Pentavia, Mill Hill

London NW7 2ET

Ground Investigation Report (May 2015)

Date: 22/03/19

LISTERS GEO
Geotechnical and Geoenvironmental Consultants

Clancy Consulting Ltd

Ground Investigation

Pentavia Retail Park
Watford Way
Mill Hill
London
NW7 2ET

Report No: 15.02.014
September 2016

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For and on behalf of ListersGeo, trading name of Listers Geotechnical Consultants Ltd

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EXECUTIVE SUMMARY

Project Reference	15.02.014.
Site Location	Pentavia Retail Park, Watford Way, Mill Hill, London, NW7 2ET.
OS Grid Reference	Approximate centre of the site – 521833, 191317.
Development Proposals	Three extensions to existing retail units.
Topography	The site is flat lying.
Vegetation	Some semi-mature trees and ornamental shrubs across the car park in the southeastern half of the site and semi-mature trees and brambles across Area 4, which is located to the north of the retail units.
Existing Buildings	Large retail units in the northwestern half of the site.
Published Geology	Made Ground over solid geology of the London Clay Formation.
Site History	The site was part of fields and remained undeveloped until the early to mid twentieth century when a road embankment was constructed in the eastern area of the site. During the mid twentieth century the northern half of the site was part of an allotment and the southern half part of a sports ground. By 1979 the site was no longer part of an allotment or a sports field and an embankment was present in the northern area of the site. By 1990 the site had become a retail development with a large building shown on the same configuration as the current retail units in the northern half of the site.
Hydrology	There is no on site surface water.
Hydrogeology	The site is underlain by Unproductive Strata (the London Clay Formation).
Ground Conditions Encountered	The site and the laboratory work have shown the site to be underlain by deep Made Ground over solid geology of Palaeogene age London Clay Formation. The Made Ground was encountered across site from ground level down to depths of between 8.5m and 10.5m. It generally comprised hardstanding and granular sub-base down to a typical depth of 0.4m over brown slightly gravelly slightly sandy clay and included occasional cobble and boulder sized concrete. The London Clay Formation was encountered underlying the Made Ground down to the base of the boreholes at depths of 20.0m. It generally comprised stiff, becoming very stiff at a typical depth of 15.0m, brown or grey slightly sandy clay.
Groundwater Encountered	Groundwater strikes were encountered in the boreholes at depths of between 4.0m and 5.5m, with the water levels rising to depths of between 3.5m and 5.0m after twenty minutes. Standing water levels of between 2.4m and 4.9m depth were recorded during the groundwater monitoring visits.
Ground Contamination	No widespread contamination was recorded by the soil tests, however low levels, i.e., less than 0.001%, of chrysotile asbestos was recorded in one sample of Made Ground tested from Area 4.
Site Remediation Required	As long as the Made Ground in Area 4 is covered with hardstanding or imported Topsoil then no remedial measures will be required.
Soil Gases	Based on the results of the site works and subsequent gas monitoring it is considered either further gas monitoring will be required to accurately assess the risks posed by ground gases, or a conservative Characteristic Gas Situation 2 is assumed for the site. The BGS advises that no special radon protection measures are necessary for this site.
Foundations	Piled foundations (see Appendix A for pile design parameters).
Floor Slabs	To allow a ground bearing floor slab geogrids or similar soil reinforcement is recommended in order to provide a sub-grade with a known CBR value.
Waste Soil Classification	Area 1 to 3 – Inert. Area 4 – Non-hazardous.
Roads & Hard Standing Design	Due to the site being underlain by deep Made Ground soil reinforcement is recommended – see the main report for details.
Chemical Attack on Buried Concrete	Design Sulphate Class DS-2. ACEC Class AC-2.

This executive summary should be read in conjunction with the main report.

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GROUND INVESTIGATION REPORT

INTRODUCTION

A ground investigation has been undertaken for a commercial development at the Pentavia Retail Park, Watford Way, Mill Hill, London, NW7 2ET. A Site Location Plan is provided in Appendix A.

The Ordnance Survey National Grid reference for the approximate centre of the site is 521833, 191317.

This report describes the desk study and intrusive site investigation activities carried out by Listers Geotechnical Consultants in order to provide an evaluation of the ground conditions and the extent of any soil contamination present on the site. The report presents initial human health and groundwater risk assessments based on the findings of the desk study information and subsequent contamination laboratory testing. The contamination risk assessment has been carried out using the source-pathway-receptor risk assessment methodology.

The report also discusses the geotechnical implications with regard to the proposed development based on the findings of the fieldwork and subsequent laboratory testing.

Instructions to undertake the investigation were received, on behalf of Clancy Consulting Ltd, from Mr Nick Kertesz of Meadow Mill Hill Ltd in their budget estimate acceptance dated 9th February 2015.

This report has been prepared for the sole use of the client and their professional advisors. This report shall not be relied upon by third parties without the express written authority of Listers Geotechnical Consultants. If an unauthorised third party comes into possession of this report they must not rely on it and the authors owe them no duty of care and skill.

SCOPE OF THE INVESTIGATION

The scope of the investigation was to undertake a desk study and walkover survey, provide an assessment of the geotechnical engineering properties of the ground and the extent of any soil contamination on the site. A contaminated land risk assessment was undertaken based on the Contaminated Land Exposure Assessment (CLEA) and Environment Agency RTM guidelines.

PROPOSALS

It is proposed to redevelop the site to accommodate three new extensions to the existing retail units. A Proposed Development Plan highlighting the locations for the proposed extensions is provided in Appendix A.

SITE INFORMATION AND WALKOVER SURVEY

A walkover survey of the site and its immediate surrounds was undertaken on the 2nd March 2015. A selection of site photographs is presented in Appendix A.

The locations for the proposed extensions are labelled on the Proposed Development and Exploratory Hole Location Plans provided in Appendix A as Areas 1 to 3. In addition the client requested a forth area was included within the investigation, this has been labelled as Area 4 on the Exploratory Hole Location Plan.

The site is an existing retail development and comprises several large retail units in its northwestern half and a customer's car park in its southeastern half. In addition, there is a service yard to the north of the retail units. It is flat lying with the surface mainly formed by a mixture of asphalt or concrete hardstanding and block paving. The retail development is bounded to the east and west by major roads, i.e. the A1 and M1 respectively. To the north is undeveloped land and to the south a restaurant.

Areas 1 to 3 are within the grounds of the existing retail development, however, Area 4 is located just to the north.

Below is a site description of each of the areas 1 to 4.

Area 1

Area 1 is a roughly wedge shaped parcel of land, located to the northeast of the retail units and is part of the retail development's car park. Its overall dimensions are approximately 45m by 20m and it covers an area of approximately 0.06 hectares. It is flat lying with asphalt hardstanding and block paving forming most of the area's surface. The area's northern and southern boundaries are open with a pedestrian pavement and the car park beyond respectively. The western boundary is formed by the retail units and the east by a wooden fence. The ground levels beyond the northern, southern and western boundaries are similar to those in Area 1. However, the ground level beyond the eastern boundary is several metres below the ground level across area 1. Consequently, there is a concrete retaining wall along this boundary.

There are no buildings, surface water or vegetation in this area and no obvious signs of contamination were observed during the site walkover.

Area 2

Area 2 is part of the retail development's service yard and is located to the north of the retail unit's buildings. It is a roughly oblong shaped parcel of land, with overall measurements of approximately 25m by 20m and covers an area of approximately 0.05 hectares. It is flat lying with concrete hardstanding forming its surface. The area's northern and western boundaries are open with the service yard continuing beyond. The area's eastern and southern boundaries are formed by the retail units. The ground levels beyond each of the boundaries are similar to those across the area. A manhole cover located within Area 2 was lifted to reveal a deep sewer that appeared to be aligned northeast to southwest.

There are no buildings, surface water or vegetation in this area and no obvious signs of contamination were observed during the site walkover.

Area 3

Area 3 is a roughly oblong shaped parcel of land, located to the south of the retail units and is mainly part of the retail development's car park. Its overall dimensions are approximately 40m by 20m and it covers an area of approximately 0.08 hectares. It is flat lying with mainly asphalt hardstanding and block paving forming its surface. The area's eastern and southern boundaries are open with the car park continuing beyond. The western boundary is also open with an access road beyond and the northern boundary is formed by the retail units. The ground levels beyond each of the boundaries is similar to those on the site.

There are several semi-mature trees and ornamental shrubs within this area, however there are no buildings or surface water. In addition, no obvious signs of contamination were observed during the site walkover.

Area 4

Area 4 is a roughly triangular shaped parcel of land, located just to the north of the retail development and is currently undeveloped. Its overall dimensions are approximately 15m by 12m and it covers an area of approximately 0.01 hectares. It slopes downwards towards the northeast and has a covering of semi-mature trees and brambles across its surface. The northern boundary is open with further undeveloped land beyond. The southeastern and southwestern boundaries are formed by a concrete retaining wall topped with steel palisade fencing. The ground levels beyond the northeast are similar to those along the area's northeastern boundary. However, the ground levels beyond the southeastern and southwestern site boundaries, which are within the retail development's service yard, are approximately 1.0m higher than those beyond the area's boundaries.

There are no buildings or surface water within this area. Although no obvious signs of contamination were observed during the site walkover, there is much rubbish strewn across its surface.

GEOLOGY

Reference to the British Geological Survey 1:50,000 scale map and other published geological information on the area indicate that the site is likely to be underlain by Made Ground over solid geology of Palaeogene age the London Clay Formation.

The geological map for the area shows the site to be underlain by Made Ground, the nature of this Made Ground is not described. It also states: "Within older urban areas, much of the surface has been partially or wholly disturbed by human activity and thus made, worked and landscaped ground are not delimited." On this basis, it is anticipated the site is likely to be underlain by thick Made Ground.

The London Clay Formation is described as clay that is silty in parts and may be up to 110m thick in this area.

There are no freely available historic borehole logs located within 100m of the site.

DESK STUDY AND BACKGROUND INFORMATION

GENERAL

A desk study review of the site and its history has been undertaken to establish the former land usage and the potential for any historically derived sources of chemical contamination. A copy of the desk study information is presented in Appendix D of this report.

It should be noted that the information provided in the desk study is obtained from independent third party sources. It is provided in good faith, but no guarantee can be provided as to its accuracy. The Client should make independent enquiries on information provided in the desk study information that may impact on the proposed development. The desk study information is not necessarily exhaustive and further information relevant to the site may be available from other sources.

The desk study comprises a review of the following consultations and information sources:

- Environment Agency (EA)
- Natural England
- National Geoscience Information Service
- Public Health England
- Centre for Ecology & Hydrology
- British Geological Survey (BGS)
- Contemporary Trade Directories
- Historical Ordnance Survey maps

Information from the above referenced sources has been utilised to develop a conceptual model of the site for use in the geotechnical appraisal and source-pathway-receptor risk assessment.

HISTORY OF THE SITE

The history of the site has been established by reviewing the historical Ordnance Survey maps and aerial imagery of the area, collected as part of the desk study information. This has established the following:

Time Period	Historical usage of the site	Historical usage of the surrounding Area
1882-1914	The site is part of three large fields, with two tree lined field boundaries aligned northeast to southwest across the centre of the site. There are two ponds located in the northeastern area of the site, one of which is close to Areas 2 and 4.	The site is mainly surrounded by fields, however, there are two railway lines aligned northwest to southeast shown within 100m of the site and located to the east and west.
1932	An embankment is shown in the eastern area of the site and the former field boundaries have been moved in order to allow access for the embankment.	A road is shown on the top of the embankment along the eastern boundary of the site. Some houses are shown approximately 50m to the northeast of the site.
1964	The northern area of the site is shown as allotment gardens and the southern area as a sports ground. A building is shown along the western site boundary, and a drain is aligned northeast to southwest and crossing the northern area of the site and through Area 1.	The allotment gardens extend to the north of the site and the sports ground to the south. The road along the eastern site boundary is labelled as the A1 Barnet Bypass.
1979-1983	The site is no longer part of allotment gardens or sports field. The embankment previously shown in the eastern area of the site is no longer shown; this is likely to be as a result of ground levels across the rest of the site having been raised as part of the M1 construction works.	The M1 motorway is shown along the western site boundary and a road linking it with the A1 to the east is located along the northern site boundary at the base of the embankment shown in the northern area of the site.
1990	There is a large building shown on the same configuration as the current retail units. A car park is shown to the south and east of this building and a service yard to its north. The northern area of the retail unit has been constructed over the embankment previously shown in the northern area of the site.	A building is shown to the south of the site on the same configuration as the current restaurant.

UNEXPLODED ORDNANCE AND BOMB SITES

An Unexploded Ordnance (UXO) Preliminary Risk Review has been carried out for this site. This found the following:

- No military history was found for the site.
- No records were found to indicate that the site was subjected to aerial bombardment by the Luftwaffe during World War II.
- No records were found to indicate that items of UXO have been found or recovered from the site.
- The footprint of the site has undergone extensive redevelopment since 1945.

The conclusion of the Preliminary Risk Review was that there is a low UXO risk on this site.

HYDROLOGY

There are no surface water features on the site. Based on the site walkover and desk study information acquired for the site the nearest surface water feature to the site is a road side ditch located 21m to the north. Due to the nature of this feature and its location off site it is not considered to be at risk from the site.

There are no current surface water abstraction licenses located within 1,000m of the site.

HYDROGEOLOGY

Information obtained from the Environment Agency indicates that the site is located on Unproductive Strata (the London Clay Formation).

The aquifer designation data is based on geological mapping provided by the British Geological Survey. The maps are divided into two different types of aquifer designation:

- **Superficial (Drift)** – Permeable unconsolidated (loose) deposits e.g. sands and gravels.
- **Bedrock** – Solid permeable formations e.g. sandstone, chalk and limestone.

For each type there are Principal, Secondary A, Secondary B and Unproductive Strata, each with a decreasing rank of importance.

There are no current groundwater abstraction licenses located within 1,000m of the site.

According to information provided by the Environment Agency the site is not within a Source Protection Zone (SPZ). An SPZ is a protection zone placed around a well or borehole that supplies groundwater of potable quality.

There has been one substantiated pollution incident to controlled waters within 250m of the site. This occurred in 1995 and was located 210m to the northwest of the site. It involved oils and was classified as a Category 3 – Minor Incident. Due to the nature of the incident, the time since it occurred and its distance from the site this pollution incident is not considered to pose a significant risk to the site.

LANDFILL, WASTE TREATMENT AND INDUSTRIAL USAGE SITES

Reference to records from the BGS, the Environment Agency and the Local Authority indicates that there are no current waste transfer or treatment sites or waste management facilities within 1,000m of the site. However, they indicate there was a registered waste transfer site located 106m to the south of the site. The site was authorised to accept asbestos, but not biodegradable or putrescible waste, clinical wastes, notifiable wastes or special wastes. Its license is recorded to have lapsed in 1985.

Reference to records indicates that there was a Local Authority Recorded Landfill Site and a Historical Landfill Site on the site. There is no information regarding the type of waste accepted, however, the last input is recorded as 1965. It is considered these activities were likely to be associated with the construction of the M1 London Extension which was opened in the late 1960s.

In addition, there is another Local Authority Recorded Landfill Site and two other Historical Landfill Sites located within 500m of the site. Two of these were located 421m to 424m to the south of the site, with the specified waste including inert waste and the last input recorded as 1978. The other was located 488m to the southwest of the site, with the specified waste including inert and industrial waste and the last input recorded as 1986.

There are two applications for Local Authority Pollution Prevention and Controls located within 500m of the site. Both of these are located at the Watford Way Filling Station which is located 88m to the south of the site.

There are eight Contemporary Trade Directory Entries that have been found within 250m of the site. The nearest of these is on the site and is for an electrical goods sales and manufacturers (Comet). The others include a garage services, a paint and varnish stripping business and a car body repairs. A full list is included in the Envirocheck Report provided in Appendix D.

The nearest active fuel filling station is the Watford Way Filling Station referred to above and located 88m to the south of the site.

RADON GAS

Envirocheck utilise information from the National Geoscience Information Service and the Britsih Geological Society to determine if the site is within a radon affected area and if radon protection is considered necessary. The BGS data complies with the BR 211, ‘Radon: Guidance on Protective Measures for New Buildings,’ and indicates that no radon gas protection is required for new buildings at this site.

RISK OF GASEOUS CONTAMINATION

We have provisionally assessed the risk of ground gases impacting the site, by reference to guidance given in the paper, ‘A Pragmatic Approach to Ground Gas Risk Assessment for the 21st Century,’ Card and Wilson, 2011. This is a follow up paper to the CIRIA Report 665 and is compatible with that document.

The site is located on a Local Authority Recorded Landfill site and a Historical Landfill site. It is not known what types of waste were used, however, it is considered likely that the landfill activities were likely to be

associated with the construction of the M1 London Extension in the 1960s. On this basis, the landfill material is unlikely to have contained significant quantities of degradable material. However, the presence of the landfill operations at the site is considered to be a potential source of ground gases, and therefore it is considered ground gases do pose a risk to the site and monitoring will be required.

GROUND RELATED HAZARDS

The desk study information identified that the site does not lie within an area likely to be affected by coal or non-coal mining.

The Hazard Potential for shrinking and swelling clay at the site is classified as moderate. The Hazard Potential for the following is classified as very low or no hazard: collapsible ground, compressible ground, ground dissolution, landslide and running sand.

BACKGROUND SOIL CHEMISTRY

Information from the BGS regarding the urban soil chemistry averages for the site area are as follows:

Contaminant	Urban Soil Averages (mg/kg)
Arsenic	15 to 25
Cadmium	<1.8 to 3.0
Chromium	90 to 120
Lead	300 to 600
Nickel	30 to 45

These concentrations are all below the generic environmental screening standards for a commercial site.

POTENTIALLY SENSITIVE LAND USES

The site is not located within an environmentally sensitive area.

CONCEPTUAL MODEL

A preliminary qualitative risk assessment has been carried out using the source-pathway-receptor principle to create a conceptual model for the site.

As such, potential sources of contamination and potential receptors have been assessed using the Contaminated Land Exposure Assessment (CLEA) Guidelines. The fact that a pathway must exist between a potential source of contamination and a potential receptor for there to be a risk, has been taken into account.

The results of the desk study and walkover indicate that the following potential sources of ground contamination are present at or in close proximity to the site:

- Made Ground associated with the site's former use as a landfill site is likely to be present.
- Contaminants associated with the site's historical use.
- Minor spills and leaks from vehicles parked at the site.

- Migration of contaminants onto the site from local current and historical industrial and commercial land uses.
- Ground gases.

The following most sensitive receptors have been identified at the site:

Human Health

- End users of the site (staff and customers).
- Construction workers.

It is considered that a number of potential pathways exist between these potential sources and the above identified receptors.

For the human receptors these include:

- Direct soil ingestion in areas of exposed soil.
- Inhalation of indoor and outdoor vapours and dust.
- Dermal contact with contaminated soil.
- Inhalation of ground gases.

EXPLORATION AND TESTING

GENERAL

A total of eleven exploratory holes were formed at the site, inclusive of six hand excavated trial pits and five cable percussion boreholes, between the 2nd and 5th March 2015. The logs and diagrammatic profiles are provided in Appendix B.

SAMPLING STRATEGY

The positions of the exploratory holes were selected by the client and Listers Geotechnical Consultants to provide information on the ground conditions and existing foundations in four specific areas of the site, i.e. the locations for the three proposed extensions (Areas 1 to 3) and Area 4.

The position of the exploratory holes undertaken at the site as part of this investigation can be seen on the Exploratory Hole Location Plan in Appendix A. The results of the laboratory testing are provided in Appendix C.

METHODOLOGY

The trial pits, TP1 to TP6, were hand excavated down to a maximum depth of 1.2m below ground level. Small-disturbed samples were taken at regular intervals down to the base of the holes for subsequent laboratory testing and inspection. On completion, the trial pits were carefully backfilled with arisings in thin layers, ensuring that excavated material was replaced in the same order as it had been removed.

Boreholes BH1, BH1A, BH1B, BH2 and BH3 were drilled utilising a standard cable percussion rig, at a diameter of 150mm, down to a maximum depth of 20.0m below ground level. Boreholes BH1 and BH1A were terminated at 4.0m depth after encountering concrete obstructions. Due to the presence of a deep sewer, identified during the site walkover it was decided to move the locations of these boreholes, rather than chiselling and risking damage to a potential sewer. Metal casing was extended to a maximum depth of 7.5m, to avoid the collapse of the loose deposits within the upper part of the boreholes and to seal out groundwater inflows. Disturbed samples were collected at regular intervals throughout the borehole for future laboratory inspection and testing. Standard penetration tests (SPTs) and undisturbed tube samples (U100s) were taken at 1.0m intervals down to 10.0m depth and at 1.5m intervals thereafter.

On completion of the boring, boreholes BH2 and BH3 were utilised for the installation of a 50mm diameter slotted uPVC standpipe from a depth of 6.0m up to 1.0m below existing ground level. From 1.0m depth up to ground level a plain pipe was added. The slotted section of the standpipe was surrounded with pea gravel, while expansive bentonite clay was added around the plain pipe and below the slotted section to seal the borehole. The standpipe was finished with a stopcock cover, which was then concreted flush with ground level.

Engineering and geoenvironmental conclusions given in this report are based on data obtained from these sources but it should be noted that variations, which affect these conclusions, may occur between and beyond the test locations. Also water levels may vary with time.

GROUND CONDITIONS

The site and laboratory test work revealed that the general succession of strata can be represented by Made Ground overlying the London Clay Formation. It may be summarised as follows:

Made Ground - Encountered at each test location from ground level down to proven depths of between 8.5m in Areas 1 and 3, and 10.5m in Area 2. It comprised paving slabs, block paving or concrete hardstanding over a granular sub-base down to depths of between 0.2m and 1.5m, but typically 0.4m. Beneath the hardstanding and granular sub-base it generally comprised brown slightly gravelly slightly sandy clay, with the gravel generally comprising fine to coarse sub-rounded to sub-angular brick, concrete and flint.

Boreholes BH1 and BH1A in were terminated at 4.0m depth after encountering concrete obstructions. No chiselling was carried out at these locations due to the potential for the obstructions being related to the deep sewer noted in the site walkover. However, a 300mm thick concrete obstruction encountered at 4.0m depth at BH2 was chiselled through. On this basis, it is considered some cobble or boulder sized concrete is present within the Made Ground.

Classification tests on selected samples revealed moisture contents generally ranging from 17% to 38%, with the fines fraction mainly classified as a soil of medium volume change potential, see the BRE Digest 240. Restricted sieve analyses on corresponding samples revealed granular soil fractions of generally between 58% and 89%.

'N' values derived from standard penetration tests in the boreholes ranged from 5 to 35, but were typically between 9 and 19, indicating the Made Ground is generally firm or stiff.

Loss on ignition tests revealed organic contents of 4%.

London Clay Formation - Encountered at each test location that penetrated the base of the Made Ground, i.e. BH1B, BH2 and BH3, from depths of between 8.5m and 10.5m down to the base of the boreholes at depths of 20.0m. It generally comprised stiff brown or grey slightly sandy clay down to a typical depth of 15.0m, below which it became very stiff grey slightly sandy clay.

Classification tests on selected samples revealed moisture contents generally ranging from 27% to 34%, with the fines fraction classified as soil of medium and high volume change potential, see the BRE Digest 240. Restricted sieve analyses on corresponding samples revealed granular soil fractions generally between 2% and 11%.

Undrained triaxial compression tests undertaken on undisturbed samples revealed shear strengths generally ranging from 89kPa to 120kPa.

'N' values derived from standard penetration tests in the boreholes generally ranged from 15 to 24 at depths of down to 15.0m, and generally 27 to 32 below 15.0m depth.

The number of blows taken to retrieve the undisturbed U100 tube samples from the boreholes ranged between 39 and 54 at depths of down to 15.0m, and were 69 and 76 below 15.0m depth.

California Bearing Ratio (CBR) Tests

Two laboratory CBR tests were undertaken on samples of the Made Ground taken from depths of 0.2m and 0.8m at BH1A and BH3 respectively. The results of the testing were 4.0% from BH1A and 2.0% from BH3.

Sulphate and pH Tests

Made Ground

Soluble sulphate tests carried out on samples of the Made Ground recovered from the exploratory holes recorded values ranging from 0.10g/l to 0.46g/l, in conjunction with pH values ranging from 6.8 to 9.3. In addition, total sulphate concentrations of 1.1% and 2.5% and total sulphur concentrations of 0.3% and 1.5% were recorded.

The London Clay Formation

Soluble sulphate tests carried out on samples of the London Clay Formation recovered from the exploratory holes recorded values of 0.50g/l and 1.0g/l, in conjunction with pH values of 7.6 and 7.7. In addition, total sulphate concentrations of 1.0% and 1.1% were recorded and total sulphur concentrations of 0.26% and 0.30% were recorded.

GROUNDWATER

Groundwater strikes were encountered in the boreholes at depths of between 4.0m to 5.5m, after twenty minutes the water levels had risen to depths of between 3.5m to 5.0m. Standing water levels were recorded at depths of between 2.4m and 4.9m during the groundwater monitoring visits.

EXISTING FOUNDATIONS

The existing foundations were revealed in the hand excavated trial pits. The test positions were selected by the client. The findings are summarised in the following table:

Trial Pit	Trial Pit Location	Foundation Depth (m)	Foundation Details	Projection (m)	Foundation Soil Type
TP1	Retaining wall along the eastern site boundary in Area 1.	>1.2m	Concrete (retaining wall).	N/a	Unknown
TP2	Retail units in Area 1	1.0m bgl	Unknown – pile cap?	0.4m	Made Ground
TP3	Retail units in Area 2	>0.9m	Unknown.	0.2m	Unknown.
TP4	Retail units in Area 3	Unknown	Unknown	>1.2m	Unknown.

Trial pits TP3 and TP4 were terminated short of 1.2m depth due to the presence of services and a concrete obstruction respectively.

Diagrammatical profiles of the foundations are provided in Appendix B.

GROUND GAS

Ground gas monitoring carried out as a part of this investigation has revealed oxygen levels of between 15.9% and 19.2% by volume, carbon dioxide levels of between 0.1% and 2.2% by volume and methane levels of between 0.3% and 0.7% by volume.

Flow rates ranged between 0.0l/hr and 0.6l/hr.

The results are provided in Appendix B.

GROUND CONTAMINATION ASSESSMENT

SOIL TESTING

Six samples of the Made Ground collected on site during this investigation were tested for a range of contaminants.

The suite of testing carried out on the samples was decided upon following consultation of R&D CLR Publications, published as part of the Contaminated Land Exposure Assessment (CLEA), a joint venture between the Department for Environment, Food and Rural Affairs (DEFRA) and the Environment Agency. The Department of the Environment (DoE) Industry Profile for, 'Engineering Works – Electrical and Electronic Equipment Manufacturing Works,' was also consulted.

The test suite included a range of:

- Metals and inorganic substances.
- Speciated Polyaromatic Hydrocarbons (PAH).
- Total Petroleum Hydrocarbons (TPH), with eight band split.
- Asbestos screening.

The soil samples were tested to obtain 'Total' values within the soil.

The results of the tests from this investigation are included in Appendix C.

RISK ASSESSMENT GUIDELINES – HUMAN HEALTH

The human health risk assessment has been undertaken using the guidance provided in the Environment Agency's publication CLR11, 'Model Procedures for the Management of Contaminated Land,' published in September 2004. Human health assessment criteria used are based upon the proposed final land use of the site, in this case as the development proposals involve extensions to the existing retail units the guidelines for 'Commercial' have been used.

Currently in the UK, no statutory limits for the presence of contaminants in soils or groundwater exist. Therefore, the results of the soil samples tested are compared to the following environmental quality standards:

Category 4 Screening Levels (C4SLs)

Published in March 2014 by DEFRA, C4SLs were primarily produced to support the revised Statutory Guidance to support Part 2A of the Environmental Protection Act 1990, which was published in April 2012. This Guidance introduced a new four-category system for classifying land under Part 2A for cases of a Significant Possibility of Significant Harm to human health, where Category 1 includes land where the level of risk is clearly unacceptable and Category 4 includes land where the level of risk posed is acceptably low.

With regards to using the C4SLs for planning purposes the DEFRA letter of 3rd September 2014 from Lord de Mauley established that they are also meant for use in planning situations, as does the DCLGs 'Planning Portal' document 2014.

Suitable 4 Use Levels (S4ULs)

As well as limited number of C4SLs (and where C4SLs are not available), the set of S4ULs produced by Land Quality Management (LQM) and the Chartered Institute of Environmental Health (CIEH) in 2015 using the CLEA software, are used as a screening tool.

The CLEA software 1.06 version was released in October 2009 and is a deterministic exposure model with altered exposure data to the original model. The model allows the creation of a generic assessment criteria database with which to screen laboratory testing results. These generic assessment criteria are conservative and based upon common assumptions.

RISK ASSESSMENT GUIDELINES – GROUNDWATER

The procedures set out in Environment Agency's Remedial Targets Methodology, 'Hydrogeological Risk Assessment for Contaminated Land,' (2006), have been followed.

RESULTS OF TOTAL SOIL TESTS

None of the metals and inorganic substances or hydrocarbons tested for recorded values higher than their relevant environmental standards values for human health for a commercial setting.

Samples of the Made Ground from each area were tested for the presence of asbestos. No asbestos was identified in the samples from Areas 1 to 3. However, fibres/clumps were identified to contain chrysotile asbestos albeit at concentrations below detectable limits of less than 0.001% from a sample of Made Ground taken from 0.5m depth at TP6 in Area 4.

No evidence of asbestos was noted during the site works.

HUMAN HEALTH RISK ASSESSMENT

The following qualitative risk assessment has been carried out using the source-pathway-receptor principle. As such, potential sources of contamination have been assessed using the CLEA Guidelines. The fact that a pathway must exist between a potential source and potential receptor for there to be a risk, has been taken into account. The potential human receptors evaluated for their individual risk are:

- End users of the site (workers and customers).
- Construction workers.

GENERAL

No obvious signs or sources of contamination were observed during the site walkover or fieldwork and, with the exception of asbestos in the Made Ground in Area 4, none of the soil contamination tests carried out as part of this investigation revealed elevated concentrations of contaminants in the soil.

On this basis, it is considered there is no significant risk of significant harm to the above referenced receptors in Areas 1 to 3, and therefore remedial measures are not necessary in these areas.

Asbestos.

Chrysotile at a concentration of less than 0.001% was recorded from a sample of Made Ground taken at a depth of 0.5m from TP6 in Area 4. No asbestos was identified in the other asbestos screens carried out as part of this investigation, including on another sample from Area 4, i.e. TP5 at 0.5m depth.

On the basis of the above it is considered asbestos is not likely to be widespread across the site, but some should be anticipated within the Made Ground in Area 4. As long as the Made Ground is covered with hardstanding or imported Topsoil in areas of soft landscaping, then it does not pose a significant risk. However, if excavated and allowed to dry out and become dusty during groundworks it would become a risk to construction workers and surrounding residents.

Any developer undertaking construction works in Area 4 where the Made Ground will be disturbed will have a duty of care to its employees and the surrounding residents to ensure that the Control of Asbestos Regulations 2012 are adhered to. We recommend that specialist advice is gained regarding air monitoring and on site visual inspection where breaking ground for construction is planned.

Should suspected asbestos be identified then this should be removed by competent personnel.

The above conclusions should be agreed with the relevant regulator prior to construction to avoid any possible delays.

GROUNDWATER RISK ASSESSMENT

No controlled waters receptors have been identified for the site. On this basis, there is no pollutant linkage and therefore no significant risk to controlled waters.

To avoid delays, the above conclusion should be agreed with the relevant regulator prior to construction.

GEOTECHNICAL ENGINEERING CONCLUSIONS

GENERAL

We understand the development proposals involve three extensions to an existing retail development. The locations of the three extensions are shown on the Proposed Development Plan which is provided in Appendix A. In addition, the client requested the investigation includes a forth area, Area 4, to the north of the existing retail development. The location of Area 4 is shown on the Exploratory Hole Location Plan, which is also provided in Appendix A.

The site and laboratory work has shown the site to be underlain by deep Made Ground over the London Clay Formation.

The Made Ground was encountered across the site from ground level down to depths of between 8.5m in Areas 1 and 3, and 10.5m in Area 2. It generally comprised hardstanding of paving slabs, block paving or concrete with a granular sub-base down to a typical depth of 0.4m. Below this it generally comprised brown slightly gravelly slightly sandy clay, with the gravel generally comprising brick, concrete and flint. 'N' values derived from the standard penetration testing in the cable percussive boreholes indicates the cohesive Made Ground is generally firm or stiff.

Concrete obstructions were encountered at three of the boreholes and chiselling at one of these locations, BH2, indicates the presence of some cobble and boulder sized concrete within the Made Ground.

The laboratory testing shows the cohesive Made Ground to mainly have medium volume change potential, as defined by the BRE Digest 240.

The London Clay Formation was encountered underlying the Made Ground from a depth of 8.5m in Areas 1 and 3, and 10.5m in Area 2, down to the base of the boreholes at depths of 20.0m. It generally comprised stiff brown or grey slightly sandy clay.

The laboratory testing shows the London Clay Formation to have medium and high volume change potential, as defined by the BRE Digest 240.

Groundwater strikes were encountered within the boreholes at depths of between 4.0m and 5.5m, after twenty minutes the water levels had risen to depths of between 3.5m to 5.0m. During the subsequent groundwater monitoring the standing water levels were recorded at depths of between 2.4m and 4.9m.

SITE EXCAVATION

Specialist breaking plant will be required to break out the surface hardstanding and any existing substructures that may need removing. However, conventional hydraulic plant should be satisfactory for excavations in the underlying cohesive Made Ground encountered during the site works.

No observations of machine excavated trial pits were possible during the site works, however, considering the 'N' values derived from the standard penetration tests carried out in the boreholes indicate the Made Ground is generally firm or stiff, it is anticipated excavations are likely to be stable in the short term.

In line with HSE guidelines, all excavations requiring personnel access should be adequately supported to avoid the risk of collapse.

Groundwater strikes were encountered at depths between 4.0m and 5.5m, with the water levels being recorded at depths of between 3.5m and 5.0m after twenty minutes. In addition, standing water levels were recorded at depths of between 2.4m and 2.9m during the groundwater monitoring. On this basis, it is considered conventional pumping from sumps should be satisfactory in order to maintain a dry excavation at depths of 2.4m or less. However, for any excavations deeper than this a higher capacity sump pump is likely to be required.

FOUNDATION SOLUTIONS

The Made Ground is considered unsuitable as a bearing stratum due to its variability, and potential for unacceptable total and differential settlement under applied foundation loadings. The proven thickness of the Made Ground is between 8.5m and 10.5m, therefore conventional shallow foundations are not suitable and piled foundations will be required.

Pile Foundations

On the basis of the above, it is recommended that new foundations should be supported on piles founded well down into the London Clay Formation.

Preliminary pile design unit values of ultimate shaft and end bearing resistance are given in Appendix A. Settlements of piled foundations should be acceptably small.

The advice of a specialist piling contractor should be obtained to determine the most appropriate pile type and its design. The piling contractor needs to be aware of the presence of some cobble or boulder sized concrete obstructions within the Made Ground that needed to be chiselled during the site works in order to advance the cable percussive boreholes. In addition, the piling contractor should be aware of the groundwater encountered during the drilling and monitoring.

It should be noted that differential movement is likely to occur between the foundations to the extensions and the existing retail units, and as such a movement joint should be incorporated into the structure.

GROUND FLOOR SLABS

Due to the presence of deep Made Ground across the site it is recommended that geogrids or similar soil reinforcement techniques be employed to provide a subgrade with a known CBR value. Discussions should be held with a soil reinforcement company (such as Tensar) who would design a sub-grade to a specified CBR value that would be likely to limit differential settlement.

Based on information given in the Concrete Society Technical Report 34, 'Concrete Industrial Ground Floors,' and a soil type of moist clay the modulus of sub-grade reaction (k) for the cohesive Made Ground encountered across the site from depths of approximately 0.4m at this site is 0.03N/mm^2/mm.

Alternatively the floor slab could be piled in order to minimise settlement.

GAS PROTECTION

The risk of ground gases impacting the site was assessed by reference to the paper, 'A Pragmatic Approach to Ground Gas Risk Assessment for the 21st Century,' Card and Wilson, 2011. This is a follow up paper to the CIRIA Report 665 and is compatible with that document. This indicated that due to the site being located on a Local Authority Recorded Landfill site and a Historical Landfill site ground gases do pose a risk to the site. In addition, the site works encountered thick Made Ground across the site. As part of this investigation two boreholes were installed with gas monitoring standpipes and two gas monitoring visits made.

The results of the gas monitoring have revealed that carbon dioxide gas levels up to 2.2% by volume and methane gas levels up to 0.7% is being produced in the ground. The maximum flow rate was recorded as 0.6l/hr.

These results have been evaluated with reference to the Code of practice for the 'Characterization and Remediation from Ground Gas in Affected Developments,' BS8485:2007.

Using the maximum carbon dioxide reading of 2.2% with the maximum flow rate of 0.6l/hr, the maximum gas screening value for carbon dioxide is 0.013l/hr. Using the maximum methane reading of 0.7% with the maximum flow rate of 0.6l/hr, the maximum gas screening value for methane is 0.004l/hr.

As the carbon dioxide and methane levels were below 5% and 1% respectively and the gas screening values below 0.07l/hr, at this stage the site is classified as Characteristic Gas Situation 1. However, considering the site's location on a former landfill and the thickness of the Made Ground encountered during the site works, it is considered two gas monitoring visits is not considered sufficient to fully assess the risks posed by ground gases at this site. On this basis, it is recommended either further gas monitoring be carried out in order to more accurately assess the risks posed by ground gases or a conservative Characteristic Gas Situation 2 is assumed for the site.

The BGS advises that no radon gas protection measures are necessary for this site.

The above conclusions should be agreed with the relevant local Regulatory Authority, as soon as possible prior to development, to reduce any potential delays to the development, should they require further clarification of this report or further ground gas monitoring.

WORKING PLATFORMS FOR TRACKED PLANT

If construction on the site requires the use of heavy tracked plant then reference will need to be made to the most recent guide for the design of, 'Working Platforms for Tracked Plant,' 2004, produced by the BRE.

Use of such plant will require construction of either a working platform or an adequate running surface if the subgrade is determined as being already adequate to support the anticipated plant loadings.

The subgrade down to 8.5m depth should be considered as essentially a cohesive soil. Accordingly the following soil characteristics should be used for preliminary Working Platform design in accord with the most recent guidance given by the Building Research Establishment.

Anticipated Subgrade Characteristics down to 8.5m Depth	
Undrained Shear Strength Cu	60kN/m^2
Effective unit weight of subgrade material	18kN/m^3

It should be noted that soft spots and zones of weaker soil may exist on any site at shallow depths that will have a significant influence on the stability of tracked plant. The location of such features will not readily be determined by a general ground investigation for foundation design and more specific investigation at shallow depth may be required before the design of a working platform can be completed.

The advice of a specialist contractor should be sought to determine the most suitable size and thickness of platform required for their specific plant. This will take into account the size of the plant and anticipated loadings imposed on the working platform.

CLASSIFICATION OF WASTE MATERIAL

The excavations on site from foundation and services trenches will produce a considerable amount of surplus soil. Under current waste management legislation if this soil is surplus to requirements it will be classified as waste and needs disposing of at a licensed facility. However, some of the soil may be able to be re-used on-site as described in the RE-USE OF MATERIAL ON SITE section below.

If it is decided that the soil should be taken off-site as waste and disposed of, the implementation of the Landfill Directive means that the waste soil requires classification prior to leaving site.

European Waste Catalogue Determination

Using the 'Total' soil contamination test results from this investigation, in conjunction with the HazWasteOnline spreadsheets, all of the soil has been classified as **non-hazardous.**

A summary of the results of the assessment is provided in Appendix C. The full details of the assessment are available upon request.

Asbestos

Chrysotile asbestos at concentrations of less than 0.001%, was identified in the soil testing of a Made Ground sample taken at 0.5m depth from TP6 in Area 4.

Waste Acceptance Criteria (WAC) Testing Results

To further classify the waste soil from Area 4 for landfill disposal, Waste Acceptance Criteria (WAC) testing has been carried out on a representative sample collected from this area. The results indicate this soil **passes** the **inert** waste criteria.

The laboratory testing results are presented in Appendix C.

Waste Classification

With regard to the European Waste Catalogue Code 17 05 04, 'Stone and soils from uncontaminated sites' should be classified as **inert**. As such it is considered the soils from Areas 1 to 3 should be classified as **inert.**

The soils from Area 4 contain some asbestos, however, the quantities encountered do not warrant classifying the soil as non-hazardous or hazardous. Therefore, based on the soil and WAC tests carried out during this investigation the waste soils from Area 4 should also be classified as **inert.**

Analytical results relevant to the materials being disposed of should be provided to the landfill operators or waste management contractors to confirm whether it meets their license agreements and to confirm tipping costs.

RE-USE OF MATERIAL ON SITE

Currently, if surplus soil is 'fit for re-use' on the site and has not been treated, its re-use is allowed within the planning law. If it needs treating prior to re-use, exemptions can be sought from the Environment Agency to allow this activity.

A recent voluntary code of practice published by CL:AIRE, in conjunction with the EA, (the Definition of Waste: Development Industry Code of Practice, Version 2) endorses the re-use of surplus soil on and off the site of origin without the need for exemptions from the EA, dependent on whether it is "fit for purpose". It also supports the use of "Hub and Cluster" sites (to enable surplus soil to be used on agreed sites in the local vicinity, dependent on the soil being "fit for purpose").

Based upon the human health and groundwater risk assessments, the soils from Areas 1 to 3 on this site are considered to be suitable to be re-used on site for landscaping purposes. However, due to the presence of asbestos in the soils from Area 4, as a precaution it is considered these will not be suitable unless demonstrated with further testing. These conclusions should be agreed with the relevant local Regulatory Authority as soon as possible prior to development; to reduce any potential delays to the development should they require further clarification of this report or further soil testing.

SUBSURFACE CONCRETE

Chemical tests on selected samples of the Made Ground and the London Clay Formation have recorded soluble sulphate concentrations ranging from 0.10g/l to 1.0g/l, and pH values ranging from 6.8 to 9.3. In addition, total sulphate concentrations ranged between 1.0% and 2.5%, and total sulphur contents ranged between 0.26% and 1.5%.

The chemical test results have been assessed in accord with BRE Special Digest 1. These results indicate one of the four samples tested contains oxidisable sulfides of greater than 0.3%, however, the other three samples contained oxidisable sulfides well below 0.3%. On the basis that three of the four samples tested contain concentrations of oxidisable sulphide well below 0.3% it is considered the soils at this site probably do not contain pyrite.

Permeability testing was not carried out as part of this investigation, therefore to allow a conservative approach mobile groundwater conditions have been assumed. In addition, based on the site's previous history of development it is considered the site should be classified as brownfield land.

Based on the above, the Design Sulphate Class for this site is **DS-2**, and the Aggressive Chemical Environment for Concrete (ACEC) class is **AC-2**.

ACCESS ROADS AND PARKING

Deep Made Ground was encountered over the whole of the site. Pavement construction may be considered on this existing fill, subject to similar considerations as the casting of ground bearing floor slabs. Where deep Made Ground is encountered beneath the area of proposed pavement it is recommended that geogrids or similar soil reinforcement techniques be employed to provide a subgrade with a known CBR value. Discussions should be held with a soil reinforcement company (such as Tensar) who would design a subgrade to a specified CBR value.

The following should also be taken into consideration:

- Inspection of the formation and removal of any surface areas of soft, organic or other unsuitable materials.
- 'Heavy' proof rolling of the resultant formation, to compact loose granular materials and locate any soft spots at shallow depth beneath the formation for subsequent removal.
- Removal of intact or loose obstructions where noted at surface, or known based on the investigation, to a depth of at least 600mm beneath the formation to prevent the creation of hard spots or voiding.
- Backfilling of any excavation with well-compacted inert granular material.
- Adopt a pavement design based upon an equilibrium CBR of less than 2%.

UNDERGROUND SERVICES

It should be noted that the utility companies often have their own local guidelines and standards on levels of shallow soil contamination in the ground that may or may not be acceptable for the installation of below ground services. These standards may be different to those specified for assessing risks to human health and groundwater.

The local requirements should be obtained from the particular service supply company as soon as possible to avoid unexpected delays or additional development costs.

Guidance can be sought from the UK Water Industry Research (UKWIR), 'Guidance for the selection of water supply pipes to be used in brownfield sites', reference 10/WM/03/21 and 'Pipe materials selection and specification for use in contaminated land', referenced 04/WM/03/0. These documents propose that the assessment of the hazard to potable water supply pipes should be based on the following pathways: contact with migrating groundwater, permeation of vapour and direct contact with soil.

Approval should be sought for the type of pipes proposed before they are installed.

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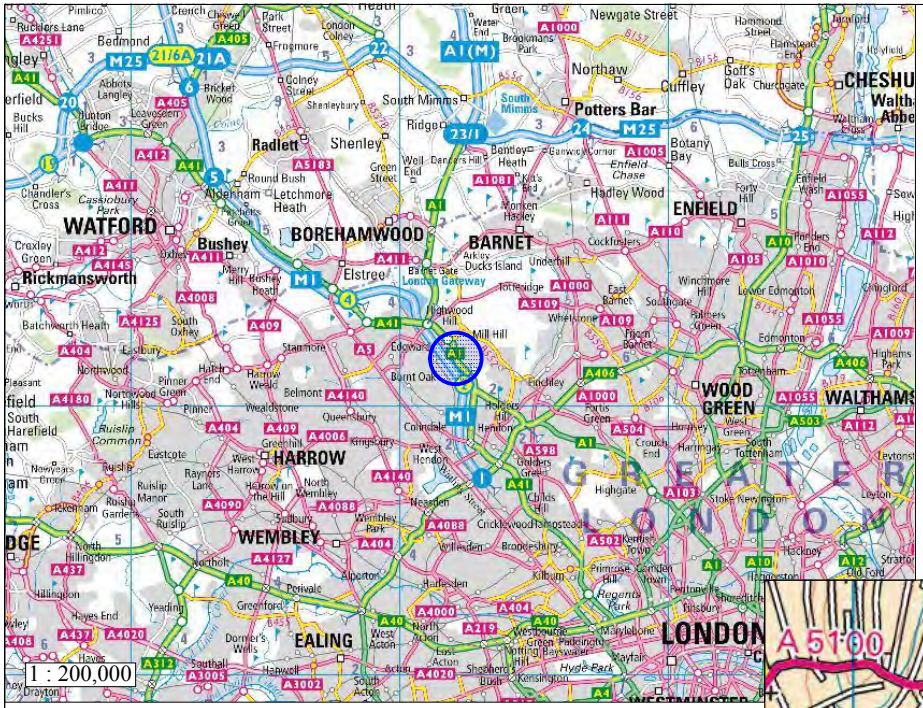
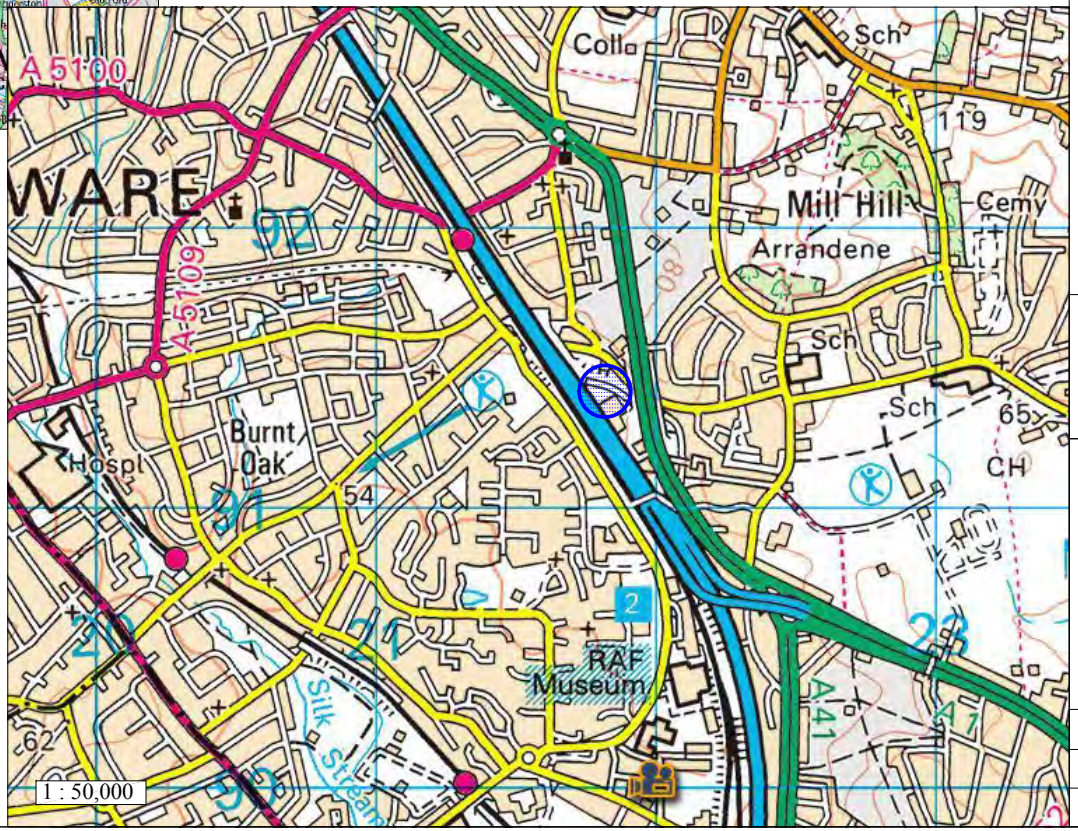
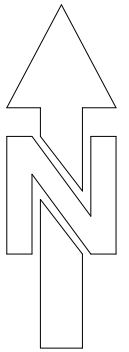
APPENDIX A
PLANS, PLOTS AND PHOTOGRAPHS







Key:

Approximate Site Location

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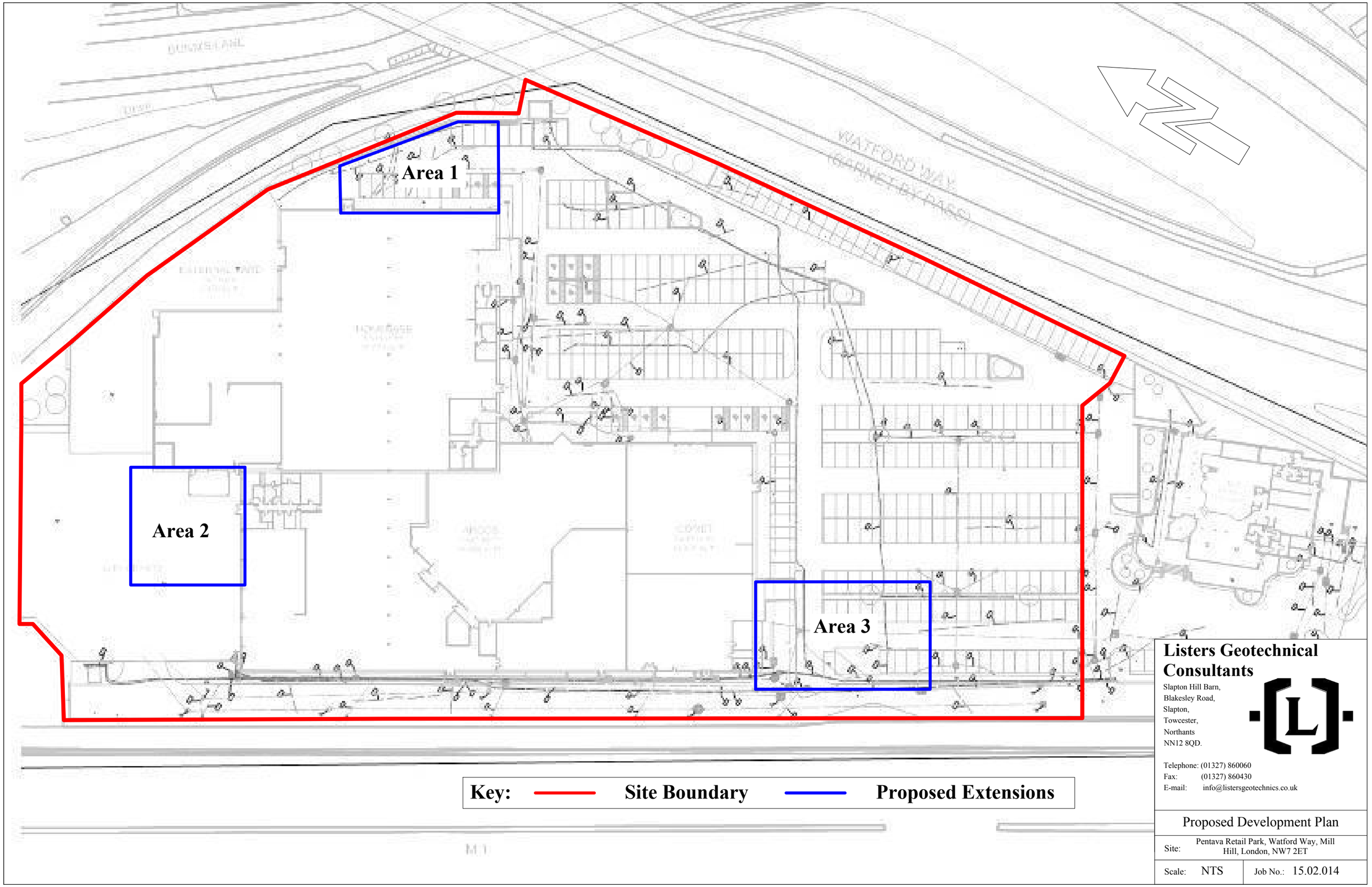
Site Location Plan

Site:	Pentava Retail Park, Watford Way, Mill Hill, London, NW7 2ET
Scale: NTS	Job No.: 15.02.014



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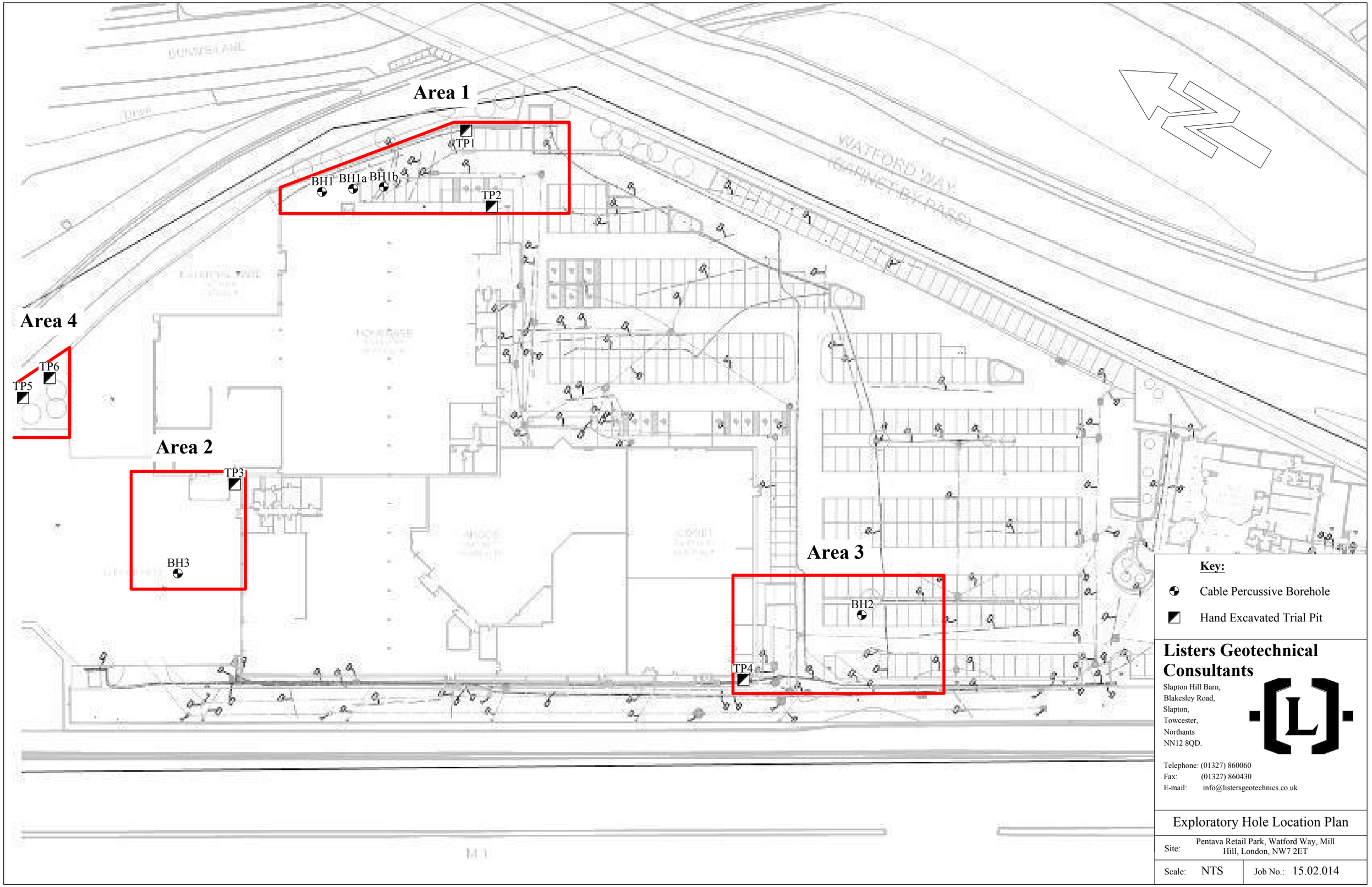
Proposed Development Plan

Site: Pentava Retail Park, Watford Way, Mill Hill, London, NW7 2ET

Scale: NTS

Job No.: 15.02.014



Key:

- Cable Percussive Borehole
- Hand Excavated Trial Pit

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Exploratory Hole Location Plan

Site: Pentava Retail Park, Watford Way, Mill Hill, London, NW7 2ET

Scale: NTS

Job No.: 15.02.014

Area 1 viewed from the south

The retaining wall along the eastern site boundary

Area 3 viewed from the south

Area 2 viewed from the west

Project Ref: 15.02.014

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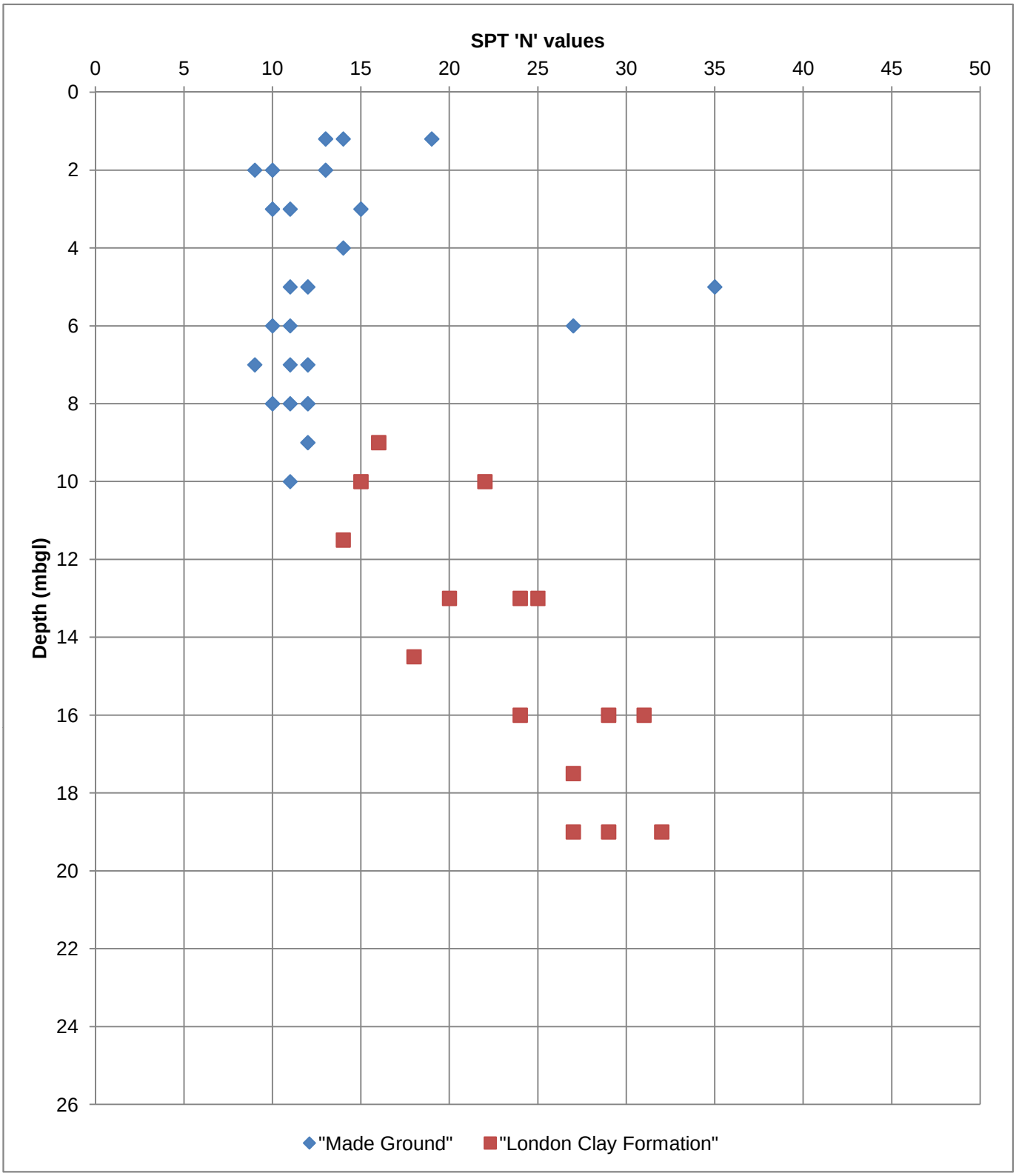
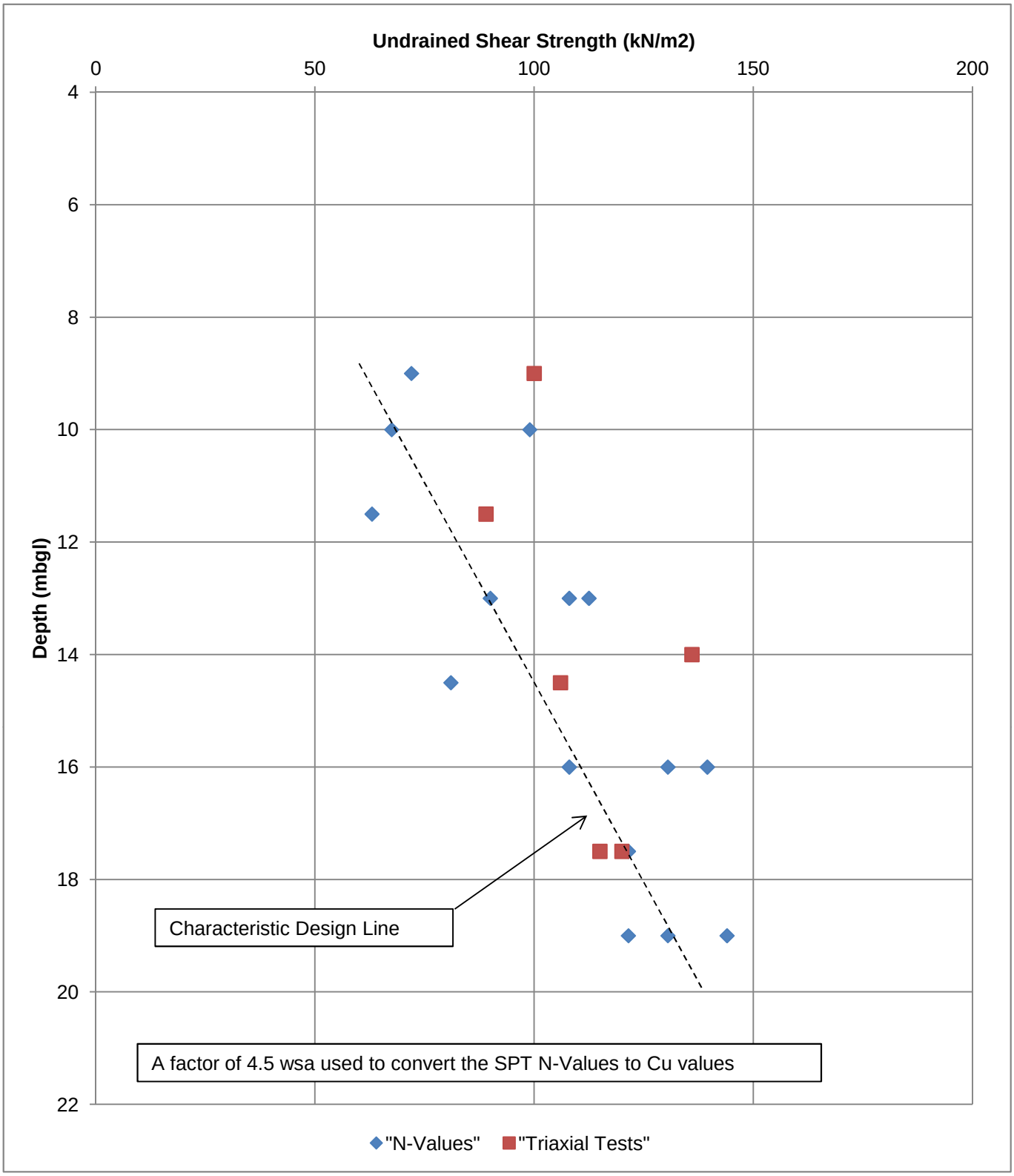
Title: **Site Photographs**

Site: **Pentavia Retail Park, Watford Way, Mill Hill, NW7 2ET**

Scale: NTS	**Drawn by:** LC
Date: 05/15	**Dwg No:** Fig 1



SPT 'N' VALUES AGAINST DEPTH	Report Number. 15.02.014



UNDRAINED SHEAR STRENGTH (LCF) AGAINST DEPTH	Report Number. 15.02.014

The working load of a single pile is the sum of the ultimate shaft resistance and the ultimate end bearing resistance, each divided by an appropriate factor of safety. The following unit ultimate values of shaft resistance and end bearing resistance are proposed for preliminary pile design, assuming a cast in-situ bored pile:

Ultimate Skin Friction	**kN**
Made Ground Approx 0.0m to 10.5m	Ignore
London Clay Formation At approximately 10.5m depth	**45 x As**
Increasing linearly from 45kN x As at 10.5m depth to 80kN x AS at 20.0m depth	**80 x As**

Ultimate End Bearing	**kN**
London Clay Formation	
At approximately approx 12.0m depth	**720 x Ab**
Increasing linearly from 720kN x Ab at 12.0m depth to 1,125kN x As at 18.0m depth	**1,125 x Ab**

As – area of the pile shaft (m2)

Ab – area of pile base (m2)

An adhesion factor, α, of 0.6 has been utilised. A bearing capacity factor of 9 has been used.

A factor of 4.5 was used to convert the SPT N-Values to Cu values.

PILE DESIGN DATA	**Report No: 15.02.014**

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APPENDIX B
FIELDWORK AND TESTING

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LOCATION: Pentavia Retail Park, Mill Hill **TEST LOCATION:** TP1

Date of Excavation: 02/03/2015

Description of Strata	Strata Change			Samples		Hand Vane kPa	Water Level -m
	Legend	Depth -m	Depth (Thickness) -m	Depth -m	Type		
		0.00					
MADE GROUND Block paving over a bed of sand			(0.20)				
			0.20				
MADE GROUND Brown and grey clayey sandy fine to coarse sub-angular GRAVEL of brick and concrete sub-base			(0.40)	0.40	D		Dry
			0.60				
MADE GROUND Brown slightly gravelly slightly sandy CLAY. Gravel is fine sub-angular brick. Contains occasional roots			(0.60)				
		1.00		1.00	D		
Trial Pit terminated at 1.20 m			1.20				

Ground Level: 66.80 m AOD

Grid Reference: 521906, 191349

Remarks:
1. Method of excavation: Hand excavated.
2. Trial pit dimensions: 0.50 x 0.50 x 1.20m.
3. Maximum depth of visible roots: 1.20m.
4. No groundwater encountered.
5. Sides stable.
6. Logged by Lee Chippington to BS5930 +A2.

▽	Water Strike
▼	Water (Standing Level)
W	Water Sample
B	Bulk Sample
D	Small Disturbed Sample
V	Vane Test
P	Penetrometer Test
M	Mexe Penetrometer
CBR	CBR Sample
UF	Under Foundations

TRIAL PIT LOG

Report No. 15.02.014

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LOCATION: Pentavia Retail Park, Mill Hill **TEST LOCATION:** TP2

Date of Excavation: 02/03/2015

Description of Strata	Strata Change: Legend	Strata Change: Depth -m	Strata Change: Depth (Thickness) -m	Samples: Depth -m	Samples: Type	Hand Vane kPa	Water Level -m
MADE GROUND Paving slab over a bed of sand		0.00	(0.20)				
MADE GROUND Concrete			0.20 (0.10)				
MADE GROUND Brown slightly gravelly slightly sandy CLAY. Gravel is fine sub-angular brick			0.30	0.50	D		Dry
			(0.90)				
		1.00		1.00	D		
Trial Pit terminated at 1.20 m			1.20				

Ground Level: 66.90 m AOD

Grid Reference: 521895, 191334

Remarks:

1. Method of excavation: Hand excavated.
2. Trial pit dimensions: 0.50 x 0.50 x 1.20m.
3. Maximum depth of visible roots: None recorded.
4. No groundwater encountered.
5. Sides stable.
6. Logged by Lee Chippington to BS5930 +A2.

▽	Water Strike
▼	Water (Standing Level)
W	Water Sample
B	Bulk Sample
D	Small Disturbed Sample
V	Vane Test
P	Penetrometer Test
M	Mexe Penetrometer
CBR	CBR Sample
UF	Under Foundations

TRIAL PIT LOG

Report No. 15.02.014

LISTERS GEO
Geotechnical and Geoenvironmental Consultants

LOCATION: Pentavia Retail Park, Mill Hill **TEST LOCATION:** TP3

Date of Excavation: 02/03/2015

Description of Strata	Strata Change			Samples		Hand Vane kPa	Water Level -m
	Legend	Depth -m	Depth (Thickness) -m	Depth -m	Type		
		0.00					
MADE GROUND Paving slab over a bed of sand			(0.20)				
			0.20				
MADE GROUND Red brown sandy fine to medium sub-angular GRAVEL of granite sub-base. Terram at 0.30m.			(0.10)				
			0.30				
MADE GROUND Grey sandy fine to coarse sub-rounded to sub-angular GRAVEL of concrete, flint and granite				0.40	D		Dry
			(0.60)				
Trial pit terminated at 0.90m due to the presence of services			0.90				
Trial Pit terminated at 0.90 m		1.00					

Ground Level: 66.90 m AOD

Grid Reference: 521820, 191348

Remarks:
1. Method of excavation: Hand excavated.
2. Trial pit dimensions: 0.50 x 0.50 x 0.90m.
3. Maximum depth of visible roots: None recorded.
4. No groundwater encountered.
5. Sides stable.
6. Logged by Lee Chippington to BS5930 +A2.

▽	Water Strike
▼	Water (Standing Level)
W	Water Sample
B	Bulk Sample
D	Small Disturbed Sample
V	Vane Test
P	Penetrometer Test
M	Mexe Penetrometer
CBR	CBR Sample
UF	Under Foundations

TRIAL PIT LOG

Report No. 15.02.014

LISTERS GEO
Geotechnical and Geoenvironmental Consultants

LOCATION: Pentavia Retail Park, Mill Hill **TEST LOCATION:** TP4

Date of Excavation: 02/03/2015

Description of Strata	Strata Change			Samples		Hand Vane kPa	Water Level -m
	Legend	Depth -m	Depth (Thickness) -m	Depth -m	Type		
MADE GROUND Brown slightly gravelly slightly sandy CLAY. Gravel is fine to medium sub-angular brick, concrete and flint		0.00	(0.90)	0.30	D		Dry
Trial pit terminated at 0.90m due to concrete slab and services				0.80	D		
Trial Pit terminated at 0.90 m		0.90					
		1.00					

Ground Level: 66.80 m AOD

Grid Reference: 521843, 191236

Remarks:

1. Method of excavation: Hand excavated.
2. Trial pit dimensions: 0.50 x 0.50 x 0.90m.
3. Maximum depth of visible roots: None recorded.
4. No groundwater encountered.
5. Sides stable.
6. Logged by Lee Chippington to BS5930 +A2.

▽	Water Strike
▼	Water (Standing Level)
W	Water Sample
B	Bulk Sample
D	Small Disturbed Sample
V	Vane Test
P	Penetrometer Test
M	Mexe Penetrometer
CBR	CBR Sample
UF	Under Foundations

TRIAL PIT LOG

Report No. 15.02.014

LISTERS GEO
Geotechnical and Geoenvironmental Consultants

LOCATION: Pentavia Retail Park, Mill Hill **TEST LOCATION:** TP5

Date of Excavation: 04/03/2015

Description of Strata	Strata Change			Samples		Hand Vane kPa	Water Level -m
	Legend	Depth -m	Depth (Thickness) -m	Depth -m	Type		
MADE GROUND Brown sandy gravelly CLAY. Gravel is fine to coarse sub-rounded to angular brick, concrete and some plastic		0.00	(0.70)	0.50	B		Dry
Trial Pit terminated at 0.70 m		0.70	0.70				
		1.00					

Ground Level: 65.60 m AOD

Grid Reference:

Remarks:

1. Method of excavation: Hand excavated.
2. Trial pit dimensions: 0.50 x 0.50 x 0.70m.
3. Maximum depth of visible roots: None recorded.
4. No groundwater encountered.
5. Sides stable.
6. Logged by Lee Chippington to BS5930 +A2.

▽	Water Strike
▼	Water (Standing Level)
W	Water Sample
B	Bulk Sample
D	Small Disturbed Sample
V	Vane Test
P	Penetrometer Test
M	Mexe Penetrometer
CBR	CBR Sample
UF	Under Foundations

TRIAL PIT LOG

Report No. 15.02.014

LISTERS GEO
Geotechnical and Geoenvironmental Consultants

LOCATION: Pentavia Retail Park, Mill Hill **TEST LOCATION:** TP6

Date of Excavation: 04/03/2015

Description of Strata	Strata Change			Samples		Hand Vane kPa	Water Level -m
	Legend	Depth -m	Depth (Thickness) -m	Depth -m	Type		
MADE GROUND Brown sandy gravelly CLAY. Gravel is fine to coarse sub-rounded to angular brick, concrete and some plastic		0.00	(0.50)				
Trial Pit terminated at 0.50 m			0.50	0.50	B		Dry
		1.00					

Ground Level: 65.60 m AOD

Grid Reference:

Remarks:

1. Method of excavation: Hand excavated.
2. Trial pit dimensions: 0.50 x 0.50 x 0.50m.
3. Maximum depth of visible roots: None recorded.
4. No groundwater encountered.
5. Sides stable.
6. Logged by Lee Chippington to BS5930 +A2.

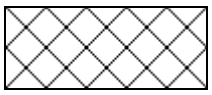
▽	Water Strike
▼	Water (Standing Level)
W	Water Sample
B	Bulk Sample
D	Small Disturbed Sample
V	Vane Test
P	Penetrometer Test
M	Mexe Penetrometer
CBR	CBR Sample
UF	Under Foundations

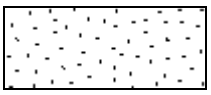
TRIAL PIT LOG

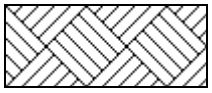
Report No. 15.02.014

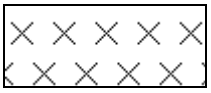
1.0 SOIL/ROCK SYMBOLS

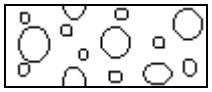
1.1 Soils

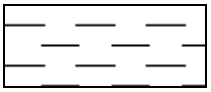

Made Ground

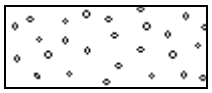

Sand

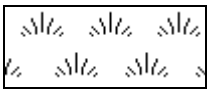

Topsoil


Silt

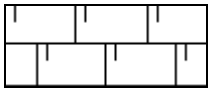

Boulders and Cobbles

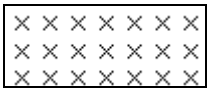

Clay

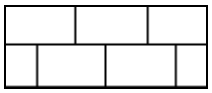

Gravel

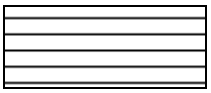

Peat

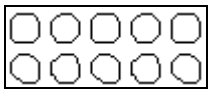
1.2 Rocks, Sedimentary

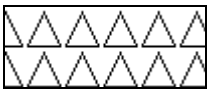

Chalk


Siltstone

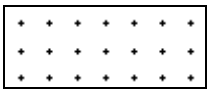

Limestone


Mudstone


Conglomerate


Breccia


Coal


Sandstone

SOIL/ROCK SYMBOLS

LISTERS GEO
Geotechnical and Geoenvironmental Consultants

LOCATION: Pentavia Retail Park, Mill Hill

BOREHOLE NO. BH1

Date of Boring: 02/03/2015

Description of Strata	Strata Change: Legend	Strata Change: Depth -m Scale	Strata Change: Depth -m Strata	Samples: Depth -m	Samples: Type	SPT CPT N Value	Water Level -m
MADE GROUND Paving slab with a sand base		0.0	0.20				
			0.50	0.50	D		
MADE GROUND Concrete		1.0	(1.00)	1.00	D		
				1.20	D	18	
MADE GROUND Grey and red brown sandy fine to coarse sub-angular GRAVEL of brick and concrete			1.50	1.50	B		
MADE GROUND Brown slightly gravelly slightly sandy CLAY. Gravel is fine to coarse sub-rounded to sub-angular brick, concrete and flint		2.0		2.00	D	5	
				2.50	D		
			(2.50)				
		3.0		3.00	D	5	Dry
				3.50	D		
Borehole terminated at 4.00m due to refusal *Base of borehole at 4.00 m*		4.0	4.00	4.00	D	50+	
		5.0					
		6.0					
		7.0					
		8.0					
		9.0					
		10.0					

Ground Level: 66.50m AOL

Grid Reference: 521880, 191366

Borehole Diameter: 150mm

Casing to: 4.00m

Instrumentation: None

Remarks:
1. Method of excavation: Cable percussive rig.
2. No groundwater encountered.
3. Logged by Lee Chippington to BS5930 +A2.

▽ Water Strike
▼ Water (Standing Level)
W Water Sample
B Bulk Sample
D Small Disturbed Sample
U Undisturbed Sample
(No. of blows shown in brackets)
SPT Standard Penetration Test
CPT Cone Penetration Test
* Extrapolated Value
A Amber
V Vial

BOREHOLE LOG

Report No
15.02.014

LISTERS GEO
Geotechnical and Geoenvironmental Consultants

LOCATION: Pentavia Retail Park, Mill Hill

BOREHOLE NO. BH1A

Date of Boring: 02/03/2015

Description of Strata	Strata Change: Legend	Strata Change: Depth -m Scale	Strata Change: Depth -m Strata	Samples: Depth -m	Samples: Type	SPT CPT N Value	Water Level -m
MADE GROUND Paving slabs with a sand base		0.0	0.20	0.20	B		
MADE GROUND Brown sandy very clayey fine to coarse sub-angular to angular GRAVEL of brick and concrete			0.70	0.70	D		
		1.0		1.20	D	19	
MADE GROUND Grey and brown slightly gravelly slightly sandy CLAY. Gravel is fine to coarse sub-rounded to sub-angular brick, concrete and flint				1.50	D		
		2.0		2.00	D	11	
			(3.30)	2.50	D		
		3.0		3.00	D	10	Dry
				3.50	D		
Borehole terminated at 4.00m due to refusal *Base of borehole at 4.00 m*		4.0	4.00	4.00	D	50+	
		5.0					
		6.0					
		7.0					
		8.0					
		9.0					
		10.0					

Ground Level: 66.50m AOL

Grid Reference: 521881, 191364

Borehole Diameter: 150mm

Casing to: 4.00m

Instrumentation: None

Remarks:
1. Method of excavation: Cable percussive rig.
2. No groundwater encountered.
3. Logged by Lee Chippington to BS5930 +A2.

▽ Water Strike
▼ Water (Standing Level)
W Water Sample
B Bulk Sample
D Small Disturbed Sample
U Undisturbed Sample
(No. of blows shown in brackets)
SPT Standard Penetration Test
CPT Cone Penetration Test
* Extrapolated Value
A Amber
V Vial

BOREHOLE LOG

Report No
15.02.014

LISTERS GEO
Geotechnical and Geoenvironmental Consultants

LOCATION: Pentavia Retail Park, Mill Hill

BOREHOLE NO. BH1B

Date of Boring: 05/03/2015

Description of Strata	Strata Change: Legend	Strata Change: Depth -m Scale	Strata Change: Depth -m Strata	Samples: Depth -m	Samples: Type	SPT CPT N Value	Water Level -m
MADE GROUND Paving slabs over a sand base		0.0	0.20				
MADE GROUND Grey and brown slightly gravelly slightly sandy CLAY. Gravel is fine to coarse sub-rounded to sub-angular brick, concrete, flint and some clinker				0.50	B		
		1.0		1.00	D		
				1.20	SPT	13	
				1.50	D		
		2.0		2.00	SPT	9	
				2.50	D		
		3.0		3.00	SPT	11	
				3.50	D		
		4.0		4.00	SPT	50+	▼
			(8.30)	4.50	B		
		5.0		5.00	SPT	12	
				5.50	D		
		6.0		6.00	SPT	11	
				6.50	D		
		7.0		7.00	SPT	12	
				7.50	D		
		8.0		8.00	SPT	10	
LONDON CLAY FORMATION Stiff brown slighty sandy CLAY			8.50	8.50	B		
		9.0		9.00	SPT	16	
				9.50	D		
Continued next sheet		10.0					

Ground Level: 66.50m AOL

Grid Reference: 521883, 191362

Borehole Diameter: 150mm

Casing to: 2.00m

Instrumentation: None

Remarks:

1. Method of excavation: Cable percussive rig.
2. Groundwater strike at 4.00m, after 20 mins water level 3.80m.
3. Logged by Lee Chippington to BS5930 +A2.

▽	Water Strike
▼	Water (Standing Level)
W	Water Sample
B	Bulk Sample
D	Small Disturbed Sample
U	Undisturbed Sample
	(No. of blows shown in brackets)
SPT	Standard Penetration Test
CPT	Cone Penetration Test
*	Extrapolated Value
A	Amber
V	Vial

BOREHOLE LOG

Report No
15.02.014

LISTERS GEO
Geotechnical and Geoenvironmental Consultants

LOCATION: Pentavia Retail Park, Mill Hill

BOREHOLE NO. BH1B

Date of Boring: 05/03/2015

Description of Strata	Strata Change: Legend	Strata Change: Depth -m Scale	Strata Change: Depth -m Strata	Samples: Depth -m	Samples: Type	SPT CPT N Value	Water Level -m
LONDON CLAY FORMATION (Contd/..)..Stiff brown slighty sandy CLAY		10.0		10.00	SPT	15	
		11.0		11.00	D		
				11.50	U	(40)	
			(6.50)				
		12.0		12.50	D		
		13.0		13.00	SPT	25	
		14.0		14.00	D		
				14.50	U	(53)	
LONDON CLAY FORMATION Stiff grey slightly sandy CLAY		15.0	15.00	14.95	D		
				15.50	B		
		16.0		16.00	SPT	31	
		17.0		17.00	D		
			(5.00)	17.50	U	(76)	
		18.0		17.95	D		
				18.50	D		
		19.0		19.00	SPT	32	
Base of borehole at 20.00 m		20.0					

Ground Level: 66.50m AOL

Grid Reference: 521883, 191362

Borehole Diameter: 150mm

Casing to: 2.00m

Instrumentation: None

Remarks:
1. Method of excavation: Cable percussive rig.
2. Groundwater strike at 4.00m, after 20 mins water level 3.80m.
3. Logged by Lee Chippington to BS5930 +A2.

▽	Water Strike
▼	Water (Standing Level)
W	Water Sample
B	Bulk Sample
D	Small Disturbed Sample
U	Undisturbed Sample
	(No. of blows shown in brackets)
SPT	Standard Penetration Test
CPT	Cone Penetration Test
*	Extrapolated Value
A	Amber
V	Vial

BOREHOLE LOG

Report No
15.02.014

LISTERS GEO
Geotechnical and Geoenvironmental Consultants

LOCATION: Pentavia Retail Park, Mill Hill

BOREHOLE NO. BH2

Date of Boring: 04/03/2015

Description of Strata	Strata Change: Legend	Strata Change: Depth -m Scale	Strata Change: Depth -m Strata	Samples: Depth -m	Samples: Type	SPT CPT N Value	Water Level -m
MADE GROUND Block paving on a sand base		0.0	0.20				
MADE GROUND Concrete			0.40	0.50	B		
MADE GROUND Grey brown slightly gravelly slightly sandy CLAY. Gravel is fine to coarse sub-rounded to sub-angular brick, concrete, flint and some chalk and clinker		1.0		1.00 1.20 1.50	D SPT D	14	
		2.0		2.00 2.50	SPT D	10	
		3.0		3.00 3.50	SPT D	10	
		4.0		4.00	SPT	50+	▼
			(8.10)	4.50	D		▽
		5.0		5.00 5.50	SPT D	35	
		6.0		6.00 6.50	SPT D	27	
		7.0		7.00 7.50	SPT D	9	
		8.0		8.00	SPT	11	
LONDON CLAY FORMATION Stiff brown slightly sandy CLAY			8.50	8.50	B		
		9.0		9.00 9.45 9.50	U D D	(39)	
Continued next sheet		10.0					

Ground Level: 66.50m AOL

Grid Reference: 521867, 191226

Borehole Diameter: 150mm

Casing to: 7.50m

Instrumentation: Standpipe installed to 6.00m depth

Remarks:
1. Method of excavation: Cable percussive rig.
2. Groundwater strike at 4.00m. After 20 mins water level 3.50m.
3. Chiselling: 4.00m to 4.30m (30 mins).
4. Logged by Lee Chippington to BS5930 +A2.

▽ Water Strike
▼ Water (Standing Level)
W Water Sample
B Bulk Sample
D Small Disturbed Sample
U Undisturbed Sample
(No. of blows shown in brackets)
SPT Standard Penetration Test
CPT Cone Penetration Test
* Extrapolated Value
A Amber
V Vial

BOREHOLE LOG

Report No
15.02.014

LISTERS GEO
Geotechnical and Geoenvironmental Consultants

LOCATION: Pentavia Retail Park, Mill Hill

BOREHOLE NO. BH2

Date of Boring: 04/03/2015

Description of Strata	Strata Change			Samples		SPT CPT N Value	Water Level -m
	Legend	Depth -m		Depth -m	Type		
		Scale	Strata				
LONDON CLAY FORMATION (Contd/..)..Stiff brown slightly sandy CLAY		10.0	(4.00)	10.00	SPT	22	
		11.0		11.50	SPT	14	
		12.0	12.50	12.50	B		
LONDON CLAY FORMATION Stiff grey slightly sandy CLAY		13.0		13.00	SPT	24	
		14.0		14.00	D		
				14.50	SPT	18	
		15.0		15.50	D		
		16.0	(7.50)	16.00	SPT	29	
		17.0		17.00	D		
				17.50	SPT	27	
		18.0		18.50	D		
		19.0		19.00	SPT	29	
Base of borehole at 20.00 m		20.0					

Ground Level: 66.50m AOL

Grid Reference: 521867, 191226

Borehole Diameter: 150mm

Casing to: 7.50m

Instrumentation: Standpipe installed to 6.00m depth

Remarks:

1. Method of excavation: Cable percussive rig.
2. Groundwater strike at 4.00m. After 20 mins water level 3.50m.
3. Chiselling: 4.00m to 4.30m (30 mins).
4. Logged by Lee Chippington to BS5930 +A2.

▽	Water Strike
▼	Water (Standing Level)
W	Water Sample
B	Bulk Sample
D	Small Disturbed Sample
U	Undisturbed Sample
	(No. of blows shown in brackets)
SPT	Standard Penetration Test
CPT	Cone Penetration Test
*	Extrapolated Value
A	Amber
V	Vial

BOREHOLE LOG

Report No
15.02.014

LISTERS GEO
Geotechnical and Geoenvironmental Consultants

LOCATION: Pentavia Retail Park, Mill Hill

BOREHOLE NO. BH3

Date of Boring: 03/03/2015

Description of Strata	Strata Change: Legend	Strata Change: Depth -m Scale	Strata Change: Depth -m Strata	Samples: Depth -m	Samples: Type	SPT CPT N Value	Water Level -m
MADE GROUND Concrete		0.0	0.20 0.40	0.40	D		
MADE GROUND Brown and grey coarse angular GRAVEL of brick and concrete sub-base				0.50 0.80	B D		
		1.0		1.20	SPT	19	
MADE GROUND Brown and grey slightly gravelly slightly sandy CLAY. Gravel is fine to coarse sub-rounded to sub-angular brick and flint				1.50	D		
		2.0		2.00	SPT	13	
				2.50	D		
		3.0		3.00	SPT	15	
				3.50	D		
		4.0		4.00	SPT	14	
				4.50	D		
		5.0		5.00	SPT	11	▼
			(10.10)	5.50	D		▽
		6.0		6.00	SPT	10	
				6.50	D		
		7.0		7.00	SPT	11	
				7.50	D		
		8.0		8.00	SPT	12	
				8.50	D		
		9.0		9.00	SPT	12	
				9.50	D		
Continued next sheet		10.0					

Ground Level: 66.80m AOL

Grid Reference: 521796, 191347

Borehole Diameter: 150mm

Casing to: 6.00m

Instrumentation: Standpipe installed to 6.00m depth

Remarks:
1. Method of excavation: Cable percussive rig.
2. Groundwater strike at 5.50m. After 20 mins water level at 5.00m.
3. Logged by Lee Chippington to BS5930 +A2.

▽	Water Strike
▼	Water (Standing Level)
W	Water Sample
B	Bulk Sample
D	Small Disturbed Sample
U	Undisturbed Sample
	(No. of blows shown in brackets)
SPT	Standard Penetration Test
CPT	Cone Penetration Test
*	Extrapolated Value
A	Amber
V	Vial

BOREHOLE LOG

Report No
15.02.014

LISTERS GEO
Geotechnical and Geoenvironmental Consultants

LOCATION: Pentavia Retail Park, Mill Hill

BOREHOLE NO. BH3

Date of Boring: 03/03/2015

Description of Strata	Strata Change: Legend	Strata Change: Depth -m Scale	Strata Change: Depth -m Strata	Samples: Depth -m	Samples: Type	SPT CPT N Value	Water Level -m
MADE GROUND (Contd/..)..Brown and grey slightly gravelly slightly sandy CLAY. Gravel is fine to coarse sub-rounded to sub-angular brick and flint		10.0		10.00	SPT	11	
			10.50	10.50	B		
LONDON CLAY FORMATION Stiff brown slightly sandy CLAY		11.0					
				11.50	U	(39)	
		12.0					
				12.50	D		
		13.0	(5.00)	13.00	SPT	20	
		14.0		14.00	D		
				14.50	U	(54)	
		15.0		14.95	D		
			15.50	15.50	B		
LONDON CLAY FORMATION Very stiff grey slightly sandy CLAY				16.00	SPT	24	
		17.0		17.00	D		
				17.50	U	(69)	
			(4.50)				
		18.0		17.95	D		
				18.50	D		
		19.0		19.00	SPT	27	
Base of borehole at 20.00 m		20.0					

Ground Level: 66.80m AOL

Grid Reference: 521796, 191347

Borehole Diameter: 150mm

Casing to: 6.00m

Instrumentation: Standpipe installed to 6.00m depth

Remarks:
1. Method of excavation: Cable percussive rig.
2. Groundwater strike at 5.50m. After 20 mins water level at 5.00m.
3. Logged by Lee Chippington to BS5930 +A2.

▽	Water Strike
▼	Water (Standing Level)
W	Water Sample
B	Bulk Sample
D	Small Disturbed Sample
U	Undisturbed Sample
	(No. of blows shown in brackets)
SPT	Standard Penetration Test
CPT	Cone Penetration Test
*	Extrapolated Value
A	Amber
V	Vial

BOREHOLE LOG

Report No
15.02.014

LISTERS GEO
Geotechnical and Geoenvironmental Consultants

Test Location	Depth at Start of Test -m	Spoon or Cone	Blows per 75mm Penetration	'N' Value	Strata Type
BH1	1.20	S	4 5 3 6	18	MG
	2.00	S	1 1 2 1	5	MG
	3.00	S	1 1 2 1	5	MG
	4.00	S	15 35 for 20mm	50+	MG
BH1A	1.20	C	5 5 6 3	19	MG
	2.00	S	2 3 3 3	11	MG
	3.00	S	2 3 2 3	10	MG
	4.00	S	50 for 40mm	50+	MG
BH1B	1.20	C	3 3 4 3	13	MG
	2.00	S	3 2 2 2	9	MG
	3.00	C	3 2 3 3	11	MG
	4.00	S	30 10 10 for 65mm	50+	MG
	5.00	S	3 3 2 4	12	MG
	6.00	S	3 3 2 3	11	MG
	7.00	S	4 3 3 2	12	MG
	8.00	S	3 3 2 2	10	MG
	9.00	S	4 3 4 5	16	MG
	10.00	S	3 3 4 5	17	LCF
	13.00	S	5 7 7 6	25	LCF
	16.00	S	8 9 7 7	31	LCF
	19.00	S	8 8 9 7	32	LCF
BH2	1.20	C	6 3 3 2	14	MG
	2.00	S	3 2 2 3	10	MG
	3.00	S	2 3 3 2	10	MG
	4.00	C	50 for 70mm	50+	MG
	5.00	S	9 8 10 8	35	MG
	6.00	S	7 6 6 8	27	MG
	7.00	S	2 3 2 2	9	MG
	8.00	S	4 2 2 3	11	MG
	10.00	S	5 6 5 6	22	LCF
	11.50	S	3 4 4 3	14	LCF
	13.00	S	6 6 7 5	24	LCF
	14.50	S	4 3 5 6	18	LCF
	16.00	S	8 8 7 6	29	LCF
	17.50	S	8 6 6 7	27	LCF
	19.00	S	7 7 7 8	29	LCF

Key:
MG = Made Ground
LCF = London Clay Formation

STANDARD PENETRATION TESTS

Report No: 15.02.014

LISTERS GEO
Geotechnical and Geoenvironmental Consultants

Test Location	Depth at Start of Test -m	Spoon or Cone	Blows per 75mm Penetration				'N' Value	Strata Type
BH3	1.20	C	5	6	4	4	19	MG
	2.00	S	3	3	4	3	13	MG
	3.00	S	5	4	3	3	15	MG
	4.00	S	3	3	4	4	14	MG
	5.00	S	3	2	3	3	11	MG
	6.00	S	3	3	2	2	10	MG
	7.00	S	3	2	3	3	11	MG
	8.00	S	4	2	3	3	12	MG
	9.00	S	2	4	4	2	12	MG
	10.00	S	4	2	2	3	11	MG
	13.00	S	6	5	5	4	20	LCF
	16.00	S	6	6	7	5	24	LCF
	19.00	S	6	8	7	6	27	LCF

Key:
MG = Made Ground
LCF = London Clay Formation

STANDARD PENETRATION TESTS

Report No: 15.02.014

LISTERS GEO
Geotechnical and Geoenvironmental Consultants

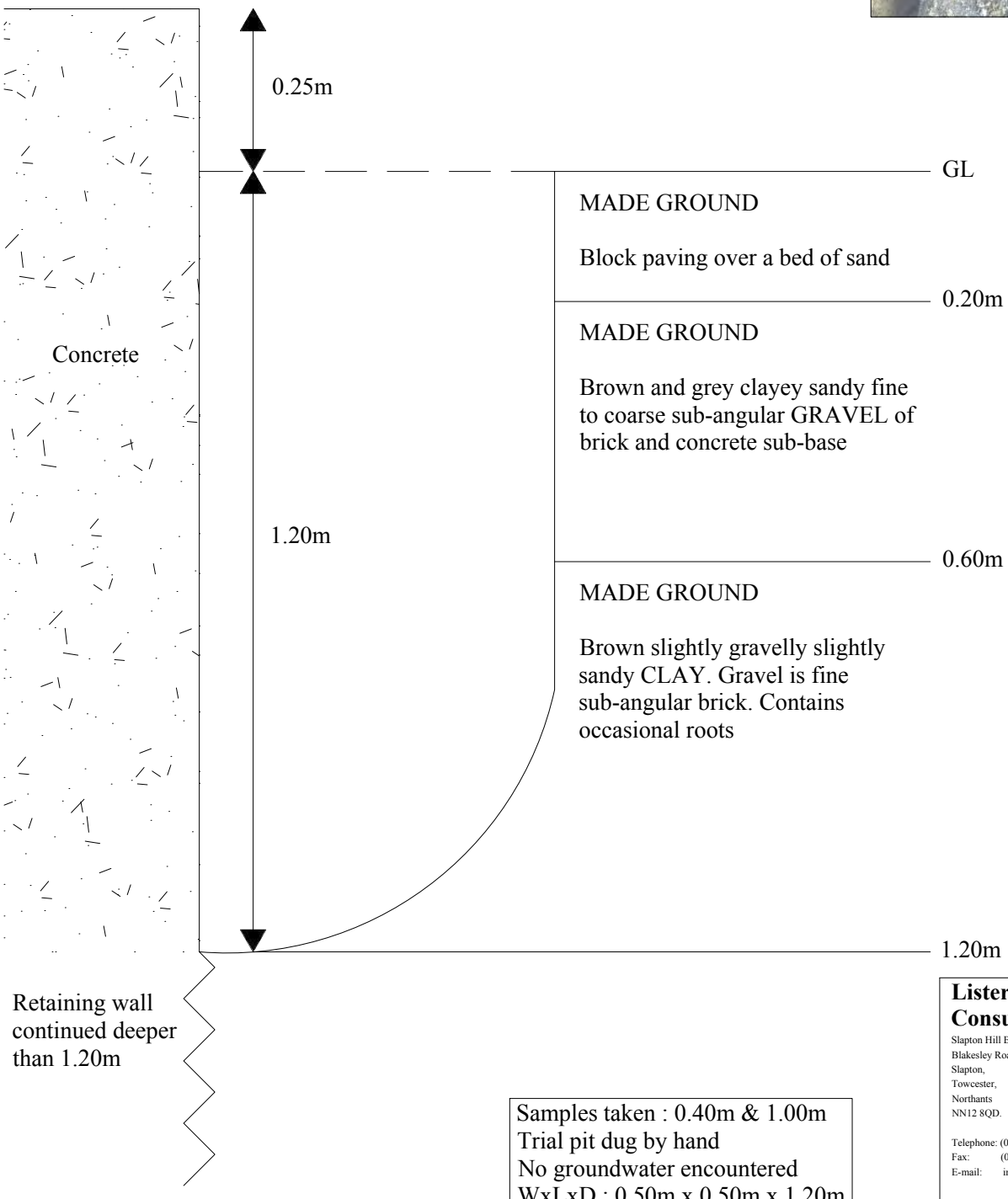
Date of Sampling:	11/03/2015			Weather Conditions:	Dry			
Test Location	Time (hh.mm)	Methane CH4(%)	Carbon Dioxide CO_2(%)	Oxygen O2(%)	LEL (%)	Atmospheric Pressure (mBar)	Flow (l/h)	Water Level (m bgl)
BH2		0.3	0.1	19.2	6.0	1021	0.6	4.9
BH3		0.6	0.8	17.9	12.0	1021	0	2.5

Date of Sampling:	25/03/2015			Weather Conditions:	Overcast			
Test Location	Time (hh.mm)	Methane CH4(%)	Carbon Dioxide CO_2(%)	Oxygen O2(%)	LEL (%)	Atmospheric Pressure (mBar)	Flow (l/h)	Water Level (m bgl)
BH3		0.4	0.1	16.5	8.0	1003	0.2	4.5
BH1		0.7	2.2	15.9	14.0	1003	0.1	2.4

Gas measurements taken using a portable GS5000 gas monitor

Date	GAS MONITORING RESULTS	Report No.
May 2015		15.02.014

TP 1 - Foundation Detail



Samples taken : 0.40m & 1.00m
Trial pit dug by hand
No groundwater encountered
WxLxD : 0.50m x 0.50m x 1.20m
Roots visible to base of pit

Listers Geotechnical Consultants
Slapton Hill Barn,
Blakesley Road,
Slapton,
Towcester,
Northants
NN12 8QD.

Telephone: (01327) 860060
Fax: (01327) 860430
E-mail: info@listersgeotechnics.co.uk

TP 1 - Foundation Detail	
Site:	Pentava Retail Park, Watford Way, Mill Hill, London, NW7 2ET
Scale: NTS	Job No.: 15.02.014

TP 2 - Foundation Detail

Samples taken : 0.50m & 1.00m
Trial pit dug by hand
No groundwater encountered
WxLxD : 0.35m x 0.70m x 1.20m
No roots visible

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Northants
NN12 8QD.

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Fax: (01327) 860430
E-mail: info@listersgeotechnics.co.uk

TP 2 - Foundation Detail	
Site:	Pentava Retail Park, Watford Way, Mill Hill, London, NW7 2ET
Scale: NTS	Job No.: 15.02.014

TP 3 - Foundation Detail

a' : 0.05m

: Electric cable

Samples taken : 0.40m - 0.60m
Trial pit dug by hand
No groundwater encountered
WxLxD : 0.40m x 0.60m x 0.90m
No roots visible

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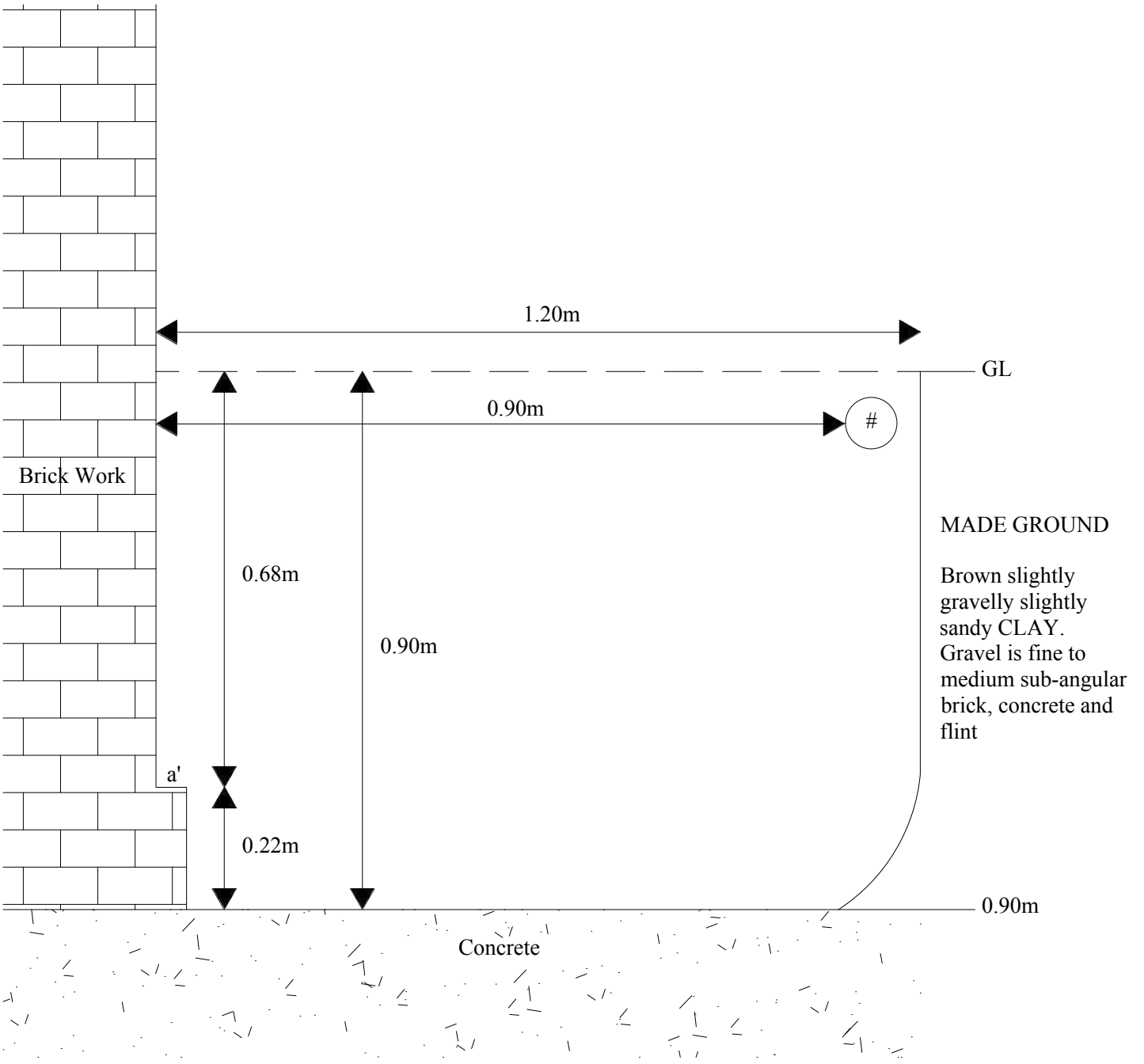
TP 3 - Foundation Detail	
Site: Pentava Retail Park, Watford Way, Mill Hill, London, NW7 2ET	
Scale: NTS	Job No.: 15.02.014

TP 4 - Foundation Detail



a' : 0.05m

: Electric cable

Samples taken : 0.30m & 0.80m
Trial pit dug by hand
No groundwater encountered
WxLxD : 0.50m x 1.20m x 0.90m
No roots visible

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TP 4 - Foundation Detail	
Site:	Pentava Retail Park, Watford Way, Mill Hill, London, NW7 2ET
Scale: NTS	Job No.: 15.02.014

APPENDIX C
LABORATORY TESTING RESULTS AND TABLES

GroundTech Laboratories

Geotechnical Testing Facility

Slapton Hill Barn, Blakesley Road, Slapton, Towcester, Northants. NN12 8QD

Telephone:- 01327 860947/860060 Fax:- 01327 860430 Email: groundtech@listersgeotechnics.co.uk

PROJECT INFORMATION		SAMPLE INFORMATION		
Site Location:-	Pentava Retail Park, Watford Way, Mill Hill, London, NW7 2ET	**Laboratory Tests Undertaken:-**		
		TEST TYPE	**TEST METHOD**	**TESTED**
		Natural Moisture Contents (MC%)	(BS 1377:Part 2:1990 Clause 3.2)	✓
		Liquid Limits (%)	(BS 1377:Part 2:1990 Clause 4.3)	✓
		Plastic Limits (%)	(BS 1377:Part 2:1990 Clause 5.3)	✓
		Plasticity Index (%)	(BS 1377:Part 2:1990 Clause 5.4)	✓
		Linear Shrinkage (%)	(BS 1377:Part 2:1990 Clause 6.5)	
		PSD - Wet Sieving	(BS 1377:Part 2:1990 Clause 9.2)	✓
Client Reference:-	-	Engineering Sample Descriptions	(BS 5930 : Section 6)	
		Passing 425/63 (μm)	-	✓
		Hydrometer	(BS 1377:Part 2:1990 Clause 9.5)	
Date Samples Received:-	4 March 2015	Loss on Ignition (%)	-	✓
Date Testing Completed:-	20 March 2015	Soil Suctions (kPa)	BRE Digest IP 4/93, 1993	
		Bulk Density (Mg/m^3)	(BS 1377:Part 2:1990 Clause 7.2)	✓
		Strength Tests	(BS 1377:Part 7:1990 Clause 8 & 9)	✓
		Soluble Sulphate Content (SO^4g/l)	(BS 1377:Part 3:1990 Clause 5.3)	✓
		pH value	(BS 1377:Part 3:1990 Clause 9.4)	✓
		California Bearing Ratios (CBR)	(BS 1377:Part 4:1990 Clause 7)	✓
		Compaction Tests	(BS 1377:Part 4:1990 Clauses 3.0-3.6)	
The results relate only to the samples tested				

Laboratory testing in accord with BS EN ISO/IEC 17025-2000 and Quality Management in accord with ISO 9001

Signed on behalf of GroundTech Laboratories:- L Clappington **Technical Signatory**

Quality Assured to ISO 9001

GEOTECHNICAL LABORATORY TEST RESULTS

Report No: 15.02.014

GroundTech Laboratories

Geotechnical Testing Facility

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Telephone:- 01327 860947/860060 Fax:- 01327 860430 Email: groundtech@listersgeotechnics.co.uk

Quality Assured to ISO 9001

SAMPLES				CLASSIFICATION TESTS							CLASSIFICATION TESTS							STRENGTH TESTS					CHEMICAL TESTS	
Test Location	Sample Type	Sample Depth -m	Test Type	MC %	LL %	PL %	PI %	Passing 425 µm %	Modified PI %	Class	Passing 63 µm %	MC/ LL	PL+ 2%	Liquidity Index	Loss on Ignition %	Soil Suction kPa	Bulk Density Mg/m^3	Test Type	Cell Pressure kN/m^2	Deviator Stress kN/m^2	Apparent Cohesion kN/m^2	ϕ	pH Value	Soluble Sulphate Content SO4 g/l
BH 1	D	0.50		13																				
	D	1.00	PSD	18																				
	D	1.20		17																				
	B	1.50		29																				
	D	1.50		32																				
	D	2.00		33																				
	D	2.50	PI/63	34	58	23	35	60	21	CH	47	0.58	25	0.31										
	D	3.00		36																				
	D	3.50		35																				
	D	4.00		32																				
BH 1A	B	0.20		27																				
	D	0.20		25																				
	D	0.70		34																				
	D	1.20		30																				
	D	1.50	PI/63	25	59	23	36	64	23	CH	55	0.42	25	0.06										
	D	2.00		25																				
	B	2.50		36																			7.1	0.21
	D	2.50		30																				
	D	3.00		29																				

Symbols:

U	Undisturbed Sample	R	Remoulded	PI	Plasticity Index	T	Triaxial Undrained	L	100mm specimen
D	Disturbed Sample	63	Passing 63µm	F	Filter Paper Suction Tests	M	Multistage Triaxial	S	38mm specimen
B	Bulk Sample	H	Hydrometer	CC	Continuous Core	HP	Hand Penetrometer		
W	Water Sample	PSD	Wet Sieving			V	Vane Test		

LABORATORY TEST RESULTS

Project Ref
15.02.014

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SAMPLES				CLASSIFICATION TESTS							CLASSIFICATION TESTS							STRENGTH TESTS					CHEMICAL TESTS	
Test Location	Sample Type	Sample Depth -m	Test Type	MC %	LL %	PL %	PI %	Passing 425 µm %	Modified PI %	Class	Passing 63 µm %	MC/ LL	PL+ 2%	Liquidity Index	Loss on Ignition %	Soil Suction kPa	Bulk Density Mg/m^3	Test Type	Cell Pressure kN/m^2	Deviator Stress kN/m^2	Apparent Cohesion kN/m^2	ϕ	pH Value	Soluble Sulphate Content SO4 g/l
BH 1A	D	3.50	PI/63	38	61	25	36	89	32	CH	79	0.63	27	0.37									6.8	0.46
	D	4.00		31																				
BH 1B	B	0.50		6																				
	D	0.50		23																				
	D	1.00		15																			9.3	0.27
	D	1.20		18																				
	D	1.50	PI/63	26	59	29	30	76	23	CH	65	0.44	31	-0.10	4									
	D	2.00		28																				
	D	2.50	PI/63	33	74	28	47	100	47	CV	99	0.44	30	0.11										
	D	3.00		30																				
	D	3.50		39																				
	D	4.00		17																				
	B	4.50	PI/63	36	53	25	28	96	27	CH	86	0.68	27	0.39										
	D	4.50		37																				
	D	5.00		31																				
	D	5.50		36																				
	D	6.00		31																				
	D	6.50		24																				
	D	7.00		31																				

Symbols:

U	Undisturbed Sample	R	Remoulded	PI	Plasticity Index	T	Triaxial Undrained	L	100mm specimen
D	Disturbed Sample	63	Passing 63µm	F	Filter Paper Suction Tests	M	Multistage Triaxial	S	38mm specimen
B	Bulk Sample	H	Hydrometer	CC	Continuous Core	HP	Hand Penetrometer		
W	Water Sample	PSD	Wet Sieving			V	Vane Test		

LABORATORY TEST RESULTS

Project Ref
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SAMPLES				CLASSIFICATION TESTS							CLASSIFICATION TESTS							STRENGTH TESTS					CHEMICAL TESTS	
Test Location	Sample Type	Sample Depth -m	Test Type	MC %	LL %	PL %	PI %	Passing 425 µm %	Modified PI %	Class	Passing 63 µm %	MC/ LL	PL+ 2%	Liquidity Index	Loss on Ignition %	Soil Suction kPa	Bulk Density Mg/m^3	Test Type	Cell Pressure kN/m^2	Deviator Stress kN/m^2	Apparent Cohesion kN/m^2	ϕ	pH Value	Soluble Sulphate Content SO4 g/l
BH 1B	D	7.50		27																			8.2	0.27
	D	8.00		36											4									
	B	8.50	PI/63	33	74	29	45	92	42	CV	89	0.45	31	0.10										
	D	8.50		30																				
	D	9.00		28																				
	D	9.50		34																				
	D	10.00		32																				
	D	11.00		32																				
	U	11.50		33													1.82	TL	238	94	47			
	D	11.95		33																				
	D	12.50	PI/63	29	73	27	46	99	45	CV	94	0.40	29	0.04										
	D	13.00		29																				
	D	14.00		32																				
	U	14.00		19													1.97	TL	289	272	136			
	D	14.95		28																				
	D	15.50	PI/63	34	65	26	39	100	39	CH	94	0.52	28	0.21										
	D	15.50		28																				
	D	16.00		27																				
	D	17.00		32																				

Symbols:

U	Undisturbed Sample	R	Remoulded	PI	Plasticity Index	T	Triaxial Undrained	L	100mm specimen
D	Disturbed Sample	63	Passing 63µm	F	Filter Paper Suction Tests	M	Multistage Triaxial	S	38mm specimen
B	Bulk Sample	H	Hydrometer	CC	Continuous Core	HP	Hand Penetrometer		
W	Water Sample	PSD	Wet Sieving			V	Vane Test		

LABORATORY TEST RESULTS

Project Ref
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Quality Assured to ISO 9001

SAMPLES				CLASSIFICATION TESTS							CLASSIFICATION TESTS							STRENGTH TESTS					CHEMICAL TESTS	
Test Location	Sample Type	Sample Depth -m	Test Type	MC %	LL %	PL %	PI %	Passing 425 µm %	Modified PI %	Class	Passing 63 µm %	MC/ LL	PL+ 2%	Liquidity Index	Loss on Ignition %	Soil Suction kPa	Bulk Density Mg/m^3	Test Type	Cell Pressure kN/m^2	Deviator Stress kN/m^2	Apparent Cohesion kN/m^2	ϕ	pH Value	Soluble Sulphate Content SO4 g/l
BH 1B	U	17.50		26													2.01	TL	344	230	115			
	D	17.95		25																				
	D	18.50		29																				
	D	19.00		28																				
	D	20.00	PI/63	28	65	26	39	100	39	CH	97	0.43	28	0.06										
BH 2	B	0.50	PI/63	19	66	30	36	69	25	CH	58	0.29	32	-0.30										
	D	0.50		32																				
	D	1.00		34																				
	D	1.20		31																				
	D	1.50		21																			7.8	0.23
	D	2.00		26																				
	D	2.50	PI/63	15	66	27	40	72	28	CH	62	0.23	29	-0.29										
	D	3.00		31																				
	D	3.50		32																				
	D	4.00		20																				
	D	4.50	PI/63	30	59	24	34	78	27	CH	67	0.51	26	0.16										
	D	5.00		25																				
	D	5.50		29																			7.8	0.10
	D	6.00		33																				

Symbols:

U	Undisturbed Sample	R	Remoulded	PI	Plasticity Index	T	Triaxial Undrained	L	100mm specimen
D	Disturbed Sample	63	Passing 63µm	F	Filter Paper Suction Tests	M	Multistage Triaxial	S	38mm specimen
B	Bulk Sample	H	Hydrometer	CC	Continuous Core	HP	Hand Penetrometer		
W	Water Sample	PSD	Wet Sieving			V	Vane Test		

LABORATORY TEST RESULTS

Project Ref
15.02.014

GroundTech Laboratories

Geotechnical Testing Facility

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Quality Assured to ISO 9001

SAMPLES				CLASSIFICATION TESTS							CLASSIFICATION TESTS							STRENGTH TESTS					CHEMICAL TESTS	
Test Location	Sample Type	Sample Depth -m	Test Type	MC %	LL %	PL %	PI %	Passing 425 µm %	Modified PI %	Class	Passing 63 µm %	MC/ LL	PL+ 2%	Liquidity Index	Loss on Ignition %	Soil Suction kPa	Bulk Density Mg/m^3	Test Type	Cell Pressure kN/m^2	Deviator Stress kN/m^2	Apparent Cohesion kN/m^2	ϕ	pH Value	Soluble Sulphate Content SO4 g/l
BH 2	D	6.50		36																				
	D	7.00		30																				
	D	7.50		32																				
	D	8.00		26																				
	B	8.50	PI/63	37	69	23	45	92	42	CH	89	0.54	25	0.31										
	D	8.50		34																				
	U	9.00		30													1.92	TL	203	200	100			
	D	9.45		31																				
	D	9.50		31																				
	D	10.00		27																				
	D	11.00	PI/63	33	76	25	51	100	51	CV	95	0.44	27	0.16										
	B	11.50		34																				
	D	11.50		33																				
	B	12.50		30																				
	D	12.50		29																				
	D	13.00		38																				
	D	14.00		32																				
	B	14.50	PI/63	32	59	24	35	100	35	CH	97	0.54	26	0.23										
	D	14.50		26																				

Symbols:

U	Undisturbed Sample	R	Remoulded	PI	Plasticity Index	T	Triaxial Undrained	L	100mm specimen
D	Disturbed Sample	63	Passing 63µm	F	Filter Paper Suction Tests	M	Multistage Triaxial	S	38mm specimen
B	Bulk Sample	H	Hydrometer	CC	Continuous Core	HP	Hand Penetrometer		
W	Water Sample	PSD	Wet Sieving			V	Vane Test		

LABORATORY TEST RESULTS

Project Ref
15.02.014

GroundTech Laboratories

Geotechnical Testing Facility

Slapton Hill Barn, Blakesley Road, Slapton, Towcester, Northants. NN12 8QD
Telephone:- 01327 860947/860060 Fax:- 01327 860430 Email: groundtech@listersgeotechnics.co.uk

Quality Assured to ISO 9001

SAMPLES				CLASSIFICATION TESTS							CLASSIFICATION TESTS							STRENGTH TESTS					CHEMICAL TESTS	
Test Location	Sample Type	Sample Depth -m	Test Type	MC %	LL %	PL %	PI %	Passing 425 µm %	Modified PI %	Class	Passing 63 µm %	MC/ LL	PL+ 2%	Liquidity Index	Loss on Ignition %	Soil Suction kPa	Bulk Density Mg/m^3	Test Type	Cell Pressure kN/m^2	Deviator Stress kN/m^2	Apparent Cohesion kN/m^2	ϕ	pH Value	Soluble Sulphate Content SO4 g/l
BH 2	D	15.50		40																				
	D	16.00		28																				
	D	17.00		39																				
	D	17.50		28																				
	D	18.50	PI/63	38	67	26	40	99	40	CH	97	0.57	28	0.29										
	D	19.00		27																				
	D	20.00		30																			7.7	0.50
BH 3	D	0.40		29																			7.8	0.17
	B	0.80	PI/63	26	57	25	32	85	27	CH	78	0.46	27	0.04										
	D	0.80		27																				
	D	1.20		21																				
	D	1.50		27																				
	D	2.00		27																				
	D	2.50	PI/63	35	58	22	36	78	28	CH	69	0.60	24	0.35	4									
	D	3.00		25																				
	D	3.50		34																				
	D	4.00		30																				
	D	4.50	PI/63	35	69	26	44	95	41	CH	89	0.50	28	0.21										
	D	5.00		28																				

Symbols:

U	Undisturbed Sample	R	Remoulded	PI	Plasticity Index	T	Triaxial Undrained	L	100mm specimen
D	Disturbed Sample	63	Passing 63µm	F	Filter Paper Suction Tests	M	Multistage Triaxial	S	38mm specimen
B	Bulk Sample	H	Hydrometer	CC	Continuous Core	HP	Hand Penetrometer		
W	Water Sample	PSD	Wet Sieving			V	Vane Test		

LABORATORY TEST RESULTS

Project Ref
15.02.014

GroundTech Laboratories

Geotechnical Testing Facility

Slapton Hill Barn, Blakesley Road, Slapton, Towcester, Northants. NN12 8QD
Telephone:- 01327 860947/860060 Fax:- 01327 860430 Email: groundtech@listersgeotechnics.co.uk

Quality Assured to ISO 9001

SAMPLES				CLASSIFICATION TESTS							CLASSIFICATION TESTS							STRENGTH TESTS					CHEMICAL TESTS	
Test Location	Sample Type	Sample Depth -m	Test Type	MC %	LL %	PL %	PI %	Passing 425 µm %	Modified PI %	Class	Passing 63 µm %	MC/ LL	PL+ 2%	Liquidity Index	Loss on Ignition %	Soil Suction kPa	Bulk Density Mg/m^3	Test Type	Cell Pressure kN/m^2	Deviator Stress kN/m^2	Apparent Cohesion kN/m^2	ϕ	pH Value	Soluble Sulphate Content SO4 g/l
BH 3	D	5.50		44																				
	D	6.00		32																				
	D	6.50		33																				
	D	7.00		26																				
	D	7.50	PI/63	32	59	26	33	94	31	CH	89	0.54	28	0.17										
	D	8.00		29																				
	D	8.50		33																				
	D	9.00		30																				
	D	9.50		28																				
	D	10.00		21																				
	B	10.50	PI/63	32	64	26	38	99	38	CH	93	0.50	28	0.16										
	D	10.50		32																				
	U	11.50		28													1.93	TL	230	178	89			
	D	11.95		32																				
	D	12.50		36																				
	D	13.00		27																				
	D	14.00	PI/63	32	72	28	44	100	44	CV	99	0.44	30	0.08									7.6	1.00
	U	14.50		29													1.94	TL	284	212	106			
	D	14.95		27																				

Symbols:

U	Undisturbed Sample	R	Remoulded	PI	Plasticity Index	T	Triaxial Undrained	L	100mm specimen
D	Disturbed Sample	63	Passing 63µm	F	Filter Paper Suction Tests	M	Multistage Triaxial	S	38mm specimen
B	Bulk Sample	H	Hydrometer	CC	Continuous Core	HP	Hand Penetrometer		
W	Water Sample	PSD	Wet Sieving			V	Vane Test		

LABORATORY TEST RESULTS

Project Ref
15.02.014

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Quality Assured to ISO 9001

SAMPLES				CLASSIFICATION TESTS							CLASSIFICATION TESTS							STRENGTH TESTS					CHEMICAL TESTS	
Test Location	Sample Type	Sample Depth -m	Test Type	MC %	LL %	PL %	PI %	Passing 425 µm %	Modified PI %	Class	Passing 63 µm %	MC/ LL	PL+ 2%	Liquidity Index	Loss on Ignition %	Soil Suction kPa	Bulk Density Mg/m^3	Test Type	Cell Pressure kN/m^2	Deviator Stress kN/m^2	Apparent Cohesion kN/m^2	ϕ	pH Value	Soluble Sulphate Content SO4 g/l
BH 3	B	15.50		30																				
	D	15.50		28																				
	D	16.00		28																				
	D	17.00		28																				
	U	17.50		28													2.07	TL	342	240	120			
	D	17.95	PI/63	30	66	26	39	100	39	CH	98	0.46	28	0.09										
	D	18.50		31																				
	D	19.00		26																				
	D	20.00	PI/63	30	70	26	44	100	44	CV	99	0.43	28	0.10										
TP 1	D	0.40		9																				
	D	1.00	PI/63	39	67	28	40	95	38	CH	90	0.58	30	0.29										
TP 2	D	0.50		35																			7.3	0.36
	D	1.00	PI/63	35	72	29	43	97	41	CV	93	0.49	31	0.14										
TP 3	D	0.40																						
TP 4	D	0.30	PI/63	20	41	23	18	73	13	CI	63	0.49	25	-0.15										
	D	0.87		27																			8.0	0.12
TP 5	B	0.50	PI/63	13	53	27	26	43	11	CH	32	0.24	29	-0.56										
TP 6	D	0.50	PI/63	27	54	27	27	55	15	CH	43	0.50	29	0.00										

Symbols:

U	Undisturbed Sample	R	Remoulded	PI	Plasticity Index	T	Triaxial Undrained	L	100mm specimen
D	Disturbed Sample	63	Passing 63µm	F	Filter Paper Suction Tests	M	Multistage Triaxial	S	38mm specimen
B	Bulk Sample	H	Hydrometer	CC	Continuous Core	HP	Hand Penetrometer		
W	Water Sample	PSD	Wet Sieving			V	Vane Test		

LABORATORY TEST RESULTS

Project Ref
15.02.014

GroundTech Laboratories

Geotechnical Testing Facility

Slapton Hill Barn, Blakesley Road, Slapton, Towcester, Northants. NN12 8QD
Telephone:- 01327 860947/860060 Fax: - 01327 860430

Test Location	Depth (m)	C.B.R. Value %	Natural Moisture Content %	Bulk Density Mg/m^3	Dry Density Mg/m^3	Remarks
BH 1A	0.20	Top: 3.7 Base: 4.1	27	1.76	1.39	Firm brown slightly silty slightly gravelly CLAY. Gravel is fine to coarse subangular quartzitic gravel, sandstone and fine to medium red brick
BH 3	0.80	Top: 2.3 Base: 1.6	26	1.61	1.28	Firm brown slightly silty slightly gravelly CLAY. Gravel is fine to coarse subangular quartzitic gravel, sandstone and fine to medium red brick

Samples recompacted using standard compation
Surcharge 9kg

CALIFORNIA BEARING RATIO

Report No.
15.02.014

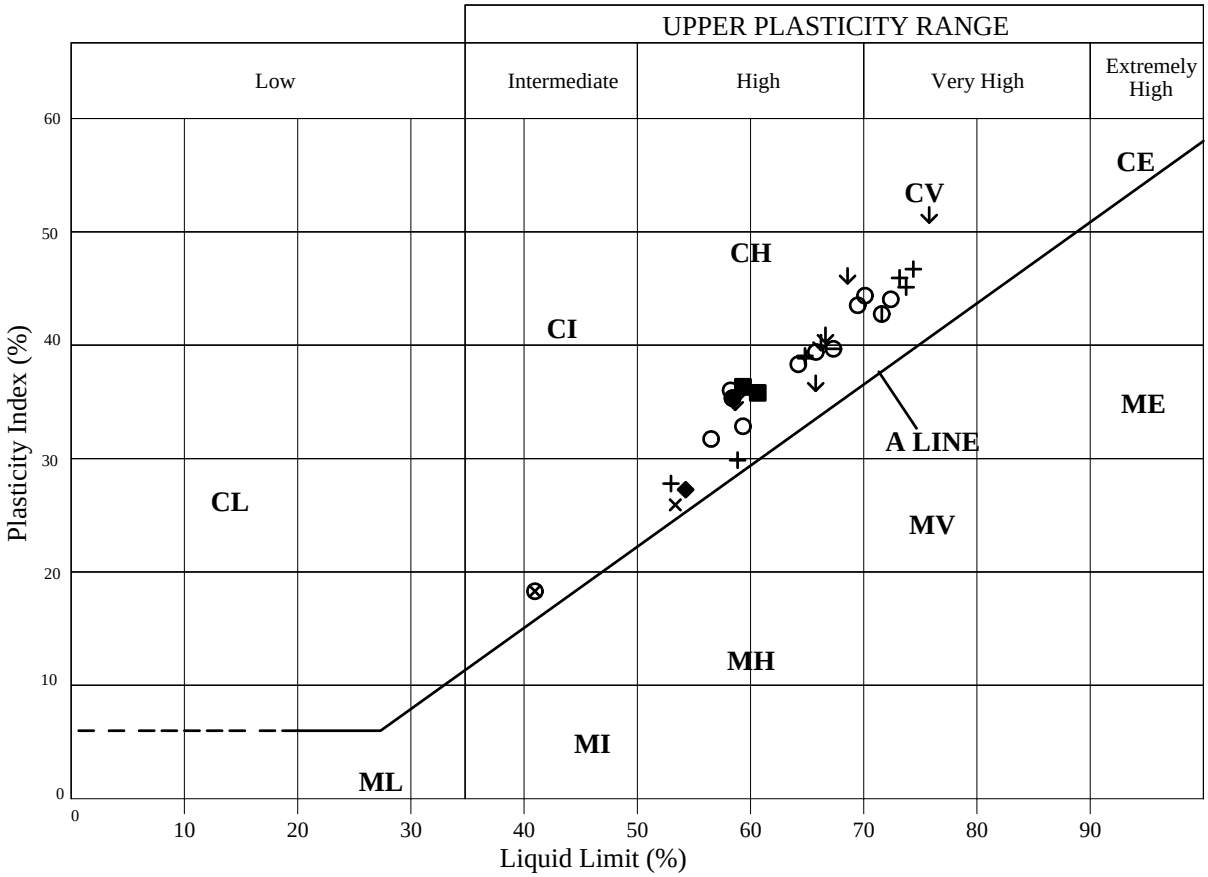
GroundTech Laboratories

Geotechnical Testing Facility

Slapton Hill Barn, Blakesley Road, Slapton, Towcester, Northants. NN12 8QD
Telephone:- 01327 860947/860060 Fax:- 01327 860430

Quality Assured to ISO9001

Site: **Mill Hill, London**



- BH 1
- BH 1A
- BH 1B
- BH 2
- BH 3
- TP 1
- TP 2
- TP 3
- TP 4
- TP 5
- TP 6

PLASTICITY CHART

Lab. Ref. **15.02.014**

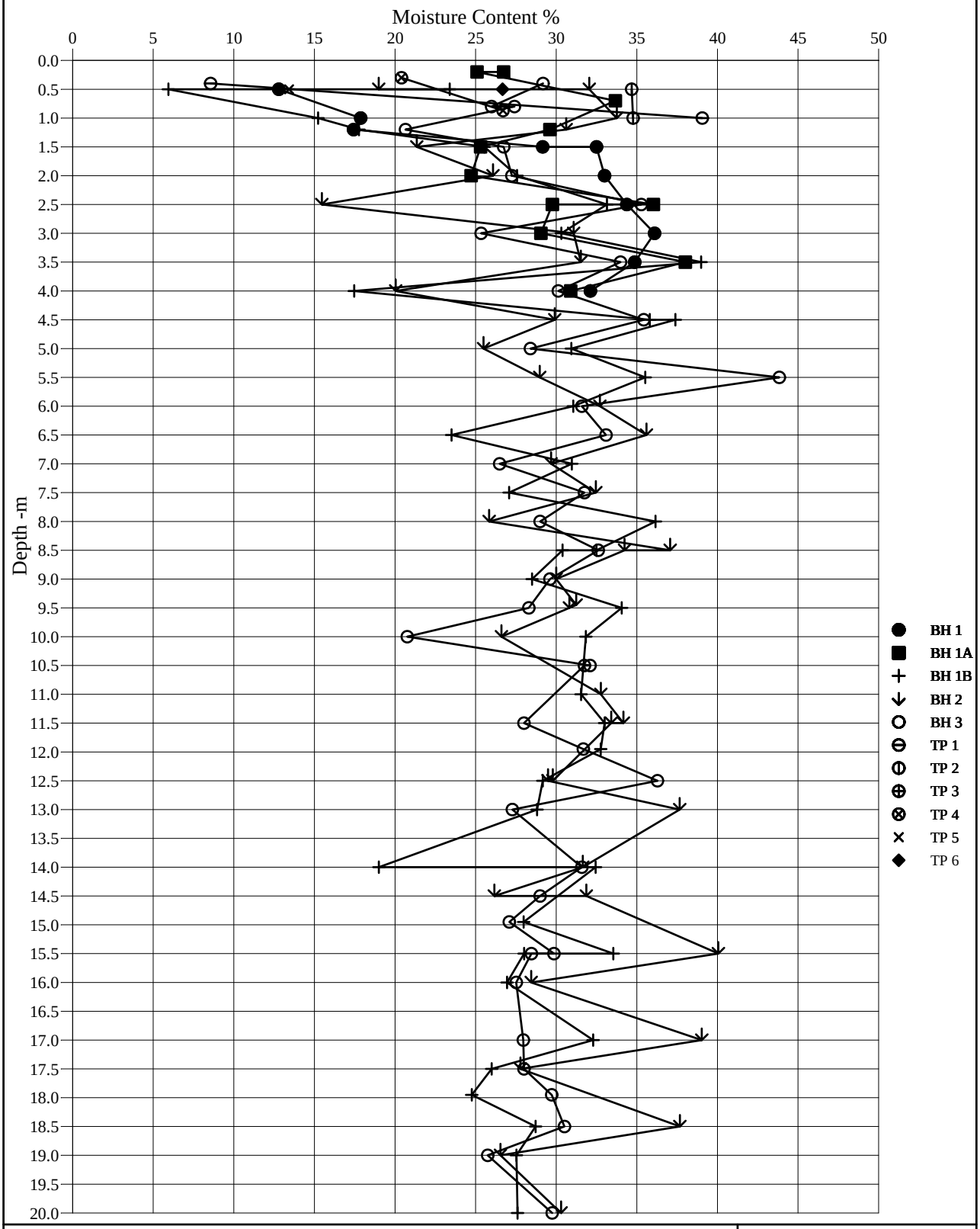
GroundTech Laboratories

Geotechnical Testing Facility

Slapton Hill Barn, Blakesley Road, Slapton, Towcester, Northants. NN12 8QD
Telephone:- 01327 860947/860060 Fax:- 01327 860430

Quality Assured to ISO9001

Site: **Mill Hill, London**



MOISTURE CONTENT v DEPTH

Lab Ref. **15.02.014**

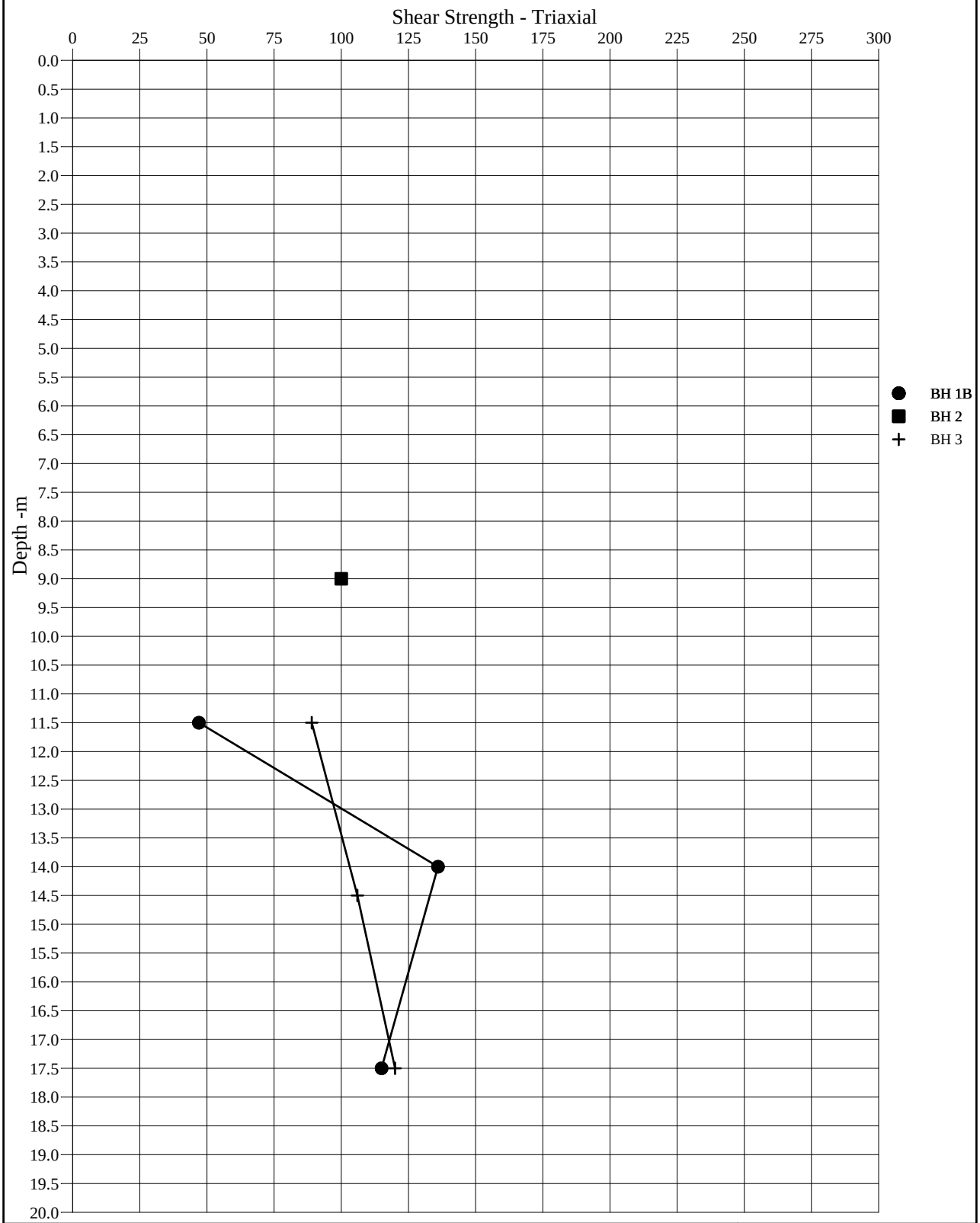
GroundTech Laboratories

Geotechnical Testing Facility

Slapton Hill Barn, Blakesley Road, Slapton, Towcester, Northants. NN12 8QD
Telephone:- 01327 860947/860060 Fax:- 01327 860430

Quality Assured to ISO9001

Site: **Mill Hill, London**



STRENGTH v DEPTH

Lab Ref. **15.02.014**

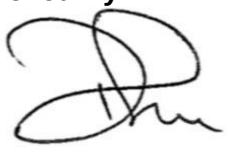
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

Final Report

Report Number:	15-05254 Issue-1
Initial Date of Issue:	13-Mar-2015
Client:	Listers Geotechnical Consultants
Client Address:	Slapton Hill Barn, Blakesley Road Slapton Towcester Northamptonshire NN12 8QD
Contact(s):	Lee Chippington
Project:	15.02.014/777 - Mill Hill
Quotation No.:	
Order No.:	15.02.014
No. of Samples:	1
Turnaround: (Wkdays)	5
Date Approved:	13-Mar-2015

Date Received:	09-Mar-2015
Date Instructed:	09-Mar-2015
Target Due Date:	11-Mar-2015
Results Due Date:	13-Mar-2015

Approved By:



Details: Darrell Hall, Laboratory Director

Results Summary - 2 Stage WAC

Project: 15.02.014/777 - Mill Hill

Chemtest Job No: 15-05254 Chemtest Sample ID: 112284 Sample Ref: Sample ID: TP5 Top Depth(m): 0.5 Bottom Depth(m): 0.7 Sampling Date: 04-Mar-2015							Landfill Waste Acceptance Criteria Limits		
							Inert Waste Landfill	Stable Non-reactive Hazardous waste in non-hazardous	Hazardous Waste Landfill
Determinand	**SOP**	**Accred.**	**Units**						
Total Organic Carbon	2625	U	%			0.96	3	5	6
Loss on Ignition	2610	U	%			3.2	--	--	10
Total BTEX	2760	U	mg/kg			< 0.01	6	--	--
Total PCBs (7 congeners)	2815	U	mg/kg			< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg			< 10	500	--	--
Total (of 17) PAHs	2700	N	mg/kg			< 2.0	100	--	--
pH	2010	U				8.8	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.089	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative 10:1 mg/kg**	**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
Arsenic	1450	U	0.002	0.002	< 0.050	< 0.050	0.5	2	25
Barium	1450	U	0.017	0.008	< 0.50	< 0.50	20	100	300
Cadmium	1450	U	0.0005	< 0.0001	< 0.010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.001	< 0.001	< 0.050	< 0.050	0.5	10	70
Copper	1450	U	0.006	0.002	< 0.050	< 0.050	2	50	100
Mercury	1450	U	< 0.0005	< 0.0005	< 0.001	< 0.005	0.01	0.2	2
Molybdenum	1450	U	0.017	0.004	< 0.050	0.051	0.5	10	30
Nickel	1450	U	< 0.001	< 0.001	< 0.050	< 0.050	0.4	10	40
Lead	1450	U	< 0.001	0.005	< 0.010	0.045	0.5	10	50
Antimony	1450	U	0.003	< 0.001	< 0.010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.002	< 0.001	< 0.010	< 0.010	0.1	0.5	7
Zinc	1450	U	0.001	0.01	< 0.50	< 0.50	4	50	200
Chloride	1220	U	16	3	32	42	800	15000	25000
Fluoride	1220	U	0.63	0.3	1.2	3.3	10	150	500
Sulphate	1220	U	35	7.6	69	100	1000	20000	50000
Total Dissolved Solids	1020	N	220	77	430	900	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	N	47	12	93	150	500	800	1000

Soild Information	
Dry mass of test portion/kg	0.175
Moisture (%)	15

Leachate Test Information	
Leachant volume 1st extract/l	0.319
Leachant volume 2nd extract/l	1.4
Eluant recovered from 1st extract/l	0.16

Report Information

Key

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

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

Sample Deviation Codes

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

Sample Retention and Disposal

All soil samples will be retained for a period of 60 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

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

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

Final Report

Report Number:	15-05257 Issue-1
Initial Date of Issue:	11-Mar-2015
Client:	Listers Geotechnical Consultants
Client Address:	Slapton Hill Barn, Blakesley Road Slapton Towcester Northamptonshire NN12 8QD
Contact(s):	Lee Chippington
Project:	15.02.014/777 - Mill Hill
Quotation No.:	
Order No.:	15.02.014
No. of Samples:	2
Turnaround: (Wkdays)	3
Date Approved:	11-Mar-2015
Approved By:	
Details:	Keith Jones, Technical Manager

Date Received:	09-Mar-2015
Date Instructed:	09-Mar-2015
Results Due Date:	11-Mar-2015

Results Summary - Soil

Project: 15.02.014/777 - Mill Hill

Client: Listers Geotechnical Consultants						
Quotation No.:				**Chemtest Job No.:**	15-05257	15-05257
Order No.: 15.02.014				**Chemtest Sample ID.:**	112324	112325
				Client Sample Ref.:		
				Client Sample ID.:	TP5	TP6
				Sample Type:	SOIL	SOIL
				Top Depth (m):	0.5	0.5
				Bottom Depth(m):	0.7	
				Date Sampled:	04-Mar-15	04-Mar-15
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
ACM Type	U	2192			-	Fibres/Clumps
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	Chrysotile
Moisture	N	2030	%	0.02	16	19
Stones	N	2030	%	0.02	< 0.020	< 0.020
Boron (Hot Water Soluble)	U	2120	mg/kg	0.4	0.96	0.67
Arsenic	U	2450	mg/kg	1	20	18
Cadmium	U	2450	mg/kg	0.1	0.36	0.20
Chromium	U	2450	mg/kg	1	39	42
Copper	U	2450	mg/kg	0.5	66	50
Mercury	U	2450	mg/kg	0.1	0.62	0.31
Nickel	U	2450	mg/kg	0.5	36	40
Lead	U	2450	mg/kg	0.5	140	100
Selenium	U	2450	mg/kg	0.2	0.22	< 0.20
Zinc	U	2450	mg/kg	0.5	180	150
Chromium (Hexavalent)	N	2490	mg/kg	0.5	< 0.50	< 0.50
TPH >C5-C6	N	2670	mg/kg	1	< 1.0	< 1.0
TPH >C6-C7	N	2670	mg/kg	1	< 1.0	< 1.0
TPH >C7-C8	N	2670	mg/kg	1	< 1.0	< 1.0
TPH >C8-C10	N	2670	mg/kg	1	< 1.0	< 1.0
TPH >C10-C12	N	2670	mg/kg	1	< 1.0	< 1.0
TPH >C12-C16	N	2670	mg/kg	1	< 1.0	< 1.0
TPH >C16-C21	N	2670	mg/kg	1	< 1.0	< 1.0
TPH >C21-C35	N	2670	mg/kg	1	< 1.0	< 1.0
Total TPH >C5-C35	N	2670	mg/kg	10	< 10	< 10
Naphthalene	U	2700	mg/kg	0.1	< 0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.1	< 0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.1	< 0.10	< 0.10
Fluorene	U	2700	mg/kg	0.1	< 0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.1	< 0.10	< 0.10
Anthracene	U	2700	mg/kg	0.1	< 0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.1	< 0.10	< 0.10
Pyrene	U	2700	mg/kg	0.1	< 0.10	< 0.10

Results Summary - Soil

Project: 15.02.014/777 - Mill Hill

Client: Listers Geotechnical Consultants			**Chemtest Job No.:**		15-05257	15-05257
Quotation No.:			**Chemtest Sample ID.:**		112324	112325
Order No.: 15.02.014			Client Sample Ref.:			
			Client Sample ID.:		TP5	TP6
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.5	0.5
			Bottom Depth(m):		0.7	
			Date Sampled:		04-Mar-15	04-Mar-15
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Benzo[a]anthracene	U	2700	mg/kg	0.1	< 0.10	< 0.10
Chrysene	U	2700	mg/kg	0.1	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.1	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.1	< 0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.1	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.1	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.1	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.1	< 0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2	< 2.0	< 2.0

Report Information

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For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at our Coventry laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

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All soil samples will be retained for a period of 60 days from the date of receipt
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customerservices@chemtest.co.uk

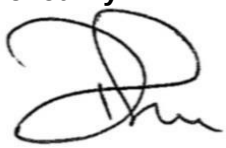
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

Final Report

Report Number:	15-05657 Issue-1
Initial Date of Issue:	16-Mar-2015
Client:	Listers Geotechnical Consultants
Client Address:	Slapton Hill Barn, Blakesley Road Slapton Towcester Northamptonshire NN12 8QD
Contact(s):	Lee Chippington
Project:	15.02.014/777- Pentavia Retail Park, Mill Hill

Quotation No.:		**Date Received:**	12-Mar-2015
Order No.:	15.02.014	**Date Instructed:**	12-Mar-2015
No. of Samples:	8		
Turnaround: (Wkdays)	3	**Results Due Date:**	16-Mar-2015
Date Approved:	16-Mar-2015		

Approved By:



Details: Darrell Hall, Laboratory Director

Chemtest
The right chemistry to deliver results

Results Summary - Soil

Project: 15.02.014/777- Pentavia Retail Park, Mill Hill

Client: Listers Geotechnical Consultants												
				Chemtest Job No.:	15-05657	15-05657	15-05657	15-05657	15-05657	15-05657	15-05657	15-05657
Quotation No.:				**Chemtest Sample ID.:**	114287	114288	114289	114290	114291	114292	114293	114294
Order No.: 15.02.014				Client Sample Ref.:								
				Client Sample ID.:	BH1B	BH1B	BH1B	BH2	BH2	BH3	BH3	BH3
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.5	4.0	16.0	3.0	6.0	0.8	6.0	11.95
				Bottom Depth(m):								
				Date Sampled:	06-Mar-15	06-Mar-15	06-Mar-15	06-Mar-15	06-Mar-15	06-Mar-15	06-Mar-15	06-Mar-15
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
ACM Type	U	2192			-			-		-	-	
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected			No Asbestos Detected		No Asbestos Detected	No Asbestos Detected	
Moisture	N	2030	%	0.02	16	14	20	21	19	21	22	23
Stones	N	2030	%	0.02	< 0.020			< 0.020		< 0.020	< 0.020	
Boron (Hot Water Soluble)	U	2120	mg/kg	0.4	1.7			0.90		1.4	1.5	
Total Sulphur	U	2175	%	0.01		0.30	0.30		1.5			0.26
Sulphate (Total)	U	2430	%	0.01		1.1	1.1		2.5			1.0
Arsenic	U	2450	mg/kg	1	19			15		18	16	
Cadmium	U	2450	mg/kg	0.1	0.34			< 0.10		0.18	< 0.10	
Chromium	U	2450	mg/kg	1	28			26		33	29	
Copper	U	2450	mg/kg	0.5	40			27		42	30	
Mercury	U	2450	mg/kg	0.1	0.23			0.14		0.30	0.38	
Nickel	U	2450	mg/kg	0.5	28			35		42	32	
Lead	U	2450	mg/kg	0.5	210			29		130	36	
Selenium	U	2450	mg/kg	0.2	< 0.20			0.25		< 0.20	< 0.20	
Zinc	U	2450	mg/kg	0.5	110			82		98	78	
Chromium (Hexavalent)	N	2490	mg/kg	0.5	< 0.50			< 0.50		< 0.50	< 0.50	
TPH >C5-C6	N	2670	mg/kg	1	< 1.0			< 1.0		< 1.0	< 1.0	
TPH >C6-C7	N	2670	mg/kg	1	< 1.0			< 1.0		< 1.0	< 1.0	
TPH >C7-C8	N	2670	mg/kg	1	< 1.0			< 1.0		< 1.0	< 1.0	
TPH >C8-C10	N	2670	mg/kg	1	< 1.0			< 1.0		< 1.0	< 1.0	
TPH >C10-C12	N	2670	mg/kg	1	< 1.0			< 1.0		< 1.0	< 1.0	
TPH >C12-C16	N	2670	mg/kg	1	< 1.0			< 1.0		< 1.0	< 1.0	
TPH >C16-C21	N	2670	mg/kg	1	< 1.0			< 1.0		< 1.0	< 1.0	
TPH >C21-C35	N	2670	mg/kg	1	< 1.0			< 1.0		< 1.0	< 1.0	
Total TPH >C5-C35	N	2670	mg/kg	10	< 10			< 10		< 10	< 10	
Naphthalene	U	2700	mg/kg	0.1	< 0.10			< 0.10		< 0.10	< 0.10	
Acenaphthylene	U	2700	mg/kg	0.1	< 0.10			< 0.10		0.15	< 0.10	
Acenaphthene	U	2700	mg/kg	0.1	< 0.10			0.17		0.18	< 0.10	
Fluorene	U	2700	mg/kg	0.1	< 0.10			0.11		0.39	< 0.10	
Phenanthrene	U	2700	mg/kg	0.1	< 0.10			1.0		3.6	< 0.10	
Anthracene	U	2700	mg/kg	0.1	< 0.10			0.20		0.79	< 0.10	

Results Summary - Soil

Project: 15.02.014/777- Pentavia Retail Park, Mill Hill

Client: Listers Geotechnical Consultants												
			Chemtest Job No.:		15-05657	15-05657	15-05657	15-05657	15-05657	15-05657	15-05657	15-05657
Quotation No.:			**Chemtest Sample ID.:**		114287	114288	114289	114290	114291	114292	114293	114294
Order No.: 15.02.014			Client Sample Ref.:									
			Client Sample ID.:		BH1B	BH1B	BH1B	BH2	BH2	BH3	BH3	BH3
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.5	4.0	16.0	3.0	6.0	0.8	6.0	11.95
			Bottom Depth(m):									
			Date Sampled:		06-Mar-15	06-Mar-15	06-Mar-15	06-Mar-15	06-Mar-15	06-Mar-15	06-Mar-15	06-Mar-15
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Fluoranthene	U	2700	mg/kg	0.1	0.56			1.4		3.5	0.40	
Pyrene	U	2700	mg/kg	0.1	0.80			1.4		3.2	0.59	
Benzo[a]anthracene	U	2700	mg/kg	0.1	0.12			0.40		0.81	< 0.10	
Chrysene	U	2700	mg/kg	0.1	0.38			0.54		1.0	< 0.10	
Benzo[b]fluoranthene	U	2700	mg/kg	0.1	0.35			0.60		1.4	< 0.10	
Benzo[k]fluoranthene	U	2700	mg/kg	0.1	0.20			0.18		0.66	< 0.10	
Benzo[a]pyrene	U	2700	mg/kg	0.1	0.16			0.23		0.77	< 0.10	
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.1	< 0.10			< 0.10		< 0.10	< 0.10	
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.1	< 0.10			< 0.10		< 0.10	< 0.10	
Benzo[g,h,i]perylene	U	2700	mg/kg	0.1	< 0.10			< 0.10		< 0.10	< 0.10	
Total Of 16 PAH's	U	2700	mg/kg	2	2.6			6.2		17	< 2.0	

Report Information

Key

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

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

Sample Deviation Codes

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

Sample Retention and Disposal

All soil samples will be retained for a period of 60 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

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

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

Final Report

Report Number:	15-05902 Issue-1
Initial Date of Issue:	25-Mar-2015
Client:	Listers Geotechnical Consultants
Client Address:	Slapton Hill Barn, Blakesley Road Slapton Towcester Northamptonshire NN12 8QD
Contact(s):	Lee Chippington
Project:	15.02.014/777 - Mill Hill
Quotation No.:	
Order No.:	15.02.014
No. of Samples:	1
Turnaround: (Wkdays)	3
Date Approved:	25-Mar-2015
Approved By:	
Details:	Keith Jones, Technical Manager

Date Received:	16-Mar-2015
Date Instructed:	16-Mar-2015
Results Due Date:	18-Mar-2015

Results Summary - Soil

Project: 15.02.014/777 - Mill Hill

Client: Listers Geotechnical Consultants			**Chemtest Job No.:**		15-05902
Quotation No.:			**Chemtest Sample ID.:**		115595
Order No.: 15.02.014			Client Sample Ref.:		
			Client Sample ID.:		TP6
			Sample Type:		SOIL
			Top Depth (m):		0.5
			Bottom Depth(m):		
			Date Sampled:		04-Mar-15
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
ACM Type	U	2192			Fibres/Clumps
Asbestos Identification	U	2192	%	0.001	Chrysotile
Asbestos by Gravimetry	U	2192	%	0.001	<0.001
Total Asbestos	N	2192	%	0.001	<0.001

Report Information

Key

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

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

Sample Deviation Codes

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

Sample Retention and Disposal

All soil samples will be retained for a period of 60 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

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

Waste Classification Report

P9G3W-R6SLS-TXNJP

Job name

15.02.014 Mill Hill

Waste Stream

Listers Suite 6 PAH in CAS order and no pH

Comments

Project

Site

Classified by

Name:
Plant, Andrew
Date:
10/04/2015 08:15
Telephone:
01327 860060

Company:
Listers Geotechnical Consultants
Slapton Hill Barn, Blakesley Road
Slapton,
Towcester
NN12 8QD

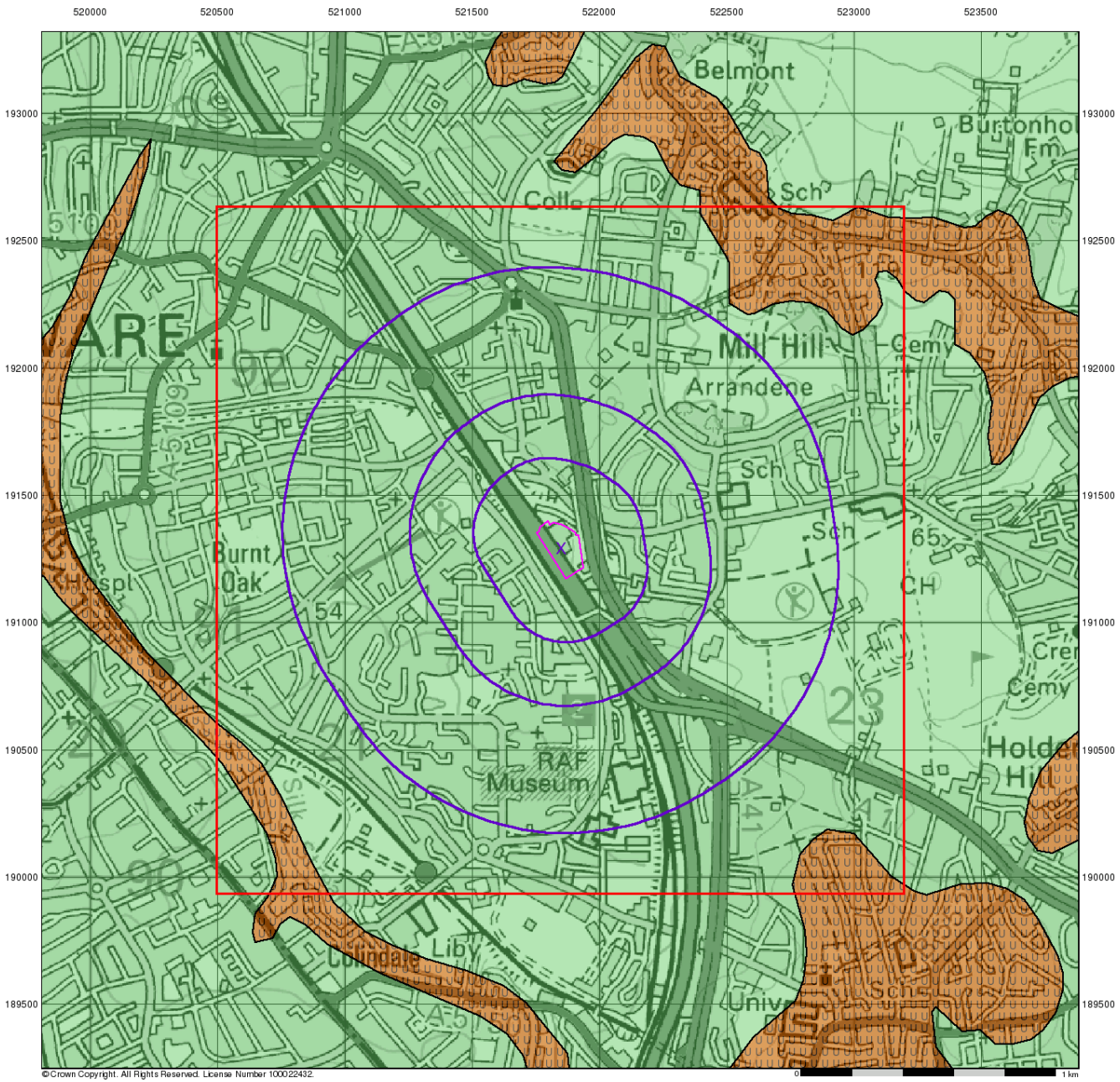
Report

Created by: Plant, Andrew
Created date: 10/04/2015 08:15

Job summary

LISTERS GEO
Geotechnical and Geoenvironmental Consultants

APPENDIX D
DESK STUDY INFORMATION



Groundwater Vulnerability

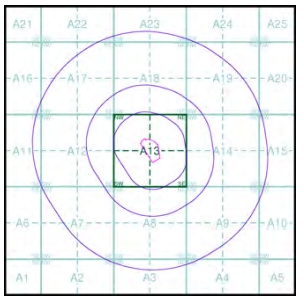
General

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



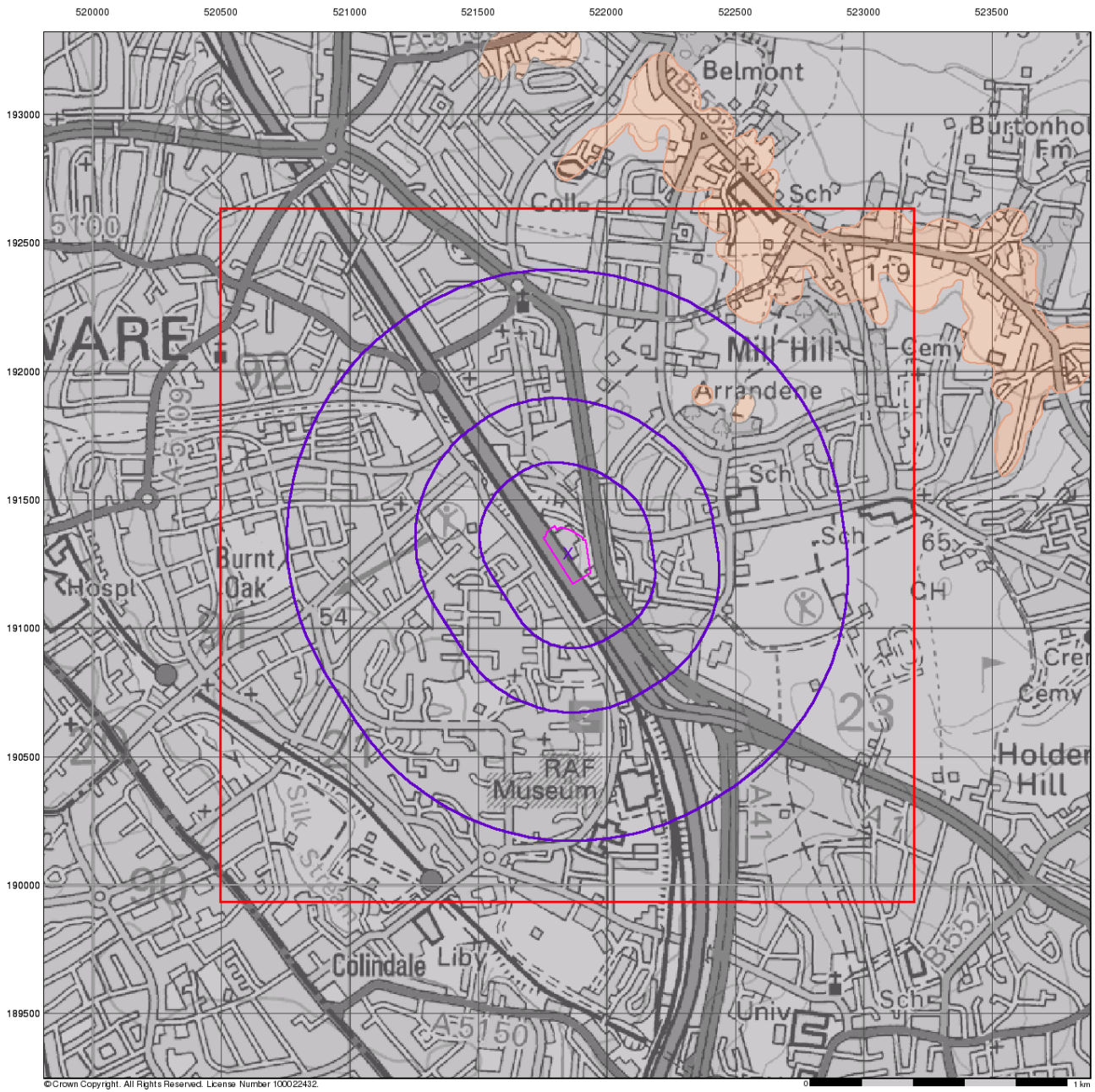
Order Details

Order Number:	64920000_1_1
Customer Ref:	15.02.014
National Grid Reference:	521850, 191290
Slice:	A
Site Area (Ha):	2.35
Search Buffer (m):	1000

Site Details

Homebase Ltd, Pentavia Retail Park, Watford Way, LONDON, NW7 2ET

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



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Bedrock Aquifer Designation

General

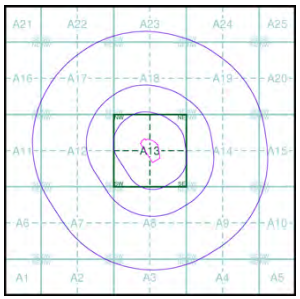
Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

Agency and Hydrological

Geological Classes

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

Site Sensitivity Context Map - Slice A

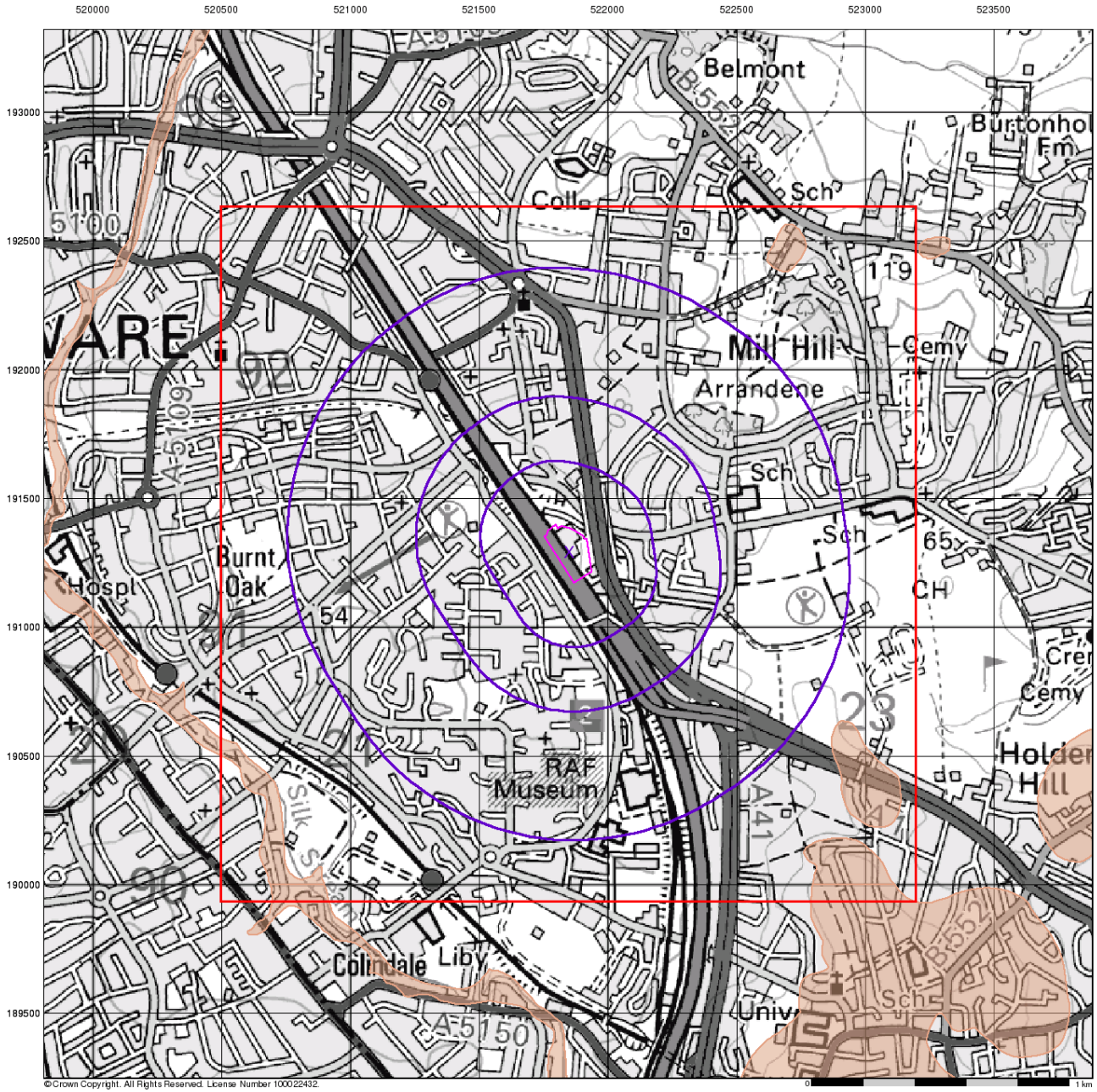


Order Details

Order Number:	64920000_1_1
Customer Ref:	15.02.014
National Grid Reference:	521850, 191290
Slice:	A
Site Area (Ha):	2.35
Search Buffer (m):	1000

Site Details

Homebase Ltd, Pentavia Retail Park, Watford Way, LONDON, NW7 2ET



Superficial Aquifer Designation

General

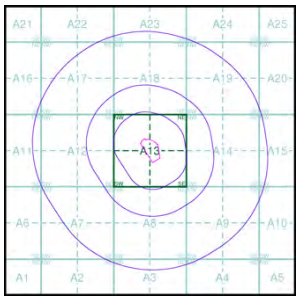
Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

Agency and Hydrological

Geological Classes

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

Site Sensitivity Context Map - Slice A



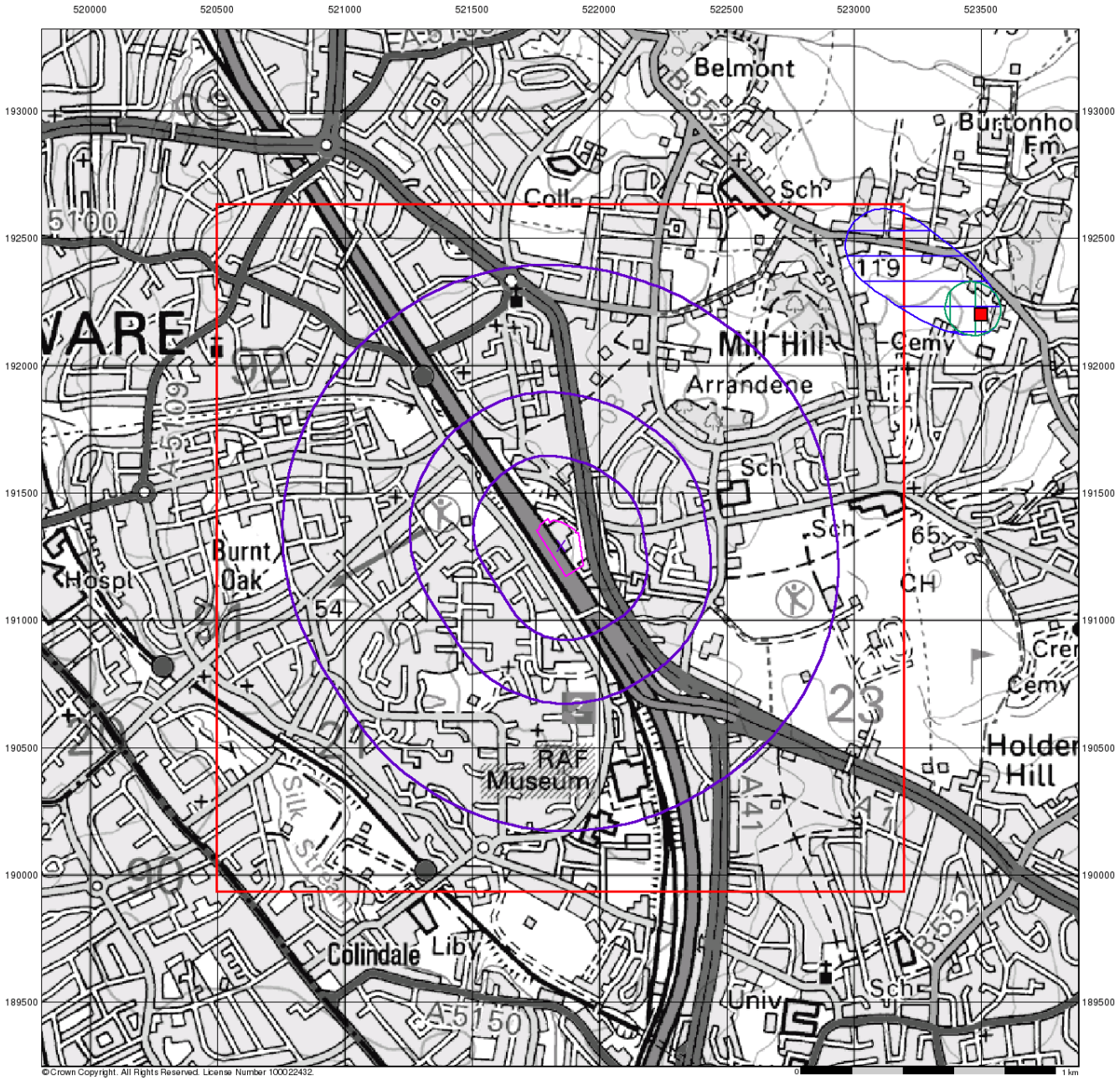
Order Details

Order Number:	64920000_1_1
Customer Ref:	15.02.014
National Grid Reference:	521850, 191290
Slice:	A
Site Area (Ha):	2.35
Search Buffer (m):	1000

Site Details

Homebase Ltd, Pentavia Retail Park, Watford Way, LONDON, NW7 2ET

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



Source Protection Zones

General

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

Slice | Map ID

Agency and Hydrological

Source Protection Zone I

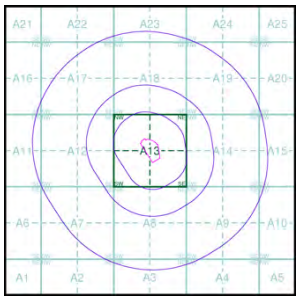
Source Protection Zone II

Source Protection Zone III

Zone of Special Interest

Source Protection Zone Borehole

Site Sensitivity Context Map - Slice A



Order Details

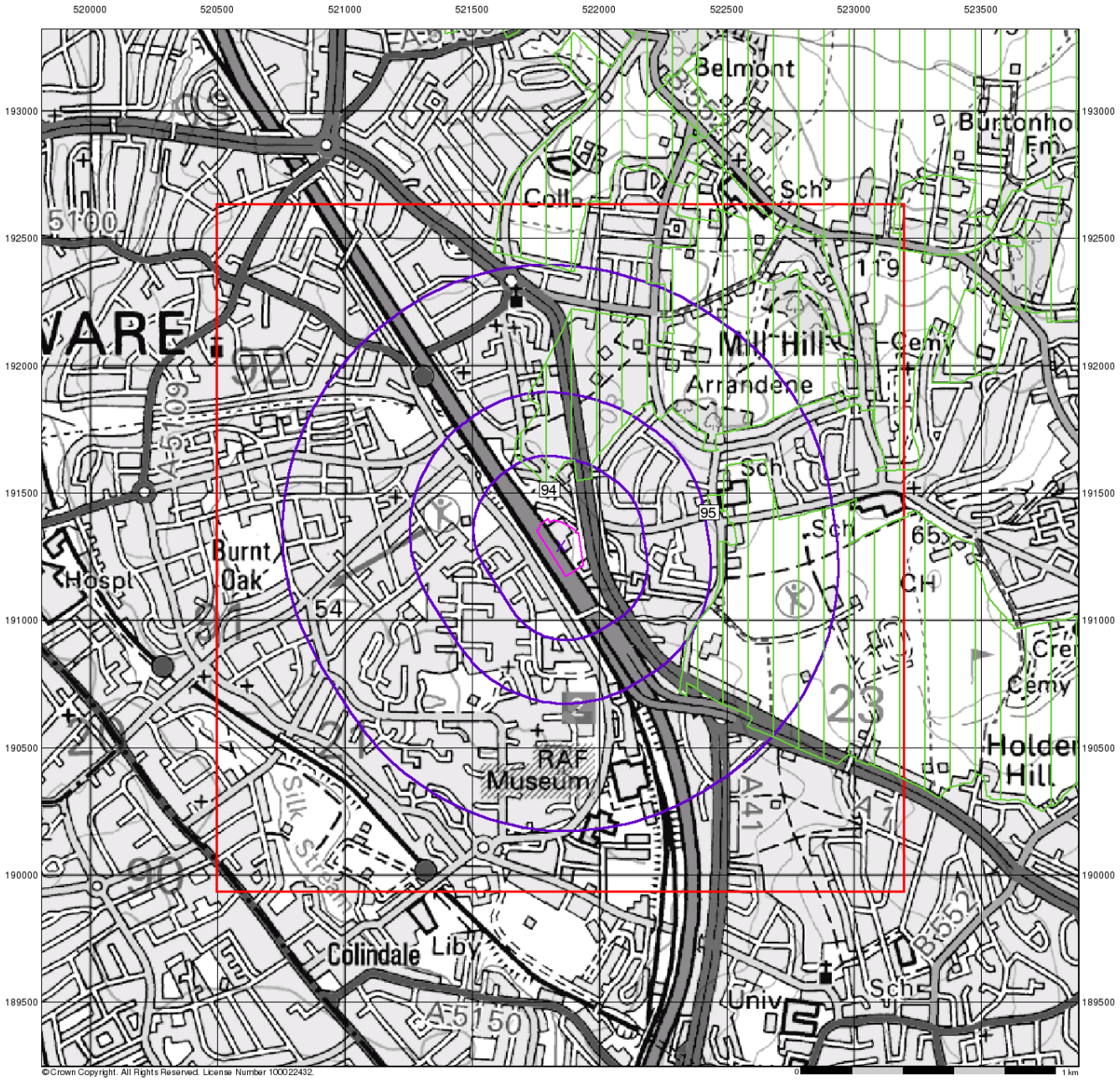
Order Number:	64920000_1_1
Customer Ref:	15.02.014
National Grid Reference:	521850, 191290
Slice:	A
Site Area (Ha):	2.35
Search Buffer (m):	1000

Site Details

Homebase Ltd, Pentavia Retail Park, Watford Way, LONDON, NW7 2ET

Landmark Information Group

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



Sensitive Land Uses

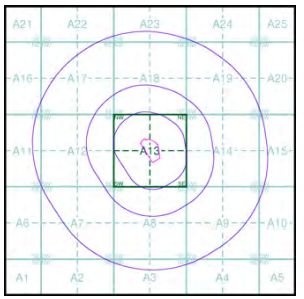
General

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



N

Order Details

Order Number:	64920000_1_1
Customer Ref:	15.02.014
National Grid Reference:	521850, 191290
Slice:	A
Site Area (Ha):	2.35
Search Buffer (m):	1000

Site Details

Homebase Ltd, Pentavia Retail Park, Watford Way, LONDON, NW7 2ET

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

Envirocheck® Report:

Datasheet

Order Details:

Order Number:
64920000_1_1

Customer Reference:
15.02.014

National Grid Reference:
521850, 191290

Slice:
A

Site Area (Ha):
2.35

Search Buffer (m):
1000

Site Details:

Homebase Ltd, Pentavia Retail Park
Watford Way
LONDON
NW7 2ET

Client Details:

Mr L Chippington
Listers Geotechnical Consultants Ltd
Slapton Hill Barn
Blakesley Road
Slapton
Towcester
Northants
NN12 8QD

Contents

Introduction

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

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

Copyright Notice

Natural England Copyright Notice

Ove Arup Copyright Notice

Peter Brett Associates Copyright Notice

Radon Potential dataset Copyright Notice

Report Version v49.0

Envirocheck®

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					
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		2		10
Local Authority Pollution Prevention and Control Enforcements	pg 2				2
Nearest Surface Water Feature	pg 2		Yes		
Pollution Incidents to Controlled Waters	pg 3		1	1	7
Prosecutions Relating to Authorised Processes					
Prosecutions Relating to Controlled Waters					
Registered Radioactive Substances					
River Quality					
River Quality Biology Sampling Points					
River Quality Chemistry Sampling Points					
Substantiated Pollution Incident Register	pg 4				1
Water Abstractions	pg 4				(*8)
Water Industry Act Referrals					
Groundwater Vulnerability	pg 6	Yes	n/a	n/a	n/a
Bedrock Aquifer Designations	pg 6	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
Detailed River Network Lines					n/a
Detailed River Network Offline Drainage	pg 7		Yes	Yes	n/a

Envirocheck®

Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Waste					
BGS Recorded Landfill Sites					
Historical Landfill Sites	pg 8	1		2	1
Integrated Pollution Control Registered Waste Sites					
Licensed Waste Management Facilities (Landfill Boundaries)					
Licensed Waste Management Facilities (Locations)					
Local Authority Recorded Landfill Sites	pg 8	1		1	2
Registered Landfill Sites	pg 9				2
Registered Waste Transfer Sites	pg 10		1		
Registered Waste Treatment or Disposal Sites					
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 1:625,000 Solid Geology	pg 11	Yes	n/a	n/a	n/a
BGS Estimated Soil Chemistry	pg 11	Yes	Yes		Yes
BGS Recorded Mineral Sites					
BGS Urban Soil Chemistry	pg 12		Yes	Yes	Yes
BGS Urban Soil Chemistry Averages	pg 16	Yes			
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 16	Yes		n/a	n/a
Potential for Compressible Ground Stability Hazards	pg 16	Yes		n/a	n/a
Potential for Ground Dissolution Stability Hazards				n/a	n/a
Potential for Landslide Ground Stability Hazards	pg 16	Yes		n/a	n/a
Potential for Running Sand Ground Stability Hazards	pg 16	Yes		n/a	n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards	pg 16	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

Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Industrial Land Use					
Contemporary Trade Directory Entries	pg 17	1	7	13	72
Fuel Station Entries	pg 24		2		2
Sensitive Land Use					
Areas of Adopted Green Belt	pg 26		1	1	
Areas of Unadopted Green Belt					
Areas of Outstanding Natural Beauty					
Environmentally Sensitive Areas					
Forest Parks					
Local Nature Reserves					
Marine Nature Reserves					
National Nature Reserves					
National Parks					
Nitrate Sensitive Areas					
Nitrate Vulnerable Zones					
Ramsar Sites					
Sites of Special Scientific Interest					
Special Areas of Conservation					
Special Protection Areas					

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
1	**Local Authority Pollution Prevention and Controls** Name: Watford Way Filling Station Location: Watford Way, London, NW7 2ET Authority: London Borough of Barnet, Environmental Health Department Permit Reference: PPC47 Dated: 13th January 1999 Process Type: Local Authority Pollution Prevention and Control Description: PG1/14 Petrol filling station **Status: Permitted** Positional Accuracy: Manually positioned to the address or location	A13SE (SE)	88	3	521945 191117
1	**Local Authority Pollution Prevention and Controls** Name: Watford Way Filling Station Location: Pentavia Retail Park, Watford Way, LONDON, NW7 2PT Authority: London Borough of Barnet, Environmental Health Department Permit Reference: Lapc/Vr/035 Dated: 13th January 1999 Process Type: Local Authority Air Pollution Control Description: PG1/14 Petrol filling station **Status: Authorised** Positional Accuracy: Manually positioned to the address or location	A13SE (SE)	88	3	521945 191117
2	**Local Authority Pollution Prevention and Controls** Name: Halt Motor Company Location: Avion Crescent, Grahame Park Way, LONDON, NM9 5QY Authority: London Borough of Barnet, Environmental Health Department Permit Reference: Ppc20 Dated: 12th May 2005 Process Type: Local Authority Pollution Prevention and Control Description: PG1/1Waste oil burners, less than 0.4MW net rated thermal input **Status: Permitted** Positional Accuracy: Located by supplier to within 10m	A8SE (S)	630	3	522076 190578
2	**Local Authority Pollution Prevention and Controls** Name: John Frederick Location: Unit 2a Avion Crescent, Grahame Park Way, Colindale, Nw9 5qw Authority: London Borough of Barnet, Environmental Health Department Permit Reference: PPCDC061 Dated: 17th October 2006 Process Type: Local Authority Pollution Prevention and Control Description: PG6/46 Dry cleaning **Status: Permitted** Positional Accuracy: Manually positioned to the address or location	A8SE (S)	665	3	522092 190547
3	**Local Authority Pollution Prevention and Controls** Name: Jemca Location: Hendon Station Goods Yard, Station Road, Hendon, LONDON, . Authority: London Borough of Barnet, Environmental Health Department Permit Reference: Ppc15 Dated: 13th May 2005 Process Type: Local Authority Pollution Prevention and Control Description: PG6/34 Respraying of road vehicles **Status: Authorisation revokedRevoked** Positional Accuracy: Located by supplier to within 10m	A17NE (NW)	709	3	521372 191962
4	**Local Authority Pollution Prevention and Controls** Name: Blue Dragon Dry Cleaners Location: 62 The Broadway, Mill Hill, Nw7 3te Authority: London Borough of Barnet, Environmental Health Department Permit Reference: PPCDC062 Dated: 18th October 2006 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)	779	3	521533 192128
5	**Local Authority Pollution Prevention and Controls** Name: Gdk Garage Location: 1-3 Hale Lane, Mill Hill, London, Nw7 3nu Authority: London Borough of Barnet, Environmental Health Department Permit Reference: PPC056 Dated: 7th August 2007 Process Type: Local Authority Pollution Prevention and Control Description: PG1/1Waste oil burners, less than 0.4MW net rated thermal input **Status: Permitted** Positional Accuracy: Manually positioned to the address or location	A17SE (NW)	793	3	521230 191957

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
6	**Local Authority Pollution Prevention and Controls** Name: Star Filling Station Location: 1-3 Flower Lane, LONDON, NW7 2JA Authority: London Borough of Barnet, Environmental Health Department Permit Reference: PPC44 Dated: 13th January 1999 Process Type: Local Authority Pollution Prevention and Control Description: PG1/14 Petrol filling station **Status: Permitted** Positional Accuracy: Manually positioned to the address or location	A18NW (N)	796	3	521635 192175
7	**Local Authority Pollution Prevention and Controls** Name: Observatory Service Station Location: Watford Way, London, NW7 2PT Authority: London Borough of Barnet, Environmental Health Department Permit Reference: PPC37 Dated: 11th January 1999 Process Type: Local Authority Pollution Prevention and Control Description: PG1/14 Petrol filling station **Status: Permitted** Positional Accuracy: Manually positioned to the address or location	A18NW (N)	804	3	521814 192200
7	**Local Authority Pollution Prevention and Controls** Name: Observatory Service StationEsso Petroleum Co Ltd Location: Watford Way, London, Nw7 2pt Authority: London Borough of Barnet, Environmental Health Department Permit Reference: PPC37 Dated: 11th January 1999 Process Type: Local Authority Pollution Prevention and Control Description: PG1/14 Petrol filling station **Status: Permitted** Positional Accuracy: Located by supplier to within 10m	A18NW (N)	815	3	521807 192211
8	**Local Authority Pollution Prevention and Controls** Name: Portiacraft Location: 555-561 Watford Way, Mill Hill, LONDON, NW7 4RT Authority: London Borough of Barnet, Environmental Health Department Permit Reference: Ppc13 Dated: 13th May 2005 Process Type: Local Authority Pollution Prevention and Control Description: PG1/1Waste oil burners, less than 0.4MW net rated thermal input **Status: Permitted** Positional Accuracy: Manually positioned to the address or location	A18NW (N)	822	3	521740 192216
9	**Local Authority Pollution Prevention and Controls** Name: Crystalline Dry Cleaners Location: 129 The Broadway, Mill Hill, Nw7 4rn Authority: London Borough of Barnet, Environmental Health Department Permit Reference: PPCDC093 Dated: 1st March 2013 Process Type: Local Authority Pollution Prevention and Control Description: PG6/46 Dry cleaning **Status: Permitted** Positional Accuracy: Manually positioned to the address or location	A23SW (N)	928	3	521584 192299
10	**Local Authority Pollution Prevention and Control Enforcements** Location: Unit 2a Avion Crescent, Grahame Park Way, Colindale, Nw9 5qw Type: Air Pollution Control Enforcement Notice Reference: PPCDC061 Date Issued: 3rd March 2009 Enforcement Date: Not Supplied Details: Not Supplied Positional Accuracy: Located by supplier to within 10m	A8NE (S)	504	3	522038 190698
10	**Local Authority Pollution Prevention and Control Enforcements** Location: Unit 2a Avion Crescent, Grahame Park Way, Colindale, Nw9 5qw Type: Air Pollution Control Enforcement Notice Reference: PPCDC061 Date Issued: Not Supplied Enforcement Date: Not Supplied Details: 24/04/09 Positional Accuracy: Located by supplier to within 10m	A8NE (S)	504	3	522038 190698
	Nearest Surface Water Feature	A13NE (N)	21	-	521883 191394

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
11	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: MILL HILL Authority: Environment Agency, Thames Region Pollutant: Oils - Unknown Note: Confirmed As A Pollution Incident Incident Date: 9th August 1995 Incident Reference: N1950430 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A13NW (NW)	210	4	521600 191500
12	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: EDGWARE Authority: Environment Agency, Thames Region Pollutant: Unknown Sewage Note: Confirmed As A Pollution Incident Incident Date: 22nd July 1994 Incident Reference: NE940545 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A18SW (N)	404	4	521800 191800
13	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: EDGWARE Authority: Environment Agency, Thames Region Pollutant: Unknown Sewage Note: Confirmed As A Pollution Incident Incident Date: 22nd November 1994 Incident Reference: NE940855 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	A17SW (NW)	792	4	521100 191800
14	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: EDGWARE Authority: Environment Agency, Thames Region Pollutant: Unknown Sewage Note: Confirmed As A Pollution Incident Incident Date: 2nd August 1994 Incident Reference: NE940585 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	A17SW (NW)	831	4	521000 191700
15	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: EDGWARE Authority: Environment Agency, Thames Region Pollutant: Unknown Sewage Note: Confirmed As A Pollution Incident Incident Date: 29th March 1995 Incident Reference: N1950149 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	A17SW (NW)	871	4	521005 191795
15	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: EDGWARE Authority: Environment Agency, Thames Region Pollutant: Unknown Sewage Note: Confirmed As A Pollution Incident Incident Date: 4th April 1995 Incident Reference: N1950158 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	A17SW (NW)	873	4	521005 191800

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
15	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: The Meads, EDGWARE Authority: Environment Agency, Thames Region Pollutant: Unknown Sewage Note: Confirmed As A Pollution Incident Incident Date: 24th March 1995 Incident Reference: N1950143 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	A17SW (NW)	875	4	521000 191795
15	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: BARNET Authority: Environment Agency, Thames Region Pollutant: Oils - Unknown Note: Confirmed As A Pollution Incident Incident Date: 12th October 1994 Incident Reference: NE940769 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	A17SW (NW)	878	4	521000 191800
16	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: HENDON Authority: Environment Agency, Thames Region Pollutant: Chemicals - Unknown Note: Confirmed As A Pollution Incident Incident Date: 11th March 1994 Incident Reference: NE940160 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	A15SW (E)	987	4	522900 191000
17	**Substantiated Pollution Incident Register** Authority: Environment Agency - Thames Region, North East Area Incident Date: 20th September 2002 Incident Reference: 109216 Water Impact: Category 2 - Significant Incident Air Impact: Category 4 - No Impact Land Impact: Category 4 - No Impact Positional Accuracy: Located by supplier to within 10m Pollutant: Crude Sewage	A17SW (NW)	821	4	521084 191829
	Water Abstractions Operator: Trustees Of Hendon Golf Club Licence Number: 28/39/38/0046 Permit Version: 1 Location: Hendon Golf Club- Borehole Authority: Environment Agency, Thames Region Abstraction: Golf Courses: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Hendon Golf Club, Saunders Lane, Mill Hill, London. Authorised Start: 01 April Authorised End: 31 October Permit Start Date: 8th September 2005 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A15SE (E)	1424	4	523360 191260

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: Trustees Of Hendon Golf Club Licence Number: 28/39/38/0036 Permit Version: 100 Location: Borehole At Hendon Golf Club, Sanders Lane, Mill Hill Authority: Environment Agency, Thames Region Abstraction: Golf Courses: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): 100 Yearly Rate (m3): 10000 Details: Hendon Goldf Club, Sanders Lane, Mill Hill Authorised Start: 01 April Authorised End: 31 October Permit Start Date: 7th July 1997 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A15SE (E)	1424	4	523360 191260
	Water Abstractions Operator: The Trustees Of Hendon Golf Club Licence Number: Th/039/0038/016 Permit Version: 1 Location: Borehole At Hendon Golf Club Authority: Environment Agency, Thames Region Abstraction: Golf Courses: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Hendon Golf Club, Ashley Walk, Mill Hill, London. Authorised Start: 01 April Authorised End: 31 October Permit Start Date: 3rd April 2013 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A15SE (E)	1425	4	523361 191269
	Water Abstractions Operator: International Bible Students Association Licence Number: 28/39/38/0034 Permit Version: 101 Location: Watch Tower House, The Ridgeway- Borehole A Authority: Environment Agency, Thames Region Abstraction: Schools and Colleges: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Watch Tower House, The Ridgeway, London. Nw7 Authorised Start: 01 May Authorised End: 30 September Permit Start Date: 13th February 2003 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A20NE (NE)	1763	4	523480 192160
	Water Abstractions Operator: International Bible Students Association Licence Number: 28/39/38/0034 Permit Version: 101 Location: Watch Tower House, The Ridgeway- Borehole A Authority: Environment Agency, Thames Region Abstraction: Schools And Colleges: Drinking; Cooking; Sanitary; Washing; (Small Garden) Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Watch Tower House, The Ridgeway, London. Nw7 Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 13th February 2003 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A20NE (NE)	1763	4	523480 192160

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: International Bible Students Association Licence Number: 28/39/38/0034 Permit Version: 100 Location: Borehole At Watch Tower House, The Ridgeway, London. Nw7 Authority: Environment Agency, Thames Region Abstraction: Schools And Colleges: Drinking; Cooking; Sanitary; Washing; (Small Garden) Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): 436 Yearly Rate (m3): 50006 Details: Watch Tower House, The Ridgeway, London. Nw7 Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 21st December 1990 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A20NE (NE)	1799	4	523500 192200
	Water Abstractions Operator: International Bible Students Association Licence Number: 28/39/38/0034 Permit Version: 100 Location: Borehole At Watch Tower House, The Ridgeway, London. Nw7 Authority: Environment Agency, Thames Region Abstraction: Schools and Colleges: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Watch Tower House, The Ridgeway, London. Nw7 Authorised Start: 01 May Authorised End: 30 September Permit Start Date: 21st December 1990 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A20NE (NE)	1799	4	523500 192200
	Water Abstractions Operator: Anglian Water Services Limited Licence Number: 28/39/38/0041 Permit Version: 1 Location: Borehole 'A' At Bittacy Hill, Mill Hill Authority: Environment Agency, Thames Region Abstraction: Public Water Supply: Potable Water Supply - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Bittacy Hill, Mill Hill Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 27th September 2001 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(E)	1939	4	523870 191370
	Groundwater Vulnerability Soil Classification: Not classified Map Sheet: Sheet 39 West London Scale: 1:100,000	A13NE (SE)	0	4	521852 191291
	Drift Deposits None				
	Bedrock Aquifer Designations Aquifer Designation: Unproductive Strata	A13NE (SE)	0	2	521852 191291
	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
	Detailed River Network Lines None				
18	**Detailed River Network Offline Drainage** River Type: Tertiary River Hydrographic Area: D006	A13NE (N)	21	4	521883 191394
19	**Detailed River Network Offline Drainage** River Type: Tertiary River Hydrographic Area: D006	A13NW (NW)	256	4	521531 191476

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
20	**Historical Landfill Sites** Licence Holder: Not Supplied Location: Bunns Lane, Edgware, Mill Hill NW7 Name: K Garage Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD11387 First Input Date: Not Supplied Last Input Date: 31st December 1965 Specified Waste Type: Not Supplied EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: 5090/0010 BGS Ref: Not Supplied Other Ref: 8BA011, BAR011	A13NE (SE)	0	4	521852 191291
21	**Historical Landfill Sites** Licence Holder: Not Supplied Location: The Hyde, Grahame Park NW9 Name: Grahame Park Way - Corner Way Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD11134 First Input Date: 31st December 1977 Last Input Date: 31st December 1978 Specified Waste Type: Deposited Waste included Inert Waste EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: 5090/0006 BGS Ref: Not Supplied Other Ref: 8BA012	A8NE (S)	421	4	521885 190752
22	**Historical Landfill Sites** Licence Holder: London Borough of Barnet Location: Grahame Park Estate Name: Lanacre Avenue - Quakers Course Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD11135 First Input Date: Not Supplied Last Input Date: 31st December 1986 Specified Waste Type: Deposited Waste included Inert and Industrial Waste EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: 5090/0003 BGS Ref: Not Supplied Other Ref: 8BA009, DL209	A8NW (SW)	488	4	521604 190764
23	**Historical Landfill Sites** Licence Holder: London Borough of Barnet Location: Great Strand, Grahame Park, The Hyde NW9 Name: Grahame Park Way - Great Strand Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD11136 First Input Date: 31st December 1977 Last Input Date: 31st December 1986 Specified Waste Type: Deposited Waste included Inert and Industrial Waste EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: 5090/0001 BGS Ref: Not Supplied Other Ref: 8BA010, DL131	A8SE (S)	671	4	521884 190502
	Local Authority Landfill Coverage Name: London Borough of Barnet - Has supplied landfill data		0	5	521852 191291
24	**Local Authority Recorded Landfill Sites** Location: K Garage Site, Watford Way, Nw7 Reference: 14962/11 Authority: London Borough of Barnet **Last Reported Status:** **Closed** Types of Waste: Not Supplied Date of Closure: 31/12/1965 Positional Accuracy: Positioned by the supplier Boundary Quality: Moderate	A13NE (SE)	0	5	521852 191291

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
25	**Local Authority Recorded Landfill Sites** Location: Corner Mead, Grahame Park Way Reference: 14962/12 Authority: London Borough of Barnet **Last Reported Status:** **Closed** Types of Waste: Not Supplied Date of Closure: 31/12/1978 Positional Accuracy: Positioned by the supplier Boundary Quality: Moderate	A8NE (S)	424	5	521986 190765
26	**Local Authority Recorded Landfill Sites** Location: Lanacre Avenue, Quakers Course Reference: 14962/9 Authority: London Borough of Barnet **Last Reported Status:** **Closed** Types of Waste: Not Supplied Date of Closure: 31/12/1986 Positional Accuracy: Positioned by the supplier Boundary Quality: Moderate	A8NW (SW)	535	5	521579 190725
27	**Local Authority Recorded Landfill Sites** Location: St James School, Grahame Park Way Reference: 14962/10 Authority: London Borough of Barnet **Last Reported Status:** **Closed** Types of Waste: Not Supplied Date of Closure: 31/12/1986 Positional Accuracy: Positioned by the supplier Boundary Quality: Moderate	A8SE (S)	680	5	521893 190493
28	**Registered Landfill Sites** Licence Holder: Barnet L.B.C. Licence Reference: DL209 Site Location: Lanacre Avenue, GRAHAME PARK, London, NW9 Licence Easting: 521500 Licence Northing: 190700 Operator Location: Barnet House, 1255 High Road, Whetstone, Barnet, London, N20 0ej Authority: Environment Agency - Thames Region, North East Area Site Category: Landfill Max Input Rate: Very Large (Equal to or greater than 250,000 tonnes per year) Waste Source Restrictions: No known restriction on source of waste Status: Licence lapsed/cancelled/defunct/not applicable/surrenderedCancelled Dated: 1st June 1985 Preceded By Licence: Not Given Superseded By Licence: Not Given Positional Accuracy: Manually positioned to the address or location Boundary Accuracy: Not Applicable Authorised Waste: Clay Filling & Excav. Earth Construction And Demolition Wastes Excavated Natural Materials $ Prohibited Waste: Biodegradable/Putrescible Waste Clinical Wastes Notifiable Wastes Special Wastes	A7NE (SW)	601	4	521500 190700

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
29	**Registered Landfill Sites** Licence Holder: Barnet L.B.C. Licence Reference: DL131 Site Location: adj. St James School, Grahame Park Way, GRAHAME PARK, London, NW9 Licence Easting: 521950 Licence Northing: 190400 Operator Location: Barnet House, 1255 High Road, Whetstone, Barnet, London, N20 0ej Authority: Environment Agency - Thames Region, North East Area Site Category: Landfill Max Input Rate: Very Large (Equal to or greater than 250,000 tonnes per year) Waste Source Restrictions: No known restriction on source of waste Status: Licence lapsed/cancelled/defunct/not applicable/surrenderedCancelled Dated: 1st August 1983 Preceded By Licence: Not Given Superseded By Licence: Not Given Positional Accuracy: Manually positioned to the address or location Boundary Accuracy: Not Applicable Authorised Waste: Construction And Demolition Wastes Excavated Natural Materials $ Ind. Non-Haz. Waste Prohibited Waste: Biodegradable/Putrescible Waste Civic Amenity/Refuse Amenity Waste Clinical Wastes Commercial Waste	A8SE (S)	778	4	521950 190400
30	**Registered Waste Transfer Sites** Licence Holder: Barnet L.B.C. Licence Reference: DL211 Site Location: Grahame Park Depot, Grahame Park Way, GRAHAME PARK, London, NW9 Operator Location: Barnet House, 1255 High Road, Whetstone, Barnet, London, N20 0ej Authority: Environment Agency - Thames Region, North East Area Site Category: Transfer Max Input Rate: Very Small (Less than 10,000 tonnes per year) Waste Source Restrictions: No known restriction on source of waste Licence Status: Licence lapsed/cancelled/defunct/not applicable/surrenderedCancelled Dated: 1st August 1985 Preceded By Licence: Not Given Superseded By Licence: Not Given Positional Accuracy: Manually positioned to the road within the address or location Boundary Quality: Not Supplied Authorised Waste: Asbestos Prohibited Waste: Biodegradable/Putrescible Waste Clinical Wastes Notifiable Wastes N.O.S Special Wastes N.O.S	A13SE (SE)	106	4	521956 191102

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS 1:625,000 Solid Geology Description: London Clay	A13NE (SE)	0	2	521852 191291
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: London Arsenic Concentration: no data Cadmium Concentration: no data Chromium Concentration: no data Lead Concentration: no data Nickel Concentration: no data	A13NE (SE)	0	2	521852 191291
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: London Arsenic Concentration: no data Cadmium Concentration: no data Chromium Concentration: no data Lead Concentration: no data Nickel Concentration: no data	A13NE (E)	63	2	522000 191291
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: London Arsenic Concentration: no data Cadmium Concentration: no data Chromium Concentration: no data Lead Concentration: no data Nickel Concentration: no data	A13SE (S)	173	2	521852 191000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: London Arsenic Concentration: no data Cadmium Concentration: no data Chromium Concentration: no data Lead Concentration: no data Nickel Concentration: no data	A13SE (SE)	216	2	522000 191000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: London Arsenic Concentration: no data Cadmium Concentration: no data Chromium Concentration: no data Lead Concentration: no data Nickel Concentration: no data	A18NE (N)	604	2	521852 192000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: London Arsenic Concentration: no data Cadmium Concentration: no data Chromium Concentration: no data Lead Concentration: no data Nickel Concentration: no data	A18NE (N)	633	2	522000 192000

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: London Arsenic Concentration: no data Cadmium Concentration: no data Chromium Concentration: no data Lead Concentration: no data Nickel Concentration: no data	A19SW (NE)	686	2	522347 191878
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: London Arsenic Concentration: no data Cadmium Concentration: no data Chromium Concentration: no data Lead Concentration: no data Nickel Concentration: no data	A19SW (NE)	736	2	522489 191807
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: London Arsenic Concentration: no data Cadmium Concentration: no data Chromium Concentration: no data Lead Concentration: no data Nickel Concentration: no data	A12NW (W)	755	2	521000 191291
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: London Arsenic Concentration: no data Cadmium Concentration: no data Chromium Concentration: no data Lead Concentration: no data Nickel Concentration: no data	A12SW (W)	833	2	521000 191000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: London Arsenic Concentration: no data Cadmium Concentration: no data Chromium Concentration: no data Lead Concentration: no data Nickel Concentration: no data	A17NW (NW)	990	2	521000 192000
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 521690, 191240 Soil Sample Type: Topsoil Sample Area: London Arsenic Measured Concentration: 24.00 mg/kg Cadmium Measured Concentration: 3.40 mg/kg Chromium Measured Concentration: 109.00 mg/kg Lead Measured Concentration: 328.00 mg/kg Nickel Measured Concentration: 39.00 mg/kg	A13SW (W)	115	2	521690 191240

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 522194, 191208 Soil Sample Type: Topsoil Sample Area: London Arsenic Measured Concentration: 26.00 mg/kg Cadmium Measured Concentration: 1.40 mg/kg Chromium Measured Concentration: 116.00 mg/kg Lead Measured Concentration: 537.00 mg/kg Nickel Measured Concentration: 54.00 mg/kg	A14SW (E)	257	2	522194 191208
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 521744, 191763 Soil Sample Type: Topsoil Sample Area: London Arsenic Measured Concentration: 17.00 mg/kg Cadmium Measured Concentration: 0.30 mg/kg Chromium Measured Concentration: 104.00 mg/kg Lead Measured Concentration: 143.00 mg/kg Nickel Measured Concentration: 30.00 mg/kg	A18SW (N)	371	2	521744 191763
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 521700, 190760 Soil Sample Type: Topsoil Sample Area: London Arsenic Measured Concentration: 18.00 mg/kg Cadmium Measured Concentration: 0.70 mg/kg Chromium Measured Concentration: 103.00 mg/kg Lead Measured Concentration: 164.00 mg/kg Nickel Measured Concentration: 34.00 mg/kg	A8NW (S)	447	2	521700 190760
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 521263, 191251 Soil Sample Type: Topsoil Sample Area: London Arsenic Measured Concentration: 15.00 mg/kg Cadmium Measured Concentration: 0.30 mg/kg Chromium Measured Concentration: 97.00 mg/kg Lead Measured Concentration: 192.00 mg/kg Nickel Measured Concentration: 28.00 mg/kg	A12SE (W)	502	2	521263 191251
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 522248, 191811 Soil Sample Type: Topsoil Sample Area: London Arsenic Measured Concentration: 17.00 mg/kg Cadmium Measured Concentration: 0.30 mg/kg Chromium Measured Concentration: 106.00 mg/kg Lead Measured Concentration: 146.00 mg/kg Nickel Measured Concentration: 29.00 mg/kg	A19SW (NE)	573	2	522248 191811

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 522320, 190781 Soil Sample Type: Topsoil Sample Area: London Arsenic Measured Concentration: 14.00 mg/kg Cadmium Measured Concentration: 1.30 mg/kg Chromium Measured Concentration: 74.00 mg/kg Lead Measured Concentration: 222.00 mg/kg Nickel Measured Concentration: 28.00 mg/kg	A9NW (SE)	579	2	522320 190781
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 521261, 191757 Soil Sample Type: Topsoil Sample Area: London Arsenic Measured Concentration: 17.00 mg/kg Cadmium Measured Concentration: 0.30 mg/kg Chromium Measured Concentration: 95.00 mg/kg Lead Measured Concentration: 118.00 mg/kg Nickel Measured Concentration: 21.00 mg/kg	A17SE (NW)	635	2	521261 191757
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 521272, 190753 Soil Sample Type: Topsoil Sample Area: London Arsenic Measured Concentration: 17.00 mg/kg Cadmium Measured Concentration: 0.30 mg/kg Chromium Measured Concentration: 110.00 mg/kg Lead Measured Concentration: 84.00 mg/kg Nickel Measured Concentration: 44.00 mg/kg	A7NE (SW)	731	2	521272 190753
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 521988, 192142 Soil Sample Type: Topsoil Sample Area: London Arsenic Measured Concentration: 15.00 mg/kg Cadmium Measured Concentration: 0.30 mg/kg Chromium Measured Concentration: 82.00 mg/kg Lead Measured Concentration: 170.00 mg/kg Nickel Measured Concentration: 23.00 mg/kg	A18NE (N)	768	2	521988 192142
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 522783, 191258 Soil Sample Type: Topsoil Sample Area: London Arsenic Measured Concentration: 19.00 mg/kg Cadmium Measured Concentration: 0.30 mg/kg Chromium Measured Concentration: 108.00 mg/kg Lead Measured Concentration: 86.00 mg/kg Nickel Measured Concentration: 27.00 mg/kg	A14SE (E)	847	2	522783 191258

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 521720, 190320 Soil Sample Type: Topsoil Sample Area: London Arsenic Measured Concentration: 16.00 mg/kg Cadmium Measured Concentration: 0.60 mg/kg Chromium Measured Concentration: 100.00 mg/kg Lead Measured Concentration: 136.00 mg/kg Nickel Measured Concentration: 36.00 mg/kg	A8SW (S)	866	2	521720 190320
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 522716, 191817 Soil Sample Type: Topsoil Sample Area: London Arsenic Measured Concentration: 13.00 mg/kg Cadmium Measured Concentration: 0.30 mg/kg Chromium Measured Concentration: 104.00 mg/kg Lead Measured Concentration: 106.00 mg/kg Nickel Measured Concentration: 22.00 mg/kg	A19SE (NE)	928	2	522716 191817
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 522764, 190736 Soil Sample Type: Topsoil Sample Area: London Arsenic Measured Concentration: 18.00 mg/kg Cadmium Measured Concentration: 0.30 mg/kg Chromium Measured Concentration: 98.00 mg/kg Lead Measured Concentration: 110.00 mg/kg Nickel Measured Concentration: 31.00 mg/kg	A9NE (SE)	956	2	522764 190736
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 522144, 190250 Soil Sample Type: Topsoil Sample Area: London Arsenic Measured Concentration: 28.00 mg/kg Cadmium Measured Concentration: 2.30 mg/kg Chromium Measured Concentration: 100.00 mg/kg Lead Measured Concentration: 657.00 mg/kg Nickel Measured Concentration: 49.00 mg/kg	A3NE (S)	963	2	522144 190250
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 522318, 192261 Soil Sample Type: Topsoil Sample Area: London Arsenic Measured Concentration: 19.00 mg/kg Cadmium Measured Concentration: 0.30 mg/kg Chromium Measured Concentration: 101.00 mg/kg Lead Measured Concentration: 210.00 mg/kg Nickel Measured Concentration: 24.00 mg/kg	A19NW (NE)	991	2	522318 192261

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Urban Soil Chemistry Averages Source: British Geological Survey, National Geoscience Information Service Sample Area: London Count Id: 7189 Arsenic Minimum Concentration: 1.00 mg/kg Arsenic Average Concentration: 17.00 mg/kg Arsenic Maximum Concentration: 161.00 mg/kg Cadmium Minimum Concentration: 0.30 mg/kg Cadmium Average Concentration: 0.90 mg/kg Cadmium Maximum Concentration: 165.20 mg/kg Chromium Minimum Concentration: 13.00 mg/kg Chromium Average Concentration: 79.00 mg/kg Chromium Maximum Concentration: 2094.00 mg/kg Lead Minimum Concentration: 11.00 mg/kg Lead Average Concentration: 280.00 mg/kg Lead Maximum Concentration: 10000.00 mg/kg Nickel Minimum Concentration: 2.00 mg/kg Nickel Average Concentration: 28.00 mg/kg Nickel Maximum Concentration: 506.00 mg/kg	A13NE (SE)	0	2	521852 191291
	Coal Mining Affected Areas In an area that might 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	A13NE (SE)	0	2	521852 191291
	Potential for Compressible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (SE)	0	2	521852 191291
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	0	2	521816 191269
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (SE)	0	2	521852 191291
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (SE)	0	2	521852 191291
	Potential for Running Sand Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	0	2	521816 191269
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (SE)	0	2	521852 191291
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13NE (SE)	0	2	521852 191291
	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	A13NE (SE)	0	2	521852 191291
	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	A13NE (SE)	0	2	521852 191291

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
31	**Contemporary Trade Directory Entries** Name: Comet Location: Unit 1, Pentavia Retail Park, Watford Way, London, NW7 2ET Classification: Electrical Goods Sales, Manufacturers & Wholesalers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	0	-	521834 191316
32	**Contemporary Trade Directory Entries** Name: Goodman Autos Ltd Location: Bunns Lane, London, NW7 2ES Classification: Garage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13SE (E)	134	-	522065 191271
33	**Contemporary Trade Directory Entries** Name: Best Door Striping Location: 44, Rivington Crescent, London, NW7 2LF Classification: Paint & Varnish Stripping **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NW (W)	137	-	521626 191306
34	**Contemporary Trade Directory Entries** Name: Merlin Interiors Ltd Location: 8, Mill Hill Industrial Estate, Flower Lane, London, NW7 2HU Classification: Office Furniture & Equipment **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	201	-	521708 191575
35	**Contemporary Trade Directory Entries** Name: Diva Distribution Location: 9, Fakenham Close, London, NW7 2SD Classification: Distribution Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13SE (SE)	216	-	522145 191159
36	**Contemporary Trade Directory Entries** Name: D Herron Gates & Railings Location: Unit 33/C, Bunns Lane Works, Bunns Lane, Mill Hill, London, NW7 2AJ Classification: Wrought Ironwork **Status: Active** Positional Accuracy: Manually positioned to the address or location	A13NW (NW)	217	-	521647 191553
36	**Contemporary Trade Directory Entries** Name: Bunns Lane Welding Location: Bunns Lane Works, Bunns Lane, London, NW7 2AJ Classification: Car Body Repairs **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	224	-	521657 191571
36	**Contemporary Trade Directory Entries** Name: Deltech Uk Ltd Location: 5, Mill Hill Industrial Estate, Flower Lane, London, NW7 2HU Classification: Lighting Manufacturers **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	244	-	521672 191604
37	**Contemporary Trade Directory Entries** Name: W L M G Nissan Location: 517, Watford Way, LONDON, NW7 2QR Classification: Car Dealers **Status: Active** Positional Accuracy: Automatically positioned to the address	A8NE (SE)	287	-	522030 190935
38	**Contemporary Trade Directory Entries** Name: Hurricane M O T Location: 1-2, Mill Hill Industrial Estate, Flower Lane, London, NW7 2HU Classification: Garage Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SW (NW)	328	-	521600 191657
39	**Contemporary Trade Directory Entries** Name: K'S Of Mill Hill Location: Unit 2A,Hurricane Trading Centre,Grahame Pk Way, London, NW9 5QW Classification: Carpet, Curtain & Upholstery Cleaners **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A8NE (S)	336	-	521954 190848
40	**Contemporary Trade Directory Entries** Name: Madara Location: 14, Bunns Lane, London, NW7 2NE Classification: Cleaning Services - Domestic **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14NW (E)	336	-	522255 191366

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
41	**Contemporary Trade Directory Entries** Name: Glenaden Ltd Location: 6, Copthall Gardens, London, NW7 2NG Classification: Distilleries **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14NW (E)	375	-	522278 191446
42	**Contemporary Trade Directory Entries** Name: Sicorps Uk Ltd Location: Flat 3, Wallace, Clayton Field, LONDON, NW9 5SE Classification: Commercial Cleaning Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12SE (SW)	377	-	521474 191093
43	**Contemporary Trade Directory Entries** Name: Rescom Cleaning Services Location: Flat 9, Nardini, The Concourse, London, NW9 5UP Classification: Cleaning Services - Commercial **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A8NW (SW)	422	-	521650 190813
44	**Contemporary Trade Directory Entries** Name: Acorn Landscape Supplies Location: Unit 2 Seelander Ho,Grahame Park Way, London, NW9 5QY Classification: Concrete Products **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A8NE (S)	422	-	521995 190770
45	**Contemporary Trade Directory Entries** Name: D & G Cleaning Services Location: 12, Birch Green, London, NW9 5GS Classification: Cleaning Services - Commercial **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12SE (SW)	475	-	521410 191010
46	**Contemporary Trade Directory Entries** Name: S & E Brazier & Sons Location: 41, Woodcroft Avenue, London, NW7 2AH Classification: Cash Registers & Check-Out Equipment **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12NE (W)	483	-	521282 191449
47	**Contemporary Trade Directory Entries** Name: Weatherwell Ltd Location: Unit 1,Seelander House,Grahame Pk Way, London, NW9 5QY Classification: Fencing Manufacturers **Status: Active** Positional Accuracy: Manually positioned to the road within the address or location	A8NE (S)	483	-	522016 190713
48	**Contemporary Trade Directory Entries** Name: Refresh Psc Location: Flat 7, Caldew Court, 1, Bunns Lane, London, NW7 2AW Classification: Damp & Dry Rot Control **Status: Active** Positional Accuracy: Automatically positioned to the address	A14NW (E)	484	-	522405 191356
49	**Contemporary Trade Directory Entries** Name: Cleaners Of Mill Hill Location: 69, Page Street, London, NW7 2EE Classification: Cleaning Services - Domestic **Status: Active** Positional Accuracy: Automatically positioned to the address	A14SW (E)	499	-	522417 191078
50	**Contemporary Trade Directory Entries** Name: Susvher Developments Location: 7, Larch Green, London, NW9 5GL Classification: Blinds, Awnings & Canopies **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A7NE (SW)	529	-	521410 190912
51	**Contemporary Trade Directory Entries** Name: Barnet Direct Location: 17, Page Street, London, NW7 2EL Classification: Pest & Vermin Control **Status: Active** Positional Accuracy: Automatically positioned to the address	A9NW (SE)	537	-	522307 190826
52	**Contemporary Trade Directory Entries** Name: Lselectricalservices Location: 38, Woodland Way, London, NW7 2JR Classification: Electrical Engineers **Status: Active** Positional Accuracy: Automatically positioned to the address	A17SE (NW)	541	-	521501 191848

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
53	**Contemporary Trade Directory Entries** Name: The Better Hearth Location: 426-428, Watford Way, London, NW7 2QJ Classification: Fireplaces & Mantelpieces **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A9NW (SE)	556	-	522274 190774
53	**Contemporary Trade Directory Entries** Name: Oven Cleaning Mill Hill Location: 420 Watford Way, London, NW7 2QJ Classification: Oven cleaning **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A9NW (SE)	573	-	522288 190763
53	**Contemporary Trade Directory Entries** Name: Auto Alternatives Location: 1-5, Page Street, London, NW7 2EL Classification: Car Customizing Specialists **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A9NW (SE)	581	-	522296 190758
54	**Contemporary Trade Directory Entries** Name: Travis Perkins Trading Co Ltd Location: Grahame Park Way, LONDON, NW9 5QY Classification: Builders' Merchants **Status: Active** Positional Accuracy: Automatically positioned to the address	A8NE (S)	586	-	522078 190625
54	**Contemporary Trade Directory Entries** Name: Technoworld Location: Unit 4,Hurricane Trading Est,Grahame Pk Way, London, NW9 5QY Classification: Electrical Goods Sales, Manufacturers & Wholesalers **Status: Active** Positional Accuracy: Manually positioned within the geographical locality	A8NE (S)	587	-	522078 190625
55	**Contemporary Trade Directory Entries** Name: Koala Cosmetic Location: Flat 48, Mercury, The Concourse, London, NW9 5XN Classification: Perfume Suppliers **Status: Active** Positional Accuracy: Automatically positioned to the address	A8NW (S)	598	-	521618 190631
56	**Contemporary Trade Directory Entries** Name: Hmc Car Care Location: Unit 1, Hurricane Trading Estate, Avion Crescent, London, NW9 5QW Classification: Garage Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A8SE (S)	630	-	522076 190578
56	**Contemporary Trade Directory Entries** Name: John Frederick Ltd Location: Unit 2a, Hurricane Trading Centre, Grahame Park Way, London, NW9 5QW Classification: Carpet, Curtain & Upholstery Cleaners **Status: Active** Positional Accuracy: Automatically positioned to the address	A8SE (S)	665	-	522092 190547
56	**Contemporary Trade Directory Entries** Name: John Frederick Ltd Location: Unit 2a, Hurricane Trading Centre, Grahame Park Way, London, NW9 5QW Classification: Carpet, Curtain & Upholstery Cleaners **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A8SE (S)	665	-	522092 190547
56	**Contemporary Trade Directory Entries** Name: Acorn Location: Unit 2, Hurricane Trading Centre, Grahame Park Way, London, NW9 5QW Classification: Concrete Products **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A8SE (S)	665	-	522092 190547
56	**Contemporary Trade Directory Entries** Name: Garner Bennett Office Supplies & Print Location: Unit 5, Hurricane Trading Centre, Grahame Park Way, London, NW9 5QW Classification: Office Furniture & Equipment **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A8SE (S)	665	-	522092 190547
57	**Contemporary Trade Directory Entries** Name: Scrap Metals Location: Gordon House, 1-6, Station Road, London, NW7 2JU Classification: Scrap Metal Merchants **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17SE (NW)	695	-	521385 191954

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
57	**Contemporary Trade Directory Entries** Name: Dawner Ltd Location: 9, Station Road, London, NW7 2JU Classification: Laundries & Launderettes **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17NE (NW)	741	-	521363 191995
57	**Contemporary Trade Directory Entries** Name: Sterling Engineering Location: 2, The Broadway, London, NW7 3LL Classification: Engineers - General **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17NE (NW)	762	-	521359 192018
57	**Contemporary Trade Directory Entries** Name: Bright & Beautiful Mill Hill Location: 6, The Broadway, London, NW7 3LL Classification: Cleaning Services - Domestic **Status: Active** Positional Accuracy: Automatically positioned to the address	A17NE (NW)	768	-	521363 192028
57	**Contemporary Trade Directory Entries** Name: Snappy Snaps Mill Hill Location: 6, The Broadway, London, NW7 3LL Classification: Photographic Processors **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17NE (NW)	768	-	521363 192028
58	**Contemporary Trade Directory Entries** Name: A & S Appliance Repairs Location: 4, Mostyn Road, Edgware, Middlesex, HA8 0JD Classification: Washing Machines - Servicing & Repairs **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12SW (W)	711	-	521098 191081
59	**Contemporary Trade Directory Entries** Name: Dave Morgan Blinds Ltd Location: The Old Garages, 54, The Broadway, London, NW7 3LH Classification: Blinds, Awnings & Canopies **Status: Active** Positional Accuracy: Automatically positioned to the address	A18NW (NW)	741	-	521509 192078
59	**Contemporary Trade Directory Entries** Name: Splash Printing Ltd Location: 54, The Broadway, London, NW7 3LH Classification: Printers **Status: Active** Positional Accuracy: Automatically positioned to the address	A18NW (NW)	741	-	521509 192078
59	**Contemporary Trade Directory Entries** Name: Phildan Motors Location: 54, The Broadway, London, NW7 3LH Classification: Garage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NW (NW)	741	-	521509 192078
59	**Contemporary Trade Directory Entries** Name: Kwik Film Location: 42a, The Broadway, London, NW7 3LH Classification: Photographic Processors **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17NE (NW)	770	-	521480 192097
60	**Contemporary Trade Directory Entries** Name: Icy Cooling Enterprise Location: 81, Blundell Road, Edgware, Middlesex, HA8 0JA Classification: Refrigerators & Freezers - Servicing & Repairs **Status: Active** Positional Accuracy: Automatically positioned to the address	A12SW (W)	761	-	521066 191031
61	**Contemporary Trade Directory Entries** Name: Proper Clean Location: Flat 49, Dragonfly Court, 3, Heybourne Crescent, London, NW9 5UW Classification: Cleaning Services - Domestic **Status: Active** Positional Accuracy: Automatically positioned to the address	A7NE (SW)	765	-	521280 190686
62	**Contemporary Trade Directory Entries** Name: Norman James Location: 58, The Broadway, London, NW7 3TE Classification: Hardware **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NW (N)	777	-	521523 192122

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
62	**Contemporary Trade Directory Entries** Name: Blue Dragon Dry Cleaners Ltd Location: 62, The Broadway, London, NW7 3TE Classification: Dry Cleaners **Status: Active** Positional Accuracy: Automatically positioned to the address	A18NW (N)	779	-	521533 192129
62	**Contemporary Trade Directory Entries** Name: Firebridge Fireplace Specialists Location: 71, The Broadway, London, NW7 3BU Classification: Fireplaces & Mantelpieces **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17NE (N)	813	-	521508 192155
63	**Contemporary Trade Directory Entries** Name: New Enterprise Pest Control Location: 33, Benningholm Road, Edgware, Middlesex, HA8 9HF Classification: Pest & Vermin Control **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17SW (NW)	783	-	521066 191725
64	**Contemporary Trade Directory Entries** Name: Interior Cleaning Services Location: Flat 7, Galy, Hundred Acre, London, NW9 5FG Classification: Carpet, Curtain & Upholstery Cleaners **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A8SW (S)	787	-	521640 190421
65	**Contemporary Trade Directory Entries** Name: Star Garage Location: Hartley Av, London, NW7 2HX Classification: Mot Testing Centres **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A18NW (N)	789	-	521693 192178
66	**Contemporary Trade Directory Entries** Name: G D K Garages Ltd Location: 1-3, Hale Lane, London, NW7 3NU Classification: Garage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17SE (NW)	794	-	521229 191957
66	**Contemporary Trade Directory Entries** Name: Gdk Garage Ltd Location: 1-3, Hale Lane, London, NW7 3NU Classification: Garage Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A17SE (NW)	794	-	521229 191957
66	**Contemporary Trade Directory Entries** Name: Mill Hill Car Co Location: 1-3, Hale Lane, London, NW7 3NU Classification: Car Dealers **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A17SE (NW)	794	-	521229 191957
66	**Contemporary Trade Directory Entries** Name: Independent Living Co Location: 11, Hale Lane, London, NW7 3NU Classification: Disability Equipment - Manufacturers & Suppliers **Status: Active** Positional Accuracy: Automatically positioned to the address	A17NE (NW)	822	-	521213 191980
67	**Contemporary Trade Directory Entries** Name: Star Filling Station Location: 1-3, Flower Lane, London, NW7 2JA Classification: Petrol Filling Stations **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A18NW (N)	796	-	521635 192175
67	**Contemporary Trade Directory Entries** Name: Cleaning Services Mill Hill Location: 88a, The Broadway, London, NW7 3TB Classification: Cleaning Services - Domestic **Status: Active** Positional Accuracy: Automatically positioned to the address	A18NW (N)	843	-	521619 192220
67	**Contemporary Trade Directory Entries** Name: Cleaning Services Mill Hill Location: 88a, The Broadway, London, NW7 3TB Classification: Commercial Cleaning Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NW (N)	843	-	521619 192220

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
68	**Contemporary Trade Directory Entries** Name: The American Dry Cleaning Co Location: 41, The Broadway, London, NW7 3DA Classification: Dry Cleaners **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17NE (NW)	803	-	521423 192106
68	**Contemporary Trade Directory Entries** Name: Harvey J Location: 63, The Broadway, London, NW7 3DA Classification: Jewellery Manufacturers & Repairers **Status: Inactive** Positional Accuracy: Automatically positioned in the proximity of the address	A17NE (NW)	805	-	521421 192106
69	**Contemporary Trade Directory Entries** Name: Esso Location: 520-522, Watford Way, London, NW7 2PT Classification: Petrol Filling Stations **Status: Active** Positional Accuracy: Automatically positioned to the address	A18NW (N)	805	-	521815 192200
69	**Contemporary Trade Directory Entries** Name: Observatory Service Station Location: 520-522, Watford Way, London, NW7 2PT Classification: Petrol Filling Stations - 24 Hour **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NW (N)	805	-	521815 192200
69	**Contemporary Trade Directory Entries** Name: Bp Location: Photobase House, 518, Watford Way, London, NW7 2PT Classification: Petrol Filling Stations - 24 Hour **Status: Active** Positional Accuracy: Automatically positioned to the address	A18NW (N)	805	-	521815 192200
70	**Contemporary Trade Directory Entries** Name: Crownguard Ltd Location: A, 15, The Broadway, London, NW7 3LN Classification: Pest & Vermin Control Products **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17NE (NW)	805	-	521342 192059
70	**Contemporary Trade Directory Entries** Name: Aaa Abbey Royal Pest Control Location: A, 15, The Broadway, London, NW7 3LN Classification: Pest & Vermin Control **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17NE (NW)	805	-	521342 192059
71	**Contemporary Trade Directory Entries** Name: J Haas Location: 8, Featherstone Road, London, NW7 2BN Classification: Optical Goods - Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14NE (E)	807	-	522684 191595
72	**Contemporary Trade Directory Entries** Name: Themed Garages Location: 24, Langley Park, London, NW7 2AA Classification: Classic Car Specialists **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17SE (NW)	817	-	521178 191940
73	**Contemporary Trade Directory Entries** Name: Portia Craft Location: 555-557, Watford Way, London, NW7 4RT Classification: Car Dealers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NW (N)	823	-	521734 192217
73	**Contemporary Trade Directory Entries** Name: Bullitt Cars Location: 565-571, Watford Way, LONDON, NW7 4RT Classification: Car Dealers - Used **Status: Active** Positional Accuracy: Automatically positioned to the address	A18NW (N)	843	-	521714 192235
74	**Contemporary Trade Directory Entries** Name: Tzefira Location: 87, The Broadway, London, NW7 3TG Classification: Jewellery Manufacturers & Repairers **Status: Active** Positional Accuracy: Automatically positioned to the address	A18NW (N)	824	-	521544 192179

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
75	**Contemporary Trade Directory Entries** Name: Mount Hygiene Location: 33-35, Daws Lane, London, NW7 4SD Classification: Cleaning Materials & Equipment **Status: Active** Positional Accuracy: Automatically positioned to the address	A18NE (N)	861	-	521848 192255
75	**Contemporary Trade Directory Entries** Name: Ad Lib Print & Design Location: 23, Daws Lane, London, NW7 4SD Classification: Printers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NW (N)	866	-	521813 192261
75	**Contemporary Trade Directory Entries** Name: Le Car Centre Ltd Location: 17-19, Daws Lane, London, NW7 4SD Classification: Car Dealers **Status: Active** Positional Accuracy: Automatically positioned to the address	A18NW (N)	892	-	521810 192288
76	**Contemporary Trade Directory Entries** Name: Axis Dry Cleaning Location: 109, The Broadway, London, NW7 3TG Classification: Dry Cleaners **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NW (N)	861	-	521578 192228
76	**Contemporary Trade Directory Entries** Name: Xpert Carpets Location: 51, Goodwyn Avenue, London, NW7 3RJ Classification: Carpet, Curtain & Upholstery Cleaners **Status: Active** Positional Accuracy: Automatically positioned to the address	A18NW (N)	898	-	521558 192261
77	**Contemporary Trade Directory Entries** Name: Mill Hill Motors Ltd Location: 51-53, Daws Lane, London, NW7 4SD Classification: Garage Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A18NE (N)	871	-	521904 192260
78	**Contemporary Trade Directory Entries** Name: Grahame Park Carpet Cleaners Location: 23, Lanacre Avenue, London, NW9 5FN Classification: Carpet, Curtain & Upholstery Cleaners **Status: Active** Positional Accuracy: Automatically positioned to the address	A7SE (SW)	872	-	521270 190540
79	**Contemporary Trade Directory Entries** Name: Mr Benjamin Applethorn Ltd Location: 9, Barford Close, London, NW4 4XG Classification: Computer Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A9SE (SE)	887	-	522521 190548
80	**Contemporary Trade Directory Entries** Name: J J Chauffeuring Services Uk Ltd Location: Laynes House, 526-528 Watford Way, London, NW7 4RS Classification: Car Engine Tuning & Diagnostic Services **Status: Active** Positional Accuracy: Manually positioned within the geographical locality	A18NW (N)	897	-	521745 192291
80	**Contemporary Trade Directory Entries** Name: L & P Building Services Ltd Location: Laynes House, 526-528, Watford Way, London, NW7 4RS Classification: Asphalt & Coated Macadam Laying Contractors **Status: Active** Positional Accuracy: Manually positioned to the address or location	A18NW (N)	897	-	521745 192291
80	**Contemporary Trade Directory Entries** Name: Airwoolf Air Conditioning Services Ltd Location: Laynes House, 526-528, Watford Way, London, NW7 4RS Classification: Air Conditioning & Refrigeration Contractors **Status: Active** Positional Accuracy: Automatically positioned to the address	A18NW (N)	897	-	521745 192291
80	**Contemporary Trade Directory Entries** Name: A Maid In Heaven Location: Laynes House, 526-528, Watford Way, London, NW7 4RS Classification: Cleaning Services - Domestic **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A18NW (N)	902	-	521738 192296

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
81	**Contemporary Trade Directory Entries** Name: Perfect Link Solutions (Uk) Location: 15, Grange Road, Edgware, Middlesex, HA8 0PR Classification: Freight Forwarders **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12NW (W)	904	-	520874 191557
82	**Contemporary Trade Directory Entries** Name: Cleaners Mill Hill Location: 1, Hammers Lane, London, NW7 4BY Classification: Commercial Cleaning Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NE (N)	912	-	522166 192240
83	**Contemporary Trade Directory Entries** Name: S & S Home Supplies Location: 16-18, Hale Lane, London, NW7 3NX Classification: Wallpapers & Wall Coverings **Status: Active** Positional Accuracy: Automatically positioned to the address	A17NE (NW)	913	-	521180 192073
84	**Contemporary Trade Directory Entries** Name: G I Stewart Services Location: 427, Watford Way, London, NW4 4TR Classification: Laundry & Dry Cleaning Supplies **Status: Active** Positional Accuracy: Automatically positioned to the address	A9SW (SE)	915	-	522416 190436
85	**Contemporary Trade Directory Entries** Name: Green Star Location: 45, Wise Lane, London, NW7 2RN Classification: Engineers - General **Status: Active** Positional Accuracy: Automatically positioned to the address	A19SE (NE)	932	-	522768 191724
86	**Contemporary Trade Directory Entries** Name: Crystalline Dry Cleaners Location: 129 The Broadway, London, NW7 4RN Classification: Dry Cleaners **Status: Active** Positional Accuracy: Manually positioned within the geographical locality	A23SW (N)	958	-	521572 192327
87	**Contemporary Trade Directory Entries** Name: Greenway Pest Control Services Location: 2, Beech Walk, London, NW7 3PH Classification: Pest & Vermin Control **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17NW (NW)	977	-	521022 192005
88	**Contemporary Trade Directory Entries** Name: Lexus Top Distribution Ltd Location: 2, Winterstoke Gardens, London, NW7 2RA Classification: Distribution Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A19NW (N)	985	-	522225 192295
89	**Contemporary Trade Directory Entries** Name: Fairview Blinds Location: 32, Marion Road, London, NW7 4AN Classification: Blinds, Awnings & Canopies **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A23SE (N)	1000	-	522132 192344
90	**Fuel Station Entries** Name: Watford Way Sf Connect Location: Service Station, Pentavia Retail Park, Watford Way, London, NW7 2ET Brand: BP Premises Type: Petrol Station **Status: Open** Positional Accuracy: Manually positioned to the address or location	A13SE (SE)	81	-	521942 191123
91	**Fuel Station Entries** Name: Featherstone Garage Location: 77 Bunns Lane, Mill Hill, LONDON, NW7 2DX Brand: Obsolete Premises Type: Not Applicable **Status: Obsolete** Positional Accuracy: Automatically positioned to the address	A13NE (E)	171	-	522097 191298

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
92	**Fuel Station Entries** Name: Star Garage Location: 1-3, Flower Lane, London, NW7 2JA Brand: Pace Premises Type: Not Applicable **Status: Obsolete** Positional Accuracy: Manually positioned to the address or location	A18NW (N)	796	-	521635 192175
93	**Fuel Station Entries** Name: Observatory Service Station Location: 520-522, Watford Way, London, NW7 2PT Brand: ESSO Premises Type: Petrol Station **Status: Open** Positional Accuracy: Automatically positioned to the address	A18NW (N)	805	-	521815 192200

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
94	**Areas of Adopted Green Belt** Authority: London Borough of Barnet Plan Name: London Borough Of Barnet Unitary Development Plan **Status: Adopted** Plan Date: 31st May 2006	A13NW (N)	116	6	521805 191512
95	**Areas of Adopted Green Belt** Authority: London Borough of Barnet Plan Name: London Borough Of Barnet Unitary Development Plan **Status: Adopted** Plan Date: 31st May 2006	A14NW (E)	497	6	522430 191422

Agency & Hydrological	Version	Update Cycle
Contaminated Land Register Entries and Notices		
London Borough of Barnet - Environmental Health Department	January 2015	Annual Rolling Update
London Borough of Haringey - Planning and Environmental Health	October 2014	Annual Rolling Update
London Borough of Harrow - Environmental Health Services	October 2014	Annual Rolling Update
Hertsmere Borough Council - Environmental Health Department	September 2014	Annual Rolling Update
London Borough of Brent - Environmental Health Department	September 2014	Annual Rolling Update
London Borough of Enfield - Environmental Services	September 2014	Annual Rolling Update
Discharge Consents		
Environment Agency - Thames Region	January 2015	Quarterly
Enforcement and Prohibition Notices		
Environment Agency - Thames Region	March 2013	As notified
Integrated Pollution Controls		
Environment Agency - Thames Region	October 2008	Not Applicable
Integrated Pollution Prevention And Control		
Environment Agency - Thames Region	January 2015	Quarterly
Local Authority Integrated Pollution Prevention And Control		
London Borough of Barnet - Environmental Health Department	April 2013	Annual Rolling Update
London Borough of Harrow - Environmental Health Services	December 2014	Annual Rolling Update
London Borough of Brent - Environmental Health Department	January 2013	Annual Rolling Update
Hertsmere Borough Council - Environmental Health Department	January 2015	Annual Rolling Update
London Borough of Enfield - Environmental Health Department	January 2015	Annual Rolling Update
London Borough of Haringey - Planning and Environmental Health	June 2014	Annual Rolling Update
Local Authority Pollution Prevention and Controls		
London Borough of Barnet - Environmental Health Department	December 2014	Annual Rolling Update
London Borough of Harrow - Environmental Health Services	December 2014	Annual Rolling Update
London Borough of Brent - Environmental Health Department	January 2013	Annual Rolling Update
Hertsmere Borough Council - Environmental Health Department	January 2015	Annual Rolling Update
London Borough of Enfield - Environmental Health Department	January 2015	Annual Rolling Update
London Borough of Haringey - Planning and Environmental Health	June 2014	Annual Rolling Update
Local Authority Pollution Prevention and Control Enforcements		
London Borough of Barnet - Environmental Health Department	December 2014	Annual Rolling Update
London Borough of Harrow - Environmental Health Services	December 2014	Annual Rolling Update
London Borough of Brent - Environmental Health Department	January 2013	Annual Rolling Update
Hertsmere Borough Council - Environmental Health Department	January 2015	Annual Rolling Update
London Borough of Enfield - Environmental Health Department	January 2015	Annual Rolling Update
London Borough of Haringey - Planning and Environmental Health	June 2014	Annual Rolling Update
Nearest Surface Water Feature		
Ordnance Survey	July 2012	Quarterly
Pollution Incidents to Controlled Waters		
Environment Agency - Thames Region	September 1999	Not Applicable
Prosecutions Relating to Authorised Processes		
Environment Agency - Thames Region	March 2013	As notified
Prosecutions Relating to Controlled Waters		
Environment Agency - Thames Region	March 2013	As notified
Registered Radioactive Substances		
Environment Agency - Thames Region	January 2015	Quarterly
River Quality		
Environment Agency - Head Office	November 2001	Not Applicable
River Quality Biology Sampling Points		
Environment Agency - Head Office	July 2012	Annually
River Quality Chemistry Sampling Points		
Environment Agency - Head Office	July 2012	Annually

Agency & Hydrological	Version	Update Cycle
Substantiated Pollution Incident Register Environment Agency - Thames Region - North East Area	January 2015	Quarterly
Water Abstractions Environment Agency - Thames Region	October 2014	Quarterly
Water Industry Act Referrals Environment Agency - Thames Region	January 2015	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	October 2012	As notified
Superficial Aquifer Designations British Geological Survey - National Geoscience Information Service	January 2015	As notified
Source Protection Zones Environment Agency - Head Office	January 2015	Quarterly
Extreme Flooding from Rivers or Sea without Defences Environment Agency - Head Office	October 2014	Quarterly
Flooding from Rivers or Sea without Defences Environment Agency - Head Office	October 2014	Quarterly
Areas Benefiting from Flood Defences Environment Agency - Head Office	October 2014	Quarterly
Flood Water Storage Areas Environment Agency - Head Office	October 2014	Quarterly
Flood Defences Environment Agency - Head Office	October 2014	Quarterly
Detailed River Network Lines Environment Agency - Head Office	March 2012	Annually
Detailed River Network Offline Drainage Environment Agency - Head Office	March 2012	Annually

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	February 2015	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	August 2014	Quarterly
Licensed Waste Management Facilities (Locations)		
Environment Agency - Thames Region - North East Area	November 2014	Quarterly
Local Authority Landfill Coverage		
Hertfordshire County Council - County Development Unit	May 2000	Not Applicable
Hertsmere Borough Council - Environmental Health Department	May 2000	Not Applicable
London Borough of Barnet	May 2000	Not Applicable
London Borough of Brent - Environmental Health Department	May 2000	Not Applicable
London Borough of Enfield - Environmental Health Department	May 2000	Not Applicable
London Borough of Haringey - Planning Department	May 2000	Not Applicable
London Borough of Harrow - Environmental Health Services	May 2000	Not Applicable
Local Authority Recorded Landfill Sites		
London Borough of Enfield - Environmental Health Department	February 2003	Not Applicable
Hertfordshire County Council - County Development Unit	May 2000	Not Applicable
Hertsmere Borough Council - Environmental Health Department	May 2000	Not Applicable
London Borough of Barnet	May 2000	Not Applicable
London Borough of Brent - Environmental Health Department	May 2000	Not Applicable
London Borough of Haringey - Planning Department	May 2000	Not Applicable
London Borough of Harrow - Environmental Health Services	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	January 2015	Bi-Annually
Explosive Sites		
Health and Safety Executive	October 2014	Bi-Annually
Notification of Installations Handling Hazardous Substances (NIHHS)		
Health and Safety Executive	November 2000	Not Applicable
Planning Hazardous Substance Enforcements		
Hertsmere Borough Council - Planning Department	February 2015	Annual Rolling Update
London Borough of Brent	November 2013	Annual Rolling Update
London Borough of Haringey	November 2014	Annual Rolling Update
Hertfordshire County Council - County Development Unit	October 2014	Annual Rolling Update
London Borough of Barnet	October 2014	Annual Rolling Update
London Borough of Harrow	September 2013	Annual Rolling Update
London Borough of Enfield - Planning Department	September 2014	Annual Rolling Update
Planning Hazardous Substance Consents		
Hertsmere Borough Council - Planning Department	February 2015	Annual Rolling Update
London Borough of Brent	November 2013	Annual Rolling Update
London Borough of Haringey	November 2014	Annual Rolling Update
Hertfordshire County Council - County Development Unit	October 2014	Annual Rolling Update
London Borough of Barnet	October 2014	Annual Rolling Update
London Borough of Harrow	September 2013	Annual Rolling Update
London Borough of Enfield - Planning Department	September 2014	Annual Rolling Update

Geological	Version	Update Cycle
BGS 1:625,000 Solid Geology British Geological Survey - National Geoscience Information Service	August 1996	Not Applicable
BGS Estimated Soil Chemistry British Geological Survey - National Geoscience Information Service	January 2010	Annually
BGS Recorded Mineral Sites British Geological Survey - National Geoscience Information Service	October 2014	Bi-Annually
BGS Urban Soil Chemistry British Geological Survey - National Geoscience Information Service	June 2011	Annually
BGS Urban Soil Chemistry Averages British Geological Survey - National Geoscience Information Service	June 2011	Annually
Brine Compensation Area Cheshire Brine Subsidence Compensation Board	August 2011	Not Applicable
Coal Mining Affected Areas The Coal Authority - Mining Report Service	December 2013	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	July 2014	Not Applicable
Potential for Collapsible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2014	Annually
Potential for Compressible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2014	Annually
Potential for Ground Dissolution Stability Hazards British Geological Survey - National Geoscience Information Service	June 2014	Annually
Potential for Landslide Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2014	Annually
Potential for Running Sand Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2014	Annually
Potential for Shrinking or Swelling Clay Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2014	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	November 2014	Quarterly
Fuel Station Entries Catalist Ltd - Experian	November 2014	Quarterly

Sensitive Land Use	Version	Update Cycle
Areas of Adopted Green Belt		
Hertsmere Borough Council - Planning Department	February 2015	As notified
London Borough of Barnet	February 2015	As notified
London Borough of Enfield	February 2015	As notified
London Borough of Haringey	February 2015	As notified
London Borough of Harrow	February 2015	As notified
Areas of Unadopted Green Belt		
Hertsmere Borough Council - Planning Department	February 2015	As notified
London Borough of Barnet	February 2015	As notified
London Borough of Enfield	February 2015	As notified
London Borough of Haringey	February 2015	As notified
London Borough of Harrow	February 2015	As notified
Areas of Outstanding Natural Beauty		
Natural England	February 2015	Bi-Annually
Environmentally Sensitive Areas		
Natural England	August 2014	Annually
Forest Parks		
Forestry Commission	April 1997	Not Applicable
Local Nature Reserves		
Natural England	October 2014	Bi-Annually
Marine Nature Reserves		
Natural England	July 2013	Bi-Annually
National Nature Reserves		
Natural England	September 2014	Bi-Annually
National Parks		
Natural England	February 2015	Bi-Annually
Nitrate Sensitive Areas		
Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	February 2012	Not Applicable
Nitrate Vulnerable Zones		
Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	July 2014	Annually
Ramsar Sites		
Natural England	March 2014	Bi-Annually
Sites of Special Scientific Interest		
Natural England	September 2014	Bi-Annually
Special Areas of Conservation		
Natural England	March 2014	Bi-Annually
Special Protection Areas		
Natural England	September 2014	Bi-Annually

Data Suppliers

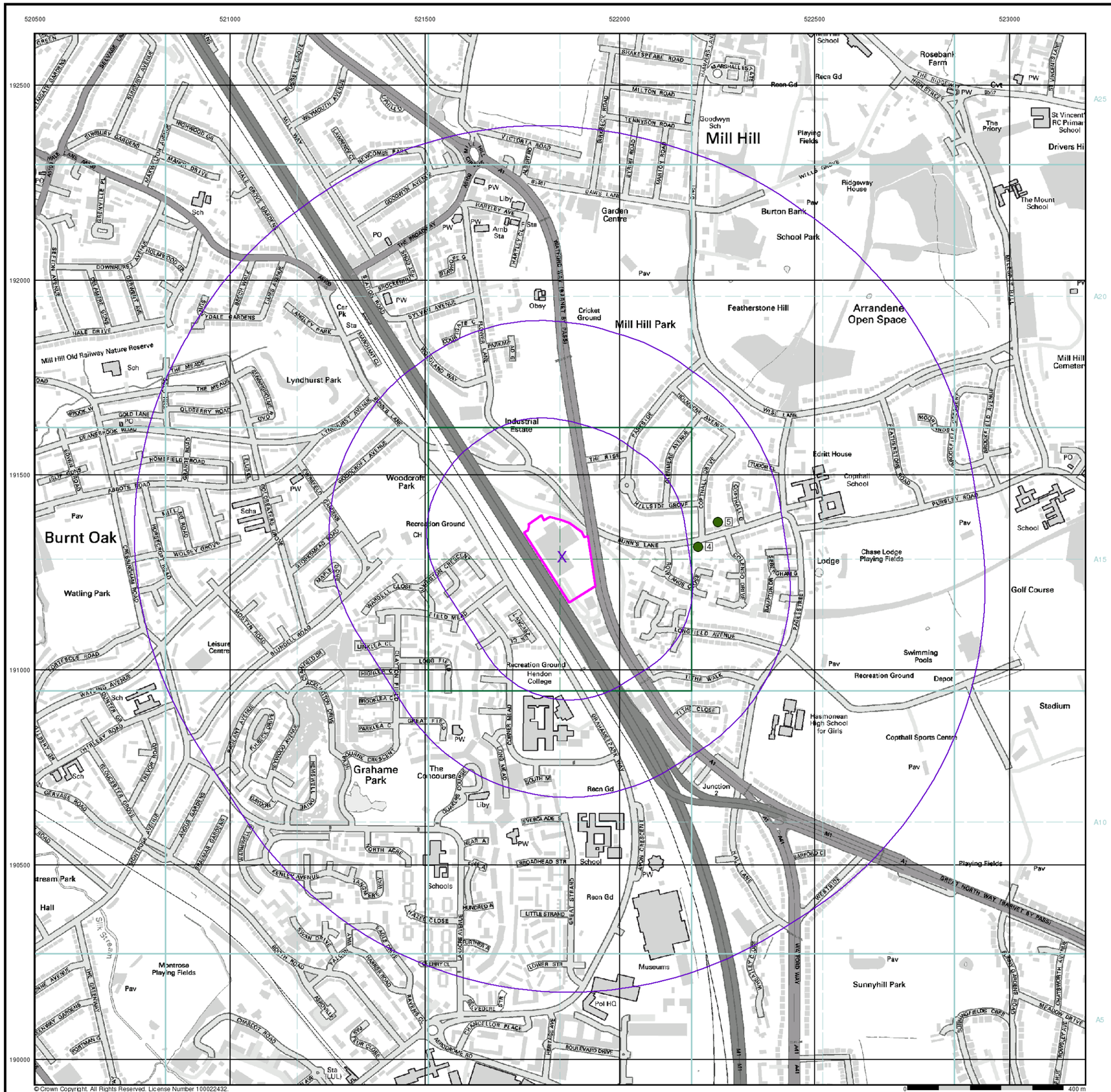
A selection of organisations who provide data within this report

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
Natural Resources Wales	Cyfoeth Naturiol Cymru Natural Resources Wales
Scottish Natural Heritage	SCOTTISH NATURAL HERITAGE
Natural England	NATURAL ENGLAND
Public Health England	Public Health England
Ove Arup	ARUP
Peter Brett Associates	pba peterbrett

Useful Contacts

Contact	Name and Address	Contact Details
2	**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
3	**London Borough of Barnet - Environmental Health Department** Building 4, North London Business Park, Oakleigh Road South, London, N11 1NP	Telephone: 020 8359 2000 Fax: 020 8359 4999 Website: www.barnet.gov.uk
4	**Environment Agency - National Customer Contact Centre (NCCC)** PO Box 544, Templeborough, Rotherham, S60 1BY	Telephone: 08708 506 506 Email: enquiries@environment-agency.gov.uk
5	**London Borough of Barnet - Land Charges** The Town Hall, The Burroughs, Hendon, LONDON, NW4 4BQ	Telephone: 0208 3592482 Fax: 0208 3592493 Website: www.barnet.gov.uk
6	**London Borough of Barnet** Barnet House, 1255 High Road, Whetstone, London, N20 0EJ	Telephone: 020 8359 4000 Fax: 020 8359 4616 Website: www.barnet.gov.uk
-	**Public Health England - Radon Survey, Centre for Radiation, Chemical and Environmental Hazards** Chilton, Didcot, Oxfordshire, OX11 0RQ	Telephone: 01235 822622 Fax: 01235 833891 Email: radon@phe.gov.uk Website: www.ukradon.org
-	**Landmark Information Group Limited** Imperium, Imperial Way, Reading, Berkshire, RG2 0TD	Telephone: 0844 844 9952 Fax: 0844 844 9951 Email: customerservices@landmarkinfo.co.uk Website: www.landmarkinfo.co.uk

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



Historical Land Use Information (1:10,000)

General

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

Several of Type at Location

Potentially Contaminative Industrial Uses (Past Land Uses - Mining)

	Point	Line	Polygon
Air Shafts	◆		
Disturbed Ground	◆		
General Quarrying	◆		
Heap, unknown constituents	◆		
Mineral Railway	◆		
Mining and Quarrying General	◆		
Mining of Coal & Lignite	◆		
Quarrying of Sand and Clay, Operation of Sand and Gravel Pits	◆		

Historical Land Use

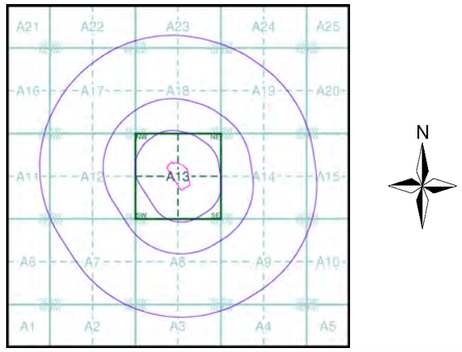
	Point	Line	Polygon
Potentially Infilled Land (Non-Water)	●		
Potentially Infilled Land (Water)	●		
Former Marsh	✠		

Mining Data

Potential Mining Area

BGS Recorded Mineral Site

Mining and Ground Stability - Slice A



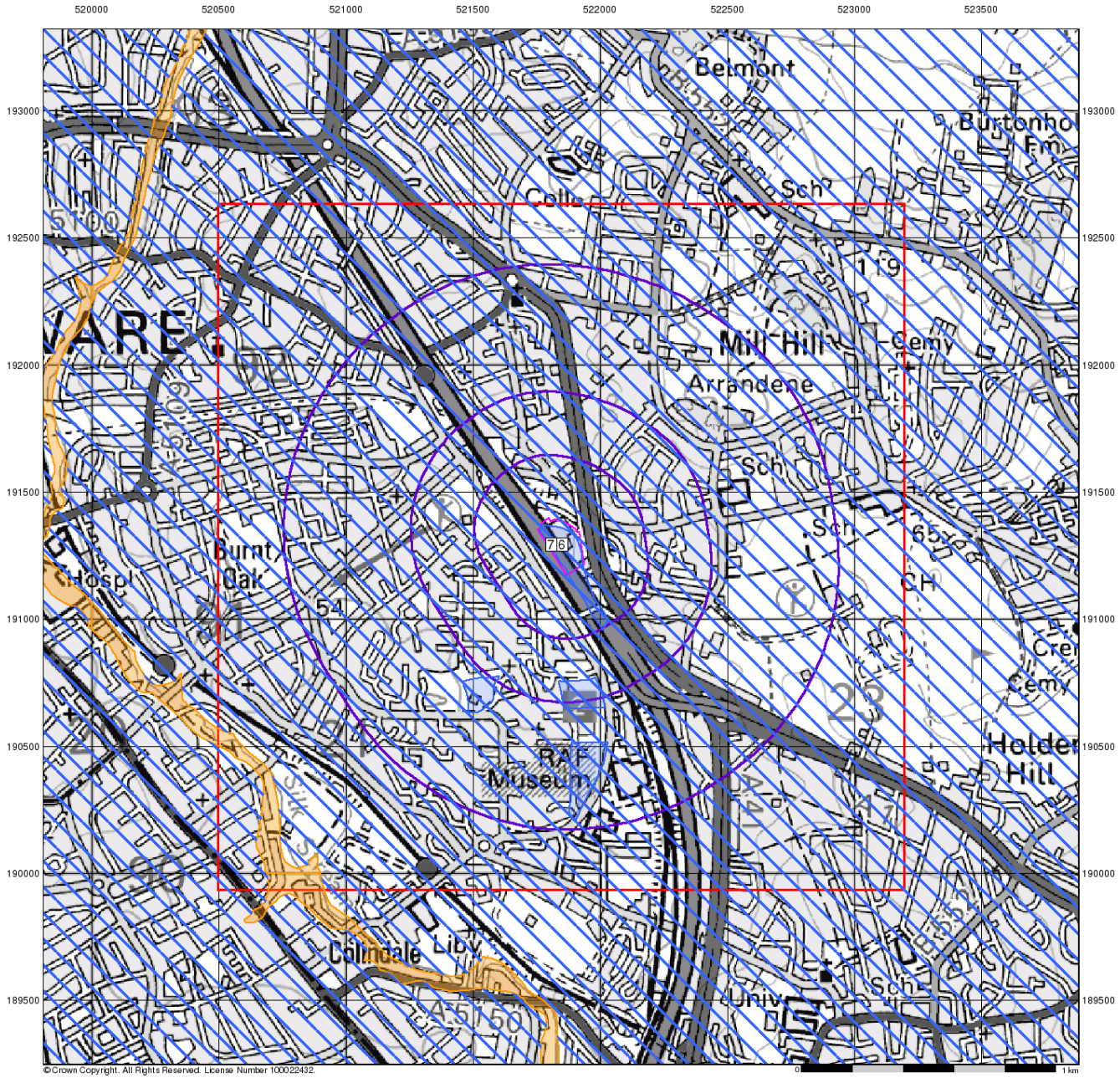
Order Details

Order Number:	64920000_1_1
Customer Ref:	15.02.014
National Grid Reference:	521850, 191290
Slice:	A
Site Area (Ha):	2.35
Search Buffer (m):	1000

Site Details

Homebase Ltd, Pentavia Retail Park, Watford Way, LONDON, NW7 2ET

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



Envirocheck® Mining

Ground Stability Data (1:50,000)

General

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

Potential for Compressible Ground Stability Hazards

High | Low | Moderate | Very Low

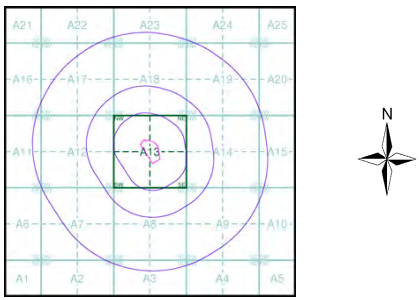
Potential for Collapsible Ground Stability Hazards

High | Low | Moderate | Very Low

Brine Pumping and Salt Mining

	Point	Polygon
Brine Pumping Related Feature	▲	▨
Salt Mining Related Feature	▲	▨

Mining and Ground Stability - Slice A



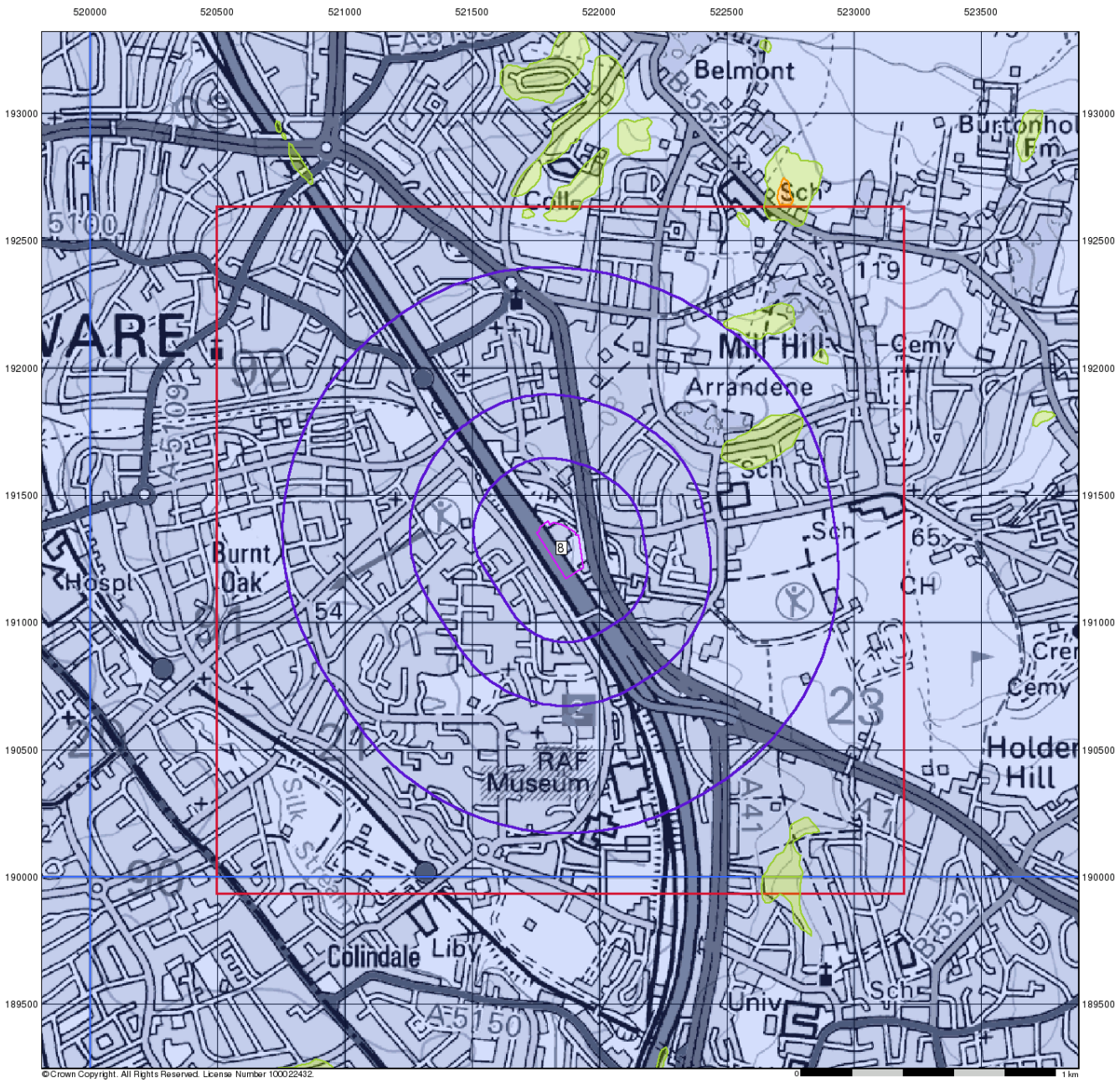
Order Details

Order Number:	64920000_1_1
Customer Ref:	15.02.014
National Grid Reference:	521850, 191290
Slice:	A
Site Area (Ha):	2.35
Search Buffer (m):	1000

Site Details

Homebase Ltd, Pentavia Retail Park, Watford Way, LONDON, NW7 2ET

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



Envirocheck® Mining

Ground Stability Data (1:50,000)

General

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

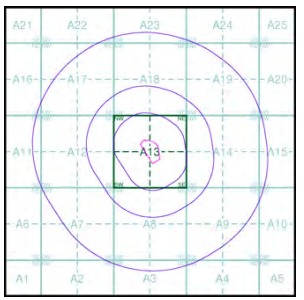
Potential for Landslide Ground Stability Hazards

High | Low | Moderate | Very Low

Potential for Ground Dissolution Stability Hazards

High | Low | Moderate | Very Low

Mining and Ground Stability - Slice A

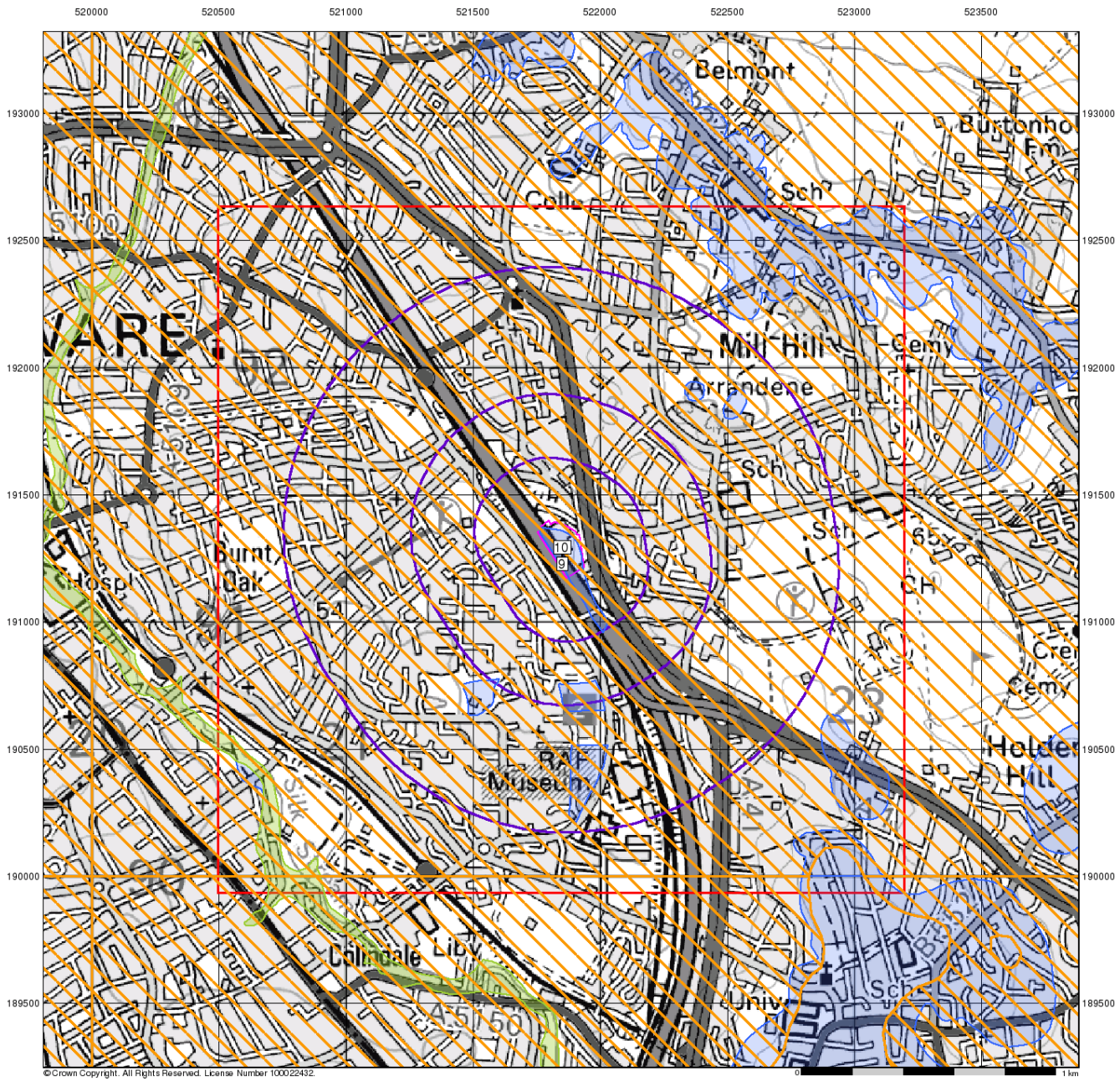


Order Details

Order Number:	64920000_1_1
Customer Ref:	15.02.014
National Grid Reference:	521850, 191290
Slice:	A
Site Area (Ha):	2.35
Search Buffer (m):	1000

Site Details

Homebase Ltd, Pentavia Retail Park, Watford Way, LONDON, NW7 2ET



Envirocheck® Mining

Ground Stability Data (1:50,000)

General

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

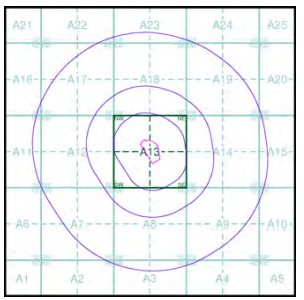
Potential for Running Sand Ground Stability Hazards

High | Low
Moderate | Very Low

Potential for Shrinking or Swelling Clay Ground Stability Hazards

High | Low
Moderate | Very Low

Mining and Ground Stability - Slice A



Order Details

Order Number:	64920000_1_1
Customer Ref:	15.02.014
National Grid Reference:	521850, 191290
Slice:	A
Site Area (Ha):	2.35
Search Buffer (m):	1000

Site Details

Homebase Ltd, Pentavia Retail Park, Watford Way, LONDON, NW7 2ET

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

Envirocheck® Report:

Mining and Ground Stability Datasheet

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64920000_1_1

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Site Details:

Homebase Ltd, Pentavia Retail Park
Watford Way
LONDON
NW7 2ET

Client Details:

Mr L Chippington
Listers Geotechnical Consultants Ltd
Slapton Hill Barn
Blakesley Road
Slapton
Towcester
Northants
NN12 8QD

Contents

Contents

Report Version v49.0

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Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m
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BGS Recorded Mineral Sites					
Coal Mining Affected Areas			n/a	n/a	n/a
Man Made Mining Cavities					
Mining Instability			n/a	n/a	n/a
Natural Cavities					
Non Coal Mining Areas of Great Britain				n/a	n/a
Potential Mining Areas					
Historical Land Use Information (1:2,500)					
Extractive Industries or Potential Excavations from 1855-1909 (100m)				n/a	n/a
Extractive Industries or Potential Excavations from 1893-1915 (100m)				n/a	n/a
Extractive Industries or Potential Excavations from 1906-1937 (100m)				n/a	n/a
Extractive Industries or Potential Excavations from 1924-1949 (100m)				n/a	n/a
Extractive Industries or Potential Excavations from 1950-1980 (100m)	pg 1		3	n/a	n/a
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Mining & quarrying general					
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Potentially Infilled Land (Non-Water)					
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Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m
Ground Stability Data (1:50,000)					
Brine Compensation Area			n/a	n/a	n/a
Brine Pumping Related Features					
Brine Subsidence Solution Area					
Potential for Collapsible Ground Stability Hazards	pg 3	Yes		n/a	n/a
Potential for Compressible Ground Stability Hazards	pg 3	Yes		n/a	n/a
Potential for Ground Dissolution Stability Hazards	pg 3	Yes		n/a	n/a
Potential for Landslide Ground Stability Hazards	pg 3	Yes		n/a	n/a
Potential for Running Sand Ground Stability Hazards	pg 3	Yes		n/a	n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards	pg 3	Yes		n/a	n/a
Salt Mining Related Features					
Subsidence Insurance Claims	pg 3		2	n/a	n/a
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Motion Map Data (1:2,500)					
Motion Map (100m)	pg 5	18	5	n/a	n/a

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Historical Land Use Information (1:2,500)

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
1	**Extractive Industries or Potential Excavations from 1950-1980** Use: Railway Embankment First Map Published Date: 1962 Last Map Published Date: 1962	A13SW (SW)	34	-	521778 191250
2	**Extractive Industries or Potential Excavations from 1950-1980** Use: Railway Embankment First Map Published Date: 1956 Last Map Published Date: 1962	A13SW (S)	44	-	521820 191171
3	**Extractive Industries or Potential Excavations from 1950-1980** Use: Railway Cutting First Map Published Date: 1962 Last Map Published Date: 1962	A13NW (N)	90	-	521775 191483

Historical Land Use Information (1:10,000)

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
4	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1897	A14NW (E)	276	-	522201 191317
5	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1897	A14NW (E)	335	-	522251 191380

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Brine Compensation Area The site does not fall within the brine compensation area.				
	Brine Subsidence Solution Area The site does not fall within the brine subsidence solution area.				
6	**Potential for Collapsible Ground Stability Hazards** Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (SE)	0	1	521852 191291
7	**Potential for Compressible Ground Stability Hazards** Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (SE)	0	1	521852 191291
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	0	1	521816 191269
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (SE)	0	1	521852 191291
8	**Potential for Landslide Ground Stability Hazards** Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (SE)	0	1	521852 191291
9	**Potential for Running Sand Ground Stability Hazards** Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (SE)	0	1	521852 191291
	Potential for Running Sand Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	0	1	521816 191269
10	**Potential for Shrinking or Swelling Clay Ground Stability Hazards** Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13NE (SE)	0	1	521852 191291
	Subsidence Investigations Site Investigation Date: 8th January 2007 Root Survey: Yes CCTV Drain Survey: No Depth of Foundation Footing: 1.35 Soil Classification: Clay of Very High Plasticity			-	
	Subsidence Investigations Site Investigation Date: 5th January 2007 Root Survey: Yes CCTV Drain Survey: No Depth of Foundation Footing: 1.55 Soil Classification: Clay of Very High Plasticity			-	
	Subsidence Investigations Site Investigation Date: 27th June 2002 Root Survey: Yes CCTV Drain Survey: No Depth of Foundation Footing: Not Supplied Soil Classification: Not Supplied			-	
	Subsidence Investigations Site Investigation Date: 9th January 2014 Root Survey: Yes CCTV Drain Survey: No Depth of Foundation Footing: 0.80 Soil Classification: Clay of Very High Plasticity			-	
	Subsidence Insurance Claims Case Date: 11th October 2004 Movement Trend Indication: No significant movement (< 0.50mm) Damage Classification: Not Supplied			-	

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Subsidence Insurance Claims Case Date: 2nd April 2007 Movement Trend Indication: No significant movement (< 0.50mm) Damage Classification: Category 2 - up to 5mm			-	

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
11	**Motion Map** Average Velocity Gradient (mmyear): -0.6	A13SE (SE)	0	-	521873 191278
11	**Motion Map** Average Velocity Gradient (mmyear): -0.5	A13SE (SE)	0	-	521871 191274
12	**Motion Map** Average Velocity Gradient (mmyear): -3.6	A13SE (S)	0	-	521856 191245
13	**Motion Map** Average Velocity Gradient (mmyear): -2.9	A13SE (S)	0	-	521847 191238
14	**Motion Map** Average Velocity Gradient (mmyear): -1.2	A13NE (N)	0	-	521860 191313
15	**Motion Map** Average Velocity Gradient (mmyear): -0.3	A13NE (NE)	0	-	521888 191327
15	**Motion Map** Average Velocity Gradient (mmyear): -0.1	A13NE (NE)	0	-	521887 191328
15	**Motion Map** Average Velocity Gradient (mmyear): 0.0	A13NE (NE)	0	-	521891 191331
15	**Motion Map** Average Velocity Gradient (mmyear): 0.1	A13NE (NE)	0	-	521889 191331
16	**Motion Map** Average Velocity Gradient (mmyear): -2.9	A13NW (N)	0	-	521838 191378
17	**Motion Map** Average Velocity Gradient (mmyear): -2.3	A13NW (NW)	0	-	521781 191324
18	**Motion Map** Average Velocity Gradient (mmyear): -1.3	A13NE (N)	0	-	521847 191307
19	**Motion Map** Average Velocity Gradient (mmyear): 0.5	A13NW (NW)	0	-	521807 191364
20	**Motion Map** Average Velocity Gradient (mmyear): -1.3	A13NE (E)	0	-	521867 191291
20	**Motion Map** Average Velocity Gradient (mmyear): -1.3	A13NE (E)	0	-	521863 191292
20	**Motion Map** Average Velocity Gradient (mmyear): -1.0	A13NE (E)	0	-	521864 191296
21	**Motion Map** Average Velocity Gradient (mmyear): -1.6	A13NE (E)	0	-	521861 191288
22	**Motion Map** Average Velocity Gradient (mmyear): -1.0	A13NW (NW)	0	-	521830 191302
23	**Motion Map** Average Velocity Gradient (mmyear): -2.2	A13SE (SE)	24	-	521920 191176
24	**Motion Map** Average Velocity Gradient (mmyear): -1.2	A13SE (SE)	37	-	521923 191163

Motion Map Data (1:2,500)

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
25	**Motion Map** Average Velocity Gradient (mmyear): -0.9	A13SW (SW)	41	-	521796 191212
26	**Motion Map** Average Velocity Gradient (mmyear): -2.5	A13SE (SE)	81	-	521927 191114
27	**Motion Map** Average Velocity Gradient (mmyear): -1.3	A13NW (NW)	100	-	521682 191425

The following mapping has been analysed for Historical Land Use Information (1:2,500):

1:2,500	Mapsheet	Published Date
Ordnance Survey Plan	TQ2290	1962
Ordnance Survey Plan	TQ2291	1962

The following mapping has been analysed for Historical Land Use Information (1:10,000):

1:10,560	Mapsheet	Published Date
Middlesex	006_00	1873
Middlesex	011_00	1873
Hertfordshire	045_00	1873
London	002_NE	1896
Middlesex	011_NE	1896
Middlesex	006_SE	1897
Middlesex	006_SW	1897
Middlesex	011_NW	1897
Hertfordshire	045_SE	1897
Hertfordshire	045_SW	1897
Middlesex	011_NE	1916
Middlesex	006_SW	1919
Hertfordshire	045_SW	1919
London	001_00	1920
Middlesex	006_SE	1920
Hertfordshire	045_SE	1920
Middlesex	011_NE	1935
Middlesex	011_NW	1935
Middlesex	006_SE	1938
Middlesex	006_SW	1938
Hertfordshire	045_SE	1938
Hertfordshire	045_SW	1938
Ordnance Survey Plan	TQ28NW	1951
Ordnance Survey Plan	TQ29SW	1951
1:10,000	**Mapsheet**	**Published Date**
Ordnance Survey Plan	TQ29SW	1976
Ordnance Survey Plan	TQ28NW	1993

Data Currency

Mining and Cavities Data	Version	Update Cycle
BGS Recorded Mineral Sites British Geological Survey - National Geoscience Information Service	October 2014	Bi-Annually
Coal Mining Affected Areas The Coal Authority - Mining Report Service	December 2013	As notified
Man Made Mining Cavities Peter Brett Associates	August 2014	Bi-Annually
Mining Instability Ove Arup & Partners	October 2000	Not Applicable
Natural Cavities Peter Brett Associates	August 2014	Bi-Annually
Non Coal Mining Areas of Great Britain British Geological Survey - National Geoscience Information Service	July 2014	Not Applicable
Historical Land Use Information (1:2,500)	**Version**	**Update Cycle**
Subterranean Features Landmark Information Group Limited	February 2015	Bi-Annually
Ground Stability Data (1:50,000)	**Version**	**Update Cycle**
Brine Compensation Area Cheshire Brine Subsidence Compensation Board	August 2011	Not Applicable
Potential for Collapsible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2014	Annually
Potential for Compressible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2014	Annually
Potential for Ground Dissolution Stability Hazards British Geological Survey - National Geoscience Information Service	June 2014	Annually
Potential for Landslide Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2014	Annually
Potential for Running Sand Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2014	Annually
Potential for Shrinking or Swelling Clay Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2014	Annually
Subsidence Insurance Claims SP Property Services	February 2015	Quarterly
Subsidence Investigations CET Structures Ltd	February 2015	Quarterly

Motion Map Data (1:2,500)	Version	Update Cycle
Motion Map		
Nigel Press Associates - Hampshire	February 2011	As notified
Nigel Press Associates - Cambridge	January 2011	As notified
Nigel Press Associates - Ipswich	January 2011	As notified
Nigel Press Associates - Norwich	January 2011	As notified
Nigel Press Associates - Peterborough	January 2011	As notified
Nigel Press Associates - Barnstaple	July 2010	As notified
Nigel Press Associates - Derbyshire	July 2010	As notified
Nigel Press Associates - Humberside	July 2010	As notified
Nigel Press Associates - Kent	July 2010	As notified
Nigel Press Associates - Lincolnshire	July 2010	As notified
Nigel Press Associates - Nottinghamshire	July 2010	As notified
Nigel Press Associates - Birmingham	May 2009	As notified
Nigel Press Associates - Bournemouth	May 2009	As notified
Nigel Press Associates - Brighton	May 2009	As notified
Nigel Press Associates - Bristol	May 2009	As notified
Nigel Press Associates - Cardiff	May 2009	As notified
Nigel Press Associates - Central London	May 2009	As notified
Nigel Press Associates - Cheltenahm	May 2009	As notified
Nigel Press Associates - Coventry	May 2009	As notified
Nigel Press Associates - Crawley	May 2009	As notified
Nigel Press Associates - Edinburgh	May 2009	As notified
Nigel Press Associates - Exeter	May 2009	As notified
Nigel Press Associates - Glasgow	May 2009	As notified
Nigel Press Associates - Isle of Wight	May 2009	As notified
Nigel Press Associates - Leeds	May 2009	As notified
Nigel Press Associates - Leicester	May 2009	As notified
Nigel Press Associates - Liverpool	May 2009	As notified
Nigel Press Associates - Manchester	May 2009	As notified
Nigel Press Associates - Milton Keynes	May 2009	As notified
Nigel Press Associates - Newcastle	May 2009	As notified
Nigel Press Associates - Northwich	May 2009	As notified
Nigel Press Associates - Nottingham	May 2009	As notified
Nigel Press Associates - Oxford	May 2009	As notified
Nigel Press Associates - Plymouth	May 2009	As notified
Nigel Press Associates - Portsmouth	May 2009	As notified
Nigel Press Associates - Preston	May 2009	As notified
Nigel Press Associates - Reading	May 2009	As notified
Nigel Press Associates - Sheffield	May 2009	As notified
Nigel Press Associates - Stoke	May 2009	As notified
Nigel Press Associates - Swindon	May 2009	As notified
Nigel Press Associates - Tonbridge	May 2009	As notified
Nigel Press Associates - North London	November 2008	As notified
Nigel Press Associates - Head Office	September 2008	As notified

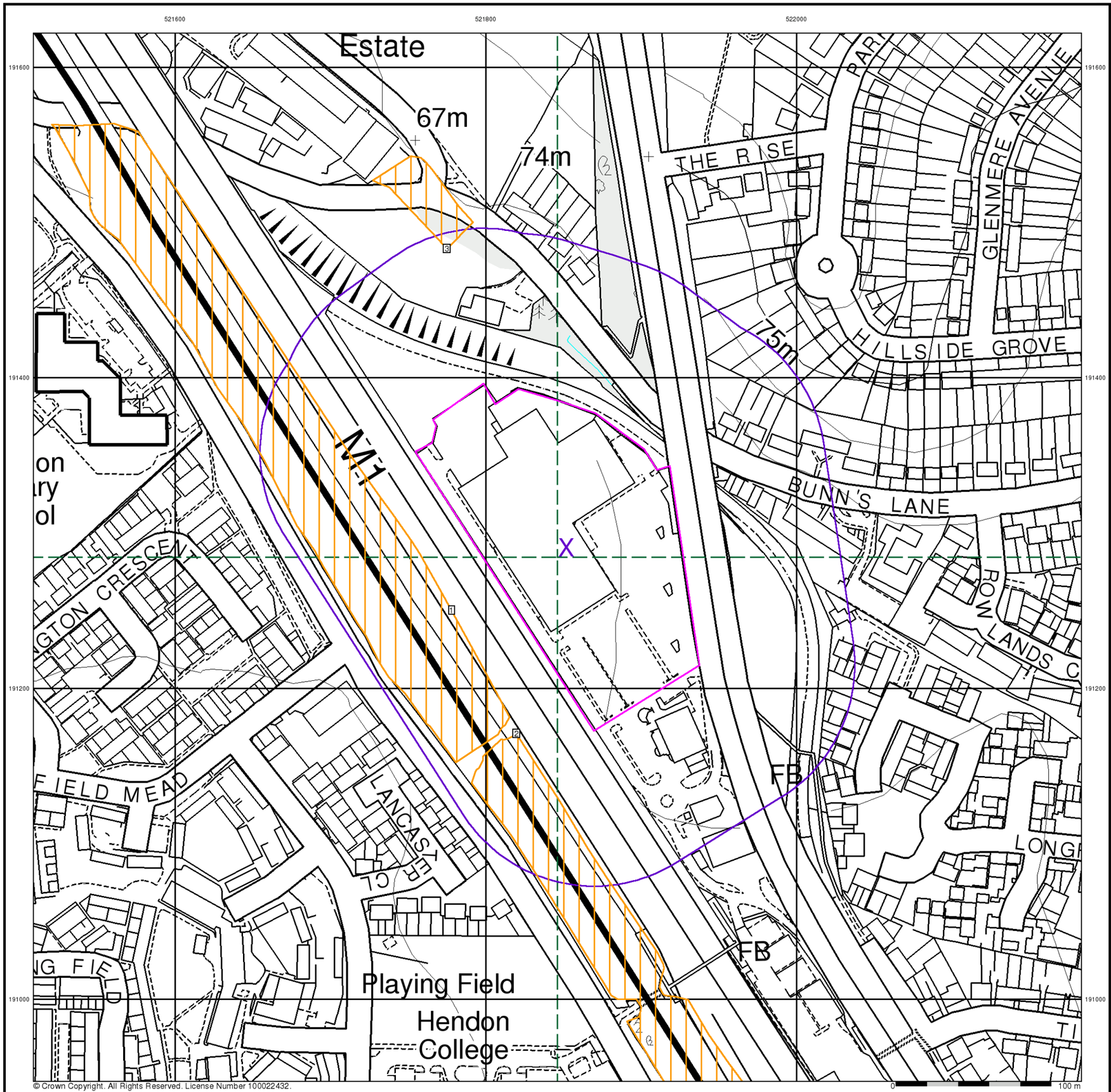
Data Suppliers

A selection of organisations who provide data within this report

Data Supplier	Data Supplier Logo
Ordnance Survey	
British Geological Survey	
The Coal Authority	
Ove Arup	
Peter Brett Associates	
Wardell Armstrong	
Johnson Poole & Bloomer	

Useful Contacts

Contact	Name and Address	Contact Details
1	**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
-	**Landmark Information Group Limited** Imperium, Imperial Way, Reading, Berkshire, RG2 0TD	Telephone: 0844 844 9952 Fax: 0844 844 9951 Email: customerservices@landmarkinfo.co.uk Website: www.landmarkinfo.co.uk



Envirocheck® Mining

Historical Land Use Information (1:2,500)

General

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

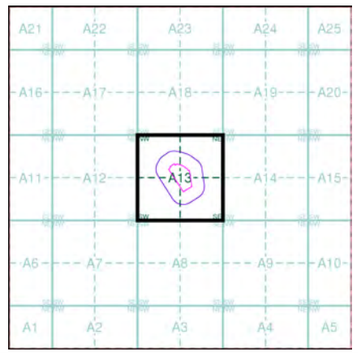
Potentially Contaminative Industrial Uses (Extractive Industries Activity)

	Point	Line	Polygon
Extractive Industries Activity from 1855 - 1909	▲	—	▭
Extractive Industries Activity from 1893 - 1915	▲	—	▨
Extractive Industries Activity from 1906 - 1937	▲	—	▭
Extractive Industries Activity from 1924 - 1949	▲	—	▨
Extractive Industries Activity from 1950 - 1980	▲	—	▥

Subterranean Features

	Point	Line	Polygon
Subterranean Features	▼	- - -	▭

Mining and Ground Stability - Segment A13



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

Envirocheck® Mining

Motion Map Data (1:2,500)

General

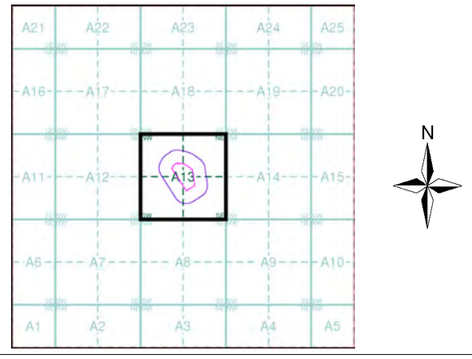
Specified Site | Specified Buffer(s) | Bearing Reference Point | Map ID

Several of Type at Location

Average Velocity Gradient

- Upward Movement > 3.5mm per year
- Upward Movement 1.5mm to 3.5mm per year
- Stable 1.5mm to -1.5mm per year
- Downward Movement -1.5mm to -3.5mm per year
- Downward Movement > -3.5mm per year

Mining and Ground Stability - Segment A13



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Geology 1:50,000 Maps Legends

Artificial Ground and Landslip

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	MGR	Made Ground (Undivided)	Artificial Deposit	Holocene - Holocene
	WGR	Worked Ground (Undivided)	Void	Holocene - Holocene
	SLIP	Landslide Deposit	Unknown/Unclassified Entry	Quaternary - Quaternary

Superficial Geology

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	ALV	Alluvium	Clay, Silt, Sand and Gravel	Flandrian - Flandrian
	DHGR	Dollis Hill Gravel Member	Sand and Gravel	Anglian - Cromerian
	STGR	Stanmore Gravel Formation	Sand and Gravel	Pleistocene - Pleistocene
	RTDU	River Terrace Deposits (Undifferentiated)	Sand and Gravel	Quaternary - Quaternary

Bedrock and Faults

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	LC	London Clay Formation	Clay, Silt and Sand	Eocene - Eocene
	CLGB	Claygate Member	Clay, Silt and Sand	Eocene - Eocene

Envirocheck® Geology

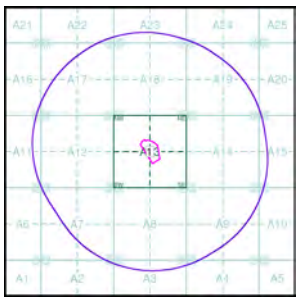
Geology 1:50,000 Maps

This report contains geological map extracts taken from the BGS Digital Geological map of Great Britain at 1:50,000 scale and is designed for users carrying out preliminary site assessments who require geological maps for the area around the site. This mapping may be more up to date than previously published paper maps.
The various geological layers - artificial and landslip deposits, superficial geology and solid (bedrock) geology are displayed in separate maps, but superimposed on the final 'Combined Surface Geology' map. All map legends feature on this page. Not all layers have complete nationwide coverage, so availability of data for relevant map sheets is indicated below.

Geology 1:50,000 Maps Coverage

Map ID:	**1**
Map Sheet No:	**256**
Map Name:	**North London**
Map Date:	**2006**
Bedrock Geology:	**Available**
Superficial Geology:	**Available**
Artificial Geology:	**Available**
Faults:	**Not Supplied**
Landslip:	**Available**
Rock Segments:	**Not Supplied**

Geology 1:50,000 Maps - Slice A



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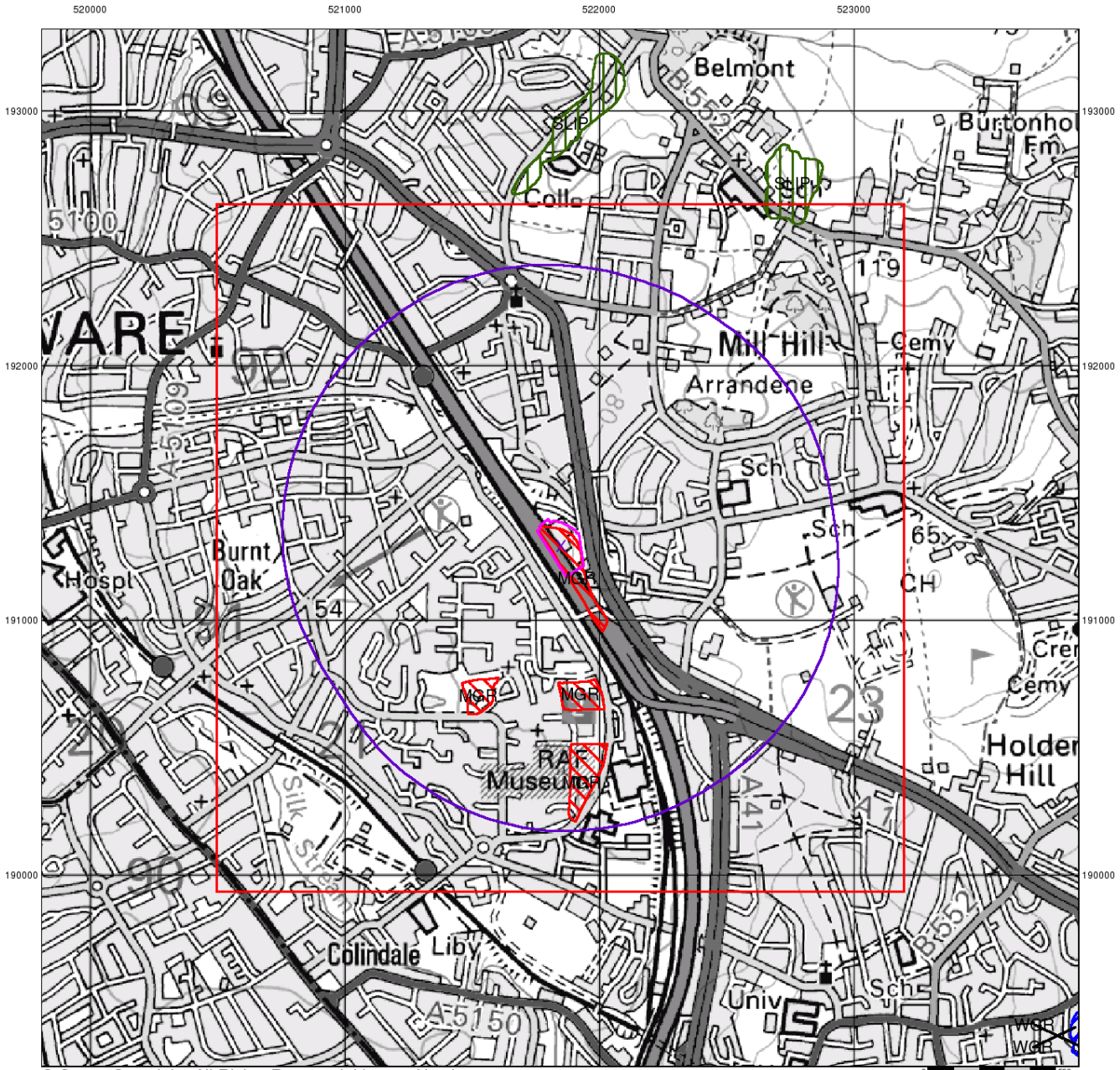


Envirocheck® Geology

Artificial Ground and Landslip

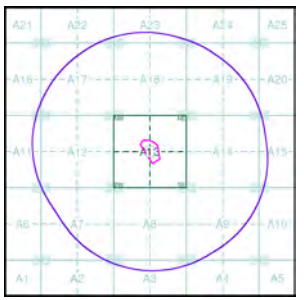
Artificial ground is a term used by BGS for those areas where the ground surface has been significantly modified by human activity. Information about previously developed ground is especially important, as it is often associated with potentially contaminated material, unpredictable engineering conditions and unstable ground.

Artificial ground includes:

- Made ground - man-made deposits such as embankments and spoil heaps on the natural ground surface.
- Worked ground - areas where the ground has been cut away such as quarries and road cuttings.
- Infilled ground - areas where the ground has been cut away then wholly or partially backfilled.
- Landscaped ground - areas where the surface has been reshaped.
- Disturbed ground - areas of ill-defined shallow or near surface mineral workings where it is impracticable to map made and worked ground separately.

Mass movement (landslip) deposits on BGS geological maps are primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground. The dataset also includes foundered strata, where the ground has collapsed due to subsidence.

Artificial Ground and Landslip Map - Slice A



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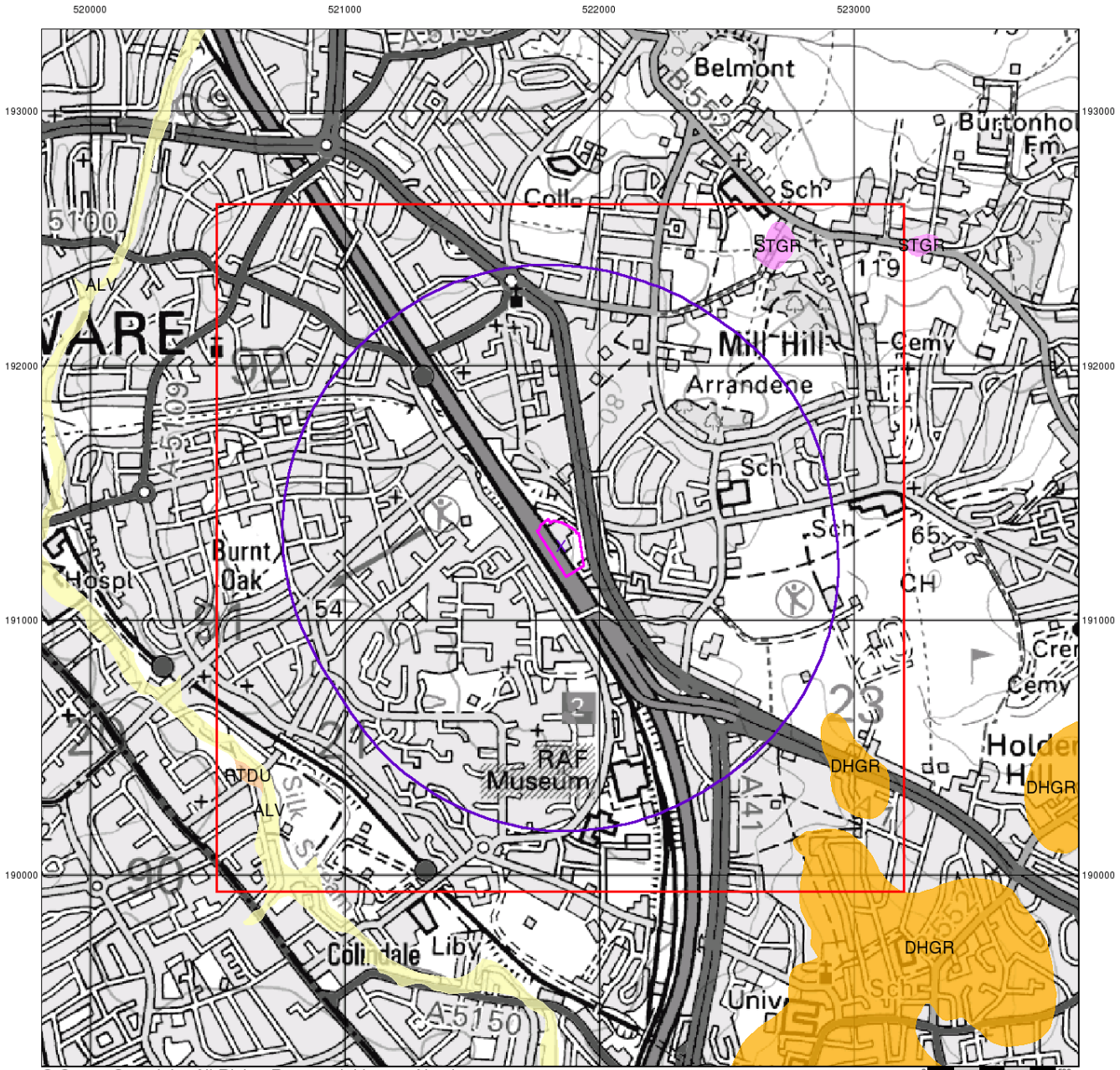


Envirocheck® Geology

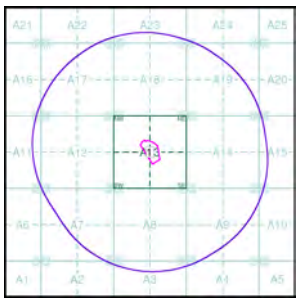
Superficial Geology

Superficial Deposits are the youngest geological deposits formed during the most recent period of geological time, the Quaternary, which extends back about 1.8 million years from the present.

They rest on older deposits or rocks referred to as Bedrock. This dataset contains Superficial deposits that are of natural origin and 'in place'. Other superficial strata may be held in the Mass Movement dataset where they have been moved, or in the Artificial Ground dataset where they are of man-made origin.

Most of these Superficial deposits are unconsolidated sediments such as gravel, sand, silt and clay, and onshore they form relatively thin, often discontinuous patches or larger spreads.

Superficial Geology Map - Slice A



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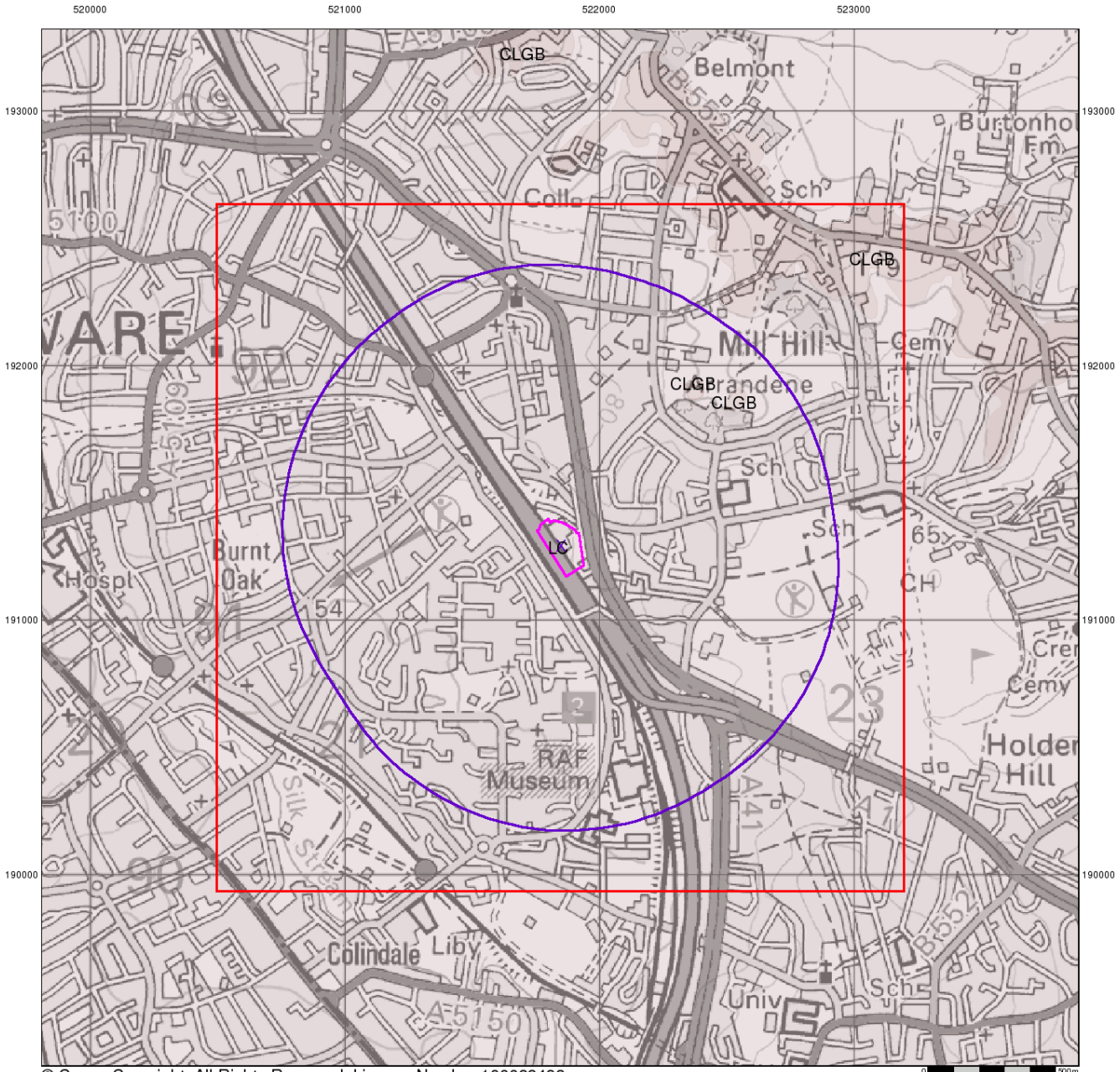
National Grid Reference:	521850, 191290
Slice:	A
Site Area (Ha):	2.35
Search Buffer (m):	1000

Site Details:

Homebase Ltd, Pentavia Retail Park, Watford Way, LONDON, NW7 2ET

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



Envirocheck® Geology

Bedrock and Faults

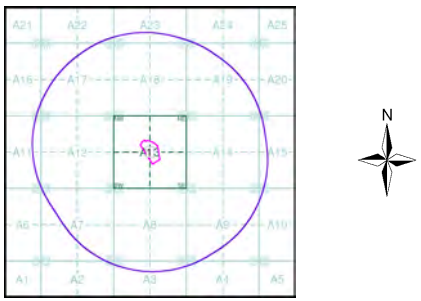
Bedrock geology is a term used for the main mass of rocks forming the Earth and are present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

The bedrock has formed over vast lengths of geological time ranging from ancient and highly altered rocks of the Proterozoic, some 2500 million years ago, or older, up to the relatively young Pliocene, 1.8 million years ago.

The bedrock geology includes many lithologies, often classified into three types based on origin: igneous, metamorphic and sedimentary.

The BGS Faults and Rock Segments dataset includes geological faults (e.g. normal, thrust), and thin beds mapped as lines (e.g. coal seam, gypsum bed). Some of these are linked to other particular 1:50,000 Geology datasets, for example, coal seams are part of the bedrock sequence, most faults and mineral veins primarily affect the bedrock but cut across the strata and post date its deposition.

Bedrock and Faults Map - Slice A



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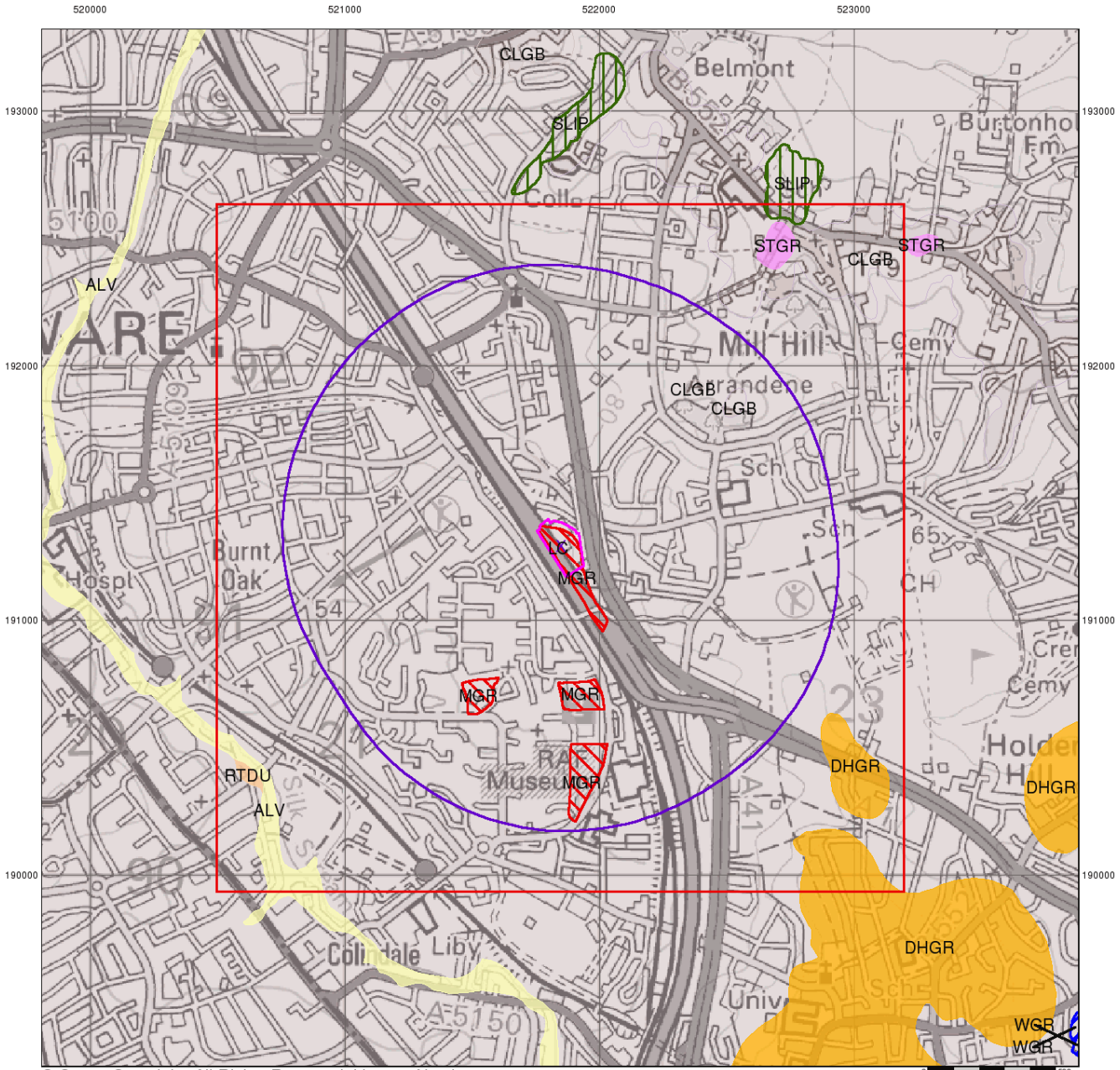


Envirocheck® Geology

Combined Surface Geology

The Combined Surface Geology map combines all the previous maps into one combined geological overview of your site.

Please consult the legends to the previous maps to interpret the Combined "Surface Geology" map.

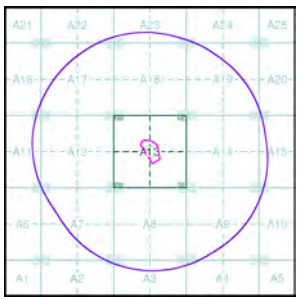
Additional Information

More information on 1:50,000 Geological mapping and explanations of rock classifications can be found on the BGS website. Using the LEX Codes in this report, further descriptions of rock types can be obtained by interrogating the 'BGS Lexicon of Named Rock Units'. This database can be accessed by following the 'Information and Data' link on the BGS website.

Contact

British Geological Survey
Kingsley Dunham Centre
Keyworth
Nottingham
NG12 5GG
Telephone: 0115 936 3143
Fax: 0115 936 3276
email: enquiries@bgs.ac.uk
website: www.bgs.ac.uk

Combined Geology Map - Slice A



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Slice:	A
Site Area (Ha):	2.35
Search Buffer (m):	1000

Site Details:

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Historical Mapping Legends

Ordnance Survey County Series 1:10,560

Gravel Pit
Sand Pit
Other Pits
Quarry
Shingle
Orchard
Osiers
Reeds
Marsh
Mixed Wood
Deciduous
Brushwood
Fir
Furze
Rough Pasture
Arrow denotes flow of water
Trigonometrical Station
Site of Antiquities
Bench Mark
Pump, Guide Post, Signal Post
Well, Spring, Boundary Post
·285 Surface Level
Sketched Contour
Instrumental Contour
Main Roads
Fenced
Un-Fenced
Minor Roads
Fenced
Un-Fenced
Sunken Road
Raised Road
Road over Railway
Railway over River
Railway over Road
Level Crossing
Road over River or Canal
Road over Stream
Road over Stream
County Boundary (Geographical)
County & Civil Parish Boundary
Administrative County & Civil Parish Boundary
Co. Boro. Bdy. County Borough Boundary (England)
Co. Burgh Bdy. County Burgh Boundary (Scotland)
R.D. Bdy. Rural District Boundary
Civil Parish Boundary

Ordnance Survey Plan 1:10,000

Chalk Pit, Clay Pit or Quarry
Gravel Pit
Sand Pit
Disused Pit or Quarry
Refuse or Slag Heap
Lake, Loch or Pond
Dunes
Boulders
Coniferous Trees
Non-Coniferous Trees
Orchard
Scrub
Coppice
Bracken
Heath
Rough Grassland
Marsh
Reeds
Saltings
Building
Direction of Flow of Water
Shingle
Sand
Glasshouse
Pylon
Electricity Transmission Line
Pole
Sloping Masonry
Cutting
Embankment
Standard Gauge Multiple Track
Road Under
Road Over
Level Crossing
Foot Bridge
Standard Gauge Single Track
Siding, Tramway or Mineral Line
Narrow Gauge
Geographical County
Administrative County, County Borough or County of City
Municipal Borough, Urban or Rural District, Burgh or District Council
Borough, Burgh or County Constituency
Shown only when not coincident with other boundaries
Civil Parish
Shown alternately when coincidence of boundaries occurs

BP, BS	Boundary Post or Stone	Pol Sta	Police Station
Ch	Church	PO	Post Office
CH	Club House	PC	Public Convenience
F E Sta	Fire Engine Station	PH	Public House
FB	Foot Bridge	SB	Signal Box
Fn	Fountain	Spr	Spring
GP	Guide Post	TCB	Telephone Call Box
MP	Mile Post	TCP	Telephone Call Post
MS	Mile Stone	W	Well

1:10,000 Raster Mapping

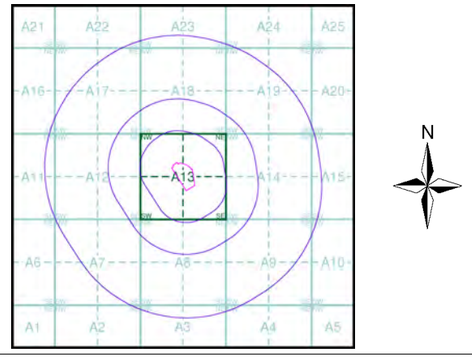
Gravel Pit
Refuse tip or slag heap
Rock
Rock (scattered)
Boulders
Boulders (scattered)
Shingle
Mud
Sand
Sand Pit
Slopes
Top of cliff
General detail
Underground detail
Overhead detail
Narrow gauge railway
Multi-track railway
Single track railway
County boundary (England only)
Civil, parish or community boundary
District, Unitary, Metropolitan, London Borough boundary
Constituency boundary
Area of wooded vegetation
Non-coniferous trees
Non-coniferous trees (scattered)
Coniferous trees
Coniferous trees (scattered)
Positioned tree
Orchard
Coppice or Osiers
Rough Grassland
Heath
Scrub
Marsh, Salt Marsh or Reeds
Water feature
Flow arrows
MHW(S) Mean high water (springs)
MLW(S) Mean low water (springs)
Telephone line (where shown)
Electricity transmission line (with poles)
BM 123.45 m Bench mark (where shown)
Triangulation station
Point feature (e.g. Guide Post or Mile Stone)
Pylon, flare stack or lighting tower
Site of (antiquity)
Glasshouse
General Building
Important Building

Envirocheck®

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Middlesex	1:10,560	1868 - 1873	3
London	1:10,560	1896	4
Middlesex	1:10,560	1897	5
Hertfordshire	1:10,560	1919 - 1920	6
London	1:10,560	1920	7
Middlesex	1:10,560	1936	8
Middlesex	1:10,560	1938 - 1939	9
Hertfordshire	1:10,560	1938	10
Historical Aerial Photography	1:10,560	1948 - 1950	11
Historical Aerial Photography	1:10,560	1948	12
Ordnance Survey Plan	1:10,000	1951	13
Ordnance Survey Plan	1:10,000	1968	14
Ordnance Survey Plan	1:10,000	1976 - 1978	15
London	1:25,000	1985	16
Ordnance Survey Plan	1:10,000	1993	17
10K Raster Mapping	1:10,000	2006	18
VectorMap Local	1:10,000	2014	19

Historical Map - Slice A



Order Details

Order Number: 64920000_1_1
Customer Ref: 15.02.014
National Grid Reference: 521850, 191290
Slice: A
Site Area (Ha): 2.35
Search Buffer (m): 1000

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Russian Military Mapping Legends

1:5,000 and 1:10,000 mapping

a. Not drawn to scale b. Drawn to scale

- Government and Administrative Buildings
- Military and Industrial Buildings
- Military and Communication Areas
- Subway Entrance
- Fireproof Building
- Prominent Fireproof Building
- Non-fireproof Building
- Non-fireproof Building (non-dwelling)
- Factory, mill, and flour mill, with chimneys
- Factory, mill, and flour mill, without chimneys
- Power Station, drawn to scale
- Hydroelectric Power Station
- Radio Station, drawn to scale
- Telephone Station, drawn to scale
- Abandoned Open-pit Mine or Quarry
- Open-pit Salt Mine
- Pit
- Oil Deposit or Well
- Oil Seepage
- Tailings Pile
- Fuel Storage Tanks
- Natural Gas Tank
- Bench Mark
- Drill Hole
- Burial Mound
- Triangulation Point on Burial Mound
- Single-track Railroad
- Double-track Railroad and Station Building
- Coniferous Forest
- Deciduous Forest
- Mixed Forest
- Lawns
- Citrus Orchard
- Wet Ground
- Scattered Vegetation

243,8 Values for prominent elevations

186.0 Numbers for spot elevations, depth soundings, contour lines, etc.

0,2 Velocity of the current, width of river bed, depth of river

Fractional terms: length and capacity of bridges; depth of fords and condition of the river bottom; height of forest and the diameter of trees

Russian Alphabet (For reference and phonetic interpretation of map text)

А а (A)	З з (Z)	П п (P)	Ч ч (CH)
Б б (B)	И и (I)	Р р (R)	Ш ш (SH)
В в (V)	Й й (Y)	С с (S)	Щ щ (SHCH)
Г г (G)	К к (K)	Т т (T)	ъ (–)
Д д (D)	Л л (L)	У у (U)	ы (Y)
Е е (E)	М м (M)	Ф ф (F)	ь (')
Ё ё (YO)	Н н (N)	Х х (KH)	Э э (E)
Ж ж (ZH)	О о (O)	Ц ц (TS)	Ю ю (YU or IU)
			Я я (YA or IA)

1:25,000 mapping

a. Not drawn to scale b. Drawn to scale

- Government and Administrative Buildings
- Military and Industrial Buildings
- Military and Communication Areas
- Subway Entrance
- Partly Demolished Buildings
- Demolished Buildings
- Built-Up Area with Fireproof Buildings Predominant
- Built-Up Area with Non-Fireproof Buildings Predominant
- Individual Fireproof Building
- Prominent Industrial Building
- Individual Dwelling, Fireproof
- Ruins of an Individual Dwelling
- Factory or Mill Chimney
- Factory or Mill with Chimney
- Factory or Mill without Chimney
- Mine or Open Pit Mine
- Operating Shaft or Mine
- Non-Operating Shaft or Mine
- Salt Mine
- Tailings Pile
- Pit
- Stone Quarry
- Gas Pump or Service Station
- Fuel Storage or Natural Gas Tank
- Oil or Natural Gas Derrick
- Small Hydroelectric Power Station
- Power Station
- Transformer Station
- Cemetery
- Burial Mound (height in metres)
- Triangulation Point on Burial Mound
- Triangulation Point
- Bench Mark
- Bench Mark (monumented)
- Telegraph Office
- Telephone Station
- Radio Station
- Radio Tower
- Airfield or Seaplane Base
- Landing Strip
- Main Highway
- Highway under Construction
- Improved Dirt Road (former truck road)
- Double-track Railroad with First Class Station
- Dismantled Railroad
- Railroad Under Construction
- Shore Embankment
- River or Ditch with Embankment
- Direction and velocity of current
- Well
- Water Reservoir or Rain Water Pit
- Spring
- Isobath with value
- Heavy (Index) Contour Line
- Contour Line and Value
- Half Contour Line
- Spot Elevation Value
- Coniferous
- Deciduous
- Mixed
- Scrub

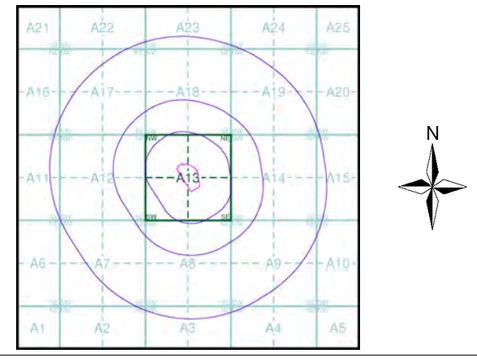
Key to Numbers on Mapping

Envirocheck®

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Middlesex	1:10,560	1868 - 1873	3
London	1:10,560	1896	4
Middlesex	1:10,560	1897	5
Hertfordshire	1:10,560	1919 - 1920	6
London	1:10,560	1920	7
Middlesex	1:10,560	1936	8
Middlesex	1:10,560	1938 - 1939	9
Hertfordshire	1:10,560	1938	10
Historical Aerial Photography	1:10,560	1948 - 1950	11
Historical Aerial Photography	1:10,560	1948	12
Ordnance Survey Plan	1:10,000	1951	13
Ordnance Survey Plan	1:10,000	1968	14
Ordnance Survey Plan	1:10,000	1976 - 1978	15
London	1:25,000	1985	16
Ordnance Survey Plan	1:10,000	1993	17
10K Raster Mapping	1:10,000	2006	18
VectorMap Local	1:10,000	2014	19

Russian Map - Slice A



Order Details

Order Number:	64920000_1_1
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National Grid Reference:	521850, 191290
Slice:	A
Site Area (Ha):	2.35
Search Buffer (m):	1000

Site Details

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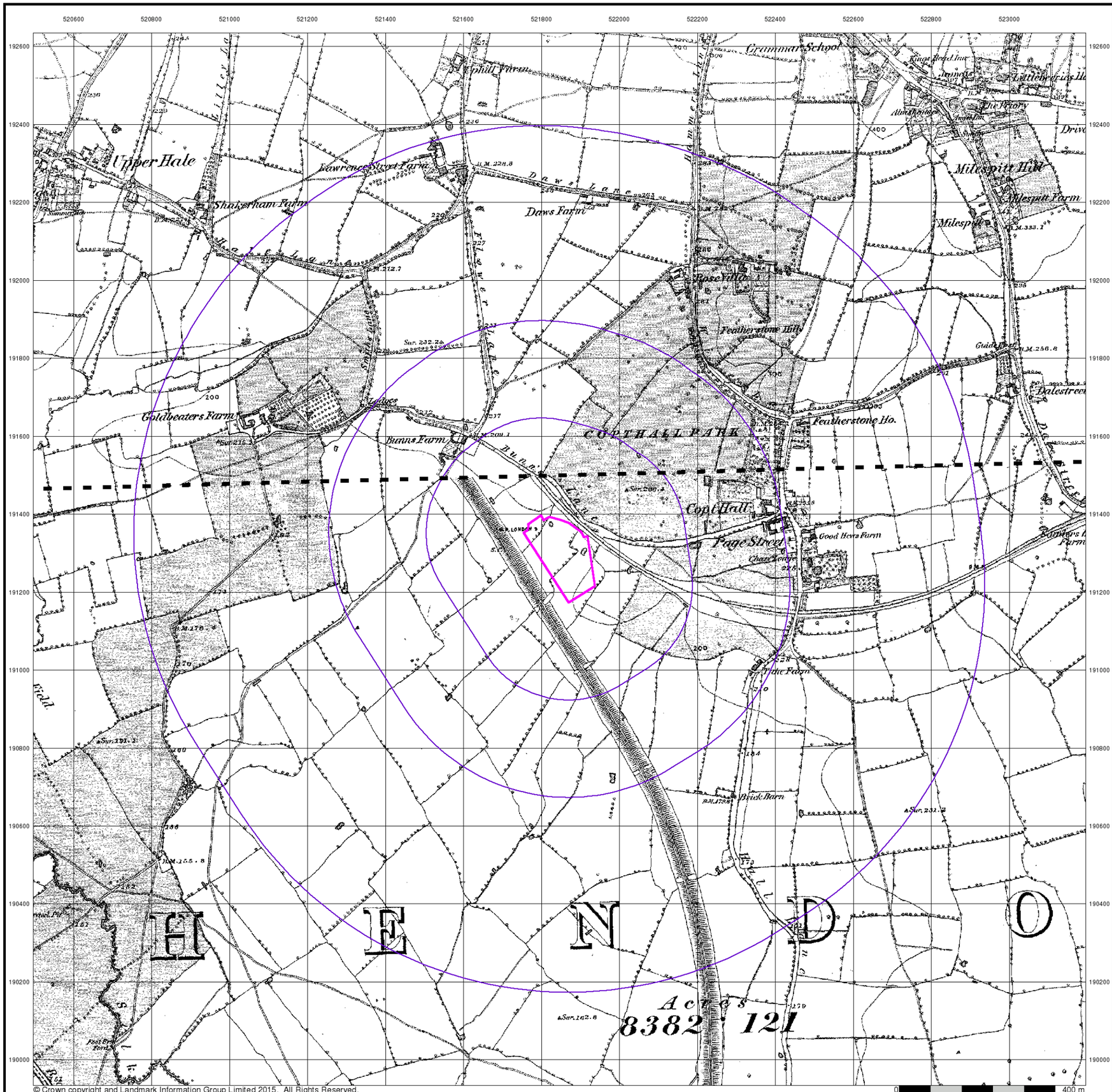


Envirocheck®

Middlesex

Published 1868 - 1873

Source map scale - 1:10,560

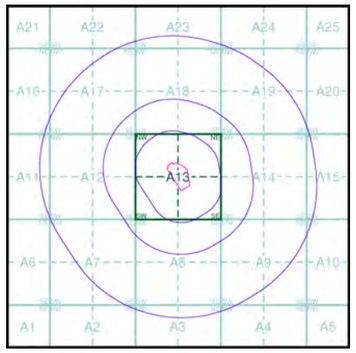
The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)

00600
1868
1:10,560

01100
1873
1:10,560

Historical Map - Slice A



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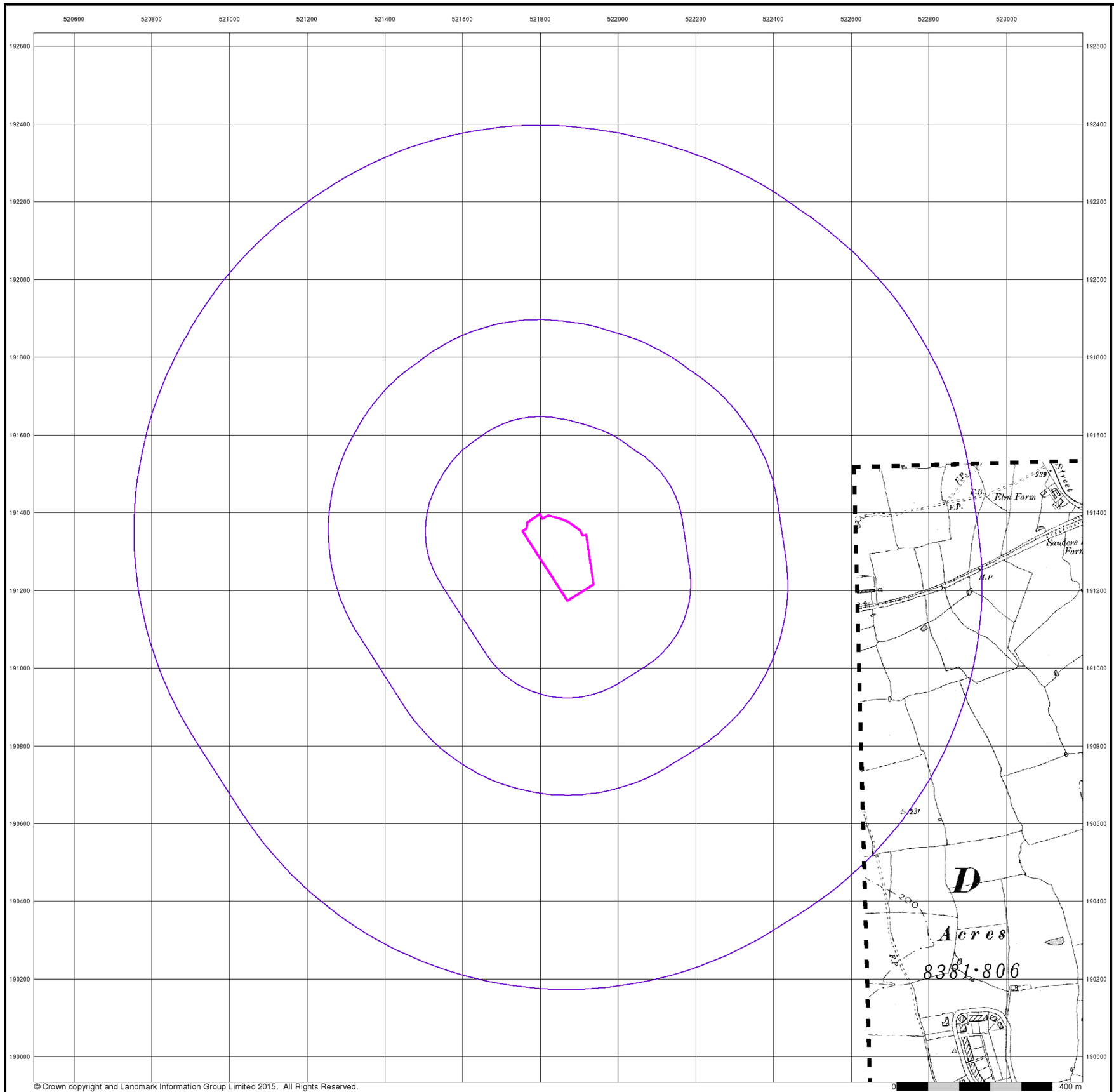

Envirocheck®

London

Published 1896

Source map scale - 1:10,560

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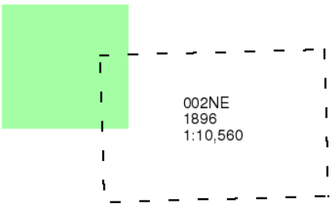
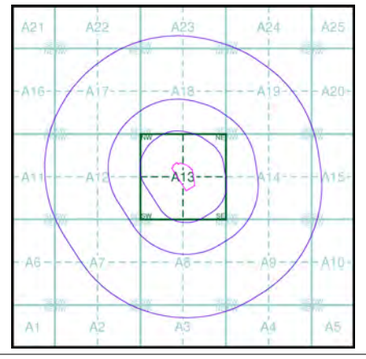


Historical Map - Slice A



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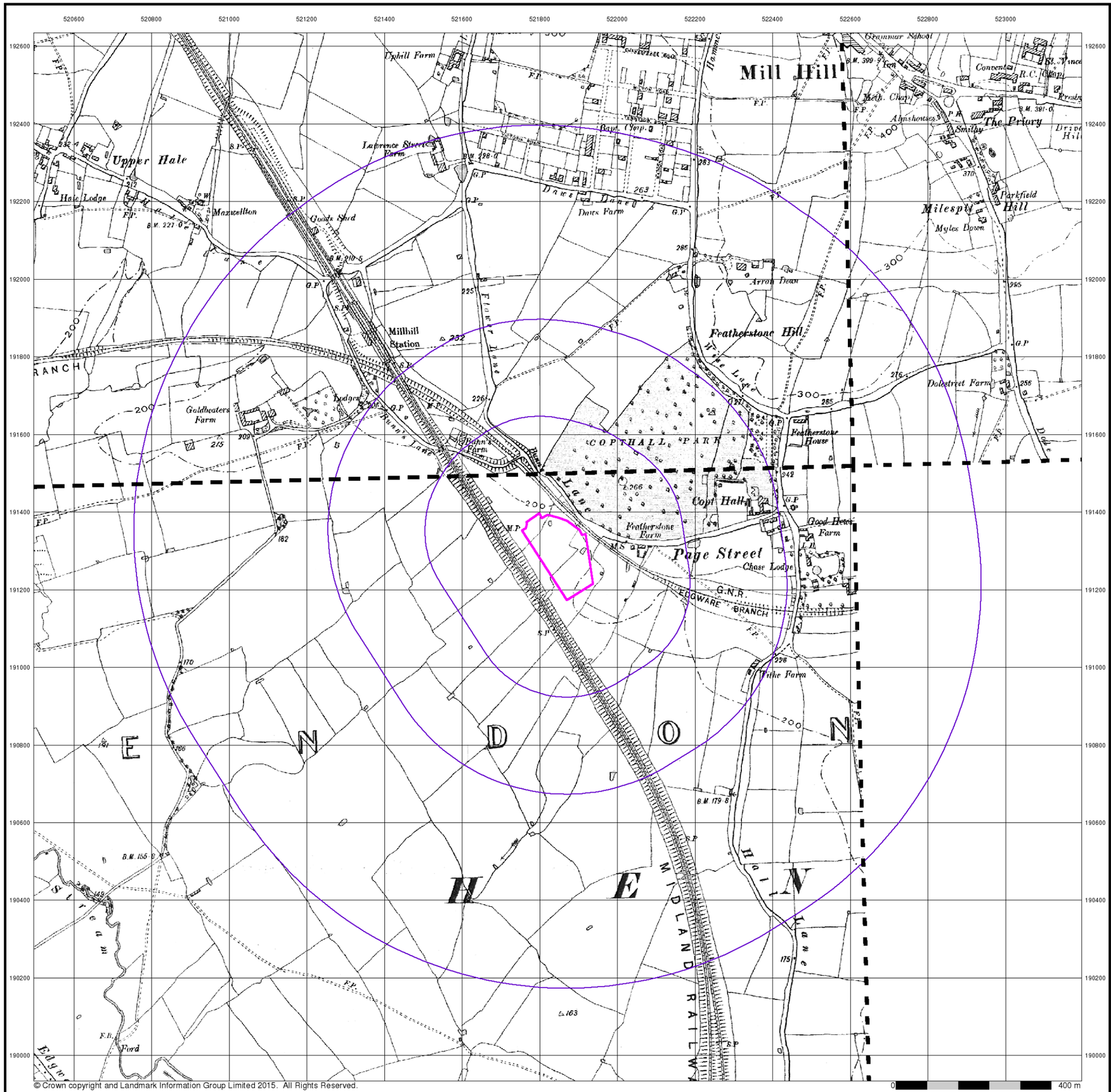

Envirocheck®

Middlesex

Published 1897

Source map scale - 1:10,560

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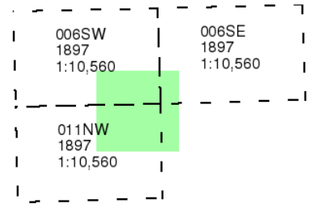
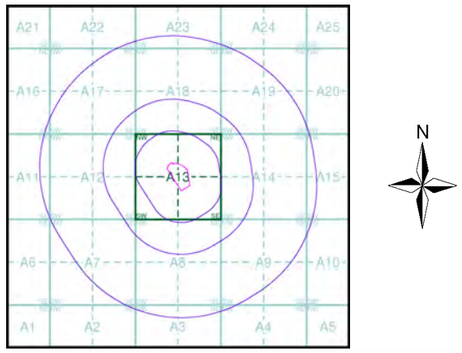


Historical Map - Slice A



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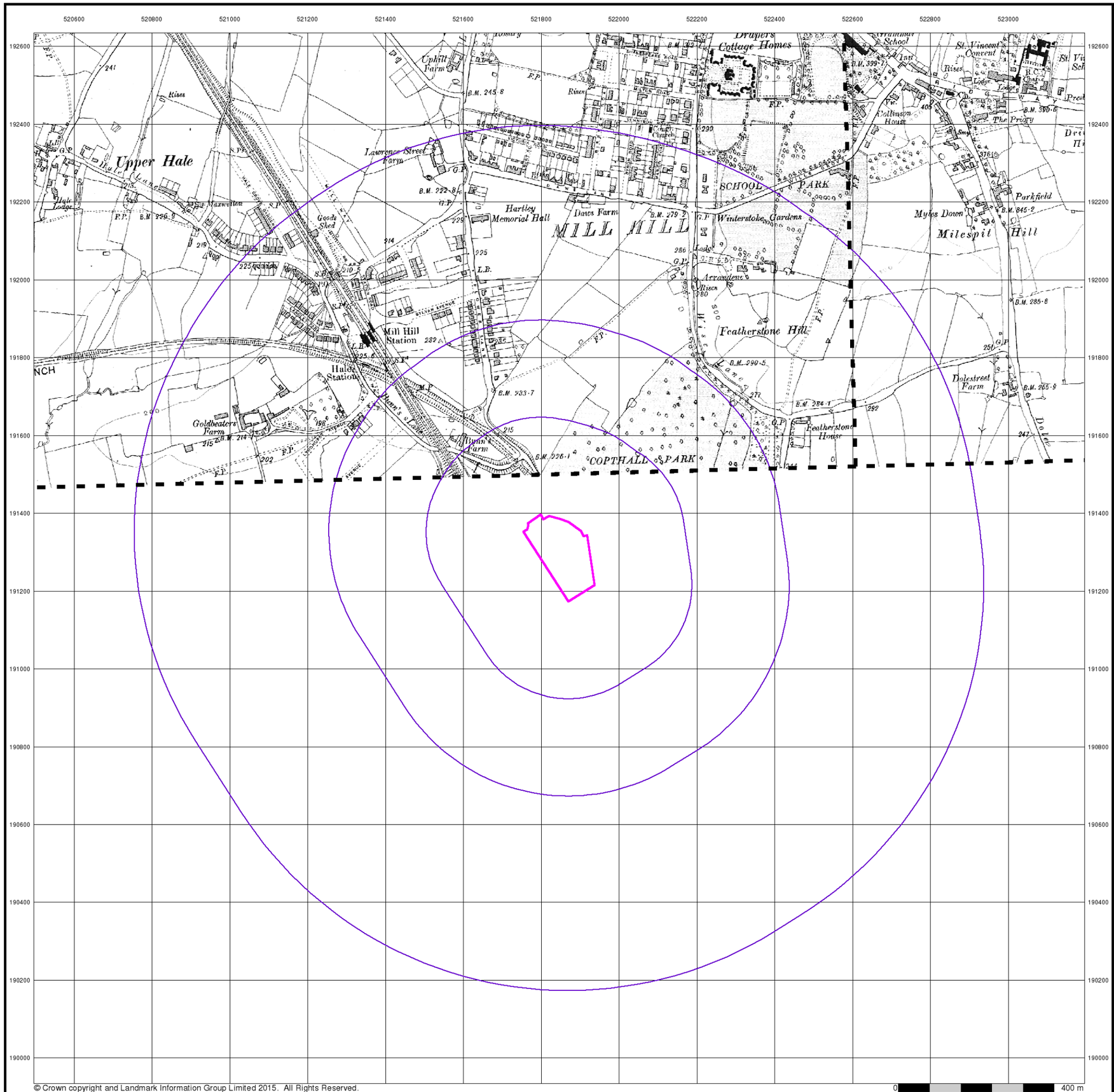

Envirocheck®

Hertfordshire

Published 1919 - 1920

Source map scale - 1:10,560

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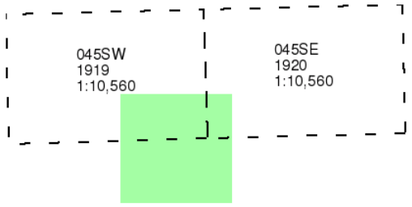
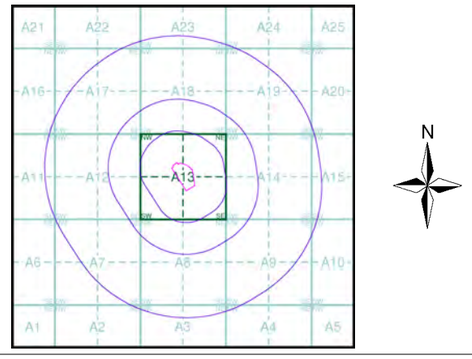
Map Name(s) and Date(s)



Historical Map - Slice A



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