20 Appendix D – GEA Report J16180

DESK STUDY & GROUND INVESTIGATION REPORT

Land to rear of
159-163 King's Cross Road
London
WC1X 9BN

Client: Balcap RE

Engineer: Parmarbrook

J16180

March 2017




GEA Geotechnical & Environmental Associates

Document Control

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Report prepared by			
	Caroline Anderson MEng AUS FGS		
With input from			
	Martin Cooper BSc CEng MICE		
			
	John Evans MSc FGS CGeol		
			
	Rupert Evans MSc CEnv CWEM MCIWEM AIEMA		
Report checked and approved for issue by			
	Steve Branch BSc MSc CGeol FGS FRGS MIEnvSc		

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

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

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

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Part 3: GROUND MOVEMENT ASSESSMENT

Part 4: BASEMENT IMPACT ASSESSMENT

EXECUTIVE SUMMARY

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

BRIEF

This report describes the findings of a site investigation carried out by Geotechnical and Environmental Associates Limited (GEA) on the instructions of Parmarbrook, on behalf of Balcap Re Limited, with respect to the demolition of the existing building and subsequent construction of a new two-storey and three-storey commercial building with a single level basement. The purpose of the investigation has been to research the history of the site with respect to possible contaminative uses, to determine the ground conditions, to assess the extent of any contamination and to provide information to assist with the design of retaining walls and spread foundations. The report also includes information required to comply with London Borough of Camden (LBC) Planning Guidance CPG4, relating to the requirement for a Basement Impact Assessment (BIA), including a ground movement assessment.

SITE HISTORY

The earliest map studied, dated 1851, shows King's Cross Road and Britannia Street in their present-day orientations. By the time of the next map, dated 1874, the site is depicted as having been developed. At some time between 1946 and 1953, the building on the site had been reconfigured to comprise a single building and a large building to the west is annotated as an engineering works. The 1951 to 1967 insurance plans indicate the site to have been a confectionery warehouse and garage, presumable for vehicle maintenance, with an asbestos roof. By 1992, a small building, presumably the existing building that houses gas assets, had been constructed adjacent to the southwestern corner of the site. The site has most recently been used as a mirror and architectural glass shop, although the date that the business was established at this address is not known. The site and surrounding area have since remained essentially unchanged.

GROUND CONDITIONS

Below a significant thickness of made ground, the London Clay Formation was encountered to the full depth of the investigation, of 15.00 m. The made ground generally comprised dark brown and grey very silty sandy gravelly clay, sand and silt with cobbles, fragments of brick, concrete and pockets of ash, and extended to depths of 1.90 m and 3.80 m. The London Clay initially comprised firm fissured medium strength silty clay which extended to a depth of 4.90 m, over firm becoming stiff fissured medium to high strength silty clay. Groundwater was encountered during drilling in Borehole No 2, at a depth of 3.0 m, and subsequent monitoring has measured the groundwater at depths of 2.6 m and 5.0 m. Contamination testing has not indicated the presence of elevated concentrations of contaminants within any of the samples of made ground tested.

RECOMMENDATIONS

The excavation of the proposed 4.4 m deep basement will result in a formation level in the firm medium strength silty clay of the London Clay and occasional groundwater seepages may be encountered in the excavation. Spread foundations or underpins may be designed to apply a net allowable bearing pressure of 120 kN/m² below the level of the proposed basement floor. Care should be taken at all times to ensure the stability of neighbouring properties and the existing party wall foundations will need to be underpinned prior to basement excavation or supported by new retaining walls. The contamination testing has not indicated that remedial works are required.

BASEMENT IMPACT ASSESSMENT

The BIA has not indicated any concerns with regard to the effects of the proposed basement construction on the site and surrounding area. A flood risk assessment may however need to be carried out. It has been concluded that the impacts identified can be mitigated by appropriate design and standard construction practice.

GROUND MOVEMENT ASSESSMENT CONCLUSIONS

The analysis has concluded that the predicted damage to the neighbouring properties from the installation of the retaining walls and basement excavation would be 'Negligible' to 'Very Slight', whilst three walls of sensitive structures may result in Category 2 'slight' damage. A monitoring strategy is recommended for the proposed construction and the horizontal limits outlined in this report should be incorporated into the strategy in order to limit the predicted movement to Category 1, Very Slight. It is recommended that movement monitoring is carried out on all structures prior to and during the proposed basement construction.

Part 1: INVESTIGATION REPORT

This section of the report details the objectives of the investigation, the work that has been carried out to meet these objectives and the results of the investigation. Interpretation of the findings is presented in Part 2, while the Ground Movement Assessment and Basement Impact Assessment are presented in Parts 3 and 4 respectively.

1.0 INTRODUCTION

Geotechnical and Environmental Associates Limited (GEA) has been commissioned by Parmarbrook, on behalf of Balcap Re Limited, to carry out a desk study and ground investigation at land to the rear of Nos 159-163 King's Cross Road, London WC1X 9BN. This report also includes a Basement Impact Assessment (BIA) and a ground movement assessment, which has been carried out in support of a planning application. The basement extent and methodology have been revised and this report comprises a revision to the ground movement assessment to reflect these changes.

1.1 Proposed Development

It is understood that it is proposed to demolish the existing building and subsequently construct a new two-storey and three-storey commercial building with a single level basement.

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

1.2 Purpose of Work

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

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

1.3 Scope of Work

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

- a review of historical Ordnance Survey (OS) maps, aerial photographs, Post Office maps and environmental searches sourced from the Envirocheck database;
- a review of readily available geology maps; and
- a walkover survey of the site carried out in conjunction with the fieldwork.

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

- a single borehole advanced to a depth of 15.00 m by cable percussive methods;
- a single window sampler borehole advanced to a depth of 6.00 m;
- installation of a standpipe within each of the boreholes to a depth of 6.00 m and a single subsequent monitoring visit;
- a series of 14 trial pits advanced to investigate the existing foundations and neighbouring basement depths;
- testing of selected soil samples for contamination and geotechnical purposes; and
- provision of a report presenting and interpreting the above data, together with our advice and recommendations with respect to the proposed development.

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

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

1.3.1 Basement Impact Assessment

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

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

1.3.2 Qualifications

The land stability element of the Basement Impact Assessment (BIA) has been carried out by Martin Cooper, a BEng in Civil Engineering, a chartered engineer (CEng), member of the Institution of Civil Engineers (MICE), and Fellow of the Geological Society (FGS) who has over 20 years' specialist experience in ground engineering. The subterranean (groundwater) flow assessment has been carried out by John Evans, MSc in Hydrogeology, Chartered Geologist (CGeol) and Fellow of the Geological Society of London (FGS). The surface water and flooding assessment has been carried out by Rupert Evans, a hydrologist with more than ten years consultancy experience in flood risk assessment, surface water drainage schemes and hydrology / hydraulic modelling. Rupert Evans is a Chartered Environmentalist, Chartered Water and Environmental Manager and a Member of CIWEM. The assessments have been made in conjunction with Steve Branch, a BSc in Engineering Geology and Geotechnics, MSc in Geotechnical Engineering, a chartered geologist (CGeol) and Fellow of the Geological Society (FGS) with some 30 years' experience in geotechnical engineering and engineering geology.

All assessors meet the qualification requirements of the Council guidance.

1.4 Limitations

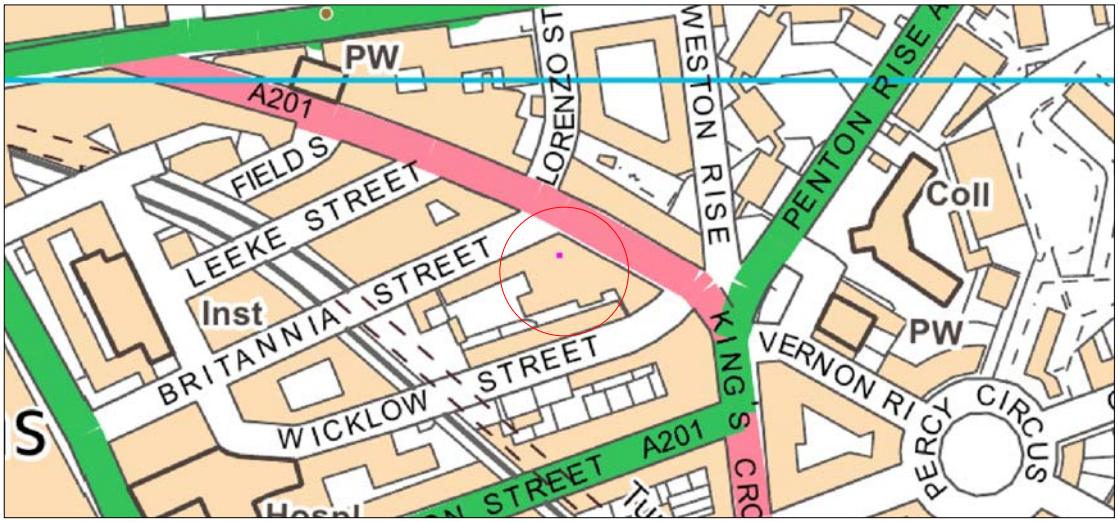
The conclusions and recommendations made in this report are limited to those that can be made on the basis of the investigation. The results of the work should be viewed in the context of the range of data sources consulted and the number of locations where the ground was sampled. No liability can be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

2.0 THE SITE

2.1 Site Description

The site is located in the London Borough of Camden, approximately 340 m east of King's Cross St Pancras Railway and London Underground stations and 860 m west of Angel London Underground station. The site is located behind properties that front on to King's Cross Road to the northeast and Britannia Street to the northwest and it is bounded by a communal courtyard area that is accessed by apartments that front on to the aforementioned roads and Wicklow Street to the south. The site may be additionally located by National Grid Reference 530720, 182908 and is shown on the map extract below.

A walkover of the site was carried out by a geotechnical engineer from GEA at the time of the fieldwork. The site is accessed from a vehicular access gate between Nos 1 and 3 Britannia Street in the northeast; there is also a pedestrian fire exit that leads to the communal courtyard to the south.



The site is entirely covered by a single storey double height building; including a temporary mezzanine level that occupies the southern half of the building, and an office and WC in the northwest and northeast respectively. There are two-storeys above the access to site on Britannia Street and these are not accessible from, and do not form part of the site. At the time of the walkover, the majority of the site was in use as a mirror and architectural glass shop, while the southeastern corner of the site was occupied by a cluster of rooms that has recently been used as accommodation and was accessed only from the mirror shop via an internal door.

An online search[4] indicates that the site is used for the manufacture and etching of glass and screen printing, although there was no evidence of the manufacture of glass on the site. The site contained equipment to repair and alter glass and the south of the site was predominantly used to store large quantities of mirrors, glass and decorative frames. A number of pots and containers that appeared to contain resins and greases, some of which were leaking, were noted during the walkover, as were a number of broken mirrors, with shards of glass on the floor of the building. During the initial visit to site the engineer from GEA was warned that a

4 http://www.2kmirror.co.uk/

container of acid was on the premises, although the location of this was never determined. Adjacent to the southwestern corner of the site is an outbuilding that houses gas assets. The site is essentially level and is devoid of vegetation.

2.2 Site History

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

The earliest map studied, dated 1851, shows King's Cross Road and Britannia Street in their present-day orientations, with a road to the south of the site named George Street and King's Cross station to the northwest, with the Metropolitan Railway orientated northwest-southeast to the west of the site. By the time of the next map, dated 1874, the site is depicted as developed with a U-shaped building including a central courtyard, whilst terraced houses annotated as industrial dwellings are shown to the northwest, northeast and south and George Street to the south had been renamed Wicklow Street. A mineral water facility is shown on the site on the 1892 Insurances Plan. The 1896 map indicates that the central courtyard area had been developed with a number of rooms; whilst a public house and a Tramway Depot were located to the northwest and north respectively. Also at that time, a large cluster of terraced houses to the northeast of the site on the opposite side of King's Cross Road had been redeveloped into a single large building that was later used as a bottling depot and a warehouse.

The Bomb Damage Maps of London[5] indicate the site to have sustained minor blast damage during World War II (WWII), whilst the building immediately north of the site had sustained general non-structural blast damage. By the time of the aerial photograph taken in 1946, a cluster of terraced houses that had fronted onto Britannia Street to the northwest had been redeveloped into an iron works and the Bomb Damage Maps of London indicate the buildings in this area had been damaged beyond repair during the war.

At some time between 1946 and 1953, the building on the site had been reconfigured to comprise a single building, and a large building to the west is annotated as an engineering works. The 1951 to 1967 insurance plans indicate the site to have been a confectionery warehouse and garage, presumably for vehicle maintenance, with an asbestos roof, and the site and surrounding buildings had been renamed the Derby Buildings. By 1976, the engineering works to the west had been cleared and by 1982, the iron works to the northwest is annotated as a post office depot. The map dated 1992 shows that a small building, presumably the existing building that houses gas assets, had been constructed adjacent to the southwestern corner of the site and what appears to have been a small structure or raised flower bed had been positioned within the courtyard area of the Derby Buildings. By 1996 the area to the west; formerly an engineering works, is annotated as a car park and by 1999 the former bottling depot had been redeveloped into townhouses.

The site has most recently been used as a mirror and architectural glass shop, although the date that the business was established at this address is not known. The site and surrounding area have since remained essentially unchanged.

2.3 Other Information

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

5 Laurence Ward (2015) *The London County Council Bomb Damage Maps 1939-1945*. Thames & Hudson

The Envirocheck report has indicated no historic landfill sites, waste management, waste transfer or Control of Major Accident Hazards (COMAH) sites are located within 500 m of the site.

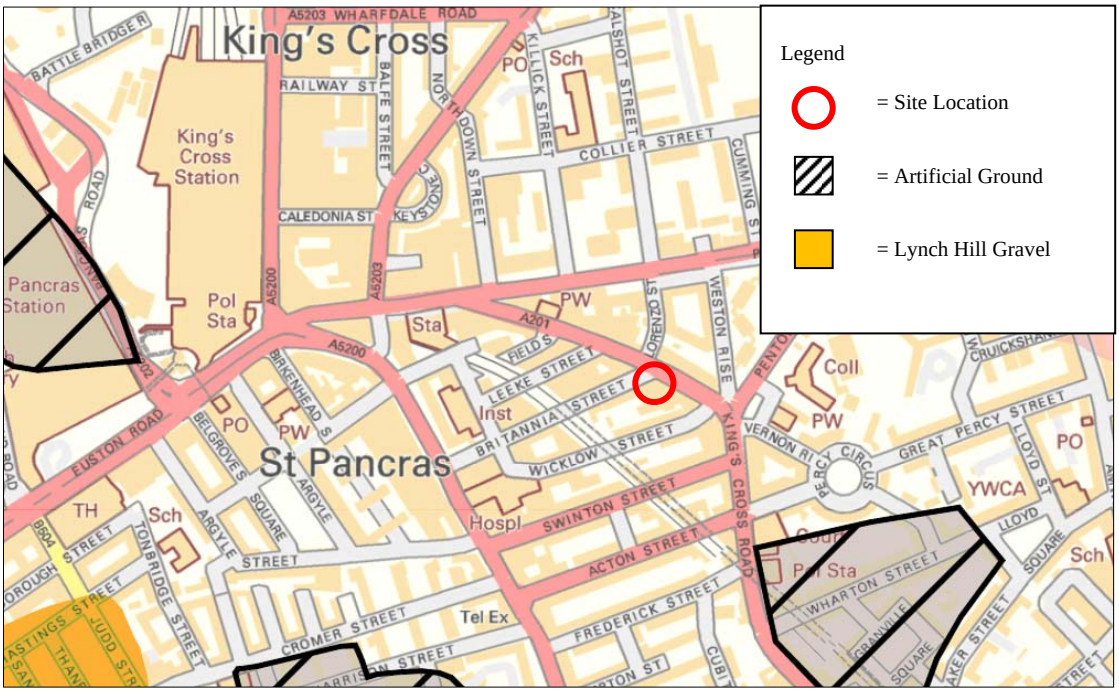
No pollution incidents to controlled waters have been recorded within 250 m of the site. The site is located within the King's Cross Conservation area, specifically the Gray's Inn Road Sub Area 4.

Reference to records compiled by the Health Protection Agency (formerly the National Radiological Protection Board) indicates that the site falls within an area where less than 1% of homes are affected by radon emissions and therefore radon protective measures will not be necessary.

2.4 Geology

The British Geological Survey (BGS) map of the area (Sheet 256) indicates that the site is directly underlain by London Clay.

According to the BGS Sheet 256, dated 2006, the site is shown in an area of "Head Propensity". Head propensity is shown on the BGS map as areas denoted as most likely to be covered by Quaternary Head Deposits as interpreted from digital slope analysis and confirmed by borehole data. These deposits are not mapped and have not been verified by fieldwork; they are noted as having properties similar to that of the London Clay and are shown to occur close to the boundary with the overlying Claygate Member.



Geological Map Extract: Superficial Deposits

According to the BGS memoir, the London Clay is homogenous, slightly calcareous silty clay to very silty clay, with some beds of clayey silt grading to silty fine grained sand.

The geological map on the previous page indicates that the site is located roughly 270 m northwest of an area of artificial ground. The origin of the artificial ground is unclear and is not shown on the historical or sensitivity maps, although it is likely to be attributable to the Metropolitan Railway that runs through the area of artificial ground. The area of artificial

ground is likely to have occurred prior to the earliest historical map, dated 1851 and as such is highly unlikely to pose a risk to the site from migrating soil gas.

2.5 Hydrology and Hydrogeology

The London Clay is classified as an Unproductive Stratum, which refers to rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow, as defined by the Environment Agency (EA).

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

The nearest surface water feature appears to be a private pond within the grounds of a school, which is located 471 m to the northeast of the site. The Regent's Canal is located beyond this, at a distance of roughly 425 m to the north of the site and flows in an easterly direction, before flowing southeast towards Limehouse in east London.

Reference to the Lost Rivers of London[6] indicates that the River Fleet previously flowed along King's Cross Road from Pentonville Road in the northwest. It is shown to have flowed in an easterly and then southeasterly direction towards Clerkenwell, before flowing south along Farringdon Road, to join the River Thames at Blackfriars. The Fleet is considered to rise from springs and seepages from the Bagshot Formation sands on Hampstead Heath and is perched on the London Clay over most of its lenght. The Fleet is now entirely covered and culverted and plans of the nearby sewer system, which indicate a major sewer to follow the line of King's Cross Road, presumably represents the course of the former river. It is likely that any groundwater flow beneath the site within the London Clay Formation would follow topographic contours, although the site is located within a topographical basin, with an Ordnance Datum level of between 10 m OD and 15 m OD.

The site is not at risk of flooding from rivers or sea, as defined by the Environment Agency and is shown as being within an area at low risk of surface water flooding, although King's Cross Road is indicated a being at high risk. The site is also not indicated as having a potential for groundwater flooding for surface or below ground property.

2.6 Preliminary Risk Assessment

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

2.6.1 Source

The desk study findings indicate that the site has previously been use as a mineral water facility, a confectionery warehouse, a garage and a mirror and architectural glass shop. The Post Office directories also indicate that the site has had an asbestos roof and is it not known if the existing roof is the original asbestos roof. The previous use of the site as a garage may represent a potential contaminative source and localised spillages of fuels and oils may have occurred. Similarly, evidence of leaking containers of resins and greases during the walkover may represent potential sources of contamination, albeit localised. The asbestos roof may

[6] Nicholas Barton & Stephen Myers (2016) *The Lost Rivers of London.* Historical Publications Ltd

represent a potential source of contamination, had the roof become damaged or been removed without due care.

2.6.2 Receptor

The proposed redevelopment of the site for commercial purposes will result in the end users representing relatively high sensitivity receptors. The occupiers of neighbouring properties are also considered to be a moderately sensitive receptor.

Groundwater is considered to be a moderately sensitive receptor and the deep chalk aquifer if considered to be a highly sensitive receptor.

2.6.3 Pathway

The negligibly permeable London Clay expected beneath the site would prevent the migration of contaminated groundwater to surrounding sites and limit the potential for groundwater percolation into the underlying chalk, and thus a pathway is not considered likely to exist to the major aquifer. Within the site, end users will be isolated from direct contact with any contaminants present within the made ground by the presence of the building and the extent of the hardstanding. Only in areas of proposed soft landscaping will a pathway to end users exist through direct contact, although it is understood that this does not form part of the proposed development.

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

2.6.4 Preliminary Risk Appraisal

On the basis of the above it is considered that there is a LOW risk of there being a significant contaminant linkage at this site which would result in a requirement for major remediation work. In addition, the site is not considered to be at risk from hazardous ground gas.

3.0 SCREENING

The London Borough of Camden guidance suggests that any development proposal that includes a subterranean basement should be screened to determine whether or not a full Basement Impact Assessment (BIA) is required.

3.1 Screening Assessment

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

3.1.1 Subterranean (groundwater) Screening Assessment

Question	Response for Land to rear of 159-163 King's Cross Road
1a. Is the site located directly above an aquifer?	No. The site is located above an unproductive stratum.

Question	Response for Land to rear of 159-163 King's Cross Road
1b. Will the proposed basement extend beneath the water table surface?	Unlikely. The London Clay cannot support a water table and is classified as an unproductive stratum, however if an upper weathered layer is present, this may have a higher permeability and could have the potential to collect groundwater if the stratum has a predominantly granular matrix, which is unlikely in this setting.
2. Is the site within 100 m of a watercourse, well (used/ disused) or potential spring line?	No. The nearest surface water feature is a small private pond, which is located 471 m to the northeast of the site.
3. Is the site within the catchment of the pond chains on Hampstead Heath?	No. Figure 14 of the Camden geological, hydrogeological and hydrological study – Guidance for subterranean development dated 2010, confirms that the site is not located within this catchment area.
4. Will the proposed basement development result in a change in the proportion of hard surfaced / paved areas?	No. The proposed development will not extend beyond the existing footprint as shown on proposed drawings provided by the consulting engineers.
5. As part of the site drainage, will more surface water (e.g. rainfall and run-off) than at present be discharged to the ground (e.g. via soakaways and/or SUDS)?	No, it is anticipated that the ground would not be sufficiently permeable to allow for a soakaway discharge design.
6. Is the lowest point of the proposed excavation (allowing for any drainage and foundation space under the basement floor) close to or lower than, the mean water level in any local pond or spring line?	No. There are no local ponds or spring lines and the London Clay is not able to support groundwater flow to these features.

The above assessment has not identified any potential issues that need to be assessed.

3.1.2 Stability Screening Assessment

Question	Response for Land to rear of 159-163 King's Cross Road
1. Does the existing site include slopes, natural or manmade, greater than 7°?	No, as indicated on the Slope Angle Map Fig 16 of the Arup report.
2. Will the proposed re-profiling of landscaping at the site change slopes at the property boundary to more than 7°?	No. The site is not to be significantly re-profiled as part of the development.
3. Does the development neighbour land, including railway cuttings and the like, with a slope greater than 7°?	No. As indicated on the Slope Angle Map Fig 16 of the Arup report.
4. Is the site within a wider hillside setting in which the general slope is greater than 7°?	No. As indicated on the Slope Angle Map Fig 16 of the Arup report.
5. Is the London Clay the shallowest stratum at the site?	*Yes.*
6. Will any trees be felled as part of the proposed development and / or are any works proposed within any tree protection zones where trees are to be retained?	No. There are no trees on the site.
7. Is there a history of seasonal shrink-swell subsidence in the local area and / or evidence of such effects at the site?	*Yes. The area is prone to these effects as a result of the presence of shrinkable London Clay.*
8. Is the site within 100 m of a watercourse or potential spring line?	No. The nearest surface water feature is a small private pond, which is located 471 m to the northeast of the site.
9. Is the site within an area of previously worked ground?	No. According to the BGS geological map the site is not within an area of previously worked ground.
10a. Is the site within an aquifer?	No. The site is located above an unproductive stratum.
10b. Will the proposed basement extend beneath the water table such that dewatering may be required during construction?	No. The London Clay cannot support a water table and is classified as an unproductive stratum.

Question	Response for Land to rear of 159-163 King's Cross Road
11. Is the site within 50 m of Hampstead Heath ponds?	No.
12. Is the site within 5 m of a highway or pedestrian right of way?	*Yes - the site is accessed from Britannia Street in the north, although it is understood that the proposed basement will be constructed in the southern two-thirds of the site.*
13. Will the proposed basement significantly increase the differential depth of foundations relative to neighbouring properties?	*Yes - The development will increase the foundation depths relative to the neighbouring properties to a relatively significant extent.*
14. Is the site over (or within the exclusion zone of) any tunnels, eg railway lines?	No.

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

Q5 London Clay is the shallowest stratum at the site.
Q7 The site is in an area likely to be affected by seasonal shrink-swell.
Q12 The site is within 5 m of Britannia Street in the north.
Q13 The development will increase the foundation depths relative to the neighbouring properties.

3.1.3 Surface Flow and Flooding Screening Assessment

Question	Response for Land to rear of 159-163 King's Cross Road
1. Is the site within the catchment of the pond chains on Hampstead Heath?	No. Figure 14 of the Camden geological, hydrogeological and hydrological study – Guidance for subterranean development dated 2010, confirms that the site is not located within this catchment area.
2. As part of the proposed site drainage, will surface water flows (e.g. volume of rainfall and peak run-off) be materially changed from the existing route?	No. There will not be an increase in impermeable area across the ground surface above the basement, so the surface water flow regime will be unchanged. There will be no surface expression of the basement development, so the surface water flow regime will be unchanged. The basement will entirely be beneath the footprint of the building/hardstanding (ie both existing and proposed), therefore the 1m distance between the roof of the basement and ground surface as recommended by the Arup report and para 2.16 of the CPG4 does not apply.
3. Will the proposed basement development result in a change in the proportion of hard surfaced / paved areas?	No. There will not be an increase in impermeable area across the ground surface above the basement. There will be no surface expression of the basement development.
4. Will the proposed basement development result in changes to the profile of the inflows (instantaneous and long term) of surface water being received by adjacent properties or downstream watercourses?	No. There will not be an increase in impermeable area across the ground surface above the basement, so the surface water flow regime will be unchanged. There will be no surface expression of the basement development, so the surface water flow regime will be unchanged. The basement will entirely be beneath the footprint of the building/hardstanding (i.e. both existing and proposed), therefore the 1m distance between the roof of the basement and ground surface as recommended by the Arup report and para 2.16 of the CPG4 does not apply.

Question	Response for Land to rear of 159-163 King's Cross Road
5. Will the proposed basement result in changes to the quality of surface water being received by adjacent properties or downstream watercourses?	No. The proposed basement is very unlikely to result in any changes to the quality of surface water being received by adjacent properties or downstream watercourses as the surface water drainage regime will be unchanged and the land uses will remain the same.
6. Is the site in an area identified to have surface water flood risk according to either the Local Flood Risk Management Strategy or the Strategic Flood Risk Assessment or is it at risk of flooding, for example because the proposed basement is below the static water level of nearby surface water feature?	*Yes.* *The findings of this BIA together with the Camden Flood Risk Management Strategy dated 2013, and Figures 3i, 4e, 5a and 5b of the SFRA dated 2014, and Environment Agency online flood maps show that the site has a low flooding risk from surface water, sewers, reservoirs (and other artificial sources), groundwater and fluvial/tidal watercourses.* *The Environment Agency surface water flooding map indicates that the flood depth across the site during low risk events would be below 0.3m.* *It is possible that granular fill around the basement may become saturated as the London Clay would effectively prevent it from draining and the recommendations outlined in the BIA with regards to water-proofing and tanking of the basement will reduce the risk to acceptable levels.* *In accordance with paragraph 5.11 of the CPG a positive pumped device will be installed in the basement in order to further protect the site from sewer flooding.* *The site is located within the Critical Drainage Area number GROUP3-003, and is in a Local Flood Risk Zone (North Swinton Street), as identified in the Camden SWMP and Updated SFRA Figure 6/Rev 2.*

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

Q6. The site is in an area identified to have surface water flood risk.

4.0 SCOPING AND SITE INVESTIGATION

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

The potential impacts of the proposed development on surface flow and flooding and subterranean flow will need to be dealt with in separate assessments, such that the following section focuses on the potential impacts that may have an impact on slope stability.

4.1 Potential Impacts

The following potential impacts have been identified.

Potential Impact	Consequence
London Clay is the shallowest stratum at the site.	The London Clay is prone to seasonal shrink-swell (subsidence and heave).
Seasonal shrink-swell can result in foundation movements.	Multiple potential impacts depending on the specific setting of the basement development. For example, in terraced properties, the implications of a deepened basement/foundation system on neighbouring properties

Potential Impact	Consequence
	should be considered.
The site is located within 5 m of a highway or pedestrian right of way	Excavation of a basement may result in structural damage to the road or footway.
Founding depths relative to neighbours.	If not designed and constructed appropriately, the excavation of a basement may result in structural damage to neighbouring buildings and structures.
The site in an area identified to have surface water flood risk.	The proposed basement may be at risk of flooding.

These potential impacts have been investigated through the site investigation, as detailed in Section 9.0.

4.2 Exploratory Work

In order to meet the objectives described in Section 1.2, a single borehole was advanced to a depth of 15.00 m by means of a dismantlable cable percussion rig. In addition, a single window sampler borehole was advanced to a depth of 6.00 m and a series of 14 trial pits were hand excavated to a maximum depth of 1.90 m.

SPTs were carried out at regular intervals within the cable percussion boreholes to provide quantitative information about the strength of the soils and both undisturbed and disturbed samples were recovered for subsequent laboratory examination and testing.

A groundwater monitoring standpipe was installed in each of the boreholes to a depth of 6.0 m to facilitate groundwater monitoring, which has been carried out on a single occasion approximately four weeks after installation.

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

All of the above work was carried out under the supervision of a geotechnical engineer from GEA.

The borehole and trial pit records and results of the laboratory testing are appended, together with a site plan indicating the exploratory positions.

4.3 Sampling Strategy

The boreholes and trial pits were specified by the consulting engineer and positioned on site by GEA, whilst avoiding areas of buried services.

Four samples of the made ground have been tested for the presence of contamination. The analytical suite of testing was selected to identify hydrocarbon contamination resulting from the former use of the site and a range of typical industrial contaminants for the purposes of general coverage. For this investigation the analytical suite for the soil included a range of metals, speciation of total petroleum hydrocarbons (TPH), polycyclic aromatic hydrocarbons (PAH), total cyanide and monohydric phenols. The samples were also submitted for asbestos identification.

The contamination analyses were carried out at an MCERTs accredited laboratory with the majority of the testing suite accredited to MCERTS standards. A summary of the MCERTs accreditation and test methods are included with the attached results and further details are available upon request.

5.0 GROUND CONDITIONS

The investigation encountered a generally significant thickness of made ground, overlying the London Clay Formation, which was proved to the full depth of the investigation, of 15.00 m.

5.1 Made Ground

Beneath a slab surface, the made ground generally comprised dark brown and grey very silty sandy gravelly clay, sand and silt with cobbles, fragments of brick, concrete and pockets of ash, and extended to depths of 1.90 m and 3.80 m in the centre and north of the site respectively.

Apart from the presence of fragments of extraneous material noted above, no visual or olfactory evidence of contamination was observed during the fieldwork. Four samples of the made ground have however been analysed for a range of contaminants as a precautionary measure and the results are summarised in Section 5.4.

5.2 London Clay

The London Clay comprised an initial weathered horizon of firm fissured medium strength brown and pale grey mottled silty clay with orange-brown sand partings, occasional coarse selenite and pockets of bluish grey sand and silt, and extended to depths of 4.90 m and to the maximum depth of Borehole No 2, of 6.0 m. In Borehole No 2, this stratum was noted as soft between 4.0 m and 5.9 m, becoming stiff from 5.9 m depth.

Below the initial weathered zone, the London Clay comprised firm becoming stiff fissured medium to high strength pale grey and brown mottled silty clay with fine selenite, becoming very silty at 9.0 m and 12.9 m depth, and was encountered to the full depth investigated, of 15.00 m.

Laboratory plasticity index test results indicate the clay to be of high volume change potential. The results from the laboratory undrained triaxial compression tests, which are plotted against depth on a graph in the appendix, indicate the clay to generally increase in strength with depth from high strength to very high strength with undrained shear strength increasing from 56 kN/m^2 to 115 kN/m^2.

No evidence of contamination was noted in these soils.

5.3 Groundwater

Groundwater was encountered during drilling in Borehole No 2 only, at a depth of 3.0 m towards the base of the made ground, which extended to a depth of 3.8 m. Monitoring of the standpipes has indicated the groundwater to be at depths of 5.0 m and 2.6 m in Borehole Nos 1 and 2 respectively, four weeks after completion of the boreholes.

5.4 Soil Contamination

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

Determinant	TP7 0.80 m	TP8 1.10 m	TP4 0.60 m	TP5 0.50 m
pH	8.6	11.4	8.4	8.4
Arsenic	24	17	34	17
Cadmium	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	23	19	26	14
Copper	110	420	150	89
Mercury	2.8	1.4	3.0	2.1
Nickel	22	16	26	16
Lead	700	430	700	500
Selenium	< 1.0	< 1.0	< 1.0	< 1.0
Zinc	100	310	220	140
Total Cyanide	< 1	< 1	< 1	< 1
Total Phenols	< 1.0	< 1.0	< 1.0	< 1.0
Sulphide	1.1	< 1.0	< 1.0	< 1.0
Total PAH	< 1.60	< 1.60	26.1	3.68
Benzo(a)pyrene	< 0.10	< 0.10	3.0	0.26
Naphthalene	< 0.05	< 0.05	< 0.05	< 0.05
TPH (C8 – C10)	< 0.1	< 0.1	< 0.1	< 0.1
TPH (C10 – C12)	< 2.0	< 2.0	< 2.0	< 2.0
TPH (C12 – C16)	< 4.0	< 4.0	< 4.0	< 4.0
TPH (C16 – C21)	< 1.0	< 1.0	10	1.9
TPH (C21 – C35)	< 1.0	< 1.0	28	9.3
Total Organic Carbon %	0.9	0.4	1.5	1.1

Note: Figure in **bold** indicates concentration in excess of risk-based soil guideline values, as discussed in Part 2 of this report

The results of the contamination testing have indicated no elevated concentrations of contaminants within any of the four samples tested.

5.4.1 Generic Quantitative Risk Assessment

The use of a risk-based approach has been adopted to provide an initial screening of the test results to assess the need for subsequent site-specific risk assessments. To this end the table below indicates those contaminants of concern that have values in excess of a generic human health risk based guideline values which are either that of the CLEA[7] Soil Guideline Value

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

where available, or is a Generic Screening Value calculated using the CLEA UK Version 1.06[8] software assuming a commercial use, or is based on the DEFRA Category 4 Screening values[9]. The key generic assumptions for this end use are as follows:

- that groundwater will not be a critical risk receptor;
- that the critical receptor for human health will be working female adults aged 16 to 65 years old;
- that young children will not have prolonged exposure to the site;
- that the exposure duration will be a working lifetime of 49 years;
- that the critical exposure pathways will be direct soil and indoor dust ingestion, skin contact with soils and dust, and inhalation of dust and vapours; and
- that the building type equates to a three storey office.

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

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

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

The results of the chemical analyses have indicated typical concentrations of contaminants to be present within the made ground, all of which are below the generic screening values adopted for a commercial end use. The significance of these results is considered further in Part 2 of the report.

5.5 Existing Foundations

Fourteen trial pits were excavated to expose the existing foundations and the findings are summarised below. Full records of the trial pits are appended to this report.

[8] Contaminated Land Exposure Assessment (CL|EA) Software Version 1.06 Environment Agency 2009
[9] CL:AIRE (2013) *Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination* Final Project Report SP1010 and DEFRA (2014) *Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination* Policy Companion Document SP1010

Trial Pit No	Foundation detail	Bearing stratum
1 / 1a	Footing inconclusive; not proved, probed to 4.0 m from ground level	N/A
2 / 2a	*Section A-A':* Concrete footing Depth to top of footing 240 mm from GL Depth to underside of footing 650 mm from GL Lateral projection 250 mm *Section B-B':* Brick footing Depth to top of footing 1600 mm from GL Depth to underside of footing 1900 mm from GL Lateral projection 140 mm	MADE GROUND (dark brown very silty sandy gravelly clay with brick and concrete fragments and pockets of ash)
3	*Section A-A':* Brick corbel Depth to top of footing 700 mm from GL Depth to underside of footing 900 mm from GL Lateral projection 130 mm *Section B-B':* Brick corbel Depth to top of footing 610 mm from GL Depth to underside of footing 685 mm from GL Lateral projection 60 mm	MADE GROUND (brown very clayey silty gravelly sand with fragments of brick, concrete, coal, occasional shell fragments and ceramic fragments)
4	*Section A-A':* Concrete footing Depth to top of footing 1140 mm from GL Depth to underside of footing 1420 mm from GL Lateral projection 300 mm *Section B-B':* Two brick corbels and a brick footing Depth to top of footing 1100 mm from GL Depth to underside of footing 1460 mm from GL Lateral projection 300 mm	MADE GROUND (brown very clayey silty gravelly sand with fragments of brick, concrete, coal and occasional shell fragments)
5	*Section A-A':* Concrete footing Depth to top of footing 1120 mm from GL Depth to underside of footing 1430 mm from GL Lateral projection 260 mm *Section B-B':* Concrete footing Depth to top of footing 1020 mm from GL Depth to underside of footing 1400 mm from GL Lateral projection 90 mm	MADE GROUND (brown silty sandy gravelly clay with fragments of brick, concrete, occasional whole brick and occasional pockets of ash)
6	*Section A-A':* Brick footing Depth to top of footing 1120 mm from GL Depth to underside of footing 1300 mm from GL Lateral projection 150 mm	MADE GROUND (brown silty sandy gravelly clay with fragments of brick, concrete, occasional whole brick and pockets of ash)

Trial Pit No	Foundation detail	Bearing stratum
7	*Section A-A':* Brick footing Depth to top of footing 1000 mm from GL Depth to underside of footing 1460 mm from GL Lateral Projection 60 mm *Section B-B':* Brick footing Depth to top of footing 980 mm from GL Depth to underside of footing 1460 mm from GL Lateral Projection Varies linearly up to 150 mm	MADE GROUND
8	*Section A-A':* Concrete footing Depth to top of footing 280 mm from GL Depth to underside of footing 1400 mm from GL Lateral Projection 120 mm *Section B-B'*: Concrete footing Depth to top of footing 640 mm from GL Depth to underside of footing 840 mm from GL Lateral Projection Varies linearly up to 220 mm	MADE GROUND (brown silty very sandy gravelly clay with frequent fragments of brick, concrete and coal)
9	*Section A-A'* Footing inconclusive; not proved.	N/A
9A	*Section A-A':* Footing type not proved due to probed beyond maximum extent of trial pit reached Depth to top of footing 1700 mm from GL Depth to underside of footing not proved Lateral Projection approximately 200 mm	MADE GROUND (brown silty sandy clay with fragments of brick, ceramic, concrete, coal and pockets of ash)
10	*Section A-A'* Footing inconclusive; not proved.	N/A
10A	*Section A-A':* Concrete footing Depth to top of footing 1500 mm from GL Depth to underside of footing 1850 mm from GL Lateral Projection approximately 350 mm	MADE GROUND (dark brown silty sandy gravelly clay with fragments of brick, concrete, pipe fragments and ash)

Part 2: DESIGN BASIS REPORT

This section of the report provides an interpretation of the findings detailed in Part 1, in the form of a ground model, and then provides advice and recommendations with respect to the basement excavation and the potential impact on the hydrogeology, which is discussed in greater detail in the Basement Impact Assessment within Part 4.

6.0 INTRODUCTION

It is understood that it is proposed to demolish the existing building and subsequently construct a new two-storey and three-storey commercial building with a single level basement that will extend to a depth of 4.4 m.

7.0 GROUND MODEL

The desk study has indicated that the site has had a potentially contaminative historical use as a garage, and on the basis of the fieldwork, the ground conditions at this site can be characterised as follows:

- Below a significant thickness of made ground the London Clay was encountered to the full depth of the investigation, of 15.00 m;
- beneath an initial concrete slab surface, the made ground comprises dark brown and grey very silty sandy gravelly clay, sand and silt with cobbles, fragments of brick, concrete and pockets of ash, and extends to depths of 1.90 m and 3.80 m in the centre and north of the site respectively;
- the London Clay comprises an initial weathered horizon of firm fissured medium strength brown and pale grey mottled silty clay to a depth of 4.90 m and to the maximum depth of Borehole No 2, of 6.0 m.
- in the north of the site, this stratum was noted as soft between 4.0 m and 5.9 m;
- below the weathered horizon, the London Clay comprises firm becoming stiff fissured medium to high strength pale grey and brown mottled silty clay to the full depth of the investigation;
- groundwater was encountered during drilling within the made ground in the north of the site at a depth of 3.0 m;
- subsequent monitoring has indicated the groundwater at depths of 2.6 m in the north and 5.0 m in the centre of the site, although the latter may represent a build-up of water from the made ground; and
- elevated concentrations of contamination have not been measured within any of the samples of made ground tested.

8.0 ADVICE AND RECOMMENDATIONS

It is understood that it is proposed to demolish the existing building and subsequently construct a new two-storey and three-storey commercial building with a single level basement, to a maximum depth of roughly 4.40 m below ground level. Formation level for the proposed basement will therefore be within the firm medium strength silty clay of the London Clay.

On the basis of the fieldwork and subsequent monitoring, groundwater may be encountered within the basement excavation in the form of seepages, and inflows may be encountered from within the made ground.

Proposed loads are not currently known, although they are anticipated to be light to moderate.

8.1 Basement Construction

The formation level for the basement is likely to be within the London Clay at a depth of about 4.40 m below ground level. Groundwater inflows were encountered during drilling in Borehole No 2 to the north of the site at a depth of 3.0 m. Groundwater has subsequently been measured at depths of between 2.6 m and 5.5 m within monitoring standpipes, although these are considered likely to reflect inflows of perched water from within the made ground. Additionally, it is not possible to draw meaningful conclusions from the measurements made in the standpipes, as the monitored water levels are not as significant as the volume of water that may flow into the excavation. For example, a high level of water measured in a standpipe may not be significant if this represents only a small localised volume of water. On this basis significant inflows of groundwater are not anticipated to be encountered within the basement excavation, although monitoring of the standpipes should be continued to confirm water levels. Shallow inflows of localised perched water are likely to be encountered from within the made ground which should be adequately controlled through sump pumping. It would be prudent, once access is available, to carry out a number of trial excavations, to depths as close to the full basement depth as possible, to provide an indication of the likely groundwater conditions.

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

Consideration may be given to the use of a bored pile retaining wall, which would have the advantage of being incorporated into the permanent works and will be able to provide support for structural loads. It should be possible to adopt a contiguous bored pile wall, with the use of localised grouting and / or pumping if necessary, in order to deal with any groundwater inflows. Alternatively, a secant bored pile wall would be a suitable solution.

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

8.1.1 Basement Retaining Walls

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

Stratum	Bulk Density (kg/m^3)	Effective Cohesion ($c' - kN/m^2$)	Effective Friction Angle (ϕ' – degrees)
Made ground	1700	Zero	27
London Clay	1950	Zero	23

Monitoring of the standpipe should be continued, including carrying out simple rising head tests, to assess the design water level. Groundwater is likely to be encountered within the excavation and, at this stage, it is recommended that the basement is designed with a water level assumed to be 1.0 m below ground level. It may however be possible to review this requirement following additional investigation by means of trial excavations and further monitoring and the advice in BS8102:2009[10] should be followed in this respect.

8.1.2 Basement Heave

The proposed excavation, to a depth of 4.40 m, will result in an unloading of approximately 90 kN/m^2 at formation level. This will lead to heave movements, which will comprise immediate elastic movement that will account for approximately 50 % of the total movement and be expected to be complete during the construction period, and long term movements, which will theoretically take many years to complete. A ground movement assessment is included in Part 3.0 of this report.

8.2 Spread Foundations

It is assumed that the new basement will extend to a depth of about 4.40 m below ground level, into the London Clay, which would provide a suitable bearing stratum for lightly loaded spread foundations. Moderate width pad or strip foundations bearing within the stiff brown fissured clay at proposed basement depth, may be designed to apply a net allowable bearing pressure of 120 kN/m^2. This value incorporates an adequate factor of safety against bearing capacity failure and should ensure that settlement remains within normal tolerable limits.

8.3 Basement Raft Foundation

Given the ground conditions at this site, a raft foundation would also be an appropriate solution, although the suitability of a raft foundation will depend on the resultant net pressure applied by the slab, taking into account the removal of overburden associated with the basement excavation. The raft would need to be designed to be rigid to resist any variation in upwards and downwards forces, in order to prevent differential movements and should bypass the made ground.

8.4 Piled Foundations

For the ground conditions at this site, a bored pile is likely to be the most appropriate type. A conventional rotary augered pile could be utilised but consideration will need to be given to the possible instability and water ingress within the made ground and sandy horizons or pockets within the London Clay. Bored piles installed using continuous flight auger (cfa) techniques may therefore be the most appropriate solution.

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

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

Stratum	Depth Below Ground Level (m)	kN / m²
Ultimate Skin Friction		
Basement Excavation	GL to 4.40	Ignore (basement excavation)
London Clay	4.40 to 14.00	Increasing linearly from 30 to 90
Ultimate End Bearing		
London Clay	10.00 to 14.00	Increasing linearly from 900 to 1170

In the absence of pile tests, guidance from the London District Surveyors Association (LDSA)[11] suggests that a factor of safety of 2.6 should be applied to the above coefficients in the computation of safe theoretical working loads. On the basis of the above coefficients, the following pile capacities have been estimated.

On the basis of the above coefficients, applying a factor of safety of 2.6, it has been estimated that 450 mm diameter piles extending to depths of 10.0 m or 14.0 m, should provide safe working loads of about 170 kN or 315 kN respectively.

The above examples are not intended to constitute any form of recommendation with regard to pile size or type, but merely serve to illustrate the use of the above coefficients. Specialist piling contractors should be consulted with regard to the design of a suitable piling scheme.

8.5 Shallow Excavations

On the basis of the borehole findings it is considered that it will be generally feasible to form relatively shallow excavations terminating within the made ground or the London Clay without the requirement for lateral support, although localised instabilities may occur where more granular material or groundwater is encountered.

Significant inflows of groundwater into shallow excavations are not generally anticipated, although seepages may be encountered from localised perched water within the made ground, although such inflows should be suitably controlled by sump pumping.

If deeper excavations are considered or if excavations are to remain open for prolonged periods it is recommended that provision be made for battered side slopes or lateral support. Where personnel are required to enter excavations, a risk assessment should be carried out and temporary lateral support or battering of the excavation sides considered in order to comply with normal safety requirements.

8.6 Basement Floor Slab

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

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

8.7 Effect of Sulphates

Chemical analyses have revealed relatively low concentrations of soluble sulphate and near-neutral to slightly alkaline pH in accordance with Class DS-2 conditions of Table C2 of BRE Special Digest 1:SD Third Edition (2005). The measured pH values of the samples show that an ACEC class of AC-2 would be appropriate for the site. This assumes a mobile water condition at the site. The highest level of soluble sulphate recorded during the investigation is at the maximum limit for the DS-2 class and adoption of class DS-3 may be more appropriate. The additional guidelines contained in the digest should be followed in the design of the foundation concrete.

8.8 Contamination Risk Assessment

The desk study findings indicate that the site has had a potentially contaminative history by means of the previous use as a garage. In addition, the results of the chemical analyses have indicated the made ground to be free from elevated concentrations of the contaminants tested for and will be excavated and removed as part of the proposed basement excavation. As a result no risk is envisaged to groundwater, adjacent sites, end users, site workers or buried services and no remediation works are considered to be required.

8.9 Waste Disposal

Under the European Waste Directive, waste is classified as being either Hazardous or Non-Hazardous and landfills receiving waste are classified as accepting hazardous or non-hazardous wastes or the non-hazardous sub-category of inert waste in accordance with the Waste Directive. Waste classification is a staged process and this investigation represents the preliminary sampling exercise of that process. Once the extent and location of the waste that is to be removed has been defined, further sampling and testing may be necessary. The results from this ground investigation should be used to help define the sampling plan for such further testing, which could include WAC leaching tests where the totals analysis indicates the soil to be a hazardous waste or inert waste from a contaminated site. It should however be noted that the Environment Agency guidance WM3[12] states that landfill WAC analysis, specifically leaching test results, must not be used for waste classification purposes.

Any spoil arising from excavations or landscaping works, which is not to be re-used in accordance with the CL:AIRE[13] guidance, will need to be disposed of to a licensed tip. Waste going to landfill is subject to landfill tax at either the standard rate of £84.40 per tonne (about £150 per m^3) or at the lower rate of £2.65 per tonne (roughly £5 per m^3). However, the classifications for tax purposes and disposal purposes differ and currently all made ground and topsoil is taxable at the 'standard' rate and only naturally occurring soil and stones, which are accurately described as such in terms of the 2011 Order, would qualify for the 'lower rate' of landfill tax.

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

12 Environment Agency 2015. *Guidance on the classification and assessment of waste.* Technical Guidance WM3 First Edition
13 CL:AIRE March 2011. *The Definition of Waste: Development Industry Code of Practice* Version 2

Soil Type	Waste Classification (Waste Code)	WAC Testing Required Prior to Landfill Disposal?	Comments
Made ground	Non-hazardous (17 05 04)	No	
London Clay	Inert (17 05 04)	Should not be required but confirm with receiving landfill	

Under the requirements of the European Waste Directive all waste needs to be pre-treated prior to disposal. The pre-treatment process must be physical, thermal, chemical or biological, including sorting. It must change the characteristics of the waste in order to reduce its volume, hazardous nature, facilitate handling or enhance recovery. The waste producer can carry out the treatment but they will need to provide documentation to prove that this has been carried out. Alternatively, the treatment can be carried out by an approved contractor. The Environment Agency has issued a position paper[14] which states that in certain circumstances, segregation at source may be considered as pre-treatment and thus excavated material may not have to be treated prior to landfilling if the soils can be segregated on site prior to excavation by sufficiently characterising the soils insitu prior to excavation.

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

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

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

Part 3: GROUND MOVEMENT ASSESSMENT

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

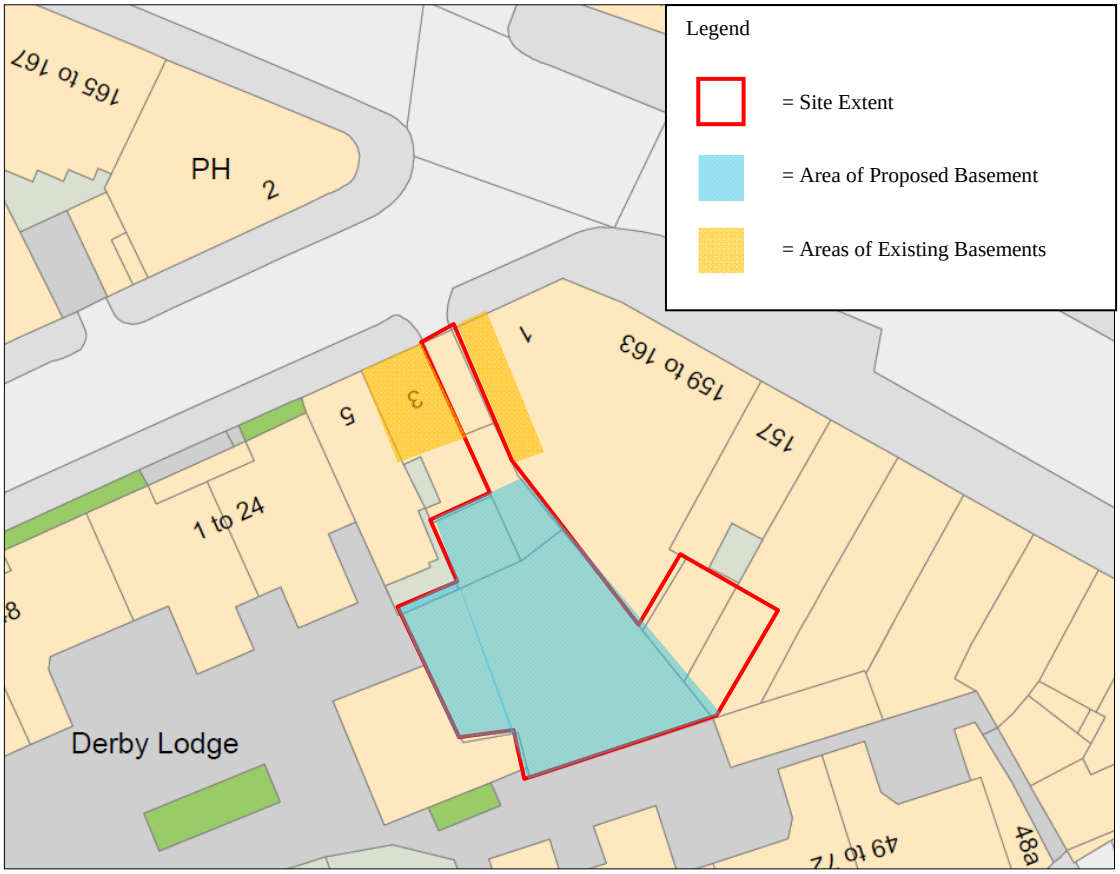
9.0 INTRODUCTION

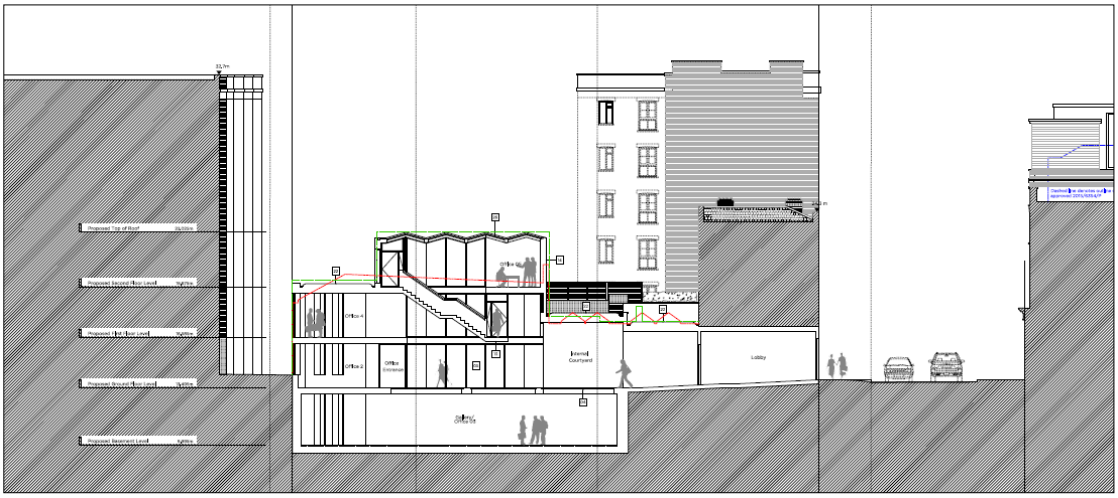
It is understood that it is proposed to construct the proposed single level basement to a depth of 4.4 m and the retaining walls will be mainly constructed by means of traditional underpinning, with contiguous bored pile walls in the southeast.

The sides of an excavation will move to some extent regardless of how they are supported. The movement will typically be both horizontal and vertical and will be influenced by the engineering properties of the ground, groundwater level and flow, the efficiency of the various support systems employed during underpinning and pile construction and the efficiency or stiffness of any support structures used. An analysis has been carried out of the likely movements arising from the proposed basement construction and the results of this analysis have been used to predict the effect of these movements on surrounding structures.

9.1 Basis of Ground Movement Assessment

9.1.1 Nearby Sensitive Structures





Section: Proposed Basement

A number of trial pits were excavated as part of the ground investigation in order to determine the depth of the existing walls and this information has been used within the ground movement assessment.

The heights of neighbouring houses have been estimated from observation. Where the depths of foundations or the heights of buildings are not known due to restricted access, these dimensions have been assumed.

The heights and basement depths of each of the nearby sensitive structures are summarised in the table below. All building foundation depths that have not been proved by means of trial pitting are assumed to be 0.5 m deep.

Sensitive Structure	Depth below existing ground floor level of basement / foundations (m)	Height of building above ground level (m)
Three storey townhouses fronting on to Britannia Street	0.5	15.0 / 3.0
Two storey townhouses fronting on to Britannia Street (front / rear)	0.5	8.0
Townhouses fronting on to King's Cross Road (front / rear / two storey extensions)	0.5	8.0 / 3.0 / 6.0
Townhouses fronting on to Wicklow Street	0.5	18.0
Gas asset building	0.5	2.6

The table below shows the walls where dimensions are known through trial pitting confirmation.

Sensitive Structure	Depth below existing ground floor level of basement / foundations (m)
Wall M	1.5
Wall N	4.0
Wall O	0.68
Wall P	1.85

Sensitive Structure	Depth below existing ground floor level of basement / foundations (m)
Wall Q	0.65
Wall W	1.7
Wall Y, AA	1.4
Wall AD, AF	1.46

The following drawings have been referred to, where relevant, to model the sensitive structures and proposed excavation.

Drawing Reference	Drawing Title
16038/P_02/P2, (draft), March 2017	Proposed Basement Plan
16038/P_01/P2, March 2017	Proposed Ground Floor Plan
16038/P_21/P2, (draft), March 2017	Proposed Section AA
SK01, 20 February 2017	Basement Construction

9.1.2 Construction Sequence

It is assumed that the proposed basement walls will be constructed by means of traditional underpinning across the majority of the site, to a depth of 4.4 m from ground level. In the southeast, a contiguous bored pile wall will be constructed to a depth of 8.5 m below ground level.

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

In general, the sequence of works for basement construction will comprise the following stages.

1. Construct underpinned retaining walls and piled retaining walls to perimeter of proposed basement. The underpins are commonly formed in a 'hit and miss' sequence using a trench box excavation, commonly sheet lined, shored and strutted; all temporary shoring and propping to be inspected by a suitably qualified person; and

2. construct new reinforced concrete slabs and excavate the new basement in a sequence that provides full restraint to the head and base of the wall, casting floor and basement slabs to provide propping as the excavation proceeds. Temporarily retain and strengthen the new retaining walls with sufficient propping and walling beams. Construct new ground slab.

Bored piles are assumed to be installed to a depth of 8.5 m from ground level.

The underpins will be adequately laterally propped and sufficiently dowelled together, and the concrete will be cast and adequately cured prior to excavation of the basement and removal of the formwork and supports. It is assumed that the corners of the excavation will be locally stiffened by cross-bracing or similar and that the new retaining walls will not be cantilevered at any stage during the construction process. It is assumed that adequate temporary propping of the new retaining walls, particularly at the top level, will occur at all times prior to the construction of permanent concrete floor slabs.

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

When the final excavation depths have been reached the permanent works will be formed, which are likely to comprise reinforced concrete walls with a drained cavity lining the inside of the underpinned walls. Reinforced concrete will be used for the floor slabs and it is anticipated that heave protection may be installed beneath the basement slab. Following this, the floor slab will be constructed at basement depth and the temporary props will be removed.

9.2 Ground Movements

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

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

The analysis of potential ground movements within the excavation, as a result of unloading of the underlying soils, has been carried out using the Oasys P-Disp Version 19.3 – Build 12 software package and is based on the assumption that the soils behave elastically, which provides a reasonable approximation to soil behaviour at small strains. For the purpose of these analyses, the corners have been defined by x and y coordinates, with the x-direction parallel with the orientation southwest-northeast, whilst the y-direction is parallel with the orientation of northwest-southeast. Vertical movement is in the z-direction. Wall lengths of

less than 10 m have been modelled as 1 m long structural elements, while walls greater than 10 m in length have been modelled as 2 m elements to reflect their greater stiffness. The full outputs of all the analyses can be provided on request and samples of the output movement contour plots are included within the appendix.

9.2.1 Ground Movements – Surrounding the Basement

Model Used

For the X-Disp analysis, the soil movement relationships used for the embedded retaining walls are the default values within CIRIA report C580[15], which were derived from a number of historic case studies. The analysis has adopted the values for 'installation of a planar diaphragm wall' to most closely represent the installation of the underpinned and reinforced concrete retaining walls. 'Installation of a contiguous bored pile wall' has been adopted for the retaining walls in the southeast. The ground movement curves for 'excavations in front of a stiff wall in stiff clay' have been adopted as being considered most appropriate for the proposed excavation.

Results

The predicted movements are based on the worst case of the individually analysed segments of 'hogging' and 'sagging' and these are summarised in the tables overleaf. It should be noted that the combined effect of segments acting together typically improves the resultant movements and the values below are therefore deemed to be conservative. The diagram on the previous page details the relevant sensitive structures in relation to the proposed excavations.

The results are tabulated below and have been presented to the degree of accuracy required to allow predicted variations in ground movements around the structure(s) to be illustrated, but may not reflect the anticipated accuracy of the predictions.

Wall Installation Phase:

Sensitive Structure	Substructure	Structure Reference	Vertical Movement (Settlement) (mm)	Horizontal Movement (mm)
Three storey townhouses fronting on to Britannia Street	N/A	A to I	< 1	< 1
Two storey townhouses fronting on to Britannia Street	Front	J to N	< 1	< 1
	Rear	O to R	3	3
Townhouses fronting on to King's Cross Road	Front	S, T, U, X, Z, AB	2	< 1
	Rear	AC to AG	4	4
	Two storey extensions	V, W, Y, AA	3	2
Townhouses fronting on to Wicklow Street	N/A	AH t o AT	3	2
Gas asset building	N/A	AU to AW	3	4

[15] Gaba, A, Simpson, B, Powrie, W and Beadman, D (2003) *Embedded retaining walls – guidance for economic design.* CIRIA Report C580.

Wall Installation and Excavation Phases Combined:

Sensitive Structure	Substructure	Structure Reference	Vertical Movement (Settlement) (mm)	Horizontal Movement (mm)
Three storey townhouses fronting on to Britannia Street	N/A	A to I	5	8
Two storey townhouses fronting on to Britannia Street (front / rear)	Front	J to N	4	8
	Rear	O to R	8	14
Townhouses fronting on to King's Cross Road	Front	S, T, U, X, Z, AB	4	6
	Rear	AC to AG	5	7
	Two storey rear extensions	V, W, Y, AA	5	6
Townhouses fronting on to Wicklow Street	N/A	AH to AT	7	9
Gas asset building	N/A	AU to AW	8	15

The analysis has indicated that the maximum vertical settlements and horizontal movements that will result from the new retaining wall construction are less than 5 mm. Furthermore, the analysis has indicated that the maximum vertical settlements and horizontal movements that will result from the combined effect of the retaining wall installation and excavation are around 15 mm or less.

9.2.2 Movements within the Excavation (Heave)

Model Used

At this site, unloading of the London Clay will take place as a result of the proposed basement excavation and the reduction in vertical stress in the short term will cause heave to take place. Undrained soil parameters have been used to estimate the potential short term movements, which include the "immediate" or elastic movements as a result of the basement excavation. Drained parameters have been used to provide an estimate of the total movement, which includes long term swelling that will continue for a number of years.

The elastic analysis requires values of soil stiffness at various levels to calculate displacements. Values of stiffness for the soils at this site are readily available from published data and we have used a well-established method to provide our estimates. This relates values of E_u and E', the drained and undrained stiffness respectively, to values of undrained cohesion, as described by Padfield and Sharrock[16] and Butler[17] and more recently by O'Brien and Sharp[18]. Relationships of $E_u = 500\ C_u$ and $E' = 300\ C_u$ for the cohesive soils have been used to obtain values of Young's modulus. More recent published data[19] indicates stiffness values of 750 x Cu for the London Clay and a ratio of E' to Eu of 0.75, and it is considered that the use of the more conservative values provides a sensible approach for this stage in the design. The profile of the underlying London Clay has been interpolated from the ground investigation.

16 Padfield CJ and Sharrock MJ (1983) *Settlement of structures on clay soils*. CIRIA Special Publication 27

17 Butler FG (1974) *Heavily overconsolidated clays: a state of the art review*. Proc Conf Settlement of Structures, Cambridge, 531-578, Pentech Press, Lond

18 O'Brien AS and Sharp P (2001) *Settlement and heave of overconsolidated clays - a simplified non-linear method.* Part Two, Ground Engineering, Nov 2001, 48-53

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

The proposed basement excavation will result in a net unloading of around 90 kN/m^2 which is assumed to act at a maximum excavation depth of 4.4 m below existing ground floor level. The predicted heave pressure at basement level is likely to be of the order of between 30 % and 40 % of the net unloading. Once the basement is complete it is understood that a new pressure of 60 kN/m^2 will apply as a uniformly distributed load at the proposed basement level.

The soil parameters used in this assessment are tabulated below.

Stratum	Depth range (m)	Eu (MPa)	E' (MPa)
Made Ground	GL to 2.0	20.0	20.0
London Clay	2.0 to 11.0	20.0 to 54.0	12.0 to 32.0

A rigid boundary for the analysis has been set at the base of the London Clay and underlying clay of the Lambeth Group, at a depth of 38 m below existing ground level, where nearby BGS records indicate that the base of this formation is likely to be present.

Results

The P-Disp analysis indicates that, by the time the basement construction is complete, between around 10 mm to 15 mm of heave is likely to have taken place at the centre of the proposed excavation, reducing to around 5 mm to 10 mm at the edges. Due to the addition of a uniform load across the new basement in the long term, the magnitude of heave at the centre of the basement is unlikely to exceed about 5 mm.

The results of the P-Disp analysis can be used to indicate the likely impact of the proposed basement construction beyond the site boundaries; about 5 m away from the excavation a total movement of less than 5 mm is predicted. Movements outside the excavation will be constrained to a certain extent by the presence of the new retaining walls.

A void or layer of compressible material may need to be incorporated into the design to accommodate these potential long term movements. If a compressible material is used beneath the slab, it will need to be designed to be able to resist the potential uplift forces generated by the ground movements. In this respect potential heave pressures are typically taken to equate to around 30 % to 40 % of the total unloading pressure.

9.3 Building Damage Assessment

In addition to the above assessment of the likely movements that will result from the proposed development, the neighbouring buildings are considered to be sensitive structures, requiring Building Damage Assessments, on the basis of the classification given in Table 2.5 of C580[1].

All structures are shown on the plan in Section 9.1.1.

9.3.1 Damage to Neighbouring Structures

The movements resulting from the wall installation phase and the combined retaining wall installation and basement excavation phases have been estimated using the X-Disp modelling software, to carry out an assessment of the likely damage to adjacent properties. The results are summarised for the combined wall installation and basement excavation in the table below.

The potential heave movements predicted by P-Disp have not been included in the first assessment of the damage category, which can therefore be considered as conservative, as these movements are likely to have a mitigating effect on the downward settlement predicted by X-Disp.

Sensitive Structure	Substructure	Structure Reference	Maximum Category of Damage*
Three storey townhouses fronting on to Britannia Street	N/A	A	Category 0 - Negligible
		B	Category 0 – Negligible
		C	Category 1 – Very Slight
		D	Category 0 – Negligible
		E	Category 0 – Negligible
		F	Category 0 – Negligible
		G	Category 0 – Negligible
		H	Category 0 – Negligible
		I	Category 0 – Negligible
Two storey townhouses fronting on to Britannia Street (front / rear)	Front	J	Category 0 - Negligible
		K	Category 0 – Negligible
		L	Category 2 – Slight
		M	Category 2 – Slight
		N	Category 0 – Negligible
	Rear	O	Category 2 – Slight
		P	Category 1 – Very Slight
		Q	Category 2 – Slight
		R	Category 0 – Negligible
Townhouses fronting on to King's Cross Road	Front	S	Category 0 – Negligible
		T	Category 0 – Negligible
		U	Category 0 – Negligible
		X	Category 0 – Negligible
		Z	Category 0 – Negligible
		AB	Category 0 – Negligible
	Rear	AC	Category 0 – Negligible
		AD	Category 0 – Negligible
		AE	Category 0 – Negligible

Sensitive Structure	Substructure	Structure Reference	Maximum Category of Damage*
		AF	Category 0 – Negligible
		AG	Category 0 – Negligible
	Two storey rear extensions	V	Category 1 – Very Slight
		W	Category 0 – Negligible
		Y	Category 0 – Negligible
		AA	Category 0 – Negligible
Townhouses fronting on to Wicklow Street	N/A	AH	Category 0 – Negligible
		AI	Category 0 – Negligible
		AJ	Category 0 – Negligible
		AK	Category 1 – Very Slight
		AL	Category 0 – Negligible
		AM	Category 1 – Very Slight
		AN	Category 0 – Negligible
		AO	Category 1 – Very Slight
		AP	Category 0 – Negligible
		AQ	Category 0 – Negligible
		AR	Category 1 – Very Slight
		AS	Category 0 – Negligible
		AT	Category 0 – Negligible
Gas asset building	N/A	AU	Category 2 - Slight
		AV	Category 0 – Negligible
		AW	Category 2 – Slight

**From Table 2.5 of C580[1]: Classification of visible damage to walls.*

The analysis has predicted that the proposed installation of the retaining walls and excavation of the proposed basement may generally result in a building damage category for sensitive structures of between Category 0 (negligible) and Category 1 (very slight); six walls of sensitive structures have however been assessed as Category 2 (Slight).

The Camden Planning Guidance notes that 'The design and construction methodology should aim to limit damage to the existing building on the site and to all adjoining buildings to Category 1 … and should never be more than Category 2', such that the damage categories above fall within acceptable limits. However, additional consideration has been given to the walls with the highest damage categories as discussed below.

All six of the walls assessed to be Category 2 – Slight are located close to the underpinned sections of the new basement. There is a wealth of experience with respect to the

construction of underpinned retaining walls, of which five of the 'Slight' walls above are adjacent to the underpinned retaining walls, which suggests that horizontal ground movements should remain typically within the range of 2 mm to 5 mm following completion of the works, provided that they are installed by a reputable and experienced contractor in accordance with the guidelines published by the Association of Specialist Underpinning Contractors[20], which indicates that the predicted movements represent a conservative assessment of the likely movements.

A manual assessment has been carried out for sensitive structures that have been assigned Damage Category 2, Slight. Within the industry it is recognised that the assessment of an underpinned retaining wall using XDisp provides a conservative approach and, for walls where high damage categories are attained, a hand calculation of the likely damage category would be more appropriate. This method considers the total heave movements at foundation level due to the basement excavation, which is assessed using PDisp, combined with the length and height of each 'Slight' sensitive structure. For this assessment, the total heave movements include the excavation of the new basement and application of a new pressure of 60 kN/m^2 at basement level.

The manual calculations have indicated that Walls L, M, and AW achieve a damage category of Negligible such that no further assessment is required. The manual output is appended.

The additional analyses have indicated that the magnitude of horizontal movement is the controlling factor in determining the damage category. For each of the sensitive walls the maximum allowable value of horizontal movement, beyond which Category 2 damage is predicted is shown in the table below.

The full manual calculations for Walls O, Q and AU are appended.

Elevation	Maximum Horizontal Movement in order to achieve a Damage Category of 1, Very Slight (mm)
O	2.0
Q	1.5
AU	2.0

In order to achieve the limiting horizontal movements, the magnitudes of movement could form part of the construction monitoring strategy, as discussed below.

9.3.2 Monitoring of Ground Movements

The predictions of ground movement based on the ground movement analysis should be checked by monitoring of adjacent properties and structures. The structures to be monitored during the construction stages should include the existing house and neighbouring structures. Condition surveys of the existing structures should be carried out before and after the proposed works.

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

[20] Haslam S, O'Connor L (2013) *Guidelines on safe and efficient basement construction directly below or near to existing structures* ASUC

9.4 Ground Movement Assessment Conclusions

The analysis has concluded that the predicted damage to the neighbouring properties from the installation of the proposed underpin construction and basement excavation would be 'Negligible' to 'Very Slight', whilst three walls of sensitive structures may result in Category 2 (slight) for which the damage that would occur would fall outside the acceptable limits. A monitoring strategy is recommended for the proposed construction and the horizontal limits outlined in Section 7.5.1 should be incorporated into the strategy in order to limit the predicted movement to Category 1, Very Slight. It is recommended that movement monitoring is carried out on all structures prior to and during the proposed basement construction.

The separate phases of work, including excavation of the proposed basement, will in practice be separated by a number of weeks, during which time construction of permanent supports, basement slab and underpin curing will take place. This will provide an opportunity for the ground movements during and immediately after underpin construction to be measured and the data acquired can be fed back into the design and compared with the predicted values. Such a comparison will allow the ground model to be reviewed and the predicted wall movements to be reassessed prior to the main excavation taking place so that propping arrangements can be adjusted if required.

Part 4: BASEMENT IMPACT ASSESSMENT

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

10.0 INTRODUCTION

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

10.1 Potential Impacts

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

The ground investigation has indicated that the site is directly underlain by the London Clay, which is classified as an unproductive stratum.

Potential Impact	Site Investigation Conclusions
London Clay is the shallowest stratum at the site.	The London Clay is prone to seasonal shrink-swell (subsidence and heave).
Seasonal shrink-swell can result in foundation movements.	The London Clay is prone to seasonal shrink-swell and can cause structural damage. Desiccation was not noted during the fieldwork.
The site is located within 5 m of a highway or pedestrian right of way	The proposed basement will not extend to within 5 m of Britannia Street in the north.
Founding depths relative to neighbours.	The retention system will ensure the stability of the excavation and neighbouring properties at all times.
The site is in an area identified to have surface water flood risk.	The proposed basement is set back behind the buildings that front on to Britannia Street and King's Cross Road, such that the basement is likely to be at a sufficient distance from any such surface water flooding.

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

Seasonal Shrink-Swell
The proposed basement is not located close to any existing trees and proposed planting of new trees does not form part of the proposals, such that the effect of shrink-swell of the London Clay is not envisaged.

The proposed basement will significantly increase differential depth of foundations to neighbouring properties
As part of the investigation, the depth of a number of neighbouring foundations has been determined and has been included in the ground movement assessment. The proposed basement will extend to a significant depth relative to the existing foundations of the neighbouring properties and will need to be designed to ensure the stability of the site and any potentially sensitive structures that are in close proximity to the site.

Appropriate propping and temporary works installed during basement construction will limit the effect of ground movements on the surrounding properties.

The results of a ground movement assessment by GEA to predict the likely movements as a result of the proposed development is shown in Part 3 of this report.

10.2 Non-Technical Summary of Evidence

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

10.2.1 Screening

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

Question	Response for Land to rear of 159-163 King's Cross Road
1a. Is the site located directly above an aquifer?	Aquifer designation maps acquired from the Environment Agency as part of the desk study and Figures 3, 5 and 8 of the Arup report.
1b. Will the proposed basement extend beneath the water table surface?	The proposals provided by the consulting engineers assessed against the standpipe monitoring levels.
2. Is the site within 100 m of a watercourse, well (used/ disused) or potential spring line?	Figures 11 and 12 of the Arup report.
3. Is the site within the catchment of the pond chains on Hampstead Heath?	Figures 12 and 14 of the Arup report.
4. Will the proposed basement development result in a change in the proportion of hard surfaced / paved areas?	Site walkover and the proposals provided by the consulting engineers.
5. As part of the site drainage, will more surface water (e.g. rainfall and run-off) than at present be discharged to the ground (e.g. via soakaways and/or SUDS)?	The proposals provided by the consulting engineers.
6. Is the lowest point of the proposed excavation (allowing for any drainage and foundation space under the basement floor) close to or lower than, the mean water level in any local pond or spring line?	The proposals provided by the consulting engineers assessed against the standpipe monitoring levels.

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

Question	Evidence
1. Is the site within the catchment of the pond chains on Hampstead Heath?	Figures 12 and 14 of the Arup report.
2. As part of the proposed site drainage, will surface water flows (e.g. volume of rainfall and peak run-off) be materially changed from the existing route?	A site walkover confirmed the proportions of hardstanding, which has been compared to the proposals to work out any proposed changes in hardstanding.
3. Will the proposed basement development result in a change in the proportion of hard surfaced / paved areas?	
4. Will the proposed basement development result in changes to the profile of the inflows (instantaneous and long term) of surface water being received by adjacent properties or downstream watercourses?	
5. Will the proposed basement result in changes to the quantity of surface water being received by adjacent properties or downstream watercourses?	

Question	Evidence
6. Is the site in an area identified to have surface water flood risk according to either the Local Flood Risk Management Strategy or the Strategic Flood Risk Assessment or is it at risk of flooding, for example because the proposed basement is below the static water level of nearby surface water feature?	Flood risk maps acquired from the Environment Agency as part of the desk study, Figure 15 of the Arup report, the Camden Flood Risk Management Strategy dated 2013 together with Figures 3iv, 4e, 5a and 5b of the Strategic Flood Risk Assessment dated 2014.

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

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

10.2.2 Scoping and Site Investigation

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

A ground investigation has been carried out, which has allowed an assessment of the potential impacts of the basement development on the various receptors identified from the screening and scoping stages. Principally the investigation aimed to establish the ground conditions, including the groundwater level, the engineering properties of the underlying soils to enable suitable design of the basement development and the configuration of the existing wall foundations. The findings of the investigation are discussed in Section 5.0 of this report and summarised in both Section 7.0 and the Executive Summary.

10.2.3 Impact Assessment

Section 9.0 of this report summarises whether or not, on the basis of the findings of the investigation, the potential impacts still need to be given consideration and identifies ongoing risks that will require suitable engineering mitigation. Section 8.0 of this report also provides recommendations for the design of the proposed development, whilst Section 9.0 discusses the outcomes of a ground movement analysis and building damage assessment, which has also been used to provide a conclusion on any potential impacts from the proposed basement development.

10.3 BIA Conclusion

A Basement Impact Assessment has been carried out following the information and guidance published by the London Borough of Camden. Information from a Site Investigation and Ground Movement Assessment has been used to assess potential impacts identified by the screening process.

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

11.0 OUTSTANDING RISKS AND ISSUES

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

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

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

APPENDIX

Borehole Records

Laboratory Geotechnical Test Results

SPT & Cohesion/Depth Graph

Chemical Analyses (soil)

Risk-based Generic Guideline Values

Envirocheck Extracts

Historical Maps

X-DISP ANALYSIS:

Wall Installation

Contour Plots of Vertical Movements and Horizontal Movements

Wall Installation and Basement Excavation combined

Contour Plots of Combined Vertical Movements and Horizontal Movements

Tabular Output of Results

P-DISP ANALYSIS

Short Term Movement Contour Plots

Total Movement Contour Plots

DAMAGE CATEGORY MANUAL CALCULATIONS

Site Plan

DESK STUDY & GROUND INVESTIGATION REPORT

Land to rear of
159-163 King's Cross Road
London
WC1X 9BN

Client: Balcap RE

Engineer: Parmarbrook

J16180

March 2017




GEA Geotechnical & Environmental Associates

Geotechnical & Environmental Associates	Widbury Barn Widbury Hill Ware,Herts SG12 7QE	**Site** 159-163 Kings Cross Road, London WC1X 9BN	**Borehole Number** **BH1**

Boring Method	**Casing Diameter**	**Ground Level (mOD)**	**Client**	**Job Number**
Cable Percussion	150mm cased to 2.50m		Balcap RE	J16180
	Location	**Dates** 12/09/2016- 14/09/2016	**Engineer** Parmarbrook	**Sheet** 1/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						0.10	CONCRETE		
0.30	B1					(0.85)	MADE GROUND (dark brown silty very clayey gravelly sand with fragments of brick, occasional ceramic fragments, concrete fragments, cobbles and ash)		
1.00-1.45	SPT(C) N60=7	1.00	DRY	1,1/1,1,2,2		0.95			
1.00	B2					(0.45)	MADE GROUND (brownish grey silty, sandy gravelly clay with fagments of brick and ash)		
1.40	D3					1.40			
						(0.50)	MADE GROUND (grey clayey silt with occasional fragments of brick and gravel)		
1.90	D4					1.90			
2.00-2.45	U5						Firm fissured medium strength brown and pale grey mottled silty CLAY with orange-brown sand partings, occasional coarse selenite, pockets of blue-grey sand and silt		
2.45	D6								
2.70	D7								
3.00-3.45	SPT N60=8	2.50	DRY	1,1/1,2,2,2					
3.00	D8					(3.00)			
3.70	D9								
4.00-4.45	U10								
4.45	D11								
4.70	D12								
4.90	D13					4.90			
5.00-5.45	SPT N60=13	2.50	DRY	1,2/2,3,3,3			Firm becoming stiff fissured medium to high strength pale grey and brown mottled silty CLAY with fine selenite, becoming very silty at 9.0 m and 12.9 m depth		
5.00	D14								
6.00	D15								
6.50-6.95	U16			12/09/2016:DRY					
				13/09/2016:DRY					
6.95	D17								
7.50	D18								
8.00-8.45	SPT N60=17	2.50	DRY	2,2/3,3,4,4					
8.00	D19								
9.00	D20								
9.50-9.95	U21								

Remarks
Groundwater monitoring standpipe installed to 6.0 m
1 hr chiselling from ground level to 1 m depth
1 hr cleaning glass and debris away from working area
2 hr dismantling rig and demobilising from site - delays due to unknown road closure for nearby construction site on Britannia Street
Chiselling from 0.00m to 1.00m for 1 hour.

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

Figure No.
J16180.BH1

Geotechnical & Environmental Associates	Widbury Barn Widbury Hill Ware,Herts SG12 7QE	**Site** 159-163 Kings Cross Road, London WC1X 9BN	**Borehole Number** **BH1**

Boring Method	**Casing Diameter**	**Ground Level (mOD)**	**Client**	**Job Number**
Cable Percussion	150mm cased to 2.50m		Balcap RE	J16180
	Location	**Dates** 12/09/2016- 14/09/2016	**Engineer** Parmarbrook	**Sheet** 2/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						(10.10)			
9.95	D22								
10.50	D23								
11.00-11.45 11.00	SPT N60=21 D24	2.50	DRY	2,2/3,4,5,6					
12.00	D25								
12.50-12.95	U26								
12.95	D27								
13.50	D28								
14.00-14.45 14.00	SPT N60=28 D29	2.50	DRY	2,3/4,5,7,8					
15.00	D30			13/09/2016:DRY		15.00	Complete at 15.00m		

Remarks
Groundwater monitoring standpipe installed to 6.0 m
1 hr chiselling from ground level to 1 m depth
1 hr cleaning glass and debris away from working area
2 hr dismantling rig and demobilising from site - delays due to unknown road closure for nearby construction site on Britannia Street

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

Figure No.
J16180.BH1

GEA Geotechnical & Environmental Associates Widbury Barn Widbury Hill Ware,Herts SG12 7QE	**Site** 159-163 Kings Cross Road, London WC1X 9BN		**Number** **BH2**
Excavation Method Drive-in Windowless Sampler	**Dimensions**	**Ground Level (mOD)**	**Client** Balcap RE	**Job Number** J16180
	Location	**Dates** 31/08/2016	**Engineer** Parmarbrook	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
1.00-1.45	SPT		0,0/1,1,0,1		(3.80)	MADE GROUND (40 mm tarmac over 40 mm concrete over dark brown very silty sandy gravelly clay with fragments of brick, concrete and pockets of ash)		
2.00-2.45	SPT		0,0/0,0,0,1					
3.00-3.45	SPT		0,0/1,0,1,1		3.80			
4.00-4.45	SPT		9,4/3,1,0,1		(2.20)	Firm dark grey and pale brown silty CLAY becoming stif from 5.9 m, soft between 4.0 m and 5.9 m, becoming dark grey from 5.0 m depth		
5.00-5.45	SPT		0,0/0,1,0,1					
6.00-6.45	SPT		3,2/2,3,4,3		6.00	Complete at 6.00m		

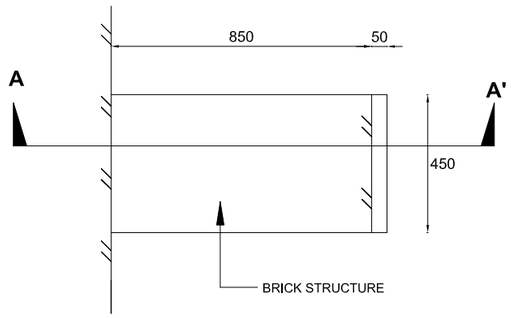
Remarks
Groundwater encountered at 3.0 m during drilling
Groundwater monitoring standpipe installed to 6.0 m depth

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

Figure No.
J16180.BH2

GEA Geotechnical & Environmental Associates	Widbury Barn Widbury Hill Ware Herts SG12 7QE	**Site** 159-163 Kings Cross Road, London WC1X 9BN			**Trial Pit Number** **TP1**
Excavation Method Manual	**Dimensions** 900 x 450 x 1500 mm	**Ground Level (m OD)**	**Client** Balcap RE	**Job Number** J16180	
	Location	**Date** 31/08/16 to 01/09/16	**Engineer** Parmarbrook	**Sheet Number** 1 of 1	

Plan



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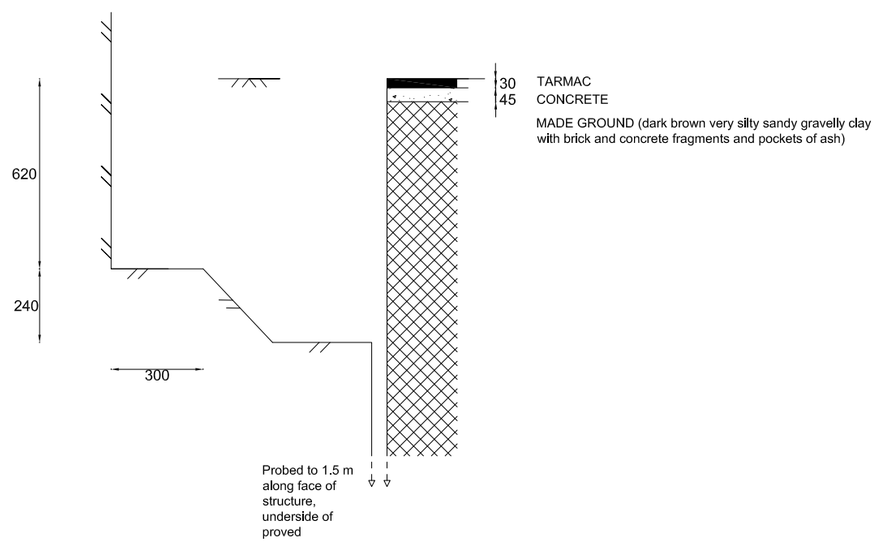


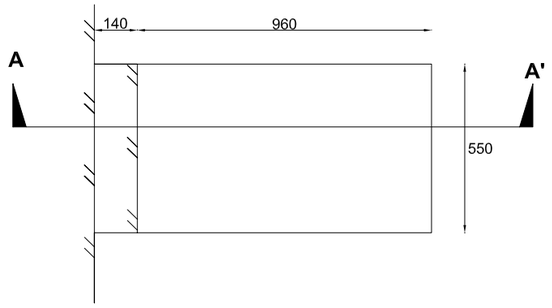
Notes:
Groundwater not encountered
Trial pit obstructed by brick structure

Scale 1 : 20

Logged By CA

GEA Geotechnical & Environmental Associates	Widbury Barn Widbury Hill Ware Herts SG12 7QE	**Site** 159-163 Kings Cross Road, London WC1X 9BN			**Trial Pit Number**
Excavation Method Manual	**Dimensions** 1100 x 550 x 1800 mm	**Ground Level (m OD)**	**Client** Balcap RE	**Job Number** J16180	**TP1A**
	Location	**Date** 31/08/16 to 01/09/16	**Engineer** Parmarbrook	**Sheet Number** 1 of 1	

Plan



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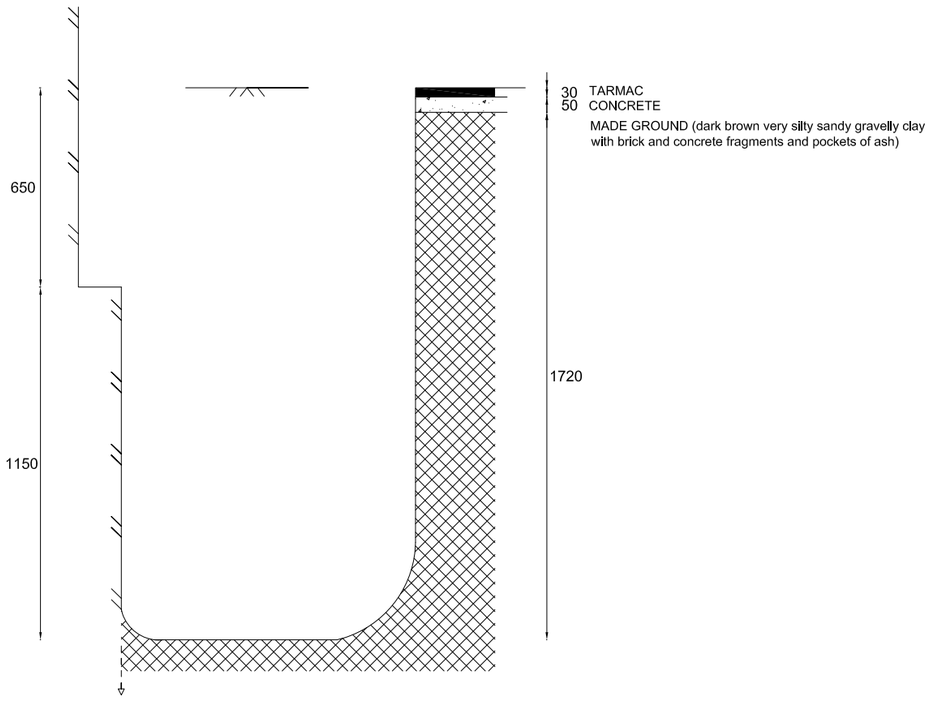


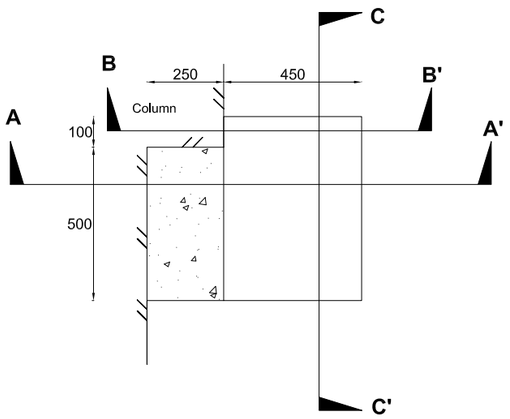
Notes:
Groundwater not encountered

Scale 1 : 20

Logged By CA

GEA Geotechnical & Environmental Associates	Widbury Barn Widbury Hill Ware Herts SG12 7QE	**Site** 159-163 Kings Cross Road, London WC1X 9BN			**Trial Pit Number**
Excavation Method Manual	**Dimensions** 700 x 600 x 1550 mm	**Ground Level (m OD)**	**Client** Balcap RE	**Job Number** J16180	**TP2**
	Location	**Date** 31/08/16 to 01/09/16	**Engineer** Parmarbrook	**Sheet Number** 1 of 1	

Plan



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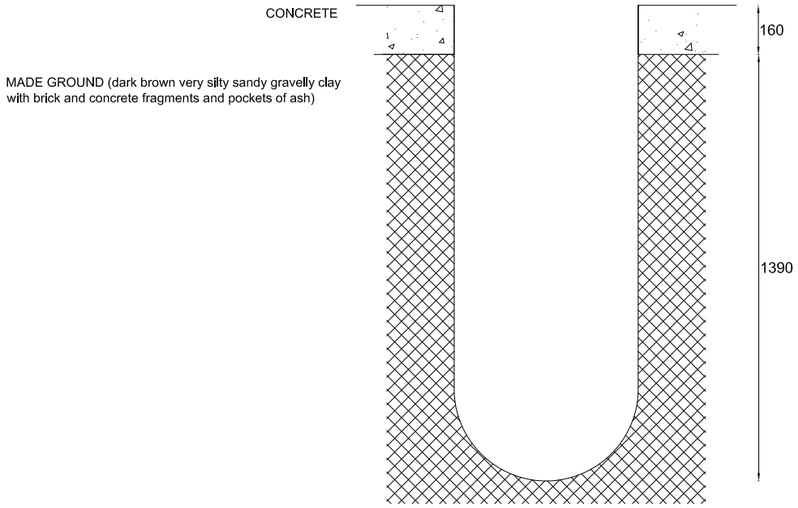

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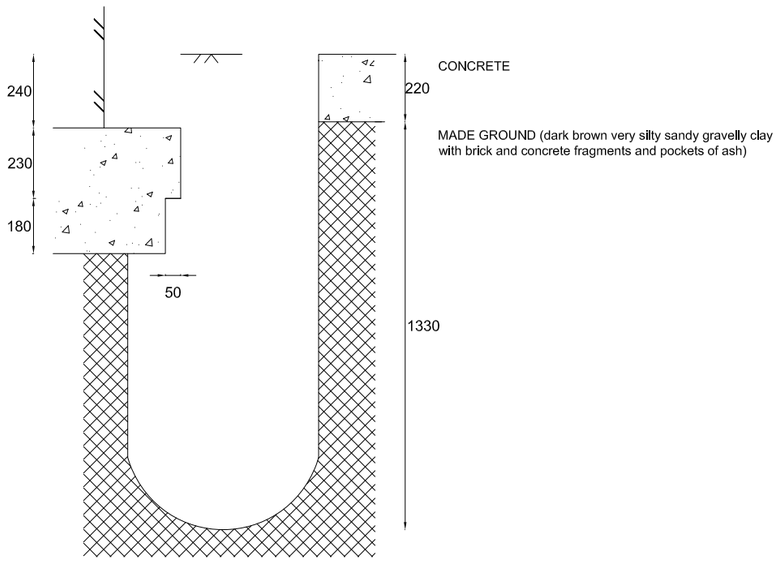

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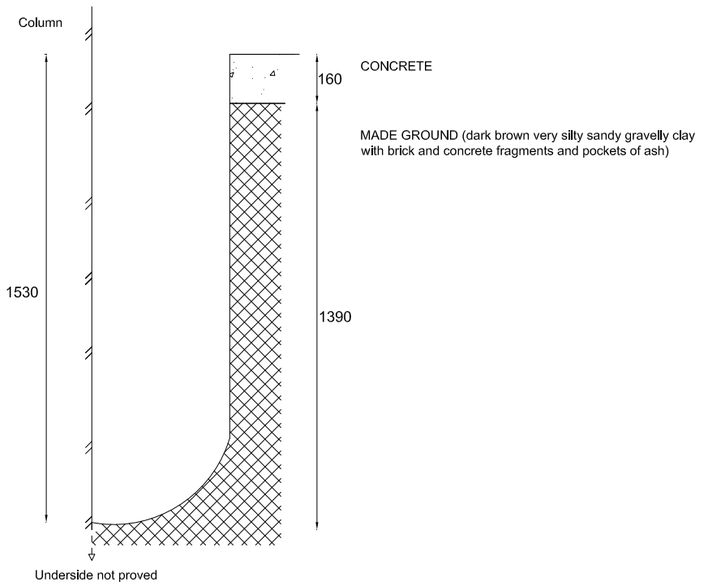


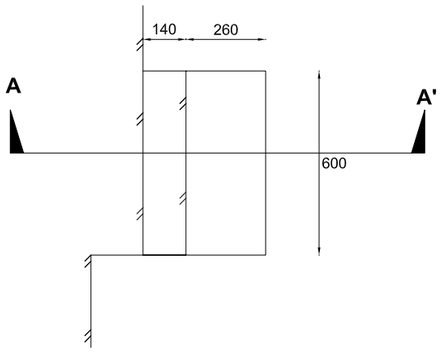
Notes:
Groundwater not encountered

Scale 1 : 20

Logged By CA

GEA Geotechnical & Environmental Associates	Widbury Barn Widbury Hill Ware Herts SG12 7QE	**Site** 159-163 Kings Cross Road, London WC1X 9BN			**Trial Pit Number**
Excavation Method Manual	**Dimensions** 400 x 600 x 1950 mm	**Ground Level (m OD)**	**Client** Balcap RE	**Job Number** J16180	**TP2A**
	Location	**Date** 31/08/16 to 01/09/16	**Engineer** Parmarbrook	**Sheet Number** 1 of 1	

Plan



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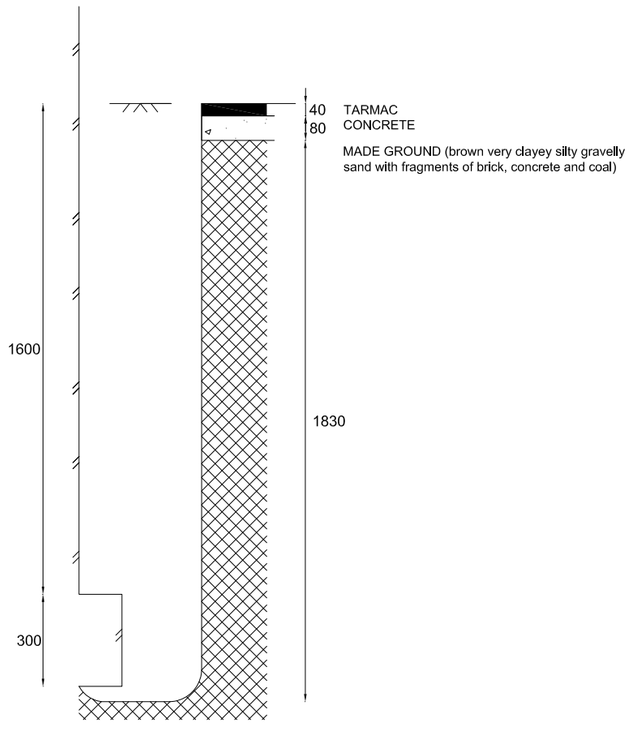
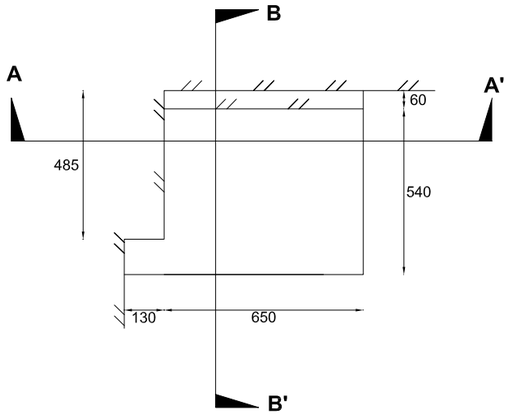


Notes:
Groundwater not encountered

Scale	1 : 20
Logged By	CA

GEA Geotechnical & Environmental Associates	Widbury Barn Widbury Hill Ware Herts SG12 7QE	**Site** 159-163 Kings Cross Road, London WC1X 9BN			**Trial Pit Number**
Excavation Method Manual	**Dimensions** 780 x 600 x 1020 mm	**Ground Level (m OD)**	**Client** Balcap RE	**Job Number** J16180	**TP3**
	Location	**Date** 31/08/16 to 01/09/16	**Engineer** Parmarbrook	**Sheet Number** 1 of 1	

Plan



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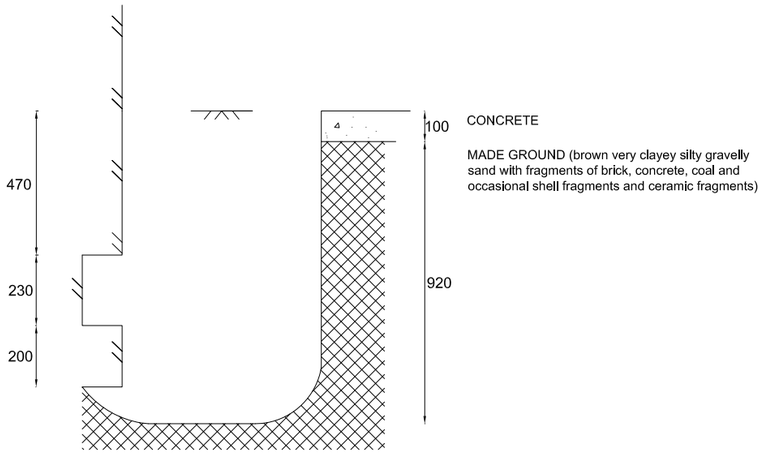

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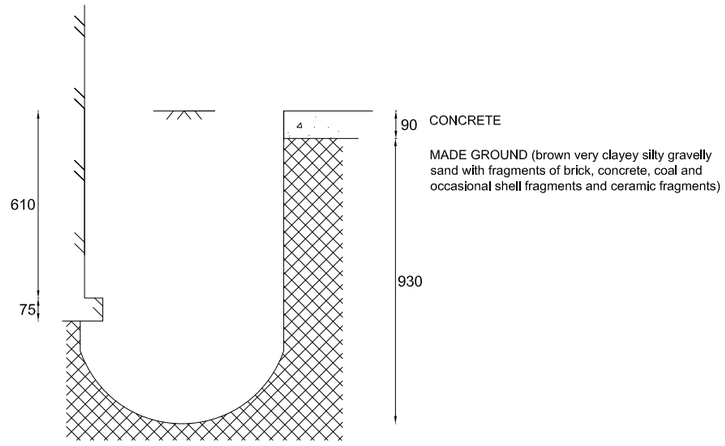


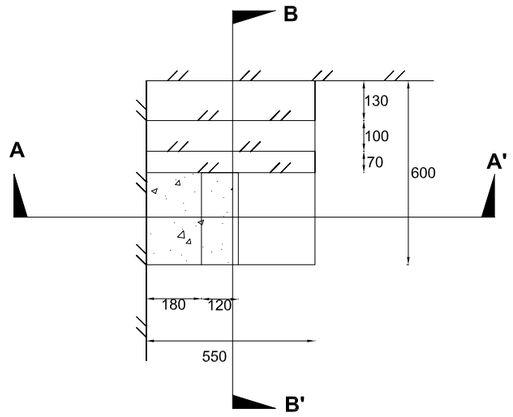
Notes:
Groundwater not encountered

Scale 1 : 20

Logged By CA

GEA Geotechnical & Environmental Associates	Widbury Barn Widbury Hill Ware Herts SG12 7QE	**Site** 159-163 Kings Cross Road, London WC1X 9BN			**Trial Pit Number**
Excavation Method Manual	**Dimensions** 550 x 600 x 1460 mm	**Ground Level (m OD)**	**Client** Balcap RE	**Job Number** J16180	**TP4**
	Location	**Date** 31/08/16 to 01/09/16	**Engineer** Parmarbrook	**Sheet Number** 1 of 1	

Plan



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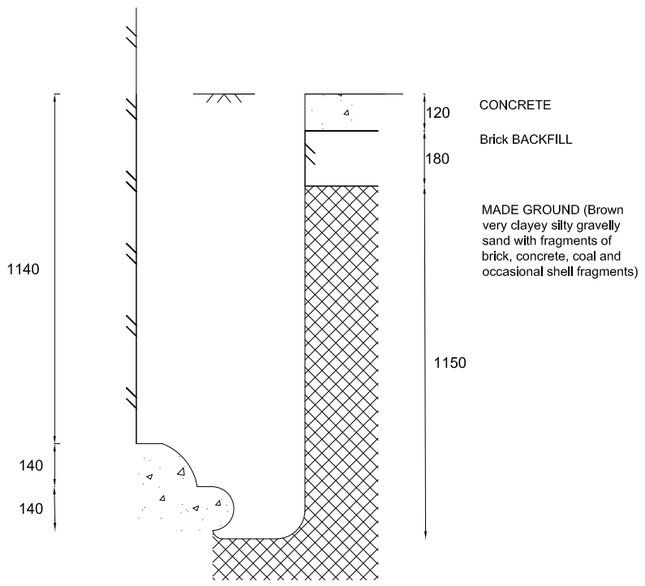

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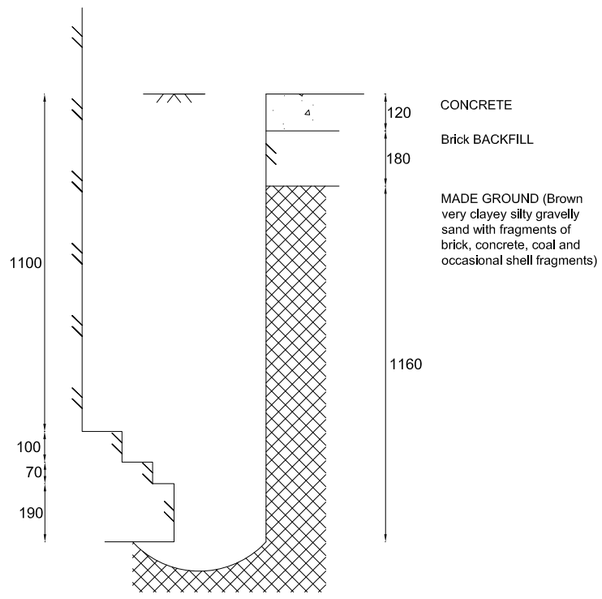
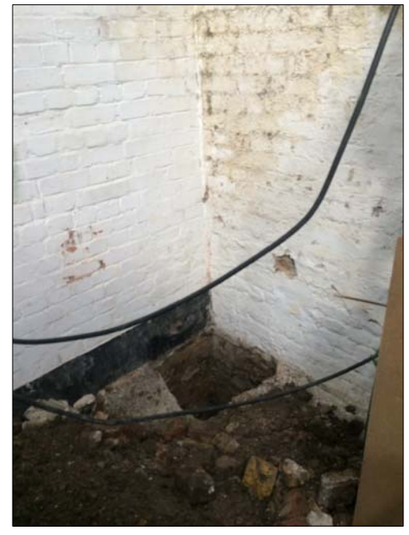




Notes:
Groundwater not encountered

Scale 1 : 20

Logged By CA

GEA Geotechnical & Environmental Associates

Widbury Barn
Widbury Hill
Ware
Herts SG12 7QE

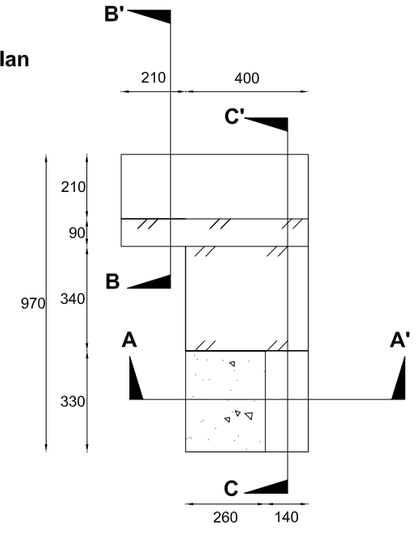
Site 159-163 Kings Cross Road, London WC1X 9BN

Trial Pit Number

TP5

Excavation Method	Dimensions	Ground Level (m OD)	Client	Job Number
Manual	610 x 970 x 1430 mm		Balcap RE	J16180
	Location	**Date**	**Engineer**	**Sheet Number**
		31/08/16 to 01/09/16	Parmarbrook	1 of 1

Plan



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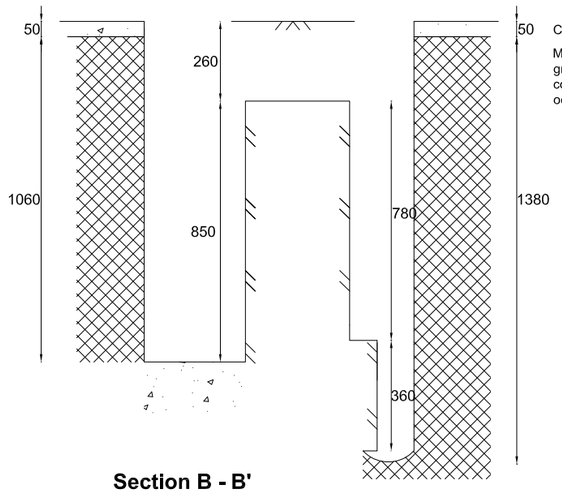

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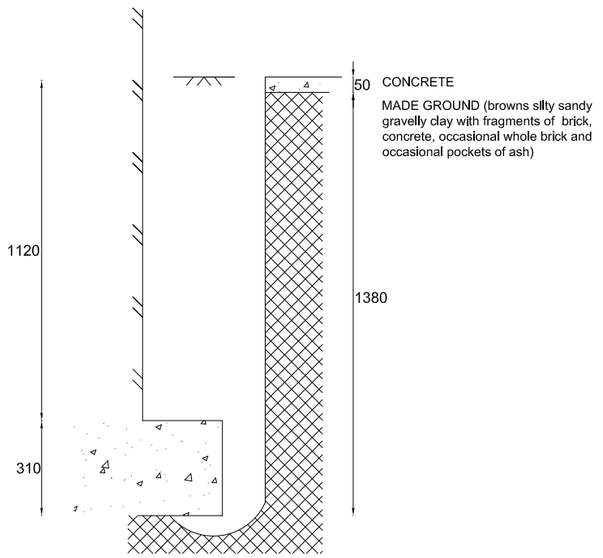

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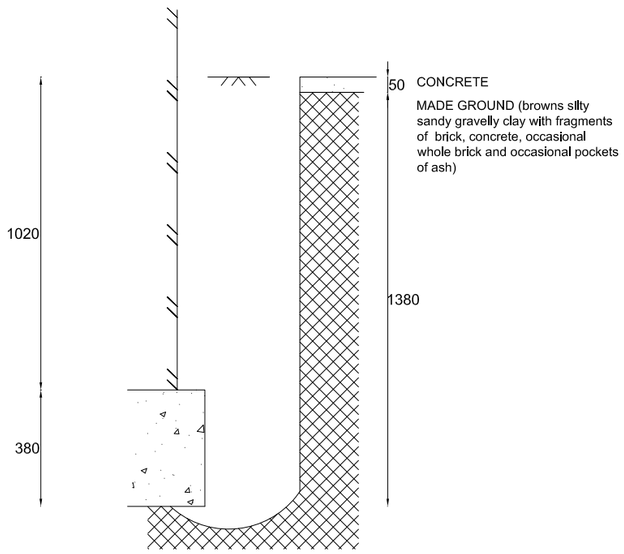


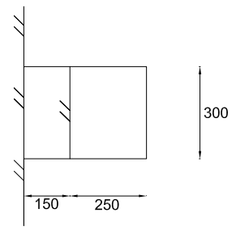
Notes:
Groundwater not encountered

Scale 1 : 20

Logged By CA

GEA Geotechnical & Environmental Associates	Widbury Barn Widbury Hill Ware Herts SG12 7QE		**Site** 159-163 Kings Cross Road, London WC1X 9BN			**Trial Pit Number** **TP6**
Excavation Method Manual	**Dimensions** 400 x 300 x 1300 mm	**Ground Level (m OD)**	**Client** Balcap RE	**Job Number** J16180		
	Location	**Date** 31/08/16 to 01/09/16	**Engineer** Parmarbrook	**Sheet Number** 1 of 1		

Plan



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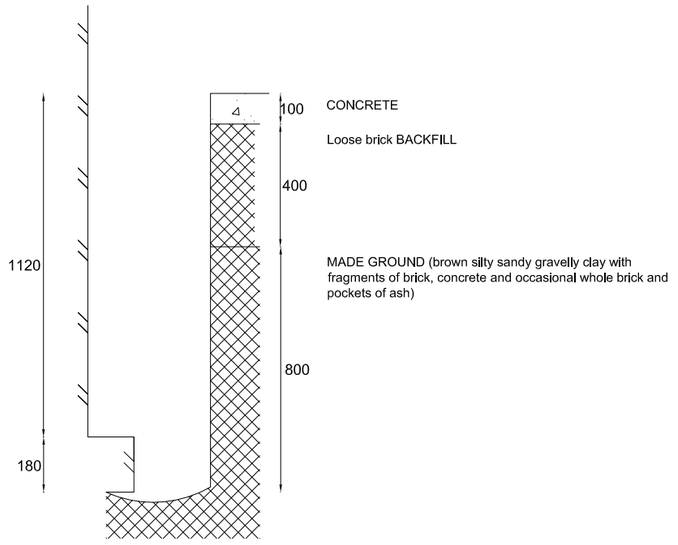
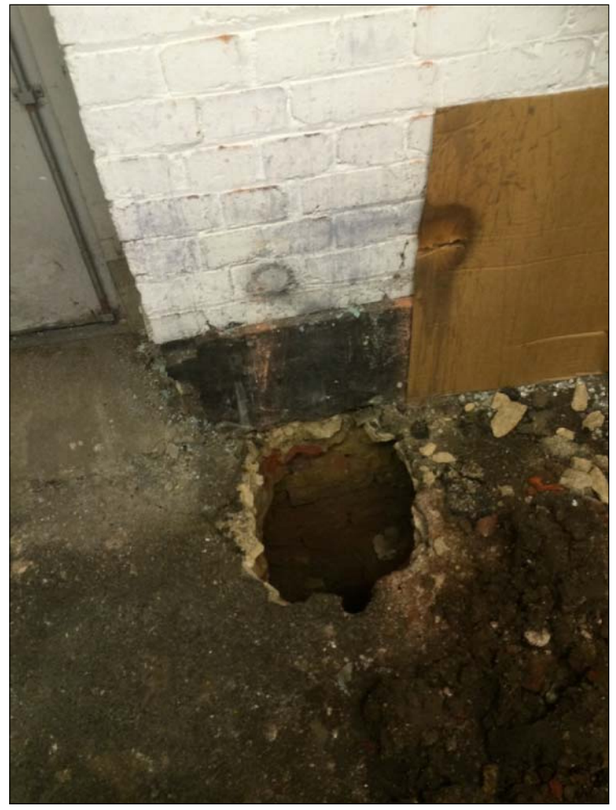




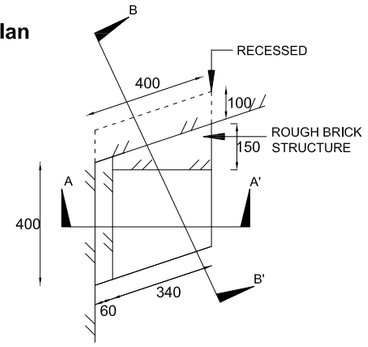
Notes:
Groundwater not encountered

Scale
1 : 20

Logged By
CA

GEA Geotechnical & Environmental Associates	Widbury Barn Widbury Hill Ware Herts SG12 7QE	**Site** 159-163 Kings Cross Road, London WC1X 9BN			**Trial Pit Number**
Excavation Method Manual	**Dimensions** 400 x 400 x 1500 mm	**Ground Level (m OD)**	**Client** Balcap RE	**Job Number** J16180	**TP7**
	Location	**Date** 27/09/2016	**Engineer** Parmarbrook	**Sheet Number** 1 of 1	

Plan



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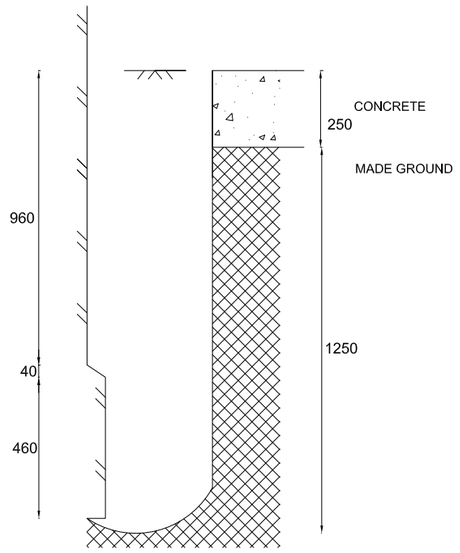

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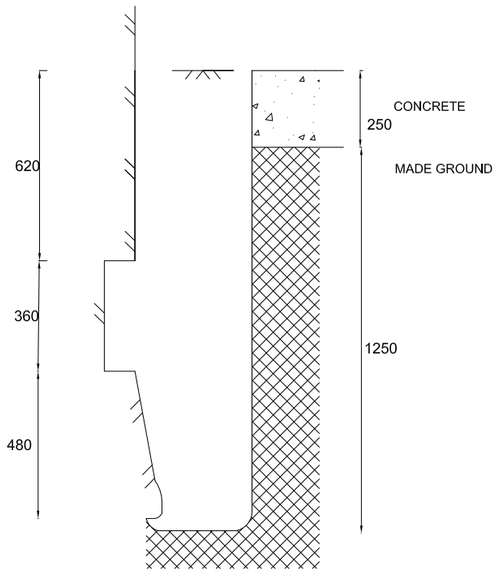
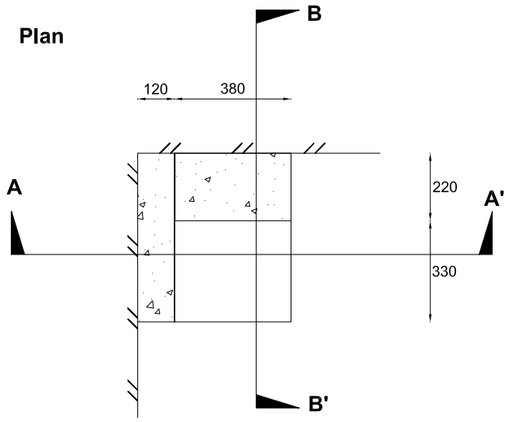


Notes:
Groundwater not encountered

Scale	1 : 20
Logged By	CA

GEA Geotechnical & Environmental Associates	Widbury Barn Widbury Hill Ware Herts SG12 7QE	**Site** 159-163 Kings Cross Road, London WC1X 9BN			**Trial Pit Number**
Excavation Method Manual	**Dimensions** 650 x 300 x 1300 mm	**Ground Level (m OD)**	**Client** Balcap RE	**Job Number** J16180	**TP8**
	Location	**Date** 31/08/16 to 01/09/16	**Engineer** Parmarbrook	**Sheet Number** 1 of 1	

Plan



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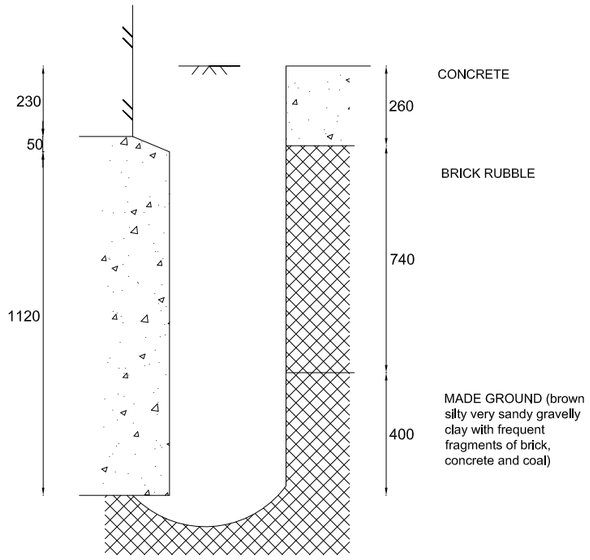

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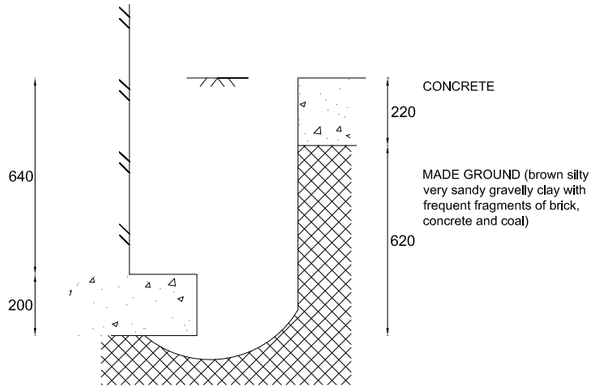


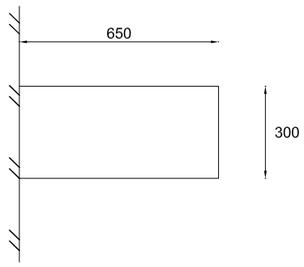
Notes:
Groundwater not encountered

Scale 1 : 20

Logged By CA

GEA Geotechnical & Environmental Associates	Widbury Barn Widbury Hill Ware Herts SG12 7QE	**Site** 159-163 Kings Cross Road, London WC1X 9BN			**Trial Pit Number** **TP9**
Excavation Method Manual	**Dimensions** 650 x 300 x 1300 mm	**Ground Level (m OD)**	**Client** Balcap RE	**Job Number** J16180	
	Location	**Date** 31/08/16 to 01/09/16	**Engineer** Parmarbrook	**Sheet Number** 1 of 1	

Plan



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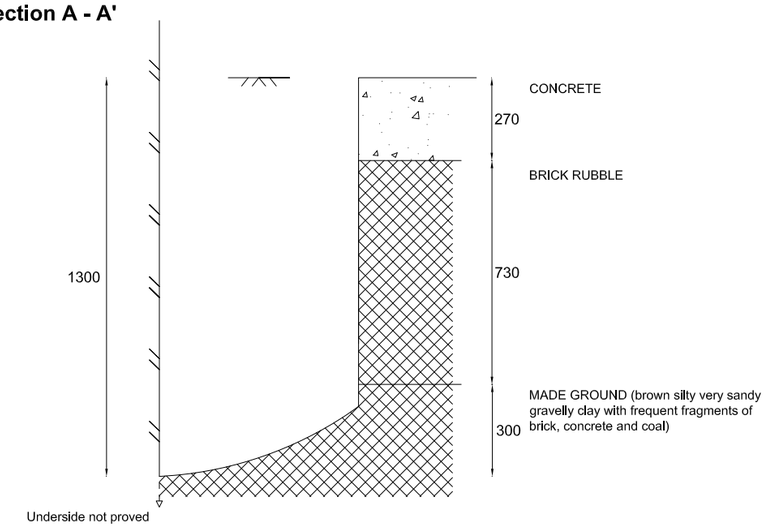


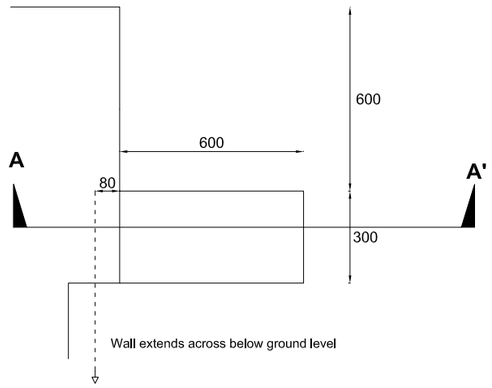
Notes:
Groundwater not encountered

Scale 1 : 20

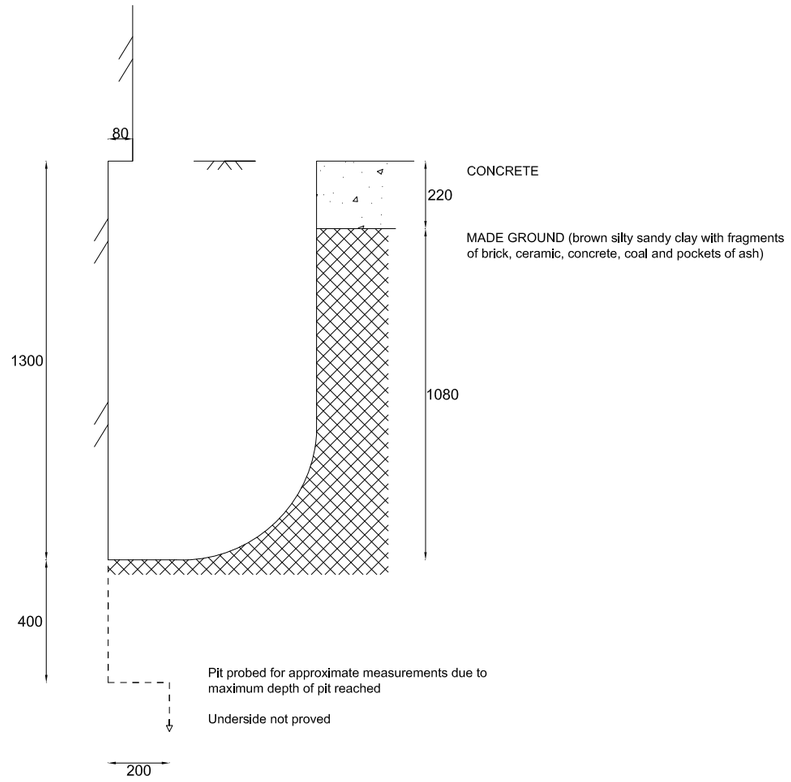
Logged By CA

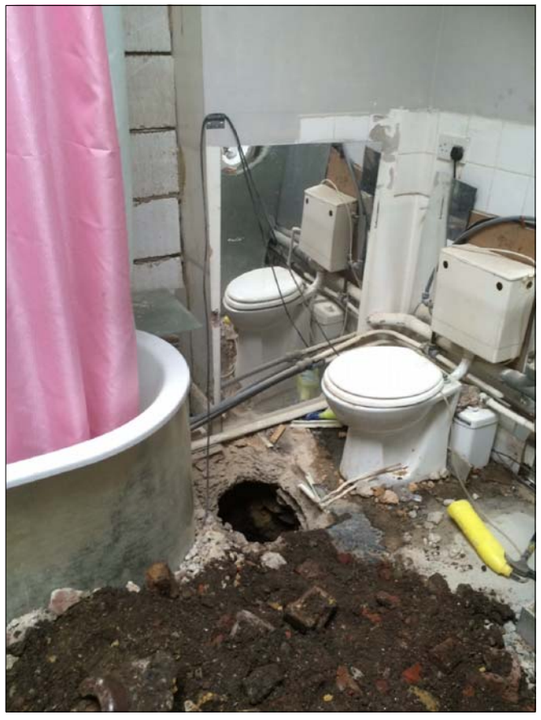
GEA Geotechnical & Environmental Associates	Widbury Barn Widbury Hill Ware Herts SG12 7QE	**Site** 159-163 Kings Cross Road, London WC1X 9BN			**Trial Pit Number**
Excavation Method Manual	**Dimensions** 600 x 300 x 1300 mm	**Ground Level (m OD)**	**Client** Balcap RE	**Job Number** J16180	**TP9A**
	Location	**Date** 27/09/2016	**Engineer** Parmarbrook	**Sheet Number** 1 of 1	

Plan



Section A - A'





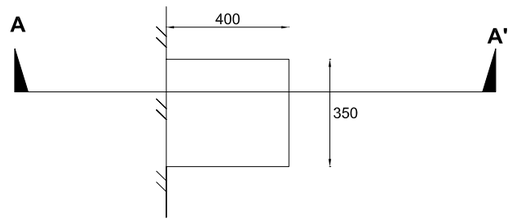
Notes:
Groundwater not encountered

Scale 1 : 20

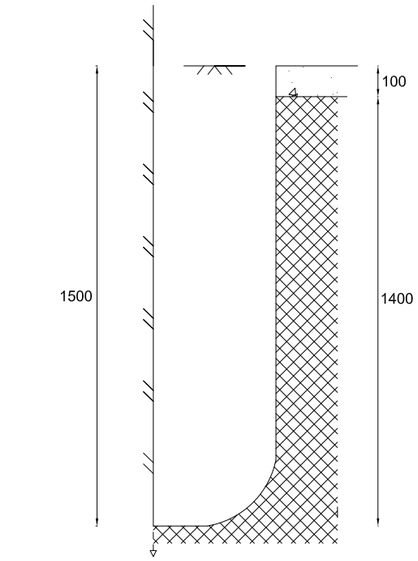
Logged By CA

GEA Geotechnical & Environmental Associates	Widbury Barn Widbury Hill Ware Herts SG12 7QE	**Site** 159-163 Kings Cross Road, London WC1X 9BN			**Trial Pit Number**
Excavation Method Manual	**Dimensions** 400 x 350 x 1500 mm	**Ground Level (m OD)**	**Client** Balcap RE	**Job Number** J16180	**TP10**
	Location	**Date** 31/08/16 to 01/09/16	**Engineer** Parmarbrook	**Sheet Number** 1 of 1	

Plan



Section A - A'



CONCRETE

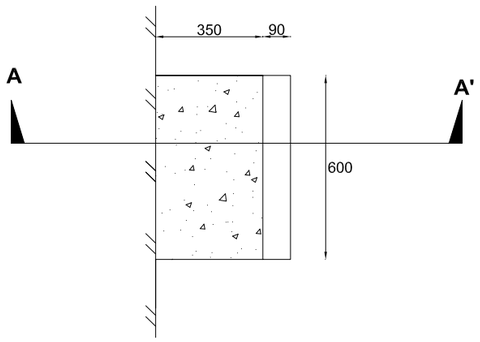
MADE GROUND (brown very clayey silty gravelly sand with fragments of brick, concrete and coal)

Probed to 1.6 m from ground level. Wall indicated to extend further

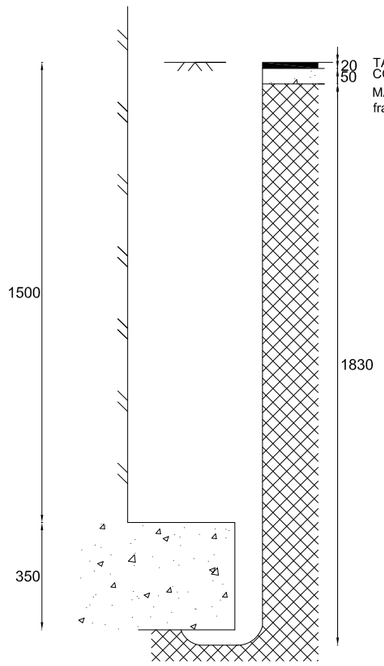
Notes: Groundwater not encountered	**Scale** 1 : 20
	Logged By CA

GEA Geotechnical & Environmental Associates	Widbury Barn Widbury Hill Ware Herts SG12 7QE	**Site** 159-163 Kings Cross Road, London WC1X 9BN			**Trial Pit Number**
Excavation Method Manual	**Dimensions** 440 x 600 x 1850 mm	**Ground Level (m OD)**	**Client** Balcap RE	**Job Number** J16180	**TP10A**
	Location	**Date** 27/09/2016	**Engineer** Parmarbrook	**Sheet Number** 1 of 1	

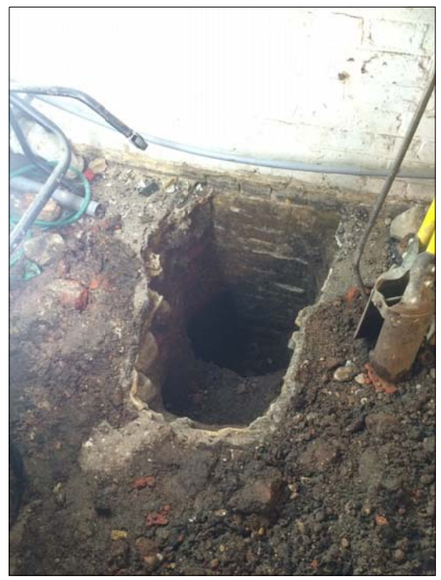
Plan



Section A - A'



TARMAC
CONCRETE
MADE GROUND (dark brown silty sandy gravelly clay with fragments of brick, concrete, pipe fragments and ash)



Notes:
Groundwater not encountered

Scale 1 : 20

Logged By CA

Geotechnical & Environmental Associates

Widbury Barn
Widbury Hill
Ware,Herts
SG12 7QE

Standard Penetration Test Results

Site : 159-163 Kings Cross Road, London WC1X 9BN

Client : Balcap RE

Engineer : Parmarbrook

Job Number J16180

Sheet 1 / 1

Borehole Number	Base of Borehole (m)	End of Seating Drive (m)	End of Test Drive (m)	Test Type	Seating Blows per 75mm		Blows for each 75mm penetration				Result	Comments
					1	2	1	2	3	4		
BH1	1.00	1.15	1.45	CPT	1	1	1	1	2	2	N60=7	
BH1	3.00	3.15	3.45	SPT	1	1	1	2	2	2	N60=8	
BH1	5.00	5.15	5.45	SPT	1	2	2	3	3	3	N60=13	
BH1	8.00	8.15	8.45	SPT	2	2	3	3	4	4	N60=17	
BH1	11.00	11.15	11.45	SPT	2	2	3	4	5	6	N60=21	
BH1	14.00	14.15	14.45	SPT	2	3	4	5	7	8	N60=28	
BH2	1.00	1.15	1.45	SPT	0	0	1	1	0	1	N=3	
BH2	2.00	2.15	2.45	SPT	0	0	0	0	0	1	N=1	
BH2	3.00	3.15	3.45	SPT	0	0	1	0	1	1	N=3	
BH2	4.00	4.15	4.45	SPT	9	4	3	1	0	1	N=5	
BH2	5.00	5.15	5.45	SPT	0	0	0	1	0	1	N=2	
BH2	6.00	6.15	6.45	SPT	3	2	2	3	4	3	N=12	

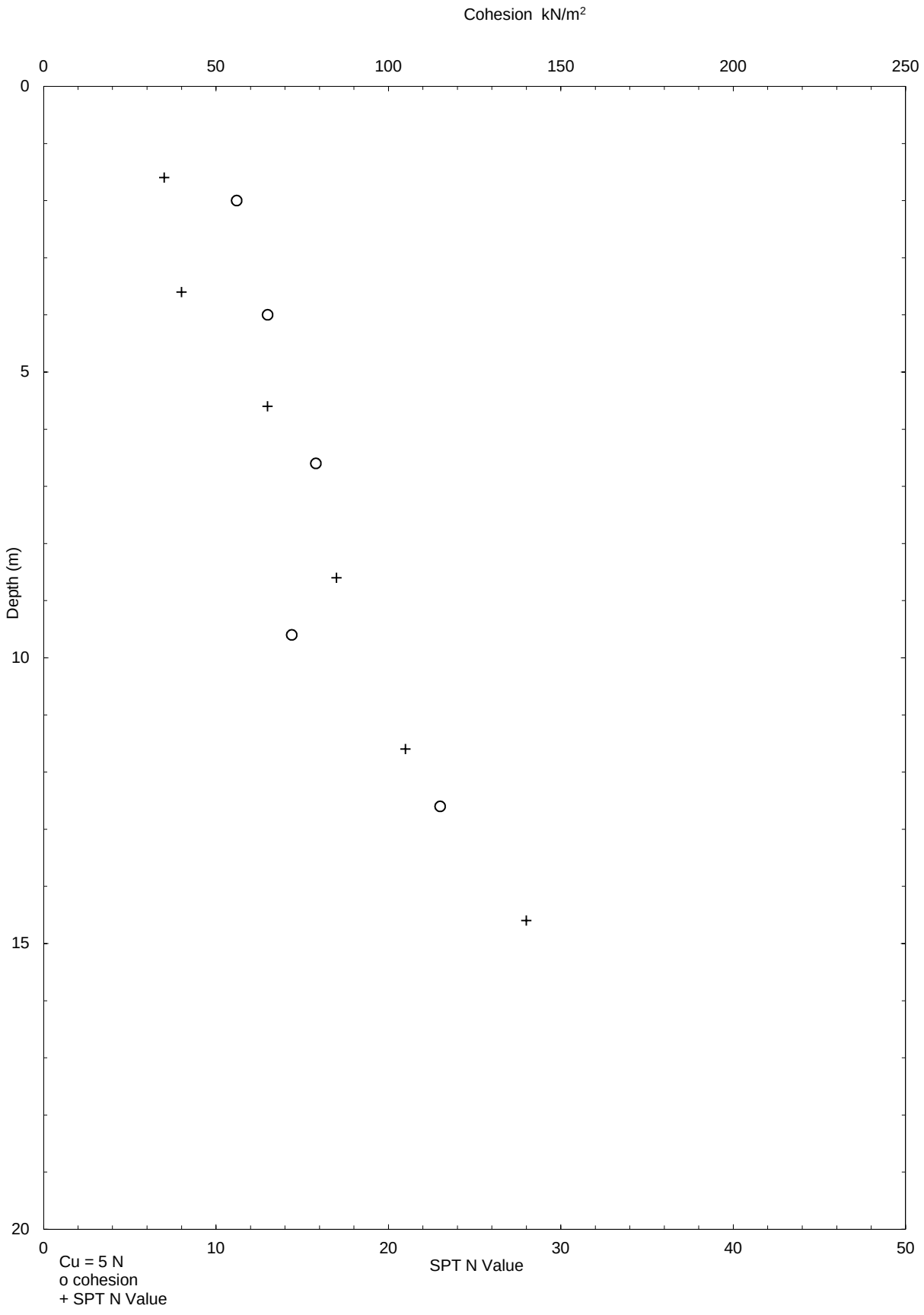
Geotechnical & Environmental Associates
Widbury Barn
Widbury Hill
Ware
Herts SG12 7QE

SPT & Cohesion / Depth Graph

Site	Rear of 159-163 King's Cross Road, London WC1X 9BN
Client	Balcap RE
Engineer	Parmarbrook

Job Number J16180

Sheet 1 / 1



SUMMARY OF GEOTECHNICAL TESTING

Sample details					Classification Tests					Density Tests		Undrained Triaxial Compression			Chemical Tests			Other tests and comments
Borehole / Trial Pit	Sample Ref	Depth (m)	Type	Description	WC (%)	LL (%)	PL (%)	PI (%)	<425 µm (%)	Bulk Mg/m³	Dry Mg/m³	Cell Pressure kPa	Deviator Stress kPa	Shear Stress kPa	pH	2:1 W/S SO4 (g/L)	W/S Mg (mg/L)	
BH1	B2	1.00	B												8.7	0.04		
BH1	U5	2.00	U	Firm brown mottled light grey CLAY	32.9	74	25	49	100	1.95	1.47	40	112	56				
BH1	D6	2.45	D	Yellowish brown and light grey mottled CLAY	31.5	70	25	45	100									
BH1	D7	2.70	D												8.3	0.20		
BH1	D8	3.00	D	Yellowish brown silty CLAY	32.6	73	25	48	100									
BH1	U10	4.00	U	Stiff fissured brown mottled blue grey CLAY	31.1	73	26	47	100	1.94	1.48	80	131	65				
BH1	U16	6.50	U	Stiff fissured brownish dark grey CLAY	30.1					1.99	1.53	130	158	79				
BH1	D18	7.50	D												8.2	1.10		
BH1	U21	9.50	U	Very stiff fissured brownish dark grey CLAY	30.7					1.96	1.50	190	144	72				
BH1		12.50-12.95	U	Very stiff fissured dark grey CLAY	26.4					2.00	1.58	250	231	115				

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

Checked and Approved by

J Sturges - Operations Manager
03/10/2016

Project Number:

GEO / 24712

Project Name:

159 - 163 KINGS CROSS ROAD, LONDON WC1X 9BN
J16180

GEOLABS®

BS 1377 : Part 7 : 1990 Clause 8

Quick Undrained Triaxial Compression Test

BH/TP No	BH1
Sample Ref	U5
Depth (m)	2.00
Sample Type	U

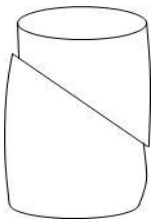
Description:

Firm brown mottled light grey CLAY

Specimen Details

Specimen conditions		Undisturbed
Length	(mm)	202.0
Diameter	(mm)	104.1
Moisture Content	(%)	32.9
Bulk Density	(Mg/m³)	1.95
Dry Density	(Mg/m³)	1.47
Test Details		
Latex membrane thickness	(mm)	0.3
Membrane correction	(kPa)	0.7
Axial displacement rate	(%/min)	2.0
Cell pressure	(kPa)	40
Strain at failure	(%)	10.4
Maximum Deviator Stress	(kPa)	112
Shear Stress Cu	(kPa)	56

Mode of failure



Orientation of the sample	Vertical
Distance from top of tube mm	240

Checked and Approved by:

J Sturges - Operations Manager
03/10/2016

Project Number:

GEO / 24712

Project Name:

159 - 163 KINGS CROSS ROAD, LONDON WC1X 9BN
J16180

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UKAS TESTING 1982

BS 1377 : Part 7 : 1990 Clause 8

Quick Undrained Triaxial Compression Test

BH/TP No	BH1
Sample Ref	U10
Depth (m)	4.00
Sample Type	U

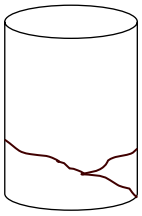
Description:

Stiff fissured brown mottled blue grey CLAY

Specimen Details

Specimen conditions		Undisturbed
Length	(mm)	202.5
Diameter	(mm)	104.2
Moisture Content	(%)	31.1
Bulk Density	(Mg/m³)	1.94
Dry Density	(Mg/m³)	1.48
Test Details		
Latex membrane thickness	(mm)	0.3
Membrane correction	(kPa)	0.4
Axial displacement rate	(%/min)	2.0
Cell pressure	(kPa)	80
Strain at failure	(%)	4.9
Maximum Deviator Stress	(kPa)	131
Shear Stress Cu	(kPa)	65

Mode of failure



Orientation of the sample	Vertical
Distance from top of tube mm	10

Checked and Approved by:

J Sturges - Operations Manager
03/10/2016

Project Number:

GEO / 24712

Project Name:

159 - 163 KINGS CROSS ROAD, LONDON WC1X 9BN
J16180

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BS 1377 : Part 7 : 1990 Clause 8

Quick Undrained Triaxial Compression Test

BH/TP No	BH1
Sample Ref	U16
Depth (m)	6.50
Sample Type	U

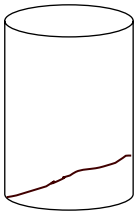
Description:

Stiff fissured brownish dark grey CLAY

Specimen Details

Specimen conditions		Undisturbed
Length	(mm)	202.5
Diameter	(mm)	104.4
Moisture Content	(%)	30.1
Bulk Density	(Mg/m³)	1.99
Dry Density	(Mg/m³)	1.53
Test Details		
Latex membrane thickness	(mm)	0.3
Membrane correction	(kPa)	0.3
Axial displacement rate	(%/min)	2.0
Cell pressure	(kPa)	130
Strain at failure	(%)	3.2
Maximum Deviator Stress	(kPa)	158
Shear Stress Cu	(kPa)	79

Mode of failure



Orientation of the sample	Vertical
Distance from top of tube mm	20

Checked and Approved by:

J Sturges - Operations Manager
03/10/2016

Project Number:

GEO / 24712

Project Name:

159 - 163 KINGS CROSS ROAD, LONDON WC1X 9BN
J16180

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BS 1377 : Part 7 : 1990 Clause 8

Quick Undrained Triaxial Compression Test

BH/TP No	BH1
Sample Ref	U21
Depth (m)	9.50
Sample Type	U

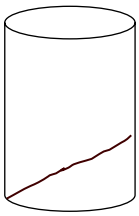
Description:

Very stiff fissured brownish dark grey CLAY

Specimen Details

Specimen conditions		Undisturbed
Length	(mm)	202.0
Diameter	(mm)	104.9
Moisture Content	(%)	30.7
Bulk Density	(Mg/m³)	1.96
Dry Density	(Mg/m³)	1.50
Test Details		
Latex membrane thickness	(mm)	0.3
Membrane correction	(kPa)	0.2
Axial displacement rate	(%/min)	2.0
Cell pressure	(kPa)	190
Strain at failure	(%)	2.2
Maximum Deviator Stress	(kPa)	144
Shear Stress Cu	(kPa)	72

Mode of failure



Orientation of the sample	Vertical
Distance from top of tube mm	20

Checked and Approved by:

J Sturges - Operations Manager
03/10/2016

Project Number:

GEO / 24712

Project Name:

159 - 163 KINGS CROSS ROAD, LONDON WC1X 9BN
J16180

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BS 1377 : Part 7 : 1990 Clause 8

Quick Undrained Triaxial Compression Test

BH/TP No	BH1
Depth (m)	12.50-12.95
Sample Type	U

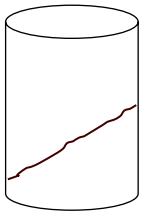
Description:

Very stiff fissured dark grey CLAY

Specimen Details

Specimen conditions		Undisturbed
Length	(mm)	202.5
Diameter	(mm)	104.5
Moisture Content	(%)	26.4
Bulk Density	(Mg/m³)	2.00
Dry Density	(Mg/m³)	1.59
Test Details		
Latex membrane thickness	(mm)	0.3
Membrane correction	(kPa)	0.2
Axial displacement rate	(%/min)	2.0
Cell pressure	(kPa)	250
Strain at failure	(%)	2.5
Maximum Deviator Stress	(kPa)	231
Shear Stress Cu	(kPa)	115

Mode of failure



Orientation of the sample	Vertical
Distance from top of tube mm	70

Checked and Approved by:

J Sturges - Operations Manager
03/10/2016

Project Number:

GEO / 24712

Project Name:

159 - 163 KINGS CROSS ROAD, LONDON WC1X 9BN
J16180

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UKAS TESTING 1982

Caroline Anderson
Geotechnical & Environmental Associates
Widbury Barn
Widbury Hill
Ware
Hertfordshire
SG127QE

e: caroline@gea-ltd.co.uk

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 16-27495

Project / Site name:	159-163 King's Cross Road	**Samples received on:**	12/09/2016
Your job number:	J16180	**Samples instructed on:**	12/09/2016
Your order number:	J16138	**Analysis completed by:**	19/09/2016
Report Issue Number:	1	**Report issued on:**	19/09/2016
Samples Analysed:	4 soil samples		

Signed:

Rexona Rahman
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Signed:

Emma Winter
Assistant Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Analytical Report Number: 16-27495

Project / Site name: 159-163 King's Cross Road
Your Order No: J16138

Lab Sample Number				627771	627772	627773	627774	
Sample Reference				TP7	TP8	TP4	TP5	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.80	1.10	0.60	0.50	
Date Sampled				01/09/2016	01/09/2016	01/09/2016	01/09/2016	
Time Taken				1200	1200	1200	1200	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
Moisture Content	%	N/A	NONE	17	8.4	21	14	
Total mass of sample received	kg	0.001	NONE	0.98	1.0	1.1	1.1	
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	8.6	11.4	8.4	8.4	
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	
Total Sulphate as SO_4	mg/kg	50	MCERTS	4300	4600	3600	3300	
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	1.5	0.19	1.0	0.86	
Sulphide	mg/kg	1	MCERTS	1.1	< 1.0	< 1.0	< 1.0	
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	78	120	35	96	
Total Organic Carbon (TOC)	%	0.1	MCERTS	0.9	0.4	1.5	1.1	
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	1.4	0.80	
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	0.58	< 0.10	
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	4.1	0.82	
Pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	3.9	0.59	
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	2.7	0.25	
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	2.5	0.39	
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	3.9	0.37	
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	1.3	0.20	
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	3.0	0.26	
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	1.2	< 0.10	
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	0.28	< 0.10	
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	1.3	< 0.05	
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	< 1.60	26.1	3.68	
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	24	17	34	17	
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	23	19	26	14	
Copper (aqua regia extractable)	mg/kg	1	MCERTS	110	420	150	89	
Lead (aqua regia extractable)	mg/kg	1	MCERTS	700	430	700	500	
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	2.8	1.4	3.0	2.1	
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	22	16	26	16	
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	100	310	220	140	
Petroleum Hydrocarbons								
TPH (C8 - C10)	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
TPH (C10 - C12)	mg/kg	2	ISO 17025	< 2.0	< 2.0	< 2.0	< 2.0	
TPH (C12 - C16)	mg/kg	4	ISO 17025	< 4.0	< 4.0	< 4.0	< 4.0	
TPH (C16 - C21)	mg/kg	1	ISO 17025	< 1.0	< 1.0	10	1.9	
TPH (C21 - C35)	mg/kg	1	ISO 17025	< 1.0	< 1.0	28	9.3	

Analytical Report Number : 16-27495

Project / Site name: 159-163 King's Cross Road

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
627771	TP7	None Supplied	0.80	Brown loam and sand with gravel.
627772	TP8	None Supplied	1.10	Brown loam and sand with gravel and rubble.
627773	TP4	None Supplied	0.60	Brown loam and sand with gravel and brick.
627774	TP5	None Supplied	0.50	Brown loam and sand with gravel and rubble.

Analytical Report Number : 16-27495

Project / Site name: 159-163 King's Cross Road

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests. 2:1 extraction.	L082-PL	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	L038-PL	D	NONE
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L023-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L038-PL	D	MCERTS
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding.	L076-PL	D	ISO 17025

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
TP4		S	16-27495	627773	c	Sulphide in soil	L010-PL	c
TP5		S	16-27495	627774	c	Sulphide in soil	L010-PL	c
TP7		S	16-27495	627771	c	Sulphide in soil	L010-PL	c
TP8		S	16-27495	627772	c	Sulphide in soil	L010-PL	c

GEA Geotechnical & Environmental Associates

Widbury Barn
Widbury Hill
Ware
Herts SG12 7QE

Generic Risk-Based Soil Screening Values

Site	Rear of 159-163 King's Cross Road, London WC1X 9BN	**Job Number** J16180
Client	Balcap RE	**Sheet** 1 / 2
Engineer	Parmarbrook	

Proposed End Use Commercial

Soil pH 8

Soil Organic Matter content % 1.0

Contaminant	Screening Value mg/kg	Data Source
Metals		
Arsenic	640	C4SL
Cadmium	410	C4SL
Chromium (III)	30400	LQM/CIEH
Chromium (VI)	49	C4SL
Copper	71,700	LQM/CIEH
Lead	2330	C4SL
Elemental Mercury	170	SGV
Inorganic Mercury	3600	SGV
Nickel	1350	LQM/CIEH
Selenium	13000	SGV
Zinc	665,000	LQM/CIEH
Hydrocarbons		
Benzene	27	C4SL
Toluene	870	SGV
Ethyl Benzene	48000	SGV
Xylene	475	SGV
Aliphatic C5-C6	3400	LQM/CIEH
Aliphatic C6-C8	8300	LQM/CIEH
Aliphatic C8-C10	2100	LQM/CIEH
Aliphatic C10-C12	10000	LQM/CIEH
Aliphatic C12-C16	61000	LQM/CIEH
Aliphatic C16-C35	1,600,000	LQM/CIEH
Aromatic C6-C7	See Benzene	LQM/CIEH
Aromatic C7-C8	See Toluene	LQM/CIEH
Aromatic C8-C10	3700	LQM/CIEH
Aromatic C10-C12	17000	LQM/CIEH
Aromatic C12-C16	36000	LQM/CIEH
Aromatic C16-C21	28000	LQM/CIEH
Aromatic C21-C35	28000	LQM/CIEH
PRO (C_5 –C_{10})	18397	Calc
DRO (C_{12} –C_{28})	1,725,000	Calc
Lube Oil (C_{28} –C_{44})	1,628,000	Calc
TPH	**1000**	Trigger for speciated testing

Contaminant	Screening Value mg/kg	Data Source
Anions		
Soluble Sulphate	500 mg/l	Structures
Sulphide	50	Structures
Chloride	400	Structures
Others		
Organic Carbon (%)	10	Methanogenic potential
Total Cyanide	12000	WRAS
Total Mono Phenols	3200	SGV
PAH		
Naphthalene	200.00	C4SL exp & LQM/CIEH
Acenaphthylene	84,000	LQM/CIEH
Acenaphthene	85,000	LQM/CIEH
Fluorene	64,000	LQM/CIEH
Phenanthrene	22,000	LQM/CIEH
Anthracene	530,000	LQM/CIEH
Fluoranthene	23,000	LQM/CIEH
Pyrene	54,000	LQM/CIEH
Benzo(a) Anthracene	90.0	C4SL exp & LQM/CIEH
Chrysene	140	C4SL exp & LQM/CIEH
Benzo(b) Fluoranthene	100.0	C4SL exp & LQM/CIEH
Benzo(k) Fluoranthene	140.0	C4SL exp & LQM/CIEH
Benzo(a) pyrene	42.00	C4SL
Indeno(1 2 3 cd) Pyrene	60.0	C4SL exp & LQM/CIEH
Dibenzo(a h) Anthracene	13.00	C4SL exp & LQM/CIEH
Benzo (g h i) Perylene	650	C4SL exp & LQM/CIEH
Screening value for PAH	**600.0**	B(a)P / 0.15
Chlorinated Solvents		
1,1,1 trichloroethane (TCA)	552	LQM/CIEH
tetrachloroethane (PCA)	150	LQM/CIEH
tetrachloroethene (PCE)	63.1	LQM/CIEH
trichloroethene (TCE)	6.42	LQM/CIEH
1,2-dichloroethane (DCA)	0.71	LQM/CIEH
vinyl chloride (Chloroethene)	0.0587	LQM/CIEH
tetrachloromethane (Carbon tetra	3	LQM/CIEH
trichloromethane (Chloroform)	79.4	LQM/CIEH

Notes

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

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

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

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

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

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

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

Envirocheck® Report:

Datasheet

Order Details:

Order Number:
95600768_1_1

Customer Reference:
J16180

National Grid Reference:
530710, 182920

Slice:
A

Site Area (Ha):
0.01

Search Buffer (m):
1000

Site Details:

159-163 King's Cross Road
LONDON
WC1X 9BN

Client Details:

Mr S Branch
GEA Ltd
Widbury Barn
Widbury Hill
Ware
Herts
SG12 7QE

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.

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Ove Arup Copyright Notice

Peter Brett Associates Copyright Notice

Radon Potential dataset Copyright Notice

Report Version v50.0

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Agency & Hydrological					
BGS Groundwater Flooding Susceptibility	pg 1			Yes	n/a
Contaminated Land Register Entries and Notices	pg 1				1
Discharge Consents	pg 1			3	3
Prosecutions Relating to Controlled Waters			n/a	n/a	n/a
Enforcement and Prohibition Notices	pg 2				1
Integrated Pollution Controls					
Integrated Pollution Prevention And Control					
Local Authority Integrated Pollution Prevention And Control					
Local Authority Pollution Prevention and Controls	pg 2		1	3	15
Local Authority Pollution Prevention and Control Enforcements					
Nearest Surface Water Feature	pg 5			Yes	
Pollution Incidents to Controlled Waters	pg 5			1	6
Prosecutions Relating to Authorised Processes	pg 6				1
Registered Radioactive Substances	pg 7		5	7	38
River Quality	pg 15				1
River Quality Biology Sampling Points					
River Quality Chemistry Sampling Points					
Substantiated Pollution Incident Register					
Water Abstractions	pg 15				20 (*21)
Water Industry Act Referrals					
Groundwater Vulnerability	pg 25	Yes	n/a	n/a	n/a
Drift Deposits			n/a	n/a	n/a
Bedrock Aquifer Designations	pg 25	Yes	n/a	n/a	n/a
Superficial Aquifer Designations			n/a	n/a	n/a
Source Protection Zones	pg 25			1	4
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					n/a

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 27				1
Integrated Pollution Control Registered Waste Sites					
Licensed Waste Management Facilities (Landfill Boundaries)					
Licensed Waste Management Facilities (Locations)	pg 27				3
Local Authority Landfill Coverage		1	n/a	n/a	n/a
Local Authority Recorded Landfill Sites					
Potentially Infilled Land (Non-Water)					
Potentially Infilled Land (Water)	pg 27				1
Registered Landfill Sites					
Registered Waste Transfer Sites	pg 28				4
Registered Waste Treatment or Disposal Sites	pg 29				1
Hazardous Substances					
Control of Major Accident Hazards Sites (COMAH)	pg 30				1
Explosive Sites					
Notification of Installations Handling Hazardous Substances (NIHHS)	pg 30				1
Planning Hazardous Substance Consents					
Planning Hazardous Substance Enforcements					

Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Geological					
BGS 1:625,000 Solid Geology	pg 31	Yes	n/a	n/a	n/a
BGS Estimated Soil Chemistry					
BGS Recorded Mineral Sites					
BGS Urban Soil Chemistry	pg 31		Yes	Yes	Yes
BGS Urban Soil Chemistry Averages	pg 33	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	pg 33				1
Non Coal Mining Areas of Great Britain				n/a	n/a
Potential for Collapsible Ground Stability Hazards	pg 33	Yes		n/a	n/a
Potential for Compressible Ground Stability Hazards				n/a	n/a
Potential for Ground Dissolution Stability Hazards				n/a	n/a
Potential for Landslide Ground Stability Hazards	pg 34	Yes	Yes	n/a	n/a
Potential for Running Sand Ground Stability Hazards				n/a	n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards	pg 34	Yes		n/a	n/a
Radon Potential - Radon Affected Areas			n/a	n/a	n/a
Radon Potential - Radon Protection Measures			n/a	n/a	n/a
Industrial Land Use					
Contemporary Trade Directory Entries	pg 35		34	78	418
Fuel Station Entries	pg 79			2	5
Points of Interest - Commercial Services	pg 80		6	10	32
Points of Interest - Education and Health	pg 84		2	3	7
Points of Interest - Manufacturing and Production	pg 85		8	16	29
Points of Interest - Public Infrastructure	pg 89		5		30
Points of Interest - Recreational and Environmental	pg 92		5	20	55
Gas Pipelines					
Underground Electrical Cables	pg 99			2	26

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Sensitive Land Use					
Ancient Woodland					
Areas of Adopted Green Belt					
Areas of Unadopted Green Belt					
Areas of Outstanding Natural Beauty					
Environmentally Sensitive Areas					
Forest Parks					
Local Nature Reserves	pg 103				1
Marine Nature Reserves					
National Nature Reserves					
National Parks					
Nitrate Sensitive Areas					
Nitrate Vulnerable Zones					
Ramsar Sites					
Sites of Special Scientific Interest					
Special Areas of Conservation					
Special Protection Areas					
World Heritage Sites					

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A13SE (S)	333	2	530800 182600
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A14NW (E)	387	2	531100 182950
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13SE (SE)	399	2	530950 182600
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A8NW (SW)	473	2	530500 182500
1	**Contaminated Land Register Entries and Notices** Location: 8 Duncan Terrace, Islington, London, N1 8bz Notice Type: Remediation Statement - Remediation Work Completed Reference: Not Supplied Dated: Not Supplied Positional Accuracy: Positioned by the supplier Boundary Quality: Not Applicable	A14NE (E)	874	3	531549 183179
2	**Discharge Consents** Operator: Bnp Paribas Jersey Trust Corporation Limited Property Type: Business Services Location: Gshp @ Regent Quarter Kings Cross London N1 9ee Authority: Environment Agency, Thames Region Catchment Area: Not Supplied Reference: Eprzp3421xw Permit Version: 1 Effective Date: 5th February 2013 Issued Date: 5th February 2013 Revocation Date: Not Supplied Discharge Type: Trade Discharges - Cooling Water Discharge Environment: Underground Water Receiving Water: Groundwaters Via Borehole **Status: New issued under EPR 2010** Positional Accuracy: Located by supplier to within 10m	A13NW (NW)	433	4	530415 183233
2	**Discharge Consents** Operator: Anley Trustees Limited Property Type: Business Services Location: Gshp @ Regent Quarter Kings Cross London N1 9ee Authority: Environment Agency, Thames Region Catchment Area: Not Supplied Reference: Eprzp3421xw Permit Version: 1 Effective Date: 5th February 2013 Issued Date: 5th February 2013 Revocation Date: Not Supplied Discharge Type: Trade Discharges - Cooling Water Discharge Environment: Underground Water Receiving Water: Groundwaters Via Borehole **Status: New issued under EPR 2010** Positional Accuracy: Located by supplier to within 10m	A13NW (NW)	433	4	530415 183233
3	**Discharge Consents** Operator: Thames Water Utilities Ltd Property Type: Reservoir/Borehole Site Location: Claremont Square Authority: Environment Agency, Thames Region Catchment Area: Not Supplied Reference: Temp.0076 Permit Version: 1 Effective Date: 15th September 1989 Issued Date: 15th September 1989 Revocation Date: 5th October 2000 Discharge Type: Trade Effluent Discharge Environment: Freshwater Stream/River Receiving Water: River Thames **Status: Authorisation revokedRevoked** Positional Accuracy: Located by supplier to within 100m	A14NW (E)	492	4	531200 183000

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
4	**Discharge Consents** Operator: National Grid Company Plc. Property Type: Sewerage Network - Sewers - Others Location: Copenhagen School Outlet, Pentonville, London Authority: Environment Agency, Thames Region Catchment Area: Not Given Reference: CTMR.0389 Permit Version: 1 Effective Date: 23rd March 1980 Issued Date: 23rd March 1980 Revocation Date: Not Supplied Discharge Type: Trade Discharges - Cooling Water Discharge Environment: Canal Receiving Water: Grand Unioncanal **Status:** **Transferred from Rivers (Prevention of Pollution) Act 1951-1961** Positional Accuracy: Located by supplier to within 100m	A18SW (N)	583	4	530590 183490
5	**Discharge Consents** Operator: University College London Property Type: Office/Data Proc Equip Manufacture Location: Bidborough House 20 Mabledon Place London London Wc1h 9bf Authority: Environment Agency, Thames Region Catchment Area: Not Supplied Reference: Npswqd005471 Permit Version: 2 Effective Date: 8th March 2013 Issued Date: 8th March 2013 Revocation Date: Not Supplied Discharge Type: Trade Discharges - Cooling Water Discharge Environment: Into Land Receiving Water: Gw Via Re-Inject Borehole **Status:** **Varied under EPR 2010** Positional Accuracy: Located by supplier to within 10m	A12SW (W)	761	4	529996 182673
5	**Discharge Consents** Operator: London Borough Of Camden Property Type: Office/Data Proc Equip Manufacture Location: Bidborough House 20 Mabledon Place London London Wc1h 9bf Authority: Environment Agency, Thames Region Catchment Area: Not Supplied Reference: Npswqd005471 Permit Version: 1 Effective Date: 20th February 2009 Issued Date: 20th February 2009 Revocation Date: 7th March 2013 Discharge Type: Trade Discharges - Cooling Water Discharge Environment: Into Land Receiving Water: Gw Via Re-Inject Borehole **Status:** **New Consent (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A12SW (W)	761	4	529996 182673
6	**Enforcement and Prohibition Notices** Location: The School of Pharmacy, 29/39 Brunswick Square, Camden, LONDON, WC1N 1AX Permit Reference: Not Given Enforcement Date: 27th February 1995 Details: Press Release HM156, Minor breaches of accumulation and disposal limits; substandard lab & storage facilities; under RSA93. Positional Accuracy: Unknown	A7NE (SW)	747	4	530300 182300
7	**Local Authority Pollution Prevention and Controls** Name: Adriana Dry Cleaners Location: 191 Kings Cross Road, London, Wc1x 9db Authority: London Borough of Camden, Pollution Projects Team Permit Reference: PPC/DC52 Dated: 1st January 2007 Process Type: Local Authority Pollution Prevention and Control Description: PG6/46 Dry cleaning **Status:** **Permitted** Positional Accuracy: Manually positioned to the address or location	A13NW (NW)	153	5	530574 182981

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
8	**Local Authority Pollution Prevention and Controls** Name: Alex 24hr Dry Cleaners Location: 289 Grays Inn Road, London, Wc1x 8qf Authority: London Borough of Camden, Pollution Projects Team Permit Reference: PPC/DC4 Dated: 26th January 2007 Process Type: Local Authority Pollution Prevention and Control Description: PG6/46 Dry cleaning **Status: Permitted** Positional Accuracy: Located by supplier to within 10m	A13SW (W)	255	5	530467 182862
9	**Local Authority Pollution Prevention and Controls** Name: Texaco Location: 71-79 Kings Cross Road, London, WC1X 9LN Authority: London Borough of Camden, Pollution Projects Team Permit Reference: Not Given Dated: 23rd December 1998 Process Type: Local Authority Air Pollution Control Description: PG1/14 Petrol filling station **Status: Site Closed** Positional Accuracy: Automatically positioned to the address	A13SE (S)	279	5	530802 182656
10	**Local Authority Pollution Prevention and Controls** Name: Shell Location: 39-43 Kings Cross Road, London, WC1X 9LN Authority: London Borough of Camden, Pollution Projects Team Permit Reference: NOT GIVEN Dated: 23rd December 1998 Process Type: Local Authority Air Pollution Control Description: PG1/14 Petrol filling station **Status: Authorised** Positional Accuracy: Automatically positioned to the address	A8NE (SE)	389	5	530889 182574
11	**Local Authority Pollution Prevention and Controls** Name: Barnsbury Dry Cleaners Location: 3 Barnsbury Road, London Authority: London Borough of Islington, Environmental Health Department Permit Reference: PPC/DC48/07 Dated: 8th September 2008 Process Type: Local Authority Pollution Prevention and Control Description: PG6/46 Dry cleaning **Status: Permitted** Positional Accuracy: Manually positioned to the address or location	A19SW (NE)	627	6	531070 183437
12	**Local Authority Pollution Prevention and Controls** Name: Gaps Location: 22 Chapel Market, London Authority: London Borough of Islington, Environmental Health Department Permit Reference: PPC/DC24/07 Dated: 5th July 2007 Process Type: Local Authority Pollution Prevention and Control Description: PG6/46 Dry cleaning **Status: Permitted** Positional Accuracy: Manually positioned to the address or location	A19SW (NE)	665	6	531242 183325
13	**Local Authority Pollution Prevention and Controls** Name: Royal Dry Cleaners Location: 46 Roseberry Avenue, London Authority: London Borough of Islington, Environmental Health Department Permit Reference: PPC/DC34/07 Dated: 5th July 2007 Process Type: Local Authority Pollution Prevention and Control Description: PG6/46 Dry cleaning **Status: Permitted** Positional Accuracy: Manually positioned to the address or location	A9NW (SE)	687	6	531195 182430
14	**Local Authority Pollution Prevention and Controls** Name: Bp Goodsway Location: Goods Way, LONDON, NW1 1UR Authority: London Borough of Camden, Pollution Projects Team Permit Reference: PPC16 Dated: 23rd December 1998 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	A17SE (NW)	699	5	530289 183475

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
15	**Local Authority Pollution Prevention and Controls** Name: Holloway Dry Cleaners Location: 33-35 Exmouth Market, London Authority: London Borough of Islington, Environmental Health Department Permit Reference: PPC/DC27/07 Dated: 5th July 2007 Process Type: Local Authority Pollution Prevention and Control Description: PG6/46 Dry cleaning **Status: Site Closed** Positional Accuracy: Manually positioned to the address or location	A9NW (SE)	700	6	531254 182476
16	**Local Authority Pollution Prevention and Controls** Name: Smartline Location: 200 Caledonian Road, London Authority: London Borough of Islington, Environmental Health Department Permit Reference: PPC/DC36/07 Dated: 5th July 2007 Process Type: Local Authority Pollution Prevention and Control Description: PG6/46 Dry cleaning **Status: Permitted** Positional Accuracy: Manually positioned to the address or location	A18NE (N)	715	6	530738 183635
17	**Local Authority Pollution Prevention and Controls** Name: Whistle Location: 57 Chapel Market, London Authority: London Borough of Islington, Environmental Health Department Permit Reference: PPC/DC46/07 Dated: 5th July 2007 Process Type: Local Authority Pollution Prevention and Control Description: PG6/46 Dry cleaning **Status: Permitted** Positional Accuracy: Manually positioned to the address or location	A19SW (NE)	743	6	531344 183315
18	**Local Authority Pollution Prevention and Controls** Name: Galliford Roadstone Location: Kings Cross Goods Depot, Goods Way, CAMDEN, NW1 Authority: London Borough of Camden, Pollution Projects Team Permit Reference: Not Given Dated: 22nd October 1993 Process Type: Local Authority Air Pollution Control Description: PG3/8 Quarry processes including roadstone plants and the size reduction of bricks, tiles and concrete **Status: Authorisation revokedRevoked** Positional Accuracy: Manually positioned to the road within the address or location	A17SE (NW)	770	5	530219 183509
19	**Local Authority Pollution Prevention and Controls** Name: Fontaine Dry Cleaners Location: 393 St John Street, London Authority: London Borough of Islington, Environmental Health Department Permit Reference: PPC/DC23/07 Dated: 5th July 2007 Process Type: Local Authority Pollution Prevention and Control Description: PG6/46 Dry cleaning **Status: Permitted** Positional Accuracy: Manually positioned to the address or location	A14NE (E)	776	6	531489 182966
20	**Local Authority Pollution Prevention and Controls** Name: Somerfield Caledonina Road Location: 219 Caledonian Road, LONDON, N1 0NG Authority: London Borough of Islington, Environmental Health Department Permit Reference: PPC PERMIT-013 Dated: 26th November 1998 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)	874	6	530701 183794
21	**Local Authority Pollution Prevention and Controls** Name: C Y M A Location: 151 Euston Road, London, NW1 2AU Authority: London Borough of Camden, Pollution Projects Team Permit Reference: NOT GIVEN Dated: Not Supplied Process Type: Local Authority Air Pollution Control Description: PG1/14 Petrol filling station **Status: Application Not Yet Authorised** Positional Accuracy: Manually positioned to the road within the address or location	A12SW (W)	925	5	529838 182628

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
22	**Local Authority Pollution Prevention and Controls** Name: Insititute of Child Health Location: University Of London, 30 Guildford Street, CAMDEN, WC1N 1EH Authority: London Borough of Camden, Pollution Projects Team Permit Reference: Not Given Dated: 17th November 1992 Process Type: Local Authority Air Pollution Control Description: PG5/1Clinical waste incineration processes under 1 tonne an hour **Status: Authorisation revokedRevoked** Positional Accuracy: Manually positioned to the road within the address or location	A7SE (SW)	929	5	530304 182088
23	**Local Authority Pollution Prevention and Controls** Name: Arcade Location: 18 Duncan Street, London Authority: London Borough of Islington, Environmental Health Department Permit Reference: PPC/DC04/07 Dated: 5th July 2007 Process Type: Local Authority Pollution Prevention and Control Description: PG6/46 Dry cleaning **Status: Permitted** Positional Accuracy: Manually positioned to the address or location	A19SE (NE)	954	6	531581 183319
24	**Local Authority Pollution Prevention and Controls** Name: Totalfinaelf Location: 3-16 Woburn Place, London, Wc1 9lw Authority: London Borough of Camden, Pollution Projects Team Permit Reference: Not Given Dated: 1st April 1999 Process Type: Local Authority Air Pollution Control Description: PG1/14 Petrol filling station **Status: Site Closed** Positional Accuracy: Located by supplier to within 10m	A7SE (SW)	961	5	530075 182204
25	**Local Authority Pollution Prevention and Controls** Name: Stephie'S Dry Cleaner Location: 52 Phoenix Road, London, Nw1 1es Authority: London Borough of Camden, Pollution Projects Team Permit Reference: PPC/DC36 Dated: 12th January 2007 Process Type: Local Authority Pollution Prevention and Control Description: PG6/46 Dry cleaning **Status: Permitted** Positional Accuracy: Located by supplier to within 10m	A12NW (W)	975	5	529744 183007
	Nearest Surface Water Feature	A18SE (NE)	471	-	530959 183323
26	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Kings Cross Authority: Environment Agency, Thames Region Pollutant: Miscellaneous - Unknown Note: Yes Incident Date: Not Supplied Incident Reference: N1910091 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)	480	4	530700 183400
27	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Kings Cross Authority: Environment Agency, Thames Region Pollutant: Chemicals - Unknown Note: Confirmed As A Pollution Incident Incident Date: 9th August 1990 Incident Reference: N1900459 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 (NW)	525	4	530500 183400

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
28	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Crinan Street, ISLINGTON Authority: Environment Agency, Thames Region Pollutant: Oils - Unknown Note: Not Supplied Incident Date: 23rd July 1998 Incident Reference: THNE1998039149 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 (NW)	574	4	530400 183400
29	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: ISLINGTON Authority: Environment Agency, Thames Region Pollutant: Unknown Sewage Note: Confirmed As A Pollution Incident Incident Date: 3rd November 1995 Incident Reference: SE950517 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)	591	4	530600 183500
30	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Wharf Road, Kings Cross Authority: Environment Agency, Thames Region Pollutant: Oils - Unknown Note: Not Supplied Incident Date: 13th August 1997 Incident Reference: THN11997029477 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)	613	4	530500 183495
30	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: St Pancras Basin, Camden Authority: Environment Agency, Thames Region Pollutant: Unknown Sewage Note: Not Supplied Incident Date: 23rd January 1997 Incident Reference: THN11997030949 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)	618	4	530500 183500
31	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: ST PANCRAS Authority: Environment Agency, Thames Region Pollutant: Miscellaneous - Other Note: Not Supplied Incident Date: Not Supplied Incident Reference: SE960379 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)	1000	4	529900 183500
32	**Prosecutions Relating to Authorised Processes** Location: Kings Cross Goods Yard, York Way, Kings Cross, LONDON, N1 0AU Prosecution Text: ENDS Report 294 (July 1999), Three breaches of a local pollution control authorisation. An emission of cement dust on 28th October 1998 and two record keeping offences from two other alleged similar incidents.) Prosecution Act: EPA90 s23(1) Hearing Date: Not Supplied Verdict: Guilty Fine: 10000 Costs: 3500 Positional Accuracy: Manually positioned to the road within the address or location	A17SE (NW)	735	4	530328 183546

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
33	**Registered Radioactive Substances** Name: University College London Location: The Ear Institute, 330 - 336 Grays Inn Road, London, WC1X 8EE Authority: Environment Agency, Thames Region Permit Reference: Bz0793 Dated: 14th July 2005 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Minor variation to authorisation under RSA **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Manually positioned to the address or location	A13SW (SW)	194	4	530562 182802
33	**Registered Radioactive Substances** Name: University College London Location: The Ear Institute, 330 - 336 Grays Inn Road, London, WC1X 8EE Authority: Environment Agency, Thames Region Permit Reference: Bz0840 Dated: 14th July 2005 Process Type: Registration under S7 RSA for the keeping and use of Radioactive materials (was RSA60 S1) Description: Minor variation to a registration under the Act of an open source which is also the subject of an authorisation **Status: Application has been authorised and any conditions apply to the operatorAuthorised** Positional Accuracy: Manually positioned to the address or location	A13SW (SW)	194	4	530562 182802
33	**Registered Radioactive Substances** Name: University College London Location: The Ear Institute,330 - 336 Grays Inn Road, LONDON, WC1X 8EE Authority: Environment Agency, Thames Region Permit Reference: Bz9995 Dated: 4th January 2006 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Minor variation to authorisation under RSA **Status: Application has been authorised and any conditions apply to the operatorAuthorised** Positional Accuracy: Manually positioned to the address or location	A13SW (SW)	195	4	530561 182802
33	**Registered Radioactive Substances** Name: University College London Location: The Ear Institute, 330 - 336 Grays Inn Road, London, WC1X 8EE Authority: Environment Agency, Thames Region Permit Reference: Bx6669 Dated: 22nd July 2004 Process Type: Registration under S7 RSA for the keeping and use of Radioactive materials (was RSA60 S1) Description: Registration under the Act of an open source which is also the subject of an authorisation **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Manually positioned to the address or location	A13SW (SW)	197	4	530540 182830
33	**Registered Radioactive Substances** Name: University College London Location: The Ear Institute, 330 - 336 Grays Inn Road, London, WC1X 8EE Authority: Environment Agency, Thames Region Permit Reference: Bx6022 Dated: 22nd July 2004 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Authorisation under RSA **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Manually positioned to the address or location	A13SW (SW)	197	4	530540 182830
34	**Registered Radioactive Substances** Name: University College London Location: 256, Gray's Inn Road, LONDON, WC1X 8LD Authority: Environment Agency, Thames Region Permit Reference: Ca0034 Dated: 4th January 2006 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Minor variation to authorisation under RSA **Status: Application has been authorised and any conditions apply to the operatorAuthorised** Positional Accuracy: Automatically positioned to the address	A8NE (S)	473	4	530723 182449

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
34	**Registered Radioactive Substances** Name: University College London Location: Eastman Dental Institute, 256 Gray's Inn Road, LONDON, WC1X 8LD Authority: Environment Agency, Thames Region Permit Reference: Bu7464 Dated: 27th September 2004 Process Type: Registration under S7 RSA for the keeping and use of Radioactive materials (was RSA60 S1) Description: Registration under the Act of an open source which is also the subject of an authorisation **Status: Application has been authorised and any conditions apply to the operatorAuthorised** Positional Accuracy: Automatically positioned to the address	A8NE (S)	473	4	530723 182449
34	**Registered Radioactive Substances** Name: University College London Location: Eastman Dental Institute, 256 Gray's Inn Road, LONDON, WC1X 8LD Authority: Environment Agency, Thames Region Permit Reference: Bu7456 Dated: 27th September 2004 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Authorisation under RSA **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Automatically positioned to the address	A8NE (S)	473	4	530723 182449
34	**Registered Radioactive Substances** Name: Eastman Dental Hospital Location: Eastman Dental Institute, 256 Gray's Inn Road, LONDON, WC1X 8LD Authority: Environment Agency, Thames Region Permit Reference: AW6731 Dated: 15th October 1996 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Substantial variation to authorisation under RSA **Status: Authorisation either revoked or cancelledCancelled** Positional Accuracy: Automatically positioned to the address	A8NE (S)	473	4	530723 182449
34	**Registered Radioactive Substances** Name: Eastman Dental Hospital Location: 256 Grays Inn Road, LONDON, Greater London, WC1X 8LD Authority: Environment Agency, Thames Region Permit Reference: AA1775 Dated: 30th October 1991 Process Type: Registration under S7 RSA for the keeping and use of Radioactive materials (was RSA60 S1) Description: Registration under the Act of an open source which is also the subject of an authorisation dated pre April 1991 **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Unknown	A8NE (S)	473	4	530715 182448
34	**Registered Radioactive Substances** Name: Eastman Dental Hospital Location: 256 Grays Inn Road, LONDON, Greater London, WC1X 8LD Authority: Environment Agency, Thames Region Permit Reference: AW6723 Dated: 15th October 1996 Process Type: Registration under S7 RSA for the keeping and use of Radioactive materials (was RSA60 S1) Description: Substantial variation to a registration under the Act of an open source which is also the subject of an authorisation **Status: Authorisation either revoked or cancelledCancelled** Positional Accuracy: Unknown	A8NE (S)	478	4	530720 182443
34	**Registered Radioactive Substances** Name: Eastman Dental Institute And Hospital Location: 256 Grays Inn Road, LONDON, Greater London, WC1X 8LD Authority: Environment Agency, Thames Region Permit Reference: AA1783 Dated: 30th October 1991 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Authorisation under RSA dated pre April 1991 **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Unknown	A8NE (S)	478	4	530715 182443

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
35	**Registered Radioactive Substances** Name: Astra Neuroscience Research Unit Location: 1 Wakefield Street, LONDON, Greater London, WC1N 1PJ Authority: Environment Agency, Thames Region Permit Reference: AP8799 Dated: 16th June 1995 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Substantial variation to authorisation under RSA **Status: Authorisation either revoked or cancelledCancelled** Positional Accuracy: Unknown	A7NE (SW)	598	4	530322 182470
35	**Registered Radioactive Substances** Name: Astra Neuroscience Research Unit Location: 1 Wakefield Street, LONDON, Greater London, WC1N 1PJ Authority: Environment Agency, Thames Region Permit Reference: AC1415 Dated: 31st March 1991 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Authorisation under RSA **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Unknown	A7NE (SW)	599	4	530319 182472
35	**Registered Radioactive Substances** Name: University College London Location: 1 Wakefield Street, LONDON, Greater London, WC1N 1PJ Authority: Environment Agency, Thames Region Permit Reference: AT6611 Dated: 4th March 1996 Process Type: Registration under S7 RSA for the keeping and use of Radioactive materials (was RSA60 S1) Description: Substantial variation to a registration under the Act of an open source which is also the subject of an authorisation **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Manually positioned to the address or location	A7NE (SW)	604	4	530309 182474
35	**Registered Radioactive Substances** Name: Institute Of Neurology Location: 1 Wakefield Street, LONDON, Greater London, WC1N 1PJ Authority: Environment Agency, Thames Region Permit Reference: AA1007 Dated: 22nd November 1991 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Substantial variation to authorisation under RSA **Status: Authorisation either revoked or cancelledCancelled** Positional Accuracy: Manually positioned to the address or location	A7NE (SW)	604	4	530309 182474
35	**Registered Radioactive Substances** Name: Institute Of Neurology Location: 1 Wakefield Street, LONDON, Greater London, WC1N 1PJ Authority: Environment Agency, Thames Region Permit Reference: AD2646 Dated: 31st March 1991 Process Type: Not Supplied Description: Authorisation under RSA **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Manually positioned to the address or location	A7NE (SW)	604	4	530309 182474
35	**Registered Radioactive Substances** Name: University College London Location: 1 Wakefield Street, London, WC1N 1PJ Authority: Environment Agency, Thames Region Permit Reference: Bw9905 Dated: 22nd July 2004 Process Type: Registration under S7 RSA for the keeping and use of Radioactive materials (was RSA60 S1) Description: Registration under the Act of an open source which is also the subject of an authorisation **Status: Application has been authorised and any conditions apply to the operatorAuthorised** Positional Accuracy: Automatically positioned to the address	A7NE (SW)	612	4	530319 182454

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
35	**Registered Radioactive Substances** Name: University College London Location: 1 Wakefield Street, London, WC1N 1PJ Authority: Environment Agency, Thames Region Permit Reference: Bw3192 Dated: 22nd July 2004 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Authorisation under RSA **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Automatically positioned to the address	A7NE (SW)	612	4	530319 182454
35	**Registered Radioactive Substances** Name: University College London Location: 1, Wakefield Street, LONDON, WC1N 1PJ Authority: Environment Agency, Thames Region Permit Reference: Bz9952 Dated: 4th January 2006 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Minor variation to authorisation under RSA **Status: Application has been authorised and any conditions apply to the operatorAuthorised** Positional Accuracy: Automatically positioned to the address	A7NE (SW)	613	4	530319 182454
35	**Registered Radioactive Substances** Name: Institute Of Neurology Location: 1 Wakefield Street, LONDON, Greater London, WC1N 1PJ Authority: Environment Agency, Thames Region Permit Reference: AD2611 Dated: 31st March 1991 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Authorisation under RSA **Status: Authorisation either revoked or cancelledCancelled** Positional Accuracy: Automatically positioned to the address	A7NE (SW)	613	4	530319 182454
36	**Registered Radioactive Substances** Name: Institute Of Opthalmology Location: Albany House, 41-45 Judd Street, LONDON, Greater London, WC1H 9QS Authority: Environment Agency, Thames Region Permit Reference: AC5402 Dated: 31st March 1991 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Authorisation under RSA **Status: Authorisation either revoked or cancelledCancelled** Positional Accuracy: Unknown	A7NE (SW)	646	4	530238 182486
37	**Registered Radioactive Substances** Name: University Of London Location: 29-39, Brunswick Square, LONDON, WC1N 1AX Authority: Environment Agency, Thames Region Permit Reference: Ca0727 Dated: 5th January 2006 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Minor variation to authorisation under RSA **Status: Application has been authorised and any conditions apply to the operatorAuthorised** Positional Accuracy: Automatically positioned to the address	A7NE (SW)	673	4	530349 182356
37	**Registered Radioactive Substances** Name: University Of London Location: 29-39 Brunswick Square, LONDON, WC1N 1AX Authority: Environment Agency, Thames Region Permit Reference: Bw6965 Dated: 1st December 2003 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Minor variation to authorisation under RSA **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Automatically positioned to the address	A7NE (SW)	673	4	530349 182356

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
37	**Registered Radioactive Substances** Name: The School Of Pharmacy Location: University Of London,29-39 Brunswick Square, LONDON, WC1N 1AX Authority: Environment Agency, Thames Region Permit Reference: CC7331 Dated: 30th July 2008 Process Type: Registration under S7 RSA for the keeping and use of Radioactive materials (was RSA60 S1) Description: Minor variation to a registration under the Act of an open source which is also the subject of an authorisation **Status: Application has been authorised and any conditions apply to the operatorAuthorised** Positional Accuracy: Manually positioned to the address or location	A7NE (SW)	674	4	530348 182356
37	**Registered Radioactive Substances** Name: University Of London Location: 29/39 Brunswick Square, LONDON, WC1N 1AX Authority: Environment Agency, Thames Region Permit Reference: BA2156 Dated: 20th February 1998 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Minor variation to authorisation under RSA **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Unknown	A7NE (SW)	679	4	530357 182344
37	**Registered Radioactive Substances** Name: University Of London Location: The School Of Pharmacy, 29-39 Brunswick Square, LONDON, Greater London, WC1N 1AX Authority: Environment Agency, Thames Region Permit Reference: AC4554 Dated: 31st March 1991 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Authorisation under RSA **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Unknown	A7NE (SW)	682	4	530352 182344
38	**Registered Radioactive Substances** Name: University Of London Location: 29-39 Brunswick Square, LONDON, Greater London, WC1N 1AX Authority: Environment Agency, Thames Region Permit Reference: AR0756 Dated: 26th June 1995 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Substantial variation to authorisation under RSA **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Unknown	A7NE (SW)	751	4	530300 182295
39	**Registered Radioactive Substances** Name: Institute Of Child Health Location: 30, Guilford Street, London, WC1N 1EH Authority: Environment Agency, Thames Region Permit Reference: CA9988 Dated: 20th February 2007 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Minor variation to an authorisation under S13 or S14 RSA in respect of a registration under S7 when Technetium 99M is used being =< 10 gigabecquerels **Status: Application has been authorised and any conditions apply to the operatorAuthorised** Positional Accuracy: Automatically positioned to the address	A8SW (S)	792	4	530518 182154
39	**Registered Radioactive Substances** Name: Institute Of Child Health Location: 30, Guilford Street, LONDON, WC1N 1EH Authority: Environment Agency, Thames Region Permit Reference: Bz9979 Dated: 4th January 2006 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Minor variation to authorisation under RSA **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Automatically positioned to the address	A8SW (S)	792	4	530518 182154

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
39	**Registered Radioactive Substances** Name: Institute Of Child Health Location: 30 Guilford Street, London, WC1N 1EH Authority: Environment Agency, Thames Region Permit Reference: Bw7244 Dated: 1st December 2003 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Minor variation to authorisation under RSA **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Automatically positioned to the address	A8SW (S)	792	4	530518 182154
39	**Registered Radioactive Substances** Name: Institute Of Child Health Location: Hospital For Sick Children, 30 Guilford Street, LONDON, WC1N 1EH Authority: Environment Agency, Thames Region Permit Reference: AH9863 Dated: 24th August 1993 Process Type: Registration under S7 RSA for the keeping and use of Radioactive materials (was RSA60 S1) Description: Registration under the Act of an open source which is also the subject of an authorisation **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Automatically positioned to the address	A8SW (S)	792	4	530518 182154
40	**Registered Radioactive Substances** Name: Institute Of Child Health Location: 30 Guilford Street, LONDON, Greater London, WC1N 1EH Authority: Environment Agency, Thames Region Permit Reference: AU3405 Dated: 22nd March 1996 Process Type: Registration under S7 RSA for the keeping and use of Radioactive materials (was RSA60 S1) Description: Substantial variation to a registration under the Act of an open source which is also the subject of an authorisation **Status: Application has been authorised and any conditions apply to the operatorAuthorised** Positional Accuracy: Unknown	A8SW (S)	873	4	530405 182105
40	**Registered Radioactive Substances** Name: Institute Of Child Health Location: 30 Guilford Street, LONDON, WC1N 1EH Authority: Environment Agency, Thames Region Permit Reference: BA3560 Dated: 26th March 1998 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Minor variation to authorisation under RSA **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Unknown	A8SW (S)	877	4	530395 182105
40	**Registered Radioactive Substances** Name: Institute Of Child Health Location: 30 Guilford Street, LONDON, Greater London, WC1N 1EH Authority: Environment Agency, Thames Region Permit Reference: AH9871 Dated: 1st September 1993 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Authorisation under RSA **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Unknown	A8SW (S)	878	4	530405 182100
40	**Registered Radioactive Substances** Name: Institute Of Child Health Location: 30 Guilford Street, LONDON, Greater London, WC1N 1EH Authority: Environment Agency, Thames Region Permit Reference: AB6497 Dated: 20th July 1991 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Authorisation under RSA dated pre April 1991 **Status: Authorisation either revoked or cancelledCancelled** Positional Accuracy: Unknown	A8SW (S)	884	4	530400 182095

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
41	**Registered Radioactive Substances** Name: Great Ormond Street Hospital For Children Nhs Trust Location: Great Ormond Street, LONDON, WC1N 3JH Authority: Environment Agency, Thames Region Permit Reference: CD1711 Dated: 24th November 2008 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Substantial variation to authorisation under RSA **Status: Application has been authorised and any conditions apply to the operatorAuthorised** Positional Accuracy: Automatically positioned to the address	A8SW (S)	899	4	530533 182041
41	**Registered Radioactive Substances** Name: Great Ormond Street Hospital For Children Nhs Trust Location: Great Ormond Street, LONDON, WC1N 3JH Authority: Environment Agency, Thames Region Permit Reference: CD1584 Dated: 24th November 2008 Process Type: Registration under S7 RSA for the keeping and use of Radioactive materials (was RSA60 S1) Description: Substantial variation to a registration under the Act of an open source which is also the subject of an authorisation **Status: Application has been authorised and any conditions apply to the operatorAuthorised** Positional Accuracy: Automatically positioned to the address	A8SW (S)	899	4	530533 182041
41	**Registered Radioactive Substances** Name: Great Ormond Street Hospital For Children Nhs Trust Location: Great Ormond Street, London, WC1N 3JH Authority: Environment Agency, Thames Region Permit Reference: Bx3783 Dated: 21st February 2005 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Substantial variation to authorisation under RSA **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Automatically positioned to the address	A8SW (S)	899	4	530533 182041
41	**Registered Radioactive Substances** Name: Great Ormond Street Hospital For Children Nhs Trust Location: Great Ormond Street, London, WC1N 3JH Authority: Environment Agency, Thames Region Permit Reference: Bx3791 Dated: 21st February 2005 Process Type: Registration under S7 RSA for the keeping and use of Radioactive materials (was RSA60 S1) Description: Substantial variation to a registration under the Act of an open source which is also the subject of an authorisation **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Automatically positioned to the address	A8SW (S)	899	4	530533 182041
41	**Registered Radioactive Substances** Name: Great Ormond Street Hospital For Children Nhs Trust Location: Great Ormond Street, London, WC1N 3JH Authority: Environment Agency, Thames Region Permit Reference: Bw7511 Dated: 1st December 2003 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Minor variation to authorisation under RSA **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Automatically positioned to the address	A8SW (S)	899	4	530533 182041
41	**Registered Radioactive Substances** Name: Great Ormond Street Hospital For Children Nhs Trust Location: Great Ormond Street, LONDON, WC1N 3JH Authority: Environment Agency, Thames Region Permit Reference: BH0895 Dated: 11th January 2000 Process Type: Registration under S7 RSA for the keeping and use of Radioactive materials (was RSA60 S1) Description: Substantial variation to a registration under the Act of an open source which is also the subject of an authorisation **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Automatically positioned to the address	A8SW (S)	899	4	530533 182041

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
41	**Registered Radioactive Substances** Name: Great Ormond Street Hospital For Children Nhs Trust Location: Great Ormond Street, LONDON, WC1N 3JH Authority: Environment Agency, Thames Region Permit Reference: Bz9731 Dated: 5th January 2006 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Minor variation to authorisation under RSA **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Manually positioned to the address or location	A8SW (S)	900	4	530533 182040
41	**Registered Radioactive Substances** Name: Great Ormond Street Hosp. For Children Nhs Trust Location: Great Ormond Street, LONDON, WC1N 3JH Authority: Environment Agency, Thames Region Permit Reference: BG6243 Dated: 11th January 2000 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Authorisation under RSA **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Automatically positioned to the address	A8SW (S)	904	4	530533 182036
42	**Registered Radioactive Substances** Name: Great Ormond Street Hospital For Children Nhs Trust Location: Great Ormond Street, LONDON, Greater London, WC1N 3JH Authority: Environment Agency, Thames Region Permit Reference: AB5415 Dated: 6th November 1991 Process Type: Registration under S7 RSA for the keeping and use of Radioactive materials (was RSA60 S1) Description: Registration under the Act of an open source which is also the subject of an authorisation dated pre April 1991 **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Unknown	A8SW (S)	915	4	530453 182045
42	**Registered Radioactive Substances** Name: Hospital For Sick Children Location: Great Ormond Street, LONDON, Greater London, WC1N 3JH Authority: Environment Agency, Thames Region Permit Reference: AF1772 Dated: 26th June 1993 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Substantial variation to authorisation under RSA **Status: Application has been authorised and any conditions apply to the operatorAuthorised** Positional Accuracy: Unknown	A8SW (S)	920	4	530478 182032
42	**Registered Radioactive Substances** Name: Hospital For Sick Children Location: Great Ormond Street, LONDON, Greater London, WC1N 3JH Authority: Environment Agency, Thames Region Permit Reference: AB5431 Dated: 20th July 1991 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Authorisation under RSA dated pre April 1991 **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Unknown	A8SW (S)	935	4	530466 182020
43	**Registered Radioactive Substances** Name: University College London Location: Queen Square, London, WC1N 3BG Authority: Environment Agency, Thames Region Permit Reference: Bw3222 Dated: 4th August 2004 Process Type: Registration under S7 RSA for the keeping and use of Radioactive materials (was RSA60 S1) Description: Discretionary registration under the Act of an open source which is also the subject of an authorisation **Status: Application has been authorised and any conditions apply to the operatorAuthorised** Positional Accuracy: Automatically positioned to the address	A7SE (S)	952	4	530375 182032

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
43	**Registered Radioactive Substances** Name: National Hospital For Neurology And Neurosurgery Location: Queen Square, LONDON, WC1N 3BG Authority: Environment Agency, Thames Region Permit Reference: AW7223 Dated: 15th October 1996 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Authorisation under RSA **Status: Authorisation either revoked or cancelledCancelled** Positional Accuracy: Automatically positioned to the address	A7SE (S)	952	4	530375 182032
44	**Registered Radioactive Substances** Name: University College London Location: Queen Square House, 12 Queen Square, LONDON, Greater London, WC1N 3AR Authority: Environment Agency, Thames Region Permit Reference: AR3500 Dated: 26th July 1995 Process Type: Registration under S7 RSA for the keeping and use of Radioactive materials (was RSA60 S1) Description: Registration under the Act of an open source which is also the subject of an authorisation **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Manually positioned to the address or location	A7SE (SW)	955	4	530310 182056
	River Quality Name: Guc (Regent'S Canal) GQA Grade: River Quality C Reach: Camden Road - Hertford Union Estimated Distance (km): 7.1 Flow Rate: Flow greater than 80 cumecs Flow Type: Canal Year: 2000	A18SE (N)	540	4	530755 183459
45	**Water Abstractions** Operator: Bnp Paribas Jersey Trust Corp Ltd And Anley Trustees Ltd Licence Number: Th/039/0039/055 Permit Version: 2 Location: Regent Quarter - Borehole A Authority: Environment Agency, Thames Region Abstraction: Other Industrial/Commercial/Public Services: Heat Pump Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Regent Quarter, Kings Cross, London Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 25th June 2014 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A17SE (NW)	510	4	530368 183294
45	**Water Abstractions** Operator: Bnp Paribas Jersey Trust Corp Ltd And Anley Trustees Ltd Licence Number: Th/039/0039/055 Permit Version: 1 Location: Regent Quarter - Borehole A Authority: Environment Agency, Thames Region Abstraction: Other Industrial/Commercial/Public Services: Heat Pump Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 6th February 2013 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A17SE (NW)	510	4	530368 183294

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
46	**Water Abstractions** Operator: Thames Water Utilities Ltd Licence Number: Th/039/0039/059 Permit Version: 1 Location: Borehole At New River Head 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: Not Supplied Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 1st April 2013 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A14SW (E)	544	4	531239 182777
46	**Water Abstractions** Operator: Thames Water Utilities Ltd Licence Number: 28/39/39/0201 Permit Version: 1 Location: New River Head, Finsbury - Borehole Authority: Environment Agency, Thames Region Abstraction: Public Water Supply: Potable Water Supply - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Area Not Specified: S46(4) Water Resources Act 1991 Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 8th January 2004 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A14SW (E)	588	4	531280 182760
47	**Water Abstractions** Operator: University College London Licence Number: Th/039/0039/064 Permit Version: 2 Location: Borehole At Bidborough House, 20 Mabledon Place, London Authority: Environment Agency, Thames Region Abstraction: Other Industrial/Commercial/Public Services: Heat Pump Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Bidborough House, 20 Mabledon Place London Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 21st November 2014 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A12SE (W)	693	4	530052 182718
47	**Water Abstractions** Operator: London Borough Of Camden Licence Number: Th/039/0039/064 Permit Version: 1 Location: Borehole At Bidborough House, 20 Mabledon Place, London Authority: Environment Agency, Thames Region Abstraction: Other Industrial/Commercial/Public Services: Heat Pump Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Bidborough House, 20 Mabledon Place London Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 16th April 2013 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A12SE (W)	693	4	530052 182718

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
47	**Water Abstractions** Operator: London Borough Of Camden Licence Number: Th/039/0039/001 Permit Version: 1 Location: Bidborough House 20 Mabledon Place London Authority: Environment Agency, Thames Region Abstraction: Other Industrial/Commercial/Public Services: Heat Pump Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Bidborough House, 20 Mabledon Place London Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 9th April 2009 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A12SE (W)	693	4	530052 182718
48	**Water Abstractions** Operator: British Waterways Licence Number: 28/39/39/0164C Permit Version: Not Supplied Location: Maiden Lane Bridge, LONDON, Nw1 Authority: Environment Agency, Thames Region Abstraction: Industrial Cooling (Cegb) Abstraction Type: Not Supplied Source: River Daily Rate (m3): 3840 Yearly Rate (m3): 1 Details: Annual Abstraction Total Aggregated To Another Licence For Quantity Purposes. Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A17SE (NW)	713	4	530300 183500
48	**Water Abstractions** Operator: Canal And River Trust Licence Number: 28/39/39/0164 Permit Version: 101 Location: Maiden Lane Bridge, London, Nw1 - Regents Canal Authority: Environment Agency, Thames Region Abstraction: Amenity: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Pipeline Alongside The Regents Canal, London Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 17th December 2007 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A17SE (NW)	723	4	530310 183520
48	**Water Abstractions** Operator: British Waterways Board Licence Number: 28/39/39/0164 Permit Version: 100 Location: Maiden Lane Bridge, London, Nw1 - Regents Canal Authority: Environment Agency, Thames Region Abstraction: Amenity: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): 3840 Yearly Rate (m3): 1 Details: Pipeline Alongside The Regents Canal, London Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 25th April 1983 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A17SE (NW)	723	4	530310 183520

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
49	**Water Abstractions** Operator: Thames Water Utilities Ltd Licence Number: 28/39/39/0208 Permit Version: 1 Location: Sadler'S Wells Theatre, London 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: Not Specified Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 13th December 2004 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A14SE (E)	736	4	531450 182900
49	**Water Abstractions** Operator: Sadler'S Wells Trust Ltd Licence Number: 28/39/39/0188 Permit Version: 101 Location: Borehole At Sadler'S Wells Theatre, London Authority: Environment Agency, Thames Region Abstraction: Food And Drink: Water Bottling Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Sadler'S Wells Theatre, London Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 18th September 2001 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A14SE (E)	736	4	531450 182900
49	**Water Abstractions** Operator: Sadler'S Wells Trust Ltd Licence Number: 28/39/39/0188 Permit Version: 101 Location: Borehole At Sadler'S Wells Theatre, London Authority: Environment Agency, Thames Region Abstraction: Commercial/Industrial/Public Services: 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: Sadler'S Wells Theatre, London Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 18th September 2001 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A14SE (E)	736	4	531450 182900
49	**Water Abstractions** Operator: Sadler'S Wells Trust Ltd Licence Number: 28/39/39/0188 Permit Version: 101 Location: Borehole At Sadler'S Wells Theatre, London Authority: Environment Agency, Thames Region Abstraction: Other Industrial/Commercial/Public Services: Non-Evaporative Cooling Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Sadler'S Wells Theatre, London Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 18th September 2001 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A14SE (E)	736	4	531450 182900

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
49	**Water Abstractions** Operator: Sadlers Wells Trust Ltd Licence Number: 28/39/39/0188 Permit Version: 100 Location: Borehole At Sadlers Wells Theatre, London Authority: Environment Agency, Thames Region Abstraction: Food And Drink: Water Bottling Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): 43 Yearly Rate (m3): 4600 Details: Sadlers Wells Theatre, London Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 29th September 1998 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A14SE (E)	736	4	531450 182900
49	**Water Abstractions** Operator: Sadlers Wells Trust Ltd Licence Number: 28/39/39/0188 Permit Version: 100 Location: Borehole At Sadlers Wells Theatre, London Authority: Environment Agency, Thames Region Abstraction: Commercial/Industrial/Public Services: 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: Sadlers Wells Theatre, London Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 29th September 1998 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A14SE (E)	736	4	531450 182900
49	**Water Abstractions** Operator: Sadlers Wells Trust Ltd Licence Number: 28/39/39/0188 Permit Version: 100 Location: Borehole At Sadlers Wells Theatre, London Authority: Environment Agency, Thames Region Abstraction: Other Industrial/Commercial/Public Services: Non-Evaporative Cooling Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Sadlers Wells Theatre, London Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 29th September 1998 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A14SE (E)	736	4	531450 182900
49	**Water Abstractions** Operator: Thames Water Utilities Ltd Licence Number: Th/039/0039/060 Permit Version: 1 Location: Borehole At Saddlers Wells 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: Not Supplied Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 1st April 2013 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A14SE (E)	739	4	531452 182887

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
50	**Water Abstractions** Operator: Thames Water Utilities Ltd Licence Number: Th/039/0039/057 Permit Version: 1 Location: Borehole At Barnard Park 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: Not Supplied Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 1st April 2013 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A18NE (N)	820	4	531022 183681
50	**Water Abstractions** Operator: Thames Water Utilities Ltd Licence Number: 28/39/39/0207 Permit Version: 1 Location: Barnard Park, Islington - Borehole Authority: Environment Agency, Thames Region Abstraction: Public Water Supply: Potable Water Supply - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Specified S.46(4) Water Resources Act 1991 Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 8th January 2004 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A18NE (N)	828	4	531020 183690
	Water Abstractions Operator: British Waterways Board Licence Number: 28/39/39/0172 Permit Version: 100 Location: Grand Union Canal At Camley Street Nature Park, London Authority: Environment Agency, Thames Region Abstraction: Environmental: Non-remedial River/Wetland Support: Make-Up or Top Up Water Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): 16 Yearly Rate (m3): 2273 Details: Camley Street Nature Park, Camden, London, Nw1 Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 18th September 1991 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A17NW (NW)	1180	4	529750 183600
	Water Abstractions Operator: Urban Hotels Uk Llp Licence Number: 28/39/39/0206 Permit Version: 4 Location: 86-88 Clerkenwell Road, London- Borehole A Authority: Environment Agency, Thames Region Abstraction: Commercial Private Water Undertaking: 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: The Zetter Hotel, 86-88 Clerkenwell Road, London Ec1r. Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 10th September 2012 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A9SE (SE)	1213	4	531650 182150

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: John Mark Developments Limited Licence Number: 28/39/39/0206 Permit Version: 2 Location: 86-88 Clerkenwell Road, London- Borehole A Authority: Environment Agency, Thames Region Abstraction: Commercial Private Water Undertaking: 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: The Zetter Hotel, 86-88 Clerkenwell Road, London Ec1r. Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st April 2008 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A9SE (SE)	1213	4	531650 182150
	Water Abstractions Operator: John Mark Developments Limited Licence Number: 28/39/39/0206 Permit Version: 1 Location: 86-88 Clerkenwell Road, London- Borehole A Authority: Environment Agency, Thames Region Abstraction: Commercial Private Water Undertaking: 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: 86-88 Clerkenwell Road, London Ec1r. Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 4th July 2003 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A9SE (SE)	1213	4	531650 182150
	Water Abstractions Operator: London School Of Hygiene And Tropical Medicine Licence Number: Th/039/0039/031 Permit Version: 1 Location: Keppel Street, Bloomsbury, London - Borehole 1 Authority: Environment Agency, Thames Region Abstraction: Other Industrial/Commercial/Public Services: Heat Pump Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 1st April 2011 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A2NW (SW)	1360	4	529860 181863
	Water Abstractions Operator: London School Of Hygiene And Tropical Medicine Licence Number: Th/039/0039/031 Permit Version: 1 Location: Keppel Street, Bloomsbury, London - Borehole 2 Authority: Environment Agency, Thames Region Abstraction: Other Industrial/Commercial/Public Services: Heat Pump Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 1st April 2011 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A2NW (SW)	1360	4	529858 181865

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: Hanson Quarry Products Europe Ltd Licence Number: Th/039/0039/027 Permit Version: 2 Location: Kings Cross Concrete Plant-Borehole Authority: Environment Agency, Thames Region Abstraction: Mineral Products: General use relating to Secondary Category (High Loss) Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Kings Cross Concrete Plant, Off York Way, London. Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 13th August 2012 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A22SW (NW)	1373	4	529920 184040
	Water Abstractions Operator: Hanson Quarry Products Europe Ltd Licence Number: Th/039/0039/027 Permit Version: 1 Location: Kings Cross Concrete Plant-Borehole Authority: Environment Agency, Thames Region Abstraction: Mineral Products: General use relating to Secondary Category (High Loss) Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Kings Cross Concrete Plant, Off York Way, London. Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 21st April 2010 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A22SW (NW)	1373	4	529920 184040
	Water Abstractions Operator: Hanson Quarry Products Europe Ltd Licence Number: 28/39/39/0222 Permit Version: 1 Location: Kings Cross Concrete Plant-Borehole Authority: Environment Agency, Thames Region Abstraction: Mineral Products: General use relating to Secondary Category (High Loss) Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Kings Cross Concrete Plant, Off York Way, London. Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 31st August 2006 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A22SW (NW)	1373	4	529920 184040
	Water Abstractions Operator: Canal And River Trust Licence Number: 28/39/39/0164 Permit Version: 101 Location: City Road Basin, Wharf Road, N1 - Regents Canal Authority: Environment Agency, Thames Region Abstraction: Amenity: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Pipeline Alongside The Regents Canal, London Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 17th December 2007 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A15NE (E)	1388	4	532100 183000

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: British Waterways Board Licence Number: 28/39/39/0164 Permit Version: 100 Location: City Road Basin, Wharf Road, N1 - Regents Canal Authority: Environment Agency, Thames Region Abstraction: Amenity: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): 2830 Yearly Rate (m3): 1 Details: Pipeline Alongside The Regents Canal, London Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 25th April 1983 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A15NE (E)	1388	4	532100 183000
	Water Abstractions Operator: British Waterways Licence Number: 28/39/39/0164F Permit Version: Not Supplied Location: City Road Basin, LONDON, N1 Authority: Environment Agency, Thames Region Abstraction: Industrial Cooling (Cegb) Abstraction Type: Not Supplied Source: River Daily Rate (m3): 2830 Yearly Rate (m3): 1 Details: Annual Abstraction Total Aggregated To Another Licence For Quantity Purposes. Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A15NE (E)	1388	4	532100 183000
	Water Abstractions Operator: Citigen (London) Ltd Licence Number: 28/39/39/0176 Permit Version: 101 Location: 2 Boreholes At Charterhouse Street, Smithfield At Point A Authority: Environment Agency, Thames Region Abstraction: Production of Energy: Evaporative Cooling Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: The Area Of Land At Charterhouse Street, Smithfield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st April 2000 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A4NE (SE)	1487	4	531630 181750
	Water Abstractions Operator: Citigen (London) Ltd Licence Number: 28/39/39/0176 Permit Version: 100 Location: Charterhouse Street, London - Borehole A Authority: Environment Agency, Thames Region Abstraction: Other Industrial/Commercial/Public Services: Evaporative Cooling Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): 48 Yearly Rate (m3): 17568 Details: Charterhouse Street, Smithfield, London Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 11th January 1995 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A4NE (SE)	1509	4	531600 181700

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: Citigen (London) Ltd Licence Number: 28/39/39/0176 Permit Version: 100 Location: Charterhouse Street, London - Borehole B Authority: Environment Agency, Thames Region Abstraction: Other Industrial/Commercial/Public Services: Evaporative Cooling Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Charterhouse Street, Smithfield, London Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 11th January 1995 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A4NE (SE)	1509	4	531600 181700
	Water Abstractions Operator: W Royle & Son Ltd Licence Number: 28/39/39/0076 Permit Version: Not Supplied Location: Union Wharf, LONDON, N1 Authority: Environment Agency, Thames Region Abstraction: Staff Welfare Abstraction Type: Not Supplied Source: Groundwater Daily Rate (m3): 50 Yearly Rate (m3): 8183 Details: Additional Purpose - Staff Welfare (8183). Chalk (Undifferentiated) Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A15NE (E)	1512	4	532200 183200
	Water Abstractions Operator: City And Guilds Of London Institure Licence Number: Th/039/0039/084 Permit Version: 1 Location: Confined Chalk At City And Guilds Head Office Authority: Environment Agency, Thames Region Abstraction: Other Industrial/Commercial/Public Services: Heat Pump Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 23rd August 2013 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A5SW (SE)	1731	4	531748 181533
	Water Abstractions Operator: C Hoare & Co Licence Number: 28/39/39/0077 Permit Version: 100 Location: Borehole At 37 Fleet Street, London Ec4 Authority: Environment Agency, Thames Region Abstraction: Commercial/Industrial/Public Services: Drinking; Cooking; Sanitary; Washing; (Small Garden) Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): 12 Yearly Rate (m3): 3409 Details: 37 Fleet Street, Lodnon Ec4 Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 10th June 1968 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	(S)	1913	4	531300 181100

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: Commerz Grundbesitz Invest. Mbh Licence Number: 28/39/39/0025 Permit Version: 101 Location: Globe House, Victoria Embankment- Borehole C Authority: Environment Agency, Thames Region Abstraction: Commercial/Industrial/Public Services: 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: Globe House, Temple Place, Victoria Embankment, London Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 28th March 2003 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(S)	1970	4	531050 180980
	Water Abstractions Operator: Commerz Grundbesitz Invest. Mbh Licence Number: 28/39/39/0025 Permit Version: 101 Location: Globe House, Victoria Embankment- Borehole A Authority: Environment Agency, Thames Region Abstraction: Commercial/Industrial/Public Services: 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: Globe House, Temple Place, Victoria Embankment, London Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 28th March 2003 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(S)	1972	4	531060 180980
	Water Abstractions Operator: Commerz Grundbesitz Invest. Mbh Licence Number: 28/39/39/0025 Permit Version: 101 Location: Globe House, Victoria Embankment- Borehole B Authority: Environment Agency, Thames Region Abstraction: Commercial/Industrial/Public Services: 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: Globe House, Temple Place, Victoria Embankment, London Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 28th March 2003 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(S)	1977	4	531030 180970
	Groundwater Vulnerability Soil Classification: Not classified Map Sheet: Sheet 40 Thames Estuary Scale: 1:100,000	A13NE (NE)	0	4	530715 182921
	Drift Deposits None				
	Bedrock Aquifer Designations Aquifer Designation: Unproductive Strata	A13NE (NE)	0	2	530715 182921
	Superficial Aquifer Designations No Data Available				
51	**Source Protection Zones** Name: Various Source: Environment Agency, Head Office Reference: Not Supplied Type: Zone II (Outer Protection Zone): Either 25% of the source area or a 400 day travel time whichever is greater.	A18SE (NE)	452	4	530907 183329

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
52	**Source Protection Zones** Name: Sadlers Well Source: Environment Agency, Head Office Reference: Th416 Type: Zone I (Inner Protection Zone): Travel time of 50 days or less to the groundwater source.	A14NW (E)	589	4	531303 182921
53	**Source Protection Zones** Name: Barnard Park Source: Environment Agency, Head Office Reference: Th350 Type: Zone I (Inner Protection Zone): Travel time of 50 days or less to the groundwater source.	A18SE (NE)	595	4	530947 183469
54	**Source Protection Zones** Name: Sadlers Well Source: Environment Agency, Head Office Reference: Th416 Type: Groundwater Source	A14SE (E)	736	4	531450 182900
55	**Source Protection Zones** Name: Barnard Park Source: Environment Agency, Head Office Reference: Th350 Type: Groundwater Source	A18NE (N)	828	4	531020 183690
	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				
	Detailed River Network Lines None				
	Detailed River Network Offline Drainage None				

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
56	**Historical Landfill Sites** Licence Holder: Not Supplied Location: Finsbury Name: Rosoman Street / Skinner Street Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD34094 First Input Date: 31st December 1975 Last Input Date: 31st December 1978 Specified Waste Type: Deposited Waste included Inert Waste EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: 5570/0002 BGS Ref: Not Supplied Other Ref: Not Supplied	A9NW (SE)	781	4	531379 182512
57	**Licensed Waste Management Facilities (Locations)** Licence Number: 80329 Location: 1 Camley Street, Camden, London, NW1 1UU Operator Name: Shanks Waste Services Ltd Operator Location: Not Supplied Authority: Environment Agency - Thames Region, North East Area Site Category: Household, Commercial And Industrial Transfer Stations **Licence Status: Surrendered** Issued: 16th February 1993 Last Modified: Not Supplied Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: 6th March 2001 IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A17SW (NW)	881	4	529975 183399
58	**Licensed Waste Management Facilities (Locations)** Licence Number: 80327 Location: 2 Camley Street, Kings Cross, London, NW1 Operator Name: Rutland (Waste Disposal) Ltd Operator Location: Not Supplied Authority: Environment Agency - Thames Region, North East Area Site Category: Household, Commercial And Industrial Transfer Stations **Licence Status: Surrendered** Issued: 17th February 1992 Last Modified: 15th July 1997 Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: 7th January 2000 IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A17SW (NW)	948	4	529928 183449
59	**Licensed Waste Management Facilities (Locations)** Licence Number: 80335 Location: 86 Pancras Road, London, NW1 1WJ Operator Name: Hall Ronald Herbert Charles Operator Location: Not Supplied Authority: Environment Agency - Thames Region, North East Area Site Category: Metal Recycling Sites (Mixed) **Licence Status: Issued** Issued: 20th November 1992 Last Modified: Not Supplied Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A17SW (NW)	990	4	529829 183362
	Local Authority Landfill Coverage Name: London Borough of Camden - Has no landfill data to supply		0	7	530715 182921
	Local Authority Landfill Coverage Name: London Borough of Islington - Has no landfill data to supply		19	6	530722 182938
60	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1920	A17SE (NW)	792	11	530160 183486

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
61	**Registered Waste Transfer Sites** Licence Holder: Willment Ready Mixed Concrete Ltd Licence Reference: DL203 Site Location: BR Goods Yard, York Way, KINGS CROSS, London, N1 Operator Location: Howard H. 63 High Street, Teddington, RICHMOND, Surrey, TW11 8HA Authority: Environment Agency - Thames Region, North East Area Site Category: Transfer Max Input Rate: Medium (Equal to or greater than 25,000 and less than 75,000 tonnes per year) Waste Source Restrictions: No known restriction on source of waste Licence Status: Licence lapsed/cancelled/defunct/not applicable/surrenderedCancelled Dated: 1st May 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: Construction And Demolition Wastes Prohibited Waste: Biodegradable/Putrescible Waste Clinical Wastes Notifiable Wastes Special Wastes	A12NE (NW)	591	4	530200 183210
62	**Registered Waste Transfer Sites** Licence Holder: Kings Cross Iron & Steel Licence Reference: DL089 Site Location: 1 Camley Street, CAMDEN, London, NW1 Operator Location: As Site Address Authority: Environment Agency - Thames Region, North East Area Site Category: Transfer Max Input Rate: Medium (Equal to or greater than 25,000 and less than 75,000 tonnes per year) Waste Source Restrictions: No known restriction on source of waste Licence Status: Licence lapsed/cancelled/defunct/not applicable/surrenderedCancelled Dated: 1st November 1981 Preceded By Licence: Not Given Superseded By Licence: Not Given Positional Accuracy: Manually positioned to the address or location Boundary Quality: Not Supplied Authorised Waste: Commercial Waste Construction And Demolition Wastes Prohibited Waste: Biodegradable/Putrescible Waste Notifiable Wastes Special Wastes	A17SW (NW)	903	4	529950 183400
63	**Registered Waste Transfer Sites** Licence Holder: Shanks & Mc Ewan (Southern) Ltd Licence Reference: DL199 Site Location: Kings Cross Transfer Station, 1 Camley Street, CAMDEN, London, NW1 1UU Operator Location: Woodside House, Church Road, WOBURN SANDS, Buckinghamshire, MK17 8TA Authority: Environment Agency - Thames Region, North East Area Site Category: Transfer Max Input Rate: Large (Equal to or greater than 75,000 and less than 250,000 tonnes per year) Waste Source Restrictions: No known restriction on source of waste Licence Status: Licence has completion certificateSurrendered Dated: 1st March 1985 Preceded By Licence: Not Given Superseded By Licence: Not Given Positional Accuracy: Manually positioned to the address or location Boundary Quality: Not Supplied Authorised Waste: L.W.R.A. Cat. A = Inert Wastes L.W.R.A. Cat. B = General Wastes L.W.R.A. Cat. C = Putresc.Waste (Some) Lwra Cat. E = Difficult Gen.W (Some) Max.Waste Permitted By Licence-Stated Prohibited Waste: Clinical - As In Coll/Disp.Regs Of '88 Special Wastes Waste N.O.S.	A17SW (NW)	908	4	529950 183410

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
63	**Registered Waste Transfer Sites** Licence Holder: Rutland Waste Disposal Ltd Licence Reference: DL241 Site Location: 2 Camley Street, KINGS CROSS, London, NW1 Operator Location: 139 Watling Street, GILLINGHAM, Kent, ME7 2YY Authority: Environment Agency - Thames Region, North East Area Site Category: Transfer Max Input Rate: Large (Equal to or greater than 75,000 and less than 250,000 tonnes per year) Waste Source Restrictions: No known restriction on source of waste Licence Status: Licence has completion certificateSurrendered Dated: 7th February 1992 Preceded By Licence: DL241 Superseded By Licence: Not Given Positional Accuracy: Manually positioned to the address or location Boundary Quality: Not Supplied Authorised Waste: Lwra Cat. A = Inert Wastes Lwra Cat. Bi Gen.Non-Putresc Max.Waste Permitted By Licence-Stated Prohibited Waste: Clinical - As In Coll/Disp.Regs Of '88 Special Wastes	A17SW (NW)	955	4	529920 183450
64	**Registered Waste Treatment or Disposal Sites** Licence Holder: R H C Hall t/a St Pancras Metals Licence Reference: DL414 Site Location: St Pancras Metals, 86 Pancras Road, CAMDEN, London, NW1 1WJ Operator Location: 13 Jeremy Bentham House, Pollard Street, LONDON, Greater London, E2 Authority: Environment Agency - Thames Region, North East Area Site Category: Scrapyard Max Input Rate: Very Small (Less than 10,000 tonnes per year) Waste Source Restrictions: No known restriction on source of waste Licence Status: May not be working (licence suspended)Suspended Dated: 20th November 1992 Preceded By Licence: Not Given Superseded By Licence: Not Given Positional Accuracy: Located by supplier to within 100m Boundary Quality: Not Supplied Authorised Waste: Electric Cable/Wire Lwra Cat Bii Gen. Scrap Metal Waste Max.Waste Permitted By Licence Prohibited Waste: Clinical - As In Control.Waste Regs'92 Special Wastes Waste N.O.S.	A17SW (NW)	988	4	529830 183360

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
65	**Control of Major Accident Hazards Sites (COMAH)** Name: London Borough of Camden Location: Bidborough House, 20 Mabledon St, LONDON, WC1H 9BT Reference: Not Supplied Type: Lower Tier **Status: Record Ceased To Be Supplied Under COMAH Regulations** Positional Accuracy: Automatically positioned to the address	A12SW (W)	728	8	530020 182703
66	**Notification of Installations Handling Hazardous Substances (NIHHS)** Name: Transco Location: St Pancras Holder Station, Battle Bridge Road, LONDON, NW1 2TR **Status: Not Active** Positional Accuracy: Located by supplier to within 100m	A17SE (NW)	723	8	530100 183300

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS 1:625,000 Solid Geology Description: Thames Group	A13NE (NE)	0	2	530715 182921
	BGS Estimated Soil Chemistry No data available				
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 530905, 182827 Soil Sample Type: Topsoil Sample Area: London Arsenic Measured Concentration: 18.00 mg/kg Cadmium Measured Concentration: 109.60 mg/kg Chromium Measured Concentration: 362.60 mg/kg Lead Measured Concentration: 555.30 mg/kg Nickel Measured Concentration: 85.80 mg/kg	A13SE (SE)	213	2	530905 182827
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 530795, 183213 Soil Sample Type: Topsoil Sample Area: London Arsenic Measured Concentration: 15.90 mg/kg Cadmium Measured Concentration: 2.50 mg/kg Chromium Measured Concentration: 75.80 mg/kg Lead Measured Concentration: 333.10 mg/kg Nickel Measured Concentration: 30.90 mg/kg	A13NE (N)	304	2	530795 183213
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 530416, 183311 Soil Sample Type: Topsoil Sample Area: London Arsenic Measured Concentration: 16.30 mg/kg Cadmium Measured Concentration: 0.90 mg/kg Chromium Measured Concentration: 68.40 mg/kg Lead Measured Concentration: 145.30 mg/kg Nickel Measured Concentration: 20.10 mg/kg	A18SW (NW)	492	2	530416 183311
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 531198, 182751 Soil Sample Type: Topsoil Sample Area: London Arsenic Measured Concentration: 13.60 mg/kg Cadmium Measured Concentration: 1.30 mg/kg Chromium Measured Concentration: 57.30 mg/kg Lead Measured Concentration: 653.60 mg/kg Nickel Measured Concentration: 21.90 mg/kg	A14SW (E)	513	2	531198 182751

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: 530280, 182600 Soil Sample Type: Topsoil Sample Area: London Arsenic Measured Concentration: 16.70 mg/kg Cadmium Measured Concentration: 0.80 mg/kg Chromium Measured Concentration: 67.50 mg/kg Lead Measured Concentration: 244.90 mg/kg Nickel Measured Concentration: 23.10 mg/kg	A12SE (SW)	541	2	530280 182600
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 530773, 182377 Soil Sample Type: Topsoil Sample Area: London Arsenic Measured Concentration: 28.40 mg/kg Cadmium Measured Concentration: 0.90 mg/kg Chromium Measured Concentration: 63.60 mg/kg Lead Measured Concentration: 944.20 mg/kg Nickel Measured Concentration: 38.60 mg/kg	A8NE (S)	548	2	530773 182377
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 531262, 183150 Soil Sample Type: Topsoil Sample Area: London Arsenic Measured Concentration: 12.70 mg/kg Cadmium Measured Concentration: 0.60 mg/kg Chromium Measured Concentration: 46.80 mg/kg Lead Measured Concentration: 458.10 mg/kg Nickel Measured Concentration: 18.70 mg/kg	A14NW (NE)	594	2	531262 183150
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 530370, 182313 Soil Sample Type: Topsoil Sample Area: London Arsenic Measured Concentration: 26.90 mg/kg Cadmium Measured Concentration: 0.60 mg/kg Chromium Measured Concentration: 73.30 mg/kg Lead Measured Concentration: 721.90 mg/kg Nickel Measured Concentration: 32.20 mg/kg	A7NE (SW)	699	2	530370 182313
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 531261, 182375 Soil Sample Type: Topsoil Sample Area: London Arsenic Measured Concentration: 23.20 mg/kg Cadmium Measured Concentration: 1.40 mg/kg Chromium Measured Concentration: 73.70 mg/kg Lead Measured Concentration: 725.00 mg/kg Nickel Measured Concentration: 32.40 mg/kg	A9NW (SE)	773	2	531261 182375

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: 530817, 183752 Soil Sample Type: Topsoil Sample Area: London Arsenic Measured Concentration: 21.90 mg/kg Cadmium Measured Concentration: 0.60 mg/kg Chromium Measured Concentration: 76.00 mg/kg Lead Measured Concentration: 294.40 mg/kg Nickel Measured Concentration: 29.80 mg/kg	A18NE (N)	838	2	530817 183752
	BGS Urban Soil Chemistry Averages Source: British Geological Survey, National Geoscience Information Service Sample Area: London Count Id: 7209 Arsenic Minimum Concentration: 1.00 mg/kg Arsenic Average Concentration: 17.00 mg/kg Arsenic Maximum Concentration: 161.00 mg/kg Cadmium Minimum Concentration: 0.10 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 (NE)	0	2	530715 182921
	Coal Mining Affected Areas In an area that might not be affected by coal mining				
	Natural Cavities Easting: 530600 Northing: 182400 Distance: 534 Quadrant Reference: A8 Quadrant Reference: NW Bearing Ref: S Cavity Type: Unknown x 1 Solid Geology Detail: London Clay Formation Superficial Geology Detail: Alluvium	A8NW (S)	534	9	530600 182400
	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 (NE)	0	2	530715 182921
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (NE)	0	2	530715 182921
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (NE)	0	2	530715 182921

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (NE)	0	2	530715 182921
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NE (N)	63	2	530732 182981
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SE (E)	129	2	530837 182881
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SE (SE)	208	2	530872 182785
	Potential for Running Sand Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (NE)	0	2	530715 182921
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13NE (NE)	0	2	530715 182921
	Radon Potential - Radon Affected Areas Affected Area: The property is in a Lower probability radon area (less than 1% of homes are estimated to be at or above the Action Level). Source: British Geological Survey, National Geoscience Information Service	A13NE (NE)	0	2	530715 182921
	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 (NE)	0	2	530715 182921

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
67	**Contemporary Trade Directory Entries** Name: Kings Cross Printers Ltd Location: 163, King's Cross Road, London, WC1X 9BN Classification: Printers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	6	-	530710 182924
67	**Contemporary Trade Directory Entries** Name: Kings Cross Printers Location: 163, King's Cross Road, London, WC1X 9BN Classification: Printers **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	6	-	530710 182924
67	**Contemporary Trade Directory Entries** Name: 2k Mirror Location: 163, King's Cross Road, London, WC1X 9BN Classification: Mirrors & Decorative Glass **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	6	-	530710 182924
67	**Contemporary Trade Directory Entries** Name: 2k Mirror Location: 163, King's Cross Road, London, WC1X 9BN Classification: Mirrors & Decorative Glass **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	6	-	530710 182924
67	**Contemporary Trade Directory Entries** Name: Britannia Office Furniture Location: 163, King's Cross Road, London, WC1X 9BN Classification: Office Furniture & Equipment **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	6	-	530710 182924
67	**Contemporary Trade Directory Entries** Name: Ak Mirror Location: 163, King's Cross Road, London, WC1X 9BN Classification: Mirrors & Decorative Glass **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A13NW (NW)	6	-	530710 182924
67	**Contemporary Trade Directory Entries** Name: 2k Mirror Uk Location: 163, King's Cross Road, London, WC1X 9BN Classification: Mirrors & Decorative Glass **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A13NW (NW)	6	-	530710 182924
67	**Contemporary Trade Directory Entries** Name: European Gateway Location: Spacetel House, 140-142, King's Cross Road, London, WC1X 9DS Classification: Telecommunications Equipment & Systems **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NE (NE)	39	-	530730 182956
67	**Contemporary Trade Directory Entries** Name: Kings Studios Location: 114-116, King's Cross Road, London, WC1X 9DS Classification: Catering Equipment **Status: Inactive** Positional Accuracy: Manually positioned within the geographical locality	A13NE (NE)	48	-	530755 182945
68	**Contemporary Trade Directory Entries** Name: London Print Centre Location: 155, King's Cross Road, London, WC1X 9BN Classification: Printers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13SE (SE)	18	-	530724 182906
69	**Contemporary Trade Directory Entries** Name: Rowland Engineering Company Location: 1a, Wicklow Street, London, WC1X 9JX Classification: Precision Engineers **Status: Active** Positional Accuracy: Automatically positioned to the address	A13SE (SE)	68	-	530764 182876
70	**Contemporary Trade Directory Entries** Name: Unique Fabrics Ltd Location: 1-2, Lorenzo Street, London, WC1X 9DJ Classification: Clothing & Fabrics - Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	73	-	530680 182985

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
70	**Contemporary Trade Directory Entries** Name: Cineflix Rights Location: 1-2, Lorenzo Street, LONDON, WC1X 9DJ Classification: Distribution Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	74	-	530680 182985
70	**Contemporary Trade Directory Entries** Name: M A Y Trading (Uk) Ltd Location: 1-2, Lorenzo Street, London, WC1X 9DJ Classification: Clothing Accessory Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	74	-	530680 182985
70	**Contemporary Trade Directory Entries** Name: Home Grown Cereals Location: 223, Pentonville Road, London, N1 9HY Classification: Food Products - Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	107	-	530654 183008
71	**Contemporary Trade Directory Entries** Name: Grays Inn Cleaners Location: 5-11, Leeke Street, London, WC1X 9HY Classification: Carpet, Curtain & Upholstery Cleaners **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (W)	76	-	530642 182944
71	**Contemporary Trade Directory Entries** Name: Peter Barber Architects Location: 173, King's Cross Road, London, WC1X 9BZ Classification: Electrical Engineers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	97	-	530628 182964
72	**Contemporary Trade Directory Entries** Name: Vail Printers Ltd Location: Leeke St,Kings Cross Rd, London, WC1X 9HU Classification: Printers **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A13NW (W)	129	-	530588 182943
72	**Contemporary Trade Directory Entries** Name: Bed Bug Doctor Location: 180-187 King's Cross rd, London, WC1X 9DE Classification: Pest & Vermin Control **Status: Active** Positional Accuracy: Manually positioned to the road within the address or location	A13NW (NW)	136	-	530597 182989
72	**Contemporary Trade Directory Entries** Name: Digital Printing Location: Kingscross Business Centre,180-186 King'S Cross Rd, London, WC1X 9DE Classification: Digital Printing **Status: Inactive** Positional Accuracy: Manually positioned within the geographical locality	A13NW (NW)	147	-	530590 182999
72	**Contemporary Trade Directory Entries** Name: Ariana Location: Flat 1, 191, King's Cross Road, London, WC1X 9DB Classification: Dry Cleaners **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	154	-	530574 182981
72	**Contemporary Trade Directory Entries** Name: Alux Location: 245, Pentonville Road, LONDON, N1 9NG Classification: Office Furniture & Equipment **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	156	-	530589 183012
72	**Contemporary Trade Directory Entries** Name: Daytona Motorcycles Location: Surety House, 25-28, Field Street, London, WC1X 9DA Classification: Motor Cycle Repairs **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (W)	158	-	530564 182964
72	**Contemporary Trade Directory Entries** Name: Dodds The Printers Ltd Location: 193-195, King's Cross Road, London, WC1X 9DB Classification: Printers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	159	-	530569 182983

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
73	**Contemporary Trade Directory Entries** Name: Underground Distribution Location: 10a, Acton Street, London, WC1X 9NG Classification: Distribution Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13SE (S)	130	-	530755 182798
73	**Contemporary Trade Directory Entries** Name: Motopsycho Ltd Location: 18, Acton Street, London, WC1X 9ND Classification: Motor Cycle Repairs **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A13SE (S)	142	-	530723 182779
74	**Contemporary Trade Directory Entries** Name: P A Enterprises Location: Basement Flat, 39, Swinton Street, London, WC1X 9NT Classification: T-Shirts **Status: Active** Positional Accuracy: Automatically positioned to the address	A13SW (S)	146	-	530661 182786
75	**Contemporary Trade Directory Entries** Name: Cleaners Kings Cross Location: 182, Pentonville Road, London, N1 9JP Classification: Commercial Cleaning Services **Status: Inactive** Positional Accuracy: Manually positioned within the geographical locality	A13NE (N)	148	-	530737 183067
76	**Contemporary Trade Directory Entries** Name: Medical Optics Ltd Location: 52, Wicklow Street, London, WC1X 9HR Classification: Medical Equipment Maintenance & Repairs **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13SW (W)	148	-	530568 182906
77	**Contemporary Trade Directory Entries** Name: The Royal National Throat Nose & Ear Hospital Location: London, Wc1x 8da Classification: Hospitals **Status: Active** Positional Accuracy: Automatically positioned to the address	A13SW (SW)	182	-	530564 182820
78	**Contemporary Trade Directory Entries** Name: Veolia Location: 210, Pentonville Road, London, N1 9JY Classification: Waste Disposal Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	185	-	530583 183050
79	**Contemporary Trade Directory Entries** Name: Primius Lab Ltd Location: 48, Britannia Street, London, WC1X 9JH Classification: Pharmaceutical Manufacturers & Distributors **Status: Active** Positional Accuracy: Automatically positioned to the address	A13SW (W)	196	-	530525 182874
80	**Contemporary Trade Directory Entries** Name: The Crossrail Referee Location: Collier St, London, N1 9BE Classification: Railways **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A13NW (N)	246	-	530657 183160
81	**Contemporary Trade Directory Entries** Name: London Boys Scrap Yards In Kings Cross Location: 252-254, Pentonville Road, London, N1 9JY Classification: Car Breakers & Dismantlers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	248	-	530496 183038
82	**Contemporary Trade Directory Entries** Name: Cadillac Jazz Distribution Location: 61-67, Collier Street, London, N1 9BE Classification: Record, Tape & CD Manufacturers & Wholesalers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	253	-	530571 183129
82	**Contemporary Trade Directory Entries** Name: Viva Trading Location: 63-71, Collier Street, London, N1 9BE Classification: Footwear - Manufacturers and Suppliers **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A13NW (NW)	253	-	530571 183129

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
83	**Contemporary Trade Directory Entries** Name: Alex Dry Cleaners Location: 289, Gray's Inn Road, London, WC1X 8QH Classification: Dry Cleaners **Status: Active** Positional Accuracy: Automatically positioned to the address	A13SW (W)	254	-	530468 182863
83	**Contemporary Trade Directory Entries** Name: Follett Mazda Location: 277a, Gray's Inn Road, London, WC1X 8QF Classification: Garage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13SW (W)	275	-	530454 182833
83	**Contemporary Trade Directory Entries** Name: Stratstone Mayfair Location: 277a, Gray's Inn Road, London, WC1X 8QF Classification: Car Dealers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13SW (W)	275	-	530454 182833
84	**Contemporary Trade Directory Entries** Name: Treadway Flow Control Location: 26-30, Cubitt Street, London, WC1X 0LS Classification: Pumps - Sales, Servicing & Repairs **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13SE (S)	262	-	530785 182669
84	**Contemporary Trade Directory Entries** Name: Texaco Location: 71-91, King's Cross Road, London, WC1X 9LN Classification: Petrol Filling Stations - 24 Hour **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13SE (S)	279	-	530802 182656
85	**Contemporary Trade Directory Entries** Name: Nevex Printing Centre Ltd Location: 307, Gray's Inn Road, London, WC1X 8QF Classification: Printers **Status: Active** Positional Accuracy: Automatically positioned to the address	A13SW (W)	271	-	530445 182904
85	**Contemporary Trade Directory Entries** Name: All Seasons Cleaning Location: 313, Gray's Inn Road, London, WC1X 8PX Classification: Laundries & Launderettes **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (W)	288	-	530428 182930
86	**Contemporary Trade Directory Entries** Name: Gap Imaging Ltd Location: 2, Rodney Street, London, N1 9JH Classification: Printers **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A13NE (NE)	271	-	530913 183105
86	**Contemporary Trade Directory Entries** Name: Moore & Moore Creative Ltd Location: 4 Rodney Street, London, N1 9JH Classification: Gunsmiths **Status: Inactive** Positional Accuracy: Manually positioned within the geographical locality	A13NE (NE)	301	-	530926 183135
86	**Contemporary Trade Directory Entries** Name: Wass Quadrant Printers Ltd Location: 2, Rodney Street, London, N1 9JH Classification: Printers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NE (NE)	301	-	530926 183135
87	**Contemporary Trade Directory Entries** Name: Ocean Contract Cleaning London Ltd Location: 5-15 Cromer Street, London, WC1H 8LS Classification: Commercial Cleaning Services **Status: Active** Positional Accuracy: Manually positioned within the geographical locality	A13SW (SW)	294	-	530522 182699
88	**Contemporary Trade Directory Entries** Name: G Thornfields Ltd Location: 319-321, Gray's Inn Road, London, WC1X 8PX Classification: Wallpapers & Wall Coverings **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (W)	304	-	530411 182935

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
88	**Contemporary Trade Directory Entries** Name: Day By Day Art & Interiors Location: 319-321, Gray's Inn Road, London, WC1X 8PX Classification: Wallpapers & Wall Coverings **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (W)	304	-	530411 182935
88	**Contemporary Trade Directory Entries** Name: Auto Audio Installations Location: 370, Gray's Inn Road, London, WC1X 8BB Classification: Telecommunications Equipment & Systems **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (W)	316	-	530404 182975
89	**Contemporary Trade Directory Entries** Name: Chanda & Sons Location: Flat, 30, Caledonian Road, London, N1 9DT Classification: Hardware **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	315	-	530460 183106
90	**Contemporary Trade Directory Entries** Name: David Charles Childrens Wear Ltd Location: 65, King's Cross Road, London, WC1X 9LW Classification: Clothing & Fabrics - Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13SE (S)	323	-	530838 182623
91	**Contemporary Trade Directory Entries** Name: M Y I P B Location: 15-17, Caledonian Road, London, N1 9DX Classification: Freight Forwarders **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	331	-	530418 183067
91	**Contemporary Trade Directory Entries** Name: Ced Location: 15-17, Caledonian Road, London, N1 9DX Classification: Domestic Appliances - Servicing, Repairs & Parts **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	332	-	530417 183067
91	**Contemporary Trade Directory Entries** Name: Eurostar Location: Times House, 5, Bravingtons Walk, London, N1 9AW Classification: Railways **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	357	-	530390 183068
92	**Contemporary Trade Directory Entries** Name: Onoff Print & Design Location: 225, Gray's Inn Road, London, WC1X 8RH Classification: Printers **Status: Active** Positional Accuracy: Automatically positioned to the address	A13SW (SW)	333	-	530586 182614
93	**Contemporary Trade Directory Entries** Name: Holocene Associates Ltd Location: 126-128, Pentonville Road, London, N1 9TS Classification: Garage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NE (NE)	339	-	530992 183114
93	**Contemporary Trade Directory Entries** Name: Swinton Auto Repairers Location: 126, Pentonville Road, London, N1 9TT Classification: Garage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NE (NE)	345	-	531002 183111
93	**Contemporary Trade Directory Entries** Name: John Haddon Location: Flat 7, Penton House, Donegal Street, London, N1 9QE Classification: Graffiti Removers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NE (NE)	382	-	531021 183147
94	**Contemporary Trade Directory Entries** Name: T G Lynes & Sons Ltd Location: 35-45, Caledonian Road, London, N1 9BX Classification: Central Heating Supplies & Equipment **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	353	-	530456 183160

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
95	**Contemporary Trade Directory Entries** Name: The English Kilt Co Location: 26, Harrison Street, London, WC1H 8JW Classification: Clothing Accessory Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13SW (SW)	361	-	530495 182634
96	**Contemporary Trade Directory Entries** Name: Ansaldo Sts Uk Ltd Location: Bravington House, 2, Bravingtons Walk, London, N1 9AF Classification: Engine Component Manufacturers **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A12NE (W)	368	-	530360 183017
97	**Contemporary Trade Directory Entries** Name: The English House Location: 98, Caledonian Road, London, N1 9DN Classification: Lighting Manufacturers **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SW (N)	371	-	530574 183264
97	**Contemporary Trade Directory Entries** Name: One Stop Wash Location: 100, Caledonian Road, London, N1 9DN Classification: Laundries & Launderettes **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SW (N)	375	-	530575 183269
97	**Contemporary Trade Directory Entries** Name: Multinational Industries Location: 83, Caledonian Road, London, N1 9BT Classification: Fertilisers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SW (NW)	384	-	530536 183260
97	**Contemporary Trade Directory Entries** Name: T20 Uk Location: 91, Caledonian Road, London, N1 9BT Classification: Cosmetic Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SW (NW)	394	-	530547 183276
98	**Contemporary Trade Directory Entries** Name: Battery Doctors Location: 52, Northdown Street, London, N1 9BS Classification: Chemicals - Distributors & Wholesalers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	386	-	530506 183246
99	**Contemporary Trade Directory Entries** Name: Paragon Document Solutions Ltd Location: 1, Euston Road, London, NW1 2SA Classification: Printers **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A12NE (W)	393	-	530322 182947
99	**Contemporary Trade Directory Entries** Name: Siyad Shipping Location: 11 Euston Road, London, NW1 2SA Classification: Freight Forwarders **Status: Active** Positional Accuracy: Manually positioned within the geographical locality	A12NE (W)	400	-	530315 182937
99	**Contemporary Trade Directory Entries** Name: Mobile Head Gasket Fitting Location: 5-7, Euston Road, London, NW1 2SA Classification: Garage Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A12NE (W)	400	-	530315 182937
100	**Contemporary Trade Directory Entries** Name: Peter Scott Fire Consultant Location: 36, Lloyd Baker Street, London, WC1X 9AB Classification: Fire Escapes & Evacuation Equipment **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13SE (SE)	396	-	531032 182685
101	**Contemporary Trade Directory Entries** Name: Willis News Distribution Ltd Location: Unit 5, 22, Pakenham Street, London, WC1X 0LB Classification: Distribution Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A8NE (S)	399	-	530829 182540

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
101	**Contemporary Trade Directory Entries** Name: Azographics Location: Unit 1, 22, Pakenham Street, London, WC1X 0LB Classification: Copying & Duplicating Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A8NE (S)	399	-	530829 182540
101	**Contemporary Trade Directory Entries** Name: Graham Playford Location: 22 Pakenham St, London, WC1X 0LB Classification: Photographic Equipment Repairs **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A8NE (S)	405	-	530820 182530
101	**Contemporary Trade Directory Entries** Name: Barnard & Westwood Ltd Location: 23, Pakenham Street, London, WC1X 0LB Classification: Printers **Status: Active** Positional Accuracy: Automatically positioned to the address	A8NE (S)	433	-	530855 182511
102	**Contemporary Trade Directory Entries** Name: Pentonville (Rubber Products) Ltd Location: 104-106, Pentonville Road, London, N1 9JB Classification: Rubber & Plastic Products - Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14NW (NE)	404	-	531069 183113
102	**Contemporary Trade Directory Entries** Name: Pentonville Rubber Location: 104-106, Pentonville Road, London, N1 9JB Classification: Rubber & Plastic Products - Manufacturers **Status: Active** Positional Accuracy: Automatically positioned to the address	A14NW (NE)	404	-	531069 183113
103	**Contemporary Trade Directory Entries** Name: Kings Cross Inn Location: 9-11, Euston Road, London, NW1 2SA Classification: Joinery Manufacturers **Status: Active** Positional Accuracy: Automatically positioned to the address	A12NE (W)	408	-	530307 182930
103	**Contemporary Trade Directory Entries** Name: Kings Cross Dry Cleaners Location: Kings Cross Post Office 17-21, Euston Road, London, NW1 2RY Classification: Dry Cleaners **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12SE (W)	421	-	530296 182882
104	**Contemporary Trade Directory Entries** Name: Prontaprint Location: 100, Pentonville Road, London, N1 9JB Classification: Printers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14NW (NE)	417	-	531082 183117
104	**Contemporary Trade Directory Entries** Name: Colour Systems Ltd Location: 90-92, Pentonville Road, London, N1 9HS Classification: Lithographic Plate Makers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14NW (NE)	463	-	531124 183136
104	**Contemporary Trade Directory Entries** Name: Richie Colour Processing Ltd Location: 90-92, Pentonville Road, London, N1 9HS Classification: Photographic Processors **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14NW (NE)	463	-	531124 183136
104	**Contemporary Trade Directory Entries** Name: Colour Systems Location: 90-92, Pentonville Road, London, N1 9HS Classification: Printers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14NW (NE)	463	-	531124 183136
104	**Contemporary Trade Directory Entries** Name: Itr Telecom Ltd Location: 90-92, Pentonville Road, London, N1 9HS Classification: Telecommunications Equipment & Systems **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A14NW (NE)	463	-	531124 183136