GROUND ENGINEERING
Newark Road
Peterborough PE1 5UA
Tel: 01733 566566 Fax: 01733 315280

SITE INVESTIGATION REPORT

61 BAYHAM PLACE

LONDON NW1

Report Reference No. C13359

On behalf of:-

Modern City Estates Limited
Flat 7a, 18-22 Craven Hill
London
W2 3DS

September 2014

MODERN CITY ESTATES LIMITED

TERRY DACOMBE ARCHITECTS

ELLIS & MOORE

CONSULTING ENGINEERS

REPORT ON A SITE INVESTIGATION

AT

61 BAYHAM PLACE

LONDON NW1

Report Reference No. C13359 **September 2014**

INTRODUCTION

Modern City Estates, the client, intends to construct a single level basement below No.61 Bayham Place, London NW1.

At the time of the investigation the building was in residential use.

Ground Engineering Limited was instructed by the client to carry out a site investigation comprising a desk study and ground investigation under the direction of Consulting Engineers, Ellis & Moore. The ground investigation was to determine the nature and geotechnical properties of the underlying soils in relation to foundation/basement design and construction. In addition, a limited contamination assessment was to be included within the scope of this investigation.

LOCATION, TOPOGRAPHY, GEOLOGY AND HYDROGEOLOGY OF THE SITE

No.61 Bayham Place is situated on the southern side of the street, some 16m east of its junction with Bayham Street, and 25m west of the grounds of Richard Cobden Primary School, to the south-south-east of the centre of Camden Town, within the London Borough of Camden, London NW1. The approximately 5m wide and 10m deep rectangular site is bounded to the east and west by similar properties of Nos.59 and 63, respectively. The site is centred at National Grid Reference TQ 29289 83446.

At the time of the investigation the site was entirely occupied by the two-storey, terraced brick dwelling, a converted former workshop. The site was bounded to the north by the Bayham Place roadway and to the south by the rear garden of No.68 Crowndale Road. The site was devoid of vegetation but several trees and shrubs were present within the adjacent rear gardens to the south.

The site stands at an approximate elevation of 22mOD on gently eastward falling ground.

The 1935 geological map for the area at 1:10,560 scale is based on the 1920 Ordnance Survey London Sheet V NW and shows the site to be directly underlain by the solid geology of the London Clay. This map also shows that the site lies some 330m west-south-west of the south-eastward draining Hole Bourne or Turnmill Stream (now culverted), part of the River Fleet. The 2006 geological map for the area at 1:50,000 scale, Sheet 256, shows the site within the centre of a 280m by 100m rectangular area of worked ground, on the northern side of Crowndale Road, underlain by the London Clay Formation.

Well records on the 1935 geological map indicate that the Unproductive Stratum of the London Clay is about 27m thick beneath this part of London and that the underlying Principal Aquifer of the Chalk lies 45m below ground level (-23mOD). Based on the topography of the site area the direction of near surface groundwater and surface water flow would locally be from west to east.

HISTORY OF THE SITE

Historical maps dating between 1745 and the present day have been reviewed as part of this desk study together with internet research. Selected map sheets are reproduced in Appendix 1 with relevant descriptions given below.

John Roque's Plan of the Cities of London and Westminster and Borough of Southwark, and the Country Ten Miles Around, was published in 1745 (not reproduced) and shows the site within open fields on the northern side of the unnamed Crowndale Road and west-south-west of St. Pancras Workhouse. A similar map of 1786 (Cary) shows the site unchanged, whilst the 1807 (Ordnance Survey) map has the adjacent land along the northern side of Crowndale Road to have been developed at the south-eastern end of Camden Town, as the settlement was then depicted (not reproduced). Greenwood's Map of London of 1827 and 1830 (2nd Edition) have the site to the rear of dwellings lining the northern side of Gloucester Place (later Crowndale Road). Bayham Street had been set out to the west of the site but was as yet undeveloped, whilst the southern part of Camden Street, to the east, was fully lined with dwellings. The Gloucester Place dwellings had rear gardens extending northwards to a short lane (the future Bayham Place), and two of the houses had outbuildings at their northern ends. The land to the south of Gloucester Place, and north of the site, remained as open fields.

John Tallis' map of 1851 (not reproduced) shows the site area to have been wholly developed and the grid of streets within this southern part of Camden Town to be apparently fully lined with dwellings. Bayham Place is not detailed on this small scale map.

Stanford's 'Library Map of London and its Suburbs' was published in 1862 (Figure A) and also shows the site in little detail. Gloucester Street (now Bayham Place) was detailed running eastwards from Bayham Street and then turning northwards, beyond which it was called Bayham Place, before running to King Street. The southern side of Gloucester Street was lined by a row of three small square buildings, probably outbuildings, at the northern end of rear gardens to Gloucester Place.

The 1870, O.S. Town Plan (Figure B) at 1:1056 scale and 1875-76 First Edition O.S. maps for the area at 1:2500 scale (Figure C), London Sheets XVI & XXV, show the site on the southern side of the eastern section of Gloucester Street (now the southern section of Bayham Place), to the east of Bayham Street. The northern half of the site was occupied by a square outbuilding at the northern end of a rear garden to one of the Crowndale Road terrace, whilst the southern half of the site was the northern end of this garden. The surrounding area was as before apart from the development of the eastern side of Bayham Place, to the north-east of the site, with terraced housing and the St. Pancras Public Baths.

The O.S. Town Plan of 1894 (Figure D) at 1:1056 scale and 1896, Second Edition O.S. maps (Figure E) for the area at 1:2500 scale, London Sheets XXXVIII & XLIX, show the site redeveloped and wholly occupied by one of a row of five buildings along the southern side of the renamed Bayham Place. The row was bounded to the south by the truncated rear gardens to the dwellings on the northern side of Crowndale Road. Two small yards were present to the east and north-east of this row, with the northernmost called King's Yard associated with a piano factory. Further to the north-east, two schools had been constructed on former mushroom grounds to the east of the public baths.

The 1897 Goad Insurance map for the site area (not reproduced) indicates that the row of buildings along the southern side of Bayham Place are two-storey, flat-roofed, brick workshop buildings. No.61 was occupied by a plating factory, whilst No.63 adjacent to the west was a cap factory and No.59 to the immediate east was a cycle factory. Further east, No.57 was a mission hall and No.55 was occupied by a gas engineer. The northwards extending building at the junction of Bayham Street and Crowndale Road, to the south-west of the site, was a co-operative store.

The 1916, 3rd Edition O.S. maps (London Sheets V.1 and V.5) at 1:2500 scale (Figure F) have the site and adjacent housing unchanged. Further east the schools had expanded southwards, and a working men's college had been constructed at the junction of Camden Street

and Crowndale Road. West of the site, a picture theatre had been built at the corner of Crowndale Road and Camden High Street.

The 1927 and 1930 Goad Insurance maps (not reproduced) indicate that No.61 was now occupied by a (smoking) pipe factory; No.63 was marked as a workshop; No.59 was denoted as a cabinet factory; No.57 was a wood turners; and Nos.53 and 55 was a music roll warehouse. In 1927 the rearward section of the co-operative store was an upholsterers but in 1930 this property was occupied by 'various factories'.

The London Bomb Damage Maps (1939-1945) for the area (not reproduced) show the site, and the adjacent workshops, to have survived unscathed. The closest bomb damage was minor and general blast damage to the terrace on the northern side of Crowndale Road and along the eastern side of Bayham Street, to the north.

The 1952, O.S. map at 1:2500 scale (TQ 2983) has the site unchanged (Figure G). The southernmost yard and associated workshops to the east had been cleared and were now included within the grounds of the adjacent school, to the east. Further school buildings had been removed to the north of the extant school.

The 1957 Goad Insurance map (not reproduced) indicates that No.61 was now a plastics factory; Nos.59 and 63, on either side, were occupied by engineers; Nos.53 and 55 were now a gown factory (ground level) and perfume factory (first floor); and No.2 Bayham Street (the former co-op store) was now a motor repairers.

The 1961-64, O.S. maps at 1:1250 scale (TQ 2983 SW & TQ 2983 NW) have the site unchanged (Figure H). The terraced streets of Bayham Street and Bayham Place, King's Yard and St. Pancras Public Baths, to the north of the site, had been cleared and partially replaced with multi-storey residential blocks (Westerham House, Rainham House, Brockham House and Faversham House). A playground was present to the east of the site, associated with the renamed Richard Cobden Primary School. The land to the north of this school remained vacant.

The 1963 Goad Insurance map (not reproduced) denotes the site (No.61) as a shoe repairers and the adjacent No.63 as a printers, and the other workshops as they were in 1957. The

1966 Goad Insurance map has the use of No.61 changed yet again, this time to a printers; Nos.53, 55 and 57 were also printers; No.59 remained as an engineer; and No.63 was now occupied by a lubricating oil store. The motor repair garage remained at No.2 Bayham Street.

The 1968, O.S. map at 1:2500 scale (TQ 2983) shows the site (Figure I) as before. A number of sites within the surrounding area had been redeveloped with residential blocks, and within part of the former baths plot a row of residents' garages had been built.

The 1969 Goad Insurance map (not reproduced) marks No.61 Bayham Place as being vacant in March 1969. The other workshop occupiers remained unchanged from 1966.

The 1968-72, 1:1250 scale maps TQ 2883 SE & NE (not reproduced) have the site and immediate surrounding area unchanged from the 1968 map.

The 1984-86 revisions of the 1:1250 scale maps TQ 2883 SE & NE (not reproduced), have the site and surrounding area as before, as do the 1987-92 editions of these maps (not reproduced).

The 2002 Raster Map at 1:10,000 scale (not reproduced), shows the site and surrounding area unchanged from the 1990s. Similarly, the 2010 and 2014 National Grid maps at 1:10,000 scale (not reproduced), have the site as before and as it was at the time of this investigation in August 2014. The 2013 aerial photograph presented on page 1 of Appendix 2 shows the site with trees and shrubs within the neighbouring rear gardens to the south.

Summary

In summary, the site was within open fields until the beginning of the Nineteenth Century after which the land was progressively covered by predominantly residential development with small workshops and yards. The site was occupied by a square outbuilding, probably a small stable, and the northern end of a rear garden to one of the Crowndale Road terraced houses, and remained unchanged through to the 1880s when the extant workshop building, and the adjoining workshops, were built.

The site use changed periodically and ranged between a plating factory, (smoking) pipe factory, a plastics factory, a shoe repairers, and a printers. The current site use is residential. The adjacent workshops have had a variety of uses, including: printers, engineers, gown and perfume factories, wood turners, a lubricating oil store, a mission hall, a cycle factory, a cabinet factory, a cap factory, and a music roll warehouse. The surrounding area was developed throughout the Nineteenth Century, and parts were progressively redeveloped from the 1950s as clearance and bomb damaged plots were redeveloped with residential blocks.

ENVIRONMENTAL DATABASE INFORMATION

Appendix 2 contains information from Environmental Databases for a radius of up to 2km from the site. The information covers various datasets and contributors include the Environment Agency, Local Authorities, British Geological Survey, Ordnance Survey and the Coal Authority. The results obtained are presented together with a detailed search on selected areas of enquiry, and have been described below for a radius of 250m from the site.

Environmental Permits, Incidents & Registers

The following is a summary of the main points for environmental authorisations:

Statutory Authorisations

IPC & IPPC Regulations: There are no (0) recorded sites authorised by the Environment Agency under Part I of the Environmental Protection Act 1990, to carry out processes subject to Integrated Pollution Control (IPC) or Integrated Pollution Prevention and Control (IPPC) on, or within 250m of the site. There are no (0) recorded IPC Registered Waste Sites on, or within 250m of the site.

Water Industry Act Referrals: There are no (0) recorded referrals under the Water Industry Act on or within 250m of the site.

Local Authority Pollution Prevention and Control Enforcements: There are no (0) recorded enforcements under Part I of the Environmental Protection Act 1990 on, or within 250m of the site.

Keeping of Dangerous Substances: There are no (0) Environment Agency List 1 or 2 Dangerous Substance Inventory Sites listed on or within 250m of the site.

Enforcement Notices and Authorised Processes: There are no (0) Part A(2) and Part B activities and enforcements recorded by the Environment Agency under Part I of the Environmental Protection Act 1990 on site and four (4) Part B activities listed within 250m of the site. The

latter all refer to two dry cleaners on Camden High Street and Crowndale Street, the nearest of which lies 147m west of the site.

Keeping of Radioactive Substances: There are no (0) recorded sites registered by the Environment Agency under the Radioactive Substances Act 1993, on or within 250m of the site.

Discharge Consents

Discharges to Water: There no (0) consents issued, by the Environment Agency, to discharge to watercourses in accordance with the Water Resources Act 1991 positioned within 250m of the site.

Storage of Hazardous Substances

Storage of Hazardous Substances: There are no (0) recorded sites subject to hazardous substances consents granted by the relevant local authority under the Planning (Hazardous Substances) Act 1990 on, or within 250m of the site.

Control of Major Accidents: There are no (0) recorded sites regulated by the Health and Safety Executive under the Control of Major Accident Hazards (COMAH) regulations 1999, on, or within 250m of the site.

Notification of Installations Handling Hazardous Substances: There are no (0) sites within 250m of the site regulated by the HSE under the Notification of Installations Handling Hazardous Substances (NIHHS) regulations.

Pollution Incidents

Pollution Incidents and Prosecutions: There are no (0) pollution incidents recorded within 250m of the site.

Contaminated Land Register Entries & Notices: There are no (0) recorded entries or notices on the Contaminated Land Register listed on, or within 250m of the site.

Landfill & Waste Sites

The following is a summary of the main points for the Waste section:

Landfill Sites: There are no (0) recorded landfill sites licensed by the Environment Agency under Part II of the Environmental Protection Act 1990, within 250m of the site.

Registered Landfill or Local Authority Recorded Landfill Sites: There are no (0) recorded operational or non-operational landfills located on or within 250m of the site.

Registered Waste Transfer Site: There are no recorded waste transfer sites on or within 250m of the site.

Waste Treatment, Transfer and Disposal: There are no (0) records of waste treatment, transfer or disposal licences issued by the Environment Agency under Part II of the Environmental Protection Act 1990 recorded within 250m of the site.

Potentially Contaminative Uses

Current Industrial Sites: There are no (0) recorded potentially contaminative uses recorded for the site, and nineteen (19) within 250m of the site. The closest of these, at No.2 Bayham Street, refers to a vehicle hirer, 9m to the south-west; whilst the remainder are for two electricity sub-stations, publishers, unspecified works, electronic component suppliers, haulage and storage depots, photographers, cosmetics suppliers, stoneworkers, vehicle repairers/cleaners and an underground railway station (Mornington Crescent).

Fuel Station Entries: There is one (1) recorded obsolete fuel station entry within 250m of the site. This relates to the former Parkway Filling Station some 114m to the south-west of the site.

High Pressure Oil & Gas Pipelines: There are no (0) recorded underground high pressure oil and gas pipelines within 250m of the site.

Geology & Hydrogeology – Pathways & Receptors

The following is a summary of the main points for the sensitivity section:

Artificial & Made Ground: The site, including a 50m buffer, is recorded as being covered by worked ground.

Drift Deposits & Solid Geology: The site, including a 50m buffer, is recorded as being directly underlain by the solid geology of the London Clay Formation (clay, silt and sand).

Groundwater Vulnerability: The site is designated by the EA as being underlain by the Unproductive stratum of the London Clay.

Water Abstractions: There are no (0) recorded water abstraction licences listed on, or within 2000m of the site.

Source Protection Zones: The site does not lie within a Source Protection Zone.

River Quality: There is no (0) Environment Agency information relating to river quality within 250m of the site.

River Network & Surface Water Features: There are no (0) detailed river network or surface water feature entries within 250m of the site apart from a culvert some 237m to the north-east of the site.

Flood Risk: The site is not within 250m of a Zone 2 or Zone 3 flood plain. The site is not within a zone benefiting from flood defences and is not used for flood storage.

The site is designated as within an area that is 'Not Prone to groundwater flooding.

Environmentally Sensitive Receptors

Environmentally Sensitive Areas: There are no (0) environmentally sensitive areas within 250m of the site.

Protected Countryside Areas: There are no (0) National Parks or other protected areas or parks recorded as being either on or within 250m of the site.

Nitrate Vulnerable Zones: The site and surroundings are not indicated to be within a nitrate vulnerable zone.

Natural & Mining Hazards

Natural Subsidence Risk: According to the British Geological Survey there is a 'Moderate' hazard potential for Shrinking or Swelling Clay; a 'Very Low' hazard potential for Landslides and Collapsible Rocks; and a 'Null-Negligible' hazard potential for Soluble Rocks, Running Sand, Compressible Ground and Shallow Mining.

Coal Mining: The site is not within 75m of any areas affected by coal mining.

Brine Affected Areas: The site is not within 75m of any areas affected by brine extraction.

Radon Affected Area: The site lies within an area where less than 1% of properties are above the action level for radon.

Radon Protection Measures: The site lies within an area where no radon protection measures are necessary for new dwellings or extensions in accordance with Building Research Establishment report BR211 (1999).

PRELIMINARY RISK ASSESSMENT

In order to assess the risks associated with the presence of ground contamination the linkages between the sources and potential receptors to contamination need to be established and evaluated. This is in accordance with the Environmental Protection Act 1990, which provides a statutory definition of Contaminated Land. To fall within this definition it is necessary that, as a result of the condition of the land, substances may be present on or under the land such that

- *Significant harm is being caused or there is a significant possibility of such harm being caused; or*
- *Pollution of controlled waters is being, or is likely to be, caused*

There are three principal factors that are assessed whilst undertaking a qualitative risk assessment for any site. These are the presence of a contamination source, the existence of migration pathways and the presence of a sensitive target(s). It should be noted that it is necessary for each element of source, pathway and target to be present in order for exposure of a human or environmental receptor to occur.

UK Government guidance on the assessment of contaminated land, requires risk to human health and the environment to be reviewed using source – pathway – target relationships. If each of these elements is present, the linkage provides a potential risk to the identified targets. ***Contaminants or potential pollutants*** identified as ***sources*** in relation to the identified previous uses are listed below in Table 1.

Table 1: Identified Potential Contaminant Sources

Contaminant Source	*Comments*
Drainage/Building	Effluent from leaking drains would provide a contaminant source. The existing building may have or have had asbestos containing materials (ACMs) within it.
Soil Beneath Site	Contamination may be present within any made ground materials beneath the site.
Soil Gas	Potential soil gas generated from made ground or natural organic soils.
Ground Contamination Outside Site Boundary	Ground contamination migrating from adjoining sites.

A ***Pathway*** is defined as one or more routes through which a receptor is being, or could be, exposed to, or affected by, a given contaminant.

Potential ***Target or Receptors*** fall within the categories of Human Health, Water Environment, Flora and Fauna, and Building Materials.

There are a number of possible pathways for the contaminants identified on the site to impact human and/or environmental receptors and these are summarised in Tables 2 and 3.

Table 2: Human Receptors and Pathways

Human Receptor-Mechanism	*Typical Exposure Pathway*
Human Inhalation	Breathing Dust and Fumes Breathing Gas emissions
Human Ingestion	Eating -contaminated soil, for example by small children -plants grown on contaminated soil Ingesting dust or soil on fruit or vegetables Drinking contaminated water
Human Contact	Direct skin contact with contamination Direct skin contact with contaminated liquids

Table 3: Water Receptors and Pathways

Receptor-Water Environment	*Typical Exposure Pathway*
Groundwater The site is directly underlain by made ground and the Unproductive strata of the London Clay Formation.	Surface infiltration of atmospheric waters into the soils beneath the site could wash or dissolve potential contaminants and migrate to underlying groundwater. Contamination leads to restriction/prevention of use as a resource, for example, drinking water, and can have secondary impacts on other resources, which depend on it.
Surface Water There are no water courses or surface water features recorded within 250m of the site. The culverted River Fleet is depicted on the 1935 geology map some 330m to the east-north-east of the site.	Surface infiltration of atmospheric waters into the soils beneath the site could wash or dissolve potential contaminants and laterally migrate. Contamination leads to a restriction/prevention of use: -as drinking water resource -for amenity use Effects on aquatic life

Preliminary Conceptual Model

Assessment of the potential linkage between ground contamination sources, human and environmental receptors have been assessed based on the desk study research documented in the preceding sections of this report.

A generalised preliminary conceptual model relative to the construction phase and completed development is presented below in Table 4.

Table 4: Preliminary Conceptual Model Relative to Construction/Future Use of Site

Receptors	Pathway	Estimated Potential for Linkage with Contaminant Sources			
		Drainage/ Buildings	Soil Beneath Site	Soil Gas	Ground Contamination Outside Site Boundary
Human Health – ground workers	Ingestion and Inhalation of contaminated Soil, Dust and Vapour	Likely	Likely	Likely	Low likelihood
Human Health – users of completed development	Ingestion and Inhalation of contaminated Soil, Dust and Vapour	Unlikely	Low likelihood	Low likelihood	Low likelihood
Water Environment	Migration through ground into surface water or groundwater	Low likelihood	Low likelihood	Unlikely	Low likelihood
Flora	Vegetation on site growing on contaminated soil.	Low likelihood	Low likelihood	Unlikely	Low likelihood
Building Materials	Contact with contaminated soil	Low likelihood	Low likelihood	Unlikely	Low likelihood

Key to Table 4

Estimated Potential for Linkage with Contaminant Source	Definition
High likelihood	There is a pollution linkage and an event that either appears very likely in the short term and almost inevitable over the long term, or there is evidence at the receptor of harm or pollution.
Likely	There is a pollution linkage and all the elements are present and in the right place, which means that it is probable that an event will occur. Circumstances are such that an event is not inevitable, but possible in the short term and likely over the long term.
Low likelihood	There is a pollution linkage and circumstances are possible under which an event could occur. However, it is by no means certain that even over a longer period such an event would take place, and is less likely in the shorter term.
Unlikely	There is a pollution linkage but circumstances are such that it is improbable that an event would occur even in the very long term.
N/A	Not Applicable

SITE WORK

A single borehole and a single foundation inspection pit were undertaken at the positions depicted on the site plan at the rear of this report, as requested by the Engineer and agreed with the Architect. Services information was obtained and referenced in relation to the exploratory hole positions prior to boring.

The investigation was undertaken following the protocols detailed in British Standards (BS) 'Code of Practice for Site Investigations' (BS5930:1999) and 'Methods of test for soils for engineering purposes' (BS1377:1990). The site work was supervised by a Geoenvironmental Engineer.

Borehole

On 8th August 2014, portable window sampling equipment was brought to site, taken into the dwelling, and the position (WS 1) was selected within the ground floor after a cable avoidance tool (CAT) scan was undertaken. The floor slab was cored using diamond drilling equipment and a starter pit was excavated using hand tools to 1.20m depth.

The borehole was then advanced using window sampling equipment that consisted of 1.00m long drive-in samplers of specially constructed and strengthened 87mm to 57mm diameter steel sample tubes with a plastic core-liner. The samplers were driven into the ground from the base of the borehole by an automatic trip hammer weighing 63.50kg falling freely through 750mm. Upon extraction a continuous profile of the soil was obtained in the plastic liners (U) inserted in the samplers. The borehole was completed at 6.45m depth.

Small disturbed samples (D) of soil were recovered at regular intervals within the WS 1 starter pit and borehole.

Standard penetration tests were undertaken in WS 1 at 1.00m intervals in order to give an indication of the in-situ relative density/shear strength of the material. The test was made by driving a 50mm diameter open shoe and split spoon sampler (S) of 50mm diameter into the

soil at the base of the borehole by means of an automatic trip hammer weighing 63.50kg falling freely through 750mm. The penetration resistance was determined as the number of blows required to drive the tool the final 300mm of a total penetration of 450mm into the soil ahead of the borehole.

On completion of boring, a 38mm diameter standpipe was installed to 5.00m depth. The annulus around the standpipe was backfilled with pea gravel with a bentonite seal placed around the top of the installation within 1.00m of ground level. A gas tap was installed in the top of the standpipe. A protective steel stopcock cover was concreted into the ground flush with the surface over the installation. Below the installation the borehole was infilled with clean arisings.

The borehole record gives the descriptions and depths of the various strata encountered, results of the in-situ tests, details of all samples taken and the groundwater conditions observed during boring, on completion and subsequently in the WS 1 standpipe.

Trial Pit

A single trial pit (TP A) was undertaken on the same day as the borehole. The surface layer of concrete was stitch-cored using diamond drilling equipment and then the pit was extended using hand tools. The exposed strata and foundations were logged and the soils sampled by the supervising Geoenvironmental Engineer. The trial pit was completed at 1.20m below ground floor level.

An immediate assessment of the apparent soil cohesion was made using a Pilcon hand shear vane (V) in clay soils. The average of three readings was recorded at each position.

Disturbed samples of soil were taken at regular intervals throughout the pit and placed in polycarbonate pots (D samples).

The trial pit record gives descriptions and depths of the various strata encountered, the details of all samples, the results of the in-situ tests and the groundwater conditions observed during excavation. A sketch section and photographs of the exposed footing are presented on the

pages following the record for the relevant excavation. On completion of the excavation, the spoil was returned to the pit and placed in layers, which were recompacted. The surface layer of concrete was reinstated.

Gas and Groundwater Monitoring

A single return visit was made on 3rd September 2014 in order to monitor methane, carbon dioxide and oxygen gas levels in the WS 1 standpipe. Ambient pressures and flow rates were recorded together with the depth to groundwater. The water level has been added to the borehole record and the gas/groundwater results are presented following the exploratory hole records.

LABORATORY TESTING

The samples were inspected in the laboratory and assessments of the soil characteristics have been taken into account during preparation of the exploratory hole records. The soil sample descriptions are in accordance with BS5930:1999.

The chemical testing schedule was devised by Ground Engineering Limited for a broad suite of potential contaminants, outlined by the Environment Agency (EA) and National House Building Council (NHBC) document R&D 66; 2008 'Guidance for the Safe Development of Housing on Land Affected by Contamination'.

The geotechnical tests were conducted to BS1377:1990 and other industry standards, and the results are presented following the exploratory hole records, whilst the results of the chemical tests are presented in Appendix 3.

Geotechnical Testing

The index properties of selected soil samples were determined as a guide to soil classification and behaviour. The liquid limit was determined by the cone penetrometer method.

In the laboratory, an immediate assessment of the apparent soil cohesion was made using a Pilcon hand shear vane (V) in the clay soils recovered within the plastic liners. The average of three readings was recorded at each position.

Selected samples of soil were analysed to determine the concentration of soluble sulphates. The pH values were also determined using an electrometric method.

Chemical Testing

Two soil samples recovered from the exploratory holes were tested for total concentrations of arsenic, cadmium, chromium, lead, mercury, selenium, nickel and benzo[a]pyrene, together with speciated polyaromatic hydrocarbons (PAH), boron, copper and

zinc, phenols, total and free cyanide, hexavalent chromium, sulphate, sulphide and pH. The soil samples were also tested for organic content.

A sample of made ground from TP A at 0.70m depth was scheduled for a full Waste Acceptance Criteria (WAC) CEN Leachate Suite at 2l/kg and 10l/kg.

GROUND CONDITIONS

The ground conditions encountered were as expected from the geological records with London Clay encountered beneath a cover of made ground.

Made Ground

The surface layer at the borehole position was 0.10m thick, but it thickened towards its edge in TP A, where it was 0.30m thick. In the borehole the slab was laid upon a dark brown, silty sand and gravel with a gravel fraction of brick, ash, glass, flint, concrete and coal. This coarse grained fill was proved to 0.70m below floor level, a thickness of 0.60m, but was absent in TP A, only 2.5m distant.

Beneath the thickened floor slab in TP A, and below 0.70m depth in WS 1, a firm or soft, dark brown, brown and orange brown mottled, slightly sandy, slightly gravelly to gravelly clay was met, with a similar gravel fraction to the coarse grained fill but also including fragments of plastic and slate. With increasing depth the artefacts within the made ground were predominantly of brick, ash and flint.

The made ground was found to at least 1.20m depth where TP A was completed, and proved to 1.40m below floor slab level in WS 1.

London Clay

The solid geology of the London Clay was met at 1.40m depth and was initially weathered to a firm, brown, orange brown and grey mottled silty clay with occasional silt partings. At 3.00m depth the London Clay was a stiff, closely fissured, brown and orange brown mottled clay with blue grey stained fissure planes, occasional selenite crystals, and patches of silt. This typical London Clay was found to at least 6.45m depth where the hole was completed.

Groundwater

The trial pit and borehole were dry during excavation/boring and on completion.

The standpipe water level recorded on 3rd September 2014 was at 2.82m depth.

Roots

No live roots were recorded in the exploratory holes.

Evidence of Contamination

The made ground contained pieces of brick, concrete, coal, ash, plastic and glass. There was no olfactory or visual evidence of hydrocarbon contamination. No visual evidence of asbestos containing material was detected within the exploratory holes.

Existing Foundations

Trial pit TP A, on the western elevation of the dwelling, found a 0.77m deep brick footing, with a 0.07m thick single brick course projecting 0.39m from the wall at 0.60m depth.

This projection may be a remnant of the floor to the former outbuilding/stable that occupied the northern half of the site until the 1880s, which may have been incorporated into the foundation to the existing structure.

COMMENTS ON THE GROUND CONDITIONS IN RELATION TO FOUNDATION DESIGN AND CONSTRUCTION

The investigation found a thin cover of made ground associated with the construction of No.61. Foundations for the basement will penetrate this made ground and be based within the underlying London Clay, which should have adequate bearing properties. The net reduction in pressure at basement floor level during construction could give negligible base heave. The groundwater level was recorded at about 2.80m below ground level, and this may well impact construction.

Foundation Depths

The borehole encountered natural ground at 1.40m below ground floor level.

The underlying London Clay had a modified plasticity index of 39%, so is of medium volume change potential. In open natural ground, well away from trees, a minimum foundation depth of 0.90m below finished or existing ground level would be required.

The presence of trees and shrubs within the adjacent rear garden to the south, means that the depth affected by seasonal changes in moisture content of clay soils may have locally been increased. However, foundations for the new basement, based perhaps 3m below ground floor level should be deeper than any root-induced desiccation effects due to this vegetation, even when mature.

Foundations within the range of influence of retained and removed trees will have to be separated from the soil by a suitable void former. The required gap dimensions for footings in medium volume change potential clay soils are detailed in the previously cited NHBC document.

Bearing Capacity

The construction of a 3m deep basement on this site will remove the surface layers and the foundations will be within the solid geology of the London Clay.

The results of the laboratory triaxial compression strength tests indicate that a net safe bearing capacity of 200kN/m^2 could be applied on a 1.00m wide strip foundation cast at or just below basement level on the stiff London Clay. This value incorporates a factor of safety of 3.0 against general shear failure and should be more than sufficient to support the likely foundation pressures applied by the structure.

Such a value could be used for the design of underpinned walls to the existing structure, which currently have only shallow footings.

Basement

The construction of the basement will remove the surface layer of made ground and the top of the underlying weathered London Clay. Foundations for the basement walls at or just below the basement floor level would be within the stiff London Clay and could be designed using the previously detailed bearing capacity of 200kN/m^2 for 1.00m wide strip foundations.

Alternatively a basement raft foundation could be considered for this structure. A net safe bearing capacity of 150kN/m^2, which incorporates a factor of safety of 3.0, could be used for the design of a raft foundation on the London Clay at 3m below existing ground floor level.

It is estimated that theoretical base heave at the centre of a 10m long and 5m wide, 3m deep unconfined basement excavation would be in the order of 10mm to 15mm following the removal of 60kN/m^2 of overburden pressure. Any heave within the basement would begin to take place soon after excavation but would be confined by the basement floor loading once it had been constructed.

A likely basement raft loading is unknown but if it were equal to a pressure of 30kN/m^2, and hence a net pressure of -30kN/m^2 once the overburden is removed, it could result in net theoretical heave in the order of 5mm to 10mm. This net heave would need to be taken

into account in the design of the basement floor slab. Alternatively, if the raft loading were greater than the 60kN/m^2 of overburden removed, then net settlement would take place. For example, for a raft loading of 75kN/m^2 consolidation settlement would be in the order of 25mm, and so net settlement would be in the order of 15mm to 20mm once the theoretical heave was taken into account.

Excavations/Groundwater

The excavation of the basement to 3m below ground floor level will require the construction of close support to its sides, the control of groundwater, and the need to avoid undermining adjacent structures.

The use of mass concrete walls, constructed in alternate panels around the perimeter of the basement could provide support to the excavation.

The excavation of a basement could then be undertaken within the walls, although it should be noted that wall lined excavations may not be water tight.

In order to construct the basement beneath this site it will be necessary to provide permanent support to the adjacent structures, which are likely to be based at relatively shallow depths similar to No.61. This support can either be provided by underpinning these structures to the same depth as the proposed basement prior to basement construction or by constructing walls to the excavation. These will need to be adequately propped during construction using temporary support and permanently by the basement and ground floors, to prevent movement at the top of the retaining walls. Or by a combination of the two.

Such lateral movement would otherwise be accompanied by settlement of the ground behind the basement walls. Provided that a very stiff bracing system is used to prevent deflection of the proposed basement walls, resultant changes to the state of soil stress and structural movement of neighbouring structures should be negligible.

The advice of specialist groundworks contractors with experience of constructing such basements should be sought, particularly in respect of other potential methods of providing support to the sides of the basement excavation.

The basement excavation should be inspected on completion to ensure that the condition of the soil complies with that assumed in design. Should pockets of inferior material be present, they should be removed and replaced with well graded hardcore or lean mix concrete. The excavated surface should be protected from deterioration and a blinding layer of concrete used where foundations are not completed without delay.

Water was recorded within the standpipe within the London Clay at 2.82m, which will be just above the base of the proposed basement excavation, and may either reflect the groundwater level beneath the site or the slow filling of the standpipe installation by 'perched' water emanating from the base of the overlying made ground. This could be determined by further monitoring. In either case potential flotation due to groundwater on this site should not be a problem.

With a groundwater level recorded above the floor of the proposed basement, it will be considered necessary to waterproof the basement in order to prevent the ingress of water, including downward percolating surface water, into the completed structure.

Piled Foundations

Piled foundations will not be necessary for the proposed small-scale basement.

Retaining Walls

The walls of the proposed basement will act as retaining walls and will need to be designed accordingly. For a permanent retaining wall analysis effective stress parameters would be appropriate, however, in the absence of effective stress testing on samples from this site, published parameters, previous experience and in-situ test results could be used as a conservative approach.

The design of retaining walls around the basement area may be based on the following stress parameters:

Soil Type	Bulk Density (Mg/m^3) γ_B	Effective Shear Strength (kPa) c'	Angle of Shearing Resistance (degrees) ϕ'
Made Ground	1.80	0	28
London Clay	1.95	0-2	25-27

Slope Stability

The ground within which the plot is located very gently slopes down to the east and falls from 22.65mOD within Bayham Place on the opposite side of Bayham Street, to 21.81mOD to the north-east in Bayham Place. This is a slope angle of less than 1 degree, and so is not highlighted on Figure 16 of the London Borough of Camden 'Guidance for subterranean development', which indicates slopes of greater than 7 degrees.

Slopes of 8 degrees or greater are reported in this document to be potentially unstable if the land topography is adversely disturbed. On this small site it is considered highly unlikely that the proposed basement extension will induce slope instability.

Buried Concrete

Sulphate analysis of the soil samples tested gave results in Design Sulphate Classes DS-1 to DS-4 of the BRE Special Digest 1, Table C2 (2005) presented in Appendix 4. The DS-3 and DS-4 results were recorded within the made ground and selenite-bearing London Clay. The pH results were between 7.1 and 8.1 and so alkaline.

The London Clay Formation is listed in this publication as being a stratum that may contain sulphides, such as pyrite, hence oxidation due to disturbance during the excavation of foundations and basements may increase the total potential sulphate content. Visual evidence

of pyrite beneath this site was not recorded. The basement excavation will be within London Clay Formation clay, which should not be left exposed to the elements for any length of time, otherwise there would be a potential for oxidation of any pyrite within the London Clay and, in the long term, possible thaumasite formation.

Using the sulphate results an Aggressive Chemical Environment for Concrete (ACEC) Class of AC-4 would be considered appropriate for buried concrete beneath this site as detailed in the above cited BRE document.

Other Issues

The basement development beneath this site would only be considered likely to affect the drainage system of the site itself. However, drainage and sewerage records for the surrounding buildings will need to be referenced, if available, or perhaps surveyed to confirm that the site does not share a communal drainage system that runs beneath the site.

The flow of surface water within the surrounding area, to the east, should not be significantly changed by the proposed redevelopment of this small site.

As previously described, groundwater beneath this site was recorded at 2.82m below ground floor level. The proposed basement depth therefore just extends below this water level so there should be minimal displacement of groundwater by its exclusion from beneath the area of the basement after it has been constructed. Consequently there should be little, if any, rise in the level at which groundwater currently stands beneath the area around the site.

The orientation of the proposed basement, north to south, would be across the likely direction of near surface groundwater flow on this very gently eastward sloping ground, but as the proposed 3m deep deepened structure only just extends below the recorded groundwater level, the drainage path should not be significantly increased and would not be expected to impact the adjoining properties downslope to the east. In the event that the adjacent west to east aligned former workshops also have basements, the construction of a basement at No.61 would therefore not be expected to have a combined effect in this regard.

COMMENTS ON THE CHEMICAL TEST RESULTS

The results of the laboratory chemical testing on samples of made ground have been compared to CLEA Soil Screening Values (SSVs) and Category 4 Screening Levels (C4SLs), which have been used as screening tools for use in the assessment of land affected by contamination.

Atkins Limited has derived ATRISKsoil SSVs based on the default assumptions provided in SR3, which have been used in the development of the Soil Guideline Values (SGVs) published by the Environment Agency in 2009. Atkins SSVs have been derived in line with the Environment Agency 2009 guidance (SR2, SR3, SR4, SR7) using the CLEA v1.04 and CLEA v1.06 software. These are provided under licence to Ground Engineering Limited, and respective toxicology reports and technical details on the derivation of the SSVs can be provided on request.

Following revised statutory guidance to support Part 2A of the Environment Protection Act (April 2012), Final Category 4 Screening Levels have recently been published (for arsenic, benzene, benzo(a)pyrene, cadmium, chromium VI and lead) by the Department for Environment Food and Rural Affairs in their document SP1010: March 2014. With the exception of lead the C4SLs are higher than the SSVs.

The following standard land uses form the basis of the assessment in relation to soils:

- Residential use with home grown produce
- Residential use without home grown produce
- Commercial and industrial usage

The intended purpose of the SSVs are as "intervention values" in the regulatory framework for assessment of human health risks in relation to land use. These values are not binding standards, but are intended to inform judgements about the need for action to ensure that a new use of land does not pose any unacceptable risks to the health of the intended users.

Table 5 compares the test results for the made ground with the SSVs, and C4SLs for lead, in relation to the specified uses. The numbers of test results, which exceed these values, are also provided.

Table 5: Comparison of Chemical Test Results with Soil Screening Criteria (SSC)

Determinand	Number of Samples	Min Value (mg/kg)	Max Value (mg/kg)	Number of Samples Exceeding SSC for:			Soil Screening Criteria SSC (1% SOM)			
				Residential with home grown produce	Residential without home grown produce	Commercial/ Industrial	Assessment Method	Residential with home grown produce (mg/kg)	Residential without home grown produce (mg/kg)	Commercial/ Industrial (mg/kg)
Organic matter	2	<0.40%	0.48%	-	-	-	-	-	-	-
Arsenic	2	22	40	1	1	0	SSV	32	35	640
Cadmium	2	0.22	0.90	0	0	0	SSV	10	83	230
Trivalent* Chromium	2	22	28	0	0	0	SSV	12,800	15,500	21,300
Hexavalent Chromium	2	<0.50	<0.50	0	0	0	SSV	14	38	330
Lead	2	450	2900	2	2	1	C4SL	200#	310#	2330#
Mercury	2	0.94	4.0	0	0	0	SSV	6	7	66
Selenium	2	<0.20	<0.20	0	0	0	SSV	350	595	13,000
Nickel	2	21	27	0	0	0	SSV	130	130	1800
Phenols	2	<0.30	<0.30	0	0	0	SSV	162	262	686
Benzo[a]pyrene	2	<0.10	0.90	1	0	0	SSV	0.8	0.9	14
Copper	2	59	120	0	0	0	SSV	3970	8370	109,000
Zinc	2	87	470	0	0	0	SSV	16,900	46,800	917,000
Free Cyanide	2	<0.50	<0.50	0	0	0	SSV	34	34	34

Notes
*The concentration of Trivalent Chromium is assumed to be equivalent to the Total Chromium concentration.
This is because most naturally occurring chromium is in the trivalent (chromic) state.
Category 4 Screening Levels for lead are based on 6% SOM.

Discussion of Results and Statistics

The results of the laboratory analysis indicate the made ground contains elevated concentrations of arsenic, lead and benzo[a]pyrene, which exceeded the residential soil screening criteria. The recorded arsenic and benzo[a]pyrene concentrations did not exceed the screening values for a commercial/industrial end use, but the highest lead result did. None of the other contaminants tested for exceeded their respective screening values for a residential or commercial/industrial land uses.

Statistical analysis would not be meaningful on such a small dataset, and has not been undertaken.

The results indicate that the made ground beneath the site would be unsuitable for retention or re-use at the surface in a residential setting due to the presence of arsenic, lead and benzo[a]pyrene within the made ground, and unsuitable at the surface in a commercial/industrial setting due to the presence of elevated lead.

No asbestos containing material (ACM) was found during sample preparation prior to chemical analysis and visual evidence of ACM was not recorded during this investigation.

Visual and olfactory evidence of hydrocarbon impacted soils was not detected within the soils beneath this site during the investigation. The single soil TPH result determined during the WAC testing was <10mg/kg, which confirms the absence of hydrocarbon contamination in the soils beneath this site.

SOIL GAS MONITORING RESULTS

The single return visit to this site on 3rd September 2014 recorded the concentrations of landfill type gases (methane, carbon dioxide and oxygen) in the WS 1 standpipe. The results are presented to the rear of the exploratory hole records. The recorded concentrations of methane were less than 0.1%, whilst the carbon dioxide level recorded was a maximum of 0.1%. The recorded oxygen concentrations within the standpipes were comparable to atmospheric conditions. The in-situ measurement confirmed a negligible gas emission rate with a recorded flow rate of <0.1l/hr in all instances.

Assuming a positive flow rate of 0.1l/hr, the results give a Gas Screening Value (GSV) of 0.0001l/hr. This GSV falls within the modified Wilson and Card Characteristic Situation 1 or 'Green' classification of the NHBC traffic light system (for low rise housing), as defined by the Construction Industry Research and Information Association, CIRIA Report C665, 'Assessing risks posed by hazardous ground gasses to buildings'.

UPDATED CONCEPTUAL MODEL

Assessment of the potential linkage between ground contamination sources, human and environmental receptors have been assessed based on the desk study research and the intrusive ground investigation documented in the preceding sections of this report.

A generalised conceptual model, updated following the intrusive works, monitoring and testing, and targeted to provide coverage across the site, relative to the construction phase and completed development, is presented below in Table 6.

Table 6: Updated Conceptual Model Relative to Construction and Future Development

Receptors	Pathway	Estimated Potential for Linkage with Contaminant Sources			
		Drainage/ Building	Soil Beneath Site	Soil Gas	Ground Contamination Outside Site Boundary
Human Health – ground workers	Ingestion and Inhalation of contaminated Soil, Dust and Vapour	Moderate	Moderate	Very Low	Very Low
Human Health – users of completed development	Ingestion and Inhalation of contaminated Soil, Dust and Vapour	N/A	Low (landscaping) to Moderate (private gardens)	Very Low	Very Low
Water Environment	Migration through ground into surface water or groundwater	N/A	Very Low	Very Low	Low
Flora	Vegetation on site growing on contaminated soil.	N/A	Very Low	Very Low	Very Low
Building Materials	Contact with contaminated soil	N/A	Very Low	Very Low	Very Low

Key to Table 6

RISK	Definition
Very High	There is a high probability that severe harm could arise to a designated receptor from an identified hazard, or, there is evidence that severe harm to a designated receptor is currently happening. The risk, if realised, is likely to result in a substantial liability. Urgent investigation (if not undertaken already) and remediation are likely to be required.
High	Harm is likely to arise to a designated receptor from an identified hazard. Realisation of the risk is likely to present a substantial liability. Urgent investigation (if not undertaken already) and remedial works may be necessary in the short term and likely over the long term.
Moderate	It is possible that harm could arise to a designated receptor from an identified hazard. However, it is either relatively unlikely that any such harm would be severe, or if any harm were to occur it is more likely that the harm would be relatively mild.
Low	It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be mild.
Very Low	There is a low possibility that harm could arise to a receptor. In the event of such harm being realised it is not likely to be severe.
N/A	Not Applicable because the proposed development will remove the source.

COMMENTS ON GROUND CONTAMINATION IN RELATION TO PROPOSED DEVELOPMENT

The proposed development is a single level basement. Anticipated exposure scenarios relating to the site and future redevelopment works including remedial options as applicable are discussed as follows.

This investigation may not have revealed the full extent of contamination on the site and appropriate professional advice should be sought if subsequent site works reveal materials that may appear to be contaminated.

Contaminated Soil

The exploratory holes found up to 1.40m of made ground beneath the rear garden of the site. The made ground beneath the site contained elevated concentrations of arsenic, lead and benzo[a]pyrene, which exceeded soil screening values for a residential and, in the case of lead, commercial/industrial end use. None of the other contaminants tested for exceeded their respective screening values for a residential or commercial/industrial land uses.

Existing Drainage and Building

Redundant foul or surface water drain runs, should be removed from beneath the site and precautions should ensure that any remaining effluent is directly disposed off-site. The integrity of existing drainage should be checked, and where they are to be retained, any damaged sections should be replaced prior to development. The latter measures should remove any future likelihood of risk to human health and to the water environment.

The existing building may have asbestos containing materials within it. Suitable precautions, in line with current best practice, should be put in place to protect workers from the effects of asbestos material, during the demolition/construction phase.

Human Health - Construction Workers

The presence of arsenic, lead and benzo[a]pyrene contamination within the made ground soils beneath the site indicates that there is locally a moderate risk that a pathway could develop affecting groundworkers during the construction phase of development.

However, no special precautions would be required during the development of the site by workers who may come into contact with the soil during groundworks, providing standard precautions are adopted which should generally include the procedures given by the Health and Safety Executive (The Blue Book) HS(G)66.

For the protection of workers during groundworks the following is recommended:

a) Limit repeated or prolonged skin contact with soils by wearing gloves with sleeves rolled down.

b) Washing facilities should be made available to groundworkers, so as to minimise the potential for inadvertent ingestion of soil.

c) If any soils are revealed which are different to those encountered by this ground investigation, the advice of a specialist should be sought in view of classifying the material and ascertaining its risk to groundworkers.

d) Dust suppression measures such as 'damping down', could also be adopted to prevent the spread of soil contaminants.

Human Health - Users of Completed Development

The risk of the encountered ground contamination affecting the site users when present beneath buildings and permanent areas of hardstanding would be considered to be very low. This is because it would be highly unlikely that the general site users would normally be able to penetrate the basement walls and floors, which would be necessary for them to uncover any contaminated soils beneath the site. However, it is considered that there would be a low to moderate risk of the ground contamination affecting site end users if the near surface fill were

retained within new private gardens or exposed at the surface within new soft landscaped garden areas.

The presence of statistically elevated arsenic, lead and benzo[a]pyrene within the made ground means that such soils should not be retained at the surface within gardens or soft landscaping in the proposed redevelopment, which is highly unlikely.

Effects on Services

Consideration should be given to upgrading service materials, particularly for water supply pipes, where they will be in contact with made ground containing elevated concentrations of arsenic, lead and benzo[a]pyrene, or ensure that the made ground is not used as a backfill around such water supply pipes. Further guidance on the selection of materials for use as water supply pipes should be sought from the local water supplier.

Soil Gas

According to database information, there are no active landfills within influencing distance of the site and although 1.40m of made ground was encountered it was not found to include organic and putrescible material.

The gas monitoring has determined that a Wilson and Card Characteristic Situation 1 would apply and that no special precautions are required to protect the proposed development from ingress of soil gases.

The site lies within an area where radon protection measures are not required for new dwellings in accordance with BR211.

Water Environment

Although some soil contamination was identified by the investigative works; the groundwater table was found to lie at about 2.80m below ground level within the practically impervious London Clay, which is about 27m thick hereabouts; and the site and immediate

surrounding area are devoid of watercourses, surface water features and source protection zones. It is consequently considered unlikely that the proposed redevelopment would impact the quality of the water environment, indeed the removal of made ground during basement excavation would be considered to improve the situation on this site.

Off-Site Disposal of Soil Arisings

The results of chemical analysis are provided in Appendix 3 and can be used for the basic characterisation of the soil destined for landfill. The Environment Agency publication Hazardous Waste, Technical Guidance WM2 outlines the methodology for classifying wastes and should be referenced for guidance. The test results (total metals, hydrocarbons and cyanide) should be compared to the relevant thresholds to determine whether they fall into the primary categories of non-hazardous waste or hazardous waste and will help indicate the likely European Waste Catalogue (EWC) code, which is determined by the waste type. The results of Waste Acceptance Criteria (WAC) leachate testing should be used to check whether if categorised as non-hazardous waste it could be disposed of at an inert waste landfill; or if categorised as hazardous waste whether it could qualify as stable non-reactive hazardous waste for disposal in non-hazardous landfill.

Excavated material and excess spoil should always be classified prior to removal from site as required by 'Duty of Care' (Environmental Protection Act, 1990) legislation. This means that material has to be given a proper description and waste classification prior to removal. Basic characterisation is the responsibility of the waste producer and compliance checking and on-site verification are generally the responsibility of the landfill operator. The landfill operator will need to liaise with the waste producer as the approach relies on the information from basic characterisation.

The clean arisings from the underlying natural soils across this site would fall under the EWC code 17 05 04 under the inert category.

CONCLUSIONS

The proposed residential development will be a single level basement. The existing site is detailed on the site plan at the rear of this report. The proposed site layout will need to be provided by the Engineer in due course. This plan will need to clearly identify areas of gardens and soft landscaping, in the highly unlikely event that any are envisaged.

Remediation

Remediation of the soils beneath the site, in respect of the redevelopment, is not considered necessary as the building floors and walls will prevent contact between any contaminated ground and the site end users.

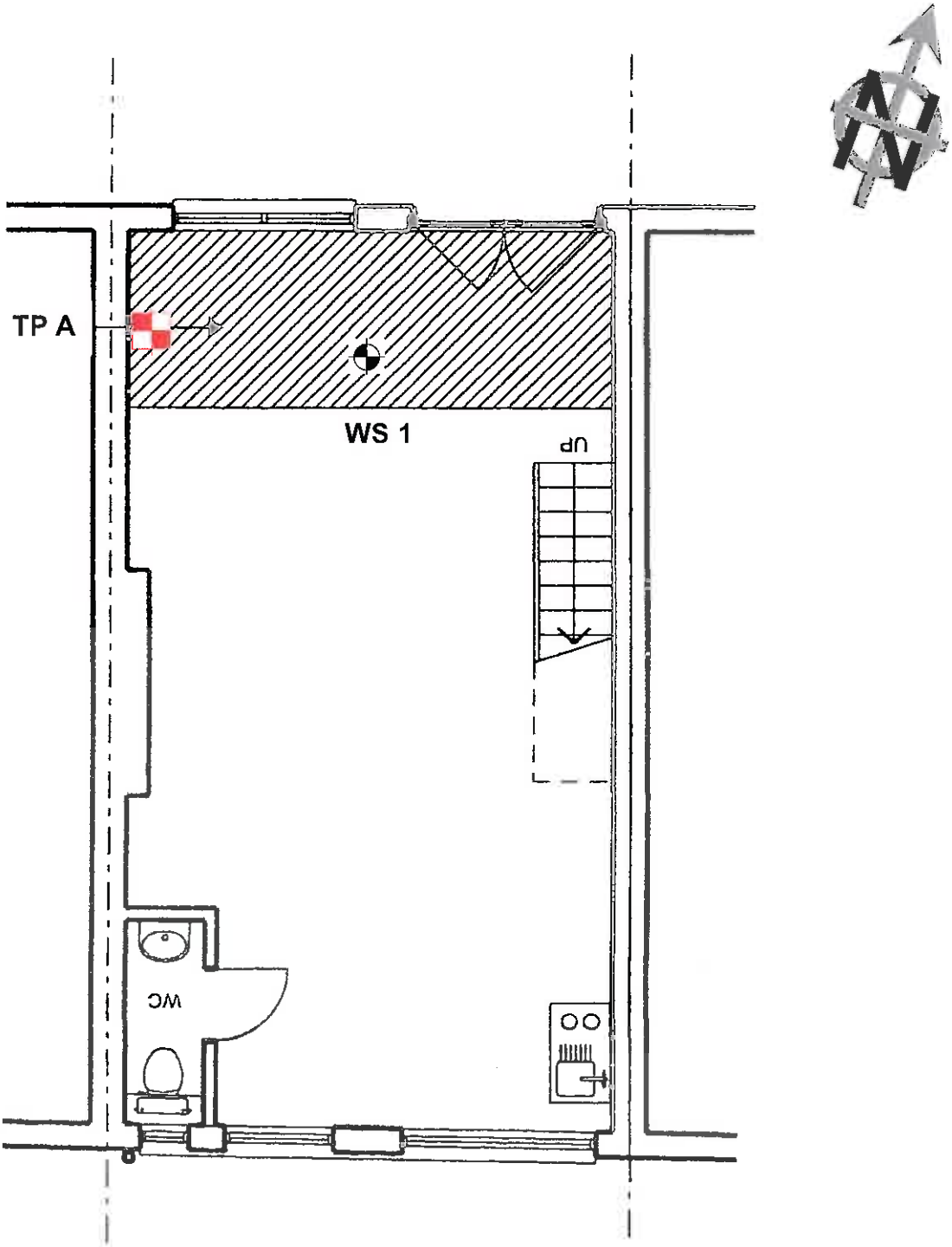
GROUND ENGINEERING LIMITED

S. J. FLEMING
M.Sc., M.C.S.M.,
C.Geol., F.G.S.,
Director

J. E. M. DAVIES
B.Sc.(Hons.), M.Sc.,
C.Geol., F.G.S.,
Senior Geotechnical Engineer

Exploratory Hole Location Plan

Not to Scale



Key

Borehole

Trial Pit

Project: 61 Bayham Place, London NW1 **Client: Modern City Estates**	**GROUND ENGINEERING LIMITED** Peterborough Tel : 01733 566566	**Project No.** **C13359**

GROUND ENGINEERING LIMITED

Tel: 01733-566566
www.groundengineering.co.uk

Site: **61 BAYHAM PLACE, LONDON NW1**

WINDOW SAMPLE
WS1

Date: 08/08/14

Hole Size: 87mm dia to 2.00m
77mm dia to 3.00m
50mm dia to 6.45m

Ground Level:

Samples and in-situ Tests			(Date) Water	Inst.	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result						
					MADE GROUND - CONCRETE floor slab.		0.10	
0.30	D1				MADE GROUND - Dark brown, silty SAND AND GRAVEL. Gravel of brick, ash, glass, flint, concrete and coal.			
0.60	D2						0.70	
0.90	D3				MADE GROUND - Firm, locally soft, brown and orange brown mottled, slightly sandy, slightly gravelly CLAY. Gravel of brick and ash.			
1.20	D4							
1.20-2.00	U1						1.40	
1.35-1.65	S	N6						
					Firm, brown, orange brown and grey mottled, silty CLAY with occasional sand partings.			
2.00	D5							
2.00-3.00	U2				(WEATHERED LONDON CLAY)			
2.15-2.45	S	N10						
			▼s					
3.00	D6						3.00	
3.00-4.00	U3				Stiff, closely fissured, brown and orange brown mottled CLAY with blue grey stained fissure planes, occasional selenite crystals and patches of silt.			
3.15-3.45	S	N10						
4.00	D7							
4.00-5.00	U4							
4.15-4.45	S	N17						
					(WEATHERED LONDON CLAY)			
5.00	D8							
5.00-6.00	U5			BENEATH INSTALLATION				
5.15-5.45	S	N15		BENEATH INSTALLATION				
				BENEATH INSTALLATION				
6.00	D9			BENEATH				
6.15-6.45	S	N21					6.45	
					Borehole completed at 6.45m depth			

REMARKS
1. Floor slab cored using diamond drilling equipment
2. Starter pit excavated from 0.10m to 1.20m depth
3. Gas monitoring standpipe installed to 5.00m depth

Project No
13359

Scale 1:50 | Page 1/1

KEY
D - Disturbed Sample
B - Bulk Sample
U - Undisturbed Sample
W - Water Sample
▽ Water Strike
▼ Depth to Water on completion
J - Jar Sample
M - Mackintosh Probe
V - Vane Shear Test Cohesion ( ) kPa
P( ) - Hand Penetrometer Cohesion ( ) kPa
▼s Standpipe Level

Groundwater Strikes						Groundwater Observations			
	Depth m						Depth m		
No	Struck	Rose to	Rate	Cased	Sealed	Date	Hole	Casing	Water
						08/08/14	6.45		dry
						03/09/14	5.00		2.82

GROUND ENGINEERING LIMITED

Tel: 01733-566566
www.groundengineering.co.uk

Site: 61 BAYHAM PLACE, LONDON NW1

TRIAL PIT
TPA

Date: 08/08/14

Pit Size: 0.40m L x 0.40m W x 1.20m D.

Ground Level:

Samples and in-situ Tests			(Date) Water	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result					
				MADE GROUND - CONCRETE floor slab.		0.30	
0.40 0.50	D1 V1	(21)		MADE GROUND - Soft, becoming firm, dark brown, brown and dark grey mottled, slightly sandy, gravelly CLAY. Gravel of brick, concrete, flint, ash, coal, plastic, slate and glass.			
0.70	D2						
0.90 1.00	V2 D3	(41)				1.00	
				MADE GROUND - Firm, brown, grey and dark brown mottled, slightly gravelly CLAY. Gravel of brick, ash and flint.		1.20	
1.20	V3	(57)		Pit completed at 1.20m depth			

KEY

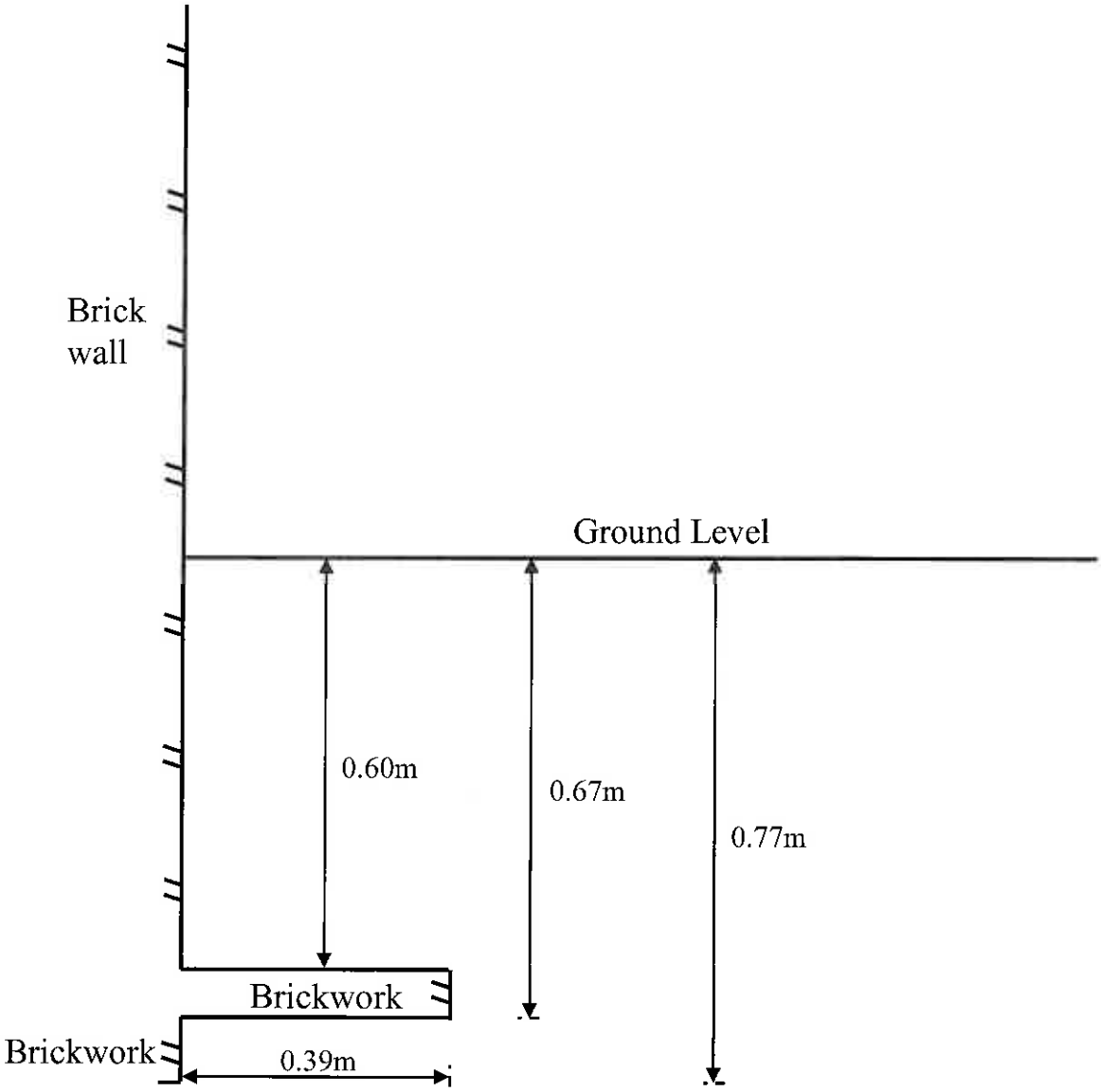
- D - Disturbed Sample
- B - Bulk Sample
- U - Undisturbed Sample
- R - Root Sample
- W - Water Sample
- J - Jar Sample
- ▽ Water Strike
- ▼ Water Rise
- ▼c Level on completion
- MP - Mackintosh Probe
- P( ) - Hand Penetrometer Cohesion ( ) kPa
- V - Vane Shear Test Cohesion ( ) kPa

REMARKS

1. No live roots observed
2. Hole sides stable

Project No	
13359	
Scale	Page
1:25	1/1

Trial Pit TPA
Cross Section



Not To Scale

Project : 61 Bayham Place, London NW1 Client : Modern City Estates	GROUND ENGINEERING LIMITED Peterborough Tel : 01733 566566	Project No. C13359

Trial Pit TPA
Photographs

Project : 61 Bayham Place, London NW1 **Client : Modern City Estates**	**GROUND ENGINEERING LIMITED** Peterborough Tel : 01733 566566	**Project No. C13359**

Groundwater/Gas Monitoring Record **GROUND ENGINEERING LIMITED**

Site: **61 Bayham Place. London NW1**

Report Ref: C13359

Date	Borehole	Methane (% v/v)		Carbon Dioxide (% v/v)		Oxygen (% v/v)		Flow Rate (l/hr)	Atmosph. Pressure (mb)	Depth of Well (m)	Depth to Groundwater (m)
		Peak	Steady	Peak	Steady	Min.	Max.				
03/09/14	WS 1	<0.1	<0.1	0.1	<0.1	20.3	20.3	<0.1	1021	5.00	2.82

Equipment: GasLog GFM 430, 50m tape dipmeter.

LABORATORY TEST RESULTS

CONTRACT 61 BAYHAM PLACE, LONDON NW1

Bore-hole	Sample	Depth m	Classification				Density		Triaxial Compression					Sulphates (SO_4)				Remarks
			Liquid Limit %	Plastic Limit %	Plasticity Index %	Moisture Content %	Bulk Mg/m^3	Dry Mg/m^3	Type	Principal Stress Difference kPa	Cell Pressure kPa	Shear Strength kPa	Angle of Shear Resistance degrees	Soil Total % Dry Wt.	Soil Aqueous Extract mg/l	Water mg/l	pH	
WS1	D3	0.90													1770		7.1	
	V1	1.60																Hand vane test = 60kN/m2
	V2	1.90																Hand vane test = 65kN/m2
	D5	2.00	62	23	39													SOIL CLASSIFICATION = CH 0% retained on 425μm sieve
	V3	2.55																Hand vane test = 74kN/m2
	V4	2.75																Hand vane test = 75kN/m2
	D6	3.00													1985		7.8	
	V5	3.50																Hand vane test = 83kN/m2
	V6	3.75																Hand vane test = 94kN/m2
	V7	4.45																Hand vane test = 80kN/m2
	V8	4.85																Hand vane test = 89kN/m2

U - UNDISTURBED SAMPLE
D - DISTURBED SAMPLE
B - BULK SAMPLE
W - WATER SAMPLE

C.U. - CONSOLIDATED UNDRAINED
C.D. - CONSOLIDATED DRAINED
Q. - IMMEDIATE UNDRAINED
Q.M. - IMMEDIATE UNDRAINED MULTISTAGE

Aqueous Extract 2:1 Water:Soil

13359

GROUND ENGINEERING LIMITED
Tel: 01733-566566
www.groundengineering.co.uk

LABORATORY TEST RESULTS

CONTRACT 61 BAYHAM PLACE, LONDON NW1

Bore-hole	Sample	Depth m	Classification				Density		Triaxial Compression					Sulphates (SO_4)				Remarks
			Liquid Limit %	Plastic Limit %	Plasticity Index %	Moisture Content %	Bulk Mg/m^3	Dry Mg/m^3	Type	Principal Stress Difference kPa	Cell Pressure kPa	Shear Strength kPa	Angle of Shear Resistance degrees	Soil: Total % Dry Wt.	Soil: Aqueous Extract mg/l	Water mg/l	pH	
WS1	V9	5.60																Hand vane test = 94kN/m2
	D9	6.00													3147		7.3	

U - UNDISTURBED SAMPLE
D - DISTURBED SAMPLE
B - BULK SAMPLE
W - WATER SAMPLE

C.U. - CONSOLIDATED UNDRAINED
C.D. - CONSOLIDATED DRAINED
Q. - IMMEDIATE UNDRAINED
Q.M. - IMMEDIATE UNDRAINED MULTISTAGE

Aqueous Extract 2:1 Water:Soil

13359

GROUND ENGINEERING LIMITED
Tel: 01733 566566
www.groundengineering.co.uk

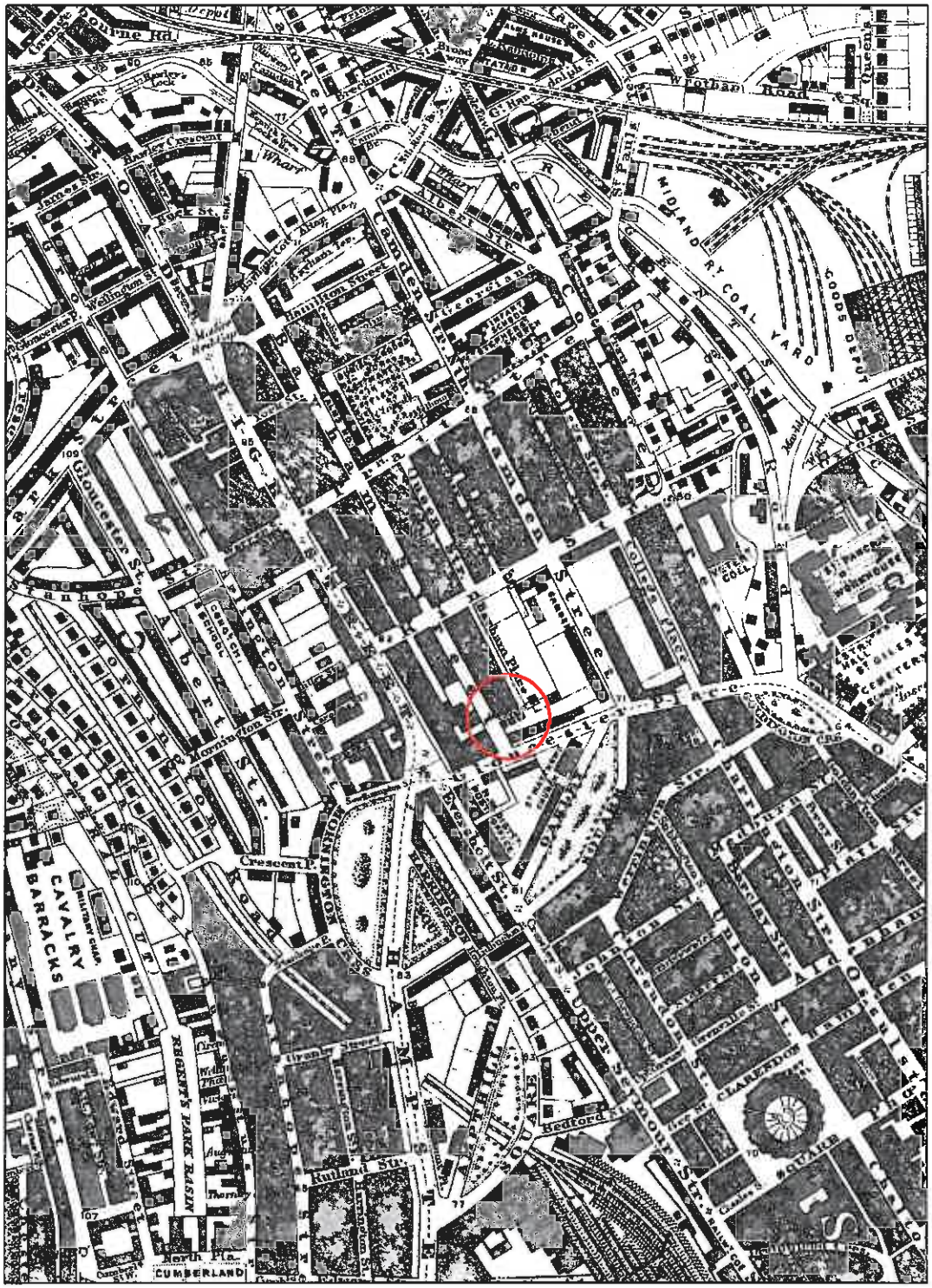
APPENDIX 1

HISTORICAL MAPS

Site History

Figure A

N



Project : 61 Bayham Place, London NW1 **Client : Modern City Estates**	**GROUND ENGINEERING LIMITED** Peterborough Tel : 01733 566566	**Project No.** **C13359**

Site History

Figure B

N

Project : 61 Bayham Place, London NW1 **Client : Modern City Estates**	**GROUND ENGINEERING LIMITED** Peterborough Tel : 01733 566566	**Project No.** **C13359**

Site History

Figure C

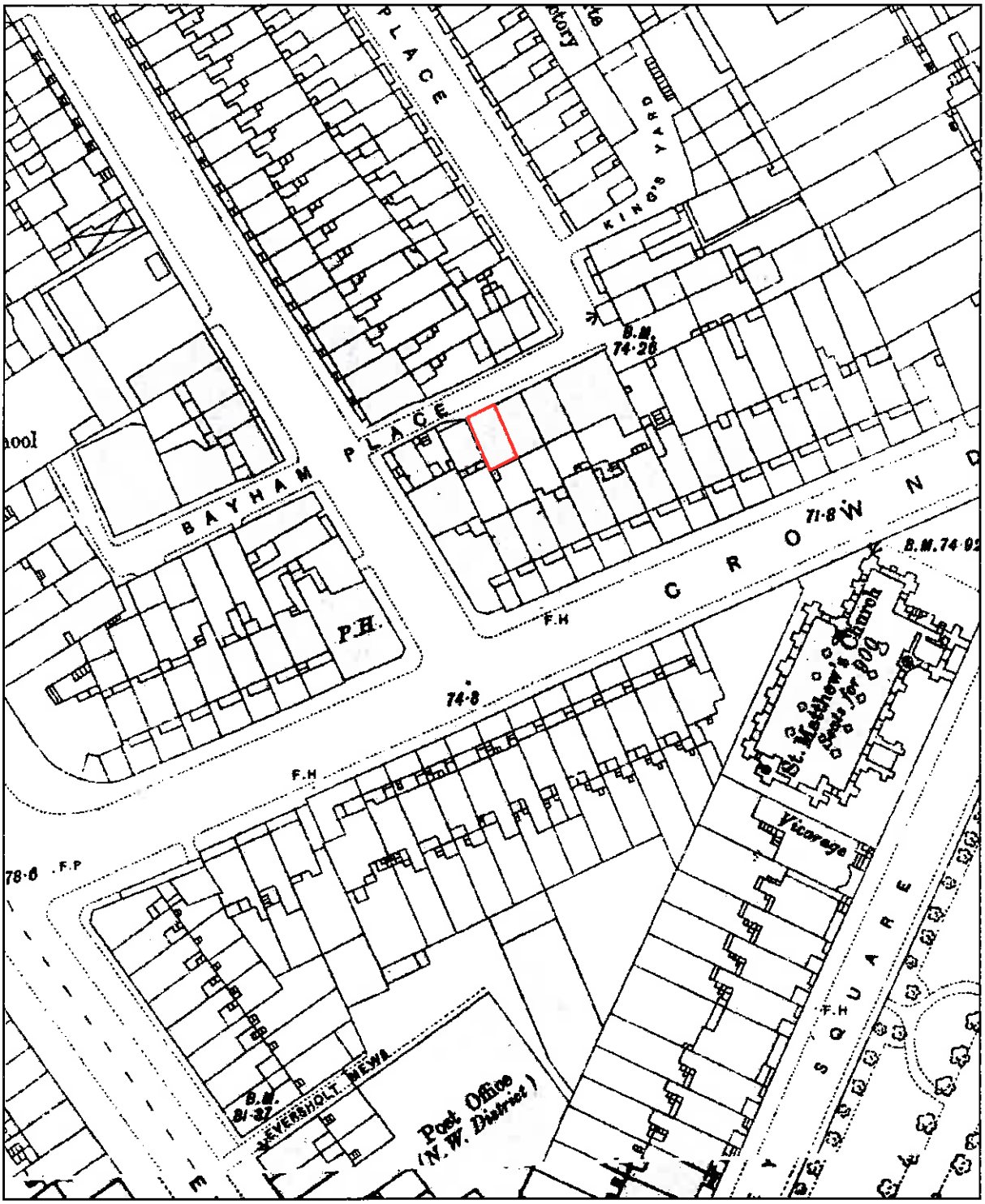
N

Project : 61 Bayham Place, London NW1 **Client : Modern City Estates**	**GROUND ENGINEERING LIMITED** Peterborough Tel : 01733 566566	**Project No.** **C13359**

Site History

Figure D

N

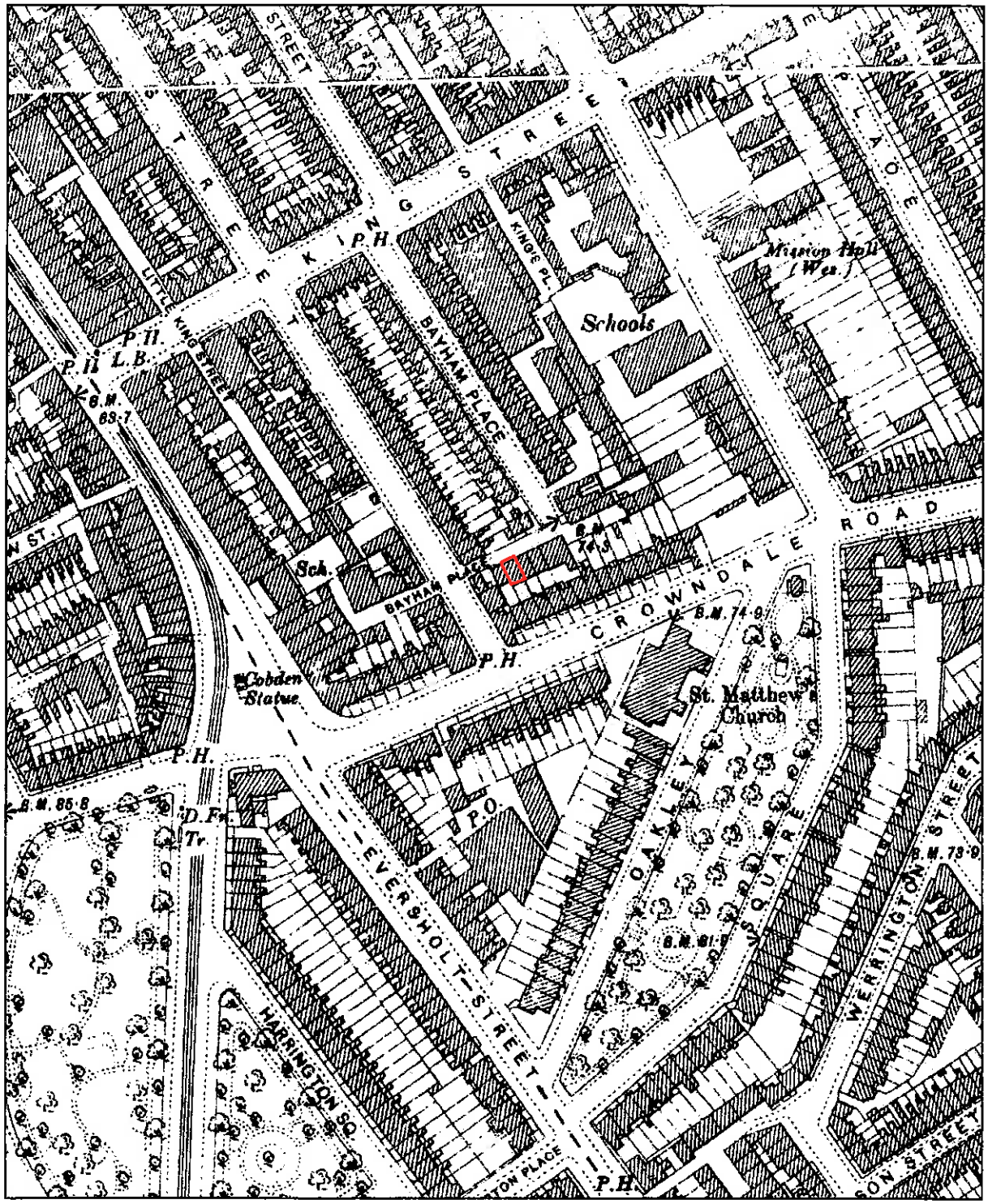


Project : 61 Bayham Place, London NW1 **Client : Modern City Estates**	**GROUND ENGINEERING LIMITED** Peterborough Tel : 01733 566566	**Project No.** **C13359**

Site History

Figure E

N

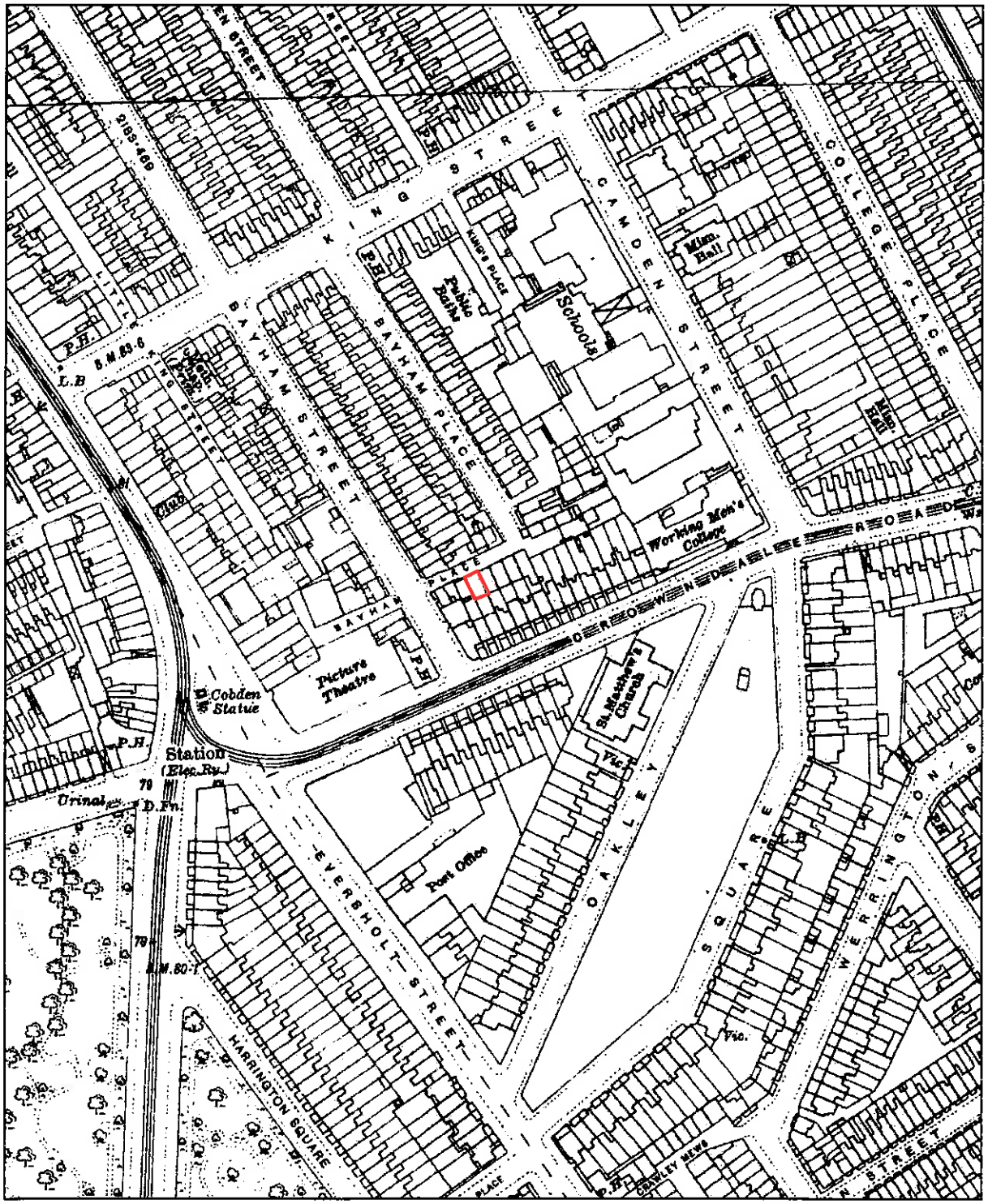


Project : 61 Bayham Place, London NW1 **Client : Modern City Estates**	**GROUND ENGINEERING LIMITED** Peterborough Tel : 01733 566566	**Project No.** **C13359**

Site History

Figure F

N

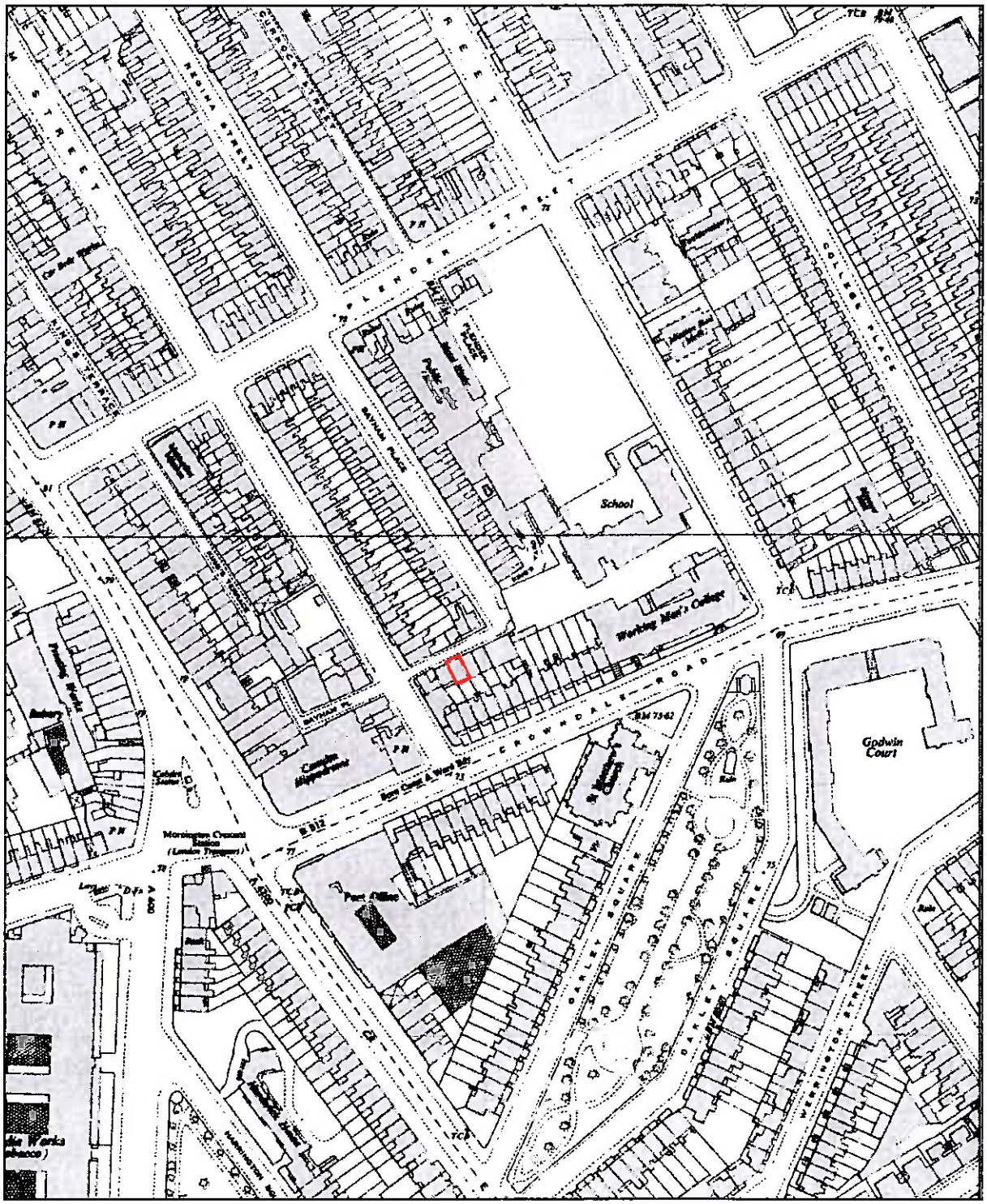


Project : 61 Bayham Place, London NW1 **Client : Modern City Estates**	**GROUND ENGINEERING LIMITED** Peterborough Tel : 01733 566566	**Project No.** **C13359**

Site History

Figure G

N

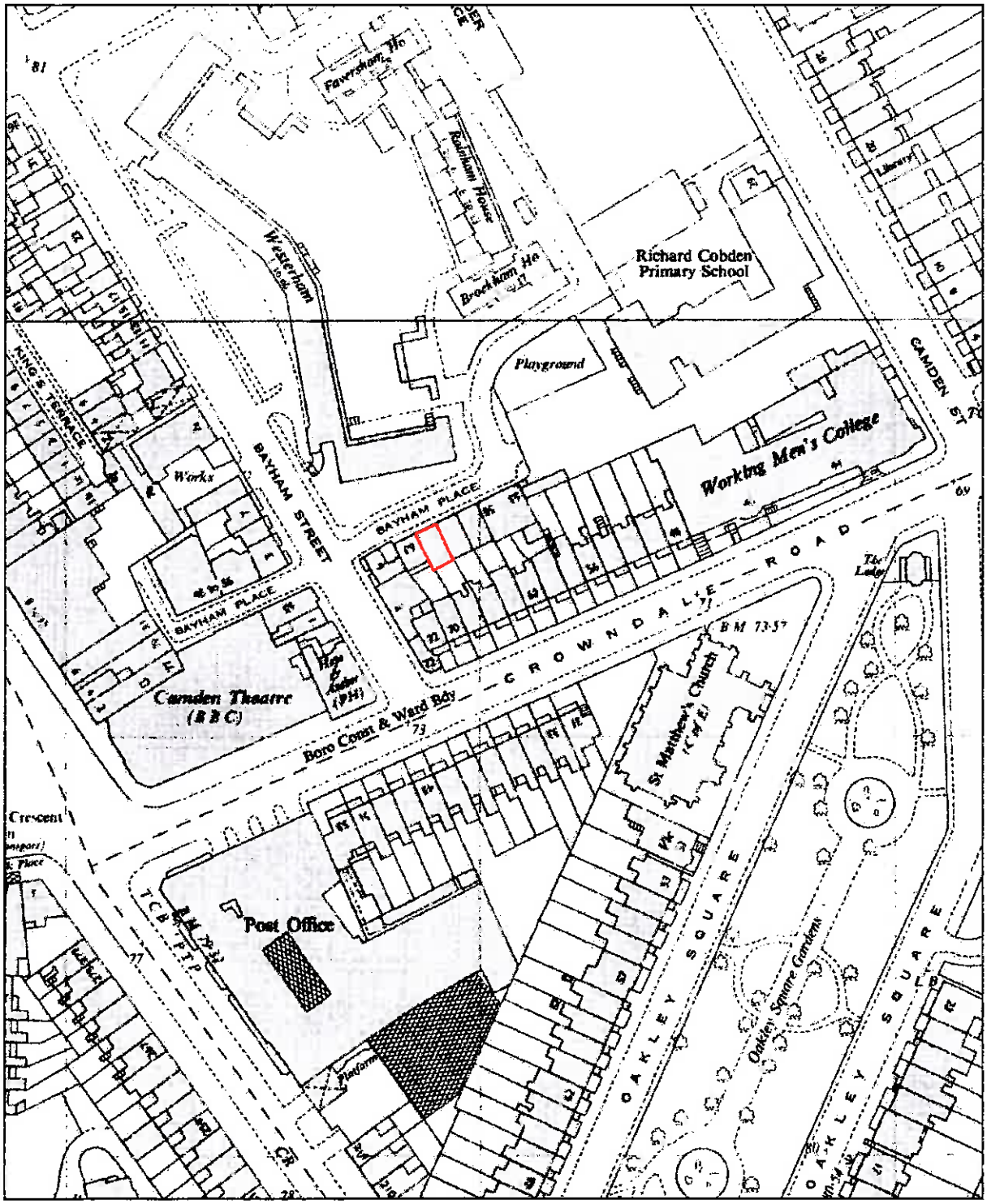


Project : 61 Bayham Place, London NW1 **Client : Modern City Estates**	**GROUND ENGINEERING LIMITED** Peterborough Tel : 01733 566566	**Project No.** **C13359**

Site History

Figure H

N

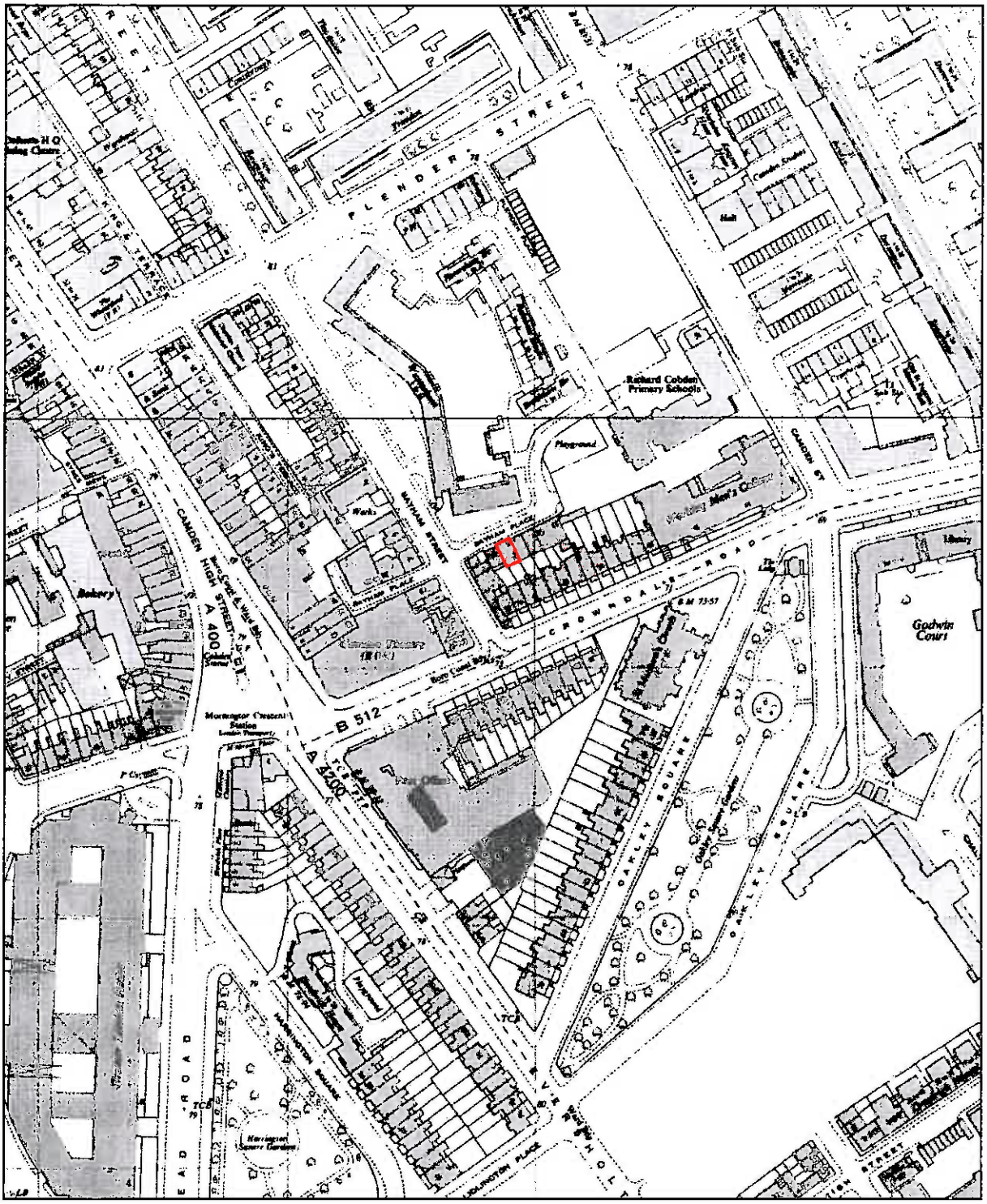


Project : 61 Bayham Place, London NW1 **Client : Modern City Estates**	**GROUND ENGINEERING LIMITED** Peterborough Tel : 01733 566566	**Project No.** **C13359**

Site History

Figure I

N



Project : 61 Bayham Place, London NW1 **Client : Modern City Estates**	**GROUND ENGINEERING LIMITED** Peterborough Tel : 01733 566566	**Project No.** **C13359**

APPENDIX 2

ENVIRONMENTAL SEARCHES

GroundSure EnviroInsight

Address:	**61,BAYHAM PLACE,LONDON, NW1 0ET**
Date:	**22 Sep 2014**
Reference:	**GS-1675971**
Client:	**Ground Engineering Limited**

NW N NE

W E

SW S SE

Aerial Photograph Capture date:	20-Apr-2013
Grid Reference:	529289,183446
Site Size:	0.00ha

Contents Page

Overview of Findings

For further details on each dataset, please refer to each individual section in the main report as listed. Where the database has been searched a numerical result will be recorded. Where the database has not been searched '-' will be recorded.

Section 1: Environmental Permits, Incidents and Registers	On-site	0-50m	51-250	251-500
1.1 Industrial Sites Holding Environmental Permits and/or Authorisations				
1.1.1 Records of historic IPC Authorisations	0	0	0	0
1.1.2 Records of Part A(1) and IPPC Authorised Activities	0	0	0	0
1.1.3 Records of Water Industry Referrals (potentially harmful discharges to the public sewer)	0	0	0	0
1.1.4 Records of Red List Discharge Consents (potentially harmful discharges to controlled waters)	0	0	0	0
1.1.5 Records of List 1 Dangerous Substances Inventory sites	0	0	0	0
1.1.6 Records of List 2 Dangerous Substances Inventory sites	0	0	0	0
1.1.7 Records of Part A(2) and Part B Activities and Enforcements	0	0	4	0
1.1.8 Records of Category 3 or 4 Radioactive Substances Authorisations	0	0	0	17
1.1.9 Records of Licensed Discharge Consents	0	0	0	0
1.1.10 Records of Planning Hazardous Substance Consents and Enforcements	0	0	0	0
1.2 Records of COMAH and NIHHS sites	0	0	0	0
1.3 Environment Agency Recorded Pollution Incidents				
1.3.1 National Incidents Recording System, List 2	0	0	0	1
1.3.2 National Incidents Recording System, List 1	0	0	0	0
1.4 Sites Determined as Contaminated Land under Part 2A EPA 1990	0	0	0	0

Section 2: Landfill and Other Waste Sites	On-site	0-50m	51-250	251-500	501-1000	1000-5000
2.1 Landfill Sites						
2.1.1 Environment Agency Registered Landfill Sites	0	0	0	0	0	Not searched
2.1.2 Environment Agency Historic Landfill Sites	0	0	0	0	0	0
2.1.3 BGS/DoE Landfill Site Survey	0	0	0	0	0	0
2.1.4 GroundSure Local Authority Landfill Sites Data	0	0	0	0	0	0
2.2 Landfill and Other Waste Sites Findings						
2.2.1 Operational and Non-Operational Waste Treatment, Transfer and Disposal Sites	0	0	0	3	Not searched	Not searched
2.2.2 Environment Agency Licensed Waste Sites	0	0	0	1	10	0

Section 3: Current Land Use

	On-site	0-50m	51-250	251-500
3.1 Current Industrial Sites Data	0	2	17	Not searched
3.2 Records of Petrol and Fuel Sites	0	0	1	1
3.3 Underground High Pressure Oil and Gas Pipelines	0	0	0	0

Section 4: Geology

4.1 Are there any records of Artificial Ground and Made Ground present beneath the study site?	Yes
4.2 Are there any records of Superficial Ground and Drift Geology present beneath the study site?	None
4.3 For records of Bedrock and Solid Geology beneath the study site see the detailed findings section.	

Section 5: Hydrogeology and Hydrology

	0-500m
5.1 Are there any records of Strata Classification in the Superficial Geology within 500m of the study site?	No
5.2 Are there any records of Strata Classification in the Bedrock Geology within 500m of the study site?	Yes

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
5.3 Groundwater Abstraction Licences (within 2000m of the study site)	0	0	0	0	2	28
5.4 Surface Water Abstraction Licences (within 2000m of the study site)	0	0	0	2	2	1
5.5 Potable Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	8
5.6 Source Protection Zones (within 500m of the study site)	0	0	0	0	Not searched	Not searched
5.7 Groundwater Vulnerability and Soil Leaching Potential (within 500m of the study site)	0	0	0	0	Not searched	Not searched

	On-site	0-50m	51-250	251-500	501-1000	1000-1500
5.8 Is there any Environment Agency information on river quality within 1500m of the study site?	No	No	No	No	Yes	No
5.9 Detailed River Network entries within 500m of the site	0	0	1	1	Not searched	Not searched
5.10 Surface water features within 250m of the study site	No	No	No	Not searched	Not searched	Not searched

Section 6: Flooding

6.1 Are there any Environment Agency Zone 2 floodplains within 250m of the study site?	No
6.2 Are there any Environment Agency Zone 3 floodplains within 250m of the study site?	No
6.3 Are there any Flood Defences within 250m of the study site?	No
6.4 Are there any areas benefiting from Flood Defences within 250m of the study site?	No
6.5 Are there any areas used for Flood Storage within 250m of the study site?	No
6.6 What is the maximum BGS Groundwater Flooding susceptibility within 50m of the study site?	Not Prone
6.7 What is the BGS confidence rating for the Groundwater Flooding susceptibility areas?	Not Applicable

Section 7: Designated Environmentally Sensitive Sites

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
7.1 Records of Sites of Special Scientific Interest (SSSI)	0	0	0	0	0	0
7.2 Records of National Nature Reserves (NNR)	0	0	0	0	0	0
7.3 Records of Special Areas of Conservation (SAC)	0	0	0	0	0	0
7.4 Records of Special Protection Areas (SPA)	0	0	0	0	0	0
7.5 Records of Ramsar sites	0	0	0	0	0	0
7.6 Records of Ancient Woodlands	0	0	0	0	0	0
7.7 Records of Local Nature Reserves (LNR)	0	0	0	0	2	1
7.8 Records of World Heritage Sites	0	0	0	0	0	0
7.9 Records of Environmentally Sensitive Areas	0	0	0	0	0	0
7.10 Records of Areas of Outstanding Natural Beauty (AONB)	0	0	0	0	0	0
7.11 Records of National Parks	0	0	0	0	0	0
7.12 Records of Nitrate Sensitive Areas	0	0	0	0	0	0
7.13 Records of Nitrate Vulnerable Zones	0	0	0	0	0	0

Section 8: Natural Hazards

8.1 What is the maximum risk of natural ground subsidence?	Moderate
8.1.1 What is the maximum Shrink-Swell hazard rating identified on the study site?	Moderate
8.1.2 What is the maximum Landslides hazard rating identified on the study site?	Very Low
8.1.3 What is the maximum Soluble Rocks hazard rating identified on the study site?	Negligible
8.1.4 What is the maximum Compressible Ground hazard rating identified on the study site?	Negligible
8.1.5 What is the maximum Collapsible Rocks hazard rating identified on the study site?	Very Low
8.1.6 What is the maximum Running Sand hazard rating identified on the study site?	Negligible

Section 9: Mining

9.1 Are there any coal mining areas within 75m of the study site?	No
9.2 What is the risk of subsidence relating to shallow mining within 150m of the study site?	Negligible
9.3 Are there any brine affected areas within 75m of the study site?	No

Using this report

The following report is designed by Environmental Consultants for Environmental Professionals bringing together the most up-to-date market leading environmental data. This report is provided under and subject to the Terms & Conditions agreed between GroundSure and the Client. The document contains the following sections:

1. Environmental Permits, Incidents and Registers

Provides information on Regulated Industrial Activities and Pollution Incidents as recorded by Regulatory Authorities, and sites determined as Contaminated Land. This search is conducted using radii up to 500m.

2. Landfills and Other Waste Sites

Provides information on landfills and other waste sites that may pose a risk to the study site. This search is conducted using radii up to 1500m.

3. Current Land Uses

Provides information on current land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. These searches are conducted using radii of up to 500m. This includes information on potentially contaminative industrial sites, petrol stations and fuel sites as well as high pressure underground oil and gas pipelines.

4. Geology

Provides information on artificial and superficial deposits and bedrock beneath the study site.

5. Hydrogeology and Hydrology

Provides information on productive strata within the bedrock and superficial geological layers, abstraction licenses, Source Protection Zones (SPZs) and river quality. These searches are conducted using radii of up to 2000m.

6. Flooding

Provides information on surface water flooding, flood defences, flood storage areas and groundwater flood areas. This search is conducted using radii of up to 250m.

7. Designated Environmentally Sensitive Sites

Provides information on the Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar sites, Local Nature Reserves (LNR), Areas of Outstanding Natural Beauty (AONB), National Parks (NP), Environmentally Sensitive Areas, Nitrate Sensitive Areas, Nitrate Vulnerable Zones and World Heritage Sites and Scheduled Ancient Woodland. These searches are conducted using radii of up to 2000m.

8. Natural Hazards

Provides information on a range of natural hazards that may pose a risk to the study site. These factors include natural ground subsidence.

9. Mining

Provides information on areas of coal and shallow mining.

10. Contacts

This section of the report provides contact points for statutory bodies and data providers that may be able to provide further information on issues raised within this report. Alternatively, GroundSure provide a free Technical Helpline (08444 159000) for further information and guidance.

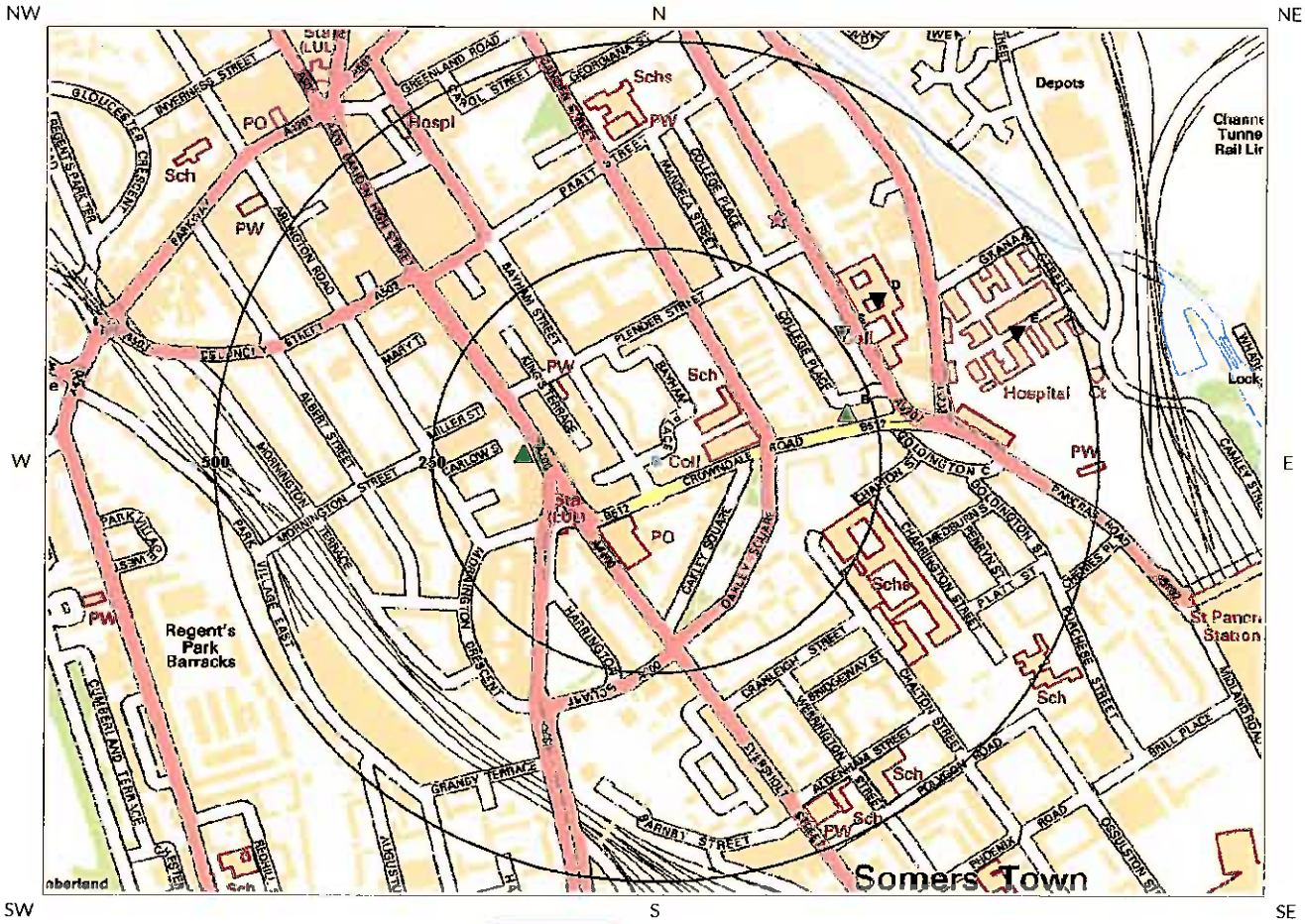
Note: Maps

Only certain features are placed on the maps within the report. All features represented on maps found within this search are given an identification number. This number identifies the feature on the mapping and correlates it to the additional information provided below. This identification number precedes all other information and takes the following format -Id: 1, Id: 2, etc. Where numerous features on the same map are in such close proximity that the numbers would obscure each other a letter identifier is used instead to represent the features. (e.g. Three features which overlap may be given the identifier "A" on the map and would be identified separately as features 1A, 3A, 10A on the data tables provided).

Where a feature is reported in the data tables to a distance greater than the map area, it is noted in the data table as "Not Shown".

All distances given in this report are in Metres (m). Directions are given as compass headings such as N: North, E: East, NE: North East from the nearest point of the study site boundary.

1. Environmental Permits, Incidents and Registers Map



Environmental Permits, Incidents and Registers Legend

- Site Outline
- Search Buffers (m) — 250 / 500
- Recorded Pollution Incident
- Dangerous Substances (List 1)
- Dangerous Substances (List 2)
- Water Industry Referrals
- Licenced Discharge Consents
- Red List Discharge Consents
- RAS 3 & 4 Authorisations
- Part A(1) Authorised Processes and Historic IPC Authorisations
- Part A(2) and Part B Authorised Processes
- COMAH / NIHHS Sites
- Sites Determined as Contaminated Land
- Hazardous Substance Consents and Enforcements

1. Environmental Permits, Incidents and Registers

1.1 Industrial Sites Holding Licences and/or Authorisations

Searches of information provided by the Environment Agency and Local Authorities reveal the following information:

1.1.1 Records of historic IPC Authorisations within 500m of the study site:

0

Database searched and no data found.

1.1.2 Records of Part A(1) and IPPC Authorised Activities within 500m of the study site:

0

Database searched and no data found.

1.1.3 Records of Water Industry Referrals (potentially harmful discharges to the public sewer) within 500m of the study site:

0

Database searched and no data found.

1.1.4 Records of Red List Discharge Consents (potentially harmful discharges to controlled waters) within 500m of the study site:

0

Database searched and no data found.

1.1.5 Records of List 1 Dangerous Substances Inventory Sites within 500m of the study site:

0

Database searched and no data found.

1.1.6 Records of List 2 Dangerous Substance Inventory Sites within 500m of the study site:

0

Database searched and no data found.

1.1.7 Records of Part A(2) and Part B Activities and Enforcements within 500m of the study site:

4

The following Part A(2) and Part B Activities are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance	Direction	NGR	Details	
2A	147.0	W	529138 183452	Address: Camden Dry Cleaners, 27 Camden High Street, NW1 7JE Process: Dry Cleaner Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcement Notified Date of Enforcement: No Enforcement Notified Comment: No Enforcement Notified
3A	147.0	W	529138 183452	Address: Camden Dry Cleaners, 27 Camden High Street, NW1 7JE Process: Dry Cleaner Status: Current Permit Permit Type: Part B	Enforcement: No Enforcement Notified Date of Enforcement: No Enforcement Notified Comment: No Enforcement Notified
4B	219.0	E	529505 183502	Address: Crowndale Dry Cleaners, 2 Crowndale Road, NW1 1TT Process: Dry Cleaner Status: Current Permit Permit Type: Part B	Enforcement: No Enforcement Notified Date of Enforcement: No Enforcement Notified Comment: No Enforcement Notified
5B	219.0	E	529505 183502	Address: Crowndale Dry Cleaners, 2 Crowndale Road, NW1 1TT Process: Dry Cleaner Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcement Notified Date of Enforcement: No Enforcement Notified Comment: No Enforcement Notified

---

1.1.8 Records of Category 3 or 4 Radioactive Substances Authorisations:

17

The following RAS Licence (3 or 4) records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance	Direction	NGR	Address	Operator	Type	Permission Number	Dates	Status
23C	258.0	NE	529500 183600	Royal Veterinary College, Royal College Street, London, NW1 0TU	Royal Veterinary College	Disposal Of Radioactive Waste (was Rsa60 Section 6).	AE5250	Date of Approval:31/3/1991 Effective from:31/3/1991 Last date of update:2014-07-01	Revoked/cancelled

ID	Distance	Direction	NGR	Address	Operator	Type	Permission Number	Dates	Status
24C	258.0	NE	529500 183600	Gene Expression Technologies Ltd (dissolved), Royal College Street, London, NW1 0TU	Gene Expression Technologies Ltd (dissolved)	Disposal Of Radioactive Waste (was Rsa60 Section 6).	BT4460	Date of Approval:25/11/2002 Effective from:23/12/2002 Last date of update:2014-07-01	Revoked/cancelled
25C	258.0	NE	529500 183600	Proxima Concepts, Royal College Street, London, NW1 0TU	Proxima Concepts	Keeping And Use Of Radioactive Materials (was Rsa60 Section 1).	BR9600	Date of Approval:5/9/2002 Effective from:5/9/2002 Last date of update:2014-07-01	Effective
26C	258.0	NE	529500 183600	Proxima Concepts, Royal College Street, London, NW1 0TU	Proxima Concepts	Disposal Of Radioactive Waste (was Rsa60 Section 6).	BR9618	Date of Approval:5/9/2002 Effective from:3/10/2002 Last date of update:2014-07-01	Effective
27C	258.0	NE	529500 183600	Spirogen Ltd, London Bioscience Innovation Centre,2 Royal College Street, London, NW1 0TU	Spirogen Ltd	Keeping And Use Of Radioactive Materials (was Rsa60 Section 1).	CA5052	Date of Approval:20/12/2006 Effective from:20/12/2006 Last date of update:2014-07-01	Revoked/cancelled
28C	258.0	NE	529500 183600	Spirogen Ltd, London Bioscience Innovation Centre, 2 Royal College Street, London, NW1 0TU	Spirogen Ltd	Disposal Of Radioactive Waste (was Rsa60 Section 6).	CA5079	Date of Approval:20/12/2006 Effective from:20/12/2006 Last date of update:2014-07-01	Revoked/cancelled
29C	258.0	NE	529500 183600	Royal Veterinary College, Royal College Street, London, NW1 0TU	Royal Veterinary College	Keeping And Use Of Radioactive Materials (was Rsa60 Section 1).	AE5268	Date of Approval:5/8/2008 Effective from:5/8/2008 Last date of update:2014-07-01	Effective
30C	258.0	NE	529500 183600	Royal Veterinary College, Royal College Street, London, NW1 0TU	Royal Veterinary College	Keeping And Use Of Radioactive Materials (was Rsa60 Section 1).	AE5268	Date of Approval:24/5/2006 Effective from:24/5/2006 Last date of update:2014-07-01	Superseded By Variation

ID	Distance	Direction	NGR	Address	Operator	Type	Permission Number	Dates	Status
31C	258.0	NE	529500 183600	Royal Veterinary College, Royal College Street, London, NW1 0TU	Royal Veterinary College	Disposal Of Radioactive Waste (was Rsa60 Section 6).	AE5241	Date of Approval:31/3/1991 Effective from:31/3/1991 Last date of update:2014-07-01	Revoked/cancelled
32C	258.0	NE	529500 183600	Royal Veterinary College, Royal College Street, London, NW1 0TU	Royal Veterinary College	Keeping And Use Of Radioactive Materials (was Rsa60 Section 1).	AE5268	Date of Approval:31/3/1991 Effective from:31/3/1991 Last date of update:2014-07-01	Superseded By Variation
33C	258.0	NE	529500 183600	Gene Expression Technologies Ltd (dissolved), Royal College Street, London, NW1 0TU	Gene Expression Technologies Ltd (dissolved)	Keeping And Use Of Radioactive Materials (was Rsa60 Section 1).	BT4478	Date of Approval:25/11/2002 Effective from:25/11/2002 Last date of update:2014-07-01	Revoked/cancelled
34D	314.0	NE	529540 183640	Royal Veterinary College, University Of London, Royal College Street, London, NW1 0TU	Royal Veterinary College	Disposal Of Radioactive Waste (was Rsa60 Section 6).	AQ1510	Date of Approval:28/3/1995 Effective from:25/4/1995 Last date of update:2014-07-01	Superseded By Variation
35D	314.0	NE	529540 183640	Royal Veterinary College, University Of London, Royal College Street, London, NW1 0TU	Royal Veterinary College	Disposal Of Radioactive Waste (was Rsa60 Section 6).	AQ1510	Date of Approval:9/6/2000 Effective from:12/6/2000 Last date of update:2014-07-01	Superseded By Variation
36D	314.0	NE	529540 183640	Royal Veterinary College, University Of London, Royal College Street, London, NW1 0TU	Royal Veterinary College	Disposal Of Radioactive Waste (was Rsa60 Section 6).	AQ1510	Date of Approval:27/1/2009 Effective from:24/2/2009 Last date of update:2014-07-01	Effective
37D	314.0	NE	529540 183640	Royal Veterinary College, University Of London, Royal College Street, London, NW1 0TU	Royal Veterinary College	Disposal Of Radioactive Waste (was Rsa60 Section 6).	AQ1510	Date of Approval:1/12/2003 Effective from:1/1/2004 Last date of update:2014-07-01	Superseded By Variation

ID	Distance	Direction	NGR	Address	Operator	Type	Permission Number	Dates	Status
38D	314.0	NE	529540 183640	Royal Veterinary College, University Of London, Royal College Street, London, NW1 0TU	Royal Veterinary College	Disposal Of Radioactive Waste (was Rsa60 Section 6).	AQ1510	Date of Approval:11/11/2005 Effective from:9/12/2005 Last date of update:2014-07-01	Superseded By Variation
39E	435.0	E	529700 183600	London School Of Hygiene And Tropical Medicine, Nutrition Research Unit, St Pancras Hospital, 4 St Pancras Way, London, NW1 0PT	London School Of Hygiene And Tropical Medicine	Disposal Of Radioactive Waste (was Rsa60 Section 6).	AC4503	Date of Approval:31/3/1991 Effective from:31/3/1991 Last date of update:2014-07-01	Revoked/cancelled

1.1.9 Records of Licensed Discharge Consents within 500m of the study site: 0

Database searched and no data found.

1.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site: 0

Database searched and no data found.

1.2 Dangerous or Hazardous Sites

Records of COMAH & NIHHS sites within 500m of the study site: 0

Database searched and no data found.

1.3 Environment Agency Recorded Pollution Incidents

1.3.1 Records of National Incidents Recording System, List 2 within 500m of the study site:

1

The following NIRS List 2 records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance	Direction	NGR	Details	
1	317.0	NE	529426 183737	Incident Date: 19/01/2002 Incident Identification: 53408 Pollutant: Contaminated Water Pollutant Description: Firefighting Run-Off	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)

1.3.2 Records of National Incidents Recording System, List 1 within 500m of the study site:

0

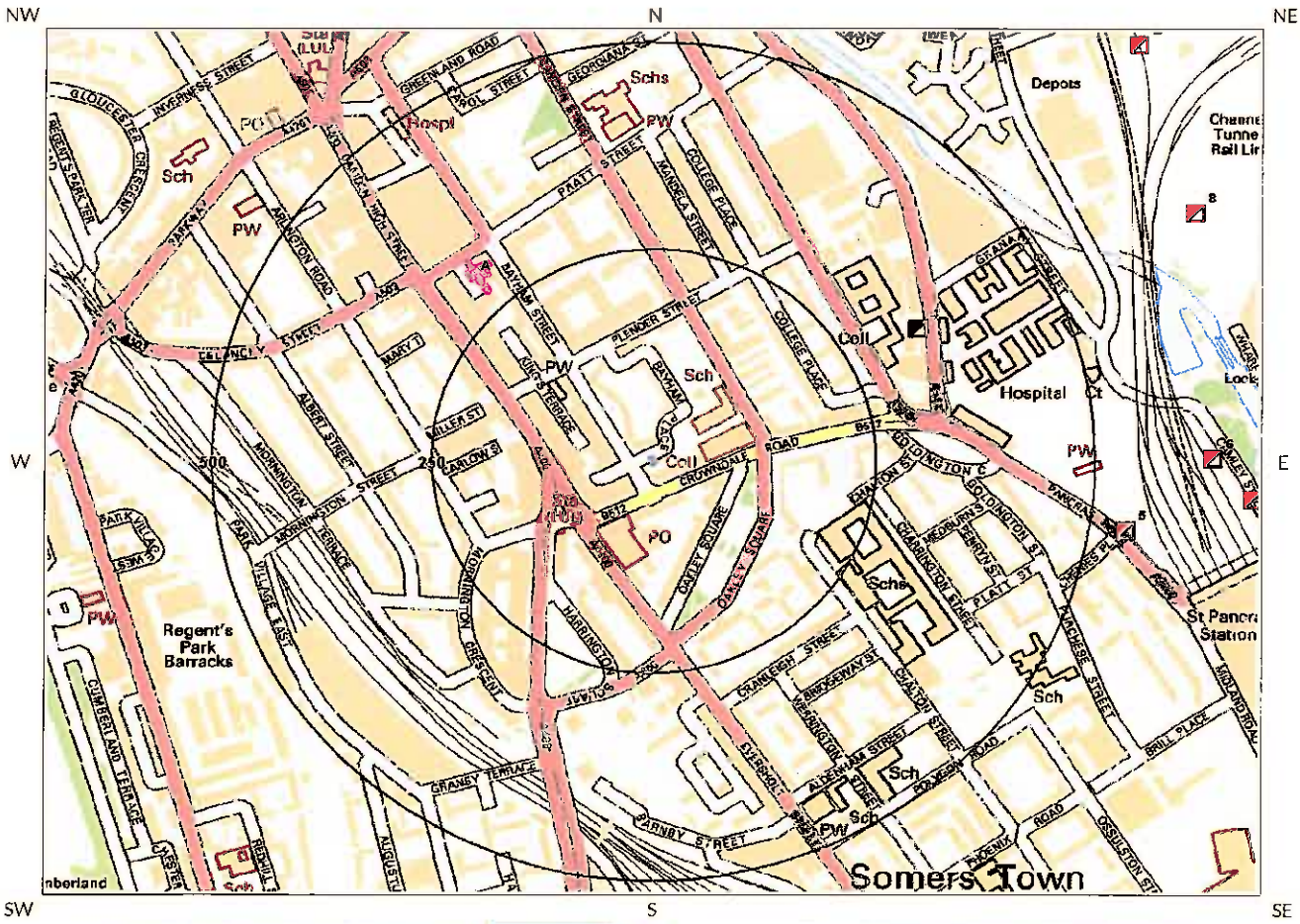
Database searched and no data found.

1.4 Sites Determined as Contaminated Land under Part 2A EPA 1990

How many records of sites determined as contaminated land under Section 78R of the Environmental Protection Act 1990 are there within 500m of the study site? 0

Database searched and no data found.

2. Landfill and Other Waste Sites Map



2. Landfill and Other Waste Sites

2.1 Landfill Sites

2.1.1 Records from Environment Agency landfill data within 1000m of the study site:

0

Database searched and no data found.

2.1.2 Records of Environment Agency historic landfill sites within 1500m of the study site:

0

Database searched and no data found.

2.1.3 Records of BGS/DoE non-operational landfill sites within 1500m of the study site:

0

Database searched and no data found.

2.1.4 Records of Local Authority landfill sites within 1500m of the study site:

0

Database searched and no data found.

2.2 Other Waste Sites

2.2.1 Records of waste treatment, transfer or disposal sites within 500m of the study site:

3

The following waste treatment, transfer or disposal sites records are represented as points on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details		
1A	271.0	NW	529087 183667	Type of Site: Scrap Metal Works Site Address: N/A	Planning Application Reference: N/A Date: 1968	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon

ID	Distance (m)	Direction	NGR	Details		
2A	272.0	NW	529087 183667	Type of Site: Scrap Metal Depot Site Address: N/A	Planning Application Reference: N/A Date: 1984	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
3A	272.0	NW	529088 183667	Type of Site: Scrap Metal Depot Site Address: N/A	Planning Application Reference: N/A Date: 1968	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon

2.2.2 Records of Environment Agency licensed waste sites within 1500m of the study site:

11

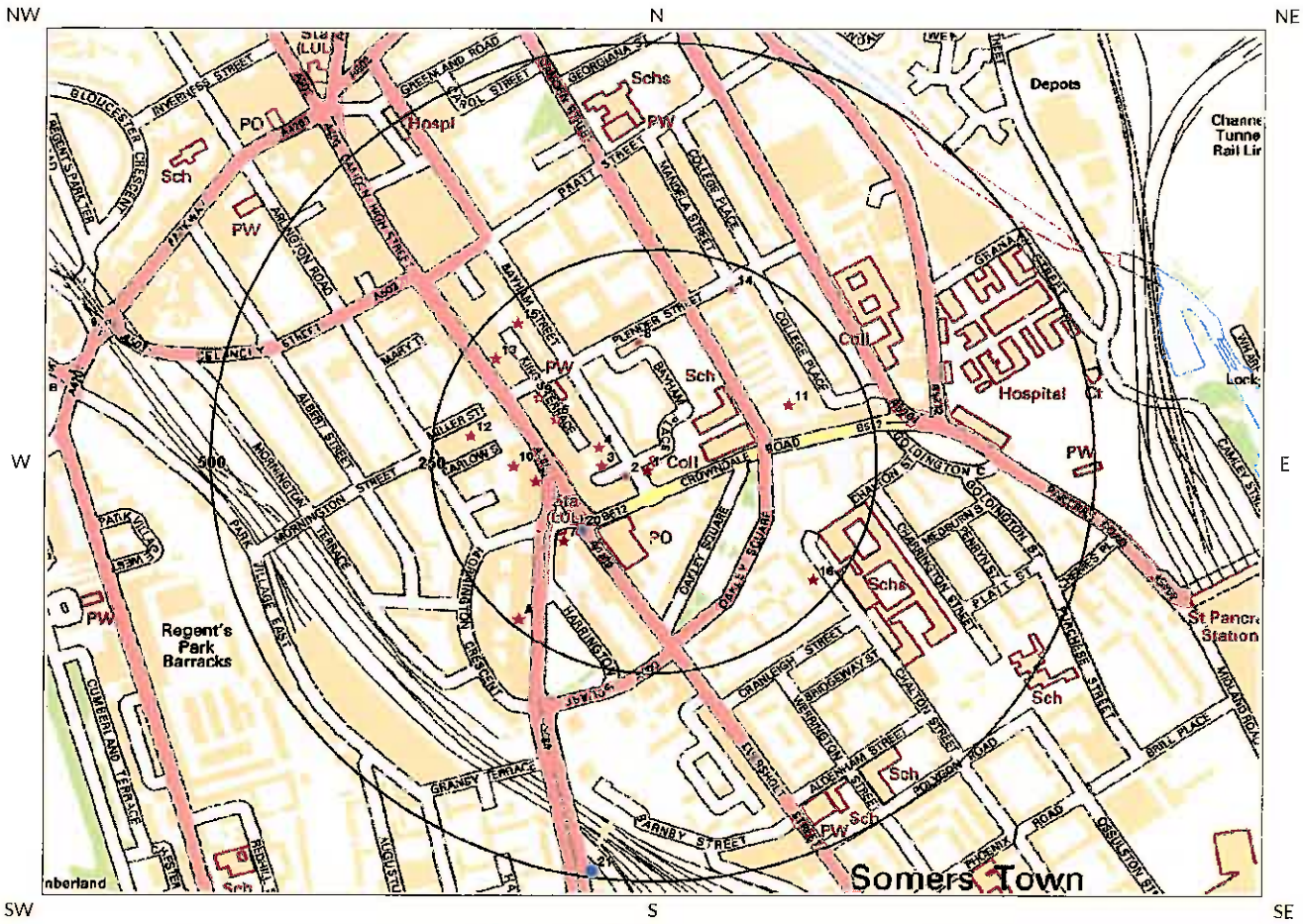
The following waste treatment, transfer or disposal sites records are represented as points on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details	
4	338.0	NE	529591 183605	Site Address: - Type: Metal Recycling Site (mixed MRS's) Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: ARB001 EPR reference: EA/EPR/EP3491NW/A001 Operator: Arbuckle William David Waste Management licence No: 80302 Annual Tonnage: 1014.0	Issue Date: 05/06/1997 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Arbuckle, St Pancras Way Correspondence Address: -, -
5	541.0	E	529829 183362	Site Address: Ronald Hall, St Pancras Metals, 86, Pancras Road, London, NW1 1WJ Type: Metal Recycling Site (mixed MRS's) Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: SAI006 EPR reference: EA/EPR/AP3691NW/A001 Operator: Hall Ronald Herbert Charles Waste Management licence No: 80335 Annual Tonnage: 2080.0	Issue Date: 20/11/1992 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: St Pancras Metals, N W 1 Correspondence Address: -, -
6	634.0	E	529928 183449	Site Address: P. Donaghy, 2, Camley Street, Kings Cross, London, NW1 Type: Household, Commercial & Industrial Waste T Stn Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: RUT001 EPR reference: EA/EPR/WP3791NW/S004 Operator: Rutland (Waste Disposal) Ltd Waste Management licence No: 80327 Annual Tonnage: 25000.0	Issue Date: 17/02/1992 Effective Date: - Modified: 15/07/1997 Surrendered Date: 07/01/2000 Expiry Date: - Cancelled Date: - Status: Surrendered Site Name: Rutland (Waste Disposal) Ltd, Kings Cross Correspondence Address: -, -
7	682.0	E	529975 183399	Site Address: Shanks & McEwan (Southern) Ltd, Kings Cross Transfer Station, 1, Camley Street, Camden, London, NW1 1UU Type: Household, Commercial & Industrial Waste T Stn Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: SHA005 EPR reference: EA/EPR/AP3091NU/S002 Operator: Shanks Waste Services Ltd Waste Management licence No: 80329 Annual Tonnage: 52326.0	Issue Date: 16/02/1993 Effective Date: - Modified: - Surrendered Date: 06/03/2001 Expiry Date: - Cancelled Date: - Status: Surrendered Site Name: Shanks & McEwan, King's Cross Correspondence Address: -, -

ID	Distance (m)	Direction	NGR	Details	
8	685.0	NE	529908 183746	Site Address: Nick Dean, Kings Cross Goods Depot, Goods Way, Kings Cross, London, NW1 Type: Household, Commercial & Industrial Waste T Stn Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: GRS001 EPR reference: EA/EPR/EP3991NL/S005 Operator: GRS (Roadstone) Ltd Waste Management licence No: 80299 Annual Tonnage: 196000.0	Issue Date: 30/03/1993 Effective Date: - Modified: 18/09/1997 Surrendered Date: 15/10/2002 Expiry Date: - Cancelled Date: - Status: Surrendered Site Name: GRS (Roadstone), Kings Cross Correspondence Address: -, -
9B	744.0	NE	529843 183948	Site Address: Murphy Ltd, British Rail Goods Yard, off York Way, Kings Cross, London, NW1 Type: Household, Commercial & Industrial Waste T Stn Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: MUR002 EPR reference: - Operator: Murphy Limited Waste Management licence No: 80310 Annual Tonnage: 0.0	Issue Date: 04/09/1995 Effective Date: - Modified: - Surrendered Date: 06/08/2002 Expiry Date: - Cancelled Date: - Status: Surrendered Site Name: "Murphy,Goods Way, Kings Cross" Correspondence Address: Murphy Limited, 2 Ashley House, Ashley Road, London, N17 9LZ
10B	744.0	NE	529843 183948	Site Address: Murphy Ltd, British Rail Goods Yard, off, York Way, Kings Cross, London, NW1 Type: Household, Commercial & Industrial Waste T Stn Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: MUR002 EPR reference: EA/EPR/VP3591NC/S002 Operator: Murphy Ltd Waste Management licence No: 80310 Annual Tonnage: 7592.0	Issue Date: 04/09/1995 Effective Date: - Modified: - Surrendered Date: 06/08/2002 Expiry Date: - Cancelled Date: - Status: Surrendered Site Name: Murphy,Goods Way, Kings Cross Correspondence Address: -, -
Not shown	821.0	NE	529900 184000	Site Address: R Wiles, 12 Engineers Cottages, York Way, London, N1 0BA Type: Metal Recycling Site (mixed MRS's) Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: YOR001 EPR reference: EA/EPR/RP3591NK/S003 Operator: York Way Metals Ltd Waste Management licence No: 80341 Annual Tonnage: 10974.0	Issue Date: 11/11/1996 Effective Date: - Modified: - Surrendered Date: 29/10/1999 Expiry Date: - Cancelled Date: - Status: Surrendered Site Name: York Way Metals, N1 Correspondence Address: -, -
Not shown	821.0	NE	529900 184000	Site Address: R Wiles, 12 Engineers Cottages, York Way, London, N1 0BA Type: Metal Recycling Site (mixed MRS's) Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: YOR001 EPR reference: - Operator: York Way Metals Ltd Waste Management licence No: 80341 Annual Tonnage: 10400.0	Issue Date: 11/11/1996 Effective Date: - Modified: - Surrendered Date: 29/10/1999 Expiry Date: - Cancelled Date: - Status: Surrendered Site Name: "York Way Metals, N1" Correspondence Address: York Way Metals Ltd, 1-2 Engineers Cottages, York Way, London, N1 0BA
Not shown	852.0	NW	528667 184035	Site Address: - Type: Household Waste Amenity Site Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: CAM003 EPR reference: - Operator: Camden London Borough Council Waste Management licence No: 80482 Annual Tonnage: 0.0	Issue Date: 15/10/1994 Effective Date: - Modified: - Surrendered Date: 25/07/1997 Expiry Date: - Cancelled Date: - Status: Surrendered Site Name: Jamestown Road Ca Site Correspondence Address: Camden LB Council, Town Hall Extension, Argyle Street, London, WC1H 8EQ

ID	Distance (m)	Direction	NGR	Details	
Not shown	852.0	NW	528667 184035	Site Address: - Type: Household Waste Amenity Site Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: CAM003 EPR reference: EA/EPR/UP3697NB/S002 Operator: Camden London Borough Council Waste Management licence No: 80482 Annual Tonnage: 20000.0	Issue Date: 15/10/1994 Effective Date: - Modified: - Surrendered Date: 25/07/1997 Expiry Date: - Cancelled Date: - Status: Surrendered Site Name: Jamestown Road CA Site Correspondence Address: -, -

3. Current Land Use Map



3. Current Land Uses

3.1 Current Industrial Data

Records of potentially contaminative industrial sites within 250m of the study site: 19

The following records are represented as points on the Current Land Uses map.

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
1	9.0	SW	Express Rent a Car	529281 183434	2, Bayham Street, London, NW1 0ES	Vehicle Hire and Rental	Hire Services
2	34.0	SW	Diabolical Liberties	529257 183427	1, Bayham Street, London, NW1 0ER	Distribution and Haulage	Transport, Storage and Delivery
3	56.0	W	Anders Electronics Plc	529229 183439	48-56, Bayham Place, London, NW1 0EU	Electrical Components	Industrial Products
4	60.0	W	Works	529226 183461	NW1	Unspecified Works Or Factories	Industrial Features
5	119.0	NW	Fox Marble	529175 183496	15, Kings Terrace, London, NW1 0JP	Stone Quarrying and Preparation	Extractive Industries
6	134.0	W	Nicholas Camera Co Ltd	529154 183421	15, Camden High Street, London, NW1 7JE	Photographic and Optical Equipment	Household, Office, Leisure and Garden
7	137.0	SW	Mornington Crescent	529186 183349	Mornington Crescent Station, Millbrook Place, London, NW1 2JA	Underground Network Stations	Public Transport, Stations and Infrastructure
8	139.0	N	Cleanwash	529271 183589	68, Plender Street, London, NW1 0LB	Vehicle Cleaning Services	Personal, Consumer and Other Services
9	147.0	NW	Steve's Garage Ltd	529156 183521	23-27, Kings Terrace, London, NW1 0JP	Vehicle Repair, Testing and Servicing	Repair and Servicing
10	157.0	W	Works	529128 183440	NW1	Unspecified Works Or Factories	Industrial Features
11	165.0	NE	Electricity Sub Station	529443 183513	NW1	Electrical Features	Infrastructure and Facilities
12	208.0	W	Works	529079 183476	NW1	Unspecified Works Or Factories	Industrial Features
13	214.0	NW	Prontaprint Ltd	529107 183568	60, Camden High Street, London, NW1 0LT	Published Goods	Industrial Products
14	221.0	NE	Electricity Sub Station	529378 183653	NW1	Electrical Features	Infrastructure and Facilities
15	224.0	NW	Warehouse	529132 183612	NW1	Container and Storage	Transport, Storage and Delivery
16	227.0	SE	Safestore Ltd	529472 183302	155, Chalton Street, London, NW1 1NR	Container and Storage	Transport, Storage and Delivery
17A	241.0	SW	Emap Ltd	529134 183255	Greater London House, Hampstead Road, London, NW1 7EJ	Published Goods	Industrial Products
18A	241.0	SW	Revlon International London	529134 183255	Greater London House, Hampstead Road, London, NW1 7QX	Cosmetics, Toiletries and Perfumes	Consumer Products
19A	241.0	SW	Here's Health	529134 183255	Greater London House, Hampstead Road, London, NW1 7EJ	Published Goods	Industrial Products

3.2 Petrol and Fuel Sites

Records of petrol or fuel sites within 500m of the study site: 2

The following petrol or fuel site records provided by Catalist are represented as points on the Current Land Use map:

ID	Distance (m)	Direction	NGR	Company	Address	LPG	Status
20	114.0	SW	529205 183363	Obsolete	St Georges Service Station, 47, Mornington Crescent, Mornington Crescent, Regents Park, London, Greater London, NW1 7RB	Not Applicable	Obsolete
21	493.0	S	529220 182952	BP	Euston Filling Station, 142, Hampstead Road, Hampstead Road, Regents Park, London, Greater London, NW1 2PT	No	Closed

3.3 Underground High Pressure Oil and Gas Pipelines

Records of high pressure underground pipelines within 500m of the study site: 0

Database searched and no data found.

4. Geology

4.1 Artificial Ground and Made Ground

The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
WGR-OPEN	WORKED GROUND (UNDIVIDED)	VOID

4.2 Superficial Ground and Drift Geology

Database searched and no data found.

The database has been searched on site, including a 50m buffer.

4.3 Bedrock and Solid Geology

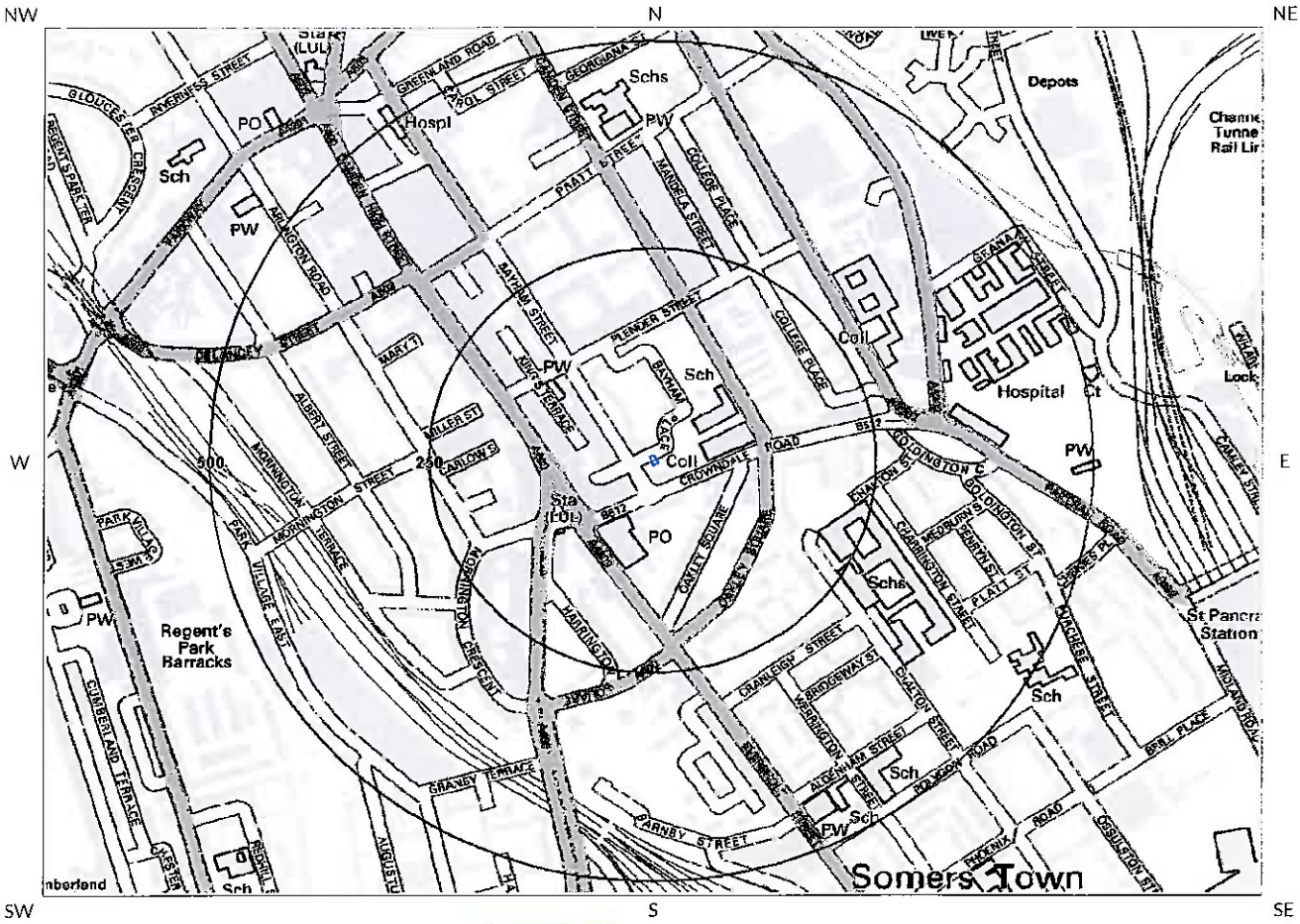
The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
LC-CLSS	LONDON CLAY FORMATION	CLAY, SILT AND SAND

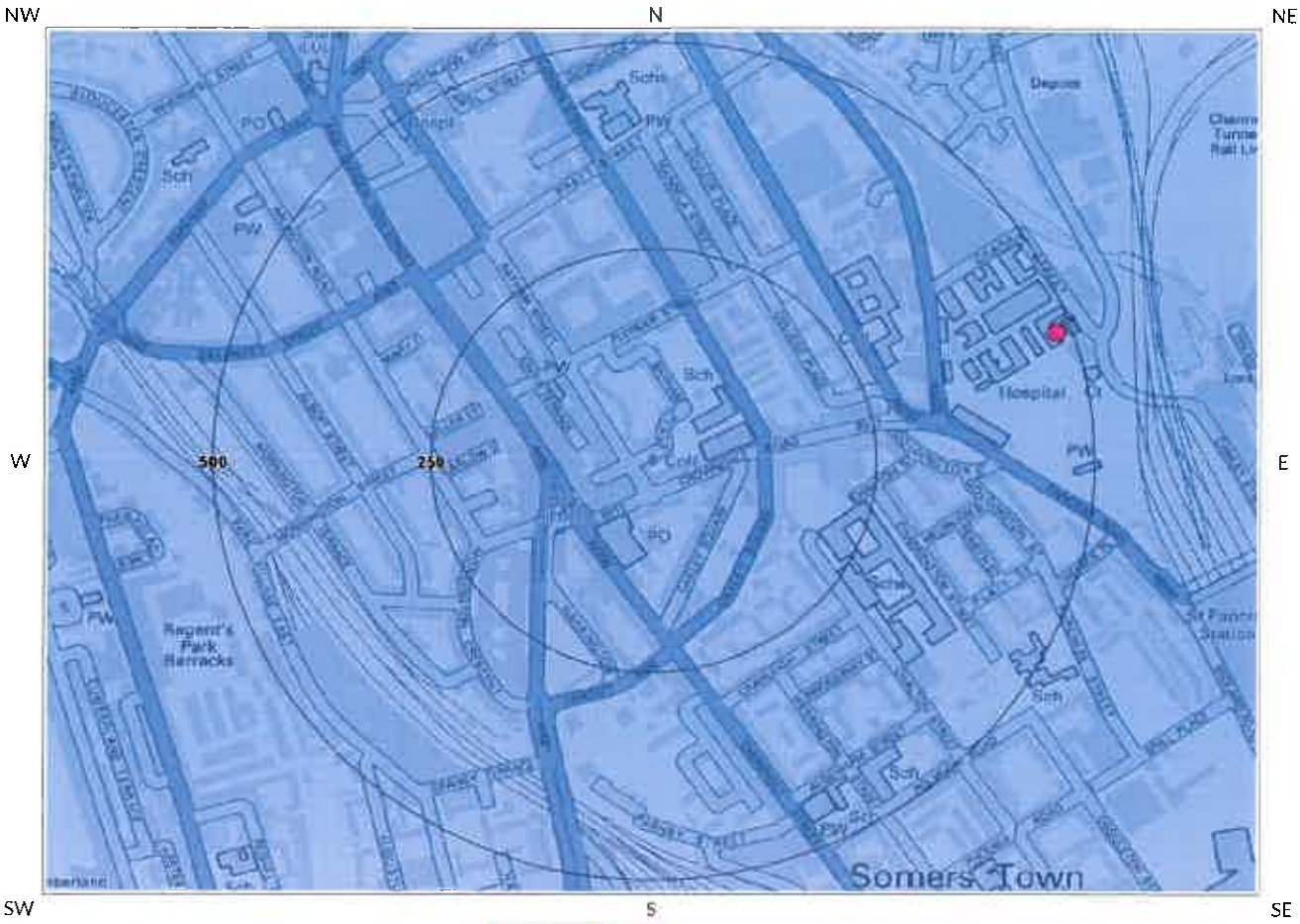
(Derived from the BGS 1:50,000 Digital Geological Map of Great Britain)

5. Hydrogeology and Hydrology

5a. Aquifer Within Superficial Geology



5b. Aquifer Within Bedrock Geology and Abstraction Licenses



Map Legend

Site Outline

250
500
Search Buffers (m)

Principal Aquifer

Secondary (A) Aquifer - Permeable Layers

Secondary (B) Aquifer - Lower Permeability Layers

Groundwater Abstraction Licence

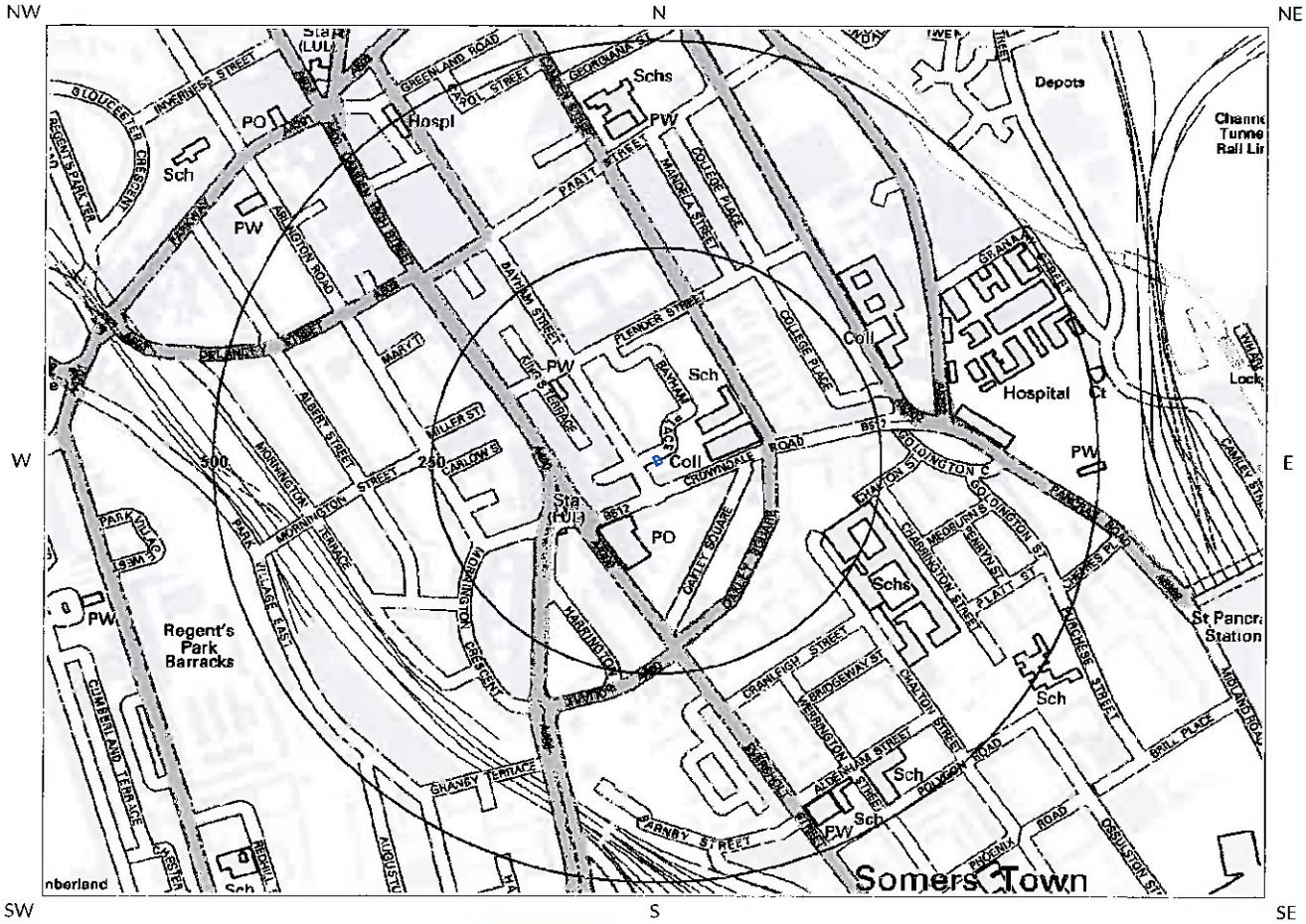
Secondary Aquifer - Undifferentiated Layers

Unproductive

Unknown (lakes and landslip)

Surface Water Abstraction Licence

5c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licenses



Map Legend

Site Outline

Search Buffers (m)

250

500

Source Protection Zone 1 - Inner Catchment

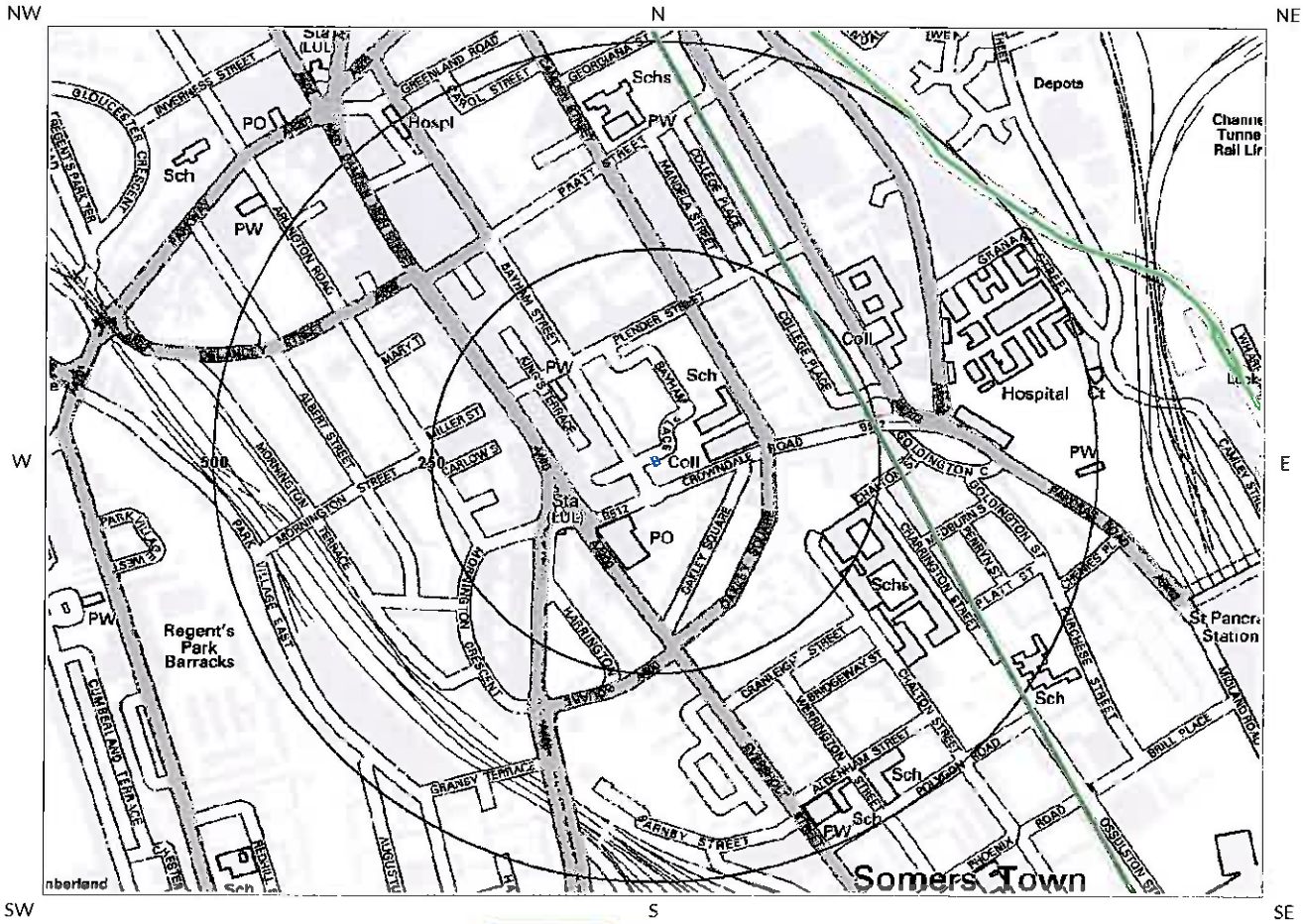
Source Protection Zone 2 - Outer Catchment

Source Protection Zone 3 - Total Catchment

Source Protection Zone 4 - Zone of Special Interest

Potable Water Abstraction Licence

5d. Hydrology – Detailed River Network and River Quality



Report Reference: GS-1675971
Client Reference: SJF/C13359

5. Hydrogeology and Hydrology

5.1 Aquifer within Superficial Deposits

Are there records of strata classification within the superficial geology at or in proximity to the property? No

Database searched and no data found.

From 1 April 2010, the Environment Agency's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the GroundSure Enviroinsight User Guide.

5.2 Aquifer within Bedrock Deposits

Are there records of strata classification within the bedrock geology at or in proximity to the property? Yes

From 1 April 2010, the Environment Agency's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the GroundSure Enviroinsight User Guide.

The following aquifer records are shown on the Aquifer within Bedrock Geology Map (5b):

ID	Distance (m)	Direction	Designation	Description
1	0.0	On Site	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow

5.3 Groundwater Abstraction Licences

Are there any Groundwater Abstraction Licences within 2000m of the study site? Yes

The following Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (5b):

ID	Distance (m)	Direction	NGR	Details	
Not shown	863.0	NE	529920 184040	Licence No: TH/039/0039/027 Details: General Use Relating To Secondary Category (High Loss) Direct Source: Thames Groundwater Point: Kings Cross Concrete Plant-borehole Data Type: Point	Annual Volume (m^3): 33400 Max Daily Volume (m^3): 200 Original Application No: NPS/WR/011609 Original Start Date: 21/4/2010 Expiry Date: 31/3/2019 Issue No: 2 Version Start Date: 13/8/2012 Version End Date:

ID	Distance (m)	Direction	NGR	Details	
Not shown	863.0	NE	529920 184040	Licence No: 28/39/39/0222 Details: General Use Relating To Secondary Category (High Loss) Direct Source: Thames Groundwater Point: Kings Cross Concrete Plant-borehole Data Type: Point	Annual Volume (m^3): 55200 Max Daily Volume (m^3): 200 Original Application No: GEN/39/ Original Start Date: 31/8/2006 Expiry Date: 31/3/2010 Issue No: 1 Version Start Date: 31/8/2006 Version End Date:
Not shown	1049.0	SE	530052 182718	Licence No: TH/039/0039/064 Details: Heat Pump Direct Source: Thames Groundwater Point: Borehole At Bidborough House, 20 Mabledon Place, London Data Type: Point	Annual Volume (m^3): 327600 Max Daily Volume (m^3): 1440 Original Application No: NPS/WR/009216 Original Start Date: 16/4/2013 Expiry Date: 31/3/2019 Issue No: 1 Version Start Date: 16/4/2013 Version End Date:
Not shown	1049.0	SE	530052 182718	Licence No: TH/039/0039/001 Details: Heat Pump Direct Source: Thames Groundwater Point: Borehole At Bidborough House 20 Mabledon Place London Data Type: Point	Annual Volume (m^3): 327600 Max Daily Volume (m^3): 1260 Original Application No: NPSWR000003 Original Start Date: 9/4/2009 Expiry Date: 31/3/2013 Issue No: 1 Version Start Date: 9/4/2009 Version End Date:
Not shown	1049.0	SE	530052 182718	Licence No: TH/039/0039/001 Details: Heat Pump Direct Source: Thames Groundwater Point: Bidborough House 20 Mabledon Place London Data Type: Point	Annual Volume (m^3): 327600 Max Daily Volume (m^3): 1260 Original Application No: NPSWR000003 Original Start Date: 9/4/2009 Expiry Date: 31/3/2013 Issue No: 1 Version Start Date: 9/4/2009 Version End Date:
Not shown	1084.0	E	530368 183294	Licence No: TH/039/0039/055 Details: Heat Pump Direct Source: Thames Groundwater Point: Regent Quarter - Borehole A Data Type: Point	Annual Volume (m^3): 323612 Max Daily Volume (m^3): 2160 Original Application No: NPS/WR/015663 Original Start Date: 6/2/2013 Expiry Date: 31/3/2025 Issue No: 2 Version Start Date: 25/6/2014 Version End Date:
Not shown	1286.0	W	528000 183400	Licence No: 28/39/39/0035 Details: Animal Watering & General Use in non Farming situations Direct Source: Thames Groundwater Point: Borehole At Regent's Park, London Nw1 Data Type: Point	Annual Volume (m^3): 681.9 Max Daily Volume (m^3): 59 Original Application No: - Original Start Date: 4/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 4/4/1966 Version End Date:
Not shown	1341.0	N	528800 184700	Licence No: 28/39/39/0091 Details: Process Water Direct Source: Thames Groundwater Point: Kentish Town Sports Centre, Prince Of Wales St Data Type: Point	Annual Volume (m^3): 17997 Max Daily Volume (m^3): 604.6 Original Application No: NPS/WR/010565 Original Start Date: 13/6/1966 Expiry Date: - Issue No: 101 Version Start Date: 25/5/2012 Version End Date:
Not shown	1341.0	N	528800 184700	Licence No: 28/39/39/0091 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Thames Groundwater Point: Kentish Town Sports Centre, Prince Of Wales St Data Type: Point	Annual Volume (m^3): 17997 Max Daily Volume (m^3): 604.6 Original Application No: NPS/WR/010565 Original Start Date: 13/6/1966 Expiry Date: - Issue No: 101 Version Start Date: 25/5/2012 Version End Date:

ID	Distance (m)	Direction	NGR	Details	
Not shown	1341.0	N	528800 184700	Licence No: 28/39/39/0091 Details: Process Water Direct Source: Thames Groundwater Point: Two Bores At Kentish Town Sports Centre, Prince Of Wales St Data Type: Point	Annual Volume (m^3): 94506 Max Daily Volume (m^3): 1813.8 Original Application No: NPS/WR/010565 Original Start Date: 13/6/1966 Expiry Date: - Issue No: 101 Version Start Date: 5/4/2012 Version End Date:
Not shown	1341.0	N	528800 184700	Licence No: 28/39/39/0091 Details: Laundry Use Direct Source: Thames Groundwater Point: Two Bores At Kentish Town Sports Centre, Prince Of Wales St Data Type: Point	Annual Volume (m^3): 94506 Max Daily Volume (m^3): 1813.8 Original Application No: NPS/WR/010565 Original Start Date: 13/6/1966 Expiry Date: - Issue No: 101 Version Start Date: 5/4/2012 Version End Date:
Not shown	1341.0	N	528800 184700	Licence No: 28/39/39/0091 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Thames Groundwater Point: Two Bores At Kentish Town Sports Centre, Prince Of Wales St Data Type: Point	Annual Volume (m^3): 94506 Max Daily Volume (m^3): 1813.8 Original Application No: NPS/WR/010565 Original Start Date: 13/6/1966 Expiry Date: - Issue No: 101 Version Start Date: 5/4/2012 Version End Date:
Not shown	1503.0	SW	528407 182223	Licence No: TH/039/0039/022 Details: Heat Pump Direct Source: Thames Groundwater Point: Doric Villa, York Terrace East, London Data Type: Point	Annual Volume (m^3): 118260 Max Daily Volume (m^3): 324 Original Application No: NPS/WR/002585 Original Start Date: 26/2/2010 Expiry Date: 31/3/2019 Issue No: 1 Version Start Date: 26/2/2010 Version End Date:
Not shown	1503.0	SW	528407 182223	Licence No: TH/039/0039/022 Details: Heat Pump Direct Source: Thames Groundwater Point: Confined Chalk, Doric Villa, York Terrace East, London Data Type: Point	Annual Volume (m^3): 118260 Max Daily Volume (m^3): 324 Original Application No: NPS/WR/002585 Original Start Date: 26/2/2010 Expiry Date: 31/3/2019 Issue No: 1 Version Start Date: 26/2/2010 Version End Date:
Not shown	1607.0	S	528830 181900	Licence No: TH/039/0039/068 Details: Heat Pump Direct Source: Thames Groundwater Point: 10 Weymouth Street, Ridgeford Properties Data Type: Point	Annual Volume (m^3): 50000 Max Daily Volume (m^3): 400 Original Application No: NPSWR009221 Original Start Date: 1/4/2013 Expiry Date: 31/3/2025 Issue No: 1 Version Start Date: 1/4/2013 Version End Date:
Not shown	1607.0	S	528830 181900	Licence No: TH/039/0039/010 Details: Heat Pump Direct Source: Thames Groundwater Point: 10 Weymouth Street, Ridgeford Properties Data Type: Point	Annual Volume (m^3): 50000 Max Daily Volume (m^3): 400 Original Application No: NPSWR001161 Original Start Date: 13/8/2009 Expiry Date: 31/3/2013 Issue No: 1 Version Start Date: 13/8/2009 Version End Date:
Not shown	1663.0	W	527640 183690	Licence No: 28/39/39/0231 Details: Potable Water Supply - Direct Direct Source: Thames Groundwater Point: Barrow Hill Pumping Station - Borehole Data Type: Point	Annual Volume (m^3): 631000 Max Daily Volume (m^3): 2000 Original Application No: WRA/R/1026 Original Start Date: 1/4/2007 Expiry Date: 31/3/2013 Issue No: 1 Version Start Date: 1/4/2007 Version End Date:

ID	Distance (m)	Direction	NGR	Details	
Not shown	1663.0	W	527640 183690	Licence No: 28/39/39/0202 Details: Potable Water Supply - Direct Direct Source: Thames Groundwater Point: Barrow Hill Pumping Station - Borehole Data Type: Point	Annual Volume (m^3): 631000 Max Daily Volume (m^3): 2000 Original Application No: WRA/2/2(24) Original Start Date: 26/9/2002 Expiry Date: 31/3/2007 Issue No: 1 Version Start Date: 26/9/2002 Version End Date:
Not shown	1668.0	W	527636 183697	Licence No: TH/039/0039/058 Details: Potable Water Supply - Direct Direct Source: Thames Groundwater Point: Borehole At Barrow Hill Data Type: Point	Annual Volume (m^3): 631000 Max Daily Volume (m^3): 2000 Original Application No: NPS/WR/009229 Original Start Date: 1/4/2013 Expiry Date: 31/3/2025 Issue No: 1 Version Start Date: 1/4/2013 Version End Date:
Not shown	1675.0	S	529858 181865	Licence No: TH/039/0039/031 Details: Heat Pump Direct Source: Thames Groundwater Point: Keppel Street, Bloomsbury, London - Borehole 2 Data Type: Point	Annual Volume (m^3): 203407 Max Daily Volume (m^3): 558 Original Application No: NPS/WR/004429 Original Start Date: 8/11/2010 Expiry Date: 31/3/2019 Issue No: 1 Version Start Date: 8/11/2010 Version End Date:
Not shown	1675.0	S	529858 181865	Licence No: TH/039/0039/031 Details: Heat Pump Direct Source: Thames Groundwater Point: Borehole 2, Keppel Street Data Type: Point	Annual Volume (m^3): 203407 Max Daily Volume (m^3): 558 Original Application No: NPS/WR/004429 Original Start Date: 8/11/2010 Expiry Date: 31/3/2019 Issue No: 1 Version Start Date: 8/11/2010 Version End Date:
Not shown	1677.0	S	529860 181863	Licence No: TH/039/0039/031 Details: Heat Pump Direct Source: Thames Groundwater Point: Keppel Street, Bloomsbury, London - Borehole 1 Data Type: Point	Annual Volume (m^3): 203407 Max Daily Volume (m^3): 558 Original Application No: NPS/WR/004429 Original Start Date: 8/11/2010 Expiry Date: 31/3/2019 Issue No: 1 Version Start Date: 8/11/2010 Version End Date:
Not shown	1677.0	S	529860 181863	Licence No: TH/039/0039/031 Details: Heat Pump Direct Source: Thames Groundwater Point: Borehole 1, Keppel Street Data Type: Point	Annual Volume (m^3): 203407 Max Daily Volume (m^3): 558 Original Application No: NPS/WR/004429 Original Start Date: 8/11/2010 Expiry Date: 31/3/2019 Issue No: 1 Version Start Date: 8/11/2010 Version End Date:
Not shown	1713.0	SW	528480 181930	Licence No: 28/39/39/0215 Details: Non-Evaporative Cooling Direct Source: Thames Groundwater Point: 3-5 Devonshire Place-borehole A Data Type: Point	Annual Volume (m^3): 122400 Max Daily Volume (m^3): 511 Original Application No: WRA/N/1383 Original Start Date: 24/2/2005 Expiry Date: 31/3/2013 Issue No: 1 Version Start Date: 24/2/2005 Version End Date:
Not shown	1722.0	SW	528480 181920	Licence No: 28/39/39/0215 Details: Non-Evaporative Cooling Direct Source: Thames Groundwater Point: 20 Devonshire Place, London-borehole A Data Type: Point	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: WRA/N/1383 Original Start Date: 24/2/2005 Expiry Date: 31/3/2013 Issue No: 1 Version Start Date: 24/2/2005 Version End Date:

ID	Distance (m)	Direction	NGR	Details	
Not shown	1723.0	SW	528460 181930	Licence No: 28/39/39/0215 Details: Non-Evaporative Cooling Direct Source: Thames Groundwater Point: 3-5 Devonshire Place-borehole B Data Type: Point	Annual Volume (m^3): 122400 Max Daily Volume (m^3): 511 Original Application No: WRA/N/1383 Original Start Date: 24/2/2005 Expiry Date: 31/3/2013 Issue No: 1 Version Start Date: 24/2/2005 Version End Date:
Not shown	1735.0	SW	528470 181910	Licence No: 28/39/39/0215 Details: Non-Evaporative Cooling Direct Source: Thames Groundwater Point: 20 Devonshire Place, London-borehole B Data Type: Point	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: WRA/N/1383 Original Start Date: 24/2/2005 Expiry Date: 31/3/2013 Issue No: 1 Version Start Date: 24/2/2005 Version End Date:
Not shown	1744.0	E	531020 183690	Licence No: 28/39/39/0207 Details: Potable Water Supply - Direct Direct Source: Thames Groundwater Point: Barnard Park, Islington - Borehole Data Type: Point	Annual Volume (m^3): 914544 Max Daily Volume (m^3): 3024 Original Application No: - Original Start Date: 2/5/2003 Expiry Date: 31/3/2013 Issue No: 1 Version Start Date: 8/1/2004 Version End Date:
Not shown	1744.0	E	531022 183681	Licence No: TH/039/0039/057 Details: Potable Water Supply - Direct Direct Source: Thames Groundwater Point: Borehole At Barnard Park Data Type: Point	Annual Volume (m^3): 914544 Max Daily Volume (m^3): 3024 Original Application No: NPS/WR/009227 Original Start Date: 1/4/2013 Expiry Date: 31/3/2025 Issue No: 1 Version Start Date: 1/4/2013 Version End Date:
Not shown	1966.0	SW	527850 182100	Licence No: 28/39/39/0070 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Thames Groundwater Point: Abbey House, Baker Street- Borehole Data Type: Point	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 13/6/1966 Expiry Date: - Issue No: 102 Version Start Date: 19/12/2003 Version End Date:

5.4 Surface Water Abstraction Licences

Are there any Surface Water Abstraction Licences within 2000m of the study site? Yes

The following Surface Water Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (5b):

ID	Distance (m)	Direction	NGR	Details	
33A	482.0	E	529750 183600	Licence No: 28/39/39/0172 Details: Make-Up or Top Up Water Direct Source: Thames Surface Water - Non Tidal Point: Grand Union Canal At Camley Street Nature Park, London Data Type: Point	Annual Volume (m^3): - Max Daily Volume (m^3): - Application No: - Original Start Date: 18/9/1991 Expiry Date: - Issue No: 100 Version Start Date: 18/9/1991 Version End Date:

ID	Distance (m)	Direction	NGR	Details	
34A	482.0	E	529750 183600	Licence No: 28/39/39/0172 Details: Make-Up or Top Up Water Direct Source: Thames Surface Water - Non Tidal Point: Camley Street Nature Park, London Data Type: Point	Annual Volume (m^3): - Max Daily Volume (m^3): - Application No: - Original Start Date: - Expiry Date: - Issue No: 100 Version Start Date: 18/9/1991 Version End Date:
Not shown	971.0	NW	528500 184020	Licence No: 28/39/39/0164 Details: Non-Evaporative Cooling Direct Source: Thames Surface Water - Non Tidal Point: Southampton Bridge, London, Nw8 - Regents Canal Data Type: Point	Annual Volume (m^3): 7010000 Max Daily Volume (m^3): 19520 Application No: - Original Start Date: 18/7/1980 Expiry Date: - Issue No: 101 Version Start Date: 17/12/2007 Version End Date:
Not shown	979.0	NW	528490 184020	Licence No: 28/39/39/0173 Details: Non-Evaporative Cooling Direct Source: Thames Surface Water - Non Tidal Point: Oval Road, Camden - Grand Union Regents Canal Data Type: Point	Annual Volume (m^3): - Max Daily Volume (m^3): - Application No: - Original Start Date: 8/12/1994 Expiry Date: - Issue No: 100 Version Start Date: 8/12/1994 Version End Date:
Not shown	1019.0	E	530310 183520	Licence No: 28/39/39/0164 Details: Non-Evaporative Cooling Direct Source: Thames Surface Water - Non Tidal Point: Maiden Lane Bridge, London, Nw1 - Regents Canal Data Type: Point	Annual Volume (m^3): 7010000 Max Daily Volume (m^3): 19520 Application No: - Original Start Date: 18/7/1980 Expiry Date: - Issue No: 101 Version Start Date: 17/12/2007 Version End Date:

5.5 Potable Water Abstraction Licences

Are there any Potable Water Abstraction Licences within 2000m of the study site? Yes

The following Potable Water Abstraction Licences records are represented as points, lines and regions on the SPZ and Potable Water Abstraction Licences Map (5c):

ID	Distance (m)	Direction	NGR	Details	
Not shown	1341.0	N	528800 184700	Licence No: 28/39/39/0091 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Thames Groundwater Point: Two Bores At Kentish Town Sports Centre, Prince Of Wales St Data Type: Point	Annual Volume (m^3): 94506 Max Daily Volume (m^3): 1813.8 Original Application No: NPS/WR/010565 Original Start Date: 13/6/1966 Expiry Date: - Issue No: 101 Version Start Date: Version End Date:
Not shown	1341.0	N	528800 184700	Licence No: 28/39/39/0091 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Thames Groundwater Point: Kentish Town Sports Centre, Prince Of Wales St Data Type: Point	Annual Volume (m^3): 17997 Max Daily Volume (m^3): 604.6 Original Application No: NPS/WR/010565 Original Start Date: 13/6/1966 Expiry Date: - Issue No: 101 Version Start Date: Version End Date:

ID	Distance (m)	Direction	NGR		Details
Not shown	1663.0	W	527640 183690	Licence No: 28/39/39/0231 Details: Potable Water Supply - Direct Direct Source: Thames Groundwater Point: Barrow Hill Pumping Station - Borehole Data Type: Point	Annual Volume (m^3): 631000 Max Daily Volume (m^3): 2000 Original Application No: WRA/R/1026 Original Start Date: 1/4/2007 Expiry Date: 31/3/2013 Issue No: 1 Version Start Date: Version End Date:
Not shown	1663.0	W	527640 183690	Licence No: 28/39/39/0202 Details: Potable Water Supply - Direct Direct Source: Thames Groundwater Point: Barrow Hill Pumping Station - Borehole Data Type: Point	Annual Volume (m^3): 631000 Max Daily Volume (m^3): 2000 Original Application No: WRA/2/2(24) Original Start Date: 26/9/2002 Expiry Date: 31/3/2007 Issue No: 1 Version Start Date: Version End Date:
Not shown	1668.0	W	527636 183697	Licence No: TH/039/0039/058 Details: Potable Water Supply - Direct Direct Source: Thames Groundwater Point: Borehole At Barrow Hill Data Type: Point	Annual Volume (m^3): 631000 Max Daily Volume (m^3): 2000 Original Application No: NPS/WR/009229 Original Start Date: 1/4/2013 Expiry Date: 31/3/2025 Issue No: 1 Version Start Date: Version End Date:
Not shown	1744.0	E	531020 183690	Licence No: 28/39/39/0207 Details: Potable Water Supply - Direct Direct Source: Thames Groundwater Point: Barnard Park, Islington - Borehole Data Type: Point	Annual Volume (m^3): 914544 Max Daily Volume (m^3): 3024 Original Application No: - Original Start Date: 2/5/2003 Expiry Date: 31/3/2013 Issue No: 1 Version Start Date: Version End Date:
Not shown	1744.0	E	531022 183681	Licence No: TH/039/0039/057 Details: Potable Water Supply - Direct Direct Source: Thames Groundwater Point: Borehole At Barnard Park Data Type: Point	Annual Volume (m^3): 914544 Max Daily Volume (m^3): 3024 Original Application No: NPS/WR/009227 Original Start Date: 1/4/2013 Expiry Date: 31/3/2025 Issue No: 1 Version Start Date: Version End Date:
Not shown	1966.0	SW	527850 182100	Licence No: 28/39/39/0070 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Thames Groundwater Point: Abbey House, Baker Street- Borehole Data Type: Point	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 13/6/1966 Expiry Date: - Issue No: 102 Version Start Date: Version End Date:

5.6 Source Protection Zones

Are there any Source Protection Zones within 500m of the study site? No

Database searched and no data found.

5.7 Groundwater Vulnerability and Soil Leaching Potential

Is there any Environment Agency information on groundwater vulnerability and soil leaching potential within 500m of the study site? No

Database searched and no data found.

5.8 River Quality

Is there any Environment Agency information on river quality within 1500m of the study site? Yes

5.8.1 Biological Quality:

Biological Quality data describes water quality in terms of 83 groups of macroinvertebrates, some of which are pollution sensitive. The results are graded from A ('Very Good') to F ('Bad').

The following Biological Quality records are shown on the Hydrology Map (5d):

ID	Distance (m)	Direction	NGR	River Quality Grade	Biological Quality Grade				
					2005	2006	2007	2008	2009
Not shown	664.0	N	529150 184100	River Name: Grand Union Canal (paddington Arm) Reach: Canal Feeder - Camden Road End/Start of Stretch: End of Stretch NGR	F	F	F	F	E

5.8.2 Chemical Quality:

Database searched and no data found.

5.9 Detailed River Network

Are there any Detailed River Network entries within 500m of the study site? Yes

The following Detailed River Network records are represented on the Hydrology Map (5d):

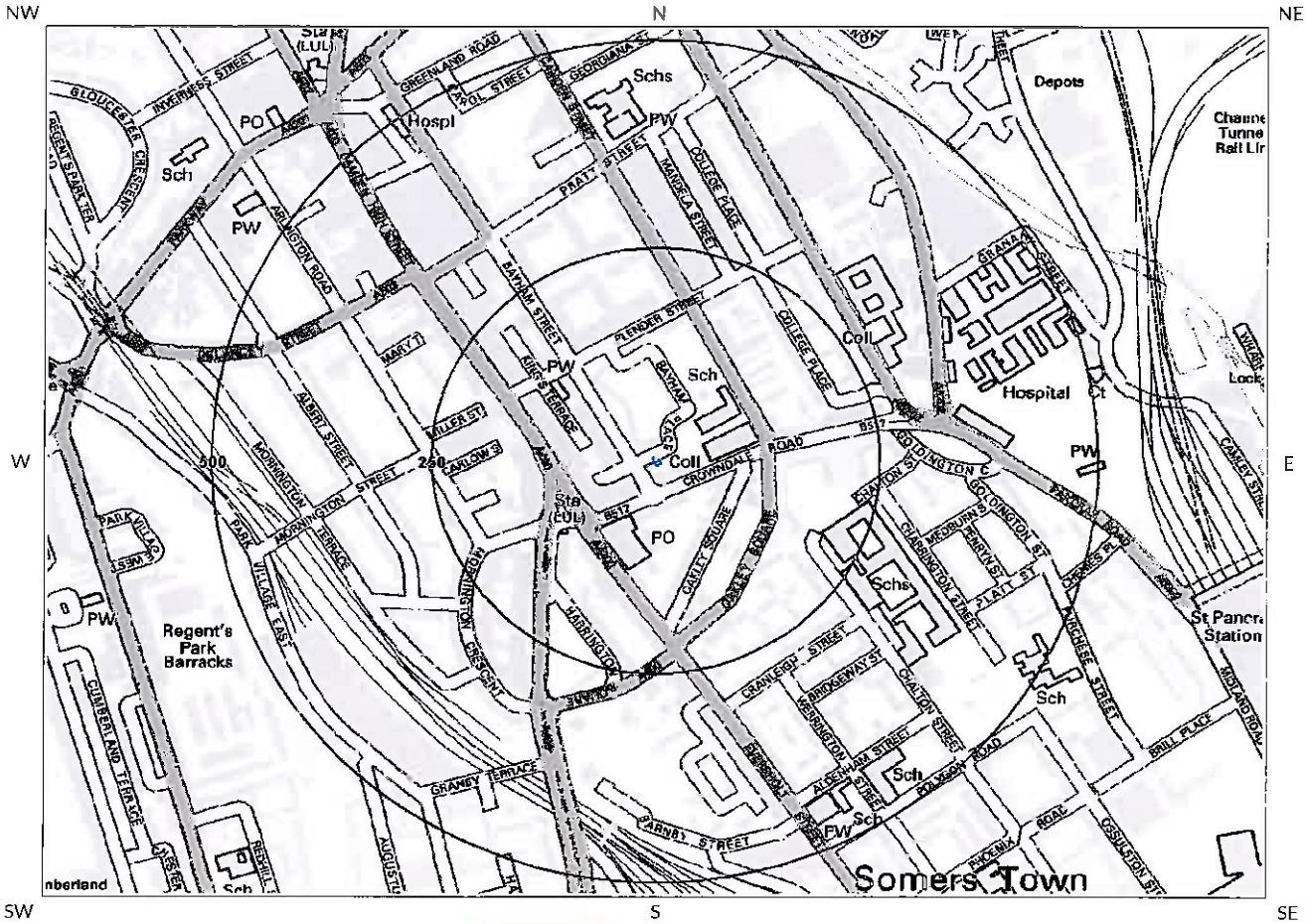
ID	Distance (m)	Direction	Details	
1	237.0	NE	River Name: - Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined
2	487.0	NE	River Name: Grand Union Canal Regent's Canal Welsh River Name: - Alternative Name: -	River Type: Canal Main River Status: Currently Undefined

5.10 Surface Water Features

Are there any surface water features within 250m of the study site?	No

Database searched and no data found.

6. Environment Agency Flood Map for planning (from rivers and the sea)



6. Flooding

6.1 Zone 2 Flooding

Environment Agency Zone 2 floodplains estimate the annual probability of flooding as between 1 in 1000 (0.1%) and 1 in 100 (1%) from rivers and between 1 in 1000 (0.1%) and 1 in 200 (0.5%) from the sea. Any relevant data is represented on Map 1 – Environment Agency Flood Map for Planning:

Is the site within 250m of an Environment Agency Zone 2 floodplain? No

Database searched and no data found.

6.2 Zone 3 Flooding

Zone 3 shows the extent of a river flood with a 1 in 100 (1%) or greater chance of occurring in any year or a sea flood with a 1 in 200 (0.5%) or greater chance of occurring in any year. Any relevant data is represented on Map 1 – Environment Agency Flood Map for Planning.

Is the site within 250m of an Environment Agency Zone 3 floodplain? No

Database searched and no data found.

6.3 Flood Defences

Are there any Flood Defences within 250m of the study site? No

Database searched and no data found.

6.4 Areas benefiting from Flood Defences

Are there any areas benefiting from Flood Defences within 250m of the study site? No

6.5 Areas benefiting from Flood Storage

Are there any areas used for Flood Storage within 250m of the study site? No

6.6 Groundwater Flooding Susceptibility Areas

6.6.1 Are there any British Geological Survey groundwater flooding susceptibility areas within 50m of the boundary of the study site?

No

Notes: Groundwater flooding may either be associated with shallow unconsolidated sedimentary aquifers which overlie unproductive aquifers (Superficial Deposits Flooding), or with unconfined aquifers (Clearwater Flooding).

6.6.2 What is the highest susceptibility to groundwater flooding in the search area based on the underlying geological conditions?

Not Prone

The area is not considered to be prone to groundwater flooding based on rock type.

6.7 Groundwater Flooding Confidence Areas

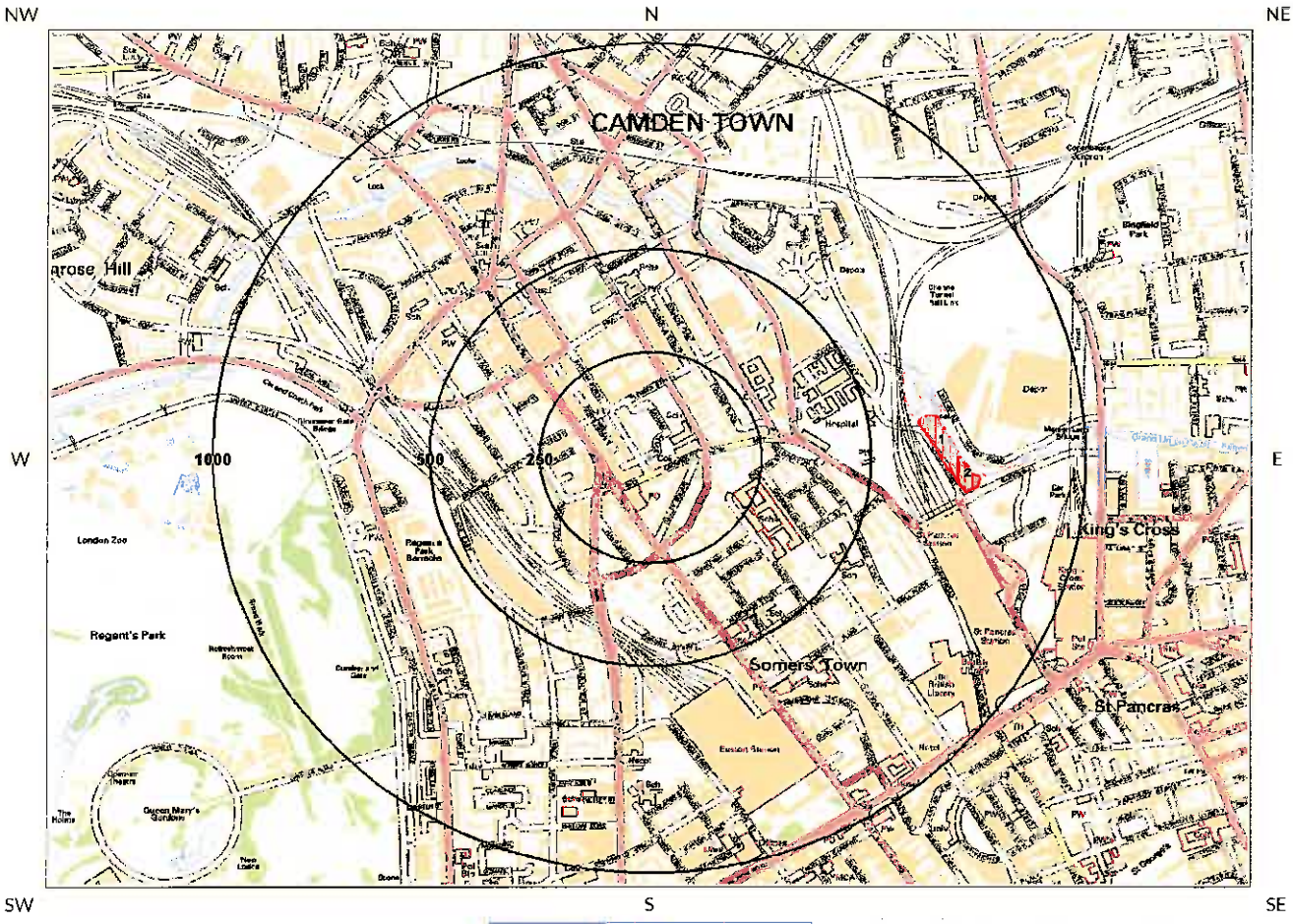
What is the British Geological Survey confidence rating in this result? Not Applicable

Notes: Groundwater flooding is defined as the emergence of groundwater at the ground surface or the rising of groundwater into man-made ground under conditions where the normal range of groundwater levels is exceeded.

The confidence rating is on a threefold scale - Low, Moderate and High. This provides a relative indication of the BGS confidence in the accuracy of the susceptibility result for groundwater flooding. This is based on the amount and precision of the information used in the assessment. In areas with a relatively lower level of confidence the susceptibility result should be treated with more caution. In other areas with higher levels of confidence the susceptibility result can be used with more confidence.

---

7. Designated Environmentally Sensitive Sites Map



Map Legend

- Site Outline
- Areas of Outstanding Natural Beauty
- SAC
- SPA
- Nitrate Vulnerable Zones
- SSSI
- Ramsar
- Nitrate Sensitive Areas
- NNR
- LNR
- National Parks
- World Heritage Sites
- Environmentally Sensitive Areas
- Ancient Woodlands

7. Designated Environmentally Sensitive Sites

Presence of Designated Environmentally Sensitive Sites within 2000m of the study site? Yes

7.1 Records of Sites of Special Scientific Interest (SSSI) within 2000m of the study site:

0

Database searched and no data found.

7.2 Records of National Nature Reserves (NNR) within 2000m of the study site:

0

Database searched and no data found.

7.3 Records of Special Areas of Conservation (SAC) within 2000m of the study site:

0

Database searched and no data found.

7.4 Records of Special Protection Areas (SPA) within 2000m of the study site:

0

Database searched and no data found.

7.5 Records of Ramsar sites within 2000m of the study site:

0

Database searched and no data found.

7.6 Records of Ancient Woodland within 2000m of the study site:

0

Database searched and no data found.

7.7 Records of Local Nature Reserves (LNR) within 2000m of the study site:

3

The following Local Nature Reserve (LNR) records provided by Natural England/Countryside Council for Wales and Scottish Natural Heritage are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	LNR Name	Data Source
1	618.0	E	Camley Street Nature Park	Natural England
2	706.0	E	Camley Street Nature Park	Natural England
Not shown	1721.0	NE	Barnsbury Wood	Natural England

7.8 Records of World Heritage Sites within 2000m of the study site:

0

Database searched and no data found.

7.9 Records of Environmentally Sensitive Areas within 2000m of the study site:

0

Database searched and no data found.

7.10 Records of Areas of Outstanding Natural Beauty (AONB) within 2000m of the study site:

0

Database searched and no data found.

7.11 Records of National Parks (NP) within 2000m of the study site:

0

Database searched and no data found.

7.12 Records of Nitrate Sensitive Areas within 2000m of the study site:

0

Database searched and no data found.

7.13 Records of Nitrate Vulnerable Zones within 2000m of the study site:

0

Database searched and no data found.

8. Natural Hazards Findings

8.1 Detailed BGS GeoSure Data

BGS GeoSure Data has been searched to 50m. The data is included in tabular format. If you require further information on geology and ground stability, please obtain a GroundSure GeoInsight, available from our website. The following information has been found:

8.1.1 Shrink Swell

What is the maximum Shrink-Swell* hazard rating identified on the study site? Moderate

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Ground conditions predominantly high plasticity. Do not plant or remove trees or shrubs near to buildings without expert advice about their effect and management. For new build, consideration should be given to advice published by the National House Building Council (NHBC) and the Building Research Establishment (BRE). There is a probable increase in construction cost to reduce potential shrink-swell problems. For existing property, there is a probable increase in insurance risk during droughts or where vegetation with high moisture demands is present.

8.1.2 Landslides

What is the maximum Landslide* hazard rating identified on the study site? Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.

* This indicates an automatically generated 50m buffer and site.

8.1.3 Soluble Rocks

What is the maximum Soluble Rocks* hazard rating identified on the study site? Negligible

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.

8.1.4 Compressible Ground

What is the maximum Compressible Ground* hazard rating identified on the study site? Negligible

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.

8.1.5 Collapsible Rocks

What is the maximum Collapsible Rocks* hazard rating identified on the study site? Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.

8.1.6 Running Sand

What is the maximum Running Sand* hazard rating identified on the study site? Negligible

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
No indicators for running sand identified. No special actions required to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.

* This indicates an automatically generated 50m buffer and site.

9. Mining

9.1 Coal Mining

Are there any coal mining areas within 75m of the study site?	No

Database searched and no data found.

9.2 Shallow Mining

What is the subsidence hazard relating to shallow mining on-site*?	Negligible

*Please note this data is searched with a 150m buffer.

9.3 Brine Affected Areas

Are there any brine affected areas within 75m of the study site?	No

Guidance: No Guidance Required.

Contact Details

GroundSure Helpline
Telephone: 08444 159 000
info@groundsure.com

British Geological Survey Enquiries

Kingsley Dunham Centre
Keyworth, Nottingham NG12 5GG
Tel: 0115 936 3143.
Fax: 0115 936 3276.
Email: enquiries@bgs.ac.uk
Web:www.bgs.ac.uk
BGS Geological Hazards Reports and general geological enquiries

Environment Agency

National Customer Contact Centre, PO Box 544
Rotherham, S60 1BY
Tel: 08708 506 506
Web:**www.environment-agency.gov.uk**
Email:**enquiries@environment-agency.gov.uk**

Public Health England

Public information access office
Public Health England, Wellington House
133-155 Waterloo Road, London, SE1 8UG
https://www.gov.uk/government/organisations/public-health-england
Email:**enquiries@phe.gov.uk**
Main switchboard: **020 7654 8000**

The Coal Authority

200 Lichfield Lane
Mansfield
Notts NG18 4RG
Tel: 0345 7626 848
DX 716176 Mansfield 5
www.coal.gov.uk

Ordnance Survey

Adanac Drive, Southampton
SO16 0AS
Tel: 08456 050505

Local Authority
Authority: Camden London Borough Council
Phone: 020 7278 4444
Web: www.camden.gov.uk
Address: Camden Town Hall, Judd Street, Camden, London, WC1H 9JE

Gemapping PLC

Virginia Villas, High Street, Hartley Witney,
Hampshire RG27 8NW
Tel: 01252 845444

GroundSure RadonCheck

Address: 61,BAYHAM PLACE,LONDON, NW1 0ET

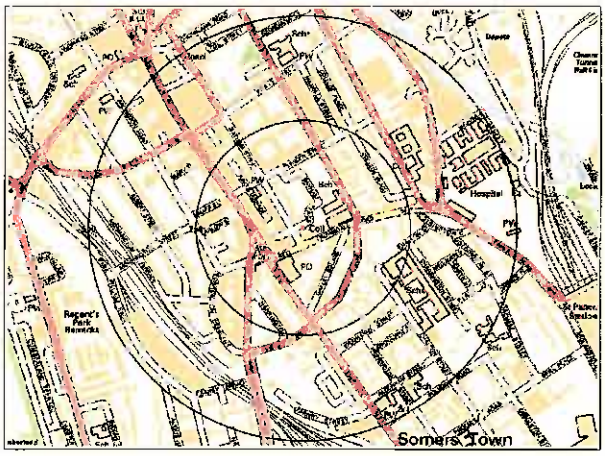
Date: 22 Sep 2014

GroundSure Reference: GS-1675970

Your Reference: SJF/C13359

Grid Reference: 529289,183446

Client: Ground Engineering Limited



Brought to you by GroundSure

1. Residential Radon Potential Result

1.1 Is the property in a Radon Affected Area?

The information in this section provides an answer to one of the standard legal enquiries on house purchase in England and Wales, known as *CON29 standard Enquiry of Local Authority; 3.13 Radon Gas: Location of the Property in a Radon Affected Area.*

Question: Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?

Answer: The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.

1.2 Are Radon Protective Measures required?

The information in this section will detail the level of protection required for new dwellings under as described in the latest Building Research Establishment guidance on radon protective measures for new dwellings. This may include extensions to the property.

Question: Is the property in an area where Radon Protection Measures are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment?

Answer: No Radon Protective Measures are necessary.

1.3 Combined Radon Guidance

Radon is a colourless, odourless radioactive gas which is present in all areas of the United Kingdom, usually at levels that pose a negligible risk to homebuyers. However, in some areas levels of radon are much higher than in others, and in these cases it can pose a health risk. The data supplied by the Health Protection Agency (HPA) and the British Geological Survey (BGS)is not able to determine exact Radon levels, as this information can only be obtained through site-specific, in-situ testing. As less than 1% of properties in the area may be radon affected, the HPA do not consider that further action is necessary.

The responses given on the level of Radon Protective Measures required are based on a joint radon potential dataset from the Health Protection Agency (HPA) and the British Geological Survey (BGS). No Radon Protective Measures are required for new builds or extensions.

1.4 Further details on Radon

Radon is a naturally occurring radioactive gas, which enters buildings from the ground. Outdoors, it is diluted to very low levels. However, in some cases the radon level indoors can build up to high concentrations. In such cases, it does pose a serious risk to health. Exposure to high concentrations increases the risk of lung cancer. The Health Protection Agency recommends that radon levels should be reduced in homes where the annual average is at or above 200 becquerels per cubic metre (200 Bq m^{-3}). This is termed the Action Level. The Health Protection Agency defines Radon Affected Areas as those with 1% chance or more of a house having a radon concentration at or above the Action Level of 200 Bq m^{-3}.

The joint HPA-BGS digital Radon Potential Dataset used in this report provides the current definitive map of Radon Affected Areas in England and Wales.

Indoor radon levels can usually be substantially reduced at a cost comparable to many home improvements, such as replacing carpets. Details of methods of reducing radon levels are given on the Building Research Establishment Website. http://www.bre.co.uk/radon/index.html

2. Contact Details

GroundSure Helpline
Telephone: 08444 159 000
info@groundsure.com

Local Authority - Camden London Borough Council. Address: Camden Town Hall, Judd Street, Camden, London, WC1H 9JE. Web: www.camden.gov.uk. Tel: 020 7278 4444

British Geological Survey Enquiries
Kingsley Dunham Centre
Keyworth, Nottingham NG12 5GG
Tel: 0115 936 3143. Fax: 0115 936 3276.
Email: enquiries@bgs.ac.uk
Web: www.bgs.ac.uk
BGS Geological Hazards Reports and general geological enquiries

Public Health England
Public information access office, Public Health England
Wellington House, 133-155 Waterloo Road, London, SE1 8UG
https://www.gov.uk/government/organisations/public-health-england
Email: enquiries@phe.gov.uk

Ordnance Survey
Adanac Drive, Southampton
SO16 0AS
Tel: 08456 050505

CoPSO
29 Harley Street, London W1G 9QR
Tel: 020 7927 6836
(www.copso.org.uk)

APPENDIX 3 – CHEMICAL TEST RESULTS

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

UKAS TESTING
2183

Final Report

Report Number:	14-08055 Issue-1
Initial Date of Issue:	26-Aug-14
Client:	Ground Engineering Limited
Client Address:	Newark Road Peterborough Cambridgeshire PE1 5UA
Contact(s):	Steve Fleming
Project:	C13359 - 61 Bayham Place

Quotation No.:		**Date Received:**	15-Aug-14
Order No.:		**Date Instructed:**	15-Aug-14
No. of Samples:	2	**Results Due:**	26-Aug-14
Turnaround: (Weekdays)	7		
Date Approved:	26-Aug-14		

Approved By:

Details: Keith Jones, Technical Manager

Chemtest
The right chemistry to deliver results

Results Summary - Soil

Report Number: 14-08055 Issue-1
Project: C13359 - 61 Bayham Place

Client: Ground Engineering Limited			Chemtest Sample ID.:		40226	40227
Quotation No.:			Client Sample Ref.:		WS1	TPA
Order No.:			Client Sample ID.:		D2	D3
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.6	1.0
			Bottom Depth(m):			
			Date Sampled:		08-Aug-14	08-Aug-14
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
pH	M	2010			8.1	7.7
Moisture	N	2030	%	0.02	16	27
Stones	N	2030	%	0.02	< 0.020	< 0.020
Boron (Hot Water Soluble)	M	2120	mg/kg	0.4	12	2.0
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/L	0.01	1.8	0.42
Cyanide (Free)	M	2300	mg/kg	0.5	< 0.50	< 0.50
Cyanide (Total)	M	2300	mg/kg	0.5	< 0.50	< 0.50
Sulphide (Easily Liberatable)	M	2325	mg/kg	0.5	< 0.50	< 0.50
Arsenic	M	2450	mg/kg	2	40	22
Cadmium	M	2450	mg/kg	0.1	0.90	0.22
Chromium	M	2450	mg/kg	5	22	28
Copper	M	2450	mg/kg	5	120	59
Mercury	M	2450	mg/kg	0.1	4.0	0.94
Nickel	M	2450	mg/kg	5	27	21
Lead	M	2450	mg/kg	5	2900	450
Selenium	M	2450	mg/kg	0.2	< 0.20	< 0.20
Zinc	M	2450	mg/kg	5	470	87
Chromium (Hexavalent)	N	2490	mg/kg	0.5	< 0.50	< 0.50
Organic Matter	M	2625	%	0.4	0.48	< 0.40
Acenaphthene	M	2700	mg/kg	0.1	< 0.10	< 0.10
Acenaphthylene	M	2700	mg/kg	0.1	< 0.10	< 0.10
Anthracene	M	2700	mg/kg	0.1	0.31	< 0.10
Benzo[a]anthracene	M	2700	mg/kg	0.1	1.1	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.1	0.91	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.1	1.4	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.1	< 0.10	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.1	0.43	< 0.10
Chrysene	M	2700	mg/kg	0.1	1.3	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.1	< 0.10	< 0.10
Fluoranthene	M	2700	mg/kg	0.1	1.7	< 0.10
Fluorene	M	2700	mg/kg	0.1	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.1	< 0.10	< 0.10
Naphthalene	M	2700	mg/kg	0.1	< 0.10	< 0.10

Chemtest
The right chemistry to deliver results

Results Summary - Soil

Report Number: 14-08055 Issue-1
Project: C13359 - 61 Bayham Place

Client: Ground Engineering Limited			Chemtest Sample ID.:		40226	40227
Quotation No.:			Client Sample Ref.:		WS1	TPA
Order No.:			Client Sample ID.:		D2	D3
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.6	1.0
			Bottom Depth(m):			
			Date Sampled:		08-Aug-14	08-Aug-14
Determinand	**Accred**	**SOP**	**Units**	**LOD**		
Phenanthrene	M	2700	mg/kg	0.1	1.2	< 0.10
Pyrene	M	2700	mg/kg	0.1	1.5	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2	9.9	< 2.0
Total Phenols	M	2920	mg/kg	0.3	< 0.30	< 0.30

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

UKAS TESTING
2183

Final Report

Report Number:	14-08056 Issue-1
Initial Date of Issue:	27-Aug-14
Client:	Ground Engineering Limited
Client Address:	Newark Road Peterborough Cambridgeshire PE1 5UA
Contact(s):	Steve Fleming
Project:	C13359 - 61 Bayham Place, London NW1

Quotation No.:		**Date Received:**	15-Aug-14
Order No.:		**Date Instructed:**	15-Aug-14
No. of Samples:	1	**Results Due:**	27-Aug-14
Turnaround: (Weekdays)	8		
Date Approved:	27-Aug-14		

Approved By:

Details: Phil Hellier, Project Director

Chemtest
The right chemistry to deliver results

Results Summary - 2 Stage WAC

Report Number: 14-08056 Issue-1
Project: C13359 - 61 Bayham Place, London NW1

Chemtest Sample ID: 40228 Sample Ref: TPA Sample ID: D2 Top Depth(m): 0.7 Bottom Depth(m): Sampling Date: 08-Aug-2014							Landfill Waste Acceptance Criteria Limits		
							Inert Waste Landfill	Stable Non-reactive Hazardous waste in non-hazardous	Hazardous Waste Landfill
Determinand	**SOP**	**Accred.**	**Units**						
Total Organic Carbon	2625	M	%			3.3	3	5	6
Loss on Ignition	2610	M	%			6.8	--	--	10
Total BTEX	2760	M	mg/kg			C < 0.01	6	--	--
Total PCBs (7 congeners)	2815	M	mg/kg			< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	M	mg/kg			C < 10	500	--	--
Total (of 17) PAHs	2700	N	mg/kg			< 2.0	100	--	--
pH	2010	M				7.9	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.038	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative 10:1 mg/kg**	**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
Arsenic	1450	U	0.023	0.016	< 0.050	0.17	0.5	2	25
Barium	1450	U	0.016	0.005	< 0.50	< 0.50	20	100	300
Cadmium	1450	U	< 0.0001	< 0.0001	< 0.010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.001	< 0.001	< 0.050	< 0.050	0.5	10	70
Copper	1450	U	0.005	0.003	< 0.050	< 0.050	2	50	100
Mercury	1450	U	< 0.0005	< 0.0005	< 0.010	< 0.010	0.01	0.2	2
Molybdenum	1450	U	0.011	0.002	< 0.050	< 0.050	0.5	10	30
Nickel	1450	U	< 0.001	< 0.001	< 0.050	< 0.050	0.4	10	40
Lead	1450	U	0.002	0.01	< 0.010	0.088	0.5	10	50
Antimony	1450	U	0.006	0.002	0.011	0.025	0.06	0.7	5
Selenium	1450	U	0.004	< 0.001	< 0.010	< 0.010	0.1	0.5	7
Zinc	1450	U	0.002	0.002	< 0.50	< 0.50	4	50	200
Chloride	1220	U	7.1	1.2	14	18	800	15000	25000
Fluoride	1220	U	0.24	0.17	< 1.0	1.8	10	150	500
Sulphate	1220	U	35	2.6	67	61	1000	20000	50000
Total Dissolved Solids	1020	N	180	60	350	730	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	N	13	9.9	< 50	100	500	800	1000

Soild Information	
Dry mass of test portion/kg	0.175
Moisture (%)	24

Leachate Test Information	
Leachant volume 1st extract/l	0.295
Leachant volume 2nd extract/l	1.4
Eluant recovered from 1st extract/l	0.192

APPENDIX 4

CLASSIFICATION OF AGGRESSIVE CHEMICAL ENVIRONMENT FOR BURIED CONCRETE

TABLE C2 – AGGRESSIVE CHEMICAL ENVIRONMENT FOR CONCRETE (ACEC) CLASSIFICATION FOR BROWNFIELD LOCATIONS[a]

Table C2 Aggressive Chemical Environment for Concrete (ACEC) classification for brownfield locations [a]

Sulfate and magnesium						Groundwater		ACEC
Design Sulfate Class for location	2:1 water/soil extract [b]		Groundwater		Total potential sulfate [c]	Static water	Mobile water	Class for location
1	2 (SO_4 mg/l)	3 (Mg mg/l)	4 (SO_4 mg/l)	5 (Mg mg/l)	6 (SO_4 %)	7 (pH) [d]	8 (pH) [d]	9
DS-1	< 500		< 400		< 0.24	≥ 2.5		AC-1s
							> 6.5 [d]	AC-1
							5.5–6.5	AC-2z
							4.5–5.5	AC-3z
							2.5–4.5	AC-4z
DS-2	500–1500		400–1400		0.24–0.6	> 5.5		AC-1s
							> 6.5	AC-2
						2.5–5.5		AC-2s
							5.5–6.5	AC-3z
							4.5–5.5	AC-4z
							2.5–5.5	AC-5z
DS-3	1600–3000		1500–3000		0.7–1.2	> 5.5		AC-2s
							> 6.5	AC-3
						2.5–5.5		AC-3s
							5.5–6.5	AC-4
							2.5–5.5	AC-5
DS-4	3100–6000	≤ 1200	3100–6000	≤ 1000	1.3–2.4	> 5.5		AC-3s
							> 6.5	AC-4
						2.5–5.5		AC-4s
							2.5–6.5	AC-5
DS-4m	3100–6000	> 1200 [e]	3100–6000	> 1000 [e]	1.3–2.4	> 5.5		AC-3s
							> 6.5	AC-4m
						2.5–5.5		AC-4ms
							2.5–6.5	AC-5m
DS-5	> 6000	≤ 1200	> 6000	≤ 1000	> 2.4	> 5.5		AC-4s
						2.5–5.5	≥ 2.5	AC-5
DS-5m	> 6000	> 1200 [e]	> 6000	> 1000 [e]	> 2.4	> 5.5		AC-4ms
						2.5–5.5	≥ 2.5	AC-5m

Notes

a Brownfield locations are those sites, or parts of sites, that might contain chemical residues produced by or associated with industrial production (Section C5.1.3).

b The limits of Design Sulfate Classes based on 2:1 water/soil extracts have been lowered from previous Digests (Box C7).

c Applies only to locations where concrete will be exposed to sulfate ions (SO_4), which may result from the oxidation of sulfides such as pyrite, following ground disturbance (Appendix A1 and Box C8).

d An additional account is taken of hydrochloric and nitric acids by adjustment to sulfate content (Section C5.1.3).

e The limit on water-soluble magnesium does not apply to brackish groundwater (chloride content between 12 000 mg/l and 17 000 mg/l). This allows 'm' to be omitted from the relevant ACEC classification. Seawater (chloride content about 18 000 mg/l) and stronger brines are not covered by this table.

Explanation of suffix symbols to ACEC Class

- Suffix 's' indicates that the water has been classified as static.
- Concrete placed in ACEC Classes that include the suffix 'z' have primarily to resist acid conditions and may be made with any of the cements in Table D2 on page 42.
- Suffix 'm' relates to the higher levels of magnesium in Design Sulfate Classes 4 and 5.