

Camley Street Natural Park 12 Camley Street London N1C 4PW

Supplementary Quantitative Ground Contamination Risk Assessment

Report Beneficiary:

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The risk assessment presented in this report follows 'source-pathway-receptor' techniques for the determination of whether a site is contaminated. This is standard practice in the UK, being intrinsic to Part 2A of the Environmental Protection Act 1990 as amended.

The report considers the proposed end users as the most sensitive human health receptors. If significant risks to construction workers are identified by the preliminary assessment attention is drawn to this, although it is noted that no assessment of risk from acute exposure has been undertaken in this connection.

This report is not intended to be either an ecological, archaeological or flood risk assessment. An appropriate specialist should be consulted about any concerns that may arise in this regard.



EXECUTIVE SUMMARY

The following presents a summary of the main findings of the supplementary assessment. It is emphasised that no reliance should be placed on any individual point until the whole of the report has been read as other sections of the report may put into context the information contained herein.

It is proposed to demolish the existing pavilion at Camley Natural Park, 12 Camley Street, London and to construct a new visitor centre and café together with enhancement to landscaping areas.

A previous ground investigation had been undertaken for the site, but limited to the extent of the proposed visitors centre. This assessment also takes into account an area to the north west and south east of the previously investigated site.

The preliminary assessment undertaken as part of the previous ground investigation identified that the site had historically been used as a coal shoot and had been subject to historical demolition work; both considered to be potential sources of contamination at the site.

A significant depth of made ground was recorded by the previous phase of the ground investigation and two samples from beneath the existing building recorded the presence of asbestos.

The report recommended that further assessment should be made to determine whether widespread asbestos contamination of the made ground was present or whether asbestos was limited to the made ground soils beneath the existing building.

The report also recommended installing standpipes to assess whether a risk was posed by ground gases; the depth of made ground recorded by the ground investigation having been considered a potential source.

The recent phase of ground investigation undertaken comprised the drilling of four boreholes and the installation of three standpipes (monitored on four occasions) and the excavation of a series of shallow hand dug trial pits.

A supplementary quantitative ground contamination risk assessment has been undertaken using the information gained from both phases of the ground investigation.

No elevated concentrations of heavy metals or PAH compounds were recorded in the made ground soils in comparison to generic soil screening values.

Concentrations of petroleum hydrocarbons within the made ground soils are in excess of the threshold values for the use of PE pipework at the development.

Chrysotile and amosite fibres and debris were recorded in the made grounds soils in the vicinity of the proposed visitors' centre. The made ground soils in this area should be considered to pose an unacceptable risk to end users of the site where such soils remain unremediated in soft landscaped areas.

It is recommended that feedback is obtained on this report from regulators prior to assessing remedial options for the site and to ultimately allow a remediation strategy to be developed for the site taking on board any comments or specific requirements of the local authority.



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1. INTRODUCTION

It is proposed to demolish the existing pavilion at Camley Natural Park, 12 Camley Street, London and to construct a new visitor centre and café together with enhancement to landscaping areas. A site location plan is included as Appendix A and plans indicating the proposed development layout are presented in Appendix B. The site plans indicate the red line boundary of the site, which is also the extent of the assessment area.

A ground investigation, as presented within a Combined Geotechnical, Preliminary and Quantitative Contamination Risk Assessment and Waste Classification Report¹, has been previously undertaken at the site by Ashdown Site Investigation Ltd.

The preliminary assessment undertaken as part of the ground investigation identified that the site had historically been used as a coal shoot and had been subject to historical demolition work. Both of these activities were considered to be potential sources of contamination at the site.

A limited intrusive ground investigation (comprising the drilling of a dynamic sampler borehole and two foundation inspection pits) was undertaken as part of the ground investigation, limited to the vicinity of the proposed visitors centre. The ground investigation encountered a significant depth of made ground (to a depth of 3.5m in the borehole and to the full depth of the trial pits), typically comprising gravelly sandy clay.

The made ground soils were tested for a range of commonly occurring contaminants (heavy metals, PAH compounds and petroleum hydrocarbons) and screened for the presence of asbestos.

No elevated concentrations of contaminants were identified in the samples tested. The two samples taken from the foundation inspection pits recorded the presence of chrysotile and amosite fibres within the soil matrix.

The quantitative assessment concluded that the presence of asbestos within the made ground soils was considered to pose a significant risk to future end users of the site. The significant depth of the made ground encountered was also considered to be a potential source of elevated concentrations of ground gases.

The report concluded that further works should be undertaken to allow a more detailed assessment of the risk posed to future end users.

The recommendations included the installation of standpipes to determine whether or not a significant risk from ground gases is present that would require some form of protection to be incorporated into the proposed building.

In addition, the report recommended that further assessment should be made to determine whether widespread asbestos contamination of the made ground was present or whether asbestos contamination within the made ground soils was limited to the made ground soils in the immediate are of the existing building where the two samples recording asbestos were obtained.

At the time of the original ground investigation, a contractors' compound was present in the north western part of the site, which prevented access to this area. It is understood from

¹ Ashdown Site Investigation, Report No. R17-12131, dated June 2017. Camley Street Natural Park, 12 Camley Street, London

discussions with the client, that the contractor has been responsible for remediating this area of the site.

Ashdown Site Investigation Limited was requested to provide an estimate for carrying out the recommended additional ground investigation works and providing a supplementary quantitative ground contamination risk assessment of the site by Huntley Cartwright, Victoria House, Harestone Valley Road, Caterham, Surrey, CR3 6HY. The scope of the works allowed for and the terms and conditions under which the works were to be undertaken were set out within the offer letter Q18-7378, dated 15th June 2018. The instruction to proceed was received on behalf of the client, London Wildlife Trust, from the client's agent, Huntley Cartwright, in an email dated 19th June 2018.

The objectives of the works were to:

- a) Further investigate the shallow ground across the site;
- b) Test supplementary samples of soils for the presence of contaminants identified by the quantitative conceptual model;
- c) Undertake gas monitoring at the site; and
- d) Develop a supplementary quantitative conceptual model of the site, refining the quantitative model to identify any remaining pollutant linkages.

It should be noted that the red line boundary for the original ground investigation was limited to an area within the northern part of the Camley Street Natural Park. The assessment area for this report is the area shown within the red line on the location plan included as Appendix A.

The relevant factual data (exploratory hole records and laboratory test results) from the previous report are contained with the relevant appendices.

2. SITE CONTEXT

2.1 Site Description

The site comprises an irregular shaped plot of land located within the northern and north eastern part of the wider Camley Street Natural Park, located at Camley Street, London. The area is centred on the approximate Ordnance Survey national grid reference TQ 2995 8351. A site location plan and site plan are presented as Appendix A and Figure 1, respectively.

Access to the site is off Camley Street to the southwest. The park extends further to the southeast and the Grand Union Canal lies to its northeast.

The existing visitors centre comprises a series of wooden prefabricated buildings. A number of mature trees were present near the buildings and the ground around was surfaced with a mixture of woodchip, brick paviors and paving slabs.

The north western part of the site comprised an area of grassland with a raised flowerbed, separating the site from the access road leading to Camley Bridge.

The north eastern part of the site comprises areas of pathways surrounded by mature trees.

2.2 Geological and Hydrogeological Information

The geological and hydrogeological setting for the site, as presented in the preliminary assessment is discussed in the following sections. Further information is presented with the previous report for the site.

2.2.1 Expected Geology and Aquifer Designation

The stratigraphic unit that may be expected to underlie the site is presented in the following table.

Table 1. Expected Strata and Aquifer Designation

Туре	Stratum	Aquifer Designation
Bedrock	London Clay Formation	Unproductive Stratum

The London Clay Formation comprises a blue grey silty clay, which tends to weather to brown near to the upper surface. With depth, the clay becomes very stiff/hard, is frequently fissured and can contain some inclusions and beds of weak mudstone and siltstone.

2.2.2 Radon

The site is reported to be within an area where less than 1% of properties are at or above the action level requiring radon gas protection measures to be installed in new buildings. No radon protection measures are reported by the British Geological Survey to be necessary in the construction of new dwellings or extensions.



2.2.3 Groundwater Source Protection Zones

The site does not lie within an Environment Agency Source Protection Zone with regard to the protection of the quality of groundwater that is abstracted for potable supply.

2.2.4 Groundwater and Surface Water Abstraction Licences

The closest groundwater abstraction licence is recorded to lie 336m to the east of the site and is recorded as being for a heat pump.

The closest surface water abstraction licence is recorded to lie 177m to the north west of the site but refers to water use within the Camley Street Nature Park.

2.2.5 Surface Water Features

The nearest recorded significant surface water feature is the Grand Union Canal located adjacent to site to the northeast. The data states that the canal is reported to be "River Quality C".

Two ponds are present within the wider Camley Street Natural Park adjacent to the southern boundary of the site.

2.2.6 Flooding

The site lies within an Environment Agency Flood Zone 1.

The site does not lie within an area where the British Geological Survey report a risk from Groundwater Flooding to be present.

3. GROUND INVESTIGATION

3.1 Introduction

The first phase of the ground investigation comprised the excavation of two hand dug foundation inspection pits and the drilling of a single dynamic sampler borehole. The fieldwork was carried out on 9th May 2017.

The recent phase of the ground investigation comprised the excavation of a series of dynamic sampler boreholes and excavation of a series of hand dug pits. Gas and groundwater monitoring standpipes were installed in selected dynamic sampler boreholes and monitored on subsequent site visits. The fieldwork was carried out on 4th and 11th July 2018.

The exploratory hole locations associated with both phases of the ground investigation are shown on Figure 1.

Descriptions of the strata encountered and comments on groundwater conditions are shown in the exploratory hole records given in Appendix C, together with notes to assist in their interpretation.

3.2 Exploratory Holes

3.2.1 Dynamic Sampler Boreholes

During the first phase of the ground investigation a single borehole (designated BH02) was drilled to a depth of 10m below ground level. As part of the recent ground investigation works, four boreholes, designated BH101 to BH103 and BH103A, were drilled to depths of between 0.6m and 3.0m below ground level. Boreholes BH103 and BH103A were abandoned on concrete obstructions at depths of 1.3m and 0.6m, respectively.

The boreholes were formed by a series of 1.0m long, open ended, hollow steel tubes of up to 100mm diameter, each containing a removable plastic liner. The tubes, progressively reducing in diameter, were driven into the ground by means of a track-mounted drop weight. Each tube was extracted from the ground using a hydraulically operated jack and the enclosed sample was recovered in its plastic liner.

The system enables sub-samples to be taken for detailed examination and laboratory testing.

3.2.2 Foundation Inspection Pits

The first phase of the ground investigation included two pits (designated TP02 and TP03) excavated using hand-tools to depths of 0.34m and 0.55m below ground level, respectively, to enable inspection of the foundations to the existing building.

3.2.3 Hand Dug Trial Pits

The recent ground investigation works included sixteen pits, designated TP101 to TP116, excavated using hand-tools to depths of between 0.25m and 0.50m below ground level to enable disturbed samples of soils to be obtained.



Obstructions were encountered in trial pits TP101 to TP107 at shallow depths (between 0.25m and 0.40m). These positions were located in the north western part of the site, within the area of the former contractors' compound.

3.3 Sampling

Disturbed samples of soil were taken at the depths shown in the exploratory hole records and were collected in plastic liners, plastic bags, plastic tubs or amber jars fitted with gas tight lids.

On collection the amber jars were stored in cool boxes with cooling blocks to maintain temperatures below 4°C until transferred to refrigerators upon return to the office and subsequently forwarded to the external accredited chemical testing laboratory.

3.4 Installations

During the current phase of the ground investigation, gas and groundwater monitoring standpipes were installed to depths of between 1.30m and 3.0m in three boreholes. Descriptions of the installations are shown on the exploratory hole records in Appendix C.

The concentrations of gases and depths to groundwater were recorded within the standpipes on four occasions between 19^{th} July 2018 and 30^{th} July 2018. The readings are presented in Appendix C.

Whilst during the first phase of the ground investigation a gas monitoring standpipe was installed within borehole BH02 to a depth of 3.5m, this standpipe could not be located during the recent ground investigation works.

3.5 Laboratory Testing

Laboratory testing was scheduled by Ashdown Site Investigation Ltd. Results from the laboratory tests from both phases of the ground investigation are provided in Appendix D.

Chemical testing of selected samples was undertaken by a laboratory with recognised (UKAS and MCERTS) accreditation for quality control.

4. **GROUND CONDITIONS**

4.1 Stratigraphy

4.1.1 Surface Covering

At the time of the initial phase of the ground investigation, exploratory holes TP02, TP03 and BH02 were excavated through a surface cover of wood chippings some 50mm to 150mm in thickness.

During the recent ground investigation works, where surfacing materials were encountered, they comprised either topsoil some 20mm to 100mm in thickness or wood chipping some 20mm in thickness. No surfacing materials were encountered in BH101, TP101, TP102, TP103, TP104 or TP108.

4.1.2 Made Ground

Made ground, generally comprising either gravelly sandy clay or gravelly clayey sand, was recorded to the full depth of the majority of exploratory holes; the single exception being borehole BH02 where the base of the made ground was proven at a depth of 3.5m below ground level.

The gravel fraction comprised variable quantities of brick, concrete, slate, chalk, clay tile, ceramic tile, metal, mortar, glass, shell, flint clinker-like material, ash-like material, wood and plastic.

Obstructions were encountered within the made ground soils at shallow depths in TP101-TP107 in the north west of the site, and at depths of 1.3m and 0.6m in boreholes BH103 and BH103A, respectively. The obstructions within the trial pits TP101-TP107 are likely due to hardcore materials being present in this part of the site associated with the former use of this area of the site as a part of the contractors' compound.

BH103 and BH103A were abandoned on concrete obstructions, potentially associated with the canal wall.

4.1.3 London Clay Formation

Beneath the made ground, borehole BH02 encountered stiff to very stiff clay soils of the London Clay Formation which persisted to the full depth of the borehole at 10.0m below ground level.

4.2 Groundwater Conditions

Each of the exploratory holes was recorded to be dry during the short period of the intrusive works.

Standing water depths of between 2.25mm and 2.70m were recorded in the standpipes during the monitoring visits.

It should be noted that water levels within the boreholes may not have equilibrated with the groundwater table at the time the readings were recorded and that groundwater levels should be expected to fluctuate seasonally.



5. SUPPLEMENTARY QUANTITATIVE CONTAMINATION ASSESSMENT

5.1 Introduction

The risk assessment for the site considers the sources of contamination identified, the receptors that may be present in view of the development proposals and the contaminant pathways by which these may be linked.

A complete pollutant linkage is only deemed to exist where all three are present and a site is considered suitable for use where no complete pollutant linkages are identified.

Where a complete pollutant linkage is considered to be present, an assessment of the level of risk associated with the pollutant linkage has been carried out in line with published guidance².

The level of risk is determined using the risk matrix presented in the following table. Classifications of probability, consequence and risk are presented in Appendix E.

		Probability			
		Very Low	Low	Moderate	High
Consequence	Very Minor	Negligible	Very Low	Low	Low/Moderate
	Minor	Very Low	Low	Low/Moderate	Moderate
	Moderate	Low	Low/Moderate	Moderate	High
	Severe	Low/Moderate	Moderate	High	Very High

Table 2. Risk Assessment Matrix

5.2 Quantitative Conceptual Model

The quantitative conceptual model for the proposed development, generated as part of the previous report is presented in Appendix F.

5.3 Assessment Strategy

As discussed in Section 9.1 of the previous report, the potential sources identified by the preliminary risk assessment could result in contamination being present anywhere on the site.

Asbestos was identified within two samples of the made ground taken from beneath the building (TP02 and TP03) and the report recommended that further assessment should be made to determine whether widespread asbestos contamination of the made ground was present or whether asbestos contamination within the made ground soils was limited to the made ground soils beneath the existing building.

Given that the area included within this assessment, includes an area to the north west and the south east of the original assessment area, selected samples were also taken in these areas and tested for the same range of contaminants as per the original assessment.

² Contaminated Land Risk Assessment: A guide to good practice, CIRIA C552, 2001. Camley Street Natural Park, 12 Camley Street, London

In addition, ground gas monitoring standpipes were installed in boreholes BH101 to BH103 and monitored on four occasions to assess whether elevated concentrations of ground gases were present within the made ground present beneath the site.

5.4 Analysis of Contamination Test Results

As with the previous assessment, the results of the laboratory testing carried out on the made ground soils encountered beneath the site have been compared with generic soil screening values (SSVs) comprising the 'Suitable For Use Levels' (S4ULs) calculated as a joint project between LQM and CIEH³. In lieu of an S4UL screening value for lead, the Category 4 Screening Level (C4SL) was used, as published within SP1010⁴.

In view of the proposed development the assessment has been made against SSVs calculated for the generic 'Public Park' (POS_{park}) land use⁵. The POS_{park} land use is intended to be representative of an open space provided for recreational use. In modelling this land use, the land is assumed to be a relatively large area of predominately grassed open space with no more than 25% of exposed soil. The critical receptor for this land use is considered to be a young female child using the site on a regular basis from birth to age 6.

The assumptions made are considered to be highly conservative given the proposed end use of the site.

For the assessment of risk to controlled waters a qualitative assessment has been undertaken based upon the concentrations of contaminants recorded within the soil samples and the information obtained about the sensitivity of the underlying strata or nearby surface water receptors.

5.4.1 Heavy Metals and PAH compounds

In total 13 samples of made ground taken from across the site were tested for concentrations of heavy metals and polycyclic aromatic hydrocarbon (PAH) compounds.

The following table summarises the soil screening values along with the maximum and minimum concentrations for the heavy metals and PAH compounds tested for.

³ The LQM/CIEH Suitable 4 Use Levels, 2015.

⁴ SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination. Final Project Report, published by DEFRA, 2014.

⁵ SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination. Final Project Report, published by DEFRA, 2014.



Contaminant	SSV (mg/kg)	No. of Samples	Minimum Concentration (mg/kg)	Maximum concentration (mg/kg)	Limit of Detection (mg/kg)	No of exceedances
Arsenic	170	13	10	29	< 2	0
Water Soluble Boron	46000	13	<lod< td=""><td>2.4</td><td>< 1</td><td>0</td></lod<>	2.4	< 1	0
Cadmium	555	13	<lod< td=""><td>0.8</td><td>< 0.2</td><td>0</td></lod<>	0.8	< 0.2	0
Chromium	33000	13	12	41	< 2	0
Hexavalent Chromium	220	13	<lod< td=""><td><lod< td=""><td>< 2</td><td>0</td></lod<></td></lod<>	<lod< td=""><td>< 2</td><td>0</td></lod<>	< 2	0
Copper	44000	13	16	127	< 4	0
Lead	1300	13	25	423	< 3	0
Mercury	240	13	<lod< td=""><td>2.9</td><td>< 1</td><td>0</td></lod<>	2.9	< 1	0
Nickel	3400	13	11	46	< 3	0
Selenium	1800	13	<lod< td=""><td><lod< td=""><td>< 3</td><td>0</td></lod<></td></lod<>	<lod< td=""><td>< 3</td><td>0</td></lod<>	< 3	0
Zinc	170000	13	70	369	< 3	0
Naphthalene	1200	13	<lod< td=""><td>1.13</td><td>< 0.1</td><td>0</td></lod<>	1.13	< 0.1	0
Acenaphthylene	29000	13	<lod< td=""><td>0.2</td><td>< 0.1</td><td>0</td></lod<>	0.2	< 0.1	0
Acenaphthene	29000	13	<lod< td=""><td>0.12</td><td>< 0.1</td><td>0</td></lod<>	0.12	< 0.1	0
Fluorene	20000	13	<lod< td=""><td>0.13</td><td>< 0.1</td><td>0</td></lod<>	0.13	< 0.1	0
Phenanthrene	6200	13	<lod< td=""><td>2.2</td><td>< 0.1</td><td>0</td></lod<>	2.2	< 0.1	0
Anthracene	150000	13	<lod< td=""><td>0.67</td><td>< 0.1</td><td>0</td></lod<>	0.67	< 0.1	0
Fluoranthene	6300	13	<lod< td=""><td>7.25</td><td>< 0.1</td><td>0</td></lod<>	7.25	< 0.1	0
Pyrene	15000	13	<lod< td=""><td>6.3</td><td>< 0.1</td><td>0</td></lod<>	6.3	< 0.1	0
Benz(a)anthracene	49	13	<lod< td=""><td>3.84</td><td>< 0.1</td><td>0</td></lod<>	3.84	< 0.1	0
Chrysene	93	13	<lod< td=""><td>3.57</td><td>< 0.1</td><td>0</td></lod<>	3.57	< 0.1	0
Benzo(b)fluoranthene	13	13	<lod< td=""><td>5.13</td><td>< 0.1</td><td>0</td></lod<>	5.13	< 0.1	0
Benzo(k)fluoranthene	370	13	<lod< td=""><td>1.78</td><td>< 0.1</td><td>0</td></lod<>	1.78	< 0.1	0
Benzo(a)pyrene	11	13	<lod< td=""><td>3.94</td><td>< 0.1</td><td>0</td></lod<>	3.94	< 0.1	0
Indeno(123-cd)pyrene	150	13	<lod< td=""><td>2.4</td><td>< 0.1</td><td>0</td></lod<>	2.4	< 0.1	0
Dibenz(ah)anthracene	1.1	13	<lod< td=""><td>0.4</td><td>< 0.1</td><td>0</td></lod<>	0.4	< 0.1	0
Benzo(ghi)perylene	1400	13	<lod< td=""><td>1.95</td><td>< 0.1</td><td>0</td></lod<>	1.95	< 0.1	0

Table 3. Summary of Test Results and Statistical Analysis for Heavy Metals and PAH Compounds

None of the samples of made ground from either phase of the ground investigation recorded concentrations of heavy metals or PAH compounds in excess of their SSVs.

The concentrations of heavy metals and PAH compounds within the made ground are not considered to pose an unacceptable risk to end users of the site.

At the concentrations recorded, heavy metals or PAH compounds would not be considered to be significantly mobile so as to pose an unacceptable risk to controlled waters beneath the site.

5.4.2 Petroleum Hydrocarbons and BTEX compounds

Two samples of the made ground and one of the undisturbed London Clay Formation were tested for total concentrations of petroleum hydrocarbons, with the results speciated by aromatic and aliphatic equivalent carbon weight fractions. The samples were also tested for concentrations of BTEX compounds.

Ten samples of made ground taken were tested for total concentrations of petroleum hydrocarbons with the results speciated only by equivalent carbon weight fractions. Although full speciation of these results was not undertaken, the results of the testing undertaken can still be compared with the more stringent of the screening values for the respective equivalent carbon weight fraction and, where the concentration recorded is found to be lower, then it can be concluded that no significant risk is present.

The following table lists the screening values for petroleum hydrocarbon equivalent carbon weight fractions calculated for 1% organic content.

Petroleum Hydrocarbon Fraction	SSV (mg/kg)	Petroleum Hydrocarbon Fraction	SSV (mg/kg)
Aliphatic EC 5-6	95000	Aromatic EC 5-7	76000
Aliphatic EC >6-8	150000	Aromatic EC >7-8	87000
Aliphatic EC >8-10	14000	Aromatic EC >8-10	7200
Aliphatic EC >10-12	21000	Aromatic EC >10-12	9200
Aliphatic EC >12-16	25000	Aromatic EC >12-16	10000
Aliphatic EC >16-35	450000	Aromatic EC >16-21	7600
Aliphatic EC >35-44	450000	Aromatic EC >21-35	7800
		Aromatic EC >35-44	7800

Table 4. SSVs for petroleum hydrocarbon equivalent carbon weight fractions

Table 5. Soil Screening Values for BTEX Compounds

BTEX Compound	SSV (mg/kg)
Benzene	87000
Toluene	17000
Ethylbenzene	17000
<i>p</i> -Xylene ¹	17000
<i>p</i> -Xylene ¹	17000

 1 Xylene has three structural isomers, the SSV presented is for *p*-Xylene, which has the most conservative SSV.

None of the samples recorded any concentrations of petroleum hydrocarbons or BTEX compounds above the generic SSV. No visual or olfactory evidence of such contamination was noted within the intrusive positions.

There is not considered to be an unacceptable risk to either end users or controlled waters from petroleum hydrocarbon or BTEX compound contamination at the site.

Comparison of the test results with threshold values for the use of PE pipework has been undertaken⁶. The concentrations of petroleum hydrocarbons within several samples exceeded the threshold values for the use of PE pipework. It is therefore strongly recommended that designers consult with the proposed water supply company to ascertain if further laboratory testing and assessment specific to proposed routes of services is required or as to the type of water supply pipe material that may be stipulated to be used in the development (e.g. barrier pipe).

⁶ In accordance with Table 3.1 of the Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites, UK Water Industry Research, 2010.

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5.4.3 Asbestos

During the first phase of the ground investigation, three samples of made ground were screened for the presence of asbestos. The samples taken at shallow depths from trial pits TP02 and TP03 both recorded the presence of chrysotile asbestos fibres, with the sample from TP03 also recording the presence of amosite fibres.

An additional twenty four samples were screened for asbestos as part of the second phase of the ground investigation.

The following table summarises the samples screened for the presence of asbestos and the associated results.

Sample	Depth (m)	Asbestos Identified	Result
BH02	0.10	Not Detected	-
TP02	0.20	Yes	Chrysotile Fibres
TP03	0.15	Yes	Chrysotile/Amosite Fibres
BH101	0.20	Not Detected	-
BH102	0.20	Not Detected	-
BH103	0.20	Not Detected	-
TP101	0.20	Not Detected	-
TP102	0.20	Not Detected	-
TP103	0.20	Not Detected	-
TP104	0.20	Not Detected	-
TP105	0.20	Not Detected	-
TP106	0.20	Not Detected	-
TP107	0.20	Not Detected	-
TP108	0.20	Yes	Chrysotile Fibres/Debris
TP108	0.40	Not Detected	-
TP109	0.20	Yes	Amosite Fibres/Debris
TP109	0.20	Not Detected	-
TP110	0.20	Not Detected	-
TP110	0.40	Yes	Chrysotile Fibres
TP111	0.20	Not Detected	-
TP111	0.40	Not Detected	-
TP112	0.40	Yes	Chrysotile Fibres/Amosite Debris
TP113	0.20	Not Detected	-
TP113	0.40	Not Detected	-
TP114	0.20	Not Detected	-
TP115	0.20	Not Detected	-
TP116	0.40	Not Detected	-

Table 6. Samples screened for asbestos and laboratory result

The exploratory holes in which asbestos was identified are all located within the area immediately surrounding the area of the visitors centre.

No asbestos was encountered in the north west of the site in the shallow made ground soils above the potential hardcore remaining in situ associated with the former use of this part of the site as a contractor's compound. No asbestos was encountered in the samples of made ground taken adjacent to the pathway along the north eastern boundary of the site.

It is therefore considered that the made ground in the area around the proposed visitors centre is considered to pose an unacceptable risk to end users where such soils remain unremediated within soft landscaped areas.

It is noted that an asbestos survey of the existing structure and infrastructure⁷ was beyond the brief of this report. The risk assessment has been undertaken on the basis that should asbestos be identified within buildings or infrastructure these materials will be removed appropriately by licensed contractors and asbestos materials disposed of in accordance with legal requirements prior to demolition or other works in order to avoid further contamination of the soils at the site.

5.5 Ground Gases

As part of the second phase of the ground investigation, three standpipes were installed and monitored on four occasions. The standpipe installed in BH02 during the first phase of the ground investigation could not be located at the time of the supplementary works.

Peak concentrations of carbon dioxide of up to 2.3% by volume were recorded during the monitoring visits.

No detectable concentrations of methane and no detectable gas flows were recorded from any of the standpipes during any of the monitoring visits.

Atmospheric pressures varied between 1005 and 1015 during the monitoring period. Monitoring was carried out during periods of both rising and falling atmospheric pressure.

Assessment of the results of the monitoring has been carried out in general accordance with the current guidance⁸.

The guidance provides a methodology for assessing the risk from ground gases by the calculation of site specific gas screening values (GSV) for each key asphyxiating or explosive gas (carbon dioxide and methane, respectively). These are calculated by multiplying the concentration (percentage/volume) of a gas by a gas flow rate (l/hr).

The initial assessment has been made by calculating GSV using the highest flow rate recorded during any of the visits multiplied by the highest gas concentration recorded during any of the visits. This is considered to represent a highly conservative assessment of the risk posed by ground gases.

Where no detectable gas concentrations or flow rates are recorded, the GSV are calculated assuming values equal to the limit of detection of the instrument are present.

 $^{^{7}}$ As defined under Section 5(a) of the Control of Asbestos Regulations, 2012.

⁸ CIRIA document C665, Assessing risks posed by hazardous ground gases to buildings, 2007. Camley Street Natural Park, 12 Camley Street, London



The following table summarises the calculated GSV:

Table 7.Calculated GSV for Carbon Dioxide and Methane

Gas	GSV
Carbon Dioxide	$0.023 \times 0.1 = 0.0023$
Methane	$0.001 \times 0.1 = 0.0001$

For sites that do not fall within the definition of "typical" 2 storey housing, Table 8.5 of the CIRIA document sets out a series of "Characteristic Situations" for different GSV, with Table 8.6 providing guidance on the degree of protection required for each situation.

The calculated GSV place the site within Characteristic Situation 1. No specific gas protection measures are required for this situation.

It is noted that the guidance suggests that for a site where the generation potential of the source is considered to be "Low" (e.g. made ground within limited degradable material) and the sensitivity of the proposed development is "Low" (in relation to ground gases, the sensitive end users would be a commercial worker at the site) the idealised period and frequency of monitoring would be 6 visits over 2 months.

Although the period of monitoring undertaken is less than that suggested by the guidance, in view of the very low concentrations of gas recorded and in the absence of any flow rates, further monitoring is unlikely to change the assessment that protective measures will not be required within the proposed buildings.

The site is reported to be within an area where less than 1% of properties are at or above the action level requiring radon gas protection measures to be installed in new buildings. No radon protection measures are reported by the British Geological Survey to be necessary in the construction of new dwellings or extensions.



5.6 Supplementary Quantitative Contamination Risk Assessment

5.6.1 Basis of Assessment

The development is to comprise new commercial buildings (a visitors centre and a café) together with areas of soft landscaping where end users can expect to come into contact with the underlying soils and where soil derived dusts may be generated.

The proposed development layout is presented in Appendix B. Should the proposed development plans be altered, a revised risk assessment may be required.

5.6.2 Contamination Sources Identified

The following sources of contamination have been identified by the quantitative contamination risk assessment:

- Made ground soils containing asbestos within the vicinity of the proposed visitors centre.
- Made ground soils containing concentrations of petroleum hydrocarbons above the threshold for the use of PE pipework.

A contamination source plan is included as Figure 2.

5.6.3 Supplementary Quantitative Conceptual Model

The revised quantitative conceptual model for the proposed development is presented in Appendix G.

5.7 Risks to Other Potential Receptors

The following general guidance is given with regard to other potential on site receptors, which may not necessarily be statutory drivers for remedial works.

As a minimum and in accordance with industry best practice all ground-workers should be issued with the appropriate PPE and should be instructed in safe working methods, particularly in view of the potential for asbestos to be encountered within the made ground soils.

As a precautionary measure instruction should be given in the recognition of potentially hazardous materials, including oily and odorous soil and water and discoloured or fibrous substances. Any oil-like substances contacting the skin must be washed off immediately using an appropriate cleanser. Operatives should be warned to avoid contact between hands and mouth before washing. The consumption of food and smoking must be confined to designated clean areas. Suitable welfare (washing) facilities should be provided. These precautions should be taken in addition to anything highlighted by a site-specific risk assessment which should be undertaken by any contractor prior to commencing work.

All site personnel should be appropriately briefed on what actions to take in the event that evidence of significant contamination is identified or suspected.

Particular attention should be paid to minimising dust arising from soils and appropriate precautions in this regard should include damping down of soils when in dry conditions. Should

any suspected asbestos containing materials be encountered, they should be left in-situ and appropriate advice sought immediately.

All site personnel should be appropriately briefed on what actions to take in the event that evidence of significant contamination is identified or suspected.

5.8 Recommendations

As complete pollutant linkages relating to end users have been identified at the site, it is considered that remedial measures will be required as part of the proposed development.

It is recommended that feedback is obtained from the regulator on this report prior to developing remedial options for the site.

5.9 Handling and Disposal of Waste

5.9.1 Waste Management – Legislative Framework

Waste is defined as "any substance or object which the holder discards or intends to discard"⁹. Soils excavated during construction works are therefore generally considered to be waste¹⁰.

If a material is waste then an Environmental Permit¹¹ will be required to lawfully deposit or reuse the material unless it is "uncontaminated soil and other naturally occurring material excavated in the course of construction activities where it is certain that the material will be used for the purposes of construction in its natural state on the site from which it was excavated". Such materials are excluded from the Waste Framework Directive (WFD).

Guidance published by CL:AIRE¹² provides a framework for demonstrating how excavated materials arising from development sites may be considered as non-waste and can therefore be re-used on their site of origin, or elsewhere.

Soils and other materials taken for disposal should be handled, transferred and disposed of as controlled waste in accordance with current waste management^{13,14} and duty of care regulations¹⁵ and comply with current codes of practice¹⁶. Waste transfer notes detailing the site address, the waste type, details of the haulage contractor and full details of the disposal site must be kept by the waste producer.

Specifically, the disposal of any asbestos containing materials should be undertaken by appropriately trained personnel. The disposal of such material and other hazardous waste should be undertaken in accordance with the Hazardous Waste Regulations 2005¹⁷.

¹⁰ Guidance on the legal definition of waste and its application, Environment Agency, 2012

⁹ 2008 Waste Framework Directive (Directive 2008/98/EC)

https://www.gov.uk/government/publications/legal-definition-of-waste-guidance/decide-if-a-material-is-waste-or-not ¹¹ Environmental Permitting (England and Wales) Regulations 2010

¹² CL:AIRE, The Definition of Waste: Development Industry Code of Practice, Version 2, March 2011

¹³ The Waste (England and Wales) Regulation 2011

¹⁴ Section 34, Environmental Protection Act 1990

¹⁵ The Environmental Protection (Duty of Care) Regulations 1991

¹⁶ Waste Duty of Care Code of Practice, Dept. for Environment Food & Rural Affairs, March 2016

¹⁷ Hazardous Waste (England and Wales) Regulations 2005

Camley Street Natural Park, 12 Camley Street, London



It is a legal requirement (as discussed within the Waste Duty of Care Code of Practice) to correctly assess and classify waste. Characterisation of the waste in full accordance with current guidance¹⁸ was beyond the scope of this assessment.

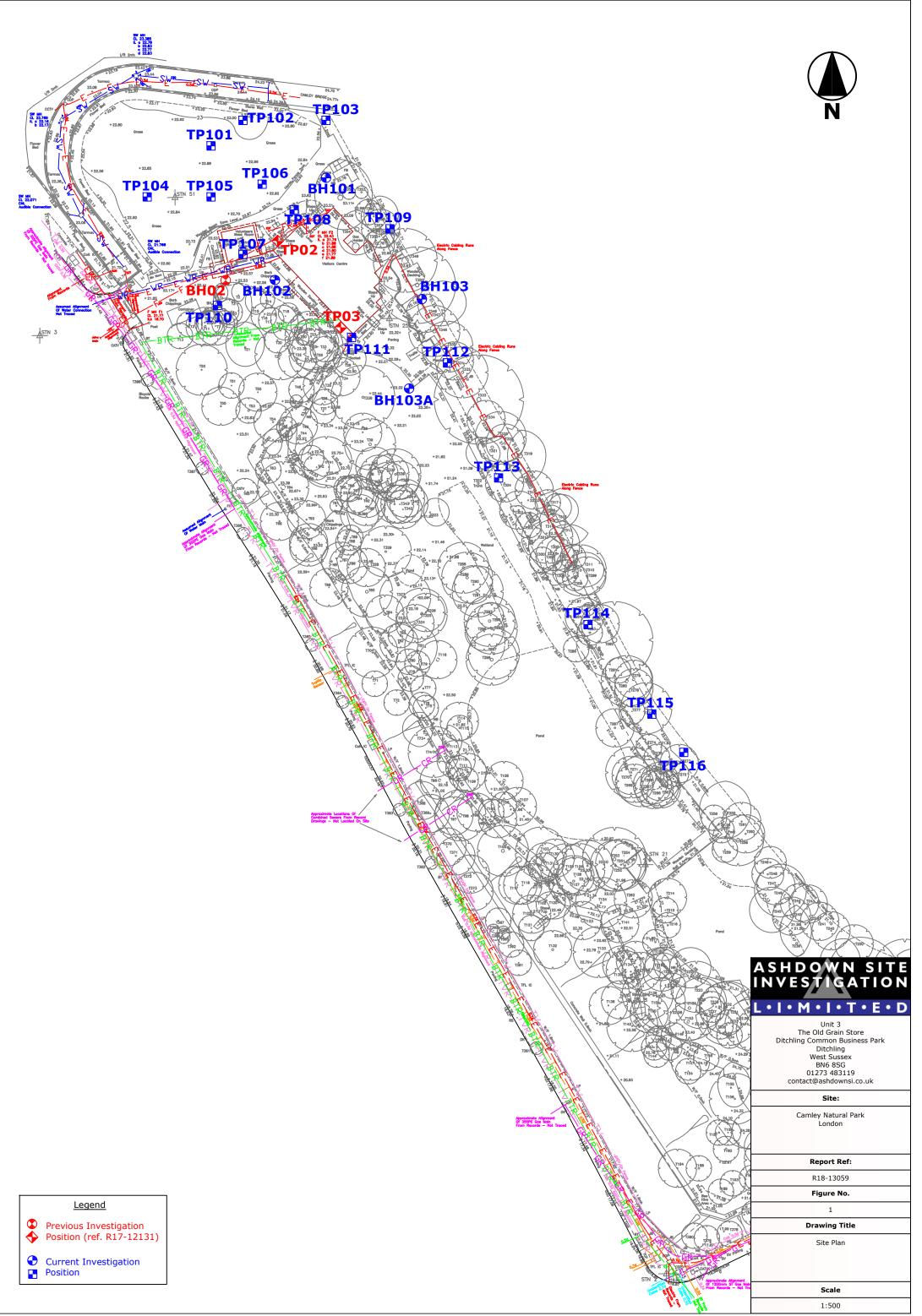
Ashdown Site Investigation Ltd.

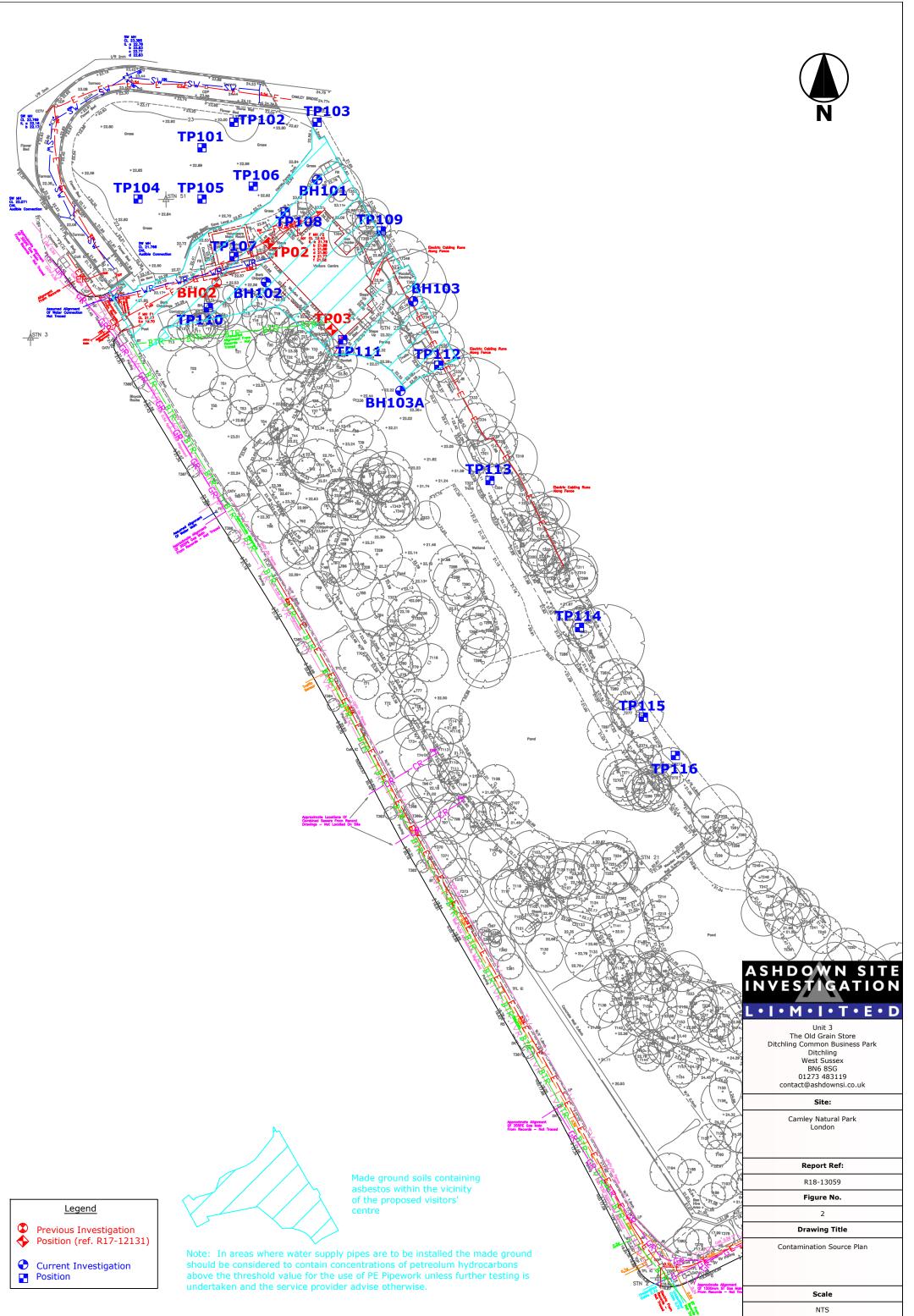
FIGURES

Figure 1 Site Plan

Figure 2 Identified Contamination Source Plan









APPENDIX A

Site Location Plan

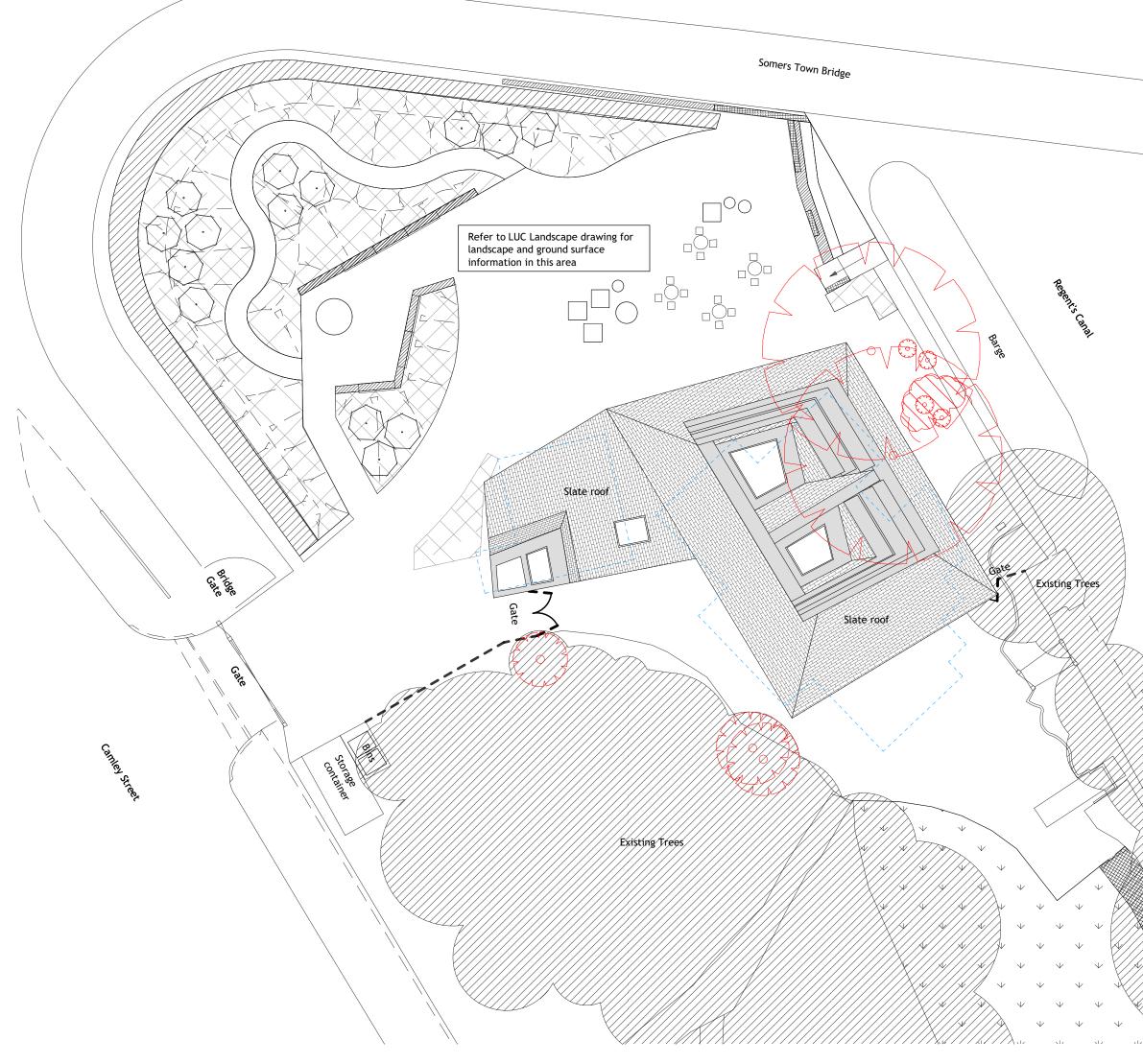


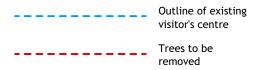
0m 5m 10m 20m 30m 40m 50m 75m 1:1250

APPENDIX B

Proposed Development Layout









P01 20.10.17 Issued for Planning

erectarchitecture. 22b Regent Studios, 8 Andrews Rd, London E8 4QN, t.020 72546336

client	London Wildlif	e Trust				
project	Camley Street	Natural Park				
title	title Proposed Site Plan					
scale/dat	e 1:200 at A3	20.10.17				
drwg no	342- GA00 -P	01				

0m 1m 5m

1:200



0m 5m 10m 20m 30m 40m 50m 75m 1:1250



APPENDIX C

Exploratory Hole Notes Exploratory Hole Records Gas Concentration and Groundwater Monitoring Results

NOTES FOR THE INTERPRETATION OF EXPLORATORY HOLE RECORDS

1 <u>Symbols and abbreviations</u>

Samples

- U 'Undisturbed' Sample: 100mm diameter by 450mm long. The number of blows to drive in the sampling tube is shown after the test index letter in the SPT column.
- Uo Sample not obtained.
- U* Full penetration of sample not obtained.
- Pi Piston Sample: 'Undisturbed' sample 100mm diameter by 600mm long.
- D Disturbed Sample.
- R Root Sample.
- B Bulk Disturbed Sample.
- W Water Sample.
- J Jar Sample (sample taken in amber glass jar fitted with gas tight lid)
- T Tub Sample
- Vi Vial Sample

In situ Testing

- S Standard penetration test (SPT): Using the split spoon sampler.
- C Standard Penetration Test (SPT): using a solid cone instead of the sampler conducted usually in coarse grained soils or weak rocks.
- V Shear Vane Test: Undrained shear strength (cohesion) (kN/m²) shown within the Vane/Pen Test and N Value column.
- H Hand penetrometer Test: Undrained shear strength (cohesion) (kN/m²) shown within the Vane/Pen Test and N Value column.
- P Perth Penetrometer Test: Number of blows for 300mm penetration shown under Vane/Pen Test and N Value column.

Excavation Method

- CP Cable Percussion Borehole
- WLS Dynamic Sampler Borehole using windowless sampler tubes
- WS Dynamic Sampler Borehole using window sampler tubes
- TP Trial Pit excavated using mechanic excavator
- HDP Trial Pit excavated using hand tools

2 Soil Description

Description and classification of soils has been carried out using as a general basis the British Standard Geotechnical investigation and testing – Identification and classification of soil, Part 1 Identification and description (BS EN ISO 14688-1:2002+A1:2013) and Part 2 Principles of classification (BS EN 14688-2:2004+A1:2013) as well as the BS5930:2015 code of Practice for Ground Investigations.

3 Rock Description

Description and classification of rocks has been carried out using as a general basis the British Standard Geotechnical investigation and testing – Identification and classification of rock, Part 1 Identification and classification (BS EN ISO 14689-1:2003) as well as the BS5930:2015 code of Practice for Ground Investigations.

4 Chalk Description

Chalk description is based on BS EN ISO 14688, BS EN ISO 14689 and BS5930. The classification of chalk generally follows the guidance offered by the Construction Industry Research and Information Association (CIRIA) C574, 'Engineering in Chalk'. This is based on assessment of chalk density, discontinuity and aperture spacing, and the proportion of intact chalk to silt of chalk. See additional chalk classification notes.

A S H D O I N V E S T	WN SI Igatio	TE Site	e Name: Ca	amley Street I	Natural Pa	ark, 12 (Camley Street, London			
L • I • M • E-mail: contacto			umber: R				1			
Web: www.a	shdownsi.co.uk 73 483119	Sld	rt Date: 09 d Date: 09				Borehole Number:	BH02	SI	heet 1 of 2
Standpipe _{Sample,} Typ	/ Test Depth Fr	and In Situ Testing		Dynamic Probe Blows/100mm 5 10 15 20 25		Depth		Stratum Description		
						0.00		Wood Chippings		
TL D						0.10	MADE GROUND: Brown subangular, fine to coarse b clinke		tile, metal,	
L L	г 1.10	,	_			-	- - - - - -			
D	1.30						- - - -			
TI T						1.50	MADE GROUND: Black/g odour. Gravel is angular to ar			
TIL										
TL TL H	3.65	;	170			3.50	Very stiff orange brown mo	ottled grey slightly sand Clay Formation)	dy silty CLA	Y. (London
V H FL	4.60	,	>130 - 250			4.30	Very stiff grey mottled o angular to subangular, fine t with nodules of claystone be	to coarse claystone. (Lo		
D	4.65						-			
V	5.00		>130			5.00 -	C	ontinued on next sheet		
Remarks Groundwater: 1	Borehole dry o	on completion.						Excavation	Method:	WLS
		psed to 8.00m			ine with gray		d; 1.50m to ground level plain pipe v	Borehole D	iameter:	Various
							ith the ground surface.		/lade By:	PM

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Adpipe San	Type H D JT H D	Depth From (m) 5.50 5.80 6.25 6.30	n Situ Testing	Test Result C	Dyn	amic Probe Blows/100	mm Legend	Depth	Very stiff orange brown mot									
Sar	Type H D JT H D	(m) 5.50 5.80 6.25 6.30	Depth To (m)			Biows/100 15 20 : 1	mm Legend 25 30	Depth 	Very stiff orange brown mot		ndon Clay	/ Formati						
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				>251				-										
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		6.80					F		-									
	н	6.80		>251				-										
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								-	with a thin layer of weak orar	ige claystone at 7.30m de	epth.							
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Remarl		ala d	manles.															
oundwate	er: Boreh	ole dry on co	mpletion.							Excavation N	/lethod:	WLS						
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Note	es: Standr	pipe installer	l to 3.50m d	epth: 3.50m	to 1.50	ım slotter	d pipe with gra	velsurroup	d; 1.50m to ground level plain pipe w	Borehole Dia	ameter:	Variou						

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E-mail: cont	L • I • M • I • T • E • D E-mail: contact@ashdownsi.co.uk Web: www.ashdownsi.co.uk			09/05/201			TD00		
Tel:	01273 483119			09/05/201		Irial Pit Number:	Trial Pit Number: TP02 Sheet 1		
Sample/ Test Type	Samples and Depth From (m)	In Situ Testing Depth To (m)	Test Result	Legend	Depth/ Reduced Level	Stratum Descript	on		
					0.00	Woodchippir			
D*	0.20				0.05	MADE GROUND: firm brown gravelly silty sandy fine to coarse brick, clay tile, ceramic tile, metal			
J T J T	0.20 0.32				0.34	flint.			
JT	0.32					∖ with crushed concrete, brick and flint material € ∖ of 0.30m. End of trial pit at 0		re to a depth	
					-				
Remark Groundwate	ks er: Trial pit dry	on completior	<u> </u> 1.	<u> </u>		<u> </u>	Excavation Metho	d: HDP	
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		Pit Widt							
Note	es: * Samples t	aken of crushe	d material ber	eath structure.			Made B		

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E-mail: contact@ashdownsi.co.uk Web: www.ashdownsi.co.uk Tel: 01273 483119		.co.uk	Start Date:	: 09/05/20 : 09/05/20	17		Trial Pit Number:	TP03	Sheet 1 of 2
Sample/ Test		In Situ Testing Depth To (m)	Test Result	Legend	Depth/ Reduced Level		Stratum Descriptio	n	
Type		Depth to (m)			0.00		Woodchippin	gs.	
	0.15 0.35 0.35				0.25	fine to coarse brick, cla	n firm gravelly silty sandy y tile, ceramic tile, metal, flint. ncrete and flint material b End of trial pit at 0.	glass, shell, clinker eneath existing stru	-like material and
Remar Groundwat	ks er: Trial pit dry	on completion	n.					Excavation Met	hod: HDP
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Standpipe	Sample/ Test	Samples and In Depth From			Dynamic Probe Blows/100 5 10 15 20		Depth	Str	ratum Description	
	J T	(m)	(,				0.00	MADE GROUND: Brown grey v to subrounded fine to coarse charcoal-like material a	concrete, brick, flint	, ash-like material,
	ΤT	0.80		_			0.70 0.90 –	MADE GROUND: Orange bro MADE GROUND: Brown, gre Gravel is angular to subrounde like material, ash-like material,	ey, and orange very g ed fine to coarse brid	ravelly sandy clay. :k, mortar, charcoal-
	JΤ	1.75						band of charcoal-like material an 1.80m depth.		
	ΤL	2.60					2.70	MADE GROUND: Black grey angular to subrounde		
							3.00 -	End of	f borehole at 3.00m	
Rem		nole dry on co	ompletion.						Excavation N	lethod: WLS
	Notes: Stand		l to 3.00m d	epth; 3.00m t				d; 1.00m to ground level plain pipe with	Borehole Dia	imeter: Various
	pento	mite seal; cor	ripieted with	i gas tap and	Security Cover (concreted flush	i with groun	iu surface.	M	ade By: MR

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L • I • E-mail:	M • I •	T • E • D lownsi.co.uk		umber: R				1		
Web	o: www.ashdov Tel: 01273 48	vnsi.co.uk		t Date: 1 d Date: 1				Borehole Number:	BH102	Sheet 1 of 1
Standpipe	Sample/ Test Type	Samples and I Depth From (m)			Dynamic	Probe /s/100mm Legend	d Depth		Stratum Description	
							0.00	-	Topsoil	
	ΤL	0.20					0.10	subrounded fine to coars	vn grey sandy slightly cl e gravel of brick, flint, c al-like material and chal	linker-like material,
	ΤL	0.70					-			
	JT	1.70					1.50	becoming light brown below MADE GROUND: Black gr subrounded fine to mediuu like material, chalk, concret	ey gravelly sandy clay. m brick, flint, charcoal-l	ike material, clinker-
	JT	2.70					3.00 -	becoming slightly gravelly be	elow 2.50m depth.	
								- Ei 	nd of borehole at 3.00m	
	arks water: Borel	nole dry on co	ompletion.						Excavation N	//ethod: WLS
		pipe installed	d to 3.00m d	epth; 3.00m				d; 1.00m to ground level plain pipe v	Borehole Di	ameter: Various
	bento	onite seal; co	mpleted wit	n gas tap and	security co	over concreted fl	ush with grour	nd surface.	N	lade By: MR

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andpipe	Sample/ Test Type	Depth From (m)	Depth To (m)	Test Result	0 5	Blow 10 15	/s/100mn 20 25	n Legend 30	Depth	Stratum Description
	Τſ	0.20							0.00 0.05	Topsoil. MADE GROUND: Brown and dark grey sandy slightly clayey angula subrounded fine to coarse brick, charcoal-like material, clinker-l material, wood, glass, concrete and flint.
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A S H I N V E	DOWN STIG	N SITE ATION						latural p	ark, 12 C	amley Street, London				
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Standpipe		Samples and I		d Date: 1		namic Pro	obe	Legend	Depth			escription		
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									0.00 - 0.10 -	MADE GROUND: Grey bro	Тор		. Cravel is a	ngularta
	JΤ	0.30							0.60	subrounded fine to coarse like mate	e brick, fli erial. Sand		, concrete a	
Rem Groundv		nole dry on co	ompletion.									Excavation	Method:	WLS
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													Made By:	MR

Start Date: 04/07/2018 Trial Pit Number: TP101 Sheet 1 of the start of t	• I • M	OWN S TIGAT	ol d• 3	b Number	:R18-13059)				_
Supple of Dials Infinite Performent is Depth left Dials Left Dec UNC UNCUL INFO Performent is Depth left Dials and Infinite I T 0.20 0.00 0.25 MADE GROUND: Light brown grey gravely fine to coarse and. Gravel is angular subrounded fine to coarse brick, concrete glass, clinker-like material, plastic an finit. Breakers wordswere: The plat do an completon. Stability: Traip it day on completon.	E-mail: cont Web: ww	tact@ashdownsi /w.ashdownsi.co	.co.uk .uk					Trial Pit Number:	TP101	
Remarks: Number of the properties of the pro	Iel:			End Date	:04/07/201				11 101	Sheet 1 o
J.T 0.20 0.00 0.00 0.00 MADE GROUND: Light brown grey gravely fine to coarse and. Gravel is angular subrounded fine to coarse brits, concrete, plass, clinkar-like material, plassic and fine. J.T 0.20 0.25 0.25 Image: subrounded fine to coarse brits, concrete, plass, clinkar-like material, plassic and fine. Remarks Image: subrounded fine to coarse brits, concrete, plass, clinkar-like material, plassic and fine. Image: subrounded fine to coarse brits, concrete, plass, clinkar-like material, plassic and fine. Remarks Image: subrounded fine to coarse brits, concrete, plass, clinkar-like material, plassic and fine. Image: subrounded fine to coarse brits, concrete, plass, clinkar-like material, plassic and fine. Remarks Image: subrounded fine to coarse brits, concrete, plassic, information material, plassic, information, plassic, information	mple/ Test Type			Test Result	Legend			Stratum Description		
		0.20						oarse brick, concrete, glass		
oundwater: Trial pit dry on completion. Excavation Method: HDP Stability: Trial pit stable on completion. Pit Length: n/a Pit Width: n/a Notes: No further progress below 0.25m depth - obstruction. Units of the stable of the sta						0.25		End of trial pit at 0.25	ōm	
Stability: Trial pit dry on completion. Excavation Method: HDP Stability: Trial pit stable on completion. Pit Length: n/a Pit Width: n/a Notes: No further progress below 0.25m depth - obstruction. Excavation Method: Units							-			
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Pit Width: n/a Notes: No further progress below 0.25m depth - obstruction. In a			on completio	n.	·				Excavation Method	: HDP
Pit Width: n/a Notes: No further progress below 0.25m depth - obstruction.	Stabilit	t y: Trial pit stal	ble on comple	tion.				-	Pit Length	: n/a
Notes: No further progress below 0.25m depth - obstruction.								-		
	Note	es: No further	progress belov	w 0.25m depth	n - obstruction.					

	OWN S		Number:	R18-13059	Э			
E-mail: conta Web: ww	act@ashdownsi w.ashdownsi.co			04/07/201			TD102	
Tel: (01273 483119			04/07/201		Trial Pit Number:	TP102	Sheet 1 o
Sample/ Test		Depth To (m)	Test Result	Legend	Depth/ Reduced Level	Stratum Description		
JT JT		In Situ Testing Depth To (m)	Test Result	Legend		brown grey gravelly fine to arse brick, concrete, glass flint. End of trial pit at 0.40	, clinker-like material,	
	r: Trial pit dry	on completion					Excavation Method Pit Length Pit Width	: n/a

Start Date: 0407/2018 Trial Pt Number: TP103 Sheet 1 Sheet 1 Darphs right 0 bit 0 true Colspan="2">Colspan="2">Colspan="2">Colspan="2" JT O.20 MADE GROUND: Light brown grow growthy fire to coarse sand. Gravel is angula JT O.20 MADE GROUND: Light brown grow growthy fire to coarse sand. Gravel is angula JT O.20 MADE GROUND: Light brown grow growthy fire to coarse sand. Gravel is angula JT O.20 MADE GROUND: Light brown grow growthy fire to coarse sand. Gravel is angula O.20 MADE GROUND: Light brown grow growthy fire to coarse sand. Gravel is angula O.20 MADE GROUND: Light brown grow growthy fire to coarse sand. Gravel is angula O.20 MADE GROUND: Light brown grow growthy fire to coarse sand. Gravel is angula O.20 MADE GROUND: Light brow grow growthy fire to coarse sand. Gravel is angula O.20 MADE GROUND: Light brow grow growthy fire to coarse sand. Gravel is angula O.20 O.20 Remarks Excavation Method: HE		OWN S		b Number	: R18-1305	9				
Remark: Indiring field Indiring field	E-mail: cont	act@ashdownsi	o uk							
Remarks	Web: ww Tel: (/w.ashdownsi.co. 01273 483119	uk					Trial Pit Number:	TP103	Sheet 1 c
Remarks Remarks Baskity: This is table on considence. Excervation Method: Stability: This is table on considence. Pit Length:	mplo/Tost				Legend			Stratum Description		
JT 0.20 Int. <		Depth From (m)	Depth To (m)	Test Result			MADE GROUND: Light br	rown grey gravelly fine to	o coarse sand. Grave	el is angular t
Remarks Excavation Method: HD stability: Tid pit databe or completion. Pit Length: n/	JΤ	0.20				0.25		flint.		
Stability: Trial pit stable on completion. Pit Length: n/ Pit Width: n/						-	-	End of that pit at 0.25	om	
Stability: Trial pit stable on completion. Pit Length: n/ Pit Width: n/						-				
Stability: Trial pit stable on completion. Pit Length: n/ Pit Width: n/							-			
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Stability: Trial pit stable on completion. Pit Length: n/ Pit Width: n/										
Stability: Trial pit stable on completion. Excavation Method: HD Pit Length: n/ Pit Width: n/							-			
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Stability: Trial pit stable on completion. Excavation Method: HD Pit Length: n/ Pit Width: n/							-			
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Stability: Trial pit stable on completion. Excavation Method: HD Pit Length: n/ Pit Width: n/						-				
Stability: Trial pit stable on completion. Excavation Method: HD Pit Length: n/ Pit Width: n/							-			
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Stability: Trial pit stable on completion. Excavation Method: HD Pit Length: n/ Pit Width: n/							1			
Stability: Trial pit stable on completion. Pit Length: n/ Pit Width: n/										
Stability: Trial pit stable on completion. Pit Length: n/ Pit Width: n/	Remark									
Pit Width: n/			on completio	n.					Excavation Metho	d: HDP
Pit Width: n/	Stabilit	:y: Trial pit stab	le on complet	tion.					Pit Lengt	: h: n/a
Made By:	Note	es: No further p	orogress below	<i>w</i> 0.25m dept	h - obstruction.			-		

	OWN S TIGAT		b Number	:R18-13059) 				
E-mail: conta Web: ww	act@ashdownsi w.ashdownsi.co 01273 483119	.co.uk .uk		: 04/07/201			Trial Pit Number:	TP104	
Tel: C			End Date	:04/07/201	.8			19104	Sheet 1 o
Sample/ Test		In Situ Testing Depth To (m)	Test Result	Legend	Depth/ Reduced Leve		Stratum Description		
Type	0.20				0.00		t brown grey gravelly fine to coarse brick, concrete, glass flint.		
					0.25		End of trial pit at 0.25	ōm	
						-			
						-			
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					-	-			
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Remark	· · · · · · · · · · · · · · · · · · ·								
		on completion	n.					Excavation Method	I: HDP
Stability	y: Trial pit stal	ole on complet	tion.					Pit Length	n: n/a
								Pit Width	
Note	s: No further	progress belov	w 0.25m depth	n - obstruction.			-		
								Made By	MR

A S H		N SITE Ation	Site	Name:	Caml	ey St	reet	Natural p	ark, 12	Camley Street, London			
L·I·	M • I •	T•E•D	Job N	umber:						1			
E-mail: Web	contact@ash : www.ashdo Tel: 01273 48	downsi.co.uk wnsi.co.uk 3119		t Date: (d Date: (Borehole Number:	TP105	ç	heet 1 of 1
		Samples and I		u Date.		ynamic F							
Standpipe	Sample/ Test Type	Depth From (m)	Depth To (m)	Test Result	05	Blows	/100mm 20 25	1 Legend 30	Depth		Stratum Description		
									0.00		Topsoil.		/
	ΤL	0.20							0.02 0.30	MADE GROUND: Light brow angular to subrounded find mat E	e to coarse brick, concr erial, plastic and flint. nd of borehole at 0.30m	rete, glass,	clinker-like
										- - - - -			
									-				
										-			
								_	-	-			
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										- - - - -			
										- - - -			
								_	-	-			
Rem Groundv		pit dry on cor	npletion.								Excavation	Method:	WLS
Sta	bility: n/a										Borehole D	iameter:	Various
n l	lotes: No fu	irther progre	ss below 0.3	0m depth -	obstru	ction.					N	/lade By:	MR

	OWN S TIGAT		o Number:	R18-13059	9				
	act@ashdownsi w.ashdownsi.co			04/07/201					
Tel: C	01273 483119			04/07/201		Tri	ial Pit Number:	TP106	Sheet 1 c
Sample/ Test Type		In Situ Testing Depth To (m)	Test Result	Legend	Depth/ Reduced Level		Stratum Description		
type					0.00	\	Topsoil.		
ΤL	0.20				0.02	MADE GROUND: Light brown subrounded fine to coarse		er-like material, plast	
					-				
					-				
					-				
					-				
					-				
					-				
					-				
					-				
					-				
Remark oundwate		on completion	l					Excavation Method	I: HDP
Stability	y: Trial pit stal	ole on complet	ion.				-	Pit Length	n: n/a
								Pit Width	
Note	s: No further	progress belov	v 0.25m depth	- obstruction.					

Image: Second	A S H I N V B	D O W I S T I G	N SITE ATION	Site	Name:	Camle	ey Stre	eet N	atural p	ark, 12 (Camley Street, London			
End of the stand balance water with any stand of the		-			umber:	R18-1	3059							
Average in the start of th				-										
Remarks Constraint Description Constraint Mode SROUND: Dark hours algoby gravehours and dark of the second algoby gravehours algoby grave	Web	: www.ashdov Tel: 01273 48	wnsi.co.uk 33119								Borehole Number:	TP	107	Sheet 1 of 1
Network Name			Samples and		u Date.									
IT 0.20 JT 0.20 0.30 Image: Computer State S	Standpipe	Sample/ Test	Depth From		Test Desult		Blows/1	00mm	Legend	Depth		Stratum D	escription	
JT 0.20 0.01 0.010 GROUND. Dark how slightly grade up sondy Cdy. Grade line and sond and fine coarse wood, brick, concrete and charcoal-like material and roots. JT 0.40 0.30 0.31 0.31 Berendes et al. 0.31 0.31 0.31 0.31 Borehole Diameter. VIIS 0.32 0.31 0.31 0.31 Borehole Diameter. VIIS 0.32 0.31 0.31 0.31 0.31 Note: Interventer and provide et al. 0.31 0.31 0.31 0.31 0.31 Borehole Diameter: VIIS 0.31 0.		Туре	(m)	Depth to (III)	lest Result				J XXXXXXXX		l			
IT 0.40 angular to subrounded fine to conservous metal and roots. JT 0.40 angular to subrounded fine to conservous metal and roots. Berd albored at a color berd albored at a color Remarks Borelond concerviewed Borelond Ender Statility: v/v Statility: v/v Excavation Method: W/IS Borelond Diameter: Various														/
J.T 0.40 0.30 Implies to Summarial and contr. Bernarks Constraints Constraints Constraints Remarks Constraints Excavation Method: WLS Basking: n/r. Borehole Diameter: Various		ΤL	0.20							0.02				
JT 0.40 Image: Second set 3.50m Remarks Image: Second set 3.50m Image: Second set 3.50m Remarks Image: Second set 3.50m Image: Second set 3.50m Stability: r/s Second set 3.50m Excavation Method: WLS Borehole Diameter: Various										0.30				crete and
Groundwater: Trial pit dry on completion. Excavation Method: WLS Stability: n/a Borehole Diameter: Various Notes: No further progress below 0.30m depth - concrete obstruction. Excavation Method: WLS		ΤL	0.40											/
Groundwater: Trial pit dry on completion. Excavation Method: WLS Stability: n/a Borehole Diameter: Various Notes: No further progress below 0.30m depth - concrete obstruction. Excavation Method: WLS											-			
Groundwater: Trial pit dry on completion. Excavation Method: WLS Stability: n/a Borehole Diameter: Various Notes: No further progress below 0.30m depth - concrete obstruction. Excavation Method: WLS											-			
Groundwater: Trial pit dry on completion. Excavation Method: WLS Stability: n/a Borehole Diameter: Various Notes: No further progress below 0.30m depth - concrete obstruction. Excavation Method: WLS											-			
Groundwater: Trial pit dry on completion. Excavation Method: WLS Stability: n/a Borehole Diameter: Various Notes: No further progress below 0.30m depth - concrete obstruction. Excavation Method: WLS											-			
Groundwater: Trial pit dry on completion. Excavation Method: WLS Stability: n/a Borehole Diameter: Various Notes: No further progress below 0.30m depth - concrete obstruction. Excavation Method: WLS											-			
Groundwater: Trial pit dry on completion. Excavation Method: WLS Stability: n/a Borehole Diameter: Various Notes: No further progress below 0.30m depth - concrete obstruction. Excavation Method: WLS										_	-			
Groundwater: Trial pit dry on completion. Excavation Method: WLS Stability: n/a Borehole Diameter: Various Notes: No further progress below 0.30m depth - concrete obstruction. Use of the second secon											-			
Groundwater: Trial pit dry on completion. Excavation Method: WLS Stability: n/a Borehole Diameter: Various Notes: No further progress below 0.30m depth - concrete obstruction. Excavation Method: WLS											_			
Groundwater: Trial pit dry on completion. Excavation Method: WLS Stability: n/a Borehole Diameter: Various Notes: No further progress below 0.30m depth - concrete obstruction. Use of the second secon														
Groundwater: Trial pit dry on completion. Excavation Method: WLS Stability: n/a Borehole Diameter: Various Notes: No further progress below 0.30m depth - concrete obstruction. Excavation Method: WLS											-			
Groundwater: Trial pit dry on completion. Excavation Method: WLS Stability: n/a Borehole Diameter: Various Notes: No further progress below 0.30m depth - concrete obstruction. Excavation Method: WLS											-			
Groundwater: Trial pit dry on completion. Excavation Method: WLS Stability: n/a Borehole Diameter: Various Notes: No further progress below 0.30m depth - concrete obstruction. Excavation Method: WLS											-			
Groundwater: Trial pit dry on completion. Excavation Method: WLS Stability: n/a Borehole Diameter: Various Notes: No further progress below 0.30m depth - concrete obstruction. Use of the second secon											-			
Groundwater: Trial pit dry on completion. Excavation Method: WLS Stability: n/a Borehole Diameter: Various Notes: No further progress below 0.30m depth - concrete obstruction. Excavation Method: WLS											-			
Groundwater: Trial pit dry on completion. Excavation Method: WLS Stability: n/a Borehole Diameter: Various Notes: No further progress below 0.30m depth - concrete obstruction. Excavation Method: WLS											-			
Groundwater: Trial pit dry on completion. Excavation Method: WLS Stability: n/a Borehole Diameter: Various Notes: No further progress below 0.30m depth - concrete obstruction. Excavation Method: WLS											-			
Groundwater: Trial pit dry on completion. Excavation Method: WLS Stability: n/a Borehole Diameter: Various Notes: No further progress below 0.30m depth - concrete obstruction. Excavation Method: WLS										-				
Groundwater: Trial pit dry on completion. Excavation Method: WLS Stability: n/a Borehole Diameter: Various Notes: No further progress below 0.30m depth - concrete obstruction. Excavation Method: WLS											-			
Groundwater: Trial pit dry on completion. Excavation Method: WLS Stability: n/a Borehole Diameter: Various Notes: No further progress below 0.30m depth - concrete obstruction. Excavation Method: WLS											-			
Groundwater: Trial pit dry on completion. Excavation Method: WLS Stability: n/a Borehole Diameter: Various Notes: No further progress below 0.30m depth - concrete obstruction. Excavation Method: WLS											-			
Groundwater: Trial pit dry on completion. Excavation Method: WLS Stability: n/a Borehole Diameter: Various Notes: No further progress below 0.30m depth - concrete obstruction. Excavation Method: WLS											-			
Groundwater: Trial pit dry on completion. Excavation Method: WLS Stability: n/a Borehole Diameter: Various Notes: No further progress below 0.30m depth - concrete obstruction. Excavation Method: WLS											-			
Groundwater: Trial pit dry on completion. Excavation Method: WLS Stability: n/a Borehole Diameter: Various Notes: No further progress below 0.30m depth - concrete obstruction. Excavation Method: WLS											-			
Groundwater: Trial pit dry on completion. Excavation Method: WLS Stability: n/a Borehole Diameter: Various Notes: No further progress below 0.30m depth - concrete obstruction. Excavation Method: WLS											_			
Groundwater: Trial pit dry on completion. Excavation Method: WLS Stability: n/a Borehole Diameter: Various Notes: No further progress below 0.30m depth - concrete obstruction. Excavation Method: WLS											_			
Groundwater: Trial pit dry on completion. Excavation Method: WLS Stability: n/a Borehole Diameter: Various Notes: No further progress below 0.30m depth - concrete obstruction. Excavation Method: WLS														
Groundwater: Trial pit dry on completion. Excavation Method: WLS Stability: n/a Borehole Diameter: Various Notes: No further progress below 0.30m depth - concrete obstruction. Excavation Method: WLS											-			
Groundwater: Trial pit dry on completion. Excavation Method: WLS Stability: n/a Borehole Diameter: Various Notes: No further progress below 0.30m depth - concrete obstruction. Excavation Method: WLS										-	-			
Groundwater: Trial pit dry on completion. Excavation Method: WLS Stability: n/a Borehole Diameter: Various Notes: No further progress below 0.30m depth - concrete obstruction. Use of the second secon											-			
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Stability: n/a Borehole Diameter: Various Notes: No further progress below 0.30m depth - concrete obstruction. Borehole Diameter: Various			pit dry on cor	npletion.									Evenuation Math	• \\// C
Notes: No further progress below 0.30m depth - concrete obstruction.			. ,											• VVLS
Notes: No further progress below 0.30m depth - concrete obstruction.												Ļ		
Notes: No further progress below 0.30m depth - concrete obstruction.	Sta	bility: n/a												
													Borehole Diameter	: Various
		Notes: No fu	urther progre	ss below 0 3	0m depth -	concret	e obstr	uction						
Made By: MR												F		
													Made By	: MR

E-mail: cont	act@ashdownsi w.ashdownsi.co)1273 483119	i.co.uk o.uk	Start Date End Date	: R18-1305 : 04/07/201 : 04/07/201	18		** NI	TD100	
Type	Samples and Depth From (m) 0.20	In Situ Testing	End Date				the Mission In a set	TD100	
Type	Depth From (m)				10	Irial P	it Number:	TP108	Sheet 1 o
Type	0.20	Depth To (m) Test Result	Legend	Depth/ Reduced Level		Stratum Description		
				<u> </u>					
Τ	0.40				0.00	MADE GROUND: Brown grey g subrounded fine to coarse brick, tile and rc	concrete, glass, oots. Sand is fine	clinker-like material, p	lgular to lastic, flint
					0.50	E	End of trial pit at 0.50r	n	
					-				
					- - -				
					-				
					-				
					-				
					- - 				
					-				
					-				
					-				
					-				
					-				
Remark roundwate	S r: Trial pit dry	on completi	on.				E	Excavation Method:	HDP
Stabilit	y: Trial pit sta	ble on compl	etion.					Pit Length:	n/a
								Pit Width:	n/a

A S H D I N V E S	OWN S TIGAT	ITE ON	Site Name:	: Camley St	reet Natur	al park, 12 Camley Street, London		
L • I • M	• I • T • I		Number:	R18-1305	9			
E-mail: con	tact@ashdownsi. vw.ashdownsi.co 01273 483119		Start Date:	: 04/07/20	18			
Tel:	01273 483119	.uk		: 04/07/20		Trial Pit Number:	TP109	Sheet 1 of 1
Sample/ Test Type		In Situ Testing Depth To (m)	Test Result	Legend	Depth/ Reduced Level	Stratum Descript	on	
					0.00	Wood chippir		/
ΤL	0.20				0.02	MADE GROUND: Brown slightly gravelly clayey to subrounded fine to coarse gravel (
ΤL	0.40				0.50	End of trial pit at 0	.50m	
Remarl Groundwate	KS er: Trial pit dry	on completior	n.	<u> </u>			Excavation Method	1: HDP
Stabili	ty: Trial pit stat	ole on complet	ion.				Dit I anath	n n/a
							Pit Length	
Note	es: n/a						Pit Width	
							Made By	y: MR

Sample/Test Type Depth From (m) Depth To (m) Test Result Depth/Reduced Level	Pit Number: Stratum Description	TP110	Sheet 1 of 1
Samples and In Situ Testing Sample/Test Type Depth From (m) Depth To (m) Test Result Depth/ Reduced Level 0.00	Stratum Description		
(yy)= 0.00 -			
	Wood chippings.		
J T 0.20 J T 0.40	n slightly gravelly cl	ayey sand. Gravel is a	
	End of trial pit at 0.50r		
Remarks Groundwater: Trial pit dry on completion. Stability: Trial pit stable on completion. Notes: n/a	E	Excavation Method: Pit Length: Pit Width:	n/a

A S H D I N V E S	OWN S TIGAT					ral park, 12 Camley Street	t, London		
L • I • M E-mail: con	• I • T • tact@ashdownsi ww.ashdownsi.co	.co.uk		:R18-13059				70444	
Tel:	01273 483119			:04/07/201			Trial Pit Number:	TP111	Sheet 1 of 1
Sample/ Test Type		In Situ Testing Depth To (m)	Test Result	Legend	Depth/ Reduced Level		Stratum Description	n	
					0.00	1	Wood chipping		/
ΤL	0.20				0.02	MADE GROUND: Dark b angular to subrounded f			
JΤ	0.40				0.50		and roots.		
					0.50	-	End of trial pit at 0.5	0m	
						-			
						- - -			
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Remar	kc					1			
	KS er: Trial pit dry	on completio	n.					Excavation Meth	od: HDP
Stabili	ty: Trial pit stal	ble on comple	tion.				_	Pit Leng	gth: n/a
							-	Pit Wic	
Note	es: n/a						-	Made	By: MR

A S H D I N V E S	OWN S TIGAT					al park, 12 Camley Street,	London		
L • I • M				: R18-1305					
Web: ww Tel:	tact@ashdownsi ww.ashdownsi.co 01273 483119	.uk		:04/07/202 :04/07/202			Trial Pit Number:	TP112	Sheet 1 of 1
Sample/ Test Type		In Situ Testing Depth To (m)		Legend	Depth/ Reduced Level		Stratum Description	1	
1792					0.00 -	h	Topsoil.		
JΤ	0.20				0.02	MADE GROUND: Dark bro angular to subrounded fin	own slightly gravelly cl		
JΤ	0.40				0.50				
					0.50 -		End of trial pit at 0.5	0m	
					-				
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Remar Groundwate	KS er: Trial pit dry	on completio	n.					Excavation Meth	od: HDP
Stabili	ty: Trial pit stal	ble on comple	tion.				-	Pit Leng	gth: n/a
							-	Pit Uit	
Note	es: n/a						-		 11/d
	, -							Made	By: MR

	OWN S			Camley St R18-1305		al park, 12 Camley Street, London				
L • I • M E-mail: con Web: wv	• • • • • • • • • • • • • • • • • • •	.co.uk S	tart Date:	04/07/202	18	Trial Pit Numb	er:	TP113	Ch	eet 1 of 1
Sample/ Test	Samples and	In Situ Testing		04/07/202	Depth/ Reduced Level	Stratum De				
Туре	Depth From (m)	Depth To (m)	Test Result							
					0.00 - 0.02 -	Mood ch MADE GROUND: Dark brown slightly grav			wel is an	gular to
JT	0.20				0.02	subrounded fine to coarse brick, concrete, fine to coarse brick.	charco			
JT	0.40				0.50	End of trial p	oit at 0.50	Im		
					-					
					_					
Remarl Groundwate	ks er: Trial pit dry	on completion	I	I	I			Excavation Met	hod:	HDP
Stabili	ty: Trial pit stat	ole on completi	ion.					Pit Le	ngth:	n/a
								Pit W		n/a
Note	es: n/a								e By:	MR

	TIGAT					al park, 12 Camley Stree	et, London		
	• I • T • I			R18-1305					
Web: ww Tel:	act@ashdownsi. /w.ashdownsi.co 01273 483119	.uk		04/07/202			Trial Pit Number:	TP114	Sheet 1 of 1
Sample/ Test Type	Samples and	In Situ Testing Depth To (m)	Test Result	: 04/07/20: Legend	Depth/ Reduced Level		Stratum Descriptio		5112211011
Type					0.00 -	Į.	Topsoil.		/
ΤL	0.20				0.05	MADE GROUND: Brown fine to coarse br		lay. Gravel is angular flint. Sand is fine to	to subrounded coarse.
JT	0.40				0.50	-	End of trial pit at 0.	50m	
Remark Groundwate	(S er: Trial pit dry	I on completion	ı.	<u> </u>	<u> </u>	1		Excavation Meth	od: HDP
Stabilit	:y: Trial pit stat	ole on complet	tion.					Pit Leng	th: n/a
Note	es: n/a							Pit Wid Made	
1								iviade	- 1

	OWN S TIGAT			: Camley Sti : R18-13059		al park, 12 Camley Street, I	London		
L • I • M E-mail: con	• • • • • • • • • • • • • • • • • • •			: 04/07/201					
Tel:	01273 483119	.uk		:04/07/201		1	Frial Pit Number:	TP115	Sheet 1 of 1
Sample/ Test Type		In Situ Testing Depth To (m)	Test Result	Legend	Depth/ Reduced Level		Stratum Description	1	
					0.00		Topsoil.	-	/
JT	0.20				0.02	MADE GROUND: Dark bro fine to coarse brick, concr			
JT	0.40				0.50		End of trial pit at 0.5	0m	
Remar Groundwate	ks er: Trial pit dry	on completior) 1.		-			Excavation Metho	od: HDP
							_		
Stabili	ty: Trial pit stal	ole on complet	ion.				-	Pit Leng	
	,						-	Pit Wid	th: n/a
Note	es: n/a							Made	By: MR

ASHD	OWN S	ITE	Sita Nama	· Camlou St	root Natur	al park 12 Camlou Stre	at London		
INVES	TIGAT					al park, 12 Camley Stre	eet, London		
L • I • M			b Number						
Web: w	tact@ashdownsi ww.ashdownsi.co 01273 483119	.uk	Start Date	:04/07/20 :04/07/20			Trial Pit Number:	TP116	Sheet 1 of 1
	Samples and	In Situ Testing	Lina Date	Legend	Depth/		Stratum Descriptic	n	
Sample/ Test Type	Depth From (m)	Depth To (m)	Test Result	Legenu	Reduced Level	1			
					0.00 0.02		Topsoil n slightly gravelly sandy c	lav. Gravel is angular	to subrounded
JΤ	0.20				0.02	fine to coarse	brick, concrete, glass and	flint. Sand is fine to	coarse.
ΤL	0.40				× - × -	1			
	0.10				0.50		End of trial pit at 0.	50m	
					-	-			
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Remar	 ks								
	er: Trial pit dry	on completic	ın.					Excavation Meth	od: HDP
									UU. NUP
Stabili	ty: Trial pit stal	ble on comple	tion.					Pit Leng	gth: n/a
Not	es: n/a							Pit Wic	lth: n/a
								Made	By: MR

Gas Concentrations and Groundwater Monitoring Results

Site Nar	me:			Camley	Natural	Park, 12	Camley	/ Street,	Londo	on, N1	.2 4PV	V										
Report I	Ref:			R18-13	059																	
Position Date Time		ime	Pressure (mb)	Emission Rate (I/hr) Atmospheric Pressure Atmospheric Trend Standpipe Depth (m) Standing Water Depth (m bgl)	Ν	1ethar	ne (%)	Cart	oon Di	oxide	(%)		Oxyge	en (%)	(mqq)	(mdd)				
Ро		F	Gas I ()	Atmos Pres	Atmos Stan Stan Stan Stan Stan Stan Stan Stan								Seco	onds			Sec	onds		H ₂ S	8
			ġ	En	A	A		3	15	30	45	60	15	30	45	60	15	30	45	60		
BH101	19/07/18	09:20	0	0.0	1015	Falling	3.00	2.25	0.0	0.0	0.0	0.0	0.9	0.9	0.8	0.8	20.0	20.0	20.0	20.0	0	0
BH102	19/07/18	09:15	0	0.0	1015	Falling	1.25	Dry	0.0	0.0	0.0	0.0	1.4	1.4	1.4	1.4	19.4	19.5	19.5	19.5	0	0
BH103	19/07/18	09:10	0	0.0	1015	Falling	3.00	2.70	0.0	0.0	0.0	0.0	1.9	2.1	2.1	2.2	19.0	18.7	18.7	18.7	0	0
BH101	23/07/18	08:35	0	0.0	1012	Rising	1.25	Dry	0.0	0.0	0.0	0.0	1.1	1.1	1.1	1.1	19.9	19.9	19.9	19.9	0	0
BH102	23/07/18	08:40	0	0.0	1012	Rising	3.00	2.55	0.0	0.0	0.0	0.0	2.1	2.2	2.2	2.2	19.8	19.8	19.8	19.8	0	0
BH103	23/07/18	08:45	0	0.0	1012	Rising	3.00	2.25	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.8	20.2	20.2	20.2	20.2	0	0
BH101	27/07/18	10:00	0	0.0	1007	Falling	3.00	2.65	0.0	0.0	0.0	0.0	1.6	1.6	1.6	1.6	19.6	19.6	19.6	19.6	0	0
BH102	27/07/18	10:05	0	0.0	1007	Falling	1.25	Dry	0.0	0.0	0.0	0.0	1.3	1.3	1.3	1.3	19.8	19.8	19.8	19.8	0	0
BH103	27/07/18	10:10	0	0.0	1007	Falling	3.00	2.45	0.0	0.0	0.0	0.0	1.9	1.9	1.9	1.9	19.2	19.2	19.2	19.2	0	0
BH101	30/07/18	09:45	0	0.0	1005	Falling	3.00	2.55	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	20.1	20.1	20.1	20.1	0	0
BH102	30/07/18	09:50	0	0.0	1005	Falling	1.25	Dry	0.0	0.0	0.0	0.0	1.9	2.3	2.3	2.3	18.7	18.7	18.7	18.7	0	0
BH103	30/07/18	09:55	0	0.0	1005	Falling	3.00	2.45	0.0	0.0	0.0	0.0	0.8	1.7	2.1	2.1	20.6	18.9	19.0	19.0	0	0

R18-13059



APPENDIX D

Contamination Test Results



Alex Bewick Ashdown Site Investigations Ltd The Old Dairy Swanborough Farm Swanborough Lewes East Sussex BN7 3PF



 QTS Environmental Ltd

 Unit 1

 Rose Lane Industrial Estate

 Rose Lane

 Lenham Heath

 Kent

 ME17 2JN

 t: 01622 850410

 russell.jarvis@gtsenvironmental.com

QTS Environmental Report No: 17-58872

Site Reference: Camley Street Natural Park, 12 Camley Street, London

Project / Job Ref: R17-12131

Order No: P17-4817

Sample Receipt Date: 12/05/2017

Sample Scheduled Date: 12/05/2017

Report Issue Number: 1

Reporting Date: 18/05/2017

Authorised by: KOK

Kevin Old Associate Director of Laboratory

QTSE is the trading name of DETS Ltd, company registration number 03705645

Authorised by: 2 and

Russell Jarvis Associate Director of Client Services





Soil Analysis Certificate						
QTS Environmental Report No: 17-58872	Date Sampled	09/05/17	09/05/17	09/05/17	09/05/17	09/05/17
Ashdown Site Investigations Ltd	Time Sampled	None Supplied				
Site Reference: Camley Street Natural Park, 12 Camley Street, London	TP / BH No	BH02	BH02	BH02	TP02	TP03
Project / Job Ref: R17-12131	Additional Refs	None Supplied				
Order No: P17-4817	Depth (m)	0.10	1.70	3.60	0.20	0.15
Reporting Date: 18/05/2017	QTSE Sample No	268367	268368	268369	268370	268371

Determinand	Unit	RL	Accreditation					
Asbestos Screen (S)	N/a	N/a	ISO17025	Not Detected			Detected	Detected
Sample Matrix ^(S)	Material Type	N/a	NONE				Fibre bundles	Fibre bundles
Sample Matrix V	массная туре	IN/d	NONL				present	present
Asbestos Type ^(S)	PLM Result	N/a	ISO17025				Chrysotile	Chrysotile
Asbestos Type		-						Amosite
pH	pH Units	N/a		7.3	7.8	7.7	7.2	7.4
Total Sulphate as SO ₄	mg/kg	< 200	NONE				6739	7895
Total Sulphate as SO ₄	%	< 0.02	NONE				0.67	0.79
Organic Matter	%	< 0.1	MCERTS	5.8	1.3	0.1	3.6	5.2
Arsenic (As)	mg/kg	< 2	MCERTS	22	13	14	16	15
W/S Boron	mg/kg	< 1	NONE	2.2	2	< 1	< 1	2.4
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	0.5	0.2	< 0.2	0.4	0.4
Chromium (Cr)	mg/kg	< 2	MCERTS	27	12	41	31	27
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Copper (Cu)	mg/kg	< 4	MCERTS	60	67	20	63	70
Lead (Pb)	mg/kg	< 3	MCERTS	336	423	25	156	211
Mercury (Hg)	mg/kg	< 1	NONE	< 1	2.9	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	21	12	46	16	15
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3	< 3	< 3
Zinc (Zn)	mg/kg	< 3	MCERTS	268	70	72	226	278

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30° C

Analysis carried out on the dried sample is corrected for the stone content

The samples have been examined to identify the presence of asbestiform minerals by polarising light microscopy and dispersion staining technique to In-House Procedures QTSE600 Determination of Asbestos in Bulk Materials; Asbestos in Soils/Sediments (fibre screening and identification)

This report refers to samples as received, and QTS Environmental Ltd, takes no responsibility for the accuracy or competence of sampling by others.

The material description shall be regarded as tentative and is not included in our scope of UKAS Accreditation.

Opinions and interpretations expressed herein are outside the scope of UKAS Accreditation.

Asbestos Analyst: Javeed Malik

RL: Reporting Limit

Pinch Test: Where pinch test is positive it is reported "Loose Fibres - $\ensuremath{\mathsf{PT}}'$ with type(s).





Soil Analysis Certificate - Speciated PAHs											
QTS Environmental Repor			Date Sampled	09/05/17	09/05/17	09/05/17	09/05/17	09/05/17			
Ashdown Site Investigation	ons Ltd		Time Sampled	None Supplied							
Site Reference: Camley S	treet Natural Park,		TP / BH No	BH02	BH02	BH02	TP02	TP03			
12 Camley Street, London											
Project / Job Ref: R17-12	2131	4	dditional Refs	None Supplied	None Supplied	None Supplied					
Order No: P17-4817			Depth (m)	0.10	1.70	3.60	0.20				
Reporting Date: 18/05/2	017	Q	SE Sample No	268367	268368	268369	268370	268371			
Determinand	Unit	RL						Ā			
Naphthalene	mg/kg	< 0.1	MCERTS	0.13	< 0.1	< 0.1	< 0.1	< 0.1			
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1			
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1			
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1			
Phenanthrene	mg/kg	< 0.1	MCERTS	1.07	< 0.1	< 0.1	0.60				
Anthracene	mg/kg	< 0.1	MCERTS	0.21	< 0.1	< 0.1	0.15				
Fluoranthene	mg/kg	< 0.1	MCERTS	2.15	< 0.1	< 0.1	1.26				
Pyrene	mg/kg	< 0.1	MCERTS	1.84	< 0.1	< 0.1	1.17	1.07			
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	1.01	< 0.1	< 0.1	0.60				
Chrysene	mg/kg	< 0.1	MCERTS	0.98	< 0.1	< 0.1	0.66				
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	1.50	< 0.1	< 0.1	0.81	0.92			
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	0.46	< 0.1	< 0.1	0.31	0.36			
Benzo(a)pyrene	5,5	< 0.1	MCERTS	0.92	< 0.1	< 0.1	0.51	0.63			
Indeno(1,2,3-cd)pyrene		< 0.1	MCERTS	0.58	< 0.1	< 0.1	0.34	0.41			
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1			
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	0.35	< 0.1	< 0.1	0.31	0.39			
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	11.2	< 1.6	< 1.6	6.7	6.9			





Soil Analysis Certificate	Soil Analysis Certificate - EPH Banded (Type F)											
QTS Environmental Report	rt No: 17-58872		Date Sampled	09/05/17	09/05/17							
Ashdown Site Investigati	ons Ltd		Time Sampled	None Supplied	None Supplied							
Site Reference: Camley S	Street Natural Park,		TP / BH No	TP02	TP03							
12 Camley Street, Londor	ı											
Project / Job Ref: R17-12	2131		Additional Refs	None Supplied	None Supplied							
Order No: P17-4817			Depth (m)	0.20	0.15							
Reporting Date: 18/05/2	2017	Q	TSE Sample No	268370	268371							
Determinand	Unit	RL	Accreditation									
EPH (>C8 - C10)	mg/kg	< 1	MCERTS	< 1	< 1							
EPH (>C10 - C12)	mg/kg	< 1	MCERTS	< 1	< 1							
EPH (>C12 - C16)	mg/kg	< 1	MCERTS	< 1	< 1							
EPH (>C16 - C21)	mg/kg	< 1	MCERTS	13	8							
EPH (>C21 - C40)	mg/kg	< 6	MCERTS	242	114							
EPH (C8 - C40)	mg/kg	< 6	MCERTS	255	122							





Soil Analysis Certificate		d					
QTS Environmental Report			Date Sampled	09/05/17	09/05/17	09/05/17	
Ashdown Site Investigati	ons Ltd		Time Sampled	None Supplied	None Supplied	None Supplied	
Site Reference: Camley S	treet Natural Park,		TP / BH No	BH02	BH02	BH02	
12 Camley Street, London	1						
Project / Job Ref: R17-12	2131		Additional Refs	None Supplied	None Supplied	None Supplied	
Order No: P17-4817			Depth (m)	0.10	1.70	3.60	
Reporting Date: 18/05/2	2017	Q	TSE Sample No	268367	268368	268369	
Determinand			Accreditation				
Aliphatic >C5 - C6		< 0.01	NONE	< 0.01	< 0.01	< 0.01	
Aliphatic >C6 - C8		< 0.05		< 0.05	< 0.05	< 0.05	
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3	< 3	
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10	< 10	
Aliphatic (C5 - C34)			NONE	< 21	< 21	< 21	
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	
Aromatic >C8 - C10			MCERTS	< 2	< 2	< 2	
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	2	< 2	< 2	
Aromatic >C16 - C21	mg/kg		MCERTS	11	< 3	< 3	
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	49	< 10	< 10	
Aromatic (C5 - C35)	mg/kg	< 21	NONE	62	< 21	< 21	
Total >C5 - C35	mg/kg	< 42	NONE	62	< 42	< 42	





Soil Analysis Certificate	- BTEX / MTBE						
QTS Environmental Repor	QTS Environmental Report No: 17-58872		Date Sampled	09/05/17	09/05/17	09/05/17	
Ashdown Site Investigation	ons Ltd		Time Sampled	None Supplied	None Supplied	None Supplied	I
Site Reference: Camley S	treet Natural Park,		TP / BH No	BH02	BH02	BH02	
12 Camley Street, London	1						
Project / Job Ref: R17-12	2131		Additional Refs	None Supplied	None Supplied	None Supplied	
Order No: P17-4817			Depth (m)	0.10	1.70	3.60	
Reporting Date: 18/05/2	017	Q	TSE Sample No	268367	268368	268369	
Determinand	Unit	RL	Accreditation				
Benzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	
Toluene	ug/kg	< 5	MCERTS	9	< 5	< 5	
Ethylbenzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	
p & m-xylene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	
o-xylene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	
MTBE	ua/ka	< 5	MCERTS	< 5	< 5	< 5	





QTS Environmental Report No:	: 17-58872	Date Sampled	09/05/17		Landfill Was	te Acceptance (Criteria Limi
Ashdown Site Investigations L	td	Time Sampled	None Supplied				
Site Reference: Camley Street Park, 12 Camley Street, Londo		TP / BH No Additional Refs	BH02			Stable Non-	
Project / Job Ref: R17-12131			None Supplied		Inert Waste	reactive HAZARDOUS	Hazardou Waste
Order No: P17-4817		Depth (m)	0.10		Landfill	waste in non- hazardous Landfill	Landfill
Reporting Date: 18/05/2017		QTSE Sample No	268367			Lanutin	
Determinand	Unit	MDL					
TOC ^{MU}	%	< 0.1	3.4		3%	5%	6%
Loss on Ignition	%	< 0.01	12.90				10%
BTEX ^{MU}	mg/kg	< 0.05	< 0.05		6		
Sum of PCBs	mg/kg	< 0.1	< 0.1		1		
Mineral Oil ^{MU}	mg/kg	< 10	< 10		500		
	mg/kg	< 1.7	11.2		100		
рН ^{ми}	pH Units	N/a	7.3			>6	
Acid Neutralisation Capacity	mol/kg (+/-)	< 1	1.9			To be evaluated	To be evaluated
			10:1	Cumulative		for compliance	
Eluate Analysis				10:1	using BS I	EN 12457-3 at l	L/S 10 l/kg
11	-		mg/l	mg/kg	0.5	(mg/kg)	25
Arsenic ^u	-		0.01	0.1	0.5	2	25
Barium ^U	_		0.03	0.3	20	100	300
Cadmium ^U	-		< 0.0005	< 0.005	0.04	1	5
	-		< 0.005	< 0.05	0.5	10	70
Copper ^U	-		0.02	0.2	2	50	100
Mercury ^U	-		< 0.0005	< 0.01	0.01	0.2	2
Molybdenum ^U	-		0.006	0.06	0.5	10	30 40
Nickel ^u	-		< 0.007	< 0.07	0.4	10	-
Lead ^U	-		0.036	0.36	0.5	10	50
Antimony	-		< 0.005	< 0.05	0.06	0.7	5
Selenium ^U	-		< 0.005	< 0.05	0.1	0.5	7
Zinc ^U	-		0.020	0.20	4	50	200
Chloride ^U	-1		11	108	800	15000	25000
Fluoride ^U	-1		< 0.5	< 5	10	150	500
Sulphate ^U	-1		32	322	1000	20000	50000
TDS Phenol Index	-1		179	1789	4000 1	60000	100000
DOC	-1		< 0.01 18.5	< 0.1 185	500	- 800	- 1000
			18.5	185	500	800	1000
Leach Test Information	1				4		
	1				-		
	1				4		
					4		
Sample Mass (kg)			0.11		4		
Dry Matter (%)			82.9	1			
Moisture (%)			20.6	İ	1		
Stage 1					1		
			0.00				
Volume Eluate L10 (litres)			0.88				
			0.00				
			0.00		-		

Stated limits are for guidance only and QTS Environmental cannot be held responsible for any discrepencies with current legislation M Denotes MCERTS accredited test U Denotes ISO17025 accredited test





Soil Analysis Certificate - Sample Descriptions	
QTS Environmental Report No: 17-58872	
Ashdown Site Investigations Ltd	
Site Reference: Camley Street Natural Park, 12 Camley Street, London	
Project / Job Ref: R17-12131	
Order No: P17-4817	
Reporting Date: 18/05/2017	

QTSE Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
268367	BH02	None Supplied	0.10	17.1	Brown sandy clay with stones and brick
268368	BH02	None Supplied	1.70	13.6	Black sandy clay with brick
268369	BH02	None Supplied	3.60	19	Brown clay
268370	TP02	None Supplied	0.20	6.2	Grey sandy gravel with stones and concrete
268371	TP03	None Supplied	0.15	7.8	Grey sandy gravel with stones and concrete

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample ^{I/S} Unsuitable Sample ^{U/S}





Soil Analysis Certificate - Methodology & Miscellaneous Information
QTS Environmental Report No: 17-58872
Ashdown Site Investigations Ltd
Site Reference: Camley Street Natural Park, 12 Camley Street, London
Project / Job Ref: R17-12131
Order No: P17-4817
Reporting Date: 18/05/2017

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR		Determination of BTEX by headspace GC-MS	E001
Soil	D		Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1.5 diphenvlcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR		Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D		Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR		Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR		Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR		Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by	E004
		C12-C16, C16-C21, C21-C40)		
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D		Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR		Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR		Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D		Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR		Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR		Determination of phenols by distillation followed by colorimetry	E021
Soil	D		Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D		Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D		Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D		Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR		Determination of sulphide by distillation followed by colorimetry	E018
Soil	D		Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry.	E017
Soil	D		Gravimetrically determined through extraction with toluene	E011
Soil	D		Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR		Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)		E004
Soil	AR		Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried

DETS

Pete Millis Ashdown Site Investigations Ltd Unit 3 The Grain Store Ditchling Common Business Park Ditchling Common West Sussex BN6 8SG



DETS Ltd Unit 1 Rose Lane Industrial Estate Rose Lane Lenham Heath Kent ME17 2JN **t:** 01622 850410 russell.jarvis@qtsenvironmental.com

DETS Report No: 18-78723

Site Reference:	Camley Street Natural Park, Camley Street, London
Project / Job Ref:	R18-13059
Order No:	P18-6379
Sample Receipt Date:	13/07/2018
Sample Scheduled Date:	13/07/2018
Report Issue Number:	1
Reporting Date:	20/07/2018

Authorised by:

KO CP

Kevin Old Associate Director of Laboratory

Authorised by:

un 6

Russell Jarvis Associate Director of Client Services





Soil Analysis Certificate						
DETS Report No: 18-78723	Date Sampled	04/07/18	04/07/18	04/07/18	04/07/18	04/07/18
Ashdown Site Investigations Ltd	Time Sampled	None Supplied				
Site Reference: Camley Street Natural Park, Camley	TP / BH No	TP113	TP113	TP114	TP115	TP116
Street, London						
Project / Job Ref: R18-13059	Additional Refs	None Supplied				
Order No: P18-6379	Depth (m)	0.20	0.40	0.20	0.20	0.40
Reporting Date: 20/07/2018	QTSE Sample No	347133	347134	347135	347136	347137

Determinand	Unit	RL	Accreditation					
Asbestos Screen ^(S)	N/a	N/a	ISO17025	Not Detected				
рН	pH Units	N/a	MCERTS	7.8				8.7
Total Sulphate as SO ₄	mg/kg	< 200	NONE	850				523
Total Sulphate as SO ₄	%	< 0.02	NONE	0.09				0.05
Organic Matter	%	< 0.1	MCERTS	6.9				2.4
Arsenic (As)	mg/kg	< 2	MCERTS	21				11
W/S Boron	mg/kg	< 1	NONE	1.5				< 1
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	0.4				0.3
Chromium (Cr)	mg/kg	< 2	MCERTS	31				19
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2				< 2
Copper (Cu)	mg/kg	< 4	MCERTS	42				35
Lead (Pb)	mg/kg	< 3	MCERTS	162				166
Mercury (Hg)	mg/kg	< 1	NONE	< 1				< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	13				14
Selenium (Se)	mg/kg	< 3	NONE	< 3				< 3
Zinc (Zn)	mg/kg	< 3	MCERTS	118				431

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30° C Subcontracted analysis (S)





Soil Analysis Certificate - Speciated PAHs					
DETS Report No: 18-78723	Date Sampled	04/07/18	04/07/18		
Ashdown Site Investigations Ltd	Time Sampled	None Supplied	None Supplied		
Site Reference: Camley Street Natural Park, Camley Street, London	TP / BH No	TP113	TP116		
Project / Job Ref: R18-13059	Additional Refs	None Supplied	None Supplied		
Order No: P18-6379	Depth (m)	0.20	0.40		
Reporting Date: 20/07/2018	QTSE Sample No	347133	347137		

Determinand	Unit	RL	Accreditation				
Naphthalene	mg/kg	< 0.1	MCERTS	0.22	0.23		
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Phenanthrene	mg/kg	< 0.1	MCERTS	0.72	0.83		
Anthracene	mg/kg	< 0.1	MCERTS	0.17	0.22		
Fluoranthene	mg/kg	< 0.1	MCERTS	1.50	1.65		
Pyrene	mg/kg	< 0.1	MCERTS	1.31	1.39		
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	0.90	0.84		
Chrysene	mg/kg	< 0.1	MCERTS	0.84	0.83		
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	1.27	1.07		
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	0.46	0.45		
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	0.95	0.82		
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	0.72	0.60		
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	0.61	0.52		
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	9.7	9.4		





Soil Analysis Certificate - EPH Banded (Type F)									
DETS Report No: 18-78723	Date Sampled	04/07/18	04/07/18						
Ashdown Site Investigations Ltd	Time Sampled	None Supplied	None Supplied						
Site Reference: Camley Street Natural Park, Camley Street, London	TP / BH No	TP113	TP116						
Project / Job Ref: R18-13059	Additional Refs	None Supplied	None Supplied						
Order No: P18-6379	Depth (m)	0.20	0.40						
Reporting Date: 20/07/2018	QTSE Sample No	347133	347137						

Determinand	Unit	RL	Accreditation				
EPH (>C8 - C10)	mg/kg	< 1	MCERTS	< 1	< 1		
EPH (>C10 - C12)	mg/kg	< 1	MCERTS	< 1	< 1		
EPH (>C12 - C16)	mg/kg	< 1	MCERTS	17	3		
EPH (>C16 - C21)	mg/kg	< 1	MCERTS	54	17		
EPH (>C21 - C40)	mg/kg	< 6	MCERTS	424	116		
EPH (C8 - C40)	mg/kg	< 6	MCERTS	495	137		





Soil Analysis Certificate - Sample Descriptions					

QTSE Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
347133	TP113	None Supplied	0.20	12.6	Brown sandy clay with vegetation and brick
347137	TP116	None Supplied	0.40	7	Brown sandy clay with stones

Moisture content is part of procedure E003 & is not an accredited test Insufficient Sample $^{\rm I/S}$

Unsuitable Sample U/S





oil Analysis Certificate - Methodology & Miscellaneous Information	
ETS Report No: 18-78723	
shdown Site Investigations Ltd	
ite Reference: Camley Street Natural Park, Camley Street, London	
roject / Job Ref: R18-13059	
order No: P18-6379	
eporting Date: 20/07/2018	

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR		Determination of BTEX by headspace GC-MS	E001
Soil	D		Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D		Determination of chloride by extraction with water & analysed by ion chromatography	E009
			Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of	
Soil	AR	Chromium - Hexavalent	1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	· · · · · · · · · · · · · · · · · · ·	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR		Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR		Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D		Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR		Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR		Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
- 301			Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by	L004
Soil	AR	C12-C16, C16-C21, C21-C40)	headspace GC-MS	E004
Soil	D		Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D		Determination of metals by aqua-regia digestion followed by ICP-OES	E023
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D		Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D		Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR		Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR		Determination of phenols by distillation followed by colorimetry	E021
Soil	D		Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D		Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D		Determination of sulphate by extraction with water & analysed by ion chromatography	E013
Soil	D		Determination of water soluble sulphate by extraction with water to lowed by ICP-OES	E009 E014
Soil	AR			E014 E018
	D AR		Determination of sulphide by distillation followed by colorimetry	
Soil	U	Sulphur - 10tal	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR		Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC- MS	E006
Soil	AR	I hiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34,	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	C5-C7, C7-C8, C8-C10, C10-C12, C12- C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR		Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried AR As Received

DETS

Alex Bewick Ashdown Site Investigations Ltd Unit 3 The Grain Store Ditchling Common Business Park Ditchling Common West Sussex BN6 8SG



DETS Ltd Unit 1 Rose Lane Industrial Estate Rose Lane Lenham Heath Kent ME17 2JN **t:** 01622 850410 russell.jarvis@qtsenvironmental.com

DETS Report No: 18-78724

Site Reference:	Camley Street Natural Park, Camley Street, London
Project / Job Ref:	R18-13059
Order No:	P18-6367
Sample Receipt Date:	13/07/2018
Sample Scheduled Date:	13/07/2018
Report Issue Number:	1
Reporting Date:	20/07/2018

Authorised by:

KO CP

Kevin Old Associate Director of Laboratory

Authorised by:

un 6

Russell Jarvis Associate Director of Client Services





Soil Analysis Certificate						
DETS Report No: 18-78724	Date Sampled	04/07/18	04/07/18	04/07/18	04/07/18	04/07/18
Ashdown Site Investigations Ltd	Time Sampled	None Supplied				
Site Reference: Camley Street Natural Park, Camley	TP / BH No	TP101	TP102	TP103	TP104	TP105
Street, London						
Project / Job Ref: R18-13059	Additional Refs	None Supplied				
Order No: P18-6367	Depth (m)	0.20	0.20	0.20	0.20	0.20
Reporting Date: 20/07/2018	QTSE Sample No	347138	347139	347140	347141	347142

Determinand	Unit	RL	Accreditation					
Asbestos Screen ^(S)	N/a	N/a		Not Detected				
Sample Matrix ^(S)	Material Type	N/a						
Asbestos Type ^(S)	PLM Result	N/a	ISO17025					
pH	pH Units	N/a	MCERTS				7.8	
Total Sulphate as SO ₄	mg/kg	< 200	NONE				2799	
Total Sulphate as SO ₄	%	< 0.02	NONE				0.28	
Organic Matter	%	< 0.1	MCERTS				3.1	
Arsenic (As)	mg/kg	< 2	MCERTS				14	
W/S Boron	mg/kg	< 1	NONE				< 1	
Cadmium (Cd)	mg/kg	< 0.2	MCERTS				< 0.2	
Chromium (Cr)	mg/kg	< 2	MCERTS				34	
Chromium (hexavalent)	mg/kg	< 2	NONE				< 2	
Copper (Cu)	mg/kg	< 4	MCERTS				19	
Lead (Pb)	mg/kg	< 3	MCERTS				92	
Mercury (Hg)		< 1	NONE				< 1	
Nickel (Ni)	mg/kg	< 3	MCERTS				18	
Selenium (Se)	mg/kg	< 3	NONE				< 3	
Zinc (Zn)		< 3	MCERTS				98	





Soil Analysis Certificate						
DETS Report No: 18-78724	Date Sampled	04/07/18	04/07/18	04/07/18	04/07/18	04/07/18
Ashdown Site Investigations Ltd	Time Sampled	None Supplied				
Site Reference: Camley Street Natural Park, Camley	TP / BH No	TP106	TP107	TP108	TP108	TP109
Street, London						
Project / Job Ref: R18-13059	Additional Refs	None Supplied				
Order No: P18-6367	Depth (m)	0.20	0.20	0.20	0.40	0.20
Reporting Date: 20/07/2018	QTSE Sample No	347143	347144	347145	347146	347147

Determinand	Unit	RL	Accreditation					
Asbestos Screen ^(S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Detected	Not Detected	Not Detected
Sample Matrix ^(S)	Material Type	N/a	NONE			Loose fibrous asbestos debris		
Asbestos Type ^(S)	PLM Result	N/a	ISO17025			Chrysotile		
pН	pH Units	N/a	MCERTS				8.0	
Total Sulphate as SO₄	mg/kg	< 200	NONE				2110	
Total Sulphate as SO₄	%	< 0.02	NONE				0.21	
Organic Matter	%	< 0.1	MCERTS				4	
Arsenic (As)	mg/kg	< 2	MCERTS				10	
W/S Boron	mg/kg	< 1	NONE				< 1	
Cadmium (Cd)	mg/kg	< 0.2	MCERTS				< 0.2	
Chromium (Cr)	mg/kg	< 2	MCERTS				21	
Chromium (hexavalent)		< 2	NONE				< 2	
Copper (Cu)	mg/kg	< 4	MCERTS				22	
Lead (Pb)	mg/kg	< 3	MCERTS				69	
Mercury (Hg)		< 1	NONE				< 1	
Nickel (Ni)	mg/kg	< 3	MCERTS				13	
Selenium (Se)	mg/kg	< 3	NONE				< 3	
Zinc (Zn)	mg/kg	< 3	MCERTS				73	





Soil Analysis Certificate						
DETS Report No: 18-78724	Date Sampled	04/07/18	04/07/18	04/07/18	04/07/18	04/07/18
Ashdown Site Investigations Ltd	Time Sampled	None Supplied				
Site Reference: Camley Street Natural Park, Camley	TP / BH No	TP109	TP110	TP110	TP111	TP111
Street, London						
Project / Job Ref: R18-13059	Additional Refs	None Supplied				
Order No: P18-6367	Depth (m)	0.40	0.20	0.40	0.20	0.40
Reporting Date: 20/07/2018	QTSE Sample No	347148	347149	347150	347151	347152

Determinand	Unit	RI	Accreditation					
Asbestos Screen ^(S)	N/a	N/a		Detected	Not Detected	Detected	Not Detected	Not Detected
	1170	ny a	1001/020	Dettetted	Not Detected	Dettetted	Not Dettetted	Not Detected
Sample Matrix ^(S)	Material Type	N/a	NONE	Loose fibrous asbestos debris		Fibres bundle in soil		
Asbestos Type ^(S)	PLM Result	N/a	ISO17025	Amosite		Chrysotile		
pH	pH Units	N/a	MCERTS			6.6		
Total Sulphate as SO ₄	mg/kg	< 200	NONE			1444		
Total Sulphate as SO ₄	%	< 0.02	NONE			0.14		
Organic Matter	%	< 0.1	MCERTS			6.4		
Arsenic (As)	mg/kg	< 2	MCERTS			15		
W/S Boron	mg/kg	< 1	NONE			1.1		
Cadmium (Cd)		< 0.2	MCERTS			0.2		
Chromium (Cr)	mg/kg	< 2	MCERTS			17		
Chromium (hexavalent)	mg/kg	< 2	NONE			< 2		
Copper (Cu)		< 4	MCERTS			39		
Lead (Pb)	mg/kg	< 3	MCERTS			251		
Mercury (Hg)		< 1	NONE			< 1		
Nickel (Ni)	mg/kg	< 3	MCERTS			11		
Selenium (Se)		< 3	NONE			< 3		
Zinc (Zn)	mg/kg	< 3	MCERTS			93		





Soil Analysis Certificate				
DETS Report No: 18-78724	Date Sampled	04/07/18		
Ashdown Site Investigations Ltd	Time Sampled	None Supplied		
Site Reference: Camley Street Natural Park, Camley	TP / BH No	TP112		
Street, London				
Project / Job Ref: R18-13059	Additional Refs	None Supplied		
Order No: P18-6367	Depth (m)	0.40		
Reporting Date: 20/07/2018	QTSE Sample No	347153		

Determinand	Unit	RL	Accreditation			
Asbestos Screen ^(S)	N/a	N/a				
Sample Matrix ^(S)	Material Type	N/a	NONE	Fibre bundles of Chrysotile and Amosite in loose fibrous asbestos debris		
Asbestos Type ^(S)	PLM Result	N/a	ISO17025	Chrysotile Amosite		
pH	pH Units	N/a	MCERTS			
Total Sulphate as SO ₄	mg/kg	< 200	NONE			
Total Sulphate as SO ₄	%	< 0.02	NONE			
Organic Matter	%	< 0.1	MCERTS			
Arsenic (As)	mg/kg	< 2	MCERTS			
W/S Boron	mg/kg	< 1	NONE			
Cadmium (Cd)	mg/kg	< 0.2	MCERTS			
Chromium (Cr)	mg/kg	< 2	MCERTS			
Chromium (hexavalent)	mg/kg	< 2	NONE			
Copper (Cu)	mg/kg	< 4	MCERTS			
Lead (Pb)	mg/kg	< 3	MCERTS			
Mercury (Hg)	mg/kg	< 1	NONE			
Nickel (Ni)	mg/kg	< 3	MCERTS			
Selenium (Se)	mg/kg	< 3	NONE			
Zinc (Zn)	mg/kg	< 3	MCERTS			





Soil Analysis Certificate - Speciated PAHs										
DETS Report No: 18-78724	Date Sampled	04/07/18	04/07/18	04/07/18						
Ashdown Site Investigations Ltd	Time Sampled	None Supplied	None Supplied	None Supplied						
Site Reference: Camley Street Natural Park, Camley Street, London	TP / BH No	TP104	TP108	TP110						
Project / Job Ref: R18-13059	Additional Refs	None Supplied	None Supplied	None Supplied						
Order No: P18-6367	Depth (m)	0.20	0.40	0.40						
Reporting Date: 20/07/2018	QTSE Sample No	347141	347146	347150						

Determinand	Unit	RL	Accreditation				
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	0.12	1.13	
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.11	
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.13	
Phenanthrene	mg/kg	< 0.1	MCERTS	0.28	0.64	1.69	
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	0.17	0.26	
Fluoranthene	mg/kg	< 0.1	MCERTS	0.61	1.43	2.22	
Pyrene	mg/kg	< 0.1	MCERTS	0.53	1.24	1.93	
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	0.35	0.73	0.97	
Chrysene	mg/kg	< 0.1	MCERTS	0.36	0.76	1.08	
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	0.48	1.04	1.30	
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	0.20	0.36	0.40	
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	0.36	0.81	0.84	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	0.29	0.62	0.62	
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	0.26	0.52	0.47	
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	3.7	8.4	13.1	





Soil Analysis Certificate - EPH Banded (Type F)										
DETS Report No: 18-78724	Date Sampled	04/07/18	04/07/18	04/07/18						
Ashdown Site Investigations Ltd	Time Sampled	None Supplied	None Supplied	None Supplied						
Site Reference: Camley Street Natural Park, Camley Street, London	TP / BH No	TP104	TP108	TP110						
Project / Job Ref: R18-13059	Additional Refs	None Supplied	None Supplied	None Supplied						
Order No: P18-6367	Depth (m)	0.20	0.40	0.40						
Reporting Date: 20/07/2018	QTSE Sample No	347141	347146	347150						

Determinand	Unit	RL	Accreditation				
EPH (>C8 - C10)	mg/kg	< 1	MCERTS	< 1	< 1	15	
EPH (>C10 - C12)	mg/kg	< 1	MCERTS	< 1	< 1	14	
EPH (>C12 - C16)	mg/kg	< 1	MCERTS	1	2	42	
EPH (>C16 - C21)	mg/kg	< 1	MCERTS	21	24	71	
EPH (>C21 - C40)	mg/kg	< 6	MCERTS	209	251	204	
EPH (C8 - C40)	mg/kg	< 6	MCERTS	231	277	346	





Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 18-78724	
Ashdown Site Investigations Ltd	
Site Reference: Camley Street Natural Park, Camley Street, London	
Project / Job Ref: R18-13059	
Order No: P18-6367	
Reporting Date: 20/07/2018	

QTSE Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
347141	TP104	None Supplied	0.20	4.4	Light grey sandy clay with stones and concrete
347146	TP108	None Supplied	0.40	3.2	Brown sandy clay with stones and stones
347150	TP110	None Supplied	0.40	10.2	Brown sandy clay with stones and brick

Moisture content is part of procedure E003 & is not an accredited test Insufficient Sample $^{\rm I/S}$

Unsuitable Sample U/S





Soil Analysis Certificate - Methodology & Miscellaneous Information	
DETS Report No: 18-78724	
Ashdown Site Investigations Ltd	
Site Reference: Camley Street Natural Park, Camley Street, London	
Project / Job Ref: R18-13059	
Order No: P18-6367	
Reporting Date: 20/07/2018	

Soil AR Chromium - nexvalerit L5 diphenytachazide followed by colorimetry Soil AR Cyanide - free Determination of complex cyanide by distillation followed by colorimetry Soil AR Cyanide - Total Determination of free cyanide by distillation followed by colorimetry Soil AR Cyanide - Total Determination of total cyanide by distillation followed by colorimetry Soil AR Disel Range Organics (CLD - C24) Determination of lextract onductivity by addition of saturated calcium sulphate fol electrometric measurement Soil AR Electrical Conductivity Determination of electrical conductivity by addition of water followed by GC-MS Soil AR Electrical Conductivity Determination of acetone/hexane extractable hydrocarbons by GC-FID Soil AR EPH Product ID Determination of acetone/hexane extractable hydrocarbons by GC-FID Soil AR EPH Product ID Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C4C Soil D FPH Product ID Determination of factorian or prostable hydrocarbons by GC-FID for C8 to C4C Soil D FPH Product ID Determination of factorian or prostable hydrocarbons by GC-FID for C8 to C4C Soil D FDC (Fraction Organic Carbon De	d Brief Method Description M	Method No
Soil AR BTEX Determination of BTEX by headspace GC-MS Soil D Chioride - Water Soluble (2:1) Determination of chioride by extraction with water & analysed by ion chromatograph Soil AR Chromium - Heavalent L5 diphenylcarbazide followed by colorimetry Soil AR Cyanide - Complex Determination of recyande by distillation followed by colorimetry Soil AR Cyanide - Total Determination of or total cyanide by distillation followed by colorimetry Soil AR Cyanide - Total Determination of total cyanide by distillation followed by colorimetry Soil AR Cyanide - Total Determination of thexanet/actorne extractable hydrocarbons by GC-HD Soil AR Electrical Conductivity Determination of electrical conductivity by addition of water followed by colorimetry Soil AR Electrical Conductivity Determination of electrical conductivity by addition of water followed by GC-HD Soil AR Electrical Conductivity Determination of actione/hexane extractable hydrocarbons by GC-HD Soil AR Electrical Conductivity Determination of actione/hexane extractable hydrocarbons by GC-HD Soil AR Electrical Conductivity Detothydrocarbon	Water Soluble Determination of water soluble boron in soil by 2:1 bot water extract followed by ICP-OFS	E012
Soil D Cations Determination of cations in soil by aque-regia digestion followed by LCP-OES Soil D Chloride: Vister Soluble (2:1) Chloride: Vister Soluble (2:1) Soil AR Chromium - Hexavalent Chromium in by extraction with water & analysed by ion chromatograph Soil AR Cyanide - Free Determination of complex cyanide by distillation followed by colorimetry Soil AR Cyanide - Free Determination of total cyanide by distillation followed by colorimetry Soil AR Cyanide - Total Determination of total cyanide by distillation followed by colorimetry Soil AR Cyclohexane Extractable Matter (CEM) Gravimetically determined mode extractable hydrocarbons by GC-HD Soil AR Electrical Conductivity Determination of electrical conductivity by addition of saturated calcium sulphate followed by colorimetry Soil AR Electrical Conductivity Determination of acetone/hexane extractable hydrocarbons by GC-HD Soil AR Electrical Conductivity Determination of acetone/hexane extractable hydrocarbons by GC-HD Soil AR Electrical Conductivity Determination of acetone/hexane extractable hydrocarbons by GC-HD Soil AR Elec		E012
Soil D Chloride - Water Soluble (2:1) Determination of chloride by extraction with water & analysed by ion chromatograph Soil AR Chromium - Hexvalent J.5 dipheny/carbazide followed by colorimetry Soil AR Cyanide - Complex Determination of complex cyanide by distillation followed by colorimetry Soil AR Cyanide - Tree Determination of tree cyanide by distillation followed by colorimetry Soil AR Cyanide - Tree Determination of tree cyanide by distillation followed by colorimetry Soil AR Desel Range Organics (CIO - C24) Determination of tree cyanide by distillation followed by colorimetry Soil AR Electrical Conductivity Determination of electrical conductivity by addition of saturated calcium sulphate fol electronetric measurement Soil AR Electrical Conductivity Determination of aceton/hexane estractable hydrocarbons by GC-FID Soil AR EPH COLO - C40) Determination of aceton/hexane estractable hydrocarbons by GC-FID Soil AR EPH Product Determination of aceton/hexane estractable hydrocarbons by GC-FID Soil AR EPH roduct Determination of aceton/hexane estractable hydrocarbons by GC-FID Soil AR EPH roduct Determination of facoton organic car		E001
Soil AR Chromium - Hexavered J.5 diphenylcarbazide followed by colorimetry Soil AR Cyanide - Complex Determination of complex cyanide by distillation followed by colorimetry Soil AR Cyanide - Tota Determination of free cyanide by distillation followed by colorimetry Soil AR Cyanide - Tota Determination of total cyanide by distillation followed by colorimetry Soil D Cyclohexane Extractable Matter (CEM) Gravimetrically determined through extractable hydrocarbons by GC-FID Soil AR Diesel Range Organis (C10 - C24) Determination of elextrical conductivity by addition of saturated calcium sulphate fol detormetric measurement Soil AR Electrical Conductivity Determination of electrical conductivity by addition of water followed by CC-FID Soil AR Electrical Conductivity Determination of actom/hexane extractable hydrocarbons by CC-FID Soil AR EPH FockuC1 Determination of actom/hexane extractable hydrocarbons by CC-FID for C8 to C4(C12-C16, C12, C12-C14) Determination of actom/hexane extractable hydrocarbons by CC-FID for C8 to C4(C12-C16, C12, C12-C14) Determination of factom of organic carbon by oxidising with potassium dichromate furtace Soil D FDH FockuC1 Determination of factom of organic carbon by oxidising with potassium dichromate furtace Soil D FOC (Fraction Organic Ca		E009
Soli AR Curromum - nexavalem J.S diphenytachexide followed by colorimetry Soli AR Cyanide - Free Determination of complex cyanide by distillation followed by colorimetry Soli AR Cyanide - Total Determination of total cyanide by distillation followed by colorimetry Soli AR Cyanide - Total Determination of total cyanide by distillation followed by colorimetry Soli AR Diesel Range Organics (CIO - C24) Determination of electrical conductivity by addition of saturated calcium sulphate fol electrometric measurement. Soli AR Electrical Conductivity Determination of electrical conductivity by addition of water followed by GC-MS Soli AR Electrical Conductivity Determination of actone/hexane extractable hydrocarbons by GC-FID Soli AR EPH FICLO - C40) Determination of actone/hexane extractable hydrocarbons by GC-FID Soli AR EPH TEXAS (CG-C2, GC-C10, CIO-C12, Determination of actone/hexane extractable hydrocarbons by GC-FID for C8 to C4C Soli AR EPH TEXAS (CG-C2, GC-C10, CIO-C12, Determination of actone/hexane extractable hydrocarbons by GC-FID for C8 to C4C Soli D Fluoride - Water Soluble Determination of actone/hexane extractable hydrocarbons by GC-FID for C8 to C4C Soli D Fluoride - Water Sol	Determination of beyavalent chromium in soil by extraction in water then by acidification, addition of	
Soil AR Cyanide - Free Determination of free cyanide by distillation followed by colorimetry Soil D Cyclohexane Extractable Matter (CEM) Gravimetically determined through extraction with cyclohexane Soil AR Diese Range Organics (C10 - C44) Determination of hexane/acetone extractable hydrocarbons by GC-FID Soil AR Electrical Conductivity Determination of electrical conductivity by addition of asturated calcium sulphate followed by celorimetry Soil AR Electrical Conductivity Determination of electrical conductivity by addition of water followed by GC-FID Soil AR Electrical Conductivity Determination of acetone/hexane extractable hydrocarbons by GC-FID Soil AR EPH (C10 - C40) Determination of acetone/hexane extractable hydrocarbons by GC-FID Soil AR EPH TEXAS (GC-G, GC-C10, C10-C12) Determination of acetone/hexane extractable hydrocarbons by GC-FID Soil D Fluoride - Water Soluble Determination of fluoride by extraction with water & analysed by ion chromatograph Soil D Fluoride - Water Soluble Determination of fluoride by extraction with water followed by ICF-GO Soil D Magnesium - Water Soluble Determination of matersoluble magnesium by extraction with water followed by IC	n - Hexavalent 1,5 diphenylcarbazide followed by colorimetry	E016
Soil AR Cyanide - Total Opermination of total cyanide by distillation followed by colorimetry Soil D Cyclohexane Extractable Matter (CEM) Gravimetrically determined through extraction with cyclohexane Soil AR Diesel Range Organics (C10 - C24) Determination of hexane/acetone extractable hydrocarbons by GC-FID Soil AR Electrical Conductivity Determination of electrical conductivity by addition of water followed by electrometric measurement Soil AR Electrical Conductivity Determination of acetone/hexane extractable hydrocarbons by GC-FID Soil AR EPH rotoxit Di Determination of acetone/hexane extractable hydrocarbons by GC-FID Soil AR EPH TEXAS (C6-C8, C8-C10, C10-C12, Determination of flouride by extraction with water & analysed by ion chromatograpi Soil D Fluoride - Water Soluble Determination of flouride by extraction with water & analysed by ion chromatograpi Soil D Fluoride - Water Soluble Determination of meals by aqua-regia digestion followed by ICP-OES Soil D Loss on Ignition @ 450oc Determination of meals by aqua-regia digestion followed by ICP-DES Soil D Mineral Ol (C10 - C40) Determination of hexane/actone extractable hydrocarbo		E015
Soil D Cyclohexane Extractable Matter (CEM) Gravimetrically determined through extraction with cyclohexane Soil AR Diesel Range Organics (CI - C24) Determination of hexane/actone extractable hydrocarbons by GC-FID Soil AR Electrical Conductivity electronetric measurement Determination of electrical conductivity by addition of saturated calcium sulphate fol electronetric measurement Soil AR Electrical Conductivity Determination of electrical conductivity by addition of saturated calcium sulphate fol electronetric measurement Soil AR EPH TC10 – C40) Determination of actone/hexane extractable hydrocarbons by GC-FID Soil AR EPH TeXAS (C6-C8, C8-C10, C10-C12, petermination of actone/hexane extractable hydrocarbons by GC-FID or C8 to C40 C12-C16, C16-C21, C21-C40) Determination of faction of peane extractable hydrocarbons by GC-FID or C8 to C40 C12-C16, C16-C21, C21-C40) Soil D Flouride - Water Soluble Determination of faction of organic carbon by oxidising with potassium dichromate thration with inor (11) sulphate Soil D Magnesium - Water Soluble Determination of metas by aqueregia digestion followed by (CP-DES Soil D Magnesium - Water Soluble C10 Determination of relative application with water & analysed by ion chromatograpi furnace Soil D Magnesium - Water		E015
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SoilDPhosphate - Water Soluble (2:1)Determination of phosphate by extraction with water & analysed by ion chromatograSoilDSulphate (as SO4) - TotalDetermination of total sulphate by extraction with 10% HCl followed by ICP-OESSoilDSulphate (as SO4) - Water Soluble (2:1)Determination of sulphate by extraction with water & analysed by ion chromatograpSoilDSulphate (as SO4) - Water Soluble (2:1)Determination of sulphate by extraction with water & analysed by ion chromatograpSoilDSulphate (as SO4) - Water Soluble (2:1)Determination of water soluble sulphate by extraction with water followed by ICP-OESSoilARSulphideDetermination of sulphide by distillation followed by colorimetrySoilDSulphur - TotalDetermination of semi-volatile organic compounds by extraction in acetone and hexeSoilARSVOCDetermination of thiocyanate by extraction in caustic soda followed by acidification f addition of ferric nitrate followed by colorimetry		E007
SoilDSulphate (as SO4) - TotalDetermination of total sulphate by extraction with 10% HCl followed by ICP-OESSoilDSulphate (as SO4) - Water Soluble (2:1)Determination of sulphate by extraction with water & analysed by ion chromatograpSoilDSulphate (as SO4) - Water Soluble (2:1)Determination of water soluble sulphate by extraction with water followed by ICP-OESSoilARSulphate (as SO4) - Water Soluble (2:1)Determination of water soluble sulphate by extraction with water followed by ICP-OESSoilARSulphideDetermination of sulphide by distillation followed by colorimetrySoilDSulphur - TotalDetermination of total sulphur by extraction with aqua-regia followed by ICP-OESSoilARSVOCDetermination of semi-volatile organic compounds by extraction in acetone and hexaSoilARThiocyanate (as SCN)Determination of thiocyanate by extraction in caustic soda followed by acidification for addition of ferric nitrate followed by colorimetry		E021
SoilDSulphate (as SO4) - Water Soluble (2:1)Determination of sulphate by extraction with water & analysed by ion chromatograpSoilDSulphate (as SO4) - Water Soluble (2:1)Determination of water soluble sulphate by extraction with water followed by ICP-OSoilARSulphideDetermination of sulphide by distillation followed by colorimetrySoilDSulphur - TotalDetermination of semi-volatile organic compounds by extraction in acetone and hexeSoilARSVOCDetermination of thiocyanate by extraction in caustic soda followed by acidification for thiocyanate by extraction in caustic soda followed by acidification for thiocyanate followed by colorimetrySoilARThiocyanate (as SCN)Determination of thiocyanate followed by colorimetry		E013
SoilDSulphate (as SO4) - Water Soluble (2:1)Determination of water soluble sulphate by extraction with water followed by ICP-OSoilARSulphideDetermination of sulphide by distillation followed by colorimetrySoilDSulphur - TotalDetermination of total sulphur by extraction with aqua-regia followed by ICP-OESSoilARSVOCDetermination of semi-volatile organic compounds by extraction in acetone and hexeSoilARThiocyanate (as SCN)Determination of thiocyanate by extraction in caustic soda followed by acidification followed by colorimetry		E013
Soil AR Sulphide Determination of sulphide by distillation followed by colorimetry Soil D Sulphur - Total Determination of total sulphur by extraction with aqua-regia followed by ICP-OES Soil AR SVOC Determination of semi-volatile organic compounds by extraction in acetone and hexa Soil AR SVOC Determination of thiocyanate by extraction in caustic soda followed by acidification followed by acidification followed by acidification followed by colorimetry		E009 E014
Soil D Sulphur - Total Determination of total sulphur by extraction with aqua-regia followed by ICP-OES Soil AR SVOC Determination of semi-volatile organic compounds by extraction in acetone and hexa Soil AR SVOC Determination of thiocyanate by extraction in caustic soda followed by acidification for addition of ferric nitrate followed by colorimetry		E014 E018
Soil AR SVOC Determination of semi-volatile organic compounds by extraction in acetone and hexa Soil AR Thiocyanate (as SCN) Determination of thiocyanate by extraction in caustic soda followed by acidification f Soil AR Thiocyanate (as SCN) Determination of ferric nitrate followed by colorimetry		E018
MS Soil AR Thiocyanate (as SCN) Determination of thiocyanate by extraction in caustic soda followed by acidification f addition of ferric nitrate followed by colorimetry	SVOC Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-	E006
addition of ferric nitrate followed by colorimetry	MS Determination of thiocyanate by extraction in caustic soda followed by acidification followed by	E017
Soil D Toluene Extractable Matter (TEM) Gravimetrically determined through extraction with toluene	addition of ferric nitrate followed by colorimetry	E011
Determination of organic matter by oxidicing with potassium dichromate followed by	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron	
Soil D Total Organic Carbon (TOC) (II) sulphate		E010
SoilARTPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating for C8 to C35. C5 to C8 by headspace GC-MS	C21, C21-C34, Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge C10, C10-C12, for C8 to C35. C5 to C8 by headspace GC-MS	E004
SoilARTPH LQM (ali: C5-C6, C6-C8, C8-C10, C10 C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12- C16, C16-C21, C21-C35, C35-C44)Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating for C8 to C44. C5 to C8 by headspace GC-MS	C35-C44, aro: Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge C10-C12, C12- for C8 to C44. C5 to C8 by headspace GC-MS C35, C35-C44)	E004
Soil AR VOCs Determination of volatile organic compounds by headspace GC-MS	VOCs Determination of volatile organic compounds by headspace GC-MS	E001
Soil AR VPH (C6-C8 & C8-C10) Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID		E001

D Dried AR As Received

DETS

Alex Bewick Ashdown Site Investigations Ltd Unit 3 The Grain Store Ditchling Common Business Park Ditchling Common West Sussex BN6 8SG



DETS Ltd Unit 1 Rose Lane Industrial Estate Rose Lane Lenham Heath Kent ME17 2JN **t:** 01622 850410 russell.jarvis@qtsenvironmental.com

DETS Report No: 18-78726

Site Reference:	Camley Street Natural Park, Camley Street, London
Project / Job Ref:	R18-13059
Order No:	P18-6412
Sample Receipt Date:	13/07/2018
Sample Scheduled Date:	13/07/2018
Report Issue Number:	1
Reporting Date:	20/07/2018

Authorised by:

KO CP

Kevin Old Associate Director of Laboratory

Authorised by:

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Russell Jarvis Associate Director of Client Services





Soil Analysis Certificate					
DETS Report No: 18-78726	Date Sampled	11/07/18	11/07/18	11/07/18	
Ashdown Site Investigations Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	
Site Reference: Camley Street Natural Park, Camley	TP / BH No	BH101	BH102	BH103	
Street, London					
Project / Job Ref: R18-13059	Additional Refs	None Supplied	None Supplied	None Supplied	
Order No: P18-6412	Depth (m)	0.20	0.20	0.20	
Reporting Date: 20/07/2018	QTSE Sample No	347157	347158	347159	

Determinand	Unit	RL	Accreditation				
Asbestos Screen ^(S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected	
pH	pH Units	N/a	MCERTS	7.9	7.9	7.6	
Total Sulphate as SO ₄	mg/kg	< 200	NONE	1265	1693	737	
Total Sulphate as SO ₄	%	< 0.02	NONE	0.13	0.17	0.07	
Organic Matter	%	< 0.1	MCERTS	1.1	0.9	1.3	
Arsenic (As)	mg/kg	< 2	MCERTS	10	10	29	
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	1	
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	0.2	< 0.2	0.8	
Chromium (Cr)	mg/kg	< 2	MCERTS	19	20	33	
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	
Copper (Cu)	mg/kg	< 4	MCERTS	28	16	127	
Lead (Pb)	mg/kg	< 3	MCERTS	106	65	276	
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1	
Nickel (Ni)	mg/kg	< 3	MCERTS	14	12	32	
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3	
Zinc (Zn)	mg/kg	< 3	MCERTS	138	109	369	





Soil Analysis Certificate - Speciated PAHs					
DETS Report No: 18-78726	Date Sampled	11/07/18	11/07/18	11/07/18	
Ashdown Site Investigations Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	
Site Reference: Camley Street Natural Park, Camley Street, London	TP / BH No	BH101	BH102	BH103	
Project / Job Ref: R18-13059	Additional Refs	None Supplied	None Supplied	None Supplied	
Order No: P18-6412	Depth (m)	0.20	0.20	0.20	
Reporting Date: 20/07/2018	QTSE Sample No	347157	347158	347159	

Determinand	Unit	RL	Accreditation				
Naphthalene	mg/kg	< 0.1	MCERTS	0.23	0.14	0.54	
Acenaphthylene	mg/kg	< 0.1	MCERTS	0.20	< 0.1	0.16	
Acenaphthene	mg/kg	< 0.1	MCERTS	0.12	< 0.1	< 0.1	
Fluorene	mg/kg	< 0.1	MCERTS	0.12	< 0.1	< 0.1	
Phenanthrene	mg/kg	< 0.1	MCERTS	2.20	0.35	1.29	
Anthracene	mg/kg	< 0.1	MCERTS	0.67	< 0.1	0.31	
Fluoranthene	mg/kg	< 0.1	MCERTS	7.25	0.76	2.45	
Pyrene	mg/kg	< 0.1	MCERTS	6.30	0.66	2.11	
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	3.84	0.45	1.38	
Chrysene	mg/kg	< 0.1	MCERTS	3.57	0.44	1.41	
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	5.13	0.66	2.10	
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	1.78	0.24	0.82	
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	3.94	0.47	1.67	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	2.40	0.32	1.48	
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	0.40	< 0.1	0.19	
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	1.95	0.30	1.24	
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	40.1	4.8	17.2	





Soil Analysis Certificate - EPH Banded (Type F)									
DETS Report No: 18-78726	Date Sampled	11/07/18	11/07/18	11/07/18					
Ashdown Site Investigations Ltd	Time Sampled	None Supplied	None Supplied	None Supplied					
Site Reference: Camley Street Natural Park, Camley Street, London	TP / BH No	BH101	BH102	BH103					
Project / Job Ref: R18-13059	Additional Refs	None Supplied	None Supplied	None Supplied					
Order No: P18-6412	Depth (m)	0.20	0.20	0.20					
Reporting Date: 20/07/2018	QTSE Sample No	347157	347158	347159					

Determinand	Unit	RL	Accreditation				
EPH (>C8 - C10)	mg/kg	< 1	MCERTS	< 1	< 1	2	
EPH (>C10 - C12)	mg/kg	< 1	MCERTS	1	< 1	3	
EPH (>C12 - C16)	mg/kg	< 1	MCERTS	5	3	11	
EPH (>C16 - C21)	mg/kg	< 1	MCERTS	39	17	57	
EPH (>C21 - C40)	mg/kg	< 6	MCERTS	223	154	265	
EPH (C8 - C40)	mg/kg	< 6	MCERTS	268	174	338	





Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 18-78726	
Ashdown Site Investigations Ltd	
Site Reference: Camley Street Natural Park, Camley Street, London	
Project / Job Ref: R18-13059	
Order No: P18-6412	
Reporting Date: 20/07/2018	

QTSE Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
347157	BH101	None Supplied	0.20	5.7	Brown sandy clay with stones and brick
347158	BH102	None Supplied	0.20	6.7	Brown sandy clay with brick and concrete
347159	BH103	None Supplied	0.20	13.7	Brown sandy clay with stones and brick

Moisture content is part of procedure E003 & is not an accredited test Insufficient Sample ^{I/S}

Unsuitable Sample U/S





Soil Analysis Certificate - Methodology & Miscellaneous Information	
DETS Report No: 18-78726	
Ashdown Site Investigations Ltd	
Site Reference: Camley Street Natural Park, Camley Street, London	
Project / Job Ref: R18-13059	
Order No: P18-6412	
Reporting Date: 20/07/2018	

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR		Determination of BTEX by headspace GC-MS	E012
Soil	D		Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E001
Soil	D		Determination of chloride by extraction with water & analysed by ion chromatography	E002
3011	U		Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of	L009
Soil	AR	Chromium - Hexavalent	1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR		Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR		Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR		Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D		Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR		Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR		Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
			Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by	
Soil	AR	C12-C16, C16-C21, C21-C40)	headspace GC-MS	E004
Soil	D		Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FUC (Fraction Ordanic Carpon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D		Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D		Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D		Determination of metals by aqua-regia digestion followed by ICP-OES	E023
Soil	AR		Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E002
Soil	AR	Maistura Contant	Moisture content; determined gravimetrically	E003
	D AR			E003
Soil Soil	D	Organic Matter	Determination of nitrate by extraction with water & analysed by ion chromatography Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E009
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and beyone followed by GC-MS with the	E005
Soil	AR		Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D		Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR		Determination of pH by addition of water followed by electrometric measurement	E011 E007
Soil	AR		Determination of phenols by distillation followed by colorimetry	E007
Soil	D		Determination of phosphate by extraction with water & analysed by ion chromatography	E021
Soil	D			E013
			Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013 E009
Soil	D		Determination of sulphate by extraction with water & analysed by ion chromatography	
Soil	D		Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR		Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR		Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC- MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR		Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	C5-C7, C7-C8, C8-C10, C10-C12, C12- C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
			Determination of volatile organic compounds by headenage CC MC	E001
Soil	AR AR		Determination of volatile organic compounds by headspace GC-MS Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	LUUI

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APPENDIX E

Classification of Probability, Consequence and Risk



	Probability of risk being realised						
Classification	Definition						
High	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.						
Moderate	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	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 event would take place and is less likely in the shorter term.						
Very Low	There is a pollution linkage but circumstances are such that it is improbable that an event would occur even in the very long term.						

	Conse	equence of risk being realised				
Classification	Category	Definition				
	Human Health	Short term (acute) risk to human health likely to result in "significant harm" as defined by the Environment Protection Act 1990, Part IIA.				
Severe	Controlled Waters	Short term risk of pollution (note: Water Resources Act contains no scope for considering significance of pollution) of sensitive water resource.				
	Property	Catastrophic damage to buildings/property.				
	Ecological Systems	A short term risk to a particular ecosystem or organisation forming part of such ecosystem.				
	Human Health	Chronic damage to Human Health.				
Moderate	Controlled Waters	Pollution of sensitive water resources (note: Water Resources Act contains no scope for considering significance of pollution).				
	Ecological System	A significant change in a particular ecosystem or organism forming part of such ecosystem.				
	Controlled Waters	Pollution of non-sensitive water resources.				
Minor	Property	Significant damage to crops, buildings, structures and service				
	Ecological Systems	Damage to sensitive buildings/structures/services or the environment.				
	Human Health	Non-permanent health effects to human health (easily prevented by means such as personal protective clothing, etc).				
Very Minor	Property	Easily repairable effects of damage to buildings, structures and services.				
	Project	Harm, although not necessarily significant harm, which may result in a financial loss or expenditure to resolve.				

	Risk classification definitions
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. This 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) is required and remedial works may be necessary in the short term and are likely over the long term.
Moderate	It is possible that harm could arise to a designated receptor from an identified hazard. However, it is 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. Investigation (if not already undertaken) is normally required to clarify the risk and to determine the potential liability. Some remedial works may be required in the longer term.
Low	It is possible that harm could arise to a designated receptor from an identified hazard, but there is a low likelihood of this hazard occurring and if realised, harm 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.

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APPENDIX F

Quantitative Conceptual Model





R17-12131

Table 12. Quantitative Conceptual Model

Sources Identified	Contaminants	Receptor	Potential Pathways	Pathway Present?	Probability	Consequence	Overall Assessment of Risk	Pollutant Linkage Present?
			Dermal contact with soil and dust (indoor & outdoor).	No	Cantaniaaat	- d		No
			Ingestion of soil and indoor dust.	No	Contaminant	s do not pose a pathways	risk via these	No
	Ashastas	Human Health	Consumption of home-grown produce and attached soil.	No		patiways		No
Made Ground beneath the site	Asbestos Potential ground	(End Users)	Inhalation of soil dust (indoor and outdoor).	Yes	Low	Moderate	Low/ Moderate	Yes
	gases		Contamination of incoming services.	No	Contaminant	s do not pose a	risk via these	No
			Inhalation of soil vapours.	No		pathways		No
			Inhalation of soil gases/Risk of explosion.	Yes	Low	Minor	Low	Yes
		Groundwater	Migration to groundwater.	No	Contaminan	ts do not pose a pathway	risk via this	No

R18-13059







Camley Street Natural Par	Quantitative Conceptu	al Model	R18-13059				
Source	Receptor	Contaminants	Pathway	Complete Linkage Present?	Probability	Consequence	Risk
			Dermal contact with soil and dust (indoor & outdoor)	Identified contaminant do not pose a risk via this pathway Identified contaminant do not pose a risk			N/A
			Ingestion of soil and indoor dust	via this pathway			N/A
	End Users	Asbestos	Consumption of home-grown produce and attached soil	No private gardens proposed			N/A
			Inhalation of soil dust (indoor and outdoor)	Yes	P3: Moderate	C2: Minor	Low/Moderate
			Inhalation of soil vapours	Identified contaminant do not pose a risk via this pathway			N/A
Made ground soils containing asbestos within the vicinity of the proposed			Inhalation of soil gases/ Risk of explosion	Identified contaminant do not pose a risk via this pathway			N/A
visitors' centre	End Users (via Water Supply Pipework)		Contamination of incoming services	Identified contaminant do not pose a risk via this pathway			N/A
	Groundwater		Migration to groundwater	Identified contaminant do not pose a risk via this pathway			N/A
	End Users		Dermal contact with soil and dust (indoor & outdoor)	Not Applicable			N/A
			Ingestion of soil and indoor dust	Not Applicable			N/A
			Consumption of home-grown produce and attached soil	Not Applicable			N/A
			Inhalation of soil dust (indoor and outdoor)	Not Applicable			N/A
			Inhalation of soil vapours	Not Applicable			N/A
Made ground soils containing concentrations of petroleum			Inhalation of soil gases/ Risk of explosion	Not Applicable			N/A
hydrocarbons above the threshold for the use of PE pipework	End Users (via Water Supply Pipework)	Petroleum Hydrocarbons	Contamination of incoming services	Yes	P3: Moderate	C3: Moderate	Moderate
	Groundwater		Migration to groundwater	Not Applicable			N/A