PHASE 2 ENVIRONMENTAL INVESTIGATION
of a site at
CORNER OF GRAFTON ROAD AND BARRINGTON COURT, CAMDEN
for
DIDIER RYAN

Contaminated Land Solutions

t 020 8291 1354 e ask@gosolve.co.uk
4 De Frene Road, London, SE26 4AB

Project No 2697
Report ref: 2697-P2E-1-B
Issued: 6 November 2024
Revision: B

Document Control		
Revision	**Issue date**	**Reason for Revision**
Draft	27/08/2024	
Prepared by		Azra Koese, MSc Agriculture
Reviewed by		Matthew Mayes, BSc (Environ), AMIEnvSc
Approved for issue by		Peter George Eur.Ing. B.Eng., Dip.EM, C.Eng., MICE, MIEnvSc, MCMI, FRSPH
Revision	**Issue date**	**Reason for Revision**
Original	02/09/2024	
Prepared by		Azra Koese, MSc Agriculture
Reviewed by		Matthew Mayes, BSc (Environ), AMIEnvSc
Approved for issue by		Peter George Eur.Ing. B.Eng., Dip.EM, C.Eng., MICE, MIEnvSc, MCMI, FRSPH
Revision	**Issue date**	**Reason for Revision**
A	05/11/2024	Updated to comments from environmental health. For ease of reference a response grid is included in appendix H
Prepared by		Matthew Mayes, BSc (Environ), AMIEnvSc
Reviewed by		Peter George Eur.Ing. B.Eng., Dip.EM, C.Eng., MICE, MIEnvSc, MCMI, FRSPH
Approved for issue by		Peter George Eur.Ing. B.Eng., Dip.EM, C.Eng., MICE, MIEnvSc, MCMI, FRSPH
Revision	**Issue date**	**Reason for Revision**
B	06/11/2024	Weather records added to appendix F. Borehole records added to appendix D
Prepared by		Matthew Mayes, BSc (Environ), AMIEnvSc
Reviewed by		Peter George Eur.Ing. B.Eng., Dip.EM, C.Eng., MICE, MIEnvSc, MCMI, FRSPH
Approved for issue by		Peter George Eur.Ing. B.Eng., Dip.EM, C.Eng., MICE, MIEnvSc, MCMI, FRSPH
Revision	**Issue date**	**Reason for Revision**
C		
Prepared by		
Reviewed by		
Approved for issue by		

CONTENTS

1 EXECUTIVE SUMMARY

The phase 1 environmental desktop report indicates that there is a potential for contamination to be present on site from its use as a part of a brick works and allotment garden.

The proposed site usage is residential.

Elevated levels of lead been recorded within samples taken from boreholes positioned across the site. At these levels there is a potential risk to on-site and off-site receptors, therefore appropriate mitigation is required.

Areas where the development is proposed to comprise of buildings and impermeable permanent hardstanding do not pose a significant risk to on-site and off-site receptors therefore made ground can remain in these areas. The external areas on site are all to be laid with permanent impermeable hardstanding. The permanent hardstanding is to be made up to at least 300mm of construction thickness.

The maximum Carbon Dioxide concentration of 1.5%v/v was used to calculate a GSV value of 0.0015 l/h. Comparing the results to the NHBC Traffic Lights Gas Risk Assessment, the site classifies as green or Characteristic Situation 1 when compared to the CIRIA C665 guidance.

Following the gas monitoring, TOC analysis, and Annex F review—each assessing the adequacy of the ground gas data—a CS1 classification has been assigned to the site. This designation confirms that gas protection measures are not required.

Vapour monitoring was carried out with each gas monitoring visit. A maximum of 0.1 ppm was recorded at BH1 on 26/07/24. At this level it is not considered that there is any significant risk from vapours to either on-site or off-site receptors. Therefore, it is not considered further investigation into vapours is required.

It is recommended that this report is provided to the water supplier to confirm the appropriate water supply pipe.

It is recommended that this report is referenced in the site Health and Safety Plan and that normal good hygiene practice is observed during the works and subsequent building and grounds maintenance.

If any potentially contaminated spoil is to be removed from site, the Waste Acceptance

Criteria (WAC) testing should be agreed with the facility to which the spoil is being transported.

Risk Summary

Very Low	Low	Moderate / Low	Moderate	High

		Receptors					
		Site Users	Ground Workers	Neighbours	Proposed Building	Aquifer	Watercourse
Sources	Brick works, allotment garden (On Site)						
	Naturally occurring contaminants						

2 BRIEF

The purpose of this report is to investigate the potential sources of contamination identified in the phase 1 desktop study. In the light of the investigation results to update the site specific conceptual model and risk assessment and where source-pathway-receptor linkages are identified advise on potential remedial options.

This report should be read in conjunction with the phase 1 environmental report, ref 2697-P1E-1 by GO contaminated Land Solutions.

3 INVESTIGATION STRATEGY

The phase 1 environmental desktop report shows that there is a potential for contamination to be present on site from its use as a part of a brick works and allotment garden.

Given the historical use of the site there is a potential for ground gas to be present on site, and further investigation was required.

The principles of the strategy are to:

- Identify the nature and extent of any contamination in the made ground across the site.
- Confirm the presence or otherwise of ground gas impacting the site.

Non-targeted sampling has been used as contamination location is unknown.

Location Reference	Rationale for Location	Depth (mbgl)	Standpipe depths (mbgl)	Sampling, Testing & Monitoring
BH1	Samples were located to cover the site	0.20-0.40	5.00	Samples from within the made ground. Tested for metals, hydrocarbons, PAHs & asbestos, SOM & TOC. Ground gas and vapour monitoring
BH2			4.00	
BH3			2.10	

Location Reference	Rationale for Location	Depth (mbgl)	Standpipe depths (mbgl)	Sampling, Testing & Monitoring
BH1		3.80-4.00	5.00	Deeper samples of the discoloured soil. Tested for TOC and SOM
BH2		3.55-3.70	4.00	

4 SITE DESCRIPTION

The site is very approximately triangular shaped in plan and occupies 0.01 ha.

The site comprises an overgrown vacant triangular plot adjacent to a terraced residential property at 12 Barrington Court.

Photograph 1: View of the site from the entrance on Grafton Road

A manhole cover was located in the northeast corner of the site during the site visit.

There are no buildings present on the site. Due to the vegetation coverage it was not possible to be certain if any remains from previous structures were present.

The client has advised that the site was formerly used as an allotment garden.

During the site visit it was observed that the site levels are lower by approximately 750mm than the street level. Timber steps lead from the street level down to the site.

Some domestic waste was noted to be scattered around the site.

The western and southern site boundary is defined by the property wall of the residential property at 12 Barrington Court

The eastern site boundary is defined by defined by the back of footpath to Grafton Road.

The northern site boundary is defined by the back of footpath to Barrington Court.

The nearby surrounding area residential.

No significant visual or olfactory evidence of contamination was noted during the visit.

5 SITE WORKS

5.1 Programme

The site works were undertaken on 8 July 2024.

Gas and vapour monitoring visits were conducted on three occasions, each spaced approximately two weeks apart, on July 26, August 9, and August 23, 2024.

5.2 Boreholes

A total of three boreholes were drilled by a drive in sampler to depths of between 3m and 6 m below ground level.

Monitoring standpipes were installed to 5m bgl in BH1, 4m bgl in BH2 and 2.1m bgl in BH3. The response zone was within the made ground.

6 GROUND CONDITIONS

6.1 Geological Survey

Reference to the geological survey of Great Britan indicates that the beneath made ground is generally underlain by bedrock composing Clay, Silt and Sand described as London Clay Formation.

There are no superficial deposits recorded beneath the site.

6.2 Hydrogeology & Hydrology

The Environmental Agency maps show the site to be located over unproductive strata in the bedrock.

The Environmental Agency maps show that there is no superficial aquifer located beneath the site.

While the site does not lie over an aquifer in the superficial stratum it is within 805m of an aquifer in the superficial stratum. The aquifer lies upslope from the site and is therefore unlikely to be affected by site run-off.

Unproductive Strata are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow.

The soils overlying the aquifers are assumed to have a high leaching potential (U) and a worst-case vulnerability classification (H) is assumed due to a lack of data available for restored workings and urban areas.

The Environment Agency maps show the site is not located within a source protection zone of a borehole abstraction point.

The Environment Agency define a zone according to how the groundwater behaves in that area. From this a model of the groundwater environment is developed on which to define the zones.

Groundwater source catchments are divided into three zones:

SPZ1 – Inner protection zone

Defined as the 50 day travel time from any point below the water table to the source. This zone has a minimum radius of 50 metres.

SPZ2 – Outer protection zone

Defined by a 400 day travel time from a point below the water table. This zone has a minimum radius of 250 or 500 metres around the source, depending on the size of the abstraction.

SPZ3 – Source catchment protection zone

Defined as the area around a source within which all groundwater recharge is presumed to be discharged at the source. In confined aquifers, the source catchment may be displaced some distance from the source. For heavily exploited aquifers, the final Source Catchment Protection Zone can be defined as the whole aquifer recharge area where the ratio of groundwater abstraction to aquifer recharge (average recharge multiplied by outcrop area) is >0.75.

6.3 Hydrology

The nearest surface water feature appears to be a swimming pool, approximately 283metres to the north.

The main water course of significance to the site would appear to be the River Thames which is approximately 5000 metres to the south at the nearest point.

These are both considered to be too distant to be significantly impacted by the site.

The Environment Agency maps show the site is not located within a flood zone.

The British Geological Society data shows the site is not located in an area with potential for groundwater flooding to occur.

7 PROPOSED DEVELOPMENT

Plan details for the proposed redevelopment of the site are shown on the Undercurrent Ltd drawing contained in appendix B.

The drawing shows a development comprising a three-storey residential development, with private courtyards. Two options are currently being considered one fully hard surfaced and the other largely paved with some limited soft landscaping and cycle store.

Access to the property is gained via a dedicated entrances from Grafton Road and Barrington Court.

8 CONTAMINATION SAMPLING and TESTING

8.1 Laboratory Testing

All samples were placed immediately in cool boxes with ice packs and collected by courier for transport to the laboratory.

The chemical testing was carried out in accordance with standard industry methods in a UKAS approved laboratory which is also currently accredited in accordance with MCERTS for the majority of its testing. Further information regarding this accreditation is available on request together with a full list of test methods if required.

Three samples were tested for a range of commonly occurring contaminants and indicators of contamination including those given by the Contaminated Land Exposure Assessment (CLEA). These include, heavy metals, aromatic and aliphatic hydrocarbons, in accordance with Environment Agency guidelines, and speciated PolyAromatic Hydrocarbon (PAH) only.

Three samples were analysed for the presence of asbestos.

Five samples were tested for Total Organic Carbon (TOC) and soil organic matter (SOM).

8.2 Test Results

All the results have been compared to the Atkins ATRISKsoil SSVs for residential use with plant uptake, for 1% or 6% as appropriate, where available. These guideline values have been derived using the updated CLEA v1.071 model, previously published Category 4 Screening Levels (C4SLs) by DEFRA and information in the Environment Agency guidance SR2. Where ATRISKsoil SSVs have not been derived, the Category 4 Screening Levels have been used, and for determinands which do not have either of the above, the LQM/CIEH Suitable 4 Use Levels (S4ULs) assessment criteria have been used.

TEST RESULTS ABOVE SCREENING VALUES				
Determinand	**Reference**	**Depth**	**Value (mg/kg)**	**Screening value (mg/kg)**
Lead	BH1	0.20-0.40	618	200
	BH2		674	
	BH3		619	

Elevated levels of lead been recorded within the samples taken from boreholes positioned across the site. At these levels there is a potential risk to on-site and off-site receptors and appropriate mitigation, or remediation is required.

All samples were screened in the laboratory for the presence of asbestos fibres.

No asbestos was identified in any of the samples.

To determine the potential for any on-site generation of ground gas. All samples were tested for Total Organic Carbon (TOC) and Soil Organic Matter (SOM). A maximum SOM of 8.1% and maximum TOC of 4.5% were recorded at BH2 in the shallow soil sample from 0.20-0.40mbgl. The thickness of the made ground within BH2 was found to be 4m.

At a depth of 3.55 to 3.70 m bgl, an organic odour was detected, and further inspection revealed dark discolouration in the soil, which appeared to be timber. A sample from this depth was tested for Soil Organic Matter (SOM) and Total Organic Carbon (TOC). A maximum SOM of 1.8% and TOC of 1.6% was identified in this sample.

Full results of the testing in this investigation can be found in appendix G.

8.3 Gas and Vapour Monitoring and Assessment

The hazardous ground gases considered to pose a potential threat to the development are methane and carbon dioxide. The table below summarises the maximum values recorded at each borehole during each visit.

Date	Borehole Ref.	Maximum Carbon Dioxide %v/v	Maximum Methane %v/v	Maximum flow rate l/hr	Maximum PID Vapour (ppm)
26/07/24	BH1	1.5	0.0	0.0	0.1
	BH2	1.3	0.0	0.0	0.0
	BH3	1.1	0.0	0.0	0.0
09/08/24	BH1	1.3	0.0	0.0	0.0
	BH2	1.1	0.0	0.0	0.0
	BH3	0.7	0.0	0.0	0.0
23/08/24	BH1	1.4	0.0	0.0	0.0
	BH2	1.1	0.0	0.0	0.0
	BH3	0.9	0.0	0.0	0.0

Full monitoring results can be found in appendix F.

The monitoring visit on 26/07/24 was conducted during a period of falling atmospheric pressure. According to data from the Northolt weather station, sourced from Meteostat.net, atmospheric pressure had been falling in the days prior to the visit. A maximum pressure of 1022mb was recorded on 24/07/24, and 1017mb on 25/07/24. At the start of monitoring on 26/07/24, at 9:50am, the gas monitor recorded a pressure of 1011mb, consistent with Northolt weather station data.

A similar trend was observed before the monitoring on 23/08/24, with atmospheric pressure reaching a maximum of 1013mb on 22/08/24 and dropping to 1001mb at the start of monitoring at 10:13am on 23/08/24.

Although monitoring was not conducted during a rapid pressure drop of at least 1.6mb within the three hours preceding measurement, the falling pressure trends on both dates are considered to approximate 'worst-case scenario' conditions for ground gas monitoring. An annex F review evaluating the ground gas data is provided in section 8.4 below. Weather records for the visits discussed above are included in appendix F.

No Methane, Hydrogen Sulphide or Carbon Monoxide was recorded during any monitoring visit.

No detectable gas flow rate has been recorded in any of the visits, therefore the instrument level of detection of 0.1l/hr has been used to calculate the GSV:

$$\text{GSV (l/h)} = \text{flow rate (l/h)} * \text{maximum gas value (\%v/v)}$$

$$\text{(l/h)} = 0.1 * 1.5/100 = 0.0015 \text{l/h}$$

The maximum Carbon Dioxide concentration of 1.5%v/v was used to calculate a GSV value of 0.0015 l/h. Comparing the results to the NHBC Traffic Lights Gas Risk Assessment, the site classifies as green or Characteristic Situation 1 when compared to the CIRIA C665 guidance.

Vapour monitoring was carried out with each gas monitoring visit. A maximum of 0.1 ppm was recorded at BH1 on 26/07/24. At this level it is not considered that there is any significant risk from vapours to either on-site or off-site receptors. Therefore, it is not considered further investigation into vapours is required.

Gas and vapour monitoring was carried out by a suitably qualified and experienced GO Contaminated Land Solutions technician.

CLAIRE Pragmatic approach to ground gas risk assessment

Using the CLAIRE pragmatic approach to ground gas risk assessment, Total Organic Carbon (TOC) test results were evaluated to assist in determining the site's ground gas regime. The made ground at the site is estimated to have been in place for over 70 years. The upper 1.0–1.2m of this made ground consists of typical fill material, including brick and ash fragments, while the lower layers (below 1.2m) are composed of reworked clay with occasional brick and ash inclusions. The clay itself is very stiff, a characteristic that would typically prevent any ground gas migration or build up.

At a depth of 3.55–3.70mbgl, a slight organic odour was detected, and the soil appeared darker, with timber present. A sample from this depth revealed a TOC value of 1.6%, which is relatively low considering the presence of the timber. The reworked clay in the remainder of the made ground is expected to have an even lower TOC value, as it lacks any putrescible material. Shallower made ground samples showed a TOC average of 3.7%, which is largely due to the presence of ash and clinker. While these materials likely

contribute to higher TOC values, they are not degradable and therefore do not indicate an elevated risk of gas emissions.

8.4 BS8576:2013 Annex F Review

An Annex F review has been undertaken in line with BS8576:2013 to assess whether the available data supports an appropriate ground gas classification for the site.

During all gas monitoring visits, groundwater levels were observed to be relatively high, ranging from 0.72 to 1.27m below ground level (mbgl). Given the underlying geology of natural or reworked London Clay, this groundwater is likely perched, with minimal seasonal fluctuation expected. High groundwater levels may affect gas concentrations by limiting soil gas movement and potentially diluting gas emissions. However, considering the relatively low gas concentrations detected, it is considered that the effect of the high groundwater would not significantly impact the gas concentrations detected.

With reference to the site investigation conducted at 12 Barrington Court (adjacent to the site), groundwater was encountered at similar depths: standing water was recorded at 1.30m below ground level (mbgl) in borehole BH1, and water inflow was observed at 1.20m in TP8 (borehole drilled through TP). Additionally, according to the BGS borehole log TQ28NE31/B, located just 10m north of the site, groundwater was encountered at a depth of four feet (1.22mbgl) below ground level. See appendix D for the site investigation and BGS borehole logs.

Given this data, it is anticipated that similar groundwater levels would pertain throughout the year, and consequently similar gas concentrations, would be recorded on site year-round.

Gas Flow Rates and Site Classification

Flow rates recorded on all four monitoring visits were 0.0 l/h, and therefore, the instrument's limit of detection (LOD) flow rate of 0.1 l/h was used to calculate the Gas Screening Value (GSV).

For the site to be reclassified to CS2, an unfeasibly high CO_2 concentration of at least 70% v/v would be required with a 0.1 l/h flow rate. The maximum CO_2 concentration recorded was 1.5% v/v, and with this concentration, a flow rate of 4.7 l/h or higher would be necessary to achieve a CS2 classification. Given the consistently low flow rates and gas

concentrations, it is highly unfeasible that conditions could produce the 4.7 l/h flow rate required for a CS2 classification. Therefore, the current CS1 classification, indicating that no gas protection measures are necessary, is considered appropriate.

The data strongly supports a CS1 classification for the site, which does not necessitate gas protection measures. Moreover, it is highly unlikely that further visits, even under conditions of falling pressure or a significant drop in pressure, would alter this classification

9 DISCUSSION

In this investigation samples were tested for a range of commonly occurring contaminants and indicators of contamination including those given by the Contaminated Land Exposure Assessment (CLEA).

The only contaminant identified as exceeding the environmental screening level was lead. Elevated lead levels were found in the shallow samples taken from all three boreholes.

At these levels there is a potential risk to on-site and off-site receptors, therefore some form of mitigation is required.

Areas where the development is proposed to comprise of buildings and impermeable permanent hardstanding do not pose a significant risk to on-site and off-site receptors therefore made ground can remain in these areas. The external areas on site are all to be laid with permanent impermeable hardstanding. The permanent hardstanding is to be made up to at least 300mm of construction thickness.

No olfactory evidence of contamination (such as vapours) was identified during sampling. No visual evidence of contaminants, such as oils, were noted.

Three samples were screened in the laboratory for the presence of asbestos fibres. No asbestos was identified in any of the samples.

Vapour monitoring was carried out with each gas monitoring visit. A maximum of 0.1 ppm was recorded at BH1 on 26/07/24. At this level it is not considered that there is any significant risk from vapours to either on-site or off-site receptors. Therefore, it is not considered further investigation into vapours is required.

The maximum Carbon Dioxide concentration of 1.5%v/v was used to calculate a GSV value of 0.0015 l/h. Comparing the results to the NHBC Traffic Lights Gas Risk Assessment, the site classifies as green or Characteristic Situation 1 when compared to the CIRIA C665 guidance.

To determine the potential for any on-site generation of ground gas. All samples were tetes for Total Organic Carbon (TOC) and Soil Organic Matter (SOM). A maximum SOM of 8.1% and maximum TOC of 4.5% were recorded at BH2 in the shallow soil sample from 0.20-0.40mbgl. The thickness of the made ground within BH2 was found to be 4m.

At a depth of 3.55 to 3.70 m bgl, an organic odour was detected, and further inspection revealed dark discolouration in the soil, which appeared to be timber. A sample from this depth was tested for Soil Organic Matter (SOM) and Total Organic Carbon (TOC). A maximum SOM of 1.8% and TOC of 1.6% was identified in this sample.

Following the gas monitoring, TOC analysis, and Annex F review—each assessing the adequacy of the ground gas data—a CS1 classification has been assigned to the site. This designation confirms that gas protection measures are not required.

If any potentially contaminated spoil is to be removed from site, the Waste Acceptance Criteria (WAC) testing should be agreed with the facility to which the spoil is being transported. It is critical that the WAC results are representative of the material to be disposed of and therefore care must be taken to ensure that different materials are not mixed. Guidance can be obtained from Environment Agency document *Waste Sampling and Testing for Disposal to Landfill*.

10 REVISED CONCEPTUAL MODEL

The legislative framework for the regulation of contaminated land is embodied in Part IIA of the Environmental Protection Act 1990, implemented in the Contaminated Land (England) Regulations 2000. This legislation allows for the identification and remediation of land where contamination is causing unacceptable risks to human health or the wider environment. The approach adopted by UK contaminated land policy is that of "suitability for use" which implies that the land should be suitable for its current use and made suitable for any proposed future use.

In this revised contamination assessment the site has been modelled using the Source-Pathway-Receptor approach to produce a site specific conceptual model.

Source - substances or potential contaminants which may cause harm

Pathway - a linkage or route between a source and receptor

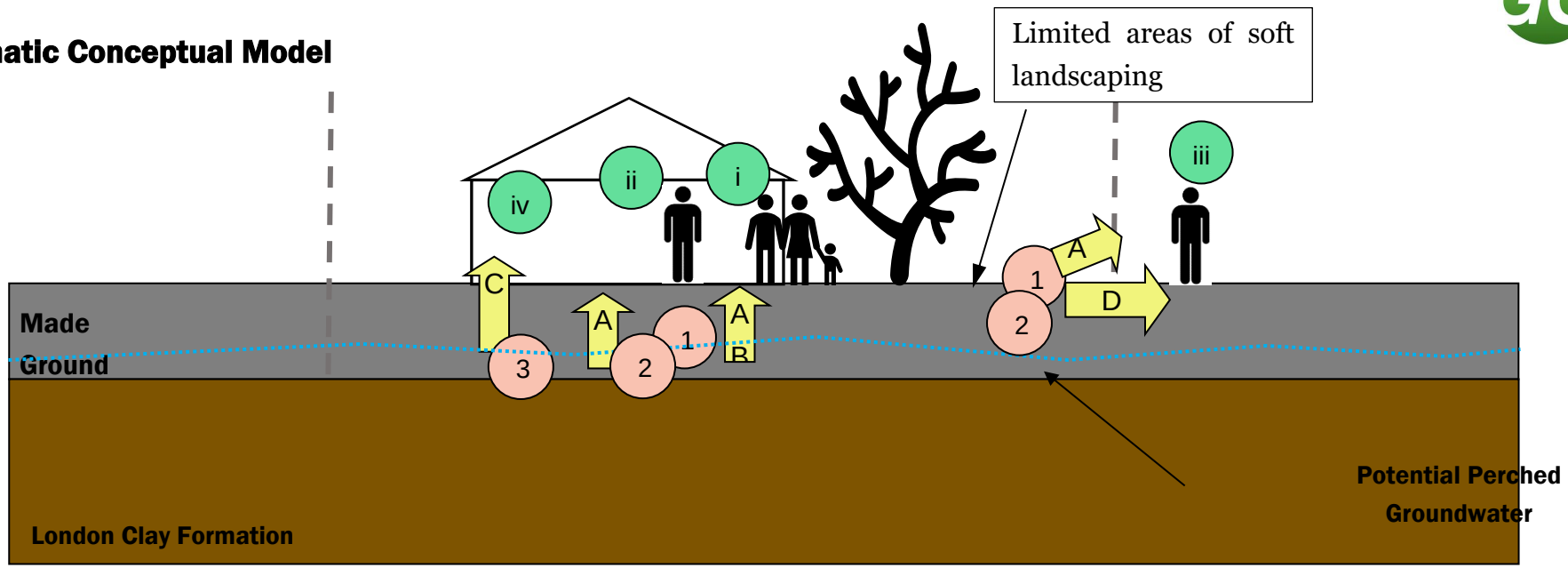
Receptor - humans, plant life, groundwater etc., which could be harmed by a contaminant

Geological records indicate that the site is not underlain by an aquifer in the superficial stratum and therefore there is not considered to be a significant potential for contaminants to be transported either to or from site in the groundwater.

From the information available at present a revised conceptual model has been considered.

		Potential pathways											Comments on discounted pathways	
		Inhalation of contaminated vapour	Inhalation of contaminated dust	Direct Soil Ingestion	Direct dermal contact	Inhalation of asbestos	Drinking contaminated water supply	Direct contact of soil with building materials	Surface water run-off	Surface water percolation to groundwater	Migration via groundwater	Build-up of ground gas		
Receptors	Site Users	N	Y	Y	Y	N	Y					N	Only lead exceedances identified	Very low CO_2 concentrations detected, no other gases detected. Site classified as CS1 when GSV is calculated
	Ground Workers	N	Y	Y	Y	N						N	No significant vapours detected. No asbestos identified in soils.	
	Neighbours	N	Y			N			Y		N	N	Impermeable clay soils identified below made ground.	
	Proposed Building							Y				N		
	Watercourse								N		N		No potentially significant watercourse identified nearby.	
	Aquifer									N			No aquifer present in underlying soils.	

Schematic Conceptual Model



Sources	Pathways	Receptors
1 Brick works, allotment garden (On Site)	A Inhalation, ingestion, dermal contact, vapours	i Site Users
2 Imported hardcore below ground slabs & demolition debris (asbestos)	B Drinking contaminated water supply	ii Ground Workers
3 Naturally occurring contaminants	C Direct contact of soil with building materials	iii Neighbours
	D Surface water run-off	iv Proposed Building

11 REVISED RISK ASSESSMENT

The level of information provided by the phase 1 desktop study report together with the other information within this report is considered suitable to provide the data for a satisfactory risk assessment for the site. While there will always be uncertainties due to known or unknown gaps in information it is considered that sufficient information is available to reduce those uncertainties to within acceptable limits for the nature of the site under review.

In regard to both the brick works and the made ground the risk arises both on and off site and therefore it is considered that there is no additional risk to off - site receptors.

The site is currently used as vacant garden and will not be occupied until after the development of the site therefore site users will not be present during the works.

Only contaminants identified to exceed the environmental screening level have been included in the Risk Assessment.

Sources	Potential pollutant	Receptor	Pathway	Hazard severity	Likelihood of occurrence	Risk / Significance	Comment & control measures
Brick works, allotment garden (on site)	Determinands exceeding screening levels: Lead	Site Users (after development)	Dermal contact	Medium	Low likelihood	Moderate/Low risk	Mitigation in the form of impermeable permanent hardstanding to be implemented
			Soil Ingestion and Home Produce Consumption	Medium	Low likelihood	Moderate/Low risk	
			Inhalation of contaminated dust	Medium	Low likelihood	Moderate/Low risk	
			Drinking of water from supply impacted by contaminated soil	Mild	Low likelihood	Low risk	It is not considered that the lead exceedances will significantly impact the water supply pipes. However, it is recommended that this report be provided to the water supplier with a request for any testing they may require.

Sources	Potential pollutant	Receptor	Pathway	Hazard severity	Likelihood of occurrence	Risk / Significance	Comment & control measures
Brick works, allotment garden (on site)	Determinands exceeding screening levels: Lead	Ground Workers	Dermal contact	Mild	Likely	Moderate/low risk	Information to be contained in site Health & Safety Plan and File. Use of appropriate PPE and normal good hygiene measures. Appropriate dust control measures during construction.
			Soil Ingestion	Medium	Likely	Moderate risk	
			Inhalation of contaminated dust	Medium	Likely	Moderate risk	
Brick works, allotment garden (on site)	Determinands exceeding screening levels: Lead	Neighbours	Inhalation of contaminated dust (during construction)	Mild	Low likelihood	Low risk	Appropriate dust control measures during construction.
			Inhalation of contaminated dust (after construction)	Mild	Unlikely	Very low risk	No action required.
			Surface water run-off	Mild	Low likelihood	Low risk	No action required.

Sources	Potential pollutant	Receptor	Pathway	Hazard severity	Likelihood of occurrence	Risk / Significance	Comment & control measures
Naturally occurring contaminants	Sulphates pH	Proposed Building	Direct contact of soil with building materials	Mild	Likely	Moderate/Low risk	As the protection of concrete is normally resolved in the building design process, the designer of the foundations should determine the requirement to undertake any investigation.

Any visual or olfactory evidence of contamination noted during works should be investigated by a suitably qualified person and their recommendations implemented.

12 SITE WORKS and UNEXPECTED CONDITIONS

The sample locations were positioned to cover the site. However, there are areas where investigations were not carried out, and although unlikely given the size of the site, it should be considered possible that other areas may potentially be contaminated. Construction operatives should remain vigilant for any unexpected contamination encountered during development (eg discoloured soil or odours or buried waste). Any unexpected conditions should be investigated by a suitably qualified person and their recommendations implemented.

It is recommended that construction operatives use appropriate PPE, normal good hygiene measures, and appropriate dust control measures if necessary. The risks to construction operatives identified, should be addressed under a Construction (Design and Management) (CDM) Plan. The CDM Regulations place legal duties on those involved in construction work. All construction projects require a plan to ensure that health and safety issues are properly considered during a project's development so that the risk of harm to workers is reduced.

13 CONCLUSIONS

In this investigation elevated levels have been recorded within samples taken from boreholes positioned across the site. At these levels there is a potential risk to on-site and off-site receptors, therefore some form of mitigation is required such ass proposed in the two options below.

Areas where the development is proposed to comprise of buildings and impermeable permanent hardstanding do not pose a significant risk to on-site and off-site receptors therefore made ground can remain in these areas. The external areas on site are all to be laid with permanent impermeable hardstanding. The permanent hardstanding is to be made up to at least 300mm of construction thickness.

The maximum Carbon Dioxide concentration of 1.5%v/v was used to calculate a GSV value of 0.0015 l/h. Comparing the results to the NHBC Traffic Lights Gas Risk Assessment, the site classifies as green or Characteristic Situation 1 when compared to the CIRIA C665 guidance.

Following the gas monitoring, TOC analysis, and Annex F review—each assessing the adequacy of the ground gas data—a CS1 classification has been assigned to the site. This designation confirms that gas protection measures are not required.

Vapour monitoring was carried out with each gas monitoring visit. A maximum of 0.1 ppm was recorded at BH1 on 26/07/24. At this level it is not considered that there is any significant risk from vapours to either on-site or off-site receptors. Therefore, it is not considered further investigation into vapours is required.

Confirmation should be sought from the water supplier on the appropriate supply pipe to be installed.

It is recommended that this report is referenced in the site Health and Safety Plan and that normal good hygiene practice is observed during the works and subsequent building and grounds maintenance.

It is recommended that appropriate dust control measures are implemented during construction. To assist in establishing what would be appropriate reference should be made to the Institute of Air Quality Management report entitled: Guidance on the assessment of dust from demolition and construction, version 1.1.

The sample locations were positioned to provide a general spread across the site.

However, there are areas where investigations were not carried out, and due to the presence of contamination identified, it should be considered possible that other areas may potentially be contaminated. Construction operatives should remain vigilant of any unexpected contamination encountered during development (eg discoloured soil or odours or buried waste).

It is also possible asbestos may be present in other areas of the site and therefore construction operatives should also ensure that appropriate PPE and good hygiene measures are used, and dust control measures during construction where necessary. Any debris from earlier demolition found during site strip is to be inspected for asbestos by a suitably experienced contractor.

If any potentially contaminated spoil is to be removed from site, the Waste Acceptance Criteria (WAC) testing should be agreed with the facility to which the spoil is being transported.

14 REFERENCES

Atkins. (2006, July 13). Retrieved from ATRISKsoil: http://www.atrisksoil.co.uk/

BS 5930, British Standard. Code of practice for ground investigations. *British Standards Institution*.

BS10175, British Standard. (2001). Investigation of potentially contaminated sites - Code of Practice. *London: British Standards Institution*.

Building Research Establishment. (2004). *Cover Systems for Land Regeneration: Thickness of Cover Systems for Contaminated Land (BR 465)*. IHS BRE Press.

Card, G. B., Wilson, S., & Mortimer, S. (2012). *A Pragmatic Approach to Ground Gas Risk Assessment*. London, UK: Contaminated Land: Applications in Real Environments.

Contaminated Land: Applications in Real Environment (CL:AIRE). (2009). *Soil Generic Assessment Criteria for Human Health Risk Assessment*. London: CL:AIRE.

Contaminated Land: Applications in Real Environment (CL:AIRE). (2014). *Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination*.

Environment Agency. Land Contamination Risk Management (LCRM).

Environment Agency. (2013). *Groundwater protection: principles and practice (GP3)*. Bristol: Environment Agency.

Environment Agency. (2013). *Waste Sampling and Testing for Disposal to Landfill*. Bristol, UK: EA.

Health and Safety Executive. (2012). *The Control of Asbestos Regulations 2012*.

Health and Safety Executive. (2015). *Construction (Design and Management) Regulations 2015*.

Nathanial, C. P., McCaffrey, C., Gillet, A. G., Ogden, R. C., & Nathanial, J. F. (2015). *The LQM/CIEH S4ULs for Human Health Risk Assessment*. Nottingham: Land Quality Press.

UK Water Industry Research Ltd. (2010). *Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites*. UKWIR.

Wilson, S., Oliver, S., Mallet, H., Hutchings, H., & Card, G. (2007). *CIRIA Report C665. Assessing risks posed by hazardous gases to buildings*. London, UK: Construction Industry Research and Information Association.

This document has been prepared for the titled project and should not be relied upon or used for any other project without an independent check being carried out as to its suitability and the prior written authority of GO Contaminated Land Solutions Ltd being obtained. No responsibility or liability is accepted for the consequences of this document being used for a purpose other than that for which it was commissioned. Any person using or relying on this document for such other purpose will by such use or reliance be taken to confirm his agreement to indemnify GO Contaminated Land Solutions Ltd for all loss or damage resulting therefrom. GO Contaminated Land Solutions Ltd accepts no responsibility or liability for this document to any party other than ***Didier Ryan*** *by whom it was commissioned.*

The recommendations made and the opinions expressed in this report are based on the borehole records, examination of samples and the results of site and laboratory tests.

The report is issued on the condition that GO Contaminated Land Solutions Ltd will under no circumstances be liable for any loss arising directly or indirectly from ground conditions between the boreholes or trial pits which have not been shown by the boreholes, trial pits or other tests carried out during the investigation.

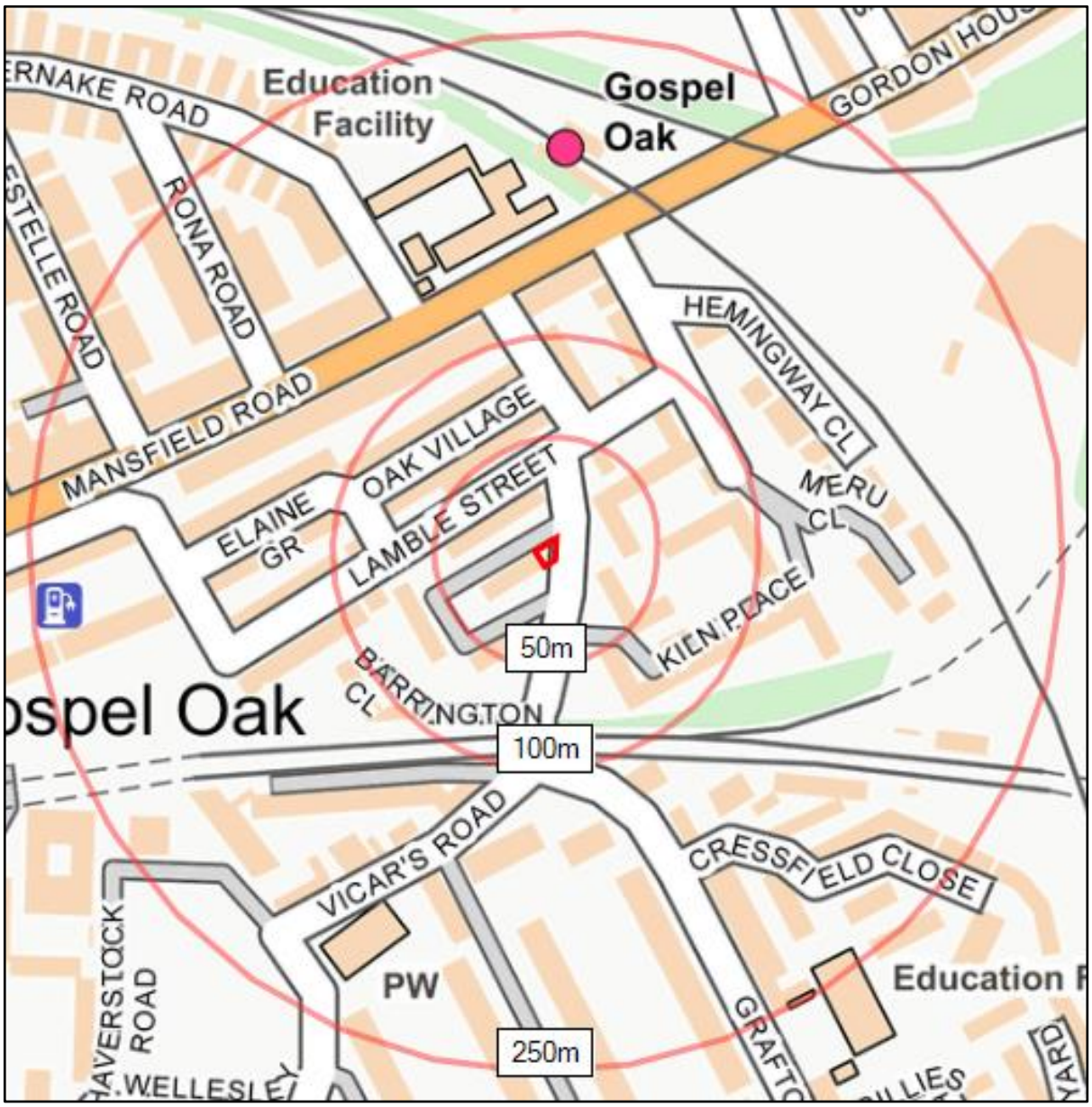
In addition, GO Contaminated Land Solutions Ltd will not be liable for any loss whatsoever arising directly or indirectly from any opinion given on the possible configuration of strata either between the borehole positions or below the maximum depth of the investigation. Such opinions, where given, are for guidance only.

Groundwater levels may also vary with time from those reported during our site investigation due to factors such as tidal conditions, heavy pumping from nearby wells or seasonal changes.

All soil samples will be kept for a period of 28 days after the date of the laboratory report for this project unless otherwise notified to GO Contaminated Land Solutions Ltd in writing. Should samples be required to be stored for longer than 28 days then a storage charge will be levied.

Contaminated Land Solutions

Appendix A – Site Location Plan

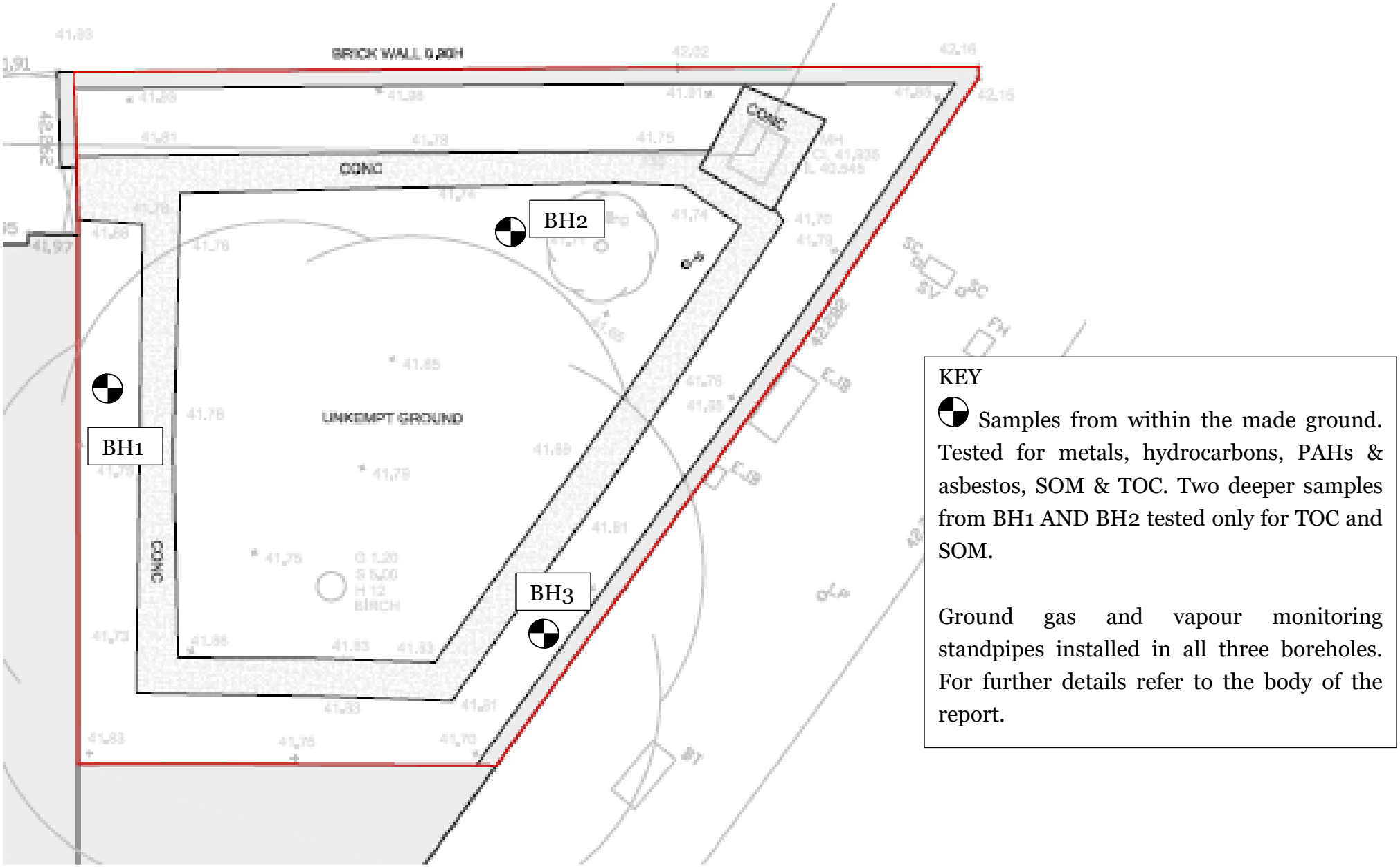


2697-P2E-1-B: Corner of Grafton Road and Barrington Court, Camden

Didier Ryan

Contaminated Land Solutions

Appendix B – Site Works Plan



KEY

Samples from within the made ground. Tested for metals, hydrocarbons, PAHs & asbestos, SOM & TOC. Two deeper samples from BH1 AND BH2 tested only for TOC and SOM.

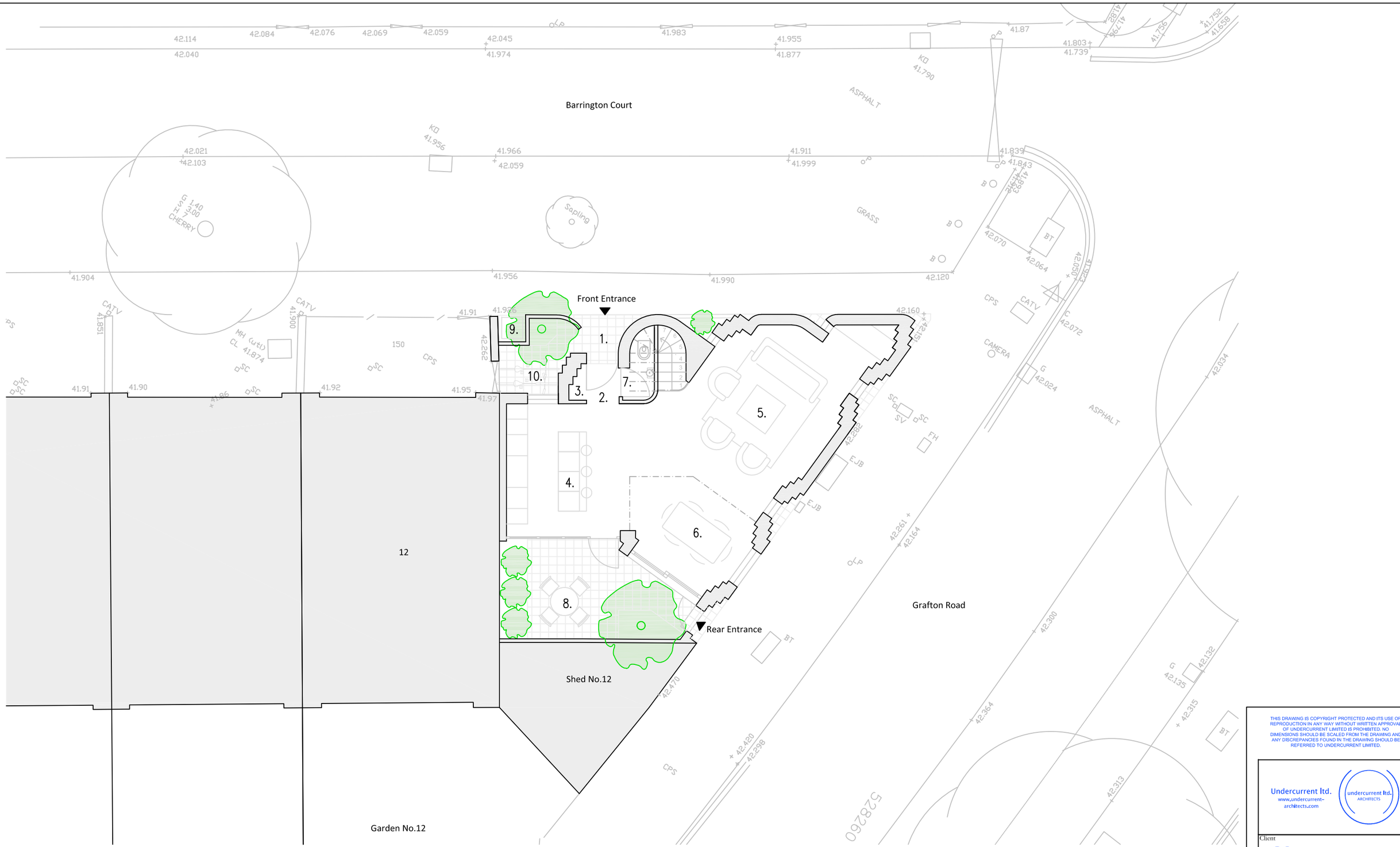
Ground gas and vapour monitoring standpipes installed in all three boreholes. For further details refer to the body of the report.

2697-P2E-1-B: Corner of Grafton Road and Barrington Court, Camden

Didier Ryan

Contaminated Land Solutions

Appendix C – Proposed Site Plan



1. Entrance
2. Hall
3. Cloaks and storage
4. Kitchen
5. Living
6. Dining (double height)
7. WC under stairs
8. Courtyard
9. Rubbish and recyling
10. Secure bike rack

0 2 5

Undercurrent ltd.
www.undercurrent-architects.com

Client: D Ryan

Project: Barrington Court

Title: Proposed Ground Floor Plan

Drawn:

Date: 14/08/23

Scale: 1:100 @A3

Drawing Number: UK 144-P-03

Rev: 4

Contaminated Land Solutions

Appendix D –Borehole Logs (Phase 2, Adjacent Site Investigation & BGS)

GO Contaminated Land Solutions
4 De Frene Rd
London, SE26 4AB
Tel.: 020 8291 1354
Email: askgo@gosolve.co.uk
Web: www.gosolve.co.uk

BOREHOLE LOG

Project	**Corner of Grafton Rd and Barrington Ct**	**Project No.**	**2697**
Client	**Didier Ryan**	**Survey date:**	**08 July 2024**

Log ID BH1 Hole type: BH

Water Strikes	Samples Type	Samples depth (m)	Standpipe	Depth (m)	Legend	Stratum Description and Observations	Depth (m)
							-0.10
							-0.20
	C	0.20-0.40					-0.30
							-0.40
							-0.50
						MADE GROUND - SILT with loose brick fill	-0.60
							-0.70
							-0.80
							-0.90
							-1.00
				1.10			-1.10
							-1.20
							-1.30
							-1.40
▽						MADE GROUND - reworked CLAY with brick pieces	-1.50
							-1.60
							-1.70

▽ Water strike

Remarks: Groundwater noted from 1.5mbgl. Decaying timber at 3.80 to 4.0m bgl with slight organic smell. BH brilled to 6mbgl, no sample recovered due to water ingress.

Key: C - Contamination sample W - Water sample P - PID test

GO Contaminated Land Solutions
4 De Frene Rd
London, SE26 4AB
Tel.: 020 8291 1354
Email: askgo@gosolve.co.uk
Web: www.gosolve.co.uk

BOREHOLE LOG

Project	**Corner of Grafton Rd and Barrington Ct**	**Project No.**	**2697**
Client	**Didier Ryan**	**Survey date:**	**08 July 2024**

Log ID BH1 Hole type: BH

Water Strikes	Samples Type	Samples depth (m)	Standpipe	Depth (m)	Legend	Stratum Description and Observations	Depth (m)
						MADE GROUND - reworked CLAY with brick pieces	-1.80 -1.90 -2.00 -2.10 -2.20 -2.30 -2.40 -2.50 -2.60 -2.70 -2.80 -2.90 -3.00 -3.10 -3.20 -3.30 -3.40

▽ Water strike

Remarks: Groundwater noted from 1.5mbgl. Decaying timber at 3.80 to 4.0m bgl with slight organic smell. BH brilled to 6mbgl, no sample recovered due to water ingress.

Key: C - Contamination sample W - Water sample P - PID test

GO Contaminated Land Solutions
4 De Frene Rd
London, SE26 4AB
Tel.: 020 8291 1354
Email: askgo@gosolve.co.uk
Web: www.gosolve.co.uk

BOREHOLE LOG

Project	**Corner of Grafton Rd and Barrington Ct**	**Project No.**	**2697**
Client	**Didier Ryan**	**Survey date:**	**08 July 2024**

Log ID BH1 Hole type: BH

Water Strikes	Samples Type	Samples depth (m)	Standpipe	Depth (m)	Legend	Stratum Description and Observations	Depth (m)
							-3.50
						MADE GROUND - reworked CLAY with brick pieces	-3.60
							-3.70
				3.80			-3.80
	C	3.80-4.00				MADE GROUND - reworked CLAY with clinker ash.	-3.90
				4.00			-4.00
							-4.10
							-4.20
							-4.30
							-4.40
							-4.50
						MADE GROUND - reworked CLAY with clinker, ash and brick frgments	-4.60
							-4.70
							-4.80
							-4.90
							-5.00
							-5.10

▽ Water strike

Remarks: Groundwater noted from 1.5mbgl. Decaying timber at 3.80 to 4.0m bgl with slight organic smell. BH brilled to 6mbgl, no sample recovered due to water ingress.

Key: C - Contamination sample W - Water sample P - PID test

GO Contaminated Land Solutions
4 De Frene Rd
London, SE26 4AB
Tel.: 020 8291 1354
Email: askgo@gosolve.co.uk
Web: www.gosolve.co.uk

BOREHOLE LOG

Project	**Corner of Grafton Rd and Barrington Ct**	**Project No.**	**2697**
Client	**Didier Ryan**	**Survey date:**	**08 July 2024**

Log ID BH1 Hole type: BH

Water Strikes	Samples Type	Samples depth (m)	Standpipe	Depth (m)	Legend	Stratum Description and Observations	Depth (m)
						MADE GROUND - reworked CLAY with clinker, ash and brick fragments	-5.10 -5.20 -5.30 -5.40 -5.50 -5.60 -5.70
				5.80		Borehole terminated	-5.80 -5.90 -6.00

▽ Water strike

Remarks: Groundwater noted from 1.5mbgl. Decaying timber at 3.80 to 4.0m bgl with slight organic smell. BH brilled to 6mbgl, no sample recovered due to water ingress.

Key: C - Contamination sample W - Water sample P - PID test

Contaminated Land Solutions
GO Contaminated Land Solutions
4 De Frene Rd
London, SE26 4AB
Tel.: 020 8291 1354
Email: askgo@gosolve.co.uk
Web: www.gosolve.co.uk

BOREHOLE LOG

Project	Corner of Grafton Rd and Barrington Ct	Project No.	2697
Client	Didier Ryan	Survey date:	08 July 2024

Log ID BH2 Hole type: BH

Water Strikes	Samples Type	Samples depth (m)	Standpipe	Depth (m)	Legend	Stratum Description and Observations	Depth (m)
							-0.10
							-0.20
	C	0.20-0.40				MADE GROUND - brown SILT with roots and rootlets	-0.30
							-0.40
							-0.50
				0.60			-0.60
							-0.70
							-0.80
						MADE GROUND - SILT with brick, brick fragments and some ash.	-0.90
▽							-1.00
							-1.10
							-1.20
				1.25			-1.30
							-1.40
						MADE GROUND - reworked CLAY	-1.50
							-1.60
							-1.70

▽ Water strike

Remarks: Groundwater noted from 1.0mbgl. Decaying timber at 3.55 to 3.70 wiith slight organic smell.

Key: C - Contamination sample W - Water sample P - PID test

GO Contaminated Land Solutions
4 De Frene Rd
London, SE26 4AB
Tel.: 020 8291 1354
Email: askgo@gosolve.co.uk
Web: www.gosolve.co.uk

BOREHOLE LOG

Project	**Corner of Grafton Rd and Barrington Ct**	**Project No.**	**2697**
Client	**Didier Ryan**	**Survey date:**	**08 July 2024**

Log ID BH2 Hole type: BH

Water Strikes	Samples Type	Samples depth (m)	Standpipe	Depth (m)	Legend	Stratum Description and Observations	Depth (m)
							-1.80
							-1.90
							-2.00
							-2.10
							-2.20
							-2.30
							-2.40
							-2.50
						MADE GROUND - reworked CLAY	-2.60
							-2.70
							-2.80
							-2.90
							-3.00
							-3.10
							-3.20
							-3.30
							-3.40

▽ Water strike

Remarks: Groundwater noted from 1.0mbgl. Decaying timber at 3.55 to 3.70 wiith slight organic smell.

Key: C - Contamination sample W - Water sample P - PID test

GO Contaminated Land Solutions
4 De Frene Rd
London, SE26 4AB
Tel.: 020 8291 1354
Email: askgo@gosolve.co.uk
Web: www.gosolve.co.uk

BOREHOLE LOG

Project	**Corner of Grafton Rd and Barrington Ct**	**Project No.**	**2697**
Client	**Didier Ryan**	**Survey date:**	**08 July 2024**

Log ID BH2 Hole type: BH

Water Strikes	Samples Type	Samples depth (m)	Standpipe	Depth (m)	Legend	Stratum Description and Observations	Depth (m)
	C	3.55-3.70				MADE GROUND - reworked CLAY	-3.50
							-3.60
				3.70			-3.70
						MADE GROUND - reworked CLAY with brick pieces	-3.80
							-3.90
				4.00			-4.00
							-4.10
							-4.20
							-4.30
							-4.40
						Brown CLAY (*London Clay Formation*)	-4.50
							-4.60
							-4.70
							-4.80
							-4.90
				5.00			-5.00
						Borehole terminated	

▽ Water strike

Remarks: Groundwater noted from 1.0mbgl. Decaying timber at 3.55 to 3.70 wiith slight organic smell.

Key: C - Contamination sample W - Water sample P - PID test

GO Contaminated Land Solutions
4 De Frene Rd
London, SE26 4AB
Tel.: 020 8291 1354
Email: askgo@gosolve.co.uk
Web: www.gosolve.co.uk

BOREHOLE LOG

Project	**Corner of Grafton Rd and Barrington Ct**	**Project No.**	**2697**
Client	**Didier Ryan**	**Survey date:**	**08 July 2024**

Log ID BH3 Hole type: BH

Water Strikes	Samples Type	Samples depth (m)	Standpipe	Depth (m)	Legend	Stratum Description and Observations	Depth (m)
							-0.10
							-0.20
	C	0.20-0.40					-0.30
							-0.40
						MADE GROUND - SILT with brick fragments	-0.50
							-0.60
							-0.70
							-0.80
							-0.90
▽				1.00			-1.00
							-1.10
							-1.20
							-1.30
						MADE GROUND - reworked CLAY	-1.40
							-1.50
							-1.60
							-1.70

▽ Water strike

Remarks: Groundwater not noted at 1m bgl. No visual or olfactory evidence of contamination noted.

Key: C - Contamination sample W - Water sample P - PID test

GO Contaminated Land Solutions
4 De Frene Rd
London, SE26 4AB
Tel.: 020 8291 1354
Email: askgo@gosolve.co.uk
Web: www.gosolve.co.uk

BOREHOLE LOG

Project	**Corner of Grafton Rd and Barrington Ct**	**Project No.**	**2697**
Client	**Didier Ryan**	**Survey date:**	**08 July 2024**

Log ID BH3 Hole type: BH

Water Strikes	Samples Type	Samples depth (m)	Standpipe	Depth (m)	Legend	Stratum Description and Observations	Depth (m)
							-1.80
						MADE GROUND - reworked CLAY	-1.90
							-2.00
				2.10			-2.10
							-2.20
							-2.30
							-2.40
							-2.50
						Brown CLAY *(London clay Formation)*	-2.60
							-2.70
							-2.80
							-2.90
				3.00			-3.00
						Borehole terminated	

▽ Water strike

Remarks: Groundwater not noted at 1m bgl. No visual or olfactory evidence of contamination noted.

Key: C - Contamination sample W - Water sample P - PID test

TQ28NE/31 (A,B)
2824.8548
256

GROUND EXPLORATIONS LIMITED

BOREHOLE SECTION SHEET

Date July, 1951.

CONTRACT NAME LAMBLE ST. HOUSING SITE. ORDER NO. 6831

Bored for : The Borough of St. Pancras.

Address : Euston Road, London, N.W.1.

Address of Site : Lamble Street.

District or Town : St. Pancras. County : London.

Standing Water Level : 4 Below Surface Dia. of Borehole : 6 Inches.

Water Struck (1) : 4 Ft. B.S. (2) : Ft. B.S. (3) : Ft. B.S.

Boring Commenced : 26. 6. 51. Boring Completed :

Special Remarks :

Height of borehole above manhole in road near factory gate - 2.04 ft.

Jar Samples : 1' 0"-1596; 3' 0"-1597; 4' 6"-1598; 6' 0"-1599; 15' 0"-4401; 18' 0"-18' 6"-4402; 20' 0"-21' 0"-4403; Water-4404;

Core Samples 7' 6"-9' 0"-1600;

DESCRIPTION OF STRATA	Thickness Feet	Thickness Inches	Depth Below Surface Feet	Depth Below Surface Inches
Clients are requested to examine the samples of the Strata submitted, as the descriptions employed below are general terms and responsibility is not accepted for their application to commercial purposes. (B) No. 2 Test. Boring.				
Fill (Soil and Stones)	2	0	2	0
Fill (Brown Clay, Timber etc)	2	0	4	0
Soft Silty Clay	0	9	4	9
Brown Mottled Clay	2	3	7	0
Firm Brown Clay	14	0	21	0
TOTAL FROM SURFACE ...	21	0	21	0

This form is to be returned to Head Office immediately the borehole is finished.

Foreman's Signature..... *Date* July, 1951.

P. & R. Ltd.—6376

Connaughts Site Investigation Ltd

3 Highlands Cottages, Southend Road, Rettenden Common, Chelmsford, CM3 8EB

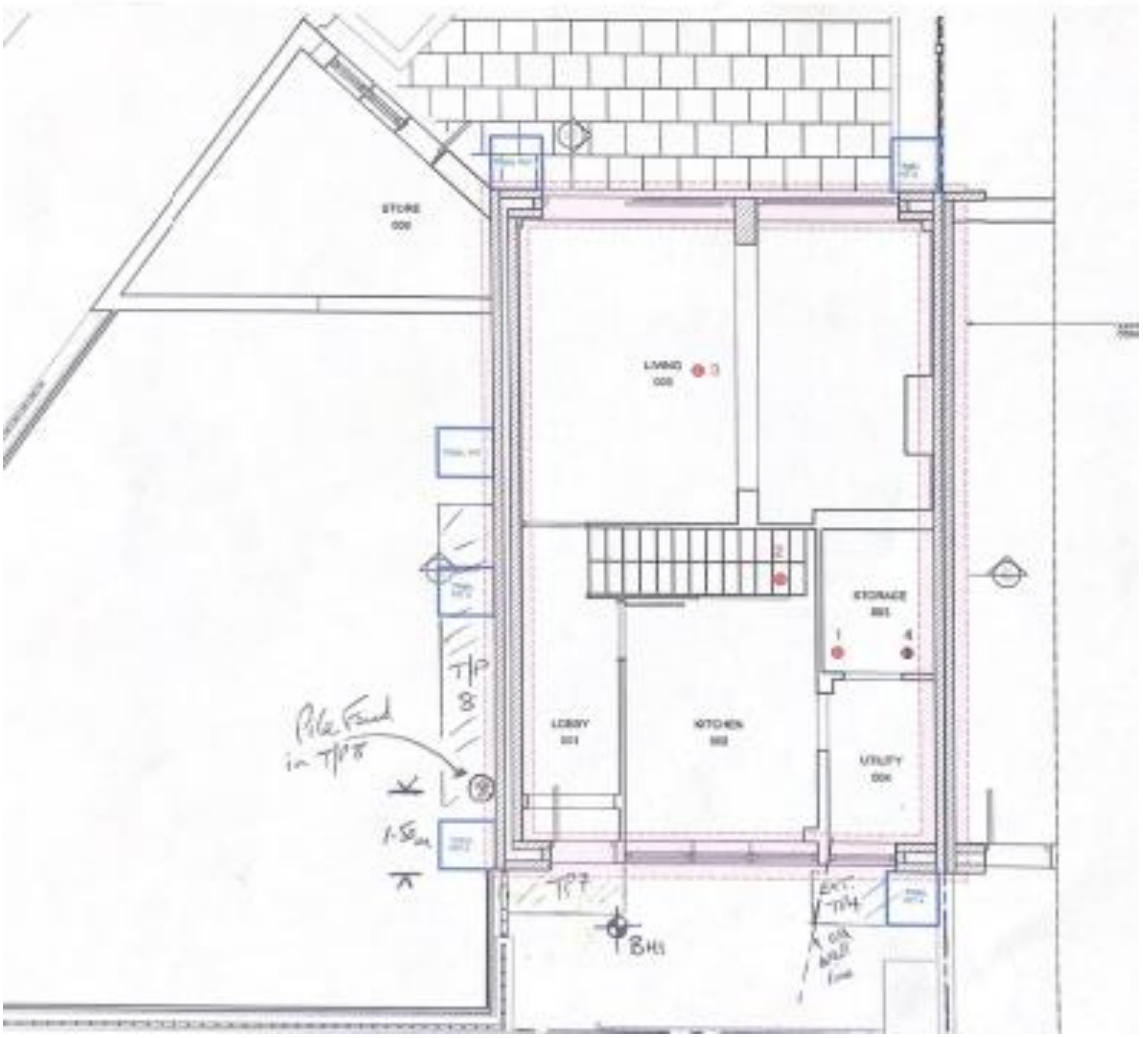
Tel: 01245 400656

Appendix No.	1
Sheet No.	1
Job No.	0920a
Date.	Aug 2022

LOCATION **12 Barrington Court, London, NW5 4AT**

Scale: NTS

Site Plan



Connaughts Site Investigation Ltd

3 Highlands Cottages, Southend Road, Rettenden Common,
Chelmsford, CM3 8EB

Tel: 01702 528098
Fax: 01702 528098

Appendix No. 2
Sheet No. 4
Job No. 0920
Date. Aug 2022

Borehole through base of trial pit 8

LOCATION **12 Barrington Court, London, NW5 4AT**

Method: Hand auger

Description of Stratum	(m)	Legend	Depth	Samples Type	Samples Depth	Tests Type	Tests Value	Field Observations
Dry brown topsoil			0.30m					Roots of 10-25mm dia. To underside of ring beam.
Brown / grey, silty, sandy gravel with much brick rubble, concrete pieces, occasional metal and glass bottles (MADE GROUND).	0.5			D1	0.72m			Underside of ring beam
	1.0		1.30m					Water inflow at 1.20m
Orange brown, silty clay (MADE GROUND)	1.5		1.70m					
Brown reworked clay (MADE GROUND)	2.0							
	2.5							
	3.0							
Borehole closed at 3.00m	3.5							
	4.0							
	4.5							
	5.0							
	5.5							

Remarks:

Water inflow at 1.20m.
Roots of 10-25mm diameter present throughout trial pit to close at 0.72m.

Mark Zudini Design

Key

U Undisturbed Sample
D Small disturbed sample
B Bulk distured sample
W Water sample
N Standard Penetration Test (C / S)
N* SPT test as a dynamic probe
V Shear vane test
MP Nackintosh probe (blows/0.3m)
BL No. blows to obtain U100 sample

Connaughts Site Investigation Ltd

3 Highlands Cottages, Southend Road, Rettenden Common,
Chelmsford, CM3 8EB

Tel: 01702 528098
Fax: 01702 528098

Window sample borehole 1

Appendix No. 3
Sheet No. 1
Job No. 0920a
Date. Aug 2022

LOCATION **12 Barrington Court, London, NW5 4AT** Method: window sample

Description of Stratum	(m)	Legend	Depth	Samples Type	Samples Depth	Tests Type	Tests Value	Field Observations
Paving slab			0.05m	U1	G.L			87mm dia. 50% recovery
Brown clayey sand / sandy clay with brick fragments (MADE GROUND)	1.0		1.10m	U2	1.00	N	3 blows	87mm dia. 70% recovery
Firm, orange brown, silty clay with fragments of brick and fine flint gravel (MADE GROUND).	2.0			U3	2.00	N	2 blows	Seepage / inflow at 1.00m Water level at 1.30m on completion and on removal of casing. 87mm dia. 90% recovery Borehole cased to 2.00m
	3.0		3.20m	U4	3.00	N	7 blows	77mm dia. 80% recovery
Loose, grey and black, clayey sand with orange brown clay and fragments of brick and ash clinker (MADE GROUND).	4.0			U5	4.00	N	3 blows	77mm dia. 90% recovery
	5.0			U6	5.00	N	6 blows	67mm dia. 40% recovery
	6.0		6.70m	U7	6.00	N	6 blows	67mm dia. 80% recovery
Stiff, orage brown, slightly mottled CLAY (No sample recovery possible due to amount of water within borehole).	7.0			U8 D1	7.00 7.00	N	18 blows	No recovery (0%)
	8.0			U9	8.00	N	27 blows	No recovery (0%)
	9.0		9.00m	*	9.00	N	26 blows	
WS1 borehole closed at 9.00m	10.0							
	11.0							

Remarks:

Water seepage / inflow at 1.00m with water level standing at 1.30m on . completion of the site works and removal of the borehole casing.

Mark Zudini Design

Key

U Undisturbed Sample
D Small disturbed sample
B Bulk distured sample
W Water sample
N Standard Penetration Test (C / S)
N* SPT test as a dynamic probe
V Shear vane test
MP Nackintosh probe (blows/0.3m)
BL No. blows to obtain U100 sample

Contaminated Land Solutions

Appendix E– Borehole Photographs

BH1	
	
	
	

2697-P2E-1-B: Corner of Grafton Road and Barrington Court, Camden

Didier Ryan

BH2	
	
 08/10/24 2697 Corner of Grafton rd and Barrington ct. BH2	
	

BH3

Contaminated Land Solutions

Appendix F – Gas & Groundwater Monitoring Results and Weather Records

2697-P2E-1-B: Corner of Grafton Road and Barrington Court, Camden

Didier Ryan

Contaminated Land Solutions

GROUNDWATER & GAS MONITORING RESULTS

Project No. 2697

Project Name Corner of Grafton Road and Barrington Court

BH ref	Date	Time	Weather	Pressure (mb)		Flow Rate (l/hr)	Methane (%)		Oxygen (%v/v)		Carbon dioxide (%)		Carbon Monoxide (%)		Hydrogen Sulphide		VOC & SVOC Vapours (ppm)			Ground water level (m)
				Atmos-pheric	in BH		Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady	Initial	Peak	Steady	
BH1	26/07/24	09:50	Sunny	1011	1000	0.0	0.0	0.0	20.7	19.2	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.72
BH2	26/07/24	10:03	Sunny	1011	1011	0.0	0.0	0.0	20.1	18.8	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.10
BH3	26/07/24	10:20	Sunny	1011	1011	0.0	0.0	0.0	19.8	18.6	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.05
BH1	09/08/24	10:10	Dry, sunny, hot	1008	1008	0.0	0.0	0.0	19.1	18.9	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.88
BH2	06/08/24	10:23	Dry, sunny, hot	1008	1008	0.0	0.0	0.0	20.2	19.5	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.05
BH3	09/08/24	10:38	Dry, sunny, hot	1008	1008	0.0	0.0	0.0	20.1	19.7	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.99
BH1	23/08/24	10:13	Dry and sunny	1001	1001	0.0	0.0	0.0	20.4	19.1	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.15
BH2	23/08/24	10:37	Dry and sunny	1001	1001	0.0	0.0	0.0	20.6	19.5	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.27
BH3	23/08/24	10:25	Dry and sunny	1001	1001	0.0	0.0	0.0	20.4	19.4	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.20

Monitoring Equipment: Gas Data GFM436 Multichannel Portable gas analyser, an ATEX and MCERTS accredited hand held gas analyser.
Monitoring for VOCs and SVOCs: MiniRAE Lite PID manufactured by RAE System fitted with a 10.6 eV lamp.

time	temp	dwpt	rhum	prcp	pres
2024-07-24 00:00:00	17.7	13	74	0	1022.5
2024-07-24 01:00:00	17.4	13.3	77	0	1022.4
2024-07-24 02:00:00	16.2	13.1	82	0	1022.2
2024-07-24 03:00:00	15.6	13.8	89	0	1021.9
2024-07-24 04:00:00	14.6	13.1	91	0	1021.8
2024-07-24 05:00:00	14.6	13.5	93	0	1021.9
2024-07-24 06:00:00	14.6	13.6	94	0	1021.9
2024-07-24 07:00:00	16.2	15.2	94	0	1021.7
2024-07-24 08:00:00	18.1	15.5	85	0	1021.7
2024-07-24 09:00:00	19.4	15.5	78	0	1021.8
2024-07-24 10:00:00	21.6	16.1	71	0	1021.4
2024-07-24 11:00:00	21.9	15.7	68	0	1021
2024-07-24 12:00:00	24.3	16	60	0	1020.4
2024-07-24 13:00:00	23.4	15.5	61	0	1019.9
2024-07-24 14:00:00	23.4	15.2	60	0	1019.5
2024-07-24 15:00:00	24.3	15.2	57	0	1019.3
2024-07-24 16:00:00	24	13.5	52	0	1019
2024-07-24 17:00:00	23.2	13.9	56	0	1018.4
2024-07-24 18:00:00	21.3	13.7	62	0	1018.3
2024-07-24 19:00:00	20.1	13.1	64	0	1017.9
2024-07-24 20:00:00	18.9	13.3	70	0	1017.7
2024-07-24 21:00:00	18.4	12.6	69	0	1017.5
2024-07-24 22:00:00	17.6	12.7	73	0	1017.5
2024-07-24 23:00:00	17.1	12.6	75	0	1017.3
2024-07-25 00:00:00	15.7	13.5	87	0	1017.1
2024-07-25 01:00:00	15.8	14	89	0	1016.4
2024-07-25 02:00:00	15.8	14.2	90	0	1015.7
2024-07-25 03:00:00	15.6	14	90	0	1015
2024-07-25 04:00:00	15.4	14.8	96	0.2	1014.6
2024-07-25 05:00:00	15.9	14.9	94	0	1013.9
2024-07-25 06:00:00	16	15	94	0	1013.6
2024-07-25 07:00:00	16.5	14.9	90	0	1013.3
2024-07-25 08:00:00	16.7	15.4	92	0	1012.8
2024-07-25 09:00:00	17	15.2	89	0	1012.3
2024-07-25 10:00:00	17.7	15.7	88	0	1011.9
2024-07-25 11:00:00	17.9	16.2	90	0	1011.9
2024-07-25 12:00:00	18.7	15.9	84	0	1011.2
2024-07-25 13:00:00	19.7	16.5	82	0	1010.3
2024-07-25 14:00:00	19.5	16.7	84	0	1010.5
2024-07-25 15:00:00	20.3	16.3	78	0	1010
2024-07-25 16:00:00	20.2	16.6	80	0	1009.5
2024-07-25 17:00:00	19.9	16.7	82	0	1009
2024-07-25 18:00:00	19	17.3	90	0	1008.3
2024-07-25 19:00:00	18.7	17	90	0	1008
2024-07-25 20:00:00	18	17.4	96	0.4	1008.3

2024-07-25 21:00:00	18	17.4	96	0.2	1008.1
2024-07-25 22:00:00	18.1	17.6	97	0.2	1008.4
2024-07-25 23:00:00	16.7	14	84	0.2	1008.8
2024-07-26 00:00:00	15.7	13.7	88	0	1009.1
2024-07-26 01:00:00	14.9	13.1	89	0	1009.3
2024-07-26 02:00:00	14.2	12.8	91	0	1009.4
2024-07-26 03:00:00	13.8	12.5	92	0	1009.5
2024-07-26 04:00:00	13.2	12.3	94	0	1009.5
2024-07-26 05:00:00	12.5	11.9	96	0	1009.8
2024-07-26 06:00:00	12.1	11.6	97	0	1010.1
2024-07-26 07:00:00	13.5	13	97	0	1010.6
2024-07-26 08:00:00	14.8	13.3	91	0	1011.1
2024-07-26 09:00:00	16.6	14.1	85	0	1011.2
2024-07-26 10:00:00	18.4	14.1	76	0	1011.3
2024-07-26 11:00:00	19.4	13.1	67	0	1011.2
2024-07-26 12:00:00	21.3	13.5	61	0	1011.3
2024-07-26 13:00:00	21.9	12.2	54	0	1011.1
2024-07-26 14:00:00	21.9	11.9	53	0	1011.3
2024-07-26 15:00:00	22.9	11.3	48	0	1011.2
2024-07-26 16:00:00	22.1	11.8	52	0	1011
2024-07-26 17:00:00	21.9	10.1	47	0	1011
2024-07-26 18:00:00	22	10.5	48	0	1010.9
2024-07-26 19:00:00	21.1	12.3	57	0	1011
2024-07-26 20:00:00	20.5	11.7	57	0	1011.3
2024-07-26 21:00:00	19.1	11.6	62	0	1011.6
2024-07-26 22:00:00	18.3	12.7	70	0	1012.2
2024-07-26 23:00:00	17.9	13.2	74	0	1012.3

time	temp	dwpt	rhum	prcp	pres
2024-08-22 00:00:00	15.4	11.6	78	0	1013.6
2024-08-22 01:00:00	15.1	11.5	79	0	1012.7
2024-08-22 02:00:00	14.8	11.8	82	0	1012
2024-08-22 03:00:00	14.6	11.9	84	0	1010.9
2024-08-22 04:00:00	14.9	11.9	82	0	1010.1
2024-08-22 05:00:00	15.5	11.9	79	0	1009.2
2024-08-22 06:00:00	16.1	11.7	75	0	1008.2
2024-08-22 07:00:00	16.6	11.7	73	0	1007.6
2024-08-22 08:00:00	16.1	13	82	0.2	1006.4
2024-08-22 09:00:00	17	13.3	79	0	1006.8
2024-08-22 10:00:00	17.7	13.8	78	0	1006.9
2024-08-22 11:00:00	18.2	14.3	78	0	1006.5
2024-08-22 12:00:00	18.1	14.8	81	0	1006.2
2024-08-22 13:00:00	19.3	15.6	79	0	1005.7
2024-08-22 14:00:00	19.4	15.7	79	0	1005.4
2024-08-22 15:00:00	19.3	16	81	0	1005.4
2024-08-22 16:00:00	19.7	16.3	81	0	1005.2
2024-08-22 17:00:00	19.7	16.3	81	0	1004.8
2024-08-22 18:00:00	19.4	16.4	83	0	1004.7
2024-08-22 19:00:00	18.8	16.9	89	0	1004.3
2024-08-22 20:00:00	18.8	16.2	85	0	1004.2
2024-08-22 21:00:00	18.9	15.8	82	0	1004.3
2024-08-22 22:00:00	18.6	15.7	83	0	1003.8
2024-08-22 23:00:00	18.2	15.3	83	0	1003
2024-08-23 00:00:00	18.1	14.8	81	0	1002.8
2024-08-23 01:00:00	17.7	14.2	80	0	1002.3
2024-08-23 02:00:00	17.6	14.3	81	0	1001.5
2024-08-23 03:00:00	17.8	13.9	78	0	1000.4
2024-08-23 04:00:00	17.8	14.1	79	0	999.2
2024-08-23 05:00:00	16.8	15.1	90	0.2	998.5
2024-08-23 06:00:00	16.7	15.6	93	0.6	998.1
2024-08-23 07:00:00	17.5	16.2	92	0.4	998.2
2024-08-23 08:00:00	18.5	16.5	88	0	999.7
2024-08-23 09:00:00	18.2	12.4	69	0	1001.8
2024-08-23 10:00:00	18.6	11.7	64	0	1003.1
2024-08-23 11:00:00	19.1	10.1	56	0	1004.4
2024-08-23 12:00:00	20.2	9.7	51	0	1005.2
2024-08-23 13:00:00	21.5	10	48	0	1005.8
2024-08-23 14:00:00	21.6	7.8	41	0	1006.4
2024-08-23 15:00:00	22.1	7.5	39	0	1006.8
2024-08-23 16:00:00	21.4	7.2	40	0	1007.1
2024-08-23 17:00:00	20.7	8.7	46	0	1007.3
2024-08-23 18:00:00	20.3	8	45	0	1007.3
2024-08-23 19:00:00	19.9	9.2	50	0	1007.3
2024-08-23 20:00:00	18.5	10.8	61	0	1007

2024-08-23 21:00:00	17.8	10.9	64	0	1007.7
2024-08-23 22:00:00	17.1	11.1	68	0	1007.9
2024-08-23 23:00:00	16.4	10.9	70	0	1007.2

Contaminated Land Solutions

Appendix G – Contamination Test Results

RESIDENTIAL WITH HOMEGROWN PRODUCE (RwHP) - SOM 1%						
Determinand	Unit	GAC	Source	BH1	Number of Tests	Number of Exceedences
				0.20-0.40		
Metals						
Arsenic	mg/kg	37.0	DEFRA C4SL	27.6	1	0
Cadmium	mg/kg	22.1	DEFRA C4SL	1.7	1	0
Chromium (III)	mg/kg	14300.0	ATRISK SSV	36.6	1	0
Copper	mg/kg	4730.0	ATRISK SSV	221	1	0
Lead	mg/kg	200.0	DEFRA C4SL	618	1	1
Mercury (Inorganic)	mg/kg	180.0	ATRISK SSV	1.5	1	0
Nickel	mg/kg	136.0	ATRISK SSV	42.0	1	0
Selenium	mg/kg	375.0	ATRISK SSV	< 1.0	1	0
Zinc	mg/kg	20000.0	ATRISK SSV	710	1	0
Inorganics						
Free Cyanide	mg/kg	34.0	ATRISK SSV	< 1.0	1	0
Hexavalent Chromium	mg/kg	20.5	DEFRA C4SL	< 0.8	1	0
Miscellaneous						
Moisture Content	%	-	-	20.7	1	
pH	pH units	-	-	6.6	1	
Soil Organic Matter	%	-	-	4.8	1	
Stones Content	%	-	-	<1.0	1	
Phenols						
Total Monohydric Phenols	mg/kg	280.0	LQM/CIEH	<5	1	0
Polyaromatic hydrocarbons						
Naphthalene	mg/kg	0.83	ATRISK SSV	< 0.02	1	0
Acenaphthylene	mg/kg	170.0	LQM/CIEH	0.02	1	
Acenaphthene	mg/kg	608.0	ATRISK SSV	0.02	1	0
Fluorene	mg/kg	735.0	ATRISK SSV	0.02	1	0
Phenanthrene	mg/kg	95.0	LQM/CIEH	0.45	1	0
Anthracene	mg/kg	10200.0	ATRISK SSV	0.09	1	0
Fluoranthene	mg/kg	983.0	ATRISK SSV	0.87	1	0
Pyrene	mg/kg	668.0	ATRISK SSV	0.75	1	0
Benzo(a)anthracene	mg/kg	7.2	LQM/CIEH	0.38	1	0
Chrysene	mg/kg	15	LQM/CIEH	0.41	1	0
Benzo(b)fluoranthene	mg/kg	2.6	LQM/CIEH	0.47	1	0
Benzo(k)fluoranthene	mg/kg	77	LQM/CIEH	0.19	1	0
Benzo(a)pyrene	mg/kg	4.95	DEFRA C4SL	0.38	1	0
Indeno (1,2,3-cd) pyrene	mg/kg	27	LQM/CIEH	0.27	1	0
Dibenzo(a,h)anthracene	mg/kg	0.24	LQM/CIEH	0.05	1	0
Benzo(g,h,i)perylene	mg/kg	320	LQM/CIEH	0.23	1	0
TPH CWG						
>C_5-C_6 Aliphatic	mg/kg	42.7	ATRISK SSV	<0.01	1	0
>C_6-C_8 Aliphatic	mg/kg	99.3	ATRISK SSV	<0.05	1	0
>C_8-C_{10} Aliphatic	mg/kg	13.9	ATRISK SSV	<2.0	1	0
>C_{10}-C_{12} Aliphatic	mg/kg	81.7	ATRISK SSV	<2.0	1	0
>C_{12}-C_{16} Aliphatic	mg/kg	385.0	ATRISK SSV	<3.0	1	0
>C_{16}-C_{35} Aliphatic	mg/kg	210000.0	ATRISK SSV	<13.0	1	0
>C_{35}-C_{40} Aliphatic	mg/kg	65000.0	LQM/CIEH	<10	1	0
>C_5-C_7 Aromatic (benzene)	mg/kg	0.14	ATRISK SSV	<0.01	1	0
>C_7-C_8 Aromatic (toluene)	mg/kg	113.0	ATRISK SSV	<0.05	1	0
>C_8-C_{10} Aromatic	mg/kg	20.5	ATRISK SSV	<2.0	1	0
>C_{10}-C_{12} Aromatic	mg/kg	70.0	ATRISK SSV	<2.0	1	0
>C_{12}-C_{16} Aromatic	mg/kg	165.0	ATRISK SSV	<2.0	1	0
>C_{16}-C_{21} Aromatic	mg/kg	319.0	ATRISK SSV	5.0	1	0
>C_{21}-C_{35} Aromatic	mg/kg	1120.0	ATRISK SSV	<10	1	0
>C_{35}-C_{44} Aromatic	mg/kg	1100.0	LQM/CIEH	<10	1	0

RESIDENTIAL WITH HOMEGROWN PRODUCE (RwHP) - SOM 6%							
Determinand	Unit	GAC	Source	BH2	BH3	Number of Tests	Number of Exceedences
				0.20-0.40	0.20-0.40		
Metals							
Arsenic	mg/kg	37.0	DEFRA C4SL	20.4	19.7	2	0
Cadmium	mg/kg	22.1	DEFRA C4SL	1.4	1.2	2	0
Chromium (III)	mg/kg	14300.0	ATRISK SSV	43.7	47.8	2	0
Copper	mg/kg	4790.0	ATRISK SSV	228	175	2	0
Lead	mg/kg	200.0	DEFRA C4SL	674	619	2	2
Mercury (Inorganic)	mg/kg	180.0	ATRISK SSV	2.8	2.8	2	0
Nickel	mg/kg	136.0	ATRISK SSV	30.7	24.9	2	0
Selenium	mg/kg	375.0	ATRISK SSV	1.7	1.4	2	0
Zinc	mg/kg	20300.0	ATRISK SSV	579	372	2	0
Inorganics							
Free Cyanide	mg/kg	34.0	ATRISK SSV	< 1.0	< 1.0	2	0
Hexavalent Chromium	mg/kg	20.5	DEFRA C4SL	< 0.8	< 0.8	2	0
Miscellaneous							
Moisture Content	%	-	-	15.3	15.8	2	-
pH	pH units	-	-	7.1	7.0	2	-
Soil Organic Matter	%	-	-	<8.1	6.3	2	-
Stones Content	%	-	-	<0.1	<0.1	2	-
Phenols							
Total Monohydric Phenols	mg/kg	1100.0	LQM/CIEH	<5	<5	2	0
Polyaromatic hydrocarbons							
Naphthalene	mg/kg	12.2	ATRISK SSV	0.04	0.03	2	0
Acenaphthylene	mg/kg	920.0	LQM/CIEH	0.06	0.05	2	0
Acenaphthene	mg/kg	2760.0	ATRISK SSV	0.05	0.03	2	0
Fluorene	mg/kg	2610.0	ATRISK SSV	0.04	0.03	2	0
Phenanthrene	mg/kg	440.0	LQM/CIEH	0.79	0.57	2	0
Anthracene	mg/kg	26200.0	ATRISK SSV	0.26	0.26	2	0
Fluoranthene	mg/kg	2980.0	ATRISK SSV	2.04	1.54	2	0
Pyrene	mg/kg	2120.0	ATRISK SSV	1.84	1.40	2	0
Benzo(a)anthracene	mg/kg	13	LQM/CIEH	1.00	0.79	2	0
Chrysene	mg/kg	27	LQM/CIEH	1.18	0.90	2	0
Benzo(b)fluoranthene	mg/kg	3.7	LQM/CIEH	1.48	1.20	2	0
Benzo(k)fluoranthene	mg/kg	100	LQM/CIEH	0.62	0.50	2	0
Benzo(a)pyrene	mg/kg	4.95	DEFRA C4SL	1.13	0.90	2	0
Indeno (1,2,3-cd) pyrene	mg/kg	41	LQM/CIEH	0.89	0.75	2	0
Dibenzo(a,h)anthracene	mg/kg	0.3	LQM/CIEH	0.18	0.15	2	0
Benzo(g,h,i)perylene	mg/kg	350	LQM/CIEH	0.84	0.70	2	0
TPH CWG							
>C_5-C_6 Aliphatic	mg/kg	369.0	ATRISK SSV	<0.01	<0.01	2	0
>C_6-C_8 Aliphatic	mg/kg	1240.0	ATRISK SSV	<0.05	<0.05	2	0
>C_8-C_{10} Aliphatic	mg/kg	204.0	ATRISK SSV	<2.0	<2.0	2	0
>C_{10}-C_{12} Aliphatic	mg/kg	1180.0	ATRISK SSV	<2.0	<2.0	2	0
>C_{12}-C_{16} Aliphatic	mg/kg	4130.0	ATRISK SSV	<3.0	<3.0	2	0
>C_{16}-C_{35} Aliphatic	mg/kg	210100.0	ATRISK SSV	<13.0	<13.0	2	0
>C_{35}-C_{40} Aliphatic	mg/kg	110000.0	LQM/CIEH	<10	<10	2	0
>C_5-C_7 Aromatic (benzene)	mg/kg	0.87	ATRISK SSV	<0.01	<0.01	2	0
>C_7-C_8 Aromatic (toluene)	mg/kg	780.0	ATRISK SSV	<0.05	<0.05	2	0
>C_8-C_{10} Aromatic	mg/kg	232.0	ATRISK SSV	<2.0	<2.0	2	0
>C_{10}-C_{12} Aromatic	mg/kg	468.0	ATRISK SSV	<2.0	<2.0	2	0
>C_{12}-C_{16} Aromatic	mg/kg	830.0	ATRISK SSV	<2.0	<2.0	2	0
>C_{16}-C_{21} Aromatic	mg/kg	1040.0	ATRISK SSV	8.0	6.0	2	0
>C_{21}-C_{35} Aromatic	mg/kg	1710.0	ATRISK SSV	<10	<10	2	0
>C_{35}-C_{44} Aromatic	mg/kg	1700.0	LQM/CIEH	<10	<10	2	0

Unit A2
Windmill Road
Ponswood Industrial Estate
St Leonards on Sea
East Sussex
TN38 9BY
Telephone: (01424) 718618

cs@elab-uk.co.uk
info@elab-uk.co.uk

2683

Certificate of Analysis

THE ENVIRONMENTAL LABORATORY LTD

Analytical Report Number:	24-54789
Issue:	1
Date of Issue:	24/07/2024
Contact:	Peter George
Customer Details:	GO Contaminated Land Solutions Ltd 4 De Frene Road Sydenham London SE26 4AB
Quotation No:	Q24-04324
Order No:	Not Supplied
Customer Reference:	2697
Date Received:	10/07/2024
Date Approved:	24/07/2024
Details:	Corner of Grafton Road and Barrington Court
Approved by:	

Tim Reeve, Technical Coordinator

Sample Summary

Report No.: 24-54789, issue number 1

Elab No.	Client's Ref.	Date Sampled	Date Scheduled	Description	Deviations
366828	BH1 0.20 - 0.40	08/07/2024	11/07/2024	Silty loam	
366829	BH1 3.80 - 4.00	08/07/2024	11/07/2024	Silty clayey loam	
366830	BH2 0.20 - 0.40	08/07/2024	11/07/2024	Silty loam	
366831	BH2 3.55 - 3.70	08/07/2024	11/07/2024	Silty clayey loam	
366832	BH3 0.20 - 0.40	08/07/2024	11/07/2024	Silty loam	

Results Summary

Report No.: 24-54789, issue number 1

ELAB Reference				366828	366829	366830	366831	366832
Customer Reference								
Sample ID								
Sample Type				SOIL	SOIL	SOIL	SOIL	SOIL
Sample Location				BH1	BH1	BH2	BH2	BH3
Sample Depth (m)				0.20 - 0.40	3.80 - 4.00	0.20 - 0.40	3.55 - 3.70	0.20 - 0.40
Sampling Date				08/07/2024	08/07/2024	08/07/2024	08/07/2024	08/07/2024
Determinand	**Codes**	**Units**	**LOD**					
Soil sample preparation parameters								
Moisture Content	N	%	0.1	20.7	24.1	15.3	25.4	15.8
Stones Content	N	%	0.1	< 0.1	n/t	< 0.1	n/t	< 0.1
Material removed	N	%	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Description of Inert material removed	N		0	None	None	None	None	None
Metals								
Arsenic	M	mg/kg	1	27.6	n/t	20.4	n/t	19.7
Cadmium	M	mg/kg	0.5	1.7	n/t	1.4	n/t	1.2
Chromium	M	mg/kg	5	36.6	n/t	43.7	n/t	47.8
Copper	M	mg/kg	5	221	n/t	228	n/t	175
Lead	M	mg/kg	5	618	n/t	674	n/t	619
Mercury	M	mg/kg	0.5	1.5	n/t	2.8	n/t	2.8
Nickel	M	mg/kg	5	42.0	n/t	30.7	n/t	24.9
Selenium	M	mg/kg	1	< 1.0	n/t	1.7	n/t	1.4
Zinc	M	mg/kg	5	710	n/t	579	n/t	372
Inorganics								
Free Cyanide	N	mg/kg	1	< 1.0	n/t	< 1.0	n/t	< 1.0
Hexavalent Chromium	N	mg/kg	0.8	< 0.8	n/t	< 0.8	n/t	< 0.8
Miscellaneous								
pH	M	pH units	0.1	6.6	n/t	7.1	n/t	7.0
Soil Organic Matter	U	%	0.1	4.8	1.0	8.1	1.8	6.3
Total Organic Carbon	N	%	0.01	3.3	1.1	4.5	1.6	3.7
Phenols								
Total Monohydric Phenols	N	mg/kg	5	< 5	n/t	< 5	n/t	< 5
Polyaromatic hydrocarbons								
Naphthalene	SM	mg/kg	0.02	< 0.02	n/t	0.04	n/t	0.03
Acenaphthylene	SM	mg/kg	0.02	0.02	n/t	0.06	n/t	0.05
Acenaphthene	SM	mg/kg	0.02	0.02	n/t	0.05	n/t	0.03
Fluorene	S	mg/kg	0.02	0.02	n/t	0.04	n/t	0.03
Phenanthrene	SM	mg/kg	0.02	0.45	n/t	0.79	n/t	0.57
Anthracene	S	mg/kg	0.02	0.09	n/t	0.26	n/t	0.26
Fluoranthene	SM	mg/kg	0.02	0.87	n/t	2.04	n/t	1.54
Pyrene	SM	mg/kg	0.02	0.75	n/t	1.84	n/t	1.40
Benzo(a)anthracene	S	mg/kg	0.02	0.38	n/t	1.00	n/t	0.79
Chrysene	SM	mg/kg	0.02	0.41	n/t	1.18	n/t	0.90
Benzo(b)fluoranthene	SM	mg/kg	0.02	0.47	n/t	1.48	n/t	1.20
Benzo(k)fluoranthene	SM	mg/kg	0.03	0.19	n/t	0.62	n/t	0.50
Benzo(a)pyrene	S	mg/kg	0.02	0.38	n/t	1.13	n/t	0.90
Indeno(1,2,3-cd)pyrene	SM	mg/kg	0.02	0.27	n/t	0.89	n/t	0.75
Dibenzo(a,h)anthracene	SM	mg/kg	0.02	0.05	n/t	0.18	n/t	0.15
Benzo[g,h,i]perylene	SM	mg/kg	0.02	0.23	n/t	0.84	n/t	0.70
Total PAH(16)	NS	mg/kg	0.34	4.61	n/t	12.4	n/t	9.80

Unit A2, Windmill Road, Ponswood Industrial Estate, St Leonards on Sea, East Sussex, TN38 9BY
Tel: +44 (0)1424 718618, Email: info@elab-uk.co.uk, Web: www.elab-uk.co.uk

Results Summary

Report No.: 24-54789, issue number 1

Asbestos Results

Analytical result only applies to the sample as submitted by the client. Any comments, opinions or interpretations (marked #)
in this report are outside UKAS accreditation (Accreditation No2683). They are subjective comments only which must be verified by the client.

In accordance with procedures, a 1kg soil sample should be analysed. For amounts less than this caution should be used when analysing the data as
sample size is smaller than the recommended amount, therefore samples could be deemed as not being representative of the materials present on site.

Elab No	Depth (m)	Clients Reference	Description of Sample Matrix #	Asbestos Identification	Gravimetric Analysis Total (%)	Gravimetric Analysis by ACM Type (%)	Free Fibre Analysis (%)	Total Asbestos (%)	F/mm2 (I)
366828	0.20 - 0.40	BH1	Brown Sandy Soil, Stones	No asbestos detected	n/t	n/t	n/t	n/t	n/t
366830	0.20 - 0.40	BH2	Brown Sandy Soil, Stones	No asbestos detected	n/t	n/t	n/t	n/t	n/t
366832	0.20 - 0.40	BH3	Brown Sandy Soil, Stones	No asbestos detected	n/t	n/t	n/t	n/t	n/t

Method Summary

Report No.: 24-54789, issue number 1

Parameter	Codes	Analysis Undertaken On	Date Tested	Method Number	Technique
Soil					
Free cyanide	N	As submitted sample	12/07/2024	107	Colorimetry
Hexavalent chromium	N	As submitted sample	12/07/2024	110	Colorimetry
pH	M	Air dried sample	12/07/2024	113	Electromeric
Aqua regia extractable metals	M	Air dried sample	12/07/2024	300	ICPMS
Phenols in solids	N	As submitted sample	12/07/2024	121	HPLC
Total organic carbon/Total sulphur	N	Air dried sample	15/07/2024	210	IR
Asbestos identification	U	Air dried sample	15/07/2024	281	Microscopy
Soil organic matter	U	Air dried sample	12/07/2024	BS1377:P3	Titrimetry

Tests marked N are not UKAS accredited

Report Information

Report No.: 24-54789, issue number 1

Key

U	hold UKAS accreditation
M	hold MCERTS and UKAS accreditation
N	do not currently hold UKAS accreditation
^	MCERTS accreditation not applicable for sample matrix
*	UKAS accreditation not applicable for sample matrix
S	Subcontracted to approved laboratory UKAS Accredited for the test
SM	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
NS	Subcontracted to approved laboratory. UKAS accreditation is not applicable.
I/S	Insufficient Sample
U/S	Unsuitable sample
n/t	Not tested
<	means "less than"
>	means "greater than"
LOD	LOD refers to limit of detection, except in the case of pH soils and pH waters where it means limit of discrimination.

Soil sample results are expressed on an air dried basis (dried at < 30°C), and are uncorrected for inert material removed.

ELAB are unable to provide an interpretation or opinion on the content of this report.

The results relate only to the sample received.

PCB congener results may include any coeluting PCBs

Uncertainty of measurement for the determinands tested are available upon request

Unless otherwise stated, sample information has been provided by the client. This may affect the validity of the results.

Deviation Codes

a	No date of sampling supplied
b	No time of sampling supplied (Waters Only)
c	Sample not received in appropriate containers
d	Sample not received in cooled condition
e	The container has been incorrectly filled
f	Sample age exceeds stability time (sampling to receipt)
g	Sample age exceeds stability time (sampling to analysis)

Where a sample has a deviation code, the applicable test result may be invalid.

Sample Retention and Disposal

All soil samples will be retained for a period of one month

All water samples will be retained for 7 days following the date of the test report

Charges may apply to extended sample storage

TPH Classification - HWOL Acronym System

HS	Headspace analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
2D	GC-GC - Double coil gas chromatography
#1	EH_Total but with humics mathematically subtracted
#2	EH_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry

End of Report

Elab Customer Services
The Environmental Laboratory Ltd
Unit 42, Windmill Road
Ponswood Industrial Estate
St Leonards-on-Sea
East Sussex
TN38 9BY

Normec DETS Limited
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410

DETS Report No: 24-08127

Site Reference:	24-54789
Project / Job Ref:	TPHCWG Analysis
Order No:	PO-12777
Sample Receipt Date:	17/07/2024
Sample Scheduled Date:	17/07/2024
Report Issue Number:	1
Reporting Date:	23/07/2024

Authorised by:

Dave Ashworth
Technical Manager

Dates of laboratory activities for each tested analyte are available upon request.

Normec DETS Limited
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - TPH CWG Banded						
DETS Report No: 24-08127	**~Date Sampled**	08/07/24	08/07/24	08/07/24		
The Environmental Laboratory Ltd	**~Time Sampled**	None Supplied	None Supplied	None Supplied		
~Site Reference: 24-54789	**~TP / BH No**	366828	366830	366832		
~Project / Job Ref: TPHCWG Analysis	**~Additional Refs**	BH1	BH2	BH3		
~Order No: PO-12777	**~Depth (m)**	0.20 - 0.40	0.20 - 0.40	0.20 - 0.40		
Reporting Date: 23/07/2024	**DETS Sample No**	726985	726986	726987		

Determinand	Unit	RL	Accreditation					
Aliphatic >C5 - C6 : HS_1D_MS_AL	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01		
Aliphatic >C6 - C8 : HS_1D_MS_AL	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05		
Aliphatic >C8 - C10 : EH_CU_1D_AL	mg/kg	< 2	MCERTS	< 2	< 2	< 2		
Aliphatic >C10 - C12 : EH_CU_1D_AL	mg/kg	< 2	MCERTS	< 2	< 2	< 2		
Aliphatic >C12 - C16 : EH_CU_1D_AL	mg/kg	< 3	MCERTS	< 3	< 3	< 3		
Aliphatic >C16 - C21 : EH_CU_1D_AL	mg/kg	< 3	MCERTS	< 3	< 3	< 3		
Aliphatic >C21 - C34 : EH_CU_1D_AL	mg/kg	< 10	MCERTS	< 10	< 10	< 10		
Aliphatic >C34 - C44 : EH_CU_1D_AL	mg/kg	< 10	NONE	< 10	< 10	< 10		
Aliphatic (C5 - C44) : HS_1D_MS+EH_CU_1D_AL	mg/kg	< 21	NONE	< 21	< 21	< 21		
Aromatic >C5 - C7 : HS_1D_MS_AR	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01		
Aromatic >C7 - C8 : HS_1D_MS_AR	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05		
Aromatic >C8 - C10 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2	< 2	< 2		
Aromatic >C10 - C12 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2	< 2	< 2		
Aromatic >C12 - C16 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2	< 2	< 2		
Aromatic >C16 - C21 : EH_CU_1D_AR	mg/kg	< 3	MCERTS	5	8	6		
Aromatic >C21 - C35 : EH_CU_1D_AR	mg/kg	< 10	MCERTS	< 10	10	< 10		
Aromatic >C35 - C44 : EH_CU_1D_AR	mg/kg	< 10	NONE	< 10	< 10	< 10		
Aromatic (C5 - C44) : HS_1D_MS+EH_CU_1D_AR	mg/kg	< 21	NONE	< 21	< 21	< 21		
Total >C5 - C44 : HS_1D_MS+EH_CU_1D_Total	mg/kg	< 42	NONE	< 42	< 42	< 42		

~Sample details provided by customer and can affect the validity of results

Normec DETS Limited
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - BTEX / MTBE						
DETS Report No: 24-08127	**~Date Sampled**	08/07/24	08/07/24	08/07/24		
The Environmental Laboratory Ltd	**~Time Sampled**	None Supplied	None Supplied	None Supplied		
~Site Reference: 24-54789	**~TP / BH No**	366828	366830	366832		
~Project / Job Ref: TPHCWG Analysis	**~Additional Refs**	BH1	BH2	BH3		
~Order No: PO-12777	**~Depth (m)**	0.20 - 0.40	0.20 - 0.40	0.20 - 0.40		
Reporting Date: 23/07/2024	**DETS Sample No**	726985	726986	726987		

Determinand	Unit	RL	Accreditation					
Benzene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2		
Toluene : HS_1D_MS	ug/kg	< 5	MCERTS	< 5	< 5	< 5		
Ethylbenzene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2		
p & m-xylene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2		
o-xylene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2		
MTBE : HS_1D_MS	ug/kg	< 5	MCERTS	< 5	< 5	< 5		

~Sample details provided by customer and can affect the validity of results

Normec DETS Limited
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 24-08127	
The Environmental Laboratory Ltd	
~Site Reference: 24-54789	
~Project / Job Ref: TPHCWG Analysis	
~Order No: PO-12777	
Reporting Date: 23/07/2024	

DETS Sample No	~TP / BH No	~Additional Refs	~Depth (m)	Moisture Content (%)	Sample Matrix Description
726985	366828	BH1	0.20 - 0.40	22.1	Brown sandy clay with stones and vegetation
726986	366830	BH2	0.20 - 0.40	18.8	Brown sandy clay with stones
726987	366832	BH3	0.20 - 0.40	18.7	Brown clayey sand with stones and vegetation

Moisture content is part of procedure E003 & is not an accredited test
Insufficient Sample I/S
Unsuitable Sample U/S
~Sample details provided by customer and can affect the validity of results

Normec DETS Limited
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 24-08127
The Environmental Laboratory Ltd
~Site Reference: 24-54789
~Project / Job Ref: TPHCWG Analysis
~Order No: PO-12777
Reporting Date: 23/07/2024

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	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	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 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	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	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	Fraction Organic Carbon (FOC)	Determination of TOC by combustion analyser.	E027
Soil	D	Organic Matter (SOM)	Determination of TOC by combustion analyser.	E027
Soil	D	TOC (Total Organic Carbon)	Determination of TOC by combustion analyser.	E027
Soil	AR	Exchangeable Ammonium	Determination of ammonium by discrete analyser.	E029
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	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	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	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	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	SVOC	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	TPH 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 with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH 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 with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	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

~Sample details provided by customer and can affect the validity of results

Normec DETS Limited
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

List of HWOL Acronyms and Operators
DETS Report No: 24-08127
The Environmental Laboratory Ltd
~Site Reference: 24-54789
~Project / Job Ref: TPHCWG Analysis
~Order No: PO-12777
Reporting Date: 23/07/2024

Acronym	Description
HS	Headspace analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
2D	GC-GC - Double coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative eg. EH+HS_Total or EH_CU+HS_Total
~	Sample details provided by customer and can affect the validity of results

Benzene - HS_1D_MS
Ethylbenzene - HS_1D_MS
MTBE - HS_1D_MS
TPH - Aliphatic >C34 - C44 - raw data - EH_CU_1D_AL
TPH CWG - Aliphatic >C10 - C12 - EH_CU_1D_AL
TPH CWG - Aliphatic >C12 - C16 - EH_CU_1D_AL
TPH CWG - Aliphatic >C16 - C21 - EH_CU_1D_AL
TPH CWG - Aliphatic >C21 - C34 - EH_CU_1D_AL
TPH CWG - Aliphatic >C34 - C44 - EH_CU_1D_AL
TPH CWG - Aliphatic >C5 - C44 - HS_1D_MS+EH_CU_1D_AL
TPH CWG - Aliphatic >C5 - C6 - HS_1D_MS_AL
TPH CWG - Aliphatic >C6 - C8 - HS_1D_MS_AL
TPH CWG - Aliphatic >C8 - C10 - EH_CU_1D_AL
TPH CWG - Aromatic >C10 - C12 - EH_CU_1D_AR
TPH CWG - Aromatic >C12 - C16 - EH_CU_1D_AR
TPH CWG - Aromatic >C16 - C21 - EH_CU_1D_AR
TPH CWG - Aromatic >C21 - C35 - EH_CU_1D_AR
TPH CWG - Aromatic >C35 - C44 - EH_CU_1D_AR
TPH CWG - Aromatic >C5 - C44 - HS_1D_MS+EH_CU_1D_AR
TPH CWG - Aromatic >C5 - C7 - HS_1D_MS_AR
TPH CWG - Aromatic >C7 - C8 - HS_1D_MS_AR
TPH CWG - Aromatic >C8 - C10 - EH_CU_1D_AR
TPH CWG - Total >C5 - C44 - HS_1D_MS+EH_CU_1D_Total
Toluene - HS_1D_MS
m & p-xylene - HS_1D_MS
o-Xylene - HS_1D_MS

Contaminated Land Solutions

Appendix H – Response Grid

2697 – Corner of Grafton Road and Barington Court		
Comments by Acting Contaminated Land Officer	**Response**	**Action**
Phase 2 Environmental Investigation		
The extent of made ground was not determined with the works completed, with the borehole recording made ground to a depth of 5.8m in BH1 (the extent of the borehole) and hence it is unknown the full extent of fill material on site.	The depth of the made ground has been confirmed at two nearby locations, where it primarily consists of reworked clay with a very low potential for gassing or contamination. Consequently, the absence of complete data on the full extent of the made ground at a single borehole is not considered significant.	No further action
The coverage of site is considered sufficient (<10m spacing) given the size of the site.	Noted	No further action
No ground gas monitoring was undertaken in low pressure conditions (i.e., <1000mb), in addition, the records do not indicate if the pressure was rising or falling during the monitoring visits. Low and falling pressure conditions are considered to pose the worst-case scenario for ground gas generation, and as such has not been captured in the monitoring completed to date.	Two visits were carried out during a falling pressure trend.	Weather records from Northolt added to section 8. An annex F review to assess the ground gas monitoring is included in section 8.4.
Groundwater levels were recorded at between 0.72-1.05m on the first visit, 0.88-1.05m on the second round of monitoring and 1.15-1.27m for the final visit, indicating	During all gas monitoring visits, groundwater levels were observed to be relatively	See section 8.4 for updates

that the boreholes were either entirely or predominantly flooded at the time of the monitoring. As such, there is limited reliance on the ground gas monitoring results.	high, ranging from 0.72 to 1.27m below ground level (mbgl). Given the underlying geology of natural or reworked London Clay, this groundwater is likely perched, with minimal seasonal fluctuation expected. High groundwater levels may affect gas concentrations by limiting soil gas movement and potentially diluting gas emissions. However, considering the relatively low gas concentrations detected, it is considered that the effect of the high groundwater would not significantly impact the gas concentrations detected. It is anticipated that similar groundwater levels would pertain throughout the year, and consequently similar gas concentrations, would be recorded on site year-round.	
TOC concentrations on site have been recorded between 1.1% and 4.5%, the risk assessment for the site should take into account the CL:AIRE pragmatic approach with regards to TOC concentrations and the degradability of the material (noting organic odours were reported, along with timber within the made ground in BH2) as another line of evidence for the ground gas risk assessment, noting the		Updates included in annex F review in section 8.4 with reference to CL:AIRE guidance

boreholes were primarily flooded during the monitoring period.		
The two proposed mitigation approaches (based on the potential development end uses) are considered suitable, however it should be noted that made ground should only remain beneath *permanent hardstanding*, where there is no possibility of end users removing the hardstanding and replacing with soft landscaping (and hence creating a potential pathway for contamination). The 600mm clean cover soils in soft landscaped areas is considered suitable.		The proposal will only include permanent hardstanding. This has been reflected in the update
It is recommended that the above comments are addressed with regards to the ground gas risk assessment, with further assessment as to the CS1/CS2 classification, noting the former brick works on site and evidence of fill material (including organic odours and timber) on site, and noting the ground gas monitoring undertaken with the response zones flooded/mostly flooded. The updated assessment should take into account whether sufficient monitoring has been undertaken, with 3 No. visits undertaken to date, no visits undertaken in low and falling atmospheric pressure, and the boreholes being flooded throughout the monitoring period. The assessment should address the number of visits required in line with current guidance.		See updates in section 8.4
At this stage it is not recommended that the condition is discharged, until the gas risk assessment is updated to address the comments above. A remediation strategy should also be submitted for approval to address Part C of the condition.	Noted	Updates made. After reviewing the updated sections, it is not considered that a remediation strategy is required.