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2022**

## **Phase II Environmental Site Investigation Report**

**ELMSTEAD ROAD  
WIVENHOE  
CO7 9JF**

**Report Ref. G58346 / Revision 1**



## PHASE II ENVIRONMENTAL SITE INVESTIGATION

**ELMSTEAD ROAD  
WIVENHOE  
CO7 9JF**

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## 1.0 INTRODUCTION

Ensafe have been appointed by Taylor Wimpey London to undertake a Phase II Environmental Site Investigation at a parcel of land off Elmstead Road Road, Wivenhoe, CO7 9JF. The site investigation was based on Taylor Wimpey's drawing 'Development Layout Option 9' Drawing No. "TW027-PL03" Rev. 00, dated January 2021.

The aim of the investigation was to fulfil Colchester Borough Council's request for further investigation to be conducted across the areas of the proposed playing fields, children's playground and public open spaces, where were not previously covered by previous studies. The investigations attempted to determine the risks to all end users appropriately, including non-residential end user purposes as opposed to only a residential end use by ascertaining information regarding the chemical characteristics of the underlying materials.

Therefore, the study focused on assessing the environmental quality of the soils and groundwater (if present) across these areas, to demonstrate these are suitable for their intended use, and assess the ground gas regime for the site.

This report should be read in conjunction with the following documents prepared by 3<sup>rd</sup> parties in relation to the site:

- REC Ltd 'Phase I and Phase II Geo-Environmental Site Assessment, Land off Richard Avenue, Wivenhoe' Ref No. 1CO108570/P2/R1. Dated: March 2020.
- Ensafe Consultants 'Phase I and Phase II Geo-Environmental Assessment, Land South of Elmstead Road, Wivenhoe, C07 9HF (North of Power Lines)'. Ref No. 1CO108570.002/P2/R0. Dated: July 2020.
- Ensafe Consultants 'Phase I Desk Study, Land off Elmstead Road, Wivenhoe, CO7 9JF'. Ref No. G58346 / Rev 1. Dated: 29<sup>th</sup> November 2021

The reporting process aims to characterise the site based upon the procedures identified within Environment Agency (2020) 'Land Contamination: Risk Management' (LCRM) report. These procedures relate to 'past' contamination and assume that legislative controls such as Pollution Prevention and Control authorisations control current potentially polluting activities. Emphasis is therefore upon historic use and the overall approach in dealing with past land contamination is one of risk management.

A conceptual site model (CSM) was first developed following the review of the environmental setting of the site using, geological, hydrological, hydrogeological and historical data determined as part of the Ensafe "Phase I Desk Study" Ref.G58346 / Rev 1. This report should be read in conjunction with this document.

The information obtained is then used to identify pollutant linkages and evaluate the associated risks in accordance with CIRIA C552 (2001)<sup>1</sup> to determine whether significant harm is being caused or there is a significant possibility of such harm being caused as outlined in EPA1990: Part IIA<sup>2</sup> and further described in DEFRA (2006, 2012) statutory guidance<sup>3,4</sup>. The classification of risk is obtained by combining the severity of the harm likely

<sup>1</sup> Rudland, D., Lancefield, R.M., Mayel, P.N. (2001) "Contaminated land Risk Assessment: A guide to good practice. CIRIA C552. UK. pp.80.

<sup>2</sup> Environmental Protection Act 1990: Part IIA. Contaminated Land. Section 78A(ii).

<sup>3</sup> Department of Environment, Food and Rural Affairs (2006) DEFRA Circular 01/2006 – Environmental Protection Act 1990: Part2A. September 2006. U.K

<sup>4</sup> Department of Environment, Food and Rural Affairs (2012) Environmental Protection Act 1990: Part2A – Contaminated Land Statutory Guidance. April 2012. U.K

to arise from a given on/off site activity and the probability that harm may arise to a particular sensitive receptor.

In accordance with LCRM, the process of investigation and risk assessment is iterative, the findings of the Phase II investigation were subsequently used to review the CSM for the site and reassess risk to receptors, and ultimately review the potential requirement for remedial action.

### **Limitations**

The conclusions reached within this report are restricted to those that can be determined from the available data and within the inherent limitations of a discrete investigation. Conclusions and/or recommendations made in this report may be subject to amendment in the light of additional information becoming available.

Any information provided by third parties is presented in good faith; however, Ensafe cannot accept any responsibility/liabilities for the information derived from these and/or for discrepancies or inaccuracies found in the data.

The report presents the findings of the ground investigation, exploratory logs, test and monitoring results and our interpretation of this data. As with any site, there may be differences in conditions between exploratory hole locations, the data included in the report reflects the observations made at the time of the investigation. Seasonal fluctuations may occur in groundwater and ground gas levels which may not be accounted for as part of this study. Ensafe cannot take responsibility for conditions that have not been revealed by the exploratory holes, or variations which may occur between them.

This report has been prepared solely for the use of Taylor Wimpey - London for the purpose of the development scheme under which the investigation was commissioned. If the document is used/viewed by any other party for any other purpose than the one specified above, reference must be made to Ensafe to confirm its suitability for use. No responsibility will be accepted where a third party uses this report, either in part or in its entirety, unless formally re-assigned.

This report should be reviewed at all stages of construction by someone familiar with the terms and assumptions it contains. It is essential that a suitably qualified and experienced engineer be appointed for design purposes, and to supervise construction.

## 2.0 BACKGROUND INFORMATION

The following sections provide an overview of the site and its current status. An extract of the 1:50,000 Ordnance Survey map showing the general location of the site is included as Figure 1.

### 2.1 SITE LOCATION AND DESCRIPTION

**Table 1. Site Description.**

<b>Site Address</b>	Elmstead Road, Wivenhoe, CO7 9JF
<b>National Grid Reference</b>	604604E, 223421N
<b>Area (Ha)</b>	11.07
<b>Level (Above Ordnance Datum, mAOD)</b>	30-33m

The site has a broadly irregular ‘L’ shape and is relatively flat, comprising agricultural fields. An electrical tower situated in the mid-eastern part of the site, with high voltage cables extending to the west and east. The is bordered by semi-mature to mature vegetation to the north, east and south. The eastern boundary has a ditch which separates the site from neighbouring trees. The western boundary of the site runs parallel to a residential estate. The current site layout is presented as Figure 2.

**Table 2. Surrounding Area.**

<b>North</b>	Treeline and vegetation, succeeded by Wivenhoe Town Football Club
<b>East</b>	Dense vegetation followed by agricultural field
<b>South</b>	Agricultural land.
<b>West</b>	Residential buildings and housing estates.

### 2.2 PROPOSED DEVELOPMENT

According to Tom Taylor Wimpey’s drawing ‘Development Layout Option 9’ Drawing No. “TW027-PL03”, dated January 2021 the proposed development plans include the construction of a residential development scheme with associated public and family open space areas and sports pitch.

The proposed development plan is shown in Figure 3.

### 2.3 GEOLOGY

According to the British Geological Survey, the southern part of the site is underlain by superficial deposits of the Kesgrave Catchment subgroup, whilst the northern section is underlain by Brickearth / Cover Sand. The Thames Group formation is found (bedrock) beneath the superficial deposits.

Previous studies found ground conditions on site consist of topsoil / clay with secondary constituents of sand and gravel in varying proportions, observed to a max depth of 0.5m bgl. Underlying this was the Cover Sand which generally consisted of slightly sandy gravelly CLAY or clayey gravelly SAND with varying proportions of secondary constituents. The Kesgrave Catchment group was encountered at depths ranging from 0.30 and 2.70m bgl predominantly comprising sandy GRAVEL at a range of 0.30 – 1.55m bgl, and gravelly SAND with varying proportions at a range of 0.70 – 2.00m bgl. Sandy CLAY was encountered in TP4020 and WS403 for the Kesgrave Catchment Group at 1.00 – 1.50m and 2.20 – 2.70m bgl respectively.

Organic matter was also encountered in a localised area, which could lead to the potential release of organic gases upon disturbance of the ground.



### 3.0 PREVIOUS INVESTIGATIONS

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Taylor Wimpey - London commissioned (2No.) previous investigations across the areas immediately north and south of the high voltage cables bisecting the site to support proposed residential and public open area development. The findings of these studies are summarised in the sections below.

#### 3.1 REC 'PHASE I AND PHASE II GEO-ENVIRONMENTAL SITE ASSESSMENT, LAND OFF RICHARD AVENUE, WIVENHOE' REF NO. 1CO108570/P2/R1. DATED: MARCH 2020

REC was commissioned to undertake a PhI Desk Study and a PhII Geo-environmental site investigation across the area south of the power lines, to support the construction of 120 dwellings with gardens, access roads, pavements and open space areas.

The ground investigation was carried out on 17<sup>th</sup> December 2019 and 22<sup>nd</sup> January 2020 with the aim to provide information on land contamination and geotechnical constraints across the site.

The investigation comprised of:

- 8No. window samples to a max depth of 4.0m bgl with SPT's within all locations
- 7No. Trial pits to a max depth of 2.55m bgl
- 5No. Infiltration testing to depths of 1.60 and 2.55m bgl
- Hand Shear Vane testing within fine grained deposits
- 8No. CBR testing adjacent to window sample locations using TRL-DCP up to 0.70m bgl
- 4No. gas/groundwater monitoring wells installations
- 3No. post completion ground gas and groundwater monitoring visits
- Soil chemical analysis of CLEA metals, cyanide (total), asbestos screening, PAHs, TPH CWG, phenols (total monohydric), and pH and water soluble sulphate
- Geotechnical testing

#### Ground Conditions

Ground conditions encountered included topsoil encountered to a max depth of 0.4m bgl, being shallowest along the western boundary of the southern half of the main proposed development site but thickens in the eastern and northern holes. The material was described as brown sandy gravelly clay. This was followed by Cover Sand superficial deposits in the north of the site generally comprising gravelly sandy clay between 0.30 – 1.20m bgl.

The Kesgrave Catchment Group was encountered as superficial deposits beneath the Topsoil and Cover Sand deposits. Deposits generally comprised slightly sandy gravelly clay or slightly gravelly sand.

No olfactory or visual evidence of contamination was identified within the strata.

### **Groundwater**

Groundwater strikes were encountered during the exploratory excavations at depths between 0.35 and 2.50m bgl. During 3No. subsequent groundwater monitoring rounds, standing water was recorded within all monitoring wells at depths ranging between 0.50 – 2.84m bgl.

During the monitoring rounds, on 10<sup>th</sup> January 2020, the wells were bailed of groundwater to record recharge rates. The findings indicated recharge being indicative of a shallow groundwater table as opposed to localised pockets of perched groundwater in the superficial soils.

### **Soil Quality**

Thirteen (13No) soil samples were retrieved and subjected to laboratory chemical testing, which included metals, cyanide (total), asbestos screening, PAHs, TPH CWG, phenols (total monohydric), and pH and water-soluble sulphate. Results showed all determinands were found at concentrations either below detection limits or below their respective generic assessment criteria for land under a residential use with plant uptake.

No asbestos fibres or asbestos containing materials were identified in those samples subjected to asbestos screening analysis.

### **Ground Gases**

Three (3No.) ground gas and groundwater monitoring visits were carried out between 3<sup>rd</sup> and 17<sup>th</sup> January 2020. Throughout this period, methane levels remained below instrument levels of detection. Carbon Dioxide concentrations ranged between 0%vol and 2.6% vol. A minimum oxygen concentration of 12.4%vol was noted on site. Gas flow rates were consistently recorded below instrument levels of detection (<0.1l/hr). Atmospheric pressures on site ranged between 1008 and 1017mb.

Based on the ground gas levels observed REC considered a Characteristic Situation 1 – ‘Very Low’ risk was adequate for the site, requiring no gas protection measures for the development.

### **Infiltration Testing**

Soil infiltration testing was undertaken in 5No. trial pits to determine the rate of soakage in the Kesgrave Catchment Subgroup at depths 1.60 and 2.55m bgl within sand, gravelly sandy clay, clayey sandy gravel and gravelly sand. Results indicated infiltration rates ranged between 5.09 and 9.29 x 10<sup>-6</sup>m/s. It is worth noting infiltration tests failed in two locations due to poor infiltration rates.

### **Geotechnical Testing and Assessment**

Soil consistency across the site ranged between firm to very stiff and medium dense to very dense. Hand shear vane results generally indicated stable consistencies. Approximate undrained shear strength ranged between 80Cu and 225Cu. SPT values provided a N value range of 13 to 50.

The Atterberg limit determinations determined a modified plasticity index ranging between 8% and 32%, averaging 19% and a low to medium volume change potential based on the modified plasticity indices for fine grained deposits. It was recommended a minimum founding depth of 0.90mbgl be utilised.

CBR testing was undertaken in-situ in 8No. locations and 9No. samples were submitted for laboratory testing. Field CBR values ranged between 2% and 26%. The results indicated an average CBR value of 3.4% for the Topsoil, 8.1% for Kesgrave Catchment Subgroup soils

and 12.2% for the Cover Sands soils. A design CBR value of 4% determined as a worst case scenario for construction.

Particle size distribution tests determined compositions of gravel ranging between 0% and 69%, sand ranged between 27% and 98%, and silt/clay ranging between 0% and 38%. Cobbles were all 0%. All tests were done within materials of the Kesgrave Catchment subgroup.

Conventional shallow strip foundations have been considered suitable site wide at 1.00m bgl. Due to the variable ground conditions encountered across the site, a conservative approach was taken with allowable bearing pressure, so a worst-case geotechnical condition should be assumed for preliminary plotting purposes. As such, an allowable bearing pressure of 135kN/m<sup>2</sup> can be achieved. Where coarse grained materials are encountered, it is anticipated the bearing capacity will increased even when taking into account the negative effects of groundwater.

### pH and Sulphate

Chemical analyses for pH and soluble sulphate content were undertaken on samples from all strata encountered. Results indicated a Design Sulphate Class of DS-1 and the Aggressive Chemical Environment for Concrete (ACEC) classification of AC-1s. The pH values were generally slightly acidic to slightly alkali, ranging between 6.5 and 8.2.

### Conclusions and Recommendations

REC found no unacceptable risk to either human health receptors or controlled waters based on the chemical analysis results and gas monitoring data available at the time the report was issued. Recommendations were made to enable the development plans, which included:

- Additional investigation works to further assess ground conditions on a tighter grid spacing to support foundation design
- Consider effects of shallow groundwater and trees within ABP calculations and foundation design
- Proof rolling/compaction of the formation level should be carried out prior to laying the new pavement
- Advice should be sought from a suitable qualified structural engineer with regard to design and construction of the floor slab

## **3.2 ENSAFE CONSULTANTS 'PHASE I AND II GEO-ENVIRONMENTAL ASSESSMENT LAND OFF RICHARD AVENUE, WIVENHOE' REF NO. 1CO108570/P2/R1. DATED: MARCH 2020**

Ensafe Consultants was commissioned by Taylor Wimpey East London to undertake a Phase I Desk Study and Phase II Geo-environmental investigation at the land south of Elmstead Road, Wivenhoe, CO7 9HF for the proposed redevelopment of 38No. new residential dwellings with associated gardens, new roads, pavements and open space.

The ground investigation works were conducted between 16<sup>th</sup> and 18<sup>th</sup> June 2020 with the aim of determining the geotechnical conditions of the underlying geology, in addition to ascertain pertinent information regarding the chemical characteristics of the underlying shallow soils.

The investigation comprised of:

- 5No. window sample holes to a max depth of 3.00m bgl
- 5No. trial pits for soil infiltration testing to a max depth of 2.60m bgl
- 3No. monitoring wells for gas and groundwater monitoring
- 3No. post completion monitoring rounds for ground gas and groundwater levels
- Geotechnical testing
- Soil chemical analysis

### Ground Conditions

Topsoil was encountered within all locations to a max depth of 0.5m bgl comprising greyish brown clay with secondary constituents of sand and gravel in varying proportions. No olfactory or visual evidence of contamination was identified within the stratum.

Cover Sand directly underlay the topsoil in the majority of locations. The deposits were recorded as slightly sandy gravelly clay. The Kesgrave Catchment subgroup was encountered in all exploratory locations beneath Topsoil and Cover Sand deposits. This stratum was recorded as clay overlying sand and gravel materials.. Cobbles of subangular flint were recovered within the south west part of the investigation site, adjacent to the residential dwellings to the west.

### Groundwater

Groundwater was encountered within 5No. exploratory holes within the Kesgrave Catchment Subgroup during the site investigation, with strike depths ranging between 1.70 – 2.60m bgl. During subsequent monitoring rounds, standing groundwater was encountered within all locations at a strike depth range of 1.58 and 2.29m bgl.

### Soil Quality

A total of 8No. samples were retrieved and subjected to laboratory chemical testing, which included metals, cyanide (total) PAHs, phenols, TPH-CWG, and pH and water-soluble sulphate. Beryllium was detected within 2No. samples at 0.40m and 0.70m bgl above the Generic Acceptance Criteria (GAC) for soils based on Residential end use with plant uptake. Given that the exceedances were minor and levels are likely to be altered to an extent during construction, Ensafe considered that it would not pose an unacceptable risk to the development. The rest of the results for the determinands were found at concentrations either below detection limits or below their respective generic assessment criteria for land under a residential use with plant uptake.

A HazWaste Online Classification tool was utilised to assess the chemical results which determined that all results were 'Non-Hazardous'.

### Ground Gases

Ground gas and groundwater monitoring visits were carried out over 3No. rounds between 23<sup>rd</sup> June 2020 and 9<sup>th</sup> July 2020. Throughout this period, methane levels ranged between below the instruments levels of detection and 0.3%vol. Carbon Dioxide concentrations ranged between 0.8%vol and 2.0% vol. A minimum oxygen concentration of 19.9%vol was noted on site. Gas flow rates were recorded between a range of 0.4l/hr and 3.9l/hr where detected. Atmospheric pressures on site ranged between 1001 and 1022mb. Concentrations of volatile compounds observed on site ranged between 0.02 and 9.9 ppm.

A worst case of CS2 was determined for both methane and carbon dioxide, however, Ensafe's conceptual site model did not note any potential sources of ground gas within the ground investigation, and any sources of ground gas were noted off site. Therefore, Ensafe deemed adequate to designate the site as a Characteristic Situation 1 – 'Very Low' risk was considered adequate for the site and will therefore require no gas protection measures.

The potential off-site sources of contamination were from a historic landfill and infilled ground toward the north east, and a historical sand and gravel pit ~ 100m east of the site.

### **Infiltration Testing**

Shallow infiltration testing was undertaken within all trial pit locations, with one exception, conducted within the Cover Sands and Kesgrave Catchment Subgroup, at depths between 1.10m – 2.03m bgl. Results indicated soil infiltration rates ranged between 2.33 and 8.93 x 10<sup>-6</sup> m/s.

### **Geotechnical Testing and Assessment**

Geotechnical analysis was carried out on 10No. soil samples in varying test distribution, including:

- Moisture Content and Atterberg Limit Tests
- Particle Size Distribution (Wet Sieve Method)
- Remoulded California Bearing Ratio

In-situ SPT tests were undertaken within superficial soils across the site to a maximum depth of 3.00m bgl. Ground conditions were found to be dense to very dense indicating competent ground conditions to the maximum observed depth. SPT "N" values ranged between 32 and 50, all within sand.

Hand shear vane testing was conducted within TP304 (SW area the site investigation area) with an undrained shear strength of 62 and 70 kpa at a depth of 1.85m bgl, which has a firm consistency.

In-situ CBR testing was conducted adjacent to window sample locations with a TRL-DCP with average CBR values ranging from 3% to 58%. Laboratory CBR testing average CBR % values ranged between 15.80% – 76.45%. A worst case CBR value of 3% was recorded for the topsoil and 8% for material found directly below the topsoil. Ensafe recommended an 8% worst case value be utilised in construction.

Atterberg Limit determinations characterised the clay within the Kesgrave Catchment Subgroup to be typically between low to medium volume change potential based on modified plasticity indices. A minimum founding depth of 0.90m bgl was recommended.

PSD testing found compositions of gravel ranging between 28% - 57%, sand ranged between 23% and 62%, and silt/clay ranged between 6% - 27%. Cobbles were valued at 0% composition.

Ensafe recommended that shallow strip foundations could be utilised site wide at a depth of circa 1.00m. Where granular deposits were encountered a worst-case allowable bearing capacity of 320kN/m<sup>2</sup> could be achieved. Floor slabs would be very low but ground bearing floor slabs should be constructed into the underlying superficial strata with the topsoil stripped to natural strata and a sufficient thickness of coarse-grained uniform fill material placed.

### pH and Sulphate

Chemical analyses for pH and soluble sulphate content were undertaken on 7No. selected samples from all strata encountered. Results indicated a Design Sulphate Class of DS-1 and the Aggressive Chemical Environment for Concrete (ACEC) classification of AC-1 or AC-1<sup>d</sup> in accordance with BRE Special Digest 1<sup>(2005)</sup>. The pH values were generally slightly acidic to slightly alkali, ranging between 6.6 and 8.3.

### Conclusions and Recommendations

Ensafe determined that no unacceptable risk to human health or controlled waters was identified, and shallow strip footings with ground bearing floor slabs could be utilised for the scheme. Some recommendations were made to support the proposed development which included:

- To confirm the classification as Characteristics Situation 1 (CS1), it is recommended that a further 3No. rounds of gas monitoring are undertaken to complete the dataset.

## 4.0 PHASE II ENVIRONMENTAL SITE INVESTIGATION

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### 4.1 GENERAL

The Phase II Environmental ground investigation was designed based on the methodology provided in the Environment Agency (2020) 'Land Contamination: Risk Management' and undertaken in accordance with BS5930:2015+A1:2020 'Code of Practice for Site Investigations', BS10175:2011+A2:2017 'Investigation of Potentially Contaminated Sites – Code of Practice'.

The scope of the investigation was developed based on the proposed development plans for a residential estate with a newly introduced sport pitch, amenity areas and landscaping strips across the site as the areas were not targeted by previous studies by characterising the quality of the soils from an environmental perspective.

The site investigation works were commissioned to address the overall following objectives:

- To assess the environmental quality of the materials that had not been investigated before and reassess the CSM using site specific data.
- To evaluate the ground gas generation potential of materials on site and determine the ground gas regime.
- To assess the quality of underlying groundwater (where present) and potential for on and off-site migration of contaminants.
- To determine on a preliminary basis whether remedial works may be required to mitigate unacceptable risks posed by identified levels of contamination.

The fieldwork was carried out between 4<sup>th</sup> and 13<sup>th</sup> October 2021 and included:

- Thirty-six (36No.) trial pits to a maximum depth of 1.65m bgl.
- Five (5No.) window samples boreholes excavated to a maximum depth of 2.7m below existing ground level (bgl).
- Installation of four (4No.) monitoring wells to measure ground gas and groundwater levels post completion of the intrusive works.
- Six (6No.) monitoring visits as part of a programme to assess the ground gas regime for the site.

The location of the recent exploratory excavations is shown in Figure 2A and B. In addition a photographic record of the works carried out on site and materials recovered as part of the investigation can be consulted in Appendix 1.

All exploratory hole locations were scanned for buried services using a Cable Avoidance Tool (CAT) and Ground Penetrating Radar (GPR) by a specialist 3<sup>rd</sup> party subcontractor using available underground utility service plans. In addition, a Zetica UXO preliminary report was used to identify potential risks in relation to Unexploded ordnance. The report indicated the site was 'Low risk', defined as "A low risk really means that there is no greater possibility of encountering UXO than anywhere else in the UK" (Appendix 2).

A summary of works undertaken presented in Table 3 below.

**Table 3. Summary of Exploratory Locations**

Exploratory Hole	Type*	Depth (m)	Date Started	Date Finished	Backfill**	Notes
TP401	TP	1.5	06/10/2021	06/10/2021	A	Within proposed sports pitch area
TP402	TP	1.55	06/10/2021	06/10/2021	A	Within proposed sports pitch area
TP403	TP	1.65	06/10/2021	06/10/2021	A	Within proposed sports pitch area
TP404	TP	1.56	06/10/2021	06/10/2021	A	Within proposed sports pitch area
TP405	TP	1.50	06/10/2021	06/10/2021	A	Within proposed amenity park area
TP406	TP	1.50	06/10/2021	06/10/2021	A	Within proposed amenity park area
TP407	TP	1.54	06/10/2021	06/10/2021	A	Within proposed amenity park area
TP408	TP	1.50	06/10/2021	06/10/2021	A	Within proposed amenity park area
TP409	TP	1.51	06/10/2021	06/10/2021	A	Within proposed amenity park area
TP4010	TP	1.53	07/10/2021	07/10/2021	A	Within proposed sports pitch area
TP4011	TP	1.50	06/10/2021	06/10/2021	A	Within proposed sports pitch area
TP4012	TP	1.60	06/10/2021	06/10/2021	A	Within proposed sports pitch area
TP4013	TP	1.50	06/10/2021	06/10/2021	A	Within proposed sports pitch area
TP4014	TP	1.50	06/10/2021	06/10/2021	A	Within proposed sports pitch area
TP4015	TP	1.50	06/10/2021	06/10/2021	A	Within proposed amenity park area
TP4016	TP	1.50	06/10/2021	06/10/2021	A	Within proposed amenity park area
TP4017	TP	1.55	06/10/2021	06/10/2021	A	Within proposed amenity park area
TP4018	TP	1.52	07/10/2021	07/10/2021	A	Within proposed amenity park area
TP4019	TP	1.55	07/10/2021	07/10/2021	A	Within proposed amenity park area
TP4020	TP	1.50	07/10/2021	07/10/2021	A	Within proposed amenity park area
TP4021	TP	1.50	07/10/2021	07/10/2021	A	Within proposed amenity park area
TP4022	TP	1.53	07/10/2021	07/10/2021	A	Within proposed amenity park area
TP4023	TP	1.51	07/10/2021	07/10/2021	A	Within proposed amenity park area
TP4024	TP	1.50	07/10/2021	07/10/2021	A	Within proposed amenity park area
TP4025	TP	1.04	12/10/2021	12/10/2021	A	Within proposed landscaping areas
TP4026	TP	1.05	12/10/2021	12/10/2021	A	Within proposed landscaping areas



Exploratory Hole	Type*	Depth (m)	Date Started	Date Finished	Backfill**	
TP4027	TP	1.10	12/10/2021	12/10/2021	A	Within proposed landscaping areas
TP4028	TP	1.02	11/10/2021	11/10/2021	A	Within proposed landscaping areas
TP4029	TP	1.52	11/10/2021	11/10/2021	A	Within proposed landscaping areas
TP4030	TP	1.10	11/10/2021	11/10/2021	A	Within proposed landscaping areas
TP4031	TP	1.00	11/10/2021	11/10/2021	A	Within proposed landscaping areas
TP4032	TP	1.00	11/10/2021	11/10/2021	A	Within proposed landscaping areas
TP4033	TP	1.00	11/10/2021	11/10/2021	A	Within proposed landscaping areas
TP4034	TP	1.10	07/10/2021	07/10/2021	A	Within proposed landscaping areas
TP4035	TP	1.10	07/10/2021	07/10/2021	A	Within proposed landscaping areas
TP4036	TP	1.00	11/10/2021	11/10/2021	A	Within proposed landscaping areas
WS401	WS	2.00	13/10/2021	13/10/2021	SP	Within proposed residential area
WS402	WS	1.50	13/10/2021	13/10/2021	SP	Within proposed residential area
WS403	WS	2.70	13/10/2021	13/10/2021	SP	Within proposed residential area
WS404	WS	1.30	13/10/2021	13/10/2021	SP	Within proposed residential area
WS404B	WS	1.20	13/10/2021	13/10/2021	A	Within proposed residential area

\*WS – Window Sample Borehole, TP – Trial Pit

\*\*SP – Standpipe, A – Arisings

Equipment brought onto site was inspected by Ensafe personnel prior to commencement of the investigation and confirmed as being in a clean, safe and tidy condition free of any leaks of fuel, hydraulic, engine and gear oil.

The logging of soils and rocks was undertaken in accordance with BS5930:2015 except where superseded by the soil and rock description methodology in BS EN14688-1(2002), BS EN14688-2(2004) and BS EN14689-1(2003).

## 4.2 TRIAL PITTING

A total of thirty-six (36No.) trial pits (designated TP401 to 4036) were excavated across the northern section of the site where the proposed playing fields and amenity / parkland areas, as well as within the proposed landscaping areas along the western, southern and eastern site boundaries. The trial pits were located on a 50 by 50 m grid, progressed to depths between 1.0 and 1.65m bgl, by means of an 8-tonne tracked excavator under the direct and continuous supervision of Ensafe personnel.

The location of the trial pits is shown in Figures 2A and B.

Details of ground and groundwater conditions noted as the excavations were progressed can be consulted in Appendix 3. Photographs of the materials recovered can be observed in Appendix 1. All pits were backfilled immediately on completion, using arisings.

## 4.3 WINDOW SAMPLING HOLES (WS)

Five (5No.) window sample holes (designated WS401 to 404 and WS404B) were excavated across the proposed residential areas of the site, to depths of between 1.20m and 2.70m below existing ground level (bgl). The primary aim of the window sample holes was to allow for the installation of standpipes for ground gas and groundwater monitoring.

The fifth hole (WS404B) was excavated, as the original (WS404) terminated at a shallow depth, preventing the installation of the monitoring well.

A plan showing the location of the window sample holes is included as Figure 2. The descriptions of the materials encountered are included in Appendix 3.

The exploratory locations were positioned with the aim to:

- Provide a greater understanding of the geological sequence along the landscaping strips on the central, west and east of the site (depending on ground conditions) for deeper excavations underlying the topsoil
- Assess the quality of the soils across the site area of proposed developments and identify sources of potential contamination
- Facilitate the installation of groundwater / gas monitoring wells
- Avoidance of assumed and identified underground services by the utility clearance contractor and plans available.
- Accessibility / ongoing operations

The boreholes were excavated using a Competitor 130 windowless sampling and probing rig.

Window sampler boring is carried out with a small, track-mounted rig, which uses a chain-driven trip hammer to drive sampling tubes or penetrometers into the ground. These tools are coupled to the anvil of the hammer by solid drill rods. Sampling tubes comprise “windowless samplers”, which are plain sampler tubes in which a continuous disturbed sample is recovered within a semi-rigid plastic liner. In order to reduce friction within the borehole, sampling tubes of progressively smaller diameter are used as the borehole depth increases. Sampler diameters generally range from between approximately 90mm to 50mm.

The rig was operated in accordance with the rig’s manufacturer’s recommendations and the Code of Safety Drilling Practice published by BDA on suitable ground and operated by a suitably qualified and experienced Lead Driller with a valid BDA Accreditation and with the appropriate PPE required for drilling on a BDA 'Green' Site.

The drilling equipment brought onto site was inspected prior commencement of the investigation by Ensafe personnel and the driller to ensure they were in a clean, safe and tidy condition free of any leaks of fuel, hydraulic, engine and gear oil.

A Ensafe engineer was also present on-site full time to examine and log the borehole samples. The recovered core liners were split, photographed, logged and sub-sampled for environmental & geotechnical purposes prior to being sealed and clearly labelled. Samples obtained were representative of made ground and natural materials encountered, and where visual or olfactory contamination was identified. Samples were subsequently sent for further chemical laboratory examination at UKAS accredited laboratories.

The logs including descriptions of the strata encountered can be consulted in Appendix 3. The soil profile and other significant features were recorded based on the materials recovered from each exploratory hole. Groundwater observations were made during the investigation works (where possible). These observations relate to the time of the investigation only, and do not necessarily reflect seasonal fluctuations.

On completion, 50mm HDPE standpipes were installed in four (4No.) of the exploratory locations to allow for subsequent gas and groundwater monitoring. When not installed boreholes were backfilled with arisings. Additional detail regarding installation depth and response zones is provided in Section 4.4.

#### 4.4 INSTALLATION AND MONITORING

On completion, monitoring wells were installed in four (4No.) exploratory locations to allow subsequent monitoring of ground gas and groundwater levels.

Details of the installations are summarised in Table 4 and are also included within the borehole logs (Appendix 3).

**Table 4. Installation details**

Exploratory Hole	Standpipe Response zone (m bgl)
WS401	0.70 – 1.50
WS402	0.50 – 1.50
WS403	0.70 – 1.30
WS404	0.50 – 1.20

A ground gas monitoring programme is currently being implemented on site. This consists of a total of four (4No.) monitoring visits over a 3-month period to adequately assess the ground gas regime on the proposed residential areas. The monitoring period has been completed with monitoring dates ranging between the 17<sup>th</sup> November and 28<sup>th</sup> January 2022, during which ground gas and groundwater levels have been recorded. Groundwater levels were measured by means of an oil/water dip meter. Ground gas concentrations were determined using a GA2000+ S/N 11567 instrument.

## 4.5 CHEMICAL LABORATORY TESTING

Fifty-two (52No.) soil samples were taken from exploratory locations representative of both made ground and natural materials. Samples were stored within appropriate glass and plastic containers and kept within cool boxes at approximately 4°C. The samples were sent within a 48hr-period to a UKAS accredited laboratory to be subject to a suite of contamination testing based on current site use and field observations. The tests undertaken comprised the following:

- Metal and metalloid suite
- Speciated polyaromatic hydrocarbons (PAHs)
- Petroleum hydrocarbons with aliphatic/aromatic speciation by CWG methodology
- Cyanide – Free, Total
- Sulphate, sulphide and sulphur
- Organic matter content
- Soil pH
- Total phenols
- Asbestos Screen – 25No. samples
- Pesticide screen - 3No. samples

Certificates for the chemical analysis of soil samples are presented in Appendix 4.

## 5.0 GROUND CONDITIONS ENCOUNTERED

### 5.1 GENERAL

On the basis of published geological information and the findings of the investigation the strata encountered in the exploratory holes included:

- Topsoil
- Cover Sand
- Kesgrave Catchment Group

The depths of the various materials encountered in each of the exploratory holes are summarised in the following table. Ground conditions encountered are discussed below.

**Table 5. Summary of Ground Conditions Encountered**

Borehole	Depth to stratum (m bgl)					Groundwater (m)	
	TOPSOIL	Cover Sands		Kesgrave Catchment			
		Gravelly Clayey / Gravelly/ Sand	Sandy Gravelly Clay	Gravelly Sand	Clay / Sandy Clay		Gravel / Sandy gravel
TP401	GL-0.30	0.30-0.40 0.70-1.50	0.40-0.70	0.70-1.50		Dry	
TP402		1.00-1.55	0.30-1.00			Dry	
TP403		0.50-1.65	0.30-0.50			Dry	
TP404		0.70-1.56	0.30-0.70			Dry	
TP405		0.30-1.25				1.25-1.50	Dry
TP406		0.30-1.50					Dry
TP407		0.30-1.54					Dry
TP408		0.60-1.50	0.30-0.60				Dry
TP409		0.30-1.42				1.42-1.51	Dry
TP4010		0.30-0.50 1.00-1.53		1.00-1.53		0.50-1.00	Dry
TP4011		1.30-1.50	0.30-1.30				Dry
TP4012		0.60-1.10	0.30-0.60			1.10-1.60	Dry
TP4013		0.60-1.50				0.30-0.60	Dry
TP4014		0.60-1.50				0.30-0.60	Dry
TP4015		0.30-0.70 1.40-1.50	0.70-1.40	1.40-1.50			Dry
TP4016		0.80-1.50	0.30-0.80				Dry
TP4017		0.60-1.55	0.30-0.60				Dry
TP4018		0.30-1.52					Dry
TP4019		0.30-0.70 1.00-1.45	0.70-1.00	1.00-1.45		1.45-1.55	Dry
TP4020		0.30-0.60			1.00-1.50	0.60-1.00	Dry
TP4021		0.30-1.50					Dry
TP4022		0.40-1.53	0.30-0.40				Dry
TP4023		0.30-1.51					Dry
TP4024		0.75-1.50	0.30-0.75				Dry
TP4025	GL-0.35	0.35-1.04				Dry	
TP4026		0.72-1.05	0.30-0.72			Dry	

TP4027	GL-0.30	0.30-1.10					Dry
TP4028		0.30-0.75	0.75-1.02				Dry
TP4029		0.30-1.52					Dry
TP4030		0.30-1.10					Dry
TP4031	GL-0.25	0.25-1.00					Dry
TP4032		0.25-1.00					Dry
TP4033	GL-0.30	0.75-1.00	0.30-0.75				Dry
TP4034		0.30-1.10					Dry
TP4035	GL-0.35	0.35-1.10					Dry
TP4036	GL-0.30	0.30-0.50 0.70-1.00	0.50-0.70	0.70-1.00			Dry
WS401		0.54-0.70 1.50-2.00	0.30-0.54 0.70-1.50	1.50-2.00			Dry
WS402		0.30-1.50					Dry
WS403		0.64-2.20	0.30-0.64		2.20-2.70		Dry
WS404	GL-0.35	0.35-0.49 1.00-1.30	0.49-1.00	1.00-1.30			Dry
WS404B		0.47-1.20	0.35-0.47				Dry

Reference should also be made to the exploratory hole records (Appendix 3) for further detail on the nature and depth of the strata observed in each exploratory hole. The exploratory locations were terminated at a maximum depth of 1.65m bgl in the trial pits and 2.70m bgl within the window sample holes, as the increasing density of the natural materials, prevented from progressing the excavations to full depth (5.0m bgl) within the window samples holes. Trial pit excavations reached full depth in all holes.

### Topsoil

Topsoil was encountered in all exploratory locations from ground level (GL) to 0.35m bgl. It is generally described as dark brown very soft slightly gravelly very sandy Clay with abundant rootlets / gravelly very clayey fine to coarse Sand with abundant rootlets overlain by grass. Gravels were sandstone and flint.

### Made Ground

Made Ground material was encountered exclusively within sand recovered from 0.25 to 0.70m bgl in TP4031 underlying the topsoil. The material was generally described as light brown to grey very gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse sandstone, flint and minor brick tiling.

### Cover Sands

The Cover Sand were encountered in all exploratory holes to a max depth of 2.20m bgl. Materials primarily comprised orangish brown to grey gravelly slightly clayey fine to coarse SAND. Also encountered was firm orangish brown to grey very sandy slightly gravelly to gravelly CLAY. Gravel comprised angular to subrounded sandstone and flint.

Silt was encountered within the Sand and Clay in TP406, TP408, TP4028, TP4035, WS401.

### Kesgrave Catchment

The Kesgrave Catchment group was encountered at depths ranging from 0.30 and 2.70m bgl predominantly comprising sandy GRAVEL at a range of 0.30 – 1.55m bgl, and gravelly SAND with varying proportions at a range of 0.70 – 2.00m bgl.

Materials comprised primarily orangish brown mottle grey / grey to light brown sandy to very sandy angular to subrounded fine to coarse GRAVEL of sandstone and flint at a range of 0.30 – 1-55m bgl. Sand is fine to coarse. Gravelly SAND with varying proportions of the gravel was also encountered at a range of 0.70 – 2.00m bgl. The gravel consisted of subangular to subrounded fine to coarse sandstone and flint.

Underlying the gravel of the Kesgrave Catchment Group, and the Cover Sand in TP4020 and WS403, respectively, was a layer of firm to very stiff grey mottle orangish brown sandy CLAY, encountered between 1.00 – 2.70m bgl. Minor amounts of organic matter was found within the clay at this exploratory location.

## 5.2 OBSTRUCTIONS

No man-made obstructions were encountered during the excavation of the exploratory boreholes.

## 5.3 GROUNDWATER

Groundwater was not encountered during the intrusive works or within any of the standpipes during the subsequent monitoring visits completed to date.

## 5.4 GROUND GAS MONITORING

Six (6No.) ground gas monitoring visits have been conducted between 17<sup>th</sup> November and 28<sup>th</sup> January 2022 at fortnightly intervals.

Atmospheric pressures recorded on site during this period ranged between 998 and 1042mb.

The results from the monitoring rounds are summarised below in Table 6 and the monitoring certificates with details on the observations made during each visit is provided in Appendix 5.

**Table 6. Summary of Ground Gas Monitoring Results**

Exploratory Hole	Borehole Pressure (mb)	Max CO <sub>4</sub> (% Vol)	Max CO <sub>2</sub> (% Vol)	Min O <sub>2</sub> (% Vol)	Max Gas Flow (l/hr)	Water level (m)
WS401	0.07	<0.1	1.1	18.9	<0.1	Dry
WS402	0.14	<0.1	1.4	19.2	0.1	Dry
WS403	0.16	<0.1	3.4	19.2	0.1	Dry
WS404	0.17	<0.1	1.9	20.1	0.1	Dry
Steady concentrations are measured up to 3 minutes						

Methane was recorded at concentrations below levels of detection during the monitoring visits, whilst Carbon dioxide concentrations ranged between 0.4%vol and 3.4%vol, observed across three monitoring rounds performed to date.

Oxygen concentrations ranged between 16.9%vol and 20.1%vol.

Recorded gas flow rates were recorded at 0.1 l/hr in all holes except on at least 1No. monitoring round, except for WS401 which was consistently recorded at <0.1 l/hr. Otherwise, results were recorded at either below or equal to instrument levels of detection  $\leq 0.1$  l/hr. Full results across all currently completed monitoring rounds are found in Appendix 5.

Based on the guidance in BS 8485:2015+A1:2019<sup>5</sup>, a preliminary calculation of the hazardous gas flow rate ( $Q_{hg}$ ) has been undertaken based on the maximum concentration of a hazardous gas observed on site during the 6No. visits conducted. In this instance carbon dioxide, as no methane has been recorded above detection levels. A worst-case scenario gas flow rate of 0.1 l/hr (instrumental limit of detection) to enable the preliminary  $Q_{hg}$  estimate, as shown below:

$$Q_{hg} \text{ (WS403)} = 0.1 \times 3.4 / 100 = 0.0034 \text{ l/hr}$$

Based on the findings of the site investigation, a worst case  $Q_{hg}$  of 0.0034 l/hr was estimated on a preliminary basis for the site, which suggests a Characteristic Situation 1 (CS1) - 'Very Low Risk' would be an appropriate for the site, with regard to new developments, according to BS8485:2015+A1:2019.

Details provided by the client about the proposed development suggest the building type as per Table 3 of the BS 8485:2015+A1:2019 would be 'Type A', as it would comprise a private premise with small to large room sizes.

Based on the assumption that development will have no central building management control and with the information available to date, the gas protection score for the site would be '0', predicated by a 'CS1' designation, combined with building type A and determined using Table 4 of the BS guidance.

Based on the data available to date, specific gas protection measures are unlikely to be required for the proposed development as there is no evident sign of contaminative gas migration.

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<sup>5</sup> BSI (2019) Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings. BS 8485:2015+A1:2019. Dated: 24<sup>th</sup> January 2019.



## 6.0 ENVIRONMENTAL ASSESSMENT

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### 6.1 METHODOLOGY

The results of the site investigation have been assessed utilising a Tier 1 quantitative risk assessment. The risk assessment methodology used is taken from the Environment Agency (EA) (2006) 'Remedial Targets Methodology', which supersedes R+D Publication 20 'Methodology for the Derivation of Remedial Targets for Soil and Groundwater to Protect Water Resources'.

The tiered approach acts as a screening process whereby low risk sites are eliminated in order to identify sites that present the greatest environmental risks. The information obtained from the site investigation is used to characterise any contaminant source and subsequently to identify any sensitive environmental receptors and appropriate target concentration at the receptor.

Any requirement for further quantitative analysis or remedial action is based on comparison of the soil and/or groundwater concentrations for each contaminant with current applicable screening criteria. A decision is then made as to appropriate action to be taken which includes; no action, continuation to the next tier assessment or to take remedial action. In a Tier 1 Assessment generic guidelines and screening values are adopted in the first instance as remedial target values as a conservative approach.

The adopted approach currently involves the following stages:

- Selection of generic Tier 1 screening criteria
- Comparison of measured contaminant concentrations with the generic screening criteria as part of a Tier 1 assessment
- Where the Tier 1 screening level is exceeded then the Conceptual Site Model (CSM) is refined to summarise sources of contamination, potential migration/exposure pathways and potential receptors that may exist at the site and could be characterised by significant levels of risk.

### 6.2 ENVIRONMENTAL LABORATORY RESULTS - SOILS

Soil contaminant concentrations determined by the chemical analyses have been compared against LQM CIEH (2015) 'Suitable for Use Levels for Human Health Risk Assessment' (S4ULs). Where no S4UL is available, the analytical results have been compared against CLEA (2009) Soil Guideline Values (SGVs) and CL:AIRE Category 4 Screening Levels (C4SLs). EIC/AGS/CL:AIRE (2010). The specific S4UL, SGV and C4SL criteria used for comparison purposes with soil analysis results correspond to values for land under Public Open Space near Residential housing end use, given the proximity of the sports pitches to the proposed houses and likelihood for soil to be tracked back, which is considered the most conservative and protective approach from a human health perspective.

A copy of the soil analysis certificate is included in Appendix 4 and the assessment criteria is included as Appendix 6.

The soils assessment criteria for organic contaminants are dependent upon the organic matter content (%) of the soil. In this instance, the generic criteria used for comparison purposes corresponds to a soil organic matter (SOM) of 2.0%, as the average SOM within

the natural material is 2.04. It should be noted that two samples were found to contain 5.3 and 5.9% SOM within TP4032 and TP4035 respectively.

#### **Metals and Metalloids**

None of the metal/metalloid determinands were recorded at concentrations which exceeded their respective generic assessment criteria.

#### **Cyanide ( Free and Total)**

None of the cyanide forms was recorded above the laboratory limits of detection.

#### **Total Petroleum Hydrocarbons (TPHs)**

No evidence of hydrocarbon contamination was found in any of the soil samples analysed, as all hydrocarbon fractions were recorded at concentrations below laboratory limits of detection (LOD).

#### **Polycyclic Aromatic Hydrocarbons (PAHs)**

All PAH species analysed were found to comply with their respective assessment criterion for a land under public open space near residential housing.

#### **Total Phenols**

Total phenols were not identified above the laboratory limits of detection.

#### **Pesticides**

No evidence of organo-tin, organo-phosphorus, organo-nitrogen, or organo-chlorine pesticides was found in any of the samples analysed. All pesticides species tested were below laboratory limits of detection.

#### **pH**

Soil pH ranged between neutral to slightly alkaline, ranging between 6.7 and 8.9.

## 7.0 REVISED CONCEPTUAL SITE MODEL

The conceptual site model has been refined as part of the Phase II Site Investigation in October 2021 by Ensafe as part of the site’s proposed development to include public open space and sports pitch with the residential dwellings. The CSM has been produced within the context of the areas being used as public open space near residential housing development.

### 7.1 IDENTIFIED CONTAMINANTS AND SOURCES

During the site investigation, no source of contamination was identified within the materials across the proposed sports pitches, park and landscaping areas.

The chemical analysis results carried out on soil samples retrieved from at the site did not identify any contaminative issues, as soil contaminant concentrations met the current generic assessment criteria for land destined for a public open space near residential housing amongst the sport pitches, park and landscaping areas.

Based on the findings of the investigation, it is considered that ‘mild’ harm could arise to future site users, adjacent users and construction workers as well as controlled waters from the quality of the materials present on site.

### 7.2 IDENTIFIED POLLUTANT PATHWAYS AND RECEPTORS

The identified receptors which would be affected by on site contaminants (if present), as well as the likelihood of the pollutant linkage being completed are indicated in Table 7 below.

**Table 7. Identified Sensitive Receptors and Likelihood of Pathway being established**

Pathway	Receptor	Harm	Likelihood	RISK
Direct contact, ingestion and Inhalation of contaminated-dust/soil	Site Users & Adjacent Users	Mild	Likely – The proposed development indicates majority of the site will be covered by soft landscaping increasing potential contact, ingestion and dust generation. Large areas of landscaping and amenity use are proposed.	L/M
Direct contact, ingestion and inhalation of contaminated dust/soil during any groundworks	Construction / Maintenance Workers	Mild	Likely – Workers are likely to come into direct contact with any contamination present within the development footprint during the construction phase. PPE usage should mitigate direct contact	L/M
Vertical mobilisation of contaminants through the soil profile	Secondary A & Secondary B aquifers	Mild	Likely – areas of landscaping (gardens or communal amenity spaces) are part of the development where infiltration can take place and the generation of leachates which could reach the underlying aquifers.	L/M
Surface runoff of contaminated water	Surface water features	Mild	Low – It is anticipated that a surface water drainage scheme would be implemented as part of the new development which would capture any surface water run-off.	L
Lateral migration of near surface groundwater		Mild	Low – The closest surface water feature is ~196m south and lack of groundwater identified in previous studies, suggest lateral migration may not occur.	L

Pathway	Receptor	Harm	Likelihood	RISK
Migration of vapours/gases into building/service runs and subsequent inhalation/explosion	Future site users	Mild	Low – Very low levels of ground gases were recorded on site.	L
	Construction / maintenance workers		Likely – it is possible for exposure to occur with contaminated materials and/or groundwater whilst workers conduct activities in the ground or maintenance, however low gas levels and no evident signs of harmful contamination were found.	L/M
Direct contact	Buildings and buried services	Mild	Low – No contamination was encountered in the materials that could affect buildings or services.	L
Plant uptake of leachable contaminants/direct contact	Vegetation / soft landscaping	Mild	Low – The proposed development indicates gardens and amenity areas of open land where plants would be incorporate, however no evidence of contamination was found in the materials on site.	L

**KEY**

H - High  
M – Moderate  
L - Low

### 7.3 REVISED RISK ASSESSMENT

Under the terms of the Environment Act 1995, a plausible pollutant linkage must exist to link the source to the receptors in order for an environmental risk to exist. Once these have been identified the likelihood and severity of each pollutant linkage are considered such that the scenarios of most concern can be addressed. A preliminary assessment of risk is then undertaken using a risk evaluation method, based on an EA/CIRIA scoring system, which aims to categorise the significance of risk in terms of the probability of the receptors being exposed to a given hazard (i.e., high likelihood, likely, low likelihood, unlikely) and the magnitude/severity of the environmental harm resulting from the hazard.

The risk categories are then assessed based upon the consequence vs. probability assigned to each scenario, in accordance with guidance originally produced by the DETR. These categories are outlined in Appendix 7.

The identified pathways and receptors with assigned risk categories are described in Table above. Further details on receptor types can be found in Tables 8 and 9, of the DEFRA (2012) Contaminated Land Statutory Guidance<sup>4</sup>.

Based on the findings of the ground investigations as well as observations made in previous studies , it is considered a ‘Low’ risk that harm could arise to human health and/or environmental receptors from contaminative issues arising as a result of the current and past site use and off-site activities.

In accordance with a ‘Low Risk’ classification based on CIRIA C552, “It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be mild”

## 8.0 CONCLUSIONS & RECOMMENDATIONS

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The site is located off Elmstead Road in Wivenhoe and is currently a large 'L' shaped plot of undeveloped land with mature vegetation on the northern and eastern boundary, and a residential building estate to the west. Historically, the site does not appear to have been developed.

Current development proposal includes the construction of residential buildings at the southern half of the site, with an area of amenity use to the northern and north-western section of the site

A site investigation was undertaken between 6<sup>th</sup> and 13<sup>th</sup> October 2021, with the aim to assess the environmental quality of the materials on site for the proposed sport pitch, amenity areas and landscaping strips across the development area. The investigation comprised the excavation of 36No. trial pits excavated to a max depth of 1.65m bgl, and 5No. window sample holes excavated to a max depth of 2.7m bgl. There were 4No. monitoring wells installed with standpipes and a programme of 6No. gas/groundwater monitoring visits, as well as environmental laboratory testing.

Ground conditions found on site included Topsoil up to 0.35m bgl overlying Cover Sands primarily to the northern half of the site, and the Kesgrave Catchment Subgroup primarily to the southern half of the site, to a max depth of 2.70m bgl.

Groundwater was not encountered during the site investigation nor in the current monitoring wells during subsequent visits.

Ground gas levels recorded to date suggest a Characteristic Situation 1 (CS1) - 'Very Low Risk' would be an appropriate for the site, with no gas protection measures required for the proposed development.

No contaminative issues have been identified across the development area, as all contaminants of concern were found either below analytical limits of detection or below its respective assessment criterion for land under public open space near residential housing.

It is considered a '**Low**' risk that harm could arise to human health and/or environmental receptors from contaminative issues arising as a result of the current and past site use and off-site activities.

No specific remedial measures are anticipated to be required to protect human health, environmental receptors and render the site suitable for its intended residential use.

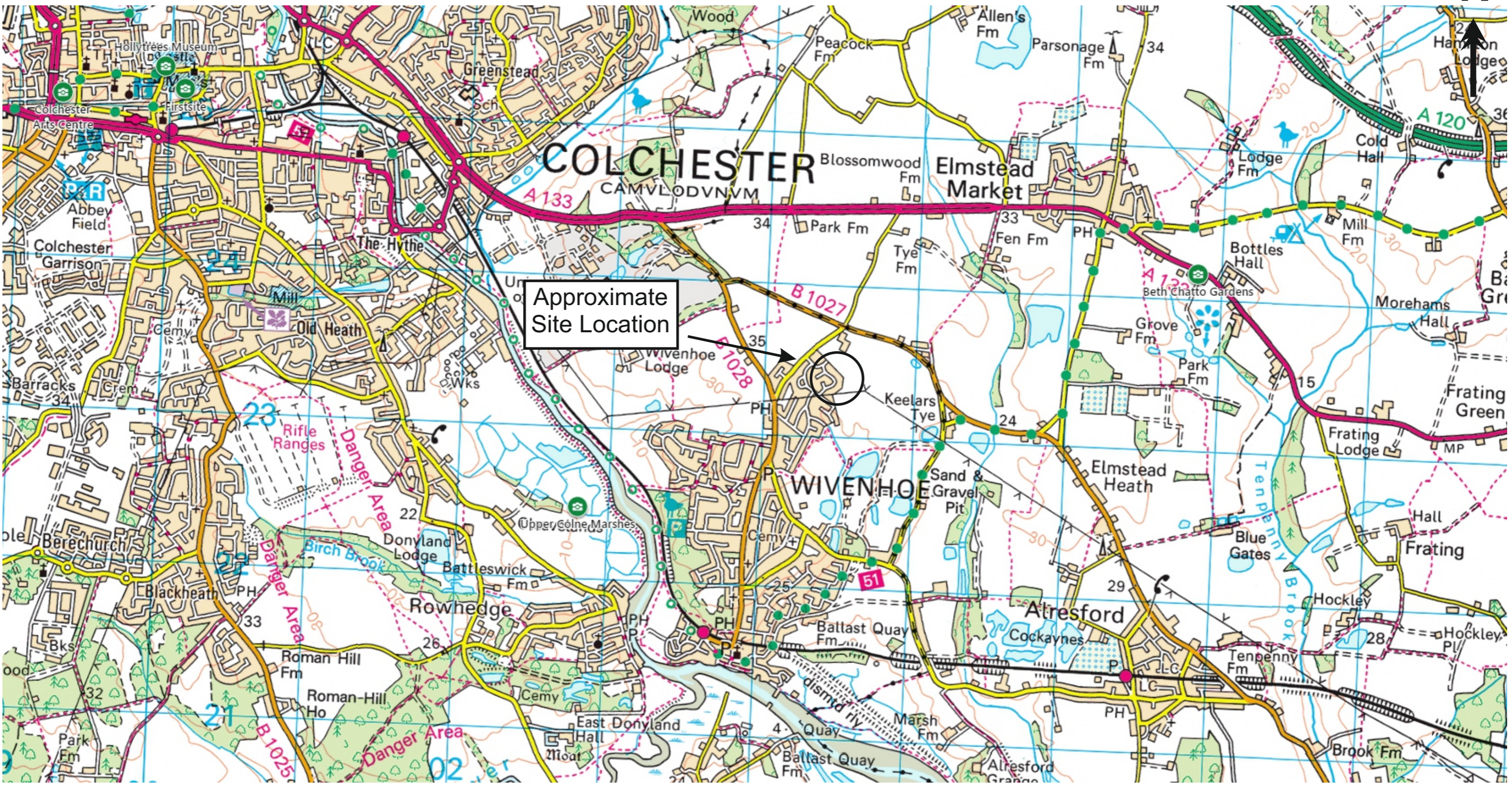
### Recommendations

- Use of appropriate PPE and good hygiene standards by site workers.

**Ensafe Consultants**  
**February 2022**

## FIGURES

N



Approximate  
Site Location

**PROJECT:**

Elmstead Road  
Wivenhoe  
CO7 9JF

**FIGURE TITLE:**

Site Location Plan

**PROJECT No.:**  
G58346

**FIGURE No.:**  
001

**SCALE:**  
Not to Scale

**REVISION:**  
A

**NOTES:**  
1) This drawing is to be read in conjunction with all relevant documentation.  
2) Image sourced from Bing Maps



**Key**  
 — Site Boundary  
 ─ Trial Pit Location



**PROJECT:**  
 Elmstead Road  
 Wivenhoe  
 CO7 9JF

**FIGURE TITLE:**  
 Site Layout & Exploratory Hole  
 Location Plan - N Area

<b>PROJECT No.:</b> G58346	<b>FIGURE No.:</b> 002A
<b>SCALE:</b> Not to Scale	<b>REVISION:</b> A
<b>NOTES:</b> 1) This drawing is to be read in conjunction with all relevant documentation. 2) All surveyed information including levels and layout is provided by Google Satellite Images, Sep 2021	





**Key**

- Site Boundary
- ⊠ Trial Pit Location
- ⊕ WS w/ Installation



**PROJECT:**

Elmstead Road  
Wivenhoe  
CO7 9JF

**FIGURE TITLE:**

Site Layout & Exploratory Hole  
Location Plan - S Area

**PROJECT No.:**  
G58346

**FIGURE No.:**  
002B

**SCALE:**  
Not to Scale

**REVISION:**  
A

**NOTES:**

- 1) This drawing is to be read in conjunction with all relevant documentation.
- 2) All surveyed information including levels and layout is provided by Google Satellite Images, Sep 2021





**KEY:**  
— Red Line Boundary



**Ensafe Consultants**  
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**PROJECT:**  
 Land off Elmstead Road  
 Wivenhoe  
 CO7 9JF

**FIGURE TITLE:**  
 Proposed Site Plan

**NOTES:**  
 1) This drawing is to be read in conjunction with all relevant documentation.  
 2) All surveyed information including levels and layout is provided by Taylor Wimpey TW027-PL03. Jan 2021

**PROJECT No.:**  
 G58346

**SCALE:**  
 Not to Scale

**FIGURE No.:**  
 003

**REVISION:**  
 A

## APPENDIX 1



**Photograph 1** - Northern section of site facing NW / W



**Photograph 2** - Eastern boundary of site



**Photograph 3 - Southern area of site**



**Photograph 4 – Topsoil (TP4026)**



**Photograph 5** – Clayey gravelly Sand (TP4024). Found in most exploratory locations



**Photograph 6** - Made Ground in TP4031. Gravelly Sand



**Photograph 7** – Grey mottle orangish brown gravelly Clay (TP4017)



**Photograph 8** – WS402 0-1m bgl



**Photograph 9 – WS402 1-1.5m bgl**



**Photograph 10 – Slightly silty Clay (WS401) 0.3 – 0.54m bgl**





**Photograph 11** – Reddish brown gravelly Sand (TP4022) 1-1.53m bgl



**Photograph 12** – WS404 0-1m bgl



**Photograph 13** – WS404 1-1.3m bgl



**Photograph 14** – Installation cover. Subject: WS403

## **APPENDIX 2**

# UNEXPLODED BOMB RISK MAP



## SITE LOCATION

Map Centre: 604605,223368



## LEGEND

- High:** Areas indicated as having a bombing density of 50 bombs per 1000acre or higher.
- Moderate:** Areas indicated as having a bombing density of 15 to 49 bombs per 1000acre.
- Low:** Areas indicated as having 15 bombs per 1000acre or less.

- military**
- industry**
- UXO find**
- transport**
- dock**
- Luftwaffe targets**
- utilities**
- Bombing decoy**
- other**

### How to use your Unexploded Bomb (UXB) risk map?

The map indicates the potential for Unexploded Bombs (UXB) to be present as a result of World War Two (WWII) bombing.

You can incorporate the map into your preliminary risk assessment\* for potential Unexploded Ordnance (UXO) for a site. Using this map, you can make an informed decision as to whether more in-depth detailed risk assessment\* is necessary.

### What do I do if my site is in a moderate or high risk area?

Generally, we recommend that a detailed UXO desk study and risk assessment is undertaken for sites in a moderate or high UXB risk area.

Similarly, if your site is near to a designated Luftwaffe target or bombing decoy then additional detailed research is recommended.

More often than not, this further detailed research will conclude that the potential for a significant UXO hazard to be present on your site is actually low.

**Never plan site work or undertake a risk assessment using these maps alone. More detail is required, particularly where there may be a source of UXO from other military operations which are not reflected on these maps.**

### If my site is in a low risk area, do I need to do anything?

If both the map and other research confirms that there is a low potential for UXO to be present on your site then, subject to your own comfort and risk tolerance, works can proceed with no special precautions.

A low risk really means that there is no greater probability of encountering UXO than anywhere else in the UK.

If you are unsure whether other sources of UXO may be present, you can ask for one of our **pre-desk study assessments (PDSA)**

### If I have any questions, who do I contact?

tel: **+44 (0) 1993 886682**

email: **uxo@zetica.com**

web: **www.zeticauxo.com**

The information in this UXB risk map is derived from a number of sources and should be used in conjunction with the accompanying notes on our website: (<https://zeticauxo.com/downloads-and-resources/risk-maps/>)

Zetica cannot guarantee the accuracy or completeness of the information or data used and cannot accept any liability for any use of the maps. These maps can be used as part of a technical report or similar publication, subject to acknowledgment. The copyright remains with Zetica Ltd.

It is important to note that this map is not a UXO risk assessment and should not be reported as such when reproduced.

\*Preliminary and detailed UXO risk assessments are advocated as good practice by industry guidance such as CIRIA C681 'Unexploded Ordnance (UXO), a guide for the construction industry'.

## APPENDIX 3



# Trial Pit Log

Trialpit No  
**TP401**  
Sheet 1 of 1

Project Name: Land off Elmstead Road, Wivenhoe	Project No. G58346	Co-ords: 604425.91 - 223623.66 Level: 33.04	Date 06/10/2021
Location: Elmstead Road, Wivenhoe, CO7 9JF		Dimensions (m): Depth 1.50	Scale 1:15 Logged N.A
Client: Taylor Wimpey - London		2.9	

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.30	32.74		Grass over TOPSOIL of dark brown very soft slightly gravelly very sandy CLAY with abundant rootlets. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				0.40	32.64		Greyish brown mottled orangish brown slightly gravelly slightly clayey fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				0.70	32.34		Firm grey mottle orangish brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				1.50	31.54		Grey mottle orangish brown gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone and flint.
							End of pit at 1.50 m

Remarks: 1. Service Clearance provided prior to excavation by third party specialist  
2. No groundwater observed

Stability: Stable





# Trial Pit Log

Trialpit No  
**TP402**  
Sheet 1 of 1

Project Name: Land off Elmstead Road, Wivenhoe	Project No. G58346	Co-ords: 604472.91 - 223597.15 Level: 32.65	Date 06/10/2021
Location: Elmstead Road, Wivenhoe, CO7 9JF		Dimensions (m): Depth 1.55	Scale 1:15 Logged N.A
Client: Taylor Wimpey - London		2.9	

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.30	32.35		Grass over TOPSOIL of dark brown very soft slightly gravelly very sandy CLAY with abundant rootlets. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				1.00	31.65		Grey mottle orangish brown slightly gravelly slightly sandy firm CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				1.35	31.30		Orangish brown very gravelly slightly clayey fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				1.55	31.10		Grey mottle orange very clayey fine to coarse SAND. Damp.
							End of pit at 1.55 m

Remarks: 1. Service Clearance provided prior to excavation by third party specialist  
2. No groundwater observed

Stability: Stable





# Trial Pit Log

Trialpit No  
**TP403**  
Sheet 1 of 1

Project Name: Land off Elmstead Road, Wivenhoe	Project No. G58346	Co-ords: 604525.31 - 223548.73 Level: 32.33	Date 06/10/2021
Location: Elmstead Road, Wivenhoe, CO7 9JF	Dimensions (m): Depth 1.65		Scale 1:15 Logged N.A
Client: Taylor Wimpey - London		2.9	

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.30	32.03		Grass over TOPSOIL of dark brown very soft slightly gravelly very sandy CLAY with abundant rootlets. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				0.50	31.83		Soft to firm grey mottle orangish brown slightly sandy gravelly CLAY. Gravel is subangular to subrounded fine to coarse sandstone and flint. Sand is fine to coarse.
				1.30	31.03		Light brown mottle orangish grey gravelly slightly clayey fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				1.65	30.68		Grey mottle orange slightly clayey slightly gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone and flint.
							End of pit at 1.65 m

Remarks: 1. Service Clearance provided prior to excavation by third party specialist  
2. No groundwater observed

Stability: Stable







# Trial Pit Log

Trialpit No  
**TP404**  
Sheet 1 of 1

Project Name: Land off Elmstead Road, Wivenhoe	Project No. G58346	Co-ords: 604565.65 - 223520.10 Level: 32.21	Date 07/10/2021
Location: Elmstead Road, Wivenhoe, CO7 9JF	Dimensions (m): Depth 1.56		Scale 1:15 Logged N.A
Client: Taylor Wimpey - London		2.9	

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.30	31.91		Grass over TOPSOIL of dark brown very soft slightly gravelly very sandy CLAY with abundant rootlets. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				0.70	31.51		Firm orangish brown to grey sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse sandstone and flint. <i>Very sandy from 0.5m bgl</i>
				1.56	30.65		Grey mottle orangish brown slightly gravelly slightly clayey fine to coarse SAND. Gravel is angular to subrounded fine to coarse sandstone and flint. Damp. <i>No clay from 1.3m bgl</i> End of pit at 1.56 m

Remarks: 1. Service Clearance provided prior to excavation by third party specialist  
2. No groundwater observed

Stability: Stable





# Trial Pit Log

Trialpit No  
**TP405**  
Sheet 1 of 1

Project Name: Land off Elmstead Road, Wivenhoe	Project No. G58346	Co-ords: 604619.40 - 223473.97 Level: 32.12	Date 07/10/2021
Location: Elmstead Road, Wivenhoe, CO7 9JF		Dimensions (m): Depth 1.50	Scale 1:15 Logged N.A.
Client: Taylor Wimpey - London		<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">2.6</div> <div style="border: 1px solid black; width: 100px; height: 30px; position: relative;"> <span style="position: absolute; top: -10px; left: 50%; transform: translate(-50%, -50%); font-size: 8px;">0.8</span> </div> </div>	

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.30	31.82		Grass over TOPSOIL of dark brown very soft slightly gravelly very clayey fine to coarse SAND with abundant rootlets. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				1.25	30.87		Orangish brown to grey slightly clayey gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse sandstone and flint.
				1.50	30.62		Orangish brown mottle grey very sandy angular to subrounded fine to coarse GRAVEL of sandstone and flint. Sand is fine to coarse.
							End of pit at 1.50 m

Remarks: 1. Service Clearance provided prior to excavation by third party specialist  
2. No groundwater observed

Stability: Stable





# Trial Pit Log

Trialpit No  
**TP406**  
Sheet 1 of 1

Project Name: Land off Elmstead Road, Wivenhoe	Project No. G58346	Co-ords: 604683.47 - 223428.95 Level: 31.70	Date 07/10/2021
Location: Elmstead Road, Wivenhoe, CO7 9JF		Dimensions (m): Depth 1.50	Scale 1:15 Logged N.A.
Client: Taylor Wimpey - London		2.9	

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.30	31.40		Grass over TOPSOIL of dark brown gravelly clayey fine to coarse SAND with abundant rootlets. Gravel is subangular to subrounded sandstone and flint.
				0.50	31.20		Orangish brown to grey gravelly very clayey fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone and flint.
							Orange to brown mottle grey slightly clayey slightly silty gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse sandstone and flint. Sand is fine to coarse.
							No clay from 0.9m bgl
							Very gravelly from 1.0m bgl
				1.50	30.20		End of pit at 1.50 m

Remarks: 1. Service Clearance provided prior to excavation by third party specialist  
2. No groundwater observed

Stability: Stable





# Trial Pit Log

Trialpit No  
**TP407**  
Sheet 1 of 1

Project Name: Land off Elmstead Road, Wivenhoe

Project No.  
G58346

Co-ords: 604727.35 - 223393.59  
Level: 31.59

Date  
07/10/2021

Location: Elmstead Road, Wivenhoe, CO7 9JF

Dimensions (m): 2.7  
Depth 1.54

Scale 1:15  
Logged N.A

Client: Taylor Wimpey - London

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.30	31.28		Grass over TOPSOIL of dark brown slightly gravelly clayey fine to coarse SAND with abundant rootlets. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				0.80	30.78		Orangish brown to grey gravelly very clayey fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				1.54	30.04		Light brown gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse sandstone and flint.
							<i>Brown mottled orange from 1.1m bgl.</i>
							End of pit at 1.54 m

Remarks: 1. Service Clearance provided prior to excavation by third party specialist  
2. No groundwater observed

Stability: Stable





# Trial Pit Log

Trialpit No  
**TP408**  
Sheet 1 of 1

Project Name: Land off Elmstead Road, Wivenhoe	Project No. G58346	Co-ords: 604677.44 - 223381.19 Level: 31.60	Date 07/10/2021
Location: Elmstead Road, Wivenhoe, CO7 9JF		Dimensions (m): Depth 1.50	Scale 1:15 Logged N.A
Client: Taylor Wimpey - London		<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">2.9</div> <div style="border: 1px solid black; width: 100px; height: 30px; position: relative;"> <span style="position: absolute; top: -10px; left: 50%; transform: translate(-50%, -50%);">0.8</span> </div> </div>	

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.30	31.30		Grass over TOPSOIL of dark brown gravelly very clayey fine to coarse SAND with abundant rootlets. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				0.60	31.00		Firm orangish brown to grey very sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				1.10	30.50		Orange to brown slightly silty gravelly slightly clayey fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				1.50	30.10		Grey mottle orangish brown gravelly slightly clayey fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone and flint. Damp.
							End of pit at 1.50 m

Remarks: 1. Service Clearance provided prior to excavation by third party specialist  
2. No groundwater observed

Stability: Stable





# Trial Pit Log

Trialpit No  
**TP409**  
Sheet 1 of 1

Project Name: Land off Elmstead Road, Wivenhoe	Project No. G58346	Co-ords: 604612.35 - 223440.51 Level: 32.10	Date 07/10/2021
Location: Elmstead Road, Wivenhoe, CO7 9JF		Dimensions (m): Depth 1.51	Scale 1:15 Logged N.A
Client: Taylor Wimpey - London		2.78	

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.30	31.80		Grass over TOPSOIL of dark brown very soft gravelly very clayey fine to coarse SAND with abundant rootlets. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				0.70	31.40		Orangish brown to grey gravelly slightly clayey fine to coarse SAND. Gravel is angular to subrounded fine to coarse sandstone and flint. <i>Slightly clayey from 0.3 to 0.4m bgl.</i>
				1.42	30.68		Orange to light brown gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse sandstone and flint.
				1.51	30.58		Orangish brown mottle grey very sandy angular to subrounded fine to coarse GRAVEL of sandstone and flint. Sand is fine to coarse. <i>End of pit at 1.51 m</i>

Remarks: 1. Service Clearance provided prior to excavation by third party specialist  
2. No groundwater observed

Stability: Stable





# Trial Pit Log

Trialpit No  
**TP4010**  
Sheet 1 of 1

Project Name: Land off Elmstead Road, Wivenhoe

Project No.  
G58346

Co-ords: 604556.58 - 223470.85  
Level: 32.28

Date  
07/10/2021

Location: Elmstead Road, Wivenhoe, CO7 9JF

Dimensions (m): 2.8  
Depth 1.53

Scale  
1:15  
Logged  
N.A

Client: Taylor Wimpey - London

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.30	31.98		Grass over TOPSOIL of dark brown very soft slightly gravelly very sandy CLAY with abundant rootlets. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				0.50	31.78		Orangish brown mottle grey slightly clayey gravelly fine to coarse SAND. Gravel is angular to subrounded sandstone and flint.
				1.00	31.28		Orangish brown mottle grey very sandy slightly clayey GRAVEL of angular to subrounded fine to coarse sandstone and flint. Sand is fine to coarse.
				1.53	30.75		Orangish brown to orange gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone and flint.
							<i>Very gravelly from 1.35m bgl</i>
							End of pit at 1.53 m

Remarks: 1. Service Clearance provided prior to excavation by third party specialist  
2. No groundwater observed

Stability: Stable





# Trial Pit Log

Trialpit No  
**TP4011**  
Sheet 1 of 1

Project Name: Land off Elmstead Road, Wivenhoe	Project No. G58346	Co-ords: 604508.29 - 223508.45 Level: 32.34	Date 06/10/2021
Location: Elmstead Road, Wivenhoe, CO7 9JF		Dimensions (m): Depth 1.50	Scale 1:15 Logged N.A
Client: Taylor Wimpey - London		<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">2.8</div> <div style="border: 1px solid black; width: 100px; height: 40px; position: relative;"> <span style="position: absolute; top: -10px; left: 50%; transform: translate(-50%, -50%);">0.8</span> </div> </div>	

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.30	32.04		Grass over TOPSOIL of dark brown very soft slightly gravelly very sandy CLAY with abundant rootlets. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				1.30	31.04		Soft to firm grey mottle orangish brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				1.50	30.84		Orangish brown mottle grey very clayey slightly gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone and flint.
							End of pit at 1.50 m

Remarks: 1. Service Clearance provided prior to excavation by third party specialist  
2. No groundwater observed

Stability: Stable







# Trial Pit Log

Trialpit No  
**TP4012**  
Sheet 1 of 1

Project Name: Land off Elmstead Road, Wivenhoe	Project No. G58346	Co-ords: 604456.65 - 223551.60 Level: 32.40	Date 06/10/2021
Location: Elmstead Road, Wivenhoe, CO7 9JF		Dimensions (m): Depth 1.60	Scale 1:15 Logged N.A
Client: Taylor Wimpey - London		2.8	

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.30	32.10		Grass over TOPSOIL of dark brown very soft slightly gravelly very sandy CLAY with abundant rootlets. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				0.60	31.80		Soft to firm grey mottle orangish brown slightly slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				1.10	31.30		Grey mottle orangish brown very clayey slightly gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				1.60	30.80		Orangish brown mottle grey very sandy angular to subrounded fine to coarse GRAVEL of sandstone and flint. Sand is fine to coarse.
							End of pit at 1.60 m

Remarks: 1. Service Clearance provided prior to excavation by third party specialist  
2. No groundwater observed

Stability: Stable





# Trial Pit Log

Trialpit No  
**TP4013**  
Sheet 1 of 1

Project Name: Land off Elmstead Road, Wivenhoe

Project No.  
G58346

Co-ords: 604432.24 - 223586.56  
Level: 32.70

Date  
06/10/2021

Location: Elmstead Road, Wivenhoe, CO7 9JF

Dimensions (m): 2.6  
Depth 1.50

Scale 1:15  
Logged N.A

Client: Taylor Wimpey - London

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.30	32.40		Grass over TOPSOIL of dark brown very soft slightly gravelly very sandy CLAY with abundant rootlets. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				0.60	32.10		Orangish brown subangular to subrounded fine to coarse very sandy slightly clayey GRAVEL of sandstone and flint. Sand is fine to coarse.
				1.50	31.20		Orange mottle grey gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone and flint. <i>Slightly clayey from 0.6m to 0.9m bgl.</i>
							End of pit at 1.50 m

Remarks: 1. Service Clearance provided prior to excavation by third party specialist  
2. No groundwater observe

Stability: Stable





# Trial Pit Log

Trialpit No  
**TP4014**  
Sheet 1 of 1

Project Name: Land off Elmstead Road, Wivenhoe

Project No.  
G58346

Co-ords: 604388.24 - 223600.97  
Level: 32.99

Date  
06/10/2021

Location: Elmstead Road, Wivenhoe, CO7 9JF

Dimensions (m): 2.5  
Depth 1.50

Scale 1:15  
Logged N.A

Client: Taylor Wimpey - London

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.30	32.69		Grass over TOPSOIL of dark brown very soft slightly gravelly very sandy CLAY with abundant rootlets. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				0.60	32.39		Orangish brown subangular to subrounded fine to coarse very sandy slightly clayey GRAVEL of sandstone and flint.
				1.40	31.59		Orange mottle grey gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				1.50	31.49		Greyish brown mottled orangish brown slightly gravelly slightly clayey fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone and flint. End of pit at 1.50 m

Remarks: 1. Service Clearance provided prior to excavation by third party specialist  
2. No groundwater observed

Stability: Stable





# Trial Pit Log

Trialpit No  
**TP4015**  
Sheet 1 of 1

Project Name: Land off Elmstead Road, Wivenhoe	Project No. G58346	Co-ords: 604365.66 - 223557.96 Level: 32.60	Date 06/10/2021
Location: Elmstead Road, Wivenhoe, CO7 9JF		Dimensions (m): 2.6	Scale 1:15
Client: Taylor Wimpey - London		Depth 1.50	Logged N.A

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.10	ES					Grass over TOPSOIL of dark brown very soft slightly gravelly very sandy CLAY with abundant rootlets. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				0.30	32.30		Greyish brown mottled orangish brown slightly gravelly slightly clayey fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone and flint.
	0.50	ES					
				0.70	31.90		Firm grey mottle orangish brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone and flint.
	1.00	ES					
				1.40	31.20		Orangish brown slightly gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone.
				1.50	31.10		End of pit at 1.50 m

Remarks: 1. Service Clearance provided prior to excavation by third party specialist  
2. No groundwater observed

Stability: Stable





# Trial Pit Log

Trialpit No  
**TP4016**  
Sheet 1 of 1

Project Name: Land off Elmstead Road, Wivenhoe	Project No. G58346	Co-ords: 604413.17 - 223524.94 Level: 32.43	Date 06/10/2021
Location: Elmstead Road, Wivenhoe, CO7 9JF		Dimensions (m): Depth 1.50	Scale 1:15 Logged N.A
Client: Taylor Wimpey - London			

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.30	32.13		Grass over TOPSOIL of dark brown very soft slightly gravelly very sandy CLAY with abundant rootlets. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				0.80	31.63		Soft to firm grey mottle orangish brown slightly slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				1.10	31.33		Grey mottle orange very clayey fine to coarse SAND. Damp.
				1.50	30.93		Light brown mottle orangish grey gravelly slightly clayey fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone and flint.
							<i>No clay from 1.3m bgl</i>
							End of pit at 1.50 m

Remarks: 1. Service Clearance provided prior to excavation by third party specialist  
2. No groundwater observed

Stability: Stable





# Trial Pit Log

Trialpit No  
**TP4017**  
Sheet 1 of 1

Project Name: Land off Elmstead Road, Wivenhoe	Project No. G58346	Co-ords: 604457.68 - 223500.79 Level: 32.36	Date 06/10/2021
Location: Elmstead Road, Wivenhoe, CO7 9JF		Dimensions (m): Depth 1.55	Scale 1:15 Logged N.A
Client: Taylor Wimpey - London		2.8	

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.30	32.06		Grass over TOPSOIL of dark brown very soft slightly gravelly very sandy CLAY with abundant rootlets. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				0.60	31.76		Soft to firm grey mottle orangish brown slightly slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				1.30	31.06		Grey mottle orange very clayey very gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone and flint. Damp.
				1.55	30.81		Grey mottle orange slightly clayey slightly gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone and flint.
							End of pit at 1.55 m

Remarks: 1. Service Clearance provided prior to excavation by third party specialist  
2. No groundwater observed

Stability: Stable





# Trial Pit Log

Trialpit No  
**TP4018**  
Sheet 1 of 1

Project Name: Land off Elmstead Road, Wivenhoe	Project No. G58346	Co-ords: 604515.60 - 223462.06 Level: 32.30	Date 07/10/2021
Location: Elmstead Road, Wivenhoe, CO7 9JF		Dimensions (m): Depth 1.52	Scale 1:15 Logged N.A
Client: Taylor Wimpey - London			

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.30	32.00		Grass over TOPSOIL of dark brown very soft slightly gravelly very sandy CLAY with abundant rootlets. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				0.65	31.65		Orangish brown mottle grey very clayey slightly gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				1.30	31.00		Light brown mottle grey gravelly slightly clayey fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				1.52	30.78		Orange mottle grey gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone and flint.
							End of pit at 1.52 m

Remarks: 1. Service Clearance provided prior to excavation by third party specialist  
2. No groundwater observed

Stability: Stable





# Trial Pit Log

Trialpit No  
**TP4019**  
Sheet 1 of 1

Project Name: Land off Elmstead Road, Wivenhoe	Project No. G58346	Co-ords: 604543.93 - 223429.09 Level: 32.23	Date 07/10/2021
Location: Elmstead Road, Wivenhoe, CO7 9JF		Dimensions (m): Depth 1.55	Scale 1:15 Logged N.A
Client: Taylor Wimpey - London		<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">2.85</div> <div style="border: 1px solid black; width: 100px; height: 40px; position: relative;"> <div style="position: absolute; top: 50%; left: 50%; transform: translate(-50%, -50%);">8</div> </div> </div>	

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				0.30	31.93		Grass over TOPSOIL of dark brown very soft slightly gravelly very clayey fine to coarse SAND with abundant rootlets. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone and flint.	
				0.70	31.53		Orangish brown mottle grey very clayey slightly gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone and flint.	
				1.00	31.23		Stiff orangish brown to grey (banded) very sandy slightly gravelly CLAY. Gravel is angular to subrounded fine to coarse sandstone and flint. Sand is fine to coarse.	
				1.45	30.78		Orangish brown to orange gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone and flint.	
				1.55	30.68		Grey very sandy slightly clayey GRAVEL of angular to subrounded fine to coarse sandstone and flint.	
				End of pit at 1.55 m				

Remarks: 1. Service Clearance provided prior to excavation by third party specialist  
2. No groundwater observed

Stability: Stable







# Trial Pit Log

Trialpit No  
**TP4020**  
Sheet 1 of 1

Project Name: Land off Elmstead Road, Wivenhoe	Project No. G58346	Co-ords: 604614.90 - 223400.53 Level: 31.93	Date 07/10/2021
Location: Elmstead Road, Wivenhoe, CO7 9JF		Dimensions (m): Depth 1.50	Scale 1:15 Logged N.A
Client: Taylor Wimpey - London		2.9	

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.30	31.63		Grass over TOPSOIL of dark brown gravelly very clayey fine to coarse SAND with abundant rootlets. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				0.60	31.33		Orangish brown to grey gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse sandstone and flint.
				1.00	30.93		Grey to light brown sandy GRAVEL of subangular to subrounded fine to coarse sandstone and flint. Sand is fine to coarse.
				1.50	30.43		Firm to stiff grey mottle orangish brown sandy CLAY. Sand is fine to coarse.
							End of pit at 1.50 m

Remarks: 1. Service Clearance provided prior to excavation by third party specialist  
2. No groundwater observed

Stability: Stable





# Trial Pit Log

Trialpit No  
**TP4021**  
Sheet 1 of 1

Project Name: Land off Elmstead Road, Wivenhoe	Project No. G58346	Co-ords: 604575.96 - 223374.24 Level: 31.87	Date 07/10/2021
Location: Elmstead Road, Wivenhoe, CO7 9JF		Dimensions (m): Depth 1.50	Scale 1:15 Logged N.A
Client: Taylor Wimpey - London		<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">2.7</div> <div style="border: 1px solid black; width: 100px; height: 30px; position: relative;"> <span style="position: absolute; top: -10px; left: 50%; transform: translate(-50%, -50%);">∞</span> </div> </div>	

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.30	31.57		Grass over TOPSOIL of dark brown slightly gravelly clayey fine to coarse SAND with abundant rootlets. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				0.50	31.37		Orangish brown gravelly slightly clayey fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				1.40	30.47		Light brown to orangish brown gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				1.50	30.37		Grey mottle orangish brown gravelly slightly clayey fine to coarse SAND. Gravel is angular to subrounded fine to coarse sandstone and flint.
							End of pit at 1.50 m

Remarks: 1. Service Clearance provided prior to excavation by third party specialist  
2. No groundwater observed

Stability: Stable





# Trial Pit Log

Trialpit No  
**TP4022**  
Sheet 1 of 1

Project Name: Land off Elmstead Road, Wivenhoe	Project No. G58346	Co-ords: 604548.94 - 223340.28 Level: 31.80	Date 07/10/2021
Location: Elmstead Road, Wivenhoe, CO7 9JF		Dimensions (m): 2.8 Depth 1.53	Scale 1:15 Logged N.A
Client: Taylor Wimpey - London			

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.30	31.50		Grass over TOPSOIL of dark brown slightly gravelly clayey fine to coarse SAND with abundant rootlets. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				0.40	31.40		Soft orangish brown slightly gravelly sandy CLAY. Gravel is subangular to subrounded fine to coarse sandstone and flint. Sand is fine to coarse
				1.00	30.80		Orangish brown mottle grey gravelly slightly clayey fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				1.53	30.26		Reddish brown to orange gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse sandstone and flint. Damp.
							End of pit at 1.53 m

Remarks: 1. Service Clearance provided prior to excavation by third party specialist  
2. No groundwater observed

Stability: Stable





# Trial Pit Log

Trialpit No  
**TP4023**  
Sheet 1 of 1

Project Name: Land off Elmstead Road, Wivenhoe	Project No. G58346	Co-ords: 604581.76 - 223309.71 Level: 31.64	Date 07/10/2021
Location: Elmstead Road, Wivenhoe, CO7 9JF		Dimensions (m): Depth 1.51	Scale 1:15 Logged N.A.
Client: Taylor Wimpey - London		2.9	

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.30	31.34		Grass over TOPSOIL of dark brown slightly gravelly slightly clayey fine to coarse SAND with abundant rootlets. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				0.55	31.09		Light brown mottled orange gravelly slightly clayey fine to coarse SAND. Gravel is angular to subrounded fine to coarse sandstone and flint.
							Grey mottled orange gravelly slightly clayey fine to coarse SAND. Gravel is angular to subrounded fine to coarse sandstone and flint.
							<u>No clay from 0.76m bgl</u> <u>Orangish grey from 0.8m bgl.</u>
				1.51	30.13		End of pit at 1.51 m

Remarks: 1. Service Clearance provided prior to excavation by third party specialist  
2. No groundwater observed

Stability: Stable





# Trial Pit Log

Trialpit No  
**TP4024**  
Sheet 1 of 1

Project Name: Land off Elmstead Road, Wivenhoe	Project No. G58346	Co-ords: 604529.99 - 223301.95 Level: 31.77	Date 07/10/2021
Location: Elmstead Road, Wivenhoe, CO7 9JF	Dimensions (m): Depth 1.50		Scale 1:15 Logged N.A
Client: Taylor Wimpey - London		1.91	

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.30	31.47		Grass over TOPSOIL of dark brown slightly gravelly slightly clayey fine to coarse SAND with abundant rootlets. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				0.75	31.02		Firm light brown mottled orange cream very sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse sandstone and flint. Sand is fine to coarse. <i>Slightly clayey from 0.45m bgl</i>
				1.50	30.27		Reddish brown to orange gravelly slightly clayey fine to coarse SAND. Gravel is angular to subrounded fine to coarse sandstone and flint. <i>No clay from 1.0m bgl.</i>  End of pit at 1.50 m

Remarks: 1. Service Clearance provided prior to excavation by third party specialist  
2. No groundwater observed

Stability: Stable





# Trial Pit Log

Trialpit No  
**TP4025**  
Sheet 1 of 1

Project Name: Land off Elmstead Road, Wivenhoe

Project No.  
G58346

Co-ords: 604486.21 - 223190.06  
Level: 30.32

Date  
12/10/2021

Location: Elmstead Road, Wivenhoe, CO7 9JF

Dimensions (m): 3.2  
Depth 1.04

Scale  
1:15  
Logged  
N.A

Client: Taylor Wimpey - London

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.35	29.97		Grass over TOPSOIL of dark brown gravelly slightly clayey fine to coarse SAND with abundant rootlets. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				1.04	29.28		Brown very gravelly slightly clayey fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone and flint.
							Greyish brown from 0.85m bgl.
							End of pit at 1.04 m

Remarks: 1. Service Clearance provided prior to excavation by third party specialist  
2. No groundwater observed

Stability: Stable





# Trial Pit Log

Trialpit No  
**TP4026**  
Sheet 1 of 1

Project Name: Land off Elmstead Road, Wivenhoe	Project No. G58346	Co-ords: 604496.54 - 223151.09 Level: 30.20	Date 12/10/2021
Location: Elmstead Road, Wivenhoe, CO7 9JF		Dimensions (m): Depth 1.05	Scale 1:15
Client: Taylor Wimpey - London			Logged N.A

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.30	29.90		Grass over TOPSOIL of dark brown gravelly slightly clayey fine to coarse SAND with abundant rootlets. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				0.72	29.48		Firm brown sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				1.05	29.15		Orangish brown gravelly very clayey fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone and flint.
							End of pit at 1.05 m

Remarks: 1. Service Clearance provided prior to excavation by third party specialist  
2. No groundwater observed

Stability: Stable





# Trial Pit Log

Trialpit No  
**TP4027**  
Sheet 1 of 1

Project Name: Land off Elmstead Road, Wivenhoe

Project No.  
G58346

Co-ords: 604511.12 - 223100.62  
Level: 30.13

Date  
12/10/2021

Location: Elmstead Road, Wivenhoe, CO7 9JF

Dimensions (m): 3.1  
Depth 1.10

Scale  
1:15  
Logged  
N.A

Client: Taylor Wimpey - London

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.30	29.82		Grass over TOPSOIL of dark brown gravelly slightly clayey fine to coarse SAND with abundant rootlets. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				0.55	29.58		Light brown mottle orange gravelly slightly clayey fine to coarse SAND. Gravel is angular to subrounded fine to coarse sandstone and flint.
				0.70	29.42		Orangish brown gravelly very clayey fine to coarse SAND. Gravel is angular to subrounded fine to coarse sandstone and flint.
				1.10	29.02		Orangish brown gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse sandstone and flint. Damp.
							End of pit at 1.10 m

Remarks: 1. Service Clearance provided prior to excavation by third party specialist  
2. No groundwater observed

Stability: Stable







# Trial Pit Log

Trialpit No  
**TP4028**  
Sheet 1 of 1

Project Name: Land off Elmstead Road, Wivenhoe	Project No. G58346	Co-ords: 604624.50 - 223089.98 Level: 29.72	Date 11/10/2021
Location: Elmstead Road, Wivenhoe, CO7 9JF		Dimensions (m): Depth 1.02	Scale 1:15
Client: Taylor Wimpey - London			Logged N.A

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.30	29.42		Grass over TOPSOIL of dark brown gravelly slightly clayey fine to coarse SAND with abundant rootlets. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				0.75	28.97		Grey mottle brown and light brown slightly silty slightly gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				1.02	28.70		Stiff grey mottle orangish brown silty CLAY.
							End of pit at 1.02 m

Remarks: 1. Service Clearance provided prior to excavation by third party specialist  
2. No groundwater observed

Stability: Stable





# Trial Pit Log

Trialpit No  
**TP4029**  
Sheet 1 of 1

Project Name: Land off Elmstead Road, Wivenhoe	Project No. G58346	Co-ords: 604599.06 - 223115.13 Level: 30.22	Date 11/10/2021
Location: Elmstead Road, Wivenhoe, CO7 9JF	Dimensions (m): Depth 1.52		Scale 1:15 Logged N.A
Client: Taylor Wimpey - London		2.9	

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.30	29.92		Grass over TOPSOIL of dark brown gravelly fine to coarse SAND with abundant rootlets. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				0.90	29.32		Grey mottle light brown slightly gravelly fine to coarse SAND.
				1.52	28.70		Orangish brown mottle grey gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone and flint.
							End of pit at 1.52 m

Remarks: 1. Service Clearance provided prior to excavation by third party specialist  
2. No groundwater observed

Stability: Stable





# Trial Pit Log

Trialpit No  
**TP4030**  
Sheet 1 of 1

Project Name: Land off Elmstead Road, Wivenhoe	Project No. G58346	Co-ords: 604625.66 - 223136.21 Level: 30.02	Date 11/10/2021
Location: Elmstead Road, Wivenhoe, CO7 9JF		Dimensions (m): Depth 1.10	Scale 1:15 Logged N.A
Client: Taylor Wimpey - London		2.82	

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.30	29.72		Grass over TOPSOIL of dark brown gravelly fine to coarse SAND with abundant rootlets. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				0.65	29.37		Grey to orangish brown slightly gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				1.10	28.92		Brown mottled orangish brown very gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse sandstone and flint.
							End of pit at 1.10 m

Remarks: 1. Service Clearance provided prior to excavation by third party specialist  
2. No groundwater observed

Stability: Stable





# Trial Pit Log

Trialpit No  
**TP4031**  
Sheet 1 of 1

Project Name: Land off Elmstead Road, Wivenhoe	Project No. G58346	Co-ords: 604627.06 - 223183.57 Level: 30.53	Date 11/10/2021
Location: Elmstead Road, Wivenhoe, CO7 9JF		Dimensions (m): Depth 1.00	Scale 1:15 Logged N.A
Client: Taylor Wimpey - London		2.75	

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.25	30.28		Grass over TOPSOIL of dark brown gravelly fine to coarse SAND with abundant rootlets. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				0.70	29.83		MADE GROUND: Light brown to grey very gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse sandstone and flint and minor brick tiling.  <i>Brick tiling from 0.5 to 0.6m bgl.</i>
				1.00	29.53		Light brown slightly gravelly slightly clayey fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone and flint.
							End of pit at 1.00 m

Remarks: 1. Service Clearance provided prior to excavation by third party specialist  
2. No groundwater observed

Stability: Stable





# Trial Pit Log

Trialpit No  
**TP4032**  
Sheet 1 of 1

Project Name: Land off Elmstead Road, Wivenhoe      Project No. G58346      Co-ords: 604645.42 - 223213.57      Date 11/10/2021  
Level: 30.86

Location: Elmstead Road, Wivenhoe, CO7 9JF      Dimensions (m): 2.8      Scale 1:15

Client: Taylor Wimpey - London      Depth 1.00      Logged N.A.

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.25	30.61		Grass over TOPSOIL of dark brown gravelly fine to coarse SAND with abundant rootlets. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				0.45	30.41		Light brown to grey gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse sandstone and flint.
				1.00	29.86		Light brown mottled grey and orange gravelly slightly clayey fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone and flint.
							End of pit at 1.00 m

Remarks: 1. Service Clearance provided prior to excavation by third party specialist  
2. No groundwater observed

Stability: Stable





# Trial Pit Log

Trialpit No  
**TP4033**  
Sheet 1 of 1

Project Name: Land off Elmstead Road, Wivenhoe	Project No. G58346	Co-ords: 604679.31 - 223270.00 Level: 31.12	Date 11/10/2021
Location: Elmstead Road, Wivenhoe, CO7 9JF		Dimensions (m): Depth 1.00	Scale 1:15 Logged N.A
Client: Taylor Wimpey - London		<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">2.7</div> <div style="border: 1px solid black; width: 100px; height: 30px; position: relative;"> <span style="position: absolute; top: -10px; left: 50%; transform: translate(-50%, -50%);">0.8</span> </div> </div>	

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.30	30.82		Grass over TOPSOIL of dark brown gravelly slightly clayey fine to coarse SAND with abundant rootlets. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				0.75	30.37		Firm light brown mottled orange to cream very sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse sandstone and flint.
				1.00	30.12		Light brown mottled orange to cream gravelly very clayey fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone and flint.
							----- End of pit at 1.00 m

Remarks: 1. Service Clearance provided prior to excavation by third party specialist  
2. No groundwater observed

Stability: Stable



# Trial Pit Log

Trialpit No  
**TP4034**  
Sheet 1 of 1

Project Name: Land off Elmstead Road, Wivenhoe	Project No. G58346	Co-ords: 604731.85 - 223331.61 Level: 31.48	Date 07/10/2021
Location: Elmstead Road, Wivenhoe, CO7 9JF		Dimensions (m): Depth 1.10	Scale 1:15 Logged N.A
Client: Taylor Wimpey - London		2.6	

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.30	31.18		Grass over TOPSOIL of dark brown gravelly very clayey fine to coarse SAND with abundant rootlets. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				1.10	30.38		Grey very gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse sandstone and flint.  <i>Orangish brown to grey from 0.6m bgl</i>
							End of pit at 1.10 m

Remarks: 1. Service Clearance provided prior to excavation by third party specialist  
2. No groundwater observed

Stability: Stable



# Trial Pit Log

Trialpit No  
**TP4035**  
Sheet 1 of 1

Project Name: Land off Elmstead Road, Wivenhoe	Project No. G58346	Co-ords: 604756.87 - 223370.83 Level: 31.71	Date 07/10/2021
Location: Elmstead Road, Wivenhoe, CO7 9JF		Dimensions (m): Depth 1.10	Scale 1:15 Logged N.A
Client: Taylor Wimpey - London		<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">2.85</div> <div style="border: 1px solid black; width: 100px; height: 40px; position: relative;"> <span style="position: absolute; top: -10px; left: 50%; transform: translate(-50%, -50%);">0.8</span> </div> </div>	

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.35	31.36		Grass over TOPSOIL of dark brown gravelly very clayey fine to coarse SAND with abundant rootlets. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				0.70	31.01		Orangish brown to grey slightly gravelly very clayey fine to coarse SAND. Gravel is angular to subrounded fine to coarse sandstone and flint.
				1.10	30.61		Orange to brown mottled grey very gravelly slightly silty fine to coarse SAND. Gravel is angular to subrounded fine to coarse sandstone and flint.
							----- End of pit at 1.10 m

Remarks: 1. Service Clearance provided prior to excavation by third party specialist  
2. No groundwater observed

Stability: Stable







# Trial Pit Log

Trialpit No  
**TP4036**  
Sheet 1 of 1

Project Name: Land off Elmstead Road, Wivenhoe

Project No.  
G58346

Co-ords: 604627.59 - 223284.48  
Level: 31.32

Date  
11/10/2021

Location: Elmstead Road, Wivenhoe, CO7 9JF

Dimensions (m): 2.7  
Depth 1.00

Scale 1:15  
Logged N.A

Client: Taylor Wimpey - London

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.30	31.02		Grass over TOPSOIL of dark brown gravelly slightly clayey fine to coarse SAND with abundant rootlets. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				0.50	30.82		Light brown mottled orange cream slightly gravelly very clayey fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone and flint.
				0.70	30.62		Firm light brown mottled orange to cream very sandy CLAY. Sand is fine to coarse.
				1.00	30.32		Orangish brown mottled grey gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse sandstone and flint.
							End of pit at 1.00 m

Remarks: 1. Service Clearance provided prior to excavation by third party specialist  
2. No groundwater observed

Stability: Stable



# Borehole Log

Borehole No.

**WS401**

Sheet 1 of 1

Project Name: Land off Elmstead Road, Wivenhoe	Project No. G58346	Co-ords: 604550.80 - 223136.85	Hole Type WS
Location: Elmstead Road, Wivenhoe, CO7 9JF		Level: 30.68	Scale 1:15
Client: Taylor Wimpey - London		Dates: 13/10/2021 -	Logged By N.A

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.30	30.38	<p>Grass over TOPSOIL of very soft dark brown slightly gravelly slightly clayey fine to coarse SAND with abundant rootlets. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone and flint.</p>	
					0.54	30.14	<p>Soft grey mottle orangish brown slightly silty CLAY.</p>	
					0.70	29.98	<p>Orangish brown gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse sandstone and flint.</p>	
							<p>Stiff grey mottle orangish brown slightly silty CLAY.</p>	
							<p><i>Very stiff from 1.0 to 1.3m bgl</i></p> <p><i>Slightly silty from 1.0m bgl</i></p>	
					1.50	29.18	<p>Light brown fine to medium SAND.</p> <p><i>Fine to coarse from 1.7m bgl</i></p>	
				2.00	28.68	<p>End of borehole at 2.00 m</p>		

Remarks

- Service Clearance provided prior to excavation by third party specialist
- No groundwater observed

# Borehole Log

Borehole No.

**WS402**

Sheet 1 of 1

Project Name: Land off Elmstead Road, Wivenhoe	Project No. G58346	Co-ords: 604515.70 - 223225.17	Hole Type WS
Location: Elmstead Road, Wivenhoe, CO7 9JF		Level: 31.00	Scale 1:15
Client: Taylor Wimpey - London		Dates: 13/10/2021 -	Logged By N.A

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.30	30.70		Grass over TOPSOIL of very soft dark brown slightly gravelly slightly clayey fine to coarse SAND with abundant rootlets. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone and flint.
					0.90	30.10		Orangish brown to light brown gravelly slightly clayey fine to coarse SAND. Gravel is angular to subrounded fine to coarse sandstone and flint.
					1.25	29.75		Brown gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone and flint. Damp.
					1.50	29.50		Brown to orangish brown slightly gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse sandstone and flint.
								End of borehole at 1.50 m

Remarks  
 1. Service Clearance provided prior to excavation by third party specialist  
 2. No groundwater observed

# Borehole Log

Borehole No.

**WS403**

Sheet 1 of 1

Project Name:	Land off Elmstead Road, Wivenhoe	Project No.	G58346	Co-ords:	604623.02 - 223238.86	Hole Type	WS
Location:	Elmstead Road, Wivenhoe, CO7 9JF			Level:	30.89	Scale	1:15
Client:	Taylor Wimpey - London			Dates:	13/10/2021 -	Logged By	N.A

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.30	30.58		Grass over TOPSOIL of very soft dark brown very sandy slightly gravelly CLAY with abundant rootlets. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone and flint.
					0.64	30.24		Stiff brown to orangish brown very sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse sandstone and flint.
					1.20	29.68		Grey gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse sandstone and flint. <i>Very gravelly from 0.9m bgl.</i> <i>Clayey from 1.0 to 1.17m bgl.</i>
					2.20	28.68		Very stiff grey mottled orange CLAY with minor fragments of organic matter. <i>Slightly sandy and stiff from 2.3m bgl</i>
					2.70	28.18	End of borehole at 2.70 m	

Remarks

- Service Clearance provided prior to excavation by third party specialist
- No groundwater observed

# Borehole Log

Borehole No.

**WS404**

Sheet 1 of 1

Project Name: Land off Elmstead Road, Wivenhoe	Project No. G58346	Co-ords: 604694.52 - 223360.67	Hole Type WS
Location: Elmstead Road, Wivenhoe, CO7 9JF		Level: 31.55	Scale 1:15
Client: Taylor Wimpey - London		Dates: 13/10/2021 -	Logged By N.A

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
							Grass over TOPSOIL of dark brown slightly gravelly very clayey fine to coarse SAND with abundant rootlets. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone and flint.	
				0.35	31.20		Light brown to grey slightly gravelly slightly clayey fine to coarse SAND. Gravel is angular to subrounded fine to coarse sandstone and flint.	
				0.49	31.06		Stiff brown to orangish brown very sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse sandstone and flint.	
				1.00	30.55		Grey gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse sandstone and flint.	
				1.30	30.25		End of borehole at 1.30 m	

Remarks

- Service Clearance provided prior to excavation by third party specialist
- No groundwater observed

# Borehole Log

Borehole No.

**WS404B**

Sheet 1 of 1

Project Name: Land off Elmstead Road, Wivenhoe	Project No. G58346	Co-ords: 604696.05 - 223360.06	Hole Type WS
Location: Elmstead Road, Wivenhoe, CO7 9JF		Level: 31.59	Scale 1:15
Client: Taylor Wimpey - London		Dates: 13/10/2021 -	Logged By N.A

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.35	31.24		Grass over TOPSOIL of dark brown slightly gravelly very clayey fine to coarse SAND with abundant rootlets. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone and flint.	
					0.47	31.12		Firm grey mottle orangish brown very sandy CLAY. Sand is fine to coarse.	
						0.78	30.81		Light brown to grey slightly gravelly slightly clayey fine to coarse SAND. Gravel is angular to subrounded fine to coarse sandstone and flint.
						1.00	30.59		Orangish brown slightly gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse sandstone and flint.
						1.20	30.39		Grey gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse sandstone and flint.
----- End of borehole at 1.20 m -----									

Remarks

1. Service Clearance provided prior to excavation by third party specialist
2. No groundwater observed
3. Backfilled with arisings

## APPENDIX 4



# Final Report

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**Report No.:** 21-36585-1

**Initial Date of Issue:** 26-Oct-2021

**Client:** Pam Brown Associates

**Client Address:** Needwood House, Lancaster Park  
Newborough Road  
Needwood  
Staffordshire  
DE13 9PD

**Contact(s):** Enquiries  
Melissa Morales  
Naicheervan Abbas

**Project:** 2074-20 Elmstead Road, Wivenhoe

**Quotation No.:** **Date Received:** 20-Oct-2021

**Order No.:** **Date Instructed:** 20-Oct-2021

**No. of Samples:** 52

**Turnaround (Wkdays):** 5 **Results Due:** 26-Oct-2021

**Date Approved:** 26-Oct-2021

**Approved By:**  


**Details:** Glynn Harvey, Technical Manager

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## Results - Soil

**Project: 2074-20 Elmstead Road, Wivenhoe**

Client: Pam Brown Associates		Chemtest Job No.: 21-36585											
Quotation No.:		Chemtest Sample ID.:											
Sample Location:		TP401	TP402	TP403	TP404	TP404	TP405	TP406	TP407	TP407	TP407	TP407	TP407
Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Top Depth (m):		0.10	0.70	1.00	0.10	0.90	1.30	0.60	0.10	1.30			
Bottom Depth (m):		0.10	0.70	1.00	0.10	0.90	1.30	0.60	0.10	1.30			
Date Sampled:		06-Oct-2021	06-Oct-2021	06-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021
Asbestos Lab:		DURHAM	DURHAM	DURHAM				DURHAM	DURHAM	DURHAM			
Determinand	Accred.	SOP	Units	LOD									
ACM Type	U	2192		N/A	-	-	-			-	-	-	
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected			No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	
Moisture	N	2030	%	0.020	12	6.3	5.7	10	6.6	3.2	1.9	11	3.2
pH	U	2010		4.0	8.6	8.9	8.6	8.6	8.7	8.8	7.0	8.3	8.6
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.76	0.53	< 0.40	0.86	0.46	0.44	0.44	0.62	< 0.40
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.015	< 0.010	0.011	< 0.010	0.011	< 0.010	0.018	0.010	< 0.010
Sulphur (Elemental)	U	2180	mg/kg	1.0	< 1.0	< 1.0	< 1.0	1.5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.70	< 0.50	< 0.50	0.50
Thiocyanate	U	2300	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	1.8	1.2	1.2	1.6	1.5	1.0	0.68	1.1	0.88
Sulphate (Total)	U	2430	%	0.010	0.029	< 0.010	< 0.010	0.022	< 0.010	< 0.010	< 0.010	0.024	< 0.010
Arsenic	U	2450	mg/kg	1.0	8.0	3.3	1.1	3.0	3.6	2.7	3.5	4.1	7.1
Cadmium	U	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chromium	U	2450	mg/kg	1.0	11	11	6.1	12	8.7	12	14	9.9	14
Copper	U	2450	mg/kg	0.50	23	12	6.2	19	19	19	20	17	16
Mercury	U	2450	mg/kg	0.10	0.15	< 0.10	< 0.10	< 0.10	0.11	< 0.10	< 0.10	< 0.10	0.11
Nickel	U	2450	mg/kg	0.50	7.8	5.1	4.0	6.6	4.7	6.6	9.6	5.7	7.8
Lead	U	2450	mg/kg	0.50	48	6.6	3.9	6.6	40	6.9	14	5.7	39
Selenium	U	2450	mg/kg	0.20	0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	0.21	0.29
Zinc	U	2450	mg/kg	0.50	27	14	5.3	14	22	13	13	8.4	28
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40	2.6	< 0.40	< 0.40	3.8	< 0.40	< 0.40	< 0.40	1.5	< 0.40
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

## Results - Soil

**Project: 2074-20 Elmstead Road, Wivenhoe**

Client: Pam Brown Associates		Chemtest Job No.:											
Quotation No.:	Chemtest Sample ID.:		21-36585	21-36585	21-36585	21-36585	21-36585	21-36585	21-36585	21-36585	21-36585	21-36585	21-36585
	Sample Location:		TP401	TP402	TP403	TP404	TP404	TP405	TP406	TP407	TP407	TP407	
	Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	
	Top Depth (m):		0.10	0.70	1.00	0.10	0.90	1.30	0.60	0.10	1.30	1.30	
	Bottom Depth (m):		0.10	0.70	1.00	0.10	0.90	1.30	0.60	0.10	1.30	1.30	
	Date Sampled:		06-Oct-2021	06-Oct-2021	06-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	
	Asbestos Lab:		DURHAM	DURHAM	DURHAM			DURHAM	DURHAM	DURHAM			
Determinand	Accred.	SOP	Units	LOD									
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Naphthalene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	0.27	< 0.10	< 0.10	0.30	< 0.10	< 0.10	< 0.10	0.21	< 0.10
Pyrene	U	2700	mg/kg	0.10	0.25	< 0.10	< 0.10	0.27	< 0.10	< 0.10	< 0.10	0.28	< 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	0.30	< 0.10	< 0.10	0.19	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	0.42	< 0.10	< 0.10	0.44	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Organotin (total as TBTO)	N	2730	µg/kg	10									
Dibutyl Tin	N	2730	µg/kg	10									
Tetrabutyl Tin	N	2730	µg/kg	10									
Tributyl Tin	N	2730	µg/kg	10									
Triphenyl Tin	N	2730	µg/kg	10									
Monobutyl Tin	N	2730	µg/kg	10									
Demeton-O	N	2820	mg/kg	0.20									
Phorate	N	2820	mg/kg	0.20									
Demeton-S	N	2820	mg/kg	0.20									
Disulfoton	N	2820	mg/kg	0.20									
Fenthion	N	2820	mg/kg	0.20									
Trichloronate	N	2820	mg/kg	0.20									
Prothiofos	N	2820	mg/kg	0.20									
Fensulphothion	N	2820	mg/kg	0.20									
Sulprofos	N	2820	mg/kg	0.20									
Azinphos-Methyl	N	2820	mg/kg	0.20									

## Results - Soil

**Project: 2074-20 Elmstead Road, Wivenhoe**

Client: Pam Brown Associates		Chemtest Job No.: 21-36585								
Quotation No.:		Chemtest Sample ID.:								
	Sample Location:	TP401	TP402	TP403	TP404	TP404	TP405	TP406	TP407	TP407
	Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):	0.10	0.70	1.00	0.10	0.90	1.30	0.60	0.10	1.30
	Bottom Depth (m):	0.10	0.70	1.00	0.10	0.90	1.30	0.60	0.10	1.30
	Date Sampled:	06-Oct-2021	06-Oct-2021	06-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021
	Asbestos Lab:	DURHAM	DURHAM	DURHAM			DURHAM	DURHAM	DURHAM	
Determinand	Accred.	SOP	Units	LOD						
Coumaphos	N	2820	mg/kg	0.20						
Atraton	N	2830	mg/kg	0.20						
Prometon	N	2830	mg/kg	0.20						
Simazine	N	2830	mg/kg	0.20						
Atrazine	N	2830	mg/kg	0.20						
Propazine	N	2830	mg/kg	0.20						
Terbutylazine	N	2830	mg/kg	0.20						
Secbumeton	N	2830	mg/kg	0.20						
Simetryn	N	2830	mg/kg	0.20						
Ametryn	N	2830	mg/kg	0.20						
Prometryn	N	2830	mg/kg	0.20						
Terbutryn	N	2830	mg/kg	0.20						
Alpha-HCH	N	2840	mg/kg	0.20						
Gamma-HCH (Lindane)	N	2840	mg/kg	0.20						
Beta-HCH	N	2840	mg/kg	0.20						
Delta-HCH	N	2840	mg/kg	0.20						
Heptachlor	N	2840	mg/kg	0.20						
Aldrin	N	2840	mg/kg	0.20						
Heptachlor Epoxide	N	2840	mg/kg	0.20						
Gamma-Chlordane	N	2840	mg/kg	0.20						
Alpha-Chlordane	N	2840	mg/kg	0.20						
Endosulfan I	N	2840	mg/kg	0.20						
4,4-DDE	N	2840	mg/kg	0.20						
Dieldrin	N	2840	mg/kg	0.20						
Endrin	N	2840	mg/kg	0.20						
4,4-DDD	N	2840	mg/kg	0.20						
Endosulfan II	N	2840	mg/kg	0.20						
Endrin Aldehyde	N	2840	mg/kg	0.20						
4,4-DDT	N	2840	mg/kg	0.20						
Endosulfan Sulphate	N	2840	mg/kg	0.20						
Methoxychlor	N	2840	mg/kg	0.20						
Endrin Ketone	N	2840	mg/kg	0.20						
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

## Results - Soil

**Project: 2074-20 Elmstead Road, Wivenhoe**

Client: Pam Brown Associates		Chemtest Job No.:		21-36585	21-36585	21-36585	21-36585	21-36585	21-36585	21-36585	21-36585	21-36585	21-36585
Quotation No.:		Chemtest Sample ID.:		1302573	1302574	1302575	1302576	1302577	1302578	1302579	1302580	1302581	1302581
		Sample Location:		TP408	TP409	TP4010	TP4010	TP4011	TP4012	TP4012	TP4013	TP4014	TP4014
		Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):		0.80	0.70	0.60	1.10	0.60	0.10	1.20	1.20	0.40	0.40
		Bottom Depth (m):		0.80	0.70	0.60	1.10	0.60	0.10	1.20	1.20	0.40	0.40
		Date Sampled:		07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	06-Oct-2021	06-Oct-2021	06-Oct-2021	06-Oct-2021	06-Oct-2021	06-Oct-2021
		Asbestos Lab:			DURHAM			DURHAM					
Determinand	Accred.	SOP	Units	LOD									
ACM Type	U	2192		N/A		-			-				
Asbestos Identification	U	2192		N/A		No Asbestos Detected			No Asbestos Detected				
Moisture	N	2030	%	0.020	6.9	1.5	4.4	2.7	8.1	18	2.3	4.0	1.4
pH	U	2010		4.0	8.5	8.0	8.3	7.0	8.2	7.6	8.0	8.5	6.8
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.48	0.44	0.51	0.41	0.54	0.90	0.49	0.41	0.45
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010	0.030	< 0.010	0.020	< 0.010	0.015	0.012	< 0.010	0.025
Sulphur (Elemental)	U	2180	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	5.1	< 1.0
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Thiocyanate	U	2300	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	0.91	0.66	1.0	0.71	1.1	1.1	0.82	0.92	0.90
Sulphate (Total)	U	2430	%	0.010	< 0.010	< 0.010	< 0.010	0.018	< 0.010	0.034	< 0.010	< 0.010	< 0.010
Arsenic	U	2450	mg/kg	1.0	20	5.5	10	15	8.1	4.5	1.6	< 1.0	2.8
Cadmium	U	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chromium	U	2450	mg/kg	1.0	26	14	28	25	23	11	12	8.3	10
Copper	U	2450	mg/kg	0.50	27	24	23	57	18	20	30	9.8	20
Mercury	U	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.12	< 0.10	< 0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	15	12	15	22	12	6.2	7.3	4.8	7.4
Lead	U	2450	mg/kg	0.50	17	11	21	21	14	46	8.0	4.0	6.1
Selenium	U	2450	mg/kg	0.20	0.47	< 0.20	0.34	< 0.20	0.30	< 0.20	0.20	< 0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	24	20	29	29	24	28	10	5.9	7.7
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	2.2	< 0.40	< 0.40	< 0.40
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

## Results - Soil

**Project: 2074-20 Elmstead Road, Wivenhoe**

Client: Pam Brown Associates		Chemtest Job No.:		21-36585	21-36585	21-36585	21-36585	21-36585	21-36585	21-36585	21-36585	21-36585	21-36585
Quotation No.:		Chemtest Sample ID.:		1302573	1302574	1302575	1302576	1302577	1302578	1302579	1302580	1302581	
		Sample Location:		TP408	TP409	TP4010	TP4010	TP4011	TP4012	TP4012	TP4013	TP4014	
		Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	
		Top Depth (m):		0.80	0.70	0.60	1.10	0.60	0.10	1.20	1.20	0.40	
		Bottom Depth (m):		0.80	0.70	0.60	1.10	0.60	0.10	1.20	1.20	0.40	
		Date Sampled:		07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	06-Oct-2021	06-Oct-2021	06-Oct-2021	06-Oct-2021	06-Oct-2021	
		Asbestos Lab:			DURHAM			DURHAM					
Determinand	Accred.	SOP	Units	LOD									
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Naphthalene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.22	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.17	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Organotin (total as TBTO)	N	2730	µg/kg	10									
Dibutyl Tin	N	2730	µg/kg	10									
Tetrabutyl Tin	N	2730	µg/kg	10									
Tributyl Tin	N	2730	µg/kg	10									
Triphenyl Tin	N	2730	µg/kg	10									
Monobutyl Tin	N	2730	µg/kg	10									
Demeton-O	N	2820	mg/kg	0.20									
Phorate	N	2820	mg/kg	0.20									
Demeton-S	N	2820	mg/kg	0.20									
Disulfoton	N	2820	mg/kg	0.20									
Fenthion	N	2820	mg/kg	0.20									
Trichloronate	N	2820	mg/kg	0.20									
Prothiofos	N	2820	mg/kg	0.20									
Fensulphothion	N	2820	mg/kg	0.20									
Sulprofos	N	2820	mg/kg	0.20									
Azinphos-Methyl	N	2820	mg/kg	0.20									

## Results - Soil

**Project: 2074-20 Elmstead Road, Wivenhoe**

Client: Pam Brown Associates		Chemtest Job No.:								
Quotation No.:		Chemtest Sample ID.:								
	Sample Location:	TP408	TP409	TP4010	TP4010	TP4011	TP4012	TP4012	TP4013	TP4014
	Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):	0.80	0.70	0.60	1.10	0.60	0.10	1.20	1.20	0.40
	Bottom Depth (m):	0.80	0.70	0.60	1.10	0.60	0.10	1.20	1.20	0.40
	Date Sampled:	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	06-Oct-2021	06-Oct-2021	06-Oct-2021	06-Oct-2021	06-Oct-2021
	Asbestos Lab:		DURHAM			DURHAM				
Determinand	Accred.	SOP	Units	LOD						
Coumaphos	N	2820	mg/kg	0.20						
Atraton	N	2830	mg/kg	0.20						
Prometon	N	2830	mg/kg	0.20						
Simazine	N	2830	mg/kg	0.20						
Atrazine	N	2830	mg/kg	0.20						
Propazine	N	2830	mg/kg	0.20						
Terbutylazine	N	2830	mg/kg	0.20						
Secbumeton	N	2830	mg/kg	0.20						
Simetryn	N	2830	mg/kg	0.20						
Ametryn	N	2830	mg/kg	0.20						
Prometryn	N	2830	mg/kg	0.20						
Terbutryn	N	2830	mg/kg	0.20						
Alpha-HCH	N	2840	mg/kg	0.20						
Gamma-HCH (Lindane)	N	2840	mg/kg	0.20						
Beta-HCH	N	2840	mg/kg	0.20						
Delta-HCH	N	2840	mg/kg	0.20						
Heptachlor	N	2840	mg/kg	0.20						
Aldrin	N	2840	mg/kg	0.20						
Heptachlor Epoxide	N	2840	mg/kg	0.20						
Gamma-Chlordane	N	2840	mg/kg	0.20						
Alpha-Chlordane	N	2840	mg/kg	0.20						
Endosulfan I	N	2840	mg/kg	0.20						
4,4-DDE	N	2840	mg/kg	0.20						
Dieldrin	N	2840	mg/kg	0.20						
Endrin	N	2840	mg/kg	0.20						
4,4-DDD	N	2840	mg/kg	0.20						
Endosulfan II	N	2840	mg/kg	0.20						
Endrin Aldehyde	N	2840	mg/kg	0.20						
4,4-DDT	N	2840	mg/kg	0.20						
Endosulfan Sulphate	N	2840	mg/kg	0.20						
Methoxychlor	N	2840	mg/kg	0.20						
Endrin Ketone	N	2840	mg/kg	0.20						
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

## Results - Soil

**Project: 2074-20 Elmstead Road, Wivenhoe**

Client: Pam Brown Associates		Chemtest Job No.: 21-36585											
Quotation No.:		Chemtest Sample ID.:											
Sample Location:		TP4015	TP4016	TP4017	TP4018	TP4018	TP4019	TP4020	TP4020	TP4021	TP4021	TP4021	TP4021
Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Top Depth (m):		0.10	1.20	0.20	0.70	1.40	0.40	0.10	1.20	0.20	0.20	0.20	0.20
Bottom Depth (m):		0.10	1.20	0.20	0.70	1.40	0.40	0.10	1.20	0.20	0.20	0.20	0.20
Date Sampled:		06-Oct-2021	06-Oct-2021	06-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021
Asbestos Lab:		DURHAM	DURHAM	DURHAM		DURHAM	DURHAM		DURHAM		DURHAM		
Determinand	Accred.	SOP	Units	LOD									
ACM Type	U	2192		N/A	-	-	-	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	9.8	2.1	11	3.4	0.65	2.9	9.3	5.1	6.6
pH	U	2010		4.0	7.7	8.8	8.4	8.6	7.6	8.0	8.4	8.6	8.5
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	1.0	0.46	0.99	0.49	0.46	< 0.40	0.52	< 0.40	0.43
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.013	0.010	0.010	0.015	0.014	0.013	< 0.010	< 0.010	< 0.010
Sulphur (Elemental)	U	2180	mg/kg	1.0	< 1.0	< 1.0	1.1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Thiocyanate	U	2300	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	0.80	1.0	0.55	0.79	1.1	0.59	< 0.50	< 0.50	1.1
Sulphate (Total)	U	2430	%	0.010	0.033	< 0.010	0.030	< 0.010	< 0.010	< 0.010	0.031	< 0.010	0.025
Arsenic	U	2450	mg/kg	1.0	3.6	2.6	6.0	3.3	2.5	12	7.4	8.7	4.9
Cadmium	U	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chromium	U	2450	mg/kg	1.0	8.2	15	12	13	13	18	13	29	11
Copper	U	2450	mg/kg	0.50	16	35	16	17	14	18	21	34	14
Mercury	U	2450	mg/kg	0.10	0.14	< 0.10	0.12	< 0.10	< 0.10	< 0.10	0.17	< 0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	4.3	8.0	6.9	8.8	8.8	12	8.2	17	6.1
Lead	U	2450	mg/kg	0.50	41	13	47	8.6	6.7	14	71	14	29
Selenium	U	2450	mg/kg	0.20	0.23	< 0.20	0.22	< 0.20	< 0.20	< 0.20	0.25	0.39	0.25
Zinc	U	2450	mg/kg	0.50	23	11	29	13	14	18	33	22	20
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40	2.9	< 0.40	2.1	< 0.40	< 0.40	< 0.40	2.1	< 0.40	1.9
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

## Results - Soil

**Project: 2074-20 Elmstead Road, Wivenhoe**

Client: Pam Brown Associates		Chemtest Job No.: 21-36585											
Quotation No.:		Chemtest Sample ID.:											
Sample Location:		TP4015	TP4016	TP4017	TP4018	TP4018	TP4019	TP4020	TP4020	TP4021	TP4021	TP4021	TP4021
Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Top Depth (m):		0.10	1.20	0.20	0.70	1.40	0.40	0.10	1.20	0.20	0.20	0.20	0.20
Bottom Depth (m):		0.10	1.20	0.20	0.70	1.40	0.40	0.10	1.20	0.20	0.20	0.20	0.20
Date Sampled:		06-Oct-2021	06-Oct-2021	06-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021
Asbestos Lab:		DURHAM	DURHAM	DURHAM		DURHAM	DURHAM		DURHAM		DURHAM		
Determinand	Accred.	SOP	Units	LOD									
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Naphthalene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	0.19	< 0.10	0.20	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	U	2700	mg/kg	0.10	0.19	< 0.10	0.20	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	0.17	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	0.34	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Organotin (total as TBTO)	N	2730	µg/kg	10									
Dibutyl Tin	N	2730	µg/kg	10									
Tetrabutyl Tin	N	2730	µg/kg	10									
Tributyl Tin	N	2730	µg/kg	10									
Triphenyl Tin	N	2730	µg/kg	10									
Monobutyl Tin	N	2730	µg/kg	10									
Demeton-O	N	2820	mg/kg	0.20									
Phorate	N	2820	mg/kg	0.20									
Demeton-S	N	2820	mg/kg	0.20									
Disulfoton	N	2820	mg/kg	0.20									
Fenthion	N	2820	mg/kg	0.20									
Trichloronate	N	2820	mg/kg	0.20									
Prothiofos	N	2820	mg/kg	0.20									
Fensulphothion	N	2820	mg/kg	0.20									
Sulprofos	N	2820	mg/kg	0.20									
Azinphos-Methyl	N	2820	mg/kg	0.20									



## Results - Soil

**Project: 2074-20 Elmstead Road, Wivenhoe**

Client: Pam Brown Associates		Chemtest Job No.:								
Quotation No.:		Chemtest Sample ID.:								
	Sample Location:	TP4015	TP4016	TP4017	TP4018	TP4018	TP4019	TP4020	TP4020	TP4021
	Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):	0.10	1.20	0.20	0.70	1.40	0.40	0.10	1.20	0.20
	Bottom Depth (m):	0.10	1.20	0.20	0.70	1.40	0.40	0.10	1.20	0.20
	Date Sampled:	06-Oct-2021	06-Oct-2021	06-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021
	Asbestos Lab:	DURHAM	DURHAM	DURHAM		DURHAM	DURHAM		DURHAM	
Determinand	Accred.	SOP	Units	LOD						
Coumaphos	N	2820	mg/kg	0.20						
Atraton	N	2830	mg/kg	0.20						
Prometon	N	2830	mg/kg	0.20						
Simazine	N	2830	mg/kg	0.20						
Atrazine	N	2830	mg/kg	0.20						
Propazine	N	2830	mg/kg	0.20						
Terbutylazine	N	2830	mg/kg	0.20						
Secbumeton	N	2830	mg/kg	0.20						
Simetryn	N	2830	mg/kg	0.20						
Ametryn	N	2830	mg/kg	0.20						
Prometryn	N	2830	mg/kg	0.20						
Terbutryn	N	2830	mg/kg	0.20						
Alpha-HCH	N	2840	mg/kg	0.20						
Gamma-HCH (Lindane)	N	2840	mg/kg	0.20						
Beta-HCH	N	2840	mg/kg	0.20						
Delta-HCH	N	2840	mg/kg	0.20						
Heptachlor	N	2840	mg/kg	0.20						
Aldrin	N	2840	mg/kg	0.20						
Heptachlor Epoxide	N	2840	mg/kg	0.20						
Gamma-Chlordane	N	2840	mg/kg	0.20						
Alpha-Chlordane	N	2840	mg/kg	0.20						
Endosulfan I	N	2840	mg/kg	0.20						
4,4-DDE	N	2840	mg/kg	0.20						
Dieldrin	N	2840	mg/kg	0.20						
Endrin	N	2840	mg/kg	0.20						
4,4-DDD	N	2840	mg/kg	0.20						
Endosulfan II	N	2840	mg/kg	0.20						
Endrin Aldehyde	N	2840	mg/kg	0.20						
4,4-DDT	N	2840	mg/kg	0.20						
Endosulfan Sulphate	N	2840	mg/kg	0.20						
Methoxychlor	N	2840	mg/kg	0.20						
Endrin Ketone	N	2840	mg/kg	0.20						
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

## Results - Soil

**Project: 2074-20 Elmstead Road, Wivenhoe**

Client: Pam Brown Associates		Chemtest Job No.: 21-36585											
Quotation No.:		Chemtest Sample ID.:											
Sample Location:		TP4021	TP4022	TP4022	TP4023	TP4024	TP4024	TP4025	TP4026	TP4026			
Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL			
Top Depth (m):		0.80	0.60	1.30	0.40	0.10	1.20	0.60	0.10	1.00			
Bottom Depth (m):		0.80	0.60	1.30	0.40	0.10	1.20	0.60	0.10	1.00			
Date Sampled:		07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021			
Asbestos Lab:			DURHAM					DURHAM	DURHAM	DURHAM			
Determinand	Accred.	SOP	Units	LOD									
ACM Type	U	2192		N/A		-				-	-	-	
Asbestos Identification	U	2192		N/A		No Asbestos Detected				No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	
Moisture	N	2030	%	0.020	5.0	6.6	1.6	4.8	9.7	2.2	7.0	5.3	7.9
pH	U	2010		4.0	8.2	8.6	8.4	8.5	8.2	6.7	7.5	7.9	8.2
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	< 0.40	< 0.40	< 0.40	0.65	< 0.40	0.76	0.52	< 0.40
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Sulphur (Elemental)	U	2180	mg/kg	1.0	< 1.0	< 1.0	< 1.0	1.8	2.4	< 1.0	1.6	< 1.0	< 1.0
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Thiocyanate	U	2300	mg/kg	5.0	< 5.0	5.8	5.4	5.5	5.0	6.0	< 5.0	< 5.0	< 5.0
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	0.80	0.94	0.75	1.3	1.1	0.84	0.86	0.72	0.83
Sulphate (Total)	U	2430	%	0.010	< 0.010	< 0.010	< 0.010	0.016	0.023	0.034	0.017	0.020	< 0.010
Arsenic	U	2450	mg/kg	1.0	5.8	6.8	6.0	7.1	5.6	17	3.1	4.9	3.9
Cadmium	U	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chromium	U	2450	mg/kg	1.0	16	18	12	23	9.3	26	6.3	10	12
Copper	U	2450	mg/kg	0.50	16	14	12	45	30	21	25	23	24
Mercury	U	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.13	0.14	< 0.10
Nickel	U	2450	mg/kg	0.50	9.1	8.2	8.5	8.9	7.3	19	4.0	6.5	5.7
Lead	U	2450	mg/kg	0.50	11	8.1	7.4	15	38	15	36	53	9.3
Selenium	U	2450	mg/kg	0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	0.25	< 0.20	< 0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	14	15	12	16	24	28	20	31	16
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40	< 0.40	< 0.40	< 0.40	0.52	2.6	< 0.40	2.1	2.4	< 0.40
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

# Results - Soil

**Project: 2074-20 Elmstead Road, Wivenhoe**

Client: Pam Brown Associates		Chemtest Job No.: 21-36585											
Quotation No.:		Chemtest Sample ID.:											
Sample Location:		TP4021	TP4022	TP4022	TP4023	TP4024	TP4024	TP4025	TP4026	TP4026			
Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL			
Top Depth (m):		0.80	0.60	1.30	0.40	0.10	1.20	0.60	0.10	1.00			
Bottom Depth (m):		0.80	0.60	1.30	0.40	0.10	1.20	0.60	0.10	1.00			
Date Sampled:		07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021			
Asbestos Lab:			DURHAM					DURHAM	DURHAM	DURHAM			
Determinand	Accred.	SOP	Units	LOD									
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Naphthalene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Organotin (total as TBTO)	N	2730	µg/kg	10									
Dibutyl Tin	N	2730	µg/kg	10									
Tetrabutyl Tin	N	2730	µg/kg	10									
Tributyl Tin	N	2730	µg/kg	10									
Triphenyl Tin	N	2730	µg/kg	10									
Monobutyl Tin	N	2730	µg/kg	10									
Demeton-O	N	2820	mg/kg	0.20									
Phorate	N	2820	mg/kg	0.20									
Demeton-S	N	2820	mg/kg	0.20									
Disulfoton	N	2820	mg/kg	0.20									
Fenthion	N	2820	mg/kg	0.20									
Trichloronate	N	2820	mg/kg	0.20									
Prothiofos	N	2820	mg/kg	0.20									
Fensulphothion	N	2820	mg/kg	0.20									
Sulprofos	N	2820	mg/kg	0.20									
Azinphos-Methyl	N	2820	mg/kg	0.20									

## Results - Soil

**Project: 2074-20 Elmstead Road, Wivenhoe**

Client: Pam Brown Associates		Chemtest Job No.:		21-36585	21-36585	21-36585	21-36585	21-36585	21-36585	21-36585	21-36585	21-36585
Quotation No.:		Chemtest Sample ID.:		1302591	1302592	1302593	1302594	1302595	1302596	1302597	1302598	1302599
Sample Location:		TP4021	TP4022	TP4022	TP4023	TP4024	TP4024	TP4025	TP4026	TP4026		
Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL		
Top Depth (m):		0.80	0.60	1.30	0.40	0.10	1.20	0.60	0.10	1.00		
Bottom Depth (m):		0.80	0.60	1.30	0.40	0.10	1.20	0.60	0.10	1.00		
Date Sampled:		07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021		
Asbestos Lab:			DURHAM					DURHAM	DURHAM	DURHAM		
Determinand	Accred.	SOP	Units	LOD								
Coumaphos	N	2820	mg/kg	0.20								
Atraton	N	2830	mg/kg	0.20								
Prometon	N	2830	mg/kg	0.20								
Simazine	N	2830	mg/kg	0.20								
Atrazine	N	2830	mg/kg	0.20								
Propazine	N	2830	mg/kg	0.20								
Terbutylazine	N	2830	mg/kg	0.20								
Secbumeton	N	2830	mg/kg	0.20								
Simetryn	N	2830	mg/kg	0.20								
Ametryn	N	2830	mg/kg	0.20								
Prometryn	N	2830	mg/kg	0.20								
Terbutryn	N	2830	mg/kg	0.20								
Alpha-HCH	N	2840	mg/kg	0.20								
Gamma-HCH (Lindane)	N	2840	mg/kg	0.20								
Beta-HCH	N	2840	mg/kg	0.20								
Delta-HCH	N	2840	mg/kg	0.20								
Heptachlor	N	2840	mg/kg	0.20								
Aldrin	N	2840	mg/kg	0.20								
Heptachlor Epoxide	N	2840	mg/kg	0.20								
Gamma-Chlordane	N	2840	mg/kg	0.20								
Alpha-Chlordane	N	2840	mg/kg	0.20								
Endosulfan I	N	2840	mg/kg	0.20								
4,4-DDE	N	2840	mg/kg	0.20								
Dieldrin	N	2840	mg/kg	0.20								
Endrin	N	2840	mg/kg	0.20								
4,4-DDD	N	2840	mg/kg	0.20								
Endosulfan II	N	2840	mg/kg	0.20								
Endrin Aldehyde	N	2840	mg/kg	0.20								
4,4-DDT	N	2840	mg/kg	0.20								
Endosulfan Sulphate	N	2840	mg/kg	0.20								
Methoxychlor	N	2840	mg/kg	0.20								
Endrin Ketone	N	2840	mg/kg	0.20								
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

## Results - Soil

**Project: 2074-20 Elmstead Road, Wivenhoe**

Client: Pam Brown Associates		Chemtest Job No.: 21-36585											
Quotation No.:		Chemtest Sample ID.:											
Sample Location:		TP4027	TP4028	TP4028	TP4029	TP4029	TP4030	TP4031	TP4032	TP4033			
Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL			
Top Depth (m):		0.90	0.50	1.00	0.10	1.40	0.40	0.50	0.20	0.60			
Bottom Depth (m):		0.90	0.50	1.00	0.10	1.40	0.40	0.50	0.20	0.60			
Date Sampled:		12-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021			
Asbestos Lab:		DURHAM			DURHAM			DURHAM	DURHAM	DURHAM			
Determinand	Accred.	SOP	Units	LOD									
ACM Type	U	2192		N/A	-			-			-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected			No Asbestos Detected			No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	3.9	4.5	5.3	3.2	2.2	2.6	1.0	13	5.3
pH	U	2010		4.0	8.3	8.1	8.5	8.4	7.7	8.4	8.4	7.7	8.4
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	0.59	< 0.40	0.52	< 0.40	< 0.40	< 0.40	1.1	< 0.40
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Sulphur (Elemental)	U	2180	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	1.1	< 1.0	< 1.0	< 1.0	4.0
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Thiocyanate	U	2300	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0	6.4	5.5	< 5.0	5.1	6.1
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	0.60	0.90	0.72	0.93	0.76	0.88	1.5	1.6	1.6
Sulphate (Total)	U	2430	%	0.010	< 0.010	0.016	< 0.010	0.033	< 0.010	< 0.010	< 0.010	0.084	0.012
Arsenic	U	2450	mg/kg	1.0	5.6	4.7	2.2	4.6	1.7	1.7	1.7	1.8	11
Cadmium	U	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chromium	U	2450	mg/kg	1.0	17	17	20	8.1	10	10	13	14	28
Copper	U	2450	mg/kg	0.50	13	19	11	50	38	38	18	19	42
Mercury	U	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	9.6	7.3	14	4.6	5.9	5.8	7.6	7.8	13
Lead	U	2450	mg/kg	0.50	8.3	22	9.4	35	9.6	9.3	9.2	9.7	18
Selenium	U	2450	mg/kg	0.20	< 0.20	0.23	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	22	25	34	21	14	14	16	17	20
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40	< 0.40	0.86	< 0.40	1.7	< 0.40	< 0.40	1.0	5.3	0.52
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

## Results - Soil

**Project: 2074-20 Elmstead Road, Wivenhoe**

Client: Pam Brown Associates		Chemtest Job No.: 21-36585											
Quotation No.:		Chemtest Sample ID.:											
Sample Location:		TP4027	TP4028	TP4028	TP4029	TP4029	TP4030	TP4031	TP4032	TP4033			
Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL			
Top Depth (m):		0.90	0.50	1.00	0.10	1.40	0.40	0.50	0.20	0.60			
Bottom Depth (m):		0.90	0.50	1.00	0.10	1.40	0.40	0.50	0.20	0.60			
Date Sampled:		12-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021
Asbestos Lab:		DURHAM			DURHAM			DURHAM		DURHAM	DURHAM	DURHAM	
Determinand	Accred.	SOP	Units	LOD									
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Naphthalene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Organotin (total as TBTO)	N	2730	µg/kg	10									
Dibutyl Tin	N	2730	µg/kg	10									
Tetrabutyl Tin	N	2730	µg/kg	10									
Tributyl Tin	N	2730	µg/kg	10									
Triphenyl Tin	N	2730	µg/kg	10									
Monobutyl Tin	N	2730	µg/kg	10									
Demeton-O	N	2820	mg/kg	0.20									
Phorate	N	2820	mg/kg	0.20									
Demeton-S	N	2820	mg/kg	0.20									
Disulfoton	N	2820	mg/kg	0.20									
Fenthion	N	2820	mg/kg	0.20									
Trichloronate	N	2820	mg/kg	0.20									
Prothiofos	N	2820	mg/kg	0.20									
Fensulphothion	N	2820	mg/kg	0.20									
Sulprofos	N	2820	mg/kg	0.20									
Azinphos-Methyl	N	2820	mg/kg	0.20									

## Results - Soil

**Project: 2074-20 Elmstead Road, Wivenhoe**

Client: Pam Brown Associates		Chemtest Job No.: 21-36585								
Quotation No.:		Chemtest Sample ID.:								
Sample Location:		TP4027	TP4028	TP4028	TP4029	TP4029	TP4030	TP4031	TP4032	TP4033
Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Top Depth (m):		0.90	0.50	1.00	0.10	1.40	0.40	0.50	0.20	0.60
Bottom Depth (m):		0.90	0.50	1.00	0.10	1.40	0.40	0.50	0.20	0.60
Date Sampled:		12-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021
Asbestos Lab:		DURHAM			DURHAM			DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD						
Coumaphos	N	2820	mg/kg	0.20						
Atraton	N	2830	mg/kg	0.20						
Prometon	N	2830	mg/kg	0.20						
Simazine	N	2830	mg/kg	0.20						
Atrazine	N	2830	mg/kg	0.20						
Propazine	N	2830	mg/kg	0.20						
Terbutylazine	N	2830	mg/kg	0.20						
Secbumeton	N	2830	mg/kg	0.20						
Simetryn	N	2830	mg/kg	0.20						
Ametryn	N	2830	mg/kg	0.20						
Prometryn	N	2830	mg/kg	0.20						
Terbutryn	N	2830	mg/kg	0.20						
Alpha-HCH	N	2840	mg/kg	0.20						
Gamma-HCH (Lindane)	N	2840	mg/kg	0.20						
Beta-HCH	N	2840	mg/kg	0.20						
Delta-HCH	N	2840	mg/kg	0.20						
Heptachlor	N	2840	mg/kg	0.20						
Aldrin	N	2840	mg/kg	0.20						
Heptachlor Epoxide	N	2840	mg/kg	0.20						
Gamma-Chlordane	N	2840	mg/kg	0.20						
Alpha-Chlordane	N	2840	mg/kg	0.20						
Endosulfan I	N	2840	mg/kg	0.20						
4,4-DDE	N	2840	mg/kg	0.20						
Dieldrin	N	2840	mg/kg	0.20						
Endrin	N	2840	mg/kg	0.20						
4,4-DDD	N	2840	mg/kg	0.20						
Endosulfan II	N	2840	mg/kg	0.20						
Endrin Aldehyde	N	2840	mg/kg	0.20						
4,4-DDT	N	2840	mg/kg	0.20						
Endosulfan Sulphate	N	2840	mg/kg	0.20						
Methoxychlor	N	2840	mg/kg	0.20						
Endrin Ketone	N	2840	mg/kg	0.20						
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

## Results - Soil

**Project: 2074-20 Elmstead Road, Wivenhoe**

Client: Pam Brown Associates		Chemtest Job No.:		21-36585	21-36585	21-36585	21-36585	21-36585	21-36585	21-36585
Quotation No.:		Chemtest Sample ID.:		1302609	1302610	1302611	1302612	1302613	1302614	1302615
Sample Location:		TP4034	TP4035	TP4036	TP4036	TP4012	TP4020	TP4029		
Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL		
Top Depth (m):		0.20	0.40	0.20	0.65	0.20	0.20	0.20		
Bottom Depth (m):		0.20	0.40	0.20	0.65	0.20	0.20	0.20		
Date Sampled:		07-Oct-2021	07-Oct-2021	11-Oct-2021	11-Oct-2021	06-Oct-2021	07-Oct-2021	11-Oct-2021		
Asbestos Lab:			DURHAM		DURHAM					
Determinand	Accred.	SOP	Units	LOD						
ACM Type	U	2192		N/A		-		-		
Asbestos Identification	U	2192		N/A		No Asbestos Detected		No Asbestos Detected		
Moisture	N	2030	%	0.020	5.3	5.3	8.7	4.5	3.8	5.0
pH	U	2010		4.0	8.4	8.5	8.2	8.5		3.6
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.55	< 0.40	0.52	< 0.40		
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010		
Sulphur (Elemental)	U	2180	mg/kg	1.0	< 1.0	< 1.0	< 1.0	1.8		
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	1.0		
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	1.0		
Thiocyanate	U	2300	mg/kg	5.0	< 5.0	< 5.0	< 5.0	5.3		
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	1.6	1.2	1.0	1.1		
Sulphate (Total)	U	2430	%	0.010	0.038	< 0.010	0.037	< 0.010		
Arsenic	U	2450	mg/kg	1.0	7.7	6.0	8.6	11		
Cadmium	U	2450	mg/kg	0.10	0.10	< 0.10	< 0.10	< 0.10		
Chromium	U	2450	mg/kg	1.0	16	20	14	25		
Copper	U	2450	mg/kg	0.50	41	15	35	13		
Mercury	U	2450	mg/kg	0.10	0.15	< 0.10	0.12	< 0.10		
Nickel	U	2450	mg/kg	0.50	9.2	11	7.9	9.5		
Lead	U	2450	mg/kg	0.50	61	14	51	12		
Selenium	U	2450	mg/kg	0.20	< 0.20	< 0.20	< 0.20	0.27		
Zinc	U	2450	mg/kg	0.50	37	25	31	17		
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50		
Organic Matter	U	2625	%	0.40	5.9	0.52	2.1	0.52		
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0		
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0		
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0		
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0		
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0		
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0		
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0		
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0		
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0		
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0		
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0		
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0		
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0		
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0		



## Results - Soil

**Project: 2074-20 Elmstead Road, Wivenhoe**

Client: Pam Brown Associates		Chemtest Job No.:		21-36585	21-36585	21-36585	21-36585	21-36585	21-36585	21-36585
Quotation No.:		Chemtest Sample ID.:		1302609	1302610	1302611	1302612	1302613	1302614	1302615
Sample Location:		TP4034	TP4035	TP4036	TP4036	TP4012	TP4020	TP4029		
Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL		
Top Depth (m):		0.20	0.40	0.20	0.65	0.20	0.20	0.20		
Bottom Depth (m):		0.20	0.40	0.20	0.65	0.20	0.20	0.20		
Date Sampled:		07-Oct-2021	07-Oct-2021	11-Oct-2021	11-Oct-2021	06-Oct-2021	07-Oct-2021	11-Oct-2021		
Asbestos Lab:			DURHAM		DURHAM					
Determinand	Accred.	SOP	Units	LOD						
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0		
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0		
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0		
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0		
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10	< 10		
Naphthalene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Fluorene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Phenanthrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Fluoranthene	U	2700	mg/kg	0.10	0.26	< 0.10	< 0.10	< 0.10		
Pyrene	U	2700	mg/kg	0.10	0.28	< 0.10	< 0.10	< 0.10		
Benzo[a]anthracene	U	2700	mg/kg	0.10	0.35	< 0.10	< 0.10	< 0.10		
Chrysene	U	2700	mg/kg	0.10	0.31	< 0.10	< 0.10	< 0.10		
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0		
Organotin (total as TBTO)	N	2730	µg/kg	10				< 10	< 10	< 10
Dibutyl Tin	N	2730	µg/kg	10				< 10	< 10	< 10
Tetrabutyl Tin	N	2730	µg/kg	10				< 10	< 10	< 10
Tributyl Tin	N	2730	µg/kg	10				< 10	< 10	< 10
Triphenyl Tin	N	2730	µg/kg	10				< 10	< 10	< 10
Monobutyl Tin	N	2730	µg/kg	10				< 10	< 10	< 10
Demeton-O	N	2820	mg/kg	0.20				< 0.20	< 0.20	< 0.20
Phorate	N	2820	mg/kg	0.20				< 0.20	< 0.20	< 0.20
Demeton-S	N	2820	mg/kg	0.20				< 0.20	< 0.20	< 0.20
Disulfoton	N	2820	mg/kg	0.20				< 0.20	< 0.20	< 0.20
Fenthion	N	2820	mg/kg	0.20				< 0.20	< 0.20	< 0.20
Trichloronate	N	2820	mg/kg	0.20				< 0.20	< 0.20	< 0.20
Prothiofos	N	2820	mg/kg	0.20				< 0.20	< 0.20	< 0.20
Fensulphothion	N	2820	mg/kg	0.20				< 0.20	< 0.20	< 0.20
Sulprofos	N	2820	mg/kg	0.20				< 0.20	< 0.20	< 0.20
Azinphos-Methyl	N	2820	mg/kg	0.20				< 0.20	< 0.20	< 0.20

## Results - Soil

**Project: 2074-20 Elmstead Road, Wivenhoe**

Client: Pam Brown Associates		Chemtest Job No.:							
Quotation No.:		Chemtest Sample ID.:							
	Sample Location:	TP4034	TP4035	TP4036	TP4036	TP4012	TP4020	TP4029	
	Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	
	Top Depth (m):	0.20	0.40	0.20	0.65	0.20	0.20	0.20	
	Bottom Depth (m):	0.20	0.40	0.20	0.65	0.20	0.20	0.20	
	Date Sampled:	07-Oct-2021	07-Oct-2021	11-Oct-2021	11-Oct-2021	06-Oct-2021	07-Oct-2021	11-Oct-2021	
	Asbestos Lab:		DURHAM		DURHAM				
Determinand	Accred.	SOP	Units	LOD					
Coumaphos	N	2820	mg/kg	0.20			< 0.20	< 0.20	< 0.20
Atraton	N	2830	mg/kg	0.20			< 0.20	< 0.20	< 0.20
Prometon	N	2830	mg/kg	0.20			< 0.20	< 0.20	< 0.20
Simazine	N	2830	mg/kg	0.20			< 0.20	< 0.20	< 0.20
Atrazine	N	2830	mg/kg	0.20			< 0.20	< 0.20	< 0.20
Propazine	N	2830	mg/kg	0.20			< 0.20	< 0.20	< 0.20
Terbutylazine	N	2830	mg/kg	0.20			< 0.20	< 0.20	< 0.20
Secbumeton	N	2830	mg/kg	0.20			< 0.20	< 0.20	< 0.20
Simetryn	N	2830	mg/kg	0.20			< 0.20	< 0.20	< 0.20
Ametryn	N	2830	mg/kg	0.20			< 0.20	< 0.20	< 0.20
Prometryn	N	2830	mg/kg	0.20			< 0.20	< 0.20	< 0.20
Terbutryn	N	2830	mg/kg	0.20			< 0.20	< 0.20	< 0.20
Alpha-HCH	N	2840	mg/kg	0.20			< 0.20	< 0.20	< 0.20
Gamma-HCH (Lindane)	N	2840	mg/kg	0.20			< 0.20	< 0.20	< 0.20
Beta-HCH	N	2840	mg/kg	0.20			< 0.20	< 0.20	< 0.20
Delta-HCH	N	2840	mg/kg	0.20			< 0.20	< 0.20	< 0.20
Heptachlor	N	2840	mg/kg	0.20			< 0.20	< 0.20	< 0.20
Aldrin	N	2840	mg/kg	0.20			< 0.20	< 0.20	< 0.20
Heptachlor Epoxide	N	2840	mg/kg	0.20			< 0.20	< 0.20	< 0.20
Gamma-Chlordane	N	2840	mg/kg	0.20			< 0.20	< 0.20	< 0.20
Alpha-Chlordane	N	2840	mg/kg	0.20			< 0.20	< 0.20	< 0.20
Endosulfan I	N	2840	mg/kg	0.20			< 0.20	< 0.20	< 0.20
4,4-DDE	N	2840	mg/kg	0.20			< 0.20	< 0.20	< 0.20
Dieldrin	N	2840	mg/kg	0.20			< 0.20	< 0.20	< 0.20
Endrin	N	2840	mg/kg	0.20			< 0.20	< 0.20	< 0.20
4,4-DDD	N	2840	mg/kg	0.20			< 0.20	< 0.20	< 0.20
Endosulfan II	N	2840	mg/kg	0.20			< 0.20	< 0.20	< 0.20
Endrin Aldehyde	N	2840	mg/kg	0.20			< 0.20	< 0.20	< 0.20
4,4-DDT	N	2840	mg/kg	0.20			< 0.20	< 0.20	< 0.20
Endosulfan Sulphate	N	2840	mg/kg	0.20			< 0.20	< 0.20	< 0.20
Methoxychlor	N	2840	mg/kg	0.20			< 0.20	< 0.20	< 0.20
Endrin Ketone	N	2840	mg/kg	0.20			< 0.20	< 0.20	< 0.20
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	

## Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2180	Sulphur (Elemental) in Soils by HPLC	Sulphur	Dichloromethane extraction / HPLC with UV detection
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N-dimethyl-p-phenylenediamine.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8,>C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35- C44Aromatics: >C5-C7, >C7-C8, >C8- C10, >C10-C12, >C12-C16, >C16- C21, >C21- C35, >C35- C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2730	Organo-Leads	Organo-Leads	Solvent extraction / GCMS detection
2820	Organophosphorus (O-P) Pesticides in Soils by GC-MS	Organophosphorus pesticide representative suite including Parathion, Malathion etc, plus client specific determinands	Dichloromethane extraction / GC-MS
2830	Organonitrogen (O-N) Pesticides in Soils by GC-MS	Organonitrogen pesticide representative suite including Triazines etc, plus client specific determinands	Dichloromethane extraction / GC-MS
2840	Organochlorine (O-Cl) Pesticides in Soils by GC-MS	Organochlorine pesticide representative suite including DDT and its metabolites, 'drins' and HCH etc, plus client specific determinands	Dichloromethane extraction / GC-MS

## Test Methods

<b>SOP</b>	<b>Title</b>	<b>Parameters included</b>	<b>Method summary</b>
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and Trimethylphenols Note: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

## **Report Information**

### **Key**

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

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

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- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

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All soil samples will be retained for a period of 30 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.com](mailto:customerservices@chemtest.com)

## APPENDIX 5

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**ESS****Environmental Site Sampling Ltd**

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17<sup>th</sup> November 2021

Mr N Abbas  
Ensafe Consultants  
2 Needwood House  
Newborough Road  
Needwood  
Burton -On-Trent  
DE13 9PD

**Environmental Site Sampling Ltd**  
**94 Dillotford Avenue**  
**Styvechale**  
**Coventry**  
**CV3 5DU**

**Tel/Fax: (024) 7669 0514**

**Mobile : 07971 664 118**

e.mail: [cosgrove\\_patrick@hotmail.com](mailto:cosgrove_patrick@hotmail.com)

**Page 1 of 2**

### **In-situ Analysis Report: ENS/6088**

Dear Mr Abbas,

Please find enclosed a copy of the in-situ ground gas monitoring results undertaken at Land off Elmstead Road, Wivenhoe, CO7 9JF, on 17<sup>th</sup> November 2021.

I trust you find these satisfactory. Should you have any queries please contact us.

Yours Sincerely,

Patrick Cosgrove

P V Cosgrove BSc MSc  
Environmental Site Sampling Ltd



**Environmental Site Sampling Ltd Registered in England & Wales No. 4431348**  
**Registered Office: 94 Dillotford Avenue Coventry CV3 5DU**

## In-situ Analysis: ENS/6088

Client: Pam Brown Associates Ltd

Project: 2074-20, Land off Elmstead Road, Wivenhoe, CO7 9JF

17/11/21

Borehole	Gas Flow (l/hr)	Borehole Pressure (mb)	Methane (%vol)		Methane (%LEL)		Carbon Dioxide (%vol)		Oxygen (%vol)		Other Gases (ppm)		Water Level (Meters)
			Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	H <sub>2</sub> S	CO	
WS 401	<0.1	0.05	<0.1	<0.1	<2	<2	1.0	1.0	18.9	18.9	<1	<1	Dry 1.50m
WS 402	<0.1	0.07	<0.1	<0.1	<2	<2	1.3	1.3	18.8	18.8	<1	<1	Dry 1.61m
WS 403	<0.1	0.03	<0.1	<0.1	<2	<2	0.7	0.7	19.2	19.2	<1	<1	Dry 2.14m
WS 404	0.1	0.17	<0.1	<0.1	<2	<2	1.9	1.9	18.2	18.2	<1	<1	Dry 1.41m

**Notes:**  
Monitoring order is from left to right.  
Steady concentrations are measured up to 3 minutes.

Additional Information	
Date Monitoring Undertaken:	17 <sup>th</sup> November 2021
Monitoring Undertaken By:	P Cosgrove
Equipment Used:	GA2000+ S/N 11567
Atmospheric Pressure Colchester a.m. (mb):	1023mb
Atmospheric Pressure On-site (mb):	1025mb
Atmospheric Pressure Colchester p.m. (mb):	1028mb
Weather During Visit:	Sunny, Dry, Wind W, 2m/s, 10°C
Comments:	



**ESS**

**Environmental Site Sampling Ltd**

1<sup>st</sup> December 2021

Mr N Abbas  
Ensafe Consultants  
2 Needwood House  
Newborough Road  
Needwood  
Burton -On-Trent  
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**94 Dillotford Avenue**  
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**Mobile : 07971 664 118**

e.mail: [cosgrove\\_patrick@hotmail.com](mailto:cosgrove_patrick@hotmail.com)

**Page 1 of 2**

### **In-situ Analysis Report: ENS/6105**

Dear Mr Abbas,

Please find enclosed a copy of the in-situ ground gas monitoring results undertaken at Land off Elmstead Road, Wivenhoe, CO7 9JF, on 1<sup>st</sup> December 2021.

I trust you find these satisfactory. Should you have any queries please contact us.

Yours Sincerely,

Patrick Cosgrove

P V Cosgrove BSc MSc  
Environmental Site Sampling Ltd



**Environmental Site Sampling Ltd Registered in England & Wales No. 4431348**  
**Registered Office: 94 Dillotford Avenue Coventry CV3 5DU**

## In-situ Analysis: ENS/6105

Client: Pam Brown Associates Ltd

Project: 2074-20, Land off Elmstead Road, Wivenhoe, CO7 9JF

01/12/21

Borehole	Gas Flow (l/hr)	Borehole Pressure (mb)	Methane (%vol)		Methane (%LEL)		Carbon Dioxide (%vol)		Oxygen (%vol)		Other Gases (ppm)		Water Level (Meters)
			Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	H <sub>2</sub> S	CO	
WS 401	<0.1	0.03	<0.1	<0.1	<2	<2	1.1	1.1	18.7	18.7	<1	<1	Dry 1.50m
WS 402	<0.1	0.04	<0.1	<0.1	<2	<2	1.4	1.4	19.0	19.0	<1	<1	Dry 1.61m
WS 403	0.1	0.16	<0.1	<0.1	<2	<2	3.1	3.1	16.9	16.9	<1	<1	Dry 2.14m
WS 404	<0.1	0.09	<0.1	<0.1	<2	<2	0.4	0.4	20.1	20.1	<1	<1	Dry 1.41m

**Notes:**  
Monitoring order is from left to right.  
Steady concentrations are measured up to 3 minutes.

Additional Information	
Date Monitoring Undertaken:	1 <sup>st</sup> December 2021
Monitoring Undertaken By:	P Cosgrove
Equipment Used:	GA2000+ S/N 11567
Atmospheric Pressure Colchester a.m. (mb):	0997mb
Atmospheric Pressure On-site (mb):	0998mb
Atmospheric Pressure Colchester p.m. (mb):	0994mb
Weather During Visit:	Sunny, Dry, Wind NW, 4m/s, 7°C
Comments:	

**ESS**

**Environmental Site Sampling Ltd**

17<sup>th</sup> December 2021

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**Page 1 of 2**

### **In-situ Analysis Report: ENS/6127**

Dear Mr Abbas,

Please find enclosed a copy of the in-situ ground gas monitoring results undertaken at Land off Elmstead Road, Wivenhoe, CO7 9JF, on 17<sup>th</sup> December 2021.

I trust you find these satisfactory. Should you have any queries please contact us.

Yours Sincerely,

Patrick Cosgrove

P V Cosgrove BSc MSc  
Environmental Site Sampling Ltd



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**Registered Office: 94 Dillotford Avenue Coventry CV3 5DU**

## In-situ Analysis: ENS/6126

Client: Pam Brown Associates Ltd

Project: 2074-20, Land off Elmstead Road, Wivenhoe, CO7 9JF

17/12/21

Borehole	Gas Flow (l/hr)	Borehole Pressure (mb)	Methane (%vol)		Methane (%LEL)		Carbon Dioxide (%vol)		Oxygen (%vol)		Other Gases (ppm)		Water Level (Meters)
			Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	H <sub>2</sub> S	CO	
WS 401	<0.1	0.02	<0.1	<0.1	<2	<2	0.9	0.9	19.1	19.1	<1	<1	Dry 1.50m
WS 402	0.1	0.14	<0.1	<0.1	<2	<2	1.3	1.3	18.6	18.6	<1	<1	Dry 1.61m
WS 403	<0.1	0.06	<0.1	<0.1	<2	<2	2.6	2.6	17.2	17.2	<1	<1	Dry 2.14m
WS 404	<0.1	0.05	<0.1	<0.1	<2	<2	0.5	0.5	19.8	19.8	<1	<1	Dry 1.41m

**Notes:**  
Monitoring order is from left to right.  
Steady concentrations are measured up to 3 minutes.

Additional Information	
Date Monitoring Undertaken:	17 <sup>th</sup> December 2021
Monitoring Undertaken By:	P Cosgrove
Equipment Used:	GA2000+ S/N 11567
Atmospheric Pressure Colchester a.m. (mb):	1042mb
Atmospheric Pressure On-site (mb):	1042mb
Atmospheric Pressure Colchester p.m. (mb):	1040mb
Weather During Visit:	Overcast, Dry, Wind E, 3m/s, 6°C
Comments:	

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**ESS****Environmental Site Sampling Ltd**

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29<sup>th</sup> December 2021

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**Page 1 of 2**

### **In-situ Analysis Report: ENS/6136**

Dear Mr Abbas,

Please find enclosed a copy of the in-situ ground gas monitoring results undertaken at Land off Elmstead Road, Wivenhoe, CO7 9JF, on 29<sup>th</sup> December 2021.

I trust you find these satisfactory. Should you have any queries please contact us.

Yours Sincerely,

Patrick Cosgrove

P V Cosgrove BSc MSc  
Environmental Site Sampling Ltd



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## In-situ Analysis: ENS/6136

Client: Pam Brown Associates Ltd

Project: 2074-20, Land off Elmstead Road, Wivenhoe, CO7 9JF

29/12/21

Borehole	Gas Flow (l/hr)	Borehole Pressure (mb)	Methane (%vol)		Methane (%LEL)		Carbon Dioxide (%vol)		Oxygen (%vol)		Other Gases (ppm)		Water Level (Meters)
			Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	H <sub>2</sub> S	CO	
WS 401	<0.1	0.06	<0.1	<0.1	<2	<2	1.1	1.1	18.7	18.7	<1	<1	Dry 1.50m
WS 402	<0.1	0.03	<0.1	<0.1	<2	<2	1.3	1.3	18.9	18.9	<1	<1	Dry 1.61m
WS 403	<0.1	0.06	<0.1	<0.1	<2	<2	3.4	3.4	16.9	16.9	<1	<1	Dry 2.14m
WS 404	0.1	0.12	<0.1	<0.1	<2	<2	0.9	0.9	19.4	19.4	<1	<1	Dry 1.41m

**Notes:**  
Monitoring order is from left to right.  
Steady concentrations are measured up to 3 minutes.

Additional Information	
Date Monitoring Undertaken:	29 <sup>th</sup> December 2021
Monitoring Undertaken By:	P Cosgrove
Equipment Used:	GA2000+ S/N 11567
Atmospheric Pressure Colchester a.m. (mb):	0997mb
Atmospheric Pressure On-site (mb):	0998mb
Atmospheric Pressure Colchester p.m. (mb):	1001mb
Weather During Visit:	Overcast, Raining, Wind SW, 4m/s, 8°C
Comments:	

**ESS**

**Environmental Site Sampling Ltd**

13<sup>th</sup> January 2022

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**Page 1 of 2**

### **In-situ Analysis Report: ENS/6141**

Dear Mr Abbas,

Please find enclosed a copy of the in-situ ground gas monitoring results undertaken at Land off Elmstead Road, Wivenhoe, CO7 9JF, on 13<sup>th</sup> January 2022.

I trust you find these satisfactory. Should you have any queries please contact us.

Yours Sincerely,

Patrick Cosgrove

P V Cosgrove BSc MSc  
Environmental Site Sampling Ltd



**Environmental Site Sampling Ltd Registered in England & Wales No. 4431348**  
**Registered Office: 94 Dillotford Avenue Coventry CV3 5DU**

## In-situ Analysis: ENS/6141

Client: Ensafe Consultants

Project: 2074-20, Land off Elmstead Road, Wivenhoe, CO7 9JF

13/01/22

Borehole	Gas Flow (l/hr)	Borehole Pressure (mb)	Methane (%vol)		Methane (%LEL)		Carbon Dioxide (%vol)		Oxygen (%vol)		Other Gases (ppm)		Water Level (Meters)
			Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	H <sub>2</sub> S	CO	
WS 401	<0.1	0.03	<0.1	<0.1	<2	<2	0.8	0.8	18.9	18.9	<1	<1	Dry 1.50m
WS 402	0.1	0.12	<0.1	<0.1	<2	<2	1.0	1.0	19.2	19.2	<1	<1	Dry 1.61m
WS 403	<0.1	0.04	<0.1	<0.1	<2	<2	2.6	2.6	17.6	17.6	<1	<1	Dry 2.14m
WS 404	<0.1	0.02	<0.1	<0.1	<2	<2	0.9	0.9	19.1	19.1	<1	<1	Dry 1.41m

**Notes:**  
Monitoring order is from left to right.  
Steady concentrations are measured up to 3 minutes.

Additional Information	
Date Monitoring Undertaken:	13 <sup>th</sup> January 2022
Monitoring Undertaken By:	P Cosgrove
Equipment Used:	GA2000+ S/N 11567
Atmospheric Pressure Colchester a.m. (mb):	1041mb
Atmospheric Pressure On-site (mb):	1041mb
Atmospheric Pressure Colchester p.m. (mb):	1039mb
Weather During Visit:	Sunny, Dry, Wind SW, 1m/s, 4°C
Comments:	



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**ESS****Environmental Site Sampling Ltd**

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28<sup>th</sup> January 2022

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**Page 1 of 2**

### **In-situ Analysis Report: ENS/6154**

Dear Mr Abbas,

Please find enclosed a copy of the in-situ ground gas monitoring results undertaken at Land off Elmstead Road, Wivenhoe, CO7 9JF, on 28<sup>th</sup> January 2022.

I trust you find these satisfactory. Should you have any queries please contact us.

Yours Sincerely,

Patrick Cosgrove

P V Cosgrove BSc MSc  
Environmental Site Sampling Ltd



**Environmental Site Sampling Ltd Registered in England & Wales No. 4431348**  
**Registered Office: 94 Dillotford Avenue Coventry CV3 5DU**

## In-situ Analysis: ENS/6154

Client: Ensafe Consultants

Project: 2074-20, Land off Elmstead Road, Wivenhoe, CO7 9JF

28/01/22

Borehole	Gas Flow (l/hr)	Borehole Pressure (mb)	Methane (%vol)		Methane (%LEL)		Carbon Dioxide (%vol)		Oxygen (%vol)		Other Gases (ppm)		Water Level (Meters)
			Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	H <sub>2</sub> S	CO	
WS 401	<0.1	0.07	<0.1	<0.1	<2	<2	1.3	1.3	18.3	18.3	<1	<1	Dry 1.50m
WS 402	0.1	0.14	<0.1	<0.1	<2	<2	1.4	1.4	19.2	19.2	<1	<1	Dry 1.61m
WS 403	<0.1	0.04	<0.1	<0.1	<2	<2	3.2	3.2	17.5	17.5	<1	<1	Dry 2.14m
WS 404	<0.1	0.07	<0.1	<0.1	<2	<2	0.9	0.9	19.7	19.7	<1	<1	Dry 1.41m

**Notes:**  
Monitoring order is from left to right.  
Steady concentrations are measured up to 3 minutes.

Additional Information	
Date Monitoring Undertaken:	28 <sup>th</sup> January 2022
Monitoring Undertaken By:	P Cosgrove
Equipment Used:	GA2000+ S/N 11567
Atmospheric Pressure Colchester a.m. (mb):	1036mb
Atmospheric Pressure On-site (mb):	1035mb
Atmospheric Pressure Colchester p.m. (mb):	1032mb
Weather During Visit:	Sunny, Dry, Wind SW, 2m/s, 5°C
Comments:	

## APPENDIX 6

## Soil Assessment Criteria for land under Public Open Space near residential housing

Parameters	Suitable for Use Levels <sup>1</sup> (mg kg <sup>-1</sup> )		
	1%SOM	2.5%SOM	6%SOM
Arsenic (inorganic)	79		
Beryllium	2.2		
Boron	21000		
Cadmium	120		
Chromium	1500(3+) 7.7 (6+)		
Copper	12000		
Lead	630 <sup>2</sup>		
Mercury (inorganic)	120		
Nickel	230		
Selenium	1100		
Vanadium	2000		
Zinc	81000		
<b>Petroleum Hydrocarbons</b>	<b>1%SOM</b>	<b>2.5%SOM</b>	<b>6%SOM</b>
TPH aliphatic >C5-C6	570000	590000	600000
TPH aliphatic >C6-C8	600000	610000	620000
TPH aliphatic >C8-C10	13000	13000	13000
TPH aliphatic >C10-C12	13000	13000	13000
TPH aliphatic >C12-C16	13000	13000	13000
TPH aliphatic >C16-C35	250000	250000	250000
TPH aliphatic >C35-C44	250000	250000	250000
TPH aromatic >C5-C7	56000	56000	56000
TPH aromatic >C7-C8	56000	56000	56000
TPH aromatic >C8-C10	5000	5000	5000
TPH aromatic >C10-12	5000	5000	5000
TPH aromatic >C12-C16	5100	5100	5000
TPH aromatic >C16-C21	3800	3800	3800
TPH aromatic >C21-C35	3800	3800	3800
TPH aromatic >C35-C44	3800	3800	3800
<b>Polyaromatic Hydrocarbons</b>			
Naphthalene	4900	4900	4900
Acenaphthylene	15000	15000	15000
Acenaphthene	15000	15000	15000
Fluorene	9900	9900	9900
Phenanthrene	3100	3100	3100
Anthracene	74000	74000	74000
Fluoranthene	3100	3100	3100
Pyrene	7400	7400	7400
Benz[a]anthracene	29	29	29
Chrysene	57	57	57
Benzo[b]fluoranthene	7.1	7.2	7.2
Benzo[k]fluoranthene	190	190	190
Benzo[a]pyrene	5.7	5.7	5.7
Dibenz[a,h]anthracene	0.57	0.57	0.58
Indeno[123-cd]pyrene	82	82	82
Benzo[ghi]perylene	640	640	640

Parameters	Suitable for Use Levels <sup>1</sup> (mg kg <sup>-1</sup> )		
	1% SOM	2.5% SOM	6% SOM
<b>BTEX</b>			
Benzene	72	72	73
Toluene	56000	56000	56000
Ethylbenzene	24000	24000	25000
m-xylene	<b>41000</b>	<b>42000</b>	<b>43000</b>
p-xylene	<b>41000</b>	<b>42000</b>	<b>43000</b>
o-xylene	<b>41000</b>	<b>42000</b>	<b>43000</b>
<b>Phenol and Chlorophenols</b>			
Phenols	760	1500	3200
Chlorophenols (4 congeners)	620	620	620
Pentachlorophenol	60	60	60
<b>Volatile Organic Compounds</b>			
1,2-Dichloroethane	29	29	29
1,1,1-Trichloroethane	140000	140000	140000
1,1,2,2 Tetrachloroethane	1400	1400	1400
1,1,1,2 Tetrachloroethane	1400	1400	1400
Tetrachloroethene	1400	1400	1400
Tetrachloromethane (carbon Tetrachloride)	890	920	950
Trichloroethene	120	120	120
Trichloromethane (chloroform)	2500	2500	2500
Chloroethene (vinyl chloride)	3.5	3.5	3.5
Carbon Disulphide	11000	11000	12000
Hexachlorobutadiene	25	25	25
<b>Chlorobenzenes</b>			
Chlorobenzene	11000	13000	14000
1,2-Dichlorobenzene	90000	95000	98000
1,3-Dichlorobenzene	300	300	300
1,4-Dichlorobenzene	17000	17000	17000
1,2,3-Trichlorobenzene	1800	1800	1800
1,2,4-Trichlorobenzene	15000	17000	19000
1,3,5-Trichlorobenzene	1700	1700	1800
1,2,3,4-Tetraclorobenzene	830	830	830
1,2,3,5-Tetrachlorobenzene	78	79	79
1,2,4,5-Tetrachlorobenzene	13	13	13
Pentachlorobenzene	100	100	100
Hexachlorobenzene	16	16	16
<b>Explosives</b>			
2,4,6 Trinitrotoluene (TNT)	130	130	130
RDX	26000	26000	27000
HMX	13000	13000	13000
<b>Pesticides</b>			
Aldrin	18	18	18
Dieldrin	18	18	18
Atrazine	1200	1200	1200
Dichlorvos	16	16	16
Alpha-Endosulfan	1200	1200	1200
Beta-Endoulfan	1200	1200	1200
Alpha-Hexachlorocyclohexane	24	24	24
Beta-Hexachlorocyclohexane	8.1	8.1	8.1
Gamma- Hexachlorocyclohexane (including Lindane)	8.2	8.2	8.2

Values in italics are preliminary  
Updated: May 2015

## References

- <sup>1</sup> Nathanail, C.P., McCaffrey, C., Gillett, A.G., Ogden, R.C. and Nathanail, J.F. 2015. The LQM/CIEH S4ULs for Human Health Risk Assessment. Land Quality Press, Nottingham. Residential with home-grown produce land use.
- <sup>2</sup> CL:AIRE (2014) SP1010-Development of Category 4 Screening Levels for assessment of Land Affected by Contamination. Final Project Report (Revision 2). Appendix H Provisional C4SL.

*Note for xylenes the most health protective value in each scenario is highlighted in **bold** see ref 1, section 16.5 para 28 for further detail.*

## APPENDIX 7

## DEFINITIONS USED IN RISK EVALUATION

This Appendix provides definitions of the terms used in the classification of harm, probability of a pollutant linkage becoming established, and classification of overall risk, as described in CIRIA Report C552<sup>1</sup>

### CLASSIFICATION OF CONSEQUENCE/HARM

Table A, reproduced from CIRIA C552 (Table 6.3)<sup>1</sup>, provides definitions of the terms used in the classification of consequence. Hazards are classed according to the magnitude of the potential consequence (severity) when reaching a receptor. This is known as environmental harm and can be classified as minor, mild, medium or severe.

**Table A. Classification of Consequence/Harm**

Classification	Definition	Examples
Severe	Short-term (acute) risk to human health likely to result in 'significant harm' as defined by the Environmental Protection Act 1990, Part IIA/ Short-term risk of pollution of sensitive water resource. Catastrophic damage to buildings/property. A short-term risk to a particular ecosystem, or organism forming part of such ecosystem.	High concentrations of cyanide on the surface of an informal recreation area. Major spillage of contaminants from a site into controlled water. Explosion causing building collapse.
Medium	Chronic damage to Human Health ('Significant Harm' as defined in DETR (2000)). Pollution of sensitive water resources. A significant change in a particular ecosystem, or organism forming part of such ecosystem.	Concentrations of a contaminant exceed generic or site specific assessment criteria. Leaching of contaminants from a site to a major or minor aquifer. Death of a species within a designated nature reserve.
Mild	Pollution of non-sensitive water resources. Significant damage to crops, buildings, structures and services ('significant harm' as defined in the 'draft circular of contaminated land', DETR 2000). Damage to sensitive buildings/structures/services or the environment.	Pollution of non-classified groundwater. Damage to building rendering it unsafe to occupy (e.g. foundation damage resulting in instability).
Minor	Harm, although not necessarily significant harm, which may result in a financial loss, or expenditure to resolve. Non-permanent effects to human health (easily prevented by means such as PPE). Easily repairable effects/damage to buildings, structures and services.	The presence of contaminants at such concentrations that protective equipment is required during site works. The loss of plants in a landscaping scheme. Discolouration of concrete.

<sup>1</sup> Rudland, D., Lancefield, R.M., Mayel, P.N. (2001) "Contaminated land Risk Assessment: A guide to good practice. CIRIA C552. UK.



## CLASSIFICATION OF PROBABILITY

The likelihood that receptors could be affected by on site contaminants, if present, is classified using CIRIA C552 (Table 6.4) <sup>1</sup>. Table B, reproduced from CIRIA C552, provides definitions of the terms used when assessing the likelihood of a pollution linkage becoming established.

**Table B. Classification of Probability**

<b>Classification</b>	<b>Definition</b>
High Likelihood	There is a pollution linkage and an event that either appears very likely in the short-term and almost inevitable over the long term, or there is evidence at the receptor of harm or pollution.
Likely	There is a pollution linkage and all of the elements are present and in the right place, which means it is probable that an event will occur. Circumstances are such that an event is not inevitable, but possible in the short-term and likely over the long term.
Low Likelihood	There is a pollutant linkage and circumstances are possible under which an event could occur, however it is by no means certain that even over a longer period that such an event would take place, and it is less likely in the shorter term.
Unlikely	There is a pollutant linkage, but circumstances are such that it is improbable that an event would occur even in the very long term.

## RISK ASSESSMENT

The risk categories are assessed based upon the consequence vs. probability assigned to each scenario, based upon guidance originally produced by the DETR (2000). Table C shows a reproduction of the risk matrix (Table 6.5) as published in CIRIA C552, which is used to evaluate the overall risk to each identified receptor on the basis of consequence v probability. Table D records the definition of each of the risk categories, and is reproduced from Table 6.6 in CIRIA C552.

**Table C. Classification of Consequence v Probability**

Probability	Consequence			
	Severe	Medium	Mild	Minor
High Likelihood	Very High Risk	High Risk	Moderate Risk	Moderate/Low Risk
Likely	High Risk	Moderate Risk	Moderate/Low Risk	Low Risk
Low Likelihood	Moderate Risk	Moderate/Low Risk	Low Risk	Very Low Risk
Unlikely	Moderate/Low Risk	Low Risk	Very Low Risk	Very Low Risk

**Table D. Description of Risk Classifications and Likely Action Required**

Very High Risk	There is a <b>high probability</b> that <b>severe harm</b> could arise to a designated receptor from an identified hazard, OR, there is evidence that severe harm to a designated receptor is currently happening. The risk, if realised, is likely to result in a substantial liability. Urgent investigation (if not already undertaken) and remediation are likely to be required.
High Risk	<b>Harm is likely to arise</b> 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 Risk	It is possible that <b>harm could arise</b> 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 <b>mild</b> . 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 Risk	It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be <b>mild</b> .
Very Low Risk	There is a <b>low possibility</b> that harm could arise to a receptor. In the event of such harm being realised it is not likely to be severe.