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SUPPLEMENTARY GEO-ENVIRONMENTAL ASSESSMENT (GROUND INVESTIGATION) REPORT

EGLEY ROAD, WOKING, GU22 0AF



JOMAS ASSOCIATES LTD

6-9 The Square, Stockley Park, Uxbridge, UB11 1FW

www.jomasassociates.com 0843-289-2187 info@jomasassociates.com

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Prepared by: JOMAS ASSOCIATES LTD For: WOKING FOOTBALL CLUB

Prepared by
Alex Marcelo BSc (Hons), FGS
Geotechnical Engineer

.....

Reviewed by
Suneel Law BSc (Hons) MSc, FGS
Principal Geo-environmental
Engineer

.....

Should you have any queries relating to this report, please contact

JOMAS ASSOCIATES LTD
www.jomasassociates.com
0843 289 2187
info@jomasassociates.com

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EXECUTIVE SUMMARY

Woking Football Club commissioned Jomas Associates Ltd to undertake a Supplementary Geo-environmental ground investigation at the site located at Egley Road, Woking, GU22 0AF.

The principle objectives of the study were as follows:

- To determine the nature and where possible, the extent of contaminants potentially present at the site;
- To establish the presence of significant pollutant linkages, in accordance with the procedures set out within the Environment Agency (EA) report R&D CLR11 and relevant guidance within the National Planning Policy Framework (NPPF);
- To assess whether the site is safe and suitable for the purpose for which it is intended, or can be made so by remedial action.

It should be noted that the table below is an executive summary of the findings of this report and is for briefing purposes only. Reference should be made to the main report for detailed information and analysis.

Site History and Ground Investigation	
Desk Study Overview	<p>A Desk Study report has been produced for the site and issued separately (Jomas – August 2018). A brief overview of the desk study findings is presented below. Reference should be made to the full report for detailed information.</p> <p>A review of earliest available (1871) historical maps indicates that the site comprised undeveloped and/or agricultural land. On the plan dated 1897 the southern half of site is identified as a nursery. No other significant changes are noted from the historical plans. During the Jomas walkover development on site was noted as a new barn and access road within the north east corner.</p> <p>The site vicinity on the earliest available map comprised predominately agricultural land. A railway line is noted on the western boundary on the 1871 plan until modern day. The area of Mayford towards the south east shows residential buildings and a large garden centre directly east of site. During the Jomas walkover an off-site development identified as a large school and an electrical substation was noted to the north of site.</p> <p>The British Geological Survey indicates that the site is directly underlain by solid sand deposits of the Bagshot Formation. There are no superficial or artificial deposits within the site area.</p> <p>The solid deposits directly underlying the site are identified as a Secondary A Aquifer.</p> <p>There are no source protection zones within 500m of the site. There are no groundwater, surface water or potable water abstractions reported within 1km of the site. The nearest detailed river entry is reported 1949m east of the site, identified as an inland river.</p> <p>Recommendations of the preliminary risk assessment included an intrusive investigation. This was recommended to further assess the potential pollution linkages identified.</p>

Site History and Ground Investigation	
Previous Investigation Overview	<p>A Ground Investigation report has been produced for the site and issued separately (Jomas – April 2019). A brief overview of the ground investigation findings is presented below. Reference should be made to the full report for detailed information.</p> <p>The ground investigation was undertaken in two phases on 12th to 13th February and 06th to 7th March 2019, and consisted of the following:</p> <ul style="list-style-type: none"> • 8No window sampling boreholes, drilled up to 5.45m below ground level (bgl), with associated in situ testing and sampling; • 3No cable percussive boreholes, drilled up to 15.00m bgl, with associated in situ testing and sampling; • 2No mechanically excavated trial pits, completed up to 1.50m bgl with associated sampling; • 2No hand dug trial pits, completed up to 1.00m bgl with associated sampling; • 5No combined soil gas and groundwater monitoring wells, targeted response zone within sand deposits; • California Bearing Ratio tests completed at 5No exploratory hole locations; • 4No return visits to monitor ground gas concentrations and groundwater levels; • Laboratory analysis for chemical and geotechnical purposes. <p>The results of the ground investigation revealed a ground profile comprising Topsoil and Made Ground over sand deposits considered to represent the Bagshot Formation.</p> <p>During the intrusive works groundwater was reported in a singular exploratory hole WS9 as seepage at 0.40m bgl. Groundwater was not reported in any of the other exploratory holes during the intrusive investigation. 4No groundwater monitoring visits were undertaken between 14th March 2019 and 2nd April 2019. Groundwater strikes were reported between 1.78m and 3.94m bgl.</p> <p>Following generic risk assessments, no elevated concentrations were detected in soils in excess of generic assessment criteria for the protection of human health within a residential with plant uptake end-use scenario. No asbestos fibres were detected in the samples analysed in the laboratory.</p> <p>Risks to controlled waters were not considered to be significant. It was recommended that the water supply pipe requirements should be discussed at an early stage with the relevant utility provider.</p> <p>It was considered that following gas monitoring, the wider site can be characterised as Characteristic Situation 1, where gas protection measures are not required. However, it was recommended that additional monitoring well installations be installed and subsequent return gas monitoring are recommended within the area of the former contractor's compound. The objective would to determine whether the concentrations of methane and carbon dioxide detected in WS2 are representative of this area, which would likely necessitate gas protection measures complying with a CS2 classification, or whether they are localised to the vicinity of WS2, in which case a CS1 classification would be considered appropriate.</p>
Intrusive Investigation	<p>The ground investigation was undertaken on 17 May 2019, and consisted of the following:</p>

Site History and Ground Investigation	
	<ul style="list-style-type: none"> • 4No windowless sampling boreholes, drilled up to 3.00m below ground level (bgl), with associated in situ testing and sampling; • 4No combined gas and groundwater monitoring wells, installed up to 3.00m bgl; • Laboratory analysis for chemical purposes; • 4No. return visits to monitor ground gas concentrations and groundwater levels.
Ground Conditions	<p>The ground investigations have identified two distinct zones of superficial soils, both overlying solid sand deposits considered to represent the Bagshot Formation.</p> <p>Groundwater was not reported in any of the exploratory holes during the investigation.</p> <p>During return site visits from 24 May 2019 to 10 June 2019 groundwater strike was reported between depths of 1.97m and 2.20m within the supplementary wells.</p>
Environmental Considerations	<p>In Zone 1 (as shown in Figure 4) superficial soils comprise Made Ground that includes a significant quantity of anthropogenic material, including brick and concrete. It is considered that the Made Ground on site is likely associated with the barn development within the north eastern part of site, and the former use as a contractor's compound as identified during the previous Desk Study (Jomas – August 2018). In Zone 2, an area of significant historic site developments, superficial soils comprised an organic soil comprising brown clay with roots and rootlets.</p> <p>No concentrations were detected in soils in excess of generic assessment criteria for the protection of human health within a residential with plant uptake end-use scenario.</p> <p>Asbestos fibres were reported in the form of chrysotile within a single sample of made ground from WSA, located in Zone 1 (as detailed in Section 4). The asbestos quantification results reported an asbestos content of below 0.1%, the fibre content at which arisings are considered hazardous for the purpose of disposal.</p> <p>Soft landscaping formed within areas of Made Ground located in Zone 1 should comprise a clean cover layer comprising 600mm imported clean topsoil /subsoil over a geotextile membrane. In areas where Made Ground does not exceed 600mm depth, the depth of ground removal can be limited at this depth, without the need for a geotextile membrane it can be uplifted and replaced with imported topsoil.</p> <p>Provision of a clean cover layer will not be required in Zone 2, from the proposed development plans provided this zone comprises the commercial leisure centre with associated car parking.</p> <p>Risks to controlled waters are not considered to be significant.</p> <p>Zone 1 will require gas protection measures providing a minimum of 3.5 protection points. From the proposed development plans provided the entire the residential development will require gas protection measures. This is supported by the CO₂ concentrations detected in WS7, which lies within Zone 1 but close to the boundary with Zone 2.</p> <p>The proposed development plans indicate that the proposal within Zone 2 comprises car parking areas and the leisure centre facility. As this area has been classified as CS1, no gas protection measures are considered necessary in this area of site.</p> <p>A remedial strategy will be required for the proposed development.</p>

1 INTRODUCTION

1.1 Terms of Reference

1.1.1 Woking Football Club (“The Client”) has commissioned Jomas Associates Ltd, to assess the risk of contamination posed by the ground conditions at a site located at Egley Road, Woking, GU22 0AF, prior to redevelopment of the site.

1.1.2 To this end a Desk Study and Ground investigation report has been produced for the site and issued separately, followed by a supplementary intrusive investigation (detailed in this report).

1.1.3 A full list of previous reports undertaken for the site by Jomas are detailed in Table 1.1:

Table 1.1: Previous Reports - Jomas

Title	Author	Reference	Date
Desk Study / Preliminary Risk Assessment Report for Egley Road, Woking, GU22 0AF	Jomas Associates Ltd	P1381J1459/AMM	17 August 2018
Geo-Environmental and Geotechnical Assessment (Ground Investigation) Report for Egley Road, Woking, GU22 0AF	Jomas Associates Ltd	P1381J1459/AMM	11 April 2019

1.1.4 The intrusive investigation was undertaken in accordance with Jomas proposal dated 08 May 2019.

1.2 Proposed Development

1.2.1 The proposed development comprises the following:

‘Redevelopment of the site, following the demolition of the existing building, to provide a health club building (Class D2) incorporating an external swimming pool and tennis/sports courts, the provision of 36 dwelling houses (Class C3) up to a maximum of 3 storeys in height, associated landscaping and car parking and new vehicular access from an existing road servicing Hoe Valley School.’

1.2.2 For the purposes of the contamination risk assessment, the proposed development is classified as ‘Residential with plant uptake’.

1.2.3 A plan of the proposed development is provided in Figure 3, Appendix 1.

1.3 Objectives

1.3.1 The objectives of Jomas’ investigation were as follows:

- To conduct an intrusive investigation, to determine the nature and extent of contaminants potentially present at the site;

- To establish the presence of significant pollutant linkages, in accordance with the procedures set out within Part IIA of the Environmental Protection Act 1990, associated statutory guidance and current best practice including the EA report R&D CLR 11.

1.4 Scope of Works

1.4.1 The following tasks were undertaken to achieve the objectives listed above:

- Intrusive ground investigation to determine shallow ground conditions, and potential for contamination at the site;
- Undertaking of laboratory chemical testing upon samples obtained;
- The compilation of this report, which collects and discusses the above data, and presents an assessment of the site conditions, conclusions and recommendations.

1.5 Supplied Documentation

1.5.1 Jomas Associates were not supplied with any previously produced reports at the time of writing this report.

1.6 Limitations

1.6.1 Jomas Associates Ltd has prepared this report for the sole use of Woking Football Club in accordance with the generally accepted consulting practices and for the intended purposes as stated in the agreement under which this work was completed. This report may not be relied upon by any other party without the explicit written agreement of Jomas Associates Limited. No other third-party warranty, expressed or implied, is made as to the professional advice included in this report. This report must be used in its entirety.

1.6.2 The records search was limited to information available from public sources; this information is changing continually and frequently incomplete. Unless Jomas Associates Limited has actual knowledge to the contrary, information obtained from public sources or provided to Jomas Associates Limited by site personnel and other information sources, have been assumed to be correct. Jomas Associates Limited does not assume any liability for the misinterpretation of information or for items not visible, accessible or present on the subject property at the time of this study.

1.6.3 Whilst every effort has been made to ensure the accuracy of the data supplied, and any analysis derived from it, there may be conditions at the site that have not been disclosed by the investigation, and could not therefore be taken into account. As with any site, there may be differences in soil conditions between exploratory hole positions. Furthermore, it should be noted that groundwater conditions may vary due to seasonal and other effects and may at times be significantly different from those measured by the investigation. No liability can be accepted for any such variations in these conditions.

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- 1.6.4 Any reports provided to Jomas Associates Limited have been reviewed in good faith. Jomas Associates Limited cannot be held liable for any errors or omissions in these reports, or for any incorrect interpretation contained within them.
- 1.6.5 This investigation and report has been carried out in accordance with the relevant standards and guidance in place at the time of the works. Future changes to these may require a re-assessment of the recommendations made within this report.
- 1.6.6 ***This report is not an engineering design and the figures and calculations contained in the report should be used by the Structural Engineer, taking note that variations may apply, depending on variations in design loading, in techniques used, and in site conditions. Our recommendations should therefore not supersede the Engineer's design.***

2 SITE SETTING

2.1 Site Information

2.1.1 The site location plan is appended to this report in Figure 1, Appendix 1.

Table 2.1: Site Information

Name of Site	Land Adjacent to Egley Road
Address of Site	Egley Road Woking GU22 0AF
Approx. National Grid Ref.	499416 156437
Site Area (Approx)	4.1ha
Site Occupation	Unoccupied land with single barn
Local Authority	Woking Borough Council
Proposed Site Use	Demolition of existing builds for the construction of new buildings for commercial and residential use.

2.2 Desk Study Overview (Jomas – August 2018)

2.2.1 A Desk Study report has been produced for the site and issued separately (Jomas – August 2018). A brief overview of the desk study findings is presented below. Reference should be made to the full report for detailed information.

2.2.2 A review of earliest available (1871) historical maps indicates that the site comprised undeveloped and/or agricultural land. On the plan dated 1897 the southern half of site is identified as a nursery. No other significant changes are noted from the historical plans. During the Jomas walkover development on site was noted as a new barn and access road within the north east corner.

2.2.3 The site vicinity on the earliest available map comprised predominately agricultural land. A railway line is noted on the western boundary on the 1871 plan until modern day. The area of Mayford towards the south east shows residential buildings and a large garden centre directly east of site. During the Jomas walkover an off site development identified as a large school and an electrical substation was noted to the north of site.

2.2.4 The British Geological Survey indicates that the site is directly underlain by solid sand deposits of the Bagshot Formation. There are no superficial or artificial deposits within the site area.

2.2.5 The solid deposits directly underlying the site are identified as a Secondary A Aquifer.

2.2.6 There are no source protection zones within 500m of the site. There are no groundwater, surface water or potable water abstractions reported within 1km of the site. The nearest detailed river entry is reported 1949m east of the site, identified as an inland river.

- 2.2.7 Recommendations of the preliminary risk assessment included an intrusive investigation. This was recommended to further assess the potential pollution linkages identified.
- 2.3 Ground Investigation Overview (Jomas – April 2019)**
- 2.3.1 A Ground Investigation report has been produced for the site and issued separately (Jomas – April 2019). A brief overview of the ground investigation findings is presented below. Reference should be made to the full report for detailed information.
- 2.3.2 The ground investigation was undertaken in two phases on 12th to 13th February and 06th to 7th March 2019, and consisted of the following:
- 8No window sampling boreholes, drilled up to 5.45m below ground level (bgl), with associated in situ testing and sampling;
 - 3No cable percussive boreholes, drilled up to 15.00m bgl, with associated in situ testing and sampling;
 - 2No mechanically excavated trial pits, completed up to 1.50m bgl with associated sampling;
 - 2No hand dug trial pits, completed up to 1.00m bgl with associated sampling;
 - 5No combined soil gas and groundwater monitoring wells, targeted response zone within sand deposits;
 - California Bearing Ratio tests completed at 5No exploratory hole locations;
 - 4No return visits to monitor ground gas concentrations and groundwater levels;
 - Laboratory analysis for chemical and geotechnical purposes.
- 2.3.3 The results of the ground investigation revealed a ground profile comprising Topsoil and Made Ground over sand deposits considered to represent the Bagshot Formation.
- 2.3.4 During the intrusive works groundwater was reported in a singular exploratory hole WS9 as seepage at 0.40m bgl. Groundwater was not reported in any of the other exploratory holes during the intrusive investigation. 4No groundwater monitoring visits were undertaken between 14th March 2019 and 2nd April 2019. Groundwater levels were reported between 1.78m and 3.94m bgl.
- 2.3.5 Following generic risk assessments, no elevated concentrations were detected in soils in excess of generic assessment criteria for the protection of human health within a residential with plant uptake end-use scenario. No asbestos fibres were detected in the samples analysed in the laboratory.
- 2.3.6 Risks to controlled waters were not considered to be significant. It was recommended that the water supply pipe requirements should be confirmed with the relevant utility provider.
- 2.3.7 It was considered that following gas monitoring, the wider site can be characterised as Characteristic Situation 1, where gas protection measures are not required. However, it was recommended that additional monitoring well installations be installed and subsequent return gas monitoring are recommended within the area of the former contractor's compound. The objective would to determine whether the

concentrations of methane and carbon dioxide detected in WS2 are representative of this area, which would likely necessitate gas protection measures complying with a CS2 classification, or whether they are localised to the vicinity of WS2, in which case a CS1 classification would be considered appropriate.

- 2.3.8 The updated conceptual site model as a result of the ground investigation is reproduced in Table 2.2 overleaf.

Table 2.2: Plausible Pollutants Linkages Summary (Pre Remediation)

Potential Source (from desk study)	Pathway	Receptor	Relevant Pollutant Linkage?	Comment
<ul style="list-style-type: none"> Potential for Made Ground associated with previous development operations – on site (S1) - Barn development, contractors compound and track (north east) Potential for contamination associated with previous development operations – off site (S2) - Rail track (west) Potential for contaminated ground from historic use as a nursery – southern half of site (S3) 	<ul style="list-style-type: none"> Ingestion and dermal contact with contaminated soil (P1) Inhalation or contact with potentially contaminated dust and vapours (P2) Permeation of water pipes and attack on concrete foundations by aggressive soil conditions (P6) 	<ul style="list-style-type: none"> Construction workers (R1) Maintenance workers (R2) Neighbouring site users (R3) Future site users (R4) Building foundations and on site buried services (water mains, electricity and sewer) (R5) 	N	Refer to Section 9.1 for remedial measures. The findings of this report should be included in the construction health and safety file, with adequate measures put in place for the protection of construction and maintenance workers.
	<ul style="list-style-type: none"> Accumulation and migration of soil gases (P5) 			?
	<ul style="list-style-type: none"> Leaching through permeable soils, migration within the vadose zone (i.e., unsaturated soil above the water table) and/or lateral migration within surface water, as a result of cracked hardstanding or via service pipe/corridors and surface water runoff. (P3) Horizontal and vertical migration of contaminants within groundwater (P4) 	<ul style="list-style-type: none"> Neighbouring site users (R3) Controlled Waters – secondary (A) aquifer, Hoe Stream (R6) Building foundations and on site buried services (water mains, electricity and sewer) (R5) 	Y	Remedial measures required and set out in Section 9.1. Contact should be made with relevant utility providers to confirm if upgraded materials are required.

3 GROUND INVESTIGATION

3.1 Rationale for Ground Investigation

3.1.1 The site investigation has been undertaken generally in accordance with Contaminated Land Report 11, BS10175, NHBC Standards Chapter 4.1, and other associated Statutory Guidance. If required, further targeted investigations and remedial option appraisal would be dependent on the findings of this site investigation.

3.1.2 The soil sampling rationale for the site investigation was developed with reference to EA guidance 'Secondary Model Procedure for the Development of Appropriate Soil Sampling Strategies for Land Contamination' (Technical Report P5-066/TR).

3.1.3 The sampling proposal was designed in order to gather data representative of the site conditions.

3.2 Scope of Ground Investigation

3.2.1 The ground investigation was undertaken on 17th May 2019.

3.2.2 The work was undertaken in accordance with BS5930 'Code of Practice for Site Investigation' and BS10175 'Investigation of Potentially Contaminated Sites'. All works were completed without incident.

3.2.3 The investigation focused on collecting data on the following:

- Quality of Made Ground/ natural ground within the area identified as the former contractors compound;
- Presence of groundwater beneath the site (if any), perched or otherwise;
- Determination of the presence or absence of hazardous ground gases;

3.2.4 A summary of the fieldwork carried out at the site, with justifications for exploratory hole positions, are offered in Table 3.1 below.

Table 3.1: Scope of Intrusive Investigation

Investigation Type	Number of Exploratory Holes Achieved	Exploratory Hole Designation	Depth Achieved (m BGL)	Justification
Window Sample Boreholes	4	WSA - WSD	Up to 3.0mbgl	Obtain shallow samples for contamination testing. All exploratory holes positioned with area identified as former contractors compound.

Investigation Type	Number of Exploratory Holes Achieved	Exploratory Hole Designation	Depth Achieved (m BGL)	Justification
Monitoring Wells	4	WSA - WSD	Up to 3.0mbgl	Combined soil gas and groundwater monitoring wells. All monitoring wells targeting response zone within Bagshot Formation in area identified as former contractors compound.

3.2.5 The exploratory holes were completed to allow soil samples to be taken in the areas of interest identified in Table 3.1 above. In all cases, all holes were logged in accordance with BS5930:2015.

3.2.6 Exploratory hole positions were located approximately with reference to known features on as shown in the exploratory hole location plan presented in Appendix 1. The exploratory hole records are included in Appendix 2.

3.3 Sampling Rationale

3.3.1 Our soil sampling rationale for the site investigation was developed with reference to EA guidance 'Secondary Model Procedure for the Development of Appropriate Soil Sampling Strategies for Land Contamination' (Technical Report P5-066/TR).

3.3.2 The exploratory holes were positioned by applying a combined non-targeted sampling strategy, as well as sample locations positioned with reference to sources identified from the desk study.

3.3.3 Soil samples were taken from across the site at various depths as shown in the exploratory hole logs.

3.3.4 Jomas Associates Limited's engineers normally collect samples at appropriate depths based on field observations such as:

- appearance, colour and odour of the strata and other materials, and changes in these;
- the presence or otherwise of sub-surface features such as pipework, tanks, foundations and walls; and,
- areas of obvious damage, e.g. to the building fabric.

3.3.5 A number of the samples were taken from the top 0-1m to aid in the assessment of the pollutant linkages identified at the site. In addition, some deeper samples were taken to aid in the interpretation of fate and transport of any contamination identified.

3.3.6 Samples were stored in cool boxes (<4°C) and preserved in accordance with laboratory guidance.

3.3.7 Groundwater strikes noted during drilling, are recorded within the exploratory hole records in Appendix 2.

3.4 Sampling Limitations

3.4.1 All of the exploratory holes were drilled in the original proposed locations to their proposed depths.

3.5 Laboratory Analysis

3.5.1 A programme of chemical laboratory testing, scheduled by Jomas Associates Limited, was carried out on selected samples of Made Ground and natural strata.

Chemical Testing

3.5.2 Soil samples were submitted to i2 Analytical (a UKAS and MCerts accredited laboratory), for analysis.

3.5.3 The samples were analysed for a wide range of contaminants as shown in Table 3.2 below:

Table 3.2: Chemical Tests Scheduled

Test Suite	No. of tests		
	Jomas – April 2019		Jomas – June 2019
	Topsoil	Made Ground	Made Ground
Basic Suite S3	5	3	2
Basic Suite S5	1	1	1
TPHCWG (inc BTEX)	1	1	2
VOC/SVOC	1	1	2
Total Organic Content	2	2	2
Pesticides	2	0	0
Asbestos Screen & ID	6	4	3

3.5.4 The determinands contained in the basic suite are as detailed in Table 3.3 below:

Table 3.3: Basic Suite of Determinands

DETERMINAND	LIMIT OF DETECTION (mg/kg)	UKAS ACCREDITATION	TECHNIQUE
Arsenic	1	Y (MCERTS)	ICPMS
Cadmium	0.2	Y (MCERTS)	ICPMS
Chromium	1	Y (MCERTS)	ICPMS
Chromium (Hexavalent)	4	Y (MCERTS)	Colorimetry
Lead	1	Y (MCERTS)	ICPMS
Mercury	0.3	Y (MCERTS)	ICPMS
Nickel	1	Y (MCERTS)	ICPMS
Selenium	1	Y (MCERTS)	ICPMS
Copper	1	Y (MCERTS)	ICPMS
Zinc	1	Y (MCERTS)	ICPMS
Boron (Water Soluble)	0.2	Y (MCERTS)	ICPMS
pH Value	0.1 units	Y (MCERTS)	Electrometric
Sulphate (Water Soluble)	0.0125g/l	Y (MCERTS)	Ion Chromatography
Total Cyanide	1	Y (MCERTS)	Colorimetry
Speciated/Total PAH	0.05/0.80	Y (MCERTS)	GCFID
Phenols	1	Y (MCERTS)	HPLC
Total Petroleum Hydrocarbons (banded)	-	N Y (MCERTS)	Gas Chromatography

3.5.5 To support the selection of appropriate tier 1 screening values, 7No samples were also analysed for total organic carbon.

3.5.6 Laboratory test results are summarised in Section 6, with raw laboratory data included in Appendix 3.

4 GROUND CONDITIONS

4.1 Soil

4.1.1 Ground conditions were logged in accordance with the requirements of BS5930:2015. Detailed exploratory hole logs are provided in Appendix 2.

4.1.2 The ground investigations have identified two distinct zones of superficial soils, both overlying solid sand deposits considered to represent the Bagshot Formation.

4.1.3 In Zone 1 (as shown in Figure 4) superficial soils comprise Made Ground that includes a significant quantity of anthropogenic material, including brick and concrete. It is considered that the Made Ground on site is likely associated with the barn development within the north eastern part of site, and the former use as a contractors compound as identified during the previous Desk Study (Jomas – August 2018). In Zone 2, an area of significant historic site developments, superficial soils comprised an organic soils comprising brown clay with roots and rootlets.

4.1.4 The ground conditions for each of the zones are detailed in Table 4.1 and Table 4.2 below.

Table 4.1: Ground Conditions Encountered (Zone 1)

Stratum and Description	Encountered from (m bgl)	Base of strata (m bgl)	Thickness range (m)
Asphalt over loose* light brown to pink sandy gravel. (MADE GROUND) Encountered in WSC only.	GL	0.80	0.80
Soft consistency* brown sandy slightly gravelly clay. Gravel consists of fine to medium angular to sub-angular flint and brick and concrete fragments. (MADE GROUND)	GL – 0.80	0.40 – 1.00	0.20 – 0.70
Medium becoming very dense brown to orange silty slightly clayey SAND. Sand is fine to medium. (BAGSHOT FORMATION)	0.50 – 1.00	3.00 – 15.00	2.00 – 14.60

*Field description

4.1.5 The pink sandy gravels encountered at WSC are considered to be as a result of the access track located within the north eastern part of the site. WSC was also the only exploratory hole to be completed within existing hardstanding present in Zone 1.

4.1.6 The Made Ground encountered in Zone 1 generally comprises sandy slightly gravelly clays with brick and concrete fragments, underlain by sand deposits considered to represent the Bagshot Formation.

Table 4.2: Ground Conditions Encountered (Zone 2)

Stratum and Description	Encountered from (m bgl)	Base of strata (m bgl)	Thickness range (m)
Soft consistency* brown sandy CLAY with roots and rootlets. Sand is fine. (ORGANIC SOIL)	GL – 0.60	0.30 – 0.60	0.30 – 0.60
Brown to orange silty clayey slightly gravelly SAND. Sand is fine to medium. Gravel consists of fine to coarse, sub-rounded flint. (BAGSHOT FORMATION - Residual)	0.30 – 0.60	0.60 – 1.00	0.30 – 0.60
Medium becoming very dense brown to orange silty slightly clayey SAND. Sand is fine to medium. (BAGSHOT FORMATION)	0.40 – 1.00	3.00 – 15.00	2.00 – 14.60

*Field description

4.1.7 The organic soil encountered within Zone 2 generally comprise sandy clay, underlain by slightly gravelly sand deposits and sand deposits, considered to represent residual and solid deposits of the Bagshot Formation respectively.

4.1.8 The residual Bagshot Formation deposits represent the slightly gravelly sand deposits. This was not encountered in Zone 1, this is likely due to the strata being removed and replaced by Made Ground during the historic use as a contractors compound.

4.2 Hydrogeology

4.2.1 Groundwater was not reported in any of the exploratory holes during the intrusive investigation.

4.2.2 As part of the previous ground investigation, 4No return groundwater monitoring visits were undertaken between 14th March 2019 and 2nd April 2019.

4.2.3 An additional 4No visits were undertaken from 24 May 2019 to 10 June 2019 to measure the levels within the previous monitoring wells, and the supplementary monitoring wells installed as part of this investigation. The results are summarised below in Table 4.2.

Table 4.2: Groundwater Monitoring Records

Exploratory Hole ID	Depth Encountered (m bgl)	Depth to Base of Well (m bgl)	Strata targeted by response zone
WS2	1.78 – 2.14	4.04	Sand - Bagshot Formation
WS4	2.90 – 3.12	3.90	Sand - Bagshot Formation
WS5	3.18 – 3.54	4.84	Sand - Bagshot Formation
WS7	3.87 – 3.94	4.96	Sand - Bagshot Formation
WS10	3.71 – 3.77	4.88	Sand - Bagshot Formation
WSA	1.97 – 2.10	2.79	Sand - Bagshot Formation
WSB	2.10 – 2.17	2.84	Sand - Bagshot Formation
WSC	2.07 – 2.20	2.90	Sand - Bagshot Formation
WSD	Dry	2.95	Sand - Bagshot Formation

4.3 Physical and Olfactory Evidence of Contamination

4.3.1 A hydrocarbon/organic odour was note within exploratory hole WSC between 0.80m and 1.00m bgl. No other visual or olfactory evidence of contamination was observed within the other exploratory holes.

5 RISK ASSESSMENT – ANALYTICAL FRAMEWORK

5.1 Context and Objectives

5.1.1 This section seeks to evaluate the level of risk pertaining to human health and the environment which may result from both the existing use and proposed future use of the site. It makes use of the site investigation findings, as described in the previous sections, to evaluate further the potential pollutant linkages identified in the desk study. A combination of qualitative and quantitative techniques is used, as described below.

5.1.2 The purpose of generic quantitative risk assessment is to compare concentrations of contaminants found on site against screening level generic assessment criteria (GAC) to establish whether there are actual or potential unacceptable risks. It also determines whether further detailed assessment is required. The approaches detailed all broadly fit within a tiered assessment structure in line with the framework set out in the Department of Environment, Food and Rural Affairs (DEFRA), EA and Institute for Environment and Health Publication, Guidelines for Environmental Risk Assessment and Management.

5.1.3 It should be noted that the statistical tests carried out in this report in accordance with CL:AIRE and CIEH (2008) recommendations, are for guidance purposes only and the conclusions of this report should be approved by the local authority prior to any redevelopment works being undertaken.

5.2 Analytical Framework – Soils

5.2.1 There is no single methodology that covers all the various aspects of the assessment of potentially contaminated land and groundwater. Therefore, the analytical framework adopted for this investigation is made up of a number of procedures, which are outlined below. All of these are based on a Risk Assessment methodology centred on the identification and analysis of Source – Pathway – Receptor linkages.

5.2.2 The CLEA model provides a methodology for quantitative assessment of the long term risks posed to human health by exposure to contaminated soils. Toxicological data have been used to calculate Soil Guideline Values (SGV) for individual contaminants, based on the proposed site use; these represent minimal risk concentrations and may be used as screening values.

5.2.3 In the absence of any published SGVs for certain substances, or where the assumptions made in generating the SGVs do not apply to the site, Jomas Associates Limited have obtained Tier 1 screening values for initial assessment of the soil, based on available current UK guidance including the LQM/CIEH S4ULs and DEFRA C4SL. Site-specific assessments are undertaken wherever possible and/or applicable. All assessments are carried out in accordance with the CLEA protocol.

5.2.4 CLEA requires a statistical treatment of the test results to take into account the normal variations in concentration of potential contaminants in the soil and allow comparisons to be made with published guidance.

5.2.5 The assessment criteria used for the screening of determinands within soils are identified within Table 5.1.

Table 5.1: Selected Assessment Criteria – Contaminants in Soils

Substance Group	Determinand(s)	Assessment Criteria Selected
<i>Organic Substances</i>		
Non-halogenated Hydrocarbons	Total Petroleum Hydrocarbons (TPHCWG banded)	S4UL
	Total Phenols	S4UL
Polycyclic Aromatic Hydrocarbons (PAH-16)	Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Dibenzo(a,h)anthracene, Benzo(ghi)perylene	S4UL
Volatile Organic Compounds (VOCs/sVOCs).	Toluene, Ethylbenzene, Benzene, Xylenes	S4UL
<i>Inorganic Substances</i>		
Heavy Metals and Metalloids	Arsenic, Cadmium, Chromium, Lead, Mercury, Nickel, Selenium, Copper, Zinc	S4UL
	Copper, Zinc, Nickel	BS: 3882 (2015).
Cyanides	Free Cyanide	CLEA v1.06
Sulphates	Water Soluble Sulphate	BRE Special Digest 1:2005

5.3 BRE

5.3.1 The BRE Special Digest 1:2005, 'Concrete in Aggressive Ground' is used with soluble sulphate and pH results to assess the aggressive chemical environment of future underground concrete structures at the site.

5.4 Site Specific Criteria

5.4.1 The criteria adopted in the selection of correct screening criteria from published reports as previously described, are provided within Table 5.3.

Table 5.3: Site Specific Data

Input Details	Value
Land Use	Residential with plant uptake
Soil Organic Matter	1%

- 5.4.2 As the published reports only offer the option of selecting a SOM value of 1%, 2.5% or 6%, a SOM value of 1% has been used for the generation of generic assessment criteria, as 1.15% was the mean value obtained from laboratory analysis.
- 5.4.3 It is understood that the site is to be converted to provide residential units with associated communal soft landscaping. As a result, the site has been assessed as residential with plant uptake.

6 GENERIC QUANTITATIVE RISK ASSESSMENT

6.1 Screening of Soil Chemical Analysis Results – Human Health Risk Assessment

6.1.1 Laboratory analysis for soils are summarised in Tables 6.1 to 6.3. Raw laboratory data is included in Appendix 3a and 3b, the April and June results respectively.

6.1.2 Results from both investigations (April 2019 and June 2019) have been included in the table below.

Table 6.1: Soil Laboratory Analysis Results – Metals, Metalloids, Phenol, Cyanide

Determinand	Unit	No. samples tested	Screening Criteria	Min	Max	No. Exceeding
Arsenic	mg/kg	13	S4UL 37	2.2	14	0
Cadmium	mg/kg	13	S4UL 11	0.7	6.1	0
Chromium	mg/kg	13	S4UL 910	24	72	0
Lead	mg/kg	13	C4SL 200	13	110	0
Mercury	mg/kg	13	S4UL 40	<0.3	0.7	0
Nickel	mg/kg	13	S4UL 180	3.5	12	0
Copper	mg/kg	13	S4UL 2400	22	71	0
Zinc	mg/kg	13	S4UL 3700	55	170	0
Total Cyanide ^A	mg/kg	13	CLEA v 1.06 33	<1	4	0
Selenium	mg/kg	13	S4UL 250	<1.0	<1.0	0
Boron Water Soluble	mg/kg	13	S4UL 290	0.3	1.2	0
Phenols	mg/kg	13	S4UL 120	<1.0	<1.0	0

Notes: ^A Generic assessment criteria derived for free inorganic cyanide.

Table 6.2: Soil Laboratory Analysis Results – Polycyclic Aromatic Hydrocarbons (PAHs)

Determinand	Unit	No. Samples Tested	Screening Criteria	Min	Max	No. Exceeding
Naphthalene	mg/kg	14	S4UL 2.3	<0.05	<0.05	0
Acenaphthylene	mg/kg	14	S4UL 170	<0.05	<0.05	0
Acenaphthene	mg/kg	14	S4UL 210	<0.05	<0.05	0
Fluorene	mg/kg	14	S4UL 170	<0.05	<0.05	0
Phenanthrene	mg/kg	14	S4UL 95	<0.05	1.7	0
Anthracene	mg/kg	14	S4UL 2400	<0.05	0.54	0
Fluoranthene	mg/kg	14	S4UL 280	<0.05	1.5	0

Determinand	Unit	No. Samples Tested	Screening Criteria	Min	Max	No. Exceeding	
Pyrene	mg/kg	14	S4UL	620	<0.05	1.8	0
Benzo(a)anthracene	mg/kg	14	S4UL	7.2	<0.05	1.3	0
Chrysene	mg/kg	14	S4UL	15	<0.05	1.0	0
Benzo(b)fluoranthene	mg/kg	14	S4UL	2.6	<0.05	1.4	0
Benzo(k)fluoranthene	mg/kg	14	S4UL	77	<0.05	1.1	0
Benzo(a)pyrene	mg/kg	14	S4UL	2.2	<0.05	1.6	0
Indeno(123-cd)pyrene	mg/kg	14	S4UL	27	<0.05	0.90	0
Dibenzo(ah)anthracene	mg/kg	14	S4UL	0.24	<0.05	<0.05	0
Benzo(ghi)perylene	mg/kg	14	S4UL	320	<0.05	1.2	0
Total PAH	mg/kg	14	-	<0.80	13.3	-	

Table 6.3: Soil Laboratory Analysis Results – Total Petroleum Hydrocarbons (TPH)

TPH Band	Unit	No. Samples Tested	Screening Criteria	Min	Max	No. Exceeding	
C ₈ -C ₁₀	mg/kg	10	S4UL	27	<0.1	<0.1	0
>C ₁₀ -C ₁₂	mg/kg	10	S4UL	74	<2.0	9.0	0
>C ₁₂ -C ₁₆	mg/kg	10	S4UL	140	<4.0	12	0
>C ₁₆ -C ₂₁	mg/kg	10	S4UL	260	<1.0	20	0
>C ₂₁ -C ₃₅	mg/kg	10	S4UL	1100	60	370	0
Total TPH	mg/kg	10	-	-	67.1	396.1	-

Note: *The lower value of guidelines for Aromatic/Aliphatics has been selected

Table 6.4: Soil Laboratory Analysis Results – Total Petroleum Hydrocarbons (TPHCWG)

TPH Band	Unit	No. Samples Tested	Screening Criteria	Min	Max	No. Exceeding	
>C ₅ -C ₆ Aliphatic	mg/kg	4	S4UL	42	<0.001	<0.001	0
>C ₆ -C ₈ Aliphatic	mg/kg	4	S4UL	100	<0.001	<0.001	0
>C ₈ -C ₁₀ Aliphatic	mg/kg	4	S4UL	27	<0.001	<0.001	0
>C ₁₀ -C ₁₂ Aliphatic	mg/kg	4	S4UL	130	<1.0	<1.0	0
>C ₁₂ -C ₁₆ Aliphatic	mg/kg	4	S4UL	1100	<2.0	<2.0	0
>C ₁₆ -C ₃₅ Aliphatic	mg/kg	4	S4UL	65000	57	90	0
>C ₅ -C ₇ Aromatic	mg/kg	4	S4UL	70	<0.001	<0.001	0
>C ₇ -C ₈ Aromatic	mg/kg	4	S4UL	130	<0.001	<0.001	0
>C ₈ -C ₁₀ Aromatic	mg/kg	4	S4UL	34	<0.001	<0.001	0

TPH Band	Unit	No. Samples Tested	Screening Criteria	Min	Max	No. Exceeding
>C ₁₀ -C ₁₂ Aromatic	mg/kg	4	S4UL 74	4.0	4.3	0
>C ₁₂ -C ₁₆ Aromatic	mg/kg	4	S4UL 140	2.3	12	0
>C ₁₆ -C ₂₁ Aromatic	mg/kg	4	S4UL 260	<10	31	0
>C ₂₁ -C ₃₅ Aromatic	mg/kg	4	S4UL 1100	150	170	0
Total TPH (Ali/Aro)	mg/kg	4	S4UL 42	251	279.6	0

6.2 Volatile Organic Compounds

6.2.1 In addition to the suites outlined previously, 4No samples were tested for the presence of volatile organic compounds including BTEX compounds (benzene, toluene, ethylbenzene, xylene). No VOCs were reported above the laboratory detection limit within any tested sample.

6.3 Pesticides

6.3.1 In addition to the suites outlined previously, 2No samples were tested for the presence of pesticides within the southern half of site due to its historic use as a nursery.

6.3.2 A single sample from WS9 (0.25m) reported organochlorine pesticides, no organonitrogen or organophosphorus pesticides were detected. The results are summarised in Table 6.5 below; only compounds reported above detection limit have been included.

Table 6.5: Soil Laboratory Analysis Results – Organochlorine Pesticides

TPH Band	Unit	No. Samples Tested	Screening Criteria	Min	Max	No. Exceeding
DDD-o,p'	µg/kg	1	EPA RSL* 1900 ⁺	7.9	7.9	0
DDD-p,p'	µg/kg	1	EPA RSL* 1900	74	74	0
DDE-p,p'	µg/kg	1	EPA RSL* 2000	130	130	0
DDT-o,p'	µg/kg	1	EPA RSL* 1900 ⁺	5.3	5.3	0
DDT-p,p'	µg/kg	1	EPA RSL* 1900 ⁺	30	30	0

*In the absence of British Standard screening criteria, values have been obtained from the US Environmental Protection Agency Regional Screening Levels documentation

*In the absence of isomer-specific screening values, the most conservative criteria for another isomer of the same compound has been used.

6.3.3 As summarised in the table above, none of the organochlorine pesticides reported above laboratory detection limit exceeded their respective screening criteria.

6.4 Asbestos in Soil

- 6.4.1 13No samples were screened in the laboratory for the presence of asbestos. Asbestos was reported positive for a single sample (WSA at 0.25m) as chrysolite loose fibres.
- 6.4.2 The results reported an asbestos content of below 0.1%, the fibre content at which arisings are considered hazardous for the purpose of disposal.
- 6.4.3 It should be noted that for the purposes of human health assessment there is no level of asbestos below which it is deemed the materials are “safe”.

6.5 Screening of Soil Chemical Analysis Results – Potential Risks to Plant Growth

- 6.5.1 Zinc, copper and nickel are phytotoxins and could therefore inhibit plant growth in soft landscaped areas. Concentrations measured in soil for these determinands have been compared with the pH dependent values given in BS: 3882 (2015).
- 6.5.2 Adopting a pH value of greater than 7, as indicated by the results of the laboratory analysis, the following is noted;

Table 6.6: Soil Laboratory Analysis Results – Phytotoxic Determinands

Determinand	Threshold level (mg/kg)	Min (mg/kg)	Max (mg/kg)	No. Exceeding
Zinc	300	55	170	0
Copper	200	22	71	0
Nickel	110	3.5	12	0

6.6 Screening for Water Pipes

- 6.6.1 The results of the analysis have been assessed for potential impact upon water supply pipes. Table 6.7 below summarises the findings of the assessment:

Table 6.7: Screening Guide for Water Pipes

Determinand	No. of tests	Threshold adopted for PE (mg/kg)	Value for site data (mg/kg)		No of Exceedances
			Min	Max	
Total VOCs	4	0.5	<0.0056	<0.0056	-
BTEX	4	0.1	<0.001	<0.001	-
MTBE	4	0.1	<0.001	<0.001	-
EC5-EC10	10	1	<0.1	<0.1	-
EC10-EC16	10	10	<6.0	21	2No exceedances WS4 (0.25m) WS6 (0.25m)
EC16-EC40	10	500	61	390	-
Naphthalene	14	5	<0.05	0.28	-
Phenols	14	2	<1	<1	-

- 6.6.3 The above suggests that upgraded pipe work may be required.
- 6.6.4 It may be possible to utilise other protection methods including (but not limited to):
- diversion of the pipe,
 - localised remediation
 - embedding the pipe in a sufficient thickness of clean granular material
- 6.6.5 The water supply pipe requirements for this site should be discussed at an early stage with the relevant Utility provider.
- 6.7 Concrete in the Ground**
- 6.7.1 Sulphate attack on building foundations occurs where sulphate solutions react with the various products of hydration in Ordinary Portland Cement (OPC) or converted High-Alumina Cement (HAC). The reaction is expansive, and therefore disruptive, not only due to the formation of minute cracks, but also due to loss of cohesion in the matrix.
- 6.7.2 In accordance with BRE Special Digest 1, as there are less than 10 results in the data set the highest value has been taken.
- 6.7.3 Table 6.8 summarises the analysis of the aggressive nature of the ground for each of the strata encountered within the previous and supplementary ground investigation.

Table 6.8: Concrete in the Ground Classes

Stratum	No. Samples	pH range	Highest WS Sulphate (mg/l)	Design Sulphate Class	ACEC Class
Made Ground	7	7.4 – 9.2	422	DS-2	AC-2
Topsoil	7	5.8 – 6.9	16	DS-1	AC-1
Bagshot Formation	4	7.6 – 8.4	220	DS-1	AC-1

- 6.8 Waste Disposal**
- 6.8.1 The classification of materials for waste disposal purposes was outside the scope of this report. Should quantities of material require off-site disposal, Waste Acceptance Criteria testing will be required.

7 SOIL GAS RISK ASSESSMENT

7.1 Soil Gas Results

- 7.1.1 Four return monitoring visits have been undertaken to monitor wells installed within boreholes at the site for soil gas concentrations and groundwater levels.
- 7.1.2 In addition to the supplementary well installations, the monitoring wells from the previous ground investigation were also included in the return monitoring.
- 7.1.3 Four additional return monitoring visits have been undertaken from 24 May 2019 to 10 June 2019, to monitor wells installed within all boreholes at the site for soil gas concentrations and groundwater levels.
- 7.1.4 During these visits atmospheric pressure ranged between 1009mb and 1019mb. During these visits pressure trends observed were as rising and steady.
- 7.1.5 The results of the monitoring undertaken are summarised in Table 7.1 below, with the monitoring records presented in Appendix 4.
- 7.1.6 The data presented below has been combined with the 4No monitoring visits undertaken as part of the previous investigation from 14 March 2019 to 02 April 2019.

Table 7.1: Summary of Gas Monitoring Data

Hole No.	CH ₄ (%)	CO ₂ (%)	O ₂ (%)	H ₂ S (ppm)	VOCs (ppm)	Steady Flow Rate (l/hr)	Peak Flow Rate (l/hr)	Depth to water (mbgl)	Depth of installation (mbgl)
WS2	<0.1 – 0.5	1.4 – 28.6	1.1 – 20.0	0	<1.0 – 5	0.0 – 0.3	0.0 – 0.3	1.78 – 2.79	4.04
WS4	<0.1	0.4 – 2.0	18.9 – 20.6	0	<1.0 – 5	0.0 – 0.2	0.0 – 0.2	2.90 – 3.66	3.90
WS5	<0.1	0.4 – 0.9	19.9 – 20.8	0	<1.0 – 5	0.0 – 0.1	0.0 – 0.1	3.18 – 4.19	4.84
WS7	<0.1	3.4 – 5.0	15.6 – 17.6	0	<1.0 – 4	0.0 – 0.1	0.0 – 0.1	3.91 – 4.06	4.96
WS10	<0.1	2.5 – 3.0	17.9 – 18.9	0	<1.0	0.0 – 0.2	0.0 – 0.2	3.71 – 3.78	4.88
WSA	<0.1	5.0 – 5.7	16.0 – 17.1	0	2 – 8	0 – 0.3	0 – 0.3	1.97 – 2.10	2.79
WSB	<0.1	0.7 – 1.4	20.6 – 20.7	0	1 – 9	0 – 0.3	0 – 0.3	2.10 – 2.17	2.84
WSC	<0.1	0.4 – 0.9	14.4 – 18.7	0	4 – 6	0 – 0.4	0 – 0.4	2.07 – 2.20	2.90
WSD	2.6 – 8.1	6.4 – 10.8	12.3 – 17.2	0	<0.1 – 4	0 – 0.2	0 – 0.2	Dry	2.95

7.2 Screening of Results

- 7.2.1 As shown in Table 7.1, methane has been reported at a maximum concentration of 8.1% v/v at a single borehole location (WSD), elevated levels of methane were also reported as 0.5% v/v at WS2. Carbon dioxide has been reported to a maximum concentration of 28.6% v/v at WS2, elevated levels of carbon dioxide were also reported as 10.8% v/v in WS2.

- 7.2.2 Screening of the monitoring well headspaces with a photo-ionisation detector (PID) has detected maximum Volatile Organic Compound (VOC) concentration to maximum levels of 9ppm. A maximum flow rate of 0.4l/hr has been reported.
- 7.2.3 In the assessment of risks posed by hazardous ground gases and selection of appropriate mitigation measures, BS8485 (2015) identifies four types of development, termed Type A to Type D.
- 7.2.4 The majority of the site (consisting of the residential housing) is considered as to be a Type A structure which is defined as:
- “private ownership with no building management controls on alterations to the internal structure, the use of rooms, the ventilation of rooms or the structural fabric of the building. Some small rooms present. Probably conventional building construction (rather than civil engineering). Examples include private housing and some retail premises.”*
- 7.2.5 In addition, there is a commercial gym / sports centre proposed on the site. This potentially may be considered as a Type B building. These are defined as:
- “private or commercial property with central building management control of any alterations to the building or its uses but limited or no central building management control of the maintenance of the building, including the gas protection measures. Multiple occupancy. Small to medium size rooms with passive ventilation of rooms and other internal spaces throughout ground floor and basement areas. May be conventional building or civil engineering construction. Examples include managed apartments, multiple occupancy offices, some retail premises and parts of some public buildings (such as schools, hospitals, leisure centres) and parts of hotels.”*
- 7.2.6 For an initial review Type A has been adopted as the relevant category for the proposed development as this provides the most conservative assessment.
- 7.2.7 The soil gas assessment method is based on that proposed by Wilson & Card (1999), which was a development of a method proposed in CIRIA publication R149 (CIRIA, 1995). The method uses both gas concentrations and borehole flow rates to define a characteristic situation based on the limiting borehole gas volume flow for methane and carbon dioxide. In both these methods, the limiting borehole gas volume flow is renamed as the Gas Screening Value (GSV).
- 7.2.8 The Gas Screening Value (litres of gas per hour) is calculated by using the following equation:

$$\text{GSV} = (\text{Concentration}/100) \times \text{Flow rate}$$

Where concentration is measured in percent (%)
and flow rate is measured in litres per hour (l/hr)

- 7.2.9 The Characteristic Situation is then determined from Table 8.5 of CIRIA C665.
- 7.2.10 To accord with C665, worst case conditions are used in the calculation of GSVs for the site. As detailed in Section 4, the site has been split into two separate zones distinguishing between the Made Ground and organic soil cover on site. The following GSV's have been calculated for each respective zone below, the different zones highlighting the suspected ground cover is detailed in Figure 4.
- 7.2.11 A worst-case flow rate of 0.4l/hr (maximum reported) will be used in the calculation of GSVs for both zones to provide the most conservative assessment. The Characteristic Situation is then determined from Table 8.5 of CIRIA C665.

7.3 GSV Calculation (Zone 1)

- 7.3.1 To accord with C665, worst case conditions are used in the calculation of GSVs for Zone 1 (Made Ground). The worst case conditions for boreholes WS2 and WSA – WSD are summarised below in Table 7.2.

Table 7.2: Summary of Gas Monitoring Data (Zone 1)

Gas	Concentration (v/v %)	Peak Flow Rate (l/hr)	GSV (l/hr)	Characteristic Situation (after CIRIA C665)
CO ₂	28.6	0.4	0.1144	2
CH ₄	8.1	0.4	0.0324	2

- 7.3.2 The methodology set out in BS 8485 (2015) has been used for determining the required gas protection measures. For a Type A development on a CS2 sites the gas protection measures must provide a minimum of 3.5points.
- 7.3.3 This can be achieved in a number of ways, within BS8485 it is recommended that a range of protection measures are utilised with a minimum of two separate methods chosen from the three groupings (Structural, Ventilation and Barrier).
- 7.3.4 However, it is felt the following provides options for the most suitable solution for the proposed development:

Table 7.3: Recommended Gas Protection Measures

Protection Measures	BS 8485 Score
<u>Structural</u>	
Cast in situ monolithic reinforced ground bearing raft or reinforced cast in situ suspended floor slab with minimal penetrations	1.5
<u>Ventilation</u>	
Pressure relief pathway	0.5
Or	
Passive sub floor dispersal layer of:	
• Very good performance:	2.5

Protection Measures	BS 8485 Score
<ul style="list-style-type: none"> Good performance: 	1.5
<p><u>Barrier</u></p> <p>Gas resistant membrane meeting all of the following criteria:</p> <ul style="list-style-type: none"> sufficiently impervious to the gases with a methane gas transmission rate <40.0 ml/day/m²/atm (average) for sheet and joints (tested in accordance with BS ISO 15105-1 manometric method); sufficiently durable to remain serviceable for the anticipated life of the building and duration of gas emissions; sufficiently strong to withstand in-service stresses (e.g. settlement if placed below a floor slab); sufficiently strong to withstand the installation process and following trades until covered (e.g. penetration from steel fibres in fibre reinforced concrete, penetration of reinforcement ties, tearing due to working above it, dropping tools, etc); capable, after installation, of providing a complete barrier to the entry of the relevant gas; and verified in accordance with CIRIA C735 	2
MINIMUM REQUIRED TOTAL	
3.5	

- 7.3.5 To achieve a score of 1.5 the suspended slab should be well reinforced to control cracking and have minimal penetrations of the slab. Any necessary penetrations should be cast in.
- 7.4 The media used to provide the dispersal layer can vary, but commonly are formed using either clear void; a polystyrene void former blanket; a geocomposite void former blanket; a no-fines gravel layer with gas drains or a no-fines gravel layer. In designing the ventilation layer, the ventilation effectiveness of different media needs to be taken into consideration. The effectiveness of the ventilation layer depends on a number of different factors including the transmissivity of the medium, the width of the building, the side ventilation spacing and type and the thickness of the layer.
- 7.4.1 During construction where personnel are required to enter excavations of greater than 1.2m the air quality (Carbon Dioxide, Methane and Oxygen as a minimum) should be regularly checked prior and during person entry. Appropriate precautions, including but not limited to, venting, PPE and gas alarms should be undertaken
- 7.4.2 Any permanent excavations such as manholes, inspection chambers or other void spaces formed beneath the sites ground surface are potential ground gas traps and precautions, as per above, are considered the minimum necessary prior to person entry.

7.5 GSV Calculation (Zone 2)

7.5.1 To accord with C665, worst case conditions are used in the calculation of GSVs for Zone 2 (Made Ground). The worst-case conditions for boreholes WS4, WS5, WS7 and WS10 are summarised below in Table 7.4.

Table 7.4: Summary of Gas Monitoring Data (Zone 2)

Gas	Concentration (v/v %)	Peak Flow Rate (l/hr)	GSV (l/hr)	Characteristic Situation (after CIRIA C665)
CO ₂	5.0	0.4	0.02	1
CH ₄	0.1	0.4	0.0004	1

7.5.2 The methodology set out in BS 8485 (2015) has been used for determining the required gas protection measures. For a Type A development on a CS1 site no gas protection measures are required.

7.6 Gas Risk Assessment Summary

7.6.1 GSV calculations for both zones using worst case conditions, as detailed in Table 7.2 and Table 7.4 respectively, have determined the two separate zones to be classified as CS2 (Zone 1) and CS1 (Zone 2).

7.6.2 As a result of the GSV calculations, Zone 1 (Made Ground) will require gas protection measures providing a minimum of 3.5 protection points. From the proposed development plans provided the entire the residential development will require gas protection measures. This is supported by the CO₂ concentrations detected in WS7, which lies within Zone 1 but close to the boundary with Zone 2.

7.6.3 The proposed development plans indicate that the proposal within Zone 2 comprises car parking areas and the leisure centre facility. As this area has been classified as CS1, no gas protection measures are considered necessary in this area of site.

7.6.1 BS 8576:2013 has been used to derived threshold levels for Carbon Monoxide and Volatile Organic Compounds.

7.6.2 Given the recorded levels across the entire site it is not considered that additional protection measures need to be incorporated to protect end users from the recorded Carbon Monoxide concentrations.

7.6.3 VOC levels of up to 9ppm were detected by means of screening the ground gas monitoring wells with a photo-ionisation detector. Given the low reading detected, and that the analytical soil data has not not shown any evidence of a source of VOCs underlying the site and therefore risks associated with inhalation of VOCs are considered to be negligible.

8 SUMMARY OF RESULTS

8.1 Land Quality Impact Summary

8.1.1 Following the ground investigation, the following is noted:

- The proposed development comprises the following:
'Redevelopment of the site, following the demolition of the existing building, to provide a health club building (Class D2) incorporating an external swimming pool and tennis/sports courts, the provision of 36 dwelling houses (Class C3) up to a maximum of 3 storeys in height, associated landscaping and car parking and new vehicular access from an existing road servicing Hoe Valley School.'
- As detailed in Section 4, the ground investigations have identified two distinct zones of superficial soils, both overlying solid sand deposits considered to represent the Bagshot Formation.
- In Zone 1 (as shown in Figure 4) superficial soils comprise Made Ground that includes a significant quantity of anthropogenic material, including brick and concrete. It is considered that the Made Ground on site is likely associated with the barn development within the north eastern part of site, and the former use as a contractor's compound as identified during the previous Desk Study (Jomas – August 2018). In Zone 2, an area of significant historic site developments, superficial soils comprised an organic soil comprising brown clay with roots and rootlets.
- No concentrations were detected in soils in excess of generic assessment criteria for the protection of human health within a residential with plant uptake end-use scenario.
- Asbestos fibres were reported in the form of chrysotile within a single sample of made ground from WSA, located in Zone 1 (as detailed in Section 4). The asbestos quantification results reported an asbestos content of below 0.1%, the fibre content at which arisings are considered hazardous for the purpose of disposal.
- Soft landscaping formed within areas of Made Ground located in Zone 1 should comprise a clean cover layer comprising 600mm imported clean topsoil /subsoil over a geotextile membrane. In areas where Made Ground does not exceed 600mm depth, the depth of ground removal can be limited

at this depth, without the need for a geotextile membrane it can be uplifted and replaced with imported topsoil.

- Provision of a clean cover layer will not be required in Zone 2, from the proposed development plans provided this zone comprises the commercial leisure centre with associated car parking.
- Risks to controlled waters are not considered to be significant.
- Zone 1 will require gas protection measures providing a minimum of 3.5 protection points. From the proposed development plans provided the entire the residential development will require gas protection measures. This is supported by the CO2 concentrations detected in WS7, which lies within Zone 1 but close to the boundary with Zone 2.
- The proposed development plans indicate that the proposal within Zone 2 comprises car parking areas and the leisure centre facility. As this area has been classified as CS1, no gas protection measures are considered necessary in this area of site.
- A remedial strategy will be required for the proposed development.
- As with any ground investigation, the presence of further hotspots between sampling points cannot be ruled out. Should any contamination be encountered, a suitably qualified environmental consultant should be informed immediately, so that adequate measures may be recommended.

8.1.2 The above conclusions are made subject to approval by the statutory regulatory bodies.

8.2 Review of Pollutant Linkages Following Site Investigation

8.2.1 The site CSM has been revised and updated from that suggested in the desk study in view of the ground investigation data, including soil laboratory analysis results. Table 8.1 highlights whether pollutant linkages identified in the original CSM are still relevant following the risk assessment, or whether pollutant linkages, not previously identified, exist.

**SECTION 8
SUMMARY OF RESULTS**



Table 8.1: Plausible Pollutants Linkages Summary (Pre Remediation)

Potential Source (from desk study)	Pathway	Receptor	Relevant Pollutant Linkage?	Comment	
<ul style="list-style-type: none"> Potential for Made Ground associated with previous development operations – on site (S1) - Barn development, contractors compound and track (north east) Potential for contamination associated with previous development operations – off site (S2) - Rail track (west) Potential for contaminated ground from historic use as a nursery – southern half of site (S3) 	<ul style="list-style-type: none"> Ingestion and dermal contact with contaminated soil (P1) Inhalation or contact with potentially contaminated dust and vapours (P2) Permeation of water pipes and attack on concrete foundations by aggressive soil conditions (P6) 	<ul style="list-style-type: none"> Construction workers (R1) Maintenance workers (R2) Neighbouring site users (R3) Future site users (R4) Building foundations and on site buried services (water mains, electricity and sewer) (R5) 	Y	see 9.1 above for remedial measures. The findings of this report should be included in the construction health and safety file, with adequate measures put in place for the protection of construction and maintenance workers.	
	<ul style="list-style-type: none"> Accumulation and migration of soil gases (P5) 			Y	Gas protection measures required in residential areas, refer to Section 9.1.
	<ul style="list-style-type: none"> Leaching through permeable soils, migration within the vadose zone (i.e., unsaturated soil above the water table) and/or lateral migration within surface water, as a result of cracked hardstanding or via service pipe/corridors and surface water runoff. (P3) Horizontal and vertical migration of contaminants within groundwater (P4) 	<ul style="list-style-type: none"> Neighbouring site users (R3) Controlled Waters – secondary (A) aquifer, Hoe Stream (R6) Building foundations and on site buried services (water mains, electricity and sewer) (R5) 	Y	Remedial measures required and set out in Section 9.1. Contact should be made with relevant utility providers to confirm if upgraded materials are required.	

9 REFERENCES

BRE Report BR211: Radon: Protective measures for new dwellings, 2007

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CIEH & CL:AIRE (2008) *Guidance on comparing soil contamination data with a critical concentration*. London: Chartered Institute of Environmental Health (CIEH) and CL:AIRE

Environment Agency (2004) *Model procedures for the management of land contamination*. CLR11. Bristol: Environment Agency

Environment Agency, NHBC & CIEH (2008) *Guidance for the safe development of housing on land affected by contamination*. R & D Publication 66. London: Environment Agency

Environment Agency (2006) *Remedial Targets Methodology: Hydrogeological Risk Assessment for Land Contamination* Environment Agency

LQM/CIEH S4ULs. LQM, 2014

National Planning Policy Framework. Department for Communities and Local Government, March 2012

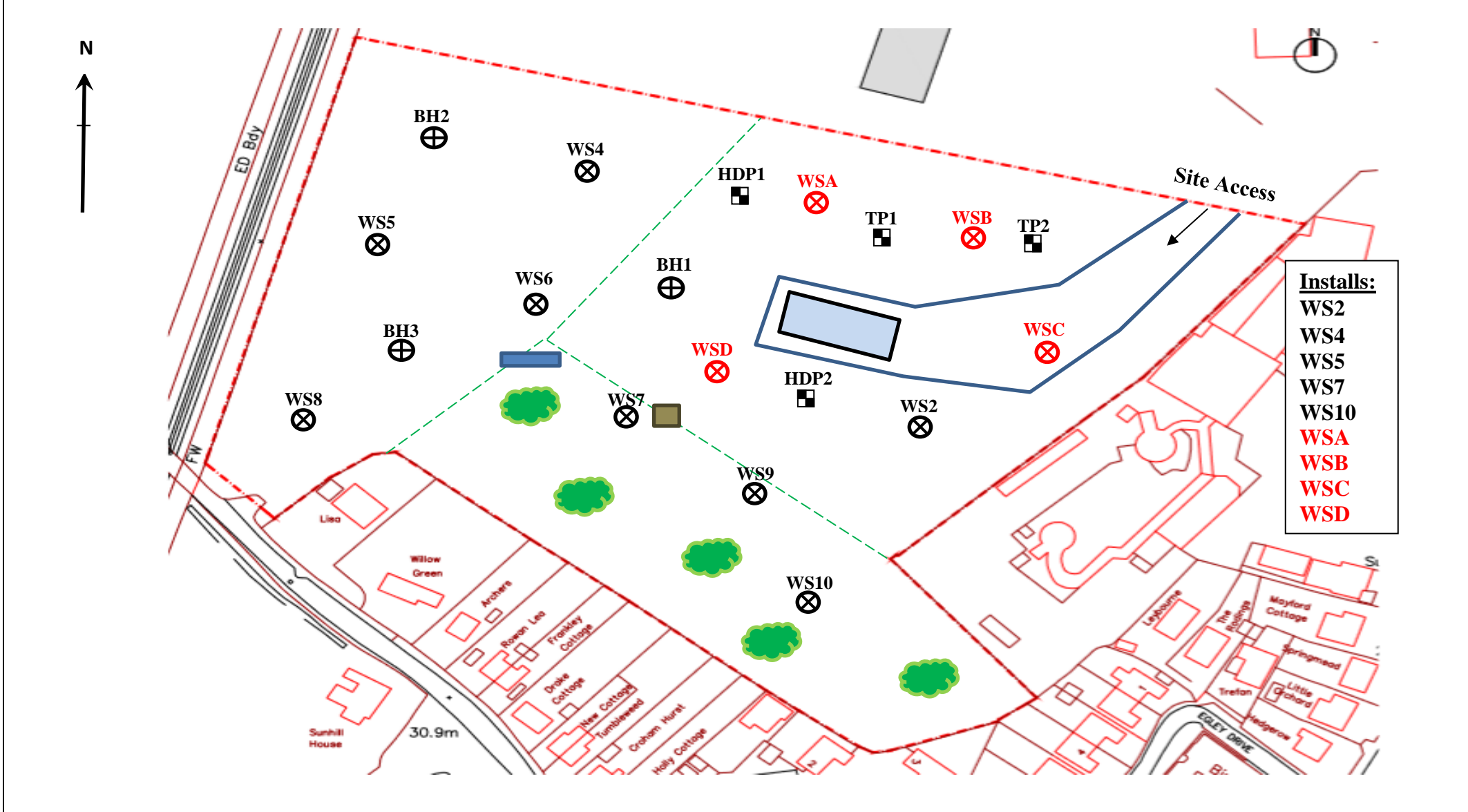
APPENDICES

APPENDIX 1 – FIGURES

Project Name	Egley Road, Woking	Client	Woking Football Club
Project No.	P1381J1459	Date	15/08/2018
Title	Site Location Plan	Figure No	1



Project Name	Egley Road, Woking	Client	Woking Football Club
Project No.	P1381J1459	Date	14/05/2019
Title	Supplementary Exploratory Hole Plan	Figure No	2



APPENDIX 2 – EXPLORATORY HOLE RECORDS



WINDOW/WINDOWLESS SAMPLING BOREHOLE RECORD

Exploratory Hole No:

WSB

Site Address: Egley Road, Woking, GU22 0AF

Project No: P1381J1459

Client: Goldev Woking Ltd

Ground Level:

Logged By: SB

Date Commenced: 17/05/2019

Checked By: PSw

Date Completed: 17/05/2019

Type and diameter of equipment: Windowless Sampler Rig

Sheet No: 1 Of 1

Water levels recorded during boring, m

Table with 6 columns for recording water levels at different depths: Date, Hole depth, Casing depth, Level water on strike, Water Level after 20mins.

Remarks
1: *Field description
2: No groundwater encountered.
3:
4:

Main data table with columns: Type, Depth (mbgl), Result (75, 75, 75, 75, 75, 75, N), Legend, Strata (Depth, Water Strikes), Strata Description, Installation. Includes depth markers from 0.00 to 5.00.



Exploratory Hole No:

WSC

Site Address: Egley Road, Woking, GU22 0AF

Project No: P1381J1459

Client: Goldev Woking Ltd

Ground Level:

Logged By: SB

Date Commenced: 17/05/2019

Checked By: PSw

Date Completed: 17/05/2019

Type and diameter of equipment: Windowless Sampler Rig

Sheet No: 1 Of 1

Water levels recorded during boring, m

Date:	17/05/2019				
Hole depth:					
Casing depth:					
Level water on strike:	2.80				
Water Level after 20mins:					

Remarks

- 1: *Field description
- 2: Groundwater encountered at 2.80m bgl.
- 3:
- 4:

Type	Depth (mbgl)	Sample or Tests							Legend	Strata		Strata Description	Installation
		Result								Depth (mbgl)	Water Strikes (mbgl)		
		75	75	75	75	75	75	N					
									0.00			Asphalt. (MADE GROUND)	
ES	0.25								0.10			Loose* light brown to pink sandy gravel. (MADE GROUND)	
ES	0.50								0.50				
ES + D	1.00								0.80			Soft to firm consistency* dark green to black silty gravelly clay. Gravel consists of fine to coarse angular to sub-angular brick, concrete and flint. Slight hydrocarbon/organic odour noted. (MADE GROUND)	
ES	1.50								1.00			Soft to firm consistency* light brown mottled orange silty clayey SAND. (BAGSHOT FORMATION)	
D	2.00								1.50				
D	3.00								2.00				
									2.50				
									3.00				
									3.50				
									4.00				
									4.50				
									5.00				



Exploratory Hole No:

WSD

Site Address: Egley Road, Woking, GU22 0AF

Project No: P1381J1459

Client: Goldev Woking Ltd

Ground Level:

Logged By: SB

Date Commenced: 17/05/2019

Checked By: PSw

Date Completed: 17/05/2019

Type and diameter of equipment: Windowless Sampler Rig

Sheet No: 1 Of 1

Water levels recorded during boring, m

Date:					
Hole depth:					
Casing depth:					
Level water on strike:					
Water Level after 20mins:					

Remarks

- 1: *Field description
- 2: No groundwater encountered.
- 3:
- 4:

Type	Depth (mbgl)	Sample or Tests							Legend	Strata		Strata Description	Installation
		Result								Depth (mbgl)	Water Strikes (mbgl)		
		75	75	75	75	75	75	N					
ES	0.25								0.00			Grass over soft to firm consistency* brown sandy slightly gravelly clay. Gravel consists of fine to coarse angular to sub-rounded brick and flint. (MADE GROUND)	
ES	0.50								0.50	0.40		Firm to stiff consistency* light brown mottled orange silty clayey SAND. (BAGSHOT FORMATION)	
ES + D	1.00								1.00				
D	2.00								2.00				
D	3.00								3.00	3.00			
									3.50				
									4.00				
									4.50				
									5.00				

APPENDIX 3A – CHEMICAL LABORATORY TEST RESULTS (APRIL 2019)



Emma Hucker

Jomas Associates Ltd
Lakeside House
1 Furzeground Way
Stockley Park
UB11 1BD

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

t: 01923 225404

f: 01923 237404

e: reception@i2analytical.com

e: Jomas Associates -

Analytical Report Number : 19-32464

Replaces Analytical Report Number : 19-32464, issue no. 1

Project / Site name:	Egley Road, Woking, GU22 0AF	Samples received on:	08/03/2019
Your job number:	JJ1459	Samples instructed on:	11/03/2019
Your order number:	P1381JJ1459.7	Analysis completed by:	28/03/2019
Report Issue Number:	2	Report issued on:	28/03/2019
Samples Analysed:	11 soil samples		

Signed:

Rexona Rahman
Head of Customer Services
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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

Analytical Report Number: 19-32464

Project / Site name: Egley Road, Woking, GU22 0AF

Your Order No: P1381JJ1459.7

Lab Sample Number	1174604			1174605			1174606			1174607			1174608		
Sample Reference	WS2			WS4			WS5			WS6			WS7		
Sample Number	None Supplied			None Supplied			None Supplied			None Supplied			None Supplied		
Depth (m)	0.25			0.25			0.25			0.25			0.20		
Date Sampled	07/03/2019			06/03/2019			06/03/2019			06/03/2019			07/03/2019		
Time Taken	None Supplied			None Supplied			None Supplied			None Supplied			None Supplied		
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status												
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
Moisture Content	%	N/A	NONE	15	12	19	13	14	14	14	14	14	14	14	
Total mass of sample received	kg	0.001	NONE	0.54	0.41	0.54	0.49	0.48	0.48	0.48	0.48	0.48	0.48	0.48	

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
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General Inorganics

Parameter	Units	N/A	MCERTS	7.6	5.8	6.0	5.9	5.9
pH - Automated	pH Units	N/A	MCERTS	7.6	5.8	6.0	5.9	5.9
Total Cyanide	mg/kg	1	MCERTS	< 1	4	3	4	< 1
Total Sulphate as SO ₄	mg/kg	50	MCERTS	400	400	310	380	290
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.047	0.015	0.0092	0.014	0.014
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	46.5	14.6	9.2	14.1	14.2
Total Organic Carbon (TOC)	%	0.1	MCERTS	1.1	1.3	-	-	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
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Speciated PAHs

Parameter	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.22	0.24	< 0.05	0.28	0.35
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.62	0.77	0.38	0.70	0.54
Pyrene	mg/kg	0.05	MCERTS	0.54	0.68	0.34	0.62	0.49
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.35	0.42	0.24	0.34	0.30
Chrysene	mg/kg	0.05	MCERTS	0.34	0.36	0.20	0.41	0.24
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	0.50	0.53	0.38	0.58	0.37
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.27	0.23	0.14	0.22	0.16
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.51	0.47	0.31	0.47	0.28
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.27	0.26	< 0.05	0.26	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.34	0.25	< 0.05	0.30	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	3.96	4.21	1.99	4.18	2.73
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Heavy Metals / Metalloids

Parameter	mg/kg	1	MCERTS	8.0	7.5	5.9	14	6.2
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	8.0	7.5	5.9	14	6.2
Boron (water soluble)	mg/kg	0.2	MCERTS	0.7	0.8	0.3	0.5	0.5
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	2.0	5.8	4.7	6.1	1.7
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	35	71	50	72	38
Copper (aqua regia extractable)	mg/kg	1	MCERTS	35	71	57	73	33
Lead (aqua regia extractable)	mg/kg	1	MCERTS	62	89	81	110	56
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.4	0.7	0.5	0.7	0.6
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	7.9	12	9.9	11	4.8
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	85	160	130	170	55



Analytical Report Number: 19-32464

Project / Site name: Egley Road, Woking, GU22 0AF

Your Order No: P1381JJ1459.7

Lab Sample Number	1174604			1174605			1174606			1174607			1174608		
Sample Reference	WS2			WS4			WS5			WS6			WS7		
Sample Number	None Supplied			None Supplied			None Supplied			None Supplied			None Supplied		
Depth (m)	0.25			0.25			0.25			0.25			0.20		
Date Sampled	07/03/2019			06/03/2019			06/03/2019			06/03/2019			07/03/2019		
Time Taken	None Supplied			None Supplied			None Supplied			None Supplied			None Supplied		
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status												

Monoaromatics & Oxygenates

Compound	Units	Limit of detection	Accreditation Status	1174604	1174605	1174606	1174607	1174608
Benzene	ug/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
Toluene	ug/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
Ethylbenzene	ug/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
p & m-xylene	ug/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
o-xylene	ug/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	ug/kg	1	MCERTS	< 1.0	-	-	-	< 1.0

Petroleum Hydrocarbons

Petroleum Range Organics (C6 - C10)	Units	Limit of detection	Accreditation Status	1174604	1174605	1174606	1174607	1174608
Petroleum Range Organics (C6 - C10)	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	< 0.1	-

TPH-CWG - Aliphatic >EC5 - EC6	Units	Limit of detection	Accreditation Status	1174604	1174605	1174606	1174607	1174608
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	-	-	-	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	-	-	-	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	-	-	-	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	-	-	-	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	-	-	-	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	-	-	-	13
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	-	-	-	13

TPH-CWG - Aromatic >EC5 - EC7	Units	Limit of detection	Accreditation Status	1174604	1174605	1174606	1174607	1174608
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	-	-	-	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	-	-	-	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	-	-	-	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	-	-	-	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	12	-	-	-	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	37	-	-	-	33
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	49	-	-	-	41

TPH (C10 - C12)	Units	Limit of detection	Accreditation Status	1174604	1174605	1174606	1174607	1174608
TPH (C10 - C12)	mg/kg	2	MCERTS	-	6.4	< 2.0	9.0	-
TPH (C12 - C16)	mg/kg	4	MCERTS	-	7.9	7.8	12	-
TPH (C16 - C21)	mg/kg	1	MCERTS	-	8.9	11	20	-
TPH (C21 - C40)	mg/kg	10	MCERTS	-	46	51	95	-

Analytical Report Number: 19-32464

Project / Site name: Egley Road, Woking, GU22 0AF

Your Order No: P1381JJ1459.7

Lab Sample Number	1174604			1174605			1174606			1174607			1174608		
Sample Reference	WS2			WS4			WS5			WS6			WS7		
Sample Number	None Supplied			None Supplied			None Supplied			None Supplied			None Supplied		
Depth (m)	0.25			0.25			0.25			0.25			0.20		
Date Sampled	07/03/2019			06/03/2019			06/03/2019			06/03/2019			07/03/2019		
Time Taken	None Supplied			None Supplied			None Supplied			None Supplied			None Supplied		
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status												

VOCs

Chloromethane	µg/kg	1	ISO 17025	< 1.0	-	-	-	-	< 1.0
Chloroethane	µg/kg	1	NONE	< 1.0	-	-	-	-	< 1.0
Bromomethane	µg/kg	1	ISO 17025	< 1.0	-	-	-	-	< 1.0
Vinyl Chloride	µg/kg	1	NONE	< 1.0	-	-	-	-	< 1.0
Trichlorofluoromethane	µg/kg	1	NONE	< 1.0	-	-	-	-	< 1.0
1,1-Dichloroethene	µg/kg	1	NONE	< 1.0	-	-	-	-	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0	-	-	-	-	< 1.0
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0	-	-	-	-	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	-	-	-	-	< 1.0
1,1-Dichloroethane	µg/kg	1	MCERTS	< 1.0	-	-	-	-	< 1.0
2,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	-	-	-	-	< 1.0
Trichloromethane	µg/kg	1	MCERTS	< 1.0	-	-	-	-	< 1.0
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0	-	-	-	-	< 1.0
1,2-Dichloroethane	µg/kg	1	MCERTS	< 1.0	-	-	-	-	< 1.0
1,1-Dichloropropene	µg/kg	1	MCERTS	< 1.0	-	-	-	-	< 1.0
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	-	-	-	-	< 1.0
Benzene	µg/kg	1	MCERTS	< 1.0	-	-	-	-	< 1.0
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0	-	-	-	-	< 1.0
1,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	-	-	-	-	< 1.0
Trichloroethene	µg/kg	1	MCERTS	< 1.0	-	-	-	-	< 1.0
Dibromomethane	µg/kg	1	MCERTS	< 1.0	-	-	-	-	< 1.0
Bromodichloromethane	µg/kg	1	MCERTS	< 1.0	-	-	-	-	< 1.0
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	-	-	-	-	< 1.0
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	-	-	-	-	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	-	-	-	-	< 1.0
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0	-	-	-	-	< 1.0
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0	-	-	-	-	< 1.0
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0	-	-	-	-	< 1.0
Tetrachloroethene	µg/kg	1	NONE	< 1.0	-	-	-	-	< 1.0
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0	-	-	-	-	< 1.0
Chlorobenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	-	< 1.0
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	-	-	-	-	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	-	< 1.0
p & m-Xylene	µg/kg	1	MCERTS	< 1.0	-	-	-	-	< 1.0
Styrene	µg/kg	1	MCERTS	< 1.0	-	-	-	-	< 1.0
Tribromomethane	µg/kg	1	NONE	< 1.0	-	-	-	-	< 1.0
o-Xylene	µg/kg	1	MCERTS	< 1.0	-	-	-	-	< 1.0
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	-	-	-	-	< 1.0
Isopropylbenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	-	< 1.0
Bromobenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	-	< 1.0
n-Propylbenzene	µg/kg	1	ISO 17025	< 1.0	-	-	-	-	< 1.0
2-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	-	-	-	-	< 1.0
4-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	-	-	-	-	< 1.0
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	-	-	-	-	< 1.0
tert-Butylbenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	-	< 1.0
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	-	-	-	-	< 1.0
sec-Butylbenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	-	< 1.0
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	< 1.0	-	-	-	-	< 1.0
p-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0	-	-	-	-	< 1.0
1,2-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	-	< 1.0
1,4-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	-	< 1.0
Butylbenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	-	< 1.0
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0	-	-	-	-	< 1.0
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	-	< 1.0
Hexachlorobutadiene	µg/kg	1	MCERTS	< 1.0	-	-	-	-	< 1.0
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	< 1.0	-	-	-	-	< 1.0



Analytical Report Number: 19-32464

Project / Site name: Egley Road, Woking, GU22 0AF

Your Order No: P1381JJ1459.7

Lab Sample Number	1174604			1174605			1174606			1174607			1174608		
Sample Reference	WS2			WS4			WS5			WS6			WS7		
Sample Number	None Supplied			None Supplied			None Supplied			None Supplied			None Supplied		
Depth (m)	0.25			0.25			0.25			0.25			0.20		
Date Sampled	07/03/2019			06/03/2019			06/03/2019			06/03/2019			07/03/2019		
Time Taken	None Supplied			None Supplied			None Supplied			None Supplied			None Supplied		
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status												

Pesticide and Herbicide Screen

Pesticides/Herbicides Screen in Soil	P/A	N/A	NONE	-	-	-	-	-	-
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Organochlorine Pesticides (OCP)

Compound	Units	Limit of detection	Accreditation Status	1174604	1174605	1174606	1174607	1174608
Aldrin	ug/kg	10	NONE	-	-	-	-	-
BHC-alpha (benzene hexachloride)	ug/kg	10	NONE	-	-	-	-	-
BHC-beta	ug/kg	10	NONE	-	-	-	-	-
BHC-delta	ug/kg	10	NONE	-	-	-	-	-
BHC-gamma (Lindane, gamma HCH)	ug/kg	10	NONE	-	-	-	-	-
Chlordane-cis	ug/kg	10	NONE	-	-	-	-	-
Chlordane-trans	ug/kg	10	NONE	-	-	-	-	-
Chlorothalonil	ug/kg	10	NONE	-	-	-	-	-
DDD-o,p'	ug/kg	1	NONE	-	-	-	-	-
DDD-p,p'	ug/kg	1	NONE	-	-	-	-	-
DDE-o, p'	ug/kg	1	NONE	-	-	-	-	-
DDE-p,p'	ug/kg	1	NONE	-	-	-	-	-
DDT-o,p'	ug/kg	1	NONE	-	-	-	-	-
DDT-p,p'	ug/kg	1	NONE	-	-	-	-	-
Dichlorobenzonitrile, 2,6-	ug/kg	10	NONE	-	-	-	-	-
Dieldrin	ug/kg	10	NONE	-	-	-	-	-
Endosulfan I (alpha isomer)	ug/kg	10	NONE	-	-	-	-	-
Endosulfan II (beta isomer)	ug/kg	10	NONE	-	-	-	-	-
Endosulfan sulfate	ug/kg	10	NONE	-	-	-	-	-
Endrin	ug/kg	10	NONE	-	-	-	-	-
Endrin aldehyde	ug/kg	10	NONE	-	-	-	-	-
Endrin ketone	ug/kg	10	NONE	-	-	-	-	-
Heptachlor	ug/kg	10	NONE	-	-	-	-	-
Heptachlor exo-epoxide	ug/kg	10	NONE	-	-	-	-	-
Hexachlorobenzene	ug/kg	10	NONE	-	-	-	-	-
Hexachlorobutadiene	ug/kg	10	NONE	-	-	-	-	-
Isodrin	ug/kg	10	NONE	-	-	-	-	-
Methoxychlor, p,p'-	ug/kg	10	NONE	-	-	-	-	-
Pentachlorobenzene	ug/kg	10	NONE	-	-	-	-	-
Tecnazene	ug/kg	10	NONE	-	-	-	-	-
Tetrachlorobenzene, 1,2,4,5-	ug/kg	10	NONE	-	-	-	-	-
Trichlorobenzene, 1,2,3-	ug/kg	10	NONE	-	-	-	-	-
Trichlorobenzene, 1,3,5-	ug/kg	10	NONE	-	-	-	-	-
Trifluralin	ug/kg	10	NONE	-	-	-	-	-

Analytical Report Number: 19-32464

Project / Site name: Egley Road, Woking, GU22 0AF

Your Order No: P1381JJ1459.7

Lab Sample Number	1174609			1174610			1174611			1174612			1174613		
Sample Reference	WS8			WS9			TP1			TP2			HDP2		
Sample Number	None Supplied			None Supplied			None Supplied			None Supplied			None Supplied		
Depth (m)	0.25			0.25			0.25			0.40			0.20		
Date Sampled	06/03/2019			07/03/2019			07/03/2019			07/03/2019			07/03/2019		
Time Taken	None Supplied			None Supplied			None Supplied			None Supplied			None Supplied		
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status												
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
Moisture Content	%	N/A	NONE	25	17	16	19	12	12	12	12	12	12	12	
Total mass of sample received	kg	0.001	NONE	0.49	0.47	0.45	0.61	0.49	0.49	0.49	0.49	0.49	0.49	0.49	

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected

General Inorganics

Parameter	Units	N/A	MCERTS					
pH - Automated	pH Units	N/A	MCERTS	6.4	6.9	7.9	7.7	7.4
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Total Sulphate as SO ₄	mg/kg	50	MCERTS	380	310	1000	590	410
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.015	0.016	0.42	0.20	0.080
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	14.5	16.4	422	197	79.8
Total Organic Carbon (TOC)	%	0.1	MCERTS	-	1.4	1.0	-	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Speciated PAHs

Parameter	mg/kg	0.05	MCERTS					
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.34	0.32	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.13	0.13	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.57	< 0.05	1.1	1.1	0.44
Pyrene	mg/kg	0.05	MCERTS	0.53	< 0.05	0.98	0.99	0.41
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.30	< 0.05	0.55	0.58	0.33
Chrysene	mg/kg	0.05	MCERTS	0.35	< 0.05	0.58	0.66	0.24
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	0.40	< 0.05	0.68	0.93	0.44
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.31	< 0.05	0.33	0.36	0.18
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.42	< 0.05	0.67	0.83	0.41
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.23	< 0.05	0.33	0.41	0.21
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.28	< 0.05	0.41	0.54	0.26

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	3.39	< 0.80	6.10	6.84	2.92

Heavy Metals / Metalloids

Parameter	mg/kg	1	MCERTS					
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	2.2	4.4	4.8	5.0	7.9
Boron (water soluble)	mg/kg	0.2	MCERTS	0.4	0.4	1.2	0.8	0.6
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	2.2	2.5	1.6	1.5	1.7
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	24	41	35	33	32
Copper (aqua regia extractable)	mg/kg	1	MCERTS	27	33	30	29	29
Lead (aqua regia extractable)	mg/kg	1	MCERTS	56	53	57	48	50
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	0.6
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	5.6	6.3	7.5	9.8	7.8
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	68	74	84	81	80



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Project / Site name: Egley Road, Woking, GU22 0AF

Your Order No: P1381JJ1459.7

Lab Sample Number	1174609			1174610			1174611			1174612			1174613		
Sample Reference	WS8			WS9			TP1			TP2			HDP2		
Sample Number	None Supplied			None Supplied			None Supplied			None Supplied			None Supplied		
Depth (m)	0.25			0.25			0.25			0.40			0.20		
Date Sampled	06/03/2019			07/03/2019			07/03/2019			07/03/2019			07/03/2019		
Time Taken	None Supplied			None Supplied			None Supplied			None Supplied			None Supplied		
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status												

Monoaromatics & Oxygenates

Parameter	Units	Limit of detection	Accreditation Status	1174609	1174610	1174611	1174612	1174613
Benzene	ug/kg	1	MCERTS	-	-	-	-	-
Toluene	ug/kg	1	MCERTS	-	-	-	-	-
Ethylbenzene	ug/kg	1	MCERTS	-	-	-	-	-
p & m-xylene	ug/kg	1	MCERTS	-	-	-	-	-
o-xylene	ug/kg	1	MCERTS	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	ug/kg	1	MCERTS	-	-	-	-	-

Petroleum Hydrocarbons

Parameter	Units	Limit of detection	Accreditation Status	1174609	1174610	1174611	1174612	1174613
Petroleum Range Organics (C6 - C10)	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	-	-	-
TPH (C10 - C12)	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH (C12 - C16)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
TPH (C16 - C21)	mg/kg	1	MCERTS	10	7.9	11	8.2	< 1.0
TPH (C21 - C40)	mg/kg	10	MCERTS	17	25	27	56	< 10

Analytical Report Number: 19-32464

Project / Site name: Egley Road, Woking, GU22 0AF

Your Order No: P1381JJ1459.7

Lab Sample Number				1174609	1174610	1174611	1174612	1174613
Sample Reference				WS8	WS9	TP1	TP2	HDP2
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.25	0.25	0.25	0.40	0.20
Date Sampled				06/03/2019	07/03/2019	07/03/2019	07/03/2019	07/03/2019
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	-	-	-	-
Chloroethane	µg/kg	1	NONE	-	-	-	-	-
Bromomethane	µg/kg	1	ISO 17025	-	-	-	-	-
Vinyl Chloride	µg/kg	1	NONE	-	-	-	-	-
Trichlorofluoromethane	µg/kg	1	NONE	-	-	-	-	-
1,1-Dichloroethene	µg/kg	1	NONE	-	-	-	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	-	-	-	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-	-	-
1,1-Dichloroethane	µg/kg	1	MCERTS	-	-	-	-	-
2,2-Dichloropropane	µg/kg	1	MCERTS	-	-	-	-	-
Trichloromethane	µg/kg	1	MCERTS	-	-	-	-	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	-	-	-	-
1,2-Dichloroethane	µg/kg	1	MCERTS	-	-	-	-	-
1,1-Dichloropropene	µg/kg	1	MCERTS	-	-	-	-	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-	-	-	-
Benzene	µg/kg	1	MCERTS	-	-	-	-	-
Tetrachloromethane	µg/kg	1	MCERTS	-	-	-	-	-
1,2-Dichloropropane	µg/kg	1	MCERTS	-	-	-	-	-
Trichloroethene	µg/kg	1	MCERTS	-	-	-	-	-
Dibromomethane	µg/kg	1	MCERTS	-	-	-	-	-
Bromodichloromethane	µg/kg	1	MCERTS	-	-	-	-	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	-	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	-	-
Toluene	µg/kg	1	MCERTS	-	-	-	-	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	-	-	-	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	-	-	-	-
Dibromochloromethane	µg/kg	1	ISO 17025	-	-	-	-	-
Tetrachloroethene	µg/kg	1	NONE	-	-	-	-	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	-	-	-	-
Chlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	-	-	-
Ethylbenzene	µg/kg	1	MCERTS	-	-	-	-	-
p & m-Xylene	µg/kg	1	MCERTS	-	-	-	-	-
Styrene	µg/kg	1	MCERTS	-	-	-	-	-
Tribromomethane	µg/kg	1	NONE	-	-	-	-	-
o-Xylene	µg/kg	1	MCERTS	-	-	-	-	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	-	-	-
Isopropylbenzene	µg/kg	1	MCERTS	-	-	-	-	-
Bromobenzene	µg/kg	1	MCERTS	-	-	-	-	-
n-Propylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-
2-Chlorotoluene	µg/kg	1	MCERTS	-	-	-	-	-
4-Chlorotoluene	µg/kg	1	MCERTS	-	-	-	-	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-
tert-Butylbenzene	µg/kg	1	MCERTS	-	-	-	-	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-
sec-Butylbenzene	µg/kg	1	MCERTS	-	-	-	-	-
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-	-	-	-	-
p-Isopropyltoluene	µg/kg	1	ISO 17025	-	-	-	-	-
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-
Butylbenzene	µg/kg	1	MCERTS	-	-	-	-	-
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	-	-	-	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-
Hexachlorobutadiene	µg/kg	1	MCERTS	-	-	-	-	-
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-	-	-	-	-



Analytical Report Number: 19-32464

Project / Site name: Egley Road, Woking, GU22 0AF

Your Order No: P1381JJ1459.7

Lab Sample Number	1174609			1174610			1174611			1174612			1174613		
Sample Reference	WS8			WS9			TP1			TP2			HDP2		
Sample Number	None Supplied			None Supplied			None Supplied			None Supplied			None Supplied		
Depth (m)	0.25			0.25			0.25			0.40			0.20		
Date Sampled	06/03/2019			07/03/2019			07/03/2019			07/03/2019			07/03/2019		
Time Taken	None Supplied			None Supplied			None Supplied			None Supplied			None Supplied		
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status												
Pesticide and Herbicide Screen															
Pesticides/Herbicides Screen in Soil				P/A	N/A	NONE	-	Present	-	-	-	-	-	-	

Organochlorine Pesticides (OCP)

Parameter	Units	Limit of detection	Accreditation Status	1174609	1174610	1174611	1174612	1174613
Aldrin	ug/kg	10	NONE	-	< 10	-	-	-
BHC-alpha (benzene hexachloride)	ug/kg	10	NONE	-	< 10	-	-	-
BHC-beta	ug/kg	10	NONE	-	< 10	-	-	-
BHC-delta	ug/kg	10	NONE	-	< 10	-	-	-
BHC-gamma (Lindane, gamma HCH)	ug/kg	10	NONE	-	< 10	-	-	-
Chlordane-cis	ug/kg	10	NONE	-	< 10	-	-	-
Chlordane-trans	ug/kg	10	NONE	-	< 10	-	-	-
Chlorothalonil	ug/kg	10	NONE	-	< 10	-	-	-
DDD-o,p'	ug/kg	1	NONE	-	7.9	-	-	-
DDD-p,p'	ug/kg	1	NONE	-	74	-	-	-
DDE-o, p'	ug/kg	1	NONE	-	< 1.0	-	-	-
DDE-p,p'	ug/kg	1	NONE	-	130	-	-	-
DDT-o,p'	ug/kg	1	NONE	-	5.3	-	-	-
DDT-p,p'	ug/kg	1	NONE	-	30	-	-	-
Dichlorobenzonitrile, 2,6-	ug/kg	10	NONE	-	< 10	-	-	-
Dieldrin	ug/kg	10	NONE	-	< 10	-	-	-
Endosulfan I (alpha isomer)	ug/kg	10	NONE	-	< 10	-	-	-
Endosulfan II (beta isomer)	ug/kg	10	NONE	-	< 10	-	-	-
Endosulfan sulfate	ug/kg	10	NONE	-	< 10	-	-	-
Endrin	ug/kg	10	NONE	-	< 10	-	-	-
Endrin aldehyde	ug/kg	10	NONE	-	< 10	-	-	-
Endrin ketone	ug/kg	10	NONE	-	< 10	-	-	-
Heptachlor	ug/kg	10	NONE	-	< 10	-	-	-
Heptachlor exo-epoxide	ug/kg	10	NONE	-	< 10	-	-	-
Hexachlorobenzene	ug/kg	10	NONE	-	< 10	-	-	-
Hexachlorobutadiene	ug/kg	10	NONE	-	< 10	-	-	-
Isodrin	ug/kg	10	NONE	-	< 10	-	-	-
Methoxychlor, p,p'-	ug/kg	10	NONE	-	< 10	-	-	-
Pentachlorobenzene	ug/kg	10	NONE	-	< 10	-	-	-
Tecnazene	ug/kg	10	NONE	-	< 10	-	-	-
Tetrachlorobenzene, 1,2,4,5-	ug/kg	10	NONE	-	< 10	-	-	-
Trichlorobenzene, 1,2,3-	ug/kg	10	NONE	-	< 10	-	-	-
Trichlorobenzene, 1,3,5-	ug/kg	10	NONE	-	< 10	-	-	-
Trifluralin	ug/kg	10	NONE	-	< 10	-	-	-

Analytical Report Number: 19-32464

Project / Site name: Egley Road, Woking, GU22 0AF

Your Order No: P1381JJ1459.7

Lab Sample Number				1174614				
Sample Reference				HDP1				
Sample Number				None Supplied				
Depth (m)				0.25				
Date Sampled				07/03/2019				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1				
Moisture Content	%	N/A	NONE	12				
Total mass of sample received	kg	0.001	NONE	0.47				

Asbestos in Soil	Type	N/A	ISO 17025	-				
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General Inorganics

pH - Automated	pH Units	N/A	MCERTS	-				
Total Cyanide	mg/kg	1	MCERTS	-				
Total Sulphate as SO ₄	mg/kg	50	MCERTS	-				
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	-				
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	-				
Total Organic Carbon (TOC)	%	0.1	MCERTS	-				

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	-				
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	-				
Acenaphthylene	mg/kg	0.05	MCERTS	-				
Acenaphthene	mg/kg	0.05	MCERTS	-				
Fluorene	mg/kg	0.05	MCERTS	-				
Phenanthrene	mg/kg	0.05	MCERTS	-				
Anthracene	mg/kg	0.05	MCERTS	-				
Fluoranthene	mg/kg	0.05	MCERTS	-				
Pyrene	mg/kg	0.05	MCERTS	-				
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-				
Chrysene	mg/kg	0.05	MCERTS	-				
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-				
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-				
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-				
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-				
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-				
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-				

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	-				
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-				
Boron (water soluble)	mg/kg	0.2	MCERTS	-				
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-				
Chromium (hexavalent)	mg/kg	4	MCERTS	-				
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-				
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-				
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-				
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-				
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-				
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-				
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-				



Analytical Report Number: 19-32464

Project / Site name: Egley Road, Woking, GU22 0AF

Your Order No: P1381JJ1459.7

Lab Sample Number				1174614				
Sample Reference				HDP1				
Sample Number				None Supplied				
Depth (m)				0.25				
Date Sampled				07/03/2019				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					

Monoaromatics & Oxygenates

Benzene	ug/kg	1	MCERTS	-				
Toluene	ug/kg	1	MCERTS	-				
Ethylbenzene	ug/kg	1	MCERTS	-				
p & m-xylene	ug/kg	1	MCERTS	-				
o-xylene	ug/kg	1	MCERTS	-				
MTBE (Methyl Tertiary Butyl Ether)	ug/kg	1	MCERTS	-				

Petroleum Hydrocarbons

Petroleum Range Organics (C6 - C10)	mg/kg	0.1	MCERTS	-				
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TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-				
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-				
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-				
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-				
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-				
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-				
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-				
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-				

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-				
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-				
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-				
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-				
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-				
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-				
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-				
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-				

TPH (C10 - C12)	mg/kg	2	MCERTS	-				
TPH (C12 - C16)	mg/kg	4	MCERTS	-				
TPH (C16 - C21)	mg/kg	1	MCERTS	-				
TPH (C21 - C40)	mg/kg	10	MCERTS	-				



Analytical Report Number: 19-32464

Project / Site name: Egley Road, Woking, GU22 0AF

Your Order No: P1381JJ1459.7

Lab Sample Number				1174614				
Sample Reference				HDP1				
Sample Number				None Supplied				
Depth (m)				0.25				
Date Sampled				07/03/2019				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-				
Chloroethane	µg/kg	1	NONE	-				
Bromomethane	µg/kg	1	ISO 17025	-				
Vinyl Chloride	µg/kg	1	NONE	-				
Trichlorofluoromethane	µg/kg	1	NONE	-				
1,1-Dichloroethene	µg/kg	1	NONE	-				
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-				
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-				
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-				
1,1-Dichloroethane	µg/kg	1	MCERTS	-				
2,2-Dichloropropane	µg/kg	1	MCERTS	-				
Trichloromethane	µg/kg	1	MCERTS	-				
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-				
1,2-Dichloroethane	µg/kg	1	MCERTS	-				
1,1-Dichloropropene	µg/kg	1	MCERTS	-				
Trans-1,2-dichloroethene	µg/kg	1	NONE	-				
Benzene	µg/kg	1	MCERTS	-				
Tetrachloromethane	µg/kg	1	MCERTS	-				
1,2-Dichloropropane	µg/kg	1	MCERTS	-				
Trichloroethene	µg/kg	1	MCERTS	-				
Dibromomethane	µg/kg	1	MCERTS	-				
Bromodichloromethane	µg/kg	1	MCERTS	-				
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-				
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-				
Toluene	µg/kg	1	MCERTS	-				
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-				
1,3-Dichloropropane	µg/kg	1	ISO 17025	-				
Dibromochloromethane	µg/kg	1	ISO 17025	-				
Tetrachloroethene	µg/kg	1	NONE	-				
1,2-Dibromoethane	µg/kg	1	ISO 17025	-				
Chlorobenzene	µg/kg	1	MCERTS	-				
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-				
Ethylbenzene	µg/kg	1	MCERTS	-				
p & m-Xylene	µg/kg	1	MCERTS	-				
Styrene	µg/kg	1	MCERTS	-				
Tribromomethane	µg/kg	1	NONE	-				
o-Xylene	µg/kg	1	MCERTS	-				
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-				
Isopropylbenzene	µg/kg	1	MCERTS	-				
Bromobenzene	µg/kg	1	MCERTS	-				
n-Propylbenzene	µg/kg	1	ISO 17025	-				
2-Chlorotoluene	µg/kg	1	MCERTS	-				
4-Chlorotoluene	µg/kg	1	MCERTS	-				
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-				
tert-Butylbenzene	µg/kg	1	MCERTS	-				
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-				
sec-Butylbenzene	µg/kg	1	MCERTS	-				
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-				
p-Isopropyltoluene	µg/kg	1	ISO 17025	-				
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-				
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-				
Butylbenzene	µg/kg	1	MCERTS	-				
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-				
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-				
Hexachlorobutadiene	µg/kg	1	MCERTS	-				
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-				



Analytical Report Number: 19-32464

Project / Site name: Egley Road, Woking, GU22 0AF

Your Order No: P1381JJ1459.7

Lab Sample Number				1174614				
Sample Reference				HDP1				
Sample Number				None Supplied				
Depth (m)				0.25				
Date Sampled				07/03/2019				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Pesticide and Herbicide Screen								
Pesticides/Herbicides Screen in Soil				P/A	N/A	NONE	Absent	

Organochlorine Pesticides (OCP)

	ug/kg	10	NONE	-				
Aldrin	ug/kg	10	NONE	-				
BHC-alpha (benzene hexachloride)	ug/kg	10	NONE	-				
BHC-beta	ug/kg	10	NONE	-				
BHC-delta	ug/kg	10	NONE	-				
BHC-gamma (Lindane, gamma HCH)	ug/kg	10	NONE	-				
Chlordane-cis	ug/kg	10	NONE	-				
Chlordane-trans	ug/kg	10	NONE	-				
Chlorothalonil	ug/kg	10	NONE	-				
DDD-o,p'	ug/kg	1	NONE	-				
DDD-p,p'	ug/kg	1	NONE	-				
DDE-o, p'	ug/kg	1	NONE	-				
DDE-p,p'	ug/kg	1	NONE	-				
DDT-o,p'	ug/kg	1	NONE	-				
DDT-p,p'	ug/kg	1	NONE	-				
Dichlorobenzonitrile, 2,6-	ug/kg	10	NONE	-				
Dieldrin	ug/kg	10	NONE	-				
Endosulfan I (alpha isomer)	ug/kg	10	NONE	-				
Endosulfan II (beta isomer)	ug/kg	10	NONE	-				
Endosulfan sulfate	ug/kg	10	NONE	-				
Endrin	ug/kg	10	NONE	-				
Endrin aldehyde	ug/kg	10	NONE	-				
Endrin ketone	ug/kg	10	NONE	-				
Heptachlor	ug/kg	10	NONE	-				
Heptachlor exo-epoxide	ug/kg	10	NONE	-				
Hexachlorobenzene	ug/kg	10	NONE	-				
Hexachlorobutadiene	ug/kg	10	NONE	-				
Isodrin	ug/kg	10	NONE	-				
Methoxychlor, p,p'-	ug/kg	10	NONE	-				
Pentachlorobenzene	ug/kg	10	NONE	-				
Tecnazene	ug/kg	10	NONE	-				
Tetrachlorobenzene, 1,2,4,5-	ug/kg	10	NONE	-				
Trichlorobenzene, 1,2,3-	ug/kg	10	NONE	-				
Trichlorobenzene, 1,3,5-	ug/kg	10	NONE	-				
Trifluralin	ug/kg	10	NONE	-				



Analytical Report Number : 19-32464

Project / Site name: Egley Road, Woking, GU22 0AF

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1174604	WS2	None Supplied	0.25	Brown loam and clay with gravel and vegetation.
1174605	WS4	None Supplied	0.25	Brown loam and sand with gravel and vegetation.
1174606	WS5	None Supplied	0.25	Brown loam and clay with gravel and vegetation.
1174607	WS6	None Supplied	0.25	Brown loam and sand with gravel and vegetation.
1174608	WS7	None Supplied	0.20	Brown loam and sand with gravel and vegetation.
1174609	WS8	None Supplied	0.25	Brown loam and sand with gravel and vegetation.
1174610	WS9	None Supplied	0.25	Brown loam and sand with gravel and vegetation.
1174611	TP1	None Supplied	0.25	Brown loam and clay with gravel and vegetation.
1174612	TP2	None Supplied	0.40	Brown loam and clay with gravel and vegetation.
1174613	HDP2	None Supplied	0.20	Brown loam and sand with gravel and vegetation.
1174614	HDP1	None Supplied	0.25	Brown loam and sand with gravel and vegetation.

Analytical Report Number : 19-32464

Project / Site name: Egley Road, Woking, GU22 0AF

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazine followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Organochlorine Pesticides in soil by GC MS/MS	Determination of Pesticides in soil by GC MS/MS	Organochlorine Pesticides in soil by GC MS/MS	L055B-PL	D	NONE
Pesticides and Herbicides in soil screening	In-house method	In-house method		W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
PRO (Soil)	Determination of hydrocarbons C6-C10 by headspace GC-MS.	In-house method based on USEPA8260	L088-PL	W	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	L038-PL	D	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L009-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L038-PL	D	MCERTS



Analytical Report Number : 19-32464

Project / Site name: Egley Road, Woking, GU22 0AF

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/cleanup.	L088/76-PL	W	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.



Emma Hucker
Jomas Associates Ltd
Lakeside House
1 Furzeground Way
Stockley Park
UB11 1BD

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

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

e: Jomas Associates -

Analytical Report Number : 19-29684

Project / Site name:	Egley Road, Woking, GU22 0AF	Samples received on:	18/02/2019
Your job number:	JJ1459	Samples instructed on:	18/02/2019
Your order number:	P1381JJ1459.4	Analysis completed by:	01/03/2019
Report Issue Number:	1	Report issued on:	01/03/2019
Samples Analysed:	4 soil samples		

Signed:

Rexona Rahman
Head of Customer Services
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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Analytical Report Number: 19-29684
Project / Site name: Egley Road, Woking, GU22 0AF
Your Order No: P1381JJ1459.4

Lab Sample Number	1160077	1160078	1160079	1160080			
Sample Reference	BH1	BH1	BH2	BH3			
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied			
Depth (m)	7.50	12.50	5.50	9.00			
Date Sampled	13/02/2019	13/02/2019	13/02/2019	13/02/2019			
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	21	27	21	19
Total mass of sample received	kg	0.001	NONE	2.0	2.0	2.0	2.0

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.4	8.1	8.0	7.6
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.094	0.081	0.020	0.22



4041



Environmental Science

Analytical Report Number : 19-29684

Project / Site name: Egley Road, Woking, GU22 0AF

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1160077	BH1	None Supplied	7.50	Grey clay and sand.
1160078	BH1	None Supplied	12.50	Grey clay.
1160079	BH2	None Supplied	5.50	Brown sandy clay.
1160080	BH3	None Supplied	9.00	Grey sandy clay.



4041



Environmental Science

Analytical Report Number : 19-29684**Project / Site name: Egley Road, Woking, GU22 0AF****Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)**

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	L038-PL	D	MCERTS

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

APPENDIX 3B – CHEMICAL LABORATORY TEST RESULTS (JUNE 2019)



Emma Hucker

Jomas Associates Ltd
Lakeside House
1 Furzeground Way
Stockley Park
UB11 1BD

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

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

e: Jomas Associates -

Analytical Report Number : 19-42208

Replaces Analytical Report Number : 19-42208, issue no. 1

Project / Site name:	Egley Road, Woking, GU22 0AF	Samples received on:	21/05/2019
Your job number:	JJ1459	Samples instructed on:	21/05/2019
Your order number:	P1381JJ1459.11	Analysis completed by:	13/06/2019
Report Issue Number:	2	Report issued on:	13/06/2019
Samples Analysed:	4 soil samples		

Signed: 

Zina Abdul Razzak
Senior Quality Specialist
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.

Iss No 19-42208-2 Egley Road, Woking, GU22 0AF JJ1459

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The results included within the report are representative of the samples submitted for analysis.

Page 1 of 8

Analytical Report Number: 19-42208

Project / Site name: Egley Road, Woking, GU22 0AF

Your Order No: P1381JJ1459.11

Lab Sample Number				1226924	1226925	1226926	1226927	
Sample Reference				WSA	WSC	WSC	WSD	
Sample Number				ES	ES	ES	ES	
Depth (m)				0.25	0.50	1.00	0.25	
Date Sampled				17/05/2019	17/05/2019	17/05/2019	17/05/2019	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	45	< 0.1	< 0.1	
Moisture Content	%	N/A	NONE	8.3	2.1	11	9.0	
Total mass of sample received	kg	0.001	NONE	1.2	1.5	2.0	1.2	

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	Chrysotile	-	-	-	
Asbestos in Soil	Type	N/A	ISO 17025	Detected	Not-detected	-	Not-detected	
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	< 0.001	-	-	-	
Asbestos Quantification Total	%	0.001	ISO 17025	< 0.001	-	-	-	

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.7	9.2	-	7.7	
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	-	< 1	
Total Sulphate as SO ₄	mg/kg	50	MCERTS	490	1300	-	240	
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.059	0.36	-	0.026	
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	59.2	364	-	25.9	
Total Organic Carbon (TOC)	%	0.1	MCERTS	1.7	-	-	0.6	

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Phenanthrene	mg/kg	0.05	MCERTS	0.89	< 0.05	1.7	< 0.05	
Anthracene	mg/kg	0.05	MCERTS	0.29	< 0.05	0.54	< 0.05	
Fluoranthene	mg/kg	0.05	MCERTS	2.0	< 0.05	1.5	0.29	
Pyrene	mg/kg	0.05	MCERTS	1.8	< 0.05	1.3	0.25	
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.3	< 0.05	0.78	< 0.05	
Chrysene	mg/kg	0.05	MCERTS	1.0	< 0.05	0.62	< 0.05	
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	1.4	< 0.05	0.58	< 0.05	
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	1.1	< 0.05	0.39	< 0.05	
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.6	< 0.05	0.69	< 0.05	
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.90	< 0.05	0.35	< 0.05	
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.2	< 0.05	0.44	< 0.05	

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	13.3	< 0.80	8.92	< 0.80	
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	7.3	5.7	-	4.2	
Boron (water soluble)	mg/kg	0.2	MCERTS	0.5	0.4	-	0.4	
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	1.7	0.7	-	1.4	
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	-	< 4.0	
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	38	5.6	-	31	
Copper (aqua regia extractable)	mg/kg	1	MCERTS	33	22	-	34	
Lead (aqua regia extractable)	mg/kg	1	MCERTS	51	13	-	78	
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.3	< 0.3	-	0.4	
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	8.7	3.5	-	8.5	
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	80	78	-	67	



Analytical Report Number: 19-42208

Project / Site name: Egley Road, Woking, GU22 0AF

Your Order No: P1381JJ1459.11

Lab Sample Number	1226924	1226925	1226926	1226927	
Sample Reference	WSA	WSC	WSC	WSD	
Sample Number	ES	ES	ES	ES	
Depth (m)	0.25	0.50	1.00	0.25	
Date Sampled	17/05/2019	17/05/2019	17/05/2019	17/05/2019	
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Monoaromatics & Oxygenates

Compound	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	
Benzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	
Toluene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	
Ethylbenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	
p & m-xylene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	
o-xylene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	

Petroleum Hydrocarbons

Petroleum Range Organics (C6 - C10)	mg/kg	0.1	MCERTS	< 0.1	-	-	< 0.1	
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TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	< 0.001	< 0.001	-	
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	< 0.001	< 0.001	-	
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	< 0.001	< 0.001	-	
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	< 1.0	< 1.0	-	
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	< 2.0	< 2.0	-	
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	< 8.0	< 8.0	-	
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	82	49	-	
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	83	54	-	

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	< 0.001	< 0.001	-	
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	< 0.001	< 0.001	-	
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	< 0.001	< 0.001	-	
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	4.3	4.0	-	
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	2.3	6.0	-	
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	< 10	31	-	
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	170	150	-	
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	180	190	-	

TPH (C10 - C12)	mg/kg	2	MCERTS	< 2.0	-	-	< 2.0	
TPH (C12 - C16)	mg/kg	4	MCERTS	< 4.0	-	-	< 4.0	
TPH (C16 - C21)	mg/kg	1	MCERTS	20	-	-	< 1.0	
TPH (C21 - C40)	mg/kg	10	MCERTS	370	-	-	60	



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Analytical Report Number: 19-42208

Project / Site name: Egley Road, Woking, GU22 0AF

Your Order No: P1381JJ1459.11

Lab Sample Number	1226924	1226925	1226926	1226927
Sample Reference	WSA	WSC	WSC	WSD
Sample Number	ES	ES	ES	ES
Depth (m)	0.25	0.50	1.00	0.25
Date Sampled	17/05/2019	17/05/2019	17/05/2019	17/05/2019
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	

VOCs								
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	1226924	1226925	1226926	1226927	
Chloromethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	
Chloroethane	µg/kg	1	NONE	-	< 1.0	< 1.0	-	
Bromomethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	
Vinyl Chloride	µg/kg	1	NONE	-	< 1.0	< 1.0	-	
Trichlorofluoromethane	µg/kg	1	NONE	-	< 1.0	< 1.0	-	
1,1-Dichloroethene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	
1,1-Dichloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	
2,2-Dichloropropane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	
Trichloromethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	
1,2-Dichloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	
1,1-Dichloropropene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	
Benzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	
Tetrachloromethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	
1,2-Dichloropropane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	
Trichloroethene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	
Dibromomethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	
Bromodichloromethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	
Toluene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	
Dibromochloromethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	
Tetrachloroethene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	
Chlorobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	
Ethylbenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	
p & m-Xylene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	
Styrene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	
Tribromomethane	µg/kg	1	NONE	-	< 1.0	< 1.0	-	
o-Xylene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	
Isopropylbenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	
Bromobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	
n-Propylbenzene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	
2-Chlorotoluene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	
4-Chlorotoluene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	
tert-Butylbenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	
sec-Butylbenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	
p-Isopropyltoluene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	
Butylbenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	
Hexachlorobutadiene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	



Analytical Report Number: 19-42208
Project / Site name: Egley Road, Woking, GU22 0AF
Your Order No: P1381JJ1459.11

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006 based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
1226924	WSA	0.25	136	Loose Fibres	Chrysotile	< 0.001	< 0.001

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



Analytical Report Number : 19-42208

Project / Site name: Egley Road, Woking, GU22 0AF

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1226924	WSA	ES	0.25	Brown loam and clay with gravel and vegetation.
1226925	WSC	ES	0.50	Brown sand with gravel and stones.
1226926	WSC	ES	1.00	Brown sand with rubble and brick.
1226927	WSD	ES	0.25	Brown loam and sand with vegetation.

Analytical Report Number : 19-42208

Project / Site name: Egley Road, Woking, GU22 0AF

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazine followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
PRO (Soil)	Determination of hydrocarbons C6-C10 by headspace GC-MS.	In-house method based on USEPA8260	L088-PL	W	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	L038-PL	D	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L009-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L038-PL	D	MCERTS
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS

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The results included within the report are representative of the samples submitted for analysis.



Analytical Report Number : 19-42208

Project / Site name: Egley Road, Woking, GU22 0AF

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

APPENDIX 4 – SOIL GAS MONITORING TEST RESULTS

GAS AND GROUNDWATER MONITORING BOREHOLE RECORD SHEET

Site: Egley Road	Operative(s): JLW	Date: 14/03/2019	Time: 09:25	Round: 1	Page: 1
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MONITORING EQUIPMENT

Instrument Type	Instrument Make	Serial No.	Date Last Calibrated
<i>Analox</i>	GA5000	G501805	30/01/2019
<i>PID</i>	Phocheck tiger	T-106448	04/10/2018
<i>Dip Meter</i>	GeoTech		

MONITORING CONDITIONS

Weather Conditions: Grey/Drizzling	Ground Conditions: Wet	Temperature: 10°C
Barometric Pressure (mbar): 1000	Barometric Pressure Trend (24hr): Steady	Ambient Concentration: 0.0%CH ₄ , 0.1%CO ₂ , 21.0%O ₂

MONITORING RESULTS

Monitoring Point Location	Flow		Atmospheric Pressure (mbar)	CH ₄ %	CH ₄ % LEL	CO ₂ %	O ₂ %	VOC (ppm)		H ₂ S (ppm)	CO (ppm)	Depth to product (mbgl)	Depth to water (mbgl)	Depth to Base of well (mbgl)
	Peak	Steady						Peak	Steady					
WS2	0.0	0.0	1000	0.1	/	1.4	20.0	/	/	0	1	/	1.78	4.04
WS4	0.0	0.0	1000	0.0	/	1.2	19.8	/	/	0	0	/	2.90	3.90
WS5	+0.1	+0.1	1000	0.0	/	0.8	20.2	/	/	0	0	/	3.18	4.84
WS7	0.0	0.0	1000	0.0	/	3.9	16.3	/	/	0	0	/	3.94	4.96
WS10	0.0	0.0	1000	0.0	/	2.6	18.9	/	/	0	0	/	3.72	4.88

GAS AND GROUNDWATER MONITORING BOREHOLE RECORD SHEET

Site: Egley Road	Operative(s): JLW	Date: 21/03/2019	Time: 11:45	Round: 2	Page: 1
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MONITORING EQUIPMENT

Instrument Type	Instrument Make	Serial No.	Date Last Calibrated
<i>Analox</i>	GA5000	G501805	30/01/2019
<i>PID</i>	Phocheck tiger	T-106448	04/10/2018
<i>Dip Meter</i>	GeoTech		

MONITORING CONDITIONS

Weather Conditions: Overcast	Ground Conditions: Damp	Temperature: 13°C
Barometric Pressure (mbar): 1031	Barometric Pressure Trend (24hr): Steady	Ambient Concentration: 0.0%CH ₄ , 0.1%CO ₂ , 20.9%O ₂

MONITORING RESULTS

Monitoring Point Location	Flow		Atmospheric Pressure (mbar)	CH ₄ %	CH ₄ % LEL	CO ₂ %	O ₂ %	VOC (ppm)		H ₂ S (ppm)	CO (ppm)	Depth to product (mbgl)	Depth to water (mbgl)	Depth to Base of well (mbgl)
	Peak	Steady						Peak	Steady					
WS2	-0.2	-0.2	1032	0.5	/	8.3	11.8	0.1	0.1	0	0	/	1.89	4.04
WS4	0.0	0.0	1031	0.0	/	1.7	19.0	0.5	0.4	0	0	/	3.03	3.90
WS5	+0.	+0.1	1032	0.0	/	0.9	19.9	0.2	0.2	0	0	/	3.29	4.84
WS7	+0.1	+0.1	1032	0.0	/	3.4	16.7	0.2	0.2	0	0	/	3.93	4.96
WS10	+0.2	+0.2	1032	0.0	/	2.5	18.5	0.1	0.1	0	0	/	3.78	4.88

GAS AND GROUNDWATER MONITORING BOREHOLE RECORD SHEET

Site: Egley Road	Operative(s): JLW	Date: 28/03/2019	Time: 09:15	Round: 3	Page: 1
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MONITORING EQUIPMENT

Instrument Type	Instrument Make	Serial No.	Date Last Calibrated
<i>Analox</i>	GA5000	G501805	30/01/2019
<i>PID</i>	Phocheck tiger	T-106448	04/10/2018
<i>Dip Meter</i>	GeoTech		

MONITORING CONDITIONS

Weather Conditions: Cloudy	Ground Conditions: Moist	Temperature: 12°C
Barometric Pressure (mbar): 1035	Barometric Pressure Trend (24hr): Falling	Ambient Concentration: 0.0%CH ₄ , 0.1%CO ₂ , 20.8%O ₂

MONITORING RESULTS

Monitoring Point Location	Flow		Atmospheric Pressure (mbar)	CH ₄ %	CH ₄ % LEL	CO ₂ %	O ₂ %	VOC (ppm)		H ₂ S (ppm)	CO (ppm)	Depth to product (mbgl)	Depth to water (mbgl)	Depth to Base of well (mbgl)
	Peak	Steady						Peak	Steady					
WS2	+0.1	+0.1	1035	0.0	/	17.2	3.4	0	0	0	0	/	2.14	4.03
WS4	0.0	0.0	1035	0.0	/	2.0	18.9	0	0	0	0	/	3.12	3.87
WS5	0.0	0.0	1035	0.0	/	0.9	19.9	0	0	0	0	/	3.54	4.83
WS7	0.0	0.0	1035	0.0	/	3.8	16.4	0	0	0	0	/	3.91	4.91
WS10	+0.1	+0.1	1035	0.0	/	2.7	18.0	0	0	0	0	/	3.77	4.86

GAS AND GROUNDWATER MONITORING BOREHOLE RECORD SHEET

Site: Egley Road	Operative(s): JJPB	Date: 02/04/2019	Time: 09:00	Round: 4	Page: 1
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MONITORING EQUIPMENT

Instrument Type	Instrument Make	Serial No.	Date Last Calibrated
<i>Analox</i>	GA5000	G501805	30/01/2019
<i>PID</i>	Phocheck tiger	T-106448	04/10/2018
<i>Dip Meter</i>	GeoTech		

MONITORING CONDITIONS

Weather Conditions: Overcast	Ground Conditions: Dry	Temperature: 7°C
Barometric Pressure (mbar): 1002	Barometric Pressure Trend (24hr): Falling	Ambient Concentration: 0.0%CH ₄ , 0.1%CO ₂ , 20.9%O ₂

MONITORING RESULTS

Monitoring Point Location	Flow		Atmospheric Pressure (mbar)	CH ₄ %	CH ₄ % LEL	CO ₂ %	O ₂ %	VOC (ppm)		H ₂ S (ppm)	CO (ppm)	Depth to product (mbgl)	Depth to water (mbgl)	Depth to Base of well (mbgl)
	Peak	Steady						Peak	Steady					
WS2	0.0	0.0	1002	0.0	/	2.4	18.8	0	0	0	0	/	2.13	3.98
WS4	0.0	0.0	1002	0.0	/	0.9	20.0	0	0	0	0	/	3.09	3.88
WS5	0.0	0.0	1002	0.0	/	0.9	20.0	0	0	0	0	/	3.32	4.84
WS7	0.0	0.0	1002	0.0	/	4.4	15.9	0	0	0	0	/	3.87	4.90
WS10	0.0	0.0	1002	0.0	/	3.0	17.9	0	0	0	0	/	3.71	4.87

GAS AND GROUNDWATER MONITORING BOREHOLE RECORD SHEET					
Site: Egley Road	Operative(s): JPB	Date: 24/05/2019	Time: 09:00	Round: 5	Page: 1
MONITORING EQUIPMENT					
Instrument Type	Instrument Make	Serial No.	Date Last Calibrated		
Analox	GA5000	G501805	30/01/2019		
PID	Phocheck tiger	T-106448	04/10/2018		
Dip Meter	GeoTech				
MONITORING CONDITIONS					
Weather Conditions: Sunny		Ground Conditions: Dry		Temperature: 19°C	
Barometric Pressure (mbar): 1016		Barometric Pressure Trend (24hr): Steady		Ambient Concentration: 0.1%CH ₄ , 0.1%CO ₂ , 21.5%O ₂	

MONITORING RESULTS														
Monitoring Point Location	Flow		Atmospheric Pressure (mbar)	CH ₄ %	CH ₄ % LEL	CO ₂ %	O ₂ %	VOC (ppm)		H ₂ S (ppm)	CO (ppm)	Depth to product (mbgl)	Depth to water (mbgl)	Depth to Base of well (mbgl)
	Peak	Steady						Peak	Steady					
WS2	-0.1	-0.1	1016	0	/	28.6	1.1	0.8	0.8	0	1	/	2.48	3.99
WS4	0	0	1016	0	/	0.9	20.3	1.4	1.4	0	0	/	3.57	3.84
WS5	0	0	1016	0	/	0.5	20.4	1	1	0	0	/	4.11	4.81
WS7	-0.1	-0.1	1016	0	/	4.7	15.6	0.5	0.5	0	1	/	3.98	4.90
WS10	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WSA	-0.1	-0.1	1016	0	/	5.7	16.0	2.2	2.2	0	1	/	1.97	2.79
WSB	0	0	1016	0.1	/	1.4	20.7	1.5	1.5	0	0	/	2.10	2.84
WSC	-0.1	-0.1	1016	0.4	/	0.9	14.4	4.3	4.3	0	9	/	2.12	2.90
WSD	-0.1	-0.1	1016	8.1	/	10.8	12.3	0.3	0.3	0	2	/	Dry	2.95

*WS10 not located due to overgrown forest area

GAS AND GROUNDWATER MONITORING BOREHOLE RECORD SHEET					
Site: Egley Road	Operative(s): JPB	Date: 30/05/2019	Time: 11:05	Round: 6	Page: 1
MONITORING EQUIPMENT					
Instrument Type	Instrument Make	Serial No.	Date Last Calibrated		
Analox	GA5000	G501805	30/01/2019		
PID	Phocheck tiger	T-106448	04/10/2018		
Dip Meter	GeoTech				
MONITORING CONDITIONS					
Weather Conditions: Sunny		Ground Conditions: Dry		Temperature: 19°C	
Barometric Pressure (mbar): 1019		Barometric Pressure Trend (24hr): Rising		Ambient Concentration: 0.1%CH ₄ , 0.1%CO ₂ , 21.2%O ₂	

MONITORING RESULTS														
Monitoring Point Location	Flow		Atmospheric Pressure (mbar)	CH ₄ %	CH ₄ % LEL	CO ₂ %	O ₂ %	VOC (ppm)		H ₂ S (ppm)	CO (ppm)	Depth to product (mbgl)	Depth to water (mbgl)	Depth to Base of well (mbgl)
	Peak	Steady						Peak	Steady					
WS2	0	0	1020	0	/	9.6	15.5	/	/	0	1	/	2.74	3.99
WS4	0	0	1020	0	/	0.7	20.3	/	/	0	1	/	3.62	3.84
WS5	0	0	1019	0	/	0.4	20.5	/	/	0	1	/	4.15	4.83
WS7	+0.1	+0.1	1020	0	/	3.8	17.0	/	/	0	1	/	4.02	4.90
WS10	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WSA	-0.1	-0.1	1020	0	/	5.2	16.5	/	/	0	1	/	2.03	2.70
WSB	0	0	1019	0.1	/	0.8	20.7	/	/	0	0	/	2.13	2.84
WSC	0	0	1020	0.1	/	0.4	17.6	/	/	0	2	/	2.14	2.81
WSD	0	0	1020	3.2	/	6.4	16.5	/	/	0	1	/	Dry	3.96

*WS10 not located due to overgrown forest area

GAS AND GROUNDWATER MONITORING BOREHOLE RECORD SHEET					
Site: Egley Road	Operative(s): JPB	Date: 06/06/2019	Time: 12:45	Round: 7	Page: 1
MONITORING EQUIPMENT					
Instrument Type	Instrument Make	Serial No.	Date Last Calibrated		
Analox	GA5000	G501805	30/01/2019		
PID	Phocheck tiger	T-106448	04/10/2018		
Dip Meter	GeoTech				
MONITORING CONDITIONS					
Weather Conditions: Showers		Ground Conditions: Damp		Temperature: 17°C	
Barometric Pressure (mbar): 1009		Barometric Pressure Trend (24hr): Rising		Ambient Concentration: 0.1%CH ₄ , 0.1%CO ₂ , 21.0%O ₂	

MONITORING RESULTS														
Monitoring Point Location	Flow		Atmospheric Pressure (mbar)	CH ₄ %	CH ₄ % LEL	CO ₂ %	O ₂ %	VOC (ppm)		H ₂ S (ppm)	CO (ppm)	Depth to product (mbgl)	Depth to water (mbgl)	Depth to Base of well (mbgl)
	Peak	Steady						Peak	Steady					
WS2	0	0	1010	0	/	5.2	18.3	5.6	5.6	0	1	/	2.79	3.99
WS4	-0.1	-0.1	1010	0.1	/	0.5	20.6	5.7	5.7	0	1	/	3.66	3.84
WS5	0	0	1009	0.1	/	0.4	20.8	5.2	5.2	0	1	/	4.19	4.81
WS7	0	0	1010	0.1	/	5.0	16.1	4.6	4.6	0	1	/	4.06	4.90
WS10	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WSA	0	0	1010	0.1	/	5.0	16.9	8.3	8.3	0	1	/	2.09	2.79
WSB	-0.1	-0.1	1009	0.1	/	0.7	20.7	8.8	8.8	0	1	/	2.17	2.84
WSC	-0.1	-0.1	1010	0.1	/	0.5	18.7	6.6	6.6	0	1	/	2.20	2.90
WSD	-0.2	-0.2	1010	2.6	/	6.6	17.2	4.6	4.6	0	1	/	Dry	2.95

*WS10 not located due to overgrown forest area

GAS AND GROUNDWATER MONITORING BOREHOLE RECORD SHEET					
Site: Egley Road	Operative(s): JPB	Date: 06/06/2019	Time: 12:45	Round: 7	Page: 1
MONITORING EQUIPMENT					
Instrument Type	Instrument Make	Serial No.	Date Last Calibrated		
Analox	GA5000	G501805	30/01/2019		
PID	Phocheck tiger	T-106448	04/10/2018		
Dip Meter	GeoTech				
MONITORING CONDITIONS					
Weather Conditions: Showers		Ground Conditions: Damp		Temperature: 17°C	
Barometric Pressure (mbar): 1009		Barometric Pressure Trend (24hr): Rising		Ambient Concentration: 0.1%CH ₄ , 0.1%CO ₂ , 21.0%O ₂	

MONITORING RESULTS														
Monitoring Point Location	Flow		Atmospheric Pressure (mbar)	CH ₄ %	CH ₄ % LEL	CO ₂ %	O ₂ %	VOC (ppm)		H ₂ S (ppm)	CO (ppm)	Depth to product (mbgl)	Depth to water (mbgl)	Depth to Base of well (mbgl)
	Peak	Steady						Peak	Steady					
WS2	0	0	1010	0	/	5.2	18.3	5.6	5.6	0	1	/	2.79	3.99
WS4	-0.1	-0.1	1010	0.1	/	0.5	20.6	5.7	5.7	0	1	/	3.66	3.84
WS5	0	0	1009	0.1	/	0.4	20.8	5.2	5.2	0	1	/	4.19	4.81
WS7	0	0	1010	0.1	/	5.0	16.1	4.6	4.6	0	1	/	4.06	4.90
WS10	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WSA	0	0	1010	0.1	/	5.0	16.9	8.3	8.3	0	1	/	2.09	2.79
WSB	-0.1	-0.1	1009	0.1	/	0.7	20.7	8.8	8.8	0	1	/	2.17	2.84
WSC	-0.1	-0.1	1010	0.1	/	0.5	18.7	6.6	6.6	0	1	/	2.20	2.90
WSD	-0.2	-0.2	1010	2.6	/	6.6	17.2	4.6	4.6	0	1	/	Dry	2.95

*WS10 not located due to overgrown forest area

GAS AND GROUNDWATER MONITORING BOREHOLE RECORD SHEET					
Site: Egley Road	Operative(s): AMM	Date: 10/06/2019	Time: 11:52	Round: 8	Page: 1
MONITORING EQUIPMENT					
Instrument Type	Instrument Make	Serial No.	Date Last Calibrated		
Analox	GA5000	G501805	30/01/2019		
PID	Phocheck tiger	T-106448	04/10/2018		
Dip Meter	GeoTech				
MONITORING CONDITIONS					
Weather Conditions: Raining		Ground Conditions: Wet		Temperature: 15°C	
Barometric Pressure (mbar): 1013		Barometric Pressure Trend (24hr): Steady		Ambient Concentration: 0.1%CH ₄ , 0.1%CO ₂ , 21.4%O ₂	

MONITORING RESULTS														
Monitoring Point Location	Flow		Atmospheric Pressure (mbar)	CH ₄ %	CH ₄ % LEL	CO ₂ %	O ₂ %	VOC (ppm)		H ₂ S (ppm)	CO (ppm)	Depth to product (mbgl)	Depth to water (mbgl)	Depth to Base of well (mbgl)
	Peak	Steady						Peak	Steady					
WS2	+0.3	+0.3	1014	0.1	/	12.6	14.4	2	2	0	0	/	2.79	3.99
WS4	+0.2	+0.2	1014	0.1	/	0.4	20.6	5	5	0	0	/	3.63	3.84
WS5	+0.1	+0.1	1014	0.1	/	0.4	20.6	5	5	0	0	/	3.63	4.83
WS7	+0.1	+0.1	1014	0.1	/	4.5	17.6	5	5	0	0	/	4.02	4.90
WS10	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WSA	+0.3	+0.3	1014	0.1	/	5.2	17.1	3	3	0	0	/	2.10	2.76
WSB	+0.3	+0.3	1013	0.1	/	0.9	20.6	4	4	0	0	/	2.17	2.85
WSC	+0.4	+0.4	1013	0.1	/	0.7	17.5	6	5	0	0	/	2.07	2.80
WSD	+0.2	+0.2	1014	3.3	/	7.6	14.8	2	2	0	0	/	Dry	3.96

*WS10 not located due to overgrown forest area



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JOMAS ASSOCIATES LTD

6-9 The Square,
Stockley Park,
Uxbridge,
UB11 1FW

CONTACT US

Website: www.jomasassociates.com
Tel: 0843-289-2187
Fax: 0872-115-4505
Email: info@jomasassociates.com