



WE LISTEN, WE PLAN, WE DELIVER

Geotechnical Engineering and Environmental Services across the UK.

GEO-ENVIRONMENTAL & GEOTECHNICAL 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

Report Title: Geo-environmental & Geotechnical Assessment Ground Investigation Report for Egley Road, Woking, GU22 0AF

Report Status: Final v1.2

Job No: P1381J1549/AMM

Date: 21st November 2019

QUALITY CONTROL – PREVIOUS RELEASE

Version	Date	Issued By
Final v1.1	12th November 2019	AM
Final v1.0	11th April 2019	AM

Prepared by: **JOMAS ASSOCIATES LTD** For: **WOKING FOOTBALL CLUB**

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



.....

Reviewed by
Peter Swettenham BSc (Hons)
MSc PgCert CEnv MIEEnvSc
Principal Geotechnical Engineer



.....

Approved 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

CONTENTS

	Page
EXECUTIVE SUMMARY	IV
1 INTRODUCTION	1
1.1 Terms of Reference	1
1.2 Proposed Development	1
1.3 Objectives	2
1.4 Scope of Works	2
1.5 Supplied Documentation	2
1.6 Limitations	2
2 SITE SETTING.....	4
2.1 Site Information	4
2.2 Desk Study Overview.....	4
3 GROUND INVESTIGATION	6
3.1 Rationale for Ground Investigation	6
3.2 Scope of Ground Investigation	6
3.3 In-situ Geotechnical Testing	7
3.4 Sampling Rationale.....	7
3.5 Sampling Limitations	8
3.6 Laboratory Analysis	8
4 GROUND CONDITIONS	11
4.1 Soil	11
4.2 Hydrogeology	11
4.3 Physical and Olfactory Evidence of Contamination.....	12
5 RISK ASSESSMENT – ANALYTICAL FRAMEWORK	13

5.1	Context and Objectives	13
5.2	Analytical Framework – Soils.....	13
5.3	BRE.....	14
6	GENERIC QUANTITATIVE RISK ASSESSMENT.....	15
6.1	Screening of Soil Chemical Analysis Results – Human Health Risk Assessment	15
6.2	Volatile Organic Compounds	17
6.3	Pesticides	17
6.4	Controlled Groundwater Risk Assessment.....	17
6.5	Screening of Soil Chemical Analysis Results – Potential Risks to Plant Growth	17
6.6	Screening for Water Pipes	18
6.7	Waste Disposal.....	18
7	SOIL GAS RISK ASSESSMENT	19
7.1	Soil Gas Results	19
7.2	Screening of Results	19
8	SUMMARY OF RESULTS.....	22
8.1	Land Quality Impact Summary	22
8.2	Review of Pollutant Linkages Following Site Investigation	22
9	GEOTECHNICAL ENGINEERING RECOMMENDATIONS.....	24
9.1	Ground Investigation Summary.....	24
9.2	Geotechnical Classification.....	24
9.3	Data Summary.....	24
9.4	Standard Penetration Tests	26
9.5	Building Near Trees	26
9.6	Foundations	27
9.7	Concrete in the Ground	28

9.8	Ground Floor Slabs	29
9.9	Excavations	30
9.10	In-Situ CBR Measurements	30
9.11	Groundwater Control	31
10	REFERENCES.....	32

APPENDICES

APPENDIX 1 – FIGURES

APPENDIX 2 – EXPLORATORY HOLE RECORDS

APPENDIX 3 – CHEMICAL LABORATORY TEST RESULTS

APPENDIX 4 – GEOTECHNICAL LABORATORY TEST RESULTS

APPENDIX 5 – SOIL GAS MONITORING TEST RESULTS

APPENDIX 6 – CALIFORNIA BEARING RATIO (CBR) TEST RESULTS

EXECUTIVE SUMMARY

Woking Football Club commissioned Jomas Associates Ltd to undertake a Geo-environmental and Geotechnical 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; and,
- To obtain geotechnical parameters to inform preliminary foundation design.

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	
Current Site Use	Unoccupied modern barn situated within a larger piece of land.
Proposed Site Use	Mixed use development comprising residential dwellings and leisure facility.
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 towards 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>
Intrusive Investigation	<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;

Site History and Ground Investigation	
	<ul style="list-style-type: none"> • 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.
Ground Conditions	<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 s seepage at 0.40m bgl. Groundwater was not reported in any of the other exploratory holes during the intrusive investigation.</p> <p>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>
Environmental Considerations	<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.</p> <p>No asbestos fibres were detected in the samples analysed in the laboratory.</p> <p>Risks to controlled waters are not considered to be significant.</p> <p>The water supply pipe requirements should be discussed at an early stage with the relevant utility provider.</p> <p>Following gas monitoring, the wider site can be characterised as Characteristic Situation 1, where gas protection measures are not required. However, it is recommended that additional monitoring well installations be installed and subsequent return gas monitoring are recommended within the area of the former contractors compound. The objective would be 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> <p>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.</p>
Geotechnical Considerations	<p>Based on the findings of this investigation, it is considered that traditional strip footings of 1m breadth formed at a depth in the order of 1.5-2m bgl within the underlying sands could be designed with an allowable bearing capacity of 175kPa. Alternatively, if greater bearing capacities are required a piled foundation solution has been considered.</p> <p>Foundations should not be formed in the granular materials until the granular materials have been proof compacted. Given the depth and likely size of these foundations it is considered that this could be undertaken using a hydraulic “elephants foot” or if the whole basement founding layer is compacted at the same time a vibrating roller or “whacker plate” if the machinery can be easily taken into the excavation and the stability of the excavation / safety of any workers entering the excavation can be assured.</p> <p>Excavations during the intrusive works, although open for a relatively short period of time remained reasonably stable. However, it is recommended that the stability of all excavations should be assessed during construction. Attention is also drawn to the provisions of the Health and Safety at Work Regulations, which state that the sides of any excavations greater than 1.2m</p>

Site History and Ground Investigation

depth, into which personnel are required to enter, should be fully supported or battered back to a safe angle.

Based on the results of chemical testing, the required concrete class for the site is DS-2 assuming an Aggressive Chemical Environment for Concrete classification of AC-2 in accordance with the procedures outlined in BRE Special Digest 1.

Interim Advice Note 73/06 Revision 1 Design Guidance for Road Pavement Foundations, suggest that a minimum permitted design CBR of 1.5% is used. Where a subgrade has a lower CBR, it is considered unsuitable support for a pavement foundation. It must therefore be permanently improved.

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 referred to as Egley Road, Woking, GU22 0AF and to provide indicative recommendations for foundation design prior to the redevelopment of the site.

1.1.2 To this end a Desk Study has been produced for the site and issued separately (Jomas, August 2018), followed by an 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 0NJ	Jomas Associates Ltd	P1381J1459/AMM Final	August 2018

1.1.4 The intrusive investigation was undertaken in accordance with Jomas proposal dated 08 February 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 For the purpose of geotechnical assessment, it is considered that the project could be classified as a Geotechnical Category (GC) 2 site in accordance with BS EN 1997. GC 2 projects are defined as involving:

- Conventional structures.
- Quantitative investigation and analysis.
- Normal risk.
- No difficult soil and site conditions.
- No difficult loading conditions.
- Routine design and construction methods.

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; and,
- To obtain geotechnical parameters to inform preliminary foundation design.

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 and geotechnical 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.

-
- 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.

Table 2.1: Site Information

Name of Site	Land Adjacent to Egley Road
Address of Site	Egley Road Woking GU22 0NJ
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 buildings for the construction of new buildings for commercial and residential use.

2.2 Desk Study Overview

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.

The conceptual site model is reproduced in Table 2.2 overleaf.

Table 2.2: Preliminary Risk Assessment for the Site

Sources	Pathways (P)	Receptors	Consequence of Impact	Probability of Impact	Risk Estimation	Hazard Assessment
<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) 	Medium	Low	Moderate	GI – Ground Investigation
			Severe for Asbestos	Low	Moderate	
			Severe	Unlikely	Low	
	<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) 	Medium	Unlikely	Low	

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 particularly targeting the sources identified in Table 2.1 .

3.2 Scope of Ground Investigation

3.2.1 The ground investigation was undertaken in two phases on 12th February and 06th March 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 site boundaries;
- Presence of groundwater beneath the site (if any), perched or otherwise;
- Determination of the presence or absence of hazardous ground gases
- Obtaining geotechnical parameters to allow initial design to take place.

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	8	WS2 – WS10	Up to 5.45mbgl	Obtain shallow samples for laboratory contamination and geotechnical testing. To allow in-situ geotechnical testing. WS2 – Positioned adjacent to 'fire pit' WS7 – Positioned adjacent to barrel storage area

Investigation Type	Number of Exploratory Holes Achieved	Exploratory Hole Designation	Depth Achieved (m BGL)	Justification
Cable Percussion Boreholes	3	BH1 – BH3	Up to 15.00mbgl	Obtain deeper samples for laboratory contamination and geotechnical testing. To allow in-situ geotechnical testing.
Monitoring Wells	5	WS2, WS4, WS5, WS7, WS10	Up to 4.96mbgl	Combined soil gas and groundwater monitoring wells, targeted response zone within sand deposits.
Mechanically Excavated Trial Pits	2	TP1 – TP2	Up to 1.50mbgl	Obtain samples for laboratory contamination testing.
Hand Dug Trial Pits	2	HDP1 – HDP2	Up to 1.00mbgl	Obtain samples for laboratory contamination testing.
California Bearing Ratio Tests	5	CBR1, CBR2, CBR5, CBR7, CBR10	Up to 1.00mbgl	To inform roadway design.

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 site as shown in the exploratory hole location plan presented in Figure 2. The exploratory hole records are included in Appendix 2.

3.2.7 Where monitoring well installations were not installed, the exploratory holes were backfilled with the arisings (in the reverse order in which they were drilled) and the ground surface was reinstated so that no depression was left.

3.3 In-situ Geotechnical Testing

3.3.1 In-situ geotechnical testing included Standard Penetration Tests. The determined ‘N’ values have been used to determine the relative density of granular materials and have been used with standard correlations to infer various other derived geotechnical parameters including the undrained shear strength of the cohesive strata. The results of the individual tests are on the appropriate exploratory hole logs in Appendix 2.

3.3.2 In-situ California Bearing Ratio (CBRs) were determined across the site using the dynamic probe methodology using a Perth Penetrometer Probe and the methodology laid out in IAN 73/06. Copies of the results and calculations are provided in Appendix 6.

3.4 Sampling Rationale

- 3.4.1 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).
- 3.4.2 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.
- 3.4.3 Soil samples were taken from across the site at various depths as shown in the exploratory hole logs.
- 3.4.4 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.
- 3.4.5 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.
- 3.4.6 Soil samples were taken from across the site at various depths as shown in the exploratory hole logs (copies of which are provided in Appendix 2). The methodology used and type of samples taken were chosen to allow the Sampling category to be A or B according to EN ISO 22475-1. This in turn allows suitable geotechnical testing to be carried out.
- 3.4.7 Groundwater strikes noted during drilling, are recorded within the exploratory hole records in Appendix 2.
- 3.4.8 Samples were stored in cool boxes (<4°C) and preserved in accordance with laboratory guidance.
- 3.5 Sampling Limitations**
- 3.5.1 WS1 was substituted with a mechanically excavated trial pit (TP2) due to site and time constraints.
- 3.5.2 WS3 was substituted with a hand dug trial pit due to time constraints.
- 3.5.3 Exploratory boreholes WS6, WS8 and WS9 were terminated at 4.45m bgl due to time constraints.
- 3.5.4 The remaining boreholes were completed in their proposed locations to the proposed depths.
- 3.6 Laboratory Analysis**
- 3.6.1 A programme of laboratory testing, scheduled by Jomas Associates Limited, was carried out on selected samples of Made Ground and natural strata.

Chemical Testing

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

3.6.3 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	
	Topsoil	Made Ground
Basic Suite S3	5	3
Basic Suite S5	1	1
TPHCWG (inc BTEX)	1	1
VOC/SVOC	1	1
Total Organic Content	2	2
Pesticides	2	0
Asbestos Screen & ID	6	4

3.6.4 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

3.6.5 To support the selection of appropriate tier 1 screening values, 4No samples were analysed for total organic carbon. Laboratory test results are summarised in Section 6, with raw laboratory data included in Appendix 3.

Geotechnical Laboratory Testing

3.6.6 In addition to the contamination assessment, soil samples were submitted to the UKAS Accredited laboratory of i2 Analytical Ltd. for a series of analyses.

3.6.7 This testing was specifically designed to:

- to classify the samples; and
- to obtain parameters (either directly or sufficient to allow relevant correlations to be used) relevant to the technical objectives of the investigation.

3.6.8 The following laboratory geotechnical testing (as summarised in Table 3.4) was carried out:

Table 3.4 Laboratory Geotechnical Analysis

BS 1377 (1990) Test Number	Test Description	Number of tests
Part 2		
3.2	Moisture Content Determination	6
4.3 and 5.3	Liquid and Plastic Limit Determination (Atterberg Limits)	2
9.2 and 9.3	Particle Size Distribution - Sieving	9

3.6.9 The water soluble sulphate and pH results obtained as part of the chemical analysis was used in combination with BRE Special Digest 1 to allow buried concrete to be classified.

3.6.10 The results of the geotechnical laboratory testing are presented as Appendix 4 and discussed in Section 9 of this report.

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. The ground conditions encountered are summarised in Table 4.1 below, based on the strata observed during the investigation.

Table 4.1: Ground Conditions Encountered

Stratum and Description	Encountered from (m bgl)	Base of strata (m bgl)	Thickness range (m)
Soft consistency* brown sandy slightly gravelly clay with roots and rootlets. Sand is fine. Gravel consists of occasional brick fragments. (MADE GROUND - Topsoil)	0.00	0.30 – 0.70	0.30 – 0.70
Soft consistency* brown sandy CLAY with roots and rootlets. Sand is fine. (TOPSOIL)	0.00	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 – 0.70	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)	0.60 – 1.00	4.45 – 15.00	3.85 – 14.60

*Field description

4.2 Hydrogeology

4.2.1 During the intrusive works groundwater was reported in a singular exploratory hole WS9 as seepage from 0.40m bgl.

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

4.2.3 4No return groundwater monitoring visits were undertaken between 14th March 2019 and 2nd April 2019. 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

4.2.4 It is noted that there is only slight variation in the observed groundwater levels. It is therefore considered likely that the observed variations are likely to be due to changes in the ground elevation rather than a significant difference in depth to groundwater.

4.3 Physical and Olfactory Evidence of Contamination

4.3.1 A 'fire pit', ca 2m x 2m in area was identified towards the west of the barn development on site. The fire contained ashes and the remains of burnt waste materials including furniture. Borehole location WS2 was positioned adjacent to this feature. No physical or olfactory evidence of contamination was noted within this borehole, or any other exploratory locations.

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, Dibenz(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

5.2.6 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 selection of generic assessment criteria, as 1.20% was the mean value obtained from laboratory analysis.

5.2.7 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 with regards to a residential with plant uptake end use scenario.

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.

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 7.

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	10	S4UL 37	2.2	14	0
Cadmium	mg/kg	10	S4UL 11	15	6.1	0
Chromium	mg/kg	10	S4UL 910	24	72	0
Lead	mg/kg	10	C4SL 200	48	110	0
Mercury	mg/kg	10	S4UL 40	<0.3	0.7	0
Nickel	mg/kg	10	S4UL 180	4.8	12	0
Copper	mg/kg	10	S4UL 2400	27	71	0
Zinc	mg/kg	10	S4UL 3700	55	170	0
Total Cyanide ^A	mg/kg	10	CLEA v 1.06 33	<1	4	0
Selenium	mg/kg	10	S4UL 250	<1.0	<1.0	0
Boron Water Soluble	mg/kg	10	S4UL 290	0.3	1.2	0
Phenols	mg/kg	10	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	10	S4UL 2.3	<0.05	<0.05	0
Acenaphthylene	mg/kg	10	S4UL 170	<0.05	<0.05	0
Acenaphthene	mg/kg	10	S4UL 210	<0.05	<0.05	0
Fluorene	mg/kg	10	S4UL 170	<0.05	<0.05	0
Phenanthrene	mg/kg	10	S4UL 95	<0.05	0.34	0
Anthracene	mg/kg	10	S4UL 2400	<0.05	0.13	0
Fluoranthene	mg/kg	10	S4UL 280	<0.05	0.77	0
Pyrene	mg/kg	10	S4UL 620	<0.05	0.99	0
Benzo(a)anthracene	mg/kg	10	S4UL 7.2	<0.05	0.58	0
Chrysene	mg/kg	10	S4UL 15	<0.05	0.66	0

Determinand	Unit	No. Samples Tested	Screening Criteria	Min	Max	No. Exceeding	
Benzo(b)fluoranthene	mg/kg	10	S4UL	2.6	<0.05	0.93	0
Benzo(k)fluoranthene	mg/kg	10	S4UL	77	<0.05	0.36	0
Benzo(a)pyrene	mg/kg	10	S4UL	2.2	<0.05	0.83	0
Indeno(123-cd)pyrene	mg/kg	10	S4UL	27	<0.05	0.41	0
Dibenzo(ah)anthracene	mg/kg	10	S4UL	0.24	<0.05	<0.05	0
Benzo(ghi)perylene	mg/kg	10	S4UL	320	<0.05	0.54	0
Total PAH	mg/kg	10	-	-	<0.80	6.84	-

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	8	S4UL	27	<0.1	<0.1	0
>C ₁₀ -C ₁₂	mg/kg	8	S4UL	74	<2.0	9.0	0
>C ₁₂ -C ₁₆	mg/kg	8	S4UL	140	<4.0	12	0
>C ₁₆ -C ₂₁	mg/kg	8	S4UL	260	<1.0	20	0
>C ₂₁ -C ₃₅	mg/kg	8	S4UL	1100	<10	95	0
Total TPH	mg/kg	8	-	-	17.1	136.1	-

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	2	S4UL	42	<0.001	<0.001	0
>C ₆ -C ₈ Aliphatic	mg/kg	2	S4UL	100	<0.001	<0.001	0
>C ₈ -C ₁₀ Aliphatic	mg/kg	2	S4UL	27	<0.001	<0.001	0
>C ₁₀ -C ₁₂ Aliphatic	mg/kg	2	S4UL	130	<1.0	<1.0	0
>C ₁₂ -C ₁₆ Aliphatic	mg/kg	2	S4UL	1100	<2.0	<2.0	0
>C ₁₆ -C ₃₅ Aliphatic	mg/kg	2	S4UL	65000	<16.0	21	0
>C ₅ -C ₇ Aromatic	mg/kg	2	S4UL	70	<0.001	<0.001	0
>C ₇ -C ₈ Aromatic	mg/kg	2	S4UL	130	<0.001	<0.001	0
>C ₈ -C ₁₀ Aromatic	mg/kg	2	S4UL	34	<0.001	<0.001	0
>C ₁₀ -C ₁₂ Aromatic	mg/kg	2	S4UL	74	<1.0	<1.0	0
>C ₁₂ -C ₁₆ Aromatic	mg/kg	2	S4UL	140	<2.0	<2.0	0
>C ₁₆ -C ₂₁ Aromatic	mg/kg	2	S4UL	260	<10	12	0

TPH Band	Unit	No. Samples Tested	Screening Criteria	Min	Max	No. Exceeding
>C ₂₁ -C ₃₅ Aromatic	mg/kg	2	S4UL 1100	43	49	0
Total TPH (Ali/Aro)	mg/kg	2	-	54	59	-

6.2 Volatile Organic Compounds

6.2.1 In addition to the suites outlined previously, 2No 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 Controlled Groundwater Risk Assessment

6.4.1 A potential pollutant linkage was not considered to exist following the desk study, and following the ground investigation, given the lack of evidence of potential contamination at the site, this conclusion is considered to remain valid.

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	27	71	0
Nickel	110	4.8	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	2	0.5	<0.056	<0.056	0
BTEX	2	0.1	<0.001	<0.001	0
MTBE	2	0.1	<0.001	<0.001	0
EC5-EC10	8	1	<0.1	<0.1	0
EC10-EC16	8	10	<6.0	21	2 No exceedances WS4 (0.25m) WS6 (0.25m)
EC16-EC40	8	500	<17	115	0
Naphthalene	10	5	<0.05	<0.05	0
Phenols	10	2	<1.0	<1.0	0

*Laboratory detection limit

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 Waste Disposal

6.7.1 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 from 14 March 2019 to 02 April 2019, to monitor wells installed within boreholes at the site for soil gas concentrations and groundwater levels.
- 7.1.2 During these visits atmospheric pressure ranged between 1000mb and 1035mb. During these visits pressure trends observed were falling and steady.
- 7.1.3 The results of the monitoring undertaken are summarised in Table 7.1 below, with the monitoring records presented in Appendix 6.

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 – 17.2	3.4 – 20.0	0	<1.0	0.0 – 0.2	0.0 – 0.2	1.78 – 2.14	4.04
WS4	<0.1	0.9 – 2.0	18.9 – 19.8	0	<1.0	0.0	0.0	2.90 – 3.12	3.90
WS5	<0.1	0.8 – 0.9	19.9 – 20.2	0	<1.0	0.0 – 0.1	0.0 – 0.1	3.18 – 3.54	4.84
WS7	<0.1	3.4 – 4.4	16.3 – 16.7	0	<1.0	0.0 – 0.1	0.0 – 0.1	3.91 – 3.94	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

7.2 Screening of Results

- 7.2.1 As shown in Table 7.1, methane has been reported at a maximum concentration of 0.5% v/v at a single borehole location (WS2). Carbon dioxide has been reported to a maximum concentration of 17.2% v/v at the same single location. Screening of the monitoring well headspaces with a photo-ionisation detector (PID) has detected maximum Volatile Organic Compound (VOC) concentration to maximum levels of <1ppm. A maximum flow rate of 0.2l/hr has been reported.
- 7.2.2 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.
- 7.2.3 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.”*
- 7.2.4 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.”

7.2.5 For an initial review Type A has been adopted as the relevant category for the proposed development as this provides the most conservative assessment.

7.2.6 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).

7.2.7 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)

7.2.8 The Characteristic Situation is then determined from Table 8.5 of CIRIA C665.

7.2.9 To accord with C665, worst case conditions are used in the calculation of GSVs for the site.

7.2.10 A worst-case flow rate of 0.2/hr (maximum reported) will be used in the calculation of GSVs for the site. The Characteristic Situation is then determined from Table 8.5 of CIRIA C665.

7.2.11 To accord with C665, worst case conditions are used in the calculation of GSVs for the site. These have been summarised below in Table 7.2.

Table 7.2: Summary of Gas Monitoring Data

Gas	Concentration (v/v %)	Peak Flow Rate (l/hr)	GSV (l/hr)	Characteristic Situation (after CIRIA C665)
CO ₂	17.2	0.2	0.0344	1
CH ₄	0.5	0.2	0.001	1

7.2.12 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.

7.2.13 Although classification of the according the GSVs lead to a CS1 classification, due to the concentrations of CO₂ over 5%, consideration should be given to increasing this to CS2, in accordance with BS8485 guidance. This was noted at one location (WS2) on two occasions (21st and 28th March) at levels of 8.3% and 17.2% v/v respectively. The elevated concentrations of CO₂ were reported in a single monitoring well (WS2) in the north eastern part of site, located adjacent to a surface fire pit.

- 7.2.14 Local authority correspondence from the former Desk Study Report (Jomas – August 2018) has identified that part of the site was used as a contractors compound associated with construction at an adjacent site, as a result this was identified as a potential source (S1) of Made Ground as detailed in Table 2.2. Publicly available satellite imagery shows that in March 2017 the north eastern part of the site (comprising exploratory locations TP1, TP2, HDP1, BH1, HDP2 and WS2) appears to represent the contractors compound, as the school directly north of site is being developed at this date. It is noted that in TP1 and TP2, slightly deeper made ground was encountered in comparison with elsewhere on site. The made ground in this area was found to contain anthropogenic materials comprising brick, concrete, ceramic and plastic, which was not observed elsewhere on site.
- 7.2.15 It is considered unlikely, however, that this made ground could comprise a significant ground gas generation source.
- 7.2.16 It is possible that the elevated concentrations of CO₂ reported in WS2 are as a result of the adjacent surface fire pit. It is possible that petrol or other hydrocarbons could have been used as a lighting aid in the fire pit, with residual contaminants producing methane and carbon dioxide during degradation. It should be noted that no visual or olfactory evidence of hydrocarbon contamination were encountered in WS2, nor were elevated concentrations of any contaminants detected.
- 7.2.17 No other potential sources of ground gases are known within the CSM.
- 7.2.18 It is recommended that additional monitoring well installations be installed and subsequent return gas monitoring are recommended within the area of the former contractors compound. The objective would be 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.

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.'
- 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.
- Risks to controlled waters are not considered to be significant.
- The water supply pipe requirements should be discussed at an early stage with the relevant utility provider.
- Following gas monitoring, the wider site can be characterised as Characteristic Situation 1, where gas protection measures are not required. However, it is recommended that additional monitoring well installations be installed and subsequent return gas monitoring are recommended within the area of the former contractors compound. The objective would be 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.
- 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.

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) 	<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	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) 	?
<ul style="list-style-type: none"> Potential for contaminated ground from historic use as a nursery – southern half of site (S3) 	<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 GEOTECHNICAL ENGINEERING RECOMMENDATIONS

9.1 Ground Investigation Summary

9.1.1 No detailed structural engineering design information, with respect to the type of construction and associated structural loadings, was provided at the time of preparing this report. Consequently, a detailed discussion of all the problems that may arise during the proposed redevelopment scheme is beyond the scope of this report.

9.1.2 Practical solutions to the difficulties encountered, both prior to, and during construction, are frequently decided by structural constraints or economic factors. For these reasons, this discussion is predominantly confined to remarks of a general nature, which are based on site conditions encountered during the intrusive investigations.

9.1.3 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.’

9.2 Geotechnical Classification

9.2.1 At the Desk Study stage this development was deemed to be a GC2 development in accordance with BS: 1997.

9.2.2 The findings of the investigation undertaken and discussed previously do not change this assessment.

9.3 Data Summary

9.3.1 The results of the ground investigation revealed a ground profile comprising a variable thickness of Made Ground (up to 0.70m bgl depth) and Topsoil, overlying slightly gravelly sand considered to represent weathered residual deposits of the Bagshot formation. This was reported to be underlain by sand deposits considered to represent the Bagshot Formation proven to a maximum depth of 15.00m bgl.

9.3.2 A summary of ground conditions obtained from the ground investigation and the derived geotechnical parameters, is provided in Table 9.1 below.

9.3.3 The predominant soil type encountered at site was reported as sand. The geotechnical analysis reported samples obtained at 1.50m, 8.50m and 10.00m bgl as clays. The sample obtained from 1.50m bgl is considered to represent weathered deposits of the Bagshot Formation. The deeper samples that were reported as clays is likely to either represent clay bands/pockets within the Bagshot Formation, or were recovered as such due to the percussive nature of the drilling equipment further disturbing the samples.

Table 9.1: Ground Conditions and Derived Geotechnical Parameters

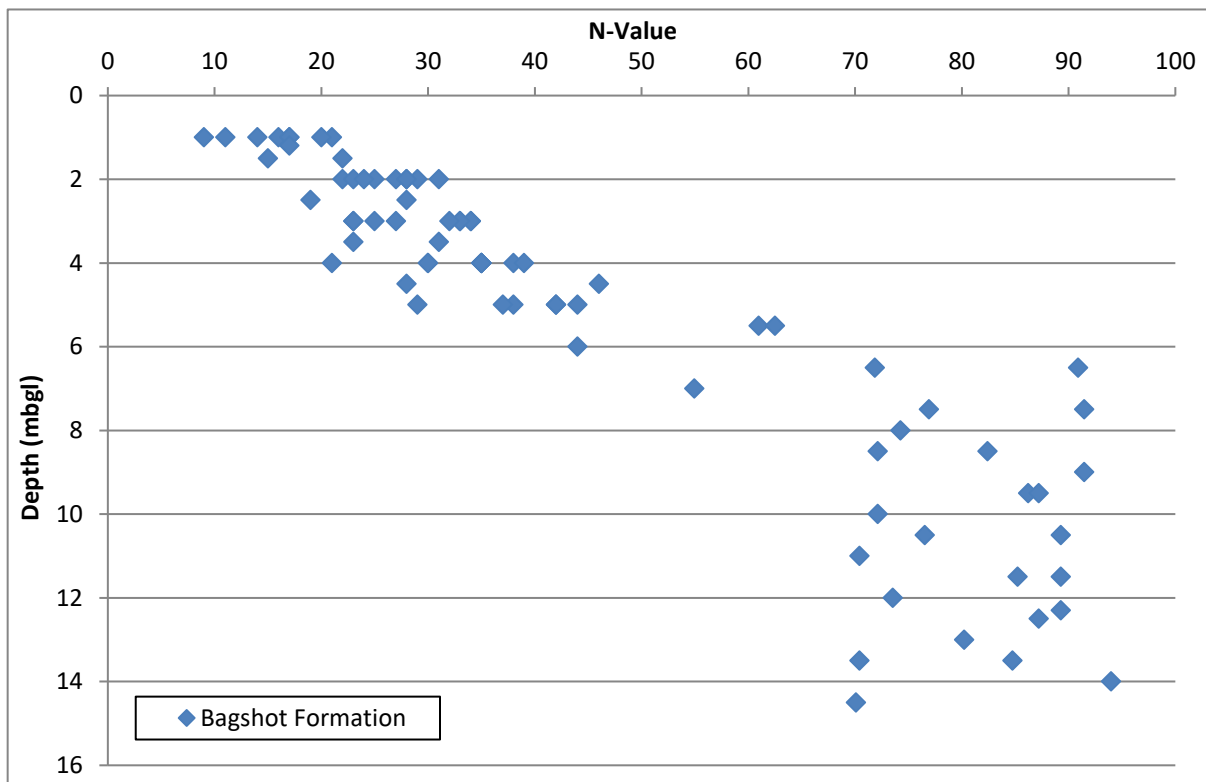
Strata	Depth Encountered (from-to) (mbgl)	SPT 'N' Value	Inferred Shear Strength (kPa)	Moisture content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (corrected plasticity) (%)	NHBC Volume Change Classification
Soft consistency* brown sandy slightly gravelly clay with roots and rootlets. Sand is fine. Gravel consists of occasional brick fragments. (MADE GROUND - Topsoil)	GL to 0.30 – 0.70	-	-	-	-	-	-	-
Soft consistency* brown sandy CLAY with roots and rootlets. Sand is fine. (TOPSOIL)	GL to 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 – 0.70 to 0.60 – 1.00	-	-	-	-	-	-	-
Medium becoming very dense brown to orange silty slightly clayey SAND. Sand is fine to medium. (BAGSHOT FORMATION)	0.60 – 1.00 to 4.45 – 15.00	9 – 129	-	23 – 29	37 – 52	19 – 25	18 – 27 (18 – 27)	Low to Medium

9.4 Standard Penetration Tests

9.4.1 Standard Penetration Tests were undertaken at regular intervals throughout the window sampler holes and cable percussive borehole. The results of the SPTs recorded within the Bagshot Formation are plotted against depth in Figure 1 below.

9.4.2 N_{equi} results have been calculated for both strata where the SPT crossed strata boundaries or where the full 300mm of penetration could not be achieved for 50 or fewer blows.

Figure 1: SPT 'N' Value v Depth



9.4.3 The results for the Bagshot Formation show a generally consistent increase with depth.

9.5 Building Near Trees

9.5.1 The underlying soil conditions have been shown to be of medium volume change potential. However, these samples were taken at depths (8.50m and 10.00m bgl) where the shrink/swell potential is unlikely to affect shallow soils.

9.5.2 Assuming that due to the natural variation of the weathered materials the results from the deeper soils could be present higher up (summarised in Table 9.1) and with reference to NHBC Chapter 4.2, a minimum founding depth of 1.25m bgl is recommended to provide the most conservative assessment. This would allow for restricted new planting.

- 9.5.3 Presence of existing and proposed trees may increase this minimum depth. It is recommended that a tree survey that should include: location, species and height of all trees on and near to the proposed development is recommended.
- 9.5.4 Guidance is also given in relation to other aspects of construction where the shrink / swell potential of the soils may be needed to take into consideration. This guidance is summarised in the appropriate sections below.
- 9.6 Foundations**
- 9.6.1 Foundations should not be formed in either the Made Ground or the Topsoil due to the unacceptable risk of total and differential settlement.
- 9.6.2 It should be noted that the demolition and removal of existing structures, foundations and services may increase the depth of Made Ground on the site.
- 9.6.3 The comments below are indicative only based on limited ground investigation data. Foundations should be designed by a suitably qualified Engineer. Once structural loads have been fully determined a full design check in accordance with BS EN 1997 should be undertaken to confirm suitability of foundation choice.
- Traditional Shallow Foundations
- 9.6.4 It is likely that traditional shallow foundations would be appropriate to support the majority of the proposed structures. However, the location of previous, existing and proposed trees must be taken into consideration in the design of foundations.
- 9.6.5 Based on the findings of this investigation, it is considered that traditional strip footings of 1m breadth formed at a depth in the order of 1.25m bgl within the underlying sands could be designed with an allowable bearing capacity of 110kPa.
- 9.6.6 If greater allowable carrying capacities are required then foundations of a similar size but deepened to 1.5m could be designed on an allowable bearing capacity of 150kPa whilst 200kPa could be achieved at 2m bgl.
- 9.6.7 Foundations formed in suitably compacted granular materials do not generally experience any consolidation settlements.
- 9.6.8 It is recommended that excavations to form the foundations should be undertaken using a toothless bucket to reduce the potential for disturbance of the underlying granular strata.
- 9.6.9 Formations of the structures should be inspected by a competent person. Any loose or soft material should be removed and replaced with well-graded, properly compacted granular fill or lean mix concrete. The formation should be blinded if left exposed for more than a few hours or if inclement weather is experienced.
- 9.6.10 Foundations should not be formed in the granular materials until the granular materials have been proof compacted. Given the depth and likely size of these foundations it is considered that this could be undertaken using a hydraulic "elephants foot" or if the whole basement founding layer is compacted at the same time a vibrating roller or "whacker plate" if the machinery can be easily taken into the excavation and the stability of the excavation / safety of any workers entering the excavation can be assured.

9.6.11 It should be noted that deeper “pockets” of the Bagshot Formation were noted to locally be cohesive. If such a “pocket” is noted during excavation of the foundations it is recommended that the foundations are deepened through it.

9.6.12 Where foundations are locally deepened the foundation would need to be stepped with each step no more than 150mm and the foundation suitably reinforced, to prevent unacceptable differential settlement.

Piled Foundation Design

9.6.13 If greater allowable carrying capacities are required, a piled foundation solution could be adopted within the underlying sand deposits.

9.6.14 The piled foundations will carry their working load in a combination of skin friction along the sides of the pile and end bearing at the base of the pile. The piles should be designed by a suitably qualified and experienced piling specialist using a suitable factor of safety with the settlement at working load specified to meet any structural requirements. Table 9.2 provides some indicative capacities for a single pile for the diameter and depths shown.

Table 9.2: Indicative Piles Capacities (kN)

Toe Depth (m bgl)	Diameter of Pile (m)				
	0.3	0.45	0.6	0.75	0.9
Indicative Total Pile Carry Capacity (kN)					
4	90	195	345	540	770
5	145	315	545	840	1200
6	230	485	835	1285	1825
7	345	715	1220	1855	2620
8	475	965	1625	2450	3440
9	590	1160	1915	2850	3970
10	740	1410	2275	3340	4600

9.6.15 It should be noted that the above assumes a bored piling system. Other methods of piling and equipment may provide different results.

9.6.16 Should any loading be placed directly on the ground which cause the ground to settle relative to the piles then additional negative skin friction loads could be imposed on the piles.

9.6.17 The use of a piling foundation solution will require the emplacement of an engineered granular piling mat to support the piling rig and prevent overturning. This should be designed and constructed in accordance with BRE 470.

9.7 Concrete in the Ground

9.7.1 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.

9.7.2 In accordance with BRE Special Digest 1, as there are less than 10 results in the data set the highest value has been taken.

9.7.3 Table 9.3 summarises the analysis of the aggressive nature of the ground for each of the strata encountered within the ground investigation.

Table 9.3: Concrete in the Ground Classes

Stratum	No. Samples	pH range	Highest WS Sulphate (mg/l)	Design Sulphate Class	ACEC Class
Made Ground	4	7.4 – 7.9	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

9.8 Ground Floor Slabs

9.8.1 The ground has been noted to be overwhelmingly granular with only a few pockets of cohesive material noted at depth. It is therefore considered that following proof compaction a ground bearing floor slab would be appropriate.

9.8.2 Formations of the structures should be inspected by a competent person. Any loose or cohesive material should be removed and replaced with well-graded, properly compacted granular fill or lean mix concrete. The formation should be blinded if left exposed for more than a few hours or if inclement weather is experienced

9.8.3 If extensive cohesive materials are encountered a ground bearing floor slab, could still be used if emplaced on a blanket of suitable granular materials. The granular blanket should be at least 50% of the foundation depth and no more than 1.25m deep (measured from ground level). Assuming that there the proposed and current trees do not increase the required depth for shallow foundations this would mean a blanket of granular material between 0.5m and 1.25m thick

9.8.4 The granular blanket should extend beyond the edge of the foundation by a distance equal to its natural angle of repose, plus 0.5m. The angle of repose will depend on the material used.

9.8.5 If a ground bearing floor slab is used then, ground gas ventilation / drains may need to be incorporated into the underside of the slab. These are usually put in either the granular blanket or in granular filled trenches.

9.8.6 Alternatively, if cohesive materials are encountered a suspended floor slab could be used. In accordance with NHBC chapter 4.2 the depth of clear void beneath the suspended floor slab will be dependent on the floor type used.

9.8.7 If the development adopts a piled foundation solution suspended floor slabs will be required.

9.8.8 Under suspended in-situ concrete ground floor a minimum void of 150mm is required. Whilst under suspended precast concrete and timber floors a minimum of 300mm is required.

9.8.9 This void could be used as part of the ground gas protection measures if designed appropriately.

9.8.10 The loadings from the suspended floor slab will need to be carried by the foundations, which will need to be designed to not only carry the structural loadings but the additional floor loadings.

9.9 Excavations

9.9.1 It is likely that some shallow excavations will be required at the site for services etc, in addition to larger excavations during the remediation and construction works. These are anticipated to remain stable for the short term only.

9.9.2 The stability of all excavations should be assessed during construction. The sides of any excavations into which personnel are required to enter, should be assessed and where necessary fully supported or battered back to a safe angle.

9.9.3 If battering is used then the effects of adverse weather conditions should be considered.

9.9.4 Any vertically sided excavations require support to provide safe man access and to support the sides of the excavation. Supports should be installed as excavation proceeds. For service excavations, overlapping trench sheets could be used as close support in the Made Ground deposits to minimise ground loss. Alternatively, consideration could be given to the use of trench boxes provided excavations take place within the boxes.

9.9.5 Attention is also drawn to the provisions of the Health and Safety at Work Regulations, which state that the sides of any excavations greater than 1.2m depth, into which personnel are required to enter, should be fully supported or battered back to a safe angle.

9.10 In-Situ CBR Measurements

9.10.1 California Bearing Ratio tests were undertaken using a perth penetrometer probe at 5No positions as shown on the exploratory hole location plan presented as Figure 2.

9.10.2 The results have been used to calculate CBR values using the methodology outlined in Interim Advice Notice 73/06.

9.10.3 The recorded penetration and calculated CBR values from each position are provided in Appendix 7.

9.10.4 The results are summarised in Table 9.4 below:

Table 9.4: CBR Results

Position	Initial-Final Depth (mm bgl)	CBR (%)
TP1	200 – 300	2.3
	300 – 600	5.7
	600 – 850	24.3
	850 – 1000	10.1
WS2	150 – 450	1.5
	450 – 600	41.6

Position	Initial-Final Depth (mm bgl)	CBR (%)
	600 – 900	17.3
	900 – 1000	4.8
WS5	150 – 450	4.8
	450 - 1000	3.0
WS7	100 – 250	4.8
	250 – 450	8.7
	450 – 750	4.0
	750 – 1000	22
WS10	100 – 350	1.8
	350 – 800	3.7
	800 – 1000	10.1

9.10.5 It is recommended that a value of 1.5% is adopted for the purpose of initial road design. It would appear that higher results could also be achieved by lowering formation level slightly.

9.10.6 Proof rolling of granular materials (both natural and Made Ground) is likely to be required to provide a consistent formation base. These works are likely to improve the CBR that could be used for design purposes.

9.10.7 Further CBR testing should be undertaken following proof rolling/ground improvement to confirm that suitable improvement was achieved.

9.11 Groundwater Control

9.11.1 During the investigation groundwater was reported as seepage within borehole WS9 at 0.40m bgl depth. Groundwater was not reported within the remaining boreholes.

9.11.2 During return monitoring groundwater was reported at depths of between 1.78m and 3.94m bgl.

9.11.3 Subject to seasonal variations, any groundwater encountered during site works could be readily dealt with by conventional pumping from a sump used to collate waters.

9.11.4 Surface water or rainfall ingress is likely to freely drain through the granular materials. If this does not occur then they too could be dealt with by traditional sump and pump.

10 REFERENCES

- BRE Report BR211: Radon: Protective measures for new dwellings, 2007
- BRE Special Digest 1: Concrete in Aggressive Ground, 2005
- British Standards Institution (2007) BS 3882:2007 *Specification for topsoil and requirements for use*. Milton Keynes: BSI
- British Standards Institution (2011) BS 10175:2011 *Code of practice for the investigation of potentially contaminated sites*. Milton Keynes: BSI
- British Standards Institution (2015) BS 5930:2015 *Code of practice for site investigations*. Milton Keynes: BSI
- 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
- CIRIA C665 (2007) *Assessing risks posed by hazardous ground gases to buildings London*, CIRIA
- British Standards Institution (2015) BS 8485:2015 Incorporating corrigendum No.1 *Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings* Milton Keynes: BSI
- British Standards Institution (2013) BS 8576:2013 *Guidance on investigations for ground gas – Permanent gases and Volatile Organic Compounds (VOC's)*, Milton Keynes: BSI

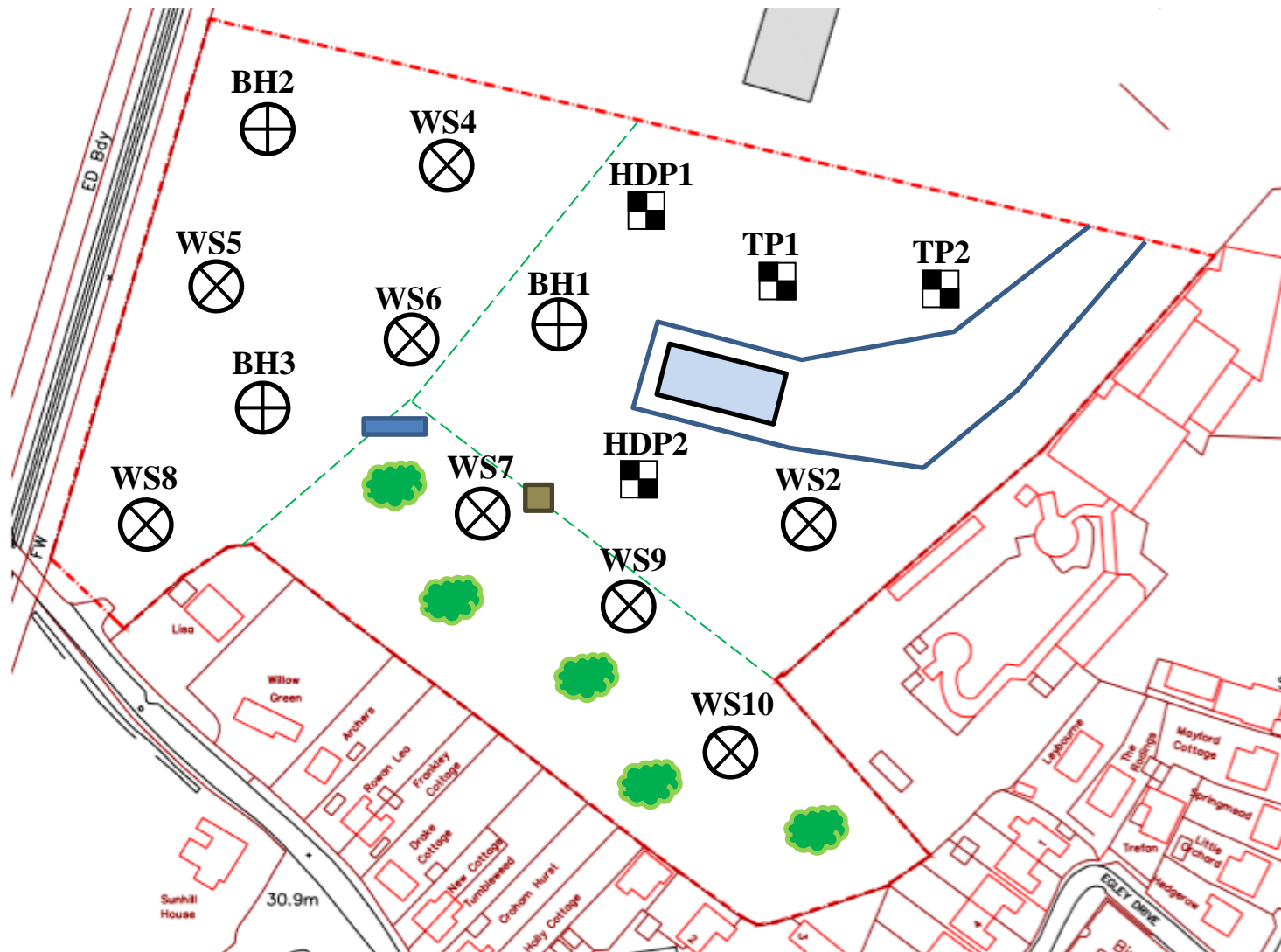
APPENDICES

APPENDIX 1 – FIGURES

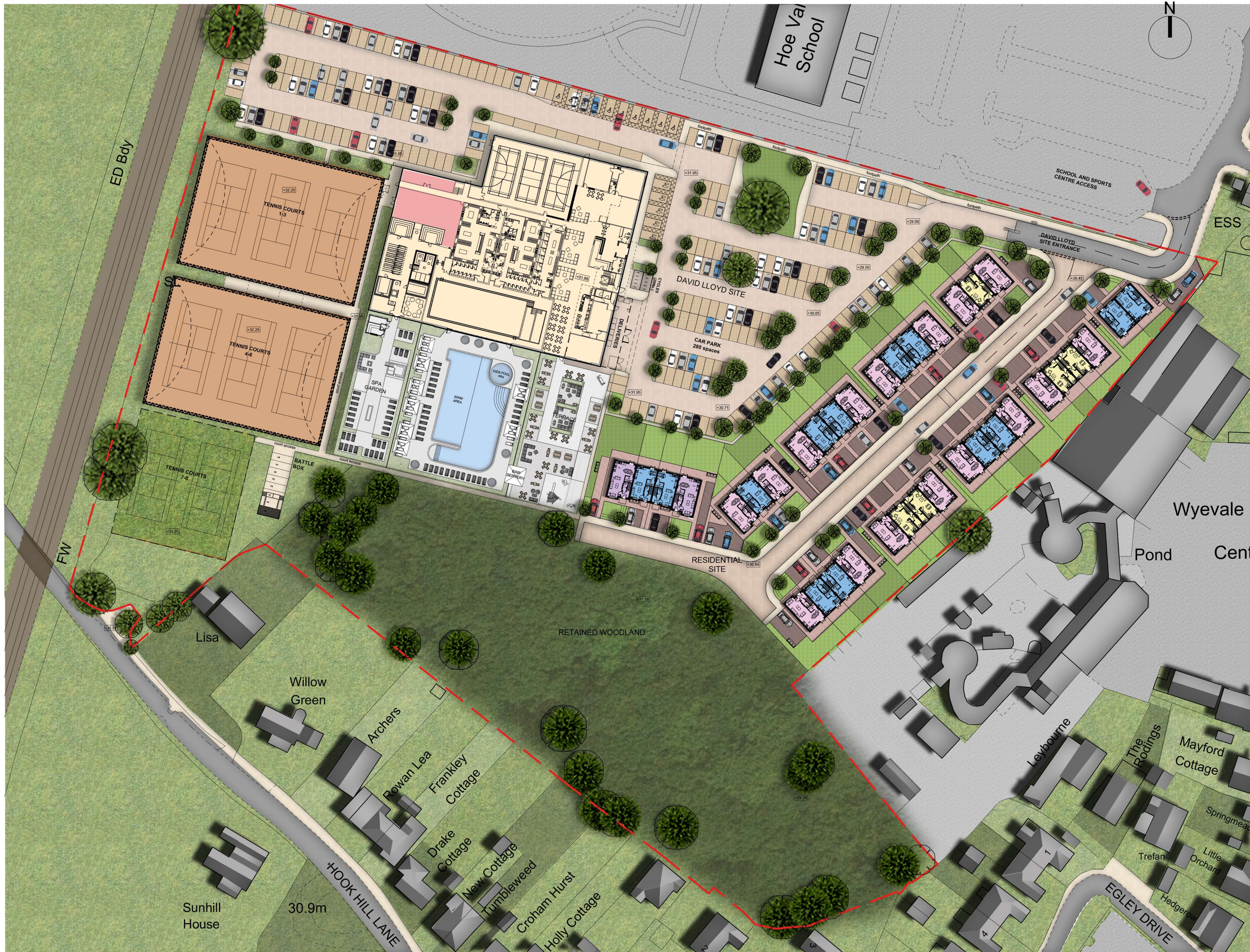
Project Name	Egley Road, Woking	Client	Woking Football Club
Project No.	P1381J1459	Date	15/08/2018
Title	Site Location Plan	Figure No	1



Project Name	Egley Road, Woking	Client	Woking Football Club
Project No.	P1381J1459	Date	07/02/2019
Title	Completed Exploratory Hole Plan	Prepared By	AM



- Borehole Installs:
 WS2
 WS4
 WS5
 WS7
 WS10
- CBR Testing:
 TP1
 WS2
 WS5
 WS7
 WS10



LEGEND

— SITE BOUNDARY

(Leisure Site Area: 22,303sqm)
(Residential Site Area: 9,161sqm)

RESIDENTIAL:

0.91 hectares
36no. houses

- 05 x House Type 1
- 13 x House Type 2
- 16 x House Type 3
- 02 x House Type 4

Gross density:
39 dwellings/ha
58,366 sqft saleable area
90 parking spaces provided

- House Type 1
2/3 BEDROOM (4 PEOPLE)
TOWNHOUSE
(123.2sqm /1326sqft)
- House Type 2
3 BEDROOM (6 PEOPLE)
TOWNHOUSE
(145sqm /1560sqft)
- House Type 3
4 BEDROOM (8 PEOPLE)
TOWNHOUSE
(162.3sqm /1747sqft)
- House Type 4
5 BEDROOM (9 PEOPLE)
TOWNHOUSE
(162.3sqm /1747sqft)

0 10 20m 40m
SCALE @ 1:500

APPENDIX 2 – EXPLORATORY HOLE RECORDS



CABLE PERCUSSION BOREHOLE RECORD

Exploratory Hole No:

BH1

Site Address: Egley Road Woking GU22 0AF

Project No: P1381J1459

Client: Goldev Woking Ltd

Ground Level:

Logged By: BD

Date Commenced: 12/02/2019

Checked By: PSw

Date Completed: 13/02/2019

Type and diameter of equipment: Cable Percussive

Sheet No: 2 Of 3

Water levels recorded during boring, m

Date:	15/02/2019				
Hole depth:	15.00				
Casing depth:	6.00				
Level water on strike:	7.20				
Water Level after 20mins:					

Remarks

1: Water strike at 7.20m bgl rising to 6.80 mbgl after 5min

2:

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					
									5.00			Very dense grey clayey silty SAND. (BAGSHOT FORMATION).	
S	5.50	4	12	13	14	14	9	50	5.50				
B	9 blows in R6 for 21mm penetration.												
									6.00				
S	6.50	7	14	16	20	14		50	6.50				
B	14 blows in R5 for 15mm penetration.												
									7.00				
S	7.50	7	13	15	22	13		50	7.50				
B	13 blows in R5 for 14mm penetration.												
									8.00				
S	8.50	5	12	17	19	14		50	8.50				
B	14 blows in R5 for 58mm penetration.												
									9.00				
S	9.50	8	15	16	23	11		50	9.50				
B	23 blows in R5 for 24mm penetration.												
									10.00				



CABLE PERCUSSION BOREHOLE RECORD

Exploratory Hole No:

BH1

Site Address: Egley Road Woking GU22 0AF

Project No: P1381J1459

Client: Goldev Woking Ltd

Ground Level:

Logged By: BD

Date Commenced: 12/02/2019

Checked By: PSw

Date Completed: 13/02/2019

Type and diameter of equipment: Cable Percussive

Sheet No: 3 Of 3

Water levels recorded during boring, m

Date:	15/02/2019				
Hole depth:	15.00				
Casing depth:	6.00				
Level water on strike:	7.20				
Water Level after 20mins:					

Remarks

1: Water strike at 7.20m bgl rising to 6.80 mbgl after 5min

2:

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					
	10.00								X			Very dense grey clayey silty SAND. (BAGSHOT FORMATION).	
S	10.50	9	13	19	20	11		50	X				
B									X				
	11.00								X				
S	11.50	8	16	21	20	9		50	X				
B									X				
	12.00								X				
S	12.30	9	16	20	18	12		50	X				
B									X				
	13.00								X				
S	13.50	10	15	22	24	4		50	X				
B									X				
	14.00								X				
S	14.50	11	18	23	22	5		50	X				
B									X				
	15.00								X				

Sampling Code: U- Undisturbed B - Large Disturbed D - Small Disturbed W - Water (U*) Non recovery of Sample
 Jomas Associates Ltd - Lakeside House, 1 Furzeground Way, Stockley Park, UB11 1BD
 T: 0843 289 2187 E: info@jomasassociates.com W: www.jomasassociates.com



CABLE PERCUSSION BOREHOLE RECORD

Exploratory Hole No:

BH2

Site Address: Egley Road Woking GU22 0AF

Project No: P1381J1459

Client: Goldev Woking Ltd

Ground Level:

Logged By: BD

Date Commenced: 12/02/2019

Checked By: Psw

Date Completed: 13/02/2019

Type and diameter of equipment: Cable Percussive

Sheet No: 2 Of 3

Water levels recorded during boring, m

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

Remarks

1: Silty SAND from 6.30m-15.00mbgl recovered as damp.

2: No water reported.

3:

4:

Sample or Tests									Strata			Strata Description	Installation				
Type	Depth (mbgl)	Result							Legend	Depth (mbgl)	Water Strikes (mbgl)						
		75	75	75	75	75	75	N									
S	5.50	3	9	10	12	14	14	50		6.30	Medium dense becoming dense and very dense orange to brown silty SAND. (BAGSHOT FORMATION).						
B	14 blows in R6 for 15mm penetration.																
S	6.50	3	5	10	15	15	40		6.30	Dense becoming very dense grey silty SAND. (BAGSHOT FORMATION).							
B	15 blows in R5 for 17mm penetration.																
S	7.50	4	6	13	17	20	50		6.30	Dense becoming very dense grey silty SAND. (BAGSHOT FORMATION).							
B	20 blows in R5 for 45mm penetration.																
S	8.50	5	6	14	20	16	50		6.30	Dense becoming very dense grey silty SAND. (BAGSHOT FORMATION).							
B	16 blows in R5 for 32mm penetration.																
S	9.50	5	7	13	19	18	50		6.30	Dense becoming very dense grey silty SAND. (BAGSHOT FORMATION).							
B	18 blows in R5 for 22mm penetration.																



CABLE PERCUSSION BOREHOLE RECORD

Exploratory Hole No:

BH2

Site Address: Egley Road Woking GU22 0AF

Project No: P1381J1459

Client: Goldev Woking Ltd

Ground Level:

Logged By: BD

Date Commenced: 12/02/2019

Checked By: PSw

Date Completed: 13/02/2019

Type and diameter of equipment: Cable Percussive

Sheet No: 3 Of 3

Water levels recorded during boring, m

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

Remarks

1: Silty SAND from 6.30m-15.00mbgl recovered as damp.

2: No water reported.

3:

4:

Sample or Tests									Strata			Strata Description	Installation
Type	Depth (mbgl)	Result							Legend	Depth (mbgl)	Water Strikes (mbgl)		
		75	75	75	75	75	75	N					
S	10.50	6	7	15	21	14			10.00		Dense becoming very dense grey silty SAND. (BAGSHOT FORMATION).		
B									10.50				
S	11.50	7	9	17	23	10			11.00				
B									11.50				
S	12.50	6	11	16	23	11			12.00				
B									12.50				
S	13.50	7	10	18	22	10			13.00				
B									13.50				
S	14.50	8	15	23	26				14.00				
B									14.50				
S	15.00								15.00				



CABLE PERCUSSION BOREHOLE RECORD

Exploratory Hole No:

BH3

Site Address: Egley Road Woking GU22 0AF

Project No: P1381J1459

Client: Goldev Woking Ltd

Ground Level:

Logged By: BD

Date Commenced: 12/02/2019

Checked By:

Date Completed: 13/02/2019

Type and diameter of equipment: Cable Percussive

Sheet No: 1 Of 4

Water levels recorded during boring, m

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

Remarks

1: Water seepage reported between 2.15m-2.30mbgl.

2:

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					
D	0.10								[Diagonal Hatching]	0.40		Grass over dark brown sandy slightly gravelly clay. (TOPSOIL).	[Cross-hatching]
ES	0.20												
ES	0.30								[Dotted with 'x' marks]		Medium dense becoming dense orange to brown silty SAND. (BAGSHOT FORMATION).	[Cross-hatching]	
B													
S	1.20	1	2	3	4	5	5	17					
B													
S	2.00	3	3	5	6	8	9	28					
B													
S	3.00	2	4	6	7	9	10	32					
B													
S	4.00	3	5	5	7	9	9	30					
B													
S	5.00	4	6	7	9	10	11	37					
B													



CABLE PERCUSSION BOREHOLE RECORD

Exploratory Hole No:

BH3

Site Address: Egley Road Woking GU22 0AF

Project No: P1381J1459

Client: Goldev Woking Ltd

Ground Level:

Logged By: BD

Date Commenced: 12/02/2019

Checked By:

Date Completed: 13/02/2019

Type and diameter of equipment: Cable Percussive

Sheet No: 2 Of 4

Water levels recorded during boring, m

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

Remarks

1: Water seepage reported between 2.15m-2.30mbgl.

2:

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					
S B	5.00	4	6	7	9	10	11	37	5.00	5.30	Medium dense becoming dense orange to brown silty SAND. (BAGSHOT FORMATION).		
									5.50		Dense rapidly becoming very dense grey slightly clayey silty SAND. (BAGSHOT FORMATION).		
S B	6.00	4	6	8	10	12	14	44	6.00				
									6.50				
S	7.00	3	7	12	15	16	7	50	7.00				
B													
									7.50				
S	8.00	4	8	13	16	21		50	8.00				
B													
									8.50				
S	9.00	5	9	15	18	17		50	9.00				
B													
									9.50				
S	10.00	5	8	17	22	11		50	10.00				
B													

Sampling Code: U- Undisturbed B - Large Disturbed D - Small Disturbed W - Water (U*) Non recovery of Sample
 Jomas Associates Ltd - Lakeside House, 1 Furzeground Way, Stockley Park, UB11 1BD
 T: 0843 289 2187 E: info@jomasassociates.com W: www.jomasassociates.com



CABLE PERCUSSION BOREHOLE RECORD

Exploratory Hole No:

BH3

Site Address: Egley Road Woking GU22 0AF

Project No: P1381J1459

Client: Goldev Woking Ltd

Ground Level:

Logged By: BD

Date Commenced: 12/02/2019

Checked By:

Date Completed: 13/02/2019

Type and diameter of equipment: Cable Percussive

Sheet No: 3 Of 4

Water levels recorded during boring, m

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

Remarks

1: Water seepage reported between 2.15m-2.30mbgl.

2:

3:

4:

Type	Depth (mbgl)	Sample or Tests						N	Legend	Strata		Strata Description	Installation
		Result								Depth (mbgl)	Water Strikes (mbgl)		
		75	75	75	75	75	75						
S	10.00	5	8	17	22	11		50	10.00			Dense rapidly becoming very dense grey slightly clayey silty SAND. (BAGSHOT FORMATION).	
B		11 blows in R5 for 58mm penetration.											
									10.50				
S	11.00	7	9	18	24	8		50	11.00				
B		8 blows in R5 for 63mm penetration.											
									11.50				
S	12.00	8	10	15	22	13		50	12.00				
B		13 blows in R5 for 54mm penetration.											
									12.50				
S	13.00	9	11	19	22	9		50	13.00				
B		9 blows in R5 for 37mm penetration.											
									13.50				
S	14.00	10	12	22	22	8		52	14.00				
B		8 blows in R5 for 16mm penetration.											
									14.50				
S	15.00	9	14	23	20	7		50	15.00				



CABLE PERCUSSION BOREHOLE RECORD

Exploratory Hole No:

BH3

Site Address: Egley Road Woking GU22 0AF

Project No: P1381J1459

Client: Goldev Woking Ltd

Ground Level:

Logged By: BD

Date Commenced: 12/02/2019

Checked By:

Date Completed: 13/02/2019

Type and diameter of equipment: Cable Percussive

Sheet No: 4 Of 4

Water levels recorded during boring, m

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

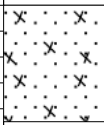
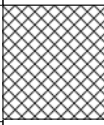
Remarks

1: Water seepage reported between 2.15m-2.30mbgl.

2:

3:

4:

Type	Depth (mbgl)	Sample or Tests							Strata	Strata Description	Installation		
		Result											
		75	75	75	75	75	75	N					
S	15.00	9	14	23	20	7		50	15.00		15.45	Dense rapidly becoming very dense grey slightly clayey silty SAND. (BAGSHOT FORMATION).	
									15.50				
									16.00				
									16.50				
									17.00				
									17.50				
									18.00				
									18.50				
									19.00				
									19.50				
									20.00				



Exploratory Hole No:

WS2

Site Address: Egley Road, Woking, GU22 0NH

Project No: P1381J1459

Client: Goldev Woking Ltd

Ground Level:

Logged By: AM

Date Commenced: 07/03/2019

Checked By: Psw

Date Completed: 07/03/2019

Type and diameter of equipment: Windowless Sampler

Sheet No: 1 Of 2

Water levels recorded during boring, m

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

Remarks

1: No water reported.

2: *Field description

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 - 0.30		Soft consistency* brown sandy slightly gravelly clay with roots and rootlets. Sand is fine. Gravel consists of occasional brick fragments. (MADE GROUND - Topsoil)		
ES	0.50								0.30 - 0.60		Recovered as loose* brown to orange silty clayey slightly gravelly SAND. Sand is fine to medium. Gravel consists of fine to coarse, sub-rounded flint. (RESIDUAL BAGSHOT FORMATION)		
ES SPT	1.00	2	2	2	3	3	3	11	0.60 - 1.00		Medium dense brown mottled orange silty clayey SAND. Sand is fine to medium. (BAGSHOT FORMATION)		
SPT	2.00	3	4	5	5	6	6	22	1.00 - 2.00				
D	2.50								2.00 - 2.50				
SPT	3.00	2	4	5	5	6	7	23	2.50 - 3.00				
D	3.50								3.00 - 3.50				
SPT	4.00	4	5	5	9	10	11	35	3.50 - 4.00				
D	4.50								4.00 - 4.30		Very dense brown silty SAND. Sand is fine to medium. (BAGSHOT FORMATION)		
SPT	5.00	6	7	8	10	12	12	42	4.30 - 5.00				



Exploratory Hole No:

WS2

Site Address: Egley Road, Woking, GU22 0NH

Project No: P1381J1459

Client: Goldev Woking Ltd

Ground Level:

Logged By: AM

Date Commenced: 07/03/2019

Checked By: PSw

Date Completed: 07/03/2019

Type and diameter of equipment: Windowless Sampler

Sheet No: 2 Of 2

Water levels recorded during boring, m

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

Remarks

1: No water reported.

2: *Field description

3:

4:

Type	Depth (mbgl)	Sample or Tests							Strata	Strata Description	Installation		
		Result											
		75	75	75	75	75	75	N					
SPT	5.00	6	7	8	10	12	12	42	5.00		5.45	Very dense brown silty SAND. Sand is fine to medium. (BAGSHOT FORMATION)	
									5.50				
									6.00				
									6.50				
									7.00				
									7.50				
									8.00				
									8.50				
									9.00				
									9.50				
									10.00				



Exploratory Hole No:

WS4

Site Address: Egley Road, Woking, GU22 0NH

Project No: P1381J1459

Client: Goldev Woking Ltd

Ground Level:

Logged By: AM

Date Commenced: 06/03/2019

Checked By: PSw

Date Completed: 06/03/2019

Type and diameter of equipment: Windowless Sampler

Sheet No: 1 Of 2

Water levels recorded during boring, m

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

Remarks

- 1: No water reported.
- 2: *Field description
- 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					
PJV	0.25											Soft consistency* brown sandy CLAY with roots and rootlets. Sand is fine. (TOPSOIL)	
PJV	0.70									0.50		Recovered as brown to orange silty clayey slightly gravelly SAND. Sand is fine to medium. Gravel consists of fine to coarse, sub-rounded flint. (RESIDUAL BAGSHOT FORMATION)	
D	0.90									1.00		Medium dense to dense brown mottled orange silty clayey SAND. Sand is fine to medium. (BAGSHOT FORMATION)	
SPT	1.00	1	3	3	4	5	5	17					
D	1.50									1.50		Medium dense brown silty SAND. Sand is fine to medium. (BAGSHOT FORMATION)	
SPT	2.00	3	4	7	7	8	9	31					
SPT	3.00									2.50		Medium dense brown silty SAND. Sand is fine to medium. (BAGSHOT FORMATION)	
D	3.00	4	6	8	7	9	10	34					
SPT	4.00									4.00		Medium dense brown silty SAND. Sand is fine to medium. (BAGSHOT FORMATION)	
D	4.00	2	3	4	5	5	7	21					
SPT	5.00									4.50		Medium dense brown silty SAND. Sand is fine to medium. (BAGSHOT FORMATION)	
SPT	5.00	4	5	6	6	8	9	29					
										5.00			



Exploratory Hole No:

WS4

Site Address:	Egley Road, Woking, GU22 0NH	Project No:	P1381J1459
Client:	Goldev Woking Ltd	Ground Level:	
Logged By:	AM	Date Commenced:	06/03/2019
Checked By:	PSw	Date Completed:	06/03/2019
Type and diameter of equipment:	Windowless Sampler	Sheet No:	2 Of 2

Water levels recorded during boring, m

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

Remarks

- 1: No water reported.
- 2: *Field description
- 3:
- 4:

Type	Depth (mbgl)	Sample or Tests							Strata	Legend	Depth (mbgl)	Water Strikes (mbgl)	Strata Description	Installation
		Result												
		75	75	75	75	75	75	N						
SPT	5.00	4	5	6	6	8	9	29	5.00		5.45		Medium dense brown silty SAND. Sand is fine to medium. (BAGSHOT FORMATION)	
									5.50					
									6.00					
									6.50					
									7.00					
									7.50					
									8.00					
									8.50					
									9.00					
									9.50					
									10.00					



Exploratory Hole No:

WS5

Site Address: Egley Road, Woking, GU22 0NH

Project No:

P1381J1459

Client: Goldev Woking Ltd

Ground Level:

Logged By: AM

Date Commenced:

06/03/2019

Checked By: PSw

Date Completed:

06/03/2019

Type and diameter of equipment: Windowless Sampler

Sheet No:

1 Of 2

Water levels recorded during boring, m

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

Remarks

- 1: No water reported.
- 2: *Field description
- 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					
PJV	0.25								0.00 - 0.50		Soft consistency* brown sandy CLAY with roots and rootlets. Sand is fine. (TOPSOIL)		
PJV	0.80								0.50 - 0.60		Recovered as loose* brown to orange silty clayey slightly gravelly SAND. Sand is fine to medium. Gravel consists of fine to coarse, sub-rounded flint. (RESIDUAL BAGSHOT FORMATION)		
SPT	1.00	2	1	2	2	3	2	9	0.60 - 1.00		Loose rapidly becoming medium dense brown mottled orange silty clayey SAND. Sand is fine to medium. (BAGSHOT FORMATION)		
SPT D	2.00	2	4	5	6	8	8	27	1.00 - 2.00				
SPT	3.00	3	3	6	6	7	4	23	2.00 - 3.00				
D	3.50								3.00 - 3.50		Medium dense becoming dense brown silty SAND. Sand is fine to medium. (BAGSHOT FORMATION)		
SPT	4.00	3	4	5	7	8	10	30	3.50 - 4.00				
D	4.50								4.00 - 4.50				
SPT	5.00	6	7	9	10	12	13	44	4.50 - 5.00				



Exploratory Hole No:

WS5

Site Address: Egley Road, Woking, GU22 0NH

Project No: P1381J1459

Client: Goldev Woking Ltd

Ground Level:

Logged By: AM

Date Commenced: 06/03/2019

Checked By: PSw

Date Completed: 06/03/2019

Type and diameter of equipment: Windowless Sampler

Sheet No: 2 Of 2

Water levels recorded during boring, m

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

Remarks

- 1: No water reported.
- 2: *Field description
- 3:
- 4:

Type	Depth (mbgl)	Sample or Tests							Strata	Strata Description	Installation		
		Result											
		75	75	75	75	75	75	N					
SPT	5.00	6	7	9	10	12	13	44	5.00		5.45	Medium dense becoming dense brown silty SAND. Sand is fine to medium. (BAGSHOT FORMATION)	
									5.50				
									6.00				
									6.50				
									7.00				
									7.50				
									8.00				
									8.50				
									9.00				
									9.50				
									10.00				



Exploratory Hole No:

WS6

Site Address: Egley Road, Woking, GU22 0NH

Project No: P1381J1459

Client: Goldev Woking Ltd

Ground Level:

Logged By: AM

Date Commenced: 06/03/2019

Checked By: PSw

Date Completed: 06/03/2019

Type and diameter of equipment: Windowless Sampler

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: No water reported.

2: *Field description

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									0.40		Soft consistency* brown sandy CLAY with roots and rootlets. Sand is fine. (TOPSOIL)	
ES	0.50									0.80		Recovered as loose* brown to orange silty clayey slightly gravelly SAND. Sand is fine to medium. Gravel consists of fine to coarse, sub-rounded flint. (RESIDUAL BAGSHOT FORMATION)	
SPT ES	1.00	2	3	3	4	4	5	16				Medium dense brown mottled orange silty clayey SAND. Sand is fine to medium. (BAGSHOT FORMATION)	
SPT	2.00	3	2	4	5	6	8	23					
D	2.50												
SPT	3.00	4	5	6	8	9	10	33		3.00		Dense brown silty SAND. Sand is fine to medium. (BAGSHOT FORMATION)	
D	3.50												
SPT	4.00	6	5	7	9	9	10	35		4.45			
	4.50												
	5.00												



Exploratory Hole No:

WS7

Site Address: Egley Road, Woking, GU22 0NH

Project No: P1381J1459

Client: Goldev Woking Ltd

Ground Level:

Logged By: AM

Date Commenced: 07/03/2019

Checked By: Psw

Date Completed: 07/03/2019

Type and diameter of equipment: Windowless Sampler

Sheet No: 1 Of 2

Water levels recorded during boring, m

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

Remarks

- 1: No water reported.
- 2: *Field description
- 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	0.20								0.00 - 0.30		Soft consistency* brown sandy CLAY with roots and rootlets. Sand is fine. (TOPSOIL)		
ES	0.50								0.30 - 0.50		Recovered as brown to orange silty clayey slightly gravelly SAND. Sand is fine to medium. Gravel consists of fine to coarse, sub-rounded flint. (RESIDUAL BAGSHOT FORMATION)		
ES SPT	1.00	3	3	4	5	5	7	21	0.50 - 1.00		Medium dense becoming dense brown mottled orange silty clayey SAND. Sand is fine to medium. (BAGSHOT FORMATION)		
									1.00 - 1.50				
									1.50 - 2.00				
D SPT	2.00	3	3	5	6	7	7	25	2.00 - 2.50				
									2.50 - 3.00				
D SPT	3.00	2	4	5	7	8	5	25	3.00 - 3.50				
									3.50 - 4.00				
D SPT	4.00	3	6	7	8	10	10	35	4.00 - 4.50				
									4.50 - 5.00				
SPT	5.00	6	7	9	8	10	11	38	5.00				



Exploratory Hole No:

WS7

Site Address: Egley Road, Woking, GU22 0NH

Project No: P1381J1459

Client: Goldev Woking Ltd

Ground Level:

Logged By: AM

Date Commenced: 07/03/2019

Checked By: PSw

Date Completed: 07/03/2019

Type and diameter of equipment: Windowless Sampler

Sheet No: 2 Of 2

Water levels recorded during boring, m

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

Remarks

- 1: No water reported.
- 2: *Field description
- 3:
- 4:

Type	Depth (mbgl)	Sample or Tests							Strata	Strata Description	Installation		
		Result											
		75	75	75	75	75	75	N					
SPT	5.00	6	7	9	8	10	11	38	5.00		5.45	Medium dense becoming dense brown mottled orange silty clayey SAND. Sand is fine to medium. (BAGSHOT FORMATION)	
									5.50				
									6.00				
									6.50				
									7.00				
									7.50				
									8.00				
									8.50				
									9.00				
									9.50				
									10.00				



Exploratory Hole No:

WS10

Site Address: Egley Road, Woking, GU22 0NH

Project No: P1381J1459

Client: Goldev Woking Ltd

Ground Level:

Logged By: AM

Date Commenced: 07/03/2019

Checked By: Psw

Date Completed: 07/03/2019

Type and diameter of equipment: Windowless Sampler

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: No water reported.
- 2: *Field description
- 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					
D	0.25								0.00 - 0.30		Soft consistency* brown sandy CLAY with roots and rootlets. Sand is fine. (TOPSOIL)		
D	0.50								0.30 - 0.60		Recovered as brown to orange silty clayey slightly gravelly SAND. Sand is fine to medium. Gravel consists of fine to coarse, sub-rounded flint. (RESIDUAL BAGSHOT FORMATION)		
SPT D	1.00	2	3	4	4	5	7	20	0.60 - 1.00		Medium dense becoming dense brown mottled orange silty clayey SAND. Sand is fine to medium. (BAGSHOT FORMATION)		
SPT D	2.00	4	8	6	7	8	8	29	1.00 - 2.00				
SPT D	3.00	3	6	8	8	8	9	33	2.00 - 3.00				
SPT D	4.00	4	7	9	10	10	10	39	3.00 - 4.00				
SPT	5.00	5	8	9	11	10	12	42	4.00 - 5.00	5.00			



TRIAL PIT RECORD

Exploratory Hole No:

TP2

Site Address:	Egley Road, Woking, GU22 0NH	Project No:	P1381J1459
Client:	Goldev Woking Ltd	Ground Level:	
Logged By:	AM	Date Commenced:	07/03/2019
Checked By:	PSw	Date Completed:	07/03/2019
Type and diameter of equipment:	JCB 3CX	Sheet No:	1 Of 1

Pit Dimension:	Length:	Width:	Depth:	0.70
----------------	---------	--------	--------	------

Remarks

- 1: No water reported.
- 2: *Field description
- 3:
- 4:

Type	Depth (mbgl)	Sample or Tests	Result	Strata			Strata Description
				Legend	Depth (mbgl)	Water Strikes (mbgl)	
ES	0.40			0.00			Soft consistency* brown to orange sandy gravelly clay. Gravel consists of flint, brick, concrete, ceramic and plastic fragments. (MADE GROUND - Topsoil)
				0.50			
				0.70			
				1.00			
				1.50			
				2.00			
				2.50			
				3.00			
				3.50			
				4.00			
				4.50			
				5.00			



TRIAL PIT RECORD

Exploratory Hole No:

HDP1

Site Address: Egley Road, Woking, GU22 0NH

Project No: P1381J1459

Client: Goldev Woking Ltd

Ground Level:

Logged By: AM

Date Commenced: 07/03/2019

Checked By:

Date Completed: 07/03/2019

Type and diameter of equipment: Hand Excavated

Sheet No: 1 Of 1

Pit Dimension: Length: 0.15 Width: 0.15 Depth: 1.00

Remarks
 1: No water reported.
 2: *Field description
 3: Hand dug pit to obtain shallow samples in the proposed position of WS1, which could not be undertaken due to time constraints.
 4:

Sample or Tests			Strata			Strata Description
Type	Depth (mbgl)	Result	Legend	Depth (mbgl)	Water Strikes (mbgl)	
ES	0.25			0.30		Soft consistency* brown sandy CLAY with roots and rootlets. Sand is fine. (TOPSOIL)
ES	0.40			0.50		Recovered as loose* brown to orange silty clayey slightly gravelly SAND. Sand is fine to medium. Gravel consists of fine to coarse, sub-rounded flint. (RESIDUAL BAGSHOT FORMATION)
				1.00		Medium dense* brown mottled orange silty clayey SAND. Sand is fine to medium. (BAGSHOT FORMATION)
				1.50		
				2.00		
				2.50		
				3.00		
				3.50		
				4.00		
				4.50		
				5.00		

APPENDIX 3 – CHEMICAL LABORATORY TEST RESULTS



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
------------------	------	-----	-----------	--------------	--------------	--------------	--------------	--------------

General Inorganics

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
----------------------------	-------	---	--------	-------	-------	-------	-------	-------

Speciated PAHs

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
-----------------------------	-------	-----	--------	------	------	------	------	------

Heavy Metals / Metalloids

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

Compound	Units	Limit of detection	Accreditation Status	1174604	1174605	1174606	1174607	1174608
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	-	-	-	-	-	-
--------------------------------------	-----	-----	------	---	---	---	---	---	---

Organochlorine Pesticides (OCP)

Parameter	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

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		

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	-				
------------------	------	-----	-----------	---	--	--	--	--

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	-				
----------------------------	-------	---	--------	---	--	--	--	--

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	-				
-----------------------------	-------	-----	--------	---	--	--	--	--

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	-				
-------------------------------------	-------	-----	--------	---	--	--	--	--

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

Iss No 19-32464-2 Egley Road, Woking, GU22 0AF JJ1459

This certificate should not be reproduced, except in full, without the express permission of the laboratory.

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

Page 15 of 16



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

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



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 4 – GEOTECHNICAL LABORATORY TEST RESULTS



TEST CERTIFICATE

Particle Size Distribution

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



Environmental Science

Tested in Accordance with: BS 1377-2: 1990

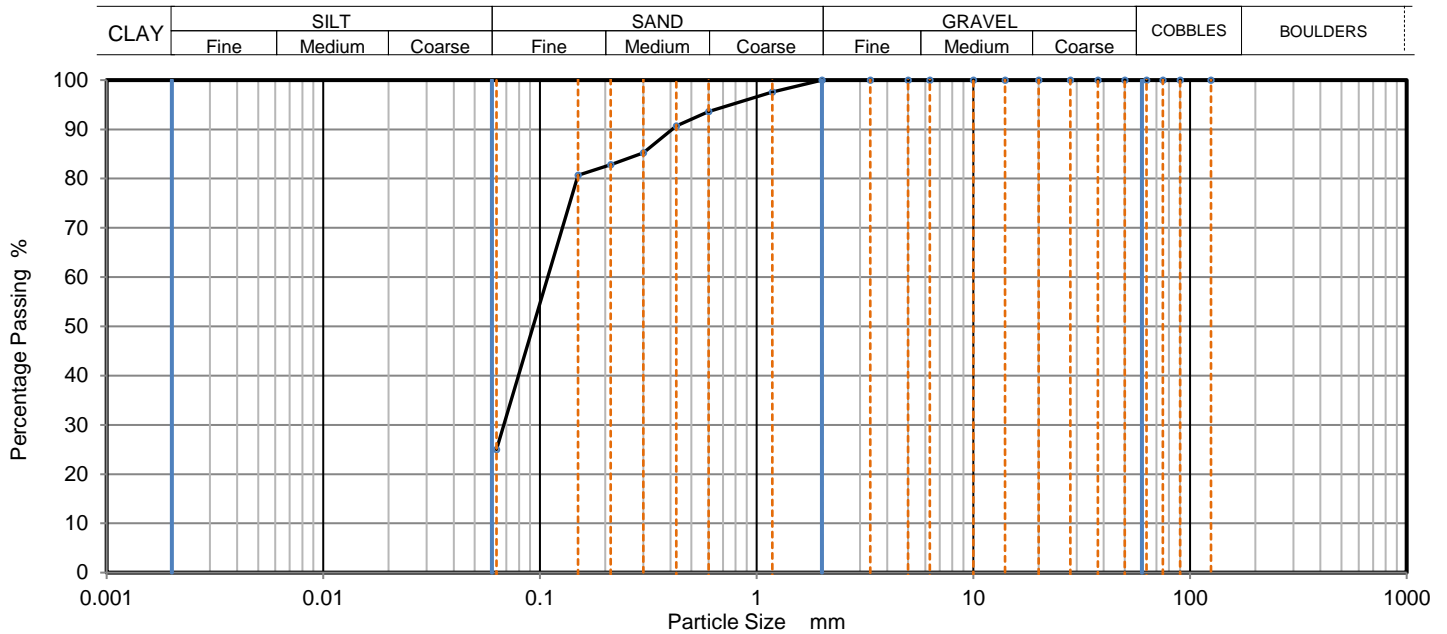
Client: Jomas Associates Ltd
Client Address: Lakeside House, 1 Furzeground Way,
Stockley Park, UB11 1BD
Contact: Emma Hucker
Site Name: Egley Road, Woking GU22 0AF
Site Address: Egley Road, Woking GU22 0AF

Client Reference: JJ1459
Job Number: 19-32327
Date Sampled: Not Given
Date Received: 08/03/2019
Date Tested: 18/03/2019
Sampled By: Not Given

Test Results:

Laboratory Reference: 1173817
Hole No.: WS2
Sample Reference: Not Given
Sample Description: Greyish brown clayey SAND

Depth Top [m]: 4.50
Depth Base [m]: Not Given
Sample Type: D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	98		
0.6	94		
0.425	91		
0.3	85		
0.212	83		
0.15	81		
0.063	26		

Dry Mass of sample [g]: 218

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	0.00
Sand	74.10
Fines <0.063mm	25.90

Grading Analysis		
D100	mm	2
D60	mm	0.108
D30	mm	0.0672
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 22/03/2019

Signed: Darren Berrill
Geotechnical General Manager

GF 100.10

Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation. This report may not be reproduced other than in full without the prior written approval of the issuing laboratory. The results included within the report are representative of the samples submitted for analysis. The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland.



TEST CERTIFICATE

Particle Size Distribution

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



Environmental Science

Tested in Accordance with: BS 1377-2: 1990

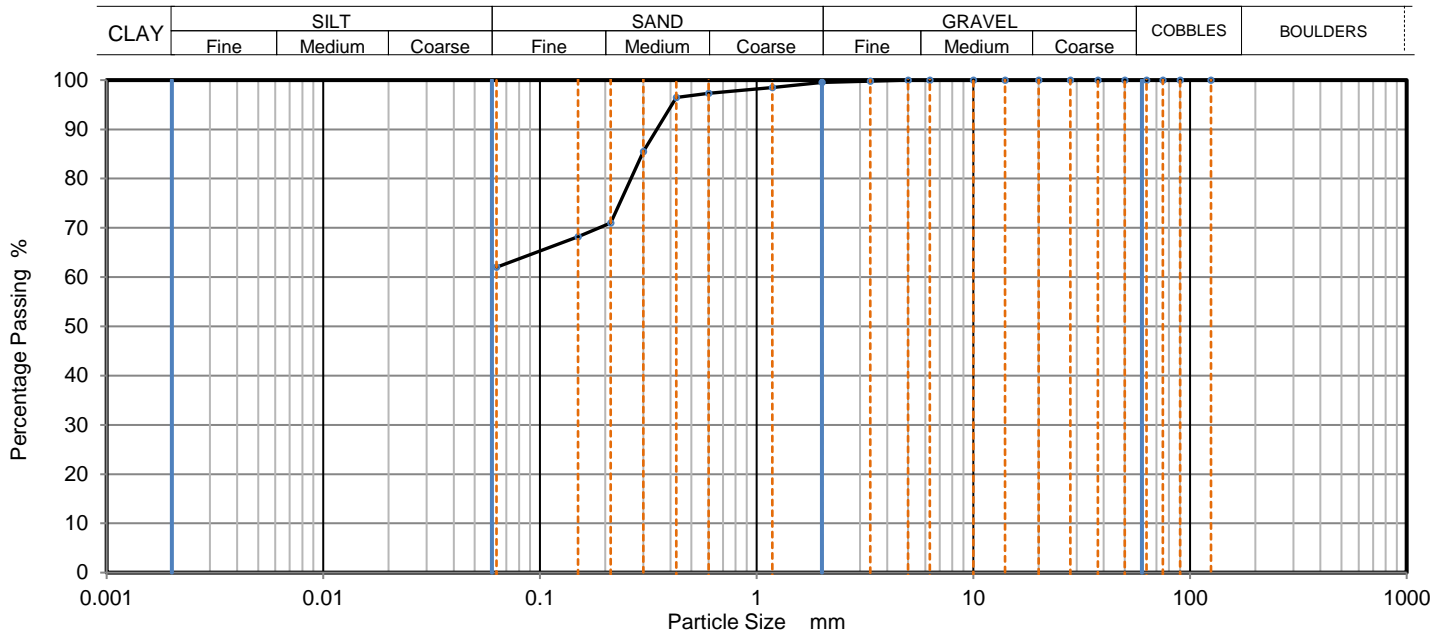
Client: Jomas Associates Ltd
Client Address: Lakeside House, 1 Furzeground Way,
Stockley Park, UB11 1BD
Contact: Emma Hucker
Site Name: Egley Road, Woking GU22 0AF
Site Address: Egley Road, Woking GU22 0AF

Client Reference: JJ1459
Job Number: 19-32327
Date Sampled: Not Given
Date Received: 08/03/2019
Date Tested: 18/03/2019
Sampled By: Not Given

Test Results:

Laboratory Reference: 1173818
Hole No.: WS4
Sample Reference: Not Given
Sample Description: Mottled brown sandy CLAY

Depth Top [m]: 1.50
Depth Base [m]: Not Given
Sample Type: B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	97		
0.425	97		
0.3	86		
0.212	71		
0.15	68		
0.063	62		

Dry Mass of sample [g]: 227

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	0.50
Sand	37.20
Fines <0.063mm	62.30

Grading Analysis		
D100	mm	5
D60	mm	
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 22/03/2019

Signed: Darren Berrill
Geotechnical General Manager

GF 100.10

Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation. This report may not be reproduced other than in full without the prior written approval of the issuing laboratory. The results included within the report are representative of the samples submitted for analysis. The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland.



TEST CERTIFICATE

Particle Size Distribution

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



Environmental Science

Tested in Accordance with: BS 1377-2: 1990

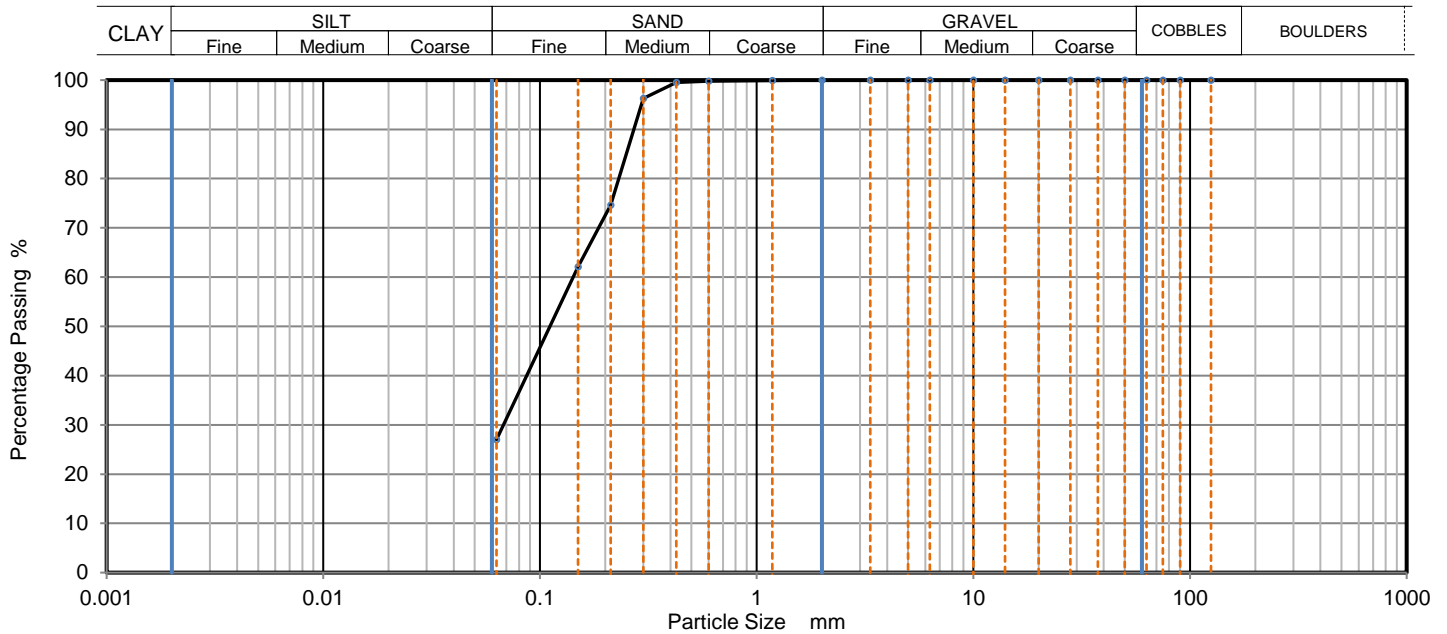
Client: Jomas Associates Ltd
Client Address: Lakeside House, 1 Furzeground Way,
Stockley Park, UB11 1BD
Contact: Emma Hucker
Site Name: Egley Road, Woking GU22 0AF
Site Address: Egley Road, Woking GU22 0AF

Client Reference: JJ1459
Job Number: 19-32327
Date Sampled: Not Given
Date Received: 08/03/2019
Date Tested: 18/03/2019
Sampled By: Not Given

Test Results:

Laboratory Reference: 1173819
Hole No.: WS5
Sample Reference: Not Given
Sample Description: Brown clayey SAND

Depth Top [m]: 3.50
Depth Base [m]: Not Given
Sample Type: D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	96		
0.212	75		
0.15	62		
0.063	27		

Dry Mass of sample [g]: 247

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	0.00
Sand	73.00
Fines <0.063mm	27.00

Grading Analysis		
D100	mm	2
D60	mm	0.142
D30	mm	0.0679
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 22/03/2019

Signed: Darren Berrill
Geotechnical General Manager

GF 100.10

Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation. This report may not be reproduced other than in full without the prior written approval of the issuing laboratory. The results included within the report are representative of the samples submitted for analysis. The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland.



TEST CERTIFICATE

Particle Size Distribution

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



Environmental Science

Tested in Accordance with: BS 1377-2: 1990

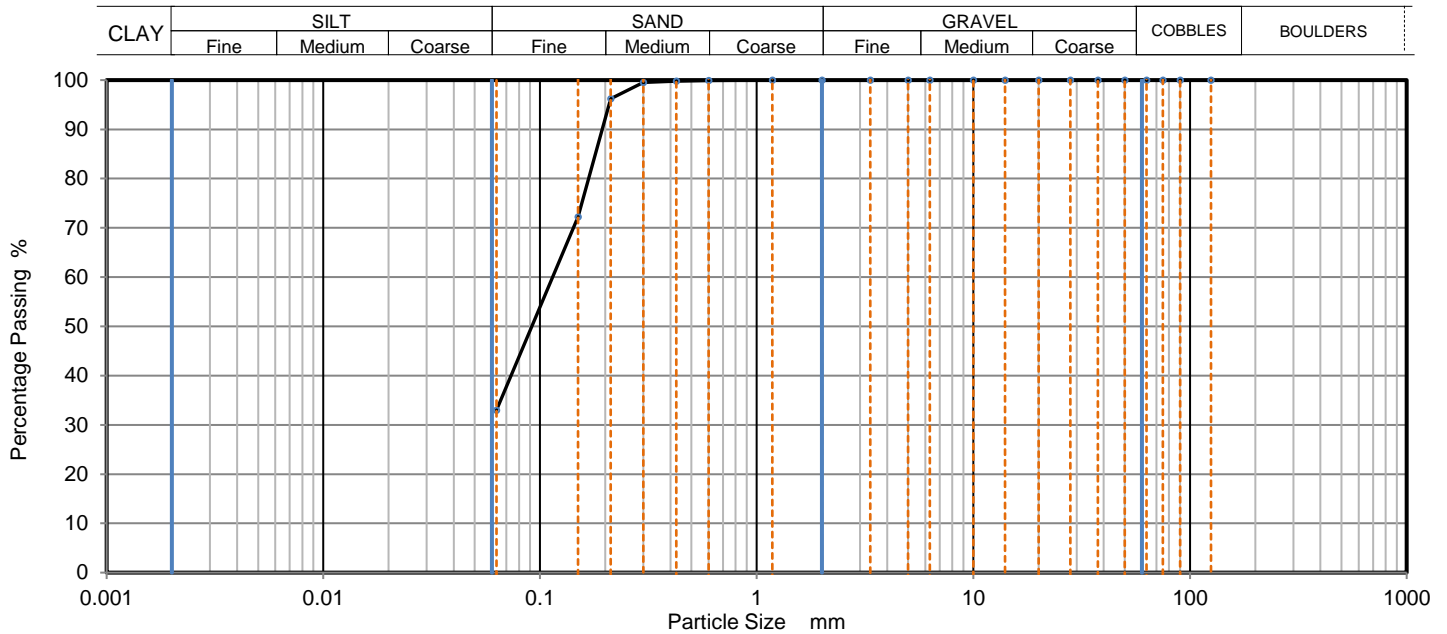
Client: Jomas Associates Ltd
Client Address: Lakeside House, 1 Furzeground Way,
Stockley Park, UB11 1BD
Contact: Emma Hucker
Site Name: Egley Road, Woking GU22 0AF
Site Address: Egley Road, Woking GU22 0AF

Client Reference: JJ1459
Job Number: 19-32327
Date Sampled: Not Given
Date Received: 08/03/2019
Date Tested: 18/03/2019
Sampled By: Not Given

Test Results:

Laboratory Reference: 1173821
Hole No.: WS7
Sample Reference: Not Given
Sample Description: Brown clayey SAND

Depth Top [m]: 3.00
Depth Base [m]: Not Given
Sample Type: B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	100		
0.212	96		
0.15	72		
0.063	33		

Dry Mass of sample [g]: 267

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	0.00
Sand	67.00
Fines <0.063mm	33.00

Grading Analysis		
D100	mm	2
D60	mm	0.114
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 22/03/2019

Signed: Darren Berrill
Geotechnical General Manager

GF 100.10

Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation. This report may not be reproduced other than in full without the prior written approval of the issuing laboratory. The results included within the report are representative of the samples submitted for analysis. The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland.



TEST CERTIFICATE

Liquid and Plastic Limits

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



Environmental Science

4041

Tested in Accordance with: BS 1377-2: 1990: Clause 4.3 and 5

Client: Jomas Associates Ltd
Client Address: Lakeside House, 1 Furzeground Way,
Stockley Park, UB11 1BD

Client Reference: JJ1459
Job Number: 19-29674
Date Sampled: 13/02/2019
Date Received: 18/02/2019
Date Tested: 28/02/2019
Sampled By: Not Given

Contact: Emma Hucker
Site Name: Egley Road, Woking GU22 0AF
Site Address: Egley Road, Woking GU22 0AF

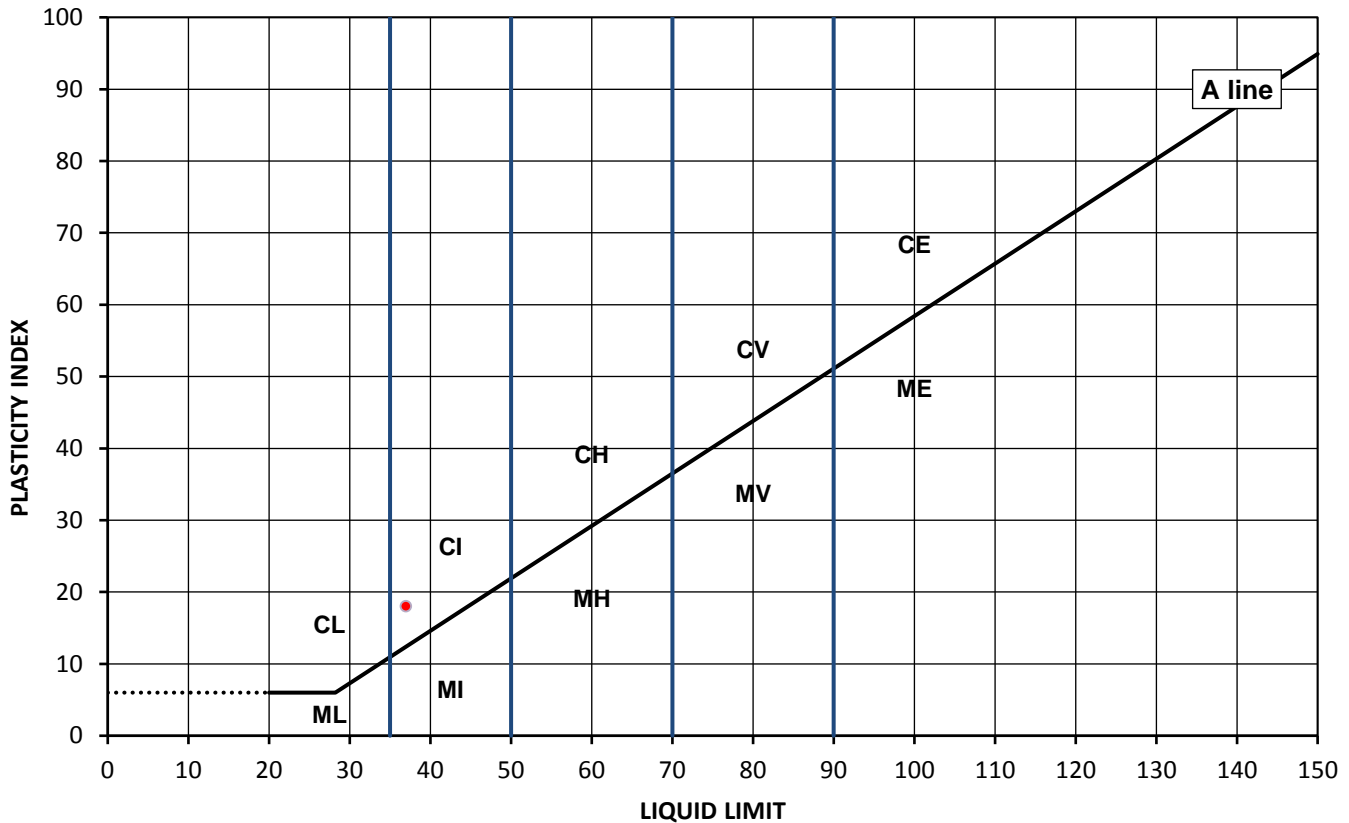
Test Results

Laboratory Reference: 1160023
Hole No.: BH1
Sample Reference: Not Given
Soil Description: Brownish grey sandy CLAY

Depth Top [m]: 8.50
Depth Base [m]: Not Given
Sample Type: B

Sample Preparation: Tested in natural condition

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
29	37	19	18	100



Legend, based on BS 5930:2015 Code of practice for site investigations

C	Clay	Plasticity	Liquid Limit
M	Silt	L	below 35
		I	35 to 50
		H	50 to 70
		V	70 to 90
		E	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 04/03/2019

Signed: Darren Berrill
Geotechnical General Manager

*Opinions and interpretations expressed here in are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland.*



TEST CERTIFICATE

Liquid and Plastic Limits

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



Environmental Science

4041

Tested in Accordance with: BS 1377-2: 1990: Clause 4.3 and 5

Client: Jomas Associates Ltd
Client Address: Lakeside House, 1 Furzeground Way,
Stockley Park, UB11 1BD
Contact: Emma Hucker
Site Name: Egley Road, Woking GU22 0AF
Site Address: Egley Road, Woking GU22 0AF

Client Reference: JJ1459
Job Number: 19-29674
Date Sampled: 13/02/2019
Date Received: 18/02/2019
Date Tested: 28/02/2019
Sampled By: Not Given

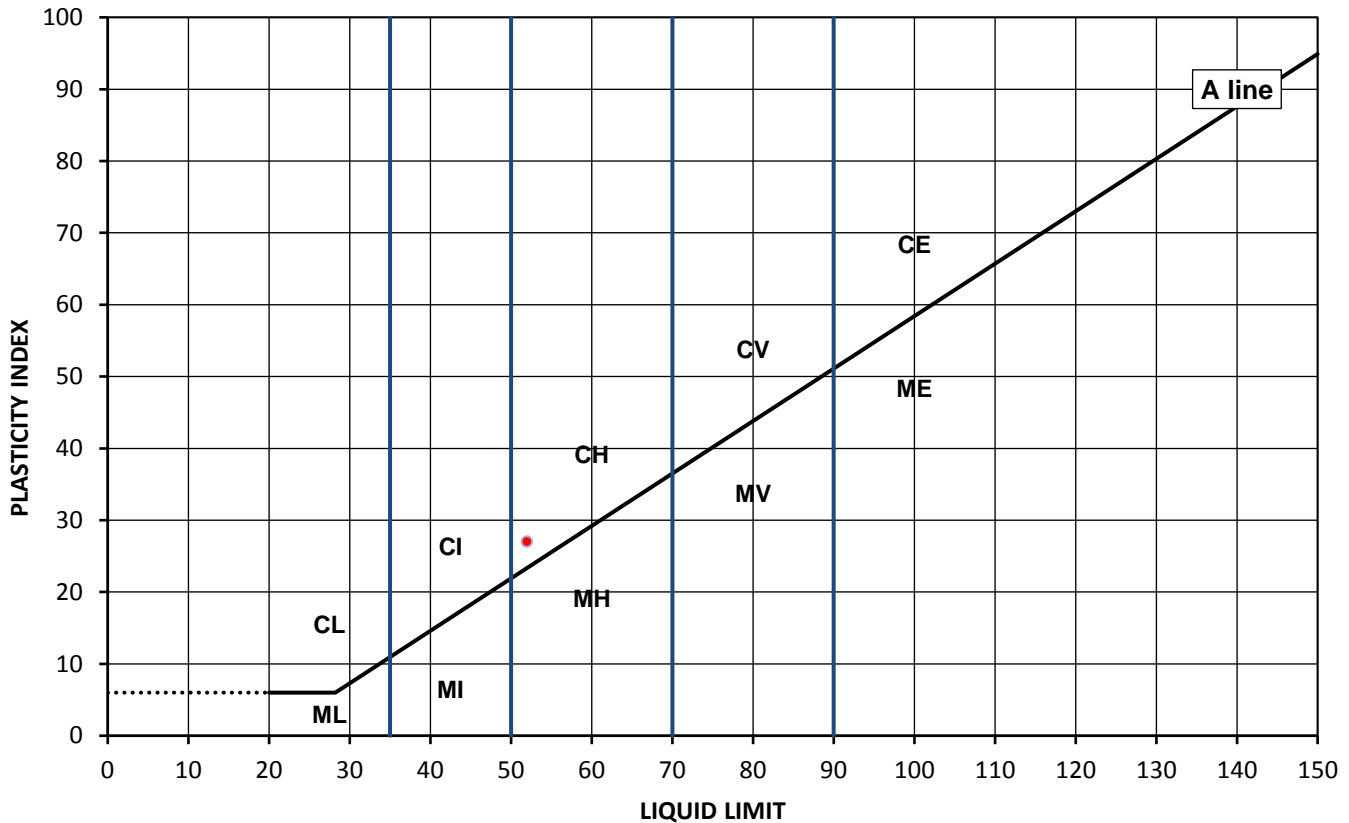
Test Results

Laboratory Reference: 1160027
Hole No.: BH3
Sample Reference: Not Given
Soil Description: Greyish brown slightly sandy CLAY

Depth Top [m]: 10.00
Depth Base [m]: Not Given
Sample Type: B

Sample Preparation: Tested in natural condition

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
25	52	25	27	100



Legend, based on BS 5930:2015 Code of practice for site investigations

C	Clay	Plasticity	Liquid Limit
M	Silt	L	Low
		I	Medium
		H	High
		V	Very high
		E	Extremely high
			below 35
			35 to 50
			50 to 70
			70 to 90
			exceeding 90
	Organic	O	append to classification for organic material (eg CHO)

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 04/03/2019

Signed: Darren Berrill
Geotechnical General Manager

*Opinions and interpretations expressed here in are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland.*



4041

Client: Jomas Associates Ltd
Client Address: Lakeside House, 1 Furzeground Way, Stockley Park, UB11 1BD

Contact: Emma Hucker
Site Name: Egley Road, Woking GU22 0AF
Site Address: Egley Road, Woking GU22 0AF

SUMMARY REPORT

Summary of Classification Test Results

Tested in Accordance with:

MC by BS 1377-2: 1990: Clause 3.2; Atterberg by BS 1377-2: 1990: Clause 4.3, Clause 4.4 and 5; PD by BS 1377-2: 1990: Clause 8.2

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



Environmental Science

Client Reference: JJ1459
Job Number: 19-29674
Date Sampled: 13/02/2019
Date Received: 18/02/2019
Date Tested: 28/02/2019
Sampled By: Not Given

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	MC#	Atterberg#				Density		Total Porosity %				
		Reference	Depth Top m	Depth Base m	Type				% Passing 425um	LL %	PL %	PI %	bulk Mg/m3	PD Mg/m3					
1160022	BH1	Not Given	3.50	Not Given	B	Brown very clayey SAND		24											
1160023	BH1	Not Given	8.50	Not Given	B	Brownish grey sandy CLAY	Atterberg 4 Point	29	100	37	19	18							
1160024	BH2	Not Given	4.50	Not Given	B	Brown very clayey SAND		26											
1160025	BH2	Not Given	10.50	Not Given	B	Greyish brown clayey SAND		40*											
1160026	BH3	Not Given	4.00	Not Given	B	Brown very clayey SAND		23											
1160027	BH3	Not Given	10.00	Not Given	B	Greyish brown slightly sandy CLAY	Atterberg 4 Point	25	100	52	25	27							

Note: # UKAS accredited; NP - Non plastic

Comments: *Sample is wet

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 04/03/2019

Signed: Darren Berrill
Geotechnical General Manager

*Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation. This report may not be reproduced other than in full without the prior written approval of the issuing laboratory. The results included within the report are representative of the samples submitted for analysis. The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland.



TEST CERTIFICATE

Particle Size Distribution

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



Environmental Science

Tested in Accordance with: BS 1377-2: 1990

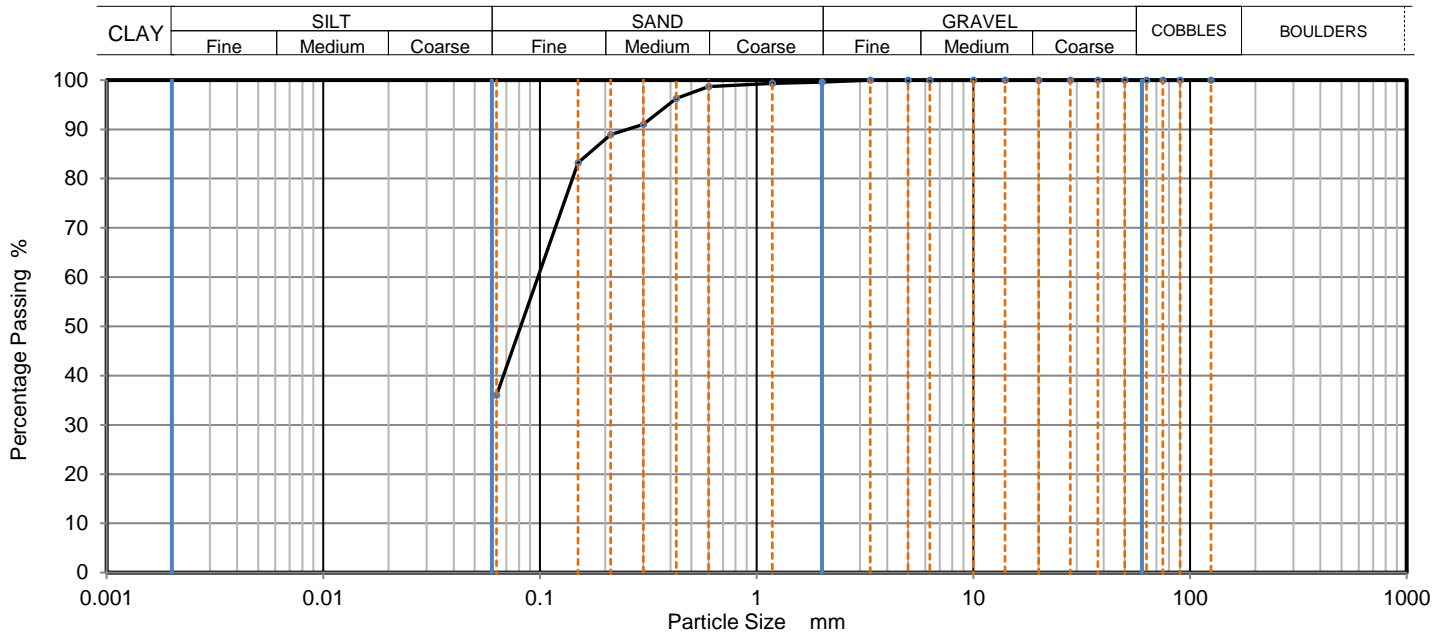
Client: Jomas Associates Ltd
Client Address: Lakeside House, 1 Furzeground Way,
Stockley Park, UB11 1BD
Contact: Emma Hucker
Site Name: Egley Road, Woking GU22 0AF
Site Address: Egley Road, Woking GU22 0AF

Client Reference: JJ1459
Job Number: 19-29674
Date Sampled: 13/02/2019
Date Received: 18/02/2019
Date Tested: 28/02/2019
Sampled By: Not Given

Test Results:

Laboratory Reference: 1160022
Hole No.: BH1
Sample Reference: Not Given
Sample Description: Brown very clayey SAND

Depth Top [m]: 3.50
Depth Base [m]: Not Given
Sample Type: B





TEST CERTIFICATE

Particle Size Distribution

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



Environmental Science

Tested in Accordance with: BS 1377-2: 1990

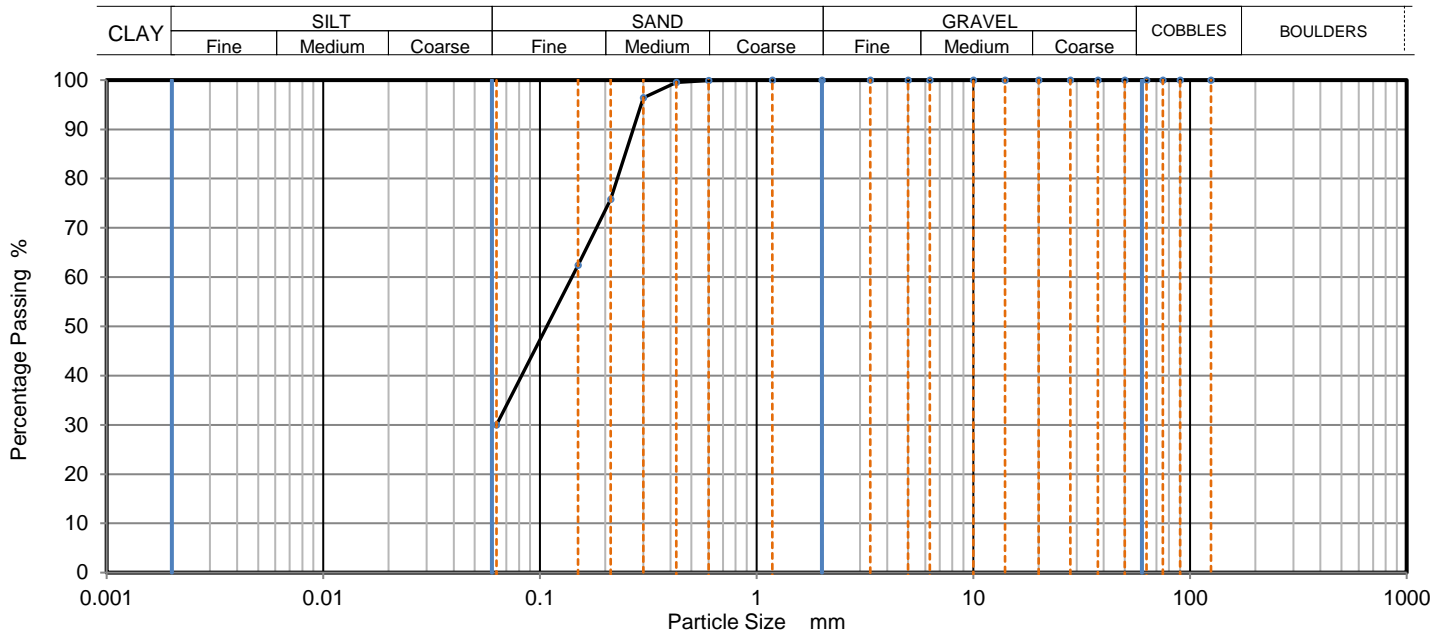
Client: Jomas Associates Ltd
Client Address: Lakeside House, 1 Furzeground Way,
Stockley Park, UB11 1BD
Contact: Emma Hucker
Site Name: Egley Road, Woking GU22 0AF
Site Address: Egley Road, Woking GU22 0AF

Client Reference: JJ1459
Job Number: 19-29674
Date Sampled: 13/02/2019
Date Received: 18/02/2019
Date Tested: 28/02/2019
Sampled By: Not Given

Test Results:

Laboratory Reference: 1160024
Hole No.: BH2
Sample Reference: Not Given
Sample Description: Brown very clayey SAND

Depth Top [m]: 4.50
Depth Base [m]: Not Given
Sample Type: B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	96		
0.212	76		
0.15	62		
0.063	30		

Dry Mass of sample [g]: 268

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	0.00
Sand	69.60
Fines <0.063mm	30.40

Grading Analysis		
D100	mm	2
D60	mm	0.141
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 04/03/2019

Signed: Darren Berrill
Geotechnical General Manager

GF 100.10

Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation. This report may not be reproduced other than in full without the prior written approval of the issuing laboratory. The results included within the report are representative of the samples submitted for analysis. The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland.



TEST CERTIFICATE

Particle Size Distribution

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



Environmental Science

Tested in Accordance with: BS 1377-2: 1990

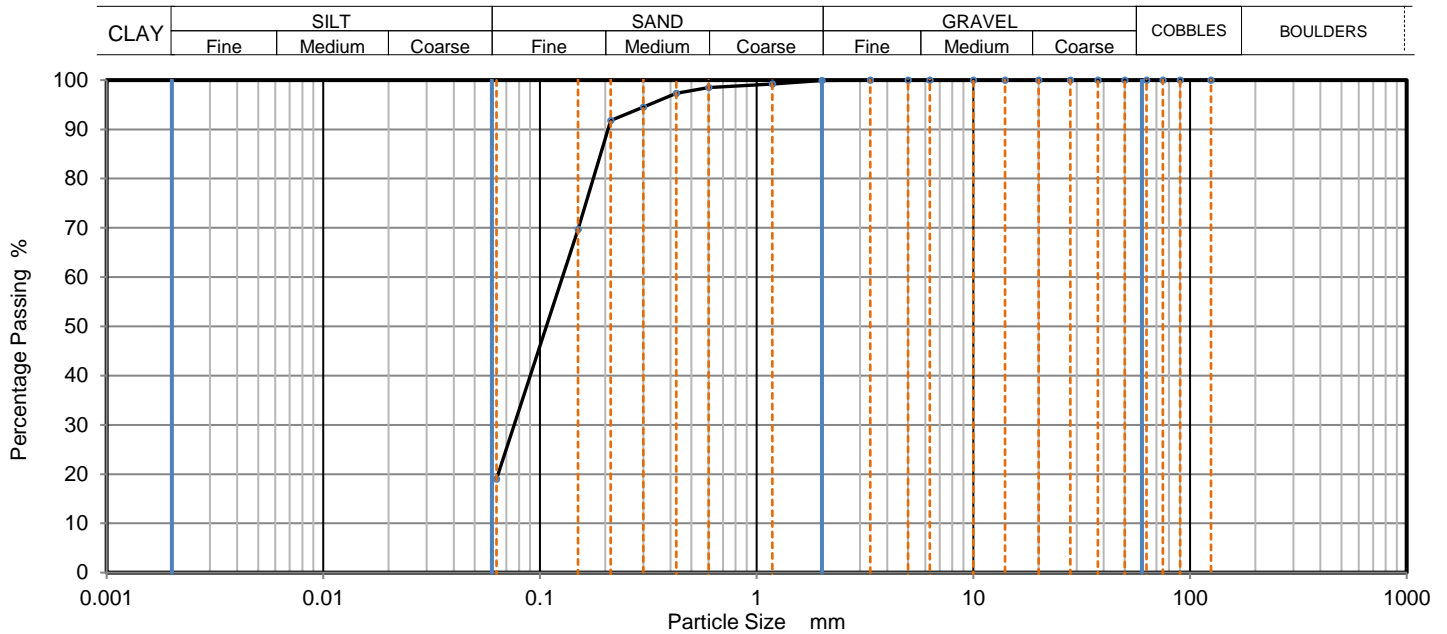
Client: Jomas Associates Ltd
Client Address: Lakeside House, 1 Furzeground Way,
Stockley Park, UB11 1BD
Contact: Emma Hucker
Site Name: Egley Road, Woking GU22 0AF
Site Address: Egley Road, Woking GU22 0AF

Client Reference: JJ1459
Job Number: 19-29674
Date Sampled: 13/02/2019
Date Received: 18/02/2019
Date Tested: 28/02/2019
Sampled By: Not Given

Test Results:

Laboratory Reference: 1160025
Hole No.: BH2
Sample Reference: Not Given
Sample Description: Greyish brown clayey SAND

Depth Top [m]: 10.50
Depth Base [m]: Not Given
Sample Type: B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	99		
0.425	97		
0.3	95		
0.212	92		
0.15	70		
0.063	20		

Dry Mass of sample [g]: 496

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	0.10
Sand	80.10
Fines <0.063mm	19.70

Grading Analysis		
D100	mm	3.35
D60	mm	0.127
D30	mm	0.0753
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 04/03/2019

Signed: Darren Berrill
Geotechnical General Manager

GF 100.10

*Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland.*



TEST CERTIFICATE

Particle Size Distribution

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



Environmental Science

Tested in Accordance with: BS 1377-2: 1990

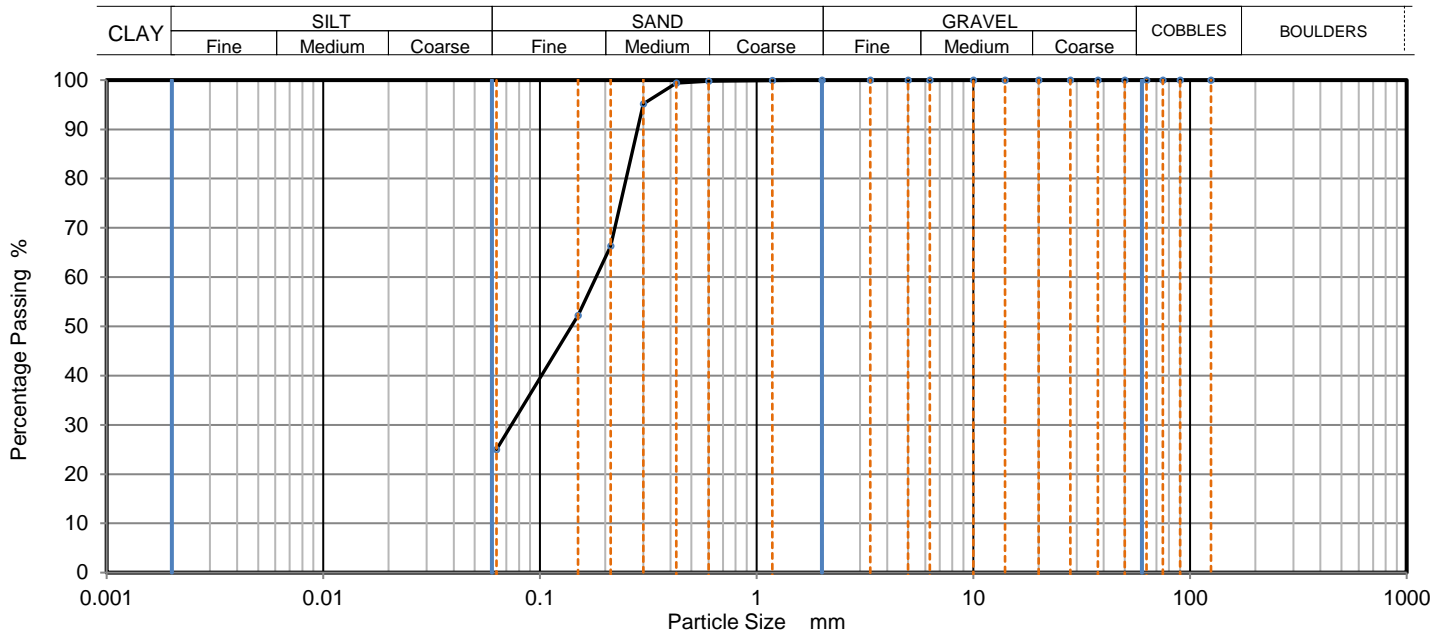
Client: Jomas Associates Ltd
Client Address: Lakeside House, 1 Furzeground Way,
Stockley Park, UB11 1BD
Contact: Emma Hucker
Site Name: Egley Road, Woking GU22 0AF
Site Address: Egley Road, Woking GU22 0AF

Client Reference: JJ1459
Job Number: 19-29674
Date Sampled: 13/02/2019
Date Received: 18/02/2019
Date Tested: 28/02/2019
Sampled By: Not Given

Test Results:

Laboratory Reference: 1160026
Hole No.: BH3
Sample Reference: Not Given
Sample Description: Brown very clayey SAND

Depth Top [m]: 4.00
Depth Base [m]: Not Given
Sample Type: B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	99		
0.3	95		
0.212	66		
0.15	52		
0.063	26		

Dry Mass of sample [g]: 321

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	0.00
Sand	74.30
Fines <0.063mm	25.70

Grading Analysis		
D100	mm	2
D60	mm	0.182
D30	mm	0.0726
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 04/03/2019

Signed: Darren Berrill
Geotechnical General Manager

GF 100.10

*Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland.*

APPENDIX 5 – 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
-------------------------	--------------------------	-------------------------	--------------------	-----------------	----------------

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
-------------------------	--------------------------	-------------------------	--------------------	-----------------	----------------

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
-------------------------	--------------------------	-------------------------	--------------------	-----------------	----------------

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
-------------------------	---------------------------	-------------------------	--------------------	-----------------	----------------

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

APPENDIX 6 – CALIFORNIA BEARING RATIO (CBR) TEST RESULTS

CBR Calculation



Jomas Job: Egley Road, Woking
Jomas Job No.: P1381J1459

Test Location: TP1
Date of test: 08/03/2019

Depth (mm)	Nr Blow	Cumulative blows
50	0	0
100	0	0
150	0	0
200	0	0
250	1	1
300	0	1
350	1	2
400	1	3
450	1	4
500	1	5
550	1	6
600	2	8
650	4	12
700	4	16
750	6	22
800	5	27
850	4	31
900	2	33
950	2	35
1000	2	37

Calculating Engineer: CLP
Approved by: PS

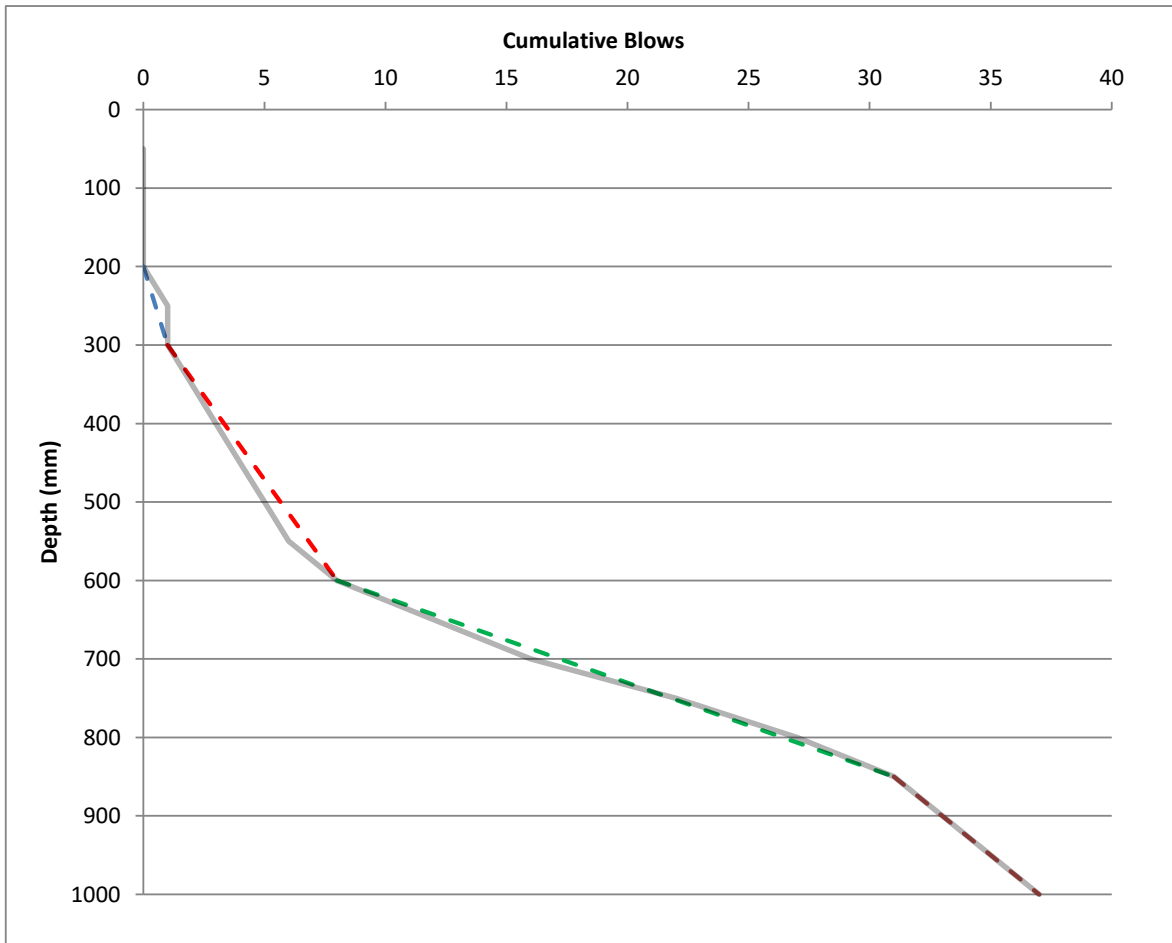
Date: 04/04/2019
Date: 08/04/2019

Test	Initial Depth (mm)	Final Depth (mm)	mm / blow	CBR* (%)	E (MPa)
TP1-Test 1	200	300	100.0	2.3	29.99
TP1-Test 2	300	600	42.9	5.7	53.61
TP1-Test 3	600	850	10.9	24.3	135.61
TP1-Test 4	850	1000	25.0	10.1	77.32

* CBR calculated using method outlined in IAN 73/06

Test Notes:

Test carried out using a Perth Probe type dynamic cone probe consisting of a 8 kg free fall hammer lifted and dropped through a height of 575mm
 Colour of text refers to the modelled gradient on graph below
 GL - 0.70m: Brown to orange sandy gravelly clay. Gravel consists of flint, brick, concrete and plastic fragments. (MADE GROUND)
 0.70m - 1.00m: Brown mottled orange silty clayey SAND. Sand is fine to medium. (BAGSHOT FORMATION)



CBR Calculation



Jomas Job: Egley Road, Woking
Jomas Job No.: P1381J1459

Test Location: WS2
Date of test: 08/03/2019

Depth (mm)	Nr Blow	Cumulative blows
50	0	0
100	0	0
150	0	0
200	1	1
250	0	1
300	0	1
350	0	1
400	0	1
450	1	2
500	6	8
550	8	16
600	9	25
650	3	28
700	2	30
750	4	34
800	4	38
850	4	42
900	3	45
950	1	46
1000	1	47

Calculating Engineer: CLP
Approved by: PS

Date: 04/04/2019
Date: 08/04/2019

Test	Initial Depth (mm)	Final Depth (mm)	mm / blow	CBR* (%)	E (MPa)
WS2-Test 1	150	450	150.0	1.5	22.81
WS2-Test 2	450	600	6.5	41.6	191.31
WS2-Test 3	600	900	15.0	17.3	109.11
WS2-Test 4	900	1000	50.0	4.8	48.03

* CBR calculated using method outlined in IAN 73/06

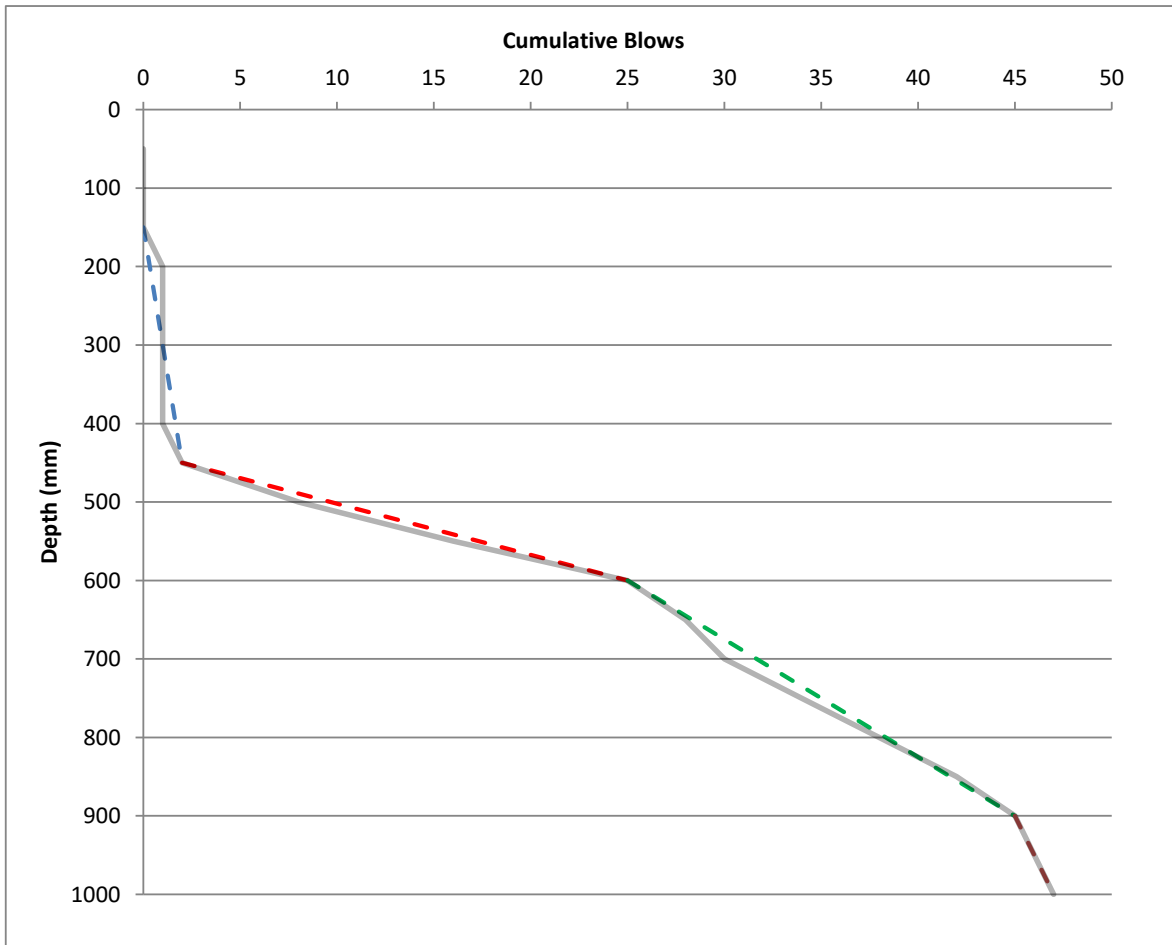
Test Notes:

Test carried out using a Perth Probe type dynamic cone probe consisting of a 8 kg free fall hammer lifted and dropped through a height of 575mm

Colour of text refers to the modelled gradient on graph below

GL - 0.30m: Brown sandy slightly gravelly clay with roots and rootlets. Sand is fine. Gravel consists of brick fragments. (MADE GROUND - Topsoil)

0.3 - 1.0m Brown to orange silty clayey slightly gravelly SAND. Sand is fine to medium. Gravel consists of flint. (BAGSHOT FORMATION)



CBR Calculation



Jomas Job: Egley Road, Woking
Jomas Job No.: P1381J1459

Test Location: WS5
Date of test: 08/03/2019

Depth (mm)	Nr Blow	Cumulative blows
50	0	0
100	1	1
150	0	1
200	1	2
250	1	3
300	1	4
350	1	5
400	1	6
450	1	7
500	0	7
550	1	8
600	1	9
650	0	9
700	1	10
750	1	11
800	0	11
850	1	12
900	0	12
950	1	13
1000	1	14

Calculating Engineer: CLP
Approved by: PS

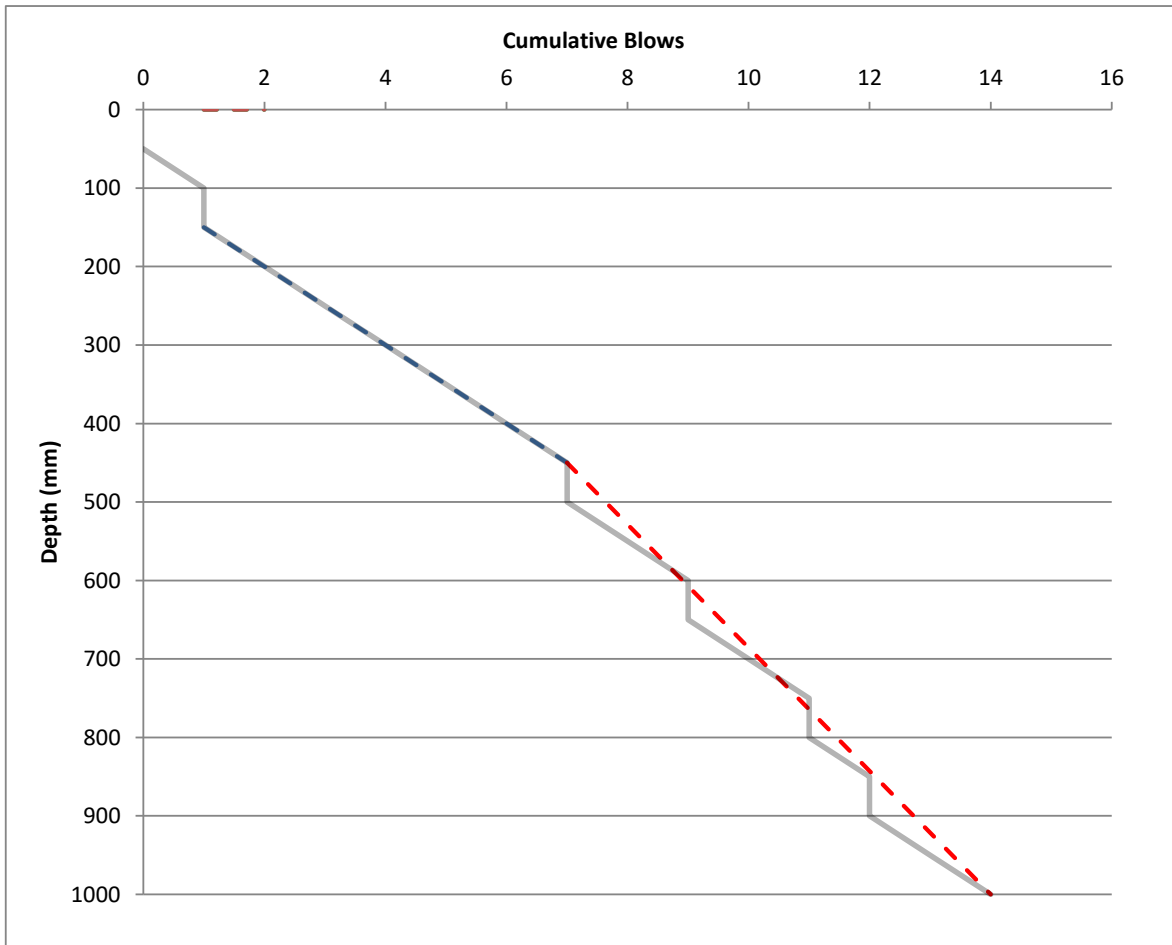
Date: 04/04/2019
Date: 08/04/2019

Test	Initial Depth (mm)	Final Depth (mm)	mm / blow	CBR* (%)	E (MPa)
WS5-Test 1	150	450	50.0	4.8	48.03
WS5-Test 2	450	1000	78.6	3	35.55

* CBR calculated using method outlined in IAN 73/06

Test Notes:

Test carried out using a Perth Probe type dynamic cone probe consisting of a 8 kg free fall hammer lifted and dropped through a height of 575mm
 Colour of text refers to the modelled gradient on graph below
 GL - 0.60m: Brown samdy CLAY with roots and rootlets. Sand is fine. (TOPSOIL)
 0.60 - 1.00m: Brown to orange silty clayey slightly gravelly SAND. Sand is fine to medium. Gravel consists of flint. (BAGSHOT FORMATION)



CBR Calculation



Jomas Job: Egley Road, Woking
Jomas Job No.: P1381J1459

Test Location: WS7
Date of test: 08/03/2019

Depth (mm)	Nr Blow	Cumulative blows
50	0	0
100	0	0
150	1	1
200	1	2
250	1	3
300	2	5
350	1	6
400	2	8
450	2	10
500	1	11
550	1	12
600	1	13
650	1	14
700	0	14
750	1	15
800	3	18
850	3	21
900	4	25
950	5	30
1000	6	36

Calculating Engineer: CLP
Approved by: PS

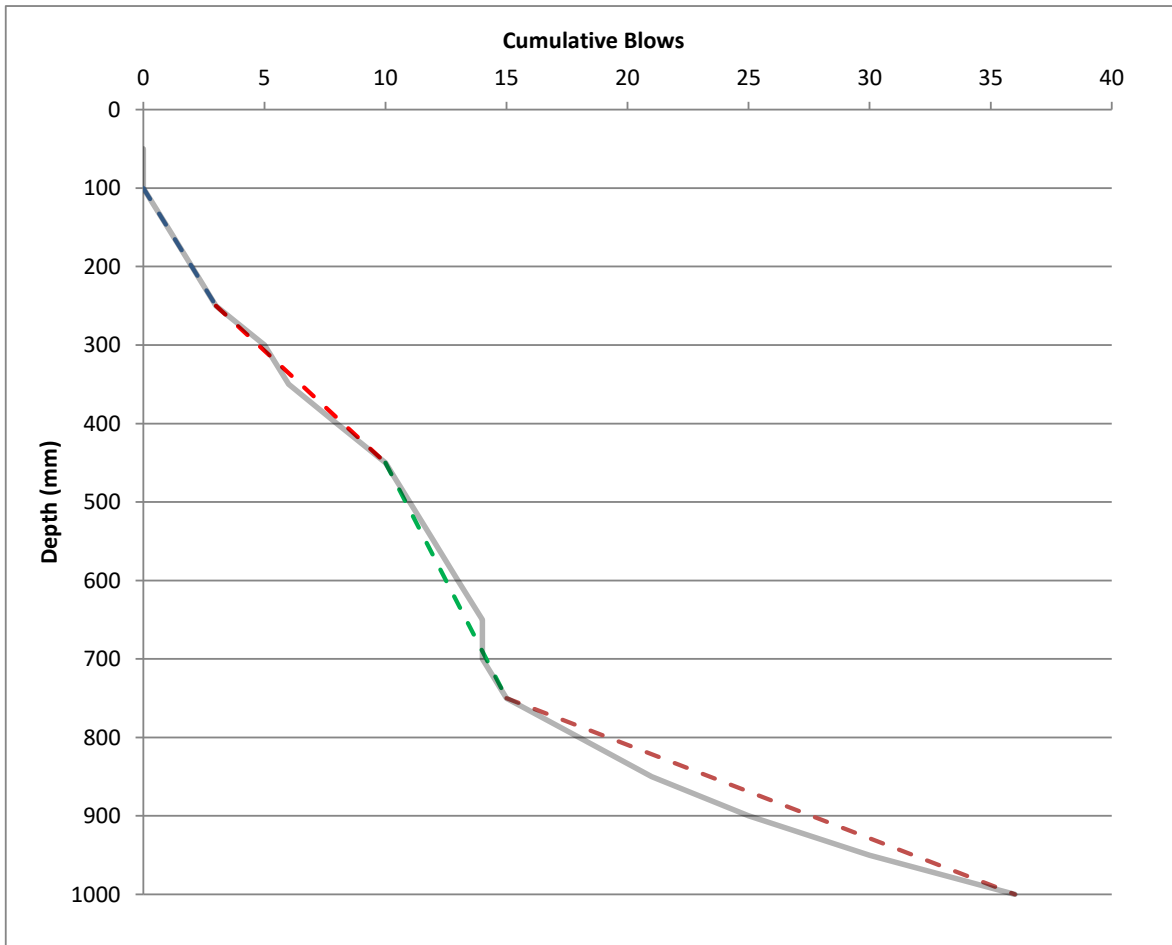
Date: 04/04/2019
Date: 08/04/2019

Test	Initial Depth (mm)	Final Depth (mm)	mm / blow	CBR* (%)	E (MPa)
WS7-Test 1	100	250	50.0	4.8	48.03
WS7-Test 2	250	450	28.6	8.7	70.28
WS7-Test 3	450	750	60.0	4	42.74
WS7-Test 4	750	1000	11.9	22	127.25

* CBR calculated using method outlined in IAN 73/06

Test Notes:

Test carried out using a Perth Probe type dynamic cone probe consisting of a 8 kg free fall hammer lifted and dropped through a height of 575mm
 Colour of text refers to the modelled gradient on graph below
 GL - 0.30m: Brown sandy CLAY with roots and rootlets. Sand is fine. (TOPSOIL)
 0.30 - 1.00m: Brown to orange silty clayey slightly gravelly SAND. Sand is fine to medium.
 Gravel consists of flint. (BAGSHOT FORMATION)



CBR Calculation



Jomas Job: Egley Road, Woking
Jomas Job No.: P1381J1459

Test Location: WS10
Date of test: 08/03/2019

Depth (mm)	Nr Blow	Cumulative blows
50	0	0
100	0	0
150	1	1
200	0	1
250	1	2
300	0	2
350	0	2
400	1	3
450	1	4
500	1	5
550	0	5
600	1	6
650	0	6
700	1	7
750	1	8
800	1	9
850	2	11
900	2	13
950	2	15
1000	2	17

Calculating Engineer: CLP
Approved by: PS

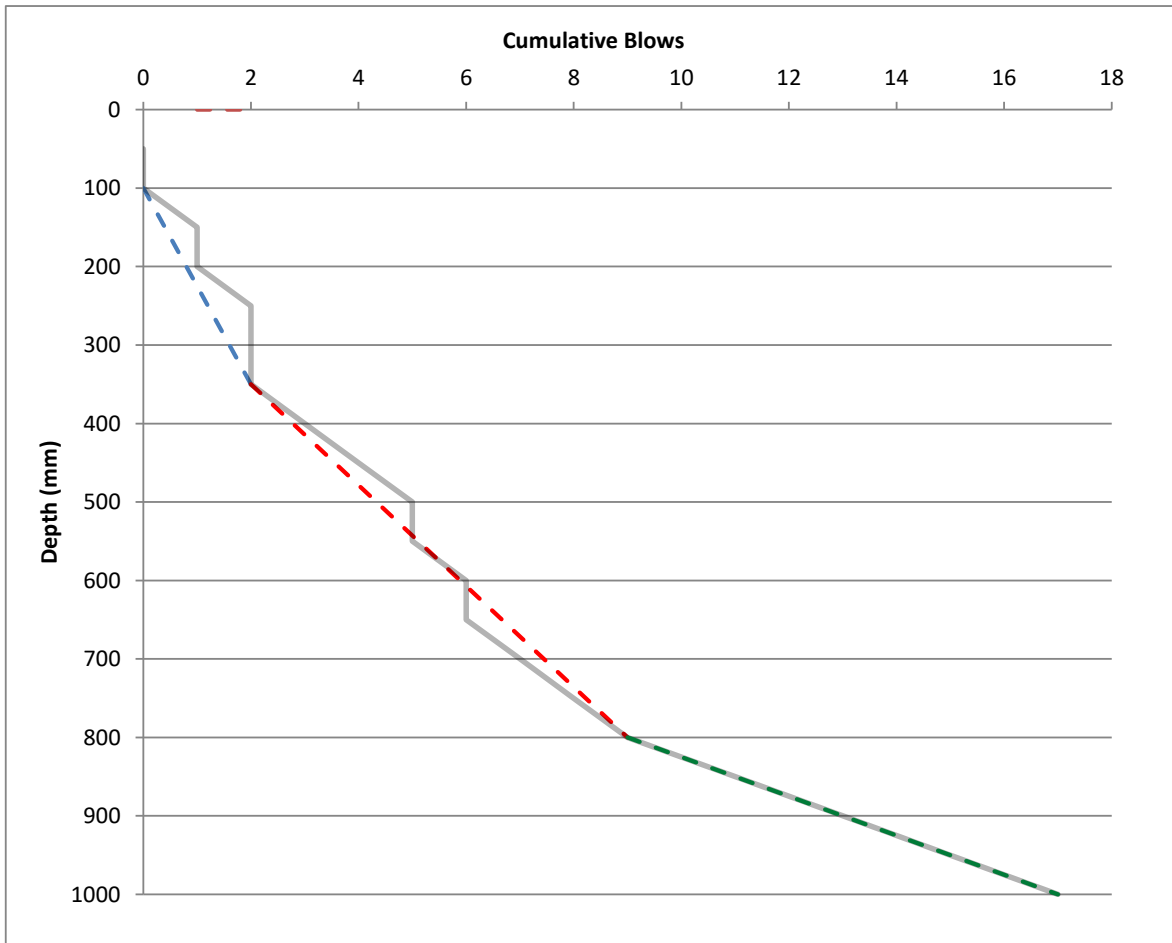
Date: 04/04/2019
Date: 08/04/2019

Test	Initial Depth (mm)	Final Depth (mm)	mm / blow	CBR* (%)	E (MPa)
WS10-Test 1	100	350	125.0	1.8	25.64
WS10-Test 2	350	800	64.3	3.7	40.66
WS10-Test 3	800	1000	25.0	10.1	77.32

* CBR calculated using method outlined in IAN 73/06

Test Notes:

Test carried out using a Perth Probe type dynamic cone probe consisting of a 8 kg free fall hammer lifted and dropped through a height of 575mm
 Colour of text refers to the modelled gradient on graph below
 GL - 0.50m: Brown sandy CLAY with roots and rootlets. Sand is fine. (TOPSOIL)
 0.50m - 1.00m: Brown to orange silty clayey slightly gravelly SAND. Sand is fine to medium. Gravel consists of flint. (BAGSHOT FORMATION)





WE LISTEN, WE PLAN, WE DELIVER

Geotechnical Engineering and Environmental Services across the UK.



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