

CABBAGEFIELD ROW, HAVANT

PHASE 2 SITE INVESTIGATION REPORT

Carried out for:

Portsmouth City Council
Civic Offices
Guildhall Square
Portsmouth
Hampshire
PO1 2AR

August 2021

Report No. STH1016/2



Glossop House, Hogwood Lane,
Wokingham RG40 4QW
Tel: +44 (0) 118 932 8888

Report No: STH1016/2

August 2021

Issue No Date	Status	Prepared by	Checked by	Approved by
2 August 2021	Final	NAME and QUALIFICATIONS Alexandra Collyer BSc (Hons)	NAME and QUALIFICATIONS Michelle Gwynne BSc Msc MRSc PIEMA	NAME and QUALIFICATIONS Jon Finnigan BSc (Hons) AMIEnvSc
		SIGNATURE 	SIGNATURE 	SIGNATURE 

This Report has been prepared by SOCOTEC Limited ("SOCOTEC L") with all reasonable skill and care, within the terms and conditions of the contract between SOCOTEC L and the Client ("Contract") and within the limitations of the resources devoted to it by agreement with the Client. Any reliance upon the Report is subject to the Contract terms and conditions.

This Report is confidential between the Client and SOCOTEC L. SOCOTEC L accepts no responsibility whatsoever to third parties to whom this document, or any part thereof, is made known. Any such party relies upon the Report at their own risk. The Contracts (Rights of Third Parties) Act 1999 does not apply to this Report nor the Contract and the provisions of the said Act are hereby excluded.

This Report shall not be used for engineering or contractual purposes unless signed above by the author, checker and the approver for and on behalf of SOCOTEC L and unless the Report status is 'Final'.

Unless specifically assigned or transferred within the terms and conditions of the Contract, SOCOTEC L asserts and retains all Copyright and other Intellectual Property Rights in and over the Report and its contents. The Report may not be copied or reproduced, in whole or in part, without the written authorisation from SOCOTEC L. SOCOTEC L shall not be liable for any use of the Report for any purpose other than that for which it was originally prepared.

Whilst every effort has been made to ensure the accuracy of the data supplied and any analysis interpretation derived from it, the possibility exists of variations in the ground and groundwater conditions around and between the exploratory positions. No liability can be accepted for any such variations in these conditions. Furthermore, any recommendations are specific to the development as detailed in this Report and no liability will be accepted should they be used for the design of alternative schemes without prior consultant with SOCOTEC L.

CONTENTS

1	INTRODUCTION	1
1.1	Engagement of SOCOTEC	2
1.2	Scope of Works	2
2	SITE DESCRIPTION AND HISTORY	3
2.1	Site Description	3
2.2	Site History	3
2.3	Proposed Development	3
3	GEOLOGY, HYDROLOGY AND HYDROGEOLOGY	3
4	FIELDWORK	4
4.1	Windowless Sampling Boreholes	4
4.2	Installations	6
4.3	Monitoring and Sampling	7
5	LABORATORY TESTING	7
6	GROUND CONDITIONS	9
6.1	Strata Encountered	9
6.2	Made Ground / Topsoil	9
6.3	London Clay Formation	9
6.4	Groundwater	9
6.5	Observed Contamination	9
7	RISK ASSESSMENTS	10
7.1	Human Health Risk Assessment	10
7.1.1	Technical Approach	10
7.1.2	Human Health Risk Assessment Screening	12
	Table 7 Comparison of Maximum Measured Soil Contaminant Concentrations with Residential with Homegrown Produce GAC	12
7.2	Risk to Construction Workers	13
7.3	Controlled Waters Risk Assessment	14
7.4	Soil Leachate Screening	15
7.5	Groundwater Screening	16
8	GROUND GAS RISK ASSESSMENT	17
8.1	Gas Monitoring Fieldwork	18
8.2	Gas Monitoring Results	18
8.3	Gas Screening Value	19
9	CONCEPTUAL SITE MODEL	19
10	CONCLUSIONS	19
11	RECOMMENDATIONS	20
	REFERENCES	21

APPENDIX A FIGURES AND DRAWINGS

APPENDIX B EXPLORATORY HOLE RECORDS

APPENDIX C PHOTOGRAPHS

APPENDIX D GEOENVIRONMENTAL LABORATORY TEST RESULTS

APPENDIX E GAS MONITORING DATA

EXECUTIVE SUMMARY

SOCOTEC UK Limited (SOCOTEC) was commissioned by Portsmouth City Council to undertake a ground investigation to comprise the progression of eight boreholes at the site in Havant, Portsmouth following recommendations made in an initial Phase I Desk Study produced by SOCOTEC.

Drilling works were undertaken on 25th & 26th May 2021 when boreholes were progressed to a maximum depth of 4m below ground level (bgl) and soils samples collected and analysed at a UKAS accredited laboratory.

Ground gas & ground water monitoring standpipes were installed at each location, with response zones within the underlying London Clay geology. These were monitored for emission of ground gases and ground water samples collected and analysed over three monitoring rounds undertaken between 9th June 2021 & 13th July 2021.

No significant contamination above screening levels employed was identified throughout the ground investigation and monitoring works. Ground gas concentrations and flow rates measured led to a calculation of Characteristic Situation 1 (CS1) and a very low risk classification attributed to the site with no specific gas protection measures required within buildings as part of the redevelopment.

The potential sources, pathways and receptors, have been reassessed incorporating the findings of the ground investigation and data collected from soils and groundwater sampling and monitoring works undertaken including ground gas monitoring. No significant pollutant linkages have been identified at the site. Therefore, no specific remedial or mitigation measures associated with soil, groundwater or ground gas at the site would be required to ensure the completed development is safe and suitable for its advised end use as residential housing with gardens.

SOCOTEC suggest that a watching brief for unexpected contamination and good practice soil handling operations should be maintained by the groundworks contractors during the construction phase of the project.

The development of a Materials Management Plan (MMP) and a Waste Management Plan (WMP) should be considered for the site if significant quantities of materials are to be excavated, removed, reused or imported as part of redevelopment works.

1 INTRODUCTION

1.1 Engagement of SOCOTEC

In March 2020, SOCOTEC UK Limited (SOCOTEC) was commissioned by Portsmouth City Council (PCC) to carry out a Phase 1 Desk Study Land Contamination Preliminary Risk Assessment and Phase 2 Site Investigation at the site known as Cabbagefield Row, Havant. SOCOTEC completed the Phase 1 report (reference STH1016/1) for the site in May 2021.

The proposal to carry out the Phase 2 Site Investigation is contained within SOCOTEC's proposal reference QLO/EN-150182/001/DH Rev00 dated 10 June 2020. The instruction to proceed was confirmed through a receipt of purchase order number 2970914 dated 10 March 2021.

The investigation was required to obtain geoenvironmental information about the site soils, groundwater and ground gas regimes as part of the planning for the proposed redevelopment of the site into 150 residential dwellings with 331 car parking spaces, associated private and communal gardens and internal roads. The investigation was performed in accordance with the general requirements of BS 5930:2015 and BS 10175:2011+A2:2017 and all normative references, including the Environment Agency Land Contamination Risk Management (LCRM) guidance (EA, 2020) and AGS Guidelines for Good Practice in Site Investigation (AGS, 2015).

1.2 Scope of Works

The scope of works comprised a Phase 1 Baseline Desk Study, presented in a separate report referenced STH1016/1, and Phase 2 Site Investigation comprising:

- Construction of 8 windowless sampling boreholes extended to a maximum depth of 4 m below ground level (bgl)
- Installation of ground gas and groundwater monitoring standpipes in all eight boreholes
- Laboratory analysis of 16 soil samples for a range of potential contaminants commonly associated with current and historic industrial land uses
- Laboratory analysis of five groundwater samples for a range of potential contaminants commonly associated with current and historic industrial land uses
- Factual record of the intrusive investigation, sampling and laboratory testing
- Human health and controlled waters generic risk assessment
- Interpretative assessment of any contamination found on the site

2 SITE DESCRIPTION AND HISTORY

2.1 Site Description

The site is located directly north of Swanmore road in Havant and is approximately 7.4 ha in size. The area proposed for redevelopment into residential properties and is currently Greenfield land comprising open grassland, shrubs and trees.

A site location plan is included as Figure 1 within Appendix A.

2.2 Site History

The site history summarised below is based on the information presented previously in the SOCOTEC Phase 1 Desk Study Report (Report reference STH1016/1).

With the exception of a telecommunications mast including a small electricity substation installed adjacent to the central eastern boundary of the site approximately 10 years ago, the historical maps show that the site has not experienced any development since the earliest historical map of the site dated 1859. The surrounding area has undergone residential and infrastructure development with residential properties and schools located directly south of the site and a motorway named A3 (M) located approximately 500 m west of the site.

2.3 Proposed Development

The initial proposed development for the site included the construction of 150 dwellings comprised of 2 to 4 bed houses and 1 to 2 bed apartments with 331 car parking spaces, associated private and communal gardens, internal roads and a playground.

3 GEOLOGY, HYDROLOGY AND HYDROGEOLOGY

According to the published British Geological Survey (BGS) Geology of Britain Viewer website (BGS, 2021), the London Clay Formation underlies the northern section of site and the Bognor Sand Member (which is a Member of the London Clay Formation) is indicated to underlie the southern section of site. Superficial deposits comprising Head (clay, silt, sand and gravel) are shown to be located in the north western corner of the site.

No Made Ground is indicated to be present on the site.

The nearest significant watercourse is a river named Park Lane Stream located 22 m west of the site. A drainage channel is also located approximately 6 m east of the site.

4 FIELDWORK

The fieldwork was carried out on 25 and 26 May 2021 and comprised progression of eight exploratory boreholes.

All site works were completed under the instruction and supervision of a SOCOTEC environmental scientist in accordance with BS 5930:2015 Code of Practice for Ground Investigations.

Exploratory hole locations were marked out by SOCOTEC in advance of the fieldwork and the locations were cleared and positioned away from identified or suspected buried services.

All locations were subject to a Cable Avoidance Tool (CAT) scan at each location and a permit to dig was issued prior to breaking ground.

The exploratory hole locations and sample depths were positioned to avoid known buried services, ensure appropriate site coverage and target areas of potential contamination of the proposed redevelopments. The locations were set out from local features. The exploratory hole locations are shown on Figure 2 Windowless Sampling Location Plan presented in Appendix A.

4.1 Windowless Sampling Boreholes

Eight windowless sampling boreholes designated as WS1 to WS6 and WS8 to WS9 were excavated to a maximum depth of 4 m bgl using insulated hand tools and a competitor rig. The depths reached and samples obtained from each borehole are summarised in Table 1.

Table 1 Summary of Windowless Sampling Boreholes and Sample Depths

Trial Pit	Final Depth (m bgl)	Samples	Sample Depth (m bgl)
WS1	1.4	ES1	0.05 – 0.25
		ES2	0.25 – 0.50
WS2	4	ES1	0.10 – 0.25
		ES2	0.25 – 1.10
WS3	4	ES1	0.10 – 0.30
		ES2	0.30 – 1.00
WS4	4	ES1	0.10 – 0.25
		ES2	0.25 – 1.00
WS5	4	ES1	0.10 – 0.45
		ES2	0.45 – 1.00
WS6	4	ES1	0.10 – 0.65
		ES2	0.65 – 1.00
WS8	2.5	ES1	0.10 – 0.25
		ES2	0.50 – 0.80
WS9	4	ES1	0.10 – 0.25
		ES2	0.25 – 1.00

WS1 was hand pitted and terminated at 1.4 m bgl. The windowless sampling rig was not used at the position due to weather conditions and site topography making it potentially hazardous to position the rig and move off following works at the bottom of a slope.

WS8 was terminated at 2.45 m bgl due to striking an obstruction on progression within the geology encountered which the rig was not able to penetrate.

Soil samples representing the soil encountered were obtained from each borehole. Each environmental soil sample comprised three one litre plastic tubs, one 120 ml amber glass jar and one 60 ml amber glass jar.

The sampling containers were placed in cool boxes/corex boxes and transported to the laboratories of SOCOTEC at Burton-on-Trent for MCerts and UKAS accredited laboratory analysis.

The exploratory hole logs are presented in Appendix B. These provide information including the groundwater observations and descriptions of the strata encountered. The logging of soil is in accordance with BS EN ISO 14688-1+A1: 2018, as amplified by BS 5930: 2015.

Photographs of the fieldwork are presented in Appendix C.

4.2 Installations

On completion, all eight boreholes were installed with standpipes for the purpose of gas monitoring and groundwater monitoring and sampling. The boreholes were installed with single 50 mm standpipes only.

The depths of the response zones were specified by SOCOTEC and were positioned to monitor ground gases from the Made Ground and natural strata as well as to enable groundwater monitoring and sampling where appropriate. Each response zone was formed using an inert gravel filter pack sealed above and below with bentonite and gas valves were placed at the top of each gas monitoring standpipe. Details of the installations are presented in Table 2 and on the relevant borehole records in Appendix B.

Table 2 Summary of Monitoring Installation Construction

Borehole	Standpipe Diameter (mm)	Response Zone (m bgl)	Stratum
WS1	50	0.3 – 1.3	London Clay Formation
WS2	50	1.0 – 2.0	London Clay Formation
WS3	50	1.0 – 4.0	London Clay Formation
WS4	50	1.0 – 4.0	London Clay Formation
WS5	50	1.0 – 4.0	London Clay Formation
WS6	50	1.0 – 4.0	London Clay Formation
WS8	50	1.0 – 2.45	London Clay Formation
WS9	50	1.0 – 4.0	London Clay Formation

4.3 Monitoring and Sampling

Groundwater and gas monitoring has been carried out after the completion of the fieldwork at two weekly intervals, as detailed in Table 3.

Gas monitoring was undertaken using a hand held Infrared Gas Analyser with integral flow measuring capability. Measurement of concentrations of methane, carbon dioxide, oxygen, carbon monoxide and hydrogen sulphide were undertaken on all standpipes, along with gas flow rates, standpipe pressure and atmospheric pressure. Groundwater levels were recorded following the gas measurements and was encountered in all boreholes excluding WS1, during all visits.

Groundwater samples were recovered from the 50 mm standpipes by use of well-specific disposable bailers in accordance with BS 10175:2011+A2:2017, following purging of three well volumes (where possible) using bailers. Water samples were collected in appropriate containers and stored in cool boxes until received by the analytical laboratory.

Table 3 Summary of Monitoring and sampling Visits

Date	Visit No	Gas Concentrations	Atmospheric Pressure	Groundwater Sampling
9 June 2021	1 of 3	All standpipes excluding WS6	High and Falling	WS9
23 June 2021	2 of 3	All standpipes	High and Rising	WS4, WS5, WS9
13 July 2021	3 of 3	WS1, WS2, WS4, WS5, WS6	Moderate and Rising	WS5

Gas concentrations were not recorded in WS6 during Visit 1 due to the gas analyser malfunctioning. Boreholes WS3, WS8 and WS9 had been vandalised between Visit 2 and 3 taking place and so gas concentrations could not be monitored in these boreholes during the third visit.

5 LABORATORY TESTING

A programme of soil chemical laboratory testing was scheduled on selected soil and water samples by SOCOTEC for a suite of chemical contaminants commonly associated with current and historical industrial land uses. Soil leachate tests were also carried out for a range of inorganic determinands.

The scheduled solid, leachate and groundwater laboratory tests are detailed in Tables 4, 5 and 6 and the results are presented in the attached laboratory test reports referenced 21060013, 21061058, 21062006 and 21071178 which are presented in Appendix D.

Table 4 Summary of Soil Chemical Laboratory Testing

Determinand	No. of tests
Metals and semi-metals (boron, arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium and zinc)	12
Hexavalent chromium	12
Cyanide (total and free)	12
Phenol index	12
Full TPH CWG to include GRO/BTEX for (nC5 to nC10) plus extractables as aliphatic and aromatic class separation with Carbon Banding	12
Polycyclic aromatic hydrocarbons (PAH) US EPA 16 compounds	12
pH	12
Asbestos screen	6
Total organic carbon	16

Table 5 Summary of Leachate Chemical Laboratory Testing

Determinand	No. of tests
Dissolved metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium and zinc)	10
Cyanide (free)	10

Table 6 Summary of Groundwater Chemical Laboratory Testing

Determinand	No. of tests
Total metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium and zinc)	5
Hexavalent chromium	5
Phenol index	5
Cyanide (free)	5
Volatile organic compounds (VOCs) target list	5
Total petroleum hydrocarbons (TPH) with carbon banding	5
Polycyclic aromatic hydrocarbons (PAH) US EPA 16 compounds	5
pH	5
Dissolved metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium and zinc)	1

6 GROUND CONDITIONS

6.1 Strata Encountered

The ground conditions encountered during the investigation comprised topsoil underlain by the solid geology of London Clay Formation at all locations. No Made Ground or Superficial Deposits were noted to be present.

For full details of the materials encountered, reference should be made to the exploratory hole records presented in Appendix B.

6.2 Made Ground / Topsoil

Topsoil was encountered in all locations and could generally be described as dark slightly clayey sandy SILT with frequent roots and rootlets.

6.3 London Clay Formation

The underlying London Clay Formation was generally described as firm orangish brown slightly sandy SILT / CLAY with partings of fine orange sand. Below 3.5 m the London Clay was described as stiff dark grey silty CLAY.

6.4 Groundwater

Were noted to be present, groundwater was recorded between 0.4 and 1.6 m bgl.

6.5 Observed Contamination

No potentially significant contamination was noted within the site soils or groundwater during the fieldwork by visual or olfactory means.

7 RISK ASSESSMENTS

7.1 Human Health Risk Assessment

7.1.1 Technical Approach

In accordance with Environment Agency Land Contamination Risk Management (LCRM) guidance (EA, 2020), human health risk assessment follows a tiered approach. The first tier ordinarily comprises a Preliminary Risk Assessment, completed as part of a Desk Study. A Desk Study (reference STH1016/1) has been carried out on the site in May 2021 by SOCOTEC.

Further tiers of risk assessment include Generic Quantitative Risk Assessment (GQRA) and Detailed Quantitative Risk Assessment (DQRA), which use data derived from the sampling and known details about the proposed reuse of the material to assess risks to identified receptors. The assessment included in this report comprises a GQRA, which is undertaken by comparing soil contaminant concentrations with conservative Generic Assessment Criteria (GAC).

Generic Assessment Criteria (GAC) for various land use and exposure scenarios have been selected from the following sources:

- CL:AIRE Category 4 Screening Levels (C4SL);
- LQM Suitable for Use Levels (S4UL); and
- CL:AIRE/EIC/AGS GAC

The GAC have been derived using the Environment Agency Contaminated Land Exposure Assessment (CLEA) model, for a range of land uses and exposure scenarios, including:

- Residential with the consumption of homegrown produce;
- Residential without the consumption of homegrown produce;
- Commercial;
- Allotments;
- Public Open Space near residential housing (POSres); and
- Public Open Space public park scenario (POSpark).

The site is proposed for use for residential properties with private gardens, therefore, the GAC for Residential with the consumption of homegrown produce is considered the most appropriate.

Provisional C4SL values for a total of six priority substances (arsenic, benzene, benzo(a)pyrene, cadmium, hexavalent chromium and lead) were produced by CL:AIRE, and published in December

2013. A policy companion document was published by DEFRA in March 2014, which confirmed the final C4SL for these determinands. C4SLs for Chloroethene (Vinyl Chloride), Trichloroethene (TCE) and Tetrachloroethene (PCE) were published by CL:AIRE (CL:AIRE, 2021) in 2021. A further tranche of C4SLs are in preparation and expected sometime in the near future.

The final C4SL values are considered to represent 'relevant technical tools', as per paragraph 4.21(c) of the Contaminated Land Part IIA Statutory Guidance. Their purpose is to identify land that falls within Category 4 (Human Health) as defined by the Statutory Guidance, i.e. land that is definitely not Contaminated Land as defined by the Part IIA legislation.

It should be noted that the C4SLs have been derived using toxicological criteria that are presented as posing a 'low level of toxicological concern'. This is in comparison with previous Soil Guidelines Values (SGVs) and LQM GAC, which were derived using toxicological criteria that represent a 'minimal risk' to human health.

The LQM Suitable for Use Levels (S4ULs) have been derived in accordance with the changes in exposure modelling presented within the C4SL framework, whilst still using a set of toxicological criteria that are set within the 'minimal risk' range. The S4ULs were published to offer a set of collated information on the toxicity and transport properties for a number of common contaminants, and should be seen as suitable for use in planning and change of use assessments, as well as Part IIA assessments.

The CL:AIRE/EIC/AGS Generic Assessment Criteria were published in December 2009. Assessment criteria were produced using the CLEA model for a total of 35 No. less common contaminants, in accordance with the CLEA guidance. The GAC were intended to compliment the SGVs produced by the Environment Agency, and the LQM GAC that were current at the time. These have been used in the assessment for contaminants where S4ULs and C4SLs are not available.

The SOCOTEC approach to human health risk assessment in reuse assessments is to use the various assessment criteria in the following order of preference: S4UL > EIC GAC > C4SLs. Note that for some contaminants this will not be possible, for example lead has a C4SL but not an S4UL or a EIC GAC.

Where contaminants fail the initial screen against S4UL or EIC GAC, a further assessment may be possible by screening against C4SLs. Where this is undertaken it should be clearly understood that the C4SLs represent 'low risk' rather than 'minimal risk' GAC.

7.1.2 Human Health Risk Assessment Screening

The analytical results of the soil samples collected from a range of depths between 0.05 and 1.6 m have been screened against the GACs for a residential with the consumption of homegrown produce end use as detailed in Table 7.

Table 7 Comparison of Maximum Measured Soil Contaminant Concentrations with Residential with Homegrown Produce GAC

Determinand	Maximum Recorded Concentration (mg/kg)	Generic Assessment Criteria (GAC) (mg/kg)	No. of results exceeding the GAC (no. of tests in brackets)
Metals and Semi-metals			
Arsenic	14.6	37	0 (12)
Boron	1	290	0 (12)
Cadmium	0.5	11	0 (12)
Chromium	43.3	910	0 (12)
Copper	29.8	2400	0 (12)
Lead	27.8	200 ¹	0 (12)
Mercury	< 0.5	40 ²	0 (12)
Nickel	48.7	180	0 (12)
Selenium	< 0.5	250	0 (12)
Zinc	81.1	3700	0 (12)
Chromium VI	0.3	6	0 (12)
Phenols			
Phenol Index	< 0.7	280	0 (12)
Total Petroleum Hydrocarbons and BTEX			
Benzene	< 0.014	0.087	0 (12)
Toluene	< 0.014	130	0 (12)
Ethylbenzene	< 0.014	47	0 (12)
Total Xylene	< 0.042	56	0 (12)
TPH – >C06-C08 aliphatic	< 0.552	100	0 (12)
TPH – >C08-C10 aliphatic	0.276	27	0 (12)
TPH – >C10-C12 aliphatic	5.75	130	0 (12)
TPH – >C12-C16 aliphatic	14.1	1100	0 (12)
TPH – >C16-C35 aliphatic	144.6	65000	0 (12)
TPH – >C08-C10 aromatic	< 0.056	34	0 (12)
TPH – >C10-C12 aromatic	< 5.52	74	0 (12)
TPH – >C12-C16 aromatic	13.7	140	0 (12)
TPH – >C16-C21 aromatic	13.2	260	0 (12)
TPH – >C21-C35 aromatic	45.7	1100	0 (12)

Polycyclic Aromatic Hydrocarbons			
Naphthalene	< 0.11	2.3	0 (12)
Acenaphthylene	< 0.11	170	0 (12)
Acenaphthene	< 0.11	210	0 (12)
Fluorene	< 0.11	170	0 (12)
Phenanthrene	< 0.11	95	0 (12)
Anthracene	< 0.11	2400	0 (12)
Fluoranthene	< 0.11	280	0 (12)
Pyrene	< 0.11	620	0 (12)
Benzo(a)anthracene	< 0.11	7.2	0 (12)
Chrysene	< 0.11	15	0 (12)
Benzo(b)fluoranthene	< 0.11	2.6	0 (12)
Benzo(k)fluoranthene	< 0.11	77	0 (12)
Benzo(a)pyrene	< 0.11	2.2	0 (12)
Indeno(1,2,3-c,d)pyrene	< 0.11	27	0 (12)
Dibenzo(a,h)anthracene	< 0.11	0.24	0 (12)
Benzo(g,h,i)perylene	< 0.11	320	0 (12)
Others			
Cyanide (free)	< 0.7	22	0 (12)
Asbestos	NAIS	Presence of Asbestos	0 (6)

¹ C4SL² GAC for Inorganic Mercury used

NAIS no asbestos identified in sample

None of the contaminants of concern exceeded the relevant GAC in any of the samples indicating that the material represented by the samples does not pose an unacceptable risk to future site users based on a residential end use and the available test results.

7.2 Risk to Construction Workers

The recorded concentrations of contaminants would pose a low risk to construction workers and the risk should be mitigated by the use of appropriate PPE (including gloves) and maintaining good site hygiene such as no drinking, eating or smoking on site (except in designated areas) and washing hands, face and lower arms when leaving the work area.

No potential asbestos containing material (ACM) was noted during the fieldwork and no asbestos fibres were detected in the soil samples screened for asbestos fibres. A watching brief with mitigation plan should be maintained during groundworks for unexpected contamination.

7.3 Controlled Waters Risk Assessment

The assessment of risks to controlled waters follows guidance provided by the EA (Remedial Targets Methodology, Hydrogeological Risk Assessment for Land Contamination (2006) and DEFRA in the Contaminated Land (England) Regulations 2006 (SI 2006/1380) and consolidated regulations.

As with the human health risk assessment, the controlled waters assessment should take into account the receptors that may be risk from the material. This could include groundwater in underlying aquifers, or nearby surface waters, or both. The generic assessment criteria (or Target Concentrations) used to assess the potential risks should then be selected based on the primary receptors of concern.

The nearest surface water feature is a drainage channel, located approximately 6 m east of the site. Another surface water feature is an inland river named Park Lane Stream flowing from north to south recorded 22 m west of the site.

The majority of the site is located over a Secondary A Aquifer and the most northern section of site is located over an Unproductive Aquifer. The site is located within a Source Protection Zone (SPZ), in an inner catchment within a confined aquifer designated 'Type 1c' SPZ. There is also another SPZ designated 'Type 2' within outer catchment recorded 497 m north east of the site. These are associated with the Principal Aquifer within the Chalk underlying the site at depth, which will be protected by a significant thickness of very slowly permeable London Clay Formation.

Therefore, for the current assessment, Target Concentrations (Ct) are based on Fresh Water Surface Water Environmental Quality Standards (EQS) as the channel and Park Lane Stream will be considered the most sensitive controlled waters receptor. Note that some of the published surface water EQSs (e.g. copper, lead, nickel, and zinc) are based on the theoretical bioavailable forms of the metals and as such are very conservative.

A further comparison of the results has been made to the UK Drinking Water Standard (UK DWS) for completeness.

7.4 Soil Leachate Screening

The analytical results of soil leachate testing have been screened against the Fresh Water Surface Water Environmental Quality Standards (EQS) and the UK Drinking Water Standard (UK DWS), in Table 8.

Table 8 Comparison of Soil Leachate Contaminant Concentrations with Freshwater EQS and UK DWS

Determinand	Maximum Recorded Concentration (mg/l)	EQS Freshwater (mg/l)	UK DWS (mg/l)	No. of results exceeding the EQS (no. of tests in brackets)	No. of results exceeding the UK DWS (no. of tests in brackets)
Heavy Metals					
Arsenic (dissolved)	< 0.001	0.05	0.01	0 (10)	0 (10)
Cadmium (dissolved)	0.00009	0.00008 ¹	0.005	1 (10)	0 (10)
Chromium (dissolved)	< 0.001	0.0047	0.05	0 (10)	0 (10)
Copper (dissolved)	0.01	0.001	2	6 (10)	0 (10)
Lead (dissolved)	0.001	0.0012	0.01	0 (10)	0 (10)
Mercury (dissolved)	< 0.00003	0.00007	0.001	0 (10)	0 (10)
Nickel (dissolved)	0.002	0.004	0.02	0 (10)	0 (10)
Selenium (dissolved)	0.001	n/a	0.01	n/a	0 (10)
Zinc (dissolved)	0.007	0.0129	n/a	0 (10)	n/a
Others					
Cyanide (Free)	0.02	0.001	0.05	1 (6) 5 (6) due to LoD	0 (10)

¹ EQS based on hardness bands (mg/l CaCO₃ >40)

Cadmium slightly exceeded the EQS Target Concentrations (Ct) in one of the ten samples tested. Copper slightly exceeded the EQS Ct in six of the ten samples. Cyanide (free) failed in one of the samples due to exceeding the EQS Ct and failed in the other five samples due to the laboratory limit of detection (LoD) being greater than the Ct and therefore were not absolute exceedances. No contaminants exceeded the UK DWS Ct.

It should be noted that the Cts are relevant at the source i.e. drinking tap water or within the controlled water body. The leachate results are considered to overestimate the levels of contaminants reaching the source, as consideration has not been given to attenuation and dilution, which would likely be significant between the site and source.

7.5 Groundwater Screening

In order to assist in the determination of risks to controlled waters, testing has been carried out on five groundwater samples. The screening results against each contaminant listed in UK freshwater EQS and UK DWS are summarised in Table 9 below.

Table 9 Comparison of Groundwater Contaminant Concentrations with Freshwater EQS and UK DWS

Determinand	Maximum Recorded Concentration (mg/l)	EQS Freshwater (mg/l)	UK DWS (mg/l)	No. of results exceeding the EQS (no. of tests in brackets)	No. of results exceeding the UK DWS (no. of tests in brackets)
Heavy Metals					
Arsenic (total)	0.005	0.05	0.01	0 (5)	0 (5)
Cadmium (total)	0.00091	0.00008 ¹	0.005	4 (5)	0 (5)
Chromium (total)	0.018	0.0047	0.05	2 (5)	0 (5)
Copper (total)	0.03	0.001	2	5 (5)	0 (5)
Lead (total)	0.03	0.0012	0.01	4 (5)	1 (5)
Mercury (total)	<0.00003	0.00007	0.001	0 (5)	0 (5)
Nickel (total)	0.054	0.004	0.02	5 (5)	1 (5)
Selenium (total)	0.012	n/a	0.01	n/a	1 (5)
Zinc (total)	0.097	0.0129	n/a	4 (5)	n/a
Others					
Cyanide (free)	0.02	0.001	0.05	5 (5) 4 due to LoD	0 (5)
Total TPH	0.03	n/a	0.09 ²	n/a	0 (5)
Polycyclic Aromatic Hydrocarbons					
Anthracene	< 0.01	0.0001	n/a	5 (5) due to LoD	n/a
Benzo(a)pyrene	< 0.01	0.00000017	0.00001	5 (5) due to LoD	5 (5) due to LoD
Benzo(b)fluoranthene	< 0.01	0.00000017	n/a	5 (5) due to LoD	n/a
Benzo(g,h,i)perylene	< 0.01	0.00000017	n/a	5 (5) due to LoD	n/a
Benzo(k)fluoranthene	< 0.01	0.00000017	n/a	5 (5) due to LoD	n/a
Fluoranthene	< 0.01	0.0000063	n/a	5 (5) due to LoD	n/a
Indeno(1,2,3-cd)pyrene	< 0.01	0.00000017	n/a	5 (5) due to LoD	n/a
Naphthalene	0.02	0.0224	n/a	0 (5)	n/a

¹ EQS based on hardness bands (mg/l CaCO₃ >40)

² WHO (2008) used for total TPH in place of EQS

As detailed in Table 9, six determinants; cadmium, chromium, copper, lead, nickel and zinc recorded concentrations that exceeded the relevant EQS Ct. Several of the Polycyclic Aromatic Hydrocarbons (PAHs) and cyanide (free) failed only due to the laboratory limit of detection (LoD) being greater than the Ct. However, one sample did record a concentration of cyanide that exceeded the relevant EQS Ct.

Three determinants; lead, nickel and selenium recorded concentrations that exceeded the relevant UK DWS Ct. The exceedance of a Ct does not automatically indicate that an unacceptable risk exists, but represents a point at which further assessment is required.

It should be noted that the Cts are relevant at the source, i.e. drinking water tap or within the controlled water body. The leachate and groundwater results are considered to overestimate the levels of contaminants reaching the receptor as consideration has not been given to attenuation and dilution, which would likely be significant between the site and controlled water.

Furthermore, considering the low levels of corresponding contaminants of concern recorded in the solids results, the soil and groundwater underlying the site is considered to pose a very low risk to the pollution of controlled waters.

8 GROUND GAS RISK ASSESSMENT

A ground gas risk assessment has been carried out in general accordance with CIRIA Publication C665 "Assessing risks posed by hazardous ground gases to buildings" (2007) and BS8485:2015+A1: (2019) "Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings".

No potential on or off site sources of ground gases were identified during the Phase 1 Desk Study and no Made Ground was identified on site during the ground investigation. Total organic carbon testing of soil samples (excluding the thin layer of topsoil) recorded a maximum of 0.45%, indicating the natural in-situ soils would not be a potential source of ground gases and the ground gas risk at the site is considered to be very low.

However, ground gas monitoring results have been assessed to provide a further line of evidence of the very low ground gas risk.

8.1 Gas Monitoring Fieldwork

SOCOTEC installed a total of eight boreholes each with a gas monitoring standpipe.

The base of the response zones of the gas monitoring wells ranged from 1.3 to 4 m bgl. All boreholes have the gas response zone in the London Clay Formation.

Table 10 gives an overview of the atmospheric pressures recorded during the three gas monitoring events over a two month period.

Table 9 Summary of Gas Monitoring Events

Visit Number	Date	Atmospheric Pressure (Pa)	Atmospheric Pressure Trend	Atmospheric Pressure Summary
1	9 June 2021	1016 – 1020	Falling	High and Falling
2	23 June 2021	1012 – 1016	Rising	High and Rising
3	13 July 2021	1003 - 1007	Rising	Moderate and Rising

The above monitoring frequency was undertaken based on the initial gas monitoring readings and the interpretation of guidance within CIRIA 665 and BS8576 (2013).

8.2 Gas Monitoring Results

Detectable concentrations of methane (CH₄) were recorded in WS8 and WS9 during the second visit, with a maximum recorded concentration of 0.8% v/v (WS9, visit 2). Detectable concentrations of carbon dioxide (CO₂) were recorded in all installations excluding WS6, on one or more occasions, with a maximum recorded concentration of 3.4% v/v (WS9, visit 2).

The maximum positive flow rate was 2.4 l/hr in WS9 during visit 2, however, the flow was generally recorded at the instrument lower limit of detection, i.e. 0.01 l/h. No negative flow rates were encountered in the boreholes during any of the monitoring visits.

Hydrogen sulphide (H₂S) consistently fluctuated throughout the duration of monitoring. A maximum of 5 ppm was recorded in WS4 during visit 1. Carbon monoxide (CO) values were also consistently fluctuating throughout the monitoring periods with a maximum of 10 ppm recorded in WS9 during visit 1.

8.3 Gas Screening Value

The Gas Screening Values (GSVs) for each borehole for each monitoring visit have been calculated and the highest GSV calculated for carbon dioxide was 0.05, based on a positive flow rate of 2.4 l/hr and 2.1% carbon dioxide at WS9 during visit 2. The highest GSV calculated for methane was 0.019, based on a positive flow rate of 2.4 l/hr and 0.8% carbon dioxide at WS9 during visit 2.

Methane and carbon dioxide were not recorded above 1% and 5% respectively and no significantly reduced (<10%) levels of oxygen were recorded within any of the boreholes during any of the monitoring visits.

Based on the highest GSV recorded of 0.05 l/hr for carbon dioxide this gives the site a gas Characteristic Situation 1 (CS1) and a very low risk classification and no specific gas protection measures would be required within the buildings.

Furthermore, the site is not located within a Radon Affected Area, and no radon protective measures are necessary.

The gas monitoring data for all monitoring events are presented in Appendix E.

9 CONCEPTUAL SITE MODEL

The potential sources, pathways and receptors, have been reassessed incorporating the findings of the ground investigation and data collected from soils and groundwater sampling and monitoring works undertaken including ground gas monitoring. No significant pollutant linkages have been identified at the site. Therefore no specific remedial or mitigation measures associated with soil, groundwater or ground gas at the site would be required to ensure the completed development is safe and suitable for

10 CONCLUSIONS

Following ground investigation works and a programme of monitoring works at the site no significant pollutant linkages have been identified. Therefore, no specific remedial or mitigation measures associated with soil, groundwater or ground gas at the site would be required to ensure the completed development is safe and suitable for use.

No further works or mitigation measures are required to ensure the completed development is safe and suitable for its advised end use as residential housing with gardens.

11 RECOMMENDATIONS

SOCOTEC suggest that a watching brief for unexpected contamination and good practice soil handling operations should be maintained by the groundworks contractors during the construction phase of the project.

The development of a Materials Management Plan (MMP) and a Waste Management Plan (WMP) should be considered for the site if significant quantities of materials are to be excavated, removed, reused or imported as part of redevelopment works.

REFERENCES

- BGS Geology of Britain Viewer. www.bgs.ac.uk. British Geological Survey.
- BS 5930: 2015 : Code of practice for ground investigations. British Standards Institution.
- BS 10175: 2011+A2: 2017 : Investigation of Potentially Contaminated Sites – Code of Practice. British Standards Institution.
- BS 8485: 2015+A1: 2019 : Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings. British Standards Institution.
- CIRIA : 2004 : Contaminated Land Risk Assessment. A Guide to Good Practice. CIRIA Report C552. Construction Industry Research and Information Association.
- CIRIA : 2007 : Assessing Risks Posed by Hazardous Ground Gases to Buildings. CIRIA Report C665. Construction Industry Research and Information Association.
- CLAIRE : 2013 : Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination – Main Report. SP1010. Contaminated Land: Applications in Real Environments, December 2013.
- CLAIRE : 2021 : C4SL Phase 2 Technical Reports. Category 4 Screening Levels: Vinyl Chloride; Trichloroethene (TCE) and Tetrachloroethene (PCE). Contaminated Land: Applications in Real Environments, London.
- DEFRA : 2014 : Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination – Policy Companion Document , DEFRA.
- EA : 2020 : Environment Agency Guidance, Land Contamination Risk Management (LCRM). Environment Agency, Bristol. Published 8 October 2020 at www.gov.uk/government/publications/land-contamination-risk-management-lcrm.
- LQM : 2015 : The LQM/CIEH S4ULs for Human Health Risk Assessment, Land Quality Press, Nottingham. 2015. Publication Number S4UL3144.

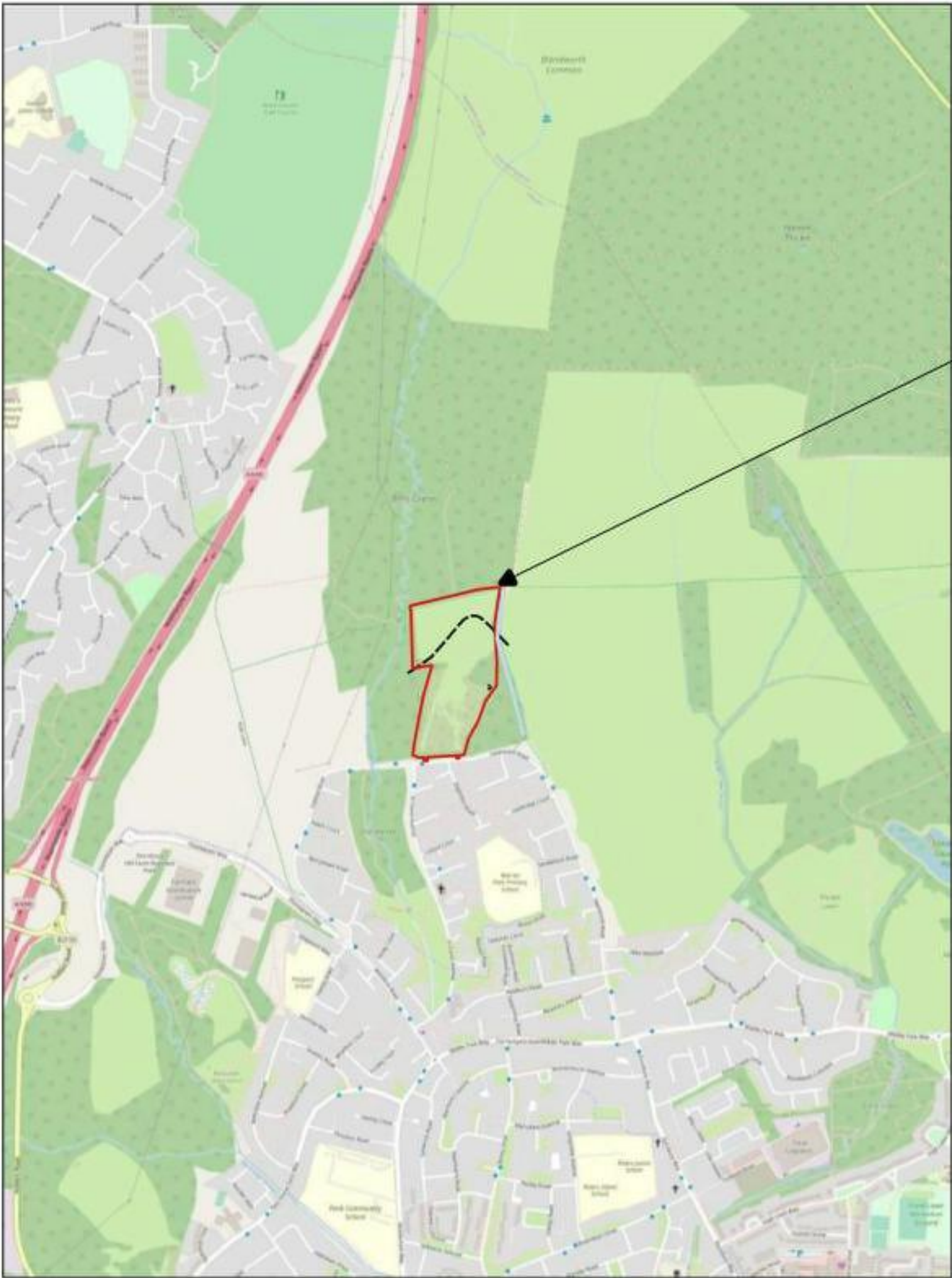
APPENDIX A
FIGURES AND DRAWINGS

Site Location Plan

Figure 1

Windowless Sampling Location Plan

Figure 2



Scale: 1:25,000
Source:
QuickMapServices © OpenStreetMap contributors,
CC-BY-SA, Contains Ordnance Survey data © Crown
copyright and database right 2010-12.
Note : Site boundary not to scale

Project Cabbagefield Row, Havant
Project No. STH1016
Client PDP Architecture

Figure

1



- Legend to symbols:
-  Window sample borehole location
 -  Site boundary
 -  Site entrance gate

Not to Scale
Aerial photo courtesy of Google

Title
Exploratory Hole Location Plan

Project
Cabbagefield Row, Havant



Project No
STH1016/002

Figure No
2

APPENDIX B
EXPLORATORY HOLE RECORDS

Key to Exploratory Hole Logs
Windowless Sampling Logs

WS1 to WS6 and WS8 and WS9



SOCOTEC

Key to Exploratory Hole Records

SAMPLES

Undisturbed

U	Driven tube sample	} nominally 100 mm diameter and full recovery unless otherwise stated
UT	Driven thin wall tube sample	
TW	Pushed thin wall tube sample	
P	Pushed piston sample	
L	Liner sample from dynamic (windowless) sampling. Full recovery unless otherwise stated	
CBR	CBR mould sample	
BLK	Block sample	
C / CS	Core sample (from rotary core) taken for laboratory testing.	
AMAL	Amalgamated sample	

Disturbed

D	Small sample
B	Bulk sample

Other

W	Water sample
G	Gas sample
	Environmental chemistry samples (in more than one container where appropriate)
ES	Soil sample
EW	Water sample

Comments

Sample reference numbers are assigned to every sample taken. A sample reference of 'NR' indicates that, while an attempt was made to take a tube sample, there was no recovery.

Samples taken from borehole installations (ie water or gas) after hole construction are not shown on the exploratory hole logs.

Specimens for point load testing undertaken on site (or other non-lab location) are not shown on the log.

IN SITU TESTS

SPT S or SPT C	Standard Penetration Test, open shoe (S) or solid cone (C)
	The Standard Penetration Test is defined in BS EN ISO 22476-3:2005+A1:2011. The incremental blow counts are given in the Field Records column; each increment is 75 mm unless stated otherwise and any penetration under self-weight in mm (SW) is noted. Where the full 300 mm test drive is achieved the total number of blows for the test drive is presented as N = ** in the Test column. Where the test drive blows reach 50 the total blow count beyond the seating drive is given (without the N = prefix).
IV	<i>in situ</i> vane shear strength, peak (p) and remoulded (r)
HV	Hand vane shear strength, peak (p) and remoulded (r)
PP	Pocket penetrometer test, converted to shear strength
KFH, KRH, KPI	Permeability tests (KFH = falling head, KRH = rising head; KPI = packer inflow); results provided in Field Records column (one value per stage for packer tests)

DRILLING RECORDS

The mechanical indices (TCR/SCR/RQD & If) are defined in BS 5930:2015

TCR	Total Core Recovery, %
SCR	Solid Core Recovery, %
RQD	Rock Quality Designation, %
If	Fracture spacing, mm. Minimum, typical and maximum spacing measurements are presented.
NI	Non-intact - used where the core is fragmented (ie no Solid Core).
NA	Not-applicable - used where a measurement is not applicable (eg. If, SCR and RQD in non-rock materials).

Flush returns, estimated percentage with colour where relevant, are given in the Records column

CRF	Core recovered in the following run (length in m)
AZCL	Assessed zone of core loss

GROUNDWATER



Groundwater entry
Depth to groundwater after standing period

Notes:

See report text for full references of standards.

Updated October 2018

Project Cabbagefield Row, Havant
Project No. STH1016
Carried out for Portsmouth City Council

Key

Sheet 1 of 3

Key to Exploratory Hole Records

INSTALLATION

Details of standpipe/piezometer installations are given on the Record. Legend column shows installed instrument depths including slotted pipe section or tip depth, response zone filter material type and layers of backfill.

Standpipe/ piezometer

The type of instrument installed is indicated by a code in the Legend column at the depth of the response zone:

SP
SPIE
PPIE
EPIE

Standpipe
Standpipe piezometer
Pneumatic piezometer
Electronic piezometer

Plain
Pipe



Slotted
Pipe



Piezometer
Tip



Inclinometer or Slip Indicator

The installation of vertical profiling instruments is indicated on the Record. The base of tubing is shown in the Legend column.

ICE
ICM
SLIP

The type of instrument installed is indicated by a code in the Legend column at the base of the tubing:

Biaxial inclinometer
Inclinometer tubing for use with probe
Slip indicator

Settlement Points or Pressure Cells

The installation of single point instruments is indicated on the Record. The location of the measuring device is shown in the Legend column. The type of instrument installed is indicated by a code in the Legend column:

ESET
ETM
EPCE
PPCE

Electronic settlement cell/gauge
Magnetic extensometer settlement point
Electronic embedment pressure cell
Electronic push in pressure cell

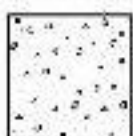
INSTALLATION / BACKFILL LEGENDS

A legend describing the installation is shown in the rightmost column. Legend symbols used to describe the backfill materials are indicated below.

Macadam



Concrete



Grout



Bentonite



Sand



Gravel



Arising



STRATUM LEGENDS

The legend symbols used for graphical representation of soils, rocks and other materials on the borehole logs are shown below. For soils with significant proportions of secondary soil types, a combination of two or more symbols may be used.

Macadam



Concrete



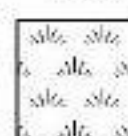
Topsoil



Made Ground / Fill



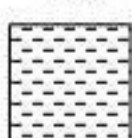
Peat



Void or No Information



Clay



Silt



Sand



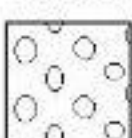
Gravel



Cobbles



Boulders



Coal



Mudstone



Siltstone



Sandstone



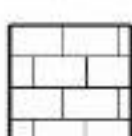
Conglomerate



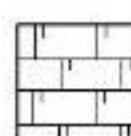
Breccia



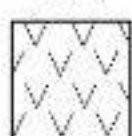
Limestone



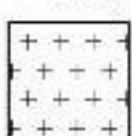
Chalk



Igneous
(Fine)



Igneous
(Med)



Igneous
(Coarse)



Metamorphic
(Fine)



Metamorphic
(Med)



Metamorphic
(Coarse)



Tuff



Notes:

See report text for full references of standards.

Updated October 2018

Project Cabbagefield Row, Havant

Project No. STH1016

Carried out for Portsmouth City Council

Key

Sheet 2 of 3

Key to Exploratory Hole Records

NOTES

- 1 Soils and rocks are described in accordance with BS EN ISO 14688-1:2018 and 14689-1:2018 respectively and the guidance of BS 5930:2015.
- 2 For fine soils, consistency determined during description is reported for those strata where undisturbed samples are available. Where the logger considers that the sample may not be representative of the condition in situ, for whatever reason, the reported consistency is given in brackets. The reliability of the sample is indicated by Probably or Possibly as appropriate. Hence (Probably firm) indicates the logger is reasonably confident of the assessment, but (Possibly firm) means less certainty. Where the samples available are too disturbed to allow a reasonable assessment of the in situ condition, no consistency is given.
- 3 Evidence of the occurrence of very coarse particles (cobbles and boulders) is presented on the logs. However, because of their size in relation to the exploratory hole these records may not be fully representative of their size and frequency in the ground mass.
- 4 The declination of bedding and joints is given with respect to the normal to the core axis. Thus in a vertical borehole this will be the dip.
- 5 The assessment of SCR, RQD and Fracture Spacing excludes artificial fractures.
- 6 Observations of discernible groundwater entries during the advancement of the exploratory hole are given at the foot of the log and in the Legend column. The absence of a recorded groundwater entry should not, however, be interpreted as a groundwater level below the base of the borehole. Under certain conditions groundwater entry may not be observed, for instance, drilling with water flush or overwater, or boring at a rate faster than water can accumulate in the borehole. Similarly, where water entry observations do exist, groundwater may also be present at higher elevations in the ground than where recorded in the borehole. In addition, where appropriate, water levels in the hole at the time of recovering individual samples or carrying out in situ tests and at shift changes are given in the Records column.
- 7 The borehole logs present the results of Standard Penetration Tests recorded in the field without correction or interpretation. However, in certain ground conditions (eg high hydraulic head or where very coarse particles are present) some judgement may be necessary in considering whether the results are representative of in situ mass conditions.

REFERENCES

- 1 BS EN ISO 14688-1:2018 : Geotechnical investigation and testing - Identification and classification of soil. Part 1 Identification and description. British Standards Institution
- 2 BS EN ISO 14689-1 : 2018 : Geotechnical investigation and testing - Identification and classification of rock. Part 1 Identification and description. British Standards Institution
- 3 BS EN ISO 22476-3:2005+A1 : 2011 : Geotechnical investigation and testing - Field testing. Part 3 Standard penetration test. British Standards Institution
- 4 BS 5930 : 2015 : Code of practice for ground investigations. British Standards Institution

Notes:

See report text for full references of standards.

Updated October 2018

Project Cabbagefield Row, Havant
Project No. STH1016
Carried out for Portsmouth City Council

Key

Sheet 3 of 3

Borehole Log



Drilled GC Logged AC Checked MG Approved SM	Start 26/05/2021 End 26/05/2021	Equipment, Methods and Remarks Insulated hand tools. Hand dug inspection pit to 1.3 m.	Depth from (m) to (m) Diameter (mm) Casing Depth (m)	Ground Level Coordinates (m) National Grid
Samples and Tests		Strata Description		
Depth Type & No. Records Date Casing Time Water	Main Detail	Depth, Level (Thickness) Legend Backfill		
0.05 - 0.25 0.25 - 0.50	ES 1 ES 2		Dark brown slightly clayey sandy SILT with frequent roots and rootlets. (TOPSOIL) Stiff brownish grey slightly sandy silty CLAY with occasional partings of fine orange sand. (LONDON CLAY FORMATION) END OF EXPLORATORY HOLE	0.25 1.00 1.30
Groundwater Entries No. Depth Strike (m) Remarks		Depth Sealed (m)	Depth Related Remarks Depths (m) Remarks	Hard Boring Depths (m) Duration (mins) Tools used
Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:50 © Copyright SOCOTEC UK Limited 17/05/2021 10:10:30		Project Cabbagefield Row, Havant Project No. STH1016 Carried out for Portsmouth City Council	Borehole WS1 Sheet 1 of 1	

SOCOTEC

[illegible]

Borehole Log



Drilled GC Logged AC Checked MG Approved SM	Start 26/05/2021 End 26/05/2021	Equipment, Methods and Remarks Archway Competitor 130. Hand dug inspection pit to 1.2 m followed by dynamic sampling with a competitor rig.	Depth from (m) to (m) Diameter (mm) Casing Depth (m)	Ground Level Coordinates (m) National Grid
Samples and Tests		Strata Description		
Depth	Type & No.	Records	Date Casing Time Water	Main Detail Depth, Level (Thickness) Legend Backfill
0.10 - 0.30	ES 1			Dark brown slightly clayey sandy SILT with frequent roots and rootlets. (TOPSOIL)
0.30 - 1.00	ES 2			Firm orangish brown slightly sandy SILT / CLAY with partings of fine orange sand. (LONDON CLAY FORMATION)
1.20 - 1.65	SPT S	N=12 (2,2/2,3,3,4)		
2.00 - 2.45	SPT S	N=14 (2,2/4,3,4,3)		
3.00 - 3.45	SPT S	N=13 (3,3/2,4,3,4)		
				END OF EXPLORATORY HOLE
Groundwater Entries		Depth Related Remarks		Hard Boring
No.	Depth Strike (m) Remarks	Depth Sealed (m)	Depths (m) Remarks	Depths (m) Duration (mins) Tools used
Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.		Project Cabbagefield Row, Havant Project No. STH1016 Carried out for Portsmouth City Council		Borehole WS3 Sheet 1 of 1

Borehole Log



Drilled GC Logged AC Checked MG Approved SM	Start 25/05/2021 End 25/05/2021	Equipment, Methods and Remarks Archway Competitor 130. Hand dug inspection pit to 1.2 m followed by dynamic sampling with a competitor rig.	Depth from (m) to (m) Diameter (mm) Casing Depth (m)	Ground Level Coordinates (m) National Grid
Samples and Tests		Strata Description		
Depth	Type & No.	Records	Date Casing Time Water	Main Detail Depth, Level (Thickness) Legend Backfill
0.10 - 0.25	ES 1			Dark brown slightly clayey sandy SILT with frequent roots and rootlets. (TOPSOIL)
0.25 - 1.00	ES 2			Firm orangish brown slightly sandy SILT / CLAY with partings of fine orange sand. (LONDON CLAY FORMATION)
1.20 - 1.65	SPT S	N=14 (0,2/3,3,4,4)		
2.00 - 2.45	SPT S	N=11 (2,2/2,3,3,3)		
3.00 - 3.45	SPT S	N=13 (2,2/3,3,4,3)		
				END OF EXPLORATORY HOLE
Groundwater Entries		Depth Related Remarks		Hard Boring
No.	Depth Strike (m) Remarks	Depth Sealed (m)	Depths (m) Remarks	Depths (m) Duration (mins) Tools used
Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.		Project Cabbagefield Row, Havant Project No. STH1016 Carried out for Portsmouth City Council		Borehole WS4 Sheet 1 of 1

Borehole Log

Drilled GC Logged AC Checked MG Approved SM	Start 26/05/2021 End 26/05/2021	Equipment, Methods and Remarks Archway Competitor 130. Hand dug inspection pit to 1.2 m followed by dynamic sampling with a competitor rig.	Depth from (m) to (m) Diameter (mm) Casing Depth (m)	Ground Level Coordinates (m) National Grid
Samples and Tests		Strata Description		
Depth	Type & No.	Records	Date Casing Time Water	Main Detail Depth, Level (Thickness) Legend Backfill
0.10 - 0.45	ES 1			Dark brown slightly clayey sandy SILT with frequent roots and rootlets. (TOPSOIL)
0.45 - 1.00	ES 2			Firm orangish brown slightly sandy SILT / CLAY with partings of fine orange sand. (LONDON CLAY FORMATION)
1.20 - 1.65	SPT S	N=13 (1,2/2,3,4,4)		
2.00 - 2.45	SPT S	N=14 (2,2/2,3,4,5)		
3.00 - 3.45	SPT S	N=11 (1,2/2,3,3,3)		
				END OF EXPLORATORY HOLE
Groundwater Entries No. Depth Strike (m) Remarks Depth Sealed (m)				
Depth Related Remarks Depths (m) Remarks				
Hard Boring Depths (m) Duration (mins) Tools used				
Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:50 © Copyright SOCOTEC UK Limited 17/05/2021 10:10:31		Project Cabbagefield Row, Havant Project No. STH1016 Carried out for Portsmouth City Council		
Borehole WS5 Sheet 1 of 1				

Borehole Log

Drilled GC Logged AC Checked MG Approved SM	Start 25/05/2021 End 25/05/2021	Equipment, Methods and Remarks Archway Competitor 130. Hand dug inspection pit to 1.2 m followed by dynamic sampling with a competitor rig.	Depth from (m) to (m) Diameter (mm) Casing Depth (m)	Ground Level Coordinates (m) National Grid					
Samples and Tests			Strata Description						
Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
0.10 - 0.65	ES 1				Dark brown slightly clayey slightly gravelly sandy SILT with frequent roots and rootlets. Gravel is sub-rounded fine to medium of quartzite. (TOPSOIL)		(0.65)		
0.65 - 1.00	ES 2				Firm orangish brown slightly sandy SILT / CLAY with partings of fine orange sand. (LONDON CLAY FORMATION)		0.65		
1.20 - 1.65	SPT S	N=11 (0,1/2,2,3,4)							
2.00 - 2.45	SPT S	N=20 (12,12/5,6,2,7)					(2.96)		
3.00 - 3.45	SPT S	N=24 (6,6/7,6,4,7)							
4.00 - 4.45	SPT S	N=38 (6,7/8,9,11,10)			Stiff dark grey silty CLAY. (LONDON CLAY FORMATION)		3.60 (0.40)		
END OF EXPLORATORY HOLE							4.00		
Groundwater Entries No. Depth Strike (m) Remarks 0.90									
Depth Sealed (m)					Depth Related Remarks Depths (m) Remarks		Hard Boring Depths (m) Duration (mins) Tools used		
Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:50 © Copyright SOCOTEC UK Limited 17/05/2021 10:10:32					Project Cabbagefield Row, Havant Project No. STH1016 Carried out for Portsmouth City Council		Borehole WS6 Sheet 1 of 1		

Borehole Log



Drilled GC Logged AC Checked MG Approved SM	Start 25/05/2021 End 25/05/2021	Equipment, Methods and Remarks Archway Competitor 130. Hand dug inspection pit to 1.2 m followed by dynamic sampling with a competitor rig.	Depth from (m) to (m) Diameter (mm) Casing Depth (m)	Ground Level Coordinates (m) National Grid			
Samples and Tests		Strata Description					
Depth	Type & No.	Records	Date Casing Time Water	Main Detail	Depth, Level (Thickness)	Legend	Backfill
0.10 - 0.25	ES 1			Dark brown slightly clayey slightly gravelly sandy SILT with frequent roots and rootlets. Gravel is angular to sub-rounded fine to medium of flint. (TOPSOIL)	(0.25)		
0.50 - 0.80	ES 2			Firm yellowish brown slightly silty slightly gravelly sandy CLAY. Gravel is sub-angular to sub-rounded fine to medium of flint quartzite and rare fragment of red tile (4x3x1 cm).	(0.75)		
1.20 - 1.65	SPT S	N=13 (0.2/2.3,4,4)		Firm orangish brown slightly sandy SILT / CLAY with partings of fine orange sand. (LONDON CLAY FORMATION)	1.00		
2.00 - 2.45	SPT S	N=14 (2.3/3.3,3,5)			(1.45)		
				END OF EXPLORATORY HOLE	2.45		
Groundwater Entries No. Depth Strike (m) Remarks			Depth Sealed (m)	Depth Related Remarks Depths (m) Remarks		Hard Boring Depths (m) Duration (mins) Tools used	
Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:50 © Copyright SOCOTEC UK Limited 17/05/2021 10:10:32			Project Cabbagefield Row, Havant Project No. STH1016 Carried out for Portsmouth City Council		Borehole WS8 Sheet 1 of 1		

Borehole Log



Drilled GC Logged AC Checked MG Approved SM	Start 25/05/2021 End 25/05/2021	Equipment, Methods and Remarks Archway Competitor 130. Hand dug inspection pit to 1.2 m followed by dynamic sampling with a competitor rig.	Depth from (m) to (m) Diameter (mm) Casing Depth (m)	Ground Level Coordinates (m) National Grid
Samples and Tests		Strata Description		
Depth Type & No. Records Date Casing Time Water	Main Detail	Depth, Level (Thickness) Legend Backfill		
0.10 - 0.25 ES 1 0.25 - 1.00 ES 2 1.20 - 1.65 SPT S N=11 (0, 1/2, 3, 2, 4) 2.00 - 2.45 SPT S N=14 (2, 3/3, 3, 4, 4) 3.00 - 3.45 SPT S N=21 (6, 3/4, 6, 5, 6)	Dark brown slightly clayey sandy SILT with frequent roots and rootlets. (TOPSOIL) Firm yellowish brown slightly silty sandy CLAY. Firm orangish brown slightly sandy SILT / CLAY with partings of fine orange sand. (LONDON CLAY FORMATION) Stiff dark grey silty CLAY. (LONDON CLAY FORMATION) END OF EXPLORATORY HOLE	(0.25) 0.25 (0.75) 1.00 (2.40) 3.40 (0.60) 4.00		
Groundwater Entries No. Depth Strike (m) Remarks 0.90		Depth Sealed (m)	Depth Related Remarks Depths (m) Remarks	
Hard Boring Depths (m) Duration (mins) Tools used				
Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:50 © Copyright SOCOTEC UK Limited 17/05/2021 10:10:32		Project Cabbagefield Row, Havant Project No. STH1016 Carried out for Portsmouth City Council		Borehole WS9 Sheet 1 of 1

APPENDIX C
PHOTOGRAPHS



Plate 1: Soil arisings from WS1. ES1 was sampled from this material.



Plate 2: Soil arisings from WS1. ES2 was sampled from this material.



Plate 3: Borehole installation at WS1 with raised cover.



Plate 4: Borehole from WS2.



Plate 5: Borehole from WS3.



Plate 6: Soil arisings from WS4. Sample ES1 was taken from the material on the left and ES2 was taken from the material on the right.



Plate 7: Borehole from WS4.



Plate 8: Soil arisings from WS5. ES1 was sampled from the material on the left and ES2 was sampled from the material on the right.



Plate 9: Borehole installation at WS5 with raised cover.



Plate 10: Soil arisings from WS6.



Plate 11: Soil arisings from WS8.



Plate 12: Layer of rock which ceased the drilling in WS8 at 2.45 m.



Plate 13: Arisings from WS9. ES1 was sampled from this material.



Plate 14: Borehole from WS9.



Plate 15: Borehole from WS9.

APPENDIX D
GEOENVIRONMENTAL LABORATORY TEST RESULTS

Soil and Leachate Analysis Reports	21060013
Groundwater Analysis Reports	21061058, 21062006 and 21071178



SOCOTEC

Environmental Chemistry
SOCOTEC UK
Ashby Rd, Bretby,
Burton-on-Trent, UK
DE15 0YZ

Certificate of Analysis

Project No: 21060013

Client: SOCOTEC Consultancy South

Quote Number: BEC210316946

Project Reference: STH1016

Site Name: Cabbagefield Row, Havant

Contact: Dave Heasman

Address: Glossop House
Hogwood Lane Industrial Estate
Finchampstead
Wokingham

Post Code: RG40 4QW

E-Mail: Dave.Heasman@socotec.com

Phone No: 02475 310 700

Number of Samples Received: 16

Date Received: 01/06/2021

Analysis Date: 10/06/2021

Date Issued: 10/06/2021

Job Status: Complete

Report Type: Final Version 01

This report supersedes any versions previously issued by the laboratory

Account Manager
Martin Elliott-Palmer

Authorised by the Operations Manager
Becky Batham

Samples Analysed

<u>Sample Reference</u>	<u>Text ID</u>	<u>Sample Date</u>	<u>Sample Type</u>
WS1-1-ES-0.05-0.25	21060013-001	26/05/2021 00:00:00	SOLID
WS1-2-ES-0.25-0.50	21060013-002	26/05/2021 00:00:00	SOLID
WS2-1-ES-0.10-0.25	21060013-003	26/05/2021 00:00:00	SOLID
WS2-2-ES-0.25-1.10	21060013-004	26/05/2021 00:00:00	SOLID
WS3-1-ES-0.10-0.30	21060013-005	26/05/2021 00:00:00	SOLID
WS3-2-ES-0.30-1.00	21060013-006	26/05/2021 00:00:00	SOLID
WS4-1-ES-0.10-0.25	21060013-007	26/05/2021 00:00:00	SOLID
WS4-2-ES-0.25-1.00	21060013-008	26/05/2021 00:00:00	SOLID
WS5-1-ES-0.10-0.45	21060013-009	25/05/2021 00:00:00	SOLID
WS5-2-ES-0.45-1.00	21060013-010	25/05/2021 00:00:00	SOLID
WS6-1-ES-0.10-0.65	21060013-011	25/05/2021 00:00:00	SOLID
WS6-2-ES-0.65-1.00	21060013-012	25/05/2021 00:00:00	SOLID
WS8-1-ES-0.10-0.25	21060013-013	25/05/2021 00:00:00	SOLID
WS8-2-ES-0.50-0.80	21060013-014	25/05/2021 00:00:00	SOLID
WS9-1-ES-0.10-0.25	21060013-015	25/05/2021 00:00:00	SOLID
WS9-2-ES-0.25-1.00	21060013-016	25/05/2021 00:00:00	SOLID

Analysis Results

Project ID					21060013				
Sample ID					001	002		003	
Customer ID					WS1-1-E5-0.05-0.25	WS1-2-E5-0.25-0.50		WS2-1-E5-0.10-0.25	
Sample Type					SOLID	LPL	SOLID	LPL	SOLID
Sampling Date					26/05/2021	26/05/2021	26/05/2021	26/05/2021	26/05/2021
Analysis	Method Code	MDL	Units	Accred					
>C6-C7 Aliphatic	GROHSA/BTEXHSA	0.2	mg/kg [^]	UM	<0.268 [*]		<0.271 [*]		<0.268 [*]
>C7-C8 Aliphatic	GROHSA/BTEXHSA	0.2	mg/kg [^]	UM	<0.268		<0.271		<0.268
>C7-C8 Aromatic	GROHSA/BTEXHSA	0.01	mg/kg [^]	UM	<0.013		<0.014		<0.013
>C8-C10 Aliphatic	GROHSA/BTEXHSA	0.2	mg/kg [^]	UM	<0.268		<0.271		<0.268
>C8-C10 Aromatic	GROHSA/BTEXHSA	0.04	mg/kg [^]	UM	<0.054		<0.055		<0.054
C5-C6 Aliphatic	GROHSA/BTEXHSA	0.2	mg/kg [^]	UM	<0.268		<0.271		<0.268
C5-C7 Aromatic	GROHSA/BTEXHSA	0.01	mg/kg [^]	UM	<0.013		<0.014		<0.013
Total GRO C5-C10	GROHSA/BTEXHSA	0.2	mg/kg [^]	UM	<0.268		<0.271		<0.268
pH (2.5:1 extraction)	PHSOIL	1	pH units	UM	8.2		7.3		7.8
Chromium (VI) as Cr	KONENS	0.1	mg/kg [^]	N	<0.1		<0.1		<0.1
Free Cyanide	SFAPI	0.02	mg/l	U		<0.02		<0.02	
Free Cyanide	SFAPI	0.5	mg/kg [^]	UM	<0.7		<0.7		<0.7
Phenol Index	SFAPI	0.5	mg/kg [^]	U	<0.7		<0.7		<0.7
Total Organic Carbon	WSLM58	0.02	% m/m [^]	U	2.01		0.32		1.44
Arsenic as As	ICPMSS	0.3	mg/kg [^]	UM	9.5		14.6		7.0
Cadmium as Cd	ICPMSS	0.2	mg/kg [^]	UM	0.2		0.2		0.2
Copper as Cu	ICPMSS	1.6	mg/kg [^]	UM	14.2		29.8		10.5
Lead as Pb	ICPMSS	0.7	mg/kg [^]	UM	27.8		19.8		20.6
Mercury as Hg	ICPMSS	0.5	mg/kg [^]	UM	<0.5		<0.5		<0.5
Nickel as Ni	ICPMSS	2	mg/kg [^]	UM	13.6		48.7		8.9
Selenium as Se	ICPMSS	0.5	mg/kg [^]	UM	<0.5		<0.5		<0.5
Total Chromium as Cr	ICPMSS	1.2	mg/kg [^]	UM	22.2		43.3		21.9
Zinc as Zn	ICPMSS	16	mg/kg [^]	UM	53.1		81.1		42.6
Boron as B	ICPBOR	0.5	mg/kg [^]	UM	1.0		0.7		0.8

Analysis Results

					Project ID	21060013					
					Sample ID	004		005	006		
					Customer ID	WS2-2-ES-0.25-1.10		WS3-1-ES-0.10-0.30		WS3-2-ES-0.30-1.00	
					Sample Type	LPL	SOLID	SOLID	LPL	SOLID	
					Sampling Date	26/05/2021	26/05/2021	26/05/2021	26/05/2021	26/05/2021	
Analysis	Method Code	MDL	Units	Accred							
>C6-C7 Aliphatic	GROHSA/BTEXHSA	0.2	mg/kg^	UM				<0.250*		<0.249*	
>C7-C8 Aliphatic	GROHSA/BTEXHSA	0.2	mg/kg^	UM				<0.250		<0.249	
>C7-C8 Aromatic	GROHSA/BTEXHSA	0.01	mg/kg^	UM				<0.013		<0.013	
>C8-C10 Aliphatic	GROHSA/BTEXHSA	0.2	mg/kg^	UM				<0.250		<0.249	
>C8-C10 Aromatic	GROHSA/BTEXHSA	0.04	mg/kg^	UM				<0.051		<0.051	
C5-C6 Aliphatic	GROHSA/BTEXHSA	0.2	mg/kg^	UM				<0.250		<0.249	
C5-C7 Aromatic	GROHSA/BTEXHSA	0.01	mg/kg^	UM				<0.013		<0.013	
Total GRO C5-C10	GROHSA/BTEXHSA	0.2	mg/kg^	UM				<0.250		<0.249	
pH (2.5:1 extraction)	PHSOIL	1	pH units	UM				7.2		6.9	
Chromium (VI) as Cr	KONENS	0.1	mg/kg^	N				<0.1		0.1	
Free Cyanide	SFAPI	0.02	mg/l	U	<0.02				<0.02		
Free Cyanide	SFAPI	0.5	mg/kg^	UM				<0.6		<0.6	
Phenol Index	SFAPI	0.5	mg/kg^	U				<0.6		<0.6	
Total Organic Carbon	WSLM59	0.02	% m/m^	U		0.26		0.85		0.35	
Arsenic as As	ICPMSS	0.3	mg/kg^	UM				6.3		8.2	
Cadmium as Cd	ICPMSS	0.2	mg/kg^	UM				<0.2		<0.2	
Copper as Cu	ICPMSS	1.6	mg/kg^	UM				14.3		17.1	
Lead as Pb	ICPMSS	0.7	mg/kg^	UM				17.0		11.2	
Mercury as Hg	ICPMSS	0.5	mg/kg^	UM				<0.5		<0.5	
Nickel as Ni	ICPMSS	2	mg/kg^	UM				7.3		13.2	
Selenium as Se	ICPMSS	0.5	mg/kg^	UM				<0.5		<0.5	
Total Chromium as Cr	ICPMSS	1.2	mg/kg^	UM				18.6		30.3	
Zinc as Zn	ICPMSS	16	mg/kg^	UM				39.6		42.4	
Boron as B	ICPBOR	0.5	mg/kg^	UM				<0.5		0.5	

Analysis Results

					Project ID	21060013					
					Sample ID	007		008	009		
					Customer ID	WS4-1-ES-0.10-0.25		WS4-2-ES-0.25-1.00		WS5-1-ES-0.10-0.45	
					Sample Type	LPL	SOLID	SOLID	LPL	SOLID	
					Sampling Date	26/05/2021	26/05/2021	26/05/2021	25/05/2021	25/05/2021	
Analysis	Method Code	MDL	Units	Accred							
>C6-C7 Aliphatic	GROHSA/BTEXHSA	0.2	mg/kg^	UM				<0.258*		<0.250*	
>C7-C8 Aliphatic	GROHSA/BTEXHSA	0.2	mg/kg^	UM				<0.258		<0.250	
>C7-C8 Aromatic	GROHSA/BTEXHSA	0.01	mg/kg^	UM				<0.013		<0.013	
>C8-C10 Aliphatic	GROHSA/BTEXHSA	0.2	mg/kg^	UM				<0.258		<0.250	
>C8-C10 Aromatic	GROHSA/BTEXHSA	0.04	mg/kg^	UM				<0.052		<0.051	
C5-C6 Aliphatic	GROHSA/BTEXHSA	0.2	mg/kg^	UM				<0.258		<0.250	
C5-C7 Aromatic	GROHSA/BTEXHSA	0.01	mg/kg^	UM				<0.013		<0.013	
Total GRO C5-C10	GROHSA/BTEXHSA	0.2	mg/kg^	UM				<0.258		<0.250	
pH (2.5:1 extraction)	PHSOIL	1	pH units	UM				7.0		6.5	
Chromium (VI) as Cr	KONENS	0.1	mg/kg^	N				0.1		<0.1	
Free Cyanide	SFAPI	0.02	mg/l	U		<0.02			<0.02		
Free Cyanide	SFAPI	0.5	mg/kg^	UM				<0.6		<0.6	
Phenol Index	SFAPI	0.5	mg/kg^	U				<0.6		<0.6	
Total Organic Carbon	WSLM59	0.02	% m/m^	U			0.88	0.23		0.73	
Arsenic as As	ICPMSS	0.3	mg/kg^	UM				11.5		5.8	
Cadmium as Cd	ICPMSS	0.2	mg/kg^	UM				<0.2		0.5	
Copper as Cu	ICPMSS	1.6	mg/kg^	UM				22.2		20.9	
Lead as Pb	ICPMSS	0.7	mg/kg^	UM				12.5		18.9	
Mercury as Hg	ICPMSS	0.5	mg/kg^	UM				<0.5		<0.5	
Nickel as Ni	ICPMSS	2	mg/kg^	UM				17.0		8.9	
Selenium as Se	ICPMSS	0.5	mg/kg^	UM				<0.5		<0.5	
Total Chromium as Cr	ICPMSS	1.2	mg/kg^	UM				36.0		20.4	
Zinc as Zn	ICPMSS	16	mg/kg^	UM				55.3		53.6	
Boron as B	ICPBOR	0.5	mg/kg^	UM				0.6		0.6	

Analysis Results

					Project ID	21060013					
					Sample ID	010		011	012		
					Customer ID	W55-2-ES-0.45-1.00		W56-1-ES-0.10-0.65		W56-2-ES-0.65-1.00	
					Sample Type	LPL	SOLID	SOLID	LPL	SOLID	
					Sampling Date	25/05/2021	25/05/2021	25/05/2021	25/05/2021	25/05/2021	
Analysis	Method Code	MDL	Units	Accred							
>C6-C7 Aliphatic	GROHSA/BTEXHSA	0.2	mg/kg^	UM				<0.246*		<0.257*	
>C7-C8 Aliphatic	GROHSA/BTEXHSA	0.2	mg/kg^	UM				<0.246		<0.257	
>C7-C8 Aromatic	GROHSA/BTEXHSA	0.01	mg/kg^	UM				<0.012		<0.013	
>C8-C10 Aliphatic	GROHSA/BTEXHSA	0.2	mg/kg^	UM				<0.246		<0.257	
>C8-C10 Aromatic	GROHSA/BTEXHSA	0.04	mg/kg^	UM				<0.049		<0.052	
C5-C8 Aliphatic	GROHSA/BTEXHSA	0.2	mg/kg^	UM				<0.246		<0.257	
C5-C7 Aromatic	GROHSA/BTEXHSA	0.01	mg/kg^	UM				<0.012		<0.013	
Total GRO C5-C10	GROHSA/BTEXHSA	0.2	mg/kg^	UM				<0.246		<0.257	
pH (2.5:1 extraction)	PHSOIL	1	pH units	UM				6.8		6.9	
Chromium (VI) as Cr	KONENS	0.1	mg/kg^	N				0.3		<0.1	
Free Cyanide	SFAPI	0.02	mg/l	U	0.02				<0.02		
Free Cyanide	SFAPI	0.5	mg/kg^	UM				<0.6		<0.6	
Phenol Index	SFAPI	0.5	mg/kg^	U				<0.6		<0.6	
Total Organic Carbon	WSLM59	0.02	% m/m^	U		0.23		0.80		0.25	
Arsenic as As	ICPMSS	0.3	mg/kg^	UM				6.0		8.3	
Cadmium as Cd	ICPMSS	0.2	mg/kg^	UM				<0.2		<0.2	
Copper as Cu	ICPMSS	1.6	mg/kg^	UM				13.8		16.2	
Lead as Pb	ICPMSS	0.7	mg/kg^	UM				23.5		13.5	
Mercury as Hg	ICPMSS	0.5	mg/kg^	UM				<0.5		<0.5	
Nickel as Ni	ICPMSS	2	mg/kg^	UM				8.3		20.2	
Selenium as Se	ICPMSS	0.5	mg/kg^	UM				<0.5		<0.5	
Total Chromium as Cr	ICPMSS	1.2	mg/kg^	UM				19.9		40.8	
Zinc as Zn	ICPMSS	16	mg/kg^	UM				39.2		59.9	
Boron as B	ICPBOR	0.5	mg/kg^	UM				0.5		0.7	

Analysis Results

Project ID					21060013				
Sample ID					013	014	015	016	
Customer ID					W58-1-ES-0.10-0.25	W58-2-ES-0.50-0.80	W59-1-ES-0.10-0.25	W59-2-ES-0.25-1.00	
Sample Type					LPL	SOLID	SOLID	SOLID	LPL
Sampling Date					25/05/2021	25/05/2021	25/05/2021	25/05/2021	25/05/2021
Analysis	Method Code	MDL	Units	Accred					
>C6-C7 Aliphatic	GROHSA/BTEXHSA	0.2	mg/kg [^]	UM		<0.250*		<0.276*	
>C7-C8 Aliphatic	GROHSA/BTEXHSA	0.2	mg/kg [^]	UM		<0.250		<0.276	
>C7-C8 Aromatic	GROHSA/BTEXHSA	0.01	mg/kg [^]	UM		<0.013		<0.014	
>C8-C10 Aliphatic	GROHSA/BTEXHSA	0.2	mg/kg [^]	UM		<0.250		<0.276	
>C8-C10 Aromatic	GROHSA/BTEXHSA	0.04	mg/kg [^]	UM		<0.051		<0.056	
C5-C6 Aliphatic	GROHSA/BTEXHSA	0.2	mg/kg [^]	UM		<0.250		<0.276	
C5-C7 Aromatic	GROHSA/BTEXHSA	0.01	mg/kg [^]	UM		<0.013		<0.014	
Total GRO C5-C10	GROHSA/BTEXHSA	0.2	mg/kg [^]	UM		<0.250		<0.276	
pH (2.5:1 extraction)	PHSOIL	1	pH units	UM		6.3		6.8	
Chromium (VI) as Cr	KONENS	0.1	mg/kg [^]	N		0.1		<0.1	
Free Cyanide	SFAPI	0.02	mg/l	U	<0.02				<0.02
Free Cyanide	SFAPI	0.5	mg/kg [^]	UM		<0.6		<0.7	
Phenol Index	SFAPI	0.5	mg/kg [^]	U		<0.6		<0.7	
Total Organic Carbon	WSLM59	0.02	% m/m [^]	U		0.98	0.45	1.28	
Arsenic as As	ICPMSS	0.3	mg/kg [^]	UM		6.2		7.9	
Cadmium as Cd	ICPMSS	0.2	mg/kg [^]	UM		0.3		0.2	
Copper as Cu	ICPMSS	1.6	mg/kg [^]	UM		15.5		15.3	
Lead as Pb	ICPMSS	0.7	mg/kg [^]	UM		26.4		21.9	
Mercury as Hg	ICPMSS	0.5	mg/kg [^]	UM		<0.5		<0.5	
Nickel as Ni	ICPMSS	2	mg/kg [^]	UM		7.1		8.4	
Selenium as Se	ICPMSS	0.5	mg/kg [^]	UM		<0.5		<0.5	
Total Chromium as Cr	ICPMSS	1.2	mg/kg [^]	UM		19.1		25.9	
Zinc as Zn	ICPMSS	16	mg/kg [^]	UM		46.0		47.2	
Boron as B	ICPBOR	0.5	mg/kg [^]	UM		0.6		0.7	

Analysis Results

Project ID	21060013
Sample ID	016
Customer ID	W59-2-ES-0.25-1.00
Sample Type	SOLID
Sampling Date	25/05/2021

Analysis	Method Code	MDL	Units	Accred	
>C6-C7 Aliphatic	GROHSA/BTEXHSA	0.2	mg/kg [^]	UM	<0.272*
>C7-C8 Aliphatic	GROHSA/BTEXHSA	0.2	mg/kg [^]	UM	<0.272
>C7-C8 Aromatic	GROHSA/BTEXHSA	0.01	mg/kg [^]	UM	<0.014
>C8-C10 Aliphatic	GROHSA/BTEXHSA	0.2	mg/kg [^]	UM	<0.272
>C8-C10 Aromatic	GROHSA/BTEXHSA	0.04	mg/kg [^]	UM	<0.055
C5-C8 Aliphatic	GROHSA/BTEXHSA	0.2	mg/kg [^]	UM	<0.272
C5-C7 Aromatic	GROHSA/BTEXHSA	0.01	mg/kg [^]	UM	<0.014
Total GRO C5-C10	GROHSA/BTEXHSA	0.2	mg/kg [^]	UM	<0.272
pH (2.5:1 extraction)	PHSOIL	1	pH units	UM	6.1
Chromium (VI) as Cr	KONENS	0.1	mg/kg [^]	N	<0.1
Free Cyanide	SFAPI	0.02	mg/l	U	
Free Cyanide	SFAPI	0.5	mg/kg [^]	UM	<0.1
Phenol Index	SFAPI	0.5	mg/kg [^]	U	<0.1
Total Organic Carbon	WSLM59	0.02	% m/m [^]	U	0.35
Arsenic as As	ICPMSS	0.3	mg/kg [^]	UM	11.1
Cadmium as Cd	ICPMSS	0.2	mg/kg [^]	UM	<0.2
Copper as Cu	ICPMSS	1.6	mg/kg [^]	UM	19.9
Lead as Pb	ICPMSS	0.7	mg/kg [^]	UM	12.8
Mercury as Hg	ICPMSS	0.5	mg/kg [^]	UM	<0.5
Nickel as Ni	ICPMSS	2	mg/kg [^]	UM	18.8
Selenium as Se	ICPMSS	0.5	mg/kg [^]	UM	<0.5
Total Chromium as Cr	ICPMSS	1.2	mg/kg [^]	UM	42.2
Zinc as Zn	ICPMSS	16	mg/kg [^]	UM	58.1
Boron as B	ICPBOR	0.5	mg/kg [^]	UM	0.7

Analysis Results

Project ID					21060013				
Sample ID					001	002		003	
Customer ID					WS1-1-E5-0.05-0.25	WS1-2-E5-0.25-0.50		WS2-1-E5-0.10-0.25	
Sample Type					SOLID	LPL	SOLID	LPL	SOLID
Sampling Date					26/05/2021	26/05/2021	26/05/2021	26/05/2021	26/05/2021
Analysis	Method Code	MDL	Units	Accred					
Arsenic as As	ICPMSW (Dissolved)	0.001	mg/l	U		<0.001		<0.001	
Cadmium as Cd	ICPMSW (Dissolved)	0.00002	mg/l	U		<0.00002		<0.00002	
Total Chromium as Cr	ICPMSW (Dissolved)	0.001	mg/l	U		<0.001		<0.001	
Copper as Cu	ICPMSW (Dissolved)	0.001	mg/l	U		<0.001		0.002	
Lead as Pb	ICPMSW (Dissolved)	0.001	mg/l	U		<0.001		<0.001	
Mercury as Hg	ICPMSW (Dissolved)	0.00003	mg/l	U		<0.00003		<0.00003	
Nickel as Ni	ICPMSW (Dissolved)	0.001	mg/l	U		<0.001		<0.001	
Selenium as Se	ICPMSW (Dissolved)	0.001	mg/l	U		0.001		<0.001	
Zinc as Zn	ICPMSW (Dissolved)	0.002	mg/l	U		<0.002		0.004	
Benzene	BTEXHSA	10	µg/kg ^A	UM	<13		<14		<13
Ethylbenzene	BTEXHSA	10	µg/kg ^A	UM	<13		<14		<13
m/p-Xylene	BTEXHSA	20	µg/kg ^A	UM	<27		<27		<27
o-Xylene	BTEXHSA	10	µg/kg ^A	UM	<13		<14		<13
Toluene	BTEXHSA	10	µg/kg ^A	UM	<13		<14		<13
Acenaphthene	PAHMSUS	0.08	mg/kg ^A	UM	<0.11		<0.11		<0.11
Acenaphthylene	PAHMSUS	0.08	mg/kg ^A	U	<0.11		<0.11		<0.11
Anthracene	PAHMSUS	0.08	mg/kg ^A	U	<0.11		<0.11		<0.11
Benzo[a]anthracene	PAHMSUS	0.08	mg/kg ^A	UM	<0.11		<0.11		<0.11
Benzo[a]pyrene	PAHMSUS	0.08	mg/kg ^A	UM	<0.11		<0.11		<0.11
Benzo[b]fluoranthene	PAHMSUS	0.08	mg/kg ^A	UM	<0.11		<0.11		<0.11
Benzo[g,h,i]perylene	PAHMSUS	0.08	mg/kg ^A	UM	<0.11		<0.11		<0.11
Benzo[k]fluoranthene	PAHMSUS	0.08	mg/kg ^A	UM	<0.11		<0.11		<0.11
Chrysene	PAHMSUS	0.08	mg/kg ^A	UM	<0.11		<0.11		<0.11
Coronene	PAHMSUS	0.08	mg/kg ^A	N	<0.11		<0.11		<0.11

Analysis Results

					Project ID	21060013				
					Sample ID	004	005	006		
					Customer ID	WS2-2-ES-0.25-1.10	WS3-1-ES-0.10-0.30	WS3-2-ES-0.30-1.00		
					Sample Type	LPL	SOLID	SOLID	LPL	SOLID
					Sampling Date	26/05/2021	26/05/2021	26/05/2021	26/05/2021	26/05/2021
Analysis	Method Code	MDL	Units	Accred						
Arsenic as As	ICPMSW (Dissolved)	0.001	mg/l	U	<0.001				<0.001	
Cadmium as Cd	ICPMSW (Dissolved)	0.00002	mg/l	U	<0.00002				<0.00002	
Total Chromium as Cr	ICPMSW (Dissolved)	0.001	mg/l	U	<0.001				<0.001	
Copper as Cu	ICPMSW (Dissolved)	0.001	mg/l	U	<0.001				0.001	
Lead as Pb	ICPMSW (Dissolved)	0.001	mg/l	U	<0.001				<0.001	
Mercury as Hg	ICPMSW (Dissolved)	0.00003	mg/l	U	<0.00003				<0.00003	
Nickel as Ni	ICPMSW (Dissolved)	0.001	mg/l	U	<0.001				<0.001	
Selenium as Se	ICPMSW (Dissolved)	0.001	mg/l	U	<0.001				<0.001	
Zinc as Zn	ICPMSW (Dissolved)	0.002	mg/l	U	<0.002				0.003	
Benzene	BTEXHSA	10	µg/kg ^A	UM			<13			<13
Ethylbenzene	BTEXHSA	10	µg/kg ^A	UM			<13			<13
m/p-Xylene	BTEXHSA	20	µg/kg ^A	UM			<25			<25
o-Xylene	BTEXHSA	10	µg/kg ^A	UM			<13			<13
Toluene	BTEXHSA	10	µg/kg ^A	UM			<13			<13
Acenaphthene	PAHMSUS	0.08	mg/kg ^A	UM			<0.10			<0.10
Acenaphthylene	PAHMSUS	0.08	mg/kg ^A	U			<0.10			<0.10
Anthracene	PAHMSUS	0.08	mg/kg ^A	U			<0.10			<0.10
Benzo(a)anthracene	PAHMSUS	0.08	mg/kg ^A	UM			<0.10			<0.10
Benzo(a)pyrene	PAHMSUS	0.08	mg/kg ^A	UM			<0.10			<0.10
Benzo(b)fluoranthene	PAHMSUS	0.08	mg/kg ^A	UM			<0.10			<0.10
Benzo(g,h,i)perylene	PAHMSUS	0.08	mg/kg ^A	UM			<0.10			<0.10
Benzo(k)fluoranthene	PAHMSUS	0.08	mg/kg ^A	UM			<0.10			<0.10
Chrysene	PAHMSUS	0.08	mg/kg ^A	UM			<0.10			<0.10
Coronene	PAHMSUS	0.08	mg/kg ^A	N			<0.10			<0.10

Analysis Results

					Project ID	21060013				
					Sample ID	007	008	009		
					Customer ID	WS4-1-ES-0.10-0.25	WS4-2-ES-0.25-1.00	WS5-1-ES-0.10-0.45		
					Sample Type	LPL	SOLID	SOLID	LPL	SOLID
					Sampling Date	26/05/2021	26/05/2021	26/05/2021	25/05/2021	25/05/2021
Analysis	Method Code	MDL	Units	Accred						
Arsenic as As	ICPMSW (Dissolved)	0.001	mg/l	U	<0.001				<0.001	
Cadmium as Cd	ICPMSW (Dissolved)	0.00002	mg/l	U	0.00004				0.00009	
Total Chromium as Cr	ICPMSW (Dissolved)	0.001	mg/l	U	<0.001				<0.001	
Copper as Cu	ICPMSW (Dissolved)	0.001	mg/l	U	0.003				0.006	
Lead as Pb	ICPMSW (Dissolved)	0.001	mg/l	U	<0.001				<0.001	
Mercury as Hg	ICPMSW (Dissolved)	0.00003	mg/l	U	<0.00003				<0.00003	
Nickel as Ni	ICPMSW (Dissolved)	0.001	mg/l	U	<0.001				<0.001	
Selenium as Se	ICPMSW (Dissolved)	0.001	mg/l	U	<0.001				<0.001	
Zinc as Zn	ICPMSW (Dissolved)	0.002	mg/l	U	0.004				0.007	
Benzene	BTEXHSA	10	µg/kg ^A	UM			<13			<13
Ethylbenzene	BTEXHSA	10	µg/kg ^A	UM			<13			<13
m/p-Xylene	BTEXHSA	20	µg/kg ^A	UM			<26			<25
o-Xylene	BTEXHSA	10	µg/kg ^A	UM			<13			<13
Toluene	BTEXHSA	10	µg/kg ^A	UM			<13			<13
Acenaphthene	PAHMSUS	0.08	mg/kg ^A	UM			<0.10			<0.10
Acenaphthylene	PAHMSUS	0.08	mg/kg ^A	U			<0.10			<0.10
Anthracene	PAHMSUS	0.08	mg/kg ^A	U			<0.10			<0.10
Benzo[a]anthracene	PAHMSUS	0.08	mg/kg ^A	UM			<0.10			<0.10
Benzo[a]pyrene	PAHMSUS	0.08	mg/kg ^A	UM			<0.10			<0.10
Benzo[b]fluoranthene	PAHMSUS	0.08	mg/kg ^A	UM			<0.10			<0.10
Benzo[g,h,i]perylene	PAHMSUS	0.08	mg/kg ^A	UM			<0.10			<0.10
Benzo[k]fluoranthene	PAHMSUS	0.08	mg/kg ^A	UM			<0.10			<0.10
Chrysene	PAHMSUS	0.08	mg/kg ^A	UM			<0.10			<0.10
Coronene	PAHMSUS	0.08	mg/kg ^A	N			<0.10			<0.10

Analysis Results

					Project ID	21060013					
					Sample ID	010		011	012		
					Customer ID	W55-2-ES-0.45-1.00		W56-1-ES-0.10-0.65		W56-2-ES-0.65-1.00	
					Sample Type	LPL	SOLID	SOLID	LPL	SOLID	
					Sampling Date	25/05/2021	25/05/2021	25/05/2021	25/05/2021	25/05/2021	
Analysis	Method Code	MDL	Units	Accred							
Arsenic as As	ICPMSW (Dissolved)	0.001	mg/l	U		<0.001			<0.001		
Cadmium as Cd	ICPMSW (Dissolved)	0.00002	mg/l	U		0.00003			0.00003		
Total Chromium as Cr	ICPMSW (Dissolved)	0.001	mg/l	U		<0.001			<0.001		
Copper as Cu	ICPMSW (Dissolved)	0.001	mg/l	U		0.001			<0.001		
Lead as Pb	ICPMSW (Dissolved)	0.001	mg/l	U		<0.001			<0.001		
Mercury as Hg	ICPMSW (Dissolved)	0.00003	mg/l	U		<0.00003			<0.00003		
Nickel as Ni	ICPMSW (Dissolved)	0.001	mg/l	U		<0.001			<0.001		
Selenium as Se	ICPMSW (Dissolved)	0.001	mg/l	U		<0.001			<0.001		
Zinc as Zn	ICPMSW (Dissolved)	0.002	mg/l	U		0.003			0.003		
Benzene	BTEXHSA	10	µg/kg^	UM				<12		<13	
Ethylbenzene	BTEXHSA	10	µg/kg^	UM				<12		<13	
m/p-Xylene	BTEXHSA	20	µg/kg^	UM				<25		<26	
o-Xylene	BTEXHSA	10	µg/kg^	UM				<12		<13	
Toluene	BTEXHSA	10	µg/kg^	UM				<12		<13	
Acenaphthene	PAHMSUS	0.08	mg/kg^	UM				<0.10		<0.10	
Acenaphthylene	PAHMSUS	0.08	mg/kg^	U				<0.10		<0.10	
Anthracene	PAHMSUS	0.08	mg/kg^	U				<0.10		<0.10	
Benzo[a]anthracene	PAHMSUS	0.08	mg/kg^	UM				<0.10		<0.10	
Benzo[a]pyrene	PAHMSUS	0.08	mg/kg^	UM				<0.10		<0.10	
Benzo[b]fluoranthene	PAHMSUS	0.08	mg/kg^	UM				<0.10		<0.10	
Benzo[g,h,i]perylene	PAHMSUS	0.08	mg/kg^	UM				<0.10		<0.10	
Benzo[k]fluoranthene	PAHMSUS	0.08	mg/kg^	UM				<0.10		<0.10	
Chrysene	PAHMSUS	0.08	mg/kg^	UM				<0.10		<0.10	
Coronene	PAHMSUS	0.08	mg/kg^	N				<0.10		<0.10	

Analysis Results

Project ID					21060013				
Sample ID					013	014	015	016	
Customer ID					W58-1-ES-0.10-0.25	W58-2-ES-0.50-0.80	W59-1-ES-0.10-0.25	W59-2-ES-0.25-1.00	
Sample Type					LPL	SOLID	SOLID	SOLID	LPL
Sampling Date					25/05/2021	25/05/2021	25/05/2021	25/05/2021	25/05/2021
Analysis	Method Code	MDL	Units	Accred					
Arsenic as As	ICPMSW (Dissolved)	0.001	mg/l	U	<0.001				<0.001
Cadmium as Cd	ICPMSW (Dissolved)	0.00002	mg/l	U	0.00014				<0.00002
Total Chromium as Cr	ICPMSW (Dissolved)	0.001	mg/l	U	<0.001				<0.001
Copper as Cu	ICPMSW (Dissolved)	0.001	mg/l	U	0.010				<0.001
Lead as Pb	ICPMSW (Dissolved)	0.001	mg/l	U	0.001				<0.001
Mercury as Hg	ICPMSW (Dissolved)	0.00003	mg/l	U	<0.00003				<0.00003
Nickel as Ni	ICPMSW (Dissolved)	0.001	mg/l	U	0.002				<0.001
Selenium as Se	ICPMSW (Dissolved)	0.001	mg/l	U	<0.001				<0.001
Zinc as Zn	ICPMSW (Dissolved)	0.002	mg/l	U	0.007				0.003
Benzene	BTEXHSA	10	µg/kg ^A	UM		<13		<14	
Ethylbenzene	BTEXHSA	10	µg/kg ^A	UM		<13		<14	
m/p-Xylene	BTEXHSA	20	µg/kg ^A	UM		<25		<28	
o-Xylene	BTEXHSA	10	µg/kg ^A	UM		<13		<14	
Toluene	BTEXHSA	10	µg/kg ^A	UM		<13		<14	
Acenaphthene	PAHMSUS	0.08	mg/kg ^A	UM		<0.10		<0.11	
Acenaphthylene	PAHMSUS	0.08	mg/kg ^A	U		<0.10		<0.11	
Anthracene	PAHMSUS	0.08	mg/kg ^A	U		<0.10		<0.11	
Benzo(a)anthracene	PAHMSUS	0.08	mg/kg ^A	UM		<0.10		<0.11	
Benzo(a)pyrene	PAHMSUS	0.08	mg/kg ^A	UM		<0.10		<0.11	
Benzo(b)fluoranthene	PAHMSUS	0.08	mg/kg ^A	UM		<0.10		<0.11	
Benzo(g,h,i)perylene	PAHMSUS	0.08	mg/kg ^A	UM		<0.10		<0.11	
Benzo(k)fluoranthene	PAHMSUS	0.08	mg/kg ^A	UM		<0.10		<0.11	
Chrysene	PAHMSUS	0.08	mg/kg ^A	UM		<0.10		<0.11	
Coronene	PAHMSUS	0.08	mg/kg ^A	N		<0.10		<0.11	

Analysis Results

Project ID	21060013
Sample ID	016
Customer ID	W59-2-ES-0.25-1.00
Sample Type	SOLID
Sampling Date	25/05/2021

Analysis	Method Code	MDL	Units	Accred	
Arsenic as As	ICPMSW (Dissolved)	0.001	mg/l	U	
Cadmium as Cd	ICPMSW (Dissolved)	0.00002	mg/l	U	
Total Chromium as Cr	ICPMSW (Dissolved)	0.001	mg/l	U	
Copper as Cu	ICPMSW (Dissolved)	0.001	mg/l	U	
Lead as Pb	ICPMSW (Dissolved)	0.001	mg/l	U	
Mercury as Hg	ICPMSW (Dissolved)	0.00003	mg/l	U	
Nickel as Ni	ICPMSW (Dissolved)	0.001	mg/l	U	
Selenium as Se	ICPMSW (Dissolved)	0.001	mg/l	U	
Zinc as Zn	ICPMSW (Dissolved)	0.002	mg/l	U	
Benzene	BTEXHSA	10	µg/kg ^A	UM	<14
Ethylbenzene	BTEXHSA	10	µg/kg ^A	UM	<14
m/p-Xylene	BTEXHSA	20	µg/kg ^A	UM	<27
o-Xylene	BTEXHSA	10	µg/kg ^A	UM	<14
Toluene	BTEXHSA	10	µg/kg ^A	UM	<14
Acenaphthene	PAHMSUS	0.08	mg/kg ^A	UM	<0.11
Acenaphthylene	PAHMSUS	0.08	mg/kg ^A	U	<0.11
Anthracene	PAHMSUS	0.08	mg/kg ^A	U	<0.11
Benzo[a]anthracene	PAHMSUS	0.08	mg/kg ^A	UM	<0.11
Benzo[a]pyrene	PAHMSUS	0.08	mg/kg ^A	UM	<0.11
Benzo[b]fluoranthene	PAHMSUS	0.08	mg/kg ^A	UM	<0.11
Benzo[g,h,i]perylene	PAHMSUS	0.08	mg/kg ^A	UM	<0.11
Benzo[k]fluoranthene	PAHMSUS	0.08	mg/kg ^A	UM	<0.11
Chrysene	PAHMSUS	0.08	mg/kg ^A	UM	<0.11
Coronene	PAHMSUS	0.08	mg/kg ^A	N	<0.11

Analysis Results

					Project ID	21060013				
					Sample ID	001	002		003	
					Customer ID	WS1-1-E5-0.05-0.25	WS1-2-E5-0.25-0.50		WS2-1-E5-0.10-0.25	
					Sample Type	SOLID	LPL	SOLID	LPL	SOLID
					Sampling Date	26/05/2021	26/05/2021	26/05/2021	26/05/2021	26/05/2021
Analysis	Method Code	MDL	Units	Accred						
Dibenzo[a,h]anthracene	PAHMSUS	0.08	mg/kg ^A	UM		<0.11		<0.11		<0.11
Fluoranthene	PAHMSUS	0.08	mg/kg ^A	UM		<0.11		<0.11		<0.11
Fluorene	PAHMSUS	0.08	mg/kg ^A	UM		<0.11		<0.11		<0.11
Indeno[1,2,3-cd]pyrene	PAHMSUS	0.08	mg/kg ^A	UM		<0.11		<0.11		<0.11
Naphthalene	PAHMSUS	0.08	mg/kg ^A	UM		<0.11		<0.11		<0.11
Phenanthrene	PAHMSUS	0.08	mg/kg ^A	UM		<0.11		<0.11		<0.11
Pyrene	PAHMSUS	0.08	mg/kg ^A	UM		<0.11		<0.11		<0.11
Total PAH 16	PAHMSUS	1.28	mg/kg ^A	U		<1.71		<1.73		<1.72
>C10-C12 (Aliphatic)	TPHFIDUS (Aliphatic)	4	mg/kg ^A	U		<5.35*		<5.42*		<5.37*
>C12-C16 (Aliphatic)	TPHFIDUS (Aliphatic)	4	mg/kg ^A	U		9.74		9.89		10.2
>C16-C21 (Aliphatic)	TPHFIDUS (Aliphatic)	4	mg/kg ^A	U		10.5		10.5		10.5
>C21-C35 (Aliphatic)	TPHFIDUS (Aliphatic)	10	mg/kg ^A	U		18.8		18.7		22.7
Total TPH >C8-C40 (Aliphatic)	TPHFIDUS (Aliphatic)	20	mg/kg ^A	U		52.8		49.0		56.2
>C10-C12 (Aromatic)	TPHFIDUS (Aromatic)	4	mg/kg ^A	U		<5.35*		<5.42*		<5.37*
>C12-C16 (Aromatic)	TPHFIDUS (Aromatic)	4	mg/kg ^A	U		12.8		13.3		13.1
>C16-C21 (Aromatic)	TPHFIDUS (Aromatic)	4	mg/kg ^A	U		11.2		12.8		11.4
>C21-C35 (Aromatic)	TPHFIDUS (Aromatic)	10	mg/kg ^A	U		25.2		30.3		19.5
Total TPH >C8-C40 (Aromatic)	TPHFIDUS (Aromatic)	20	mg/kg ^A	U		57.6		65.9		52.6
Total Moisture at 105°C	TMSS	0.1	%	U		25.3		26.2		25.5
Total Moisture at 35°C	CLANDPREP	0.1	%	N		26.6		24.2		24.7
Colour of Material	CLANDPREP		-	N		Brown		Brown		Brown
Major Constituents	CLANDPREP		-	N		SILT		CLAY		SILT
Minor Constituents	CLANDPREP		-	N		Clay		None		Clay
Miscellaneous Constituents	CLANDPREP		-	N		Rootlets		na		Rootlets

Analysis Results

Project ID					21060013				
Sample ID					004	005	006		
Customer ID					WS2-2-ES-0.25-1.10	WS3-1-ES-0.10-0.30	WS3-2-ES-0.30-1.00		
Sample Type					LPL	SOLID	SOLID	LPL	SOLID
Sampling Date					26/05/2021	26/05/2021	26/05/2021	26/05/2021	26/05/2021
Analysis	Method Code	MDL	Units	Accred					
Dibenzo[a,h]anthracene	PAHMSUS	0.08	mg/kg ⁺	UM		<0.10		<0.10	
Fluoranthene	PAHMSUS	0.08	mg/kg ⁺	UM		<0.10		<0.10	
Fluorene	PAHMSUS	0.08	mg/kg ⁺	UM		<0.10		<0.08 ⁺	
Indeno[1,2,3-cd]pyrene	PAHMSUS	0.08	mg/kg ⁺	UM		<0.10		<0.10	
Naphthalene	PAHMSUS	0.08	mg/kg ⁺	UM		<0.10		<0.10	
Phenanthrene	PAHMSUS	0.08	mg/kg ⁺	UM		<0.10		<0.10	
Pyrene	PAHMSUS	0.08	mg/kg ⁺	UM		<0.10		<0.10	
Total PAH 16	PAHMSUS	1.28	mg/kg ⁺	U		<1.60		<1.59	
>C10-C12 (Aliphatic)	TPHFIDUS (Aliphatic)	4	mg/kg ⁺	U		<5.00 [*]		<4.98 [*]	
>C12-C16 (Aliphatic)	TPHFIDUS (Aliphatic)	4	mg/kg ⁺	U		8.48		8.41	
>C16-C21 (Aliphatic)	TPHFIDUS (Aliphatic)	4	mg/kg ⁺	U		9.06		9.08	
>C21-C35 (Aliphatic)	TPHFIDUS (Aliphatic)	10	mg/kg ⁺	U		13.6		16.6	
Total TPH >C8-C40 (Aliphatic)	TPHFIDUS (Aliphatic)	20	mg/kg ⁺	U		40.0		42.9	
>C10-C12 (Aromatic)	TPHFIDUS (Aromatic)	4	mg/kg ⁺	U		<5.00 [*]		<4.98 [*]	
>C12-C16 (Aromatic)	TPHFIDUS (Aromatic)	4	mg/kg ⁺	U		12.7		11.1	
>C16-C21 (Aromatic)	TPHFIDUS (Aromatic)	4	mg/kg ⁺	U		11.0		9.83	
>C21-C35 (Aromatic)	TPHFIDUS (Aromatic)	10	mg/kg ⁺	U		24.1		16.1	
Total TPH >C8-C40 (Aromatic)	TPHFIDUS (Aromatic)	20	mg/kg ⁺	U		56.2		44.2	
Total Moisture at 105°C	TMSS	0.1	%	U		25.1	20.0	19.7	
Total Moisture at 35°C	CLANDPREP	0.1	%	N		23.6	18.9	19.6	
Colour of Material	CLANDPREP		-	N		Brown	Brown	Brown	
Major Constituents	CLANDPREP		-	N		CLAY	SILT	CLAY	
Minor Constituents	CLANDPREP		-	N		Silt	Clay	Silt	
Miscellaneous Constituents	CLANDPREP		-	N		na	Gravel	na	

Analysis Results

Project ID					21060013				
Sample ID					007	008	009		
Customer ID					WS4-1-ES-0.10-0.25	WS4-2-ES-0.25-1.00	WS5-1-ES-0.10-0.45		
Sample Type					LPL	SOLID	SOLID	LPL	SOLID
Sampling Date					26/05/2021	26/05/2021	26/05/2021	25/05/2021	25/05/2021
Analysis	Method Code	MDL	Units	Accred					
Dibenzo[a,h]anthracene	PAHMSUS	0.08	mg/kg [^]	UM		<0.10		<0.10	
Fluoranthene	PAHMSUS	0.08	mg/kg [^]	UM		<0.10		<0.10	
Fluorene	PAHMSUS	0.08	mg/kg [^]	UM		<0.10		<0.10	
Indeno[1,2,3-cd]pyrene	PAHMSUS	0.08	mg/kg [^]	UM		<0.10		<0.10	
Naphthalene	PAHMSUS	0.08	mg/kg [^]	UM		<0.10		<0.10	
Phenanthrene	PAHMSUS	0.08	mg/kg [^]	UM		<0.10		<0.10	
Pyrene	PAHMSUS	0.08	mg/kg [^]	UM		<0.10		<0.10	
Total PAH 16	PAHMSUS	1.28	mg/kg [^]	U		<1.65		<1.60	
>C10-C12 (Aliphatic)	TPHFIDUS (Aliphatic)	4	mg/kg [^]	U		<5.17*		<5.01*	
>C12-C16 (Aliphatic)	TPHFIDUS (Aliphatic)	4	mg/kg [^]	U		9.14		8.38	
>C16-C21 (Aliphatic)	TPHFIDUS (Aliphatic)	4	mg/kg [^]	U		9.95		9.26	
>C21-C35 (Aliphatic)	TPHFIDUS (Aliphatic)	10	mg/kg [^]	U		18.4		22.8	
Total TPH >C8-C40 (Aliphatic)	TPHFIDUS (Aliphatic)	20	mg/kg [^]	U		50.2		52.4	
>C10-C12 (Aromatic)	TPHFIDUS (Aromatic)	4	mg/kg [^]	U		<5.17*		<5.01*	
>C12-C16 (Aromatic)	TPHFIDUS (Aromatic)	4	mg/kg [^]	U		12.0		11.5	
>C16-C21 (Aromatic)	TPHFIDUS (Aromatic)	4	mg/kg [^]	U		10.9		9.96	
>C21-C35 (Aromatic)	TPHFIDUS (Aromatic)	10	mg/kg [^]	U		17.1		15.9	
Total TPH >C8-C40 (Aromatic)	TPHFIDUS (Aromatic)	20	mg/kg [^]	U		47.5		45.0	
Total Moisture at 105°C	TMSS	0.1	%	U		25.9	22.6	20.1	
Total Moisture at 35°C	CLANDPREP	0.1	%	N		21.9	20.9	20.4	
Colour of Material	CLANDPREP		-	N		Brown	Brown	Brown	
Major Constituents	CLANDPREP		-	N		SILT	CLAY	SILT	
Minor Constituents	CLANDPREP		-	N		Clay	None	Clay	
Miscellaneous Constituents	CLANDPREP		-	N		Rootlets	na	Gravel	

Analysis Results

					Project ID	21060013					
					Sample ID	010		011	012		
					Customer ID	W55-2-ES-0.45-1.00		W56-1-ES-0.10-0.65		W56-2-ES-0.65-1.00	
					Sample Type	LPL	SOLID	SOLID	LPL	SOLID	
					Sampling Date	25/05/2021	25/05/2021	25/05/2021	25/05/2021	25/05/2021	
Analysis	Method Code	MDL	Units	Accred							
Dibenzo[a,h]anthracene	PAHMSUS	0.08	mg/kg^	UM				<0.10		<0.10	
Fluoranthene	PAHMSUS	0.08	mg/kg^	UM				<0.10		<0.10	
Fluorene	PAHMSUS	0.08	mg/kg^	UM				<0.10		<0.10	
Indeno[1,2,3-cd]pyrene	PAHMSUS	0.08	mg/kg^	UM				<0.10		<0.10	
Naphthalene	PAHMSUS	0.08	mg/kg^	UM				<0.10		<0.10	
Phenanthrene	PAHMSUS	0.08	mg/kg^	UM				<0.10		<0.10	
Pyrene	PAHMSUS	0.08	mg/kg^	UM				<0.10		<0.10	
Total PAH 16	PAHMSUS	1.28	mg/kg^	U				<1.58		<1.65	
>C10-C12 (Aliphatic)	TPHFIDUS (Aliphatic)	4	mg/kg^	U				<4.93*		<5.15*	
>C12-C16 (Aliphatic)	TPHFIDUS (Aliphatic)	4	mg/kg^	U				8.59		8.81	
>C16-C21 (Aliphatic)	TPHFIDUS (Aliphatic)	4	mg/kg^	U				9.01		9.83	
>C21-C35 (Aliphatic)	TPHFIDUS (Aliphatic)	10	mg/kg^	U				22.1		20.1	
Total TPH >C8-C40 (Aliphatic)	TPHFIDUS (Aliphatic)	20	mg/kg^	U				50.9		49.8	
>C10-C12 (Aromatic)	TPHFIDUS (Aromatic)	4	mg/kg^	U				<4.93*		<5.15*	
>C12-C16 (Aromatic)	TPHFIDUS (Aromatic)	4	mg/kg^	U				12.0		12.0	
>C16-C21 (Aromatic)	TPHFIDUS (Aromatic)	4	mg/kg^	U				10.8		10.3	
>C21-C35 (Aromatic)	TPHFIDUS (Aromatic)	10	mg/kg^	U				23.8		22.3	
Total TPH >C8-C40 (Aromatic)	TPHFIDUS (Aromatic)	20	mg/kg^	U				54.7		51.5	
Total Moisture at 105°C	TMSS	0.1	%	U			20.1	18.8		22.3	
Total Moisture at 35°C	CLANDPREP	0.1	%	N			18.5	17.4		20.6	
Colour of Material	CLANDPREP		-	N			Brown	Brown		Brown	
Major Constituents	CLANDPREP		-	N			CLAY	SILT		CLAY	
Minor Constituents	CLANDPREP		-	N			None	Clay		None	
Miscellaneous Constituents	CLANDPREP		-	N			Rootlets	Rootlets		na	

Analysis Results

Project ID					21060013				
Sample ID					013	014	015	016	
Customer ID					W58-1-ES-0.10-0.25	W58-2-ES-0.50-0.80	W59-1-ES-0.10-0.25	W59-2-ES-0.25-1.00	
Sample Type					LPL	SOLID	SOLID	SOLID	LPL
Sampling Date					25/05/2021	25/05/2021	25/05/2021	25/05/2021	25/05/2021
Analysis	Method Code	MDL	Units	Accred					
Dibenzo[a,h]anthracene	PAHMSUS	0.08	mg/kg ^A	UM		<0.10		<0.11	
Fluoranthene	PAHMSUS	0.08	mg/kg ^A	UM		<0.10		<0.11	
Fluorene	PAHMSUS	0.08	mg/kg ^A	UM		<0.10		<0.11	
Indeno[1,2,3-cd]pyrene	PAHMSUS	0.08	mg/kg ^A	UM		<0.10		<0.11	
Naphthalene	PAHMSUS	0.08	mg/kg ^A	UM		<0.10		<0.11	
Phenanthrene	PAHMSUS	0.08	mg/kg ^A	UM		<0.10		<0.11	
Pyrene	PAHMSUS	0.08	mg/kg ^A	UM		<0.10		<0.11	
Total PAH 16	PAHMSUS	1.28	mg/kg ^A	U		<1.60		<1.77	
>C10-C12 (Aliphatic)	TPHFIDUS (Aliphatic)	4	mg/kg ^A	U		<5.00*		5.75*	
>C12-C16 (Aliphatic)	TPHFIDUS (Aliphatic)	4	mg/kg ^A	U		8.61		14.1	
>C16-C21 (Aliphatic)	TPHFIDUS (Aliphatic)	4	mg/kg ^A	U		9.24		20.6	
>C21-C35 (Aliphatic)	TPHFIDUS (Aliphatic)	10	mg/kg ^A	U		23.0		124	
Total TPH >C8-C40 (Aliphatic)	TPHFIDUS (Aliphatic)	20	mg/kg ^A	U		51.3		254	
>C10-C12 (Aromatic)	TPHFIDUS (Aromatic)	4	mg/kg ^A	U		<5.00*		<5.52*	
>C12-C16 (Aromatic)	TPHFIDUS (Aromatic)	4	mg/kg ^A	U		11.6		13.5	
>C16-C21 (Aromatic)	TPHFIDUS (Aromatic)	4	mg/kg ^A	U		10.4		13.2	
>C21-C35 (Aromatic)	TPHFIDUS (Aromatic)	10	mg/kg ^A	U		22.8		45.7	
Total TPH >C8-C40 (Aromatic)	TPHFIDUS (Aromatic)	20	mg/kg ^A	U		52.6		85.1	
Total Moisture at 105°C	TMSS	0.1	%	U		20.0	21.9	27.5	
Total Moisture at 35°C	CLANDPREP	0.1	%	N		18.8	18.8	27.2	
Colour of Material	CLANDPREP		-	N		Brown	Brown	Brown	
Major Constituents	CLANDPREP		-	N		SILT	CLAY	CLAY	
Minor Constituents	CLANDPREP		-	N		Clay	None	Gravel	
Miscellaneous Constituents	CLANDPREP		-	N		Gravel	na	Rootlets	

Analysis Results

Project ID	21060013
Sample ID	016
Customer ID	W59-2-ES-0.25-1.00
Sample Type	SOLID
Sampling Date	25/05/2021

Analysis	Method Code	MDL	Units	Accred	
Dibenzo[a,h]anthracene	PAHMSUS	0.08	mg/kg ^A	UM	<0.11
Fluoranthene	PAHMSUS	0.08	mg/kg ^A	UM	<0.11
Fluorene	PAHMSUS	0.08	mg/kg ^A	UM	<0.11
Indeno[1,2,3-cd]pyrene	PAHMSUS	0.08	mg/kg ^A	UM	<0.11
Naphthalene	PAHMSUS	0.08	mg/kg ^A	UM	<0.11
Phenanthrene	PAHMSUS	0.08	mg/kg ^A	UM	<0.11
Pyrene	PAHMSUS	0.08	mg/kg ^A	UM	<0.11
Total PAH 16	PAHMSUS	1.28	mg/kg ^A	U	<1.74
>C10-C12 (Aliphatic)	TPHFIDUS (Aliphatic)	4	mg/kg ^A	U	<5.43*
>C12-C16 (Aliphatic)	TPHFIDUS (Aliphatic)	4	mg/kg ^A	U	10.1
>C16-C21 (Aliphatic)	TPHFIDUS (Aliphatic)	4	mg/kg ^A	U	12.5
>C21-C35 (Aliphatic)	TPHFIDUS (Aliphatic)	10	mg/kg ^A	U	39.4
Total TPH >C8-C40 (Aliphatic)	TPHFIDUS (Aliphatic)	20	mg/kg ^A	U	89.2
>C10-C12 (Aromatic)	TPHFIDUS (Aromatic)	4	mg/kg ^A	U	<5.43*
>C12-C16 (Aromatic)	TPHFIDUS (Aromatic)	4	mg/kg ^A	U	13.7
>C16-C21 (Aromatic)	TPHFIDUS (Aromatic)	4	mg/kg ^A	U	13.0
>C21-C35 (Aromatic)	TPHFIDUS (Aromatic)	10	mg/kg ^A	U	30.3
Total TPH >C8-C40 (Aromatic)	TPHFIDUS (Aromatic)	20	mg/kg ^A	U	66.3
Total Moisture at 105°C	TMSS	0.1	%	U	26.4
Total Moisture at 35°C	CLANDPREP	0.1	%	N	24.3
Colour of Material	CLANDPREP		-	N	Brown
Major Constituents	CLANDPREP		-	N	CLAY
Minor Constituents	CLANDPREP		-	N	None
Miscellaneous Constituents	CLANDPREP		-	N	na

Analysis Results

Project ID					21060013				
Sample ID					001	002		003	
Customer ID					WS1-1-E5-0.05-0.25	WS1-2-E5-0.25-0.50		WS2-1-E5-0.10-0.25	
Sample Type					SOLID	LPL	SOLID	LPL	SOLID
Sampling Date					26/05/2021	26/05/2021	26/05/2021	26/05/2021	26/05/2021
Analysis	Method Code	MDL	Units	Accred					
Equivalent Weight of Dry Material (kg)	Leachate Preparation CEN 2:1		kg	N			0.400		0.400
Fraction above 4 mm (%)	Leachate Preparation CEN 2:1		%	N			1.6		0
Fraction of non-crushable material (%)	Leachate Preparation CEN 2:1		%	N			0		0
Volume of Water for 2:1 Leach (ltr)	Leachate Preparation CEN 2:1		l	N			0.656		0.666
Weight of Sample Leached (kg)	Leachate Preparation CEN 2:1		kg	N			0.544		0.534
Asbestos Identification	SUB020		-	N	NAHS				

Analysis Results

					Project ID	21060013							
					Sample ID	004		005		006			
					Customer ID	WS2-2-ES-0.25-1.10		WS3-1-ES-0.10-0.30		WS3-2-ES-0.30-1.00			
					Sample Type	LPL	SOLID		SOLID		LPL	SOLID	
					Sampling Date	26/05/2021	26/05/2021		26/05/2021		26/05/2021	26/05/2021	
Analysis	Method Code	MDL	Units	Accred									
Equivalent Weight of Dry Material (kg)	Leachate Preparation CEN 2:1		kg	N		0.400			0.400				
Fraction above 4 mm (%)	Leachate Preparation CEN 2:1		%	N		0			0				
Fraction of non-crushable material (%)	Leachate Preparation CEN 2:1		%	N		0			0				
Volume of Water for 2:1 Leach (ltr)	Leachate Preparation CEN 2:1		l	N		0.662			0.700				
Weight of Sample Leached (kg)	Leachate Preparation CEN 2:1		kg	N		0.538			0.500				
Asbestos Identification	SUB020		-	N			NAHS						

Analysis Results

					Project ID	21060013							
					Sample ID	007		008		009			
					Customer ID	WS4-1-ES-0.10-0.25		WS4-2-ES-0.25-1.00		WS5-1-ES-0.10-0.45			
					Sample Type	LPL	SOLID		SOLID		LPL	SOLID	
					Sampling Date	26/05/2021		26/05/2021		26/05/2021		25/05/2021	
Analysis	Method Code	MDL	Units	Accred									
Equivalent Weight of Dry Material (kg)	Leachate Preparation CEN 2:1		kg	N		0.400			0.400				
Fraction above 4 mm (%)	Leachate Preparation CEN 2:1		%	N		0			0.8				
Fraction of non-crushable material (%)	Leachate Preparation CEN 2:1		%	N		0			0				
Volume of Water for 2:1 Leach (ltr)	Leachate Preparation CEN 2:1		l	N		0.685			0.699				
Weight of Sample Leached (kg)	Leachate Preparation CEN 2:1		kg	N		0.515			0.501				
Asbestos Identification	SUB020		-	N			NAHS						

Analysis Results

					Project ID	21060013					
					Sample ID	010		011	012		
					Customer ID	W55-2-ES-0.45-1.00		W56-1-ES-0.10-0.65		W56-2-ES-0.65-1.00	
					Sample Type	LPL	SOLID	SOLID	LPL	SOLID	
					Sampling Date	25/05/2021	25/05/2021	25/05/2021	25/05/2021	25/05/2021	
Analysis	Method Code	MDL	Units	Accred							
Equivalent Weight of Dry Material (kg)	Leachate Preparation CEN 2:1		kg	N		0.400			0.400		
Fraction above 4 mm (%)	Leachate Preparation CEN 2:1		%	N		0			0		
Fraction of non-crushable material (%)	Leachate Preparation CEN 2:1		%	N		0			0		
Volume of Water for 2:1 Leach (ltr)	Leachate Preparation CEN 2:1		l	N		0.661			0.681		
Weight of Sample Leached (kg)	Leachate Preparation CEN 2:1		kg	N		0.539			0.519		
Asbestos Identification	SUB020		-	N			NAIIS				

Analysis Results

					Project ID	21060013				
					Sample ID	013		014	015	016
					Customer ID	WS8-1-ES-0.10-0.25		WS8-2-ES-0.50-0.80	WS9-1-ES-0.10-0.25	WS9-2-ES-0.25-1.00
					Sample Type	LPL	SOLID	SOLID	SOLID	LPL
					Sampling Date	25/05/2021	25/05/2021	25/05/2021	25/05/2021	25/05/2021
Analysis	Method Code	MDL	Units	Accred						
Equivalent Weight of Dry Material (kg)	Leachate Preparation CEN 2:1		kg	N		0.400				
Fraction above 4 mm (%)	Leachate Preparation CEN 2:1		%	N		0.6				
Fraction of non-crushable material (%)	Leachate Preparation CEN 2:1		%	N		0				
Volume of Water for 2:1 Leach (ltr)	Leachate Preparation CEN 2:1		l	N		0.693				
Weight of Sample Leached (kg)	Leachate Preparation CEN 2:1		kg	N		0.507				
Asbestos Identification	SUB020		-	N			NAIIS	NAIIS		



Client: SOCOTEC Consultancy South
 Project Name: Cabbagefield Row, Havant
 Project No: 21060013
 Date Issued: 10/06/2021

Analysis Results

Project ID	21060013
Sample ID	016
Customer ID	W59-2-ES-0.25-1.00
Sample Type	SOLID
Sampling Date	25/05/2021

Analysis	Method Code	MDL	Units	Accred	
Equivalent Weight of Dry Material (kg)	Leachate Preparation CEN 2:1		kg	N	0.400
Fraction above 4 mm (%)	Leachate Preparation CEN 2:1		%	N	0
Fraction of non-crushable material (%)	Leachate Preparation CEN 2:1		%	N	0
Volume of Water for 2:1 Leach (ltr)	Leachate Preparation CEN 2:1		l	N	0.675
Weight of Sample Leached (kg)	Leachate Preparation CEN 2:1		kg	N	0.525
Asbestos Identification	SUB020		-	N	



CERTIFICATE OF ANALYSIS

ANALYSIS REQUESTED BY: SOCOTEC UK Ltd
Environmental Chemistry
PO Box 100
Burton upon Trent
Staffordshire
DE15 0XD

CONTRACT NO: S18904-12

DATE OF ISSUE: 09.06.21

DATE SAMPLES RECEIVED: 02.06.21

DATE ANALYSIS COMPLETED: 08.06.21

DESCRIPTION: Six soil/loose aggregate samples each weighing approximately 1.0-1.1kg.

ANALYSIS REQUESTED: Qualitative and quantitative analysis of soil/loose aggregate samples for mass determination of asbestos.

METHODS:

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

Quantitative - The analysis was carried out using our documented in-house method based on HSE Contract Research Report No. 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies *et al*, 1996) and HSG 248. Our method includes initial examination of the entire sample, detailed analysis of a representative sub-sample and quantification by hand picking/weighing and/or fibre counting/sizing as appropriate.

RESULTS:

Initial Screening

No asbestos was detected in any of the soil samples by stereo-binocular and polarised light microscopy.

A summary of the results is given in Table 1.





CONTRACT NO: S18904-12
DATE OF ISSUE: 09.06.21

RESULTS: (cont.)

Table 1: Qualitative Results

SOCOTEC Job I.D: 21060013

IOM sample number	SOCOTEC Sample ID	Client Sample ID	ACM type detected	PLM result
S82579	21060013-001-12	WS1-1-ES-0.05-0.25	-	No Asbestos Detected
S82580	21060013-005-12	WS3-1-ES-0.10-0.30	-	No Asbestos Detected
S82581	21060013-008-12	WS4-2-ES-0.25-1.00	-	No Asbestos Detected
S82582	21060013-011-12	WS6-1-ES-0.10-0.65	-	No Asbestos Detected
S82583	21060013-014-4	WS8-2-ES-0.50-0.80	-	No Asbestos Detected
S82584	21060013-015-12	WS9-1-ES-0.10-0.25	-	No Asbestos Detected

Our detection limit for this method is 0.001%.

COMMENTS:

IOM Consulting cannot accept responsibility for samples that have been incorrectly collected or despatched by external clients.

Any opinions and interpretations expressed herein are out with the scope of our UKAS accreditation.

AUTHORISED BY:

D Third
Scientific Technician

Additional Report Notes

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
TMSS	21060013-01	When reviewed at the reporting stage the total moisture at 105°C was lower than the loss on oven drying moisture at 35°C. Having examined the sample it is our opinion that the homogeneity of the sample is inconsistent due to the presence of small pieces of gravel, which has led this discrepancy. As all quality control parameters pass, we consider that the data obtained from both tests is analytically valid has therefore been included in the final report.
GROHSA	001-003, 005-006, 008-009, 011-013, 015-016	The Secondary process control data associated with this Test has not wholly met the requirements of the Laboratory Quality Management System QMS with one or more target analytes falling outside acceptable limits. However the remaining data gives the Laboratory confidence that the test has performed satisfactorily (including the Primary Process Control) and that the validity of the data may not have been significantly affected. However in line with our QMS policy we have removed accreditation , where applicable, from the affected analytes (C6-C7) . These circumstances should be taken into consideration when utilising the data.
TPHFIDUS (ALIPHATIC)	001-003, 005-006, 008-009, 011-013, 015-016	The Secondary process control data associated with this Test has not wholly met the requirements of the Laboratory Quality Management System QMS with one or more target analytes falling outside acceptable limits. However the remaining data gives the Laboratory confidence that the test has performed satisfactorily (including the Primary Process Control) and that the validity of the data may not have been significantly affected. However in line with our QMS policy we have removed accreditation , where applicable, from the affected analytes (C10-C12) . These circumstances should be taken into consideration when utilising the data.
TPHFIDUS (AROMATIC)	001-003, 005-006, 008-009, 011-013, 015-016	The Secondary process control data associated with this Test has not wholly met the requirements of the Laboratory Quality Management System QMS with one or more target analytes falling outside acceptable limits. However the remaining data gives the Laboratory confidence that the test has performed satisfactorily (including the Primary Process Control) and that the validity of the data may not have been significantly affected. However in line with our QMS policy we have removed accreditation , where applicable, from the affected analytes (C10-C12) . These circumstances should be taken into consideration when utilising the data.

HWOL Analysis

<u>Customer ID</u>	<u>Analysis</u>	<u>HWOL Code</u> <u>ANALYSIS</u>	<u>Result</u>
WS1-1-ES-0.05-0.25	>C6-C7 Aliphatic	HS_1D_AL	<0.268
WS1-1-ES-0.05-0.25	>C7-C8 Aliphatic	HS_1D_AL	<0.268
WS1-1-ES-0.05-0.25	>C7-C8 Aromatic	HS_1D_AR	<0.013
WS1-1-ES-0.05-0.25	>C8-C10 Aliphatic	HS_1D_AL	<0.268
WS1-1-ES-0.05-0.25	>C8-C10 Aromatic	HS_1D_AR	<0.054
WS1-1-ES-0.05-0.25	C5-C6 Aliphatic	HS_1D_AL	<0.268
WS1-1-ES-0.05-0.25	C5-C7 Aromatic	HS_1D_AR	<0.013
WS1-1-ES-0.05-0.25	Total GRO C5-C10	HS_1D_Total	<0.268
WS1-1-ES-0.05-0.25	Benzene	HS_1D_AR	<13
WS1-1-ES-0.05-0.25	Ethylbenzene	HS_1D_AR	<13
WS1-1-ES-0.05-0.25	m/p-Xylene	HS_1D_AR	<27
WS1-1-ES-0.05-0.25	o-Xylene	HS_1D_AR	<13
WS1-1-ES-0.05-0.25	Toluene	HS_1D_AR	<13
WS1-1-ES-0.05-0.25	>C10-C12 (Aliphatic)	EH_CU_1D_AL	<5.35
WS1-1-ES-0.05-0.25	>C10-C12 (Aromatic)	EH_CU_1D_AR	<5.35
WS1-1-ES-0.05-0.25	>C12-C16 (Aliphatic)	EH_CU_1D_AL	9.74
WS1-1-ES-0.05-0.25	>C12-C16 (Aromatic)	EH_CU_1D_AR	12.8
WS1-1-ES-0.05-0.25	>C16-C21 (Aliphatic)	EH_CU_1D_AL	10.5
WS1-1-ES-0.05-0.25	>C16-C21 (Aromatic)	EH_CU_1D_AR	11.2
WS1-1-ES-0.05-0.25	>C21-C35 (Aliphatic)	EH_CU_1D_AL	18.8
WS1-1-ES-0.05-0.25	>C21-C35 (Aromatic)	EH_CU_1D_AR	25.2
WS1-1-ES-0.05-0.25	Total TPH >C8-C40 (Aliphatic)	EH_CU_1D_AL	52.8
WS1-1-ES-0.05-0.25	Total TPH >C8-C40 (Aromatic)	EH_CU_1D_AR	57.6
WS1-2-ES-0.25-0.50	>C6-C7 Aliphatic	HS_1D_AL	<0.271
WS1-2-ES-0.25-0.50	>C7-C8 Aliphatic	HS_1D_AL	<0.271
WS1-2-ES-0.25-0.50	>C7-C8 Aromatic	HS_1D_AR	<0.014
WS1-2-ES-0.25-0.50	>C8-C10 Aliphatic	HS_1D_AL	<0.271
WS1-2-ES-0.25-0.50	>C8-C10 Aromatic	HS_1D_AR	<0.055
WS1-2-ES-0.25-0.50	C5-C6 Aliphatic	HS_1D_AL	<0.271
WS1-2-ES-0.25-0.50	C5-C7 Aromatic	HS_1D_AR	<0.014
WS1-2-ES-0.25-0.50	Total GRO C5-C10	HS_1D_Total	<0.271
WS1-2-ES-0.25-0.50	Benzene	HS_1D_AR	<14
WS1-2-ES-0.25-0.50	Ethylbenzene	HS_1D_AR	<14
WS1-2-ES-0.25-0.50	m/p-Xylene	HS_1D_AR	<27
WS1-2-ES-0.25-0.50	o-Xylene	HS_1D_AR	<14

WS1-2-ES-0.25-0.50	Toluene	HS_1D_AR	<14
WS1-2-ES-0.25-0.50	>C10-C12 (Aliphatic)	EH_CU_1D_AL	<5.42
WS1-2-ES-0.25-0.50	>C10-C12 (Aromatic)	EH_CU_1D_AR	<5.42
WS1-2-ES-0.25-0.50	>C12-C16 (Aliphatic)	EH_CU_1D_AL	9.89
WS1-2-ES-0.25-0.50	>C12-C16 (Aromatic)	EH_CU_1D_AR	13.3
WS1-2-ES-0.25-0.50	>C16-C21 (Aliphatic)	EH_CU_1D_AL	10.5
WS1-2-ES-0.25-0.50	>C16-C21 (Aromatic)	EH_CU_1D_AR	12.8
WS1-2-ES-0.25-0.50	>C21-C35 (Aliphatic)	EH_CU_1D_AL	18.7
WS1-2-ES-0.25-0.50	>C21-C35 (Aromatic)	EH_CU_1D_AR	30.3
WS1-2-ES-0.25-0.50	Total TPH >C8-C40 (Aliphatic)	EH_CU_1D_AL	49.0
WS1-2-ES-0.25-0.50	Total TPH >C8-C40 (Aromatic)	EH_CU_1D_AR	65.9
WS2-1-ES-0.10-0.25	>C6-C7 Aliphatic	HS_1D_AL	<0.268
WS2-1-ES-0.10-0.25	>C7-C8 Aliphatic	HS_1D_AL	<0.268
WS2-1-ES-0.10-0.25	>C7-C8 Aromatic	HS_1D_AR	<0.013
WS2-1-ES-0.10-0.25	>C8-C10 Aliphatic	HS_1D_AL	<0.268
WS2-1-ES-0.10-0.25	>C8-C10 Aromatic	HS_1D_AR	<0.054
WS2-1-ES-0.10-0.25	C5-C6 Aliphatic	HS_1D_AL	<0.268
WS2-1-ES-0.10-0.25	C5-C7 Aromatic	HS_1D_AR	<0.013
WS2-1-ES-0.10-0.25	Total GRO C5-C10	HS_1D_Total	<0.268
WS2-1-ES-0.10-0.25	Benzene	HS_1D_AR	<13
WS2-1-ES-0.10-0.25	Ethylbenzene	HS_1D_AR	<13
WS2-1-ES-0.10-0.25	m/p-Xylene	HS_1D_AR	<27
WS2-1-ES-0.10-0.25	o-Xylene	HS_1D_AR	<13
WS2-1-ES-0.10-0.25	Toluene	HS_1D_AR	<13
WS2-1-ES-0.10-0.25	>C10-C12 (Aliphatic)	EH_CU_1D_AL	<5.37
WS2-1-ES-0.10-0.25	>C10-C12 (Aromatic)	EH_CU_1D_AR	<5.37
WS2-1-ES-0.10-0.25	>C12-C16 (Aliphatic)	EH_CU_1D_AL	10.2
WS2-1-ES-0.10-0.25	>C12-C16 (Aromatic)	EH_CU_1D_AR	13.1
WS2-1-ES-0.10-0.25	>C16-C21 (Aliphatic)	EH_CU_1D_AL	10.5
WS2-1-ES-0.10-0.25	>C16-C21 (Aromatic)	EH_CU_1D_AR	11.4
WS2-1-ES-0.10-0.25	>C21-C35 (Aliphatic)	EH_CU_1D_AL	22.7
WS2-1-ES-0.10-0.25	>C21-C35 (Aromatic)	EH_CU_1D_AR	19.5
WS2-1-ES-0.10-0.25	Total TPH >C8-C40 (Aliphatic)	EH_CU_1D_AL	56.2
WS2-1-ES-0.10-0.25	Total TPH >C8-C40 (Aromatic)	EH_CU_1D_AR	52.6
WS3-1-ES-0.10-0.30	>C6-C7 Aliphatic	HS_1D_AL	<0.250
WS3-1-ES-0.10-0.30	>C7-C8 Aliphatic	HS_1D_AL	<0.250
WS3-1-ES-0.10-0.30	>C7-C8 Aromatic	HS_1D_AR	<0.013

WS3-1-ES-0.10-0.30	>C8-C10 Aliphatic	HS_1D_AL	<0.250
WS3-1-ES-0.10-0.30	>C8-C10 Aromatic	HS_1D_AR	<0.051
WS3-1-ES-0.10-0.30	C5-C6 Aliphatic	HS_1D_AL	<0.250
WS3-1-ES-0.10-0.30	C5-C7 Aromatic	HS_1D_AR	<0.013
WS3-1-ES-0.10-0.30	Total GRO C5-C10	HS_1D_Total	<0.250
WS3-1-ES-0.10-0.30	Benzene	HS_1D_AR	<13
WS3-1-ES-0.10-0.30	Ethylbenzene	HS_1D_AR	<13
WS3-1-ES-0.10-0.30	m/p-Xylene	HS_1D_AR	<25
WS3-1-ES-0.10-0.30	o-Xylene	HS_1D_AR	<13
WS3-1-ES-0.10-0.30	Toluene	HS_1D_AR	<13
WS3-1-ES-0.10-0.30	>C10-C12 (Aliphatic)	EH_CU_1D_AL	<5.00
WS3-1-ES-0.10-0.30	>C10-C12 (Aromatic)	EH_CU_1D_AR	<5.00
WS3-1-ES-0.10-0.30	>C12-C16 (Aliphatic)	EH_CU_1D_AL	8.48
WS3-1-ES-0.10-0.30	>C12-C16 (Aromatic)	EH_CU_1D_AR	12.7
WS3-1-ES-0.10-0.30	>C16-C21 (Aliphatic)	EH_CU_1D_AL	9.06
WS3-1-ES-0.10-0.30	>C16-C21 (Aromatic)	EH_CU_1D_AR	11.0
WS3-1-ES-0.10-0.30	>C21-C35 (Aliphatic)	EH_CU_1D_AL	13.6
WS3-1-ES-0.10-0.30	>C21-C35 (Aromatic)	EH_CU_1D_AR	24.1
WS3-1-ES-0.10-0.30	Total TPH >C8-C40 (Aliphatic)	EH_CU_1D_AL	40.0
WS3-1-ES-0.10-0.30	Total TPH >C8-C40 (Aromatic)	EH_CU_1D_AR	56.2
WS3-2-ES-0.30-1.00	>C6-C7 Aliphatic	HS_1D_AL	<0.249
WS3-2-ES-0.30-1.00	>C7-C8 Aliphatic	HS_1D_AL	<0.249
WS3-2-ES-0.30-1.00	>C7-C8 Aromatic	HS_1D_AR	<0.013
WS3-2-ES-0.30-1.00	>C8-C10 Aliphatic	HS_1D_AL	<0.249
WS3-2-ES-0.30-1.00	>C8-C10 Aromatic	HS_1D_AR	<0.051
WS3-2-ES-0.30-1.00	C5-C6 Aliphatic	HS_1D_AL	<0.249
WS3-2-ES-0.30-1.00	C5-C7 Aromatic	HS_1D_AR	<0.013
WS3-2-ES-0.30-1.00	Total GRO C5-C10	HS_1D_Total	<0.249
WS3-2-ES-0.30-1.00	Benzene	HS_1D_AR	<13
WS3-2-ES-0.30-1.00	Ethylbenzene	HS_1D_AR	<13
WS3-2-ES-0.30-1.00	m/p-Xylene	HS_1D_AR	<25
WS3-2-ES-0.30-1.00	o-Xylene	HS_1D_AR	<13
WS3-2-ES-0.30-1.00	Toluene	HS_1D_AR	<13
WS3-2-ES-0.30-1.00	>C10-C12 (Aliphatic)	EH_CU_1D_AL	<4.98
WS3-2-ES-0.30-1.00	>C10-C12 (Aromatic)	EH_CU_1D_AR	<4.98
WS3-2-ES-0.30-1.00	>C12-C16 (Aliphatic)	EH_CU_1D_AL	8.41
WS3-2-ES-0.30-1.00	>C12-C16 (Aromatic)	EH_CU_1D_AR	11.1

WS3-2-ES-0.30-1.00	>C16-C21 (Aliphatic)	EH_CU_1D_AL	9.08
WS3-2-ES-0.30-1.00	>C16-C21 (Aromatic)	EH_CU_1D_AR	9.83
WS3-2-ES-0.30-1.00	>C21-C35 (Aliphatic)	EH_CU_1D_AL	16.6
WS3-2-ES-0.30-1.00	>C21-C35 (Aromatic)	EH_CU_1D_AR	16.1
WS3-2-ES-0.30-1.00	Total TPH >C8-C40 (Aliphatic)	EH_CU_1D_AL	42.9
WS3-2-ES-0.30-1.00	Total TPH >C8-C40 (Aromatic)	EH_CU_1D_AR	44.2
WS4-2-ES-0.25-1.00	>C6-C7 Aliphatic	HS_1D_AL	<0.258
WS4-2-ES-0.25-1.00	>C7-C8 Aliphatic	HS_1D_AL	<0.258
WS4-2-ES-0.25-1.00	>C7-C8 Aromatic	HS_1D_AR	<0.013
WS4-2-ES-0.25-1.00	>C8-C10 Aliphatic	HS_1D_AL	<0.258
WS4-2-ES-0.25-1.00	>C8-C10 Aromatic	HS_1D_AR	<0.052
WS4-2-ES-0.25-1.00	C5-C6 Aliphatic	HS_1D_AL	<0.258
WS4-2-ES-0.25-1.00	C5-C7 Aromatic	HS_1D_AR	<0.013
WS4-2-ES-0.25-1.00	Total GRO C5-C10	HS_1D_Total	<0.258
WS4-2-ES-0.25-1.00	Benzene	HS_1D_AR	<13
WS4-2-ES-0.25-1.00	Ethylbenzene	HS_1D_AR	<13
WS4-2-ES-0.25-1.00	m/p-Xylene	HS_1D_AR	<26
WS4-2-ES-0.25-1.00	o-Xylene	HS_1D_AR	<13
WS4-2-ES-0.25-1.00	Toluene	HS_1D_AR	<13
WS4-2-ES-0.25-1.00	>C10-C12 (Aliphatic)	EH_CU_1D_AL	<5.17
WS4-2-ES-0.25-1.00	>C10-C12 (Aromatic)	EH_CU_1D_AR	<5.17
WS4-2-ES-0.25-1.00	>C12-C16 (Aliphatic)	EH_CU_1D_AL	9.14
WS4-2-ES-0.25-1.00	>C12-C16 (Aromatic)	EH_CU_1D_AR	12.0
WS4-2-ES-0.25-1.00	>C16-C21 (Aliphatic)	EH_CU_1D_AL	9.95
WS4-2-ES-0.25-1.00	>C16-C21 (Aromatic)	EH_CU_1D_AR	10.9
WS4-2-ES-0.25-1.00	>C21-C35 (Aliphatic)	EH_CU_1D_AL	18.4
WS4-2-ES-0.25-1.00	>C21-C35 (Aromatic)	EH_CU_1D_AR	17.1
WS4-2-ES-0.25-1.00	Total TPH >C8-C40 (Aliphatic)	EH_CU_1D_AL	50.2
WS4-2-ES-0.25-1.00	Total TPH >C8-C40 (Aromatic)	EH_CU_1D_AR	47.5
WS5-1-ES-0.10-0.45	>C6-C7 Aliphatic	HS_1D_AL	<0.250
WS5-1-ES-0.10-0.45	>C7-C8 Aliphatic	HS_1D_AL	<0.250
WS5-1-ES-0.10-0.45	>C7-C8 Aromatic	HS_1D_AR	<0.013
WS5-1-ES-0.10-0.45	>C8-C10 Aliphatic	HS_1D_AL	<0.250
WS5-1-ES-0.10-0.45	>C8-C10 Aromatic	HS_1D_AR	<0.051
WS5-1-ES-0.10-0.45	C5-C6 Aliphatic	HS_1D_AL	<0.250
WS5-1-ES-0.10-0.45	C5-C7 Aromatic	HS_1D_AR	<0.013
WS5-1-ES-0.10-0.45	Total GRO C5-C10	HS_1D_Total	<0.250

WS5-1-ES-0.10-0.45	Benzene	HS_1D_AR	<13
WS5-1-ES-0.10-0.45	Ethylbenzene	HS_1D_AR	<13
WS5-1-ES-0.10-0.45	m/p-Xylene	HS_1D_AR	<25
WS5-1-ES-0.10-0.45	o-Xylene	HS_1D_AR	<13
WS5-1-ES-0.10-0.45	Toluene	HS_1D_AR	<13
WS5-1-ES-0.10-0.45	>C10-C12 (Aliphatic)	EH_CU_1D_AL	<5.01
WS5-1-ES-0.10-0.45	>C10-C12 (Aromatic)	EH_CU_1D_AR	<5.01
WS5-1-ES-0.10-0.45	>C12-C16 (Aliphatic)	EH_CU_1D_AL	8.38
WS5-1-ES-0.10-0.45	>C12-C16 (Aromatic)	EH_CU_1D_AR	11.5
WS5-1-ES-0.10-0.45	>C16-C21 (Aliphatic)	EH_CU_1D_AL	9.26
WS5-1-ES-0.10-0.45	>C16-C21 (Aromatic)	EH_CU_1D_AR	9.96
WS5-1-ES-0.10-0.45	>C21-C35 (Aliphatic)	EH_CU_1D_AL	22.8
WS5-1-ES-0.10-0.45	>C21-C35 (Aromatic)	EH_CU_1D_AR	15.9
WS5-1-ES-0.10-0.45	Total TPH >C8-C40 (Aliphatic)	EH_CU_1D_AL	52.4
WS5-1-ES-0.10-0.45	Total TPH >C8-C40 (Aromatic)	EH_CU_1D_AR	45.0
WS6-1-ES-0.10-0.65	>C6-C7 Aliphatic	HS_1D_AL	<0.246
WS6-1-ES-0.10-0.65	>C7-C8 Aliphatic	HS_1D_AL	<0.246
WS6-1-ES-0.10-0.65	>C7-C8 Aromatic	HS_1D_AR	<0.012
WS6-1-ES-0.10-0.65	>C8-C10 Aliphatic	HS_1D_AL	<0.246
WS6-1-ES-0.10-0.65	>C8-C10 Aromatic	HS_1D_AR	<0.049
WS6-1-ES-0.10-0.65	C5-C6 Aliphatic	HS_1D_AL	<0.246
WS6-1-ES-0.10-0.65	C5-C7 Aromatic	HS_1D_AR	<0.012
WS6-1-ES-0.10-0.65	Total GRO C5-C10	HS_1D_Total	<0.246
WS6-1-ES-0.10-0.65	Benzene	HS_1D_AR	<12
WS6-1-ES-0.10-0.65	Ethylbenzene	HS_1D_AR	<12
WS6-1-ES-0.10-0.65	m/p-Xylene	HS_1D_AR	<25
WS6-1-ES-0.10-0.65	o-Xylene	HS_1D_AR	<12
WS6-1-ES-0.10-0.65	Toluene	HS_1D_AR	<12
WS6-1-ES-0.10-0.65	>C10-C12 (Aliphatic)	EH_CU_1D_AL	<4.93
WS6-1-ES-0.10-0.65	>C10-C12 (Aromatic)	EH_CU_1D_AR	<4.93
WS6-1-ES-0.10-0.65	>C12-C16 (Aliphatic)	EH_CU_1D_AL	8.59
WS6-1-ES-0.10-0.65	>C12-C16 (Aromatic)	EH_CU_1D_AR	12.0
WS6-1-ES-0.10-0.65	>C16-C21 (Aliphatic)	EH_CU_1D_AL	9.01
WS6-1-ES-0.10-0.65	>C16-C21 (Aromatic)	EH_CU_1D_AR	10.8
WS6-1-ES-0.10-0.65	>C21-C35 (Aliphatic)	EH_CU_1D_AL	22.1
WS6-1-ES-0.10-0.65	>C21-C35 (Aromatic)	EH_CU_1D_AR	23.8
WS6-1-ES-0.10-0.65	Total TPH >C8-C40 (Aliphatic)	EH_CU_1D_AL	50.9
WS6-1-ES-0.10-0.65	Total TPH >C8-C40 (Aromatic)	EH_CU_1D_AR	54.7

WS6-2-ES-0.65-1.00	>C6-C7 Aliphatic	HS_1D_AL	<0.257
WS6-2-ES-0.65-1.00	>C7-C8 Aliphatic	HS_1D_AL	<0.257
WS6-2-ES-0.65-1.00	>C7-C8 Aromatic	HS_1D_AR	<0.013
WS6-2-ES-0.65-1.00	>C8-C10 Aliphatic	HS_1D_AL	<0.257
WS6-2-ES-0.65-1.00	>C8-C10 Aromatic	HS_1D_AR	<0.052
WS6-2-ES-0.65-1.00	C5-C6 Aliphatic	HS_1D_AL	<0.257
WS6-2-ES-0.65-1.00	C5-C7 Aromatic	HS_1D_AR	<0.013
WS6-2-ES-0.65-1.00	Total GRO C5-C10	HS_1D_Total	<0.257
WS6-2-ES-0.65-1.00	Benzene	HS_1D_AR	<13
WS6-2-ES-0.65-1.00	Ethylbenzene	HS_1D_AR	<13
WS6-2-ES-0.65-1.00	m/p-Xylene	HS_1D_AR	<26
WS6-2-ES-0.65-1.00	o-Xylene	HS_1D_AR	<13
WS6-2-ES-0.65-1.00	Toluene	HS_1D_AR	<13
WS6-2-ES-0.65-1.00	>C10-C12 (Aliphatic)	EH_CU_1D_AL	<5.15
WS6-2-ES-0.65-1.00	>C10-C12 (Aromatic)	EH_CU_1D_AR	<5.15
WS6-2-ES-0.65-1.00	>C12-C16 (Aliphatic)	EH_CU_1D_AL	8.81
WS6-2-ES-0.65-1.00	>C12-C16 (Aromatic)	EH_CU_1D_AR	12.0
WS6-2-ES-0.65-1.00	>C16-C21 (Aliphatic)	EH_CU_1D_AL	9.83
WS6-2-ES-0.65-1.00	>C16-C21 (Aromatic)	EH_CU_1D_AR	10.3
WS6-2-ES-0.65-1.00	>C21-C35 (Aliphatic)	EH_CU_1D_AL	20.1
WS6-2-ES-0.65-1.00	>C21-C35 (Aromatic)	EH_CU_1D_AR	22.3
WS6-2-ES-0.65-1.00	Total TPH >C8-C40 (Aliphatic)	EH_CU_1D_AL	49.8
WS6-2-ES-0.65-1.00	Total TPH >C8-C40 (Aromatic)	EH_CU_1D_AR	51.5
WS8-1-ES-0.10-0.25	>C6-C7 Aliphatic	HS_1D_AL	<0.250
WS8-1-ES-0.10-0.25	>C7-C8 Aliphatic	HS_1D_AL	<0.250
WS8-1-ES-0.10-0.25	>C7-C8 Aromatic	HS_1D_AR	<0.013
WS8-1-ES-0.10-0.25	>C8-C10 Aliphatic	HS_1D_AL	<0.250
WS8-1-ES-0.10-0.25	>C8-C10 Aromatic	HS_1D_AR	<0.051
WS8-1-ES-0.10-0.25	C5-C6 Aliphatic	HS_1D_AL	<0.250
WS8-1-ES-0.10-0.25	C5-C7 Aromatic	HS_1D_AR	<0.013
WS8-1-ES-0.10-0.25	Total GRO C5-C10	HS_1D_Total	<0.250
WS8-1-ES-0.10-0.25	Benzene	HS_1D_AR	<13
WS8-1-ES-0.10-0.25	Ethylbenzene	HS_1D_AR	<13
WS8-1-ES-0.10-0.25	m/p-Xylene	HS_1D_AR	<25
WS8-1-ES-0.10-0.25	o-Xylene	HS_1D_AR	<13
WS8-1-ES-0.10-0.25	Toluene	HS_1D_AR	<13

WS8-1-ES-0.10-0.25	>C10-C12 (Aliphatic)	EH_CU_1D_AL	<5.00
WS8-1-ES-0.10-0.25	>C10-C12 (Aromatic)	EH_CU_1D_AR	<5.00
WS8-1-ES-0.10-0.25	>C12-C16 (Aliphatic)	EH_CU_1D_AL	8.61
WS8-1-ES-0.10-0.25	>C12-C16 (Aromatic)	EH_CU_1D_AR	11.6
WS8-1-ES-0.10-0.25	>C16-C21 (Aliphatic)	EH_CU_1D_AL	9.24
WS8-1-ES-0.10-0.25	>C16-C21 (Aromatic)	EH_CU_1D_AR	10.4
WS8-1-ES-0.10-0.25	>C21-C35 (Aliphatic)	EH_CU_1D_AL	23.0
WS8-1-ES-0.10-0.25	>C21-C35 (Aromatic)	EH_CU_1D_AR	22.8
WS8-1-ES-0.10-0.25	Total TPH >C8-C40 (Aliphatic)	EH_CU_1D_AL	51.3
WS8-1-ES-0.10-0.25	Total TPH >C8-C40 (Aromatic)	EH_CU_1D_AR	52.6
WS9-1-ES-0.10-0.25	>C6-C7 Aliphatic	HS_1D_AL	<0.276
WS9-1-ES-0.10-0.25	>C7-C8 Aliphatic	HS_1D_AL	<0.276
WS9-1-ES-0.10-0.25	>C7-C8 Aromatic	HS_1D_AR	<0.014
WS9-1-ES-0.10-0.25	>C8-C10 Aliphatic	HS_1D_AL	<0.276
WS9-1-ES-0.10-0.25	>C8-C10 Aromatic	HS_1D_AR	<0.056
WS9-1-ES-0.10-0.25	C5-C6 Aliphatic	HS_1D_AL	<0.276
WS9-1-ES-0.10-0.25	C5-C7 Aromatic	HS_1D_AR	<0.014
WS9-1-ES-0.10-0.25	Total GRO C5-C10	HS_1D_Total	<0.276
WS9-1-ES-0.10-0.25	Benzene	HS_1D_AR	<14
WS9-1-ES-0.10-0.25	Ethylbenzene	HS_1D_AR	<14
WS9-1-ES-0.10-0.25	m/p-Xylene	HS_1D_AR	<28
WS9-1-ES-0.10-0.25	o-Xylene	HS_1D_AR	<14
WS9-1-ES-0.10-0.25	Toluene	HS_1D_AR	<14
WS9-1-ES-0.10-0.25	>C10-C12 (Aliphatic)	EH_CU_1D_AL	5.75
WS9-1-ES-0.10-0.25	>C10-C12 (Aromatic)	EH_CU_1D_AR	<5.52
WS9-1-ES-0.10-0.25	>C12-C16 (Aliphatic)	EH_CU_1D_AL	14.1
WS9-1-ES-0.10-0.25	>C12-C16 (Aromatic)	EH_CU_1D_AR	13.5
WS9-1-ES-0.10-0.25	>C16-C21 (Aliphatic)	EH_CU_1D_AL	20.6
WS9-1-ES-0.10-0.25	>C16-C21 (Aromatic)	EH_CU_1D_AR	13.2
WS9-1-ES-0.10-0.25	>C21-C35 (Aliphatic)	EH_CU_1D_AL	124
WS9-1-ES-0.10-0.25	>C21-C35 (Aromatic)	EH_CU_1D_AR	45.7
WS9-1-ES-0.10-0.25	Total TPH >C8-C40 (Aliphatic)	EH_CU_1D_AL	254
WS9-1-ES-0.10-0.25	Total TPH >C8-C40 (Aromatic)	EH_CU_1D_AR	85.1
WS9-2-ES-0.25-1.00	>C6-C7 Aliphatic	HS_1D_AL	<0.272
WS9-2-ES-0.25-1.00	>C7-C8 Aliphatic	HS_1D_AL	<0.272
WS9-2-ES-0.25-1.00	>C7-C8 Aromatic	HS_1D_AR	<0.014
WS9-2-ES-0.25-1.00	>C8-C10 Aliphatic	HS_1D_AL	<0.272
WS9-2-ES-0.25-1.00	>C8-C10 Aromatic	HS_1D_AR	<0.055

WS9-2-ES-0.25-1.00	C5-C6 Aliphatic	HS_1D_AL	<0.272
WS9-2-ES-0.25-1.00	C5-C7 Aromatic	HS_1D_AR	<0.014
WS9-2-ES-0.25-1.00	Total GRO C5-C10	HS_1D_Total	<0.272
WS9-2-ES-0.25-1.00	Benzene	HS_1D_AR	<14
WS9-2-ES-0.25-1.00	Ethylbenzene	HS_1D_AR	<14
WS9-2-ES-0.25-1.00	m/p-Xylene	HS_1D_AR	<27
WS9-2-ES-0.25-1.00	o-Xylene	HS_1D_AR	<14
WS9-2-ES-0.25-1.00	Toluene	HS_1D_AR	<14
WS9-2-ES-0.25-1.00	>C10-C12 (Aliphatic)	EH_CU_1D_AL	<5.43
WS9-2-ES-0.25-1.00	>C10-C12 (Aromatic)	EH_CU_1D_AR	<5.43
WS9-2-ES-0.25-1.00	>C12-C16 (Aliphatic)	EH_CU_1D_AL	10.1
WS9-2-ES-0.25-1.00	>C12-C16 (Aromatic)	EH_CU_1D_AR	13.7
WS9-2-ES-0.25-1.00	>C16-C21 (Aliphatic)	EH_CU_1D_AL	12.5
WS9-2-ES-0.25-1.00	>C16-C21 (Aromatic)	EH_CU_1D_AR	13.0
WS9-2-ES-0.25-1.00	>C21-C35 (Aliphatic)	EH_CU_1D_AL	39.4
WS9-2-ES-0.25-1.00	>C21-C35 (Aromatic)	EH_CU_1D_AR	30.3
WS9-2-ES-0.25-1.00	Total TPH >C8-C40 (Aliphatic)	EH_CU_1D_AL	89.2
WS9-2-ES-0.25-1.00	Total TPH >C8-C40 (Aromatic)	EH_CU_1D_AR	66.3

Deviating Sample Report

Sample Reference	Text ID	Reported Name	Incorrect Container	Incorrect Label	Headspace	Incorrect/No Preservative	No Sampling Date	Holding Time
------------------	---------	---------------	---------------------	-----------------	-----------	---------------------------	------------------	--------------

Analysis Method

<u>Analysis</u>	<u>Analysis Type</u>	<u>Analysis Method</u>
BTEXHSA	ORGANIC	As Received
CLANDPREP	PHYS	As Received
GROHSA	ORGANIC	As Received
GROHSA/BTEXHSA	ORGANIC	
ICPBOR	METALS	Air Dried & Ground
ICPMSS	METALS	Air Dried & Ground
ICPMSW (Dissolved)	METALS	Filtered
KONENS	INORGANIC	Air Dried & Ground
Leachate Preparation CEN 2:1	PHYS	As Received
PAHMSUS	ORGANIC	As Received
PHSOIL	INORGANIC	As Received
SFAP	INORGANIC	Filtered
SUB020	SUBCON	
TMSS	PHYS	As Received
TPHFIDUS (Aliphatic)	ORGANIC	As Received
TPHFIDUS (Aromatic)	ORGANIC	As Received
WSLM59	INORGANIC	Air Dried & Ground



Client: SOCOTEC Consultancy South

Project Name: Cabbagefield Row, Havant

Project No: 21060013

Date Issued: 10/06/2021

Additional Information

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

Results within this report relate only to the samples tested.

In the accreditation column of analysis report the codes are as follows:

- U = UKAS accredited analysis
- M = MCERT accredited analysis
- N = Unaccredited analysis

Any units marked with ^ signify results are reported on a dry weight basis of 105° c

All Air Dried and Ground Samples (ADG) are oven dried at less than 35° c.

This report shall not be reproduced except in full and with approval from the laboratory.

Opinions and interpretations given are outside the scope of our UKAS accreditation.

Any samples marked with * are not covered by our scope of UKAS accreditation. If applicable, further report notes have been added.

Any solid samples where the Major Constituents are not one of the following (Sand, Silt, Clay, Made Ground) are not one of our accredited matrix types.

Any samples marked with ‡ have had MCERTS accreditation removed for this result

Any samples marked with a tick in the deviant table is deviant for the specific reason.

Any samples reported as IS, NA, ND mean the following:

- IS = Insufficient Sample to complete analysis
- NA = Sample is not amenable for the required analysis
- ND = Results cannot be determined

Our deviating sample report does not include deviancy information for Subcontracted analysis. Please see the report from the Subcontracted lab for information regarding any deviancies for this analysis.

HWOL Acronym Key

<u>Acronym</u>	<u>Description</u>
HS	Headspace Analysis
EH	Extractable Hydrocarbons - i.e everything extracted by the solvent(s)
CU	Clean up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
+	Operator to indicate cumulative e.g. EH_CU+HS_1D_Total

End of Certificate of Analysis



SOCOTEC

Environmental Chemistry
SOCOTEC UK
Ashby Rd, Bretby,
Burton-on-Trent, UK
DE15 0YZ

Certificate of Analysis

Project No: 21061058

Client: SOCOTEC Consultancy South

Quote Number: BEC210316946

Project Reference: STH1016

Site Name: Cabbagefield Row, Havant

Contact: Dave Heasman

Address: Glossop House
Hogwood Lane Industrial Estate
Finchampstead
Wokingham

Post Code: RG40 4QW

E-Mail: Dave.Heasman@socotec.com

Phone No: 02475 310 700

Number of Samples Received: 1

Date Received: 14/06/2021

Analysis Date: 23/06/2021

Date Issued: 23/06/2021

Job Status: Complete

Report Type: Final Version 01

This report supersedes any versions previously issued by the laboratory

Account Manager
Martin Elliott-Palmer

Authorised by the Operations Manager
Becky Batham



Client: SOCOTEC Consultancy South

Project Name: Cabbagefield Row, Havant

Project No: 21061058

Date Issued: 23/06/2021

Samples Analysed

<u>Sample Reference</u>	<u>Text ID</u>	<u>Sample Date</u>	<u>Sample Type</u>	<u>Sample Description</u>
WS9 EW1-1-EW-1.51-2.00	21061058-001	09/06/2021 07:12:00	WATER	Ground Water

Analysis Results

					Project ID	21061058
					Sample ID	001
					Customer ID	WS9 EW1-1-EW-1.51-2.00
					Sample Type	WATER
					Sampling Date	09/06/2021
Analysis	Method Code	MDL	Units	Accred		
pH	PHCONDW	1	pH units	U	7.8	
Chromium (VI) as Cr	KONENS	0.003	mg/l	U	<0.003	
Phenol Index	SFAPi	0.05	mg/l	U	<0.05	
Total Cyanide	SFAPi	0.02	mg/l	U	<0.02	
Arsenic as As	ICPMSWT (Total)	0.001	mg/l	U	0.002	
Cadmium as Cd	ICPMSWT (Total)	0.00002	mg/l	U	0.00012	
Total Chromium as Cr	ICPMSWT (Total)	0.001	mg/l	U	0.005	
Copper as Cu	ICPMSWT (Total)	0.001	mg/l	U	0.009	
Lead as Pb	ICPMSWT (Total)	0.001	mg/l	U	0.007	
Nickel as Ni	ICPMSWT (Total)	0.001	mg/l	U	0.014	
Selenium as Se	ICPMSWT (Total)	0.001	mg/l	U	0.001	
Mercury as Hg	ICPMSWT (Total)	0.00003	mg/l	U	<0.00003	
Zinc as Zn	ICPMSWT (Total)	0.002	mg/l	U	0.038	
Total GRO C5-C10	GROHSA	0.1	mg/l	U	<0.100	
Acenaphthene	PAHMSW	0.01	µg/l	U	<0.01	
Acenaphthylene	PAHMSW	0.01	µg/l	U	<0.01	
Anthracene	PAHMSW	0.01	µg/l	U	<0.01	
Benzo[a]anthracene	PAHMSW	0.01	µg/l	U	<0.01	
Benzo[a]pyrene	PAHMSW	0.01	µg/l	U	<0.01	
Benzo[b]fluoranthene	PAHMSW	0.01	µg/l	U	<0.01	
Benzo[g,h,i]perylene	PAHMSW	0.01	µg/l	U	<0.01	
Benzo[k]fluoranthene	PAHMSW	0.01	µg/l	U	<0.01	
Chrysene	PAHMSW	0.01	µg/l	U	<0.01	
Dibenzo[a,h]anthracene	PAHMSW	0.01	µg/l	U	<0.01	

Analysis Results

Project ID	21061058
Sample ID	001
Customer ID	WS9 EW1-1-EW-1.51-2.00
Sample Type	WATER
Sampling Date	09/06/2021

Analysis	Method Code	MDL	Units	Accred	
Fluoranthene	PAHMSW	0.01	µg/l	U	<0.01
Fluorene	PAHMSW	0.01	µg/l	U	<0.01
Indeno[1,2,3-cd]pyrene	PAHMSW	0.01	µg/l	U	<0.01
Naphthalene	PAHMSW	0.01	µg/l	U	0.02
Phenanthrene	PAHMSW	0.01	µg/l	U	<0.01
Pyrene	PAHMSW	0.01	µg/l	U	<0.01
Total PAH 16	PAHMSW	0.16	µg/l	U	0.17
>C10-C12	TPHFID	0.01	mg/l	U	<0.01
>C12-C16	TPHFID	0.01	mg/l	U	<0.01
>C16-C21	TPHFID	0.01	mg/l	U	<0.01
>C21-C35	TPHFID	0.01	mg/l	U	<0.01
>C8-C10	TPHFID	0.01	mg/l	U	<0.01
Total TPH >C8-C40	TPHFID	0.01	mg/l	U	0.02
1,1,1,2-Tetrachloroethane	VOCHSAW	1	µg/l	U	<1
1,1,1-Trichloroethane	VOCHSAW	1	µg/l	U	<1
1,1,2,2-Tetrachloroethane	VOCHSAW	1	µg/l	N	<1
1,1,2-Trichloroethane	VOCHSAW	1	µg/l	U	<1
1,1-Dichloroethane	VOCHSAW	1	µg/l	U	<1
1,1-Dichloroethene	VOCHSAW	1	µg/l	U	<1
1,1-Dichloropropene	VOCHSAW	1	µg/l	U	<1
1,2,3-Trichlorobenzene	VOCHSAW	5	µg/l	U	<5
1,2,3-Trichloropropane	VOCHSAW	1	µg/l	U	<1
1,2,4-Trichlorobenzene	VOCHSAW	5	µg/l	U	<5
1,2,4-Trimethylbenzene	VOCHSAW	1	µg/l	U	<1

Analysis Results

Project ID	21061058
Sample ID	001
Customer ID	WS9 EW1-1-EW-1.51-2.00
Sample Type	WATER
Sampling Date	09/06/2021

Analysis	Method Code	MDL	Units	Accred	
1,2-Dibromo-3-chloropropane	VOCHSAW	5	µg/l	U	<5
1,2-Dibromoethane	VOCHSAW	1	µg/l	U	<1
1,2-Dichlorobenzene	VOCHSAW	5	µg/l	U	<5
1,2-Dichloroethane	VOCHSAW	1	µg/l	U	<1
1,2-Dichloropropane	VOCHSAW	1	µg/l	U	<1
1,3,5-Trimethylbenzene	VOCHSAW	1	µg/l	U	<1
1,3-Dichlorobenzene	VOCHSAW	1	µg/l	U	<1
1,3-Dichloropropane	VOCHSAW	1	µg/l	N	<1
1,4-Dichlorobenzene	VOCHSAW	1	µg/l	U	<1
2,2-Dichloropropane	VOCHSAW	1	µg/l	N	<1
2-Chlorotoluene	VOCHSAW	1	µg/l	U	<1
4-Chlorotoluene	VOCHSAW	1	µg/l	U	<1
Benzene	VOCHSAW	1	µg/l	U	<1
Bromobenzene	VOCHSAW	1	µg/l	U	<1
Bromochloromethane	VOCHSAW	1	µg/l	U	<1
Bromodichloromethane	VOCHSAW	1	µg/l	U	<1
Bromoform	VOCHSAW	1	µg/l	U	<1
Bromomethane	VOCHSAW	5	µg/l	N	<5
Carbon Tetrachloride	VOCHSAW	1	µg/l	U	<1
Chlorobenzene	VOCHSAW	1	µg/l	U	<1
Chloroethane	VOCHSAW	5	µg/l	U	<5
Chloroform	VOCHSAW	5	µg/l	U	<5
Chloromethane	VOCHSAW	1	µg/l	U	<1*
cis 1,2-Dichloroethene	VOCHSAW	5	µg/l	U	<5

Analysis Results

Project ID	21061058
Sample ID	001
Customer ID	WS9 EW1-1-EW-1.51-2.00
Sample Type	WATER
Sampling Date	09/06/2021

Analysis	Method Code	MDL	Units	Accred	
cis 1,3-Dichloropropene	VOCHSAW	1	µg/l	N	<1
Dibromochloromethane	VOCHSAW	1	µg/l	U	<1
Dibromomethane	VOCHSAW	1	µg/l	U	<1
Dichlorodifluoromethane	VOCHSAW	1	µg/l	N	<1
Ethylbenzene	VOCHSAW	1	µg/l	U	<1
Hexachlorobutadiene	VOCHSAW	5	µg/l	U	<5
iso-Propylbenzene	VOCHSAW	1	µg/l	U	<1
m and p-Xylene	VOCHSAW	1	µg/l	U	<1*
MTBE	VOCHSAW	1	µg/l	N	<1
Naphthalene	VOCHSAW	5	µg/l	U	<5
n-Butylbenzene	VOCHSAW	1	µg/l	U	<1
o-Xylene	VOCHSAW	1	µg/l	U	<1
p-Isopropyltoluene	VOCHSAW	1	µg/l	U	<1
Propylbenzene	VOCHSAW	1	µg/l	U	<1*
sec-Butylbenzene	VOCHSAW	1	µg/l	U	<1
Styrene	VOCHSAW	1	µg/l	U	<1
tert-Butylbenzene	VOCHSAW	1	µg/l	U	<1
Tetrachloroethene	VOCHSAW	5	µg/l	U	<5
Toluene	VOCHSAW	1	µg/l	U	<1
trans 1,2-Dichloroethene	VOCHSAW	1	µg/l	U	<1
trans 1,3-Dichloropropene	VOCHSAW	1	µg/l	U	<1
Trichloroethene	VOCHSAW	5	µg/l	U	<5
Trichlorofluoromethane	VOCHSAW	1	µg/l	U	<1
Vinyl Chloride	VOCHSAW	1	µg/l	U	<1

Additional Report Notes

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
VOCHSAW	001	The Primary process control data associated with this Test has not wholly met the requirements of the Laboratory Quality Management System QMS with one or more target analytes falling outside acceptable limits. However the remaining data gives the Laboratory confidence that the test has performed satisfactorily and that the validity of the data may not have been significantly affected. However in line with our QMS policy we have removed accreditation, where applicable, from the affected analytes (Chloromethane) . These circumstances should be taken into consideration when utilising the data.
VOCHSAW	001	The Secondary process control data associated with this Test has not wholly met the requirements of the Laboratory Quality Management System QMS with one or more target analytes falling outside acceptable limits. However the remaining data gives the Laboratory confidence that the test has performed satisfactorily (including the Primary Process Control) and that the validity of the data may not have been significantly affected. However in line with our QMS policy we have removed accreditation , where applicable, from the affected analytes (Bromomethane, m and p-Xylene, Propylbenzene) . These circumstances should be taken into consideration when utilising the data.

HWOL Analysis

<u>Customer ID</u>	<u>Analysis</u>	<u>HWOL Code</u>	<u>ANALYSIS</u>	<u>Result</u>
WS9 EW1-1-EW-1.51-2.00	Total GRO C5-C10	HS_1D_Total		<0.100
WS9 EW1-1-EW-1.51-2.00	>C10-C12	EH_1D_Total		<0.01
WS9 EW1-1-EW-1.51-2.00	>C12-C16	EH_1D_Total		<0.01
WS9 EW1-1-EW-1.51-2.00	>C16-C21	EH_1D_Total		<0.01
WS9 EW1-1-EW-1.51-2.00	>C21-C35	EH_1D_Total		<0.01
WS9 EW1-1-EW-1.51-2.00	>C8-C10	EH_1D_Total		<0.01
WS9 EW1-1-EW-1.51-2.00	Total TPH >C8-C40	EH_1D_Total		0.02

Deviating Sample Report

Sample Reference	Text ID	Reported Name	Incorrect Container	Incorrect Label	Headspace	Incorrect/No Preservative	No Sampling Date	Holding Time
------------------	---------	---------------	---------------------	-----------------	-----------	---------------------------	------------------	--------------

Analysis Method

<u>Analysis</u>	<u>Analysis Type</u>	<u>Analysis Method</u>
GROHSA	ORGANIC	Unfiltered
ICPMSWT (Total)	METALS	Unfiltered
KONENS	INORGANIC	Filtered
PAHMSW	ORGANIC	Unfiltered
PHCONDW	INORGANIC	Unfiltered
SFAP	INORGANIC	Unfiltered
TPHFID	ORGANIC	Unfiltered
VOCHSAW	ORGANIC	Unfiltered



Client: SOCOTEC Consultancy South

Project Name: Cabbagefield Row, Havant

Project No: 21061058

Date Issued: 23/06/2021

Additional Information

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

Results within this report relate only to the samples tested.

In the accreditation column of analysis report the codes are as follows:

- U = UKAS accredited analysis
- M = MCERT accredited analysis
- N = Unaccredited analysis

Any units marked with ^ signify results are reported on a dry weight basis of 105° c

All Air Dried and Ground Samples (ADG) are oven dried at less than 35° c.

This report shall not be reproduced except in full and with approval from the laboratory.

Opinions and interpretations given are outside the scope of our UKAS accreditation.

Any samples marked with * are not covered by our scope of UKAS accreditation. If applicable, further report notes have been added.

Any solid samples where the Major Constituents are not one of the following (Sand, Silt, Clay, Made Ground) are not one of our accredited matrix types.

Any samples marked with ‡ have had MCERTS accreditation removed for this result

Any samples marked with a tick in the deviant table is deviant for the specific reason.

Any samples reported as IS, NA, ND mean the following:

- IS = Insufficient Sample to complete analysis
- NA = Sample is not amenable for the required analysis
- ND = Results cannot be determined

Our deviating sample report does not include deviancy information for Subcontracted analysis. Please see the report from the Subcontracted lab for information regarding any deviancies for this analysis.

HWOL Acronym Key

<u>Acronym</u>	<u>Description</u>
HS	Headspace Analysis
EH	Extractable Hydrocarbons - i.e everything extracted by the solvent(s)
CU	Clean up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
+	Operator to indicate cumulative e.g. EH_CU+HS_1D_Total

End of Certificate of Analysis



SOCOTEC

Environmental Chemistry
SOCOTEC UK
Ashby Rd, Bretby,
Burton-on-Trent, UK
DE15 0YZ

Certificate of Analysis

Project No: 21062006

Client: SOCOTEC Consultancy South

Quote Number: BEC210316946

Project Reference: STH1016

Site Name: Cabbagefield Row, Havant

Contact: Dave Heasman

Address: Glossop House
Hogwood Lane Industrial Estate
Finchampstead
Wokingham

Post Code: RG40 4QW

E-Mail: Dave.Heasman@socotec.com

Phone No: 02475 310 700

Number of Samples Received: 3

Date Received: 26/06/2021

Analysis Date: 05/07/2021

Date Issued: 05/07/2021

Job Status: Complete

Report Type: Final Version 01

This report supersedes any versions previously issued by the laboratory

Account Manager
Martin Elliott-Palmer

Authorised by the Operations Manager
Becky Batham



Client: SOCOTEC Consultancy South

Project Name: Cabbagefield Row, Havant

Project No: 21062006

Date Issued: 05/07/2021

Samples Analysed

<u>Sample Reference</u>	<u>Text ID</u>	<u>Sample Date</u>	<u>Sample Type</u>	<u>Sample Description</u>
WS9 EW1-1-EW-0.97-3.00	21062006-001	23/06/2021 14:14:00	WATER	Ground Water
WS4 EW1-1-EW-1.89-3.50	21062006-002	23/06/2021 14:25:00	WATER	Ground Water
WS5 EW1-1-EW-2.93-3.50	21062006-003	23/06/2021 14:45:00	WATER	Ground Water

Analysis Results

					Project ID		
					21062006		
					Sample ID	001	002
					Customer ID	WS3 EW1-1-EW-0.97-3.00	WS4 EW1-1-EW-1.89-3.50
					Sample Type	WATER	WATER
					Sampling Date	23/06/2021	23/06/2021
Analysis	Method Code	MDL	Units	Accred			
pH	PHCONDW	1	pH units	U	7.4	7.0	6.9
Chromium (VI) as Cr	KONENS	0.003	mg/l	U	<0.003	<0.003	<0.003
Phenol Index	SFAPi	0.05	mg/l	U	<0.05	<0.05	<0.05
Total Cyanide	SFAPi	0.02	mg/l	U	<0.02	<0.02	<0.02
Arsenic as As	ICPMSWT (Total)	0.001	mg/l	U	0.002	0.001	0.005
Cadmium as Cd	ICPMSWT (Total)	0.00002	mg/l	U	0.00013	0.00009	0.00091
Total Chromium as Cr	ICPMSWT (Total)	0.001	mg/l	U	0.001	0.002	0.018
Copper as Cu	ICPMSWT (Total)	0.001	mg/l	U	0.008	0.004	0.030
Lead as Pb	ICPMSWT (Total)	0.001	mg/l	U	0.004	0.003	0.030
Nickel as Ni	ICPMSWT (Total)	0.001	mg/l	U	0.008	0.007	0.054
Selenium as Se	ICPMSWT (Total)	0.001	mg/l	U	<0.001	<0.001	0.003
Mercury as Hg	ICPMSWT (Total)	0.00003	mg/l	U	<0.00003	<0.00003	<0.00003
Zinc as Zn	ICPMSWT (Total)	0.002	mg/l	U	0.014	0.016	0.097
Total GRO C5-C10	GROHSA	0.1	mg/l	U	<0.100	<0.100	<0.100
Acenaphthene	PAHMSW	0.01	µg/l	U	<0.01	<0.01	<0.01
Acenaphthylene	PAHMSW	0.01	µg/l	U	<0.01	<0.01	<0.01
Anthracene	PAHMSW	0.01	µg/l	U	<0.01	<0.01	<0.01
Benzo[a]anthracene	PAHMSW	0.01	µg/l	U	<0.01	<0.01	<0.01
Benzo[a]pyrene	PAHMSW	0.01	µg/l	U	<0.01	<0.01	<0.01
Benzo[b]fluoranthene	PAHMSW	0.01	µg/l	U	<0.01	<0.01	<0.01
Benzo[g,h,i]perylene	PAHMSW	0.01	µg/l	U	<0.01*	<0.01*	<0.01*
Benzo[k]fluoranthene	PAHMSW	0.01	µg/l	U	<0.01	<0.01	<0.01
Chrysene	PAHMSW	0.01	µg/l	U	<0.01	<0.01	<0.01
Dibenzo[a,h]anthracene	PAHMSW	0.01	µg/l	U	<0.01	<0.01	<0.01

Analysis Results

					Project ID	21062006		
					Sample ID	001	002	003
					Customer ID	WS3 EW1-1-EW-0.97-3.00	WS4 EW1-1-EW-1.89-3.50	WS5 EW1-1-EW-2.93-3.50
					Sample Type	WATER	WATER	WATER
					Sampling Date	23/06/2021	23/06/2021	23/06/2021
Analysis	Method Code	MDL	Units	Accred				
Fluoranthene	PAHMSW	0.01	µg/l	U	<0.01	<0.01	<0.01	<0.01
Fluorene	PAHMSW	0.01	µg/l	U	<0.01	<0.01	<0.01	<0.01
Indeno[1,2,3-cd]pyrene	PAHMSW	0.01	µg/l	U	<0.01	<0.01	<0.01	<0.01
Naphthalene	PAHMSW	0.01	µg/l	U	0.01	0.01	<0.01	<0.01
Phenanthrene	PAHMSW	0.01	µg/l	U	<0.01	<0.01	<0.01	<0.01
Pyrene	PAHMSW	0.01	µg/l	U	<0.01	<0.01	<0.01	<0.01
Total PAH 16	PAHMSW	0.16	µg/l	U	0.16	0.16	<0.16	<0.16
>C10-C12	TPHFID	0.01	mg/l	U	<0.01	<0.01	<0.01	<0.01
>C12-C16	TPHFID	0.01	mg/l	U	<0.01	<0.01	<0.01	<0.01
>C16-C21	TPHFID	0.01	mg/l	U	<0.01	<0.01	<0.01	<0.01
>C21-C35	TPHFID	0.01	mg/l	U	0.02	<0.01	<0.01	<0.01
>C35-C40	TPHFID	0.01	mg/l	U	<0.01	<0.01	<0.01	<0.01
Total TPH >C8-C40	TPHFID	0.01	mg/l	U	0.02	<0.01	<0.01	0.01
1,1,1,2-Tetrachloroethane	VOCHSAW	1	µg/l	U	<1	<1	<1	<1
1,1,1-Trichloroethane	VOCHSAW	1	µg/l	U	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	VOCHSAW	1	µg/l	N	<1	<1	<1	<1
1,1,2-Trichloroethane	VOCHSAW	1	µg/l	U	<1	<1	<1	<1
1,1-Dichloroethane	VOCHSAW	1	µg/l	U	<1	<1	<1	<1
1,1-Dichloroethene	VOCHSAW	1	µg/l	U	<1	<1	<1	<1
1,1-Dichloropropane	VOCHSAW	1	µg/l	U	<1	<1	<1	<1
1,2,3-Trichlorobenzene	VOCHSAW	5	µg/l	U	<5	<5	<5	<5
1,2,3-Trichloropropane	VOCHSAW	1	µg/l	U	<1	<1	<1	<1
1,2,4-Trichlorobenzene	VOCHSAW	5	µg/l	U	<5	<5	<5	<5
1,2,4-Trimethylbenzene	VOCHSAW	1	µg/l	U	<1	<1	<1	<1

Analysis Results

Project ID					21062006		
Sample ID					001	002	003
Customer ID					WS3 EW1-1-EW-0.97-3.00	WS4 EW1-1-EW-1.89-3.50	WS5 EW1-1-EW-2.93-3.50
Sample Type					WATER	WATER	WATER
Sampling Date					23/06/2021	23/06/2021	23/06/2021
Analysis	Method Code	MDL	Units	Accred			
1,2-Dibromo-3-chloropropane	VOCHSAW	5	µg/l	U	<5	<5	<5
1,2-Dibromoethane	VOCHSAW	1	µg/l	U	<1	<1	<1
1,2-Dichlorobenzene	VOCHSAW	5	µg/l	U	<5*	<5*	<5*
1,2-Dichloroethane	VOCHSAW	1	µg/l	U	<1	<1	<1
1,2-Dichloropropane	VOCHSAW	1	µg/l	U	<1	<1	<1
1,3,5-Trimethylbenzene	VOCHSAW	1	µg/l	U	<1	<1	<1
1,3-Dichlorobenzene	VOCHSAW	1	µg/l	U	<1	<1	<1
1,3-Dichloropropane	VOCHSAW	1	µg/l	N	<1	<1	<1
1,4-Dichlorobenzene	VOCHSAW	1	µg/l	U	<1*	<1*	<1*
2,2-Dichloropropane	VOCHSAW	1	µg/l	N	<1	<1	<1
2-Chlorotoluene	VOCHSAW	1	µg/l	U	<1	<1	<1
4-Chlorotoluene	VOCHSAW	1	µg/l	U	<1	<1	<1
Benzene	VOCHSAW	1	µg/l	U	<1	<1	<1
Bromobenzene	VOCHSAW	1	µg/l	U	<1	<1	<1
Bromochloromethane	VOCHSAW	1	µg/l	U	<1	<1	<1
Bromodichloromethane	VOCHSAW	1	µg/l	U	<1	<1	<1
Bromoform	VOCHSAW	1	µg/l	U	<1*	<1*	<1*
Bromomethane	VOCHSAW	5	µg/l	N	<5	<5	<5
Carbon Tetrachloride	VOCHSAW	1	µg/l	U	<1	<1	<1
Chlorobenzene	VOCHSAW	1	µg/l	U	<1	<1	<1
Chloroethane	VOCHSAW	5	µg/l	U	<5	<5	<5
Chloroform	VOCHSAW	5	µg/l	U	<5	<5	<5
Chloromethane	VOCHSAW	1	µg/l	U	<1	<1	<1
cis 1,2-Dichloroethene	VOCHSAW	5	µg/l	U	<5	<5	<5

Analysis Results

					Project ID	21062006		
					Sample ID	001	002	003
					Customer ID	WS3 EW1-1-EW-0.97-3.00	WS4 EW1-1-EW-1.89-3.50	WS5 EW1-1-EW-2.93-3.50
					Sample Type	WATER	WATER	WATER
					Sampling Date	23/06/2021	23/06/2021	23/06/2021
Analysis	Method Code	MDL	Units	Accred				
cis 1,3-Dichloropropene	VOCHSAW	1	µg/l	N	<1	<1	<1	<1
Dibromochloromethane	VOCHSAW	1	µg/l	U	<1	<1	<1	<1
Dibromomethane	VOCHSAW	1	µg/l	U	<1	<1	<1	<1
Dichlorodifluoromethane	VOCHSAW	1	µg/l	N	<1	<1	<1	<1
Ethylbenzene	VOCHSAW	1	µg/l	U	<1	<1	<1	<1
Hexachlorobutadiene	VOCHSAW	5	µg/l	U	<5	<5	<5	<5
iso-Propylbenzene	VOCHSAW	1	µg/l	U	<1	<1	<1	<1
m and p-Xylene	VOCHSAW	1	µg/l	U	<1	<1	<1	<1
MTBE	VOCHSAW	1	µg/l	N	<1	<1	<1	<1
Naphthalene	VOCHSAW	5	µg/l	U	<5	<5	<5	<5
n-Butylbenzene	VOCHSAW	1	µg/l	U	<1	<1	<1	<1
o-Xylene	VOCHSAW	1	µg/l	U	<1	<1	<1	<1
p-Isopropyltoluene	VOCHSAW	1	µg/l	U	<1	<1	<1	<1
Propylbenzene	VOCHSAW	1	µg/l	U	<1	<1	<1	<1
sec-Butylbenzene	VOCHSAW	1	µg/l	U	<1	<1	<1	<1
Styrene	VOCHSAW	1	µg/l	U	<1	<1	<1	<1
tert-Butylbenzene	VOCHSAW	1	µg/l	U	<1	<1	<1	<1
Tetrachloroethene	VOCHSAW	5	µg/l	U	<5	<5	<5	<5
Toluene	VOCHSAW	1	µg/l	U	<1	<1	<1	<1
trans 1,2-Dichloroethene	VOCHSAW	1	µg/l	U	<1	<1	<1	<1
trans 1,3-Dichloropropene	VOCHSAW	1	µg/l	U	<1	<1	<1	<1
Trichloroethene	VOCHSAW	5	µg/l	U	<5	<5	<5	<5
Trichlorofluoromethane	VOCHSAW	1	µg/l	U	<1	<1	<1	<1
Vinyl Chloride	VOCHSAW	1	µg/l	U	<1*	<1*	<1*	<1*

Additional Report Notes

[illegible]

HWOL Analysis

<u>Customer ID</u>	<u>Analysis</u>	<u>HWOL Code</u> <u>ANALYSIS</u>	<u>Result</u>
WS9 EW1-1-EW-0.97-3.00	Total GRO C5-C10	HS_1D_Total	<0.100
WS9 EW1-1-EW-0.97-3.00	>C10-C12	EH_1D_Total	<0.01
WS9 EW1-1-EW-0.97-3.00	>C12-C16	EH_1D_Total	<0.01
WS9 EW1-1-EW-0.97-3.00	>C16-C21	EH_1D_Total	<0.01
WS9 EW1-1-EW-0.97-3.00	>C21-C35	EH_1D_Total	0.02
WS9 EW1-1-EW-0.97-3.00	>C8-C10	EH_1D_Total	<0.01
WS9 EW1-1-EW-0.97-3.00	Total TPH >C8-C40	EH_1D_Total	0.02
WS4 EW1-1-EW-1.89-3.50	Total GRO C5-C10	HS_1D_Total	<0.100
WS4 EW1-1-EW-1.89-3.50	>C10-C12	EH_1D_Total	<0.01
WS4 EW1-1-EW-1.89-3.50	>C12-C16	EH_1D_Total	<0.01
WS4 EW1-1-EW-1.89-3.50	>C16-C21	EH_1D_Total	<0.01
WS4 EW1-1-EW-1.89-3.50	>C21-C35	EH_1D_Total	<0.01
WS4 EW1-1-EW-1.89-3.50	>C8-C10	EH_1D_Total	<0.01
WS4 EW1-1-EW-1.89-3.50	Total TPH >C8-C40	EH_1D_Total	<0.01
WS5 EW1-1-EW-2.93-3.50	Total GRO C5-C10	HS_1D_Total	<0.100
WS5 EW1-1-EW-2.93-3.50	>C10-C12	EH_1D_Total	<0.01
WS5 EW1-1-EW-2.93-3.50	>C12-C16	EH_1D_Total	<0.01
WS5 EW1-1-EW-2.93-3.50	>C16-C21	EH_1D_Total	<0.01
WS5 EW1-1-EW-2.93-3.50	>C21-C35	EH_1D_Total	<0.01
WS5 EW1-1-EW-2.93-3.50	>C8-C10	EH_1D_Total	<0.01
WS5 EW1-1-EW-2.93-3.50	Total TPH >C8-C40	EH_1D_Total	0.01

Deviating Sample Report

Sample Reference	Text ID	Reported Name	Incorrect Container	Incorrect Label	Headspace	Incorrect/No Preservative	No Sampling Date	Holding Time
------------------	---------	---------------	---------------------	-----------------	-----------	---------------------------	------------------	--------------



Client: SOCOTEC Consultancy South

Project Name: Cabbagefield Row, Havant

Project No: 21062006

Date Issued: 05/07/2021

Analysis Method

Analysis

GROHSA
ICPMSWT (Total)
KONENS
PAHMSW
PHCONDW
SFAP
TPHFID
VOCHSAW

Analysis Type

ORGANIC
METALS
INORGANIC
ORGANIC
INORGANIC
INORGANIC
ORGANIC
ORGANIC

Analysis Method

Unfiltered
Unfiltered
Filtered
Unfiltered
Unfiltered
Unfiltered
Unfiltered
Unfiltered



Client: SOCOTEC Consultancy South

Project Name: Cabbagefield Row, Havant

Project No: 21062006

Date Issued: 05/07/2021

Additional Information

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

Results within this report relate only to the samples tested.

In the accreditation column of analysis report the codes are as follows:

- U = UKAS accredited analysis
- M = MCERT accredited analysis
- N = Unaccredited analysis

Any units marked with ^ signify results are reported on a dry weight basis of 105° c

All Air Dried and Ground Samples (ADG) are oven dried at less than 35° c.

This report shall not be reproduced except in full and with approval from the laboratory.

Opinions and interpretations given are outside the scope of our UKAS accreditation.

Any samples marked with * are not covered by our scope of UKAS accreditation. If applicable, further report notes have been added.

Any solid samples where the Major Constituents are not one of the following (Sand, Silt, Clay, Made Ground) are not one of our accredited matrix types.

Any samples marked with ‡ have had MCERTS accreditation removed for this result

Any samples marked with a tick in the deviant table is deviant for the specific reason.

Any samples reported as IS, NA, ND mean the following:

- IS = Insufficient Sample to complete analysis
- NA = Sample is not amenable for the required analysis
- ND = Results cannot be determined

Our deviating sample report does not include deviancy information for Subcontracted analysis. Please see the report from the Subcontracted lab for information regarding any deviancies for this analysis.

HWOL Acronym Key

<u>Acronym</u>	<u>Description</u>
HS	Headspace Analysis
EH	Extractable Hydrocarbons - i.e everything extracted by the solvent(s)
CU	Clean up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
+	Operator to indicate cumulative e.g. EH_CU+HS_1D_Total

End of Certificate of Analysis



SOCOTEC

Environmental Chemistry
SOCOTEC UK
Ashby Rd, Bretby,
Burton-on-Trent, UK
DE15 0YZ

Certificate of Analysis

Project No: 21071178

Client: SOCOTEC Consultancy South

Quote Number: BEC210720596

Project Reference: STH1016 (schedule rev 00)

Site Name: Cabbagefield Row, Havant

Contact: Simon Mason

Address: Glossop House
Hogwood Lane Industrial Estate
Finchampstead
Wokingham

Post Code: RG40 4QW

E-Mail: Simon.Mason@socotec.com

Phone No: 01189 324 470

Number of Samples Received: 1

Date Received: 16/07/2021

Analysis Date: 26/07/2021

Date Issued: 26/07/2021

Job Status: Complete

Report Type: Final Version 01

This report supersedes any versions previously issued by the laboratory

Account Manager
Martin Elliott-Palmer

Authorised by the Operations Manager
Becky Batham



Client: SOCOTEC Consultancy South

Project Name: Cabbagefield Row,Havant

Project No: 21071178

Date Issued: 26/07/2021

Samples Analysed

<u>Sample Reference</u>	<u>Text ID</u>	<u>Sample Date</u>	<u>Sample Type</u>	<u>Sample Description</u>
WS5 EW1-1-EW-0.86-3.00	21071178-001	13/07/2021 13:10:00	WATER	Ground Water

Analysis Results

Project ID	21071178
Sample ID	001
Customer ID	WS5 EW1-1-EW-0.86-3.00
Sample Type	WATER
Sampling Date	13/07/2021

Analysis	Method Code	MDL	Units	Accred	
pH	PHCONDW	1	pH units	U	7.0
Chromium (VI) as Cr	KONENS	0.003	mg/l	U	<0.003
Phenol Index	SFAPi	0.05	mg/l	U	<0.05
Total Cyanide	SFAPi	0.02	mg/l	U	0.02
Arsenic as As	ICPMSW (Dissolved)	0.001	mg/l	U	<0.001
Cadmium as Cd	ICPMSW (Dissolved)	0.00002	mg/l	U	0.00006
Total Chromium as Cr	ICPMSW (Dissolved)	0.001	mg/l	U	<0.001
Copper as Cu	ICPMSW (Dissolved)	0.001	mg/l	U	0.002
Lead as Pb	ICPMSW (Dissolved)	0.001	mg/l	U	<0.001
Mercury as Hg	ICPMSW (Dissolved)	0.00003	mg/l	U	<0.00003
Nickel as Ni	ICPMSW (Dissolved)	0.001	mg/l	U	0.011
Selenium as Se	ICPMSW (Dissolved)	0.001	mg/l	U	0.012
Zinc as Zn	ICPMSW (Dissolved)	0.002	mg/l	U	0.011
Arsenic as As	ICPMSWT (Total)	0.001	mg/l	U	0.001
Cadmium as Cd	ICPMSWT (Total)	0.00002	mg/l	U	0.00009
Total Chromium as Cr	ICPMSWT (Total)	0.001	mg/l	U	<0.001
Copper as Cu	ICPMSWT (Total)	0.001	mg/l	U	0.003
Lead as Pb	ICPMSWT (Total)	0.001	mg/l	U	<0.001
Nickel as Ni	ICPMSWT (Total)	0.001	mg/l	U	0.011
Selenium as Se	ICPMSWT (Total)	0.001	mg/l	U	0.012
Mercury as Hg	ICPMSWT (Total)	0.00003	mg/l	U	<0.00003
Zinc as Zn	ICPMSWT (Total)	0.002	mg/l	U	0.017
Total GRO C5-C10	GROHSA	0.1	mg/l	U	<0.100
Acenaphthene	PAHMSW	0.01	µg/l	U	<0.01

Analysis Results

Project ID	21071178
Sample ID	001
Customer ID	WS5 EW1-1-EW-0.86-3.00
Sample Type	WATER
Sampling Date	13/07/2021

Analysis	Method Code	MDL	Units	Accred	
Acenaphthylene	PAHMSW	0.01	µg/l	U	<0.01
Anthracene	PAHMSW	0.01	µg/l	U	<0.01
Benzo[a]anthracene	PAHMSW	0.01	µg/l	U	<0.01
Benzo[a]pyrene	PAHMSW	0.01	µg/l	U	<0.01
Benzo[b]fluoranthene	PAHMSW	0.01	µg/l	U	<0.01
Benzo[g,h,i]perylene	PAHMSW	0.01	µg/l	U	<0.01
Benzo[k]fluoranthene	PAHMSW	0.01	µg/l	U	<0.01
Chrysene	PAHMSW	0.01	µg/l	U	<0.01
Dibenzo[a,h]anthracene	PAHMSW	0.01	µg/l	U	<0.01
Fluoranthene	PAHMSW	0.01	µg/l	U	<0.01
Fluorene	PAHMSW	0.01	µg/l	U	<0.01
Indeno[1,2,3-cd]pyrene	PAHMSW	0.01	µg/l	U	<0.01
Naphthalene	PAHMSW	0.01	µg/l	U	<0.01
Phenanthrene	PAHMSW	0.01	µg/l	U	<0.01
Pyrene	PAHMSW	0.01	µg/l	U	<0.01
Total PAH 16	PAHMSW	0.16	µg/l	U	<0.16
>C10-C12	TPHFID	0.01	mg/l	U	<0.01
>C12-C16	TPHFID	0.01	mg/l	U	<0.01
>C16-C21	TPHFID	0.01	mg/l	U	<0.01
>C21-C35	TPHFID	0.01	mg/l	U	0.02
>C8-C10	TPHFID	0.01	mg/l	U	<0.01
Total TPH >C8-C40	TPHFID	0.01	mg/l	U	0.03
1,1,1,2-Tetrachloroethane	VOCHSAW	1	µg/l	U	<1
1,1,1-Trichloroethane	VOCHSAW	1	µg/l	U	<1

Analysis Results

Project ID	21071178
Sample ID	001
Customer ID	WS5 EW1-1-EW-0.86-3.00
Sample Type	WATER
Sampling Date	13/07/2021

Analysis	Method Code	MDL	Units	Accred	
1,1,2,2-Tetrachloroethane	VOCHSAW	1	µg/l	N	<1
1,1,2-Trichloroethane	VOCHSAW	1	µg/l	U	<1
1,1-Dichloroethane	VOCHSAW	1	µg/l	U	<1
1,1-Dichloroethene	VOCHSAW	1	µg/l	U	<1
1,1-Dichloropropane	VOCHSAW	1	µg/l	U	<1
1,2,3-Trichlorobenzene	VOCHSAW	5	µg/l	U	<5
1,2,3-Trichloropropane	VOCHSAW	1	µg/l	U	<1
1,2,4-Trichlorobenzene	VOCHSAW	5	µg/l	U	<5
1,2,4-Trimethylbenzene	VOCHSAW	1	µg/l	U	<1
1,2-Dibromo-3-chloropropane	VOCHSAW	5	µg/l	U	<5
1,2-Dibromoethane	VOCHSAW	1	µg/l	U	<1
1,2-Dichlorobenzene	VOCHSAW	5	µg/l	U	<5
1,2-Dichloroethane	VOCHSAW	1	µg/l	U	<1
1,2-Dichloropropane	VOCHSAW	1	µg/l	U	<1
1,3,5-Trimethylbenzene	VOCHSAW	1	µg/l	U	<1
1,3-Dichlorobenzene	VOCHSAW	1	µg/l	U	<1
1,3-Dichloropropane	VOCHSAW	1	µg/l	N	<1
1,4-Dichlorobenzene	VOCHSAW	1	µg/l	U	<1
2,2-Dichloropropane	VOCHSAW	1	µg/l	N	<1
2-Chlorotoluene	VOCHSAW	1	µg/l	U	<1
4-Chlorotoluene	VOCHSAW	1	µg/l	U	<1
Benzene	VOCHSAW	1	µg/l	U	<1
Bromobenzene	VOCHSAW	1	µg/l	U	<1
Bromochloromethane	VOCHSAW	1	µg/l	U	<1

Analysis Results

Project ID	21071178
Sample ID	001
Customer ID	WS5 EW1-1-EW-0.86-3.00
Sample Type	WATER
Sampling Date	13/07/2021

Analysis	Method Code	MDL	Units	Accred	
Bromodichloromethane	VOCHSAW	1	µg/l	U	<1
Bromoform	VOCHSAW	1	µg/l	U	<1
Bromomethane	VOCHSAW	5	µg/l	N	<5
Carbon Tetrachloride	VOCHSAW	1	µg/l	U	<1
Chlorobenzene	VOCHSAW	1	µg/l	U	<1
Chloroethane	VOCHSAW	5	µg/l	U	<5
Chloroform	VOCHSAW	5	µg/l	U	<5
Chloromethane	VOCHSAW	1	µg/l	U	<1*
cis 1,2-Dichloroethene	VOCHSAW	5	µg/l	U	<5
cis 1,3-Dichloropropene	VOCHSAW	1	µg/l	N	<1
Dibromodichloromethane	VOCHSAW	1	µg/l	U	<1
Dibromomethane	VOCHSAW	1	µg/l	U	<1
Dichlorodifluoromethane	VOCHSAW	1	µg/l	N	<1
Ethylbenzene	VOCHSAW	1	µg/l	U	<1
Hexachlorobutadiene	VOCHSAW	5	µg/l	U	<5
iso-Propylbenzene	VOCHSAW	1	µg/l	U	<1
m and p-Xylene	VOCHSAW	1	µg/l	U	<1
MTBE	VOCHSAW	1	µg/l	N	<1
Naphthalene	VOCHSAW	5	µg/l	U	<5*
n-Butylbenzene	VOCHSAW	1	µg/l	U	<1
o-Xylene	VOCHSAW	1	µg/l	U	<1
p-Isopropyltoluene	VOCHSAW	1	µg/l	U	<1
Propylbenzene	VOCHSAW	1	µg/l	U	<1
sec-Butylbenzene	VOCHSAW	1	µg/l	U	<1

Analysis Results

Project ID	21071178
Sample ID	001
Customer ID	WS5 EW1-1-EW-0.86-3.00
Sample Type	WATER
Sampling Date	13/07/2021

Analysis	Method Code	MDL	Units	Accred	
Styrene	VOCHSAW	1	µg/l	U	<1
tert-Butylbenzene	VOCHSAW	1	µg/l	U	<1
Tetrachloroethene	VOCHSAW	5	µg/l	U	<5
Toluene	VOCHSAW	1	µg/l	U	<1
trans 1,2-Dichloroethene	VOCHSAW	1	µg/l	U	<1
trans 1,3-Dichloropropene	VOCHSAW	1	µg/l	U	<1
Trichloroethene	VOCHSAW	5	µg/l	U	<5
Trichlorofluoromethane	VOCHSAW	1	µg/l	U	<1
Vinyl Chloride	VOCHSAW	1	µg/l	U	<1*

Additional Report Notes

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
VOCHSAW	001	The Primary process control data associated with this Test has not wholly met the requirements of the Laboratory Quality Management System QMS with one or more target analytes falling outside acceptable limits. However the remaining data gives the Laboratory confidence that the test has performed satisfactorily and that the validity of the data may not have been significantly affected. However in line with our QMS policy we have removed accreditation, where applicable, from the affected analytes (Chloromethane) . These circumstances should be taken into consideration when utilising the data.
VOCHSAW	001	The Secondary process control data associated with this Test has not wholly met the requirements of the Laboratory Quality Management System QMS with one or more target analytes falling outside acceptable limits. However the remaining data gives the Laboratory confidence that the test has performed satisfactorily (including the Primary Process Control) and that the validity of the data may not have been significantly affected. However in line with our QMS policy we have removed accreditation , where applicable, from the affected analytes (Naphthalene, Vinyl Chloride) . These circumstances should be taken into consideration when utilising the data.

HWOL Analysis

<u>Customer ID</u>	<u>Analysis</u>	<u>HWOL Code</u>	<u>ANALYSIS</u>	<u>Result</u>
WS5 EW1-1-EW-0.86-3.00	Total GRO C5-C10	HS_1D_Total		<0.100
WS5 EW1-1-EW-0.86-3.00	>C10-C12	EH_1D_Total		<0.01
WS5 EW1-1-EW-0.86-3.00	>C12-C16	EH_1D_Total		<0.01
WS5 EW1-1-EW-0.86-3.00	>C16-C21	EH_1D_Total		<0.01
WS5 EW1-1-EW-0.86-3.00	>C21-C35	EH_1D_Total		0.02
WS5 EW1-1-EW-0.86-3.00	>C8-C10	EH_1D_Total		<0.01
WS5 EW1-1-EW-0.86-3.00	Total TPH >C8-C40	EH_1D_Total		0.03

Deviating Sample Report

Sample Reference	Text ID	Reported Name	Incorrect Container	Incorrect Label	Headspace	Incorrect/No Preservative	No Sampling Date	Holding Time
------------------	---------	---------------	---------------------	-----------------	-----------	---------------------------	------------------	--------------

Analysis Method

<u>Analysis</u>	<u>Analysis Type</u>	<u>Analysis Method</u>
GROHSA	ORGANIC	Unfiltered
ICPMSW (Dissolved)	METALS	Unfiltered
ICPMSWT (Total)	METALS	Unfiltered
KONENS	INORGANIC	Filtered
PAHMSW	ORGANIC	Unfiltered
PHCONDW	INORGANIC	Unfiltered
SFAPI	INORGANIC	Unfiltered
TPHFID	ORGANIC	Unfiltered
VOCHSAW	ORGANIC	Unfiltered

Additional Information

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

Results within this report relate only to the samples tested.

In the accreditation column of analysis report the codes are as follows:

- U = UKAS accredited analysis
- M = MCERT accredited analysis
- N = Unaccredited analysis

Any units marked with ^ signify results are reported on a dry weight basis of 105° c

All Air Dried and Ground Samples (ADG) are oven dried at less than 35° c.

This report shall not be reproduced except in full and with approval from the laboratory.

Opinions and interpretations given are outside the scope of our UKAS accreditation.

Any samples marked with * are not covered by our scope of UKAS accreditation. If applicable, further report notes have been added.

Any solid samples where the Major Constituents are not one of the following (Sand, Silt, Clay, Made Ground) are not one of our accredited matrix types.

Any samples marked with ‡ have had MCERTS accreditation removed for this result

Any samples marked with a tick in the deviant table is deviant for the specific reason.

Any samples reported as IS, NA, ND mean the following:

- IS = Insufficient Sample to complete analysis
- NA = Sample is not amenable for the required analysis
- ND = Results cannot be determined

Our deviating sample report does not include deviancy information for Subcontracted analysis. Please see the report from the Subcontracted lab for information regarding any deviancies for this analysis.

HWOL Acronym Key

<u>Acronym</u>	<u>Description</u>
HS	Headspace Analysis
EH	Extractable Hydrocarbons - i.e everything extracted by the solvent(s)
CU	Clean up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
+	Operator to indicate cumulative e.g. EH_CU+HS_1D_Total

End of Certificate of Analysis

APPENDIX E
GAS MONITORING DATA

Project No: STH1016
 Date: 09/06/2021
 Operator: MG, AC
 Equipment Used: Gas Data GFM 400

Project: Cabbagefield Row, Havant
 State of Ground: Damp
 Wind: Light
 Wind Direction: None
 Cloud Cover: None
 Precipitation: None

Atmospheric Pressure
 High and Falling

Borehole	Time of Reading (hh:mm:ss)	DIP Meter		LMSxi									
		Depth to Groundwater (mBGL)	Depth of Installation (mBGL)	Atmospheric Pressure (mbar)	Steady/ Peak Reading	Flow Rate (l/hr)	Differential Pressure (Pa)	CH ₄ (% LEL)	CH ₄ (% Vol)	CO ₂ (% Vol)	O ₂ (% Vol)	H ₂ S (ppm)	CO (ppm)
WS1		-	1.26	1020	Steady	0.01	0	0.0	0.0	0.5	20.8	0.0	0.0
					Peak	0.01	0	0.0	0.0	0.5	20.9	1.0	0.0
WS2		1.09	1.74	1018	Steady	0.01	0	0.0	0.0	0.0	21.4	0.0	0.0
					Peak	0.01	0	0.0	0.0	0.5	21.4	3.0	1.0
WS3		1.7	1.87	1018	Steady	0.11	0	0.0	0.0	2.1	19.8	0.0	0.0
					Peak	0.11	0	0.0	0.0	2.1	20.8	2.0	3.0
WS4		1.2	4	1017	Steady	0.01	0	0.0	0.0	0.8	20.7	0.0	0.0
					Peak	0.01	0	0.0	0.0	0.8	20.9	4.0	3.0
WS5		1.6	3.64	1018	Steady	0.01	0	0.0	0.0	0.9	20.6	-	-
					Peak	0.01	0	0.0	0.0	0.9	21.5	3.0	6.0
WS6		1.07	3.43	1017	Steady	0.01							
					Peak	0.01							
WS8		1.39	2.65	1017	Steady	0.01	0	0.0	0.0	0.9	20.5	1.0	1.0
					Peak	0.01	0	0.0	0.0	0.9	20.9	3.0	3.0
WS9		0.54	3.56	1019	Steady	0.01	0	0.0	0.0	0.6	20.7	-	-
					Peak	0.01	0	0.0	0.0	0.6	21.4	2.0	10.0

Comments:

Project No: STH1016
 Date: 23/06/2021
 Operator: MG
 Equipment Used: Gas Analyser LMSxi serial no. 5427

Project: Cabbagefield Row, Havant
 State of Ground: Dry
 Wind: Calm
 Wind Direction: None
 Cloud Cover: Slight
 Precipitation: None

Atmospheric Pressure
 High and Rising

Borehole	Time of Reading (hh:mm:ss)	DIP Meter		LMSxi									
		Depth to Groundwater (mBGL)	Depth of Installation (mBGL)	Atmospheric Pressure (mbar)	Steady/ Peak Reading	Flow Rate (l/hr)	Differential Pressure (Pa)	CH ₄ (% LEL)	CH ₄ (% Vol)	CO ₂ (% Vol)	O ₂ (% Vol)	H ₂ S (ppm)	CO (ppm)
WS1	1:20:00 PM	-	1.26	1016	Steady	0.01	0	0.0	0.0	0.5	20.8	0.0	0.0
					Peak	0.01	0	0.0	0.0	0.7	20.8	0.0	1.0
WS2	1:07:00 PM	0.9	1.24	1016	Steady	0.01	0	0.0	0.0	0.8	19.8	0.0	0.0
					Peak	0.01	0	0.0	0.0	1.6	20.2	1.0	0.0
WS3	12:54:00 PM	1.61	1.8	1016	Steady	0.11	0	0.0	0.0	1.7	17.2	0.0	0.0
					Peak	0.21	0	0.0	0.0	1.7	18.1	0.0	0.0
WS4	12:14:00 PM	1.13	4.02	1013	Steady	0.01	0.0	0.0	0.0	1.2	19.8	0.0	0.0
					Peak	0.01	0.0	0.0	0.0	1.3	20.8	0.0	0.0
WS5	12:40:00 PM	1.37	3.63	1016	Steady	0.01	0.0	0.0	0.0	1.2	19.3	0.0	0.0
					Peak	0.01	0.0	0.0	0.0	1.2	21.1	0.0	0.0
WS6	1:30:00 PM	0.5	3.19	1015	Steady	0.01	0.0	0.0	0.0	0.0	21.0	0.0	0.0
					Peak	0.01	0.0	0.0	0.0	0.7	21.0	0.0	0.0
WS8	11:58:00 AM	1.26	2.61	1012	Steady	0.01	0.0	0.0	0.0	0.8	19.9	0.0	0.0
					Peak	0.01	0.0	0.2	3.9	1.9	20.6	0.0	0.0
WS9	11:40:00 AM	0.97	3.39	1011	Steady	2.40	5.0	-	-	2.0	-	0.0	0.0
					Peak	2.40	5.0	0.8	16.5	2.1	20.6	0.0	0.0
WS9	1:40:00 PM	0.97	3.39	1014	Steady	1.21	3.0	0.0	0.0	3.4	-	0.0	0.0
					Peak	1.21	3.0	0.0	0.0	3.4	19.7	1.3	0.0

Comments:

Project No: STH1016
 Date: 13/07/2021
 Operator: MG
 Equipment Used: Gas Analyser LMSxi serial no. 5427

Project: Cabbagefield Row, Havant
 State of Ground: Damp
 Wind: Calm
 Wind Direction: None
 Cloud Cover: Slight
 Precipitation: None

Atmospheric Pressure
 Moderate and Rising

Borehole	Time of Reading (hh:mm:ss)	DIP Meter		LMSxi									
		Depth to Groundwater (mBGL)	Depth of Installation (mBGL)	Atmospheric Pressure (mbar)	Steady/ Peak Reading	Flow Rate (l/hr)	Differential Pressure (Pa)	CH ₄ (% LEL)	CH ₄ (% Vol)	CO ₂ (% Vol)	O ₂ (% Vol)	H ₂ S (ppm)	CO (ppm)
WS1		-	1.26		Steady	0.01	0	0.0	0.0	0.2	20.5	0.0	0.0
					Peak	0.01	0	0.0	0.0	0.3	20.8	0.0	0.0
WS2		0.6	1.24	1003	Steady	0.10	0	0.0	0.0	2.8	15.6	0.0	3.0
					Peak	0.10	0	0.0	0.0	2.8	16.0	0.0	4.6
WS3		1.54	1.8		Steady								
					Peak								
WS4		0.72	4	1004	Steady	0.10	0.0	0.0	0.0	2.0	17.1	0.0	0.0
					Peak	0.11	0.0	0.0	0.0	2.0	20.3	0.0	0.0
WS5		0.82	3.6	1005	Steady	0.10	0.0	0.0	0.0	1.9	18.5	0.0	0.0
					Peak	0.10	0.0	0.0	0.0	2.0	21.0	0.0	0.0
WS6		0.4	3.18	1007	Steady	0.01	0.0	0.0	0.0	0.0	20.7	0.0	0.0
					Peak	0.01	0.0	0.0	0.0	0.0	20.8	0.0	0.0
WS8					Steady								
					Peak								
WS9		0.94	3.48		Steady								
					Peak								

Comments: