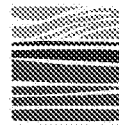


Our Ref: RJ/MS/JT0126
Your Ref:



ST Consult
Environmental & Geotechnical

ST Consult
Unit 5, Hannington Farm, Hannington
Kingsclere, Hampshire, RG26 5TZ

28 November 2017

Vinery Management Ltd
Church House farm
Clewers Hill
Waltham Chase
Southampton
Hants
SO32 2LN

ST Consult is a regional office of Southern Testing Laboratories Ltd.
Regional Manager: Robert Jaggie BSc (Hons) MSc FGS MEnvSc CSci

For the attention of Paul Airey

Dear Sirs,

Re: Soil Testing: The Vinery Industrial Estate, Arundel Road, Poling, Arundel, BN18 9PY
National Grid Reference: TQ 05055 05553
Geology: River Terrace over Lambeth Group

1 Introduction

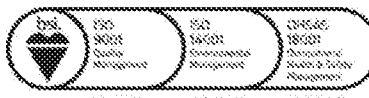
Further to your acceptance of our quotation Ref. RJ/Q171939 dated 13th October 2017, and our subsequent site visit, we are hereby pleased to present details of our assessment.

The site is located within the Vinery approximately 3km to the southeast of Arundel Railway station, on the southern side of A27 in Arundel. It is proposed to construct a car park in an area currently covered by soft landscaping.

2 Site Description

The site comprises a roughly rectangular earthen stockpile to the south west of multiple low rise industrial buildings forming part of the wider 'Vinery' industrial estate. The stockpile rises in height from approximately 0.5/1m to the east to 3m to the west. The pile is generally vegetated with grasses and nettles, with the density of growth greater in the southern half of the stockpile. A mature Oak tree is situated immediately to the south of the pile, with the southern edge of the pile partially encircling it.

Sporadic building waste was evident on the surface of the pile, including metal pipework, brick rubble and occasional large concrete slabs. Along the northern base of the pile was observed multiple stumps of recently felled trees. Also within the northern face were multiple animal burrows.



FS 29280 EMS 506775 OHS 506776

3 Proposed Development

It is understood that a car park is proposed to be constructed on the site approximately 50m away from the stockpile. The stockpile material is being considered to be used to raise ground levels at the proposed car park location. Chemical analysis was therefore required to assess the suitability of the soil for the proposed use.

4 Scope

This letter report presents our test results and our interpretation of these data.

Any contamination screening values used are valid at the time of writing but may be subject to change and any such changes will have implications for the assessments based upon them.

The site investigation was conducted and this report has been prepared for the sole internal use and reliance of Vinery Management Ltd and their appointed Engineers. This report shall not be relied upon or transferred to any other parties without the express written authorization of ST Consult. If an unauthorised third party comes into possession of this report they rely on it at their peril and the authors owe them no duty of care and skill.

Recommendations contained in this report may not be appropriate to alternative development schemes.

5 Fieldwork

An engineer from ST Consult attended site on 26th October 2017 and collected 3 No composite samples from various depths (from the top of the pile to 3m deep) within six trial pits excavated using a machine excavator.

The soil encountered generally comprised dark brown mottled grey gravelly sandy Clay with frequent cobble sized brick, occasional concrete slab and other foreign matter including metal wire, rebar, cloth, plastic, glass and wooden railway sleeper.

The sampling locations are shown on Fig 1 and detailed description of the soils is included in Appendix A.

6 Chemical Laboratory Analysis

All samples were scheduled for laboratory testing including metals/metalloids, polycyclic aromatic hydrocarbons (PAHs), asbestos and petroleum hydrocarbons. The results of the analysis are presented in Appendix B of this report. WAC analysis was also carried out on two composite samples.

7 Contamination Assessment

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

The CLEA model¹ provides a methodology for quantitative assessment of the long term risks posed to human health by exposure to contaminated soils. Toxicological data is used to calculate a Soil Guideline Value (SGV) for an individual contaminant, based on the proposed site use; these represent minimal risk concentrations and may be used as screening values.

In the absence of any published SGVs for certain substances, Southern Testing have derived or adopted Tier 1 screening values for initial assessment of the soil, based on available current UK guidance including the LQM/CIEH² S4UL's and CL:AIRE³ generic assessment criteria. In addition, in March 2014, DEFRA⁴ published the results of a research programme to develop screening values to assist decision making under Part 2A of the Environmental Protection Act. Category 4 screening levels were published for 6 substances, with reference to human health risk only. This guidance includes revisions of the CLEA exposure parameters, presenting parameters for public open space land use scenarios, and of the toxicological approach. The screening levels represent a low risk scenario, based on a 'Low Level of Toxicological Concern' rather than the 'Minimal Risk' of CLEA, and the analytical results of this investigation may be considered relative to these levels.

The values used are valid at the time of writing but may be subject to change and any such changes will have implications for the assessments based upon them. Their validity should be confirmed at the time of site development.

7.1 Human Health Risk Assessment (Soil Analysis)

A human health risk assessment screening was carried out on the chemical results. Given the location of the stockpile and the proposed end use of the material to raise ground level for a car park, the analytical results have been compared with generic assessment criteria (GAC) for **Industrial land use (CLEA model⁵/C4SL report⁶)**. A summary data is presented in the tables below and the laboratory analysis is included in Appendix B. The screening values and source notes are presented in Table 1 "Tier 1 Screening Values" attached to this letter.

Contaminants	Units	SP1 (composite) @ 2.0m-2.5m	SP2 (composite) @ 1.0m-1.5m	SP3 (composite) @ 0.3m-0.5m	Industrial/Commercial) Tier 1 Screening Value
Arsenic (As)	mg/kg	22	13	13	640
Cadmium (Cd)	mg/kg	< 0.2	< 0.2	< 0.2	190
Total Chromium (Cr)	mg/kg	24	27	25	8600
Hexavalent Chromium (CrVI)	mg/kg	< 4.0	< 4.0	< 4.0	33
Lead (Pb)	mg/kg	200	490	320	2330
Mercury (Hg)	mg/kg	< 0.3	< 0.3	< 0.3	29
Selenium (Se)	mg/kg	< 1.0	< 1.0	< 1.0	12,000
Nickel (Ni)	mg/kg	30	19	21	980
Copper (Cu)	mg/kg	64	38	34	68,000
Zinc (Zn)	mg/kg	180	150	140	730,000

¹ Environment Agency Publication SC050021/SR3 'Updated technical background to the CLEA Model' (2009).

² The LQM/CIEH S4ULs for Human Health Risk Assessment. (2014).

³ The EIC/AGS/CL:AIRE Soil Generic Assessment Criteria for Human Health Risk Assessment (2009).

⁴ SP1010 Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination. DEFRA, 2014.

⁵ Environment Agency Publication SC050021/SR3 'Updated technical background to the CLEA Model' (2009).

⁶ SP1010 Development of Category 4 Screening Levels DEFRA (2014)

Phenol	mg/kg	< 1	< 1	< 1	440
Benzo[a]pyrene	mg/kg	0.69	< 0.05	< 0.05	36
Naphthalene	mg/kg	< 0.05	< 0.05	< 0.05	77
Total Cyanide (CN)	mg/kg	< 1	< 1	< 1	640
Acidity (pH value)	Units	8.2	8.1	7.9	190
Soil Organic Matter	%	3.3	3.9	3.2	8600
Asbestos	%	Loose chrysotile fibres (<0.001)	Loose chrysotile fibres (<0.001)	Loose chrysotile fibres (<0.001)	0.001

The chemical analysis carried out on the three composite samples recovered from the stockpile recorded no elevated concentrations, relative to the screening values for industrial/commercial land use scenario.

Organic Compounds

Two of the samples were analysed for extractable petroleum hydrocarbons (C6-C40) and a single sample for aliphatic/aromatic split petroleum hydrocarbons including BTEX. The fractions of petroleum hydrocarbon concentrations reported were generally below laboratory detection limit. The concentrations of those fractions recorded above the detection limits were less the LQM/CIEH S4UL (2014) assessment criteria.

7.2 Leachate Analysis

Leachate analysis carried out on two composite samples recovered from the stockpile The results of the leachate analysis have been compared with Environmental Quality Standards (EQS) as shown in the table below.

Contaminants	Units	Measured concentration		Target Concentration (Ct) (EQS)
		SP2 (composite) @ 1.0m-1.5m	SP3 (composite) @ 0.3m-0.5m	
Metals				
Arsenic (dissolved)	ug/l	6.3	4.2	50
Cadmium (dissolved)	ug/l	< 0.1	< 0.1	0.2
Chromium (dissolved)	ug/l	0.9	0.8	4.7
Copper (dissolved)	ug/l	10	13	112
Lead (dissolved)	ug/l	8.4	5.2	1.2
Mercury (dissolved)	ug/l	< 0.5	< 0.5	0.07
Nickel (dissolved)	ug/l	1.7	1.2	4
Selenium (dissolved)	ug/l	< 4	< 4	10
Zinc (dissolved)	ug/l	8.6	9.7	500
Sulphate	mg/l	6.2	7.3	400
Chloride	mg/l	1.9	1.8	250

None of the leachable contaminant concentrations in the soil is considered sufficiently significant to pose any significant risk to controlled waters.

8 Suitability of material for reuse on site

The results of the solid phase chemical analysis carried out on both topsoil and made ground recorded no significant concentrations of the contaminants of concern, relative to the proposed end-use. Although traces of asbestos fibres were in the soil, the material could be considered suitable for reuse provided adequate human health protection/control measures are adopted in order to break the inhalation pathway.

The leachable concentrations of contaminants of concern recorded were also recorded below the EQS value.

Notwithstanding the above, the stockpile material was described as containing cobble sized brick, occasional concrete slab and other foreign matter including metal wire, rebar, cloth, plastic, glass, wooden railway sleeper. It is therefore recommended that prior to reuse, screening is carried out to remove all the unsuitable foreign materials.

This report relates to suitability or otherwise of the soil based on the contaminant concentration. No request has been made for assessment of engineering properties of this soil, and no such assessment has been made.

It is recommended that the reuse of these materials be carried out in accordance with the Materials Management Plan (MMP) prepared under the CLA:RE "The Definition of Waste: Development Industry Code of Practice.

During the movement of the materials and during the construction, all personnel should comply with appropriate health and safety measures by wearing correct personal protective equipment.

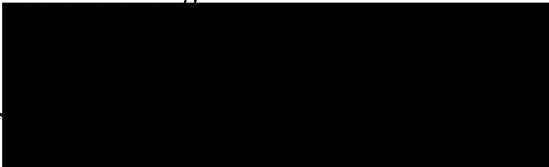
We would recommend that a careful watch is kept, as part of a discovery strategy, for any more significant contamination that may come to light as the material is being moved. This is particularly the case with asbestos, as low concentrations have already been identified in the samples screened, but any other contamination as well. Should any more significant contamination come to light, this will mean that additional assessment is required.

9 Waste Disposal

It is anticipated that some soils will require removal from site and disposal to suitably licensed landfills. As waste producers, the Developer holds responsibilities under the various governing regulations. Based on the results of the chemical analysis carried out and the presence of traces of asbestos fibres (<0.001% by weight), the materials represented by test soils could be disposed of as Non-Hazardous waste. The test results should be presented to the waste disposal facility for their final decision.

We trust that the above meets your requirements but if you have any queries please do not hesitate to contact us.

Yours faithfully,



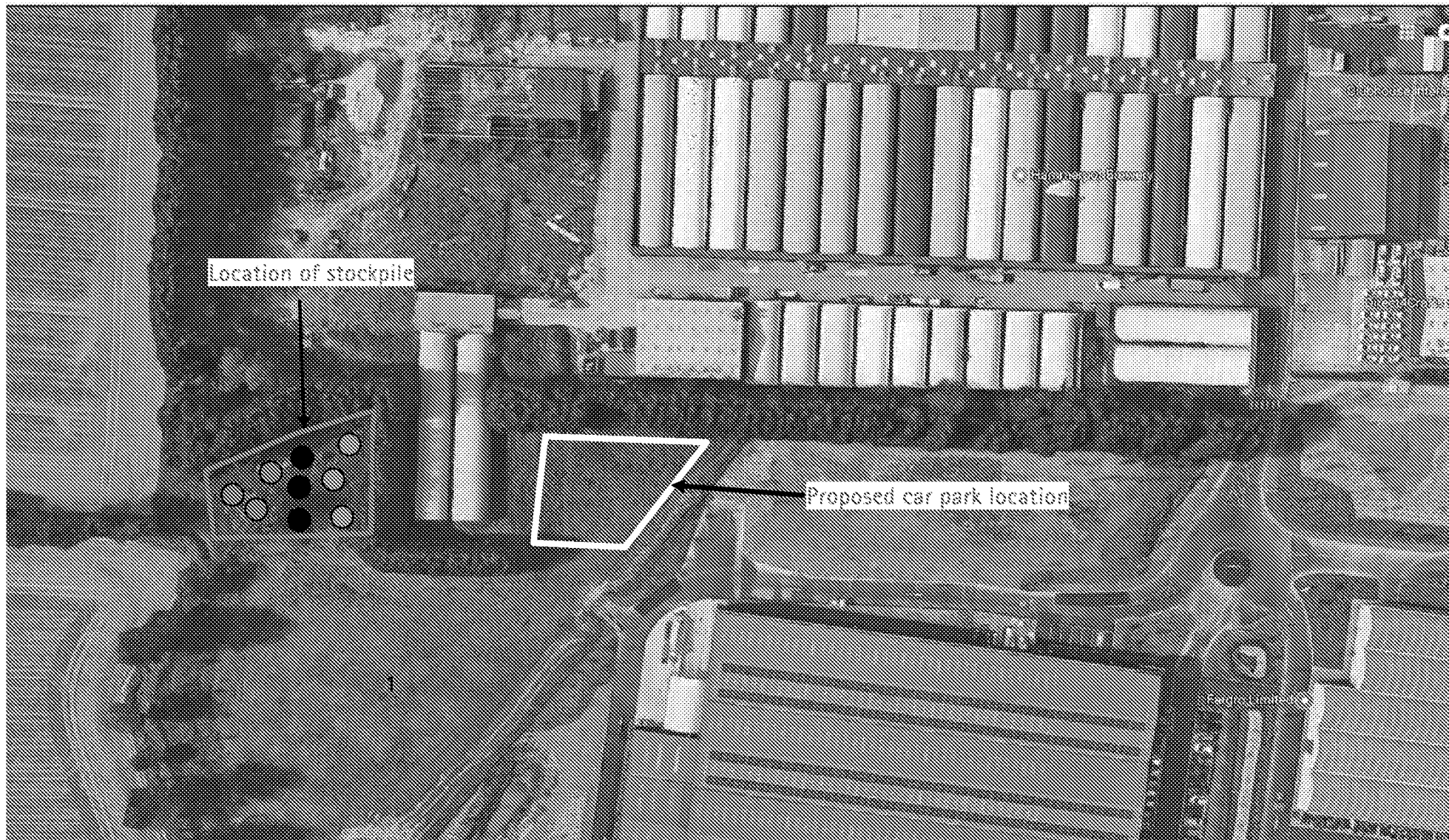
Robert Jiagge BSc (Hons) MSc MEnvSc CSci FGS

For and on behalf of

ST Consult



APPENDIX A – SITE PLAN & SAMPLE DESCRIPTION



NB: Positions of Boreholes and/or Trial Pits are only indicative unless dimensioned

Site: The Vinery, Poling West Sussex BN18 9PY

STL:

Fig No:

Date: 27 November 2017

Site Plan

 Southern Testing

Southern Testing: Keeble House, Stuart Way, East Grinstead, West Sussex RH19 4QA
ST Consult: Twigden Barns, Brixworth Road, Creton, Northampton NN6 8NN

 ST Consult



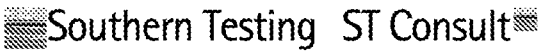
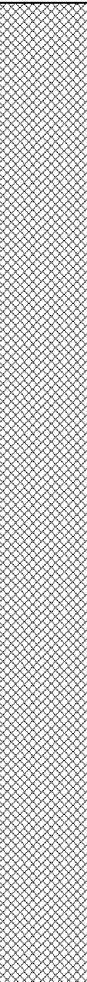
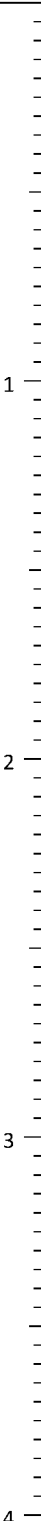
SP3: Sample depth
0.3-0.5m

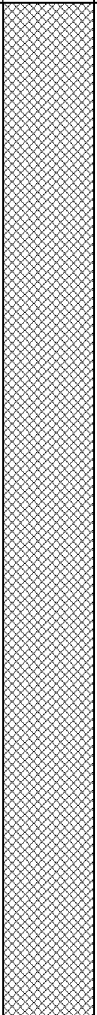


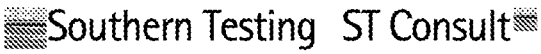
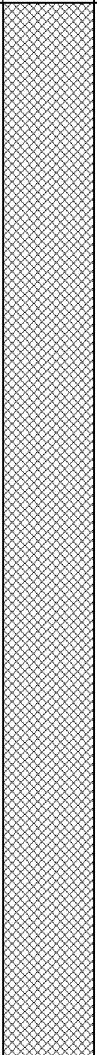
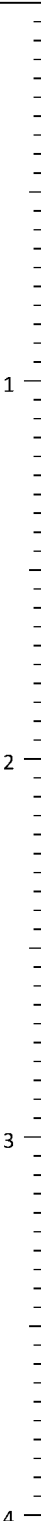
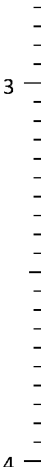
SP2: Sample depth:
2.0-2.5m

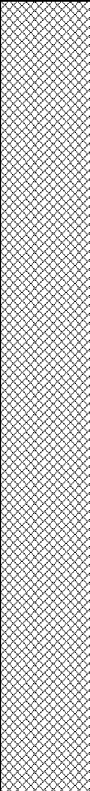


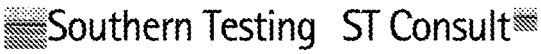
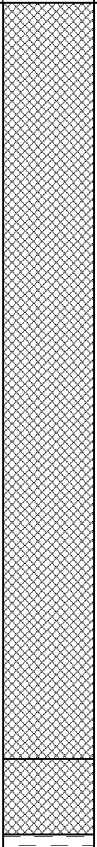
SP1: Sample depth:
1.0-1.5m

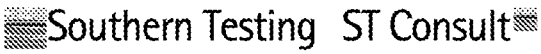
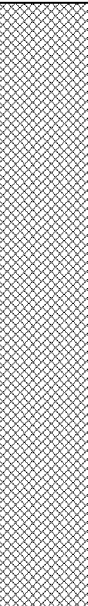
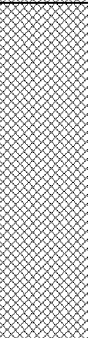
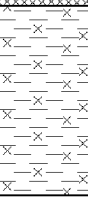
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Location: Poling, Arundel											
Client: Paul Airey Planning Associates Ltd											
Samples and Insitu Testing			Level (m AOD)	Thickness (m)	Legend	Depth (m bgl)	Stratum Description				
Depth (m)	Type	Results									
1.50	D			(2.60)			Made Ground comprising dark brown mottled mid brown gravelly very sandy CLAY, with frequent fragments of metal wire, rebar, cloth, plastic and glass. Gravel is fine to coarse subrounded flint and fine to medium subangular brick (Made Ground).				
							1.0m... with intact red brick and timber.				
							1.5m... Wooden railway sleeper.				
							2.1m... Tending to SAND, with fine to medium gravel sized clinker.				
2.00	ES						2.5m... barbed wire fragments.				
2.20	D					2.60	Made Ground comprising soft grey brown sandy CLAY with frequent metal nail fragments and metal domestic waste. Gravel is fine to medium red brick (Made Ground).				
						2.80	Firm greenish grey brown slightly gravelly very silty CLAY with abundant roots. Gravel is fine rounded flint.				
						3.10	Pit terminated at 3.10m.				
Pit Dimension (m)			Pit Stability:				Water Strikes:				
Width:		0.45	Spalling from 0.5m.								
Length:		2.00									
Depth:		3.10									

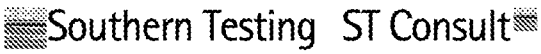
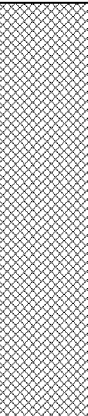
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Location: Poling, Arundel											
Client: Paul Airey Planning Associates Ltd											
Samples and Insitu Testing			Level (m AOD)	Thickness (m)	Legend	Depth (m bgl)	Stratum Description				
Depth (m)	Type	Results									
				(2.70)			Made Ground comprising mid to dark brown gravelly CLAY. Gravel is fine to medium subrounded to subangular concrete, red brick and flint (Made Ground).		1 2 3 4		
							1.8m... becoming ashy.				
				(0.30)		2.70	Firm greenish grey brown slightly very silty CLAY with abundant roots.				
						3.00	Pit terminated at 3.00m.				
Pit Dimension (m)			Pit Stability:						Water Strikes:		
Width:	0.45		Spalling from 0.5m.								
Length:	2.00										
Depth:	3.00										

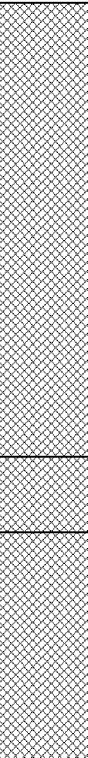
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Location: Poling, Arundel											
Client: Paul Airey Planning Associates Ltd											
Samples and Insitu Testing			Level (m AOD)	Thickness (m)	Legend	Depth (m bgl)	Stratum Description				
Depth (m)	Type	Results									
				(2.80)			Made Ground comprising sandy CLAY with frequent cobble sized brick and occasional concrete slab. Gravel is fine to coarse brick and concrete (Made Ground).				
							0.4m... with timber and iron rail.				
							0.6m... frequent boulder sized concrete.				
							1.2m... with half to intact brick and glass fragments.				
							2.0m... very sandy.				
				(0.20)		2.80	Stiff greenish grey brown slightly gravelly very silty CLAY with abundant roots. Gravel is fine flint.				
						3.00	Pit terminated at 3.00m.				
Pit Dimension (m)			Pit Stability:						Water Strikes:		
Width:		0.45	Spalling from 0.5m.								
Length:		2.00									
Depth:		3.00									

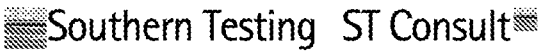
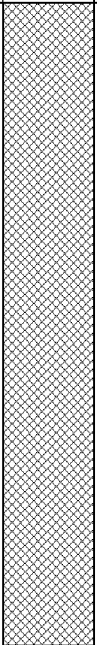
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Location:		Poling, Arundel					JMW	
Client:		Paul Airey Planning Associates Ltd						
Samples and Insitu Testing			Level (m AOD)	Thickness (m)	Legend	Depth (m bgl)	Stratum Description	
Depth (m)	Type	Results						
1.00	ES			(2.10)			Made Ground comprising mid brown mottled orange brown gravelly slightly sandy CLAY with high cobble and boulder content, frequent plastic film and cloth fragments. Gravel is fine to coarse flint, brick and concrete. Cobble and boulders are concrete (Made Ground).	
1.40	D							
1.80	D							
						2.10	1.5m... becoming grey to dark grey, organic, with frequent pseudofibrous roots and rootlets	
						2.30	Made Ground comprising grey mottled dark grey brown slightly sandy CLAY with occasional fine chalk, brick and flint gravel (Underlying Strata) (Made Ground).	
							Pit terminated at 2.30m.	
Pit Dimension (m)			Pit Stability:			Water Strikes:		
Width:	0.45		Spalling from 0.5m.					
Length:	2.00							
Depth:	2.30							

				Start - End Date: 26/10/2017		Project ID: JT0126		Machine Type: JCB 3CX		SP2a Sheet 1 of 1	
Project Name: The Vinery industrial Estate				Remarks:		Co-ordinates:		Level (m AOD):		Logger: JMW	
Location: Poling, Arundel											
Client: Paul Airey Planning Associates Ltd											
Samples and Insitu Testing			Level (m AOD)	Thickness (m)	Legend	Depth (m bgl)	Stratum Description				
Depth (m)	Type	Results									
				(1.00)			Made Ground comprising dark brown gravelly clayey SAND with metal wire, cable and black film fragments. Gravel is fine to medium subangular to angular brick (Made Ground).				
				(2.00)		1.00	Made Ground comprising mid to orange brown reddish brown ironstained sandy CLAY with occasional medium gravel to cobble sized angular red brick (Made Ground).				
				(0.20)		2.00	Made Ground comprising red brown to purple very gravelly SAND with frequent coarse to cobble sized brick (Made Ground).				
				(0.10)		2.20	Made Ground comprising stiff mid brown to grey CLAY (Underlying Stata) (Made Ground).				
						2.30	Pit terminated at 2.30m.				
Pit Dimension (m)			Pit Stability:				Water Strikes:				
Width:	0.45		Stable								
Length:	2.00										
Depth:	2.30										

				Start - End Date: 26/10/2017		Project ID: JT0126		Machine Type: JCB 3CX		SP2b Sheet 1 of 1	
Project Name: The Vinery industrial Estate				Remarks:		Co-ordinates:		Level (m AOD):		Logger: JMW	
Location: Poling, Arundel											
Client: Paul Airey Planning Associates Ltd											
Samples and Insitu Testing			Level (m AOD)	Thickness (m)	Legend	Depth (m bgl)	Stratum Description				
Depth (m)	Type	Results									
2.00	D			(1.60)		1.60	Made Ground comprising gravelly very sandy CLAY with frequent partial to intact brick, cobble to boulder sized concrete, plastic packaging and glass fragments (Made Ground).		1		
				(0.90)			Made Ground comprising stiff grey slightly gravelly very silty slightly organic CLAY with frequent pseudofibrous root and rare metal fragments. Gravel is fine angular flint (Made Ground).		2		
				(0.50)		2.50	Stiff greenish grey silty CLAY.		3		
						3.00	Pit terminated at 3.00m.		4		
Pit Dimension (m)			Pit Stability:				Water Strikes:				
Width:		0.45	Stable								
Length:		2.00									
Depth:		3.00									

				Start - End Date: 26/10/2017		Project ID: JT0126		Machine Type: JCB 3CX		SP3 Sheet 1 of 1		
Project Name: The Vinery industrial Estate				Remarks:		Co-ordinates:		Level (m AOD):		Logger: JMW		
Location: Poling, Arundel												
Client: Paul Airey Planning Associates Ltd												
Samples and Insitu Testing			Level (m AOD)	Thickness (m)	Legend	Depth (m bgl)	Stratum Description					
Depth (m)	Type	Results										
0.30	ES			(1.10)		1.10	Made Ground comprising firm mid brown to orange brown slightly gravelly sandy silty CLAY with occasional plastic, glass, root and timber fragments. Gravel is fine angular flint (Made Ground).		1			
1.40	D					(0.70)	1.80	Made Ground comprising stiff mid brown to grey CLAY with fine to medium gravel sized brick, flint and glass (Made Ground).		2		
						(0.20)	2.00	Stiff grey mottled mid brown organic silty CLAY with some decomposed root and wood fragments.		3		
							Pit terminated at 2.00m.		4			
Pit Dimension (m)			Pit Stability:					Water Strikes:				
Width:	0.45		Stable					Slight seepage at 1.8m.				
Length:	2.00											
Depth:	2.00											

 Southern Testing ST Consult www.southerntesting.co.uk tel:01342 333100 www.stconsult.co.uk tel:01604 500020				Start - End Date: 26/10/2017		Project ID: JT0126		Machine Type: JCB 3CX		SP3a Sheet 1 of 1	
Project Name: The Vinery industrial Estate				Remarks:		Co-ordinates:		Level (m AOD):		Logger: JMW	
Location: Poling, Arundel											
Client: Paul Airey Planning Associates Ltd											
Samples and Insitu Testing			Level (m AOD)	Thickness (m)	Legend	Depth (m bgl)	Stratum Description				
Depth (m)	Type	Results									
				(1.20)			Made Ground comprising dark brown gravelly sandy CLAY with fine to coarse brick, concrete and flint (Made Ground).		1 2 3 4		
				(0.20)		1.20	Made Ground comprising dark grey ashy SAND (Made Ground).				
				(0.60)		1.40	Made Ground comprising stiff brown gravelly CLAY with occasional wire and rare glass fragments. Gravel is medium subrounded flint and red brick (Made Ground).				
				(0.10)		2.00	Stiff grey mottled mid brown organic silty CLAY with some decomposed root and wood fragments.				
						2.10	Pit terminated at 2.10m.				
Pit Dimension (m)			Pit Stability:				Water Strikes:				
Width:	0.45		Stable				Slight seepage at 2.0m.				
Length:	2.00										
Depth:	2.10										

				Start - End Date: 26/10/2017		Project ID: JT0126		Machine Type: JCB 3CX		SP3b Sheet 1 of 1			
Project Name: The Vinery industrial Estate				Remarks:		Co-ordinates:		Level (m AOD):		Logger: JMW			
Location: Poling, Arundel													
Client: Paul Airey Planning Associates Ltd													
Samples and Insitu Testing			Level (m AOD)	Thickness (m)	Legend	Depth (m bgl)	Stratum Description						
Depth (m)	Type	Results											
1.50	D			(1.70)			Made Ground comprising dark brown very gravelly CLAY with red brick, concrete, flint and frequent roots (Made Ground).		1				
							1.1m... concrete abundant, cobble to boulder sized. With plastic bag and glass fragments.						
							1.70		Made Ground comprising stiff mid to orange brown sandy silty CLAY (Made Ground).		2		
							1.80		Very stiff mid brown sandy CLAY.				
2.00		Pit terminated at 2.00m.		3									
								4					
Pit Dimension (m)			Pit Stability:					Water Strikes:					
Width:		0.45	Stable					Slight seepage at 1.8m.					
Length:		2.00											
Depth:		2.00											

APPENDIX B – CHEMICAL LABORATORY TEST RESULTS

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Analytical Report Number : 17-66006

Project / Site name:	Arundel	Samples received on:	31/10/2017
Your job number:	JT0126	Samples instructed on:	31/10/2017
Your order number:	JT0126-1	Analysis completed by:	09/11/2017
Report Issue Number:	1	Report issued on:	09/11/2017
Samples Analysed:	2 WAC 10:1 samples		

Signed:

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

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

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

Standard sample disposal times, unless otherwise agreed with the laboratory, are :	soils	- 4 weeks from reporting
	leachates	- 2 weeks from reporting
	waters	- 2 weeks from reporting
	asbestos	- 6 months from reporting

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Waste Acceptance Criteria Analytical Results							
Report No:	17-66006						
					Client: SOUTHERNT		
Location	Arundel						
Lab Reference (Sample Number)	848159 / 848160				Landfill Waste Acceptance Criteria		
					Limits		
Sampling Date	26/10/2017				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	SP2 ES						
Depth (m)	1.00						
Solid Waste Analysis							
TOC (%)**	2.3				3%	5%	6%
Loss on Ignition (%) **	5.2				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.007				1	--	--
Mineral Oil (mg/kg)	40				500	--	--
Total PAH (WAC-17) (mg/kg)	< 0.9				100	--	--
pH (units)**	7.9				--	>6	--
Acid Neutralisation Capacity (mol / kg)	2.3				--	To be evaluated	To be evaluated
Eluate Analysis					Limit values for compliance leaching test		
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)	10:1			10:01	using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
	mg/l			mg/kg			
Arsenic *	0.0063			0.0402	0.5	2	25
Barium *	0.0277			0.176	20	100	300
Cadmium *	< 0.0001			< 0.0008	0.04	1	5
Chromium *	0.0009			0.0055	0.5	10	70
Copper *	0.010			0.066	2	50	100
Mercury *	< 0.0005			< 0.0050	0.01	0.2	2
Molybdenum *	0.0058			0.0367	0.5	10	30
Nickel *	0.0017			0.011	0.4	10	40
Lead *	0.0084			0.053	0.5	10	50
Antimony *	0.0027			0.017	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.0086			0.054	4	50	200
Chloride *	1.9			12	800	4000	25000
Fluoride	0.60			3.8	10	150	500
Sulphate *	6.2			39	1000	20000	50000
TDS	89			560	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	5.49			34.9	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	1.4						
Dry Matter (%)	83						
Moisture (%)	17						
Results are expressed on a dry weight basis, after correction for moisture content where applicable.							
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation					** = UKAS accredited (liquid eluate analysis only)		
					** = MCERTS accredited		

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3.
This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.

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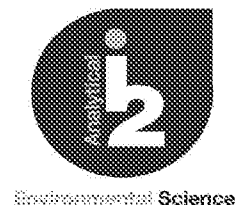
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Waste Acceptance Criteria Analytical Results							
Report No:	17-66006						
					Client: SOUTHERNT		
Location	Arundel						
Lab Reference (Sample Number)	848161 / 848162				Landfill Waste Acceptance Criteria		
					Limits		
Sampling Date	26/10/2017				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	SP3 ES						
Depth (m)	0.30						
Solid Waste Analysis							
TOC (%)**	1.8				3%	5%	6%
Loss on Ignition (%) **	4.5				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.007				1	--	--
Mineral Oil (mg/kg)	32				500	--	--
Total PAH (WAC-17) (mg/kg)	< 0.9				100	--	--
pH (units)**	7.8				--	>6	--
Acid Neutralisation Capacity (mol / kg)	3.6				--	To be evaluated	To be evaluated
Eluate Analysis					Limit values for compliance leaching test		
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)	10:1			10:01	using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
	mg/l			mg/kg			
Arsenic *	0.0042			0.0224	0.5	2	25
Barium *	0.0181			0.0973	20	100	300
Cadmium *	< 0.0001			< 0.0008	0.04	1	5
Chromium *	0.0008			0.0042	0.5	10	70
Copper *	0.013			0.067	2	50	100
Mercury *	< 0.0005			< 0.0050	0.01	0.2	2
Molybdenum *	0.0040			0.0215	0.5	10	30
Nickel *	0.0012			0.0062	0.4	10	40
Lead *	0.0052			0.028	0.5	10	50
Antimony *	0.0017			< 0.017	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.0097			0.052	4	50	200
Chloride *	1.8			9.8	800	4000	25000
Fluoride	1.4			7.6	10	150	500
Sulphate *	7.3			39	1000	20000	50000
TDS	100			540	4000	60000	100000
Phenol Index (Monhydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	5.66			30.4	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	1.4						
Dry Matter (%)	82						
Moisture (%)	18						
Results are expressed on a dry weight basis, after correction for moisture content where applicable.					* = UKAS accredited (liquid eluate analysis only)		
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation					** = MCERTS accredited		

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3.
This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.



Analytical Report Number : 17-66006

Project / Site name: Arundel

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
848159	SP2	ES	1.00	Brown clay and loam with gravel and vegetation.
848161	SP3	ES	0.30	Brown loam and clay with gravel and vegetation.

Analytical Report Number : 17-66006

Project / Site name: Arundel

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Acid neutralisation capacity of soil	Determination of acid neutralisation capacity by addition of acid or alkali followed by electronic probe.	In-house method based on Guidance on Sampling and Testing of Wastes to Meet Landfill Waste Acceptance"	L046-UK	W	NONE
BS EN 12457-2 (10:1) Leachate Prep	10:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-2.	L043-PL	W	NONE
BTEX in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Chloride 10:1 WAC	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260.	L082-PL	W	ISO 17025
Dissolved organic carbon 10:1 WAC	Determination of dissolved inorganic carbon in leachate by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	NONE
Fluoride 10:1 WAC	Determination of fluoride in leachate by 1:1ratio with a buffer solution followed by Ion Selective Electrode.	In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination"	L033B-PL	W	ISO 17025
Loss on ignition of soil @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L047-PL	D	MCERTS
Metals in leachate by ICP-OES	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil"	L039-PL	W	ISO 17025
Mineral Oil (Soil) C10 - C40	Determination of mineral oil fraction extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L076-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols 10:1 WAC	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
PCB's By GC-MS in soil	Determination of PCB by extraction with acetone and hexane followed by GC-MS.	In-house method based on USEPA 8082	L027-PL	D	MCERTS
pH in soil	Determination of pH in soil by addition of water followed by electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L005-PL	W	MCERTS
Speciated WAC-17 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate 10:1 WAC	Determination of sulphate in leachate by ICP-OES	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil"	L039-PL	W	ISO 17025
Total dissolved solids 10:1 WAC	Determination of total dissolved solids in water by electrometric measurement.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L004-PL	W	NONE
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests"	L009-PL	D	MCERTS



Analytical Report Number : 17-66006

Project / Site name: Arundel

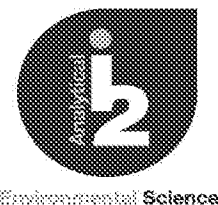
Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

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

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



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Analytical Report Number : 17-66005

Replaces Analytical Report Number : 17-66005, issue no. 1

Project / Site name:	Arundel	Samples received on:	31/10/2017
Your job number:	JT0126	Samples instructed on:	31/10/2017
Your order number:	JT0126-1	Analysis completed by:	15/11/2017
Report Issue Number:	2	Report issued on:	16/11/2017
Samples Analysed:	3 soil samples		

Signed:

Jordan Hill
Reporting Manager
For & on behalf of i2 Analytical Ltd.

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

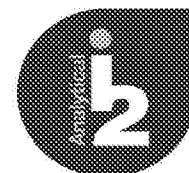
Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :	soils	- 4 weeks from reporting
	leachates	- 2 weeks from reporting
	waters	- 2 weeks from reporting
	asbestos	- 6 months from reporting

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4841



Environmental Science

Analytical Report Number: 17-66005

Project / Site name: Arundel

Your Order No: JT0126-1

Lab Sample Number				848156	848157	848158		
Sample Reference				SP1	SP2	SP3		
Sample Number				ES	ES	ES		
Depth (m)				2.00	1.00	0.30		
Date Sampled				26/10/2017	26/10/2017	26/10/2017		
Time Taken				0900	1000	1100		
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1		
Moisture Content	%	N/A	NONE	11	17	18		
Total mass of sample received	kg	0.001	NONE	1.4	1.4	1.4		

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	Chrysotile	Chrysotile	Chrysotile		
Asbestos in Soil	Type	N/A	ISO 17025	Detected	Detected	Detected		
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	< 0.001	< 0.001	< 0.001		
Asbestos Quantification Total	%	0.001	ISO 17025	< 0.001	< 0.001	< 0.001		

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.2	8.1	7.9		
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1		
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.17	0.045	0.026		
Sulphide	mg/kg	1	MCERTS	3.3	< 1.0	< 1.0		
Organic Matter	%	0.1	MCERTS	3.3	3.9	3.2		

Total Phenols

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

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Phenanthrene	mg/kg	0.05	MCERTS	0.32	< 0.05	< 0.05		
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Fluoranthene	mg/kg	0.05	MCERTS	0.91	< 0.05	< 0.05		
Pyrene	mg/kg	0.05	MCERTS	0.82	< 0.05	< 0.05		
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.62	< 0.05	< 0.05		
Chrysene	mg/kg	0.05	MCERTS	0.56	< 0.05	< 0.05		
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	0.78	< 0.05	< 0.05		
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.29	< 0.05	< 0.05		
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.69	< 0.05	< 0.05		
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.44	< 0.05	< 0.05		
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.51	< 0.05	< 0.05		

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	5.94	< 0.80	< 0.80		
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Heavy Metals / Metalloids

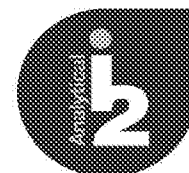
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	22	13	13		
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2		
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0		
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	24	27	25		
Copper (aqua regia extractable)	mg/kg	1	MCERTS	64	38	34		
Lead (aqua regia extractable)	mg/kg	1	MCERTS	200	490	320		
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3		
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	30	19	21		
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	180	150	140		

Analytical Report Number: 17-66005

Project / Site name: Arundel

Your Order No: JT0126-1

Lab Sample Number				848156	848157	848158		
Sample Reference				SP1	SP2	SP3		
Sample Number				ES	ES	ES		
Depth (m)				2.00	1.00	0.30		
Date Sampled				26/10/2017	26/10/2017	26/10/2017		
Time Taken				0900	1000	1100		
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	-	-	< 1.0		
Toluene	ug/kg	1	MCERTS	-	-	< 1.0		
Ethylbenzene	ug/kg	1	MCERTS	-	-	< 1.0		
p & m-xylene	ug/kg	1	MCERTS	-	-	< 1.0		
o-xylene	ug/kg	1	MCERTS	-	-	< 1.0		
MTBE (Methyl Tertiary Butyl Ether)	ug/kg	1	MCERTS	-	-	< 1.0		
Petroleum Hydrocarbons								
TPH C10 - C40	mg/kg	10	MCERTS	120	15	-		
TPH2 (C6 - C10)	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-		
TPH C6 - C40	mg/kg	10	NONE	120	15	-		
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	-	< 0.001		
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	-	< 0.001		
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	< 0.001		
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	< 1.0		
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	< 2.0		
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	-	< 8.0		
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	-	16		
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	16		
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	-	< 0.001		
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	-	< 0.001		
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	< 0.001		
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	1.4		
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	6.9		
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	-	16		
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	-	44		
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	68		



Environmental Science

Analytical Report Number: **17-66005**
Project / Site name: **Arundel**
Your Order No: **JT0126-1**

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

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

Quantitative Analysis

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

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

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

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
848156	SP1	2.00	133	Loose Fibres	Chrysotile	< 0.001	< 0.001
848157	SP2	1.00	123	Loose Fibres	Chrysotile	< 0.001	< 0.001
848158	SP3	0.30	120	Loose Fibres	Chrysotile	< 0.001	< 0.001

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



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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
848156	SP1	ES	2.00	Brown loam and clay with gravel and vegetation.
848157	SP2	ES	1.00	Brown clay and loam with gravel and vegetation.
848158	SP3	ES	0.30	Brown loam and clay with gravel and vegetation.

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazine followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L009-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	L038-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding.	L076-PL	W	MCERTS
TPH C6 - C40 (soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method	L076-PL	W	NONE
TPH2 (Soil)	Determination of hydrocarbons C6-C10 by headspace GC-MS.	In-house method based on USEPA8260	L088-PL	W	MCERTS

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Analytical Report Number : 17-66005

Project / Site name: Arundel

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L088/76-PL	W	MCERTS

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

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

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