

HARRISON GROUP ENVIRONMENTAL LIMITED

Document: Ground Investigation Factual Report

Project: Land East of Drove Lane, Yapton

Reference No.: GL22428A

Date: January 2019

Prepared For: Trustees of the Langmead Pension Scheme c/o Landlink Estates Ltd.

Engineer: Campbell Reith Hill LLP

REPORT STATUS:

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		COMMENTS DATE	COMMENTS DATE	COMMENTS DATE	COMMENTS DATE
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Document: Ground Investigation Factual Report

Project: Land East of Drove Lane, Yapton

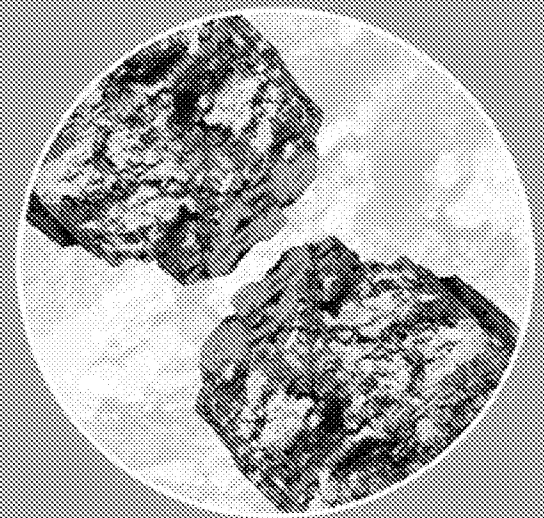
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ENGINEERING



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CONTENTS

FOREWORD

1.0	TERMS OF REFERENCE AND INTRODUCTION	1
2.0	LOCATION AND DESCRIPTION OF SITE	1
3.0	EXPECTED GEOLOGY	1
4.0	FIELDWORK	1
4.1	Dynamic Continuous Sampling (Windowless Sampler) Boreholes	2
4.2	Installations	2
4.3	Surveying	3
4.4	Gas and Groundwater Monitoring	3
5.0	GEOTECHNICAL TESTING	3
5.1	In-Situ Testing	3
5.2	Geotechnical Laboratory Testing	4

REFERENCES

APPENDICES

FOREWORD

General Conditions Relating To Site Investigation

This investigation has been devised to generally comply with the relevant principles and requirements of BS10175:2001+A2:2017 "Investigation of potentially contaminated sites - Code of practice" and where directed by the principles and application rules of Eurocode 7 (EC7 – Part 1 and Part 2). The recommendations made and opinions expressed in this report are based on the information obtained from the sources described using a methodology intended to provide reasonable consistency and robustness.

The opinions expressed in this report are based on the ground conditions revealed by the site works, together with an assessment of the site and of laboratory test results. Whilst opinions may be expressed relating to sub-soil conditions in parts of the site not investigated, for example between exploratory positions, these are only for guidance and no liability can be accepted for their accuracy.

Boring, sampling and field test procedures are undertaken in accordance with BS5930:2015 "Code of Practice for Site Investigations". Likewise in-situ and laboratory testing complies with B.S.1377, "Methods of Tests for Soils for Civil Engineering Purposes", unless stated otherwise in the text.

The groundwater conditions entered on the boring records are those observed at the time of investigation. The normal rate of boring usually does not permit the recording of an equilibrium water level for any one water strike. Moreover, groundwater levels are subject to seasonal variation or changes in local drainage conditions.

Some items of the investigation have been provided by third parties and whilst Harrison Group have no reason to doubt the accuracy, the items relied on have not been verified. No responsibility can be accepted for errors within third party items presented in this report.

This report is produced for the benefit of the client alone. No responsibility can be accepted for any consequences of this information being passed to a third party who may act upon its contents/recommendations.

FACTUAL REPORT
ON A
GROUND INVESTIGATION
AT
LAND EAST OF DROVE LANE, YAPTON

1.0 TERMS OF REFERENCE AND INTRODUCTION

The work covered by this report was undertaken on behalf of Trustees of the Langmead Pension Scheme c/o Landlink Estates Ltd by Harrison Group Environmental Ltd (HGE). The work was undertaken in accordance with the relevant contract documentation and the Campbell Reith Hill LLP (Campbell Reith) Specification for Ground Investigation Tender Document Project (TET-13024-171018). Campbell Reith acted as Consulting Engineer.

The purpose of the investigation was to provide factual geotechnical and geo-environmental data from the fieldwork and subsequent laboratory testing which will be used to assist with the design for the development of the site.

This report presents the results of the fieldwork, associated laboratory testing and post fieldwork monitoring.

2.0 LOCATION AND DESCRIPTION OF SITE

The site is comprised of two adjoining agricultural fields located to the east of Drove Lane, Yapton, Arundel, West Sussex. The north eastern section of the site comprises two indentations around existing residential developments. The site is typically aligned north eastwards and has a total extent of some 12.90 hectares. It is centred on an approximate national grid reference of 497355, 103150 and the nearest postcode to site is BN18 0EB. It is proposed to develop the site with residential housing and associated landscaping and access.

A site location plan (GL22428A-DR001) is presented in Appendix A.

3.0 EXPECTED GEOLOGY

The site is predominantly underlain by Top Soil, with Made Ground up to 1.10mbgl locally, moving into River Terrace Deposits up to 4.70mbgl and in turn the Lewes Nodular Chalk Formation, observed up to 5.45mbgl.

4.0 FIELDWORK

The scope of the site works was generally in accordance with that proposed by CampbellReith and comprised the following:

- Utility clearance of the exploratory locations (carried out by Midland Surveys Ltd)

- Dynamic Continuous Sampling (Windowless Sampler) Boreholes (11 No. to maximum depth of 5.75mbgl)
- Gas and groundwater monitoring of installations (Currently 2 of 6 No. monthly rounds completed)

The main intrusive fieldwork was carried out by HGE between the 12th and 14th December 2018. All exploratory locations are detailed on the appended drawing GL22428A - DR002 presented in Appendix A.

In addition to consulting all available service plans, lifting all available covers and prior to intrusive activities taking place, service clearance was carried out using Ground Penetrating Radar (GPR). Service inspection pits were also dug at borehole locations to clear near surface utilities.

The sampling strategy was designed by CampbellReith and took into account local site constraints, topography of the site, the geology encountered, including made ground and the development proposals.

During and immediately following completion of the fieldwork geotechnical samples were transported to Harrison Group Geotechnical Laboratory via in house transportation where, upon arrival, they were logged into a sample management system. Following receipt of the CampbellReith geotechnical schedules, certain geotechnical samples were subsequently dispatched to laboratory subcontractors via a courier.

4.1 Dynamic Continuous Sampling (Windowless Sampler) Boreholes

11 No. dynamic sampler boreholes, WS101 through to WS111 were drilled between 12th and 14th December 2018 using a dual-purpose tracked rig. Each position was progressed to a depth of between 4.90mbgl and 5.75mbgl, in order to identify, sample and test the underlying sub-soils.

Upon completion, WS202, WS208, WS210 and WS211 were installed with combined groundwater and gas monitoring wells (50mm), as summarised in Table 4.2. The remaining 7 holes (WS201, WS203, WS204, WS205, WS206, WS207 and WS209) were installed with 19mm groundwater monitoring wells as summarised in Table 4.2.

A detailed description of all the strata encountered, in-situ testing undertaken, position and types of samples taken along, with any groundwater observations made at the time of drilling are included on the dynamic sampling borehole records presented in Appendix B.

4.2 Installations

All boreholes were installed with standpipes for monitoring the gas and groundwater within the soils encountered. Table 4.2 below summarises these installations.

Monitoring Point I.D	Diameter of Installation (mm)	Base Depth of Installation (mbgl)	Response Zone (mbgl)	
			Top	Base
WS201	19	4.80	1.00	4.80
WS202	50	4.80	1.00	4.80
WS203	19	5.00	1.00	5.00
WS204	19	5.70	1.00	5.70
WS205	19	5.70	1.00	5.70
WS206	19	5.00	1.00	5.00

WS207	19	5.00	1.00	5.00
WS208	50	4.40	1.00	4.40
WS209	19	5.90	1.00	5.90
WS210	50	5.00	1.00	5.00
WS211	50	5.00	1.00	5.00

Table 4.2: Summary of Gas and Groundwater Installations.

Detailed descriptions of the installations and their corresponding backfill materials are included on the relevant exploratory borehole logs presented in Appendix B.

4.3 Surveying

Pre-intrusive works were undertaken by an independent specialist who cleared proposed exploratory locations utilising a range of techniques including Ground Penetration Radar (GPR).

The service cleared locations were also surveyed in to establish the coordinates of all exploratory positions, the details of which are shown on the appropriate records presented in Appendix C.

4.4 Gas and Groundwater Monitoring

Two rounds of gas and groundwater monitoring have been undertaken on the HGE borehole installations on the following dates, with four further rounds planned during the winter months:

- Round 1 – 21st December 2018
- Round 2 – 8th January 2019
- Round 3 – tbc February 2019
- Round 4 – tbc March 2019
- Round 5 – tbc April 2019
- Round 6 – tbc May 2019

The results of the water strikes encountered during the intrusive works are detailed on the relevant logs presented in Appendix B. The standing groundwater water levels from the subsequent monitoring rounds detailed above are presented in Appendix C.

Gas monitoring was also undertaken on the above dates including one following a fall in atmospheric pressure (date to be confirmed). Concentrations of oxygen, methane, carbon dioxide, carbon monoxide and hydrogen sulphide were measured using a GA5000 land gas analyser. Concentrations of volatile organic compounds (VOCs) were monitored using a Tiger Particle Ionisation detector (PID). The results are presented in Appendix C.

5.0 GEOTECHNICAL TESTING

Use of the laboratory and field tests presented below to establish geotechnical parameters should be carried out in accordance with BS EN 1997-2 Eurocode Part 2.

5.1 In-Situ Testing

In-Situ testing was undertaken for geotechnical purposes and samples were obtained for appropriate laboratory analysis. Site based geotechnical testing is presented in the Appendix B and summarised below (Table 5.1).

Test Type and Reference	Number	Comments / Limitations
Standard penetration test (BS EN ISO 22476-3:2005)	56	Standard Penetration Tests (SPTs) display a general trend of increasing in value with depth below ground level. Non calibrated SPT hammers can result in a wide variance between reported results. It should be noted we report raw SPT N values rather than corrected $N_{(60)}$ values. However, calibration certificates are provided in Appendix E so as to enable $N_{(60)}$ values to be calculated if required.

Table 5.1: Summary of In-Situ Geotechnical Testing

The dynamic continuous sampler (windowless sampler) borehole SPT Hammer Test Report (SPT Hammer Ref: 382709 / 87.82%) are presented in Appendix E.

5.2 Geotechnical Laboratory Testing

Geotechnical laboratory testing scheduled by Campbell Reith on selected soil samples recovered from the exploratory holes, was carried out to identify the physical characteristics of the soils encountered.

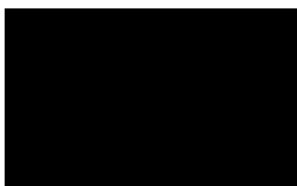
A summary of the results can be found below (Table 5.2).

Test Type and Reference (BS 1377: 1990 unless stated)	No of tests	Results (Range)	Comments / Limitations
Water Content (BS EN ISO 17892-1: 2014)	24	17.9 - 32.8%	Determinations on disturbed samples, including those obtained from dynamic continuous sampler boreholes may not be wholly representative due to disturbance arising from the sampling process.
Liquid Limit (Part 2:5)	12	25 -43%	Only material passing a 425micron sieve is utilised. Therefore, the results may not be wholly representative of in-situ material.
Plastic Limit (Part 2:5)		15 - 22%	Determinations on disturbed samples, including those obtained from dynamic continuous sampler boreholes may not be wholly representative due to disturbance arising from the sampling process.
Particle size distribution - wet sieving (Part 2:9.3)	7	-	The recovery of an adequate mass of coarse-grained soils for particle distribution analysis can be difficult in boreholes. In obtaining such samples from cable tool boreholes it should also be noted that some loss of fine material generally occurs due to the nature of the sampling process.
Saturation Moisture Content	3	26.6 - 29%	The absence of suitable sized chalk 'lumps' limits the locations at which intact dry density tests can be performed, with more competent material being preferentially tested. 12 tests scheduled – 9 restricted due to above.
Intact Dry Density		1.51 - 1.57 mg/m ³	
pH	10	7.8 - 8.7	Determination of pH in soil by addition of water followed by automated electrometric measurement.
Water Soluble Sulphate	10	0.0073 - 0.015g/l	Determination of water-soluble sulphate by ICPOES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).

Test Type and Reference (BS 1377: 1990 unless stated)	No of tests	Results (Range)	Comments / Limitations
Acid Soluble Sulphate (Total)	10	0.020 - 0.044%	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.
Total Sulphur	10	0.006 - 0.015%	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.

Table 5.2: Summary of Geotechnical Laboratory Testing

Report Compiled by:



Iain Reid BSc (Hons) MSc FGS
Geotechnical Engineer

Report Checked by:



Martin Cooper BEng (Hons) FGS
Principal Engineer

REFERENCES

BSI British Standard, BS5930:2015 "Code of Practice for Site Investigations".

BSI British Standard, BS1377:2016, "Methods of Test for Soils for Civil Engineering Purposes".

BS EN ISO 17892-1: 2014 Geotechnical investigation and testing. Laboratory testing of soil. Determination of water content.

BS EN 1997-1 Eurocode 7 Part 1 "General Rules"

BS EN 1997-2 Eurocode 7 Part 2 "Ground Investigation and Testing"

BS EN ISO 22475-1:2006 & 22475-2/3:2011 Geotechnical investigation and testing. Sampling methods and groundwater measurements.

BS EN ISO 22476:2005+A1:2011 Geotechnical investigation and testing. Various.

BS EN ISO 14688-2:2004 Geotechnical investigation and testing. Identification and classification of soil. Principles for a classification.

BRE Special Digest 1:2005 Concrete in Aggressive Ground.

LIST OF APPENDICES

APPENDIX A: DRAWINGS

Site Location Plan - GL22428A-DR001

Exploratory Location Plan – GL22428A-DR002

APPENDIX B: EXPLORATORY HOLE RECORDS

Data Sheet: Site Investigation Methods

Key to Site Investigation Records

Dynamic Sampling (Windowless Sampler) Borehole Records

APPENDIX C: GAS & GROUNDWATER MONITORING RECORDS

- Round 1 - 19th December 2018
- Round 2 - 8th January 2019
- Round 3 - tbc February 2019
- Round 4 - tbc March 2019
- Round 5 - tbc April 2019
- Round 6 - tbc May 2019

APPENDIX D: LABORATORY TESTING

Geotechnical Laboratory Test Results

Summary of Restricted Tests

GL22428A-01 - Test Report Transmittal

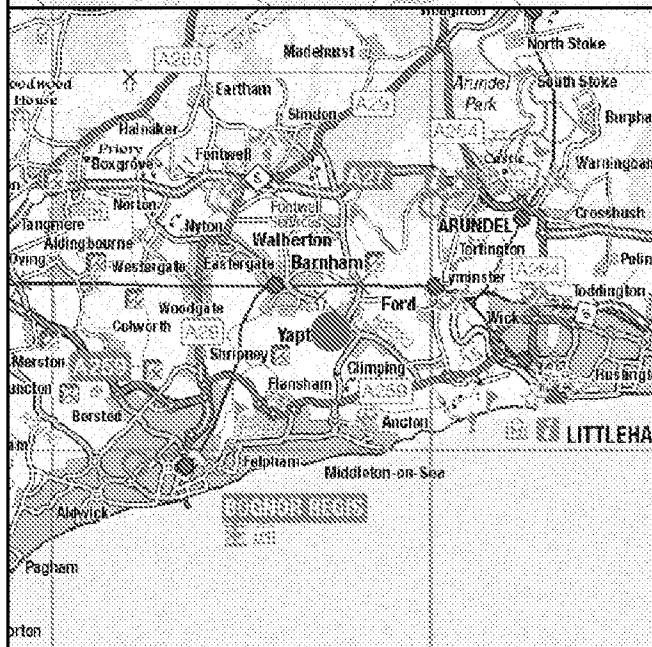
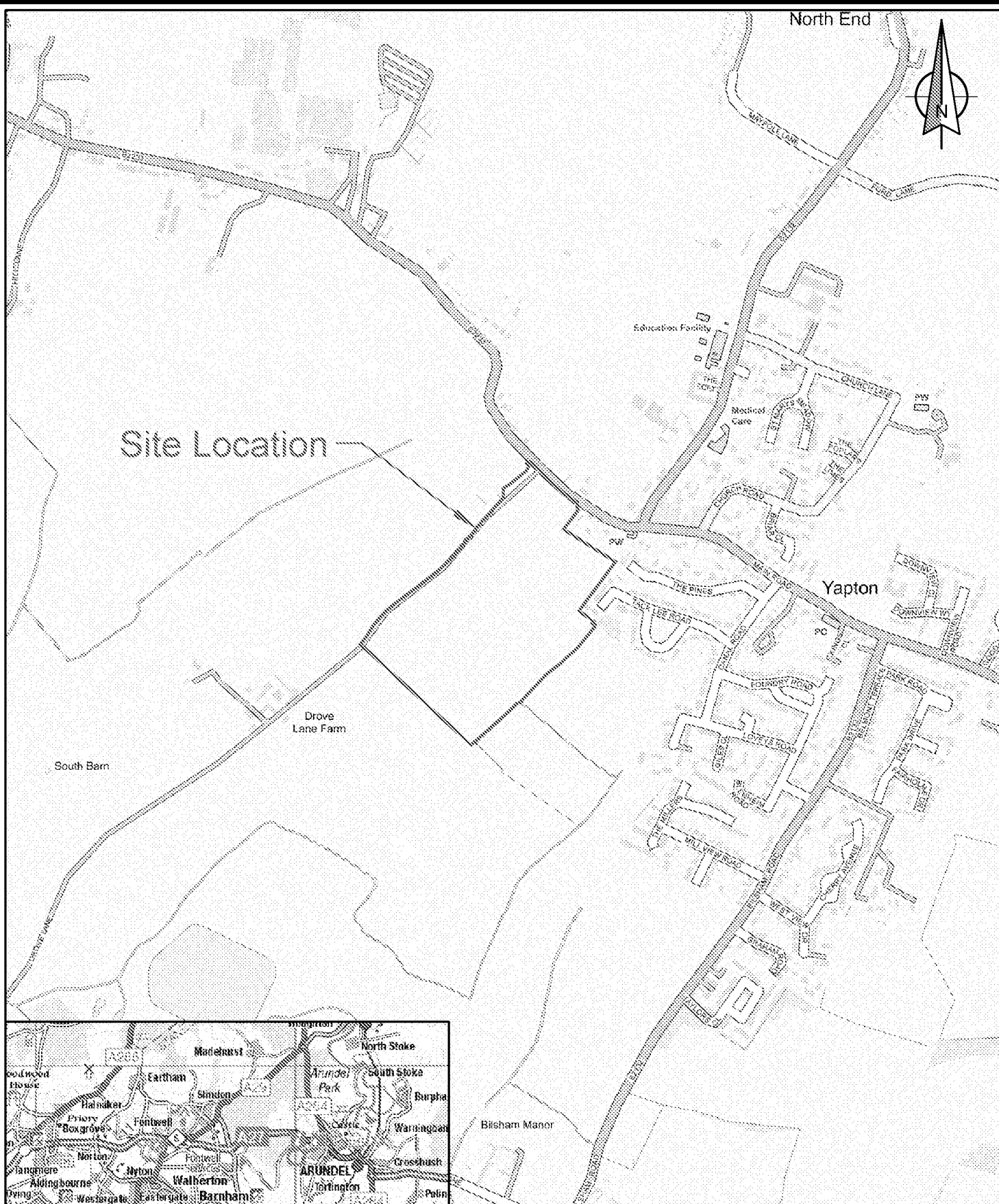
19-24225-1 (i2 Analytical)

APPENDIX E: LABORATORY TESTING

SPT Hammer Certificates

APPENDIX A

DRAWINGS



Client : Trustees of the Langmead Pension Scheme	
Project : Drove Lane, Yapton	
Job No : GL22428	Date : December 2018
Drawing No : GL22428A - DR001	
Scale : 1:10000 @ A4	
Drawn by : CS	Checked by : IR
Eastings : 497347	Nothings : 103144
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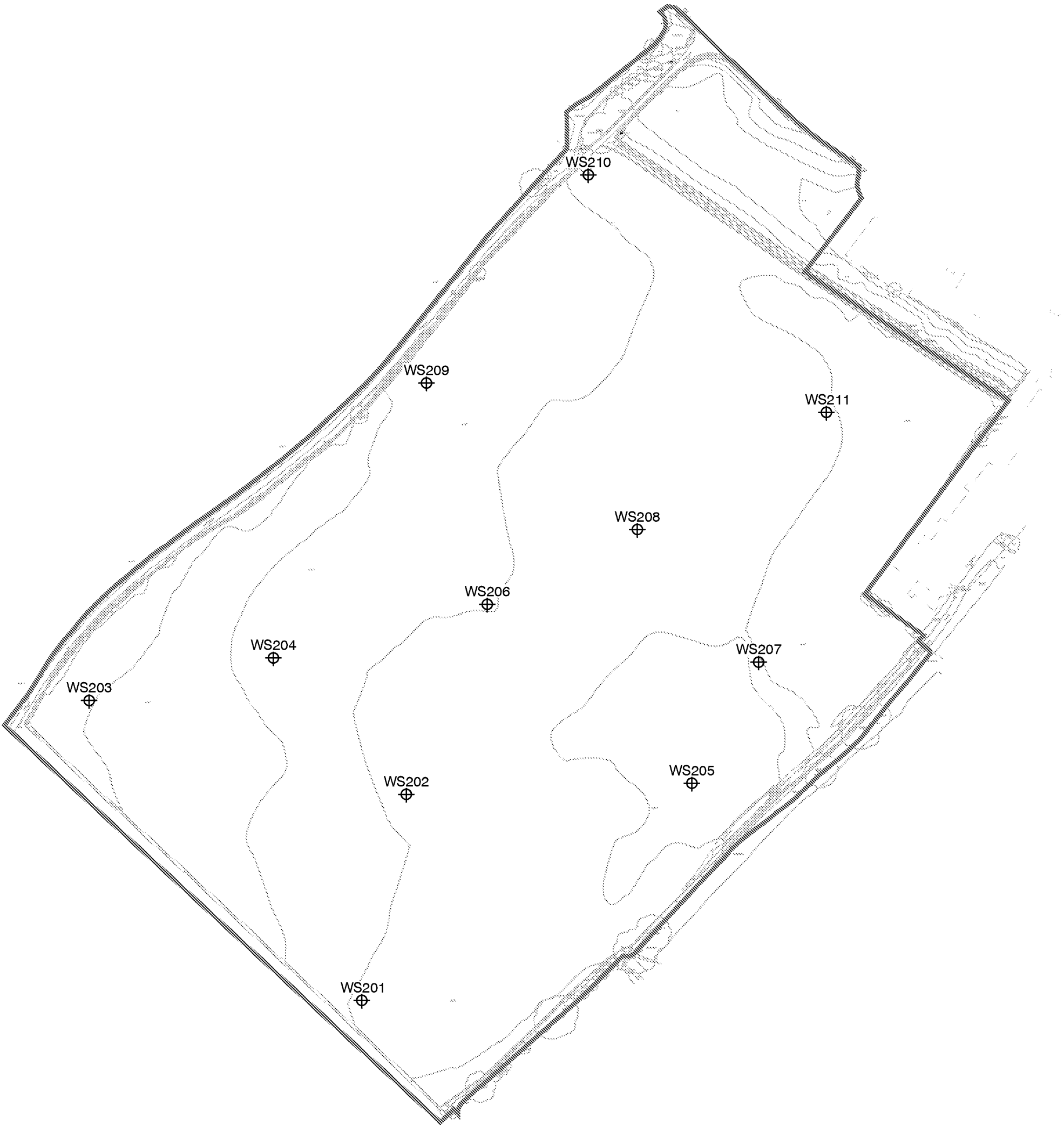
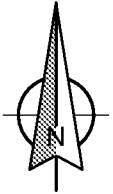
Norwich: 01603 613111 London: 020 7537 9233
Cambridge: 01223 781585 Laboratory: 01603 416333

Email: info@harrisingroupuk.com
Website: www.harrisingroupuk.com



Certificate Number 5983
ISO 9001, ISO 14001

4031



Key :

-  Site Boundary
-  WS201 Dynamic Continuous Sampling Borehole

Notes :

Client : Trustees of the Langmead Pension Scheme
Project : Drove Lane, Yapton
Job No : GL22428 Date : December 2018
Drawing Title : Fieldwork Location Plan

Drawing No : GL22428A - DR002
Scale : 1:2000 @ A3
Drawn by : CS Checked by : IR
Eastings : 497947 Northings : 103144

Revision history

Rev	Date	Revision Data



Norwich: 01603 613111 London: 020 7537 9233
Cambridge: 01223 781585 Laboratory: 01603 416333

Email: info@harrisingroupuk.com
Website: www.harrisingroupuk.com



Certificate Number 5933
ISO 9001, ISO 14001

4031

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APPENDIX B

EXPLORATORY HOLE RECORDS

DATA SHEET: SITE INVESTIGATION METHODS

The following sheet provides basic details of the site investigation methods employed in the direct investigation phase of this report. Detailed method statements may be provided if requested or further information may be obtained from the relevant British Standard or Environment Agency publications. Prior to any excavation being undertaken, a surface sweep using a cable detector is undertaken, in order to avoid services. Details of the lithology encountered are generally presented on the relevant field record sheets, which also detail the type and depths of samples taken, the results of any in-situ tests, and any groundwater observations noted at the time. Other pertinent information may also be recorded.

DYNAMIC CONTINUOUS SAMPLING (WINDOW SAMPLER) BOREHOLES

The window sampler system comprises a series of varying diameter (100mm down to 36mm) steel tubes of either 1m length, and in the case of window (rather than windowless) having a slot or window cut along the side. The tubes are driven into the ground using a light percussive hammer attached to solid rods, and withdrawn by use of a jack. The hammer may be machine mounted (wheeled or tracked) or for restricted access work, hand held. The soil sample is forced up into the tube during the driving, samples being obtained directly through the slot or window, or in the case of windowless, in plastic liners in the steel tube. The sampler generally achieves depths of around 5m in favourable soils. Use of a super heavy tracked rig allows samples to be retrieved in liners to depths of up to 10m in suitable ground conditions.

Sampling can be carried out from the boreholes in accordance with BS EN ISO 22475-1:2006 and SPT testing can be undertaken in accordance with BS EN ISO 22476-3:2005+A1:2011. In addition, small diameter standpipes/monitoring wells can be installed to facilitate the sampling and monitoring of gas and groundwater.

MONITORING WELL INSTALLATIONS

All types of boreholes can be fitted with monitoring wells to enable subsequent sampling and monitoring of groundwater and ground gas levels. Monitoring wells are usually of upvc or hdpe material, although steel may also be used in certain circumstances. Various diameters are available from 19mm upwards, depending upon the size of the borehole. 38mm or 50mm diameter wells are the most commonly used. Wells generally have slotted lower sections which may have a geomesh filter and then are surrounded with a filter medium such as single sized gravel. The upper sections are generally solid casing which is usually grouted to produce a seal with the surrounding ground. The top of the well is generally fitted with a removable cap that may include a gas valve to enable future gas monitoring. The installation is usually protected by a lockable cover set in a concrete base. Details of monitoring well installations and associated backfill are given on the relevant borehole records.

GROUNDWATER MONITORING

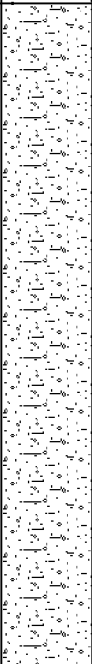
Groundwater monitoring is undertaken using an electronic dip meter, which records the depth to water in a standpipe or monitoring well. Alternatively, down-hole pressure transducers can be utilised which can record variations over an extended period, which is particularly useful in monitoring variations due to tidal influences or when undertaking permeability tests or draw down tests or when undertaking soakaway testing. Where a non-aqueous phase liquid (e.g. floating hydrocarbon layer) is present, an interface meter is utilised to measure the thickness.

GROUND GAS MONITORING

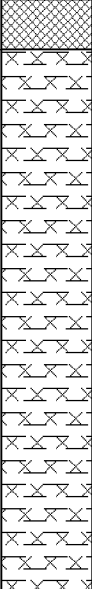
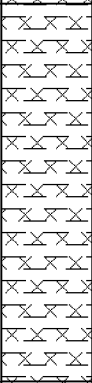
Ground gas composition and flow monitoring may be undertaken where monitoring wells have been installed. Both flow (litres per hour) and composition (%) are measured using a portable infra-red multi-gas meter, calibrated for methane, carbon dioxide, carbon monoxide, hydrogen sulphide and oxygen. Records are also taken of atmospheric pressure, and relative pressure. The results are presented in the appendix of the report on the relevant records.

Ground gas monitoring can also be undertaken on a continuous basis using in-situ GasClam instrumentation where specific projects warrant accurate identification and quantification of the ground gas regime.

					Dynamic Continuous Sampling Borehole Record					WS201		Sheet 1 of 1	
Project ID: GL22428A					Client: Trustees of the Langmead Pension Scheme					E: 497263.14		N: 102944.85	
Location: Land East of Drove Lane, Yapton					Consultant: Harrison Group Environmental Ltd					Date: 13/12/2018			
					Plant used: Premier Tracked 110 Rig					SPT Hammer Serial No: 382709 (ER: 88%)			

Geology Description	Legend	Depth (m)	Elevation (maOD) 5.93	Sample / In-Situ Test Information			Casing (Water)	Installation & Backfill	
				Type	Depth	Results / Remarks			
MADE GROUND. Soft brown slightly gravelly slightly organic CLAY. Gravel is angular to subrounded fine to coarse brick and flint. Soft orangish brown gravelly CLAY. Gravel is angular to subrounded fine to coarse flint.		0.15	5.78	D1	0.10				
				B1	0.50				
				D2	0.50				
				SPT(C)	1.00				N=7 (1,1/2,1,1,3)
Loose becoming medium dense light orangish brown mottled white gravelly very clayey fine and medium SAND. Gravel is subangular to subrounded fine to coarse flint and chalk. <i>From 2.70m: Becoming very gravelly.</i>		1.35	4.58	D3	1.00				
				D4	1.50				
				SPT(C)	2.00				N=9 (0,1/1,2,2,4)
				D5	2.00				
				D6	2.50				
				SPT(C)	3.00				N=10 (1,1/2,2,3,3)
				D7	3.00				
				D8	3.50				
Drilled through by SPT rod only. No recovery		4.00	1.93	SPT(C)	4.00				
				SPT(C)	4.45				N=24 (4,4/5,7,7,5)
Borehole completed at 4.90m.		4.90	1.03						

Window or Windowless Sampling Run Details					Water Strike						
Diameter (mm)	Top Depth (m)	Base Depth (m)	Sample Length (m)	Recovery (%)	Date	Strike Depth (m)	Depth Sealed (m)	Casing Depth (m)	Time Elapsed (mins)	Standing Level (m)	Remarks
85	1.20	2.00	0.80	100	13-12-2018	2.70			20	2.70	
75	2.00	3.00	1.00	100							
65	3.00	4.00	1.00	100							
					Remarks: 1. Inspection pit from GL to 1.20m. 2. SPT rod drilled from 4.00m to 4.90m to allow installation of 19mm standpipe. Two SPT tests detailed for the continuous depth drive. 3. Installation: 19mm standpipe GL to 1.00m plain, 1.00m to 4.80m slotted, fitted with cap and tophat cover. 4. Backfill: GL to 0.20m concrete, 0.20m to 1.00m bentonite pellets, 1.00m to 4.90m gravel.						
Norwich Office: 01603 613111 London Office: 020 7537 9233 Cambridge Office: 01223 781585 Testing Services: 01603 416333 E-mail: info@harrisingroupuk.com Website: www.harrisingroupuk.com											
Drilled by: S. Bellchambers					Logged by: I. Reid			Checked by: M. Cooper			Fm-Hn-R-3068-Rev C

					Dynamic Continuous Sampling Borehole Record					WS202		Sheet 1 of 2	
Project ID: GL22428A					Client: Trustees of the Langmead Pension Scheme					E: 497284.93		N: 103045.78	
Location: Land East of Drove Lane, Yapton					Consultant: Harrison Group Environmental Ltd					Date: 13/12/2018			
					Plant used: Premier Tracked 110 Rig					SPT Hammer Serial No: 382709 (ER: 88%)			
Geology Description					Legend	Depth (m)	Elevation (maOD) 6.14	Sample / In-Situ Test Information			Casing (Water)	Installation & Backfill	
MADE GROUND. Very soft brown gravelly slightly organic CLAY. Gravel is angular to subrounded fine to coarse brick and flint. Very soft orangish brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse flint.						0.20	5.94	D1	0.10				
								B1	0.50				
								D2	0.50				
								SPT(C)	1.00				N=7 (1,1/1,1,2,3)
								D3	1.00				
Light brown locally mottled light grey sandy slightly gravelly CLAY. Gravel is angular to subrounded fine to coarse flint. From 2.90m: Chalk present in gravel.						2.35	3.79	D4	1.50				
								SPT(C)	2.00				N=11 (1,1/1,3,3,4)
								D5	2.00				
								SPT(C)	3.00				N=11 (1,1/2,3,3,3)
								D7	3.00				
Light brown gravelly SILT. Gravel is angular to subrounded fine to coarse chalk and flint.						3.85	2.29	D6	2.50				
								SPT(C)	4.00				N=18 (3,3/4,4,4,6)
								D9	4.00				
								D10	4.50				
Recovered as structureless CHALK composed of cream to white silty GRAVEL. Clasts are moderately weak, low density, white, angular to subangular fine to coarse chalk with frequent flint						4.65	1.49	D11	4.70				
								SPT(C)	4.80				N=54 (3,6/11,14,15,14)
Window or Windowless Sampling Run Details					Water Strike								
Diameter (mm)	Top Depth (m)	Base Depth (m)	Sample Length (m)	Recovery (%)	Date	Strike Depth (m)	Depth Sealed (m)	Casing Depth (m)	Time Elapsed (mins)	Standing Level (m)	Remarks		
85	1.20	2.00	0.80	100							No groundwater encountered		
75	2.00	3.00	1.00	100	Remarks: 1. Inspection pit from GL to 1.20m. 2. Installation: 50mm standpipe GL to 1.00m plain, 1.00m to 4.80m slotted, fitted with gas tap, bung and tophat cover. 3. Backfill: GL to 0.20m concrete, 0.20m to 1.00m bentonite pellets, 1.00m to 5.25m gravel.								
65	3.00	4.00	1.00	100									
55	4.00	4.80	0.80	100									
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Drilled by: S. Bellchambers					Logged by: I. Reid			Checked by: M. Cooper			Fm-Hn-R-3068-Rev C		

					Dynamic Continuous Sampling Borehole Record					WS203		Sheet 1 of 1	
Project ID: GL22428A					Client: Trustees of the Langmead Pension Scheme					E: 497129.58		N: 103091.73	
Location: Land East of Drove Lane, Yapton					Consultant: Harrison Group Environmental Ltd					Date: 14/12/2018			
					Plant used: Premier Tracked 110 Rig					SPT Hammer Serial No: 382709 (ER: 88%)			
Geology Description					Legend	Depth (m)	Elevation (maOD) 4.96	Sample / In-Situ Test Information			Casing (Water)	Installation & Backfill	
								Type	Depth	Results / Remarks			
MADE GROUND. Very soft brown slightly gravelly slightly organic CLAY. Gravel is subangular to subrounded fine and medium brick and flint. Soft orangish brown slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse flint.						0.20	4.76	D1	0.10	N=6 (1,1/1,1,2,2)	-		
								B1 D2	0.50 0.50				
								SPT(C) D3	1.00 1.00				
								D4	1.50				
								SPT(C) D5	2.00 2.00				
Orangish brown mottled light grey very gravelly SILT. Gravel is angular to subrounded fine to coarse chalk and flint. <i>From 2.40m to 2.50m: Band of flint cobbles.</i>						2.15	2.81	D6	2.50	N=8 (1,1/1,2,2,3)	-		
Recovered as structureless CHALK composed of cream to white slightly gravelly SILT. Gravel is weak to moderately weak, medium density, white, angular to subrounded fine to coarse chalk. (Grade Dm)									2.90				2.06
						4.00	0.96			SPT(C) D9	4.00 4.00	N=20 (1,1/2,5,7,6)	
Drilled through by SPT rod only. No recovery											SPT(C)		4.45
Borehole completed at 5.00m.						5.00	-0.04						
Window or Windowless Sampling Run Details					Water Strike								
Diameter (mm)	Top Depth (m)	Base Depth (m)	Sample Length (m)	Recovery (%)	Date	Strike Depth (m)	Depth Sealed (m)	Casing Depth (m)	Time Elapsed (mins)	Standing Level (m)	Remarks		
85	1.20	2.00	0.80	100	14-12-2018	3.40			20	2.20	Remarks: 1. Inspection pit from GL to 1.20m. 2. SPT rod drilled from 4.00m to 5.00m to allow installation of 19mm standpipe. Two SPT tests detailed for the continuous depth drive. 3. Installation: 19mm standpipe GL to 1.00m plain, 1.00m to 5.00m slotted, fitted with cap and tophat cover. 4. Backfill: GL to 0.20m concrete, 0.20m to 1.00m bentonite pellets, 1.00m to 5.00m gravel.		
75	2.00	3.00	1.00	100									
65	3.00	4.00	1.00	100									
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Drilled by: S. Bellchambers					Logged by: I. Reid				Checked by: M. Cooper			Fm-Hn-R-3068-Rev C	

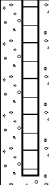
		Dynamic Continuous Sampling Borehole Record			WS204		Sheet 1 of 2	
Project ID: GL22428A		Client: Trustees of the Langmead Pension Scheme			E: 497219.84		N: 103112.59	
Location: Land East of Drove Lane, Yapton		Consultant: Harrison Group Environmental Ltd			Date: 13/12/2018			
		Plant used: Premier Tracked 110 Rig			SPT Hammer Serial No: 382709 (ER: 88%)			

Geology Description	Legend	Depth (m)	Elevation (maOD) 5.67	Sample / In-Situ Test Information			Casing (Water)	Installation & Backfill	
				Type	Depth	Results / Remarks			
TOPSOIL. Very soft brown slightly gravelly CLAY. Gravel is subangular to rounded fine and medium flint. Soft orangish brown slightly gravelly CLAY. Gravel is subangular to rounded coarse flint.		0.15	5.52	D1	0.10				
				B1 D2	0.50 0.50				
				SPT(C) D3	1.00 1.00				N=5 (1,1/1,1,1,2)
				D4	1.50				
Light orangish brown slightly gravelly sandy CLAY. Gravel is subangular to subrounded fine and medium chalk and flint.		1.55	4.12	SPT(C) D5	2.00 2.00	N=10 (1,1/2,2,3,3)	-		
				D6	2.50				
Soft orangish brown mottled grey slightly sandy CLAY with occasional gravel of subangular to subrounded fine flint.		2.55	3.12	SPT(C) D7	3.00 3.00	N=0 (0,0/0,0,0,0)	-		
				D8	3.50				
Medium dense orangish brown mottled grey slightly gravelly fine and medium SAND. Gravel is subangular to subrounded fine flint. <i>From 4.10m: Becoming very gravelly. Chalk present in gravel.</i>		3.80	1.87	SPT(C) D9	4.00 4.00	N=17 (1,1/2,3,4,8)	-		
				D10	4.40				
Recovered as structureless CHALK composed of cream to white silty GRAVEL. Clasts are moderately weak, low density, white, angular to subangular fine to coarse chalk with frequent flint		4.60 4.80	1.07 0.87	D11	4.70	N=27 (3,4/4,5,6,12)	-		
				SPT(C)	4.80				

Window or Windowless Sampling Run Details					Water Strike						
Diameter (mm)	Top Depth (m)	Base Depth (m)	Sample Length (m)	Recovery (%)	Date	Strike Depth (m)	Depth Sealed (m)	Casing Depth (m)	Time Elapsed (mins)	Standing Level (m)	Remarks
85	1.20	2.00	0.80	100						3.60	No groundwater encountered
75	2.00	3.00	1.00	100							
65	3.00	4.00	1.00	100							
55	4.00	4.80	0.80	100							
Norwich Office: 01603 613111 London Office: 020 7537 9233 Cambridge Office: 01223 781585 Testing Services: 01603 416333 E-mail: info@harrisingroupuk.com Website: www.harrisingroupuk.com					Remarks: 1. Inspection pit from GL to 1.20m. 2. SPT rod drilled from 4.80m to 5.75m to allow installation of 19mm standpipe. Two SPT tests detailed for the continuous depth drive. 3. Installation: 19mm standpipe GL to 1.00m plain, 1.00m to 5.70m slotted, fitted with cap and tophat cover. 4. Backfill: GL to 0.20m concrete, 0.20m to 1.00m bentonite pellets, 1.00m to 5.75m gravel.						

Drilled by: S. Bellchambers	Logged by: I. Reid	Checked by: M. Cooper	Fm-Hn-R-3068-Rev C
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		Dynamic Continuous Sampling Borehole Record			WS204		Sheet 2 of 2	
Project ID: GL22428A		Client: Trustees of the Langmead Pension Scheme			E: 497219.84 N: 103112.59			
Location: Land East of Drove Lane, Yapton		Consultant: Harrison Group Environmental Ltd			Date: 13/12/2018			
		Plant used: Premier Tracked 110 Rig			SPT Hammer Serial No: 382709 (ER: 88%)			

Geology Description	Legend	Depth (m)	Elevation (maOD) 5.67	Sample / In-Situ Test Information			Casing (Water)	Installation & Backfill
				Type	Depth	Results / Remarks		
Recovered as structureless CHALK composed of cream to white silty GRAVEL. Clasts are moderately weak, low density, white, angular to subangular fine to coarse chalk with frequent flint fragments. (Grade Dc) Drilled through by SPT rod only. No recovery				SPT(C)	5.30	N=38 (12,11/10,9,9,10)	-	
Borehole completed at 5.75m.		5.75	-0.08					

Window or Windowless Sampling Run Details					Water Strike						
Diameter (mm)	Top Depth (m)	Base Depth (m)	Sample Length (m)	Recovery (%)	Date	Strike Depth (m)	Depth Sealed (m)	Casing Depth (m)	Time Elapsed (mins)	Standing Level (m)	Remarks
85	1.20	2.00	0.80	100						3.60	No groundwater encountered
75	2.00	3.00	1.00	100							
65	3.00	4.00	1.00	100							
55	4.00	4.80	0.80	100							

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Remarks:

1. Inspection pit from GL to 1.20m.

2. SPT rod drilled from 4.80m to 5.75m to allow installation of 19mm standpipe. Two SPT tests detailed for the continuous depth drive.

3. Installation: 19mm standpipe GL to 1.00m plain, 1.00m to 5.70m slotted, fitted with cap and tophat cover.

4. Backfill: GL to 0.20m concrete, 0.20m to 1.00m bentonite pellets, 1.00m to 5.75m gravel.

Drilled by: S. Bellchambers	Logged by: I. Reid	Checked by: M. Cooper	Fm-Hn-R-3068-Rev C
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Dynamic Continuous Sampling Borehole Record

WS205

Sheet 1 of 2

Project ID: GL22428A

Client: Trustees of the Langmead Pension Scheme

E: 497424.84 N: 103051.23

Location: Land East of Drove Lane, Yapton

Consultant: Harrison Group Environmental Ltd

Date: 13/12/2018

Plant used: Premier Tracked 110 Rig

SPT Hammer Serial No: 382709 (ER: 88%)

Geology Description	Legend	Depth (m)	Elevation (maOD) 6.68	Sample / In-Situ Test Information			Casing (Water)	Installation & Backfill	
				Type	Depth	Results / Remarks			
MADE GROUND. Very soft brown slightly gravelly slightly organic CLAY. Gravel is angular to subrounded fine and medium brick and flint. Very soft orangish brown slightly sandy slightly gravelly CLAY. Gravel is angular to subrounded fine to coarse flint.		0.15	6.53	D1	0.10				
				B1	0.50				
				D2	0.50				
				SPT(C) D3	1.00 1.00				N=8 (1,1/2,2,3)
				D4	1.50				
Light brown slightly sandy slightly gravelly SILT. Gravel is angular to subrounded fine and medium flint.		2.10	4.58	SPT(C) D5	2.00 2.00	N=4 (1,2/1,1,1,1)	-		
				D6	2.50				
Medium dense brown mottled light grey very silty gravelly fine and medium SAND. Gravel is angular to subrounded fine to coarse chalk and flint.		2.90	3.78	SPT(C) D7	3.00 3.00	N=16 (1,1/2,3,5,6)	-		
				D8	3.50				
				SPT(C) D9	4.00 4.00	N=22 (3,5/6,6,5,5)	-		
				D10	4.50				
Recovered as structureless CHALK composed of cream to white silty GRAVEL. Clasts are moderately weak, low density, white, angular to subangular fine to coarse chalk with frequent flint		4.65 4.80	2.03 1.88	SPT(C) D11	4.80 4.80	N=30 (7,7/8,7,7,8)	-		

Window or Windowless Sampling Run Details

Diameter (mm)	Top Depth (m)	Base Depth (m)	Sample Length (m)	Recovery (%)
85	1.20	2.00	0.80	100
75	2.00	3.00	1.00	100
65	3.00	4.00	1.00	100
55	4.00	4.80	0.80	100

Water Strike

Date	Strike Depth (m)	Depth Sealed (m)	Casing Depth (m)	Time Elapsed (mins)	Standing Level (m)	Remarks
13-12-2018	3.60			20	3.60	

Remarks:

1. Inspection pit from GL to 1.20m.
2. SPT rod drilled from 4.80m to 5.75m to allow installation of 19mm standpipe. Two SPT tests detailed for the continuous depth drive.
3. Installation: 19mm standpipe GL to 1.50m plain, 1.50m to 5.70m slotted, fitted with cap and tophat cover.
4. Backfill: GL to 0.20m concrete, 0.20m to 1.50m bentonite pellets, 1.50m to 5.75m gravel.

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Drilled by: S. Bellchambers

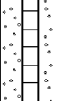
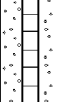
Logged by: I. Reid

Checked by: M. Cooper

Fm-Hn-R-3068-Rev C

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		Dynamic Continuous Sampling Borehole Record			WS206		Sheet 1 of 1	
Project ID: GL22428A		Client: Trustees of the Langmead Pension Scheme			E: 497324.61		N: 103138.85	
Location: Land East of Drove Lane, Yapton		Consultant: Harrison Group Environmental Ltd			Date: 12/12/2018			
		Plant used: Premier Tracked 110 Rig			SPT Hammer Serial No: 382709 (ER: 88%)			

Geology Description	Legend	Depth (m)	Elevation (maOD) 5.90	Sample / In-Situ Test Information			Casing (Water)	Installation & Backfill
				Type	Depth	Results / Remarks		
MADE GROUND. Very soft brown slightly gravelly slightly organic clayey SILT. Gravel is subangular to subrounded fine brick and flint. Very soft brown to orangish brown slightly sandy CLAY with rare gravel of subrounded fine flint.		0.20	5.70	D1	0.10	N=5 (1,1/1,1,1,2)	-	
				B1	0.50			
				D2	0.50			
				SPT(C)	1.00			
				D3	1.00			
				D4	1.50			
Brown locally mottled light grey gravelly SILT. Gravel is subangular to subrounded fine to coarse flint.		2.80	3.10	SPT(C)	3.00	N=0 (0,0/0,0,0,0)	-	
				D7	3.00			
Recovered as structureless CHALK composed of cream to white gravelly SILT. Gravel is weak, low density, cream to white, angular to subrounded fine to coarse chalk with flint fragments. (Grade Dm)		3.30	2.60	D8	3.50			
				D9	4.00			
Drilled through by SPT rod only. No recovery		4.00	1.90					
Borehole completed at 5.00m.		5.00	0.90					

Window or Windowless Sampling Run Details					Water Strike						
Diameter (mm)	Top Depth (m)	Base Depth (m)	Sample Length (m)	Recovery (%)	Date	Strike Depth (m)	Depth Sealed (m)	Casing Depth (m)	Time Elapsed (mins)	Standing Level (m)	Remarks
85	1.20	2.00	0.80	100	12-12-2018	3.20			20	2.40	
75	2.00	3.00	1.00	100							
65	3.00	4.00	1.00	100							

Remarks:

1. Inspection pit from GL to 1.20m.

2. SPT rod continuously drilled from 4.00m to 5.00m to allow installation of 19mm standpipe.

3. Installation: 19mm standpipe GL to 1.00m plain, 1.00m to 5.00m slotted, fitted with cap and tophat cover.

4. Backfill: GL to 0.20m concrete, 0.20m to 1.00m bentonite pellets, 1.00m to 5.00m gravel.

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Drilled by: S. Bellchambers	Logged by: I. Reid	Checked by: M. Cooper	Fm-Hn-R-3068-Rev C
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		Dynamic Continuous Sampling Borehole Record			WS207		Sheet 1 of 1	
Project ID: GL22428A		Client: Trustees of the Langmead Pension Scheme			E: 497457.58		N: 103110.55	
Location: Land East of Drove Lane, Yapton		Consultant: Harrison Group Environmental Ltd			Date: 13/12/2018			
		Plant used: Premier Tracked 110 Rig			SPT Hammer Serial No: 382709 (ER: 88%)			

Geology Description	Legend	Depth (m)	Elevation (maOD) 6.44	Sample / In-Situ Test Information			Casing (Water)	Installation & Backfill	
				Type	Depth	Results / Remarks			
MADE GROUND. Very soft brown slightly gravelly slightly organic CLAY. Gravel is angular to subrounded fine and coarse brick and flint. Soft orangish brown slightly sandy CLAY with rare gravel of subangular to subrounded fine to coarse flint.		0.25	6.19	D1	0.10				
				B1	0.50				
				D2	0.50				
				SPT(C) D3	1.00 1.00				N=5 (1,1/1,1,2,1)
				D4	1.50				
Brown locally mottled light grey gravelly SILT. Gravel is subangular to subrounded fine to coarse flint. <i>From 2.80m: Chalk present in gravel.</i>		2.40	4.04	D6	2.50				
				SPT(C) D7	3.00 3.00				N=6 (0,1/1,1,3,1)
Recovered as structureless CHALK composed of cream to white gravelly SILT. Gravel is weak to moderately weak, low density, white, angular to subrounded fine to coarse chalk with flint fragments. (Grade Dm)		3.10	3.34	D8	3.50				
				SPT(C) D9	4.00 4.00				N=16 (3,3/3,4,5,4)
Drilled through by SPT rod only. No recovery		4.00	2.44	SPT(C) D10	4.50 4.50				
				D11	4.80				
Borehole completed at 5.00m.			5.00		1.44				

Window or Windowless Sampling Run Details					Water Strike						
Diameter (mm)	Top Depth (m)	Base Depth (m)	Sample Length (m)	Recovery (%)	Date	Strike Depth (m)	Depth Sealed (m)	Casing Depth (m)	Time Elapsed (mins)	Standing Level (m)	Remarks
85	1.20	2.00	0.80	100	13-12-2018	3.20			20	2.90	
75	2.00	3.00	1.00	100							
65	3.00	4.00	1.00	100							
					Remarks: 1. Inspection pit from GL to 1.20m. 2. SPT rod drilled from 4.00m to 5.00m to allow installation of 19mm standpipe. Two SPT tests detailed for the continuous depth drive. 3. Installation: 19mm standpipe GL to 1.00m plain, 1.00m to 5.00m slotted, fitted with cap and tophat cover. 4. Backfill: GL to 0.20m concrete, 0.20m to 1.00m bentonite pellets, 1.00m to 5.00m gravel.						
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Drilled by: S. Bellchambers	Logged by: I. Reid	Checked by: M. Cooper	Fm-Hn-R-3068-Rev C
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		Dynamic Continuous Sampling Borehole Record			WS208		Sheet 1 of 2	
Project ID: GL22428A		Client: Trustees of the Langmead Pension Scheme			E: 497398.15		N: 103175.52	
Location: Land East of Drove Lane, Yapton		Consultant: Harrison Group Environmental Ltd			Date: 12/12/2018			
		Plant used: Premier Tracked 110 Rig			SPT Hammer Serial No: 382709 (ER: 88%)			

Geology Description	Legend	Depth (m)	Elevation (maOD) 6.06	Sample / In-Situ Test Information			Casing (Water)	Installation & Backfill	
				Type	Depth	Results / Remarks			
MADE GROUND. Very soft brown slightly gravelly slightly organic CLAY. Gravel is angular to subrounded fine and medium brick and flint. Very soft orangish brown slightly sandy CLAY.		0.15	5.91	D1	0.10				
				B1 D2	0.50 0.50				
				SPT(C) D3	1.00 1.00				N=10 (1,1/2,2,3,3)
Loose becoming medium dense brown to orangish brown slightly gravelly slightly clayey fine SAND. Gravel is angular to subrounded fine to coarse flint.		1.40	4.66	D4	1.50				
				SPT(C) D5	2.00 2.00				N=7 (1,1/1,1,2,3)
				D6	2.50				
				SPT(C) D7	3.00 3.00				N=16 (3,3/3,4,4,5)
Light brown mottled light grey gravelly SILT. Gravel is subangular to subrounded fine and medium flint and chalk.		3.40	2.66	D8	3.50				
				SPT(C) D9	4.00 4.00				N=36 (2,2/3,8,12,13)
Recovered as structureless CHALK composed of cream to white gravelly SILT. Gravel is weak, low density, cream to white, angular to subangular fine to coarse chalk with flint fragments. (Grade Dm)		4.35	1.71	D10 SPT(C)	4.50 4.60	N=40 (8,10/10,9,9,12)			

Window or Windowless Sampling Run Details					Water Strike						
Diameter (mm)	Top Depth (m)	Base Depth (m)	Sample Length (m)	Recovery (%)	Date	Strike Depth (m)	Depth Sealed (m)	Casing Depth (m)	Time Elapsed (mins)	Standing Level (m)	Remarks
85	1.20	2.00	0.80	100	12-12-2018	3.90			20	3.80	
75	2.00	3.00	1.00	100	Remarks: 1. Inspection pit from GL to 1.20m. 2. Hole collapsed from 5.05m to 4.40m following SPT test. 3. Installation: 50mm standpipe GL to 1.00m plain, 1.00m to 4.40m slotted, fitted with gas tap, bung and tophat cover. 4. Backfill: GL to 0.20m concrete, 0.20m to 1.00m bentonite pellets, 1.00m to 4.40m gravel, 4.40m to 5.05m arisings.						
65	3.00	4.00	1.00	100							
55	4.00	5.00	1.00	100							

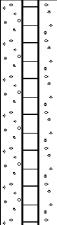
Norwich Office: 01603 613111 London Office: 020 7537 9233 Cambridge Office: 01223 781585 Testing Services: 01603 416333 E-mail: info@harrisongroupuk.com Website: www.harrisongroupuk.com					Drilled by: S. Bellchambers		Logged by: I. Reid		Checked by: M. Cooper		Fm-Hn-R-3068-Rev C
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		Dynamic Continuous Sampling Borehole Record			WS209		Sheet 1 of 2	
Project ID: GL22428A		Client: Trustees of the Langmead Pension Scheme			E: 497294.83		N: 103247.25	
Location: Land East of Drove Lane, Yapton		Consultant: Harrison Group Environmental Ltd			Date: 14/12/2018			
		Plant used: Premier Tracked 110 Rig			SPT Hammer Serial No: 382709 (ER: 88%)			

Geology Description	Legend	Depth (m)	Elevation (maOD) 5.66	Sample / In-Situ Test Information			Casing (Water)	Installation & Backfill		
				Type	Depth	Results / Remarks				
MADE GROUND. Very soft brown slightly gravelly slightly organic CLAY. Gravel is angular to subrounded fine to coarse brick and flint.		0.20	5.46	D1	0.10					
Soft orangish brown slightly gravelly CLAY. Gravel is subangular to subrounded fine and medium flint.				B1	0.50					
				D2	0.50					
				SPT(C) D3	1.00 1.00				N=6 (1,1/1,1,2,2)	
From 1.45m to 1.64m: Band of dark orangish brown slightly clayey gravelly fine and medium sand. Gravel is subangular to subrounded fine flint.				D4	1.50					
					SPT(C) D5				2.00 2.00	N=6 (0,0/0,1,3,2)
					D6				2.50	
					SPT(C) D7				3.00 3.00	N=8 (2,2/1,2,3,2)
Light grey mottled light brown very gravelly SILT. Gravel is angular to subrounded fine to coarse chalk and flint.		2.80	2.86	D8	3.50					
					SPT(C) D9				4.00 4.00	N=3 (0,0/0,1,1,1)
Recovered as structureless CHALK composed of cream to off-white gravelly SILT. Gravel is weak to moderately weak, low density, off-white, subangular to subrounded fine to coarse chalk with flint fragments. (Grade Dm)		4.10	1.56	D10	4.50					
					SPT(C) D11				5.00 5.00	N=20 (2,5/4,5,6,5)
		5.00	0.66							

Window or Windowless Sampling Run Details					Water Strike						
Diameter (mm)	Top Depth (m)	Base Depth (m)	Sample Length (m)	Recovery (%)	Date	Strike Depth (m)	Depth Sealed (m)	Casing Depth (m)	Time Elapsed (mins)	Standing Level (m)	Remarks
85	1.20	2.00	0.80	100	14-12-2018	4.10			20	4.10	
75	2.00	3.00	1.00	100							
65	3.00	4.00	1.00	100							
55	4.00	5.00	1.00	100							
					Remarks: 1. Inspection pit from GL to 1.20m. 2. SPT rod drilled from 5.00m to 5.90m to allow installation of 19mm standpipe. Two SPT tests detailed for the continuous depth drive. 3. Installation: 19mm standpipe GL to 1.00m plain, 1.00m to 5.90m slotted, fitted with cap and tophat cover. 4. Backfill: GL to 0.20m concrete, 0.20m to 1.00m bentonite pellets, 1.00m to 5.90m gravel.						
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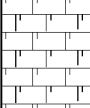
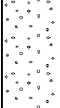
Drilled by: S. Bellchambers	Logged by: I. Reid	Checked by: M. Cooper	Fm-Hn-R-3068-Rev C
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					Dynamic Continuous Sampling Borehole Record					WS209		Sheet 2 of 2																																																								
Project ID: GL22428A					Client: Trustees of the Langmead Pension Scheme					E: 497294.83		N: 103247.25																																																								
Location: Land East of Drove Lane, Yapton					Consultant: Harrison Group Environmental Ltd					Date: 14/12/2018																																																										
					Plant used: Premier Tracked 110 Rig					SPT Hammer Serial No: 382709 (ER: 88%)																																																										
Geology Description					Legend	Depth (m)	Elevation (maOD) 5.66	Sample / In-Situ Test Information			Casing (Water)	Installation & Backfill																																																								
								Type	Depth	Results / Remarks																																																										
Drilled through by SPT rod only. No recovery						5.90	-0.24	SPT(C)	5.45	N=20 (4,4/4,6,6,4)	-																																																									
Borehole completed at 5.90m.																																																																				
<table border="1"> <thead> <tr> <th colspan="5">Window or Windowless Sampling Run Details</th> <th colspan="5">Water Strike</th> </tr> <tr> <th>Diameter (mm)</th> <th>Top Depth (m)</th> <th>Base Depth (m)</th> <th>Sample Length (m)</th> <th>Recovery (%)</th> <th>Date</th> <th>Strike Depth (m)</th> <th>Depth Sealed (m)</th> <th>Casing Depth (m)</th> <th>Time Elapsed (mins)</th> <th>Standing Level (m)</th> <th>Remarks</th> </tr> </thead> <tbody> <tr> <td>85</td> <td>1.20</td> <td>2.00</td> <td>0.80</td> <td>100</td> <td>14-12-2018</td> <td>4.10</td> <td></td> <td></td> <td>20</td> <td>4.10</td> <td></td> </tr> <tr> <td>75</td> <td>2.00</td> <td>3.00</td> <td>1.00</td> <td>100</td> <td colspan="7" rowspan="3"> Remarks: 1. Inspection pit from GL to 1.20m. 2. SPT rod drilled from 5.00m to 5.90m to allow installation of 19mm standpipe. Two SPT tests detailed for the continuous depth drive. 3. Installation: 19mm standpipe GL to 1.00m plain, 1.00m to 5.90m slotted, fitted with cap and tophat cover. 4. Backfill: GL to 0.20m concrete, 0.20m to 1.00m bentonite pellets, 1.00m to 5.90m gravel. </td> </tr> <tr> <td>65</td> <td>3.00</td> <td>4.00</td> <td>1.00</td> <td>100</td> </tr> <tr> <td>55</td> <td>4.00</td> <td>5.00</td> <td>1.00</td> <td>100</td> </tr> </tbody> </table>													Window or Windowless Sampling Run Details					Water Strike					Diameter (mm)	Top Depth (m)	Base Depth (m)	Sample Length (m)	Recovery (%)	Date	Strike Depth (m)	Depth Sealed (m)	Casing Depth (m)	Time Elapsed (mins)	Standing Level (m)	Remarks	85	1.20	2.00	0.80	100	14-12-2018	4.10			20	4.10		75	2.00	3.00	1.00	100	Remarks: 1. Inspection pit from GL to 1.20m. 2. SPT rod drilled from 5.00m to 5.90m to allow installation of 19mm standpipe. Two SPT tests detailed for the continuous depth drive. 3. Installation: 19mm standpipe GL to 1.00m plain, 1.00m to 5.90m slotted, fitted with cap and tophat cover. 4. Backfill: GL to 0.20m concrete, 0.20m to 1.00m bentonite pellets, 1.00m to 5.90m gravel.							65	3.00	4.00	1.00	100	55	4.00	5.00	1.00	100
Window or Windowless Sampling Run Details					Water Strike																																																															
Diameter (mm)	Top Depth (m)	Base Depth (m)	Sample Length (m)	Recovery (%)	Date	Strike Depth (m)	Depth Sealed (m)	Casing Depth (m)	Time Elapsed (mins)	Standing Level (m)	Remarks																																																									
85	1.20	2.00	0.80	100	14-12-2018	4.10			20	4.10																																																										
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Norwich Office: 01603 613111 London Office: 020 7537 9233 Cambridge Office: 01223 781585 Testing Services: 01603 416333 E-mail: info@harrisingroupuk.com Website: www.harrisingroupuk.com																																																																				
Drilled by: S. Bellchambers					Logged by: I. Reid				Checked by: M. Cooper			Fm-Hn-R-3068-Rev C																																																								

					Dynamic Continuous Sampling Borehole Record					WS210		Sheet 1 of 2					
Project ID: GL22428A					Client: Trustees of the Langmead Pension Scheme					E: 497374.11		N: 103349.24					
Location: Land East of Drove Lane, Yapton					Consultant: Harrison Group Environmental Ltd					Date: 12/12/2018							
					Plant used: Premier Tracked 110 Rig					SPT Hammer Serial No: 382709 (ER: 88%)							
Geology Description					Legend	Depth (m)	Elevation (maOD) 6.04	Sample / In-Situ Test Information			Casing (Water)	Installation & Backfill					
								Type	Depth	Results / Remarks							
MADE GROUND. Soft brown slightly gravelly slightly organic CLAY. Gravel is subangular to subrounded fine brick and flint.						0.25	5.79	D1	0.20	N=5 (1,1/1,1,2,1)	-						
Very soft orangish brown slightly sandy CLAY with rare gravel of subrounded fine to coarse flint.								B1	0.50								
								D2	0.50								
								SPT(C)	1.00				N=4 (0,0/1,1,1,1)	-			
								D3	1.00								
								D4	1.50								
								SPT(C)	2.00								
								D5	2.00				N=8 (1,1/2,2,2,2)	-			
								D6	2.50								
								SPT(C)	3.00								
								D7	3.00								
Loose orangish brown mottled white gravelly fine to coarse SAND. Gravel is angular to subrounded fine and medium flint and chalk. Locally a slightly sandy slightly gravelly clay.									2.95				3.09	SPT(C)	3.00	N=6 (0,0/1,2,1,2)	-
					D8	3.50											
					SPT(C)	4.00											
					D9	4.00											
					D10	4.50											
					SPT(S)	5.00	N=26 (4,4/5,6,7,8)			-							
					D11	5.00											
					D12	5.00											
						5.00 - 5.45											
						3.40	2.64					-					

Window or Windowless Sampling Run Details					Water Strike						
Diameter (mm)	Top Depth (m)	Base Depth (m)	Sample Length (m)	Recovery (%)	Date	Strike Depth (m)	Depth Sealed (m)	Casing Depth (m)	Time Elapsed (mins)	Standing Level (m)	Remarks
85	1.20	2.00	0.80	100	12-12-2018	3.60			20	3.50	
75	2.00	3.00	1.00	100							
65	3.00	4.00	1.00	100							
55	4.00	5.00	1.00	100							
					Remarks: 1. Inspection pit from GL to 1.20m. 2. Installation: 50mm standpipe GL to 1.00m plain, 1.00m to 5.00m slotted, fitted with gas tap, bung and tophat cover. 3. Backfill: GL to 0.20m concrete, 0.20m to 1.00m bentonite pellets, 1.00m to 5.45m gravel.						
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Drilled by: S. Bellchambers					Logged by: I. Reid			Checked by: M. Cooper			Fm-Hn-R-3068-Rev C

					Dynamic Continuous Sampling Borehole Record					WS211		Sheet 1 of 2	
Project ID: GL22428A					Client: Trustees of the Langmead Pension Scheme					E: 497490.76		N: 103232.89	
Location: Land East of Drove Lane, Yapton					Consultant: Harrison Group Environmental Ltd					Date: 12/12/2018			
					Plant used: Premier Tracked 110 Rig					SPT Hammer Serial No: 382709 (ER: 88%)			
Geology Description					Legend	Depth (m)	Elevation (maOD) 6.35	Sample / In-Situ Test Information			Casing (Water)	Installation & Backfill	
								Type	Depth	Results / Remarks			
MADE GROUND. Very soft brown slightly gravelly slightly organic CLAY. Gravel is angular to subrounded fine and medium brick and flint. Very soft brown slightly sandy CLAY with rare gravel of angular to subangular flint.						0.25	6.10	B1	0.20				
								D1	0.20				
								D2	0.50				
								SPT(C) D3	1.00 1.00				N=6 (1,1/1,1,2,2)
Soft orangish brown slightly sandy CLAY.						2.20	4.15	D4	1.50				
								SPT(C) D5	2.00 2.00				N=3 (1,0/1,0,1,1)
Orangish brown slightly sandy gravelly CLAY. Gravel is angular to subrounded medium and coarse flint.						2.65	3.70	D6	2.50				
								SPT(C) D7	3.00 3.00				N=11 (2,2/2,3,3,3)
Recovered as structureless CHALK composed of cream to white gravelly SILT. Gravel is weak, low density, cream to white, angular to subangular fine to coarse chalk with flint fragments. (Grade Dm)						3.60	2.75	D8	3.50				
								SPT(C) D9	4.00 4.00				N=4 (1,1/1,1,1,1)
								D10	4.50				
								SPT(S) D11 D12	5.00 5.00 5.00 - 5.45				N=26 (2,3/4,7,7,8)
Window or Windowless Sampling Run Details					Water Strike								
Diameter (mm)	Top Depth (m)	Base Depth (m)	Sample Length (m)	Recovery (%)	Date	Strike Depth (m)	Depth Sealed (m)	Casing Depth (m)	Time Elapsed (mins)	Standing Level (m)	Remarks		
85	1.20	2.00	0.80	100	12-12-2018	4.50			20	3.30			
75	2.00	3.00	1.00	100	Remarks: 1. Inspection pit from GL to 1.20m. 2. Installation: 50mm standpipe GL to 1.00m plain, 1.00m to 5.00m slotted, fitted with gas tap, bung and tophat cover. 3. Backfill: GL to 0.20m concrete, 0.20m to 1.00m bentonite pellets, 1.00m to 5.45m gravel.								
65	3.00	4.00	1.00	100									
55	4.00	5.00	1.00	100									
Norwich Office: 01603 613111 London Office: 020 7537 9233 Cambridge Office: 01223 781585 Testing Services: 01603 416333 E-mail: info@harrisingroupuk.com Website: www.harrisingroupuk.com													
Drilled by: S. Bellchambers					Logged by: I. Reid				Checked by: M. Cooper			Fm-Hn-R-3068-Rev C	

					Dynamic Continuous Sampling Borehole Record					WS211		Sheet 2 of 2	
Project ID: GL22428A					Client: Trustees of the Langmead Pension Scheme					E: 497490.76		N: 103232.89	
Location: Land East of Drove Lane, Yapton					Consultant: Harrison Group Environmental Ltd					Date: 12/12/2018			
					Plant used: Premier Tracked 110 Rig					SPT Hammer Serial No: 382709 (ER: 88%)			
Geology Description					Legend	Depth (m)	Elevation (maOD) 6.35	Sample / In-Situ Test Information			Casing (Water)	Installation & Backfill	
								Type	Depth	Results / Remarks			
Recovered as structureless CHALK composed of cream to white gravelly SILT. Gravel is weak, low density, cream to white, angular to subangular fine to coarse chalk with flint fragments. (Grade Dm)						5.45	0.90						
Borehole completed at 5.45m.													
Window or Windowless Sampling Run Details					Water Strike								
Diameter (mm)	Top Depth (m)	Base Depth (m)	Sample Length (m)	Recovery (%)	Date	Strike Depth (m)	Depth Sealed (m)	Casing Depth (m)	Time Elapsed (mins)	Standing Level (m)	Remarks		
85	1.20	2.00	0.80	100	12-12-2018	4.50			20	3.30			
75	2.00	3.00	1.00	100	Remarks: 1. Inspection pit from GL to 1.20m. 2. Installation: 50mm standpipe GL to 1.00m plain, 1.00m to 5.00m slotted, fitted with gas tap, bung and tophat cover. 3. Backfill: GL to 0.20m concrete, 0.20m to 1.00m bentonite pellets, 1.00m to 5.45m gravel.								
65	3.00	4.00	1.00	100									
55	4.00	5.00	1.00	100									
Norwich Office: 01603 613111 London Office: 020 7537 9233 Cambridge Office: 01223 781585 Testing Services: 01603 416333 E-mail: info@harrisingroupuk.com Website: www.harrisingroupuk.com													
Drilled by: S. Bellchambers					Logged by: I. Reid				Checked by: M. Cooper			Fm-Hn-R-3068-Rev C	

APPENDIX C

GAS & GROUNDWATER MONITORING RECORDS

				Gas and PID Monitoring Results																	
Project ID: GL22428A		Client: Trustees of the Langmead Pension Scheme		Equipment		Model / Serial Number		Manufacturer's Calibration Date													
Date: 21/12/2018 - 08/01/2019		Location: Land East of Drove Lane, Yapton		Gas Analyser: GA5000 / 501752		22/05/2019															
Weather conditions: Clear, Overcast				PID: Tiger Handheld VOC Detector / L-112924		11/10/2019															
Pump Running Time (Purge): Standard 30 secs. Pump Running Time (Sampling): Standard 180 secs. Flow Details: 5 sec average for 1 min.				PID Details: "<" indicates reading is under the detection limit. ">" indicates reading is over the upper limit. "***" level to be determined.																	
Field engineer(s): S. Hedges/ I. Reid				Remarks:																	
Location ID	Monitoring Pipe and Diameter	Date Monitored	Time	Air Temp (°C)	Atmospheric Pressure 48Hrs Prior to Sampling (mB)	Atmospheric Pressure 24Hrs Prior to Sampling (mB)	Atmospheric Pressure 3Hrs Prior to Sampling (mB)	Atmospheric Pressure When Sampled (mB)	Relative Pressure (mB)	Peak PID (ppm)	Stable PID (ppm)	Methane (%)	Peak Methane (%)	Methane LEL (%)	Carbon Dioxide (%)	Oxygen (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	Flow (l/hr)		
WS202	PIPE1 (50mm)	21/12/2018	11:00:00	9.0	1005	1008	998	999	26.9			0.2	0.2	1.0	0.0	21.4	10.0	0.0	6.3		
			11:00:15									0.2			0.5	19.9	10.0		6.3		
			11:00:30									0.1			0.5	18.5	10.0		5.5		
			11:00:45									0.2			0.5	18.4	10.0		5.5		
			11:01:00									0.2			0.5	18.4	10.0		5.4		
			11:01:30									0.2			0.5	18.4	10.0		5.4		
			11:02:00									0.1			0.5	18.4	10.0		5.4		
			11:03:00									0.1			0.5	18.4	10.0		5.4		
		08/01/2019	13:45:00	10.0	1033	1026	1010	1028	0.1			0.2	0.2	1.0	0.1	21.8	0.0	0.0	0.0		
			13:45:15									0.2			1.1	18.6	0.0	0.0	0.0		
			13:45:30									0.1			1.2	15.2	0.0	0.0	0.0		
			13:45:45									0.1			1.2	14.9	0.0	0.0	0.0		
			13:46:00									0.1			1.1	14.9	0.0	0.0	0.0		
			13:46:30									0.1			1.1	14.9	0.0	0.0	0.0		
			13:47:00									0.1			1.1	14.9	0.0	0.0	0.0		
			13:48:00									0.1			1.1	14.9	0.0	0.0	0.0		
WS208	PIPE1 (50mm)	21/12/2018	10:00:00	8.0	1005	1007	998	999	0.0	0.3	0.1	0.2	0.2	1.0	0.1	20.7	0.0	0.0	-0.1		
			10:00:15							0.4	0.1	0.2			0.1	21.0	0.0		-0.1		
			10:00:30							0.3	0.1	0.2			0.1	21.1	0.0		-0.1		
			10:00:45							0.2	0.1	0.2			0.1	21.2	0.0		-0.1		
			10:01:00							0.2	0.1	0.2			0.1	21.2	0.0		-0.1		
			10:01:30							0.1	0.1	0.2			0.1	21.2	0.0		-0.1		
			10:02:00							0.1	0.1	0.2			0.0	21.2	0.0		-0.1		
			10:03:00							0.1	0.1	0.2			0.0	21.2	0.0		-0.1		
		08/01/2019	14:30:00	10.0	1033	1025	1010	1027	0.0			0.2	0.2	1.0	0.0	22.1	0.0	0.0	0.0		
			14:30:15									0.2			1.1	20.1	0.0	0.0	0.0		
			14:30:30									0.2			1.1	17.6	0.0	0.0	0.0		
			14:30:45									0.2			1.1	17.4	0.0	0.0	0.0		
			14:31:00									0.2			1.1	17.4	0.0	0.0	0.0		
			14:31:30									0.2			1.1	17.3	0.0	0.0	0.0		
			14:32:00									0.2			1.1	17.2	0.0	0.0	0.0		
			14:33:00									0.2			1.1	17.2	0.0	0.0	0.0		
WS210	PIPE1 (50mm)	21/12/2018	09:30:00	8.0	1005	1007	998	999	-0.2	0.4	0.0	0.2	0.2	1.0	0.0	20.9	2.0	0.0	-0.1		
			09:30:15							0.3	0.0	0.2			0.5	20.0	3.0		-0.1		
			09:30:30							0.2	0.0	0.2			0.5	17.4	4.0		-0.1		
			09:30:45							0.0	0.0	0.2			0.5	17.3	4.0		-0.1		
			09:31:00							0.0	0.0	0.2			0.5	17.3	4.0		-0.1		
			09:31:30							0.0	0.0	0.2			0.4	17.7	4.0		-0.1		
			09:32:00							0.0	0.0	0.2			0.4	17.8	4.0		-0.1		
			09:33:00							0.0	0.0	0.2			0.4	17.8	4.0		-0.1		
		08/01/2019	12:00:00	9.0	1033	1026	1010	1026	0.0			0.2	0.2	1.0	0.0	21.1	0.0	0.0	0.0		
			12:00:15									0.2			1.3	18.3	0.0	0.0	0.0		
			12:00:30									0.2			1.3	12.2	0.0	0.0	0.0		
			12:00:45									0.2			1.3	11.5	0.0	0.0	0.0		
			12:01:00									0.2			1.3	11.4	0.0	0.0	0.0		
			12:01:30									0.2			1.3	11.3	0.0	0.0	0.0		
			12:02:00									0.2			1.3	11.2	0.0	0.0	0.0		
			12:03:00									0.2			1.3	11.2	0.0	0.0	0.0		

				Gas and PID Monitoring Results															
Project ID: GL22428A				Client: Trustees of the Langmead Pension Scheme					Equipment Model / Serial Number					Manufacturer's Calibration Date					
Date: 21/12/2018 - 08/01/2019				Location: Land East of Drove Lane, Yapton					Gas Analyser: GA5000 / 501752					22/05/2019					
Weather conditions: Clear, Overcast									PID: Tiger Handheld VOC Detector / L-112924					11/10/2019					
Pump Running Time (Purge): Standard 30 secs. Pump Running Time (Sampling): Standard 180 secs. Flow Details: 5 sec average for 1 min.									PID Details: "<" indicates reading is under the detection limit. ">" indicates reading is over the upper limit. "*" level to be determined.										
Field engineer(s): S. Hedges/ I. Reid				Remarks:															
Location ID	Monitoring Pipe and Diameter	Date Monitored	Time	Air Temp (°C)	Atmospheric Pressure 48Hrs Prior to Sampling (mB)	Atmospheric Pressure 24Hrs Prior to Sampling (mB)	Atmospheric Pressure 3Hrs Prior to Sampling (mB)	Atmospheric Pressure When Sampled (mB)	Relative Pressure (mB)	Peak PID (ppm)	Stable PID (ppm)	Methane (%)	Peak Methane (%)	Methane LEL (%)	Carbon Dioxide (%)	Oxygen (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	Flow (l/hr)
WS211	PIPE1 (50mm)	21/12/2018	09:45:00	8.0	1004	1007	998	999	-0.1	0.0	0.0	0.2	0.2	1.0	0.4	18.2	0.0		0.0
			09:45:15							0.1	0.0	0.2			0.3	19.3	0.0		0.0
			09:45:30							0.3	0.0	0.2			0.2	19.5	0.0		0.0
			09:45:45							0.1	0.0	0.2			0.2	19.9	0.0		0.0
			09:46:00							0.0	0.0	0.2			0.1	20.0	0.0		0.0
			09:46:30							0.0	0.0	0.2			0.1	20.8	0.0		0.0
			09:47:00							0.0	0.0	0.2			0.1	20.8	0.0		0.0
			09:48:00							0.0	0.0	0.2			0.1	20.8	0.0		0.0
		08/01/2019	12:45:00	10.0	1033	1026	1010	1026	0.3			0.2	0.2	1.0	0.1	21.3	0.0	0.0	0.0
			12:45:15									0.2			0.4	19.9	0.0	0.0	0.0
			12:45:30									0.2			0.4	18.2	0.0	0.0	0.0
			12:45:45									0.2			0.3	18.4	0.0	0.0	0.0
			12:46:00									0.2			0.3	18.7	0.0	0.0	0.0
			12:46:30									0.2			0.3	19.0	0.0	0.0	0.0
			12:47:00									0.2			0.3	19.0	0.0	0.0	0.0
			12:48:00									0.2			0.3	19.0	0.0	0.0	0.0



Site Name: Land East of Drove Lane, Yapton Job No.: GL22428A

Site Name: Land East of Drove Lane, Yapton

Job No.: GL22428A

Weather (include Temperature & Pressure): Cloudy, wet

State of Ground: Wet

Harrison Group Environmental Ltd. Unit 12
Waterways Business Centre
Enfield
EN3 6JJ



Site Name:	Land East of Drove Lane, Yapton	Job No.:	GL22428A
------------	---------------------------------	----------	----------

Site Name: Land East of Drove Lane, Yapton

Job No.: GL22428A

Weather (include Temperature & Pressure): Clear, dry

State of Ground: Dry

Harrison Group Environmental Ltd. Unit 12
Waterways Business Centre
Enfield
EN3 6JJ

APPENDIX D

LABORATORY TESTING



Harrison Group Environmental
12, Waterways Business Centre
Navigation Drive
Enfield
EN3 6JJ

For the attention of: John Keay

Page 1 of 1
Issue No: 01

Project: **Drove Lane, Yapton**
Report No: **GL22428A-01**
Your Ref: **GL22428A-01**

Samples received: 19/12/2018
Instruction received: 19/12/2018
Testing commenced: 07/01/2019

Please find results attached as summarised below.

Item	Description	Quantity	UKAS Accredited
1	Water Content	24	Yes
2	Liquid & Plastic Limits	12	Yes
3	Saturation Moisture Content	3	No
4	Particle Size Distribution - Wet Sieve Method	7	Yes

Only those results indicated in this report are UKAS accredited and any opinion or interpretations expressed are outside the scope of UKAS accreditation.

Unless we are notified to the contrary, samples will be disposed after a period of one month from this date.

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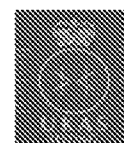
Issued by:

Date Issued:



M. Willson
Laboratory Manager

25 January 2019



4831



DETERMINATION OF WATER CONTENT

BS EN ISO 17892 - 1 : 2014

Project Name:			Drove Lane, Yapton		Project Number:
Client Name:			Trustees of the Langmead Pension Scheme		GL22428A
Location	Depth m	Sample Ref	Sample Description	Water Content %	Remarks
WS201	0.50	D2	Brown CLAY	32.8	
WS202	0.50	B1	Brown CLAY	22.9	
WS203	1.00	D3	Orange brown CLAY	23.1	
WS204	1.00	D3	Orange brown CLAY	23.9	
WS204	3.00	D7	Grey brown slightly gravelly slightly sandy CLAY. Gravel is of flint and chalk	21.4	
WS205	0.50	B1	Brown CLAY	23.2	
WS206	0.50	B1	Orange brown CLAY.	24.0	
WS206	2.00	D5	Brown slightly gravelly slightly sandy CLAY. Gravel is of flint	24.9	
WS207	0.50	B1	Brown CLAY	22.9	
WS207	2.00	D5	Orange brown slightly gravelly CLAY. Gravel is of chalk.	21.5	
Notes: 1) Unless we are notified to the contrary, samples will be disposed after a period of one month from this date. 2) This report should not be reproduced except in full without the written approval of the laboratory. 3) Only those results indicated in this report are UKAS accredited and any opinion or interpretations expressed are outside the scope of UKAS accreditation.					
Remarks			Approved	Date	Sheet No.:
			MW M. Willson Laboratory Manager	25/01/2019	1 of 3



DETERMINATION OF WATER CONTENT

BS EN ISO 17892 - 1 : 2014

Project Name:			Drove Lane, Yapton		Project Number:	
Client Name:			Trustees of the Langmead Pension Scheme		GL22428A	
Location	Depth m	Sample Ref	Sample Description	Water Content %	Remarks	
WS208	0.50	B1	Brown CLAY	22.9		
WS209	0.50	D2	Brown slightly gravelly CLAY. Gravel is of chalk.	22.5		
WS209	1.50	D4	Orange brown slightly gravelly slightly sandy CLAY. Gravel is of flint and chalk	19.9		
WS210	0.20	D1	Brown slightly gravelly CLAY. Gravel is of flint.	26.5		
WS210	0.50	B1	Brown slightly gravelly CLAY. Gravel is of chalk.	22.8		
WS210	0.50	D2	Orange brown slightly sandy CLAY.	22.1		
WS210	1.00	D3	Orange brown slightly sandy CLAY.	22.4		
WS210	1.50	D4	Orange brown slightly sandy CLAY.	21.8		
WS210	2.00	D5	Brown slightly sandy slightly gravelly CLAY. Gravel is of flint and claystone.	19.0		
WS210	2.50	D6	Orange brown slightly gravelly slightly sandy CLAY. Gravel is of flint and chalk	19.9		
Notes: 1) Unless we are notified to the contrary, samples will be disposed after a period of one month from this date. 2) This report should not be reproduced except in full without the written approval of the laboratory. 3) Only those results indicated in this report are UKAS accredited and any opinion or interpretations expressed are outside the scope of UKAS accreditation.						
Remarks				Approved	Date	Sheet No.:
				MW M. Wilson Laboratory Manager	25/01/2019	2 of 3



DETERMINATION OF WATER CONTENT

BS EN ISO 17892 - 1 : 2014

Project Name:			Drove Lane, Yapton		Project Number:
Client Name:			Trustees of the Langmead Pension Scheme		GL22428A
Location	Depth m	Sample Ref	Sample Description	Water Content %	Remarks
WS210	3.00	D7	Brown slightly sandy slightly gravelly CLAY. Gravel is of chalk.	17.9	
WS211	0.50	D2	Brown CLAY	24.3	
WS211	1.50	D4	Brown slightly sandy CLAY.	23.4	
WS211	2.50	D6	Orange brown , grey brown and brown CLAY	21.5	

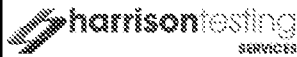
Notes:

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4031

Remarks	Approved	Date	Sheet No.:
	MW M. Wilson Laboratory Manager	25/01/2019	3 of 3

			DETERMINATION OF LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX BS1377 : Part 2 : 1990						
Project Name:			Drove Lane, Yapton						Project Number:
Client Name:			Trustees of the Langmead Pension Scheme						GL22428A
Location	Depth m	Sample Ref	Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	Percentage passing 425µm %	Classification	Sample Description
WS201	0.50	D2	33	40	20	20	100	CI	Brown CLAY
WS202	0.50	B1	23	43	21	22	100	CI	Brown CLAY
WS203	1.00	D3	23	38	20	18	100	CI	Orange brown CLAY
WS204	1.00	D3	24	41	20	21	100	CI	Orange brown CLAY
WS204	3.00	D7	21	25	15	10	91	CL	Grey brown slightly gravelly slightly sandy CLAY. Gravel is of flint and chalk
WS205	0.50	B1	23	34	21	13	100	CL	Brown CLAY
WS206	2.00	D5	25	37	17	20	100	CI	Brown slightly gravelly slightly sandy CLAY. Gravel is of flint
WS207	0.50	B1	23	33	20	13	100	CL	Brown CLAY
WS208	0.50	B1	23	36	22	14	100	CI	Brown CLAY
WS210	2.50	D6	20	28	16	12	88	CL	Orange brown slightly gravelly slightly sandy CLAY. Gravel is of flint and chalk

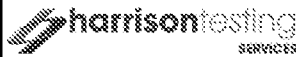
Notes:

- 1) This summary sheet is provided for convenience and in no way replaces individual test result sheets which shall, without exception, be regarded as the definitive result. Please refer to the individual test result sheets for the respective methods used.
- 2) Unless we are notified to the contrary, samples will be disposed after a period of one month from this date.
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Remarks	Approved	Date	Sheet No.:
	MW M. Willson Laboratory Manager	25/01/2019	1 of 2

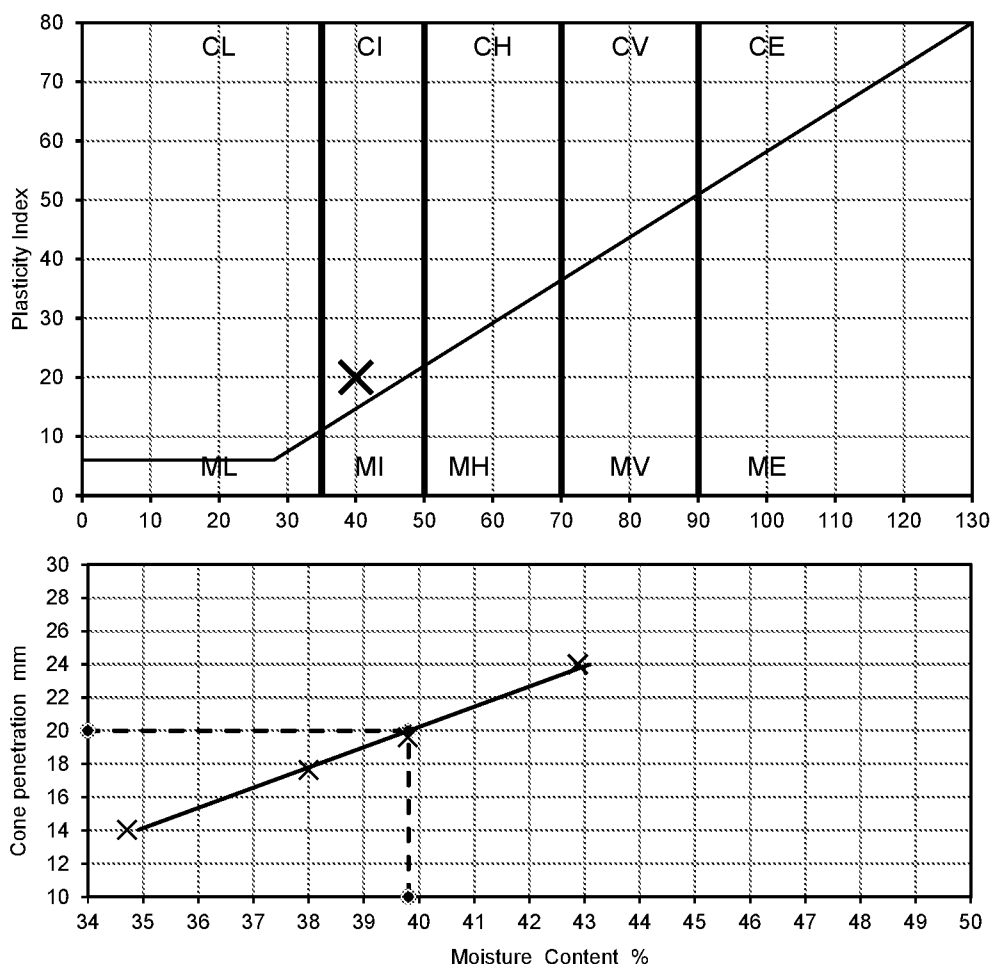
			DETERMINATION OF LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX BS1377 : Part 2 : 1990							
Project Name:			Drove Lane, Yapton					Project Number:		
Client Name:			Trustees of the Langmead Pension Scheme					GL22428A		
Location	Depth m	Sample Ref	Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	Percentage passing 425µm %	Classification	Sample Description	
WS211	0.50	D2	24	41	21	20	100	CI	Brown CLAY	
WS211	2.50	D6	22	33	18	15	100	CL	Orange brown, grey brown and brown CLAY	
Notes: 1) This summary sheet is provided for convenience and in no way replaces individual test result sheets which shall, without exception, be regarded as the definitive result. Please refer to the individual test result sheets for the respective methods used. 2) Unless we are notified to the contrary, samples will be disposed after a period of one month from this date. 3) This report should not be reproduced except in full without the written approval of the laboratory. 4) Only those results indicated in this report are UKAS accredited and any opinion or interpretations expressed are outside the scope of UKAS accreditation.										
Remarks							Approved		Date	Sheet No.:
							MW M. Willson Laboratory Manager		25/01/2019	2 of 2



LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX, & LIQUIDITY INDEX

BS 1377 : Part 2 : 1990, clause 4.3 and 5

Project Name:	Drove Lane, Yapton	Project Number:	GL22428A
Client Name:	Trustees of the Langmead Pension Scheme	Sample Location:	WS201
Sample Description:	Brown CLAY	Sample Depth (m)	0.50
		Sample Reference	D2



Preparation: Material was natural

Results: As Received Moisture Content: (BS1377 : Part 2 : Clause 3 : 1990) 33 %
 Percentage Passing 425µm sieve: 100 %
 Liquid Limit: 40 %
 Plastic Limit: 20 %
 Plasticity Index: 20

Liquidity Index: 0.65
 Modified Plasticity Index: (NHBC Standards Chapter 4.2) 20

Notes:

- 1) Modified Plasticity Index: (NHBC Standards Chapter 4.2) not covered by UKAS accreditation.
- 2) Unless we are notified to the contrary, samples will be disposed after a period of one month from this date.
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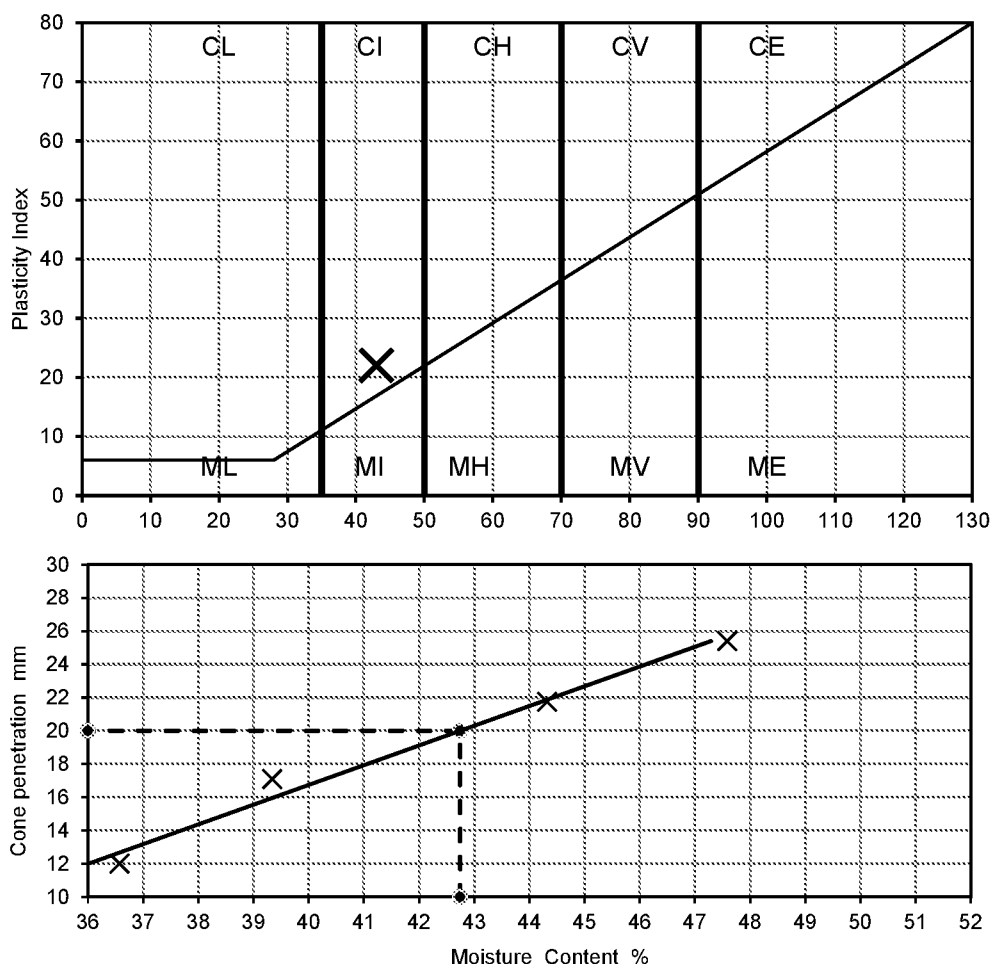


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	MW M. Willson Laboratory Manager	25/01/2019	1 of 1

LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX, & LIQUIDITY INDEX

BS 1377 : Part 2 : 1990, clause 4.3 and 5

Project Name:	Drove Lane, Yapton	Project Number:	GL22428A
Client Name:	Trustees of the Langmead Pension Scheme	Sample Location:	WS202
Sample Description:	Brown CLAY	Sample Depth (m)	0.50
		Sample Reference	B1



Preparation: Material was natural

Results: As Received Moisture Content: (BS1377 : Part 2 : Clause 3 : 1990) 23 %
 Percentage Passing 425µm sieve: 100 %
 Liquid Limit: 43 %
 Plastic Limit: 21 %
 Plasticity Index: 22
 Liquidity Index: 0.09
 Modified Plasticity Index: (NHBC Standards Chapter 4.2) 22

Notes:

- 1) Modified Plasticity Index: (NHBC Standards Chapter 4.2) not covered by UKAS accreditation.
- 2) Unless we are notified to the contrary, samples will be disposed after a period of one month from this date.
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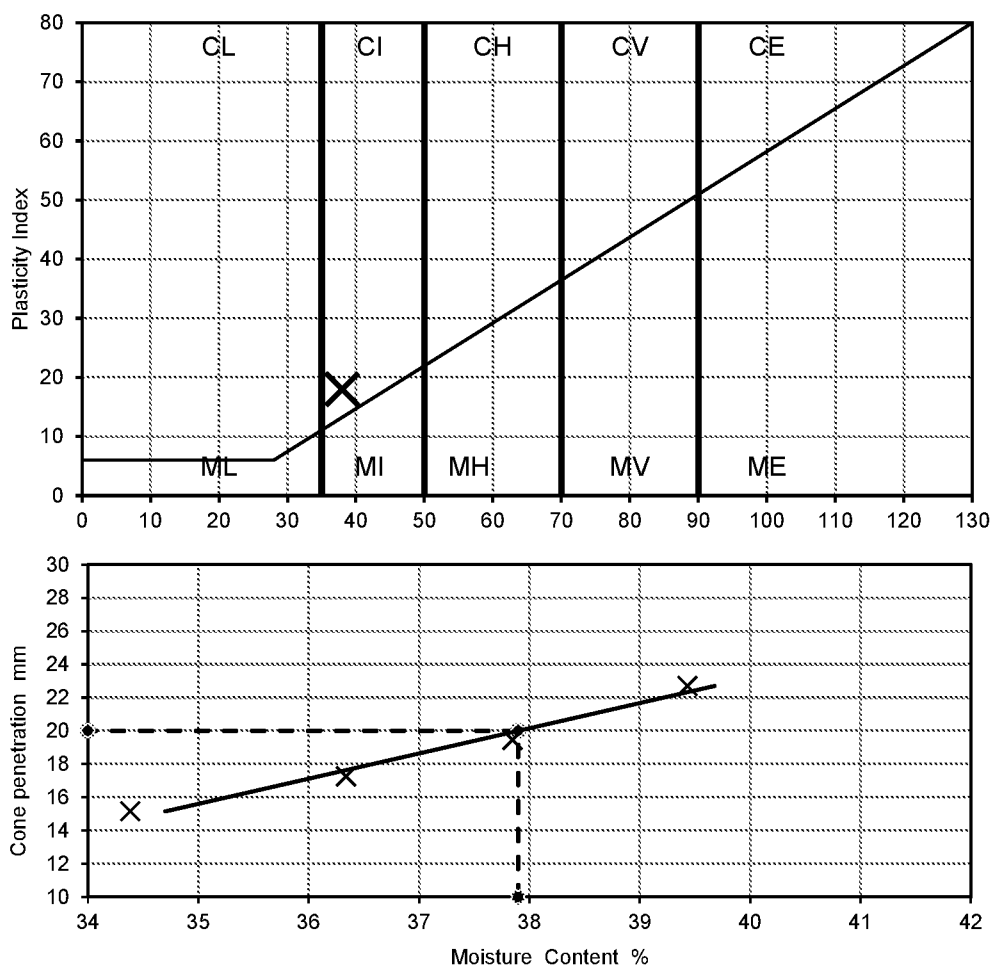


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	MW M. Willson Laboratory Manager	25/01/2019	1 of 1

LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX, & LIQUIDITY INDEX

BS 1377 : Part 2 : 1990, clause 4.3 and 5

Project Name:	Drove Lane, Yapton	Project Number:	GL22428A
Client Name:	Trustees of the Langmead Pension Scheme	Sample Location:	WS203
Sample Description:	Orange brown CLAY	Sample Depth (m)	1.00
		Sample Reference	D3



Preparation: Material was natural

Results: As Received Moisture Content: (BS1377 : Part 2 : Clause 3 : 1990) 23 %
 Percentage Passing 425µm sieve: 100 %
 Liquid Limit: 38 %
 Plastic Limit: 20 %
 Plasticity Index: 18
 Liquidity Index: 0.17
 Modified Plasticity Index: (NHBC Standards Chapter 4.2) 18

Notes:

- 1) Modified Plasticity Index: (NHBC Standards Chapter 4.2) not covered by UKAS accreditation.
- 2) Unless we are notified to the contrary, samples will be disposed after a period of one month from this date.
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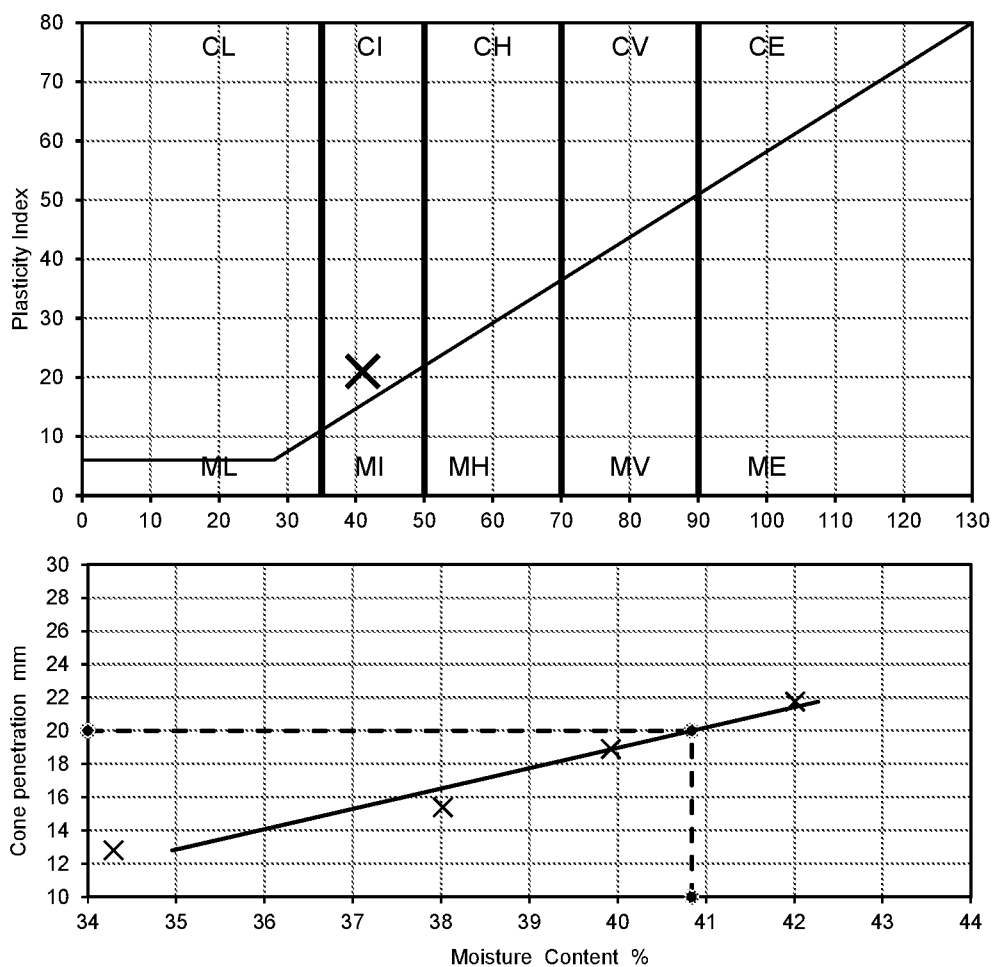


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	MW M. Willson Laboratory Manager	25/01/2019	1 of 1

LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX, & LIQUIDITY INDEX

BS 1377 : Part 2 : 1990, clause 4.3 and 5

Project Name:	Drove Lane, Yapton	Project Number:	GL22428A
Client Name:	Trustees of the Langmead Pension Scheme	Sample Location:	WS204
Sample Description:	Orange brown CLAY	Sample Depth (m)	1.00
		Sample Reference	D3



Preparation: Material was natural

Results: As Received Moisture Content: (BS1377 : Part 2 : Clause 3 : 1990) 24 %
 Percentage Passing 425µm sieve: 100 %
 Liquid Limit: 41 %
 Plastic Limit: 20 %
 Plasticity Index: 21
 Liquidity Index: 0.19
 Modified Plasticity Index: (NHBC Standards Chapter 4.2) 21

Notes:

- 1) Modified Plasticity Index: (NHBC Standards Chapter 4.2) not covered by UKAS accreditation.
- 2) Unless we are notified to the contrary, samples will be disposed after a period of one month from this date.
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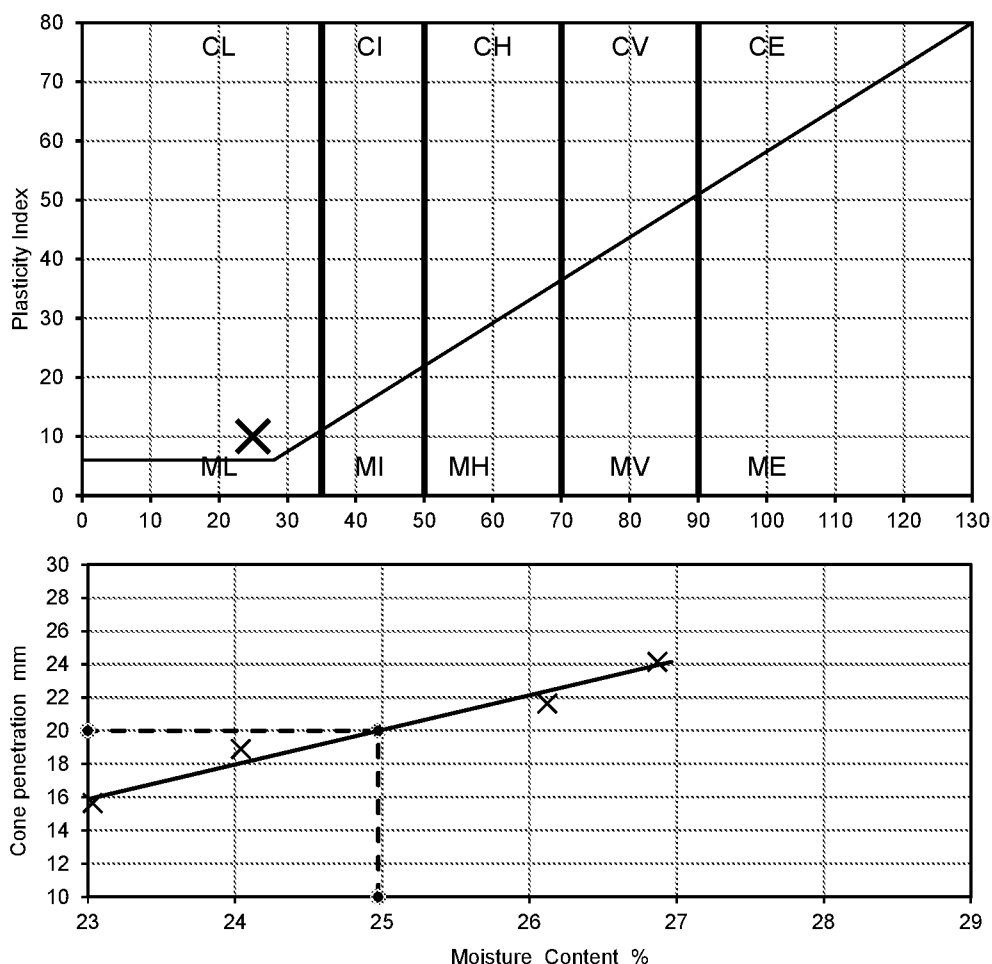


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	MW M. Willson Laboratory Manager	25/01/2019	1 of 1

LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX, & LIQUIDITY INDEX

BS 1377 : Part 2 : 1990, clause 4.3 and 5

Project Name:	Drove Lane, Yapton	Project Number:	GL22428A
Client Name:	Trustees of the Langmead Pension Scheme	Sample Location:	WS204
Sample Description:	Grey brown slightly gravelly slightly sandy CLAY. Gravel is of flint and chalk	Sample Depth (m)	3.00
		Sample Reference	D7



Preparation: Material was washed and oven dried at below 50°C

Results: As Received Moisture Content: (BS1377 : Part 2 : Clause 3 : 1990) 21 %
 Percentage Passing 425µm sieve: 91 %
 Liquid Limit: 25 %
 Plastic Limit: 15 %
 Plasticity Index: 10
 Liquidity Index: 0.60
 Modified Plasticity Index: (NHBC Standards Chapter 4.2) 9

Notes:

- 1) Modified Plasticity Index: (NHBC Standards Chapter 4.2) not covered by UKAS accreditation.
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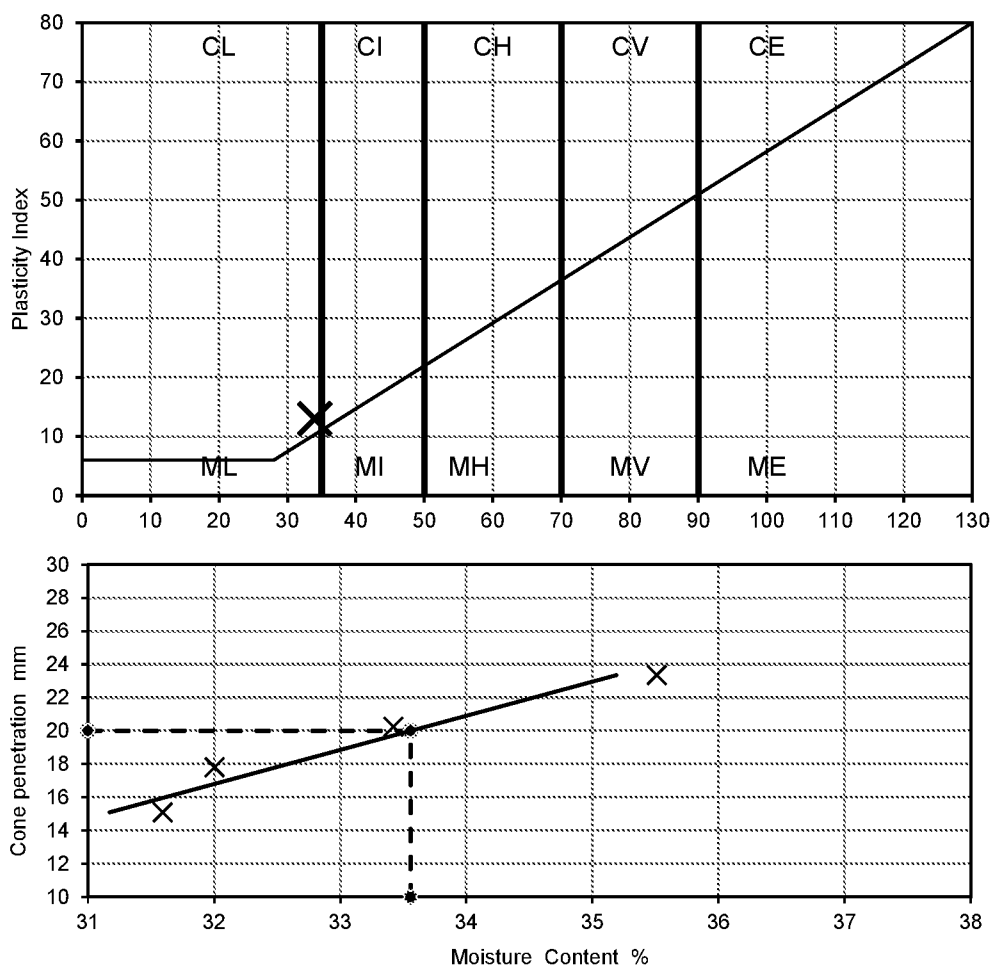


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	MW M. Willson Laboratory Manager	25/01/2019	1 of 1

LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX, & LIQUIDITY INDEX

BS 1377 : Part 2 : 1990, clause 4.3 and 5

Project Name:	Drove Lane, Yapton	Project Number:	GL22428A
Client Name:	Trustees of the Langmead Pension Scheme	Sample Location:	WS205
Sample Description:	Brown CLAY	Sample Depth (m)	0.50
		Sample Reference	B1



Preparation: Material was natural

Results: As Received Moisture Content: (BS1377 : Part 2 : Clause 3 : 1990) 23 %
 Percentage Passing 425µm sieve: 100 %
 Liquid Limit: 34 %
 Plastic Limit: 21 %
 Plasticity Index: 13
 Liquidity Index: 0.15
 Modified Plasticity Index: (NHBC Standards Chapter 4.2) 13

Notes:

- 1) Modified Plasticity Index: (NHBC Standards Chapter 4.2) not covered by UKAS accreditation.
- 2) Unless we are notified to the contrary, samples will be disposed after a period of one month from this date.
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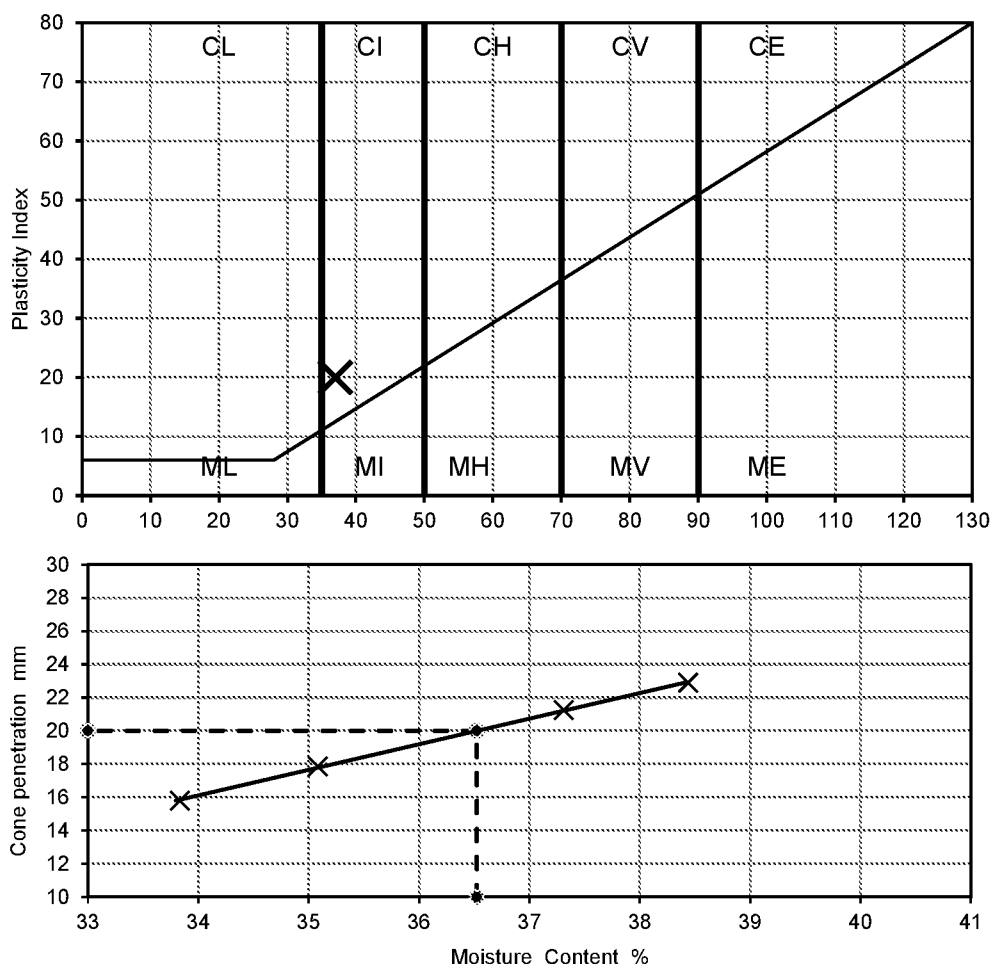


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	MW M. Willson Laboratory Manager	25/01/2019	1 of 1

LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX, & LIQUIDITY INDEX

BS 1377 : Part 2 : 1990, clause 4.3 and 5

Project Name:	Drove Lane, Yapton	Project Number:	GL22428A
Client Name:	Trustees of the Langmead Pension Scheme	Sample Location:	WS206
Sample Description:	Brown slightly gravelly slightly sandy CLAY. Gravel is of flint	Sample Depth (m)	2.00
		Sample Reference	D5



Preparation: Material was washed and oven dried at below 50°C

Results: As Received Moisture Content: (BS1377 : Part 2 : Clause 3 : 1990) 25 %
 Percentage Passing 425µm sieve: 100 %
 Liquid Limit: 37 %
 Plastic Limit: 17 %
 Plasticity Index: 20
 Liquidity Index: 0.40
 Modified Plasticity Index: (NHBC Standards Chapter 4.2) 20

Notes:

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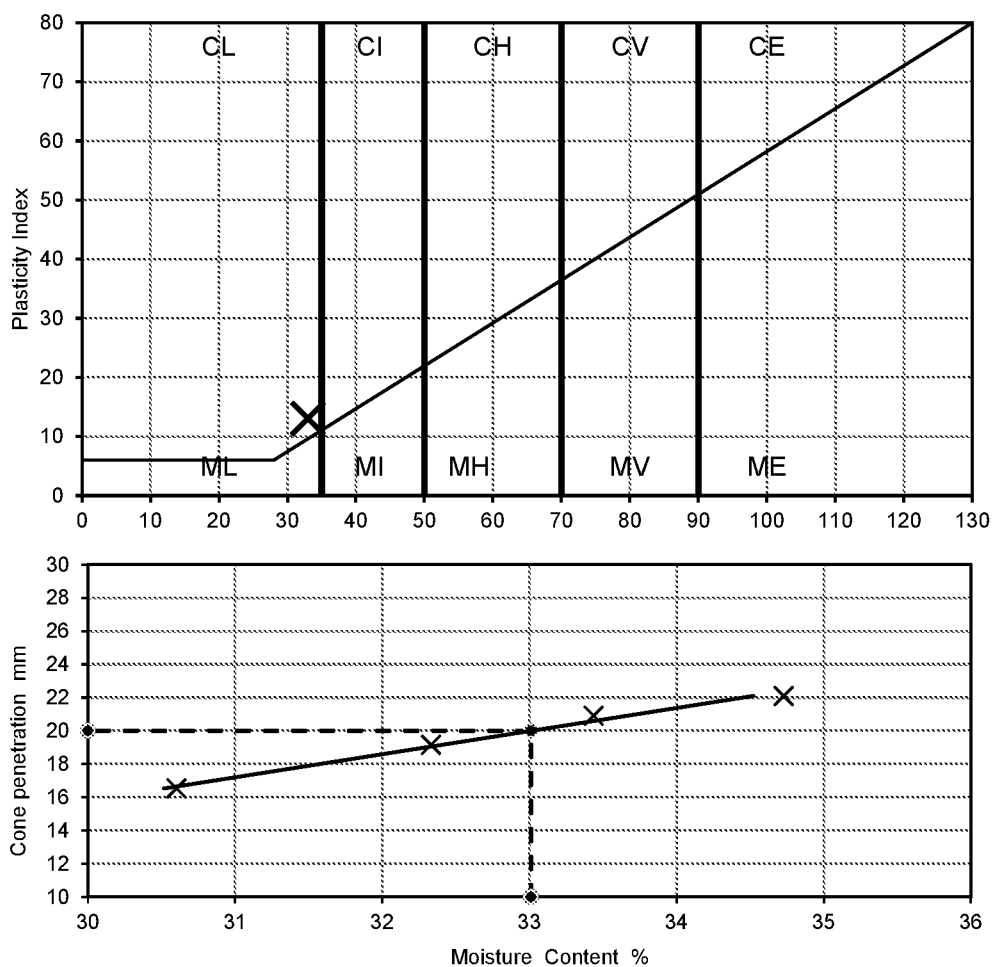


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	MW M. Willson Laboratory Manager	25/01/2019	1 of 1

LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX, & LIQUIDITY INDEX

BS 1377 : Part 2 : 1990, clause 4.3 and 5

Project Name:	Drove Lane, Yapton	Project Number:	GL22428A
Client Name:	Trustees of the Langmead Pension Scheme	Sample Location:	WS207
Sample Description:	Brown CLAY	Sample Depth (m)	0.50
		Sample Reference	B1



Preparation: Material was natural

Results: As Received Moisture Content: (BS1377 : Part 2 : Clause 3 : 1990) 23 %
 Percentage Passing 425µm sieve: 100 %
 Liquid Limit: 33 %
 Plastic Limit: 20 %
 Plasticity Index: 13
 Liquidity Index: 0.23
 Modified Plasticity Index: (NHBC Standards Chapter 4.2) 13

Notes:

- 1) Modified Plasticity Index: (NHBC Standards Chapter 4.2) not covered by UKAS accreditation.
- 2) Unless we are notified to the contrary, samples will be disposed after a period of one month from this date.
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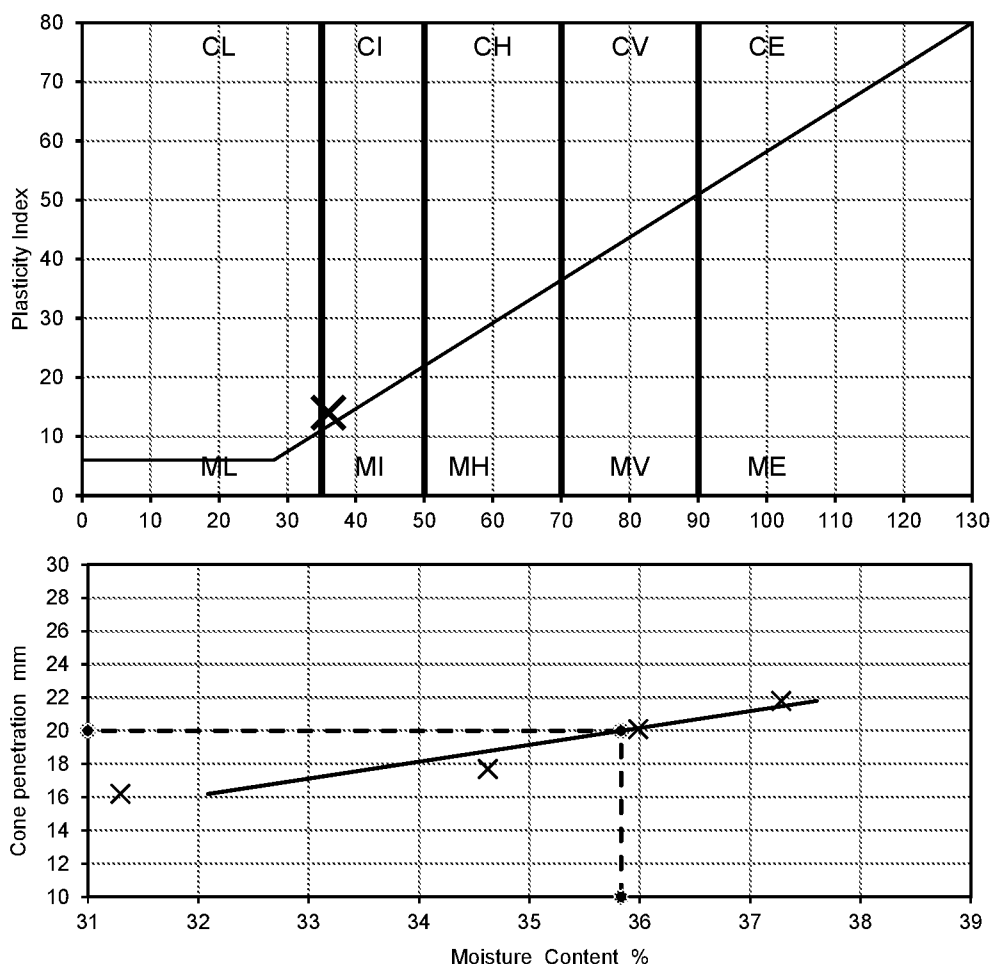


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	MW M. Willson Laboratory Manager	25/01/2019	1 of 1

LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX, & LIQUIDITY INDEX

BS 1377 : Part 2 : 1990, clause 4.3 and 5

Project Name:	Drove Lane, Yapton	Project Number:	GL22428A
Client Name:	Trustees of the Langmead Pension Scheme	Sample Location:	WS208
Sample Description:	Brown CLAY	Sample Depth (m)	0.50
		Sample Reference	B1



Preparation: Material was washed and oven dried at below 50°C

Results: As Received Moisture Content: (BS1377 : Part 2 : Clause 3 : 1990) 23 %
 Percentage Passing 425µm sieve: 100 %
 Liquid Limit: 36 %
 Plastic Limit: 22 %
 Plasticity Index: 14
 Liquidity Index: 0.07
 Modified Plasticity Index: (NHBC Standards Chapter 4.2) 14

Notes:

- 1) Modified Plasticity Index: (NHBC Standards Chapter 4.2) not covered by UKAS accreditation.
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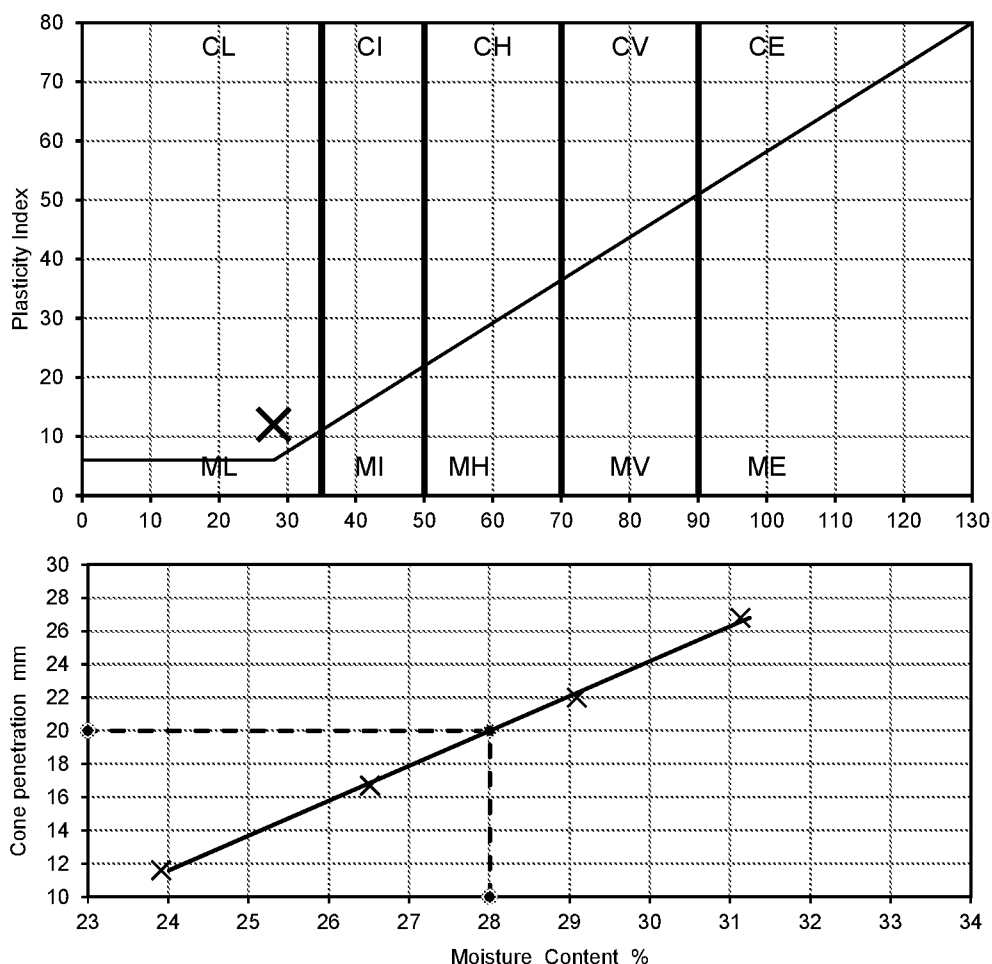


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	MW M. Willson Laboratory Manager	25/01/2019	1 of 1

LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX, & LIQUIDITY INDEX

BS 1377 : Part 2 : 1990, clause 4.3 and 5

Project Name:	Drove Lane, Yapton	Project Number:	GL22428A
Client Name:	Trustees of the Langmead Pension Scheme	Sample Location:	WS210
Sample Description:	Orange brown slightly gravelly slightly sandy CLAY. Gravel is of flint and chalk	Sample Depth (m)	2.50
		Sample Reference	D6



Preparation: Material was washed and oven dried at below 50°C

Results: As Received Moisture Content: (BS1377 : Part 2 : Clause 3 : 1990) 20 %
 Percentage Passing 425µm sieve: 88 %
 Liquid Limit: 28 %
 Plastic Limit: 16 %
 Plasticity Index: 12
 Liquidity Index: 0.33
 Modified Plasticity Index: (NHBC Standards Chapter 4.2) 11

Notes:

- 1) Modified Plasticity Index: (NHBC Standards Chapter 4.2) not covered by UKAS accreditation.
- 2) Unless we are notified to the contrary, samples will be disposed after a period of one month from this date.
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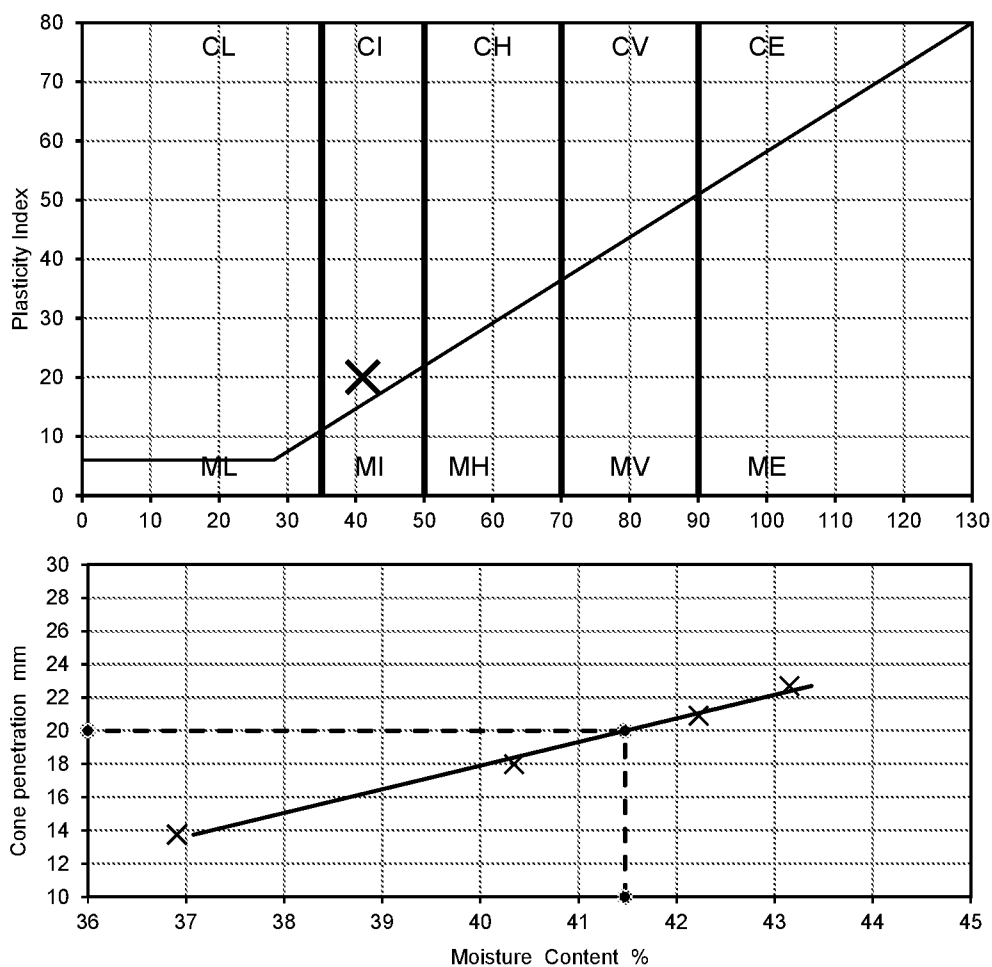


Remarks	Approved	Date	Sheet No.:
	MW M. Willson Laboratory Manager	25/01/2019	1 of 1

LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX, & LIQUIDITY INDEX

BS 1377 : Part 2 : 1990, clause 4.3 and 5

Project Name:	Drove Lane, Yapton	Project Number:	GL22428A
Client Name:	Trustees of the Langmead Pension Scheme	Sample Location:	WS211
Sample Description:	Brown CLAY	Sample Depth (m)	0.50
		Sample Reference	D2



Preparation: Material was natural

Results: As Received Moisture Content: (BS1377 : Part 2 : Clause 3 : 1990) 24 %
 Percentage Passing 425µm sieve: 100 %
 Liquid Limit: 41 %
 Plastic Limit: 21 %
 Plasticity Index: 20
 Liquidity Index: 0.15
 Modified Plasticity Index: (NHBC Standards Chapter 4.2) 20

Notes:

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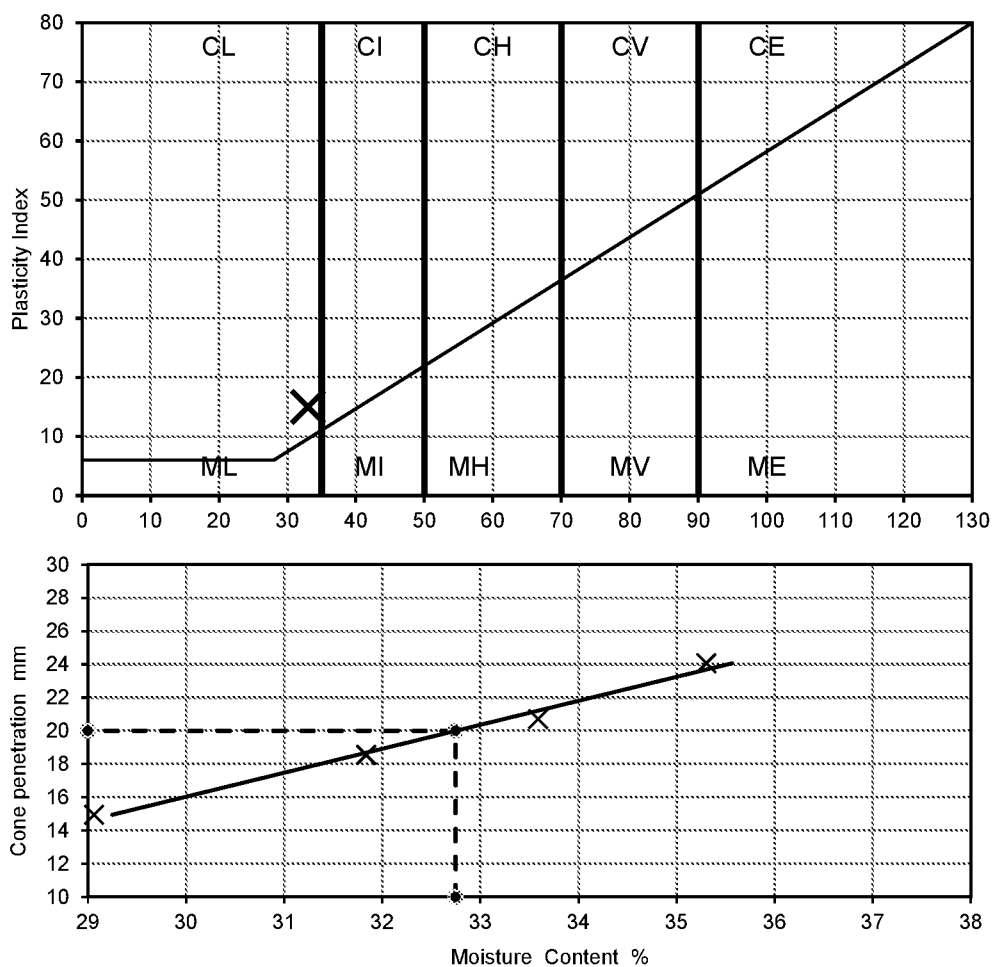


Remarks	Approved	Date	Sheet No.:
	MW M. Willson Laboratory Manager	25/01/2019	1 of 1

LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX, & LIQUIDITY INDEX

BS 1377 : Part 2 : 1990, clause 4.3 and 5

Project Name:	Drove Lane, Yapton	Project Number:	GL22428A
Client Name:	Trustees of the Langmead Pension Scheme	Sample Location:	WS211
Sample Description:	Orange brown , grey brown and brown CLAY	Sample Depth (m)	2.50
		Sample Reference	D6



Preparation: Material was natural

Results: As Received Moisture Content: (BS1377 : Part 2 : Clause 3 : 1990) 22 %
 Percentage Passing 425µm sieve: 100 %
 Liquid Limit: 33 %
 Plastic Limit: 18 %
 Plasticity Index: 15
 Liquidity Index: 0.27
 Modified Plasticity Index: (NHBC Standards Chapter 4.2) 15

Notes:

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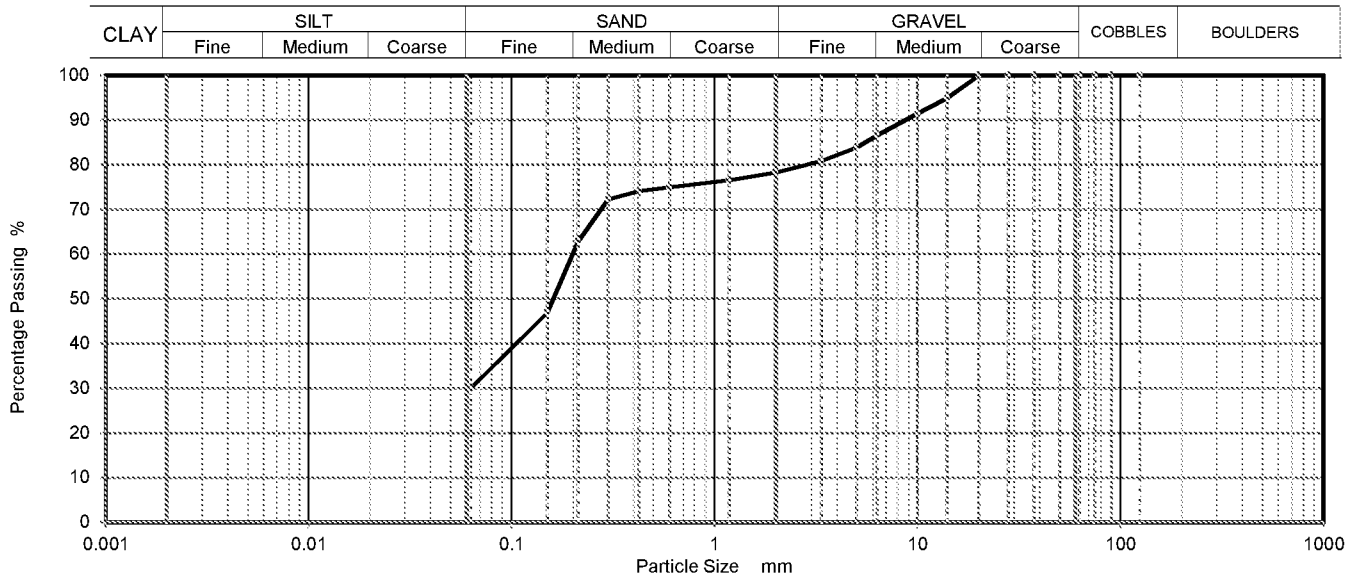
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	MW M. Willson Laboratory Manager	25/01/2019	1 of 1

			DETERMINATION OF SATURATION MOISTURE CONTENT BS1377 : Part 2 : 1990 : Clause 3.3					
Project Name:			Drove Lane, Yapton					Project Number:
Client Name:			Trustees of the Langmead Pension Scheme					GL22428A
Location	Depth m	Sample Ref	Sample Description	Moisture Content %	Density		Saturation Moisture Content %	Remarks
					Bulk Mg/m3	Dry Mg/m3		
WS203	3.50	D8	Medium density cream stained orange brown and dark brown CHALK.	26	1.97	1.56	27.1	
WS205	4.80	D11	Low density cream CHALK.	23	1.86	1.51	29.0	
WS210	5.00	D11	Medium density cream CHALK.	22	1.91	1.57	26.6	
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Drove Lane, Yapton	Project Number:	GL22428A-01
Client Name:	Trustees of the Langmead Pension Scheme	Sample Location:	WS201
Sample Description:	Light brown very clayey very gravelly SAND. Gravel is of chalk and flint.	Sample Depth (m)	2.50
		Sample Reference	D6



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	95		
10	91		
6.3	87		
5	84		
3.35	81		
2	78		
1.18	77		
0.6	75		
0.425	74		
0.3	72		
0.212	63		
0.15	47		
0.063	30		

Sample Proportions	% dry mass
Very coarse	0
Gravel	22
Sand	48
Fines <0.063mm	30

Grading Analysis		
D100	mm	0.199
D60	mm	
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

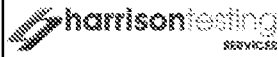
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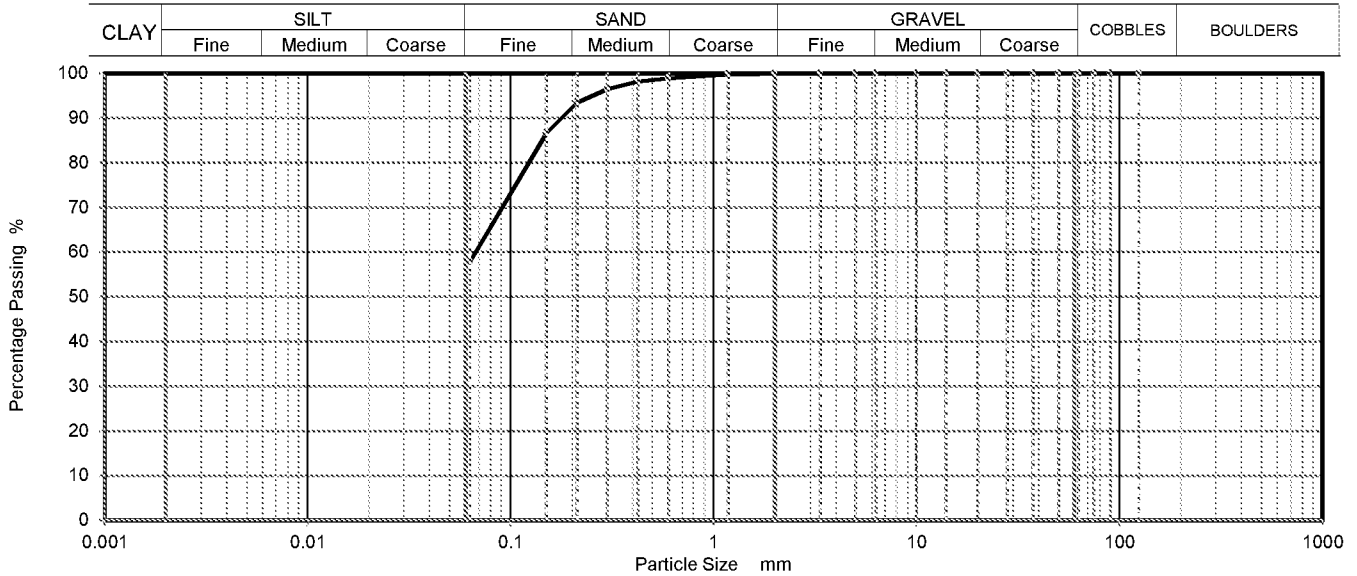
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	MW M. Willson Laboratory Manager	23/01/2019	1 of 1



DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Drove Lane, Yapton	Project Number:	GL22428A-01
Client Name:	Trustees of the Langmead Pension Scheme	Sample Location:	WS202
Sample Description:	Grey brown sandy CLAY.	Sample Depth (m)	3.00
		Sample Reference	D7



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	98		
0.3	97		
0.212	94		
0.15	87		
0.063	58		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	42
Fines <0.063mm	58

Grading Analysis		
D100	mm	0.067
D60	mm	
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

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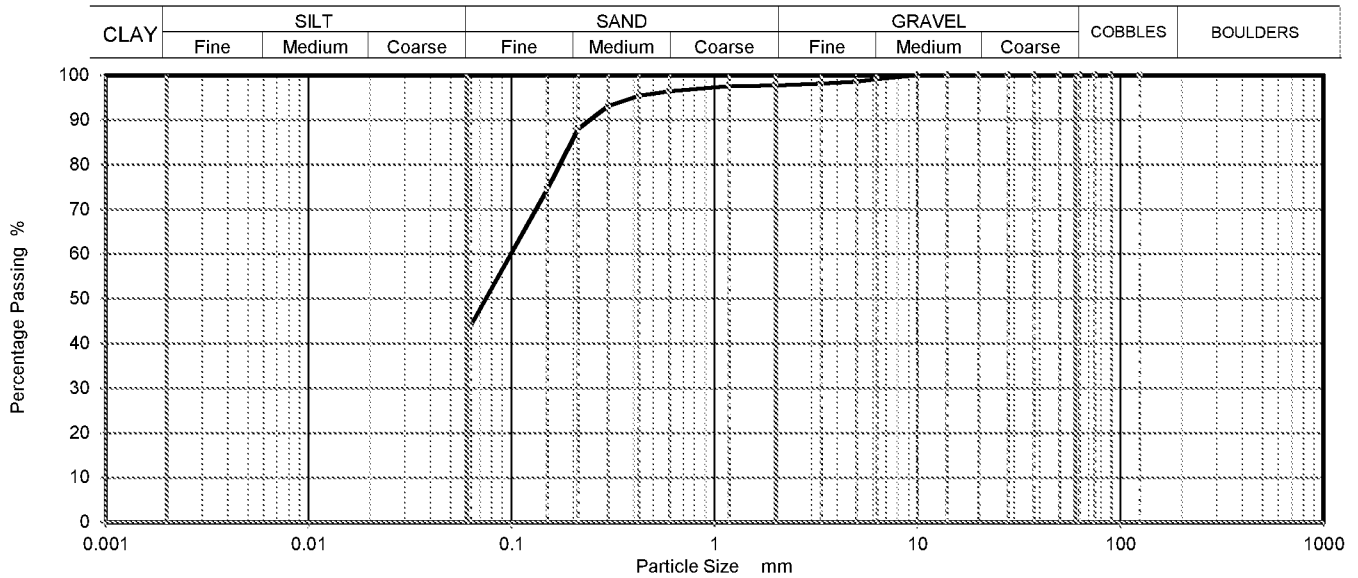
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	MW M. Willson Laboratory Manager	23/01/2019	1 of 1



DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Drove Lane, Yapton	Project Number:	GL22428A-01
Client Name:	Trustees of the Langmead Pension Scheme	Sample Location:	WS203
Sample Description:	Brown slightly gravelly sandy CLAY. Gravel is of flint.	Sample Depth (m)	2.00
		Sample Reference	D5



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	99		
5	99		
3.35	98		
2	98		
1.18	98		
0.6	96		
0.425	95		
0.3	93		
0.212	88		
0.15	75		
0.063	44		

Sample Proportions	% dry mass
Very coarse	0
Gravel	2
Sand	54
Fines <0.063mm	44

Grading Analysis		
D100	mm	0.099
D60	mm	
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

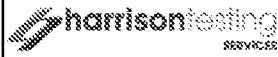
Notes:

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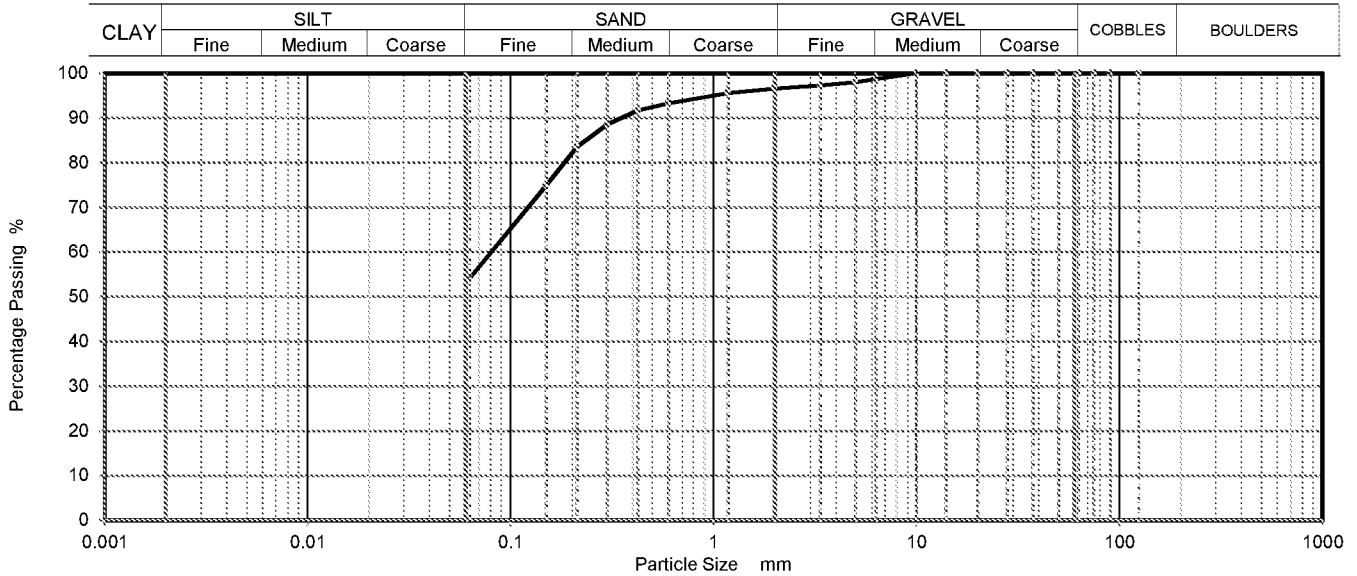
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	MW M. Willson Laboratory Manager	23/01/2019	1 of 1



DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Drove Lane, Yapton	Project Number:	GL22428A-01
Client Name:	Trustees of the Langmead Pension Scheme	Sample Location:	WS204
Sample Description:	Orange brown mottled light grey and dark grey slightly gravelly sandy CLAY. Gravel is of flint and chalk.	Sample Depth (m)	2.50
		Sample Reference	D6



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	99		
5	98		
3.35	97		
2	97		
1.18	96		
0.6	93		
0.425	92		
0.3	89		
0.212	84		
0.15	75		
0.063	54		

Sample Proportions	% dry mass
Very coarse	0
Gravel	3
Sand	42
Fines <0.063mm	54

Grading Analysis		
D100	mm	0.080
D60	mm	
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

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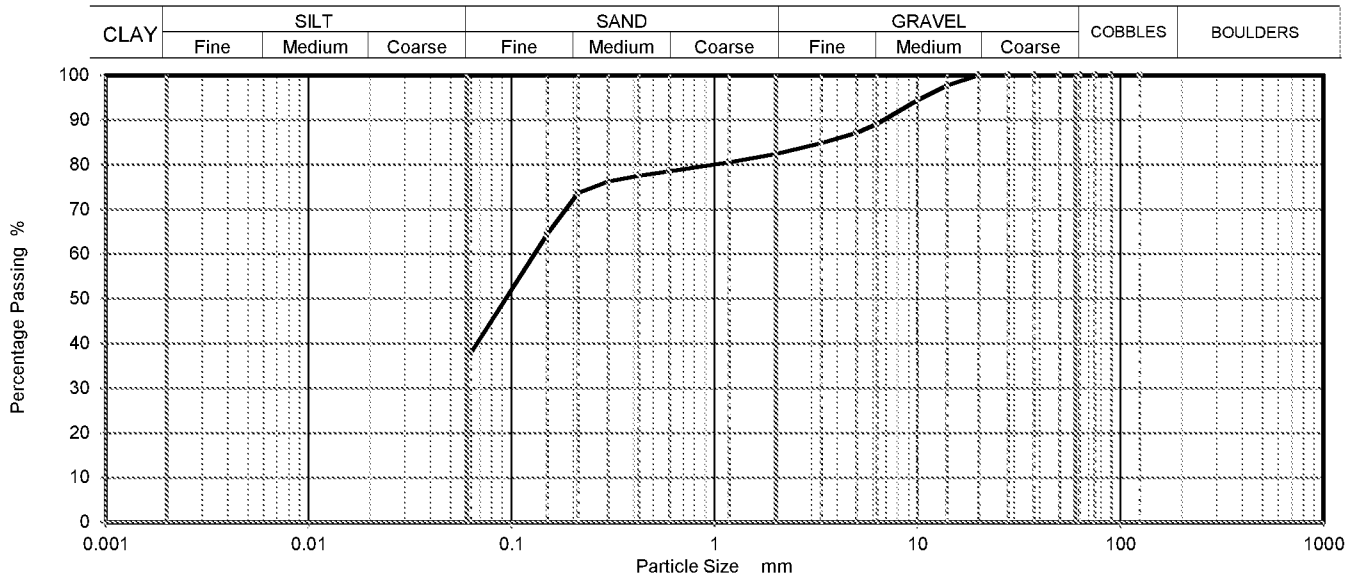
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	MW M. Willson Laboratory Manager	23/01/2019	1 of 1

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Drove Lane, Yapton	Project Number:	GL22428A-01
Client Name:	Trustees of the Langmead Pension Scheme	Sample Location:	WS205
Sample Description:	Light grey brown slightly gravelly sandy CLAY. Gravel is of chalk and flint.	Sample Depth (m)	4.00
		Sample Reference	D9



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	98		
10	95		
6.3	89		
5	87		
3.35	85		
2	82		
1.18	81		
0.6	79		
0.425	78		
0.3	76		
0.212	74		
0.15	65		
0.063	38		

Sample Proportions	% dry mass
Very coarse	0
Gravel	18
Sand	45
Fines <0.063mm	38

Grading Analysis		
D100	mm	0.130
D60	mm	
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

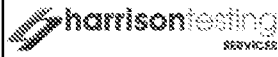
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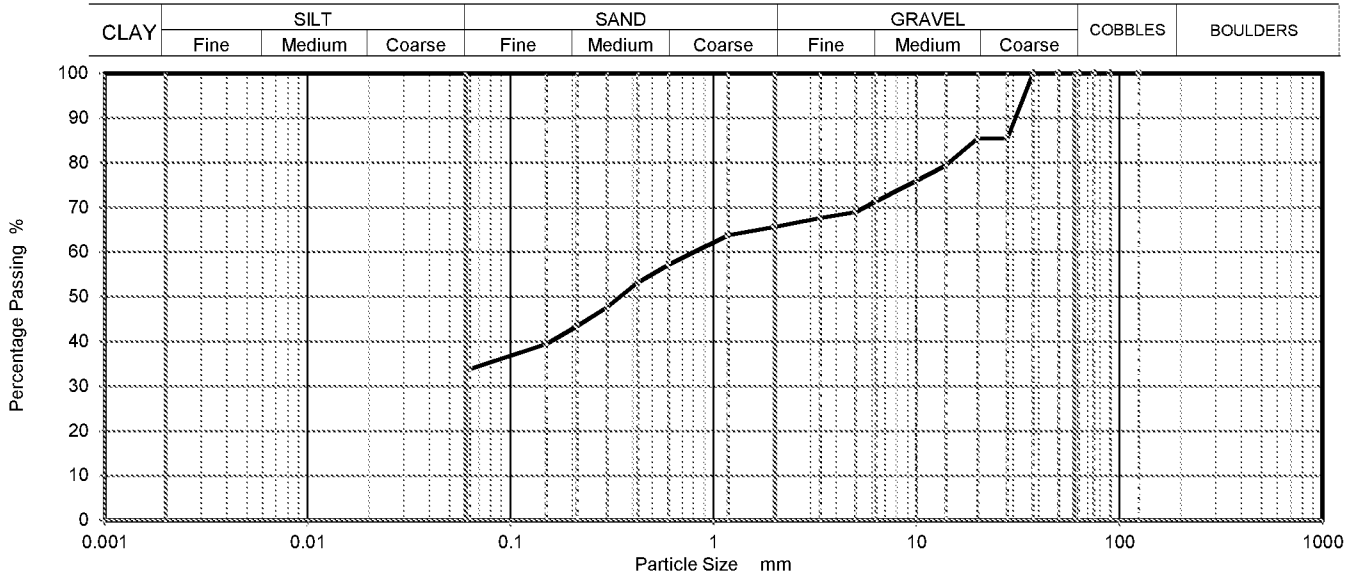
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	MW M. Willson Laboratory Manager	23/01/2019	1 of 1



DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Drove Lane, Yapton	Project Number:	GL22428A-01
Client Name:	Trustees of the Langmead Pension Scheme	Sample Location:	WS207
Sample Description:	Brown very clayey SAND / GRAVEL. Gravel is of flint and chalk.	Sample Depth (m)	2.50
		Sample Reference	D6



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	85		
20	85		
14	79		
10	76		
6.3	71		
5	69		
3.35	68		
2	66		
1.18	64		
0.6	57		
0.425	53		
0.3	48		
0.212	43		
0.15	40		
0.063	34		

Sample Proportions	% dry mass
Very coarse	0
Gravel	34
Sand	32
Fines <0.063mm	34

Grading Analysis		
D100	mm	0.799
D60	mm	
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

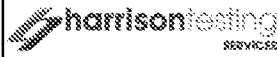
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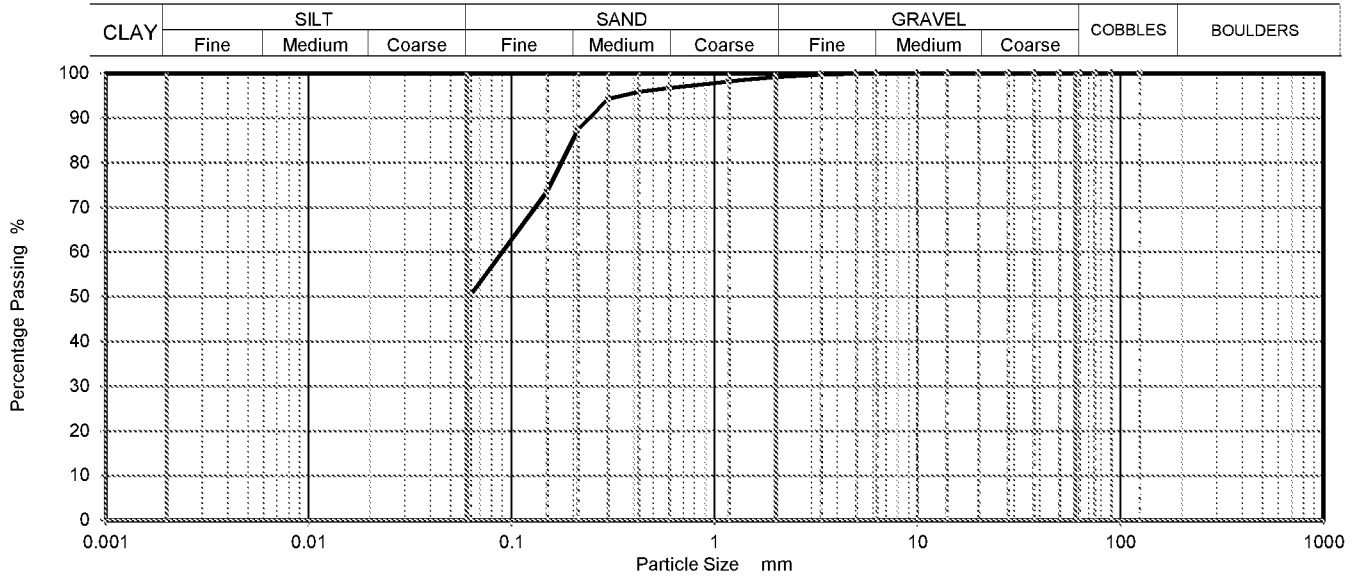
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	MW M. Willson Laboratory Manager	23/01/2019	1 of 1



DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Drove Lane, Yapton	Project Number:	GL22428A-01
Client Name:	Trustees of the Langmead Pension Scheme	Sample Location:	WS209
Sample Description:	Orange brown slightly gravelly sandy CLAY. Gravel is of flint.	Sample Depth (m)	1.50
		Sample Reference	D4



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	99		
1.18	98		
0.6	97		
0.425	96		
0.3	94		
0.212	87		
0.15	74		
0.063	51		

Sample Proportions	% dry mass
Very coarse	0
Gravel	1
Sand	49
Fines <0.063mm	51

Grading Analysis		
D100	mm	0.090
D60	mm	
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

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4841



///CERTS



Environmental Science

Matthew Wilson

Harrison Group
Harrison Testing Services
Unit 1
Alston Road
Norwich
Norfolk
NR6 5DS

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

Analytical Report Number : 19-24225

Project / Site name:	Drove Lane, Yapton	Samples received on:	10/01/2019
Your job number:	GL22428A	Samples instructed on:	10/01/2019
Your order number:	PO-32876-GB	Analysis completed by:	16/01/2019
Report Issue Number:	1	Report issued on:	16/01/2019
Samples Analysed:	10 soil samples		

Signe

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

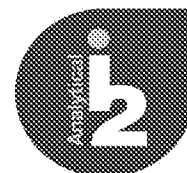
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Environmental Science

Analytical Report Number: 19-24225

Project / Site name: Drove Lane, Yapton

Your Order No: PO-32876-GB

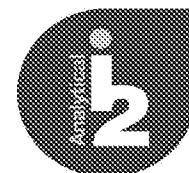
Lab Sample Number				1127418	1127419	1127420	1127421	1127422
Sample Reference				WS201	WS201	WS204	WS204	WS205
Sample Number				B1	D9	D4	D11	D2
Depth (m)				0.50-0.50	4.00-4.00	1.50-1.50	4.70-4.70	0.50-0.50
Date Sampled				07/01/2019	07/01/2019	07/01/2019	07/01/2019	07/01/2019
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	15	16	15	14	16
Total mass of sample received	kg	0.001	NONE	0.22	0.96	0.96	0.24	0.74

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.0	8.7	8.1	8.6	7.8
Total Sulphate as SO ₄	%	0.005	MCERTS	0.026	0.021	0.020	0.044	0.032
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.013	0.0073	0.010	0.014	0.015
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	12.5	7.3	10.1	13.7	14.8
Total Sulphur	%	0.005	MCERTS	0.010	0.006	0.007	0.015	0.012



4841



Environmental Science

Analytical Report Number: 19-24225

Project / Site name: Drove Lane, Yapton

Your Order No: PO-32876-GB

Lab Sample Number				1127423	1127424	1127425	1127426	1127427
Sample Reference				WS205	WS210	WS210	WS211	WS211
Sample Number				D10	D3	D7	D3	D6
Depth (m)				4.50-4.50	1.00-1.00	3.00-3.00	1.00-1.00	2.50-2.50
Date Sampled				07/01/2019	07/01/2019	07/01/2019	07/01/2019	07/01/2019
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	10	16	14	17	16
Total mass of sample received	kg	0.001	NONE	0.87	0.22	0.29	0.80	0.21

General Inorganics

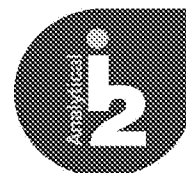
pH - Automated	pH Units	N/A	MCERTS	8.5	7.9	8.6	7.9	8.3
Total Sulphate as SO ₄	%	0.005	MCERTS	0.025	0.023	0.032	0.027	0.022
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0086	0.014	0.0097	0.012	0.014
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	8.6	13.5	9.7	12.4	14.0
Total Sulphur	%	0.005	MCERTS	0.008	0.011	0.011	0.011	0.008



4841



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Environmental Science

Analytical Report Number : 19-24225**Project / Site name: Drove Lane, Yapton**

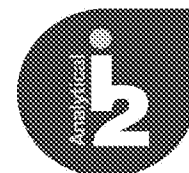
* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid 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 *
1127418	WS201	B1	0.50-0.50	Brown clay.
1127419	WS201	D9	4.00-4.00	Light brown sand.
1127420	WS204	D4	1.50-1.50	Brown clay with gravel.
1127421	WS204	D11	4.70-4.70	Beige clay with chalk and gravel.
1127422	WS205	D2	0.50-0.50	Brown clay and loam with vegetation.
1127423	WS205	D10	4.50-4.50	Light brown sandy clay with gravel.
1127424	WS210	D3	1.00-1.00	Brown clay.
1127425	WS210	D7	3.00-3.00	Light brown clay and sand with gravel.
1127426	WS211	D3	1.00-1.00	Brown clay.
1127427	WS211	D6	2.50-2.50	Light brown clay.



4841



Environmental Science

Analytical Report Number : 19-24225**Project / Site name: Drove Lane, Yapton****Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)**

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	L038-PL	D	MCERTS
Total Sulphate in soil as %	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests"	L038	D	MCERTS
Total Sulphur in soil as %	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In-house method based on BS1377 Part 3, 1990, and MEWAM 2006 Methods for the Determination of Metals in Soil	L038	D	MCERTS

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

APPENDIX E

RIG CERTIFICATES

SPT Calibration Report

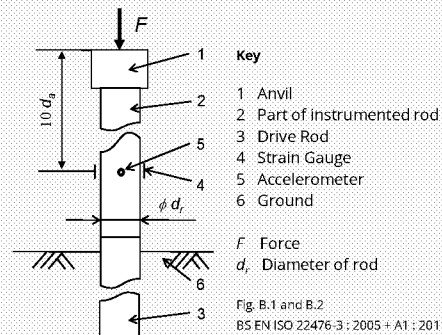
Hammer Energy Measurement Report

Type of Hammer PREMIER
Client GEOTECHNICAL SERVICES
Test No EQU2030

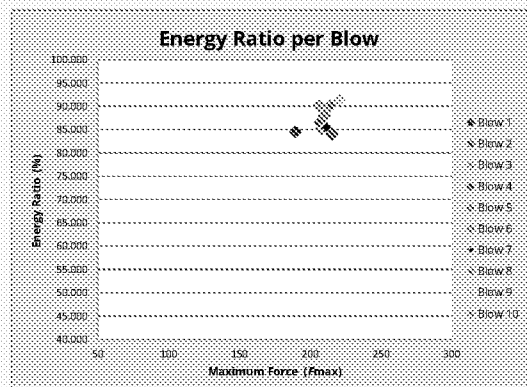
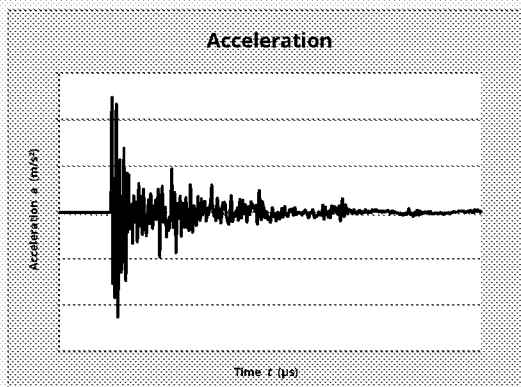
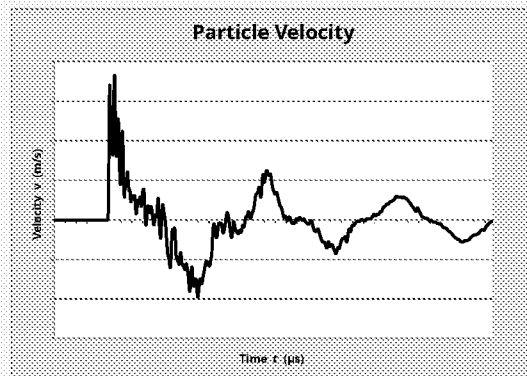
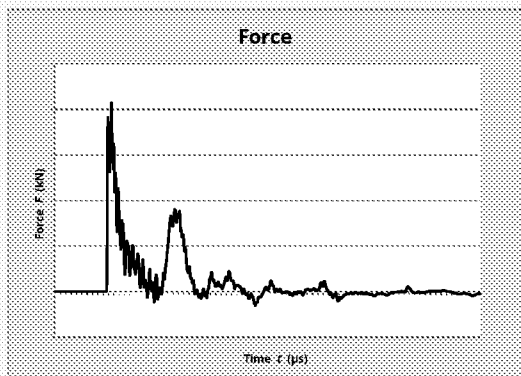
Test Depth (m) 8.70
Mass of hammer $m = 63.5\text{kg}$
Falling height $h = 0.76\text{m}$
 $E_{\text{theor}} = m \times g \times h = 473\text{J}$

Characteristics of the instrumented rod

Diameter $d_r = 0.052\text{ m}$
Length of instrumented rod 0.558 m
Area $A = 11.61\text{ cm}^2$
Modulus $E_s = 206843\text{ MPa}$



DATE OF TEST	VALID UNTIL	HAMMER ID
29/01/2018	29/01/2019	382709



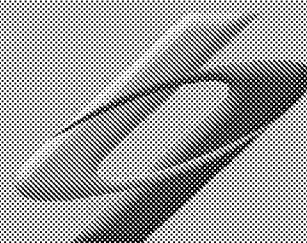
Observations:
1.

$E_{\text{meas}} = 0.415\text{ kN-m}$
 $E_{\text{theor}} = 0.473\text{ kN-m}$

Energy Ratio = $\frac{E_{\text{meas}}}{E_{\text{theor}}}$
87.82%

Equipe SPT Analyzer Operators: IML

Prepared by: [Redacted] Checked by: [Redacted] Date: 01/02/2018



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