Construction Design Solutions
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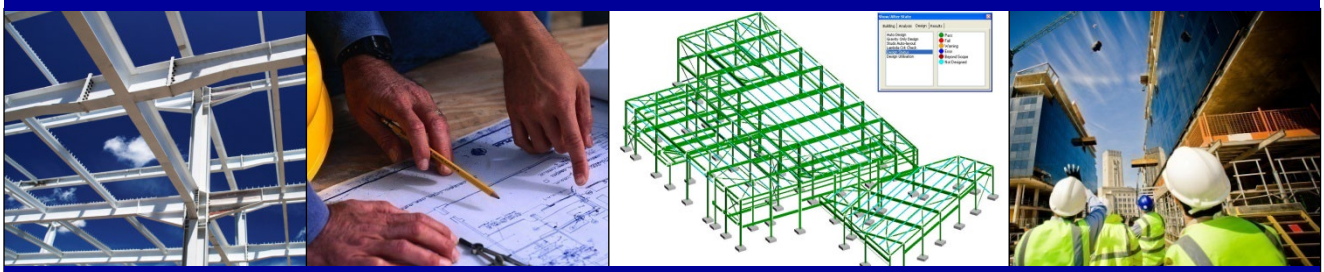
Intrusive Ground Investigation



Development :

Plot 10 Dove Valley Park,
Foston, Derbyshire

Client :
Dove Valley Park Limited

CDS Project Reference : 2022-9385

July 2022

Prepared By:

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DOCUMENT INFORMATION

Reference	Revision	Project Engineer	Project Director	Issue Date
MJH/J2038/D2/1	First	Dr Jonathon Thomson	Marcus Hanford	8th July 2022

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1 INTRODUCTION

1.1 This report describes an intrusive ground investigation on a site at Plot 10, Dove Valley Park, Foston, Derbyshire, carried out for our Client, Dove Valley Park Limited. This report follows on from and should be read in conjunction with the geotechnical & geo-environmental desk study for the site, issued by CDS in April 2022.

1.2 The objectives of this investigation have been to obtain further information relating to the geotechnical and geo-environmental conditions pertaining to the site and to produce an assessment of these factors in relation to the proposed development.

1.3 We have been advised that the proposed development at the site will comprise 2 light industrial buildings and associated infrastructure. It is assumed in the production of this report that ground levels across the site will remain generally unchanged during the proposed development. If the assumptions made above and in the later sections of this report are not the case, then the recommendations presented within this report may require some amendment.

1.4 This report has been produced on behalf of the Client, Dove Valley Park Limited and no responsibility is accepted to any third party for all or any part. This report should not be relied upon or transferred to any other parties without the express written authorisation of CDS. If any unauthorised third party comes into possession of this report, they rely on it at their own risk and the authors owe them no duty of care or skill.

1.5 Whilst this report may express an opinion on the possible configuration of strata, groundwater, ground gases or contaminants between or beyond various locations, or on the possible presence of features based on visual, verbal or published evidence, this is for guidance only, and no liability can be accepted for its accuracy.

1.6 The site plans and drawings enclosed in this report should not be scaled off.

2 THE SITE & BACKGROUND

2.1 The Site

2.1.1 The site is approximately rectangular in shape and located on the eastern side of Uttoxeter Road (A511), Foston, Derbyshire, (see drawings J2038/01a and J2038/02a). The Ordnance Survey Grid Reference for the approximate centre of the site is SK 2035 3146.

2.1.2 At the time of the investigation site works, (early June 2022), the site generally comprised a group of roughly grassed fields and paddocks used for grazing horses & sheep. Areas of shrubby vegetation / trees were present in the northern and central-western area of the site.

2.2 Background

2.2.1 The salient desk information can be summarised as follows.

- The site is indicated to have been undeveloped before becoming part of an airfield at some time between 1924 and 1955. The site is indicated to have been returned to rough fields / rough grazing in circa 1996.
- The strata beneath the northern area of the site is indicated to comprise Fluvio-glacial Gravel, underlain by the Triassic Mercia Mudstone The strata beneath the southern area of the site is indicated to comprise 1st River Terrace Deposits, underlain by the Triassic Mercia Mudstone.
- The site is indicated to form part of a historical landfill, identified as Church Broughton Airfield. The landfill is reported to have operated from March 1987 – December 1988 and accepted inert and industrial waste.
- Gross contamination of the site is not anticipated. However, elevated concentrations of metals, polyaromatic hydrocarbons and asbestos may be present. Furthermore, the possibility of some localised contamination of the strata beneath the site associated with the usage & storage of fuels and oils could not be completely discounted at the desk study stage.
- Landfilled material beneath the site and adjacent area has the potential to generate concentrations of carbon dioxide and perhaps methane which may impact the proposed development.
- No radon protection measures are required at the site.

3 SCOPE OF THE INVESTIGATION

3.1 Site Works

3.1.1 Intrusive investigation of the site was carried out on the 8th and 9th of June 2022, under the full-time supervision of a suitably experienced Engineer. The intrusive investigation generally comprised.

- The advancement of 12 boreholes (WS1 – WS12) to depths in the range 1m – 4m bgl., using a tracked dynamic sampling rig.
- The excavation of 19 trial pits (TP1 – TP18, (including TP3a)) to depths in the range 2.5m – 3.4m bgl.
- 8 plate load tests with results converted to equivalent CBR values, (PLT1 – PLT8).

3.1.2 The locations of the investigatory holes (boreholes and trial pits) and plate load tests are indicated approximately on drawing J2038/03

3.1.3 Standard Penetration Tests (SPTs) were generally undertaken in the boreholes at 1m vertical centres. Once advanced to the required depths, boreholes WS1, WS2, WS3, WS6, WS9 and WS12 were installed with ground-gas and ground-water monitoring standpipes. The standpipes were sealed into discrete strata horizons and fitted at the surface with lockable headworks covers. The remaining boreholes were backfilled with arisings.

3.1.4 The trial pits were excavated using a tractor mounted back-acting excavator, fitted with a 0.6m wide toothless bucket. Once excavated to the required depths, the trial pits were backfilled with arisings, tamped down with the excavator bucket.

3.1.5 The investigatory holes (trial pits & boreholes) were logged in general accordance with BS 5930: 2015 + A1: 2020 Code of practice for ground investigations. Representative disturbed samples of all the strata encountered in the investigatory holes were placed into sealable plastic containers and glass jars provided by the analytical laboratory for that purpose.

3.1.6 The Engineer's logs of the investigatory holes are presented in Appendix A of this report.

3.1.7 The plate load tests were undertaken by the specialist geotechnical testing contractor Construction Testing Solutions, using a 0.3m diameter plate. The tests were undertaken at depths of 0.3m bgl., with the test locations prepared using a tractor mounted back acting excavator fitted with a 1m wide toothless bucket. The excavator also provided the reaction weight for the testing jack. The results of the plate load tests are presented in Appendix B of this report.

3.2 Laboratory Testing & Analyses

3.2.1 Selected disturbed samples recovered from the investigatory holes were subsequently submitted to MCERTS and UKAS accredited laboratories for chemical analysis and geotechnical testing.

3.2.2 The geotechnical testing was undertaken at the laboratories of Geolabs and generally comprised the following:

- Moisture content and plasticity index determinations were undertaken on 7 samples in accordance with BS EN ISO 17892-12: 2018.
- Particle size distribution tests were undertaken on 3 samples in accordance with BS EN ISO 17892-4: 2016.

3.2.3 The chemical analyses was undertaken at the laboratories of Chemtech Environmental and generally comprised the following:

- 20 samples were analysed for a typical suite of potential contaminants, including a range of metals & semi-metals, phenol, cyanides, total sulphate, sulphur, sulphides & pH and USEPA 16 speciated Poly Aromatic Hydrocarbons (PAHs).
- 10 samples were screened for the presence of asbestos.
- 10 samples were screened for Total Petroleum Hydrocarbons, speciated in accordance with current UK guidelines (TPH-CWG).

3.2.4 20 samples of the strata were also analysed for pH and water-soluble sulphates to determine the potential aggressiveness of the ground to buried concrete.

3.2.5 Further details and the results of the laboratory analyses and testing are presented in Appendix C.

3.3 Gas Monitoring

3.3.1 The first of the 4 proposed post site works visits has been made to monitor the standpipes installed in WS1, WS2, WS3, WS6, WS9 and WS12 for a range of ground gases (including carbon dioxide and methane), together with measurement of gas flow and to take groundwater level readings. The monitoring visit was undertaken on 17th June 2022. The results of the monitoring visit are presented in Appendix D.

4 FINDINGS OF THE INVESTIGATION

4.1 Site Works

4.1.1 Brown gravelly sandy topsoil was initially encountered in trial pits TP1, TP2, TP3, TP3a, TP4, TP5, TP6, TP8, TP9, TP11, TP12, TP13, TP14 & TP17, and boreholes WS1, WS2, WS3, WS4, WS5, WS6, WS7, WS8, WS10, WS11 and WS12 to depths of 0.1m - 0.5m bgl. The topsoil in TP5, TP6, TP8, TP15, and WS8 incorporated varying proportions of brick, ceramic and shale.

4.1.2 Made Ground was encountered underlying the topsoil in WS8 and from ground level in TP7, TP10, TP15, TP16 and TP18. In TP7, TP10, TP15, TP16 & TP18, Made Ground generally comprising brown, black & grey sandy gravel fill incorporating varying proportions of asphalt, ceramic, ash, clinker, shale and metal was encountered to depths of 0.1m – 1.2m bgl. Underlying the sandy gravel fill in TP18 and the topsoil in WS8, Made Ground generally comprising brown – clay fill incorporating fragments of wood, wire and brick was encountered to 2.1m bgl., (TP18) and 1.9m bgl., (WS8).

4.1.3 In TP11 and WS10 the Made Ground was underlain by 'disturbed natural strata' comprising soft grey and brown clay to 1m bgl., (TP11) and 0.9m bgl., (WS10).

4.1.4 Natural strata was encountered underlying the topsoil, Made Ground or disturbed strata. The natural strata generally comprised a sequence of medium dense brown sandy gravels and stiff, (locally firm to stiff, but soft in WS1) gravelly clays. The gravels and clays incorporated occasional cobbles and are considered to represent superficial deposits (Terrace Deposits / Fluvio-glacial Gravel). In TP3, TP3a, TP4, TP6, TP7, TP9, TP10, TP15, TP16, TP17, TP18, WS1, WS2, WS3, WS6, WS9, WS10, WS11 and WS12, those superficial deposits were encountered to 1.7m - 4.3m bgl. The superficial deposits extended beyond the bottom of TP1, TP2, TP5, TP8, TP11, TP12, TP13, TP14, WS4, WS5 & WS7.

4.1.5 Underlying the superficial deposits in TP3, TP3a, TP4, TP6, TP7, TP9, TP10, TP15, TP16, TP17, TP18, WS1, WS2, WS3, WS6, WS9, WS10, WS11 & WS12 and directly underlying the Made Ground in WS8, stiff and very stiff (occasionally firm) brown – red silts and clays were generally encountered, considered to represent strata from the Mercia Mudstone Group. The Mercia Mudstone Group strata extended beyond the bottom of the investigatory holes, where encountered.

4.1.6 The Standard Penetration Tests (SPTs) undertaken in the superficial deposits generally revealed 'N' values in the range 10 to >50 (i.e. refusal of the test) An SPT 'N' value of 4 was, however, revealed for the SPT undertaken in WS1 at 2m bgl. The SPTs undertaken in the Mercia Mudstone Group strata revealed 'N' values in the range of 14 and >50.

4.1.7 Groundwater was encountered in TP6 at 3.1m bgl., and WS2 & WS6 at 3.45m bgl. No groundwater was encountered during the excavation of the other trial pits and / or advancement of the other boreholes.

4.1.8 The sides of the trial pits remained generally stable for the short time those excavations were left open, before being backfilled.

4.1.9 The equivalent CBR values calculated from the results of the plate load tests can be summarised as follows.

Test Location	Strata at Plate Formation	Equivalent CBR Value
PLT1	Gravelly Clay	16.4%
PLT2	Gravelly Clay	9.4%
PLT3	Gravelly Clay	21.5%
PLT4	Gravelly Clay	25.1%
PLT5	Gravelly Clay	10.5%
PLT6	Gravelly Clay	7.1%
PLT7	Gravelly Clay	24.9%
PLT8	Gravelly Clay	21.4%

4.2 Geotechnical Laboratory Testing

4.2.1 The results of the particle size distribution determinations undertaken on the samples of granular strata encountered beneath the site can be summarised as follows.

Sample Reference	Particle Size and Proportion of Sample			
	Cobbles	Gravel	Sand	Silt & Clay
TP3A at 0.8m bgl.	-	73.1%	23.2%	5.5%
TP6 at 1m bgl.	20.4%	56.1%	17%	6.5%
TP10 at 1.5m bgl.	-	73.4%	18%	8.6%

4.2.2 The results of the moisture content and plasticity index determinations undertaken on the samples of strata encountered beneath the site can be summarised as follows.

Sample Reference	Moisture Content	Percentage of sample particles <425µm	Plasticity Index
TP3 at 1.3m bgl	7%	27%	20%
TP4 at 2m bgl	23%	84%	22%
TP6 at 1m bgl	5%	15%	Non-plastic
TP9 at 0.8m bgl	18%	94%	17%
TP15 at 1m bgl.	15%	64%	28%
TP16 at 1.5m bgl	17%	94%	15%

4.2.3 The pH of the strata at the site is in the range 6.7 to 8.6, with associated water-soluble sulphate concentrations of <10mg/l., and 270mg/l., as SO_4 revealed for the samples tested.

4.3 Chemical Contamination Analyses – Soils

4.3.1 The results of the chemical contamination testing from the area of the historic contractor's compound have been assessed with reference to the published Soil Guideline Values (SGVs) and Category 4 Screening Levels (C4SLs). In the absence of published SGVs / C4SLs for particular determinands, the results of the chemical contamination analyses have been assessed with reference to criteria calculated using the CLEA software and in-house criteria based on a combination of previous experience or other available assessment guidelines.

4.3.2 The SGVs, C4SLs, etc. are interpreted in current guidance as 'intervention values' relative to a particular intended end use for the respective site, to provide a means of assessing possible long term chronic risks to human health. They are based on assumptions about soil conditions and the existence of exposure pathway behaviour for the particular contaminant. The exceedance of an SGV, C4SL, etc. can thus be taken as indicating that further detailed assessment and/or remedial action is required to enable/facilitate development for the particular end use of the site concerned.

4.3.3 We have been advised that the proposed development at the site will comprise industrial buildings and associated infrastructure. As such, the results of the contamination analyses have been assessed for a commercial / industrial land use category.

4.3.4 The results of the chemical analyses have generally revealed the chemicals of concern at concentrations below the levels of detection and / or below their respective assessment criteria for an industrial end use.

4.3.5 Some exceedances have, however, been revealed in the gravelly Made Ground encountered beneath the site, summarised as follows.

Benzo(a)pyrene – The samples of Made Ground from TP7 at 0.05m bgl., and TP10 at 0.1m bgl., have revealed benzo(a)pyrene concentrations which exceed the intervention value of 77mg/kg.

Indeno(123cd)pyrene - The samples of Made Ground from TP7 at 0.05m bgl., and TP10 at 0.1m bgl., have revealed indeno(123cd)pyrene concentrations which exceed the intervention value of 61mg/kg., (soils with more than 2.5% organic matter content).

Benzo(a)anthracene – The sample of Made Ground from TP7 at 0.05m bgl., has revealed a benzo(a)anthracene concentration which exceeds the intervention value of 95mg/kg., (soils with more than 2.5% organic matter content).

Benzo(b)fluoranthene - The sample of Made Ground from TP7 at 0.05m bgl., has revealed benzo(b)fluoranthene concentration which exceeds the intervention value of 100mg/kg.

Dibenz(ah)anthracene - The sample of Made Ground from TP7 at 0.05m bgl., has revealed a dibenz(ah)anthracene concentration of 18.1mg/kg which marginally exceeds the intervention value of 13mg/kg.

4.4 Gas Monitoring Results

4.4.1 The first of the 4 proposed visits have been made to monitor the standpipes installed at the site.

4.4.2 The results of the first monitoring visit can be summarised below.

Carbon Dioxide – Carbon dioxide concentrations in the range 0.8%v/v to 2.6%v/v have been recorded in the standpipes to date.

Methane – No detectable concentrations of methane have been recorded to date.

Oxygen – Oxygen concentrations in the range 18.3%v/v to 20.6%v/v have been recorded in the available standpipes to date.

Hydrogen Sulphide - No detectable concentrations of hydrogen sulphide have been recorded in any of the standpipes to date.

Carbon Monoxide –Carbon monoxide concentrations in the range 1ppm to 6ppm have been recorded in the standpipes to date.

Gas Flow – Gas flows of 0.1l/hr (i.e. the lower detectable limit of the gas monitor being used) were recorded from the standpipes at the time of the monitoring visit to date.

4.4.3 The atmospheric pressure at the time of the monitoring visit was 1001mb.

4.4.4 After obtaining the gas readings, the gas bungs/taps were removed and the standpipes 'dipped' for water depths. The water surface in the standpipes was encountered at depths in the range 1.05m – 2.25m bgl., at the time of the monitoring visit to date.

5 GEOTECHNICAL ASSESSMENT

5.1 Foundations & Floor Slabs

5.1.1 It is considered that the Made Ground encountered beneath the site will not provide a suitable bearing strata for foundations and / or floor slabs due to the variability and / or likely settlement performance of that strata.

5.1.2 It is considered that pad / strip foundations bearing on the medium dense (locally very dense) sandy gravels and stiff, (locally firm to stiff,) gravelly clays will prove appropriate for the proposed industrial buildings. It is recommended that pad / strip foundations which bear on the generally medium dense sands and firm/stiff clays are designed with a presumed bearing resistance in the order of 150kN/m^2.

5.1.3 Pad / strip foundations should be deepened through Made Ground, to bear on undisturbed medium dense (locally dense sands) and firm to stiff clays. It is recommended that a pad / strip foundations bear at a minimum depth of 0.6m bgl., on sands and 0.75m bgl., on clays.

5.1.4 If strip foundations span between non-cohesive sands and cohesive clays, it is recommended that strip foundations are appropriately reinforced to minimise the potential effects of differential settlement.

5.1.5 It is considered that foundations which bear on non-cohesive sands do not require any adjustment to protect against the potential effects of heave and shrinkage associated with existing, proposed or recently removed trees and vegetation.

5.1.6 Where cohesive strata is encountered, foundations should be adjusted in accordance with the recommendations of NHBC Chapter 4.2 - Building Near Trees, (or similar guidance) to protect against the potential effects of heave and shrinkage associated with existing, proposed or recently removed trees and vegetation. The results of the plasticity index determinations, modified for the indicate that the cohesive strata beneath the site should be regarded as having a low volume change potential.

5.1.7 All foundations should be deepened below roots of 5mm diameter, or greater.

5.1.8 It is anticipated that floor slabs bearing on the medium dense (locally dense sands) and firm to stiff clays should prove appropriate for the industrial buildings. It is recommended that any Made Ground encountered beneath (and within influencing distance) of the proposed floor slabs should be excavated and ground levels in those areas reinstated with appropriately placed and compacted engineered fill.

5.2 Construction

5.2.1 As very dense sands and very stiff clays have been encountered at shallow depth beneath the site, it is anticipated that higher specification plant, such as a larger tracked 360 degree excavator and / or hydraulic breaker may be required for excavations.

5.2.2 The stability of excavations which encounter Made Ground and granular strata (sands & gravels) may be poor. As such, we would recommend that appropriate excavation support, battering of excavation sides or other measures should be used during construction.

5.2.3 It is considered that natural strata excavated from beneath the site should be suitable for re-use as a general fill / bulk fill in earthworks.

5.3 Concrete Design

5.3.1 We have considered the geology of the site and the ground conditions in accordance with the guidelines contained in Part C of BRE Special Digest 1: Concrete in aggressive ground (2005) and have categorised the site as a 'greenfield' site.

5.3.2 The results of the water-soluble sulphate analyses fall within Design Sulphate (DS) Class DS-1. The groundwater conditions at the site should be considered to be mobile (potentially). On this basis and from consideration of the pH conditions, the site has been assigned an ACEC (Aggressive Chemical Environment for Concrete) Class AC1.

5.3.3 The specific concrete mixes (The Design Chemical Class) to be used on site for all the 'in the ground' and 'on the ground' permanent applications should be determined, mindful of the ACEC Class, by the site-specific concrete requirements, in terms of the required durability and structural performance. These are assessed in terms of the Intended Working Life and any need for Additional Protective Measures (APM), as detailed in Part D, with further guidance in Parts E and F, of the BRE Special Digest 1, (2005).

5.4 Soakaways

5.4.1 The single post site works monitoring visit to date has revealed groundwater level at shallow depth beneath the site, (1.05m – 2.25m bgl). In view of that shallow groundwater level, it is anticipated that soakaways are unlikely to be viable at the site.

5.5 Road Pavements & Hardstandings

5.5.1 The results of plate load testing undertaken on the gravelly clays has revealed equivalent CBR values in the range 7% to 25%.

6 GEO-ENVIRONMENTAL ASSESSMENT

6.1 Contamination

6.1.1 The results of the investigation have revealed the strata beneath the site is generally free of significant contamination for the proposed industrial end use. However, elevated concentrations of Poly Aromatic Hydrocarbons (Indeno(123cd)pyrene, Benzo(a)anthracene, Benzo(b)fluoranthene and / or Benzo(a)pyrene) have been revealed in the samples of the gravelly Made Ground encountered in TP7 at 0.05m bgl., and TP10 at 0.1m bgl. It is considered those elevated Poly Aromatic Hydrocarbon concentrations are likely to be associated with the asphalt and ash / clinker encountered in that strata, with similar gravelly Made Ground also encountered at shallow depth in TP15, TP16 and TP18.

6.1.2 Across the majority of the site, it is considered that the proposed hardsurfacing of the building floors and hardstandings, etc., will provide a break in the contamination source to receptor pathway and prevent the elevated Poly Aromatic Hydrocarbon (PAH) concentrations in the shallow gravelly Made Ground from posing a significant risk to end users.

6.1.3 Within the subordinate soft landscaping areas, it is recommended that the shallow gravelly Made Ground is excavated and ground levels in those areas reinstated with chemically suitable subsoil and topsoil.

6.1.3 With the proposed development generally comprising non permeable surface cover managed by a dedicated drainage system and following the excavation / removal of the gravelly Made Ground with elevated PAH concentrations from the proposed soft landscaping areas, it is considered the site will not pose a significant risk to controlled waters / environmental receptors.

6.1.4 If during the proposed development of the site, any visual or olfactory evidence of contamination is encountered, then further advice from a suitably qualified and experienced Geo-Environmental Engineer should be sought.

6.2 Radon & Other Ground Gases

6.2.1 No Radon protection measures are required at the site.

6.2.2 The results of the first post site works visit to monitor the standpipes installed at the site have revealed a maximum carbon dioxide concentration of 2.6%v/v, and a maximum gas flow of 0.1l/hr. No detectable concentrations of methane have been recorded in the standpipes to date.

6.2.3 In accordance with BS 8485:2015 + A1:2019 'Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings', a preliminary maximum borehole hazardous gas flow rate of 0.003l/hr for carbon dioxide has been calculated.

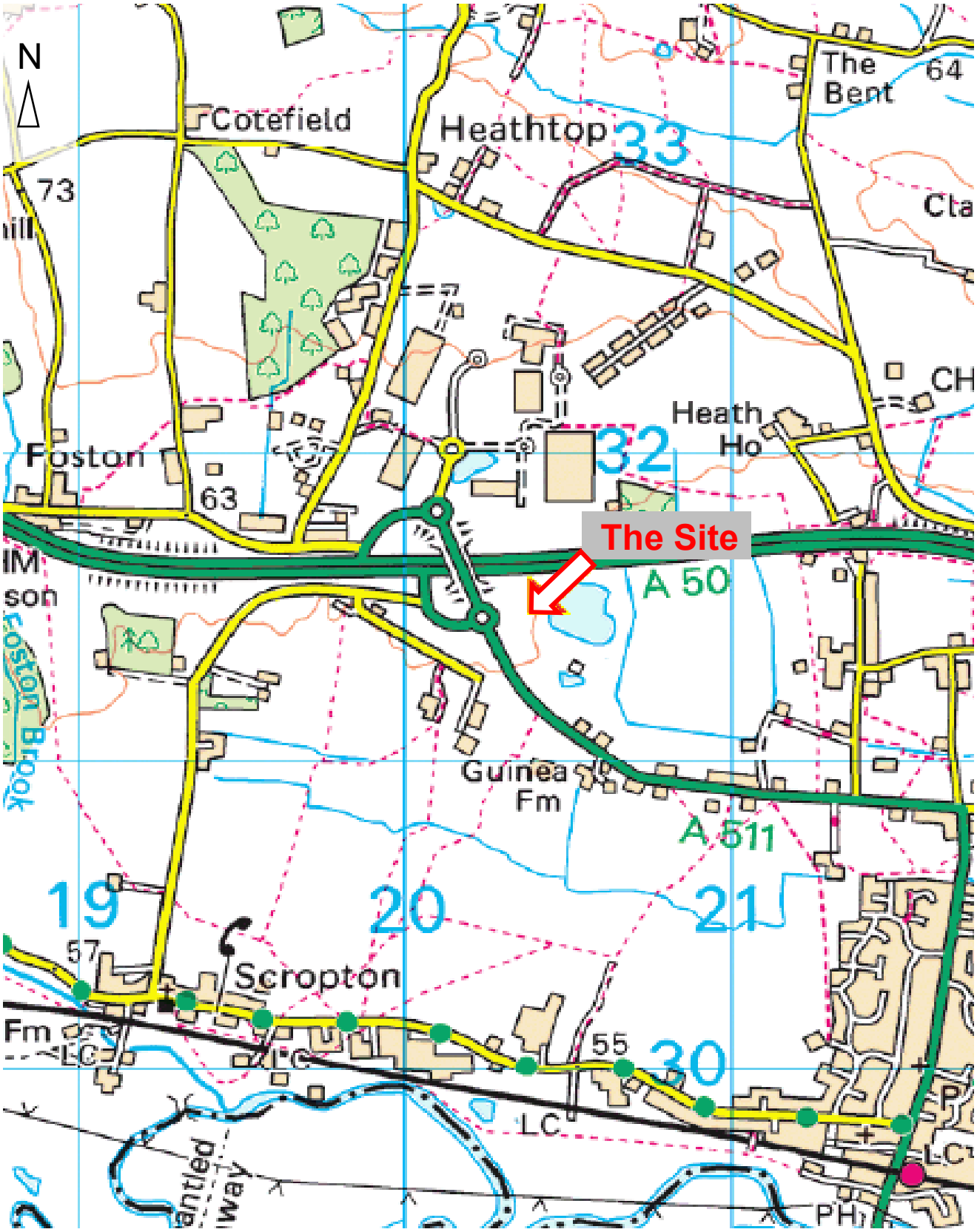
6.2.4 A check of the 'worst case' scenario for the gas monitoring data to date, (i.e. maximum recorded gas concentration at the time of the maximum recorded gas flow), has also revealed a preliminary 'worst case' hazardous gas flow rate of 0.003l/hr for carbon dioxide.

6.2.5 From consideration of hazardous gas flow rates (actual & 'worst case') and ground gas concentrations, the site has been assigned a preliminary Characteristic Gas Situation (CS) CS1 in accordance with BS8485.

6.2.6 From that preliminary characterisation CS1, it is considered gas protection measures are unlikely to be required at the site.

6.2.7 The assessment for carbon dioxide and methane ground gases should be reviewed once the outstanding monitoring visits have been undertaken.

DRAWINGS



Drawing Title: **Site Location Plan**		**J2038/01a**	
		Scale at A4: NTS	
Project: **Plot 10, Dove Valley Park, Foston, Derbyshire**		Drawn: MJH	Approved: MJH
Client: **Dove Valley Park Limited and OGM Limited**		Date: 05/04/2022	Date: 05/04/2022

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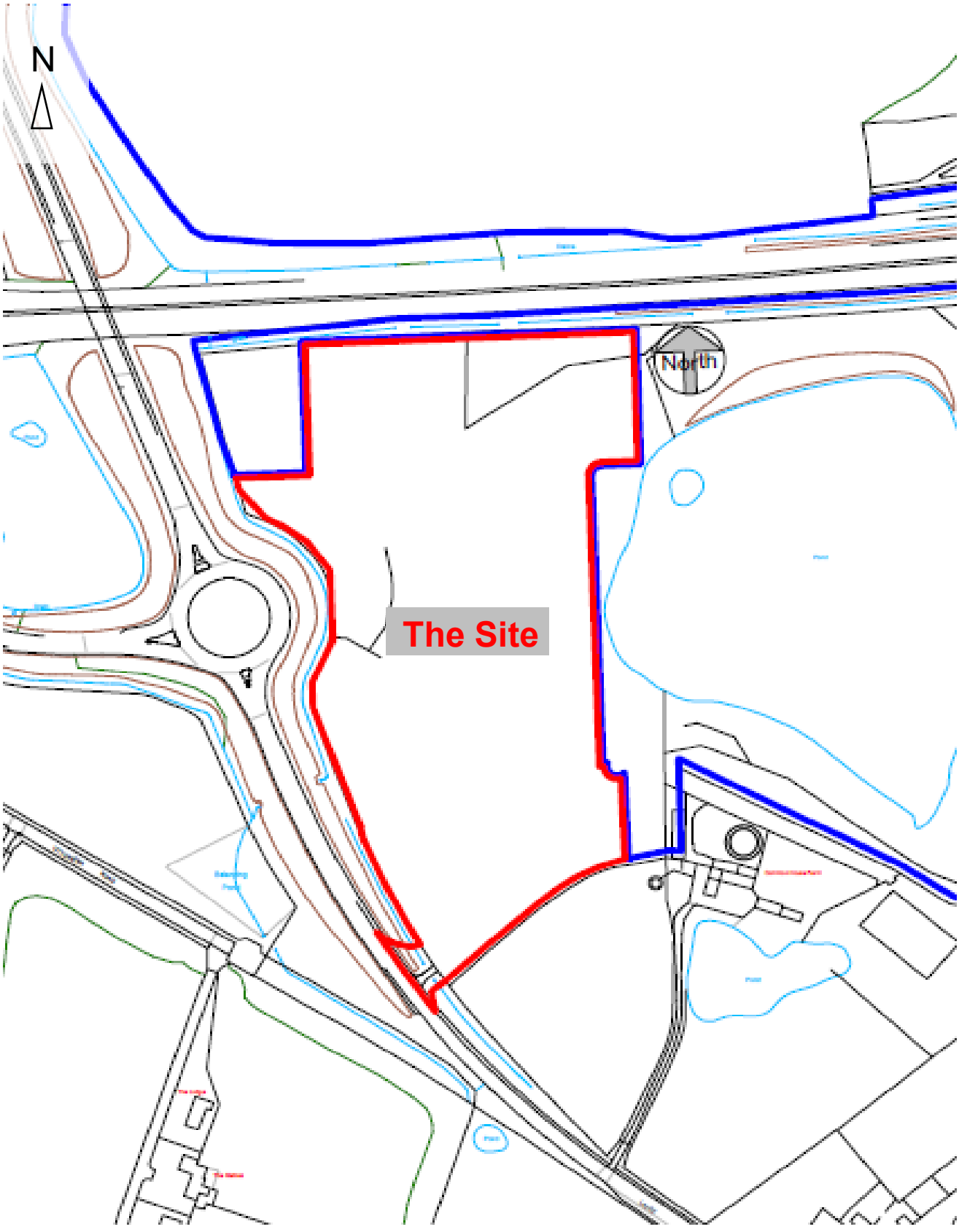

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		Scale at A4: NTS	
Project: **Plot 10, Dove Valley Park, Foston, Derbyshire**		Drawn: MJH	Approved: MJH
Client: **Dove Valley Park Limited and OGM Limited**		Date: 06/04/2022	Date: 06/04/2022

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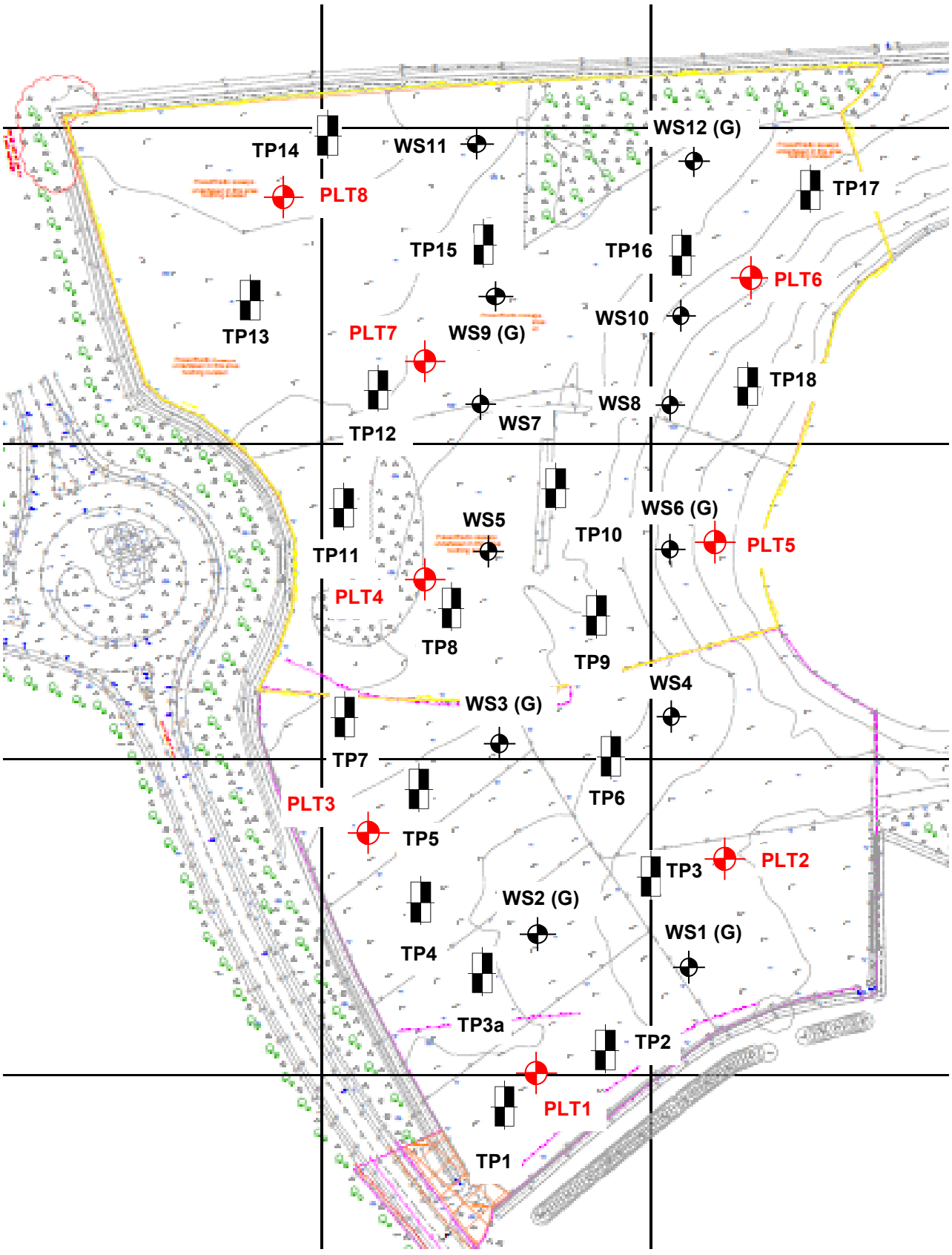

Drawing Title: **Approximate Investigatory Hole Locations**		**J2038/03**	
		Scale at A4: NTS	
Project: **Plot 10, Dove Valley Park, Foston, Derbyshire**		Drawn: JT	Approved: MJH
Client: **Dove Valley Park Limited**		Date: 23/06/2022	Date: 23/06/2022

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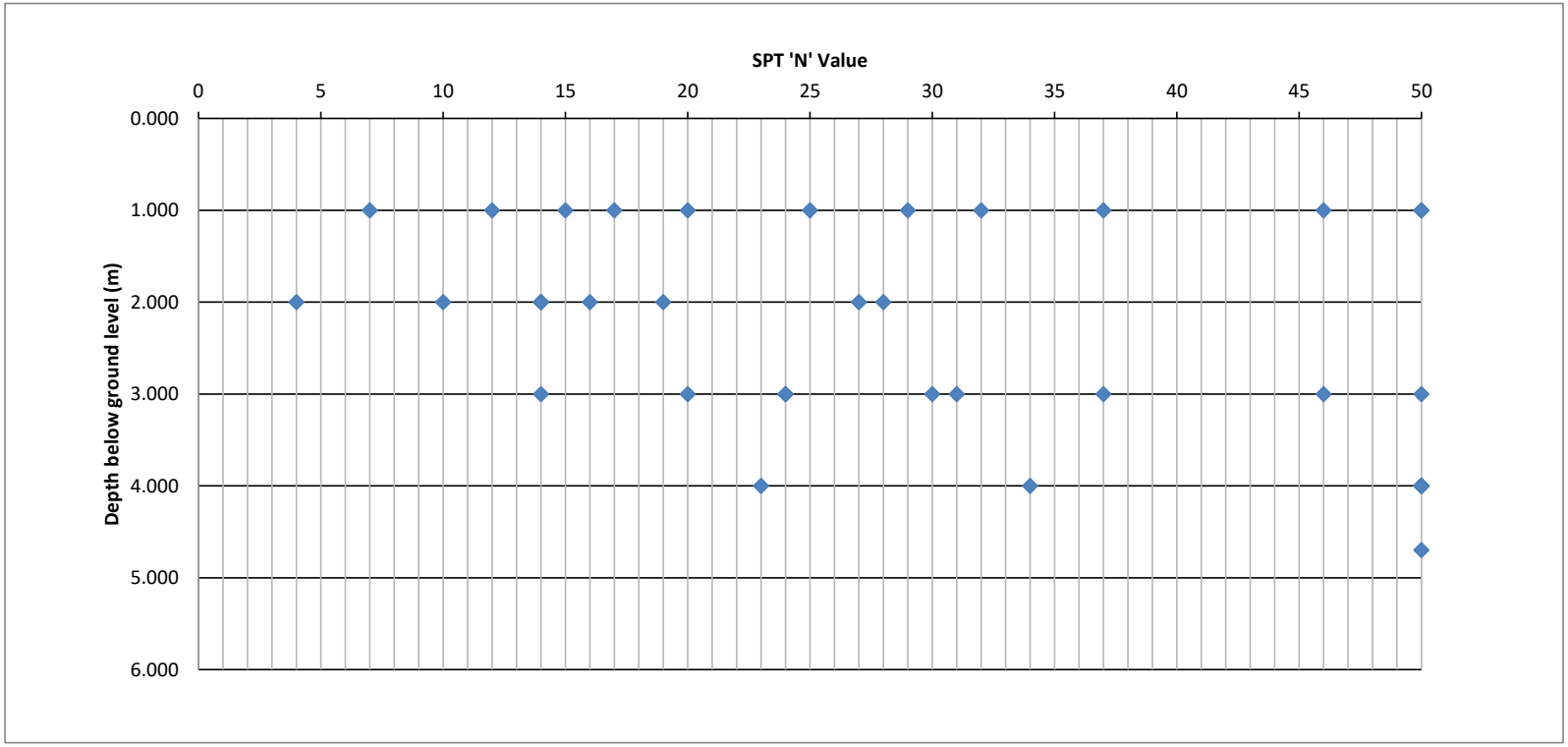

Drawing Title **Summary of Standard Penetration Test 'N' Values**	**J2038/04**	
	Scale at A4: NTS	
Project **Plot 10 Dove Valley Park**	Drawn MJH	Approved MJH
Client **Dove Valley Park Limited**	Date 08/07/2022	Date 08/07/2022

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APPENDICES

Appendix A

Logs of the Investigatory Holes

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Borehole Log

Borehole No.
WS1
Sheet 1 of 1

Project Name: Plot 10	Project No. J2038	Co-ords: -	Hole Type WS
Location: Dove Valley Park, Foston Derbyshire		Level:	Scale 1:50
Client: Dove Valley Park, Limited		Dates: 09/06/2022 - 09/06/2022	Logged By JST

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.40			Brown sandy TOPSOIL with occasional fine medium and coarse gravel of quartzite.
		1.00		N=17 (2,2/4,4,4,5)				Stiff red - brown very gravelly CLAY. Gravel is subrounded fine medium and coarse quartzite and sandstone. Poor recovery.
		2.00		N=4 (1,1/1,1,1,1)	2.00			Soft (becoming stiff at 3.0m bgl) red - brown gravelly CLAY. Gravel is subrounded fine medium and coarse quartzite and sandstone. Silty from 3.0m bgl.
		3.00		N=24 (4,5/5,6,6,7)				
		4.00		N=23 (4,6/4,6,6,7)				
					4.30			Stiff (becoming very stiff at 4.7m bgl) brown - red friable SILT.
		4.70		50 (25 for 135mm/50 for 145mm)	4.70			End of borehole at 4.70 m

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Remarks
1) Groundwater was not encountered. 2) Window sample installed with monitoring standpipe.

AGS

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Borehole Log

Borehole No.
WS2
Sheet 1 of 1

Project Name: Plot 10	Project No. J2038	Co-ords: -	Hole Type WS
Location: Dove Valley Park, Foston Derbyshire		Level:	Scale 1:50
Client: Dove Valley Park, Limited		Dates: 09/06/2022 - 09/06/2022	Logged By JST

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.40			Brown sandy TOPSOIL with occasional fine medium and coarse gravel of quartzite.
		1.00		N=12 (5,4/3,3,3,3)	1.10			Stiff light brown- brown very gravelly CLAY. Gravel is subrounded fine medium and coarse quartzite and sandstone.
		2.00		N=27 (3,3/5,6,8,8)	2.00			Firm to stiff brown - red slightly gravelly CLAY. Gravel is subrounded fine medium and coarse quartzite and sandstone.
		3.00		N=20 (3,3/5,5,5,5)				Stiff light brown- brown very gravelly CLAY. Gravel is subrounded fine medium and coarse quartzite and sandstone.
	▼				3.50			Very stiff brown - red friable SILT.
		4.00		N=50 (5,12/50 for 295mm)	4.00			End of borehole at 4.00 m

Remarks
1) Groundwater was encountered 3.45m bgl. 2) Window sample installed with monitoring standpipe.

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Consulting Civil, Structural, Highway & Drainage Engineers

Borehole Log

Borehole No.
WS3
Sheet 1 of 1

Project Name: Plot 10	Project No. J2038	Co-ords: -	Hole Type WS
Location: Dove Valley Park, Foston Derbyshire		Level:	Scale 1:50
Client: Dove Valley Park, Limited		Dates: 09/06/2022 - 09/06/2022	Logged By JST

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.40			Brown sandy TOPSOIL with occasional fine medium and coarse gravel of quartzite.
					0.60			Medium dense light brown - orange subrounded fine medium and coarse sandy clayey GRAVEL of quartzite and sandstone. Occasional cobbles.
		1.00		N=32 (6,7/8,8,8,8)				Stiff brown- red very gravelly CLAY. Gravel is subrounded fine medium and coarse quartzite and sandstone.
		2.00		N=14 (2,2/3,3,3,5)	2.00			Firm to stiff brown - red slightly gravelly CLAY. Gravel is subrounded fine medium and coarse quartzite and sandstone.
		3.00		N=14 (3,4/4,3,3,4)				
					3.70			Very stiff brown - red friable SILT.
		4.00		N=34 (5,4/4,10,10,10)	4.00			End of borehole at 4.00 m

Remarks
1) Groundwater was not encountered. 2) WWindow sample installed with monitoring standpipe.

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Borehole Log

Borehole No.
WS4
Sheet 1 of 1

Project Name: Plot 10	Project No. J2038	Co-ords: -	Hole Type WS
Location: Dove Valley Park, Foston Derbyshire		Level:	Scale 1:50
Client: Dove Valley Park, Limited		Dates: 09/06/2022 - 09/06/2022	Logged By JST

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.50			Brown sandy TOPSOIL with occasional fine medium and coarse gravel of quartzite.
		1.00		N=50 (10,12/50 for 240mm)	1.00			Very dense light brown - orange subrounded fine medium and coarse sandy clayey GRAVEL of quartzite and sandstone. Occasional cobbles.
								End of borehole at 1.00 m

Remarks
1) Groundwater was not encountered. 2) Window sample backfilled with arisings upon completion.

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Borehole Log

Borehole No.
WS5
Sheet 1 of 1

Project Name: Plot 10	Project No. J2038	Co-ords: -	Hole Type WS
Location: Dove Valley Park, Foston Derbyshire		Level:	Scale 1:50
Client: Dove Valley Park, Limited		Dates: 09/06/2022 - 09/06/2022	Logged By JST

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.40			Brown sandy TOPSOIL with occasional fine medium and coarse gravel of quartzite.
					0.60			Medium dense light brown - orange subrounded fine medium and coarse sandy clayey GRAVEL of quartzite and sandstone.
		1.00		N=46 (11,10/12,12,11,11)	1.00			Stiff to very stiff light brown- brown very gravelly CLAY. Gravel is subrounded fine medium and coarse quartzite and sandstone.
								End of borehole at 1.00 m

Remarks
1) Groundwater was not encountered. 2) Window sample backfilled with arisings upon completion.

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Borehole Log

Borehole No.
WS6
Sheet 1 of 1

Project Name: Plot 10	Project No. J2038	Co-ords: -	Hole Type WS
Location: Dove Valley Park, Foston Derbyshire		Level:	Scale 1:50
Client: Dove Valley Park, Limited		Dates: 09/06/2022 - 09/06/2022	Logged By JST

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.30			Brown sandy TOPSOIL with occasional fine medium and coarse gravel of quartzite.
		1.00		N=15 (3,2/2,4,4,5)				Firmto stiff brown - red slightly gravelly CLAY. Gravel is subrounded fine medium and coarse quartzite and sandstone.
					1.70			Stiff (becoming very stiff at 3.0m bgl) brown - red friable SILT.
		2.00		N=28 (4,4/5,5,8,10)				
		3.00		N=31 (3,5/5,6,8,12)				
	▼							
		4.00		N=50 (5,10/50 for 285mm)	4.00			End of borehole at 4.00 m

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Remarks
1) Groundwater was encountered at 3.45m bgl. 2) Window sample installed with monitoring standpipe.

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Borehole Log

Borehole No.
WS7
Sheet 1 of 1

Project Name: Plot 10	Project No. J2038	Co-ords: -	Hole Type WS
Location: Dove Valley Park, Foston Derbyshire		Level:	Scale 1:50
Client: Dove Valley Park, Limited		Dates: 09/06/2022 - 09/06/2022	Logged By JST

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.40			Brown sandy TOPSOIL with occasional fine medium and coarse gravel of quartzite.
					0.60			Firm to stiff brown very gravelly CLAY. Gravel is subrounded fine medium and coarse quartzite and sandstone.
		1.00		N=50 (10,11/50 for 235mm)	1.00			Very dense light brown - orange subrounded fine medium and coarse sandy clayey GRAVEL of quartzite and sandstone. Occasional cobbles.
								End of borehole at 1.00 m

Remarks
1) Groundwater was not encountered. 2) Window sample backfilled with arisings upon completion.

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Borehole Log

Borehole No.
WS8
Sheet 1 of 1

Project Name: Plot 10	Project No. J2038	Co-ords: -	Hole Type WS
Location: Dove Valley Park, Foston Derbyshire		Level:	Scale 1:50
Client: Dove Valley Park, Limited		Dates: 09/06/2022 - 09/06/2022	Logged By JST

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.50			Brown sandy TOPSOIL incorporating occasional gravel sized fragments of quartzite and rare brick.
		1.00		N=7 (1,1/1,2,2,2)				MADE GROUND: Brown -grey clay fill incorporating occasional gravel sized fragments of quartzite and rare brick and asphalt.
		2.00		N=14 (2,3/3,3,4,4)	1.90			Firm to stiff brown - red CLAY.
					2.50			Stiff brown - red friable SILT.
		3.00		N=46 (3,5/5,7,10,24)	3.00			End of borehole at 3.00 m

Remarks
1) Groundwater was not encountered. 2) Window sample backfilled with arisings upon completion.

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Borehole Log

Borehole No.
WS9
Sheet 1 of 1

Project Name: Plot 10	Project No. J2038	Co-ords: -	Hole Type WS
Location: Dove Valley Park, Foston Derbyshire		Level:	Scale 1:50
Client: Dove Valley Park, Limited		Dates: 09/06/2022 - 09/06/2022	Logged By JST

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.20			Brown sandy TOPSOIL with occasional fine medium and coarse gravel of quartzite.
					0.50			Medium dense light brown - orange subrounded fine medium and coarse sandy clayey GRAVEL of quartzite and sandstone. Occasional cobbles.
		1.00		N=20 (1,1/2,5,6,7)				Stiff brown - red (firm between 2.0 - 3.0m bgl) slightly gravelly CLAY. Gravel is subrounded fine medium and coarse quartzite and sandstone. Sand horizon between 1.5m - 1.6m bgl.
		2.00		N=14 (2,3/3,4,3,4)				
		3.00		N=37 (5,7/7,10,10,10)				
					3.50			Very stiff brown - red friable SILT.
		4.00		50 (7,11/50 for 190mm)	4.00			End of borehole at 4.00 m

Remarks
1) Groundwater was not encountered. 2) Window sample installed with monitoring standpipe.

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Borehole Log

Borehole No.
WS10
Sheet 1 of 1

Project Name: Plot 10	Project No. J2038	Co-ords: -	Hole Type WS
Location: Dove Valley Park, Foston Derbyshire		Level:	Scale 1:50
Client: Dove Valley Park, Limited		Dates: 09/06/2022 - 09/06/2022	Logged By JST

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.50			Brown sandy TOPSOIL with occasional fine medium and coarse gravel of quartzite.
					0.90			Soft brown CLAY. Probable disturbed natural strata.
		1.00		N=37 (4,6/10,7,10,10)				Stiff brown - red slightly gravelly CLAY. Gravel is subrounded fine medium and coarse quartzite and sandstone. Sand horizon between 2.5m - 2.6m bgl.
		2.00		N=16 (2,2/2,4,5,5)				
		3.00		N=30 (2,2/5,5,10,10)	3.10			Stiff (becoming very stiff at 4.0m bgl) brown - red friable SILT.
		4.00		N=50 (7,10/50 for 295mm)	4.00			End of borehole at 4.00 m

Remarks
1) Groundwater was not encountered. 2) Window sample backfilled with arisings upon completion.

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Borehole Log

Borehole No.
WS11
Sheet 1 of 1

Project Name: Plot 10	Project No. J2038	Co-ords: -	Hole Type WS
Location: Dove Valley Park, Foston Derbyshire		Level:	Scale 1:50
Client: Dove Valley Park, Limited		Dates: 09/06/2022 - 09/06/2022	Logged By JST

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.15			Brown sandy TOPSOIL with occasional fine medium and coarse gravel of quartzite.
		1.00		N=25 (4,5/7,4,4,10)				Stiff brown very gravelly CLAY. Gravel is subrounded fine medium and coarse quartzite and sandstone.
					1.60			Firm brown - red slightly gravelly CLAY. Gravel is subrounded fine medium and coarse quartzite and sandstone. Sand horizon between 2.5m - 2.6m bgl.
		2.00		N=10 (2,3/2,2,3,3)				
					2.50			Stiff brown - red silty CLAY.
		3.00		N=24 (10,8/4,6,7,7)				
					3.50			Very stiff brown - red friable SILT.
		4.00		50 (12,12/50 for 210mm)	4.00			End of borehole at 4.00 m

Remarks
1) Groundwater was not encountered. 2) Window sample backfilled with arisings upon completion.

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Borehole Log

Borehole No.
WS12
Sheet 1 of 1

Project Name: Plot 10	Project No. J2038	Co-ords: -	Hole Type WS
Location: Dove Valley Park, Foston Derbyshire		Level:	Scale 1:50
Client: Dove Valley Park, Limited		Dates: 09/06/2022 - 09/06/2022	Logged By JST

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.40			Brown sandy TOPSOIL with occasional fine medium and coarse gravel of quartzite.
		1.00		N=29 (3,4/4,7,8,10)				Stiff brown - red slightly gravelly CLAY. Gravel is subrounded fine medium and coarse quartzite and sandstone.
		2.00		N=19 (3,3/4,5,5,5)	2.00			Stiff brown - red silty CLAY.
		3.00		N=50 (11,12/50 for 295mm)	2.80 3.00			Very stiff brown - red friable SILT. End of borehole at 3.00 m

Remarks
1) Groundwater was not encountered. 2) Window sample installed with monitoring standpipe.

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Trial Pit Log

Trialpit No
TP1
Sheet 1 of 1

Project Name: Plot 10	Project No. J2038	Co-ords: - Level:	Date 08/06/2022
Location: Dove Valley Park, Foston Derbyshire		Dimensions (m): Depth 3.00	Scale 1:25
Client: Dove Valley Park, Limited			Logged JST

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.10	ES					Brown sandy gravelly TOPSOIL . Gravel is subrounded fine medium and coarse quartzite.
				0.35			Stiff brown - orange very gravelly CLAY. Gravel is subrounded fine medium and coarse quartzite and sandstone. Occasional sandy horizons.
				1.00			Stiff red - brown slightly gravelly CLAY. Gravel is subrounded fine medium and coarse quartzite and sandstone. Occasional clayey silt horizons (between 0.1m - 0.3m thickness) from 2.0m bgl.
				3.00			End of pit at 3.00 m

1
2
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4
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Remarks: 1) Trial pit completed using JCB 3CX with 600m steel toothed bucket. 2) Groundwater was not encountered. 3) Trial pit walls remained stable during excavation. 4) Trial pit backfilled with arisings upon completion.

Stability:

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Trial Pit Log

Trialpit No
TP2
Sheet 1 of 1

Project Name: Plot 10	Project No. J2038	Co-ords: - Level:	Date 08/06/2022
Location: Dove Valley Park, Foston Derbyshire		Dimensions (m): Depth 3.00	Scale 1:25
Client: Dove Valley Park, Limited			Logged JST

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.50	ES		0.40			Brown sandy gravelly TOPSOIL . Gravel is subrounded fine medium and coarse quartzite.
				2.10			Stiff brown - orange very gravelly CLAY. Gravel is subrounded fine medium and coarse quartzite and sandstone. Occasional sandy horizons.
				3.00			Stiff red - brown - grey slightly gravelly CLAY. Gravel is subrounded fine medium and coarse quartzite and sandstone. Occasional clayey silt horizons (between 0.1m - 0.3m thickness from 2.1m bgl.
							End of pit at 3.00 m

1 2 3 4 5

Remarks: 1) Trial pit completed using JCB 3CX with 600m steel toothed bucket. 2) Groundwater was not encountered. 3) Trial pit walls remained stable during excavation. 4) Trial pit backfilled with arisings upon completion.

Stability:

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Trial Pit Log

Trialpit No
TP3
Sheet 1 of 1

Project Name: Plot 10	Project No. J2038	Co-ords: - Level:	Date 08/06/2022
Location: Dove Valley Park, Foston Derbyshire		Dimensions (m): Depth 3.20	Scale 1:25
Client: Dove Valley Park, Limited			Logged JST

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.05	ES					Brown sandy gravelly TOPSOIL . Gravel is subrounded fine medium and coarse quartzite.
				0.40			Stiff light brown - orange slightly gravelly CLAY. Gravel is subrounded fine medium and coarse quartzite and sandstone. Occasional sandy horizons.
				1.10			Medium dense/Dense brown - red subrounded fine medium and coarse clayey GRAVEL of quartzite and sandstone. Occasional firm/stiff red - brown - grey clay horizons (0.1m - 0.4m thickness).
	1.30	D					
				2.90			Firm brown - red CLAY/SILT.
				3.20			End of pit at 3.20 m

1
2
3
4
5

Remarks: 1) Trial pit completed using JCB 3CX with 600m steel toothed bucket. 2) Groundwater was not encountered. 3) Trial pit walls remained stable during excavation. 4) Trial pit backfilled with arisings upon completion.

Stability:

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Trial Pit Log

Trialpit No
TP3a
Sheet 1 of 1

Project Name: Plot 10	Project No. J2038	Co-ords: - Level:	Date 08/06/2022
Location: Dove Valley Park, Foston Derbyshire		Dimensions (m): Depth 3.10	Scale 1:25
Client: Dove Valley Park, Limited			Logged JST

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							Brown sandy gravelly TOPSOIL . Gravel is subrounded fine medium and coarse quartzite.
				0.40			Medium dense/Dense brown - orange subrounded fine medium and coarse clayey GRAVEL of quartzite and sandstone. Occasional cobbles.
				1.20			Stiff brown - red very gravelly CLAY. Gravel is subrounded fine medium and coarse quartzite and sandstone. Occasional sandy horizons.
				2.90			Firm brown - red CLAY/SILT.
				3.10			End of pit at 3.10 m

1
2
3
4
5

Remarks: 1) Trial pit completed using JCB 3CX with 600m steel toothed bucket. 2) Groundwater was not encountered. 3) Trial pit walls remained stable during excavation. 4) Trial pit backfilled with arisings upon completion.

Stability:

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Trial Pit Log

Trialpit No
TP4
Sheet 1 of 1

Project Name: Plot 10	Project No. J2038	Co-ords: - Level:	Date 08/06/2022
Location: Dove Valley Park, Foston Derbyshire		Dimensions (m): Depth 3.20	Scale 1:25
Client: Dove Valley Park, Limited			Logged JST

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
							Brown sandy gravelly TOPSOIL . Gravel is subrounded fine medium and coarse quartzite.
				0.40			Medium dense/Dense light brown - grey subrounded fine medium and coarse sandy GRAVEL of quartzite and sandstone. Occasional cobbles.
	0.70	ES					
				1.00			Stiff brown - red sandy gravelly CLAY. Gravel is subrounded fine medium and coarse quartzite and sandstone.
				1.50			Stiff brown - red - grey slightly gravelly CLAY. Gravel is subrounded fine medium and coarse quartzite and sandstone.
	2.00	D					
				2.90			Firm brown - red clayey SILT.
				3.20			End of pit at 3.20 m

1
2
3
4
5

Remarks: 1) Trial pit completed using JCB 3CX with 600m steel toothed bucket. 2) Groundwater was not encountered. 3) Trial pit walls remained stable during excavation. 4) Trial pit backfilled with arisings upon completion.

Stability:

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Trial Pit Log

Trialpit No
TP5
Sheet 1 of 1

Project Name: Plot 10	Project No. J2038	Co-ords: - Level:	Date 08/06/2022
Location: Dove Valley Park, Foston Derbyshire		Dimensions (m): Depth 3.20	Scale 1:25
Client: Dove Valley Park, Limited			Logged JST

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.05	ES					Brown sandy TOPSOIL incorporating gravel sized fragments of quartzite, ceramic and brick .
				0.40			Medium dense light brown gravelly fine medium and coarse SAND. Gravel is subrounded fine medium and coarse quartzite.
				1.00			Stiff light brown - orange very gravelly CLAY. Gravel is subrounded fine medium and coarse quartzite and sandstone. Occasional sandy horizons.
				1.80			Stiff red - brown - grey slightly gravelly CLAY. Gravel is subrounded fine medium and coarse quartzite and sandstone. Occasional clayey silt horizons (between 0.1m - 0.3m thickness from 2.7m bgl.
				3.20			End of pit at 3.20 m

1
2
3
4
5

Remarks: 1) Trial pit completed using JCB 3CX with 600m steel toothed bucket. 2) Groundwater was not encountered. 3) Trial pit walls remained stable during excavation. 4) Trial pit backfilled with arisings upon completion.

Stability:

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Trial Pit Log

Trialpit No
TP6
Sheet 1 of 1

Project Name: Plot 10	Project No. J2038	Co-ords: - Level:	Date 08/06/2022
Location: Dove Valley Park, Foston Derbyshire		Dimensions (m): Depth 3.20	Scale 1:25
Client: Dove Valley Park, Limited			Logged JST

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
							Brown sandy TOPSOIL incorporating gravel sized fragments of quartzite and rare brick .
	0.50	ES		0.40			Medium dense/Dense light brown - orange subrounded fine medium and coarse sandy clayey GRAVEL of quartzite and sandstone. Occasional cobbles and firm/ stiff brown - red clay horizons (0.05 - 0.1m thickness).
	1.00	D					
				2.80			Firm brown - red clayey SILT.
				3.20			End of pit at 3.20 m

1
2
3
4
5

Remarks: 1) Trial pit completed using JCB 3CX with 600m steel toothed bucket. 2) Groundwater seepage was encountered at 3.1m bgl. 3) Trial pit walls remained stable during excavation. 4) Trial pit backfilled with arisings upon completion.

Stability:

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Trial Pit Log

Trialpit No
TP7
Sheet 1 of 1

Project Name: Plot 10	Project No. J2038	Co-ords: - Level:	Date 08/06/2022
Location: Dove Valley Park, Foston Derbyshire		Dimensions (m): Depth 3.30	Scale 1:25
Client: Dove Valley Park, Limited			Logged JST

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.05	ES		0.10			MADE GROUND: Brown - grey sandy granular fill incorporating gravel sized fragments of igneous rock and asphalt.
				0.40			MADE GROUND: Light grey sandy granular fill incorporating gravel sized fragments of limestone.
	0.50	ES					MADE GROUND: Brown - grey sandy granular fill incorporating gravel sized fragments of igneous rock, ceramic, ash, clinker and rare asphalt.
	0.70	ES		0.60			Stiff light brown - orange gravelly sandy CLAY. Gravel is subrounded fine medium and coarse quartzite and sandstone.
				1.40			Stiff red - brown slightly gravelly CLAY. Gravel is subrounded fine medium and coarse quartzite and sandstone. Occasional irregular shaped very gravelly sand horizons (between 0.1m - 0.4m thickness). Gravel is subrounded fine medium and coarse quartzite. Occasional cobbles.
				3.00			Firm red- brown CLAY/SILT.
				3.30			End of pit at 3.30 m

1
2
3
4
5

Remarks: 1) Trial pit completed using JCB 3CX with 600m steel toothed bucket. 2) Groundwater was not encountered. 3) Trial pit walls remained stable during excavation. 4) Trial pit backfilled with arisings upon completion.

Stability:

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Trial Pit Log

Trialpit No
TP8
Sheet 1 of 1

Project Name: Plot 10	Project No. J2038	Co-ords: - Level:	Date 08/06/2022
Location: Dove Valley Park, Foston Derbyshire		Dimensions (m): Depth 3.20	Scale 1:25
Client: Dove Valley Park, Limited			Logged JST

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.10	ES					Brown sandy TOPSOIL incorporating much gravel sized fragments of ceramic and brick.
				0.30			
	0.50	ES					Medium dense light brown very gravelly fine medium and coarse SAND. Gravel is subrounded fine medium and coarse quartzite. Occasionally clayey.
				0.70			Stiff red - brown very gravelly CLAY. Gravel is subrounded fine medium and coarse quartzite and sandstone. Occasional irregular shaped sand horizons (between 0.1m - 0.2m thickness).
				3.20			End of pit at 3.20 m

1
2
3
4
5

Remarks: 1) Trial pit completed using JCB 3CX with 600m steel toothed bucket. 2) Groundwater was not encountered. 3) Trial pit walls remained stable during excavation. 4) Trial pit backfilled with arisings upon completion.

Stability:

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Trial Pit Log

Trialpit No
TP9
Sheet 1 of 1

Project Name: Plot 10	Project No. J2038	Co-ords: - Level:	Date 08/06/2022
Location: Dove Valley Park, Foston Derbyshire		Dimensions (m): Depth 3.00	Scale 1:25
Client: Dove Valley Park, Limited			Logged JST

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.30			Brown sandy gravelly TOPSOIL . Gravel is subrounded fine medium and coarse quartzite.
	0.80	D					Stiff red - brown - grey slightly gravelly CLAY. Gravel is subrounded fine medium and coarse quartzite and sandstone.
				2.00			Stiff red - brown CLAY/SILT.
				2.90			Firm/Stiff red - brown friable SILT with very weak siltstone lithorelicts.
				3.00			End of pit at 3.00 m

1
2
3
4
5

Remarks: 1) Trial pit completed using JCB 3CX with 600m steel toothed bucket. 2) Groundwater was not encountered. 3) Trial pit walls remained stable during excavation. 4) Trial pit backfilled with arisings upon completion.

Stability:

AGS

Construction Design Solutions
Consulting Civil, Structural, Highway & Drainage Engineers

Trial Pit Log

Trialpit No
TP10
Sheet 1 of 1

Project Name: Plot 10	Project No. J2038	Co-ords: - Level:	Date 08/06/2022
Location: Dove Valley Park, Foston Derbyshire		Dimensions (m): Depth 3.00	Scale 1:25
Client: Dove Valley Park, Limited			Logged JST

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.10	ES					MADE GROUND: Brown - black very sandy granular fill comprising gravel sized fragments of igneous rock, asphalt and rare metal.
				0.30			
	0.50	ES					MADE GROUND: Brown - red very sand fill incorporating much gravel sized fragments of brick, shale and asphalt.
				1.20			
	1.50	D					Medium dense light brown very gravelly fine medium and coarse SAND. Gravel is subrounded fine medium and coarse quartzite. Occasionally clayey.
	1.50	ES					
				2.00			Firm/stiff brown - red silty CLAY.
				3.00			End of pit at 3.00 m

Remarks: 1) Trial pit completed using JCB 3CX with 600m steel toothed bucket. 2) Groundwater was not encountered. 3) Trial pit walls remained stable during excavation. 4) Trial pit backfilled with arisings upon completion.

Stability:

AGS

Construction Design Solutions
Consulting Civil, Structural, Highway & Drainage Engineers

Trial Pit Log

Trialpit No
TP11
Sheet 1 of 1

Project Name: Plot 10	Project No. J2038	Co-ords: - Level:	Date 08/06/2022
Location: Dove Valley Park, Foston Derbyshire		Dimensions (m): Depth 3.00	Scale 1:25
Client: Dove Valley Park, Limited			Logged JST

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							Brown sandy gravelly TOPSOIL . Gravel is subrounded fine medium and coarse quartzite.
				0.40			Soft grey - brown CLAY. Probable disturbed natural strata.
				1.00			Stiff orange - brown slightly gravelly CLAY. Gravel is subrounded fine medium and coarse quartzite and sandstone. Occasional irregular shaped very gravelly sand horizons (between 0.1m - 0.3m thickness). Gravel is subrounded fine medium and coarse quartzite. Occasional cobbles.
				2.30			Stiff red - brown - grey slightly gravelly CLAY. Gravel is subrounded fine medium and coarse quartzite and sandstone. Occasional firm brown - red silt horizons (0.1m - 0.2m thickness) from 2.6m bgl.
				3.00			End of pit at 3.00 m

1
2
3
4
5

Remarks: 1) Trial pit completed using JCB 3CX with 600m steel toothed bucket. 2) Groundwater was not encountered. 3) Trial pit walls remained stable during excavation. 4) Trial pit backfilled with arisings upon completion.

Stability:

AGS

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Trial Pit Log

Trialpit No
TP12
Sheet 1 of 1

Project Name: Plot 10	Project No. J2038	Co-ords: - Level:	Date 08/06/2022
Location: Dove Valley Park, Foston Derbyshire		Dimensions (m): Depth 3.00	Scale 1:25
Client: Dove Valley Park, Limited			Logged JST

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
							Brown sandy TOPSOIL with occasional fine medium and coarse gravel of quartzite and rootlets.
				0.40			Medium dense/Dense brown very gravelly fine medium and coarse slightly clayey SAND. Gravel is subrounded fine medium and coarse quartzite and sandstone. Occasional cobbles.
	0.80	ES		0.80			Stiff red - brown - grey slightly gravelly CLAY. Gravel is subrounded fine medium and coarse quartzite and sandstone.
				2.20			Stiff red - brown - orange very gravelly CLAY. Gravel is subrounded fine medium and coarse quartzite and sandstone.
				2.40			Stiff red - brown - grey slightly gravelly CLAY. Gravel is subrounded fine medium and coarse quartzite and sandstone. Occasional firm brown - red silt horizons (0.1m - 0.2m thickness) from 2.6m bgl.
				3.00			End of pit at 3.00 m

1 2 3 4 5

Remarks: 1) Trial pit completed using JCB 3CX with 600m steel toothed bucket. 2) Groundwater was not encountered. 3) Trial pit walls remained stable during excavation. 4) Trial pit backfilled with arisings upon completion.

Stability:

AGS

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Trial Pit Log

Trialpit No
TP13
Sheet 1 of 1

Project Name: Plot 10	Project No. J2038	Co-ords: - Level:	Date 08/06/2022
Location: Dove Valley Park, Foston Derbyshire		Dimensions (m): Depth 3.00	Scale 1:25
Client: Dove Valley Park, Limited			Logged JST

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							Brown sandy TOPSOIL with occasional fine medium and coarse gravel of quartzite.
				0.50			
				0.60			Medium dense/Dense brown very gravelly fine medium and coarse slightly clayey SAND. Gravel is subrounded fine medium and coarse quartzite and sandstone.
							Stiff red - brown - grey slightly gravelly CLAY. Gravel is subrounded fine medium and coarse quartzite and sandstone. Occasional irregular shaped very gravelly sand horizons (between 0.1m - 0.3m thickness). Gravel is subrounded fine medium and coarse quartzite.
				3.00			End of pit at 3.00 m

1
2
3
4
5

Remarks: 1) Trial pit completed using JCB 3CX with 600m steel toothed bucket. 2) Groundwater was not encountered. 3) Trial pit walls remained stable during excavation. 4) Trial pit backfilled with arisings upon completion.

Stability:

AGS

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Trial Pit Log

Trialpit No
TP14
Sheet 1 of 1

Project Name: Plot 10	Project No. J2038	Co-ords: - Level:	Date 08/06/2022
Location: Dove Valley Park, Foston Derbyshire		Dimensions (m): Depth 3.00	Scale 1:25
Client: Dove Valley Park, Limited			Logged JST

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.05	ES					Brown sandy TOPSOIL with occasional fine medium and coarse gravel of quartzite.
				0.40			Medium dense light brown gravelly fine medium and coarse SAND. Gravel is subrounded fine medium and coarse quartzite and sandstone.
				0.90			Stiff red - brown slightly gravelly CLAY. Gravel is subrounded fine medium and coarse quartzite and sandstone. Silt horizons (0.1 - 0.2m thickness) from 2.5m bgl.
				3.00			End of pit at 3.00 m

1
2
3
4
5

Remarks: 1) Trial pit completed using JCB 3CX with 600m steel toothed bucket. 2) Groundwater was not encountered. 3) Trial pit walls remained stable during excavation. 4) Trial pit backfilled with arisings upon completion.

Stability:

AGS

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Trial Pit Log

Trialpit No
TP15
Sheet 1 of 1

Project Name: Plot 10	Project No. J2038	Co-ords: - Level:	Date 08/06/2022
Location: Dove Valley Park, Foston Derbyshire		Dimensions (m): Depth 3.40	Scale 1:25
Client: Dove Valley Park, Limited			Logged JST

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.05	ES		0.10			MADE GROUND: Brown - red very sandy granular fill comprising gravel sized fragments of brick, quartzite and burnt shale.
				0.40			Stiff red - brown - orange very gravelly CLAY. Gravel is subrounded fine medium and coarse quartzite and sandstone.
	0.50	ES					Stiff red - brown slightly gravelly CLAY. Gravel is subrounded fine medium and coarse quartzite and sandstone.
	1.00	D					
				2.90			Firm/Stiff brown - red friable SILT.
				3.40			End of pit at 3.40 m

1
2
3
4
5

Remarks: 1) Trial pit completed using JCB 3CX with 600m steel toothed bucket. 2) Groundwater was not encountered. 3) Trial pit walls remained stable during excavation. 4) Trial pit backfilled with arisings upon completion.

Stability:

AGS

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Trial Pit Log

Trialpit No
TP16
Sheet 1 of 1

Project Name: Plot 10	Project No. J2038	Co-ords: - Level:	Date 08/06/2022
Location: Dove Valley Park, Foston Derbyshire		Dimensions (m): Depth 3.20	Scale 1:25
Client: Dove Valley Park, Limited			Logged JST

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.30	ES					MADE GROUND: Brown sand fill incorporating occasional gravel and cobble sized fragments of brick and asphalt.
				0.60			Stiff red - brown gravelly CLAY. Gravel is subrounded fine medium and coarse quartzite and sandstone.
	1.50	D					
	2.90	D		2.80			Firm/Stiff brown - red friable SILT. Occasional stiff brown - red clay horizons (0.1m - 0.2m thickness).
				3.20			End of pit at 3.20 m

1
2
3
4
5

Remarks: 1) Trial pit completed using JCB 3CX with 600m steel toothed bucket. 2) Groundwater was not encountered. 3) Trial pit walls remained stable during excavation. 4) Trial pit backfilled with arisings upon completion.

Stability:

AGS

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Trial Pit Log

Trialpit No
TP17
Sheet 1 of 1

Project Name: Plot 10	Project No. J2038	Co-ords: - Level:	Date 08/06/2022
Location: Dove Valley Park, Foston Derbyshire		Dimensions (m): Depth 3.20	Scale 1:25
Client: Dove Valley Park, Limited			Logged JST

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.30			Brown sandy TOPSOIL with occasional fine medium and coarse gravel of quartzite.
				1.70			Stiff red - brown very gravelly (slightly gravelly from 1.0m bgl) CLAY. Gravel is subrounded fine medium and coarse quartzite and sandstone.
				2.80			Medium dense/Dense brown very gravelly fine medium and coarse slightly clayey SAND. Gravel is subrounded fine medium and coarse quartzite and sandstone.
				3.20			Firm/Stiff brown - red friable SILT. Occasional stiff brown - red clay horizons (0.1m - 0.2m thickness).
							End of pit at 3.20 m

1
2
3
4
5

Remarks: 1) Trial pit completed using JCB 3CX with 600m steel toothed bucket. 2) Groundwater was not encountered. 3) Trial pit walls remained stable during excavation. 4) Trial pit backfilled with arisings upon completion.

Stability:

AGS

Construction Design Solutions
Consulting Civil, Structural, Highway & Drainage Engineers

Trial Pit Log

Trialpit No
TP18
Sheet 1 of 1

Project Name: Plot 10	Project No. J2038	Co-ords: - Level:	Date 08/06/2022
Location: Dove Valley Park, Foston Derbyshire		Dimensions (m): Depth 2.50	Scale 1:25
Client: Dove Valley Park, Limited			Logged JST

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
							MADE GROUND: Brown sand fill incorporating occasional gravel sized fragments of quartzite.
				0.30			MADE GROUND: Brown - grey clay fill incorporating occasional gravel sized fragments of quartzite, wood and wire. Rare brick.
	1.00	ES					
				2.10			Stiff/Very stiff brown - red friable SILT.
				2.50			End of pit at 2.50 m

Remarks: 1) Trial pit completed using JCB 3CX with 600m steel toothed bucket. 2) Groundwater was not encountered. 3) Trial pit walls remained stable during excavation. 4) Trial pit backfilled with arisings upon completion.

Stability:

AGS

Appendix B

Results of Plate Load Tests Converted to CBR Values

Construction Testing Solutions

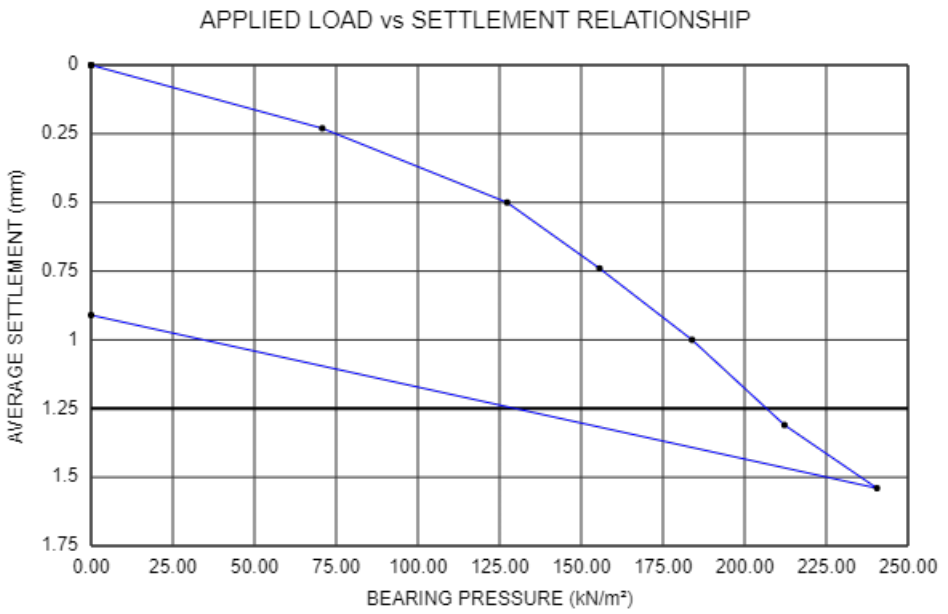
TEST REPORT:	**Estimation of California Bearing Ratio** Tested in Accordance with CTS In House Test Procedure TP15: Carried out in-situ		
REPORT NUMBER:	C1060159 / 189615.1.1.1		
CLIENT REF:	MD3749	CLIENT:	Emcus Ltd
DATE COMPLETED:	09/06/2022	ADDRESS:	11a Campbell Street, Belper, Derbyshire, DE56 1AP
TESTED BY:	Elliott Williams	SITE:	Dove Valley Park, Foston, Derbyshire
LOCATION:	Test 1 (52.8817981,-1.7100839)	MATERIAL:	Brown Gravelly Clay
DEPTH OF TEST:	Surface	SUPPLIER:	Site won
DISTANCE FROM EDGE OF PLATE TO WALL:	0 mm	SOURCE:	Site won
WEATHER:	Overcast	SAMPLING PLAN:	Client Specification
TEST METHOD:	Incremental Plate Loading	SAMPLE TAKEN:	No

Equipment Details

Type of Kentledge:	6 ton ex
Plate Diameter:	300 mm
Plate Area:	0.070686 m^2
Plate Correction:	0.44

Results

Max applied pressure:	241 kN/m^2
Max settlement:	1.54 mm
Avg Bearing Pressure (P) at 1.25mm settlement:	206.8 kN/m^2
Modulus of subgrade K762:	73 $kN/m^2/mm$
Equivalent C.B.R Value at 1.25mm settlement:	16.4%
Plate recovery:	41%



Equivalent C.B.R Value: 16.4 %

Remarks:
Initial load applied by test equipment calculated to be less than 0.5 kN. The laboratory does not apply a conformity statement to test reports as standard, unless specifically requested by the customer. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. Test results reported relate only to the items tested.
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Construction Testing Solutions Ltd.
Registered in England No. 05998333

Construction Testing Solutions

TEST REPORT: **Estimation of California Bearing Ratio**
Tested in Accordance with CTS In House Test Procedure TP15: Carried out in-situ

REPORT NUMBER: C1060159 / 189615.1.1.1

TEST RESULTS

LOAD APPLIED TO PLATE	AVERAGE BEARING PRESSURE	GAUGE SETTLEMENT			AVERAGE SETTLEMENT
		1	2	3	
kN	kN/m^2	mm			mm
0.0	0.0	0.00	0.00	0.00	0.00
5.0	70.7	0.13	0.25	0.30	0.23
9.0	127.3	0.31	0.57	0.62	0.50
11.0	155.6	0.53	0.87	0.83	0.74
13.0	183.9	0.76	1.09	1.14	1.00
15.0	212.2	1.27	1.31	1.35	1.31
17.0	240.5	1.44	1.46	1.72	1.54
0.0	0.0	0.88	0.91	0.94	0.91

Remarks:
Initial load applied by test equipment calculated to be less than 0.5 kN. The laboratory does not apply a conformity statement to test reports as standard, unless specifically requested by the customer. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. Test results reported relate only to the items tested.
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For and on behalf of CTS
James Browne - Testing Services Manager

Approved Signatory
Report date 10-Jun-22

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END OF REPORT

Construction Testing Solutions Ltd.
Registered in England No. 05998333

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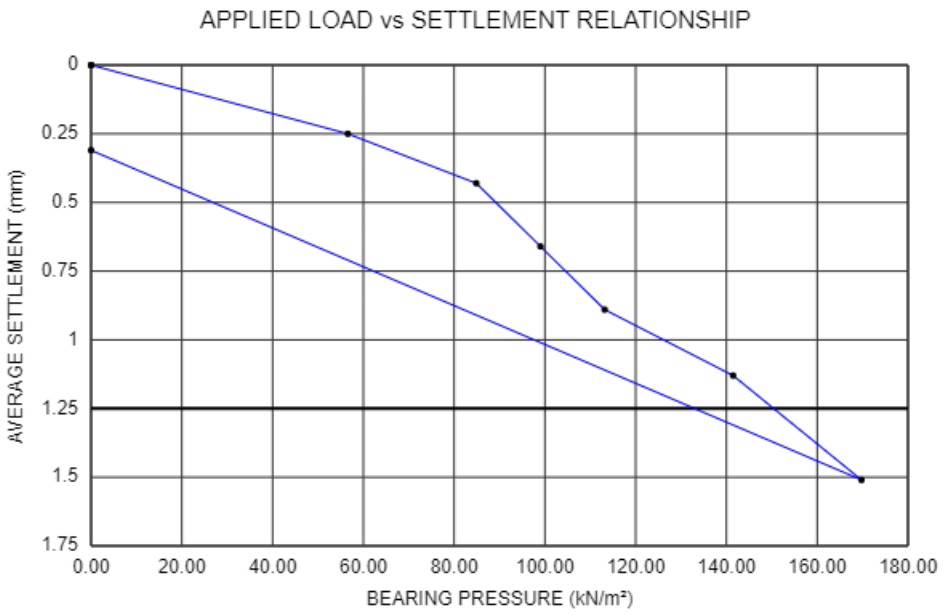
TEST REPORT:	**Estimation of California Bearing Ratio** Tested in Accordance with CTS In House Test Procedure TP15: Carried out in-situ		
REPORT NUMBER:	C1060159 / 189615.1.1.2		
CLIENT REF:	MD3749	CLIENT:	Emcus Ltd
DATE COMPLETED:	09/06/2022	ADDRESS:	11a Campbell Street, Belper, Derbyshire, DE56 1AP
TESTED BY:	Elliott Williams	SITE:	Dove Valley Park, Foston, Derbyshire
LOCATION:	Test 2 (52.8817981,-1.7100839)	MATERIAL:	Brown Gravelly Clay
DEPTH OF TEST:	Surface	SUPPLIER:	Site won
DISTANCE FROM EDGE OF PLATE TO WALL:	0 mm	SOURCE:	Site won
WEATHER:	Overcast	SAMPLING PLAN:	Client Specification
TEST METHOD:	Incremental Plate Loading	SAMPLE TAKEN:	No

Equipment Details

Type of Kentledge:	6 ton ex
Plate Diameter:	300 mm
Plate Area:	0.070686 m^2
Plate Correction:	0.44

Results

Max applied pressure:	170 kN/m^2
Max settlement:	1.51 mm
Avg Bearing Pressure (P) at 1.25mm settlement:	150.4 kN/m^2
Modulus of subgrade K762:	53 $kN/m^2/mm$
Equivalent C.B.R Value at 1.25mm settlement:	9.4%
Plate recovery:	80%



Equivalent C.B.R Value: 9.4 %

Remarks:
Initial load applied by test equipment calculated to be less than 0.5 kN. The laboratory does not apply a conformity statement to test reports as standard, unless specifically requested by the customer. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. Test results reported relate only to the items tested.
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Registered in England No. 05998333

Construction Testing Solutions

TEST REPORT: **Estimation of California Bearing Ratio**
Tested in Accordance with CTS In House Test Procedure TP15: Carried out in-situ

REPORT NUMBER: C1060159 / 189615.1.1.2

TEST RESULTS

LOAD APPLIED TO PLATE	AVERAGE BEARING PRESSURE	GAUGE SETTLEMENT			AVERAGE SETTLEMENT
		1	2	3	
kN	kN/m^2	mm			mm
0.0	0.0	0.00	0.00	0.00	0.00
4.0	56.6	0.35	0.10	0.30	0.25
6.0	84.9	0.56	0.21	0.53	0.43
7.0	99.0	0.84	0.34	0.81	0.66
8.0	113.2	1.08	0.45	1.15	0.89
10.0	141.5	1.33	0.56	1.50	1.13
12.0	169.8	1.60	0.74	2.19	1.51
0.0	0.0	0.39	0.11	0.42	0.31

Remarks:
Initial load applied by test equipment calculated to be less than 0.5 kN. The laboratory does not apply a conformity statement to test reports as standard, unless specifically requested by the customer. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. Test results reported relate only to the items tested.
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For and on behalf of CTS
James Browne - Testing Services Manager

Approved Signatory
Report date 10-Jun-22

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END OF REPORT

Construction Testing Solutions Ltd.
Registered in England No. 05998333

Construction Testing Solutions

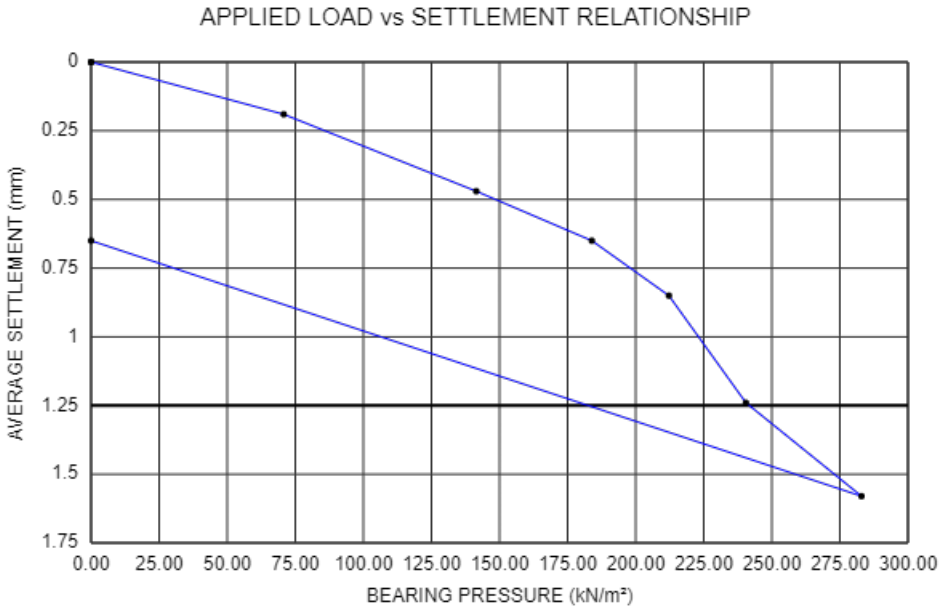
TEST REPORT:	**Estimation of California Bearing Ratio** Tested in Accordance with CTS In House Test Procedure TP15: Carried out in-situ		
REPORT NUMBER:	C1060159 / 189615.1.1.3		
CLIENT REF:	MD3749	CLIENT:	Emcus Ltd
DATE COMPLETED:	09/06/2022	ADDRESS:	11a Campbell Street, Belper, Derbyshire, DE56 1AP
TESTED BY:	Elliott Williams	SITE:	Dove Valley Park, Foston, Derbyshire
LOCATION:	Test 3 (52.8817981,-1.7100839)	MATERIAL:	Brown Gravelly Clay
DEPTH OF TEST:	Surface	SUPPLIER:	Site won
DISTANCE FROM EDGE OF PLATE TO WALL:	0 mm	SOURCE:	Site won
WEATHER:	Overcast	SAMPLING PLAN:	Client Specification
TEST METHOD:	Incremental Plate Loading	SAMPLE TAKEN:	No

Equipment Details

Type of Kentledge:	6 ton ex
Plate Diameter:	300 mm
Plate Area:	0.070686 m^2
Plate Correction:	0.44

Results

Max applied pressure:	283 kN/m^2
Max settlement:	1.58 mm
Avg Bearing Pressure (P) at 1.25mm settlement:	242.2 kN/m^2
Modulus of subgrade K762:	86 $kN/m^2/mm$
Equivalent C.B.R Value at 1.25mm settlement:	21.5%
Plate recovery:	59%



Equivalent C.B.R Value: 21.5 %

Remarks:
Initial load applied by test equipment calculated to be less than 0.5 kN. The laboratory does not apply a conformity statement to test reports as standard, unless specifically requested by the customer. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. Test results reported relate only to the items tested.
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TEST REPORT: **Estimation of California Bearing Ratio**
Tested in Accordance with CTS In House Test Procedure TP15: Carried out in-situ

REPORT NUMBER: C1060159 / 189615.1.1.3

TEST RESULTS

LOAD APPLIED TO PLATE	AVERAGE BEARING PRESSURE	GAUGE SETTLEMENT			AVERAGE SETTLEMENT
		1	2	3	
kN	kN/m^2	mm			mm
0.0	0.0	0.00	0.00	0.00	0.00
5.0	70.7	0.10	0.30	0.18	0.19
10.0	141.5	0.27	0.64	0.51	0.47
13.0	183.9	0.46	0.85	0.63	0.65
15.0	212.2	0.57	1.15	0.84	0.85
17.0	240.5	0.90	1.65	1.16	1.24
20.0	282.9	1.34	1.83	1.56	1.58
0.0	0.0	0.95	0.54	0.45	0.65

Remarks:
Initial load applied by test equipment calculated to be less than 0.5 kN. The laboratory does not apply a conformity statement to test reports as standard, unless specifically requested by the customer. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. Test results reported relate only to the items tested.
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For and on behalf of CTS
James Browne - Testing Services Manager

Approved Signatory
Report date 10-Jun-22

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END OF REPORT

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Construction Testing Solutions

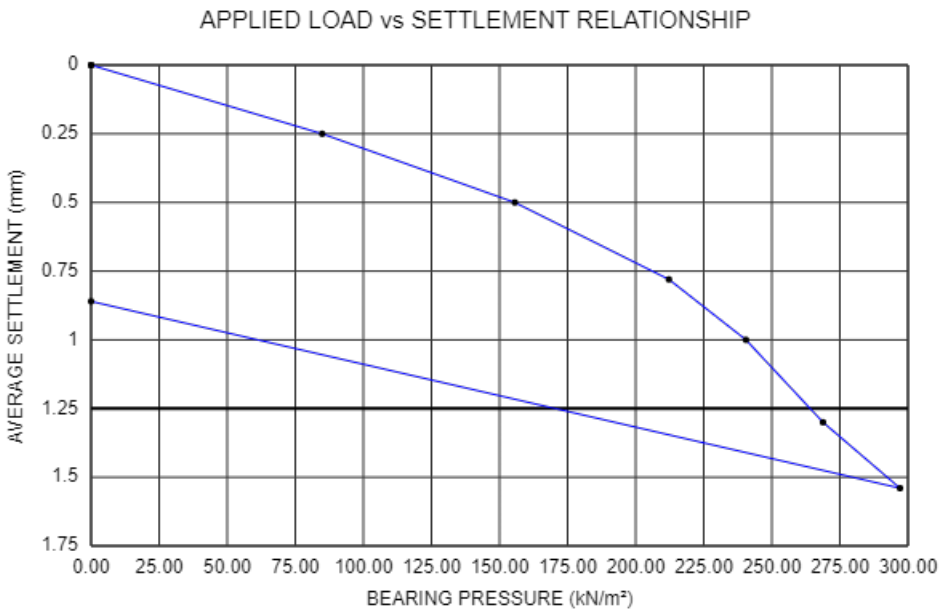
TEST REPORT:	**Estimation of California Bearing Ratio** Tested in Accordance with CTS In House Test Procedure TP15: Carried out in-situ		
REPORT NUMBER:	C1060159 / 189615.1.1.4		
CLIENT REF:	MD3749	CLIENT:	Emcus Ltd
DATE COMPLETED:	09/06/2022	ADDRESS:	11a Campbell Street, Belper, Derbyshire, DE56 1AP
TESTED BY:	Elliott Williams	SITE:	Dove Valley Park, Foston, Derbyshire
LOCATION:	Test 4 (52.8817981,-1.7100839)	MATERIAL:	Brown Gravelly Clay
DEPTH OF TEST:	Surface	SUPPLIER:	Site won
DISTANCE FROM EDGE OF PLATE TO WALL:	0 mm	SOURCE:	Site won
WEATHER:	Overcast	SAMPLING PLAN:	Client Specification
TEST METHOD:	Incremental Plate Loading	SAMPLE TAKEN:	No

Equipment Details

Type of Kentledge:	6 ton ex
Plate Diameter:	300 mm
Plate Area:	0.070686 m^2
Plate Correction:	0.44

Results

Max applied pressure:	297 kN/m^2
Max settlement:	1.54 mm
Avg Bearing Pressure (P) at 1.25mm settlement:	264.4 kN/m^2
Modulus of subgrade K762:	93 $kN/m^2/mm$
Equivalent C.B.R Value at 1.25mm settlement:	25.1%
Plate recovery:	44%



Equivalent C.B.R Value: 25.1 %

Remarks:
Initial load applied by test equipment calculated to be less than 0.5 kN. The laboratory does not apply a conformity statement to test reports as standard, unless specifically requested by the customer. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. Test results reported relate only to the items tested.
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Report Format: STP S8 rev.1

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enquiries@constructiontesting.co.uk
www.constructiontesting.co.uk

Construction Testing Solutions Ltd.
Registered in England No. 05998333

Construction Testing Solutions

TEST REPORT: **Estimation of California Bearing Ratio**
Tested in Accordance with CTS In House Test Procedure TP15: Carried out in-situ

REPORT NUMBER: C1060159 / 189615.1.1.4

TEST RESULTS

LOAD APPLIED TO PLATE	AVERAGE BEARING PRESSURE	GAUGE SETTLEMENT			AVERAGE SETTLEMENT
		1	2	3	
kN	kN/m^2	mm			mm
0.0	0.0	0.00	0.00	0.00	0.00
6.0	84.9	0.32	0.19	0.25	0.25
11.0	155.6	0.65	0.34	0.50	0.50
15.0	212.2	1.05	0.54	0.76	0.78
17.0	240.5	1.28	0.65	1.06	1.00
19.0	268.8	1.73	0.81	1.35	1.30
21.0	297.1	2.10	0.95	1.57	1.54
0.0	0.0	0.99	0.76	0.82	0.86

Remarks:
Initial load applied by test equipment calculated to be less than 0.5 kN. The laboratory does not apply a conformity statement to test reports as standard, unless specifically requested by the customer. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. Test results reported relate only to the items tested.
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Report Format: STP S8 rev.1

For and on behalf of CTS
James Browne - Testing Services Manager

Approved Signatory
Report date 10-Jun-22

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END OF REPORT

Construction Testing Solutions Ltd.
Registered in England No. 05998333

Construction Testing Solutions

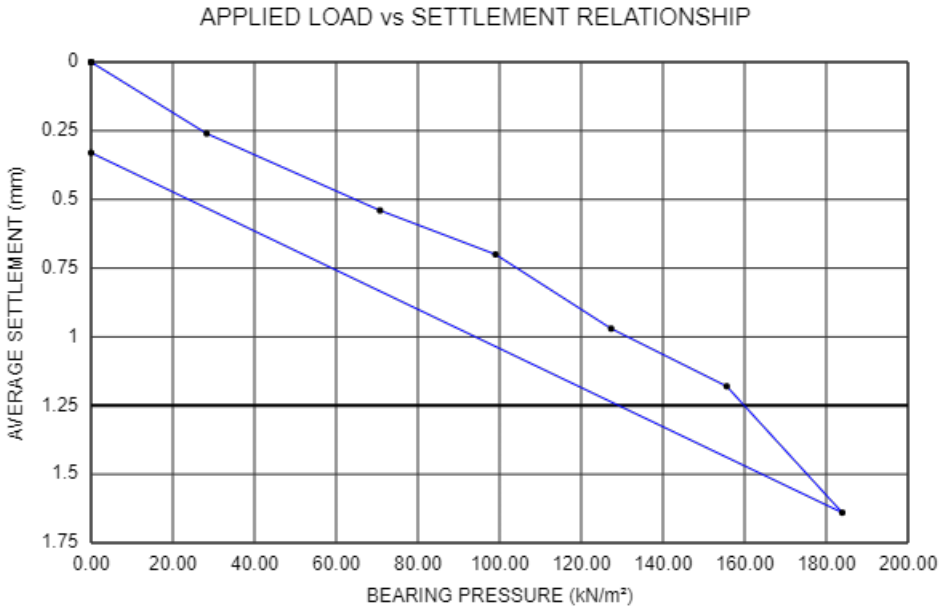
TEST REPORT:	**Estimation of California Bearing Ratio** Tested in Accordance with CTS In House Test Procedure TP15: Carried out in-situ		
REPORT NUMBER:	C1060159 / 189615.1.1.5		
CLIENT REF:	MD3749	CLIENT:	Emcus Ltd
DATE COMPLETED:	09/06/2022	ADDRESS:	11a Campbell Street, Belper, Derbyshire, DE56 1AP
TESTED BY:	Elliott Williams	SITE:	Dove Valley Park, Foston, Derbyshire
LOCATION:	Test 5 (52.8841583,-1.6978857)	MATERIAL:	Brown Gravelly Clay
DEPTH OF TEST:	Surface	SUPPLIER:	Site won
DISTANCE FROM EDGE OF PLATE TO WALL:	0 mm	SOURCE:	Site won
WEATHER:	Sunny	SAMPLING PLAN:	Client Specification
TEST METHOD:	Incremental Plate Loading	SAMPLE TAKEN:	No

Equipment Details

Type of Kentledge:	6 ton ex
Plate Diameter:	300 mm
Plate Area:	0.070686 m^2
Plate Correction:	0.44

Results

Max applied pressure:	184 kN/m^2
Max settlement:	1.64 mm
Avg Bearing Pressure (P) at 1.25mm settlement:	159.7 kN/m^2
Modulus of subgrade K762:	56 $kN/m^2/mm$
Equivalent C.B.R Value at 1.25mm settlement:	10.5%
Plate recovery:	80%



Equivalent C.B.R Value: 10.5 %

Remarks:
Initial load applied by test equipment calculated to be less than 0.5 kN. The laboratory does not apply a conformity statement to test reports as standard, unless specifically requested by the customer. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. Test results reported relate only to the items tested.
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Construction Testing Solutions

TEST REPORT: **Estimation of California Bearing Ratio**
Tested in Accordance with CTS In House Test Procedure TP15: Carried out in-situ

REPORT NUMBER: C1060159 / 189615.1.1.5

TEST RESULTS

LOAD APPLIED TO PLATE	AVERAGE BEARING PRESSURE	GAUGE SETTLEMENT			AVERAGE SETTLEMENT
		1	2	3	
kN	kN/m^2	mm			mm
0.0	0.0	0.00	0.00	0.00	0.00
2.0	28.3	0.13	0.39	0.27	0.26
5.0	70.7	0.35	0.69	0.57	0.54
7.0	99.0	0.45	0.90	0.74	0.70
9.0	127.3	0.67	1.23	1.00	0.97
11.0	155.6	0.82	1.50	1.23	1.18
13.0	183.9	1.12	2.10	1.71	1.64
0.0	0.0	0.11	0.46	0.42	0.33

Remarks:
Initial load applied by test equipment calculated to be less than 0.5 kN. The laboratory does not apply a conformity statement to test reports as standard, unless specifically requested by the customer. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. Test results reported relate only to the items tested.
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For and on behalf of CTS
James Browne - Testing Services Manager

Approved Signatory
Report date 10-Jun-22

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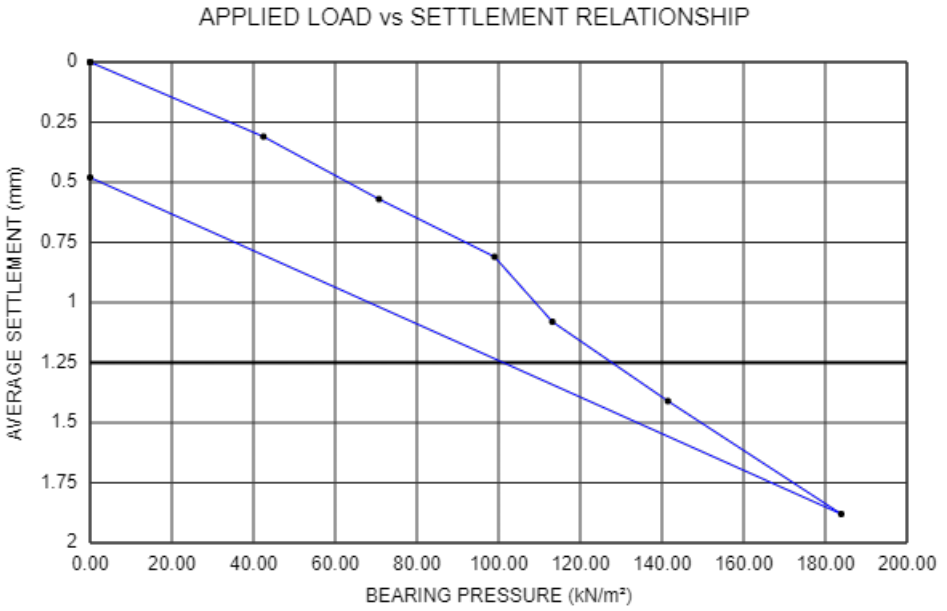
TEST REPORT:	**Estimation of California Bearing Ratio** Tested in Accordance with CTS In House Test Procedure TP15: Carried out in-situ		
REPORT NUMBER:	C1060159 / 189615.1.1.6		
CLIENT REF:	MD3749	CLIENT:	Emcus Ltd
DATE COMPLETED:	09/06/2022	ADDRESS:	11a Campbell Street, Belper, Derbyshire, DE56 1AP
TESTED BY:	Elliott Williams	SITE:	Dove Valley Park, Foston, Derbyshire
LOCATION:	Test 6 (52.8817981,-1.7100839)	MATERIAL:	Brown Gravelly Clay
DEPTH OF TEST:	Surface	SUPPLIER:	Site won
DISTANCE FROM EDGE OF PLATE TO WALL:	0 mm	SOURCE:	Site won
WEATHER:	Sunny	SAMPLING PLAN:	Client Specification
TEST METHOD:	Incremental Plate Loading	SAMPLE TAKEN:	No

Equipment Details

Type of Kentledge:	6 ton ex
Plate Diameter:	300 mm
Plate Area:	0.070686 m^2
Plate Correction:	0.44

Results

Max applied pressure:	184 kN/m^2
Max settlement:	1.88 mm
Avg Bearing Pressure (P) at 1.25mm settlement:	127.6 kN/m^2
Modulus of subgrade K762:	45 $kN/m^2/mm$
Equivalent C.B.R Value at 1.25mm settlement:	7.1%
Plate recovery:	75%



Equivalent C.B.R Value: 7.1 %

Remarks:
Initial load applied by test equipment calculated to be less than 0.5 kN. The laboratory does not apply a conformity statement to test reports as standard, unless specifically requested by the customer. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. Test results reported relate only to the items tested.
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TEST REPORT: **Estimation of California Bearing Ratio**
Tested in Accordance with CTS In House Test Procedure TP15: Carried out in-situ

REPORT NUMBER: C1060159 / 189615.1.1.6

TEST RESULTS

LOAD APPLIED TO PLATE	AVERAGE BEARING PRESSURE	GAUGE SETTLEMENT			AVERAGE SETTLEMENT
		1	2	3	
kN	kN/m^2	mm			mm
0.0	0.0	0.00	0.00	0.00	0.00
3.0	42.4	0.24	0.32	0.36	0.31
5.0	70.7	0.50	0.51	0.71	0.57
7.0	99.0	0.72	0.75	0.95	0.81
8.0	113.2	0.95	1.02	1.28	1.08
10.0	141.5	1.25	1.39	1.59	1.41
13.0	183.9	1.72	1.88	2.04	1.88
0.0	0.0	0.34	0.47	0.62	0.48

Remarks:
Initial load applied by test equipment calculated to be less than 0.5 kN. The laboratory does not apply a conformity statement to test reports as standard, unless specifically requested by the customer. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. Test results reported relate only to the items tested.
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James Browne - Testing Services Manager

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Registered in England No. 05998333

Construction Testing Solutions

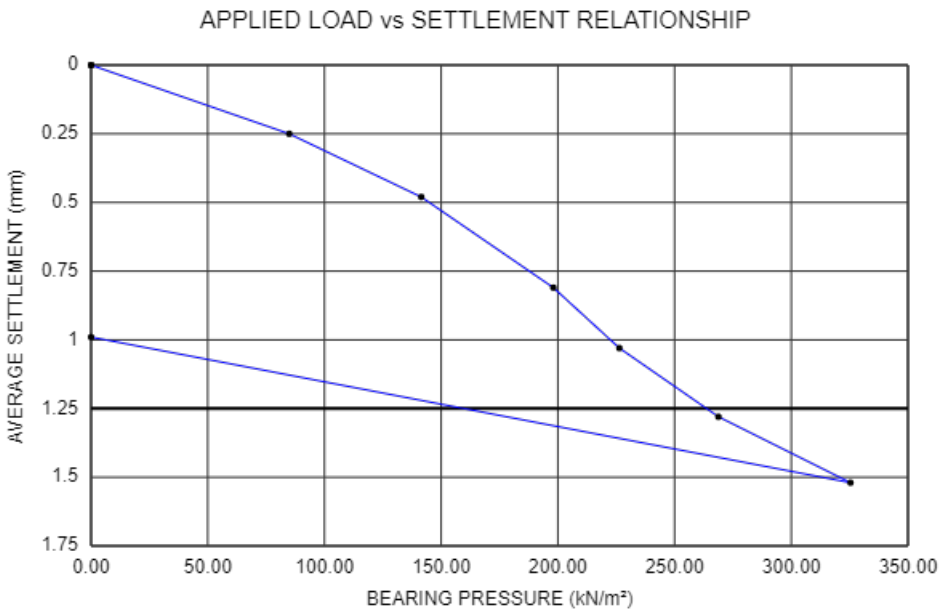
TEST REPORT:	**Estimation of California Bearing Ratio** Tested in Accordance with CTS In House Test Procedure TP15: Carried out in-situ		
REPORT NUMBER:	C1060159 / 189615.1.1.7		
CLIENT REF:	MD3749	CLIENT:	Emcus Ltd
DATE COMPLETED:	09/06/2022	ADDRESS:	11a Campbell Street, Belper, Derbyshire, DE56 1AP
TESTED BY:	Elliott Williams	SITE:	Dove Valley Park, Foston, Derbyshire
LOCATION:	Test 7 (52.8817981,-1.7100839)	MATERIAL:	Brown Gravelly Clay
DEPTH OF TEST:	Surface	SUPPLIER:	Site won
DISTANCE FROM EDGE OF PLATE TO WALL:	0 mm	SOURCE:	Site won
WEATHER:	Sunny	SAMPLING PLAN:	Client Specification
TEST METHOD:	Incremental Plate Loading	SAMPLE TAKEN:	No

Equipment Details

Type of Kentledge:	6 ton ex
Plate Diameter:	300 mm
Plate Area:	0.070686 m^2
Plate Correction:	0.44

Results

Max applied pressure:	325 kN/m^2
Max settlement:	1.52 mm
Avg Bearing Pressure (P) at 1.25mm settlement:	263.1 kN/m^2
Modulus of subgrade K762:	93 $kN/m^2/mm$
Equivalent C.B.R Value at 1.25mm settlement:	24.9%
Plate recovery:	35%



Equivalent C.B.R Value: 24.9 %

Remarks:
Initial load applied by test equipment calculated to be less than 0.5 kN. The laboratory does not apply a conformity statement to test reports as standard, unless specifically requested by the customer. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. Test results reported relate only to the items tested.
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TEST REPORT: **Estimation of California Bearing Ratio**
Tested in Accordance with CTS In House Test Procedure TP15: Carried out in-situ

REPORT NUMBER: C1060159 / 189615.1.1.7

TEST RESULTS

LOAD APPLIED TO PLATE	AVERAGE BEARING PRESSURE	GAUGE SETTLEMENT			AVERAGE SETTLEMENT
		1	2	3	
kN	kN/m^2	mm			mm
0.0	0.0	0.00	0.00	0.00	0.00
6.0	84.9	0.30	0.16	0.28	0.25
10.0	141.5	0.65	0.26	0.53	0.48
14.0	198.1	1.19	0.48	0.75	0.81
16.0	226.4	1.45	0.66	0.99	1.03
19.0	268.8	1.77	0.84	1.24	1.28
23.0	325.4	1.81	1.16	1.60	1.52
0.0	0.0	1.19	0.69	1.08	0.99

Remarks:
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Construction Testing Solutions

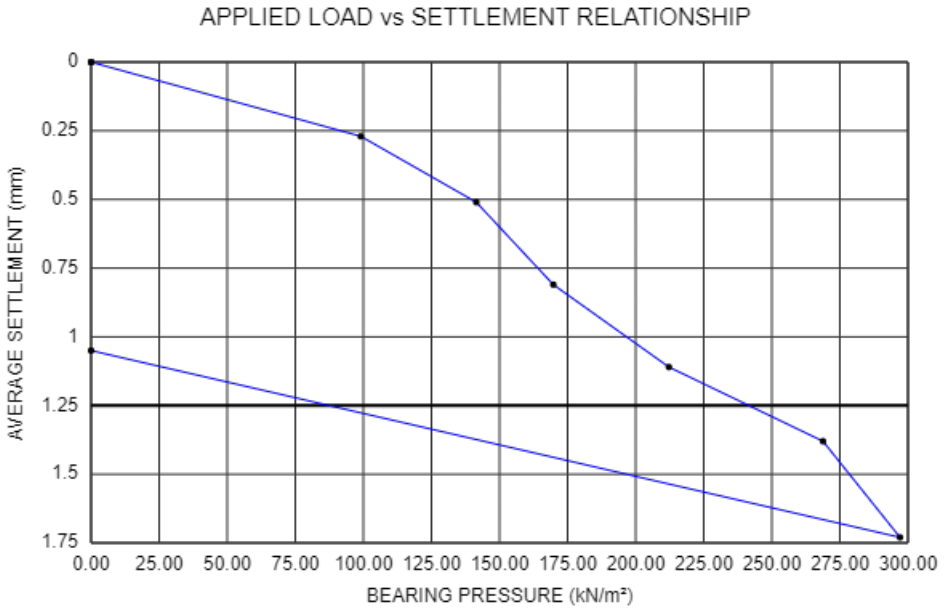
TEST REPORT:	**Estimation of California Bearing Ratio** Tested in Accordance with CTS In House Test Procedure TP15: Carried out in-situ		
REPORT NUMBER:	C1060159 / 189615.1.1.8		
CLIENT REF:	MD3749	CLIENT:	Emcus Ltd
DATE COMPLETED:	09/06/2022	ADDRESS:	11a Campbell Street, Belper, Derbyshire, DE56 1AP
TESTED BY:	Elliott Williams	SITE:	Dove Valley Park, Foston, Derbyshire
LOCATION:	Test 8 (52.8817981,-1.7100839)	MATERIAL:	Brown Gravelly Clay
DEPTH OF TEST:	Surface	SUPPLIER:	Site won
DISTANCE FROM EDGE OF PLATE TO WALL:	0 mm	SOURCE:	Site won
WEATHER:	Sunny	SAMPLING PLAN:	Client Specification
TEST METHOD:	Incremental Plate Loading	SAMPLE TAKEN:	No

Equipment Details

Type of Kentledge:	6 ton ex
Plate Diameter:	300 mm
Plate Area:	0.070686 m^2
Plate Correction:	0.44

Results

Max applied pressure:	297 kN/m^2
Max settlement:	1.73 mm
Avg Bearing Pressure (P) at 1.25mm settlement:	241.2 kN/m^2
Modulus of subgrade K762:	85 $kN/m^2/mm$
Equivalent C.B.R Value at 1.25mm settlement:	21.4%
Plate recovery:	39%



Equivalent C.B.R Value: 21.4 %

Remarks:
Initial load applied by test equipment calculated to be less than 0.5 kN. The laboratory does not apply a conformity statement to test reports as standard, unless specifically requested by the customer. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. Test results reported relate only to the items tested.
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Tested in Accordance with CTS In House Test Procedure TP15: Carried out in-situ

REPORT NUMBER: C1060159 / 189615.1.1.8

TEST RESULTS

LOAD APPLIED TO PLATE	AVERAGE BEARING PRESSURE	GAUGE SETTLEMENT			AVERAGE SETTLEMENT
		1	2	3	
kN	kN/m^2	mm			mm
0.0	0.0	0.00	0.00	0.00	0.00
7.0	99.0	0.44	0.17	0.19	0.27
10.0	141.5	0.70	0.32	0.50	0.51
12.0	169.8	1.11	0.57	0.75	0.81
15.0	212.2	1.51	0.71	1.11	1.11
19.0	268.8	1.88	0.92	1.35	1.38
21.0	297.1	2.21	1.29	1.69	1.73
0.0	0.0	1.52	0.37	1.26	1.05

Remarks:
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END OF REPORT

Construction Testing Solutions Ltd.
Registered in England No. 05998333

Appendix C

Laboratory Analyses & Test Results

ANALYTICAL TEST REPORT

Contract no: 110198

Contract name: Plot 10 Dove Valley

Client reference: J2038

Clients name: Emcus

Clients address: 1E Campbell Street
Belper
Derbyshire
DE56 1AP

Samples received: 10 June 2022

Analysis started: 10 June 2022

Analysis completed: 20 June 2022

Report issued: 20 June 2022

Key

U	UKAS accredited test
M	MCERTS & UKAS accredited test
$	Test carried out by an approved subcontractor
I/S	Insufficient sample to carry out test
N/S	Sample not suitable for testing
NAD	No Asbestos Detected

Approved by:

Megan Harris

Senior Reporting Administrator

Chemtech Environmental Limited

SAMPLE INFORMATION

MCERTS (Soils):

Soil descriptions are only intended to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions. MCERTS accreditation applies for sand, clay and loam/topsoil, or combinations of these whether these are derived from naturally occurring soils or from made ground, as long as these materials constitute the major part of the sample. Other materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Lab ref	Sample id	Depth (m)	Sample description	Material removed	% Removed	% Moisture
110198-1	TP1	0.10	Sandy Clayey Loam with Gravel & Roots	-	-	6.0
110198-2	TP2	0.50	Sandy Clay	-	-	4.5
110198-3	TP3	0.05	Sandy Clayey Loam with Gravel & Roots	-	-	7.6
110198-4	TP3a	0.30	Sandy Clayey Loam with Gravel & Roots	-	-	4.9
110198-5	TP4	0.70	Sandy Clayey Loam with Gravel & Roots	-	-	4.1
110198-6	TP5	0.05	Sandy Clayey Loam with Gravel & Roots	-	-	4.9
110198-7	TP6	0.50	Sandy Clayey Loam with Gravel & Roots	-	-	5.4
110198-8	TP7	0.05	Sandy Clayey Loam with Gravel & Roots	-	-	4.8
110198-9	TP7	0.50	Sandy Loam with Gravel	-	-	8.4
110198-10	TP7	0.70	Sandy Clay	-	-	8.7
110198-11	TP8	0.10	Sandy Loam with Gravel & Roots	-	-	5.9
110198-12	TP8	0.50	Clayey Sand	-	-	5.7
110198-13	TP10	0.10	Sandy Loam with Gravel	-	-	2.9
110198-14	TP10	0.50	Sandy Loam with Gravel	-	-	5.5
110198-15	TP10	1.50	Sandy Clay with Gravel	-	-	2.9
110198-16	TP14	0.05	Loamy Clayey Sand with Gravel	-	-	3.5
110198-17	TP15	0.05	Sandy Loam with Gravel & Roots	-	-	5.2
110198-18	TP15	0.50	Sandy Clay with Gravel & Roots	-	-	7.5
110198-19	TP16	0.30	Sandy Loam with Gravel & Roots	-	-	5.2
110198-20	TP18	1.00	Loamy Clay	-	-	7.8

Chemtech Environmental Limited

SOILS

Lab number			110198-1	110198-2	110198-3	110198-4	110198-5	110198-6
Sample id			TP1	TP2	TP3	TP3a	TP4	TP5
Depth (m)			0.10	0.50	0.05	0.30	0.70	0.05
Date sampled			08/06/2022	08/06/2022	08/06/2022	08/06/2022	08/06/2022	08/06/2022
Test	**Method**	**Units**						
Arsenic (total)	CE127 [M]	mg/kg As	14	7.9	8.2	12	11	8.8
Boron (water soluble)	CE063 [U]	mg/kg B	0.6	<0.5	0.8	0.5	<0.5	0.7
Cadmium (total)	CE127 [M]	mg/kg Cd	<0.2	<0.2	0.3	<0.2	<0.2	0.3
Chromium (total)	CE127 [M]	mg/kg Cr	69	108	64	70	81	71
Chromium (VI)	CE146	mg/kg CrVI	<1	<1	<1	<1	<1	<1
Copper (total)	CE127 [M]	mg/kg Cu	13	12	25	15	7.0	23
Lead (total)	CE127 [M]	mg/kg Pb	18	8.0	39	21	17	93
Mercury (total)	CE127 [M]	mg/kg Hg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Nickel (total)	CE127 [M]	mg/kg Ni	11	15	16	11	7.8	16
Selenium (total)	CE127 [M]	mg/kg Se	0.7	0.5	0.9	0.9	0.6	1.2
Zinc (total)	CE127 [M]	mg/kg Zn	35	32	68	42	21	63
pH	CE004 [M]	units	7.1	7.0	6.7	6.5	6.4	6.7
Sulphate (2:1 water soluble)	CE061 [U]	mg/l SO_4	20	17	16	15	<10	31
Sulphate (total)	CE062 [M]	mg/kg SO_4	243	191	473	356	173	672
Sulphide	CE016	mg/kg S^{2-}	<10	<10	12	<10	<10	<10
Cyanide (free)	CE077	mg/kg CN	<1	<1	<1	<1	<1	<1
Cyanide (total)	CE077	mg/kg CN	<1	<1	<1	<1	<1	<1
Thiocyanate	CE145 [M]	mg/kg SCN	<1	<1	<1	<1	<1	1.8
Phenols (total)	CE078	mg/kg PhOH	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total Organic Carbon (TOC)	CE197	% w/w C	0.8	0.2	2.0	1.5	0.4	1.9
Estimate of OMC (calculated from TOC)	CE197	% w/w	1.4	0.3	3.4	2.7	0.7	3.3
PAH								
Naphthalene	CE087 [M]	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Acenaphthylene	CE087 [M]	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Acenaphthene	CE087 [M]	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02	0.04
Fluorene	CE087 [U]	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Phenanthrene	CE087 [M]	mg/kg	<0.02	<0.02	0.03	<0.02	<0.02	0.75
Anthracene	CE087 [U]	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02	0.13
Fluoranthene	CE087 [M]	mg/kg	<0.02	<0.02	0.17	0.11	0.05	2.21
Pyrene	CE087 [M]	mg/kg	<0.02	<0.02	0.14	0.10	0.05	1.88
Benzo(a)anthracene	CE087 [U]	mg/kg	<0.02	<0.02	0.04	0.03	<0.02	0.85
Chrysene	CE087 [M]	mg/kg	<0.03	<0.03	0.06	0.03	<0.03	0.86
Benzo(b)fluoranthene	CE087 [M]	mg/kg	<0.02	<0.02	0.09	0.06	<0.02	1.35
Benzo(k)fluoranthene	CE087 [M]	mg/kg	<0.03	<0.03	0.03	<0.03	<0.03	0.47
Benzo(a)pyrene	CE087 [U]	mg/kg	<0.02	<0.02	0.05	0.04	<0.02	1.01
Indeno(123cd)pyrene	CE087 [M]	mg/kg	<0.02	<0.02	0.03	0.02	<0.02	0.89
Dibenz(ah)anthracene	CE087 [M]	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02	0.12
Benzo(ghi)perylene	CE087 [M]	mg/kg	<0.02	<0.02	0.03	0.02	<0.02	0.78
PAH (total of USEPA 16)	CE087	mg/kg	<0.34	<0.34	0.69	0.42	<0.34	11.3

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SOILS

Lab number			110198-1	110198-2	110198-3	110198-4	110198-5	110198-6
Sample id			TP1	TP2	TP3	TP3a	TP4	TP5
Depth (m)			0.10	0.50	0.05	0.30	0.70	0.05
Date sampled			08/06/2022	08/06/2022	08/06/2022	08/06/2022	08/06/2022	08/06/2022
Test	**Method**	**Units**						
TPH								
VPH Aromatic (>EC5-EC7)	CE067	mg/kg	-	-	-	-	-	<0.01
VPH Aromatic (>EC7-EC8)	CE067	mg/kg	-	-	-	-	-	<0.01
VPH Aromatic (>EC8-EC10)	CE067	mg/kg	-	-	-	-	-	<0.01
EPH Aromatic (>EC10-EC12)	CE250	mg/kg	-	-	-	-	-	1
EPH Aromatic (>EC12-EC16)	CE250	mg/kg	-	-	-	-	-	4
EPH Aromatic (>EC16-EC21)	CE250	mg/kg	-	-	-	-	-	2
EPH Aromatic (>EC21-EC35)	CE250	mg/kg	-	-	-	-	-	9
EPH Aromatic (>EC35-EC44)	CE250	mg/kg	-	-	-	-	-	<1
VPH Aliphatic (>C5-C6)	CE067	mg/kg	-	-	-	-	-	<0.1
VPH Aliphatic (>C6-C8)	CE067	mg/kg	-	-	-	-	-	<0.1
VPH Aliphatic (>C8-C10)	CE067	mg/kg	-	-	-	-	-	<0.1
EPH Aliphatic (>C10-C12)	CE250	mg/kg	-	-	-	-	-	<6
EPH Aliphatic (>C12-C16)	CE250	mg/kg	-	-	-	-	-	<6
EPH Aliphatic (>C16-C35)	CE250	mg/kg	-	-	-	-	-	<15
EPH Aliphatic (>C35-C44)	CE250	mg/kg	-	-	-	-	-	<10
Subcontracted analysis								
Asbestos (qualitative)	$	-	-	-	-	-	-	NAD

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SOILS

Lab number			110198-7	110198-8	110198-9	110198-10	110198-11	110198-12
Sample id			TP6	TP7	TP7	TP7	TP8	TP8
Depth (m)			0.50	0.05	0.50	0.70	0.10	0.50
Date sampled			08/06/2022	08/06/2022	08/06/2022	08/06/2022	08/06/2022	08/06/2022
Test	**Method**	**Units**						
Arsenic (total)	CE127 M	mg/kg As	8.4	15	19	13	14	2.8
Boron (water soluble)	CE063 U	mg/kg B	0.5	<0.5	1.3	2.1	1.2	0.5
Cadmium (total)	CE127 M	mg/kg Cd	<0.2	1.6	0.9	<0.2	0.4	<0.2
Chromium (total)	CE127 M	mg/kg Cr	96	89	55	58	73	77
Chromium (VI)	CE146	mg/kg CrVI	<1	<1	<1	<1	<1	<1
Copper (total)	CE127 M	mg/kg Cu	7.8	51	40	20	38	9.3
Lead (total)	CE127 M	mg/kg Pb	19	88	417	33	310	32
Mercury (total)	CE127 M	mg/kg Hg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Nickel (total)	CE127 M	mg/kg Ni	12	25	39	19	34	10
Selenium (total)	CE127 M	mg/kg Se	0.8	3.3	2.0	1.1	1.4	0.4
Zinc (total)	CE127 M	mg/kg Zn	27	698	189	52	66	28
pH	CE004 M	units	7.5	7.9	7.5	7.4	7.0	7.8
Sulphate (2:1 water soluble)	CE061 U	mg/l SO_4	18	105	1540	168	34	21
Sulphate (total)	CE062 M	mg/kg SO_4	212	1986	3526	437	502	130
Sulphide	CE016	mg/kg S^{2-}	<10	80	48	92	76	<10
Cyanide (free)	CE077	mg/kg CN	<1	<1	<1	<1	<1	<1
Cyanide (total)	CE077	mg/kg CN	<1	<1	<1	<1	<1	<1
Thiocyanate	CE145 M	mg/kg SCN	<1	<1	<1	<1	<1	<1
Phenols (total)	CE078	mg/kg PhOH	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total Organic Carbon (TOC)	CE197	% w/w C	0.4	2.9	2.1	0.4	4.2	0.2
Estimate of OMC (calculated from TOC)	CE197	% w/w	0.6	5.0	3.7	0.7	7.2	0.3
PAH								
Naphthalene	CE087 M	mg/kg	<0.02	1.07	0.03	<0.02	<0.02	<0.02
Acenaphthylene	CE087 M	mg/kg	<0.02	13.65	0.41	<0.02	0.06	<0.02
Acenaphthene	CE087 M	mg/kg	<0.02	19.30	0.07	<0.02	<0.02	<0.02
Fluorene	CE087 U	mg/kg	<0.02	6.05	0.05	<0.02	<0.02	<0.02
Phenanthrene	CE087 M	mg/kg	<0.02	223.03	1.60	0.10	0.34	<0.02
Anthracene	CE087 U	mg/kg	<0.02	59.28	0.59	0.09	0.12	<0.02
Fluoranthene	CE087 M	mg/kg	0.04	360.27	6.70	0.16	0.93	0.05
Pyrene	CE087 M	mg/kg	0.04	309.15	6.26	0.13	0.81	0.05
Benzo(a)anthracene	CE087 U	mg/kg	<0.02	137.70	3.48	0.08	0.38	<0.02
Chrysene	CE087 M	mg/kg	<0.03	122.31	2.75	0.08	0.37	<0.03
Benzo(b)fluoranthene	CE087 M	mg/kg	0.02	152.96	4.88	0.11	0.70	0.03
Benzo(k)fluoranthene	CE087 M	mg/kg	<0.03	58.05	1.81	0.07	0.25	<0.03
Benzo(a)pyrene	CE087 U	mg/kg	<0.02	131.12	3.58	0.08	0.48	<0.02
Indeno(123cd)pyrene	CE087 M	mg/kg	<0.02	96.11	3.15	0.12	0.55	<0.02
Dibenz(ah)anthracene	CE087 M	mg/kg	<0.02	18.10	0.49	<0.02	0.06	<0.02
Benzo(ghi)perylene	CE087 M	mg/kg	<0.02	87.45	2.51	0.09	0.45	0.02
PAH (total of USEPA 16)	CE087	mg/kg	<0.34	1796	38.4	1.11	5.50	<0.34

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SOILS

Lab number			110198-7	110198-8	110198-9	110198-10	110198-11	110198-12
Sample id			TP6	TP7	TP7	TP7	TP8	TP8
Depth (m)			0.50	0.05	0.50	0.70	0.10	0.50
Date sampled			08/06/2022	08/06/2022	08/06/2022	08/06/2022	08/06/2022	08/06/2022
Test	**Method**	**Units**						
TPH								
VPH Aromatic (>EC5-EC7)	CE067	mg/kg	-	<0.01	<0.01	-	<0.01	-
VPH Aromatic (>EC7-EC8)	CE067	mg/kg	-	<0.01	<0.01	-	<0.01	-
VPH Aromatic (>EC8-EC10)	CE067	mg/kg	-	<0.01	<0.01	-	<0.01	-
EPH Aromatic (>EC10-EC12)	CE250	mg/kg	-	774	9	-	3	-
EPH Aromatic (>EC12-EC16)	CE250	mg/kg	-	4249	36	-	8	-
EPH Aromatic (>EC16-EC21)	CE250	mg/kg	-	774	136	-	6	-
EPH Aromatic (>EC21-EC35)	CE250	mg/kg	-	4246	474	-	20	-
EPH Aromatic (>EC35-EC44)	CE250	mg/kg	-	1411	88	-	5	-
VPH Aliphatic (>C5-C6)	CE067	mg/kg	-	<0.1	<0.1	-	<0.1	-
VPH Aliphatic (>C6-C8)	CE067	mg/kg	-	<0.1	<0.1	-	<0.1	-
VPH Aliphatic (>C8-C10)	CE067	mg/kg	-	<0.1	<0.1	-	<0.1	-
EPH Aliphatic (>C10-C12)	CE250	mg/kg	-	64	<6	-	<6	-
EPH Aliphatic (>C12-C16)	CE250	mg/kg	-	152	<6	-	<6	-
EPH Aliphatic (>C16-C35)	CE250	mg/kg	-	1437	30	-	<15	-
EPH Aliphatic (>C35-C44)	CE250	mg/kg	-	79	<10	-	<10	-
Subcontracted analysis								
Asbestos (qualitative)	$	-	-	NAD	NAD	-	NAD	-

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SOILS

Lab number			110198-13	110198-14	110198-15	110198-16	110198-17	110198-18
Sample id			TP10	TP10	TP10	TP14	TP15	TP15
Depth (m)			0.10	0.50	1.50	0.05	0.05	0.50
Date sampled			08/06/2022	08/06/2022	08/06/2022	08/06/2022	08/06/2022	08/06/2022
Test	**Method**	**Units**						
Arsenic (total)	CE127 M	mg/kg As	9.8	12	5.7	6.8	12	7.6
Boron (water soluble)	CE063 U	mg/kg B	0.5	0.6	<0.5	<0.5	<0.5	1.0
Cadmium (total)	CE127 M	mg/kg Cd	1.6	0.4	<0.2	0.2	<0.2	0.3
Chromium (total)	CE127 M	mg/kg Cr	51	74	129	75	56	68
Chromium (VI)	CE146	mg/kg CrVI	<1	<1	<1	<1	<1	<1
Copper (total)	CE127 M	mg/kg Cu	32	27	9.8	14	34	43
Lead (total)	CE127 M	mg/kg Pb	96	38	20	19	19	13
Mercury (total)	CE127 M	mg/kg Hg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Nickel (total)	CE127 M	mg/kg Ni	19	25	11	13	43	36
Selenium (total)	CE127 M	mg/kg Se	1.0	0.9	0.5	0.6	1.7	1.3
Zinc (total)	CE127 M	mg/kg Zn	148	77	30	50	60	57
pH	CE004 M	units	7.3	7.7	7.9	6.9	7.7	7.6
Sulphate (2:1 water soluble)	CE061 U	mg/l SO_4	35	22	13	11	159	127
Sulphate (total)	CE062 M	mg/kg SO_4	661	609	242	238	640	312
Sulphide	CE016	mg/kg S^{2-}	96	64	<10	394	<10	<10
Cyanide (free)	CE077	mg/kg CN	<1	<1	<1	<1	<1	<1
Cyanide (total)	CE077	mg/kg CN	1.3	<1	<1	<1	<1	<1
Thiocyanate	CE145 M	mg/kg SCN	<1	<1	<1	1.1	<1	<1
Phenols (total)	CE078	mg/kg PhOH	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total Organic Carbon (TOC)	CE197	% w/w C	3.6	0.9	0.1	1.0	3.8	0.3
Estimate of OMC (calculated from TOC)	CE197	% w/w	6.3	1.5	0.2	1.7	6.5	0.4
PAH								
Naphthalene	CE087 M	mg/kg	1.36	0.12	<0.02	<0.02	0.04	<0.02
Acenaphthylene	CE087 M	mg/kg	1.40	0.16	0.02	<0.02	<0.02	<0.02
Acenaphthene	CE087 M	mg/kg	11.32	1.65	0.10	<0.02	<0.02	<0.02
Fluorene	CE087 U	mg/kg	6.34	1.02	0.06	<0.02	<0.02	<0.02
Phenanthrene	CE087 M	mg/kg	113.58	14.76	1.73	0.16	0.13	<0.02
Anthracene	CE087 U	mg/kg	30.27	2.74	0.26	<0.02	0.02	<0.02
Fluoranthene	CE087 M	mg/kg	225.21	26.78	4.43	0.43	0.11	<0.02
Pyrene	CE087 M	mg/kg	186.38	22.59	3.68	0.35	0.09	<0.02
Benzo(a)anthracene	CE087 U	mg/kg	83.72	9.28	1.64	0.14	0.05	<0.02
Chrysene	CE087 M	mg/kg	74.90	9.63	1.69	0.16	0.06	<0.03
Benzo(b)fluoranthene	CE087 M	mg/kg	108.48	12.90	2.63	0.24	0.13	<0.02
Benzo(k)fluoranthene	CE087 M	mg/kg	44.58	5.43	0.93	0.10	0.04	<0.03
Benzo(a)pyrene	CE087 U	mg/kg	90.67	10.54	1.76	0.16	0.08	<0.02
Indeno(123cd)pyrene	CE087 M	mg/kg	73.14	8.11	1.66	0.14	0.11	<0.02
Dibenz(ah)anthracene	CE087 M	mg/kg	12.36	1.57	0.21	<0.02	<0.02	<0.02
Benzo(ghi)perylene	CE087 M	mg/kg	64.75	7.83	1.35	0.12	0.12	<0.02
PAH (total of USEPA 16)	CE087	mg/kg	1128	135	22.2	1.99	0.97	<0.34

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SOILS

Lab number			110198-13	110198-14	110198-15	110198-16	110198-17	110198-18
Sample id			TP10	TP10	TP10	TP14	TP15	TP15
Depth (m)			0.10	0.50	1.50	0.05	0.05	0.50
Date sampled			08/06/2022	08/06/2022	08/06/2022	08/06/2022	08/06/2022	08/06/2022
Test	**Method**	**Units**						
TPH								
VPH Aromatic (>EC5-EC7)	CE067	mg/kg	<0.01	<0.01	-	-	<0.01	<0.01
VPH Aromatic (>EC7-EC8)	CE067	mg/kg	<0.01	<0.01	-	-	<0.01	<0.01
VPH Aromatic (>EC8-EC10)	CE067	mg/kg	<0.01	<0.01	-	-	<0.01	<0.01
EPH Aromatic (>EC10-EC12)	CE250	mg/kg	2506	11	-	-	2	1
EPH Aromatic (>EC12-EC16)	CE250	mg/kg	4336	43	-	-	7	3
EPH Aromatic (>EC16-EC21)	CE250	mg/kg	2506	250	-	-	4	2
EPH Aromatic (>EC21-EC35)	CE250	mg/kg	4333	967	-	-	16	11
EPH Aromatic (>EC35-EC44)	CE250	mg/kg	553	158	-	-	4	4
VPH Aliphatic (>C5-C6)	CE067	mg/kg	<0.1	<0.1	-	-	<0.1	<0.1
VPH Aliphatic (>C6-C8)	CE067	mg/kg	<0.1	<0.1	-	-	<0.1	<0.1
VPH Aliphatic (>C8-C10)	CE067	mg/kg	<0.1	<0.1	-	-	<0.1	<0.1
EPH Aliphatic (>C10-C12)	CE250	mg/kg	9	<6	-	-	<6	<6
EPH Aliphatic (>C12-C16)	CE250	mg/kg	28	<6	-	-	<6	<6
EPH Aliphatic (>C16-C35)	CE250	mg/kg	167	88	-	-	<15	<15
EPH Aliphatic (>C35-C44)	CE250	mg/kg	247	10	-	-	<10	<10
Subcontracted analysis								
Asbestos (qualitative)	$	-	NAD	NAD	-	-	NAD	NAD

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SOILS

Lab number			110198-19	110198-20
Sample id			TP16	TP18
Depth (m)			0.30	1.00
Date sampled			08/06/2022	08/06/2022
Test	**Method**	**Units**		
Arsenic (total)	CE127 M	mg/kg As	15	10
Boron (water soluble)	CE063 U	mg/kg B	<0.5	0.7
Cadmium (total)	CE127 M	mg/kg Cd	0.6	0.8
Chromium (total)	CE127 M	mg/kg Cr	64	60
Chromium (VI)	CE146	mg/kg CrVI	<1	<1
Copper (total)	CE127 M	mg/kg Cu	15	15
Lead (total)	CE127 M	mg/kg Pb	25	23
Mercury (total)	CE127 M	mg/kg Hg	<0.5	<0.5
Nickel (total)	CE127 M	mg/kg Ni	16	19
Selenium (total)	CE127 M	mg/kg Se	0.8	0.8
Zinc (total)	CE127 M	mg/kg Zn	53	57
pH	CE004 M	units	7.4	7.7
Sulphate (2:1 water soluble)	CE061 U	mg/l SO_4	38	36
Sulphate (total)	CE062 M	mg/kg SO_4	478	436
Sulphide	CE016	mg/kg S^{2-}	72	20
Cyanide (free)	CE077	mg/kg CN	<1	<1
Cyanide (total)	CE077	mg/kg CN	<1	<1
Thiocyanate	CE145 M	mg/kg SCN	<1	<1
Phenols (total)	CE078	mg/kg PhOH	<0.5	<0.5
Total Organic Carbon (TOC)	CE197	% w/w C	1.0	0.8
Estimate of OMC (calculated from TOC)	CE197	% w/w	1.7	1.4
PAH				
Naphthalene	CE087 M	mg/kg	0.06	<0.02
Acenaphthylene	CE087 M	mg/kg	0.18	<0.02
Acenaphthene	CE087 M	mg/kg	0.30	0.06
Fluorene	CE087 U	mg/kg	0.25	0.04
Phenanthrene	CE087 M	mg/kg	2.43	0.48
Anthracene	CE087 U	mg/kg	0.85	0.14
Fluoranthene	CE087 M	mg/kg	5.48	0.92
Pyrene	CE087 M	mg/kg	4.47	0.77
Benzo(a)anthracene	CE087 U	mg/kg	2.56	0.35
Chrysene	CE087 M	mg/kg	2.12	0.33
Benzo(b)fluoranthene	CE087 M	mg/kg	3.12	0.41
Benzo(k)fluoranthene	CE087 M	mg/kg	1.43	0.21
Benzo(a)pyrene	CE087 U	mg/kg	3.01	0.33
Indeno(123cd)pyrene	CE087 M	mg/kg	2.36	0.26
Dibenz(ah)anthracene	CE087 M	mg/kg	0.45	0.05
Benzo(ghi)perylene	CE087 M	mg/kg	2.12	0.23
PAH (total of USEPA 16)	CE087	mg/kg	31.2	4.56

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SOILS

Lab number			110198-19	110198-20
Sample id			TP16	TP18
Depth (m)			0.30	1.00
Date sampled			08/06/2022	08/06/2022
Test	**Method**	**Units**		
TPH				
VPH Aromatic (>EC5-EC7)	CE067	mg/kg	<0.01	<0.01
VPH Aromatic (>EC7-EC8)	CE067	mg/kg	<0.01	<0.01
VPH Aromatic (>EC8-EC10)	CE067	mg/kg	<0.01	<0.01
EPH Aromatic (>EC10-EC12)	CE250	mg/kg	3	2
EPH Aromatic (>EC12-EC16)	CE250	mg/kg	7	4
EPH Aromatic (>EC16-EC21)	CE250	mg/kg	13	3
EPH Aromatic (>EC21-EC35)	CE250	mg/kg	69	15
EPH Aromatic (>EC35-EC44)	CE250	mg/kg	15	6
VPH Aliphatic (>C5-C6)	CE067	mg/kg	<0.1	<0.1
VPH Aliphatic (>C6-C8)	CE067	mg/kg	<0.1	<0.1
VPH Aliphatic (>C8-C10)	CE067	mg/kg	<0.1	<0.1
EPH Aliphatic (>C10-C12)	CE250	mg/kg	<6	<6
EPH Aliphatic (>C12-C16)	CE250	mg/kg	<6	<6
EPH Aliphatic (>C16-C35)	CE250	mg/kg	<15	<15
EPH Aliphatic (>C35-C44)	CE250	mg/kg	<10	<10
Subcontracted analysis				
Asbestos (qualitative)	$	-	NAD	NAD

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METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE127	Arsenic (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg As
CE063	Boron (water soluble)	Hot water extract, ICP-OES	Dry	U	0.5	mg/kg B
CE127	Cadmium (total)	Aqua regia digest, ICP-MS	Dry	M	0.2	mg/kg Cd
CE127	Chromium (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Cr
CE146	Chromium (VI)	Acid extraction, Colorimetry	Dry		1	mg/kg CrVI
CE127	Copper (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Cu
CE127	Lead (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Pb
CE127	Mercury (total)	Aqua regia digest, ICP-MS	Dry	M	0.5	mg/kg Hg
CE127	Nickel (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Ni
CE127	Selenium (total)	Aqua regia digest, ICP-MS	Dry	M	0.3	mg/kg Se
CE127	Zinc (total)	Aqua regia digest, ICP-MS	Dry	M	5	mg/kg Zn
CE004	pH	Based on BS 1377, pH Meter	As received	M	-	units
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry	U	10	mg/l SO_4
CE062	Sulphate (total)	Acid extraction, ICP-OES	Dry	M	100	mg/kg SO_4
CE016	Sulphide	Distillation, Titration	Dry		10	mg/kg S^{2-}
CE077	Cyanide (free)	Extraction, Continuous Flow Colorimetry	As received		1	mg/kg CN
CE077	Cyanide (total)	Extraction, Continuous Flow Colorimetry	As received		1	mg/kg CN
CE145	Thiocyanate	Weak acid extraction, Colorimetry	Dry	M	1	mg/kg SCN
CE078	Phenols (total)	Extraction, Continuous Flow Colorimetry	As received		0.5	mg/kg PhOH
CE197	Total Organic Carbon (TOC)	Carbon Analyser	Dry		0.1	% w/w C
CE197	Estimate of OMC (calculated from TOC)	Calculation from Total Organic Carbon	Dry		0.1	% w/w
CE087	Naphthalene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Acenaphthylene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Acenaphthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Fluorene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Phenanthrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Pyrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(a)anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Chrysene	Solvent extraction, GC-MS	As received	M	0.03	mg/kg
CE087	Benzo(b)fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(k)fluoranthene	Solvent extraction, GC-MS	As received	M	0.03	mg/kg
CE087	Benzo(a)pyrene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Indeno(123cd)pyrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Dibenz(ah)anthracene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(ghi)perylene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	PAH (total of USEPA 16)	Solvent extraction, GC-MS	As received		0.34	mg/kg
CE067	VPH Aromatic (>EC5-EC7)	Headspace GC-FID	As received		0.01	mg/kg
CE067	VPH Aromatic (>EC7-EC8)	Headspace GC-FID	As received		0.01	mg/kg
CE067	VPH Aromatic (>EC8-EC10)	Headspace GC-FID	As received		0.01	mg/kg
CE250	EPH Aromatic (>EC10-EC12)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC12-EC16)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC16-EC21)	Solvent extraction, GCxGC-FID	As received		1	mg/kg

Chemtech Environmental Limited

METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE250	EPH Aromatic (>EC21-EC35)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC35-EC44)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE067	VPH Aliphatic (>C5-C6)	Headspace GC-FID	As received		0.1	mg/kg
CE067	VPH Aliphatic (>C6-C8)	Headspace GC-FID	As received		0.1	mg/kg
CE067	VPH Aliphatic (>C8-C10)	Headspace GC-FID	As received		0.1	mg/kg
CE250	EPH Aliphatic (>C10-C12)	Solvent extraction, GCxGC-FID	As received		6	mg/kg
CE250	EPH Aliphatic (>C12-C16)	Solvent extraction, GCxGC-FID	As received		6	mg/kg
CE250	EPH Aliphatic (>C16-C35)	Solvent extraction, GCxGC-FID	As received		15	mg/kg
CE250	EPH Aliphatic (>C35-C44)	Solvent extraction, GCxGC-FID	As received		10	mg/kg
$	Asbestos (qualitative)	HSG 248, Microscopy	Dry	U	-	-

Chemtech Environmental Limited

DEVIATING SAMPLE INFORMATION

Comments
Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.
For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.
Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

Key

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
110198-1	TP1	0.10	N	
110198-2	TP2	0.50	N	
110198-3	TP3	0.05	N	
110198-4	TP3a	0.30	N	
110198-5	TP4	0.70	N	
110198-6	TP5	0.05	N	
110198-7	TP6	0.50	N	
110198-8	TP7	0.05	N	
110198-9	TP7	0.50	N	
110198-10	TP7	0.70	N	
110198-11	TP8	0.10	N	
110198-12	TP8	0.50	N	
110198-13	TP10	0.10	N	
110198-14	TP10	0.50	N	
110198-15	TP10	1.50	N	
110198-16	TP14	0.05	N	
110198-17	TP15	0.05	N	
110198-18	TP15	0.50	N	
110198-19	TP16	0.30	N	
110198-20	TP18	1.00	N	

Chemtech Environmental Limited

ADDITIONAL INFORMATION

Notes

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

Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.

All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.

Methods, procedures and performance data are available on request.

Results reported herein relate only to the material supplied to the laboratory.

This report shall not be reproduced except in full, without prior written approval.

Samples will be disposed of 4 weeks from initial receipt unless otherwise instructed.

For soils and solids, all results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.

For soils and solids, analytical results are inclusive of stones, where applicable.

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Emcus Limited
1E Campbell Street
Belper
Derbyshire
DE56 1AP

29 June 2022
Report No : GEO/35670/01

For the attention of Mr J Thomson

Date samples received 09/06/2022
Date written instructions received 09/06/2022
Date testing commenced 10/06/2022
Date of sample disposal 27/07/2022

Our ref **GEO / 35670**
Your Ref **J2038**

Project **PLOT 10 DOVE VALLEY**

Further to your instructions we have pleasure in enclosing the results of the tests you requested in the attached figures.

LABORATORY TEST REPORT

Item No	Test Quantity	Description
1	~	Liquid & Plastic Limits Summary
~	6	Water Content
2	~	Particle Size Distribution Summary
3	3	Particle Size Distribution

Any opinions or interpretations expressed herein are outside the scope of UKAS accreditation. All results contained in this report are provisional unless signed by an approved signatory. The results contained in this report relate only to samples received in the laboratory and are tested 'as received' unless otherwise stated. This report should not be reproduced, except in full, without the written approval of the laboratory. The results reported are applicable only to the test items received by the laboratory.

All the necessary data required by the documented test procedures has been recorded and will be stored for a period of not less than 6 years. This data will be issued to yourselves at your request. All samples will be disposed of after the date shown above. Written confirmation will be required to retain the samples beyond this period and a storage charge may be applied.

We trust that the above meets your requirements and should you require any further information or assistance, please do not hesitate to contact us.

Yours faithfully
on behalf of **GEOLABS Limited**

P Kluba
Senior Technician

BS EN ISO 17892-12 : 2018

SUMMARY OF LIQUID AND PLASTIC LIMIT TESTS

Location	Depth m	Sample Ref	Sample Type	Description	Water Content BS EN ISO 17892-1 : 2014 %	Liquid Limit %	Plastic Limit %	Plasticity Index %	Percentage Passing 425µm %	Atterberg Classification	Test Type	Sample Condition
TP3	1.30		D	Brown very sandy CLAY with much fine to coarse gravel.	6.6	31	11	20	27	CL	1	3
TP4	2.00		D	Brown sandy CLAY with some fine to coarse gravel.	23.0	40	18	22	84	CI	1	3
TP6	1.00		B	Brown clayey sandy fine to coarse GRAVEL and one cobble.	4.6	~	NP		15	~	3	3
TP9	0.80		D	Brown very sandy CLAY with some fine to medium gravel.	17.5	34	17	17	94	CL	1	1
TP15	1.00		D	Brown sandy CLAY with much fine to medium gravel.	15.4	45	17	28	64	CI	1	3
TP16	1.50		D	Brown very sandy CLAY with some fine to medium gravel.	16.9	32	17	15	94	CL	1	1

Test Type:
1 - 1 point 80g / 30° fall cone method.
2 - 4 point 80g / 30° fall cone method.
3 - Non plastic determination.

Sample condition:
1 - As Received
2 - Air Dried
3 - Washed & Air Dried

Checked and Approved by:

P Kluba - Senior Technician
29/06/2022

Project Number:

GEO / 35670

Project Name:

PLOT 10 DOVE VALLEY
J2038

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BS EN ISO 17892-12 : 2018 : Clause 5.3 & 5.5

LIQUID AND PLASTIC LIMITS

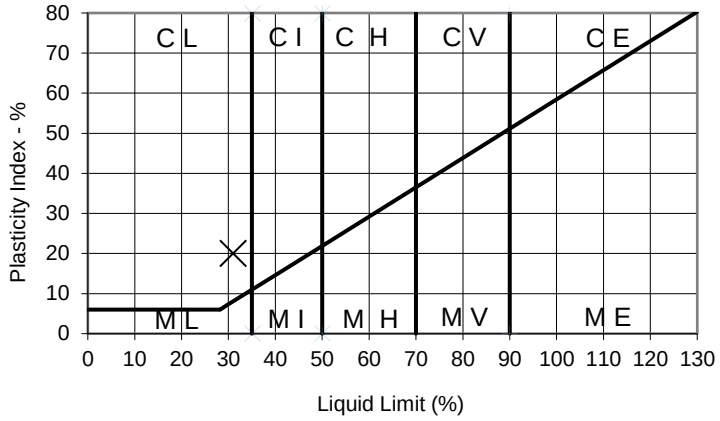
Location	TP3
Depth (m)	1.30
Sample Type	D

Description:

Brown very sandy CLAY with much fine to coarse gravel.

Preparation : Particles >425µm removed by wet sieving and air drying.

Water Content : (BS EN ISO 17892-1:2014)	6.6 %
Measured percentage passing 425µm sieve :	27 %
*Liquid Limit - Fall Cone 1 point Method (cone angle 30°) :	31 %
Plastic Limit :	11 %
Plasticity Index :	20 %
Equivalent Water Content of material passing 425µm sieve :	24.7 %
Liquidity Index :	0.69



***One point liquid limit test readings**

Cone penetration	20.1 mm
Water content	30.7 %
One point method correlation factor	0.998

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Tested by AD
Checked and Approved by

P Kluba - Senior Technician
29/06/2022

Project Number:

GEO / 35670

Project Name:

PLOT 10 DOVE VALLEY
J2038

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BS EN ISO 17892-12 : 2018 : Clause 5.3 & 5.5

LIQUID AND PLASTIC LIMITS

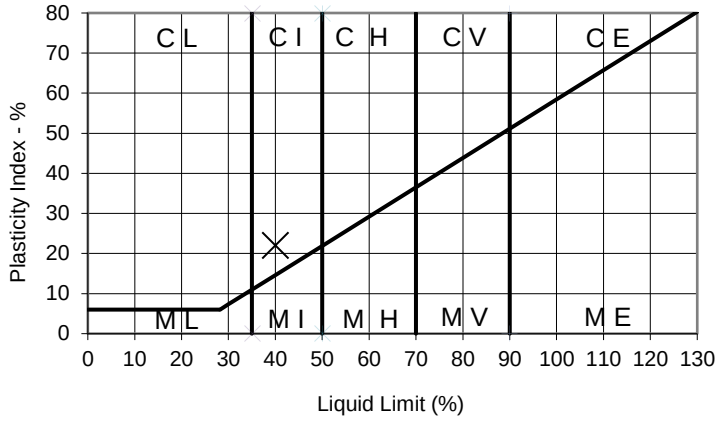
Location	TP4
Depth (m)	2.00
Sample Type	D

Description:

Brown sandy CLAY with some fine to coarse gravel.

Preparation : Particles >425µm removed by wet sieving and air drying.

Water Content : (BS EN ISO 17892-1:2014)	23.0 %
Measured percentage passing 425µm sieve :	84 %
*Liquid Limit - Fall Cone 1 point Method (cone angle 30°) :	40 %
Plastic Limit :	18 %
Plasticity Index :	22 %
Equivalent Water Content of material passing 425µm sieve :	27.4 %
Liquidity Index :	0.43



***One point liquid limit test readings**

Cone penetration	20.0 mm
Water content	39.8 %
One point method correlation factor	1.001

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29/06/2022

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J2038

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BS EN ISO 17892-12 : 2018 : Clause 5.3 & 5.5

LIQUID AND PLASTIC LIMITS

Location	TP6
Depth (m)	1.00
Sample Type	B

Description:

Brown clayey very sandy fine to coarse GRAVEL.

Preparation : Particles >425µm removed by wet sieving and air drying.

Water Content : (BS EN ISO 17892-1:2014)	4.6 %
Measured percentage passing 425µm sieve :	15 %
Liquid Limit - Fall Cone Method (cone angle 30°) :	Not Determined
Plastic Limit :	Non-Plastic

Equivalent Water Content of material passing 425µm sieve : 30 %

Sample was determined to be Non-Plastic after preparation

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LIQUID AND PLASTIC LIMITS

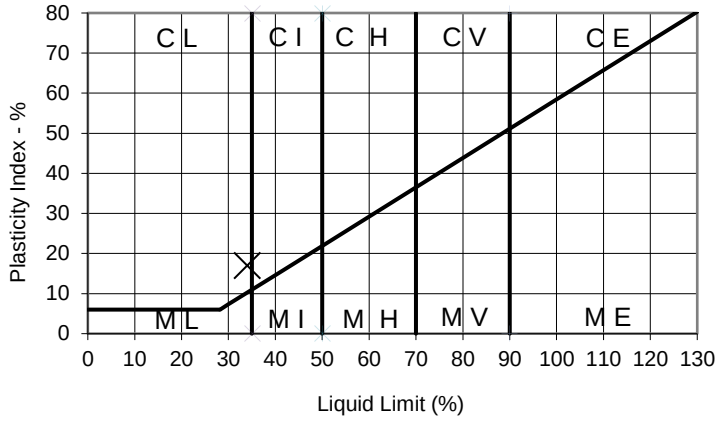
Location	TP9
Depth (m)	0.80
Sample Type	D

Description:

Brown very sandy CLAY with some fine to medium gravel.

Preparation : Sample as received with discrete coarse particles removed by hand.

Water Content : (BS EN ISO 17892-1:2014)	17.5	%
Estimated percentage passing 425µm sieve :	94	%
*Liquid Limit - Fall Cone 1 point Method (cone angle 30°) :	34	%
Plastic Limit :	17	%
Plasticity Index :	17	%
Equivalent Water Content of material passing 425µm sieve :	18.6	%
Liquidity Index :	0.09	



***One point liquid limit test readings**

Cone penetration	20.9	mm
Water content	34.9	%
One point method correlation factor	0.986	

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LIQUID AND PLASTIC LIMITS

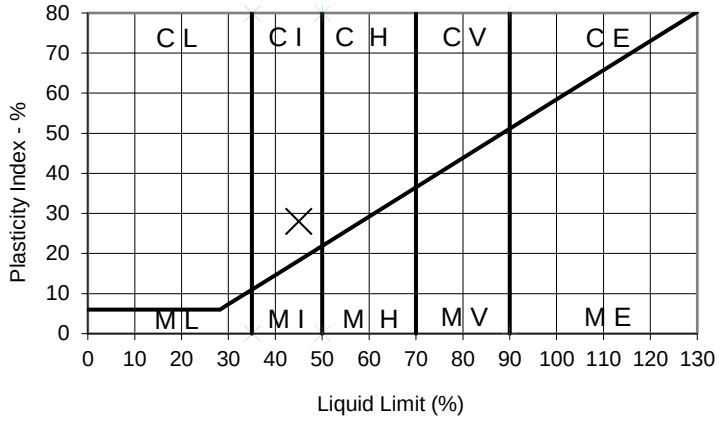
Location	TP15
Depth (m)	1.00
Sample Type	D

Description:

Brown sandy CLAY with much fine to medium gravel.

Preparation : Particles >425µm removed by wet sieving and air drying.

Water Content : (BS EN ISO 17892-1:2014)	15.4 %
Measured percentage passing 425µm sieve :	64 %
*Liquid Limit - Fall Cone 1 point Method (cone angle 30°) :	45 %
Plastic Limit :	17 %
Plasticity Index :	28 %
Equivalent Water Content of material passing 425µm sieve :	24.0 %
Liquidity Index :	0.25



***One point liquid limit test readings**

Cone penetration	20.0 mm
Water content	45.2 %
One point method correlation factor	1.002

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BS EN ISO 17892-12 : 2018 : Clause 5.3 & 5.5

LIQUID AND PLASTIC LIMITS

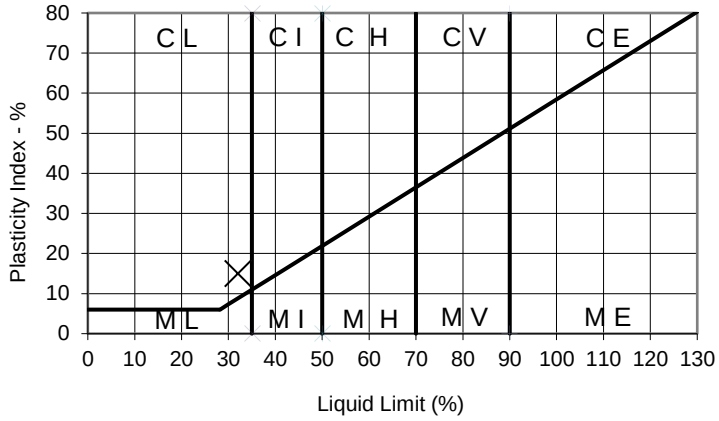
Location	TP16
Depth (m)	1.50
Sample Type	D

Description:

Brown very sandy CLAY with some fine to medium gravel.

Preparation : Sample as received with discrete coarse particles removed by hand.

Water Content : (BS EN ISO 17892-1:2014)	16.9	%
Estimated percentage passing 425µm sieve :	94	%
*Liquid Limit - Fall Cone 1 point Method (cone angle 30°) :	32	%
Plastic Limit :	17	%
Plasticity Index :	15	%
Equivalent Water Content of material passing 425µm sieve :	17.9	%
Liquidity Index :	0.06	



***One point liquid limit test readings**

Cone penetration	19.5	mm
Water content	31.8	%
One point method correlation factor	1.007	

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29/06/2022

Project Number:

GEO / 35670

Project Name:

PLOT 10 DOVE VALLEY
J2038

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1260 - PSD Summary - 35670.XLSM

SUMMARY OF PARTICLE SIZE DISTRIBUTION TESTS

Location	Depth m	Sample Ref	Sample Type	Description	Sample Proportion					D100	D60	D10
					Cobbles %	Gravel %	Sand %	Silt %	Clay %	%	%	%
TP3A	0.80		B	Brown clayey sandy fine to coarse GRAVEL.	0.0	71.3	23.2	5.5		50	15	0
TP6	1.00		B	Brown clayey sandy fine to coarse GRAVEL and one cobble.	20.4	56.1	17.0	6.5		75	18	0
TP10	1.50		B	Brown clayey sandy fine to coarse GRAVEL.	0.0	73.4	18.0	8.6		50	18	0

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PLOT 10 DOVE VALLEY
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Version 07.210317

BS EN ISO 17892-4 : 2016

PARTICLE SIZE DISTRIBUTION

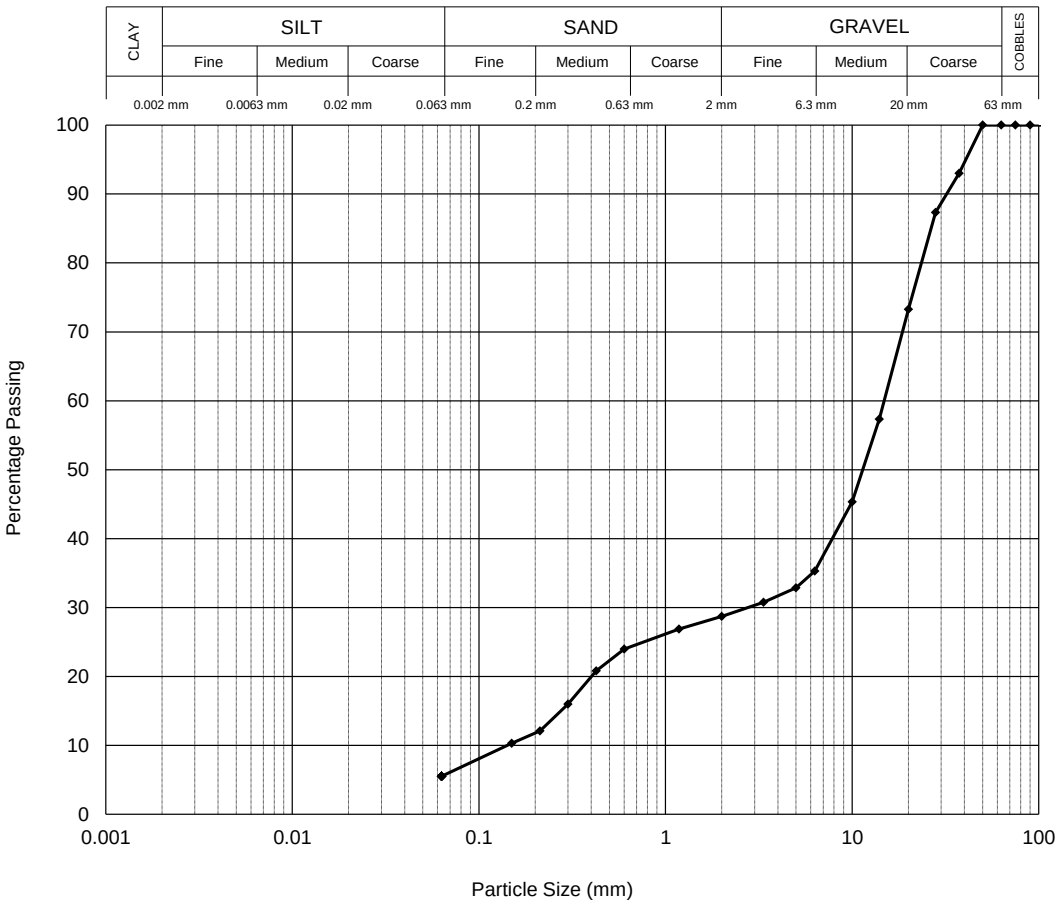
Location	TP3A
Depth (m)	0.80
Sample Type	B

Description

Brown clayey sandy fine to coarse GRAVEL.

BS EN ISO 17892-4 : 2016 : Clause 5.2 - Wet Sieve

Sieve	
Size	% Pass
200.0 mm	100
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	100
50.0 mm	100
37.5 mm	93
28.0 mm	87
20.0 mm	73
14.0 mm	57
10.0 mm	45
6.30 mm	35
5.00 mm	33
3.35 mm	31
2.00 mm	29
1.18 mm	27
600 µm	24
425 µm	21
300 µm	16
212 µm	12
150 µm	10
63 µm	6



Particle Proportions	
Cobbles	0.0
Gravel	71.3
Sand	23.2
Silt & Clay	5.5

Tested by PK
Checked and Approved by

P Kluba - Senior Technician
29/06/2022

Project Number:

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BS EN ISO 17892-4 : 2016

PARTICLE SIZE DISTRIBUTION

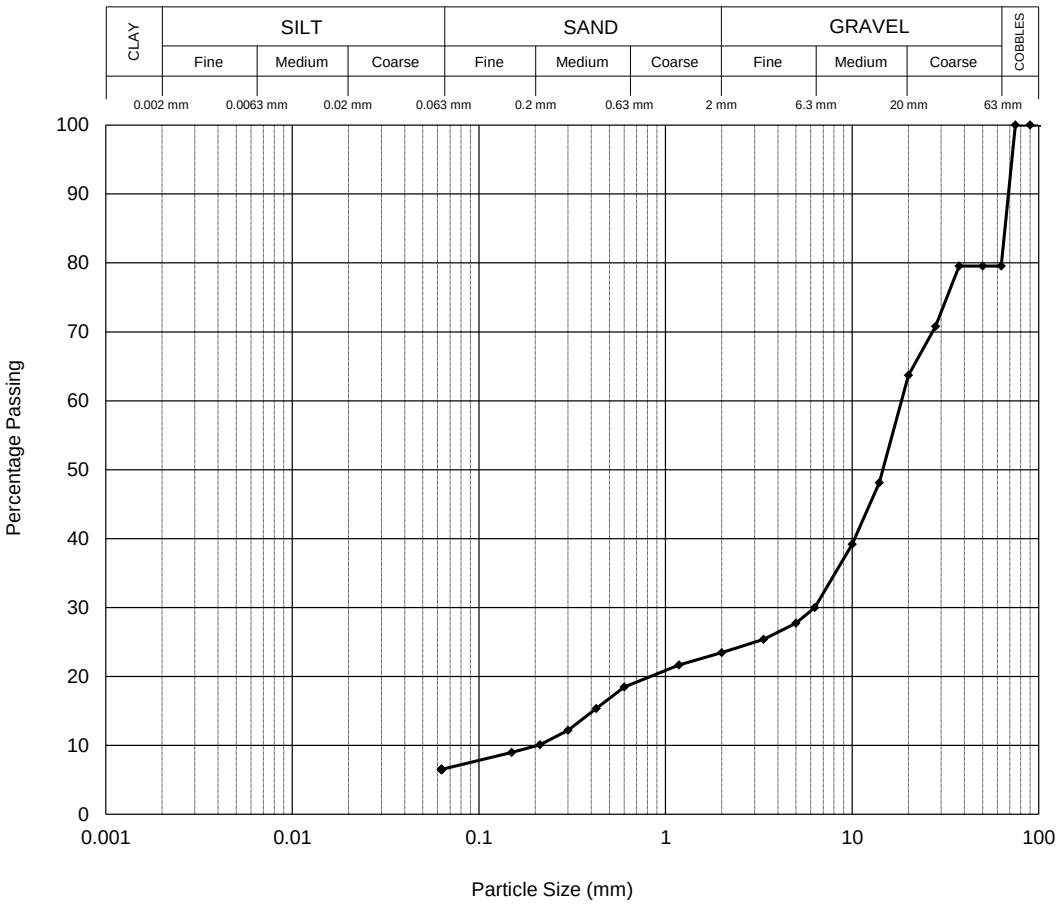
Location	TP6
Depth (m)	1.00
Sample Type	B

Description

Brown clayey sandy fine to coarse GRAVEL and one cobble.

BS EN ISO 17892-4 : 2016 : Clause 5.2 - Wet Sieve

Sieve	
Size	% Pass
200.0 mm	100
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	80
50.0 mm	80
37.5 mm	80
28.0 mm	71
20.0 mm	64
14.0 mm	48
10.0 mm	39
6.30 mm	30
5.00 mm	28
3.35 mm	25
2.00 mm	23
1.18 mm	22
600 µm	18
425 µm	15
300 µm	12
212 µm	10
150 µm	9
63 µm	7



Particle Proportions	
Cobbles	20.4
Gravel	56.1
Sand	17.0
Silt & Clay	6.5

Tested by PK
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29/06/2022

Project Number:

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Project Name:

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BS EN ISO 17892-4 : 2016

PARTICLE SIZE DISTRIBUTION

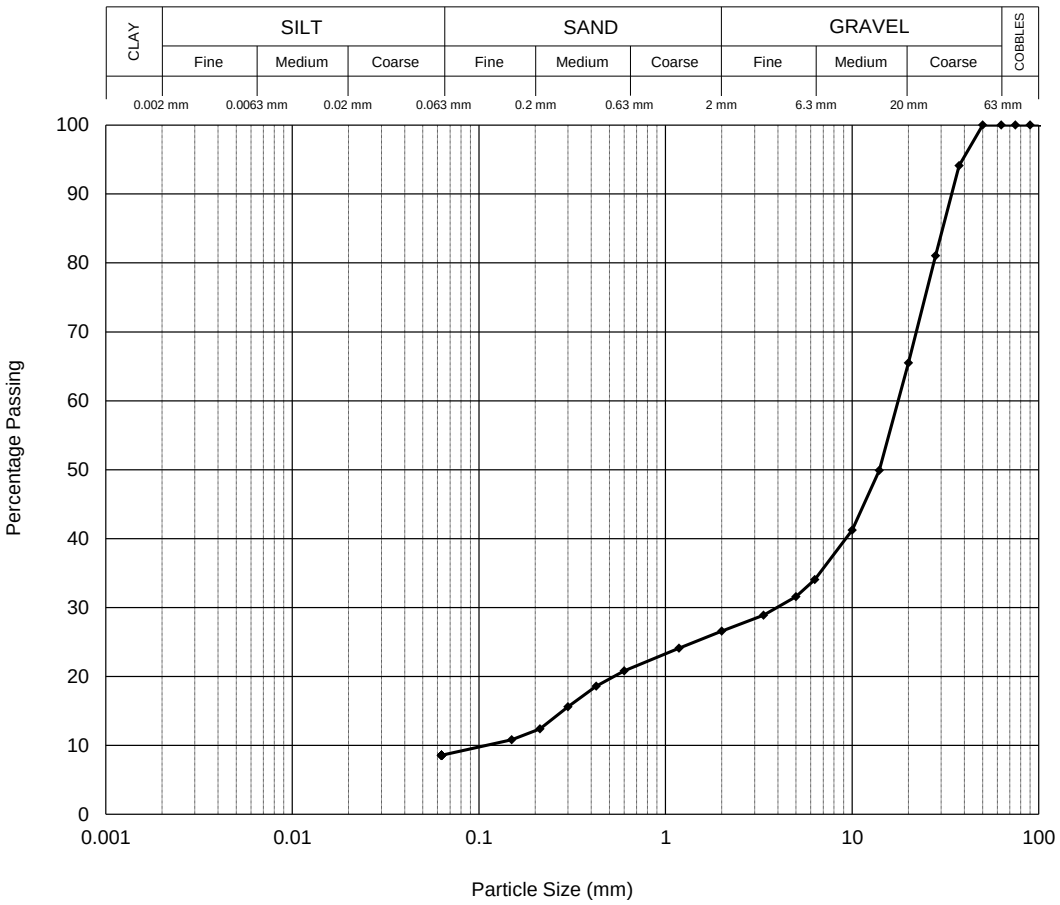
Location	TP10
Depth (m)	1.50
Sample Type	B

Description

Brown clayey sandy fine to coarse GRAVEL.

BS EN ISO 17892-4 : 2016 : Clause 5.2 - Wet Sieve

Sieve	
Size	% Pass
200.0 mm	100
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	100
50.0 mm	100
37.5 mm	94
28.0 mm	81
20.0 mm	65
14.0 mm	50
10.0 mm	41
6.30 mm	34
5.00 mm	32
3.35 mm	29
2.00 mm	27
1.18 mm	24
600 µm	21
425 µm	19
300 µm	16
212 µm	12
150 µm	11
63 µm	9



Particle Proportions	
Cobbles	0.0
Gravel	73.4
Sand	18.0
Silt & Clay	8.6

Tested by PK
Checked and Approved by

P Kluba - Senior Technician
29/06/2022

Project Number:

GEO / 35670

Project Name:

PLOT 10 DOVE VALLEY
J2038

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1982

Appendix D

Gas Monitoring Results

Construction Design Solutions
Consulting Civil, Structural, Highway & Drainage Engineers

GAS MONITORING RECORD

J2038 Plot 10 Dove Valley Park

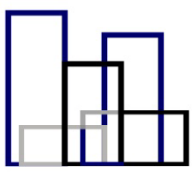
Date: 17/06/2022
Atmospheric Pressure: 1001mb
Atmospheric O_2: 21.2%v/v

Gas Analyser: GA5000
Serial Number: G503422

BH No.	Ground level (m AOD)	Response Zone	CH_4 (%v/v)		CO_2 (%v/v)		O_2 (%v/v)		CO (ppm)		H_2S (ppm)		Flow (L/Hr)	Depth to Water (m bgl)	Hazardous Gas Flow Rate (L/Hr)	
			P.R.	S.R.	P.R.	S.R.	P.R.	S.R.	P.R.	S.R.	P.R.	S.R.			CH_4	CO_2
WS1		1.0m - 4.7m bgl	0.0	0.0	2.6	2.6	20.6	20.6	2.0	2.0	0.0	0.0	0.1	1.55	0.0000	0.0026
WS2		1.0m - 3.0m bgl	0.0	0.0	2.0	2.0	19.7	19.7	2.0	2.0	0.0	0.0	0.1	1.95	0.0000	0.0020
WS3		1.0m - 4.0m bgl	0.0	0.0	2.0	2.0	19.9	19.9	1.0	1.0	0.0	0.0	0.1	2.20	0.0000	0.0020
WS6		1.0m - 4.0m bgl	0.0	0.0	0.8	0.8	20.0	20.0	6.0	6.0	0.0	0.0	0.1	1.05	0.0000	0.0008
WS9		1.0m - 4.0m bgl	0.0	0.0	2.5	2.5	18.3	18.3	4.0	4.0	0.0	0.0	0.1	2.05	0.0000	0.0025
WS12		1.0m - 3.0m bgl	0.0	0.0	1.5	1.5	20.1	20.1	2.0	2.0	0.0	0.0	0.1	2.25	0.0000	0.0015

Notes:
P.R. - Peak Reading
S.R. - Steady Reading
D.T.B. - Dry to Base
N.R.T - No Reading Taken

Recorded	Checked
JST	



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