



Geo-Environmental

GROUND INVESTIGATION REPORT

for the land at

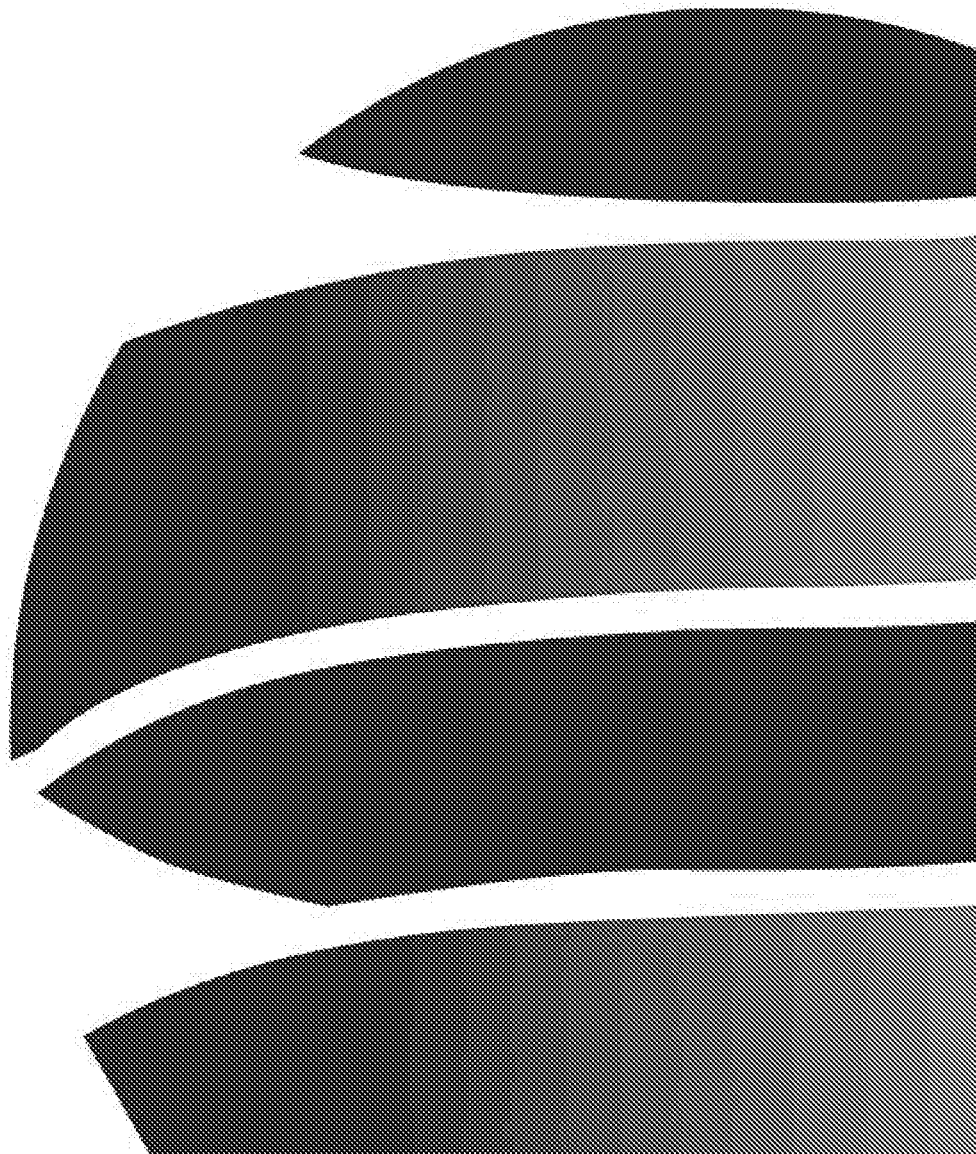
STAKERS FARM, NORTHERN END ROAD (B2132),

YAPTON, ARUNDEL, WEST SUSSEX,

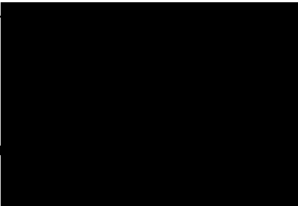
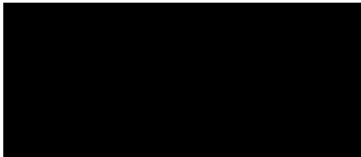
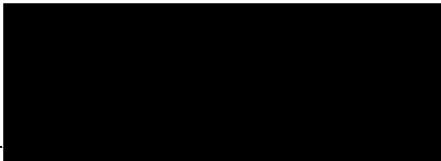
BN18 0DU

on behalf of

DANDARA LIMITED





Report:	GROUND INVESTIGATION REPORT
Site:	LAND AT STAKERS FARM, NORTHERN END ROAD (B2132), YAPTON, ARUNDEL, WEST SUSSEX, BN18 0DU
Client:	DANDARA LIMITED
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APPENDICES

APPENDIX A	Exploratory Hole Logs and In-situ Test Results
APPENDIX B	Geotechnical Laboratory Test Results



1.0 INTRODUCTION

1.1 General

Geo-Environmental Services Limited (Geo-Environmental) was instructed by Dandara Limited to undertake a supplementary investigation of the geotechnical factors pertaining to a proposed residential development of the land at Stakers Farm, Northern End Road (B2132), Yapton, Arundel, West Sussex, BN18 0DU (herein referred to as 'the site'). The site's location is presented in Figure 1.

1.2 Form of Development

It is understood that the site is proposed to be developed with houses with private gardens, access roads and associated infrastructure.

1.3 Objectives

The data from the geotechnical investigation was used to form the basis of an interpretation with respect to foundation design, pavement construction, excavation stability, soakaway design and other pertinent construction issues.

1.4 Standards and References

Where practicable, the ground investigation and subsequent geotechnical assessments were undertaken in accordance with the following documents and guidance.

- National Planning Policy Framework – March 2012
- Planning Policy Statement 23 – Planning and Pollution Control;
- Model Procedures for the Management of Contaminated Land, CLR11, DEFRA and Environment Agency 2004;
- BS10175:2011+A1:2013 - Investigation of Potentially Contaminated Sites - Code of Practice, BSI 2013;
- BS5930: 2015 - Code of Practice for Site Investigations, BSI 2015;
- EN ISO 14688 Geotechnical Investigation and Testing Part 1-2002 and Part 2-2004;
- BS1377: 1990 - Soils for Civil Engineering Purposes, BSI1990;
- NHBC Standards Chapter 4.1 Land Quality - Managing Ground Conditions;
- NHBC Standards Chapter 4.2 Building Near Trees;

1.5 Conditions

This report does not purport to be a "Geotechnical Design Report" as defined in Clause 2.8 of Eurocode 7 (Geotechnical Design BS EN 1997-1:2004) and some of the data used to support this preliminary geotechnical assessment may not be fully compliant with that design code. It is considered possible that further detailed ground investigations could be required to facilitate the detailed geotechnical design process and should be carried out on a structure specific basis if necessary.

The data collected from the investigations have been used to provide an interpretation of the geotechnical conditions pertaining to the site. The recommendations and opinions expressed in this report are based on the data obtained. Geo-Environmental takes no responsibility for conditions that either have not been revealed in the available records, or that occur between or under points of physical investigation. Whilst every effort has been made to interpret the conditions, such information is only indicative and liability cannot be accepted for its accuracy.



It should be noted that in particular the concentrations and levels of mobile liquid and gaseous materials are likely to vary with time. The results obtained may therefore only be representative of the conditions at the time of sampling. This report should not be taken as any guarantee that a site is free of hazardous or potentially contaminative materials.

Information contained in this report is intended for the use of the Client and Geo-Environmental can take no responsibility for the use of this information by any party for uses other than that described in this report. Geo-Environmental makes no warranty or representation whatsoever express or implied with respect to the use of this information by any third party. Geo-Environmental does not indemnify the Client or any third parties against any dispute or claim arising from any finding or other result of this investigation report or any consequential losses.

Assessment criteria or other parameters developed for the evaluation of contamination on this site are based on a number of assumptions regarding exposure and toxicology. Exposure to contaminants and levels of adverse effects may therefore vary. Whilst reasonable care and expertise has been employed in the development of such criteria, no liability is accepted in this respect. Other criteria or guidance on the development of assessment criteria may be published in the future and no liability is accepted in this respect.



2.0 ENCOUNTERED CONDITIONS

2.1 Site Description

At the time of the site investigation works, the site comprised an irregularly shaped plot of land spanning across two fields on the west side of North End Road. The site consisted two open fields, a concrete hardstanding area, a farm house and associated farm outbuildings (e.g. a shed and several barns to the southwest). At the time of the investigation the northern open field was occupied by two horses and it is understood that this part of the site was being used as a grazing field. In addition, a collapsed shed's components (comprised timber side panels, metal roof sheets, possible asbestos containing cement boards, timber floorboards, water proof plastic roof liners) were noted in the northeast corner of the site. It was also noted that the shed in the southwest portion of the site comprised the similar elements.

The overall site extended to c.4.5Ha and was located at NGR 497669, 103728.

The site boundaries were locally lined with densely vegetated hedges (locally tree lined and close boarded fencing) and unlined ditches. The site's topography was generally flat, although some localised and low height undulations were observed.

Two open fields were bisected with a low voltage powered fence in a west-east direction during the investigation.

The site was accessed via North End Road to the southeast corner of the site. A second access point was noted to the northwest of the site, adjacent to the North End Road. However, the second access point was not used during the course of the investigation. A public footpath and associated access point were also noted in the centre portion of the eastern site boundary. The site was bordered on the west by a large arable field; to the east by a primary school (Yapton CE Primary School), residential properties and North End Road; to the north by a farm house and associated outbuildings and open fields; to the southeast by Stakers Farm, hardstanding areas and associated outbuildings; to the south by an open field.

2.2 Geology

British Geological Survey geological mapping indicated the geology of the site to comprise sand, silt and clay of the River Terrace Deposits overlying chalk of the Lewes Nodular Chalk Formation, Seaford Chalk Formation, Newhaven Chalk Formation, Culver Chalk Formation and Portsdown Chalk Formation (Undifferentiated). A mantle of Topsoil was assumed to be present over the subsoil and bedrock strata. In addition, given the close proximity of developed areas within the surrounding area of the site (e.g. Northern End Road, a primary school, residential properties, a farm house and farm outbuildings to the immediate southeast), there is the potential for a thickness of Made Ground to be present near to the boundaries of the site. In addition, Made Ground may have been introduced onto the site through other historic activities.

BS5930:2015 defines **Made Ground** as anthropogenic ground in which the material has been placed without engineering control and/or manufactured by man in some way, such as through crushing or washing, or arising from an industrial process. Great variations in material type, thickness and degree of compaction invariably occur and there can be deleterious or harmful matter, as well as potentially methanogenic organic material. In addition, on sites which have undergone several phases of historic development it is not uncommon for asbestos to be present within Made Ground soils.

The rivers of the southern England have been subject to several changes of level since Pleistocene times. One result has been the formation of a complex series of **River Terrace Deposits**. The deposits are generally found at an elevation close to or higher than that of the existing rivers, and generally comprise sand and gravel of roughly



bedded flint or chert in varying degrees of coarseness.

The **White Chalk Subgroup** is a soft white friable microporous limestone composed of coccolith biomicrites with a varying proportion of larger shell fragments. Flint characterises the White Chalk Subgroup, occurring as nodular courses, tabular beds and linings to fractures. At various levels clay sized material occurs as marl seams and partings. Close to the surface the upper few metres are invariably discoloured brown, due to leaching from the overlying strata. The interface with any overlying stratum is invariably extremely irregular as a result of localised weathering and general solution. Weathering by frost action may extend to a depth of several metres. Occasional erosional features, such as pipes, swallow holes and solution cavities, usually infilled with drift deposits, are found in the chalk, sometimes manifesting themselves at the surface as shallow circular depressions. Solution features may be reactivated by the concentrated ingress of water from leaking drains or soakaways. Reactivation may lead to surface collapse. Within the Chalk outcrop on the south coast of England the traditional three-fold division into Lower, Middle and Upper Chalk is impractical for mapping purposes and only two divisions are mapped, these being the Grey Chalk Subgroup (formerly known as the Lower Chalk) and the White Chalk Subgroup (formerly the undivided Middle & Upper Chalk).

2.3 Previous Investigations

A ground interpretative report was undertaken by WYG Environment Planning Transport Ltd (WYG) on behalf of Dandara Ltd, dated 28th May 2019 entitled 'Land at Stakers Farm, Yapton. Ground Investigation Interpretative Report, reference no: A112666. The investigation comprised twenty exploratory holes with a maximum depth of 6.0m bgl. The investigation encountered Topsoil to depths in the range of 0.05m to 0.50m. Where encountered Topsoil was generally described as brown slightly gravelly sandy clay with frequent rootlets. Firm to stiff orange brown clay with varying sand and gravel content was encountered thereafter (River Terrace Deposits) overlying the White Chalk. The White Chalk was described as weathered structureless (Grade Dm) White Chalk generally recovered as silty chalk gravel with occasional flint. As part of the fieldworks, three soakage tests were undertaken in general accordance with BRE Digest 365 Soakaway Design. No infiltration rate was determined due to insufficient fall in head during the soakage tests. The report suggested that shallow spread foundations would be viable on the encountered River Terrace Deposits, albeit with a low bearing pressure.

The findings of the WYG report indicate that there were no contaminants of concern identified during the investigation with the exception of one exceedance of pH within WS05 at a depth of 0.2m bgl and slight exceedances of heavy metals in the topsoil samples taken from WS02 and WS06. The metal exceedances from these leachate samples have not been considered to pose a risk to the underlying aquifer. Based on the results the Topsoil was considered suitable for re-use. The WYG report has also suggested that a total of six combined groundwater and ground gas monitoring wells were installed within the selected boreholes (WS01, WS04, WS05, WS06, WS09 and WS10).

Notwithstanding the above, during the fieldwork undertaken by Geo-Environmental a collapsed shed building was noted that appeared to have been constructed from potentially asbestos bearing corrugated cement board. It is recommended that this material be removed and disposed by a specialist contractor. Once removed, it would be prudent to undertake a shallow 'scrape' of the effected area to remove the near surface soils that may contain entrained asbestos containing material or fibres. The arisings should undergo appropriate waste categorisation testing prior to disposal.

2.4 Scope of Works

In summary, the following scope of works for the supplementary intrusive investigation was agreed with the Client.

- Attendance of a Geo-Environmental Engineer to set out and supervise the intrusive investigation, undertake sampling, in-situ testing and logging of recovered soils from exploratory holes.
- Attendance of a Geo-Environmental Technician to oversee additional days of testing and backfilling of locations on completion.
- Provision of a number of hand pits along the proposed roads to obtain bulk samples for CBR laboratory testing.
- The construction of 2No. machine dug trial pits to provisional depths of up to c. 2.00m bgl to obtain bulk samples for CBR laboratory testing.
- Undertake Dynamic Cone Penetrometer (DCP) tests to determine the in-situ CBR profile in the upper metre of ground at 20No. locations along the proposed site access roads and car parking areas.
- The construction of 6No. machine dug trial pits to provisional depths of up to c. 0.60m bgl (depth of BRE 365 soakage testing requested).
- The construction of 5No. machine dug trial pits to provisional depths of up to c. 1.00m bgl (depth of plate load testing requested). Undertake plate load testing within five trial pits, in accordance with BS1377 Part 9: 1990: 4.1.
- Attendance of a JCB 3CX or similar to excavate the trial pits.
- Attendance of a road tanker or 4x4 water bowser which we have supplied water for trial pit soakage tests for a 3 day period.
- Undertake trial pit soakage tests in general accordance with BRE Digest 365 within six trial pits. BRE Digest 365 requires three consecutive filling and drainage cycles to be completed. Construction of 2No. window sampler boreholes to depths of up to 5.00m bgl, or maximum achievable depth depending on drilling conditions. One day of drilling has been allowed for.
- Installation of groundwater monitoring wells within 2No. dynamic sampler boreholes. The wells were completed with a lockable cover fitted flush with adjacent ground.
- 11No. return groundwater monitoring visits to allow for groundwater monitoring of existing wells (and new wells where installed) at fortnightly intervals between the 1st November 2019 and 31st March 2020, as stipulated by the LPA.
- Geotechnical laboratory testing to support the geotechnical assessment for foundations, ground floor construction and pavement design.
- Provision of a Ground Investigation Report detailing the findings of the ground and groundwater conditions encountered; the results of in-situ testing and laboratory testing; a geotechnical assessment for foundations, drainage, excavations, pavement assessment and recommendations for further action (if required). The report would be delivered in electronic format only.

A factual record of the conditions encountered during the physical investigation of the site is presented in the following sections.

For further details of the ground conditions, reference should be made to the exploratory hole logs and in situ testing presented in Appendix A and the geotechnical testing results in Appendix B.

The physical ground investigation works were undertaken between 28th and 30th October 2019.

Unless stated otherwise, all depths are reported as metres below ground level (m bgl).



2.5 Investigation Strategy

The positioning of exploratory holes was specified by Geo-Environmental. Table 2.1 sets out the investigation rationale adopted.

Geotechnical Area of Concern	Investigation	Positions
Lateral changes in ground conditions	Exploratory holes located across the site, coupled with sampling and laboratory analysis.	All
Shrinkable soils	Exploratory holes located across the site, coupled with sampling and laboratory analysis.	All
Significant depths of Made Ground	Exploratory holes located across the site.	All
Pavement and Sub-Grade	Exploratory holes located along the proposed roads.	All (Exc. TP01 to TP06 and WS01 to WS02)
Soakaways	Trial pits located within the selected positions.	TP01 to TP06
Foundation Recommendations	Exploratory holes located across the site, coupled with sampling and laboratory analysis.	All

Table 2.1 Summary of Geotechnical Investigation Strategy

2.6 Ground Conditions

The ground conditions encountered within the exploratory holes were broadly consisted with those anticipated, i.e. a thickness of Topsoil and Made Ground overlying cohesive and granular soils of the River Terrace Deposits overlying chalk. The ground conditions are summarised in Table 2.2.

Top (m bgl)	Base (m bgl)	Geology	Positions
0.00	0.15-0.50	Topsoil: Grass overlying brown silty clay with rootlets.	All (exc. HP03, HP10, TP02, TP106 and TP107)
0.00	0.45-0.75	Made Ground: Grass overlying brown and dark grey gravelly sandy Clay with roots, brick, ceramic and concrete fragments.	HP03, HP10, TP02, TP106 and TP107
0.15-0.75	2.00-2.70	Cohesive River Terrace Deposits: Varied from stiff becoming firm orangish brown slightly sandy silty CLAY with numerous dark grey flecks and rare fine gravel to firm brown slightly sandy silty CLAY with traces of rootlets and rare fine gravel.	All (exc. HP08)
0.30-2.70	0.60-3.20	Granular River Terrace Deposits: Varied from medium dense orangish brown slightly gravelly silty clayey SAND to light brown clayey silty gravelly SAND with occasional fine to coarse chalk fragments. Sand is fine to coarse. Gravel is sub-angular to sub-rounded fine to coarse chalk gravel and flint.	WS01, WS02 and HP08
2.60-3.20	4.50-5.00	Seaford Chalk Formation: Recovered as firm off-white structureless CHALK with scattered intact white chalk gravel and flints.	WS01 and WS02

Table 2.2 Summary of Ground Conditions

For more detailed descriptions at specific locations, reference should be made to the exploratory hole logs presented in Appendix A and the exploratory hole location plan is presented in Figure 2.



2.7 Groundwater

A groundwater strike was encountered within WS01 at a depth of 2.4m bgl during the intrusive investigation, this was likely to represent a pocket of perched water within granular soils of the River Terrace Deposits.

In addition, two groundwater monitoring wells were installed within the boreholes (referenced WS01-WS02) to a maximum depth of 5.0m bgl and were monitored on an initial two occasions in November 2019. Groundwater was recorded at depths of between 2.46m and 3.72m bgl during the return visits (including WYG boreholes; i.e. WS01, WS04, WS05, WS06, WS09 and WS10)

It should be noted that changes in groundwater levels do occur for a number of reasons including seasonal effects and variations in drainage. Such fluctuations may only be recorded by the measurement of the groundwater level within a series of standpipes or piezometers installed within appropriate response zones.

This aside, an additional nine groundwater monitoring visits were outstanding at the of preparing this report. An addendum letter report or an updated version of this report will be submitted on completion of the monitoring.

2.8 Obstructions

No artificial or man-made obstructions were encountered during the investigation. However, it should be noted that WS02 did not reach its target depth due to the presence of flints and/or chalk gravel within the Chalk.

The presence of man-made below ground obstructions elsewhere on site cannot be discounted based on the previous development history of the site.

2.9 Geotechnical Testing and Assessment

Sixteen Pocket Penetrometer (PP) tests were undertaken on the cohesive elements of the River Terrace Deposits to assess possible variation in soil strength. The results of the pocket penetrometer tests carried out on the recovered samples from dynamic boreholes, indicated the soils tested to be of low to medium strength becoming very high strength with depth.

The results of the geotechnical laboratory testing from the recovered samples are summarised in Table 2.3.

Characteristic/Parameter		Cohesive River Terrace Deposits	Granular River Terrace Deposits
Natural Water content (%)		14 – 23	14
Liquid Limit (%)		31 – 46	27
Plastic Limit (%)		15 – 20	16
Plasticity Index Ip (%)		16 – 26	11
Modified Plasticity Index Ip' (%)		16 – 26	9.7
Volume Change Potential [NHBC]		Low to Medium	Non-shrinkable
Particle Size Distribution	Gravel (%)	0.0 – 3.3	27.9
	Sand (%)	9.6 – 50.2	38.1
	Clay/Silt (%)	46.2 – 90.4	34.0

Table 2.3 Summary of Geotechnical Laboratory Test Results

In addition to the above, examination of SMC and Dry Density values of the White Chalk, based on the guidance given in Table 9.2 of CIRIA 574, classifies them to be predominantly Medium Density (approximate Unconfined



Compressive Strength (UCS) 3-5MN/m²).



3.0 ENGINEERING CONSIDERATIONS

Subsequent to intrusive investigation of the site and receipt of the laboratory test results, the following geotechnical assessments have been made.

3.1 Foundations

The Modified Plasticity Indices showed the recovered samples of the cohesive soils of the River Terrace Deposits to vary from Low to Medium Volume Change Potential as defined in NHBC guidance. It was not considered feasible to zone the results and thus given the variability in composition, it is recommended that the River Terrace Deposits are assumed to be of Medium Volume Change Potential, as defined in NHBC Standards and therefore a minimum foundation depth in natural soils of 0.9m would be applicable remote from trees. Within the zone of moisture demand of any existing, recently removed or proposed trees the foundation depth should be calculated in accordance with the NHBC Standards. Heave protection measures in accordance with the NHBC Standards will be required where calculated founding depths on account of trees are in excess of 1.50m.

Based on the ground and groundwater conditions encountered, conventional shallow foundations could be suitable for the proposed residential development across the site, albeit taken through any topsoil, soft clay, root or desiccated zones, or disturbed ground and bear wholly into or onto the medium strength cohesive elements of the River Terrace Deposits or underlying granular deposits of the River Terrace Deposits. However, due to the presence of hedgerows and trees on the site boundaries, foundations within the zone of influence of trees (existing, removed and/or proposed) may need to be deepened in accordance with NHBC Standards, Chapter 4.2.

Based on the ground conditions encountered, an allowable bearing pressure of 90kN/m² is recommended for the medium strength cohesive soils of the River Terrace Deposits but would also be suitable for the more granular River Terrace Deposits where encountered at depths of between 0.6 and 3.2m bgl. Under this loading, total settlements should remain within tolerable limits. Where foundations span between cohesive and non cohesive soils, provision should be made for limited reinforcement across the junction between the differing strata.

3.2 Floor Slabs

Given the variable ground conditions across the site and the presence of shrinkable soils, it is recommended that suspended floor slabs are used with an adequate void designed according to NHBC Standards. As a guide, initial assessments indicate a requirement for a sub-floor void of at least 250mm due to the presence of shrinkable soils of medium volume change potential.

3.3 Excavations

Shallow excavations within the Made Ground and granular deposits (River Terrace Deposits) above any water ingress are likely to remain stable in the short term only, though instability should be expected where water is encountered or loose sandy pockets.

However, deeper longer excavations within any deeper pockets of encountered within the Made Ground and granular deposits (River Terrace Deposits) are unlikely to remain stable and some form of temporary support or battering back to a safe angle and dewatering are likely to be required.

Both shallow and deeper excavations within the cohesive deposits (River Terrace Deposits) and chalk are likely to remain relatively stable in the short to medium term though some spalling may be anticipated.



Ground works should always be designed in such a manner to avoid entry into excavations by construction or maintenance personnel. However, in the event that such works cannot be avoided or designed out, they should only be undertaken in accordance with a safe system of work, following an appropriate risk assessment and in accordance with any legislative requirements, e.g. Confined Spaces Regulations.

3.4 Soakaways

Soakage tests were undertaken at six locations (TP01, TP02, TP03, TP04, TP05 and TP06) in accordance with BRE Digest 365. Three soakage runs were undertaken within each position during the intrusive investigation and testing within each position was commenced on the 28th October 2019 and was left to run over night with the final readings being collected on the 29th and 30th October 2019. Table 3.1 summarises the soakage rates, which were calculated based on the results of the soakage testing:

Reference	Calculated Infiltration Rates (m/s)		
	1 st Cycle	2 nd Cycle	3 rd Cycle
TP01	6.0×10^{-6}	2.5×10^{-6}	2.6×10^{-6}
TP02	7.5×10^{-6}	3.3×10^{-6}	3.0×10^{-6}
TP03	3.2×10^{-6}	2.7×10^{-6}	2.5×10^{-5}
TP04	1.0×10^{-5}	3.2×10^{-6}	2.6×10^{-6}
TP05	3.4×10^{-6}	2.4×10^{-6}	2.4×10^{-6}
TP06	1.3×10^{-5}	8.4×10^{-6}	3.1×10^{-6}

Table 3.1 Summary of Soakage Test Results

Based on the above results and ground conditions encountered on site, it is considered that conventional soakaways may locally be suitable for discharging storm water run-off to the ground. However, the storage capacity of any soakaway may be limited by the presence of groundwater, particularly during the wetter winter months, and it is likely that some allowance for on-site storage and attenuation of peak storm flow with discharge to the drainage ditch network, possible at greenfield run-off rate would be required, under an extension of riparian rights.

3.5 Pavement and Sub-grade

Twenty in-situ California Bearing Ratio (CBR) tests were undertaken along the route of the proposed access roads using a Transport Research Laboratory (TRL) Dynamic Cone Penetrometer (DCP). Table 3.2 summarises the results of the in-situ CBR testing at a nominal depth of 0.45m.

Location	Stratum	Depth Range (mm)	DCP CBR (%)
DCP 01	River Terrace Deposits	260-490	6
DCP 02	River Terrace Deposits	370-500	6
DCP 03	River Terrace Deposits	293-528	5
DCP 04	River Terrace Deposits	300-520	6
DCP 05	River Terrace Deposits	330-520	5
DCP 06	River Terrace Deposits	330-490	6
DCP 07	River Terrace Deposits	210-420	5
DCP 08	River Terrace Deposits	365-420	4
DCP 09	River Terrace Deposits	205-560	5
DCP 10	River Terrace Deposits	355-450	5
DCP 11	River Terrace Deposits	225-415	5
DCP 12	River Terrace Deposits	270-420	5



DCP 13	River Terrace Deposits	470-560	5
DCP 14	River Terrace Deposits	130-520	4
DCP 15	River Terrace Deposits	855	5
DCP 16	River Terrace Deposits	410-590	4
DCP 17	River Terrace Deposits	865	5
DCP 18	River Terrace Deposits	535	4
DCP 19	River Terrace Deposits	430-595	6
DCP 20	River Terrace Deposits	365-530	4

Table 3.2 Summary of CBR Results

CBR values were estimated based on the Atterberg Limit Test results and the Transport and Road Research Laboratory Report (LR1132) entitled 'The Structural Design of Bituminous Roads' (1984) cites estimated equilibrium suction indices of between 1.5% and 5% for sandy silty clay with Plasticity Indices ranging between 16% and 26%, such as those of the River Terrace Deposits, under average construction conditions and a presumed high water table.

In addition, six soaked CBR tests were carried out in accordance with BS1377: Part 4:1990 using a 2.5kg rammer compaction method. A maximum dry unit weight of 17.2kN/m³ (TP107) and natural moisture contents ranged from 10% to 22% with soaked CBR values ranging from 1.5 to 5.7%.

Based on both the estimated CBR value and the results of the in-situ and laboratory testing, it is recommended that a CBR design value of 2% is adopted.

Given the variable ground conditions across the site it is recommended that the ground conditions are assumed to be frost susceptible across the site, and therefore a minimum formation depth of 450mm should be adopted. The formation level should be proof rolled and any soft zones excavated and replaced with suitably compacted engineered granular fill.

Any hard or soft spots in the formation level such may induce reflective cracking in the pavement and allowance should be made for localised treatment or removal.

3.6 Discovery Strategy

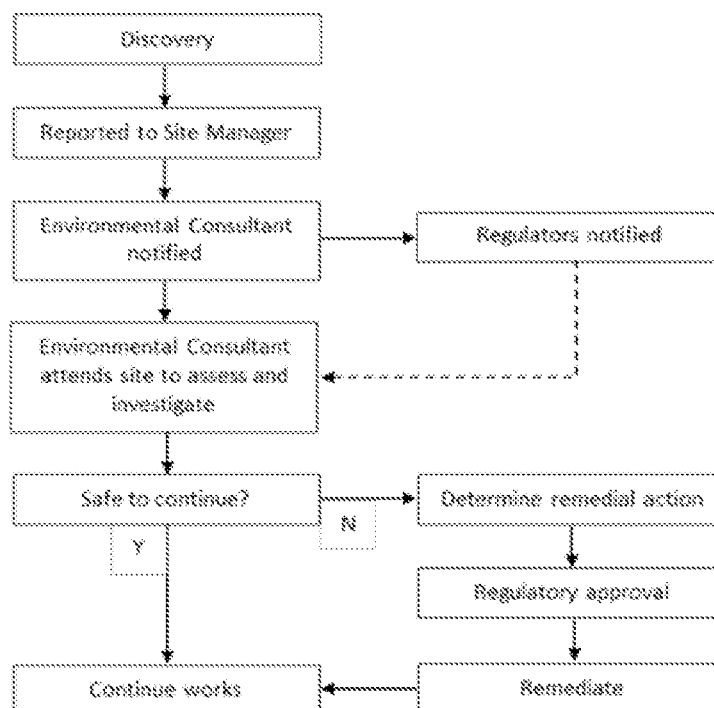
Whilst previously an environmental investigation has been undertaken on the site, it remains possible that unexpected soil conditions may be encountered during the process of site demolition, clearance and construction.

Examples may include oily pockets within the soil, pockets of cement boarding or fibrous materials within the soil, black ashy materials, soils exhibiting strong odours, brightly coloured materials and former structures or brickwork.

Should previously undiscovered contamination be encountered during construction by the ground workers, this should be reported to the Site Manager immediately in order that any necessary inspection may be made. Records should be kept and samples submitted for analysis where conditions encountered are not as anticipated. The results of any such testing should be sent to the authorities for consultation.



The process is shown below

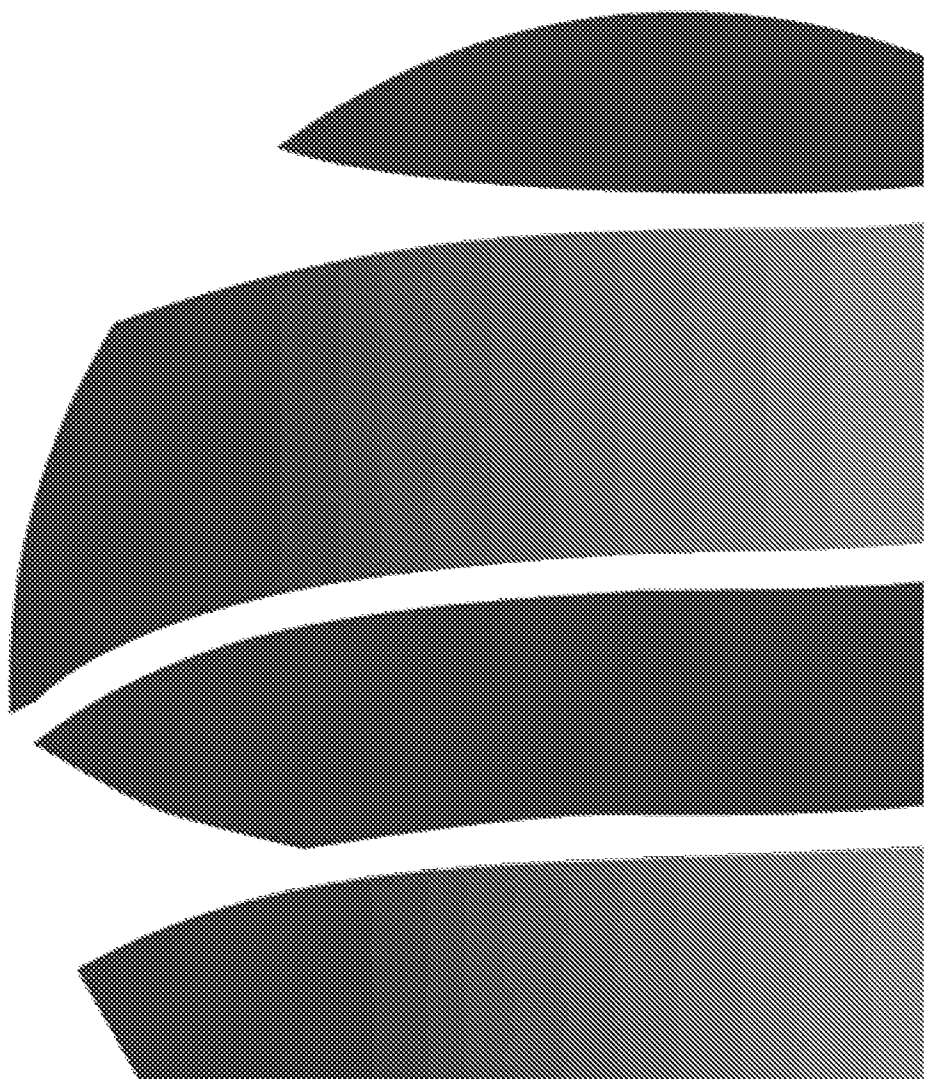


Discovery Strategy Process

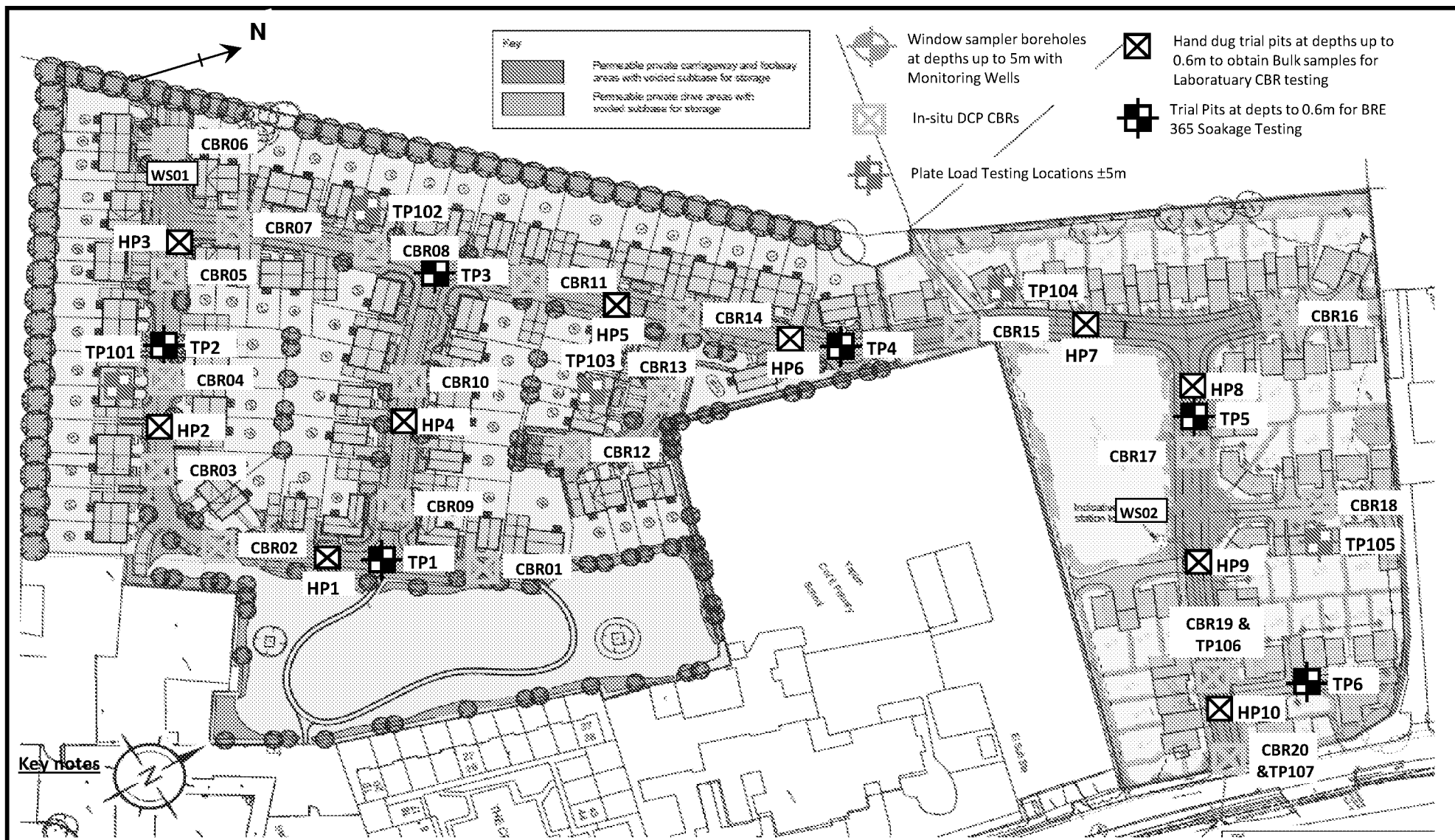
A copy of the discovery strategy should be lodged on site and provisions made to ensure that all workers are made aware of their responsibility to observe, report and act on any potentially suspicious or contaminated materials they may encounter.



Figures



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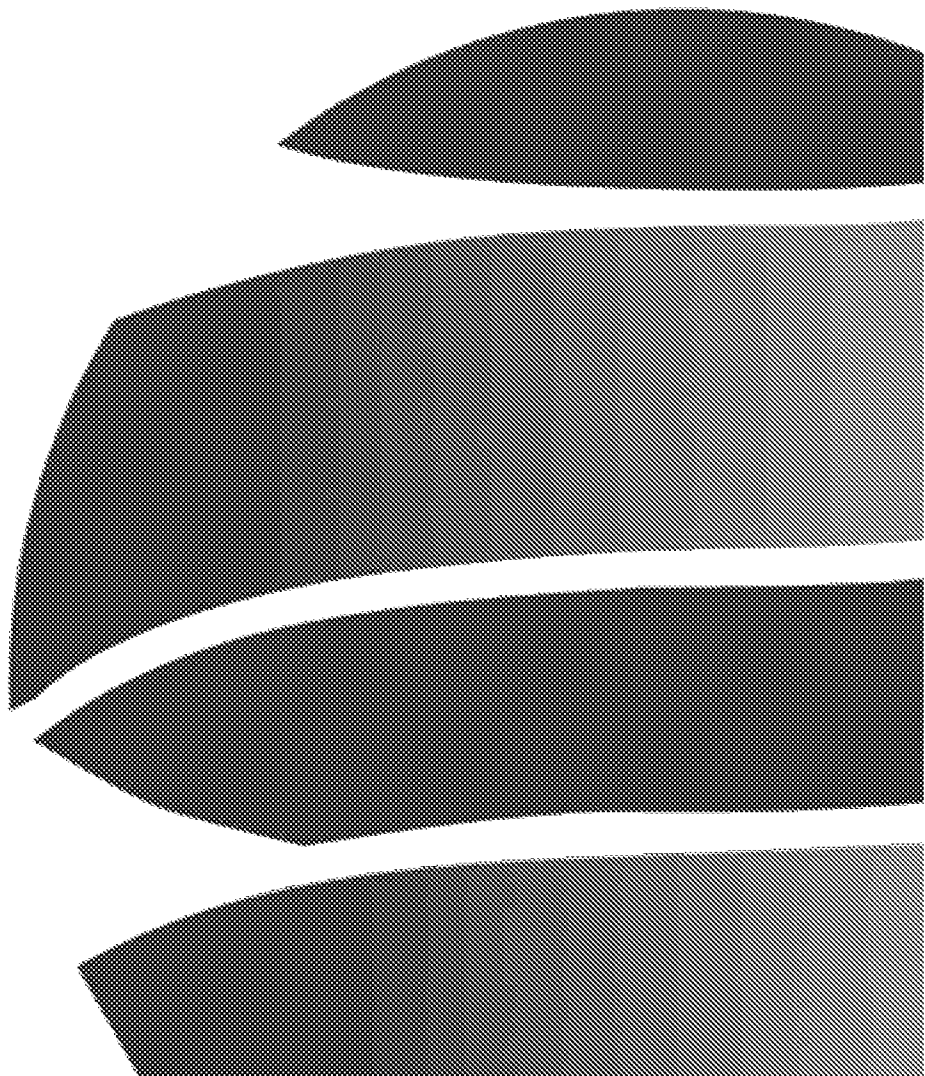


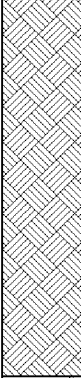
Project:	Land at Stakers Farm, North End Road, Yapton, Arundel, West Sussex, BN18 0DU			Title	Exploratory Hole Logs Location Plan	
Client:	Dandara Limited			Geo-Environmental Services Ltd Unit 7 Danworth Farm, Cuckfield Road Hurstpierpoint, West Sussex BN6 9GL +44(0)1273 832972 www.gesl.net	 Geo-Environmental	
Ref No:	GE18621	Revision:	0			
Drawn:	LD	Date:	11/11/2019			
Figure:	2	Scale:	Not To Scale			

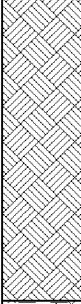
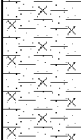


APPENDIX A

Exploratory Hole Logs and In-Situ Testing Results



 Geo-Environmental				Trial Pit Log				Trialpit No HP01 Sheet 1 of 1	
Project Name: Land at Stakers Farm, Yapton				Project No. GE18621		Co-ords: 497655.59 - 103574.83 Level:		Date	
Location: Land at Stakers Farm, North End Road, Yapton, Arundel, West Sussex, BN18 0DU				Dimensions (m):		0.4		Scale 1:10	
Client: Dandara Ltd				Depth 0.60		0.4		Logged LD	
Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth	Type	Results						
	0.60	B		0.50 0.60			Grass over brown silty Clay with rootlets. TOPSOIL		
							Firm brown slightly sandy silty CLAY. RIVER TERRACE DEPOSITS		
							End of pit at 0.60 m		
Remarks: 1. Pit remained dry 2. Pit backfilled with arisings on completion.									
Stability:									

 Geo-Environmental				Trial Pit Log				Trialpit No HP02 Sheet 1 of 1	
Project Name: Land at Stakers Farm, Yapton				Project No. GE18621		Co-ords: 497590.09 - 103560.79 Level:		Date	
Location: Land at Stakers Farm, North End Road, Yapton, Arundel, West Sussex, BN18 0DU				Dimensions (m):		0.4		Scale 1:10	
Client: Dandara Ltd				Depth 0.60		0.4		Logged LD	
Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth	Type	Results						
	0.60	B		0.40			Grass over brown silty Clay with rootlets. TOPSOIL		
							Firm brown slightly sandy silty CLAY. RIVER TERRACE DEPOSITS		
							End of pit at 0.60 m		
1 2									
Remarks: 1. Pit remained dry 2. Pit backfilled with arisings on completion.									
Stability:									





Geo-Environmental

Trial Pit Log

Trialpit No

HP03

Sheet 1 of 1

Project Name: Land at Stakers Farm, Yapton

Project No.
GE18621

Co-ords: 497549.18 - 103586.03
Level:

Date

Location: Land at Stakers Farm, North End Road, Yapton, Arundel, West Sussex, BN18 0DU

Dimensions (m):

0.4

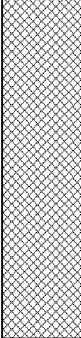
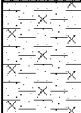
Depth
0.60

0.4

Scale
1:10

Logged
LD

Client: Dandara Ltd

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.60	B		0.45			Grass over brown dark grey gravelly sandy Clay with brick, ceramic and concrete fragments. MADE GROUND
				0.60			Firm brown slightly sandy silty CLAY. RIVER TERRACE DEPOSITS
							End of pit at 0.60 m

1

2

Remarks: 1. Pit remained dry 2. Pit backfilled with arisings on completion.

Stability:



 Geo-Environmental				Trial Pit Log				Trialpit No HP04 Sheet 1 of 1	
Project Name: Land at Stakers Farm, Yapton				Project No. GE18621		Co-ords: 497617.15 - 103609.17 Level:		Date	
Location: Land at Stakers Farm, North End Road, Yapton, Arundel, West Sussex, BN18 0DU				Dimensions (m):		0.4 		Scale 1:10	
Client: Dandara Ltd				Depth 0.60				Logged LD	

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
							Grass over brown silty Clay with rootlets. TOPSOIL
				0.40			Firm brown slightly sandy silty CLAY. RIVER TERRACE DEPOSITS
	0.60	B		0.60			End of pit at 0.60 m

Remarks: 1. Pit remained dry 2. Pit backfilled with arisings on completion.	
Stability:	



Trialpit No

HP05

Sheet 1 of 1

Project Name:	Land at Stakers Farm, Yapton
---------------	------------------------------

Project No.
GE18621

Co-ords: 497626.78 - 103680.59

Level:

Date _____

Location: Land at Stakers Farm, North End Road, Yapton, Arundel, West Sussex, BN18 0DU

Dimensions
(m):

0.4

Depth
0.60

04

Scale
1:10

Logged
LD

Client: Dandara Ltd

1

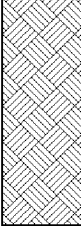
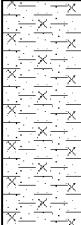
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Remarks: 1. Pit remained dry 2. Pit backfilled with arisings on completion.

Stability:



 Geo-Environmental				Trial Pit Log				Trialpit No HP06 Sheet 1 of 1	
Project Name: Land at Stakers Farm, Yapton				Project No. GE18621		Co-ords: 497674.45 - 103738.40 Level:		Date	
Location: Land at Stakers Farm, North End Road, Yapton, Arundel, West Sussex, BN18 0DU				Dimensions (m):		0.4 		Scale 1:10	
Client: Dandara Ltd				Depth 0.60				Logged LD	

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
							Grass over brown silty Clay with rootlets. TOPSOIL
				0.30			Firm brown slightly sandy silty CLAY with rare fine to medium sub-angular gravel. RIVER TERRACE DEPOSITS
	0.60	B		0.60			End of pit at 0.60 m

Remarks: 1. Pit remained dry 2. Pit backfilled with arisings on completion.		
Stability:		

 Geo-Environmental				Trial Pit Log				Trialpit No HP07 Sheet 1 of 1	
Project Name: Land at Stakers Farm, Yapton				Project No. GE18621		Co-ords: 497699.63 - 103786.37 Level:		Date	
Location: Land at Stakers Farm, North End Road, Yapton, Arundel, West Sussex, BN18 0DU				Dimensions (m):		0.4 		Scale 1:10	
Client: Dandara Ltd				Depth 0.60				Logged LD	

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.30			Grass over brown silty Clay with rootlets. TOPSOIL
	0.60	B		0.60			Firm brown slightly sandy silty CLAY. RIVER TERRACE DEPOSITS
							End of pit at 0.60 m

Remarks: 1. Pit remained dry 2. Pit backfilled with arisings on completion.



Stability:

 Geo-Environmental				Trial Pit Log				Trialpit No HP08 Sheet 1 of 1	
Project Name: Land at Stakers Farm, Yapton				Project No. GE18621		Co-ords: 497725.66 - 103788.74 Level:		Date	
Location: Land at Stakers Farm, North End Road, Yapton, Arundel, West Sussex, BN18 0DU				Dimensions (m):		0.4 		Scale 1:10	
Client: Dandara Ltd				Depth 0.60				Logged LD	

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.30			Grass over brown silty Clay with rootlets. TOPSOIL
	0.60	B		0.60			Brown slightly clayey silty SAND. RIVER TERRACE DEPOSITS
							End of pit at 0.60 m

Remarks: 1. Pit remained dry 2. Pit backfilled with arisings on completion.



Stability:

 Geo-Environmental				Trial Pit Log				Trialpit No HP09 Sheet 1 of 1	
Project Name: Land at Stakers Farm, Yapton				Project No. GE18621		Co-ords: 497771.40 - 103768.49 Level:		Date	
Location: Land at Stakers Farm, North End Road, Yapton, Arundel, West Sussex, BN18 0DU				Dimensions (m):		0.4 		Scale 1:10	
Client: Dandara Ltd				Depth 0.60				Logged LD	

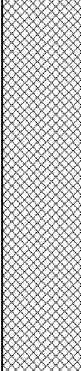
Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
							Grass over brown silty Clay with rootlets. TOPSOIL
				0.30			Firm brown slightly sandy silty CLAY. RIVER TERRACE DEPOSITS
	0.60	B		0.60			End of pit at 0.60 m

Remarks: 1. Pit remained dry 2. Pit backfilled with arisings on completion.

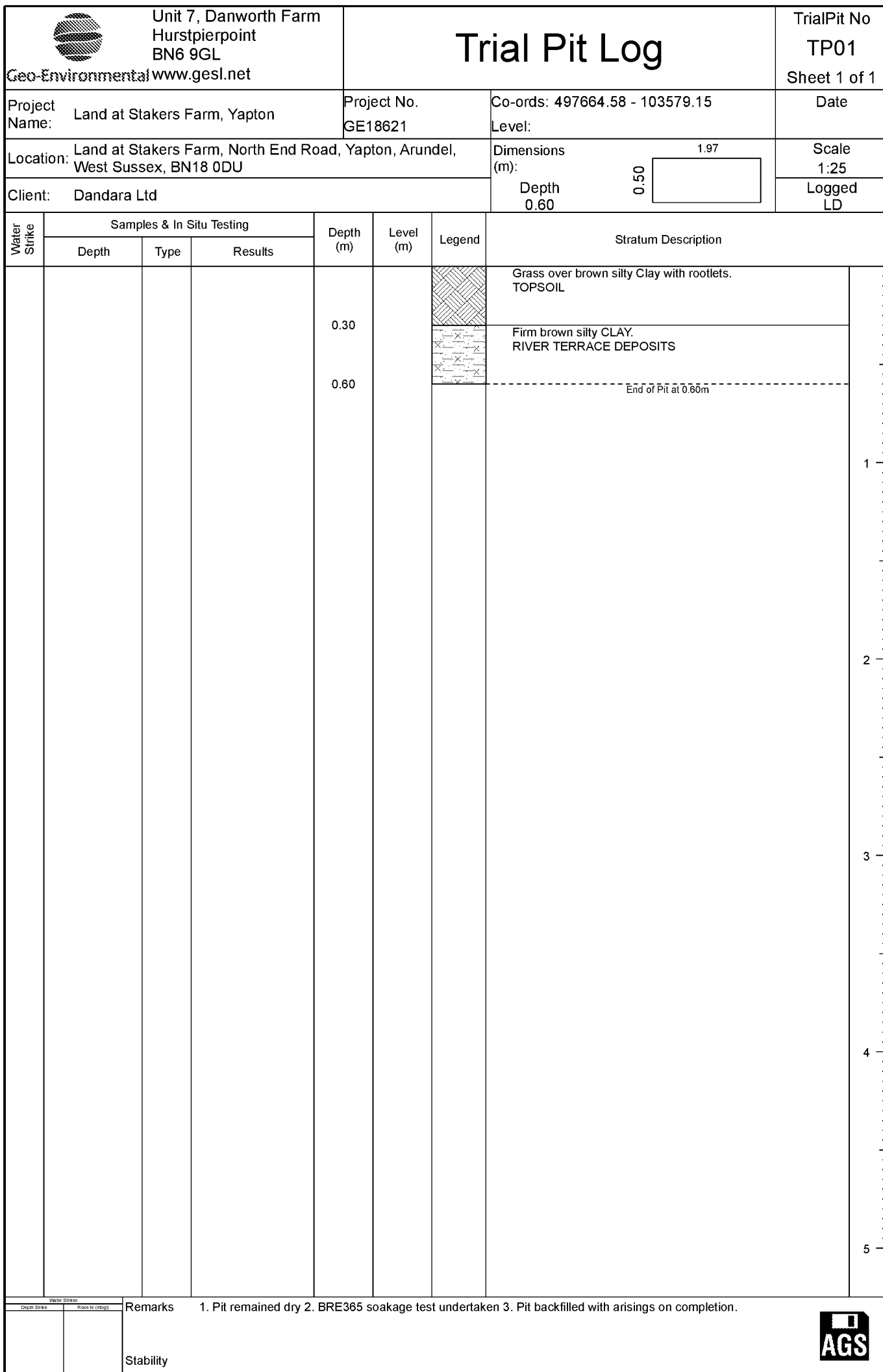
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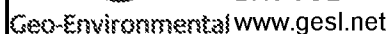


 Geo-Environmental				Trial Pit Log				Trialpit No HP10 Sheet 1 of 1	
Project Name: Land at Stakers Farm, Yapton				Project No. GE18621		Co-ords: 497807.57 - 103754.47 Level:		Date	
Location: Land at Stakers Farm, North End Road, Yapton, Arundel, West Sussex, BN18 0DU				Dimensions (m):		0.4 		Scale 1:10	
Client: Dandara Ltd				Depth 0.60		0.4 		Logged LD	

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
							Grass over brown silty Clay with rootlets and brick fragments. MADE GROUND
				0.50			Firm brown slightly sandy silty CLAY. RIVER TERRACE DEPOSITS
	0.60	B		0.60			End of pit at 0.60 m

Remarks: 1. Pit remained dry 2. Pit backfilled with arisings on completion.	
Stability:	





Trial Pit Log

TrialPit No
TP02
Sheet 1 of 1

Project No.
GE18621

Co-ords: 497572.62 - 103565.36
Level:

Date _____

Location: Land at Stakers Farm, North End Road, Yapton, Arundel,
West Sussex, BN18 0DU

Dimensions (m): 2.00

Scale
1:25

Client: Dandara Ltd

Depth
0.60

0.50

2.00

Logged
LD

1

2

3

4

5





Unit 7, Danworth Farm
Hurstpierpoint
BN6 9GL

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Trial Pit Log

Trial Pit No

TP03

Sheet 1 of 1

Project Name: Land at Stakers Farm, Yapton

Project No.
GE18621

Co-ords: 497604.16 - 103657.17
Level:

Date

Location: Land at Stakers Farm, North End Road, Yapton, Arundel,
West Sussex, BN18 0DU

Dimensions (m): 1.80

Scale
1:25

Client: Dandara Ltd

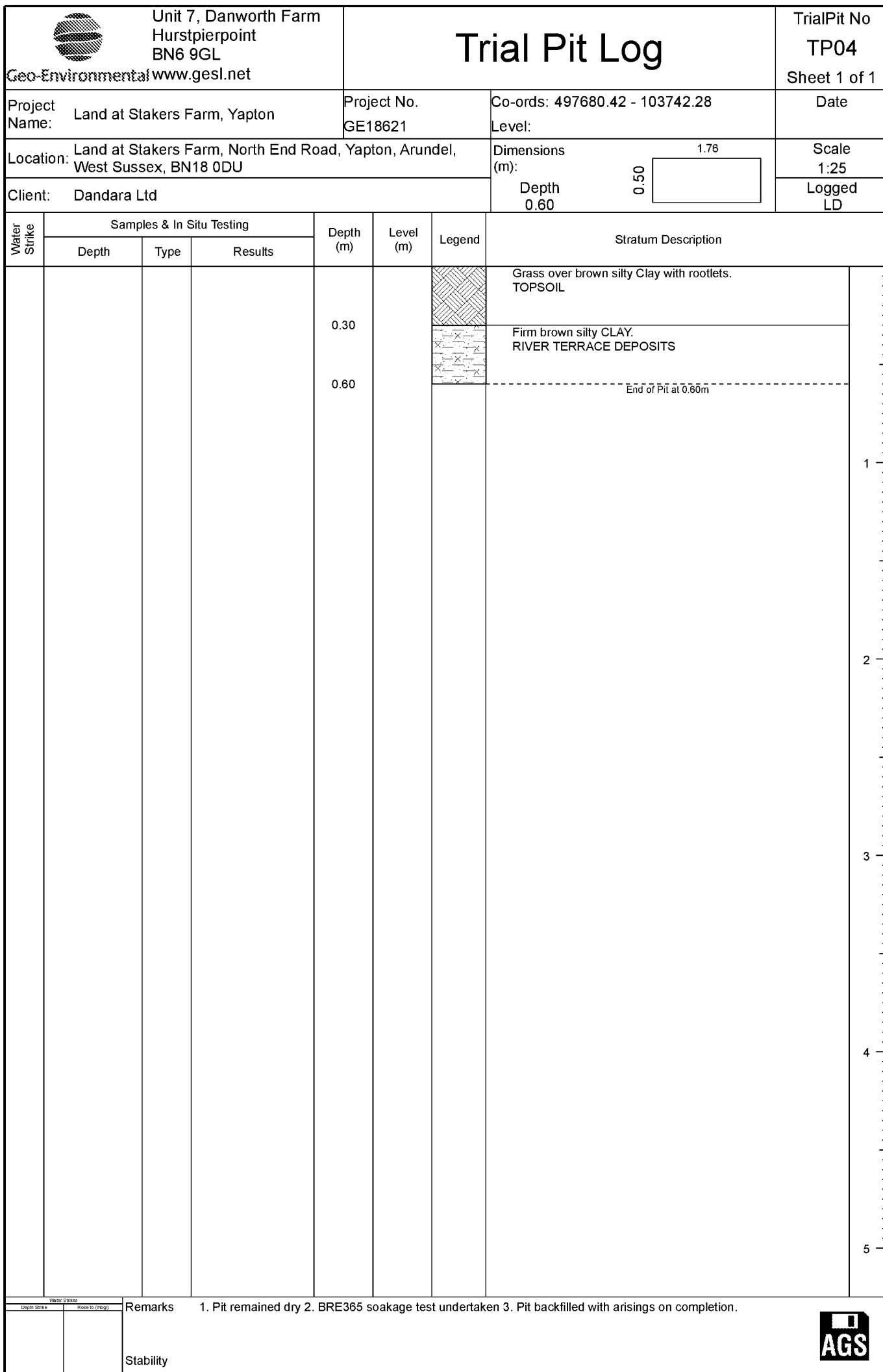
Depth
0.60

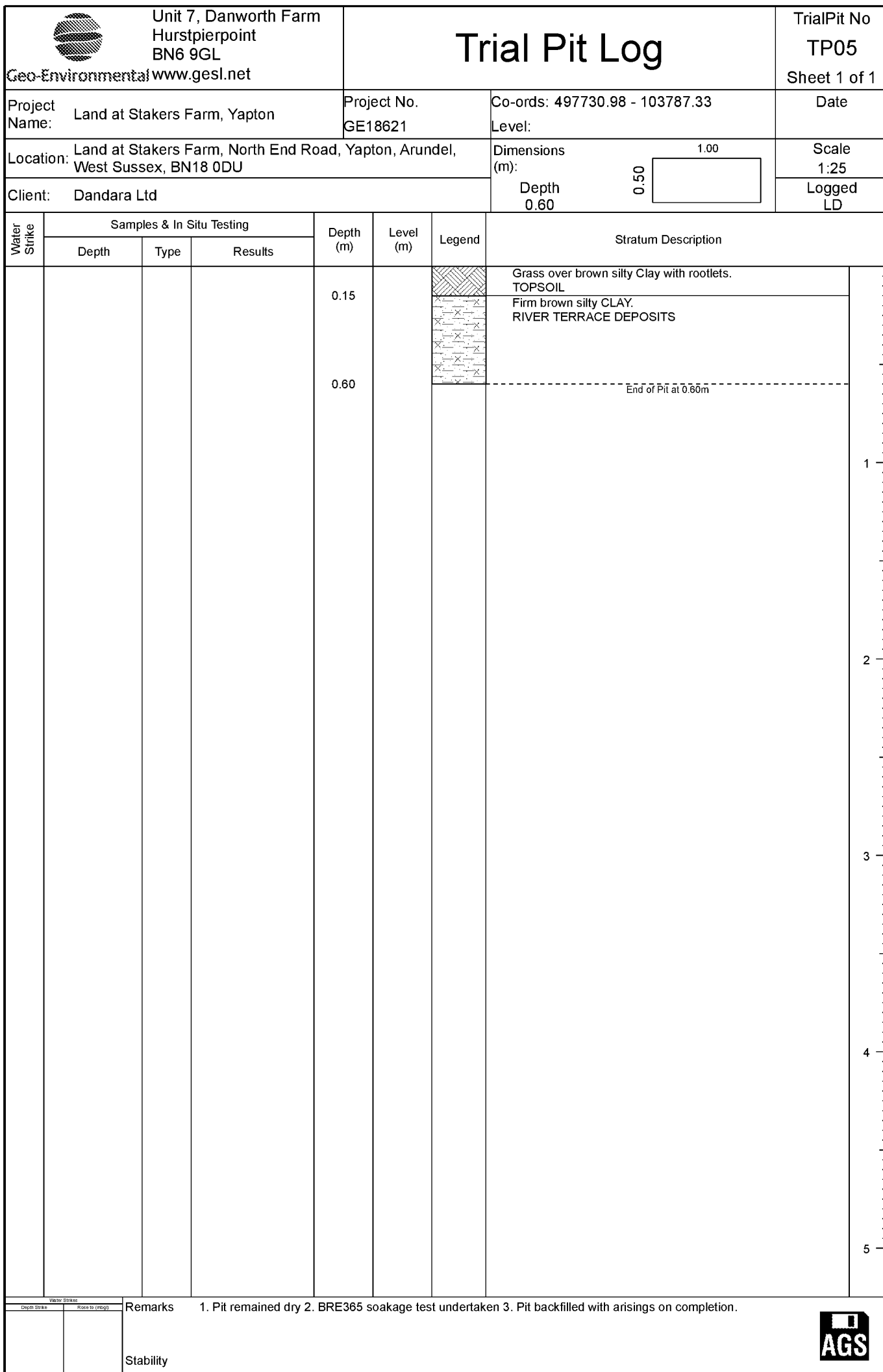
0.50

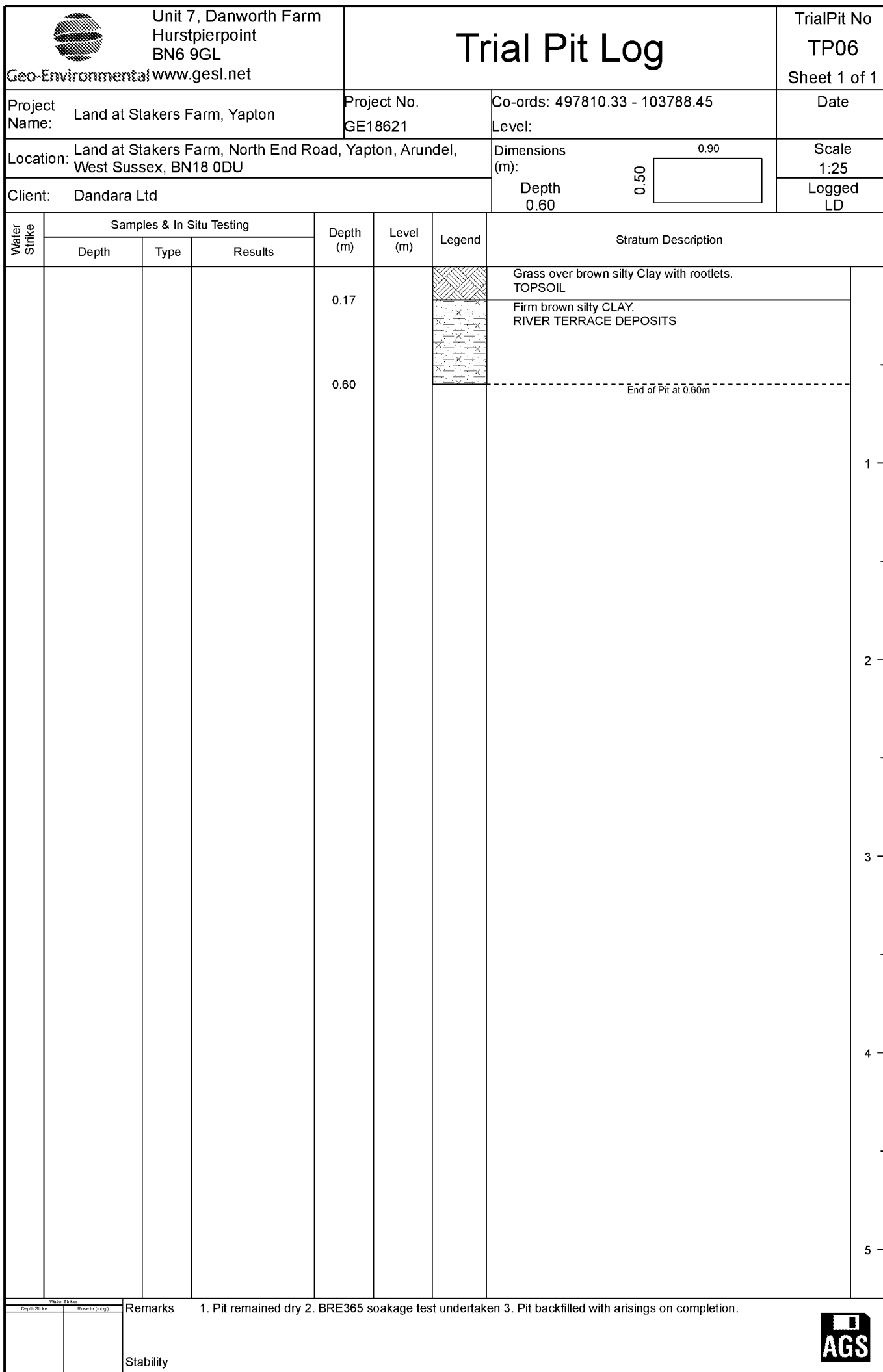
Logged
LD

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.50	PP	PP=1.5kg/cm2	0.30			Grass over brown silty Clay with rootlets. TOPSOIL	
				0.60			Firm brown silty CLAY. RIVER TERRACE DEPOSITS	
							End of Pit at 0.60m	
								1
								2
								3
								4
								5
Water Strike								
Depth Strike								
		Remarks 1. Pit remained dry 2. BRE365 soakage test undertaken 3. Pit backfilled with arisings on completion.						
		Stability						











Unit 7, Danworth Farm
Hurstpierpoint
BN6 9GL

Geo-Environmental/ www.gesl.net

Trial Pit Log

Trial Pit No

TP101

Sheet 1 of 1

Project Name: Land at Stakers Farm, Yapton

Project No.
GE18621

Co-ords: 497572.77 - 103557.07
Level:

Date

Location: Land at Stakers Farm, North End Road, Yapton, Arundel,
West Sussex, BN18 0DU

Dimensions (m): 1.50

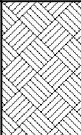
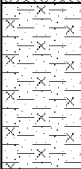
Depth
1.00

0.50

Scale
1:25

Logged
LD

Client: Dandara Ltd

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				0.45			Grass over brown silty Clay with rootlets. TOPSOIL	
				1.00			Firm brown silty CLAY with traces of rootlets and rare fine gravel. RIVER TERRACE DEPOSITS	
							End of Pit at 1.00m	1
								2
								3
								4
								5
Water Strike		Remarks		1. Pit remained dry 2. Plate Load Testing undertaken at 1.0m depth 3. Pit backfilled with arisings on completion.				
Depth Strike		Stability						





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Hurstpierpoint
BN6 9GL

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Trial Pit Log

Trial Pit No

TP102

Sheet 1 of 1

Project Name: Land at Stakers Farm, Yapton

Project No.
GE18621

Co-ords: 497573.49 - 103640.01
Level:

Date

Location: Land at Stakers Farm, North End Road, Yapton, Arundel,
West Sussex, BN18 0DU

Dimensions (m):

1.60

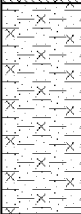
Depth
1.00

0.50

Scale
1:25

Logged
LD

Client: Dandara Ltd

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				0.30			Grass over brown silty Clay with rootlets. TOPSOIL	
				1.00			Firm brown silty CLAY. RIVER TERRACE DEPOSITS	
							End of Pit at 1.00m	1
								2
								3
								4
								5
Water Strike		Remarks		1. Pit remained dry 2. Plate Load Testing undertaken at 1.0m depth 3. Pit backfilled with arisings on completion.				
Depth Strike		Stability						





Unit 7, Danworth Farm
Hurstpierpoint
BN6 9GL

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Trial Pit Log

Trial Pit No

TP103

Sheet 1 of 1

Project Name: Land at Stakers Farm, Yapton

Project No.
GE18621

Co-ords: 497656.17 - 103664.93
Level:

Date

Location: Land at Stakers Farm, North End Road, Yapton, Arundel,
West Sussex, BN18 0DU

Dimensions (m):

1.50

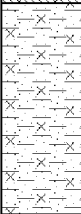
Depth
1.00

0.50

Scale
1:25

Logged
LD

Client: Dandara Ltd

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				0.30			Grass over brown silty Clay with rootlets. TOPSOIL	
				1.00			Firm brown silty CLAY. RIVER TERRACE DEPOSITS	
							End of Pit at 1.00m	1
								2
								3
								4
								5
Water Strike		Remarks		1. Pit remained dry 2. Plate Load Testing undertaken at 1.0m depth 3. Pit backfilled with arisings on completion.				
Depth Strike		Stability						





Unit 7, Danworth Farm
Hurstpierpoint
BN6 9GL

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Trial Pit Log

Trial Pit No

TP104

Sheet 1 of 1

Project Name: Land at Stakers Farm, Yapton

Project No.
GE18621

Co-ords: 497688.03 - 103780.12
Level:

Date

Location: Land at Stakers Farm, North End Road, Yapton, Arundel,
West Sussex, BN18 0DU

Dimensions (m): 1.73

Scale
1:25

Client: Dandara Ltd

Depth
1.00

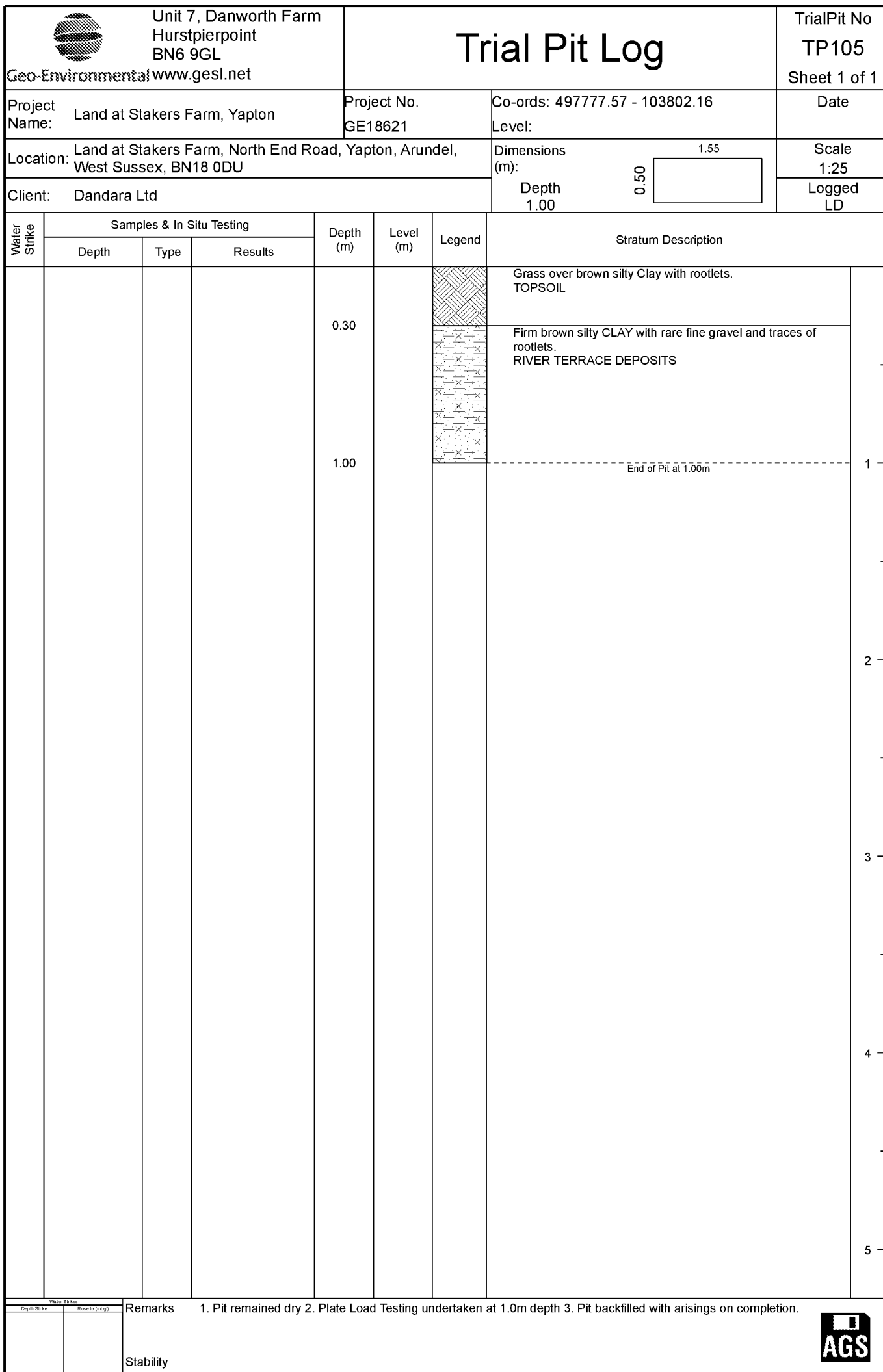
0.50

Logged
LD

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				0.30			Grass over brown silty Clay with rootlets. TOPSOIL	
				1.00			Firm brown silty CLAY with rare fine gravel. RIVER TERRACE DEPOSITS	
							End of Pit at 1.00m	1
								2
								3
								4
								5

Water Strike	Remarks	1. Pit remained dry 2. Plate Load Testing undertaken at 1.0m depth 3. Pit backfilled with arisings on completion.
Depth Strike	Stability	







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Hurstpierpoint
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Trial Pit Log

Trial Pit No

TP106

Sheet 1 of 1

Project Name: Land at Stakers Farm, Yapton

Project No.
GE18621

Co-ords: 497796.18 - 103757.27
Level:

Date

Location: Land at Stakers Farm, North End Road, Yapton, Arundel,
West Sussex, BN18 0DU

Dimensions (m): 1.50

Depth
2.00

0.50

Scale
1:25

Logged
LD

Client: Dandara Ltd

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.50	PP	PP=1kg/cm2	0.75			Grass over brown silty gravelly Clay with occasional bricks. MADE GROUND	
	1.00 - 1.50 1.00	B PP	PP=1.5kg/cm2				Firm brown slightly sandy silty CLAY with black stains (decayed/degraded roots?) and rare fine gravel. RIVER TERRACE DEPOSITS	1
	1.50 - 2.00 1.50	B PP	PP=1.5kg/cm2					
	2.00	PP	PP=1.2kg/cm2	2.00			End of Pit at 2.00m	2
								3
								4
								5
Water Strike								
Depth Strike								
		Remarks 1. Pit remained dry 2. Pit backfilled with arisings on completion.						
		Stability						





Unit 7, Danworth Farm
Hurstpierpoint
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Trial Pit Log

Trial Pit No

TP107

Sheet 1 of 1

Project Name: Land at Stakers Farm, Yapton

Project No.
GE18621

Co-ords: 497832.28 - 103746.64
Level:

Date

Location: Land at Stakers Farm, North End Road, Yapton, Arundel,
West Sussex, BN18 0DU

Dimensions (m): 2.00

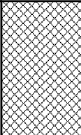
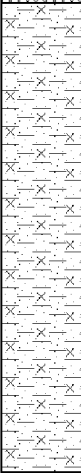
Scale
1:25

Client: Dandara Ltd

Depth
2.00

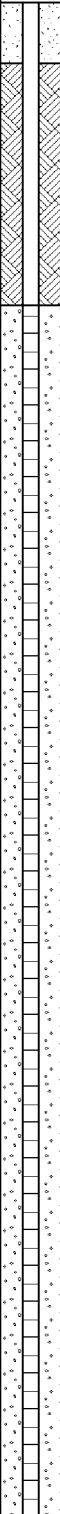
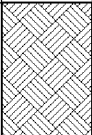
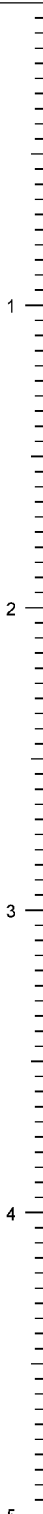
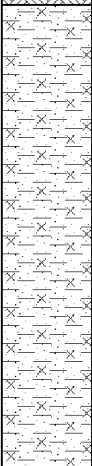
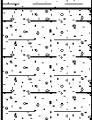
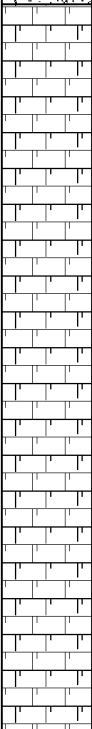
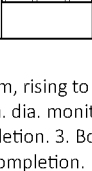
0.50

Logged
LD

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				0.45			Grass over dark brown silty gravelly Clay with whole bricks and roots up to 10mm in diameter. MADE GROUND	
	0.80 - 1.20	B					Stiff to very stiff orangish brown slightly sandy silty CLAY with rare fine gravel. RIVER TERRACE DEPOSITS	1
	1.00	PP	PP=3kg/cm2					
	1.50 - 2.00	B						
	1.50	PP	PP=4kg/cm2					
	2.00	PP	PP=4kg/cm2	2.00			End of Pit at 2.00m	2
								3
								4
								5
Water Strike								
Depth Strike								
		Remarks 1. Pit remained dry 2. Pit backfilled with arisings on completion.						
		Stability						

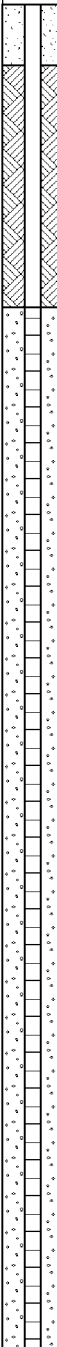
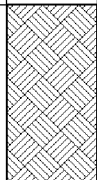
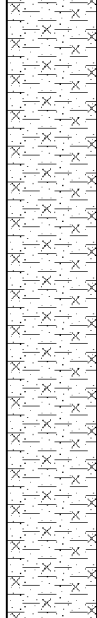
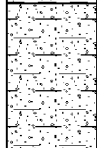
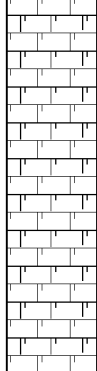


 Unit 7, Danworth Farm Hurstpierpoint BN6 9GL www.gesl.net		Borehole Log		Borehole No. WS01 Sheet 1 of 1	
Project Name: Land at Stakers Farm, Yapton		Project No. GE18621		Co-ords: 497536E - 103590N	
Location: Land at Stakers Farm, North End Road, Yapton, Arundel, West Sussex, BN18 0DU		Level:		Hole Type WLS	
Client: Dandara Ltd		Dates:		Scale 1:25 Logged By	

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.40	PP	2.8kg/cm2	0.45		Grass over dark brown silty Clay with roots and rootlets. TOPSOIL		
	0.60	D							Firm brown slightly gravelly silty sandy CLAY with rare fine to medium sub-angular gravel. Gravel is fine to medium and sub-angular. RIVER TERRACE DEPOSITS
	0.80	PP	1.2kg/cm2						
	1.00	D							
	1.20	PP	1.0kg/cm2						
	1.50	D							
	1.60	PP	0.8kg/cm2						
	2.00	D			2.00		Medium dense orangish brown slightly gravelly silty clayey SAND. Sand is fine to coarse. Gravel is sub-angular to sub-rounded fine to coarse chalk gravel or flint. RIVER TERRACE DEPOSITS		
	2.00	PP	1.0kg/cm2						
	2.50	D			2.40		Light brown clayey silty gravelly SAND with occasional fine to coarse chalk fragments. Gravel is fine to medium and sub-angular to angular. RIVER TERRACE DEPOSITS		
	2.50	PP	3.5kg/cm2						
	3.00	D			2.60		Recovered as firm off-white structureless CHALK with scattered intact white chalk gravel and flints. SEAFORD CHALK FORMATION		
	3.00	PP	3.5kg/cm2						
	3.50	D							
	3.50	PP	3.0kg/cm2						
4.00	D			4.00					
4.00	PP	1.4kg/cm2							
4.50	D					No Recovery.			
					5.00		End of Borehole at 5.00m		

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks	
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to		
		2.40	2.00			1. Water strike at 2.4m, rising to 2.0m after 20minutes, standing at 2.0m on completion. 2. 50mm. dia. monitoring well flush fitting cover installed to 5.0m depth on completion. 3. Borehole backfilled with gravel backfill-arising-cement on completion.	

 Unit 7, Danworth Farm Hurstpierpoint BN6 9GL www.gesl.net		Borehole Log		Borehole No. WS02 Sheet 1 of 1	
Project Name: Land at Stakers Farm, Yapton		Project No. GE18621		Co-ords: 497759E - 103778N	
Location: Land at Stakers Farm, North End Road, Yapton, Arundel, West Sussex, BN18 0DU		Level:		Hole Type WLS	
Client: Dandara Ltd		Dates:		Scale 1:25 Logged By	

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
							 Grass over dark brown silty clay with rootlets. TOPSOIL		
	0.50 0.50	D PP	1.5kg/cm2	0.60			 Stiff becoming firm orangish brown slightly sandy silty CLAY with numerous dark grey flecks and rare fine gravel. Sand is fine to medium. RIVER TERRACE DEPOSITS	1	
	1.00 1.00	D PP	3.0kg/cm2						
	1.50 1.50	D PP	2.0kg/cm2						
	2.00 2.00	D PP	2.5kg/cm2						
		2.50 2.50	D PP	1.5kg/cm2	2.70			 Medium dense orange brown slightly gravelly silty clayey SAND. Sand is fine to coarse. Gravel is sub-angular to sub-rounded fine to coarse chalk gravel or flint. RIVER TERRACE DEPOSITS	2
		3.00 3.00	D PP	3.0kg/cm2	3.20				
		3.50 3.50	D PP	4.0kg/cm2					
		4.00 4.00	D PP	4.0kg/cm2				 Recovered as firm off-white structureless CHALK with scattered intact white chalk gravel and flints. SEAFORD CHALK FORMATION	3
		4.50 4.50	D PP	4.0kg/cm2	4.50				
							End of Borehole at 4.50m	4	
								5	

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks	
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to		
						1. Borehole remained dry. 2. Refused at 4.5m depth 3. 50mm. dia. monitoring well flush fitting cover installed to 4.5m depth on completion. 4. Borehole backfilled with gravel backfill-arising-cement on completion.	

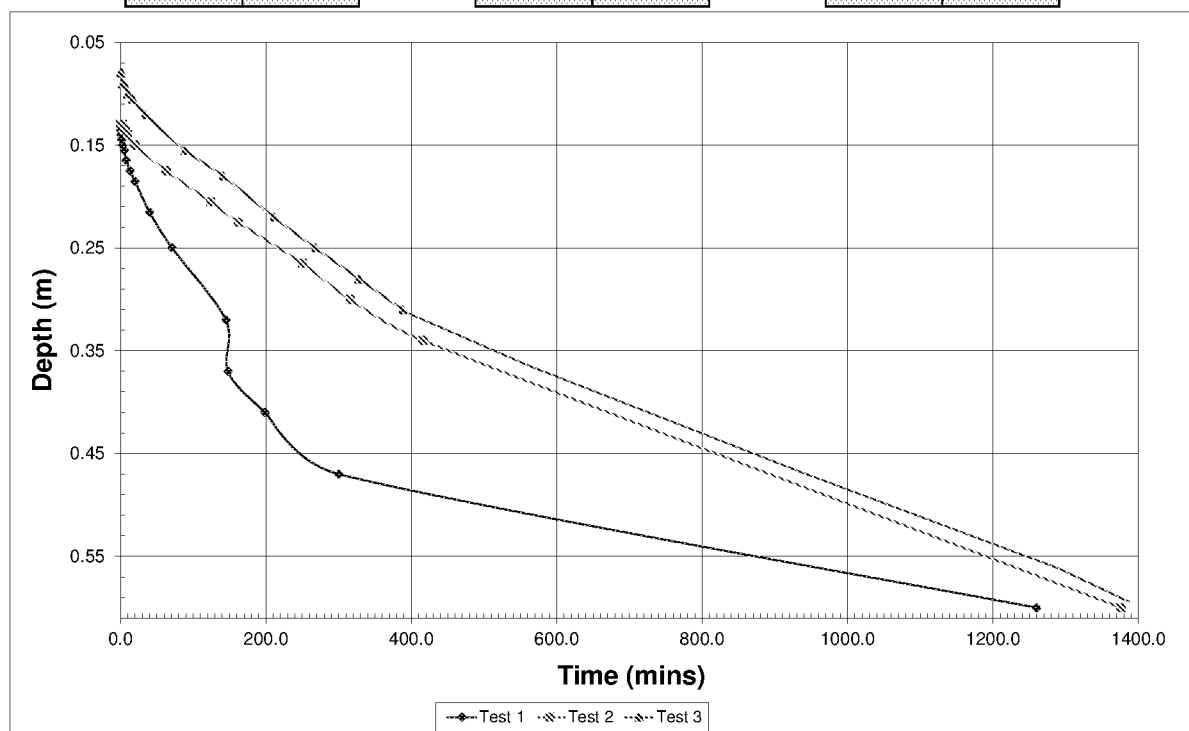
 Geo-Environmental	Soakaway Test Results (after BRE Digest 365)	Geo-Environmental Services Limited Unit 7 Danworth Farm, Cuckfield Road, Hurstpierpoint, West Sussex BN6 9GL
Project Name :	Land at Stakers Farm, Yapton	Job No. : GE18621
Client :	Dandara Ltd	Date : 06/11/2019

Pit reference	TP01
Pit depth (m)	0.60
Pit width (m)	0.55
Pit length (m)	1.50
Depth to standing water (m)	

Test 1	
Time (min)	Depth (m)
0.0	0.14
1.0	0.14
2.0	0.15
3.0	0.15
5.0	0.16
8.0	0.17
13.0	0.18
20.0	0.19
40.0	0.22
71.0	0.25
145.0	0.32
148.0	0.37
199.0	0.41
300.0	0.47
1260.0	0.60

Test 2	
Time (min)	Depth (m)
0.0	0.13
1.0	0.13
2.0	0.13
3.0	0.13
5.0	0.14
7.0	0.14
10.0	0.14
20.0	0.15
63.0	0.18
124.0	0.21
162.0	0.23
250.0	0.27
316.0	0.30
416.0	0.34
1376.0	0.60

Test 3	
Time (min)	Depth (m)
0.0	0.08
1.0	0.08
2.0	0.08
3.0	0.09
5.0	0.09
10.0	0.10
17.0	0.11
34.0	0.12
89.0	0.16
141.0	0.18
211.0	0.22
268.0	0.25
328.0	0.28
388.0	0.31



Max. depth (m)	0.60	0.60	0.60
Effective depth (m)	0.47	0.47	0.52
75% effective depth (m)	0.25	0.25	0.21
50% effective depth (m)	0.37	0.37	0.34
25% effective depth (m)	0.48	0.48	0.47
t75 (min)	72.00	220.00	190.00
t50 (min)	150.00	510.00	470.00
t25 (min)	370.00	934.00	931.00
Vp 75-25	0.19	0.19	0.21
ap 50	1.77825	1.7885	1.891
tp 75-25	298.00	714.00	741.00

Soil infiltration rate (m/s)	6.0E-06	2.5E-06	2.6E-06
Soil infiltration rate (mm/hr)	2.17E+01	9.11E+00	9.18E+00



Soakaway Test Results (after BRE Digest 365)

Geo-Environmental Services Limited
Unit 7 Danworth Farm, Cuckfield Road,
Hurstpierpoint, West Sussex BN6 9GL

Project Name : Land at Stakers Farm, Yapton
Client : Dandara Ltd

Job No. : GE18621
Date : 06/11/2019

Pit reference	TP02
Pit depth (m)	0.80
Pit width (m)	0.55
Pit length (m)	1.55
Depth to standing water (m)	

Test 1

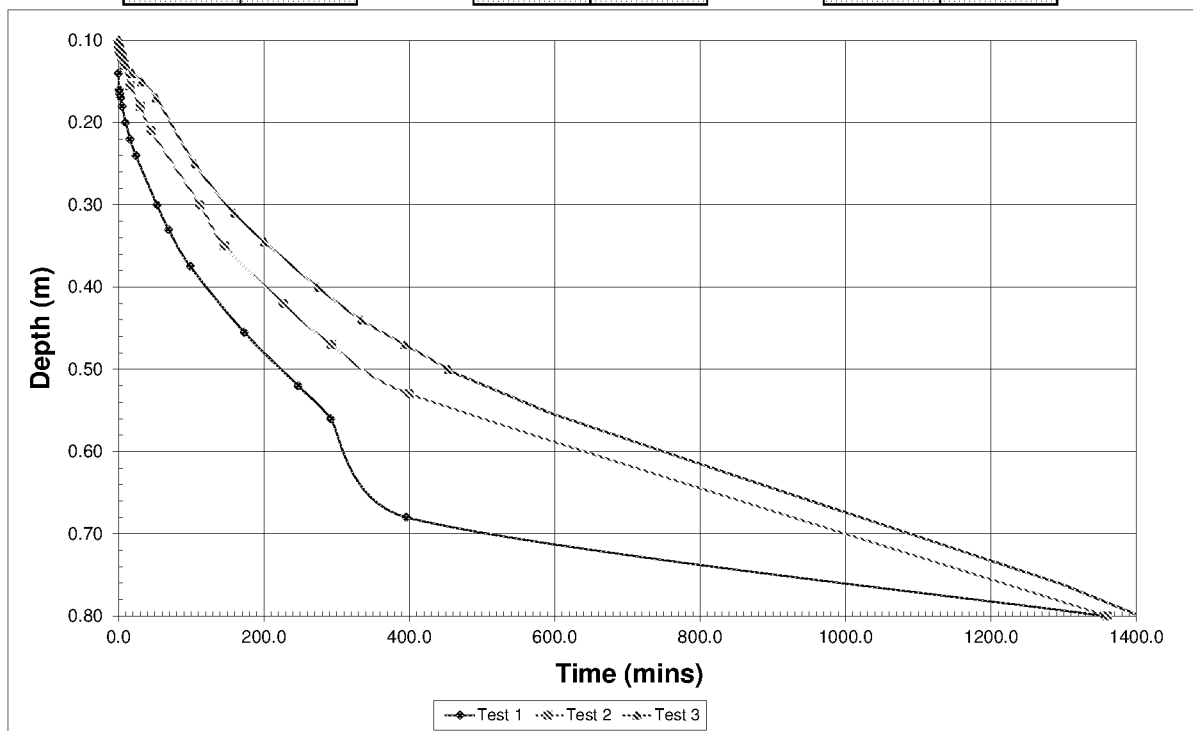
Time (min)	Depth (m)
0.0	0.14
1.0	0.16
2.0	0.17
3.0	0.17
5.0	0.18
10.0	0.20
16.0	0.22
24.0	0.24
53.0	0.30
69.0	0.33
99.0	0.38
173.0	0.46
247.0	0.52
292.0	0.56
396.0	0.68
1356.0	0.80

Test 2

Time (min)	Depth (m)
0.0	0.11
1.0	0.11
2.0	0.11
3.0	0.12
5.0	0.12
8.0	0.13
16.0	0.16
30.0	0.18
45.0	0.21
112.0	0.30
146.0	0.35
227.0	0.42
293.0	0.47
400.0	0.53
1360.0	0.80

Test 3

Time (min)	Depth (m)
0.0	0.10
1.0	0.10
2.0	0.11
3.0	0.11
6.0	0.12
10.0	0.13
19.0	0.14
32.0	0.15
52.0	0.17
105.0	0.25
159.0	0.31
201.0	0.35
274.0	0.40
334.0	0.44
394.0	0.47
454.0	0.50



Max. depth (m)	0.80	0.80	0.80
Effective depth (m)	0.66	0.70	0.70
75% effective depth (m)	0.31	0.28	0.28
50% effective depth (m)	0.47	0.45	0.45
25% effective depth (m)	0.64	0.63	0.63
t75 (min)	40.00	92.00	127.00
t50 (min)	180.00	264.00	355.00
t25 (min)	320.00	730.00	840.00
Vp 75-25	0.28	0.30	0.30
ap 50	2.2385	2.312	2.3225
tp 75-25	280.00	638.00	713.00

Soil infiltration rate (m/s)	7.5E-06	3.3E-06	3.0E-06
Soil infiltration rate (mm/hr)	2.69E+01	1.21E+01	1.08E+01



Soakaway Test Results (after BRE Digest 365)

Geo-Environmental Services Limited
Unit 7 Danworth Farm, Cuckfield Road,
Hurstpierpoint, West Sussex BN6 9GL

Project Name : Land at Stakers Farm, Yapton
Client : Dandara Ltd

Job No. : GE18621
Date : 06/11/2019

Pit reference	TP03
Pit depth (m)	0.65
Pit width (m)	0.55
Pit length (m)	1.50
Depth to standing water (m)	

Test 1

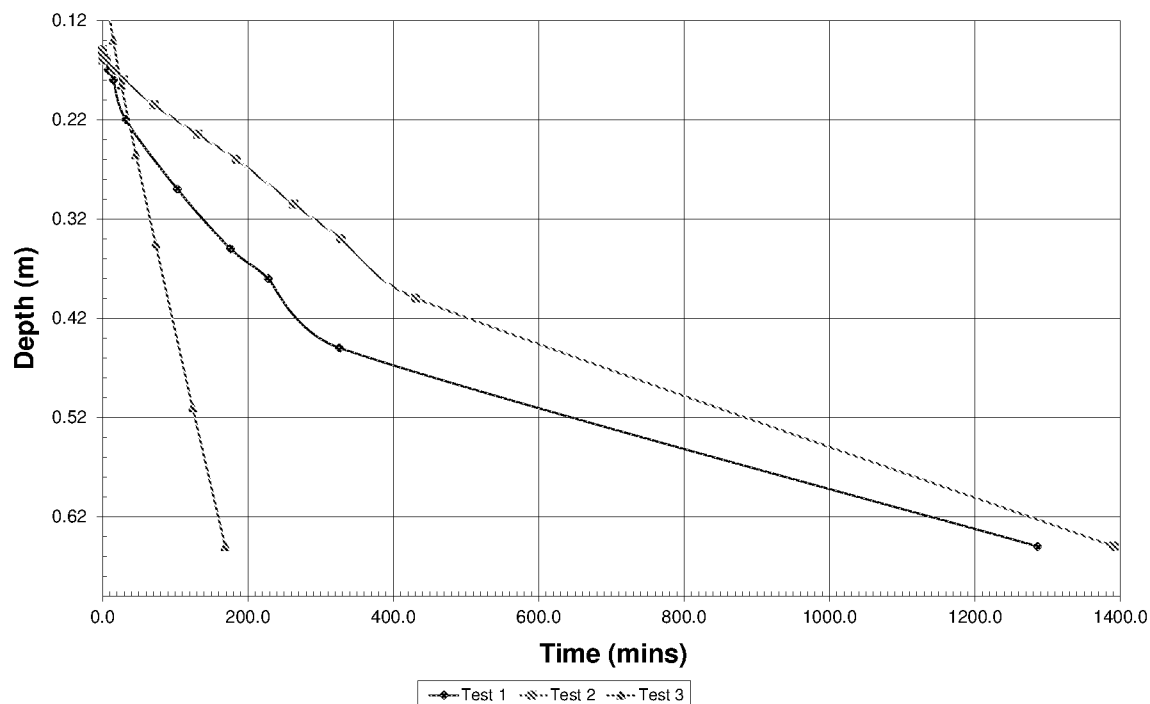
Time (min)	Depth (m)
0.0	0.15
1.0	0.16
2.0	0.16
5.0	0.16
8.0	0.17
15.0	0.18
32.0	0.22
103.0	0.29
176.0	0.35
228.0	0.38
326.0	0.45
1286.0	0.65

Test 2

Time (min)	Depth (m)
0.0	0.15
1.0	0.16
2.0	0.16
3.0	0.16
5.0	0.16
15.0	0.17
29.0	0.18
71.0	0.21
131.0	0.24
184.0	0.26
263.0	0.31
328.0	0.34
431.0	0.40
1391.0	0.65

Test 3

Time (min)	Depth (m)
0.0	0.07
1.0	0.09
2.0	0.09
3.0	0.09
4.0	0.10
8.0	0.11
15.0	0.14
26.0	0.19
46.0	0.26
73.0	0.35
124.0	0.51
169.0	0.65



Max. depth (m)	0.65	0.65	0.65
Effective depth (m)	0.50	0.50	0.58
75% effective depth (m)	0.28	0.28	0.22
50% effective depth (m)	0.40	0.40	0.36
25% effective depth (m)	0.53	0.53	0.51
t75 (min)	82.00	210.00	50.00
t50 (min)	247.00	430.00	92.00
t25 (min)	670.00	900.00	130.00
Vp 75-25	0.21	0.21	0.24
ap 50	1.85	1.85	2.014
tp 75-25	588.00	690.00	80.00

Soil infiltration rate (m/s)	3.2E-06	2.7E-06	2.5E-05
Soil infiltration rate (mm/hr)	1.14E+01	9.69E+00	8.91E+01



Soakaway Test Results (after BRE Digest 365)

Geo-Environmental Services Limited
Unit 7 Danworth Farm, Cuckfield Road,
Hurstpierpoint, West Sussex BN6 9GL

Project Name : Land at Stakers Farm, Yapton
Client : Dandara Ltd

Job No. : GE18621
Date : 06/11/2019

Pit reference	TP04
Pit depth (m)	0.65
Pit width (m)	0.55
Pit length (m)	1.30
Depth to standing water (m)	

Test 1

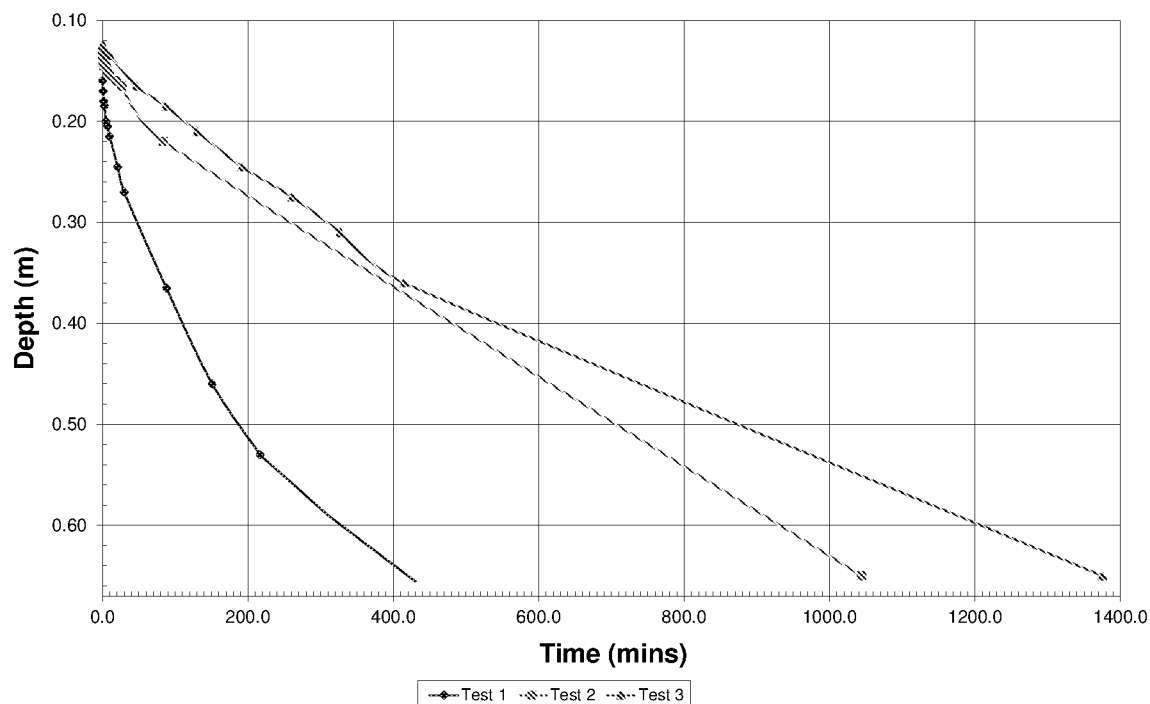
Time (min)	Depth (m)
0.0	0.16
1.0	0.17
2.0	0.18
3.0	0.19
5.0	0.20
7.0	0.21
10.0	0.22
21.0	0.25
30.0	0.27
88.0	0.37
151.0	0.46
217.0	0.53

Test 2

Time (min)	Depth (m)
0.0	0.14
1.0	0.14
2.0	0.15
3.0	0.15
5.0	0.15
7.0	0.15
10.0	0.16
19.0	0.16
27.0	0.17
84.0	0.22
1044.0	0.65

Test 3

Time (min)	Depth (m)
0.0	0.13
1.0	0.13
2.0	0.13
3.0	0.13
5.0	0.14
10.0	0.14
47.0	0.17
87.0	0.19
130.0	0.21
192.0	0.25
261.0	0.28
327.0	0.31
415.0	0.36
1375.0	0.65



Max. depth (m)	0.65	0.65	0.65
Effective depth (m)	0.49	0.52	0.53
75% effective depth (m)	0.28	0.26	0.26
50% effective depth (m)	0.41	0.39	0.39
25% effective depth (m)	0.53	0.52	0.52
t75 (min)	35.00	174.00	218.00
t50 (min)	111.00	460.00	500.00
t25 (min)	212.00	750.00	934.00
Vp 75-25	0.18	0.18	0.19
ap 50	1.6215	1.66775	1.68625
tp 75-25	177.00	576.00	716.00

Soil infiltration rate (m/s)	1.0E-05	3.2E-06	2.6E-06
Soil infiltration rate (mm/hr)	3.66E+01	1.15E+01	9.33E+00



Soakaway Test Results (after BRE Digest 365)

Geo-Environmental Services Limited
Unit 7 Danworth Farm, Cuckfield Road,
Hurstpierpoint, West Sussex BN6 9GL

Project Name : Land at Stakers Farm, Yapton
Client : Dandara Ltd

Job No.: GE18021
Date : 06/11/2019

Pit reference	TP05
Pit depth (m)	0.65
Pit width (m)	0.55
Pit length (m)	1.00
Depth to standing water (m)	

Test 1

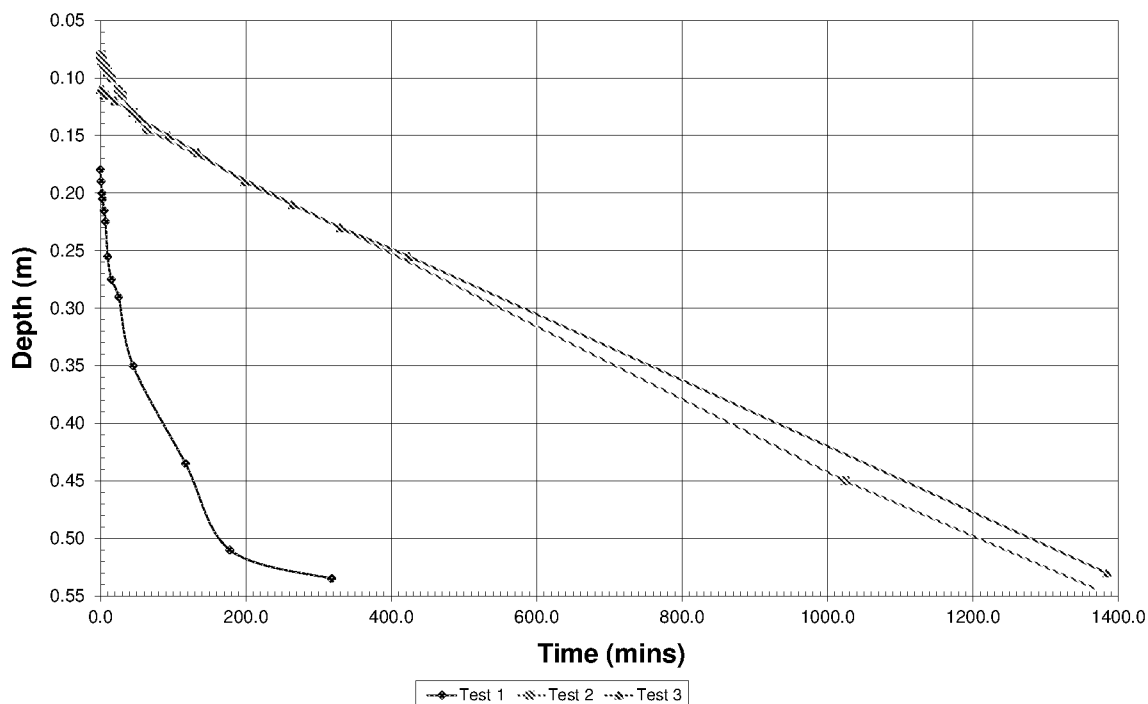
Time (min)	Depth (m)
0.0	0.18
1.0	0.19
2.0	0.20
3.0	0.21
5.0	0.22
7.0	0.23
10.0	0.26
15.0	0.28
25.0	0.29
45.0	0.35
117.0	0.44
178.0	0.51
318.0	0.54

Test 2

Time (min)	Depth (m)
0.0	0.08
1.0	0.08
2.0	0.09
3.0	0.09
5.0	0.09
7.0	0.09
10.0	0.10
15.0	0.10
25.0	0.11
30.0	0.12
45.0	0.13
64.0	0.15
1024.0	0.45

Test 3

Time (min)	Depth (m)
0.0	0.11
1.0	0.11
2.0	0.11
3.0	0.11
5.0	0.12
10.0	0.12
20.0	0.12
54.0	0.14
94.0	0.15
134.0	0.17
198.0	0.19
264.0	0.21
330.0	0.23
424.0	0.26
1384.0	0.53



Max. depth (m)	0.65	0.65	0.65
Effective depth (m)	0.47	0.57	0.54
75% effective depth (m)	0.30	0.22	0.25
50% effective depth (m)	0.42	0.37	0.38
25% effective depth (m)	0.53	0.51	0.52
t75 (min)	30.00	214.00	286.00
t50 (min)	119.00	589.00	655.00
t25 (min)	521.00	959.00	1028.00
Vp 75-25	0.13	0.16	0.15
ap 50	1.2785	1.4335	1.387
tp 75-25	491.00	745.00	742.00

Soil infiltration rate (m/s)	3.4E-06	2.4E-06	2.4E-06
Soil infiltration rate (mm/hr)	1.24E+01	8.81E+00	8.66E+00



Soakaway Test Results (after BRE Digest 365)

Geo-Environmental Services Limited
Unit 7 Danworth Farm, Cuckfield Road,
Hurstpierpoint, West Sussex BN6 9GL

Project Name : Land at Stakers Farm, Yapton
Client : Dandara Ltd

Job No. : GE18621
Date : 06/11/2019

Pit reference	TP05
Pit depth (m)	0.65
Pit width (m)	0.55
Pit length (m)	0.80
Depth to standing water (m)	

Test 1

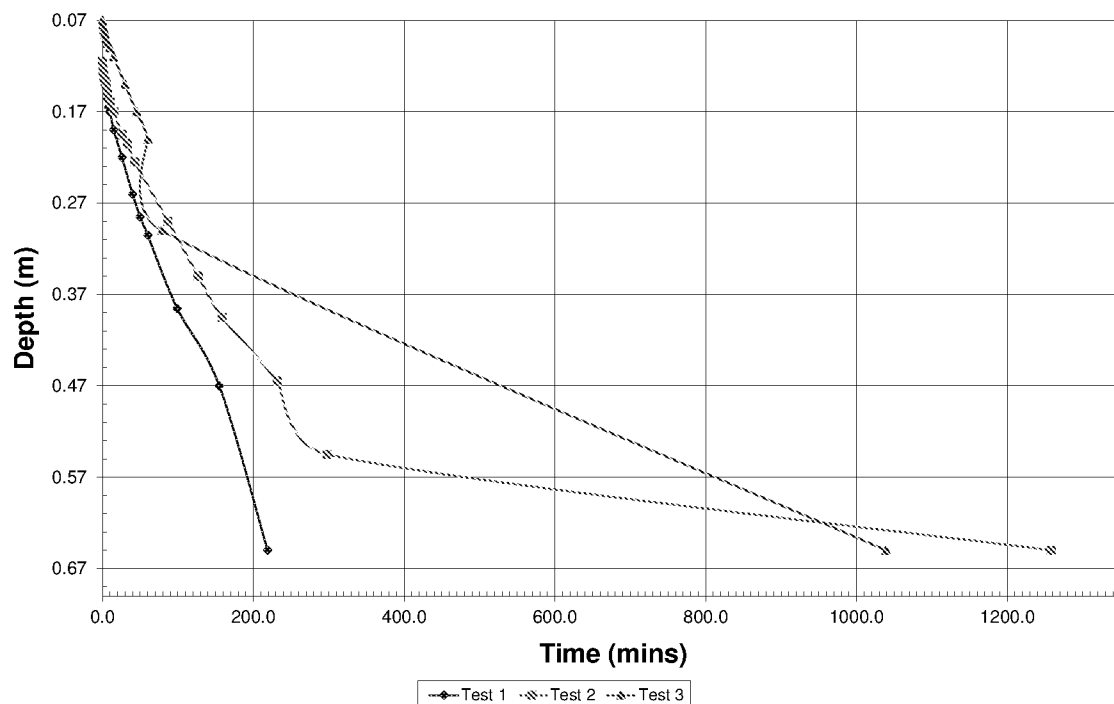
Time (min)	Depth (m)
0.0	0.12
1.0	0.13
2.0	0.14
3.0	0.14
6.0	0.16
8.0	0.17
10.0	0.17
15.0	0.19
26.0	0.22
40.0	0.26
50.0	0.29
60.0	0.31
99.0	0.39
155.0	0.47
219.0	0.65

Test 2

Time (min)	Depth (m)
0.0	0.12
1.0	0.13
2.0	0.13
3.0	0.14
5.0	0.14
7.0	0.15
10.0	0.16
15.0	0.17
26.0	0.20
33.0	0.21
43.0	0.23
87.0	0.29
127.0	0.35
159.0	0.40
232.0	0.47
298.0	0.55
1258.0	0.65

Test 3

Time (min)	Depth (m)
0.0	0.07
1.0	0.08
2.0	0.08
3.0	0.09
5.0	0.09
7.0	0.10
10.0	0.10
15.0	0.11
30.0	0.14
45.0	0.17
60.0	0.20
79.0	0.30
1039.0	0.65



Max. depth (m)	0.65	0.65	0.65
Effective depth (m)	0.54	0.54	0.58
75% effective depth (m)	0.25	0.25	0.22
50% effective depth (m)	0.38	0.38	0.36
25% effective depth (m)	0.52	0.52	0.51
t75 (min)	40.00	50.00	55.00
t50 (min)	99.00	150.00	220.00
t25 (min)	172.00	250.00	620.00
Vp 75-25	0.12	0.12	0.13
ap 50	1.16225	1.16225	1.223
tp 75-25	132.00	200.00	565.00

Soil infiltration rate (m/s)	1.3E-05	8.4E-06	3.1E-06
Soil infiltration rate (mm/hr)	4.60E+01	3.04E+01	1.11E+01

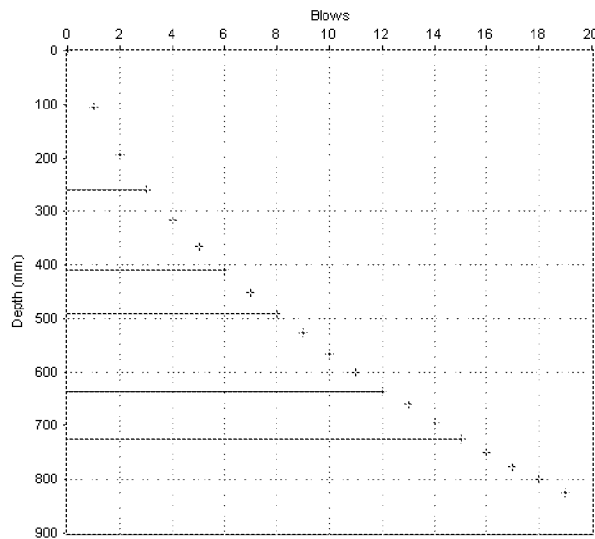
DCP Layer Strength Analysis Report

Project Name: DCP01 to DCP20

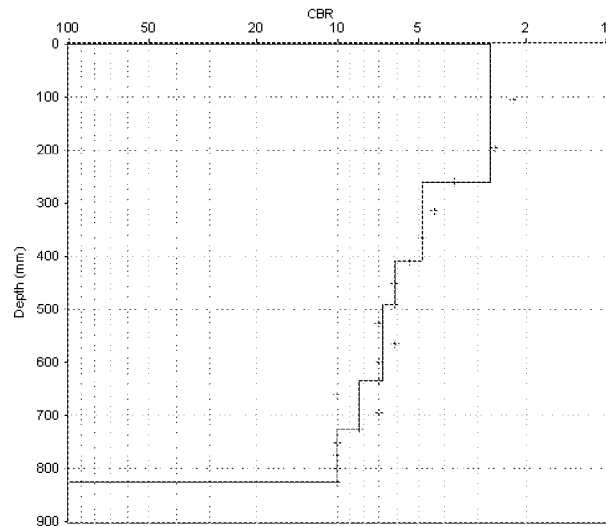
Chainage (km): 0.000
 Direction:
 Location/Offset: Carriageway
 Cone Angle: 60 degrees
 Zero Error (mm): 95
 Test Date: 06/11/2019

Surface Type: Unpaved
 Thickness (mm): 0
 Base Type:
 Thickness (mm):
 Surface Moisture: Moderate
 Moisture adjustment factor: Not adjusted

Layer Boundaries: Chainage 0.000



Layer Boundaries Chart



CBR Chart

Layer Properties

Nb.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	86.67	3	260	260
2	50.00	5	150	410
3	40.00	6	80	490
4	36.25	7	145	635
5	30.00	8	90	725
6	25.00	10	100	825

CBR Relationship:

TFL equation: $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

Report produced by

Penetration Data Report

Project Name: DCP01 to DCP20

Chainage (km): 0.000
 Direction:
 Location/Offset: Carriageway
 Cone Angle: 60 degrees
 Zero Error (mm): 95
 Test Date: 06/11/2019

Surface Type: Unpaved
 Thickness (mm): 0
 Base Type:
 Thickness (mm):
 Surface Moisture: Moderate
 Moisture adjustment factor: Not adjusted

No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)	No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)
1	0	0	95	0.00					
2	1	1	200	105.00					
3	1	2	290	90.00					
4	1	3	355	65.00					
5	1	4	410	55.00					
6	1	5	460	50.00					
7	1	6	505	45.00					
8	1	7	545	40.00					
9	1	8	585	40.00					
10	1	9	620	35.00					
11	1	10	660	40.00					
12	1	11	695	35.00					
13	1	12	730	35.00					
14	1	13	755	25.00					
15	1	14	790	35.00					
16	1	15	820	30.00					
17	1	16	845	25.00					
18	1	17	870	25.00					
19	1	18	895	25.00					
20	1	19	920	25.00					

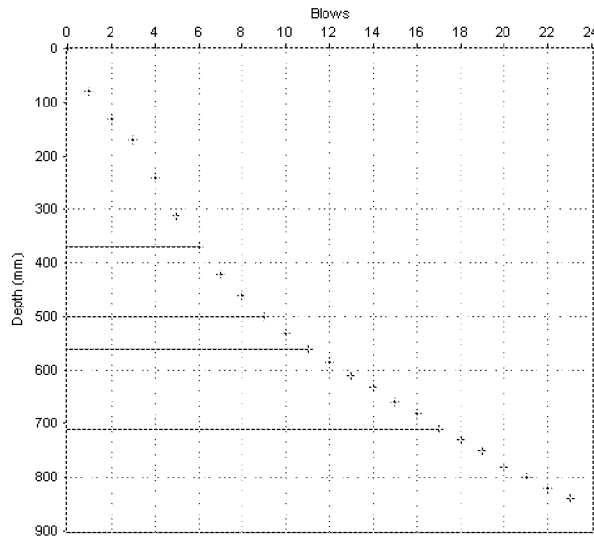
DCP Layer Strength Analysis Report

Project Name: DCP01 to DCP20

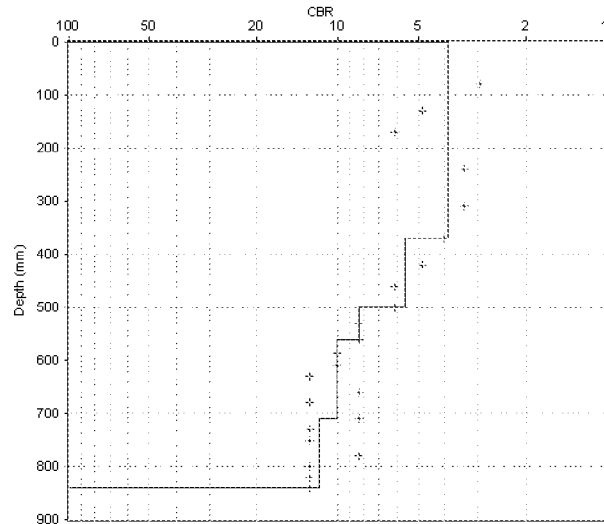
Chainage (km): 30.000
 Direction:
 Location/Offset: Carriageway
 Cone Angle: 60 degrees
 Zero Error (mm): 70
 Test Date: 06/11/2019

Surface Type: Unpaved
 Thickness (mm): 0
 Base Type:
 Thickness (mm):
 Surface Moisture: Moderate
 Moisture adjustment factor: Not adjusted

Layer Boundaries: Chainage 30.000



Layer Boundaries Chart



CBR Chart

Layer Properties

Nb.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	61.67	4	370	370
2	43.33	6	130	500
3	30.00	8	60	560
4	25.00	10	150	710
5	21.67	12	130	840

CBR Relationship:

TFL equation: $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

Report produced by

Penetration Data Report

Project Name: DCP01 to DCP20

Chainage (km): 30.000
 Direction:
 Location/Offset: Carriageway
 Cone Angle: 60 degrees
 Zero Error (mm): 70
 Test Date: 06/11/2019

Surface Type: Unpaved
 Thickness (mm): 0
 Base Type:
 Thickness (mm):
 Surface Moisture: Moderate
 Moisture adjustment factor: Not adjusted

No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)	No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)
1	0	0	70	0.00					
2	1	1	150	80.00					
3	1	2	200	50.00					
4	1	3	240	40.00					
5	1	4	310	70.00					
6	1	5	380	70.00					
7	1	6	440	60.00					
8	1	7	490	50.00					
9	1	8	530	40.00					
10	1	9	570	40.00					
11	1	10	600	30.00					
12	1	11	630	30.00					
13	1	12	655	25.00					
14	1	13	680	25.00					
15	1	14	700	20.00					
16	1	15	730	30.00					
17	1	16	750	20.00					
18	1	17	780	30.00					
19	1	18	800	20.00					
20	1	19	820	20.00					
21	1	20	850	30.00					
22	1	21	870	20.00					
23	1	22	890	20.00					
24	1	23	910	20.00					

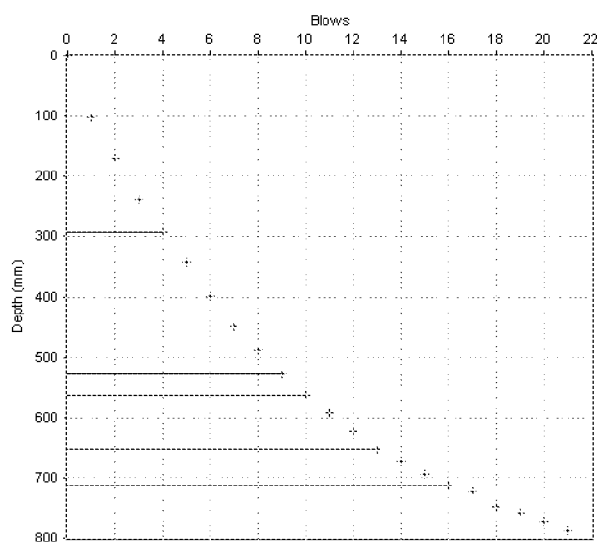
DCP Layer Strength Analysis Report

Project Name: DCP01 to DCP20

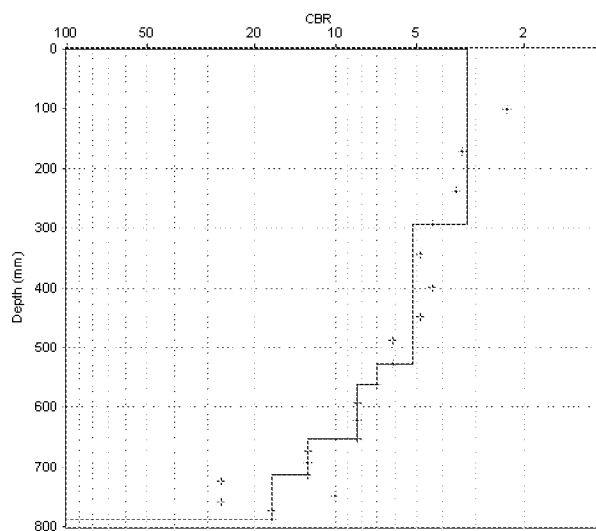
Chainage (km): 60.000
 Direction:
 Location/Offset: Carriageway
 Cone Angle: 60 degrees
 Zero Error (mm): 117
 Test Date: 06/11/2019

Surface Type: Unpaved
 Thickness (mm): 0
 Base Type:
 Thickness (mm):
 Surface Moisture: Moderate
 Moisture adjustment factor: Not adjusted

Layer Boundaries: Chainage 60.000



Layer Boundaries Chart



CBR Chart

Layer Properties

Nb.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	73.25	3	293	293
2	47.00	5	235	528
3	35.00	7	35	563
4	30.00	8	90	653
5	20.00	13	60	713
6	15.00	17	75	788

CBR Relationship:

TFL equation: $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

Report produced by

Penetration Data Report

Project Name: DCP01 to DCP20

Chainage (km): 60.000
 Direction:
 Location/Offset: Carriageway
 Cone Angle: 60 degrees
 Zero Error (mm): 117
 Test Date: 06/11/2019

Surface Type: Unpaved
 Thickness (mm): 0
 Base Type:
 Thickness (mm):
 Surface Moisture: Moderate
 Moisture adjustment factor: Not adjusted

No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)	No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)
1	0	0	117	0.00					
2	1	1	218	101.00					
3	1	2	288	70.00					
4	1	3	355	67.00					
5	1	4	410	55.00					
6	1	5	460	50.00					
7	1	6	515	55.00					
8	1	7	565	50.00					
9	1	8	605	40.00					
10	1	9	645	40.00					
11	1	10	680	35.00					
12	1	11	710	30.00					
13	1	12	740	30.00					
14	1	13	770	30.00					
15	1	14	790	20.00					
16	1	15	810	20.00					
17	1	16	830	20.00					
18	1	17	840	10.00					
19	1	18	865	25.00					
20	1	19	875	10.00					
21	1	20	890	15.00					
22	1	21	905	15.00					

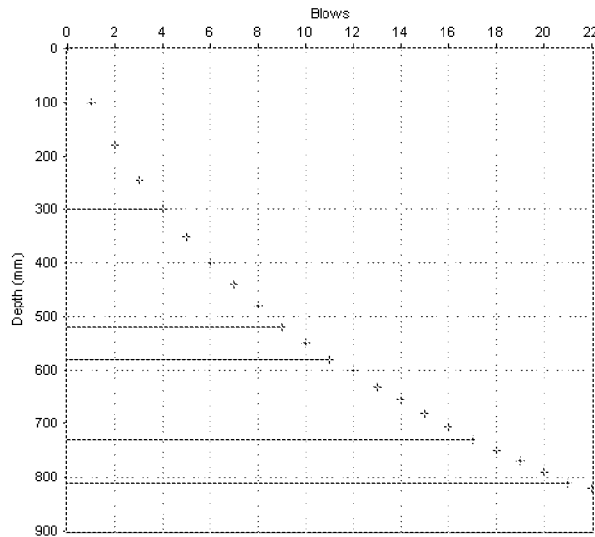
DCP Layer Strength Analysis Report

Project Name: DCP01 to DCP20

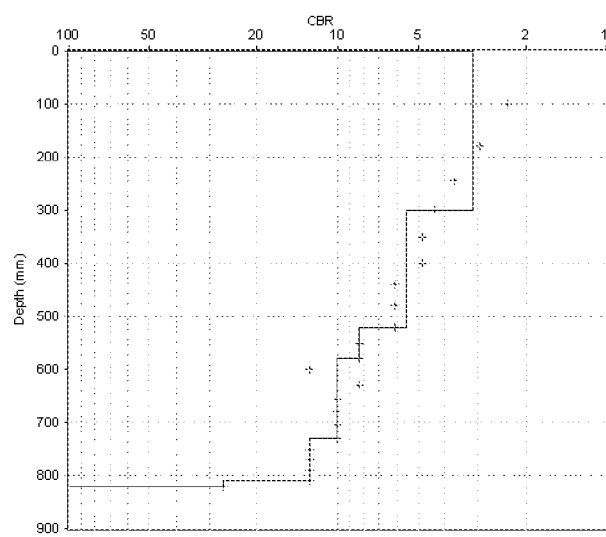
Chainage (km): 90.000
 Direction:
 Location/Offset: Carriageway
 Cone Angle: 60 degrees
 Zero Error (mm): 90
 Test Date: 06/11/2019

Surface Type: Unpaved
 Thickness (mm): 0
 Base Type:
 Thickness (mm):
 Surface Moisture: Moderate
 Moisture adjustment factor: Not adjusted

Layer Boundaries: Chainage 90.000



Layer Boundaries Chart



CBR Chart

Layer Properties

Nb.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	75.00	3	300	300
2	44.00	6	220	520
3	30.00	8	60	580
4	25.00	10	150	730
5	20.00	13	80	810
6	10.00	26	10	820

CBR Relationship:

TFL equation: $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

Report produced by

Penetration Data Report

Project Name: DCP01 to DCP20

Chainage (km): 90.000
 Direction:
 Location/Offset: Carriageway
 Cone Angle: 60 degrees
 Zero Error (mm): 90
 Test Date: 06/11/2019

Surface Type: Unpaved
 Thickness (mm): 0
 Base Type:
 Thickness (mm):
 Surface Moisture: Moderate
 Moisture adjustment factor: Not adjusted

No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)	No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)
1	0	0	90	0.00					
2	1	1	190	100.00					
3	1	2	270	80.00					
4	1	3	335	65.00					
5	1	4	390	55.00					
6	1	5	440	50.00					
7	1	6	490	50.00					
8	1	7	530	40.00					
9	1	8	570	40.00					
10	1	9	610	40.00					
11	1	10	640	30.00					
12	1	11	670	30.00					
13	1	12	690	20.00					
14	1	13	720	30.00					
15	1	14	745	25.00					
16	1	15	770	25.00					
17	1	16	795	25.00					
18	1	17	820	25.00					
19	1	18	840	20.00					
20	1	19	860	20.00					
21	1	20	880	20.00					
22	1	21	900	20.00					
23	1	22	910	10.00					

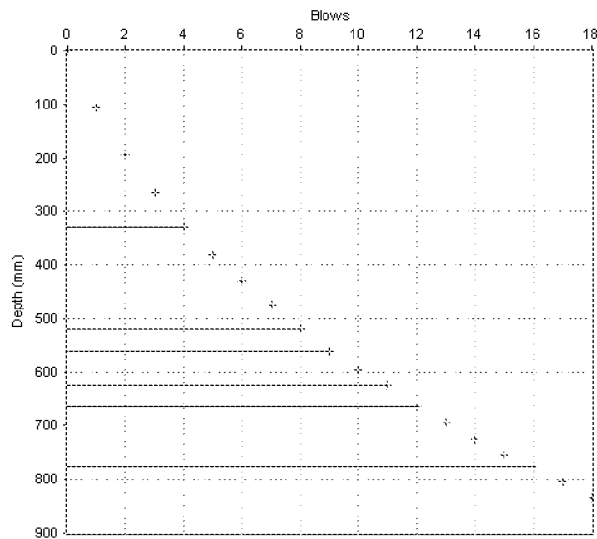
DCP Layer Strength Analysis Report

Project Name: DCP01 to DCP20

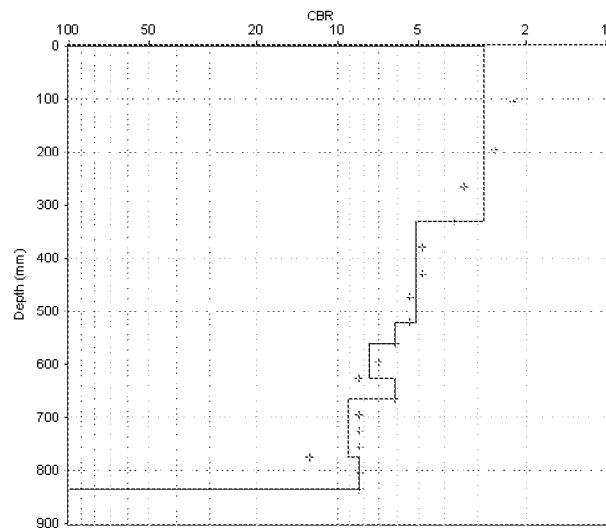
Chainage (km): 120.000
 Direction:
 Location/Offset: Carriageway
 Cone Angle: 60 degrees
 Zero Error (mm): 95
 Test Date: 06/11/2019

Surface Type: Unpaved
 Thickness (mm): 0
 Base Type:
 Thickness (mm):
 Surface Moisture: Moderate
 Moisture adjustment factor: Not adjusted

Layer Boundaries: Chainage 120.000



Layer Boundaries Chart



CBR Chart

Layer Properties

Nb.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	82.50	3	330	330
2	47.50	5	190	520
3	40.00	6	40	560
4	32.50	8	65	625
5	40.00	6	40	665
6	27.50	9	110	775
7	30.00	8	60	835

CBR Relationship:

TFL equation: $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

Report produced by

Penetration Data Report

Project Name: DCP01 to DCP20

Chainage (km): 120.000
 Direction:
 Location/Offset: Carriageway
 Cone Angle: 60 degrees
 Zero Error (mm): 95
 Test Date: 06/11/2019

Surface Type: Unpaved
 Thickness (mm): 0
 Base Type:
 Thickness (mm):
 Surface Moisture: Moderate
 Moisture adjustment factor: Not adjusted

No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)	No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)
1	0	0	95	0.00					
2	1	1	200	105.00					
3	1	2	290	90.00					
4	1	3	360	70.00					
5	1	4	425	65.00					
6	1	5	475	50.00					
7	1	6	525	50.00					
8	1	7	570	45.00					
9	1	8	615	45.00					
10	1	9	655	40.00					
11	1	10	690	35.00					
12	1	11	720	30.00					
13	1	12	760	40.00					
14	1	13	790	30.00					
15	1	14	820	30.00					
16	1	15	850	30.00					
17	1	16	870	20.00					
18	1	17	900	30.00					
19	1	18	930	30.00					

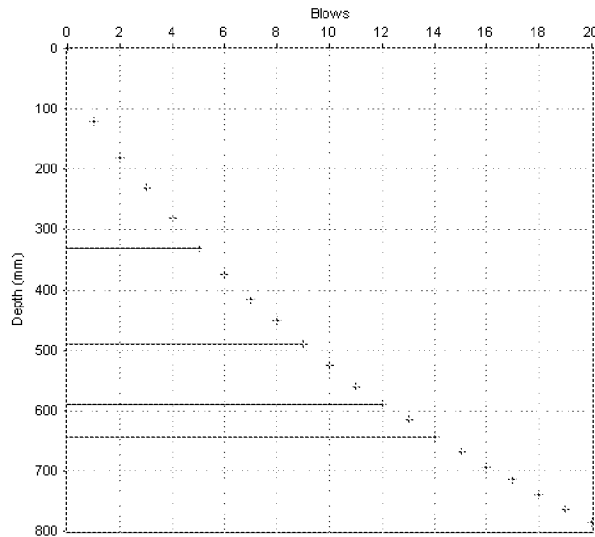
DCP Layer Strength Analysis Report

Project Name: DCP01 to DCP20

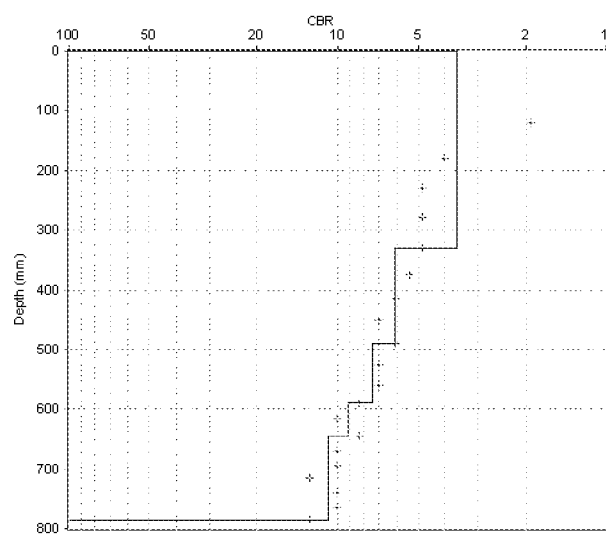
Chainage (km): 150.000
 Direction:
 Location/Offset: Carriageway
 Cone Angle: 60 degrees
 Zero Error (mm): 140
 Test Date: 06/11/2019

Surface Type: Unpaved
 Thickness (mm): 0
 Base Type:
 Thickness (mm):
 Surface Moisture: Moderate
 Moisture adjustment factor: Not adjusted

Layer Boundaries: Chainage 150.000



Layer Boundaries Chart



CBR Chart

Layer Properties

Nb.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	66.00	4	330	330
2	40.00	6	160	490
3	33.33	7	100	590
4	27.50	9	55	645
5	23.33	11	140	785

CBR Relationship:

TFL equation: $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

Report produced by

Penetration Data Report

Project Name: DCP01 to DCP20

Chainage (km): 150.000
 Direction:
 Location/Offset: Carriageway
 Cone Angle: 60 degrees
 Zero Error (mm): 140
 Test Date: 06/11/2019

Surface Type: Unpaved
 Thickness (mm): 0
 Base Type:
 Thickness (mm):
 Surface Moisture: Moderate
 Moisture adjustment factor: Not adjusted

No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)	No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)
1	0	0	140	0.00					
2	1	1	260	120.00					
3	1	2	320	60.00					
4	1	3	370	50.00					
5	1	4	420	50.00					
6	1	5	470	50.00					
7	1	6	515	45.00					
8	1	7	555	40.00					
9	1	8	590	35.00					
10	1	9	630	40.00					
11	1	10	665	35.00					
12	1	11	700	35.00					
13	1	12	730	30.00					
14	1	13	755	25.00					
15	1	14	785	30.00					
16	1	15	810	25.00					
17	1	16	835	25.00					
18	1	17	855	20.00					
19	1	18	880	25.00					
20	1	19	905	25.00					
21	1	20	925	20.00					

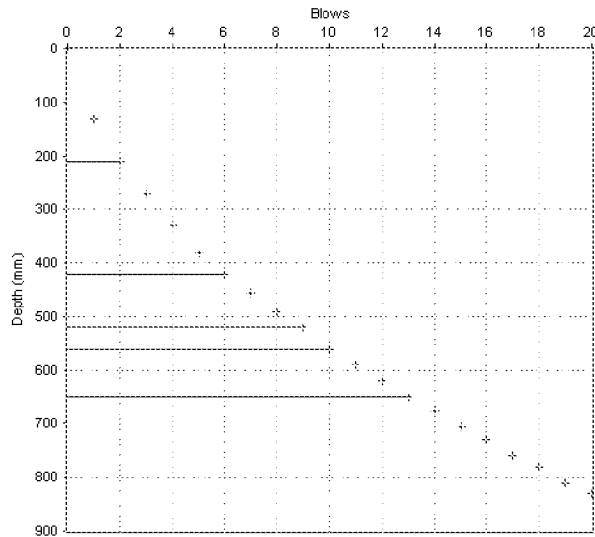
DCP Layer Strength Analysis Report

Project Name: DCP01 to DCP20

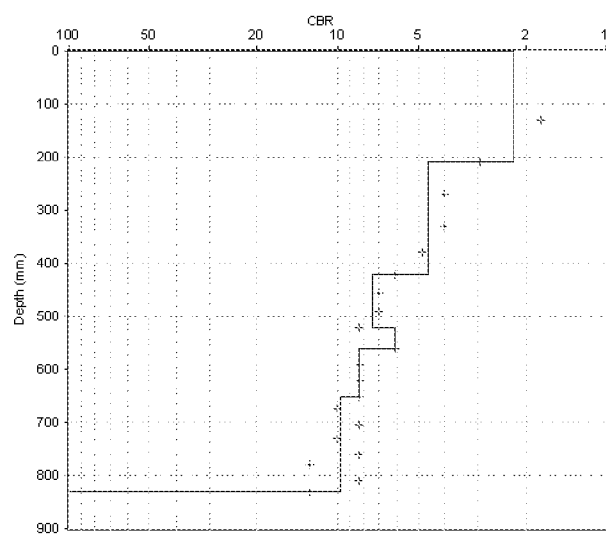
Chainage (km): 180.000
 Direction:
 Location/Offset: Carriageway
 Cone Angle: 60 degrees
 Zero Error (mm): 90
 Test Date: 06/11/2019

Surface Type: Unpaved
 Thickness (mm): 0
 Base Type:
 Thickness (mm):
 Surface Moisture: Moderate
 Moisture adjustment factor: Not adjusted

Layer Boundaries: Chainage 180.000



Layer Boundaries Chart



CBR Chart

Layer Properties

Nb.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	105.00	2	210	210
2	52.50	5	210	420
3	33.33	7	100	520
4	40.00	6	40	560
5	30.00	8	90	650
6	25.71	10	180	830

CBR Relationship:

TFL equation: $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

Report produced by

Penetration Data Report

Project Name: DCP01 to DCP20

Chainage (km): 180.000
 Direction:
 Location/Offset: Carriageway
 Cone Angle: 60 degrees
 Zero Error (mm): 90
 Test Date: 06/11/2019

Surface Type: Unpaved
 Thickness (mm): 0
 Base Type:
 Thickness (mm):
 Surface Moisture: Moderate
 Moisture adjustment factor: Not adjusted

No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)	No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)
1	0	0	90	0.00					
2	1	1	220	130.00					
3	1	2	300	80.00					
4	1	3	360	60.00					
5	1	4	420	60.00					
6	1	5	470	50.00					
7	1	6	510	40.00					
8	1	7	545	35.00					
9	1	8	580	35.00					
10	1	9	610	30.00					
11	1	10	650	40.00					
12	1	11	680	30.00					
13	1	12	710	30.00					
14	1	13	740	30.00					
15	1	14	765	25.00					
16	1	15	795	30.00					
17	1	16	820	25.00					
18	1	17	850	30.00					
19	1	18	870	20.00					
20	1	19	900	30.00					
21	1	20	920	20.00					

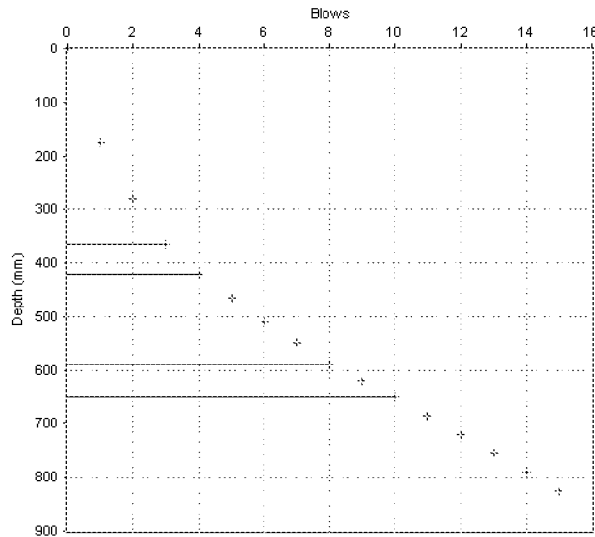
DCP Layer Strength Analysis Report

Project Name: DCP01 to DCP20

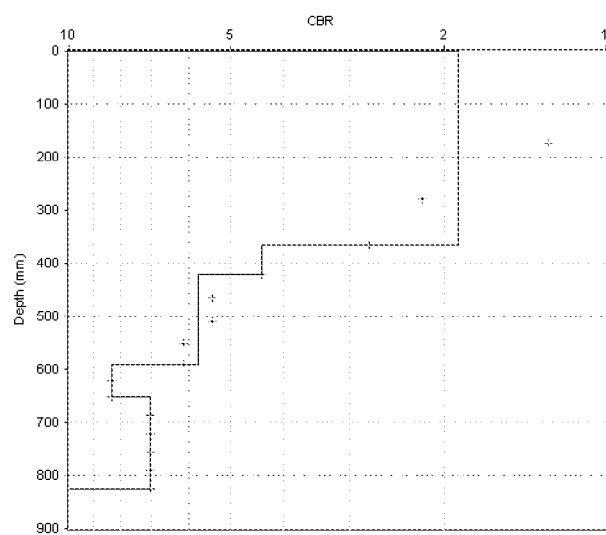
Chainage (km): 210.000
 Direction:
 Location/Offset: Carriageway
 Cone Angle: 60 degrees
 Zero Error (mm): 85
 Test Date: 06/11/2019

Surface Type: Unpaved
 Thickness (mm): 0
 Base Type:
 Thickness (mm):
 Surface Moisture: Moderate
 Moisture adjustment factor: Not adjusted

Layer Boundaries: Chainage 210.000



Layer Boundaries Chart



CBR Chart

Layer Properties

Nb.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	121.67	2	365	365
2	55.00	4	55	420
3	42.50	6	170	590
4	30.00	8	60	650
5	35.00	7	175	825

CBR Relationship:

TFL equation: $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

Report produced by

Penetration Data Report

Project Name: DCP01 to DCP20

Chainage (km):	210.000
Direction:	
Location/Offset:	Carriageway
Cone Angle:	60 degrees
Zero Error (mm):	85
Test Date:	06/11/2019

Surface Type:	Unpaved
Thickness (mm):	0
Base Type:	
Thickness (mm):	
Surface Moisture:	Moderate
Moisture adjustment factor:	Not adjusted

[illegible]

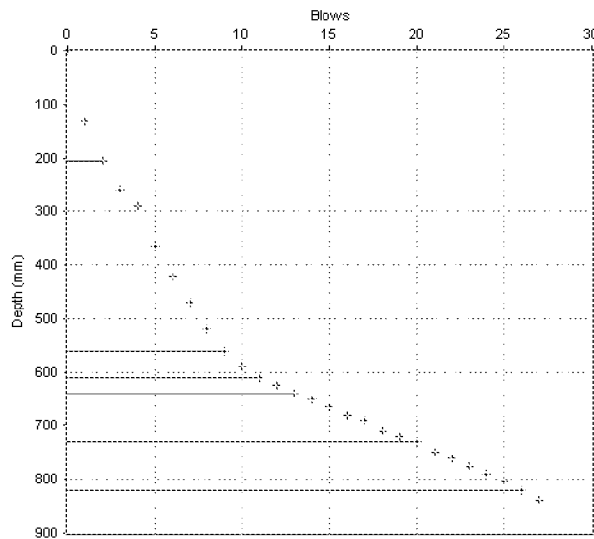
DCP Layer Strength Analysis Report

Project Name: DCP01 to DCP20

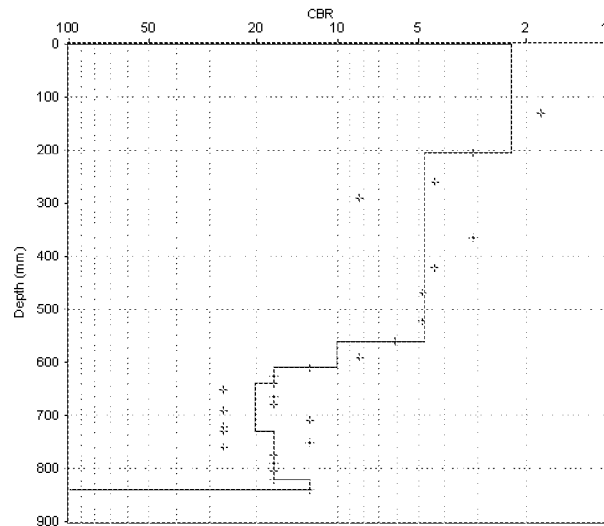
Chainage (km): 240.000
 Direction:
 Location/Offset: Carriageway
 Cone Angle: 60 degrees
 Zero Error (mm): 80
 Test Date: 06/11/2019

Surface Type: Unpaved
 Thickness (mm): 0
 Base Type:
 Thickness (mm):
 Surface Moisture: Moderate
 Moisture adjustment factor: Not adjusted

Layer Boundaries: Chainage 240.000



Layer Boundaries Chart



CBR Chart

Layer Properties

Nb.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	102.50	2	205	205
2	50.71	5	355	560
3	25.00	10	50	610
4	15.00	17	30	640
5	12.86	20	90	730
6	15.00	17	90	820
7	20.00	13	20	840

CBR Relationship:

TFL equation: $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

Report produced by

Penetration Data Report

Project Name: DCP01 to DCP20

Chainage (km): 240.000
 Direction:
 Location/Offset: Carriageway
 Cone Angle: 60 degrees
 Zero Error (mm): 80
 Test Date: 06/11/2019

Surface Type: Unpaved
 Thickness (mm): 0
 Base Type:
 Thickness (mm):
 Surface Moisture: Moderate
 Moisture adjustment factor: Not adjusted

No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)	No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)
1	0	0	80	0.00	26	1	25	885	15.00
2	1	1	210	130.00	27	1	26	900	15.00
3	1	2	285	75.00	28	1	27	920	20.00
4	1	3	340	55.00					
5	1	4	370	30.00					
6	1	5	445	75.00					
7	1	6	500	55.00					
8	1	7	550	50.00					
9	1	8	600	50.00					
10	1	9	640	40.00					
11	1	10	670	30.00					
12	1	11	690	20.00					
13	1	12	705	15.00					
14	1	13	720	15.00					
15	1	14	730	10.00					
16	1	15	745	15.00					
17	1	16	760	15.00					
18	1	17	770	10.00					
19	1	18	790	20.00					
20	1	19	800	10.00					
21	1	20	810	10.00					
22	1	21	830	20.00					
23	1	22	840	10.00					
24	1	23	855	15.00					
25	1	24	870	15.00					

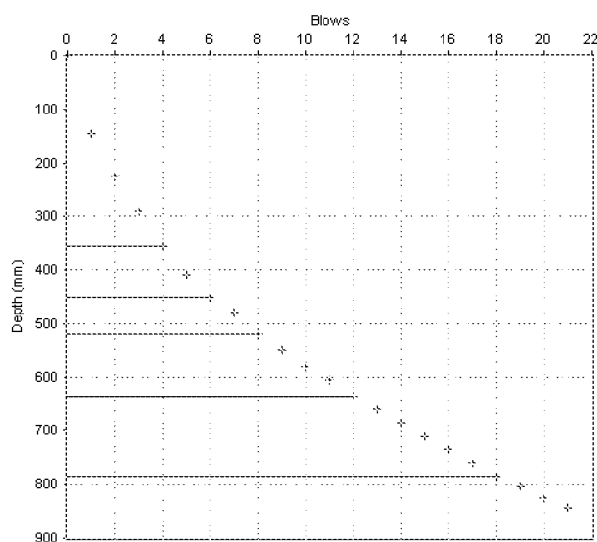
DCP Layer Strength Analysis Report

Project Name: DCP01 to DCP20

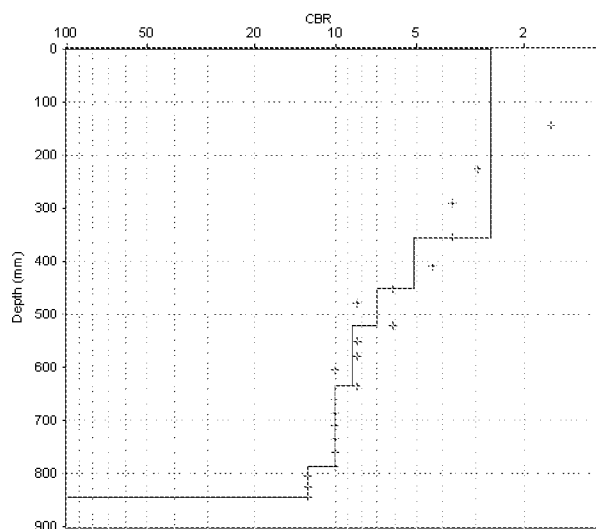
Chainage (km): 270.000
 Direction:
 Location/Offset: Carriageway
 Cone Angle: 60 degrees
 Zero Error (mm): 80
 Test Date: 06/11/2019

Surface Type: Unpaved
 Thickness (mm): 0
 Base Type:
 Thickness (mm):
 Surface Moisture: Moderate
 Moisture adjustment factor: Not adjusted

Layer Boundaries: Chainage 270.000



Layer Boundaries Chart



CBR Chart

Layer Properties

Nb.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	88.75	3	355	355
2	47.50	5	95	450
3	35.00	7	70	520
4	28.75	9	115	635
5	25.00	10	150	785
6	20.00	13	60	845

CBR Relationship:

TFL equation: $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

Report produced by

Penetration Data Report

Project Name: DCP01 to DCP20

Chainage (km): 270.000
 Direction:
 Location/Offset: Carriageway
 Cone Angle: 60 degrees
 Zero Error (mm): 80
 Test Date: 06/11/2019

Surface Type: Unpaved
 Thickness (mm): 0
 Base Type:
 Thickness (mm):
 Surface Moisture: Moderate
 Moisture adjustment factor: Not adjusted

No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)	No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)
1	0	0	80	0.00					
2	1	1	225	145.00					
3	1	2	305	80.00					
4	1	3	370	65.00					
5	1	4	435	65.00					
6	1	5	490	55.00					
7	1	6	530	40.00					
8	1	7	560	30.00					
9	1	8	600	40.00					
10	1	9	630	30.00					
11	1	10	660	30.00					
12	1	11	685	25.00					
13	1	12	715	30.00					
14	1	13	740	25.00					
15	1	14	765	25.00					
16	1	15	790	25.00					
17	1	16	815	25.00					
18	1	17	840	25.00					
19	1	18	865	25.00					
20	1	19	885	20.00					
21	1	20	905	20.00					
22	1	21	925	20.00					

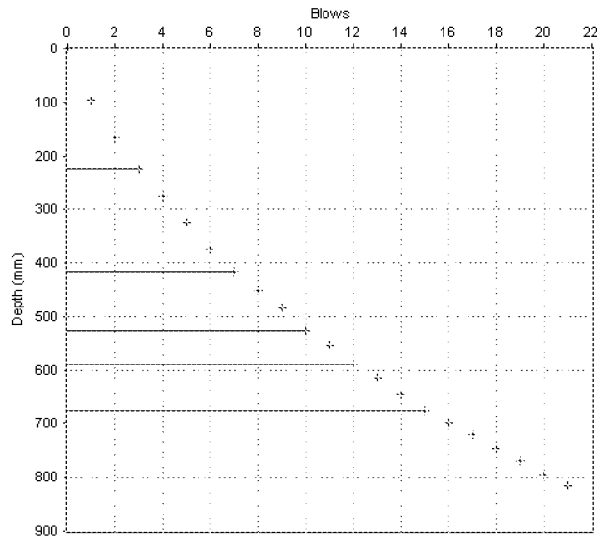
DCP Layer Strength Analysis Report

Project Name: DCP01 to DCP20

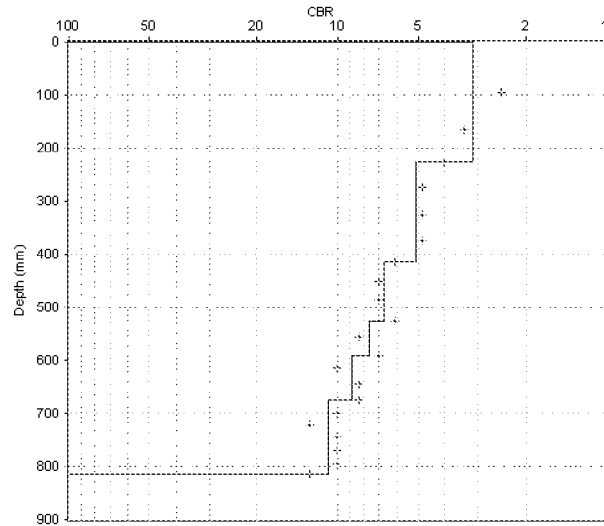
Chainage (km): 300.000
 Direction:
 Location/Offset: Carriageway
 Cone Angle: 60 degrees
 Zero Error (mm): 95
 Test Date: 06/11/2019

Surface Type: Unpaved
 Thickness (mm): 0
 Base Type:
 Thickness (mm):
 Surface Moisture: Moderate
 Moisture adjustment factor: Not adjusted

Layer Boundaries: Chainage 300.000



Layer Boundaries Chart



CBR Chart

Layer Properties

Nb.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	75.00	3	225	225
2	47.50	5	190	415
3	36.67	7	110	525
4	32.50	8	65	590
5	28.33	9	85	675
6	23.33	11	140	815

CBR Relationship:

TFL equation: $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

Report produced by

Penetration Data Report

Project Name: DCP01 to DCP20

Chainage (km): 300.000
 Direction:
 Location/Offset: Carriageway
 Cone Angle: 60 degrees
 Zero Error (mm): 95
 Test Date: 06/11/2019

Surface Type: Unpaved
 Thickness (mm): 0
 Base Type:
 Thickness (mm):
 Surface Moisture: Moderate
 Moisture adjustment factor: Not adjusted

No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)	No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)
1	0	0	95	0.00					
2	1	1	190	95.00					
3	1	2	260	70.00					
4	1	3	320	60.00					
5	1	4	370	50.00					
6	1	5	420	50.00					
7	1	6	470	50.00					
8	1	7	510	40.00					
9	1	8	545	35.00					
10	1	9	580	35.00					
11	1	10	620	40.00					
12	1	11	650	30.00					
13	1	12	685	35.00					
14	1	13	710	25.00					
15	1	14	740	30.00					
16	1	15	770	30.00					
17	1	16	795	25.00					
18	1	17	815	20.00					
19	1	18	840	25.00					
20	1	19	865	25.00					
21	1	20	890	25.00					
22	1	21	910	20.00					

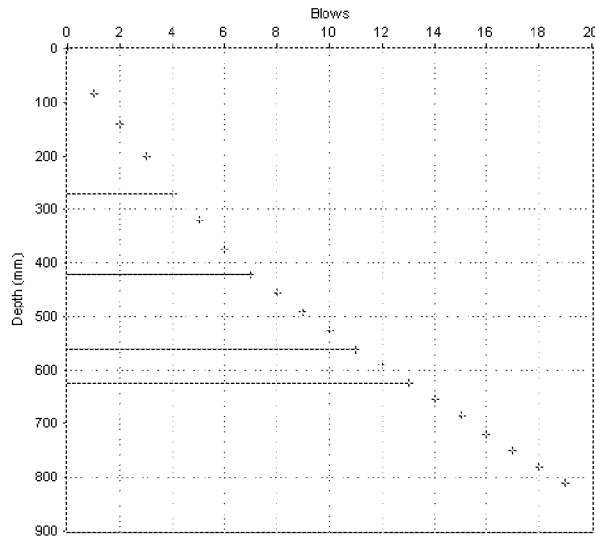
DCP Layer Strength Analysis Report

Project Name: DCP01 to DCP20

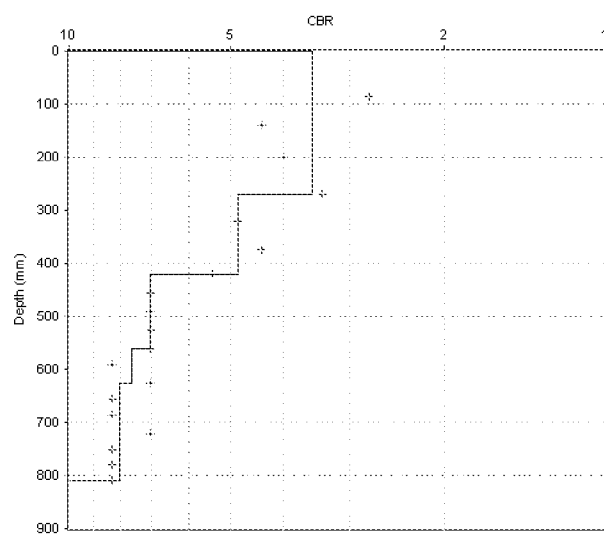
Chainage (km): 330.000
 Direction:
 Location/Offset: Carriageway
 Cone Angle: 60 degrees
 Zero Error (mm): 100
 Test Date: 06/11/2019

Surface Type: Unpaved
 Thickness (mm): 0
 Base Type:
 Thickness (mm):
 Surface Moisture: Moderate
 Moisture adjustment factor: Not adjusted

Layer Boundaries: Chainage 330.000



Layer Boundaries Chart



CBR Chart

Layer Properties

Nb.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	67.50	4	270	270
2	50.00	5	150	420
3	35.00	7	140	560
4	32.50	8	65	625
5	30.83	8	185	810

CBR Relationship:

TFL equation: $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

Report produced by

Penetration Data Report

Project Name: DCP01 to DCP20

Chainage (km): 330.000
 Direction:
 Location/Offset: Carriageway
 Cone Angle: 60 degrees
 Zero Error (mm): 100
 Test Date: 06/11/2019

Surface Type: Unpaved
 Thickness (mm): 0
 Base Type:
 Thickness (mm):
 Surface Moisture: Moderate
 Moisture adjustment factor: Not adjusted

No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)	No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)
1	0	0	100	0.00					
2	1	1	185	85.00					
3	1	2	240	55.00					
4	1	3	300	60.00					
5	1	4	370	70.00					
6	1	5	420	50.00					
7	1	6	475	55.00					
8	1	7	520	45.00					
9	1	8	555	35.00					
10	1	9	590	35.00					
11	1	10	625	35.00					
12	1	11	660	35.00					
13	1	12	690	30.00					
14	1	13	725	35.00					
15	1	14	755	30.00					
16	1	15	785	30.00					
17	1	16	820	35.00					
18	1	17	850	30.00					
19	1	18	880	30.00					
20	1	19	910	30.00					

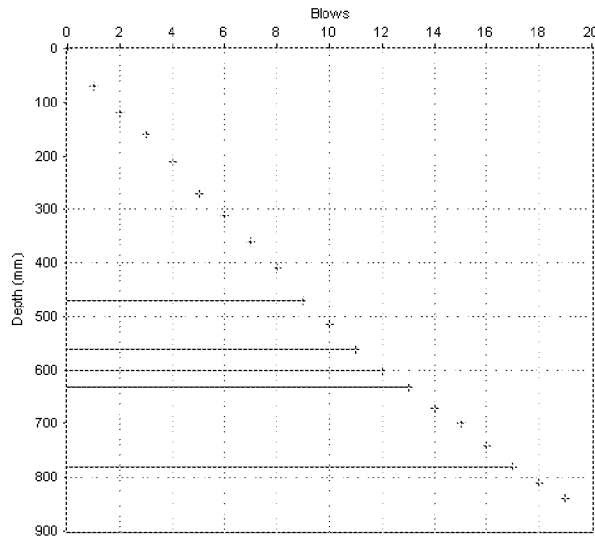
DCP Layer Strength Analysis Report

Project Name: DCP01 to DCP20

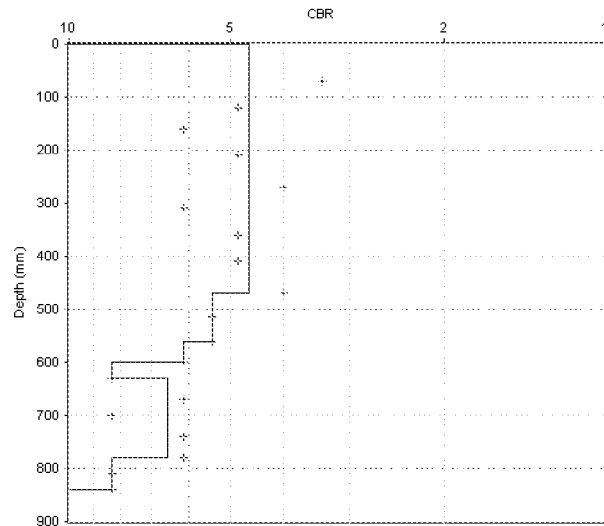
Chainage (km): 360.000
 Direction:
 Location/Offset: Carriageway
 Cone Angle: 60 degrees
 Zero Error (mm): 70
 Test Date: 06/11/2019

Surface Type: Unpaved
 Thickness (mm): 0
 Base Type:
 Thickness (mm):
 Surface Moisture: Moderate
 Moisture adjustment factor: Not adjusted

Layer Boundaries: Chainage 360.000



Layer Boundaries Chart



CBR Chart

Layer Properties

Nb.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	52.22	5	470	470
2	45.00	5	90	560
3	40.00	6	40	600
4	30.00	8	30	630
5	37.50	7	150	780
6	30.00	8	60	840

CBR Relationship:

TFL equation: $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

Report produced by

Penetration Data Report

Project Name: DCP01 to DCP20

Chainage (km): 360.000
 Direction:
 Location/Offset: Carriageway
 Cone Angle: 60 degrees
 Zero Error (mm): 70
 Test Date: 06/11/2019

Surface Type: Unpaved
 Thickness (mm): 0
 Base Type:
 Thickness (mm):
 Surface Moisture: Moderate
 Moisture adjustment factor: Not adjusted

No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)	No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)
1	0	0	70	0.00					
2	1	1	140	70.00					
3	1	2	190	50.00					
4	1	3	230	40.00					
5	1	4	280	50.00					
6	1	5	340	60.00					
7	1	6	380	40.00					
8	1	7	430	50.00					
9	1	8	480	50.00					
10	1	9	540	60.00					
11	1	10	585	45.00					
12	1	11	630	45.00					
13	1	12	670	40.00					
14	1	13	700	30.00					
15	1	14	740	40.00					
16	1	15	770	30.00					
17	1	16	810	40.00					
18	1	17	850	40.00					
19	1	18	880	30.00					
20	1	19	910	30.00					

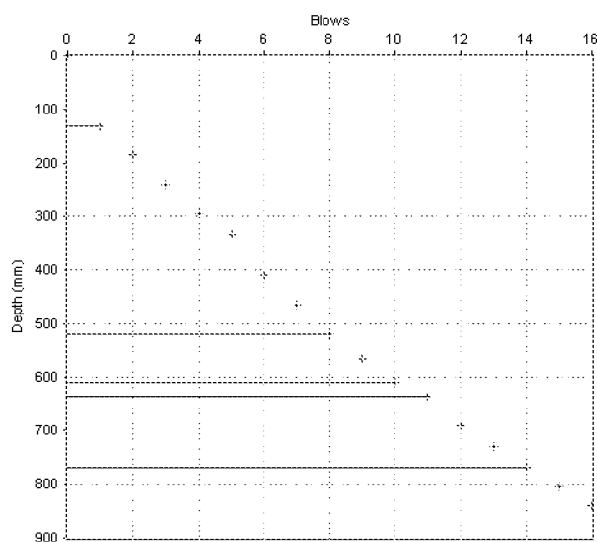
DCP Layer Strength Analysis Report

Project Name: DCP01 to DCP20

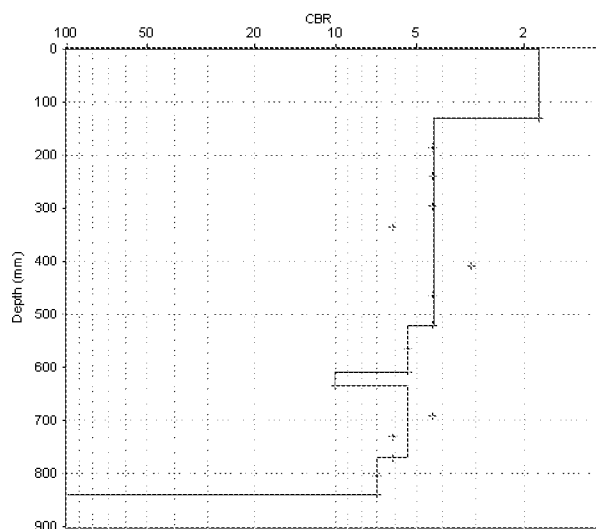
Chainage (km): 390.000
 Direction:
 Location/Offset: Carriageway
 Cone Angle: 60 degrees
 Zero Error (mm): 85
 Test Date: 06/11/2019

Surface Type: Unpaved
 Thickness (mm): 0
 Base Type:
 Thickness (mm):
 Surface Moisture: Moderate
 Moisture adjustment factor: Not adjusted

Layer Boundaries: Chainage 390.000



Layer Boundaries Chart



CBR Chart

Layer Properties

Nb.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	130.00	2	130	130
2	55.71	4	390	520
3	45.00	5	90	610
4	25.00	10	25	635
5	45.00	5	135	770
6	35.00	7	70	840

CBR Relationship:

TFL equation: $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

Report produced by

Surface Type:	Unpaved
Thickness (mm):	0
Base Type:	
Thickness (mm):	
Surface Moisture:	Moderate
Moisture adjustment factor:	Not adjusted

[illegible]

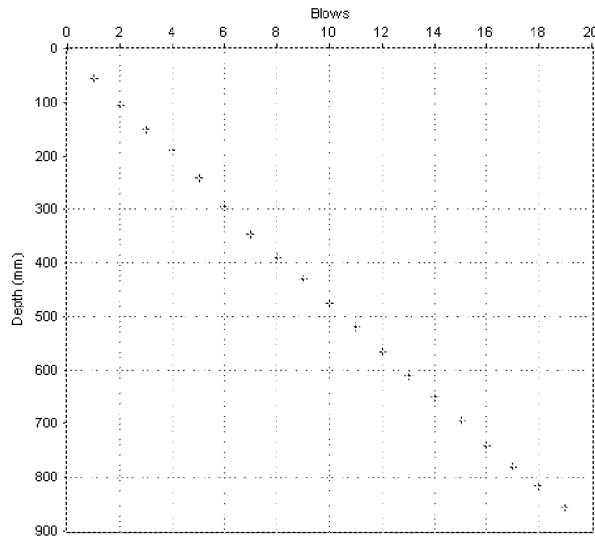
DCP Layer Strength Analysis Report

Project Name: DCP01 to DCP20

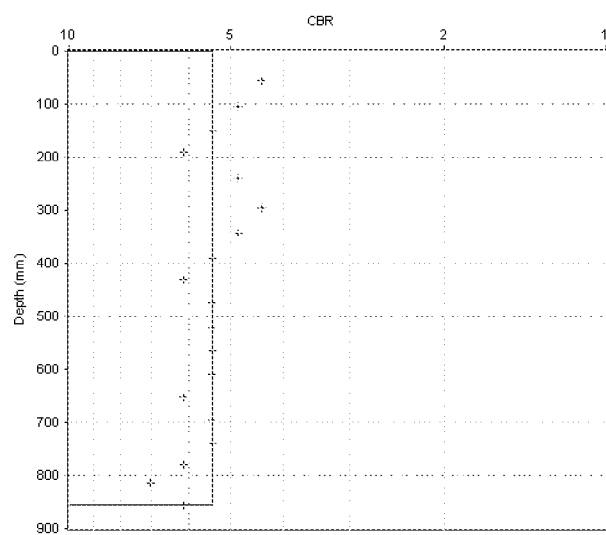
Chainage (km): 420.000
 Direction:
 Location/Offset: Carriageway
 Cone Angle: 60 degrees
 Zero Error (mm): 60
 Test Date: 06/11/2019

Surface Type: Unpaved
 Thickness (mm): 0
 Base Type:
 Thickness (mm):
 Surface Moisture: Moderate
 Moisture adjustment factor: Not adjusted

Layer Boundaries: Chainage 420.000



Layer Boundaries Chart



CBR Chart

Layer Properties

Nb.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	45.00	5	855	855

CBR Relationship:

TFL equation: $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

Report produced by

Penetration Data Report

Project Name: DCP01 to DCP20

Chainage (km): 420.000
 Direction:
 Location/Offset: Carriageway
 Cone Angle: 60 degrees
 Zero Error (mm): 60
 Test Date: 06/11/2019

Surface Type: Unpaved
 Thickness (mm): 0
 Base Type:
 Thickness (mm):
 Surface Moisture: Moderate
 Moisture adjustment factor: Not adjusted

No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)	No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)
1	0	0	60	0.00					
2	1	1	115	55.00					
3	1	2	165	50.00					
4	1	3	210	45.00					
5	1	4	250	40.00					
6	1	5	300	50.00					
7	1	6	355	55.00					
8	1	7	405	50.00					
9	1	8	450	45.00					
10	1	9	490	40.00					
11	1	10	535	45.00					
12	1	11	580	45.00					
13	1	12	625	45.00					
14	1	13	670	45.00					
15	1	14	710	40.00					
16	1	15	755	45.00					
17	1	16	800	45.00					
18	1	17	840	40.00					
19	1	18	875	35.00					
20	1	19	915	40.00					

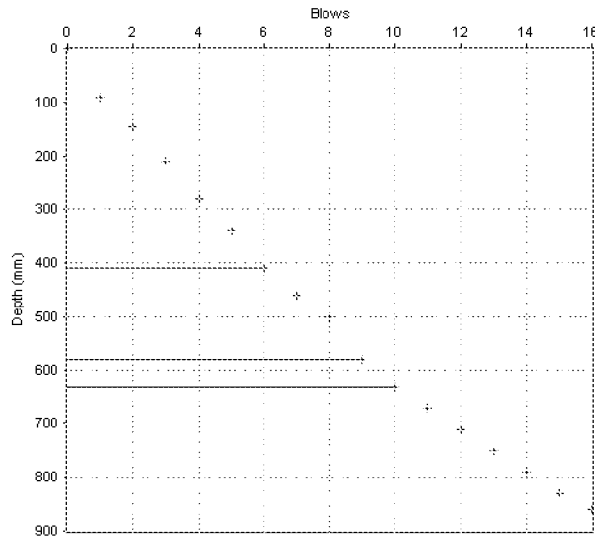
DCP Layer Strength Analysis Report

Project Name: DCP01 to DCP20

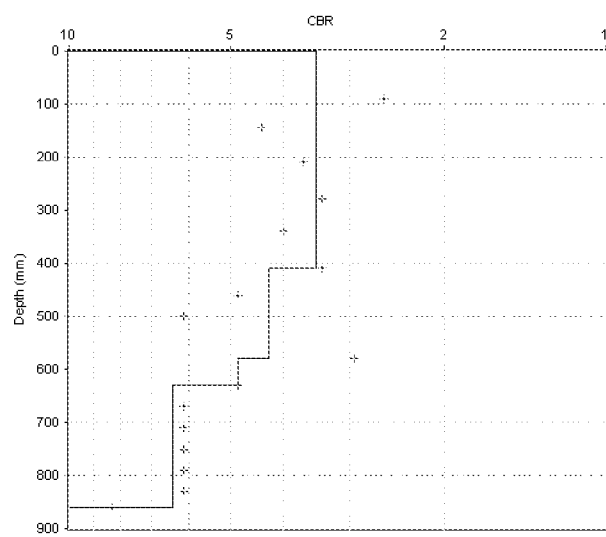
Chainage (km): 450.000
 Direction:
 Location/Offset: Carriageway
 Cone Angle: 60 degrees
 Zero Error (mm): 70
 Test Date: 06/11/2019

Surface Type: Unpaved
 Thickness (mm): 0
 Base Type:
 Thickness (mm):
 Surface Moisture: Moderate
 Moisture adjustment factor: Not adjusted

Layer Boundaries: Chainage 450.000



Layer Boundaries Chart



CBR Chart

Layer Properties

Nb.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	68.33	3	410	410
2	56.67	4	170	580
3	50.00	5	50	630
4	38.33	6	230	860

CBR Relationship:

TFL equation: $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

Report produced by

Penetration Data Report

Project Name: DCP01 to DCP20

Chainage (km): 450.000
 Direction:
 Location/Offset: Carriageway
 Cone Angle: 60 degrees
 Zero Error (mm): 70
 Test Date: 06/11/2019

Surface Type:	Unpaved
Thickness (mm):	0
Base Type:	
Thickness (mm):	
Surface Moisture:	Moderate
Moisture adjustment factor:	Not adjusted

[illegible]

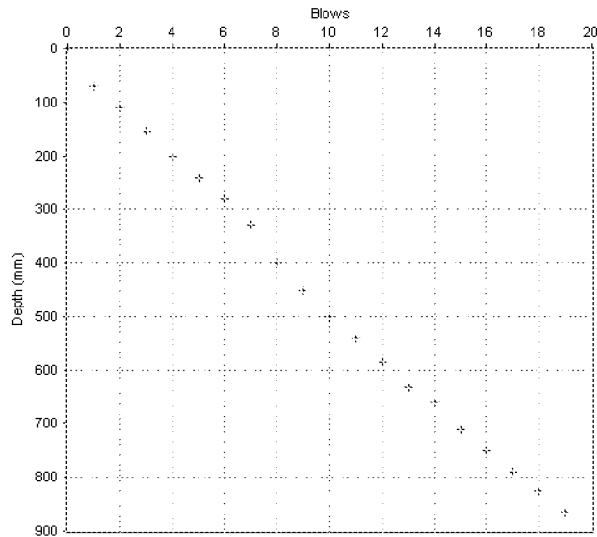
DCP Layer Strength Analysis Report

Project Name: DCP01 to DCP20

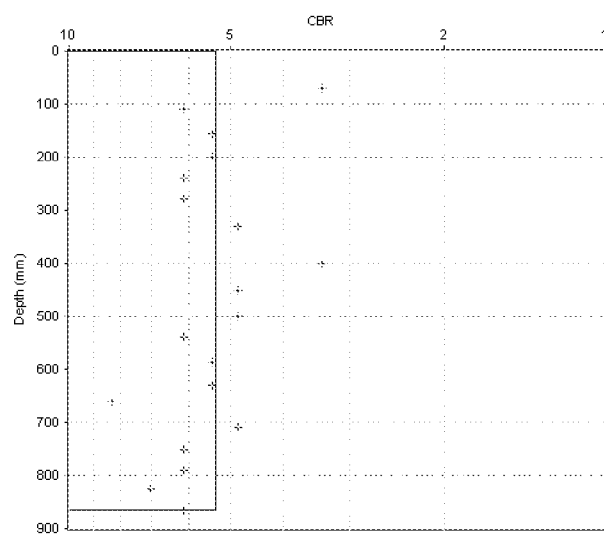
Chainage (km): 480.000
 Direction:
 Location/Offset: Carriageway
 Cone Angle: 60 degrees
 Zero Error (mm): 70
 Test Date: 06/11/2019

Surface Type: Unpaved
 Thickness (mm): 0
 Base Type:
 Thickness (mm):
 Surface Moisture: Moderate
 Moisture adjustment factor: Not adjusted

Layer Boundaries: Chainage 480.000



Layer Boundaries Chart



CBR Chart

Layer Properties

Nb.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	45.53	5	865	865

CBR Relationship:

TFL equation: $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

Report produced by

Penetration Data Report

Project Name: DCP01 to DCP20

Chainage (km): 480.000
 Direction:
 Location/Offset: Carriageway
 Cone Angle: 60 degrees
 Zero Error (mm): 70
 Test Date: 06/11/2019

Surface Type: Unpaved
 Thickness (mm): 0
 Base Type:
 Thickness (mm):
 Surface Moisture: Moderate
 Moisture adjustment factor: Not adjusted

No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)	No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)
1	0	0	70	0.00					
2	1	1	140	70.00					
3	1	2	180	40.00					
4	1	3	225	45.00					
5	1	4	270	45.00					
6	1	5	310	40.00					
7	1	6	350	40.00					
8	1	7	400	50.00					
9	1	8	470	70.00					
10	1	9	520	50.00					
11	1	10	570	50.00					
12	1	11	610	40.00					
13	1	12	655	45.00					
14	1	13	700	45.00					
15	1	14	730	30.00					
16	1	15	780	50.00					
17	1	16	820	40.00					
18	1	17	860	40.00					
19	1	18	895	35.00					
20	1	19	935	40.00					

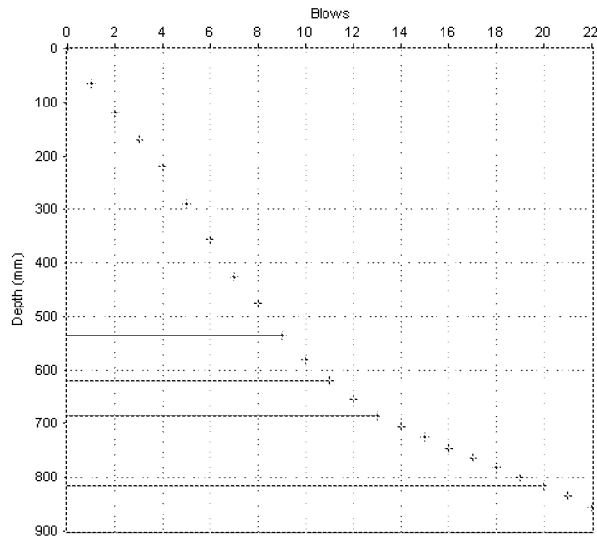
DCP Layer Strength Analysis Report

Project Name: DCP01 to DCP20

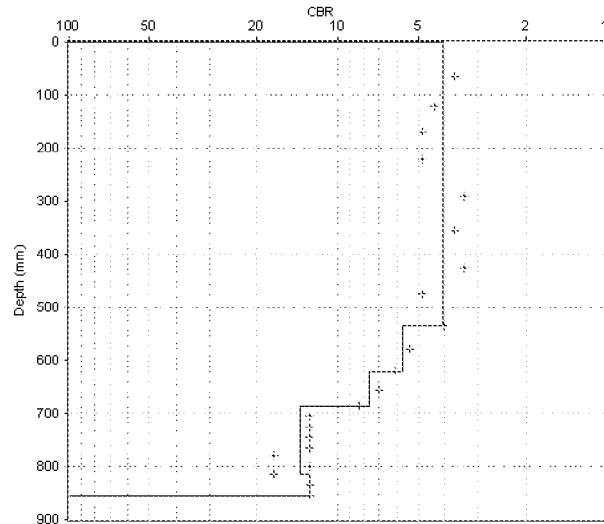
Chainage (km): 510.000
 Direction:
 Location/Offset: Carriageway
 Cone Angle: 60 degrees
 Zero Error (mm): 65
 Test Date: 06/11/2019

Surface Type: Unpaved
 Thickness (mm): 0
 Base Type:
 Thickness (mm):
 Surface Moisture: Moderate
 Moisture adjustment factor: Not adjusted

Layer Boundaries: Chainage 510.000



Layer Boundaries Chart



CBR Chart

Layer Properties

Nb.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	59.44	4	535	535
2	42.50	6	85	620
3	32.50	8	65	685
4	18.57	14	130	815
5	20.00	13	40	855

CBR Relationship:

TFL equation: $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

Report produced by

Penetration Data Report

Project Name: DCP01 to DCP20

Chainage (km): 510.000
 Direction:
 Location/Offset: Carriageway
 Cone Angle: 60 degrees
 Zero Error (mm): 65
 Test Date: 06/11/2019

Surface Type: Unpaved
 Thickness (mm): 0
 Base Type:
 Thickness (mm):
 Surface Moisture: Moderate
 Moisture adjustment factor: Not adjusted

No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)	No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)
1	0	0	65	0.00					
2	1	1	130	65.00					
3	1	2	185	55.00					
4	1	3	235	50.00					
5	1	4	285	50.00					
6	1	5	355	70.00					
7	1	6	420	65.00					
8	1	7	490	70.00					
9	1	8	540	50.00					
10	1	9	600	60.00					
11	1	10	645	45.00					
12	1	11	685	40.00					
13	1	12	720	35.00					
14	1	13	750	30.00					
15	1	14	770	20.00					
16	1	15	790	20.00					
17	1	16	810	20.00					
18	1	17	830	20.00					
19	1	18	845	15.00					
20	1	19	865	20.00					
21	1	20	880	15.00					
22	1	21	900	20.00					
23	1	22	920	20.00					

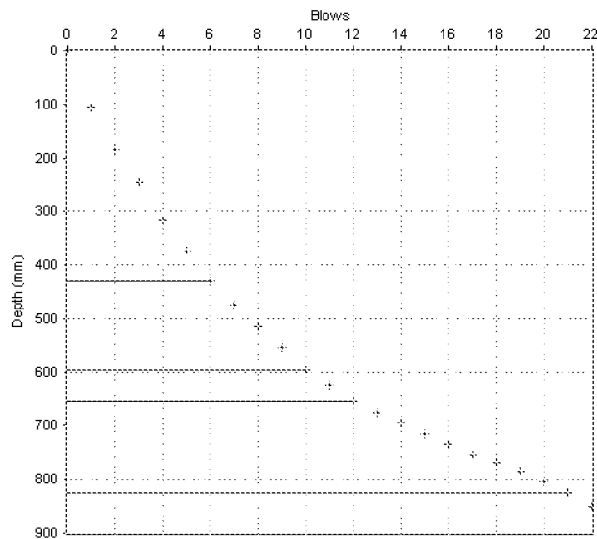
DCP Layer Strength Analysis Report

Project Name: DCP01 to DCP20

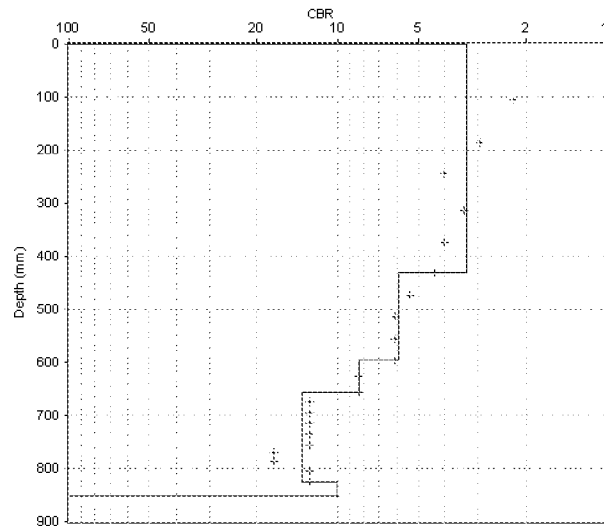
Chainage (km): 540.000
 Direction:
 Location/Offset: Carriageway
 Cone Angle: 60 degrees
 Zero Error (mm): 75
 Test Date: 06/11/2019

Surface Type: Unpaved
 Thickness (mm): 0
 Base Type:
 Thickness (mm):
 Surface Moisture: Moderate
 Moisture adjustment factor: Not adjusted

Layer Boundaries: Chainage 540.000



Layer Boundaries Chart



CBR Chart

Layer Properties

Nb.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	71.67	3	430	430
2	41.25	6	165	595
3	30.00	8	60	655
4	18.89	14	170	825
5	25.00	10	25	850

CBR Relationship:

TFL equation: $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

Report produced by

Penetration Data Report

Project Name: DCP01 to DCP20

Chainage (km): 540.000
 Direction:
 Location/Offset: Carriageway
 Cone Angle: 60 degrees
 Zero Error (mm): 75
 Test Date: 06/11/2019

Surface Type: Unpaved
 Thickness (mm): 0
 Base Type:
 Thickness (mm):
 Surface Moisture: Moderate
 Moisture adjustment factor: Not adjusted

No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)	No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)
1	0	0	75	0.00					
2	1	1	180	105.00					
3	1	2	260	80.00					
4	1	3	320	60.00					
5	1	4	390	70.00					
6	1	5	450	60.00					
7	1	6	505	55.00					
8	1	7	550	45.00					
9	1	8	590	40.00					
10	1	9	630	40.00					
11	1	10	670	40.00					
12	1	11	700	30.00					
13	1	12	730	30.00					
14	1	13	750	20.00					
15	1	14	770	20.00					
16	1	15	790	20.00					
17	1	16	810	20.00					
18	1	17	830	20.00					
19	1	18	845	15.00					
20	1	19	860	15.00					
21	1	20	880	20.00					
22	1	21	900	20.00					
23	1	22	925	25.00					

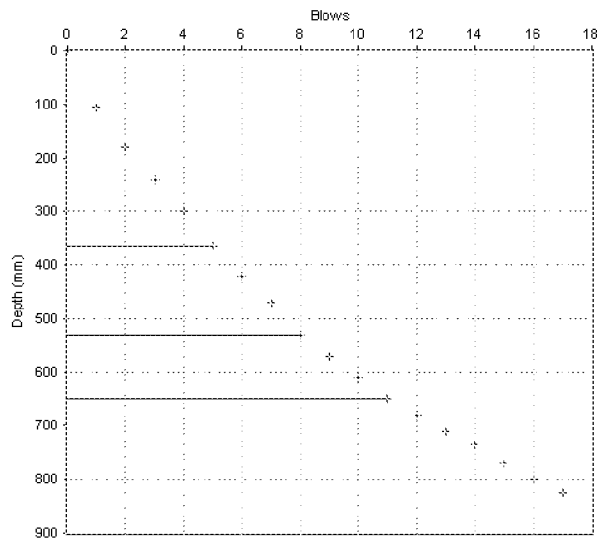
DCP Layer Strength Analysis Report

Project Name: DCP01 to DCP20

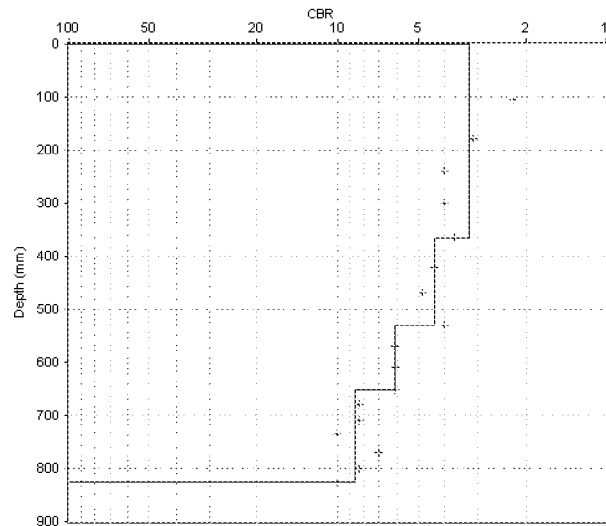
Chainage (km): 570.000
 Direction:
 Location/Offset: Carriageway
 Cone Angle: 60 degrees
 Zero Error (mm): 80
 Test Date: 06/11/2019

Surface Type: Unpaved
 Thickness (mm): 0
 Base Type:
 Thickness (mm):
 Surface Moisture: Moderate
 Moisture adjustment factor: Not adjusted

Layer Boundaries: Chainage 570.000



Layer Boundaries Chart



CBR Chart

Layer Properties

Nb.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	73.00	3	365	365
2	55.00	4	165	530
3	40.00	6	120	650
4	29.17	9	175	825

CBR Relationship:

TFL equation: $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

Report produced by

Penetration Data Report

Project Name: DCP01 to DCP20

Chainage (km): 570.000
 Direction:
 Location/Offset: Carriageway
 Cone Angle: 60 degrees
 Zero Error (mm): 80
 Test Date: 06/11/2019

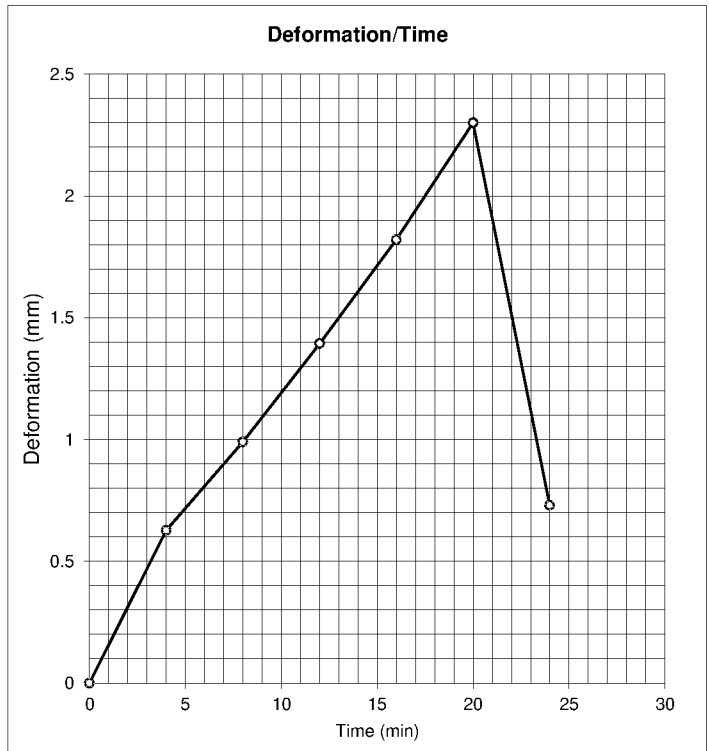
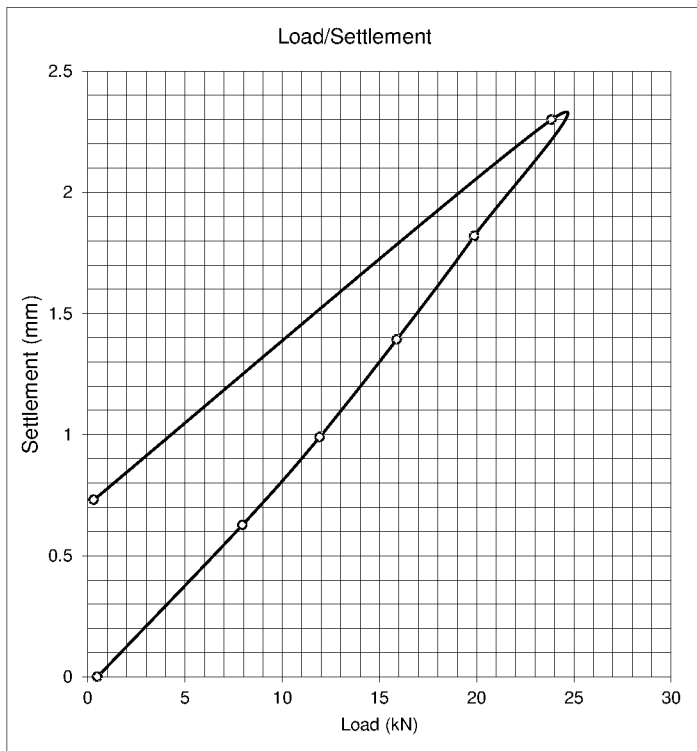
Surface Type: Unpaved
 Thickness (mm): 0
 Base Type:
 Thickness (mm):
 Surface Moisture: Moderate
 Moisture adjustment factor: Not adjusted

No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)	No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)
1	0	0	80	0.00					
2	1	1	185	105.00					
3	1	2	260	75.00					
4	1	3	320	60.00					
5	1	4	380	60.00					
6	1	5	445	65.00					
7	1	6	500	55.00					
8	1	7	550	50.00					
9	1	8	610	60.00					
10	1	9	650	40.00					
11	1	10	680	40.00					
12	1	11	730	40.00					
13	1	12	760	30.00					
14	1	13	790	30.00					
15	1	14	815	25.00					
16	1	15	850	35.00					
17	1	16	880	30.00					
18	1	17	905	25.00					

	Plate Bearing		Job Ref	27374
			Position No:	TP101
Site Name:	Land at Stakers Farm, Yapton		Depth m	1.00
Project No:	GE18621	Client	GESL	
Soil Description:	Brown silty CLAY with traces of rootlets and rare fine gravel		Reported	11/11/2019
			Plate Diameter	450 mm
Test Method	BS1377 Part 9 : 1990 : 4.1			

Sample Information		Test Data	
Environmental conditions	Overcast	Loading procedure	Incremental
Material Type	-	Description of Reaction load	Tracked Excavator
Temperature (0C):	13	In-situ moisture content %	22
Remarks:			

Load Increment no:	Load	Cumulative Settlement
	kN	mm
Seating load	0.5	0
1	8.0	0.63
2	11.9	0.99
3	15.9	1.39
4	19.9	1.82
5	23.9	2.30
6	0.3	0.73

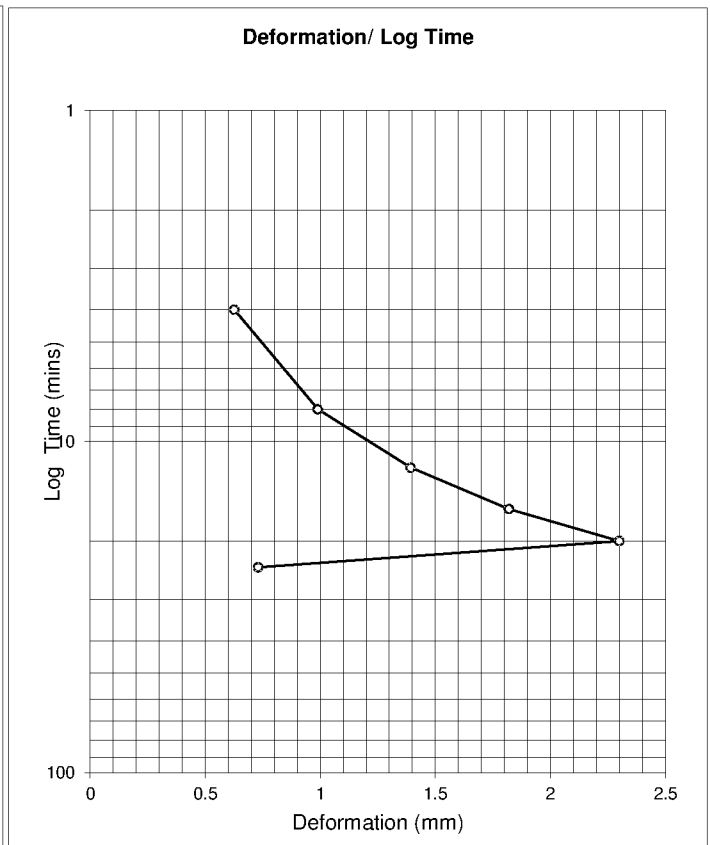
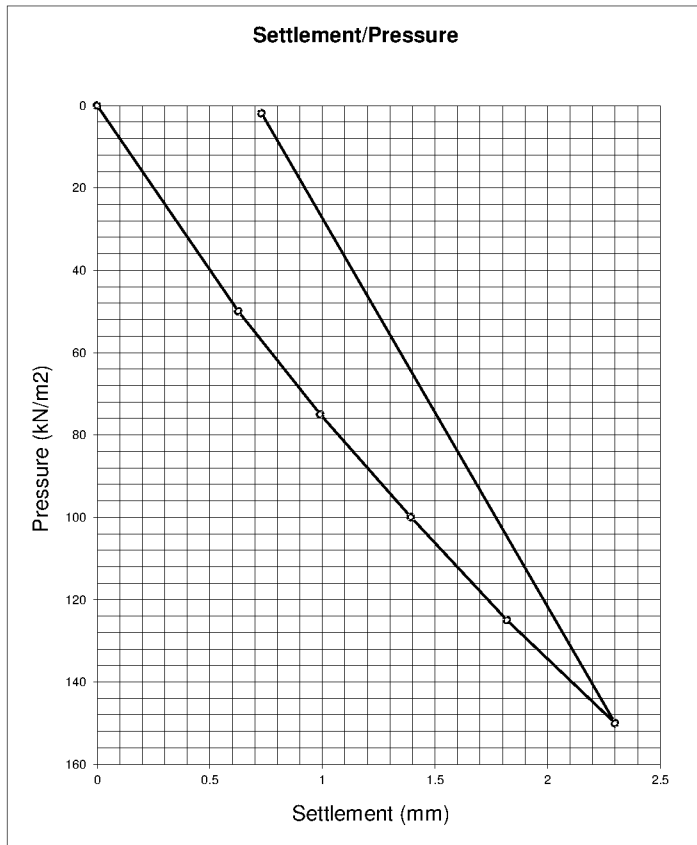


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	Watford Herts WD18 9RU		
2519	Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)		Initials: J.P Date: 11/11/2019

	Plate Bearing		Job Ref	27374
			Position No:	TP101
Site Name:	Land at Stakers Farm, Yapton		Depth m	1.00
Project No:	GE18621	Client	GESL	
Soil Description:	Brown silty CLAY with traces of rootlets and rare fine gravel		Reported	11/11/2019
			Plate Diameter	450 mm
Test Method	BS1377 Part 9 : 1990 : 4.3			

Sample Information		Test Data	
Environmental conditions	Overcast	Loading procedure	Incremental
Material Type	-	Description of Reaction load	Tracked Excavator
Temperature (0C):	13	In situ moisture content %	22
Remarks:			

Load Increment no:	Load	Settlement	Pressure
	kN	mm	kN/m2
Seating load	0.5	0	0
1	8.0	0.63	50
2	11.9	0.99	75
3	15.9	1.39	100
4	19.9	1.82	125
5	23.9	2.30	150
6	0.3	0.73	2

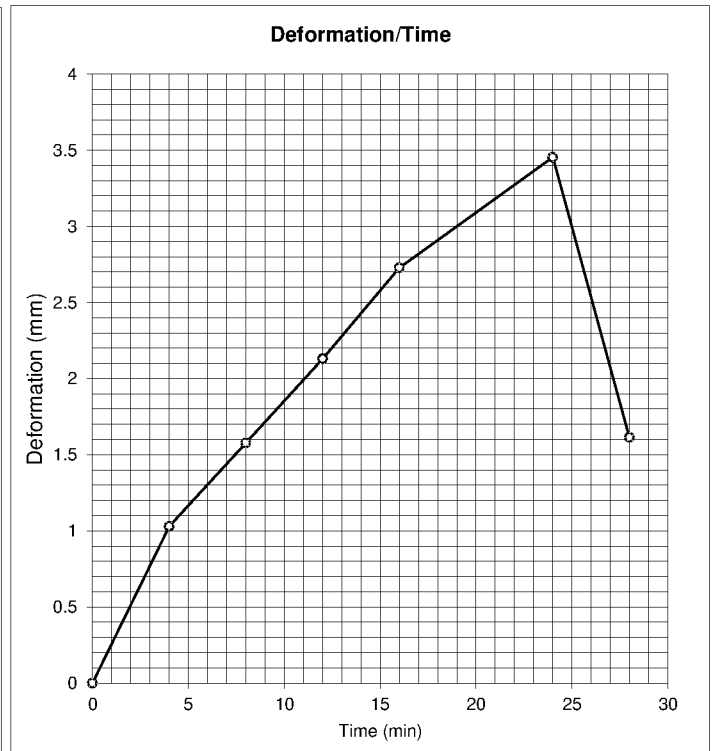
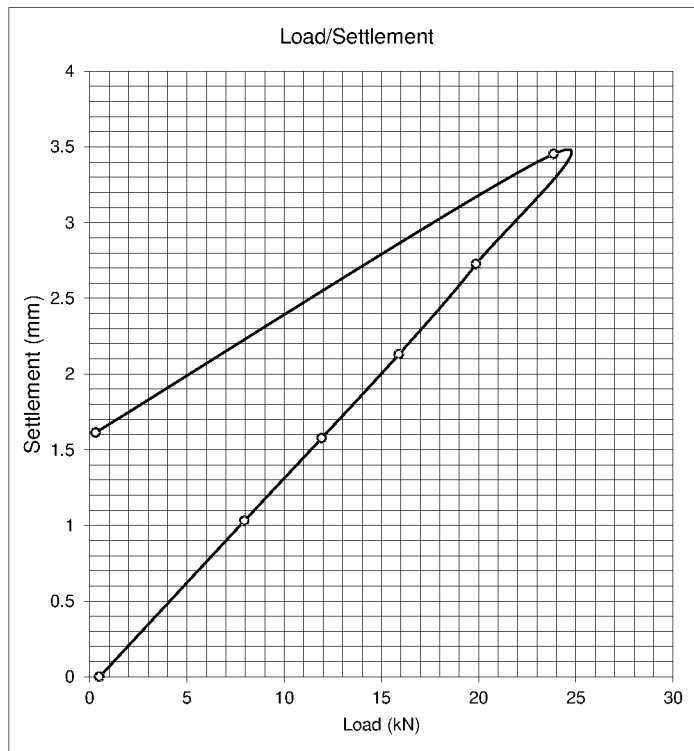


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	Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)		
	2519	Page 2 of 2	MSF-5-R9 (Rev.0)

	Plate Bearing		Job Ref	27374		
			Position No:	TP102		
Site Name:	Land at Stakers Farm, Yapton		Depth m	1.00		
Project No:	GE18621	Client	GESL		Date tested:	29/10/2019
Soil Description:	Brown silty CLAY		Reported	11/11/2019		
			Plate Diameter	450	mm	
Test Method	BS1377 Part 9 : 1990 : 4.1					

Sample Information		Test Data	
Environmental conditions	Overcast	Loading procedure	Incremental
Material Type	-	Description of Reaction load	Tracked Excavator
Temperature (0C):	13	In-situ moisture content %	23
Remarks:			

Load Increment no:	Load	Cumulative Settlement
	kN	mm
Seating load	0.5	0
1	8.0	1.03
2	11.9	1.58
3	15.9	2.13
4	19.9	2.73
5	23.9	3.45
6	0.3	1.61

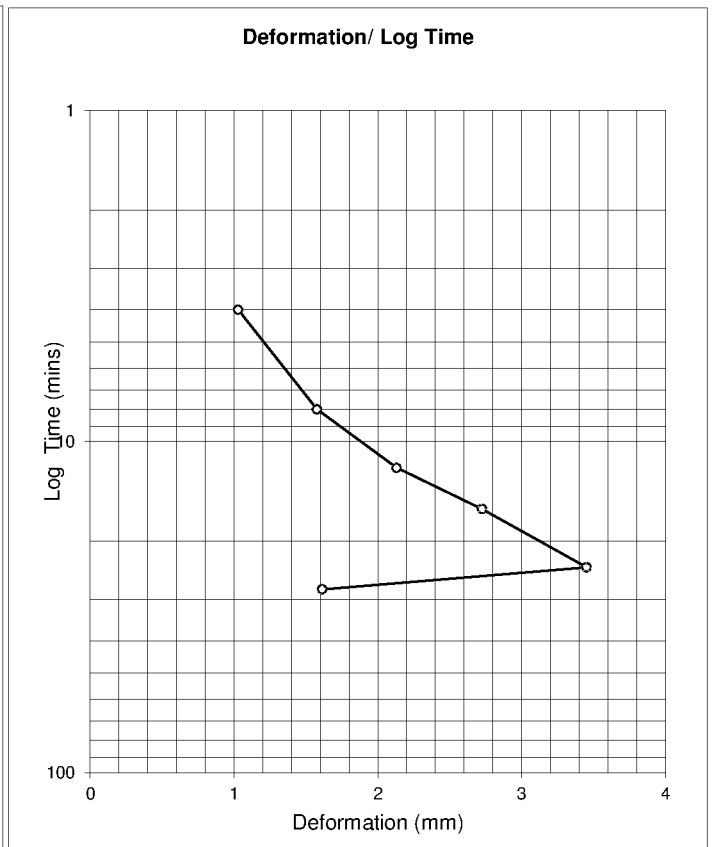
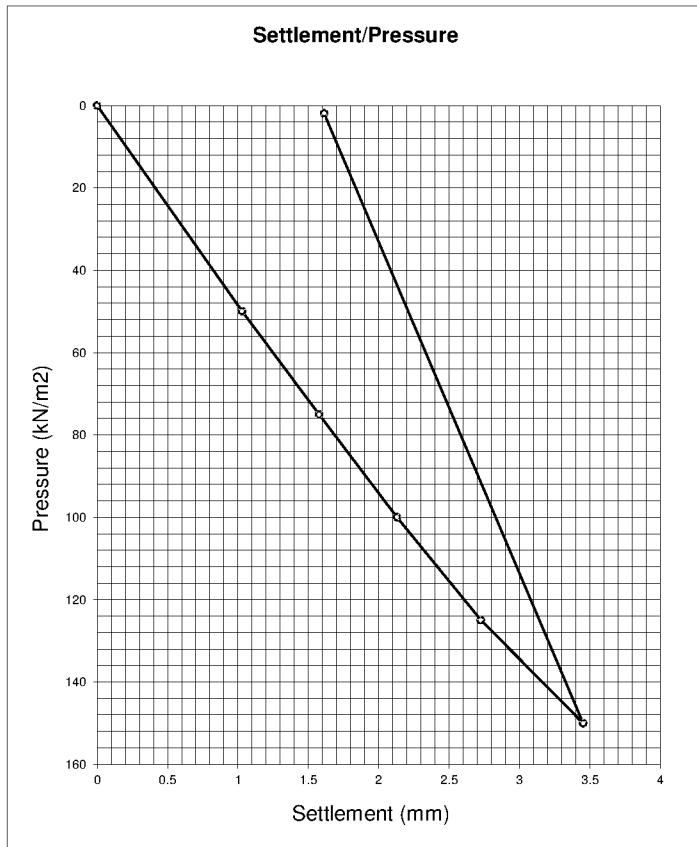


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	Wotton, Herts WD18 8PU		
	[Redacted Signature]		
2519	Approved Signatories: K.Phaure (Tech.Mgr)	J.Phaure (Lab.Mgr)	Initials: J.P
			Date: 11/11/2019
		Page 1 of 2	MSF-5-R9 (Rev.0)

	Plate Bearing		Job Ref	27374
			Position No:	TP102
Site Name:	Land at Stakers Farm, Yapton		Depth m	1.00
Project No:	GE18621	Client	GESL	
Soil Description:	Brown silty CLAY		Reported	11/11/2019
			Plate Diameter	450 mm
Test Method	BS1377 Part 9 : 1990 : 4.3			

Sample Information		Test Data	
Environmental conditions	Overcast	Loading procedure	Incremental
Material Type	-	Description of Reaction load	Tracked Excavator
Temperature (0C):	13	In situ moisture content %	23
Remarks:			

Load increment no:	Load	Settlement	Pressure
	kN	mm	kN/m2
Seating load	0.5	0	0
1	8.0	1.03	50
2	11.9	1.58	75
3	15.9	2.13	100
4	19.9	2.73	125
5	23.9	3.45	150
6	0.3	1.61	2

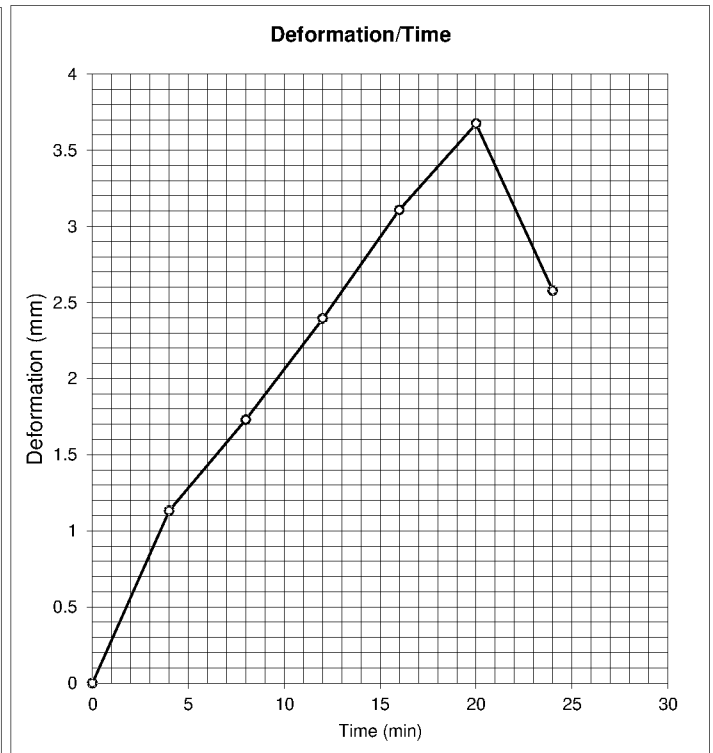
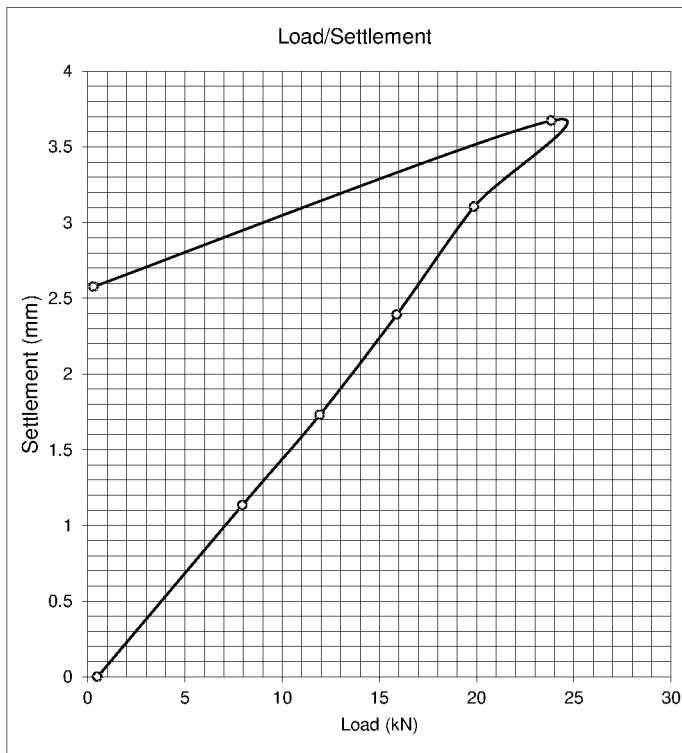


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	Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)		Page 2 of 2 MSF-5-R9 (Rev.0)

	Plate Bearing		Job Ref	27374		
			Position No:	TP103		
Site Name:	Land at Stakers Farm, Yapton		Depth m	1.00		
Project No:	GE18621	Client	GESL		Date tested:	29/10/2019
Soil Description:	Brown silty CLAY		Reported	11/11/2019		
			Plate Diameter	450	mm	
Test Method	BS1377 Part 9 : 1990 : 4.1					

Sample Information		Test Data	
Environmental conditions	Overcast	Loading procedure	Incremental
Material Type	-	Description of Reaction load	Tracked Excavator
Temperature (0C):	13	In-situ moisture content %	24
Remarks:			

Load Increment no:	Load	Cumulative Settlement
	kN	mm
Seating load	0.5	0
1	8.0	1.13
2	11.9	1.73
3	15.9	2.39
4	19.9	3.11
5	23.9	3.67
6	0.3	2.58



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			Initials:	J.P	
			Date:	11/11/2019	
2519	Approved Signatories:	K.Phaure (Tech.Mgr)	J.Phaure (Lab.Mgr)	Page 1 of 2	MSF-5-R9 (Rev.0)



Plate Bearing

Job Ref 27374

Position No: TP103

Site Name: Land at Stakers Farm, Yapton

Depth m 1.00

Project No: GE18621 Client GESL

Date tested: 29/10/2019

Soil Description: Brown silty CLAY

Reported 11/11/2019

Plate Diameter 450 mm

Test Method BS1377 Part 9 : 1990 : 4.3

Sample Information

Environmental conditions Overcast

Material Type -

Temperature (0C): 13

Remarks:

Test Data

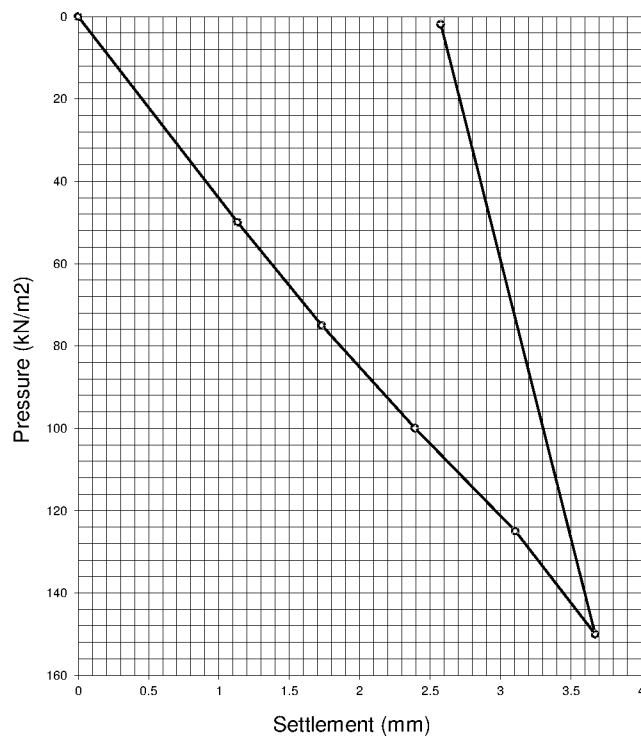
Loading procedure Incremental

Description of Reaction load Tracked Excavator

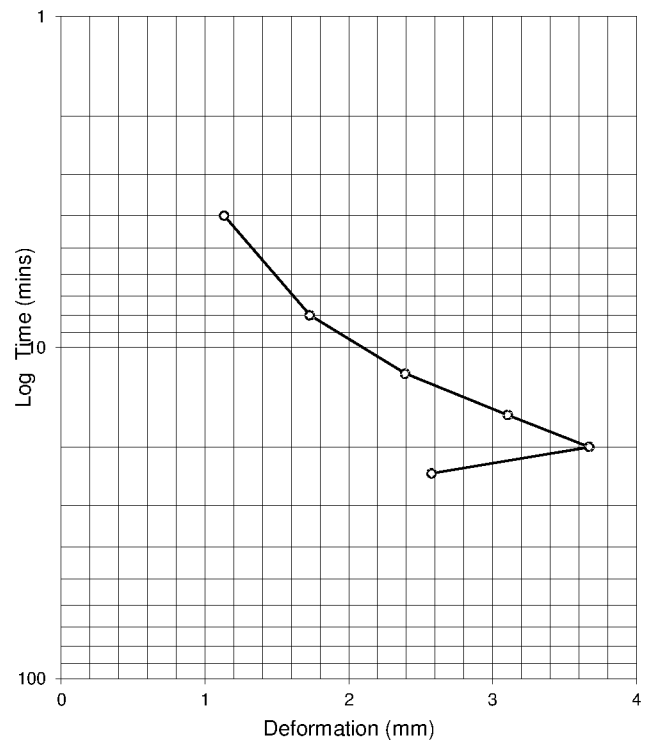
Insitu moisture content % 24

Load Increment no:	Load	Settlement	Pressure
	kN	mm	kN/m2
Seating load	0.5	0	0
1	8.0	1.13	50
2	11.9	1.73	75
3	15.9	2.39	100
4	19.9	3.11	125
5	23.9	3.67	150
6	0.3	2.58	2

Settlement/Pressure



Deformation/ Log Time

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Date: 11/11/2019

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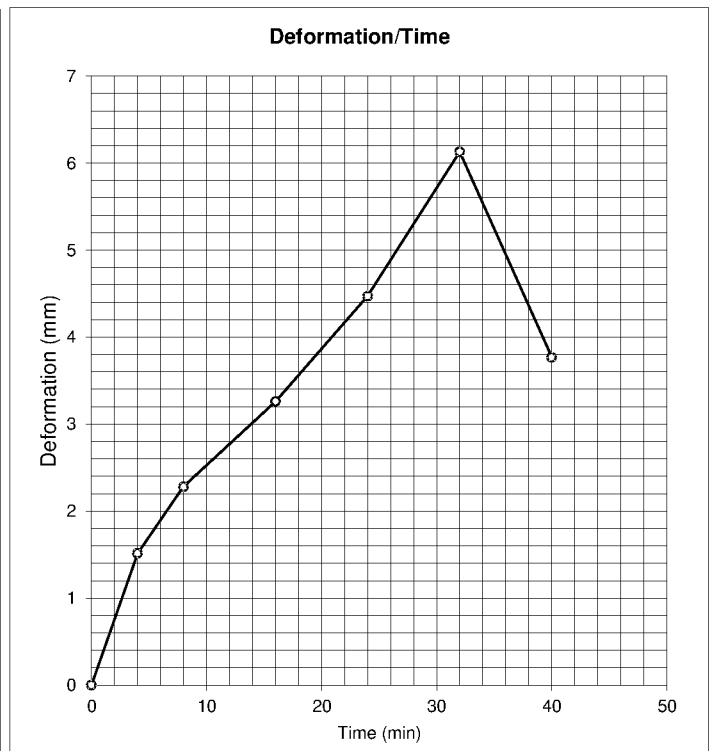
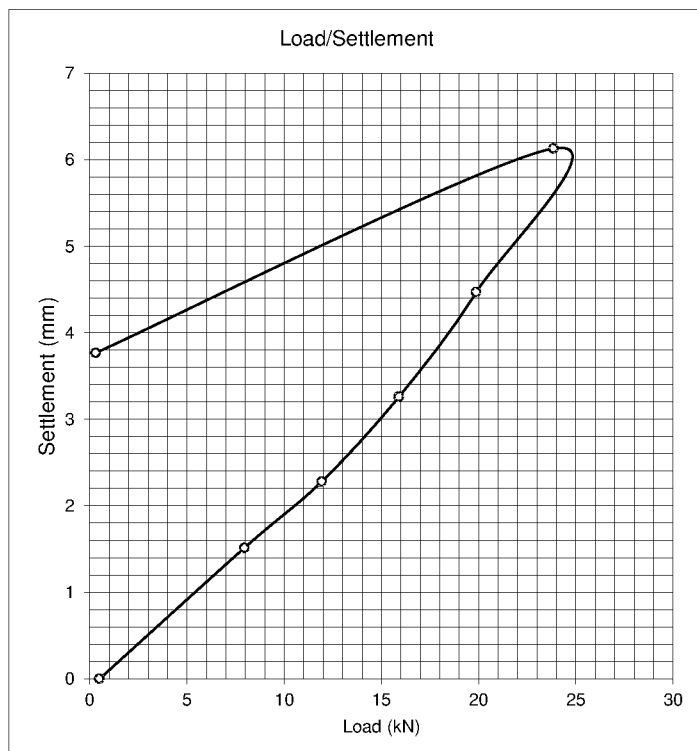
Page 2 of 2

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	Plate Bearing		Job Ref	27374		
			Position No:	TP104		
Site Name:	Land at Stakers Farm, Yapton		Depth m	1.00		
Project No:	GE18621	Client	GESL		Date tested:	29/10/2019
Soil Description:	Brown silty CLAY with rare fine gravel		Reported	11/11/2019		
			Plate Diameter	450	mm	
Test Method	BS1377 Part 9 : 1990 : 4.1					

Sample Information		Test Data	
Environmental conditions	Overcast	Loading procedure	Incremental
Material Type	-	Description of Reaction load	Tracked Excavator
Temperature (0C):	13	In-situ moisture content %	23
Remarks:			

Load Increment no:	Load	Cumulative Settlement
	kN	mm
Seating load	0.5	0
1	8.0	1.51
2	11.9	2.28
3	15.9	3.26
4	19.9	4.47
5	23.9	6.13
6	0.3	3.77

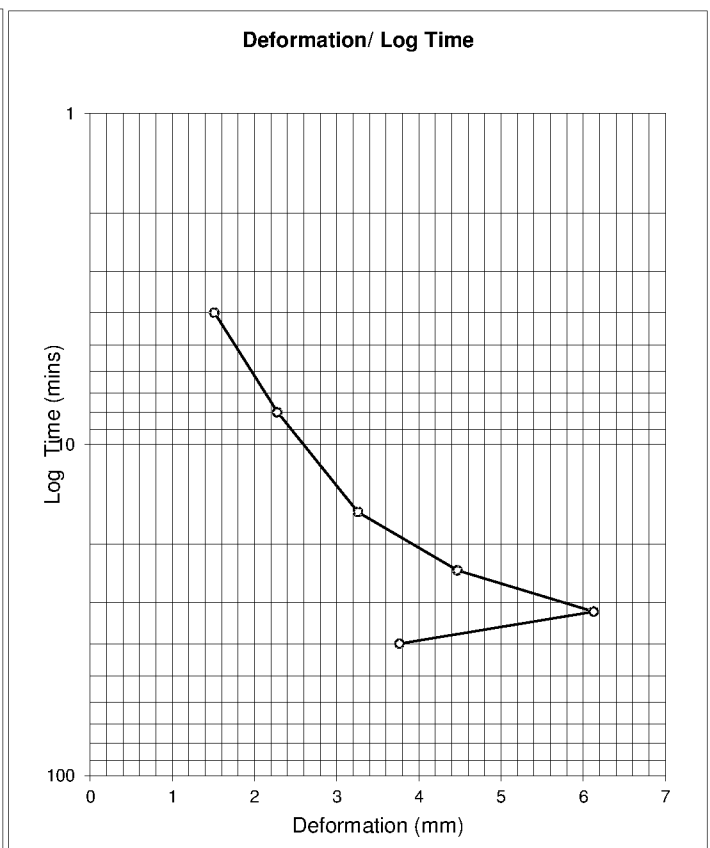
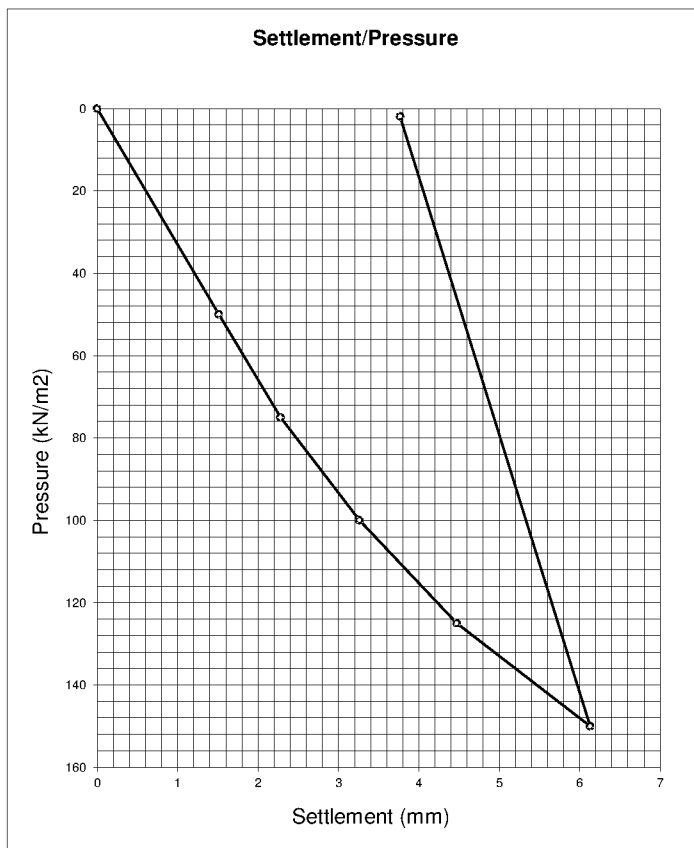


	K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford Herts WD18 9RU		Checked and Approved		
			Initials:	J.P	
			Date:	11/11/2019	
2519	Approved Signatories:	K.Phaure (Tech.Mgr)	J.Phaure (Lab.Mgr)	Page 1 of 2	MSF-5-R9 (Rev.0)

	Plate Bearing		Job Ref	27374
			Position No:	TP104
Site Name:	Land at Stakers Farm, Yapton		Depth m	1.00
Project No:	GE18621	Client	GESL	
Soil Description:	Brown silty CLAY with rare fine gravel		Reported	11/11/2019
			Plate Diameter	450 mm
Test Method	BS1377 Part 9 : 1990 : 4.3			

Sample Information		Test Data	
Environmental conditions	Overcast	Loading procedure	Incremental
Material Type	-	Description of Reaction load	Tracked Excavator
Temperature (0C):	13	Insitu moisture content %	23
Remarks:			

Load Increment no:	Load	Settlement	Pressure
	kN	mm	kN/m2
Seating load	0.5	0	0
1	8.0	1.51	50
2	11.9	2.28	75
3	15.9	3.26	100
4	19.9	4.47	125
5	23.9	6.13	150
6	0.3	3.77	2

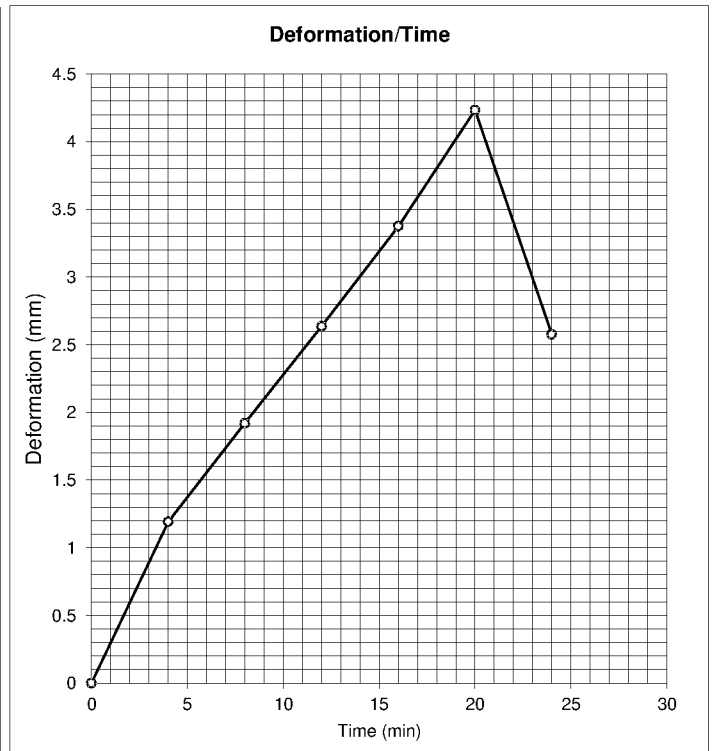
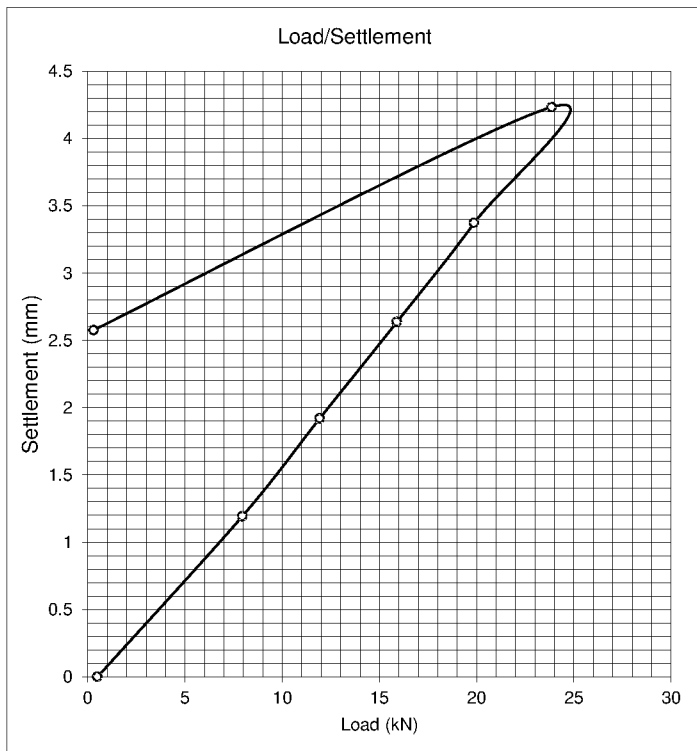


	K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach		Checked and Approved Initials: J.P Date: 11/11/2019
	Wetford, Leicestershire LE19 6PU		
	Em [REDACTED]		
2519	Approved Signatories:	K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)	Page 2 of 2 MSF-5-R9 (Rev.0)

	Plate Bearing		Job Ref	27374		
			Position No:	TP105		
Site Name:	Land at Stakers Farm, Yapton		Depth m	1.00		
Project No:	GE18621	Client	GESL		Date tested:	29/10/2019
Soil Description:	Brown silty CLAY with rare fine gravel and traces of rootlets		Reported	11/11/2019		
			Plate Diameter	450	mm	
Test Method	BS1377 Part 9 : 1990 : 4.1					

Sample Information		Test Data	
Environmental conditions	Overcast	Loading procedure	Incremental
Material Type	-	Description of Reaction load	Tracked Excavator
Temperature (0C):	13	In-situ moisture content %	22
Remarks:			

Load Increment no:	Load	Cumulative Settlement
	kN	mm
Seating load	0.5	0
1	8.0	1.19
2	11.9	1.92
3	15.9	2.64
4	19.9	3.37
5	23.9	4.23
6	0.3	2.58

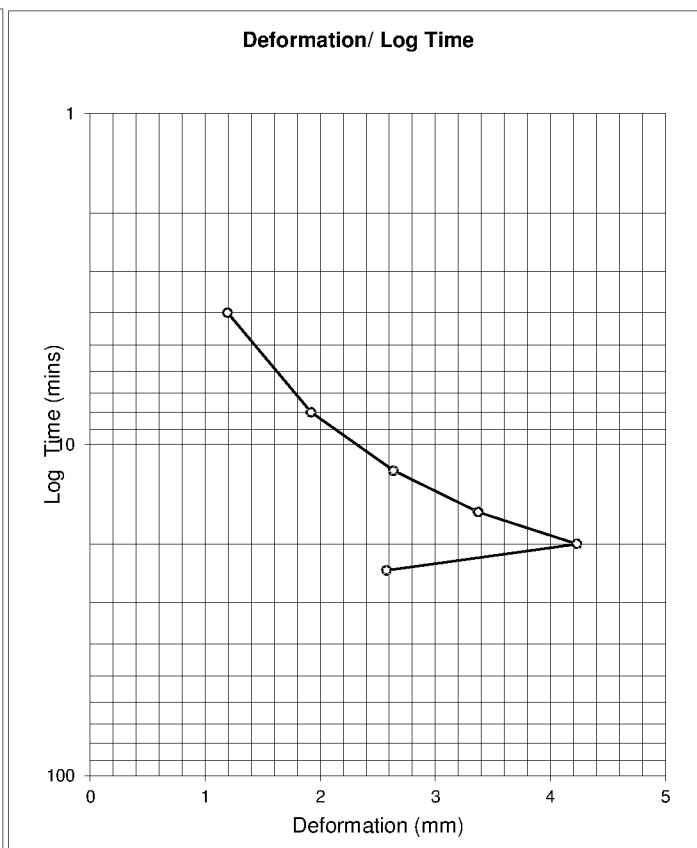
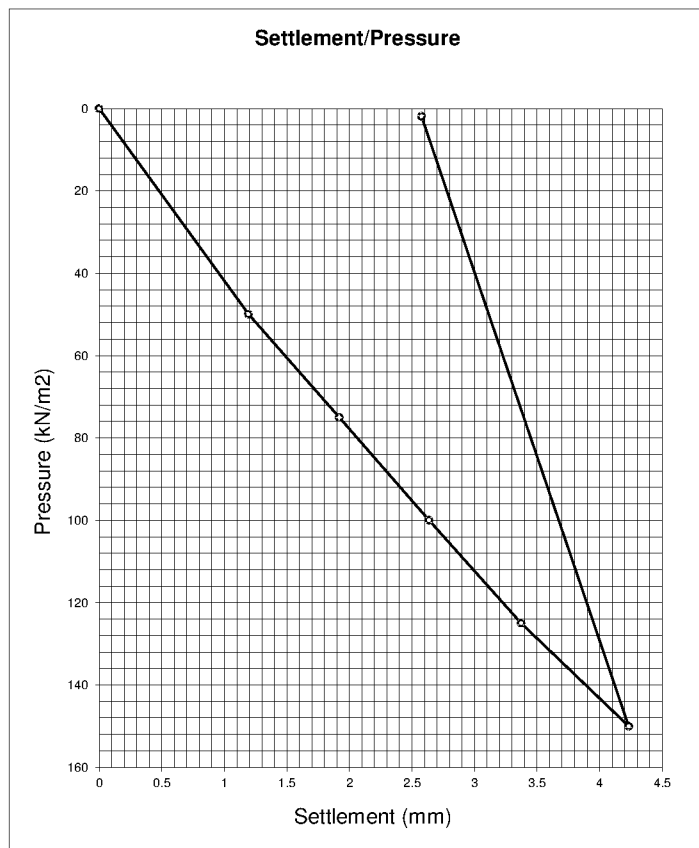


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	Approved Signatories: K.Phaure (Tech. Mgr) J.Phaure (Lab. Mgr)		Page 1 of 2	
	MSF-5-R9 (Rev.0)			

	Plate Bearing		Job Ref	27374
			Position No:	TP105
Site Name:	Land at Stakers Farm, Yapton		Depth m	1.00
Project No:	GE18621	Client	GESL	
Soil Description:	Brown silty CLAY with rare fine gravel and traces of rootlets		Reported	11/11/2019
			Plate Diameter	450 mm
Test Method	BS1377 Part 9 : 1990 : 4.3			

Sample Information		Test Data	
Environmental conditions	Overcast	Loading procedure	Incremental
Material Type	-	Description of Reaction load	Tracked Excavator
Temperature (0C):	13	Insitu moisture content %	22
Remarks:			

Load Increment no:	Load	Settlement	Pressure
	kN	mm	kN/m2
Seating load	0.5	0	0
1	8.0	1.19	50
2	11.9	1.92	75
3	15.9	2.64	100
4	19.9	3.37	125
5	23.9	4.23	150
6	0.3	2.58	2

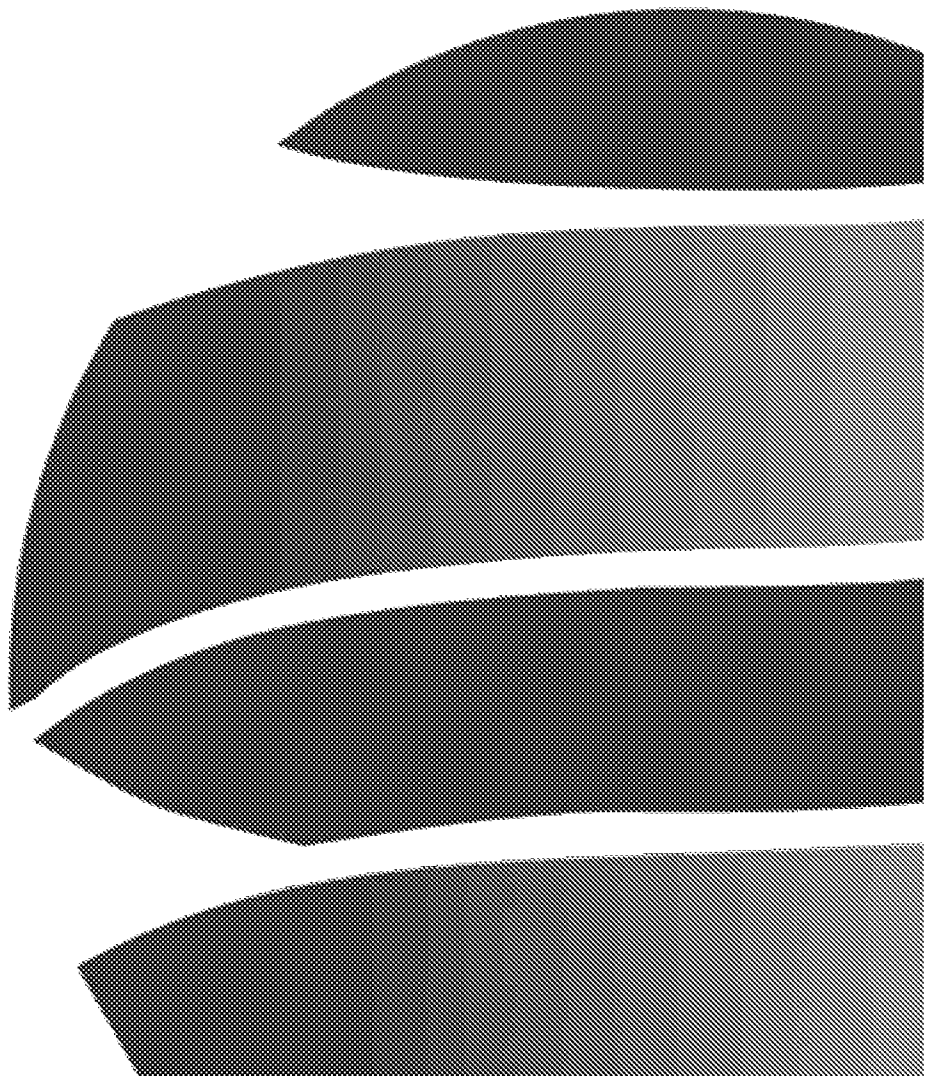


	K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford Herts WD18 9RU		Checked and Approved Initials: J.P. Date: 11/11/2019
	Approved Signatories:		Page 2 of 2



APPENDIX B

Geotechnical Laboratory Testing Results





Summary of Natural Moisture Content, Liquid Limit and Plastic Limit Results

Job No.	Project Name	Programme	
27374	Land at Stakers Farm, Yapton	Samples received	01/11/2019
		Schedule received	01/11/2019
Project No.	Client	Project started	04/11/2019
GE18621	GESL	Testing Started	07/11/2019

Hole No.	Sample				Soil Description	NMC %	Passing 425µm %	LL %	PL %	PI %	Remarks
	Ref	Top m	Base m	Type							
WS01	2	1.00	-	D	Brown sandy silty CLAY with rare fm sub-angular gravel	18	99	31	15	16	
WS01	4	2.00	-	D	Orangish brown slightly gravelly silty clayey SAND (gravel is fmc and sub-rounded)	14	88	27	16	11	
WS02	11	1.00	-	D	Orangish brown slightly sandy silty CLAY with numerous dark grey flecks and rare fine gravel	20	99	43	17	26	
WS02	13	2.00	-	D	Orangish brown slightly sandy silty CLAY with rare fine gravel	20	98	38	17	21	
TP106	15	1.50	-	B	Brown slightly sandy silty CLAY with rare fine gravel	22	99	39	18	21	
TP107	17	1.20	-	B	Orangish brown slightly sandy silty CLAY with rare fine gravel	14	99	43	18	25	
TP101	-	1.00	-	D	Brown silty CLAY with traces of rootlets and rare fine gravel	21	97	43	19	24	
TP102	-	1.00	-	D	Brown silty CLAY	23	100	46	20	26	
TP103	-	1.00	-	D	Brown silty CLAY	22	100	44	18	26	
TP104	-	1.00	-	D	Brown silty CLAY with rare fine gravel	23	98	42	20	22	
TP105	-	1.00	-	D	Brown silty CLAY with rare fine gravel and traces of rootlets	22	96	43	20	23	

 UKAS TESTING	Test Methods: BS1377: Part 2: 1990: Natural Moisture Content : clause 3.2 Atterberg Limits: clause 4.3 and 5.0	Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford Herts WD18 9RU	Checked and Approved Initials J.P Date: 15/11/2019
	2519	Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)	MSF-5-R1(b)

2519

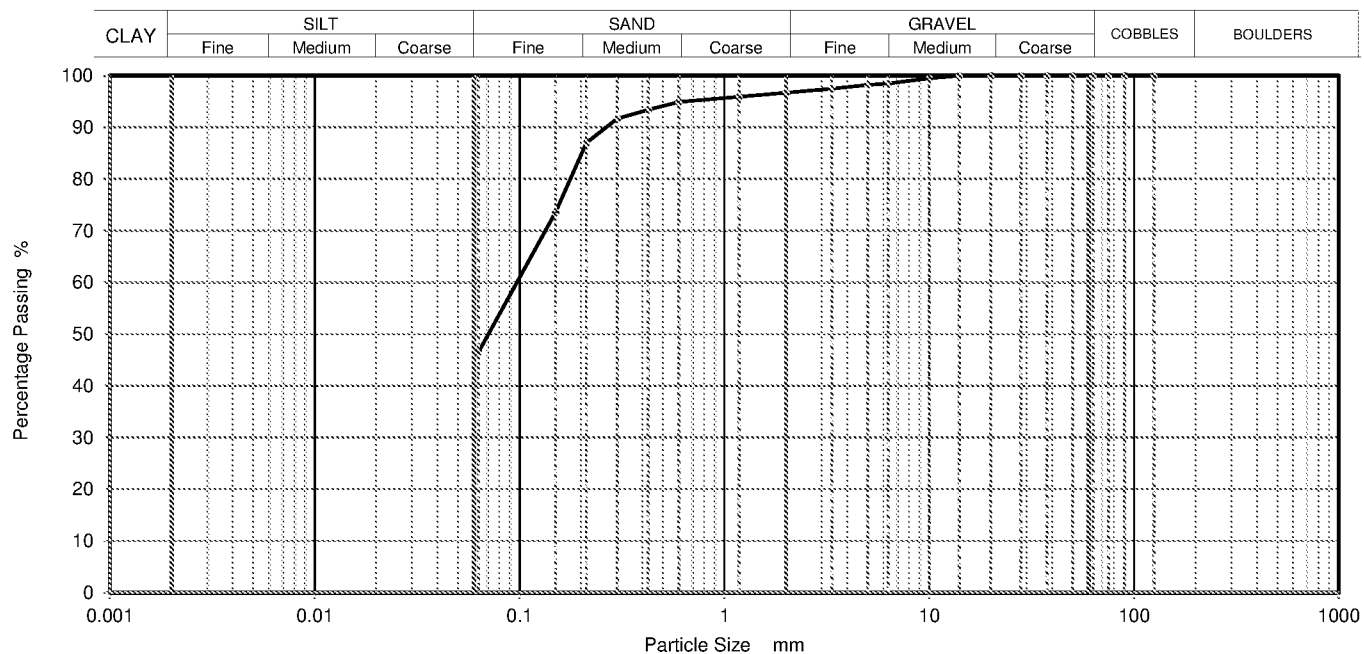
MSF-5-R1(b)



PARTICLE SIZE DISTRIBUTION

Job Ref	27374
Borehole/Pit No.	WS01
Sample No.	3
Depth Top	1.50 m
Depth Base	- m
Sample Type	D
Samples received	01/11/2019
Schedules received	01/11/2019
Project started	04/11/2019
Date tested	12/11/2019

Site Name	Land at Stakers Farm, Yapton		
Project No.	GE18621	Client	GESL
Soil Description	Brown slightly gravelly silty sandy CLAY (gravel is fm and sub-angular)		
Test Method	BS1377:Part 2: 1990, clause 9.0		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	99		
5	98		
3.35	98		
2	97		
1.18	96		
0.6	95		
0.425	93		
0.3	92		
0.212	87		
0.15	74		
0.063	47		

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	3.3
Sand	50.2
Fines <0.063mm	46.5

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

Remarks
Preparation and testing in accordance with BS1377 unless noted below



K4 Soils Laboratory
Unit 8, Olds Close, Watford, Herts, WD18 9RU

Checked and Approved

Initials: J.P

Date: 15/11/2019

2519

Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

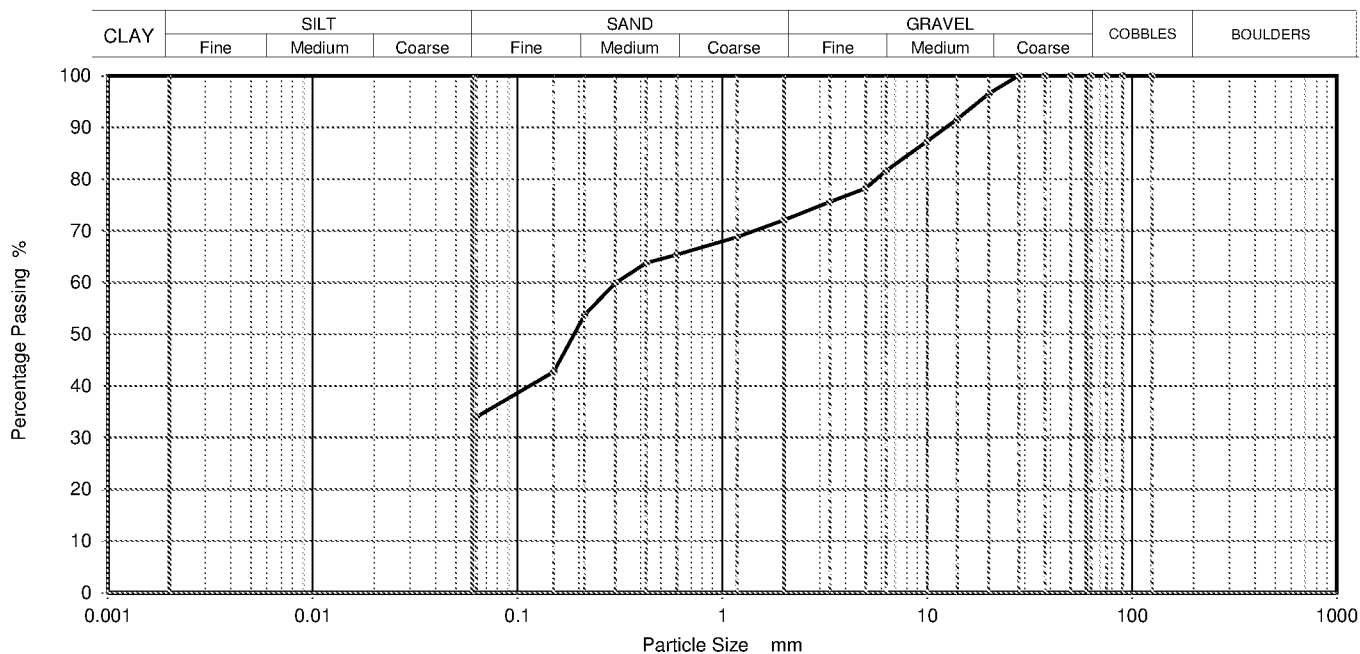
MSF-5-R3



PARTICLE SIZE DISTRIBUTION

Job Ref	27374
Borehole/Pit No.	WS01
Sample No.	5
Depth Top	2.50 m
Depth Base	- m
Sample Type	D
Samples received	01/11/2019
Schedules received	01/11/2019
Project started	04/11/2019
Date tested	12/11/2019

Site Name	Land at Stakers Farm, Yapton		
Project No.	GE18621	Client	GESL
Soil Description	Light brown clayey silty gravelly SAND with occasional fmc intact chalk fragments (gravel is fm and sub-angular to angular)		
Test Method	BS1377:Part 2: 1990, clause 9.0		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	97		
14	92		
10	87		
6.3	82		
5	78		
3.35	76		
2	72		
1.18	69		
0.6	65		
0.425	64		
0.3	60		
0.212	54		
0.15	43		
0.063	34		

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	27.9
Sand	38.1
Fines <0.063mm	34.0

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

Remarks
Preparation and testing in accordance with BS1377 unless noted below



K4 Soils Laboratory
Unit 8, Olds Close, Watford, Herts, WD18 9RU

Checked and Approved

Initials: J.P

Date: 15/11/2019

2519

Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

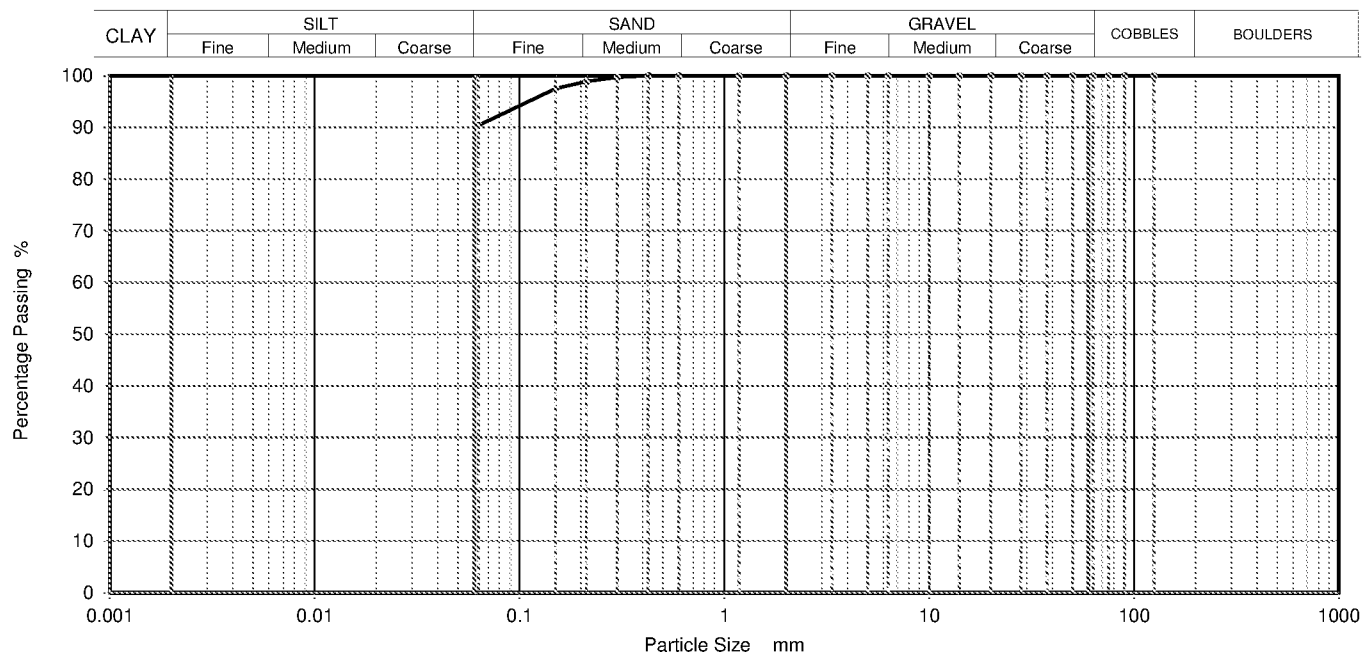
MSF-5-R3



PARTICLE SIZE DISTRIBUTION

Job Ref	27374
Borehole/Pit No.	WS02
Sample No.	12
Depth Top	1.50 m
Depth Base	- m
Sample Type	D
Samples received	01/11/2019
Schedules received	01/11/2019
Project started	04/11/2019
Date tested	13/11/2019

Site Name	Land at Stakers Farm, Yapton		
Project No.	GE18621	Client	GESL
Soil Description	Brown slightly sandy silty CLAY with scattered dark grey flecks		
Test Method	BS1377:Part 2: 1990, clause 9.0		



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

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	0.0
Sand	9.6
Fines <0.063mm	90.4

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

Remarks
Preparation and testing in accordance with BS1377 unless noted below



K4 Soils Laboratory
Unit 8, Olds Close, Watford, Herts, WD18 9RU

Checked and Approved

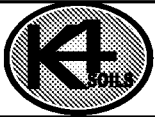
Initials: J.P

Date: 15/11/2019

MSF-5-R3

Approved Signatories: K.Phaure

					Saturation Moisture Content - Summary of Results Tested in accordance with BS1377 : Part 2 : 1990, clause 3.3 unless annotated otherwise.						
Job No.		Project Name							Programme		
27374		Land at Stakers Farm, Yapton							Samples received	01/11/2019	
									Schedule received	01/11/2019	
Project No.		Client							Project started		
GE18621		GESL							Testing Started		
Hole No.	Sample				Description	SMC %	NMC %	Bulk Density Mg/m3	Dry Density Mg/m3	Remarks - Sample size complies with BS1377:1990: Part 2 (Yes/No)	
	Ref	Top m	Base m	Type							
WS01	6	3.00	-	D	Off white putty CHALK with fmc intact chalk fragments	22	21	2.03	1.68	No	
WS01	9	4.50	-	D	Off white putty CHALK with fmc intact chalk fragments	23	21	2.02	1.67	No	
WS02	2	3.50	-	D	Off white putty CHALK with fmc intact chalk fragments	24	24	2.01	1.63	No	
					Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford Herts WD18 9BU					Checked and Approved Initials J.P Date: 15/11/2019	
2519					Approved Signatories: K.Phaure (Tech.Mgr) J.N. Phure (Lab.Mgr)					MSF-5-R18	



California Bearing Ratio (CBR)

Job Ref 27374

Borehole/Pit No. HP01

Site Name Land at Stakers Farm, Yapton

Sample No. 5

Project No. GE18621

Client

GESL

Depth Top 0.60 m

Soil Description

Brown slightly sandy silty CLAY

Depth Base - m

Sample Type B

Samples received 01/11/2019

Schedules received 01/11/2019

Test Method BS1377 : Part 4 : 1990, clause 7

Project Started 04/11/2019

Date Tested 08/11/2019

Specimen Preparation

Condition REMOULDED

Details Recompacted with specified standard effort using 2.5kg rammer

Soaking details

Period of soaking 6 days

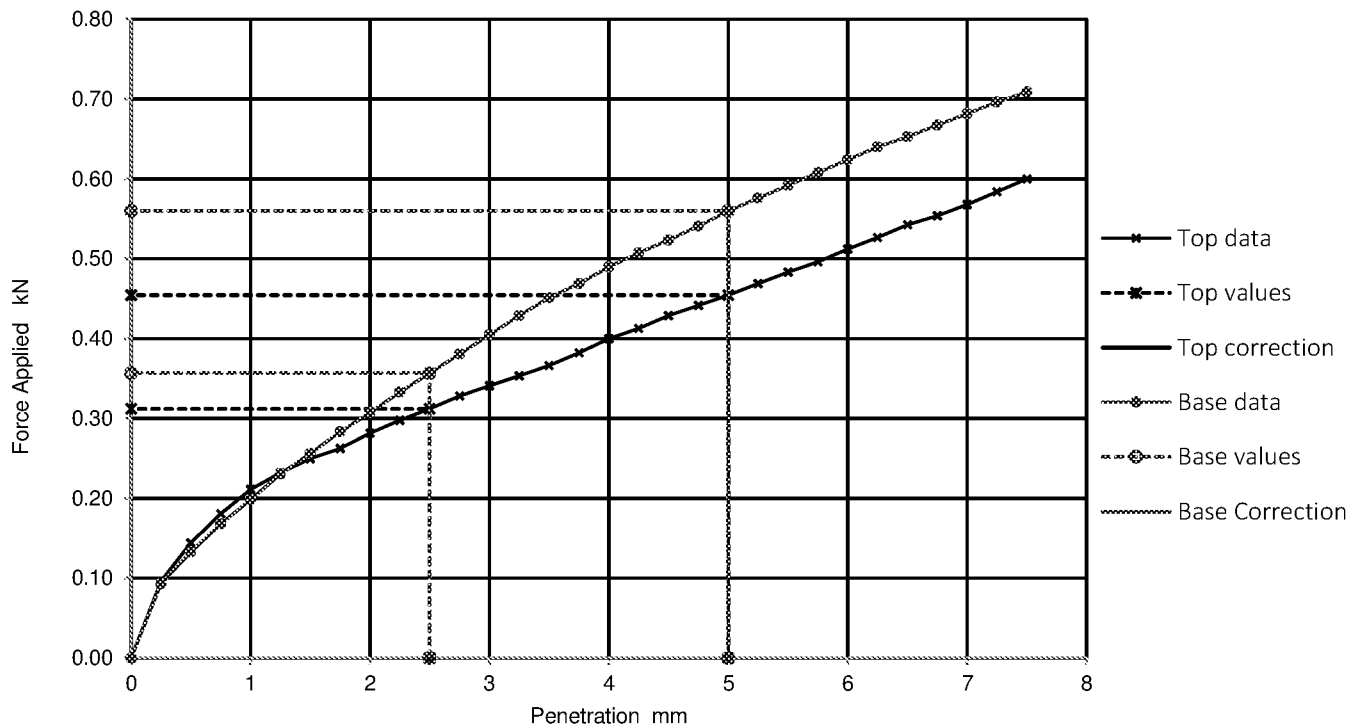
Time to surface 6 days

Amount of swell recorded 0.02 mm

Material retained on 20mm sieve removed 0.0 %

Initial Specimen details	Bulk density	2.01	Mg/m ³	Surcharge applied	6	kg
	Dry density	1.65	Mg/m ³		4	kPa
	Moisture content	22	%			

Force v Penetration Plots



Results

TOP
BASE

Curve correction applied	CBR Values, %			
	2.5mm	5mm	Highest	Average
No	2.4	2.3	2.4	2.6
No	2.7	2.8	2.8	

Moisture Content
%
23
22

Remarks

1



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Test Report by K4 SOILS LABORATORY
Unit 8 Olds Close Olds Approach
Watford Herts WD18 9RU

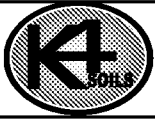
Approved Signatories: K.Phaure (Tel: 01924 251911)

Checked and Approved

Initials: J.P

Date: 15/11/2019

MSF-5-R16



California Bearing Ratio (CBR)

Job Ref 27374

Borehole/Pit No. HP03

Site Name Land at Stakers Farm, Yapton

Sample No. 7

Project No. GE18621 Client GESL

Depth Top 0.60 m

Soil Description Brown slightly sandy silty CLAY

Depth Base - m

Sample Type B

Samples received 01/11/2019

Schedules received 01/11/2019

Test Method BS1377 : Part 4 : 1990, clause 7

Project Started 04/11/2019

Date Tested 08/11/2019

Specimen Preparation

Condition REMOULDED

Details Recompacted with specified standard effort using 2.5kg rammer

Soaking details

Period of soaking 6 days

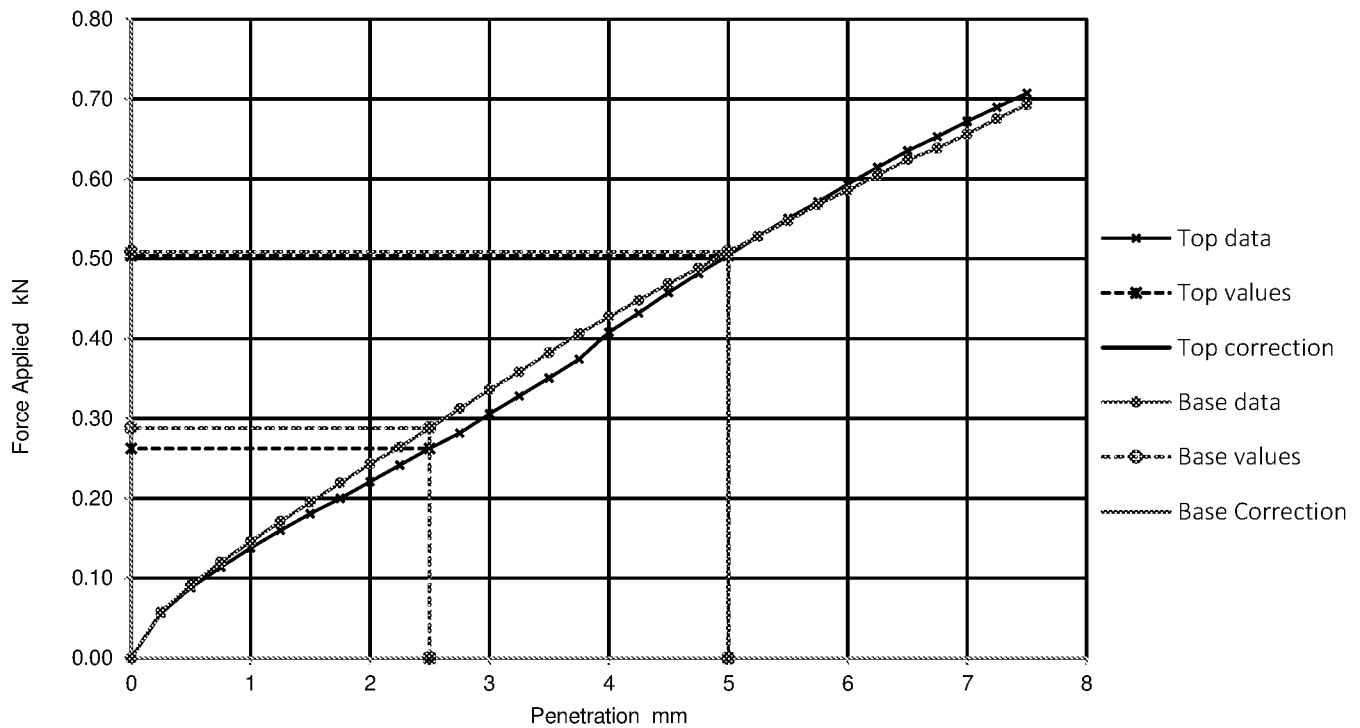
Time to surface 6 days

Amount of swell recorded 0.11 mm

Material retained on 20mm sieve removed 0.0 %

Initial Specimen details	Bulk density	2.02	Mg/m ³	Surcharge applied	6	kg
	Dry density	1.68	Mg/m ³		4	kPa
	Moisture content	21	%			

Force v Penetration Plots



Results

TOP
BASE

Curve correction applied	CBR Values, %			
	2.5mm	5mm	Highest	Average
No	2.0	2.5	2.5	2.5
No	2.2	2.5	2.5	

Moisture Content %
22
20

Remarks

1



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Test Report by K4 SOILS LABORATORY
Unit 8 Olds Close Olds Approach
Watford Herts WD18 9RU

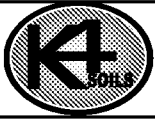
Checked and Approved

Initials: J.P

Date: 15/11/2019

Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

MSF-5-R16



California Bearing Ratio (CBR)

Job Ref 27374

Borehole/Pit No. HP06

Site Name Land at Stakers Farm, Yapton

Sample No. 10

Project No. GE18621

Client

GESL

Depth Top 0.60 m

Soil Description

Brown slightly sandy silty CLAY with rare fm sub-angular gravel

Depth Base - m

Sample Type B

Samples received 01/11/2019

Schedules received 01/11/2019

Test Method BS1377 : Part 4 : 1990, clause 7

Project Started 04/11/2019

Date Tested 08/11/2019

Specimen Preparation

Condition REMOULDED

Details Recompacted with specified standard effort using 2.5kg rammer

Soaking details

Period of soaking 6 days

Time to surface 6 days

Amount of swell recorded 0.44 mm

Material retained on 20mm sieve removed 0.0 %

Initial Specimen details Bulk density 1.99 Mg/m³

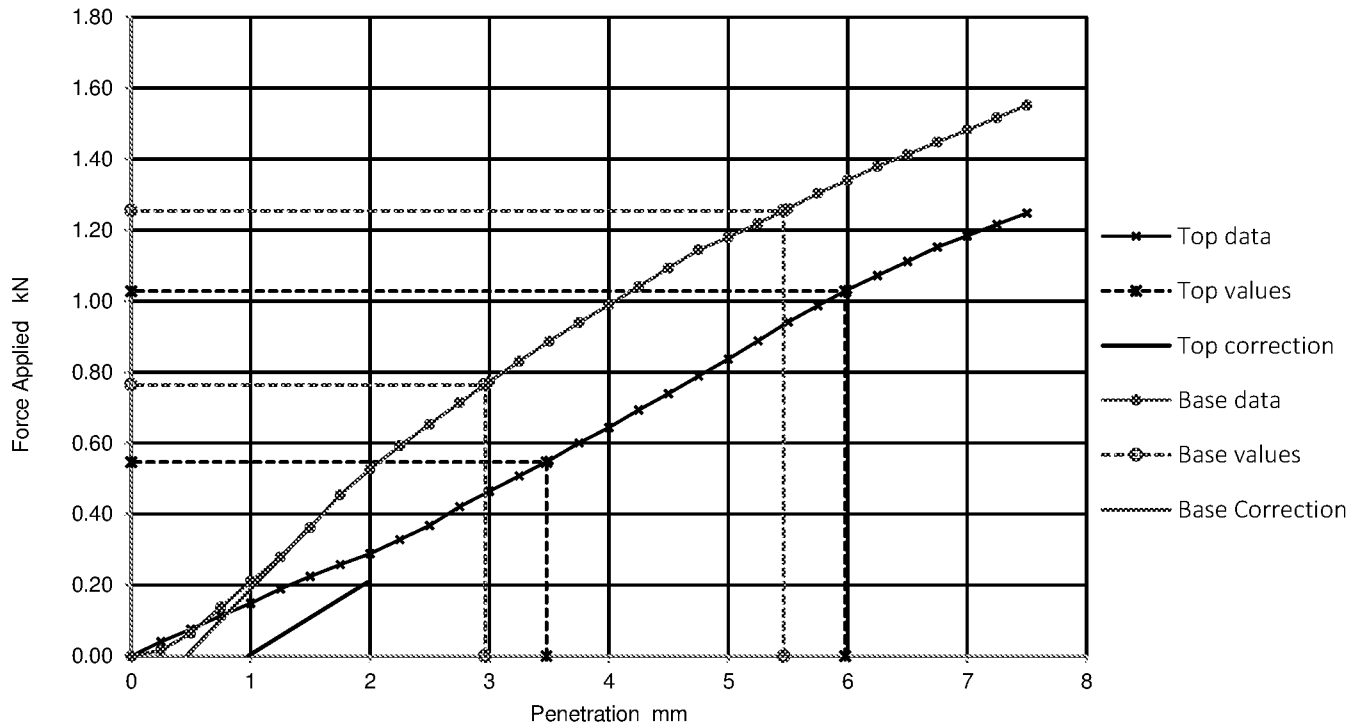
Dry density 1.68 Mg/m³

Moisture content 18 %

Surcharge applied 6 kg

4 kPa

Force v Penetration Plots



Results

TOP
BASE

Curve correction applied	CBR Values, %			
	2.5mm	5mm	Highest	Average
Yes	4.1	5.1	5.1	5.7
Yes	5.8	6.3	6.3	

Moisture Content %
20
19

Remarks

1



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Test Report by K4 SOILS LABORATORY
Unit 8 Olds Close Olds Approach
Watford Herts WD18 9RU

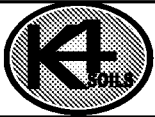
Checked and Approved

Initials: J.P

Date: 15/11/2019

Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

MSF-5-R16



California Bearing Ratio (CBR)

Job Ref 27374

Borehole/Pit No. HP08

Site Name Land at Stakers Farm, Yapton

Sample No. 12

Project No. GE18621 Client GESL

Depth Top 0.60 m

Soil Description Brown slightly clayey silty SAND

Depth Base - m

Sample Type B

Samples received 01/11/2019

Schedules received 01/11/2019

Test Method BS1377 : Part 4 : 1990, clause 7

Project Started 04/11/2019

Date Tested 08/11/2019

Specimen Preparation

Condition REMOULDED

Details Recompacted with specified standard effort using 2.5kg rammer

Soaking details

Period of soaking 6 days

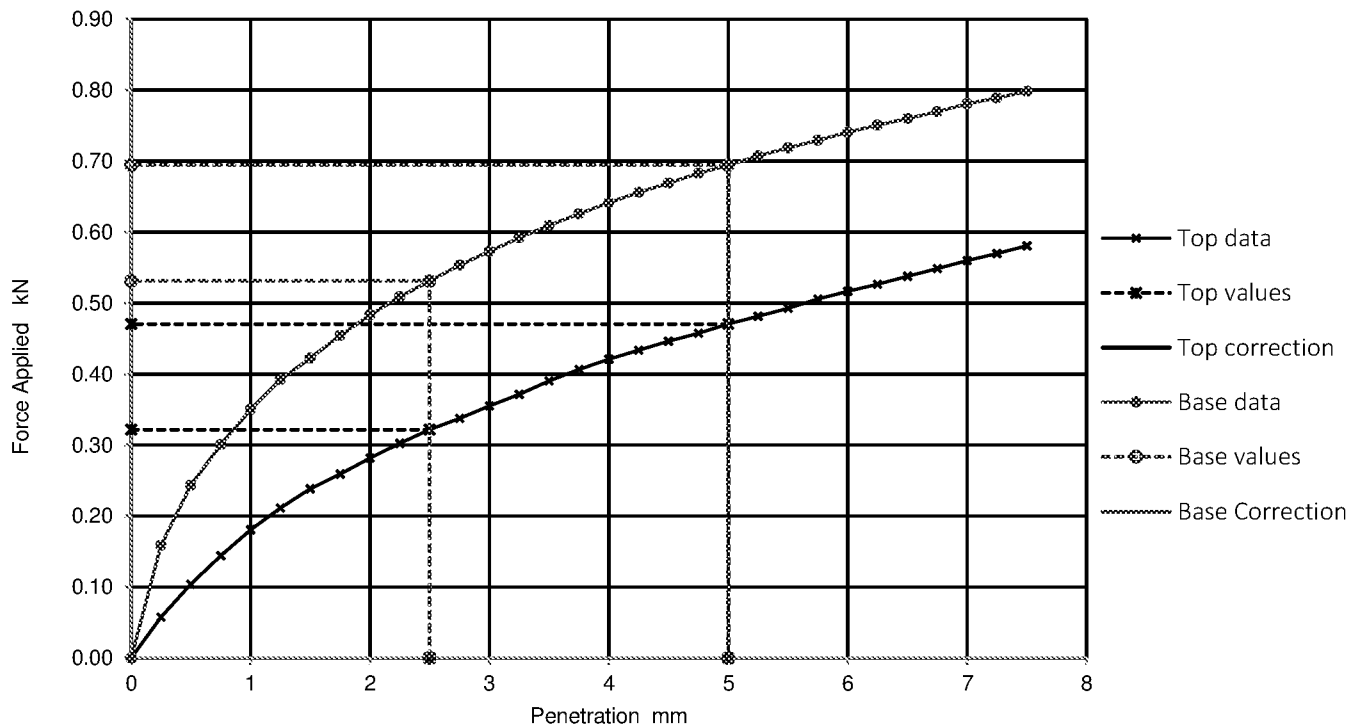
Time to surface 6 days

Amount of swell recorded 1.08 mm

Material retained on 20mm sieve removed 0.0 %

Initial Specimen details Bulk density 1.76 Mg/m³ Surcharge applied 6 kg
Dry density 1.56 Mg/m³ 4 kPa
Moisture content 13 %

Force v Penetration Plots



Results

TOP
BASE

Curve correction applied	CBR Values, %			
	2.5mm	5mm	Highest	Average
No	2.4	2.4	2.4	N/A
No	4.0	3.5	4.0	

Moisture Content %
24
24

Remarks

1



2519

Test Report by K4 SOILS LABORATORY
Unit 8 Olds Close Olds Approach
Watford Herts WD18 9RU

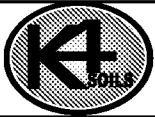
Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

Checked and Approved

Initials: J.P

Date: 15/11/2019

MSF-5-R16



California Bearing Ratio (CBR)

Job Ref 27374

Borehole/Pit No. TP106

Site Name Land at Stakers Farm, Yapton

Sample No. 16

Project No. GE18621 Client GESL

Depth Top 2.00 m

Soil Description Brown slightly sandy silty CLAY

Depth Base - m

Sample Type B

Samples received 01/11/2019

Schedules received 01/11/2019

Test Method BS1377 : Part 4 : 1990, clause 7

Project Started 04/11/2019

Date Tested 08/11/2019

Specimen Preparation

Condition REMOULDED

Details Recompacted with specified standard effort using 2.5kg rammer

Soaking details

Period of soaking 6 days

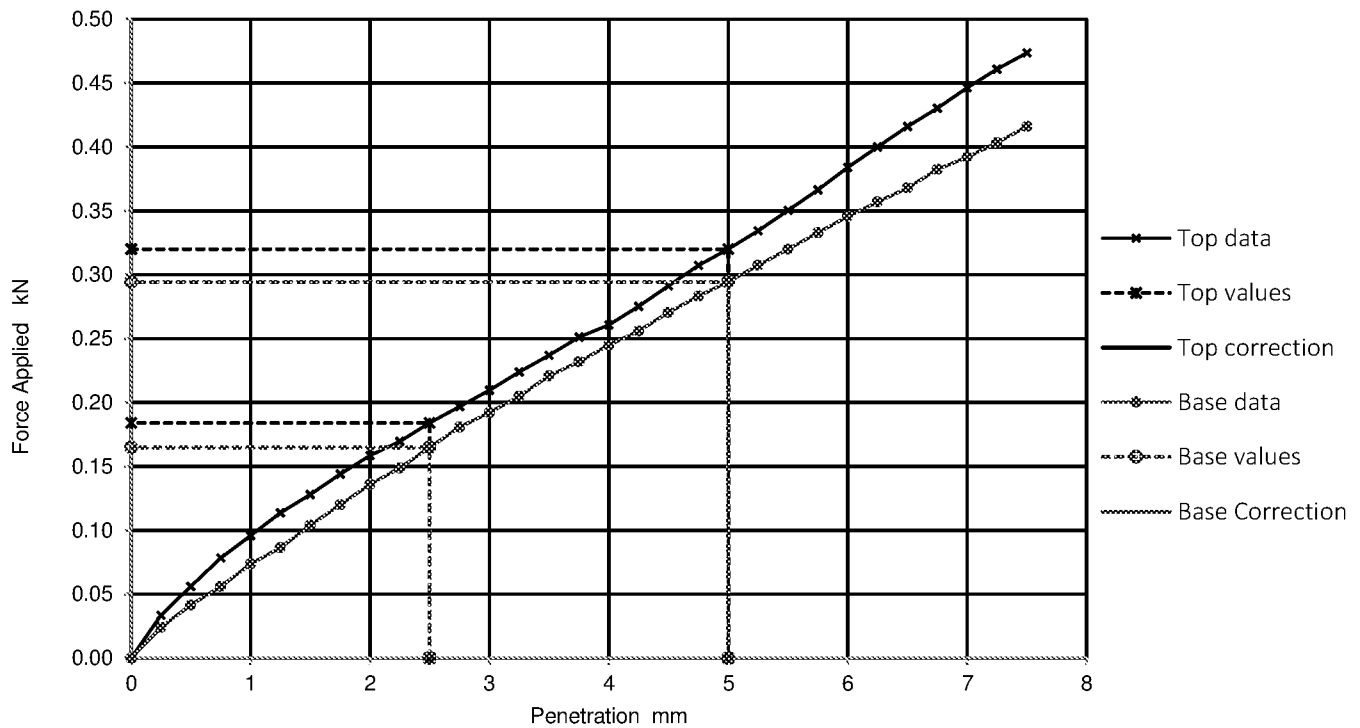
Time to surface 6 days

Amount of swell recorded 0.01 mm

Material retained on 20mm sieve removed 0.0 %

Initial Specimen details Bulk density 2.06 Mg/m³ Surcharge applied 6 kg
Dry density 1.71 Mg/m³ 4 kPa
Moisture content 20 %

Force v Penetration Plots



Results

TOP
BASE

Curve correction applied	CBR Values, %			
	2.5mm	5mm	Highest	Average
No	1.4	1.6	1.6	1.5
No	1.2	1.5	1.5	

Moisture Content %
20
20

Remarks

1



Test Report by K4 SOILS LABORATORY
Unit 8 Olds Close Olds Approach
Wotton Bassett, Wiltshire, Wiltshire, Wiltshire

Checked and Approved

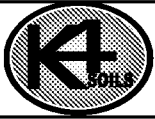
Initials: J.P

Date: 15/11/2019

2519

Approved Signatories: K.Phaure

MSF-5-R16



California Bearing Ratio (CBR)

Job Ref 27374

Borehole/Pit No. TP107

Site Name Land at Stakers Farm, Yapton

Sample No. 18

Project No. GE18621 Client GESL

Depth Top 2.00 m

Soil Description Brown silty clayey SAND/very sandy CLAY

Depth Base - m

Sample Type B

Samples received 01/11/2019

Schedules received 01/11/2019

Test Method BS1377 : Part 4 : 1990, clause 7

Project Started 04/11/2019

Date Tested 08/11/2019

Specimen Preparation

Condition REMOULDED

Details Recompacted with specified standard effort using 2.5kg rammer

Soaking details

Period of soaking 6 days

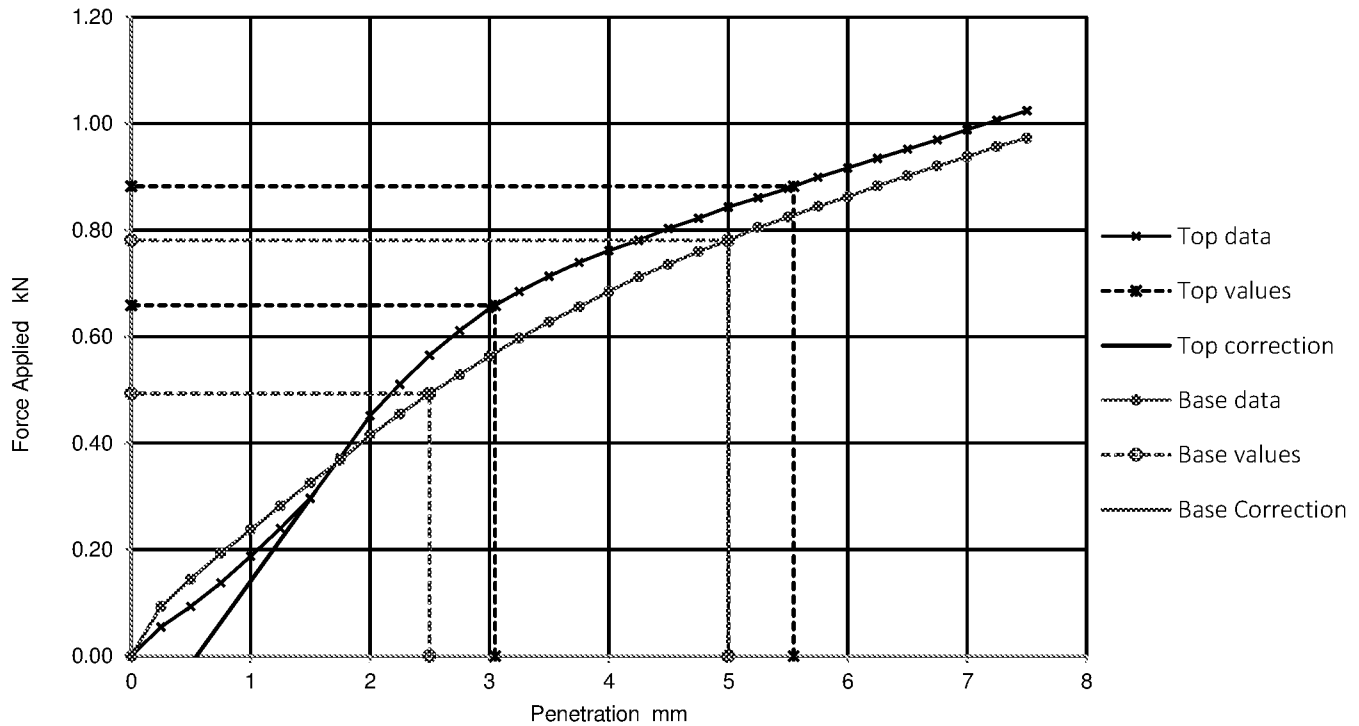
Time to surface 6 days

Amount of swell recorded 1.20 mm

Material retained on 20mm sieve removed 0.0 %

Initial Specimen details Bulk density 1.89 Mg/m³ Surcharge applied 6 kg
Dry density 1.72 Mg/m³ 4 kPa
Moisture content 10 %

Force v Penetration Plots



Results

TOP
BASE

Curve correction applied	CBR Values, %			
	2.5mm	5mm	Highest	Average
Yes	5.0	4.4	5.0	N/A
No	3.7	3.9	3.9	

Moisture Content %
18
19

Remarks

1



2519

Test Report by K4 SOILS LABORATORY
Unit 8 Olds Close Olds Approach
Watford Herts WD18 9RU

Checked and Approved

Initials: J.P

Date: 15/11/2019

Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

MSF-5-R16