

TÜV Rheinland Industrial Services Limited

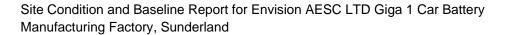


Site Condition and Baseline Report for Envision AESC LTD Giga 1 Car Battery Manufacturing Factory, Sunderland

Report ref: 300168590-ES-002

Version ref: 1

Issue date: 19/01/2023





Ref. No: 300168590-ES-002

Version: 1

Issue date: 19/01/2023

Report prepared for: Envision ASEC UK Ltd

IAMP

Washington road Sunderland Tyne and Wear SR5 3HY

Report prepared by: Melvin Thomas
Telephone: 07784 361734

Email: jacob.owen@tuv.com

TÜV Rheinland Industrial Services Limited

Technical Engineering Consultancy

Pavilion 9, Byland Way Belasis Business Park

Billingham TS23 4EB



Baseline Report for Envision AESC LTD Giga 1 Car Battery Manufacturing Factory, Sunderland

Revision History

Version	Date	Purpose
1	19/01/2023	Issue

Approval

Version	Date	Name	Role
1	19/01/2023	Jacob Owen	Process Engineer



Table of Contents

1	Introduction and Stage 1	6
1.1	Instruction	6
1.2	Site Location	6
1.3	Information Sources	6
1.4	Stage 1: Identify All the Hazardous Substances	7
2	Stage 2: Identify the Relevant Hazardous Substances	8
3	Stage 3: Assess the Site-Specific Pollution Possibility	11
4	Stage 4: Site History	13
4.1	Historical Ordnance Survey Map Review	13
4.2	Previous Site Investigations	14
4.3	RSP Ground Investigation 2022	14
4.4	Pollution Incidents	15
5	Stage 5: Environmental Setting	16
5.1	Topography	16
5.2	Geology	16
5.3	Hydrogeology	16
5.4	Hydrology	16
5.5	Waste Management Facilities	17



5.6	Designated Environmentally Sensitive Sites	17
6	Stage 6: Site Characterisation	18
6.1	Potential Contamination Sources	18
6.2	Receptors	18
6.3	Pathways	18
6.4	Potential Pollution Linkages	19
6.4.1	Human Health	19
6.4.2	Controlled Waters	19
6.4.3	Soil	19
7	Stage 7: Ground Investigation	20
8	Stage 8: Baseline report	21

FIGURES

Appendix A Historical Ordnance Survey Maps

Appendix B Baseline Report



1 Introduction and Stage 1

1.1 Instruction

This Site Condition and Baseline Report is for the new Envision AESC Ltd Giga 1 Li-ion car battery manufacturing Installation in Sunderland and has been completed in accordance with the requirements of the Industrial Emissions Directive, 2010/75/EU (IED).

As part of the IED, there is a requirement to prepare a Baseline Report to provide information on the state of soil and groundwater contamination by relevant hazardous substances. The characterisation of any contamination of the soil and groundwater identified in the Baseline Report should be sufficiently detailed since this information will be used to determine whether or not the operation of the component manufacturing has generated soil or groundwater contamination since the baseline has been established. The baseline report will be used for a comparison with the state of contamination upon cessation of permitted activities.

The provisions concerning the baseline report are outlined in the European Commission (EC) Guidance concerning baseline reports under Article 22(2) of the IED.

Article 22(2) specifies that a baseline report should contain at least the following information:

- Information on the present and past uses of the site; and
- Where available, existing information or, new soil and groundwater measurements having regard for the possibility of soil or groundwater contamination by hazardous substance used by the installation.

1.2 Site Location

The Installation is located in Sunderland, situated between the Concord and Castletown areas. It is part of the IAMP (International Advanced Manufacturing Park) designated for industrial/commercial use. It is to the west of the A19, and to the south of the River Don.

The Installation is located at National Grid Reference NZ 33101 58820 (approx.). The location is shown on **Figure 1**.

1.3 Information Sources

Historical Ordnance Survey maps have been obtained from Landmark Information Group, with dates ranging between 1850 to 2022. These maps provide high quality information on the historical land use at the Installation and in the surrounding area.

The British Geological Survey Geoindex database has been used to provide information on geoenvironmental aspects of the land associated with the Installation and the immediate surrounding area such as geological, hydrogeological, and hydrological data.

The Environment Agency website (www.gov.uk/government/organisations/environment-agency) and Magic website (www.magic.gov.uk) were used to obtain additional relevant environmental information.



Industry Profiles produced by the Department of the Environment were utilised to obtain information on processes, materials and wastes associated potential contaminative land uses in the vicinity of the Installation.

1.4 Stage 1: Identify All the Hazardous Substances

The EC Guidance requires that a list of all hazardous substances that are currently used, produced or released at the Installation is prepared. The list should include the hazardous substances associated with both the IED Annex I activities and directly associated activities which could influence soil and groundwater pollution.

The chemicals used at the Installation that meet any of the requirements in Annex I, Parts 2 to 5 that determines them to be hazardous are shown in **Table 1** in Section 2.



2 Stage 2: Identify the Relevant Hazardous Substances

This stage requires that the potential pollution risks of all hazardous substances identified in Stage 1 be determined by considering their chemical and physical properties. This information should be used to determine whether the substances have the potential to cause pollution of soil and groundwater.



Table 1 summarises the potential pollution risks associated with the hazardous substances stored at the Installation. Materials considered to be relevant hazardous substances (and potentially capable of polluting soil and/or groundwater) under IED Annex 1 are marked in the final column.

TÜVRheinland Precisely Right.

Table 1: Summary of Potential Pollution Risk of Hazardous Substances

Substance	Composition	Hazard Statements	Physical State	Solubility	Tox- icity	Mobility	Persis- tence	Soil/Groundwater pollution potential	Quantity	RHS Yes/No
Raw Materials	1									
Cobalt Lithium Manga- nese Nickel oxide (NMC)	100%	H330, H350, H375, H412	Solid	NDA	High	NDA	NDA	The substance is a hazardous solid. Very toxic to aquatic life with long lasting effects.	959,892 Kg	Yes
Electrolyte	100%	H225, H226, H301, H302, H311, H312, H314, H315, H317, H318, H319, H350, H351, H361, H372, H373, H411, H412	Liquid	Soluble	High	NDA	NDA	The substance is a hazardous liquid. Soluble in water so could impact groundwater. Very toxic to aquatic life with long lasting effects.	88,000 Kg	Yes
Diethyl Carbonate	100%	H226, H315, H319, H335	Liquid	Soluble	Low	NDA	NDA	The substance is a liquid. Soluble in water so could impact groundwater. Not expected to be hazardous or persist in the environment.	3,000 Kg	No
Polyvinylidene Fluo- ride	100%	Not applica- ble	Solid	Insoluble	Low	Low	NDA	The substance is a non-hazardous solid, insoluble in water.	10,066 Kg	No
Carbon Black	100%	Not applica- ble	Solid	Insoluble	Low	Low	NDA	The substance is a non-hazardous solid and insoluble in water.	74,103 Kg	No
Graphite	100%	Not applica- ble	Solid	Insoluble	NDA	NDA	NDA	The substance is a non-hazardous solid and insoluble in water.	517,466 Kg	No
Sodium Carboxyme- thyl Cellulose	Sodium Carboxymethyl Cellulose > 99% 2-Propanol < 0.5% Methanol < 0.3%	Not applica- ble	Solid	Soluble	NDA	NDA	NDA	The substance is a non-hazardous solid, soluble in water.	6,043 Kg	No
Boehmite	100%	Not applica- ble	Solid	Insoluble	NDA	Low	NDA	The substance is a non-hazardous solid, insoluble in water.	375 Kg	No
Carbon Nano Tubes	NMP – 93% - 97% FT7010 – 3% - 7%	H319, H335, H227, H315, H360	Liquid	NDA	NDA	NDA	Low	The substance is a non-hazardous liquid. Not expected to persist in the environment.	133,000 Kg	No
Styrene-Butadiene Rubber	Synthetic polymer – 39% -<41% Water – 59% - 61%	Not applica- ble	Liquid	NDA	NDA	NDA	NDA	The substance is a non-hazardous liquid. Not expected to be hazardous to the environment.	2,000 Kg	No
N-Methyl-2-Pyrrolidone	93-97%	H319, H335, H227, H315, H360	Liquid	NDA	NDA	NDA	Low	The substance is a non-hazardous liquid. Not expected to persist in the environment.	200,000 Kg	No
Ammonia	100%	H221, H280, H314, H331, H410	Gas	Soluble	High	Low	Not appli- cable	The substance is a hazardous gas, soluble in water. Very toxic to aquatic life with long lasting effects.	4,800 Kg	Yes
Aquaflim B3-5	Ethanediol – 8% - <12% 2-(2-butoxyethoxy) ethanol – 2% - <5% Sodium octyl sulphate – 0.5% - <2% (carboxymethyl)dimethyl-3-[(1-oxododecyl)amino]propylammonium hydroxide – 0.5% - <2% Mixture of flurosurfactants – 0.1% - <1% Methanol - <0.05% Acetic acid - <0.05%	H319	Liquid	Soluble	Low	NDA	NDA	The substance is a non-hazardous liquid, soluble in water. Low toxicity and not expected to persist in the environment		No



		Hazard								rian II. Din
Substance	Composition	Statements	Physical State	Solubility	Tox- icity	Mobility	Persis- tence	Soil/Groundwater pollution potential	Quantity	RHS Yes/No
Waste Materials									1	
Wet Cell Waste	electrolyte	H225, H226, H301, H302, H311, H312, H314, H315, H317, H318, H319, H350, H351, H361, H372, H373, H411, H412	NDA	Soluble	High	NDA	NDA	The substance is a hazardous liquid. Soluble in water so could impact groundwater. Very toxic to aquatic life with long lasting effects.	26,160 Kg	Yes
Waste Anode	graphite	Not applica- ble	Solid	Insoluble	NDA	NDA	NDA	The substance is a non-hazardous solid and insoluble in water.	15,270 Kg	No
Waste Cathode	Cobalt Lithium Manga- nese Nickel oxide (NMC)	H330, H350, H375, H412	Solid	NDA	High	NDA	NDA	The substance is a hazardous solid. Very toxic to aquatic life with long lasting effects.	10,800 Kg	Yes
Waste Slurry (An & Ca)	Graphite, Cobalt Lithium Manganese Nickel oxide (NMC)	H330, H350, H375, H412	Liquid	NDA	NDA	NDA	NDA	The substance is assumed to be hazardous in nature. Very toxic to aquatic life with long lasting effects.	25,000 Kg	Yes
Mixed Cell Waste	NDA	NDA	NDA	NDA	NDA	NDA	NDA	The substance is assumed to be hazardous in nature.	25,680 Kg	Yes
Powder Waste (An & Ca)	Graphite, Cobalt Lithium Manganese Nickel oxide (NMC)	H330, H350, H375, H412	Solid	NDA	NDA	NDA	NDA	The substance is assumed to be hazardous in nature.	25,000 Kg	Yes
Electrolyte Waste	electrolyte	H225, H226, H301, H302, H311, H312, H314, H315, H317, H318, H319, H350, H351, H361, H372, H373, H411, H412	Liquid	Soluble	High	NDA	NDA	The substance is a hazardous liquid. Soluble in water so could impact groundwater. Very toxic to aquatic life with long lasting effects.	4,000 Kg	Yes
Electrolyte Waste	electrolyte	H225, H226, H301, H302, H311, H312, H314, H315, H317, H318, H319, H350, H351, H361, H372, H373, H411, H412	Liquid	Soluble	High	NDA	NDA	The substance is a hazardous liquid. Soluble in water so could impact groundwater. Very toxic to aquatic life with long lasting effects.	800 Kg	Yes
Misc Lab Waste	NDA	NDA	NDA	NDA	NDA	NDA	NDA	The substance is a mixture of various lab chemicals, assumed to be hazardous in nature	15,000 Kg	Yes

3 Stage 3: Assess the Site-Specific Pollution Possibility

From



Table 1 it can be seen that there are a number of hazardous substances on the site which may theoretically have the potential to pollute soil, surface waters and/or groundwater. The operator does not produce any of these substances or knowingly release these substances in the environment.

Presented in



Table 2 below is a summary of the volumes, mitigating factors and pollution prevention measures associated with these substances. At the end of the table is a Yes/No column indicating whether the RHS's propose and actual pollution risk taking into account any source-pathway-receptor linkages.

Based on the pollution prevention measures listed in



Table 2, it is considered that the likelihood of pollution of soil, surface water and groundwater is highly unlikely.



Table 2: Summary of Actual Pollution Risk for Relevant Hazardous Substances

Substance	Mass/ Volume	Details of Existing Pollution Prevention Measures and Mitigating Factors	
Cobalt Lithium Manganese Nickel oxide (NMC)	959,892 Kg	Generally Unmanned Area, Fire suppression & Internal location in set room	No
Electrolyte	88,000 Kg	Foam enhanced sprinkler system, Leak detect & Bunded	No
Ammonia	4,800 Kg	und around chillers as sensors to detect and interlock system	
Wet Cell Waste	26,160 Kg	Sealed marked containers, generally unmanned area, and segregated locked storage. Bunded Area.	No
Waste Cathode	10,800 Kg	Sealed marked containers, generally unmanned area, and segregated locked storage.	No
Waste Slurry (An & Ca)	25,000 Kg	Sealed marked containers, generally unmanned area, and segregated locked storage. Bunded Area.	No
Mixed Cell Waste	25,680 Kg	Sealed marked containers, generally unmanned area, and segregated locked storage. Bunded Area.	No
Powder Waste (An & Ca)	25,000 Kg	Sealed marked containers, generally unmanned area, and segregated locked storage.	No
Electrolyte Waste	4,000 Kg	Dedicated waste tank with self-bunded.	No
Electrolyte Waste	800 Kg	Sealed marked containers, generally unmanned area, and segregated locked storage. Bunded	No
Misc Lab Waste	15,000 Kg	Sealed marked containers, generally unmanned area, and segregated locked storage.	No



4 Stage 4: Site History

4.1 Historical Ordnance Survey Map Review

The development of the land to be occupied by the Installation and the land in the surrounding area has been considered with reference to historical Ordnance Survey (OS). Copies of the Historical OS Maps are included in **Appendix A**. A summary of the historical land uses at the at the location of the installation and in the surrounding area (within a 250m radius of the installation) is summarised in **Table 3**.

Table 3: Historic Mapping Review

Date	Scale	On Site	Off Site
1862	1:10,560	The site is located within agricultural field.	The site is surrounded by agricultural fields and plantations
1864	1:10,560	No Significant change	No significant change
1898	1:10,560	No significant change.	No significant change.
1899	1:10,560	No significant change.	No significant change.
1921	1:10,560	No significant change.	No significant change.
1938	1:10,560	No significant change.	No significant change.
1967	1:10,000	No significant change.	The map shows an aerodrome established to the East of the site.
			Other residential development present to the Northeast.
1975-1977	1:10,000	No significant change.	No Significant change.
1980	1:10,000	No significant change	The map shows Sunderland airport to the East of the site.
			Residential development present changed to ATC Centre
1990-1992	1:10,000	No significant change	The map shows a factory in the location where the Sunderland Airport existed.
			The ATC Centre changed to a museum.
2000	1:10,000	No significant change.	The map shows additional factory development to the Southwest of the site
2006	1:10,000	No significant change.	No significant change.



Date	Scale	On Site	Off Site
2021	1:10,000`	No significant change.	The map shows additional development to the Northeast of the site.

4.2 Previous Site Investigations

4.3 RSP Ground Investigation 2022

An intrusive ground investigation was undertaken at the site of the Installation in 2021. The works were undertaken to confirm the ground conditions beneath the site and to support the design of the Installation.

RPS Consulting Services Ltd (RPS) was commissioned to design and oversee the intrusive ground investigation and prepare an interpretative ground investigation report. The ground investigation work and laboratory analysis was carried out by Solmek Limited (Solmek).

The results of the investigation are reported in the following documents:

- RPS, Phase 2 Ground Investigation Report, 18th February 2022
- Solmek, Factual Site Investigation Report, S211001, January 2022

The ground investigation works comprised:

- 7no.Cable percussive boreholes (CP01 to CP07) drilled to a maximum depth of 16.50m below ground level (mbgl).
- 6no. Cable percussive boreholes with rotary core follow on (CPRO01 to CPRO06) to a maximum depth of 26.50mbgl. Ten small percussive boreholes (WS01 to WS10) drilled to a maximum depth of 5.45mbgl.
- 52no. machine excavated trial pits (TP01 to TP52) excavated to a maximum depth of 3.50mbgl. In-situ Dynamic Cone Penetrations (DCP) and Plate Bearing Tests (PBT) were undertaken in selected trial pits.
- 12 cone penetration tests with pore water pressure measurement (CPTu) (CPT01 to CPT12).Insitu hand shear vanes and standard penetration tests (SPT) were undertaken in the boreholes and trial pits.
- Geological logging of the soil arisings
- Representative sampling for laboratory analysis
- Ground gas and groundwater monitoring programme

The ground conditions encountered during the intrusive ground investigation were found to be consistent with both the British Geological Survey (BGS) mapping. The ground conditions encountered generally comprised localised pockets of Made Ground around the area of former farm buildings, with Topsoil and reworked subsoils (logged as Made Ground) encountered across the wider area. These were found to be underlain by a variable thickness of Superficial soils comprising a sequence of Pelaw Clay Member, Tyne and Wear Complex (Laminated Clays), and Glacial Till (partially), with the bedrock of Pennine Middle Coal Measures Strata extending to depth.

No chemicals of concern were recorded in the soils or groundwater at concentrations above their respective assessment criteria, and / or above the laboratory limit of detection in many cases. No asbestos was detected in any of the soil samples.



4.4 Pollution Incidents

There are no records of any major accidents such as spillages, leakages or loss of containment involving any hazardous substances at the land occupied by the Installation. In addition, the Installation is in the construction phase and not yet operational, therefore, there should not be any substances associated with the Installation processes present in the ground beneath the Installation.



5 Stage 5: Environmental Setting

5.1 Topography

The topography of the land occupied by the Installation is generally flat ranging from around 40mOD in the southwest corner sloping gently to around 35mOD towards the northeast boundary and the River Don, north of Downhill Lane. The A1290 is supported on low embankment, generally between 1 and 1.5m in height, along the southern and eastern boundaries.

5.2 Geology

Geological maps for the area indicate that the Installation is immediately underlain by superficial deposits comprising Pelaw Clay Member, comprising silty clay. Glaciolacustrine and alluvium deposits are present in the locality comprising silty clay; the alluvium deposits may also comprise layers of silt, sand, peat and gravel.

The underlying bedrock comprises the Pennine Middle Coal Measures formation, consisting of interbedded grey mudstone, siltstone and coal seams.

5.3 Hydrogeology

The Pelaw Clay Member aquifer designated is 'unproductive strata'. These formations have a low permeability and have negligible significance for water supply or base flow.

The glaciolacustrine and alluvium deposits are designated as Secondary A aquifers. These formations have permeable layers which are capable of supporting water supplies at a local scale.

The bedrock aquifer is classified as a Secondary A Aquifer.

Groundwater vulnerability across the area is designated as 'soils of low leaching potential' and pollutants are unlikely to penetrate the soul layer as water movements is predominantly horizontal.

The Installation is not located within a Source Protection Zone (SPZ) and there are no SPZs present within 2km of the Establishment.

There are 19 groundwater abstractions located within a 10km radius of the Installation; 4 are used for drinking water purposes. The closest abstraction is located 2.5 km northeast of the Installation and this is not used for drinking water purposes.

5.4 Hydrology

The closest watercourse is Unsworth Burn (a tributary of the River Don) which is located approximately 190m north of the Installation. The River Don is located approximately 280m north of the Installation. Both the River Don and its tributary are classified by the EA as 'Main Rivers' and both watercourses flow in a north-easterly direction. The confluence of the two rivers is approximately 280m northeast of the Installation.

There are a series of drainage channels and ditches located along the road to the south of the Installation and along field boundaries. Most of these discharge to the southeast via culverts beneath the A1290 (road).



5.5 Waste Management Facilities There is one historical landfill site recorded within 1 km of the Installation. This is:

Historic Landfill site	Operation dates	Waste type	Distance from site
Sir Robert McAlpine and Sons Limited		Deposited waste including Inert waste	902m E

5.6 Designated Environmentally Sensitive Sites

There are no designated environmentally sensitive sites located within a 1km radius of the Installation.



6 Stage 6: Site Characterisation

6.1 Potential Contamination Sources

The operator employs modern storage methods and effective pollution control methods and procedures. Environmental control procedures in relation to the RHS's are listed in Table 2.

Accurate records of volumes of raw materials coming onto the Installation and volumes of materials used in the processes will highlight potential losses of hazardous substances through spillage or leakage. It has been concluded that the likelihood of sources of contamination originating from the Installation is very low.

The Installation is in the construction phase and not yet operational, therefore, there will be no contamination present in the ground beneath the Installation associated with its processes.

6.2 Receptors

The potential receptors considered to be at risk from soil and groundwater contamination associated with the site are summarised below.

Table 4: Receptor Description

Receptor	Details
Human (On Site)	- Site visitors
	- Site users
Human (Off Site)	- Adjacent site users
Controlled Waters	- River Don
	- Secondary A Aquifer
Soil (on site)	- Ground beneath the Installation
	 Foundations/buried infrastructure

6.3 Pathways

The potential exposure pathways linking contamination with the receptors identified above are summarised in Table 5 below.

Table 5: Exposure Pathways Summary

Receptor	Details of Exposure Pathway
Human (on-site)	 Direct ingestion of contaminated soil/groundwater Dermal contact with soil/groundwater Inhalation of gases and vapours



Receptor	Details of Exposure Pathway
Human (off-site)	 Inhalation of fibres and particulates (fugitive dust) Inhalation of migrating gases and vapours
Controlled waters	Vertical and lateral migration of dissolved phase contaminants via preferential pathways to River Don and Secondary A Aquifer
Soil (on site)	- Infiltration/percolation through permeable deposits

6.4 Potential Pollution Linkages

6.4.1 Human Health

The presence of buildings and hardstanding at the site would eliminate the risk of exposure, via the dermal contact and ingestion pathways, to current and future sites users to any historic or novel contamination that may be present in the soil or groundwater. However, inhalation of gases (such as methane and carbon dioxide) and vapours associated with presence of any volatile organic contaminants beneath the site could be feasible.

6.4.2 Controlled Waters

There is limited potential for contamination to migrate via preferential pathways to the River Don as the presence of buildings and hardstanding will restrict infiltration.

6.4.3 Soil

There is limited potential for soils to be exposed to contamination from the site due to the presence of hardstanding and buildings at the site.



7 Stage 7: Ground Investigation

The detailed analysis of the use and storage of RHS's undertaken in Section 3 indicates that the current pollution risk is very low. Therefore, it is not considered necessary to obtain any up-to-date information on the soil and groundwater conditions beneath the Installation. Should future need arise through an increase in risk to the soil and groundwater beneath the Installation or if pollution incidents occur then a ground investigation may be necessitated.

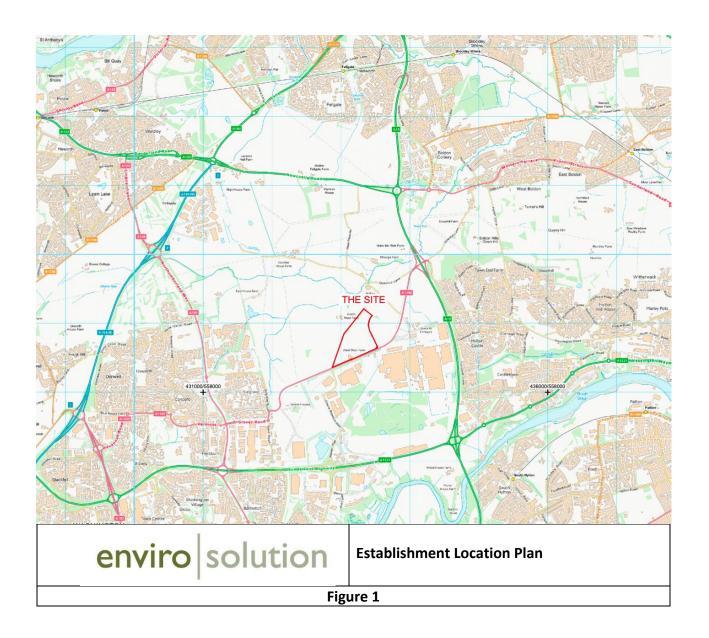


8 Stage 8: Baseline report

The factual ground investigation report produced by Solmek Limited will form the Baseline report for the Installation. A copy of the report is included in **Appendix B**. The maximum recorded soil and groundwater concentrations for the substances analysed for as part of the investigation will form the baseline data for the Installation and this data should be used for comparison upon cessation of the Installation to inform the surrender of the environmental permit.



FIGURES





Appendix A

Historical Mapping Legends

Ordnance Survey County Series 1:10,560 Other Gravel Orchard Mixed Wood Deciduous Brushwood Furze Rough Pasture Arrow denotes Trigonometrical flow of water Station Site of Antiquities Bench Mark Pump, Guide Post, Well, Spring, Signal Post **Boundary Post** ·285 Surface Level Sketched Instrumental Contour Contour Fenced Main Roads Minor Roads Un-Fenced Sunken Road Raised Road Railway over Road over Ri∨er Railway Railway over Level Crossing Road Road over Road over Road over County Boundary (Geographical)

County & Civil Parish Boundary

Co. Boro. Bdy.

Co. Burgh Bdy.

RD. Bdy.

County Borough Boundary (England)

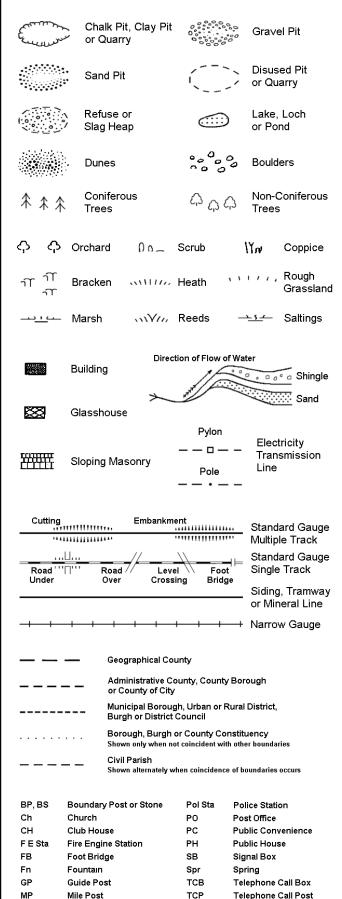
County Burgh Boundary (Scotland)

Rural District Boundary

Civil Parish Boundary

Administrative County & Civil Parish Boundary

Ordnance Survey Plan 1:10,000



1:10,000 Raster Mapping

	Gravel Pit		Refuse tip or slag heap
	Rock	3 3	Rock (scattered)
	Boulders		Boulders (scattered)
	Shingle	Mud	Mud
Sand	Sand		Sand Pit
********	Slopes		Top of cliff
	General detail		Underground detail
	- Overhead detail		Narrow gauge railway
	Multi-track railway		Single track railway
	County boundary (England only)	• • • • • •	Ci∨il, parish or community boundary
	District, Unitary, Metropolitan, London Borough boundary		Constituency boundary
۵ ^۵	Area of wooded vegetation	۵ ^۵	Non-coniferous trees
\Diamond	Non-coniferous trees (scattered)	**	Coniferous trees
* *	Coniferous trees (scattered)	Ċ̄	Positioned tree
4 4 4 4	Orchard	* *	Coppice or Osiers
ωTα ωTα	Rough Grassland	www.	Heath
On	Scrub	<u>⊿\\</u> /\∟	Marsh, Salt Marsh or Reeds
5	Water feature	← ←	Flow arrows
MHW(S)	Mean high water (springs)	MLW(S)	Mean low water (springs)
	Telephone line (where shown)		Electricity transmission line (with poles)
← BM 123.45 m	Bench mark (where shown)	Δ	Triangulation station
	Point feature (e.g. Guide Post or Mile Stone)	\boxtimes	Pylon, flare stac or lighting tower
.	Site of (antiquity)		Glasshouse
		<u> </u>	Important

General Building

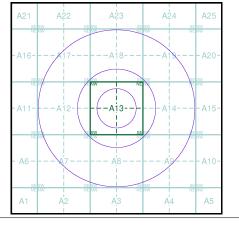
Envirocheck®

LANDMARK INFORMATION GROUP

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Durham	1:10,560	1862	3
Northumberland	1:10,560	1864	4
Durham	1:10,560	1898	5
Northumberland	1:10,560	1899	6
Durham	1:10,560	1921	7
Durham	1:10,560	1938	8
Ordnance Survey Plan	1:10,000	1951 - 1952	9
Ordnance Survey Plan	1:10,000	1967	10
Ordnance Survey Plan	1:10,000	1975	11
Sunderland	1:10,000	1976	12
Newcastle-upon-Tyne	1:25,000	1977	13
Ordnance Survey Plan	1:10,000	1980	14
Ordnance Survey Plan	1:10,000	1990 - 1992	15
10K Raster Mapping	1:10,000	2000	16
10K Raster Mapping	1:10,000	2006	17
VectorMap Local	1:10,000	2021	18

Historical Map - Slice A





Order Number: 301180946_1_1 **Envision AESC** Customer Ref: National Grid Reference: 433360, 558650 Slice:

Site Area (Ha):

Search Buffer (m):

Site Details

Important

Building

Site at 433100, 558820



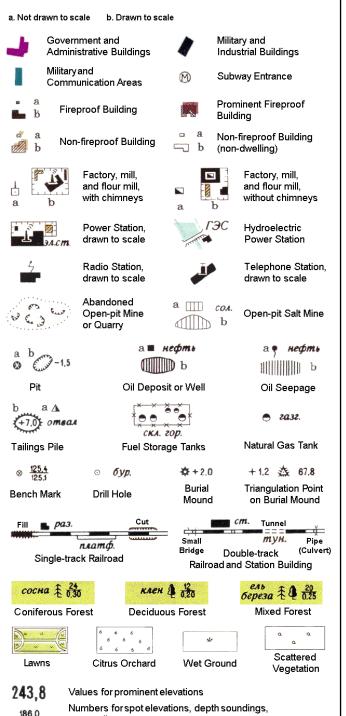
0844 844 9952 0844 844 9951

A Landmark Information Group Service v50.0 13-Sep-2022 Page 1 of 18

1000

Russian Military Mapping Legends

1:5,000 and 1:10,000 mapping



M m (m)

H H (N)

O o (o)

Фф(F)

X x (KH)

Цц(тѕ)

ь (')

Ээ(E)

Юю (YU or IU) A (YA or IA)

Contour Line

and Value

Deciduous

Value

Line

E e (E)

Ë ë (YO)

Ж ж (ZH)

1:25,000 mapping

a. Not drawn to				a. Not drav				
	rnment and nistrative Buildings		tary and ustrial Buildings	-		ernment and ninistrative Buildings		ilitary and idustrial Buildings
	ry and munication Areas		oway Entrance			aryand nmunication Areas	M S	ubway Entrance
a b Fi	reproof Building		minent Fireproof Iding	8888a	Partly Build	y Demolished lings	3883 D	emolished Buildings
a a No	on-fireproof Building		n-fireproof Building n-dwelling)		Firep	-Up Area with proof Buildings Iominant	<i>/////////////////////////////////////</i>	uilt-Up Area with on-Fireproof Buildings redominant
	Factory, mill,		Factory, mill,	a b		ridual Fireproof	P	rominent Industrial uilding
a b	and flour mill, with chimneys	a b	and flour mill, without chimneys			ridual Dwelling, proof	, ,	uins ofan Individual welling
элст	Power Station, drawn to scale	ГЭС	Hydroelectric Power Station	a n		Б бум.	□ скип.	. 🗣 медн.
5	Radio Station, drawn to scale	عق	Telephone Station, drawn to scale	Factory Mill Chim		Factory or Mill with Chimney	Factoryor M without Chim	
		•		🗴 кам.	уг.	*	d∭) co	Δ . Δ.
w 63 w	Abandoned Open-pit Mine or Quarry	a con	Open-pit Salt Mine	Operation N		Non-Operating Shaft or Mine	Salt Mine	Tailings Pile
a b	a ≡ <i>n</i>	<i>ефть</i>	а 🗣 нефть	<i>00</i> -	1.7	rn. nec. kam.	₹	•
€ € -1,5		D b	ъ	Pit		Stone Quarry	Gas Pump o Service Statio	
Pit	Oil Depos	it or VVell	Oil Seepage	8		\forall	×	= 6.mp.
b a ∆ (+7.0) omed			⊕ газг.	Oil or Nat Gas Den		Small Hydroelectric Power Station	Power Statio	•
Tailings Pile	скл. а Fuel Stora	•	Natural Gas Tank	Gas Dell	ICK	Power Station		Station
125.4	. 64-	- w	140 \$ 070)	\$ ∅ +8.1	₾ 95.7	△ 92.6
⊗ 125.4 125.1 Bench Mark	⊙ <i>бур.</i> Drill Hole	☆ + 2.0 Burial Mound	+ 1.2 ເ 67.8 Triangulation Point on Burial Mound	Cemete	ry	Burial Mound (height in metres)	Triangulation P on Burial Mou	
	•			□ 52. /		e 7/./	×	I
Fill pas	n. Cut	Small	типпеl на при пре	Bench M	ark	Bench Mark (monumented)	Telegraph Office	Telephone Station
Single-ti	rack Railroad	_	ouble-track ^(Culvert) nd Station Building	4		충	†	\$
сосна 🖹 т	24 130 клен		ель береза ₹ 4 20 0.25	Radio Sta	tion	Radio Tower	Airfield or Seaplane Ba	Landing Strip se
Coniferous F	San	us Forest	Mixed Forest	Cut	Fill	Km Post Plantings		Width of Road
- T	<u> </u>			Tel	egraph	/Telephone Lines	*	Steep Grade
	6 6 6	*	Scattered		Main I	Highway	Highway under Construction	Improved Dirt Road (former truck road)
Lawns	Citrus Orchard	Wet Groun	d Vegetation	Small Bridge	cm.	Pipe (Culvert) Tunnel	Dism	antled Railroad
210,0	Values for prominent el			Dou	ble-tra	ack Railroad with		
186,0	Numbers for spot eleva contour lines, etc.		J ,		First C	lass Station	Railroad I	Under Construction
	Velocity of the current, \ Fractional terms: length		, ·	Comment of the	Secret &	+2.4		Water Gauge
180 180 12 12	fords and condition of the the diameter of trees		9 / .	Shor		River or Ditch with		135.1
Russian A	Iphabet (Forreferenc	e and phonetic i	nterpretation of man text)	Embank		Embankment		Water Level Mark
A a (A)	3 3 (z)	Пп(Р)	Чч (сн)	© K. 125,0 (2		■ ¢dxp.	156,2 📍 K.A.	20
Бб (в)	И и (1)	P p (R)	Шш (SH)	Wel		Water Reservoir or Rain Water Pit	Spring	Isobath with value
B B (V)	Йй(Y)	C c (s)	Щ щ (энсн)					o 347.1
Гг (G) Дд(D)	Кк (к) Лл(L)	Т т (т) У у (U)	ъ (-) ы (Y)	Heavy (lı Contour		Contour Line and Value	Half Contour	Spot Elevation Value

Key to Numbers on Mapping

NZ35_Newcastle

No.	Description
1	Airfield/Airport

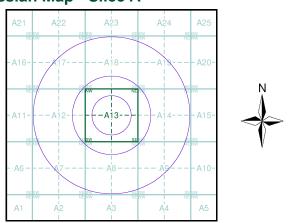
Envirocheck®

LANDMARK INFORMATION GROUP®

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Durham	1:10,560	1862	3
Northumberland	1:10,560	1864	4
Durham	1:10,560	1898	5
Northumberland	1:10,560	1899	6
Durham	1:10,560	1921	7
Durham	1:10,560	1938	8
Ordnance Survey Plan	1:10,000	1951 - 1952	9
Ordnance Survey Plan	1:10,000	1967	10
Ordnance Survey Plan	1:10,000	1975	11
Sunderland	1:10,000	1976	12
Newcastle-upon-Tyne	1:25,000	1977	13
Ordnance Survey Plan	1:10,000	1980	14
Ordnance Survey Plan	1:10,000	1990 - 1992	15
10K Raster Mapping	1:10,000	2000	16
10K Raster Mapping	1:10,000	2006	17
VectorMap Local	1:10,000	2021	18

Russian Map - Slice A



Order Details

Order Number: 301180946_1_1 Customer Ref: **Envision AESC** National Grid Reference: 433360, 558650 Slice:

Site Area (Ha):

0.01 Search Buffer (m): 1000

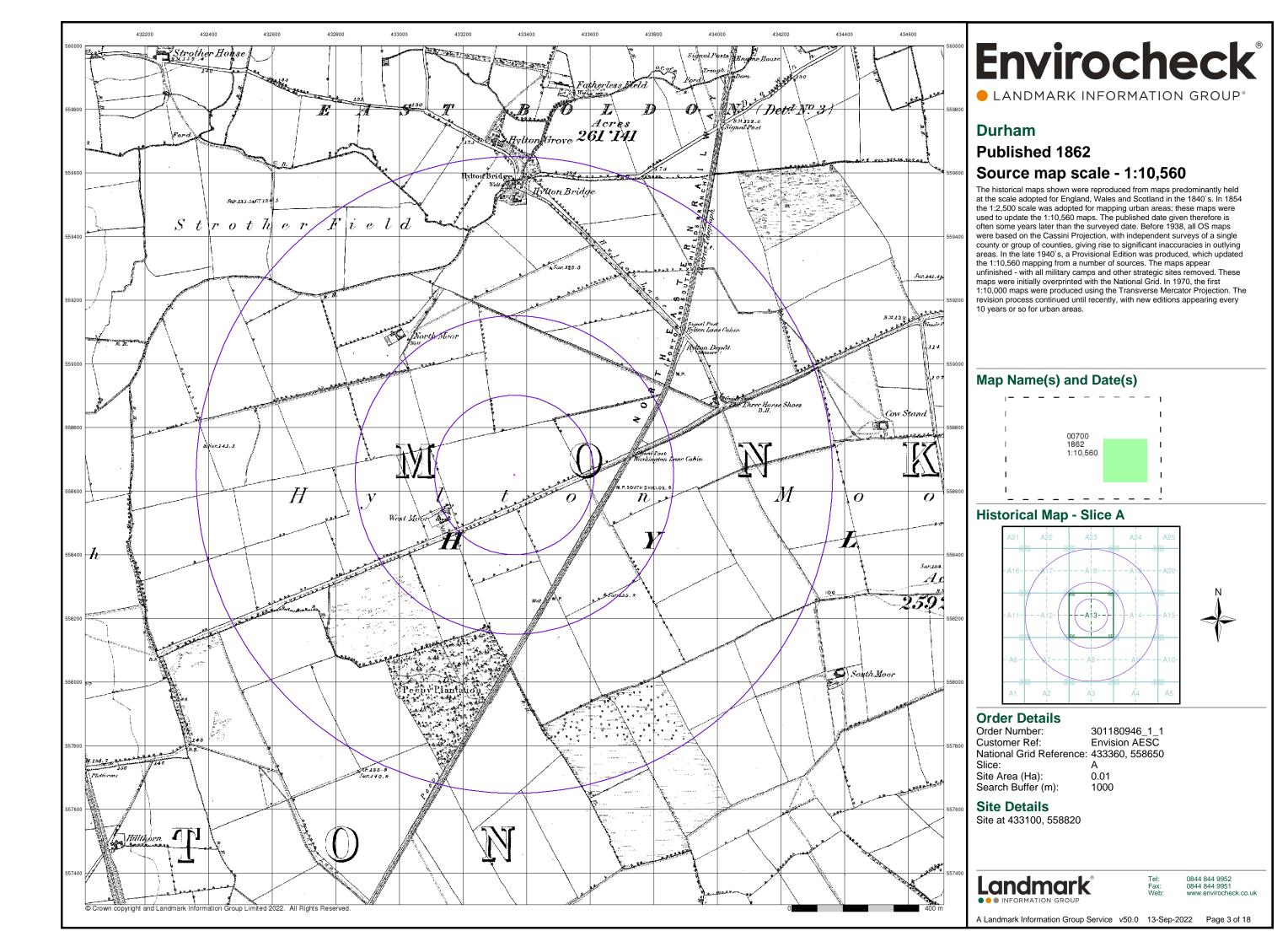
Site Details

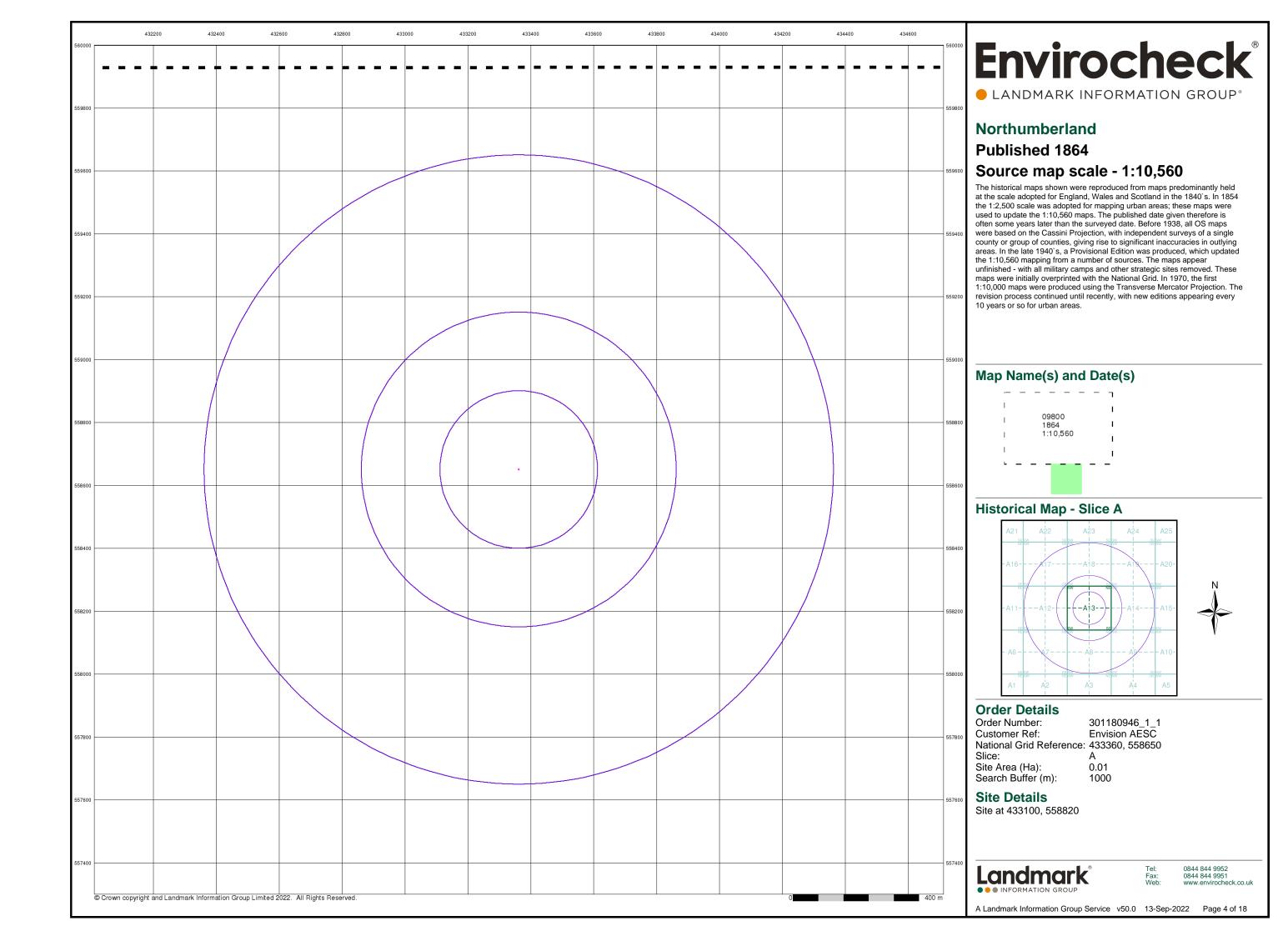
Site at 433100, 558820

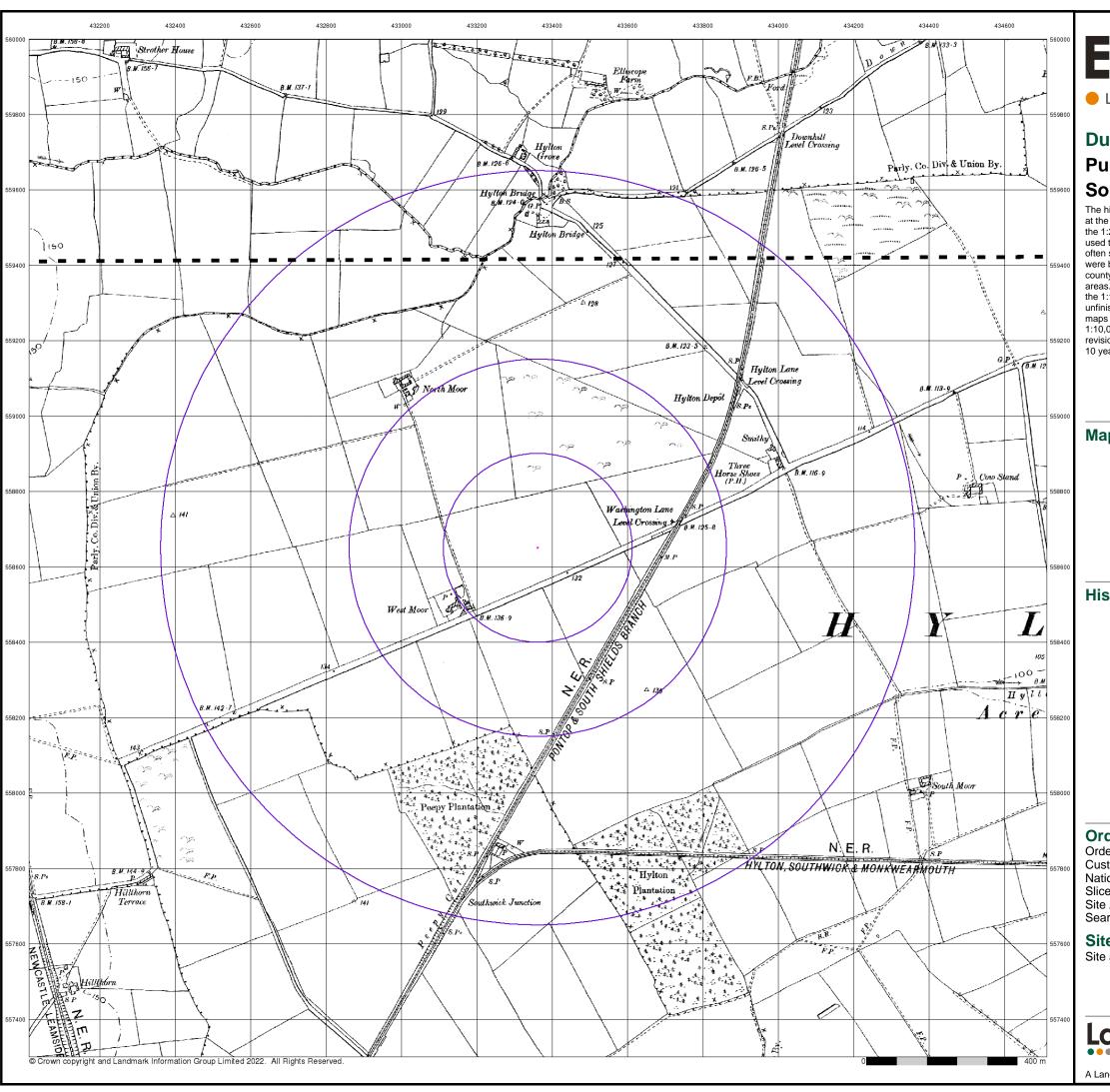


0844 844 9951

A Landmark Information Group Service v50.0 13-Sep-2022 Page 2 of 18







Envirocheck®

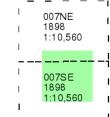
LANDMARK INFORMATION GROUP®

Durham

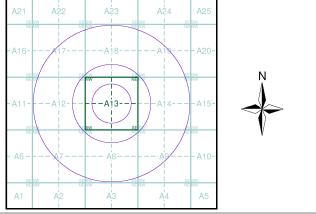
Published 1898 Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940's, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

Order Number: 301180946_1_1
Customer Ref: Envision AESC
National Grid Reference: 433360, 558650
Slice: A

Site Area (Ha): 0.01 Search Buffer (m): 1000

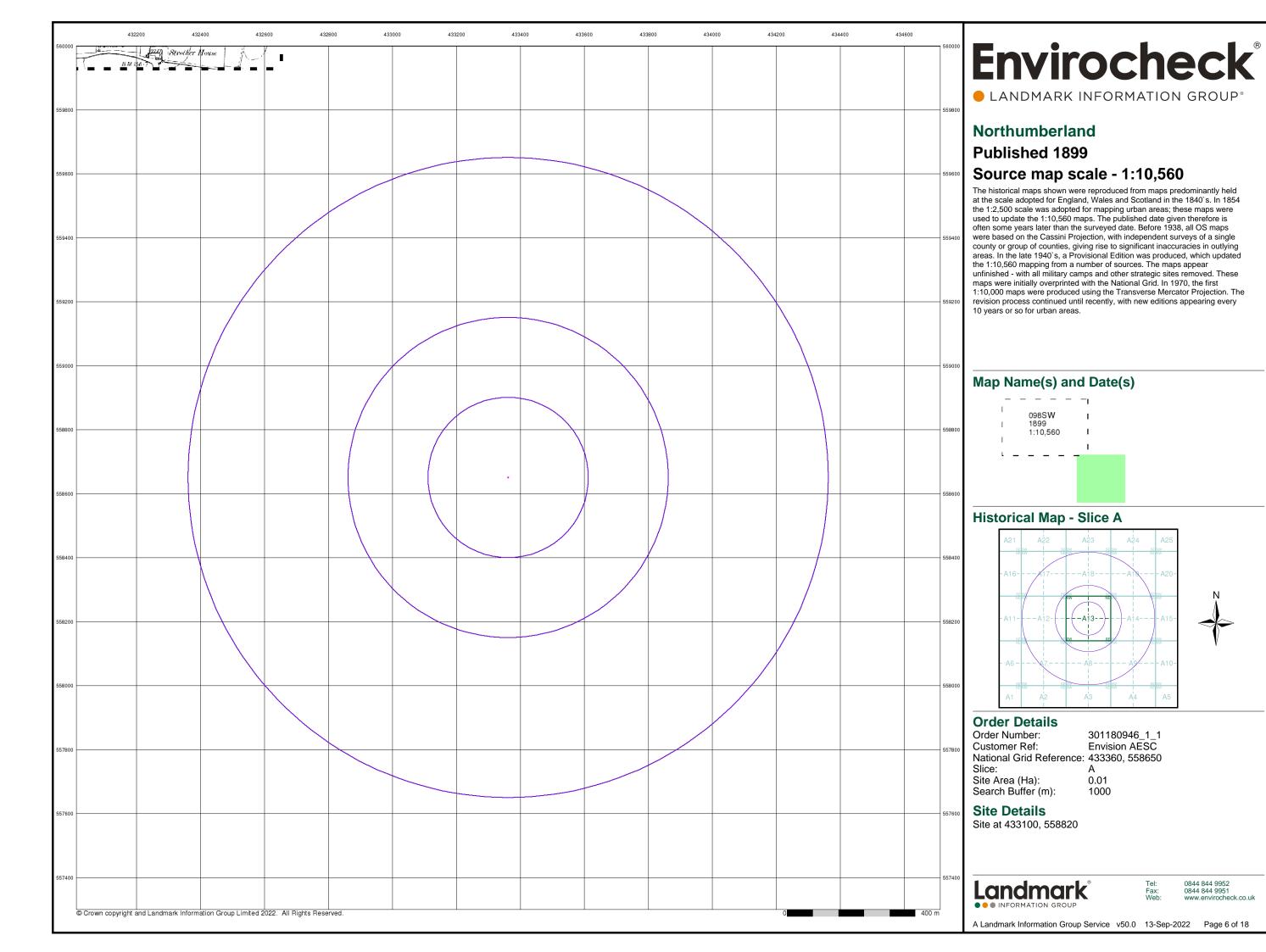
Site Details Site at 433100, 558820

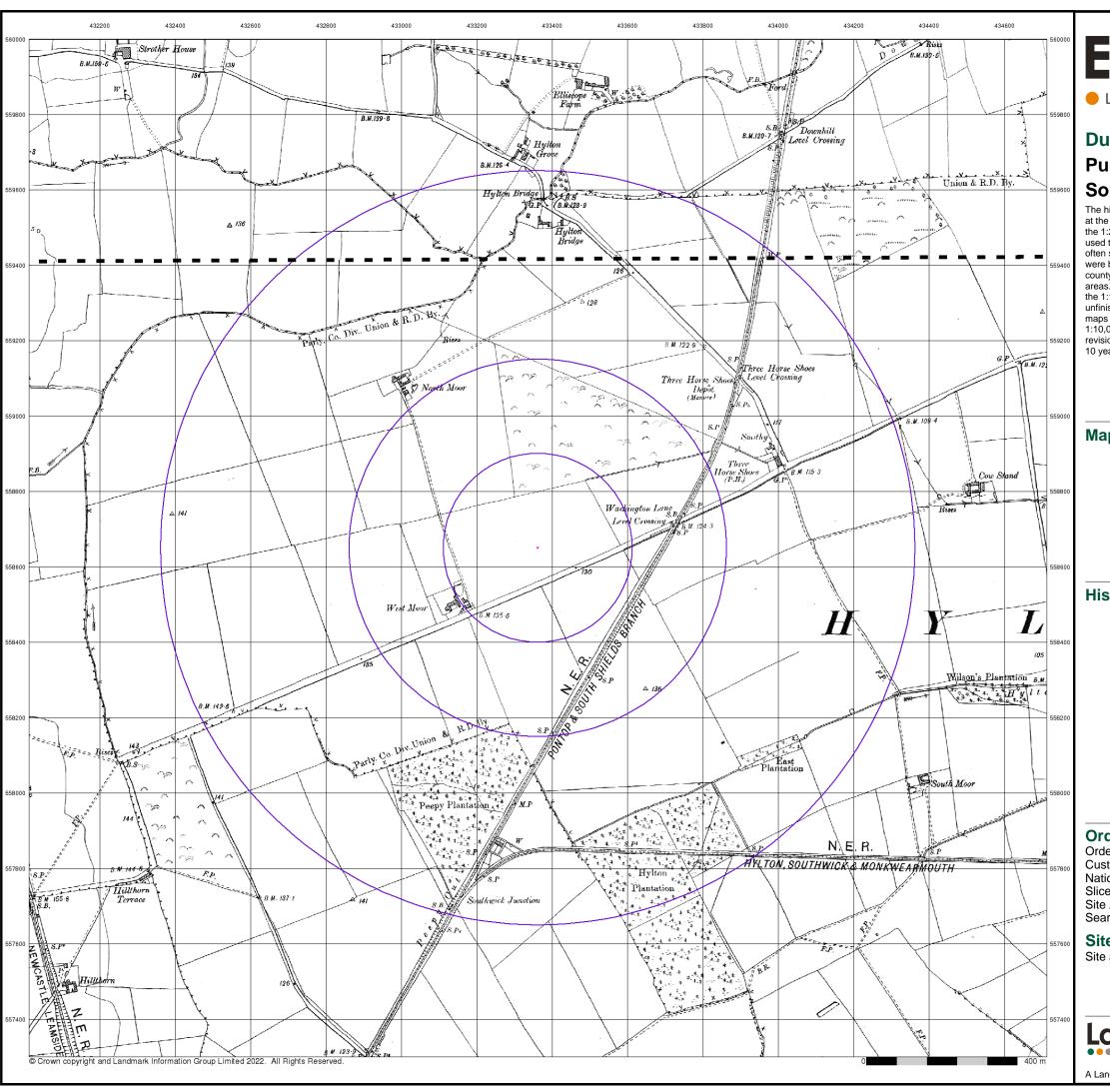
Landmark®

INFORMATION GROUP

Tel: 0844 844 9952 Fax: 0844 844 9951 Web: www.envirocheck.co.uk

A Landmark Information Group Service v50.0 13-Sep-2022 Page 5 of 18





Envirocheck®

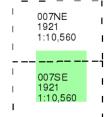
LANDMARK INFORMATION GROUP®

Durham

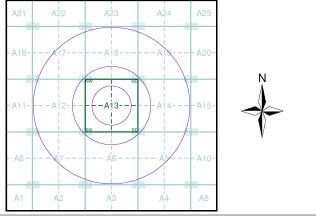
Published 1921 Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban arreas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940's, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

Order Number: 301180946_1_1
Customer Ref: Envision AESC
National Grid Reference: 433360, 558650
Slice: A

Site Area (Ha): 0.01 Search Buffer (m): 1000

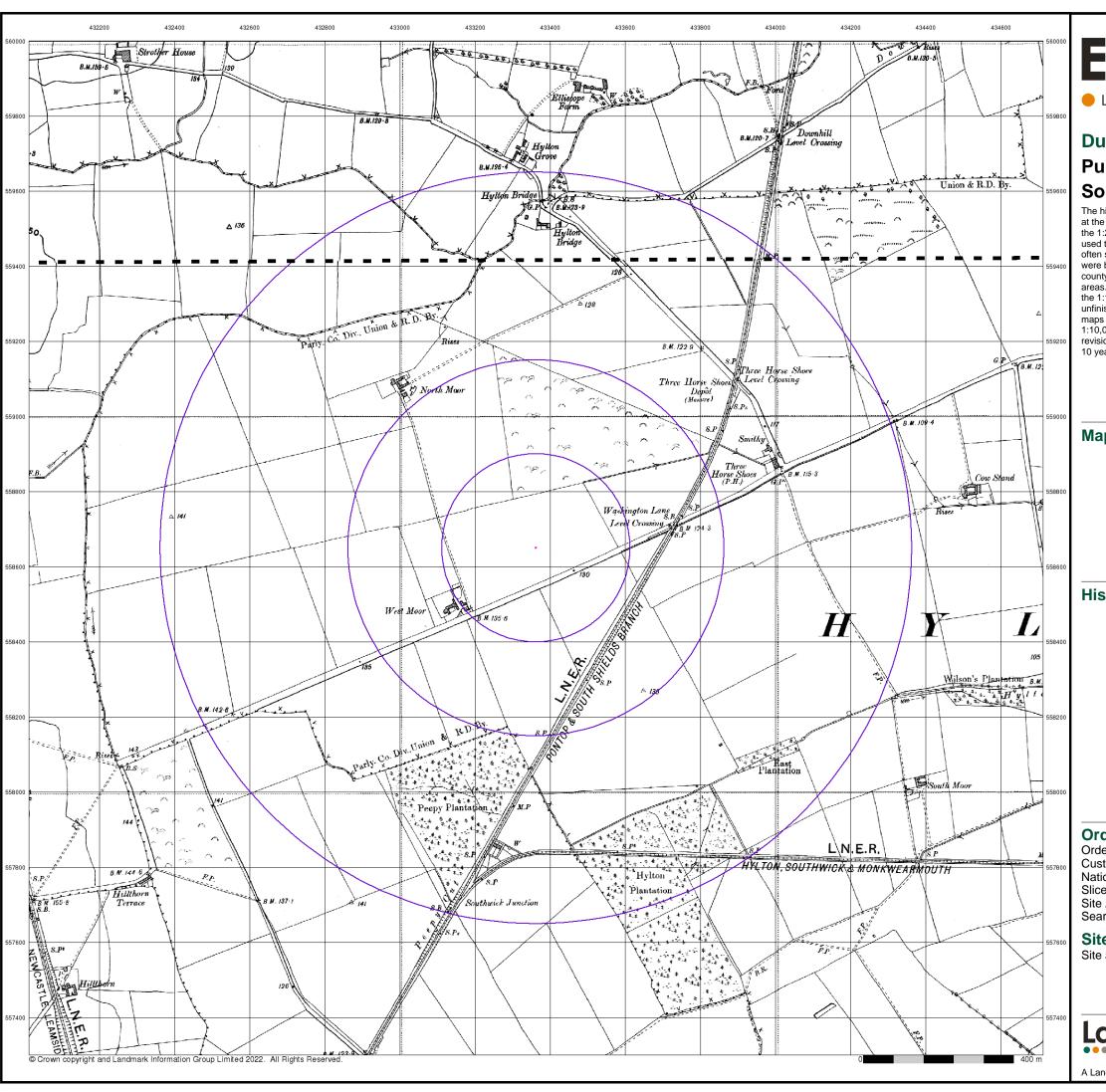
Site Details

Site at 433100, 558820

Landmark®
••• INFORMATION GROUP

Tel: 0844 844 9952 Fax: 0844 844 9951 Web: www.envirocheck.co.uk

A Landmark Information Group Service v50.0 13-Sep-2022 Page 7 of 18



Envirocheck®

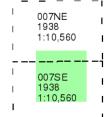
LANDMARK INFORMATION GROUP®

Durham

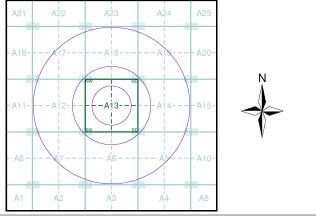
Published 1938 Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940's, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

Order Number: 301180946_1_1
Customer Ref: Envision AESC
National Grid Reference: 433360, 558650
Slice: A

Site Area (Ha): 0.01 Search Buffer (m): 1000

Site Details

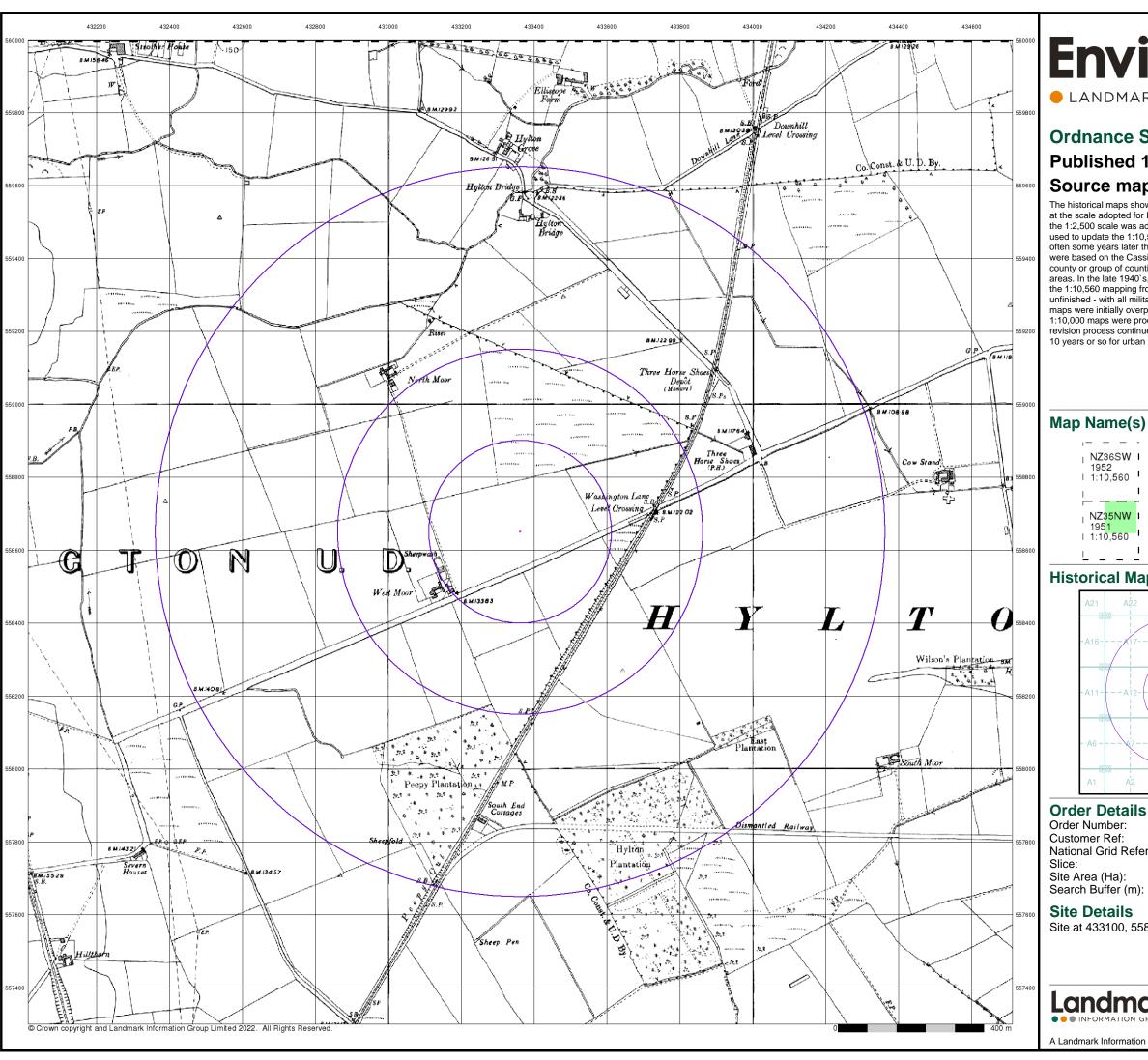
Site at 433100, 558820

Landmark

INFORMATION GROUP

Tel: 0844 844 9952 Fax: 0844 844 9951 Web: www.envirocheck.co.uk

A Landmark Information Group Service v50.0 13-Sep-2022 Page 8 of 18

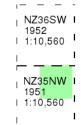


LANDMARK INFORMATION GROUP®

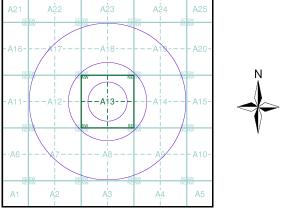
Ordnance Survey Plan Published 1951 - 1952 Source map scale - 1:10,000

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940's, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

301180946_1_1 Order Number: Customer Ref: **Envision AESC** National Grid Reference: 433360, 558650 Slice:

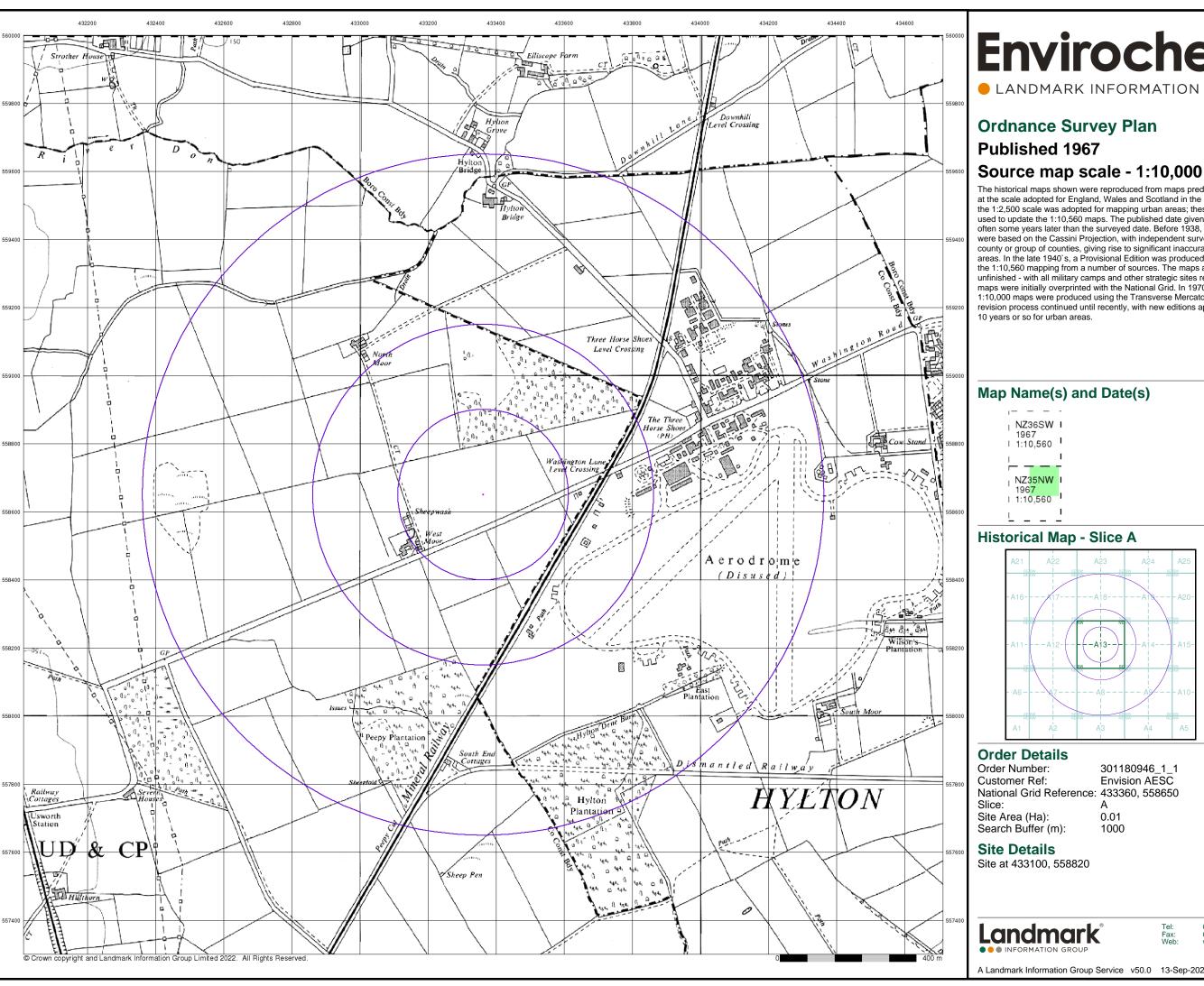
Site Details

Site at 433100, 558820



0844 844 9951 www.envirocheck.co.uk

A Landmark Information Group Service v50.0 13-Sep-2022 Page 9 of 18

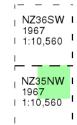


LANDMARK INFORMATION GROUP®

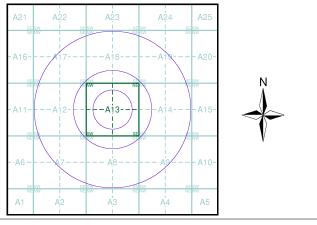
Ordnance Survey Plan Published 1967

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940's, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

Order Number: 301180946_1_1 Customer Ref: **Envision AESC** National Grid Reference: 433360, 558650 Slice:

Site Area (Ha): Search Buffer (m): 0.01

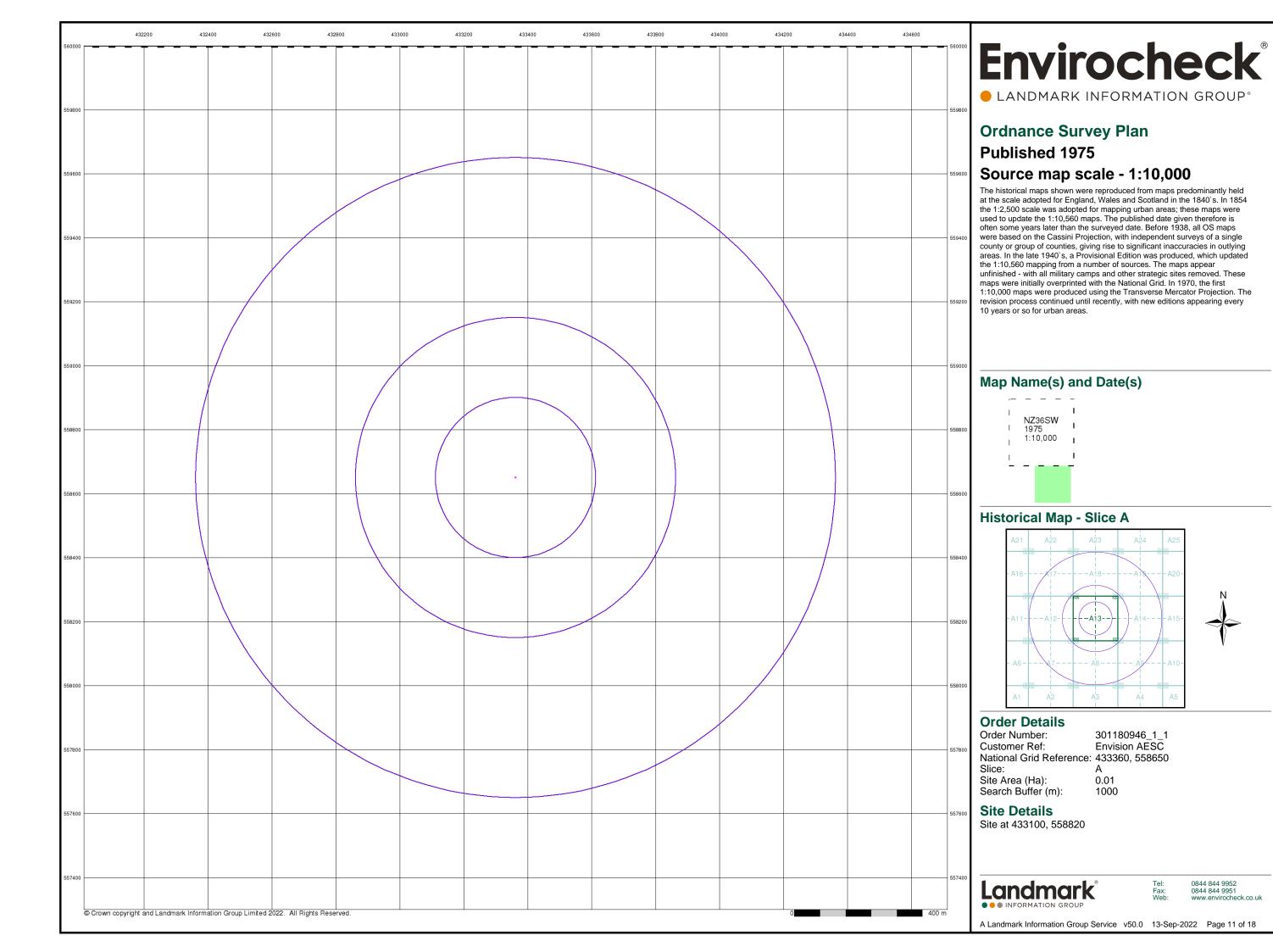
Site Details

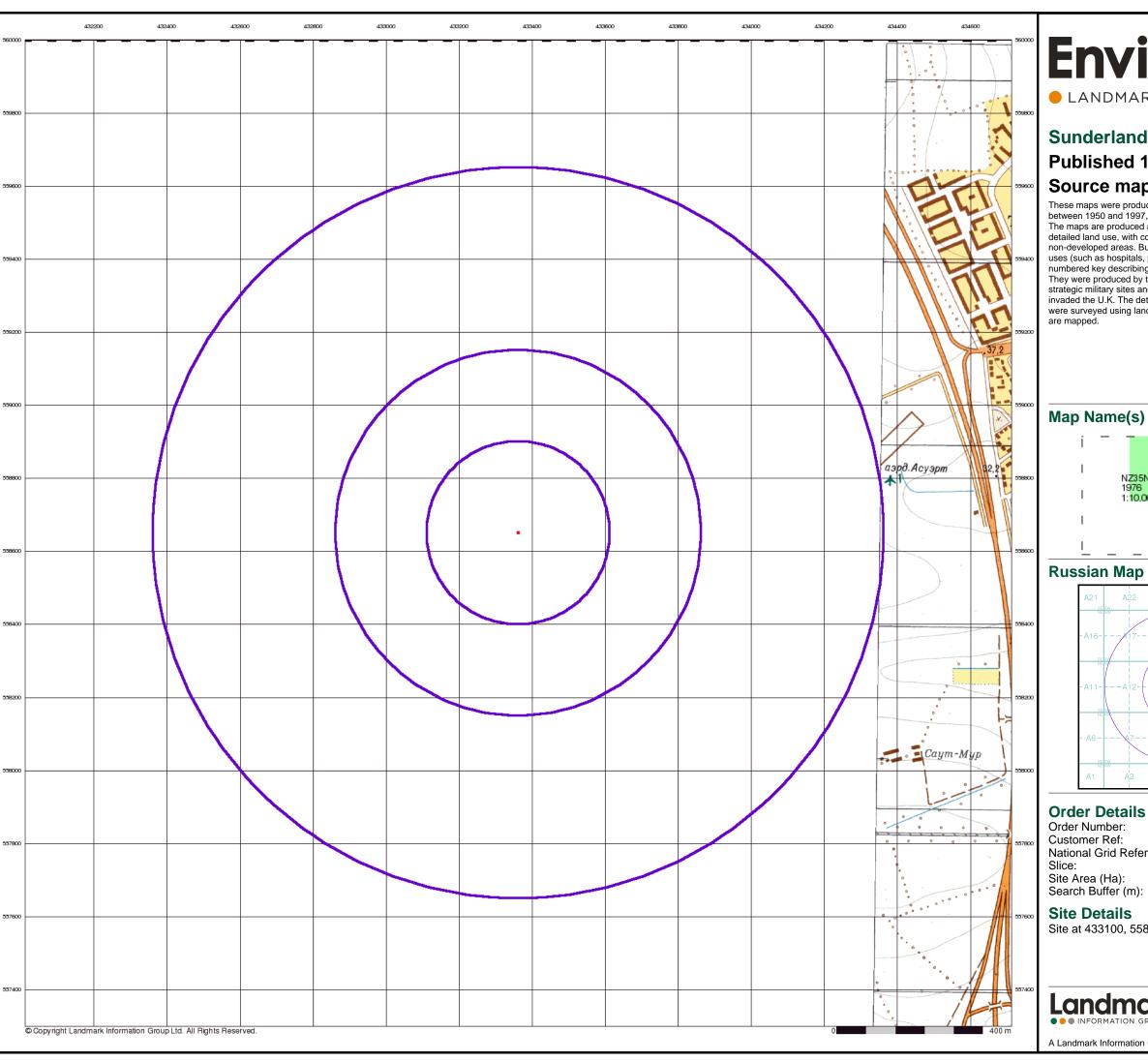
Site at 433100, 558820

Landmark

0844 844 9951 www.envirocheck.co.uk

A Landmark Information Group Service v50.0 13-Sep-2022 Page 10 of 18





LANDMARK INFORMATION GROUP®

Sunderland

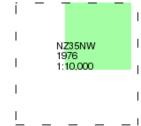
Published 1976 Source map scale - 1:10,000

These maps were produced by the Russian military during the Cold War between 1950 and 1997, and cover 103 towns and cities throughout the U.K. The maps are produced at 1:25,000, 1:10,000 and 1:5,000 scale, and show detailed land use, with colour-coded areas for development, green areas, and non-developed areas. Buildings are coloured black and important building uses (such as hospitals, post offices, factories etc.) are numbered, with a

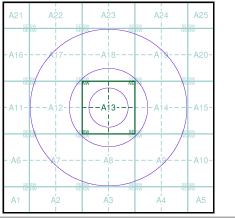
numbered key describing their use.

They were produced by the Russians for the benefit of navigation, as well as strategic military sites and transport hubs, for use if they were to have invaded the U.K. The detailed information provided indicates that the areas were surveyed using land-based personnel, on the ground, in the cities that

Map Name(s) and Date(s)



Russian Map - Slice A





301180946_1_1 Customer Ref: **Envision AESC** National Grid Reference: 433360, 558650

Site Area (Ha): Search Buffer (m): 0.01

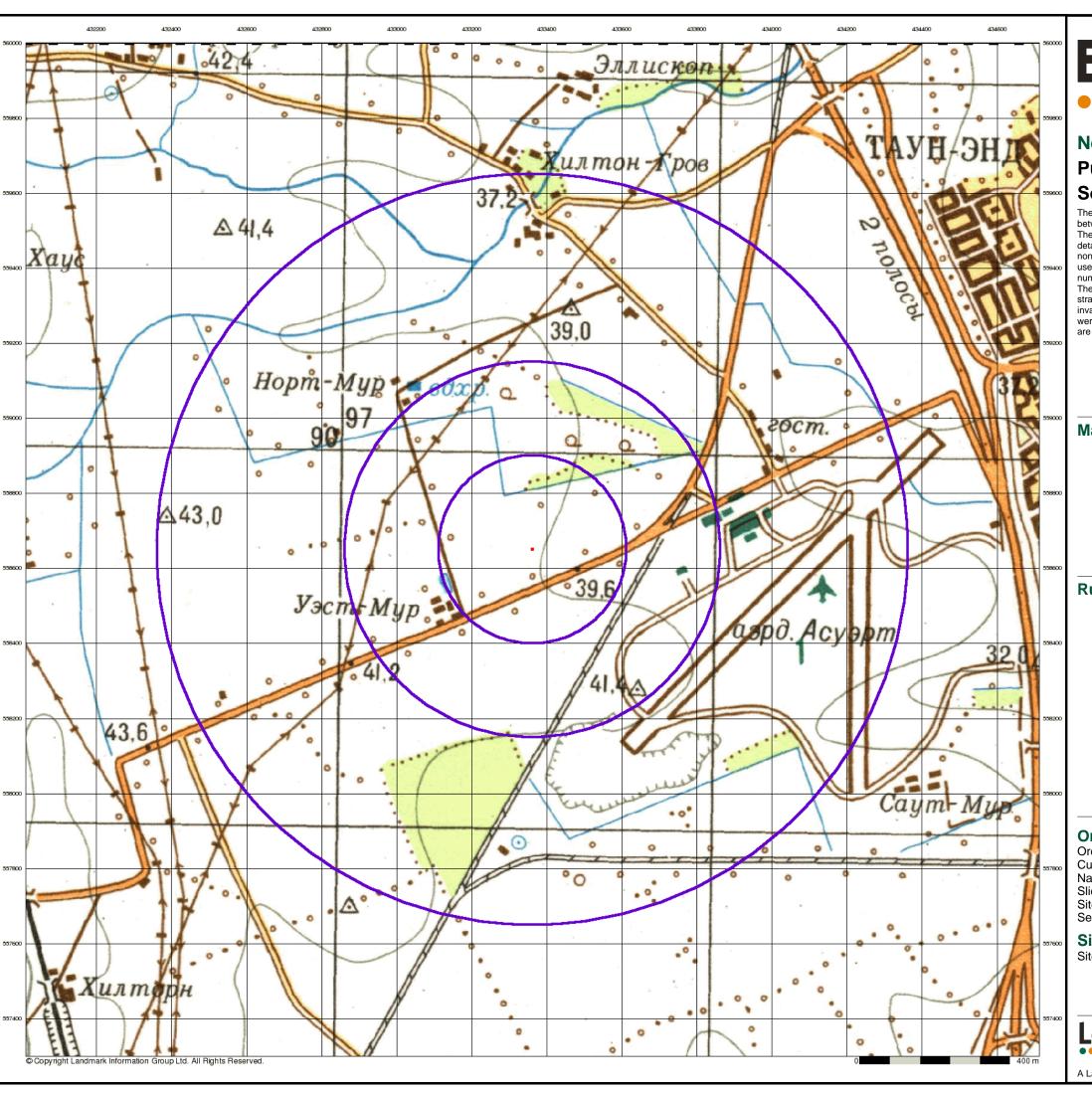
Site Details

Site at 433100, 558820



0844 844 9951 www.envirocheck.co.uk

A Landmark Information Group Service v50.0 13-Sep-2022 Page 12 of 18



LANDMARK INFORMATION GROUP®

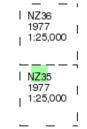
Newcastle-upon-Tyne Published 1977 Source map scale - 1:25,000

These maps were produced by the Russian military during the Cold War between 1950 and 1997, and cover 103 towns and cities throughout the U.K. The maps are produced at 1:25,000, 1:10,000 and 1:5,000 scale, and show detailed land use, with colour-coded areas for development, green areas, and non-developed areas. Buildings are coloured black and important building uses (such as hospitals, post offices, factories etc.) are numbered, with a numbered key describing their use.

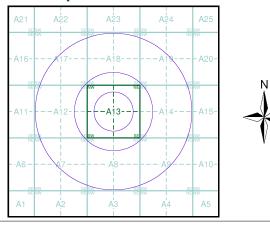
They were produced by the Russians for the benefit of navigation, as well as strategic military sites and transport hubs, for use if they were to have

invaded the U.K. The detailed information provided indicates that the areas were surveyed using land-based personnel, on the ground, in the cities that

Map Name(s) and Date(s)



Russian Map - Slice A



Order Details

Order Number: 301180946_1_1 Customer Ref: Envision AESC National Grid Reference: 433360, 558650

Site Area (Ha): Search Buffer (m):

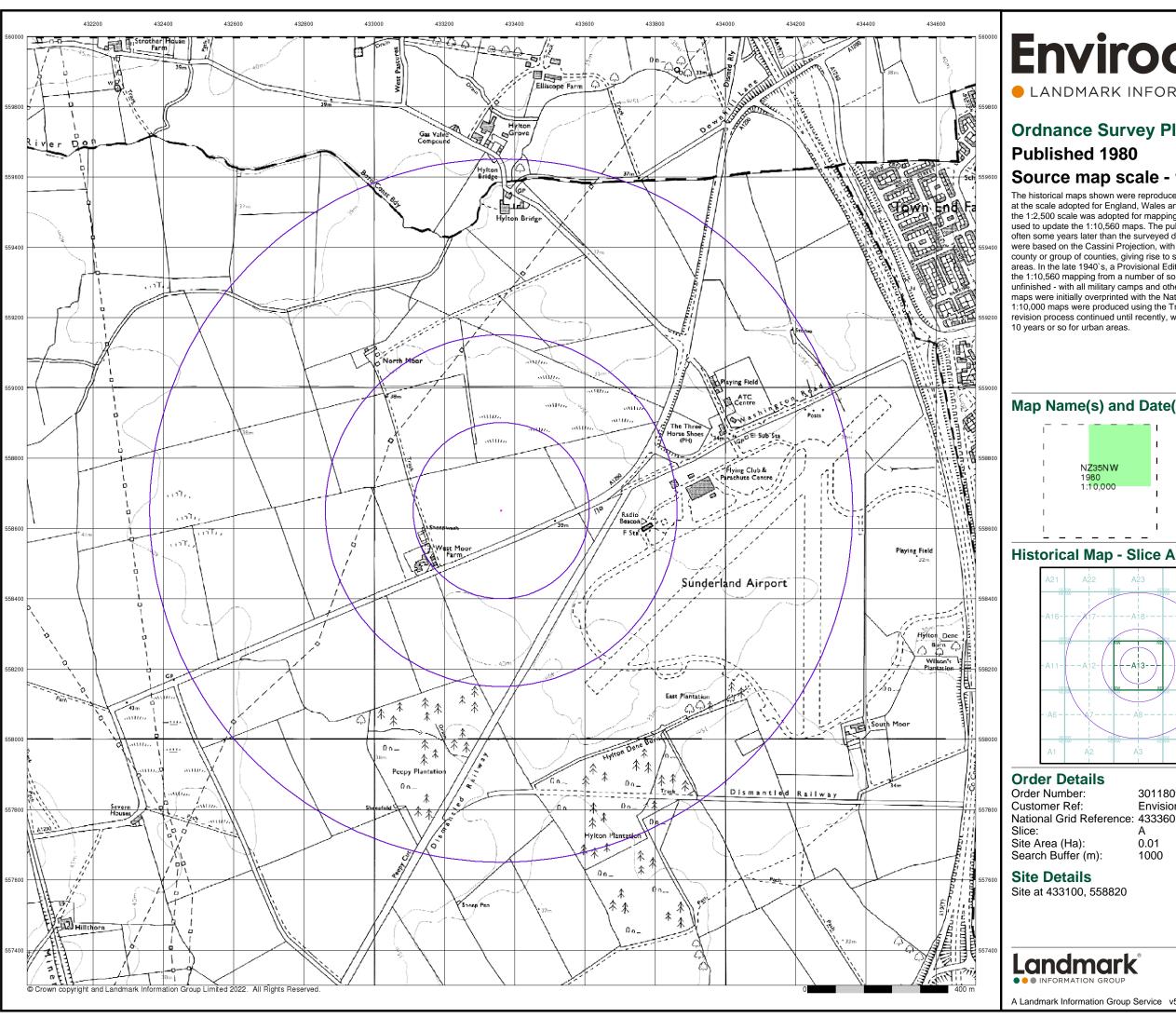
Site Details

Site at 433100, 558820



0844 844 9951 www.envirocheck.co.uk

A Landmark Information Group Service v50.0 13-Sep-2022 Page 13 of 18

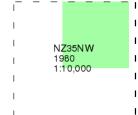


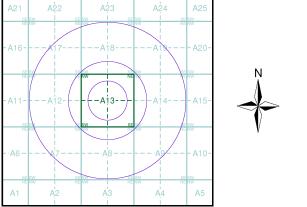
LANDMARK INFORMATION GROUP®

Ordnance Survey Plan Source map scale - 1:10,000

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940's, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every

Map Name(s) and Date(s)

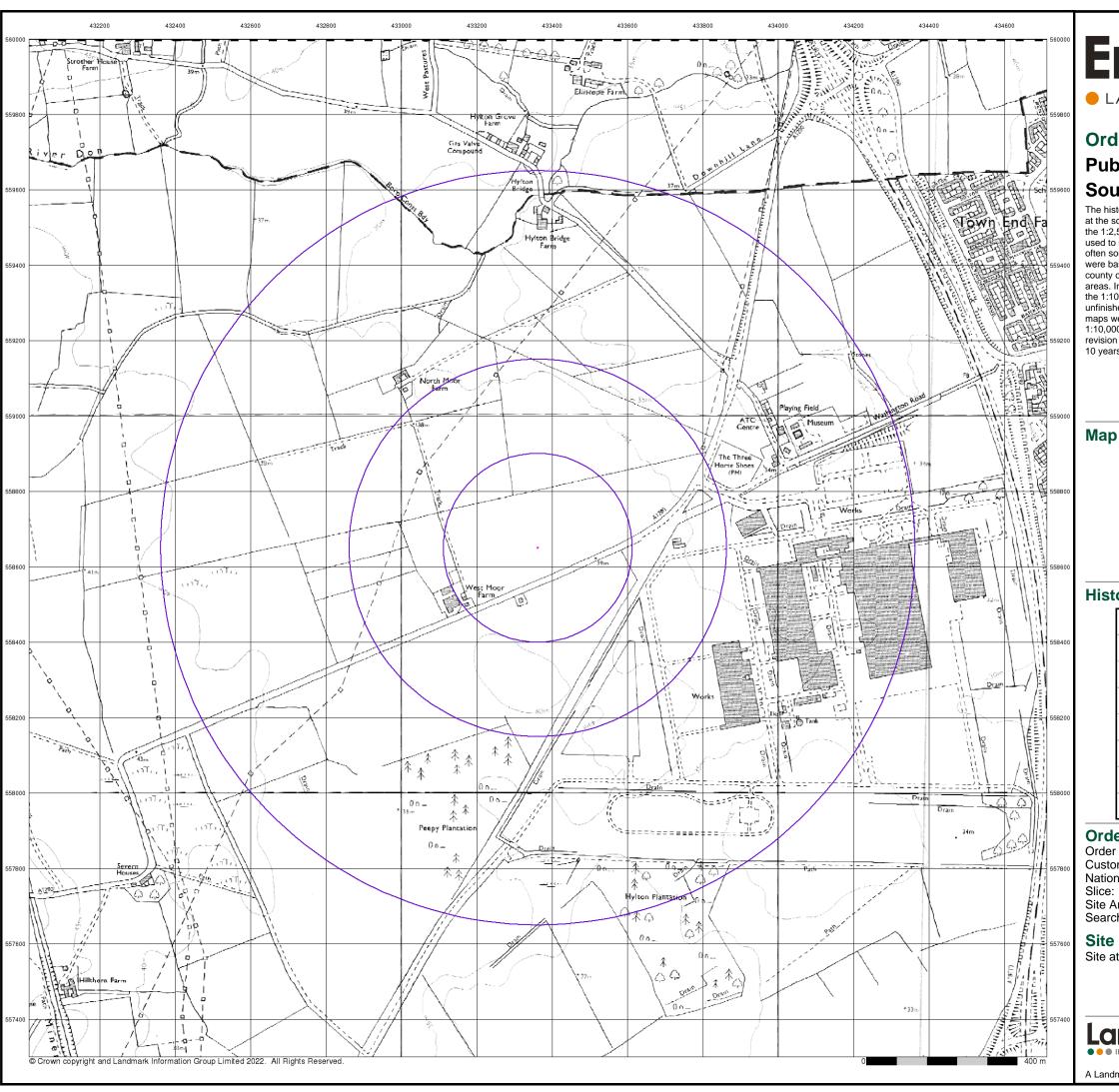




301180946_1_1 **Envision AESC** National Grid Reference: 433360, 558650

0844 844 9951 www.envirocheck.co.uk

A Landmark Information Group Service v50.0 13-Sep-2022 Page 14 of 18

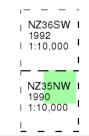


LANDMARK INFORMATION GROUP®

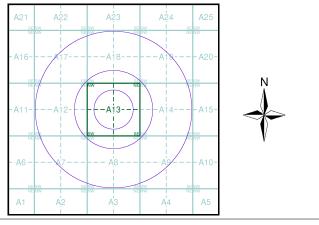
Ordnance Survey Plan Published 1990 - 1992 Source map scale - 1:10,000

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940's, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

Order Number: 301180946_1_1
Customer Ref: Envision AESC
National Grid Reference: 433360, 558650
Slice: A
Site Area (Ha): 0.01
Search Buffer (m): 1000

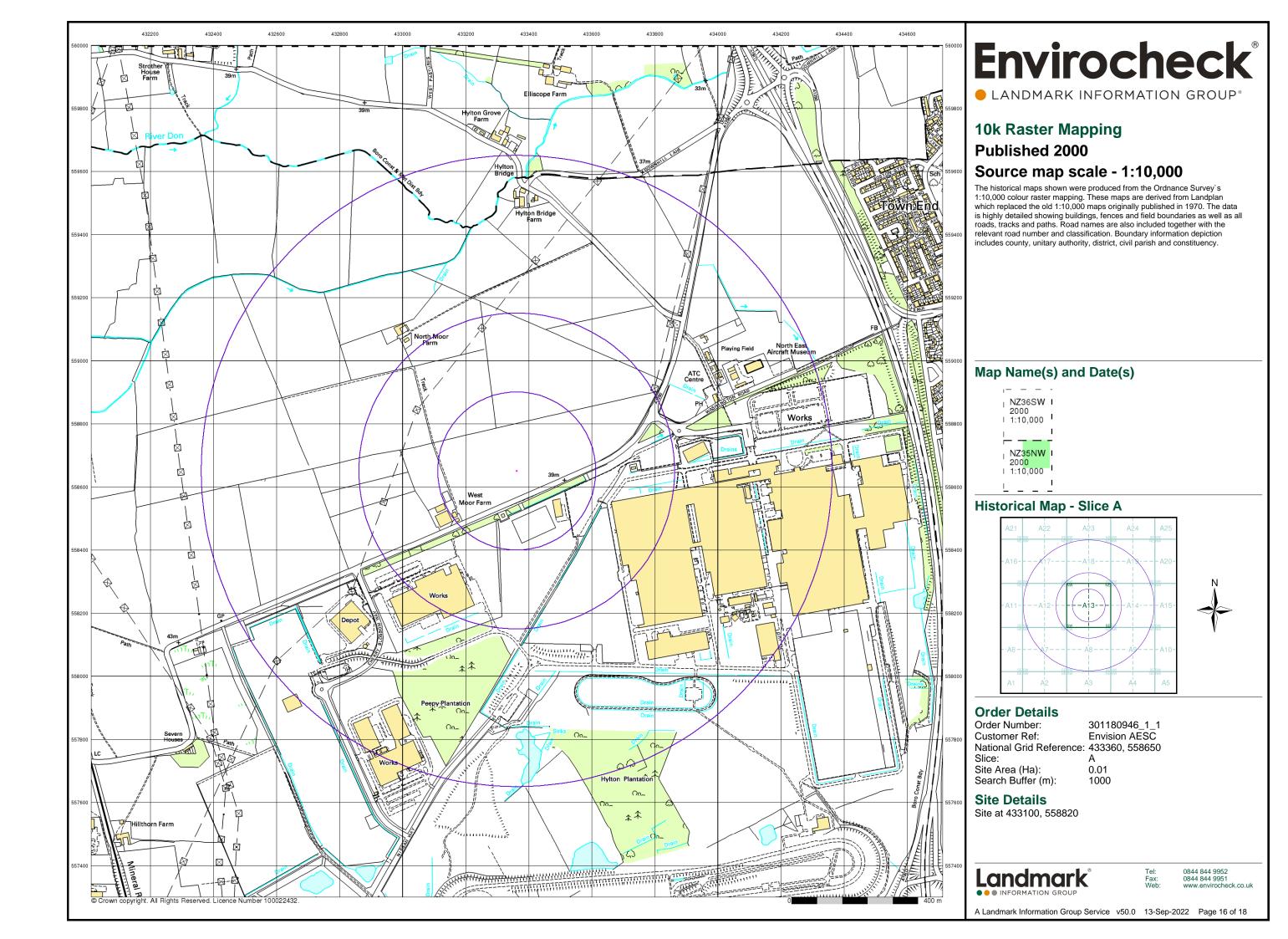
Site Details

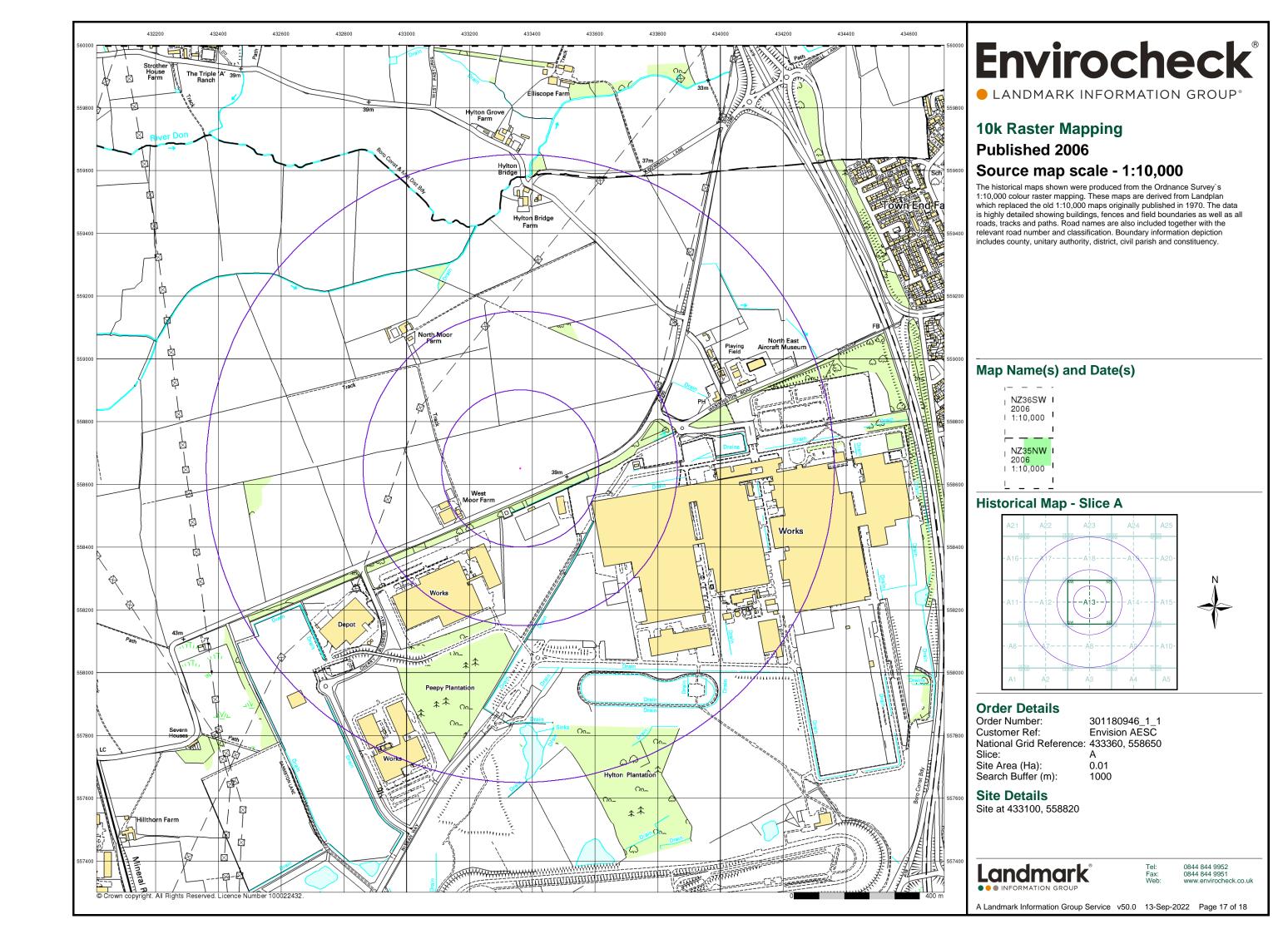
Site Details
Site at 433100, 558820

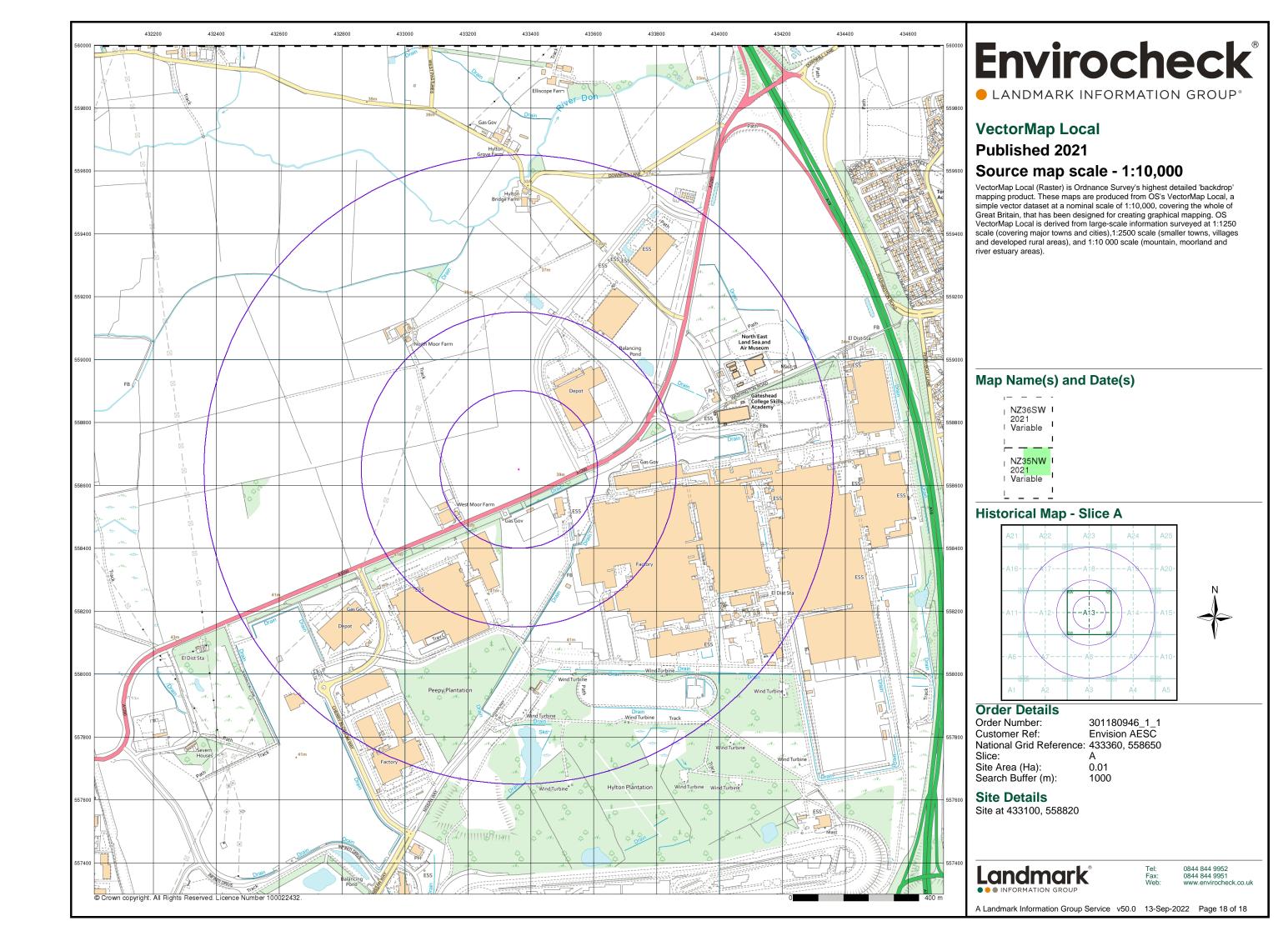
Landmark®
••• INFORMATION GROUP

Tel: 0844 844 9952 Fax: 0844 844 9951 Web: www.envirocheck.co.uk

A Landmark Information Group Service v50.0 13-Sep-2022 Page 15 of 18

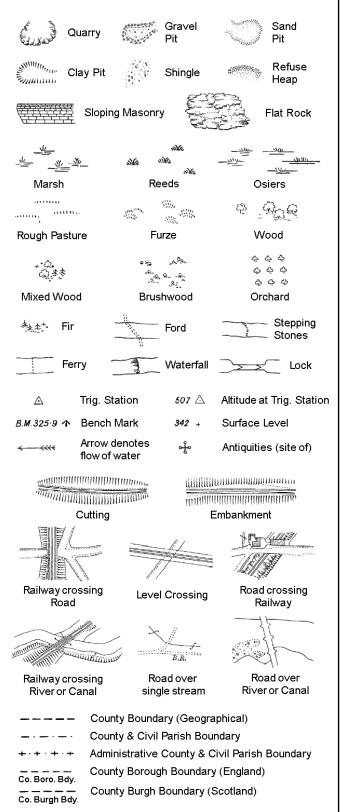






Historical Mapping Legends

Ordnance Survey County Series and Ordnance Survey Plan 1:2,500



B.R.

E.P

F.B.

M.S

Bridle Road

Foot Bridge

Mile Stone

M.P.M.R. Mooring Post or Ring

Electricity Pylor

Police Call Box

Telephone Call Box

Signal Post

Pump

Sluice

Spring

Trough Well

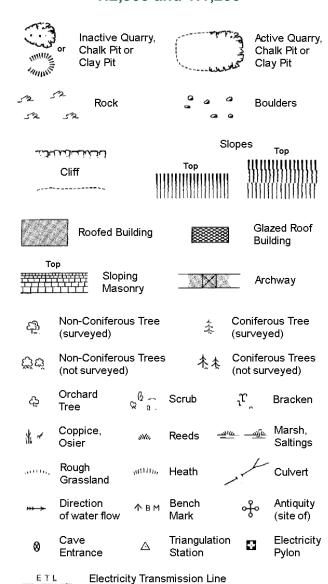
S.P

T.C.B

Sl.

 T_T

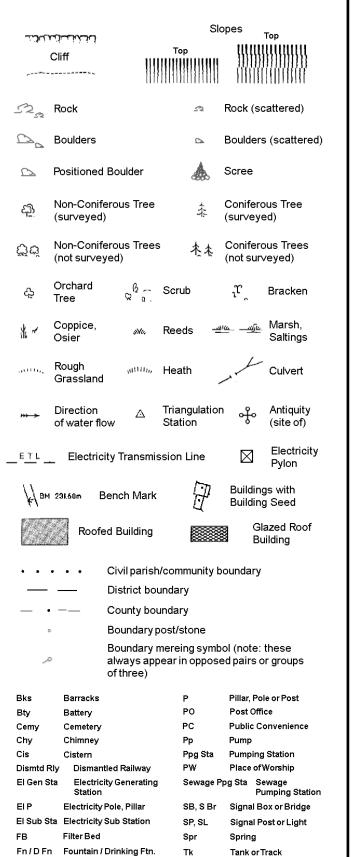
Ordnance Survey Plan, Additional SIMs and Large-Scale National Grid Data 1:2,500 and **Supply of Unpublished Survey Information** 1:2,500 and 1:1,250



	County Boundary (Geographical)
	County & Civil Parish Boundary
	Civil Parish Boundary
· -	Admin. County or County Bor. Boundary
L B Bdy	London Borough Boundary
	Symbol marking point where boundary mereing changes

вн	Beer House	Р	Pillar, Pole or Post
BP, BS	Boundary Post or Stone	PO	Post Office
Cn, C	Capstan, Crane	PC	Public Convenience
Chy	Chimney	PH	Public House
D Fn	Drinking Fountain	Pp	Pump
EIP	Electricity Pillar or Post	SB, S Br	Signal Box or Bridge
FAP	Fire Alarm Pillar	SP, SL	Signal Post or Light
FB	Foot Bridge	Spr	Spring
GP	Guide Post	Tk	Tank or Track
Н	Hydrant or Hydraulic	TCB	Telephone Call Box
LC	Level Crossing	TCP	Telephone Call Post
MH	Manhole	Tr	Trough
MP	Mile Post or Mooring Post	WrPt,WrT	Water Point, Water Tap
MS	Mile Stone	W	Well
NTL	Normal Tidal Limit	Wd Pp	Wind Pump

1:1,250



Gas Valve Compound

Mile Post or Mile Stone

Gas Governer

Guide Post

Manhole

GVC

Tr

Wd Pp

Wks

Trough

Wind Pump Wr Pt. Wr T Water Point, Water Tap

Works (building or area)

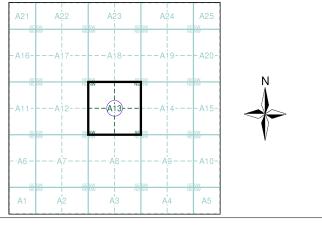
Envirocheck®

LANDMARK INFORMATION GROUP

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Durham	1:2,500	1856 - 1884	2
Durham	1:2,500	1896	3
Durham	1:2,500	1919	4
Durham	1:2,500	1939	5
Ordnance Survey Plan	1:2,500	1959	6
Additional SIMs	1:2,500	1981	7
Additional SIMs	1:2,500	1988	8
Large-Scale National Grid Data	1:2,500	1993	9
Large-Scale National Grid Data	1:2,500	1993	10
Historical Aerial Photography	1:2,500	1999	11

Historical Map - Segment A13



Order Details

Order Number: 301180946_1_1 **Envision AESC** Customer Ref: National Grid Reference: 433360, 558650 Slice:

Site Area (Ha): Search Buffer (m): 100

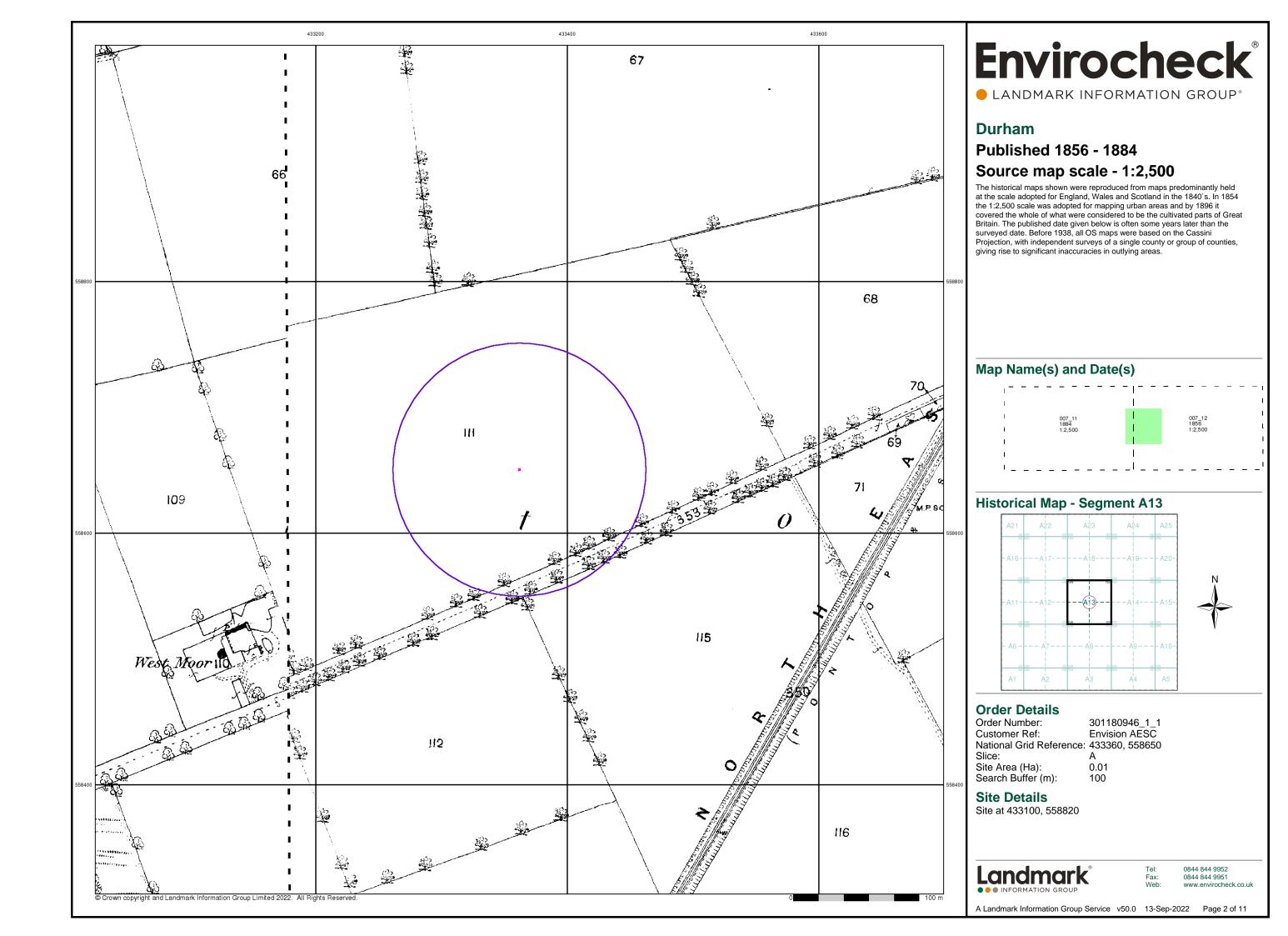
Site Details

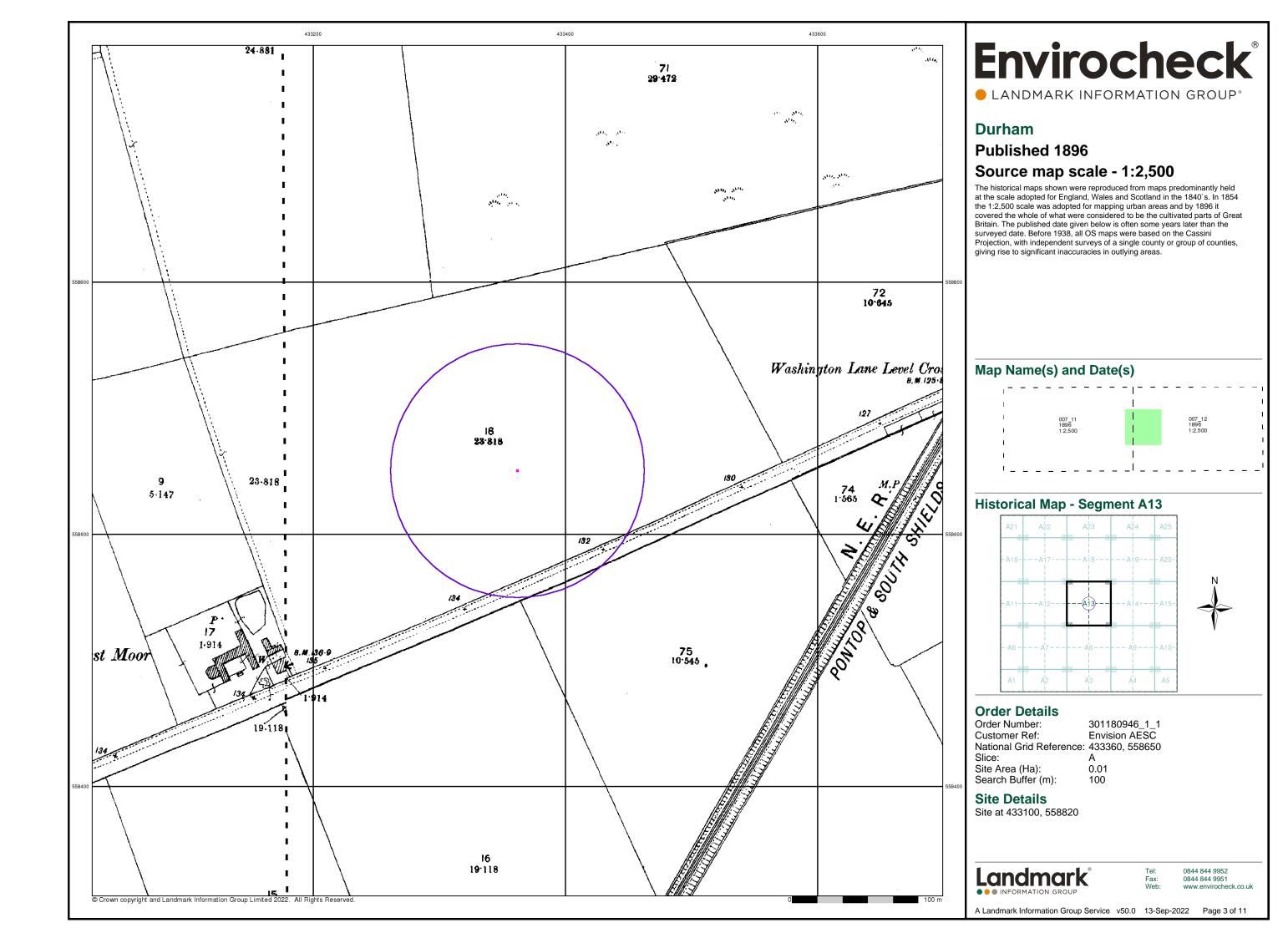
Site at 433100, 558820

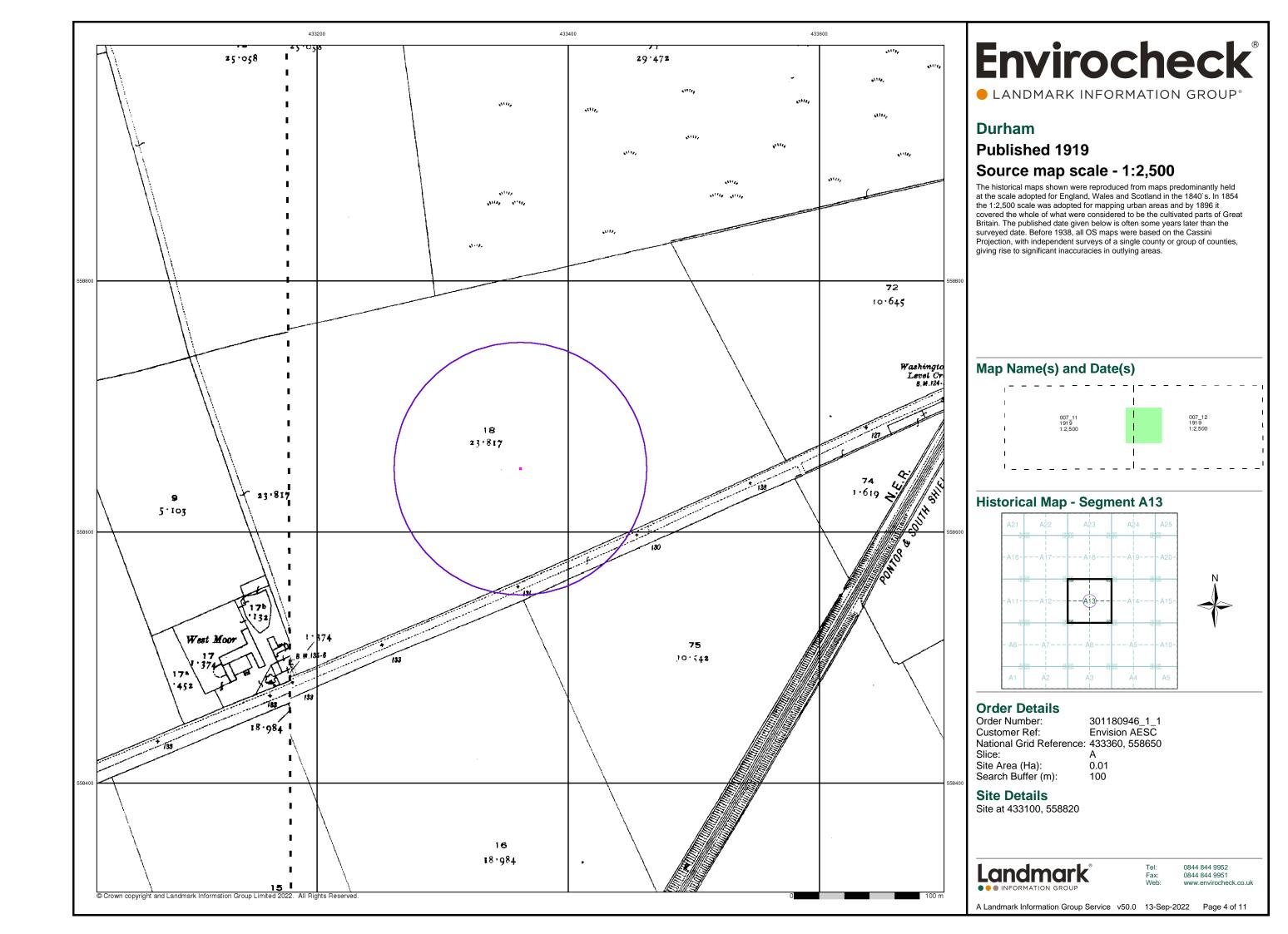


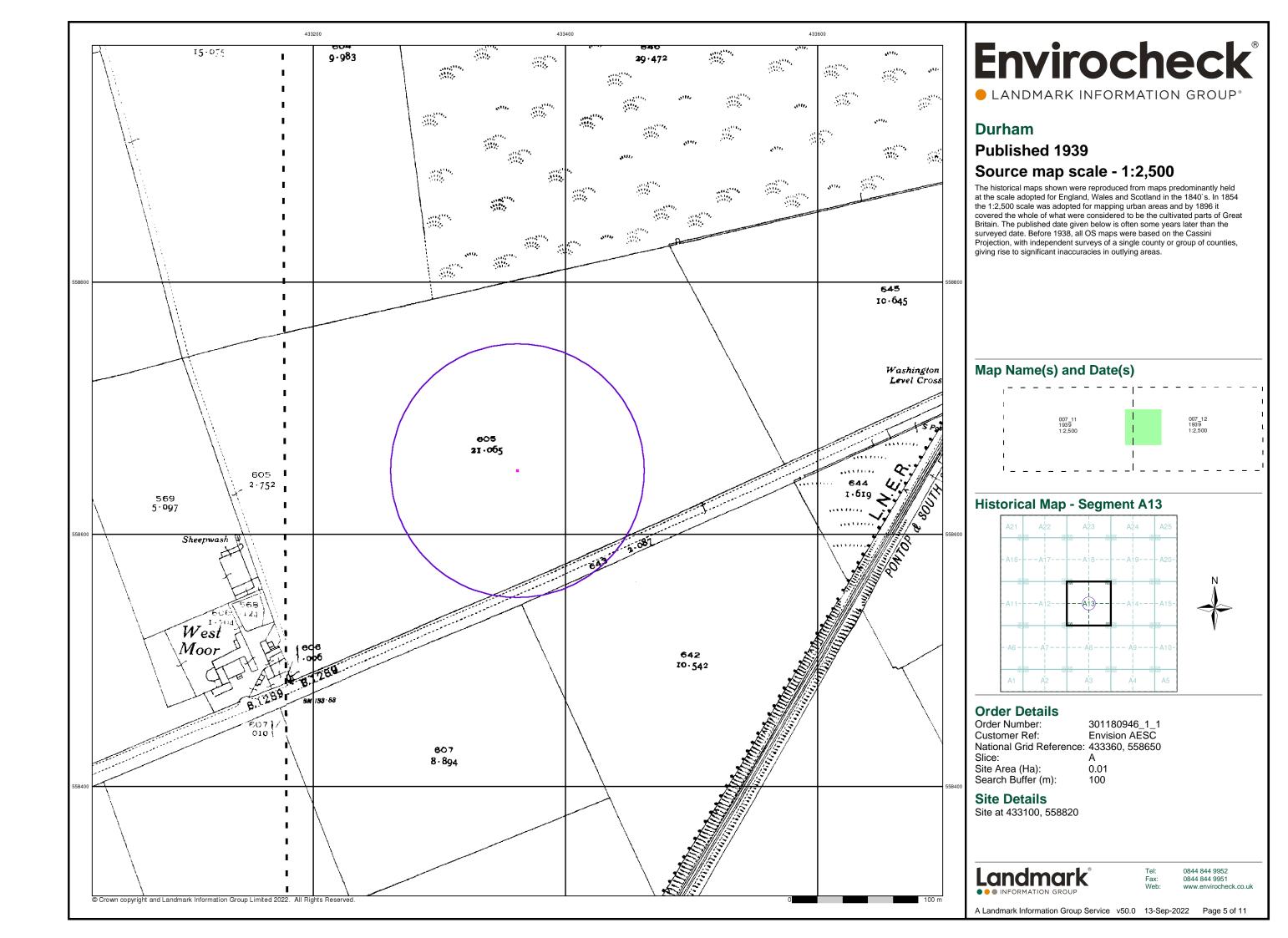
0844 844 9952

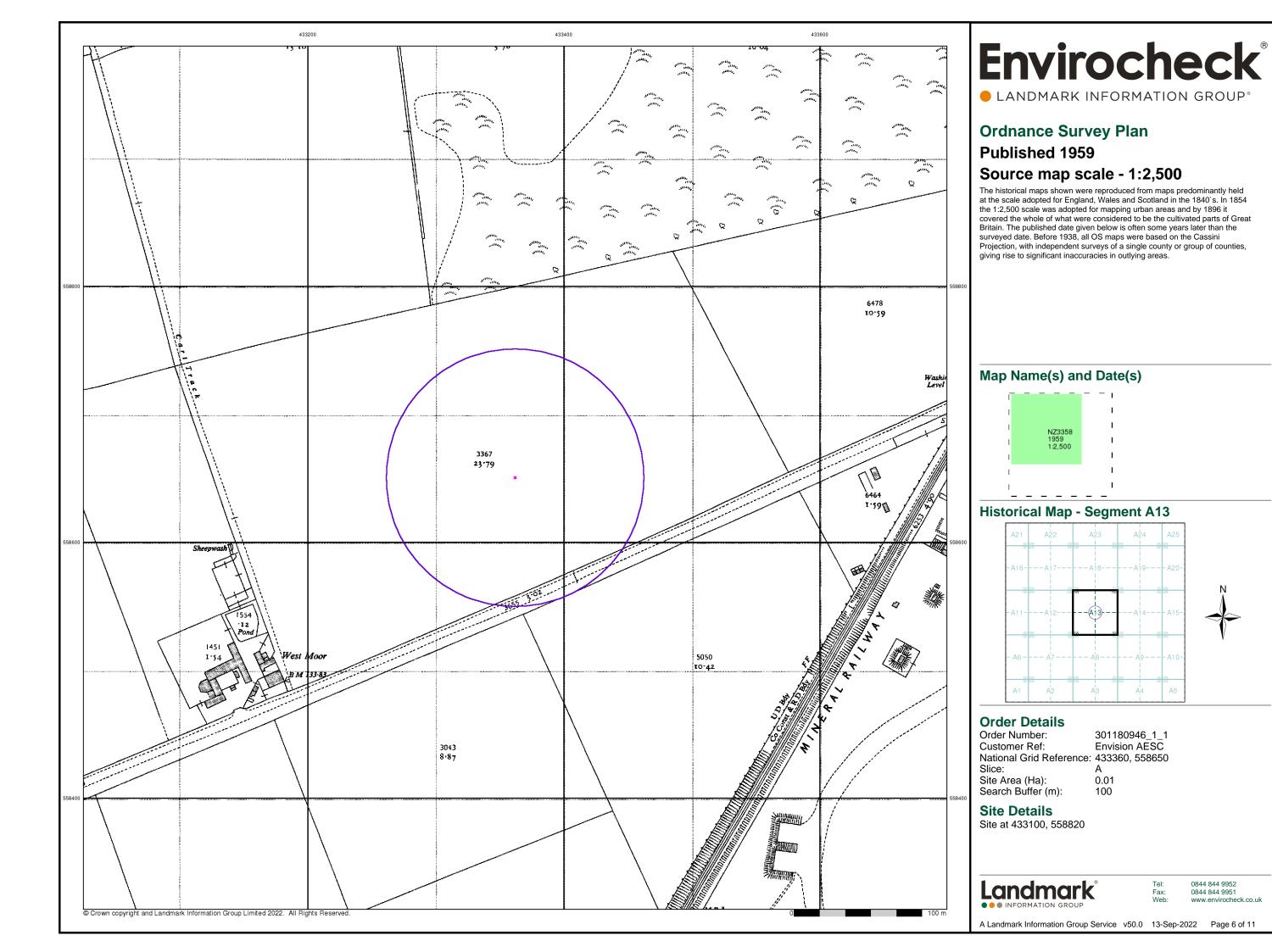
A Landmark Information Group Service v50.0 13-Sep-2022 Page 1 of 11

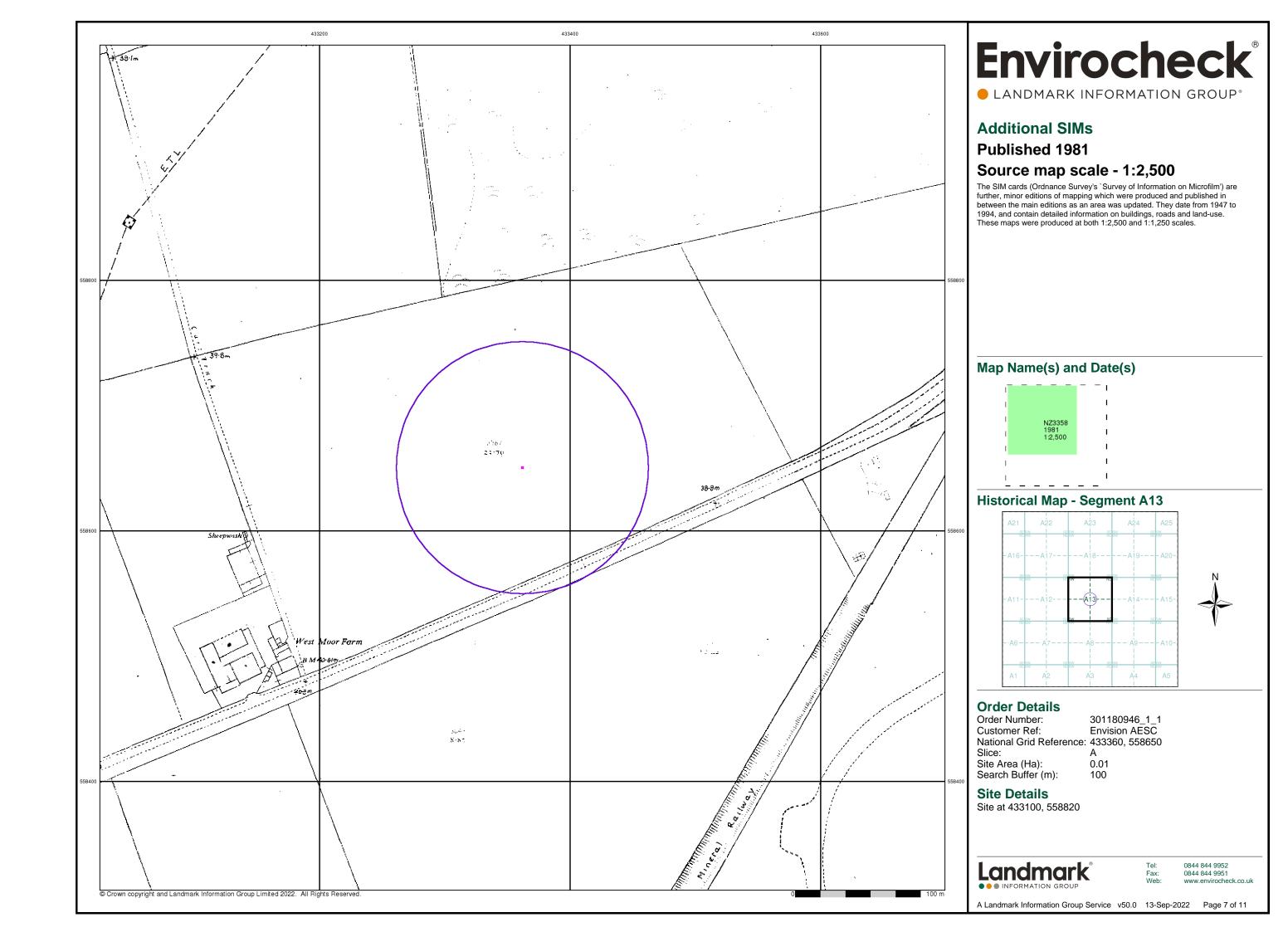


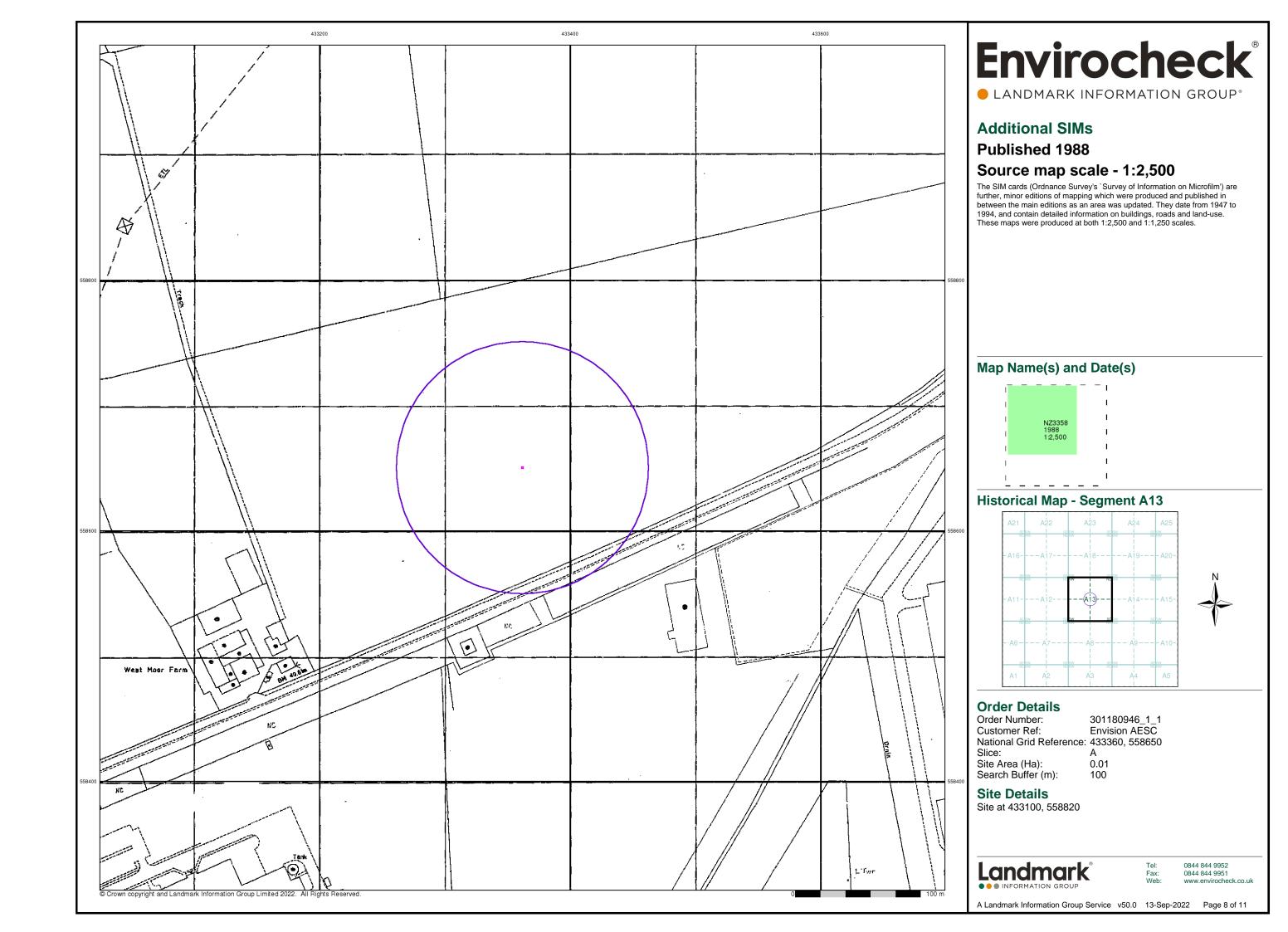


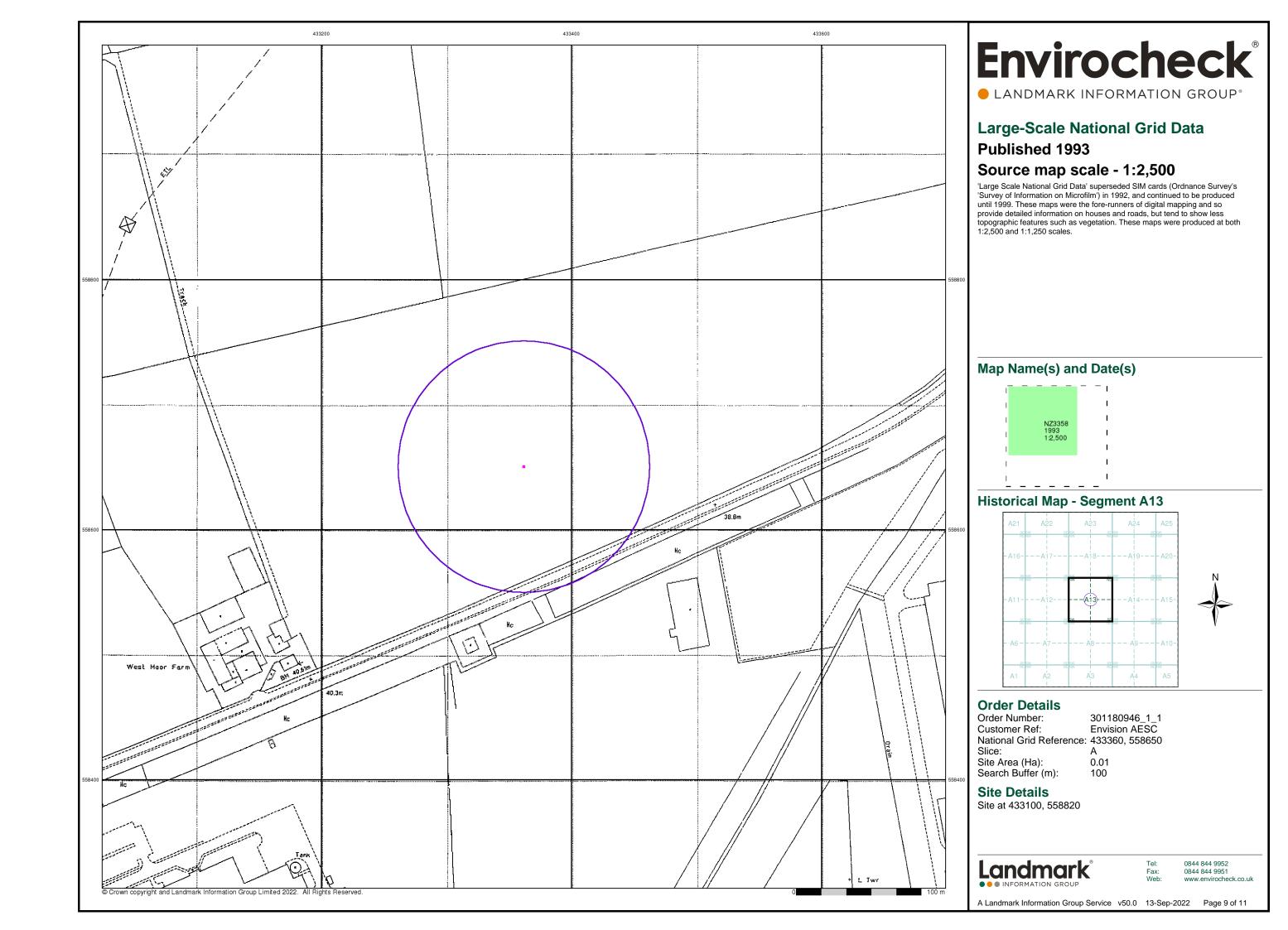


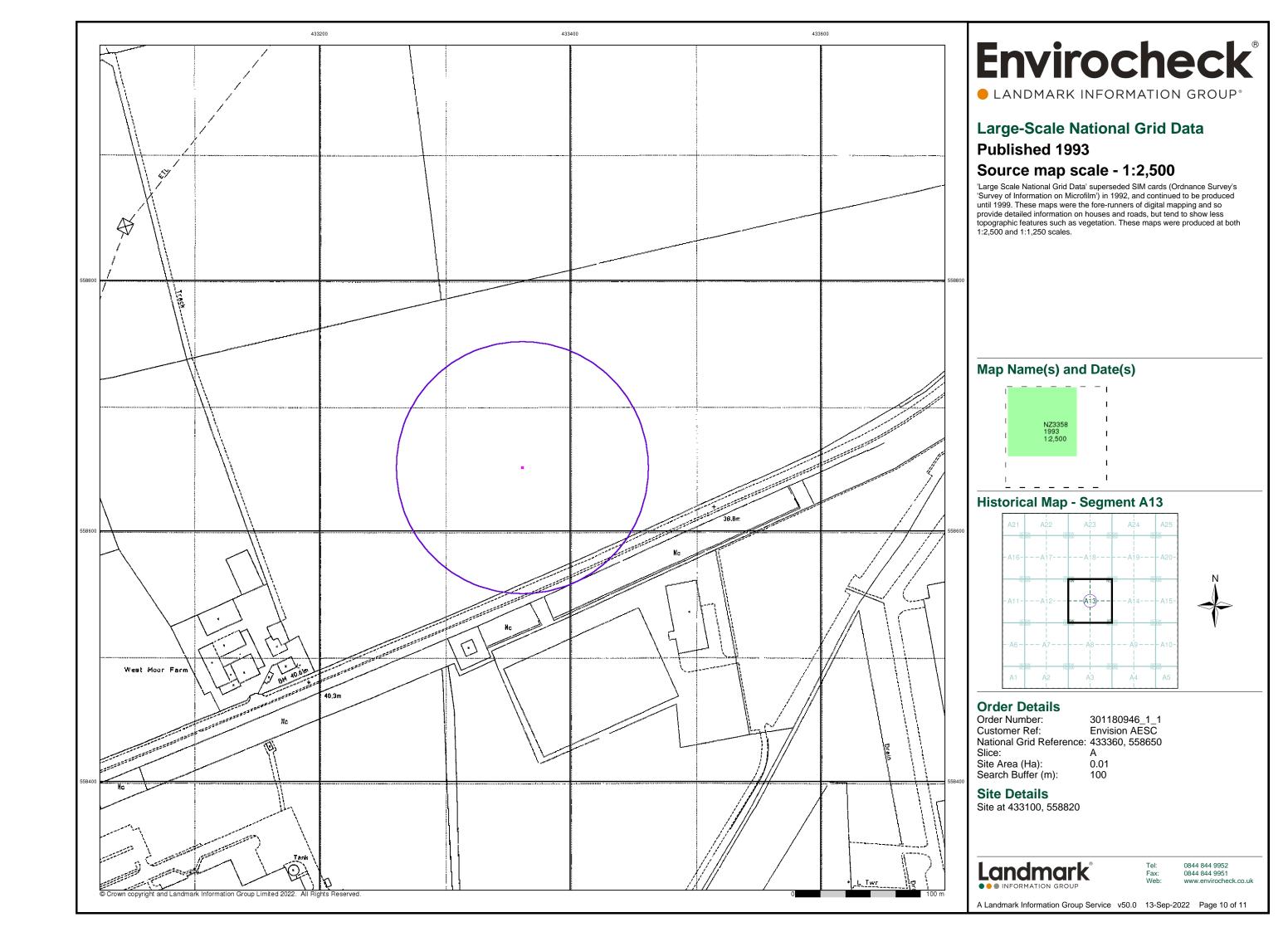


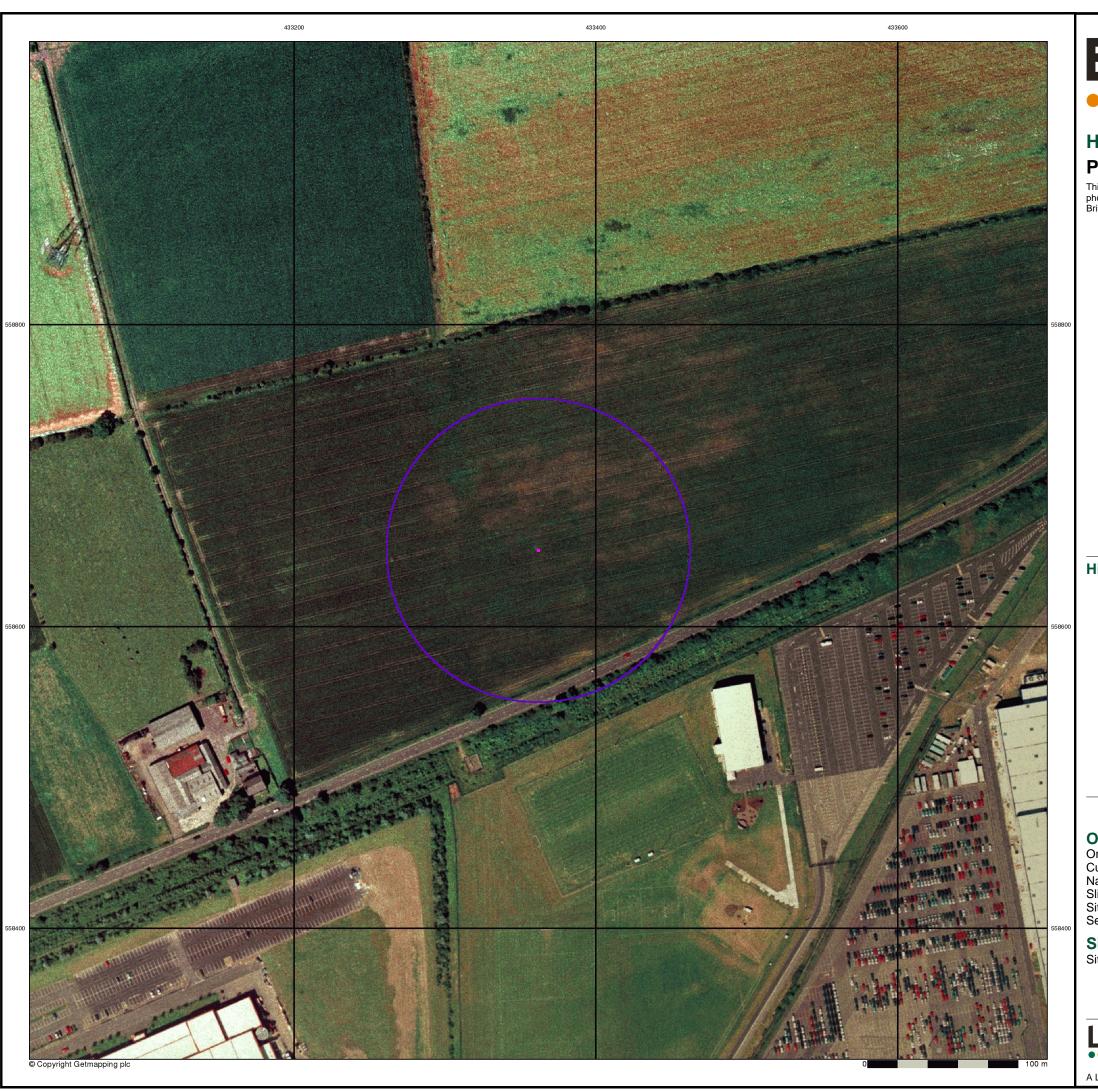










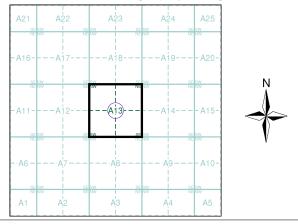


● LANDMARK INFORMATION GROUP®

Historical Aerial Photography Published 1999

This aerial photography was produced by Getmapping, these vertical aerial photographs provide a seamless, full colour survey of the whole of Great Britain

Historical Aerial Photography - Segment A13



Order Details

Order Number: 301180946_1_1
Customer Ref: Envision AESC
National Grid Reference: 433360, 558650
Slice: A

Site Area (Ha): 0.01 Search Buffer (m): 100

Site Details

Site at 433100, 558820

Landmark®
••• INFORMATION GROUP

Tel: 0844 844 9952 Fax: 0844 844 9951 Veb: www.envirocheck.co.uk

A Landmark Information Group Service v50.0 13-Sep-2022 Page 11 of 11

Site Condition and Baseline Report for Envision AESC LTD Giga 1 Car Battery Manufacturing Factory, Sunderland



Appendix B











Factual Site Investigation Report

Envision Giga Factory, Sunderland Wates Construction North East Ltd S211001

Solmek Ltd

12 Yarm Road Stockton-on-Tees TS18 3NA Tel: 01642 607083

www.solmek.com

info@solmek.com











FACTUAL SITE INVESTIGATION REPORT

ENVISION GIGA FACTORY, SUNDERLAND

TABLE OF CONTENTS

1	INTRODUCTION	2
	FIELDWORK	
	CONTAMINATION TESTING	
	GEOTECHNICAL TESTING	
	GROUND GAS/WATER MONITORING	

APPENDICES

Appendix A: Drawings

Appendix B: Borehole Logs, Trial Pit Logs, Trial Pit & Rock Core Photographs

Appendix C: Soil and Water Contamination Laboratory Results

Appendix D: Geotechnical Soil Laboratory Results, DCP Results & Plate Bearing Test Results

Appendix E: Geotechnical Rock Laboratory Results

Appendix F: CPT Data

Appendix G: Gas Monitoring Results

Appendix H: Drill Rig SPT Certificates, Notes on Limitations & Contamination Guidelines

Revision	Date	Prepared By	Signed
		A Cutts Senior Engineering Geologist	ACUA
		Checked By	
Final	January 2022	R Woods Principal Geotechnical Engineer	
		Approved By	
		R Woods Principal Geotechnical Engineer	



1 INTRODUCTION

1.1 Authorisation

The fieldwork described in this report was carried out by Solmek to the instructions of RPS Consulting Services Ltd on behalf of Wates Construction North East Ltd.

The site investigation was undertaken on a parcel of predominantly agricultural land to the north of the Nissan Manufacturing Plant adjacent to the A1290 near Washington, Sunderland. A site location plan is presented in Appendix A, Figure 1.

1.2 Scope of Works

The scope of works was set out by RPS within the Specification 020439-RPS-SI-XX-SP-C-00022 to facilitate the design of a proposed battery manufacturing plant.

A factual geotechnical and environmental investigation was requested. The fieldwork and testing was generally carried out according to the recommendations of BS5930: 2015 "Code of Practice for Ground Investigations" together with BS 10175:2011+A1:2013, "Investigation of Potentially Contaminated Land - Code of Practice" and where applicable BS EN 1997-2:2007 with soil descriptions to BS EN 14688-1:2013 where applicable. The information provided in this report is based on the investigation fieldwork and is subject to the comments and approval of the various regulatory authorities.

There may be other conditions prevailing on the site which have not been disclosed by this investigation and which have not been taken into account by this report. Solmek reserve the right to alter conclusions and recommendations should further information be available or provided. Any schematic representation or opinion of the possible configuration of ground conditions between exploratory holes is conjectural and given for guidance only and confirmation of intermediate ground conditions should be considered if deemed necessary.

2 FIELDWORK

The works commenced on 18th October 2021. The exploratory positions were indicated to Solmek in line with the Specification written by RPS.

The location of the exploratory positions is shown in Figure 2 (Appendix A).

The fieldworks comprised:

- 7no. Cable percussive boreholes (CP01 to CP07) drilled to a maximum depth of 16.27m below ground level (bgl).
- 6no. Cable percussive boreholes with rotary core follow on (CPRO01 to CPRO06) to a maximum depth of 26.50mbgl.
- 10no. small percussive boreholes (WS01 to WS10 inclusive) drilled to a maximum depth of 5.45mbgl.
- 52no. machine excavated trial pits (TP01 to TP52 inclusive) excavated to a maximum depth of 3.50mbgl.
 - Insitu Dynamic Cone Penetrations (DCP) and Plate Bearing Tests (PBT) were undertaken in selected trial pits.
- 12no. cone penetration tests with pore water pressure measurement (CPTu) (CPT01 to CPT12 inclusive)

Insitu hand shear vanes and standard penetration tests (SPT) were undertaken in the boreholes and trial pits where applicable.



The boreholes were backfilled with grout or gas pipe installations upon completion. The trial pits were backfilled with arisings.

Descriptions of the strata encountered in the boreholes and trial pits together with details of sampling and groundwater are presented in Appendix B of this report.

3 CONTAMINATION TESTING

Environmental samples were collected by the Solmek Supervising Engineer and transported to Eurofins Chemtest Environmental Laboratory. RPS issued testing schedules to Solmek.

The test results for both soil and water are within the Chemtest reports presented in Appendix C.

4 GEOTECHNICAL TESTING

Samples taken from the exploratory positions underwent a series of soil geotechnical tests as instructed by RPS. This also included insitu plate bearing tests (PBT) and Dynamic Probe Penetration (DCP).

The results of the soil geotechnical testing are provided in Appendix D.

In addition, a series of cone penetration tests with pore water pressure measurement (CPTu) were carried out across the site. The results are presented in Appendix F.

Point Load Testing and Unconfined Compressive Strength rock testing was outsourced to Professional Soils Laboratory, Hexthorpe Road, Hexthorpe, Doncaster, DN4 0AR. Rock triaxial Testing was outsourced to Geolabs Ltd, Bucknalls Lane, Garston, Watford, WD25 9XX.

The results of the rock geotechnical testing are provided in Appendix E.

5 GROUND GAS/WATER MONITORING

A post fieldwork series of 4no. ground gas and ground water monitoring visits were completed between 12th November and 6th December 2021.

The results are presented in Appendix G.

SOLMEK

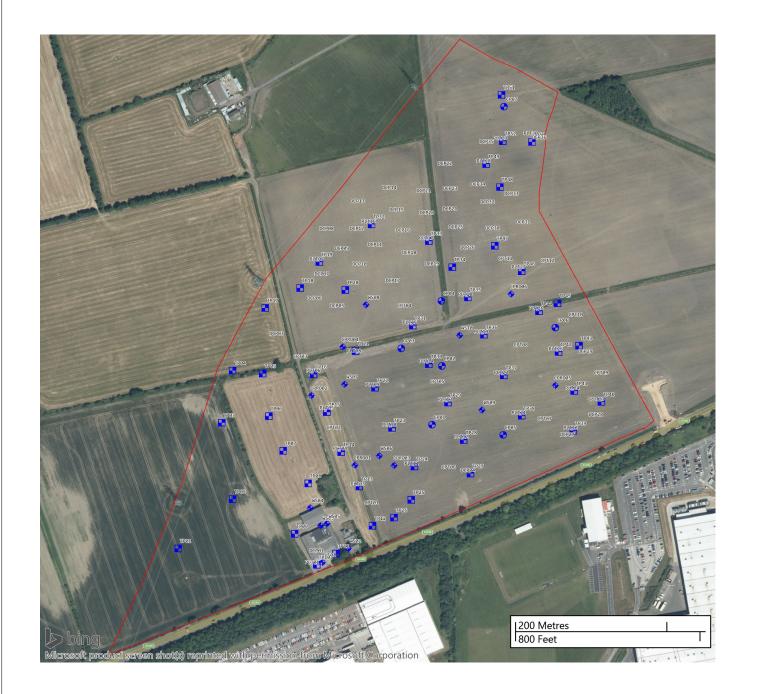
APPENDIX A





12-16 Yarm Road, Stockton on Tees, TS18 3NA Tel: 01642 607083 Email: info@solmek.com

· ·
Figure Title
Site Location Plan
Project Number
S211001
Project Name
Envision Giga Factory, Sunderland
Client
Wates Construction North East
Date
January 2022
DRG Number
Figure 1
Scale
1:20000 @ A4 [DO NOT SCALE]
Legend Key Project Bounds - Project Bounds





12-16 Yarm Road, Stockton on Tees, TS18 3NA Tel: 01642 607083 Email: info@solmek.com

Figure Title

Exploratory Position Location Plan

Project Number

S211001

Project Name

Envision Giga Factory, Sunderland

Client

Wates Construction North East

Date

January 2022

DRG Number

Figure 2

Scale

1:5000 @ A4 [DO NOT SCALE]

Legend Key

♦ Locations By Type - BH

Locations By Type - TP

Project Bounds - Project Bounds

APPENDIX B

			arm Road								Scale	1:50	Sheet	1 of 2
	SOLME	TS18 3N 01642 6		Borehole	Log						С	PR	00	1
Contra	ct no:	S21100	1	Site: Envision Giga Factory, Sunderland	Drill Plan Star	t used:	BBL Dando 19/10		Beretta T	59	GL (Ad Eastin North	g:	39.32 4331 55860	73
Client:		Wates 0	Construction	on North East	Ende	ed:	19/10	/2021			Logge	d:	SM	
Metho	d:	Cable P	ercussive f	Rotary Core follow on	Back	rfilled:	21/10	/2021			Status	s:	FINAL	
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description						es and Ins	itu Tes			
n B		_	٤					Dept	th (m)	Туре		Res	ults	
		0.30	39.02	TOPSOIL/REWORKED GROUND: Grass over dark brown slightly sandy smany fine to medium plant rootlets. Gravel is sub angular to sub round sandstone, mudstone and quartz. Stiff consistency light brown mottled grey slightly sandy slightly gravell sub rounded fine to coarse of sandstone, siltstone, mudstone and qua	ded fine	to coarse o	of/	0.30 0.50	- 0.30 - 0.40 - 0.60	ES B ES				
				(PELAW CLAY MEMBER)	112.				- 0.80	B ES	53	olows	[450n	nm]
		1.40	37.92	Firm becoming stiff consistency with depth dark brown mottled grey s gravelly high strength CLAY with a low cobble content. Gravel is sub an to coarse of sandstone, siltstone and mudstone. Cobbles are sub angu	gular to	sub round		1.20	- 1.65 - 1.70	U				,
			=	(PELAW CLAY MEMBER)				2.00	- 2.45 - 2.45 - 2.50	SPT (S) B+D ES	N=:	17 (2,:	2/3,4,5	5,5)
									- 3.45	U	136	hlow	s [450r	nm1
								E	- 3.50	В	200		. [.56.	,
	× × × × × × × × × × × × × × × × × × ×	3.70	35.62	Very weak to weak thinly laminated dark grey highly weathered SILTST Fractures: Horizontal to sub horizontal closely to medium spaced undu (PENNINE MIDDLE COAL MEASURES)		nd smooth			- 4.03 - 4.45	SPT (S) B+D			(25 fo for 15	
	×××× ×××× ×××× ××××× ×××××					4.50 - 6.00		E 4.50 C	- 6.00	С				
	× × × × × × × × × × × × × × × × × × ×										100	58	37	NI 140 200
	X X X X X X X X X X X X X X X X X X X					6.00 - 7.50		С						
	×××× ×××× ×××× ×××× ×××× ××××										98	39	28	NI 100 230
	× × × × ×	7.20	32.12	Weak to medium strong very thinly bedded light grey slightly to moderately weathered medium grained SANDSTONE. Fractures: Horizontal to sub horizontal closely to medium spaced plant and rough.	ar	7.50 - 9.00		с						
			_	(PENNINE MIDDLE COAL MEASURES)						-	100	63	61	100 300 390
						9.00 - 10.5	0	С		_				
					- - - - - - - - - - - - - - - - - - -						97	67	61	40 210 530
Hole D	iameter	Casing	Denths	General Remarks		Chiselling				Ground W	ater			
Depth	Diameter	Depth Base	Diameter	1. 1.2m hand excavated inspection pit.	From (m)	To (m)	Time (hr)	Depth Strike	Depth Casing	Depth Sealed	Time Ela		Water Le	vel (m)
4.50 15.00	(mm) 150 100	(m) 4.50	(mm) 150	Groundwater encountered at 4.20m and 8.40m. Borehole backfilled on completion.			(")	(m) 4.20 8.40	(m) 4.00 4.50	(m) 4.50	(min	1		- (***)

♣ S	SOLME	Stockto TS18 3N 01642 6	arm Road n on Tees NA 507083 olmek.com	Borehole L	og							1:50 CPR		
Contrac		S21100:	1 Constructio	Site: Envision Giga Factory, Sunderland on North East Rotary Core follow on	Driller: Plant us Started Ended: Backfill	sed:	19 19			tta T59	Easti	hing: ed:	4331	73.40 01.70
_ =			_				Sample	es and Ins	situ Testin	g	Co	oring /	Fractu	ires
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	De	pth (m		Туре		Results	TCR (%)	SCR (%)	RQD (%)	Fracture
				Weak to medium strong very thinly bedded light grey slightly to moderately weathered medium grained SANDSTONE. Fractures: Horizontal to sub horizontal closely to medium spaced planar and rough. (PENNINE MIDDLE COAL MEASURES)	10.5	0 - 12.	00	С						NI
					12.0	10 - 13.	50	С			99	59	53	190 360
		42.50	25.00	1no. Vertical fracture. 13.00-13.50m	10.5	0.45					96	44	34	NI 90 260
		13.50	25.82	Very weak to weak thinly laminated dark grey highly weathered MUDSTONE. Fractures: Horizontal to sub horizontal closely to medium spaced undulating and smooth. (PENNINE MIDDLE COAL MEASURES)	13.5	0 - 15.	00	С			93	49	42	NI 140 240
			24.32	End of Borehole at 15.000m										
Hole Dia	ameter Diameter	Casing Depth Base	Depths Diameter	General Remarks 1. 1.2m hand excavated inspection pit.	+		Returns		Depth Strike	Gr Depth Casing	ound Wate		osed Wa	iter Level
Base (m) 4.50 15.00	(mm) 150 100	(m) 4.50	(mm) 150	1. 1.2. Third and exacted in percentage of the control of the	From (m)	To (m)	Flush Typ	e Flush (%)	(m) 4.20 8.40	4.00 4.50	(m) 4.50	(min		(m)

			arm Road								Scale	1:50	Sheet	1 of 2
À	SOLMI	EK TS18 31 01642 6	on on Tees NA 607083 olmek.com	Borehole L	og						С	PR	00	2
Cont	ract no: t:	S21100	1	Site: Envision Giga Factory, Sunderland on North East	Drille Plan Start Ende	t used: ed:	BBL Dando 19/10/ 20/10/	2021	Beretta T5	59	GL (AC Easting Northi	g: ng:	39.62 43311 55869 SM	15
Meth		Cable P	ercussive l	Rotary Core follow on	Back	filled:	20/10/	2021			Status	:	FINAL	
<u>`</u>		ے	_ <u>@</u>						Sampl	es and Ins	itu Tes	ting		
Backfill /	Legend	Depth (m)	Level (m AOD)	Stratum Description				Dept	h (m)	Туре		Resi	ults	
		0.30	39.32	TOPSOIL/REWORKED GROUND: Grass over brown slightly sandy slightly fine to medium plant rootlets. Gravel is sub angular to sub rounded fine siltstone, mudstone and quartz. Firm consistency light brown mottled grey slightly sandy slightly gravelly	to coai	se of sand	lstone,	0.30	- 0.20 - 0.40	ES B				
		1.00	38.62	to sub rounded fine to coarse of sandstone, mudstone and quartz. (PELAW CLAY MEMBER)					- 0.70 - 0.80	ES B				
		1.00	30.02	Firm to stiff consistency dark brown mottled grey slightly sandy slightly s strength CLAY with a low to medium cobble content. Gravel is angular to coarse of sandstone, siltstone, mudstone and quartz. Cobbles are sub ar siltstone. (PELAW CLAY MEMBER)	sub ro	unded fin	e to	1.20	- 1.65 - 1.65 - 1.70	SPT (S) B+D ES	N=	11 (2,	2/3,4,	4)
			_					2.00	- 2.45	U				
								Ė	- 2.50 - 2.80	B ES				
									- 3.45 - 3.45	SPT (S) B+D	N=	22 (3,	5/6,7,	9)
								4.00	- 4.45	U				
		4.70	34.92					4.45	- 4.50	В				
				Dark grey highly weathered fine grained SANDSTONE. Recovered as sand gravel. (PENNINE MIDDLE COAL MEASURES)	dy angu	llar fine to	coarse	L	- 5.31 - 5.45	SPT (S) B+D	N=50	+ (7,10 for 10		.7,20
\cdot H		<u> </u>						6.00	- 7.50					
	* XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	6.00	33.62	Very weak to weak thinly laminated light grey highly weathered SILTSTONE. Fractures: Horizontal to 45 degrees closely to medium spaced undulating and smooth. (PENNINE MIDDLE COAL MEASURES) Vertical fractures. 6.50-7.70m		6.00 - 7.50		5.00			97	47	14	NI 210 250
	* ××××	7.30	32.32	Weak to medium strong very thinly bedded light grey slightly to moderately weathered medium grained SANDSTONE. Fractures: Horizontal to 45 degrees closely to medium spaced planar and rough.		7.50 - 9.00				_				
				(PENNINE MIDDLE COAL MEASURES)							97	54	59	90 180 340
					5	0.00 - 10.50	0 (100	80	53	70 150 310
:: <u>ˈ</u>		<u> </u>			+									
Hole	Diameter	Casing	Depths	General Remarks		Chiselling				Ground W	ater			
Depti Base (r 6.00 16.50	m) (mm) 150	Depth Base (m) 6.00	Diameter (mm) 150	1. 1.2m hand excavated inspection pit. 2. No groundwater encountered. 3. Gas standpipe installed on completion.	rom (m)	To (m)	Time (hr)	Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elap (min)		Water Lev	el (m)

	SOLME	Stockto TS18 3N 01642 6	arm Road n on Tees NA 507083 olmek.com	Borehole	Log							1:50 CPR		t 2 of 2
Contraction Client:		S21100 Wates (1 Constructi	Site: Envision Giga Factory, Sunderland on North East Rotary Core follow on	Driller Plant (Starte Ended Backfi	used: d: :	19 20		-	etta T59	East	hing: ed:	4331	15.10 93.70
- ioi	- I	_	_ 6				Sample	es and In	situ Testin	g	C	ring /	Fractu	ıres
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	D	epth (n	1)	Туре	ı	Results	TCR (%)	SCR (%)	RQD (%)	Fracture
				Weak to medium strong very thinly bedded light grey slightly to moderately weathered medium grained SANDSTONE. Fractures: Horizontal to 45 degrees closely to medium spaced planar and rough. (PENNINE MIDDLE COAL MEASURES)	10.	50 - 12.	.00	С						
			_		12.	00 - 13	.50	С			100	47	35	NI 90 330
	**************************************	12.35	27.27	Very weak to weak thinly laminated light grey highly weathered SILTSTONE. Fractures: Horizontal to 45 degrees closely to medium spaced undulating and smooth. (PENNINE MIDDLE COAL MEASURES)							95	73	47	NI 240 350
		13.50	26.12	Weak to medium strong very thinly bedded light grey slightly to moderately weathered medium grained SANDSTONE. Fractures: Horizontal to 45 degrees closely to medium spaced planar and rough. (PENNINE MIDDLE COAL MEASURES)	13.	50 - 15.	.00	С			100	80	63	300 400 470
					15.	00 - 16	.50	С			100	93	80	NI 180 340
		16.50	23.12	End of Borehole at 16.500m										
	iameter	Casing		General Remarks			Returns		Description:	1	round Wate			
Depth Base (m) 6.00 16.50	Diameter (mm) 150 100	Depth Base (m) 6.00	Diameter (mm) 150	1. 1.2m hand excavated inspection pit. 2. No groundwater encountered. 3. Gas standpipe installed on completion.	From (m)	To (m)	Flush Type	e Flush (%)	Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Ela (min		(m)

			'arm Road								Scale	1:42	Sheet	1 of 2
	SOLMI	EK TS18 31 01642 6		Borehole I	Log						С	PR	00	3
Contrac	ct no:	S21100 Wates (Site: Envision Giga Factory, Sunderland on North East	Drill Plan Star	t used: ted:	BBL Dando 19/10/ 19/10/	2021	Beretta T5	59	GL (AC Eastin North Logge	g: ing:	39.24 43322 55860 SM	26
Metho	d:	Cable P	ercussive	Rotary Core follow on	Back	cfilled:	19/10/	2021			Status	: :	FINAL	
/ on	_								Sampl	es and Ins	itu Tes	ting		
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description				Dept	h (m)	Туре		Res	ults	
		0.30	38.94	TOPSOIL/REWORKED GROUND: Grass over brown slightly sandy slightly fine to medium plant rootlets. Gravel is sub angular to sub rounded fine siltstone, mudstone and quartz. Firm consistency dark brown slightly sandy slightly gravelly medium to	e to coa	rse of sand	dstone,	0.20	- 0.30 - 0.30	B ES				-
			-	is sub angular to sub rounded fine to coarse of sandstone, mudstone at (PELAW CLAY MEMBER)				F	- 0.80 - 0.70	B ES				
			-					1.20	- 1.65 - 1.30 - 1.65	SPT (S) B+D ES	N=1	11 (2,2	2/2,3,3	3,3)
								2.00	- 2.45	U	91 1	olows	[293m	nm] -
								_	- 2.60 - 2.55	ES B				-
		3.30	35.94	Firm to stiff consistency dark greyish brown slightly sandy slightly grave strength CLAY with a medium cobble content. Gravel is sub angular to sof sandstone, mudstone, coal fragments and quartz. Cobbles are sub all (PELAW CLAY MEMBER)	sub rour	nded fine t		Г	- 3.45 - 3.45	SPT (S) B+D	N=1	15 (2,2	2/3,3,4	1,5)
									- 4.45 - 4.55	U B	38 1	olows	[450m	nm]
		5.40	33.84			<i>E</i>		Г	- 5.45 - 5.45	SPT (S) B+D	N=3	0 (3,3	/4,7,8	,11)
	****			Dark grey highly weathered fine grained SANDSTONE. Recovered as sar gravel. (PENNINE MIDDLE COAL MEASURES)				6.00	-6.45	,SPT (S)	N=5	0+ (1 9),6/32	118)
	X X X X X X X X X X X X X X X X X X X		33.24	Weak to medium strong thinly laminated light grey highly weathered SILTSTONE. Fractures: Horizontal to 45 degrees very closely to closely spaced undulating and smooth. (PENNINE MIDDLE COAL MEASURES)	Ė	6.00 - 6.45 6.00 - 6.45 6.00 - 7.50	5 0		- 6.45 =50+ (19,6 - 6.45 - 7.50	D -	0.5	-	F2	NI
	X X X X X X X X X X X X X X X X X X X					7.50 0.00					95	55	53	80 150
	X X X X X X X X X X X X X X X X X X X			Vertical fractures. 7.50-9.00m		7.50 - 9.00					100	45	26	NI 50 170
Hole D	Diameter	Casing Depth Base	Depths Diameter	General Remarks 1. 1.2m hand excavated inspection pit.		Chiselling		Depth Strike	Depth Casing	Ground W Depth Sealed	ater	psed		
6.00 16.50	(mm) 150 100	(m) 6.00	(mm)	1. 1.2m nand excavated inspection pit. 2. Groundwater encountered at 9.20m. 3. Borehole backfilled on completion.	From (m)	To (m)	Time (hr)	(m) 9.20	(m) 6.00	(m)	(min		Water Le	vel (m)

.	SOLMI	Stockto TS18 3N 01642 6	arm Road n on Tees NA 507083 olmek.com	Borehole	Log						Sc		1:42 PR(
Contra Client:	d:	S21100:	1 Constructio	Site: Envision Giga Factory, Sunderland on North East Rotary Core follow on	Driller Plant (Starte Ended Backfi	used: d: :	19 19 19	/10/2021 /10/2021 /10/2021	l L		Ea No Lo St	sting orthingged atus:	ng:	43322 55860 SM FINAL	26.00
ill /	þu	£ _	- <u>Q</u>				Sample	es and In	situ Testir	ng			ng / F		
Backfill / Installation		Depth (m)	Level (m AOD)	Stratum Description	D	epth (n	1)	Туре		Results	1	ICK (%)	SCR (%)	RQD (%)	Fracture
	X X X X X X X X X X X X X X X X X X X		_	Weak to medium strong thinly laminated light grey highly weathered SILTSTONE. Fractures: Horizontal to 45 degrees very closely to closely spaced undulating and smooth. (PENNINE MIDDLE COAL MEASURES)	9.0	00 - 10.	50	C				5	43	37	NI 100 190
	X X X X X X X X X X X X X X X X X X X				10.	50 - 12	.00	С							NI
	*****	11.38	27.86	Weak to medium strong very thinly bedded light grey slightly to moderately weathered medium grained SANDSTONE. Fractures: Horizontal to 45 degrees closely to medium spaced planar and rough. (PENNINE MIDDLE COAL MEASURES)		00 - 13	.50	С			1	00	73	60	70 190
					13.	50 - 15	.00	C				9	67	57	NI 180 590
		14.81	24.43	Very weak to weak black moderately weathered COAL. (Intact)							9	7	40	31	NI 50 150
		14.95	24.29_	(PENNINE MIDDLE COAL MEASURES) Very weak to weak thinly laminated dark grey to black highly weathered carbonaceous MUDSTONE. Fractures: Horizontal to sub horizontal very closely to closely spaced undulating and smooth. (PENNINE MIDDLE COAL MEASURES)	15.	00 - 16	50	С				3	47	38	NI 80 120
		16.50	22.74	End of Borehole at 16.500m							-				
	Diameter	Casing		General Remarks		Flush	Returns	5			round W				
Depth Base (m) 6.00 16.50	Diameter (mm) 150 100	Depth Base (m) 6.00	Diameter (mm) 150	1. 1.2m hand excavated inspection pit. 2. Groundwater encountered at 9.20m. 3. Borehole backfilled on completion.	From (m)	To (m)	Flush Typ	e Flush (%)	Depth Strike (m) 9.20	Depth Casing (m) 6.00	Depth Sea (m)	ed Tin	me Elaps (min)		ter Level (m)

			arm Road								Scale	1:43	Sheet	1 of 2
	SOLME	EK TS18 31 01642 6	n on Tees NA 507083 olmek.com	Borehole	Log						С	PR	00	4
Contrac	ct no:	\$21100 Wates (Site: Envision Giga Factory, Sunderland	Pla Sta	ller: nt used: rted: ded:	BBL Dando 20/10/ 20/10/	2021	d Beretta T	59	GL (AC Easting Northi	g: ing:	39.38 43315 55875 SM	56
Metho	d:			Rotary Core follow on	_	kfilled:	20/10/				Status		FINAL	-
_ uo		_	6						Samp	es and Ins	itu Tes	ting		
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description				Dep	th (m)	Туре		Res	ults	
			-	TOPSOIL/REWORKED GROUND: Grass over brown slightly sandy slight fine to medium plant rootlets. Gravel is angular to sub rounded fine to mudstone and quartz.		•		_) - 0.30) - 0.60	ES B				
		0.60	38.78	Firm consistency brown mottled grey slightly sandy slightly gravelly m medium cobble content. Gravel is sub angular to sub rounded fine to siltstone, mudstone and quartz. Cobbles are sub angular sandstone. (PELAW CLAY MEMBER)				0.70	0.80 - 0.80	ES				
								1.20) - 1.65) - 1.65) - 1.60	SPT (S) B+D ES	N=1	.1 (2,2	2/2,3,3	3,3)
									- 2.45	U	48 b	lows	[450n	nm]
		2.80	36.58	Firm to stiff consistency dark brownish grey slightly sandy slightly grav	elly higl	n strength C	LAY	Г	:.40 5 - 2.55	ES B				
				with a medium cobble content. Gravel is sub angular to rounded fine siltstone, mudstone and quartz. Cobbles are sub angular sandstone. (PELAW CLAY MEMBER)				Г) - 3.45) - 3.45	SPT (S) B+D	N=1	.7 (3,3	3/4,4,4	1,5)
									0 - 4.45	U	61 b	lows	[338n	nm]
								5.00	i - 4.55 i - 5.45	B SPT (S)	N=2	:5 (4,5	5/5,6,6	5,8)
		5.40	33.98	Dark grey highly weathered fine grained SANDSTONE. Recovered as sa gravel.	andy ang	gular fine to	coarse	5.00) - 5.45	B+D				
		6.00	33.38	(PENNINE MIDDLE COAL MEASURES) Very weak very thinly laminated dark purplish brown highly to completely weathered MUDSTONE.	E	6.00 - 6.45 6.00 - 7.50	SPT	(S) N= 6.00	1-6.45 50+ (10,15, 1-7.50	(16,16,18)	(10	N=: ,15/1	50+ 6,16,1	8)
	****	6.60	32.78	Fractures: Horizontal to 45 degrees closely to very closely spaced undulating and smooth. (PENNINE MIDDLE COAL MEASURES) Recovered as coarse gravel. 6.00-6.20m	_/_	0.00 - 7.50					99	27	23	NI 60
	× × × × × × × × × × × × × × × × × × ×			Very weak to weak very thinly laminated dark grey highly weathered SILTSTONE. Fractures: Sub horizontal to sub vertical very closely to closely spaced undulating and smooth. (PENNINE MIDDLE COAL MEASURES)		7.50 - 9.00					33		23	110
	× × × × × × × × × × × × × × × × × × ×	8.10	31.28	Very weak to weak thinly bedded dark bluish grey highly weathered						_	100	30	22	NI 100 170
		8.30	31.08	fine grained SANDSTONE. Fractures: Sub horizontal closely spaced undulating and rough with										
	iameter	_	Depths	General Remarks	_	Chiselling	'	Dorat C: "	Doret C :	Ground W		200		
Depth Base (m) 6.00 16.50	Diameter (mm) 150 100	Depth Base (m) 6.00	Diameter (mm) 150	1. 1.2m hand excavated inspection pit. 2. Groundwater encountered at 10.50m. 3. Borehole backfilled on completion.	2.70 4.80 5.80	To (m) 3.00 5.00 6.00	00:45 00:40 00:30	Depth Strike (m) 10.50	Depth Casing (m)	Depth Sealed (m)	Time Elar (min)		Water Le	vel (m)

A :	SOLMI	Stockto TS18 3N 01642 6		Borehole L	.og						Sca	CP	3 She	et 2 of 2
Contrac			Construction	Site: Envision Giga Factory, Sunderland on North East Rotary Core follow on	Drille Plant Starte Endee	used: ed: d:	20 20			tta T59	Eas No Log	(AOD) ting: rthing ged: tus:		156.00 758.60
. 5			_				Sampl	es and In	situ Testin	g		Coring	/ Fract	tures
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description		Depth (r	Ì	Туре		Results	(%)		-	
		10.00	29.38- 29.23	Very weak to weak thinly bedded dark bluish grey highly weathered fine grained SANDSTONE. Fractures: Sub horizontal closely spaced undulating and rough with occasional mineral presence on fracture surfaces. (PENNINE MIDDLE COAL MEASURES) Very weak very thinly laminated dark purplish brown highly to completely weathered MUDSTONE. Fractures: Horizontal to 45 degrees closely to very closely spaced undulating and smooth. (PENNINE MIDDLE COAL MEASURES) 1no. Vertical fracture. 9.50-9.70m Very weak to weak black moderately weathered COAL. (Intact) (PENNINE MIDDLE COAL MEASURES)	9.	00 - 10	50	С			10			NI
		10.60	28.78	Very weak very thinly laminated dark purplish brown highly to completely weathered MUDSTONE. Fractures: Horizontal to 45 degrees closely to very closely spaced undulating and smooth. (PENNINE MIDDLE COAL MEASURES) Very weak to weak very thinly to thinly bedded dark bluish grey highly weathered fine grained silty SANDSTONE. Fractures: Horizontal to 45 degrees closely to medium spaced	1	50 - 12 00 - 12		c c			10	0 6	0 52	
		11.70	27.68	undulating and smooth. (PENNINE MIDDLE COAL MEASURES) Medium strong to strong thinly bedded light grey slightly weathered medium grained SANDSTONE. Fractures: Horizontal to 45 degrees closely to medium spaced undulating and smooth. (PENNINE MIDDLE COAL MEASURES)	12	00 - 13	.50	С						300
					13	:.50 - 15	00	С			10	0 5	7 48	110 190 480
						.00 - 15 .00 - 16		C			9	5	7 51	40 260 510
											10	0 4	27	NI 80 310
		16.50	22.88	End of Borehole at 16.500m										
	iameter		Depths	General Remarks		Flush	Returns	5			ound Wa	_	. 1	
Depth Base (m) 6.00 16.50	Diameter (mm) 150 100	Depth Base (m) 6.00	Diameter (mm) 150	1. 1.2m hand excavated inspection pit. 2. Groundwater encountered at 10.50m. 3. Borehole backfilled on completion.	From (m	n) To (m)	Flush Typ	e Flush (%)	Depth Strike (m) 10.50	Depth Casing (m) 6.00	Depth Seale (m)		Elapsed N	Water Level (m)

			arm Road n on Tees							Scale 1:37	Sheet 1 of 3
S	SOLMEK TS18 3NA O1642 607083 info@solmek.com Borehole Log							CPR	RO05		
	Driller: BBL							GL (AOD):	38.06m		
Contrac	t no:	S21100	1	Site:	Envision Giga Factory, Sunderland	Plant used:	Dando	2000 and Beretta T5	9	Easting:	433439
						Started:	19/10/	2021		Northing:	558710
Client:		Wates C	Constructi	on North Ea	st	Ended:	21/10/	2021		Logged:	SM
Method	l:	Cable Pe	ercussive	Rotary Core	follow on	Backfilled:	21/10/	2021		Status:	FINAL
ill /	臣	Stratum Description		Sampl	es and Ins	itu Testing					
Backfill / Installation	Legend	Depth (m)	Level (m AOD		Stratum Description			Depth (m)	Туре	Re	sults

Client:				n North East	Ende		21/10/				Logged:	SM
Method:	Ca	ble Pe	rcussive F	Rotary Core follow on				/2021			Status:	FINAL
ckfill / tallation	Legend	(E)	Level (m AOD)	Stratum Description						es and Ins		
Backfill / Installation		30 00 45	37.76	TOPSOIL/REWORKED GROUND: Grass over dark brown slightly sandy sliging many fine to medium plant rootlets. Gravel is sub angular to sub rounded sandstone, siltstone, mudstone and quartz. Firm to stiff consistency dark brown mottled grey slightly sandy slightly grounded is sub angular to sub rounded fine to coarse of sandstone, si quartz. (PELAW CLAY MEMBER) Firm consistency thinly laminated dark brown mottled grey slightly sandy angular to sub rounded fine to coarse of sandstone, mudstone and quartz (PELAW CLAY MEMBER) Firm to stiff consistency dark grey slightly sandy slightly gravelly high streemedium cobble content. Gravel is sub angular to rounded fine to coarse of mudstone and quartz. Cobbles are sub angular of sandstone. (PELAW CLAY MEMBER)	d fine to	coarse o	of lighth ne and	2.40 2.45 3.00 3.00 4.45	- 0.30 - 0.80 - 0.80 - 0.80 - 1.65 - 1.30 - 1.65 - 2.45 - 2.45 - 2.45 - 3.45 - 3.45 - 3.45 - 3.45 - 3.45 - 3.45 - 3.45	ES B ES SPT (S) B+D ES U B SPT (S) B+D U B SPT (S) B+D U B	N=20 (: 100 b N=22 (: 100 blov	esults 2,3/4,4,6,6) 0
			=======================================					-				=======================================
Hole Diame	eter C	asing F	Depths	General Remarks		Chiselling				Ground Wa	ater	
		h Base	Diameter	1. 1.3m band avanuated inspection nit			Time (ba)	Depth Strike	Depth Casing	Depth Sealed	Time Elapsed)Makes I as all (as)
9.00 1	mm) (r	m)	(mm)	2. No groundwater encountered. 3. Gas standpipe installed on completion.	rom (m)	To (m)	Time (hr)	(m)	(m)	(m)	(min)	Water Level (m)

			/arm Road								Scale	1:37	Sheet	2 of 3
	SOLM	EK TS18 31 01642 (on on Tees NA 607083 olmek.com	Borehole	Log						c	PR	00	5
	ract no:	S21100		Site: Envision Giga Factory, Sunderland	Pla Sta	iller: int used: irted: ded:	19/10,	/2021	Beretta TS	59	GL (A) Eastin North Logge	g: ing:	43343 5587	39
Clier Met				Rotary Core follow on	_	ckfilled:	21/10, 21/10,				Status		SM FINAL	_
	d b	۔	_ 6						Samp	es and Ins	itu Tes	ting		
Backfill /	Installatio	Depth (m)	Level (m AOD)	Stratum Description				Dept	th (m)	Туре		Res	ults	
		10.90	27.16 27.06 25.96	Dark reddish brown completely weathered MUDSTONE. Recovered as (PELAW CLAY MEMBER) Dark reddish brown completely weathered MUDSTONE. Recovered as (PELAW CLAY MEMBER) Dark reddish brown completely weathered MUDSTONE. Recovered as (PELAW CLAY MEMBER) Dark reddish brown completely weathered MUDSTONE. Recovered as (PENNINE MIDDLE COAL MEASURES) Very weak to weak very thinly bedded dark grey highly to completely weathered fine grained SANDSTONE. Fractures: Sub horizontal (<5 degrees) medium to closely spaced undulating and smooth. (PENNINE MIDDLE COAL MEASURES) Recovered as coarse gravel. 11.00-11.50m Very weak thinly laminated light grey highly to completely weathered MUDSTONE. Fractures: Sub horizontal (<5 degrees) medium to closely spaced plana and rough. (PENNINE MIDDLE COAL MEASURES) Weak to medium strong very thinly bedded slightly to moderately weathered medium grained SANDSTONE. Fractures: Sub horizontal (<5 degrees) medium to closely spaced plana and rough. (PENNINE MIDDLE COAL MEASURES)	se of sa		45 SP145 SP150	9.00 - 9.45 - 10.50 - 10.50 - 10.50	- 7.95 - 7.95 - 7.95 - 9.45 - 9.55 - 10.95 - 10.95 - 10.95 - 10.95	SPT (S) B+D SPT (S) B+D 12,PT (S) D	1(N=:	27 (4,: N= 9/11,:	5/5,5,7 ws [Ni 12,12,12,12,12,12]	7,8)
	**************************************	13.60	24.46	undulating and rough. (PENNINE MIDDLE COAL MEASURES) Dark grey staining on bedding planes. 12.95-13.50m Very weak to weak very thinly laminated dark grey moderately to high weathered SILTSTONE. Fractures: Sub horizontal medium to closely spaced undulating and smooth. (PENNINE MIDDLE COAL MEASURES) Weak thinly laminated dark grey highly weathered MUDSTONE.		14.00 - 15.!	50	С		-	95	60	54	540
		-	-	Fractures: Sub horizontal (<5degrees) closely spaced planar and smooth. (PENNINE MIDDLE COAL MEASURES)						-				
	Diameter		Depths	General Remarks		Chiselling				Ground W		ı		
9.00 21.5	m) (mm)) 150	Depth Base (m) 9.00	Diameter (mm)	1. 1.2m hand excavated inspection pit. 2. No groundwater encountered. 3. Gas standpipe installed on completion.	From (m)	To (m)	Time (hr)	Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Ela (min		Water Le	vel (m)

	SOLME	Stockto TS18 3N 01642 6	arm Road n on Tees IA 507083 olmek.com	Borehole	Log						So			Sheet	
Contraction Client:		S21100: Wates C	1 Constructi	Site: Envision Giga Factory, Sunderland on North East Rotary Core follow on	Driller Plant u Startee Ended Backfil	used: d: :	19 21		L	tta T59	Ea No Lo	stin	g: ing: d:		39.20 09.60
- ioi	- I	_	_ 6				Sampl	es and In	situ Testin	g		Cor	ing/	Fractu	res
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Do	epth (n	n)	Туре	ı	Results		ICK (%)	SCR (%)	RQD (%)	Fracture
				Weak thinly laminated dark grey highly weathered MUDSTONE. Fractures: Sub horizontal (<5degrees) closely spaced planar and smooth. (PENNINE MIDDLE COAL MEASURES)							1	00	87	39	NI 170 330
	×××× ×××× ×××× ×××× ×××× ×××× ×××× ×××× ××××	15.60	22.46	Very weak to weak very thinly bedded light whitish grey highly weathered SILTSTONE. Fractures: Sub horizontal (<5degrees) closely to very closely spaced undulating and smooth. (PENNINE MIDDLE COAL MEASURES)	15	50 - 17	.00	С			1	00	43	34	NI 60 190
	× × × × × × × × × × × × × × × × × × ×	17.30	20.76	Weak very thinly laminated dark purplish grey highly weathered MUDSTONE. Fractures: Sub horizontal to sub vertical medium to closely spaced undulating and smooth.	17./	00 - 18	.50	С							NI
			_	(PENNINE MIDDLE COAL MEASURES)	18.	50 - 20	.00	С			1	000	47	28	110 230
		19.90	18.16 18.06	Medium strong very thinly bedded light grey slightly weathered medium grained SANDSTONE. Fractures: Sub horizontal medium to closely spaced undulating and	20.	00 - 21	.50	C			1	00	87	39	NI 230 410
				smooth. (PENNINE MIDDLE COAL MEASURES) Weak thinly laminated dark grey highly weathered MUDSTONE. Fractures: Sub horizontal (<5degrees) closely spaced planar and smooth. (PENNINE MIDDLE COAL MEASURES)								16	37	25	NI 80 200
		21.50	16.56	End of Borehole at 21.500m											
Hole D	iameter	Casing	Depths	General Remarks		Flush	Return	S		G	round W	iter			
Depth Base (m) 9.00 21.50	Diameter (mm) 150 100	Depth Base (m) 9.00	Diameter (mm) 150	1. 1.2m hand excavated inspection pit. 2. No groundwater encountered. 3. Gas standpipe installed on completion.	From (m)	To (m)	Flush Typ	pe Flush (%)	Depth Strike (m)	Depth Casing (m)	Depth Sea (m)	ed T	ime Elap (min)		iter Level (m)

A	SOLME	Stockto		Borehole I	_og						Scale 1:45	Sheet 1 of 3
Contrac	ct no:	info@sc \$21100	olmek.com	Site: Envision Giga Factory, Sunderland on North East	Drille	used: ed:	BBL Dando 20/10/ 21/10/		Beretta T5	9	GL (AOD): Easting: Northing: Logged:	37.56m 433380
Metho	d:	Cable Pe	ercussive f	Rotary Core follow on	Backf	filled:	21/10/	2021			Status:	FINAL
II /	ᅙ	£ _	- <u>@</u>						Sample	es and Ins	itu Testing	
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description				Dept	h (m)	Туре	Re	esults
		0.30	37.26	TOPSOIL/REWORKED GROUND: Grass over dark greyish brown slightly stocked with many fine to medium plant rootlets and a low cobble content sub rounded fine to coarse of sandstone, siltstone, mudstone, coal and angular sandstone. Firm to stiff consistency dark brown mottled grey slightly sandy slightly CLAY with a low cobble content. Gravel is sub angular to rounded fine to siltstone, mudstone, coal and quartz. Cobbles are sub angular of sandst (PELAW CLAY MEMBER)	t. Gravel quartz. (gravelly c coarse	l is sub an Cobbles a high strer of sandst	gular to re sub ngth one,	0.30 · 0.30 · 0.30 · 0.90 · 1.20 · 1.	1.00	B ES ES SPT (S) B+D	N=15 (2	- 2,2/3,4,4,4)
								2.00 -	2.45	ES B	94 blow	/s [113mm] -
		3.60	3 3.96 33.76	Dark brown slightly clayey slightly gravelly medium to coarse SAND. Gravenunded fine to coarse of sandstone, siltstone, mudstone and quartz. (PELAW CLAY MEMBER) Soft consistency dark grey mottled brown slightly sandy slightly gravelly CLAY. Gravel is of sub angular to sub rounded fine to coarse of sandston coal and quartz. (PELAW CLAY MEMBER)	medium	n strength	silty	3.00 · 3.00 · 4.00 ·	3.45	SPT (S) B+D U		2,2/4,5,7,7) - vs [450mm] -
		5.80	31.76	Stiff consistency dark greyish brown slightly sandy slightly gravelly high CLAY with a medium cobble content. Gravel is sub angular to sub round sandstone, siltstone, mudstone, coal fragments and quartz. Cobbles are	ed fine t	to coarse	of	5.00	5.45	SPT (S) B+D		,2/2,2,2,3) - lows [NR] -
				rounded of sandstone and siltstone. (PELAW CLAY MEMBER)	. Sub dife	guiai to sc		7.50 7.50	7.95	B SPT (S) B+D	N=26 (4	- 1,5/6,6,7,7) -
Hole D	iameter	Casing	Depths	General Remarks		Chiselling				Ground W	ater	
Depth Base (m) 15.00 26.50	Diameter (mm) 150 100	Depth Base (m) 15.00	Diameter (mm) 150	1. 1.2m hand excavated inspection pit. 2. Groundwater encountered at 3.60m. 3. Borehole backfilled on completion.	9.40 12.50 15.80	To (m) 9.60 12.70 16.00	Time (hr) 00:30 00:30 00:30	Depth Strike (m) 3.60	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)

			arm Road								Scale 1	45 She	et 2 of 3
	SOLME	EK TS18 31 01642 6		Borehole	Log						СР	RO) 6
Contra	ct no:	S21100		Site: Envision Giga Factory, Sunderland	Star	nt used: ted:	20/10/	2021	Beretta T	59	GL (AOD Easting: Northin	433: 5 58:	380
Client: Metho	d:			on North East Rotary Core follow on	End Bacl	ea: kfilled:	21/10/ 21/10/				Logged: Status:	SM FINA	ΔL
									Samn	les and Ins			
kfill / llatio	Legend	Depth (m)	Level (m AOD)	Stratum Description					Jamp	Tes and mis	ita iestii	'6	
Backfill / Installation	Leg) 0) E					Dept	th (m)	Туре		Results	
				Stiff consistency dark greyish brown slightly sandy slightly gravelly hig CLAY with a medium cobble content. Gravel is sub angular to sub rour sandstone, siltstone, mudstone, coal fragments and quartz. Cobbles a rounded of sandstone and siltstone. (PELAW CLAY MEMBER)	nded fine	to coarse	of		- 9.45 - 9.55	В	100 bl	ows [11:	3mm]
								Г	- 10.95 - 10.95	SPT (S) B+D	N=37 (5,6/6,9,	10,12)
									- 12.45 - 12.45	SPT (S) B+D	N=42 (5,6/9,9,	12,12)
									- 13.95 - 13.95	SPT (S) B+D	(6,8/	N=42 10,10,10	D,12)
		15.50	22.06	Weak to medium strong very thinly bedded slightly to moderately we SANDSTONE. Fractures: Sub horizontal medium to closely spaced planar and smoot		medium gra		15.00	- 15.45 - 15.45	SPT (S) B+D	N=40 (6	i,6/9,10,	,10,11)
		-	=	(PENNINE MIDDLE COAL MEASURES)	- 1	6.00 - 16.4	5 SPT	(S) 16.00	- 16.45 N=50	SPT (S)		N=50+	5 20)
				No recovery. 16.00-16.35m		.6.00 - 16.4 .6.00 - 17.5	15 (60 (15.00 16.00	\(\bar{8}\)/15/15 - 17.50	1 SPT (S) ,15,20)		15,15,15 37 40	NI
	X X X X X X X X X X X X X X X	17.10 17.50	20.46	Ino. Vertical fracture. 17.00-17.20m Weak thinly laminated dark grey highly weathered SILTSTONE. Fractures: Sub horizontal (<5degrees) closely to very closely spaced undulating and smooth. (PENNINE MIDDLE COAL MEASURES) Weak to medium strong very thinly bedded slightly to moderately	1	L7.50 - 19.0	00 (C		- - - -			
	iameter		Depths	General Remarks		Chiselling				Ground W			
Depth Base (m) 15.00 26.50	Diameter (mm) 150 100	Depth Base (m) 15.00	Diameter (mm) 150	1. 1.2m hand excavated inspection pit. 2. Groundwater encountered at 3.60m. 3. Borehole backfilled on completion.	9.40 12.50 15.80	9.60 12.70 16.00	00:30 00:30 00:30 00:30	Depth Strike (m) 3.60	Depth Casing (m)	Depth Sealed (m)	Time Elapse (min)	d Water	Level (m)

	SOLME	Stockto TS18 3f 01642 6	arm Road n on Tees NA 507083 olmek.com	Borehole Lo	og						Sc			Sheet	
Contrac Client: Method		S21100 Wates 0	1 Constructio	Site: Envision Giga Factory, Sunderland on North East Rotary Core follow on	Driller Plant (Starte Ended Backfi	used: d: :	20, 21,			tta T59	Ea No Lo	sting orthi ggeo atus	g: ing: d:	37.56 43337 55883 SM FINAL	79.70 30.30
~ io		_	<u> </u>				Sample	es and In	situ Testin	g		Cori	ing / I	ractu	res
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	D	epth (n	1)	Туре	i	Results		ICK (%)	SCR (%)	RQD (%)	Fracture
	******* ******* ******* ******* ****	18.20	19.36	Weak to medium strong very thinly bedded slightly to moderately weathered medium grained SANDSTONE. Fractures: Sub horizontal medium to closely spaced planar and smooth. (PENNINE MIDDLE COAL MEASURES) Weak thinly laminated dark grey highly weathered SILTSTONE. Fractures: Sub horizontal to 45 degrees closely to very closely spaced undulating and smooth. (PENNINE MIDDLE COAL MEASURES) 170. Verifical fracture. 18.70-19.00m Recovered as coarse gravel. 19.00-19.20m	19.	00 - 20	.50	С			1	00	100	48	70 130 310
	X X X X X X X X X X X X X X X X X X X										1/	00	67	40	NI 150 290
	× × × × × × × × × × × × × × × × × × ×	20.70	16.86	Weak thinly laminated dark grey highly weathered MUDSTONE. Fractures: Sub horizontal closely to medium spaced planar and smooth. (PENNINE MIDDLE COAL MEASURES)		50 - 22 00 - 23		С			1,	00	73	43	NI 170 340
					22	50 - 25	00	С			1	00	87	33	NI 190 510
		23.70	13.86	Weak to medium strong very thinly bedded slightly to moderately weathered medium grained SANDSTONE. Fractures: Sub horizontal medium to closely spaced planar and smooth. (PENNINE MIDDLE COAL MEASURES)		00 - 26		С			1	00	60	40	NI 260 310
		26.50	11.06	Ford of Double Last 90 500m		00 - 20	.30	C			1	00	97	67	30 110 800
				End of Borehole at 26.500m	=							\dashv			\vdash
Hole Di	ameter	Casing	Depths	General Remarks		Flush	Returns			G	round Wa	ater			Щ
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)	1. 1.2m hand excavated inspection pit.	From (m)		Flush Type		Depth Strike (m)	1		$\overline{}$	ime Elap: (min)		ter Level (m)
15.00 26.50	150 100	15.00	150	Groundwater encountered at 3.60m. Borehole backfilled on completion.					3.60		,		/		



Plate 1: CPRO01 4.50-7.50mbgl



Plate 2: CPRO01 7.50-10.50mbgl

Title	Date
Rock Core Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	1
Client	
Wates Construction North East Ltd	





Plate 3: CPRO01 10.50-13.50mbgl



Plate 4: CPRO01 13.50-15.00mbgl

Title	Date
Rock Core Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	2
Client	
Wates Construction North East Ltd	





Plate 5: CPRO02 6.00-9.00mbgl



Plate 6: CPRO02 9.00-12.00mbgl

Title	Date
Rock Core Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	3
Client	
Wates Construction North East Ltd	





Plate 7: CPRO02 12.00-15.00mbgl



Plate 8: CPRO02 15.00-16.50mbgl

Title	Date
Rock Core Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	4
Client	
Wates Construction North East Ltd	





Plate 9: CPRO03 6.00-9.00mbgl



Plate 10: CPRO03 9.00-12.00mbgl

Title	Date
Rock Core Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	5
Client	
Wates Construction North East Ltd	
1	





Plate 11: CPRO03 12.00-15.00mbgl



Plate 12: CPRO03 15.00-16.50mbgl

Title	Date
Rock Core Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	6
Client	
Wates Construction North East Ltd	





Plate 13: CPRO04 6.00-9.00mbgl



Plate 14: CPRO04 9.00-12.00mbgl

Title	Date
Rock Core Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	7
Client	
Wates Construction North East Ltd	





Plate 15: CPRO04 12.00-15.00mbgl



Plate 16: CPRO04 15.00-16.50mbgl

Title	Date
Rock Core Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	8
Client	
Wates Construction North East Ltd	





Plate 17: CPRO05 11.00-14.00mbgl



Plate 18: CPRO05 14.00-17.00mbgl

Title	Date
Rock Core Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	9
Client	
Wates Construction North East Ltd	





Plate 19: CPRO05 17.00-20.00mbgl



Plate 20: CPRO05 20.00-21.50mbgl

Title	Date				
Rock Core Photographs	January 2022				
Project	Plate No.				
Envision Giga Factory, Sunderland	10				
Client					
Wates Construction North East Ltd					





Plate 21: CPRO06 16.00-19.00mbgl



Plate 22: CPRO06 19.00-22.00mbgl

Date					
January 2022					
Plate No.					
11					





Plate 23: CPRO06 22.00-25.00mbgl



Plate 24: CPRO06 25.00-26.50mbgl

Title	Date				
Rock Core Photographs	January 2022				
Project	Plate No.				
Envision Giga Factory, Sunderland	12				
Client					
Wates Construction North East Ltd					

Solmek Ltd.

12 Yarm Road Stockton-on-Tees TS18 3NA



SOLME	12-16 Yarm Road Stockton on Tees TS18 3NA 01642 607083 info@solmek.com		Cable Per	cussive Log	Scale 1:50	Sheet 1 of 1	
Contract no:	S211001	Site:	Envision Giga Factory, Sunderland	Driller: Plant used:	BBL Dando 2000	GL (AOD): Easting:	38.96m 433276
				Started:	26/10/2021	Northing:	558656
Client:	Wates Constructi	on North E	ast	Ended:	26/10/2021	Logged:	SM
Method:	Cable Percussive	-		Backfilled:	26/10/2021	Status:	FINAL

Method:	Cable Percussive Backfilled: 26/10/2021 Status:				Status: FINAL						
ation ation	(a) (a) (b) (b) (b) (b) (c) (c) (d) (d) (d) (d) (d) (d) (d) (d) (d) (d						Sampl	es and Ins	and Insitu Testing		
Backfill / Installation Legend	Dep (π	Lev (m A	Stratum Description			Depth	n (m)	Туре	Results		
	- - -	-	TOPSOIL/REWORKED GROUND: Grass over dark brown slightly sandy slightly some fine to medium plant rootlets. Gravel is sub angular to sub rounded fir	- 0.10 - - -		ES	-				
	- 0.40 -	38.56 - - -	sandstone, mudstone and quartz. Firm consistency dark brown mottled grey slightly sandy slightly gravelly me Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone	- 0.40 - -		В	- - -				
	-	- -	(PELAW CLAY MEMBER)	- 0.70 - - - -	0.80	ES	- - -				
	- - -	- - - -				1.20 - 1.20 -		SPT (S) B+D	N=14 (2,2/3,3,4,4) -		
	- - -	- - - - -				- - - 1.90 - - 2.0		ES U	 65 blows [450mm] — 		
	- - -	- - -				_ _ _ 2.4	15	В	- - -		
	-	-				- - - - 2.90 -	3.00	ES	- - -		
	- 3.00 	35.96— - - - - - -	Soft becoming firm consistency dark grey slightly sandy slightly gravelly med CLAY. Gravel is sub angular to sub rounded fine to coarse of sandstone, mud (PELAW CLAY MEMBER)	dium to high Istone and q	strength uartz.	3.00 -	3.45	SPT (S) B+D	N=8 (1,2/2,2,2,2) — - - - - - - -		
	- - - -	- - - -				- - - - - -	4.45	U	69 blows [450mm] —		
	- - - - -	- - - - -				- - - 4.45 - -	4.55	В	- - - -		
- ©	- - - -	- - - -				- - - - 5.00 - - -		SPT (S) B+D	N=19 (3,3/3,4,6,6) —		
	5.70	33.26 -	Dark grey completely weathered SANDSTONE.			- - -			- - -		
		- -	(PENNINE MIDDLE COAL MEASURES)			- 6.00 - - 6.0		SPT (S) D	N=50+ (7,12/15,16,19- for 10mm)		
	6.45	32.51	End of Borehole at 6.450m			- - -			- -		
	- - -	- -				- - -			- - -		
	- - -	-				- - -			- - -		
	- - -	- -				- - -			- - - -		
	- - -	_				- -			<u>-</u> -		
	- - -	- - -				- - -			- - -		
	 - -	- - -				- - -			- - -		
	- - -	- - -				 - - -					
	- - - -	- - -				- - -			- - - -		
	_	-							-		
Hole Diameter			General Remarks	Chiselling		D1' 5: ::	D 0 :	Ground W			
Depth Base (m) (mm) 6.45 150	Depth Base (m) 6.00		1. 1.2m hand excavated inspection pit. 2. No groundwater encountered. 3. Gas standpipe installed on completion.	n) To (m)	Time (hr)	Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min) Water Level (m)		

SOLME	12-16 Yarm Road Stockton on Tees K TS18 3NA 01642 607083 info@solmek.com	Cable Percussive Log						Scale 1:50	Sheet 1 of 1
				ļ	Driller:	BBL		GL (AOD):	38.40m
Contract no:	S211001	Site:	Envision Giga Factory, Sunderland	ļ	Plant used:	Dando 2000		Easting:	433288
					Started:	25/10/2021		Northing:	558734
Client:	Wates Construction	on North Ea	est	ı	Ended:	25/10/2021		Logged:	SM
Method:	Cable Percussive			ı	Backfilled:	25/10/2021		Status:	FINAL

Backfill / Installation	Legend Depth	Level (m AOD)	Stratum Description				Sample	es and Insi	tu Testing	
Backf	Lege Dep	Lev m A(Stratum Description					es and Insitu Testing		
	/23//					Depth	(m)	Туре	Results	
	0.40	38.00 -	TOPSOIL/REWORKED GROUND: Grass over light brown slightly sandy slightly many fine to medium plant rootlets. Gravel is angular to sub angular fine to a mudstone and quartz. Firm consistency dark brown slightly sandy slightly gravelly medium strength angular to sub rounded fine to coarse of sandstone, siltstone, mudstone and (PELAW CLAY MEMBER)	coarse of san	dstone,	0.20 - 0.40 - 0.70 -	0.80	ES B ES		
		-				1.20 - 1.20 - 1.20 -	1.65	SPT (S) B+D ES	N=14 (2,3/3,3,4,4)	
		=				- - - 2.00 -	2.45	U	49 blows [450mm]	
	2.80	35.60	Soft consistency thinly laminated dark greyish brown slightly gravelly medium			- - 2.45 - - 2.60 - - -	2.70	D ES	N=0 /1 1/2 2 2 2)	
X	300 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	- - - - - -	CLAY. Gravel is of sub angular to sub rounded fine to medium of sandstone at (PELAW CLAY MEMBER)	nd mudstone	2.	- 3.00 - - 3.00 - 		SPT (S) B+D	N=8 (1,1/2,2,2,2)	
<i> </i>		-				- 4.00 - - -	4.45	U	84 blows [450mm]	
	4.50	33.90	Firm becoming stiff consistency dark grey mottled brown slightly sandy slight strength CLAY with a low cobble content. Gravel is sub angular to sub rounde sandstone, siltstone and mudstone. Cobbles are sub angular of sandstone.			- 4.45 - - - -	4.55	D		
# :		- - - - - - -	(PELAW CLAY MEMBER)			- 5.00 - 5.00 - 5.00 - -	5.45	SPT (S) B D	N=15 (2,3/3,4,4,4)	
						6.00 -	6.45	U		
+		- - - -				6.45 - - - -	6.55	D	79 blows [383mm]	
	7.30	31.10	Dark grey completely weathered SILTSTONE. (PENNINE MIDDLE COAL MEASURES)			- - - 7.50 - - 7.50 -	I	SPT (S)	N=50+ (4,9/11,19,20,5)	
	×××	30.40	End of Borehole at 8.000m			_ 7.30 - - - -	7.93	D	(4,9) 11,19,20,3)	
		- - - - -	End of Boronoic at 0.000m			- - - - - - -				
	- - - - - - - -	- - - - - -								
Hole Diamet		ng Depths se Diameter	General Remarks 1. 1.2m hand excavated inspection pit.	Chiselling	Time (hr)	Depth Strike I		Ground Wa	Time Elapsed Water Level (m	
Base (m) (mi	nm) (m)	(mm) 150	2. No groundwater encountered. 3. Borehole backfilled on completion.) To (m)	rime (nr)	(m)	(m)	(m)	(min) Water Level (m	

SOLME	12-16 Yarm Road Stockton on Tees TS18 3NA 01642 607083 info@solmek.com		Cable Per	Scale 1:50	Sheet 1 of 1		
Contract no:	S211001	Site:	Envision Giga Factory, Sunderland	Driller: Plant used:	BBL Dando 2000	GL (AOD): Easting:	38.60m 433234
			<i>"</i>	Started:	25/10/2021	Northing:	558757
Client:	Wates Constructi	on North E	ast	Ended:	25/10/2021	Logged:	SM
Method:	Cable Percussive			Backfilled:	25/10/2021	Status:	FINAL

Method	d:	Cable P	ercussive	Backfilled: 25/10/2021 State			Status: FINAL			
fill / ation	pue	th (c	oD)					Sampl	es and Ins	itu Testing
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description			Dept	h (m)	Туре	Results
		- - -	-	TOPSOIL/REWORKED GROUND: Grass over light brown slightly sandy slightly many fine to medium plant rootlets. Gravel is angular to sub angular fine to			- 0.10 - -		ES	
	X	- 0.40 - -	38.20 - - -	mudstone and quartz. Firm consistency dark brown slightly sandy slightly gravelly medium strength sub angular to sub rounded fine to coarse of sandstone, siltstone, mudstone	h silty CLAY. (Gravel is	- 0.40 - - -	- 0.80	В	
	×	- - -	-	(PELAW CLAY MEMBER)	·		- 0.80 - - -	- 0.90	ES	
	×-×-	-	-				1.20 - 1.20 -		SPT (S) B+D	N=13 (2,3/3,3,3,4)
	×— ×—	- - -	-				- - 1.80 -	- 1.90	ES	
	×	- - -	-				2.00 - 	- 2.45	U	82 blows [NR]
		- - -	-				2.45 -	- 2.55	D	
	×	- - 2.90	35.70 -	Firm to stiff consistency dark grey slightly sandy slightly gravelly medium to	high strengt	h CLAY.	- - 2.80 - - 3.00 -		ES SPT (S)	N=11 (2,2/3,3,2,3)
		- - -	- - -	Gravel is sub angular to sub rounded fine to coarse of sandstone and mudst (PELAW CLAY MEMBER)			3.00		B+D	N-11 (2,2/3,3,2,3)
		- - -	-				- - -			
		- -	- - -				- - 4.00 - - 4.00 -		D U	100 blows [450mm]
		- - -	-				-			
		- - -	-				- - - - 5.00 -	- 5.45	SPT (S)	N=23 (3,4/4,5,6,8)
		- - -	-				5.00 -		B+D	== (=, 1, 1,=,=,=,=
(- - -	- - -				-			
		- - - 6.08	32.52 -	End of Borehole at 6.080m			- - 6.00 - - 6.00 -		SPT (S)	N=50+ (25 for 10mm/50 for 70mm)
		- - -	- - -				- - -			
		- - -	-				- - -			
		- - -	- - -				- - -			
		- - -	- - -				- - - -			
		- -	- - -				- -			
		- - -	-				- - -			
		- - -	-				= - - -			
		- - -	-				-			
		- - -	- - -				- - -			
Hole Di	Diameter	Casing Depth Base	Depths Diameter	General Remarks 1. 1.2m hand excavated inspection pit.	Chiselling	Time (hr)	Depth Strike	Depth Casing	Ground Wa	Time Flanced
Base (m) 6.45	(mm) 150	(m) 6.00	(mm) 150	2. No groundwater encountered. 3. Gas standpipe installed on completion.	n) To (m)	rime (nr)	(m)	(m)	(m)	(min) Water Level (m)

	SOLME	Stocktor TS18 3N 01642 6			Cable Per	cussive	Log			Scale 1:5	Sheet 1 of 2
						D	riller:	BBL		GL (AOD)	37.69m
Contrac	ct no:	S211001	1	Site:	Envision Giga Factory, Sunderland	PI	lant used:	Dando	2000	Easting:	433287
						St	tarted:	22/10/	2021	Northing:	558820
Client:		Wates C	onstruction	on North Ea	st	Er	nded:	22/10/	2021	Logged:	SM
Metho	d:	Cable Pe	ercussive			Ba	ackfilled:	22/10/	2021	Status:	FINAL

Method	l:		ercussive	on North East End Bac	kfilled:	22/10/		2021 Lc 2021 St			SM FINAL
II / tion	ē	£	- Q					Samp	es and Ins	itu Testing	
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description			Dept	:h (m)	Туре	R	esults
		0.40	37.29 -	TOPSOIL/REWORKED GROUND: Grass over light brown slightly sandy slightly a many fine to medium plant rootlets. Gravel is angular to sub angular fine to comudstone and quartz. Firm consistency light brown slightly sandy slightly gravelly medium strength	arse of sar	ndstone,	-	- 0.20 - 0.80	ES B		- - - -
		- - - - -	- - -	cobble content. Gravel is sub angular to sub rounded fine to coarse of sandsto siltstone and quartz. Cobbles are sub angular of sandstone and siltstone. (PELAW CLAY MEMBER)			- - - -	- 0.70	ES ES	N 42 (
		- - - -	- - - - - -				1.20	- 1.65 - 1.65 - 1.40	SPT (S) B+D ES	N=12 (2	2,3/3,3,3,3) - - - - - - - -
		- - - -	- - - -				_	- 2.45 - 2.55	U D	47 bl	ows [NR] — - - - -
		2.90	- - - 34.79				1	- 2.80	ES		- - -
			-	Firm becoming stiff consistency dark brownish grey slightly sandy slightly grav strength CLAY with a low cobble content. Gravel is angular to sub rounded fine sandstone, siltstone, mudstone and quartz, Cobbles are sub angular sandston (PELAW CLAY MEMBER)	to coarse	of		- 3.45 - 3.45	SPT (S) B+D	N=11 (2	2,2/3,3,2,3) — - - - - - - - -
		- - - - 4.20	33.49				4.00	- 4.45	U		=======================================
- © -	×	4.35	33.34 <u> </u>	Dark brown slightly gravelly medium to coarse SAND. Gravel is of sub angular medium of sandstone and quartz. (PELAW CLAY MEMBER) Soft consistency thinly laminated dark brownish grey slightly sandy slightly graves.		/	- 4.45	- 4.55	B+D		-
		- - - - - - -	- - - - - - - -	Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone a (PELAW CLAY MEMBER) Firm becoming stiff consistency dark greyish brown slightly sandy slightly grav high strength CLAY with a medium cobble content. Gravel is sub angular to su coarse of sandstone, siltstone, mudstone and quartz. Cobbles are sub angular (PELAW CLAY MEMBER)	nd quartz. elly high to o rounded	very fine to	L	- 5.45 - 5.45	SPT (S) B+D	N=21 (3	3,4/4,4,5,8)
		- - - - -					- - -	- 6.45 - 6.55	U	100 b	ows [NR] -
		- - - - - -	- - - - -				- 0.43 	- 0.33	D		- - - - -
		-	- - - - - - - -				l	- 7.95 - 7.95	SPT (S) B+D	N=24 (š	3,4/5,5,7,7) -
		-	- - - - - - - - - -				_	- 9.45 - 9.45	SPT (S) B+D	N=22 (4	
		-					10.00	- 10.45	SPT (S)		- -
Hole Dia	1	Casing	•	General Remarks	Chiselling	1		1	Ground W		
Depth Base (m) 10.45	Diameter (mm) 150	Depth Base (m) 10.00	Diameter (mm)	1. 1.2m hand excavated inspection pit. 2. Groundwater encountered at 4.20m. 3. Borehole backfilled on completion.	To (m)	Time (hr)	Depth Strike (m) 4.20	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m) 3.80

	12-16 Yarm Roa Stockton on Tee	l l	Cabla Daw				Scale 1:	50 Sheet 2 of 2
SOLM	EK TS18 3NA 01642 607083 info@solmek.co	ım	Cable Per	cussive Log			C	P04
				Driller:	BBL		GL (AOD	: 37.69m
Contract no:	S211001	Site:	Envision Giga Factory, Sunderland	Plant used:	Dando	2000	Easting:	433287
				Started:	22/10/	2021	Northing	: 558820
Client:	Wates Constru	uction North E	ast	Ended:	22/10/	2021	Logged:	SM
Method:	Cable Percussi	ive		Backfilled:	22/10/	2021	Status:	FINAL
_ u		_				Sample	es and Insitu Testin	g

Method	l:	Cable P	ercussive	В	ackfilled:	22/10/	/2021 St			Status: FINAL		
fill / ation	pu	£ ~	el 00)					Samp	es and Ins	itu Testing		
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description			Dept	h (m)	Туре	Res	sults	
		10.45	27.24	Firm becoming stiff consistency dark greyish brown slightly sandy slightly gr high strength CLAY with a medium cobble content. Gravel is sub angular to s coarse of sandstone, siltstone, mudstone and quartz. Cobbles are sub angul	sub rounded t	fine to	- 10.00 ·	- 10.45	D	N= (5,9/12,	50+ - 13,13,12) - -	
		-	-	\ (PELAW CLAY MEMBER) End of Borehole at 10.450m		/	<u>-</u> -				-	
		_	-				_				_	
		-	-								-	
			-				= - -				-	
			-				-				-	
		_	-				_ - -				-	
		_	-				-				-	
		-	-				-				-	
		-	_				- -				_	
		-	-				-				-	
			-				-				-	
		-	-				= - -				-	
		-	-				- -				-	
			-				-				-	
			-				- - -				-	
		_	-				-				_	
		-	-				_				-	
		-	-				- - -				- -	
			-				-				-	
		_	-				_ - -				-	
		-	-				-				-	
		_	-				-				-	
		_	_				-				_	
			-				-				-	
		-	-				-				-	
		<u> </u>	-				- -				-	
		_	-				- - -				-	
			-				-				-	
		Ė	=				<u>-</u>				- -	
		_					-				_	
		-	-				-				-	
		-	-				= = =				- -	
			-				- - -				-	
Hole Di	ameter	Casing	Depths	General Remarks	Chiselling				Ground Wa	ater		
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)	1. 1.2m hand excavated inspection pit. 2. Groundwater encountered at 4.20m.		Time (hr)	Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Classes	Water Level (m)	
10.45	150	10.00	150	2. Groundwater encountered at 4.20m. 3. Borehole backfilled on completion.			4.20			20	3.80	
		<u> </u>						<u> </u>				

SOLME	12-16 Yarm Road Stockton on Tees IK TS18 3NA 01642 607083 info@solmek.com	Cable Percussive Log						
Contract no:	S211001	Site:	Envision Giga Factory, Sunderland	Driller: Plant used:	25/10/2021	GL (AOD): Easting:	433370	
Client:	Wates Constructi	l on North E	ast	Started: Ended:	26/10/2021 26/10/2021	Northing: Logged:	538043	
Method:				Backfilled:	26/10/2021	Status:	FINAL	

Method	od: Backfilled: 26/10/2021 Stat						Status:	FINAL				
fill / ation	p _u	f c	oD)	a					Sampl	es and Ins	itu Testing	
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description				Dept	h (m)	Туре	Re	sults
		- - - 0.40	38.18 -	TOPSOIL/REWORKED GROUND: Grass over light brown slightly sandy slig some fine to medium plant rootlets. Gravel is sub angular to sub rounde sandstone, mudstone, siltstone and quartz.	d fine t	o coarse o	of	0.10	- 0.30 - 0.20	B ES		-
		- - - - 0.90	37.68	Firm consistency brown mottled grey slightly sandy slightly gravelly CLAY to sub rounded fine to coarse of sandstone, siltstone, mudstone and qua (PELAW CLAY MEMBER)		l is sub an	ngular	F	- 0.80 - 0.80	B ES		- - -
		0.90	37.08	Firm consistency brown slightly sandy slightly gravelly medium strength angular to sub rounded fine to coarse of sandstone, siltstone and mudst (PELAW CLAY MEMBER)		ravel is su	ıb	1	- 1.65 - 1.65	SPT (S) B+D	N=12 (2	,2/3,3,3,3) - - - - - - - -
		- - - -	-					1	- 2.00 - 2.45	ES U	68 blow	s [450mm] —
	× × ×	2.30 - -	36.28 -	Firm consistency dark grey slightly gravelly silty CLAY. Gravel is sub angul coarse of sandstone, mudstone and quartz. (PELAW CLAY MEMBER)	ar to ro	unded fir	ne to	2.45	- 2.55	D		=
	× × × × × × × × × × × × × × × × × × ×	3.00	35.58— 	Firm becoming stiff consistency dark grey mottled brown slightly sandy strength CLAY with a low cobble content. Gravel is sub angular to sub ro sandstone, mudstone, siltstone, quartz and coal. Cobbles are sub angula mudstone. (PELAW CLAY MEMBER)	unded 1	ine to coa	arse of	3.00	- 3.00 - 3.45 - 3.45	ES SPT (S) B+D	N=20 (4	 ,4/5,5,5,5) — - - - - - - -
			- - - - - -						- 4.45 - 4.45	SPT (S) B+D	N=20 (13	 3,4/4,4,5,7)
0		- - - - - - - - - - - - -	- - - - - - -					1	- 5.45 - 5.45	D U	100 blov	 vs [315mm]—
		5.80	32.78 -	Dark grey highly weathered SANDSTONE. (PENNINE MIDDLE COAL MEASURES)				1	- 6.36 - 6.45	SPT (S)		16/16,17,17 50mm)
		- 6.50 - -	32.08 - - -	End of Borehole at 6.500m				<u>-</u> - -				=
		- - - -	- - -					- - - -				_ - - -
		- - -	-					- - -				- - -
			-					 - -				- - -
		_ - - -	- - -					- - -				- - -
			-									=
		- - - -	- - - -					- - - -				- - - -
Depth	Diameter	Depth Base	Depths Diameter	General Remarks 1. 1.2m hand excavated inspection pit. Free Free Free Free Free Free Free Fre	om (m)	Chiselling To (m)	Time (hr)	Depth Strike	Depth Casing		Time Elapsed	Water Level (m)
8ase (m) 6.50	(mm) 150	(m) 6.00	(mm) 150	No groundwater encountered. Gas standpipe installed on completion.				(m)	(m)	(m)	(min)	

SOLME	OLMEK TS18 3NA Cable Percussive Log (1642 607083 info@solmek.com						Searc		Sheet 1 of 2
Contract no:	S211001	Site:	Envision Giga Factory, Sunderland		Driller: Plant used:		GL (AOD	•	37.67m 433439
					Started:	27/10/2021	Northin	g: !	558786
Client:	Wates Construction	on North East			Ended:	27/10/2021	Logged:		
Method:				-	Backfilled:		Status:	-	FINAL

Method	d:				Backfilled:	illed: Status:				FINAL	
III /	ρι	£ _	- Q					Sampl	es and Ins	itu Testing	•
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description			Dept	h (m)	Туре	Re	esults
		- 0.20 - 0.60 	37.47 - 37.07 -	TOPSOIL/REWORKED GROUND: Grass over dark brown sandy slightly gray fine to medium plant rootlets. Gravel is sub angular to sub rounded fine to mudstone, siltstone and quartz. Firm consistency light orangish brown slightly sandy slightly gravelly CLAY sub rounded fine to coarse of sandstone, mudstone and siltstone. (PELAW CLAY MEMBER) Firm consistency light brown slightly sandy slightly gravelly high strength	to coarse of Y. Gravel is a	ngular to	0.20	- 0.40 - 0.60 - 0.60 - 1.00	B ES ES		- - - - - - -
		- - - - -	- - - -	to sub rounded fine to coarse of sandstone, mudstone and quartz. (PELAW CLAY MEMBER)			1.20	- 1.65 - 1.65 - 1.90	SPT (S) D	N=15 (2	2,3/3,3,4,5) - - - - - - -
		- - - - - - 2.40	35.27 -	Soft consistency thinly laminated dark brown and grey slightly sightly gra	avelly mediui	m strength	2.00	- 2.45 - 2.50 - 2.55	U ES B	81 blow	rs [450mm] — - - - - - - -
		- - - - - - -	- - - - -	silty CLAY. Gravel is sub angular to sub rounded fine to coarse of mudstor (PELAW CLAY MEMBER)	ne and quart	tz.	3.00	- 3.45 - 3.45	SPT (S) B+D	N=8 (1	,1/2,2,2,2) - - - - - -
	× × × × × × × × × × × × × × × × × × ×	- - - - - - 4.15	33.52 33.42	Dark brown slightly gravelly coarse SAND. Gravel is sub angular to sub rou	ounded fine t	o medium	4.00	- 4.45	U	51 blow	rs [450mm] — -
		- - - - - - - - -	-	of sandstone, siltstone and quartz. \(PELAW CLAY MEMBER\) Soft consistency thinly laminated dark brown and grey slightly gravelly lo Gravel is sub angular to sub rounded fine to coarse of sandstone, mudsto (PELAW CLAY MEMBER)			- - - - - 5.00	- 4.55 - 5.45 - 5.45	B SPT (S) B+D	N=6 (1	,1/1,1,2,2) —
	X	- - - - - -	- - - -				6.00	- 6.45	U	32 blow	/s [450mm] –
		. 6.45	31.22	Stiff consistency dark brown slightly sandy slightly gravelly high to very hi Gravel is sub angular to sub rounded fine to coarse of sandstone, siltston (PELAW CLAY MEMBER)			- - - - - - - - - - - - - - - - - - -	- 6.55 - 7.95 - 7.95	SPT (S) B+D	N=30 (4	,5/9,10,5,6)
			- - - - - - - - - - - - - - - - - - -				-	- 9.45 - 9.55	U	100 blov	vs [450mm]–
Hole Di	iameter	Casing	Depths	General Remarks	Chisel	lling			Ground Wa	ater	
Depth Base (m) 16.50	Diameter (mm) 150	Depth Base (m) 12.00	Diameter (mm) 150	1 1 2m hand averaged inspection nit	om (m) To (n		Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)

SOLME	12-16 Yarm Road Stockton on Tees EK TS18 3NA 01642 607083 info@solmek.com	Cable Percussive Log					
Contract no:	S211001	Site:	Envision Giga Factory, Sunderland	Driller: Plant used:		GL (AOD): Easting:	37.67m 433439
				Started:	27/10/2021	Northing:	558786
Client:	Wates Constructi	on North E	ast	Ended:	27/10/2021	Logged:	
Method:				Backfilled:		Status:	FINAL

Method	l:				Backfilled:							FINAL
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description					Sampl	es and Ins	itu Testing	
Bacl	leg	De	(m)					Dept	h (m)	Туре	Re	esults
		-	- - - - - - - - - - - - - - - - - - -	Stiff consistency dark brown slightly sandy slightly gravelly high to very Gravel is sub angular to sub rounded fine to coarse of sandstone, siltst (PELAW CLAY MEMBER)	/ high str	ength CLA mudstone	Y. 2 .		- 10.95 - 10.95	SPT (S) B+D	N=24 (4	,9/5,5,6,8) - - - - - - - - - -
		-							- 12.45 - 12.45	B U	100 blov	vs [135mm]—
		- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -						- 13.95 - 13.95	SPT (S) B+D		=50+ - 2,13,15,10) - - - -
		-	- - - - - - - - - - - - - - - - - - -						- 15.45 - 15.45	SPT (S) B	N=30 (€	6,6/6,8,8,8)
		16.27	21.40	End of Borehole at 16.270m					- 16.27 .00	SPT (S) D		15,10/25,25 50mm)
		-	- - - -					- - - - -				- - - - - -
			- - - - -					- - - - -				-
		-	- - - -					- - - - -				-
		- - - - -	- - - - -					- - - - -				- - - - - -
		-	- - - - -					- - - -				
Hole Di	ameter	Casing	Depths	General Remarks		Chiselling				Ground W	ater	
Depth Base (m) 16.50	Diameter (mm) 150	Depth Base (m) 12.00	(mm)	1. 1.2m hand excavated inspection pit. 2. No groundwater encountered. 3. Borehole backfilled on completion.	From (m)	To (m)	Time (hr)	Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)

SOLME	SOLMEK TS18 3NA O1642 607083 info@solmek.com							Sheet 1 of 2
					Driller:	BBL	GL (AOD)	: 35.54m
Contract no:	S211001	Site:	Envision Giga Factory, Sunderland		Plant used:	Dando 2000	Easting:	433369
					Started:	21/10/2021	Northing	559079
Client:	Wates Construction	on North	East		Ended:	21/10/2021	Logged:	SM
Method:	Cable Percussive				Backfilled:	21/10/2021	Status:	FINAL

Method				Backfilled: 21/10/					Status: FINAL	
_ =							Sampl	es and Ins	itu Testing	
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	-	Depth		Туре	Results	
		- - - - - 0.50	35.04 -	TOPSOIL/REWORKED GROUND: Grass over greyish brown slightly sandy slightly gravelly CL with many fine to medium plant rootlets. Gravel is sub angular to sub rounded fine to coar sandstone, siltstone, mudstone and quartz. Firm consistency dark brown mottled grey slightly sandy slightly gravelly medium strength with a low cobble content. Gravel is sub angular to sub rounded fine to coarse of sandston	rse of CLAY	0.10 -	0.90	ES B ES	- - - - - -	
		- - - - - - -	- - - - - - -	siltstone, mudstone, coal and quartz. Cobbles are sub angular to sub rounded of sandstone (PELAW CLAY MEMBER)		1.20 - 1.20 - 1.40 -	1.65	SPT (S) B+D ES	N=13 (2,2/3,3,3,4) -	
		- - - - - -	- - - - - - - -		-	2.00 - 2.00 - 2.00 -	2.45	SPT (S) B+D ES	N=14 (2,3/3,3,4,4) —	
		- - - - -	- - - - -		- - - - -	3.00 -	3.45	U	74 blows [450mm] —	
		- - -	-			3.45 -	3.55	В	-	
	× · · · · · · · · · · · · · · · · · · ·	- 3.80 	31.74 -	Firm consistency thinly laminated dark brown mottled grey slightly sandy slightly gravelly medium strength silty CLAY with a low cobble content. Gravel is sub angular to sub rounde to coarse of sandstone, siltstone, mudstone, coal and quartz. Cobbles are sub angular of sandstone and siltstone. (PELAW CLAY MEMBER)	ed fine	4.00 -		SPT (S) B+D	N=9 (1,2/2,2,2,3) —	
		- - - - -	- - - - - -		-	5.00 -		U	52 blows [450mm] — - - - - - - -	
	× × × × × × × × × × × × × × × × × × ×	- - - - - - -	- - - - - - - -		- - - - - - - -	6.00 -	6.45	SPT (S) B+D	N=11 (2,2/2,3,3,3)	
924 8224	× · · · · · · · · · · · · · · · · · · ·	- - - - - - -	- - - - - - -		-	7.50 -	7.05	U		
	× × × × × × × × × × × × × × × × × × ×	- - - - - - -	- - - - - - -		- - - - - - - -	7.30 - - - - - - - - - -		В	- John Standard	
	× × × × × × × × × × × × × × × × × × ×	-			-	9.00 -		SPT (S) B+D	N=13 (2,3/3,3,3,4) —	
	×	-	-			-			-	
Depth Base (m)	Diameter (mm)	Casing Depth Base (m) 14.00	Diameter (mm)	General Remarks 1. 1.2m hand excavated inspection pit. 2. Groundwater encountered at 12.00m. 3. Gas standpipe installed on completion.	Time (hr)	Depth Strike (m)	Depth Casing (m)	Ground Wa Depth Sealed (m)	Time Elapsed (min) Water Level (m) 20 10.70	

SOLME	12-16 Yarm Road Stockton on Tees K TS18 3NA 01642 607083 info@solmek.com		Scale 1:5	Sheet 2 of 2P07			
				Driller:	BBL	GL (AOD)	: 35.54m
Contract no:	S211001	Site:	Envision Giga Factory, Sunderland	Plant used:	Dando 2000	Easting:	433369
				Started:	21/10/2021	Northing	: 559079
Client:	Wates Construction	on North Ea	st	Ended:	21/10/2021	Logged:	SM
Method:	Cable Percussive			Backfilled:	21/10/2021	Status:	FINAL

Method				Backfilled:	Backfilled: 21/10/2			Status: FINAL			
				, , , , , , , , , , , , , , , , , , , ,	, ,			situ Testing			
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description		Depth (m)	Туре	Results			
		-	-	Firm consistency thinly laminated dark brown mottled grey slightly sandy slightly grav medium strength silty CLAY with a low cobble content. Gravel is sub angular to sub ro to coarse of sandstone, siltstone, mudstone, coal and quartz. Cobbles are sub angular sandstone and siltstone. (PELAW CLAY MEMBER)	rounded fine	10.50 - 10.95 10.50 - 10.95	SPT (S) B+D	N=11 (2,2/2,3,3,3)			
		- - - - - - - - - - - - - - - - - - -	23.54	Soft consistency dark greyish brown slightly sandy slightly gravelly low strength SILT. C sub angular to sub rounded fine to coarse of sandstone, mudstone and siltstone. (PELAW CLAY MEMBER)	Gravel is	- 12.00 - 12.45 12.00 - 12.45	SPT (S) B+D	N=4 (1,1/1,1,1,1)			
		- - - 13.40	22.14	Stiff consistency dark greyish brown slightly sandy slightly gravelly high strength CLAY. sub angular to sub rounded fine to coarse of sandstone, mudstone and siltstone.	Y. Gravel is	13.50 - 13.95 13.50 - 13.95	SPT (S) B+D	N=26 (4,5/6,6,7,7)			
©		- 14.00 - - -	21.54	Grey highly weathered SANDSTONE. (PENNINE MIDDLE COAL MEASURES)		- 14.00 - 14.45 14.00 - 14.45	SPT (S) B+D	N=44 - (5,6/11,11,11,11)			
		14.45 - -	21.09	End of Borehole at 14.450m							
			- - - - - -		- - - - - - - -	-					
			- - - - - -		- - - - - - - -	-					
			- - - - -			-		-			
			- - - - - -			-					
		-	- - - -		-						
		- - - - -	-		 - - -	-					
		- - - -	-								
Depth Base (m) 14.50	Diameter (mm) 150	Casing Depth Base (m) 14.00	Depths Diameter (mm) 150	General Remarks Chiselli 1. 1.2m hand excavated inspection pit. 2. Groundwater encountered at 12.00m. 3. Gas standpipe installed on completion.		Depth Strike (m) Depth Casing (m) 12.00	Ground W Depth Sealed (m)				

SOLME	SOLMEK TS18 3NA Borehole Log SOLMEK TS18 3NA Borehole Log info@solmek.com						
				Driller:	BBL	GL (AOD):	40.00m
Contract no:	S211001	Site:	Envision Giga Factory, Sunderland	Plant used:	Mini Rig	Easting:	433132
				Started:	28/10/2021	Northing:	558472
Client:	Wates Construc	ction North Ea	st	Ended:	28/10/2021	Logged:	SM
Method:	Small Percussiv	е		Backfilled:	28/10/2021	Status:	FINAL

Motho	hod: Small Percussive Backfilled: 28/10/2021						Status: FINAL	
		Silidii Fi	ercussive	Dackilleu	u. 26/10/			
lion	9	ج	_ 0			Sar	nples and Ins	itu Testing
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description		Depth (m)	Туре	Results
		- 0.10	39.90 -	MADE GROUND: CONCRETE.		- 0.20 2.5	1 -	-
		- - -	-	MADE GROUND: Black ashy gravelly coarse SAND with a low cobble content. Gravel angular to sub rounded fine to coarse of red brick, concrete, dolomite and quartz. C sub angular of red brick.		0.20 - 0.40 0.20 - 0.50	B ES	=
		0.65 - 0.90	39.35 <u> </u>	MADE GROUND: Dark brown mottled grey (staining) ashy slightly sandy slightly grav Gravel is angular to sub rounded fine to coarse of red-brick, sandstone and quartz. F reworked.		0.70 - 0.90 0.80 - 0.90	ES B	-
G		- - - - -	- - - -	Soft consistency becoming stiff with depth dark brown mottled grey slightly sandy signately medium strength CLAY with a low cobble content. Gravel is sub angular to sifne to coarse of sandstone, mudstone, siltstone and quartz. Cobbles are sub angula sandstone and siltstone.	sub rounded	1.20 - 1.65 1.20 - 1.65 1.40 - 1.60	SPT (S) D D	N=8 (7,7/2,2,2,2)
		_ 2.00	38.00	(PELAW CLAY MEMBER) Firm consistency dark brown mottled grey slightly sandy slightly gravelly medium str	trength CLAY	1.80 - 1.90	ES SPT (S)	N=50+ —
	0-0	- - - 2.45	37.55	with a medium cobble content. Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone, siltstone and quartz. Cobbles are sub angular of sandstone at Refusal at 2.45mbgl on possible sandstone cobble or boulder.	of	2.00 - 2.45 - 2.10 - 2.20	D ES	(9,9/12,14,19,5)
		_	-	(PELAW CLAY MEMBER) End of Borehole at 2.450m	/	- -]
		_	_	Litu di Bolenole al 2.450m		- -		
		- -	-			- - -		=
		-	-			-		-
		_	-			- - -		=
		<u> </u>	_			- -		
		-	-			- - -]
		-	-			- -		=
		-	-			- - -		=
		-	_			- 		
		-	-			- - -]
		-	-			- -		=
		-				- -]
		-	_	<u> </u>		- -		
		-	-			- - -]
		- -	-			- -		-
		-	-			- -]
			_			- -		
		-	-			- -]
			-			-]
		-	-			-		_
		<u> </u>	-			<u>-</u>] -
		-	-			- -		
						- - -]
		<u>-</u>	-			- -		
] -			- - -		Ι
		-	-			- -		
		<u>-</u>	-			- - -]
		-	-			- -]
			-			-		-
Hole D	iameter	Casing	Depths	General Remarks Chise	selling		Ground W	ater
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)	1. 1.2m hand excavated inspection pit. 2. No groundwater encountered.	o (m) Time (hr)	Depth Strike (m) Depth Ca	1	
				Gas standpipe installed on completion. Refusal at 2.45mbgl on possible sandstone cobble or boulder.				

SOLME	12-16 Yarm Road Stockton on Tees TS18 3NA 01642 607083 info@solmek.com		Boreh	ole Log		Scale 1:50	Sheet 1 of 1
Contract no:	S211001	Site:	Envision Giga Factory, Sunderland	Driller: Plant used: Started:	BBL Mini Rig 27/10/2021	GL (AOD): Easting: Northing:	38.47m 433165 558491
Client:	Wates Construct		ast	Ended:	27/10/2021	Logged:	SM
Method:	Small Percussive	T		Backfilled:	28/10/2021	Status:	FINAL

Metho	d·					Ctatue:	SIVI				
	1	Small P	ercussive	Ba	аскппеа:	28/10/	ZUZ1			Status:	FINAL
li /	<u> </u>	_	_ 6					Sampl	es and Ins	itu Testing	.
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description			Dept	h (m)	Туре	Ro	esults
		- 0.15	38.32 -	MADE GROUND: Dark brown black tarmac/ compacted bituminous angular t	fine to coarse	9	-		_		_
		0.30	38.17 -	GRAVEL. MADE GROUND: Dark brown black ashy gravelly coarse SAND with a low cob	hhlo contort	Graval	0.20		ES		=
		-	-	is angular to sub rounded fine to coarse of red brick, concrete, sandstone an			0.40		В		=
				are sub angular of red brick and concrete.			0.60	- 0.70	ES		=
	×××××	0.90	37.57	MADE GROUND: Light brown grey (staining) ashy slightly sandy slightly grave sub angular to sub rounded fine to coarse of red brick, concrete, sandstone,			_				
		-	-	\quartz.			- - 1.20	- 1.65	SPT (S)	N=9 (2	,2/2,2,2,3)
			-	Soft consistency becoming stiff with depth light brown mottled grey slightly gravelly medium strength CLAY. Gravel is angular to sub rounded fine to coar			1.20		D		=
			-	mudstone, siltstone and quartz.			1.40		D ES		=
G		-	:	(PELAW CLAY MEMBER)			- - 1.90	- 2.35	SPT (S)	N	=50+ -
		-	-	-			1.90		D		0,12,18,10)
		2.20	36.27 - 36.12 _	Light brown highly weathered SANDSTONE.			-				=
			-	\ (PENNINE MIDDLE COAL MEASURES) End of Borehole at 2.350m		/	-				=
		_	-				-				-
		_	-				_				
		Ė	-				- - -				= = = = = = = = = = = = = = = = = = = =
			-				-				=
		_	-				-]
		<u>-</u>	-	-			- -				-
		-	-				-				-
			-				_				=
		_	-				-				-
		-	-	-			- -				-
		-					_				_
							-				=
			-				_]
		_	-				- -				-
		-	-				-				=
		-	-				-				-
			-				- -				=
		_	-				-				-
		-	-	1			-				-
		_					_				_
			=				- - -				=
		-	-				-]
		-	-	1			-				-
		<u> </u>	-				- -				=
		_	-								-
		_	-				-]
		-	:				-				=
		-	-				- -				=
		<u> </u>	-				_				
		_	-				-]
		-	=				- -				=
		<u> </u>	-				-				=
			-								
Holo	iameter	Cacina	Depths	General Remarks	Chiselling				Ground Wa	ater	
Depth	Diameter	Depth Base	Diameter	1. 1.2m hand excavated inspection pit.		Time (hr)	Depth Strike	Depth Casing	Depth Sealed	Time Elapsed	Water Level (m)
Base (m)	(mm)	(m)	(mm)	No groundwater encountered. Gas standpipe installed on completion.		- 1007	(m)	(m)	(m)	(min)	
	1		I	1							

SOLME	12-16 Yarm Road Stockton on Tees K TS18 3NA 01642 607083 info@solmek.com	Borehole Log						
				Driller:	BBL	GL (AOD):	38.84m	
Contract no:	S211001	Site:	Envision Giga Factory, Sunderland	Plant used:	Mini Rig	Easting:	433129	
				Started:	27/10/2021	Northing:	558521	
Client:	Wates Construction	on North East		Ended:	27/10/2021	Logged:	SM	
Method:	Small Percussive			Backfilled:	27/10/2021	Status:	FINAL	

Metho	d:		ercussive		ckfilled:	27/10/				Status:	FINAL
_ =							Samples and Insi			itu Testine	
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description			Dept	h (m)	Туре		esults
		- - 0.20 - - - -	38.64	MADE GROUND: Dark brown black ashy sandy gravelly CLAY with occasional plant rootlets. Gravel is sub angular to sub rounded fine to coarse of red bric MADE GROUND: Dark brown/black ashy sandy fine to coarse GRAVEL with a Gravel is sub angular to sub rounded fine to coarse of red brick, slag, concret quartz.	low cobble	ete. content.	0.20	- 0.20 - 0.30 - 0.70 - 0.80	B ES B ES		- - - - - -
		0.95 - - - - - - -	37.89	Firm consistency dark brown mottled grey slightly sandy slightly gravelly med strength CLAY. Gravel is angular to sub rounded fine to coarse of sandstone, and quartz. (PELAW CLAY MEMBER)			1.20 1.20 1.40	- 1.65 - 1.65 - 1.60 - 1.90	SPT (S) D D	N=10 (1	
	X	- - - - - - - 2.50	36.34	Firm locally soft consistency dark grey slightly gravelly high strength silty CLA	Firm locally coft consistency dark groy elightly groyelly high strength silty CLAY Groyel is sub-						
	X XX XX	- - - - -	- -	angular to sub rounded fine to coarse sandstone, mudstone, siltstone and quality (PELAW CLAY MEMBER)		- - 3.00	- 3.00 - 3.45 - 3.45	D SPT (S) D	N=19 (3	3,5/7,4,4,4) —	
		- 3.30 - - - -	35.54 - - - - -	Stiff consistency dark brown mottled grey slightly sandy slightly gravelly high Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone (PELAW CLAY MEMBER)	_	- 3.60	D		- - - -		
©		3.85 - -	34.99 <u> </u>	Dark grey highly weathered SANDSTONE. (PENNINE MIDDLE COAL MEASURES)				- 4.45 - 4.45	SPT (S)	N=17 (4	1,4/5,4,4,4) — - - - -
		4.45 - - -	34.39 <u> </u>	End of Borehole at 4.450m			- - - - -				- - - -
			- - - - - - -								- - - - -
		-	- - - - -				- - - - -				- - - - -
		- - - - -	- - - - -				- - - - -				- - - - -
		- - - - - -	- - - - -				- - - - - - -				- - - -
		- - - - -	- - - - -				- - - - -				- - - - -
		- - - - -	- - - - - -				- - - - -				- - - - - -
		-	-				-				-
Hole D	Diameter	Casing Depth Base	Depths Diameter	General Remarks 1. 1.2m hand excavated inspection pit.	Chiselling		Depth Strike	Depth Casing	Ground Wa	Time Elapsed	
Base (m)	(mm)	(m)	(mm)	2. No groundwater encountered.) To (m)	Time (hr)	(m)	(m)	(m)	(min)	Water Level (m)
				3. Gas standpipe installed on completion.							
				1							

SOLME	12-16 Yarm Road Stockton on Tees K TS18 3NA 01642 607083 info@solmek.com	Borehole Log						Sheet 1 of 1
				D	riller:	BBL	GL (AOD):	39.16m
Contract no:	S211001	Site:	Envision Giga Factory, Sunderland	PI	lant used:	Mini Rig	Easting:	433114
				St	tarted:	26/10/2021	Northing:	558544
Client:	Wates Construction	on North Ea	st	Er	nded:	26/10/2021	Logged:	SM
Method:	Small Percussive			Ba	ackfilled:	26/10/2021	Status:	FINAL

Method	4.			on North East End	eu. kfilled:	26/10,				Status:	FINAL	
		Siliali re	ercussive	Baci	Killieu.	20/10/	72021	Samples and Insitu Testing				
lon	<u> </u>	ے	_ 6				Sampl	itu Testing				
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description			Dept	h (m)	Туре	Re	sults	
			-	TOPSOIL/REWORKED GROUND: Dark brown sandy slightly gravelly CLAY with r								
		0.30	38.86 -	medium plant rootlets. Gravel is sub angular to sub rounded fine to coarse of	sandstone,		⊬	- 0.30	ES		_	
		-	_	\ mudstone, sandstone and quartz. Firm consistency light brown mottled dark brown grey slightly sandy slightly g	ravelly med	/ dium to	0.40	- 0.80	В		-	
		-	_	high strength CLAY with a low cobble content. Gravel is sub angular to sub rou	nded fine t	to	0.70	- 0.80	ES		=	
TH:		-	_	coarse of sandstone, mudstone and quartz. Cobbles are sub angular of sandst (PELAW CLAY MEMBER)	one.		-				7	
		F	_	(PELAW CLAY MEMBER)			F 4.20	4.65	CDT (C)		2 (2 2 2 2)	
		-	_					- 1.65 - 1.65	SPT (S) B+D	N=11 (1	,2/2,3,3,3) -	
		[- 1.60	D		3	
ŀ:¦∃:		-	-				1.70	- 1.80	ES		=	
		-	_				2 00	- 2.45	SPT (S)	N-17 (A	,4/4,4,4,5) –	
l∴H:`		-	-					- 2.45	D D	14-17 (4	,-,-,-,-, - -	
\cdot H \cdot		-	-					- 2.30	ES		-	
		2.60	36.56 -					- 2.60 - 2.80	D D			
ြ			-	Dark grey highly weathered SANDSTONE. (PENNINE MIDDLE COAL MEASURES)			-	- 3.18	SPT (S)	N=50	+ (25 for -	
	[:::::	_	_	TEATHER INIDUCE CORE INTERSORES!				- 3.25	D D		nm/50) _	
		2 25	25.04				}				=	
		3.25	35.91 _	End of Borehole at 3.250m			}				=	
		-	-				-				=	
		-	_				-				=	
		-	_				_				=	
		-	_				-				=	
		-	_				-				=	
		-	_				-				7	
		-	-				-				1	
		_	_				F				7	
		-	_				-				7	
		-	_				-				=	
		[_				E]	
			-								3	
		_	_				_				-	
		_	-				_				_	
		-	-				-				=	
		-	_				-				_	
		-	_				-				_	
		_	_				-				=	
		-	_				-				= =	
		-	_				-				=	
		-	-				E				=	
			-				E				=	
		_	-				-				3	
		-	-				ŀ				3	
		-	-				-				_	
		-	-				ļ.				_	
		_	_				L		1			
		-	-				-				=	
		-	-				<u> </u>				=	
		-	-				Ė				- -	
		-	_				F				=	
			_				Γ					
Hole Di	iameter	Casing	Depths	General Remarks	Chiselling				Ground W	ater		
Depth Base (m)	Diameter (mm)	Depth Base (m)		1. 1.2m hand excavated inspection pit. 2. No groundwater encountered.	To (m)	Time (hr)	Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)	
	·			2. No groundwater encountered. 3. Gas standpipe installed on completion.								
							1		<u> </u>			

SOLM	12-16 Yarm Road Stockton on Tees TS18 3NA 01642 607083 info@solmek.com		Borehole Log					
				Driller:	BBL		GL (AOD):	39.59m
Contract no:	S211001	Site:	ite: Envision Giga Factory, Sunderland	Plant used:	Mini Rig		Easting:	433137
				Started:	27/10/	/2021	Northing:	558524
Client:	Wates Construct	tion North Ea	est	Ended:	27/10/	/2021	Logged:	SM
Method:	Small Percussive	!		Backfilled:	27/10/	/2021	Status:	FINAL
_						_		

Client:		Wates 0	Constructio	on North East	Ende	d:	27/10,	/2021			Logged:	SM
Method	d:	Small Pe	ercussive		Back	filled:	27/10,	/2021			Status:	FINAL
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Dept	Sampl	es and Insi		esults			
		0.25	39.24	MADE GROUND: Dark brown slightly sandy gravelly CLAY with some fine rootlets. Gravel is sub angular to sub rounded fine to coarse of red brick, plastic. MADE GROUND: Medium dense dark brown black sandy fine to coarse G cobble content. Gravel is angular to sub rounded fine to coarse of slag, re Cobbles are sub angular red brick.	RAVEL	ete, clay p . with a m	oipe and ledium	0.30	- 0.20 - 0.40 - 0.60	B ES B		- - - - - - - - -
		- - 1.30 - - - - - - -	38.29 -	Firm consistency dark brown mottled grey slightly sandy slightly gravelly in Gravel is sub angular to rounded fine to coarse of sandstone, mudstone, subscribed backfilling from 2.40mbgl. (PELAW CLAY MEMBER)				1.20 - 1.40 - 1.60 - 1.80 - 2.00	- 1.65 - 1.65 - 1.60 - 1.70 - 2.00 - 2.45 - 2.45	SPT (S) D D ES D SPT (S)		2,2/3,2,3,2)
		2.45	37.14	End of Borehole at 2.450m					- 2.20	ES		- - - - -
	ameter			General Remarks		Chiselling				Ground Wa		
Depth	Diameter	Depth Base	Diameter	1. 1.2m hand excavated inspection pit.	m (m)	To (m)	Time (hr)	Depth Strike		Depth Sealed	Time Elapsed	Water Level (m)
Base (m)	(mm)	(m)	(mm)	2. Groundwater encountered at 0.60m.	ın (m)	10 (m)	Time (hr)	(m) 0.60	(m)	(m)	(min) 20	Water Level (m) 0.40
				3. Gas standpipe installed on completion. 4. Borehole terminated at 2.45mbgl due to backfilling.				0.60			20	U.40

SOLME	12-16 Yarm Road Stockton on Tees K TS18 3NA 01642 607083 info@solmek.com	Borehole Log						
				Driller:	BBL	GL (AOD):	39.28m	
Contract no:	S211001	Site:	Envision Giga Factory, Sunderland	Plant used:	Mini Rig	Easting:	433206	
				Started:	27/10/2021	Northing:	558614	
Client:	Wates Construction	on North East		Ended:	27/10/2021	Logged:	SM	
Method:	Small Percussive			Backfilled:	27/10/2021	Status:	FINAL	

Method	d:		ercussive	Backfilled:	27/10/2				Status: FINAL	
		Sindin		- Buckineur	27/10/2	Samples and Insitu Testing				
fill /	2	# G G G G					Sampl	itu Testing		
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description		Depth	(m)	Туре	Results	
		_	-	TOPSOIL/REWORKED GROUND: Dark brown slightly sandy slightly gravelly CLAY with me to medium plant rootlets. Gravel is sub angular to rounded fine to coarse of sandstone,		0.10 -	0.20	ES	_	
	,	0.30	38.98 -	mudstone, siltstone and quartz.	<u>'</u> ,	0.40 -	0.50	В	_	
		-	-	Firm consistency dark brown mottled grey slightly sandy sightly silty slightly gravelly me	edium to	0.40 -		ES	_	
		-	-	high strength CLAY. Gravel is angular to sub rounded fine to coarse of sandstone, mudst quartz and coal.	stone,	0.40 -	0.80	ES	-	
		_	_	(PELAW CLAY MEMBER)	-	—				
		-	-		F	1.20 -		SPT (S)	N=13 (2,2/3,3,3,4)	
		F] =		F	1.20 - 1.40 -		D	-	
		[]		E	1.40 -		D ES]	
		_	-						_	
		_	-	-	-	2.00 -		SPT (S) D	N=19 (2,3/4,5,5,5)	
		 - -	-		-	2.20 -		ES		
		-	-		F	2.40 -		D		
			-		E]	
l· H·] -			- 3.00 - i	3 //5	SPT (S)	N=16 (3,3/3,4,4,5)	
		-	-		-	3.00 -		D D	11-10 (3,3,3,4,4,3,	
		-		-	þ	3.40 -	3.60	D		
		-			F					
					E]	
		_			-	4.00 -		SPT (S)	N=17 (4,5/4,4,5,4)	
		-			-	4.00 -		D		
		-	-		F	4.40 -	4.60	D		
		-	-		F				-	
			_		E	- 5.00 - I	5 45	SPT (S)	N=20 (4,5/5,5,5,5)	
		-	-		-	5.00 -		D D	11-20 (4,5/5,5,5/5)	
		5.45	33.83							
			_	End of Borehole at 5.450m	E]	
		-	-		-					
		_	-	1	-	_				
		-	-		F					
		E	-		E]	
			-		-				_	
		_			-	—				
		<u>-</u>	-		-					
		-	-		F]	
			-		E]	
		_	-		-				_	
		_	-		-	- ·				
		-	-		F				1	
		_	-		F]	
		_	-		E]	
		_	-		E	-]	
		_	-		þ					
		Ē	-		F					
		_			Ē]	
		_	-		þ					
Hole Di	Diameter	Casing Depth Base	Depths Diameter	General Remarks Chiselling 1. 1.2m hand excavated inspection pit.		Depth Strike [Denth Casins	Ground W	Time Flanced	
Base (m)	(mm)	(m)	(mm)	2. Groundwater encountered at 4.20m.	Time (hr)	(m) 4.20	(m)	(m)	(min) Water Level (m)	
				3. Gas standpipe installed on completion.		4.20			20 3.50	

SOLME	12-16 Yarm Road Stockton on Tees K TS18 3NA 01642 607083 info@solmek.com		Borehole L	og		Scale 1:50	Sheet 1 of 1
				Driller:	BBL	GL (AOD):	39.34m
Contract no:	S211001	Site:	Envision Giga Factory, Sunderland	Plant used:	Mini Rig	Easting:	433159
				Started:	28/10/2021	Northing:	558709
Client:	Wates Construction	on North East		Ended:	28/10/2021	Logged:	SM
Method:	Small Percussive			Backfilled:	27/10/2021	Status:	FINAL

Method:	Small Pe	ercussive	Back	filled:	27/10/	2021			Status:	FINAL
tion d	ب	- (Q					Sampl	es and Ins	itu Testing	
Backfill / Installation Legend	Depth (m)	Level (m AOD)	Stratum Description			Depth	ı (m)	Туре	Re	sults
	0.40	38.94	TOPSOIL/REWORKED GROUND: Dark brown sandy slightly gravelly CLAY. Gravel sub rounded fine to coarse mudstone and sandstone. Firm consistency orangish brown sandy slightly gravelly CLAY. Gravel is sub angiounded fine to coarse mudstone and sandstone.		lar to	0.10 -		ES B		-
	- 0.70 - - - - - - - -	38.64 -	(PELAW CLAY MEMBER) Stiff consistency greyish brown slightly sandy slightly gravelly medium strength sub angular to sub rounded fine to coarse mudstone and sandstone. Becoming very high strength below 2.00m. Refusal at 2.45mbgl on possible sandstone boulder.	CLAY. Grave	el is	0.80 - - - 1.20 - - 1.20 -	1.65 1.40	ES SPT (S) B D	N=11 (1	,2/2,3,3,3)
6		- - - - - -	(PELAW CLAY MEMBER)			1.80 - - 2.00 - - 2.00 - - 2.20 -	2.00 2.40 2.45	ES SPT (S) D B	N=37 (2,	2/3,4,5,25)
.• G• 1 · · · · ·	2.45	36.89	End of Borehole at 2.450m			-				-
	-	-				 - - - -				_
	- - - -	- - - -				- - - - -				- - - -
	- - - - -	- - - -				- - - - -				- - - - - -
	-					 - - - -				-
	- - - -	- - -				- - - - -				-
	- - - - -	- - - -				- - - - -				- - - - -
	-	<u>-</u> -								-
	- - - -	_ _ _ _				- - - - -				- - - - -
	-	- - - -				- - - - -				-
		- - - - - -								
	-	-				-				
Hole Diameter	Casing	Depths	General Remarks	Chiselling				Ground Wa	ater	
Depth Diameter Base (m) (mm)	Depth Base (m)	Diameter	1. 1.2m hand excavated inspection pit. 2. No groundwater encountered.		Time (hr)	Depth Strike (m)	Depth Casing (m)			Water Level (m)
			2. Rog good water encountered encountered at 2.45 mbgl on possible sandstone boulder.							

SOLME	12-16 Yarm Road Stockton on Tees TS18 3NA 01642 607083		Bore	hole Log			Scale 1:50	Sheet 1 of 1
	info@solmek.com							
				Driller	r:	BBL	GL (AOD):	38.65m
Contract no:	S211001	Site:	Envision Giga Factory, Sunderland	Plant (used:	Mini Rig	Easting:	433187
				Starte	ed:	28/10/2021	Northing:	558815
Client:	Wates Construction	on North Ea	st	Ended	d:	28/10/2021	Logged:	SM
Method:	Small Percussive			Backfi	filled:	28/10/2021	Status:	FINAL

Method:	Small Pe	ercussive	Ва	ckfilled:	28/10/	2021			Status:	FINAL
iii /	£ _	la (OC					Sampl	es and Ins	itu Testing	
Backfill / Installation Legend	Depth (m)	Level (m AOD)	Stratum Description			Dept	h (m)	Туре	Re	sults
	0.40	38.25	MADE GROUND: Dark brown sandy slightly gravelly CLAY. Gravel is sub angu fine to coarse mudstone, sandstone and pottery. Stiff consistency orangish brown sandy slightly gravelly CLAY. Gravel is sub ar rounded fine to coarse mudstone and sandstone. (PELAW CLAY MEMBER)			- - - 0.50	- 0.30 - 0.70 - 1.00	ES B ES		- - - - - -
	1.10	37.55 - - - - - - - - - - -	Stiff consistency greyish brown slightly sandy slightly gravelly medium to hig Gravel is sub angular to sub rounded fine to coarse mudstone and sandstone Sampler refusal at 2.70mbgl due to possible cobble or boulder of sandstone (PELAW CLAY MEMBER)	е.	LAY.	1.20 - 1.20 - 1.80 - 2.00	- 1.65 - 1.50 - 1.65 - 2.00 - 2.45 - 2.45	SPT (S) B D ES SPT (S) B		.3/3,3,3,4) - .3/3,3,3,4) - .4/4,4,5,5) -
		= = =				2.00	- 2.50 - 2.70	D ES		- - -
G = =	2.70	35.95	End of Borehole at 2.700m			-				=
	-					- - - - - - - - - - - - - - - - - - -				
	-	- - - - - - - - - - - - - - - - - - -				- - - - - - - - - - - - - - - - - - -				- - - - - - - - - - - - - - - - - - -
		- - - - - - -				-				- - - - - - - -
Hole Diameter		Depths	General Remarks	Chiselling			n // -	Ground Wa		
Depth Base (m) (mm)	Depth Base (m)	Diameter (mm)	1. 1.2m hand excavated inspection pit. 2. No groundwater encountered. 3. Gas standpipe installed on completion. 4. Sampler refusal at 2.70mbgl on possible sandstone cobble or boulder.) To (m)	Time (hr)	Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)
	1					1	<u> </u>			

	12-16 Yarm Road Stockton on Tees					Scale 1:5	0 Sheet 1 of 1
SOLME			Boreh	ole Log		W	/S09
				Driller:	BBL	GL (AOD)	: 38.60m
Contract no:	S211001	Site:	Envision Giga Factory, Sunderland	Plant used:	Mini Rig	Easting:	433342
				Started:	27/10/2021	Northing	: 558676
Client:	Wates Constructi	on North E	ast	Ended:	27/10/2021	Logged:	SM
Method:	Small Percussive			Backfilled:	27/10/2021	Status:	FINAL

Method:	Small Pe	ercussive	Ва	ckfilled:	27/10/	2021			Status:	FINAL
Backfill / Installation Legend	Depth (m)	Level (m AOD)	Stratum Description				Sampl	es and Ins	itu Testing	
Backfill / Installatio Legend	Dek (n	Lev (m A	Stratum Description			Depth	n (m)	Туре	Re	sults
	0.30	38.30 - - - - - -	TOPSOIL/REWORKED GROUND: Brown slightly sandy slightly gravelly CLAY w medium plant rootlets. Gravel is sub angular to sub rounded fine to medium siltstone, mudstone and quartz. Firm consistency becoming stiff with depth dark brown mottled grey slightly gravelly medium strength CLAY with a low cobble content. Gravel is sub angular to coarse of sandstone, siltstone, mudstone and quartz. Cobbles are sub	of sandstor sandy slight ular to sub ro	ne, tly ounded	0.10 -		ES ES		-
		- - - - - - -	sandstone. (PELAW CLAY MEMBER)			1.20 - 1.20 - 1.20 - 1.40 -	1.30 1.65	SPT (S) B ES D	N=10 (1	,2/2,3,2,3) -
•	2.40	36.20 - 36.10 _	Loose dark brown slightly gravelly medium to coarse SAND. Gravel is sub any fine to medium of sandstone, siltstone and quartz.	gular to rour	nded	2.00 - 2.00 - 2.20 - 2.20 - 2.40 -	2.45 2.30	SPT (S) B ES D	N=8 (2,	2/1,2,2,3)
	-	_	Borehole backfilling from 2.40mbgl. (PELAW CLAY MEMBER)			- - -				
	- - - - -	- - - - - - -	End of Borehole at 2.500m			- - - - - -				-
	-	- - - - - -				- - - - - -				-
	-	- - - - -				- - - - -				-
	-	- - - - -				- - - - - -				-
	-	- - - - -				- - - - -				-
	- - - -	- - - - - -				- - - - -				- - - - -
		- - - - -				- - - - -				-
	-	- - - - -				- - - - - -				-
	- - - - - -	- - - - - -				- - - - - - -				-
	-	-				-				
Hole Diameter		Depths	General Remarks	Chiselling				Ground W		
Depth Diameter Base (m) (mm)	Depth Base (m)	Diameter (mm)	1. 1.2m hand excavated inspection pit. 2. No groundwater encountered. 3. Gas standpipe installed on completion. 4. Borehole terminated at 2.50mbgl due to sand backfilling.	To (m)	Time (hr)	(m)	Depth Casing (m)	(m)	Time Elapsed (min)	Water Level (m)

SOLMI	12-16 Yarm Road Stockton on Tees EK TS18 3NA 01642 607083 info@solmek.com		Borehole Log							
				Driller:	BBL	GL (AOD):	38.01m			
Contract no:	S211001	Site:	Envision Giga Factory, Sunderland	Plant used:	Mini Rig	Easting:	433311			
				Started:	27/10/2021	Northing:	558775			
Client:	Wates Construct	ion North Ea	st	Ended:	27/10/2021	Logged:	SM			
Method:	Small Percussive			Backfilled:	27/10/2021	Status:	FINAL			

Method	d:	Small P	ercussive	В	ackfilled:	27/10/	2021			Status:	FINAL
iii /	<u> </u>	モ _	ام <u>و</u>					Sampl	es and Insi	itu Testing	
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description			Dept	h (m)	Туре	Re	sults
		- 0.30	- - 37.71 -	TOPSOIL/REWORKED GROUND: Dark brown sandy slightly gravelly CLAY. Gra sub rounded fine to coarse sandstone and mudstone.			0.10	- 0.30	ES		-
		0.30 - -	37./1 -	Stiff consistency orangish brown sandy slightly gravelly CLAY. Gravel is sub a rounded fine to coarse sandstone and mudstone.	ngular to sub	,		- 0.70	В]
		- - -	=	(PELAW CLAY MEMBER)			_ 0.50 · - -	- 1.00	ES		- - -
		1.10	36.91	Stiff consistency greyish brown slightly sandy slightly gravelly high to very high to select the sand models and states.	igh strength (CLAY.		- 1.65	SPT (S)	N=21 (2,	2/3,3,3,12)
		- - -	- -	Gravel is sub angular to sub rounded fine to coarse sandstone and mudston (PELAW CLAY MEMBER)	ie.		1.20		D ES		- - -
		- - -					-	- 2.00 - 2.45	B SPT (S)	N=2E /2	3/5,5,5,20) —
		-	- - -				2.00	2.45	D ES	N-33 (2,	3/3,3,3,20/
-G-		- 2.50 -	35.51 - -	No recovery, Orangish brown SAND noted in base of sampler. (PELAW CLAY MEMBER)			-				-
		- - - 3.00	35.01				- - -				-
			=	End of Borehole at 3.000m			- - -				- - -
		_	-				- - -				-
		_	_				- - -				-
		-	=				- - -				-
		- -	-				- - -				-
		_ 	_				- - -				-
		- - -	=				- - -				=
		- - -	-				- - -				=
		- - -					- -				-
		_ _ _	-				- - -				- - -
		-					- - -				-
		<u>-</u>	=				- - -				=
		-	-				- - -				=
		- - -	-				- - -				=
		- - -	_				- - -				-
		-					- - -				=
		- - -	=				- -				-
		_	_				- - -				-
			-				- - -				=
		- - -	-				- - -				- - - -
		_	=				-				
	iameter		Depths	General Remarks	Chiselling				Ground Wa		
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)	1. 1.2m hand excavated inspection pit. 2. No groundwater encountered. 3. Gas standpipe installed on completion.	m) To (m)	Time (hr)	Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)
			<u> </u>								



Trial Pit Log

TrialPit No
TP01
Sheet 1 of 1

Co-ords: 432939E - 558490N Project No. Date Project Envision Giga Factory, Sunderland Name: S211001 29/10/2021 Level: 39.54 2.60 Scale Plant Dimensions JCB 3CX Used: (m): 1:26

Samples & In Situ Testing Depth Type Results O.10 ES O.40 B+ES O.50 HV 60kPa Depth W 60kPa Depth Type Results O.30 Samples & In Situ Testing Depth (m) Depth (m) Depth (m) Depth (m) Level (m) Depth (m) TOPSOIL/REWORKED GROUND: Dark brown sandy slightly gravelly CLAY with many fine to medium plant rootlets. Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone and quartz. Firm consistency dark brown mottled grey slightly sandy slightly gravelly medium strength CLAY with a low cobble content. Gravel is sub angular to rounded fine to coarse sandstone, siltstone, mudstone, coal and quartz. Cobble are sub angular of sandstone and mudstone. (PELAW CLAY MEMBER)	_ogged SM	Logge SM						North East	truction N	Wates Cons	Client:
Samples & In Situ Testing Depth Type Results Depth (m) Level (m) Stratum Description			•	2.00							
0.10 ES 0.40 B+ES 0.50 HV 60kPa 0.30 39.24 TOPSOIL/REWORKED GROUND: Dark brown sandy slightly gravelly CLAY with many fine to medium plant rootlets. Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone and quartz. Firm consistency dark brown mottled grey slightly sandy slightly gravelly medium strength CLAY with a low cobble content. Gravel is sub angular to rounded fine to coarse sandstone, siltstone, mudstone, coal and quartz. Cobble are sub angular of sandstone and mudstone. (PELAW CLAY MEMBER)			n Description		Legand	Level	Depth	Testing	s & In Situ T	Sample	ater ike
0.10 ES 0.30 0.40 B+ES 0.50 HV 60kPa 0.30 39.24 Slightly gravelly CLAY with many fine to medium plant rootlets. Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone and quartz. Firm consistency dark brown mottled grey slightly sandy slightly gravelly medium strength CLAY with a low cobble content. Gravel is sub angular to rounded fine to coarse sandstone, siltstone, mudstone, coal and quartz. Cobble are sub angular of sandstone and mudstone. (PELAW CLAY MEMBER)			•		Legend			Results	Туре	Depth	Wa
	of	sandy cobble oarse of	many fine to medium pla ular to sub rounded fine to stone and quartz. We mottled grey slightly serength CLAY with a low of ular to rounded fine to costone, coal and quartz. Come and mudstone.	slightly gravelly CLAY with rootlets. Gravel is sub ang coarse of sandstone, mud: Firm consistency dark bro slightly gravelly medium st content. Gravel is sub ang sandstone, siltstone, muds are sub angular of sandsto		39.24	0.30	60kPa	B+ES	0.40	
1.20 HV 70kPa mottled grey slightly sandy slightly gravelly medium to his strength CLAY with a low cobble content. Gravel is sub angular to sub rounded fine to coarse of sandstone, siltstone, mudstone and quartz. Cobbles are sub angular sandstone.		m to high s sub e,	slightly gravelly medium sobble content. Gravel is e to coarse of sandstone	mottled grey slightly sandy strength CLAY with a low o angular to sub rounded fin siltstone, mudstone and qu		38.44	1.10	70kPa	HV	1.20	
1.60 B+ES (PELAW CLAY MEMBER)				(PELAW CLAY MEMBER)					B+ES	1.60	
1.80 HV 84kPa 1.90 37.64 Dark grey highly weathered SANDSTONE.			d SANDSTONE	Dark grev highly weathere		37.64	1.90	84kPa	HV	1.80	
2.00 37.54 (PENNINE MIDDLE COAL MEASURES) End of Pit at 2.000m											

Remarks: No groundwater encountered.

Trial pit terminated at 2.00mbgl due to rockhead.



Trial Pit Log

TP02

TrialPit No

Sheet 1 of 1

Co-ords: 433011E - 558556N Project No. Date Project Envision Giga Factory, Sunderland Name: S211001 29/10/2021 Level: 39.17 Plant 2.10 Scale Dimensions JCB 3CX Used: (m): 1:26

1.60 Depth Logged Wates Construction North East Client:

Client:	Wates Cons	struction N	orth East				1.60 SM
ter	Sample	es & In Situ T	esting	Depth	Level	1	Observe Description
Water	Depth	Туре	Results	(m)	(m)	Legend	Stratum Description
	0.20 - 0.30	ES		0.30	38.87		TOPSOIL/REWORKED GROUND: Dark brown sandy slightly gravelly CLAY with many fine to medium plant rootlets.Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone and quartz.
	0.50 - 0.70	B+ES		0.30	36.67		Firm consistency dark brown mottled grey slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is sub angular to rounded fine to coarse of sandstone, siltstone, mudstone, coal and quartz. Cobbles are sub angular of sandstone and mudstone. (PELAW CLAY MEMBER)
	1.20 - 1.30	B+ES		1.00	38.17		Firm consistency becoming stiff with depth dark brown mottled grey slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is sub angular to sub rounded fine to coarse of sandstone, siltstone, mudstone and quartz. Cobbles are sub angular sandstone.
				1.40	37.77		(PELAW CLAY MEMBER) Dark grey highly weathered SANDSTONE.
				1.60	37.57	:::::	(PENŇIŇE MIDDLE COAL MEASURES) End of Pit at 1.600m
							2
							3
							4
							5

Remarks: No groundwater encountered.

Hand vanes not undertaken.

Trial pit terminated at 1.60mbgl due to rockhead.



Trial Pit Log

TrialPit No
TP03
Sheet 1 of 1

Project Envision Giga Factory, Sunderland

Project No. Co-ords: 432996E - 558657N Date

Name: S211001 29/10/2021 Level: 38.98 Plant 2.65 Scale Dimensions JCB 3CX Used: (m): 1:26 1.00 Depth Logged Client: Wates Construction North East 2.15 SM

ke fe	Sample	s & In Situ	Testing	Depth	Level	l	0. 1. 5	
Water Strike	Depth	Туре	Results	(m)	(m)	Legend	Stratum Description	
	0.30 - 0.40	B+ES		0.40	38.58		TOPSOIL/REWORKED GROUND: Dark brown sandy slightly gravelly CLAY with many fine to medium plant rootlets. Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone and quartz. Firm consistency dark brown mottled grey slightly sandy	
	0.50 0.60 - 0.80	HV B+ES	47kPa	0.90	38.08		slightly gravelly medium strength CLAY with a low cobble content. Gravel is sub angular to rounded fine to coarse of sandstone, siltstone, mudstone, coal and quartz. Cobbles are sub angular of sandstone and mudstone. (PELAW CLAY MEMBER)	
	1.00	HV	58kPa	0.90	36.06		Firm to stiff consistency dark brown mottled grey slightly sandy slightly gravelly medium to high strength CLAY with a low cobble content. Gravel is sub angular to sub rounded fine to coarse of sandstone, siltstone, mudstone and quartz. Cobbles are sub angular sandstone. (PELAW CLAY MEMBER)	
	1.50 1.60 - 1.80	HV ES	87kPa	1.95	37.03		Dada was birkhan da ANDSTONE	
				2.15	36.83		Dark grey highly weathered SANDSTONE. (PENNINE MIDDLE COAL MEASURES)	\exists
							4	
	No secondo						5	

Remarks: No groundwater encountered.

Trial pit terminated at 2.15mbgl due to rockhead.



Trial Pit Log

TP04 Sheet 1 of 1

TrialPit No

 Project Name:
 Envision Giga Factory, Sunderland
 Project No.
 Co-ords: 433010E - 558726N
 Date 29/10/2021

 Plant Used:
 JCB 3CX
 Dimensions (m):
 3.00
 Scale 1:26

Used:	JCB 3CX						(m): 253.65 (m): 1:26	
Client:	Wates Cons	struction N	orth East				(m): 1:26 Depth 3.50	d
Water	Sample Depth	es & In Situ	Testing Results	Depth (m)	Level (m)	Legend	Stratum Description	
	0.10 - 0.30	ES	Results	0.40	39.12		MADE GROUND: Dark brown sandy slightly gravelly CLAY with many fine to medium plant rootlets. Gravel is sub angular to sub rounded fine to coarse of sandstone, brick, mudstone and quartz. Firm consistency yellowish brown sandy slightly gravelly	
	0.60 - 0.80	ES		0.80	38.72		CLAY. Gravel is sub angular to sub rounded fine to coarse mudstone, sandstone and coal. (PELAW CLAY MEMBER)	
	1.00 - 1.20	В		0.00	30.72		Stiff consistency dark grey slightly sandy slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse mudstone and sandstone. (PELAW CLAY MEMBER)	1
	1.60 - 1.80	ES						
	2.00 - 2.20	В						2
	2.60 - 2.80	ES						
	3.00 - 3.20	ES						3
				3.50	36.02	*******	End of Pit at 3.500m	
								4
								5

Remarks: No groundwater encountered.

Hand vanes not undertaken.



Trial Pit Log

TP05 Sheet 1 of 1

TrialPit No

Project No. Co-ords: 433050E - 558722N Date Project Envision Giga Factory, Sunderland Name: S211001 28/10/2021 Level: 39.66 3.00 Scale Plant Dimensions JCB 3CX Used: 1:26 (m): 9

Client:	Wates Cons	truction N	lorth East				Depth 0 3.50	Logge CG	d
ter Ke	Sample	s & In Situ	Testing	Depth	Level	Lamand		00	
Water	Depth	Туре	Results	(m)	(m)	Legend	Stratum Description		
	0.10 - 0.30	ES		0.40	39.26		MADE GROUND: Dark brown sandy slightly grawith many fine to medium plant rootlets. Gravel is angular to sub rounded fine to coarse of sandsto mudstone and quartz.	s sub ne, brick,	-
	0.60 - 0.80	ES					Firm consistency yellowish brown sandy slightly CLAY. Gravel is sub angular to sub rounded fine mudstone, sandstone and coal. (PELAW CLAY MEMBER)	gravelly to coarse	-
	1.00 - 1.20	В		0.80	38.86		Stiff consistency dark grey slightly sandy slightly CLAY. Gravel is sub angular to sub rounded fine mudstone and sandstone. (PELAW CLAY MEMBER)	gravelly to coarse	1 -
	1.60 - 1.80	ES							-
	2.00 - 2.20	В							2 -
	2.60 - 2.80	ES							-
	3.00 - 3.20	В							3 -
				3.50	36.16		End of Pit at 3.500m		4 -
									5 -

Remarks: No groundwater encountered.

Hand vanes not undertaken.

Stability:



Trial Pit Log

TrialPit No TP06 Sheet 1 of 1

Co-ords: 433058E - 558666N Project No. Date Project Envision Giga Factory, Sunderland Name: S211001 29/10/2021 Level: 39.35 2.50 Scale Plant Dimensions JCB 3CX Used: (m): 1:26 0.90

USEU.							('''): 6 1.20
Client:	Wates Cons	struction N	orth East				Depth o SM
Water Strike	Sample	es & In Situ T	Testing	Depth	Level	Lamand	
Stri	Depth	Туре	Results	(m)	(m)	Legend	Stratum Description
	0.10 - 0.20	ES		0.20	39.15		TOPSOIL/REWORKED GROUND: Dark brown sandy slightly gravelly CLAY with many fine to medium plant rootlets. Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone and quartz. Firm consistency light brown mottled grey slightly sandy slightly gravelly medium strength CLAY. Gravel is sub
	0.50 - 1.00 0.60	B+ES HV	59kPa	0.70	38.65		angular to rounded fine to coarse of sandstone, mudstone, quartz and siltstone. (PELAW CLAY MEMBER) Firm consistency becoming stiff with depth dark brown
	1.10	HV	70kPa				mottled grey slightly sandy slightly gravelly high strength CLAY with a low cobble content. Gravel is sub angular to sub rounded fine to coarse of sandstone, siltstone, mudstone and quartz. Cobbles are sub angular sandstone. (PELAW CLAY MEMBER)
	1.40 - 1.60 1.50	B+ES HV	109kPa	1.60	37.75		Dark grey highly weathered SANDSTONE.
				1.80	37.55		(PENNINE MIDDLE COAL MEASURES)
							End of Pit at 1.800m
							4
							5

Remarks: No groundwater encountered.

Trial pit terminated at 1.80mbgl due to rockhead.



Trial Pit Log

Dimensions

(m):

TrialPit No **TP07**

Sheet 1 of 1 Email: info@solmek.com Co-ords: 433078E - 558620N Project No. Date Project Envision Giga Factory, Sunderland Name:

S211001 Level: 39.19 29/10/2021 Scale

JCB 3CX Used:

Plant

1:26 Depth Logged

2.35

Client:	Wates Cons	truction N	lorth East				Depth 2.40 Logge SM	ed
Water Strike	Sample	s & In Situ	Testing	Depth	Level	Legend	Stratum Description	
Wa	Depth	Туре	Results	(m)	(m)	Legend		
	0.20 - 0.30	ES		0.30	38.89		TOPSOIL/REWORKED GROUND: Dark brown sandy slightly gravelly CLAY with many fine to medium plant rootlets. Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone and quartz.	
	0.50	HV	55kPa				Firm consistency light brown mottled grey slightly sandy slightly gravelly medium strength CLAY. Gravel is sub angular to rounded fine to coarse of sandstone, mudstone, quartz and siltstone. (PELAW CLAY MEMBER)	
	0.80 - 1.00	B+ES						1 —
								- - - - -
	1.50 - 1.70	B+ES		1.60	37.59] =
	1.70	HV	95kPa				Stiff consistency dark grey slightly sandy slightly gravelly high strength CLAY with a low cobble content. Gravel is sub angular to sub rounded fine to coarse of sandstone, siltstone, mudstone and quartz. Cobbles are sub angular sandstone. (PELAW CLAY MEMBER)	2 —
	2.20 - 2.30	ES		2.30 2.40	36.89 36.79		Dark grey highly weathered SANDSTONE. (PENNINE MIDDLE COAL MEASURES)	
							End of Pit at 2.400m	3

Remarks: No groundwater encountered.

Trial pit terminated at 2.40mbgl due to rockhead.



Depth

0.10 - 0.20

Solmek Ltd 12-16 Yarm Road Stockton on Tees **TS18 3NA** Tel: 01642 607083 Email: info@solmek.com

Results

Trial Pit Log

Depth

1.65

TrialPit No **TP08**

Sheet 1 of 1

Logged

SM

Co-ords: 433111E - 558577N Project No. Date Project Envision Giga Factory, Sunderland Name: S211001 Level: 39.14 29/10/2021 Plant 2.20 Scale Dimensions JCB 3CX Used: (m): 1:26 8

Legend

Level

(m)

Depth

(m)

Client: Wates Construction North East

Samples & In Situ Testing

Type

ES

TOPSOIL/REWORKED GROUND: Dark brown sandy slightly gravelly CLAY with many fine to medium plant rootlets. Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone and quartz.

Firm consistency dark brown mottled grey slightly sandy

Stratum Description

0.25 38.88 slightly gravelly medium strength CLAY with a low cobble 0.40 ΗV 59kPa content. Gravel is sub angular to rounded fine to coarse of sandstone, siltstone, mudstone, coal and quartz. Cobbles are sub angular of sandstone and mudstone. (PELAW CLAY MEMBER) 0.70 - 0.80 B+ES 0.90 HV 72kPa 1.30 37.84 Stiff consistency dark grey slightly sandy slightly gravelly high strength CLAY with a low cobble content. Gravel is 1.40 - 1.50 B+ES sub angular to sub rounded fine to coarse of sandstone, 1.50 HV 121kPa 1.50 37.64 siltstone, mudstone and quartz. Cobbles are sub angular sandstone 1.65 37.48 (PELAW CLAY MEMBER)

Dark grey highly weathered SANDSTONE.
(PENNINE MIDDLE COAL MEASURES) End of Pit at 1.650m 3 5

No groundwater encountered. Remarks:

Trial pit terminated at 1.65mbgl due to rockhead.



JCB 3CX

Plant

Used:

Solmek Ltd 12-16 Yarm Road Stockton on Tees TS18 3NA Tel: 01642 607083 Email: info@solmek.com

Trial Pit Log

Dimensions

(m):

TrialPit No **TP09** Sheet 1 of 1

Scale

3.00

Co-ords: 433094E - 558510N Project No. Date Project Envision Giga Factory, Sunderland Name: 29/10/2021

S211001 Level: 39.61

1:26 1.00 Depth Logged Wates Construction North East Client:

Client:	Wates Cons	struction N	orth East				2.50 SM	
ter ke	Sample	es & In Situ	Testing	Depth	Level			
Water	Depth	Туре	Results	(m)	(m)	Legend	Stratum Description	
	0.20 - 0.40	ES		0.20	39.41		MADE GROUND: Dark brown to black sandy fine to coarse GRAVEL Gravel is sub angular to sub rounded fine to coarse of tarmac, dolomite and quartz. MADE GROUND: Black ashy sandy fine to coarse GRAVEL with a low cobble content. Gravel is sub angular to sub rounded fine to coarse of red brick, concrete, dolomite, sandstone and quartz. Cobbles are sub angular of red brick and concrete.	-
	0.80 - 1.00	ES		0.85	38.76		MADE GROUND: Firm consistency dark grey slightly sandy slightly gravelly CLAY. Gravel is sub angular to sub	1 -
	1.20 - 1.40	B+ES		1.10	38.51		rounded fine to coarse of red brick, concrete, sandstone, mudstone and quartz. Stiff consistency dark grey mottled brown slightly sandy slightly gravelly high strength CLAY. Gravel is sub angular to sub rounded fine to coarse of sandstone, siltstone,	
	1.40	HV B+ES	97kPa				mudstone and quartz. (PELAW CLAY MEMBER)	- - - - - - - -
				2.40	37.21			2 -
				2.50	37.11		Dark grey highly weathered SANDSTONE. (PENNINE MIDDLE COAL MEASURES) End of Pit at 2.500m	-
								3 -
								-
								4 -
								5 -

Remarks: No groundwater encountered.

Trial pit terminated at 2.50mbgl due to rockhead.



Trial Pit Log

TrialPit No TP10

Project Envision Giga Factory, Sunderland Name:

Co-ords: 433124E - 558469N Project No. S211001

Sheet 1 of 1 Date

Plant JCB 3CX Used:

Level: 39.93 Dimensions

01/11/2021 Scale

2.10

Used:	JCB 3CX						(m):	1:26	
Client:	Wates Cons	truction N	lorth East				(m): 0 Depth 7: 1.95	Logge SM	d
Water Strike	Sample Depth	s & In Situ	Testing Results	Depth (m)	Level (m)	Legend	Stratum Description		
	0.30	B+ES		0.15	39.78		MADE GROUND: CONCRETE. MADE GROUND: Black ashy sandy GRAVEL. G sub angular to sub rounded fine to coarse of red concrete, dolomite and quartz.	ravel is brick,	-
	0.80	B+ES		1.15	38.78		Firm consistency becoming stiff with depth brow dark brown slightly sandy slightly gravelly CLAY. sub angular to sub rounded fine to coarse of san	n mottled Gravel is dstone,	1 -
	1.60	B+ES		1.95	37.98		mudstone and quartz. (PELAW CLAY MEMBER) End of Pit at 1.950m		2 -
									3 -
									4 -
									5 -

Remarks: No groundwater encountered.

Hand vanes not undertaken.

Trial pit terminated at 1.95mbgl due to restricted access.



Trial Pit Log

TP11 Sheet 1 of 1

TrialPit No

Email: info@solmek.com Co-ords: 433149E - 558484N Project No. Date Project Envision Giga Factory, Sunderland Name: S211001 01/11/2021 Level: 40.12 2.50 Plant Scale Dimensions JCB 3CX Used: (m): 1:26 1.20

Client: Wates Construction North East Depth 1.90	on GRAVEL. Gravel is	ogged SM
0.20 39.92 MADE GROUND: CONCRETE. MADE GROUND: Black ashy sandy G sub angular to sub rounded fine to coa concrete, dolomite and quartz.	SRAVEL. Gravel is	-
0.30 - 0.50 B+ES 0.20 39.92 MADE GROUND: Black ashy sandy G sub angular to sub rounded fine to coa concrete, dolomite and quartz.	GRAVEL. Gravel is arse of red brick,	
		-
0.90 39.22 Firm consistency becoming stiff with didark brown slightly sandy slightly graw sub angular to sub rounded fine to coamudstone and quartz. (PELAW CLAY MEMBER)	epth brown mottled elly CLAY. Gravel is arse of sandstone,	1
1.90 38.22 End of Pit at 1.900n	n	3 -

Remarks: No groundwater encountered.

Hand vanes not undertaken.

Trial pit terminated at 1.90mbgl due to restricted access.



Trial Pit Log

TrialPit No TP12

Project Envision Giga Factory Sunderland

Project Envision Giga Factory Sunderland

Project No. Co-ords: 433198E - 558522N

Date

Used: (m): 0 1:26

Client: Wates Construction North East Depth 1.90

Client: Wates Construction North East SM

				1		1	1.90 SM	
ž š	Sample	es & In Situ	Testing	Depth	Level	l		
Water Strike	Depth	Туре	Results	(m)	(m)	Legend	Stratum Description	
	0.30 - 0.40 0.50 - 0.70	B+ES ES		0.55	39.05		TOPSOIL/REWORKED GROUND: Dark brown sandy slightly gravelly CLAY with many fine to medium plant rootlets. Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone and quartz. Firm to stiff consistency dark brown mottled grey slightly	-
	1.60 - 1.70	HV B+ES	92kPa				sandy slightly gravelly high strength CLAY with a low cobble content. Gravel is sub angular to sub rounded fine to coarse of sandstone, siltstone, mudstone and quartz. Cobbles are sub angular sandstone. (PELAW CLAY MEMBER)	1 —
	1.70	HV	108kPa	1.70	37.90		Dark grey highly weathered SANDSTONE. (PENNINE MIDDLE COAL MEASURES)	
				1.90	37.70			2 -
								4
								5 —

Remarks: No groundwater encountered.

Trial pit terminated at 1.90mbgl due to rockhead.



Used:

Solmek Ltd 12-16 Yarm Road Stockton on Tees TS18 3NA Tel: 01642 607083 Email: info@solmek.com

Trial Pit Log

TP13

TrialPit No

Sheet 1 of 1

Co-ords: 433180E - 558574N Project No. Date Project Envision Giga Factory, Sunderland Name: S211001 01/11/2021 Level: 39.34 2.50 Scale Plant Dimensions JCB 3CX

1:26 0.90 Depth Logged Wates Construction North East

(m):

Client:	Wates Cons	truction N	orth East				2.60 SM
ke te	Sample	es & In Situ T	esting	Depth	Level	Las	
Water	Depth	Туре	Results	(m)	(m)	Legend	Stratum Description
	0.30 0.30 - 0.40	ES B		0.40	38.94		TOPSOIL/REWORKED GROUND: Dark brown sandy slightly gravelly CLAY with many fine to medium plant rootlets. Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone and quartz. Firm consistency dark brown mottled grey slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is
	0.60	ES		0.80	38.54		sub angular to rounded fine to coarse of sandstone, siltstone, mudstone, coal and quartz. Cobbles are sub angular of sandstone and mudstone. (PELAW CLAY MEMBER)
	1.00	ES		1.10	38.24		Firm consistency becoming stiff with depth dark brown mottled grey slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is sub angular to sub rounded fine to coarse of sandstone, siltstone, mudstone and quartz. Cobbles are sub angular sandstone.
	1.20 - 1.30	В					(PELAW CLAY MEMBER) Stiff consistency dark grey slightly sandy slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse of sandstone, siltstone, mudstone and quartz. (PELAW CLAY MEMBER)
	2.00 - 2.20	B					2
				2.60	36.74		End of Pit at 2.600m
							3
							4
							5

Remarks: No groundwater encountered.

Hand vanes not undertaken.



Trial Pit Log

TP14 Sheet 1 of 1

TrialPit No

Email: info@solmek.com Project No. Co-ords: 433155E - 558619N Date Project Envision Giga Factory, Sunderland Name: S211001 01/11/2021 Level: 39.43 Plant 2.40 Scale Dimensions

Plant Used:	JCB 3CX						Dimensions (m):	2.40	Scale 1:26	
Client	: Wates Cons	struction N	North East						Logge SM	
.e. ke	Sample	es & In Situ	Testing	Depth	Level				OIVI	
Water Strike	Depth	Туре	Results	(m)	(m)	Legend	Stratum	Description		
	0.30	ES		0.40	39.03		TOPSOIL/REWORKED GR slightly gravelly CLAY with i rootlets. Gravel is sub angu coarse of sandstone, muds	many fine to medium p lar to sub rounded fine tone and quartz.	plant e to	- - - - - - -
	0.60 0.60 - 0.80	ES ES		0.80	38.63		slightly gravelly CLAY with a sub angular to rounded fine siltstone, mudstone, coal ar angular of sandstone and n (PELAW CLAY MEMBER)	a low cobble content. (to coarse of sandstor nd quartz. Cobbles are nudstone.	Gravel is ie, sub	- - - - -
	1.40 - 1.60 1.50	ES B					Firm consistency becoming mottled grey slightly sandy low cobble content. Gravel fine to coarse of sandstone quartz. Cobbles are sub an (PELAW CLAY MEMBER)	slightly gravelly CLAY is sub angular to sub r , siltstone, mudstone a	with a ounded	1 —
				1.60	37.83		Stiff consistency dark grey: Gravel is sub angular to sul sandstone, mudstone and o (PELAW CLAY MEMBER)	o rounded fine to coars		- - - - - - -
	2.00	В		0.50	00.00					2
				2.50	36.93		Dark grey highly weathered SANDSTONE. (PENNINE MIDDLE COAL End of F			3 —
										3
										4

Remarks: No groundwater encountered.

Hand vanes not undertaken.

Trial pit terminated at 2.50mbgl due to rockhead.



Trial Pit Log

TP15 Sheet 1 of 1

TrialPit No

 Project Name:
 Envision Giga Factory, Sunderland
 Project No. S211001
 Co-ords: 433136E - 558672N
 Date 28/10/2021

 Plant Used:
 JCB 3CX
 Dimensions (m): Scale (m): 1:26
 1:26

Plant Used:	JCB 3CX						Dimensions (m):	3.00	Scal 1:26	
Client:	Wates Cons	struction N	lorth East				Depth 3.50		Logge	ed
ke te	Sample	es & In Situ	Testing	Depth	Level	1		December	1 00	
Water Strike	Depth	Туре	Results	(m)	(m)	Legend		um Description		
	0.10 - 0.30	ES		0.40	39.09		MADE GROUND: Dark to with many fine to mediun angular to sub rounded for mudstone and brick.	n plant rootlets. Gravel i ine to coarse of sandsto	is sub one,	- - - - - -
	0.60 - 0.80	В		0.40	39.09		Firm consistency yellowis CLAY. Gravel is sub angumudstone, sandstone and (PELAW CLAY MEMBER	d coal.	gravelly to coarse	
	0.80 - 1.00 0.80	ES HV	80kPa	0.80	38.69		Stiff consistency dark green high strength CLAY. Gravine to coarse mudstone (PELAW CLAY MEMBER	ey slightly sandy slightly vel is sub angular to sub and sandstone.	gravelly o rounded	1
	1.60 - 1.80	В								- - - - -
	1.80 - 2.00 1.80	ES HV	140kPa							2
	2.60 - 2.80	В								- - -
	2.80 - 3.00 2.80	ES HV	140kPa							3
				3.50	35.99	***	End o	of Pit at 3.500m		- - -
										4
										5 —

Remarks: No groundwater encountered.

Hand vanes not undertaken.

Stability:



Trial Pit Log

TP16 Sheet 1 of 1

TrialPit No

Project No. Co-ords: 433118E - 558722N Date Project Envision Giga Factory, Sunderland Name: S211001 28/10/2021 Level: 39.56 3.00 Scale Plant Dimensions JCB 3CX Used: (m): 1:26

sed:							(m): 6 1:26	
lient:	Wates Cons	struction N	orth East				(m):	d
- o	Sample	es & In Situ T	esting	5 "	Ι		3.50 CG	
Strike	Depth	Туре	Results	Depth (m)	Level (m)	Legend	Stratum Description	
	0.10 - 0.30	ES		0.40	39.16		MADE GROUND: Dark brown sandy slightly gravelly CLAY with many fine to medium plant rootlets. Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone and brick.	
	0.60 - 0.80	ES					Firm consistency yellowish brown sandy slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse mudstone, sandstone and coal. (PELAW CLAY MEMBER)	
	1.00 - 1.20	В		0.80	38.76		Stiff consistency dark grey slightly sandy slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse mudstone and sandstone. (PELAW CLAY MEMBER)	,
	1.60 - 1.80	ES						
	2.00 - 2.20	В						
	2.60 - 2.80	ES						
	3.00 - 3.20	В						
				3.50	36.06		End of Pit at 3.500m	

Remarks: No groundwater encountered.

Hand vanes not undertaken.

Stability: Pit walls stable



Trial Pit Log

TP17

TrialPit No

Sheet 1 of 1 Email: info@solmek.com Project No. Co-ords: 433053E - 558810N Date Project Envision Giga Factory, Sunderland Name: S211001 28/10/2021 Level: 39.26 3.00 Scale Plant Dimensions JCB 3CX Used: (m): 1:26

Used: (m): 1:26

Client: Wates Construction North East Depth 3.50

Client: Wates Construction North East CG

							3.50	
ke re	Sample	s & In Situ T	esting	Depth	Level	1	S	
Water Strike	Depth	Туре	Results	(m)	(m)	Legend	Stratum Description	
	0.10 - 0.30	ES					MADE GROUND: Grass over dark brown sandy slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse mudstone, sandstone, coal and brick.	
				0.40	38.86		Stiff consistency dark grey slightly sandy slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse	
	0.60 - 0.80	ES					mudstone and sandstone. (PELAW CLAY MEMBER)	
	1.00 - 1.20	В						1
	1.60 - 1.80	ES						
	2.00 - 2.20	В						2
	2.60 - 2.80	ES						
	3.00 - 3.20	В						3
				3.50	35.76		F 1 (B) 10 F20	
							End of Pit at 3.500m	
								4
								_
	rks: No aroundw				<u> </u>			5

Remarks: No groundwater encountered.

Hand vanes not undertaken.

Stability:



Used:

Solmek Ltd 12-16 Yarm Road Stockton on Tees TS18 3NA Tel: 01642 607083 Email: info@solmek.com

Trial Pit Log

TrialPit No TP18 Sheet 1 of 1

Co-ords: 433099E - 558836N Project No. Date Project Envision Giga Factory, Sunderland Name: S211001 27/10/2021 Level: 38.99 Plant 3.00 Scale Dimensions JCB 3CX

1:26 0.60 Depth Logged Client: Wates Construction North East

(m):

Client:	Wates Cons	truction N	orth East				3.50 CO	}
ke	Sample	es & In Situ T	esting	Depth	Level	l amamal		
Water	Depth	Туре	Results	(m)	(m)	Legend	Stratum Description	
	0.10 - 0.30	ES		0.40 38.59		MADE GROUND: Grass over dark brown sandy slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse mudstone, sandstone, coal and brick.		
	0.60 - 0.80	ES		0.40	38.59		Firm consistency yellowish brown sandy slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse mudstone, sandstone and coal. (PELAW CLAY MEMBER)	
				0.80	38.19		Stiff consistency dark grey slightly sandy slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse mudstone and sandstone.	
	1.00 - 1.20	В					mudstone and sandstone. (PELAW CLAY MEMBER)	1
	1.60 - 1.80	ES						
	2.00 - 2.20	В						2
	2.60 - 2.80	ES						
	3.00 - 3.20	В						3
				3.50	35.49		End of Pit at 3.500m	+
								4
	s: No groundy							5

Remarks: No groundwater encountered.

Hand vanes not undertaken.

Pit walls stable

Stability:



Trial Pit Log

TP19 Sheet 1 of 1

TrialPit No

Project No. Co-ords: 433124E - 558871N Date Project Envision Giga Factory, Sunderland Name: S211001 27/10/2021 Level: 38.50 Scale Plant 3.00 Dimensions JCB 3CX Used: 1:26

Jsed:	008 00%							26
Client:	Wates Cons	truction N	lorth East				Depth Si Log	gged CG
ke të	Sample	s & In Situ	Testing	Depth	Level	1		
Strike	Depth	Туре	Results	(m)	(m)	Legend	Stratum Description	
	0.10 - 0.30	ES					MADE GROUND: Grass over dark brown sandy slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse mudstone, sandstone, coal and brick.	
	0.60 - 0.80	ES		0.40	38.10		Firm consistency yellowish brown sandy slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse mudstone, sandstone and coal. (PELAW CLAY MEMBER)	
	1.00 - 1.20	В		0.80	37.70		Stiff consistency dark grey slightly sandy slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse mudstone and sandstone. (PELAW CLAY MEMBER)	1
							(22 m 32 m m2m21 y	
	1.60 - 1.80	ES						
	2.00 - 2.20	В						2
	2.60 - 2.80	ES						
	3.00 - 3.20	В						3
				3.50	35.00			
							End of Pit at 3.500m	
								4
								Ę

Remarks: No groundwater encountered.

Hand vanes not undertaken.

Stability:



Trial Pit Log

38.72

TrialPit No TP20 Sheet 1 of 1

Date

Project No. Project Envision Giga Factory, Sunderland Name: S211001

Co-ords: 433159E - 558834N

28/10/2021 Scale

rtaino.				5211	001		Level: 38.72 28/10/2021
Plant Used:	JCB 3CX						Dimensions 3.00 Scale (m): 9 1:26
Client:	Wates Cons	truction N	lorth East				Depth \circ Logged
- o	Sample	es & In Situ	Testing	D th	11		3.50 CG
Water	Depth	Туре	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.10 - 0.30	ES					MADE GROUND: Grass over dark brown sandy slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse mudstone, sandstone, coal and brick.
	0.50 - 0.70	ES		0.40	38.32		Firm consistency yellowish brown sandy slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse mudstone, sandstone and coal. (PELAW CLAY MEMBER)
	0.80 - 1.00	В		0.80	37.92		Stiff consistency dark grey slightly sandy slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse mudstone and sandstone. (PELAW CLAY MEMBER)
	1.20 - 1.40	ES					
	1.80 - 2.00	В					2
	2.20 - 2.40	ES					
	2.80 - 3.00	В					3
				3.50	35.22		End of Pit at 3.500m
							4
							5

Remarks: No groundwater encountered.

Hand vanes not undertaken.

Stability:



Trial Pit Log

TP21

TrialPit No

Sheet 1 of 1 Email: info@solmek.com Project No. Co-ords: 433173E - 558753N Date Project Envision Giga Factory, Sunderland Name: S211001 28/10/2021 Level: 39.28 3.00 Scale Plant Dimensions JCB 3CX Used: (m): 1:26

							3.50	
ë e	Sample	s & In Situ	Testing	Depth	Level			
Water Strike	Depth	Туре	Results	(m)	(m)	Legend	Stratum Description	
	0.10 - 0.30	ES		0.40	20.00		MADE GROUND: Grass over dark brown sandy slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse mudstone, sandstone, coal and brick.	-
	0.60 - 0.80	ES		0.40	38.88		Firm consistency yellowish brown sandy slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse mudstone, sandstone and coal. (PELAW CLAY MEMBER)	- - - - -
	1.00 - 1.20	В		0.80	38.48		Stiff consistency dark grey slightly sandy slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse mudstone and sandstone. (PELAW CLAY MEMBER)	1 —
	1.60 - 1.80	ES						- - - - - - - - -
	2.00 - 2.20	В						2
	2.60 - 2.80	ES						-
	3.00 - 3.20	В						3
				3.50	35.78		End of Pit at 3.500m	
								4 —
								- - - -
								- - - - -
	nrke: No aroundw							5 —

Remarks: No groundwater encountered.

Hand vanes not undertaken.

Stability:



Trial Pit Log

TrialPit No TP22 Sheet 1 of 1

Project No. Co-ords: 433200E - 558705N Date Project Envision Giga Factory, Sunderland Name: S211001 28/10/2021 Level: 39.14 3.00 Scale Plant Dimensions JCB 3CX Used: (m): 1:26

							(m): 8 1:2	
lient:	Wates Cons	truction No	orth East				Depth 6 C0	ged G
<u> 5</u> 9	Sample	es & In Situ T	esting	Depth	Level			
Strike	Depth	Туре	Results	(m)	(m)	Legend	Stratum Description	
	0.10 - 0.30	ES					MADE GROUND: Grass over dark brown sandy slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse mudstone, sandstone, coal and brick.	
	0.60 - 0.80	ES		0.40	38.74		Firm consistency yellowish brown sandy slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse mudstone, sandstone and coal. (PELAW CLAY MEMBER)	
				0.80	38.34		Stiff consistency dark grey slightly sandy slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse	
	1.00 - 1.20	В					mudstone and sandstone. (PELAW CLAY MEMBER)	
	1.60 - 1.80	ES						
	2.00 - 2.20	В						
	2.60 - 2.80	ES						
	3.00 - 3.20	В						
				3.50	35.64		End of Pit at 3.500m	

Hand vanes not undertaken.

Stability:



Trial Pit Log

TrialPit No
TP23
Sheet 1 of 1

Project No. Co-ords: 433223E - 558652N Date

Name: S211001 01/11/2021 Level: 39.20 Plant 2.45 Scale Dimensions JCB 3CX Used: (m): 1:26 1.05 Logged Depth Client: Wates Construction North East

Samples & In Situ Testing Depth Depth Depth (m) Depth Level (m) Depth Stratum Description MADE GROUND: Dark brown sandy slightly graveling with many fine to medium plant rootlets. Gravel is angular to sub rounded fine to coarse of sandstone,	CLAY
0.10 - 0.30 ES MADE GROUND: Dark brown sandy slightly gravelly with many fine to medium plant rootlets. Gravel is st	CLAY
0.10 - 0.30 ES with many fine to medium plant rootlets. Gravel is su	CLAY
mudstone and brick.	
0.40 38.80 Firm consistency dark brown mottled grey slightly sa slightly gravelly CLAY with a low cobble content. Grasub angular to rounded fine to coarse of sandstone, siltstone, mudstone, coal and quartz. Cobbles are sa angular of sandstone and mudstone. (PELAW CLAY MEMBER)	vel is
1.00 38.20 Stiff consistency dark grey slightly sandy slightly grace CLAY with a low cobble content. Gravel is sub angular sub rounded fine to coarse of sandstone, siltstone, mudstone and quartz. Cobbles are sub angular sand (PELAW CLAY MEMBER)	ar to
1.60 - 1.80 B 1.80 ES	
	2
2.20 37.00 Light brown slightly gravelly coarse SAND (saturate Gravel is sub angular to sub rounded fine to coarse sandstone, mudstone, siltstone and quartz. (PELAW CLAY MEMBER)) If
3.20 36.00 End of Pit at 3.200m	3
	4
Demonstrate Groundwater ingrees at 2 0mbgl	5

Remarks: Groundwater ingress at 2.0mbgl.

Hand vanes not undertaken.



Trial Pit Log

TrialPit No
TP24
Sheet 1 of 1

Project No. Co-ords: 433253E - 558601N Date Name: Envision Giga Factory, Sunderland S211001 Level: 39.25 01/11/20

S211001 01/11/2021 Level: 39.25 2.70 Scale Plant Dimensions JCB 3CX Used: (m): 1:26 1.10 Depth Logged Client: Wates Construction North East

Client:	Wates Cons	struction N	orth East				3.10 Logged
ke ke	Sample	es & In Situ	Testing	Depth	Level	1	
Water Strike	Depth	Туре	Results	(m)	(m)	Legend	Stratum Description
	0.00 - 0.40	ES					TOPSOIL/REWORKED GROUND: Dark brown sandy slightly gravelly CLAY with many fine to medium plant rootlets. Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone and quartz.
	0.70 0.70	B ES		0.40	38.85		Firm consistency dark brown mottled grey slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is sub angular to rounded fine to coarse of sandstone, siltstone, mudstone, coal and quartz. Cobbles are sub angular of sandstone and mudstone. (PELAW CLAY MEMBER)
				0.80	38.45		Firm consistency becoming stiff with depth dark brown mottled grey slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is sub angular to sub rounded fine to coarse of sandstone, siltstone, mudstone and quartz. Cobbles are sub angular sandstone. (PELAW CLAY MEMBER)
	1.40 - 1.50	В		1.30	37.95		Stiff consistency dark grey slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is sub angular to sub rounded fine to coarse of sandstone, siltstone, mudstone and quartz. Cobbles are sub angular sandstone. (PELAW CLAY MEMBER)
	1.80	ES					2
	2.50	ES					3
				3.10	36.15	3 N. A. S. S. J. S.	End of Pit at 3.100m
							4
							Ę

Remarks: No groundwater encountered.

Hand vanes not undertaken.



JCB 3CX

Plant

Used:

Solmek Ltd 12-16 Yarm Road Stockton on Tees TS18 3NA Tel: 01642 607083

Trial Pit Log

TrialPit No **TP25**

Scale

1:26

2.30

Sheet 1 of 1 Email: info@solmek.com Co-ords: 433249E - 558556N Project No. Date Project Envision Giga Factory, Sunderland Name: 01/11/2021

S211001 Level: 39.42 Dimensions

0.90 Depth Logged Client: Wates Construction North East 0.70 SM

(m):

Onone.	***************************************						0.70 SM
ke te	Sample	es & In Situ T	Testing	Depth	Level		Otratura Danasintian
Water	Depth	Туре	Results	(m)	(m)	Legend	Stratum Description
	0.00 - 0.40	ES					TOPSOIL/REWORKED GROUND: Dark brown sandy slightly gravelly CLAY with many fine to medium plant rootlets. Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone and quartz
	0.40 - 0.70 0.40 - 0.70	B ES		0.40	39.02		Firm consistency dark brown mottled grey slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is sub angular to rounded fine to coarse of sandstone, siltstone, mudstone, coal and quartz. Cobbles are sub
	0.80	В		0.70	38.72		angular of sandstone and mudstone. (PELAW CLAY MEMBER) End of Pit at 0.700m
							1
							2
							3
							4
							5

Remarks: No groundwater encountered.

Trial pit terminated at 0.70mbgl due to service presence.

No service damage encountered.

Hand vanes not undertaken. Stability:



Depth

0.20 - 0.30

0.50 - 0.60

1.10 - 1.30

2.50 - 2.60

Solmek Ltd 12-16 Yarm Road Stockton on Tees **TS18 3NA** Tel: 01642 607083 Email: info@solmek.com

Results

Depth

(m)

0.30

0.60

2.40

2.70

37.27

36.97

Level

(m)

39.37

39.07

Legend

Trial Pit Log

39.67

TrialPit No **TP26**

Project Envision Giga Factory, Sunderland Name:

Co-ords: 433226E - 558533N Project No. S211001

Level:

Sheet 1 of 1 Date

Plant JCB 3CX Used:

Dimensions (m): Depth

2.70

29/10/2021 Scale 1:26

Logged

SM

2

3

5

Client: Wates Construction North East

Samples & In Situ Testing

Type

ES

B+ES

B+ES

FS

TOPSOIL/REWORKED GROUND: Dark brown sandy slightly gravelly CLAY with many fine to medium plant rootlets. Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone and quartz.

Stratum Description

8

2.30

Firm consistency dark brown mottled grey slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is sub angular to rounded fine to coarse of sandstone, siltstone, mudstone, coal and quartz. Cobbles are sub angular of sandstone and mudstone (PELAW CLAY MEMBER)

Firm consistency becoming stiff with depth dark brown mottled grey slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is sub angular to sub rounded fine to coarse of sandstone, siltstone, mudstone and quartz. Cobbles are sub angular sandstone. (PELAW CLAY MEMBER)

Stiff consistency thinly laminated dark grey slightly sandy slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse sandstone, mudstone and quartz. (PELAW CLAY MEMBER)

End of Pit at 2.700m

No groundwater encountered. Remarks:

Hand vanes not undertaken.



Trial Pit Log

TP27

TrialPit No

Sheet 1 of 1 Email: info@solmek.com Co-ords: 433327E - 558592N Project No. Date Project Envision Giga Factory, Sunderland Name: S211001 03/11/2021 Level: 38.99 2.60 Scale Plant Dimensions JCB 3CX Used: (m): 1:26

Olioiti	-		TOTAL EGGE				2.50 SM	
Water Strike	Sample	es & In Situ	Testing	Depth	Level	Logond	Stratum Description	
Wa	Depth	Туре	Results	(m)	(m)	Legend	Stratum Description	
	0.20 - 0.30	ES		0.40	29.50		TOPSOIL/REWORKED GROUND: Dark brown sandy slightly gravelly CLAY with many fine to medium plant rootlets. Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone and quartz.	- - - -
	0.80 - 0.90	ES		0.40	38.59		Firm consistency dark brown mottled grey slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is sub angular to rounded fine to coarse of sandstone, siltstone, mudstone, coal and quartz. Cobbles are sub angular of sandstone and mudstone. (PELAW CLAY MEMBER)	1 -
	1.70 - 1.80	B+ES		1.50	37.49		Stiff consistency dark grey slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is sub angular to sub rounded fine to coarse of sandstone, siltstone, mudstone and quartz. Cobbles are sub angular sandstone. (PELAW CLAY MEMBER)	-
	2.20 - 2.30	B+ES		2.00	36.99		Firm consistency becoming stiff with depth dark brown mottled grey slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is sub angular to sub rounded fine to coarse of sandstone, siltstone, mudstone and quartz. Cobbles are sub angular sandstone. (PELAW CLAY MEMBER)	2 -
							End of Pit at 2.500m	3
								5 -

Remarks: No groundwater encountered.

Hand vanes not undertaken.



Trial Pit Log

TrialPit No TP28

Sheet 1 of 1

1:26

Project No. Co-ords: 433318E - 558636N Date Project Envision Giga Factory, Sunderland Name: S211001 02/11/2021 Level: 38.69 2.60 Scale Plant Dimensions JCB 3CX Used:

(m):

90

Client:	Wates Cons	truction N	orth East				Depth o		Logged SM
Water	Sample	s & In Situ T	esting	Depth	Level	Legend		Description	
ĭŞ ₹Ş	Depth	Туре	Results	(m)	(m)	2090		·	
	0.20 - 0.30	ES		0.40	38.29		TOPSOIL/REWORKED GRI slightly gravelly CLAY with n rootlets. Gravel is sub angul coarse of sandstone, mudst	nany fine to medium plan ar to sub rounded fine to one and quartz.	nt o
	0.70 - 0.80	ES		0.40	30.29		Firm consistency dark brown slightly gravelly CLAY with a sub angular to rounded fine siltstone, mudstone, coal an angular of sandstone and m (PELAW CLAY MEMBER)	low cobble content. Gra to coarse of sandstone, d quartz. Cobbles are su	avel is
	1.20 - 1.30	ES		1.00	37.69		Stiff consistency dark grey s CLAY with a low cobble con- sub rounded fine to coarse of mudstone and quartz. Cobb (PELAW CLAY MEMBER)	tent. Gravel is sub angul of sandstone, siltstone.	lar to
	2.40 - 2.50	B+ES		1.40	37.29		Firm consistency becoming mottled grey slightly sandy s low cobble content. Gravel is fine to coarse of sandstone, quartz. Cobbles are sub and (PELAW CLAY MEMBER)	slightly gravelly CLAY wi s sub angular to sub rou siltstone, mudstone and	th a inded
				3.15	35.54		End of P	it at 3.150m	4 -

Remarks: No groundwater encountered.

Hand vanes not undertaken.



Trial Pit Log

TrialPit No TP29

Sheet 1 of 1

Co-ords: 433297E - 558686N Project No. Date Project Envision Giga Factory, Sunderland Name: S211001 Level: 38.70 02/11/2021 2.65 Scale Plant Dimensions JCB 3CX Used: (m):

1:26 82 Depth Logged Client: Wates Construction North East 3.40 SM Samples & In Situ Testing Depth Level Legend Stratum Description (m) (m) Depth Type Results TOPSOIL/REWORKED GROUND: Dark brown sandy slightly gravelly CLAY with many fine to medium plant rootlets. Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone and quartz. 0.20 - 0.30 ES 0.40 38.30 Firm consistency dark brown mottled grey slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is sub angular to rounded fine to coarse of sandstone, siltstone, mudstone, coal and quartz. Cobbles are sub angular of sandstone and mudstone.
(PELAW CLAY MEMBER) 1.10 37.60 Firm consistency becoming stiff with depth dark brown mottled grey slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is sub angular to sub rounded fine to coarse of sandstone, siltstone, mudstone and 1.40 - 1.50 B+ES quartz. Cobbles are sub angular sandstone. (PELAW CLAY MEMBER) 1.80 36.90 Stiff consistency dark grey slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is sub angular to sub rounded fine to coarse of sandstone, siltstone, mudstone and quartz. Cobbles are sub angular sandstone. (PELAW CLAY MEMBER) 2.40 - 2.50 B+ES 2.60 36.10 Light brown slightly gravelly medium to coarse SAND. Gravel is angular to sub rounded fine to coarse of sandstone, mudstone, quartz and siltstone. (PELAW CLAY MEMBER) 3 3.20 - 3.30 B+ES 3.40 35.30 End of Pit at 3.400m 5

Remarks: No groundwater encountered.

Hand vanes not undertaken.



Trial Pit Log

Co-ords: 433271E - 558737N

TrialPit No **TP30**

Sheet 1 of 1 Date

Project No. Project Envision Giga Factory, Sunderland Name:

S211001 Level: 38.51

01/11/2021

End of Pit at 3.200m

2.70

Plant JCB 3CX Used:

Dimensions (m):

Scale 1:26

5

1.10 Depth Logged Client: Wates Construction North East 3.20 SM Samples & In Situ Testing Depth Level Legend Stratum Description (m) (m) Depth Type Results TOPSOIL/REWORKED GROUND: Dark brown sandy slightly gravelly CLAY with many fine to medium plant rootlets. Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone and quartz.

Firm consistency dark grey slightly sandy slightly gravelly 0.20 - 0.40 ES 0.20 38.31 Ξ: CLAY. Gravel is sub angular to sub rounded fine to coarse 0.40 38.11 of sandstone, mudstone and quartz.
(PELAW CLAY MEMBER)
Firm consistency dark brown mottled grey slightly sandy 0.60 HV 58kPa slightly gravelly medium strength CLAY with a low cobble content. Gravel is sub angular to rounded fine to coarse of 0.80 - 0.90 В sandstone, siltstone, mudstone, coal and quartz. Cobbles are sub angular of sandstone and mudstone. (PELAW CLAY MEMBER) 1.10 - 2.00ES 1.10 37.41 Stiff consistency dark grey slightly sandy slightly gravelly 1.20 77kPa high strength CLAY with a low cobble content. Gravel is sub angular to sub rounded fine to coarse of sandstone, siltstone, mudstone and quartz. Cobbles are sub angular (PELAW CLAY MEMBER) 2.00 36.51 2 Stiff consistency thinly laminated dark grey mottled brown slightly sandy slightly gravelly high strength CLAY. Gravel is sub angular to sub rounded fine to coarse of sandstone. 2.20 - 2.40 В (PELAW CLAY MEMBER) 2.40 HV 97kPa 3.00 - 3.20 ES 3

3.20

35.31

Remarks: No groundwater encountered.



Trial Pit Log

TP31 Sheet 1 of 1

TrialPit No

Project No. Co-ords: 433249E - 558788N Date Project Envision Giga Factory, Sunderland Name: S211001 27/10/2021 Level: 38.27 3.00 Scale Plant Dimensions JCB 3CX Used: (m): 1:26

Used: (m): 1:26

Client: Wates Construction North East Depth 3.50

Client: Wates Construction North East CG

	Comple	o 9 In Citu	Tooting				3.30
Water Strike	Depth	s & In Situ Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.10 - 0.30 0.60 - 0.80	ES ES		0.40	37.87		MADE GROUND: Dark brown sandy slightly gravelly CLAY with many fine to medium plant rootlets. Gravel is sub angular to sub rounded fine to coarse of sandstone, coal and brick. Firm consistency yellowish brown sandy slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse mudstone, sandstone and coal. (PELAW CLAY MEMBER)
	1.00 - 1.20	В		0.80	37.47		Stiff consistency dark grey slightly sandy slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse mudstone and sandstone. (PELAW CLAY MEMBER)
	1.60 - 1.80	ES					
	2.00 - 2.20	В					2
	2.60 - 2.80	ES					
	3.00 - 3.20	В					3
				3.50	34.77		End of Pit at 3.500m
							4
Dama	nate. No groundw						5

Remarks: No groundwater encountered.

Hand vanes not undertaken.

Stability:



Trial Pit Log

TrialPit No
TP32
Sheet 1 of 1

Project No. Co-ords: 433193E - 558922N Date Project Envision Giga Factory, Sunderland Name: S211001 27/10/2021 Level: 37.60 3.00 Scale Plant Dimensions JCB 3CX Used: (m): 1:26

Used: (m): 1:26

Client: Wates Construction North East Depth 3.50

Client: Wates Construction North East CG

							3.50	
Water Strike	Sample	s & In Situ	Testing	Depth	Level	Legend	Stratum Description	
š tī	Depth	Туре	Results	(m)	(m)		·	
	0.10 - 0.30	ES					MADE GROUND: Dark brown sandy slightly gravelly CLAY with many fine to medium plant rootlets. Gravel is sub angular to sub rounded fine to coarse of sandstone, coal and brick.	
	0.60 - 0.80	ES		0.40	37.20		Firm consistency yellowish brown sandy slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse mudstone, sandstone and coal.	
				0.80	36.80		(PELAW CLAY MEMBER) Stiff consistency dark grey slightly sandy slightly gravelly	
	1.00 - 1.20	В					CLAY. Gravel is sub angular to sub rounded fine to coarse mudstone and sandstone. (PELAW CLAY MEMBER)	1
	1.60 - 1.80	ES						
	2.00 - 2.20	В						2
	2.60 - 2.80	ES						
	3.00 - 3.20	В						3
				3.50	34.10			
				3.30	34.10		End of Pit at 3.500m	
								4

Remarks: No groundwater encountered.

Hand vanes not undertaken.

Stability:



Trial Pit Log

TP33 Sheet 1 of 1

TrialPit No

Project Envision Giga Factory, Sunderland Name:

Project No. Co-ords: 433270E - 558900N S211001 Level: 37.24

Date 27/10/2021

3.00

0.60

Plant JCB 3CX Used:

Dimensions (m): Depth

3.50

Scale 1:26 Logged

CG

Client: Wates Construction North East

Samples & In Situ Testing

Water Strike		s & In Situ		Depth	Level	Legend	Stratum Description	
≥ çç	Depth	Туре	Results	(m)	(m)	3	·	
	0.10 - 0.30	ES		0.40	00.04		MADE GROUND: Dark brown sandy slightly gravelly CLAY with many fine to medium plant rootlets. Gravel is sub angular to sub rounded fine to coarse of sandstone, coal and brick.	-
				0.40	36.84		Firm consistency yellowish brown sandy slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse	Ξ
	0.60 - 0.80	ES					CLAY. Gravel is sub angular to sub rounded fine to coarse mudstone, sandstone and coal. (PELAW CLAY MEMBER)	=
				0.80	36.44		Stiff consistency dark grey slightly sandy slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse	Ξ
	1.00 - 1.20	В					CLAY. Gravel is sub angular to sub rounded fine to coarse mudstone and sandstone. (PELAW CLAY MEMBER)	1 -
								=
								_
								=
	1.60 - 1.80	ES						=
								=
								=
	2.00 - 2.20	В						2 —
								_
								=
								Ξ
	2.60 - 2.80	ES						=
								=
								=
	3.00 - 3.20	В						3 —
								-
								=
								=
				3.50	33.74		End of Pit at 3.500m	=
								=
								_
								4 —
								* -
								Ξ
								-
								_
								Ξ
								=
								=
								5 —

Remarks: No groundwater encountered.

Hand vanes not undertaken.

Stability:



Trial Pit Log

TP34 Sheet 1 of 1

TrialPit No

 Project Name:
 Envision Giga Factory, Sunderland
 Project No. S211001
 Co-ords: 433301E - 558866N
 Date 27/10/2021

 Plant Used:
 JCB 3CX
 Dimensions (m): 1:26
 3.00
 Scale (1:26)

Used:	JCB 3CX						(m):		1:26	
Client:	Wates Cons	struction N	North East				(m): 99 Depth 0 3.50		Logge CG	ed
Water	Sample Depth	es & In Situ Type	Testing Results	Depth (m)	Level (m)	Legend		ım Description		
	0.10 - 0.30	ES					MADE GROUND: Dark b with many fine to medium angular to sub rounded fi and brick.	plant rootlets. Gravel is	s sub	
	0.40 - 0.60	ES		0.30	37.01		Stiff consistency reddish sandy slightly gravelly CL rounded fine to coarse m (PELAW CLAY MEMBER	udstone, sandstone and	d slightly ar to sub d coal.	
	0.80 - 1.00	В								1 -
	1.20 - 1.40	ES								
	1.80 - 2.00	В								2 -
	2.20 - 2.40	ES								
	2.80 - 3.00	В								3 ·
				3.50	33.81		End c	f Pit at 3.500m		
										4 -
										5

Remarks: No groundwater encountered.

Hand vanes not undertaken.

Stability: Pit w



Trial Pit Log

TrialPit No **TP35**

Project No. Project Envision Giga Factory, Sunderland Name:

Co-ords: 433322E - 558826N

Sheet 1 of 1 Date

S211001 27/10/2021 Level: 37.67 3.00 Scale Plant Dimensions JCB 3CX Used: (m): 1:26 0.60 Depth Logged Client: Wates Construction North East

Client:	Wates Const	truction in	iortn East			_	3.50 CG	
Water	Sample	s & In Situ	Testing	Depth Level	l amamal	Stratum Description		
Stri	Depth	Туре	Results	(m)	(m)	Legend	Stratum Description	
	0.10 - 0.30	ES		0.00	07.07		MADE GROUND: Dark brown sandy slightly gravelly CLAY with many fine to medium plant rootlets. Gravel is sub angular to sub rounded fine to coarse of sandstone, coal and brick.	
				0.30	37.37		Stiff consistency yellowish brown slightly sandy slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse mudstone, sandstone and coal. (PELAW CLAY MEMBER)	
	0.60 - 0.80	ES					(,	
	1.00 - 1.20	В		0.90	36.77		Stiff consistency reddish brown dark grey mottled slightly sandy slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse mudstone, sandstone and coal. (PELAW CLAY MEMBER)	1 -
	1.60 - 1.80	ES						
	2.00 - 2.20	В						2 -
	2.60 - 2.80	ES						
	3.00 - 3.20	В						3
				3.50	34.17		End of Pit at 3.500m	
								4
								5 -
\perp	ke. No aroundw	otor one	ountered		<u> </u>			_

Remarks: No groundwater encountered.

Hand vanes not undertaken.

Stability:



Trial Pit Log

TP36

TrialPit No

Sheet 1 of 1

Co-ords: 433344E - 558776N Project No. Date Project Envision Giga Factory, Sunderland Name: S211001 02/11/2021 Level: 38.14 Plant 2.60 Scale Dimensions JCB 3CX Used: (m): 1:26

Client: Wates Construction North East

(m):
Depth
2.30

1:26

Logged
SM

Client:	Wates Cons	struction N	lorth East				2.30 SM	•	
ter	Sample	es & In Situ	Testing	Depth	Level		Stratum Description		
Water	Depth	Туре	Results	(m)	(m)	Legend	Stratum Description		
	0.30 - 0.40	ES					TOPSOIL/REWORKED GROUND: Dark brown sandy slightly gravelly CLAY with many fine to medium plant rootlets. Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone and quartz.	- - - - -	
	0.80 - 0.90	ES		0.40	37.74		Firm consistency dark brown mottled grey slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is sub angular to rounded fine to coarse of sandstone, siltstone, mudstone, coal and quartz. Cobbles are sub angular of sandstone and mudstone. (PELAW CLAY MEMBER)	- - - - - - - -	
				1.10	37.04		Stiff consistency dark brown mottled grey slightly sandy	1 -	
							slightly gravelly CLAY with a low cobble content. Gravel is sub angular to sub rounded fine to coarse of sandstone, siltstone, mudstone and quartz. Cobbles are sub angular sandstone. (PELAW CLAY MEMBER)	-	
	1.60 - 1.70 1.60 - 1.80	ES B		1.80	36.34			- - - -	
	1.90 - 2.10	B+ES					Stiff consistency dark grey slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is sub angular to sub rounded fine to coarse of sandstone, siltstone, mudstone and quartz. Cobbles are sub angular sandstone. (PELAW CLAY MEMBER)	2 -	
								3	
								5 —	

Remarks: Surface water ingress.

Hand vanes not undertaken.

Stability: Small areas of instability



Trial Pit Log

TP37 Sheet 1 of 1

TrialPit No

 Project Name:
 Envision Giga Factory, Sunderland
 Project No. S211001
 Co-ords: 433371E - 558722N
 Date 02/11/2021

 Plant Lead:
 JCB 3CX
 Dimensions
 2.50
 Scale (m): 1400

Used: (m): 1:26

Client: Wates Construction North East Depth 3.10

1:26

SM

<u>_</u> 0	Samples	s & In Situ	ı Testing				3.10 JW	
Water Strike	Depth	Туре	Results	Depth (m)	Level (m)	Legend	Stratum Description	
	0.30 - 0.40	ES		0.40	37.99		TOPSOIL/REWORKED GROUND: Dark brown sandy slightly gravelly CLAY with many fine to medium plant rootlets. Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone and quartz. Firm consistency dark brown mottled grey slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is sub angular to rounded fine to coarse of sandstone,	
	1.20 - 1.30	B+ES		0.80	37.59		siltstone, mudstone, coal and quartz. Cobbles are sub angular of sandstone and mudstone. (PELAW CLAY MEMBER) Firm consistency becoming stiff with depth dark brown mottled grey slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is sub angular to sub rounded fine to coarse of sandstone, siltstone, mudstone and quartz. Cobbles are sub angular sandstone. (PELAW CLAY MEMBER)	
	2.00 - 2.10	B+ES		1.80	36.59		Stiff consistency dark grey slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is sub angular to sub rounded fine to coarse of sandstone, siltstone, mudstone and quartz. Cobbles are sub angular sandstone. (PELAW CLAY MEMBER)	
	2.60 - 2.70	B+ES		2.30	36.09		Firm consistency becoming stiff with depth dark brown mottled grey slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is sub angular to sub rounded fine to coarse of sandstone, siltstone, mudstone and quartz. Cobbles are sub angular sandstone. (PELAW CLAY MEMBER)	
				3.10	35.29		End of Pit at 3.100m	
							4	
	No groundw						5	-

Remarks: No groundwater encountered.

Hand vanes not undertaken.



Trial Pit Log

Depth

3.50

TP38 Sheet 1 of 1

Logged

SM

TrialPit No

Project No. Co-ords: 433395E - 558669N Date Project Envision Giga Factory, Sunderland Name: S211001 02/11/2021 Level: 38.36 Plant 2.50 Scale Dimensions JCB 3CX Used: (m): 1:26 1.05

Client: Wates Construction North East

							3.30 SIVI	
Water Strike	Sample	s & In Situ	Testing	Depth	Level	Legend	Stratum Description	
Wa	Depth	Туре	Results	(m)	(m)	Legend	·	
	0.30 - 0.40	ES		0.40	37.96		TOPSOIL/REWORKED GROUND: Dark brown sandy slightly gravelly CLAY with many fine to medium plant rootlets. Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone and quartz. Firm consistency dark brown mottled grey slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is sub angular to rounded fine to coarse of sandstone, siltstone, mudstone, coal and quartz. Cobbles are sub	
	0.80 - 0.90	B+ES					angular of sandstone and mudstone. (PELAW CLAY MEMBER)	1 —
	1.50 - 1.60	B+ES		1.10	37.26		Stiff consistency dark grey slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is sub angular to sub rounded fine to coarse of sandstone, siltstone, mudstone and quartz. Cobbles are sub angular sandstone. (PELAW CLAY MEMBER)	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	2.80 - 2.90	B+ES		2.00	36.36		Stiff consistency dark grey light brown slightly sandy slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone, siltstone and quartz. (PELAW CLAY MEMBER)	2
				3.50	34.86		End of Pit at 3.500m	4 —
	nrke · No aroundw							5

Remarks: No groundwater encountered.

Hand vanes not undertaken.



Trial Pit Log

TP39 Sheet 1 of 1

TrialPit No

 Project Name:
 Envision Giga Factory, Sunderland
 Project No. S211001
 Co-ords: 433464E - 558650N
 Date 02/11/2021

 Plant
 JCR 2CY
 Dimensions
 2.80
 Scale

Plant Used: JCB 3CX
Used: Dimensions (m): 1:26
Client: Wates Construction North East

Dimensions (m): 1:26
Depth Construction North East

Client:	Wates Const	truction N	orth East				Depth — Logged SM
ke ke	Sample	s & In Situ T	esting	Depth	Level	Lamond	
Water	Depth	Туре	Results	(m)	(m)	Legend	Stratum Description
	0.10 - 0.30	ES		0.40	27.00		TOPSOIL/REWORKED GROUND: Dark brown sandy slightly gravelly CLAY with many fine to medium plant rootlets. Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone and quartz.
	0.50 - 0.80	B+ES		0.40	37.90		Firm consistency dark brown mottled grey slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is sub angular to rounded fine to coarse of sandstone, siltstone, mudstone, coal and quartz. Cobbles are sub angular of sandstone and mudstone. (PELAW CLAY MEMBER)
	1.00 - 1.30	B+ES		0.90	37.40		Stiff consistency dark grey slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is sub angular to sub rounded fine to coarse of sandstone, siltstone, mudstone and quartz. Cobbles are sub angular sandstone. (PELAW CLAY MEMBER)
	1.70 - 1.80	B+ES		2.00	26.30		
	2.40 - 2.50	B+ES		2.00	36.30		Firm consistency becoming stiff with depth dark brown mottled grey slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is sub angular to sub rounded fine to coarse of sandstone, siltstone, mudstone and quartz. Cobbles are sub angular sandstone. (PELAW CLAY MEMBER)
				3.10	35.20		End of Pit at 3.100m
							4
							5

Remarks: No groundwater encountered.

Hand vanes not undertaken.



Trial Pit Log

TrialPit No TP40

Sheet 1 of 1

 Project Name:
 Envision Giga Factory, Sunderland
 Project No. S211001
 Co-ords: 433501E - 558688N
 Date 02/11/2021

 Plant
 JCR 3CY
 Dimensions
 2.85
 Scale

Plant Used: JCB 3CX
Used: Used: Dimensions (m): 1:26

Client: Wates Construction North East Depth 3.25

Dimensions (m): 1:26

Logged SM

	_	:					3.20 OW
že še	Sample	s & In Situ	Testing	Depth	Level		Otroture December 6
Water Strike	Depth	Туре	Results	(m)	(m)	Legend	Stratum Description
	0.10 - 0.30	ES					TOPSOIL/REWORKED GROUND: Dark brown sandy slightly gravelly CLAY with many fine to medium plant rootlets. Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone and quartz.
	0.80 - 1.00	ES		0.40	37.42		Firm consistency dark brown mottled grey slightly sandy slightly gravelly medium strength CLAY with a low cobble content. Gravel is sub angular to rounded fine to coarse of sandstone, siltstone, mudstone, coal and quartz. Cobbles are sub angular of sandstone and mudstone. (PELAW CLAY MEMBER)
	1.00	HV	74kPa				1
	1.50	HV	90kPa	1.30	36.52		Firm consistency becoming stiff with depth dark brown mottled grey slightly sandy slightly gravelly high strength CLAY with a low cobble content. Gravel is sub angular to sub rounded fine to coarse of sandstone, siltstone, mudstone and quartz. Cobbles are sub angular sandstone. (PELAW CLAY MEMBER)
	1.80 - 2.00	B+ES					2
	2.50	HV	117kPa				
	2.80 - 3.00	B+ES					3
				3.20 3.25	34.62 34.56		Stiff consistency dark grey mottled brown slightly sandy slightly gravelly CLAY with occasional clayey sand inclusions. Gravel is sub angular to sub rounded fine to coarse of mudstone, sandstone, quartz and siltstone. (PELAW CLAY MEMBER) End of Pit at 3.250m
							4
	Mo groundw		td				5

Remarks: No groundwater encountered.



Trial Pit Log

TP41 Sheet 1 of 1

TrialPit No

Co-ords: 433465E - 558702N Project No. Date Project Envision Giga Factory, Sunderland Name: S211001 02/11/2021 38.03 2.60 Scale Plant Dimensions JCB 3CX Used: (m): 1:26 10

Client	Wates Cons	truction l	North East			Depth 2.20 Logged SM		
ke ke	Sample	s & In Situ	Testing	Depth	Level	1	·	
Water	Depth	Туре	Results	(m)	(m)	Legend	Stratum Description	
	0.10 - 0.30	ES		0.40	37.63		TOPSOIL/REWORKED GROUND: Dark brown sandy slightly gravelly CLAY with many fine to medium plant rootlets. Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone and quartz. Firm consistency dark brown mottled grey slightly sandy	- - - - -
	0.00, 4.00	D.F.C					slightly gravelly CLAY with a low cobble content. Gravel is sub angular to rounded fine to coarse of sandstone, siltstone, mudstone, coal and quartz. Cobbles are sub angular of sandstone and mudstone. (PELAW CLAY MEMBER)	
	0.90 - 1.00	B+ES		1.20	36.83		Firm consistency becoming stiff with depth dark brown	1 -
	4.00, 4.00	D.F.C					mottled grey slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is sub angular to sub rounded fine to coarse of sandstone, siltstone, mudstone and quartz. Cobbles are sub angular sandstone. (PELAW CLAY MEMBER)	- - - - - - - -
	1.80 - 1.90	B+ES		1.90	36.13		Stiff consistency dark grey slightly sandy gravelly CLAY with a low to medium cobble content and low boulder content. Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone, siltstone and quartz. Cobbles are sub angular sandstone. Boulders are sub angular sandstone.	2 —
	2.40 - 2.50	B+ES		2.50	35.53		(PELAW CLAY MEMBER) Stiff consistency dark grey slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is sub angular to sub rounded fine to coarse of sandstone, siltstone, mudstone and quartz. Cobbles are sub angular sandstone. (PELAW CLAY MEMBER)	3 —
				3.20	34.83	en e	End of Pit at 3.200m	4
								5 —

Remarks: No groundwater encountered.

Hand vanes not undertaken.

Pit walls open and stable Stability:



Trial Pit Log

TrialPit No TP42

Sheet 1 of 1

5

Co-ords: 433443E - 558754N Project No. Date Project Envision Giga Factory, Sunderland Name: S211001 Level: 37.99 02/11/2021 2.40 Scale Plant Dimensions JCB 3CX Used: (m): 1:26

8 Depth Logged Client: Wates Construction North East 2.90 SM Samples & In Situ Testing Depth Level Legend Stratum Description (m) (m) Depth Type Results TOPSOIL/REWORKED GROUND: Dark brown sandy 0.10 - 0.30FS slightly gravelly CLAY with many fine to medium plant rootlets. Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone and quartz. 0.40 37.59 Firm consistency dark brown mottled grey slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is sub angular to rounded fine to coarse of sandstone, 0.60 - 0.70 B+ES siltstone, mudstone, coal and quartz. Cobbles are sub angular of sandstone and mudstone. (PELAW CLAY MEMBER) 0.80 37.19 Firm consistency dark brown mottled grey sandy slightly gravelly CLAY. Gravel is angular to sub rounded fine to coarse of sandstone, siltstone and mudstone.
(PELAW CLAY MEMBER) 1.40 36.59 Stiff consistency light brown mottled grey slightly silty slightly sandy slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone and 1.60 - 1.70 ES quartz. (PELAW CLAY MEMBER) 1.60 - 1.80 <u>><</u> 2.00 35.99 2 Stiff consistency dark grey slightly sandy slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse of sandstone, siltstone, mudstone and quartz, (PELAW CLAY MEMBER) 2.40 - 2.50 В 2.60 - 2.70ES 2.90 35.09 End of Pit at 2.900m 3

Remarks: No groundwater encountered.

Hand vanes not undertaken.



Trial Pit Log

TP43

TrialPit No

Sheet 1 of 1

 Project Name:
 Envision Giga Factory, Sunderland
 Project No. S211001
 Co-ords: 433471E - 558763N
 Date 02/11/2021

 Plant
 JOB 2004
 Dimensions
 2.65
 Scale

 Plant Used:
 JCB 3CX

 Client:
 Wates Construction North East

 Dimensions (m):
 2.65

 Scale 1:26

 Depth 3.20

 Logged SM

Seg	-				1		_	3.20 SIVI	
1.80 36.93 SRIF consistency dark grey slightly sandy Slightly gravely CLAY with a size cobble content. Covade is all angular to satisfactions and quartz. 1.80 36.93 SRIF consistency dark brown motited grey slightly sandy slightly gravely CLAY with a live cobble content. Covade is slightly gravely CLAY with a live cobble are sub-angular of sandstone and mudstone. 1.80 SRIF consistency dark grey slightly sandy slightly gravely CLAY with a live cobble content. Covade is slightly gravely CLAY with a live cobble content. Covade is sub-angular of sandstone and mudstone and quartz. Cobbles are sub-angular sandstone. 1.80 SRIF consistency dark grey slightly sandy slightly gravely CLAY with a live cobble content. Crisee is sub-angular to mudstone and quartz. Cobbles are sub-angular sandstone. 1.80 SRIF consistency dark grey slightly sandy slightly gravely CLAY with a live cobble content. Crisee is sub-angular to mudstone and quartz. Cobbles are sub-angular sandstone. 1.80 SRIF consistency dark grey slightly sandy slightly gravely CLAY with a live cobble content. Crisee is sub-angular sandstone. 1.80 SRIF consistency dark grey slightly sandy slightly gravely CLAY with a live cobble content. Crisee is sub-angular sandstone. 1.80 SRIF consistency dark grey slightly sandy slightly gravely CLAY with a live cobble content. Crisee is sub-angular sandstone. 1.80 SRIF consistency dark grey slightly sandy slightly gravely CLAY with a live cobble content. Crisee is sub-angular sandstone. 1.80 SRIF consistency dark grey slightly sandy slightly gravely CLAY with a live cobble content. Crisee is sub-angular sandstone. 1.80 SRIF consistency dark grey slightly sandy slightly gravely CLAY with a live cobble content. Crisee is sub-angular sandstone. 1.80 SRIF consistency dark grey slightly sandy slightly gravely CLAY with a live cobble content. Crisee is sub-angular sandstone. 1.80 SRIF consistency dark grey slightly sandy slightly gravely CLAY with a live cobble content. Crisee is sub-angular sandstone. 1.80 SRIF content da	e e	Sample	es & In Situ Testing		Depth Level				
slightly gravely CLAY with many fee to medium plant or considerations and quart. 0.30 - 0.40 ES 0.50 - 0.60 ES 0.70 36.93 Test and the plant of the control of the contr	Wate	Depth	Туре	Results			Legend	Stratum Description	
1.60 38.03 1.60 3		0.30 - 0.40	ES					slightly gravelly CLAY with many fine to medium plant rootlets. Gravel is sub angular to sub rounded fine to	- - - - - -
salistone, mudatone, coal and quartz. Cobbles are sub angular of auxidence and mudately CLAY with a low cobble content. Gravel is sub angular to sub rounded fine to coarse of sandstone, sillayed (CLAY with a low cobble content. Gravel is sub angular sandstone. (PELAW CLAY MEMBER) 1.60 36.03 Stiff consistency dark grey slightly sandy slightly gravely CLAY with a low cobble content. Gravel is sub angular to sub rounded fine to coarse of sandstone, sillatione, mudatone and quartz. Cobbles are sub angular sandstone. (PELAW CLAY MEMBER) 2.50 - 2.60 BHES 8 BHES 1.60 36.43 Firm consistency becoming stiff with depth dark brown motted grey slightly sandy slightly gravely CLAY with a low cobble content. Gravel is sub angular to sub rounded fine to coarse of sandstone, sillatione, mudatone and quartz. Cobbles are sub angular sandstone. (PELAW CLAY MEMBER) 2.50 - 2.60 BHES 8 BHES Firm consistency becoming stiff with depth dark brown motted grey slightly sandy slightly gravely CLAY with a low cobble content. Gravel is sub angular to sub rounded fine to coarse of sandstone, sillatione, mudatone and quartz. Cobbles are sub angular sandstone. (PELAW CLAY MEMBER) 3.30 34.43 End of Pit at 3.200m		0.50 - 0.60	ES		0.40	37.23		slightly gravelly CLAY with a low cobble content. Gravel is	=
mottled grey slightly sandy slightly gravelly CLAY with a low cobbic content. Grave langular sondstone and quartz. Cobbics are sub angular sondstone. Stiff consistency dark grey slightly sandy slightly gravelly CLAY with a low cobbic content. Gravel is sub angular to sub rounded fine to coarse of sandstone, siltstone, mutostone and quartz. Cobbics are sub angular sandstone. Part Part					0.70	36.93		siltstone, mudstone, coal and quartz. Cobbles are sub angular of sandstone and mudstone. (PELAW CLAY MEMBER)	=
3.6.03 Stiff consistency dark grey slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is sub angular to sub rounded fine to coarse of sandstone, sillstone, mudstone and quart. Cobbles are sub angular sandstone. (PELAW CLAY MEMBER) 2.50 - 2.60 B+ES Tim consistency becoming stiff with depth dark brown mottled grey slightly gravelly CLAY with a low cobble content. Gravel is sub angular to sub rounded quart. Cobbles are sub angular sub angular to sub rounded quart. Cobbles are sub angular to sub rounde		0.90 - 1.10	B+ES					mottled grey slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is sub angular to sub rounded fine to coarse of sandstone, siltstone, mudstone and quartz. Cobbles are sub angular sandstone.	1 —
Stiff Consistency dark greys signify sandy signify gravely CAZ with a low obtained fine to coarse of sandstone, silistone, mustatione and quartz. Cobbles are sub angular sandstone. (PELAW CLAY MEMBER) 2.50 - 2.60 B+ES 2.50 - 2.60 B+ES 2.50 - 2.60 B+ES 3.20 3.4.43 Firm consistency becoming sliff with depth dark brown motited grey slightly sandy slightly gravely CLAY with a body obtained of the cobble senters. Grave it is sub angular to subtract the cobble senters. Grave it is sub angular sandstone and quartz. Cobbles are sub angular sandstone. (PELAW CLAY MEMBER) 3.4 3.5 End of Pit at 3.200m								(PELAW CLAT MEMBER)	- - - - -
2.50 - 2.60 B+ES					1.60	36.03		CLAY with a low cobble content. Gravel is sub angular to sub rounded fine to coarse of sandstone, siltstone, mudstone and quartz. Cobbles are sub angular sandstone.	2 —
2.50 - 2.60 B+ES 3.20 34.43 End of Pit at 3.200m					2.20	35.43		mottled grey slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is sub angular to sub rounded	- - - - - -
4 - 5 -		2.50 - 2.60	B+ES					quartz. Cobbles are sub angular sandstone.	3 —
5 -					3.20	34.43		End of Pit at 3.200m	=
5 -									
									4
									-
									5 —

Remarks: No groundwater encountered.

Hand vanes not undertaken.



Trial Pit Log

TP44 Sheet 1 of 1

TrialPit No

Project Name: Envision Giga Factory, Sunderland S211001 Project No. Co-ords: 433417E - 558808N Level: 37.68

3417E - 558808N Date .68 02/11/2021

Plant Used: JCB 3CX

Client: Wates Construction North East

Dimensions (m): 1:26

Depth 2.70

Depth 2.70

Depth 2.70

Cilent	. Wates Cons	il dollor i	Voitii Last				2.70 SM
e e	Sample	es & In Situ	Testing	Depth	Level		
Water Strike	Depth	Туре	Results	(m)	(m)	Legend	Stratum Description
	0.30 - 0.40	ES		0.40	37.28		TOPSOIL/REWORKED GROUND: Dark brown sandy slightly gravelly CLAY with many fine to medium plant rootlets. Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone and quartz. Firm consistency dark brown mottled grey slightly sandy
	0.60 - 0.70	ES		0.80	36.88		slightly gravelly CLAY with a low cobble content. Gravel is sub angular to rounded fine to coarse of sandstone, siltstone, mudstone, coal and quartz. Cobbles are sub angular of sandstone and mudstone. (PELAW CLAY MEMBER) Stiff consistency dark grey slightly sandy slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse
	1.20 - 1.40	B+ES					of sandstone, mudstone and siltstone. 1 - (PELAW CLAY MEMBER)
				1.50	36.18		Firm consistency becoming stiff with depth dark brown mottled grey slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is sub angular to sub rounded fine to coarse of sandstone, siltstone, mudstone and quartz. Cobbles are sub angular sandstone. (PELAW CLAY MEMBER)
	2.10 - 2.20 2.10 - 2.30	B ES					
	2.50 - 2.60	В		2.70	34.98		End of Pit at 2.700m
							3 -
							4 -
	eke. No groundu						5 -

Remarks: No groundwater encountered.

Hand vanes not undertaken.



Trial Pit Log

TP45

TrialPit No

Sheet 1 of 1

 Project Name:
 Envision Giga Factory, Sunderland
 Project No.
 Co-ords: 433442E - 558819N
 Date 02/11/2021

 Plant
 ICR 3CY
 Dimensions
 2.70
 Scale

Plant Used: JCB 3CX Dimensions (m): 1:26

Client: Wates Construction North East Depth 3.30

Dimensions (m): 1:26

Logged SM

	<u> </u>	- 0 1- 0''	T4:				3.30 GIVI	
Water Strike	Sample	s & In Situ	resting	Depth	Level	Legend	Stratum Description	
₩ Str	Depth	Туре	Results	(m)	(m)	Logena	Oraciani Description	
							TOPSOIL/REWORKED GROUND: Dark brown sandy slightly gravelly CLAY with many fine to medium plant rootlets. Gravel is sub angular to sub rounded fine to	- - -
	0.30 - 0.40	ES		0.40	37.16		coarse of sandstone, mudstone and quartz.	-
	0.60 - 0.70	ES					Firm consistency dark brown mottled grey slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is sub angular to rounded fine to coarse of sandstone, siltstone, mudstone, coal and quartz. Cobbles are sub angular of sandstone and mudstone.	-
				0.80	36.76		(PELAW CLAY MEMBER) Firm consistency becoming stiff with depth dark brown mottled grey slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is sub angular to sub rounded fine to coarse of sandstone, siltstone, mudstone and	1 —
	1.50 - 1.60	B+ES					quartz. Cobbles are sub angular sandstone. (PELAW CLAY MEMBER)	-
				1.80	35.76		Stiff consistency dark grey slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is sub angular to	- - - -
	2.10 - 2.30	B+ES					sub rounded fine to coarse of sandstone, siltstone, mudstone and quartz. Cobbles are sub angular sandstone. (PELAW CLAY MEMBER)	2
	3.00 - 3.10	B+ES		2.70	34.86		Stiff consistency brown slightly sandy slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse of sandstone. (PELAW CLAY MEMBER)	3 —
	3.00 - 3.10	B.E0		3.30	34.26		F + (P) + 0.000	3 - - - -
				5.50	34.20		End of Pit at 3.300m	4
	wko. No groundw							5 —

Remarks: No groundwater encountered.

Hand vanes not undertaken.



Trial Pit Log

TP46 Sheet 1 of 1

TrialPit No

Project No. Co-ords: 433394E - 558861N Date Project Envision Giga Factory, Sunderland Name: S211001 27/10/2021 Level: 37.52 3.00 Scale Plant Dimensions JCB 3CX Used: (m): 1:26 0.60 Depth Logged

Client:	Wates Cons	truction N	lorth East				Depth 3.50	o		Logge CG	ed
ke ke	Sample	s & In Situ	Testing	Depth	Level	Ι	0.00	01 1 5			
Water	Depth	Туре	Results	(m)	(m)	Legend		Stratum Descri			
	0.10 - 0.30	ES					MADE GROUN with many fine angular to sub and brick.	ID: Dark brown san to medium plant roo rounded fine to coa	dy slightly grav otlets. Gravel is rse of sandstor	elly CLAY sub ie, coal	
	0.60 - 0.80	ES		0.50	37.02		Stiff consistenc CLAY. Gravel is mudstone and (PELAW CLAY	y dark grey slightly s sub angular to sub sandstone. MEMBER)	sandy slightly o rounded fine t	gravelly o coarse	
	1.00 - 1.20	В									1
	1.60 - 1.80	ES									
	2.00 - 2.20	В									2
	2.60 - 2.80	ES									
	3.00 - 3.20	В									3
				3.50	34.02			End of Pit at 3.5	500m		
											4
											5

Remarks: No groundwater encountered.

Hand vanes not undertaken.

Stability:



Trial Pit Log

TP47

TrialPit No

Sheet 1 of 1 Project No. Co-ords: 433358E - 558894N Date Project Envision Giga Factory, Sunderland Name: S211001 27/10/2021 Level: 36.98 Scale Plant Dimensions (m): 3.00 JCB 3CX Used: 1.26

Jsed:	JCB 3CX						(m):	0.60		1:26	
Client:	Wates Cons	struction N	orth East				Depth 3.50	0.		Logg CG	ed i
Water	Sample	es & In Situ T	esting	Depth	Level	Logand		Stratum Doo	arintian		
Stri	Depth	Туре	Results	(m)	(m) Legend		Stratum Description				
	0.10 - 0.30	ES					MADE GROUND with many fine to angular to sub ro and brick.	medium plant	rootlets. Gravel	is sub	
	0.60 - 0.80	В		0.40	36.58		Firm consistency CLAY. Gravel is s mudstone, sands (PELAW CLAY N	stone and coal.	vn sandy slightly sub rounded fine	gravelly to coarse	
	0.00 4.00	F0		0.00	00.40		5				
	0.80 - 1.00	ES		0.80	36.18		Stiff consistency CLAY. Gravel is s mudstone and sa (PELAW CLAY N	sub angular to s andstone.	tly sandy slightly sub rounded fine	/ gravelly e to coarse	1
	1.60 - 1.80	В									
	1.80 - 2.00	ES									2
	2.60 - 2.80	В									
	2.80 - 3.00	ES		2.50	22.40						:
				3.50	33.48			End of Pit at	3.500m		
											4

Remarks: No groundwater encountered.

Hand vanes not undertaken.

Stability:



Trial Pit Log

TP48 Sheet 1 of 1

TrialPit No

 Project Name:
 Envision Giga Factory, Sunderland
 Project No.
 Co-ords: 433364E - 558972N
 Date 27/10/2021

| Plant | JCB 3CX | Dimensions | 3.00 | Scale | Used: | Wates Construction North East | Depth | 3.50 | CG | CG | CG | CF | Construction | Client: | S211001 | Level: | 36.60 | | 2/110/2021 | | 2/110/2021 | | Cevel: | 36.60 | | 2/110/2021 | | Cevel: | 36.60 | | 2/110/2021 | | Cevel: | 36.60 | Cevel: |

							3.50 CG	
ē	Sample	s & In Situ T	esting	Depth	Level	1	· · ·	
Strike	Depth	Туре	Results	(m)	(m)	Legend	Stratum Description	
-							MADE GROUND: Dark brown sandy slightly gravelly CLAY	Т
	0.10 - 0.30	ES					with many fine to medium plant rootlets. Gravel is sub	
							angular to sub rounded fine to coarse of sandstone, coal	
							and brick.	
				0.40	36.20			
	0.50 - 0.70	В		00	00.20		Firm consistency yellowish brown sandy slightly gravelly slightly peaty CLAY. Gravel is sub angular to sub rounded	
	0.50 - 0.70						fine to coarse sandstone, mudstone and coal.	
							(PELAW CLAY MEMBER)	
				0.70	35.90		Stiff consistency dark grey slightly sandy slightly gravelly	
	0.80 - 1.00	ES					CLAY. Gravel is sub angular to sub rounded fine to coarse mudstone and sandstone.	
							(PELAW CLAY MEMBER)	
							(i EDW ODW MEMBER)	
	1.50 - 1.80	В						
	1.00 - 1.00							
	1.00 0.00							
	1.80 - 2.00	ES						
	2.00 - 2.20	В						
	2.50 - 2.80	В						
	2.80 - 3.00	ES						
				2.50	20.40			
				3.50	33.10		End of Pit at 3.500m	
- 1								

Remarks: No groundwater encountered.

Hand vanes not undertaken.

Stability: Pit wall stable



Solmek Ltd 12-16 Yarm Road Stockton on Tees TS18 3NA Tel: 01642 607083

Trial Pit Log

TrialPit No TP49 Sheet 1 of 1

Email: info@solmek.com Project No. Co-ords: 433345E - 559003N Date Project Envision Giga Factory, Sunderland Name: S211001 27/10/2021 Level: 36.29 3.00 Scale Plant Dimensions JCB 3CX Used: (m): 1:26

Used: (m): 26
Client: Wates Construction North East Depth 3.50
Logged CG

Ciletit	. Wates Cons	ti dottori i	North Last		1		3.50 CG
ter ke	Sample	es & In Situ	Testing	Depth	Level		Objectives Description
Water Strike	Depth	Туре	Results	(m)	(m)	Legend	Stratum Description
	0.20 - 0.40	ES					MADE GROUND: Dark brown sandy slightly gravelly CLAY with many fine to medium plant rootlets. Gravel is sub angular to sub rounded fine to coarse of sandstone, coal and brick.
	0.80 - 1.00	ES		0.60	35.69		Firm consistency yellowish brown sandy slightly gravelly peaty CLAY. Gravel is sub angular to sub rounded fine to coarse sandstone, mudstone and coal. (PELAW CLAY MEMBER)
	1.00 - 1.20	В		1.00	35.29		Stiff consistency dark grey slightly sandy slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse mudstone and sandstone. (PELAW CLAY MEMBER)
	1.80 - 2.00	ES					
	2.00 - 2.20	В					2 -
	2.80 - 3.00 3.00 - 3.20	ES B					3 -
				3.50	32.79		End of Pit at 3.500m
	when No grounds						5 -

Remarks: No groundwater encountered.

Hand vanes not undertaken.

Pit walls stable

Stability:



Trial Pit Log

TrialPit No
TP50
Sheet 1 of 1

 Project Name:
 Envision Giga Factory, Sunderland
 Project No. S211001
 Co-ords: 433406E - 559032N
 Date 26/10/2021

 Plant Used:
 JCB 3CX
 Dimensions (m): Giga Factory, Sunderland (m): Dimensions (

Plant Used:	JCB 3CX						Dimensions (m):	3.00	1:26	
Client:	Wates Cons	struction N	orth East				Depth 3.50	0.60	Logge	ed
Water Strike		les & In Situ		Depth (m)	Level (m)	Legend		ratum Description		
> 00	Depth 0.10 - 0.30	Type ES	Results	(,	(,		MADE GROUND: Dat	rk brown sandy slightly gra	velly CLAY	Τ
	0.10 0.00						angular to sub rounde and brick.	lium plant rootlets. Gravel i d fine to coarse of sandsto	ne, coal	
				0.40	35.75		Stiff consistency dark CLAY. Gravel is sub a mudstone and sandst	grey slightly sandy slightly ngular to sub rounded fine	gravelly to coarse	
	0.60 - 0.80	ES					(PELAW CLAY MEME	BER)		
	1.00 - 1.20	В								1 -
	1.60 - 1.80	ES								
	2.00 - 2.20	В								2 -
	2.00 - 2.20									
	2.60 - 2.80	ES								
							2 - - - - -			3 -
							3 - - - - -			
				3.50	32.65		Eı	nd of Pit at 3.500m		
										4
										5 -

Remarks: No groundwater encountered.

Hand vanes not undertaken.

Stability:



Trial Pit Log

TP51 Sheet 1 of 1

TrialPit No

Project No. Co-ords: 433365E - 559095N Date Project Envision Giga Factory, Sunderland Name: S211001 26/10/2021 Level: 35.47 3.00 Scale Plant Dimensions JCB 3CX Used: (m): 1:26

Steed: (m): 09 1:26

Client: Wates Construction North East Depth 3.50

CG

Client:	Wates Cons	truction No	orth East				Depth 3.50	0		Logged CG
ke ke	Sample	es & In Situ T	esting	Depth L	Level	Level	0.00			
Water	Depth	Туре	Results	(m)	(m)	Legend		Stratum Descrip		
	0.10 - 0.30	ES					MADE GROUN with many fine angular to sub and brick.	ID: Dark brown sand to medium plant root rounded fine to coars	y slightly gravell lets. Gravel is su se of sandstone,	y CLAY ub coal
	0.40 - 0.60	ES		0.40	35.07		Stiff consistenc CLAY. Gravel is mudstone and (PELAW CLAY	y dark grey slightly s s sub angular to sub sandstone. MEMBER)	andy slightly gra rounded fine to o	velly coarse
	1.00 - 1.20	В								1
	1.40 - 1.60	ES								
	2.00 - 2.20	В								2
	2.40 - 2.60	ES								
	3.00 - 3.20	В								3
				3.50	31.97			End of Pit at 3.50	00m	
										4
										5
	. No aroundw									

Remarks: No groundwater encountered.

Hand vanes not undertaken.

Stability:



Project

Name:

Solmek Ltd 12-16 Yarm Road Stockton on Tees TS18 3NA Tel: 01642 607083 Email: info@solmek.com

Trial Pit Log

TP52

TrialPit No

| Sheet 1 of 1 | Project No. | Co-ords: 433367E - 559033N | Date

Envision Giga Factory, Sunderland
S211001
Level: 35.85
26/10/2021

Plant Used: JCB 3CX Dimensions 3.00 Scale (m): Depth Depth Color (m): Depth Color (m): Logged Color (m): Color

Client:	Wates Cons	struction N	orth East				3.50 CG
ke	Sample	es & In Situ T	Testing	Depth	Level		
Water	Depth	Туре	Results	(m)	(m)	Legend	Stratum Description
	0.10 - 0.30	ES		0.40	35.45		MADE GROUND: Dark brown sandy slightly gravelly CLAY with many fine to medium plant rootlets. Gravel is sub angular to sub rounded fine to coarse of sandstone, coal and brick.
	0.60 - 0.80	ES			33.13		Stiff consistency dark grey slightly sandy slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse mudstone and sandstone. (PELAW CLAY MEMBER)
	1.00 - 1.20	В					1
	1.60 - 1.80	ES					
	2.00 - 2.20	В					2
	2.60 - 2.80	ES					
	3.00 - 3.20	В					3
				3.50	32.35		End of Pit at 3.500m
							4
							5

Remarks: No groundwater encountered.

Hand vanes not undertaken.

Stability:



Plate 1: TP01 Faces



Plate 2: TP01 Spoil

Title	Date
Trial Pit Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	1
Client	
Wates Construction North East Ltd	





Plate 3: TP02 Faces



Plate 4: TP02 Spoil

Title	Date
Trial Pit Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	2
Client	
Wates Construction North East Ltd	





Plate 5: TP03 Faces



Plate 6: TP03 Spoil

Title	Date
Trial Pit Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	3
Client	
Wates Construction North East Ltd	
	_





Plate 7: TP04 Faces



Plate 8: TP04 Spoil

Title	Date
Trial Pit Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	4
Client	
Wates Construction North East Ltd	

Solmek Ltd. 12 Yarm Road

Stockton-on-Tees TS18 3NA





Plate 9: TP05 Faces



Plate 10: TP05 Spoil

Title	Date
Trial Pit Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	5
Client	
Wates Construction North East Ltd	





Plate 11: TP06 Faces



Plate 12: TP06 Spoil

Title	Date
Trial Pit Photographs	January 2022
	-
Project	Plate No.
Envision Giga Factory, Sunderland	6
Client	
Wates Construction North East Ltd	
1	·





Plate 13: TP07 Faces



Plate 14: TP07 Spoil

Title	Date
Trial Pit Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	7
Client	
Wates Construction North East Ltd	







Plate 16: TP08 Spoil

Title	Date
Trial Pit Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	8
Client	
Wates Construction North East Ltd	
	·





Plate 17: TP09 Faces



Plate 18: TP09 Spoil

Title	Date
Trial Pit Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	9
Client	
Wates Construction North East Ltd	





Plate 19: TP10 Faces



Plate 20: TP10 Spoil

Title	Date
Trial Pit Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	10
Client	
Wates Construction North East Ltd	





Plate 21: TP11 Pre Dig (Faces & Spoil Photographs Unavailable)



Plate 22: TP12 Faces

Title	Date
Trial Pit Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	11
Client	
Wates Construction North East Ltd	





Plate 23: TP12 Spoil



Plate 24: TP13 Faces

Title	Date
Trial Pit Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	12
Client	
Wates Construction North East Ltd	





Plate 25: TP13 Spoil



Plate 26: TP14 Faces

Title	Date
Trial Pit Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	13
Client	
Wates Construction North East Ltd	





Plate 27: TP14 Spoil



Plate 28: TP15 Faces

Title	Date
Trial Pit Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	14
Client	
Wates Construction North East Ltd	





Plate 29: TP15 Spoil



Plate 30: TP16 Faces

T:41a	Data
Title	Date
Trial Pit Photographs	January 2022
	,
Project	Plate No.
Envision Giga Factory, Sunderland	15
Client	
Wates Construction North East Ltd	





Plate 31: TP16 Spoil



Plate 32: TP17 Faces

Title	Date
Trial Pit Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	16
Client	
Wates Construction North East Ltd	
Wates Constitution North Last Liu	





Plate 33: TP17 Spoil



Plate 34: TP18 Faces

January 2022	
January 2022	
Plate No.	
17	
	Plate No.

Solmek Ltd. 12 Yarm Road

Stockton-on-Tees TS18 3NA





Plate 35: TP18 Spoil



Plate 36: TP19 Faces

Title	Date
Trial Pit Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	18
Envision eiger actory, canachana	
Client	
Wates Construction North East Ltd	





Plate 37: TP19 Spoil



Plate 38: TP20 Faces

Title	Date
Trial Pit Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	19
Client	
Wates Construction North East Ltd	





Plate 39: TP20 Spoil



Plate 40: TP21 Faces

Title	Date
Trial Pit Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	20
Client	
Wates Construction North East Ltd	
1	





Plate 41: TP21 Spoil



Plate 42: TP22 Faces

Title	Date
Trial Pit Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	21
Client	
Wates Construction North East Ltd	





Plate 43: TP22 Spoil



Plate 44: TP23 Faces

Title	Date
Trial Pit Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	22
Client	
Wates Construction North East Ltd	





Plate 45: TP23 Spoil



Plate 46: TP24 Faces

Title	Date
Trial Pit Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	23
Client	
Wates Construction North East Ltd	
· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·





Plate 47: TP24 Spoil



Plate 48: TP25 Faces

Title	Date
Trial Pit Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	24
Client	
Wates Construction North East Ltd	





Plate 49: TP25 Spoil



Plate 50: TP26 Faces

Title	Date
Trial Pit Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	25
Client	
Wates Construction North East Ltd	





Plate 51: TP26 Spoil



Plate 52: TP27 Faces

Title	Date
Trial Pit Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	26
Client	
Wates Construction North East Ltd	
· · · · · · · · · · · · · · · · · · ·	





Plate 53: TP27 Spoil



Plate 54: TP28 Faces

Title	Date
Trial Pit Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	27
Client	
Wates Construction North East Ltd	





Plate 55: TP28 Spoil



Plate 56: TP29 Faces

Title	Date
Trial Pit Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	28
Client	
Wates Construction North East Ltd	







Plate 58: TP30 Faces

Title	Date
Trial Pit Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	29
Client	
Wates Construction North East Ltd	





Plate 59: TP30 Spoil



Plate 60: TP31 Faces

Title	Date
Trial Pit Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	30
Client	
Wates Construction North East Ltd	





Plate 61: TP31 Spoil



Plate 62: TP32 Faces

Title	Date
Trial Pit Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	31
Client	
Wates Construction North East Ltd	





Plate 63: TP32 Spoil



Plate 64: TP33 Faces

Title	Date
Trial Pit Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	32
Client	
Wates Construction North East Ltd	





Plate 65: TP33 Spoil



Plate 66: TP34 Faces

Title	Date
Trial Pit Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	33
Client	
Wates Construction North East Ltd	





Plate 67: TP34 Spoil



Plate 68: TP35 Faces

Title	Date
Trial Pit Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	34
Client	
Wates Construction North East Ltd	





Plate 69: TP35 Spoil



Plate 70: TP36 Faces

Title	Date
Trial Pit Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	35
Client	
Wates Construction North East Ltd	





Plate 71: TP36 Spoil



Plate 72: TP37 Faces

Title	Date
Trial Pit Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	36
Client	
Wates Construction North East Ltd	

Solmek Ltd. 12 Yarm Road

Stockton-on-Tees TS18 3NA





Plate 73: TP37 Spoil



Plate 74: TP38 Faces

Title	Date
Trial Pit Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	37
Client	
Wates Construction North East Ltd	

Solmek Ltd.

12 Yarm Road Stockton-on-Tees TS18 3NA





Plate 75: TP38 Spoil



Plate 76: TP39 Faces

Title	Date
Trial Pit Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	38
Client	
Wates Construction North East Ltd	
	•





Plate 77: TP39 Spoil



Plate 78: TP40 Faces

Title	Date
Trial Pit Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	39
Client	
Wates Construction North East Ltd	





Plate 79: TP40 Spoil



Plate 80: TP41 Faces

Title	Date
Trial Pit Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	40
Client	
Wates Construction North East Ltd	





Plate 81: TP41 Spoil



Plate 82: TP42 Faces

Title	Date
Trial Pit Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	41
Client	
Wates Construction North East Ltd	
	_





Plate 83: TP42 Spoil



Plate 84: TP43 (No Photographs) TP44 Faces

Title	Date
Trial Pit Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	42
Client	
Wates Construction North East Ltd	





Plate 85: TP44 Spoil



Plate 86: TP45 Faces

Title	Date
Trial Pit Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	43
Client	
Wates Construction North East Ltd	





Plate 87: TP45 Spoil



Plate 88: TP46 Faces

Title	Date
Trial Pit Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	44
Client	
Wates Construction North East Ltd	





Plate 89: TP46 Spoil



Plate 90: TP47 Faces

Title	Date
Trial Pit Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	45
Client	
Wates Construction North East Ltd	
	-





Plate 91: TP47 Spoil



Plate 92: TP48 Faces

Title	Date
Trial Pit Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	46
Client	
Wates Construction North East Ltd	





Plate 93: TP48 Spoil



Plate 94: TP49 Faces

Title	Date
Trial Pit Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	47
Client	
Wates Construction North East Ltd	

Tel: +44 (0) 1642 607083 Fax: +44 (0) 1642 612355 e-mail: south@solmek.com

www.solmek.com





Plate 95: TP49 Spoil



Plate 96: TP50 Faces

Date
January 2022
Plate No.
48





Plate 97: TP50 Spoil



Plate 98 TP51 Faces

Title	Date
Trial Pit Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	49
Client	
Wates Construction North East Ltd	





Plate 99: TP51 Spoil



Plate 100: TP52 Faces

Title	Date
Trial Pit Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	50
Client	
Wates Construction North East Ltd	





Plate 101: TP52 Spoil

Title	Date
Trial Pit Photographs	January 2022
Project	Plate No.
Envision Giga Factory, Sunderland	51
Client	
Wates Construction North East Ltd	

Tel: +44 (0) 1642 607083 Fax: +44 (0) 1642 612355 e-mail: south@solmek.com

www.solmek.com



APPENDIX C



eurofins Chemtest

Eurofins Chemtest Ltd Depot Road Newmarket CB8 0AL

Tel: 01638 606070 Email: info@chemtest.com

Final Report

Report No.: 21-38893-1

Initial Date of Issue: 16-Nov-2021

Client Solmek Ltd

Client Address: 12 Yarm Road

Stockton-on-Tees

TS18 3NA

Contact(s): Adrian Cutts

Lab Office

Project S211001 Envision, Sunderland

Quotation No.: Date Received: 08-Nov-2021

Order No.: SOL5550 Date Instructed: 08-Nov-2021

No. of Samples: 12

Turnaround (Wkdays): 5 Results Due: 12-Nov-2021

Date Approved: 16-Nov-2021

Approved By:

Details: Glynn Harvey, Technical Manager

<u>1</u>												
	Che	mtest Jo	ob No.:	21-38893	21-38893	21-38893	21-38893	21-38893	21-38893	21-38893	21-38893	21-38893
	Chemte	est Sam	ple ID.:	1314198	1314199	1314200	1314201	1314202	1314203	1314204	1314205	1314206
	Sa	ample Lo	ocation:	CP+RO 01	CP+RO 04	CP+RO 06	CP04	CP04	WS02	WS05	WS05	WS05
		Sample	е Туре:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Top Der	oth (m):	0.50	0.20	0.30	0.10	0.60	02	0.3	0.9	1.6
	Bof	ttom Der	oth (m):	0.60	0.30	0.40	0.20	0.70	0.3	0.4	1	1.7
		Date Sa	ampled:	25-Oct-2021	25-Oct-2021	25-Oct-2021	25-Oct-2021	25-Oct-2021	28-Oct-2021	28-Oct-2021	28-Oct-2021	28-Oct-2021
		Asbest	os Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	
Accred.	SOP	Units	LOD									
U	2192		N/A	-	-	-	-	-	-	-	-	
U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	
N	2030	%	0.020									43
	_											Brown
N	2040		N/A	Stones	Stones	Stones and Roots	Stones	Stones	Stones	Stones	Stones	Stones
N	2040		N/A	Clay	Sand	Clay	Clay	Clay	Sand	Sand	Sand	Clay
М	2010		4.0	8.6	7.8	8.5	8.4	8.3	8.3	8.0	7.6	
М	2120		0.40	< 0.40	0.86	< 0.40	1.1	0.41	< 0.40	1.2	1.1	
М	2120	mg/l	10	13	< 10	< 10	10	< 10	21	110	41	
М	2300	mg/kg	0.50	< 0.50	0.60	0.50	0.60	< 0.50	< 0.50	< 0.50	< 0.50	1
N			0.50	33	3.2	41	28	22		47	9.2	1
М	_	U U	1.0	8.8	4.1	4.4	1.8	2.9		3.7	16	
			0.10				< 0.10				0.19	
М									110	48		
М									< 0.10	< 0.10		1
			0.50	51	8.9	21	22		32	21		1
		0					21					
	_									_		
		_										
-												< 1.0
		5										< 1.0
М			1.0	< 1.0								< 1.0
М			1.0	< 1.0								< 1.0
М			1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	340		< 1.0
												< 1.0
												260
N			1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
												260
N	_		1.0									< 1.0
N												< 1.0
	_											< 1.0
M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	Accred. U N N N M M M M M M M M M M	Chemte	Chemtest Jam	Chemtest Sample ID.: Sample Location: Sample Type: Top Depth (m):	Chemtest Job No.: 21-38893 Chemtest Sample ID.: 1314198 Sample Location: CP+RO 01 Sample Type: SOIL Top Depth (m): 0.50 Bottom Depth (m): 0.60 Date Sampled: 25-Oct-2021 Asbestos Lab: DURHAM	Chemtest Job No.: 21-38893 21-38893 Chemtest Sample ID.: 1314198 1314199 Sample Location: CP+RO 01 CP+RO 04 Sample Type: SOIL SOIL Top Depth (m): 0.50 0.20 O.30 Date Sampled: 25-Oct-2021 25-Oct-2021 Asbestos Lab: DURHAM DURHAM	Chemtest Job No.: 21-38893 21-38893 21-38893 Chemtest Sample ID.: 1314198 1314199 1314200 Sample Location: CP+RO 01 CP+RO 04 CP+RO 06 CP+RO 06 Sample Type: SOIL SOIL SOIL Top Depth (m): 0.50 0.20 0.30 0.40	Chemtest Sample ID: 1314198	Chemtest Job No. 21-38893 21-38492 21-3894 21-389	Chemtest Job No. 21-38893 21-38293 2	Chemtest Sample ID.: 1314198 1314199 1314200 1314201 1314202 1314202 1314202 1314202 1314202 1314202 1314203 1314204 1314202 1314202 1314203 1314204 1314204 1314202 1314202 1314204 1314204 1314202 1314204 1314204 1314202 1314204 1314204 1314204 1314204 1314204 1314202 1314204 1	Chemiest Sample ID:

Clients Salmak Ltd		Cha	mtest Jo	sh No i	24 20002	24 20002	24 20002	24 20002	24 20002	24 20002	24 20002	24 20002	24 20002
Client: Solmek Ltd			est Sami		21-38893	21-38893	21-38893	21-38893	21-38893	21-38893	21-38893	21-38893	21-38893
Quotation No.:	'				1314198	1314199	1314200	1314201	1314202	1314203	1314204	1314205	1314206
		58	ample Lo		CP+RO 01	CP+RO 04	CP+RO 06	CP04	CP04	WS02	WS05	WS05	WS05
			Sample	,,	SOIL								
			Top Dep		0.50	0.20	0.30	0.10	0.60	02	0.3	0.9	1.6
		Bo	ttom Dep	, ,	0.60	0.30	0.40	0.20	0.70	0.3	0.4	1	1.7
			Date Sa	_	25-Oct-2021	25-Oct-2021	25-Oct-2021	25-Oct-2021	25-Oct-2021	28-Oct-2021	28-Oct-2021	28-Oct-2021	28-Oct-2021
			Asbest		DURHAM								
Determinand	Accred.	SOP	Units		4.0	4.0	4.0	4.0	4.0	4.0	400	40	4.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	160	19	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	460	2100	82	190
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	460	2400	140	190
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10	< 10	< 10	560	3500	1100	460
Dichlorodifluoromethane	U	2760	μg/kg	1.0							< 1.0	< 1.0	< 1.0
Chloromethane	М	2760	μg/kg	1.0							< 1.0	< 1.0	< 1.0
Vinyl Chloride	М	2760	μg/kg	1.0							< 1.0	< 1.0	< 1.0
Bromomethane	М	2760	μg/kg	20							< 20	< 20	< 20
Chloroethane	U	2760	μg/kg	2.0							< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	M	2760	μg/kg	1.0							< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	M	2760	μg/kg	1.0							< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	М	2760	μg/kg	1.0							< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	M	2760	μg/kg	1.0							< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	M	2760	μg/kg	1.0							< 1.0	< 1.0	< 1.0
Bromochloromethane	U	2760	μg/kg	5.0							< 5.0	< 5.0	< 5.0
Trichloromethane	М	2760	μg/kg	1.0							< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	М	2760	μg/kg	1.0							< 1.0	< 1.0	< 1.0
Tetrachloromethane	М	2760	μg/kg	1.0							< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	U	2760	μg/kg	1.0							< 1.0	< 1.0	< 1.0
Benzene	М	2760	μg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	М	2760	μg/kg	2.0							< 2.0	< 2.0	< 2.0
Trichloroethene	N	2760	μg/kg	1.0							< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	М	2760	μg/kg	1.0							< 1.0	< 1.0	< 1.0
Dibromomethane	М	2760	μg/kg	1.0							< 1.0	< 1.0	< 1.0
Bromodichloromethane	М	2760	μg/kg	5.0							< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	μg/kg	10							< 10	< 10	< 10
Toluene	М	2760	μg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	μg/kg	10							< 10	< 10	< 10
1,1,2-Trichloroethane	М	2760	μg/kg	10							< 10	< 10	< 10
Tetrachloroethene	М	2760	μg/kg	1.0							< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	U	2760	μg/kg	2.0						1	< 2.0	< 2.0	< 2.0
Dibromochloromethane	Ü	2760	μg/kg	10							< 10	< 10	< 10
1,2-Dibromoethane	M	2760	μg/kg	5.0							< 5.0	< 5.0	< 5.0
Chlorobenzene	M	2760	μg/kg	1.0				<u> </u>			< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	M	2760	μg/kg	2.0							< 2.0	< 2.0	< 2.0
Ethylbenzene	M	2760	μg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	M	2760	μg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
a. p			פיייפייו		,		,	,			,	,	

Client: Solmek Ltd		Che	mtest Jo	b No.:	21-38893	21-38893	21-38893	21-38893	21-38893	21-38893	21-38893	21-38893	21-38893
Quotation No.:	(est Sam		1314198	1314199	1314200	1314201	1314202	1314203	1314204	1314205	1314206
			ample Lo		CP+RO 01	CP+RO 04	CP+RO 06	CP04	CP04	WS02	WS05	WS05	WS05
			Sample		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Dep		0.50	0.20	0.30	0.10	0.60	02	0.3	0.9	1.6
		Bo	ttom Dep	oth (m):	0.60	0.30	0.40	0.20	0.70	0.3	0.4	1	1.7
			Date Sa			25-Oct-2021	25-Oct-2021	25-Oct-2021	25-Oct-2021	28-Oct-2021	28-Oct-2021	28-Oct-2021	28-Oct-2021
			Asbest	_	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	
Determinand	Accred.	SOP	Units	LOD									
o-Xylene	М	2760	μg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	М	2760	μg/kg	1.0							< 1.0	< 1.0	< 1.0
Tribromomethane	U	2760	μg/kg	1.0							< 1.0	< 1.0	< 1.0
Isopropylbenzene	М	2760	μg/kg	1.0							< 1.0	< 1.0	< 1.0
Bromobenzene	М	2760	μg/kg	1.0							< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50					1		< 50	< 50	< 50
N-Propylbenzene	Ü	2760	μg/kg	1.0							< 1.0	< 1.0	< 1.0
2-Chlorotoluene	M	2760	μg/kg	1.0							< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	M	2760	µg/kg	1.0					<u> </u>	1	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	U	2760	μg/kg	1.0							< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	U	2760	μg/kg	1.0							< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	M	2760	μg/kg	1.0							< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	U	2760	µg/kg	1.0							< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	M	2760	µg/kg	1.0							< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	U	2760	µg/kg	1.0							< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	M	2760	μg/kg	1.0							< 1.0	< 1.0	< 1.0
N-Butylbenzene	U	2760	µg/kg	1.0							< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	M	2760	μg/kg	1.0							< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50							< 50	< 50	< 50
1,2,4-Trichlorobenzene	M	2760	µg/kg	1.0							< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	U	2760	µg/kg	1.0							< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	U	2760	μg/kg	2.0							< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	M	2760	μg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	1.1	0.56	11.0
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.55	0.15	
Acenaphthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.56	0.18	
Fluorene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	1.4	0.73	
Phenanthrene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	1.3	5.5	1.4	
Anthracene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.12	1.9	0.52	
Fluoranthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	0.51	< 0.10	< 0.10	0.64	9.8	0.82	
Pyrene	M	2800	mg/kg	0.10	< 0.10	< 0.10	0.51	< 0.10	< 0.10	0.59	9.6	0.99	
Benzo[a]anthracene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.42	5.4	0.55	
Chrysene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.42	5.5	0.76	
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.82	6.3	0.70	1
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.20	2.9	0.90	<u> </u>
Benzo[a]pyrene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.55	5.1	0.23	
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	3.8	< 0.10	
	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.89	< 0.10	
Dibenz(a,h)Anthracene	IN	2000	my/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.69	< 0.10	L

Client: Solmek Ltd		Che	mtest J	ob No.:	21-38893	21-38893	21-38893	21-38893	21-38893	21-38893	21-38893	21-38893	21-38893
Quotation No.:	(Chemte	est Sam	ple ID.:	1314198	1314199	1314200	1314201	1314202	1314203	1314204	1314205	1314206
		Sa	ample Lo	ocation:	CP+RO 01	CP+RO 04	CP+RO 06	CP04	CP04	WS02	WS05	WS05	WS05
			Sampl	е Туре:	SOIL	SOIL	SOIL						
			Top De	oth (m):	0.50	0.20	0.30	0.10	0.60	02	0.3	0.9	1.6
		Bo	ttom De _l	oth (m):	0.60	0.30	0.40	0.20	0.70	0.3	0.4	1	1.7
			Date Sa	ampled:	25-Oct-2021	25-Oct-2021	25-Oct-2021	25-Oct-2021	25-Oct-2021	28-Oct-2021	28-Oct-2021	28-Oct-2021	28-Oct-2021
			Asbest	os Lab:	DURHAM	DURHAM							
Determinand	Accred.	SOP	Units	LOD									
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	3.7	< 0.10	
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	5.0	64	8.4	
PCB 28	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	
PCB 52	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	
PCB 90+101	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	
PCB 118	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	
PCB 153	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	
PCB 138	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	
PCB 180	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	
Total PCBs (7 Congeners)	U	2815	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Total Phenols	M	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
VOC TIC	N	2760	μg/kg	N/A							None Detected	None Detected	None Detected

Client: Solmek Ltd		Che	mtest Jo	ob No.:	21-38893	21-38893	21-38893
Quotation No.:		Chemte	st Sam	ple ID.:	1314207	1314208	1314209
		Sa	ample Lo		WS08	WS09	WS10
				e Type:	SOIL	SOIL	SOIL
			Top Dep	oth (m):	0.1	0.5	0.1
		Bot	tom Dep	` '	0.3	0.6	0.3
			Date Sa	_	28-Oct-2021	28-Oct-2021	28-Oct-2021
			Asbest		DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD			
ACM Type	U	2192		N/A	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	5.7	20	19
Soil Colour	N	2040		N/A	Brown	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones and Roots	Stones and Roots
Soil Texture	N	2040		N/A	Clay	Clay	Sand
рН	М	2010		4.0	8.3	8.6	7.9
Boron (Hot Water Soluble)	М	2120	mg/kg	0.40	0.50	< 0.40	0.63
Sulphate (2:1 Water Soluble) as SO4	М	2120	mg/l	10	< 10	< 10	< 10
Cyanide (Total)	М	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	23	32	21
Arsenic	M	2450	mg/kg	1.0	6.6	3.7	7.6
Cadmium	M	2450	mg/kg	0.10	< 0.10	< 0.10	0.15
Copper	M	2450	mg/kg	0.50	32	23	31
Mercury	М	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Nickel	М	2450	mg/kg	0.50	35	12	14
Lead	M	2450	mg/kg	0.50	9.2	7.6	31
Selenium	M	2450	mg/kg	0.20	0.32	< 0.20	0.31
Zinc	M	2450	mg/kg	0.50	38	22	52
Chromium (Trivalent)	N N	2490	mg/kg	1.0	27	15	20
Chromium (Hexavalent) Organic Matter	M	2490 2625	mg/kg %	0.50	< 0.50 1.7	< 0.50 1.6	< 0.50 9.5
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	86	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	86	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	М	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	М	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	М	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0

Client: Solmek Ltd			mtest Jo		21-38893	21-38893	21-38893
Quotation No.:	(Chemte	st Sam	ole ID.:	1314207	1314208	1314209
		Sa	ample Lo		WS08	WS09	WS10
			Sample		SOIL	SOIL	SOIL
			Top Dep	, ,	0.1	0.5	0.1
			tom Dep		0.3	0.6	0.3
			Date Sa	mpled:	28-Oct-2021	28-Oct-2021	28-Oct-2021
			Asbest	os Lab:	DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD			
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	160	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	160	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	240	< 10	< 10
Dichlorodifluoromethane	U	2760	μg/kg	1.0			
Chloromethane	М	2760	μg/kg	1.0			
Vinyl Chloride	М	2760	μg/kg	1.0			
Bromomethane	М	2760	μg/kg	20			
Chloroethane	U	2760	μg/kg	2.0			
Trichlorofluoromethane	М	2760	μg/kg	1.0			
1,1-Dichloroethene	М	2760	μg/kg	1.0			
Trans 1,2-Dichloroethene	М	2760	μg/kg	1.0			
1,1-Dichloroethane	М	2760	μg/kg	1.0			
cis 1,2-Dichloroethene	М	2760	μg/kg	1.0			
Bromochloromethane	U	2760	μg/kg	5.0			
Trichloromethane	М	2760	μg/kg	1.0			
1,1,1-Trichloroethane	М	2760	μg/kg	1.0			
Tetrachloromethane	М	2760	μg/kg	1.0			
1,1-Dichloropropene	U	2760	μg/kg	1.0			
Benzene	М	2760	μg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	М	2760	μg/kg	2.0			
Trichloroethene	N	2760	μg/kg	1.0			
1,2-Dichloropropane	М	2760	μg/kg	1.0			
Dibromomethane	М	2760	μg/kg	1.0			
Bromodichloromethane	М	2760	μg/kg	5.0			
cis-1,3-Dichloropropene	N	2760	μg/kg	10			
Toluene	M	2760	μg/kg	1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	μg/kg	10			
1.1.2-Trichloroethane	M	2760	μg/kg	10			
Tetrachloroethene	M	2760	μg/kg	1.0			
1,3-Dichloropropane	U	2760	μg/kg	2.0			
Dibromochloromethane	U	2760	μg/kg	10			
1,2-Dibromoethane	M	2760	μg/kg	5.0			
Chlorobenzene	M	2760	μg/kg	1.0			
	M	2760	μg/kg	2.0			
1.1.1.2-Tetrachloroethane	IVI						
1,1,1,2-Tetrachloroethane Ethylbenzene	M	2760	μg/kg	1.0	< 1.0	< 1.0	< 1.0

Client: Solmek Ltd			mtest Jo		21-38893	21-38893	21-38893
Quotation No.:	(st Sam		1314207	1314208	1314209
		Sa	ample Lo	cation:	WS08	WS09	WS10
				e Type:	SOIL	SOIL	SOIL
			Top Dep		0.1	0.5	0.1
		Bot	tom Dep	oth (m):	0.3	0.6	0.3
			Date Sa	ımpled:	28-Oct-2021	28-Oct-2021	28-Oct-202
			Asbest	os Lab:	DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD			
o-Xylene	M	2760	μg/kg	1.0	< 1.0	< 1.0	< 1.0
Styrene	M	2760	μg/kg	1.0			
Tribromomethane	U	2760	μg/kg	1.0			
Isopropylbenzene	M	2760	μg/kg	1.0			
Bromobenzene	М	2760	μg/kg	1.0			
1,2,3-Trichloropropane	N	2760	μg/kg	50			
N-Propylbenzene	U	2760	μg/kg	1.0			
2-Chlorotoluene	M	2760	μg/kg	1.0			
1,3,5-Trimethylbenzene	М	2760	μg/kg	1.0			
4-Chlorotoluene	U	2760	μg/kg	1.0			
Tert-Butylbenzene	U	2760	μg/kg	1.0			
1,2,4-Trimethylbenzene	M	2760	μg/kg	1.0			
Sec-Butylbenzene	U	2760	μg/kg	1.0			
1,3-Dichlorobenzene	M	2760	μg/kg	1.0			
4-Isopropyltoluene	U	2760	μg/kg	1.0			
1,4-Dichlorobenzene	M	2760	μg/kg	1.0			
N-Butylbenzene	U	2760	µg/kg	1.0			
1,2-Dichlorobenzene	M	2760	μg/kg	1.0			
1,2-Dibromo-3-Chloropropane	U	2760	μg/kg	50			
1,2,4-Trichlorobenzene	M	2760	μg/kg	1.0			
Hexachlorobutadiene	U	2760	μg/kg	1.0			
1,2,3-Trichlorobenzene	U	2760	μg/kg	2.0			
Methyl Tert-Butyl Ether	M	2760	μg/kg	1.0	< 1.0	< 1.0	< 1.0
Naphthalene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2800	mg/kg	0.10	< 0.10	< 0.10	
Phenanthrene	M	2800		0.10	< 0.10	< 0.10	< 0.10 0.33
Anthracene	M	2800	mg/kg	0.10	< 0.10	< 0.10	0.33
Fluoranthene	M		mg/kg	0.10	0.10	< 0.10	
	M	2800	mg/kg		_		0.37
Pyrene		2800	mg/kg	0.10	0.10	< 0.10	0.33
Benzo[a]anthracene	M	2800	mg/kg	0.10	< 0.10	< 0.10	0.23
Chrysene	M	2800	mg/kg	0.10	< 0.10	< 0.10	0.27
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	0.23
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	0.20
Benzo[a]pyrene	M	2800	mg/kg	0.10	< 0.10	< 0.10	0.34
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10

Client: Solmek Ltd		Che	mtest Jo	ob No.:	21-38893	21-38893	21-38893
Quotation No.:	(Chemte	st Sam	ple ID.:	1314207	1314208	1314209
		Sa	ample Lo	cation:	WS08	WS09	WS10
			Sampl	е Туре:	SOIL	SOIL	SOIL
			Top Dep	oth (m):	0.1	0.5	0.1
		Bot	tom Dep	oth (m):	0.3	0.6	0.3
			Date Sa	ampled:	28-Oct-2021	28-Oct-2021	28-Oct-2021
			Asbest	os Lab:	DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD			
Benzo[g,h,i]perylene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0	2.4
PCB 28	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010
PCB 52	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010
PCB 90+101	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010
PCB 118	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010
PCB 153	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010
PCB 138	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010
PCB 180	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010
Total PCBs (7 Congeners)	U	2815	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Total Phenols	М	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10
VOC TIC	N	2760	μg/kg	N/A			

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	рН	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N–dimethyl-p-phenylenediamine.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21- C35, >C35- C44Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Dichloromethane extraction / GCxGC FID detection
2700		Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1- Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key **UKAS** accredited MCERTS and UKAS accredited M Unaccredited Ν This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for S this analysis This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited SN for this analysis Т This analysis has been subcontracted to an unaccredited laboratory I/S Insufficient Sample U/S Unsuitable Sample N/E not evaluated < "less than" "greater than" > SOP Standard operating procedure LOD Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

- A Date of sampling not supplied
- B Sample age exceeds stability time (sampling to extraction)
- C Sample not received in appropriate containers
- D Broken Container
- E Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to: <u>customerservices@chemtest.com</u>



eurofins Chemtest

Eurofins Chemtest Ltd Depot Road Newmarket CB8 0AL

Tel: 01638 606070 Email: info@chemtest.com

Final Report

Report No.: 21-38929-1

Initial Date of Issue: 13-Nov-2021

Client Solmek Ltd

Client Address: 12 Yarm Road

Stockton-on-Tees

TS18 3NA

Contact(s): Adrian Cutts

Lab Office

Project S211001 Envision, Sunderland

Quotation No.: Date Received: 08-Nov-2021

Order No.: SOL5550 Date Instructed: 08-Nov-2021

No. of Samples: 13

Turnaround (Wkdays): 5 Results Due: 12-Nov-2021

Date Approved: 13-Nov-2021

Approved By:

Details: Glynn Harvey, Technical Manager

Project: 5211001 Envision, Sunderland	<u>u</u>												
Client: Solmek Ltd			mtest Jo		21-38929	21-38929	21-38929	21-38929	21-38929	21-38929	21-38929	21-38929	21-38929
Quotation No.:	(Chemte	est Sam	ple ID.:	1314359	1314360	1314361	1314362	1314363	1314364	1314365	1314366	1314367
		Sa	ample Lo	ocation:	CP+RO 02	CP+RO 03	CP+RO 05	CP02	CP03	CP07	CP07	WS01	WS01
			Sampl	- , ,	SOIL								
			Top Dep		0.10	0.20	0.30	0.20	0.10	0.10	0.60	0.20	0.70
		Bo	tom Dep	oth (m):	0.20	0.30	0.40	0.40	0.20	0.20	0.70	0.50	0.90
			Date Sa	ampled:	25-Oct-2021	28-Oct-2021	28-Oct-2021						
			Asbest	os Lab:	DURHAM								
Determinand	Accred.	SOP	Units	LOD									
ACM Type	U	2192		N/A	-	-	-	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected								
Moisture	N	2030	%	0.020	14	25	21	26	19	26	26	19	25
Soil Colour	N	2040	,,,	N/A	Brown								
Other Material	N	2040		N/A	Stones	Roots	Roots	Roots	None	Roots	Roots	None	None
Soil Texture	N	2040		N/A	Loam	Loam	Loam	Loam	Clay	Clay	Clay	Clay	Clay
pH	M	2010		4.0	8.1	7.6	8.3	7.8	8.5	8.5	7.7	8.4	8.4
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	0.50	0.98	0.64	0.63	< 0.40	0.55	2.5	< 0.40	1.3
Sulphate (2:1 Water Soluble) as SO4	M	2120	mg/l	10	810	120	65	190	120	32	< 10	23	< 10
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	3.1	2.8	3.7	3.2	3.2	2.3	2.4	1.8	3.1
Arsenic	M	2450	mg/kg	1.0	1.9	7.0	7.0	3.9	4.3	< 1.0	5.7	5.4	4.4
Cadmium	M	2450	mg/kg	0.10	0.19	0.21	0.11	0.19	< 0.10	< 0.10	0.14	< 0.10	< 0.10
	M	2450		0.10	19	43	48	40	30	8.2	69	37	79
Copper	M	2450	mg/kg	0.30	< 0.10	0.15	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Mercury	M	2450	mg/kg	0.10	25	28	26	13	32	2.8	16	50	33
Nickel		2450	mg/kg			53					40		
Lead	M	-	mg/kg	0.50	18		40	28	19	5.0		18	18
Selenium	M	2450	mg/kg	0.20	0.43	0.26	0.50	0.37	0.48	< 0.20	0.39	0.22	0.30
Zinc	M	2450	mg/kg	0.50	140	63	42	88	67	9.7	46	49	44
Chromium (Trivalent)	N	2490	mg/kg	1.0	16	29	26	14	25	3.5	22	36	34
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Organic Matter	M	2625	%	0.40	2.6	6.7	5.3	5.6	3.1	4.9	6.3	1.7	1.6
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	М	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	М	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	М	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	М	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	М	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

i Toject. 321 1001 Envision, Sunderlan	<u>u</u>												
Client: Solmek Ltd		Che	mtest Jo	ob No.:	21-38929	21-38929	21-38929	21-38929	21-38929	21-38929	21-38929	21-38929	21-38929
Quotation No.:	(Chemte	st Sam	ple ID.:	1314359	1314360	1314361	1314362	1314363	1314364	1314365	1314366	1314367
		Sa	ample Lo	cation:	CP+RO 02	CP+RO 03	CP+RO 05	CP02	CP03	CP07	CP07	WS01	WS01
			Sample	е Туре:	SOIL								
			Top Dep	oth (m):	0.10	0.20	0.30	0.20	0.10	0.10	0.60	0.20	0.70
		Bot	tom Dep	oth (m):	0.20	0.30	0.40	0.40	0.20	0.20	0.70	0.50	0.90
			Date Sa	ampled:	25-Oct-2021	28-Oct-2021	28-Oct-2021						
			Asbest	os Lab:	DURHAM								
Determinand	Accred.	SOP	Units	LOD									
Aromatic TPH >C21-C35	М	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Benzene	М	2760	μg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	М	2760	μg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	1.5	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	М	2760	μg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	М	2760	μg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	М	2760	μg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl Tert-Butyl Ether	М	2760	μg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	М	2800	mg/kg	0.10	0.40	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	М	2800	mg/kg	0.10	0.38	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
PCB 28	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 52	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 90+101	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 118	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 153	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 138	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 180	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Total PCBs (7 Congeners)	U	2815	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Phenols	М	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Client: Solmek Ltd			mtest Jo		21-38929	21-38929	21-38929	21-38929
Quotation No.:	(Chemte	st Sam	ple ID.:	1314368	1314369	1314370	1314371
		Sa	ample Lo	ocation:	WS03	WS04	WS06	WS07
			Sampl	е Туре:	SOIL	SOIL	SOIL	SOIL
			Top Dep		0.70	0.20	0.10	0.10
		Bot	tom Dep	oth (m):	0.80	0.30	0.20	0.30
			Date Sa		28-Oct-2021	28-Oct-2021	28-Oct-2021	28-Oct-2021
			Asbest	os Lab:	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD				
ACM Type	U	2192		N/A	ì	-	i	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbesto Detected
Moisture	N	2030	%	0.020	18	25	22	25
Soil Colour	N	2040		N/A	Black	Brown	Brown	Brown
Other Material	N	2040		N/A	Stones	Roots	None	Roots
Soil Texture	N	2040		N/A	Gravel	Loam	Clay	Loam
pH	М	2010		4.0	8.4	8.1	8.4	7.7
Boron (Hot Water Soluble)	М	2120	mg/kg	0.40	1.5	1.2	0.45	1.0
Sulphate (2:1 Water Soluble) as SO4	М	2120	mg/l	10	840	< 10	33	< 10
Cyanide (Total)	М	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	25	3.3	6.0	3.0
Arsenic	М	2450	mg/kg	1.0	6.4	7.8	4.2	7.8
Cadmium	M	2450	mg/kg	0.10	< 0.10	0.17	< 0.10	0.21
Copper	М	2450	mg/kg	0.50	52	43	50	51
Mercury	М	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.13
Nickel	М	2450	mg/kg	0.50	30	18	34	29
Lead	M	2450	mg/kg	0.50	16	45	14	50
Selenium	М	2450	mg/kg	0.20	0.48	< 0.20	0.27	< 0.20
Zinc	М	2450	mg/kg	0.50	38	62	39	66
Chromium (Trivalent)	N	2490	mg/kg	1.0	16	26	29	39
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Organic Matter	М	2625	%	0.40	23	5.7	1.9	9.4
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	М	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	М	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	М	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	М	2680	mg/kg	1.0	150	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	25	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	170	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	М	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	М	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	М	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	22	< 1.0	< 1.0	< 1.0

Client: Solmek Ltd			mtest Jo		21-38929	21-38929	21-38929	21-38929
Quotation No.:	(st Sam		1314368	1314369	1314370	1314371
		Sa	ample Lo		WS03	WS04	WS06	WS07
				е Туре:	SOIL	SOIL	SOIL	SOIL
			Top De		0.70	0.20	0.10	0.10
		Bottom Depth (m):		0.80	0.30	0.20	0.30	
			Date Sa	ampled:	28-Oct-2021	28-Oct-2021	28-Oct-2021	28-Oct-2021
			Asbest	os Lab:	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD				
Aromatic TPH >C21-C35	М	2680	mg/kg	1.0	280	< 1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	300	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	470	< 10	< 10	< 10
Benzene	М	2760	μg/kg	1.0	5.5	< 1.0	< 1.0	< 1.0
Toluene	М	2760	μg/kg	1.0	5.2	< 1.0	< 1.0	< 1.0
Ethylbenzene	М	2760	μg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	М	2760	μg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	М	2760	μg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl Tert-Butyl Ether	М	2760	μg/kg	1.0	< 1.0	< 1.0	1.3	1.3
Naphthalene	М	2800	mg/kg	0.10	1.5	< 0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	0.19	< 0.10	< 0.10	< 0.10
Acenaphthene	М	2800	mg/kg	0.10	1.1	< 0.10	< 0.10	< 0.10
Fluorene	М	2800	mg/kg	0.10	1.5	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2800	mg/kg	0.10	6.0	< 0.10	< 0.10	< 0.10
Anthracene	M	2800	mg/kg	0.10	1.8	< 0.10	< 0.10	< 0.10
Fluoranthene	M	2800	mg/kg	0.10	10	0.39	< 0.10	0.29
Pyrene	M	2800	mg/kg	0.10	8.1	0.38	< 0.10	0.30
Benzo[a]anthracene	M	2800	mg/kg	0.10	4.5	0.22	< 0.10	< 0.10
Chrysene	M	2800	mg/kg	0.10	4.3	0.26	< 0.10	< 0.10
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	5.9	0.30	< 0.10	< 0.10
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	2.1	0.14	< 0.10	< 0.10
Benzo[a]pyrene	M	2800	mg/kg	0.10	4.2	0.30	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	3.3	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	0.60	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	2.8	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	58	< 2.0	< 2.0	< 2.0
PCB 28	Ü	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 52	Ü	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 90+101	Ü	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 118	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 153	Ü	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 138	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 180	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010
Total PCBs (7 Congeners)	U	2815	mg/kg	0.010	< 0.10	< 0.10	< 0.010	< 0.10
Total Phenols	M	2920)	0.10	< 0.10	< 0.10	< 0.10	< 0.10
i otal Prienois	IVI	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	рН	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N–dimethyl-p-phenylenediamine.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8,>C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21- C35, >C35- C44Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Dichloromethane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1- Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key **UKAS** accredited MCERTS and UKAS accredited M Unaccredited Ν This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for S this analysis This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited SN for this analysis Т This analysis has been subcontracted to an unaccredited laboratory I/S Insufficient Sample U/S Unsuitable Sample N/E not evaluated < "less than" "greater than" > SOP Standard operating procedure LOD Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

- A Date of sampling not supplied
- B Sample age exceeds stability time (sampling to extraction)
- C Sample not received in appropriate containers
- D Broken Container
- E Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to: customerservices@chemtest.com



eurofins Chemtest

Eurofins Chemtest Ltd Depot Road Newmarket CB8 0AL

Tel: 01638 606070 Email: info@chemtest.com

Final Report

Report No.: 21-39496-1

Initial Date of Issue: 17-Nov-2021

Client Solmek Ltd

Client Address: 12 Yarm Road

Stockton-on-Tees

TS18 3NA

Contact(s): Adrian Cutts

Lab Office

Project S211001 Envision, Sunderland

Quotation No.: Q21-25941 Date Received: 11-Nov-2021

Order No.: SOL5550 Date Instructed: 11-Nov-2021

No. of Samples: 20

Turnaround (Wkdays): 5 Results Due: 17-Nov-2021

Date Approved: 17-Nov-2021

Approved By:

Details: Glynn Harvey, Technical Manager

Project: 5211001 Envision, Sunderland	<u>u</u>				24 22 422		21 22 122			21 22 122	24 22 422	1 04 00 400	24.22.422
Client: Solmek Ltd			mtest J		21-39496	21-39496	21-39496	21-39496	21-39496	21-39496	21-39496	21-39496	21-39496
Quotation No.: Q21-25941	(est Sam	•	1317261	1317262	1317263	1317264	1317265	1317266	1317267	1317268	1317269
		Sa	ample Lo		TP05	TP05	TP17	TP18	TP19	TP20	TP21	TP22	TP31
				e Type:	SOIL								
			Top De		0.1	0.6	0.1	0.1	0.1	0.5	0.1	0.1	0.1
		Bo	ttom De _l		0.3	0.8	0.3	0.3	0.3	0.7	0.3	0.3	0.3
			Date Sa	ampled:	03-Nov-2021								
			Asbest	os Lab:	DURHAM								
Determinand	Accred.	SOP	Units	LOD									
ACM Type	U	2192		N/A	-	-	-	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected								
Moisture	N	2030	%	0.020	20	14	22	22	24	14	26	26	21
Soil Colour	N	2040		N/A	Brown								
Other Material	N	2040		N/A	None	Stones	Roots	None	None	None	None	None	None
Soil Texture	N	2040		N/A	Loam	Clay	Loam						
На	М	2010		4.0	9.0	8.7	8.3	8.9	8.7	8.4	8.9	8.8	8.6
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	< 0.010	0.028	< 0.010	< 0.010	< 0.010	0.10	< 0.010	< 0.010	< 0.010
Cyanide (Total)	М	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	1.4	1.5	1.5	1.7	1.1	1.3	1.6	1.4	1.5
Arsenic	М	2450	mg/kg	1.0	5.9	7.6	9.5	2.4	4.1	6.5	< 1.0	5.2	4.0
Cadmium	М	2450	mg/kg	0.10	0.18	0.10	0.27	0.10	0.14	0.12	< 0.10	0.18	0.16
Chromium	M	2450	mg/kg	1.0	18	33	32	9.9	16	31	2.5	18	17
Copper	М	2450	mg/kg	0.50	29	28	35	13	30	31	4.7	20	19
Mercury	М	2450	mg/kg	0.10	0.13	0.13	0.13	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.13
Nickel	M	2450	mg/kg	0.50	11	44	22	6.8	10	47	2.4	12	11
Lead	M	2450	mg/kg	0.50	40	22	84	22	36	19	4.2	36	35
Selenium	M	2450	mg/kg	0.20	0.33	0.27	0.46	< 0.20	0.27	< 0.20	< 0.20	< 0.20	0.25
Zinc	M	2450	mg/kg	0.50	47	57	72	22	30	41	4.7	35	30
Chromium (Trivalent)	N	2490	mg/kg	1.0	18	33	32	9.9	16	31	2.4	18	17
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Organic Matter	M	2625	%	0.40	7.2	2.0	7.1	5.0	6.1	1.8	6.2	6.3	4.1
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C21	M	2680	mg/kg	1.0	< 1.0	73	< 1.0	180	< 1.0	150	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	73	< 5.0	180	< 5.0	150	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C3-C7 Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8 Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680		1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16 Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Albinatic IFF >C10-C21	U	∠000	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.U

Client: Solmek Ltd		Cher	ntest Jo	b No.:	21-39496	21-39496	21-39496	21-39496	21-39496	21-39496	21-39496	21-39496	21-39496
Quotation No.: Q21-25941	-		st Samı		1317261	1317262	1317263	1317264	1317265	1317266	1317267	1317268	1317269
Quotation 140 Q21 25541	`		mple Lo		TP05	TP05	TP17	TP18	TP19	TP20	TP21	TP22	TP31
			Sample		SOIL								
			Top Dep		0.1	0.6	0.1	0.1	0.1	0.5	0.1	0.1	0.1
			tom Dep		0.3	0.8	0.3	0.3	0.3	0.7	0.3	0.3	0.3
			Date Sa		03-Nov-2021								
			Asbest		DURHAM								
Determinand	Accred.	SOP	Units		DOMINAN	DOMINI	DOMINAN	DOMINAN	DOMINAN	DOMINI	BORTIAN	DOMINAN	DOMINI
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	60	< 1.0	< 1.0	210	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	60	< 5.0	< 5.0	210	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	130	< 10	180	210	150	< 10	< 10	< 10
Benzene	М	2760	μg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	М	2760	μg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	М	2760	μg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	М	2760	μg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	М	2760	μg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl Tert-Butyl Ether	М	2760	μg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	М	2800	mg/kg	0.10	0.12	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	М	2800	mg/kg	0.10	0.19	< 0.10	0.25	0.21	0.21	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	М	2800	mg/kg	0.10	0.14	< 0.10	0.23	0.18	0.23	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	М	2800	mg/kg	0.10	0.14	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	М	2800	mg/kg	0.10	0.15	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	М	2800	mg/kg	0.10	0.14	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	М	2800	mg/kg	0.10	0.12	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	М	2800	mg/kg	0.10	0.14	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	М	2800	mg/kg	0.10	0.20	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	Ν	2800	mg/kg	0.10	0.24	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	М	2800	mg/kg	0.10	0.20	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
PCB 28	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 52	U	2815			< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 90+101	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 118	U	2815		0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 153	U	2815		0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 138	U	2815		0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 180	U	2815		0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Total PCBs (7 Congeners)	U	2815	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Phenols	М	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.13	< 0.10	< 0.10	< 0.10	< 0.10

Project: 5211001 Envision, Sunderland	<u>u</u>	Ol: -	11 1	- I- NI -	04.00400	04.00400	04.00400	04.00400	04.00400	04.00400	04.00400	04.00400	04.00400
Client: Solmek Ltd			mtest Jo		21-39496	21-39496	21-39496	21-39496	21-39496	21-39496	21-39496	21-39496	21-39496
Quotation No.: Q21-25941	· ·		est Sam	•	1317270	1317271	1317272	1317273	1317274	1317275	1317276	1317277	1317278
		Sa	ample Lo		TP32	TP33	TP34	TP35	TP46	TP46	TP47	TP49	TP50
				e Type:	SOIL								
			Top Dep		0.6	0.1	0.1	0.6	0.1	0.6	0.1	0.2	0.1
		Bo	ttom Dep		0.8	0.3	0.3	0.8	0.3	0.8	0.3	0.4	0.3
			Date Sa		03-Nov-2021								
			Asbest		DURHAM								
Determinand	Accred.	SOP	Units	LOD									
ACM Type	U	2192		N/A	-	-	-	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected								
Moisture	N	2030	%	0.020	23	15	21	20	18	16	14	17	9.2
Soil Colour	N	2040		N/A	Brown								
Other Material	N	2040	1	N/A	None								
Soil Texture	N	2040	1	N/A	Loam								
На	M	2010	1	4.0	8.3	8.5	8.5	8.0	8.4	8.4	8.6	7.6	7.3
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	0.022	0.041	< 0.010	< 0.010	< 0.010	0.030	< 0.010	< 0.010	< 0.010
Cyanide (Total)	М	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.60	< 0.50	< 0.50	< 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	0.67	2.0	2.1	2.1	2.2	2.2	2.2	2.1	2.0
Arsenic	M	2450	mg/kg	1.0	7.4	5.3	7.3	9.2	6.9	10	8.4	6.2	7.4
Cadmium	M	2450	mg/kg	0.10	0.19	< 0.10	0.23	0.26	< 0.10	0.24	0.13	0.17	0.20
Chromium	M	2450	mg/kg	1.0	26	27	25	32	37	38	44	18	24
Copper	M	2450	mg/kg	0.50	31	24	24	42	30	67	36	42	30
Mercury	M	2450	mg/kg	0.10	0.11	< 0.10	< 0.10	0.11	< 0.10	0.11	< 0.10	< 0.10	< 0.10
Nickel	M	2450	mg/kg	0.50	23	36	15	24	47	34	58	13	16
Lead	M	2450	mg/kg	0.50	51	14	48	67	20	60	22	47	56
Selenium	M	2450	mg/kg	0.30	0.27	0.20	0.31	0.38	0.35	0.40	0.34	0.35	0.44
Zinc	M	2450		0.20	48	41	41	57	42	64	67	38	45
Chromium (Trivalent)	N	2490	mg/kg	1.0	26	27	25	32	37	38	44	18	24
,	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50		< 0.50	< 0.50	< 0.50	< 0.50
Chromium (Hexavalent)		2625	mg/kg			2.8			< 0.50		2.1	4.2	
Organic Matter	M		%	0.40	4.0		4.9	5.3	1.6	4.5			6.9
Aliphatic TPH >C5-C6 Aliphatic TPH >C6-C8	N N	2680 2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0 < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0 < 1.0	< 1.0 < 1.0
<u> </u>		2680	mg/kg	1.0	< 1.0	< 1.0		< 1.0	< 1.0	< 1.0	< 1.0		
Aliphatic TPH > C8-C10	M		mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH > C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH > C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH > C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	120	< 1.0	250
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	120	< 5.0	250
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	М	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	М	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	М	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

i Toject. 32 i Too i Envision, Sundenan	<u>u</u>												
Client: Solmek Ltd		Che	ntest Jo	b No.:	21-39496	21-39496	21-39496	21-39496	21-39496	21-39496	21-39496	21-39496	21-39496
Quotation No.: Q21-25941	(Chemte	st Sam	ole ID.:	1317270	1317271	1317272	1317273	1317274	1317275	1317276	1317277	1317278
		Sa	ample Lo	cation:	TP32	TP33	TP34	TP35	TP46	TP46	TP47	TP49	TP50
			Sample	е Туре:	SOIL								
			Top Dep	oth (m):	0.6	0.1	0.1	0.6	0.1	0.6	0.1	0.2	0.1
		Bot	tom Dep	oth (m):	0.8	0.3	0.3	0.8	0.3	0.8	0.3	0.4	0.3
			Date Sa	mpled:	03-Nov-2021								
			Asbest	os Lab:	DURHAM								
Determinand	Accred.	SOP	Units	LOD									
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10	< 10	< 10	< 10	120	< 10	250
Benzene	M	2760	μg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	М	2760	μg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	М	2760	μg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	M	2760	μg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	M	2760	μg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl Tert-Butyl Ether	М	2760	μg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	М	2800	mg/kg	0.10	0.28	< 0.10	< 0.10	0.25	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	М	2800	mg/kg	0.10	0.11	< 0.10	< 0.10	0.15	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	М	2800	mg/kg	0.10	0.50	< 0.10	0.36	0.33	< 0.10	0.27	< 0.10	0.17	< 0.10
Pyrene	M	2800	mg/kg	0.10	0.38	< 0.10	0.22	0.35	< 0.10	0.23	< 0.10	0.15	< 0.10
Benzo[a]anthracene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
PCB 28	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 52	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 90+101	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 118	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 153	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 138	U	2815		0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 180	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Total PCBs (7 Congeners)	U	2815	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Phenols	М	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Client: Solmek Ltd		Che	mtest Jo	ob No.:	21-39496	21-39496
Quotation No.: Q21-25941		Chemte	st Sam	ple ID.:	1317279	1317280
		Sa	ample Lo	ocation:	TP51	TP52
			Sample	е Туре:	SOIL	SOIL
			Top Dep	oth (m):	0.1	0.1
		Bot	tom Dep	oth (m):	0.3	0.3
			Date Sa	ampled:	03-Nov-2021	03-Nov-2021
			Asbest	os Lab:	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD		
ACM Type	U	2192		N/A	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	22	17
Soil Colour	N	2040		N/A	Brown	Brown
Other Material	N	2040		N/A	None	None
Soil Texture	N	2040		N/A	Loam	Loam
рН	М	2010		4.0	7.6	8.8
Sulphate (2:1 Water Soluble) as SO4	М	2120	g/l	0.010	< 0.010	< 0.010
Cyanide (Total)	М	2300	mg/kg	0.50	< 0.50	< 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	0.61	0.64
Arsenic	М	2450	mg/kg	1.0	9.5	2.5
Cadmium	М	2450	mg/kg	0.10	0.22	< 0.10
Chromium	М	2450	mg/kg	1.0	33	9.2
Copper	М	2450	mg/kg	0.50	58	60
Mercury	М	2450	mg/kg	0.10	0.12	< 0.10
Nickel	М	2450	mg/kg	0.50	22	9.8
Lead	М	2450	mg/kg	0.50	65	11
Selenium	М	2450	mg/kg	0.20	0.41	< 0.20
Zinc	М	2450	mg/kg	0.50	59	15
Chromium (Trivalent)	N	2490	mg/kg	1.0	33	9.2
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50
Organic Matter	M	2625	%	0.40	6.2	3.1
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	М	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	М	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	М	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	М	2680	mg/kg	1.0	290	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	290	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	М	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	М	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	М	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0

Client: Solmek Ltd			mtest J		21-39496	21-39496
Quotation No.: Q21-25941	(st Sam		1317279	1317280
		Sa	ample Lo		TP51	TP52
			Sampl	SOIL	SOIL	
			Top De		0.1	0.1
		Bot	tom De _l		0.3	0.3
			Date Sa	ampled:	03-Nov-2021	03-Nov-2021
			Asbest	os Lab:	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD		
Aromatic TPH >C21-C35	М	2680	mg/kg	1.0	8.8	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	8.8	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	300	< 10
Benzene	М	2760	μg/kg	1.0	< 1.0	< 1.0
Toluene	М	2760	μg/kg	1.0	< 1.0	< 1.0
Ethylbenzene	М	2760	μg/kg	1.0	< 1.0	< 1.0
m & p-Xylene	М	2760	μg/kg	1.0	< 1.0	< 1.0
o-Xylene	М	2760	μg/kg	1.0	< 1.0	< 1.0
Methyl Tert-Butyl Ether	М	2760	μg/kg	1.0	< 1.0	< 1.0
Naphthalene	М	2800	mg/kg	0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10
Acenaphthene	М	2800	mg/kg	0.10	< 0.10	< 0.10
Fluorene	М	2800	mg/kg	0.10	< 0.10	< 0.10
Phenanthrene	М	2800	mg/kg	0.10	< 0.10	< 0.10
Anthracene	М	2800	mg/kg	0.10	< 0.10	< 0.10
Fluoranthene	М	2800	mg/kg	0.10	0.23	< 0.10
Pyrene	М	2800	mg/kg	0.10	0.14	< 0.10
Benzo[a]anthracene	М	2800	mg/kg		< 0.10	< 0.10
Chrysene	М	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	М	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	М	2800	mg/kg		< 0.10	< 0.10
Benzo[a]pyrene	М	2800	mg/kg	0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	М	2800	mg/kg	0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	М	2800	mg/kg		< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0
PCB 28	U	2815	mg/kg		< 0.010	< 0.010
PCB 52	Ü	2815	mg/kg		< 0.010	< 0.010
PCB 90+101	U	2815	mg/kg		< 0.010	< 0.010
PCB 118	U	2815	mg/kg		< 0.010	< 0.010
PCB 153	U	2815	mg/kg		< 0.010	< 0.010
PCB 138	U	2815	mg/kg		< 0.010	< 0.010
PCB 180	U	2815	mg/kg		< 0.010	< 0.010
Total PCBs (7 Congeners)	U	2815	mg/kg	0.10	< 0.10	< 0.10
Total Phenois	M		mg/kg		< 0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	рН	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N–dimethyl-p-phenylenediamine.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8,>C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21- C35, >C35- C44Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Dichloromethane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1- Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key **UKAS** accredited MCERTS and UKAS accredited M Unaccredited Ν This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for S this analysis This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited SN for this analysis Т This analysis has been subcontracted to an unaccredited laboratory I/S Insufficient Sample U/S Unsuitable Sample N/E not evaluated < "less than" "greater than" > SOP Standard operating procedure LOD Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

- A Date of sampling not supplied
- B Sample age exceeds stability time (sampling to extraction)
- C Sample not received in appropriate containers
- D Broken Container
- E Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to: customerservices@chemtest.com



eurofins Chemtest

Eurofins Chemtest Ltd Depot Road Newmarket CB8 0AL

Tel: 01638 606070 Email: info@chemtest.com

Final Report

Report No.: 21-39538-1

Initial Date of Issue: 18-Nov-2021

Client Solmek Ltd

Client Address: 12 Yarm Road

Stockton-on-Tees

TS18 3NA

Contact(s): Adrian Cutts

Lab Office

Project S211001 Envision, Sunderland

Quotation No.: Q21-25941 Date Received: 11-Nov-2021

Order No.: SOL5550 Date Instructed: 11-Nov-2021

No. of Samples: 3

Turnaround (Wkdays): 5 Results Due: 17-Nov-2021

Date Approved: 18-Nov-2021

Approved By:

Details: Glynn Harvey, Technical Manager

Client: Solmek Ltd			mtest Jo		21-39538	21-39538	21-39538
Quotation No.: Q21-25941	(st Sam		1317503	1317504	1317505
		Sa	ample Lo		CP01	CP05	CP06
			Sampl	e Type:	SOIL	SOIL	SOIL
			Top Dep		0.1	0.1	0.5
		1 ()		0.2	0.2	0.6	
			Date Sa	ampled:	03-Nov-2021	03-Nov-2021	03-Nov-202
			Asbest	os Lab:	NEW-ASB	NEW-ASB	NEW-ASB
Determinand	Accred.	SOP	Units	LOD			
ACM Type	U	2192		N/A	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbesto Detected
Moisture	N	2030	%	0.020	3.1	8.0	5.1
Soil Colour	N	2040		N/A	Brown	Brown	Brown
Other Material	N	2040		N/A	Roots	Roots	None
Soil Texture	N	2040		N/A	Clay	Clay	Clay
pH	M	2010		4.0	8.4	8.1	8.6
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	0.038	0.020	0.029
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50	< 0.50	0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	3.1	3.1	3.2
Arsenic	M	2450	mg/kg	1.0	7.1	11	8.2
Cadmium	M	2450	mg/kg	0.10	0.18	0.30	0.13
Chromium	M	2450	mg/kg	1.0	36	37	43
Copper	M	2450	mg/kg	0.50	110	97	68
Mercury	M	2450	mg/kg	0.10	< 0.10	0.18	< 0.10
Nickel	M	2450	mg/kg	0.50	45	28	54
Lead	M	2450	mg/kg	0.50	200	480	380
Selenium	M	2450	mg/kg	0.20	0.33	0.28	0.38
Zinc	M	2450	mg/kg	0.50	69	74	71
Chromium (Trivalent)	N	2490	mg/kg	1.0	36	37	43
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Organic Matter	M	2625	%	0.40	3.0	6.9	2.5
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16 Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21 Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0 76	< 1.0	< 1.0
Aliphatic TPH >C21-C35 Aliphatic TPH >C35-C44	N N	2680		1.0	< 1.0	< 1.0	< 1.0
<u>'</u>	N	2680	mg/kg	5.0	76	< 5.0	< 5.0
Total Aliphatic Hydrocarbons	N N	2680	mg/kg mg/kg				
Aromatic TPH > C5-C7	_			1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH > C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH > C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0

Client: Solmek Ltd			mtest Jo		21-39538	21-39538	21-39538
Quotation No.: Q21-25941			est Sam		1317503	1317504	1317505
		Sa	ample Lo		CP01	CP05	CP06
		Sample Type:				SOIL	SOIL
			Top Dep		0.1	0.1	0.5
		Bot	ttom Dep		0.2	0.2	0.6
			Date Sa	ampled:	03-Nov-2021	03-Nov-2021	03-Nov-2021
			Asbest	os Lab:	NEW-ASB	NEW-ASB	NEW-ASB
Determinand	Accred.	SOP	Units	LOD			
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	6.3	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	6.3	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	82	< 10	< 10
Benzene	М	2760	μg/kg	1.0	< 1.0	< 1.0	< 1.0
Toluene	M	2760	μg/kg	1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	M	2760	μg/kg	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	M	2760	μg/kg	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	М	2760	μg/kg	1.0	< 1.0	< 1.0	< 1.0
Methyl Tert-Butyl Ether	M	2760	μg/kg	1.0	< 1.0	< 1.0	< 1.0
Naphthalene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Anthracene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	M	2800	mg/kg	0.10	< 0.10	0.20	< 0.10
Pyrene	M	2800	mg/kg	0.10	< 0.10	0.15	< 0.10
Benzo[a]anthracene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Chrysene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0	< 2.0
PCB 28	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010
PCB 52	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010
PCB 90+101	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010
PCB 118	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010
PCB 153	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010
PCB 138	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010
PCB 180	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010
Total PCBs (7 Congeners)	U	2815	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Total Phenols	М	2920	mg/kg		< 0.10	< 0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	рН	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N–dimethyl-p-phenylenediamine.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8,>C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21- C35, >C35- C44Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Dichloromethane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1- Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key **UKAS** accredited MCERTS and UKAS accredited M Unaccredited Ν This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for S this analysis This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited SN for this analysis Т This analysis has been subcontracted to an unaccredited laboratory I/S Insufficient Sample U/S Unsuitable Sample N/E not evaluated < "less than" "greater than" > SOP Standard operating procedure LOD Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

- A Date of sampling not supplied
- B Sample age exceeds stability time (sampling to extraction)
- C Sample not received in appropriate containers
- D Broken Container
- E Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to: customerservices@chemtest.com



eurofins Chemtest

Eurofins Chemtest Ltd Depot Road Newmarket CB8 0AL

Tel: 01638 606070 Email: info@chemtest.com

Final Report

Report No.: 21-39893-1

Initial Date of Issue: 19-Nov-2021

Client Solmek Ltd

Client Address: 12 Yarm Road

Stockton-on-Tees

TS18 3NA

Contact(s): Adrian Cutts

Lab Office

Project S211001 Envision, Sunderland

Quotation No.: Date Received: 15-Nov-2021

Order No.: SOL5550 Date Instructed: 15-Nov-2021

No. of Samples: 14

Turnaround (Wkdays): 5 Results Due: 19-Nov-2021

Date Approved: 19-Nov-2021

Approved By:

Details: Glynn Harvey, Technical Manager

Project: 5211001 Envision, Sunderian	<u>u</u>												
Client: Solmek Ltd		Che	mtest Jo	ob No.:	21-39893	21-39893	21-39893	21-39893	21-39893	21-39893	21-39893	21-39893	21-39893
Quotation No.:		Chemte	est Sam	ple ID.:	1319230	1319231	1319232	1319233	1319234	1319235	1319236	1319237	1319238
	Sample Location: Sample Type:			CP+RO 01	CP+RO 03	CP+RO 04	CP05	CP06	TP01	TP19	TP21	TP34	
				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	
Top Depth (m):			0.2	0.7	0.7	0.7	0.2	0.4	0.6	0.6	0.4		
		Bottom Depth (m):			0.3	0.8	0.8						
	Date Sampled: Asbestos Lab:			03-Nov-2021	03-Nov-2021	03-Nov-2021	03-Nov-2021	03-Nov-2021	03-Nov-2021	03-Nov-2021	03-Nov-2021	03-Nov-2021	
				DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	
Determinand	Accred.	SOP			BOTH III	BOTH III	DOTALD AND	DOI (II) (IV)	DOI (II) (IV)	DOI (II) (IVI	DOTAL II AM	DOTAL IJ LIVI	BOIL IN CO.
ACM Type	U	2192	Cinto	N/A	-	-	-	-	-	-	-	-	_
7.0 1,pc	+ -			,, .	No Asbestos	No Asbestos	No Asbestos	No Asbestos	No Asbestos	No Asbestos	No Asbestos	No Asbestos	No Asbestos
Asbestos Identification	U	2192		N/A	Detected	Detected	Detected	Detected	Detected	Detected	Detected	Detected	Detected
Moisture	N	2030	%	0.020	12	16	14	16	15	14	16	16	24
	N	2040	70	0.020 N/A									Brown
Soil Colour	IN	2040		IN/A	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown	
Other Material	N	2040		N/A	Stones	Stones	Stones	Stones and	Stones and	Stones	Stones and	Stones and	Stones and
0.117		22.12			0.	0.	01	Roots	Roots		Roots	Roots	Roots
Soil Texture	N	2040		N/A	Clay	Clay	Clay	Clay	Sand	Sand	Clay	Sand	Clay
рН	М	2010		4.0	8.9	8.8	8.8	8.8	8.4	8.5	8.7	8.7	7.6
Sulphate (2:1 Water Soluble) as SO4	М	2120	g/l	0.010	0.11	0.031	0.011	< 0.010	< 0.010	0.067	< 0.010	0.013	< 0.010
Cyanide (Total)	М	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	3.0	2.9	2.8	2.2	1.7	1.9	1.9	1.8	1.9
Arsenic	М	2450	mg/kg	1.0	9.0	7.4	7.3	8.3	9.0	6.9	7.5	9.9	11
Cadmium	М	2450	mg/kg	0.10	< 0.10	0.12	< 0.10	0.16	0.19	0.11	0.11	0.30	0.28
Chromium	М	2450	mg/kg	1.0	34	39	44	49	35	36	45	38	41
Copper	М	2450	mg/kg	0.50	33	26	28	31	31	23	27	28	30
Mercury	М	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.13	0.14
Nickel	М	2450	mg/kg	0.50	49	49	50	59	37	46	62	27	28
Lead	М	2450	mg/kg	0.50	24	31	24	31	44	22	27	80	83
Selenium	М	2450	mg/kg	0.20	0.31	0.22	0.30	0.39	0.31	0.33	0.50	0.39	0.44
Zinc	М	2450	mg/kg	0.50	78	63	56	78	79	51	53	80	69
Chromium (Trivalent)	N	2490	mg/kg	1.0	34	39	44	49	35	36	45	38	41
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Organic Matter	М	2625	%	0.40	2.4	2.1	1.7	2.1	2.4	2.6	1.7	2.4	6.2
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	22
Aliphatic TPH >C21-C35 Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
-	N	2680					< 5.0			< 5.0			22
Total Aliphatic Hydrocarbons			mg/kg	5.0	< 5.0	[C] < 5.0		< 5.0	< 5.0		< 5.0	< 5.0	
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	М	2680	mg/kg	1.0	< 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Project: 5211001 Envision, Sunderland		Char		ala Nia .	04 00000	04.00000	04.00000	04.00000	04.00000	04.00000	04.00000	04.00000	04 00000
Client: Solmek Ltd			mtest Jo		21-39893	21-39893	21-39893	21-39893	21-39893	21-39893	21-39893	21-39893	21-39893
Quotation No.:	Chemtest Sample ID.:		1319230	1319231	1319232	1319233	1319234	1319235	1319236	1319237	1319238		
	Sample Location:			CP+RO 01	CP+RO 03	CP+RO 04	CP05	CP06	TP01	TP19	TP21	TP34	
	Sample Type:			SOIL	SOIL								
	Top Depth (m): Bottom Depth (m):			0.2	0.7	0.7	0.7	0.2	0.4	0.6	0.6	0.4	
				0.3	0.8	0.8							
	·		03-Nov-2021										
	Asbestos Lab:		DURHAM										
Determinand	Accred.	SOP	Units	LOD									
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	38
Aromatic TPH >C21-C35	М	2680	mg/kg	1.0	< 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	180
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	[C] < 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	220
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	[C] < 10	< 10	< 10	< 10	< 10	< 10	< 10	240
Benzene	М	2760	μg/kg	1.0	< 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	М	2760	μg/kg	1.0	< 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	М	2760	μg/kg	1.0	< 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	М	2760	μg/kg	1.0	< 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	М	2760	μg/kg	1.0	< 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl Tert-Butyl Ether	М	2760	μg/kg	1.0	< 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.36
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.71
Fluorene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	1.1
Phenanthrene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	7.0
Anthracene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	1.8
Fluoranthene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	5.8
Pyrene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	3.8
Benzo[a]anthracene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	2.2
Chrysene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	1.9
Benzo[b]fluoranthene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	1.7
Benzo[k]fluoranthene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.60
Benzo[a]pyrene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	1.0
Indeno(1,2,3-c,d)Pyrene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.58
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.16
Benzo[g,h,i]perylene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.39
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	29
PCB 28	U	2815	mg/kg	0.010	< 0.010	[C] < 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 52	U	2815	mg/kg	0.010	< 0.010	[C] < 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 90+101	U	2815	mg/kg		< 0.010	[C] < 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 118	U	2815	mg/kg	0.010	< 0.010	[C] < 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 153	U	2815	mg/kg	0.010	< 0.010	[C] < 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 138	U	2815	mg/kg	0.010	< 0.010	[C] < 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 180	U	2815	mg/kg	0.010	< 0.010	[C] < 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
		_0.0	9,9										
Total PCBs (7 Congeners)	U	2815	mg/kg	0.10	< 0.10	[C] < 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Client: Solmek Ltd		Che	mtest Jo	ob No.:	21-39893	21-39893	21-39893	21-39893	21-39893
Quotation No.:	(st Sam		1319239	1319241	1319242	1319243	1319244
		Sa	ample Lo		TP35	WS06	WS08	WS09	WS10
			Sampl	е Туре:	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Dep	oth (m):	0.1	0.4	0.5	0.1	0.5
		Bot	tom Dep	oth (m):					
			Date Sa	ampled:	03-Nov-2021	03-Nov-2021	03-Nov-2021	03-Nov-2021	03-Nov-202
			Asbest	os Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD					
ACM Type	U	2192		N/A	=	-	=	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbesto Detected
Moisture	N	2030	%	0.020	18	24	15	18	12
Soil Colour	N	2040	70	N/A	Brown	Brown	Brown	Brown	Brown
3011 C01001	IN .	2040		IN//	Stones and	Stones and	Stones and	Stones and	Stones and
Other Material	N	2040		N/A	Roots	Roots	Roots	Roots	Roots
Soil Texture	N	2040		N/A	Clay	Clay	Sand	Sand	Sand
pH	M	2010		4.0	8.3	8.3	8.4	8.0	8.3
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	< 0.010	< 0.010	0.031	< 0.010	< 0.010
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.010	< 0.010	< 0.50	< 0.50	< 0.010
Sulphide (Fasily Liberatable)	N	2325		0.50	2.7	3.0	3.0	3.1	3.1
		_	mg/kg						
Arsenic	M	2450	mg/kg	1.0	5.5	7.8	11	8.9	7.1
Cadmium	M	2450	mg/kg	0.10	< 0.10	0.11	0.31	0.11	< 0.10
Chromium	M	2450	mg/kg	1.0	34	44	43	55	36
Copper	M	2450	mg/kg	0.50	17	24	35	32	19
Mercury	M	2450	mg/kg	0.10	< 0.10	< 0.10	0.15	< 0.10	< 0.10
Nickel	M	2450	mg/kg	0.50	31	44	44	74	32
Lead	M	2450	mg/kg	0.50	20	36	74	30	32
Selenium	M	2450	mg/kg	0.20	0.27	0.24	0.48	0.31	0.50
Zinc	M	2450	mg/kg	0.50	38	56	69	63	44
Chromium (Trivalent)	N	2490	mg/kg	1.0	34	44	43	55	36
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Organic Matter	M	2625	%	0.40	1.7	2.9	1.9	6.0	1.0
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	М	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	М	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	М	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Results - Soil

Client: Solmek Ltd			mtest Jo		21-39893	21-39893	21-39893	21-39893	21-39893
Quotation No.:		Chemte	st Sam	ple ID.:	1319239	1319241	1319242	1319243	1319244
		Sa	ample Lo		TP35	WS06	WS08	WS09	WS10
			Sampl	е Туре:	SOIL	SOIL	SOIL	SOIL	SOIL
			Top De _l	oth (m):	0.1	0.4	0.5	0.1	0.5
			tom De _l						
						03-Nov-2021	03-Nov-2021	03-Nov-2021	
			Asbest	os Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD					
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	М	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10	< 10	< 10
Benzene	M	2760	μg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	М	2760	μg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	M	2760	μg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	M	2760	μg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	М	2760	μg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl Tert-Butyl Ether	М	2760	μg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.13	< 0.10
Pyrene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.10	< 0.10
Benzo[a]anthracene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	М	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
PCB 28	U		mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 52	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 90+101	U		mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 118	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 153	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 138	Ü		mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 180	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Total PCBs (7 Congeners)	U	2815	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Phenois	M		mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request. The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1319231			CP+RO 03	03-Nov-2021	С	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	рН	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N–dimethyl-p-phenylenediamine.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8,>C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21- C35, >C35- C44Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Dichloromethane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1- Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key **UKAS** accredited MCERTS and UKAS accredited M Unaccredited Ν This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for S this analysis This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited SN for this analysis Т This analysis has been subcontracted to an unaccredited laboratory I/S Insufficient Sample U/S Unsuitable Sample N/E not evaluated < "less than" "greater than" > SOP Standard operating procedure LOD Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

- A Date of sampling not supplied
- B Sample age exceeds stability time (sampling to extraction)
- C Sample not received in appropriate containers
- D Broken Container
- E Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to: customerservices@chemtest.com



eurofins Chemtest

Eurofins Chemtest Ltd Depot Road Newmarket CB8 0AL

Tel: 01638 606070 Email: info@chemtest.com

Final Report

Report No.: 21-39897-1

Initial Date of Issue: 19-Nov-2021

Client Solmek Ltd

Client Address: 12 Yarm Road

Stockton-on-Tees

TS18 3NA

Contact(s): Office

Adrian Cutts

Lab

Project S211001 Envision, Sunderland

Quotation No.: Q21-25941 Date Received: 15-Nov-2021

Order No.: SOL5550 Date Instructed: 15-Nov-2021

No. of Samples: 2

Turnaround (Wkdays): 5 Results Due: 19-Nov-2021

Date Approved: 19-Nov-2021

Approved By:

Details: Glynn Harvey, Technical Manager

Results - Soil

Client: Solmek Ltd			mtest Jo	21-39897	21-39897			
Quotation No.: Q21-25941		Chemte	st Sam	ple ID.:	1319275	1319276		
		Sa	ample Lo	ocation:	TP39	TP39		
			Sampl	е Туре:	SOIL	SOIL		
			Top Dep	oth (m):	0.1	0.5		
		Bot	tom Dep	oth (m):	0.3	0.8		
			Date Sa	02-Nov-2021	02-Nov-2021			
			Asbest	os Lab:	DURHAM	DURHAM		
Determinand	Accred.	SOP	Units	LOD				
ACM Type	U	2192		N/A	-	-		
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected		
Moisture	N	2030	%	0.020	15	13		
Soil Colour	N	2040		N/A	Brown	Brown		
Other Material	N	2040		N/A	Stones and Roots	Stones		
Soil Texture	N	2040		N/A	Sand	Sand		
Hq	М	2010		4.0	8.0	8.5		
Sulphate (2:1 Water Soluble) as SO4	М	2120	g/l	0.010	< 0.010	0.036		
Cyanide (Total)	М	2300		0.50	< 0.50	< 0.50		
Sulphide (Easily Liberatable)	N	2325		0.50	3.9	4.1		
Arsenic	М	2450		1.0	16	10		
Cadmium	М	2450	0 0	0.10	0.42	< 0.10		
Chromium	М	2450	mg/kg	1.0	54	48		
Copper	М	2450	mg/kg	0.50	54	33		
Mercury	М	2450	mg/kg	0.10	0.23	< 0.10		
Nickel	М	2450		0.50	39	59		
Lead	М	2450	mg/kg	0.50	120	26		
Selenium	М	2450		0.20	0.52	0.33		
Zinc	М	2450	mg/kg	0.50	110	68		
Chromium (Trivalent)	N	2490	mg/kg	1.0	54	48		
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50		
Organic Matter	М	2625	%	0.40	6.7	1.7		
Aliphatic TPH >C5-C6	N	2680		1.0	[C] < 1.0	[C] < 1.0		
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	[C] < 1.0	[C] < 1.0		
Aliphatic TPH >C8-C10	М	2680		1.0	[C] < 1.0	[C] < 1.0		
Aliphatic TPH >C10-C12	М	2680	mg/kg	1.0	[C] < 1.0	[C] < 1.0		
Aliphatic TPH >C12-C16	М	2680	0	1.0	[C] < 1.0	[C] < 1.0		
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	[C] < 1.0	[C] < 1.0		
Aliphatic TPH >C21-C35	М	2680	mg/kg	1.0	[C] < 1.0	[C] < 1.0		
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	[C] < 1.0	[C] < 1.0		
Total Aliphatic Hydrocarbons	N	2680		5.0	[C] < 5.0	[C] < 5.0		
Aromatic TPH >C5-C7	N	2680	0	1.0	[C] < 1.0	[C] < 1.0		
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	[C] < 1.0	[C] < 1.0		
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	[C] < 1.0	[C] < 1.0		
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	[C] < 1.0	[C] < 1.0		
Aromatic TPH >C12-C16	М	2680		1.0	[C] < 1.0	[C] < 1.0		

Results - Soil

Client: Solmek Ltd		Cho	mtest Jo	21-39897	21-39897	
Quotation No.: Q21-25941	-		st Sam		1319275	1319276
Quotation No.: Q21-25941			ample Lo		TP39	TP39
		- 00		e Type:	SOIL	SOIL
			Top Der		0.1	0.5
			tom Der		0.1	0.8
		БО	Date Sa		0.3 02-Nov-2021	0.6 02-Nov-2021
				os Lab:	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD	DURHAM	DURHAM
Aromatic TPH >C16-C21	U Accrea.	2680	mg/kg	1.0	[C] < 1.0	[C] < 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	[C] < 1.0	[C] < 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	[C] < 1.0	[C] < 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	[C] < 1.0	[C] < 1.0
Total Petroleum Hydrocarbons	N	2680		10.0	[C] < 5.0 [C] < 10	[C] < 5.0 [C] < 10
•			mg/kg		[C] < 10	
Benzene	M M	2760	μg/kg	1.0	[C] < 1.0 [C] < 1.0	[C] < 1.0
Toluene	M	2760 2760	μg/kg	1.0		[C] < 1.0
Ethylbenzene			μg/kg	1.0	[C] < 1.0	[C] < 1.0
m & p-Xylene	M	2760	μg/kg	1.0	[C] < 1.0	[C] < 1.0
o-Xylene	M	2760	μg/kg	1.0	[C] < 1.0	[C] < 1.0
Methyl Tert-Butyl Ether	M	2760	μg/kg	1.0	[C] < 1.0	[C] < 1.0
Naphthalene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10
Acenaphthene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Fluorene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Phenanthrene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Anthracene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Fluoranthene	M	2800	mg/kg	0.10	0.27	< 0.10
Pyrene	M	2800	mg/kg	0.10	0.21	< 0.10
Benzo[a]anthracene	М	2800	mg/kg	0.10	0.16	< 0.10
Chrysene	М	2800	mg/kg	0.10	0.14	< 0.10
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	М	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[a]pyrene	М	2800	mg/kg	0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	М	2800	mg/kg	0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0
PCB 28	U	2815	mg/kg		[C] < 0.010	[C] < 0.010
PCB 52	U	2815	mg/kg		[C] < 0.010	[C] < 0.010
PCB 90+101	U	2815	mg/kg		[C] < 0.010	[C] < 0.010
PCB 118	U	2815	mg/kg		[C] < 0.010	[C] < 0.010
PCB 153	U	2815	mg/kg		[C] < 0.010	[C] < 0.010
PCB 138	U	2815	mg/kg		[C] < 0.010	[C] < 0.010
PCB 180	U	2815	mg/kg		[C] < 0.010	[C] < 0.010
Total PCBs (7 Congeners)	U	2815	mg/kg	0.10	[C] < 0.10	[C] < 0.10
Total Phenols	М	2920	mg/kg	0.10	< 0.10	< 0.10

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request. The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1319275			TP39	02-Nov-2021	С	Plastic Tub 500g
1319276			TP39	02-Nov-2021	С	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	рН	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N–dimethyl-p-phenylenediamine.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8,>C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21- C35, >C35- C44Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Dichloromethane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1- Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key **UKAS** accredited MCERTS and UKAS accredited M Unaccredited Ν This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for S this analysis This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited SN for this analysis Т This analysis has been subcontracted to an unaccredited laboratory I/S Insufficient Sample U/S Unsuitable Sample N/E not evaluated < "less than" "greater than" > SOP Standard operating procedure LOD Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

- A Date of sampling not supplied
- B Sample age exceeds stability time (sampling to extraction)
- C Sample not received in appropriate containers
- D Broken Container
- E Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to: customerservices@chemtest.com



chemtest

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL

Tel: 01638 606070

Email: info@chemtest.com

Final Report

Report No.: 21-40485-1

Initial Date of Issue: 24-Nov-2021

Client Solmek Ltd

Client Address: 12 Yarm Road

Stockton-on-Tees

TS18 3NA

Contact(s): Adrian Cutts

Lab

Office

Project S211001 Envision, Sunderland

Quotation No.: Q21-25941 Date Received: 18-Nov-2021

Order No.: SOL5550 Date Instructed: 18-Nov-2021

No. of Samples: 1

Turnaround (Wkdays): 5 Results Due: 24-Nov-2021

Date Approved: 24-Nov-2021

Approved By:

Details: Glynn Harvey, Technical Manager

Results - Soil

Client: Solmek Ltd		21-40485			
Quotation No.: Q21-25941	Ch		itest Jo		1322142
Quotation 140 Q21 200+1	 		nple Lo		WS04
		Oui	Sample		SOIL
		Т	op Dep	,,	0.70
			om Dep		0.80
					03-Nov-2021
			Asbesto		COVENTRY
Determinand	Accred.	SOP	Units	LOD	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected
Moisture	N	2030	%	0.020	9.8
Soil Colour	N	2040		N/A	Black
Other Material	N	2040		N/A	Stones and Roots
Soil Texture	N	2040		N/A	Loam
рН	М	2010		4.0	8.4
Sulphate (2:1 Water Soluble) as SO4	М	2120	g/l	0.010	0.14
Cyanide (Total)	М		mg/kg		[B] 0.60
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	14
Arsenic	М		mg/kg		8.4
Cadmium	М	2450	mg/kg	0.10	0.22
Chromium	М		mg/kg		8.8
Copper	М		mg/kg		37
Mercury	М		mg/kg		< 0.10
Nickel	М		mg/kg		12
Lead	М		mg/kg		96
Selenium	М	2450	mg/kg	0.20	0.40
Zinc	М		mg/kg		190
Chromium (Trivalent)	N		mg/kg		8.8
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Organic Matter	М	2625	%	0.40	28
Aliphatic TPH >C5-C6	N		mg/kg	1.0	[B] < 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	[B] < 1.0
Aliphatic TPH >C8-C10	М	2680	mg/kg	1.0	[B] < 1.0
Aliphatic TPH >C10-C12	М		mg/kg	1.0	[B] < 1.0
Aliphatic TPH >C12-C16	М		mg/kg	1.0	[B] < 1.0
Aliphatic TPH >C16-C21	М	2680	mg/kg	1.0	[B] < 1.0
Aliphatic TPH >C21-C35	М		mg/kg	1.0	[B] < 1.0
Aliphatic TPH >C35-C44	N		mg/kg	1.0	[B] < 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	[B] < 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	[B] < 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	[B] < 1.0
Aromatic TPH >C8-C10	М	2680	mg/kg	1.0	[B] < 1.0
Aromatic TPH >C10-C12	М	2680	mg/kg	1.0	[B] < 1.0
Aromatic TPH >C12-C16	М		mg/kg	1.0	[B] < 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	[B] < 1.0
Aromatic TPH >C21-C35	М		mg/kg	1.0	[B] < 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	[B] < 1.0

Results - Soil

Client: Solmek Ltd		Chemtest Job No.:				
Quotation No.: Q21-25941	Ch		t Samp		1322142	
			nple Lo		WS04	
			Sample		SOIL	
			op Dep		0.70	
			om Dep		0.80	
			Date Sa	mpled:	03-Nov-2021	
		COVENTRY				
Determinand	Accred.		Units			
Total Aromatic Hydrocarbons	N		mg/kg		[B] < 5.0	
Total Petroleum Hydrocarbons	N		mg/kg	10.0	[B] < 10	
Benzene	М		μg/kg	1.0	[B] < 1.0	
Toluene	M		μg/kg	1.0	[B] < 1.0	
Ethylbenzene	М		μg/kg	1.0	[B] < 1.0	
m & p-Xylene	М	2760	μg/kg	1.0	[B] < 1.0	
o-Xylene	М		μg/kg	1.0	[B] < 1.0	
Methyl Tert-Butyl Ether	М	2760	μg/kg	1.0	[B] < 1.0	
Naphthalene	М	2800	mg/kg	0.10	0.96	
Acenaphthylene	N	2800	mg/kg	0.10	0.30	
Acenaphthene	М		mg/kg		0.32	
Fluorene	М	2800	mg/kg	0.10	0.63	
Phenanthrene	М	2800	mg/kg	0.10	2.3	
Anthracene	М	2800	mg/kg	0.10	0.45	
Fluoranthene	М		mg/kg		3.6	
Pyrene	M	2800	mg/kg	0.10	3.6	
Benzo[a]anthracene	М		mg/kg		2.5	
Chrysene	М	2800	mg/kg	0.10	2.7	
Benzo[b]fluoranthene	М	2800	mg/kg	0.10	4.3	
Benzo[k]fluoranthene	М	2800	mg/kg	0.10	1.4	
Benzo[a]pyrene	М	2800	mg/kg	0.10	3.0	
Indeno(1,2,3-c,d)Pyrene	М	2800	mg/kg	0.10	2.6	
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	0.56	
Benzo[g,h,i]perylene	М	2800	mg/kg	0.10	2.8	
Total Of 16 PAH's	N		mg/kg		32	
PCB 28	U		mg/kg		< 0.010	
PCB 52	U	2815	mg/kg	0.010	< 0.010	
PCB 90+101	U		mg/kg		< 0.010	
PCB 118	U		mg/kg		< 0.010	
PCB 153	U		mg/kg		< 0.010	
PCB 138	U		mg/kg		< 0.010	
PCB 180	U		mg/kg		< 0.010	
Total PCBs (7 Congeners)	U		mg/kg		< 0.10	
Total Phenols	М	2920	mg/kg	0.10	< 0.10	

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request. The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1322142			WS04	03-Nov-2021	В	Amber Glass 250ml
1322142			WS04	03-Nov-2021	В	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	рН	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N–dimethyl-p-phenylenediamine.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8,>C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21- C35, >C35- C44Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Dichloromethane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1- Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key **UKAS** accredited Μ MCERTS and UKAS accredited Ν Unaccredited This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for S this analysis This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited SN for this analysis Т This analysis has been subcontracted to an unaccredited laboratory I/S Insufficient Sample U/S Unsuitable Sample N/E not evaluated "less than" < "greater than" > SOP Standard operating procedure LOD Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

- A Date of sampling not supplied
- B Sample age exceeds stability time (sampling to extraction)
- C Sample not received in appropriate containers
- D Broken Container
- E Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to: customerservices@chemtest.com





Eurofins Chemtest Ltd Depot Road Newmarket CB8 0AL

Tel: 01638 606070 Email: info@chemtest.com

Final Report

Report No.: 21-42812-1

Initial Date of Issue: 09-Dec-2021

Client Solmek Ltd

Client Address: 12 Yarm Road

Stockton-on-Tees

TS18 3NA

Contact(s): Adrian Cutts

Lab Office

Project S211001 Envision, Sunderland

Quotation No.: Date Received: 03-Dec-2021

Order No.: SOL5550 Date Instructed: 03-Dec-2021

No. of Samples: 10

Turnaround (Wkdays): 5 Results Due: 09-Dec-2021

Date Approved: 09-Dec-2021

Approved By:

Details: Glynn Harvey, Technical Manager

Client: Solmek Ltd	1	Che	mtest J	oh No ·	21-42812	21-42812	21-42812	21-42812	21-42812	21-42812	21-42812	21-42812	21-42812
Quotation No.:			st Sam		1333581	1333582	1333583	1333584	1333585	1333586	1333587	1333588	1333589
Quotation No	+		ample L	•	CPRO2	CPRO5	CP03	CP04	CP05	CP07	WS03	WS04	WS05
	1	36		e Type:	WATER	WATER			WATER	WATER		WATER	WATER
	1		Top De		2.25	0.25	WATER 0.65	WATER 2.04	0.30	1.52	WATER 1.20	0.60	0.20
			Date Sa	·	2.25 29-Nov-2021	29-Nov-2021	29-Nov-2021	29-Nov-2021	29-Nov-2021	29-Nov-2021	29-Nov-2021	29-Nov-2021	29-Nov-2021
Determinend	Accred	SOP	Units		29-NOV-2021	29-INOV-2021	29-INOV-2021	29-INOV-2021	29-INOV-2021	29-INOV-2021	29-INOV-2021	29-INOV-2021	29-INOV-2021
Determinand	Accred.	1010	Units	N/A	8.4	8.4	8.3	8.3	8.1	8.2	8.2	8.4	8.4
PH Alkelinity (Tetal)	U	1220	m a/l	10	530	600	410	590	590	610	550	380	330
Alkalinity (Total)	N	1220	mg/l mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	0.35	0.070
Ammonia (Free) Ammoniacal Nitrogen	U	1220		0.050	0.39	0.16	0.030	0.065	0.078	0.20	0.070	3.1	0.60
Sulphate	U	1220	mg/l mg/l	1.0	260	270	410	220	840	290	220	44	14
	U		mg/l		< 0.050	< 0.050		< 0.050		< 0.050		< 0.050	< 0.050
Cyanide (Total)	U	1300		0.050			< 0.050		< 0.050		< 0.050		< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	
Cyanide (Complex)	N	1300 1455	mg/l	0.050	< 0.050 0.95	< 0.050 0.52	< 0.050 0.22	< 0.050 0.27	< 0.050 0.23	< 0.050 1.4	< 0.050 1.1	< 0.050 14	< 0.050 4.3
Arsenic (Total)	N N	1455	μg/l	10.0	160	200	120	180	120	270	65	97	4.3 37
Boron (Total) Barium (Total)	N N	1455	μg/l	5.00	63	74	96	140	56	47	58	16	97
` '	N	1455	μg/l	1.00	< 1.0	< 1.0		< 1.0		< 1.0			< 1.0
Beryllium (Total)	_		μg/l				< 1.0		< 1.0		< 1.0	< 1.0	
Cadmium (Total)	N N	1455	μg/l	0.11	< 0.11 3.4	< 0.11 2.4	< 0.11 2.4	< 0.11 2.3	< 0.11 3.3	< 0.11 2.3	< 0.11 1.3	< 0.11 1.3	< 0.11 < 0.50
Copper (Total)	N	1455	μg/l	0.50	< 0.05	< 0.05			< 0.05	< 0.05		< 0.05	< 0.50
Mercury (Total)	N	1455	μg/l				< 0.05	< 0.05			< 0.05	1.7	4.6
Nickel (Total)	N	1455	μg/l	0.50	2.6 < 0.50	1.6 < 0.50	2.4	3.9	4.2 1.2	1.2	3.8		_
Lead (Total)	N N	1455	μg/l	0.50			< 0.50	< 0.50		< 0.50	< 0.50	< 0.50	< 0.50
Selenium (Total)	N N	1455	μg/l	0.50	< 0.50	< 0.50 1.3	< 0.50	0.53	< 0.50	< 0.50 2.4	< 0.50	< 0.50	< 0.50 0.62
Vanadium (Total) Zinc (Total)	N N	1455 1455	μg/l	0.50 2.5	< 0.50 40	1.3	< 0.50 5.1	< 0.50 11	< 0.50 16	38	< 0.50 4.3	4.9 11	< 2.5
Chromium (Trivalent)	N	1490	μg/l	2.3	[B] < 20	[B] < 20	[B] < 20	[B] < 20	[B] < 20	[B] < 20	4.3 [B] < 20	[B] < 20	[B] < 20
Chromium (Hexavalent)	U	1490	μg/l μg/l	20	[B] < 20	[B] < 20	[B] < 20	[B] < 20	[B] < 20	[B] < 20	[B] < 20	[B] < 20	[B] < 20
Aliphatic TPH >C5-C6	N	1675		0.10	(D) < 20 < 0.10	< 0.10	< 0.10	< 0.10	< 0.10	(B) < 20 < 0.10	(B) < 20 < 0.10	(B) < 20 < 0.10	(D) < 20 < 0.10
Aliphatic TPH >C6-C8	N	1675	μg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	μg/l μg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	μg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	μg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	580
Aliphatic TPH >C16-C21	N	1675	μg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	1100
Aliphatic TPH >C16-C21	N	1675	μg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	51
Aliphatic TPH >C21-C35	N	1675	μg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	μg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	1700
Aromatic TPH >C5-C7	N	1675		0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C5-C7	N	1675	μg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C7-C8 Aromatic TPH >C8-C10	N N	1675	μg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C6-C10	N N	1675	μg/l μg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	19
Aromatic TPH >C10-C12 Aromatic TPH >C12-C16	N N	1675	μg/l μg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	240
Aromatic TPH >C12-C16 Aromatic TPH >C16-C21	N	1675		0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
	N		μg/l										
Aromatic TPH > C21-C35	N	1675 1675	μg/l	0.10	< 0.10 < 0.10	< 0.10 < 0.10	< 0.10 < 0.10	< 0.10	< 0.10	< 0.10 < 0.10	< 0.10 < 0.10	< 0.10 < 0.10	39 < 0.10
Aromatic TPH >C35-C44	N N		μg/l	0.10				< 0.10	< 0.10				
Total Aromatic Hydrocarbons	IN	1675	μg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	300

Client: Solmek Ltd			mtest J		21-42812	21-42812	21-42812	21-42812	21-42812	21-42812	21-42812	21-42812	21-42812
Quotation No.:			st Sam		1333581	1333582	1333583	1333584	1333585	1333586	1333587	1333588	1333589
		Sa	ample L		CPRO2	CPRO5	CP03	CP04	CP05	CP07	WS03	WS04	WS05
			Sampl	e Type:	WATER								
			Top De	, ,	2.25	0.25	0.65	2.04	0.30	1.52	1.20	0.60	0.20
			Date S		29-Nov-2021								
Determinand	Accred.	SOP	Units	LOD									
Total Petroleum Hydrocarbons	N	1675	μg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	2000
Dichlorodifluoromethane	U	1760	μg/l	1.0									[C] < 1.0
Chloromethane	U	1760	μg/l	1.0									[C] < 1.0
Vinyl Chloride	N	1760	μg/l	1.0									[C] < 1.0
Bromomethane	U	1760	μg/l	5									[C] < 5
Chloroethane	U	1760	μg/l	2.0									[C] < 2.0
Trichlorofluoromethane	U	1760	μg/l	1.0									[C] < 1.0
1,1-Dichloroethene	U	1760	μg/l	1.0									[C] < 1.0
Trans 1,2-Dichloroethene	U	1760	μg/l	1.0									[C] < 1.0
1,1-Dichloroethane	U	1760	μg/l	1.0									[C] < 1.0
cis 1,2-Dichloroethene	U	1760	μg/l	1.0									[C] < 1.0
Bromochloromethane	U	1760	μg/l	5									[C] < 5
Trichloromethane	U	1760	μg/l	1.0									[C] < 1.0
1,1,1-Trichloroethane	U	1760	μg/l	1.0									[C] < 1.0
Tetrachloromethane	U	1760	μg/l	1.0									[C] < 1.0
1,1-Dichloropropene	U	1760	μg/l	1.0									[C] < 1.0
Benzene	U	1760	μg/l	1.0	[C] < 1.0	[C] < 1.0	[C] < 1.0	[C] < 1.0	[C] < 1.0	[C] < 1.0	[C] < 1.0	[C] < 1.0	[C] < 1.0
1,2-Dichloroethane	U	1760	μg/l	2.0									[C] < 2.0
Trichloroethene	N	1760	μg/l	1.0									[C] < 1.0
1,2-Dichloropropane	U	1760	μg/l	1.0									[C] < 1.0
Dibromomethane	U	1760	μg/l	10									[C] < 10
Bromodichloromethane	U	1760	μg/l	5									[C] < 5
cis-1,3-Dichloropropene	N	1760	μg/l	10									[C] < 10
Toluene	U	1760	μg/l	1.0	[C] < 1.0	[C] < 1.0	[C] < 1.0	[C] < 1.0	[C] < 1.0	[C] < 1.0	[C] < 1.0	[C] < 1.0	[C] < 1.0
Trans-1,3-Dichloropropene	N	1760	μg/l	10									[C] < 10
1,1,2-Trichloroethane	U	1760	μg/l	10									[C] < 10
Tetrachloroethene	U	1760	μg/l	1.0									[C] < 1.0
1,3-Dichloropropane	U	1760	μg/l	2.0									[C] < 2.0
Dibromochloromethane	U	1760	μg/l	10									[C] < 10
1,2-Dibromoethane	U	1760	μg/l	5									[C] < 5
Chlorobenzene	N	1760	μg/l	1.0									[C] < 1.0
1,1,1,2-Tetrachloroethane	U	1760	μg/l	2.0									[C] < 2.0
Ethylbenzene	U	1760	μg/l	1.0	[C] < 1.0	[C] < 1.0	[C] < 1.0	[C] < 1.0	[C] < 1.0	[C] < 1.0	[C] < 1.0	[C] < 1.0	[C] < 1.0
m & p-Xylene	U	1760	μg/l	1.0	[C] < 1.0	[C] < 1.0	[C] < 1.0	[C] < 1.0	[C] < 1.0	[C] < 1.0	[C] < 1.0	[C] < 1.0	[C] < 1.0
o-Xylene	U	1760	μg/l	1.0	[C] < 1.0	[C] < 1.0	[C] < 1.0	[C] < 1.0	[C] < 1.0	[C] < 1.0	[C] < 1.0	[C] < 1.0	[C] < 1.0
Styrene	U	1760	μg/l	1.0									[C] < 1.0
Tribromomethane	U	1760	μg/l	1.0									[C] < 1.0
Isopropylbenzene	U	1760	μg/l	1.0									[C] < 1.0
Bromobenzene	U	1760	μg/l	1.0									[C] < 1.0
1,2,3-Trichloropropane	N	1760	μg/l	50									[C] < 50

												21-42812
				1333581	1333582	1333583	1333584	1333585	1333586	1333587	1333588	1333589
	Sa			CPRO2	CPRO5	CP03			CP07	WS03	WS04	WS05
				WATER	WATER	WATER				WATER		WATER
			. , ,				2.04	0.30	1.52	1.20	0.60	0.20
				29-Nov-2021	29-Nov-2021	29-Nov-2021	29-Nov-2021	29-Nov-2021	29-Nov-2021	29-Nov-2021	29-Nov-2021	29-Nov-2021
Accred.	SOP	Units	LOD									
U	1760	μg/l	1.0									[C] < 1.0
U	1760	μg/l	1.0									[C] < 1.0
U	1760	μg/l	1.0									[C] < 1.0
U	1760	μg/l	1.0									[C] < 1.0
U	1760	μg/l	1.0									[C] < 1.0
U	1760	μg/l	1.0									[C] < 1.0
U	1760	μg/l	1.0									[C] < 1.0
N	1760	μg/l	1.0									[C] < 1.0
U	1760	μg/l	1.0									[C] < 1.0
U	1760	μg/l	1.0									[C] < 1.0
U	1760	μg/l	1.0									[C] < 1.0
U	1760	μg/l	1.0									[C] < 1.0
U	1760	μg/l	50									[C] < 50
U	1760	μg/l	1.0									[C] < 1.0
U	1760	μg/l	1.0									[C] < 1.0
U	1760	μg/l	2.0									[C] < 2.0
N	1760	μg/l	1.0	[C] < 1.0	[C] < 1.0	[C] < 1.0	[C] < 1.0	[C] < 1.0	[C] < 1.0	[C] < 1.0	[C] < 1.0	[C] < 1.0
N	1790	μg/l	0.50									< 0.50
N	1790	μg/l	0.50									< 0.50
N	1790	μg/l	0.50									< 0.50
N	1790	μg/l	0.50									< 0.50
N	1790		0.50									< 0.50
N	1790	µg/l	0.50									< 0.50
N	1790	µg/l	0.50									< 0.50
N	1790		0.50									< 0.50
N	1790		0.50									< 0.50
N	1790	μg/l	0.50									< 0.50
N	1790	μg/l	0.50									< 0.50
N												< 0.50
N												< 0.50
N	1790	μg/l	0.50									< 0.50
N												< 0.50
N	1790											< 0.50
N	1790		0.50									< 0.50
	1790		0.50									< 0.50
	1790		0.50									< 0.50
		5					ļ—————————————————————————————————————	.	.	l		
N	1790	ua/l	0.50									< 0.50
	1790 1790	µg/l ua/l	0.50									< 0.50 < 0.50
N	1790 1790 1790	μg/l μg/l μg/l	0.50 0.50 0.50									< 0.50 < 0.50 < 0.50
	Accred. U	Chemte Chemte Sa	Chemtest J Chemtest Sample L Sample L Sample L Top De	Chemtest Sample ID.: Sample Location: Sample Type: Top Depth (m): Date Sampled: Accred. SOP Units LOD U 1760 μg/l 1.0 U 1760 μg/l 0.50 U 1790 μg/l 0.50 N 1790 μg/l 0.50	Chemtest Job No.: 21-42812 Chemtest Sample ID.: 1333581 Sample Location: CPRO2 Sample Type: WATER Top Depth (m): 2.25 Date Sampled: 29-Nov-2021 Accred. SOP Units LOD U 1760 µg/I 1.0 U 1760 µg/I 0.50 N 1790 µg/I 0.50 N 1790 µg/	Chemtest Job No.: 21-42812 21-42812 21-42812 Chemtest Sample ID.: 1333581 1333582 Sample Location: CPRO2 CPRO5 Sample Location: CPRO2 CPRO5 Sample Sampled: WATER WATER Date Sampled: 29-Nov-2021 29-Nov-2021 Accred. SOP Units LOD U 1760 µg/l 1.0 U 1760 µg/l	Chemtest Job No.: 21-42812 21-8282 20-8282	Chemtest Job No. 21-42812 21-42812 21-42812 21-42812 Chemtest Sample ID. 1333581 1333582 1333583 1333583 1333583 1333584 1333584 1333584 1333583 1333583 1333584 133584 1335844 133584 1335844 1335844 1335844 1335844 1335844 1335854	Chemtest Job No.: 21-42812 21-42812 21-42812 21-42812 21-42812 Chemtest Sample ID.: 1333581 1333582 1333583 1333584 1333585 1333581 1335581 1335581 1335581 1335581 1335581 1335581 13355	Chemtest Job No. 21-42812 2	Chemiest Job No. 214/2812 2	Chemitest Job No.: 21-42812

Client: Solmek Ltd				ob No.:	21-42812	21-42812	21-42812	21-42812	21-42812	21-42812	21-42812	21-42812	21-42812
Quotation No.:		Chemte	st Sam	ple ID.:	1333581	1333582	1333583	1333584	1333585	1333586	1333587	1333588	1333589
		Sa	ample L	ocation:	CPRO2	CPRO5	CP03	CP04	CP05	CP07	WS03	WS04	WS05
			Samp	le Type:	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
			Top De	pth (m):	2.25	0.25	0.65	2.04	0.30	1.52	1.20	0.60	0.20
			Date S	ampled:	29-Nov-2021	29-Nov-2021	29-Nov-2021	29-Nov-2021	29-Nov-2021	29-Nov-2021	29-Nov-2021	29-Nov-2021	29-Nov-2021
Determinand	Accred.	SOP	Units	LOD									
2-Methylnaphthalene	N	1790	μg/l	0.50									< 0.50
Hexachlorocyclopentadiene	N	1790	μg/l	0.50									< 0.50
2,4,6-Trichlorophenol	N	1790	μg/l	0.50									< 0.50
2,4,5-Trichlorophenol	N	1790	μg/l	0.50									< 0.50
2-Chloronaphthalene	N	1790	μg/l	0.50									< 0.50
2-Nitroaniline	N	1790	μg/l	0.50									< 0.50
Acenaphthylene	N	1790	μg/l	0.50									< 0.50
Dimethylphthalate	N	1790	μg/l	0.50									< 0.50
2,6-Dinitrotoluene	N	1790	μg/l	0.50									< 0.50
Acenaphthene	N	1790	μg/l	0.50									< 0.50
3-Nitroaniline	N	1790	μg/l	0.50									< 0.50
Dibenzofuran	N	1790	μg/l	0.50									< 0.50
4-Chlorophenylphenylether	N	1790	μg/l	0.50									< 0.50
2,4-Dinitrotoluene	N	1790	μg/l	0.50									< 0.50
Fluorene	N	1790	μg/l	0.50									< 0.50
Diethyl Phthalate	N	1790	μg/l	0.50									< 0.50
4-Nitroaniline	N	1790	μg/l	0.50									< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	μg/l	0.50									< 0.50
Azobenzene	N	1790	μg/l	0.50									< 0.50
4-Bromophenylphenyl Ether	N	1790	μg/l	0.50									< 0.50
Hexachlorobenzene	N	1790	μg/l	0.50									< 0.50
Pentachlorophenol	N	1790	μg/l	0.50									< 0.50
Phenanthrene	N	1790	μg/l	0.50									< 0.50
Anthracene	N	1790	μg/l	0.50									< 0.50
Carbazole	N	1790	μg/l	0.50									< 0.50
Di-N-Butyl Phthalate	N	1790	μg/l	0.50									< 0.50
Fluoranthene	N	1790	μg/l	0.50									< 0.50
Pyrene	N	1790	μg/l	0.50									< 0.50
Butylbenzyl Phthalate	N	1790	μg/l	0.50									< 0.50
Benzo[a]anthracene	N	1790	μg/l	0.50									< 0.50
Chrysene	N	1790	μg/l	0.50									< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	μg/l	0.50									< 0.50
Di-N-Octyl Phthalate	N	1790	μg/l	0.50									< 0.50
Benzo[b]fluoranthene	N	1790	μg/l	0.50						1			< 0.50
Benzo[k]fluoranthene	N	1790	μg/l	0.50						1			< 0.50
Benzo[a]pyrene	N	1790	μg/l	0.50						<u> </u>			< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	μg/l	0.50									< 0.50
Dibenz(a,h)Anthracene	N	1790	μg/l	0.50						 			< 0.50
Benzo[g,h,i]perylene	N	1790	μg/l	0.50						 			< 0.50
4-Nitrophenol	N	1790	μg/l	0.50						 			< 0.50
1 Tata Optionol	1 11	1730	P9/1	0.00	I		I		I .	1			~ 0.00

Client: Solmek Ltd				ob No.:	21-42812	21-42812	21-42812	21-42812	21-42812	21-42812	21-42812	21-42812	21-42812
Quotation No.:	(Chemte	st Sam	ple ID.:	1333581	1333582	1333583	1333584	1333585	1333586	1333587	1333588	1333589
		Sa	ample L	ocation:	CPRO2	CPRO5	CP03	CP04	CP05	CP07	WS03	WS04	WS05
			Sampl	e Type:	WATER								
			Top De	pth (m):	2.25	0.25	0.65	2.04	0.30	1.52	1.20	0.60	0.20
			Date Sa	ampled:	29-Nov-2021								
Determinand	Accred.	SOP	Units	LOD									
Naphthalene	U	1800	μg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	U	1800	μg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	1800	μg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	1800	μg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	1800	μg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	1800	μg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	1800	μg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	U	1800	μg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	1800	μg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	1800	μg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	1800	μg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	1800	μg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	1800	μg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1800	μg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	1800	μg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	1800	μg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	1800	μg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Total Phenols	U	1920	mg/l	0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030

Client: Solmek Ltd			mtest Jo		21-42812		
Quotation No.:	(st Sam		1333590		
		Sa	ample Lo		WS06		
				е Туре:	WATER		
			Top De	oth (m):	0.00		
		Date Sample					
Determinand	Accred.	SOP	Units	LOD			
рН	U	1010		N/A	8.4		
Alkalinity (Total)	U	1220	mg/l	10	410		
Ammonia (Free)	N	1220	mg/l	0.050	< 0.050		
Ammoniacal Nitrogen	U	1220	mg/l	0.050	0.24		
Sulphate	U	1220	mg/l	1.0	510		
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050		
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050		
Cyanide (Complex)	U	1300	mg/l	0.050	< 0.050		
Arsenic (Total)	N	1455	μg/l	0.20	< 0.20		
Boron (Total)	N	1455	μg/l	10.0	150		
Barium (Total)	N	1455		5.00	46		
Beryllium (Total)	N	1455	μg/l	1.00	< 1.0		
Cadmium (Total)	N	1455	μg/l	0.11	< 0.11		
Copper (Total)	N	1455	μg/l	0.50	1.7		
Mercury (Total)	N	1455		0.05	< 0.05		
Nickel (Total)	N	1455	μg/l	0.50	3.2		
Lead (Total)	N	1455	μg/l	0.50	< 0.50		
Selenium (Total)	N	1455	μg/l	0.50	< 0.50		
Vanadium (Total)	N	1455	μg/l	0.50	< 0.50		
Zinc (Total)	N	1455	μg/l	2.5	< 2.5		
Chromium (Trivalent)	N	1490		20	[B] < 20		
Chromium (Hexavalent)	U	1490		20	[B] < 20		
Aliphatic TPH >C5-C6	N	1675	μg/l	0.10	< 0.10		
Aliphatic TPH >C6-C8	N	1675	μg/l	0.10	< 0.10		
Aliphatic TPH >C8-C10	N	1675	μg/l	0.10	< 0.10		
Aliphatic TPH >C10-C12	N	1675	μg/l	0.10	< 0.10		
Aliphatic TPH >C12-C16	N	1675		0.10	< 0.10		
Aliphatic TPH >C16-C21	N	1675	μg/l	0.10	< 0.10		
Aliphatic TPH >C21-C35	N	1675		0.10	< 0.10		
Aliphatic TPH >C35-C44	N	1675	μg/l	0.10	< 0.10		
Total Aliphatic Hydrocarbons	N	1675	μg/l	5.0	< 5.0		
Aromatic TPH >C5-C7	N	1675	μg/l	0.10	< 0.10		
Aromatic TPH >C7-C8	N	1675	μg/l	0.10	< 0.10		
Aromatic TPH >C8-C10	N	1675		0.10	< 0.10		
Aromatic TPH >C10-C12	N	1675	μg/l	0.10	< 0.10		
Aromatic TPH >C12-C16	N	1675	μg/l	0.10	< 0.10		
Aromatic TPH >C16-C21	N	1675	μg/l	0.10	< 0.10		
Aromatic TPH >C21-C35	N	1675		0.10	< 0.10		
Aromatic TPH >C35-C44	N	1675	μg/l	0.10	< 0.10		
Total Aromatic Hydrocarbons	N	1675	μg/l	5.0	< 5.0		

Client: Solmek Ltd			ntest Jo		
Quotation No.:	(st Sam		1333590
		Sa	ample Lo		WS06
				e Type:	WATER
			Top Dep		0.00
			Date Sa		29-Nov-2021
Determinand	Accred.	SOP	Units	LOD	
Total Petroleum Hydrocarbons	N	1675	μg/l	10	< 10
Dichlorodifluoromethane	U	1760	μg/l	1.0	
Chloromethane	U	1760	μg/l	1.0	
Vinyl Chloride	N	1760	μg/l	1.0	
Bromomethane	U	1760	μg/l	5	
Chloroethane	U	1760	μg/l	2.0	
Trichlorofluoromethane	U	1760	μg/l	1.0	
1,1-Dichloroethene	U	1760	μg/l	1.0	
Trans 1,2-Dichloroethene	U	1760	μg/l	1.0	
1,1-Dichloroethane	U	1760	μg/l	1.0	
cis 1,2-Dichloroethene	U	1760	μg/l	1.0	
Bromochloromethane	U	1760	μg/l	5	
Trichloromethane	U	1760	μg/l	1.0	
1,1,1-Trichloroethane	U	1760	μg/l	1.0	
Tetrachloromethane	U	1760	μg/l	1.0	
1,1-Dichloropropene	U	1760	μg/l	1.0	
Benzene	U	1760	μg/l	1.0	[C] < 1.0
1,2-Dichloroethane	U	1760	μg/l	2.0	
Trichloroethene	N	1760	μg/l	1.0	
1,2-Dichloropropane	U	1760	μg/l	1.0	
Dibromomethane	U	1760	μg/l	10	
Bromodichloromethane	U	1760	μg/l	5	
cis-1,3-Dichloropropene	N	1760	μg/l	10	
Toluene	U	1760	μg/l	1.0	[C] < 1.0
Trans-1,3-Dichloropropene	N	1760	μg/l	10	[-]
1,1,2-Trichloroethane	U	1760	μg/l	10	
Tetrachloroethene	Ü	1760	μg/l	1.0	
1,3-Dichloropropane	Ü	1760	μg/l	2.0	
Dibromochloromethane	Ü	1760	μg/l	10	
1,2-Dibromoethane	Ü	1760	μg/l	5	
Chlorobenzene	N	1760	μg/l	1.0	
1,1,1,2-Tetrachloroethane	U	1760	μg/l	2.0	
Ethylbenzene	Ü	1760	μg/l	1.0	[C] < 1.0
m & p-Xylene	Ü	1760	μg/l	1.0	[C] < 1.0
o-Xylene	Ü	1760	μg/l	1.0	[C] < 1.0
Styrene	Ü	1760	μg/l	1.0	[0]
Tribromomethane	Ü	1760	μg/l	1.0	
Isopropylbenzene	Ū	1760	μg/l	1.0	
Bromobenzene	U	1760	μg/l	1.0	
1,2,3-Trichloropropane	N	1760	μg/l	50	

Client: Solmek Ltd			mtest Jo		21-42812
Quotation No.:			st Sam		1333590
		Sa	ample Lo		WS06
				е Туре:	WATER
			Top Dep		0.00
			Date Sa		29-Nov-2021
Determinand	Accred.	SOP	Units	LOD	
N-Propylbenzene	U	1760	μg/l	1.0	
2-Chlorotoluene	U	1760	μg/l	1.0	
1,3,5-Trimethylbenzene	U	1760	μg/l	1.0	
4-Chlorotoluene	U	1760	μg/l	1.0	
Tert-Butylbenzene	U	1760	μg/l	1.0	
1,2,4-Trimethylbenzene	U	1760	μg/l	1.0	
Sec-Butylbenzene	U	1760	μg/l	1.0	
1,3-Dichlorobenzene	N	1760	μg/l	1.0	
4-Isopropyltoluene	U	1760	μg/l	1.0	
1,4-Dichlorobenzene	U	1760	μg/l	1.0	
N-Butylbenzene	U	1760	μg/l	1.0	
1,2-Dichlorobenzene	U	1760	μg/l	1.0	
1,2-Dibromo-3-Chloropropane	U	1760	μg/l	50	
1,2,4-Trichlorobenzene	U	1760	μg/l	1.0	
Hexachlorobutadiene	U	1760	μg/l	1.0	
1,2,3-Trichlorobenzene	U	1760	μg/l	2.0	
Methyl Tert-Butyl Ether	N	1760	μg/l	1.0	[C] < 1.0
N-Nitrosodimethylamine	N	1790	μg/l	0.50	
Phenol	N	1790	μg/l	0.50	
2-Chlorophenol	N	1790	μg/l	0.50	
Bis-(2-Chloroethyl)Ether	N	1790	μg/l	0.50	
1,3-Dichlorobenzene	N	1790	μg/l	0.50	
1,4-Dichlorobenzene	N	1790	μg/l	0.50	
1,2-Dichlorobenzene	N	1790	μg/l	0.50	
2-Methylphenol (o-Cresol)	N	1790	μg/l	0.50	
Bis(2-Chloroisopropyl)Ether	N	1790	μg/l	0.50	
Hexachloroethane	N	1790	μg/l	0.50	
N-Nitrosodi-n-propylamine	N	1790	μg/l	0.50	
4-Methylphenol	N	1790	μg/l	0.50	
Nitrobenzene	N	1790	μg/l	0.50	
Isophorone	T N	1790	μg/l	0.50	
2-Nitrophenol	T N	1790	μg/l	0.50	
2,4-Dimethylphenol	N	1790	μg/l	0.50	
Bis(2-Chloroethoxy)Methane	N	1790	μg/l	0.50	
2,4-Dichlorophenol	N	1790	μg/l	0.50	
1,2,4-Trichlorobenzene	N	1790	μg/l	0.50	
Naphthalene	N	1790	μg/l	0.50	
4-Chloroaniline	N	1790	μg/l	0.50	
Hexachlorobutadiene	N	1790	μg/l μg/l	0.50	
	N N				
4-Chloro-3-Methylphenol	I IN	1790	μg/l	0.50	

Client: Solmek Ltd			mtest Jo		21-42812
Quotation No.:		Chemte	st Sam	ple ID.:	1333590
		Sa	ample Lo		WS06
				е Туре:	WATER
			Top De	oth (m):	0.00
			Date Sa	ampled:	29-Nov-2021
Determinand	Accred.	SOP	Units	LOD	
2-Methylnaphthalene	N	1790	μg/l	0.50	
Hexachlorocyclopentadiene	N	1790	μg/l	0.50	
2,4,6-Trichlorophenol	N	1790	μg/l	0.50	
2,4,5-Trichlorophenol	N	1790	μg/l	0.50	
2-Chloronaphthalene	N	1790	μg/l	0.50	
2-Nitroaniline	N	1790	μg/l	0.50	
Acenaphthylene	N	1790	μg/l	0.50	
Dimethylphthalate	N	1790	μg/l	0.50	
2,6-Dinitrotoluene	N	1790	μg/l	0.50	
Acenaphthene	N	1790	μg/l	0.50	
3-Nitroaniline	N	1790	μg/l	0.50	
Dibenzofuran	N	1790	μg/l	0.50	
4-Chlorophenylphenylether	N	1790	μg/l	0.50	
2,4-Dinitrotoluene	N	1790	μg/l	0.50	
Fluorene	N	1790	μg/l	0.50	
Diethyl Phthalate	N	1790	μg/l	0.50	
4-Nitroaniline	N	1790	μg/l	0.50	
2-Methyl-4,6-Dinitrophenol	N	1790	μg/l	0.50	
Azobenzene	N	1790	μg/l	0.50	
4-Bromophenylphenyl Ether	N	1790	μg/l	0.50	
Hexachlorobenzene	N	1790	μg/l	0.50	
Pentachlorophenol	N	1790	μg/l	0.50	
Phenanthrene	N	1790	μg/l	0.50	
Anthracene	N	1790	μg/l	0.50	
Carbazole	N	1790	μg/l	0.50	
Di-N-Butyl Phthalate	N	1790	μg/l	0.50	
Fluoranthene	N	1790	μg/l	0.50	
Pyrene	N	1790	μg/l	0.50	
Butylbenzyl Phthalate	N	1790	μg/l	0.50	
Benzo[a]anthracene	N	1790	μg/l	0.50	
Chrysene	N	1790	μg/l	0.50	
Bis(2-Ethylhexyl)Phthalate	N	1790	μg/l	0.50	
Di-N-Octyl Phthalate	N	1790	μg/l	0.50	
Benzo[b]fluoranthene	N	1790	μg/l	0.50	
Benzo[k]fluoranthene	N	1790	μg/l	0.50	
Benzo[a]pyrene	N	1790	μg/l	0.50	
Indeno(1,2,3-c,d)Pyrene	N	1790	μg/l	0.50	
Dibenz(a,h)Anthracene	N	1790	μg/l	0.50	
Benzo[g,h,i]perylene	N	1790	μg/l	0.50	
4-Nitrophenol	N	1790	μg/l	0.50	

Client: Solmek Ltd		Chei	mtest Jo	ob No.:	21-42812
Quotation No.:		Chemte	st Sam	ple ID.:	1333590
		Sa	ample Lo	ocation:	WS06
				e Type:	
			Top Dep		
			Date Sa	ampled:	29-Nov-2021
Determinand	Accred.	SOP	Units	LOD	
Naphthalene	U	1800	μg/l	0.10	< 0.10
Acenaphthylene	U	1800	μg/l	0.10	< 0.10
Acenaphthene	U	1800	μg/l	0.10	< 0.10
Fluorene	U	1800	μg/l	0.10	< 0.10
Phenanthrene	U	1800	μg/l	0.10	< 0.10
Anthracene	U	1800	μg/l	0.10	< 0.10
Fluoranthene	U	1800	μg/l	0.10	< 0.10
Pyrene	U	1800	μg/l	0.10	< 0.10
Benzo[a]anthracene	U	1800	μg/l	0.10	< 0.10
Chrysene	U	1800	μg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1800	μg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1800	μg/l	0.10	< 0.10
Benzo[a]pyrene	U	1800	μg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1800	μg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1800	μg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1800	μg/l	0.10	< 0.10
Total Of 16 PAH's	U	1800	μg/l	2.0	< 2.0
Total Phenols	U	1920	mg/l	0.030	< 0.030

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request. The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1333581			CPRO2	29-Nov-2021	ВС	Coloured Winchester 1000ml
1333582			CPRO5	29-Nov-2021	ВС	Coloured Winchester 1000ml
1333583			CP03	29-Nov-2021	ВС	Coloured Winchester 1000ml
1333584			CP04	29-Nov-2021	ВС	Coloured Winchester 1000ml
1333585			CP05	29-Nov-2021	ВС	Coloured Winchester 1000ml
1333586			CP07	29-Nov-2021	ВС	Coloured Winchester 1000ml
1333587			WS03	29-Nov-2021	ВС	Coloured Winchester 1000ml
1333588			WS04	29-Nov-2021	ВС	Coloured Winchester 1000ml
1333589			WS05	29-Nov-2021	ВС	Coloured Winchester 1000ml
1333590			WS06	29-Nov-2021	ВС	Coloured Winchester 1000ml

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	рН	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	determination by inductively coupled plasma
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21- C35, >C35-C44Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Pentane extraction / GCxGC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-MS	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.

Report Information

Key	
U	UKAS accredited
М	MCERTS and UKAS accredited
Ν	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
Τ	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

- A Date of sampling not supplied
- B Sample age exceeds stability time (sampling to extraction)
- C Sample not received in appropriate containers
- D Broken Container
- E Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to: customerservices@chemtest.com

APPENDIX D

Laboratory Report Front Sheet

Site name	Job number
Envision, Sunderland	S211001

Solmek 12-16 Yarm Road, Stockton on Tees, TS18 3NA 01642 607083 lab@solmek.com



Client details:

Reference: S211001
Name: Solmek
Address: 12 Yarm Road,
Stockton-on-tees,
TS18 3NA

Telephone: 01642 607083

Email: acutts@solmek.com

FAO: A. Cutts

Date commenced: 12/11/2021

Date reported: 10/01/2022

Observations and interpretations are outside of the UKAS Accreditiation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced in full, without the prior written approval of the laboratory.

Samples will be held at the laboratory for a period of 4 weeks after the report date. After the above reporting date the samples will be disposed of. Should further testing be required then the office should be informed before the above date.

Signature:	Approved Signitories:				
KWalkin	J. Brischuck (Laboratory Manager) K. Watkin (Quality Manager)				

Site name Job number

Envision, Sunderland S211001

Solmek 12-16 Yarm Road, Stockton on Tees, TS18 3NA 01642 607083 lab@solmek.com



	De	pth	-		Oven		_	_		_	ID.	**	Plasticity	Barrary Comments and
Hole	Тор	Base	Type	w	temp.	wa	Pa	Pr	wL	wP	IP	IL	class	Preparation method
	m	m		%	ос	%	%	%	%	%	%			
CP01	1.20	1.65	B+D	22	105	22	100	0	43-s	23	20	-0.050	CI	Tested in natural condition
CP01	3.00	3.45	B+D	28	105	30	92	8	42-s	23	19	0.368	CI	Tested after >425µm removed by hand
CP01	5.00	5.45	B+D	17	105	21	82	18	24-s	13	11	0.727	CL	Tested after >425µm removed by hand
CP01	6.00	6.45	B+D	11	105	11	100	0	29-s	16	13	-0.385	CL	Tested in natural condition
CP02	1.20	1.65	B+D	20	105	20	100	0	51-s	27	24	-0.292	СН	Tested in natural condition
CP02	2.00	2.45	U	26	105									
CP02	3.00	3.45	B+D	19	105	19	100	0	44-s	23	21	-0.190	CI	Tested in natural condition
CP02	4.00	4.45	U	17	105									
CP02	5.00	5.45	D	7.6	105	9.3	82	18	26-s	13	13	-0.285	CL	Tested after >425µm removed by hand
CP02	6.00	6.45	U	15	105									
CP02	7.50	7.95	D	16	105	20	80	20	30-s	17	13	0.231	CL	Tested after >425μm removed by hand
CP03	1.20	1.65	B+D	18	105	21	87	13	45-s	24	21	-0.143	CI	Tested after >425μm removed by hand
CP03	3.00	3.45	B+D	14	105	16	86	14	28-s	16	12	0.000	CL	Tested after >425μm removed by hand
CP03	4.00	4.45	U	18	105									
CP03	5.00	5.45	B+D	17	105	33	52	48	27-s	14	13	1.462	CL	Tested after >425μm removed by hand
CP03	6.00	6.45	D	18	105	21	87	13	26-s	13	13	0.615	CL	Tested after >425µm removed by hand
CP04	1.20	1.65	B+D	21	105	22	95	5	46-s	25	21	-0.143	CI	Tested after >425µm removed by hand
CP04	2.45	2.55	D	23	105									
CP04	3.00	3.45	B+D	16	105	19	86	14	31-s	18	13	0.077	CL	Tested after >425µm removed by hand
CP04	4.00	4.45	U	24	105									

Key	Description		Category	BS Test Code
W	Moisture content			BS 1377:1990 Part 2 Clause 3.2
wa	Equivalent moistur sieve	e content passing 425μm		BS 1377:1990 Part 2 Clause 3.2
wL	Liguid limit	Single point	-S	BS 1377:1990 Part 2 Clause 4.4
WL	Liquia ilitiit	Four point	-f	BS 1377:1990 Part 2 Clause 4.3
wP	Plastic limit			BS 1377:1990 Part 2 Clause 5.2
Pa	Percentage passing	g 425um sieve		
Pr	Percentage retaine	ed 425um sieve		
IP	Plasticity index			BS 1377:1990 Part 2 Clause 5.4
IL	Liquidity index	•		BS 1377:1990 Part 2 Clause 5.4
	Suffix indicating te Accredited"	st is "Not UKAS	*	

Approved by	KW
Approval date	19/11/2021 12:25
Date report generated	
Report Number	

Site name Job number

Envision, Sunderland S211001

Solmek 12-16 Yarm Road, Stockton on Tees, TS18 3NA 01642 607083 lab@solmek.com



Hole	De	pth	Tumo		Oven		Da	D.,	T	D	IP	11	Plasticity	Dranavation mathed
Hole	Тор	Base	Туре	w	temp.	wa	Pa	Pr	wL	wP		IL	class	Preparation method
	m	m		%	ос	%	%	%	%	%	%			
CP04	6.45	6.55	D	15	105									
CP04	7.50	7.95	B+D	19	105	22	87	13	36-s	20	16	0.125	CI	Tested after >425µm removed by hand
CP04	9.00	9.45	B+D	13	105	13	100	0	32-s	18	14	-0.357	CL	Tested in natural condition
CP04	10.00	10.45	B+D	14	105	18	79	21	29-s	16	13	0.154	CL	Tested after >425µm removed by hand
CP05	1.20	1.30	B+D	20	105	22	90	10	42-s	22	20	0.000	CI	Tested after >425µm removed by hand
CP05	3.00	3.45	B+D	20	105	22	92	8	44-s	25	19	-0.158	CI	Tested after >425µm removed by hand
CP05	4.00	4.45	B+D	13	105	18	71	29	29-s	17	12	0.083	CL	Tested after >425µm removed by hand
CP05	6.00	6.45	B+D	17	105	23	75	25	30-s	17	13	0.462	CL	Tested after >425µm removed by hand
CP06	1.20	1.65	B+D	24	105	24	100	0	46-s	24	22	0.000	CI	Tested in natural condition
CP06	3.00	3.45	B+D	23	105	23	100	0	31-s	20	11	0.273	CL	Tested in natural condition
CP06	4.00	4.45	U	32	105									
CP06	5.00	5.45	B+D	24	105	24	98	2	35-s	23	12	0.083	CI	Tested after >425µm removed by hand
CP06	6.00	6.45	U	24	105									
CP06	7.50	7.95	B+D	11	105	15	75	25	28-s	15	13	0.000	CL	Tested after >425µm removed by hand
CP06	10.50	10.95	B+D	11	105	13	84	16	28-s	14	14	-0.071	CL	Tested after >425µm removed by hand
CP06	12.00	12.45	В	22	105									
CP06	13.50	13.95	B+D	16	105	20	81	19	31-s	16	15	0.267	CL	Tested after >425µm removed by hand
CP06	15.00	15.45	B+D	18	105	22	82	18	29-s	13	16	0.563	CL	Tested after >425µm removed by hand
CP06	16.00	16.45	B+D	18	105	21	86	14	30-s	17	13	0.308	CL	Tested after >425µm removed by hand
CP07	1.20	1.65	B+D	20	105	22	91	9	48-s	26	22	-0.182	CI	Tested after >425µm removed by hand

Key	Description		Category	BS Test Code				
W	Moisture content			BS 1377:1990 Part 2 Clause 3.2				
wa	Equivalent moistu sieve	re content passing 425μm		BS 1377:1990 Part 2 Clause 3.2				
wL	Liguid limit	Single point	-S	BS 1377:1990 Part 2 Clause 4.4				
WL	Liquia iimit	Four point	-f	BS 1377:1990 Part 2 Clause 4.3				
wP	Plastic limit			BS 1377:1990 Part 2 Clause 5.2				
Pa	Percentage passin	g 425um sieve						
Pr	Percentage retaine	ed 425um sieve						
IP	Plasticity index			BS 1377:1990 Part 2 Clause 5.4				
IL	Liquidity index	•		BS 1377:1990 Part 2 Clause 5.4				
	Suffix indicating te Accredited"	st is "Not UKAS	*					

Approved by	KW
Approval date	16/11/2021 14:17
Date report generated	
Report Number	

Site name Job number

Envision, Sunderland S211001

Solmek 12-16 Yarm Road, Stockton on Tees, TS18 3NA 01642 607083 lab@solmek.com



	De	pth	-		Oven		_	_		_	ID.	**	Plasticity	Barrary Comments and
Hole	Тор	Base	Type	w	temp.	wa	Pa	Pr	wL	wP	IP	IL	class	Preparation method
	m	m		%	ос	%	%	%	%	%	%			
CP07	2.00	2.45	B+D	17	105									
CP07	3.00	3.45	U	23	105	25	92	8	42-s	21	21	0.190	CI	Tested after >425µm removed by hand
CP07	4.00	4.45	B+D	19	105	19	100	0	44-s	23	21	-0.190	CI	Tested in natural condition
CP07	5.00	5.45	U	28	105									
CP07	5.45	5.55	В	21	105									
CP07	6.00	6.45	B+D	21	105	21	100	0	42-s	22	20	-0.050	CI	Tested in natural condition
CP07	7.95	8.05	В	34	105									
CP07	9.00	9.45	B+D	21	105	23	91	9	44-s	23	21	0.000	CI	Tested after >425μm removed by hand
CP07	10.50	10.95	B+D	27	105	28	95	5	45-s	26	19	0.105	CI	Tested after >425µm removed by hand
CP07	12.00	12.45	B+D	32	105	32	100	0	30-s	20	10	1.200	CL	Tested in natural condition
CP07	13.50	13.95	B+D	20	105	22	92	8	28-s	14	14	0.571	CL	Tested after >425μm removed by hand
CP07	14.00	14.45	B+D	14	105	14	100	0	28-s	15	13	-0.077	CL	Tested in natural condition
CPRO01	0.70	0.80	В	27	105	28	96	4	56-s	28	28	0.000	СН	Tested after >425µm removed by hand
CPRO01	1.20	1.65	U	20	105									
CPRO01	2.00	2.45	B+D	22	105	24	91	9	43-s	21	22	0.136	CI	Tested after >425µm removed by hand
CPRO01	2.00	2.45	U	12	105									
CPRO01	3.00	3.45	U	16	105									
CPRO01	4.00	4.45	B+D	16	105	20	80	20	37-s	25	12	-0.417	MI	Tested after >425µm removed by hand
CPRO02	0.30	0.40	В	36	105	47	77	23	37-s	25	12	1.833	MI	Tested after >425µm removed by hand
CPRO02	1.20	1.65	B+D	12	105									

Key	Description		Category	BS Test Code			
W	Moisture content			BS 1377:1990 Part 2 Clause 3.2			
wa	Equivalent moistu sieve	re content passing 425μm		BS 1377:1990 Part 2 Clause 3.2			
wL	Liquid limit	Single point	-S	BS 1377:1990 Part 2 Clause 4.4			
WL	Liquiu iiiiit	Four point	-f	BS 1377:1990 Part 2 Clause 4.3			
wP	Plastic limit			BS 1377:1990 Part 2 Clause 5.2			
Pa	Percentage passin	ng 425um sieve					
Pr	Percentage retain	ed 425um sieve					
IP	Plasticity index			BS 1377:1990 Part 2 Clause 5.4			
IL	Liquidity index			BS 1377:1990 Part 2 Clause 5.4			
	Suffix indicating to Accredited"	est is "Not UKAS	*				

Approved by	T. Finnimore
Approval date	25/11/2021 11:15
Date report generated	
Report Number	

Site name Job number

Envision, Sunderland S211001

Solmek 12-16 Yarm Road, Stockton on Tees, TS18 3NA 01642 607083 lab@solmek.com



	De	pth			Oven		_	_			ID.	**	Plasticity	Daniel de la constitució
Hole	Тор	Base	Type	w	temp.	wa	Pa	Pr	wL	wP	IP	IL	class	Preparation method
	m	m		%	ос	%	%	%	%	%	%			
CPRO02	3.00	3.45	B+D	11	105	16	69	31	27-s	12	15	0.267	CL	Tested after >425μm removed by hand
CPRO02	4.00	4.45	U	14	105									
CPRO02	5.00	5.45	B+D	12	105	12	100	0	33-s	19	14	-0.500	CL	Tested in natural condition
CPRO03	0.00	0.30	В	35	105									
CPRO03	1.20	1.65	B+D	24	105	24	100	0	47-s	25	22	-0.045	CI	Tested in natural condition
CPRO03	2.00	2.45	U	17	105									
CPRO03	3.00	3.45	B+D	31	105	32	98	2	40-s	25	15	0.467	CI	Tested after >425μm removed by hand
CPRO03	5.00	5.45	B+D	14	105	18	77	23	28-s	11	17	0.412	CL	Tested after >425μm removed by hand
CPRO03	6.00	6.45	D	16	105									
CPRO04	0.30	0.60	В	12	105									
CPRO04	1.20	1.65	B+D	21	105	22	96	4	44-s	23	21	-0.048	CI	Tested after >425µm removed by hand
CPRO04	2.00	2.45	U	27	105									
CPRO04	3.00	3.45	B+D	25	105	26	96	4	43-s	21	22	0.227	CI	Tested after >425μm removed by hand
CPRO04	4.00	4.45	U	12	105									
CPRO04	5.00	5.45	B+D	16	105	20	79	21	30-s	14	16	0.375	CL	Tested after >425μm removed by hand
CPRO05	0.40	0.80	В	29	105	29	100	0	49-s	27	22	0.091	CI	Tested in natural condition
CPRO05	1.20	1.65	B+D	23	105									
CPRO05	2.45	2.55	В	16	105									
CPRO05	3.00	3.45	B+D	20	105	22	93	7	47-s	30	17	-0.471	MI	Tested after >425μm removed by hand
CPRO05	4.00	4.45	U	22	105									

Key	Description		Category	BS Test Code
W	Moisture content			BS 1377:1990 Part 2 Clause 3.2
wa	Equivalent moisture content passing 425μm sieve			BS 1377:1990 Part 2 Clause 3.2
wL	Liquid limit	Single point	-S	BS 1377:1990 Part 2 Clause 4.4
		Four point	-f	BS 1377:1990 Part 2 Clause 4.3
wP	Plastic limit			BS 1377:1990 Part 2 Clause 5.2
Pa	Percentage passing 425um sieve			
Pr	Percentage retained 425um sieve			
IP	Plasticity index			BS 1377:1990 Part 2 Clause 5.4
IL	Liquidity index			BS 1377:1990 Part 2 Clause 5.4
	Suffix indicating test is "Not UKAS Accredited"		*	

Approved by	T. Finnimore
Approval date	03/12/2021 12:10
Date report generated	
Report Number	

Site name Job number

Envision, Sunderland S211001

Solmek 12-16 Yarm Road, Stockton on Tees, TS18 3NA 01642 607083 lab@solmek.com



	De	pth		1	Oven	1	<u> </u>	l					Plasticity	
Hole	Тор	Base	Type	w	temp.	wa	Pa	Pr	wL	wP	IP	IL	class	Preparation method
	m	m		%	ос	%	%	%	%	%	%			
CPRO05	5.00	5.45	B+D	16	105	20	80	20	23-s	14	9	0.667	CL	Tested after >425µm removed by hand
CPRO05	6.45	6.55	В	25	105									
CPRO05	9.00	9.45	U	14	105									
CPRO05	10.50	10.95	B+D	28	105	39	72	28	47-s	17	30	0.733	CI	Tested after >425µm removed by hand
CPRO05	11.00	11.45	D	46	105									
CPRO06	0.30	0.80	В	24	105									
CPRO06	1.20	1.65	B+D	28	105	31	90	10	30-s	18	12	1.083	CL	Tested after >425µm removed by hand
CPRO06	2.00	2.45	U	12	105									
CPRO06	3.00	3.45	B+D	16	105	16	98	2	31-s	15	16	0.063	CL	Tested after >425µm removed by hand
CPRO06	4.00	4.45	U	26	105									
CPRO06	5.00	5.45	B+D	30	105	31	98	2	35-s	22	13	0.692	CI	Tested after >425µm removed by hand
CPRO06	6.00	6.45	U	23	105									
CPRO06	7.50	7.95	B+D	16	105	20	81	19	29-s	18	11	0.182	CL	Tested after >425μm removed by hand
CPRO06	9.00	9.45	U	23	105									
CPRO06	9.45	9.55	В	15	105	19	80	20	27-s	12	15	0.467	CL	Tested after >425μm removed by hand
CPRO06	10.50	10.95	B+D	15	105	18	84	16	26-s	13	13	0.385	CL	Tested after >425μm removed by hand
CPRO06	12.00	12.45	B+D	16	105	16	100	0	27-s	14	13	0.154	CL	Tested in natural condition
CPRO06	13.50	13.95	B+D	23	105	23	100	0	27-s	18	9	0.556	CL	Tested in natural condition
CPRO06	15.00	15.45	B+D	26	105	26	100	0	43-s	22	21	0.190	CI	Tested in natural condition
CPRO06	16.00	16.45	D	21	105	23	93	7	42-s	24	18	-0.056	CI	Tested after >425μm removed by hand

Key	Description		Category	BS Test Code
W	Moisture content			BS 1377:1990 Part 2 Clause 3.2
wa	Equivalent moistur sieve	e content passing 425μm		BS 1377:1990 Part 2 Clause 3.2
wL	Liguid limit	Single point	-S	BS 1377:1990 Part 2 Clause 4.4
WL	Liquia ilitiit	Four point	-f	BS 1377:1990 Part 2 Clause 4.3
wP	Plastic limit			BS 1377:1990 Part 2 Clause 5.2
Pa	Percentage passing	g 425um sieve		
Pr	Percentage retaine	ed 425um sieve		
IP	Plasticity index			BS 1377:1990 Part 2 Clause 5.4
IL	Liquidity index	•		BS 1377:1990 Part 2 Clause 5.4
	Suffix indicating te Accredited"	st is "Not UKAS	*	

Approved by	T. Finnimore
Approval date	03/12/2021 12:11
Date report generated	
Report Number	

Site name Job number

Envision, Sunderland S211001

Solmek 12-16 Yarm Road, Stockton on Tees, TS18 3NA 01642 607083 lab@solmek.com



IIala	De	pth	T		Oven			D	T		ID	**	Plasticity	Dunamentian method
Hole	Тор	Base	Туре	W	temp.	wa	Pa	Pr	wL	wP	IP	IL	class	Preparation method
	m	m		%	ос	%	%	%	%	%	%			
TP01	0.40		В	20	105	21	94	6	31-s	25	6	-0.667	ML	Tested after >425μm removed by hand
TP01	1.60		В	15	105	17	88	12	28-s	14	14	0.214	CL	Tested after >425µm removed by hand
TP02	0.50	0.70	В	23	105	25	92	8	44-s	25	19	0.000	CI	Tested after >425µm removed by hand
TP02	1.20	1.30	В	21	105	25	85	15	40-s	24	16	0.063	CI	Tested after >425µm removed by hand
TP03	0.60	0.80	В	22	105	24	92	8	40-s	19	21	0.238	CI	Tested after >425µm removed by hand
TP04	1.00	1.20	В	21	105	23	91	9	45-s	27	18	-0.222	MI	Tested after >425µm removed by hand
TP04	2.00	2.20	В	8.4	105	8.8	95	5	42-s	24	18	-0.844	CI	Tested after >425µm removed by hand
TP05	1.00	1.20	В	22	105	26	84	16	48-s	26	22	0.000	CI	Tested after >425µm removed by hand
TP05	2.00	2.20	В	14	105									
TP05	3.00	3.20	В	15	105	18	82	18	32-s	20	12	-0.167	CL	Tested after >425µm removed by hand
TP06	0.50	1.00	В	28	105	30	94	6	45-s	25	20	0.250	CI	Tested after >425µm removed by hand
TP06	1.40	1.60	В	22	105	22	100	0	47-s	22	25	0.000	CI	Tested in natural condition
TP08	0.70	0.80	В	22	105	24	93	7	46-s	21	25	0.120	CI	Tested after >425µm removed by hand
TP08	1.40	1.50	В	20	105	25	80	20	44-s	25	19	0.000	CI	Tested after >425µm removed by hand
TP09	1.20	1.40	В	41	105		22	78	51-s	31	20		МН	Tested after washing to remove >425µm
TP09	1.80	2.00	В	25	105	30	82	18	45-s	26	19	0.211	CI	Tested after >425µm removed by hand
TP10	0.80		В	24	105	25	96	4	42-s	17	25	0.320	CI	Tested after >425µm removed by hand
TP10	1.60		В	23	105	25	92	8	45-s	26	19	-0.053	CI	Tested after >425µm removed by hand
TP11	0.50	0.60	В	14	105	14	100	0	42-s	20	22	-0.273	CI	Tested after >425µm removed by hand
TP11	1.60	1.80	В	21	105	25	83	17	38-s	24	14	0.071	CI	Tested after >425µm removed by hand

Key	Description		Category	BS Test Code
W	Moisture content			BS 1377:1990 Part 2 Clause 3.2
wa	Equivalent moistur sieve	e content passing 425μm		BS 1377:1990 Part 2 Clause 3.2
wL	Liguid limit	Single point	-S	BS 1377:1990 Part 2 Clause 4.4
WL	Liquia ilitiit	Four point	-f	BS 1377:1990 Part 2 Clause 4.3
wP	Plastic limit			BS 1377:1990 Part 2 Clause 5.2
Pa	Percentage passing	g 425um sieve		
Pr	Percentage retaine	ed 425um sieve		
IP	Plasticity index			BS 1377:1990 Part 2 Clause 5.4
IL	Liquidity index	•		BS 1377:1990 Part 2 Clause 5.4
	Suffix indicating te Accredited"	st is "Not UKAS	*	

Approved by	T. Finnimore					
Approval date	02/12/2021 09:23					
Date report generated						
Report Number						
TP09 at 1.20m : Sample tested was deviating (78% retained on 425um sieve) : wa% and IL						

Site name Job number

Envision, Sunderland S211001

Solmek 12-16 Yarm Road, Stockton on Tees, TS18 3NA 01642 607083 lab@solmek.com



IIala	De	pth	T		Oven		D -	D	T	D	ID	**	Plasticity	Duamanatian mathad
Hole	Тор	Base	Type	W	temp.	wa	Pa	Pr	wL	wP	IP	IL	class	Preparation method
	m	m		%	ос	%	%	%	%	%	%			
TP12	0.30	0.40	В	29	105	45	65	35	45-s	28	17	1.000	MI	Tested after >425μm removed by hand
TP12	1.60	1.70	В	21	105	22	95	5	44-s	26	18	-0.222	CI	Tested after >425μm removed by hand
TP13	0.30	0.40	В	29	105	31	94	6	51-s	33	18	-0.111	МН	Tested after >425μm removed by hand
TP13	1.20	1.30	В	17	105	18	93	7	42-s	25	17	-0.412	CI	Tested after >425μm removed by hand
TP13	2.00	2.20	В	23	105	29	79	21	28-s	16	12	1.083	CL	Tested after >425μm removed by hand
TP14	1.50		В	23	105	25	92	8	45-s	21	24	0.167	CI	Tested after >425μm removed by hand
TP14	2.00		В	27	105	28	98	2	49-s	24	25	0.160	CI	Tested after >425μm removed by hand
TP15	0.60	0.80	В	25	105	26	96	4	50-s	22	28	0.143	СН	Tested after >425μm removed by hand
TP15	1.60	1.80	В	20	105	21	95	5	47-s	26	21	-0.238	CI	Tested after >425µm removed by hand
TP16	1.00	1.20	В	21	105	23	93	7	48-s	27	21	-0.190	CI	Tested after >425µm removed by hand
TP16	2.00	2.20	В	17	105	20	85	15	30-s	18	12	0.167	CL	Tested after >425μm removed by hand
TP16	3.00	3.20	В	13	105	15	84	16	28-s	14	14	0.071	CL	Tested after >425μm removed by hand
TP17	1.00	1.20	В	28	105									
TP17	2.00	2.20	В	14	105									
TP17	3.00	3.20	В	14	105									
TP18	1.00	1.20	В	12	105	15	81	19	30-s	17	13	-0.154	CL	Tested after >425μm removed by hand
TP18	3.00	3.20	В	12	105									
TP19	1.00	1.20	В	20	105									
TP19	2.00	2.20	В	21	105									
TP20	0.80	1.00	В	19	105									

Key	Description		Category	BS Test Code
W	Moisture content			BS 1377:1990 Part 2 Clause 3.2
wa	Equivalent moistur sieve	e content passing 425μm		BS 1377:1990 Part 2 Clause 3.2
wL	Liguid limit	Single point	-S	BS 1377:1990 Part 2 Clause 4.4
WL	Liquia ilitiit	Four point	-f	BS 1377:1990 Part 2 Clause 4.3
wP	Plastic limit			BS 1377:1990 Part 2 Clause 5.2
Pa	Percentage passing	g 425um sieve		
Pr	Percentage retaine	ed 425um sieve		
IP	Plasticity index			BS 1377:1990 Part 2 Clause 5.4
IL	Liquidity index	•		BS 1377:1990 Part 2 Clause 5.4
	Suffix indicating te Accredited"	st is "Not UKAS	*	

Approved by	T. Finnimore
Approval date	02/12/2021 09:27
Date report generated	
Report Number	

Site name Job number

Envision, Sunderland S211001

Solmek 12-16 Yarm Road, Stockton on Tees, TS18 3NA 01642 607083 lab@solmek.com



Uele	De	Depth			Oven		Da	D	Y	D	ID	11	Plasticity	Droporation mathed
Hole	Тор	Base	Туре	W	temp.	wa	Pa	Pr	wL	wP	IP	IL	class	Preparation method
	m	m		%	ОС	%	%	%	%	%	%			
TP20	2.80	3.00	В	24	105									
TP21	1.00	1.20	В	19	105	23	84	16	44-s	25	19	-0.105	CI	Tested after >425µm removed by hand
TP21	2.00	2.20	В	18	105	22	83	17	47-s	25	22	-0.136	CI	Tested after >425μm removed by hand
TP21	3.00	3.20	В	21	105	23	91	9	45-s	23	22	0.000	CI	Tested after >425µm removed by hand
TP22	1.00	1.20	В	21	105	21	100	0	46-s	24	22	-0.136	CI	Tested in natural condition
TP22	3.00	3.20	В	18	105									
TP23	1.60	1.80	В	14	105	14	100	0	39-s	21	18	-0.389	CI	Tested in natural condition
TP23	2.60	2.80	В	18	105	23	80	20	45-s	25	20	-0.100	CI	Tested after >425µm removed by hand
TP24	0.70		В	18	105	18	98	2	46-s	21	25	-0.120	CI	Tested after >425µm removed by hand
TP24	1.40	1.50	В	22	105	23	96	4	47-s	22	25	0.040	CI	Tested after >425µm removed by hand
TP25	0.40	0.70	В	22	105	25	87	13	46-s	20	26	0.192	CI	Tested after >425µm removed by hand
TP25	0.80		В	23	105	24	94	6	43-s	23	20	0.050	CI	Tested after >425µm removed by hand
TP26	0.50	0.60	В	18	105	18	100	0	46-s	25	21	-0.333	CI	Tested in natural condition
TP26	1.10	1.30	В	21	105	22	96	4	39-s	22	17	0.000	CI	Tested after >425µm removed by hand
TP27	1.70	1.80	В	23	105	24	96	4	47-s	21	26	0.115	CI	Tested after >425µm removed by hand
TP27	2.20	2.30	В	23	105	25	93	7	36-s	22	14	0.214	CI	Tested after >425µm removed by hand
TP28	2.40	2.50	В	25	105	25	99	1	37-s	24	13	0.077	CI	Tested after >425µm removed by hand
TP29	1.40	1.50	В	20	105	22	92	8	47-s	26	21	-0.190	CI	Tested after >425µm removed by hand
TP29	2.40	2.50	В	21	105	22	97	3	51-s	22	29	0.000	СН	Tested after >425µm removed by hand
TP29	3.20	3.30	В	15	105									

Key	Description		Category	BS Test Code		
W	Moisture content			BS 1377:1990 Part 2 Clause 3.2		
wa	Equivalent moistui sieve	re content passing 425μm		BS 1377:1990 Part 2 Clause 3.2		
wL	Liguid limit	Single point	-S	BS 1377:1990 Part 2 Clause 4.4		
WL	Liquiu iiiiiit	Four point	-f	BS 1377:1990 Part 2 Clause 4.3		
wP	Plastic limit			BS 1377:1990 Part 2 Clause 5.2		
Pa	Percentage passing	g 425um sieve				
Pr	Percentage retaine	ed 425um sieve				
IP	Plasticity index			BS 1377:1990 Part 2 Clause 5.4		
IL	Liquidity index			BS 1377:1990 Part 2 Clause 5.4		
	Suffix indicating te Accredited"	st is "Not UKAS	*			

Approved by	KW
Approval date	16/11/2021 14:17
Date report generated	
Report Number	

Site name Job number

Envision, Sunderland S211001

Solmek 12-16 Yarm Road, Stockton on Tees, TS18 3NA 01642 607083 lab@solmek.com



	De	pth	-		Oven		_	_			I.D.	**	Plasticity	Barran Barran Hard
Hole	Тор	Base	Туре	W	temp.	wa	Pa	Pr	wL	wP	IP	IL	class	Preparation method
	m	m		%	ос	%	%	%	%	%	%			
TP30	0.80	0.90	В	12	105	16	76	24	46-s	27	19	-0.579	MI	Tested after >425μm removed by hand
TP30	2.20	2.40	В	22	105	22	98	2	45-s	20	25	0.080	CI	Tested after >425µm removed by hand
TP31	1.00	1.20	В	19	105	22	86	14	45-s	25	20	-0.150	CI	Tested after >425µm removed by hand
TP31	2.00	2.20	В	21	105	23	91	9	43-s	25	18	-0.111	CI	Tested after >425µm removed by hand
TP31	3.00	3.20	В	25	105	35	71	29	50-s	22	28	0.464	СН	Tested after >425µm removed by hand
TP32	1.00	1.20	В	21	105	25	83	17	44-s	24	20	0.050	CI	Tested after >425µm removed by hand
TP32	2.00	2.20	В	21	105									
TP32	3.00	3.20	В	16	105									
TP33	1.00	1.20	В	27	105	31	88	12	50-s	29	21	0.095	МН	Tested after >425µm removed by hand
TP33	2.00	2.20	В	19	105									
TP33	3.00	3.20	В	28	105									
TP34	0.80	1.00	В	17	105									
TP34	1.80	2.00	В	21	105									
TP34	2.80	3.00	В	20	105									
TP35	1.00	1.20	В	23	105	23	100	0	54-s	27	27	-0.148	СН	Tested in natural condition
TP35	2.00	2.20	В	21	105									
TP35	3.00	3.20	В	21	105									
TP36	1.60	1.80	В	21	105	23	90	10	45-s	25	20	-0.100	CI	Tested after >425µm removed by hand
TP36	1.90	2.10	В	25	105	27	94	6	44-s	27	17	0.000	MI	Tested after >425µm removed by hand
TP37	1.20	1.30	В	19	105	21	90	10	37-s	24	13	-0.231	CI	Tested after >425µm removed by hand

Key	Description		Category	BS Test Code
W	Moisture content			BS 1377:1990 Part 2 Clause 3.2
wa	Equivalent moistur sieve	e content passing 425μm		BS 1377:1990 Part 2 Clause 3.2
wL	Liguid limit	Single point	-S	BS 1377:1990 Part 2 Clause 4.4
WL	Liquia ilitiit	Four point	-f	BS 1377:1990 Part 2 Clause 4.3
wP	Plastic limit			BS 1377:1990 Part 2 Clause 5.2
Pa	Percentage passing	g 425um sieve		
Pr	Percentage retaine	ed 425um sieve		
IP	Plasticity index			BS 1377:1990 Part 2 Clause 5.4
IL	Liquidity index	•		BS 1377:1990 Part 2 Clause 5.4
	Suffix indicating te Accredited"	st is "Not UKAS	*	

Approved by	T. Finnimore
Approval date	03/12/2021 14:28
Date report generated	
Report Number	

Site name Job number

Envision, Sunderland S211001

Solmek 12-16 Yarm Road, Stockton on Tees, TS18 3NA 01642 607083 lab@solmek.com



Uala	De	pth	T		Oven		n-			D	ID	***	Plasticity	Dunamentian method
Hole	Тор	Base	Туре	W	temp.	wa	Pa	Pr	wL	wP	IP	IL	class	Preparation method
	m	m		%	ос	%	%	%	%	%	%			
TP37	2.00	2.10	В	24	105	27	90	10	39-s	23	16	0.250	CI	Tested after >425μm removed by hand
TP37	2.60	2.70	В	26	105	27	95	5	46-s	21	25	0.240	CI	Tested after >425μm removed by hand
TP38	0.80	0.90	В	19	105	20	97	3	24-s	16	8	0.500	CL	Tested after >425µm removed by hand
TP38	1.50	1.60	В	19	105	19	100	0	43-s	20	23	-0.043	CI	Tested in natural condition
TP38	2.80	2.90	В	18	105	19	96	4	42-s	17	25	0.080	CI	Tested after >425μm removed by hand
TP39	1.70	1.80	В	28	105	29	95	5	49-s	23	26	0.231	CI	Tested after >425μm removed by hand
TP39	2.40	2.50	В	20	105	22	89	11	25-s	11	14	0.786	CL	Tested after >425µm removed by hand
TP40	1.80	2.00	В	21	105	23	92	8	43-s	22	21	0.048	CI	Tested after >425µm removed by hand
TP40	2.80	3.00	В	21	105	25	84	16	44-s	24	20	0.050	CI	Tested after >425μm removed by hand
TP41	0.90	1.00	В	18	105	21	86	14	44-s	20	24	0.042	CI	Tested after >425µm removed by hand
TP41	1.80	1.90	В	18	105	19	95	5	38-s	17	21	0.095	CI	Tested after >425μm removed by hand
TP41	2.40	2.50	В	27	105	29	92	8	44-s	21	23	0.348	CI	Tested after >425μm removed by hand
TP42	0.60	0.70	В	19	105	23	84	16	44-s	28	16	-0.313	MI	Tested after >425μm removed by hand
TP42	1.60	1.80	В	26	105	28	92	8	43-s	25	18	0.167	CI	Tested after >425μm removed by hand
TP42	2.40	2.50	В	22	105	22	99	1	42-s	20	22	0.091	CI	Tested after >425µm removed by hand
TP43	0.90	1.10	В	20	105	25	81	19	42-s	19	23	0.261	CI	Tested after >425μm removed by hand
TP43	2.50	2.60	В	18	105	19	93	7	45-s	19	26	0.000	CI	Tested after >425µm removed by hand
TP44	1.20	1.40	В	18	105	19	93	7	69-s	28	41	-0.220	СН	Tested after >425µm removed by hand
TP44	2.10	2.20	В	20	105	21	94	6	45-s	20	25	0.040	CI	Tested after >425μm removed by hand
TP44	2.50	2.60	В	21	105	22	94	6	44-s	25	19	-0.158	CI	Tested after >425μm removed by hand

Key	Description		Category	BS Test Code
W	Moisture content			BS 1377:1990 Part 2 Clause 3.2
wa	Equivalent moistur sieve	e content passing 425μm		BS 1377:1990 Part 2 Clause 3.2
wL	Liguid limit	Single point	-S	BS 1377:1990 Part 2 Clause 4.4
WL	Liquia ilitiit	Four point	-f	BS 1377:1990 Part 2 Clause 4.3
wP	Plastic limit			BS 1377:1990 Part 2 Clause 5.2
Pa	Percentage passing	g 425um sieve		
Pr	Percentage retaine	ed 425um sieve		
IP	Plasticity index			BS 1377:1990 Part 2 Clause 5.4
IL	Liquidity index	•		BS 1377:1990 Part 2 Clause 5.4
	Suffix indicating te Accredited"	st is "Not UKAS	*	

Approved by	T. Finnimore
Approval date	02/12/2021 09:31
Date report generated	
Report Number	

Site name Job number

Envision, Sunderland S211001

Solmek 12-16 Yarm Road, Stockton on Tees, TS18 3NA 01642 607083 lab@solmek.com



IIala	De	pth	T		Oven		D -	D	T	D	ID	**	Plasticity	Duamanatian mathad
Hole	Тор	Base	Type	W	temp.	wa	Pa	Pr	wL	wP	IP	IL	class	Preparation method
	m	m		%	ос	%	%	%	%	%	%			
TP45	1.50	1.60	В	19	105	21	89	11	43-s	24	19	-0.158	CI	Tested after >425μm removed by hand
TP45	2.10	2.30	В	20	105	22	91	9	45-s	21	24	0.042	CI	Tested after >425μm removed by hand
TP45	3.00	3.10	В	22	105	22	99	1	44-s	26	18	-0.222	CI	Tested after >425μm removed by hand
TP46	1.00	1.20	В	21	105	22	94	6	42-s	23	19	-0.053	CI	Tested after >425μm removed by hand
TP46	2.00	2.20	В	20	105									
TP46	3.00	3.20	В	23	105									
TP47	0.60	0.80	В	22	105									
TP47	1.60	1.80	В	20	105	23	88	12	46-s	24	22	-0.045	CI	Tested after >425μm removed by hand
TP47	2.60	2.80	В	20	105									
TP49	1.00	1.20	В	19	105									
TP49	2.00	2.20	В	21	105									
TP49	3.00	3.20	В	32	105									
TP50	1.00	1.20	В	17	105	17	100	0	42-s	23	19	-0.316	CI	Tested in natural condition
TP50	2.00	2.20	В	20	105									
TP51	1.00	1.20	В	20	105	24	83	17	48-s	26	22	-0.091	CI	Tested after >425μm removed by hand
TP51	2.00	2.20	В	24	105									
TP51	3.00	3.20	В	17	105									
TP52	1.00	1.20	В	19	105									
TP52	2.00	2.20	В	17	105									
TP52	3.00	3.20	В	20	105									

Key	Description		Category	BS Test Code	
W	Moisture content			BS 1377:1990 Part 2 Clause 3.2	
wa	wa Equivalent moisture content passing 425μm sieve			BS 1377:1990 Part 2 Clause 3.2	
wL	Liguid limit	Single point	-S	BS 1377:1990 Part 2 Clause 4.4	
WL	Liquid IIIIII	Four point	-f	BS 1377:1990 Part 2 Clause 4.3	
wP	Plastic limit			BS 1377:1990 Part 2 Clause 5.2	
Pa	Percentage passing	g 425um sieve			
Pr	Percentage retaine	ed 425um sieve			
IP	Plasticity index			BS 1377:1990 Part 2 Clause 5.4	
IL	Liquidity index			BS 1377:1990 Part 2 Clause 5.4	
	Suffix indicating te Accredited"	st is "Not UKAS	*		

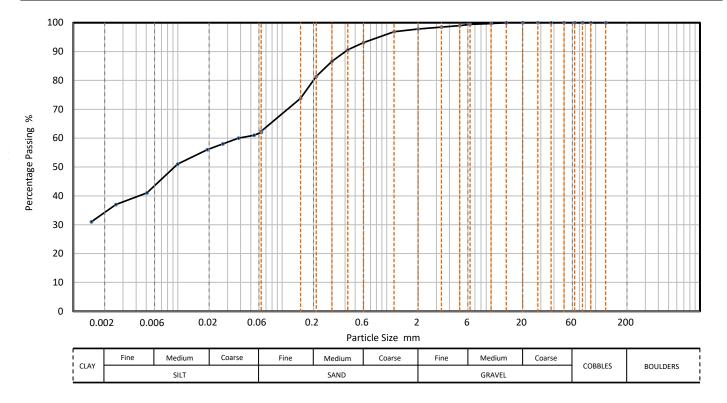
Approved by	T. Finnimore
Approval date	02/12/2021 09:35
Date report generated	
Report Number	

Site name Job number
Envision, Sunderland S211001

Solmek 12-16 Yarm Road, Stockton on Tees, TS18 3NA 01642 607083 lab@solmek.com



Hole		CP01	Lab sample ID	SLMK202111168
Depth (Top)	m	0.40	Test Method	BS 1377 - 2 : 1990 Clauses 9.2 and 9.5
Depth (Base)	m	0.8	Soil Description	Slightly Gravelly, Very Silty, Very Clayey,
Sample type		В		SAND.



Siev	/ing	Sedimentation					
Particle Size mm	% Passing	Particle Size mm	% Passing				
125	100	0.0630	62				
90	100	0.0538	61				
75	100	0.0381	60				
63	100	0.0270	58				
50	100	0.0192	56				
37.5	100	0.0100	51				
28	100	0.0051	41				
20	100	0.0026	37				
14	100	0.0015	31				
10	100						
6.3	99						
5	99						
3.35	99						
2	98						
1.18	97						
0.6	93	Particle density	(assumed)				
0.425	91	2.65	Mg/m3				
0.3	87		_				
0.212	81						
0.15	74						
0.063	62						

Sample Proportions	% dry mass	
Very coarse	0.0	
Gravel	2.2	
Sand	35.4	
Silt	28.2	
Clay	34.2	

Grading Analysis		
D100	mm	
D60	mm	0.0413
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

cordance with te	t method unless noted	below
	ccordance with tes	ccordance with test method unless noted

Accreditation status

Approved by	T. Finnimore	
Approval date	03/12/2021 13:50	

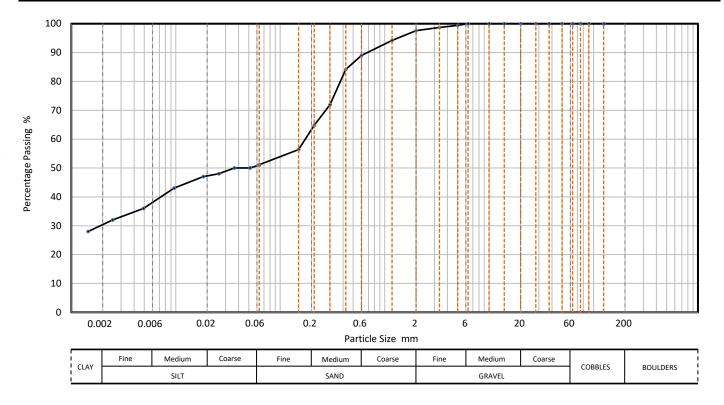
Site name Job number

Envision, Sunderland S211001

Solmek 12-16 Yarm Road, Stockton on Tees, TS18 3NA 01642 607083 lab@solmek.com



Hole		CP02	Lab sample ID	SLMK2021111615
Depth (Top)	m	0.30	Test Method	BS 1377 - 2 : 1990 Clauses 9.2 and 9.5
Depth (Base)	m	0.4	Soil Description	Slightly clayey. Very Silty. Very Clayey. SAND
Sample type		В		



Siev	Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing	
125	100	0.0630	51	
90	100	0.0515	50	
75	100	0.0365	50	
63	100	0.0259	48	
50	100	0.0184	47	
37.5	100	0.0096	43	
28	100	0.0049	36	
20	100	0.0025	32	
14	100	0.0014	28	
10	100			
6.3	100			
5	99			
3.35	99			
2	98			
1.18	94			
0.6	89	Particle density	(assumed)	
0.425	84	2.65	Mg/m3	
0.3	72			
0.212	65			
0.15	56			
0.063	51			

Dry Mass of sample, g	450

Sample Proportions	% dry mass	
Very coarse	0.0	
Gravel	2.4	
Sand	46.5	
Silt	20.5	
Clay	30.6	

Grading Analysis		
D100	mm	
D60	mm	0.174
D30	mm	0.00185
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks	
Preparation and testing in accordance with test method unless noted below	

Accreditation status

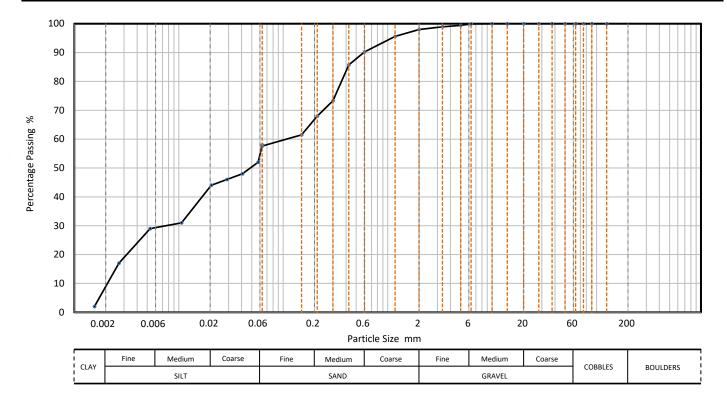
Approved by	KW	
Approval date	10/01/2022 09:00	

Site name Job number
Envision, Sunderland S211001

Solmek 12-16 Yarm Road, Stockton on Tees, TS18 3NA 01642 607083 lab@solmek.com



Hole		CP03	Lab sample ID	SLMK2021111624
Depth (Top)	m	0.40	Test Method	BS 1377 - 2 : 1990 Clauses 9.2 and 9.5
Depth (Base)	m	0.8	Soil Description	Slightly Gravelly, Slightly clayey, Sandy, SILT.
Sample type		В		



Siev	/ing	Sedime	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	58
90	100	0.0577	52
75	100	0.0409	48
63	100	0.0289	46
50	100	0.0205	44
37.5	100	0.0106	31
28	100	0.0053	29
20	100	0.0027	17
14	100	0.0016	2
10	100		
6.3	100		
5	99		
3.35	99		
2	98		
1.18	96		
0.6	90	Particle density	(assumed)
0.425	86	2.65	Mg/m3
0.3	73		_
0.212	68		
0.15	62		
0.063	58		

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	2.0
Sand	40.5
Silt	48.5
Clay	9.0

Grading Analysis		
D100	mm	
D60	mm	0.108
D30	mm	0.00821
D10	mm	0.00207
Uniformity Coefficient		52
Curvature Coefficient		0.3

Remarks	
Preparation and testing in accordance with test method unless noted below	

Accreditation status

Approved by	T. Finnimore
Approval date	22/11/2021 12:24

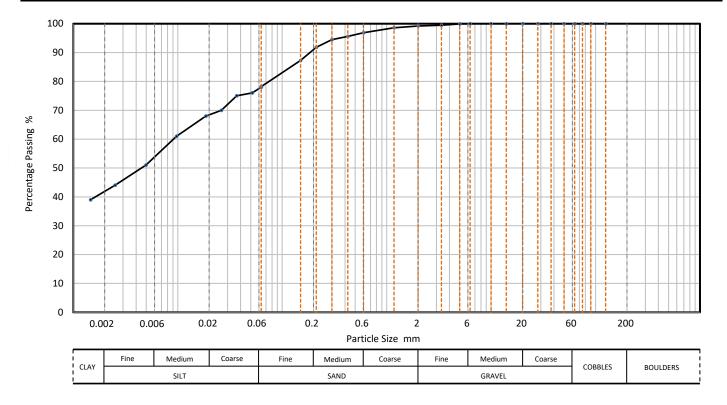
Site name Job number

Envision, Sunderland S211001

Solmek 12-16 Yarm Road, Stockton on Tees, TS18 3NA 01642 607083 lab@solmek.com



Hole		CP04	Lab sample ID	SLMK2021111630
Depth (Top)	m	0.40	Test Method	BS 1377 - 2 : 1990 Clauses 9.2 and 9.5
Depth (Base)	m	0.8	Soil Description	Slightly Gravelly, Slightly Sandy, Silty, CLAY.
Sample type		В		



Siev	/ing	Sedim	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	78
90	100	0.0517	76
75	100	0.0367	75
63	100	0.0262	70
50	100	0.0186	68
37.5	100	0.0097	61
28	100	0.0050	51
20	100	0.0025	44
14	100	0.0015	39
10	100		
6.3	100		
5	100		
3.35	100		
2	99		
1.18	99		
0.6	97	Particle density	(assumed)
0.425	96	2.65	Mg/m3
0.3	95		
0.212	92		
0.15	87		
0.063	78		

Dry Mass of sample, g	419
•	B

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	0.8
Sand	21.0
Silt	36.5
Clay	41.7

Grading Analysis		
D100	mm	
D60	mm	0.0093
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

method unless noted below

Accreditation status

Approved by	T. Finnimore
Approval date	22/11/2021 12:25

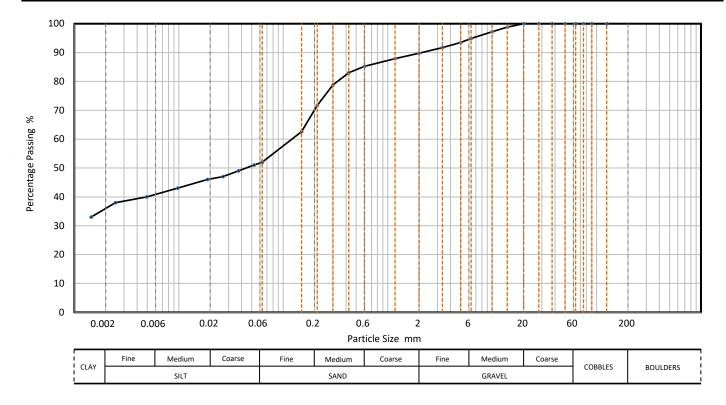
Site name Job number

Envision, Sunderland S211001

Solmek 12-16 Yarm Road, Stockton on Tees, TS18 3NA 01642 607083 lab@solmek.com



Hole		CP07	Lab sample ID	SLMK2021111659
Depth (Top)	m	0.50	Test Method	BS 1377 - 2 : 1990 Clauses 9.2 and 9.5
Depth (Base)	m	0.9	Soil Description	Gravelly, Silty, Very Clayey, SAND.
Sample type		В		



Siev	/ing	Sedime	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	52
90	100	0.0525	51
75	100	0.0373	49
63	100	0.0265	47
50	100	0.0188	46
37.5	100	0.0098	43
28	100	0.0049	40
20	100	0.0025	38
14	99	0.0014	33
10	97		
6.3	95		
5	94		
3.35	92		
2	90		
1.18	88		
0.6	85	Particle density	(assumed)
0.425	83	2.65	Mg/m3
0.3	79		_
0.212	72		
0.15	63		
0.063	52		

Dry Mass of sample, g	386

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	10.2
Sand	37.8
Silt	16.3
Clay	35.7

Grading Analysis		
D100	mm	
D60	mm	0.122
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks		
Preparation and testin	g in accordance with test method unless noted	below

Accreditation status

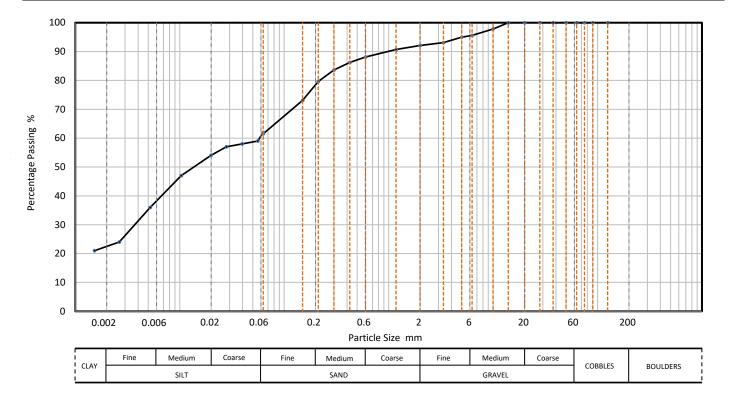
Approved by	T. Finnimore
Approval date	03/12/2021 13:53

Site name Job number
Envision, Sunderland S211001

Solmek 12-16 Yarm Road, Stockton on Tees, TS18 3NA 01642 607083 lab@solmek.com



Hole		TP03	Lab sample ID	SLMK2021120189
Depth (Top)	m	0.60	Test Method	BS 1377 - 2 : 1990 Clauses 9.2 and 9.5
Depth (Base)	m	0.8	Soil Description	Slightly Gravelly, Slightly Clayey, Sandy, SILT.
Sample type		В		



Siev	/ing	Sedime	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	62
90	100	0.0558	59
75	100	0.0395	58
63	100	0.0280	57
50	100	0.0198	54
37.5	100	0.0103	47
28	100	0.0052	36
20	100	0.0026	24
14	100	0.0015	21
10	98		
6.3	96		
5	95		
3.35	93		
2	92		
1.18	91		
0.6	88	Particle density	(assumed)
0.425	86	2.65	Mg/m3
0.3	84		
0.212	80		
0.15	73		
0.063	62		

Dry Mass of sample, g	270

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	7.9
Sand	30.6
Silt	39.1
Clay	22.4

Grading Analysis		
D100	mm	
D60	mm	0.0577
D30	mm	0.00367
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks	
Preparation and testing in accordance with test method unless noted below	

Accreditation status

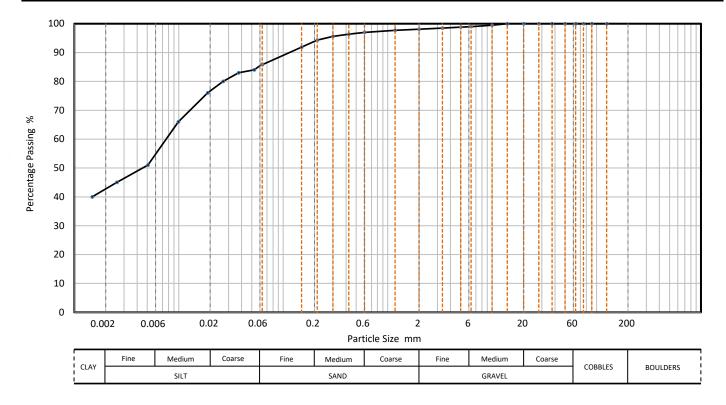
Approved by	T. Finnimore	
Approval date	07/12/2021 15:31	

Site name Job number
Envision, Sunderland S211001

Solmek 12-16 Yarm Road, Stockton on Tees, TS18 3NA 01642 607083 lab@solmek.com



Hole		TP04	Lab sample ID	SLMK2021120190
Depth (Top)	m	1.00	Test Method	BS 1377 - 2 : 1990 Clauses 9.2 and 9.5
Depth (Base)	m	1.2	Soil Description	Slightly Gravelly, Sandy, Clayey, SILT.
Sample type		В		



Sieving		Sedimentation		
Particle Size mm	% Passing	Particle Size mm	% Passing	
125	100	0.0630	86	
90	100	0.0529	84	
75	100	0.0375	83	
63	100	0.0266	80	
50	100	0.0189	76	
37.5	100	0.0099	66	
28	100	0.0051	51	
20	100	0.0026	45	
14	100	0.0015	40	
10	100			
6.3	99			
5	99			
3.35	99			
2	98			
1.18	98			
0.6	97	Particle density	(assumed)	
0.425	96	2.65	Mg/m3	
0.3	96			
0.212	94			
0.15	92			
0.063	86			

Dry Mass of sample, g	328

Sample Proportions % dry mass	
Very coarse	0.0
Gravel	1.9
Sand	12.3
Silt	43.5
Clay	42.3

Grading Analysis		
D100	mm	
D60	mm	0.0075
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

with test meth	od unless noted b	pelow	
			_
e	e with test meth	e with test method unless noted b	e with test method unless noted below

Accreditation status

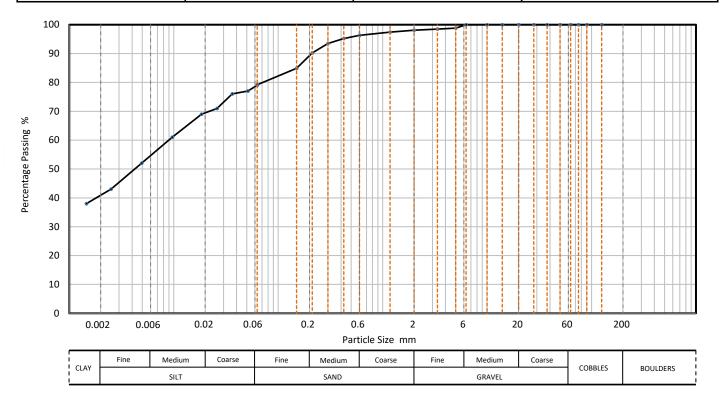
Approved by	T. Finnimore	
Approval date	03/12/2021 14:34	

Site name Job number
Envision, Sunderland S211001

Solmek 12-16 Yarm Road, Stockton on Tees, TS18 3NA 01642 607083 lab@solmek.com



Hole	TP05	Lab sample ID	SLMK2021111673
Depth (Top)	n 1.00	Test Method	BS 1377 - 2 : 1990 Clauses 9.2 and 9.5
Depth (Base)	n 1.2	Soil Description	Slightly Sandy, CLAY
Sample type	В		



Sieving		Sedimentation		
Particle Size mm	% Passing	Particle Size mm	% Passing	
125	100	0.0630	79	
90	100	0.0512	77	
75	100	0.0364	76	
63	100	0.0260	71	
50	100	0.0184	69	
37.5	100	0.0097	61	
28	100	0.0049	52	
20	100	0.0025	43	
14	100	0.0015	38	
10	100			
6.3	100			
5	99			
3.35	99			
2	98			
1.18	97			
0.6	96	Particle density	(assumed)	
0.425	95	2.65	Mg/m3	
0.3	94			
0.212	90			
0.15	85			
0.063	79			

Dry Mass of sample, g	412

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	1.9
Sand	18.9
Silt	38.3
Clay	40.9

Grading Analysis		
D100	mm	
D60	mm	0.00875
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

cordance with te	t method unless noted	below
	ccordance with tes	ccordance with test method unless noted

Accreditation status

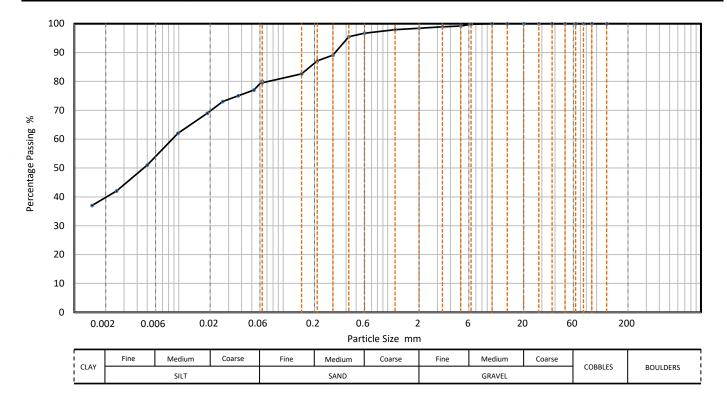
Approved by	JBrischuk
Approval date	23/11/2021 08:18

Site name Job number
Envision, Sunderland S211001

Solmek 12-16 Yarm Road, Stockton on Tees, TS18 3NA 01642 607083 lab@solmek.com



Hole		TP06	Lab sample ID	SLMK2021120193
Depth (Top)	m	1.40	Test Method	BS 1377 - 2 : 1990 Clauses 9.2 and 9.5
Depth (Base)	m	1.6	Soil Description	Slightly Gravelly, Slightly Sandy, SILT/ CLAY.
Sample type	_	В		



Siev	/ing	Sedime	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	80
90	100	0.0523	77
75	100	0.0372	75
63	100	0.0264	73
50	100	0.0188	69
37.5	100	0.0098	62
28	100	0.0050	51
20	100	0.0025	42
14	100	0.0015	37
10	100		
6.3	100		
5	99		
3.35	99		
2	98		
1.18	98		
0.6	97	Particle density	(assumed)
0.425	96	2.65	Mg/m3
0.3	89		
0.212	87		
0.15	83		
0.063	80		

Dry Mass of sample, g	251

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	1.6
Sand	19.0
Silt	39.7
Clay	39.7

Grading Analysis		
D100	mm	
D60	mm	0.00856
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

with test meth	od unless noted b	pelow	
			_
e	e with test meth	e with test method unless noted b	e with test method unless noted below

Accreditation status

Approved by	T. Finnimore
Approval date	03/12/2021 14:34

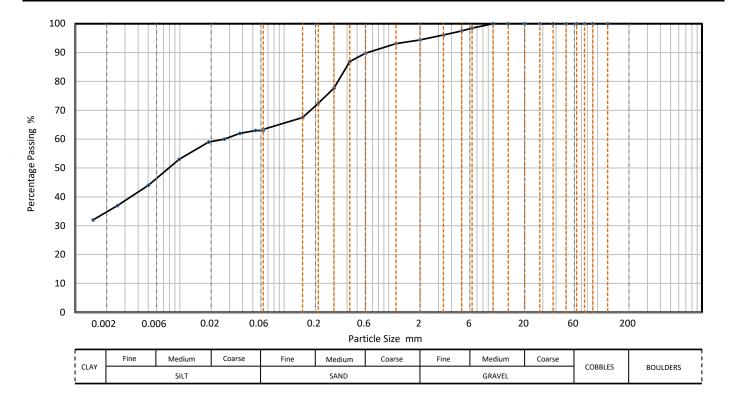
Site name Job number

Envision, Sunderland S211001

Solmek 12-16 Yarm Road, Stockton on Tees, TS18 3NA 01642 607083 lab@solmek.com



Hole		TP08	Lab sample ID	SLMK2021120194
Depth (Top)	m	0.70	Test Method	BS 1377 - 2 : 1990 Clauses 9.2 and 9.5
Depth (Base)	m	0.8	Soil Description	Slightly Gravelly, Silty, Sandy, CLAY.
Sample type		В		



Siev	/ing	Sedimentation		
Particle Size mm	% Passing	Particle Size mm	% Passing	
125	100	0.0630	63	
90	100	0.0531	63	
75	100	0.0376	62	
63	100	0.0267	60	
50	100	0.0189	59	
37.5	100	0.0099	53	
28	100	0.0050	44	
20	100	0.0025	37	
14	100	0.0015	32	
10	100			
6.3	99			
5	98			
3.35	96			
2	94			
1.18	93			
0.6	90	Particle density	(assumed)	
0.425	87	2.65	Mg/m3	
0.3	78			
0.212	72			
0.15	68			
0.063	63			

Dry Mass of sample, g	288

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	5.6
Sand	31.0
Silt	28.9
Clay	34.5

Grading Analysis		
D100	mm	
D60	mm	0.0284
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

with test meth	od unless noted b	pelow	
			_
e	e with test meth	e with test method unless noted b	e with test method unless noted below

Accreditation status

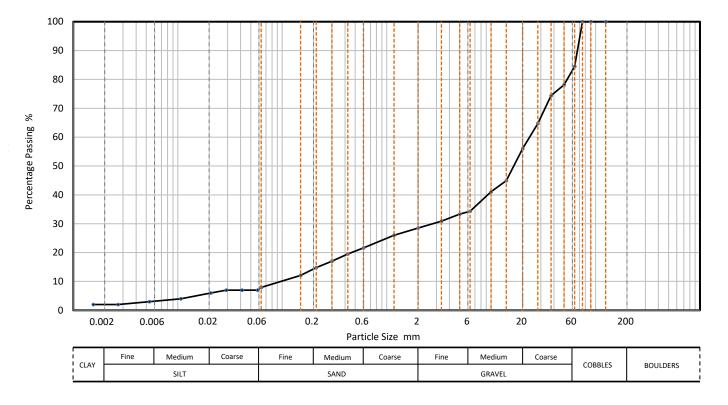
Approved by	T. Finnimore	
Approval date	03/12/2021 14:34	

Site name Job number
Envision, Sunderland S211001

Solmek 12-16 Yarm Road, Stockton on Tees, TS18 3NA 01642 607083 lab@solmek.com



Hole		TP09	Lab sample ID	SLMK2021120196
Depth (Top)	m	1.20	Test Method	BS 1377 - 2 : 1990 Clauses 9.2 and 9.5
Depth (Base)	m	1.4	Soil Description	Slight;y Clayey, Slightly Silty, Very Sandy,
Sample type		В		GRAVEL. (COBBLES PRESENT)



Siev	/ing	Sedimentation		
Particle Size mm	% Passing	Particle Size mm	% Passing	
125	100	0.0630	8	
90	100	0.0583	7	
75	100	0.0412	7	
63	85	0.0292	7	
50	78	0.0207	6	
37.5	74	0.0107	4	
28	65	0.0054	3	
20	56	0.0027	2	
14	45	0.0016	2	
10	41			
6.3	34			
5	33			
3.35	31			
2	29			
1.18	26			
0.6	22	Particle density	(assumed)	
0.425	20	2.65	Mg/m3	
0.3	17			
0.212	15			
0.15	12			
0.063	8			

Dry Mass of sample, g	4006

Sample Proportions	% dry mass
Very coarse	15.5
Gravel	56.0
Sand	20.6
Silt	5.7
Clay	2.2

Grading Analysis		
D100	mm	
D60	mm	23.3
D30	mm	2.78
D10	mm	0.0969
Uniformity Coefficient		240
Curvature Coefficient		3.4

Remarks

Preparation and testing in accordance with test method unless noted below

Sample tested was deviating in accordance with BS1377 test standard. $\label{eq:barder} % \begin{array}{l} \text{Sample tested was deviating in accordance with BS1377 test} \\ \text{Sample tested was deviating in accordance with BS1377 test} \\ \text{Sample tested was deviating in accordance with BS1377 test} \\ \text{Sample tested was deviating in accordance with BS1377 test} \\ \text{Sample tested was deviating in accordance with BS1377 test} \\ \text{Sample tested was deviating in accordance with BS1377 test} \\ \text{Sample tested was deviating in accordance with BS1377 test} \\ \text{Sample tested was deviating in accordance with BS1377 test} \\ \text{Sample tested was deviating in accordance with BS1377 test} \\ \text{Sample tested was deviating in accordance with BS1377 test} \\ \text{Sample tested was deviating in accordance with BS1377 test} \\ \text{Sample tested was deviating in accordance with BS1377 test} \\ \text{Sample tested was deviating in accordance with BS1377 test} \\ \text{Sample tested was deviating in accordance with BS1377 tested with BS13$

Accreditation status

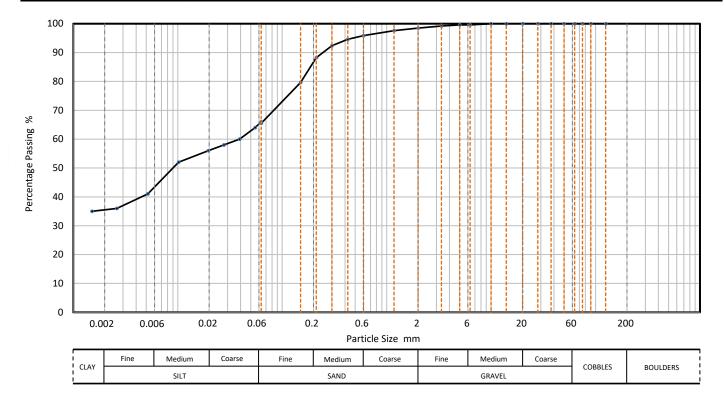
Approved by	T. Finnimore
Approval date	07/12/2021 15:33

Site name Job number
Envision, Sunderland S211001

Solmek 12-16 Yarm Road, Stockton on Tees, TS18 3NA 01642 607083 lab@solmek.com



Hole		TP10	Lab sample ID	SLMK2021120198
Depth (Top)	m	0.80	Test Method	BS 1377 - 2 : 1990 Clauses 9.2 and 9.5
Depth (Base)	m		Soil Description	Slightly Gravelly, Very Silty, Very Sandy,
Sample type		В		CLAY.



Siev	/ing	Sedime	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	66
90	100	0.0550	64
75	100	0.0391	60
63	100	0.0277	58
50	100	0.0197	56
37.5	100	0.0102	52
28	100	0.0052	41
20	100	0.0026	36
14	100	0.0015	35
10	100		
6.3	100		
5	100		
3.35	99		
2	99		
1.18	98		
0.6	96	Particle density	(assumed)
0.425	95	2.65	Mg/m3
0.3	92		_
0.212	88		
0.15	80		
0.063	66		

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	1.5
Sand	33.0
Silt	30.0
Clay	35.5

Grading Analysis		
D100	mm	
D60	mm	0.0392
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks		
Preparation and testin	g in accordance with test method unless noted	below

Accreditation status

Approved by	T. Finnimore
Approval date	03/12/2021 14:35

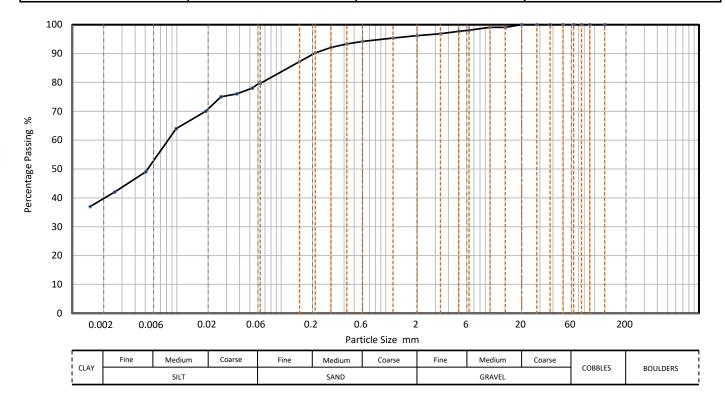
Site name Job number

Envision, Sunderland S211001

Solmek 12-16 Yarm Road, Stockton on Tees, TS18 3NA 01642 607083 lab@solmek.com



Hole		TP11	Lab sample ID	SLMK20211201100
Depth (Top)	m	0.50	Test Method	BS 1377 - 2 : 1990 Clauses 9.2 and 9.5
Depth (Base)	m	0.6	Soil Description	Slightly Gravelly, Slightly Sandy, Silty, CLAY.
Sample type		В		



Siev	/ing	Sedimo	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	80
90	100	0.0529	78
75	100	0.0375	76
63	100	0.0266	75
50	100	0.0189	70
37.5	100	0.0099	64
28	100	0.0050	49
20	100	0.0025	42
14	99	0.0015	37
10	99		
6.3	98		
5	98		
3.35	97		
2	96		
1.18	95		
0.6	94	Particle density	(assumed)
0.425	93	2.65	Mg/m3
0.3	92		
0.212	90		
0.15	87		
0.063	80		

Dry Mass of sample, g	342

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	3.8
Sand	16.5
Silt	39.6
Clay	40.1

Grading Analysis		
D100	mm	
D60	mm	0.00825
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

method unless noted below

Accreditation status

Approved by	T. Finnimore	
Approval date	03/12/2021 15:29	

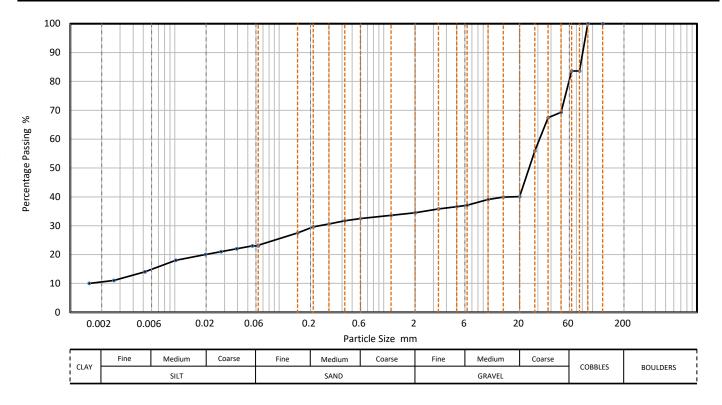
Site name Job number

Envision, Sunderland S211001

Solmek 12-16 Yarm Road, Stockton on Tees, TS18 3NA 01642 607083 lab@solmek.com



Hole	TP12	Lab sample ID	SLMK20211201102
Depth (Top)	n 0.30	Test Method	BS 1377 - 2 : 1990 Clauses 9.2 and 9.5
Depth (Base)	n 0.4	Soil Description	Clayey, Silty, Sandy, GRAVEL. (COBBLES
Sample type	В		PRESENT)



Siev	Sieving		entation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	23
90	100	0.0552	23
75	84	0.0391	22
63	84	0.0277	21
50	69	0.0197	20
37.5	67	0.0102	18
28	56	0.0052	14
20	40	0.0026	11
14	40	0.0015	10
10	39		
6.3	37		
5	37		
3.35	36		
2	35		
1.18	34		
0.6	33	Particle density	(assumed)
0.425	32	2.65	Mg/m3
0.3	31		
0.212	30		
0.15	28		
0.063	23		

Sample Proportions	% dry mass	
Very coarse	16.4	
Gravel	49.1	
Sand	11.3	
Silt	12.6	
Clay	10.6	

Grading Analysis		
D100	mm	
D60	mm	31.1
D30	mm	0.244
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with test method unless noted below

Sample tested was deviating in accordance with $\ensuremath{\mathsf{BS}}1377$ test standard.

Accreditation status

Approved by	T. Finnimore	
Approval date	07/12/2021 15:34	

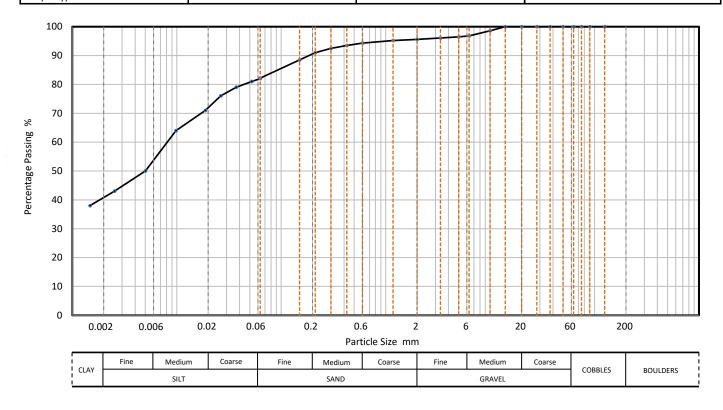
Site name Job number

Envision, Sunderland S211001

Solmek 12-16 Yarm Road, Stockton on Tees, TS18 3NA 01642 607083 lab@solmek.com



Hole		TP13	Lab sample ID	SLMK20211201105
Depth (Top)	m	1.20	Test Method	BS 1377 - 2 : 1990 Clauses 9.2 and 9.5
Depth (Base)	m	1.3	Soil Description	Slightly Gravelly, Slightly Sandy, Clayey, SILT.
Sample type		В		



Siev	/ing	Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	82
90	100	0.0523	81
75	100	0.0371	79
63	100	0.0264	76
50	100	0.0188	71
37.5	100	0.0098	64
28	100	0.0050	50
20	100	0.0025	43
14	100	0.0015	38
10	99		
6.3	97		
5	97		
3.35	96		
2	96		
1.18	95		
0.6	94	Particle density	(assumed)
0.425	94	2.65	Mg/m3
0.3	93		_
0.212	91		
0.15	89		
0.063	82		

Sample Proportions	% dry mass	
Very coarse	0.0	
Gravel	4.4	
Sand	13.4	
Silt	41.6	
Clay	40.6	

Grading Analysis		
D100	mm	
D60	mm	0.00814
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks	
Preparation and testing in accordance with test method unless noted below	

Accreditation status

Approved by	T. Finnimore
Approval date	03/12/2021 14:36

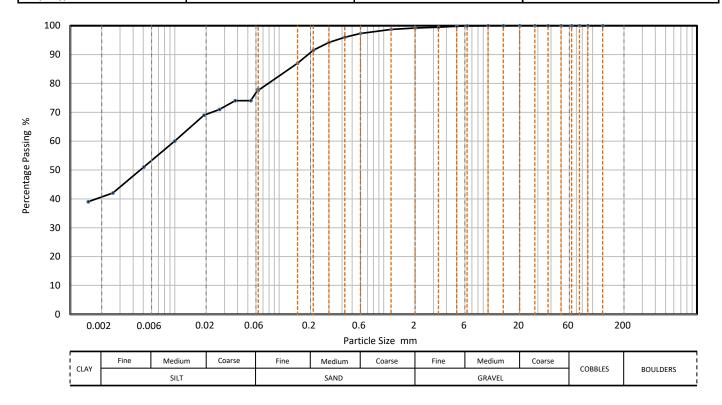
Site name Job number

Envision, Sunderland S211001

Solmek 12-16 Yarm Road, Stockton on Tees, TS18 3NA 01642 607083 lab@solmek.com



Hole		TP14	Lab sample ID	SLMK20211201107
Depth (Top)	m	1.50	Test Method	BS 1377 - 2 : 1990 Clauses 9.2 and 9.5
Depth (Base)	m		Soil Description	Slightly Gravelly, Slightly Sandy, Silty, CLAY.
Sample type		В		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	78
90	100	0.0535	74
75	100	0.0378	74
63	100	0.0269	71
50	100	0.0191	69
37.5	100	0.0100	60
28	100	0.0051	51
20	100	0.0026	42
14	100	0.0015	39
10	100		
6.3	100		
5	100		
3.35	100		
2	99		
1.18	99		
0.6	97	Particle density	(assumed)
0.425	96	2.65	Mg/m3
0.3	94		
0.212	92		
0.15	87	1	
0.063	78	7	

Dry Mass of sample, g	268

Sample Proportions	% dry mass	
Very coarse	0.0	
Gravel	0.8	
Sand	21.6	
Silt	36.7	
Clay	40.9	

Grading Analysis		
D100	mm	
D60	mm	0.0103
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

with test meth	od unless noted b	pelow	
			_
e	e with test meth	e with test method unless noted b	e with test method unless noted below

Accreditation status

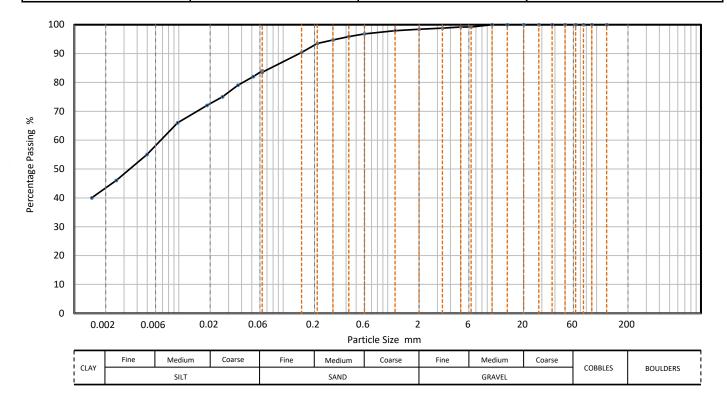
Approved by	T. Finnimore
Approval date	03/12/2021 14:36

Site name Job number
Envision, Sunderland S211001

Solmek 12-16 Yarm Road, Stockton on Tees, TS18 3NA 01642 607083 lab@solmek.com



Hole		TP15	Lab sample ID	SLMK20211201109
Depth (Top)	m	0.60	Test Method	BS 1377 - 2 : 1990 Clauses 9.2 and 9.5
Depth (Base)	m	0.8	Soil Description	Slightly Gravelly, Sandy, Very Silty, CLAY.
Sample type		В		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	84
90	100	0.0518	82
75	100	0.0368	79
63	100	0.0262	75
50	100	0.0186	72
37.5	100	0.0097	66
28	100	0.0050	55
20	100	0.0025	46
14	100	0.0015	40
10	100		
6.3	99		
5	99		
3.35	99		
2	98		
1.18	98		
0.6	97	Particle density	(assumed)
0.425	96	2.65	Mg/m3
0.3	95		_
0.212	94		
0.15	90		
0.063	84		

Dry Mass of sample, g	292

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	1.6
Sand	14.9
Silt	40.0
Clay	43.5

Grading Analysis		
D100	mm	
D60	mm	0.00684
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks	
Preparation and testing in accordance with test method unless noted below	

Accreditation status

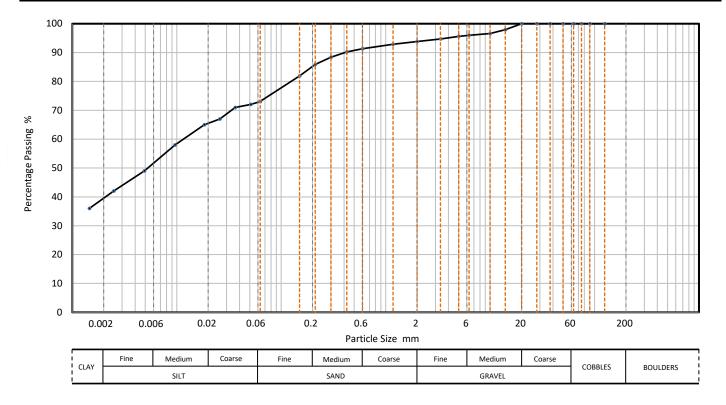
Approved by	T. Finnimore
Approval date	03/12/2021 14:37

Site name Job number
Envision, Sunderland S211001

Solmek 12-16 Yarm Road, Stockton on Tees, TS18 3NA 01642 607083 lab@solmek.com



Hole		TP17	Lab sample ID	SLMK2021111676
Depth (Top)	m	1.00	Test Method	BS 1377 - 2 : 1990 Clauses 9.2 and 9.5
Depth (Base)	m	1.2	Soil Description	Slightly Gravelly, Slightly Sandy, Silty, CLAY.
Sample type		В		



Siev	/ing	Sedim	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	73
90	100	0.0512	72
75	100	0.0363	71
63	100	0.0259	67
50	100	0.0184	65
37.5	100	0.0096	58
28	100	0.0049	49
20	100	0.0025	42
14	98	0.0015	36
10	97		
6.3	96		
5	96		
3.35	95		
2	94		
1.18	93		
0.6	91	Particle density	(assumed)
0.425	90	2.65	Mg/m3
0.3	88		_
0.212	86		
0.15	82		
0.063	73		

Dry Mass of sample, g	433

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	6.2
Sand	20.7
Silt	33.8
Clay	39.3

Grading Analysis		
D100	mm	
D60	mm	0.0119
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks	
Preparation and testing in accordance with test method unless noted below	

Accreditation status

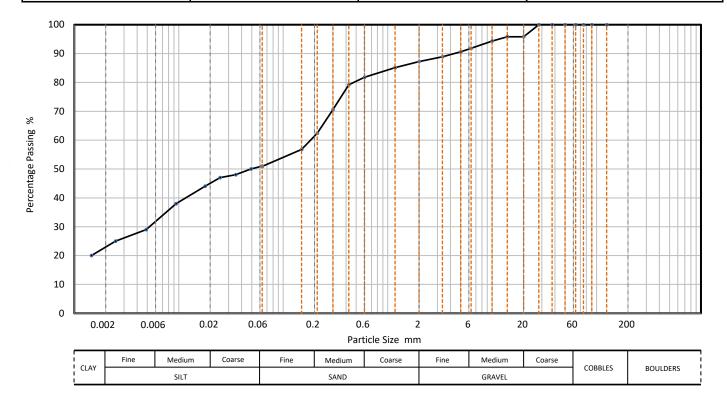
Approved by	T. Finnimore
Approval date	01/12/2021 13:20

Site name Job number
Envision, Sunderland S211001

Solmek 12-16 Yarm Road, Stockton on Tees, TS18 3NA 01642 607083 lab@solmek.com



Hole		TP18	Lab sample ID	SLMK2021111679
Depth (Top)	m	1.00	Test Method	BS 1377 - 2 : 1990 Clauses 9.2 and 9.5
Depth (Base)	m	1.2	Soil Description	Gravelly, Very Clayey, Very Silty, SAND
Sample type		В		



Siev	/ing	Sedim	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	51
90	100	0.0491	50
75	100	0.0350	48
63	100	0.0249	47
50	100	0.0178	44
37.5	100	0.0094	38
28	100	0.0049	29
20	96	0.0025	25
14	96	0.0015	20
10	94		
6.3	92		
5	91		
3.35	89		
2	87		
1.18	85		
0.6	82	Particle density	(assumed)
0.425	79	2.65	Mg/m3
0.3	71		
0.212	62		
0.15	57		
0.063	51		

Dry Mass of sample, g	533

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	12.8
Sand	36.3
Silt	28.0
Clay	22.9

Grading Analysis		
D100	mm	
D60	mm	0.183
D30	mm	0.00508
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks		
Preparation and testin	g in accordance with test method unless noted	below

Accreditation status

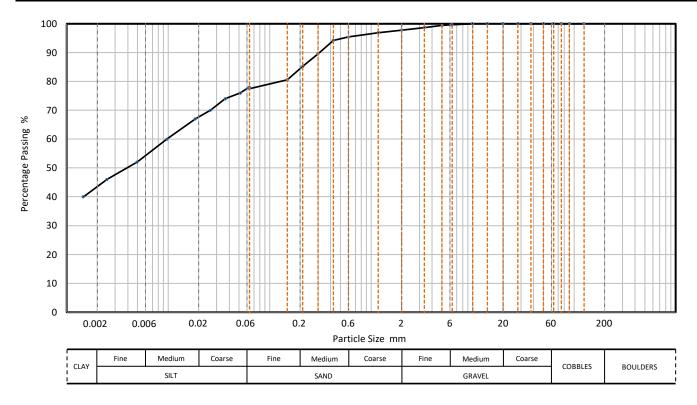
Approved by	T. Finnimore
Approval date	01/12/2021 13:23

Site name Job number
Envision, Sunderland S211001

Solmek 12-16 Yarm Road, Stockton on Tees, TS18 3NA 01642 607083 lab@solmek.com



Hole		TP19	Lab sample ID	SLMK2021111681
Depth (Top)	m	1.00	Test Method	BS 1377 - 2 : 1990 Clauses 9.2 and 9.5
Depth (Base)	m	1.2	Soil Description	Slightly Gravelly. Very Sandy. Very Silty.
Sample type		В		CLAY



Siev	/ing	Sedime	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	78
90	100	0.0516	76
75	100	0.0366	74
63	100	0.0261	70
50	100	0.0186	67
37.5	100	0.0097	60
28	100	0.0049	52
20	100	0.0025	46
14	100	0.0015	40
10	100		
6.3	100		
5	99		
3.35	99		
2	98		
1.18	97		
0.6	95	Particle density	(assumed)
0.425	94	2.65	Mg/m3
0.3	90		
0.212	85		
0.15	81		
0.063	78		

	Dry Mass of sample, g	451
--	-----------------------	-----

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	2.2
Sand	20.4
Silt	34.2
Clay	43.2

Grading Analysis		
D ₁₀₀	mm	
D ₆₀	mm	0.0099
D ₃₀	mm	
D ₁₀	mm	
Uniformity Coefficient		
Curvature Coefficient		

marks			
paration and testing in	ccordance with test metho	od unless noted below	

Accreditation status

Approved by	KW	
Approval date	10/01/2022 11:23	

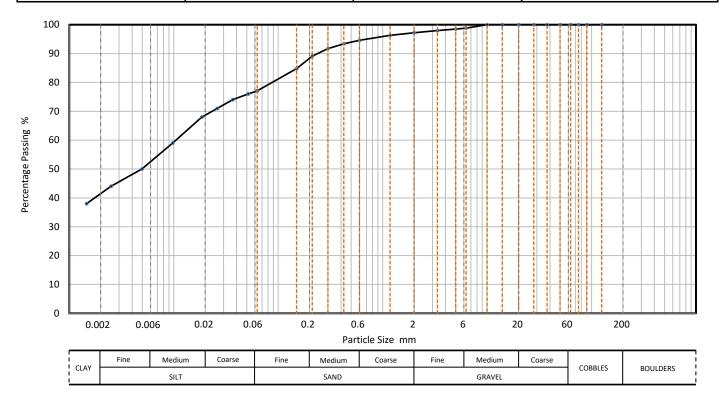
Site name Job number

Envision, Sunderland S211001

Solmek 12-16 Yarm Road, Stockton on Tees, TS18 3NA 01642 607083 lab@solmek.com



Hole		TP21	Lab sample ID	SLMK2021111685
Depth (Top)	m	1.00	Test Method	BS 1377 - 2 : 1990 Clauses 9.2 and 9.5
Depth (Base)	m	1.2	Soil Description	Slight Gravel, Slightly Sandy, SILTY CLAY
Sample type		В		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	77
90	100	0.0516	76
75	100	0.0367	74
63	100	0.0261	71
50	100	0.0186	68
37.5	100	0.0098	59
28	100	0.0050	50
20	100	0.0025	44
14	100	0.0015	38
10	100		
6.3	99		
5	99		
3.35	98		
2	97		
1.18	96		
0.6	95	Particle density	(assumed)
0.425	93	2.65	Mg/m3
0.3	92		
0.212	89		
0.15	85		
0.063	77		

Dry Mass of sample, g	392

Sample Proportions	% dry mass		
Very coarse	0.0		
Gravel	2.8		
Sand	20.1		
Silt	35.9		
Clay	41.2		

Grading Analysis		
D100	mm	
D60	mm	0.0103
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

marks
paration and testing in accordance with test method unless noted below

Accreditation status

Approved by	T. Finnimore	
Approval date	01/12/2021 13:25	

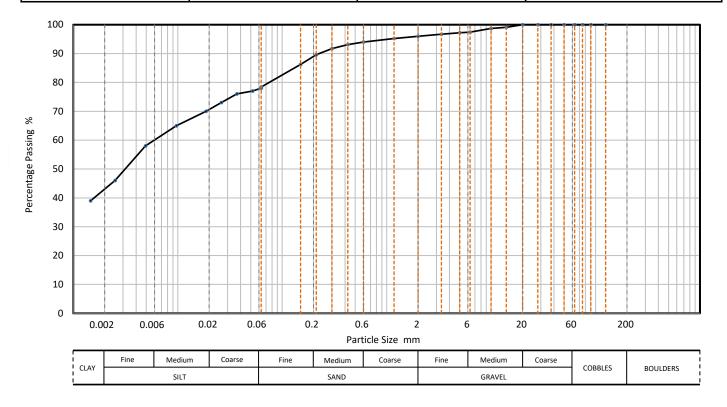
Site name Job number

Envision, Sunderland \$211001

Solmek 12-16 Yarm Road, Stockton on Tees, TS18 3NA 01642 607083 lab@solmek.com



Hole		TP22	Lab sample ID	SLMK2021111688
Depth (Top)	m	1.00	Test Method	BS 1377 - 2 : 1990 Clauses 9.2 and 9.5
Depth (Base)	m	1.2	Soil Description	Slightly Gravelly, Slightly Sandy, Silty, CLAY.
Sample type		В		



Sieving		Sedimentation		
Particle Size mm	% Passing	Particle Size mm	% Passing	
125	100	0.0630	78	
90	100	0.0520	77	
75	100	0.0368	76	
63	100	0.0262	73	
50	100	0.0186	70	
37.5	100	0.0097	65	
28	100	0.0049	58	
20	100	0.0025	46	
14	99	0.0015	39	
10	99			
6.3	97			
5	97			
3.35	97			
2	96			
1.18	95			
0.6	94	Particle density	(assumed)	
0.425	93	2.65	Mg/m3	
0.3	92		_	
0.212	90			
0.15	86			
0.063	78			

Dry Mass of sample, g	429

Sample Proportions	% dry mass	
Very coarse	0.0	
Gravel	4.0	
Sand	17.6	
Silt	35.0	
Clay	43.4	

Grading Analysis		
D100	mm	
D60	mm	0.00596
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

method unless noted below

Accreditation status

Approved by	T. Finnimore
Approval date	03/12/2021 13:06

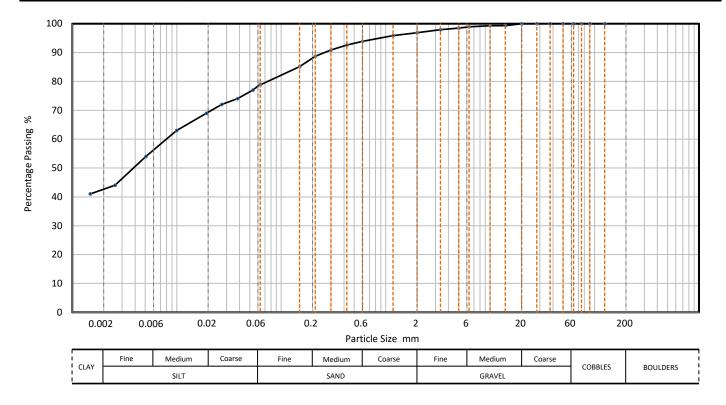
Site name Job number

Envision, Sunderland S211001

Solmek 12-16 Yarm Road, Stockton on Tees, TS18 3NA 01642 607083 lab@solmek.com



Hole		TP23	Lab sample ID	SLMK20211201115
Depth (Top)	m	2.60	Test Method	BS 1377 - 2 : 1990 Clauses 9.2 and 9.5
Depth (Base)	m	2.8	Soil Description	Slightly Gravelly, Slightly Silty, Silty, CLAY.
Sample type		В		



Siev	/ing	Sedim	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	79
90	100	0.0537	77
75	100	0.0381	74
63	100	0.0270	72
50	100	0.0192	69
37.5	100	0.0100	63
28	100	0.0051	54
20	100	0.0026	44
14	99	0.0015	41
10	99		
6.3	99		
5	99		
3.35	98		
2	97		
1.18	96		
0.6	94	Particle density	(assumed)
0.425	93	2.65	Mg/m3
0.3	91		
0.212	89		
0.15	85		
0.063	79		

Sample Proportions	% dry mass	
Very coarse	0.0	
Gravel	3.1	
Sand	18.1	
Silt	35.9	
Clay	42.9	

Grading Analysis		
D100	mm	
D60	mm	0.00809
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

with test meth	od unless noted b	pelow	
			_
e	e with test meth	e with test method unless noted b	e with test method unless noted below

Accreditation status

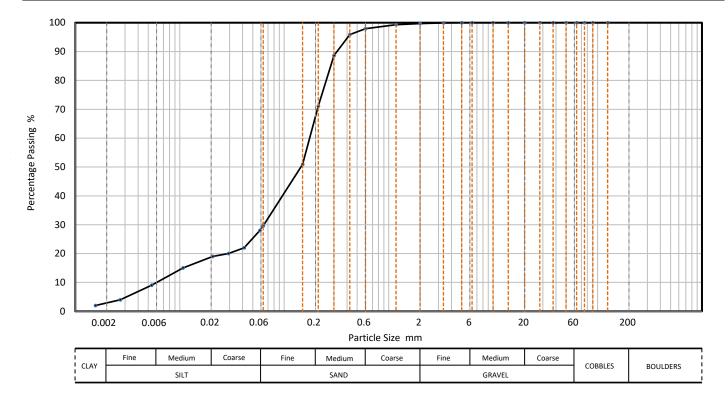
Approved by	T. Finnimore
Approval date	03/12/2021 14:37

Site name Job number
Envision, Sunderland S211001

Solmek 12-16 Yarm Road, Stockton on Tees, TS18 3NA 01642 607083 lab@solmek.com



Hole		TP29	Lab sample ID	SLMK20211201127
Depth (Top)	m	3.20	Test Method	BS 1377 - 2 : 1990 Clauses 9.2 and 9.5
Depth (Base)	m	3.3	Soil Description	Slightly Silty, SAND
Sample type		В		



Siev	/ing	Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	30
90	100	0.0584	28
75	100	0.0414	22
63	100	0.0293	20
50	100	0.0207	19
37.5	100	0.0107	15
28	100	0.0054	9
20	100	0.0027	4
14	100	0.0016	2
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	98	Particle density	(assumed)
0.425	96	2.65	Mg/m3
0.3	89		
0.212	71		
0.15	51		
0.063	30		

Sample Proportions	% dry mass	
Very coarse	0.0	
Gravel	0.3	
Sand	70.2	
Silt	26.8	
Clay	2.7	

Grading Analysis		
D ₁₀₀	mm	
D ₆₀	mm	0.175
D ₃₀	mm	0.0642
D ₁₀	mm	0.00591
Uniformity Coefficient		30
Curvature Coefficient		4

Remarks	
Preparation and testing in accordance with test method unless noted below	

Accreditation status

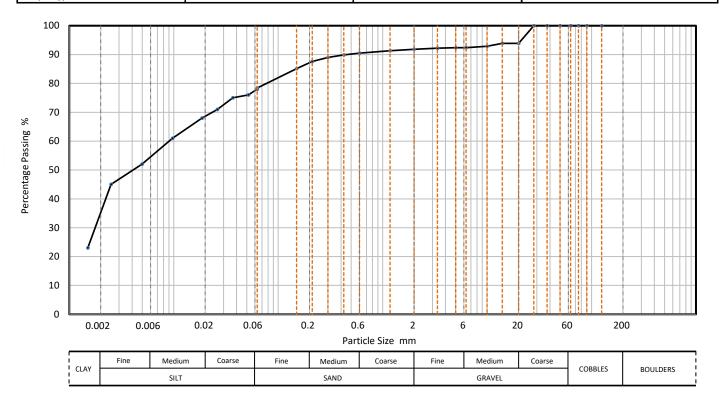
Approved by	KW	
Approval date	10/01/2022 11:24	

Site name Job number
Envision, Sunderland S211001

Solmek 12-16 Yarm Road, Stockton on Tees, TS18 3NA 01642 607083 lab@solmek.com



Hole		TP31	Lab sample ID	SLMK2021111690
Depth (Top)	m	1.00	Test Method	BS 1377 - 2 : 1990 Clauses 9.2 and 9.5
Depth (Base)	m	1.2	Soil Description	Slightly Gravelly, Slightly sandy, Clayey, SILT.
Sample type		В		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	78
90	100	0.0518	76
75	100	0.0368	75
63	100	0.0262	71
50	100	0.0186	68
37.5	100	0.0097	61
28	100	0.0050	52
20	94	0.0025	45
14	94	0.0015	23
10	93		
6.3	92		
5	92		
3.35	92		
2	92		
1.18	91		
0.6	91	Particle density	(assumed)
0.425	90	2.65	Mg/m3
0.3	89		
0.212	88		
0.15	85		
0.063	78		

Dry Mass of sample, g	466

Sample Proportions	% dry mass	
Very coarse	0.0	
Gravel	8.2	
Sand	13.4	
Silt	43.0	
Clay	35.4	

Grading Analysis		
D100	mm	
D60	mm	0.00891
D30	mm	0.00177
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

	Remarks
ethod unless noted below	Preparation and testing in accordance with to

Accreditation status

Approved by	T. Finnimore
Approval date	01/12/2021 13:34

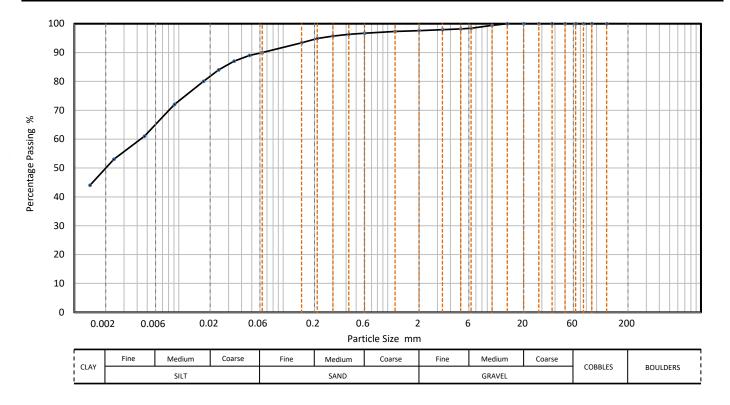
Site name Job number

Envision, Sunderland S211001

Solmek 12-16 Yarm Road, Stockton on Tees, TS18 3NA 01642 607083 lab@solmek.com



Hole		TP32	Lab sample ID	SLMK2021111693
Depth (Top)	m	1.00	Test Method	BS 1377 - 2 : 1990 Clauses 9.2 and 9.5
Depth (Base)	m	1.2	Soil Description	Slightly Gravelly, Slightly sandy, Silty, CLAY.
Sample type		В		



Siev	/ing	Sedim	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	90
90	100	0.0475	89
75	100	0.0338	87
63	100	0.0241	84
50	100	0.0173	80
37.5	100	0.0091	72
28	100	0.0047	61
20	100	0.0024	53
14	100	0.0014	44
10	99		
6.3	98		
5	98		
3.35	98		
2	98		
1.18	97		
0.6	97	Particle density	(assumed)
0.425	96	2.65	Mg/m3
0.3	96		
0.212	95		
0.15	93		
0.063	90		

Dry Mass of sample, g	515

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	2.4
Sand	7.6
Silt	40.3
Clay	49.7

Grading Analysis		
D100	mm	
D60	mm	0.00437
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks		
Preparation and testin	g in accordance with test method unless noted	below

Accreditation status

Approved by	T. Finnimore
Approval date	01/12/2021 13:36

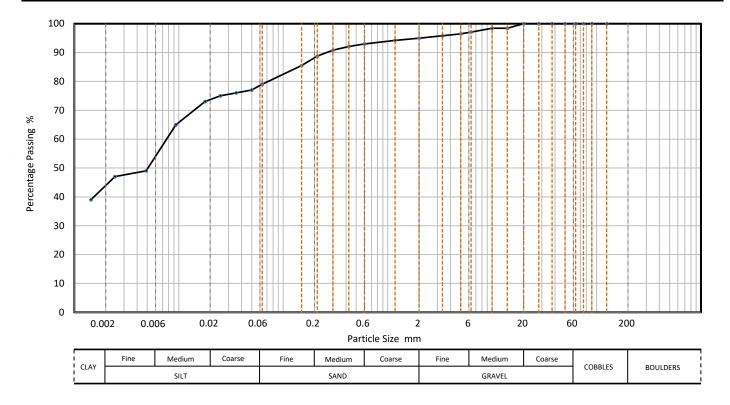
Site name Job number

Envision, Sunderland S211001

Solmek 12-16 Yarm Road, Stockton on Tees, TS18 3NA 01642 607083 lab@solmek.com



Hole		TP33	Lab sample ID	SLMK2021111696
Depth (Top)	m	1.00	Test Method	BS 1377 - 2 : 1990 Clauses 9.2 and 9.5
Depth (Base)	m	1.2	Soil Description	Slightly Gravelly, Slightly Sandy, Silty, CLAY.
Sample type		В		



Siev	/ing	Sedime	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	79
90	100	0.0499	77
75	100	0.0354	76
63	100	0.0251	75
50	100	0.0178	73
37.5	100	0.0094	65
28	100	0.0049	49
20	100	0.0025	47
14	98	0.0014	39
10	98		
6.3	97		
5	97		
3.35	96		
2	95		
1.18	94		
0.6	93	Particle density	(assumed)
0.425	92	2.65	Mg/m3
0.3	91		_
0.212	89		
0.15	86		
0.063	79		

Dry Mass of sample, g	387

Sample Proportions	% dry mass	
Very coarse	0.0	
Gravel	5.0	
Sand	16.0	
Silt	34.9	
Clay	44.1	

Grading Analysis		
D100	mm	
D60	mm	0.00752
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks	
Preparation and testing in accordance with test method unless noted below	

Accreditation status

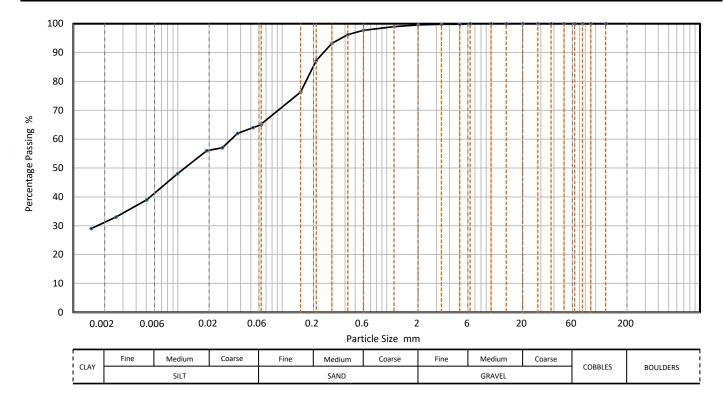
Approved by	T. Finnimore
Approval date	22/11/2021 12:29

Site name Job number
Envision, Sunderland S211001

Solmek 12-16 Yarm Road, Stockton on Tees, TS18 3NA 01642 607083 lab@solmek.com



Hole		TP35	Lab sample ID	SLMK20211116102
Depth (Top)	m	1.00	Test Method	BS 1377 - 2 : 1990 Clauses 9.2 and 9.5
Depth (Base)	m	1.2	Soil Description	Slightly Gravelly, Very Clayey, Very Silty,
Sample type		В	1	SAND.



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	65
90	100	0.0527	64
75	100	0.0374	62
63	100	0.0267	57
50	100	0.0189	56
37.5	100	0.0099	48
28	100	0.0050	39
20	100	0.0026	33
14	100	0.0015	29
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	98	Particle density	(assumed)
0.425	96	2.65	Mg/m3
0.3	93		
0.212	87		
0.15	76		
0.063	65		

Dry Mass of sample, g	342

Sample Proportions	% dry mass	
Very coarse	0.0	
Gravel	0.4	
Sand	34.4	
Silt	33.9	
Clay	31.3	

Grading Analysis		
D100	mm	
D60	mm	0.0326
D30	mm	0.00165
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks		
Preparation and testin	g in accordance with test method unless noted	below

Accreditation status

Approved by	T. Finnimore
Approval date	01/12/2021 13:39

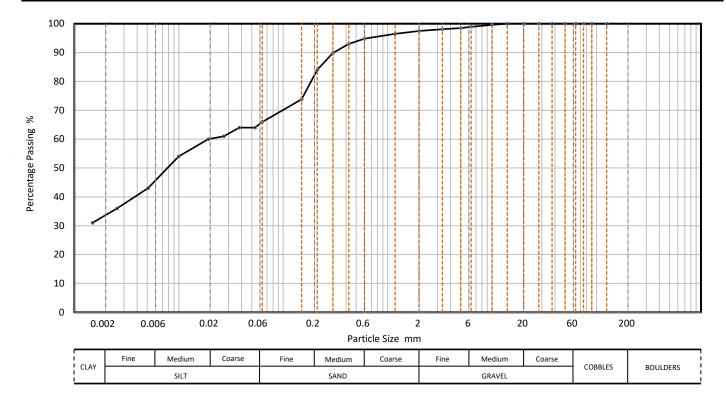
Site name Job number

Envision, Sunderland S211001

Solmek 12-16 Yarm Road, Stockton on Tees, TS18 3NA 01642 607083 lab@solmek.com



Hole		TP46	Lab sample ID	SLMK20211116105
Depth (Top)	m	1.00	Test Method	BS 1377 - 2 : 1990 Clauses 9.2 and 9.5
Depth (Base)	m	1.2	Soil Description	Slightly Gravelly, Sandy, Silty, CLAY.
Sample type		В		



Siev	/ing	Sedim	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	66
90	100	0.0538	64
75	100	0.0381	64
63	100	0.0270	61
50	100	0.0192	60
37.5	100	0.0100	54
28	100	0.0051	43
20	100	0.0026	36
14	100	0.0015	31
10	100		
6.3	99		
5	99		
3.35	98		
2	98		
1.18	97		
0.6	95	Particle density	(assumed)
0.425	93	2.65	Mg/m3
0.3	90		
0.212	84		
0.15	74		
0.063	66		

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	2.5
Sand	31.6
Silt	32.0
Clay	33.9

Grading Analysis		
D100	mm	
D60	mm	0.0215
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks	
Preparation and testing in accordance with test method unless noted below	

Accreditation status

Approved by	T. Finnimore
Approval date	01/12/2021 13:40

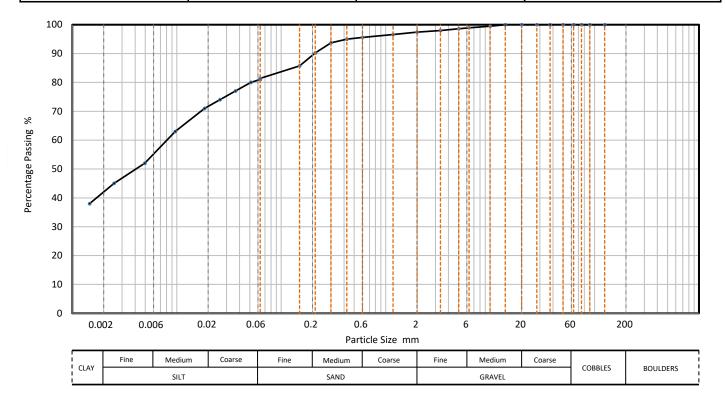
PARTICLE SIZE DISTRIBUTION

Site name Job number
Envision, Sunderland S211001

Solmek 12-16 Yarm Road, Stockton on Tees, TS18 3NA 01642 607083 lab@solmek.com



Hole		TP47	Lab sample ID	SLMK20211116109
Depth (Top)	m	1.60	Test Method	BS 1377 - 2 : 1990 Clauses 9.2 and 9.5
Depth (Base)	m	1.8	Soil Description	Slightly Gravelly, Slightly Sandy, Silty, CLAY.
Sample type		В		



Siev	/ing	Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	81
90	100	0.0513	80
75	100	0.0365	77
63	100	0.0260	74
50	100	0.0185	71
37.5	100	0.0097	63
28	100	0.0049	52
20	100	0.0025	45
14	100	0.0015	38
10	100		
6.3	99		
5	99		
3.35	98		
2	97		
1.18	97		
0.6	96	Particle density	(assumed)
0.425	95	2.65	Mg/m3
0.3	94		_
0.212	90		
0.15	86		
0.063	81		

Dry Mass of sample, g	462

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	2.6
Sand	15.9
Silt	39.6
Clay	41.9

Grading Analysis		
D100	mm	
D60	mm	0.00791
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks	
Preparation and testing in accordance with test method unless noted below	

Accreditation status

Hydrometer is the usual Sedimentation method carried out by Solmek and is part of the Solmek UKAS accreditation schedule.

Approved by	T. Finnimore	
Approval date	03/12/2021 13:08	

PARTICLE SIZE DISTRIBUTION

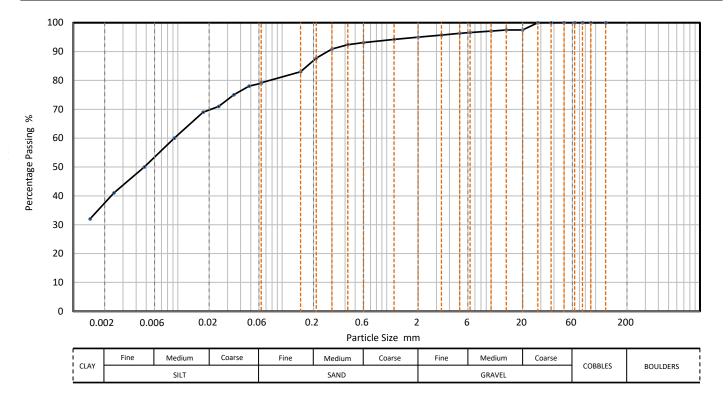
Site name Job number

Envision, Sunderland S211001

Solmek 12-16 Yarm Road, Stockton on Tees, TS18 3NA 01642 607083 lab@solmek.com



Hole		TP50	Lab sample ID	SLMK20211116114
Depth (Top)	m	1.00	Test Method	BS 1377 - 2 : 1990 Clauses 9.2 and 9.5
Depth (Base)	m	1.2	Soil Description	Slightly Gravelly, Slightly Sandy, Clayey, SILT.
Sample type		В		



Siev	/ing	Sedimentation		
Particle Size mm	% Passing	Particle Size mm	% Passing	
125	100	0.0630	79	
90	100	0.0482	78	
75	100	0.0344	75	
63	100	0.0246	71	
50	100	0.0175	69	
37.5	100	0.0093	60	
28	100	0.0048	50	
20	98	0.0025	41	
14	98	0.0014	32	
10	97			
6.3	97			
5	96			
3.35	96			
2	95			
1.18	94			
0.6	93	Particle density	(assumed)	
0.425	92	2.65	Mg/m3	
0.3	91			
0.212	88			
0.15	83			
0.063	79			

Dry Mass of sample, g	536

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	5.0
Sand	15.8
Silt	41.8
Clay	37.4

Grading Analysis		
D100	mm	
D60	mm	0.00905
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks	
Preparation and testing in accordance with test method unless noted below	

Accreditation status

Hydrometer is the usual Sedimentation method carried out by Solmek and is part of the Solmek UKAS accreditation schedule.

Approved by	T. Finnimore
Approval date	01/12/2021 13:44

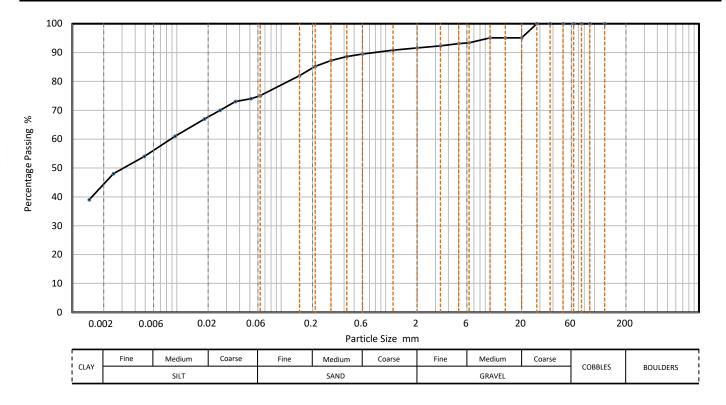
PARTICLE SIZE DISTRIBUTION

Site name Job number
Envision, Sunderland S211001

Solmek 12-16 Yarm Road, Stockton on Tees, TS18 3NA 01642 607083 lab@solmek.com



Hole		TP51	Lab sample ID	SLMK20211116116
Depth (Top)	m	1.00	Test Method	BS 1377 - 2 : 1990 Clauses 9.2 and 9.5
Depth (Base)	m	1.2	Soil Description	Slightly Gravelly, Slightly Sandy, Silty, CLAY.
Sample type		В		



Siev	/ing	Sedimentation		
Particle Size mm	% Passing	Particle Size mm	% Passing	
125	100	0.0630	75	
90	100	0.0515	74	
75	100	0.0365	73	
63	100	0.0259	70	
50	100	0.0184	67	
37.5	100	0.0096	61	
28	100	0.0049	54	
20	95	0.0025	48	
14	95	0.0015	39	
10	95			
6.3	93			
5	93			
3.35	92			
2	92			
1.18	91			
0.6	90	Particle density	(assumed)	
0.425	89	2.65	Mg/m3	
0.3	87			
0.212	85			
0.15	82			
0.063	75			

Dry Mass of sample, g	430

Sample Proportions	% dry mass		
Very coarse	0.0		
Gravel	8.4		
Sand	16.6		
Silt	30.2		
Clay	44.8		

Grading Analysis		
D100	mm	
D60	mm	0.00865
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks	
Preparation and testing in accordance with test method unless noted below	

Accreditation status

Hydrometer is the usual Sedimentation method carried out by Solmek and is part of the Solmek UKAS accreditation schedule.

Approved by	T. Finnimore
Approval date	01/12/2021 13:42

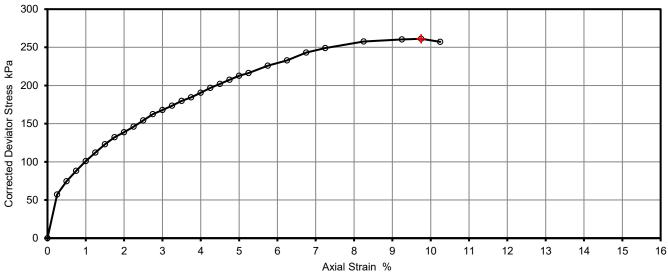
	Unconsolidated Compression To		ed Triaxial ut measurement	Job Ref	S211001
	of pore pressure - single specimen		Borehole/Pit No.	CP01	
Site Name	Envision, Sunderland	Envision, Sunderland		Sample No.	
Soil Description			Depth	2.00	
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Firm, High Strength, CLAY.		KeyLAB ID	SLMK2021111610	
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen		Date of test		

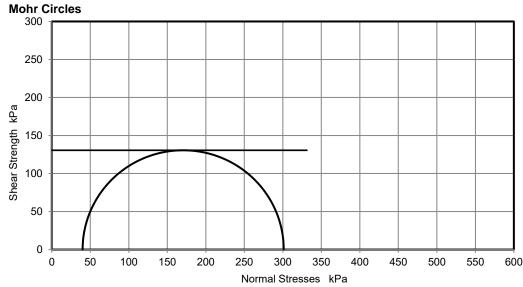
Test Num	ber	1	
Length		76.0	mm
Diameter		38.0	mm
Bulk Dens	sity	2.11	Mg/m3
Moisture (Content	22.0	%
Dry Densi	ty	1.73	Mg/m3
			_
Rate of St	train	1.0	%/min
Cell Press	sure	40	kPa
	Axial Strain	9.8	%
At failure	Deviator Stress, (σ1 - σ3)f	261	kPa
At failure	Undrained Shear Strength, cu	131	kPa ½(σ1-σ3)f
	Mode of Failure	Plastic	ì
	•	-	-

Test Frame Load Ring Pressure Gauge Digital Caliper Balance

TRI 004
LOAD CELL 003
PRE 004
CAL-005
BAL-007

Deviator Stress v Axial Strain





Deviator stress corrected for area change and membrane effects

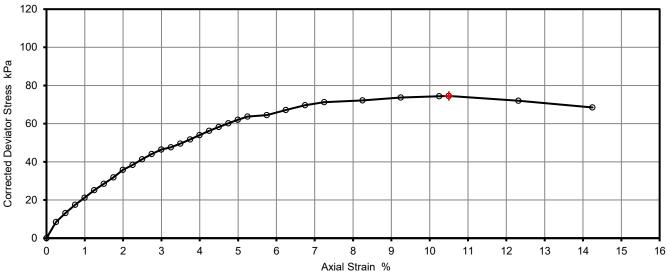
Mohr circles and their interpretation is not covered by BS1377. This is provided for information only.

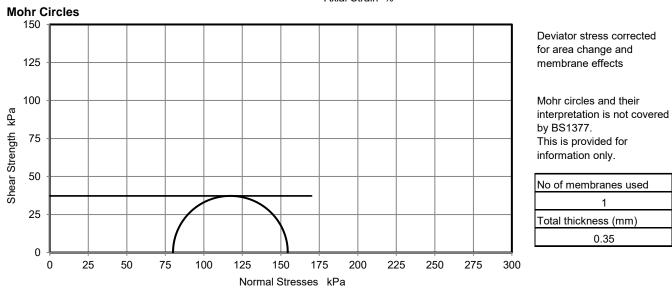
	Unconsolidated Undrained Triaxial Compression Test without measurement		Job Ref	S211001	
	of pore pressur	e - single	specimen	Borehole/Pit No.	CP01
Site Name	Envision, Sunderland	Envision, Sunderland		Sample No.	
Soil Description			Depth	4.00	
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Firm, Low Strength, CLAY.		KeyLAB ID	SLMK2021111612	
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen			Date of test	

Test Num	ber	1	٦
Length		202.0	mm
Diameter		100.0	mm
Bulk Dens	sity	2.00	Mg/m3
Moisture (Content	30.7	%
Dry Densi	ty	1.53	Mg/m3
Rate of St	train	1.0	%/min
Cell Press	sure	80	kPa
	Axial Strain	10.5	%
At failure	Deviator Stress, (σ1 - σ3)f	75	kPa
At failure	Undrained Shear Strength, cu	37	kPa ½(σ1-σ3)f
	Mode of Failure	Plastic	i è
	•	-	

Test Frame Load Ring Pressure Gauge Digital Caliper Balance

TRI 003
LOAD CELL 001
PRE 004
CAL-005
BAL-006





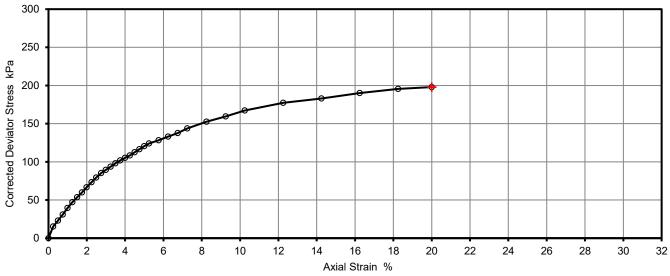
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen		Job Ref	S211001	
			Borehole/Pit No.	CP02	
Site Name	Envision, Sunderland	Envision, Sunderland		Sample No.	
Soil Description			Depth	2.00	
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Firm, Brown, High Strength, CLAY.		KeyLAB ID	SLMK2021111618	
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen			Date of test	

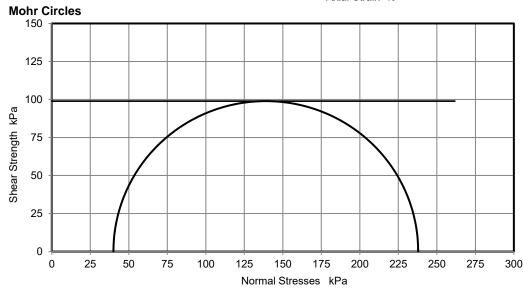
Test Num	ber	1	٦
Length		202.0	mm
Diameter		100.0	mm
Bulk Dens	sity	2.13	Mg/m3
Moisture (Content	25.7	%
Dry Densi	ty	1.69	Mg/m3
Rate of St	train	1.0	%/min
Cell Press	sure	40	kPa
	Axial Strain	20.0	%
At failure	Deviator Stress, (σ1 - σ3)f	198	kPa
Atlaliule	Undrained Shear Strength, cu	99	kPa ½(σ1 - σ3)f
	Mode of Failure	Plastic	
		,	

Test Frame Load Ring Pressure Gauge Digital Caliper Balance

TRI 003
LOAD CELL 001
PRE 004
CAL 006
BAL-006

Deviator Stress v Axial Strain





Deviator stress corrected for area change and membrane effects

Mohr circles and their interpretation is not covered by BS1377. This is provided for information only.

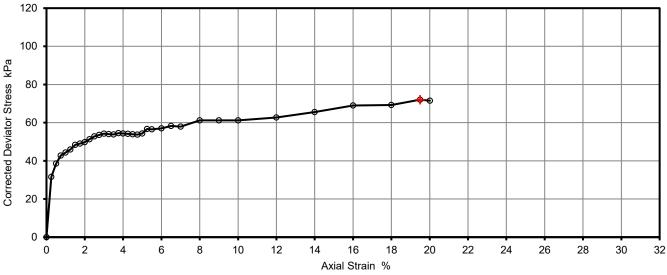
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen		Job Ref	S211001	
			Borehole/Pit No.	CP02	
Site Name	Envision, Sunderland	Envision, Sunderland		Sample No.	
Soil Description			Depth	4.00	
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Soft, Brown, Low Strength, CLAY.		KeyLAB ID	SLMK2021111620	
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen			Date of test	

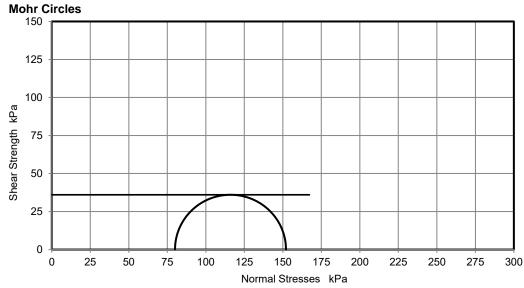
Test Num	ber	1	٦
Length		76.0	mm
Diameter		38.0	mm
Bulk Dens	sity	1.94	Mg/m3
Moisture (Content	16.8	%
Dry Densi	ty	1.66	Mg/m3
			-
Rate of St	train	1.0	%/min
Cell Press	sure	80	kPa
	Axial Strain	19.5	%
At failure	Deviator Stress, (σ1 - σ3)f	72	kPa
At failure	Undrained Shear Strength, cu	36	kPa ½(σ1-σ3)f
	Mode of Failure	Plastic	1
	•	•	_

Test Frame Load Ring Pressure Gauge Digital Caliper Balance

TRI 003
LOAD CELL 001
PRE 004
CAL-005
BAL-006

Deviator Stress v Axial Strain





Deviator stress corrected for area change and membrane effects

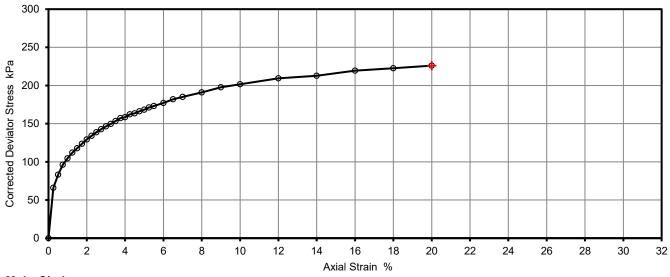
Mohr circles and their interpretation is not covered by BS1377. This is provided for information only.

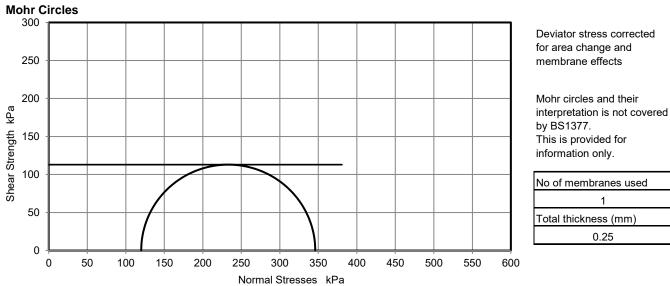
	Unconsolidated Undrained Triaxial Compression Test without measurement		Job Ref	S211001	
	of pore pressu	re - single	specimen	Borehole/Pit No.	CP02
Site Name	Envision, Sunderland	Envision, Sunderland		Sample No.	
Soil Description			Depth	6.00	
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Firm, Brown, High Strength, CLAY.		KeyLAB ID	SLMK2021111622	
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen			Date of test	

Test Num	ber	1	
Length		76.0	mm
Diameter		38.0	mm
Bulk Dens	sity	2.14	Mg/m3
Moisture (Content	14.6	%
Dry Densi	ty	1.87	Mg/m3
			_
Rate of St	train	1.0	%/min
Cell Press	sure	120	kPa
	Axial Strain	20.0	%
At failure	Deviator Stress, (σ1 - σ3)f	226	kPa
At lallure	Undrained Shear Strength, cu	113	kPa ½(σ1 - σ3)f
	Mode of Failure	Plastic	
	•		

Test Frame Load Ring Pressure Gauge Digital Caliper Balance

TRI 003
LOAD CELL 001
PRE 006
CAL-005
BAL-006



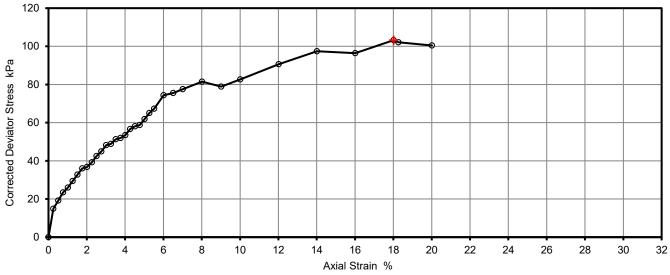


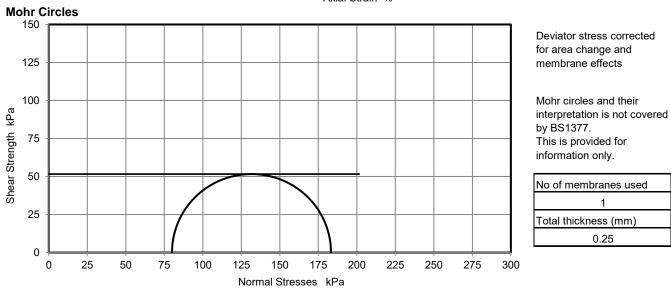
	Unconsolidated I Compression Tes	st withou	ıt measurement	Job Ref	S211001
	of pore pressure	- single	specimen	Borehole/Pit No.	CP03
Site Name	Envision, Sunderland		Sample No.		
Soil Description			Depth	4.00	
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Firm, Brown, Medium Strength, CLAY.		KeyLAB ID	SLMK2021111627	
Test Method	BS1377 : Part 7 : 1990, c	clause 8, sinç	gle specimen	Date of test	

Test Num	ber	1	
Length		76.0	mm
Diameter		38.0	mm
Bulk Dens	sity	2.12	Mg/m3
Moisture (Content	18.5	%
Dry Density		1.79	Mg/m3
			_
Rate of St	train	1.0	%/min
Cell Press	sure	80	kPa
	Axial Strain	18.0	%
At failure	Deviator Stress, (σ1 - σ3)f	103	kPa
	Undrained Shear Strength, cu	52	kPa ½(σ1 - σ3)f
	Mode of Failure	Plastic	
	•		

Test Frame Load Ring Pressure Gauge Digital Caliper Balance

TRI 003
LOAD CELL 001
PRE 004
CAL-005
BAL-006





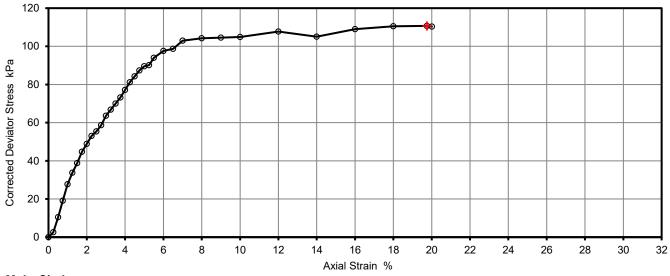
	-	Test withou	ut measurement	Job Ref Borehole/Pit No.	S211001 CP04
	of pore pressu	re - single	specimen	Borchole/Fit No.	01 04
Site Name	Envision, Sunderland		Sample No.		
Soil Description			Depth	4.00	
Specimen Reference	Specimen m Depth		Sample Type	U	
Specimen Description	Firm, Medium Strength, CLAY.		KeyLAB ID	SLMK2021111634	
Test Method	BS1377 : Part 7 : 199	0, clause 8, sin	gle specimen	Date of test	

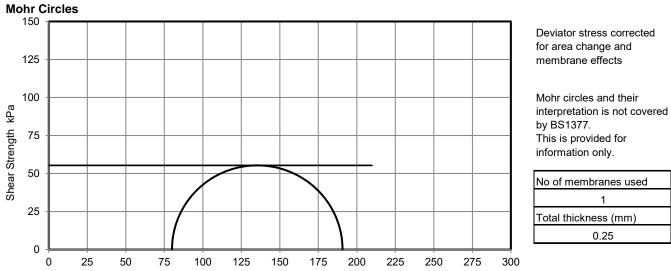
Test Num	ber	1	
Length		76.0	mm
Diameter		38.0	mm
Bulk Dens	sity	2.02	Mg/m3
Moisture (Content	23.6	%
Dry Density		1.64	Mg/m3
			_
Rate of St	train	1.0	%/min
Cell Press	sure	80	kPa
	Axial Strain	19.8	%
At failure	Deviator Stress, (σ1 - σ3)f	111	kPa
	Undrained Shear Strength, cu	55	kPa ½(σ1 - σ3)f
	Mode of Failure	Plastic	
	•		

Test Frame Load Ring Pressure Gauge Digital Caliper Balance

TRI 003
LOAD CELL 001
PRE 004
CAL-005
BAL-006

Deviator Stress v Axial Strain





Normal Stresses kPa

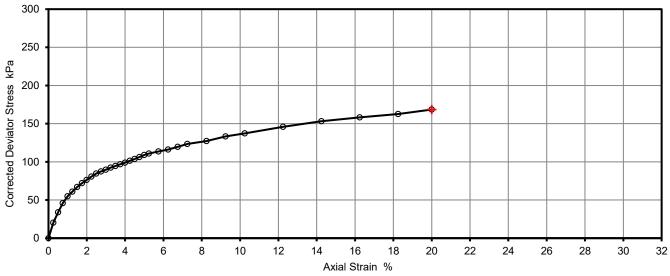
	Unconsolidated Compression Te			Job Ref	S211001
	of pore pressure - single specimen			Borehole/Pit No.	CP05
Site Name	Envision, Sunderland		Sample No.		
Soil Description			Depth	2.00	
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Firm, Brown, High Strength, CLAY.		KeyLAB ID	SLMK2021111640	
Test Method	BS1377 : Part 7 : 1990,	clause 8, sing	gle specimen	Date of test	

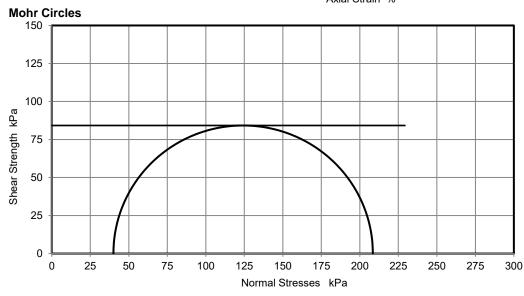
Test Num	ber	1	
Length		200.0	mm
Diameter		100.0	mm
Bulk Dens	sity	2.21	Mg/m3
Moisture (Content	27.5	%
Dry Density		1.73	Mg/m3
			_
Rate of St	train	1.0	%/min
Cell Press	sure	40	kPa
	Axial Strain	20.0	%
At failure	Deviator Stress, (σ1 - σ3)f	168	kPa
	Undrained Shear Strength, cu	84	kPa ½(σ1 - σ3)f
	Mode of Failure	Plastic	
	•		

Test Frame Load Ring Pressure Gauge Digital Caliper Balance

TRI 004
LOAD CELL 001
PRE 004
CAL-005
BAL-006

Deviator Stress v Axial Strain





Deviator stress corrected for area change and membrane effects

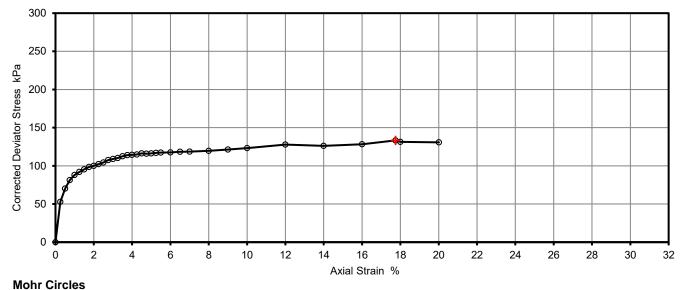
No of membranes used			
1			
Total thickness (mm)			
0.35			

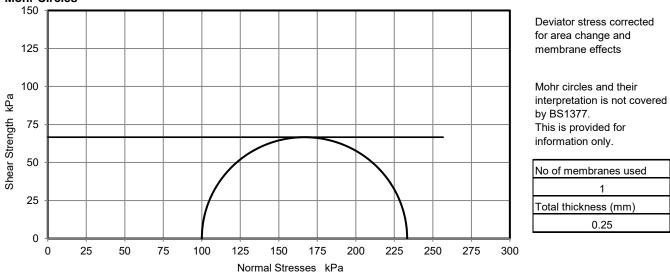
	Unconsolidated Unc Compression Test v	withou	t measurement	Job Ref	S211001
	of pore pressure - s	single s	specimen	Borehole/Pit No.	CP05
Site Name	Envision, Sunderland		Sample No.		
Soil Description			Depth	5.00	
Specimen Reference	Speci Depth		m	Sample Type	U
Specimen Description	Firm, Brown, Medium Strength, CLAY.		KeyLAB ID	SLMK2021111643	
Test Method	BS1377 : Part 7 : 1990, claus	se 8, sing	e specimen	Date of test	

Test Num	ber	1	
Length		76.0	mm
Diameter		38.0	mm
Bulk Dens	sity	2.26	Mg/m3
Moisture (Content	12.6	%
Dry Density		2.01	Mg/m3
			_
Rate of St	train	1.0	%/min
Cell Press	sure	100	kPa
	Axial Strain	17.8	%
At failure	Deviator Stress, (σ1 - σ3)f	133	kPa
	Undrained Shear Strength, cu	67	kPa ½(σ1 - σ3)f
	Mode of Failure	Plastic	
	•		

Test Frame Load Ring Pressure Gauge Digital Caliper Balance

TRI 004
LOAD CELL 001
PRE 004
CAL-005
BAL-006





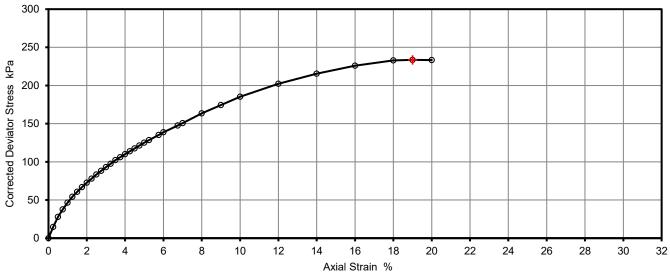
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen		Job Ref	S211001	
			Borehole/Pit No.	CP06	
Site Name	Envision, Sunderland			Sample No.	
Soil Description			Depth	2.00	
Specimen Reference	Specimen m Depth		Sample Type	U	
Specimen Description	Firm, Brown, High Strength, CLAY.		KeyLAB ID	SLMK2021111646	
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen			Date of test	

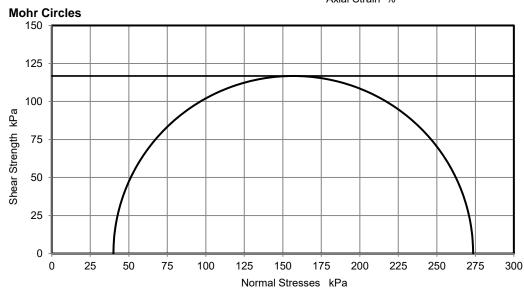
Test Number		1	
Length		195.0	mm
Diameter		102.0	mm
Bulk Dens	sity	2.16	Mg/m3
Moisture (Content	25.2	%
Dry Densi	ty	1.72	Mg/m3
			_
Rate of St	train	1.0	%/min
Cell Press	sure	40	kPa
	Axial Strain	19.0	%
At failure	Deviator Stress, (σ1 - σ3)f	234	kPa
At lallule	Undrained Shear Strength, cu	117	kPa ½(σ1 - σ3)f
	Mode of Failure	Plastic	
	•	,	

Test Frame Load Ring Pressure Gauge Digital Caliper Balance

TRI 003
LOAD CELL 001
PRE 004
CAL 006
BAL-006

Deviator Stress v Axial Strain





Deviator stress corrected for area change and membrane effects

No of membranes used
1
Total thickness (mm)
0.35

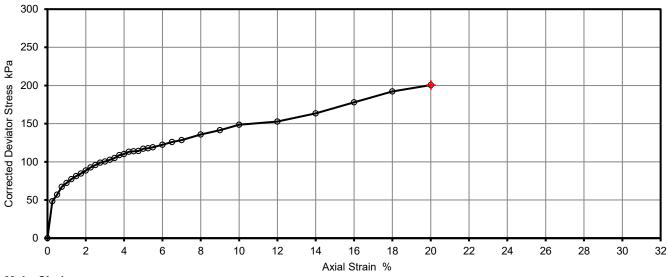
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen		Job Ref	S211001
			Borehole/Pit No.	CP06
Site Name	Envision, Sunderland		Sample No.	
Soil Description			Depth	4.00
Specimen Reference	Specimen m Depth		Sample Type	U
Specimen Description	Firm, Brown. High Strength, CLAY.		KeyLAB ID	SLMK2021111648
Test Method	BS1377 : Part 7 : 1990, clause	8, single specimen	Date of test	

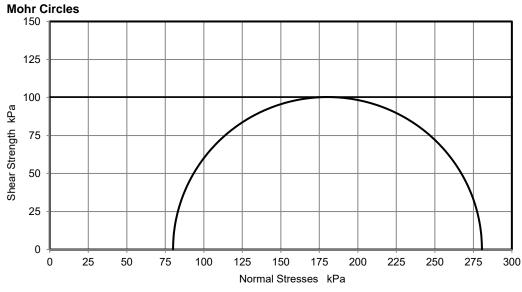
Test Num	ber	1	٦
Length		76.0	mm
Diameter		38.0	mm
Bulk Dens	sity	1.94	Mg/m3
Moisture (Content	32.2	%
Dry Densi	ity	1.47	Mg/m3
Rate of St	train	1.0	%/min
Cell Press	sure	80	kPa
	Axial Strain	20.0	%
At failure	Deviator Stress, (σ1 - σ3)f	201	kPa
At failure	Undrained Shear Strength, cu	100	kPa ½(σ1 - σ3)f
	Mode of Failure	Plastic	1
	•	1	→

Test Frame Load Ring Pressure Gauge Digital Caliper Balance

TRI 003
LOAD CELL 001
PRE 004
CAL-005
BAL-006

Deviator Stress v Axial Strain





Deviator stress corrected for area change and membrane effects

No of membranes used
1
Total thickness (mm)
0.25

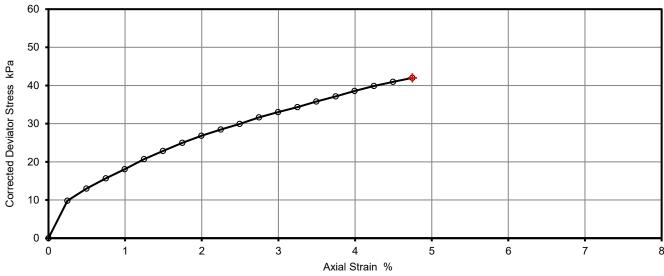
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen		Job Ref	S211001	
			Borehole/Pit No.	CP06	
Site Name	Envision, Sunderland			Sample No.	
Soil Description			Depth	6.00	
Specimen Reference	Specimen m Depth		Sample Type	U	
Specimen Description	Soft, Low Strength CLAY		KeyLAB ID	SLMK2021111650	
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen			Date of test	16/11/2021

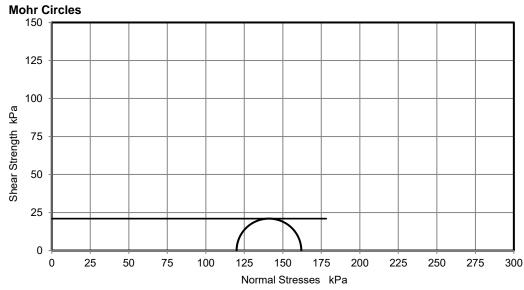
Test Num	ber	1	٦	
Length		202.0	mm	
Diameter		101.0	mm	
Bulk Dens	sity	2.08	Mg/m3	
Moisture (Content	23.6	%	
Dry Densi	ty	1.68	Mg/m3	
Rate of St	rain	1.0	%/min	
Cell Press	sure	120	kPa	
	Axial Strain	4.7	%	
At failure	Deviator Stress, (σ1 - σ3)f	42	kPa	
At failure	Undrained Shear Strength, cu	21	kPa ½(σ1 - σ3)f	
	Mode of Failure	Plastic		
	•	•	_	

Test Frame Load Ring Pressure Gauge Digital Caliper Balance

TRI 004
LOAD CELL 003
PRE 004
CAL-005
BAL-001

Deviator Stress v Axial Strain





Deviator stress corrected for area change and membrane effects

No of membranes used			
1			
Total thickness (mm)			
0.35			

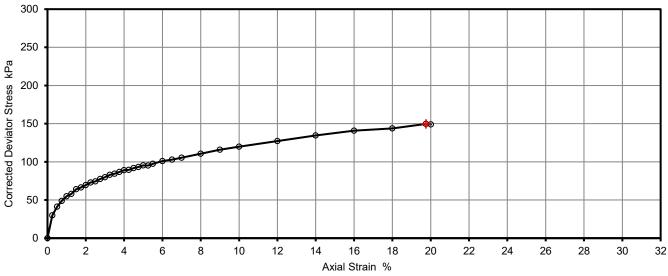
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen		Job Ref	S211001	
			Borehole/Pit No.	CP06	
Site Name	Envision, Sunderland		Sample No.		
Soil Description			Depth	12.00	
Specimen Reference	· '	Specimen m		Sample Type	U
Specimen Description	Firm, Brown, Medium Strength, CLAY.			KeyLAB ID	SLMK2021111655
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen			Date of test	

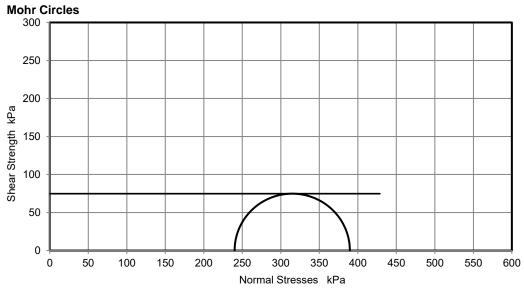
Test Num	ber	1	
Length		76.0	mm
Diameter		38.0	mm
Bulk Dens	sity	2.16	Mg/m3
Moisture (Content	21.6	%
Dry Densi	ty	1.77	Mg/m3
			_
Rate of Strain		1.0	%/min
Cell Press	sure	240	kPa
	Axial Strain	19.8	%
At failure	Deviator Stress, (σ1 - σ3)f	150	kPa
At lallure	Undrained Shear Strength, cu	75	kPa ½(σ1 - σ3)f
	Mode of Failure	Plastic	
	•		

Test Frame Load Ring Pressure Gauge Digital Caliper Balance

TRI 003
LOAD CELL 001
PRE 004
CAL-005
BAL-006

Deviator Stress v Axial Strain





Deviator stress corrected for area change and membrane effects

No of membranes used			
1			
Total thickness (mm)			
0.25			

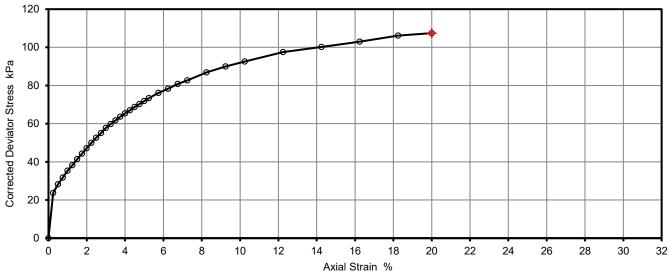
	Unconsolidated Undr Compression Test wi	thout measurement	Job Ref	S211001
	of pore pressure - sir	gle specimen	Borehole/Pit No.	CP07
Site Name	Envision, Sunderland		Sample No.	
Soil Description			Depth	3.00
Specimen Reference	Specim Depth	Specimen m		U
Specimen Description	Firm, brown, Medium Strength CLAY		KeyLAB ID	SLMK2021111662
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen		Date of test	16/11/2021

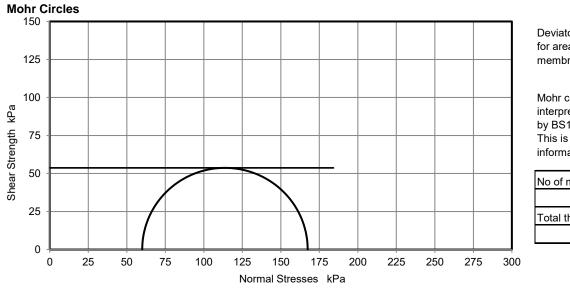
Test Number		1	7
Length		204.0	mm
Diameter		100.0	mm
Bulk Dens	sity	2.20	Mg/m3
Moisture (Content	23.4	%
Dry Densi	ty	1.78	Mg/m3
Rate of Strain		1.0	%/min
Cell Press	sure	60	kPa
	Axial Strain	20.0	%
At failure	Deviator Stress, (σ1 - σ3)f	107	kPa
	Undrained Shear Strength, cu	54	kPa ½(σ1 - σ3)f
	Mode of Failure	Plastic	
	•		_

Test Frame Load Ring Pressure Gauge Digital Caliper Balance

TRI 004
LOAD CELL 003
PRE 004
CAL-005
BAL-001

Deviator Stress v Axial Strain





Deviator stress corrected for area change and membrane effects

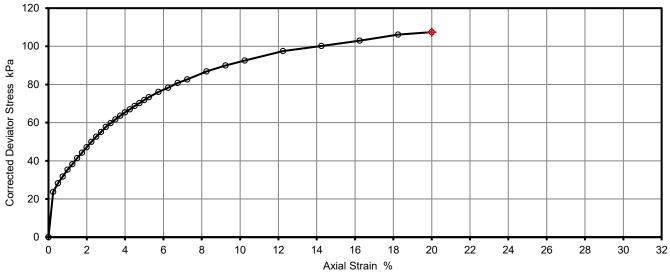
No of membranes used
1
Total thickness (mm)
0.35

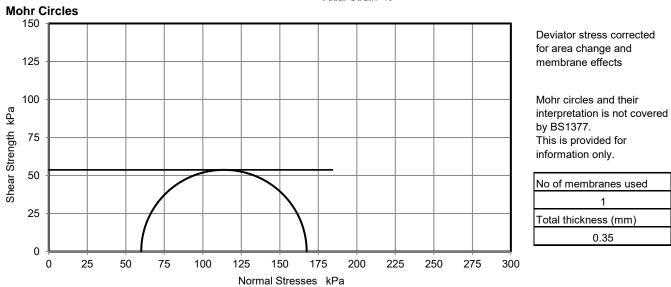
	Unconsolidated Undrained Triaxial Compression Test without measurement			Job Ref	S211001
	of pore pressure - single specimen		Borehole/Pit No.	CP07	
Site Name	Envision, Sunderland		Sample No.		
Soil Description			Depth	5.00	
Specimen Reference		Specimen m Depth		Sample Type	U
Specimen Description	Firm, Brown, Medium Strength, CLAY.		KeyLAB ID	SLMK2021111664	
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen			Date of test	

Test Number		1	٦
Length		204.0	mm
Diameter		100.0	mm
Bulk Dens	sity	2.20	Mg/m3
Moisture (Content	28.0	%
Dry Densi	ty	1.72	Mg/m3
			-
Rate of Strain		1.0	%/min
Cell Press	sure	60	kPa
	Axial Strain	20.0	%
At failure	Deviator Stress, (σ1 - σ3)f	107	kPa
	Undrained Shear Strength, cu	54	kPa ½(σ1-σ3)f
	Mode of Failure	Plastic	1
	,		-

Test Frame Load Ring Pressure Gauge Digital Caliper Balance

TRI 003
LOAD CELL 001
PRE 004
CAL-005
BAL-006





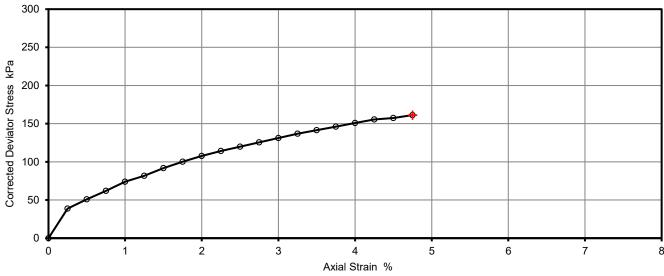
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen		Job Ref Borehole/Pit No.	S211001 CPRO01	
Site Name	Envision, Sunderland		Sample No.		
Soil Description			Depth	1.20	
Specimen Reference	Specimen m Depth		Sample Type	U	
Specimen Description	Firm, High Strength, CLAY.		KeyLAB ID	SLMK202111172	
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen			Date of test	

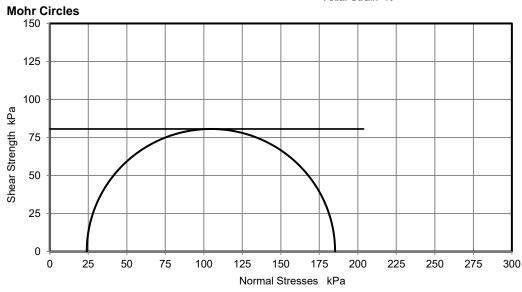
Test Num	ber	1	٦	
Length		76.0	mm	
Diameter		38.0	mm	
Bulk Dens	sity	2.08	Mg/m3	
Moisture (Content	20.0	%	
Dry Density		1.74	Mg/m3	
Rate of Strain		1.0	%/min	
Cell Press	sure	24	kPa	
	Axial Strain	4.8	%	
At failure	Deviator Stress, (σ1 - σ3)f	161	kPa	
Atlanule	Undrained Shear Strength, cu	81	kPa ½(σ1 - σ3)f	
	Mode of Failure	Plastic		
		,		

Test Frame Load Ring Pressure Gauge Digital Caliper Balance

TRI 003
LOAD CELL 001
PRE 004
CAL-005
BAL-006

Deviator Stress v Axial Strain





Deviator stress corrected for area change and membrane effects

No of membranes used		
1		
Total thickness (mm)		
0.25		

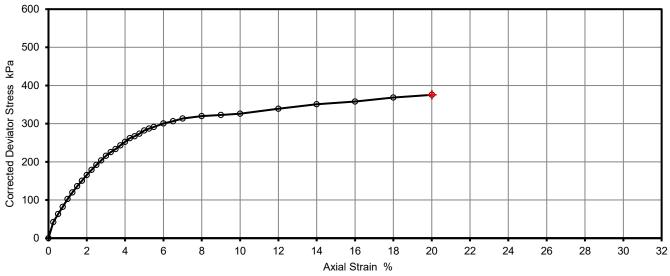
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen		Job Ref	S211001
			Borehole/Pit No.	CPRO01
Site Name	Envision, Sunderland		Sample No.	
Soil Description			Depth	2.00
Specimen Reference	Specimen m		Sample Type	U
Specimen Description	Firm, Very High Strength, CLAY.		KeyLAB ID	SLMK202111178
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen		Date of test	

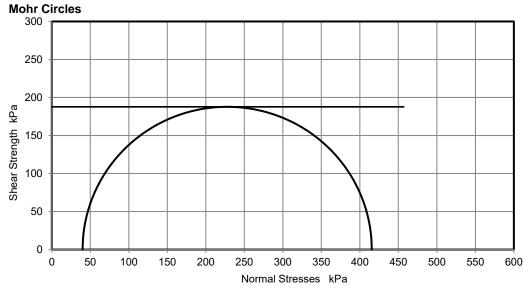
Test Num	ber	1	٦	
Length		76.0	mm	
Diameter		38.0	mm	
Bulk Dens	sity	2.22	Mg/m3	
Moisture (Content	12.4	- %	
Dry Densi	ty	1.97	Mg/m3	
Rate of St	train	1.0	%/min	
Cell Press	sure	40	kPa	
	Axial Strain	20.0	%	
At failure	Deviator Stress, (σ1 - σ3)f	375	kPa	
	Undrained Shear Strength, cu	188	kPa ½(σ1 - σ3)f	
	Mode of Failure	Plastic	1	
	•	•	_	

Test Frame Load Ring Pressure Gauge Digital Caliper Balance

TRI 003
LOAD CELL 001
PRE 004
CAL-005
BAL-006

Deviator Stress v Axial Strain





Deviator stress corrected for area change and membrane effects

Mohr circles and their interpretation is not covered by BS1377. This is provided for information only.

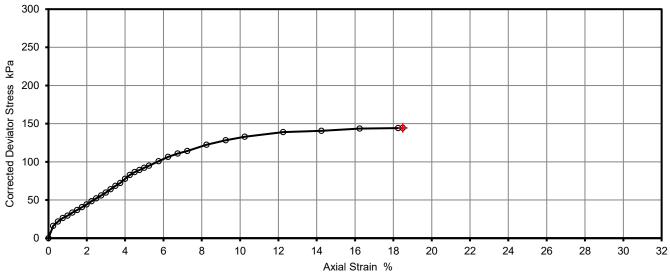
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen		Job Ref Borehole/Pit No.	S211001 CPRO01	
Site Name	Envision, Sunderland		Sample No.		
Soil Description			Depth	3.00	
Specimen Reference	Specimen m Depth		Sample Type	U	
Specimen Description	Firm, Medium Strength, CLAY.		KeyLAB ID	SLMK202111174	
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen			Date of test	

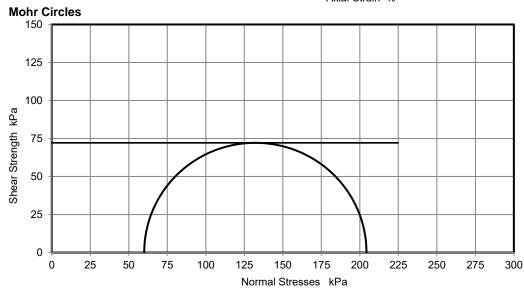
Test Num	ber	1	٦	
Length		202.0	mm	
Diameter		101.0	mm	
Bulk Dens	sity	2.32	Mg/m3	
Moisture (Content	15.8	- %	
Dry Density		2.01	Mg/m3	
			_	
Rate of St	train	1.0	%/min	
Cell Press	sure	60	kPa	
	Axial Strain	18.5	%	
At failure	Deviator Stress, (σ1 - σ3)f	144	kPa	
At lallule	Undrained Shear Strength, cu	72	kPa ½(σ1 - σ3)f	
	Mode of Failure	Plastic		
	•		-	

Test Frame Load Ring Pressure Gauge Digital Caliper Balance

TRI 003
LOAD CELL 001
PRE 004
CAL-005
BAL-006

Deviator Stress v Axial Strain





Deviator stress corrected for area change and membrane effects

No of membranes used		
1		
Total thickness (mm)		
0.35		

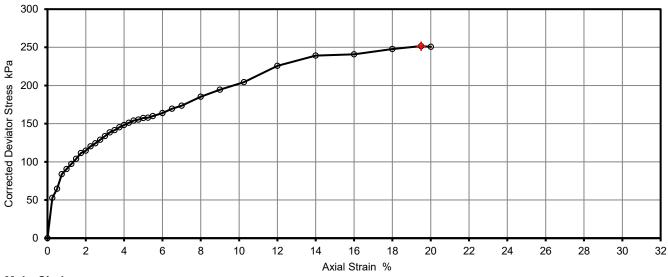
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen		Job Ref	S211001
			Borehole/Pit No.	CPRO02
Site Name	Envision, Sunderland		Sample No.	
Soil Description			Depth	4.00
Specimen Reference	Specimen m Depth		Sample Type	U
Specimen Description	Firm, Brown, High Strength, CLAY.		KeyLAB ID	SLMK2021111710
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen		Date of test	

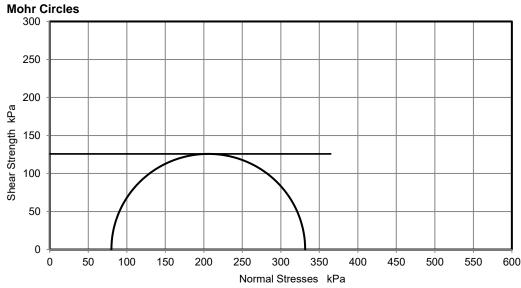
Test Num	ber	1	
Length		76.0	mm
Diameter		38.0	mm
Bulk Dens	sity	2.18	Mg/m3
Moisture (Content	14.0	%
Dry Densi	ty	1.91	Mg/m3
			_
Rate of St	train	1.0	%/min
Cell Press	sure	80	kPa
	Axial Strain	19.5	%
At failure	Deviator Stress, (σ1 - σ3)f	252	kPa
At lallure	Undrained Shear Strength, cu	126	kPa ½(σ1 - σ3)f
	Mode of Failure	Plastic	
	•		

Test Frame Load Ring Pressure Gauge Digital Caliper Balance

TRI 003
LOAD CELL 001
PRE 004
CAL-005
BAL-006

Deviator Stress v Axial Strain





Deviator stress corrected for area change and membrane effects

Mohr circles and their interpretation is not covered by BS1377. This is provided for information only.

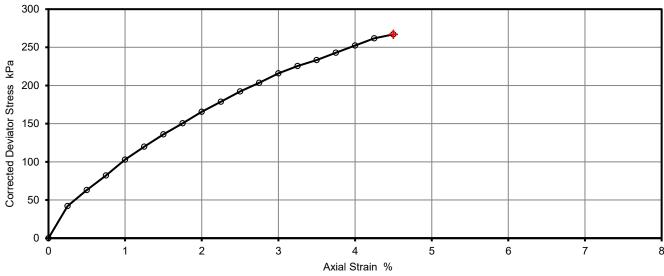
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen		Job Ref	S211001
			Borehole/Pit No.	CPRO03
Site Name	Envision, Sunderland		Sample No.	
Soil Description			Depth	2.00
Specimen Reference	Specimen m Depth		Sample Type	U
Specimen Description	Firm, High Strength, CLAY.		KeyLAB ID	SLMK2021111714
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen		Date of test	

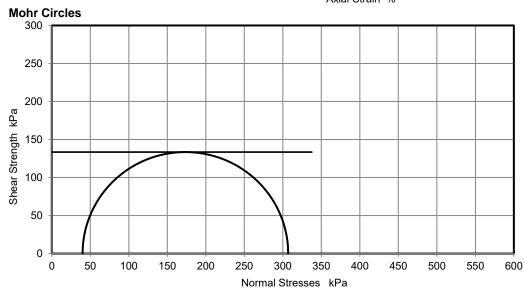
Test Num	ber	1	コーニー こっこう
Length		76.0	mm
Diameter		38.0	mm
Bulk Dens	sity	2.22	Mg/m3
Moisture (Content	17.2	%
Dry Densi	ty	1.89	Mg/m3
Rate of St	rain	1.0	%/min
Cell Press	sure	40	kPa
	Axial Strain	4.5	%
At failure	Deviator Stress, (σ1 - σ3)f	267	kPa
At lallule	Undrained Shear Strength, cu	133	kPa ½(σ1 - σ3)f
	Mode of Failure	Plastic	
	•		

Test Frame Load Ring Pressure Gauge Digital Caliper Balance

TRI 003
LOAD CELL 001
PRE 004
CAL-005
BAL-006

Deviator Stress v Axial Strain





Deviator stress corrected for area change and membrane effects

Mohr circles and their interpretation is not covered by BS1377. This is provided for information only.

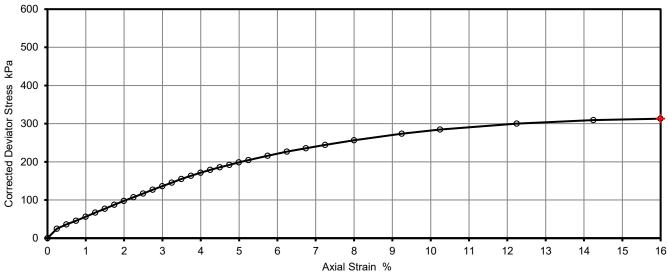
	Unconsolidated Compression Te	est withou	ut measurement	Job Ref Borehole/Pit No.	S211001 CPRO04
	of pore pressure - single specimen			0111004	
Site Name	Envision, Sunderland		Sample No.		
Soil Description			Depth	2.00	
Specimen Reference	Specimen m Depth		Sample Type	U	
Specimen Description	Firm, Very High Strength, CLAY.		KeyLAB ID	SLMK2021111720	
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen		Date of test		

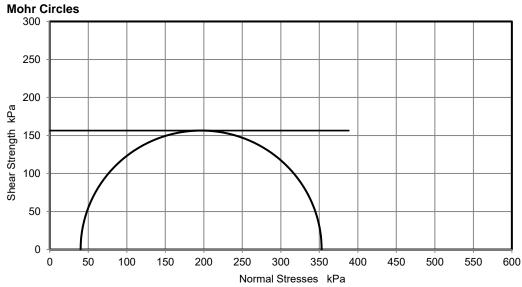
Test Num	ber	1	٦
Length		200.0	mm
Diameter		100.0	mm
Bulk Dens	sity	2.18	Mg/m3
Moisture (Content	26.7	%
Dry Densi	ty	1.72	Mg/m3
			_
Rate of St	train	1.0	%/min
Cell Press	sure	40	kPa
	Axial Strain	16.0	%
At failure	Deviator Stress, (σ1 - σ3)f	313	kPa
Atiallule	Undrained Shear Strength, cu	157	kPa ½(σ1 - σ3)f
	Mode of Failure	Plastic	
	•	P	_

Test Frame Load Ring Pressure Gauge Digital Caliper Balance

TRI 003
LOAD CELL 001
PRE 004
CAL-005
BAL-006

Deviator Stress v Axial Strain





Deviator stress corrected for area change and membrane effects

No of membranes used
1
Total thickness (mm)
0.35

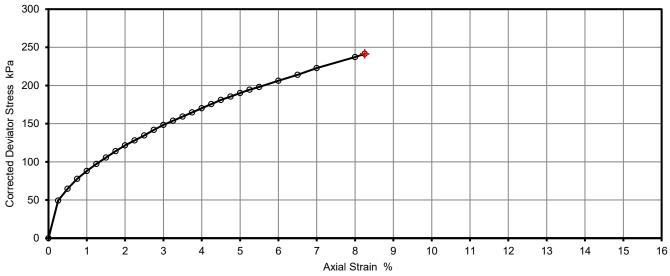
	-	est withou	ut measurement	Job Ref Borehole/Pit No.	S211001 CPRO04
Site Name	of pore pressure - single specimen Envision, Sunderland		Sample No.	0.11001	
	Envision, Sundenand		'		
Soil Description			Depth	4.00	
Specimen Reference	Specimen m Depth		Sample Type	U	
Specimen Description	Firm, High Strength, CLAY.		KeyLAB ID	SLMK2021111722	
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen			Date of test	

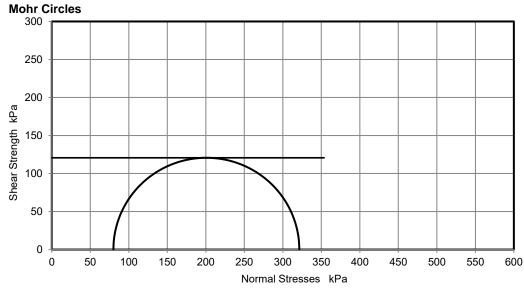
Test Num	ber	1	
Length		76.0	mm
Diameter		38.0	mm
Bulk Dens	sity	2.27	Mg/m3
Moisture (Content	12.2	%
Dry Densi	ty	2.02	Mg/m3
			_
Rate of St	train	1.0	%/min
Cell Press	sure	80	kPa
	Axial Strain	8.3	%
At failure	Deviator Stress, (σ1 - σ3)f	241	kPa
At lallure	Undrained Shear Strength, cu	121	kPa ½(σ1 - σ3)f
	Mode of Failure	Plastic	
	•	,	

Test Frame Load Ring Pressure Gauge Digital Caliper Balance

TRI 003
LOAD CELL 001
PRE 004
CAL-005
BAL-006

Deviator Stress v Axial Strain





Deviator stress corrected for area change and membrane effects

No of membranes used
1
Total thickness (mm)
0.25

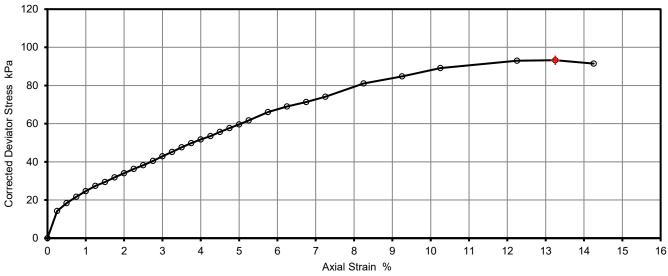
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen			Job Ref	S211001
				Borehole/Pit No.	CPRO05
Site Name	Envision, Sunderland		Sample No.		
Soil Description			Depth	4.00	
Specimen Reference	Specimen m Depth		Sample Type	U	
Specimen Description	Firm, Medium Strength, CLAY.		KeyLAB ID	SLMK2021111728	
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen			Date of test	

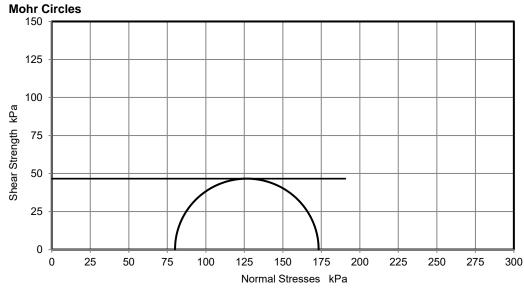
Test Num	ber	1		
Length		202.0	mm	
Diameter		100.0	mm	
Bulk Dens	sity	2.07	Mg/m3	
Moisture (Content	21.9	%	
Dry Density		1.70	Mg/m3	
			_	
Rate of St	train	1.0	%/min	
Cell Press	sure	80	kPa	
	Axial Strain	13.3	%	
At failure	Deviator Stress, (σ1 - σ3)f	93	kPa	
	Undrained Shear Strength, cu	47	kPa ½(σ1-σ3)f	
	Mode of Failure	Plastic	ì	
	•	•		

Test Frame Load Ring Pressure Gauge Digital Caliper Balance

TRI 003
LOAD CELL 001
PRE 004
CAL-005
BAL-006

Deviator Stress v Axial Strain





Deviator stress corrected for area change and membrane effects

No of membranes used
1
Total thickness (mm)
0.35

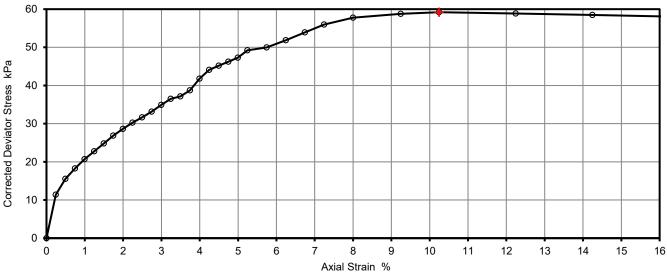
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen			Job Ref Borehole/Pit No.	S211001 CPRO05
				Borellole/Fit No.	GFR003
Site Name	Envision, Sunderland		Sample No.		
Soil Description			Depth	9.00	
Specimen Reference	Specimen m Depth		Sample Type	U	
Specimen Description	Soft, Low strength, CLAY.			KeyLAB ID	SLMK2021111731
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen			Date of test	

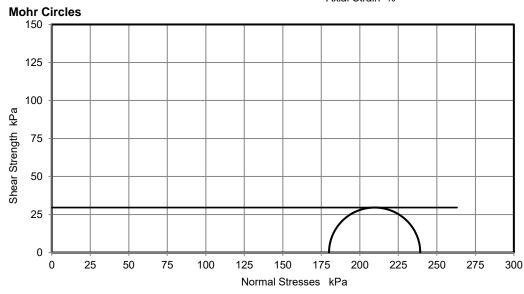
Test Num	ber	1	٦	
Length		200.0	mm	
Diameter		100.0	mm	
Bulk Dens	sity	2.09	Mg/m3	
Moisture (Content	14.6	%	
Dry Density		1.82	Mg/m3	
Rate of St	train	1.0	%/min	
Cell Press	sure	180	kPa	
	Axial Strain	10.2	%	
At failure	Deviator Stress, (σ1 - σ3)f	59	kPa	
	Undrained Shear Strength, cu	30	kPa ½(σ1 - σ3)f	
	Mode of Failure	Plastic		
	•			

Test Frame Load Ring Pressure Gauge Digital Caliper Balance

TRI 003
LOAD CELL 001
PRE 004
CAL-005
BAL-006

Deviator Stress v Axial Strain





Deviator stress corrected for area change and membrane effects

Mohr circles and their interpretation is not covered by BS1377. This is provided for information only.

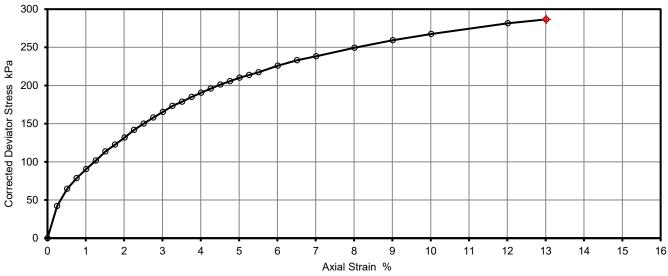
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen			Job Ref	S211001
				Borehole/Pit No.	CPRO06
Site Name	Envision, Sunderland		Sample No.		
Soil Description			Depth	2.00	
Specimen Reference	Specimen m Depth		Sample Type	U	
Specimen Description	Firm, High Strength, CLAY.			KeyLAB ID	SLMK2021111736
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen			Date of test	

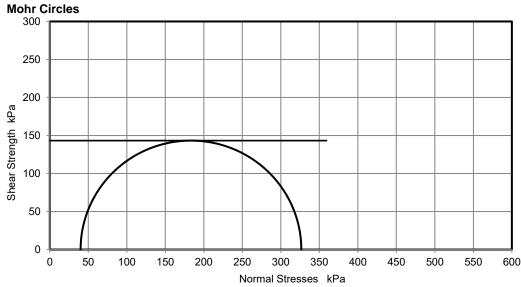
Test Num	ber	1		
Length		76.0	mm	
Diameter		38.0	mm	
Bulk Dens	sity	2.26	Mg/m3	
Moisture (Content	12.4	- %	
Dry Densi	ty	2.01	Mg/m3	
Rate of St	train	1.0	%/min	
Cell Press	sure	40	kPa	
	Axial Strain	13.0	%	
At failure	Deviator Stress, (σ1 - σ3)f	287	kPa	
At lallule	Undrained Shear Strength, cu	143	kPa ½(σ1 - σ3)f	
	Mode of Failure	Plastic		
	•			

Test Frame Load Ring Pressure Gauge Digital Caliper Balance

TRI 003
LOAD CELL 001
PRE 004
CAL-005
BAL-006

Deviator Stress v Axial Strain





Deviator stress corrected for area change and membrane effects

Mohr circles and their interpretation is not covered by BS1377. This is provided for information only.

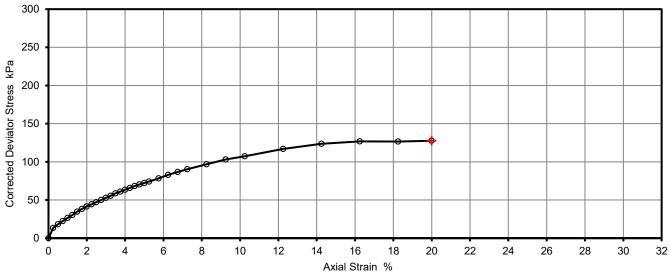
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen		Job Ref Borehole/Pit No.	S211001 CPRO06	
Site Name	Envision, Sunderland			Sample No.	
Soil Description			Depth	4.00	
Specimen Reference	Specimen m Depth		Sample Type	U	
Specimen Description	Firm, Brown, Medium Strength, CLAY.		KeyLAB ID	SLMK2021111738	
Test Method	BS1377 : Part 7 : 199	BS1377 : Part 7 : 1990, clause 8, single specimen			

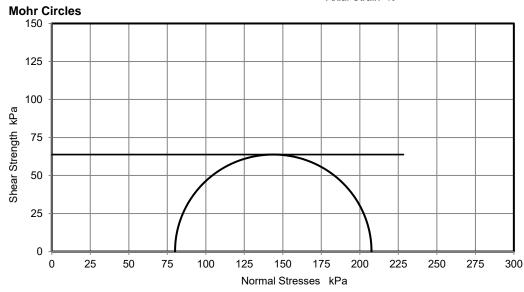
Test Num	ber	1					
Length		202.0	mm				
Diameter		101.0	mm				
Bulk Dens	sity	2.35	Mg/m3				
Moisture (Content	26.3	%				
Dry Densi	ty	1.86	Mg/m3				
			_				
Rate of St	train	1.0	%/min				
Cell Press	sure	80	kPa				
	Axial Strain	20.0	%				
At failure	Deviator Stress, (σ1 - σ3)f	128	kPa				
At failure	Undrained Shear Strength, cu	64	kPa ½(σ1-σ3)f				
	Mode of Failure	Plastic	ì				
	•	P					

Test Frame Load Ring Pressure Gauge Digital Caliper Balance

TRI 003
LOAD CELL 001
PRE 004
CAL-005
BAL-006

Deviator Stress v Axial Strain





Deviator stress corrected for area change and membrane effects

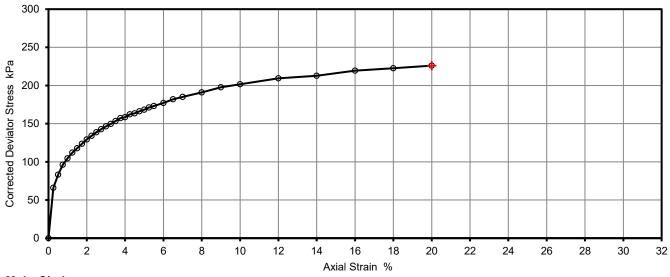
No of membranes used
1
Total thickness (mm)
0.35

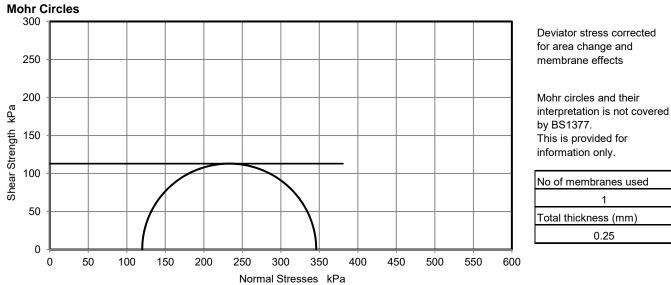
	-	est withou	ut measurement	Job Ref	S211001
	of pore pressur	re - single	specimen	Borehole/Pit No.	CPRO06
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	6.00
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Firm, High Strength, C	LAY.		KeyLAB ID	SLMK2021111740
Test Method	BS1377 : Part 7 : 1990), clause 8, sin	gle specimen	Date of test	

Test Num	ber	1	
Length		76.0	mm
Diameter		38.0	mm
Bulk Dens	sity	2.14	Mg/m3
Moisture (Content	22.7	%
Dry Densi	ty	1.74	Mg/m3
			_
Rate of St	train	1.0	%/min
Cell Press	sure	120	kPa
	Axial Strain	20.0	%
At failure	Deviator Stress, (σ1 - σ3)f	226	kPa
At lallule	Undrained Shear Strength, cu	113	kPa ½(σ1 - σ3)f
	Mode of Failure	Plastic	
	•		

Test Frame Load Ring Pressure Gauge Digital Caliper Balance

TRI 003
LOAD CELL 001
PRE 004
CAL-005
BAL-006



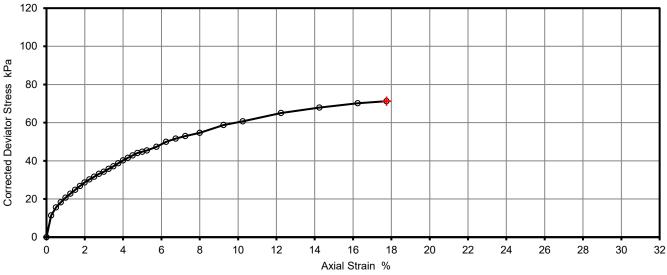


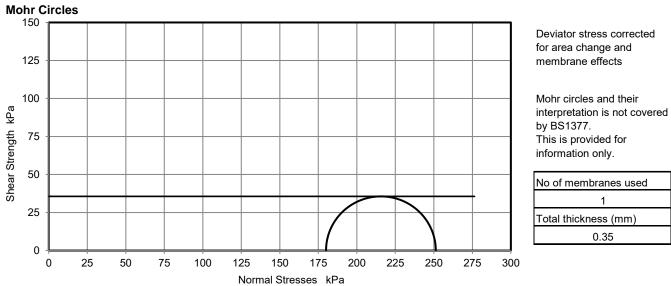
	Unconsolidate Compression of pore pressu	Job Ref Borehole/Pit No.	S211001 CPRO06				
Site Name	Envision, Sunderland		Specimen	Sample No.			
Soil Description				Depth	9.00		
Specimen Reference		Specimen Depth	m	Sample Type	U		
Specimen Description	Soft/Firm, Low Streng	th, CLAY.		KeyLAB ID	SLMK2021111742		
Test Method	BS1377 : Part 7 : 199	0, clause 8, sin	gle specimen	Date of test			

Test Num	ber	1	٦				
Length		200.0	mm				
Diameter		100.0	mm				
Bulk Dens	sity	2.09	Mg/m3				
Moisture (Content	22.9	%				
Dry Densi	ty	1.70	Mg/m3				
			_				
Rate of St	rain	1.0	%/min				
Cell Press	sure	180	kPa				
	Axial Strain	17.7	%				
At failure	Deviator Stress, (σ1 - σ3)f	71	kPa				
At lallule	Undrained Shear Strength, cu	36	kPa ½(σ1 - σ3)f				
	Mode of Failure	Plastic					
	•						

Test Frame Load Ring Pressure Gauge Digital Caliper Balance

TRI 003
LOAD CELL 001
PRE 004
CAL-005
BAL-006





			ONI	E DIMEN	SIONAL C	Jo	Job Ref S2°					11001							
				BS13	377:Part 5	:1990,	, cla	use	3		В	orehole/	Pit No.			CP	01		
Site	Name)	Envision, S	Sunderland							S	ample N	lo.						
Soil	Desci	iption									D	epth				2			
	cimen				Specime Depth	n					m S	Sample Type				U			
Spec	cimen criptio		Firm, Brov	vn, CLAY	• •							eyLAB I	D		SLN	/K202	111161	0	
Test	Meth 0.640	od	BS1377:P	art 5:1990,	clause 3						D	ate start	ted						
	0.640				e _o														
	0.620	-					+	+					+				-	+	\mathbb{H}
	0.005					•	+												
	0.600						\top	\uparrow	abla									\top	
0	0.580					•	\downarrow	+	+			-	+			+	$\perp \downarrow \downarrow$	+	\parallel
Voids Ratio								$\downarrow \downarrow$	\bigcup										
Void	0.560				1			+	\exists		\Box		+			$\dagger \dagger$	$\dashv \uparrow$	$\dagger \dagger$	\forall
	0.540						\perp	$\perp \! \! \perp$	Щ				$\perp \! \! \perp \! \! \! \mid$			_		$\downarrow \downarrow$	Ц
	0.520	-					-	+	+			\dashv	+		_	+		+	\mathbb{H}
	0.500								Ш				Ш			Ш		Щ	
	2.000																		
	0.480	-	+				+	+	\mathbb{H}	1		\dashv	+		_	+	\dashv	+	H
	በ 460	L																	
	0.460							\prod										\prod	
	0.440 25.00																		
© O	20.00																	\prod	
(log t	15.00						<u> </u>	\forall	+									+	\prod
²/yr	10.00							+	*	\downarrow								+	\parallel
Cv m²/yr	5.00								+	*	,							+	
	0.00	1			10			Anni	iod F	100 ressure k	·Da			1000				1	000
Appli	ied			Cv	Cv					ressure r paration	u⁻a								
Press	ure	Voids ratio		(t50, log)	1)	Cse	ec		0	- 5. 50011									
kP:		0.635	m2/MN -	m2/yr -	m2/yr -	_			Inde	ex tests	Liau	uid limit		%	Plasti	c limit			%
25	,	0.614	0.49		16	0.000											0.65		
50 100		0.605 0.587	0.24 0.22	17 8.5	32 25	0.000			Par	ticle densi	ty			assun	ned		2.65		Mg/
200	0	0.565	0.14	5.4	21	0.000)46			cimen de	tails		F	Initia			Final		
100		0.541 0.560	0.077 0.042	5.3	12	0.000)/4		Dia:	meter aht				75.0 20.0		1	- 19.40		mm mm
25		0.586	0.22							sture Con	tent		F	14.			21.8		%
										c density				1.80					Mg/
										density				1.62					Mg/
	\dashv			+						ds Ratio uration			-	0.63					%
	\dashv									rage temp	erature	for test	-		19	.0			oC
									Swe	elling Pres	sure								kPa
	$ \mp$									tlement or narks	saturat	ion							%
									1101	iiuiNO									
Final va	البود دا	hould be use	ad with caution	n	Tested	Ic	Chec	ked		Approve	ed.	Prin	ited ·			J,	Fig. No		
	al values should be used with caution plotted at mid point of load increments				Tested Checked Approved						Ju	Printed :					ig. NO	•	
	orrected to 20oC				DS KW KW							10/01/2022 11:33						1	

			ONE DIMENSIONAL CONSOLIDATION TEST										Job Ref S211							
				BS137	77:Part 5:	1990	, cla	use	3		Во	rehole	/Pit N	lo.		CF	P01			
Site	Name		Envision, S	underland							Sai	mple N	No.							
Soil	Descript	ion									De	pth					4			
	cimen rence				Specimer Depth	n				m	Sai	mple T	уре				U			
Spec	cimen		Firm, Brow	n, CLAY.	Берит						Key	yLAB I	D		s	SLMK2021111612				
	ription Method			rt 5:1990, cl	ause 3							te star			+					
	0.950													•						
	0.900				e _o	-	+										+			
	0.850					Q.	+										\dashv	+	+	
.o.	0.800						\searrow							\perp			$\perp \downarrow$	\perp	\square	
Voids Ratio	0.750 -																			
Voic	0.750					•											\prod		\prod	
1	0.700						\uparrow	\forall					\dashv	+			+	\parallel	$\dagger \dagger$	
	0.650					\dashv	+		H			7	+	#		-	+	\parallel	\mathbb{H}	
	0.600					\dashv							-	+			\dashv	+	+	
	0.550					-											\sqcup		\coprod	
	0.500 -								Ш								Щ		Ш	
	0.450																			
	0.450 L 2.50 T																$\overline{\Box}$			
Cv m²/yr (log time)	2.00																+			
yr (Ic	1.00						×		*\								\Box			
.v m²/	0.50									*							-			
O	0.00				10					20				40	00				400	
	1				10			Appli	ed Pr	00 essure kP	'a			10	00				100	
Appli Press		ids ratio	Mv	Cv (t50, log)	Cv (t90, root	Cse	ес		Prep	aration										
kPa 0.0		0.918	m2/MN -	m2/yr -	m2/yr -	-			Inde	c tests	Liquid	d limit			% Pla	stic limi	t		%	
25	(0.832	1.8		7.3	0.00	094					<i>a</i>			70 T IG	ouo iii iii			70	
50 100		0.797 0.738	0.76 0.66	1.2 1.3	4.6 7.7	0.00			Parti	cle density	,				assumed		2.65	5	Mg	
200) (0.686	0.3	0.8	1.8	0.00)18			imen deta	ils				Initial		Fina	ıl		
400		0.625 0.667	0.18	0.91	1.9	0.0	02		Diam						75.00 20.11		18.03	2	mn	
100 25		0.720	0.086 0.43						Heig Mois		nt				34.6		32.2		mn %	
		0.720	0.10			Moisture Conter Bulk density									1.86			-	— ∕° Mg	
										lensity					1.38				Mg	
									Void	Ratio					0.918					
										ration					100				%	
									Average temperature for test 19.0								οС			
										ling Pressi ement on s		n							kP %	
									Rem	arks										
Final va	lues shou	ıld be use	d with caution		Tested		Chec	ked		Approved	l	Prir	nted :				Fig.	No		
	v plotted at mid point of load increments										10/01/2022 11:33									
Cv corre	corrected to 20oC							KW	w kw				10	J/U1/2	2022 11:33	1				

			ONE	DIMENS	Job Ref S211001														
				BS137	77:Part 5	1990,	clause	3		Вог	rehole/F	Pit No.		CF	P02				
Sit	te Name	e	Envision, S	Sunderland						Sar	mple No) .							
Sc	oil Desc	ription								De	pth				2				
	ecimen eference				Specime Depth	n			m	Sar	Sample Type				U				
Sp	Specimen Firm Brown Slightly					ly Gravel	ly, CLA	· · · · · · · · · · · · · · · · · · ·		Kev	yLAB IC)		SLMK20	021111618				
	escription est Meth			art 5:1990, cl		.,	.,,				te starte								
	0.640	· T								<u> </u>							$\overline{\Box}$		
	0.620	,			··· e _o														
	0.600					•													
Voids Ratio	0.580) -																	
Voids	0.560)															\dagger		
	0.540	,																	
	0.520	·									7								
	0.500															\parallel			
	0.480	·								+						+			
	0.460	·																	
(e)	0.440 5.00																\Box		
og time)	4.00						×												
Cv m²/yr (lo	3.00 2.00																		
v m²/	1.00								*	 *									
S	0.00				10								1000				<u> </u>		
		1			10		Арр	lied Pr	00 essure kPa	а			1000				10000		
Pre		Voids ratio		Cv (t50, log)	Cv (t90, root	Csec		Prep	aration										
	(Pa 0.0	0.625	m2/MN -	m2/yr -	m2/yr -	-		Index	k tests	Liquio	d limit		% Pla	astic limi	t		%		
	25	0.597	0.67		97	0.0004									0.05		,		
	50 100	0.585 0.568	0.32	3.2 1.8	29 8.3	0.0007		Parti	cle density				assumed		2.65		Mg/m		
2	200	0.542	0.16	1.4	6.2	0.001	1		imen detail	s			Initial		Final]		
	100	0.512 0.538	0.098	1.2	5.7	0.001	3	Diam					74.83		19.70		mm		
	25	0.536	0.058 0.48					Heig Mois	nι ture Conter	nt			20.08		23.9		mm %		
		0.001	Bulk density									2.03				Mg/m			
									density				1.63				Mg/m		
								s Ratio				0.625							
								Satu	ration								%		
								Average temperature for test 19.0									οС		
									ling Pressu ement on s		n						kPa %		
								Rem			-	L			%				
E:=-'	volues	hould ba	ad with access		Tested		neckod		Approved		Drint	-od :			Fig. N-				
	Final values should be used with caution Cv plotted at mid point of load increments				Tested Checked Approved						Printed :					Fig. No			
	Cv corrected to 20oC				DS KW KW								1						

	ONE DIMENSIONAL CONSOLIDATION TEST									Job	Ref				S211001						
			77:Part 5:1990, clause 3							rehole/	Pit No	0.		CP02							
Site Name			Envision, Sunderland									Sample No.									
Sc	oil Descr	iption	1									pth				4					
	ecimen		Specimen m								Sar	Sample Type			U						
Sp	Specimen		Depth "" Firm, Brown, CLAY.								Kev	yLAB I	D		SLMK2021111620					_	
	escription est Meth			art 5:1990, cl	ause 3							te star			+					_	
	0.640	Ţ	1		e _o										•						
	0.620				00								+								
	0.600																+				
atio	0.580					9							\dashv				\dashv	+			
ids Ra	0.560								Ш												
%	0.540								V												
	0.540					•															
	0.520								\prod				\dashv				$\dagger \dagger$	\dashv			
	0.500												+				+	+	+		
	0.480								+			7	\dashv				\dashv	+	\perp		
	0.460								Ш				$\downarrow \downarrow$				$\perp \downarrow$		Ш		
	0.440																				
) Эс	10.00																			1	
og tin	8.00																				
yr (R)									Ш		
,v m²,	2.00	-															+		+		
Soil Speck Reference Speck	0.00				10				10	20				10	00				100	200	
		ı						Applied	d Pre	00 essure kP	'a			10	00				100	000	
		√oids ratio	Mv	Cv (t50, log)	(t90, root	Csed	С	Р	repa	aration											
		0.004	m2/MN	m2/yr	m2/yr			I.			Limite	J 1::t			0/ DI=	-4:- !::			0/		
		0.634 0.583	1.2	-	4	0.000	86	ır	naex	tests	Liquid	d limit			% Pla	stic limi	τ		%		
	50		0.46		13	0.000		Р	Partic	cle density	,				assumed		2.65	5	M	g/m	
	0.00 + 1 Applied Pressure kPa		0.31	5.9 4.8	12 8.2	0.000		S	Spec	imen deta	ils				Initial		Fina	ıl	7		
		0.481	0.11	6.5	11	0.001		Diameter							75.00		-		m	m	
		0.504	0.051						leigh						20.01		18.70		m		
	25	0.527	0.527 0.2							ure Conte	nt				24.4		22.4		%		
										density					2.02					g/m	
										ensity Ratio					1.62 0.634				IVI	g/m	
							-			ation					102	+			- %		
										allori age tempe	rature fo	or teet				19.0			00		
										ing Pressi									kF		
								S	Settle	ement on s		n							%		
								К	Rema	arks											
Final	values sl	nould be use	ed with cautior	1	Tested Checked Approved					I	Printed :						Fig. No				
Cv plotted at mid point of load increments													10	/01/3	0022 11.33						
Cv corrected to 20oC					DS	KW KW			V	10/01/2022 11:33					1						

	ONE DIMENSIONAL CONSOLIDATION TEST									Job Ref				S211001					
BS13					77:Part 5:1	990, c	lause 3	Воі	Borehole/Pit No.										
Site Name		Envision, S	Sar	mple No	ο.														
Soil Description			Dej	pth															
	pecimen eference				Specimen Depth		m Sample Type						U						
S	pecimen escriptio		Firm, Brow	n, Slightly G	Gravelly, Slightl	, CLAY.		Key	yLAB IE)		SLMK2021111622							
Test Method			BS1377:Pa	Dat	te starte	ed													
	0.380				e _o														
	0.360								\dashv		$+\!+\!-$	\perp			\perp	Ш	Ш	Н	
	0.340															\Box	H		
0	0.320											Ш				Ш	Ш	Ц	
Voids Ratio																			
	0.300	-				~			\dashv		++	\dashv				H	H	Н	
	0.280							No.											
	0.200								\searrow										
	0.260	-				\dashv			_		++	\mathbb{H}			_	H	H	H	
	0.240																П		
	0.220	-							_		4				_		Ш	4	
	0.200								\dashv		+				\top	H	Н	1	
	0.180																		
ne)	0.00	·			10		10	00				10	00				1	0000	
og time)																			
/yr (I																			
Cv m²/yr (lo																			
O	-2.00	,																Ш	
_	1		I		T Cv T		¬ ``	essure kPa											
	oplied essure	Voids ratio	Mv	Cv (t50, log)	(t90, root	Csec	Prepa	aration											
	kPa		m2/MN	m2/yr	m2/yr			Liquid limit			0/ D I				0.4				
	0.0 0.373 25 0.339		0.98	-	74	0.00041		tests	Liquio	אוווווו ג			% PI	astic li	mil		,	%	
	50 0.325 100 0.308		0.43 0.26	68 100		0.00063 0.00063		Particle density						assumed			ľ	Mg/m3	
	200 0.3		0.16	22	160	0.00063	Spec	Specimen details				Initial			Final				
	400 0.266 100 0.283		0.081 0.043	11	100	0.001	Diam Heigh				-		74.93 20.06		-		_	mm mm	
	25	0.203	0.043					ure Content	t		ŀ		12.9		19.01 13.0			%	
								density					2.18					Mg/m3	
<u> </u>								ensity			ŀ		1.93					Mg/m3	
							Satur	Ratio			ŀ		0.373 92				—,	%	
								age tempera	ature fo	ture for test				19.0				oC	
				Sw				ing Pressur	е		<u> </u>					ŀ	kPa		
				Settlement on s					ituratio	n	Ĺ							%	
							Kema	6A IK											
			1 22 2		Tankid	Ici		A		5	!				I ₋	<u> </u>			
Final values should be used with caution Cv plotted at mid point of load increments					Tested	Che	ecked	ed Approved			ed:					Fig. No			
			ioau incremen		DS		KW	KW		10/01/20				2022 11:33					
Cv corrected to 20oC							1744 1747												

			ONE	E DIMENS	SIONAL C	ONS	OLIE	DATIO	ON T	ΓEST	Jol	b Ref			S211001	1	
				BS13	377:Part 5	:1990	0, cla	ause	3		Во	rehole/Pi	t No.		CP03		
Sir	te Nam	e	Envision, S	Sunderland							Sa	ımple No.					
Sc	oil Desc	ription									De	pth			4		
	oecimer eference				Specime Depth	n				m	n Sa	ımple Typ	е		U		
Sp	oecimer escriptio)	Soft/Firm,	Grey, Silty,							Ke	yLAB ID		SLI	MK202111	11627	
	est Meth 0.420	nod	BS1377:Pa	art 5:1990, d	clause 3						Da	ite started	t				
	0.420	,			- e _o												
	0.400	,										-	+++			\square	+
						~											
	0.380)														\Box	\Box
0	0.360	,						`	\setminus							Ш	Щ
Voids Ratio																	
/oids	0.340)				<u> </u>					9.				+	\vdash	+
	0.320	, 📙					\geq	\leq								Ш	Ш
	0.020										\	>					
	0.300) 						+							+	$\vdash\vdash$	++
	0.280																
	0.200	' [
	0.260) 														$\vdash\vdash\vdash$	+
	0.240)															Π
	0.220 25.00	<u>, L</u>															
g time)	25.00																
log ti	15.00				×_												
² /yr (10.00				+			/		*							
Cv m²/yr (lo	5.00					_	\checkmark				*						
	0.00) 1			10				1	+ 00 essure kF			10	00			10000
Δρ	plied		1	Cv	Cv			1			'a						
Pre	essure	Voids ratio	M∨	(t50, log)	(t90, root)	Cs	sec		riep	aration							
	кРа 0.0	0.413	m2/MN	m2/yr	m2/yr		_	-	Inde	x tests	Liqui	d limit		% Plasti	ic limit		%
	25	0.393	0.57	16	140		0063					a minic		70 1 1000			
	50 100	0.378 0.358	0.42	3.2 15	29 110		0057	=	Parti	cle density	/			assumed	2.6	5	Mg/m
2	200	0.334	0.18	9.3	26	0.00	0089	4		cimen deta	ils			Initial	Fin		\exists
	400 100	0.311 0.315	0.087 0.01	6.7	28	0.00	0047		Diam Heig					74.93 20.06	18.9		mm mm
	25	0.333	0.19						_	ture Conte	ent			15.9	14.	.0	%
										density				2.17			Mg/m
								-		density s Ratio				1.88 0.413			Mg/m
								1		ration				102			%
									Aver	age tempe	erature f	or test		19	9.0		οС
										lling Press							kPa
									Settl Rem	ement on :	saturatio	on					%
								-	I/GIII	uino							
Fi '	vol::s-	hould b - ··	ad with a - · · t		Tested		Chec	-kod		Approve	<u> </u>	Printe	.d :		 -:-	No	
			ed with caution load incremen		rested		Criec	ĸeu		Approved		Pilnte			JFig.	. No	
	orrected		oaa moremen		DS			KW		KV	V		10/01/2	2022 11:34			1

			ONE	DIMENS	IONAL C	ONSO	LID	ATIC	T NC	EST	Job	Ref				S21	1001			
				BS13	77:Part 5	1990,	clau	ıse 3	3		Boi	rehole/	Pit N	0.		CF	P04			
Sit	te Name)	Envision, S	Sunderland							Sar	mple N	lo.							
Sc	oil Desci	ription									De	pth					4			
					Specime Depth	n				m	Sar	mple T	уре				U			
Sp	ecimen		Firm. Brow	n. Sliahtly S		v Grave	llv. C	LAY.			Kev	yLAB I	D		S	LMK20	21111	1634		_
						,	,, -					te start								
	0.660	T																		
	0.620 0.620 0.640 0.520 0.500 0.480 0.460 100.00 80.00 40.00 20.00 0.542 25 0.621 50 0.595 100 0.542 25 0.571 values should be used				• e _o		\perp		\perp				$\perp \mid$							
	0.620																		\top	
Qi	0.600	-							+				\dashv	+		_		+	+	
Voids Ratio	0.590																			
Voic	0.560					•														
	0.560	Description Firm, Brown, series Firm, Br							+				+	+			+	+	+	
	0.540	escription men ence men iption 640 640 640 650 640 650 640 650 640 650 640 650 640 650 640 650 640 650 640 650 65							\searrow											
	0.010										\searrow									
	0.520						+		+			•	+	++		\dashv	\forall	+	+	
	0.500						\perp		\perp				$\perp \! \! \! \! \! \! \! \! \! \! \! \! \! \! \! \! \! \! \!$					\perp	$\perp \!\!\! \perp$	
	0.480						\top		\top				\dagger						\dagger	
	0.460																			
ime)																				
(log ti							×						\dashv					\blacksquare	+	-
Cv m²/yr (log time)		Description cimen erence cimen cription R Method 0.660 0.640 0.620 0.600 0.580 0.580 0.580 0.560 0.520 0.600 0.620 0.600 0.620 0.600 0.620 0.600 0.620 0.600 0.620 0.600 0.520 0.500 0.6000 0.6000 0.6000 0.6000 0.6000 0.6000							+				\dashv	+			+	+	+	
Ç.									*	-*-	*									
	0.00				10			Applie	10 ed Pro	00 essure kP	a			10	00				10	000
Ар	plied		NA.	Cv	Cv (t90, root	Csec				aration	~									
		Voids ratio		(t50, log) m2/yr	(190, 1001) m2/yr	CSEC														
	0.0	0.647			- -	-		I	Index	tests	Liquid	d limit			% Plas	stic limi	t		%	,
	25			54	93 130	0.0006			Dorti	cle density					assumed		2.65	:	N	lg/m
1	100	0.569	0.33	14	86	0.001	1		ıaılı	ole delisity										g/III
				5.8 3.6	21 17	0.001			Spec Diam	imen detai	ils				Initial 75.10		Fina -	l	┦	
				3.0	17	0.001	+		Diam Heigl						19.97		19.0	5	_	ım ım
	25								_	ture Conte	nt				24.9		25.2			
										density					2.01				_	g/m
										lensity					1.61				_	lg/m
								•	Voids	s Ratio					0.647					
								;	Satu	ration					102				%	
										age tempe		or test				19.0			00	
							_			ling Pressu										Pa
									Settle	ement on s arks	aturatio	υΠ							%	
Final	values s	nould be use	ed with cautior	1	Tested	C	heck	ed		Approved		Prin	nted :				Fig.	No		
			load incremen	ts									10	/01/2	2022 11:34					
Cv cc	orrected t	o 20oC			DS			KW		K۷	V								1	

			ONE	DIMENS	IONAL C	ONSO	LIDA	ATIOI	N T	EST	Job	Ref				S2	21100	1		
				BS137	77:Part 5	1990,	clau	se 3			Bor	ehole	e/Pit	No.		C	CP05			
Sit	e Name				Sar	nple	No.													
So	il Desc	ription									Dep	oth					2			
						n				m	Sar	nple	Туре)			U			
Sp	ecimer		Firm, Brow	n, slightly gra							Key	/LAB	ID			SLMK2	0211	11640	0	
	st Meth	od										e sta			+					
	0.700	Description Specimen Specimen Depth De																		
	BS1377:Part 5:1990, clause 3													+						
	0.660	Name												+			_	\vdash		H
•	0.640	, .					Ų									Щ				
Voids Ratio																				
Voids	0.620						$\downarrow \uparrow$											\top		
	0.600	-					\rightarrow	+	Н		$\overline{}$						_	\vdash	\vdash	+
	0.580																			
	0.500											7								
	0.560	-									\dashv		\parallel				+	+		Н
	0.540	-					+	+									+	\vdash		H
	0.520	,					+	+									_	\vdash		H
	0.500																			
ne)	25.00)																		П
(log time)																				
²/yr (×			+	+				\vdash	+			_	+		\parallel
Cv m²/yr							*	*		*	×		\forall							Н
	0.00				10		Δ	nnlied	1()0 Pssure kPa				1	000				1	000
Apı	plied		My			Cso					•									
		Voids ratio)	Csec														
0	0.0		-	-	-			In	ndex	tests	Liquio	d limit	t		% P	lastic lim	nit			%
								P	artio	cle density					assumed		2.6	ô5		Mg/r
1	00		0.28	2.2	5.5	0.000	83				_			_	Initial	<u> </u>				Ü
											S			\vdash	Initial 75.01		Fir	ıaı		mm
		0.592						Н	leigł	nt					20.02		19.			mm
2	25	0.620	0.23								t				18.2		22	.6		%
														L	1.85					Mg/r
														-	1.57					Mg/r
							-							\vdash	0.693 70				\dashv	%
											ature fo	or tec	t	\vdash	70	19.0				% оС
													•	\vdash						kPa
								S	ettle	ement on sa		n								%
Final	values s	hould be use	ed with caution	1	Tested	С	hecke	ed		Approved		Pr	inted	1:			Fig	g. No		
			oad incremen	ts				0.A.		100				10/01	/2022 11:34	4			,	
Cv co	rrected t	o 200C			DS		ł	(W		KW									1	

		ONE	DIMENS	IONAL C	ONSC	LID	ATIO	N T	EST	Job	Ref				S2	21100	1	
				77:Part 5						Вог	ehole	e/Pit I	No.		(CP05		
Site Nan	ne	Envision, S	Sunderland							Sar	mple	No.						
Soil Des	cription									Dep	oth					5		
Specime Reference				Specime	n				m	Sar	mple '	Туре				U		
Specime	en	Bfirm, Brov	vn,. Slightly S	Depth Sandv. Sligh	ntly Gra	vellv.	CLAY.			-	/LAB				SLMK2	0211	11643	3
Descript Test Me			art 5:1990, cl			- ,,					e sta							
0.48	30	<u> </u>																
0.46	60			··· e _o	9													
0.44	10																	
Satio 0.42	20						\rightarrow	V										
Voids Ratio	00				9													
0.38	30															+		
0.36	60									\nearrow								
0.34	10										7							
0.32	20																	
0.30																		
0.28 5.0 (e) (e) 4.0	00																	
Cv m ² /yr (log time) 3.0 3.1 1.0						,			X									
<u>ک</u> 2.0																		
5 1.0																		
0.0	1			10			Applied	1(00 essure kPa	a			1	000				1000
Applied Pressure	Voids ratio	Mv	Cv (t50, log)	Cv (t90, root	Cse				aration									
kPa 0.0 25	0.473 0.463	m2/MN - 0.26	m2/yr - 1.3	m2/yr - 2.4	0.000)94	In	ndex	tests	Liquid	d limit			% P	lastic lin	nit		%
50	0.440	0.64	3.7	11	0.000	73	Р	artic	cle density					assumed		2.6	65	Mg
100 200	0.409 0.379	0.43 0.22	3.9 3.3	8.8	0.000		S	pec	imen detail	s			Г	Initial	\top	Fir	nal	
400	0.338	0.15	4.6	14	0.00	16	D	iam	eter					74.93		-		mm
100 25	0.363 0.397	0.06 0.34				\blacksquare		eigh		. +			-	20.15 17.4		19. 15		mm o/
	0.397	0.34				-			ure Conter density	IL			\vdash	2.11		15	. 1	% Mg,
						\dashv			ensity					1.80				Mg,
							V	oids	Ratio					0.473				
									ation					97				%
									age temper ing Pressu		or tes	t	\vdash		19.0			oC kPa
							S	ettle	ement on s arks		n							%
Final values	should be use	ed with caution	1	Tested	l c	Check	ed		Approved		Pri	nted	•			Fig	ı. No	
Cv plotted a	t mid point of I	oad increment												/0000 44-0	4			
Cv corrected				DS			KW		KW	,		1	U/U1/	/2022 11:34	+			1

			ONE	DIMENS	IONAL C	ONS	OLIE	ATIC	T NC	EST	Job	Ref				S2	11001	1		
				BS13	77:Part 5	1990	, cla	use 3	3		Вог	rehole/F	Pit No	.		C	P06			
Sit	e Name)	Envision, S	Sunderland							Sar	mple No	0.							
So	il Desci	ription									De	pth					2			
	ecimen				Specime Depth	n				m	Sar	mple Ty	уре				U			
Sp	ecimen		Firm Brown	n. Slightly Sa		v Grave	ellv. C	LAY.			Kev	yLAB I)		;	SLMK2	02111	1646		_
						,	,, -					te starte								
	Description								П		<u> </u>									$\overline{}$
	0.640				··· e _o	-			+		_			#		_				
	0.620					٩			+		-		+	+		_	+		\parallel	
<u>.0</u>	0.600	-					\searrow	9	-			\perp		+					\parallel	
Voids Ratio																				
Void	0.580					٩			/	,										
	0.560										+		+	+		+	+			
	0.540	-							\downarrow				+						\perp	
	0.520										1			\dagger						
	0.500								+			•		+						
	0.480	-				\dashv			+			+	+	+			+	+	\parallel	
	0.460																			
g time)]
log tir							×													
Cv m²/yr (lo		escription men ence men iption							-										+	-
V	5.00								*										+	-
O	0.00				10				10	00	*			1000					10	000 1
		'	T		Cv			Applie	ed Pr	00 essure kPa	а			1000					10	500
	plied ssure	Voids ratio	Mv	Cv (t50, log)	(t90, root	Cse	ec	I	Prep	aration										
	.Pa	voius ratio		m2/yr) m2/yr															
	0.0			-	-	- 0.00		1	Index	tests	Liquid	d limit		ģ	% Pla	astic lim	nit		%)
	50			18	85 120	0.00		l	Parti	cle density				as	sumed		2.6	5	М	lg/m
	00			6.3 2.4	37 15	0.00			C	:	1_		_	-	nitial		Fin	ol.	_	
	100			1.6	4.2	0.00			Spec Diam	imen detail eter	S		ŀ		'4.89		-		\dashv_{m}	ım
	00								Heigl						20.15		19.1	19	_	m
	25	0.573	0.3							ture Conter	nt				26.3		25.	4	%	
										density			L		2.03				_	lg/m
										lensity			-		1.60				M	lg/m
										Ratio			-).652 107					
										ration age temper	oturo fo	or toot	F		107	19.0			% o(
										ling Pressu		JI IESI	F			10.0				Pa
										ement on s		n	ŀ						- Ki	
								ا	Rem	arks			_							
<u> </u>			I	1		,		1		1		1								
					Tested		Checl	ked		Approved		Print	ted :				Fig.	No		
			oad incremen	tS	DS			KW		KW	,		10/0	01/202	2 11:34				1	
J v 00	องเฮน เ				טט			1711		I IVV		l							1	

			ONE	DIMENS	IONAL C	ONS	OLIE	DATI	ON	ΓEST	Job	Ref				S21	1001			
				BS13	77:Part 5:	1990), cla	use	3		Вог	rehole	Pit N	No.		CF	06			
Si	te Name	9	Envision, S	Sunderland							Sai	mple l	No.							
Sc	oil Desci	ription									De	pth				4	1			
	ecimen eference				Specimer Depth	n				m	Sai	mple ⁻	Туре			ι	J			_
Sp	pecimen		Firm, Brow	n,Slightly Sa		/ Grave	elly, C	CLAY.			Ke	yLAB	ID		S	LMK202	211116	648		_
	escription est Meth						,, -					te sta								_
	0.900																			
	0.850				Θ ₀															
	0.800	-				9	\downarrow													
0	0.750								\bigcup									Н	Ш	
Voids Ratio						•														
/oids	0.700						\rightarrow	\forall	$\forall \dagger$	9									Н	
>	0.650																			
	0.650								Ш			7								
	0.600	me Envision, Sund scription en loce en lition Firm, Brown, SI ethod BS1377:Part 5				_	+	+	++									H	Н	
	0.550						\top		Ш										П	
	0.500						_		Ш									Н	Ш	
	0.450						+		++									\vdash	Н	
	0.400																			
(e)	5.00																			ĺ
g time)	4.00						×		++				\parallel	H				\forall	\forall	
Cv m²/yr (lo	3.00	Envision, Sunda Scription Firm, Brown, Slighten BS1377: Part 5::00 BS1																		
′ m²/y	1.00	scription en							*	*	×							Щ		
Ó	0.00																			i
		1			10			Appli	1 ied Pr	00 essure kPa	a			10	000				100	000
	plied		Mv	Cv	Cv (t90, root	Cse	ec		Prep	aration										
	ssure Pa	Voids ratio	D	(t50, log) m2/yr) m2/yr	330	-													
	0.0		-		-	-			Inde	x tests	Liquid	d limit			% Plas	stic limit			%	
	25 50			3.3	12 12	0.00			Do#	cle density					assumed		2.65		Ŋ.A.	g/m
	100			1.4	3.3	0.00			ган	cie delisity					assumed		2.00			<i>J</i> /111
	200			1.5 1.6	2.9	0.00				cimen detai	ls				Initial		Final -]	
	100			1.0	2.8	0.0	02		Heig	neter ht					74.96 20.09		18.66		m m	
	25							l	_	ture Conter	nt				36.2		30.4		%	
								1		density					1.95				_	g/m
								1		density					1.43				M	g/m
										s Ratio				-	0.851				4.	
			-					1		ration				\vdash	113	19.0			% 	
-			-					l		age temper Iling Pressu		ur test		\vdash		13.0			oC kF	
			+							ement on s		on							- KF %	
									Rem					_					_	
<u> </u>								l 												_
Final	values s	hould be us	ed with cautior	1	Tested		Chec	ked		Approved		Pri	nted	:			Fig. N	О		
			load incremen	ts									1	0/01/	2022 11:34					
Cv co	orrected t	o 20oC			DS			KW		KW	1				- '			1		

			ONE	DIMENS	IONAL C	ONS	OLID	ATIC	T NC	EST	Job	Ref			S211	001		
				BS13	77:Part 5	1990	, cla	use 3	3		Вог	rehole/P	it No.		СР	07		
Sit	te Name)	Envision, S	Sunderland							Sar	mple No						
Sc	oil Desci	ription									Dej	pth			3	3		
	oecimen eference				Specime Depth	n				m	Sar	mple Ty	ре		L	J		
Sp	oecimen		Firm, Brow	n, Slightly S		ly Grav	elly, C	CLAY.			Key	yLAB ID		s	LMK202	1111662	2	
	escriptio est Meth	od										te starte						
	0.560																	7
	0.540				e _o		+											$\frac{1}{1}$
	0.520					9			+									$\frac{1}{1}$
0	0.500	-					\rightarrow						Ш				Ш	4
Voids Ratio									\setminus									
Voids	0.480					۹											\Box	1
	0.460						\searrow						Ш				Ш	
									$\downarrow \downarrow$									
	0.440	-	+				+		++		\rightarrow		++				++	+
	0.420											7					Ш	
	0.420																	
	0.400	-	+				+		+			\dashv	++				\mathbb{H}	┨
	0.000																	
	0.380																	1
	0.360																	_
ime)	8.00						×											
(log t	6.00																	-
Cv m²/yr (log time)	4.00	Scription leen noce leen of the leen of th							× _									+
C E	2.00										Î							1
	0.00				10			A 1' -	1(D0 essure kP	-		1	000			10	⊣ 0000
Δn	plied			Cv	Cv						'a							
		Voids ratio	Mv	(t50, log)	(t90, root)	Cse	ЭС		Prepa	aration								
	кРа 0.0	0.543		m2/yr	m2/yr	-			Indox	tests	Liquia	d limit		% Plas	stic limit		%	/.
	25			-	14	0.000	028		muex	i lesis	Liquit	זווווונ		70 Fla	Suc IIIIII		7	0
	50			7.8	18	0.000			Partio	cle density	,			assumed		2.65	N	/lg/m
	100			3.4 2.7	12 9.3	0.00			Spec	imen deta	ils		Г	Initial		Final		
	400			2.8	7.5	0.00	13		Diam					74.96		-	m	nm
	100								Heigl					20.09		19.18		nm
	25	0.473	0.25							ure Conte	nt		_	23.1		20.8	%	
\vdash										density lensity			\vdash	2.11 1.72			_	/lg/m /lg/m
\vdash							-			ensity Ratio			\vdash	0.543			— ^{IV}	ng/III
							-			ation			\vdash	113	+		9	6
							-			age tempe	rature fo	or test	\vdash		19.0			C C
										ling Pressi								Pa
									Settle	ement on s		n					9	
									Rema	arks								
<u> </u>			[l .	<u> </u>													
					Tested	(Check	ed	_	Approved	I	Printe	ed:		Ī	Fig. No	_	_
			oad increment	ts				10.4			.,		10/01	/2022 11:34				
Cv cc	orrected t	o 20oC			DS			KW		K۷	V						1	

			ONI	DIMEN	ISIONAL C	ONS	OLII	DATIO	ON T	ΓEST	Jol	o Ref				S21	11001			
			<u></u>	BS1	377:Part 5	:199	0, cla	ause	3		Во	rehole	e/Pit	No.		С	P07			
Sit	te Name)	Envision, S	Sunderland							Sa	mple	No.							
Sc	oil Desci	ription									De	pth					5			
	oecimen eference				Specime Depth	en				m	Sa	mple	Туре				U			
Sp	oecimen escriptio		Firm, Brow	n, Slightly	Sandy, Sligh	tly Gra	velly,	CLAY.			Ke	yLAB	ID			SLMK20	21111	1664		
	est Meth	od	BS1377:Pa	art 5:1990,	clause 3						Da	te sta	rted							
	0.800																			
	0.750				e _o							_	\square				++	+		
	0.700					~	abla										\top	\top		
0	0.650	-						\rightarrow	\downarrow				Ш				$\dashv \dashv$	\perp		
Voids Ratio						<u>~</u>														
/oids	0.600								+		\forall	+					+	\dashv	+	
	0.550											<u>~</u>					Ш			
	0.000																			
	0.500	-										_	+				++	\dashv		
	0.450																			
	0.430																			
	0.400	-										_	\vdash	\square			++	+	+	
	0.350																			
	0.300																			
g time)	25.00 20.00																			
log ti	15.00				×															
Cv m²/yr (lo	10.00																+		+	
C m	5.00																			
	0.00	1			10		X		1	00 essure kP				1	000				1000	00
Δ.	boilar			Cv	Cv			1			a									
Pre	plied essure	Voids ratio	Mv	(t50, log) (t90, root	Cs	sec		Prep	aration										
	кРа 0.0	0.759	m2/MN	m2/yr	m2/yr		_		Inde	x tests	Liqui	d limit			% Pla	astic limi	i+		%	
	25	0.700	1.3	17	41	0.00	0094		iiiue.	A 16313	Liqui	u IIIIII			70 I I	istic iiiii			70	
	50 100	0.673 0.642	0.63 0.38	0.71 0.89	1.8 2.1		014 016		Parti	cle density					assumed		2.65	5	Mg/	m
2	200	0.604	0.23	1	3	0.0	022	-		cimen detai	ls				Initial		Fina	ıl		
	400 100	0.565 0.591	0.13 0.055	1.1	3	0.0	002		Dian Heig	neter ht					74.97 20.09		18.5	7	mm mm	
	25	0.626	0.29						_	ture Conte	nt				25.7		26.0		%	
										density					1.89				Mg/	
										density s Ratio					1.51 0.759				Mg/	m
										s Rallo ration				-	90				%	
										age tempe	rature f	or tes	t			19.0			oC	
										lling Pressu									kPa	ı
										ement on s	aturatio	on							%	
								-	Rem	arks				_		_		_		
			I	I		1	•	J		•										
			ed with caution		Tested		Chec	ked	_	Approved		Pri	inted	:		_	Fig.	No		
			oad incremen	ts	_			,					1	0/01	/2022 11:34					
Cv co	orrected t	o 20oC			DS			KW		K۷	I						1		1	

			ONE	E DIMENS	SIONAL C	ONSC	DLIE	ATIO	ON T	TEST	Job	Ref			S211001		
				BS13	77:Part 5	:1990	, cla	use	3		Вог	rehole/Pit	t No.		CPRO01		
Sit	e Name	9	Envision, S	Sunderland			_				Sai	mple No.				_	
So	il Desc	ription									De	pth			1.2		
	ecimen eference				Specime Depth	n				m	Sai	mple Typ	e		U		
Sp	ecimen		Stiff, Brown	n, Slightly Sa		y Grave	elly, C	CLAY.			Ke	yLAB ID		SL	MK20211117	72	
	st Meth	od	BS1377:Pa	art 5:1990, c							Dat	te started	i				
	0.540				e _o												
	0.520	-	-					+	$\vdash\vdash$				$\dashv \dashv \dashv$				\mathbb{H}
	0.500																
	0.500								П								
.0	0.480	-					\Rightarrow		++				+++				\mathbb{H}
Voids Ratio								$\downarrow \downarrow$	1								
Void	0.460																T
	0.440	-						-	 '	1	$\overline{}$		+++				\mathbb{H}
	0.420					\dashv		+	H				+++			\forall	\dagger
	0.400	-						$\perp \! \! \perp$	Ш				$\bot \bot \bot \bot$				Щ
	0.380								$\forall \forall$								\dagger
	0.360								Ш								Щ
	0.340 50.00									<u> </u>							⊥
g time)	40.00	, —					×										
gol) 7	30.00								×.								
Cv m²/yr (lo	20.00																
ડે	0.00									*							Щ
		1			10			Appli	1 ed Pr	00 essure kPa	a		100	00			10000
Ар	plied ssure		Mv	Cv	Cv (t90, root	Cse	eC		Prep	aration							
	:Pa	Voids ratio	m2/MN	(t50, log) m2/yr) m2/yr												
	0.0	0.539 0.486	- 1.4	-	- 52	0.000	002		Index	k tests	Liquid	d limit		% Plast	ic limit		%
	25 50	0.480	0.16	35	280	0.000			Parti	cle density			á	assumed	2.65		Mg/m
	00	0.464 0.447	0.22 0.12	24 8.5	240 240	0.000			Spec	imen detail	9		_	Initial	Final		1
4	100	0.427	0.067	7.8	31	0.000			Diam	neter	•			74.93	-		mm
	00 25	0.449	0.05 0.31						Heig Mois	ht ture Conter	nt			20.06	19.32 21.0		mm %
		0.100	0.01							density				2.07	21.0		Mg/m
										density				1.72			Mg/m
										s Ratio				0.539			
										ration age temper	atura fo	or teet		100	9.0		% oC
										age temper ling Pressu		oi icol		1;			kPa
									Settle	ement on sa		n					%
									Rem	arks							
<u>I</u>			ı	I	I	1											
			ed with caution		Tested	ľ	Checl	ked		Approved		Printe	d :		Fig. No	0	
	otted at r orrected t		oad incremen	ເວ	DS			KW		KW	,		10/01/2	022 11:34		1	

		ON	E DIMENS	IONAL C	ONSOL	.IDA1	ION T	ΓEST	Job	Ref				S21	1001		
				77:Part 5:					Вог	rehole	Pit N	No.		CPR	003		
Site N	lame	Envision, S	Sunderland						Sar	mple I	No.						
Soil D	escription								De	pth				2	2		
Special Refere				Specimer	ı			m	Sar	mple ⁻	Туре			ι	J		
Speci	men	Soft, Slight	tly Gravelly,	Depth Slightly Sand	dv. CLAY	,			_	yLAB			SL	MK202	21111	714	
Descr Test N	ription Method		art 5:1990, cl							te stai							
	.650																
0.	.600			e _o					_					_		$\frac{1}{1}$	
0.	.550				•									_		\perp	+
					0		1										
atio	.500														\Box	\top	
Voids Ratio	.450													+		+	
	.400								_					_			
0.	.350								_					_			
0.	.300																
0	.250																
	.200																
2	.150																
	0.00				,												+
<u>e</u> 1	5.00 0.00																
12	5.00						X	*				Ш					Ш
Ó	0.00								*								Щ
	1			10		Apı	1 plied Pr	00 essure kPa	a			10	000				10000
Applie Pressu		Mv	Cv (t50, log)	(t90, root	Csec		Prep	aration									
kPa		m2/MN	m2/yr	m2/yr													
0.0 25	0.629 0.554	1.8	-	- 42	0.0003	_	Inde	x tests	Liquid	d limit			% Plas	tic limit			%
50	0.535	0.48	21	140	0.0007		Parti	cle density					assumed		2.65		Mg/n
100 200	0.510 0.476	0.32	8.1 5.9	90 30	0.001 0.0011		Spec	cimen detail	ls				Initial	I	Final		1
400	0.444	0.11	2	8.1	0.0011		Dian						74.89		-		mm
100	0.483	0.089					Heig	ht					20.15		18.75		mm
25	0.516	0.29						ture Conter	nt				24.2		22.7		%
						_		density				-	2.02				Mg/n
						\dashv		density					1.63				Mg/n
						\dashv		s Ratio ration				\vdash	0.629 102				
						\dashv		ration age temper	aturo fo	or toot		\vdash		9.0			° ₀C
							Swel	ling Pressu	ire				'	J. J			kPa
							Settl Rem	ement on s arks	aturatio	n		L					%
Final valu	les should be u	sed with caution		Tested	Ch	ecked		Approved		Pri	nted				Fig. N	No.	
		f load incremen		, coleu		ooneu		Apploved		1511					, ig. I	10	
	cted to 20oC			DS		K۷	V	KW	,		1	0/01/	2022 11:34				1

			ONE	DIMENS	IONAL C	ONSOL	IDATION	N TI	EST	Job	Ref				S21	1001			
				BS137	77:Part 5:	1990, с	lause 3			Вог	rehole/	Pit N	0.		CPR	O05			
Sit	e Name)	Envision, S	underland						Sai	mple N	lo.							
So	il Desci	iption								De	pth				4	1			
	ecimen				Specimer Depth	ì			m	Sar	mple T	уре			ι	J			
Sp	ecimen		Firm, Brow	n, CLAY	Берит					Key	yLAB I	D		SI	MK202	211117	28		
	st Meth	od		rt 5:1990, cl	ause 3						te start								\dashv
	0.680																		
	0.660				·· e _o														
	0.640											+			_				
0	0.620					٩		\perp										Ш	
Voids Ratio																			
/oids	0.600						$\rightarrow \rightarrow$	∜				\dashv	++		_	\vdash		Н	
	0 580					0												Ш	
	0.000							\bigcup											
	0.560	-						╬			+	\dashv	+		_	\vdash		Н	
	0.540																		
	0.540																		
	0.520	-	+	-				+		-		$\dashv \vdash$	+		+	\vdash	H	Н	
	0.500																		
	0.500																		
	0.480																		
ime)																			
Cv m²/yr (log time)							צ	\Box											
1 ² /yr						*		\rightarrow									+		
C	ference ecimen scription Firm, Brown st Method BS1377:Pa								*	*									
	0.00				10		ام ما الم ما	100	0 ssure kPa	_			10	00				100	900
Δn	nlind		1	Cv	Cv		_		ration	a									
Pre	ssure	√oids ratio	Mv	(t50, log)	(t90, root)	Csec		ера	ialion										
	Pa	0.668	1	m2/yr	m2/yr -		_ In	dev	tests	Liquid	d limit			% Plas	tic limit			%	
	25	0.626	1		72	0.00044	_	uσλ	10010	Liquit	a 1111111			70 FIdS	ao mint			/0	
	50			19 26	120 210	0.0006 0.00076		articl	le density					assumed		2.65		M	g/m
	200			12	230	0.00070		oecir	men detai	ls				Initial		Final			
	00			5	37	0.00088	_	ame						75.07		-		m	
								eight	t ure Contei	nt				19.97 22.2		19.00 24.0		m	
	23	0.367	0.10						lensity	i it				1.94		24.0		_	g/m
									ensity					1.59					g/m
									Ratio					0.668				┨┈;	9,
									ation					88				%	
									ge tempei	rature fo	or test				9.0			00	
							Sv	velli	ng Pressu	ıre								kF	
								ettler emai	ment on s	aturatio	n							%	
								Jilid	11/0										
Final	values s	nould be use	ad with courties		Tested	Cho	ecked	L	Approved		Drin	nted :				Fig. N	0		
					ı ธอเ ธ น	Cite	ONEU	ľ	~hhiovea							ı ıg. ıv	J		
				-	DS		KW		KW	/		10	/01/2	2022 11:34			1		

			ONE	DIMENS	SIONAL C	ONS	OLIE	DATIC	N T	EST	Jol	o Ref			S211001		
				BS13	77:Part 5:	1990), cla	use :	3		Во	rehole/Pi	t No.		CPRO06		
Si	ite Name	е	Envision, S	Sunderland							Sa	mple No.					
So	oil Desc	ription									De	pth			6		
	pecimer eference				Specimer Depth	า				m) Sa	mple Typ	е		U		
S	pecimer escription)	Soft, Brown	n, Slightly G	ravelly, CLA	Υ.					Ke	yLAB ID		SLI	MK2021111	1740	
	est Meth	nod	BS1377:Pa	art 5:1990, c	lause 3						Da	te started	t				
	0.650)															
	0.640) 			- e.	-	+	+	+							+	Ш
	0.630)				9			\forall				$\dashv \dashv \dagger$				
0	0.620)					\searrow	Ш		<u> </u>						\bot	Щ
Voids Ratio																	
/oids	0.610)										$\dashv \dashv$	$\dashv \dashv \dagger \dagger$		+	+	\mathbb{H}
	0.600	,							$\sqrt{}$								Ш
	0.000								1		\setminus						
	0.590) 	+			\dashv	+	++	+		\vdash	$\dashv \dashv$	$\dashv \dashv \dagger$		\dashv	+	\mathbb{H}
	0.580																
	0.500	'															
	0.570) 					_		-				$\dashv \dashv \dashv$		+	+	\mathbb{H}
	0.500																
	0.560) [
	0.550 2.50	<u> </u>															
og time)	2.00																
(log ti	1.50				*												
Cv m²/yr (lo	1.00	·							~							+	+
CV m	0.50																
	0.00	1			10			Applie	1(! 00 essure kF	00		100	00			10000
Ar	oplied			Cv	Cv			1		essure kr aration	ra						
Pre	essure	Voids ratio		(t50, log)	(t90, root)	Cs	ec		Пор	aration							
	kPa 0.0	0.641	m2/MN -	m2/yr -	m2/yr -		-		Index	c tests	Liqui	d limit		% Plasti	ic limit		%
	25	0.640	0.004	1.7	39		0096										
	50 100	0.635 0.621	0.15 0.16	1.3 1.3	10 6.3	0.00	0071		Parti	cle density	′		;	assumed	2.65)	Mg/m
	200	0.600	0.13	1.7	5	0.0				imen deta	ils			Initial	Fina	l	
	400 100	0.570 0.597	0.092 0.058	1.3	5.5	0.0	013		Diam Heigl					74.83 20.08	19.93	3	mm mm
	25	0.629	0.26						_	ture Conte	ent			24.0	23.6		%
	-									density				2.00			Mg/m
										lensity				1.62			Mg/m
										s Ratio				0.641			
										ration				99			%
										age tempe		or test		19	9.0		οС
										ling Press		. n					kPa
									Settle	ement on : arks	saturatio	חכ					%
Final	l values s	hould be use	ed with caution	1	Tested		Chec	ked		Approved	1	Printe	d :		Fig.	No	
			oad increment		7.00100		01160	ou		, who we	•	' ' ' ' ' '			l' ^{ig.}	. 10	
	orrected t				DS			KW		ΚV	٧		10/01/2	022 11:34		1	

		Dry Density	Moisture Content Relationship		Job Ref	S211001
			Light Compaction		Borehole / Pit No	CP01
Site Name			Envision, Sunderland		Sample No	
Soil Description	on Brown,	, CLAY			Depth	0.40 m
Specimen Re	f.	1	Specimen Depth	m	Sample Type	В
Test Method		BS1377:P	Keylab ID	SLMK202111168		
	·		Cor	npaction	Test Reference/No.	
1.90					— — - 5 °	% Air Voids % Air Voids % Air Voids
1.80 — 1.70 — 1.						
1.70 L		•		1,		
1.60						
1.50				10		
		8	12 Moisture Content, %	16		20
	Mould Type				1 LITRE	
	Samples Used	I on 27 5 mm Cia	0/	Si	ngle sample tested	
		on 37.5 mm Sieve on 20.0 mm Sieve			0 1	
	viaterial Retained Particle Density -		Mg/m³		2.65	
	Particle Density - Natural Moisture		Mg/m² // %		2.65	
	Maximum Dry D		Mg/m³		1.77	
	Optimum Moist		%		14	
Operator	Checked	Approved	Remarks			Fig
1.Southgate	KW	KW				Sheet 1 of 1

		Dry Density	/ Moisture Content Rela	ationship	Job Ref	S211001
			Light Compaction		Borehole / Pit No	CP07
Site Name			Envision, Sunderland		Sample No	
Soil Descrip	otion Bro	own, CLAY			Depth	0.50 m
Specimen R	Ref.	1	Specimen Depth	m	Sample Type	В
Test Method	t	BS1377:P	art 4:1990, clause 3.3, 2.5kg rai	mmer	Keylab ID	SLMK2021111659
1.90	•			Compaction	n Test Reference/No.	
					5	% Air Voids % Air Voids % Air Voids
Dry Density, Mg/m3						
Dry Dens.						
1.60 -						
1.50						
6		10	14 Moisture Cor	ntent, %	18	22
	Mould Type				1 LITRE	
	Samples Use			S	ingle sample tested	
		ined on 37.5 mm Sieve			0	
L		ined on 20.0 mm Sieve			1	
<u> </u>	Particle Dens Natural Moist	sity - Assumed	Mg/m³ %		2.65	
 	Maximum D		Mg/m³		1.75	
		oisture Content	g %		15	
Operator	Checke	ed Approved	Remarks			Fig
M.Southgate	KW	KW				Sheet 1 of 1

	Dry Density	/ Moisture Content Rel	ationship	Job Ref	S211001	
		Light Compaction	•	Borehole / Pit No	TP03	
Site Name		Envision, Sunderland		Sample No		
Soil Description	Brown, Slightly Gravelly,	Slightly Sandy, CLAY.		Depth	0.60 m	
Specimen Ref.	1	Specimen Depth	m	Sample Type	В	
Test Method	BS1377:	Part 4:1990, clause 3.3, 2.5kg ra	ammer	Keylab ID	SLMK2021120189	
1.90			Compaction	n Test Reference/No.		
				—— - 5 °	% Air Voids % Air Voids I % Air Voids	
1.80						
1.60						
1.50	6	10	14	18	22	
l		Moisture Co	ontent, %			
Mould	Гуре			1 LITRE		
	es Used		S	ingle sample tested		
	l Retained on 37.5 mm Siev			0		
	l Retained on 20.0 mm Siev			1		
	Density - Assumed	Mg/m³		2.65		
Natural Moisture Content % 2I						
	um Dry Density um Moisture Content	Mg/m³		1.75		
	hecked Approved	Remarks				
Operator C	поскей другочей	1			Fig	
MS T. Fii	nnimore T. Finnimore				Sheet 1 of 1	

		Dry Density	Moisture Content Rel	ationship	Job Ref	S211001
			Light Compaction	•	Borehole / Pit No	TP09
Site Name			Envision, Sunderland		Sample No	
Soil Descrip	tion Brown	, CLAY			Depth	1.20 m
Specimen R	tef.	1	Specimen Depth	m	Sample Type	В
Test Method	1	BS1377:P	art 4:1990, clause 3.3, 2.5kg ra	mmer	Keylab ID	SLMK2021120196
	1				n Test Reference/No.	
1.90 -					— — – 5 9	% Air Voids % Air Voids % Air Voids
Dry Density, Mg/m3						
1.60		•				
3		7	11	15	19	23
_			Moisture Co	ntent, %		
	Mould Type				1 LITRE	
	Samples Used			S	ingle sample tested	
		on 37.5 mm Sieve			0	
		I on 20.0 mm Sieve			0	
<u> </u>	Particle Density -		Mg/m³		2.65	
-	Natural Moisture		% Ma/m³		20	
	Maximum Dry D	ensity	Mg/m³		1.73	
	Optimum Moist	ure Content	%		14	
Operator	Checked	Approved	Remarks			Fig
MS	T Finnimore	T. Finnimore				Sheet 1 of 1

		Dry Density	Moisture Content R	elationship	Job Ref	S211001
			Light Compaction	·	Borehole / Pit No	TP10
Site Name			Envision, Sunderland6		Sample No	
Soil Description	on Órown	slightly gravelly, sli	ghtly sandy CLAY		Depth	0.80 m
Specimen Re	f.	1	Specimen Depth	m	Sample Type	В
Test Method		BS1377:P	art 4:1990, clause 3.3, 2.5kg	rammer	Keylab ID	SLMK2021120198
1.90	•			Compaction	on Test Reference/No.	
					— — – 5	% Air Voids % Air Voids I % Air Voids
Dry Density, Mg/m3						
1.60	*					
1.50		8	12 16	20	24	28
			Moisture (Content, %		
N	Mould Type				1 LITRE	
	Samples Used				Single sample tested	
		l on 37.5 mm Sieve		%	0	
		I on 20.0 mm Sieve		%	0	
	Particle Density -		Mg/m ³	_	2.65	
	Natural Moisture			%	2Î	
	Maximum Dry D		Mg/m		1.71	
	Optimum Moist	ure Content	(%	19	
Operator	Checked	Approved	Remarks			Fig
MS	T Finnimore	T. Finnimore				Sheet 1 of 1

		Dry Density	/ Moisture Content Rela	ationship	Job Ref	S211001
		, ,	Light Compaction	·	Borehole / Pit No	TP11
Site Name			Envision, Sunderland		Sample No	
Soil Descrip	otion Brown	n, slightly sandy,	slightly gravelly, CLAY		Depth	0.50 m
Specimen F	Ref.	1	Specimen Depth	m	Sample Type	В
Test Method	d	BS1377:P	Part 4:1990, clause 3.3, 2.5kg ra	mmer	Keylab ID	SLMK20211201100
1.90 ▮				Compaction	n Test Reference/No.	
					— — – 5 °	% Air Voids % Air Voids 9 % Air Voids
Dry Density, Mg/m3						
1.70 -		✓				
1.60					- San Andrews	
1.50		8	12	16		20
4		Ü	Moisture Cor			
	Mould Type				1 LITRE	
L	Samples Used			S	ingle sample tested	
L		ed on 37.5 mm Sieve			0	
		ed on 20.0 mm Sieve			33 2.65	
	Particle Density Natural Moisture		Mg/m³ %		2.65 1J	
 	Maximum Dry		Mg/m³		1.76	
	Optimum Mois		%		14	
Operator	Checked	Approved	Remarks			Fig
//S	T. Finnimore	T. Finnimore]			Sheet 1 of 1

		Dry Density	/ Moisture Content Relati	onship	Job Ref	S211001
			Light Compaction		Borehole / Pit No	TP12
Site Name			Envision, Sunderland		Sample No	
Soil Descriptio	n Brown,	CLAY			Depth	0.30 m
Specimen Ref		1	Specimen Depth	m	Sample Type	В
Test Method		BS1377:P	art 4:1990, clause 3.3, 2.5kg ramn	ner	Keylab ID	SLMK20211201102
1.80				Compactio	n Test Reference/No.	
1.70					—— - 5 9	% Air Voids % Air Voids % Air Voids
Dry Density, Mg/m3						
1.50		•				
1.40	4	8	12 16 Moisture Conte	20 nt. %	24	28 32
			Woodule conte	ιι, 70		
	Nould Type				1 LITRE	
	amples Used				Single sample tested	
		on 37.5 mm Sieve			0	
		on 20.0 mm Sieve			1 2.65	
	Particle Density latural Moisture (Mg/m³ %		2.65 2G	
	laximum Dry De		Mg/m³		1.67	
	Optimum Moistu		%		14	
Operator	Checked	Approved	Remarks			Fig
1S	T Finnimore	T. Finnimore	1			Sheet 1 of 1

	Dry Density	/ Moisture Content Rel	ationship	Job Ref	S211001
		Light Compaction	•	Borehole / Pit No	TP15
Site Name		Envision, Sunderland		Sample No	
Soil Description	Brown, Slightly Ùæ) å^ ÊÂÛ	l∣a ̃@r̂ÁGravelly, CLAY.		Depth	0.60 m
Specimen Ref.	1	Specimen Depth	m	Sample Type	В
Test Method	BS1377:F	Part 4:1990, clause 3.3, 2.5kg ra	ammer	Keylab ID	SLMK20211201109
1.80			Compaction	n Test Reference/No.	
				—— - 5 °	% Air Voids % Air Voids % Air Voids
1.70 Dry Density, Mg/m3					
1.50	10		18	22	26
6	10	14 Moisture Co		22	26
_					
Mould ¹				1 LITRE	
Sample	s Used Retained on 37.5 mm Siev	e %	S	ingle sample tested	
	Retained on 37.5 mm Siever Retained on 20.0 mm Siever			1	
	Density - Assumed	Mg/m³		2.65	
	Moisture Content	,		2H	
	um Dry Density	Mg/m³		1.69	
	m Moisture Content	%		16	
Operator C	necked Approved	Remarks			Fig
MS T Fin	nimore T. Finnimore				Sheet 1 of 1

		Dry Density	/ Moisture Content Re	elationship	Job Ref	S211001
		, ,	Light Compaction	•	Borehole / Pit No	TP17
Site Name			Envision, Sunderland		Sample No	
Soil Descrip	otion Brown	n, Sandy, CLAY.			Depth	1.00 m
Specimen R	Ref.	1	Specimen Depth	m	Sample Type	В
Test Method	d	BS1377:P	art 4:1990, clause 3.3, 2.5kg	rammer	Keylab ID	SLMK2021111676
					on Test Reference/No.	
1.80 - 1.80 - 1.50 - 1.50 - 4		8	12 16 Moisture C	20	0°	% Air Voids % Air Voids 9 % Air Voids
	Mould Type				1 LITRE	
	Samples Used				Single sample tested	
		ed on 37.5 mm Sieve			0	
		ed on 20.0 mm Sieve			0	
	Particle Density		Mg/m³	.	2.65	
_	Natural Moisture		9		2Í	
	Maximum Dry	Density	Mg/m ³	<u>' </u>	1.74	
	Optimum Mois	ture Content	9	6	18	
Operator	Checked	Approved	Remarks			Fig
MS	T Finnimore	T. Finnimore				Sheet 1 of 1

		Dry Density	Moisture Content Relation	ıship	Job Ref	S211001
			Light Compaction		Borehole / Pit No	TP19
Site Name			Envision, Sunderland		Sample No	
Soil Description	on Brown,	, Sandy, CLAY.			Depth	1.00 m
Specimen Ref	f.	1	Specimen Depth	m	Sample Type	В
Test Method		BS1377:P	art 4:1990, clause 3.3, 2.5kg rammer		Keylab ID	SLMK2021111681
1.70				Compaction	5	% Air Voids % Air Voids
Dry Density, Mg/m3 10 10 10 10 10 10 10 10 10 10 10 10 10					10	% Air Voids
1.50		•				
6		10	14 18 Moisture Content,	%	22	26
	Nould Type		1		1 LITRE	
	Samples Used			Si	ngle sample tested	
		on 37.5 mm Sieve			0	
		I on 20.0 mm Sieve			0	
	Particle Density - Natural Moisture		Mg/m³ %		2.65 2Î	
<u> </u>	Maximum Dry D		Mg/m³		1.63	
	Optimum Moistu		%		19	
Operator	Checked	Approved	Remarks			Fig
MS	T Finnimore	T. Finnimore				Sheet 1 of 1

		Dry Density	/ Moisture Content Relatio	nship	Job Ref	S211001
			Light Compaction		Borehole / Pit No	TP22
Site Name			Envision, Sunderland		Sample No	
Soil Descrip	ption Brow	n, Sandy, CLAY.			Depth	1.00 m
Specimen F	Ref.	1	Specimen Depth	m	Sample Type	В
Test Metho	d	BS1377:F	art 4:1990, clause 3.3, 2.5kg ramme	er	Keylab ID	SLMK2021111688
4.00				Compactio	n Test Reference/No.	
1.90 -	/				0	% Air Voids
		``.			5	% Air Voids
						% Air Voids
Dry Density, Mg/m3 1.70						
Dry Dens						
1.60 -						
1.50 - 8		12	16	20		24
			Moisture Content			
	Mould Type				1 LITRE	
	Samples Used			S	Single sample tested	
-		d on 37.5 mm Sieve d on 20.0 mm Sieve			1	
-	Particle Density		Mg/m³		2.65	
 	Natural Moisture		, wg/m		2€	
F	Maximum Dry		Mg/m³		1.73	
	Optimum Mois		%		18	
Operator	Checked	Approved	Remarks			Fig
	KW	ĸw	I			1

		Dry Density	/ Moisture Content Relatio	onship	Job Ref	S211001
			Light Compaction	•	Borehole / Pit No	TP32
Site Name			Envision, Sunderland		Sample No	
Soil Description	n Brow	n, Slightly Sandy, Sl	ightly Gravelly, CLAY.		Depth	1.00 m
Specimen Ref.		1	Specimen Depth	m	Sample Type	В
Test Method		BS1377:P	art 4:1990, clause 3.3, 2.5kg ramm	er	Keylab ID	SLMK2021111693
1.80				Compaction	n Test Reference/No.	% Air Voids
1.70 — Dry Density, Mg/m3						% Air Voids
1.40		10	14 Moisture Conten	18 it, %	22	26
	lould Type amples Used				1 LITRE	
		ed on 37.5 mm Sieve	9 %	3	ingle sample tested 0	
		ed on 20.0 mm Sieve			1	
	article Density		Mg/m³		2.47	
	latural Moisture		%		19	
	laximum Dry Optimum Mois		Mg/m³ %		1.71	
	ypumum MOIS	ture Content	70		10	
Operator	Checked	Approved	Remarks			Fig
MS	T Finnimore	T. Finnimore				Sheet 1 of 1

			Dry Density	/ Moisture Conte	ent Relation	nship	Job Ref	S211001
				Light Compacti		•	Borehole / Pit No	TP51
Site Name	е			Envision, Sunderla	nd		Sample No	
Soil Desc	ription	Brown, S	Slightly Gravelly,	Slightly Sandy, CLAY.			Depth	1.00 n
Specimen	Ref.		1	Specimen Depth		m	Sample Type	В
Test Meth	od		BS1377:F	Part 4:1990, clause 3.3	2.5kg rammer	-	Keylab ID	SLMK2021111611
1.90 1.80 1.70 1.60	4		8	12	16		— — - 5 °	% Air Voids % Air Voids % Air Voids
				Moi	sture Content,	%		
	Mould Ty	pe					1 LITRE	
	Samples	Used				S	ingle sample tested	
			on 37.5 mm Sieve		%		0	
			on 20.0 mm Sieve		% Ma/m³		2.65	
	Particle D Natural M				Mg/m³ %		2.65	
	Maximun				Mg/m³		1.74	
	Optimum	Moistur	e Content		%		18	
	- Ch-	.11	A	Remarks				
Operato	Che	ecked	Approved					Fig

		Dry Density	Moisture Content Re	elationship	Job Ref	S211001
			Heavy Compaction	induorionip	Borehole / Pit No	TP04
Site Name)		Envision, Sunderland		Sample No	
Soil Descr	ription	В	rown, Slightly Sandy, CLAY.		Depth	1.00 m
Specimen	Ref.	1	Specimen Depth	m	Sample Type	В
Test Meth	od	BS1377:P	art 4:1990, clause 3.5, 4.5kg	rammer	Keylab ID	SLMK2021120190
2.00 Dry Density, Mg/m3 1.80				Compactio	—— - 5 °	% Air Voids % Air Voids % Air Voids
1.70						`
	4	8	12		16	20
			Moisture C	ontent, %		
	Preparation			Material use	ed was oven dried at 3	80degC
	Mould Type				1 LITRE	
	Samples Used	07.5			Single sample tested	
ŀ		on 37.5 mm Sieve			0	
ŀ	Particle Density -		Mg/m³		2.65	
ŀ	Natural Moisture		%		23	
	Maximum Dry D	ensity	Mg/m³		1.89	
[Optimum Moistu	ure Content	9/		15	
Operator	Checked	Approved	Remarks			Fig
MS	KW	ĸw				Sheet 1 of 1

		Dry Density	/ Moisture Cont	ent Rel	ationship	Job Ref	S211001
			Heavy Compac		шр	Borehole / Pit No	TP05
Site Name)		Envision, Sunderl	and		Sample No	
Soil Descr	ription		Brown, CLAY.			Depth	1.00 m
Specimen	Ref.	1	Specimen Depth		m	Sample Type	В
Test Meth	od	BS1377:F	art 4:1990, clause 3.5	5, 4.5kg ra	mmer	Keylab ID	SLMK2021111673
2.00 1.90 1.80 1.70					Compaction	—— -5 °	% Air Voids % Air Voids % Air Voids
1.60							``
	4	8	12 Mo	oisture Co	16 ntent, %		20
	Preparation				Ma	terial used was natural	
	Mould Type					1 LITRE	
	Samples Used					Single sample tested	
	Material Retained			%		0	
	Material Retained		9	%		0	
	Particle Density -			Mg/m³		2.70	
	Natural Moisture			% Na:/::-3		21	
	Maximum Dry D	ensity		Mg/m³		1.89	
	Optimum Moistu	ire Content		%		15	
Operator	Checked	Approved	Remarks				Fig
KW	T Finnimore	T. Finnimore					Sheet 1 of 1

		Dry Density	/ Moisture Conte	nt Relati	onship	Job Ref	S211001
			Heavy Compaction	on		Borehole / Pit No	TP06
Site Name			Envision, Sunderlan	ıd		Sample No	
Soil Descr	ption	Brown, CLA	Υ			Depth	1.40 n
Specimen	Ref.	1	Specimen Depth		m	Sample Type	В
Test Metho	od	BS1377:F	Part 4:1990, clause 3.5,	4.5kg ramm	ner	Keylab ID	SLMK202112019
2.30 graph, Mg/m3 2.10 2.10 2.00 2.00						— — - 5	% Air Voids % Air Voids D % Air Voids
1.80							
ı	4	6	8 Mois	ture Conter	10 nt, %	12	14
	Preparation				Mate	erial used was air drie	ed
	Mould Type					1 LITRE	
}	Samples Used Material Retained	on 37.5 mm Sieve	3	%	8	Single sample tested 0	
ŀ	Material Retained			%		4	
}	Particle Density -			Mg/m³		2.80	
ļ	Natural Moisture			%		12	
	Maximum Dry D	ensity		Mg/m³		2.19	
Γ	Optimum Moistu	ure Content		%		8.6	
L							
Operator	Checked	Approved	Remarks				Fig

			Moisture Content R	elationship	Job Ref	S211001
			Heavy Compaction		Borehole / Pit No	TP08
Site Name			Envision, Sunderland		Sample No	
Soil Descr	iption	Brown, sli	ghtly•æ)å^ÊÁi ā*@¦^Ágravelly,	ÁCLAY	Depth	0.70 m
Specimen		1	Specimen Depth	m	Sample Type	В
Test Metho	od	BS1377:P	art 4:1990, clause 3.5, 4.5kg	rammer	Keylab ID	SLMK2021120194
2.00 ft. 1.90 ft. 1.80 ft. 1.70 ft. 1.60 ft. 1.6	Preparation Mould Type Samples Used Material Retained	10 on 37.5 mm Sieve			— — – 5 °	% Air Voids % Air Voids % Air Voids 22 30degC
		on 20.0 mm Sieve		%	1	
	Particle Density -		Mg/n		2.65	
	Natural Moisture			%	21	
[[Maximum Dry D Optimum Moist		Mg/n	%	1.93	
<u>_</u>	Optimum WOISt	a.o content		<u>~1</u>	10	
Operator	Checked	Approved	Remarks			Fig
MS	T. Finnimore	T. Finnimore				Sheet 1 of 1

Heavy Compaction Borehole / Pit No Site Name Envision, Sunderland Sample No Soil Description Brown, slightly sandy, slightly gravelly. CLAY Depth 1.2 Specimen Ref. 1 Specimen Depth m Sample Type			Dry Density	/ Moisture Content Re	lationship	Job Ref	S211001	
Soli Description Brown, slightly sandy, slightly gravelly, CLAY Depth 1.2					•	Borehole / Pit No	TP13	
Specimen Ref. 1 Specimen Depth m Sample Type	Site Name	ne		Envision, Sunderland		Sample No		
Test Method BS1377:Part 4:1990, clause 3.5, 4.5kg rammer Keylab ID SLMK20	Soil Descr	cription	Brown, s	lightly sandy, slightly gravelly.	CLAY	Depth	1.20 m	
2.10 2.10 2.10 2.10 2.10 2.10 2.10 2.10 3.10 4.10 1.10	Specimen	en Ref.	1	Specimen Depth	m	Sample Type	В	
2.10 2.00 2.00 2.00 1.90 1.70 1.60 1.70 Material used was oven dried at 30degC Mould Type Samples Used Material Retained on 37.5 mm Sieve Material Retained on 20.0 mm Sieve	Test Metho	thod	BS1377:F	² art 4:1990, clause 3.5, 4.5kg ı	rammer	Keylab ID	SLMK2021120110	
Mould Type 1 LITRE Samples Used Single sample tested Material Retained on 37.5 mm Sieve % 0 Material Retained on 20.0 mm Sieve % 0	2.00 Em/sh Mg/m3 1.90 1.70		8		ontent, %	20	% Air Voids 0 % Air Voids	
Samples Used Material Retained on 37.5 mm Sieve Material Retained on 20.0 mm Sieve Single sample tested Material Retained on 20.0 mm Sieve 0					Material use		30degC	
Material Retained on 37.5 mm Sieve % 0 Material Retained on 20.0 mm Sieve % 0								
Material Retained on 20.0 mm Sieve % 0	ŀ		on 37.5 mm Sieve	9/				
	ŀ							
	ŀ							
Natural Moisture Content % 23								
Maximum Dry Density Mg/m³ 1.95		Maximum Dry D	ensity	Mg/m³		1.95		
Optimum Moisture Content % 12	[Optimum Moistu	ure Content	9/		12		
Operator Checked Approved Remarks	Operator	or Checked	Approved	Remarks			Fig	
AS T Finnimore T Finnimore	IS	T. Finnimore	T. Finnimore				Sheet 1 of 1	

		Dry Density	Moisture Content R	elationshin	Job Ref	S211001
			Heavy Compaction		Borehole / Pit No	TP14
Site Name	•		Envision, Sunderland		Sample No	
Soil Descr	ription	В	rown, Slightly Sandy, CLAY.		Depth	1.50 m
Specimen	Ref.	1	Specimen Depth	m	Sample Type	В
Test Meth	od	BS1377:P	art 4:1990, clause 3.5, 4.5kg	rammer	Keylab ID	SLMK20211201107
2.00 Dry Density, Mg/m3 1.90 1.70		4	6 8 Moisture	Compaction 10 12 Content, %		% Air Voids % Air Voids 9% Air Voids
į						
	Preparation			Material us	ed was oven dried at	30degC
	Mould Type				1 LITRE	
	Samples Used	on 27 F 0'-		<u>\$</u>	Single sample tested	
					0	
	Particle Density -		Mg/m	% 3	2.80	
	Natural Moisture			%	23	
	Maximum Dry D	ensity	Mg/m		1.93	
	Optimum Moistu			%	13	
Operator	Checked	Approved	Remarks			Fig
MS	T Finnimore	T. Finnimore				Sheet 1 of 1

		Dry Density	/ Moisture Content Re	elationship	Job Ref	S211001
			Heavy Compaction		Borehole / Pit No	TP18
Site Name	e		Envision, Sunderland		Sample No	
Soil Desc	•	Brown, Sligh	tly Sandy, Slightly Gravelly, Cl	_AY.	Depth	1.00 m
Specimer		1	Specimen Depth	m	Sample Type	В
Test Meth	nod	BS1377:F	Part 4:1990, clause 3.5, 4.5kg		Keylab ID n Test Reference/No.	SLMK2021111679
2.10 2.10 2.00 1.90	4 Preparation	6	8 10 Moisture C	1		% Air Voids % Air Voids 1 % Air Voids
				Waterial do		oodege
	Mould Type Samples Used				1 LITRE Single sample tested	
	Material Retained on 37.5 mm Sieve %				0	
	Material Retained on 20.0 mm Sieve %				0	
	Particle Density -		Mg/m³		2.65	
					2.07	
	Maximum Drv D	CHOILV	1119/111	1		
	Maximum Dry Do		9/	0	8.9	
	Optimum Moistu	ure Content	% Remarks	ь	8.9	
Operato 4S	Optimum Moistu			5	8.9	Fig

		Dry Density	/ Moisture Content Re	elationship	Job Ref	S211001
			Heavy Compaction		Borehole / Pit No	TP21
Site Name	•		Envision, Sunderland		Sample No	
Soil Descr	ription	Brown, Sligh	ntly Grvelly, Slightly Sandy, CL	AY.	Depth	1.00 m
Specimen	Ref.	1	Specimen Depth	m	Sample Type	В
Test Meth	od	BS1377:P	art 4:1990, clause 3.5, 4.5kg	rammer	Keylab ID	SLMK202111168
2.00 Dry Density, Mg/m3 1.90 1.70	4	8	12 Moisture C	16 content, %		% Air Voids % Air Voids % Air Voids 20
	Preparation			Material us	ed was oven dried at	50degC
	Mould Type				1 LITRE	
	Samples Used Material Retained	on 37.5 mm Sieve	9		Single sample tested 0	
	Material Retained				1	
	Particle Density -	Assumed	Mg/m³		2.70	
Į.	Natural Moisture (9		19	
	Maximum Dry Do	ensity	Mg/m³	1	1.93	
	waxiiiidiii biy b					
	Optimum Moistu	re Content	9/	6	11	
Operator	Optimum Moistu	Approved	% Remarks	6	11	Fig

			Moisture Content R	elationship	Job Ref	S211001
			Heavy Compaction		Borehole / Pit No	TP23
Site Name	•		Envision, Sunderland		Sample No	
Soil Descr	ription	Brown, Slightly	Gravelly, Slightly Sandy, CL	AY.	Depth	1.60 m
Specimen	Ref.	1	Specimen Depth	m	Sample Type	В
Test Metho	od	BS1377:P	art 4:1990, clause 3.5, 4.5kg	rammer	Keylab ID	SLMK2021120111
2.00 2.00 1.90 1.80 1.70 1.60 1.50		4	8 Moisture (12 Content, %	10 10	% Air Voids % Air Voids 0 % Air Voids
	Preparation			Material us	sed was oven dried at	SodegC
ŀ	Mould Type Samples Used				1 LITRE Single sample tested	
}	Material Retained	on 37.5 mm Sieve	,		0	
Ţ	Material Retained				1	
Ţ	Particle Density -		Mg/m		2.70	
	Natural Moisture (6	19	
[Maximum Dry De		Mg/m		1.98	
Į	Optimum Moistu	ire Content	C	6	12	
Operator	Checked	Approved	Remarks			Fig

		Dry Density	/ Moisture Cont	ent Rel	ationship	Job	Ref	S211001
			Heavy Compact			Bore	hole / Pit No	TP31
Site Name	9		Envision, Sunderla	and		Sam	ple No	
Soil Descr	ription	Brown, Sl	ightly Gravelly, Slightly	/ Sandy, C	CLAY.	Dept	th	1.00 m
Specimen	Ref.	1	Specimen Depth		r	m Sam	ple Type	В
Test Meth	od	BS1377:F	art 4:1990, clause 3.5	, 4.5kg ra	mmer	Keyl	ab ID	SLMK2021111690
2.10 2.00 1.90 1.80 1.70					Compac	tion Test F	—— -5 °	% Air Voids % Air Voids % Air Voids
1.50	4	8	12		16	 S		20
ı	4	0		isture Co				
	Preparation		Material		oven dried at 3	30degC		
	Mould Type						ITRE	
	Samples Used	on 27 E mr. Circ.		%		Single sa	ample tested	
ŀ							2	
ŀ	Particle Density -	% Mg/m³		2	2.85			
ŀ	Natural Moisture	wg/m² %			18			
	Maximum Dry D	Mg/m³			.90			
[Optimum Moist			%			11	
Operator	Checked	Approved	Remarks					Fig
//S	T Finnimore	T. Finnimore						Sheet 1 of 1

		Dry Density	/ Moisture Cont	ent Rel	ationship	Job Ref	S211001
			Heavy Compac		-	Borehole / Pit No	TP33
Site Name	Э		Envision, Sunderla	and		Sample No	
Soil Desci	ription		Brown, CLAY			Depth	1.00
Specimen	ı Ref.	1	Specimen Depth		m	Sample Type	В
Test Meth	nod	BS1377:F	art 4:1990, clause 3.5	5, 4.5kg ra	mmer	Keylab ID	SLMK20211116
2.00							% Air Voids % Air Voids 9 % Air Voids
Dry Density, Mg/m3 1.80						*	
E DLY DE	•						
1.70							
1.60			10		10	1	
	4	8	12 Mo	oisture Co	16 ntent, %		20
	Preparation				Material us	ed was oven dried at	30degC
	Mould Type					1 LITRE	
	Samples Used Material Retained on 37.5 mm Sieve				;	Single sample tested	
				% %		0	
	Material Retained on 20.0 mm Sieve Particle Density - Assumed Mg					2.70	
	Natural Moisture			%		2H	
	Maximum Dry D	ensity		Mg/m³		1.87	
	Optimum Moistu	ure Content		%		15	
Operator	r Checked	Approved	Remarks				Fig
	KW		I				l

			Moisture Content	Relationship	Job Ref	\$211001
		Heavy Compaction			Borehole / Pit No	TP35
Site Nam	е		Envision, Sunderland		Sample No	
Soil Desc	ription	Brown, Sli	ghtly Gravelly, Slightly San	dy, CLAY.	Depth	1.00
Specimer	n Ref.	1	Specimen Depth	n	n Sample Type	В
Test Meth	nod	BS1377:P	art 4:1990, clause 3.5, 4.5l	kg rammer	Keylab ID	SLMK202111161
2.00 1.90 1.80 1.70		8	1	2	——-5	% Air Voids % Air Voids 0 % Air Voids
			Moisture	Content, %		
	Preparation Material us		used was oven dried at	30degC		
	Mould Type			1 LITRE		
	Samples Used Material Retained on 37.5 mm Sieve %			%	Single sample tested 0	
	Material Retained on 20.0 mm Sieve %				0	
	Particle Density - Assumed Mg/m³		m³	2.65		
	Natural Moisture Content % Maximum Dry Density Mg/m³		22			
			1.88			
	Optimum Moistu	ire Content		%	14	
Operato	r Checked	Approved	Remarks			Fig
<u> </u>						9

		Dry Doneity	/ Moisture Contr	ant Pol	ationship	Job Ref	S211001
		Dry Density / Moisture Content Relationship Heavy Compaction			Borehole / Pit No	TP46	
Site Name	•	Envision, Sunderland			Sample No		
Soil Descr	ription	Brown, SI	ightly Gravelly, Slightly	/ Sandy C	CLAY.	Depth	1.00 m
Specimen	Ref.	1	Specimen Depth		m	Sample Type	В
Test Meth	od	BS1377:P	art 4:1990, clause 3.5	, 4.5kg ra	mmer	Keylab ID	SLMK20211116105
2.10					Compaction	on Test Reference/No	% Air Voids
2.00			, , ,				% Air Voids
Dry Density, Mg/m3 66				1			
1.80							
1.70							
1.60			10				
	2	6	10 Mo	isture Co	14 ntent, %	18	22
	Preparation		Material us	ed was oven dried at	30degC		
	Mould Type					1 LITRE	
	Samples Used			;	Single sample tested		
	·			%		0	
		%		0			
		Mg/m³		2.65			
	Natural Moisture Content %			16			
Maximum Dry Density Mg/m³ Optimum Moisture Content %			1.93				
			Remarks	,,,		••	<u>_</u>
Operator		Approved					Fig
MS	T Finnimore	T. Finnimore					Sheet 1 of 1

		Dry Density	/ Moisture Conter		Job Ref	S211001
		Heavy Compaction			Borehole / Pit No	TP50
Site Name	•		Envision, Sunderlan	d	Sample No	
Soil Desc	Soil Description Brown, Slightly Sandy, Slightly Gravelly, CLAY. Depth		Depth	1.00 m		
•	ecimen Ref. 1 Specimen Depth m Sample Type			В		
Test Meth	od	BS1377:F	Part 4:1990, clause 3.5, 4		Keylab ID ction Test Reference/No.	SLMK2021111611
2.10 2.00 2.00 1.90	4	8	Moist	12 ure Content, %	——- 5	% Air Voids % Air Voids 0 % Air Voids
Preparation			Materia	used was oven dried at	30degC	
Mould Type Samples Used				1 LITRE		
			%	Single sample tested % 0		
Material Retained on 20.0 mm Sieve %				0		
Particle Density - Assumed Mg/m³				2.65		
Natural Moisture Content %				17		
Maximum Dry Density Mg/m³			Mg/m³	1.93		
Optimum Moisture Content %				10		
	Charled	Approved	Remarks			
Operator	Checked	Approved				Fig

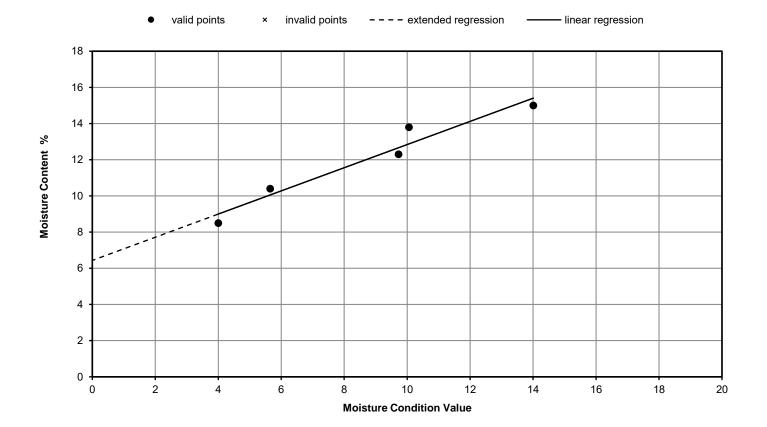
	Moisture Con	Moisture Condition Value / Moisture Content Relationship		Job Ref	S211001
				Borehole/Pit No.	CP01
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	0.4
Specimen Reference		Specimen Depth	m	Sample Type	В
Specimen Description	Brown, CLAY			KeyLAB ID	SLMK202111168
Test Method	BS1377:Part4:1990:cla	use 5.5		Date started	15/12/2021

Amount of material larger than 20mm sieve removed 1 %
Natural Moisture Content of sample 18 %
Initial Moisture Content of test sample below 20mm %

General remarks

Table of results

1	2	3	4	5
8.5	10.4	12.3	13.8	15.0
4.0	5.6	9.7	10.1	14.0
4	5.6	9.7	10.1	14
YES	YES	YES	YES	YES



Tested	Checked	Approved
MS	KW	KW

	Moisture Co	Moisture Condition Value / Moisture Content Relationship		Job Ref	S211001
				Borehole/Pit No.	CP07
Site Name	Envision, Sunderland	Envision, Sunderland			
Soil Description				Depth	0.5
Specimen Reference		Specimen Depth	m	Sample Type	В
Specimen Description	Brown, CLAY	Brown, CLAY			SLMK2021111659
Test Method	BS1377:Part4:1990:cl	ause 5.5		Date started	14/12/2021

Amount of material larger than 20mm sieve removed 0 %

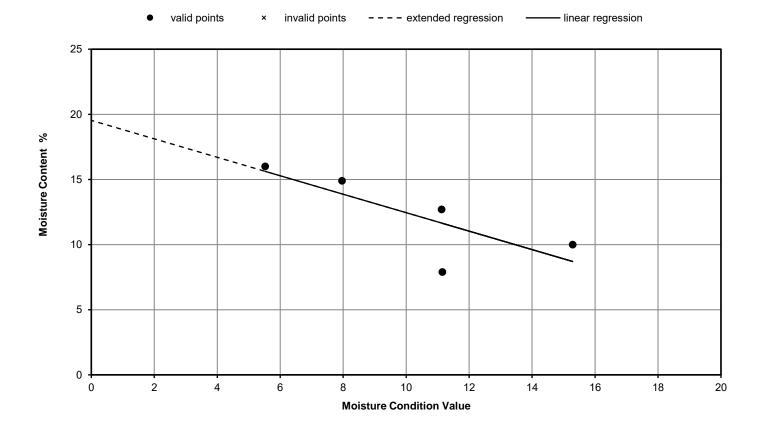
Natural Moisture Content of sample 20 %

Initial Moisture Content of test sample below 20mm %

General remarks

Table of results

1	2	3	4	5
7.9	10.0	12.7	14.9	16.0
11.2	15.3	11.1	8.0	5.5
11.2	15.3	11.1	8	5.5
YES	YES	YES	YES	YES



Tested	Checked	Approved
MS	KW	KW

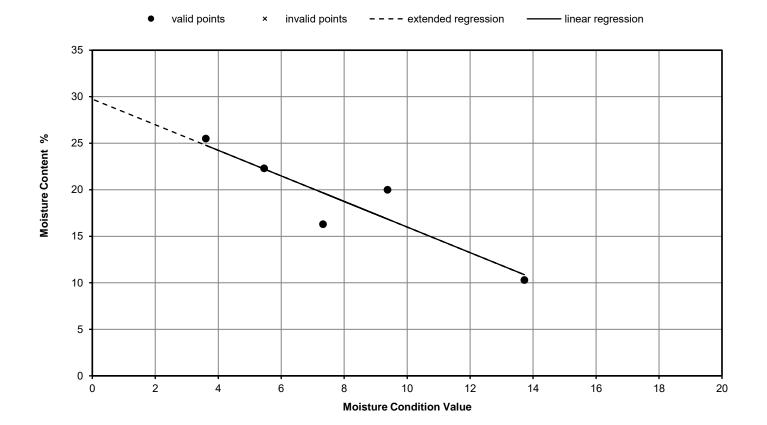
	Moisture Condition Value	Moisture Condition Value / Moisture Content Relationship		S211001
	Relations			TP03
Site Name	Envision, Sunderland		Sample No.	
Soil Description				0.6
Specimen Reference	Specimen Depth	m	Sample Type	В
Specimen Description	Brown, slightly gravelly, slightly san	dy CLAY	KeyLAB ID	SLMK2021120189
Test Method	BS1377:Part4:1990:clause 5.5		Date started	15/12/2021

Amount of material larger than 20mm sieve removed 1 %
Natural Moisture Content of sample 20 %
Initial Moisture Content of test sample below 20mm %

General remarks

Table of results

1	2	3	4	5
25.5	22.3	20.0	16.3	10.3
3.6	5.5	9.4	7.3	13.7
3.6	5.5	9.4	7.3	13.7
YES	YES	YES	YES	YES



Tested	Checked	Approved
MS	TT	T. Finnimore

	Moisture Con	Moisture Condition Value / Moisture Content Relationship		Job Ref	S211001
				Borehole/Pit No.	TP04
Site Name	Envision, Sunderland	Envision, Sunderland		Sample No.	
Soil Description				Depth	1
Specimen Reference		Specimen m Depth		Sample Type	В
Specimen Description	Brown,slightly sandy (Brown, slightly sandy CLAY		KeyLAB ID	SLMK2021120190
Test Method	BS1377:Part4:1990:cla	use 5.5		Date started	17/12/2021

Amount of material larger than 20mm sieve removed 0 %

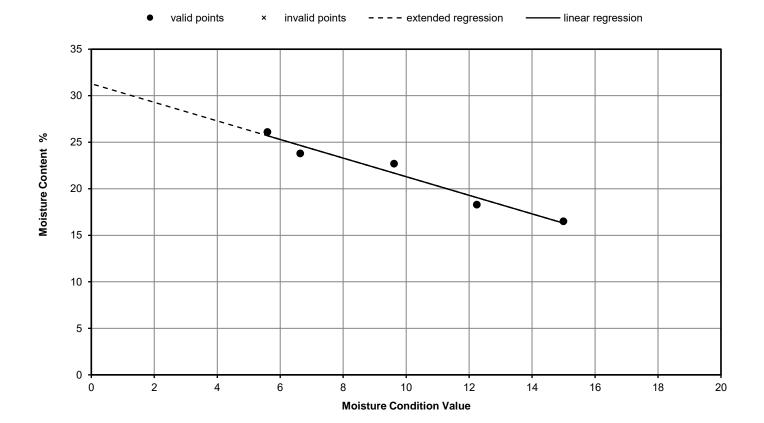
Natural Moisture Content of sample 21 %

Initial Moisture Content of test sample below 20mm %

General remarks

Table of results

1	2	3	4	5
26.1	23.8	22.7	18.3	16.5
5.6	6.6	9.6	12.2	15.0
5.6	6.6	9.6	12.2	15
YES	YES	YES	YES	YES



Tested	Checked	Approved
MS	JВ	JBrischuk

	Moisture Co	Moisture Condition Value / Moisture Content Relationship		Job Ref	S211001
				Borehole/Pit No.	TP05
Site Name	Envision, Sunderland	Envision, Sunderland			
Soil Description				Depth	1
Specimen Reference		Specimen m Depth			В
Specimen Description	Brown, CLAY	Brown, CLAY			SLMK2021111673
Test Method	BS1377:Part4:1990:cl	ause 5.5		Date started	02/12/2021

Amount of material larger than 20mm sieve removed 0 %

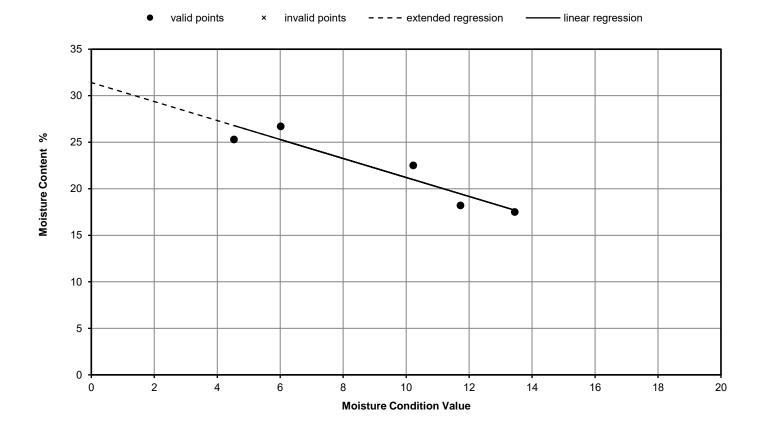
Natural Moisture Content of sample 22.5 %

Initial Moisture Content of test sample below 20mm %

General remarks

Table of results

1	2	3	4	5
22.5	26.7	18.2	17.5	25.3
10.2	6.0	11.7	13.5	4.5
10.2	6	11.7	13.5	4.5
YES	YES	YES	YES	YES



Tested	Checked	Approved
MS	JB	JBrischuk

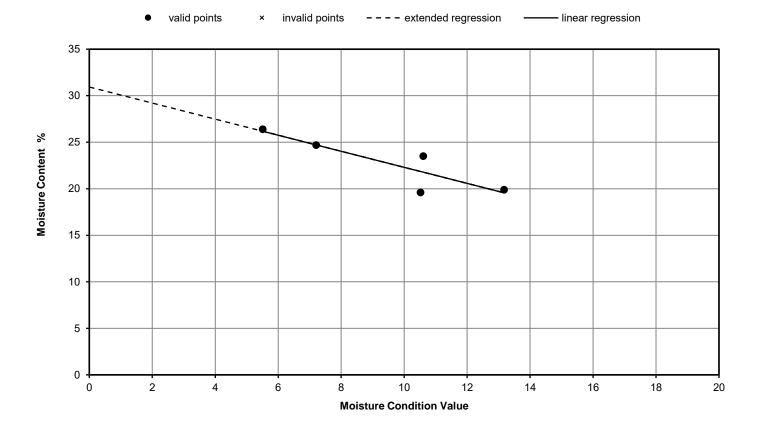
	Moisture Cond	Moisture Condition Value / Moisture Content Relationship		Job Ref	S211001
				Borehole/Pit No.	TP06
Site Name	Envision, Sunderland	Envision, Sunderland			
Soil Description				Depth	1.4
Specimen Reference		Specimen m			В
Specimen Description	Brown, CLAY	Brown, CLAY			SLMK2021120193
Test Method	BS1377:Part4:1990:clau	use 5.5		Date started	

Sample preparation	Amount of material larger than 20mm sieve removed	5	%
	Natural Moisture Content of sample	22	%
	Initial Moisture Content of test sample below 20mm	23.5	%

General remarks

Table of results

1	2	3	4	5
26.4	24.7	19.6	23.5	19.9
5.5	7.2	10.5	10.6	13.2
5.5	7.2	10.5	10.6	13.2
YES	YES	YES	YES	YES



Tested	Checked	Approved
MS	TF	T. Finnimore

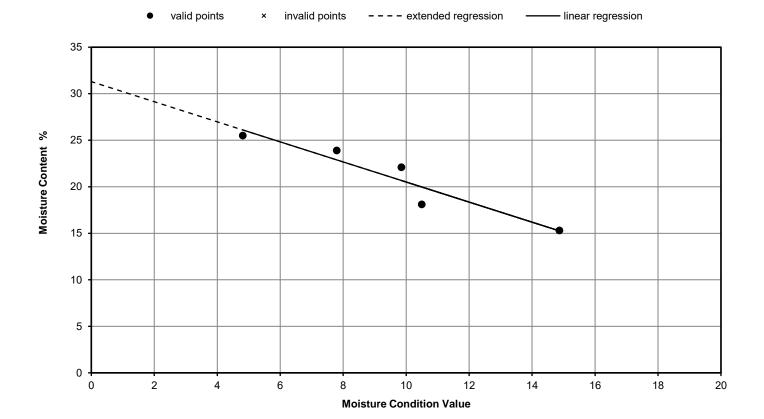
	Moisture Condition Value / Moisture Content		Job Ref	S211001	
		Relationship		Borehole/Pit No.	TP08
Site Name	Envision, Sunderland	Envision, Sunderland		Sample No.	
Soil Description				Depth	0.7
Specimen Reference		Specimen m			В
Specimen Description	Brown, Slightly Gravelly, Slightly Sandy, CLAY.		KeyLAB ID	SLMK2021120194	
Test Method	BS1377:Part4:1990:clau	use 5.5		Date started	

Amount of material larger than 20mm sieve removed 0 %
Natural Moisture Content of sample 22 %
Initial Moisture Content of test sample below 20mm %

General remarks

Table of results

1	2	3	4	5
22.1	15.3	18.1	23.9	25.5
9.9	14.9	10.5	7.8	4.8
9.9	14.9	10.5	7.8	4.8
YES	YES	YES	YES	YES



Tested	Checked	Approved	
MS	TF	T. Finnimore	

	Moisture Cor	Moisture Condition Value / Moisture Content Relationship		Job Ref	S211001
				Borehole/Pit No.	TP09
Site Name	Envision, Sunderland	Envision, Sunderland		Sample No.	
Soil Description				Depth	1.2
Specimen Reference		Specimen m Depth		Sample Type	В
Specimen Description	Brown, CLAY	Brown, CLAY			SLMK2021120196
Test Method	BS1377:Part4:1990:cla	ause 5.5		Date started	17/12/2021

Amount of material larger than 20mm sieve removed 0 %

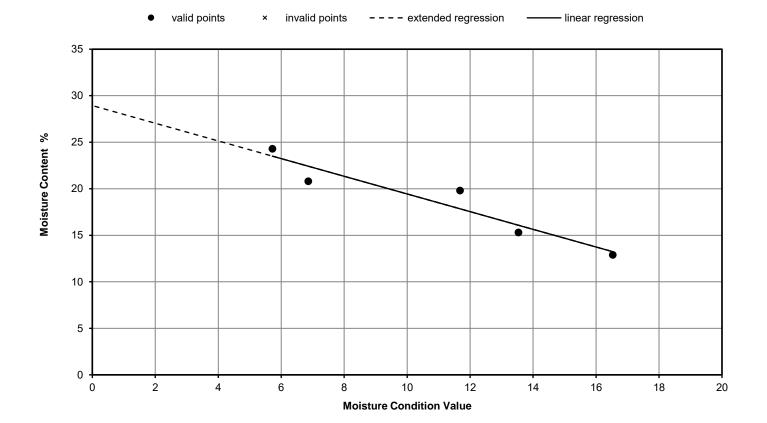
Natural Moisture Content of sample 20 %

Initial Moisture Content of test sample below 20mm 20 %

General remarks

Table of results

1	2	3	4	5
24.3	20.8	19.8	15.3	12.9
5.7	6.9	11.7	13.5	16.5
5.7	6.9	11.7	13.5	16.5
YES	YES	YES	YES	YES
	1	1	1	



Tested	Checked	Approved
MS	JB	JBrischuk

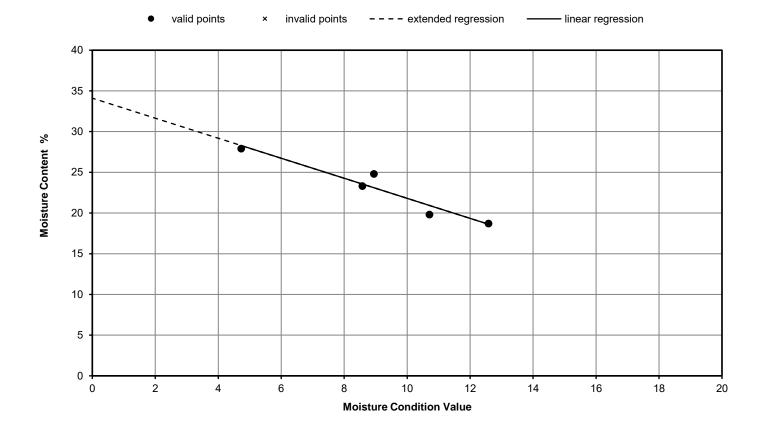
	Moisture Condition Va	Moisture Condition Value / Moisture Content Relationship		S211001
	Relatio			TP10
Site Name	Envision, Sunderland	Envision, Sunderland		
Soil Description				0.8
Specimen Reference	Specimen Depth	Specimen m		В
Specimen Description	Brown, Slightly Gravelly, Slightly Sandy, CLAY		KeyLAB ID	SLMK2021120198
Test Method	BS1377:Part4:1990:clause 5.5		Date started	

Amount of material larger than 20mm sieve removed 0 %
Natural Moisture Content of sample 25 %
Initial Moisture Content of test sample below 20mm %

General remarks

Table of results

1	2	3	4	5
27.9	23.3	24.8	19.8	18.7
4.7	8.6	8.9	10.7	12.6
4.7	8.6	8.9	10.7	12.6
YES	YES	YES	YES	YES



Tested	Checked	Approved
MS	TF	T. Finnimore

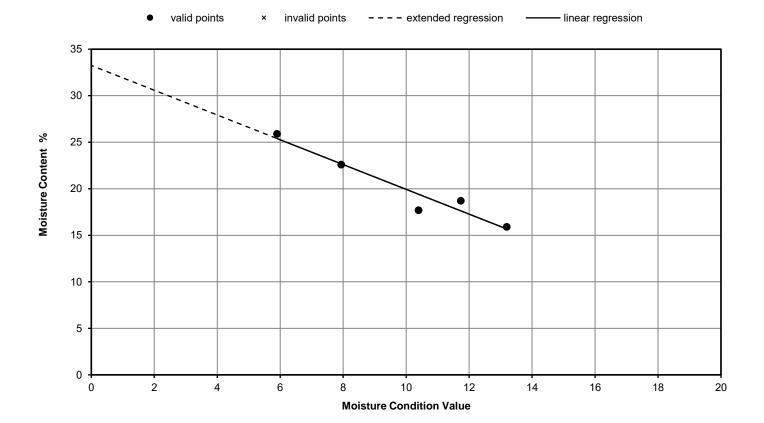
	Moisture Con	Moisture Condition Value / Moisture Content Relationship		Job Ref	S211001
				Borehole/Pit No.	TP11
Site Name	Envision, Sunderland	Envision, Sunderland			
Soil Description				Depth	0.5
Specimen Reference		Specimen m Depth		Sample Type	В
Specimen Description	Brown, slightly sandy,	Brown, slightly sandy, slightly gravelly, CLAY		KeyLAB ID	SLMK20211201100
Test Method	BS1377:Part4:1990:cla	use 5.5		Date started	16/12/2021

Sample preparation	Amount of material larger than 20mm sieve removed	33	%
	Natural Moisture Content of sample	19	%
	Initial Moisture Content of test sample below 20mm	19	%

General remarks

Table of results

1	2	3	4	5
25.9	22.6	17.7	18.7	15.9
5.9	7.9	10.4	11.7	13.2
5.9	7.9	10.4	11.7	13.2
YES	YES	YES	YES	YES



Tested	Checked	Approved
MS	JB	JBrischuk

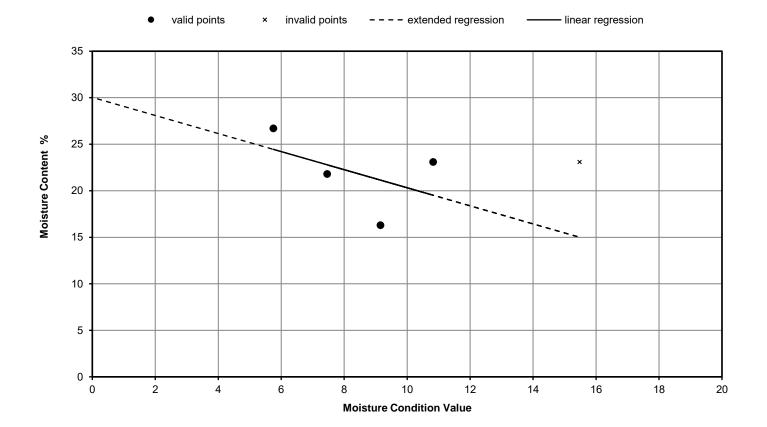
	Moisture Con	Disture Condition Value / Moisture Content Relationship		Job Ref	S211001
				Borehole/Pit No.	TP12
Site Name	Envision, Sunderland	Envision, Sunderland		Sample No.	
Soil Description				Depth	0.3
Specimen Reference		Specimen m Depth		Sample Type	В
Specimen Description	Brown, CLAY	Brown, CLAY			SLMK20211201102
Test Method	BS1377:Part4:1990:cla	use 5.5		Date started	14/12/2021

Sample preparation	Amount of material larger than 20mm sieve removed	1	%
	Natural Moisture Content of sample	19	%
	Initial Moisture Content of test sample below 20mm	19	%

General remarks

Table of results

1	2	3	4	5
26.7	16.3	23.1	21.8	23.1
5.8	9.2	10.8	7.5	15.5
5.8	9.2	10.8	7.5	15.5
YES	YES	YES	YES	NO



Tested	Checked	Approved
M.Southgate	KW	KW

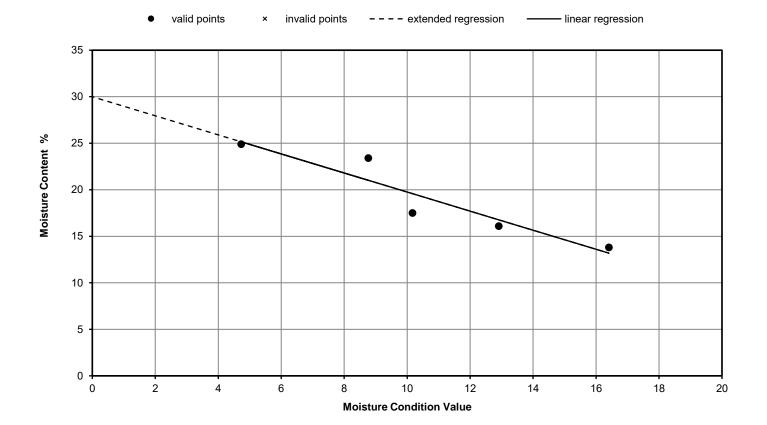
	Moisture Condition Value / Moisture Content Relationship		Job Ref	S211001
			Borehole/Pit No.	TP13
Site Name	Envision, Sunderland		Sample No.	
Soil Description			Depth	1.2
Specimen Reference	Specimen Depth	m	Sample Type	В
Specimen Description	Brown, slightly sandy, slightly gravelly CLAY		KeyLAB ID	SLMK20211201105
Test Method	BS1377:Part4:1990:clause 5.5		Date started	24/11/2021

Amount of material larger than 20mm sieve removed 0 %
Natural Moisture Content of sample 23 %
Initial Moisture Content of test sample below 20mm %

General remarks

Table of results

1	2	3	4	5
23.4	24.9	17.5	16.1	13.8
8.8	4.7	10.2	12.9	16.4
8.8	4.7	10.2	12.9	16.4
YES	YES	YES	YES	YES



Tested	Checked	Approved
MS	TF	T. Finnimore

	Moisture Con	Moisture Condition Value / Moisture Content Relationship		Job Ref	S211001
				Borehole/Pit No.	TP14
Site Name	Envision, Sunderland	Envision, Sunderland		Sample No.	
Soil Description				Depth	1.5
Specimen Reference		Specimen Depth	m	Sample Type	В
Specimen Description	Brown, slightly sandy CLAY		KeyLAB ID	SLMK20211201107	
Test Method	BS1377:Part4:1990:cla	use 5.5		Date started	10/12/2021

Sample preparation Amount of material larger than 20mm sieve removed 0

Natural Moisture Content of sample 21

Initial Moisture Content of test sample below 20mm 21 %

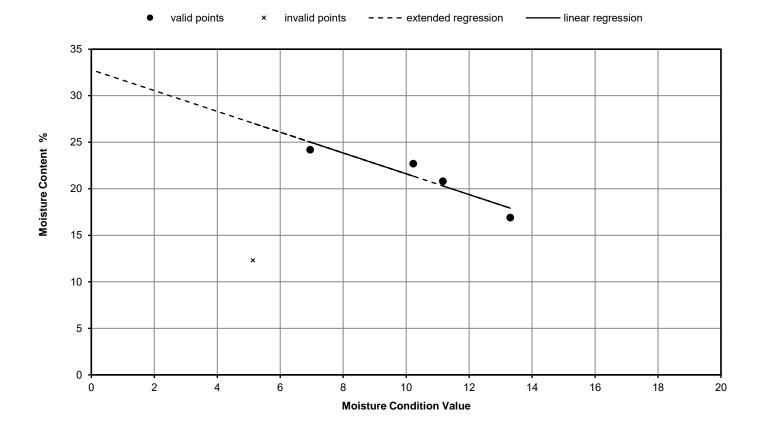
%

%

General remarks

Table of results

1	2	3	4	5
20.8	16.9	12.3	22.7	24.2
11.2	13.3	5.1	10.2	7.0
11.2	13.3	5.1	10.2	7
YES	YES	NO	YES	YES



Tested	Checked	Approved
M.Southgate	KW	KW

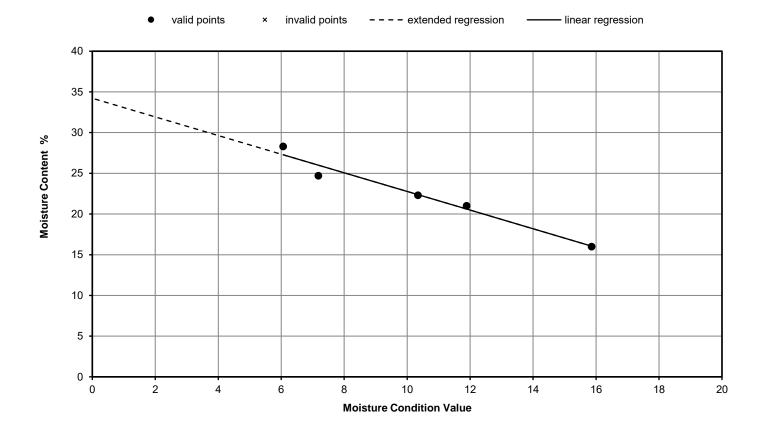
	Moisture Conditio	Moisture Condition Value / Moisture Content Relationship		Job Ref	S211001
	Re			Borehole/Pit No.	TP15
Site Name	Envision, Sunderland	Envision, Sunderland		Sample No.	
Soil Description				Depth	0.6
Specimen Reference	Spe Dep	ecimen pth	m	Sample Type	В
Specimen Description	Brown, Slightly Sandy, Slightly Gravelly, CLAY.		KeyLAB ID	SLMK20211201109	
Test Method	BS1377:Part4:1990:clause 5.	.5		Date started	

Amount of material larger than 20mm sieve removed 1 %
Natural Moisture Content of sample 22.3 %
Initial Moisture Content of test sample below 20mm %

General remarks

Table of results

1	2	3	4	5
16.0	21.0	22.3	24.7	28.3
15.9	11.9	10.3	7.2	6.1
15.9	11.9	10.3	7.2	6.1
YES	YES	YES	YES	YES
	!	1	1	



Tested	Checked	Approved
MS	TF	T. Finnimore

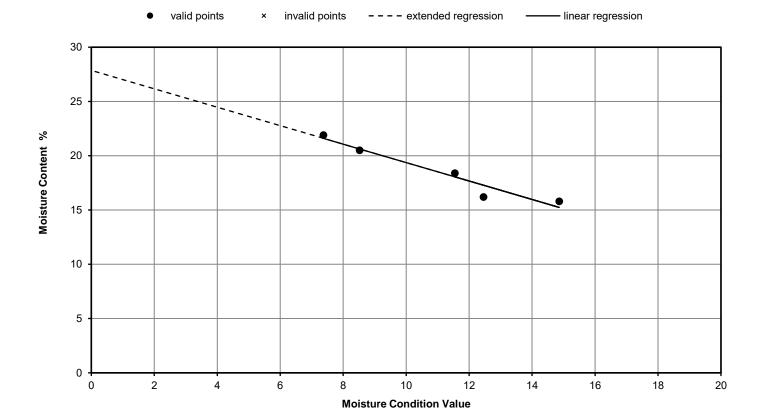
	Moisture Condition	Moisture Condition Value / Moisture Content		Job Ref	S211001
	Relationship		Borehole/Pit No.	TP21	
Site Name	Envision, Sunderland	Envision, Sunderland		Sample No.	
Soil Description				Depth	1
Specimen Reference	Spe Dep	ecimen pth	m	Sample Type	В
Specimen Description	Brown, Slightly Gravelly, Sligh	Brown, Slightly Gravelly, Slightly Sandy, CLAY.		KeyLAB ID	SLMK2021111685
Test Method	BS1377:Part4:1990:clause 5.	.5		Date started	

Amount of material larger than 20mm sieve removed 1 %
Natural Moisture Content of sample 18 %
Initial Moisture Content of test sample below 20mm %

General remarks

Table of results

1	2	3	4	5
18.4	15.8	16.2	20.5	21.9
11.5	14.9	12.5	8.5	7.4
11.5	14.9	12.5	8.5	7.4
YES	YES	YES	YES	YES



Tested	Checked	Approved
MS	TF	T. Finnimore

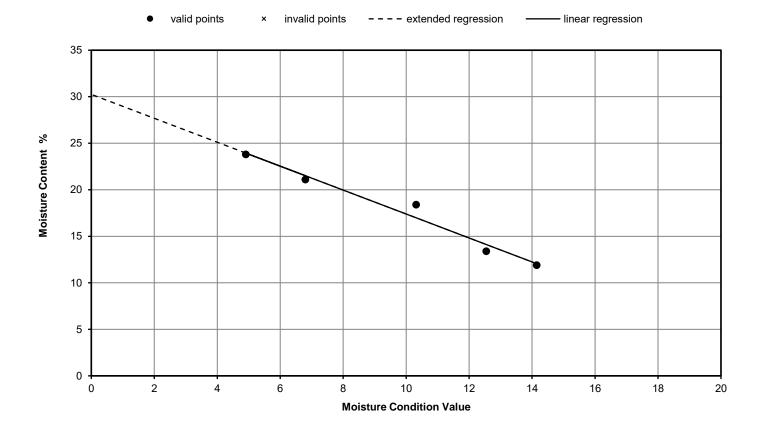
	Moisture Con	Moisture Condition Value / Moisture Content Relationship		Job Ref	S211001
				Borehole/Pit No.	TP23
Site Name	Envision, Sunderland	Envision, Sunderland		Sample No.	
Soil Description				Depth	1.6
Specimen Reference		Specimen Depth	m	Sample Type	В
Specimen Description	Brown, Slightly Gravelly	Brown, Slightly Gravelly, Slightly Sandy, CLAY.		KeyLAB ID	SLMK20211201114
Test Method	BS1377:Part4:1990:cla	use 5.5		Date started	

Amount of material larger than 20mm sieve removed 1 %
Natural Moisture Content of sample 18.4 %
Initial Moisture Content of test sample below 20mm %

General remarks

Table of results

1	2	3	4	5
11.9	13.4	18.4	23.8	21.1
14.1	12.5	10.3	4.9	6.8
14.1	12.5	10.3	4.9	6.8
YES	YES	YES	YES	YES



Tested	Checked	Approved
MS	TF	T. Finnimore

	Moisture Con	Moisture Condition Value / Moisture Content Relationship		Job Ref	S211001
				Borehole/Pit No.	TP33
Site Name	Envision, Sunderland	Envision, Sunderland		Sample No.	
Soil Description				Depth	1
Specimen Reference		Specimen Depth	m	Sample Type	В
Specimen Description	Brown CLAY	Brown CLAY		KeyLAB ID	SLMK2021111696
Test Method	BS1377:Part4:1990:cla	ause 5.5		Date started	02/12/2021

Amount of material larger than 20mm sieve removed 0 %

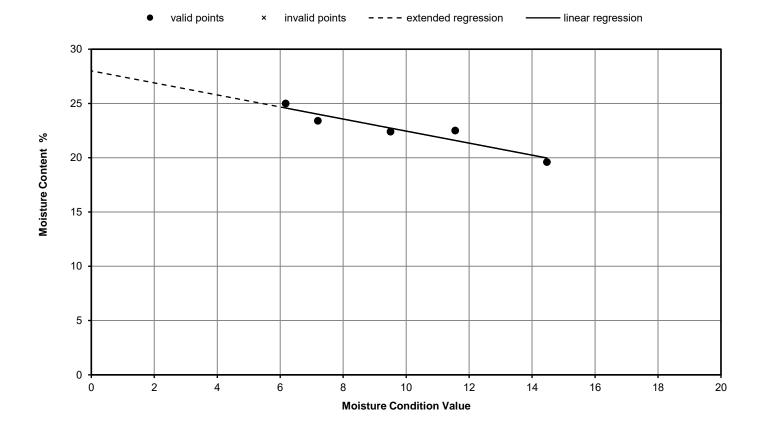
Natural Moisture Content of sample 22.5 %

Initial Moisture Content of test sample below 20mm %

General remarks

Table of results

1	2	3	4	5
25.0	23.4	22.4	22.5	19.6
6.2	7.2	9.5	11.6	14.5
6.2	7.2	9.5	11.6	14.5
YES	YES	YES	YES	YES



Tested	Checked	Approved
MS	JВ	JBrischuk

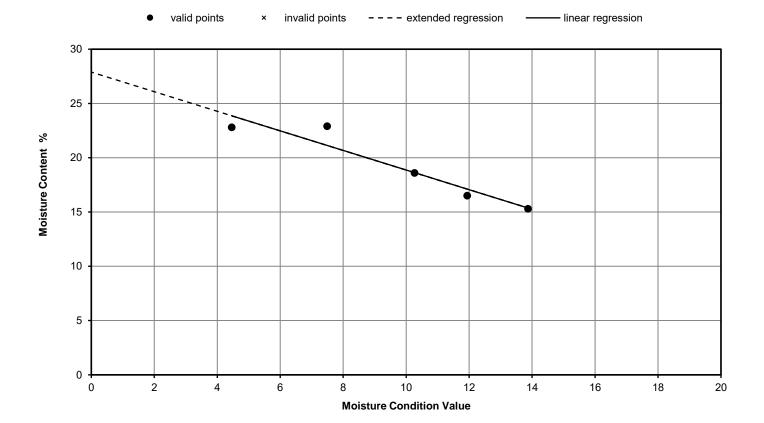
	Moisture Con	Moisture Condition Value / Moisture Content Relationship		Job Ref	S211001
				Borehole/Pit No.	TP46
Site Name	Envision, Sunderland	Envision, Sunderland		Sample No.	
Soil Description				Depth	1
Specimen Reference		Specimen Depth	m	Sample Type	В
Specimen Description	Brown, slightly gravel	Brown, slightly gravelly, slightly sandy CLAY		KeyLAB ID	SLMK20211116105
Test Method	BS1377:Part4:1990:cla	use 5.5		Date started	16/11/2021

Amount of material larger than 20mm sieve removed 99 %
Natural Moisture Content of sample 23 %
Initial Moisture Content of test sample below 20mm %

General remarks

Table of results

1	2	3	4	5
22.8	22.9	18.6	16.5	15.3
4.5	7.5	10.3	11.9	13.9
4.5	7.5	10.3	11.9	13.9
YES	YES	YES	YES	YES



Tested	Checked	Approved
MS	JВ	JBrischuk

_	_					-								
	Californ	ia Bearing R	Ratio (CBR))	Job Ref	S211001								
	-			,	Borehole/Pit No.	CP01								
Site Name	Envision, Sunderland				Sample No.									
Soil Description					Depth m	0.40								
Specimen Reference		Specimen Depth		m	Sample Type	В								
Specimen Description	Brown, CLAY				KeyLAB ID	SLMK202111168								
Test Method	BS1377 : Part 4 : 1990), clause 7			CBR Test Number	1								
Specimen Preparation Condition Details	Details Recompacted with specified standard effort using 2.5kg rammer Time to surface													
Material re	etained on 20mm sieve r	%	Time to surface days Amount of swell recorded mm Dry density after soaking Mg/m3											
Initial Spe	cimen details Bulk Dry c Mois	Mg/m3 Mg/m3 %	Surcharge applied	16.5 kg 10 kPa										
		Force v Pen	netration Plots											
2.50														
2.00														
						× Top data								
₹ 1.50						*·Top values								
						—— Top correction								
Force Applied						—● Base data								
j 1.00						• Base values								
						—— Base Correction								
0.50														
0.00			<u> </u>											
0	1 2	3 Penetra	4 5 ation mm	6	7 8	3								
Results	Curve	CI	BR Values, %	1	Moisture									
	correction applied	Average	Content %											
TOF		8.9	20.9											
BAS			.4 8.9		20.3									
General remark	S	Test specific rem	arks	Appro		Fig No.								
					KW	Sheet No 1								
Lab Sheet Reference	:													

	Californ	ia Danima F	natio (CDD	`	Job F	Ref	S211001							
	Californ	ia Bearing F	Ratio (CBR)	Bore	hole/Pit No.	CP07							
Site Name	Envision, Sunderland				Sam	ole No.								
Soil Description					Dept	h m	0.50							
Specimen Reference		Specimen Depth		m	Sam	ole Type	В							
Specimen Description	Brown, CLAY				KeyL	AB ID	SLMK2021111659							
Test Method	BS1377 : Part 4 : 1990	, clause 7		CBR	Test Number	1								
Condition Details	· · · · · · · · · · · · · · · · · · ·													
Initial Spec	ing Mg/m3 16.5 kg 10 kPa													
1.60		Force v Fer	netration Plots											
1.40														
1.40					*	**								
1.20							─× Top data							
₹ 1.00			200				*·Top values							
bblied 0.80		No.					—— Top correction							
Porce Applie							Base data							
0.60							• Base values							
0.40							Base Correction							
0.20														
0.00														
0	1 2	3 Penetra	4 5 ation mm	6		7 8								
Results	Curve correction	C	BR Values, %	1	_	Moisture Content								
	applied	Average] [%										
TOP BAS	19.7 21.0													
General remarks		4.8 5 Test specific rem	5.4 5.4 narks	App	roved		Fig No.							
2 S. S. S. FORMAN	KW Sheet No 2													
Lab Sheet Reference														

-						<u> </u>
	Californ	nia Bearing R	Ratio (CBR))	Job Ref	S211001
			(32.1)	•	Borehole/Pit No.	TP03
Site Name	Envision, Sunderland				Sample No.	
Soil Description					Depth m	0.60
Specimen Reference		Specimen Depth		m	Sample Type	В
Specimen Description	Brown, Slightly Gravel	ly, Slightly Sandy,	CLAY.		KeyLAB ID	SLMK2021120189
Test Method	BS1377 : Part 4 : 1990), clause 7			CBR Test Number	1
Specimen Preparation	on REMOULDED	Soaking details	Not soaked			
Details	days days					
Material re	etained on 20mm sieve r	Amount of swell record Dry density after soak				
Initial Spec	cimen details Bulk Dry c Mois	Surcharge applied	16.5 kg 10 kPa			
		Force v Per	netration Plots			
1.60						
1.40						
4.00						
1.20				A PARTY OF THE PAR		— × — Top data
₹ 1.00						*·Top values
bblied 0.80						—— Top correction
Force Applied						—●— Base data
ū 0.60						• Base values
0.40						Base Correction
0.20						
0.00						
0	1 2	3 Penetra	4 5 ation mm	6	7 8	3
Results	Curve		BR Values, %	1	Moisture	
	correction applied	Average	Content %			
TOP	18.9					
BAS			.3 5.3		18.6	
General remarks	8	Test specific rem	narks	Appr		Fig No.
					T. Finnimore	Sheet No 3
Lab Sheet Reference	:					

	Californi	ia Doorina F	netic / CDD	`	Job Ref	S211001									
	Californ	ia Bearing F	tatio (CBR)	Borehole/Pit No.	TP04									
Site Name	Envision, Sunderland				Sample No.										
Soil Description					Depth m	1.00									
Specimen Reference		Specimen Depth		m	Sample Type	В									
Specimen Description	Brown, Slightly Sandy,				KeyLAB ID	SLMK2021120190									
Test Method	BS1377 : Part 4 : 1990), clause 7			CBR Test Number	1									
Condition Details	· · · · · · · · · · · · · · · · · · ·														
Material re															
Initial Spe	Initial Specimen details Bulk density Dry density after s 1.99 Mg/m3 Surcharge applied Dry density 1.60 Mg/m3 Moisture content 24.0 %														
		Force v Per	netration Plots												
1.20															
1.00					*****										
¥				***	***	−−×−− Top data									
0.80 }		- V	***************************************			*· Top values									
0.60 bblied			سامسور			——Top correction									
Force Applied		معمو				Base data									
0.40						• Base values									
0.40	Jan					Base Correction									
0.20															
0.00															
0	1 2	3 Penetra	4 5 ation mm	6	7 8										
Results	Curve		BR Values, %	T	Moisture										
	correction applied	2.5mm 5r	nm Highest	Average	Content %										
TOF			.1 4.4		23.4										
BASE 3.3 3.3 24.0															
General remark	S	Test specific rem	narks	Appro		Fig No. 1									
					KW	Sheet No 4									
Lab Sheet Reference	:														

	Californ	nia Boaring F	Patio (CBP)		Job Ref	S211001							
	Californ	nia Bearing R	Ratio (CBR)		Borehole/Pit No.	TP05							
Site Name	Envision, Sunderland				Sample No.								
Soil Description					Depth m	1.00							
Specimen Reference		Specimen Depth		m	Sample Type	В							
Specimen Description	Brown, CLAY.		•		KeyLAB ID	SLMK2021111673							
Test Method	BS1377 : Part 4 : 199	0, clause 7		CBR Test Number	1								
Specimen Preparati Condition Details	Not soaked days days ded mm												
Material ı	ng Mg/m3												
Initial Specimen details Bulk density 2.01 Mg/m3 Surcharge applied 16.5 kg Dry density 1.64 Mg/m3 Moisture content 22.3 %													
4.40		Force v Per	netration Plots										
1.40					***								
1.00				***									
Z						—×— Top data* Top values							
0.80						Top correction							
Porce Applied						—● Base data • Base values							
0.40						Base Correction							
0.20													
0.00	1 2	3 Penetra	4 5 ation mm	6	7 8								
Results	Curve		BR Values, %		Moisture								
	correction applied	2.5mm 5n	nm Highest	Average	Content %								
TOP 5.3 5.1 5.3 5.1 5.3 21.7 BASE 5.3 5.2 5.3 5.3 20.9													
General remark		Test specific rem		Appr	J	Fig No.							
Scholar lentan		. cot specific refi	NO		KW	Sheet No 5							
Lab Sheet Reference) :	1		<u> </u>									

									lok	Ref	S211001	
			Californ	ia Beari	ng Rat	io (CBR)					
6:: .:										rehole/Pit No.	TP06	
Site Nam		Envision, S	underland							mple No.		
Soil Des	-			Or '	_				De	pth m	1.40	
Specime Reference	e			Specimer Depth	n			m	Sa	mple Type	В	
Specime Descripti		Brown, CLA	AY.						Ke	yLAB ID	SLMK2021120193	
Test Met	hod	BS1377 : F	Part 4 : 1990	, clause 7			СВ	R Test Number	1			
Specimen	Preparation Condition Details	ing details Ind of soaking Ito surface Indicate to surface	Not soaked days days ded mm									
	Material re	lensity after soak	ing Mg/m3									
	Initial Spec	narge applied	16.5 kg 10 kPa									
0.4	4			Force	v Penetr	ation Plots						
0.1	4											
0.1	2	_	_	_				+		, x		
0.1	0								× ×			
							, x x	\downarrow	ممر		─ × Top data	
0	8 *						<u> </u>	+			* Top values	
Appli											Top correction Base data	
Force Applie	06											
											• Base values Base Correction	
0.0	d			-							Base Correction	
0.0	2							+				
0.0	0 0	1	2	3	4	5		6		7 8	3	
				P	enetration	n mm			ī			
Resu	ılts		Curve correction			Values, %				Moisture Content		
			applied	2.5mm 0.3	5mm 0.4	Highest	Ave	rage		%		
	TOP BAS			18.2 17.4								
_				0.3	0.4	0.4		Δ.			[Fig.Ni	
Gene	eral remarks	3		Test specifi	ıc remark	S		Appr			Fig No. 1	
KW Sheet No												
Lab Sheet	Reference	:										

	1					<u> </u>		1						
	Californ	nia Bearing F	Ratio (CB	R)		Job F	Ref	S211001						
	Gain.o		(0 2	,		Borel	nole/Pit No.	TP08						
Site Name	Envision, Sunderland					Samp	ole No.							
Soil Description						Depth	ı m	0.70						
Specimen Reference		Specimen Depth			m	Samp	ole Type	В						
Specimen Description	Brown, slightly sandy,		CLAY.			KeyL	AB ID	SLMK2021120194						
Test Method	BS1377 : Part 4 : 1990), clause 7		CBR	Test Number	1								
Specimen Preparation Condition Details	REMOULDED Recompacted wirenamer	Period Time to	g details of soaking surface	Not soaked days days										
Material re	etained on 20mm sieve r		t of swell record nsity after soaki											
Initial Spe	cimen details Bulk Dry o Mois	/m3 /m3	Surcha	rge applied	16.5 kg 10 kPa									
	Moisture content 19.0 % Force v Penetration Plots													
1.20														
1.00							***							
				_ ا	,,,	میر موسور		× Top data						
0.80 Z				- A-A-	1			*·Top values						
Р								—— Top correction						
Force Applie		A PARTIES AND A						—● Base data						
1								• Base values						
0.40								Base Correction						
0.20			<u> </u>		+									
0.00														
0.00	1 2	3 Penetra	4 ation mm	5	6		7 8							
Results	Curve		BR Values, %	6			Moisture							
	correction applied	verage		Content %										
TOP		3.7		19.9										
BAS		3.2 3	3.5			19.6								
General remarks	8	Test specific rem	narks		Appr	oved		Fig No. 1						
		KW Sheet No		Sheet No 7										
Lab Sheet Reference	:	1												

Job Ref S211001													
	Califor	nia Bearing F	Ratio (CBF	2)		Job Re	ef ————	S211001					
			. ,			Boreho	ole/Pit No.	TP09					
Site Name	Envision, Sunderland					Sampl	e No.						
Soil Description						Depth	m	1.20					
Specimen Reference		Specimen Depth			m	Sampl	е Туре	В					
Specimen Description	Brown, CLAY.					KeyLA	.B ID	SLMK2021120196					
Test Method	BS1377 : Part 4 : 199	0, clause 7				CBR T	est Number	1					
Specimen Preparation Condition Details	REMOULDED Recompacted w rammer	Time to	f soaking surface of swell record										
Material re	tained on 20mm sieve	Dry dens	sity after soaki	ing Mg/m3									
Initial Spec	cimen details Bulk Dry Moi:	3	Surcharo	ge applied	16.5 kg 10 kPa								
		Force v Pe	netration Plots										
1.80													
1.60					_								
4.40						Mary Mary	***						
1.40				W. W. W.	1	•							
1.20					+			─ × Top data					
R 1.00			1					* Top values					
Applie	·							—— Top correction					
Force Applie		*			+			Base data					
0.60		1			+			• Base values					
0.40								Base Correction					
0.40													
0.20	/				\dagger								
0.00													
0	1 2	3 Penetr	4 5 ration mm		6		7 8						
Results	Curve	С	BR Values, %				loisture						
	correction applied	age		Content %									
TOP		6	1 📙	19.5									
BAS	E	6.9	6.9	0.	19.3								
General remarks	S	Test specific ren	narks	Ī	Appro	oved		Fig No.					
						KW		Sheet No 8					
Lab Sheet Reference	:	1											

						Job Re	f	S211001							
	Califorr	nia Bearing F	Ratio (CB	R)		Boreho	le/Pit No.	TP10							
Site Name	Envision, Sunderland					Sample	e No.								
Soil Description						Depth	m	0.80							
Specimen Reference		Specimen Depth			m	Sample	е Туре	В							
Specimen Description	Brown, Slightly Sandy	, Slightly Gravelly,	CLAY.			KeyLA	B ID	SLMK2021120198							
Test Method	BS1377 : Part 4 : 1990), clause 7		CBR T	est Number	1									
Specimen Preparation Condition Details	Details Recompacted with specified standard effort using 2.5kg Period of soaking rammer Time to surface Amount of swell recompacted.														
Material re															
Initial Spec	Initial Specimen details Bulk density Dry density after so 1.97 Mg/m3 Surcharge applied Dry density 1.55 Mg/m3 Moisture content 26.8 %														
	Moisture content 26.8 % Force v Penetration Plots														
0.90															
0.80															
0.70						W. W.	مم								
0.60			ļ					─× Top data							
₹ 0.00								*·Top values							
polled			1					—— Top correction							
Force Applie					-			Base data							
0.30								• Base values							
0.20								Base Correction							
0.10															
0.00															
0.00	1 2	3 Penetr	4 ation mm	5	6	-	7 8	:							
Results	Curve		BR Values, %	6		- 1	oisture								
	correction applied	2.5mm 5r	mm High	est A	verage		ontent %								
TOP BAS			3.1 3.1 3.0 3.0		3.1	_	24.5 25.0								
General remarks	General remarks Test specific remarks Approved T. Finnimore Sheet No														
Lab Sheet Reference	:														

											1			1 1
				Californ	ia Beari	ina R	atio	(CBR	()		L	Job F	Ref	S211001
								,				Bore	hole/Pit No.	TP11
Site	Name		Envision, S	Sunderland								Sam	ole No.	
Soil	Descrip	tion										Dept	h m	0.50
	cimen erence				Specime Depth	en				m		Sam	ole Type	В
	cimen cription		Brown, Sli	ghtly Sandy,		avelly,	CLAY	' .				KeyL	AB ID	SLMK20211201100
	Method	d	BS1377 : I	Part 4 : 1990), clause 7						\dagger	CBR	Test Number	1
Specii	Specimen Preparation Condition REMOULDED Soa Details Recompacted with specified standard effort using 2.5kg rammer Tim Amount of the control of the contr													Not soaked days days rded mm
	Material retained on 20mm sieve removed 0 %													king Mg/m3
	Material retained on 20mm sieve removed 0 % Initial Specimen details Bulk density 2.02 Mg/m3 Dry density 1.70 Mg/m3 Moisture content 19.1 %												rge applied	16.5 kg 10 kPa
	0.50				Force	v Pen	etrati	on Plots						
	2.50													
	2.00										_			
	•	.					 		اسوار					─ × Top data
Ϋ́	1.50													∗ ∙ Top values
Force Applied	i													Top correction Base data
Forc	1.00		<i>**</i>											• Base values
	0.50													——— Base Correction
	0.00	0	1	2	3 F	Penetra	4 ition r	5 mm		6			7	8
F	Results			Curve		CE	3R Va	lues, %				Γ	Moisture	
	Results Curve CBR Values, % correction applied 2.5mm 5mm Highest Average												Content %	
	TOP 9.0 8.4 9.0 8.9 8.9												19.0	
		BASI			8.8	8.	.3	8.8			19.3			
Γ	General	remarks			Test speci	fic rem	arks			Арр	rov			Fig No.
												KW Sheet No 10		
Lab Sh	neet Re	ference :								•				

							1							
	Californ	nia Bearing F	Ratio (CBR	:)	Job	Ref	S211001							
			,	,	Bore	ehole/Pit No.	TP12							
Site Name	Envision, Sunderland				Sam	nple No.								
Soil Description					Dep	th m	0.30							
Specimen Reference		Specimen Depth		m	Sam	iple Type	В							
Specimen Description	Brown, CLAY.	2 9 5 11 1			Keyl	LAB ID	SLMK20211201102							
Test Method	BS1377 : Part 4 : 1990), clause 7		CBF	R Test Number	1								
Specimen Preparation Condition Details	· ·													
Material re														
Initial Spe	Material retained on 20mm sieve removed 1 % Dry density after so Initial Specimen details Bulk density 1.94 Mg/m3 Surcharge applied Dry density 1.55 Mg/m3 Moisture content 25.0 %													
1.20		Force v Per	netration Plots											
1.20														
1.00														
1.00					مسمر									
0.80				مممر		, ****	─× Top data							
₹ 0.00			الممم	****			- Top values							
b *		معرب					—— Top correction							
Force Applie		A A					Base data							
							• Base values							
0.40							Base Correction							
0.20														
0.00														
0	1 2	3 Penetra	4 5 ation mm	6		7 8	1							
Results	Curve	С	BR Values, %			Moisture Content								
	correction applied		%											
	TOP 3.0 3.4 3.4 3.7 25.1 BASE 4.0 4.1 4.1 24.3													
		<u> </u>			J L	24.3								
General remark	5	Test specific rem	narks	Ар <u>г</u> I	roved		Fig No. 1							
KW Sheet No														
Lab Sheet Reference	: :													

													Ι.		•	00	11001	$\overline{}$
				Califo	rnia	Beari	ng R	atio	(CB	R)				lob Re		_	11001	4
													В	Boreho	le/Pit No.	Т	P13	_
Site N	Name		Envision, S	Sunderla	nd								S	Sample	e No.			
Soil [Descript	tion											С	Depth	m	1	.20	
Spec Refer						pecime epth	n					m	Sample Type				В	
Spec	imen ription		Brown, Sli	ghtly Sar			avelly,	CLAY	′ .				KeyLAB ID			SLMK20	211201105	
	Method		BS1377 : I	Part 4 : 1	990, cla	ause 7				C	CBR T	est Number		1				
Specin	Details Recompacted with specified standard effort using 2.5kg Period rammer Time to														Soaking details Not soaked Period of soaking days Time to surface days Amount of swell recorded mm			
															ity after soal		Mg/m3	\$
	Material retained on 20mm sieve removed 0 % Dry density Initial Specimen details Bulk density 2.00 Mg/m3 Surcharg Dry density 1.62 Mg/m3 Moisture content 23.3 %													e applied	16.5 10	3		
	0.70 ¬					Force	v Pen	etrati	ion Plot	s						_		
	0.70																	
	0.60 -												***					
	0.50	,				<u> </u>		ļ									-1-4-	
7									No.	بعر	تعمر	1					data	
N P P	0.40						<u> </u>	-	N S			+				*·Top		
Force Applie					Ж		سمره									Bas	correction	П
Force	0.30				7											• Bas		
	0.20 -											+					e Correction	on
	0.10 -											+						
	0.00				<u> </u>							\perp						
	C)	1	2		3 F	enetra	4 ition i		5		6		7	7	8		
R	Results			Curve			CE	BR Va	alues, %	ó					oisture			
	correction applied 2.5mm 5mm Highest Avera														ontent %			
	TOP 2.3 2.5 2.5 2.3 BASE 1.8 2.1 2.1														23.6			
		BASI	Ξ			1.8	2.	.1	2.1				23.3					
G	Seneral	remarks			Te	st specif	fic rem	arks			T I	Appr	ove	d		Fig No.	1	
KW Sheet No												12						
Lab Sh	eet Ref	erence :																

					1	<u> </u>
	Californ	Job Ref	S211001			
				Borehole/Pit No.	TP14	
Site Name	Envision, Sunderland			Sample No.		
Soil Description					Depth m	1.50
Specimen Reference		Specimen Depth		m	Sample Type	В
Specimen Description	Brown, Slightly Sandy,	CLAY.	•		KeyLAB ID	SLMK20211201107
Test Method	BS1377 : Part 4 : 1990	, clause 7			CBR Test Number	1
Specimen Preparation Condition Details	REMOULDED Recompacted wi rammer	th specified stand		-	Soaking details Period of soaking Time to surface Amount of swell record	
Material re	tained on 20mm sieve r	emoved	0	%	Dry density after soaki	ng Mg/m3
Initial Spec	Dry d	density ensity ure content	2.00 1.78 12.5	Mg/m3 Mg/m3 %	Surcharge applied	16.5 kg 10 kPa
		Force v Per	netration Plots			
0.80			Т			
0.70						
0.60						× Top data
<u>₹</u> 0.50 *					and and	* Top values
Р		ر		ممم		—— Top correction
Porce Applie			Jan Park			Base data
0.30		No series	1			• Base values
						Base Correction
0.20						
0.10						
0.00	-					
0.00	1 2	3 Penetra	4 5 ation mm	6	7 8	
Results	Curve		BR Values, %		Moisture	
correcti			nm Highest	Average	Content %	
TOP		2.3 2	2.5 2.5	2.2	12.5	
BAS	E	1.7 2	2.1 2.1	2.3	12.5	
General remarks	3	Test specific rem	narks	Appr	oved	Fig No.
					KW	Sheet No 13
Lab Sheet Reference		<u> </u>				

California Bearing Ratio (CBR) Site Name Envision, Sunderland Sample No. TP15 Site Name Envision, Sunderland Sample No. Depth m 0.80 Specimen Specimen Brown. Slightly Gravelly. Slightly Sandy. CLAY. KeyAAB ID SLMK20211201109 Specimen Preparation Condition REMOULDED Details Recompacted with specified standard effort using 2.5 kg Period of soaking rammer Material retained on 20mm sleve removed 1 % Dry density after soaking Mg/m3 Instal Specimen details Bulk density 1.98 Mg/m3 Surcharge applied 16.5 kg Dry density after soaking Mg/m3 Top kensity after soaking Mg/m												-			1
Site Name				California Bearing Ratio (CBR)									Job Ref		S211001
Soli Description													Borehole/Pit No.		TP15
Specimen Specimen Depth m Sample Type B Section Se	Site	Name		Envision, Sunderland									Samp	le No.	
Reference Dopth	Soil I	Description		-									Depth m		0.60
Specimen Brown, Slightly Gravelly, Slightly Sandy, CLAY. KeyLAB ID SLMX20211201109							n	m				Sample Type		В	
Test Method				Brown, Slig	htly Gravel	•							KeyLAB ID		SLMK20211201109
Condition REMOULDED Recompacted with specified standard effort using 2.5kg Period of soaking days Amount of swell recorded mm Material retained on 20mm sieve removed 1				BS1377 : F	Part 4 : 1990), clause 7						CBR Test Number		Test Number	1
Initial Specimen details	Specir	Condition REMOULDED Details Recompacted with											Period of soaking Time to surface Amount of swell record		days days ded mm
1.59 Mg/m3 10 kPa		Materi	al ret	ained on 20	ımm sieve i	removed			1	%		D	ry den	sity after soak	ing Mg/m3
1.40		Dry d				density	:		1.59	M	g/m3	S	urchar	ge applied	9
1.20						Force	v Pen	etrati	on Plots						
1.00		1.40						1							
No.		1.20									<u> </u>		** *****	***	
No.	İ	*													
0.80 ——————————————————————————————————		1.00													─× Top data
		0.80													∗ Top values
0.40 0.20 0.00 0.00 1 2 3 4 5 6 7 8 Penetration mm Results Curve CBR Values, % correction applied 2.5mm 5mm Highest Average		*													
0.40 0.20 0.00 0.00 1 2 3 4 5 6 7 8 Penetration mm Results Curve CBR Values, % correction applied 2.5mm 5mm Highest Average	orce /	0.60													
Curve CBR Values, % Moisture Content % 2.5mm 5mm Highest Average Average 2.8 24.3 Sheet No 14 Sheet No 14 Sheet No 14 Sheet No 14 Sheet No 14 Sheet No	ш														
Curve CBR Values, % Moisture Content % 22.8 24.3		0.40		1											Base Correction
Results		0.20	_/	*											
Results			1												
Penetration mm Penetration mm Results Curve				1	2	3		4	5		6			7 8	:
TOP 5.7 5.4 5.7 5.6 22.8 24.3 Sheet No 14															
Applied 2.5mm 5mm Highest Average %	F	Ourve]					
BASE 5.4 5.2 5.4 5.6 24.3 General remarks Test specific remarks Approved KW Fig No. 1 Sheet No 14									: <i>F</i>	Average					
General remarks Test specific remarks Approved Fig No. 1 Sheet No 14				:						\dashv	5.6		F		
KW Sheet No 14									Λ				Fig.No.		
		Contra remains			Test specific refilates Appri			OVE			Sheet No.				
	Lab Sh	neet Refere	nce :			<u> </u>									

	Colife	arnia Baarina	Datia / CDD	Job Ref	S211001		
	Califo	ornia Bearing	Ratio (CBR	Borehole/Pit No.	TP21		
Site Name	Envision, Sunderla	nd		Sample No.			
Soil Description				Depth m	1.00		
Specimen Reference		Specimen Depth		m	Sample Type	В	
Specimen Description	Brown, slightly gr	ravelly, slightly sa	indy CLAY		KeyLAB ID	SLMK2021111685	
Test Method	BS1377 : Part 4 : 1	990, clause 7		CBR Test Number	1		
Specimen Preparation Condition Details	REMOULDE	D d with specified star	2.5kg	Soaking details Period of soaking Time to surface	Not soaked days days		
Material re	tained on 20mm sie	ve removed	1	%	Amount of swell recorded mm Dry density after soaking Mg/m3		
Initial Spec	D	oulk density Ory density Moisture content	2.05 1.72 19.4	Mg/m3 Mg/m3 %	Surcharge applied	16.5 kg 10 kPa	
4.00		Force v P	enetration Plots				
1.80							
1.60							
1.40							
1.20						─× Top data	
Z			200			* Top values	
p 1.00						—— Top correction	
0.80 Value of the state of the						— Base data	
0.60						Base values	
0.40						Base Correction	
0.20							
0.00	1 2	3 Pene	4 5 tration mm	6	7 8	3	
Results	Curv	e	CBR Values, %		Moisture		
	correct applie	tion	5mm Highes	Average	Content %		
TOP		6.5	6.4 6.5	6.1	18.7		
BAS	E	5.7	5.5 5.7	1	19.4		
General remarks	3	Test specific re	emarks	Appr	roved	Fig No.	
					KW	Sheet No 15	
Lab Sheet Reference		•		•	<u> </u>		

	Cali	Marria Danii	o er Doti	- / CDD)		,	Job Ref	S211001	
	Cali	fornia Bearii	ng Ratio	o (CBR))	ŀ	Borehole/Pit No.	TP23	
Site Name	Envision, Sunder	rland				ű	Sample No.		
Soil Description						[Depth m	1.60	
Specimen Reference		Specimer Depth	1		m	Ş	Sample Type	В	
Specimen Description	Brown, Slightly G	Gravelly, Slightly S	andy, CLA	Υ.		ŀ	KeyLAB ID	SLMK20211201114	
Test Method	BS1377 : Part 4	: 1990, clause 7				(CBR Test Number	1	
Specimen Preparation Condition REMOULDED Details Recompacted with specified standard effort using 2.5kg rammer							Soaking details Period of soaking Time to surface Amount of swell recorded		
Material re	tained on 20mm s	sieve removed		1	%	Dr	y density after soak	ing Mg/m3	
Initial Spec	imen details	Bulk density Dry density Moisture content		2.05 1.71 19.6	Mg/m3 Mg/m3 %	Su	ırcharge applied	16.5 kg 10 kPa	
1.80					T				
1.60					+				
1.40							***		
1.20						سمر		─× Top data	
Z				مستعمد				* · Top values	
9 1.00 			-					—— Top correction	
Lorce Applie								—● Base data	
0.60								• Base values	
0.40								Base Correction	
0.20	7				+				
0.00	1 2		4	5	6		7 8	3	
Penetration mm									
Results	correction			1	Moisture Content				
	арр	olied 2.5mm	5mm	Highest	Average		%		
TOP BAS		6.5 5.7	6.4 5.7	6.5 5.7	6.1		18.8		
General remarks	<u> </u>	Test specifi	c remarks		App	rove	ed	Fig No. 1	
							KW	Sheet No 16	
Lab Sheet Reference					<u> </u>				

Г	<u> </u>				lah Daf	5244004	
	Californ	ia Bearing F	Ratio (CBF	2)	Job Ref	S211001	
					Borehole/Pit No.	TP33	
Site Name	Envision, Sunderland				Sample No.		
Soil Description		I ou saint an	1		Depth m	1.00	
Specimen Reference		Specimen Depth		m	Sample Type	В	
Specimen Description	Brown, CLAY				KeyLAB ID	SLMK2021111696	
Test Method	BS1377 : Part 4 : 1990), clause 7			CBR Test Number	1	
Specimen Preparation Condition Details	REMOULDED	th specified stand	lard effort using	2.5kg	Soaking details Period of soaking Time to surface Amount of swell recor	Not soaked days days ded mm	
Material re	etained on 20mm sieve i	removed	0	%	Dry density after soak	ing Mg/m3	
Initial Spe	Dry o	density density ture content	1.97 1.59 23.6	Mg/m3 Mg/m3 %	Surcharge applied	16.5 kg 10 kPa	
1.60							
1.00							
1.40							
1.20							
1.20		سعمو				─× Top data	
₹ 1.00		- No.				∗ Top values	
0.80 bblied						—— Top correction	
Force Applie						— Base data	
<u>5</u> 0.60						• Base values	
0.40						Base Correction	
0.20	<u> </u>						
0.00							
0	1 2	3 Penetra	4 5 ation mm	6	7 8	i e e e e e e e e e e e e e e e e e e e	
Results	Curve correction	C	BR Values, %		Moisture Content		
	applied	2.5mm 5r	mm Highes	t Average	%		
TOF			6.7 6.3 6.8	6.8	22.6 22.0		
BAS		<u> </u>	•				
General remark	S	Test specific rem	narks	Арр 	roved	Fig No.	
					KW	Sheet No 17	
Lab Sheet Reference	:			•			

				0-1:4		ia Das		2-4!-	/ CDF				Job R	ef	S211001
				Calif	orni	а веа	iring F	katio	(CBF	()			Boreh	ole/Pit No.	TP46
Site	Name		Envision, S	Sunderla	and								Samp	le No.	
Soil	Descrip	otion											Depth	m	1.00
	cimen erence					Specir Depth					m		Sample Type		В
Spec	cimen cription		Brown, slig	htly gra	avelly,			LAY					KeyLA	AB ID	SLMK20211116105
_	Metho		BS1377 : F	Part 4 :	1990,	clause	7						CBR 7	Test Number	1
Specimen Preparation Condition REMOULDED Details Recompacted with specified standard effort using 2.5kg rammer									P Ti	Soaking details Period of soaking Time to surface Amount of swell recorded Not soaked day					
	М	aterial re	ained on 20	Omm si	eve re	moved			0	%				sity after soa	
Initial Specimen details Bulk densi Dry densit Moisture c							ent		1.98 1.61 23.1	Mg/m Mg/m %		Si	urchar	ge applied	16.5 kg 10 kPa
	0.70					For	ce v Per	netrati	on Plots		_				7
	0.60			+							+			***	
	0.50	*							*	****	1	_			Top data
Σ Z	0.40													*·Top values	
Force Applied	0.40											•	-	•	Top correction Base data
Force	0.30	8 =====		,			سمسه		-						Base values
	0.20	•			المستور						+				Base Correction
	0.10										+				_
	0.00							1						7	
0 1 2 3 4 5 6 7 8 Penetration mm										8					
F	Results			Cur			С	BR Va	lues, %]		Moisture Content	
				correc		2.5mm	n 5r	nm	Highes	t Ave	rage		(%	
		TOP BASI	=			2.2 1.4	_	.4	2.4 1.4			22.1 24.3			
	2 0								1.4		Λ : :-				Fig No.
	<u>senera</u>	l remarks				rest spe	ecific rem	iarks	arks Approved KW				Fig No. 1 Sheet No 18		
Lab Si	neet Re	ference :			ļ										

Laboratory Report Fr	Laboratory Report Front Sheet							
Site name	Job number	TS18 3NA						
Envision, Sunderland	S211001	01642 607083 lab@solmek.com						

Solmek

Client details:

Reference: S211001 Name: Solmek 12 Yarm Road, Address: Stockton-on-tees,

TS18 3NA

01642 607083 Telephone:

acutts@solmek.com Email:

A. Cutts FAO:

12/11/2021 Date commenced:

Date reported: 10/01/2022

Observations and interpretations are outside of the UKAS Accreditiation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation $Service. \ The \ results \ reported \ herein \ relate \ only \ to \ the \ material \ supplied \ to \ the \ laboratory. \ This \ certificate$ shall not be reproduced in full, without the prior written approval of the laboratory.

Samples will be held at the laboratory for a period of 4 weeks after the report date. After the above reporting date the samples will be disposed of. Should further testing be required then the office should be informed before the above date.

Signature:	Approved Signitories:			
KWatkin	J. Brischuck (Laboratory Manager) K. Watkin (Quality Manager)			

						Dens	ity Te	ests -	Sum	mary	of R	esult	s		
Project No. S21	1001		Project	Nam	le			Envisio	on, Sur	ıderlan	d				
		Sar	nple			Linea	r Measur	ement	Imme	ersion in	water	Wate	r displace	ement	
Hole No.	Ref	Тор	Base	Туре	Soil Description	Bulk density	Dry density	w	Bulk density	Dry density	w	Bulk density	Dry density	w	Remarks
					5	Mg/m ³	Mg/m ³	%	Mg/m ³	Mg/m ³	%	Mg/m ³	Mg/m ³	%	
CP01		2.00	2.45	U		2.11	1.73	22.0							
CP01		4.00	4.45	U		2.02	1.55	30.7							
CP02		2.00	2.45	U		2.10	1.69	24.4							
CP02		4.00	4.45	U		1.94	1.66	16.8							
CP02		6.00	6.45	U		2.14	1.87	14.6							
CP03		4.00	4.45	U		2.12	1.79	18.5							
CP04		4.00	4.45	U		2.02	1.64	23.6							
CP05		2.00	2.45	U		2.21	1.73	27.5							
CP05		5.00	5.45	U		2.26	2.01	12.6							
CP06		2.00	2.45	U		2.16	1.72	25.2							
CP06		4.00	4.45	U		1.94	1.47	32.2							
CP06		6.00	6.45	U		2.12	1.69	25.3							
CP06		12.00	12.45	U		2.16	1.77	21.6							
CPRO01		1.20	1.65	U		2.08	1.74	20.0							
CPRO01		2.00	2.45	U		2.22	1.97	12.4							
CPRO01		3.00	3.45	U		2.32	2.01	15.8							
CPRO02		4.00	4.45	U		2.18	1.91	14.0							
CPRO03		2.00	2.45	U		2.22	1.89	17.2							
CPRO04		2.00	2.45	U		2.18	1.72	26.7							
CPRO04		4.00	4.45	U		2.27	2.02	12.2							
Legend w moisture content of the density test specimen															
Notes									Date F	Printed		Appro	ved By	,	Table
BS1377:Part2	Tests carried out in accordance 3S1377:Part2:1990 and the				Immercian in water		7.2 7.3		10						
following claus otherwise	following clauses unless annota otherwise				Water displacement	clause		10/01/2022					sheet		
													KW		<u> </u>





Eurofins Chemtest Ltd Depot Road Newmarket CB8 0AL

Tel: 01638 606070 Email: info@chemtest.com

Amended Report

Report No.: 21-39513-2

Initial Date of Issue: 17-Nov-2021 Date of Re-Issue: 19-Jan-2022

Client Solmek Ltd

Client Address: 12 Yarm Road

Stockton-on-Tees

TS18 3NA

Contact(s): Lab

Office

Adrian Cutts

Project S211001 Envision, Sunderland

Quotation No.: Q20-21567 Date Received: 11-Nov-2021

Order No.: Date Instructed: 11-Nov-2021

No. of Samples: 19

Turnaround (Wkdays): 5 Results Due: 17-Nov-2021

Date Approved: 17-Nov-2021

Approved By:

Details: Stuart Henderson, Technical

Manager

Client: Solmek Ltd		Cher	ntest Jo	ob No.:	21-39513	21-39513	21-39513	21-39513	21-39513	21-39513	21-39513	21-39513	21-39513
Quotation No.: Q20-21567	(Chemte	st Sam	ple ID.:	1317370	1317371	1317372	1317373	1317374	1317375	1317376	1317377	1317378
		Sa	mple Lo	ocation:	CP01	CP01	CP02	CP02	CP02	CP03	CP03	CP04	CP04
		Sample Type:			SOIL								
		Top Depth (m):			0.40	4.45	0.30	2.45	5.00	0.40	4.45	0.40	4.45
		Bot	tom Dep	oth (m):	0.80	4.55	0.40	2.55	5.95	0.80	4.55	0.80	4.55
			Date Sa	ampled:	27-Oct-2021								
Determinand	Accred.	SOP	Units	LOD									
Moisture	N	2030	%	0.020	26	14	19	19	13	24	16	22	11
pH (2.5:1)	N	2010		4.0	7.7	8.4	8.3	8.3	8.5	7.7	8.5	8.3	8.6
Sulphate (2:1 Water Soluble) as SO4	U	2120	mg/l	10	10	< 10	74	52	81	100	< 10	81	21
Total Sulphur	U	2175	%	0.010	0.064	0.19	0.033		0.16	0.077		0.027	
Sulphate (Acid Soluble)	U	2430	%	0.010	0.054	0.035	0.036		0.034	0.059		0.013	

Client: Solmek Ltd		Cher	ntest Jo	ob No.:	21-39513	21-39513	21-39513	21-39513	21-39513	21-39513	21-39513	21-39513	21-39513
Quotation No.: Q20-21567	(Chemte	st Sam	ple ID.:	1317379	1317380	1317381	1317382	1317383	1317384	1317385	1317386	1317387
		Sa	ample Lo	ocation:	CP04	CP05	CP06	CP06	CP06	CP06	CP07	CP07	CP07
		Sample Type:			SOIL								
		Top Depth (m):			10.00	0.40	0.20	4.45	9.45	16.00	0.50	3.45	7.95
		Bot	tom Dep	oth (m):	10.45	0.80	0.40	4.55	9.55	16.45	0.90	3.55	8.05
			Date Sa	ampled:	27-Oct-2021								
Determinand	Accred.	SOP	Units	LOD									
Moisture	N	2030	%	0.020	11	12	17	20	14	15	19	19	21
pH (2.5:1)	N	2010		4.0	8.4	8.3	8.3	8.4	8.4	8.4	8.3	8.4	8.3
Sulphate (2:1 Water Soluble) as SO4	U	2120	mg/l	10	< 10	60	120	< 10	130	170	130	68	140
Total Sulphur	U	2175	%	0.010	0.15	0.042	0.032		0.23		0.077		0.21
Sulphate (Acid Soluble)	U	2430	%	0.010	0.038	0.018	0.011		0.046		0.029		0.060

Client: Solmek Ltd		Che	mtest Jo	ob No.:	21-39513		
Quotation No.: Q20-21567	(Chemte	ple ID.:	1317388			
		Sa	ample Lo	ocation:	CP07		
			Sampl	е Туре:	SOIL		
			Top Dep	oth (m):	14.00		
		Bot	oth (m):	14.45			
		Date Sampled:					
Determinand	Accred.	SOP	Units	LOD			
Moisture	N	2030	%	0.020	12		
pH (2.5:1)	N	2010		4.0	8.4		
Sulphate (2:1 Water Soluble) as SO4	U	2120	mg/l	10	250		
Total Sulphur	U	2175	%	0.010			
Sulphate (Acid Soluble)	U	2430	%	0.010			

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	рН	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2220	Water soluble Chloride in Soils	Chloride	Aqueous extraction and measuremernt by 'Aquakem 600' Discrete Analyser using ferric nitrate / mercuric thiocyanate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.

Report Information

Key **UKAS** accredited MCERTS and UKAS accredited M Unaccredited Ν This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for S this analysis This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited SN for this analysis Т This analysis has been subcontracted to an unaccredited laboratory I/S Insufficient Sample U/S Unsuitable Sample N/E not evaluated < "less than" "greater than" > SOP Standard operating procedure LOD Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

- A Date of sampling not supplied
- B Sample age exceeds stability time (sampling to extraction)
- C Sample not received in appropriate containers
- D Broken Container
- E Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to: <u>customerservices@chemtest.com</u>





Eurofins Chemtest Ltd Depot Road Newmarket CB8 0AL

Tel: 01638 606070 Email: info@chemtest.com

Amended Report

Report No.: 21-39946-2

Initial Date of Issue: 19-Nov-2021 Date of Re-Issue: 19-Jan-2022

Client Solmek Ltd

Client Address: 12 Yarm Road

Stockton-on-Tees

TS18 3NA

Contact(s): Adrian Cutts

Lab Office

Joe Brischuk Tanya Finnimore

Project S211001 Envision, Sunderland

Quotation No.: Q20-21567 Date Received: 15-Nov-2021

Order No.: LAB1199 Date Instructed: 15-Nov-2021

No. of Samples: 6

Turnaround (Wkdays): 5 Results Due: 19-Nov-2021

Date Approved: 19-Nov-2021

Approved By:

Details: Stuart Henderson, Technical

Manager

Client: Solmek Ltd		Cher	ntest J	ob No.:	21-39946	21-39946	21-39946	21-39946	21-39946	21-39946
Quotation No.: Q20-21567	(Chemte	st Sam	ple ID.:	1319424	1319425	1319426	1319427	1319428	1319429
		Sample Location:			TP17	TP19	TP21	TP31	TP34	TP49
	Sample Type:			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	
	Top Depth (m):			2.00	2.00	2.00	2.00	0.80	2.00	
		Bot	tom De _l	oth (m):	2.20	2.20	2.20	2.20	1.00	2.20
			Date Sa	ampled:	27-Oct-2021	27-Oct-2021	27-Oct-2021	27-Oct-2021	27-Oct-2021	27-Oct-2021
Determinand	Accred.	SOP	Units	LOD						
Moisture	N	2030	%	0.020	10	14	16	16	16	15
pH (2.5:1)	N	2010		4.0	9.2	8.9	9.0	9.0	9.4	9.4
Sulphate (2:1 Water Soluble) as SO4	U	2120	mg/l	10	84	180	45	120	140	200
Total Sulphur	U	2175	%	0.010	0.21	0.012	0.014	0.021	0.046	0.13
Sulphate (Acid Soluble)	U	2430	%	0.010	0.041	0.045	0.023	0.032	0.048	0.046

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	рН	pH Meter
	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.

Report Information

Key **UKAS** accredited MCERTS and UKAS accredited M Unaccredited Ν This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for S this analysis This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited SN for this analysis Т This analysis has been subcontracted to an unaccredited laboratory I/S Insufficient Sample U/S Unsuitable Sample N/E not evaluated < "less than" "greater than" > SOP Standard operating procedure LOD Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

- A Date of sampling not supplied
- B Sample age exceeds stability time (sampling to extraction)
- C Sample not received in appropriate containers
- D Broken Container
- E Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to: customerservices@chemtest.com



eurofins Chemtest

Eurofins Chemtest Ltd Depot Road Newmarket CB8 0AL

Tel: 01638 606070 Email: info@chemtest.com

Final Report

Report No.: 21-40245-1

Initial Date of Issue: 23-Nov-2021

Client Solmek Ltd

Client Address: 12 Yarm Road

Stockton-on-Tees

TS18 3NA

Contact(s): Adrian Cutts

Lab Office

Project S211001 Envision, Sunderland

Quotation No.: Q20-21567 Date Received: 17-Nov-2021

Order No.: SOL5550 Date Instructed: 17-Nov-2021

No. of Samples: 6

Turnaround (Wkdays): 5 Results Due: 23-Nov-2021

Date Approved: 23-Nov-2021

Approved By:

Details: Glynn Harvey, Technical Manager

Client: Solmek Ltd		Chemt	est Jo	b No.:	21-40245	21-40245	21-40245	21-40245	21-40245	21-40245
Quotation No.: Q20-21567	Che	emtest	Samp	le ID.:	1321014	1321015	1321016	1321017	1321018	1321019
		Sam	ple Lo	cation:	TP17	TP19	TP21	TP31	TP34	TP49
		Sample Type:			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			2.00	2.00	2.00	2.00	0.80	2.00
		Bottom Depth (m):		2.20	2.20	2.20	2.20	1.00	2.20	
		Date Sampled: ##		##########	##########	#########	##########	##########	##########	
Determinand	Accred.	SOP	Units	LOD						
Moisture	N	2030	%	0.020	11	17	16	15	16	16
Soil Colour	N	2040		N/A	Black	Brown	Brown	Brown	Brown	Brown
Other Material	N	2040		N/A	None	None	None	None	None	None
Soil Texture	N	2040		N/A	Clay	Clay	Clay	Clay	Clay	Clay
pH (2.5:1)	N	2010		4.0	8.4	8.4	8.6	8.5	8.6	8.6
Sulphate (2:1 Water Soluble) as SO4	M	2120	mg/l	10	< 10	46	50	< 10	690	170
Total Sulphur	M	2175	%	0.010	0.26	0.032	0.038	0.030	0.016	0.16
Sulphate (Acid Soluble)	U	2430	%	0.010	0.030	0.013	0.031	0.019	< 0.010	0.018

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	рН	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.

Report Information

Key **UKAS** accredited Μ MCERTS and UKAS accredited Ν Unaccredited This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for S this analysis This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited SN for this analysis Т This analysis has been subcontracted to an unaccredited laboratory I/S Insufficient Sample U/S Unsuitable Sample N/E not evaluated "less than" < "greater than" > SOP Standard operating procedure LOD Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

- A Date of sampling not supplied
- B Sample age exceeds stability time (sampling to extraction)
- C Sample not received in appropriate containers
- D Broken Container
- E Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt All water samples will be retained for 14 days from the date of receipt Charges may apply to extended sample storage

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to: customerservices@chemtest.com





Eurofins Chemtest Ltd Depot Road Newmarket CB8 0AL

Tel: 01638 606070 Email: info@chemtest.com

Amended Report

Report No.: 21-42357-2

Initial Date of Issue: 07-Dec-2021 Date of Re-Issue: 19-Jan-2022

Client Solmek Ltd

Client Address: 12 Yarm Road

Stockton-on-Tees

TS18 3NA

Contact(s): Joe Brischuk

Lab Office

Tanya Finnimore

Project S211001 Envision, Sunderland

Quotation No.: Date Received: 01-Dec-2021

Order No.: LAB1214 Date Instructed: 01-Dec-2021

No. of Samples: 7

Turnaround (Wkdays): 5 Results Due: 07-Dec-2021

Date Approved: 07-Dec-2021

Approved By:

Details: Stuart Henderson, Technical

Manager

Client: Solmek Ltd		Cher	ntest J	ob No.:	21-42357	21-42357	21-42357	21-42357	21-42357	21-42357	21-42357
Quotation No.:	Chemtest Sample ID.:		1331321	1331322	1331323	1331324	1331325	1331326	1331327		
		Sa	mple Lo	ocation:	TP06	TP10	TP11	TP14	TP23	TP30	TP37
	Sample Type:		SOIL								
	Top Depth (m):		1.40	0.80	0.50	2.00	1.60	0.80	2.60		
	Bottom Depth (m):		1.60		0.60		1.80	0.90	2.70		
	Date Sampled: 1		10-Nov-2021								
Determinand	Accred.	SOP	Units	LOD							
Moisture	N	2030	%	0.020	16	15	12	15	13	12	13
pH (2.5:1)	N	2010		4.0	8.5	8.5	8.8	8.5	8.6	8.7	8.6
Sulphate (2:1 Water Soluble) as SO4	U 2120 mg/l 10		< 10	< 10	< 10	< 10	< 10	< 10	< 10		
Total Sulphur	U	2175	%	0.010	0.020	0.034	0.025	0.20	0.13	0.020	0.067
Sulphate (Acid Soluble)	U	2430	%	0.010	< 0.010	< 0.010	< 0.010	0.032	0.021	< 0.010	0.013

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	рН	pH Meter
	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.

Report Information

Key **UKAS** accredited MCERTS and UKAS accredited M Unaccredited Ν This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for S this analysis This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited SN for this analysis Т This analysis has been subcontracted to an unaccredited laboratory I/S Insufficient Sample U/S Unsuitable Sample N/E not evaluated < "less than" "greater than" > SOP Standard operating procedure LOD Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

- A Date of sampling not supplied
- B Sample age exceeds stability time (sampling to extraction)
- C Sample not received in appropriate containers
- D Broken Container
- E Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to: customerservices@chemtest.com





Eurofins Chemtest Ltd Depot Road Newmarket CB8 0AL

Tel: 01638 606070 Email: info@chemtest.com

Amended Report

Report No.: 21-42373-2

Initial Date of Issue: 07-Dec-2021 Date of Re-Issue: 19-Jan-2022

Client Solmek Ltd

Client Address: 12 Yarm Road

Stockton-on-Tees

TS18 3NA

Contact(s): Joe Brischuk

Lab Office

Tanya Finnimore

Project S211001 Envision, Sunderland

Quotation No.: Date Received: 01-Dec-2021

Order No.: LAB1202 Date Instructed: 01-Dec-2021

No. of Samples: 3

Turnaround (Wkdays): 5 Results Due: 07-Dec-2021

Date Approved: 07-Dec-2021

Approved By:

Details: Stuart Henderson, Technical

Manager

Client: Solmek Ltd		Che	mtest Jo	ob No.:	21-42373	21-42373	21-42373
Quotation No.:	(Chemte	st Sam	ple ID.:	1331389	1331390	1331391
		Sample Location:		CPRO01	CPRO04	CPRO06	
		Sample Type:			SOIL	SOIL	SOIL
	Top Depth (m):				0.70	4.45	16.00
		Bot	tom Dep	oth (m):	0.80	4.55	16.45
			Date Sa	ampled:	10-Nov-2021	10-Nov-2021	10-Nov-2021
Determinand	Accred.	SOP	Units	LOD			
Moisture	N	2030	%	0.020	15	9.5	12
pH (2.5:1)	N	2010		4.0	8.5	8.4	8.6
Sulphate (2:1 Water Soluble) as SO4	U	2120	mg/l	10	11	170	< 10
Total Sulphur	U	2175	%	0.010	0.024	0.22	0.041
Sulphate (Acid Soluble)	U	2430	%	0.010	0.014	0.042	0.014

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	рН	pH Meter
	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.

Report Information

Key **UKAS** accredited MCERTS and UKAS accredited M Unaccredited Ν This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for S this analysis This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited SN for this analysis Т This analysis has been subcontracted to an unaccredited laboratory I/S Insufficient Sample U/S Unsuitable Sample N/E not evaluated < "less than" "greater than" > SOP Standard operating procedure LOD Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

- A Date of sampling not supplied
- B Sample age exceeds stability time (sampling to extraction)
- C Sample not received in appropriate containers
- D Broken Container
- E Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to: customerservices@chemtest.com



LABORATORY REPORT



4043

Contract Number: PSL21/9587

Report Date: 11 January 2022

Client's Reference: S211001-1

Client Name: Solmek

12 Yarm Road Stockton-on-Tees

TS18 3NA

For the attention of: T Finnimore/Joe Brischuk

Contract Title: Envision, Sunderland

Date Received: 7/12/2021
Date Commenced: 7/12/2021
Date Completed: 11/1/2022

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

A Watkins R Berriman S Royle

(Director) (Quality Manager) (Laboratory Manager)

(Director) (Quality Manager) (Laboratory Manager)

EH#

L Knight S Eyre T Watkins
(Assistant Laboratory Manager) (Senior Technician) (Senior Technician)

Page 1 of

5 – 7 Hexthorpe Road, Hexthorpe,

Doncaster DN4 0AR tel: +44 (0)844 815 6641 fax: +44 (0)844 815 6642

e-mail: rberriman@prosoils.co.uk awatkins@prosoils.co.uk

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
CP01		В	0.40	0.80	Brown slightly gravelly sandy CLAY.
CP02		В	0.40	0.70	Brown sandy CLAY.
CP03		В	0.40	0.80	Brown slightly gravelly sandy CLAY.
CP04		В	0.40	0.80	Brown slightly gravelly sandy CLAY.
CP07		В	0.50	0.90	Brown slightly gravelly sandy CLAY.



Envision, Sunderland

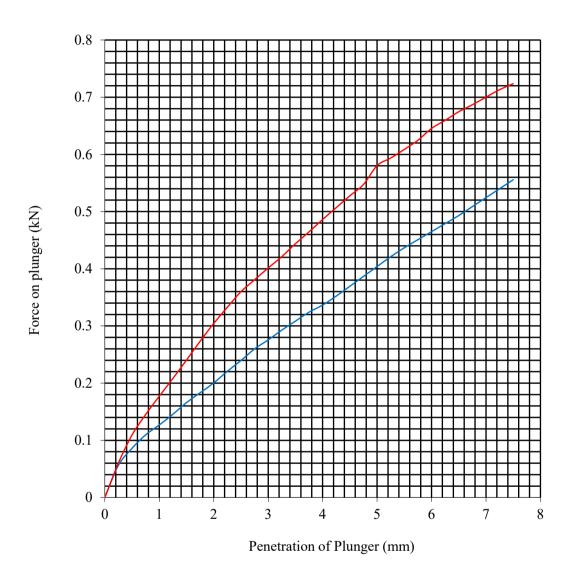
Contract No:
PSL21/9587
Client Ref:
S211001-1

BS 1377: Part 4: 1990

Hole Number: CP01 Top Depth (m): 0.40

Sample Number: Base Depth (m): 0.80

Sample Type: B



Initial Sample Conditions		Sample Prepara	ation	Final Moisture Cont	tent %	C.B.R. Value %		
Moisture Content:	18	Surcharge kPa:	10	Sample Top	20	Sample Top	2.0	
Bulk Density Mg/m3:	2.04	Soaking Time hrs	96	Sample Bottom	19	Sample Bottom	2.9	
Dry Density Mg/m3:	Dry Density Mg/m3: 1.73 Swelling mm:			Remarks: Compacted to 9	5% MDD a	t natural moistur	e content	
Percentage retained on 20mm BS test sieve:			0]				
Compaction Conditions 2.5kg								

- Top

- Bottom

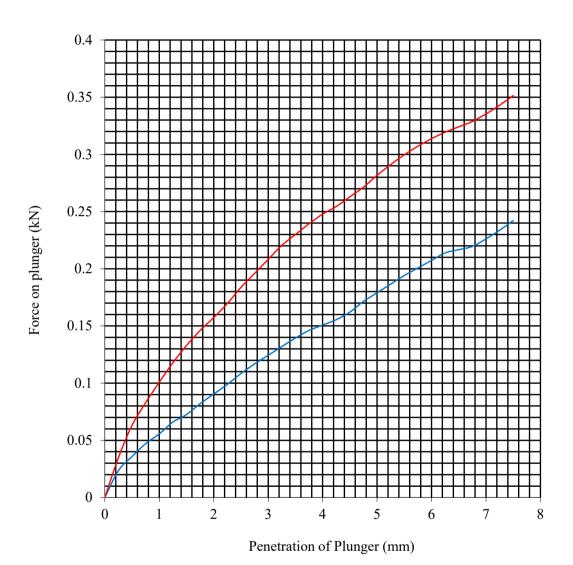


BS 1377: Part 4: 1990

Hole Number: CP02 Top Depth (m): 0.40

Sample Number: Base Depth (m): 0.70

Sample Type: B



Initial Sample Conditions		Sample Prepara	ation	Final Moisture Cont	C.B.R. Value %		
Moisture Content:	27	Surcharge kPa:	10	Sample Top	28	Sample Top	0.9
Bulk Density Mg/m3:	1.90	Soaking Time hrs	96	Sample Bottom	28	Sample Bottom	1.4
Dry Density Mg/m3: 1.49 Swelling mm:			0.03	Remarks: Compacted to 9	5% MDD a	t natural moistur	e content
Percentage retained on 20mm BS test sieve:			0]			
Compaction Conditions 2.5kg							

- Top

- Bottom

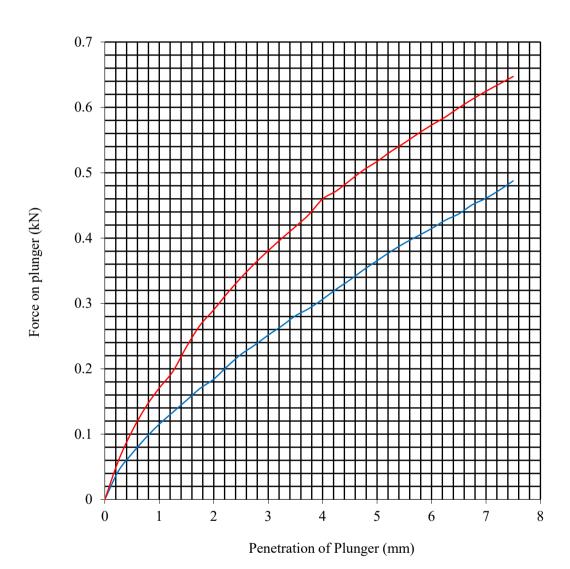


BS 1377: Part 4: 1990

Hole Number: CP03 Top Depth (m): 0.40

Sample Number: Base Depth (m): 0.80

Sample Type: B



Initial Sample Conditions		Sample Prepara	ation	Final Moisture Cont	C.B.R. Value %		
Moisture Content:	24	Surcharge kPa:	10	Sample Top	26	Sample Top	1.8
Bulk Density Mg/m3:	1.93	Soaking Time hrs	96	Sample Bottom	25	Sample Bottom	2.6
Dry Density Mg/m3: 1.56 Swelling mm:		1.75	Remarks: Compacted to 95% MDD at natural moisture content				
Percentage retained on 20mm BS test sieve:			0				
Compaction Conditions 2.5kg							

- Top

- Bottom

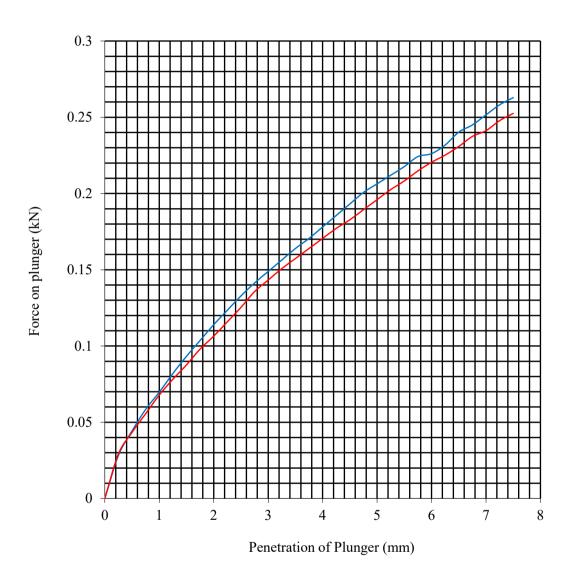


BS 1377: Part 4: 1990

Hole Number: CP04 Top Depth (m): 0.40

Sample Number: Base Depth (m): 0.80

Sample Type: B



Initial Sample Conditions Sa		Sample Prepara	ation	Final Moisture Cont	C.B.R. Value %		
Moisture Content:	23	Surcharge kPa:	10	Sample Top	24	Sample Top	1.0
Bulk Density Mg/m3:	1.96	Soaking Time hrs	96	Sample Bottom	25	Sample Bottom	1.0
Dry Density Mg/m3: 1.59 Swelling mm:		0.00	Remarks: Compacted to 9	5% MDD a	t natural moistur	e content	
Percentage retained on 20mm BS test sieve:			0]			
Compaction Conditions 2.5kg							

- Top

- Bottom

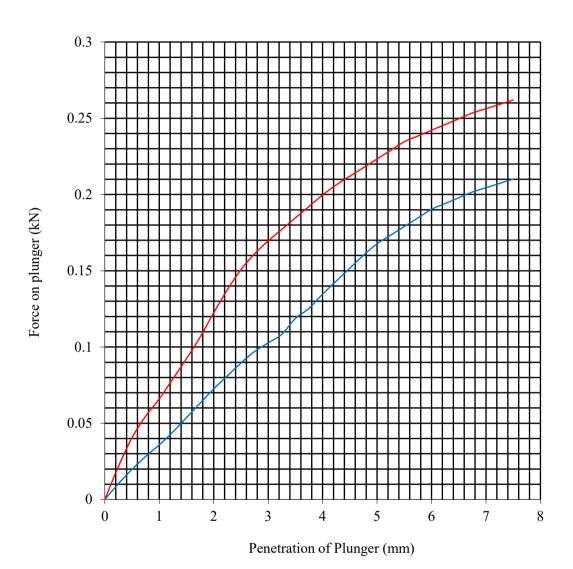


BS 1377: Part 4: 1990

Hole Number: CP07 Top Depth (m): 0.50

Sample Number: Base Depth (m): 0.90

Sample Type: B



Initial Sample Conditions		Sample Preparation		Final Moisture Content %		C.B.R. Value %	
Moisture Content:	24	Surcharge kPa:	10	Sample Top	26	Sample Top	0.8
Bulk Density Mg/m3:	1.95	Soaking Time hrs	96	Sample Bottom	26	Sample Bottom	1.1
Dry Density Mg/m3: 1.57 Swelling mm:		0.10	Remarks : Compacted to 95% MDD at natural moisture content				
Percentage retained on 20mm BS test sieve:			1				
Compaction Conditions 2.5kg							

- Top

- Bottom





LABORATORY REPORT



4043

Contract Number: PSL21/9588

Report Date: 12 January 2022

Client's Reference: S211001

Client Name: Solmek

12 Yarm Road Stockton-on-Tees

TS18 3NA

For the attention of: T Finnimore/Joe Brischuk

Contract Title: Envision, Sunderland

Date Received: 7/12/2021
Date Commenced: 7/12/2021
Date Completed: 12/1/2022

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

A Watkins R Berriman S Royle

(Director) (Quality Manager) (Laboratory Manager)

EK#

L Knight S Eyre T Watkins
(Assistant Laboratory Manager) (Senior Technician) (Senior Technician)

Page 1 of

5 – 7 Hexthorpe Road, Hexthorpe,

Doncaster DN4 0AR tel: +44 (0)844 815 6641 fax: +44 (0)844 815 6642

e-mail: rberriman@prosoils.co.uk awatkins@prosoils.co.uk

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
TP03		В	0.60	0.80	Brown slightly gravelly sandy CLAY.
TP04		В	1.00	1.20	Brown slightly gravelly sandy CLAY.
TP06		В	1.40	1.60	Brown slightly gravelly sandy CLAY.
TP08		В	0.70	0.80	Brown slightly gravelly sandy CLAY.
TP09		В	1.20	1.40	Brown slightly gravelly very sandy CLAY.
TP10		В	0.80		Brown slightly gravelly sandy CLAY.
TP11		В	0.50	0.60	Brown mottled grey slightly gravelly sandy CLAY.
TP12		В	0.30	0.40	Brown slightly gravelly sandy CLAY.
TP13		В	1.20	1.30	Brown slightly gravelly very sandy CLAY.
TP14		В	1.50		Brown slightly gravelly sandy CLAY.
TP15		В	0.60	0.80	Brown slightly gravelly sandy CLAY.
TP23		В	1.60	1.80	Brown slightly gravelly sandy CLAY.



Envision, Sunderland

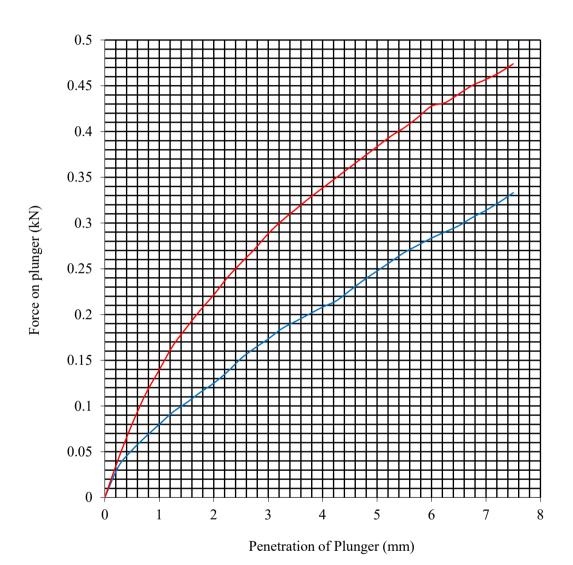
Contract No:
PSL21/9588
Client Ref:
S211001

BS 1377: Part 4: 1990

Hole Number: TP03 Top Depth (m): 0.60

Sample Number: Base Depth (m): 0.80

Sample Type: B



Initial Sample Conditions Sample Prepara		ration Final Moisture Conte		tent % C.B.R. Val		Value %	
Moisture Content:	23	Surcharge kPa:	10	Sample Top	25	Sample Top	1.2
Bulk Density Mg/m3:	1.95	Soaking Time hrs	96	Sample Bottom	24	Sample Bottom	1.9
Dry Density Mg/m3:	1.59	Swelling mm:	2.12	Remarks: Compacted to 9	5% MDD a	t natural moistur	e content
Percentage retained on 20mm BS test sieve:			0]			
Compaction Conditions 2.5kg							

- Top

Bottom

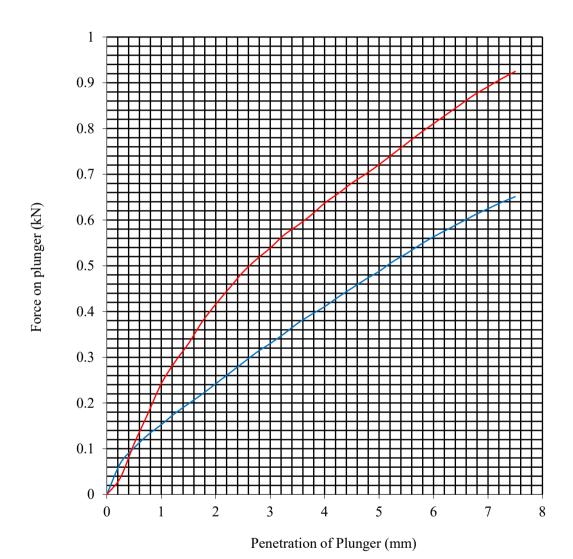


BS 1377: Part 4: 1990

Hole Number: TP04 Top Depth (m): 1.00

Sample Number: Base Depth (m): 1.20

Sample Type: B



Initial Sample Conditions Sample Prepar		ation Final Moisture Conte		ent % C.B.R.		Value %	
Moisture Content:	20	Surcharge kPa:	10	Sample Top	23	Sample Top	2.4
Bulk Density Mg/m3:	2.01	Soaking Time hrs	96	Sample Bottom	22	Sample Bottom	3.7
Dry Density Mg/m3:	1.67	Swelling mm:	3.30	Remarks: Compacted to 9	5% MDD a	t natural moistur	e content
Percentage retained on 20mm BS test sieve:			0	1			
Compaction Conditions		2.5kg					

- Top

Bottom

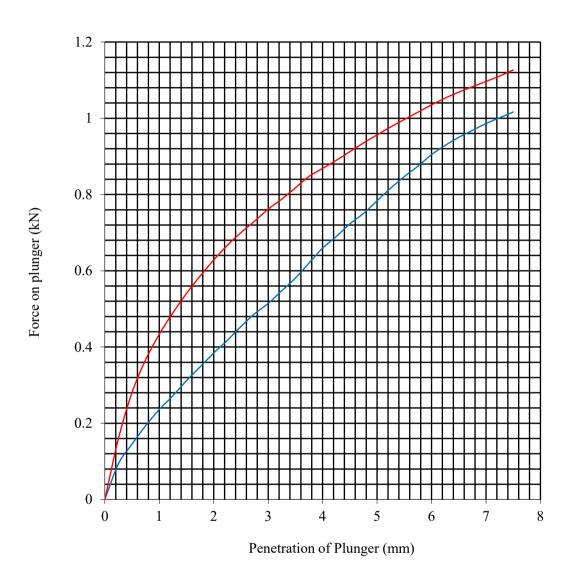


BS 1377: Part 4: 1990

Hole Number: TP06 Top Depth (m): 1.40

Sample Number: Base Depth (m): 1.60

Sample Type: B



Initial Sample Conditions Sample Prepara		ration Final Moisture Conte		tent % C.B.R. Va		Value %	
Moisture Content:	22	Surcharge kPa:	10	Sample Top	24	Sample Top	3.9
Bulk Density Mg/m3:	1.98	Soaking Time hrs	96	Sample Bottom	23	Sample Bottom	5.3
Dry Density Mg/m3:	1.62	Swelling mm:	3.22	Remarks: Compacted to 9	95% MDD a	t natural moistur	e content
Percentage retained on 2	20mm B	S test sieve:	0				
Compaction Conditions 2.5kg							

- Top

- Bottom

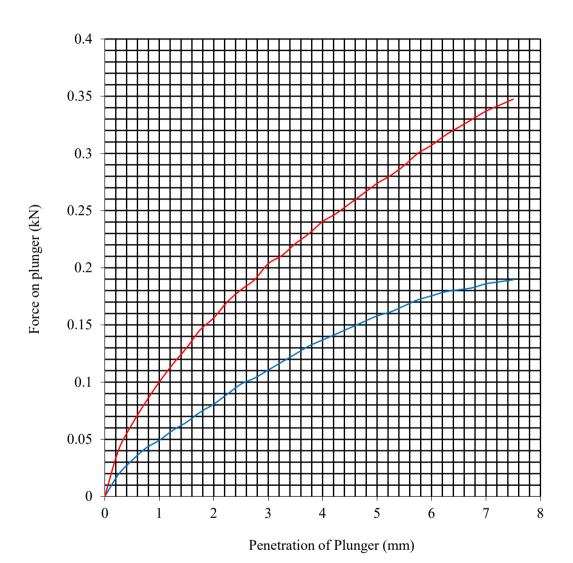


BS 1377: Part 4: 1990

Hole Number: TP08 Top Depth (m): 0.70

Sample Number: Base Depth (m): 0.80

Sample Type: B



Initial Sample Conditions Sample Prepara		ration Final Moisture Conten		tent %	C.B.R.	Value %	
Moisture Content:	23	Surcharge kPa:	10	Sample Top	25	Sample Top	0.8
Bulk Density Mg/m3:	1.97	Soaking Time hrs	96	Sample Bottom	24	Sample Bottom	1.4
Dry Density Mg/m3:	1.59	Swelling mm:	0.25	Remarks: Compacted to 9	5% MDD a	t natural moistur	e content
Percentage retained on 20mm BS test sieve:			0				
Compaction Conditions 2.5kg							

- Top

- Bottom

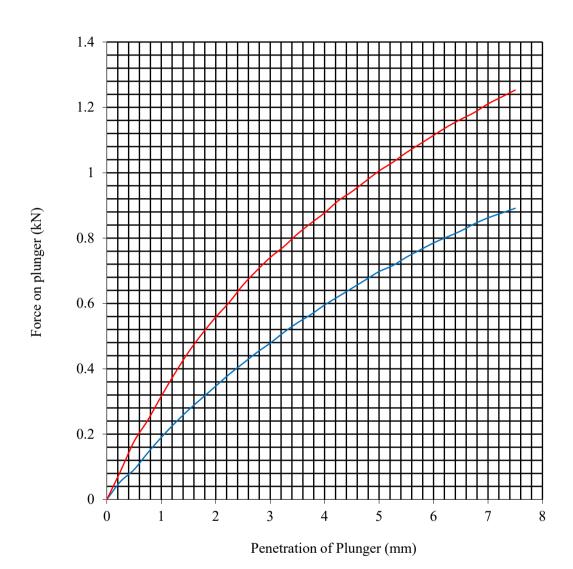


BS 1377: Part 4: 1990

Hole Number: TP09 Top Depth (m): 1.20

Sample Number: Base Depth (m): 1.40

Sample Type: B



Initial Sample Conditions Sample Prepara		ration Final Moisture Conto		tent % C.B.R. V		Value %	
Moisture Content:	12	Surcharge kPa:	10	Sample Top	15	Sample Top	3.5
Bulk Density Mg/m3:	2.14	Soaking Time hrs	96	Sample Bottom	13	Sample Bottom	5.0
Dry Density Mg/m3:	1.91	Swelling mm:	3.18	Remarks: Compacted to 9	5% MDD a	t natural moistur	e content
Percentage retained on 20mm BS test sieve:		0					
Compaction Conditions 2.5kg							

- Top

- Bottom

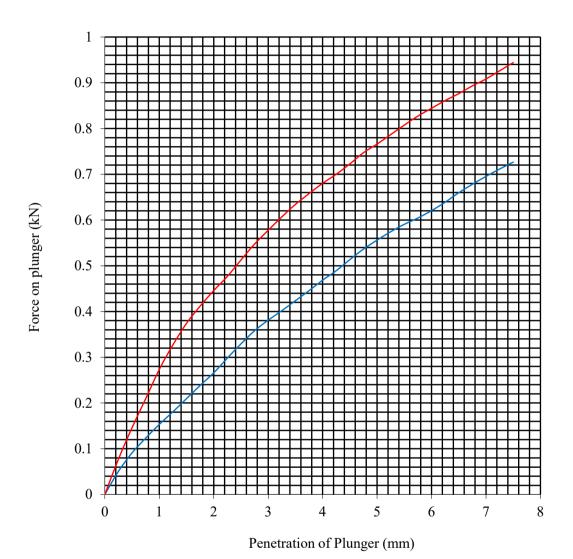


BS 1377: Part 4: 1990

Hole Number: TP10 Top Depth (m): 0.80

Sample Number: Base Depth (m):

Sample Type: B



Initial Sample Conditions Sample Prepara		ration Final Moisture Cont		tent %	C.B.R. Value %		
Moisture Content:	22	Surcharge kPa:	10	Sample Top	23	Sample Top	2.8
Bulk Density Mg/m3:	1.98	Soaking Time hrs	96	Sample Bottom	22	Sample Bottom	3.9
Dry Density Mg/m3:	1.62	Swelling mm:	0.07	Remarks: Compacted to 9	5% MDD a	t natural moistur	e content
Percentage retained on 20mm BS test sieve:			0				
Compaction Conditions		2.5kg					

- Top

Bottom

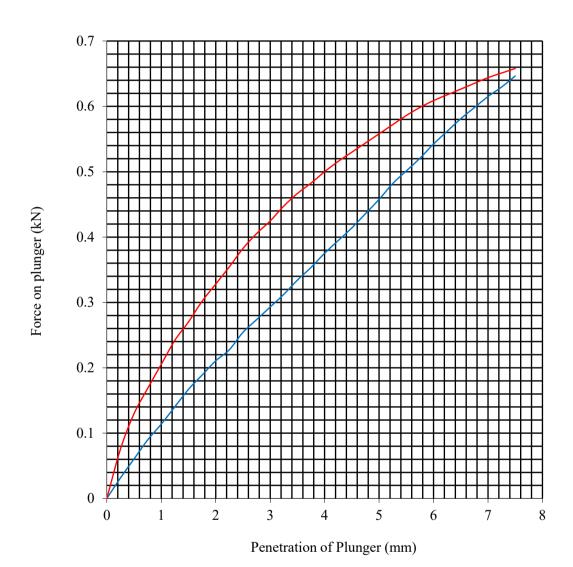


BS 1377: Part 4: 1990

Hole Number: TP11 Top Depth (m): 0.50

Sample Number: Base Depth (m): 0.60

Sample Type: B



Initial Sample Conditions Sample Prepara		ration Final Moisture Conte		tent % C.B.R. Val		Value %	
Moisture Content:	21	Surcharge kPa:	10	Sample Top	23	Sample Top	2.3
Bulk Density Mg/m3:	1.99	Soaking Time hrs	96	Sample Bottom	23	Sample Bottom	2.9
Dry Density Mg/m3:	1.64	Swelling mm:	2.80	Remarks: Compacted to 9	5% MDD a	t natural moistur	e content
Percentage retained on 2	20mm B	S test sieve:	0]			
Compaction Conditions 2.5kg							

- Top

- Bottom

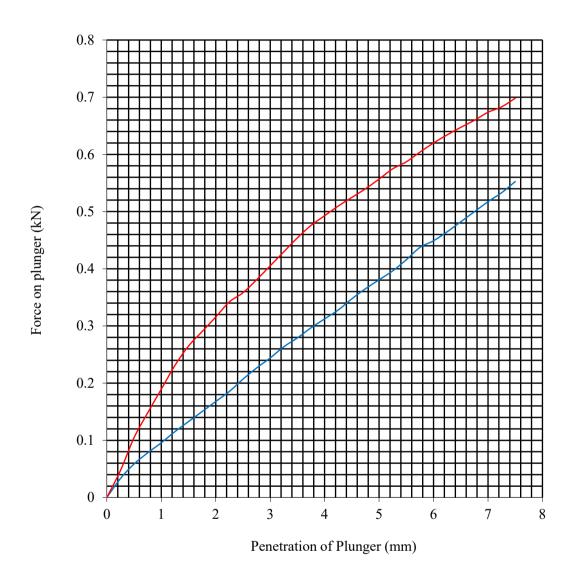


BS 1377: Part 4: 1990

Hole Number: TP12 Top Depth (m): 0.30

Sample Number: Base Depth (m): 0.40

Sample Type: B



Initial Sample Conditions Sample Prepara		ration Final Moisture Conte		tent % C.B.R. Val		Value %	
Moisture Content:	20	Surcharge kPa:	10	Sample Top	23	Sample Top	1.9
Bulk Density Mg/m3:	2.00	Soaking Time hrs	96	Sample Bottom	21	Sample Bottom	2.8
Dry Density Mg/m3:	1.68	Swelling mm:	3.88	Remarks: Compacted to 9	5% MDD a	t natural moistur	e content
Percentage retained on 2	20mm B	S test sieve:	0]			
Compaction Conditions 2.5kg							

- Top

- Bottom

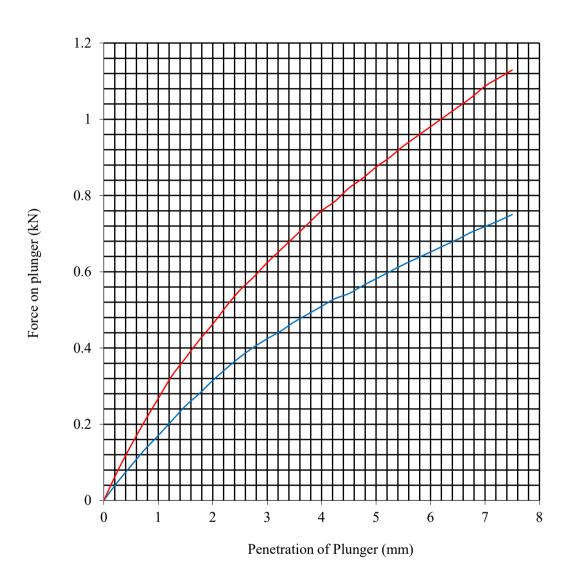


BS 1377: Part 4: 1990

Hole Number: TP13 Top Depth (m): 1.20

Sample Number: Base Depth (m): 1.30

Sample Type: B



Initial Sample Conditions Sample Prepara		ation Final Moisture Conte		tent %	ent % C.B.R. Valu		
Moisture Content:	17	Surcharge kPa:	10	Sample Top	20	Sample Top	2.9
Bulk Density Mg/m3:	2.04	Soaking Time hrs	96	Sample Bottom	18	Sample Bottom	4.4
Dry Density Mg/m3:	1.74	Swelling mm:	4.42	Remarks: Compacted to 9	5% MDD a	t natural moistur	e content
Percentage retained on 20mm BS test sieve:			2]			
Compaction Conditions 2.5kg							

- Top

- Bottom

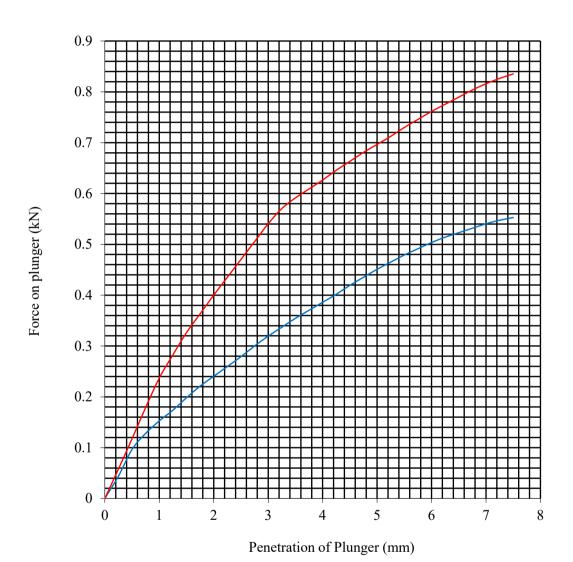


BS 1377: Part 4: 1990

Hole Number: TP14 Top Depth (m): 1.50

Sample Number: Base Depth (m):

Sample Type: B



Initial Sample Conditions Sample Prepara		ration Final Moisture Conter		tent %	t % C.B.R. Value		
Moisture Content:	24	Surcharge kPa:	10	Sample Top	26	Sample Top	2.3
Bulk Density Mg/m3:	1.93	Soaking Time hrs	96	Sample Bottom	25	Sample Bottom	3.6
Dry Density Mg/m3:	1.56	Swelling mm:	0.75	Remarks: Compacted to 9	5% MDD a	t natural moistur	e content
Percentage retained on 20mm BS test sieve:			0				
Compaction Conditions 2.5kg							

- Top

Bottom

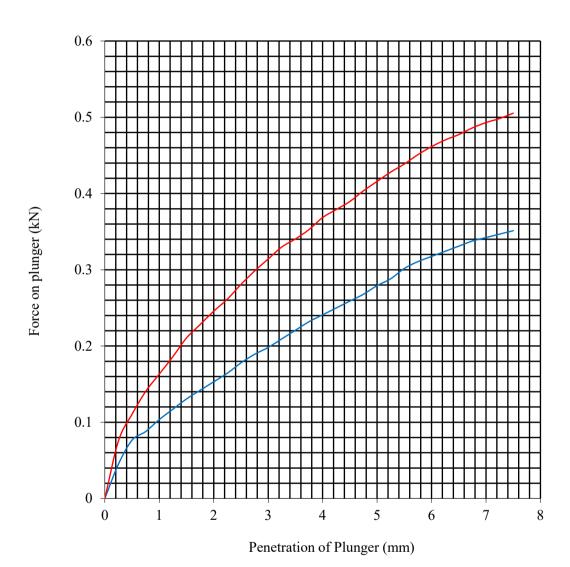


BS 1377: Part 4: 1990

Hole Number: TP15 Top Depth (m): 0.60

Sample Number: Base Depth (m): 0.80

Sample Type: B



Initial Sample Conditions Sample Prepara		ration Final Moisture Conte		ent % C.B.R. Val		Value %	
Moisture Content:	23	Surcharge kPa:	10	Sample Top	25	Sample Top	1.4
Bulk Density Mg/m3:	1.95	Soaking Time hrs	96	Sample Bottom	24	Sample Bottom	2.1
Dry Density Mg/m3:	1.59	Swelling mm:	0.48	Remarks: Compacted to 9	5% MDD a	t natural moistur	e content
Percentage retained on 20mm BS test sieve:			0]			
Compaction Conditions 2.5kg							

- Top

- Bottom

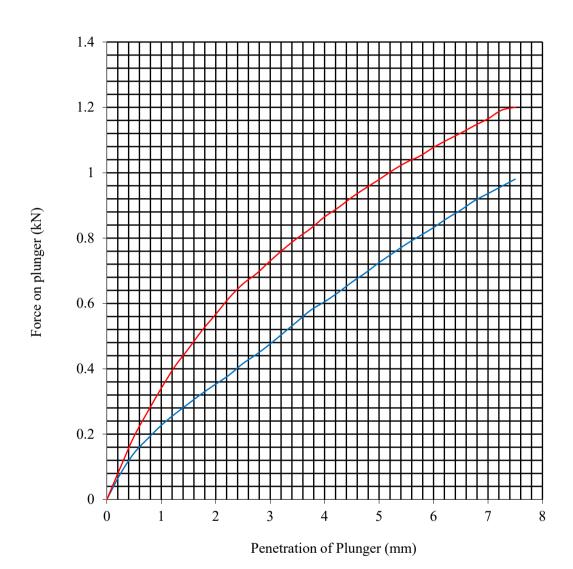


BS 1377: Part 4: 1990

Hole Number: TP23 Top Depth (m): 1.60

Sample Number: Base Depth (m): 1.80

Sample Type: B



Initial Sample Conditions Sample Prep		Sample Prepara	ration Final Moisture Cont		tent %	C.B.R. Value %	
Moisture Content:	22	Surcharge kPa:	10	Sample Top	24	Sample Top	3.6
Bulk Density Mg/m3:	1.98	Soaking Time hrs	96	Sample Bottom	22	Sample Bottom	5.0
Dry Density Mg/m3:	1.62	Swelling mm:	2.40	Remarks: Compacted to 9	5% MDD a	t natural moistur	e content
Percentage retained on 20mm BS test sieve:			0				
Compaction Conditions 2.5kg							

- Top

- Bottom





LABORATORY REPORT



4043

Contract Number: PSL21/9589

Report Date: 11 January 2022

Client's Reference: S211001-4

Client Name: Solmek

12 Yarm Road Stockton-on-Tees

TS18 3NA

For the attention of: T Finnimore/Joe Brischuk

Contract Title: Envision, Sunderland

Date Received: 7/12/2021

Date Commenced: 7/12/2021

Date Completed: 11/1/2022

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

A Watkins R Berriman S Royle

(Director) (Quality Manager) (Laboratory Manager)

(Director) (Quality Manager) (Laboratory Manager)

EH#

L Knight S Eyre T Watkins
(Assistant Laboratory Manager) (Senior Technician) (Senior Technician)

Page 1 of

5 – 7 Hexthorpe Road, Hexthorpe,

Doncaster DN4 0AR tel: +44 (0)844 815 6641 fax: +44 (0)844 815 6642

e-mail: rberriman@prosoils.co.uk awatkins@prosoils.co.uk

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
TP05		В	1.00	1.20	Brown slightly gravelly sandy CLAY.
TP21		В	1.00	1.20	Brown slightly gravelly sandy CLAY.
TP33		В	1.00	1.20	Brown sandy CLAY.
TP46		В	1.00	1.20	Brown slightly gravelly sandy CLAY.



Envision, Sunderland

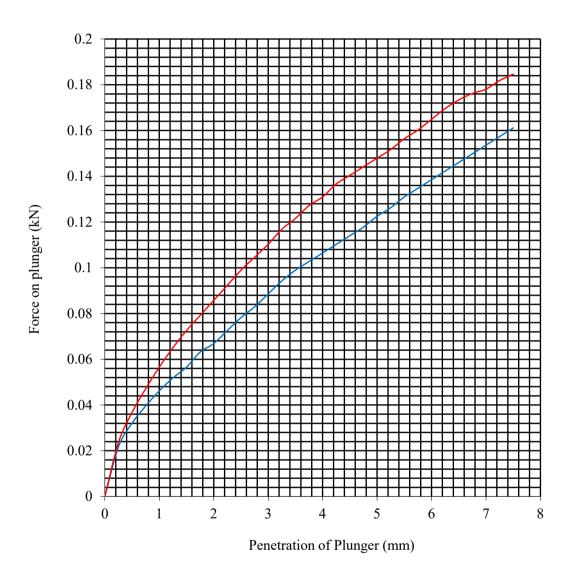
Contract No:
PSL21/9589
Client Ref:
S211001

BS 1377: Part 4: 1990

Hole Number: TP05 Top Depth (m): 1.00

Sample Number: Base Depth (m): 1.20

Sample Type: B



Initial Sample Conditions		Sample Preparation		Final Moisture Content %		C.B.R. Value %	
Moisture Content:	21	Surcharge kPa:	10	Sample Top	23	Sample Top	0.6
Bulk Density Mg/m3:	1.99	Soaking Time hrs	96	Sample Bottom	22	Sample Bottom	0.7
Dry Density Mg/m3:	1.64	Swelling mm:	0.00	Remarks: Remoulded to 95% of MDD at natural moisture content			ture content
Percentage retained on 20mm BS test sieve:			0]			
Compaction Conditions 4.5kg							

- Top

Bottom

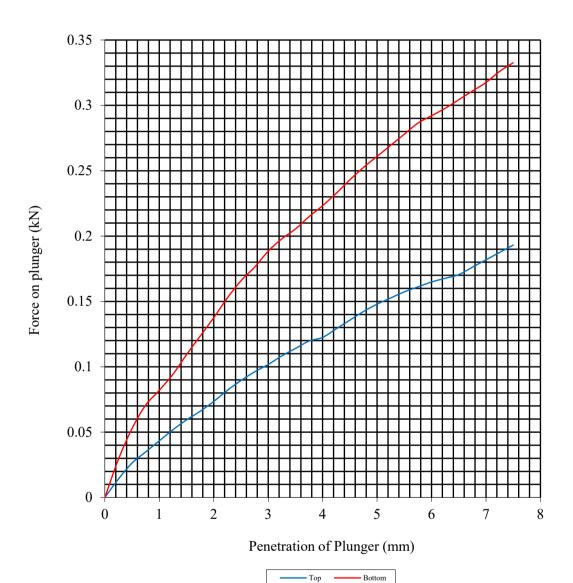


BS 1377: Part 4: 1990

Top Depth (m): **Hole Number:** 1.00 **TP21**

Base Depth (m): **Sample Number:** 1.20

Sample Type: B



Initial Sample Conditions Sam		Sample Preparation		Final Moisture Content %		C.B.R. Value %	
Moisture Content:	23	Surcharge kPa:	10	Sample Top	24	Sample Top	0.7
Bulk Density Mg/m3:	1.97	Soaking Time hrs	96	Sample Bottom	23	Sample Bottom	1.3
Dry Density Mg/m3:	1.59	Swelling mm:	0.00	Remarks : Remoulded to 95% MDD at natural moisture content			re content
Percentage retained on 20mm BS test sieve:			0]			
Compaction Conditions 4.5kg							

- Top



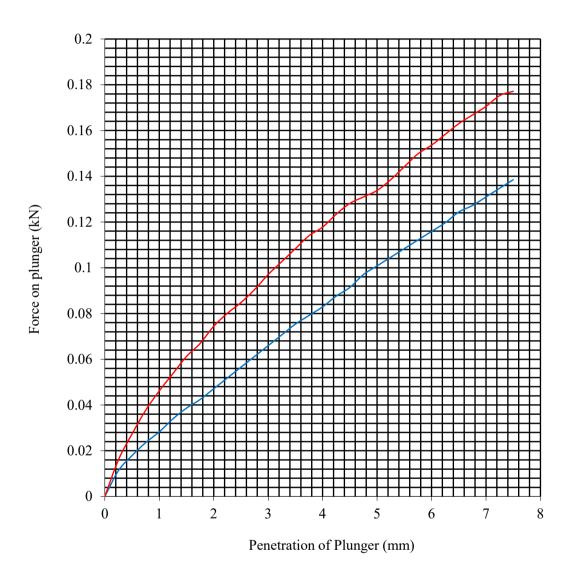
Contract No: PSL21/9589 **Client Ref:** $S2\overline{11001}$

BS 1377: Part 4: 1990

Hole Number: TP33 Top Depth (m): 1.00

Sample Number: Base Depth (m): 1.20

Sample Type: B



Initial Sample Conditions		Sample Preparation		Final Moisture Content %		C.B.R. Value %	
Moisture Content:	24	Surcharge kPa:	10	Sample Top	25	Sample Top	0.5
Bulk Density Mg/m3:	1.94	Soaking Time hrs	96	Sample Bottom	24	Sample Bottom	0.7
Dry Density Mg/m3:	1.57	Swelling mm:	0.00	Remarks: Remoulded to 9	95% MDD a	t natural moistur	e content
Percentage retained on 20mm BS test sieve:			0]			
Compaction Conditions 4.5kg							

- Top

Bottom

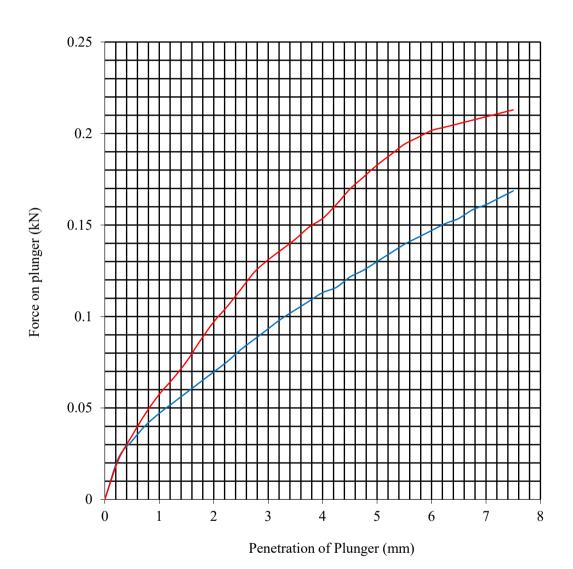


BS 1377: Part 4: 1990

Hole Number: TP46 Top Depth (m): 1.00

Sample Number: Base Depth (m): 1.20

Sample Type: B



Initial Sample Conditions		Sample Preparation		Final Moisture Content %		C.B.R. Value %	
Moisture Content:	24	Surcharge kPa:	10	Sample Top	27	Sample Top	0.7
Bulk Density Mg/m3:	1.94	Soaking Time hrs	96	Sample Bottom	25	Sample Bottom	0.9
Dry Density Mg/m3:	1.56	Swelling mm:	0.00	Remarks: Remoulded to 95% MDD at natural moisture content			e content
Percentage retained on 20mm BS test sieve:			0				
Compaction Conditions 4.5kg							

- Top

- Bottom





DYNAMIC CONE PENETROMETER TEST REPORT

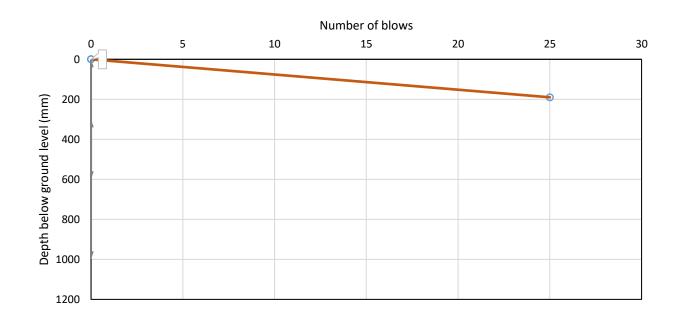
Project: S211001

Project name: Envision, Sunderland

Report date:

Operator: Samuel McNiff Notes:

Test date: 25/10/2021 Test location: DCP01



Layer 0-1000mm bgl

Penetration rate Equivalent CBR Equivalent surface modulus Estimated bearing capacity 8 mm/blow

 35.4 %
 [DMRB Vol.7 3.2 HD 29/08 - Section 7.31]

 172.3 kPa
 [TRRL LR 1132 - Appendix C Equation C1]

 279.4 kPa
 [PCA - Design of Concrete Pavement. 1955]

Produced by	Dated	Checked by	Dated
S McNiff			00/01/00



DYNAMIC CONE PENETROMETER TEST REPORT

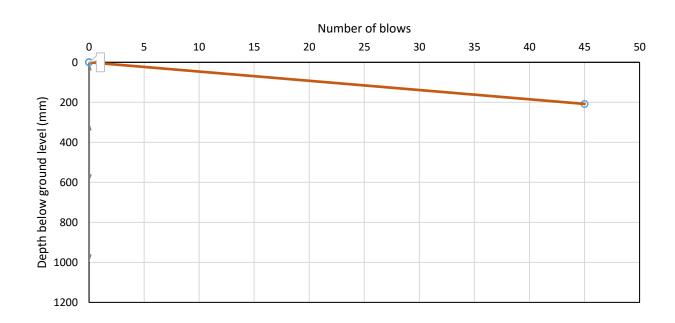
Project: S211001

Project name: Envision, Sunderland

Report date:

Operator: Samuel McNiff Notes:

Test date: 25/10/2021 Test location: DCP02



Layer 0-1000mm bgl

Penetration rate Equivalent CBR Equivalent surface modulus Estimated bearing capacity 5 mm/blow

 59.9 %
 [DMRB Vol.7 3.2 HD 29/08 - Section 7.31]

 241.2 kPa
 [TRRL LR 1132 - Appendix C Equation C1]

 396.0 kPa
 [PCA - Design of Concrete Pavement. 1955]

Pro	duced by	Dated	Checked by	Dated
	S McNiff			00/01/00



DYNAMIC CONE PENETROMETER TEST REPORT

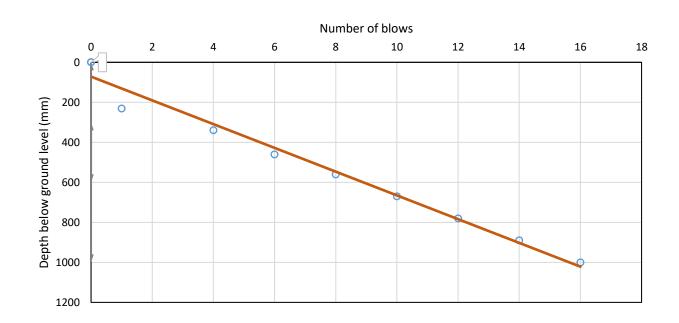
Project: S211001

Project name: Envision, Sunderland

Report date:

Operator: Samuel McNiff Notes:

Test date: 25/10/2021 Test location: DCP03



Layer 0-1000mm bgl

Penetration rate Equivalent CBR Equivalent surface modulus Estimated bearing capacity 57 mm/blow

4.2 % [DMRB Vol.7 3.2 HD 29/08 - Section 7.31]
 44.0 kPa [TRRL LR 1132 - Appendix C Equation C1]
 67.8 kPa [PCA - Design of Concrete Pavement. 1955]

Produced b	y	Dated	Checked by	Dated
S McNi	ff			00/01/00



DYNAMIC CONE PENETROMETER TEST REPORT

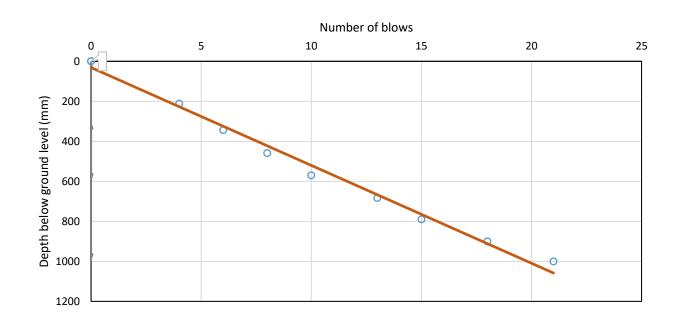
Project: S211001

Project name: Envision, Sunderland

Report date:

Operator: Samuel McNiff Notes:

Test date: 25/10/2021 Test location: DCP04



Layer 0-1000mm bgl

Penetration rate Equivalent CBR Equivalent surface modulus Estimated bearing capacity 48 mm/blow

5.0 % [DMRB Vol.7 3.2 HD 29/08 - Section 7.31]
49.5 kPa [TRRL LR 1132 - Appendix C Equation C1]
76.6 kPa [PCA - Design of Concrete Pavement. 1955]

Pro	oduced by	Dated	Checked by	Dated
	S McNiff			00/01/00



DYNAMIC CONE PENETROMETER TEST REPORT

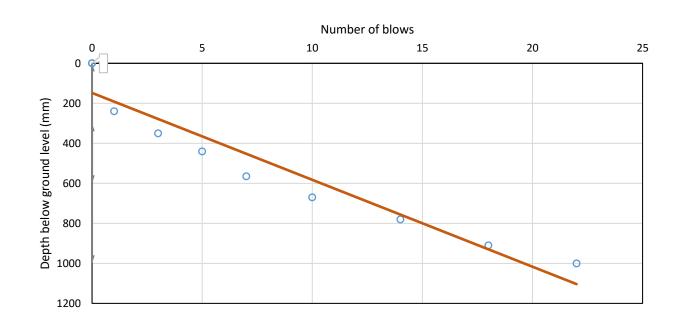
Project: S211001

Project name: Envision, Sunderland

Report date:

Operator: Samuel McNiff Notes:

Test date: 25/10/2021 Test location: DCP06



Layer 0-1000mm bgl

Penetration rate Equivalent CBR Equivalent surface modulus Estimated bearing capacity 41 mm/blow

6.0 % [DMRB Vol.7 3.2 HD 29/08 - Section 7.31]
55.4 kPa [TRRL LR 1132 - Appendix C Equation C1]
86.1 kPa [PCA - Design of Concrete Pavement. 1955]

Pro	oduced by	Dated	Checked by	Dated
	S McNiff			00/01/00



DYNAMIC CONE PENETROMETER TEST REPORT

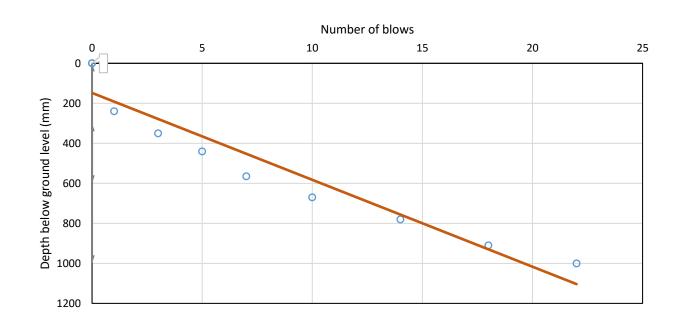
Project: S211001

Project name: Envision, Sunderland

Report date:

Operator: Samuel McNiff Notes:

Test date: 25/10/2021 Test location: DCP06



Layer 0-1000mm bgl

Penetration rate Equivalent CBR Equivalent surface modulus Estimated bearing capacity 41 mm/blow

6.0 % [DMRB Vol.7 3.2 HD 29/08 - Section 7.31]
55.4 kPa [TRRL LR 1132 - Appendix C Equation C1]
86.1 kPa [PCA - Design of Concrete Pavement. 1955]

Pro	oduced by	Dated	Checked by	Dated
	S McNiff			00/01/00



DYNAMIC CONE PENETROMETER TEST REPORT

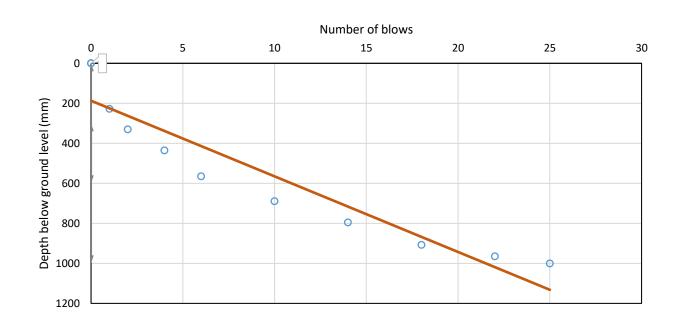
Project: S211001

Project name: Envision, Sunderland

Report date:

Operator: Samuel McNiff Notes:

Test date: 25/10/2021 Test location: DCP07



Layer 0-1000mm bgl

Penetration rate Equivalent CBR Equivalent surface modulus Estimated bearing capacity 35 mm/blow

7.0 % [DMRB Vol.7 3.2 HD 29/08 - Section 7.31]
61.0 kPa [TRRL LR 1132 - Appendix C Equation C1]
95.2 kPa [PCA - Design of Concrete Pavement. 1955]

Pro	duced by	Dated	Checked by	Dated
	S McNiff			00/01/00



DYNAMIC CONE PENETROMETER TEST REPORT

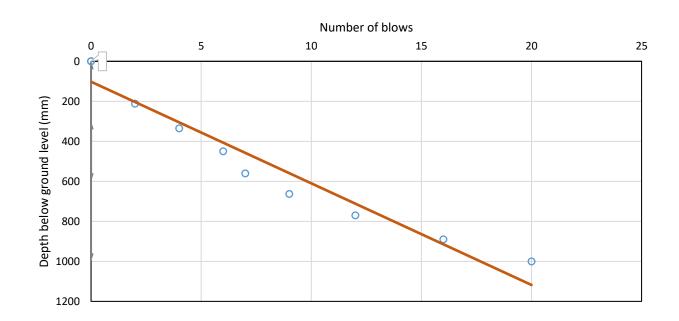
Project: S211001

Project name: Envision, Sunderland

Report date:

Operator: Samuel McNiff Notes:

Test date: 25/10/2021 Test location: DCP08



Layer 0-1000mm bgl

Penetration rate Equivalent CBR Equivalent surface modulus Estimated bearing capacity 48 mm/blow

5.0 % [DMRB Vol.7 3.2 HD 29/08 - Section 7.31]
49.3 kPa [TRRL LR 1132 - Appendix C Equation C1]
76.3 kPa [PCA - Design of Concrete Pavement. 1955]

Pro	oduced by	Dated	Checked by	Dated
	S McNiff			00/01/00



DYNAMIC CONE PENETROMETER TEST REPORT

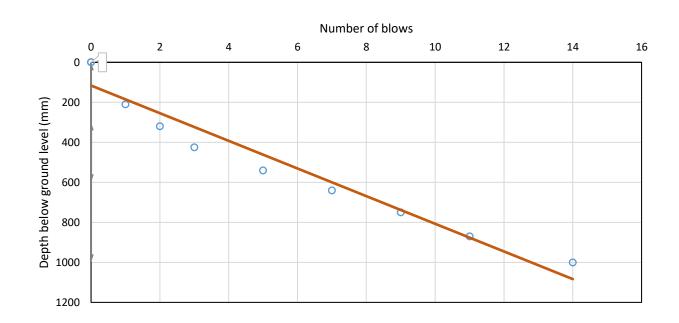
Project: S211001

Project name: Envision, Sunderland

Report date:

Operator: Samuel McNiff Notes:

Test date: 25/10/2021 Test location: DCP09



Layer 0-1000mm bgl

Penetration rate Equivalent CBR Equivalent surface modulus Estimated bearing capacity 65 mm/blow

 3.6 %
 [DMRB Vol.7 3.2 HD 29/08 - Section 7.31]

 40.1 kPa
 [TRRL LR 1132 - Appendix C Equation C1]

 61.6 kPa
 [PCA - Design of Concrete Pavement. 1955]

Prod	luced by	Dated	Checked by	Dated
	S McNiff			00/01/00



DYNAMIC CONE PENETROMETER TEST REPORT

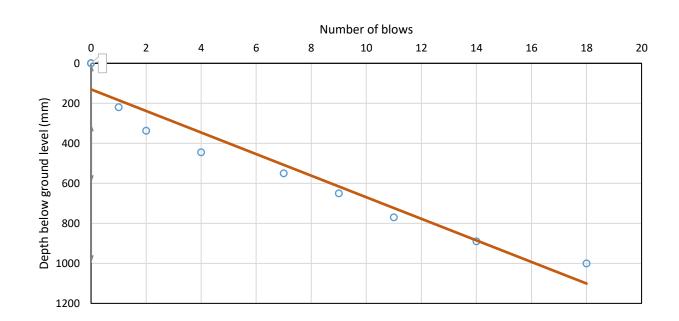
Project: S211001

Project name: Envision, Sunderland

Report date:

Operator: Samuel McNiff Notes:

Test date: 25/10/2021 Test location: DCP10



Layer 0-1000mm bgl

Penetration rate Equivalent CBR Equivalent surface modulus Estimated bearing capacity 51 mm/blow

 4.8 %
 [DMRB Vol.7 3.2 HD 29/08 - Section 7.31]

 47.7 kPa
 [TRRL LR 1132 - Appendix C Equation C1]

 73.6 kPa
 [PCA - Design of Concrete Pavement. 1955]

Prod	luced by	Dated	Checked by	Dated
	S McNiff			00/01/00



DYNAMIC CONE PENETROMETER TEST REPORT

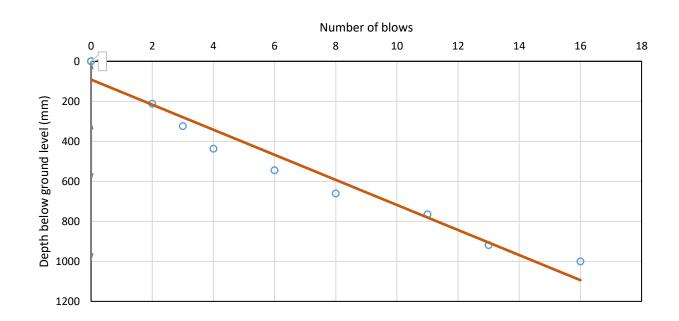
Project: S211001

Project name: Envision, Sunderland

Report date:

Operator: Samuel McNiff Notes:

Test date: 25/10/2021 Test location: DCP11



Layer 0-1000mm bgl

Penetration rate Equivalent CBR Equivalent surface modulus Estimated bearing capacity 60 mm/blow

 4.0 %
 [DMRB Vol.7 3.2 HD 29/08 - Section 7.31]

 42.6 kPa
 [TRRL LR 1132 - Appendix C Equation C1]

 65.6 kPa
 [PCA - Design of Concrete Pavement. 1955]

Prod	luced by	Dated	Checked by	Dated
	S McNiff			00/01/00



DYNAMIC CONE PENETROMETER TEST REPORT

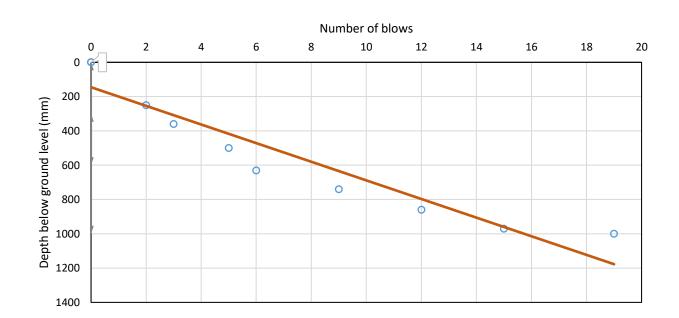
Project: S211001

Project name: Envision, Sunderland

Report date:

Operator: Samuel McNiff Notes:

Test date: 25/10/2021 Test location: DCP12



Layer 0-1000mm bgl

Penetration rate Equivalent CBR Equivalent surface modulus Estimated bearing capacity 51 mm/blow

 4.8 %
 [DMRB Vol.7 3.2 HD 29/08 - Section 7.31]

 47.7 kPa
 [TRRL LR 1132 - Appendix C Equation C1]

 73.7 kPa
 [PCA - Design of Concrete Pavement. 1955]

Pro	duced by	Dated	Checked by	Dated
	S McNiff			00/01/00



DYNAMIC CONE PENETROMETER TEST REPORT

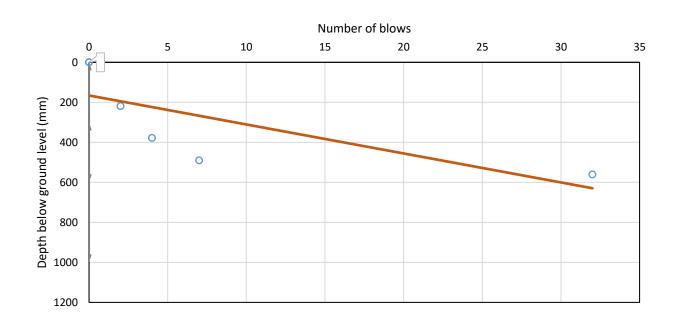
Project: S211001

Project name: Envision, Sunderland

Report date:

Operator: Samuel McNiff Notes: Possible cobble or boulder refusal

Test date: 25/10/2021 Test location: DCP13



Layer 0-1000mm bgl

Penetration rate Equivalent CBR Equivalent surface modulus Estimated bearing capacity 12 mm/blow

 21.2 %
 [DMRB Vol.7 3.2 HD 29/08 - Section 7.31]

 124.3 kPa
 [TRRL LR 1132 - Appendix C Equation C1]

 199.0 kPa
 [PCA - Design of Concrete Pavement. 1955]

Pro	duced by	Dated	Checked by	Dated
	S McNiff			00/01/00



DYNAMIC CONE PENETROMETER TEST REPORT

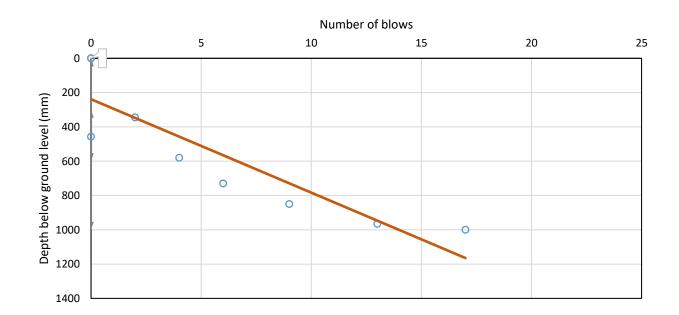
Project: S211001

Project name: Envision, Sunderland

Report date:

Operator: Samuel McNiff Notes: Possible cobble or boulder refusal

Test date: 25/10/2021 Test location: DCP14



Layer 0-1000mm bgl

Penetration rate Equivalent CBR Equivalent surface modulus Estimated bearing capacity 54 mm/blow

 4.5 %
 [DMRB Vol.7 3.2 HD 29/08 - Section 7.31]

 45.8 kPa
 [TRRL LR 1132 - Appendix C Equation C1]

 70.7 kPa
 [PCA - Design of Concrete Pavement. 1955]

Prod	luced by	Dated	Checked by	Dated
	S McNiff			00/01/00



DYNAMIC CONE PENETROMETER TEST REPORT

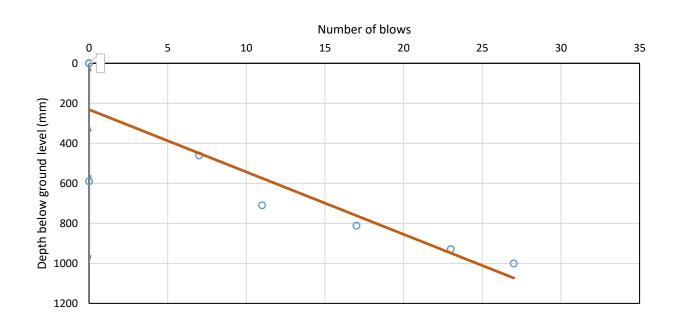
Project: S211001

Project name: Envision, Sunderland

Report date:

Operator: Samuel McNiff Notes:

Test date: 25/10/2021 Test location: DCP15



Layer 0-1000mm bgl

Penetration rate Equivalent CBR Equivalent surface modulus Estimated bearing capacity 35 mm/blow

7.1 % [DMRB Vol.7 3.2 HD 29/08 - Section 7.31]
61.7 kPa [TRRL LR 1132 - Appendix C Equation C1]
96.2 kPa [PCA - Design of Concrete Pavement. 1955]

Pro	duced by	Dated	Checked by	Dated
	S McNiff			00/01/00



DYNAMIC CONE PENETROMETER TEST REPORT

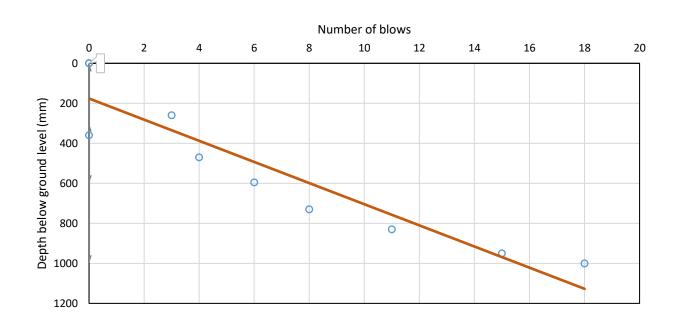
Project: S211001

Project name: Envision, Sunderland

Report date:

Operator: Samuel McNiff Notes:

Test date: 25/10/2021 Test location: DCP16



Layer 0-1000mm bgl

Penetration rate Equivalent CBR Equivalent surface modulus Estimated bearing capacity 53 mm/blow

 4.5 %
 [DMRB Vol.7 3.2 HD 29/08 - Section 7.31]

 46.3 kPa
 [TRRL LR 1132 - Appendix C Equation C1]

 71.4 kPa
 [PCA - Design of Concrete Pavement. 1955]

Pro	oduced by	Dated	Checked by	Dated
	S McNiff			00/01/00



DYNAMIC CONE PENETROMETER TEST REPORT

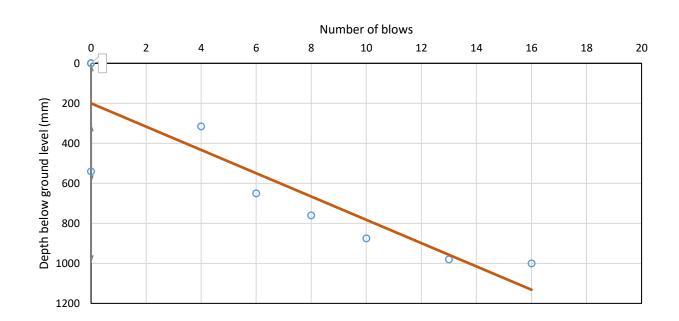
Project: S211001

Project name: Envision, Sunderland

Report date:

Operator: Samuel McNiff Notes:

Test date: 25/10/2021 Test location: DCP17



Layer 0-1000mm bgl

Penetration rate Equivalent CBR Equivalent surface modulus Estimated bearing capacity 65 mm/blow

 3.7 %
 [DMRB Vol.7 3.2 HD 29/08 - Section 7.31]

 40.5 kPa
 [TRRL LR 1132 - Appendix C Equation C1]

 62.2 kPa
 [PCA - Design of Concrete Pavement. 1955]

Produced b	y	Dated	Checked by	Dated
S McNi	ff			00/01/00



DYNAMIC CONE PENETROMETER TEST REPORT

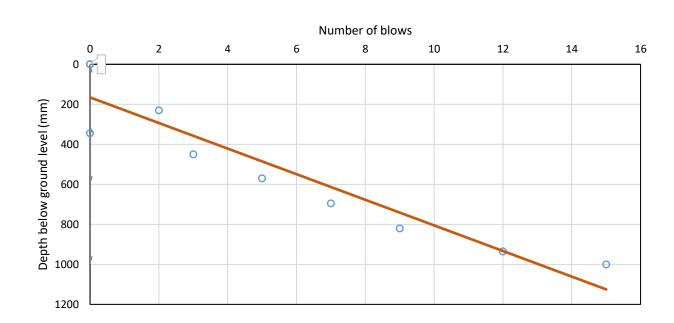
Project: S211001

Project name: Envision, Sunderland

Report date:

Operator: Samuel McNiff Notes:

Test date: 25/10/2021 Test location: DCP18



Layer 0-1000mm bgl

Penetration rate Equivalent CBR Equivalent surface modulus Estimated bearing capacity 64 mm/blow

 3.7 %
 [DMRB Vol.7 3.2 HD 29/08 - Section 7.31]

 40.6 kPa
 [TRRL LR 1132 - Appendix C Equation C1]

 62.3 kPa
 [PCA - Design of Concrete Pavement. 1955]

Pro	oduced by	Dated	Checked by	Dated
	S McNiff			00/01/00



DYNAMIC CONE PENETROMETER TEST REPORT

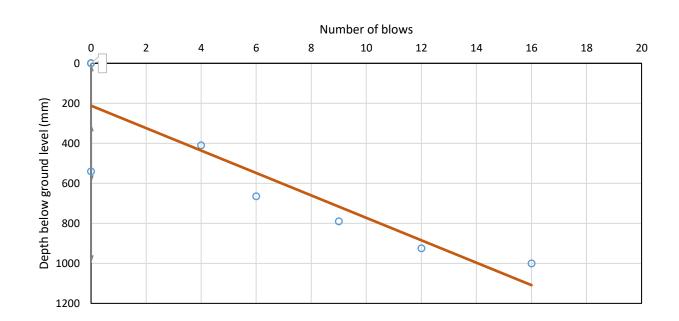
Project: S211001

Project name: Envision, Sunderland

Report date:

Operator: Samuel McNiff Notes:

Test date: 25/10/2021 Test location: DCP19



Layer 0-1000mm bgl

Penetration rate Equivalent CBR Equivalent surface modulus Estimated bearing capacity 62 mm/blow

 3.9 %
 [DMRB Vol.7 3.2 HD 29/08 - Section 7.31]

 41.8 kPa
 [TRRL LR 1132 - Appendix C Equation C1]

 64.3 kPa
 [PCA - Design of Concrete Pavement. 1955]

Pro	oduced by	Dated	Checked by	Dated
	S McNiff			00/01/00



DYNAMIC CONE PENETROMETER TEST REPORT

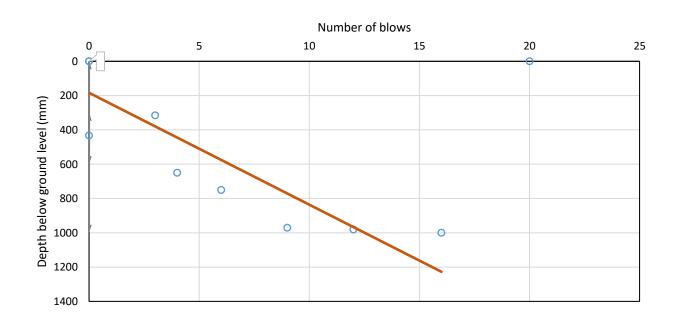
Project: S211001

Project name: Envision, Sunderland

Report date:

Operator: Samuel McNiff Notes:

Test date: 25/10/2021 Test location: DCP20



Layer 0-1000mm bgl

Penetration rate Equivalent CBR Equivalent surface modulus Estimated bearing capacity 61 mm/blow

 3.9 %
 [DMRB Vol.7 3.2 HD 29/08 - Section 7.31]

 42.3 kPa
 [TRRL LR 1132 - Appendix C Equation C1]

 65.0 kPa
 [PCA - Design of Concrete Pavement. 1955]

Pro	oduced by	Dated	Checked by	Dated
	S McNiff			00/01/00



DYNAMIC CONE PENETROMETER TEST REPORT

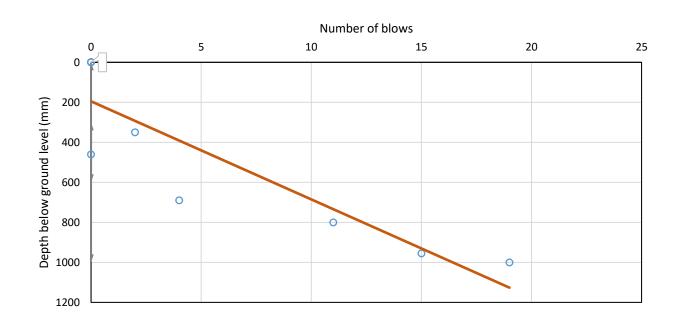
Project: S211001

Project name: Envision, Sunderland

Report date:

Operator: Samuel McNiff Notes:

Test date: 25/10/2021 Test location: DCP21



Layer 0-1000mm bgl

Penetration rate Equivalent CBR Equivalent surface modulus Estimated bearing capacity 45 mm/blow

5.4 % [DMRB Vol.7 3.2 HD 29/08 - Section 7.31]
51.4 kPa [TRRL LR 1132 - Appendix C Equation C1]
79.7 kPa [PCA - Design of Concrete Pavement. 1955]

Pro	oduced by	Dated	Checked by	Dated
	S McNiff			00/01/00



DYNAMIC CONE PENETROMETER TEST REPORT

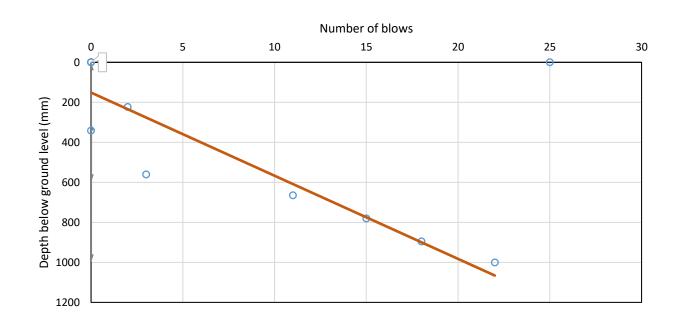
Project: S211001

Project name: Envision, Sunderland

Report date:

Operator: Samuel McNiff Notes:

Test date: 25/10/2021 Test location: DCP22



Layer 0-1000mm bgl

Penetration rate Equivalent CBR Equivalent surface modulus Estimated bearing capacity 39 mm/blow

 6.3 %
 [DMRB Vol.7 3.2 HD 29/08 - Section 7.31]

 57.0 kPa
 [TRRL LR 1132 - Appendix C Equation C1]

 88.6 kPa
 [PCA - Design of Concrete Pavement. 1955]

Pro	oduced by	Dated	Checked by	Dated
	S McNiff			00/01/00



DYNAMIC CONE PENETROMETER TEST REPORT

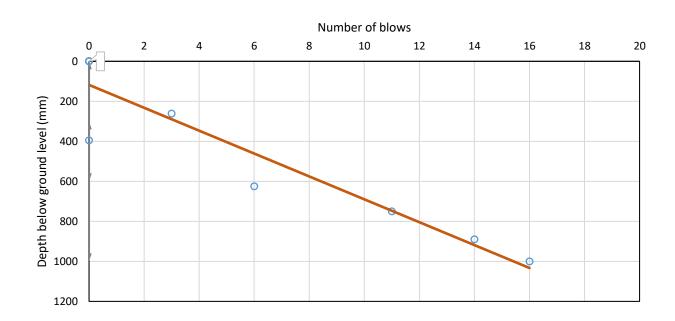
Project: S211001

Project name: Envision, Sunderland

Report date:

Operator: Samuel McNiff Notes:

Test date: 25/10/2021 Test location: DCP23



Layer 0-1000mm bgl

Penetration rate Equivalent CBR Equivalent surface modulus Estimated bearing capacity 59 mm/blow

4.1 % [DMRB Vol.7 3.2 HD 29/08 - Section 7.31]
43.1 kPa [TRRL LR 1132 - Appendix C Equation C1]
66.4 kPa [PCA - Design of Concrete Pavement. 1955]

Pro	oduced by	Dated	Checked by	Dated
	S McNiff			00/01/00



DYNAMIC CONE PENETROMETER TEST REPORT

Project: S211001

Project name: Envision, Sunderland

Report date:

Operator: Samuel McNiff Notes:

Test date: 25/10/2021 Test location: DCP24



Layer 0-1000mm bgl

Penetration rate Equivalent CBR Equivalent surface modulus Estimated bearing capacity 86 mm/blow

2.7 % [DMRB Vol.7 3.2 HD 29/08 - Section 7.31]
 33.4 kPa [TRRL LR 1132 - Appendix C Equation C1]
 50.9 kPa [PCA - Design of Concrete Pavement. 1955]

Pro	oduced by	Dated	Checked by	Dated
	S McNiff			00/01/00



DYNAMIC CONE PENETROMETER TEST REPORT

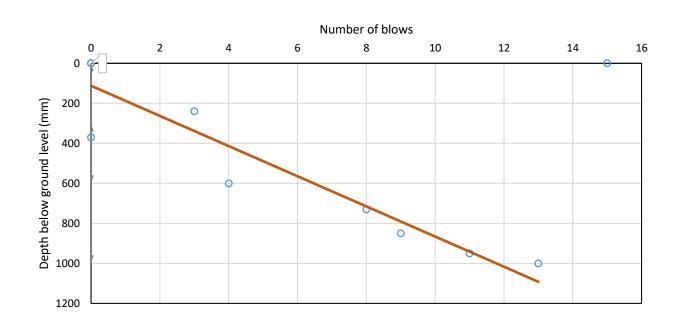
Project: S211001

Project name: Envision, Sunderland

Report date:

Operator: Samuel McNiff Notes:

Test date: 25/10/2021 Test location: DCP25



Layer 0-1000mm bgl

Penetration rate Equivalent CBR Equivalent surface modulus Estimated bearing capacity 77 mm/blow

 3.1 %
 [DMRB Vol.7 3.2 HD 29/08 - Section 7.31]

 35.9 kPa
 [TRRL LR 1132 - Appendix C Equation C1]

 54.9 kPa
 [PCA - Design of Concrete Pavement. 1955]

Pro	oduced by	Dated	Checked by	Dated
	S McNiff			00/01/00



DYNAMIC CONE PENETROMETER TEST REPORT

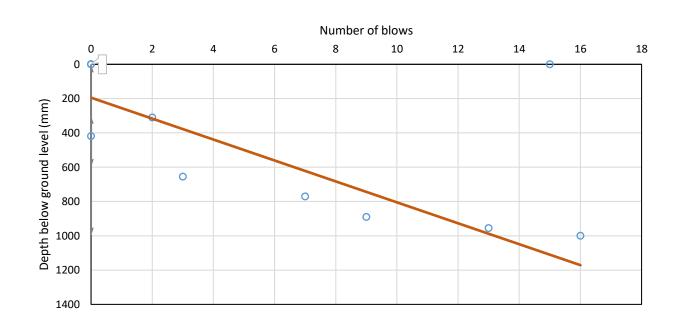
Project: S211001

Project name: Envision, Sunderland

Report date:

Operator: Samuel McNiff Notes:

Test date: 25/10/2021 Test location: DCP26



Layer 0-1000mm bgl

Penetration rate Equivalent CBR Equivalent surface modulus Estimated bearing capacity 55 mm/blow

4.3 % [DMRB Vol.7 3.2 HD 29/08 - Section 7.31]
 44.9 kPa [TRRL LR 1132 - Appendix C Equation C1]
 69.3 kPa [PCA - Design of Concrete Pavement. 1955]

Produced by	Dated	Checked by	Dated
S McNiff			00/01/00



DYNAMIC CONE PENETROMETER TEST REPORT

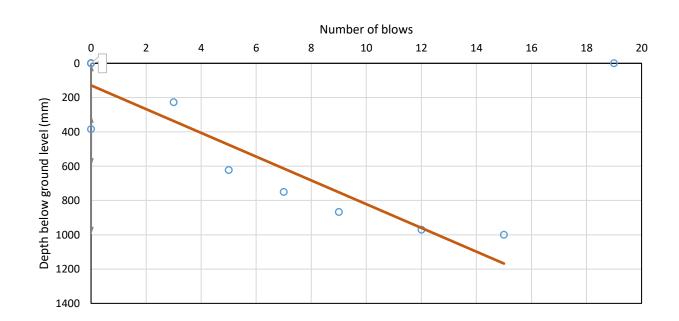
Project: S211001

Project name: Envision, Sunderland

Report date:

Operator: Samuel McNiff Notes:

Test date: 25/10/2021 Test location: DCP27



Layer 0-1000mm bgl

Penetration rate Equivalent CBR Equivalent surface modulus Estimated bearing capacity 69 mm/blow

 3.4 %
 [DMRB Vol.7 3.2 HD 29/08 - Section 7.31]

 38.7 kPa
 [TRRL LR 1132 - Appendix C Equation C1]

 59.3 kPa
 [PCA - Design of Concrete Pavement. 1955]

Pro	duced by	Dated	Checked by	Dated
	S McNiff			00/01/00



DYNAMIC CONE PENETROMETER TEST REPORT

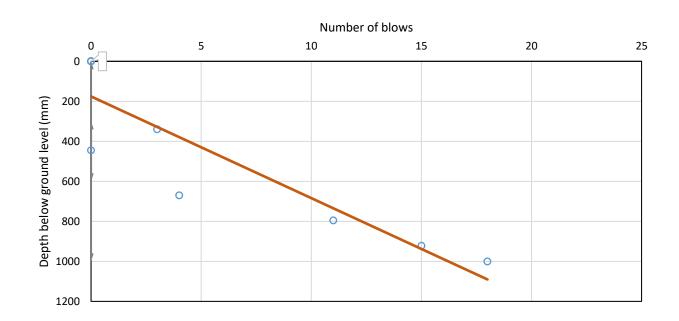
Project: S211001

Project name: Envision, Sunderland

Report date:

Operator: Samuel McNiff Notes:

Test date: 25/10/2021 Test location: DCP28



Layer 0-1000mm bgl

Penetration rate Equivalent CBR Equivalent surface modulus Estimated bearing capacity 48 mm/blow

5.0 % [DMRB Vol.7 3.2 HD 29/08 - Section 7.31]
49.4 kPa [TRRL LR 1132 - Appendix C Equation C1]
76.4 kPa [PCA - Design of Concrete Pavement. 1955]

Pro	oduced by	Dated	Checked by	Dated
	S McNiff			00/01/00



DYNAMIC CONE PENETROMETER TEST REPORT

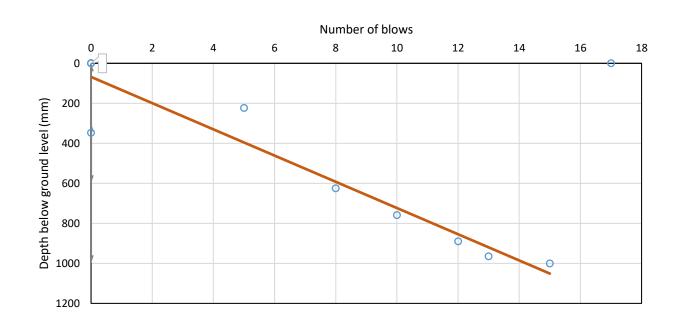
Project: S211001

Project name: Envision, Sunderland

Report date:

Operator: Samuel McNiff Notes:

Test date: 25/10/2021 Test location: DCP29



Layer 0-1000mm bgl

Penetration rate Equivalent CBR Equivalent surface modulus Estimated bearing capacity 74 mm/blow

 3.2 %
 [DMRB Vol.7 3.2 HD 29/08 - Section 7.31]

 37.1 kPa
 [TRRL LR 1132 - Appendix C Equation C1]

 56.8 kPa
 [PCA - Design of Concrete Pavement. 1955]

Pro	duced by	Dated	Checked by	Dated
	S McNiff			00/01/00



DYNAMIC CONE PENETROMETER TEST REPORT

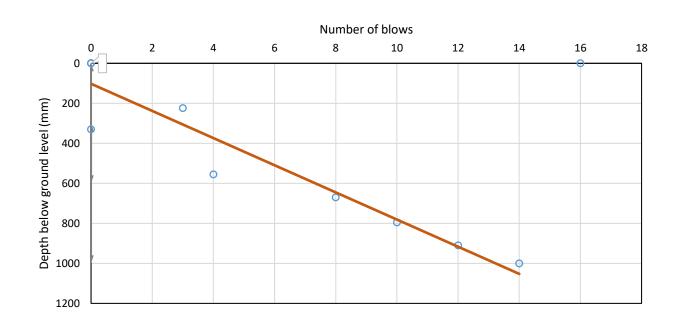
Project: S211001

Project name: Envision, Sunderland

Report date:

Operator: Samuel McNiff Notes:

Test date: 25/10/2021 Test location: DCP30



Layer 0-1000mm bgl

Penetration rate Equivalent CBR Equivalent surface modulus Estimated bearing capacity 69 mm/blow

 3.4 %
 [DMRB Vol.7 3.2 HD 29/08 - Section 7.31]

 38.8 kPa
 [TRRL LR 1132 - Appendix C Equation C1]

 59.4 kPa
 [PCA - Design of Concrete Pavement. 1955]

Prod	luced by	Dated	Checked by	Dated
	S McNiff			00/01/00



DYNAMIC CONE PENETROMETER TEST REPORT

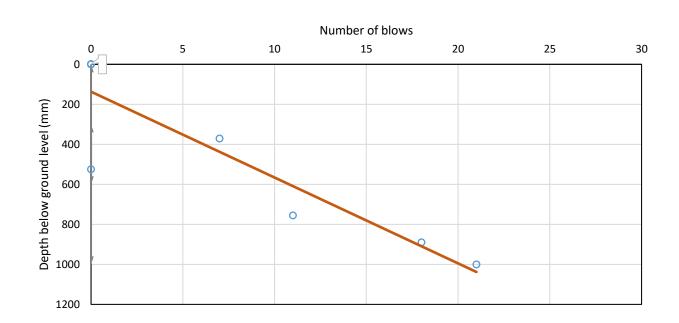
Project: S211001

Project name: Envision, Sunderland

Report date:

Operator: Samuel McNiff Notes:

Test date: 25/10/2021 Test location: DCP31



Layer 0-1000mm bgl

Penetration rate Equivalent CBR Equivalent surface modulus Estimated bearing capacity 47 mm/blow

5.1 % [DMRB Vol.7 3.2 HD 29/08 - Section 7.31] 49.9 kPa [TRRL LR 1132 - Appendix C Equation C1] 77.2 kPa [PCA - Design of Concrete Pavement. 1955]

Pro	oduced by	Dated	Checked by	Dated
	S McNiff			00/01/00



DYNAMIC CONE PENETROMETER TEST REPORT

Project: S211001

Project name: Envision, Sunderland

Report date:

Operator: Samuel McNiff Notes:

Test date: 25/10/2021 Test location: DCP32



Layer 0-1000mm bgl

Penetration rate Equivalent CBR Equivalent surface modulus Estimated bearing capacity 76 mm/blow

 3.1 %
 [DMRB Vol.7 3.2 HD 29/08 - Section 7.31]

 36.2 kPa
 [TRRL LR 1132 - Appendix C Equation C1]

 55.3 kPa
 [PCA - Design of Concrete Pavement. 1955]

Produced by	Dated	Checked by	Dated
S McNiff			00/01/00



DYNAMIC CONE PENETROMETER TEST REPORT

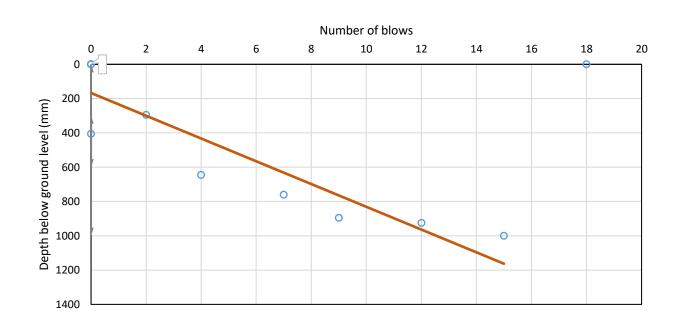
Project: S211001

Project name: Envision, Sunderland

Report date:

Operator: Samuel McNiff Notes:

Test date: 25/10/2021 Test location: DCP33



Layer 0-1000mm bgl

Penetration rate Equivalent CBR Equivalent surface modulus Estimated bearing capacity 63 mm/blow

 3.8 %
 [DMRB Vol.7 3.2 HD 29/08 - Section 7.31]

 41.4 kPa
 [TRRL LR 1132 - Appendix C Equation C1]

 63.6 kPa
 [PCA - Design of Concrete Pavement. 1955]

Pro	oduced by	Dated	Checked by	Dated
	S McNiff			00/01/00



DYNAMIC CONE PENETROMETER TEST REPORT

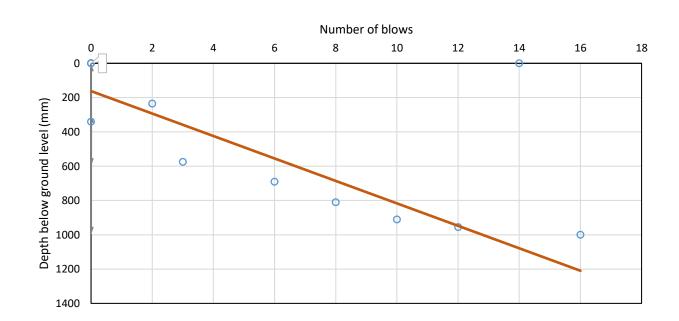
Project: S211001

Project name: Envision, Sunderland

Report date:

Operator: Samuel McNiff Notes:

Test date: 25/10/2021 Test location: DCP34



Layer 0-1000mm bgl

Penetration rate Equivalent CBR Equivalent surface modulus Estimated bearing capacity 60 mm/blow

4.0 % [DMRB Vol.7 3.2 HD 29/08 - Section 7.31]
42.4 kPa [TRRL LR 1132 - Appendix C Equation C1]
65.2 kPa [PCA - Design of Concrete Pavement. 1955]

Produced b	y	Dated	Checked by	Dated
S McNi	ff			00/01/00



DYNAMIC CONE PENETROMETER TEST REPORT

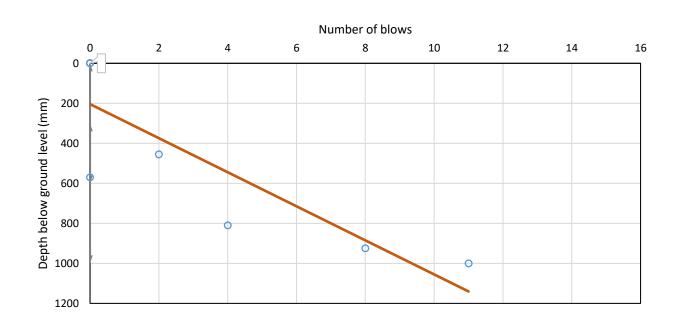
Project: S211001

Project name: Envision, Sunderland

Report date:

Operator: Samuel McNiff Notes:

Test date: 25/10/2021 Test location: DCP35



Layer 0-1000mm bgl

Penetration rate Equivalent CBR Equivalent surface modulus Estimated bearing capacity 83 mm/blow

 2.8 %
 [DMRB Vol.7 3.2 HD 29/08 - Section 7.31]

 34.3 kPa
 [TRRL LR 1132 - Appendix C Equation C1]

 52.4 kPa
 [PCA - Design of Concrete Pavement. 1955]

Produced b	y	Dated	Checked by	Dated
S McNi	ff			00/01/00



DYNAMIC CONE PENETROMETER TEST REPORT

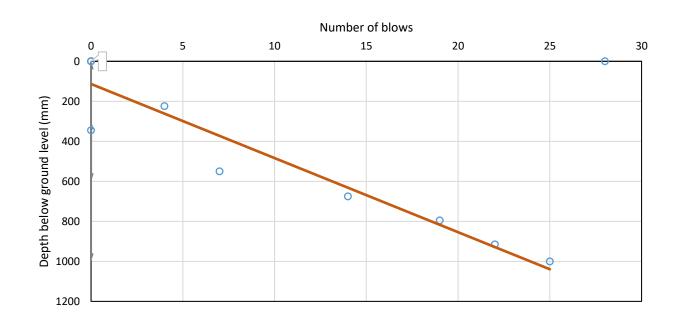
Project: S211001

Project name: Envision, Sunderland

Report date:

Operator: Samuel McNiff Notes:

Test date: 25/10/2021 Test location: DCP36



Layer 0-1000mm bgl

Penetration rate Equivalent CBR Equivalent surface modulus Estimated bearing capacity 37 mm/blow

 6.6 %
 [DMRB Vol.7 3.2 HD 29/08 - Section 7.31]

 58.9 kPa
 [TRRL LR 1132 - Appendix C Equation C1]

 91.7 kPa
 [PCA - Design of Concrete Pavement. 1955]

Prod	luced by	Dated	Checked by	Dated
	S McNiff			00/01/00

Project Number: S211001 Test No: PLT 01		EARING TEST				Date:	01/11/2021
Project Name: Envision, Sunderland Test Level: 0.30mtpg	Project N	lumber:		S211001		Test No:	PLT 01
Conversion Factor Conv			Envision, Sunderland			Test Level:	0.30mbgl
Name	Test Meth	nod: BS 1377	: Part 9 : 1990 (Incre	emental Method)	\	Weather:	Warm, dry and clear
12	Plate Dia	meter:	0.6	600 m		Load Applied:	108 kPa
12							
V = 0.0922x + 0.5413	Kentledg	e Type:	14T 360 M	achine Excavator	Ī	Remarks: C	lay ————————————————————————————————————
V = 0.0922x + 0.5413							
10		12				<u> </u>	
10							
Pressure (kN/m²)		10				y = 0.0	0922x + 0.5413
Pressure (kN/m²)		10					
Pressure (kN/m²)	Ē						
Pressure (kN/m²)	E)	8 +					
Pressure (kN/m²)	tion						
Pressure (kN/m²)	etra	6 —				•	
Pressure (kN/m²)	ene	-					
Pressure (kN/m²)	te P						
Pressure (kN/m²)	Pla	4					
Pressure (kN/m²)			2				
Conversion Factor		2 —					
Conversion Factor							
Conversion Factor							
Pressure (kN/m²)			20	40	60	80	100 120
Conversion Factor O.80 Stage 8 Stage 8							
Conversion Factor O.80 Stage 8 Stage 8				_	,		
Initial 0 0 0 1.41					Plate Pentra	ation (mm)	
Stage 1 7 1.41 2.22 Stage 3 22 2.82 Stage 4 36 3.93 Stage 5 72 6.51 Stage 6 108 10.81 Stage 7 0 Stage 8			Initial		0		
Stage 2 14 2.22 Stage 3 22 2.82 Stage 4 36 3.93 Stage 5 72 6.51 Stage 6 108 10.81 Stage 7 0 Stage 8							
Stage 3 22 2.82							
Stage 4 36 3.93 Stage 5 72 6.51 Stage 6 108 10.81 Stage 7 0 Stress Applied @ 1.25mm 6.74 kN/m² Total Plate Deflection 10.81 mm Plate Diameter 600 mm k600 5394 k762 4339 SOLMEK							
Stage 5 72 6.51 Stage 6 108 10.81 Stage 7 0 Stage 8 Produced by: Total Plate Deflection 10.81 mm Plate Diameter 600 mm k600 5394 k762 4339 SOLMEK							
Stage 7 0					6.5	51	
Stage 8					10.8	81	
Conversion Factor 0.80 Stress Applied @ 1.25mm 6.74 kN/m² Total Plate Deflection 10.81 mm Plate Diameter 600 mm k600 5394 k762 4339 Produced by: Checked by: SOLMEK							
Stress Applied @ 1.25mm 6.74 kN/m² Produced by: Image: Checked by: Total Plate Deflection 10.81 mm Checked by: Plate Diameter 600 mm 5394 k762 4339 SOLMEK			Stage 8	1			
Stress Applied @ 1.25mm 6.74 kN/m² Produced by: Image: Checked by: Total Plate Deflection 10.81 mm Checked by: Plate Diameter 600 mm 5394 k762 4339 SOLMEK							
Stress Applied @ 1.25mm 6.74 kN/m² Produced by: Image: Checked by: Total Plate Deflection 10.81 mm Checked by: Plate Diameter 600 mm 5394 k762 4339 SOLMEK	Conversion	n Factor	0	.80	Ī	e per en en en en	
Total Plate Deflection 10.81 mm Checked by: Plate Diameter 600 mm k600 5394 k762 4339 SOLMEK					Produced by:	Q M	° Niff.
Checked by:					1		stant ver Gere
k600 5394 k762 4339 SOLMEK					Checked by:		
k762 4339 SOLMEK							
SOLMER					1	00	
CBR 0.12 %					1 (50	JLMEK
	CBR		0	.12 %			

PLATE BEARING TEST				e:	29/10/2021
Project Number: S211001			Tes	st No:	PLT02
Project Name:	<u> </u>			Test Level: 0.3mbgl	
Test Method: BS 1377 : Part 9 : 1	1990 (Increme	ental Method)	We	ather:	Warm, dry and clear
Plate Diameter:	0.600	m	Loa	d Applied:	108 kPa
Kentledge Type:	14T 360 Mach	ine Excavator	Rer	marks: C	lay
Plate Penetration (mm) 9 8 7 6 7 8 9 8				y = 0.	1162x + 0.4139
Blate Penetr	20	30 Applied Pre	40 essure (kN/m²)	50	60 70 80
		Pressure (kN/m²)	Plate Pentratio	n (mm)	
	Initial	0	0		
	Stage 1	7	1.39		
	Stage 2	14	2.56		
	Stage 3	22	3.10		
	Stage 4	36	4.18		
	Stage 5	72	8.83		
	Stage 6 Stage 7 Stage 8	108	11.35		
Conversion Factor	0.80		Produced by:		° n. cf
Stress Applied @ 1.25mm	#N/A	kN/m²	i iouuoeu by.	Ø m	, c 1 1.
Total Plate Deflection	11.35	mm	Checked by:		
Plate Diameter	600	mm	Official by.		
k600	#N/A				
k762	#N/A		SOLM		OL MEIZ
				30	JLMEK

PLATE BEARING TEST			Date:	01/11/2021	
Project Number: S211001			Test No: PLT 03		
Project Name:	ect Name: Envision, Sunderland			Test Level:	0.30mbgl
Test Method: BS 1377 : Part 9 :	1990 (Increme	ntal Method)		Weather:	Warm, dry and clear
Plate Diameter:	0.600	m		Load Applied:	108 kPa
Kentledge Type:	14T 360 Machi	ne Excavator		Remarks:	Clay
Plate Penetration (mm) 2 4 3 7 1	•			y =	0.078x + 0.2828
0 0 10	20	30 Applied Pre	40 ssure (kN/m²)		60 70 80
		(kN/m^2)		ration (mm)	
	Initial Stage 1 Stage 2 Stage 3 Stage 4 Stage 5 Stage 6 Stage 7 Stage 8	0 7 14 22 36 54 72 108	1. 1. 2. 2. 4. 5.	0 02 45 20 98 44 90	
Occurration Foot	0.63	-			
Conversion Factor	0.80	kN/m²	Produced by:	A M	l° Niff.
Stress Applied @ 1.25mm Total Plate Deflection	12.40 5.90				
Plate Diameter	600		Checked by:		
k600	9919	111111		_	
k762	7979				
N/ UZ	1919			S	OLMEK
CBR	0.35	%			

PLATE BEARING TEST			Date:	01/11/2021	
Project Number: S211001			Test No:	PLT 04	
Project Name:	pject Name: Envision, Sunderland			Test Level:	0.30mbgl
Test Method: BS 1377 : Part 9 :	1990 (Increme	ntal Method)		Weather:	Warm, dry and clear
Plate Diameter:	0.600	m		Load Applied:	108 kPa
Kentledge Type:	14T 360 Machi	ne Excavator		Remarks:	Clay
Plate Penetration (mm) 2 4 3 4 3				y = (0.0841x - 0.0011
1 0 0 10	20	30 Applied Pre	40 ssure (kN/m²)	50	60 70 80
		Pressure (kN/m²)	Plate Pent	ration (mm)	
	Initial Stage 1 Stage 2 Stage 3 Stage 4 Stage 5 Stage 6 Stage 7 Stage 8	0 7 14 22 36 54 72 108	0. 1. 1. 2. 4. 6.	0 69 27 96 61 50 23	
Conversion Factor	0.80			- A = 0	
Stress Applied @ 1.25mm		kN/m²	Produced by:	V M	r niff.
Total Plate Deflection	6.23				
Plate Diameter	600		Checked by:		
k600	11873				
k762	9551			S	OLMEK
CBR	0.48	%			

PLATE BEARING TEST				Date:	27/10/2021
Project Number: S211001				Test No:	PLT 05
Project Name: Envision, Sunderland				Test Level: 0.30mbgl	
Test Method: BS 1377 : Part 9 :	1990 (Increme	ntal Method)		Weather:	Warm, dry and clear
Plate Diameter:	0.600	m		Load Applied	: 100.8 kPa
Kentledge Type:	14T 360 Machi	ne Excavator		Remarks:	Clay
4					
3.5				v = 0.0	399x - 0.1989
<u>و</u> 3				y = 0.0	555.4 - 0.1505
Plate Penetration (mm)					
2				•	
List - Li			•		
1					
0.5					
0 10	20	30 40 Applied Pre	50 ssure (kN/m²)		70 80 90 100
		Pressure (kN/m²)	Plate Pent	ration (mm)	
	Initial	0	(0	
	Stage 1	14		34	
	Stage 2	29	0.	87	
	Stage 3	43	1.	40	
	Stage 4	58	1.	97	
	Stage 5	72		68	
	Stage 6	86		44	
	Stage 7	101	3.	98	
	Stage 8				
Conversion Factor	0.80				
Stress Applied @ 1.25mm	37.16	kN/m²	Produced by:		n° n ff.
Total Plate Deflection	3.44				R-36: EFF - 50 - 50 T
Plate Diameter	600		Checked by:		
k600	29729				
k762	23914				
-	200.1			S	OLMEK
CBR	2.36	%			

PLATE BEARING TEST			Date:	27/10/2021
Project Number: S211001			Test No:	PLT 07
Project Name: Envision, Sunderland			Test Level:	0.30mbgl
Test Method: BS 1377 : Part 9 :	1990 (Incremental Meth	od)	Weather:	Warm, dry and clear
Plate Diameter:	0.600 m		Load Applied:	100.8 kPa
Kentledge Type:	14T 360 Machine Excava	ator	Remarks: Cla	ay
6 5 (u u, 4			y = 0.058	7x - 0.1489
Plate Penetration (
0 10		40 50 I Pressure (kN/m	60 70	80 90 100
	Pressu (kN/m	Diata Dan	ntration (mm)	
	Initial 0		0	
	Stage 1 14		0.60	
	Stage 2 29		1.46	
	Stage 3 43		2.39	
	Stage 4 58		3.23	
	Stage 5 72 Stage 6 86		4.03 5.01	
	Stage 7 101 Stage 8		5.84	
Conversion Factor	0.80	Produced by	, A Mc	0.00
Stress Applied @ 1.25mm 23.83 kN/m²		Froduced by	V W.	iu f J
Total Plate Deflection	5.01 mm	Checked by:		
Plate Diameter	600 mm	Checked by:	•	
k600	19061			
k762	15333		SC	DLMEK
CBR	1.09 %			

PLATE	BEARING TES	Т				Date:	28/10/2021		
Project	Number:		S21′	1001		Test No:	PLT 08		
Project	Name:		Envision, S	Sunderland		Test Level:	0.30mbgl		
Test Me	ethod: BS 1377	' : Part 9 :	1990 (Increme	ntal Method)		Weather:	Warm, dry and clear		
Plate Di	iameter:		0.600	m		Load Applied:	100.8 kPa		
Kentled	lge Type:		14T 360 Machi	ne Excavator		Remarks: Cl	ay		
	4								
	3.5					y = 0.042	9x - 0.1048		
(mu	3								
Plate Penetration (mm)	2.5					•			
Penetra	2								
Plate F	1.5				•				
	1 +								
	0.5								
	0 0	10	20	30 40 Applied Pre	50 essure (kN/m²	60 70	80 90 100		
				Pressure (kN/m²)	Plate Pent	ration (mm)			
			Initial	0	·	0			
			Stage 1	14		.56			
			Stage 2	29		.06			
			Stage 3	43		.62			
			Stage 4	58 72		.25			
			Stage 5	72 86		.05 .71			
			Stage 6 Stage 7	86 101		.71			
			Stage 8						
Convers	sion Factor		0.80		Produced by:	A M	0.00		
Stress A	Applied @ 1.25r	mm	31.87	kN/m²	r rouucea by:	V W.	in 11		
Total Pla	ate Deflection		3.71	mm	Checked by:				
Plate Diameter		600	mm	Checked by:					
k600			25499						
k762			20511		SOLMEK				
CBR			1.81	%	`				
	OBIT		1.01 /0						

PLATE BEARING TEST			Date:	Date: 28/10/2021		
Project Number:		1001	Test No:	PLT 09		
Project Name:	Envision,	Sunderland	Test Level:	0.30mbgl		
Test Method: BS 1377 : Par	t 9 : 1990 (Increme	ental Method)	Weather:	Warm, dry and clear		
Plate Diameter:	0.600	m	Load Applie	ed: 100.8 kPa		
Kentledge Type:	14T 360 Mach	ine Excavator	Remarks:	Clay		
6						
5			y = 0	0.0574x - 0.0727		
(EUE) 4						
etration 3						
Plate Penetration (mm)						
1						
0 10) 20	30 40 Applied Pre	50 60 essure (kN/m²)	70 80 90 100		
		Pressure (kN/m²)	Plate Pentration (mm)	7		
	Initial	0	0			
	Stage 1	14	0.72			
	Stage 2	29	1.63			
	Stage 3	43	2.36			
	Stage 4	58	3.09			
	Stage 5	72	4.06			
	Stage 6	86	5.00			
	Stage 7	101	5.71			
	Stage 8					
				_		
Conversion Factor	0.80	/	Produced by:	m° niff.		
Stress Applied @ 1.25mm		kN/m²				
Total Plate Deflection	5.00		Checked by:			
Plate Diameter		mm	.,			
k600	18412					
k762	14811			SOLMEK		
CBR	1.03	%				
	1.03	70				

PLATE BEARING TEST				Date: 02/11/2021			
Project Number:	S211	1001		Test No:	PLT 10		
Project Name:	Envision, S	Sunderland		Test Level:	0.30mbgl		
Test Method: BS 1377 : Part 9 :	1990 (Increme	ntal Method)		Weather:	Warm, dry and clear		
Plate Diameter:	0.600	0.600 m			Load Applied: 108 kPa		
Kentledge Type:	14T 360 Machi	ne Excavator		Remarks: Clay			
Plate Penetration (mm) 2 4 3 2 1 0					0.078x + 0.6836		
0 10	20	30 Applied Pre	40 ssure (kN/m²)	50	60 70 80		
	[Pressure (kN/m²)	Plate Pent	ration (mm)			
	Initial Stage 1 Stage 2 Stage 3 Stage 4 Stage 5 Stage 6 Stage 7 Stage 8	0 7 14 22 36 54 72 108	1. 2. 2. 3. 4. 6.	0 76 05 43 45 96 16 52			
Conversion Factor	0.80		5	A 40	c.0.00		
Stress Applied @ 1.25mm		kN/m²	Produced by:	Ø W	i° N ff.		
Total Plate Deflection	6.16		Chooked by:				
Plate Diameter	600	mm	Checked by:				
k600	6103						
k762	4909		SOLMEK				
CBR	0.15	%					

PLATE B	BEARING TEST				Date: 01/11/2021				
Project N	Number:	S21	1001		Test No:	PLT 11			
Project N	Name:	Envision, S	Sunderland		Test Level:	0.30mbgl			
Test Met	hod: BS 1377 : P	art 9 : 1990 (Increme	ntal Method)	Y	Weather: Warm, dry and clear				
Plate Dia	ımeter:	0.600	m		Load Applied:	108 kPa			
Kentledç	де Туре:	14T 360 Mach	ine Excavator		Remarks:	Clay			
	6								
	5								
					y = 0	0.0662x - 0.1049			
mu)	4								
n (n	4								
Plate Penetration (mm)									
netr	3								
Pe .									
late	2								
	1								
	']								
	0 0	10 20	30	40	50	60 70 80			
	O	10 20		essure (kN/m²)	50	00 70 00			
			Pressure (kN/m²)	Plate Pentra	ation (mm)				
		Initial	0	0					
		Stage 1	7	0.4					
		Stage 2	14	0.9					
		Stage 3	22	1.2	23				
		Stage 4	36	1.9					
		Stage 5	54	3.3					
		Stage 6	72	4.9					
		Stage 7	108	8.1	9				
		Stage 8							
Conversi	on Factor	0.80		Decilies 11	A **	cn n			
Stress Ap	oplied @ 1.25mm	21.07	kN/m²	Produced by:	Ø m	10 + †			
	te Deflection	4.95	mm	Checked by:					
Plate Dia	meter		mm	OHEOREU DY.					
k600		16856							
k762		13559	13559		SOLMEK				
CBR		0.88	0.88 %						
CBR		5.66	0.00 %		<u> </u>				

PLATE BEARING TEST				Date: 02/11/2021			
Project Number:	S211			Test No:	PLT 12		
Project Name:	Envision, S	Sunderland		Test Level:	0.30mbgl		
Test Method: BS 1377 : Part 9 :	1990 (Incremer	ntal Method)		Weather:	Warm, dry and clear		
Plate Diameter:	0.600	0.600 m			Load Applied: 108 kPa		
Kentledge Type:	14T 360 Machine Excavator			Remarks: Clay			
5				y = 0	0.0619x + 1.1194		
Plate Penetration (mm)			•	•			
Plate Penetr	•						
1							
0 10	20	30 Applied Pre	40 ssure (kN/m²)	50	60 70 80		
		Pressure (kN/m²)	Plate Pent	ration (mm)			
	Initial Stage 1	0 7		0 12			
	Stage 2	14		47			
	Stage 3	22		78			
	Stage 4 Stage 5	36 54		55 21			
	Stage 5	72		43			
	Stage 7	108		59			
	Stage 8						
L							
Conversion Factor	0.80		Produced by:	A 1	1° N ff.		
Stress Applied @ 1.25mm	2.88	kN/m²	i rouuceu by:	Q "	C 10 JJ		
Total Plate Deflection	5.43		Checked by:				
Plate Diameter	600 1	mm	2				
k600	2301						
k762	1851		SOLMEK				
CBR	0.03 %		JOLIVIER				

PLATE BEARING TE	ST				Date: 02/11/2021		
Project Number:		<u> </u>			Test No:	F	PLT 13
Project Name:		Envision, S	underland		Test Level: 0.30mbgl		30mbgl
Test Method: BS 13	77 : Part 9 : 199	1990 (Incremental Method)			Weather:	Warm,	dry and clear
Plate Diameter:		0.600 m			Load Applied	:	108 kPa
Kentledge Type:	147	14T 360 Machine Excavator			Remarks:	Clay	
4.5							
4					y =	0.0574x - 0.24	157
3.5 -							
≝ 3 —					•		
2.5 — enetration 2 — 2 — 2 — 2 — 2 — 2 — 2 — 2 — 2 — 2							
Plate Penetration (mm) 2.5							
1 —							
0.5		•					
0 0	10	20	30 Applied Pre	40 ssure (kN/m²)		60	70 80
	_	1.22.1	(kN/m^2)		ration (mm)		
		Initial Stage 1	0 7		0 11		
		Stage 2	, 14		58		
		Stage 3	22		84		
		Stage 4	36		76		
		Stage 5	54		67		
		Stage 6	72	4.	11		
		Stage 7	108	5.	95		
		Stage 8					
						1	
Conversion Factor	_	0.80	kNI/m²	Produced by:	\wedge	m°nff.	
Stress Applied @ 1.2		27.23	The state of the s		~	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
Total Plate Deflection Plate Diameter)	4.11		Checked by:			
		600 1	шт				
k600		21785					
k762		17524			S	OLME	K l
CBR		1.38	%				

PLATE BEARING TEST				Date: 02/11/2021		
Project Number:	S21′	1001		Test No:	PLT 14	
Project Name:		Sunderland		Test Level:	0.30mbgl	
Test Method: BS 1377 : Part 9 :	1990 (Increme	ntal Method)		Weather:	Warm, dry and clear	
Plate Diameter:	0.600			Load Applied:	108 kPa	
Kentledge Type:	14T 360 Machi	ine Excavator		Remarks:	Clay	
Plate Penetration (mm) 2 4 3 2 1 0 0 10	Initial Stage 1 Stage 2 Stage 3 Stage 4 Stage 5 Stage 6 Stage 7 Stage 8	30 Applied Pressure (kN/m²) 0 7 14 22 36 54 72 108	1 2 2 3 5 6	50	.0825x + 0.6295 60 70 80	
Conversion Factor Stress Applied @ 1.25mm	0.80	kN/m²	Produced by:	A m	i° N ff.	
Total Plate Deflection	6.39					
Plate Diameter	6.39		Checked by:			
		mm				
k600	6359					
k762	5115		SOLMEK			
CBR	0.16 %		,			

PLATE E	BEARING TEST					Date: 27/10/2021			
Project I	Number:		S21′	1001		Test No:	PL	PLT 15	
Project N	Name:		Envision, S	Sunderland		Test Level:	0.3	0.30mbgl	
Test Met	thod: BS 1377 :	Part 9:	1990 (Increme	ntal Method)		Weather:	y and clear		
Plate Dia	ameter:		0.600	m		Load Applied	:	100.8 kPa	
Kentledo	де Туре:		14T 360 Machi	ne Excavator		Remarks:	Clay		
	6								
	5					y = 0.0	648x - 0.2088	•	
(mm) r	4					•			
Plate Penetration (mm)	3								
late Per	2				•				
ā									
	1	_							
	0 0	10	20	30 40 Applied Pre	50 essure (kN/m²		70 80	90 100	
				Pressure (kN/m²)	Plate Pen	tration (mm)			
			Initial	0		0	1		
			Stage 1	14	0	.61			
			Stage 2	29		.60			
			Stage 3	43		21			
			Stage 4	58		.87			
			Stage 5	72		.49			
			Stage 6	86		.37			
			Stage 7 Stage 8	101	6	5.26			
Conversi	on Factor		0.80		Produced by:		. M < N, ↑↑		
Stress A	pplied @ 1.25mi	m	22.51	kN/m²	Produced by:	N	m c n ff.		
Total Pla	Total Plate Deflection		5.37	mm	Chacked by:				
Plate Dia	meter		600		Checked by:				
k600			18011						
k762			14488			S	OLME!	K	
CBR			0.99	%					
			0.99 76		<u> </u>				

PLATE BEARING	TEST				Date: 27/10/2021			
Project Number:		S211	1001		Test No:	PL	PLT 16	
Project Name:		Envision, S	Sunderland		Test Level:		0.30mbgl	
Test Method: BS	1377 : Part 9 :	1990 (Increme	ntal Method)		Weather: Warm, dry and clear			
Plate Diameter:		0.600	m		Load Applied	:	100.8 kPa	
Kentledge Type:		14T 360 Machi	ne Excavator		Remarks:	Clay		
5 —								
4.5					y = 0.	0516x - 0.097	•	
4 +								
3.5								
Dlate Denetration (mm) 3.5 — 2.5 — 2.5 — 1.5 —								
2.5								
2 -								
1.5								
1 +								
0.5								
0 1	10	20	30 40	50	60 7	70 80	90 100	
	10	20		ssure (kN/m²)		0 00	30 100	
		ſ	Pressure	Dieta Dant				
			(kN/m^2)		ration (mm)			
		Initial	0		0			
		Stage 1	14		48			
		Stage 2	29		39			
		Stage 3	43		06			
		Stage 4	58		10			
		Stage 5	72 86		70			
		Stage 6 Stage 7	101		22 89			
		Stage 8	101	4.	.09			
		Clage 0						
Conversion Factor		0.80			- A - S	00 C D . O A		
	Stress Applied @ 1.25mm		kN/m²	Produced by:	∅ (m° Niff.		
Total Plate Deflection		4.22		Charles				
Plate Diameter			mm	Checked by:				
k600		20820						
k762		16747		SOLMEK			7	
000						OLMEI		
CBR		1.27	%					

PLATE BEARING TEST			Date:	Date: 27/10/2021		
Project Number:	S21	1001	Test No:	PLT 17		
Project Name:	Envision, S	Sunderland	Test Level:	0.30mbgl		
Test Method: BS 1377 : Part 9	: 1990 (Increme	ntal Method)	Weather:	Warm, dry and clear		
Plate Diameter:	0.600	m	Load Applied	d: 100.8 kPa		
Kentledge Type:	14T 360 Mach	ine Excavator	Remarks:	Clay		
Plate Penetration (mm) 2 4 1			y = 0.0	0656x - 0.3152		
0 0 10	20	30 40 Applied Pre	50 60 ssure (kN/m²) Plate Pentration (mm)	70 80 90 100		
	Initial Stage 1 Stage 2 Stage 3 Stage 4 Stage 5 Stage 6 Stage 7 Stage 8	0 14 29 43 58 72 86 101	0 0.60 1.45 2.35 3.25 4.09 5.89 6.09			
Conversion Factor Stress Applied @ 1.25mm Total Plate Deflection Plate Diameter	5.89	kN/m² mm mm	Produced by:	menff.		
k600 k762 CBR	19085 15352 1.1 %			SOLMEK		

PLATE	BEARING TEST					Date: 27/10/2021			
Project	Number:		S21	1001		Test No:		PLT 18	
Project	Name:	Ī	Envision, S	Sunderland		Test Level:		0.30mbgl	
Test Me	ethod: BS 1377	: Part 9 : 1	1990 (Increme	ntal Method)		Weather:	Weather: Warm, dry and clear		
Plate D	iameter:		0.600	m		Load Applied	d:	100.8 kPa	
Kentled	lge Type:		14T 360 Mach	ne Excavator		Remarks:	Clay		
	5 4.5					v = 0.	0512x - 0.0	463.	
	4					, ,			-
E (E	3.5								-
Plate Penetration (mm)	3					•			
trat	2.5								
ene									
te F	2								1
Pla	1.5								-
	1								
	0.5								1
	0	10		1					
	0	10	20	30 40 Applied Pre	50 essure (kN/m²		70 80	0 90 1	100
				Pressure			٦		
				(kN/m ²)	Plate Pen	tration (mm)			
			Initial	0		0			
			Stage 1	14	C).67			
			Stage 2	29		.33			
			Stage 3	43		2.19			
			Stage 4	58		3.04			
			Stage 5 Stage 6	72 86		3.56			
			Stage 6	101		I.38 5.92			
			Stage 8	101					
			3 3						
	sion Factor		0.80	IsNI/ma4	Produced by:	<u></u>	m° N ff.		
	Applied @ 1.25m	m		kN/m²					
Total Plate Di	ate Deflection		4.38		Checked by:				
k600	ailletel		600 20253	HIIII					
k762			16292						
N OZ			10232			S	SOLM	1EK	
CBR			1.22	%					
				•					

PLATE B	BEARING TEST				Date: 02/11/2021			
Project N	Number:	S21 ²	1001		Test No:	PLT 19		
Project N	Name:	Envision, S	Sunderland		Test Level:	0.30mbgl		
Test Met	hod: BS 1377 : Par	t 9 : 1990 (Increme	ntal Method)		Weather:	Warm, dry and clear		
Plate Dia	ameter:	0.600	m		Load Applied:	108 kPa		
Kentledg	де Туре:	14T 360 Machi	ine Excavator		Remarks:	Clay		
	6					272		
	5				y = 0	0.0722x + 0.0788		
Plate Penetration (mm)	4							
netratic	3			•				
late Pe	2							
_								
	1							
	0	10 20	30 Applied Pre	40 essure (kN/m²	50	60 70 80		
			Pressure (kN/m²)	-	tration (mm)			
		Initial	(KIN/ffi) 0		0			
		Stage 1	7		.80			
		Stage 2	14		.07			
		Stage 3	22		.49			
		Stage 4	36		.84			
		Stage 5	54	3	.85			
		Stage 6	72	5	.33			
		Stage 7 Stage 8	108	6	.99			
Conversi	on Factor	0.80						
	oplied @ 1.25mm		kN/m²	Produced by:	V W	l° Niff.		
	te Deflection	5.33						
Plate Dia			mm	Checked by:				
k600		12984						
k762		10445			SOLMEK			
CBR		0.56	0.56 %					
		0.00	0.50 %					

PLATE BEARING TEST			Date: 02/11/2021		
Project Number:	S211	001		Test No: PLT 20	
Project Name:	Envision, S	underland		Test Level:	0.30mbgl
Test Method: BS 1377 : Part 9 :	1990 (Increme	ntal Method)		Weather:	Warm, dry and clear
Plate Diameter:	0.600	m		Load Applied:	108 kPa
Kentledge Type:	14T 360 Machi	ne Excavator		Remarks: (Clay
Plate Penetration (mm) 2 1 0 0 10	Initial Stage 1 Stage 2 Stage 3 Stage 4 Stage 5 Stage 6 Stage 7 Stage 8	30 Applied Pressure (kN/m²) 0 7 14 22 36 54 72 108	0. 1. 1. 3. 4. 5.	50	.0741x + 0.1927 60 70 80
Conversion Factor	0.80	kNI/m²	Produced by:	$M \propto$	c Niff.
	Stress Applied @ 1.25mm 14.31 kN/m²			· ·	
Total Plate Deflection 5.44 mm			Checked by:		
Plate Diameter 600 mm			, ,		
k600 11448					
762 9208		SOLMEK			
CBR	0.45	%			

PLATE BEARING TEST						Date: 02/11/2021			
Project Nu	ımber:		S21′	1001		Test No: PLT 2		PLT 21	
Project Na	ıme:		Envision, S	Sunderland		Test Level:		0.60mbgl	
Test Metho	od: BS 1377 : F	Part 9 : 1	990 (Increme	cremental Method)				Warm, dry and clear	
Plate Diam	neter:		0.600 m			Load Applied: 108 kPa			
Kentledge Type: 1		14T 360 Machi	ne Excavator		Remarks	Remarks: Clay			
	7								
	6						y = 0.078	x + 0.0297	
(mm)	5								
tration	4								
Plate Penetration (mm)	3								
Plai	2				•				
	1	•	•						
	0 0	10	20	30	40	50	60	70 8	0
					ssure (kN/m²				
		_		Pressure (kN/m²)	Plate Pent	tration (mm	٦)		
			Initial	0		0			
			Stage 1	7		.76			
			Stage 2	14		.33			
			Stage 3	22		.78			
			Stage 4	36		.33			
			Stage 5	54		.05			
			Stage 6 Stage 7	72 108		.98 .03			
			Stage 8	108	9.	.03			
			Glage 0						
Conversion	Factor	I	0.80				A 11 11 11 11 11 11	0	
	lied @ 1.25mm			kN/m²	Produced by:	4	Q monif	Ľ	
Total Plate			5.98						
Plate Diam			600		Checked by:				
k600	-		12522						
k762			10073				COT) (T) (T)	
	K7 02		100.0				SOL	MEK	
CBR			0.53	%					

PLATE BEARING TEST				Date: 02/11/2021		
Project Number:	S211	001		Test No: PLT 22		
Project Name:	Envision, S	underland		Test Level:	0.30mbgl	
Test Method: BS 1377 : Part 9 :	1990 (Incremer	ntal Method)		Weather:	Warm, dry and clear	
Plate Diameter:	0.600	m		Load Applied:	108 kPa	
Kentledge Type:	14T 360 Machir	ne Excavator		Remarks: (Clay	
Plate Penetration (mm) Plate Penetration (mm)	Initial Stage 1 Stage 2 Stage 3 Stage 4 Stage 5 Stage 6 Stage 7 Stage 8	30 Applied Pressure (kN/m²) 0 7 14 22 36 54 72 108	0. 1. 1. 3. 4. 5.	50	.0741x + 0.1927 60 70 80	
Conversion Factor	0.80	I-NI/Z	Produced by:	Q M	° N ff.	
Stress Applied @ 1.25mm 14.31 kN/m ²		, .	* X	<i>1</i> J		
Total Plate Deflection 5.44 mm			Checked by:			
Plate Diameter 600 mm						
k600 11448						
762 9208			S	OLMEK		
CBR	0.45	%				

PLATE BEARING TEST			Date: 02/11/2021		
Project Number:	S211	1001		Test No:	PLT 23
Project Name:	Envision, S	Sunderland		Test Level:	0.30mbgl
Test Method: BS 1377 : Part 9 :	1990 (Increme	ntal Method)		Weather:	Warm, dry and clear
Plate Diameter:	0.600	m		Load Applied:	108 kPa
Kentledge Type: 14T 360 Machine Excavator				Remarks:	Clay
6					
5				y = 0	0.0681x + 0.2475
(iiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiii					
3 - 3			•		
Plate Penetration (mm)					
1					
0 10	20	30 Applied Pre	40 ssure (kN/m²)	50)	60 70 80
		Pressure (kN/m²)	Plate Pent	ration (mm)	
	Initial	0		0	
	Stage 1	7	0.	.90	
	Stage 2	14		.22	
	Stage 3	22		.62	
	Stage 4	36		.02	
	Stage 5 Stage 6	54 72		.04 .93	
	Stage 7	108		.73	
	Stage 8	100	0.		
	9				
Conversion Factor	0.80			- 	
Stress Applied @ 1.25mm		kN/m²	Produced by:	Q M	r niff.
Total Plate Deflection	4.93				
Plate Diameter			Checked by:		
k600 11826					
k762	9513			C	OLMEN
				2	OLMEK
CBR	0.48	%			

PLATE B	BEARING TEST			Date: 02/11/2021				
Project N	Number:	S21	1001		Test No: PLT 24		PLT 24	
Project N	lame:	Envision, S	Sunderland		Test Level: 0.30mbgl		0.30mbgl	
Test Met	hod: BS 1377 : Par	rt 9 : 1990 (Increme	ntal Method)		Weather:	Warm,	dry and clear	
Plate Dia	meter:	0.600	m		Load Applied:		108 kPa	
Kentledg	де Туре:	14T 360 Mach	ine Excavator		Remarks:	Clay		
Plate Penetration (mm)	6 5 4 3 2 1 0 0	10 20	30	40	y = 0	.0713x + 0.4	70 80	1
	U	10 20		ssure (kN/m²)		60	70 60	J
			Pressure (kN/m²)	Plate Pent	ration (mm)			
		Initial	0		0			
		Stage 1	7	1.	17			
		Stage 2	14	1.	67			
		Stage 3	22	2.	08			
		Stage 4	36	3.	38			
		Stage 5	54	4.	46			
		Stage 6	72	5.	32			
		Stage 7 Stage 8	108	6.	95			
Conversion	on Factor	0.80			- x = 0			
	oplied @ 1.25mm		kN/m²	Produced by:	W M	c° Niff.		
	te Deflection	5.32						
	Plate Diameter 600 mm		Checked by:					
k600								
k762			SOLMEK					
CBR		0.29	%	SOLIVIER				
	0.23 /0							

PLATE BEARING TEST			Date: 02/11/2021		
Project Number:	S211	001		Test No:	PLT 25
Project Name:	Envision, S	Sunderland		Test Level:	0.30mbgl
Test Method: BS 1377 : Part 9 :	1990 (Increme	ntal Method)		Weather:	Warm, dry and clear
Plate Diameter:	0.600	m		Load Applied:	108 kPa
Kentledge Type:	ne Excavator		Remarks:	Clay	
Plate Penetration (mm) 5 4 3 2 1 0 0 10	20	30 Applied Pre Pressure (kN/m²)	40 ssure (kN/m²)	50	0.0762x + 0.2735 60 70 80
	Initial Stage 1 Stage 2 Stage 3 Stage 4 Stage 5 Stage 6 Stage 7 Stage 8	0 7 14 22 36 54 72 108	1. 1. 1. 3. 4. 5.	0 09 31 74 47 33 62 56	
Conversion Factor	0.80			- A	
Stress Applied @ 1.25mm	12.94	kN/m²	Produced by:	V M	r niff.
Total Plate Deflection	5.62				
Plate Diameter	600		Checked by:		
k600	10350				
k762	8325				01117
N 02	0323			S	OLMEK
CBR	0.38	%			

PLATE B	BEARING TEST				Date: 02/11/2021		
Project N	Number:	S21 ²	1001		Test No: PLT 26		
Project N	Name:	Envision, S	Sunderland		Test Level:	0.30mbgl	
Test Met	hod: BS 1377 : Par	t 9 : 1990 (Increme	ntal Method)		Weather:	Warm, dry and clear	
Plate Dia	nmeter:	0.600	m		Load Applied:	108 kPa	
Kentledg	Kentledge Type: 14T 360 Machine Excavator				Remarks: (Clay	
Plate Penetration (mm)	6 5 4 3 2 1 0 0	10 20	30	40	50	0.073x + 0.3118 60 70 80	
			Pressure	essure (kN/m²)	ration (mm)		
		la iti al	(kN/m²)				
		Initial	0 7		0		
		Stage 1	7 14		30		
		Stage 2 Stage 3	22		89		
			36		31		
		Stage 4 Stage 5	56 54		33		
		Stage 5	72		32		
		Stage 6 Stage 7	108		27		
		Stage 8		, .			
Conversi	on Factor	0.80					
		Produced by:	\mathbb{Q} M	.° Niff.			
	Stress Applied @ 1.25mm 13.07 kN/m² Total Plate Deflection 5.32 mm					Be FO BO GO D	
Plate Diameter 5.32 mm			Checked by:				
k600							
k762	762 8409		SOLMEK				
CBR	CBR 0.39 %						
J D . (0.00	,~				

PLATE B	EARING T	EST				Date: Test No:		10/2021		
Project N	umber:		S21	S211001			P	LT 27		
Project N	ame:		Envision, Sunderland			Test Level:	0.3	0mbgl		
Test Meth	nod: BS 13	377 : Part 9 :	1990 (Increme	ental Method)		Weather:	Warm, d	Warm, dry and clear		
Plate Diar	meter:		0.600	m		Load Applied:		100.8 kPa		
Kentledge	е Туре:		14T 360 Mach	ine Excavator		Remarks:	Clay			
Plate Penetration (mm)	3.5 3 2.5 2 1.5 1					y = 0.0	42x + 0.0127	•		
	0 0	10	20	30 40 Applied Pre	50 essure (kN/m²)		0 80	90	100	
				(kN/m ²)	Plate Penti	ration (mm)				
			Initial	0	(0				
			Stage 1	14	0.	50				
			Stage 2	29	1.	42				
			Stage 3	43	1.	85				
			Stage 4	58	2.	38				
			Stage 5	72		95				
			Stage 6 Stage 7 Stage 8	86 101		69 41				
Conversio	n Factor		0.80				and the grade			
	plied @ 1.2	25mm		kN/m²	Produced by:	Q M	l°Niff.			
	e Deflection		3.69				1883 B F			
Plate Dian				mm	Checked by:					
k600			23673							
k762			19043			S	OLME	K		
CBR 1			1.59	%						
OBIC										

PLATE BI	EARING	S TEST				Date: 28/10/2021			
Project N			S21			Test No: PLT 28			
Project N	ame:		Envision, S	Sunderland		Test Level:		0.30mbgl	
Test Meth	nod: BS	1377 : Part 9	: 1990 (Increme	ntal Method)		Weather: Warm, dry and clear			
Plate Dia	meter:		0.600	m		Load Applied	d:	100.8 kPa	
Kentledge Type: 14T 360 Machine Excavator				Remarks:	Clay				
	1.8 -								
	1.6 -					y = 0.0	0192x - 0.076	4	
<u></u>	1.4 -								
Plate Penetration (mm)	1.2 -								
tratio	1 -					•			
Pene	0.8 -								
Plate	0.6 -								
	0.4 -								
	0.2 -								
	0 •								
	(10	20	30 40 Applied Pre	50 essure (kN/m²		70 80	90 10	0
				Pressure (kN/m²)	Plate Pent	tration (mm)			
			Initial	0		0			
			Stage 1	14	0	.24			
			Stage 2	29		.41			
			Stage 3	43		.69			
			Stage 4	58 72		.97			
			Stage 5 Stage 6	72 86		.30 .70			
			Stage 7	101		.89			
			Stage 8			.00			
Comme	n F1		0.00						
	Conversion Factor 0.80 Stress Applied @ 1.25mm 72.74 kN/m²		kN/m²	Produced by:	\mathbb{Q}	m° Niff.			
	Total Plate Deflection 1.70 mm Plate Diameter 600 mm			Checked by:					
k600									
k762					10115	D17			
	K762 40009				SOLMEK				
CBR			7.57	%					

PLATE BEARING TEST				Date: 27/10/2021		
Project Number:	S211	001		Test No:	PLT 29	
Project Name:	Envision, S	Sunderland		Test Level:	0.30mbgl	
Test Method: BS 1377 : Part 9 :	1990 (Increme	ntal Method)		Weather:	Warm, dry and clear	
Plate Diameter:	0.600	m		Load Applied:	100.8 kPa	
Kentledge Type: 14T 360 Machine Excav				Remarks:	Clay	
6				y = 0.06	337x + 0.1343	
(ww.) 4						
Plate Penetration (mm)						
1						
0 10	20	30 40 Applied Pre	50 ssure (kN/m²)		70 80 90 100	
		Pressure (kN/m²)	Plate Pentr	ation (mm)		
	Initial Stage 1	0 14	1.			
	Stage 2	29		82		
	Stage 3	43	3.			
	Stage 4	58	3.8	80		
	Stage 5	72	4.0			
	Stage 6	86	5.0			
	Stage 7 Stage 8	101	7.9	56		
Conversion France	2.22				•	
Conversion Factor Stress Applied @ 1.25mm	0.80 17.57	kN/m²	Produced by:		n° n ff.	
Total Plate Deflection	5.60					
Plate Diameter	600		Checked by:			
k600	14056					
k762	11307				A	
IVI OZ	11307			S	OLMEK	
CBR	0.65	%			· <u>-</u>	

PLATE BEARING TEST			Date: 26/10/2021		
Project Number:	S21	1001		Test No:	PLT 30
Project Name:	Envision, S	Sunderland		Test Level:	0.30mbgl
Test Method: BS 1377 : Part 9 :	1990 (Increme	ntal Method)	١	Weather:	Warm, dry and clear
Plate Diameter:	0.600	m	ı	Load Applied:	100.8 kPa
Kentledge Type:	14T 360 Machi	ine Excavator	F	Remarks: Cla	ay
6					
5				y = 0.0578	x + 0.0057
(ww.) 4					
Plate Penetration (mm) 2				•	
te Penc					
2					
1					
0 10	20	30 40 Applied Pre	50 ssure (kN/m²)	60 70	80 90 100
		Pressure (kN/m²)	Plate Pentra	ation (mm)	
	Initial	0	0		
	Stage 1	14	0.8	5	
	Stage 2	29	1.5		
	Stage 3	43	2.5		
	Stage 4	58	3.4		
	Stage 5	72	4.1		
	Stage 6	86 101	4.9		
	Stage 7 Stage 8	101	6.9	2	
	Stage o				
Conversion Factor	0.80		Produced by:	Ø M°	1111
Stress Applied @ 1.25mm	21.55	kN/m²	i iouuocu by.	ev in	• •]]
Total Plate Deflection	4.94		Checked by:		
Plate Diameter	600	mm			
k600	17240				
k762	13868			SC	DLMEK
CBR	0.92 %			30	
CDN	0.92	/0			

APPENDIX E

Strength of Rock Materials in Triaxial Compression: Revised Version

Borehole Ref.: CPR03

Sample Ref.:

6.00-7.50 Depth (m):

Description:

Medium strong thinly laminated grey fine grained SANDSTONE. Fresh to

slightly weathered

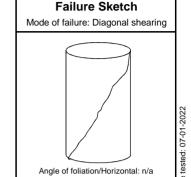
Procedure Type II - Multiple failure state test

LF0879C (1000kN) compression frame used

Diameter	38.10 mm	Hoek-				
Height	76.50 mm	Number of te				
Bulk Density	2.29 Mg/m³	Uniaxial Stre				
Dry Density	2.17 Mg/m³	Hoek-Brown				
Water Content	5.4 %	Coef. of dete				
Degree of Saturation: 46.6 % Specific Gravity: 2.9 Mg/m³ (Assumed)						

Hoek-Brown criterion

Number of tests 34.49 **Uniaxial Strength** 13.00 Hoek-Brown constant Coef. of determination r^2 1.00



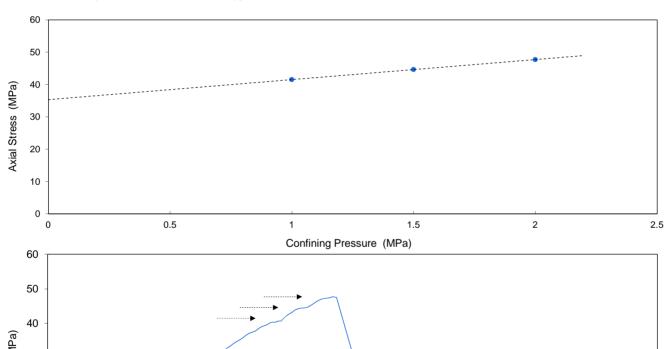
Angle of shear plane/Horizontal: 120° Solid lines for material failures Dashed lines for apparent weakness failure.

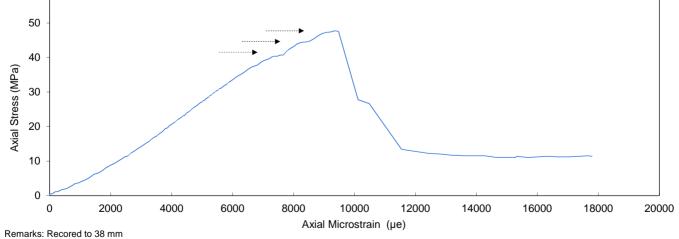
Confining Pressure (MPa)	1.000	1.500	2.000
Axial Strength (MPa) 3 sig. fig.	41.50	44.60	47.70

Gradient of Slope, m 6.200 Ordinate of Slope, b 35 MPa

46.2° Internal Friction Angle, φ

Apparent Cohesion, c 7 MPa





Checked and Approved by

C Clergeaud (Snr. Geologist) 14/01/2022

Project Number:

Project Name:

GEO / 34555

ENVISION, SUNDERLAND S211001

GEOLABS

Strength of Rock Materials in Triaxial Compression: Revised Version

Borehole Ref.: CPR04

Sample Ref.: Depth (m):

12.30-12.60

Description:

Strong to medium strong thinly laminated grey fine grained SANDSTONE.

Fresh to slightly weathered

Procedure Type II - Multiple failure state test

LF0879C (1000kN) compression frame used

Diameter	38.20 mm	Hoek-							
Height	78.00 mm	Number of te							
Bulk Density	2.52 Mg/m³	Uniaxial Stre							
Dry Density	2.45 Mg/m³	Hoek-Brown							
Water Content	3.0 %	Coef. of dete							
Degree of Saturation: 47.2 % Specific Gravity: 2.9 Mg/m³ (Assumed)									

Hoek-Brown criterion

Number of tests 48.02 **Uniaxial Strength** Hoek-Brown constant 20.99 Coef. of determination r^2 0.99

Mode of failure: Diagonal shearing

Angle of foliation/Horizontal: n/a Angle of shear plane/Horizontal: 75° Solid lines for material failures Dashed lines for apparent weakness failure. tested: 07-01-2022

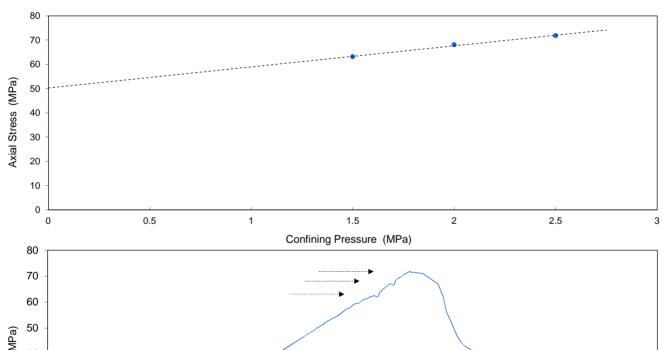
Failure Sketch

Confining Pressure (MPa)	1.500	2.000	2.500
Axial Strength (MPa) 3 sig. fig.	63.10	68.10	71.80

Gradient of Slope, m 8.700

52.5° Internal Friction Angle, φ 9 MPa

Ordinate of Slope, b 50 MPa Apparent Cohesion, c



Stress (MPa) 40 30 20 10 2000 4000 6000 8000 10000 12000 14000 0 Axial Microstrain (µe) Remarks: Recored to 38 mm

Checked and Approved by

C Clergeaud (Snr. Geologist) 14/01/2022

Project Number:

GEO / 34555 Project Name:

> **ENVISION, SUNDERLAND** S211001

GEOLABS



LABORATORY REPORT



4043

Contract Number: PSL21/9416

Report Date: 20 December 2021

Client's Reference: S211001

Client Name: Solmek

12 Yarm Road Stockton-on-Tees

TS18 3NA

For the attention of: Adrian Cutts

Contract Title: Envision, Sunderland

Date Received: 30/11/2021 Date Commenced: 30/11/2021 Date Completed: 20/12/2021

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

A Watkins R Berriman S Royle

(Director) (Quality Manager) (Laboratory Manager)

L Knight S Eyre T Watkins
(Assistant Laboratory Manager) (Senior Technician) (Senior Technician)

5 – 7 Hexthorpe Road, Hexthorpe,

Doncaster DN4 0AR tel: +44 (0)844 815 6641 fax: +44 (0)844 815 6642

e-mail: rberriman@prosoils.co.uk awatkins@prosoils.co.uk Page 1 of

SUMMARY OF ROCK TESTS

(ISRM Suggested Method for the Determination of the Water Content of Rock)

Hole Number	Sample Number	Sample Type	Sample Depth (m)	Water Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Porosity %	Remarks
CPRO1		C	4.50	5.6				
CPRO1		C	14.10	5.7				
CPRO2		C	6.50	5.8				
CPRO2		C	11.50	6.2				
CPRO2		C	12.80	5.5				
CPRO3		C	6.80	7.5				
CPRO3		C	9.80	4.1				
CPRO3		C	15.30	4.1				
CPRO4		C	6.00	5.5				
CPRO5		C	11.00	4.4				
CPRO6		C	22.70	9.6				

PSIL	
Professional Soils Laboratory	

Envision, Sunderland

Contract No:
PSL21/9416
Client Ref:
S211001

DETERMINATION OF UNCONFINED COMPRESSIVE STRENGTH

ISRM Suggested Methods, pp 111 –116, 1981.

Hole	Sample	Sample	Тор	Base	Sample	Sample	Height	Initial	Bulk	Moisture	Dry	Load	UCS	Failure	Date	Remarks
Number	Number	Type	Depth	Depth	Diameter	Length	Ratio	Mass	Density	Content	Density	Failure	UCS	Mode	Tested	Telliul its
		71	(m)	(m)	(mm)	(mm)		(g)	(Mg/m)	(%)	(Mg/m)	(kN)	(MPa)			
CPRO1		C	4.50	4.70	103	154	1.5	3121	2.43	5.6	2.30	43.6	5.2	Brittle	18/12/21	
CPRO1		C	8.10	8.40	103	140	1.4	3008	2.58	4.7	2.46	68.2	8.2	Brittle	18/12/21	
CPRO1		C	11.30	11.50	103	148	1.4	3024	2.45	7.9	2.27	47.8	5.7	Brittle	18/12/21	
CPRO1		C	14.60	14.80	103	163	1.6	3146	2.32	6.7	2.17	52.8	6.3	Brittle	18/12/21	
CPRO2		C	6.20	6.40	103	160	1.6	3260	2.44	5.2	2.32	64.6	7.8	Brittle	18/12/21	
CPRO2		C	10.50	10.80	103	154	1.5	3108	2.42	5.8	2.29	58.6	7.0	Brittle	18/12/21	
CPRO2		C	12.20	12.50	103	150	1.5	3058	2.45	5.4	2.32	56.2	6.7	Brittle	18/12/21	
CPRO2		C	15.40	15.70	103	156	1.5	3037	2.34	6.1	2.20	59.8	7.2	Brittle	18/12/21	
CPRO3		C	8.30	8.50	103	139	1.3	3090	2.67	4.0	2.57	50.0	6.0	Brittle	18/12/21	
CPRO3		C	10.90	11.10	103	144	1.4	3110	2.59	6.5	2.43	53.2	6.4	Brittle	18/12/21	
CPRO3		C	12.50	12.80	103	162	1.6	3250	2.41	5.4	2.28	49.4	5.9	Brittle	18/12/21	
CPRO3		C	15.50	15.70	103	158	1.5	3210	2.44	7.7	2.26	54.4	6.5	Brittle	18/12/21	
CPRO4		C	8.60	8.80	103	140	1.4	2809	2.41	4.3	2.31	46.5	5.6	Brittle	18/12/21	
CPRO4		C	10.00	10.20	103	162	1.6	3198	2.37	7.1	2.21	48.6	5.8	Brittle	18/12/21	
CPRO4		C	11.10	11.30	103	150	1.5	3080	2.46	6.8	2.31	32.4	3.9	Brittle	18/12/21	
CPRO5		C	13.30	13.50	103	168	1.6	3264	2.33	5.5	2.21	49.8	6.0	Brittle	18/12/21	
CPRO5		C	19.40	19.60	103	152	1.5	3028	2.39	5.9	2.26	84.2	10.1	Brittle	18/12/21	
CPRO6		C	16.70	16.95	103	150	1.5	3050	2.44	6.8	2.28	60.4	7.2	Brittle	18/12/21	
CPRO6		C	19.90	20.15	103	190	1.8	3652	2.31	7.6	2.14	116.2	13.9	Brittle	18/12/21	

PSIL	
Professional Soils Laboratory	

	Contract No:
Envision Sundayland	PSL21/9416
Envision, Sunderland	Client Ref:
	S211001

ISRM Suggested Methods: 2007

Borehole Number	Denth (m)		Test Type	Orientation	Dimer (m		Area	D _e ²	D _e	Failure 1	Load (P)	Is	Corr Fac	I_{s50}	Failure Type	Remarks
Tulliou		Ref	1300	Par / Perp	W	D	(mm2)		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)	Type	
CPRO1	5.00		A	Perp	103	45	4635	5901.47	76.82	ı	1.54	0.26	1.213	0.32	Valid	
CPRO1	5.90		A	Perp	103	47	4841	6163.75	78.51	-	2.81	0.46	1.225	0.56	Valid	
CPRO1	6.50		A	Perp	103	48	4944	6294.90	79.34	-	3.07	0.49	1.231	0.60	Valid	
CPRO1	7.40		A	Perp	103	52	5356	6819.47	82.58	ı	3.78	0.55	1.253	0.69	Valid	
CPRO1	8.50		A	Perp	103	57	5871	7475.19	86.46	-	4.16	0.56	1.279	0.71	Valid	
CPRO1	9.50		A	Perp	103	55	5665	7212.90	84.93	-	4.57	0.63	1.269	0.80	Valid	
CPRO1	11.00		A	Perp	103	44	4532	5770.32	75.96	-	2.89	0.50	1.207	0.60	Valid	
CPR02	9.20		A	Perp	103	48	4944	6294.90	79.34	-	3.21	0.51	1.231	0.63	Valid	
CPR02	11.00		A	Perp	103	52	5356	6819.47	82.58	-	2.84	0.42	1.253	0.52	Valid	
CPR02	11.90		A	Perp	103	43	4429	5639.18	75.09	-	2.16	0.38	1.201	0.46	Valid	
CPR02	12.80		A	Perp	103	48	4944	6294.90	79.34	-	2.72	0.43	1.231	0.53	Valid	
CPR02	13.40		A	Perp	103	42	4326	5508.03	74.22	-	2.66	0.48	1.195	0.58	Valid	
CPR02	14.40		A	Perp	103	38	3914	4983.46	70.59	-	4.17	0.84	1.168	0.98	Valid	
CPR02	15.30		A	Perp	103	66	6798	8655.48	93.03	ı	12.01	1.39	1.322	1.83	Valid	
CPR02	15.80		A	Perp	103	42	4326	5508.03	74.22	-	8.46	1.54	1.195	1.83	Valid	

*Note All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

A = Axial, D = Diametral, I = Irregular





Envision, Sunderland

Contract No:
PSL21/9416
Client Ref:
S211001

ISRM Suggested Methods: 2007

Borehole Number	Depth (m)	Sample Ref	Test Type	Orientation	Dimei (m		D _e ²	D _e	Failur	e Load	$\mathbf{I_s}$	Corr Fac	I _{s50}	Failure Type	Remarks
rumber	(111)	KCI	Турс	Par / Perp	L	D		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)	Турс	
CPRO1	13.40		D	Par	-	103	10609	103.00	-	8.72	0.822	1.384	1.14	Valid	
CPRO2	6.60		D	Par	-	103	10609	103.00	-	3.46	0.326	1.384	0.45	Valid	
CPRO2	7.60		D	Par	ı	103	10609	103.00	-	5.01	0.472	1.384	0.65	Valid	

All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random



Professional Soils Laboratory

Envision, Sunderland

PSL21/9416 **Client Ref:** S211001

Contract No:

ISRM Suggested Methods: 2007

Borehole Number	Depth (m)	Sample Ref	Test Type	Orientation	Dimer (m		Area	D _e ²	D _e	Failure 1	Load (P)	Is	Corr Fac	I_{s50}	Failure Type	Remarks
Tullber		KCI	Турс	Par / Perp	W	D	(mm2)		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)	Турс	
CPRO3	6.90		A	Perp	103	81	8343	10622.64	103.07	-	0.81	0.08	1.385	0.11	Valid	
CPRO3	7.40		A	Perp	103	45	4635	5901.47	76.82	-	2.09	0.35	1.213	0.43	Valid	
CPRO3	9.40		A	Perp	103	52	5356	6819.47	82.58	-	4.44	0.65	1.253	0.82	Valid	
CPRO3	9.90		A	Perp	103	38	3914	4983.46	70.59	-	3.72	0.75	1.168	0.87	Valid	
CPRO3	10.50		A	Perp	103	43	4429	5639.18	75.09	-	4.04	0.72	1.201	0.86	Valid	
CPRO3	11.50		A	Perp	103	44	4532	5770.32	75.96	-	4.52	0.78	1.207	0.95	Valid	
CPRO3	12.50		A	Perp	103	48	4944	6294.90	79.34	-	4.27	0.68	1.231	0.83	Valid	
CPRO3	13.40		A	Perp	103	69	7107	9048.91	95.13	-	10.31	1.14	1.336	1.52	Valid	
CPRO3	14.00		A	Perp	103	59	6077	7737.48	87.96	-	7.01	0.91	1.289	1.17	Valid	
CPRO3	14.70		A	Perp	103	80	8240	10491.49	102.43	-	11.21	1.07	1.381	1.48	Valid	
CPRO3	15.00		A	Perp	103	52	5356	6819.47	82.58	-	6.53	0.96	1.253	1.20	Valid	
CPRO3	16.40		A	Perp	103	54	5562	7081.76	84.15	-	6.82	0.96	1.264	1.22	Valid	
CPRO4	6.50		A	Perp	103	35	3605	4590.03	67.75	-	0.68	0.15	1.146	0.17	Valid	
CPRO4	7.20		A	Perp	103	38	3914	4983.46	70.59	-	0.98	0.20	1.168	0.23	Valid	
CPRO4	7.90		A	Perp	103	90	9270	11802.93	108.64	-	9.90	0.84	1.418	1.19	Valid	
CPRO4	8.80		A	Perp	103	63	6489	8262.05	90.90	-	4.96	0.60	1.309	0.79	Valid	
CPRO4	10.20		A	Perp	103	67	6901	8786.63	93.74	-	2.84	0.32	1.327	0.43	Valid	
CPRO4	10.60		A	Perp	103	94	9682	12327.51	111.03	-	1.55	0.13	1.432	0.18	Valid	
CPRO4	11.30		A	Perp	103	69	7107	9048.91	95.13	-	2.57	0.28	1.336	0.38	Valid	
CPRO4	12.90		A	Perp	103	43	4429	5639.18	75.09	-	6.34	1.12	1.201	1.35	Valid	
CPRO4	14.80		A	Perp	103	88	9064	11540.64	107.43	-	1.89	0.16	1.411	0.23	Valid	
CPRO4	15.60		A	Perp	103	89	9167	11671.79	108.04	-	1.58	0.14	1.414	0.19	Valid	

*Note All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

A = Axial, D = Diametral, I = Irregular





Envision, Sunderland

Contract No:
PSL21/9416
Client Ref:
S211001

ISRM Suggested Methods: 2007

Borehole Number	Depth (m)	Sample Ref	Test Type	Orientation	Dimei (m	nsions m)	D _e ²	$\mathbf{D}_{\mathbf{e}}$	Failur	e Load	I_s	Corr Fac	I _{s50}	Failure Type	Remarks
Tuniber	()	1401	1340	Par / Perp	L	D		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)	1300	
CPRO3	8.00		D	Par	-	103	10609	103.00	-	0.29	0.027	1.384	0.04	Valid	
CPRO3	8.90		D	Par	-	103	10609	103.00	-	4.62	0.435	1.384	0.60	Valid	
CPRO4	9.60		D	Par	-	103	10609	103.00	-	3.38	0.319	1.384	0.44	Valid	

*Note All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random



Envision, Sunderland

Contract No:
PSL21/9416
Client Ref:
S211001

ISRM Suggested Methods: 2007

Borehole Number	Depth (m)	Sample Ref	Test Type	Orientation	Dimer (m		Area	D _e ²	D _e	Failure l	Load (P)	Is	Corr Fac	I_{s50}	Failure Type	Remarks
rvaniber		KCI	Турс	Par / Perp	W	D	(mm2)		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)	Турс	
CPRO5	11.60		A	Perp	103	38	3914	4983.46	70.59	-	0.61	0.12	1.168	0.14	Valid	
CPRO5	13.80		A	Perp	103	38	3914	4983.46	70.59	-	0.82	0.16	1.168	0.19	Valid	
CPRO5	14.45		A	Perp	103	59	6077	7737.48	87.96	-	2.45	0.32	1.289	0.41	Valid	
CPRO5	15.20		A	Perp	103	63	6489	8262.05	90.90	-	1.76	0.21	1.309	0.28	Valid	
CPRO5	16.30		A	Perp	103	73	7519	9573.49	97.84	-	1.62	0.17	1.353	0.23	Valid	
CPRO5	18.80		A	Perp	103	38	3914	4983.46	70.59	-	1.24	0.25	1.168	0.29	Valid	
CPRO5	20.20		A	Perp	103	43	4429	5639.18	75.09	-	1.58	0.28	1.201	0.34	Valid	
CPRO5	21.10		A	Perp	103	46	4738	6032.61	77.67	-	1.70	0.28	1.219	0.34	Valid	
CPRO6	17.10		A	Perp	103	48	4944	6294.90	79.34	-	2.13	0.34	1.231	0.42	Valid	
CPRO6	18.80		A	Perp	103	54	5562	7081.76	84.15	-	2.83	0.40	1.264	0.51	Valid	
CPRO6	19.80		A	Perp	103	60	6180	7868.62	88.71	-	2.75	0.35	1.294	0.45	Valid	
CPRO6	21.30		A	Perp	103	68	7004	8917.77	94.43	-	3.22	0.36	1.331	0.48	Valid	
CPRO6	22.80		A	Perp	103	51	5253	6688.33	81.78	-	2.46	0.37	1.248	0.46	Valid	
CPRO6	24.30		A	Perp	103	58	5974	7606.33	87.21	-	2.67	0.35	1.284	0.45	Valid	

*Note All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

A = Axial, D = Diametral, I = Irregular





Envision, Sunderland

Contract No:
PSL21/9416
Client Ref:
S211001

ISRM Suggested Methods: 2007

Borehole Number	Depth (m)	Sample Ref	Test Type	Orientation		nsions m)	D _e ²	D _e	Failur	e Load	$\mathbf{I_s}$	Corr Fac	I_{s50}	Failure Type	Remarks
Tullioti	(111)	101	1300	Par / Perp	L	D		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)	1300	
CPRO5	16.90		D	Par	•	103	10609	103.00	-	2.11	0.199	1.384	0.28	Valid	
CPRO5	17.60		D	Par	•	103	10609	103.00	-	1.98	0.187	1.384	0.26	Valid	

*Note All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random



Envision, Sunderland

Contract No:
PSL21/9416
Client Ref:
S211001

APPENDIX:



LANKELMA Limited

Cold Harbour Barn, Cold Harbour Lane, Iden
East Sussex, TN31 7UT
T: +44 (0)1797 280050
E: info@lankelma.com
www.lankelma.com

SUNDERLAND BATTERY FARM

SOIL INVESTIGATION

CPT REPORT

Cone penetration testing
Dissipation testing
Parameter interpretation

Project ref.: P-107877-1

Report No.: P-107877_1













	PROJECT:	Sunderland Battery Farm
--	----------	-------------------------

CLIENT:	Solmek	
---------	--------	--

FIELDWORK

CPT rig(s)	20.5-tonne track-truck mounted CPT unit (UK3)
Date fieldwork started	21st of October 2021
Date fieldwork completed	22 nd of October 2021
Lankelma's representative	Emma Stickland
Client's representative	Richard Woods

DOCUMENT CHECKING

Action	Date	Name
Completed	28/10/2021	Elliot Corner
Checked	28/10/2021	Chris Player
Approved	28/10/2021	Chris Player

Issue	Date	Status			
1	28/10/2021	Final			





APPENDIX E INTERPRETATION RESULTS - SET 2

CONTENTS

1	IN	ITRODUC	1							
2	DI	ISCLAIME	ER	1						
3	CC	OMPLETE	ED WORKS	1						
4	FI	FIELDWORK GENERAL 1								
5	CC	ONE PEN	ETRATION TESTS	2						
	5.1	Glossar	y of CPT Terms and Symbols	2						
	5.2	CPT Dat	a Reduction and Presentation	4						
	5.3	In-situ S	Stress Conditions	5						
	5.4 Soil Unit Weight									
	5.5 Soil Behaviour Type									
	5.6 Soil Behaviour Type Index − Ic									
	5.7 Relative Density									
	5.8 Undrained Shear Strength									
	5.9	9								
	5.10	SPT N60	10							
	5.11	Friction	11							
5.12 Coefficient of Volume Change										
	5.13 Young's Modulus									
6	CPT INTERPRETATION NOTES 14									
7	REFERENCES 1									
ΑI	PPEND	OIX A	SUMMARY TABLES							
ΑI	PPEND	DIX B	GENERAL INFORMATION							
ΑI	PPEND	OIX C	CONE PENETRATION TEST RESULTS							
ΑI	PPEND	DIX D	INTERPRETATION RESULTS - SET 1							



1 INTRODUCTION

At the request of Solmek, a soils investigation was carried out on project Sunderland Battery Farm.

Site location:

(In the general region of)

West Moor Farm Cottage Washington Road Sunderland SR5 3HY

2 DISCLAIMER

The investigation information, raw data and interpretations provided in this report are for the sole benefit of the Client identified at the front of the report.

Lankelma has exercised reasonable skill and care in the fieldwork and preparation of this report. This report has been completed based on information available to Lankelma at the time of preparation. The measurement and interpreted data in this report do not constitute recommendations for design purposes. An appropriately qualified person must review and interpret the data given in this report, together with any assumptions we have made that affect the data, before using the data for design or recommendation. Lankelma accepts no responsibility for the accuracy or suitability of any assumptions, derived soil parameters, soil classification descriptions or soil layer boundaries contained in this report.

3 COMPLETED WORKS

- 12 nr. cone penetration tests with pore pressure measurement (CPTu)
- Factual report including point data interpretation of selected parameters

Appendix A Summary Tables contains tabulated details of the works completed together with analysis results where applicable.

4 FIELDWORK GENERAL

Fieldwork was performed with a 20.5-tonne track-truck mounted CPT unit (UK3) equipped with a 17.0-tonne capacity hydraulic ram set.

The Client was responsible for the positioning and re-survey of all investigative locations.

The target depth for the investigation was between 5 m and 6 m below ground level. Table 1 details the final test depths and reasons for test termination (*refusal factor*). Where penetration



refusal was encountered the termination depth was advised to, and agreed with, the Client's onsite representative.

5 CONE PENETRATION TESTS

Cone penetration testing was carried out in general accordance with BS ISO 22476-1:2012.

Penetrometer measurements included cone tip resistance, friction sleeve resistance and dynamic pore water pressure sampled at a 10 mm resolution.

Penetrometers were calibrated in accordance with BS8422:2003 and ASTM E74-13a, and penetrometers with down-hole digitisation and incorporating load cell temperature sensors were calibrated in accordance with ISO 376:2011. The BS8422:2003 calibration provides a single calibration uncertainty value as a percentage of full-scale output (FSO), while ISO 376:2011 calibrations provide an uncertainty value for each calibration force or pressure and extends to the very low range (tip pressure >= 0.06 MPa) required to quantify uncertainty in low strength soils. The management of calibration records is in accordance with ISO 10012. Copies of all calibration certificates for the cones used are provided in Appendix B.

The piezometer filter element was in the u_2 position and was vacuum saturated in a > 99.9% vacuum under 1000 cSt silicone oil for > 7 days prior to mobilisation. The pore pressure system was vacuum saturated in the disassembled state under 500 cSt glycerine oil (dipropylene glycol or propylene glycol) and assembled under oil prior to each test.

5.1 GLOSSARY OF CPT TERMS AND SYMBOLS

SYMBOLS & ABBREVIATIONS

B_{q}	Pore pressure ratio. The net pore pressure normalized with respect to the net cone resistance: $B_q = (u_2 - u_0)/(q_t . \sigma_v)$
Fr	Normalised friction sleeve resistance: $F_r = f_s / (q_c - \sigma_v)$
f s	Friction sleeve resistance: The total frictional force acting on the friction sleeve, F_s , divided by its surface area A_s : $f_s = F_s/A_s$.
G	Shear modulus
g	Gravitational constant: $g = 9.81 \text{ m/s}^2$
G_0	Small strain shear modulus
Gs	Specific gravity of solids
HOC	Heavily overconsolidated
<i>I</i> _c	Soil Behaviour Type Index: Continuous numerical representation of Robertson (1990) soil behaviour type classification chart.
LOC	Lightly overconsolidated
NC	Normally consolidated
OC	Overconsolidated
\mathbf{q}_{c}	Cone resistance: The total force acting on the cone Q_c , divided by the projected area of the cone, A_c : $q_c = Q_c/A_c$.



Q_t Normalised cone resistance (Method 1): $Q_t = (q_c - \sigma_v)/\sigma'v$

 q_t Corrected tip resistance: The cone tip resistance q_c corrected for pore water

pressure effects on the cone shoulder.

q_{t-net} **Net cone resistance:** $q_{t-net} = q_t - \sigma_v$. Where q_t is unavailable q_c is applied.

q_{t1} Normalised cone resistance (Method 2): $q_{t1} = (q_t)/(\sigma'_v)^{0.5}$

R_f **Friction ratio:** The ratio, expressed as a percentage, of the sleeve friction, f_s,

to the cone resistance, q_c , at a given depth: $R_f = (f_s/q_c) \cdot 100$

SBT or SBTn Soil behaviour type classification

u₀ Equilibrium pore pressure

 $\mathbf{u_2}$ Pore pressure: Dynamic pore pressure measured at the shoulder position $(\mathbf{u_2})$

during penetration and during dissipation tests. $u_2 = \Delta u_2 + u_0$

 $Δu_2$ Excess pore pressure: $Δu_2 = Δu_2 - u_0$

 $V_{s_1}V_p$ Shear wave velocity, V_s , and pressure wave velocity, V_p . Measured with use

of a seismic receiver.

z Depth below ground level: Depth as penetration length without correction for

inclination, or true depth after correction for inclination.

Greek

 γ Unit weight of soil γ_w Unit weight of water

ρ Volumetric mass density (or specific mass) of soil: ρ = γ/g

 σ_v Total overburden stress

σ'_v Effective overburden stress

 σ_{atm} , or, P_a Reference atmospheric stress: $\sigma_{atm} = 101.3$ kPa

TERMS

Cone or 'tip': The conical tip of the cone penetrometer.

Friction sleeve: The section of the cone penetrometer upon which the sleeve friction is measured, located behind the cone tip.

Piezocone: A cone penetrometer with a pore pressure sensor $(u_2 \text{ or } u_1)$

Seismic cone: A cone penetrometer with a seismic receiver incorporated inside or behind.

Dynamic pore pressure: The pore pressure measured during penetration (u₂ or u₁).

Soil behaviour type, or 'SBT': Soil classification scheme or classified soil type according to Robertson (1990, 2016) often abbreviated to SBT or according to normalised cone parameters SBTn.

Rod string: The series of hollow tube push rods that transmit force to the penetrometer.



5.2 CPT DATA REDUCTION AND PRESENTATION

The CPT results are presented in Appendix C. The corrected cone resistance (q_t) , local side friction (f_s) , dynamic pore water pressure (u_2) , friction ratio (R_f) and inclination are all presented against depth and elevation in accordance BS ISO 22476-1:2012. CPT data and the associated derived geotechnical parameters are included in the 4.0 data file provided.

The cone tip and sleeve force measurements were converted to pressure using the nominal dimensions of the penetrometer.

Zero load output values were recorded before and after each test. The set of zero values applied to the measurements (subtracted from the raw output measurement) were those deemed to be obtained at a temperature closest to ground temperature, or the average of the two sets where appropriate.

For piezocone tests the total cone resistance (or 'corrected cone resistance') was calculated according to the formula:

$$q_t = q_c + u_2 \times (1 - a)$$

Where a is the 'area ratio' and (1-a) is the proportion of cross-sectional area between the cone tip and penetrometer body where pore pressures (positive or negative) can act to add or subtract from the total external axial force on the tip. The difference between measured and corrected values is largest in low strength collapsible soils with large excess pore pressures. The percentage adjustment is described by the curves on the chart below for a = 0.8:

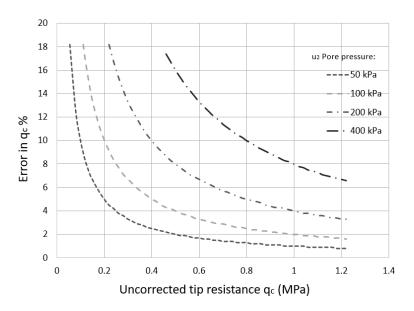


Figure 5-1 Uncorrected tip with measured tip resistance

Penetration length readings were corrected for inclination and sleeve readings were depth corrected for the dimensional offset between cone tip and sleeve during post processing. Rod spikes (artefacts of the pause for push rod addition) were filtered from the cone tip and sleeve data. The data was re-sampled from 10 mm resolution to 20 mm to reduce the size of the data set to a more manageable size for end users. A 20 mm resolution is well within the intrinsic influence zone of the cone tip measurement and the loss of meaningful resolution is negligible.



The raw data are presented in Appendix C. For piezocone tests q_t is reported on all logs, and q_c only appears in the digital AGS data.

Geotechnical parameters appropriate for drained and undrained cone penetration conditions were derived for corresponding drained and undrained derived soil behaviour types (SBTs) respectively, however, to account for uncertainty in the SBT correlation with drainage behaviour, all parameters were derived over a range of transitional soils within the range 2.4 < Ic < 2.7 (see section 6.3).

In general, the engineering parameters derived for fine grain soils (undrained) are suitable for soils of both silicate and carbonate composition, whereas parameters derived for coarse soils are intended for non-cemented predominantly silicate composition.

5.3 IN-SITU STRESS CONDITIONS

An estimate of the equilibrium pore pressure and total and effective vertical stress states is required for derivation of many parameters obtained from the CPT and dissipation test.

The total vertical stress with depth was calculated as the sum of the calculated soil unit weight above a given depth. See section 5.4 for information on the empirical estimate of soil unit weight.

An arbitrary phreatic surface of 3.00 mBGL was applied in the calculation of effective stress.

Note: The term phreatic surface is used here, however when it is based on piezocone measurements it is assumed that the piezometric level (under hydrostatic conditions) and phreatic surface coincide. The phreatic or piezometric level reported is intended to provide information about the assumed pore pressure distribution and may not represent the true position of the groundwater table or perched water bodies. Complex groundwater pressure distributions will be applied if they are observed from the measurements and are sufficiently well defined.

5.4 SOIL UNIT WEIGHT

The soil unit weight was estimated using the following method proposed by Robertson (2010b).

$$\frac{y}{y_w} = 0.27 \, Log(R_f) + 0.36 \, (Log(q_t/R_f)) + 1.236$$

Throughout pre-drilled zones (inspection pits or drill-out) the soil was assigned a nominal unit weight of 17 kN/m^3 .

For depths where the friction sleeve resistance measurement was less than zero due to measurement limitations, the friction sleeve resistance input parameter was substituted with a nominal 1.0 kPa resistance for the purpose of obtaining an approximate soil unit weight necessary for estimation of total vertical stress over the entire profile.

5.5 SOIL BEHAVIOUR TYPE

Robertson (1990, 2010)



The soil behaviour type (SBT) was interpreted using the Robertson (1990) classification system based on the normalised cone resistance (Qt) and normalised friction sleeve resistance (Fr) for silicate soils.

While the classification based on normalised parameters is considered more accurate, particularly for NC soils exceeding a depth of 15 m, the classification is often significantly in error (artificially granular/drained) at very shallow depth (< 1-3 m). The error at shallow depth is associated with the potentially large difference between the estimated vertical effective stress (applied in normalisation) and the unknown horizontal stress influencing penetration resistance.

Robertson (2010) proposed a non-normalised version of the 1990 chart which uses dimensionless cone resistance (q_c/Pa) and friction ratio, Rf. The classification according to this chart can be more reliable at shallow depth and has been plotted as an approximate SBT index (discussed below) for comparison to the normalised classification.

The SBT chart is provided in Appendix B - *General Information*, titled 'CPT Soil Behaviour Type Chart'.

It should be noted that:

- The SBT classification provides a general soil type and tends to show biased towards the soil fraction that dominates the mechanical behaviour.
- If fine cohesive soils are dry and overconsolidated, the classification tends to shift towards a coarser soil type (or lower I_c index)

While the repeatability and behavioural bias of the SBT is usually beneficial, the classification is not always an appropriate substitute for classification based on particle size and plasticity index tests.

The results are presented in Appendix D.

Schneider et al. (2008)

Schneider et al. (2008) proposed a classification system based on the normalised pore pressure B_q and tip resistance Q_t . This system is particularly useful for soils of very low strength or that exhibit drainage behaviour or u_2 response inconsistent with the SBT derived from tip and sleeve measurements. However, for onshore CPTs care must be taken that the u_2 piezometer is not affected by desaturation and that the response is dynamic. A set of logs showing both the Robertson and Schneider et al. classification results are provided for comparison in Appendix F.

Layer Analysis

The layer boundaries are manually interpreted based on broad changes in Robertson 1990 SBT classification or variance with depth. Once layer boundaries are defined, the SBT zones classified within each layer are listed together with the corresponding percentage of data points within the layer (excluding null/filtered data). The modal classification is reported in full, with abbreviated short descriptions for all secondary zones, for example - 'Clays - clay to silty clay [74%]; *Silt mixtures [20%]', where the asterisk represents an abbreviation of the full description 'Silt mixtures - clayey silt to silty clay'. It is important to consider that the classification zone boundaries do not exist in nature and small shifts in the cone response can lead multiple



classifications within layers of relatively uniform behaviour; especially were the layer data plot close to a triple junction and/or has spurious spikes or very thin layers. Therefore, some system to limit the number of classified zones is usually necessary for clarity in the plot. The logic used by Lankelma for each layer is:

Where

C = Minimum % SBT zone classification coverage within the layer LT = Layer thickness (m)

For layers having a thickness of less than 1 m then 10% of data at the top and bottom of the layer are excluded to limit the effect of transition zone data (mobilised resistance influenced by overlying or underlying strata) being included in the classification.

The continuous SBT index I_c should be used to assess the classification distribution and variation not accounted for by the layer description.

5.6 SOIL BEHAVIOUR TYPE INDEX - Ic

The principal trend in soil behaviour type (SBT) variation can be expressed by a continuous index, I_C , proposed by Robertson and Wride (1998) based on a similar index proposed by Jefferies and Davies (1993). The index provides a continuous profile of SBT variation with depth for end-user analysis of soil units and variation within units.

The equivalent non-normalised version, as proposed by Robertson (2010), is provided for comparison.

The basis of I_c and its approximation of the original chart classification zones may be seen from Appendix B figure 'CPT Soil Behaviour Type Chart'. The method does not identify zones 1 (sensitive fine grained) or zones 8 & 9 (overconsolidated or cemented).

Normalised SBT index I_C (Robertson and Wride, 1998):

$$I_c = [(3.47 - \log Q_t)^2 + (\log F_r + 1.22)^2]^{0.5}$$

Non-normalised SBT index I_C (Robertson, 2010):

$$I_c = \left[\left(3.47 - \log \left(\frac{q_c}{\sigma_{atm}} \right) \right)^2 + (\log R_f + 1.22)^2 \right]^{0.5}$$

The normalised version if I_c is generally more accurate, while the non-normalised version is intended for compatibility with the non-normalised Robertson's (2010) SBT chart and may be more accurate at shallow depths in overconsolidated soils.

The results are presented in Appendix D.



5.7 RELATIVE DENSITY

The relative density of sands was calculated based on an empirical relationship proposed by Jamiolkowski *et al.* (2001) based on a large database of undisturbed frozen samples and calibration chamber tests. The expected accuracy may be evaluated from the figures presented below.

$$D_r = 100 \left[0.268 \cdot \ln \left(\frac{q_t / \sigma_{atm}}{\sqrt{\sigma_{vo}' / \sigma_{atm}}} \right) - k \right]$$

k = Compressibility dependant constant can be taken as -0.675 for medium compressibility (applied value in our interpretation), <= 1 for high compressibility and >= 2 for compressible sands.

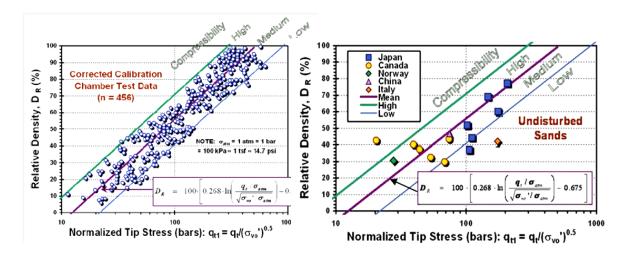


Figure 5-2 Relative density with normalised tip stress and sand compressibility from calibration chamber tests (left) and undisturbed frozen samples (right). Jamiolkowski *et al.* (2001). Reproduced from Mayne (2007).

The results are presented in Appendix E- Standard interpretation results (set 2).

5.8 UNDRAINED SHEAR STRENGTH

The undrained shear strength s_u is usually estimated by the bearing capacity method, whereby the net tip resistance is divided by a factor N_k (Lunne *et al*, 1981):

$$s_u = \frac{q_c - \sigma_{v0}}{N_k}$$

Where N_k is an empirical factor which varies with soil type, stress history, structure/fabric, plasticity, and the mode of shear.

Mayne and Peuchen (2018) performed and evaluation of 407 high-quality undrained anisotropically consolidated triaxial compression tests (CAUC) with net tip resistance to proposed $N_{\rm kt}$ factors with regression analysis details for five categories of clays shown in Table 1.



Clay Group	Number of	Nr Data	Correlation	Factor N _{kt}	Mean Pore
	sites		Coefficient r ²		Pressure
					Parameter B _q
Offshore NC-LOC	17	115	0.98	12.32	0.51
Onshore NC-LOC	30	191	0.867	12	0.53
Sensitive NC-LOC	5	43	0.507	10.33	0.84
OC Intact	5	36	0.862	13.57	0.49
OC Fissured	5	22	0.393	22.47	-0.01
All clays	62	407	0.923	13.33	0.55

Table 1 Summary of CAUC su versus q_{net} for clays. Reproduced from Mayne and Peuchen (2018).

Alternatively, a variable N_{kt} factor can be estimated for the profile as a function of the pore pressure parameter B_q , applicable for B_q values of > -0.01. The following equation proposed by Mayne and Peuchen is based on the same database evaluation:

$$N_{kt} = 10.5 - 4.6 \cdot \ln(B_a + 0.1)$$

Where the pore pressure parameter B_q is the ratio of excess pore pressure to net tip resistance:

$$B_q = \frac{u_2 - u_0}{q_t - \sigma_{v0}}$$

The N_{kt} estimate has a standard error of 2.4 N_k and correlation coefficient of 0.645.

The estimate based on B_q is presented as 's_u5' on the parameter plots and is only suitable for tests that have a high-quality pore pressure data, often indicated by a positive, repeatable, and dynamic response.

Note: N_{kt} (with subscript 't') indicates a N_k factor that has been established using the corrected tip resistance q_t . N_{kt} can be applied to the uncorrected tip resistance q_c (non-piezocone tests) but results in a slightly lower estimate of s_u depending on the correction magnitude ($q_c - q_t$) in lower strength soils.

Undrained shear strengths corresponding to selected values of N_k are presented on the plots of Appendix D. ' $s_u 3$ ' on the logs ($N_k = 15$) has been included as a reference for comparison to traditionally reported N_k values of 15 and 20.

5.9 OVERCONSOLIDATION RATIO

The preconsolidation stress σ'_p was calculated based on the method proposed by Mayne et al (2009):

$$\sigma_p' = k \cdot (q_t - \sigma_{vo})^{m \prime}$$

$$OCR = \sigma_p'/\sigma'_{v0}'$$

Mayne et al found that the trend with mean grain size followed a power law through the addition of exponent m' and that its value can be estimated by relation to soil behaviour type index I_c :



$$m' = 1 - \frac{0.28}{1 + \frac{I_c}{2.65}^{25}}$$

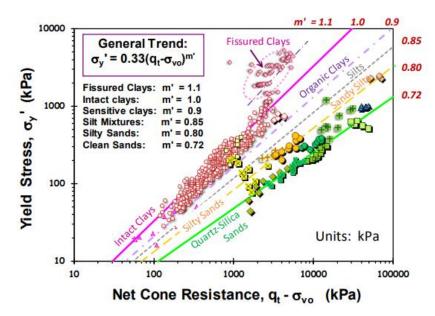


Figure 5-3 Preconsolidation stress with net cone resistance power law, reproduced from Mayne (2014).

An additional set of σ'_p and OCR values were calculated for m'=1.1 to reflect the upper trend for over consolidated fissured clays not captured by the correlation with I_c .

5.10 SPT N60 VALUES

Equivalent SPT N60 values, defined as the non-normalised SPT blow count over a 30 cm interval, were derived for two correlations.

Method 1 - Jefferies and Davies (1993) cited in Lunne et al. (1997):

$$N_{60} = \frac{q_t}{8.5 \cdot \sigma_{atm} \cdot \left(1 - \frac{I_c}{4.6}\right)}$$

Method 2 - Robertson (2012):

$$\frac{\left(\frac{q_t}{p_a}\right)}{N_{60}} = 10^{(1.268 - 0.2817I_c)}$$

The correlations are intended for clays, silts and sands and not for carbonates or cemented geomaterials.

The results are presented in Appendix D.



5.11 FRICTION ANGLE

Sands

The peak friction angle of granular materials was calculated using the Kulhawy and Mayne (1990) method. The relationship is based on a calibration chamber database from 24 sands of varying mineralogy and is found from:

$$\phi' = 17.6 + 11.0 \cdot \log(q_{t1})$$

Where:

 ϕ' = Peak friction angle (degrees)

 q_{t1} = stress normalised cone resistance:

$$q_{t1} = \left(\frac{q_t}{\sigma_{atm}}\right) / \left(\frac{\sigma_{v0'}}{\sigma_{atm}}\right)^{0.5}$$

The presence of compressible minerals tends to reduce tip resistance resulting in lower estimate of friction angle, while very coarse (sand) or larger grain size tends to increase tip resistance resulting in higher estimate. Increased penetration resistance due to high k_0 conditions also results in an overestimate of friction angle.

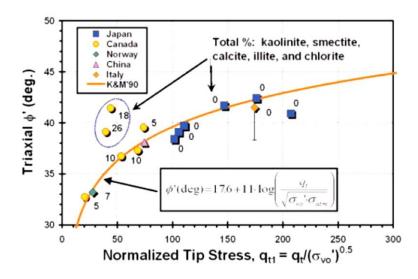


Figure 5-4 Peak triaxial friction angle from undisturbed sands with normalised cone resistance.

Fine grained soils

The effective friction angle for fine grained soils was calculated based on the Senneset et~al. (1988, 1989) method by applying the approximate closed form solution by Mayne & Campanella (2005) as a direct function of the pore pressure parameter Bq and normalised tip resistance Q. The method is applicable where $0.1 < B_q < 1.0$ and $20^\circ < \phi' < 45^\circ$ and generally appropriate for non-cemented normally consolidated to lightly overconsolidated soils.



$$\phi' = 29.5^{\circ} B_{q^{0.121}} [0.256 + 0.336 B_q + \log Q]$$

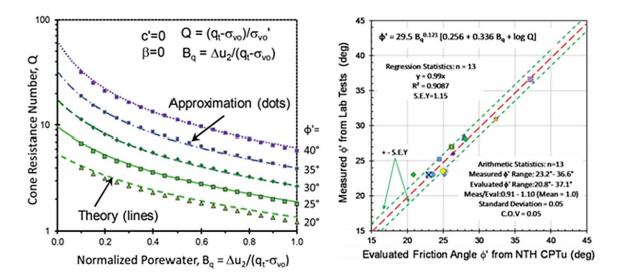


Figure 5-5 [Left] Theoretical curves with function approximation (dots) overlay [Right] calibration data from geotechnical centrifuge tests for a variety of soils. Redrawn from Ouyang & Mayne (2018).

The results are presented in Appendix E.

5.12 COEFFICIENT OF VOLUME CHANGE

Coefficient of volume change m_v defined as the inverse of the constrained modulus M, is evaluated for all soil types using the constrained modulus method proposed by Mayne (2006) cited in Mayne (2007). The value may be used to predict settlement at the end of primary consolidation and is applicable to the present state of vertical effective stress up to the preconsolidation stress for overconsolidated soils.

$$m_v = \frac{1}{M}$$

Where:

$$M = \alpha \cdot (q_t - \sigma_v)$$

$$\alpha = 5$$

An alpha factor of 8.25 reported by Kulhawy & Mayne (1990) for fine grained soils appears to provide a better fit through the data for intact non-organic clays, reducing to around 1 to 2 for organic plastic clays.



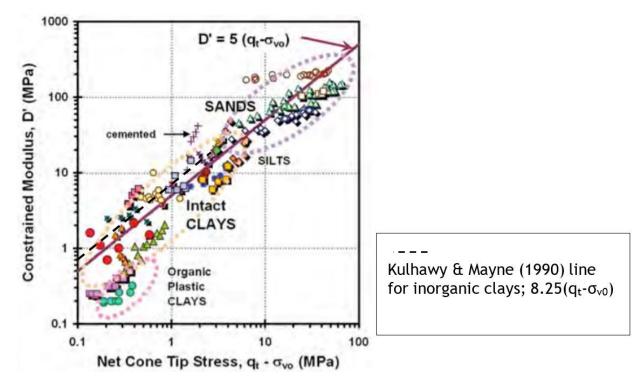


Figure 5-6 Constrained modulus of Mayne (2006). Annotated/redrawn from NCHRP Synthesis 368 (2007).

The results are presented in Appendix D.

5.13 YOUNG'S MODULUS

The secant Young's modulus E' at 25% mobilised shear strength (FOS = 4) was calculated according to the method proposed by Robertson (2009):

$$E' = \alpha (q_t - \sigma_v)$$
 Where:

$$\alpha = 0.015(10^{0.55Ic + 1.68})$$

The method described by Robertson may be adapted to estimate E' for loading at different percentages of mobilised shear strength.

The results are presented in Appendix E.



6 CPT INTERPRETATION NOTES

Provided below is a non-exhaustive set of notes on interpretation of the acquired CPT data with reference to examples within the dataset where appropriate.

DRAINED AND UNDRAINED SOIL BEHAVIOUR

Geotechnical parameters appropriate for drained and undrained cone penetration conditions are derived for drained and undrained soil behaviour types (SBTs) respectively, however, to help mitigate the uncertainty in the SBT correlation with drainage behaviour, all parameters are derived over the Soil Behaviour Type range $2.4 < I_c < 2.7$. For partially drained conditions, error will be introduced within derived parameters.

Piezocone dynamic pore pressure and dissipation tests may be used to identify drainage conditions. Dissipation t_{50} values exceeding 50 seconds indicate undrained penetration behaviour based on the findings of Kim *et al.* (2008).

In partially drained materials the friction sleeve resistance may rise significantly immediately following a pause in penetration due to consolidation and increased effective stress on the friction sleeve.

DYNAMIC PORE PRESSURE u₂ (CPTu)

While the piezo system is saturated before use, testing through unsaturated soils may result in some degree of desaturation leading to a less accurate and more 'sluggish' pore pressure response. Desaturation can also occur during penetration due to suction pressure during dilative shear at the cone shoulder. Dissipation tests that are undertaken following desaturation are likely to have a more pronounced initial rise and some degree of error will be present in the analysis.

If the piezometer system becomes desaturated it may re-saturate at higher excess pressures later in the test as gas dissolves under pressure. The pore pressure response in saturated contractive soils should normally have a dynamic 'peaky' appearance.

The tip resistance in lower strength contractive soils <u>without</u> pore pressure measurement in the u_2 position is likely to be significantly lower (up to 20%, typically ~10%) than the equivalent corrected tip resistance depending on the magnitude of excess pore pressure generated during penetration.

CONE TIP AND SLEEVE OFFSET

The accuracy of the SBT over thin layers and at layer boundaries is sensitive to offset error in the friction ratio often resulting in sharp peaks or troughs at boundaries. The friction ratio is often inaccurate in heavily disturbed soils with a 'blocky' macro fabric. The last ~8 cm of data is also not included in the SBT material description as no friction sleeve measurements are recorded.

FRICTION SLEEVE DATA

There are two common causes of friction sleeve measurement issues; 1) unequal pore pressure acting on the sleeve end areas as the sleeve passes though materials of different permeability





and hence excess pore pressure Δu_2 , often resulting in a negative/positive spike, and 2) Accuracy limitations and temperature effects in very low strength or sensitive soils. The latter can often be mitigated by temperature stabilisation during the test and at the time of zero output measurement.

CONE TYPE

The reference cone type has a 10 cm² projected cone tip area and 150 cm² friction sleeve area, however it is common to use a larger 15 cm² cone with a 225 cm² friction sleeve area for improved sensitivity, temperature stability, damage prevention and penetration depth potential due to the higher bending strength. Use of a 15 cm² cone does however require higher penetration force (reaction force) for a given penetration pressure and produces more pronounced transitions zones and thin layer effects due to the larger influence zone.

TRANSITION ZONES AND THIN LAYER EFFECTS

During penetration at the boundary between soils of contrasting stiffness, a transition zone is often evident prior to mobilisation of the true soil stiffness. These should be cautiously ignored in assessment of soil behaviour type and parameter evaluation. Where the stiff layer is thin (<~1 m) mobilised resistance may be significantly less than that of an equivalent thick layer. The effect for thin low stiffness layers is less significant. Procedures for thin-layer effect correction are provided by Robertson and Wride (1998) and Boulanger & DeJong (2018).

GRAVELS

The presence of gravel or larger clasts in a soil is often characterised by short peaks in the CPT tip and sleeve readings, possibly with associate inclinometer 'shake' and/or short sharp reductions in pore water readings due to dilation effects. Frequent gravels in soft or loose soils may generate localised erroneous friction ratio values.



7 REFERENCES

ASTM E74-13a (2013), Standard Practice of Calibration of Force-Measuring Instruments for Verifying the Force Indication of Testing Machines, ASTM International, West Conshohocken, PA.

Boulanger, R.W. and DeJong J.T. (2018) "Inverse filtering procedure to correct cone penetration data for thin-layer effects" Proceedings, 4th International Symposium on Cone Penetration Testing (CPT'18), 21-22 June 2018, Delft, The Netherlands. CRC Press. pp. 25-44.

British Standards Institution (2003) BS 8422:2003, Force measurement - Strain gauge load cell systems - Calibration method. London: British Standards Institution.

Houlsby, G.T. and Teh, C.I. (1988). Analysis of the Piezocone in Clay. Proceedings of the International Symposium on Penetration Testing (ISOPT-1), Orlando, Vol. 2, pp. 777-783. Balkema Pub., Rotterdam.

ISO 376:201. Metallic materials — Calibration of force-proving instruments used for the verification of uniaxial testing machines (2011).

ISO 10012:2003 Measurement management systems - Requirements for measurement processes and measuring equipment. New Delhi: Bureau of Indian Standards (2003).

ISO 22476-1:2012 Geotechnical investigation and testing - Field testing - Part 1: Electrical cone and piezocone penetration test. New Delhi: Bureau of Indian Standards (2012).

ISSMGE, 1999. International reference test procedure for the cone penetrometer test CPT and the cone penetration test CPTU, Report of ISSMGE TC16 on Ground Property Characterisation for in situ Testing, In Proceedings of the 12th European conference on Soil Mechanics and Geotechnical Engineering 3:2195-222 (1999).

Idriss, I. M., and Boulanger, R. W. (2008) "Soil liquefaction during earthquakes". Monograph MNO-12, Earthquake Engineering Research Institute, Oakland, CA, pp. 261.

Jamiolkowski, M., LoPresti, D.C.F., and Manassero, M. (2001) "Evaluation of Relative Density and Shear Strength of Sands from Cone Penetration Test and Flat Dilatometer Test". Soil Behaviour and Soft Ground Construction (GSP119), American Society of Civil Engineers, pp. 201-238. Reston, Va. 2001

Jefferies, M.G. and Davies M.P. (1993), "Use of CPTu to estimate equivalent SPT N60", Geotechnical Testing Journal, 16(4), pp. 458-467.

Kim, K., Prezzi, M., Salgado, R., and Lee, W. (2008) "Effect of Penetration Rate on Cone Penetration Resistance in Saturated Clayey Soils", Journal of Geotech. Geoenviron. Eng., Vol. 134(8), pp. 1142-1153.

Kulhawy, F.H. and Mayne, P.W. (1990) "Manual on Estimating Soil Properties for Foundation Design". Report EPRI EL-6800 Research Project 1493-6, Electric Power Research Institute, Palo Alto, CA, pp. 306.

Ladd, C.C. and DeGroot, D.J. (2003) "Recommended Practice for Soft Ground Site Characterization: Arthur Casagrande Lecture". Soil & Rock America 2003 (Proceedings. 12th Pan American Conference on Soil Mechanics and Geotechnical Engineering, Boston, MA). Verlag Glückauf, Essen, Germany. pp. 3-57.

Lunne, T., Robertson, P.K. and Powell, J.J.M. (1997) "Cone Penetration Testing in Geotechnical Practice" Blackie Academic, New York 1997. (Robertson, 2009)

Lunne, T. and Kleven, A. (1981) "Role of CPT in North Sea Foundation Engineering". Session at the ASCE National Convention: Cone Penetration Testing and Materials. pp. 76-107. American Society of Engineers (ASCE).

Mayne, P.W. and Campanella, R.G. (2005) "Versatile Site Characterisation by Seismic Piezocone". Proceedings, 16th International Conference on Soil Mechanics and Geotechnical Engineering, Vol. 2. Millpress, Rotterdam, The Netherlands 2005. pp 721-724.

Mayne, P.W. and Peuchen J. (2018), "Evaluation of CPTU Nkt cone factor for undrained strength of clays". Proceedings, 4th International Symposium on Cone Penetration Testing (CPT'18), 21-22 June 2018, Delft, The Netherlands. CRC Press. pp. 423-479.

Mayne, P.W. (2007) "Cone Penetration Testing - A Synthesis of Highway Practice". NCHRP Synthesis 368, Transportation Research Board, Washington, D.C.

Mayne, P.W. (2014). KN2: "Interpretation of geotechnical parameters from seismic piezocone tests". Proceedings, 3rd International Symposium on Cone Penetration Testing (CPT'14), June 2014, ISSMGE Technical Committee TC 102, Edited by P.K. Robertson and K.I. Cabal: pp. 47-73.

Parez, L. and Fauriel, R. (1988). "Le piézocône. Améliorations apportées à la reconnaissance de sols". Revue Française de Géotech, Vol. 33, pp. 13-27.

Robertson, P.K. (2009). Cited in "Guide to Cone Penetration Testing - 6th edition (2015)", pp. 36, pp. 58, Gregg Drilling & Testing, Inc.



SUNDERLAND BATTERY FARM

Robertson, P.K. (2009). Interpretation of cone penetration tests - a unified approach. Canadian Geotechnical Journal, 46, pp. 1337-1355.

Robertson, P.K. (2010a) "Soil Behaviour Type from the CPT: an update". Proceedings, 2nd International Symposium on Cone Penetration Testing. Huntingdon Beach, CA, USA.

Robertson, P.K. (2010b) "Estimating soil unit weight from CPT". Proceedings, 2nd International Symposium on Cone Penetration Testing. Huntingdon Beach, CA, USA.

Robertson, P.K. (2012). "Interpretation of in-situ tests - some insights", Proceedings, 4th Int. Conf. on Geotechnical & Geophysical Site Characterization, ISC'4, Brazil, 1.

Robertson, P.K (2014) "Estimating in-situ soil permeability from CPT & CPTu". Proceedings, 3rd International Symposium on Cone Penetration Testing (CPT'14), June, 2014, ISSMGE Technical Committee TC 102.

Senneset, K., R. Sandven, and N. Janbu (1989), "Evaluation of Soil Parameters from Piezocone Tests," Transportation Research Record 1235, Transportation Research Board, National Research Council, Washington D.C, pp. 24-37.

Sully, J.P., Robertson, P.K., Campanella, R.G. and Woeller, D.J. (1999) "An approach to evaluation of field CPTU dissipation data in overconsolidated fine-grained soils". Canadian Geotechnical Journal. Vol. 36, pp. 369-381.



APPENDICES

APPENDIX A SUMMARY TABLES

APPENDIX B GENERAL INFORMATION

APPENDIX C CONE PENETRATION TEST RESULTS

APPENDIX D INTERPRETATION RESULTS - SET 1

APPENDIX E INTERPRETATION RESULTS - SET 2



APPENDIX A SUMMARY TABLES

Table 2 CPT summary

Location ID	Stroke number	Final depth (m)	Cone ID	Piezocone test	Pre-drilled (m)	Pre-drilling details	Rig	Primary refusal factor	Applied zero values: qc, fs, u2	Tip zero drift (kPa)	Sleeve zero drift (subtraction) (kPa)	Piezo zero drift (kPa)	Nr dissipation tests	Raw File Name	Easting (m)	Northing (m)	Elevation (m)	Date	Remarks
																			Data Loss: Operative error, test refusal at 1.77 m not
CPT01	1	1.76	S15-CFIPM(250).841	YES	1.20	IP-BF	UK3	Tip load	pre, pre, pre	-7.80	-0.10	-5.40		107877-V1-211021-UK3-LP78.L01				21/10/2021	captured
CPT02	1	4.16	S15-CFIPM(250).841	YES	1.20	IP-BF	UK3	Tip load	pre, pre, pre	33.80	-2.10	-3.50		107877-V1-211021-UK3-LP78.L02				21/10/2021	
CPT03	1	6.24	S15-CFIPM(250).841	YES	1.20	IP-BF	UK3	Lateral support	pre, pre, pre	18.00	-1.20	0.00		107877-V1-211021-UK3-LP78.L12				22/10/2021	
CPT04	1	8.08	S15-CFIPM(250).841	YES	1.20	IP-BF	UK3	Tip load	pre, pre, pre	-23.00	0.60	-3.50		107877-V1-211021-UK3-LP78.L11				22/10/2021	
CPT05	1	7.86	S15-CFIPM(250).841	YES	1.20	IP-BF	UK3	Lateral support	pre, pre, pre	5.60	-1.50	-4.00		107877-V1-211021-UK3-LP78.L08				22/10/2021	
CPT06	1	6.82	S15-CFIPM(250).841	YES	1.20	IP-BF	UK3	Lateral support	pre, pre, pre	-55.80	-0.30	-0.10		107877-V1-211021-UK3-LP78.L03				21/10/2021	
CPT07	1	9.16	S15-CFIPM(250).841	YES	1.20	IP-BF	UK3	Tip load	pre, pre, pre	-15.00	-3.10	1.90		107877-V1-211021-UK3-LP78.L04				21/10/2021	
CPT08	1	7.40	S15-CFIPM(250).841	YES	1.20	IP-BF	UK3	Tip load	pre, pre, pre	30.60	0.60	-0.50		107877-V1-211021-UK3-LP78.L07				21/10/2021	
CPT09	1	5.26	S15-CFIPM(250).841	YES	1.20	IP-BF	UK3	Tip load	pre, pre, pre	75.40	-1.80	-3.50		107877-V1-211021-UK3-LP78.L05				21/10/2021	
CPT10	1	16.60	S15-CFIPM(250).841	YES	1.20	IP-BF	UK3	Lateral support	pre, pre, pre	-87.80	1.20	4.30		107877-V1-211021-UK3-LP78.L06				21/10/2021	
CPT11	1	12.44	S15-CFIPM(250).841	YES	1.20	IP-BF	UK3	Lateral support	pre, pre, pre	-37.20	1.30	2.20		107877-V1-211021-UK3-LP78.L10				22/10/2021	
CPT12	1	13.18	S15-CFIPM(250).841	YES	1.20	IP-BF	UK3	Lateral support	pre, pre, pre	70.20	-3.60	-2.80		107877-V1-211021-UK3-LP78.L09				22/10/2021	

CPT test plots are presented in Appendix C.



APPENDIX B GENERAL INFORMATION

LIST OF FIGURES

Cone calibration certificate: S15-CFIIP.841

Data sheet: 20.5-tonne track-truck mounted CPT unit (UK3)

CPT soil behaviour type chart



Certificate Number: 1365

Cone Serial Number: DS15-CFIIPM.841

Instrument:	Digital-Geopoint-S15-150kN-2MPa	Location:	Lankelma Calibration Laboratory
Serial number:	DS15-CFIIPM.841	Temperature (°C):	17.6
Manufacturer:	Geopoint	Temperature change (°C):	0.13
Calibration standard:	Conforms to ISO 376:2011 & ISO 22476-	Calibration engineer:	P Metcalf
ISO 22476-1:2012 application class:	Class 1	Calibration re-verification date:	14/12/2021 to 14/02/2022
Date of calibration:	14/10/2021	Calibration verification completed:	-
Calibration expiry:	14/02/2022		

This calibration certificate is valid for 6 months, with a verification of the calibration being performed between 2 and 4 months from the date of calibration.

Calibration signed and dated by:

P Metcalf

Calibration checked and dated by:

AN Harman

Calibration verification signed and dated by:

REFERENCE INSTRUMENTS	SERIAL NUMBER	UNCERTAINTY OF RECORDED VALUE	CALIBRATION DATE
AM DSCCHA-100kN Load Cell	66914	0.02%	29/04/2021
AM DSCCHA-5kN Load Cell	0	0.05%	00/01/1900
Omega MMG750V	502273	0.01%	01/09/2021
Keithley 3706A Multimeter	4067652	10ppm	27/08/2021
LD Solar2-45	105775	0.04°	02/09/2020
ETI Ref Thermometer	D20345255	0.01°C	27/08/2021

The calibration tests were made in the Lankelma force standards machine. The applied forces of which are within an uncertainty of: ± 0.050 % of nominal value from 0.5kN up to 10kN, then 0.02% of nominal from 10kN up to 100kN.

MEASUREMENTS

- 1. The forces applied, and the resulting deflections are given in Tables 1. No corrections for temperature have been applied to these results.
- The cone was loaded to full range 3 times for no less than 1 minute before calibration and after each rotation.
- 3. The cone was calibrated in low and high range using two reference load cells. The low range calibration consisted of a maximum load of 5kN with 4 sets of increasing forces and 2 sets of decreasing forces. The high range calibration consisted of a maximum load of 100kN with 3 sets of increasing forces and 2 sets of decreasing forces.

 4. The difference in deflection for each applied force with rotation is the relative reproducibility error b, shown as a percentage of the recorded value and in units of pressure MPa.
- The uncertainty relating to the difference in deflection for increasing forces against degreasing forces is the reversibility uncertainty U_rev, shown as a percentage of the recorded value and in units of pressure MPa.
- 5. For each application of force, the coefficients of a linear and third order equation relating the estimate of the mean deflection as a function of the applied calibration force were calculated. Table 2.
- 6. The combined expanded uncertainty of deflection U for each force is shown as a percentage of the recorded value and in un its of pressure MPa.
- 7. The coefficients of a third order equation relating a given applied force to the estimate of the mean deflection were also calculated. The coefficients are given in Table 3.

 8. In use the forces acting on the sleeve load cell element are a combination of tip resistance and sleeve friction, with the tip resistance from the tip load cell element being subtracted
- to give the sleeve friction value. The resultant error values for differing tip and sleeve values are shown in Table 4.
- The combined expanded uncertainties shown are to k=2 with a 95% coverage factor.

The calibration uncertainty is the uncertainty in the force value calculated from the interpolation equation at any deflection.

At each calibration point a combined standard uncertainty uc is calculated from the readings obtained during the calibration.

$$uc = \sqrt{\sum_{i=1}^{8} ui^2}$$

and

 $U = k \times uc$

where

u1 is the standard uncertainty associated with the applied calibration force.

u2 is the standard uncertainty associated with the reproducibility of the calibration results.

u3 is the standard uncertainty associated with the repeatability of the calibration results. u4 is the standard uncertainty associated with the resolution and noise of the system.

u5 is the standard uncertainty associated with the creep of the instrument.

u6 is the standard uncertainty associated with the drift in zero output.

u7 is the standard uncertainty associated with temperature of the instrument.

	Symbols and their designations
Symbol	Designation
Ref LC	Reference load cell with calibration force in kN
cts	Counts. Base digital cone units.
0.1N	Interpolated digital cone units from counts
b	Relative reproducibility error
U_rev	Reversibility uncertainty
Uc	Combined standard uncertainty
Uc_sub	Combined standard uncertainty including sleeve subtraction
U	Combined expanded uncertainty
k=2	95% uncertainty coverage factor

Cone tempreture effect profile:

This section deals with the apparent pressure readings obtained from sensors due to static and transient temperature change. The parameters for post-processing temperature correction are established and the apparent pressures after correction are presented. Depending on the design or temperature performance, correction of the friction sleeve and/or piezometer readings may not be warranted

Certificate Number: 1365

Cone Serial Number: DS15-CFIIPM.841

Table 1-a.

CONE END RESISTANCE CALIBRATION

			Low range	calibration					High range calibration							
		Tip change lı	n output (cts)		Reprod	ucibility	Reversibility			Tip change in output (cts)			Reprodu	ıcibility	Revers	ibility
Ref LC	1	2	3	4	erro	or b	error (J_rev	Ref LC	1	2	3	error b		error <i>U_rev</i>	
(kN)	0°	120°	240°	240°	MPa	%	MPa	%	(kN)	0°	120°	240°	MPa	%	MPa	%
0.100	1.163E+05	1.165E+05	1.116E+05	1.116E+05	0.001	1.37			5.000	5.733E+06	5.731E+06	5.740E+06	0.002	0.05		
0.500	5.739E+05	5.723E+05	5.728E+05	5.717E+05	0.000	0.08			10.000	1.147E+07	1.146E+07	1.147E+07	0.001	0.02		ļ
1.000	1.147E+06	1.141E+06	1.148E+06	1.147E+06	0.001	0.20			15.000	1.720E+07	1.720E+07	1.721E+07	0.001	0.01		ļ
1.500	1.721E+06	1.711E+06	1.723E+06	1.723E+06	0.002	0.21			20.000	2.294E+07	2.294E+07	2.295E+07	0.002	0.01		ļ
2.000	2.295E+06	2.280E+06	2.299E+06	2.299E+06	0.003	0.24			30.000	3.441E+07	3.441E+07	3.442E+07	0.002	0.01		
2.500	2.869E+06	2.851E+06	2.875E+06	2.874E+06	0.004	0.25			40.000	4.587E+07	4.588E+07	4.588E+07	0.002	0.01		ļ
3.000	3.442E+06	3.422E+06	3.450E+06	3.450E+06	0.005	0.24			50.000	5.732E+07	5.732E+07	5.733E+07	0.002	0.01		
3.500	4.017E+06	3.994E+06	4.026E+06	4.026E+06	0.006	0.24			60.000	6.876E+07	6.876E+07	6.877E+07	0.002	0.00		
4.000	4.590E+06	4.564E+06	4.603E+06	4.603E+06	0.007	0.25			80.000	9.160E+07	9.161E+07	9.161E+07	0.002	0.00		
5.000	5.739E+06	5.706E+06	5.756E+06	5.755E+06	0.009	0.26			######	1.144E+08	1.144E+08	1.144E+08	0.003	0.00		ļ
4.000	4.590E+06	4.563E+06			0.006	0.21	0.000	0.00	80.000	9.160E+07	9.161E+07		0.002	0.00	0.000	0.00
3.500	4.015E+06	3.993E+06			0.004	0.19	0.000	0.01	60.000	6.877E+07	6.878E+07		0.001	0.00	-0.004	-0.01
3.000	3.442E+06	3.422E+06			0.004	0.21	0.000	0.01	50.000	5.734E+07	5.735E+07		0.001	0.00	-0.008	-0.02
2.500	2.869E+06	2.850E+06			0.004	0.23	0.000	0.00	40.000	4.590E+07	4.590E+07		0.000	0.00	-0.009	-0.04
2.000	2.294E+06	2.279E+06			0.003	0.22	0.000	0.03	30.000	3.444E+07	3.445E+07		0.001	0.00	-0.011	-0.06
1.500	1.719E+06	1.709E+06			0.002	0.22	0.001	0.07	20.000	2.298E+07	2.297E+07		0.001	0.01	-0.012	-0.09
1.000	1.147E+06	1.139E+06			0.002	0.23	0.000	0.07	15.000	1.723E+07	1.723E+07		0.001	0.01	-0.010	-0.10
0.500	5.707E+05	5.700E+05			0.000	0.04	0.001	0.28	10.000	1.149E+07	1.149E+07		0.000	0.00	-0.008	-0.12
0.100	1.131E+05	1.149E+05			0.000	0.55	0.001	1.16	5.000	5.746E+06	5.745E+06		0.000	0.01	-0.005	-0.14

Table 2-a.

		Low r	ange calib	oration				
Referen	ce output	Line	ar equatio	n	3rd order equation			
Ref Load		Cone	Expa		Equation	Expa		
Cell Nom.	Ref Load	output	uncerta	inty U*	output	uncerta	inty <i>U</i> *	
(MPa)	Cell (0.1N)	(0.1N)	MPa	%	(0.1N)	MPa	%	
0.067	1000	1002	0.002	2.91	1003	0.002	2.95	
0.333	5000	5004	0.001	0.37	4995	0.001	0.42	
0.667	10000	10003	0.003	0.47	9981	0.004	0.59	
1.000	15000	15006	0.005	0.51	14971	0.006	0.59	
1.333	20000	20008	0.008	0.57	19961	0.009	0.64	
1.667	25000	25018	0.010	0.60	24958	0.010	0.62	
2.000	30000	30026	0.012	0.61	29954	0.012	0.59	
2.333	35000	35037	0.015	0.63	34953	0.013	0.57	
2.667	40000	40044	0.018	0.67	39947	0.016	0.59	
3.333	50000	50070	0.025	0.76	49948	0.021	0.64	
2.667	40000	39965	0.013	0.49	39868	0.021	0.80	
2.333	35000	34967	0.011	0.45	34883	0.018	0.79	
2.000	30000	29970	0.010	0.49	29898	0.016	0.82	
1.667	25000	24974	0.009	0.53	24914	0.014	0.85	
1.333	20000	19967	0.008	0.58	19919	0.012	0.93	
1.000	15000	14966	0.006	0.65	14932	0.010	1.02	
0.667	10000	9979	0.004	0.66	9957	0.007	1.00	
0.333	5000	4981	0.003	0.84	4972	0.004	1.17	
0.067	1000	996	0.001	1.69	997	0.001	1.55	

		High r	ange calil	oration					
Referen	ce output	Linea	ar equatio	n	3rd order equation				
Ref Load		Cone	Expa	nded	Equation	Expa	nded		
Cell Nom.	Ref Load	output	uncerta	inty U*	output	uncerta	inty U*		
(MPa)	Cell (0.1N)	(0.1N)	MPa	%	(0.1N)	MPa	%		
3.333	50000	50077	0.015	0.45	49956	0.012	0.37		
6.667	100000	100146	0.024	0.36	99907	0.018	0.28		
10.000	150000	150232	0.036	0.36	149887	0.023	0.23		
13.333	200000	200330	0.050	0.37	199891	0.027	0.20		
20.000	300000	300527	0.078	0.39	299942	0.033	0.16		
26.667	400000	400628	0.093	0.35	399968	0.041	0.15		
33.333	500000	500604	0.095	0.28	499953	0.051	0.15		
40.000	600000	600476	0.087	0.22	599933	0.060	0.15		
53.333	800000	799931	0.080	0.15	799957	0.080	0.15		
66.667	1000000	998880	0.179	0.27	1000042	0.099	0.15		
53.333	800000	799925	0.079	0.15	799951	0.079	0.15		
40.000	600000	600568	0.096	0.24	600024	0.059	0.15		
33.333	500000	500778	0.115	0.35	500127	0.052	0.16		
26.667	400000	400849	0.121	0.45	400188	0.047	0.18		
20.000	300000	300803	0.112	0.56	300217	0.042	0.21		
13.333	200000	200629	0.088	0.66	200189	0.033	0.25		
10.000	150000	150472	0.066	0.66	150127	0.024	0.24		
6.667	100000	100336	0.047	0.71	100098	0.018	0.28		
3.333	50000	50174	0.026	0.78	50052	0.012	0.37		

Table 3-a. Third order equation

For a given cone indicated output of D (0.1N units), the corre applied force	cted
F (in 0.1N units) is calculated from :	
$F = (a3 \times D^3) + (a2 \times D^2) + (a1 \times D) + a0$	

a0 = 3.57261 a1 = 0.99743 a2 = 1.29613E-09 a3 = 2.43863E-15 Maximum tip zero drift during the calibration (MPa) = 0.001

Maximum load cell zero drift during the calibration (MPa) = 0.000

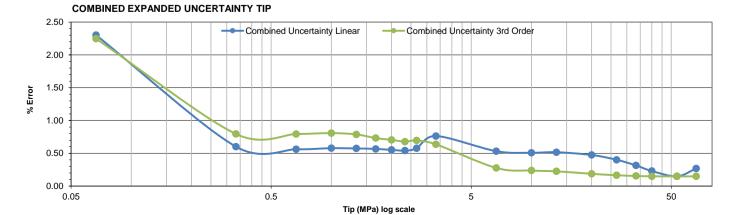
Factor used to convert from counts to 0.1N units = 0.0087325

Maximum tip full scale reading (MPa) = 100.00

Tip resolution (Pa) = 66.7

Tip area (cm²) = 15

Tip area ratio factor = 0.798



Certificate Number: 1365

Cone Serial Number: DS15-CFIIPM.841

Table1-b.

SLEEVE FRICTION CALIBRATION

			Low range	calibration				High range calibration								
	SI	eeve change	In output (ct	s)	Reproducibility		Revers	Reversibility		Sleeve change in output (cts)			Reprodu	ucibility	Revers	ibility
Ref LC	1	2	3	4	erro	r b	error (J_rev	Ref LC	1	2	3	error b		error <i>U_rev</i>	
(kN)	0°	120°	240°	240°	kPa	%	kPa	%	(kN)	0°	120°	240°	kPa	%	kPa	%
0.100	1.191E+05	1.192E+05	1.175E+05	1.175E+05	0.020	0.46			5.000	5.906E+06	5.906E+06	5.913E+06	0.086	0.04		
0.500	5.915E+05	5.899E+05	5.900E+05	5.895E+05	0.019	0.09			10.000	1.181E+07	1.181E+07	1.182E+07	0.084	0.02		
1.000	1.182E+06	1.178E+06	1.182E+06	1.182E+06	0.047	0.11			15.000	1.772E+07	1.772E+07	1.772E+07	0.074	0.01		
1.500	1.774E+06	1.766E+06	1.774E+06	1.774E+06	0.099	0.15			20.000	2.362E+07	2.363E+07	2.363E+07	0.101	0.01		
2.000	2.364E+06	2.353E+06	2.367E+06	2.367E+06	0.156	0.18			30.000	3.544E+07	3.544E+07	3.545E+07	0.101	0.01		
2.500	2.955E+06	2.942E+06	2.959E+06	2.960E+06	0.191	0.17			40.000	4.724E+07	4.724E+07	4.725E+07	0.099	0.01		
3.000	3.546E+06	3.532E+06	3.551E+06	3.552E+06	0.216	0.16			50.000	5.903E+07	5.903E+07	5.904E+07	0.126	0.01		
3.500	4.136E+06	4.120E+06	4.144E+06	4.143E+06	0.260	0.17			60.000	7.080E+07	7.081E+07	7.082E+07	0.154	0.01		
4.000	4.728E+06	4.710E+06	4.737E+06	4.737E+06	0.300	0.17			80.000	9.431E+07	9.432E+07	9.433E+07	0.198	0.01		
5.000	5.911E+06	5.888E+06	5.924E+06	5.923E+06	0.394	0.18			######	1.178E+08	1.178E+08	1.178E+08	0.206	0.00		
4.000	4.727E+06	4.710E+06			0.231	0.13	0.005	0.00	80.000	9.432E+07	9.433E+07		0.154	0.00	-0.128	0.00
3.500	4.136E+06	4.121E+06			0.201	0.13	-0.006	0.00	60.000	7.082E+07	7.083E+07		0.098	0.00	-0.503	-0.02
3.000	3.545E+06	3.531E+06			0.179	0.14	0.011	0.01	50.000	5.906E+07	5.907E+07		0.111	0.01	-0.697	-0.03
2.500	2.953E+06	2.942E+06			0.145	0.13	0.023	0.02	40.000	4.728E+07	4.728E+07		0.037	0.00	-0.824	-0.05
2.000	2.362E+06	2.353E+06			0.126	0.14	0.016	0.02	30.000	3.548E+07	3.549E+07		0.087	0.01	-0.958	-0.07
1.500	1.771E+06	1.765E+06			0.077	0.12	0.044	0.07	20.000	2.367E+07	2.367E+07		0.025	0.00	-0.999	-0.11
1.000	1.180E+06	1.175E+06			0.060	0.14	0.058	0.13	15.000	1.776E+07	1.776E+07		0.002	0.00	-0.823	-0.12
0.500	5.876E+05	5.876E+05			0.001	0.00	0.068	0.31	10.000	1.184E+07	1.184E+07		0.032	0.01	-0.633	-0.14
0.100	1.161E+05	1.177E+05			0.021	0.47	0.048	1.08	5.000	5.920E+06	5.922E+06		0.020	0.01	-0.324	-0.15

Table 2-b.

	Low range calibration										
Reference	ce output	Linear	factor out	put	3rd ord	3rd order equation					
Ref Load		Cone	Expa	nded	Equation	Expa	nded				
Cell Nom.	Ref Load	output	uncerta	inty U*	output	uncerta	inty <i>U</i> *				
(kPa)	Cell (0.1N)	(0.1N)	kPa	%	(0.1N)	kPa	%				
4	1000	1006	0.073	1.67	1007	0.082	1.86				
22	5000	5008	0.100	0.45	4996	0.080	0.36				
44	10000	10012	0.163	0.37	9985	0.181	0.41				
66	15000	15021	0.291	0.44	14978	0.294	0.44				
88	20000	20022	0.390	0.44	19964	0.464	0.53				
110	25000	25035	0.516	0.47	24961	0.539	0.49				
132	30000	30045	0.616	0.47	29956	0.614	0.46				
154	35000	35054	0.742	0.48	34950	0.716	0.46				
176	40000	40069	0.889	0.50	39950	0.789	0.45				
220	50000	50097	1.332	0.60	49949	1.118	0.51				
176	40000	40014	0.541	0.31	39896	1.058	0.60				
154	35000	35012	0.469	0.30	34908	0.931	0.60				
132	30000	30006	0.408	0.31	29917	0.835	0.63				
110	25000	24996	0.332	0.30	24923	0.758	0.69				
88	20000	19992	0.290	0.33	19934	0.646	0.73				
66	15000	14991	0.199	0.30	14948	0.492	0.74				
44	10000	9985	0.195	0.44	9958	0.398	0.90				
22	5000	4983	0.161	0.73	4972	0.256	1.16				
4	1000	992	0.091	2.08	993	0.082	1.86				

		High r	ange calib	oration					
Referen	ce output	Linear	factor out	put	3rd order equation				
Ref Load		Cone	Expai		Equation Expanded				
Cell Nom.	Ref Load	output	uncerta	•	output	uncerta	inty U*		
(kPa)	Cell (0.1N)	(0.1N)	kPa	%	(0.1N)	kPa	%		
220	50000	50106	1.159	0.53	49958	0.778	0.35		
441	100000	100189	1.885	0.43	99903	1.222	0.14		
661	150000	150277	2.697	0.41	149870	1.622	0.12		
881	200000	200378	3.640	0.41	199867	1.875	0.11		
1322	300000	300559	5.333	0.40	299896	2.248	0.09		
1762	400000	400649	6.287	0.36	399921	2.712	0.08		
2203	500000	500621	6.355	0.29	499923	3.303	0.07		
2643	600000	600490	5.787	0.22	599925	3.914	0.07		
3524	800000	799888	5.215	0.15	799940	5.147	0.07		
4405	1000000	998844	12.007	0.27	1000044	6.366	0.07		
3524	800000	799905	5.107	0.14	799958	5.052	0.07		
2643	600000	600656	6.914	0.26	600091	3.877	0.07		
2203	500000	500867	8.282	0.38	500169	3.520	0.08		
1762	400000	400952	8.768	0.50	400224	3.235	0.09		
1322	300000	300913	8.284	0.63	300251	2.959	0.11		
881	200000	200749	6.741	0.77	200237	2.497	0.14		
661	150000	150585	5.265	0.80	150176	1.900	0.14		
441	100000	100420	3.797	0.86	100134	1.449	0.16		
220	50000	50214	1.996	0.91	50066	0.869	0.20		

Table 3-b. Third order equation

For a given cone indicated output of D (0.1N units), the corrected
applied force

F (in 0.1N units) is calculated from :

 $\mathsf{F} = (\; \mathsf{a3} \; \mathsf{x} \; \mathsf{D}^{\mathsf{3}} \;) + (\; \mathsf{a2} \; \mathsf{x} \; \mathsf{D}^{\mathsf{2}} \;) + (\; \mathsf{a1} \; \mathsf{x} \; \mathsf{D} \;) + \mathsf{a0}$

a0	=	4.50324
a1	=	0.99681
a2	=	2.74188E-09
а3	=	1.65405E-15
	=	

Maximum sleeve zero drift during the calibration (kPa) = 0.029

Maximum load cell zero drift during the calibration (kPa) = 0.002

Factor used to convert from counts to 0.1N units = 0.0084805

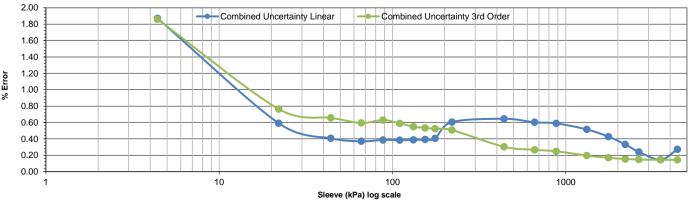
Thysical strength influed maximum sleeve reading (wir-a) = 1.333

Sleeve resolution (Pa) = 4.4

Sleeve area (cm²) = 227

Sleeve area ratio factor = -0.004





Certificate Number: 1365

Cone Serial Number: DS15-CFIIPM.841

Table 4-b Sleeve friction - tip subtraction combined standard uncertainty Uc_sub

			Sleeve linear equation subtraction error (%)						
		Sleeve kPa							
		4	22	44	66	110	154	220	661
Тір МРа	0.07	3.0	0.7	0.4	0.3	0.3	0.3	0.3	0.3
ĮĔ I	0.33	3.9	0.9	0.5	0.4	0.3	0.3	0.3	0.3
	0.67	5.8	1.3	0.7	0.5	0.4	0.3	0.4	0.3
	1.00	8.1	1.7	0.9	0.7	0.5	0.4	0.4	0.3
•	1.67	12.8	2.7	1.4	1.0	0.7	0.5	0.5	0.4
	2.33	17.3	3.6	1.8	1.3	0.8	0.7	0.6	0.4
	3.33	35.1	7.1	3.6	2.5	1.6	1.2	1.0	0.5
	10.00	84.2	17.0	8.5	5.7	3.5	2.6	2.0	0.7
	13.33	111.5	22.4	11.3	10.1	4.6	3.4	3.3	1.0

			Sleeve 3rd order equation subtraction error (%)						
		Sleeve k	Ра —		→				
		4	22	44	66	110	154	220	661
Тір МРа	0.07	3.0	0.8	0.5	0.4	0.4	0.3	0.3	0.1
<u>т</u>	0.33	4.8	1.2	0.7	0.6	0.5	0.4	0.3	0.2
	0.67	8.2	1.8	1.1	0.8	0.6	0.5	0.4	0.2
	1.00	11.4	2.5	1.4	1.0	0.7	0.6	0.5	0.2
•	1.67	17.4	3.7	2.0	1.4	1.0	0.7	0.6	0.2
	2.33	22.1	4.6	2.4	1.7	1.1	0.9	0.7	0.3
	3.33	29.5	6.1	3.2	2.2	1.4	1.1	0.8	0.3
	10.00	38.7	7.9	4.1	2.8	1.8	1.3	1.0	0.4
	13.33	48.2	9.8	5.1	4.1	2.2	1.6	1.2	0.4

PORE PRESSURE CALIBRATION

Table 2-c.

Table1-c.							
	PWP ch	nange in outp	out (cts)	Reprod	ucibility	Rever	sibility
Ref PR	1	2	3	erro	or b	error	U_rev
(kPa)	0°	120°	240°	kPa	%	kPa	%
50	1.979E+07	1.981E+07	1.978E+07	0.0	0.03		
100	3.971E+07	3.964E+07	3.950E+07	0.2	0.15		
200	7.930E+07	7.933E+07	7.912E+07	0.2	0.08		
300	1.188E+08	1.189E+08	1.188E+08	0.1	0.04		
400	1.584E+08	1.583E+08	1.583E+08	0.1	0.01		
500	1.978E+08	1.978E+08	1.977E+08	0.1	0.02		
600	2.372E+08	2.372E+08	2.372E+08	0.1	0.01		
800	3.159E+08	3.160E+08	3.159E+08	0.1	0.01		
1000	3.945E+08	3.946E+08	3.945E+08	0.1	0.01		
1200	4.729E+08	4.731E+08	4.729E+08	0.2	0.01		
1000	3.946E+08	3.946E+08		0.0	0.00	-0.1	-0.01
800	3.162E+08	3.161E+08		0.1	0.01	-0.2	-0.03
600	2.375E+08	2.373E+08		0.1	0.02	-0.3	-0.05
500	1.980E+08	1.979E+08		0.1	0.03	-0.2	-0.04
400	1.585E+08	1.584E+08		0.1	0.03	-0.2	-0.04
300	1.190E+08	1.189E+08		0.1	0.04	-0.1	-0.04
200	7.954E+07	7.933E+07		0.2	0.10	-0.2	-0.09
100	3.979E+07	3.977E+07		0.0	0.02	-0.2	-0.16

Reference	Reference output		actor out	put	3rd ord	ler equati	ion
Ref			Cone Expanded		Equation	Expa	
Pressure	Pressure	output	uncerta	•	output	uncerta	
(kPa)	(0.1Pa)	(0.1Pa)	kPa	%	(0.1N)	kPa	%
50	500000	502197	0.474	0.95	498771	0.291	0.58
100	1000000	1005041	1.070	1.07	998479	0.466	0.47
200	2000000	2010531	2.152	1.08	1998719	0.491	0.25
300	3000000	3014808	2.995	1.00	2999077	0.438	0.15
400	4000000	4016932	3.416	0.85	3998569	0.505	0.13
500	5000000	5017325	3.514	0.70	4997570	0.731	0.15
600	6000000	6017681	3.594	0.60	5997728	0.763	0.13
800	8000000	8015636	3.228	0.40	7998701	0.834	0.10
1000	10000000	10008928	2.060	0.21	9999278	1.033	0.10
1200	12000000	11998274	1.514	0.13	11999838	1.474	0.12
1000	10000000	10010616	2.349	0.23	10000975	1.015	0.10
800	8000000	8019873	4.066	0.51	8002950	0.987	0.12
600	6000000	6022914	4.653	0.78	6002963	0.891	0.15
500	5000000	5021881	4.453	0.89	5002122	0.708	0.14
400	4000000	4020313	4.103	1.03	4001944	0.613	0.15
300	3000000	3017698	3.584	1.19	3001957	0.564	0.19
200	2000000	2015233	3.107	1.55	2003400	0.820	0.41
100	1000000	1009188	1.861	1.86	1002601	0.553	0.55
50	500000	504672	0.970	1.94	501229	0.315	0.63

Table	3-c.	Third	order	eq	uation

1.986E+07 1.993E+07

For a given cone indicated output of D (0.1N units), the corrected
applied force

F (in 0.1N units) is calculated from :

 $F = (a3 \times D^3) + (a2 \times D^2) + (a1 \times D) + a0$

a0 = 51.03216 a1 = 0.99273 a2 = 6.95886E-10 a3 = -6.60237E-18

-0.27

Maximum PWP zero drift during the calibration (kPa) = 0.11

Maximum reference zero drift during the calibration (kPa) = 0.225

Factor used to convert from counts to 0.1Pa units = 0.0253701

Maximum PWP full scale reading (kPa) = 2000

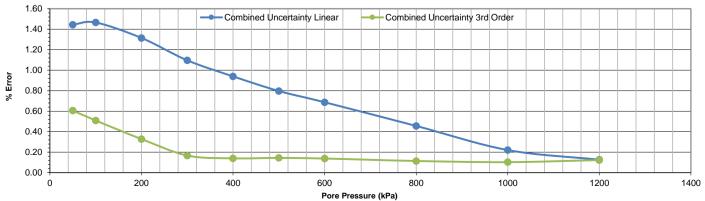
PWP resolution (Pa) = 0.1



0.1

0.12

-0.1





Certificate Number: 1365

Cone Serial Number: DS15-CFIIPM.841

INCLINATION CALIBRATION

Ref Inclination	Cone inclination output				
(°C)	X Inc (cts)	Y Inc (cts)			
-25	-25217	-25596			
0	570	-342			
25	26166	24651			

Ref Inclination	Cone inclination output				
(°)	X Inc (°)	Y Inc (°)			
-25	-25.1	-25.1			
0	0.0	0.0			
25	24.9	24.9			

	X inc	Y inc
Factor used to convert from counts to 0.1m° units =	9.73080001	9.95075334
Inclination error (°) =	0.1	0.1

TEMPERATURE CALIBRATION

Recorded temp (°C)	Cone output 1 FS (cts)	Cone output 2 QC (cts)
0.00	0	0
0.00	0	0
0.00	0	0
0.00	0	0
0.00	0	0

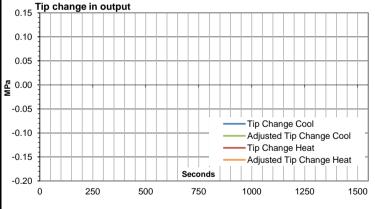
Recorded temp (°C)	Cone output 1 FS (°C)	Cone output 2 QC (°C)
0.00	#DIV/0!	#DIV/0!

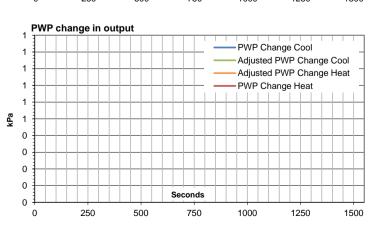
Factor used to convert from counts to 0.00001°C units =	#DIV/0!	#DIV/0!
Temperature error (°C) =	0.00	0.00

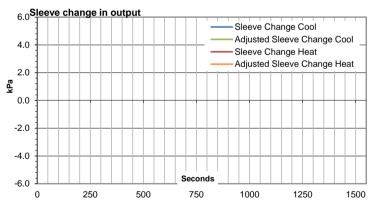
CONE TEMPERATURE EFFECT

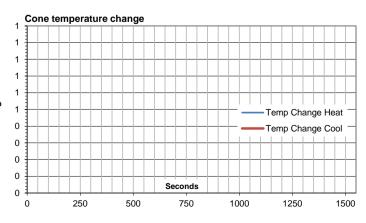
	Cooling	Heating
Start temperature =	0.00	0.00
End temperature =	0.00	0.00
Temperature change =	0.00	0.00

	Cooling	Heating
Tip maximum rate of change (MPa/°C/min) =	#DIV/0!	#DIV/0!
Tip end change (MPa/°C) =	#DIV/0!	#DIV/0!
Adjusted tip end change (MPa/°C) =	#DIV/0!	#DIV/0!
Sleeve maximum rate of change (kPa/°C/min) =	#DIV/0!	#DIV/0!
Sleeve end change (kPa/°C) =	#DIV/0!	#DIV/0!
Adjusted sleeve end change (kPa/°C) =	#DIV/0!	#DIV/0!
PWP end change (kPa/°C) =	#VALUE!	#VALUE!
Adjusted PWP end change (kPa/°C) =	#VALUE!	#VALUE!









Page 5 of 5



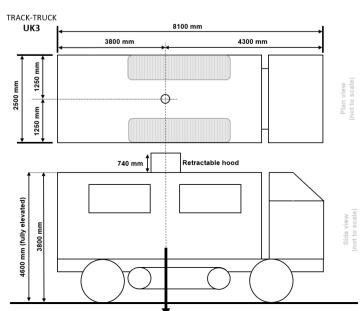
Rig weight	20.5 T
Max. operating ram capacity	17 T
Max. travelling speed	86 km/h
Track material	Steel
Track length	3300 mm
Track width	650 mm
Jack plate dimensions	Tracks act as jacks
Jack arrangements	1nr. on each side
Max. ground clearance on jacks	210 mm
Max. ground bearing pressure	Tracking/pushing – 47 kPa Pulling – 88 kPa
Max. testing gradient	10 degrees
Max. traversing gradient	20 degrees (operator assessed)
Noise output at 2 m	Testing - 74 dBA Driving – 87 dBA
Clamp arrangement	36/55 push-pull clamp
Ram stroke	1.2 m
Max. casing size	55 mm

Lankelma's versatile track-truck is suitable for most geotechnical sites. The rig is driven to site as a self-contained HGV with tracks that can be deployed to cope with soft or uneven terrain. Fitted with a chalwyn valve and spark arrestor.

Typical production

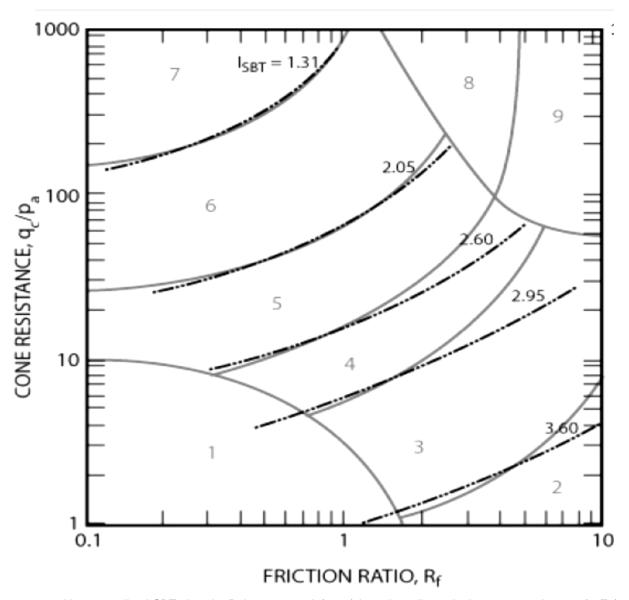
An expected 100m+ of standard CPTu testing can be executed in a day (depending on conditions and access).

Specialist testing Seismic	Installations VWP	Sampling MOSTAP
Pressuremeter	Piezometer	Shelby
Magnetometer	Inclinometer	Cilcip
Video cone		
Wing cone		
Push-in shear vane		





CPT SOIL BEHAVIOUR TYPE CHART



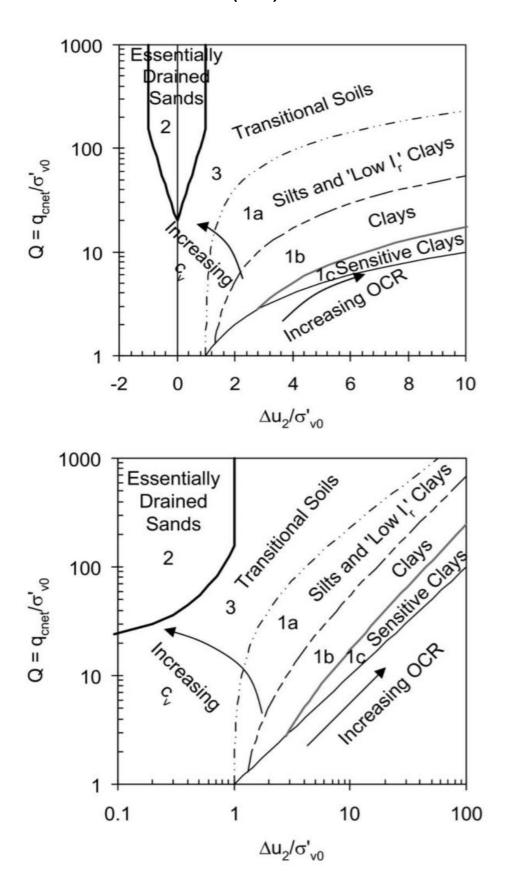
Non-normalised SBT chart by Robertson *et al.* (2010) based on dimensionless cone resistance (q_c/P_a) and friction ration, R_f , showing contours of SBT index I_{SBT} (denoted I_c on the test plots). The chart is also applicable to normalised tip and sleeve values Q_t and F_r .

Zone	Soil Behaviour Type (SBT)		
1	Sensitive fine-grained	6	Sands - clean sand to silty sand
2	Organic soils	7	Gravelly sand to sand
3	Clays – clay to silty clay	8	Very stiff/dense sand to clayey sand*
4	Silt mixtures - clayey silt to silty clay	9	Very stiff fine grained*
5	Sand mixtures – silty sand to sandy silt	* <i>F</i>	leavily overconsolidated or cemented

Note zones 8 and 9 appear as 'Very stiff/dense sand to clayey sand – HOC or cemented' and 'Very stiff fine grained – HOC or cemented' within the soil unit descriptions of plots in Appendix D.



SCHNEIDER ET AL (2008) SOIL CLASSIFICATION CHART



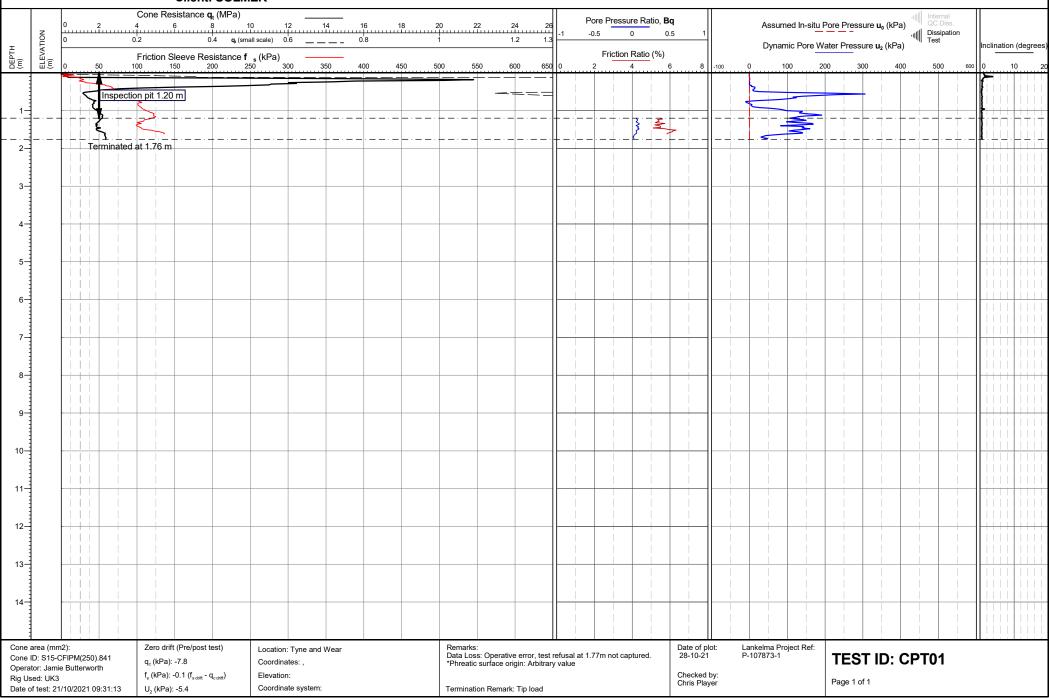


APPENDIX C CONE PENETRATION TEST RESULTS

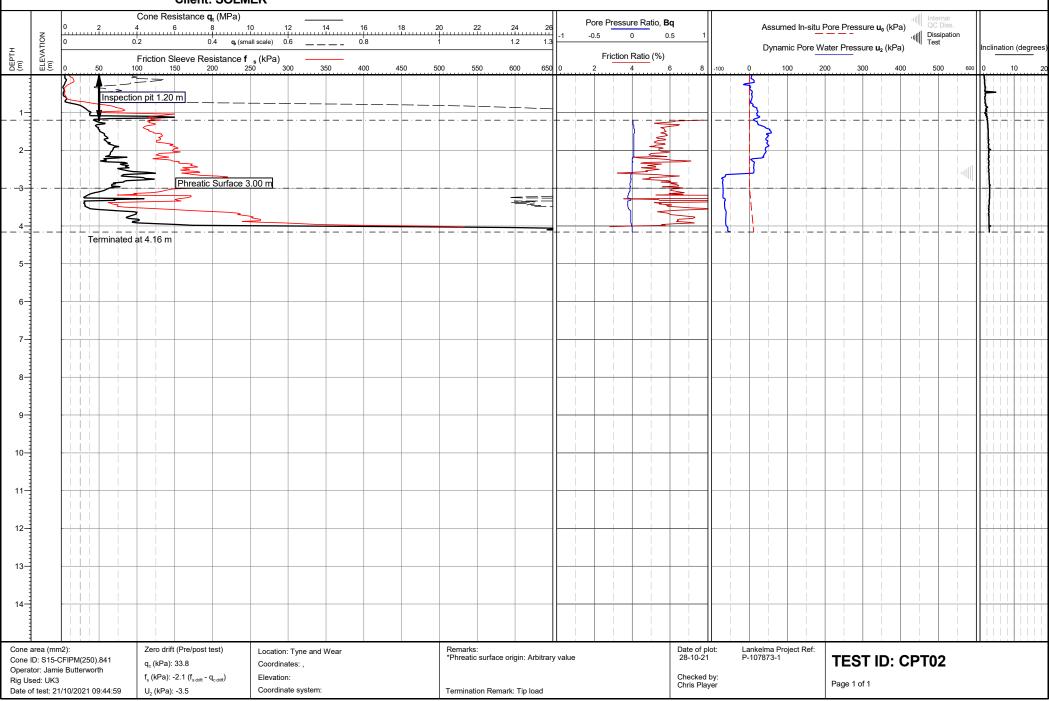
RAW DATA PLOTS

Plots are provided for all locations

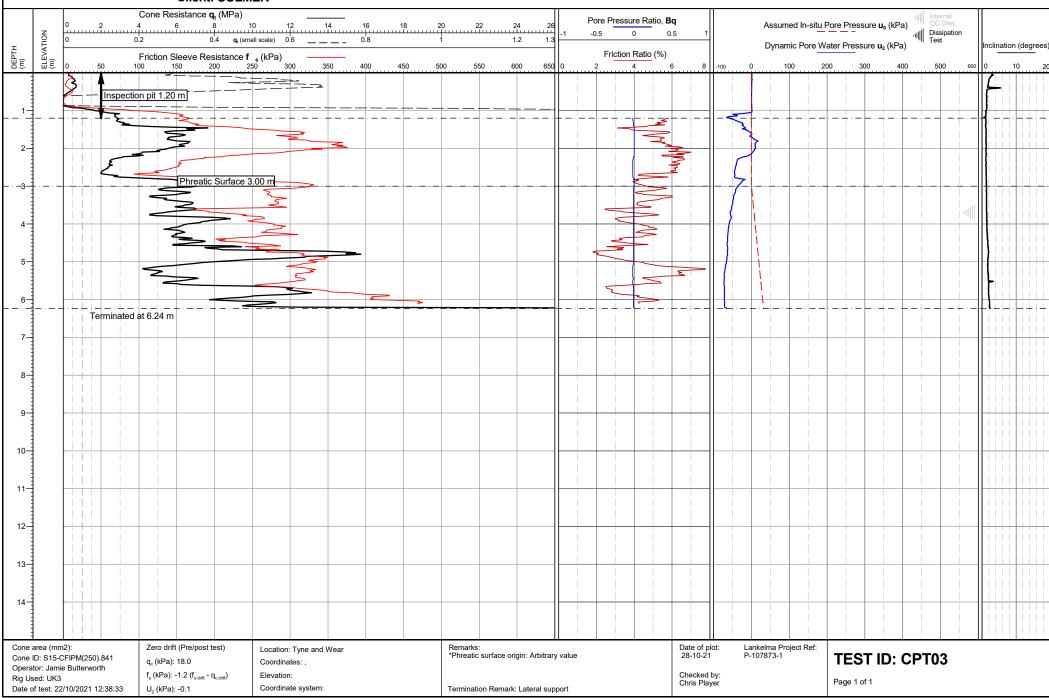


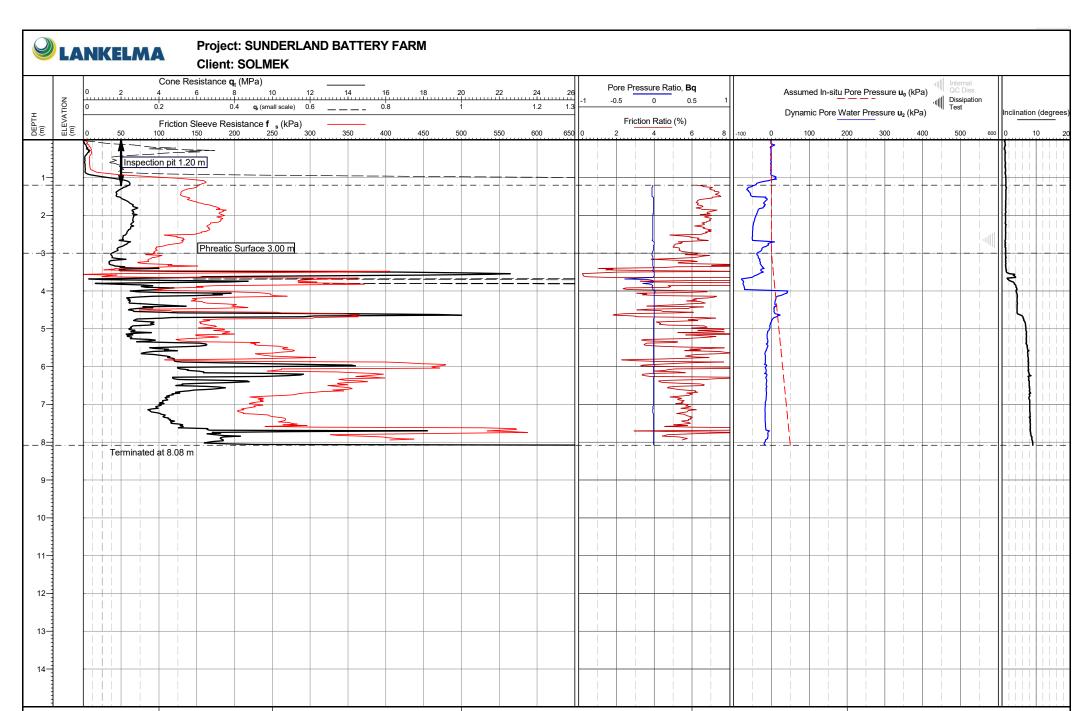












Cone area (mm2): Cone ID: S15-CFIPM(250).841 Operator: Jamie Butterworth Rig Used: UK3 Date of test: 22/10/2021 11:34:24 Zero drift (Pre/post test) $\begin{aligned} q_{c} \text{ (kPa): -23.0} \\ f_{s} \text{ (kPa): 0.6 } (f_{s \text{ drift}} - q_{c \text{ drift}}) \end{aligned}$ $U_{2} \text{ (kPa): -3.5}$

Location: Tyne and Wear
Coordinates: ,
Elevation:

Coordinate system:

*Phreatic surface origin: Arbitrary value

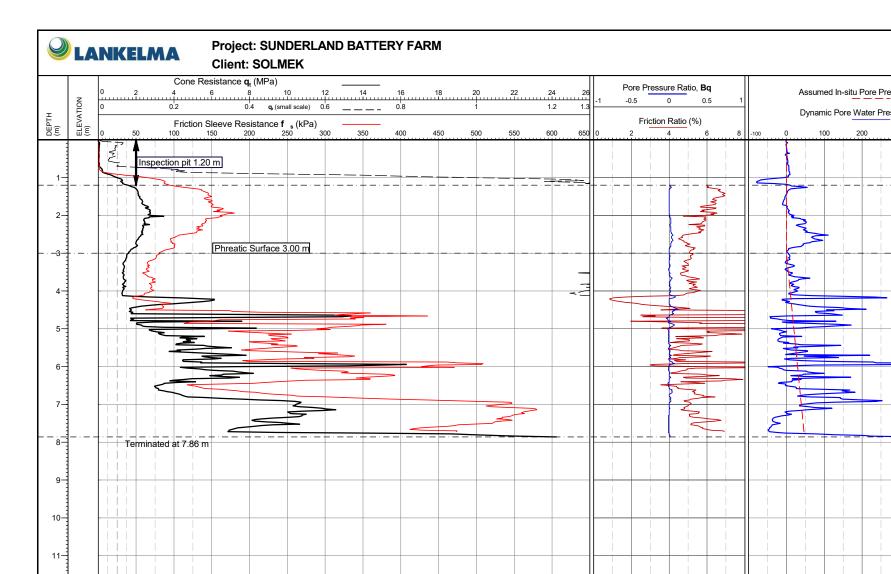
Termination Remark: Tip load

Date of plot: Lankelma P 28-10-21 P-107873-1 Checked by: Chris Player

Lankelma Project Ref: P-107873-1 **TEST I**

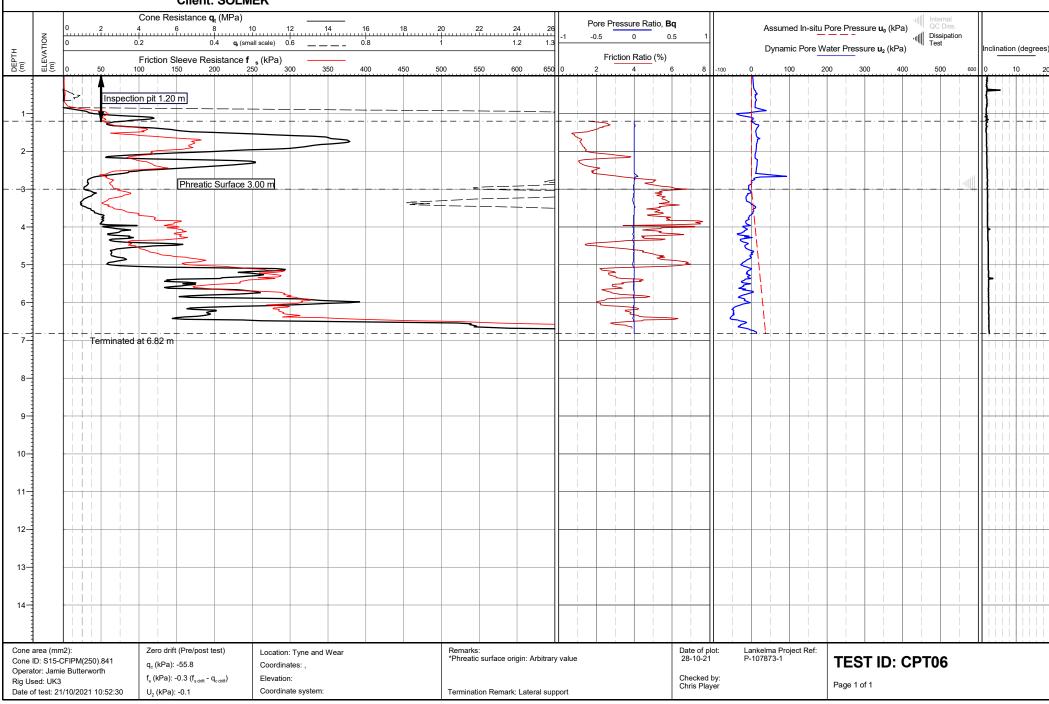
TEST ID: CPT04

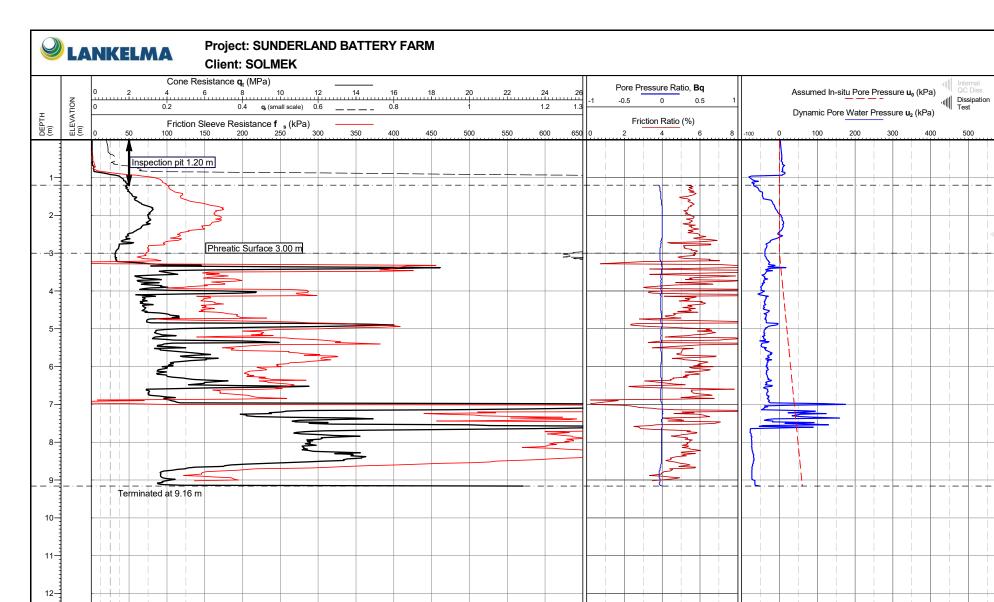
Page 1 of 1



Assumed In-situ Pore Pressure **u**₀ (kPa) Dissipation Dynamic Pore Water Pressure **u**₂ (kPa) Inclination (degrees 300 500 12-13-14-Zero drift (Pre/post test) Lankelma Project Ref: Cone area (mm2): Date of plot: Location: Tyne and Wear *Phreatic surface origin: Arbitrary value **TEST ID: CPT05** Cone ID: S15-CFIPM(250).841 q_c (kPa): 5.6 Coordinates:, Operator: Jamie Butterworth f_s (kPa): -1.5 ($f_{s drift}$ - $q_{c drift}$) Checked by: Elevation: Rig Used: UK3 Chris Player Page 1 of 1 U₂ (kPa): -4.0 Coordinate system: Date of test: 22/10/2021 08:10:07 Termination Remark: Lateral support



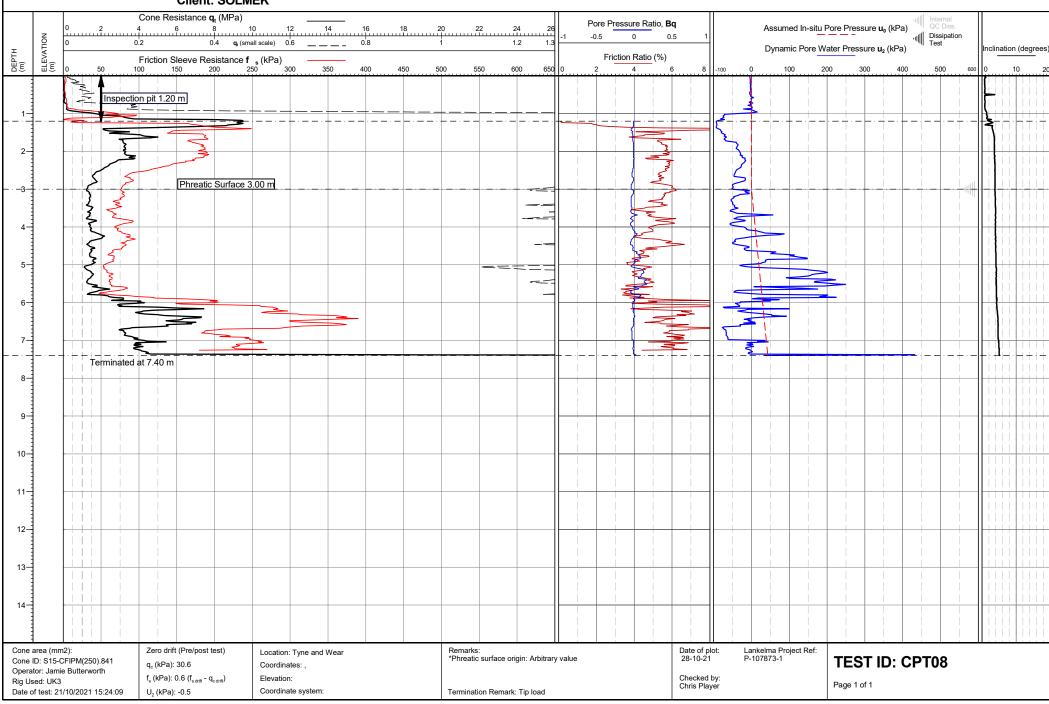




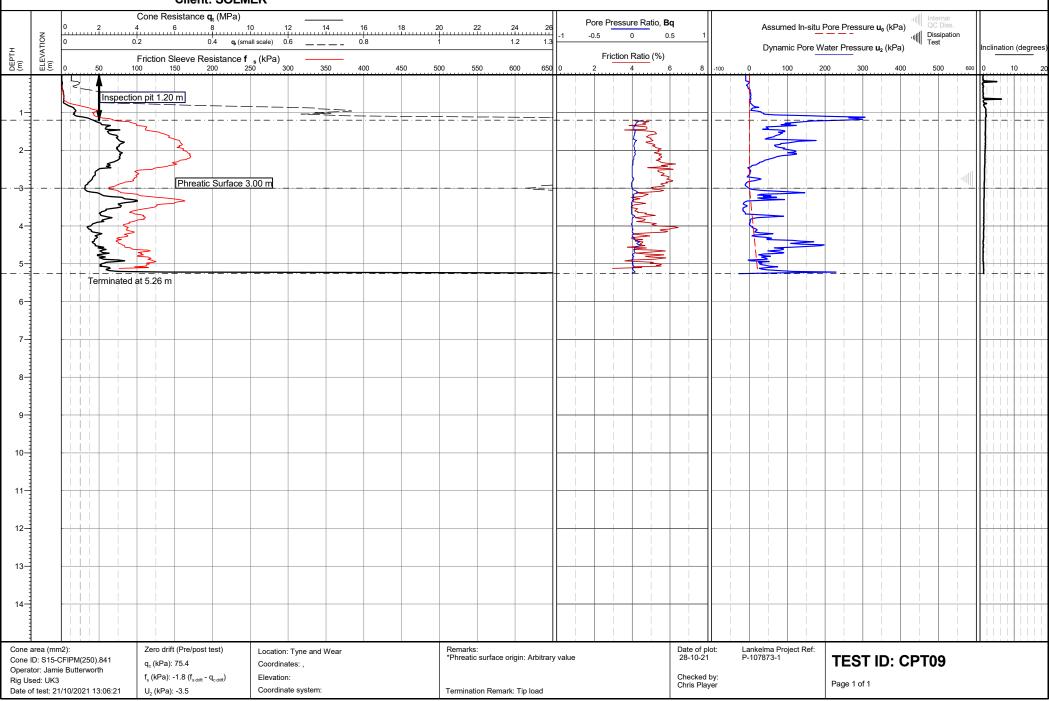
13-14-Zero drift (Pre/post test) Lankelma Project Ref: Cone area (mm2): Date of plot: Location: Tyne and Wear *Phreatic surface origin: Arbitrary value **TEST ID: CPT07** Cone ID: S15-CFIPM(250).841 q_c (kPa): -15.0 Coordinates:, Operator: Jamie Butterworth f_s (kPa): -3.1 ($f_{s drift}$ - $q_{c drift}$) Checked by: Elevation: Rig Used: UK3 Chris Player Page 1 of 1 Date of test: 21/10/2021 12:05:59 U₂ (kPa): 1.9 Coordinate system: Termination Remark: Tip load

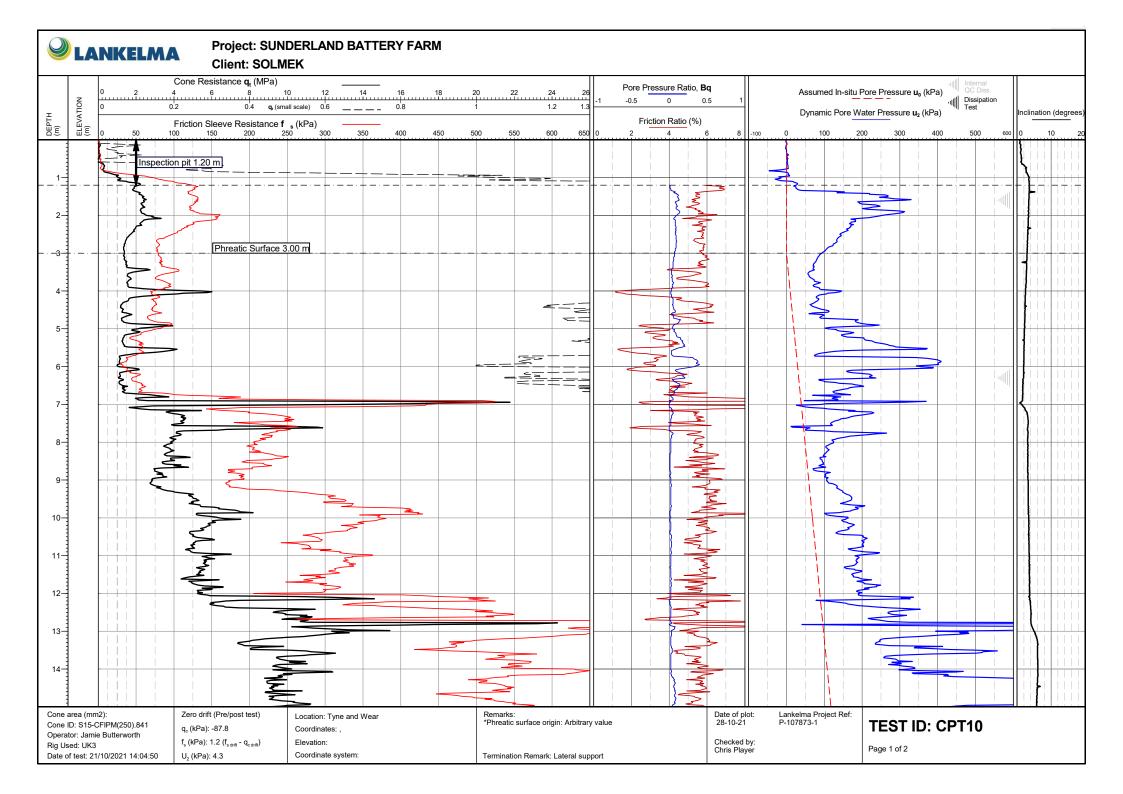
Inclination (degrees





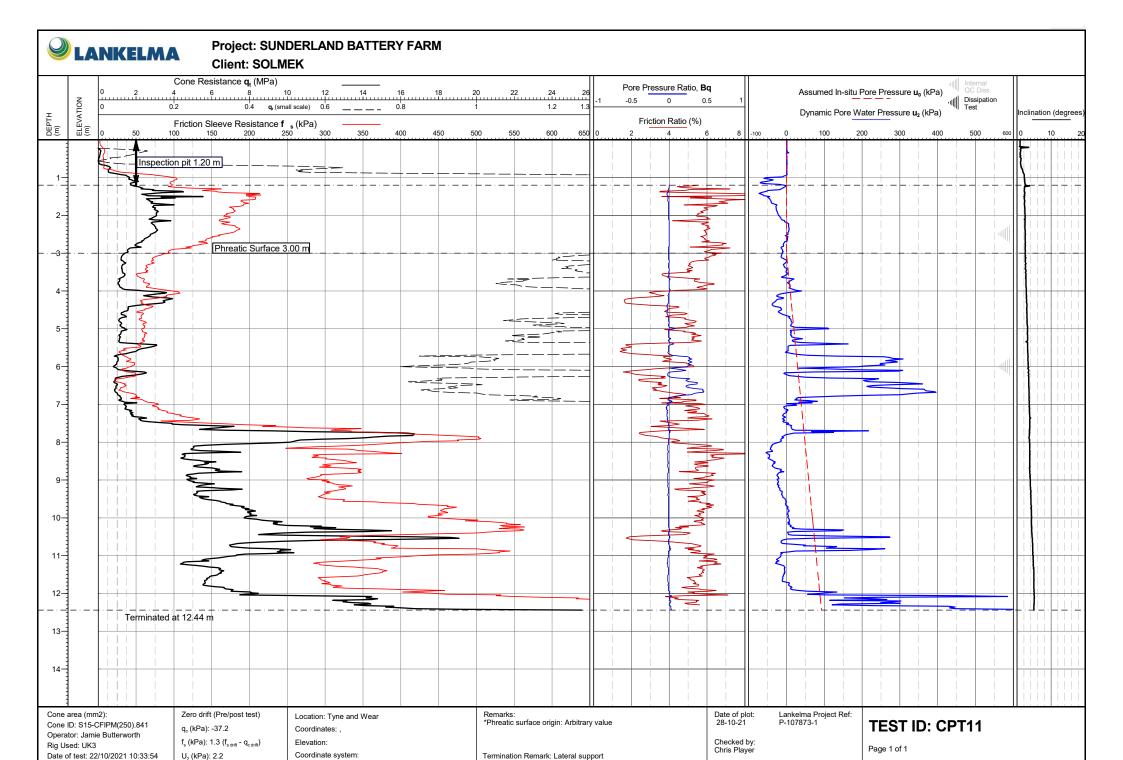


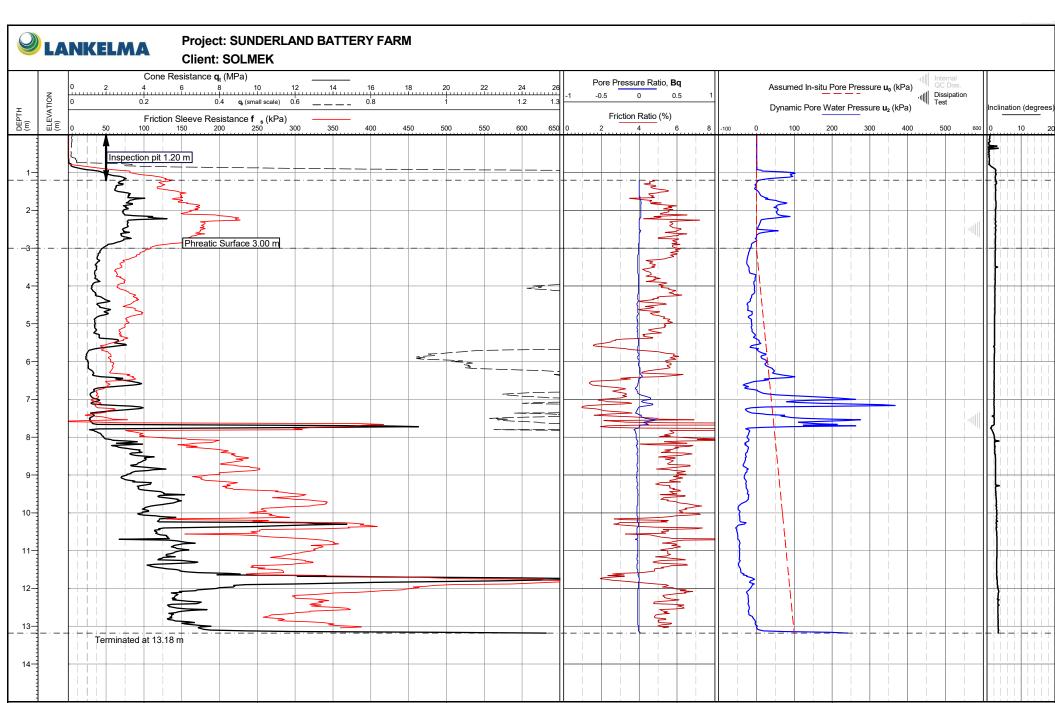






	Client: SOLMER								
		0 2	Cone Resistance q _t (MPa)	n)	20 22 24 28	Pore Pressure Ratio, B	Assumed In-situ	Pore Pressure u₀ (kPa) Internal QC Diss.	
	ELEVATION (m)	0	0.2 0.4 q _t (10 12 14 16 18 (small scale) 0.6 0.8	1 1.2 1.3	-0.5 0 0	.5 1	Dissipation	
DEPTH (m)	EVAT					Friction Ratio (%)		/ater Pressure u₂ (kPa)	Inclination (degrees)
HE.	ΞŒ	0 50	Friction Sleeve Resistance	250 300 350 400 450	500 550 600 650 0	2 4	6 8 -100 0 100 3	200 300 400 500 600	0 10 20
			حجم ا			\\ \\			
40			Z	2					
16-									1
		Terminate	d at 16.60 m		 - · · · - - · · -		├	·	+
17-		Terrimate	d at 10.00 III						
18-									
40									
19-									
20-									
21									
22-			i			i i i	i i i i		
23-									
:									
24-									
25-									
00									
26-									
27-									
28-									
29-						i i i			
20									
	area (mn		Zero drift (Pre/post test)	Location: Tyne and Wear	Remarks: *Phreatic surface origin: Arbitrary va		Date of plot: Lankelma Project Ref: 28-10-21 P-107873-1		
			q _c (kPa): -87.8	q _c (kPa): -87.8 Coordinates: ,		iue		TEST ID: CPT10	
Rig Us	sed: UK3	3	f _s (kPa): 1.2 (f _{s drift} - q _{c drift})	Elevation:			Checked by: Chris Player	Page 2 of 2	
Date	or test: 21	1/10/2021 14:04:50	U ₂ (kPa): 4.3	Coordinate system:	Termination Remark: Lateral support	Ĭ	<u> </u>		





Cone area (mm2): Cone ID: S15-CFIPM(250).841 Operator: Jamie Butterworth Rig Used: UK3 Date of test: 22/10/2021 09:02:06 Zero drift (Pre/post test)
$$\begin{split} q_{\rm c} \ (\text{kPa}) \colon 70.2 \\ f_{\rm s} \ (\text{kPa}) \colon -3.6 \ (f_{\text{s drift}} - q_{\text{c drift}}) \\ U_2 \ (\text{kPa}) \colon -2.8 \end{split}$$

Location: Tyne and Wear Coordinates: , Elevation: Coordinate system:

Remarks: *Phreatic surface origin: Arbitrary value

Termination Remark: Lateral support

Date of plot: Lankelma Project Ref: 28-10-21 P-107873-1

Checked by: Chris Player

TEST ID: CPT12

Page 1 of 1

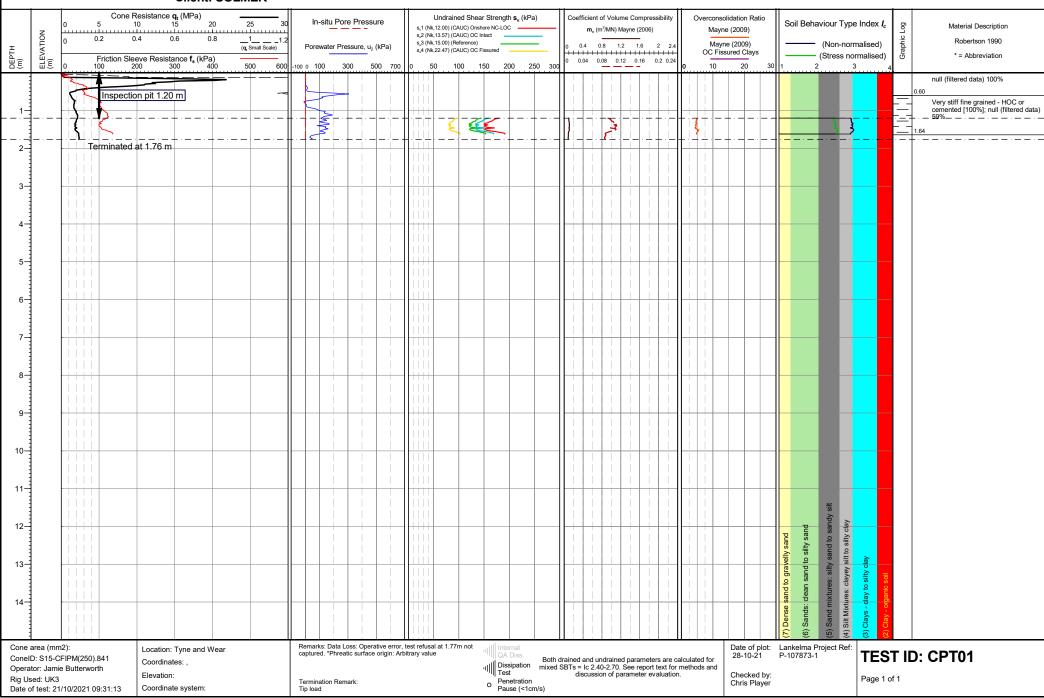


APPENDIX D INTERPRETATION RESULTS - SET 1

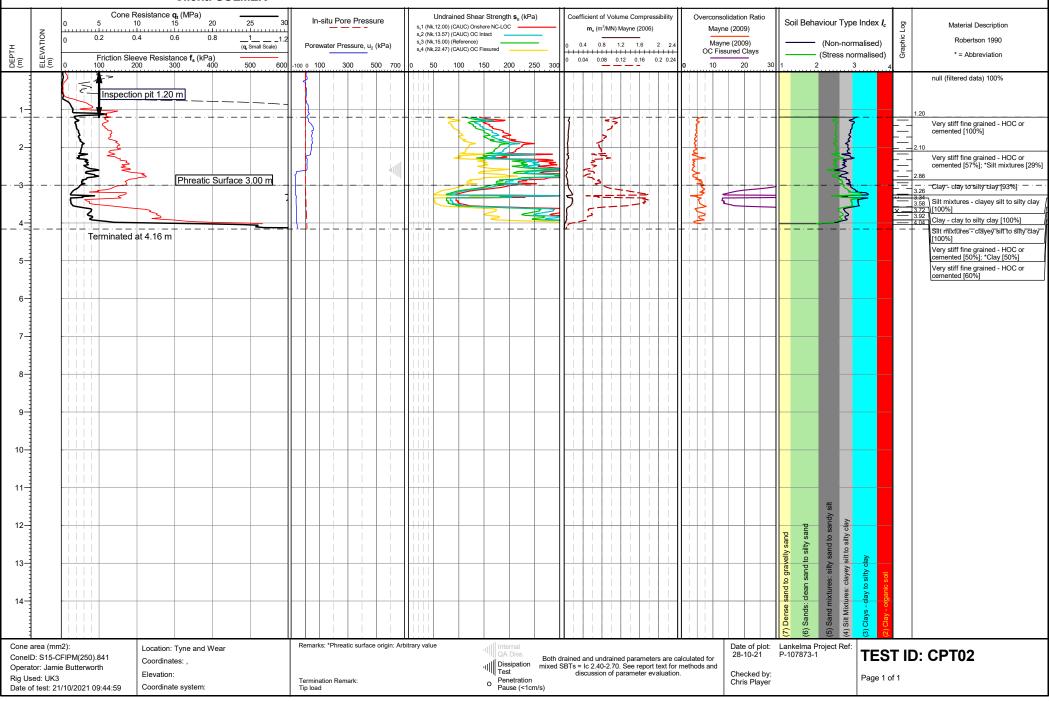
UNDRAINED SHEAR STRENGTH
COEFFICIENT OF VOLUME CHANGE
OVERCONSOLIDATION RATIO
SOIL BEHAVIOUR TYPE (SBT) DESCRIPTIONS

Plots are provided for all locations





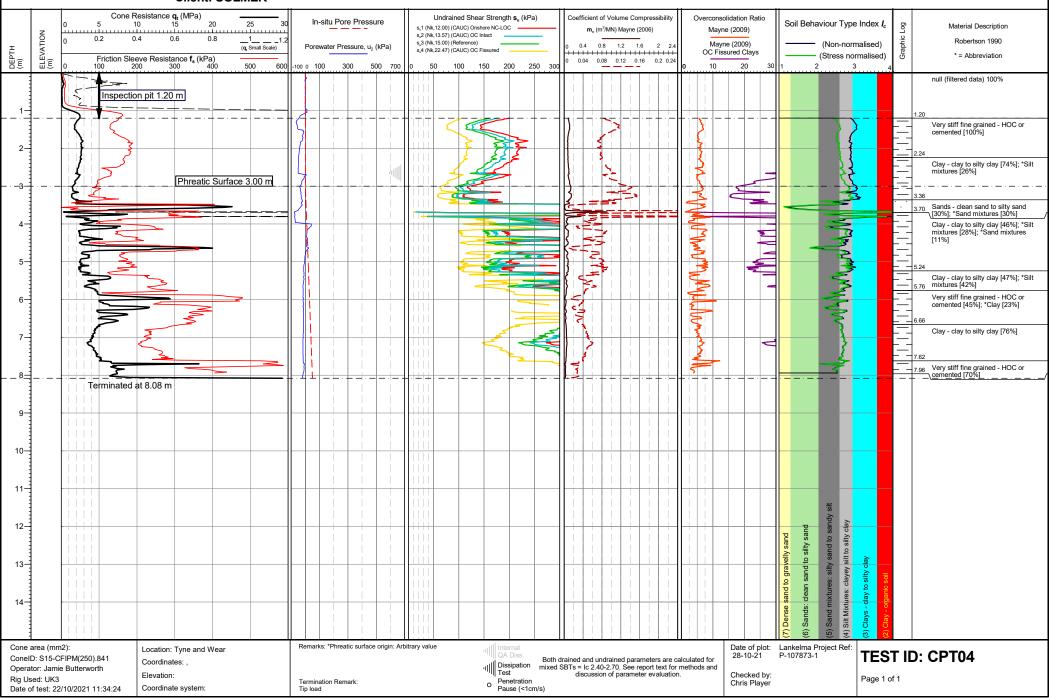




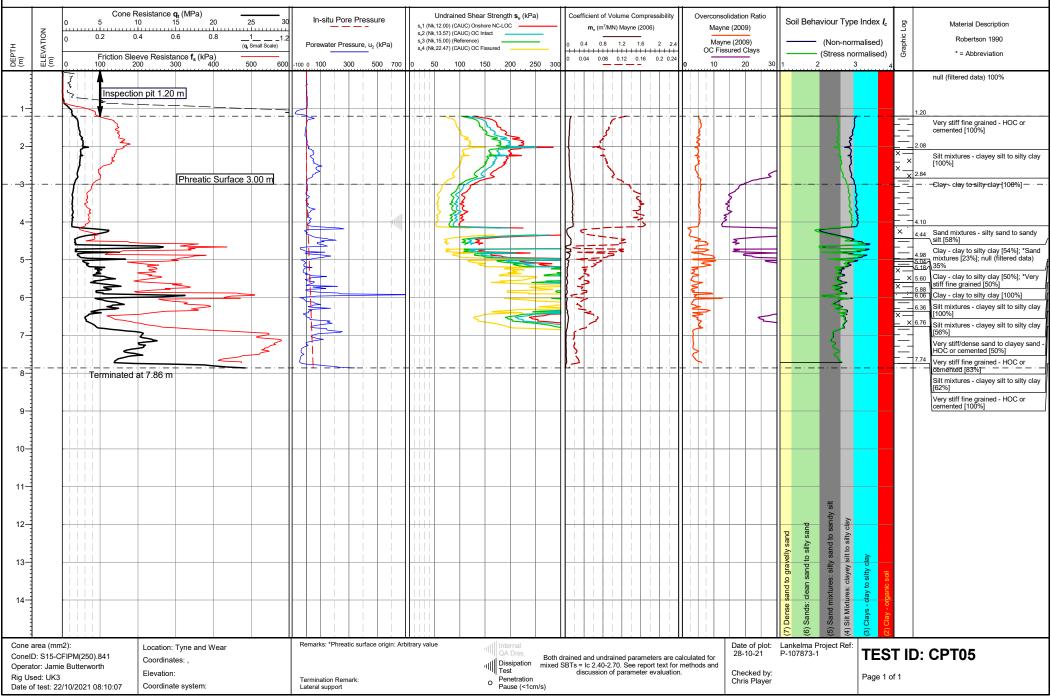


		Client: SOLMEK						
I	2 0 5 1	Resistance q _t (MPa)	1	Undrained Shear Strength s _u (kPa) s,1 (Nk,12.00) (CAUC) Onshore NC-LOC s,2 (Nk,13.57) (CAUC) OC Intact s,3 (Nk,15.00) (Reference) s,4 (Nk,22.47) (CAUC) OC Pissured	Coefficient of Volume Compressibility m _v (m²/MN) Mayne (2006) 0 0.4 0.8 1.2 1.6 2 2.4	Overconsolidation Ratio Mayne (2009) Mayne (2009)	Soil Behaviour Type Index	S Behavior 4000
DEPTH (m)	Friction Sle	eve Resistance f _s (kPa)	-100 0 100 300 500 700		0 0.04 0.08 0.12 0.16 0.2 0.24	OC Fissured Clays 0 10 20 30	(Stress normalise	ed) * = Abbreviation
1-	3	on pit 1.20 m		1111				null (filtered data) 100%
2-	8	3					The state of the s	Very stiff fine grained - HOC or cemented [88%]
3-	***************************************	Phreatic Surface 3.00 m	7			<u> </u>		
4-		A A A			V1>~~			
5								Very stiff fine grained - HOC or cemented [37%]; "Sand mixtures [26%]; "Clay [19%]
6- · - 7-	Terminated	at 6.24 m				-1-+		
8-								
9—				1111				
10-								
11-				1111			and sandy silt clay	
13-							gravelly sand to silty sa silty sand to yey silt to silty lity clay	75
14-							(7) Dense sand to (6) Sands: clean s (5) Sand mixtures: (4) Silt Mixtures: cla	2) Clay - oganic s
Conell Opera Rig Us	area (mm2): D: S15-CFIPM(250).841 tor: Jamie Butterworth ed: UK3 f test: 22/10/2021 12:38:33	Location: Tyne and Wear Coordinates: , Elevation: Coordinate system:	Remarks: *Phreatic surface origin: Art Termination Remark: Lateral support	atic surface origin: Arbitrary value Internal OA Diss.				

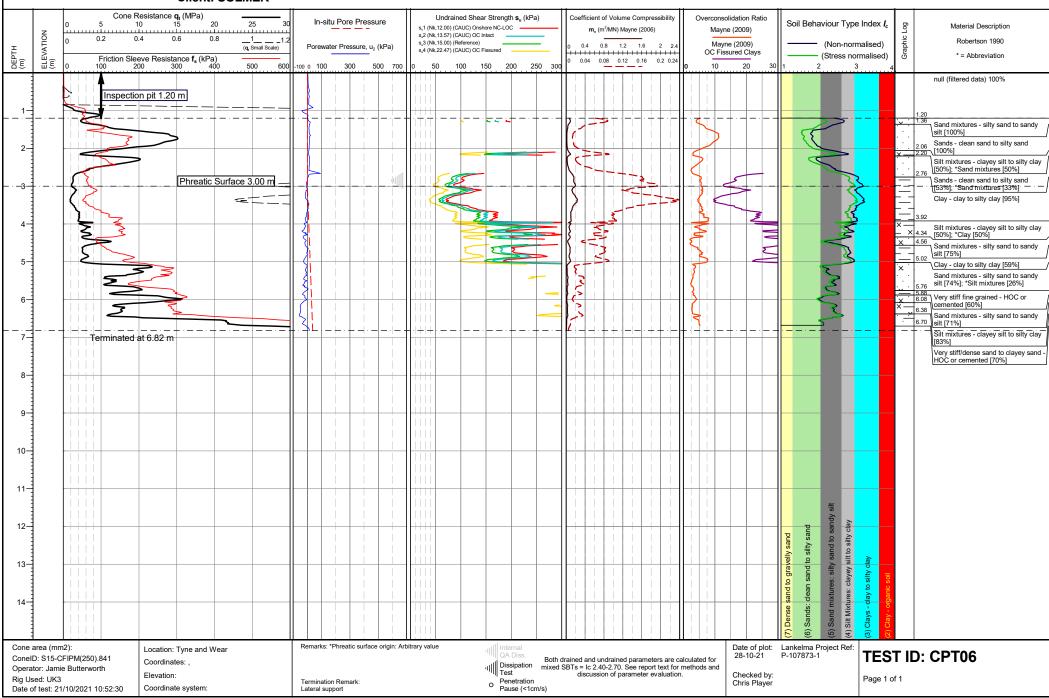




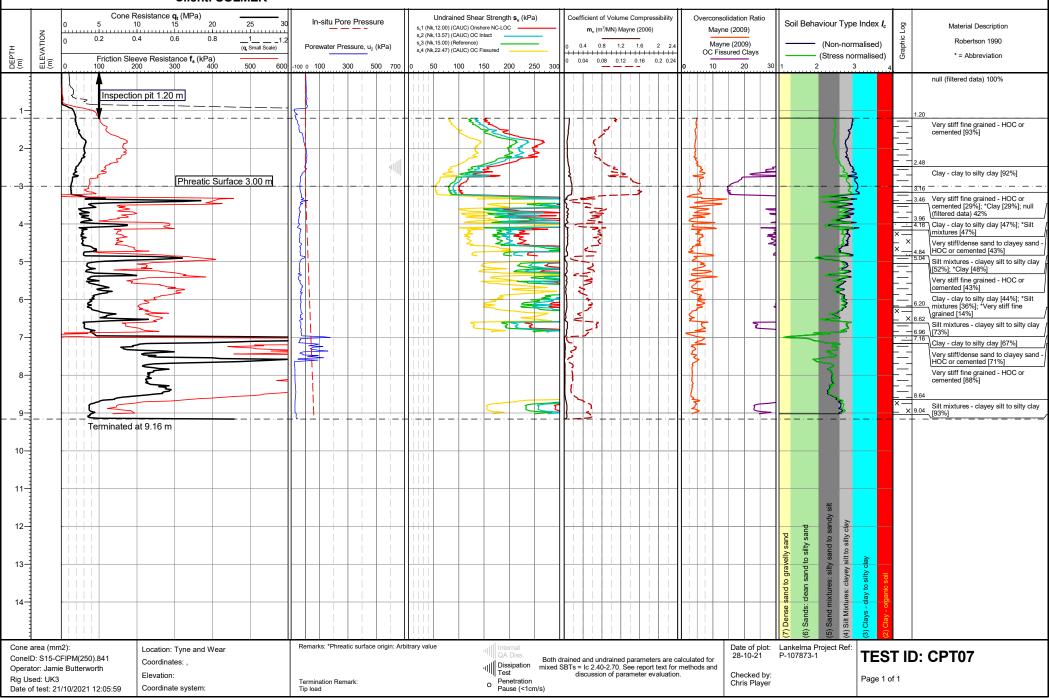




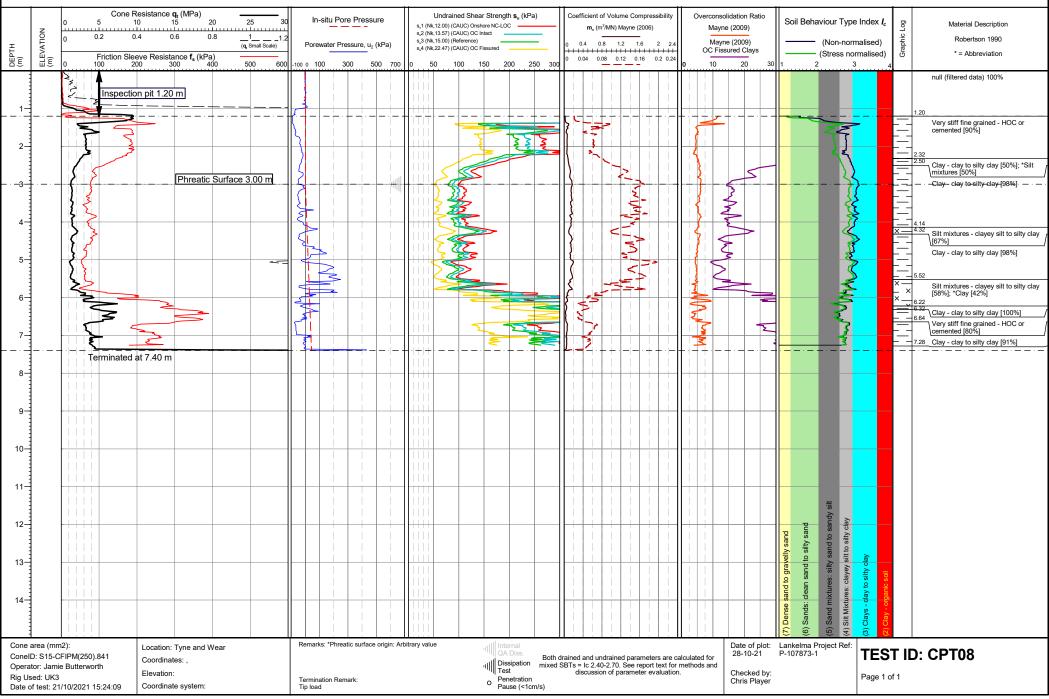




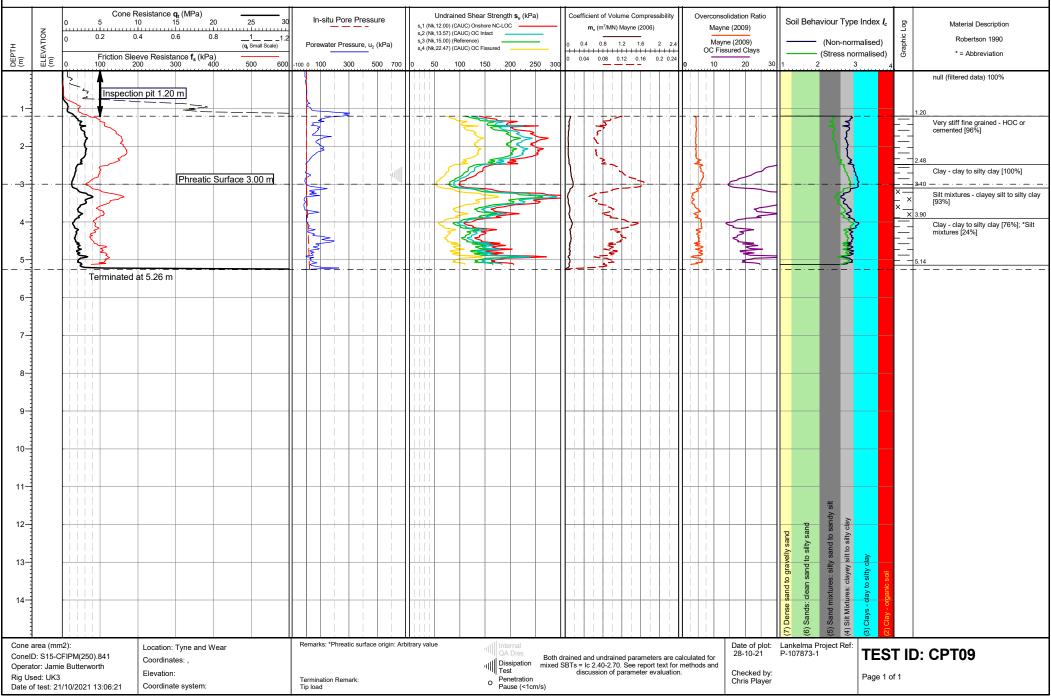




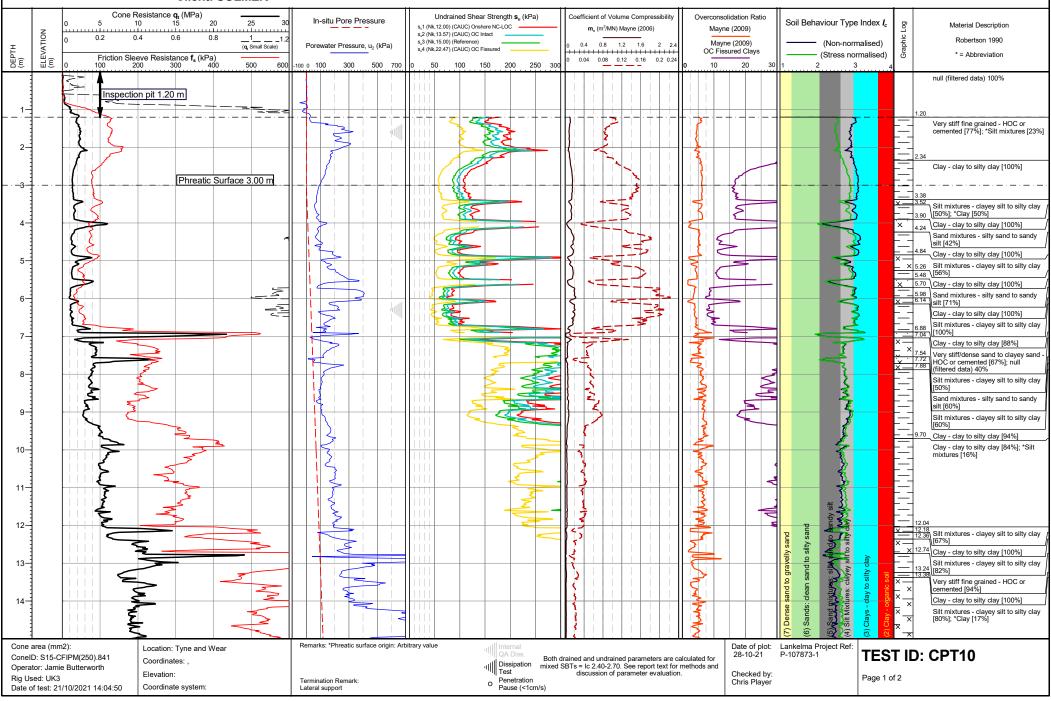








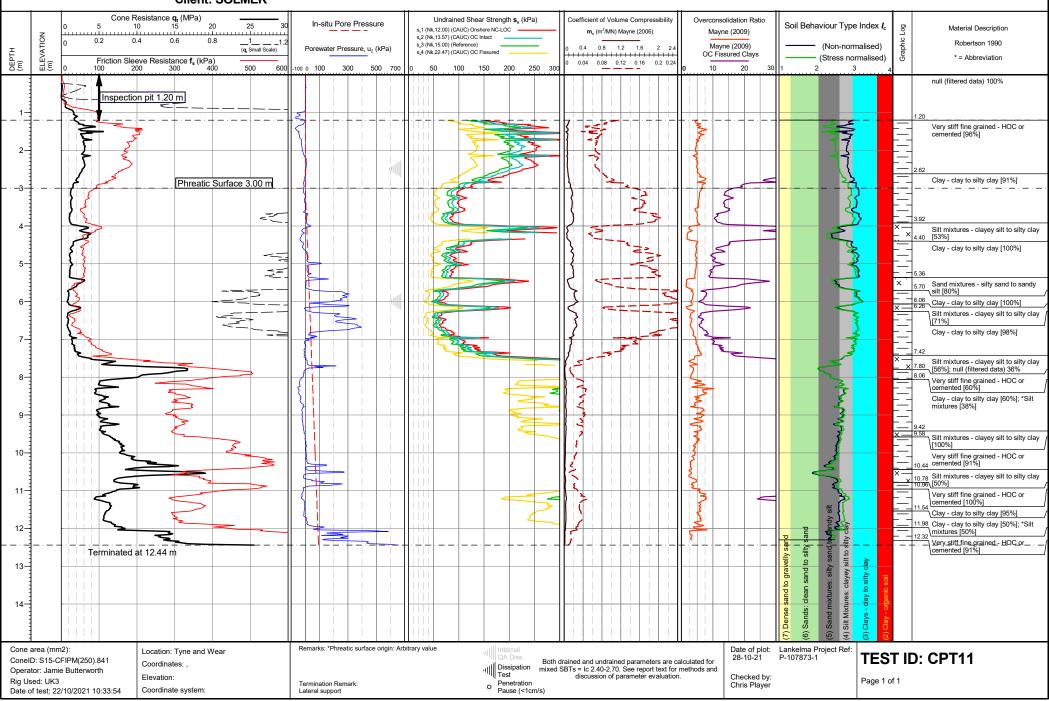




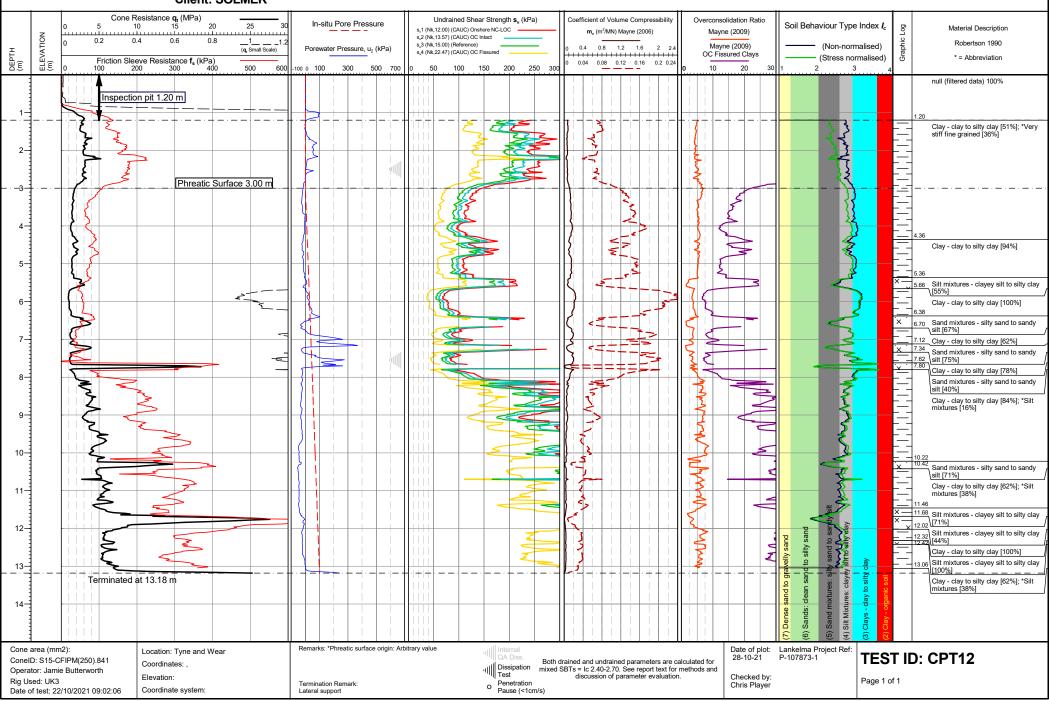


		Cone F	Resistance q _t (MPa)		In-situ Pore Pressure		Undraina C	hoor St	angth a (kB-)	- 11	Cooffic:-	nt of \/-!-	ıma Ca	opropolbilit:	0	aalidatian D-f										
	z	0 5	10 15 20	25 30	1	n-situ Pore	Press	ure	s _u 1 (Nk	,12.00) (CAUC)	Onshore NC	ength s _u (kPa) C-LOC ————	_		nt of Volu , (m²/MN)		npressibility 2006)	11	solidation Ration ne (2009)	•	Soil Beh	aviour '	Type Inc	lex I _c	Log	Material Description
_±	ELEVATION (m)		0.4 0.6 0.8	1	Poi	rewater Pres	sure, u ₂	(kPa)	s _u 3 (Nk	;,13.57) (CAUC) ;,15.00) (Referen ;,22.47) (CAUC)	nce)		_ ₀	0.4	0.8	1.2 1.6	6 2 2.4	Ma	yne (2009)			- (Non-	-normalis	sed)	Graphic	Robertson 1990
DEPTI (m)	ELEV. (m)	Friction Sle	eve Resistance f _s (kPa)	500 600	-100 0	100 30	0 5	500 700				200 250	300				16 0.2 0.24		ssured Clays 20	30	1	- (Stres 2	s normal	lised)	ے ا	* = Abbreviation
16—	ш ())		330 300	1100 0			100			100	. 200 200	<u></u>) } }				1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		Ž		4	4	4	× × × ×	Silt mixtures - clayey silt to silty clay [80%]; *Clay [17%] (continued)
10-													_	3				The same of the sa					<u> </u>			16.48
		Terminated	at 16.60 m		† · † -	-				-				-	++	- -	++		- +		· — — · —			-	. – +	
17-							İ									İ										
18																										
19							i						_ -													
20																										
-~																										
21																										
22-													\dashv							$-\ $						
23																										
24																										
25													$-\parallel$													
26													_ -													
27-																					<u> </u>	sandy silt	clay			
1																					o gravelly sand sand sand to silty san	<u>ء</u>	silty			
28																					and to gravelly sand lean sand to silty sa	tures: silty s	es: clayey silt to	soil		
29																					(7) Dense sand to	(5) Sand mixtur	Silt Mixtures: Clays - clay t	organ		
-					Ш																			(2) C		
Conell		2): FIPM(250).841 e Butterworth	Location: Tyne and Wear Coordinates: ,		Rema	arks: *Phreati	c surface	e origin: Arb	itrary valu	e	:	Dissipation n	Both dra	3Ts = Ic 2	2.40-2.70). See re	port text for	calculated for methods and	28-10-21		Lankelma P-107873-	Project I 1	Ref:	ES	T IE): CPT10
Rig Us	ed: UK3		Elevation: Coordinate system:		Term Later	ination Rema al support	ırk:					Test Penetration Pause (<1cm/s		discus	ssion of p	oaramet	er evaluatio	n.	Checked Chris Play	by: /er			Pa	age 2 c	of 2	











APPENDIX E INTERPRETATION RESULTS - SET 2

EQUIVALENT SPT N60
PEAK FRICTION ANGLE
RELATIVE DENSITY
YOUNG'S MODULUS

Plots are provided for all locations



DEPTH (m)	z ŀ	0.2 0.4 (Friction Sleeve Resist	15 20 25 0.6 0.8 1	1.2 ale) 6000	10	Robert	60' Values et al. (1997) son (2012)		O 60			naway &	Mayne (1		50	0	ve Dens blkowski e 40	• ,)1)	100 0		R		ulus E' (l on (2009) 0 160		00 240	1	Soil Be	— (Nor	ype Index in the interest of t	d)
1-		Inspection pit 1.20																											Į		
		Terminated at 1.76 m	<u> </u>	1				- - : - - :	_ T : _	- · -			[[]		_ _ : -		- -	-									3	3	
2-							İ	İ																							
3-																															
4-	-	1111																													
5-																															
6-																															
7-																															
8-	_																												Н		
9-	-																														
10																															
10-																															
11-	-																												silt		
12-	_							+	+																		pui	sand	sand to sandy silt	iliy clay	
13-	-																										gravelly sand	nd to silty san	silty sand t	es, ciayey sinto siny ciay ay to silty clay	
14-																											sand to	clean sar	nixtures: s	clay to silty	ganic soil
17																											(6) Dense	(5) Sands:	(4) Sand mix	(2) Clays - c	1) Clay - or
Cone Opera	tor: Jamie	2): FIPM(250).841 Butterworth 10/2021 09:31:13	Location: Tyne and Wear Coordinates: , Elevation: Coordinate system:		1 .	1 .		Boti	n draine d SBTs	d and un = Ic 2.40 discussio	drained p I-2.70. Se n of para	paramet ee repor meter e	ers are co t text for valuation	alculated i methods i	for and		of plot: 0-21 ked by: Player	ı	Lankeln P-10787	na Proje 73-1	ct Ref:		EST	ID:	CF	PT0				<u> </u>	

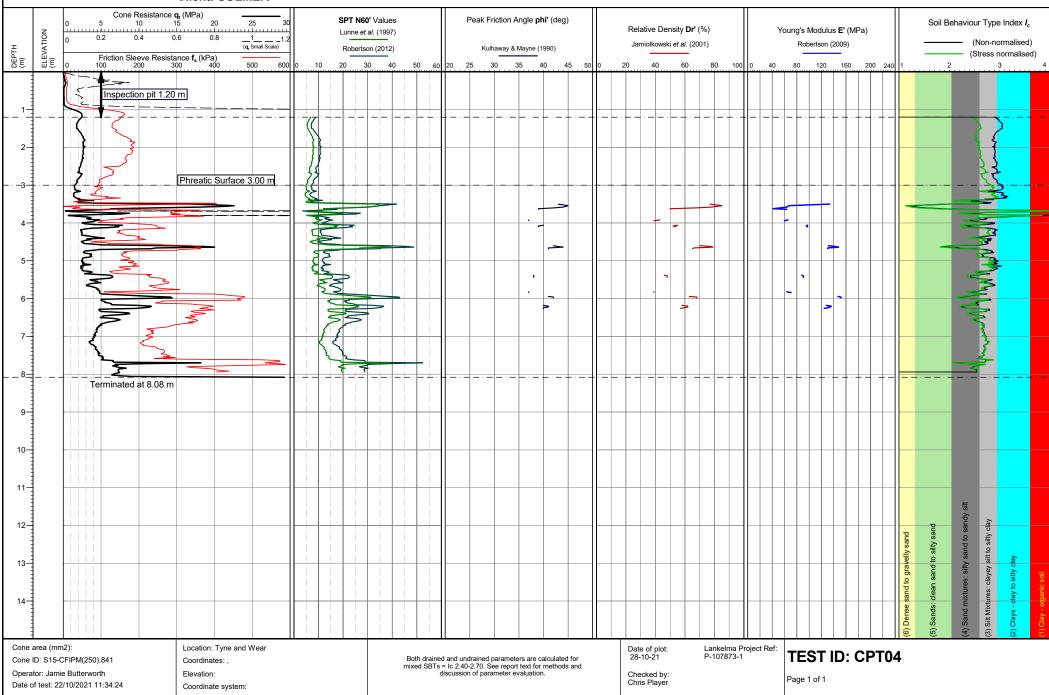


DEPTH (m)	EVAT	0 0.2 0.4 0	15 20 25 30 0.6 0.811 (q, Small Scale)		Robert	60' Values et al. (1997) son (2012)	50	60 20		riction Ar	layne (199	90)	50 0		elative D	vski <i>et al.</i>	(2001)	100	0 40	ı		dulus E' son (2009)))	00 240) 1	Soil Be	— (No	Type Index n-normalise ess normalis	ed)
1-		Inspection pit 1.20																											
2-					† - - - 								-				. – – ! -										Ammonto	X	
3-	- · - · -	A CONTRACTOR OF THE CONTRACTOR	Phreatic Surface 3.00 m	A CONTRACTOR OF THE PARTY OF TH	<u> </u>			-	_				_															And the second	
4_		Terminated at 4.16 m		2	کے											- -				- -				. + -			2	2	- · -
5-																													
6- 7-																													
8-																													
9-																													
10-																													
11-																											ndy silt	Á	
12-																									gravelly sand	d to silty sand	silty sand to sandy silt	es: clayey silt to silty clay iy to silty clay	
14-																									sand to	nds: clean san	nd mixtures: sil	Mixtures: clayey	r - organic soil
	area (mm		Location: Tyne and Wear											D	ate of plo	ot:	Lank	elma Pr	oject Re	- - - - - - - - - -		Γ ID:	. 6	ЭТС	(e) Dense	(5) Sands:	(4) Sand mix	(3) Silt Mixture (2) Clays - cla	(1) Clay
Opera	tor: Jamie	CFIPM(250).841 e Butterworth /10/2021 09:44:59	Coordinates: , Elevation: Coordinate system:				Both drained and undrained parameters an mixed SBTs = lc 2.40-2.70. See report text discussion of parameter evalual			ext for me	culated for ethods and	l		l8-10-21 hecked b hris Play		P-10	1813-1			ge 1 of		. UI	-10						

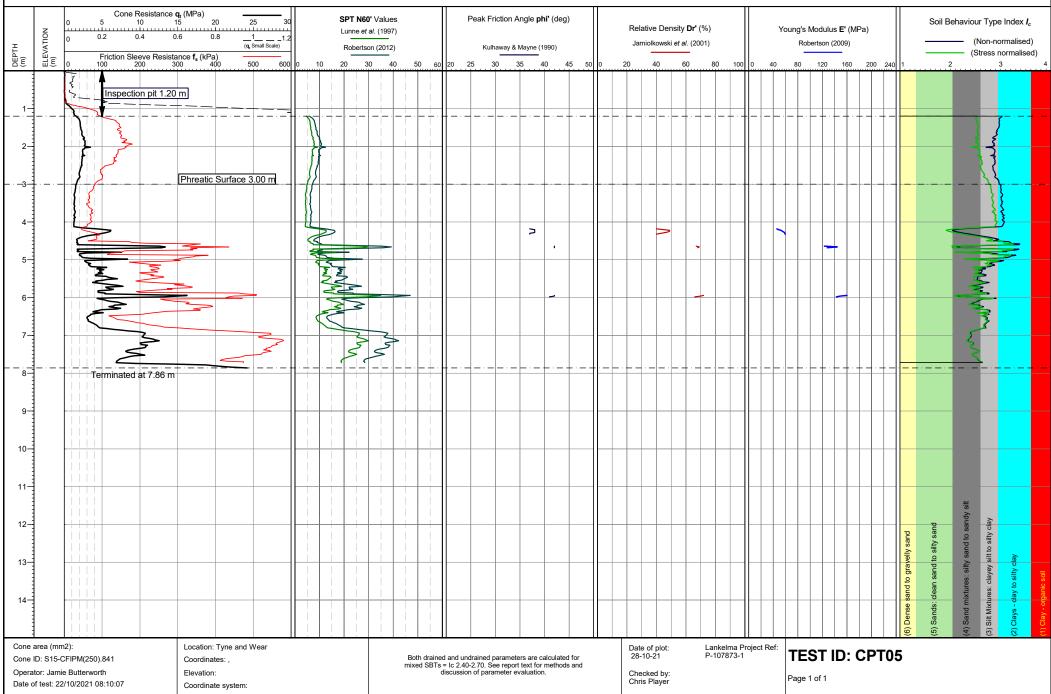


DEPTH (m)	ELEVATION (m)	Cone Resistance 0 5 10 0 0.2 0.4 0 Friction Sleeve Resist 0 100 200 3	15 20 25 30 0.6 0.8 _11.2 (q. Small Scale)	SPT N60' Values Lunne <i>et al.</i> (1997) Robertson (2012) 20 30 40 50 60	Peak Friction Angle phi' (deg) Kulhaway & Mayne (1990) 20 25 30 35 40 45 50 0	Relative Density Dr' (%) Jamio <u>lkowski <i>et al.</i></u> (2001) 20 40 60 80 100 0	Young's Modulus E' (MPa) Robertson (2009) 40 80 120 160 200 240	Soil Behaviour Type Index I _c (Non-normalised) (Stress normalised) 1 2 3 4
1-		Inspection pit 1.20)m					
2-			Phreatic Surface 3.00 m					
- · -3- 4-			Timedae Currices 5.50 mg		7 7	->		
5-						***		
 7-		Terminated at 6.24 m						
8-								
9-								
11-								
12-								and to gravelly sand ean sand to sitly sand tures: sitly sand to sandy sitt tures: clayery sitt to sitly clay by to sitly clay
13-								nse sand to gravelly sand nds: clean sand to sifty sand mixtures: silty sand to silty. Rixtures: clayey silt to silty. Se - clay to silty clay - oganic soil
Cone Opera	tor: Jan	m2): -CFIPM(250).841 nie Butterworth :2/10/2021 12:38:33	Location: Tyne and Wear Coordinates: , Elevation: Coordinate system:	Both drained mixed SBTs = di	and undrained parameters are calculated for le 2.40-2.70. See report text for methods and scussion of parameter evaluation.	Date of plot: 28-10-21 Checked by: Chris Player		(5) Sands: cl (5) Sands: cl (4) Sand mix (3) Silt Mixtur (2) Clays - cla (1) Clays - creg

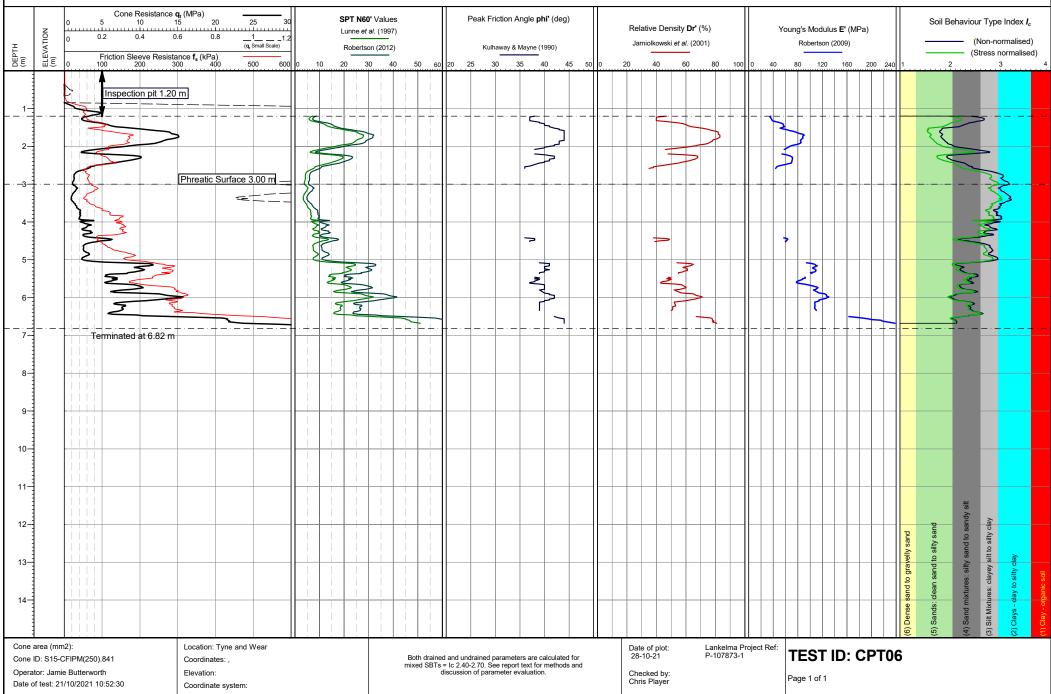




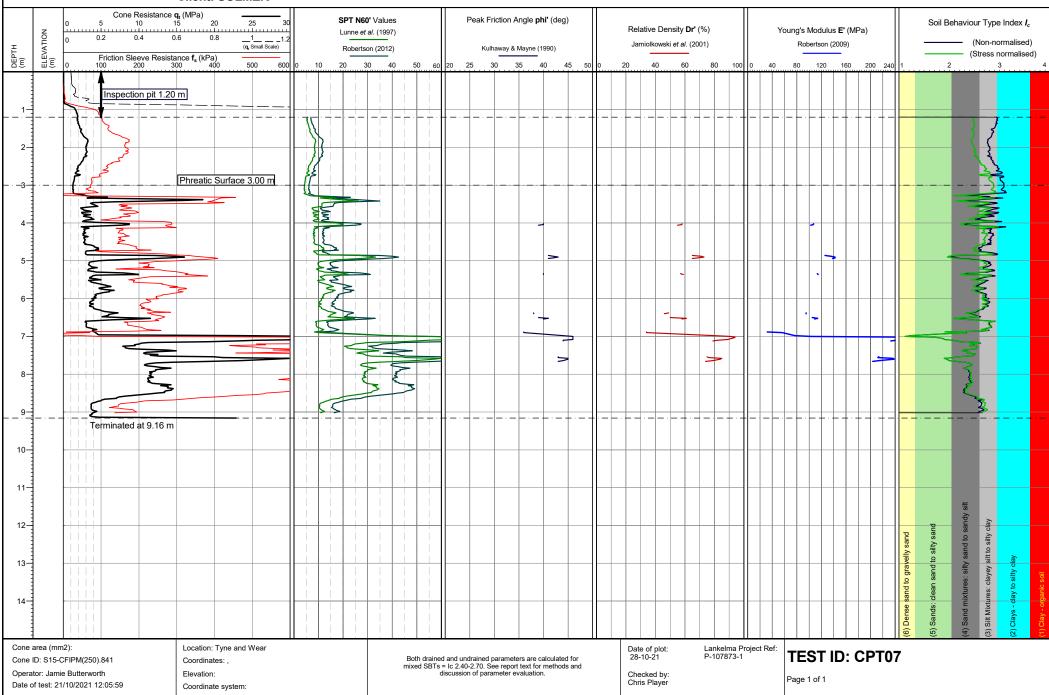




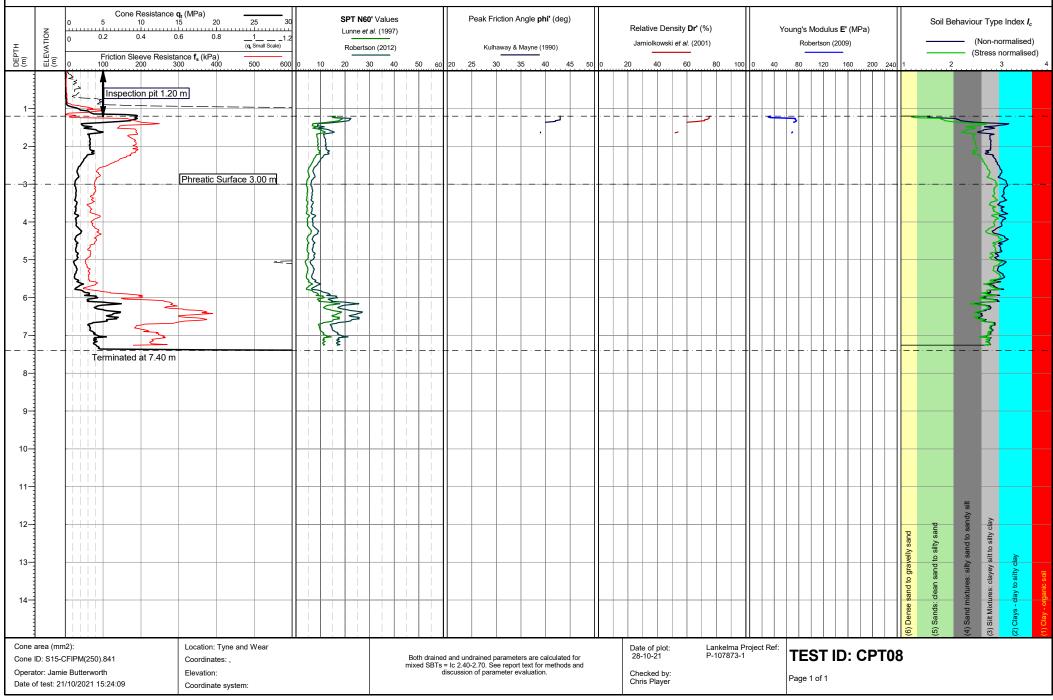








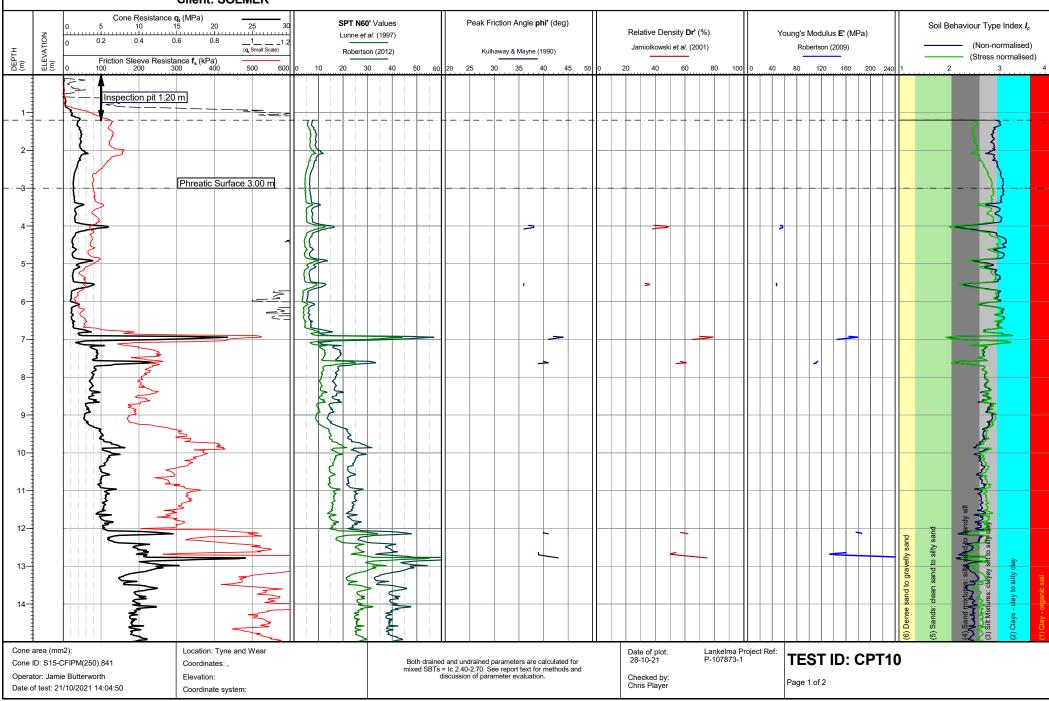






DEPTH (m)	ELEVATION (m)	Cone Resistance q _t (M 0 5 10 15 10 15 10 15 10 15 10 15 15 10 15 10 15 10 15 10 10 10 10 10 10 10 10 10 10 10 10 10	20 25 30 0.8 _11.2 (q, Small Scale)	0 10	SPT N60' Va Lunne et al. (Robertson (2 20 30	1997) 	60 60		Friction Angle		60 0	Jamiol	e Density E kowski <i>et al.</i> 40 60	(2001)	100 0 4	F	's Modu Robertsor 120	_	a) 200 24	10 1	Soil Be		
1-		Inspection pit 1.20 m																					
2-				2										- +								4	
3-	· - · -	Ph	reatic Surface 3.00 m								-				-					-			}
4-																						ANNERS AND AND AND AND AND AND AND AND AND AND	
5-		Terminated at 5.26 m					-+-									- -						A	
6-																							
7-																							
8-																							
9-																							
11-																							
12-																				77	and	sand to sandy silt ilt to silty clay	
13-																				gravelly sand	sand to silty sar	ctures: silty sand to sand	ilty clay
14-																				(6) Dense sand to	(5) Sands: clean s	(4) Sand mixtures (3) Silt Mixtures: cle	lays - clay to s
Cone Opera	tor: Jami	12): Lo CFIPM(250).841 Cc e Butterworth Ele	cation: Tyne and Wear pordinates: , evation: pordinate system:			Both drained and undrained parameters are calculated mixed SBTs = Ic 2.40-2.70. See report text for methods discussion of parameter evaluation.						Date of 28-10- Checke Chris P		Lankelm P-10787	a Project Re 3-1		EST e 1 of 1	ID: C	PTO		(5) S	(4) S (3) Si	(2) Clays

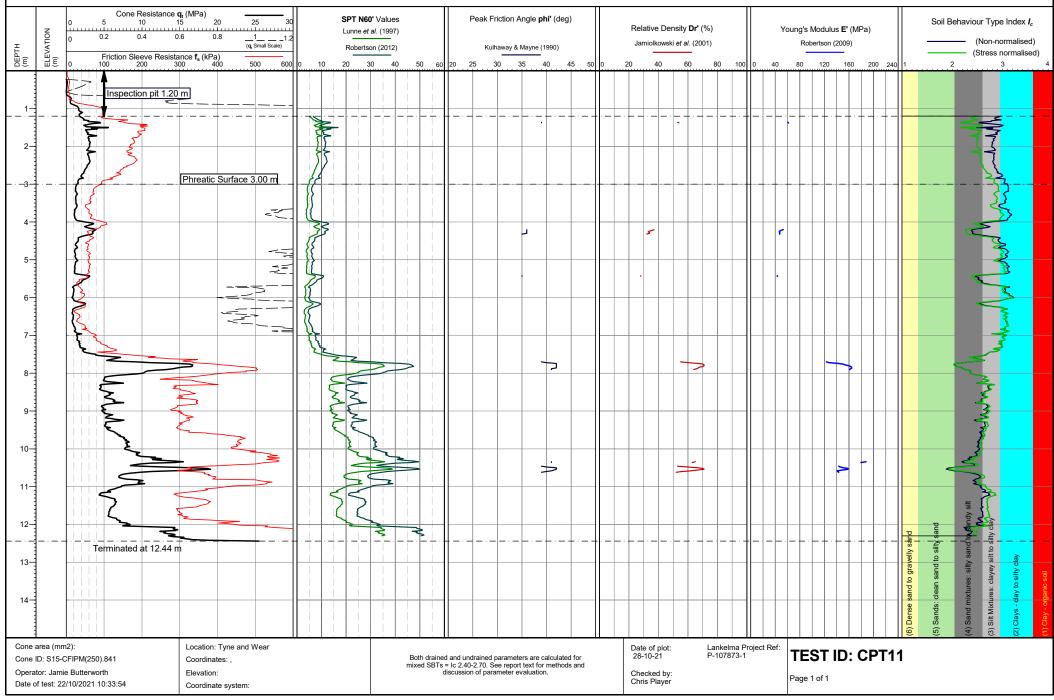




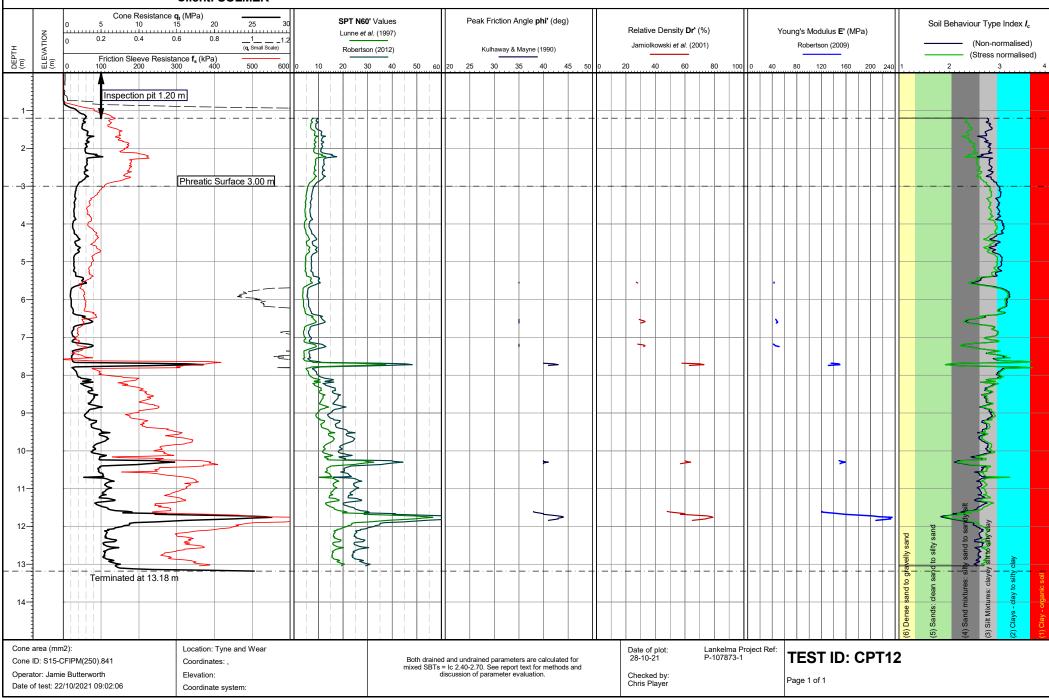


DЕРТН (m)	EVATION (r		0.6 0.811.2 (q, Small Scale)	L	PT N60' Va unne et al. (Robertson (2	1997) 2012)	50 6	60 20	Peak F	haway &	Mayne (1	1990)	5 50	0	tive Den	•	. ,	100	0 41		Roberts	dulus E' son (2009	9)	200 24	0 1	Soil Be	(Nor	ype Index I	i)
16-		e e		1																							Alexandra (
17-		Terminated at 16.60 n	n	 			+	-						-	 	_			- -								₹ ₹ 	:	- · ·
10																													
18-																													
19-																													
20-		 																											
21-																													
22-	-															+													
23-																													
24-	-																												
25-	-																												
26																													
27-	-																								q	and	sandy silt	á a a a a a a a a a a a a a a a a a a a	
28-																									and to gravelly sand	nd to silty sar	ktures: silty sand to sandy silt	ay to silty clay	
29-																									- io	s: clean sar	mixtures: s	- clay to silty	organic soil
																									esued (9)	(5) Sands	(4) Sand mix	(2) Clays -	(1) Clay -
Operator	: S15-Cl r: Jamie	2): FIPM(250).841 Butterworth 10/2021 14:04:50	Location: Tyne and Wear Coordinates: , Elevation: Coordinate system:	 		E mi	oth drair xed SBT	ned and u s = Ic 2.4 discussi	indrained 40-2.70. S ion of para	parame ee repo ameter e	ters are c rt text for evaluation	calculated methods n.	l for and		of plot: 0-21 ked by: Player		Lanke P-107	lma Pro 873-1	ject Re	-	ES [*] ge 2 of	T ID	: C	PT1	0				









APPENDIX G



Weather Conditions	Cloudy
Ground Conditions	Wet
Ambient Atmospheric Pressure	996
Regional Pressure Trend	Rising

Project number	S211001
Project name	Envision, Sunderland
Client	Wates, Sunderland
Visit no	1
Date	12/11/2021
Equipment	GFM 435 Gas Analyser
Operator	LO

Position	Flow	Pressure	С	H4	С	O2	02 (%)//)	CO (nnm)	H2S (ppm)	Groundwater	Depth to	Notes
FOSITION	I IOW	Fiessule	(% v/v)	GSV (I/hr)	(% v/v)	GSV (I/hr)	02 (70 777)	CO (ppili)	1123 (ppi11)	Level (mbgl)	Base (mbgl)	Notes
CP01	0.1	996	0.0	0.0000	0.3	0.0003	18.7	0.0	0.0	4.40	5.00	
CP03	0.1	996	0.0	0.0000	0.0	0.0000	20.3	0.0	0.0	0.88	5.80	
CP04	0.1	996	0.0	0.0000	1.2	0.0012	18.3	0.0	0.0	2.28	4.45	
CP05	0.1	996	0.0	0.0000	0.5	0.0005	20.0	0.0	0.0	0.30	5.00	
CP07	0.1	996	0.0	0.0000	8.0	0.0008	19.6	0.0	0.0	1.90	14.00	
CPRO02	0.1	996	0.0	0.0000	1.7	0.0017	15.4	0.0	0.0	2.20	16.50	
CPRO05	0.1	996	0.0	0.0000	0.0	0.0000	20.5	0.0	0.0	0.20	21.50	
WS01	0.1	996	0.0	0.0000	1.5	0.0015	7.1	0.0	0.0	1.43	1.30	
WS02	0.1	996	0.0	0.0000	1.6	0.0016	17.1	0.0	0.0	Dry	1.90	
WS03					Unab	le to Locate					4.00	
WS04	0.1	996	0.0	0.0000	0.7	0.0007	18.6	0.0	0.0	0.40	2.80	
WS05	0.1	996	0.0	0.0000	0.2	0.0002	20.3	0.0	0.0	0.37	1.40	
WS06	0.1	996	0.0	0.0000	0.1	0.0001	20.2	0.0	0.0	0.00	5.00	BH Pipe Flooded
WS07	0.1	996	0.0	0.0000	0.0	0.0000	17.3	0.0	0.0	1.40	2.40	
WS08	0.1	996	0.0	0.0000	0.4	0.0004	12.4	0.0	0.0	2.29	2.70	
WS09	0.1	996	0.0	0.0000	0.2	0.0002	18.3	0.0	0.0	0.32	2.50	
WS10	0.1	996	0.0	0.0000	0.0	0.0000	20.4	0.0	0.0	0.20	2.50	

KEY



Weather Conditions	Sunny
Ground Conditions	Wet
Ambient Atmospheric Pressure	1026
Regional Pressure Trend	Falling

Project number	S211001
Project name	Envision, Sunderland
Client	Wates, Sunderland
Visit no	2
Date	22/11/2021
Equipment	GFM 435 Gas Analyser
Operator	LO

Position Flow	Pressure	С	H4	CO2		02 (%)//)	CO (nnm)	H2S (ppm)	Groundwater	Depth to	Notes	
	Fiessule	(% v/v)	GSV (I/hr)	(% v/v)	GSV (I/hr)	O2 (70 V/V)	CO (ppili)	1123 (ppi11)	Level (mbgl)	Base (mbgl)	Notes	
CP01	0.1	1026	0.0	0.0000	0.1	0.0001	19.9	0.0	0.0	3.85	5.00	
CP03	0.1	1026	0.0	0.0000	0.0	0.0000	20.3	0.0	0.0	1.07	5.80	
CP04	0.1	1026	0.0	0.0000	1.1	0.0011	18.4	0.0	0.0	2.20	4.45	
CP05	0.1	1026	0.0	0.0000	0.6	0.0006	19.8	0.0	0.0	0.50	5.00	
CP07	0.1	1026	0.0	0.0000	0.3	0.0003	20.0	0.0	0.0	1.47	14.00	
CPRO02	0.1	1026	0.0	0.0000	1.9	0.0019	14.1	0.0	0.0	2.44	16.50	
CPRO05	0.1	1026	0.0	0.0000	0.0	0.0000	20.5	0.0	0.0	0.31	21.50	
WS01	0.1	1026	0.0	0.0000	1.8	0.0018	0.2	0.0	0.0	1.50	1.30	
WS02	0.1	1026	0.0	0.0000	0.2	0.0002	19.4	0.0	0.0	Dry	1.90	
WS03	0.1	1026	0.0	0.0000	8.0	0.0008	18.2	0.0	0.0	0.43	4.00	
WS04	0.1	1026	0.0	0.0000	0.5	0.0005	19.9	0.0	0.0	0.74	2.80	
WS05	0.1	1026	0.0	0.0000	0.3	0.0003	18.8	0.0	0.0	1.67	1.40	
WS06	0.1	1026	0.0	0.0000	0.0	0.0000	20.4	0.0	0.0	0.00	5.00	BH Pipe Flooded
WS07	0.1	1026	0.0	0.0000	0.1	0.0001	15.3	0.0	0.0	1.20	2.40	
WS08	0.1	1026	0.0	0.0000	0.3	0.0003	15.5	0.0	0.0	2.12	2.70	
WS09	0.1	1026	0.0	0.0000	0.0	0.0000	20.4	0.0	0.0	0.30	2.50	
WS10	0.1	1026	0.0	0.0000	0.0	0.0000	20.2	0.0	0.0	0.35	2.50	

KEY



Weather Conditions	Cloudy
Ground Conditions	Wet/Frost
Ambient Atmospheric Pressure	1003
Regional Pressure Trend	Falling

Project number	S211001
Project name	Envision, Sunderland
Client	Wates, Sunderland
Visit no	3
Date	29/11/2021
Equipment	GFM 435 Gas Analyser
Operator	LO

Position Flow	Flow	Pressure	С	H4	С	02	02 (% \//\)	CO (nnm)	H2S (ppm)	Groundwater	Depth to	Notes	
1 03111011	1 1000	1 1033410	(% v/v)	GSV (I/hr)	(% v/v)	GSV (I/hr)	O2 (70 V/V)	СС (рріпі)	τι20 (ρριτι)	Level (mbgl)	Base (mbgl)	140(65	
CP01	0.1	1003	0.0	0.0000	0.4	0.0004	19.1	0.0	0.0	3.98	5.00		
CP03	0.1	1003	0.0	0.0000	0.5	0.0005	19.6	0.0	0.0	0.65	5.80		
CP04	0.1	1003	0.0	0.0000	0.5	0.0005	19.5	0.0	0.0	2.04	4.45		
CP05	0.1	1003	0.0	0.0000	2.9	0.0029	18.2	0.0	0.0	0.30	5.00		
CP07	0.1	1003	0.0	0.0000	0.4	0.0004	19.9	0.0	0.0	1.52	14.00		
CPRO02	0.1	1003	0.0	0.0000	1.4	0.0014	16.2	0.0	0.0	2.25	16.50		
CPRO05	0.1	1003	0.0	0.0000	0.0	0.0000	20.3	0.0	0.0	0.25	21.50		
WS01	0.1	1003	0.0	0.0000	3.1	0.0031	7.3	0.0	0.0	1.93	1.30		
WS02					Boreh	ole has bee	n Demolish	ed					
WS03	0.1	1003	0.0	0.0000	0.3	0.0003	19.5	0.0	0.0	1.20	4.00		
WS04	0.1	1003	0.0	0.0000	0.1	0.0001	20.1	0.0	0.0	0.60	2.80		
WS05	0.1	1003	0.0	0.0000	0.5	0.0005	19.9	0.0	0.0	0.20	1.40		
WS06	0.1	1003	0.0	0.0000	0.0	0.0000	20.5	0.0	0.0	0.00	5.00	BH Pipe Flooded	
WS07	0.1	1003	0.0	0.0000	0.2	0.0002	16.1	0.0	0.0	1.40	2.40		
WS08	0.1	1003	0.0	0.0000	0.4	0.0004	17.1	0.0	0.0	2.64	2.70		
WS09	0.1	1003	0.0	0.0000	0.2	0.0002	20.0	0.0	0.0	0.15	2.50		
WS10	0.1	1003	0.0	0.0000	0.2	0.0002	19.9	0.0	0.0	0.15	2.50		

KEY



Weather Conditions	Cloudy
Ground Conditions	Wet
Ambient Atmospheric Pressure	994
Regional Pressure Trend	Falling

Project number	S211001
Project name	Envision, Sunderland
Client	Wates, Sunderland
Visit no	4
Date	06/12/2021
Equipment	GFM 435 Gas Analyser
Operator	LO

Position Flow	Flow	Pressure	С	H4	С	O2	02 (% ۷/۷)	CO (nnm)	H2S (ppm)	Groundwater	Depth to	Notes
	Fiessule	(% v/v)	GSV (I/hr)	(% v/v)	GSV (I/hr)	O2 (70 V/V)	CO (ppiii)	1123 (ppiii)	Level (mbgl)	Base (mbgl)	140162	
CP01	0.1	994	0.0	0.0000	0.3	0.0003	19.3	0.0	0.0	3.99	5.00	
CP03	0.1	994	0.0	0.0000	0.3	0.0003	19.9	0.0	0.0	0.68	5.80	
CP04	0.1	994	0.0	0.0000	0.1	0.0001	20.3	0.0	0.0	2.00	4.45	
CP05	0.1	994	0.0	0.0000	1.4	0.0014	19.5	0.0	0.0	0.98	5.00	
CP07	0.1	994	0.0	0.0000	0.2	0.0002	20.0	0.0	0.0	1.48	14.00	
CPRO02	0.1	994	0.0	0.0000	0.4	0.0004	19.5	0.0	0.0	2.18	16.50	
CPRO05	0.1	994	0.0	0.0000	0.4	0.0004	19.9	0.0	0.0	0.15	21.50	
WS01	0.1	994	0.0	0.0000	0.6	0.0006	17.4	0.0	0.0	1.39	1.30	
WS02					Boreh	ole has bee	n Demolish	ed				
WS03	0.1	994	0.0	0.0000	0.2	0.0002	19.3	0.0	0.0	0.50	4.00	
WS04	0.1	994	0.0	0.0000	0.4	0.0004	19.3	0.0	0.0	0.50	2.80	
WS05	0.1	994	0.0	0.0000	0.3	0.0003	20.2	0.0	0.0	0.35	1.40	
WS06	0.1	994	0.0	0.0000	0.0	0.0000	20.4	0.0	0.0	0.00	5.00	BH Pipe Flooded
WS07	0.1	994	0.0	0.0000	0.3	0.0003	18.7	0.0	0.0	1.14	2.40	
WS08	0.1	994	0.0	0.0000	0.2	0.0002	19.2	0.0	0.0	2.74	2.70	
WS09	0.1	994	0.0	0.0000	0.1	0.0001	20.4	0.0	0.0	0.00	2.50	BH Pipe Flooded
WS10	0.1	994	0.0	0.0000	0.2	0.0002	19.1	0.0	0.0	0.15	2.50	

KEY

APPENDIX H

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

ARCHWAY ENGINEERING (UK) LTD AINLEYS INDUSTRIAL ESTATE ELLAND WEST YORKSHIRE

HX5 9JP

SPT Hammer Ref: DART449

Test Date:

04/01/2021

Report Date:

04/01/2021

File Name:

DART449.spt

Test Operator:

JL

Instrumented Rod Data

Diameter d_r (mm):

54

Wall Thickness t_r (mm):

6.3

Assumed Modulus Ea (GPa): 208

Accelerometer No.1:

7080

Accelerometer No.2:

11609

SPT Hammer Information

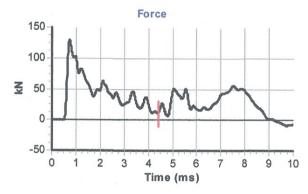
Hammer Mass m (kg):

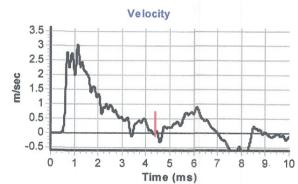
Falling Height h (mm): 760

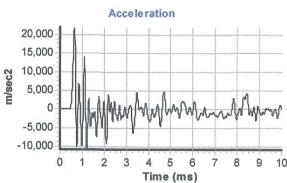
SPT String Length L (m): 10.0

Comments / Location

BAINBRIDGE BROTHERS - 73694









Calculations

Area of Rod A (mm2):

944

Theoretical Energy E_{theor} (J):

473 301

Measured Energy E_{meas}

Energy Ratio E_r (%):

64

J.LOCK Title: FITTER

The recommended calibration interval is 12 months

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

ARCHWAY ENGINEERING (UK) LTD AINLEYS INDUSTRIAL ESTATE ELLAND

WEST YORKSHIRE

HX5 9JP

SPT Hammer Ref: BB4

Test Date:

04/01/2021

Report Date:

04/01/2021

File Name:

BB4.spt

Test Operator:

JL

Instrumented Rod Data

Diameter d_r (mm):

54

Wall Thickness t_r (mm):

6.3

Assumed Modulus Ea (GPa): 208

Accelerometer No.1:

7080

Accelerometer No.2:

11609

SPT Hammer Information

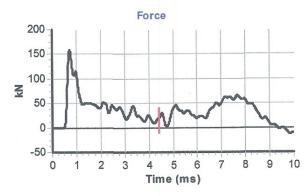
Hammer Mass m (kg): 63.5

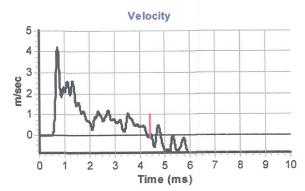
Falling Height h (mm): 760

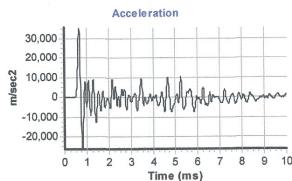
SPT String Length L (m): 10.0

Comments / Location

BAINBRIDGE BROTHERS - 73694









Calculations

Area of Rod A (mm2):

944

Theoretical Energy E_{theor} (J):

473

Measured Energy E_{meas}

298

Energy Ratio E_r (%):

63

Signed: J.LOCK Title: **FITTER**

The recommended calibration interval is 12 months

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

ARCHWAY ENGINEERING (UK) LTD AINLEYS INDUSTRIAL ESTATE ELLAND

WEST YORKSHIRE HX5 9JP

SPT Hammer Ref: BB5

Test Date:

04/01/2021

Report Date:

04/01/2021

File Name:

BB5.spt

Test Operator:

JL

Instrumented Rod Data

Diameter d_r (mm):

54

Wall Thickness tr (mm):

6.3

Assumed Modulus Ea (GPa): 208

Accelerometer No.1:

7080

Accelerometer No.2:

11609

SPT Hammer Information

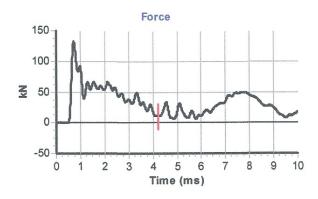
Hammer Mass m (kg): 63.5

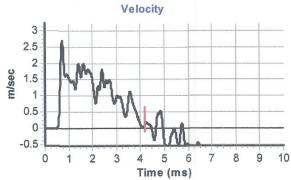
Falling Height h (mm): 760

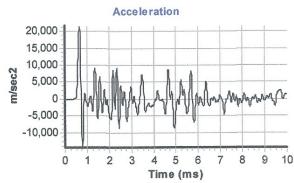
SPT String Length L (m): 10.0

Comments / Location

BAINBRIDGE BROTHERS - 73694









Calculations

Area of Rod A (mm2):

944

Theoretical Energy E_{theor} (J):

473

Measured Energy E_{meas} (J):

274

Energy Ratio E_r (%):

58

Signed: J.LOCK Title: FITTER

The recommended calibration interval is 12 months

SOLMEK NOTES ON CONTAMINATION GUIDANCE (REF: VERSION 1/2022)

UK BACKGROUND

Environmental Protection Act 1990: Part 2A Revised Statutory Guidance (April 2012)

This revised document explains how the Local Authority should decide if land, based on a legal interpretation, is contaminated. The document replaces the previous guidance given in Annex 3 of DEFRA Circular 01/2006, issued in accordance with section 78YA of the 1990 Environmental Protection Act.

The main objectives of the Part 2A regime are to "identify and remove unacceptable risks to human health and the environment" and to "seek to ensure that contaminated land is made suitable for its current use".

Part 2A uses a risk based approach to defining contaminated land whereby the "risk" is interpreted as "the likelihood that harm, or pollution of water, will occur as a result of contaminants in, on or under the land" and by "the scale and seriousness of such harm or pollution if it did occur".

For a relevant risk to exist a contaminant, pathway and receptor linkage must be present before the land can be considered to be contaminated. The document explains that "for a risk to exist there must be contaminants present in, on or under the land in a form and quantity that poses a hazard, and one or more pathways by which they might significantly harm people, the environment, or property; or significantly pollute controlled waters."

A conceptual model is used to develop and communicate the risks associated with a particular site.

To determine if land is contaminated the local authority use various categories from 1 to 4. Categories 1 and 2 include "land which is capable of being determined as contaminated land on grounds of significant possibility of significant harm to human health."

Categories 3 and 4 "encompass land which is not capable of being determined on such grounds".

PRELIMINARY CONCEPTUAL MODEL

Preliminary Conceptual Models are undertaken in accordance with CIRIA C552. The Preliminary Conceptual Model assesses the consequence and the likelihood of a risk being realised to provide a risk classification, using the tables detailed below.

CONSEQUENCE OF RISK BEING REALISED (Based on C552 CIRIA, 2001)

Classification	Definition	Example
Severe	Short-term (acute) risk to human health, the environment, an element of the development or other aspect with is likely to result in significant harm, damage or both.	High concentrations of cyanide on the surface of an informal recreational area. Major spills of contaminants from site into controlled water. High concentrations of explosive gas in the subsurface environment that have a clear unobstructed pathway into buildings.
Moderate	Chronic damage to human health, a plausible chance that an event will occur, although the timeline is not immediate to be in the short-term.	Appreciable concentration of contamination that over the longer- term will cause significant harm i.e. high lead concentration in topsoil. Shallow mine workings that are potentially unstable but may remain in a satisfactory or stable conditions for a number of years.
Mild	Low level pollution of non-sensitive water, a feasible hazardous scenario although the timeline of such occurring can probably be considered in 10's of years.	The effect of high sulphate concentrations on structural concrete. Pollution of non-classified groundwater.
Minor	Harm, although not necessarily significant to human health, or with respect to other aspects of the development, which are considered implausible in terms of occurrence, or will have little consequential impact.	The presence of contaminants at such low concentrations that protective equipment is required during site works. Any damage to structures is minimal and will not be structural in characteristics.

PROBABILITY OF RISK BEING REALISED (C552 CIRIA, 2001)

Classification	Definition
High Likelihood	There is a viable pollutant linkage and an event that either appears very likely in the short term and almost inevitable over the long term, or there is evidence that the receptor has been harmed or polluted.
Likely	There is a viable pollutant linkage and all elements are present and in the right place, which means that it is probable that an event will occur. Circumstances are such that an event is not inevitable, but possible in the short term and likely over the long term.
Low Likelihood	There is a viable pollutant linkage and circumstances are possible under which an event could occur. However, it is by no means certain that even over a longer period such event would take place, and is less likely in the shorter term.
Unlikely	There is a viable pollutant linkage but circumstances are such that it is improbable that an event would occur even in the very long term.

RISK CLASSIFICATION MATRIX (C552 CIRIA, 2001)

Risk = Probabil	ity x	Consequence					
Consequence		Severe	Moderate	Mild	Minor		
Probability	High likelihood	Very high risk	High risk	Moderate risk	Moderate/low risk		
	Likely	High risk	Moderate risk	Moderate/low risk	Low risk		
	Low likelihood	Moderate risk	Moderate/low risk	Low risk	Very low risk		
	Unlikely	Moderate/low risk	Low risk	Very low risk	Very low risk		

HUMAN RECEPTORS

Human exposure to contaminants present in soils can occur via several pathways. Direct exposure pathways include dermal absorption after contact with contaminated ground, inhalation of soil or dust, inhalation of volatised compounds, and inadvertent soil ingestion (or deliberate soil ingestion in the case of some children). Other indirect pathways include human ingestion of plants grown in contaminated soil or contaminated ground or surface water. Contaminants associated with wind blown dust can affect humans on surrounding sites.

VEGETATION

Plants can be affected by soil contamination in a number of ways resulting in growth inhibition, nutrient deficiencies and yellowing of leaves. Contaminants are taken up by plants through the roots and through foliage. Contaminants identified as being highly phytotoxic include boron, cadmium, copper, lead, nickel, and zinc.

To establish if the levels of contaminants present on a site may pose a risk to vegetation the results of the contamination testing are compared to a series of threshold values published in 'Code of Good Agricultural Practice for the Protection of Soil'.

GROUNDWATER AND SURFACE WATER RECEPTORS

The principal pathway by which soil contamination may reach the water environment is through a slow seepage or leaching to groundwater or surface water. The potential for contaminants to migrate along such pathways is dependent on the chemical and physical characteristics of the contaminants and the local hydrogeology. Surface watercourses may also accumulate contamination as contaminated sediments are deposited within the water body.

Where the site investigated overlies major/principal aquifers (and in some cases minor/secondary aquifers depending on certain conditions), groundwater Source Protection Zones and areas in close proximity to groundwater abstractions, contamination test results have been compared with the Water Supply (Water Quality) Regulations 1989 and The Water Supply (Water Quality) Regulations 2000.

Should a surface water receptor, such as a fresh water environment (river, canal, stream, lake etc), or marine environment be considered sensitive in relation to a site, then test results are compared with DEFRA & SEPA Environmental Quality Standards (2004). Many of the Environmental Quality Standards are hardness (CaCO₃) depended. Where no hardness values are available, Solmek assume conservative values (of between 0 and 50mg/l).

In the absence of vulnerable ground and surface water environments, Solmek may compare any test results with the Environment Agency Leachate Quality Threshold Values.

DETAILED QUANTITATIVE RISK ASSESSMENT (DQRA)

In line with Environment Agency's guidance document Environment Agency *Land Contamination Risk Management*, which replaced the now-withdrawn *Contaminated Land Report 11 – Model Procedures for the Management of Land Contamination (2004)*, a DQRA for groundwater/human health may be required following a Phase 2 investigation and before the preparation of a Phase 3 Remediation Strategy. For human health DQRA, a site specific assessment criteria is undertaken using CLEA Software Version 1.06. For groundwater DQRA, the Environment Agency Remedial Targets Worksheet Version 3.1 is used.

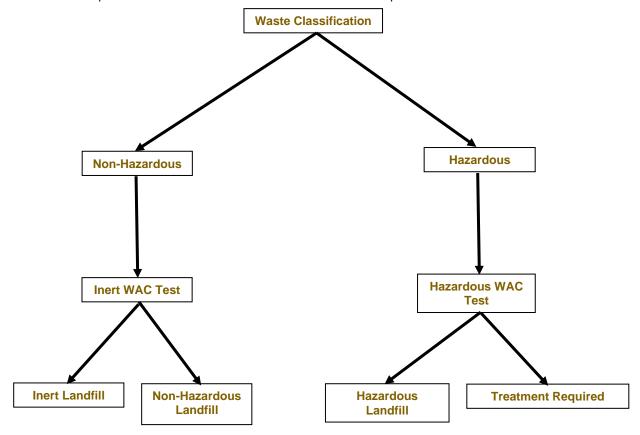
WASTE CLASSIFICATION AND WASTE ACCEPTANCE CRITERIA

During the site strip and construction activities, material may be required to be removed from site. Any such material would require classification, in line with Environment Agency Technical Guidance *Waste Classification: Guidance on the classification and assessment of waste (2015).* This would classify the material as either Non-Hazardous or Hazardous Waste.

Once the material has been classified, determining the suitable landfill for disposal is governed by landfill directive Waste Acceptance Criteria (WAC) testing, with landfills categorized as Inert Waste, Stable Non-Reactive Hazardous Waste and Hazardous Waste. The WAC testing relates to materials that are to be exported from a site/development to landfill, and do not directly relate to human health specifically. The testing results are generally presented as certificates which can be used by site owners/contractors etc, which should be presented to the accepting waste facility or waste contractor.

If waste classification and/or WAC testing are not undertaken, material taken off site may be subject to WAC testing by the appropriate waste disposal company. The decision on whether or not to accept waste, or whether further testing is required, is at the discretion of the waste disposal company.

The below flow chart provides further information on the waste classification process.



CONSTRUCTION MATERIALS

Materials at risk from possible soil contaminants include inorganic matrices such as cement and concrete and also organic material such as plastics and rubbers. Acid ground conditions and high levels of sulphates can accelerate the corrosion of building materials. Where pH and soluble sulphate analysis has been undertaken, Solmek compare the test results with the guidelines presented within BRE Special Digest 1, 2005 (3rd Edition) 'Concrete in Aggressive Ground'. Plastics and rubbers are generally used for piping and service ducts and are potentially attacked by a range of chemicals, most of which are organic, particularly petroleum based substances. Drinking water supplies can be tainted by substances that can penetrate piping and water companies enforce stringent threshold values.

The levels of potential contaminants should be compared to thresholds supplied in the UK Water Industry Research (UKWIR) publication "Guidance for the selection of Water Supply Pipes to be used in Brownfield Sites" (January 2011). A Brownfield Site is defined in the document as "Land or premises that have not previously been used or developed that may be vacant or derelict". It should be noted that Brownfield sites may not be contaminated. The guidance does not apply to Greenfield Sites however water companies may have their own assessment criteria which should be checked by the developer. The table below outlines the pipe material selection threshold concentrations.

	Pipe Material (Threshold concentrations in mg/kg)								
Parameter group	PE	PVC	Barrier pipe (PE-AL-PE)	Wrapped Steel	Wrapped Ductile Iron	Copper			
Extended VOC suite by purge and trap or head space and GC-MS with TIC	0.5	0.125	Pass	Pass	Pass	Pass			
+ BTEX + MTBE	0.1	0.03	Pass	Pass	Pass	Pass			
SVOCs TIC by purge and trap or head space and GC-MS with TIC (aliphatic and aromatic C5-C10)	2	1.4	Pass	Pass	Pass	Pass			
+ Phenols	2	0.4	Pass	Pass	Pass	Pass			
+ Cresols and chlorinated phenols	2	0.04	Pass	Pass	Pass	Pass			
Mineral oil C11-C20	10	Pass	Pass	Pass	Pass	Pass			
Mineral oil C21-C40	500	Pass	Pass	Pass	Pass	Pass			
Corrosive (Conductivity, Redox and pH)	Pass	Pass	Pass	Corrosive if pH <7 and conductivity >400µS/cm	Corrosive if pH <5, Eh not neutral and conductivity >400µS/cm	Corrosive if pH <5 or >8 and Eh positive			
Specific	suite iden	tified as rele	evant following	site investigati	on				
Ethers	0.5	1	Pass	Pass	Pass	Pass			
Nitrobenzene	0.5	0.4	Pass	Pass	Pass	Pass			
Ketones	0.5	0.02	Pass	Pass	Pass	Pass			
Aldehydes	0.5	0.02	Pass	Pass	Pass	Pass			
Amines	Fail	Pass	Pass	Pass	Pass	Pass			

REQUIREMENTS OF PARTIES WITHIN THE DEVELOPMENT PROCESS

Interested parties involved in the development process may use the data in different ways and there may be varying views and interpretation of the factual data. Local Authority staff may have a view on contamination and human health and the wider environment. The Environment Agency are concerned principally with the protection of Controlled waters. Building insurers, funders and purchasers may be primarily concerned with issues of potential commercial blight. Purchasers are also not always fully informed, and perceptions on issues associated with risk can affect the decision to purchase. Developers and construction organisations will focus on financial aspects of dealing with the contamination in the context of the development and construction programme.

RISKS & LIABILITIES FROM CONTAMINATION

In simple terms, risks associated with contamination may be considered in terms of 1) statutory risks and 2) development related risks. If contamination is severe or forms a potential hazard based on its potential to affect groundwater, surface water or human health, a statutory risk may be present, and as such, if the risk is not reduced, criminal proceedings may be instigated by a government body or local authority.

If the contamination is less severe or not considered to be mobile, it may be considered a commercial liability which could, in theory remain untreated, but which may at a later date affect the value of the property, or, with changing legislation, become a statutory risk. Commercial liabilities could give rise to civil proceedings by third parties if there are grounds for action.

◆Solmek conditions of offer, notes on limitations & basis for contract (ref: version1/2022)

These conditions accompany our tender and supercede any previous conditions issued. Solmek will prepare a report solely for the use of the Client (the party invoiced) and its agent(s). No reliance should be placed on the contents of this report, in whole or in part by 3rd parties. The report, its content and format and associated data are copyright, and the property of Solmek. Photocopying of part or all of the contents, transfer or reproduction of any kind is forbidden without written permission from Solmek. A charge may be levied against such approval, the same to be made at the discretion of Solmek.

Solmek cannot be held liable and do not warrant, or otherwise guarantee the validity of information provided by third parties and subsequently used in our reports. Solmek are not responsible for the action negligent of otherwise of subcontractors or third parties.

Site investigation is a process of sampling. The scope and size of an investigation may be considered proportional to levels of confidence regarding the ground and groundwater conditions. The exploratory holes undertaken investigate only a small volume of the ground in relation to the overall size of the site, and can only provide a general indication of site conditions. The opinions provided and recommendations given in this report are based on the ground conditions as encountered within each of the exploratory holes. There may be different ground conditions elsewhere on the site which have not been identified by this investigation and which therefore have not been taken into account in this report. Reports are generally subject to the comments of the local authority and Environment Agency. The comments made on groundwater conditions are based on observations made at the time that site work was carried out. It should be noted that mobile contamination, ground gas levels and groundwater levels may vary owing to seasonal, tidal and/or weather related effects. Solmek cannot be held liable for any unrecorded or unforeseen obstructions between exploratory boreholes and trial pits. This includes instances where previous structures on the site (buried man made structures) or the presence of boulder clay (cobbles and/or boulder obstructions) have been anticipated. All types of piling operations should make allowance for obstructions within the construction budget to accommodate this. Unrecorded ancient mining may occur anywhere where seams that have been worked and influence the rock and soil above. Dissolution cavities can occur where gypsum or chalk is present. Rotary drilling is the recommended technique to prove the integrity of the rock.

Where the scope of the investigation is limited via access to information, time constraints, equipment limitations, testing, interpretation or by the client or his agents budgetary constraints, elements not set out in the proposal and excluded from the report are deemed to be omitted from the scope of the investigation.

Desk studies are generally prepared in accordance with RICS guidelines. Environmental site investigations are generally undertaken as 'exploratory investigations' in accordance with the definitions provided in paragraph 5.4 of BS 10175:2011 in order to confirm the conceptual assumptions. You are advised to familiarize yourself with the typical scope of such an investigation. No pumping of water will be undertaken unless a licence or facilities/equipment have been arranged by others.

Where the type, number or/and depth of exploratory hole is specified by others, Solmek cannot and will not be responsible for any subsequent shortfall or inadequacy in data, and any consequent shortfall in interpretation of environmental and geotechnical aspects which may be required at a later date in order to facilitate the design of permanent or temporary works.

All information acquired by Solmek in the course of investigation is the property of Solmek, and, only also becomes the joint property of the Client only on the complete settlement of all invoices relating to the project. Solmek reserve the right to use the information in commercial tendering and marketing, unless the Client expressly wishes otherwise in writing. The quoted rates do not include VAT, and payment terms are 30 days from dispatch of invoice from our offices. Quotes are subject to a site visit.

We have allowed for 1 mobilisation and normal working hours unless otherwise stated. The scope of the investigation may be reviewed following the desk study and/or fieldwork. The presence or otherwise of Japanese Knotweed or other invasive plants can be difficult to identify especially during winter months. If Japanese Knotweed or other invasive species are suspect, it should be confirmed by an ecologist. We have not allowed for acquiring services information, and cannot be responsible for damage to underground services or pipes not shown to us or not clearly shown on plans. Costs incurred will be passed on to you, and in commissioning Solmek you understand and accept that you/your agent have a contractual relationship with Solmek & you accept this. Our rates assume unobstructed, reasonably level and firm access to the exploratory positions and adequate clear working areas and headroom. We have priced on the basis that you or your client have the necessary permissions, wayleaves and approvals to access land. All boreholes and pits are backfilled with arisings except where gas monitoring pipes are installed with stopcock covers. Solmek are not responsible for any uneven surfaces as a result of siteworks and rutting and backfilled excavations may require re-levelling and/or making good by others after fieldwork is complete, and Solmek has not allowed for this. No price has been provided or requested for a return visit to remove pipework and covers. Hourly rates apply to consultancy only and do not include expenses unless otherwise shown. If warranties are required, legal costs incurred will be passed on to you assuming Solmek agree to complete such warranties, modified or otherwise and you understand and agree to pay all costs.

We reserve the right to pursue full payment of the invoice prior to release of any information including reports. We advise you/your client that we may elect to pursue our statutory rights under late payment legislation, and will apply 8% to the base rate for unreasonably late payments. Solmek are exempt from the CIS Scheme. Solmek offer to undertake work <u>only</u> in strict accordance with conditions covered by our current insurances, which are available for inspection. Solmek are not responsible for acts, negligent or otherwise of subcontractors and as a matter of policy cannot indemnify any other parties. Professional indemnity Insurance is limited to ten times the invoice net total except where stated otherwise by Solmek. Solmek give notice that consequential loss as a direct or indirect result of Solmek's activities or omission of the same are excluded.

