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

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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

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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 geo-environmental 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.

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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**.**

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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.

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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.

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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										
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 ex-pected 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 ex-pected to be hazardous to the environment.	2,000 Kg	No
N-Methyl-2-Pyrroli-done	93-97%	H319, H335, H227, H315, H360	Liquid	NDA	NDA	NDA	Low	The substance is a non-hazardous liquid. Not ex-pected 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) etha-nol – 2% - <5% Sodium octyl sulphate – 0.5% - <2% (carboxymethyl)dime-thyl-3-[(1-oxodo-decyl)amino]prop-ylammonium hydroxide – 0.5% - <2% Mixture of flurosurfac-tants – 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

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Substance	Composition	Hazard Statements	Physical State	Solubility	Tox-icity	Mobility	Persis-tence	Soil/Groundwater pollution potential	Quantity	RHS Yes/No
Waste Materials										
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

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3 Stage 3: Assess the Site-Specific Pollution Possibility

From

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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

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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

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

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

Substance	Mass/ Volume	Details of Existing Pollution Prevention Measures and Mitigating Factors	Actual Pollu-tion Risk Yes/No
Cobalt Lithium Man-ganese 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	Bund around chillers Gas sensors to detect and interlock system	No
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

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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.

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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).In-situ 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.

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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.

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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).

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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	NDA	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.

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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

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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.

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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.

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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.

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FIGURES

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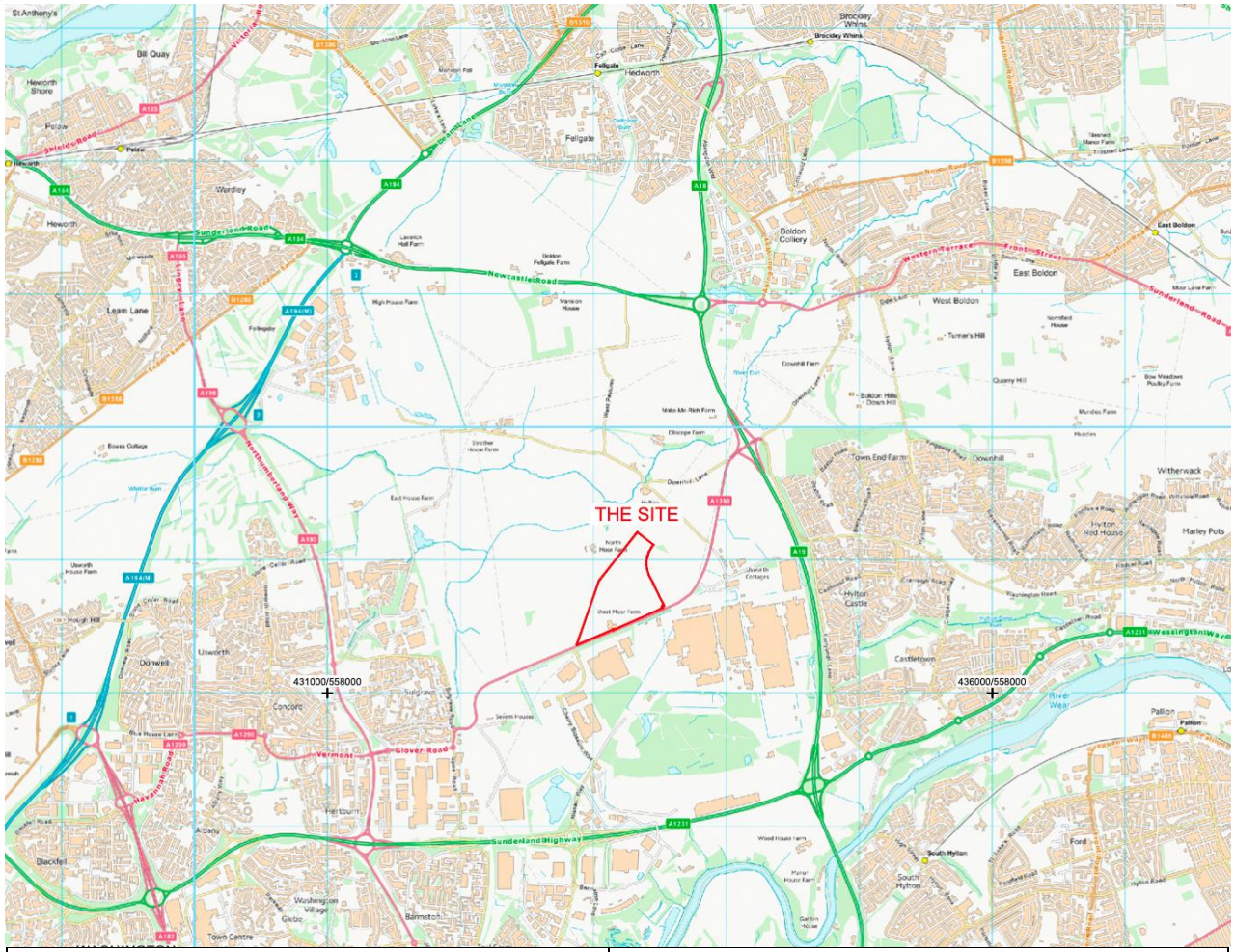

enviro | solution	**Establishment Location Plan**

Figure 1

Appendix A

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Historical Mapping Legends

Ordnance Survey County Series 1:10,560

Gravel Pit
Sand Pit
Other Pits
Quarry
Shingle
Orchard
Osiers
Reeds
Marsh
Mixed Wood
Deciduous
Brushwood
Fir
Furze
Rough Pasture
Arrow denotes flow of water
Trigonometrical Station
Site of Antiquities
Bench Mark
Pump, Guide Post, Signal Post
Well, Spring, Boundary Post
·285 Surface Level
Sketched Contour
Instrumental Contour
Main Roads
Fenced
Un-Fenced
Minor Roads
Fenced
Un-Fenced
Sunken Road
Raised Road
Road over Railway
Railway over River
Railway over Road
Level Crossing
Road over River or Canal
Road over Stream
Road over Stream
County Boundary (Geographical)
County & Civil Parish Boundary
Administrative County & Civil Parish Boundary
Co. Boro. Bdy. County Borough Boundary (England)
Co. Burgh Bdy. County Burgh Boundary (Scotland)
R.D. Bdy. Rural District Boundary
Civil Parish Boundary

Ordnance Survey Plan 1:10,000

Chalk Pit, Clay Pit or Quarry
Gravel Pit
Sand Pit
Disused Pit or Quarry
Refuse or Slag Heap
Lake, Loch or Pond
Dunes
Boulders
Coniferous Trees
Non-Coniferous Trees
Orchard
Scrub
Coppice
Bracken
Heath
Rough Grassland
Marsh
Reeds
Saltings
Building
Direction of Flow of Water
Shingle
Sand
Glasshouse
Pylon
Pylon
Electricity Transmission Line
Sloping Masonry
Cutting
Embankment
Standard Gauge Multiple Track
Road Under
Road Over
Level Crossing
Foot Bridge
Standard Gauge Single Track
Siding, Tramway or Mineral Line
Narrow Gauge
Geographical County
Administrative County, County Borough or County of City
Municipal Borough, Urban or Rural District, Burgh or District Council
Borough, Burgh or County Constituency
Shown only when not coincident with other boundaries
Civil Parish
Shown alternately when coincidence of boundaries occurs

BP, BS	Boundary Post or Stone	Pol Sta	Police Station
Ch	Church	PO	Post Office
CH	Club House	PC	Public Convenience
F E Sta	Fire Engine Station	PH	Public House
FB	Foot Bridge	SB	Signal Box
Fn	Fountain	Spr	Spring
GP	Guide Post	TCB	Telephone Call Box
MP	Mile Post	TCP	Telephone Call Post
MS	Mile Stone	W	Well

1:10,000 Raster Mapping

Gravel Pit
Refuse tip or slag heap
Rock
Rock (scattered)
Boulders
Boulders (scattered)
Shingle
Mud
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)
Civil, parish or community boundary
District, Unitary, Metropolitan, London Borough boundary
Constituency boundary
Area of wooded vegetation
Non-coniferous trees
Non-coniferous trees (scattered)
Coniferous trees
Coniferous trees (scattered)
Positioned tree
Orchard
Coppice or Osiers
Rough Grassland
Heath
Scrub
Marsh, Salt Marsh or Reeds
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)
Triangulation station
Point feature (e.g. Guide Post or Mile Stone)
Pylon, flare stack or lighting tower
Site of (antiquity)
Glasshouse
General Building
Important Building

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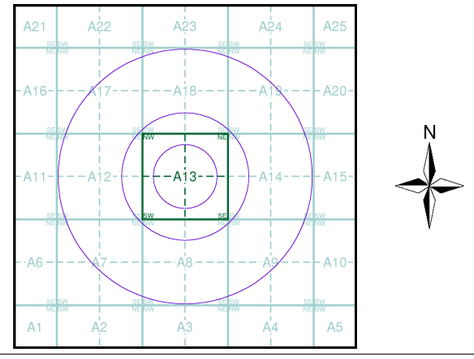
Historical Mapping & Photography included:

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 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

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Russian Military Mapping Legends

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

a. Not drawn to scale b. Drawn to scale

- Government and Administrative Buildings
- Military and Industrial Buildings
- Military and Communication Areas
- Subway Entrance
- Fireproof Building
- Prominent Fireproof Building
- Non-fireproof Building
- Non-fireproof Building (non-dwelling)
- Factory, mill, and flour mill, with chimneys
- Factory, mill, and flour mill, without chimneys
- Power Station, drawn to scale
- Hydroelectric Power Station
- Radio Station, drawn to scale
- Telephone Station, drawn to scale
- Abandoned Open-pit Mine or Quarry
- Open-pit Salt Mine
- Pit
- Oil Deposit or Well
- Oil Seepage
- Tailings Pile
- Fuel Storage Tanks
- Natural Gas Tank
- Bench Mark
- Drill Hole
- Burial Mound
- Triangulation Point on Burial Mound
- Single-track Railroad
- Double-track Railroad and Station Building
- Coniferous Forest
- Deciduous Forest
- Mixed Forest
- Lawns
- Citrus Orchard
- Wet Ground
- Scattered Vegetation

243,8 — Values for prominent elevations

186.0 — Numbers for spot elevations, depth soundings, contour lines, etc.

0,2 — Velocity of the current, width of river bed, depth of river

Fractional terms: length and capacity of bridges; depth of fords and condition of the river bottom; height of forest and the diameter of trees

Russian Alphabet (For reference and phonetic interpretation of map text)

А а (A)	З з (Z)	П п (P)	Ч ч (CH)
Б б (B)	И и (I)	Р р (R)	Ш ш (SH)
В в (V)	Й й (Y)	С с (S)	Щ щ (SHCH)
Г г (G)	К к (K)	Т т (T)	ъ (–)
Д д (D)	Л л (L)	У у (U)	ы (Y)
Е е (E)	М м (M)	Ф ф (F)	ь (')
Ё ё (YO)	Н н (N)	Х х (KH)	Э э (E)
Ж ж (ZH)	О о (O)	Ц ц (TS)	Ю ю (YU or IU)
			Я я (YA or IA)

1:25,000 mapping

a. Not drawn to scale b. Drawn to scale

- Government and Administrative Buildings
- Military and Industrial Buildings
- Military and Communication Areas
- Subway Entrance
- Partly Demolished Buildings
- Demolished Buildings
- Built-Up Area with Fireproof Buildings Predominant
- Built-Up Area with Non-Fireproof Buildings Predominant
- Individual Fireproof Building
- Prominent Industrial Building
- Individual Dwelling, Fireproof
- Ruins of an Individual Dwelling
- Factory or Mill Chimney
- Factory or Mill with Chimney
- Factory or Mill without Chimney
- Mine or Open Pit Mine
- Operating Shaft or Mine
- Non-Operating Shaft or Mine
- Salt Mine
- Tailings Pile
- Pit
- Stone Quarry
- Gas Pump or Service Station
- Fuel Storage or Natural Gas Tank
- Oil or Natural Gas Derrick
- Small Hydroelectric Power Station
- Power Station
- Transformer Station
- Cemetery
- Burial Mound (height in metres)
- Triangulation Point on Burial Mound
- Triangulation Point
- Bench Mark
- Bench Mark (monumented)
- Telegraph Office
- Telephone Station
- Radio Station
- Radio Tower
- Airfield or Seaplane Base
- Landing Strip
- Main Highway
- Highway under Construction
- Improved Dirt Road (former truck road)
- Double-track Railroad with First Class Station
- Dismantled Railroad
- Railroad Under Construction
- Shore Embankment
- River or Ditch with Embankment
- Direction and velocity of current
- Well
- Water Reservoir or Rain Water Pit
- Spring
- Isobath with value
- Heavy (Index) Contour Line
- Contour Line and Value
- Half Contour Line
- Spot Elevation Value
- Coniferous
- Deciduous
- Mixed
- Scrub

Key to Numbers on Mapping

NZ35_Newcastle

No.	Description
1	Airfield/Airport

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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
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Sunderland	1:10,000	1976	12
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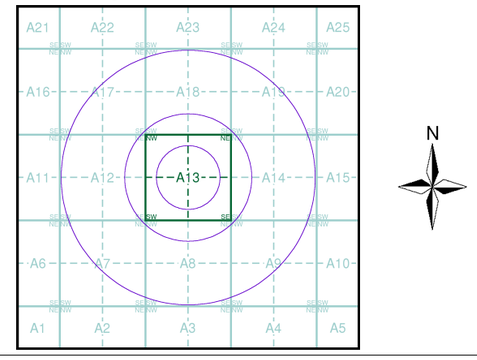
Ordnance Survey Plan	1:10,000	1990 - 1992	15
10K Raster Mapping	1:10,000	2000	16
10K Raster Mapping	1:10,000	2006	17
VectorMap Local	1:10,000	2021	18

Russian Map - Slice A



Order Details

Order Number:	301180946_1_1
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Search Buffer (m):	1000

Site Details

Site at 433100, 558820

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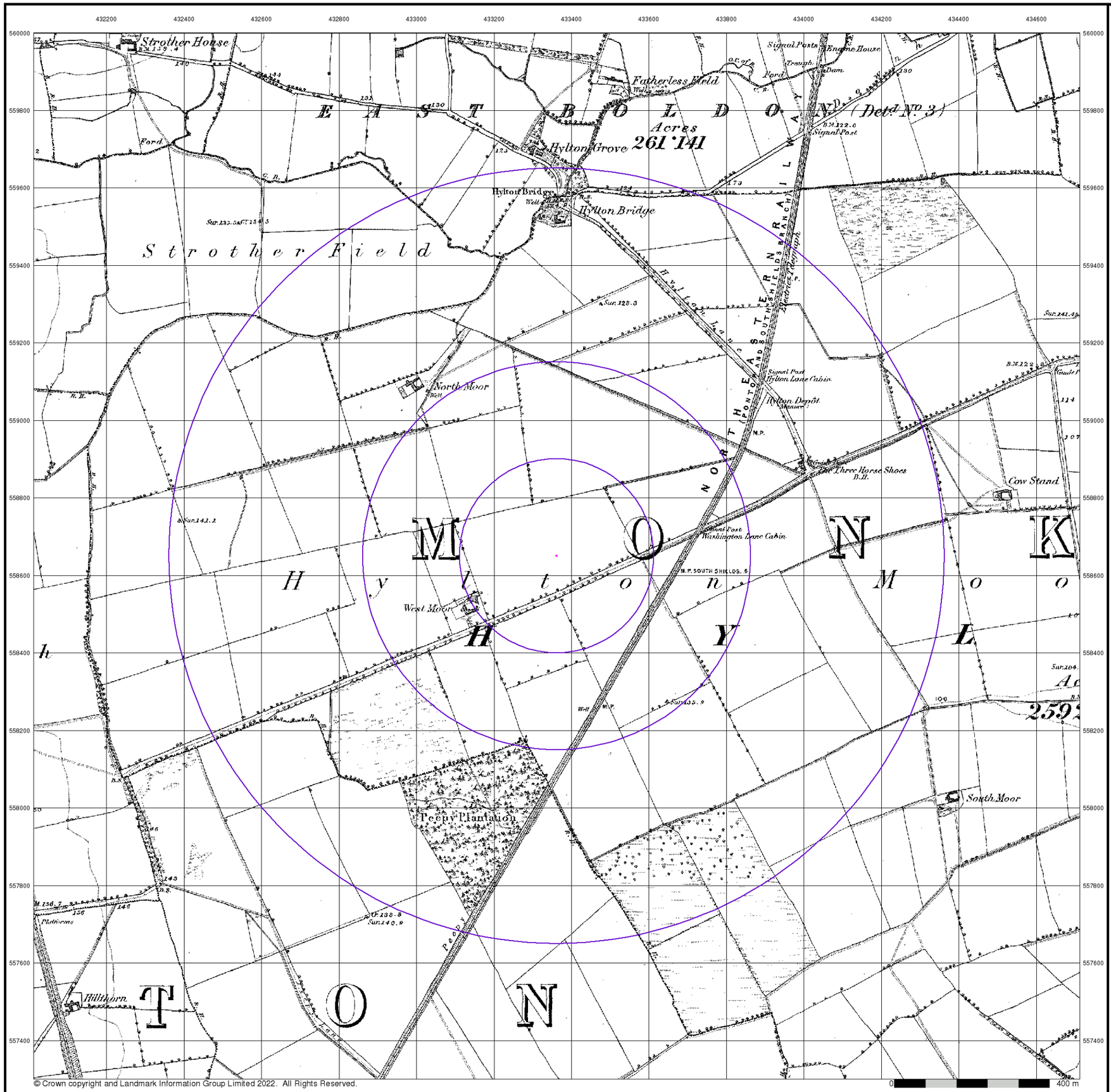

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Durham

Published 1862

Source map scale - 1:10,560

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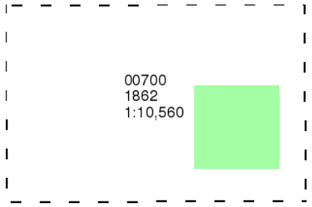
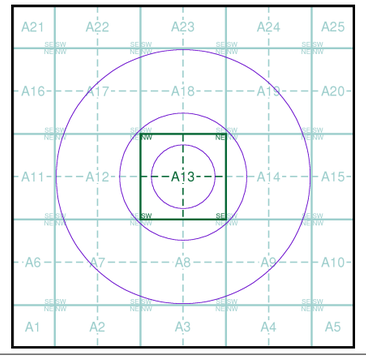
Map Name(s) and Date(s)



Historical Map - Slice A



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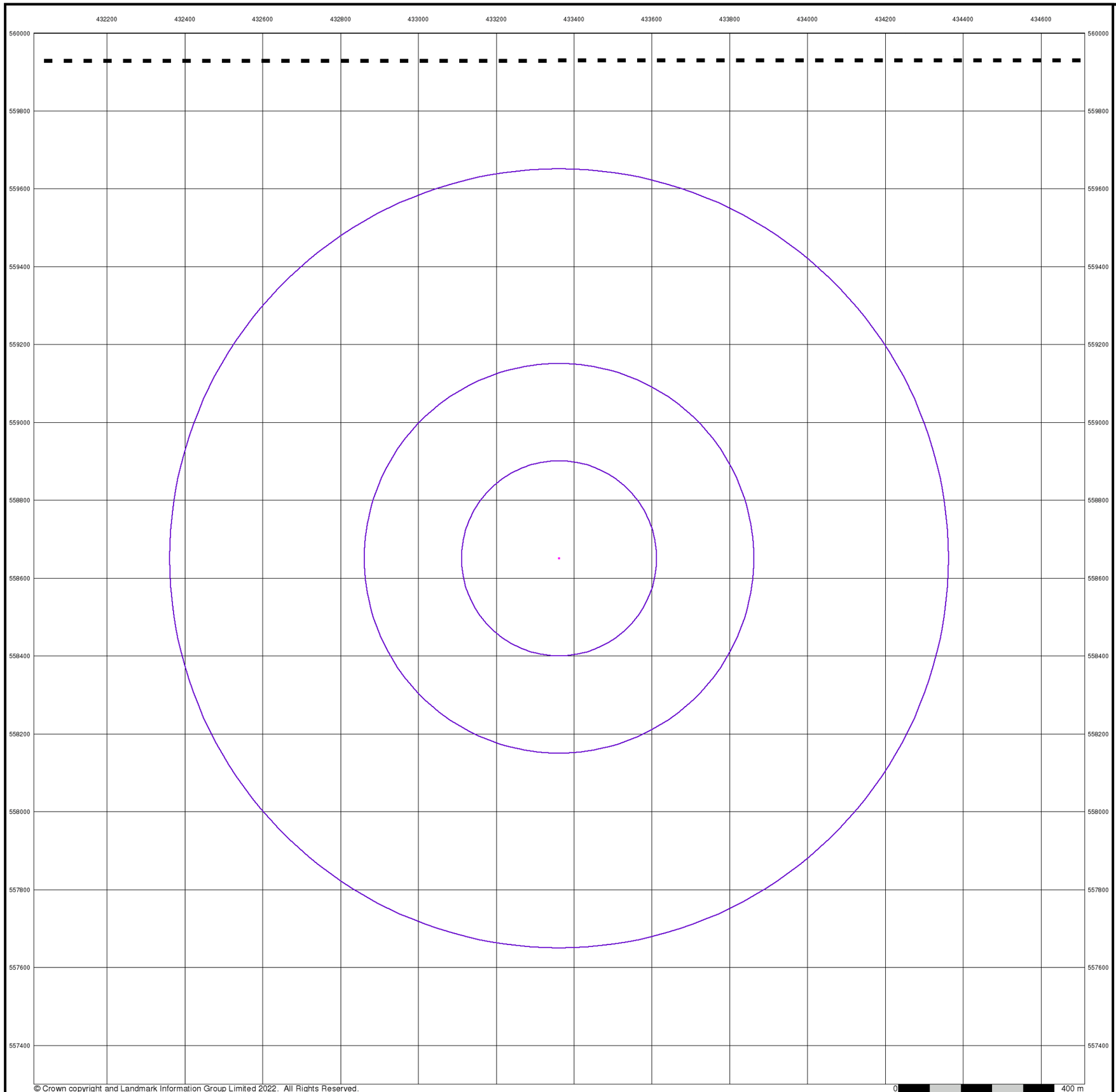

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Northumberland

Published 1864

Source map scale - 1:10,560

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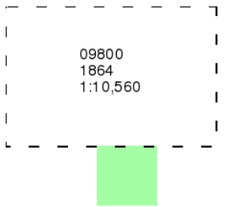
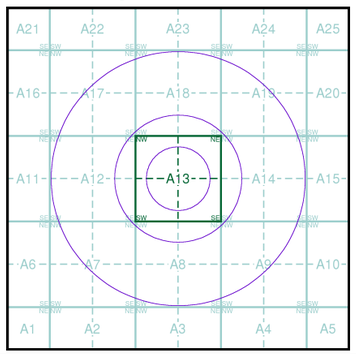
Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

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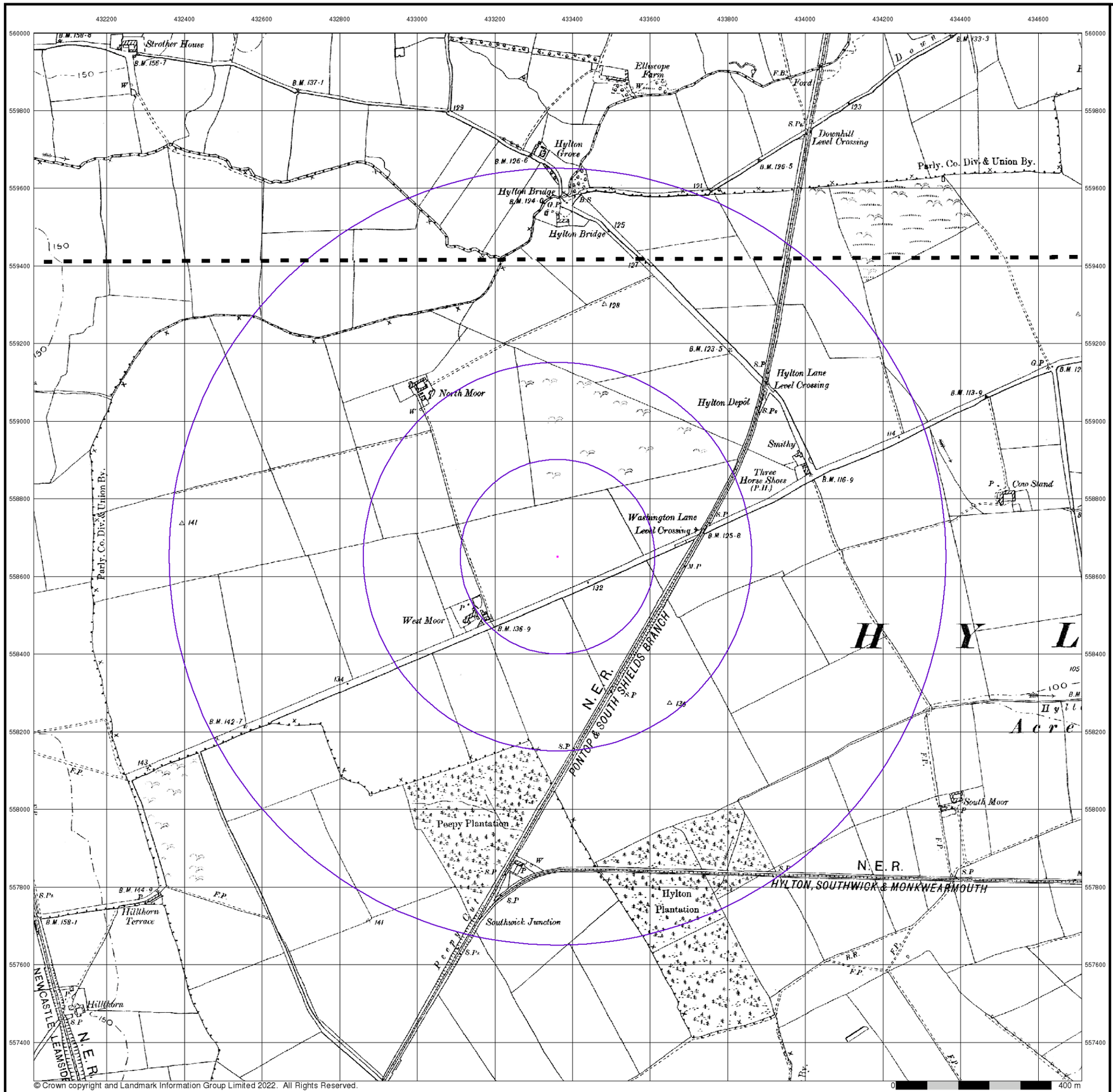

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Durham

Published 1898

Source map scale - 1:10,560

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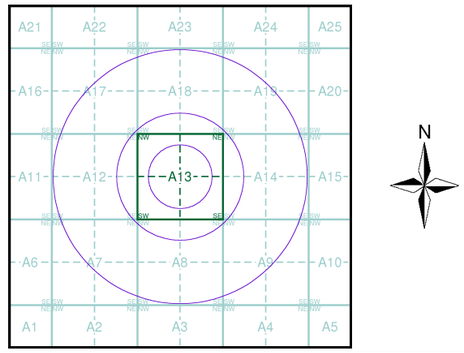
Map Name(s) and Date(s)

007NE
1898
1:10,560

007SE
1898
1:10,560

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

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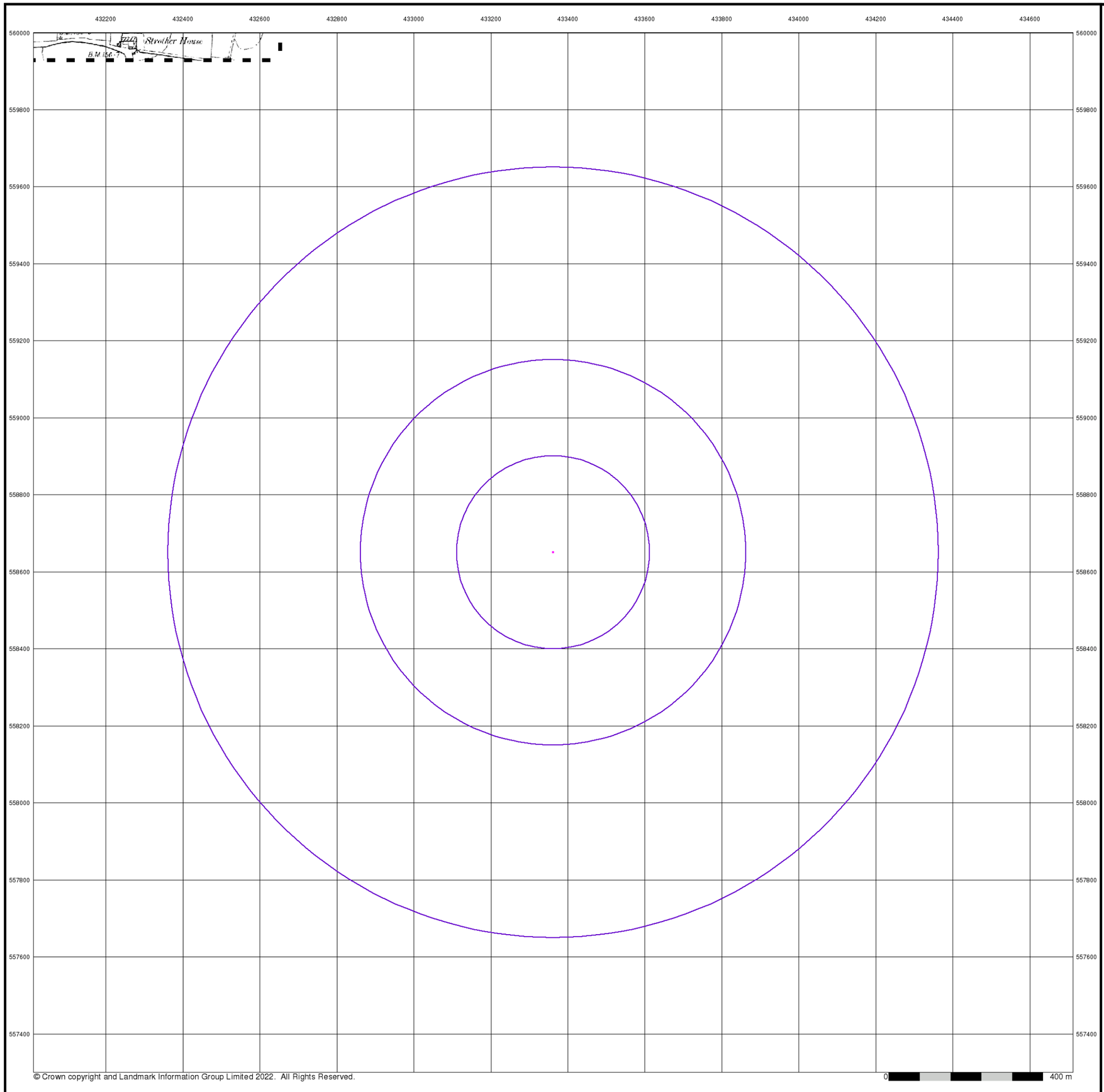

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Northumberland

Published 1899

Source map scale - 1:10,560

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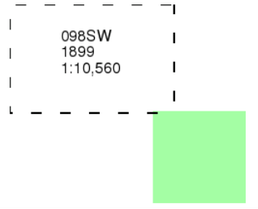
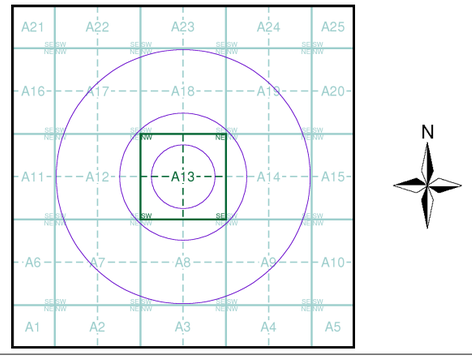
Map Name(s) and Date(s)



Historical Map - Slice A



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Site Details

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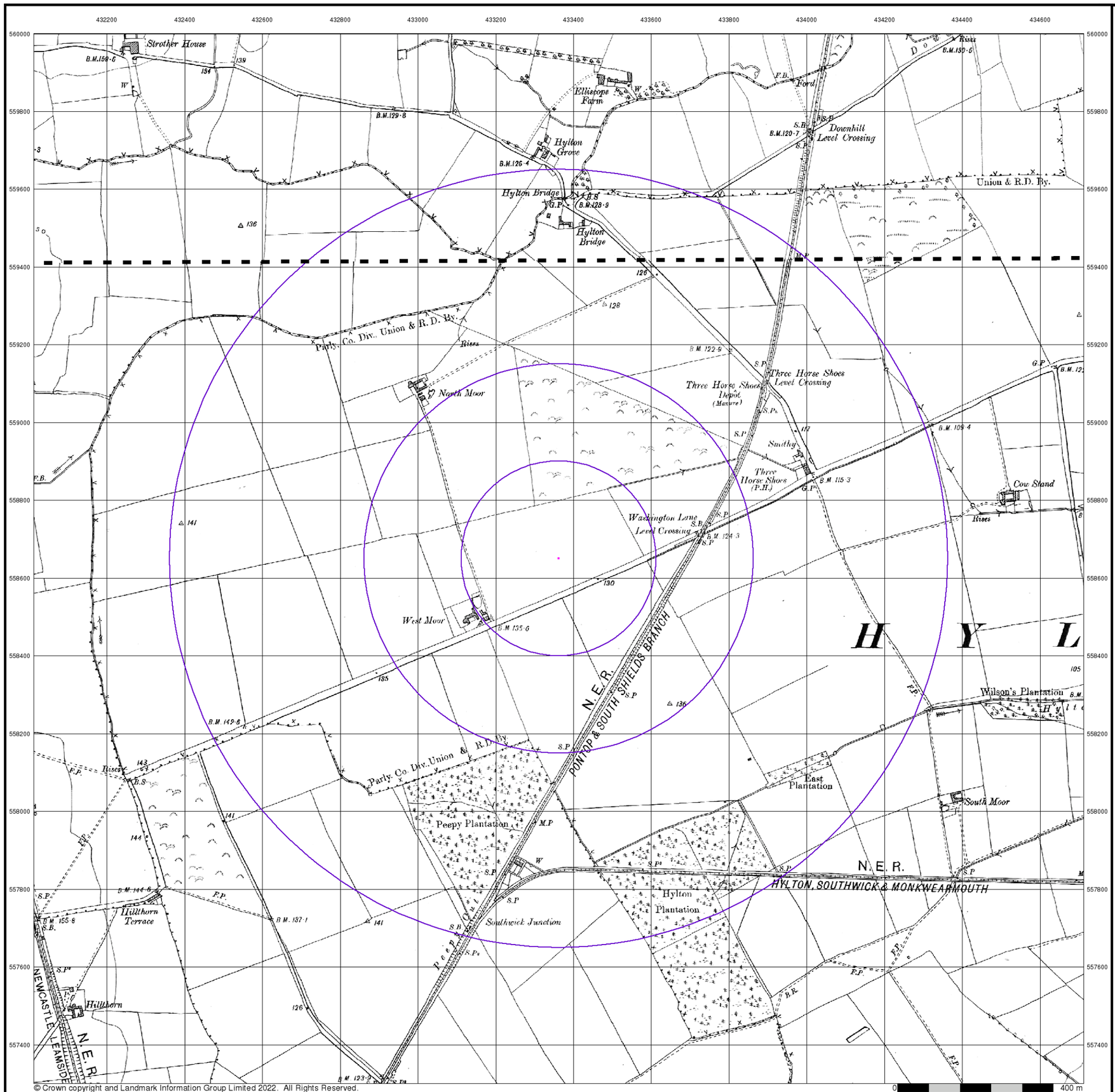

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Durham

Published 1921

Source map scale - 1:10,560

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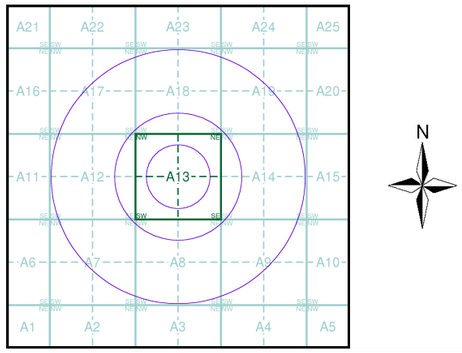
Map Name(s) and Date(s)

007NE
1921
1:10,560

007SE
1921
1:10,560

Historical Map - Slice A



Order Details

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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

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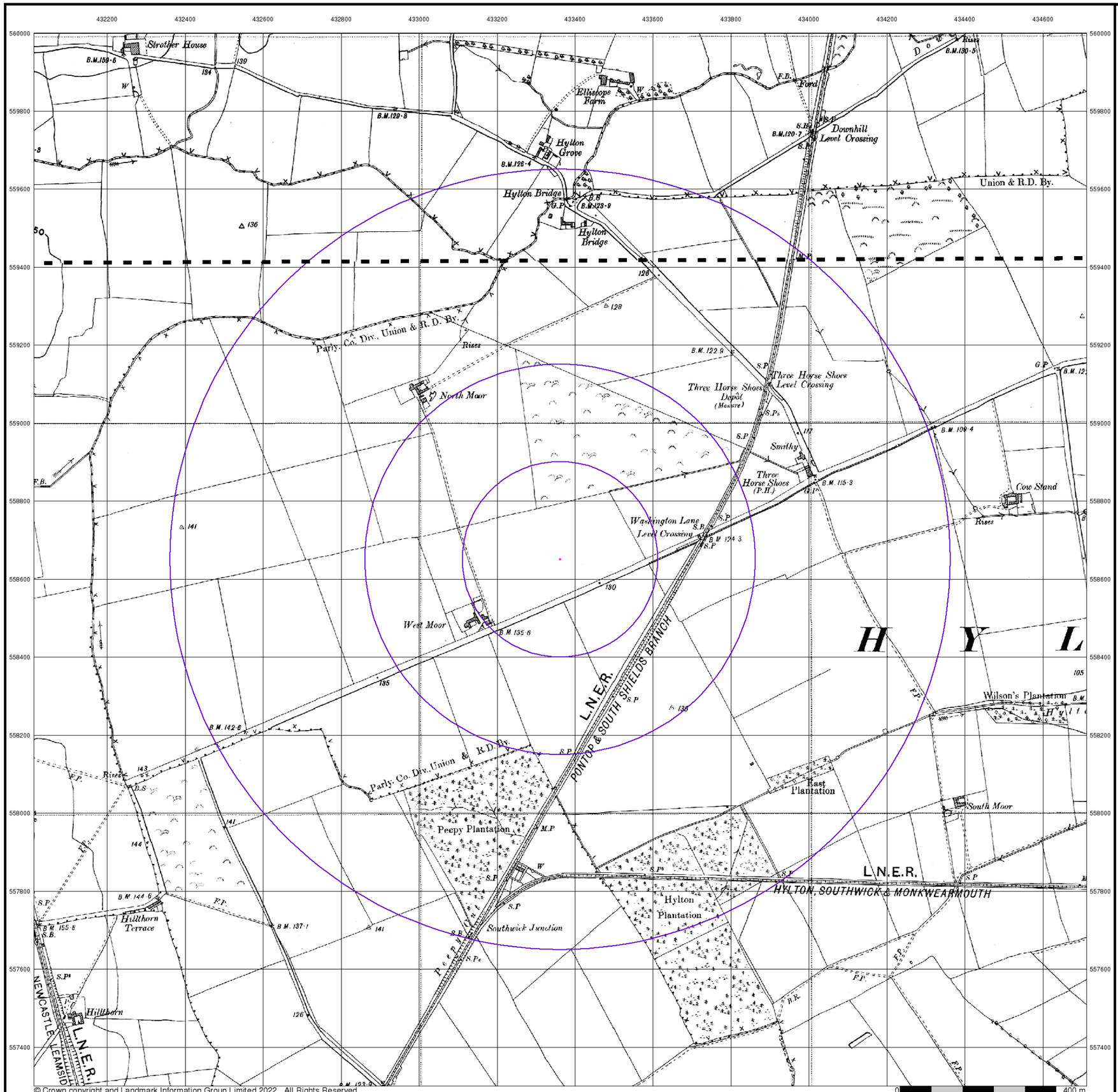

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LANDMARK INFORMATION GROUP®

Durham

Published 1938

Source map scale - 1:10,560

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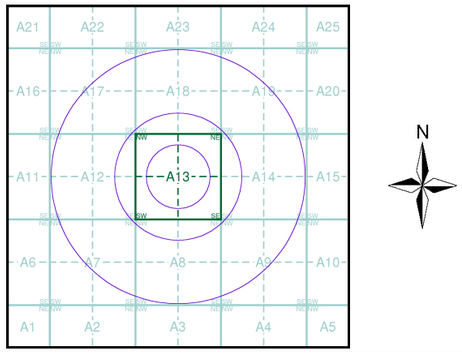
Map Name(s) and Date(s)

007NE
1938
1:10,560

007SE
1938
1:10,560

Historical Map - Slice A



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Order Number:	301180946_1_1
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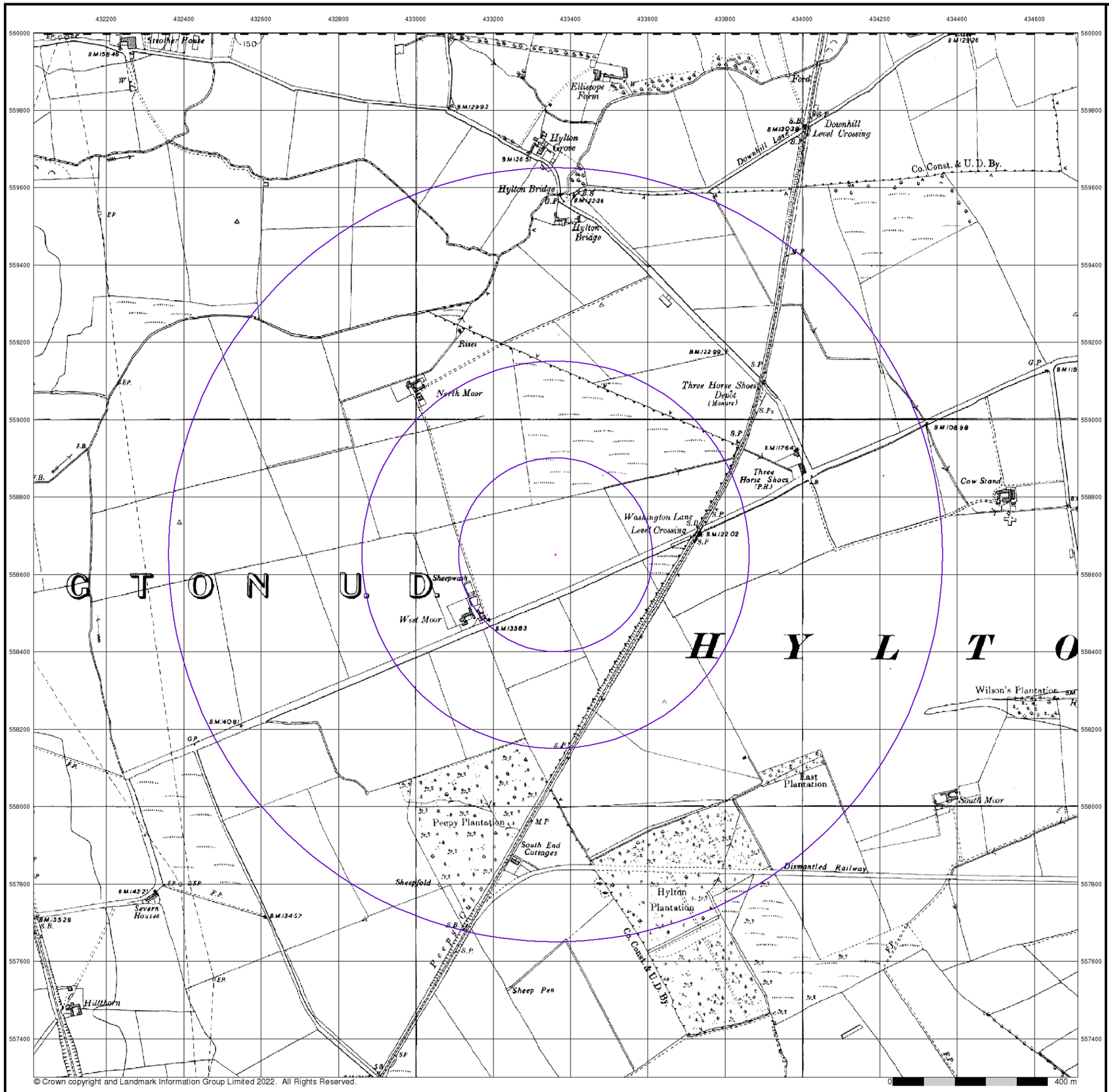

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Ordnance Survey Plan

Published 1951 - 1952

Source map scale - 1:10,000

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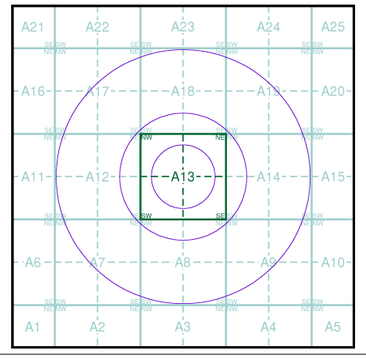
Map Name(s) and Date(s)

NZ36SW
1952
1:10,560

NZ35NW
1951
1:10,560

Historical Map - Slice A



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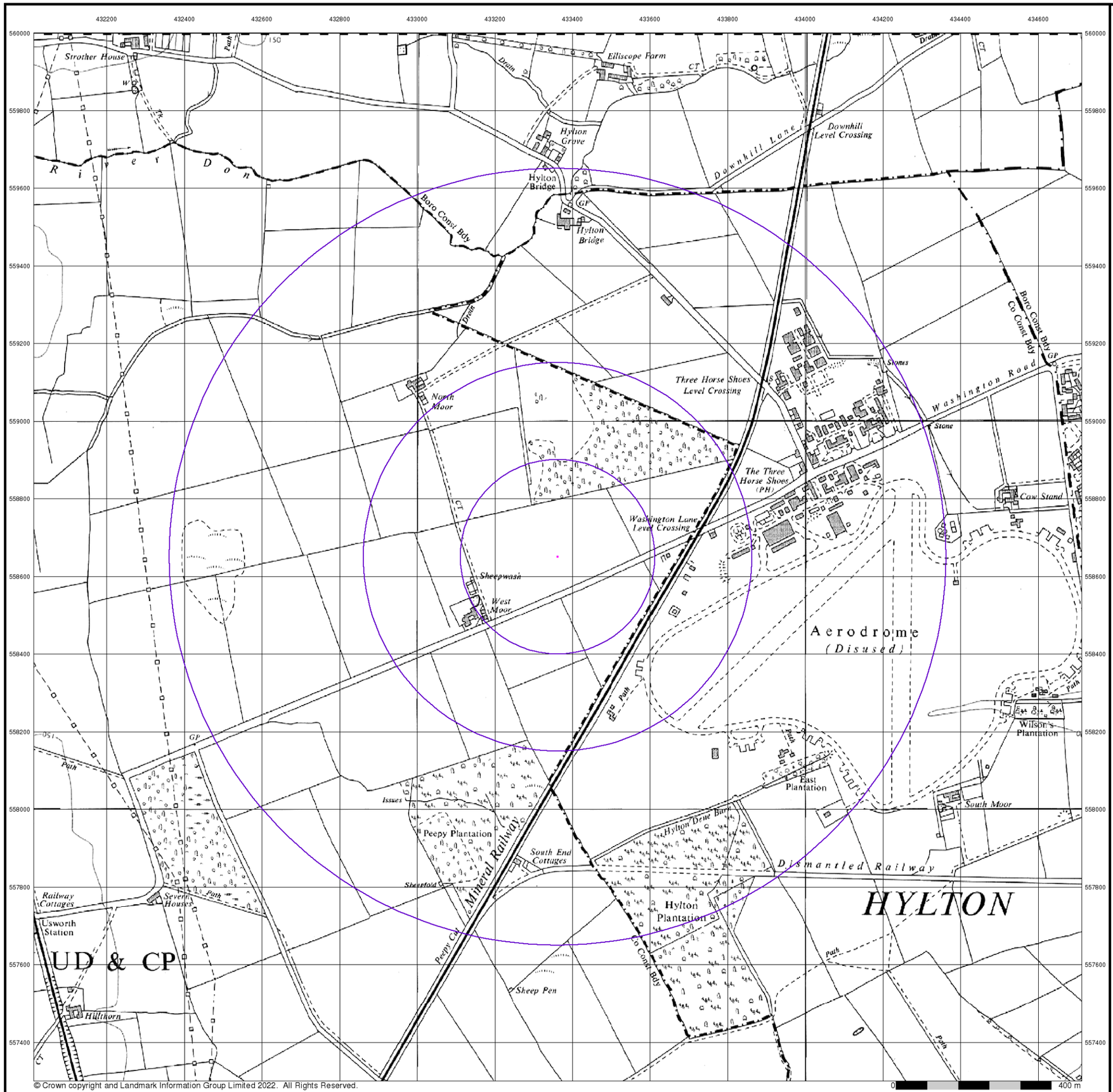

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Ordnance Survey Plan

Published 1967

Source map scale - 1:10,000

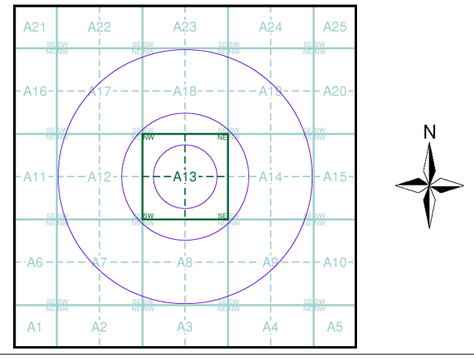
The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some 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)

NZ36SW
1967
1:10,560

NZ35NW
1967
1:10,560

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

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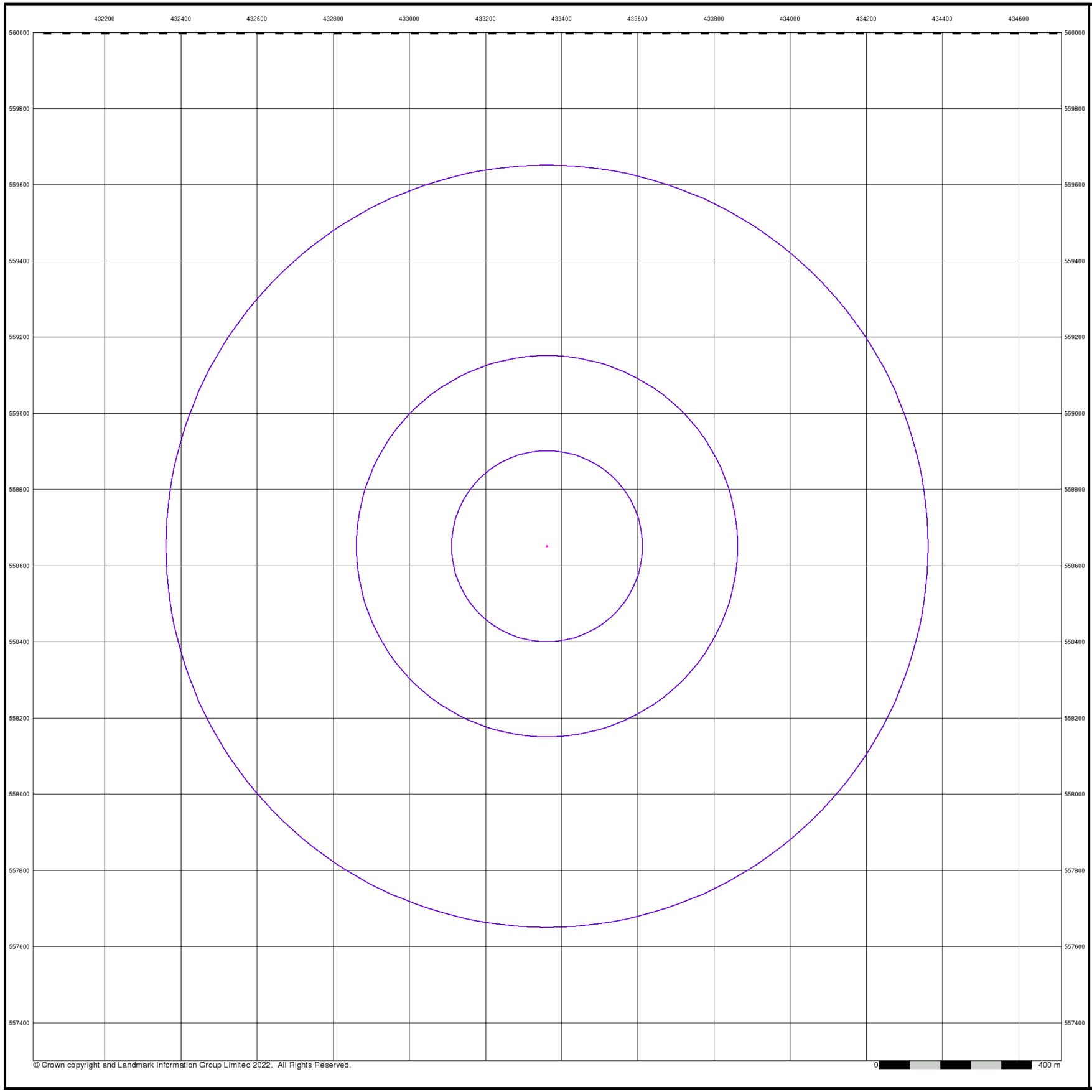

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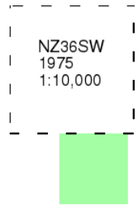
Ordnance Survey Plan

Published 1975

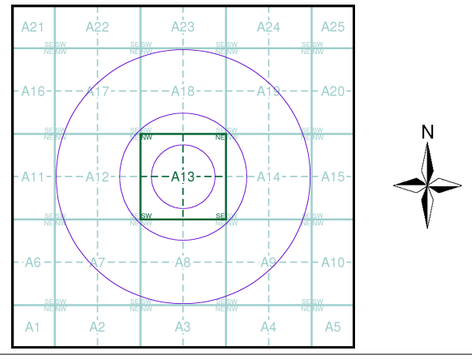
Source map scale - 1:10,000

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

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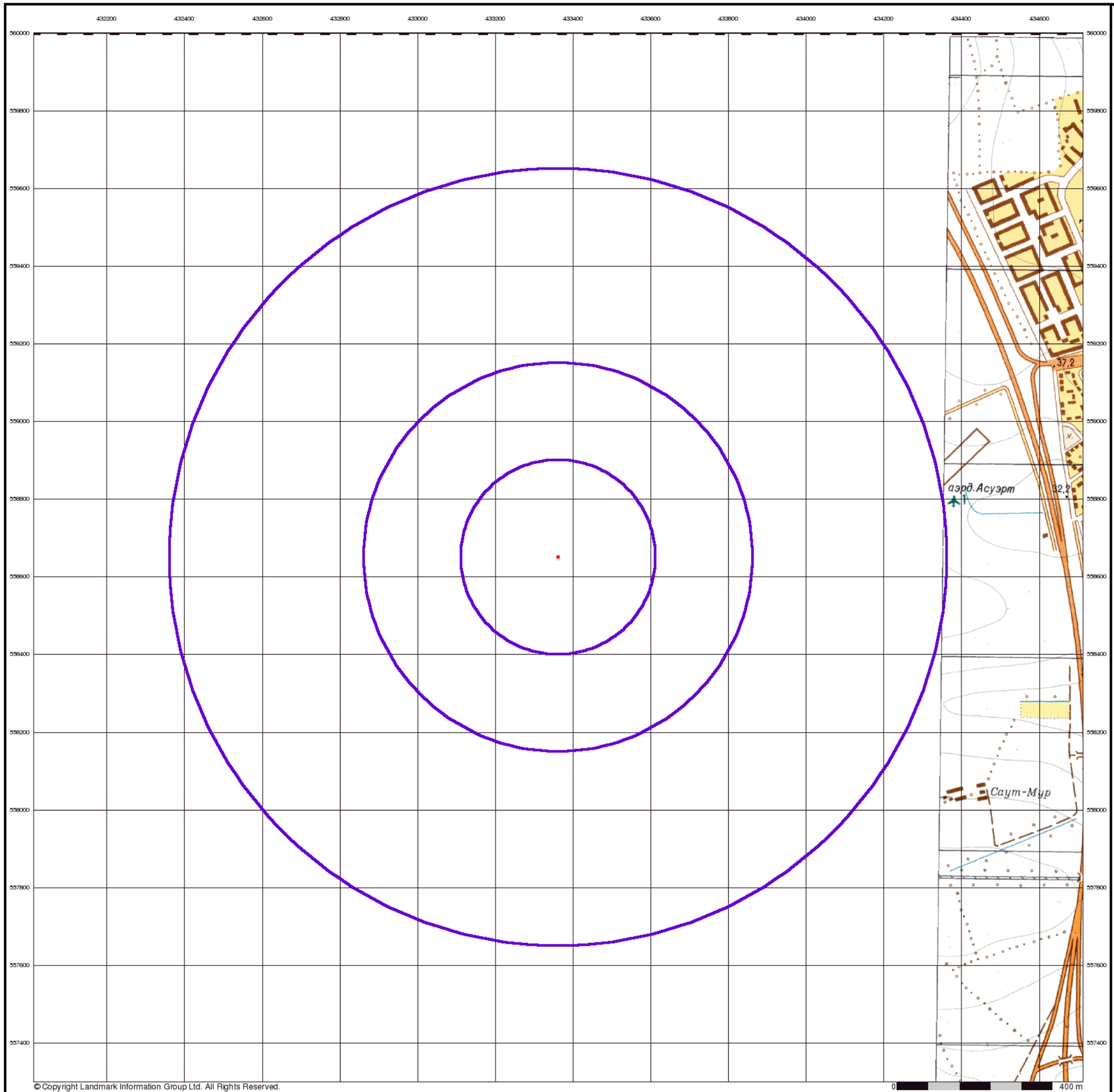

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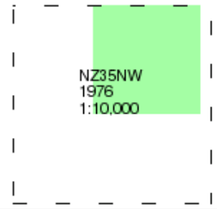
Sunderland

Published 1976

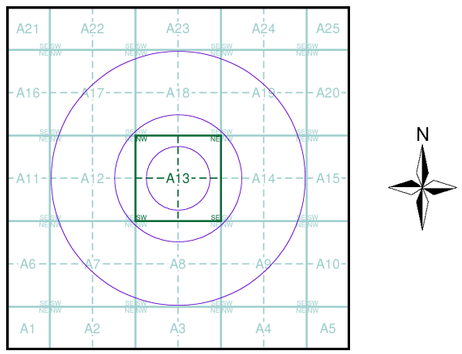
Source map scale - 1:10,000

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 are mapped.

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

Site Details

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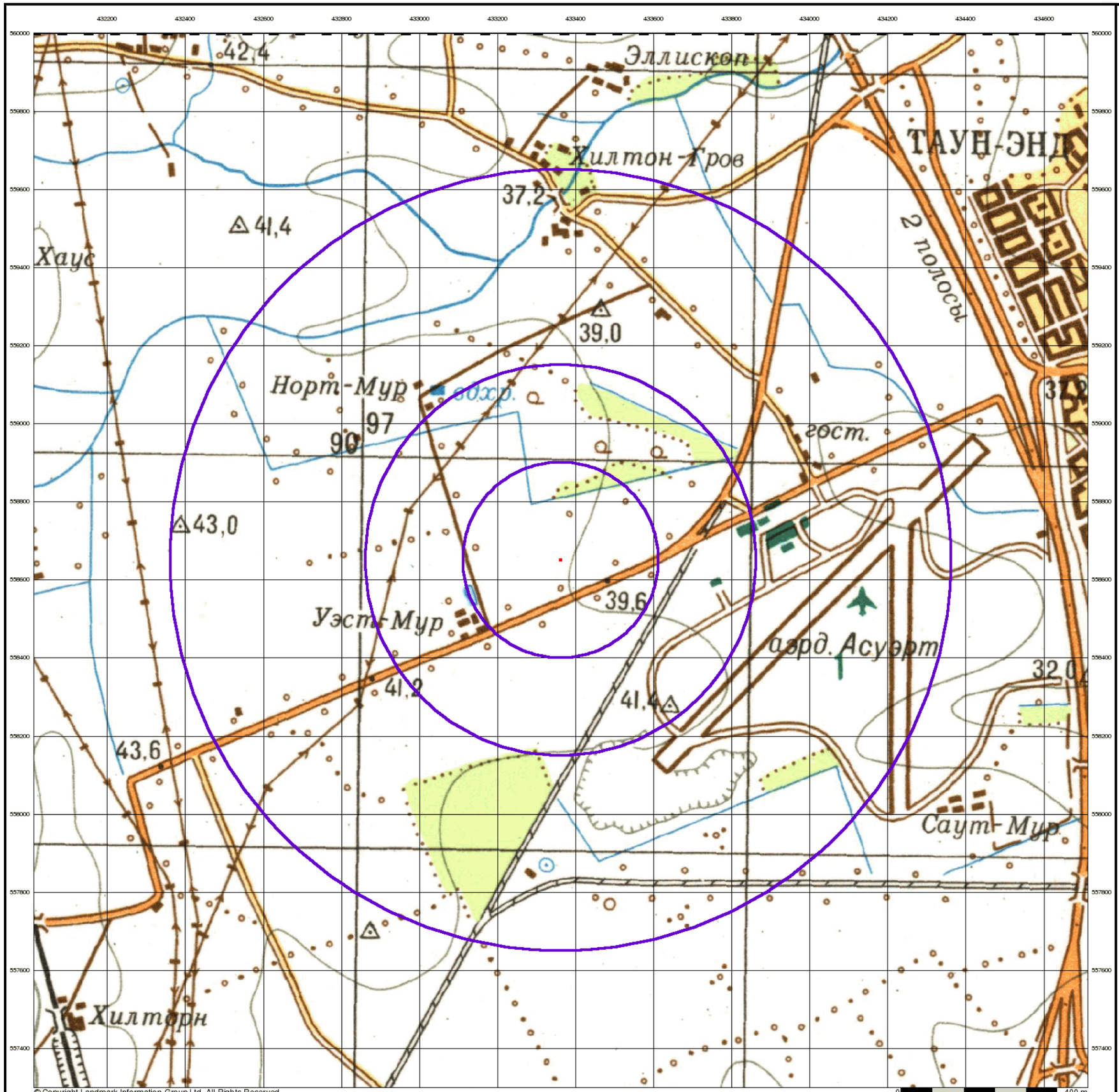

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Newcastle-upon-Tyne

Published 1977

Source map scale - 1:25,000

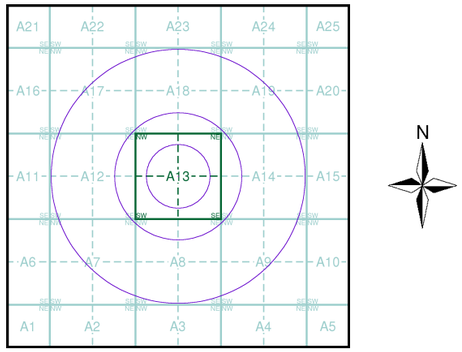
These maps were produced by the Russian military during the Cold War between 1950 and 1997, and cover 103 towns and cities throughout the U.K. The maps are produced at 1:25,000, 1:10,000 and 1:5,000 scale, and show detailed land use, with colour-coded areas for development, green areas, and non-developed 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 are mapped.

Map Name(s) and Date(s)

NZ36
1977
1:25,000

NZ35
1977
1:25,000

Russian 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

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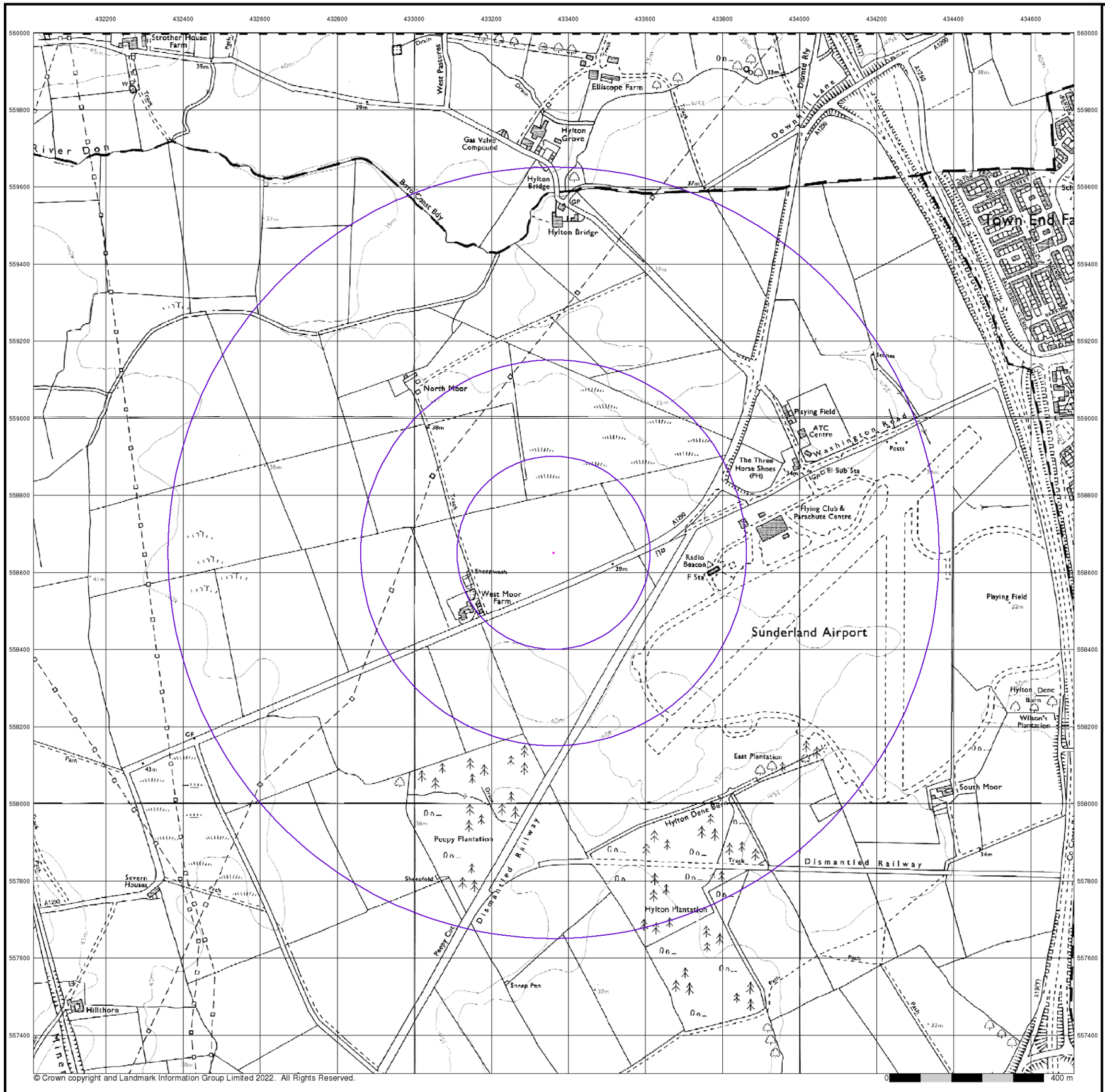

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0 400 m

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Ordnance Survey Plan

Published 1980

Source map scale - 1:10,000

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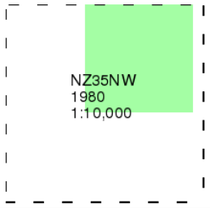
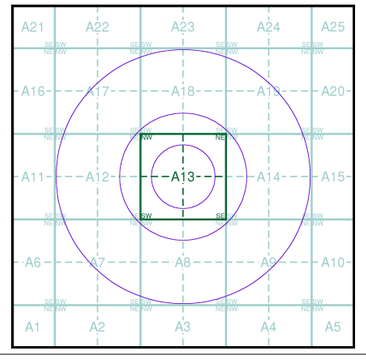
Map Name(s) and Date(s)



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

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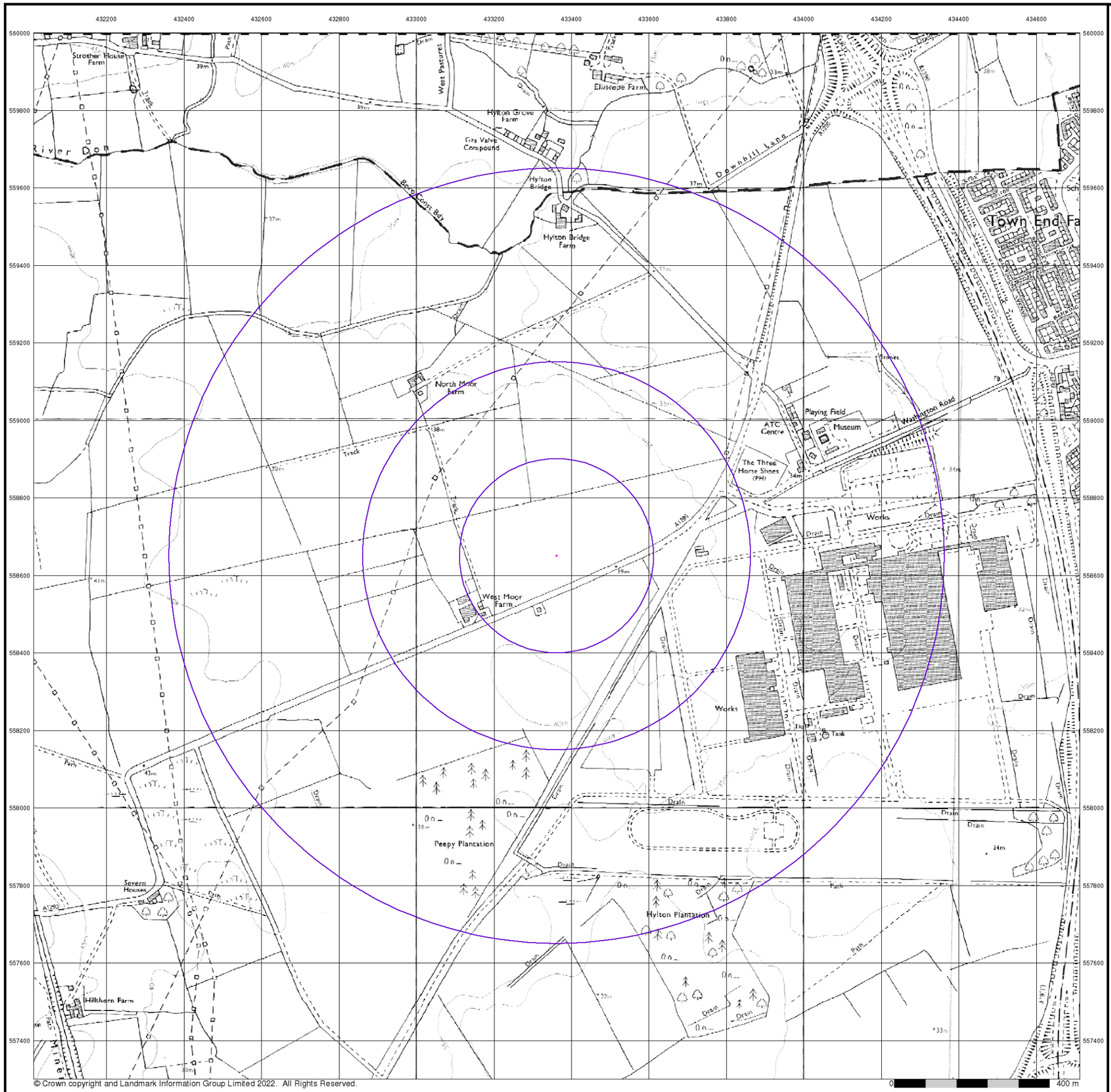

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Ordnance Survey Plan

Published 1990 - 1992

Source map scale - 1:10,000

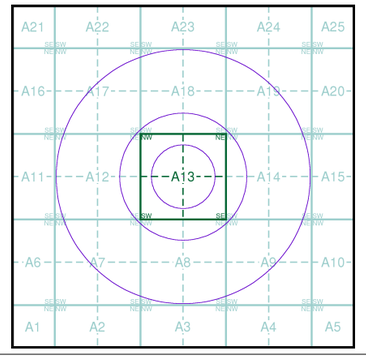
The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some 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)

NZ36SW
1992
1:10,000

NZ35NW
1990
1:10,000

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

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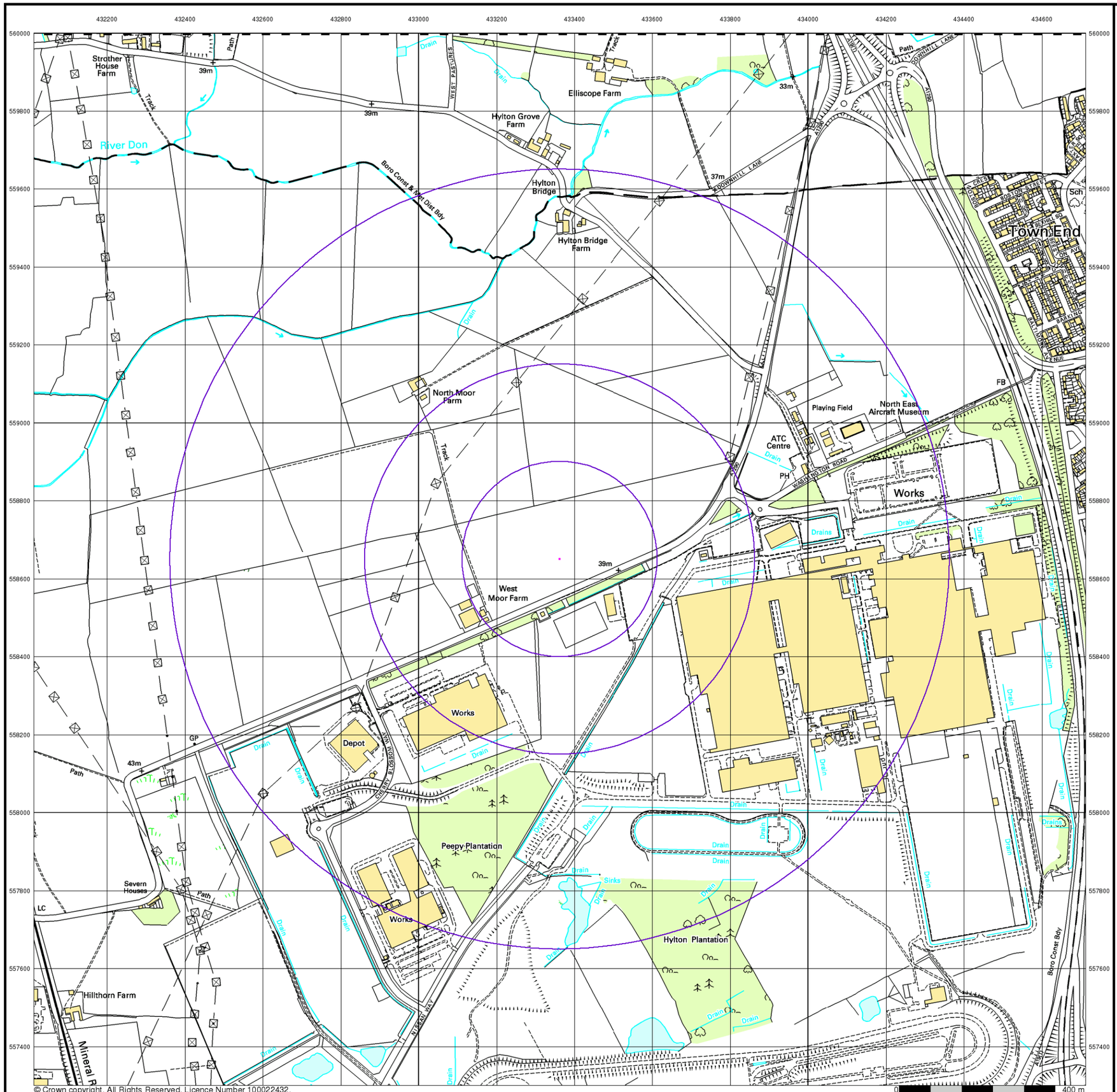

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10k Raster Mapping

Published 2000

Source map scale - 1:10,000

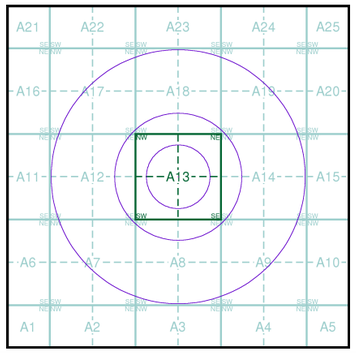
The historical maps shown were produced from the Ordnance Survey`s 1:10,000 colour raster mapping. These maps are derived from Landplan which replaced the old 1:10,000 maps originally published in 1970. The data is highly detailed showing buildings, fences and field boundaries as well as all roads, tracks and paths. Road names are also included together with the relevant road number and classification. Boundary information depiction includes county, unitary authority, district, civil parish and constituency.

Map Name(s) and Date(s)

NZ36SW
2000
1:10,000

NZ35NW
2000
1:10,000

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

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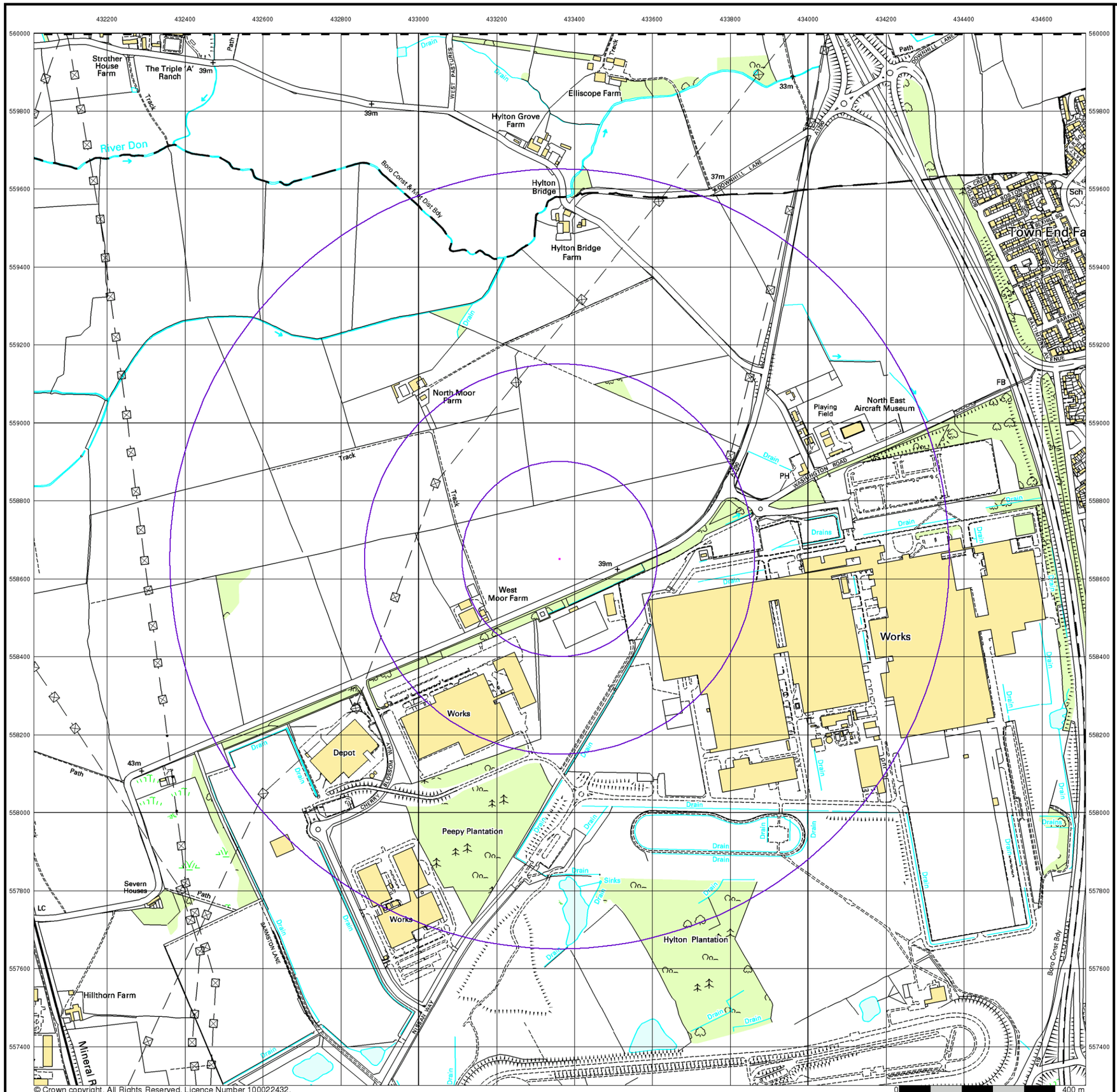

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10k Raster Mapping

Published 2006

Source map scale - 1:10,000

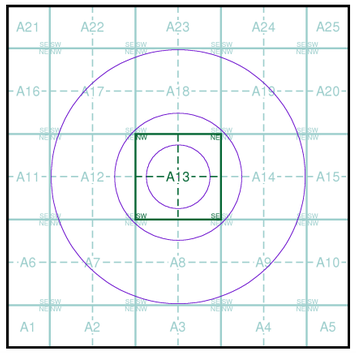
The historical maps shown were produced from the Ordnance Survey`s 1:10,000 colour raster mapping. These maps are derived from Landplan which replaced the old 1:10,000 maps originally published in 1970. The data is highly detailed showing buildings, fences and field boundaries as well as all roads, tracks and paths. Road names are also included together with the relevant road number and classification. Boundary information depiction includes county, unitary authority, district, civil parish and constituency.

Map Name(s) and Date(s)

NZ36SW
2006
1:10,000

NZ35NW
2006
1:10,000

Historical Map - Slice A



Order Details

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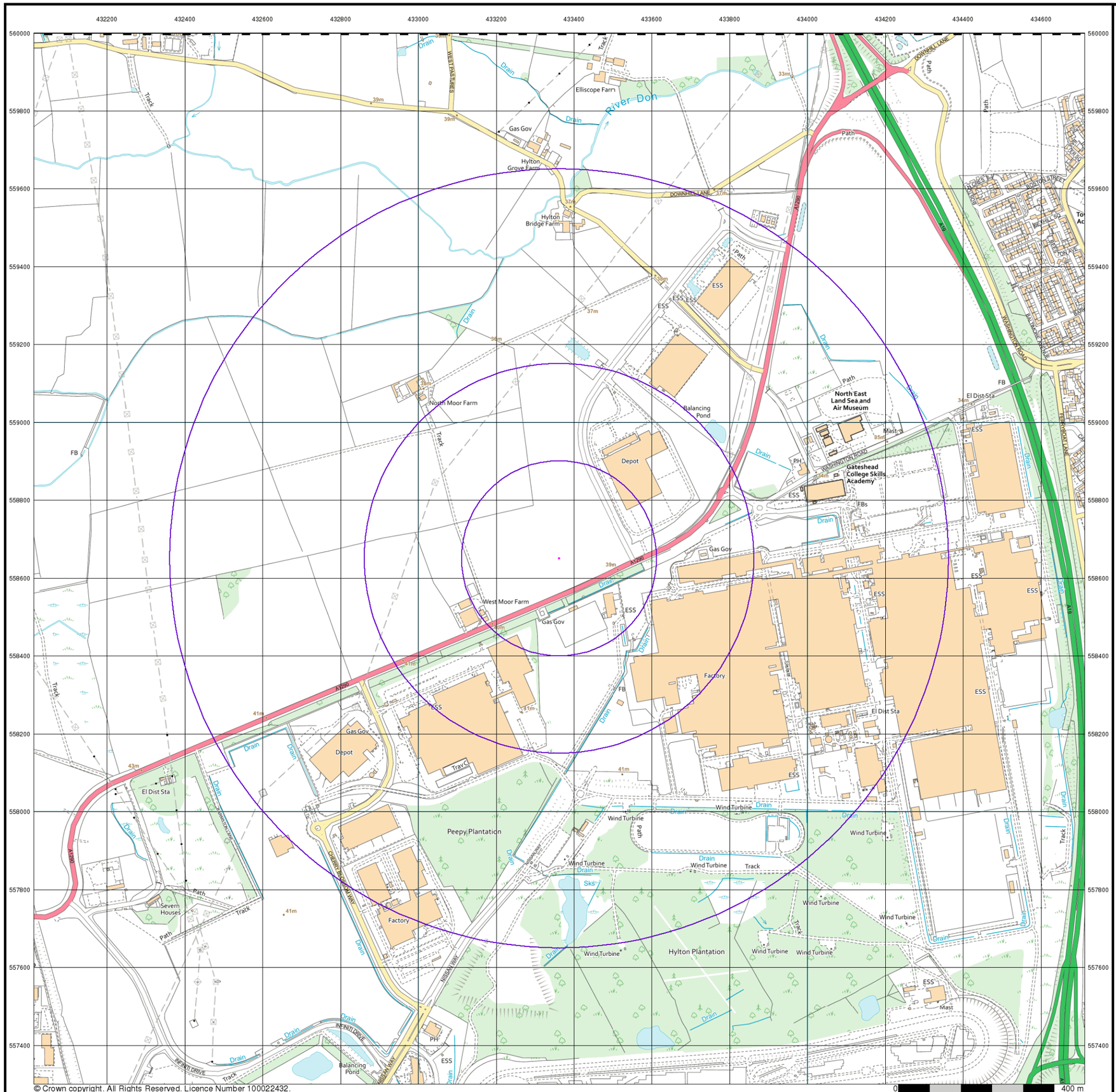

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VectorMap Local

Published 2021

Source map scale - 1:10,000

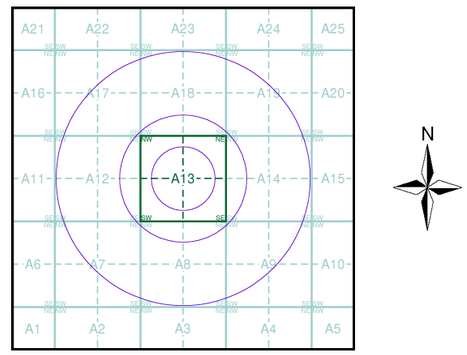
VectorMap Local (Raster) is Ordnance Survey's highest detailed 'backdrop' mapping product. These maps are produced from OS's VectorMap Local, a simple vector dataset at a nominal scale of 1:10,000, covering the whole of Great Britain, that has been designed for creating graphical mapping. OS VectorMap Local is derived from large-scale information surveyed at 1:1250 scale (covering major towns and cities),1:2500 scale (smaller towns, villages and developed rural areas), and 1:10 000 scale (mountain, moorland and river estuary areas).

Map Name(s) and Date(s)

NZ36SW
2021
Variable

NZ35NW
2021
Variable

Historical Map - Slice A



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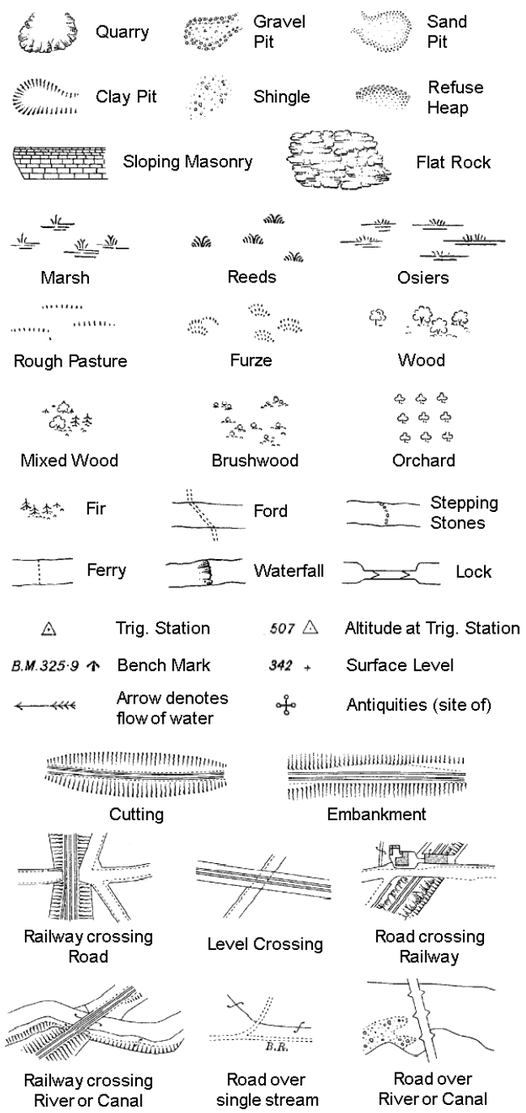
Historical Mapping Legends

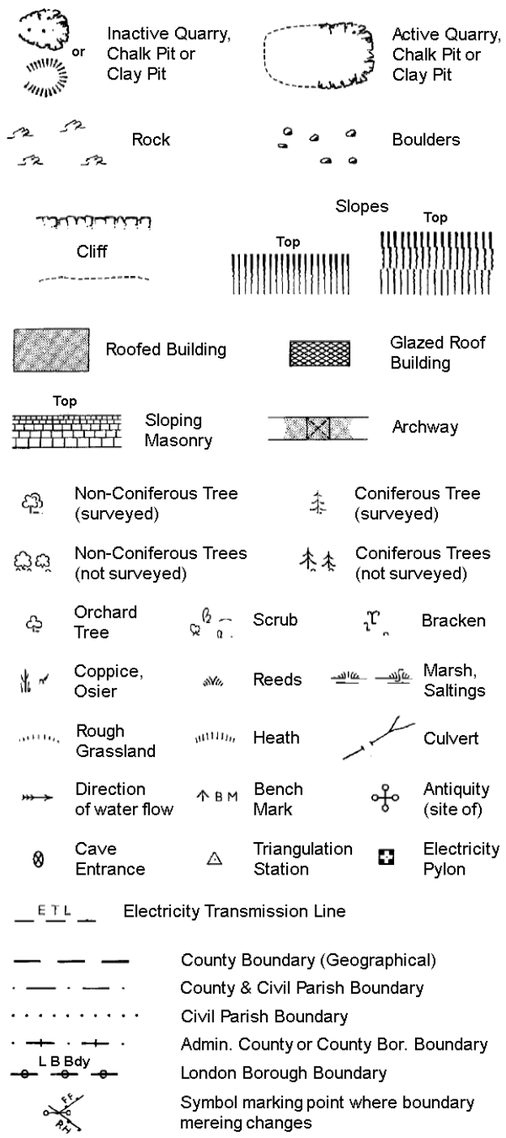
Ordnance Survey County Series and Ordnance Survey Plan 1:2,500



County Boundary (Geographical)
County & Civil Parish Boundary
Administrative County & Civil Parish Boundary
Co. Boro. Bdy.
County Borough Boundary (England)
Co. Burgh Bdy.
County Burgh Boundary (Scotland)

B P B S	Boundary Post or Stone	P.C.B	Police Call Box
B.R.	Bridle Road	P	Pump
E.P	Electricity Pylon	S.P	Signal Post
F.B.	Foot Bridge	St.	Sluice
F.P.	Foot Path	Sp.	Spring
G.P	Guide Post or Board	T.C.B	Telephone Call Box
M.S	Mile Stone	Tr.	Trough
M.P M.R	Mooring Post or Ring	W	Well

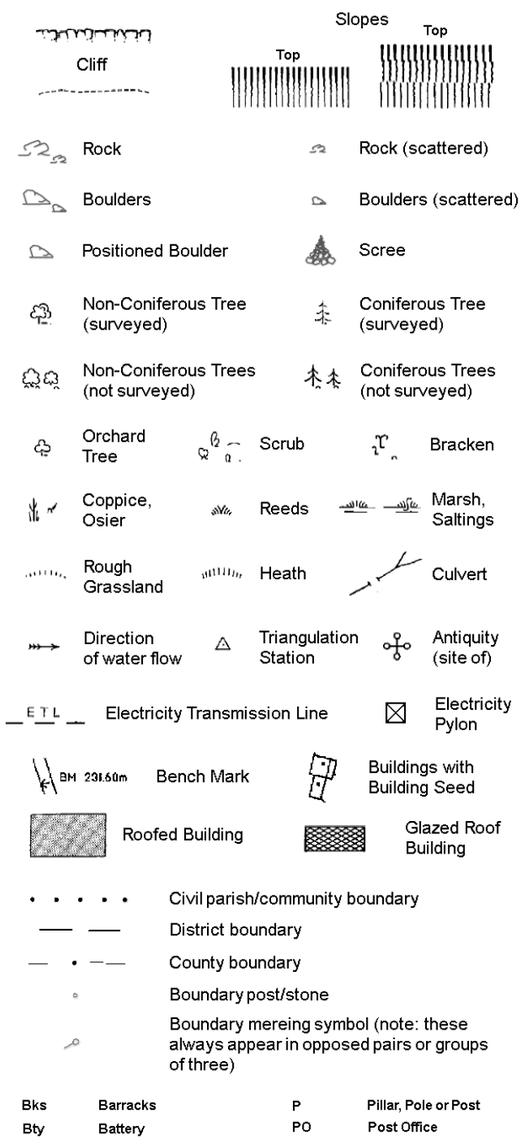
Ordnance Survey Plan, Additional SIMs and Supply of Unpublished Survey Information 1:2,500 and 1:1,250



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

BH	Beer House	P	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
El P	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
H	Hydrant or Hydraulic	TCB	Telephone Call Box
LC	Level Crossing	TCP	Telephone Call Post
MH	Manhole	Tr	Trough
MP	Mile Post or Mooring Post	Wr Pt, Wr T	Water Point, Water Tap
MS	Mile Stone	W	Well
NTL	Normal Tidal Limit	Wd Pp	Wind Pump

Large-Scale National Grid Data 1:2,500 and 1:1,250



Civil parish/community boundary
District boundary
County boundary
Boundary post/stone
Boundary mereing symbol (note: these always appear in opposed pairs or groups of three)

Bks	Barracks	P	Pillar, Pole or Post
Bty	Battery	PO	Post Office
Cemy	Cemetery	PC	Public Convenience
Chy	Chimney	Pp	Pump
Cis	Cistern	Ppg Sta	Pumping Station
Dismtd Rly	Dismantled Railway	PW	Place of Worship
El Gen Sta	Electricity Generating Station	Sewage Ppg Sta	Sewage Pumping Station
El P	Electricity Pole, Pillar	SB, S Br	Signal Box or Bridge
El Sub Sta	Electricity Sub Station	SP, SL	Signal Post or Light
FB	Filter Bed	Spr	Spring
Fn / D Fn	Fountain / Drinking Ftn.	Tk	Tank or Track
Gas Gov	Gas Valve Compound	Tr	Trough
GVC	Gas Governer	Wd Pp	Wind Pump
GP	Guide Post	Wr Pt, Wr T	Water Point, Water Tap
MH	Manhole	Wks	Works (building or area)
MP, MS	Mile Post or Mile Stone	W	Well

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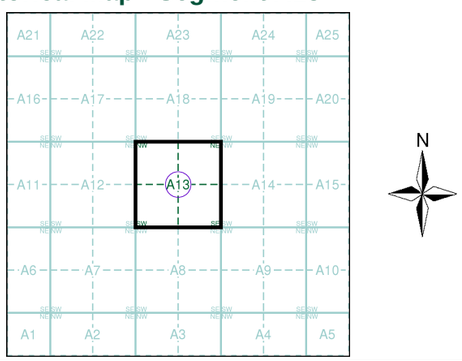
Historical Mapping & Photography included:

Historical Map - Segment A13



Order Details

Order Number:	301180946_1_1
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Slice:	A
Site Area (Ha):	0.01
Search Buffer (m):	100

Site Details

Site at 433100, 558820

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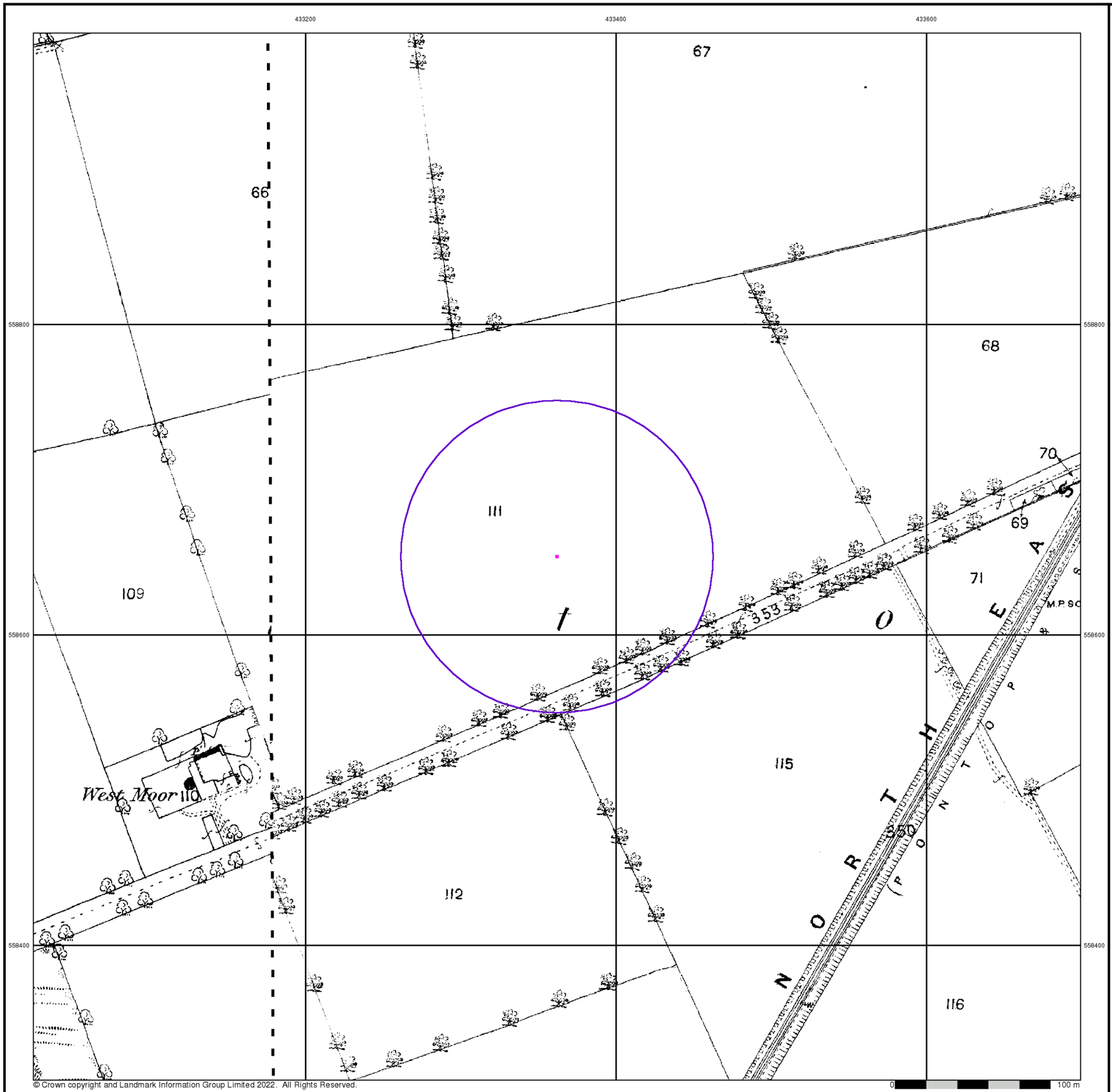

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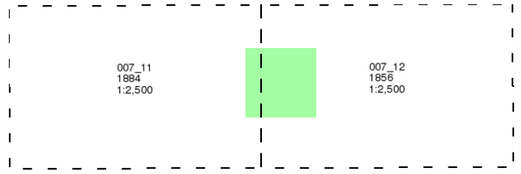
Durham

Published 1856 - 1884

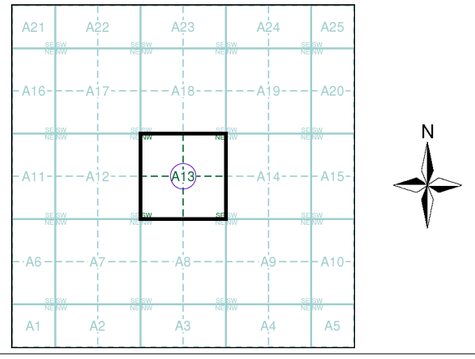
Source map scale - 1:2,500

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 and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below 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.

Map Name(s) and Date(s)



Historical Map - Segment A13



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Site Details

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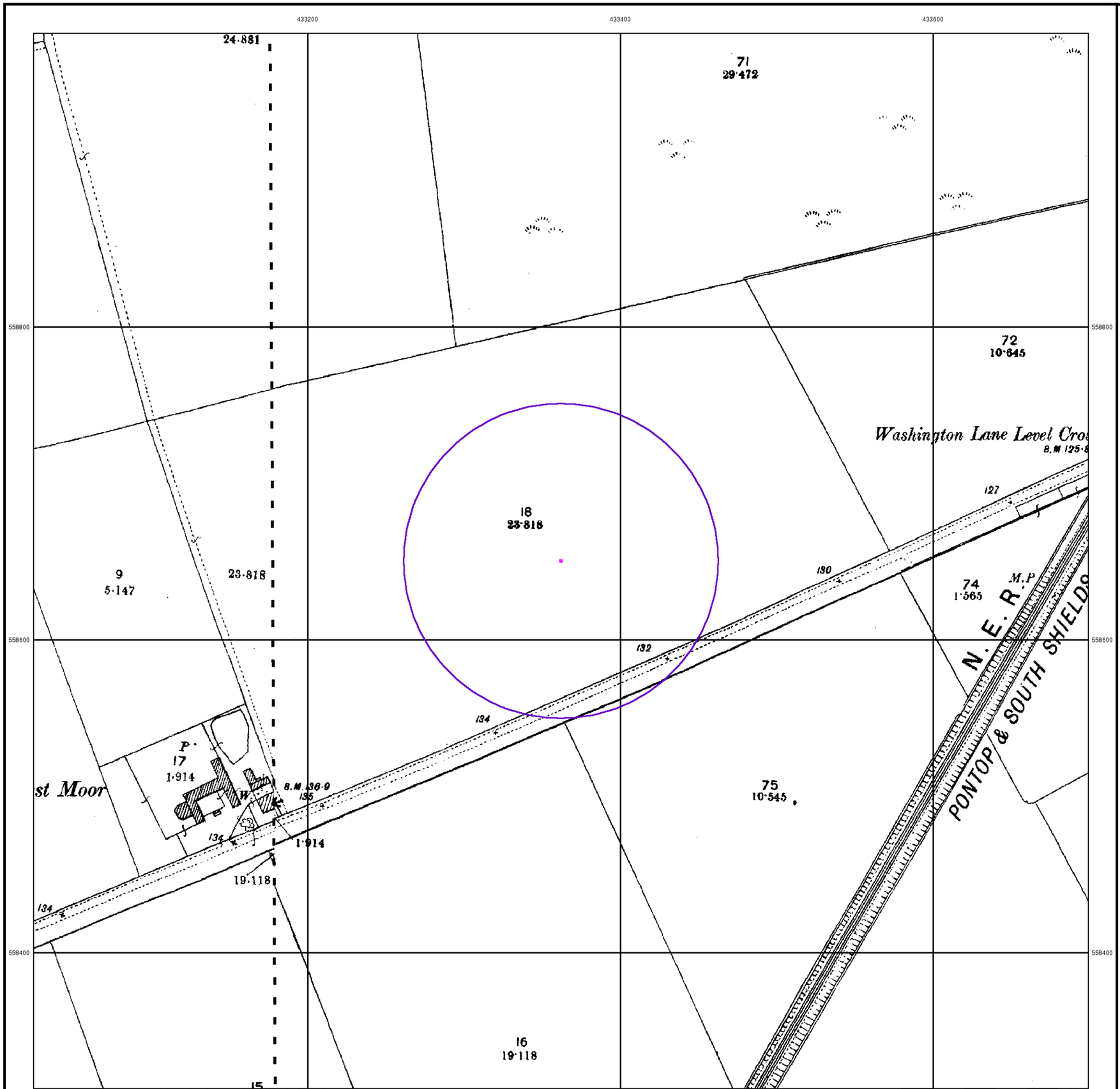

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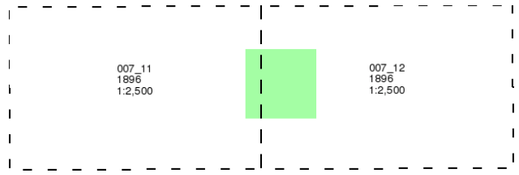

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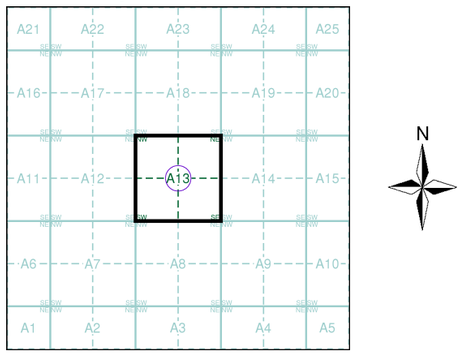

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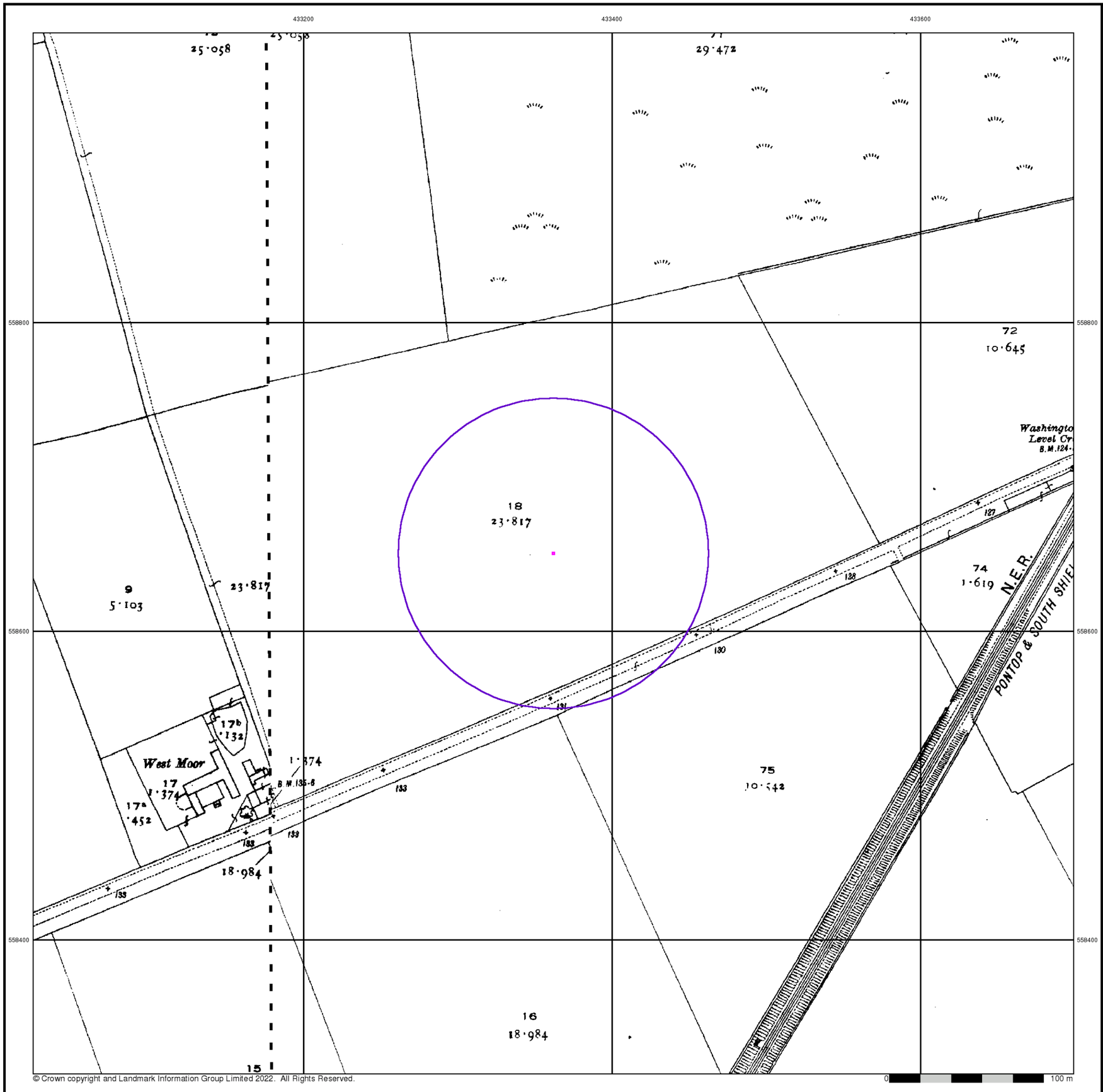

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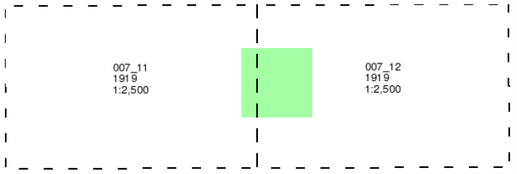

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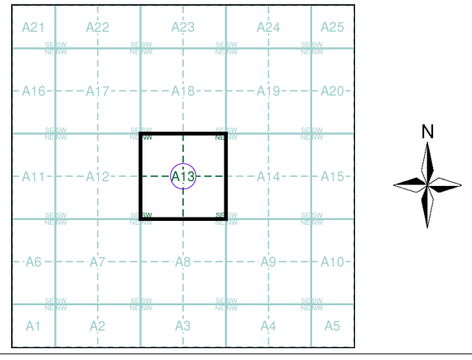

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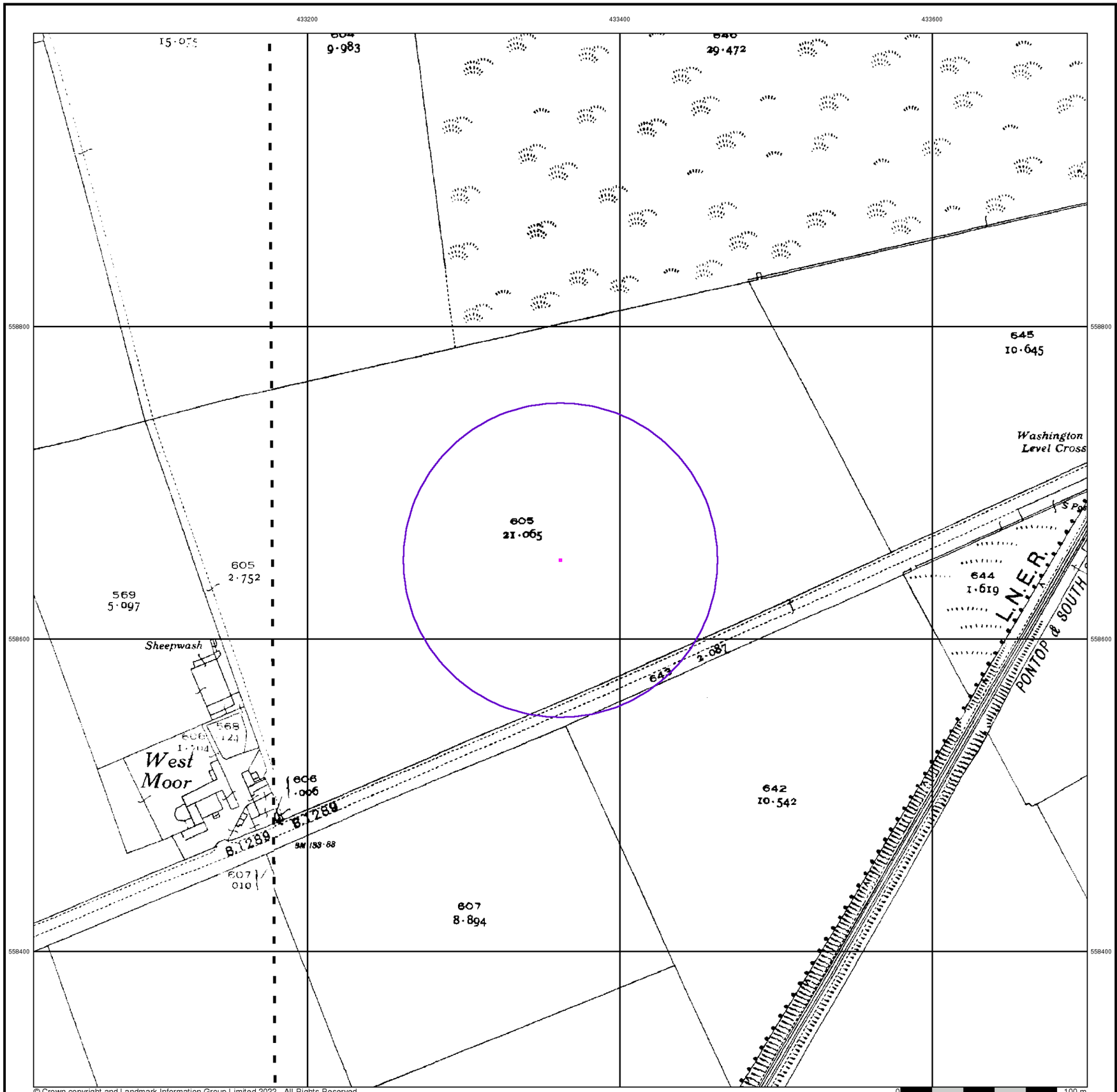

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Durham

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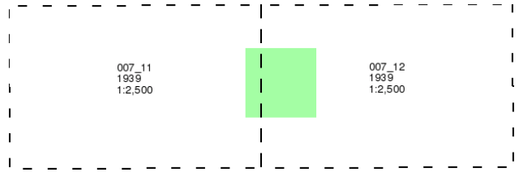

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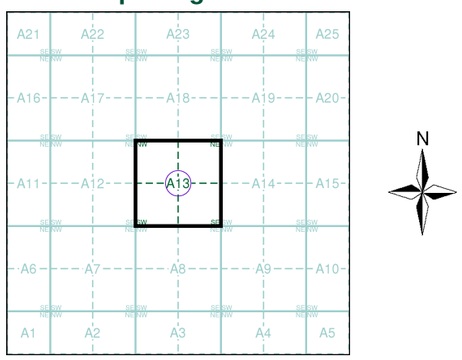

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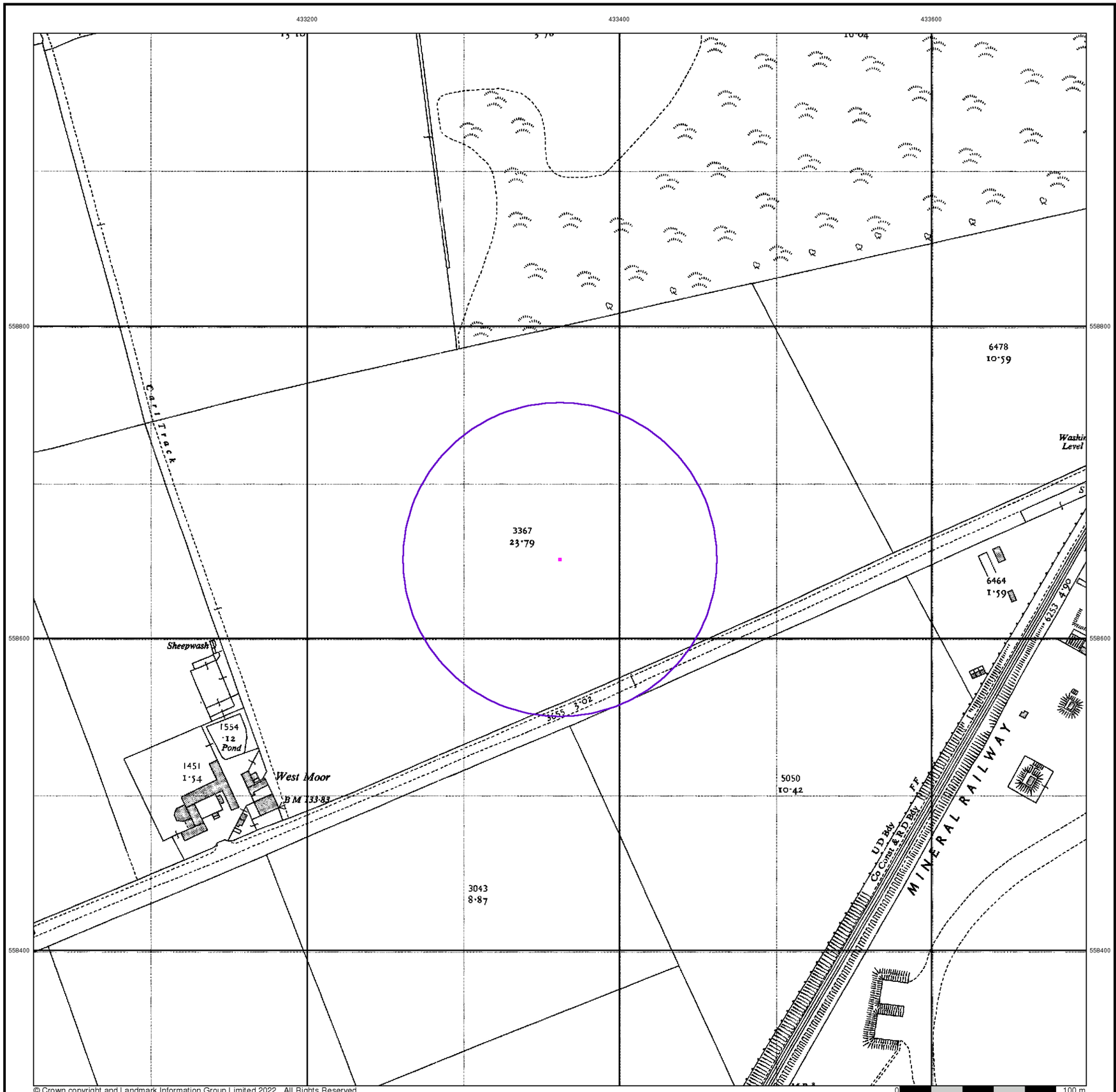

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Ordnance Survey Plan

Published 1959

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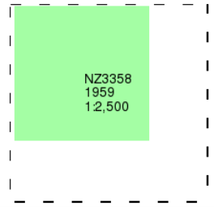

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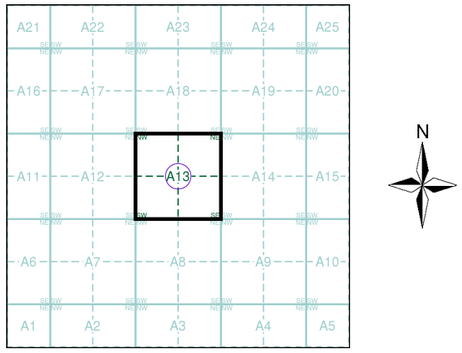

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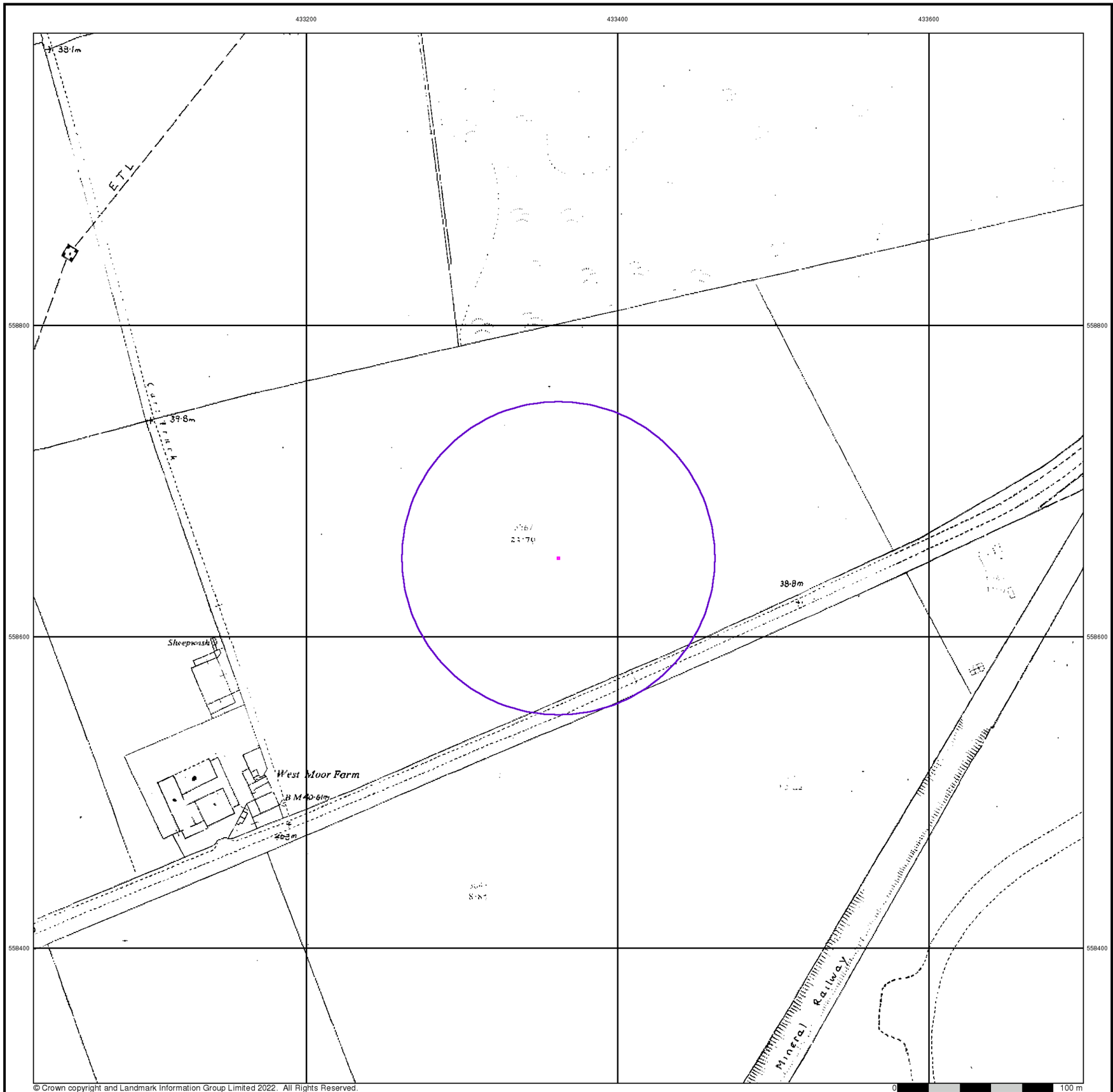

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Additional SIMs

Published 1981

Source map scale - 1:2,500

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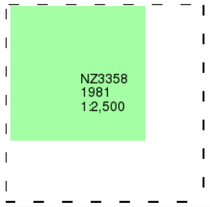

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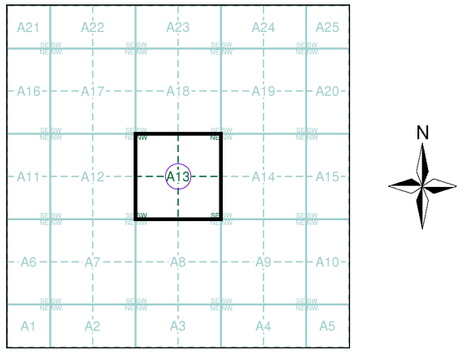

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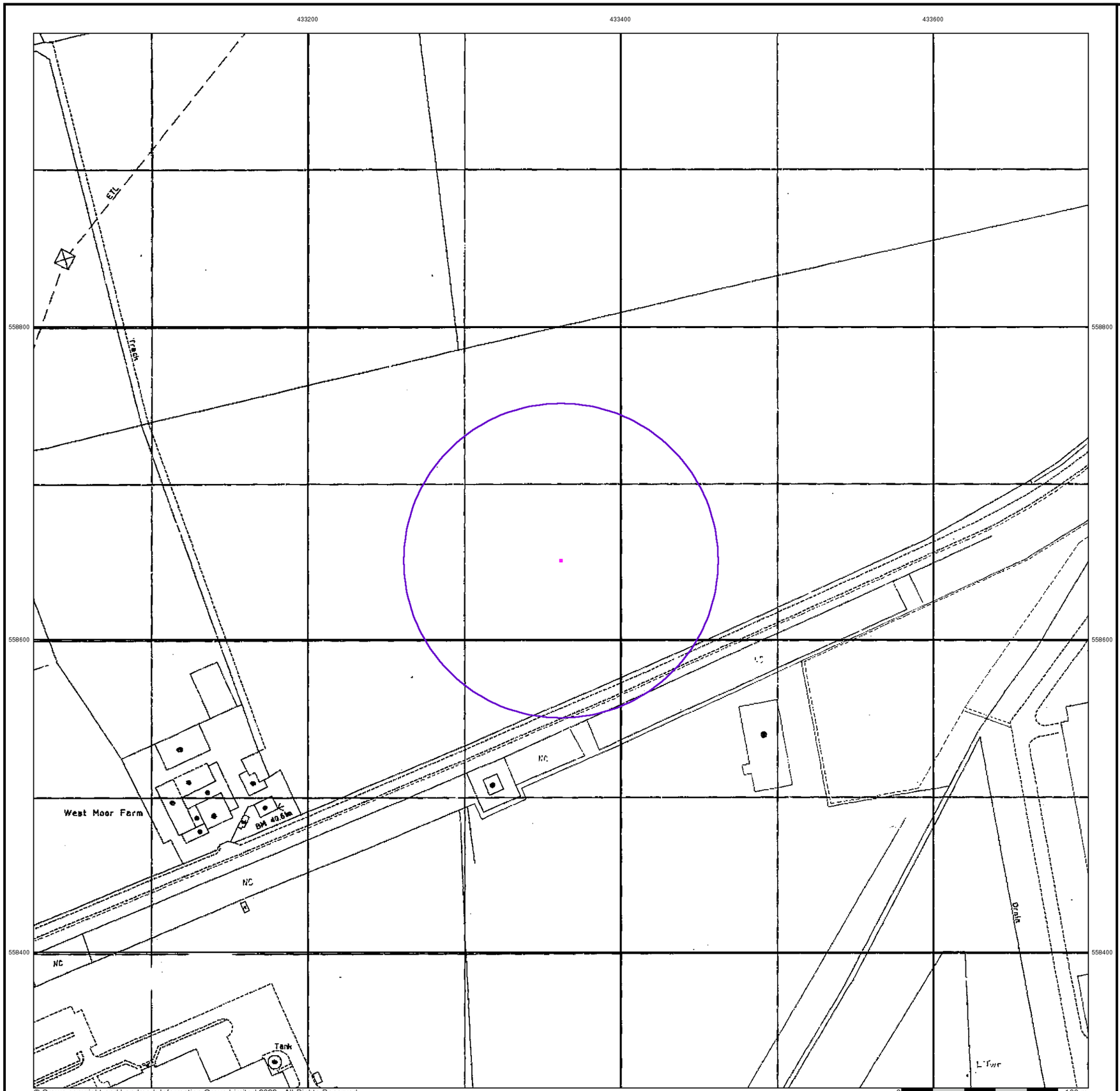

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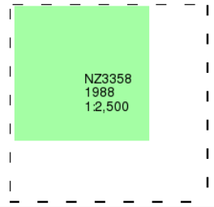

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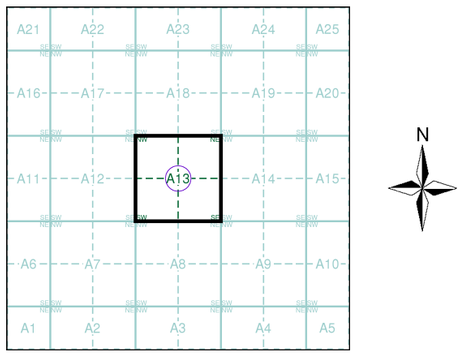

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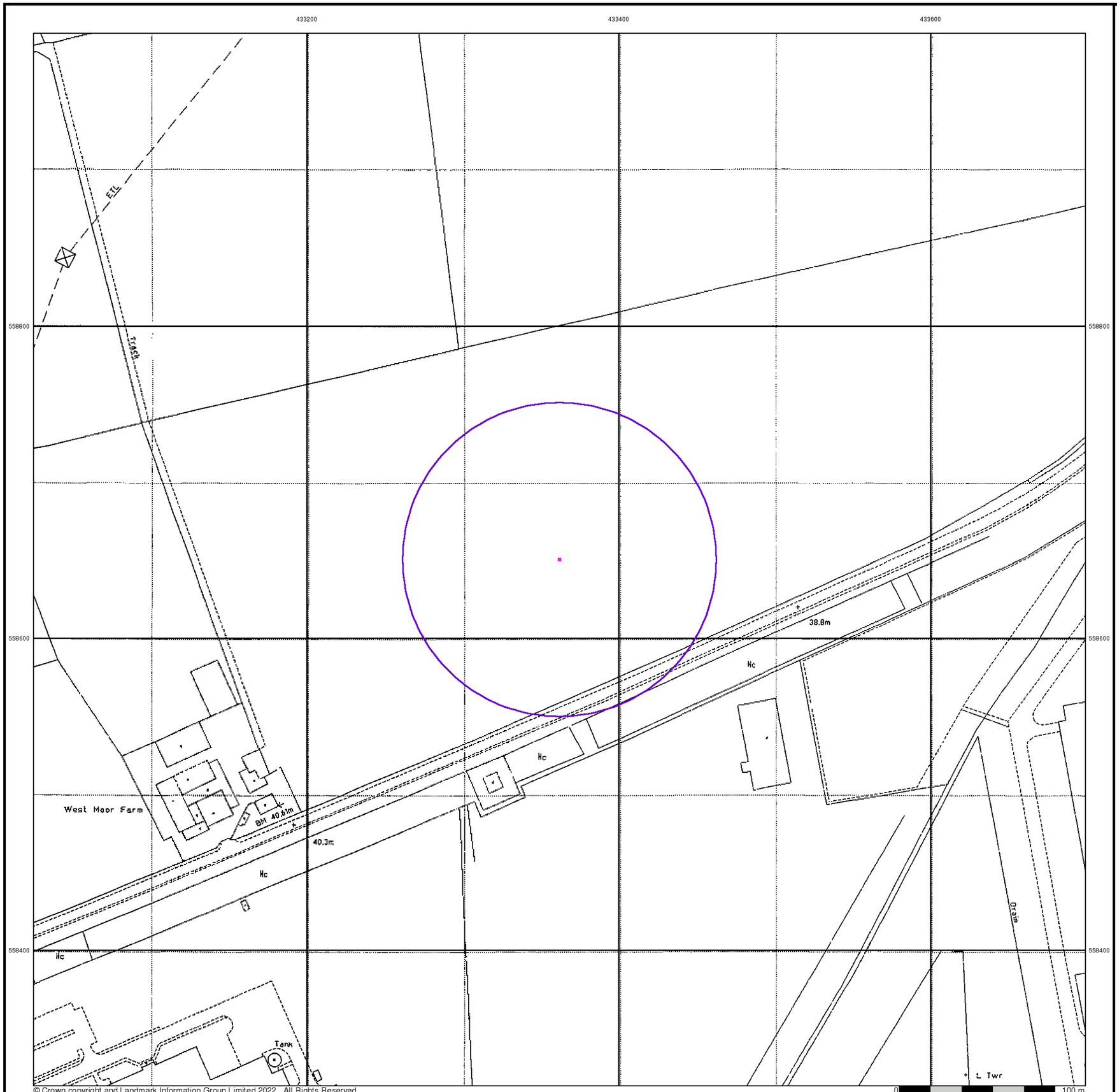

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Large-Scale National Grid Data

Published 1993

Source map scale - 1:2,500

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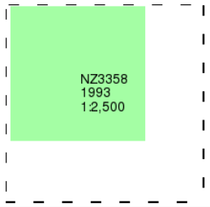

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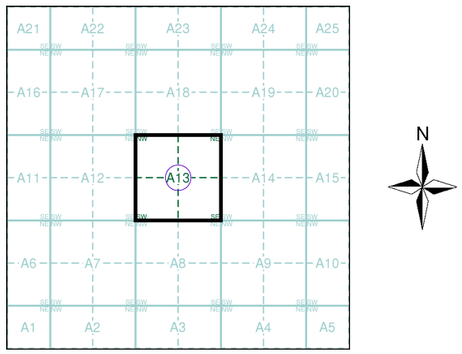

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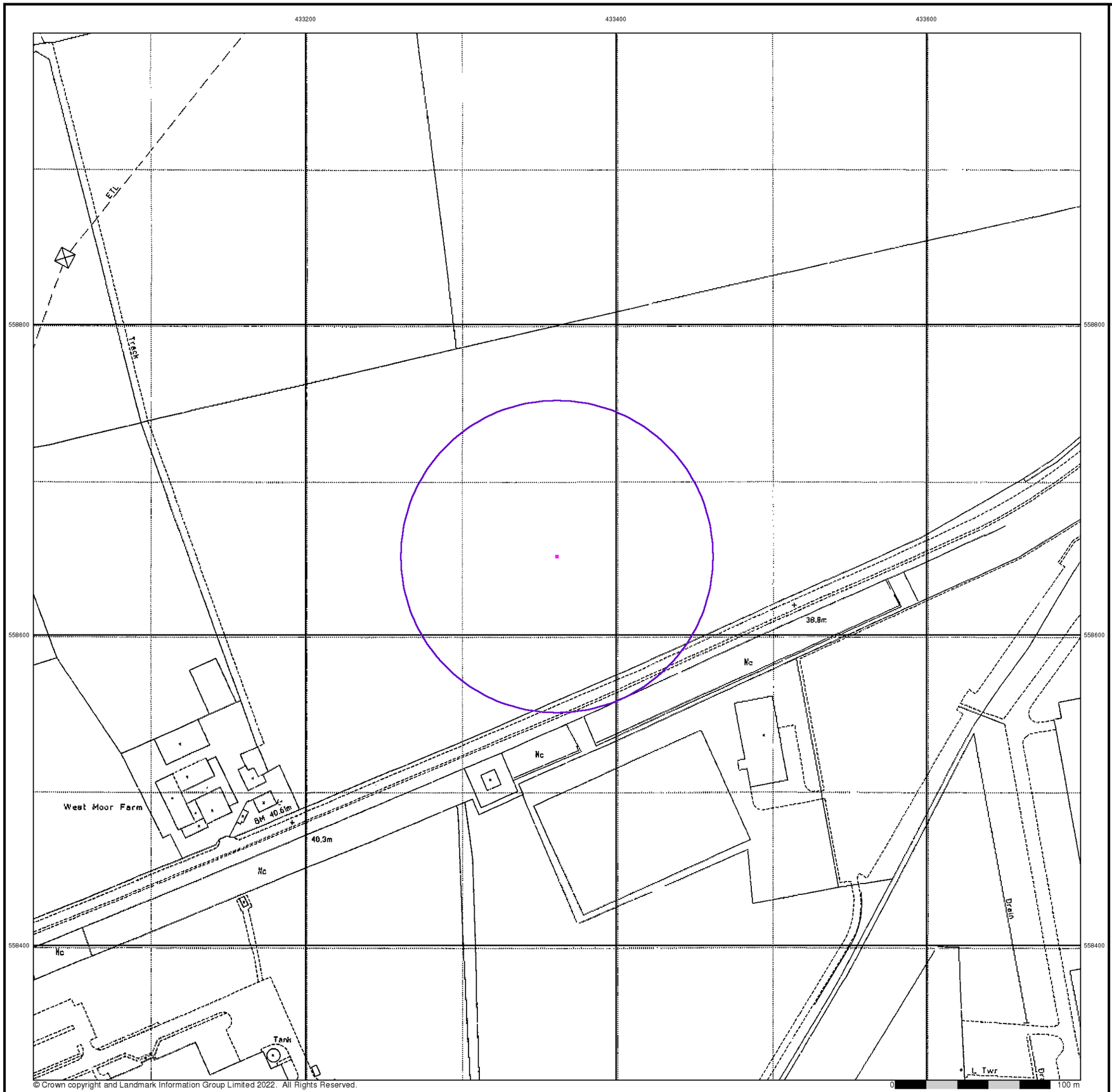

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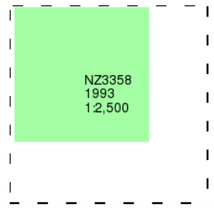

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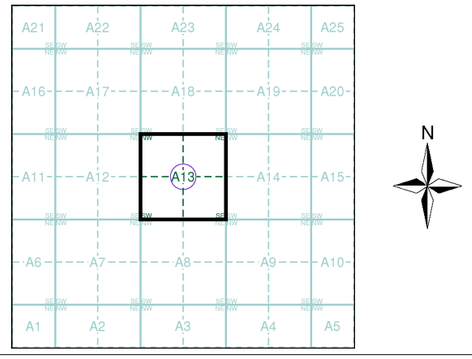

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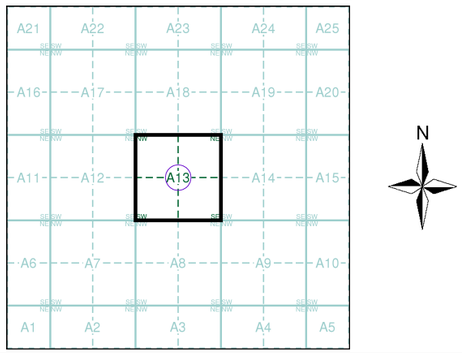
Historical Aerial Photography

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



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Appendix B

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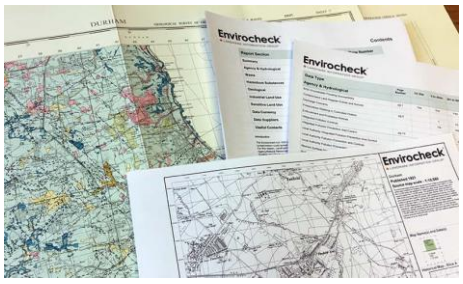
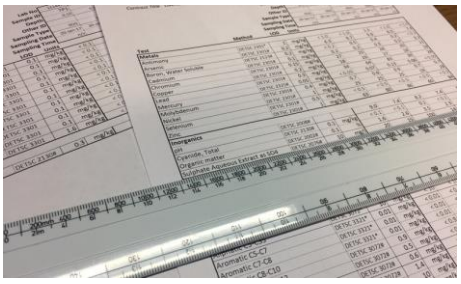






Factual Site Investigation Report

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

ISO 9001:2015 Quality Management
ISO 14001:2015 Environmental Management
CHAS Accredited Contractor
North East England Chamber of Commerce

FACTUAL SITE INVESTIGATION REPORT

ENVISION GIGA FACTORY, SUNDERLAND

TABLE OF CONTENTS

APPENDICES

Revision	Date	Prepared By	Signed
Final	January 2022	A Cutts *Senior Engineering Geologist*	
		Checked By	
		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

SOLMEK

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

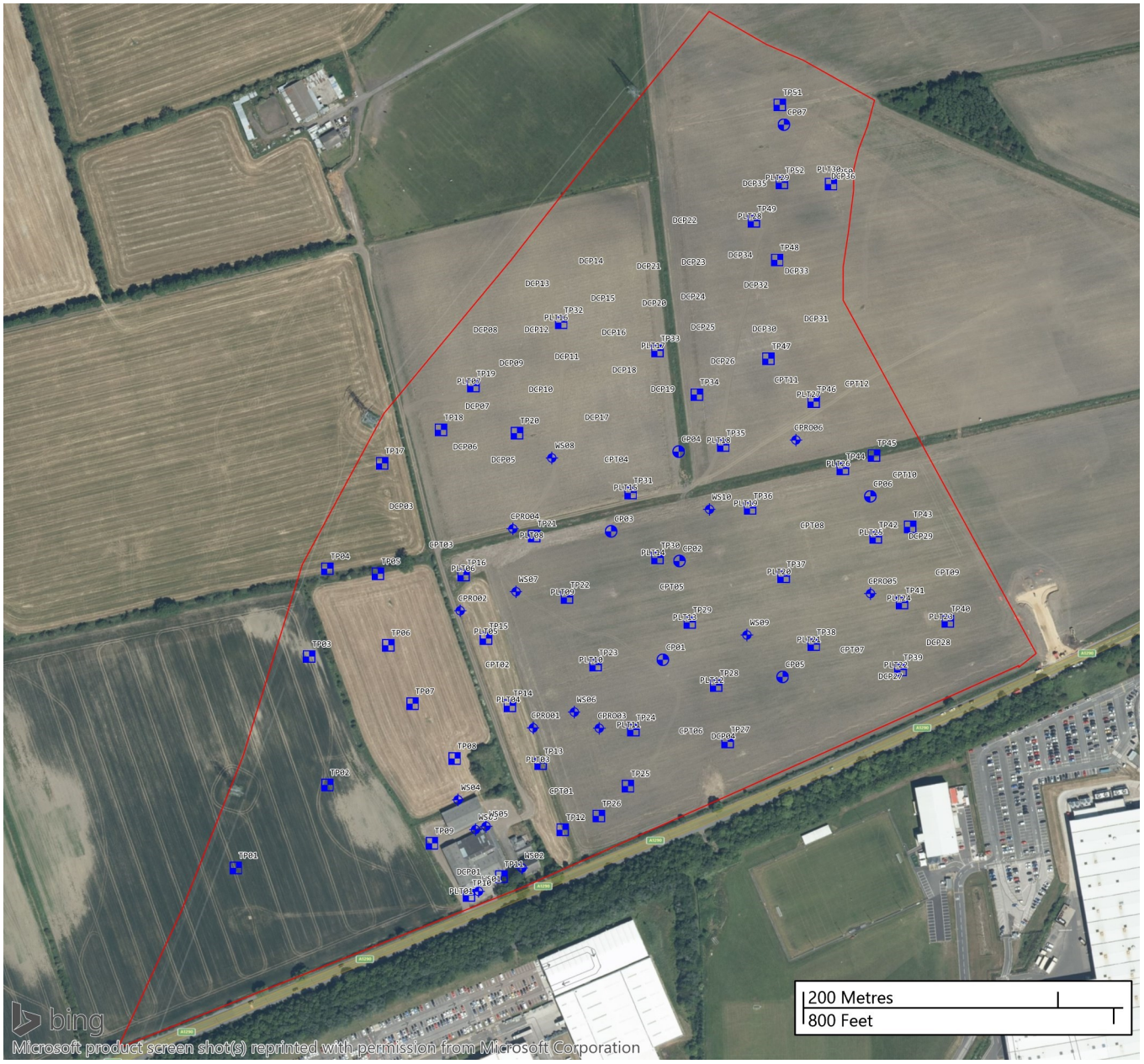
Figure 1

Scale

1:20000 @ A4 [DO NOT SCALE]

Legend Key

Project Bounds - Project Bounds



SOLMEK
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 - CP
- Locations By Type - TP
- Project Bounds - Project Bounds

APPENDIX B

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Borehole Log

Scale 1:50 Sheet 1 of 2

CPRO01

Contract no:	S211001	**Site:**	Envision Giga Factory, Sunderland	**Driller:**	BBL
				Plant used:	Dando 2000 and Beretta T59
				Started:	19/10/2021
Client:	Wates Construction North East			**Ended:**	19/10/2021
Method:	Cable Percussive Rotary Core follow on			**Backfilled:**	21/10/2021

GL (AOD):	39.32m	
Easting:	433173	
Northing:	558602	
Logged:	SM	
Status:	FINAL	

Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing						
					Depth (m)	Type	Results				
		0.30	39.02	TOPSOIL/REWORKED GROUND: Grass over dark brown slightly 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					
					0.30 - 0.40	B					
				Stiff consistency light brown mottled grey slightly sandy slightly gravelly CLAY. Gravel is angular to sub rounded fine to coarse of sandstone, siltstone, mudstone and quartz. (PELAW CLAY MEMBER)	0.50 - 0.60	ES					
					0.70 - 0.80	B					
					1.20 - 1.40	ES	53 blows [450mm]				
		1.40	37.92		1.20 - 1.65	U					
				Firm becoming stiff consistency 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 and mudstone. Cobbles are sub angular of sandstone. (PELAW CLAY MEMBER)	1.65 - 1.70	B					
					2.00 - 2.45	SPT (S)	N=17 (2,2/3,4,5,5)				
					2.00 - 2.45	B+D					
					2.40 - 2.50	ES					
					3.00 - 3.45	U	136 blows [450mm]				
					3.45 - 3.50	B					
		3.70	35.62	Very weak to weak thinly laminated dark grey highly weathered SILTSTONE. Fractures: Horizontal to sub horizontal closely to medium spaced undulating and smooth. (PENNINE MIDDLE COAL MEASURES)	4.00 - 4.03	SPT (S)	N=50+ (25 for 10mm/50 for 15mm)				
					4.00 - 4.45	B+D					
					4.50 - 6.00	C		100	58	37	NI 140 200
					6.00 - 7.50	C		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 planar and rough. (PENNINE MIDDLE COAL MEASURES)	7.50 - 9.00	C		100	63	61	100 300 390
					9.00 - 10.50	C		97	67	61	40 210 530

Hole Diameter		Casing Depths		General Remarks
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)	
4.50 15.00	150 100	4.50	150	1. 1.2m hand excavated inspection pit. 2. Groundwater encountered at 4.20m and 8.40m. 3. Borehole backfilled on completion.

Chiselling		
From (m)	To (m)	Time (hr)

Ground Water				
Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)
4.20 8.40	4.00 4.50	4.50		

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Borehole Log

Scale 1:50 Sheet 2 of 2

CPRO01

Contract no:	S211001	**Site:**	Envision Giga Factory, Sunderland	**Driller:**	BBL
				Plant used:	Dando 2000 and Beretta T59
				Started:	19/10/2021
Client:	Wates Construction North East			**Ended:**	19/10/2021
Method:	Cable Percussive Rotary Core follow on			**Backfilled:**	21/10/2021

GL (AOD):	39.32m
Easting:	433173.40
Northing:	558601.70
Logged:	SM
Status:	FINAL

Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing: Depth (m)	Type	Results	Coring / Fractures: 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)	10.50 - 12.00	C					
								99	59	53	NI 190 360
					12.00 - 13.50	C					
				1no. Vertical fracture. 13.00-13.50m				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)	13.50 - 15.00	C					
								93	49	42	NI 140 240
		15.00	24.32	End of Borehole at 15.000m							

Hole Diameter

Depth Base (m)	Diameter (mm)
4.50	150
15.00	100

Casing Depths

Depth Base (m)	Diameter (mm)
4.50	150

General Remarks

1. 1.2m hand excavated inspection pit.
2. Groundwater encountered at 4.20m and 8.40m.
3. Borehole backfilled on completion.

Flush Returns

From (m)	To (m)	Flush Type	Flush (%)

Ground Water

Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)
4.20	4.00	4.50		
8.40	4.50			

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Borehole Log

Scale 1:50 | Sheet 1 of 2

CPRO02

Contract no:	S211001	**Site:**	Envision Giga Factory, Sunderland	**Driller:**	BBL
				Plant used:	Dando 2000 and Beretta T59
				Started:	19/10/2021
Client:	Wates Construction North East			**Ended:**	20/10/2021
Method:	Cable Percussive Rotary Core follow on			**Backfilled:**	20/10/2021

GL (AOD):	39.62m
Easting:	433115
Northing:	558694
Logged:	SM
Status:	FINAL

Depth (m)	Level (m AOD)	Stratum Description
0.30	39.32	TOPSOIL/REWORKED GROUND: Grass over brown slightly sandy slightly gravelly CLAY with many fine to medium plant rootlets. Gravel is sub angular to sub rounded fine to coarse of sandstone, siltstone, mudstone and quartz.
1.00	38.62	Firm consistency light brown mottled grey slightly sandy slightly gravelly CLAY. Gravel is angular to sub rounded fine to coarse of sandstone, mudstone and quartz. (PELAW CLAY MEMBER)
4.70	34.92	Firm to stiff consistency dark brown mottled grey slightly sandy slightly gravelly medium to high strength CLAY with a low to medium cobble content. Gravel is angular to sub rounded fine to coarse of sandstone, siltstone, mudstone and quartz. Cobbles are sub angular of sandstone and siltstone. (PELAW CLAY MEMBER)
6.00	33.62	Dark grey highly weathered fine grained SANDSTONE. Recovered as sandy angular fine to coarse gravel. (PENNINE MIDDLE COAL MEASURES)
7.30	32.32	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*
		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)

Samples and Insitu Testing

Depth (m)	Type	Results
0.10 - 0.20	ES	
0.30 - 0.40	B	
0.60 - 0.70	ES	
0.70 - 0.80	B	
1.20 - 1.65	SPT (S)	N=11 (2,2/3,4,4)
1.20 - 1.65	B+D	
1.50 - 1.70	ES	
2.00 - 2.45	U	
2.45 - 2.50	B	
2.70 - 2.80	ES	
3.00 - 3.45	SPT (S)	N=22 (3,5/6,7,9)
3.00 - 3.45	B+D	
4.00 - 4.45	U	
4.45 - 4.50	B	
5.00 - 5.31	SPT (S)	N=50+ (7,10/13,17,20 for 10mm)
5.00 - 5.45	B+D	
6.00 - 7.50	C	

Core runs

Depth (m)	Type				
6.00 - 7.50	C	97	47	14	NI 210 250
7.50 - 9.00	C	97	54	59	90 180 340
9.00 - 10.50	C	100	80	53	70 150 310

Hole Diameter

Depth Base (m)	Diameter (mm)
6.00	150
16.50	100

Casing Depths

Depth Base (m)	Diameter (mm)
6.00	150

General Remarks

1. 1.2m hand excavated inspection pit.
2. No groundwater encountered.
3. Gas standpipe installed on completion.

Chiselling

From (m)	To (m)	Time (hr)

Ground Water

Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)

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Borehole Log

Scale 1:50 Sheet 2 of 2

CPRO02

Contract no:	S211001	**Site:**	Envision Giga Factory, Sunderland	**Driller:**	BBL
				Plant used:	Dando 2000 and Beretta T59
				Started:	19/10/2021
Client:	Wates Construction North East			**Ended:**	20/10/2021
Method:	Cable Percussive Rotary Core follow on			**Backfilled:**	20/10/2021

GL (AOD):	39.62m
Easting:	433115.10
Northing:	558693.70
Logged:	SM
Status:	FINAL

Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing: Depth (m)	Type	Results	Coring / Fractures: 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	C					
								100	47	35	NI 90 330
					12.00 - 13.50	C					
		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	C					
								100	80	63	300 400 470
					15.00 - 16.50	C					
								100	93	80	NI 180 340
G		16.50	23.12	End of Borehole at 16.500m							

Hole Diameter		Casing Depths		General Remarks
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.
6.00 16.50	150 100	6.00	150	

Flush Returns				Ground Water				
From (m)	To (m)	Flush Type	Flush (%)	Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)

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Borehole Log

Scale 1:42 Sheet 1 of 2

CPRO03

Contract no:	S211001	**Site:**	Envision Giga Factory, Sunderland	**Driller:**	BBL
				Plant used:	Dando 2000 and Beretta T59
				Started:	19/10/2021
Client:	Wates Construction North East			**Ended:**	19/10/2021
Method:	Cable Percussive Rotary Core follow on			**Backfilled:**	19/10/2021

GL (AOD):	39.24m	
Easting:	433226	
Northing:	558602	
Logged:	SM	
Status:	FINAL	

Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing: Depth (m)	Type	Results
				TOPSOIL/REWORKED GROUND: Grass over brown slightly sandy slightly gravelly CLAY with many fine to medium plant rootlets. Gravel is sub angular to sub rounded fine to coarse of sandstone, siltstone, mudstone and quartz.	0.00 - 0.30	B	
					0.20 - 0.30	ES	
		0.30	38.94	Firm consistency dark brown slightly sandy slightly gravelly medium to high strength CLAY. Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone and quartz. (PELAW CLAY MEMBER)	0.50 - 0.80	B	
					0.60 - 0.70	ES	
					1.20 - 1.65	SPT (S)	N=11 (2,2/2,3,3,3)
					1.20 - 1.30	B+D	
					1.20 - 1.65	ES	
					2.00 - 2.45	U	91 blows [293mm]
					2.40 - 2.60	ES	
					2.45 - 2.55	B	
					3.00 - 3.45	SPT (S)	N=15 (2,2/3,3,4,5)
					3.00 - 3.45	B+D	
		3.30	35.94	Firm to stiff consistency dark greyish brown slightly sandy slightly gravelly high to very high strength CLAY with a medium cobble content. Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone, coal fragments and quartz. Cobbles are sub angular sandstone. (PELAW CLAY MEMBER)	4.00 - 4.45	U	38 blows [450mm]
					4.45 - 4.55	B	
					5.00 - 5.45	SPT (S)	N=30 (3,3/4,7,8,11)
					5.00 - 5.45	B+D	
		5.40	33.84	Dark grey highly weathered fine grained SANDSTONE. Recovered as sandy angular fine to coarse gravel. (PENNINE MIDDLE COAL MEASURES)			
		6.00	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)	6.00 - 6.45	SPT (S)	N=50+ (19,6/32,18)
					6.00 - 6.45	C	
					6.00 - 7.50	D	
				Vertical fractures. 7.50-9.00m	7.50 - 9.00	C	

Results				
95	55	53	NI	80	150
100	45	26	NI	50	170

Hole Diameter		Casing Depths		General Remarks
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)	
6.00	150	6.00	150	1. 1.2m hand excavated inspection pit.
16.50	100			2. Groundwater encountered at 9.20m.
				3. Borehole backfilled on completion.

Chiselling		
From (m)	To (m)	Time (hr)

Ground Water				
Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)
9.20	6.00			

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Borehole Log

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CPRO03

Contract no:	S211001	**Site:**	Envision Giga Factory, Sunderland	**Driller:**	BBL
				Plant used:	Dando 2000 and Beretta T59
				Started:	19/10/2021
Client:	Wates Construction North East			**Ended:**	19/10/2021
Method:	Cable Percussive Rotary Core follow on			**Backfilled:**	19/10/2021

GL (AOD):	39.24m	
Easting:	433226.00	
Northing:	558601.80	
Logged:	SM	
Status:	FINAL	

Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing: Depth (m)	Type	Results	Coring / Fractures: TCR (%)	SCR (%)	RQD (%)	Fracture
				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)	9.00 - 10.50	C					
								95	43	37	NI 100 190
					10.50 - 12.00	C					
		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)				100	73	60	NI 70 190
					12.00 - 13.50	C					
								99	67	57	NI 180 590
					13.50 - 15.00	C					
								97	40	31	NI 50 150
		14.81	24.43	Very weak to weak black moderately weathered COAL. (Intact) (PENNINE MIDDLE COAL MEASURES)							
		14.95	24.29		15.00 - 16.50	C					
				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)						
								93	47	38	NI 80 120
		16.50	22.74	End of Borehole at 16.500m							

Hole Diameter		Casing Depths		General Remarks
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)	1. 1.2m hand excavated inspection pit. 2. Groundwater encountered at 9.20m. 3. Borehole backfilled on completion.
6.00 16.50	150 100	6.00	150	

Flush Returns				Ground Water				
From (m)	To (m)	Flush Type	Flush (%)	Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)
				9.20	6.00			

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Borehole Log

CPRO04

Contract no: S211001	**Site:** Envision Giga Factory, Sunderland	**Driller:**	BBL	**GL (AOD):**	39.38m
		Plant used:	Dando 2000 and Beretta T59	**Easting:**	433156
		Started:	20/10/2021	**Northing:**	558759
Client: Wates Construction North East		**Ended:**	20/10/2021	**Logged:**	SM
Method: Cable Percussive Rotary Core follow on		**Backfilled:**	20/10/2021	**Status:**	FINAL

Depth (m)	Level (m AOD)	Stratum Description
		TOPSOIL/REWORKED GROUND: Grass over brown slightly sandy slightly gravelly CLAY with many fine to medium plant rootlets. Gravel is angular to sub rounded fine to coarse of sandstone, mudstone and quartz.
0.60	38.78	Firm consistency brown mottled grey slightly sandy slightly gravelly medium strength CLAY with a medium 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)
2.80	36.58	Firm to stiff consistency dark brownish grey slightly sandy slightly gravelly high strength CLAY with a medium cobble content. Gravel is sub angular to rounded fine to coarse of sandstone, siltstone, mudstone and quartz. Cobbles are sub angular sandstone. (PELAW CLAY MEMBER)
5.40	33.98	Dark grey highly weathered fine grained SANDSTONE. Recovered as sandy angular fine to coarse gravel. (PENNINE MIDDLE COAL MEASURES)
6.00	33.38	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) *Recovered as coarse gravel. 6.00-6.20m*
6.60	32.78	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)
8.10	31.28	
8.30	31.08	Very weak to weak thinly bedded dark bluish grey highly weathered fine grained SANDSTONE. Fractures: Sub horizontal closely spaced undulating and rough with

Samples and Insitu Testing

Depth (m)	Type	Results
0.20 - 0.30	ES	
0.30 - 0.60	B	
0.70 - 0.80	ES	
1.20 - 1.65	SPT (S)	N=11 (2,2/2,3,3,3)
1.20 - 1.65	B+D	
1.40 - 1.60	ES	
2.00 - 2.45	U	48 blows [450mm]
2.40	ES	
2.45 - 2.55	B	
3.00 - 3.45	SPT (S)	N=17 (3,3/4,4,4,5)
3.00 - 3.45	B+D	
4.00 - 4.45	U	61 blows [338mm]
4.45 - 4.55	B	
5.00 - 5.45	SPT (S)	N=25 (4,5/5,6,6,8)
5.00 - 5.45	B+D	
6.00 - 6.45	SPT (S)	N=50+ (10,15/16,16,18)
6.00 - 7.50	C	
7.50 - 9.00	C	

Core run				
6.00 - 7.50	99	27	23	NI 60 110
7.50 - 9.00	100	30	22	NI 100 170

Hole Diameter

Depth Base (m)	Diameter (mm)
6.00	150
16.50	100

Casing Depths

Depth Base (m)	Diameter (mm)
6.00	150

General Remarks

1. 1.2m hand excavated inspection pit.
2. Groundwater encountered at 10.50m.
3. Borehole backfilled on completion.

Chiselling

From (m)	To (m)	Time (hr)
2.70	3.00	00:45
4.80	5.00	00:40
5.80	6.00	00:30

Ground Water

Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)
10.50	6.00			

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Borehole Log

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CPRO04

Contract no:	S211001	**Site:**	Envision Giga Factory, Sunderland	**Driller:**	BBL
				Plant used:	Dando 2000 and Beretta T59
				Started:	20/10/2021
Client:	Wates Construction North East			**Ended:**	20/10/2021
Method:	Cable Percussive Rotary Core follow on			**Backfilled:**	20/10/2021

GL (AOD):	39.38m	
Easting:	433156.00	
Northing:	558758.60	
Logged:	SM	
Status:	FINAL	

Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing: Depth (m)	Type	Results	Coring / Fractures: TCR (%)	SCR (%)	RQD (%)	Fracture
				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)	9.00 - 10.50	C					
				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*				100	27	21	NI 50 130
		10.00	29.38								
		10.15	29.23	Very weak to weak black moderately weathered COAL. (Intact) (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)	10.50 - 12.00	C					
		10.60	28.78								
				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 undulating and smooth. (PENNINE MIDDLE COAL MEASURES)	11.00 - 12.50	C		100	60	52	NI 70 300
		11.70	27.68								
				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	C		100	57	48	110 190 480
					13.50 - 15.00	C					
					14.00 - 15.50	C		91	57	51	40 260 510
					15.00 - 16.50	C					
								100	40	27	NI 80 310
		16.50	22.88	End of Borehole at 16.500m							

Hole Diameter		Casing Depths		General Remarks
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)	1. 1.2m hand excavated inspection pit. 2. Groundwater encountered at 10.50m. 3. Borehole backfilled on completion.
6.00 16.50	150 100	6.00	150	

Flush Returns			
From (m)	To (m)	Flush Type	Flush (%)

Ground Water				
Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)
10.50	6.00			

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Borehole Log

CPRO05

Contract no:	S211001	**Site:**	Envision Giga Factory, Sunderland	**Driller:**	BBL
				Plant used:	Dando 2000 and Beretta T59
				Started:	19/10/2021
Client:	Wates Construction North East			**Ended:**	21/10/2021
Method:	Cable Percussive Rotary Core follow on			**Backfilled:**	21/10/2021

GL (AOD):	38.06m	
Easting:	433439	
Northing:	558710	
Logged:	SM	
Status:	FINAL	

Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing		
					Depth (m)	Type	Results
				TOPSOIL/REWORKED GROUND: Grass over dark brown slightly sandy slightly gravelly CLAY with many fine to medium plant rootlets. Gravel is sub angular to sub rounded fine to coarse of sandstone, siltstone, mudstone and quartz.	0.20 - 0.30	ES	
		0.30	37.76	Firm to stiff consistency dark brown mottled grey slightly sandy slightly gravelly high strength CLAY. Gravel is sub angular to sub rounded fine to coarse of sandstone, siltstone, mudstone and quartz. (PELAW CLAY MEMBER)	0.40 - 0.80	B	
					0.70 - 0.80	ES	
					1.20 - 1.65	SPT (S)	N=20 (2,3/4,4,6,6)
					1.20 - 1.30	B+D	
					1.20 - 1.65	ES	
					2.00 - 2.45	U	100 blows [NR]
					2.40 - 2.60	ES	
					2.45 - 2.55	B	
					3.00 - 3.45	SPT (S)	N=22 (3,4/4,5,6,7)
					3.00 - 3.45	B+D	
		4.00	34.06	Firm consistency thinly laminated dark brown mottled grey slightly sandy silty CLAY. Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone and quartz. (PELAW CLAY MEMBER)	4.00 - 4.45	U	100 blows [450mm]
		4.45	33.61	Firm to stiff consistency dark grey slightly sandy slightly gravelly high strength CLAY with a medium cobble content. Gravel is sub angular to rounded fine to coarse of sandstone, siltstone, mudstone and quartz. Cobbles are sub angular of sandstone. (PELAW CLAY MEMBER)	4.45 - 4.55	B	
					5.00 - 5.45	SPT (S)	N=15 (2,3/3,4,4,4)
					5.00 - 5.45	B+D	
					6.00 - 6.45	U	100 blows [NR]
					6.45 - 6.55	B	

Hole Diameter

Depth Base (m)	Diameter (mm)
9.00	150
21.50	100

Casing Depths

Depth Base (m)	Diameter (mm)
9.00	150

General Remarks

1. 1.2m hand excavated inspection pit.
2. No groundwater encountered.
3. Gas standpipe installed on completion.

Chiselling

From (m)	To (m)	Time (hr)

Ground Water

Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)

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Borehole Log

Scale 1:37 Sheet 2 of 3

CPRO05

Contract no:	S211001	**Site:**	Envision Giga Factory, Sunderland	**Driller:**	BBL
				Plant used:	Dando 2000 and Beretta T59
				Started:	19/10/2021
Client:	Wates Construction North East			**Ended:**	21/10/2021
Method:	Cable Percussive Rotary Core follow on			**Backfilled:**	21/10/2021

GL (AOD):	38.06m
Easting:	433439
Northing:	558710
Logged:	SM
Status:	FINAL

Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing: Depth (m)	Type	Results
				Firm to stiff consistency dark grey slightly sandy slightly gravelly high strength CLAY with a medium cobble content. Gravel is sub angular to rounded fine to coarse of sandstone, siltstone, mudstone and quartz. Cobbles are sub angular of sandstone. (PELAW CLAY MEMBER)	7.50 - 7.95	SPT (S)	N=24 (4,5/5,5,7,7)
					7.50 - 7.95	B+D	
					9.00 - 9.45	U	100 blows [NR]
					9.45 - 9.55	B	
					10.50 - 10.95	SPT (S)	N=27 (4,5/6,6,7,8)
					10.50 - 10.95	B+D	
		10.90	27.16				
		11.00	27.06	Dark reddish brown completely weathered MUDSTONE. Recovered as clayey sandy angular gravel. (PENNINE MIDDLE COAL MEASURES)	11.00 - 11.45	SPT (S)	N=47 (7,9/11,12,12,12)
					11.00 - 11.45	C	(7,9/11,12,12,12)
					11.00 - 12.50	D	
				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*			63 / 33 / 0 / NI / 70 / 210
		12.10	25.96	Very weak thinly laminated light grey highly to completely weathered MUDSTONE. Fractures: Sub horizontal (<5degrees) medium to closely spaced planar and rough. (PENNINE MIDDLE COAL MEASURES)	12.50 - 14.00	C	
		12.95	25.11	Weak to medium strong very thinly bedded slightly to moderately weathered medium grained SANDSTONE. Fractures: Sub horizontal (<5degrees) medium to closely spaced undulating and rough. (PENNINE MIDDLE COAL MEASURES) *Dark grey staining on bedding planes. 12.95-13.50m*			95 / 60 / 54 / NI / 110 / 540
		13.60	24.46	Very weak to weak very thinly laminated dark grey moderately to highly weathered SILTSTONE. Fractures: Sub horizontal medium to closely spaced undulating and smooth. (PENNINE MIDDLE COAL MEASURES)	14.00 - 15.50	C	
		14.10	23.96	Weak thinly laminated dark grey highly weathered MUDSTONE. Fractures: Sub horizontal (<5degrees) closely spaced planar and smooth. (PENNINE MIDDLE COAL MEASURES)			

Hole Diameter

Depth Base (m)	Diameter (mm)
9.00	150
21.50	100

Casing Depths

Depth Base (m)	Diameter (mm)
9.00	150

General Remarks

1. 1.2m hand excavated inspection pit.
2. No groundwater encountered.
3. Gas standpipe installed on completion.

Chiselling

From (m)	To (m)	Time (hr)

Ground Water

Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)

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Borehole Log

Scale 1:37 Sheet 3 of 3

CPRO05

Contract no:	S211001	**Site:**	Envision Giga Factory, Sunderland	**Driller:**	BBL
				Plant used:	Dando 2000 and Beretta T59
				Started:	19/10/2021
Client:	Wates Construction North East			**Ended:**	21/10/2021
Method:	Cable Percussive Rotary Core follow on			**Backfilled:**	21/10/2021

GL (AOD):	38.06m
Easting:	433439.20
Northing:	558709.60
Logged:	SM
Status:	FINAL

Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing: Depth (m)	Type	Results	Coring / Fractures: TCR (%)	SCR (%)	RQD (%)	Fracture
				Weak thinly laminated dark grey highly weathered MUDSTONE. Fractures: Sub horizontal (<5degrees) closely spaced planar and smooth. (PENNINE MIDDLE COAL MEASURES)				100	87	39	NI 170 330
					15.50 - 17.00	C					
		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)				100	43	34	NI 60 190
				1no. Vertical fracture. 16.50-16.80m							
					17.00 - 18.50	C					
		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. (PENNINE MIDDLE COAL MEASURES)				100	47	28	NI 110 230
					18.50 - 20.00	C					
								100	87	39	NI 230 410
		19.90	18.16								
		20.00	18.06	Medium strong very thinly bedded light grey slightly weathered medium grained SANDSTONE. Fractures: Sub horizontal medium to closely spaced undulating and smooth. (PENNINE MIDDLE COAL MEASURES)	20.00 - 21.50	C					
				Weak thinly laminated dark grey highly weathered MUDSTONE. Fractures: Sub horizontal (<5degrees) closely spaced planar and smooth. (PENNINE MIDDLE COAL MEASURES)				96	37	25	NI 80 200
G		21.50	16.56	End of Borehole at 21.500m							

Hole Diameter		Casing Depths	
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)
9.00	150	9.00	150
21.50	100		

General Remarks

1. 1.2m hand excavated inspection pit.
2. No groundwater encountered.
3. Gas standpipe installed on completion.

Flush Returns			
From (m)	To (m)	Flush Type	Flush (%)

Ground Water				
Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)

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Borehole Log

Scale 1:45 Sheet 1 of 3

CPRO06

Contract no:	S211001	**Site:**	Envision Giga Factory, Sunderland	**Driller:**	BBL
				Plant used:	Dando 2000 and Beretta T59
				Started:	20/10/2021
Client:	Wates Construction North East			**Ended:**	21/10/2021
Method:	Cable Percussive Rotary Core follow on			**Backfilled:**	21/10/2021

GL (AOD):	37.56m	
Easting:	433380	
Northing:	558830	
Logged:	SM	
Status:	FINAL	

Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing		
					Depth (m)	Type	Results
				TOPSOIL/REWORKED GROUND: Grass over dark greyish brown slightly sandy slightly gravelly CLAY with many fine to medium plant rootlets and a low cobble content. Gravel is sub angular to sub rounded fine to coarse of sandstone, siltstone, mudstone, coal and quartz. Cobbles are sub angular sandstone.			
		0.30	37.26	Firm to stiff consistency dark brown mottled grey slightly sandy slightly gravelly high 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)	0.30 - 0.40 0.30 - 0.80	B ES	
					0.90 - 1.00	ES	
					1.20 - 1.65 1.20 - 1.65 1.50 - 1.60	SPT (S) B+D ES	N=15 (2,2/3,4,4,4)
					2.00 - 2.45	U	94 blows [113mm]
					2.40 - 2.50 2.45 - 2.55	ES B	
					3.00 - 3.45 3.00 - 3.45	SPT (S) B+D	N=23 (2,2/4,5,7,7)
		3.60	33.96	▼			
		3.80	33.76	Dark brown slightly clayey slightly gravelly medium to coarse SAND. Gravel sub angular to sub rounded fine to coarse of sandstone, siltstone, mudstone and quartz. (PELAW CLAY MEMBER)			
				Soft consistency dark grey mottled brown slightly sandy slightly gravelly medium strength silty CLAY. Gravel is of sub angular to sub rounded fine to coarse of sandstone, siltstone, mudstone, coal and quartz. (PELAW CLAY MEMBER)	4.00 - 4.45	U	39 blows [450mm]
					4.45 - 4.55	B	
					5.00 - 5.45 5.00 - 5.45	SPT (S) B+D	N=9 (2,2/2,2,2,3)
		5.80	31.76	Stiff consistency dark greyish brown slightly sandy slightly gravelly high to very high strength CLAY with a medium cobble content. Gravel is sub angular to sub rounded fine to coarse of sandstone, siltstone, mudstone, coal fragments and quartz. Cobbles are sub angular to sub rounded of sandstone and siltstone. (PELAW CLAY MEMBER)	6.00 - 6.45	U	100 blows [NR]
					6.45 - 6.55	B	
					7.50 - 7.95 7.50 - 7.95	SPT (S) B+D	N=26 (4,5/6,6,7,7)

Hole Diameter

Depth Base (m)	Diameter (mm)
15.00	150
26.50	100

Casing Depths

Depth Base (m)	Diameter (mm)
15.00	150

General Remarks

1. 1.2m hand excavated inspection pit.
2. Groundwater encountered at 3.60m.
3. Borehole backfilled on completion.

Chiselling

From (m)	To (m)	Time (hr)
9.40	9.60	00:30
12.50	12.70	00:30
15.80	16.00	00:30

Ground Water

Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)
3.60				

Borehole Log

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CPRO06

Contract no:	S211001	**Site:** Envision Giga Factory, Sunderland	**Driller:** BBL	**GL (AOD):**	37.56m
			Plant used: Dando 2000 and Beretta T59	**Easting:**	433380
			Started: 20/10/2021	**Northing:**	558830
Client:	Wates Construction North East		**Ended:** 21/10/2021	**Logged:**	SM
Method:	Cable Percussive Rotary Core follow on		**Backfilled:** 21/10/2021	**Status:**	FINAL

Depth (m)	Level (m AOD)	Stratum Description
		Stiff consistency dark greyish brown slightly sandy slightly gravelly high to very high strength CLAY with a medium cobble content. Gravel is sub angular to sub rounded fine to coarse of sandstone, siltstone, mudstone, coal fragments and quartz. Cobbles are sub angular to sub rounded of sandstone and siltstone. (PELAW CLAY MEMBER)
15.50	22.06	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) *No recovery. 16.00-16.35m* *1no. Vertical fracture. 17.00-17.20m*
17.10	20.46	Weak thinly laminated dark grey highly weathered SILTSTONE. Fractures: Sub horizontal (<5degrees) closely to very closely spaced undulating and smooth. (PENNINE MIDDLE COAL MEASURES)
17.50	20.06	Weak to medium strong very thinly bedded slightly to moderately

Samples and Insitu Testing

Depth (m)	Type	Results
9.00 - 9.45	U	100 blows [113mm]
9.45 - 9.55	B	
10.50 - 10.95	SPT (S)	N=37 (5,6/6,9,10,12)
10.50 - 10.95	B+D	
12.00 - 12.45	SPT (S)	N=42 (6,6/9,9,12,12)
12.00 - 12.45	B+D	
13.50 - 13.95	SPT (S)	N=42 (6,8/10,10,10,12)
13.50 - 13.95	B+D	
15.00 - 15.45	SPT (S)	N=40 (6,6/9,10,10,11)
15.00 - 15.45	B+D	
16.00 - 16.45	SPT (S)	N=50+ (8,9/15,15,15,20)
16.00 - 16.45	C	
16.00 - 17.50	D	
17.50 - 19.00	C	

90	87	40	NI 90 210

Hole Diameter: Depth Base (m)	Hole Diameter: Diameter (mm)	Casing Depths: Depth Base (m)	Casing Depths: Diameter (mm)
15.00	150	15.00	150
26.50	100		

General Remarks

1. 1.2m hand excavated inspection pit.
2. Groundwater encountered at 3.60m.
3. Borehole backfilled on completion.

Chiselling

From (m)	To (m)	Time (hr)
9.40	9.60	00:30
12.50	12.70	00:30
15.80	16.00	00:30

Ground Water

Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)
3.60				

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Borehole Log

Scale 1:45 Sheet 3 of 3

CPRO06

Contract no:	S211001	**Site:**	Envision Giga Factory, Sunderland	**Driller:**	BBL
				Plant used:	Dando 2000 and Beretta T59
				Started:	20/10/2021
Client:	Wates Construction North East			**Ended:**	21/10/2021
Method:	Cable Percussive Rotary Core follow on			**Backfilled:**	21/10/2021

GL (AOD):	37.56m	
Easting:	433379.70	
Northing:	558830.30	
Logged:	SM	
Status:	FINAL	

Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing: Depth (m)	Type	Results	Coring / Fractures: TCR (%)	SCR (%)	RQD (%)	Fracture
				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)							
		18.20	19.36	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)							
				1no. Vertical fracture. 18.70-19.00m							
				Recovered as coarse gravel. 19.00-19.20m	19.00 - 20.50	C		100	100	48	70 130 310
								100	67	40	NI 150 290
					20.50 - 22.00	C					
		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)				100	73	43	NI 170 340
					22.00 - 23.50	C					
								100	87	33	NI 190 510
					23.50 - 25.00	C					
		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)				100	60	40	NI 260 310
					25.00 - 26.50	C					
								100	97	67	30 110 800
		26.50	11.06	End of Borehole at 26.500m							

Hole Diameter

Depth Base (m)	Diameter (mm)
15.00	150
26.50	100

Casing Depths

Depth Base (m)	Diameter (mm)
15.00	150

General Remarks

1. 1.2m hand excavated inspection pit.
2. Groundwater encountered at 3.60m.
3. Borehole backfilled on completion.

Flush Returns

From (m)	To (m)	Flush Type	Flush (%)

Ground Water

Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)
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	

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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	

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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	

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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	
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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	
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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	

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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	

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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	

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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	

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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	

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Plate 21: CPRO06 16.00-19.00mbgl

Plate 22: CPRO06 19.00-22.00mbgl

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

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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	
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Cable Percussive Log

Scale 1:50 Sheet 1 of 1

CP01

Contract no:	S211001	**Site:**	Envision Giga Factory, Sunderland	**Driller:**	BBL
				Plant used:	Dando 2000
				Started:	26/10/2021
Client:	Wates Construction North East			**Ended:**	26/10/2021
Method:	Cable Percussive			**Backfilled:**	26/10/2021

GL (AOD):	38.96m
Easting:	433276
Northing:	558656
Logged:	SM
Status:	FINAL

Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing: Depth (m)	Type	Results
				TOPSOIL/REWORKED GROUND: Grass over dark brown slightly sandy slightly gravelly CLAY with some fine to medium plant rootlets. Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone and quartz.	0.10 - 0.20	ES	
		0.40	38.56	Firm consistency dark brown mottled grey slightly sandy slightly gravelly medium strength CLAY. Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone and quartz. (PELAW CLAY MEMBER)	0.40 - 0.80	B	
					0.70 - 0.80	ES	
					1.20 - 1.65	SPT (S)	N=14 (2,2/3,3,4,4)
					1.20 - 3.00	B+D	
					1.90 - 2.00	ES	
					2.00	U	65 blows [450mm]
					2.45	B	
		3.00	35.96	Soft becoming firm consistency dark grey slightly sandy slightly gravelly medium to high strength CLAY. Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone and quartz. (PELAW CLAY MEMBER)	2.90 - 3.00	ES	
					3.00 - 3.45	SPT (S)	N=8 (1,2/2,2,2,2)
					3.00 - 3.45	B+D	
					4.00 - 4.45	U	69 blows [450mm]
					4.45 - 4.55	B	
G					5.00 - 5.45	SPT (S)	N=19 (3,3/3,4,6,6)
					5.00 - 5.45	B+D	
		5.70	33.26	Dark grey completely weathered SANDSTONE. (PENNINE MIDDLE COAL MEASURES)	6.00 - 6.31	SPT (S)	N=50+ (7,12/15,16,19 for 10mm)
					6.00	D	
		6.45	32.51	End of Borehole at 6.450m			

Hole Diameter		Casing Depths	
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)
6.45	150	6.00	150

General Remarks

1. 1.2m hand excavated inspection pit.
2. No groundwater encountered.
3. Gas standpipe installed on completion.

Chiselling		
From (m)	To (m)	Time (hr)

Ground Water				
Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)

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Cable Percussive Log

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CP02

Contract no:	S211001	**Site:**	Envision Giga Factory, Sunderland	**Driller:**	BBL
				Plant used:	Dando 2000
				Started:	25/10/2021
Client:	Wates Construction North East			**Ended:**	25/10/2021
Method:	Cable Percussive			**Backfilled:**	25/10/2021

GL (AOD):	38.40m	
Easting:	433288	
Northing:	558734	
Logged:	SM	
Status:	FINAL	

Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing		
					Depth (m)	Type	Results
				TOPSOIL/REWORKED GROUND: Grass over light brown slightly sandy slightly gravelly CLAY with many fine to medium plant rootlets. Gravel is angular to sub angular fine to coarse of sandstone, mudstone and quartz.	0.20 - 0.40	ES	
		0.40	38.00	Firm consistency dark brown slightly sandy slightly gravelly medium strength CLAY. Gravel is sub angular to sub rounded fine to coarse of sandstone, siltstone, mudstone and quartz. (PELAW CLAY MEMBER)	0.40 - 0.80	B	
					0.70 - 0.90	ES	
					1.20 - 1.65	SPT (S)	N=14 (2,3/3,3,4,4)
					1.20 - 1.65	B+D	
					1.70 - 1.80	ES	
					2.00 - 2.45	U	49 blows [450mm]
					2.45 - 2.55	D	
					2.60 - 2.70	ES	
		2.80	35.60	Soft consistency thinly laminated dark greyish brown slightly gravelly medium strength silty CLAY. Gravel is of sub angular to sub rounded fine to medium of sandstone and mudstone. (PELAW CLAY MEMBER)	3.00 - 3.45	SPT (S)	N=8 (1,1/2,2,2,2)
					3.00 - 3.45	B+D	
					4.00 - 4.45	U	84 blows [450mm]
					4.45 - 4.55	D	
		4.50	33.90	Firm becoming stiff consistency dark grey mottled brown 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 and mudstone. Cobbles are sub angular of sandstone. (PELAW CLAY MEMBER)	5.00 - 5.45	SPT (S)	N=15 (2,3/3,4,4,4)
					5.00 - 5.45	B	
					5.00 - 5.95	D	
					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 - 7.95	SPT (S)	N=50+
					7.50 - 7.95	D	(4,9/11,19,20,5)
		8.00	30.40	End of Borehole at 8.000m			

Hole Diameter		Casing Depths	
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)
8.00	150	7.50	150

General Remarks

1. 1.2m hand excavated inspection pit.
2. No groundwater encountered.
3. Borehole backfilled on completion.

Chiselling		
From (m)	To (m)	Time (hr)

Ground Water				
Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)

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CP03

Contract no:	S211001	**Site:**	Envision Giga Factory, Sunderland	**Driller:**	BBL
				Plant used:	Dando 2000
				Started:	25/10/2021
Client:	Wates Construction North East			**Ended:**	25/10/2021
Method:	Cable Percussive			**Backfilled:**	25/10/2021

GL (AOD):	38.60m
Easting:	433234
Northing:	558757
Logged:	SM
Status:	FINAL

Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing		
					Depth (m)	Type	Results
				TOPSOIL/REWORKED GROUND: Grass over light brown slightly sandy slightly gravelly CLAY with many fine to medium plant rootlets. Gravel is angular to sub angular fine to coarse of sandstone, mudstone and quartz.	0.10 - 0.20	ES	
		0.40	38.20	Firm consistency dark brown slightly sandy slightly gravelly medium strength silty CLAY. Gravel is sub angular to sub rounded fine to coarse of sandstone, siltstone, mudstone and quartz. (PELAW CLAY MEMBER)	0.40 - 0.80	B	
					0.80 - 0.90	ES	
					1.20 - 1.65	SPT (S)	N=13 (2,3/3,3,3,4)
					1.20 - 1.65	B+D	
					1.80 - 1.90	ES	
					2.00 - 2.45	U	82 blows [NR]
					2.45 - 2.55	D	
					2.80 - 2.90	ES	
		2.90	35.70	Firm to stiff consistency dark grey slightly sandy slightly gravelly medium to high strength CLAY. Gravel is sub angular to sub rounded fine to coarse of sandstone and mudstone. (PELAW CLAY MEMBER)	3.00 - 3.45	SPT (S)	N=11 (2,2/3,3,2,3)
					3.00 - 3.45	B+D	
					4.00 - 4.45	D	100 blows [450mm]
					4.00 - 4.55	U	
					5.00 - 5.45	SPT (S)	N=23 (3,4/4,5,6,8)
					5.00 - 5.45	B+D	
					6.00 - 6.08	SPT (S)	N=50+ (25 for
		6.08	32.52	End of Borehole at 6.080m	6.00 - 6.45	D	10mm/50 for 70mm)

Hole Diameter		Casing Depths		General Remarks
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)	
6.45	150	6.00	150	1. 1.2m hand excavated inspection pit. 2. No groundwater encountered. 3. Gas standpipe installed on completion.

Chiselling		
From (m)	To (m)	Time (hr)

Ground Water				
Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)

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CP04

Contract no:	S211001	**Site:**	Envision Giga Factory, Sunderland	**Driller:**	BBL
				Plant used:	Dando 2000
				Started:	22/10/2021
Client:	Wates Construction North East			**Ended:**	22/10/2021
Method:	Cable Percussive			**Backfilled:**	22/10/2021

GL (AOD):	37.69m
Easting:	433287
Northing:	558820
Logged:	SM
Status:	FINAL

Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing: Depth (m)	Type	Results
				TOPSOIL/REWORKED GROUND: Grass over light brown slightly sandy slightly gravelly CLAY with many fine to medium plant rootlets. Gravel is angular to sub angular fine to coarse of sandstone, mudstone and quartz.	0.10 - 0.20	ES	
		0.40	37.29		0.40 - 0.80	B	
				Firm consistency light brown slightly sandy slightly gravelly medium strength CLAY with a low cobble content. Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone, siltstone and quartz. Cobbles are sub angular of sandstone and siltstone. (PELAW CLAY MEMBER)	0.60 - 0.70	ES	
					1.20 - 1.65	SPT (S)	N=12 (2,3/3,3,3,3)
					1.20 - 1.65	B+D	
					1.30 - 1.40	ES	
					2.00 - 2.45	U	47 blows [NR]
					2.45 - 2.55	D	
					2.60 - 2.80	ES	
		2.90	34.79				
				Firm becoming stiff consistency dark brownish grey slightly sandy slightly gravelly medium strength CLAY with a low cobble content. Gravel is angular to sub rounded fine to coarse of sandstone, siltstone, mudstone and quartz, Cobbles are sub angular sandstone and siltstone. (PELAW CLAY MEMBER)	3.00 - 3.45	SPT (S)	N=11 (2,2/3,3,2,3)
					3.00 - 3.45	B+D	
					4.00 - 4.45	U	
		4.20	33.49				
		4.35	33.34	Dark brown slightly gravelly medium to coarse SAND. Gravel is of sub angular to rounded fine to medium of sandstone and quartz. (PELAW CLAY MEMBER)			
		4.45	33.24		4.45 - 4.55	B+D	
				Soft consistency thinly laminated dark brownish grey slightly sandy slightly gravelly silty CLAY. Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone and quartz. (PELAW CLAY MEMBER)			
					5.00 - 5.45	SPT (S)	N=21 (3,4/4,4,5,8)
					5.00 - 5.45	B+D	
				Firm becoming stiff consistency dark greyish brown slightly sandy slightly gravelly high to very high strength CLAY with a medium cobble content. Gravel is sub angular to sub rounded fine to coarse of sandstone, siltstone, mudstone and quartz. Cobbles are sub angular of sandstone. (PELAW CLAY MEMBER)			
					6.00 - 6.45	U	100 blows [NR]
					6.45 - 6.55	D	
					7.50 - 7.95	SPT (S)	N=24 (3,4/5,5,7,7)
					7.50 - 7.95	B+D	
					9.00 - 9.45	SPT (S)	N=22 (4,4/5,5,6,6)
					9.00 - 9.45	B+D	
					10.00 - 10.45	SPT (S)	

Hole Diameter		Casing Depths		General Remarks
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)	
10.45	150	10.00	150	1. 1.2m hand excavated inspection pit. 2. Groundwater encountered at 4.20m. 3. Borehole backfilled on completion.

Chiselling		
From (m)	To (m)	Time (hr)

Ground Water				
Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)
4.20			20	3.80

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Cable Percussive Log

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CP04

Contract no:	S211001	**Site:**	Envision Giga Factory, Sunderland	**Driller:**	BBL
				Plant used:	Dando 2000
				Started:	22/10/2021
Client:	Wates Construction North East			**Ended:**	22/10/2021
Method:	Cable Percussive			**Backfilled:**	22/10/2021

GL (AOD):	37.69m
Easting:	433287
Northing:	558820
Logged:	SM
Status:	FINAL

Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing		
					Depth (m)	Type	Results
		10.45	27.24	Firm becoming stiff consistency dark greyish brown slightly sandy slightly gravelly high to very high strength CLAY with a medium cobble content. Gravel is sub angular to sub rounded fine to coarse of sandstone, siltstone, mudstone and quartz. Cobbles are sub angular of sandstone. (PELAW CLAY MEMBER)	10.00 - 10.45	D	N=50+ (5,9/12,13,13,12)
				End of Borehole at 10.450m			

Hole Diameter

Depth Base (m)	Diameter (mm)
10.45	150

Casing Depths

Depth Base (m)	Diameter (mm)
10.00	150

General Remarks

1. 1.2m hand excavated inspection pit.
2. Groundwater encountered at 4.20m.
3. Borehole backfilled on completion.

Chiselling

From (m)	To (m)	Time (hr)

Ground Water

Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)
4.20			20	3.80

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Cable Percussive Log

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CP05

Contract no:	S211001	**Site:**	Envision Giga Factory, Sunderland	**Driller:**	
				Plant used:	
				Started:	26/10/2021
Client:	Wates Construction North East			**Ended:**	26/10/2021
Method:				**Backfilled:**	26/10/2021

GL (AOD):	38.58m
Easting:	433370
Northing:	558643
Logged:	
Status:	FINAL

Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing: Depth (m)	Type	Results
				TOPSOIL/REWORKED GROUND: Grass over light brown slightly sandy slightly gravelly CLAY with some fine to medium plant rootlets. Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone, siltstone and quartz.	0.00 - 0.30	B	
					0.10 - 0.20	ES	
		0.40	38.18	Firm consistency brown mottled 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)	0.50 - 0.80	B	
					0.70 - 0.80	ES	
		0.90	37.68	Firm consistency brown slightly sandy slightly gravelly medium strength CLAY. Gravel is sub angular to sub rounded fine to coarse of sandstone, siltstone and mudstone. (PELAW CLAY MEMBER)	1.20 - 1.65	SPT (S)	N=12 (2,2/3,3,3,3)
					1.20 - 1.65	B+D	
					1.90 - 2.00	ES	
					2.00 - 2.45	U	68 blows [450mm]
		2.30	36.28	Firm consistency dark grey slightly gravelly silty CLAY. Gravel is sub angular to rounded fine to coarse of sandstone, mudstone and quartz. (PELAW CLAY MEMBER)	2.45 - 2.55	D	
					2.90 - 3.00	ES	
		3.00	35.58	Firm becoming stiff consistency dark grey mottled brown slightly sandy slightly gravelly high strength CLAY with a low cobble content. Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone, siltstone, quartz and coal. Cobbles are sub angular sandstone and mudstone. (PELAW CLAY MEMBER)	3.00 - 3.45	SPT (S)	N=20 (4,4/5,5,5,5)
					3.00 - 3.45	B+D	
					4.00 - 4.45	SPT (S)	N=20 (13,4/4,4,5,7)
					4.00 - 4.45	B+D	
G					5.00 - 5.45	D	100 blows [315mm]
					5.00 - 5.45	U	
		5.80	32.78	Dark grey highly weathered SANDSTONE. (PENNINE MIDDLE COAL MEASURES)	6.00 - 6.36	SPT (S)	N=50+ (9,16/16,17,17 for 60mm)
					6.00 - 6.45	D	
		6.50	32.08	End of Borehole at 6.500m			

Hole Diameter		Casing Depths		General Remarks
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)	
6.50	150	6.00	150	1. 1.2m hand excavated inspection pit. 2. No groundwater encountered. 3. Gas standpipe installed on completion.

Chiselling		
From (m)	To (m)	Time (hr)

Ground Water				
Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)

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CP06

Contract no:	S211001	**Site:**	Envision Giga Factory, Sunderland	**Driller:**	**GL (AOD):** 37.67m
				Plant used:	**Easting:** 433439
				Started: 27/10/2021	**Northing:** 558786
Client:	Wates Construction North East			**Ended:** 27/10/2021	**Logged:**
Method:				**Backfilled:**	**Status:** FINAL

Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing		
					Depth (m)	Type	Results
		0.20	37.47	TOPSOIL/REWORKED GROUND: Grass over 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, siltstone and quartz.	0.20 - 0.40	B	
					0.20 - 0.60	ES	
		0.60	37.07	Firm consistency light orangish brown slightly sandy slightly gravelly CLAY. Gravel is angular to sub rounded fine to coarse of sandstone, mudstone and siltstone. (PELAW CLAY MEMBER)	0.50 - 0.60	ES	
					0.80 - 1.00	B	
				Firm consistency light brown slightly sandy slightly gravelly high strength CLAY. Gravel is angular to sub rounded fine to coarse of sandstone, mudstone and quartz. (PELAW CLAY MEMBER)	1.20 - 1.65	SPT (S)	N=15 (2,3/3,3,4,5)
					1.20 - 1.65	D	
					1.80 - 1.90	ES	
					2.00 - 2.45	U	81 blows [450mm]
		2.40	35.27	Soft consistency thinly laminated dark brown and grey slightly sightly gravelly medium strength silty CLAY. Gravel is sub angular to sub rounded fine to coarse of mudstone and quartz. (PELAW CLAY MEMBER)	2.40 - 2.50	ES	
					2.45 - 2.55	B	
					3.00 - 3.45	SPT (S)	N=8 (1,1/2,2,2,2)
					3.00 - 3.45	B+D	
					4.00 - 4.45	U	51 blows [450mm]
		4.15	33.52	Dark brown slightly gravelly coarse SAND. Gravel is sub angular to sub rounded fine to medium of sandstone, siltstone and quartz. (PELAW CLAY MEMBER)			
		4.25	33.42		4.45 - 4.55	B	
				Soft consistency thinly laminated dark brown and grey slightly gravelly low strength silty CLAY. Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone and quartz. (PELAW CLAY MEMBER)	5.00 - 5.45	SPT (S)	N=6 (1,1/1,1,2,2)
					5.00 - 5.45	B+D	
					6.00 - 6.45	U	32 blows [450mm]
		6.45	31.22	Stiff consistency dark brown slightly sandy slightly gravelly high to very high strength CLAY. Gravel is sub angular to sub rounded fine to coarse of sandstone, siltstone and mudstone. (PELAW CLAY MEMBER)	6.45 - 6.55	B	
					7.50 - 7.95	SPT (S)	N=30 (4,5/9,10,5,6)
					7.50 - 7.95	B+D	
					9.00 - 9.45	U	100 blows [450mm]
					9.45 - 9.55	B	

Hole Diameter

Depth Base (m)	Diameter (mm)
16.50	150

Casing Depths

Depth Base (m)	Diameter (mm)
12.00	150

General Remarks

1. 1.2m hand excavated inspection pit.
2. No groundwater encountered.
3. Borehole backfilled on completion.

Chiselling

From (m)	To (m)	Time (hr)

Ground Water

Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)

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CP06

Contract no:	S211001	**Site:**	Envision Giga Factory, Sunderland	**Driller:**	**GL (AOD):** 37.67m
				Plant used:	**Easting:** 433439
				Started: 27/10/2021	**Northing:** 558786
Client:	Wates Construction North East			**Ended:** 27/10/2021	**Logged:**
Method:				**Backfilled:**	**Status:** FINAL

Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing		
					Depth (m)	Type	Results
				Stiff consistency dark brown slightly sandy slightly gravelly high to very high strength CLAY. Gravel is sub angular to sub rounded fine to coarse of sandstone, siltstone and mudstone. (PELAW CLAY MEMBER)	10.50 - 10.95	SPT (S)	N=24 (4,9/5,5,6,8)
					10.50 - 10.95	B+D	
					12.00 - 12.45	B	100 blows [135mm]
					12.00 - 12.45	U	
					13.50 - 13.95	SPT (S)	N=50+ (8,12/12,13,15,10)
					13.50 - 13.95	B+D	
					15.00 - 15.45	SPT (S)	N=30 (6,6/6,8,8,8)
					15.00 - 15.45	B	
					16.00 - 16.27	SPT (S)	N=50+ (15,10/25,25 for 50mm)
					16.00	D	
		16.27	21.40	End of Borehole at 16.270m			

Hole Diameter		Casing Depths		General Remarks	Chiselling			Ground Water				
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)		From (m)	To (m)	Time (hr)	Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)
16.50	150	12.00	150	1. 1.2m hand excavated inspection pit. 2. No groundwater encountered. 3. Borehole backfilled on completion.								

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Cable Percussive Log

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CP07

Contract no:	S211001	**Site:**	Envision Giga Factory, Sunderland	**Driller:**	BBL
				Plant used:	Dando 2000
				Started:	21/10/2021
Client:	Wates Construction North East			**Ended:**	21/10/2021
Method:	Cable Percussive			**Backfilled:**	21/10/2021

GL (AOD):	35.54m	
Easting:	433369	
Northing:	559079	
Logged:	SM	
Status:	FINAL	

Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing		
					Depth (m)	Type	Results
				TOPSOIL/REWORKED GROUND: Grass over greyish brown slightly sandy slightly gravelly CLAY with many fine to medium plant rootlets. Gravel is sub angular to sub rounded fine to coarse of sandstone, siltstone, mudstone and quartz.	0.10 - 0.20	ES	
		0.50	35.04	Firm consistency dark brown mottled grey slightly sandy slightly gravelly medium strength CLAY with a low cobble content. Gravel is sub angular to sub rounded fine to coarse of sandstone, siltstone, mudstone, coal and quartz. Cobbles are sub angular to sub rounded of sandstone. (PELAW CLAY MEMBER)	0.50 - 0.90	B	
					0.60 - 0.70	ES	
					1.20 - 1.65	SPT (S)	N=13 (2,2/3,3,3,4)
					1.20 - 1.65	B+D	
					1.40 - 1.50	ES	
					2.00 - 2.45	SPT (S)	N=14 (2,3/3,3,4,4)
					2.00 - 2.45	B+D	
					2.40 - 2.50	ES	
					3.00 - 3.45	U	74 blows [450mm]
					3.45 - 3.55	B	
		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 rounded fine to coarse of sandstone, siltstone, mudstone, coal and quartz. Cobbles are sub angular of sandstone and siltstone. (PELAW CLAY MEMBER)	4.00 - 4.45	SPT (S)	N=9 (1,2/2,2,2,3)
					4.00 - 4.45	B+D	
					5.00 - 5.45	U	52 blows [450mm]
					5.45 - 5.55	B	
					6.00 - 6.45	SPT (S)	N=11 (2,2/2,3,3,3)
					6.00 - 6.45	B+D	
					7.50 - 7.95	U	65 blows [NR]
					7.95 - 8.05	B	
					9.00 - 9.45	SPT (S)	N=13 (2,3/3,3,3,4)
					9.00 - 9.45	B+D	

Hole Diameter		Casing Depths		General Remarks
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)	
14.50	150	14.00	150	1. 1.2m hand excavated inspection pit. 2. Groundwater encountered at 12.00m. 3. Gas standpipe installed on completion.

Chiselling		
From (m)	To (m)	Time (hr)

Ground Water				
Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)
12.00			20	10.70

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Cable Percussive Log

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CP07

Contract no:	S211001	**Site:**	Envision Giga Factory, Sunderland	**Driller:**	BBL
				Plant used:	Dando 2000
				Started:	21/10/2021
Client:	Wates Construction North East			**Ended:**	21/10/2021
Method:	Cable Percussive			**Backfilled:**	21/10/2021

GL (AOD):	35.54m	
Easting:	433369	
Northing:	559079	
Logged:	SM	
Status:	FINAL	

Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing		
					Depth (m)	Type	Results
				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 rounded fine to coarse of sandstone, siltstone, mudstone, coal and quartz. Cobbles are sub angular of sandstone and siltstone. (PELAW CLAY MEMBER)	10.50 - 10.95 10.50 - 10.95	SPT (S) B+D	N=11 (2,2/2,3,3,3)
		12.00	23.54	Soft consistency dark greyish brown slightly sandy slightly gravelly low strength SILT. Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone and siltstone. (PELAW CLAY MEMBER)	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. Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone and siltstone. (PELAW CLAY MEMBER)	13.50 - 13.95 13.50 - 13.95	SPT (S) B+D	N=26 (4,5/6,6,7,7)
	G	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			

Hole Diameter		Casing Depths		General Remarks
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)	
14.50	150	14.00	150	1. 1.2m hand excavated inspection pit. 2. Groundwater encountered at 12.00m. 3. Gas standpipe installed on completion.

Chiselling		
From (m)	To (m)	Time (hr)

Ground Water				
Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)
12.00			20	10.70

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Borehole Log

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WS01

Contract no:	S211001	**Site:**	Envision Giga Factory, Sunderland	**Driller:**	BBL
				Plant used:	Mini Rig
				Started:	28/10/2021
Client:	Wates Construction North East			**Ended:**	28/10/2021
Method:	Small Percussive			**Backfilled:**	28/10/2021

GL (AOD):	40.00m	
Easting:	433132	
Northing:	558472	
Logged:	SM	
Status:	FINAL	

Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing		
					Depth (m)	Type	Results
		0.10	39.90	MADE GROUND: CONCRETE.			
				MADE GROUND: Black ashy gravelly coarse SAND with a low cobble content. Gravel is sub angular to sub rounded fine to coarse of red brick, concrete, dolomite and quartz. Cobbles are sub angular of red brick.	0.20 - 0.40 0.20 - 0.50	B ES	
		0.65	39.35	MADE GROUND: Dark brown mottled grey (staining) ashy slightly sandy slightly gravelly CLAY . Gravel is angular to sub rounded fine to coarse of red-brick, sandstone and quartz. Possibly reworked.	0.70 - 0.90 0.80 - 0.90	ES B	
		0.90	39.10	Soft consistency becoming stiff with depth dark brown mottled grey slightly sandy slightly gravelly medium strength CLAY with a low cobble content. Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone, siltstone and quartz. Cobbles are sub angular of sandstone and siltstone. (PELAW CLAY MEMBER)	1.20 - 1.65 1.20 - 1.65 1.40 - 1.60 1.80 - 1.90	SPT (S) D D ES	N=8 (7,7/2,2,2,2)
		2.00	38.00	Firm consistency dark brown mottled grey slightly sandy slightly gravelly medium strength CLAY 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 and siltstone. Refusal at 2.45mbgl on possible sandstone cobble or boulder. (PELAW CLAY MEMBER)	2.00 - 2.45 2.00 - 2.45 2.10 - 2.20	SPT (S) D ES	N=50+ (9,9/12,14,19,5)
		2.45	37.55	End of Borehole at 2.450m			

Hole Diameter		Casing Depths		General Remarks	Chiselling			Ground Water				
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)		From (m)	To (m)	Time (hr)	Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)
				1. 1.2m hand excavated inspection pit. 2. No groundwater encountered. 3. Gas standpipe installed on completion. 4. Refusal at 2.45mbgl on possible sandstone cobble or boulder.								

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Borehole Log

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WS02

Contract no:	S211001	**Site:**	Envision Giga Factory, Sunderland	**Driller:**	BBL
				Plant used:	Mini Rig
				Started:	27/10/2021
Client:	Wates Construction North East			**Ended:**	27/10/2021
Method:	Small Percussive			**Backfilled:**	28/10/2021

GL (AOD):	38.47m
Easting:	433165
Northing:	558491
Logged:	SM
Status:	FINAL

Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing		
					Depth (m)	Type	Results
		0.15	38.32	MADE GROUND: Dark brown black tarmac/ compacted bituminous angular fine to coarse GRAVEL.	0.20 - 0.30	ES	
		0.30	38.17	MADE GROUND: Dark brown black ashy gravelly coarse SAND with a low cobble content. Gravel is angular to sub rounded fine to coarse of red brick, concrete, sandstone and quartz. Cobbles are sub angular of red brick and concrete.	0.40 - 0.60	B	
					0.60 - 0.70	ES	
		0.90	37.57	MADE GROUND: Light brown grey (staining) ashy slightly sandy slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse of red brick, concrete, sandstone, mudstone and quartz.			
				Soft consistency becoming stiff with depth light brown mottled grey slightly sandy slightly gravelly medium strength CLAY. Gravel is angular to sub rounded fine to coarse of sandstone, mudstone, siltstone and quartz. (PELAW CLAY MEMBER)	1.20 - 1.65	SPT (S)	N=9 (2,2/2,2,2,3)
					1.20 - 1.65	D	
					1.40 - 1.60	D	
					1.60 - 1.70	ES	
G					1.90 - 2.35	SPT (S)	N=50+
					1.90 - 2.35	D	(9,10/10,12,18,10)
		2.20	36.27	Light brown highly weathered SANDSTONE. (PENNINE MIDDLE COAL MEASURES)			
		2.35	36.12	End of Borehole at 2.350m			

Hole Diameter		Casing Depths		General Remarks	Chiselling			Ground Water				
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)		From (m)	To (m)	Time (hr)	Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)
				1. 1.2m hand excavated inspection pit. 2. No groundwater encountered. 3. Gas standpipe installed on completion.								

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WS03

Contract no:	S211001	**Site:**	Envision Giga Factory, Sunderland	**Driller:**	BBL
				Plant used:	Mini Rig
				Started:	27/10/2021
Client:	Wates Construction North East			**Ended:**	27/10/2021
Method:	Small Percussive			**Backfilled:**	27/10/2021

GL (AOD):	38.84m	
Easting:	433129	
Northing:	558521	
Logged:	SM	
Status:	FINAL	

Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing		
					Depth (m)	Type	Results
		0.20	38.64	MADE GROUND: Dark brown black ashy sandy gravelly CLAY with occasional fine to medium plant rootlets. Gravel is sub angular to sub rounded fine to coarse of red brick and concrete.	0.10 - 0.20 0.20 - 0.30	B ES	
		0.95	37.89	MADE GROUND: Dark brown/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, slag, concrete, dolomite and quartz.	0.60 - 0.70 0.70 - 0.80	B ES	
		2.50	36.34	Firm consistency dark brown mottled grey slightly sandy slightly gravelly medium to high strength CLAY. Gravel is angular to sub rounded fine to coarse of sandstone, mudstone, siltstone and quartz. (PELAW CLAY MEMBER)	1.20 - 1.65 1.20 - 1.65 1.40 - 1.60 1.70 - 1.90 1.80 - 2.00 2.00 - 2.45 2.00 - 2.45 2.20 - 2.30 2.40 - 2.60	SPT (S) D D ES D SPT (S) D ES D	N=10 (1,1/2,2,3,3) N=15 (1,0/2,3,5,5)
		3.30	35.54	Firm locally soft consistency dark grey slightly gravelly high strength silty CLAY. Gravel is sub angular to sub rounded fine to coarse sandstone, mudstone, siltstone and quartz. (PELAW CLAY MEMBER)	2.80 - 3.00 3.00 - 3.45 3.00 - 3.45	D SPT (S) D	 N=19 (3,5/7,4,4,4)
		3.85	34.99	Stiff consistency dark brown mottled grey slightly sandy slightly gravelly high strength CLAY. Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone and quartz. (PELAW CLAY MEMBER)	3.40 - 3.60	D	
		4.45	34.39	Dark grey highly weathered SANDSTONE. (PENNINE MIDDLE COAL MEASURES) End of Borehole at 4.450m	4.00 - 4.45 4.00 - 4.45	SPT (S) D	N=17 (4,4/5,4,4,4)

Hole Diameter		Casing Depths		General Remarks	Chiselling			Ground Water				
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.	From (m)	To (m)	Time (hr)	Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)

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Borehole Log

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WS04

Contract no:	S211001	**Site:**	Envision Giga Factory, Sunderland	**Driller:**	BBL
				Plant used:	Mini Rig
				Started:	26/10/2021
Client:	Wates Construction North East			**Ended:**	26/10/2021
Method:	Small Percussive			**Backfilled:**	26/10/2021

GL (AOD):	39.16m
Easting:	433114
Northing:	558544
Logged:	SM
Status:	FINAL

Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing: Depth (m)	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, sandstone and quartz.	0.20 - 0.30	ES	
		0.30	38.86		0.40 - 0.80	B	
				Firm consistency light brown mottled dark brown 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, mudstone and quartz. Cobbles are sub angular of sandstone. (PELAW CLAY MEMBER)	0.70 - 0.80	ES	
					1.20 - 1.65	SPT (S)	N=11 (1,2/2,3,3,3)
					1.20 - 1.65	B+D	
					1.40 - 1.60	D	
					1.70 - 1.80	ES	
					2.00 - 2.45	SPT (S)	N=17 (4,4/4,4,4,5)
					2.00 - 2.45	D	
					2.20 - 2.30	ES	
					2.40 - 2.60	D	
		2.60	36.56		2.60 - 2.80	D	
				Dark grey highly weathered SANDSTONE. (PENNINE MIDDLE COAL MEASURES)	2.80 - 3.18	SPT (S)	N=50+ (25 for 10mm/50)
					2.80 - 3.25	D	
		3.25	35.91	End of Borehole at 3.250m			

Hole Diameter		Casing Depths		General Remarks	Chiselling			Ground Water				
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.	From (m)	To (m)	Time (hr)	Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)

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WS05

Contract no:	S211001	**Site:**	Envision Giga Factory, Sunderland	**Driller:**	BBL
				Plant used:	Mini Rig
				Started:	27/10/2021
Client:	Wates Construction North East			**Ended:**	27/10/2021
Method:	Small Percussive			**Backfilled:**	27/10/2021

GL (AOD):	39.59m
Easting:	433137
Northing:	558524
Logged:	SM
Status:	FINAL

Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing		
					Depth (m)	Type	Results
		0.25	39.34	MADE GROUND: Dark brown slightly sandy gravelly CLAY with some fine to medium plant rootlets. Gravel is sub angular to sub rounded fine to coarse of red brick, concrete, clay pipe and plastic.	0.10 - 0.20	B	
					0.30 - 0.40	ES	
				MADE GROUND: Medium dense dark brown black sandy fine to coarse GRAVEL with a medium cobble content. Gravel is angular to sub rounded fine to coarse of slag, red brick and concrete. Cobbles are sub angular red brick.	0.40 - 0.60	B	
					0.90 - 1.00	ES	
G		1.30	38.29	Firm consistency dark brown mottled grey slightly sandy slightly gravelly medium strength CLAY. Gravel is sub angular to rounded fine to coarse of sandstone, mudstone, siltstone and quartz. Borehole backfilling from 2.40mbgl. (PELAW CLAY MEMBER)	1.20 - 1.65	SPT (S)	N=14 (1,1/3,3,4,4)
					1.20 - 1.65	D	
					1.40 - 1.60	D	
					1.60 - 1.70	ES	
					1.80 - 2.00	D	
					2.00 - 2.45	SPT (S)	N=10 (2,2/3,2,3,2)
					2.00 - 2.45	D	
					2.10 - 2.20	ES	
		2.45	37.14	End of Borehole at 2.450m			

Hole Diameter		Casing Depths		General Remarks
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)	1. 1.2m hand excavated inspection pit. 2. Groundwater encountered at 0.60m. 3. Gas standpipe installed on completion. 4. Borehole terminated at 2.45mbgl due to backfilling.

Chiselling		
From (m)	To (m)	Time (hr)

Ground Water				
Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)
0.60			20	0.40

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Borehole Log

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WS06

Contract no:	S211001	**Site:**	Envision Giga Factory, Sunderland	**Driller:**	BBL
				Plant used:	Mini Rig
				Started:	27/10/2021
Client:	Wates Construction North East			**Ended:**	27/10/2021
Method:	Small Percussive			**Backfilled:**	27/10/2021

GL (AOD):	39.28m
Easting:	433206
Northing:	558614
Logged:	SM
Status:	FINAL

Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing		
					Depth (m)	Type	Results
				TOPSOIL/REWORKED GROUND: Dark brown slightly sandy slightly gravelly CLAY with many fine to medium plant rootlets. Gravel is sub angular to rounded fine to coarse of sandstone, mudstone, siltstone and quartz.	0.10 - 0.20	ES	
		0.30	38.98	Firm consistency dark brown mottled grey slightly sandy sightly silty slightly gravelly medium to high strength CLAY. Gravel is angular to sub rounded fine to coarse of sandstone, mudstone, quartz and coal. (PELAW CLAY MEMBER)	0.40 - 0.50	B	
					0.40 - 0.80	ES	
					0.40 - 0.80	ES	
					1.20 - 1.65	SPT (S)	N=13 (2,2/3,3,3,4)
					1.20 - 1.65	D	
					1.40 - 1.60	D	
					1.40 - 1.60	ES	
					2.00 - 2.45	SPT (S)	N=19 (2,3/4,5,5,5)
					2.00 - 2.45	D	
					2.20 - 2.30	ES	
					2.40 - 2.60	D	
					3.00 - 3.45	SPT (S)	N=16 (3,3/3,4,4,5)
					3.00 - 3.45	D	
					3.40 - 3.60	D	
					4.00 - 4.45	SPT (S)	N=17 (4,5/4,4,5,4)
					4.00 - 4.45	D	
					4.40 - 4.60	D	
	G				5.00 - 5.45	SPT (S)	N=20 (4,5/5,5,5,5)
					5.00 - 5.45	D	
		5.45	33.83	End of Borehole at 5.450m			

Hole Diameter		Casing Depths		General Remarks
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)	1. 1.2m hand excavated inspection pit. 2. Groundwater encountered at 4.20m. 3. Gas standpipe installed on completion.

Chiselling		
From (m)	To (m)	Time (hr)

Ground Water				
Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)
4.20			20	3.50

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Borehole Log

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WS07

Contract no:	S211001	**Site:**	Envision Giga Factory, Sunderland	**Driller:**	BBL
				Plant used:	Mini Rig
				Started:	28/10/2021
Client:	Wates Construction North East			**Ended:**	28/10/2021
Method:	Small Percussive			**Backfilled:**	27/10/2021

GL (AOD):	39.34m
Easting:	433159
Northing:	558709
Logged:	SM
Status:	FINAL

Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing: Depth (m)	Type	Results
				TOPSOIL/REWORKED GROUND: Dark brown sandy slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse mudstone and sandstone.	0.10 - 0.30	ES	
		0.40	38.94		0.40 - 0.60	B	
		0.70	38.64	Firm consistency orangish brown sandy slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse mudstone and sandstone. (PELAW CLAY MEMBER)	0.80 - 1.00	ES	
				Stiff consistency greyish brown slightly sandy slightly gravelly medium strength CLAY. Gravel is 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. (PELAW CLAY MEMBER)	1.20 - 1.65	SPT (S)	N=11 (1,2/2,3,3,3)
					1.20 - 1.40	B	
					1.20 - 1.65	D	
					1.80 - 2.00	ES	
					2.00 - 2.40	SPT (S)	N=37 (2,2/3,4,5,25)
					2.00 - 2.45	D	
G					2.20 - 2.40	B	
		2.45	36.89	End of Borehole at 2.450m			

Hole Diameter		Casing Depths		General Remarks	Chiselling			Ground Water				
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. 4. Refusal at 2.45mbgl on possible sandstone boulder.	From (m)	To (m)	Time (hr)	Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)

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WS08

Contract no:	S211001	**Site:**	Envision Giga Factory, Sunderland	**Driller:**	BBL
				Plant used:	Mini Rig
				Started:	28/10/2021
Client:	Wates Construction North East			**Ended:**	28/10/2021
Method:	Small Percussive			**Backfilled:**	28/10/2021

GL (AOD):	38.65m
Easting:	433187
Northing:	558815
Logged:	SM
Status:	FINAL

Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing: Depth (m)	Type	Results
				MADE GROUND: Dark brown sandy slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse mudstone, sandstone and pottery.	0.10 - 0.30	ES	
		0.40	38.25				
				Stiff consistency orangish brown sandy slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse mudstone and sandstone. (PELAW CLAY MEMBER)	0.50 - 0.70	B	
					0.50 - 1.00	ES	
		1.10	37.55				
				Stiff consistency greyish brown slightly sandy slightly gravelly medium to high strength CLAY. 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)	1.20 - 1.65	SPT (S)	N=13 (2,3/3,3,3,4)
					1.20 - 1.50	B	
					1.20 - 1.65	D	
					1.80 - 2.00	ES	
					2.00 - 2.45	SPT (S)	N=18 (3,4/4,4,5,5)
					2.00 - 2.45	B	
					2.00 - 2.50	D	
G					2.50 - 2.70	ES	
		2.70	35.95	End of Borehole at 2.700m			

Hole Diameter		Casing Depths		General Remarks	Chiselling			Ground Water				
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)		From (m)	To (m)	Time (hr)	Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)
				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.								

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Borehole Log

Scale 1:50 Sheet 1 of 1

WS09

Contract no:	S211001	**Site:**	Envision Giga Factory, Sunderland	**Driller:**	BBL
				Plant used:	Mini Rig
				Started:	27/10/2021
Client:	Wates Construction North East			**Ended:**	27/10/2021
Method:	Small Percussive			**Backfilled:**	27/10/2021

GL (AOD):	38.60m
Easting:	433342
Northing:	558676
Logged:	SM
Status:	FINAL

Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing		
					Depth (m)	Type	Results
				TOPSOIL/REWORKED GROUND: Brown slightly sandy slightly gravelly CLAY with many fine to medium plant rootlets. Gravel is sub angular to sub rounded fine to medium of sandstone, siltstone, mudstone and quartz.	0.10 - 0.20	ES	
		0.30	38.30	Firm consistency becoming stiff with depth dark brown mottled grey slightly sandy slightly gravelly medium 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 of sandstone. (PELAW CLAY MEMBER)	0.50 - 0.60	ES	
					1.20 - 1.65	SPT (S)	N=10 (1,2/2,3,2,3)
					1.20 - 1.30	B	
					1.20 - 1.65	ES	
					1.40 - 1.60	D	
					2.00 - 2.45	SPT (S)	N=8 (2,2/1,2,2,3)
					2.00 - 2.45	B	
					2.20 - 2.30	ES	
G		2.40	36.20		2.40 - 2.50	D	
		2.50	36.10	Loose dark brown slightly gravelly medium to coarse SAND. Gravel is sub angular to rounded fine to medium of sandstone, siltstone and quartz. Borehole backfilling from 2.40mbgl. (PELAW CLAY MEMBER)			
				End of Borehole at 2.500m			

Hole Diameter		Casing Depths		General Remarks	Chiselling			Ground Water				
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. 4. Borehole terminated at 2.50mbgl due to sand backfilling.	From (m)	To (m)	Time (hr)	Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)

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Borehole Log

Scale 1:50 Sheet 1 of 1

WS10

Contract no:	S211001	**Site:**	Envision Giga Factory, Sunderland	**Driller:**	BBL
				Plant used:	Mini Rig
				Started:	27/10/2021
Client:	Wates Construction North East			**Ended:**	27/10/2021
Method:	Small Percussive			**Backfilled:**	27/10/2021

GL (AOD):	38.01m
Easting:	433311
Northing:	558775
Logged:	SM
Status:	FINAL

Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing		
					Depth (m)	Type	Results
				TOPSOIL/REWORKED GROUND: Dark brown sandy slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse sandstone and mudstone.	0.10 - 0.30	ES	
		0.30	37.71	Stiff consistency orangish brown sandy slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse sandstone and mudstone. (PELAW CLAY MEMBER)	0.50 - 0.70	B	
					0.50 - 1.00	ES	
		1.10	36.91	Stiff consistency greyish brown slightly sandy slightly gravelly high to very high strength CLAY. Gravel is sub angular to sub rounded fine to coarse sandstone and mudstone. (PELAW CLAY MEMBER)	1.20 - 1.65	SPT (S)	N=21 (2,2/3,3,3,12)
					1.20 - 1.65	D	
					1.50 - 1.70	ES	
					1.80 - 2.00	B	
G		2.50	35.51	No recovery, Orangish brown SAND noted in base of sampler. (PELAW CLAY MEMBER)	2.00 - 2.45	SPT (S)	N=35 (2,3/5,5,5,20)
					2.00 - 2.45	D	
					2.20 - 2.40	ES	
		3.00	35.01	End of Borehole at 3.000m			

Hole Diameter		Casing Depths		General Remarks	Chiselling			Ground Water				
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)		From (m)	To (m)	Time (hr)	Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)
				1. 1.2m hand excavated inspection pit. 2. No groundwater encountered. 3. Gas standpipe installed on completion.								

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Trial Pit Log

TrialPit No: TP01
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 432939E - 558490N Level: 39.54
Plant Used:	JCB 3CX	Dimensions (m): Depth 2.00	2.60 × 1.00
Client:	Wates Construction North East		Scale 1:26 Logged SM

Date: 29/10/2021

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.10	ES		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.
	0.40	B+ES					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)
	0.50	HV	60kPa				
	1.20	HV	70kPa	1.10	38.44		Firm consistency becoming stiff with depth 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)
	1.60	B+ES					
	1.80	HV	84kPa				
				1.90	37.64		Dark grey highly weathered SANDSTONE. (PENNINE MIDDLE COAL MEASURES)
				2.00	37.54		End of Pit at 2.000m

Remarks: No groundwater encountered.
Trial pit terminated at 2.00mbgl due to rockhead.

Stability: Pit walls open and stable

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Trial Pit Log

TrialPit No
TP02
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 433011E - 558556N Level: 39.17
Plant Used:	JCB 3CX	Dimensions (m): Depth 1.60	2.10 × 1.60
Client:	Wates Construction North East		Scale 1:26 Logged SM

Date: 29/10/2021

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (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		1.00	38.17		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		1.40	37.77		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)
				1.60	37.57		Dark grey highly weathered SANDSTONE. (PENNINE MIDDLE COAL MEASURES)
							End of Pit at 1.600m

Remarks: No groundwater encountered.
Hand vanes not undertaken.
Trial pit terminated at 1.60mbgl due to rockhead.

Stability: Pit walls open and stable

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Trial Pit Log

TrialPit No: TP03
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 432996E - 558657N Level: 38.98
Plant Used:	JCB 3CX	Dimensions (m): Depth 2.15	2.65 × 1.00
Client:	Wates Construction North East		Scale 1:26 Logged SM

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (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.
	0.50	HV	47kPa				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)
	0.60 - 0.80	B+ES		0.90	38.08		
	1.00	HV	58kPa				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	HV	87kPa				
	1.60 - 1.80	ES		1.95	37.03		Dark grey highly weathered SANDSTONE. (PENNINE MIDDLE COAL MEASURES)
				2.15	36.83		End of Pit at 2.150m

Remarks: No groundwater encountered.
Trial pit terminated at 2.15mbgl due to rockhead.

Stability: Pit walls open and stable

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Trial Pit Log

TrialPit No
TP04
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 433010E - 558726N Level: 39.52	Date 29/10/2021
Plant Used:	JCB 3CX	Dimensions (m): Depth 3.50	3.00 / 0.60	Scale 1:26
Client:	Wates Construction North East			Logged SM

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	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, brick, mudstone and quartz.
				0.40	39.12		
	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)
				0.80	38.72		
	1.00 - 1.20	B					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	B					
	2.60 - 2.80	ES					
	3.00 - 3.20	ES					
				3.50	36.02		End of Pit at 3.500m

1
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Remarks: No groundwater encountered.
Hand vanes not undertaken.

Stability: Pit walls open and stable

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Trial Pit Log

TrialPit No
TP05
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 433050E - 558722N Level: 39.66
Plant Used:	JCB 3CX	Dimensions (m): Depth 3.50	3.00 × 0.60
Client:	Wates Construction North East		Scale 1:26 Logged CG

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	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, brick, mudstone and quartz.
				0.40	39.26		
	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)
				0.80	38.86		
	1.00 - 1.20	B					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	B					
	2.60 - 2.80	ES					
	3.00 - 3.20	B					
				3.50	36.16		End of Pit at 3.500m

1
2
3
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5

Remarks: No groundwater encountered.
Hand vanes not undertaken.

Stability: Pit walls stable

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Trial Pit Log

TrialPit No: TP06
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 433058E - 558666N Level: 39.35
Plant Used:	JCB 3CX	Dimensions (m): Depth 1.80	2.50 × 0.90
Client:	Wates Construction North East		Scale 1:26 Logged SM

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (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.
	0.50 - 1.00	B+ES					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)
	0.60	HV	59kPa	0.70	38.65		
	1.10	HV	70kPa				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)
	1.40 - 1.60	B+ES					
	1.50	HV	109kPa	1.60	37.75		Dark grey highly weathered SANDSTONE. (PENNINE MIDDLE COAL MEASURES)
				1.80	37.55		End of Pit at 1.800m

Remarks: No groundwater encountered.
Trial pit terminated at 1.80mbgl due to rockhead.

Stability: Pit walls open and stable

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Trial Pit Log

TrialPit No
TP07
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 433078E - 558620N Level: 39.19
Plant Used:	JCB 3CX	Dimensions (m): Depth 2.40	2.35 × 1.05
Client:	Wates Construction North East		Scale 1:26 Logged SM

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	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					
	1.50 - 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)
	2.20 - 2.30	ES		2.30	36.89		
				2.40	36.79		Dark grey highly weathered SANDSTONE. (PENNINE MIDDLE COAL MEASURES)
							End of Pit at 2.400m

1
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Remarks: No groundwater encountered.
Trial pit terminated at 2.40mbgl due to rockhead.

Stability: Pit walls open and stable

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Trial Pit Log

TrialPit No
TP08
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 433111E - 558577N Level: 39.14
Plant Used:	JCB 3CX	Dimensions (m): Depth 1.65	2.20 × 0.90
Client:	Wates Construction North East		Scale 1:26 Logged SM

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.10 - 0.20	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.
				0.25	38.88		
	0.40	HV	59kPa				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)
	0.70 - 0.80	B+ES					
	0.90	HV	72kPa				
				1.30	37.84		
	1.40 - 1.50	B+ES					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)
	1.50	HV	121kPa	1.50	37.64		
				1.65	37.48		Dark grey highly weathered SANDSTONE. (PENNINE MIDDLE COAL MEASURES)
							End of Pit at 1.650m

Remarks: No groundwater encountered.
Trial pit terminated at 1.65mbgl due to rockhead.

Stability: Pit walls open and stable

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Trial Pit Log

TrialPit No
TP09
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 433094E - 558510N Level: 39.61
Plant Used:	JCB 3CX	Dimensions (m): Depth 2.50	3.00 × 1.00
Client:	Wates Construction North East		Scale 1:26 Logged SM

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (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.
	0.80 - 1.00	ES		0.85	38.76		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.
	1.20 - 1.40	B+ES		1.10	38.51		MADE GROUND: Firm consistency dark grey slightly sandy slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse of red brick, concrete, sandstone, mudstone and quartz.
	1.40	HV	97kPa				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, mudstone and quartz. (PELAW CLAY MEMBER)
	1.80 - 2.00	B+ES					
				2.40	37.21		Dark grey highly weathered SANDSTONE. (PENNINE MIDDLE COAL MEASURES)
				2.50	37.11		End of Pit at 2.500m

Remarks: No groundwater encountered.
Trial pit terminated at 2.50mbgl due to rockhead.

Stability: Pit walls open and stable

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Trial Pit Log

TrialPit No
TP10
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 433124E - 558469N Level: 39.93
Plant Used:	JCB 3CX	Dimensions (m): Depth 1.95	2.10 × 1.70
Client:	Wates Construction North East		Scale 1:26 Logged SM

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.15	39.78		MADE GROUND: CONCRETE.
	0.30	B+ES					MADE GROUND: Black ashy sandy GRAVEL. Gravel is sub angular to sub rounded fine to coarse of red brick, concrete, dolomite and quartz.
	0.80	B+ES					
				1.15	38.78		Firm consistency becoming stiff with depth brown mottled dark brown slightly sandy slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone and quartz. (PELAW CLAY MEMBER)
	1.60	B+ES					
				1.95	37.98		End of Pit at 1.950m

Remarks: No groundwater encountered.
Hand vanes not undertaken.
Trial pit terminated at 1.95mbgl due to restricted access.

Stability: Pit walls open and stable

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Trial Pit Log

TrialPit No
TP11
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 433149E - 558484N Level: 40.12
Plant Used:	JCB 3CX	Dimensions (m): Depth 1.90	2.50 × 1.20
Client:	Wates Construction North East		

Date: 01/11/2021
Scale: 1:26
Logged: SM

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20	39.92		MADE GROUND: CONCRETE.
	0.30 - 0.50	B+ES					MADE GROUND: Black ashy sandy GRAVEL. Gravel is sub angular to sub rounded fine to coarse of red brick, concrete, dolomite and quartz.
	0.50 - 0.60	B+ES					
				0.90	39.22		Firm consistency becoming stiff with depth brown mottled dark brown slightly sandy slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone and quartz. (PELAW CLAY MEMBER)
	1.60 - 1.80	B+ES					
				1.90	38.22		End of Pit at 1.900m

Remarks: No groundwater encountered.
Hand vanes not undertaken.
Trial pit terminated at 1.90mbgl due to restricted access.

Stability: Pit walls open and stable

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Trial Pit Log

TrialPit No
TP12
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 433198E - 558522N Level: 39.60
Plant Used:	JCB 3CX	Dimensions (m): Depth 1.90	2.90 × 0.90
Client:	Wates Construction North East		Scale 1:26 Logged SM

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.30 - 0.40	B+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.
	0.50 - 0.70	ES		0.55	39.05		
	0.70	HV	92kPa				Firm to stiff consistency 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)
	1.60 - 1.70	B+ES					
	1.70	HV	108kPa	1.70	37.90		Dark grey highly weathered SANDSTONE. (PENNINE MIDDLE COAL MEASURES)
				1.90	37.70		End of Pit at 1.900m

Remarks: No groundwater encountered.
Trial pit terminated at 1.90mbgl due to rockhead.

Stability: Pit walls open and stable

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Trial Pit Log

TrialPit No
TP13
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 433180E - 558574N Level: 39.34	Date 01/11/2021
Plant Used:	JCB 3CX	Dimensions (m): Depth 2.60	2.50 × 0.90	Scale 1:26
Client:	Wates Construction North East			Logged SM

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (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.
	0.60	ES		0.80	38.54		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 1.20 - 1.30	ES B		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. (PELAW CLAY MEMBER)
	2.00 - 2.20 2.30	B ES		2.60	36.74		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) End of Pit at 2.600m

1 2 3 4 5

Remarks: No groundwater encountered.
Hand vanes not undertaken.

Stability: Pit walls open and stable

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Trial Pit Log

TrialPit No
TP14
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 433155E - 558619N Level: 39.43
Plant Used:	JCB 3CX	Dimensions (m): Depth 2.50	2.40 × 1.00
Client:	Wates Construction North East		

Date: 01/11/2021
Scale: 1:26
Logged: SM

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.30	ES		0.40	39.03		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.
	0.60 0.60 - 0.80	ES ES		0.80	38.63		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)
	1.40 - 1.60 1.50	ES B		1.60	37.83		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	B		2.50	36.93		Stiff consistency dark grey slightly sandy gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone and quartz. (PELAW CLAY MEMBER)
							Dark grey highly weathered SILTSTONE and SANDSTONE. (PENNINE MIDDLE COAL MEASURES)
							End of Pit at 2.500m

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Remarks: No groundwater encountered.
Hand vanes not undertaken.
Trial pit terminated at 2.50mbgl due to rockhead.

Stability: Pit walls open and stable

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Trial Pit Log

TrialPit No
TP15
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 433136E - 558672N Level: 39.49
Plant Used:	JCB 3CX	Dimensions (m): Depth 3.50	3.00 × 0.60
Client:	Wates Construction North East		

Date: 28/10/2021
Scale: 1:26
Logged: CG

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	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, mudstone and brick.
				0.40	39.09		
	0.60 - 0.80	B					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 0.80	ES HV	80kPa	0.80	38.69		Stiff consistency dark grey slightly sandy slightly gravelly high strength CLAY. Gravel is sub angular to sub rounded fine to coarse mudstone and sandstone. (PELAW CLAY MEMBER)
	1.60 - 1.80	B					
	1.80 - 2.00 1.80	ES HV	140kPa				
	2.60 - 2.80	B					
	2.80 - 3.00 2.80	ES HV	140kPa				
				3.50	35.99		End of Pit at 3.500m

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Remarks: No groundwater encountered.
Hand vanes not undertaken.

Stability: Pit walls stable

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Trial Pit Log

TrialPit No
TP16
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 433118E - 558722N Level: 39.56
Plant Used:	JCB 3CX	Dimensions (m): Depth 3.50	3.00 × 0.60
Client:	Wates Construction North East		Scale 1:26 Logged CG

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	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, mudstone and brick.
				0.40	39.16		
	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)
				0.80	38.76		
	1.00 - 1.20	B					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	B					
	2.60 - 2.80	ES					
	3.00 - 3.20	B					
				3.50	36.06		End of Pit at 3.500m

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Remarks: No groundwater encountered.
Hand vanes not undertaken.

Stability: Pit walls stable

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Trial Pit Log

TrialPit No
TP17
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 433053E - 558810N Level: 39.26
Plant Used:	JCB 3CX	Dimensions (m): Depth 3.50	3.00 × 0.60
Client:	Wates Construction North East		Scale 1:26 Logged CG

Date: 28/10/2021

Water Strike	Samples & In Situ Testing: Depth	Type	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.
				0.40	38.86		
	0.60 - 0.80	ES					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	B					
	1.60 - 1.80	ES					
	2.00 - 2.20	B					
	2.60 - 2.80	ES					
	3.00 - 3.20	B					
				3.50	35.76		End of Pit at 3.500m

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Remarks: No groundwater encountered.
Hand vanes not undertaken.

Stability: Pit walls stable

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Trial Pit Log

TrialPit No
TP18
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 433099E - 558836N Level: 38.99
Plant Used:	JCB 3CX	Dimensions (m): Depth 3.50	3.00 × 0.60
Client:	Wates Construction North East		Scale 1:26 Logged CG

Water Strike	Samples & In Situ Testing: Depth	Type	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.
				0.40	38.59		
	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)
				0.80	38.19		
	1.00 - 1.20	B					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	B					
	2.60 - 2.80	ES					
	3.00 - 3.20	B					
				3.50	35.49		End of Pit at 3.500m

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Remarks: No groundwater encountered.
Hand vanes not undertaken.

Stability: Pit walls stable

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Trial Pit Log

TrialPit No
TP19
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 433124E - 558871N Level: 38.50
Plant Used:	JCB 3CX	Dimensions (m): 3.00 × 0.60, Depth 3.50	Scale 1:26
Client:	Wates Construction North East		Logged CG

Water Strike	Samples & In Situ Testing: Depth	Type	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.
				0.40	38.10		
	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)
				0.80	37.70		
	1.00 - 1.20	B					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	B					
	2.60 - 2.80	ES					
	3.00 - 3.20	B					
				3.50	35.00		End of Pit at 3.500m

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Remarks: No groundwater encountered.
Hand vanes not undertaken.

Stability: Pit walls stable

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Trial Pit Log

TrialPit No
TP20
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 433159E - 558834N Level: 38.72
Plant Used:	JCB 3CX	Dimensions (m): Depth 3.50	3.00 × 0.60
Client:	Wates Construction North East		Scale 1:26 Logged CG

Date: 28/10/2021

Water Strike	Samples & In Situ Testing: Depth	Type	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.
				0.40	38.32		
	0.50 - 0.70	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)
	0.80 - 1.00	B		0.80	37.92		
	1.20 - 1.40	ES					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	B					
	2.20 - 2.40	ES					
	2.80 - 3.00	B					
				3.50	35.22		End of Pit at 3.500m

1 2 3 4 5

Remarks: No groundwater encountered.
Hand vanes not undertaken.

Stability: Pit walls stable

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Trial Pit Log

TrialPit No
TP21
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 433173E - 558753N Level: 39.28
Plant Used:	JCB 3CX	Dimensions (m): Depth 3.50	3.00 × 0.60
Client:	Wates Construction North East		Scale 1:26 Logged CG

Water Strike	Samples & In Situ Testing: Depth	Type	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.
				0.40	38.88		
	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)
				0.80	38.48		
	1.00 - 1.20	B					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	B					
	2.60 - 2.80	ES					
	3.00 - 3.20	B					
				3.50	35.78		End of Pit at 3.500m

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Remarks: No groundwater encountered.
Hand vanes not undertaken.

Stability: Pit walls stable

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Trial Pit Log

TrialPit No
TP22
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 433200E - 558705N Level: 39.14	Date 28/10/2021
Plant Used:	JCB 3CX	Dimensions (m): Depth 3.50	3.00 / 0.60	Scale 1:26
Client:	Wates Construction North East			Logged CG

Water Strike	Samples & In Situ Testing: Depth	Type	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.
				0.40	38.74		
	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)
				0.80	38.34		
	1.00 - 1.20	B					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	B					
	2.60 - 2.80	ES					
	3.00 - 3.20	B					
				3.50	35.64		End of Pit at 3.500m

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Remarks: No groundwater encountered.
Hand vanes not undertaken.

Stability: Pit walls stable

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Trial Pit Log

TrialPit No
TP23
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 433223E - 558652N Level: 39.20
Plant Used:	JCB 3CX	Dimensions (m): Depth 3.20	2.45 × 1.05
Client:	Wates Construction North East		Scale 1:26 Logged SM

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	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, mudstone and brick.
				0.40	38.80		
	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. (PELAW CLAY MEMBER)
				1.00	38.20		
	1.60 - 1.80	B					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					
				2.20	37.00		
	2.50	ES					Light brown slightly gravelly coarse SAND (saturated) Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone, siltstone and quartz. (PELAW CLAY MEMBER)
	2.60 - 2.80	B					
				3.20	36.00		End of Pit at 3.200m

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Remarks: Groundwater ingress at 2.0mbgl.
Hand vanes not undertaken.

Stability: Pit walls open and stable

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Trial Pit Log

TrialPit No
TP24
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 433253E - 558601N Level: 39.25
Plant Used:	JCB 3CX	Dimensions (m): 2.70 × 1.10, Depth 3.10	Scale 1:26
Client:	Wates Construction North East		Logged SM

Date: 01/11/2021

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.00 - 0.40	ES		0.40	38.85		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		0.80	38.45		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)
	1.40 - 1.50	B		1.30	37.95		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)
	1.80	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)
	2.50	ES		3.10	36.15		End of Pit at 3.100m

Remarks: No groundwater encountered.
Hand vanes not undertaken.

Stability: Pit walls open and stable

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Trial Pit Log

TrialPit No
TP25
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 433249E - 558556N Level: 39.42
Plant Used:	JCB 3CX	Dimensions (m): Depth 0.70	2.30 × 0.90
Client:	Wates Construction North East		Scale 1:26 Logged SM

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (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	B		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 angular of sandstone and mudstone. (PELAW CLAY MEMBER)
	0.40 - 0.70	ES					
	0.80	B		0.70	38.72		End of Pit at 0.700m

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Remarks: No groundwater encountered.
Trial pit terminated at 0.70mbgl due to service presence.
No service damage encountered.
Hand vanes not undertaken.

Stability: Pit walls open and stable

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Trial Pit Log

TrialPit No: TP26
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 433226E - 558533N Level: 39.67
Plant Used:	JCB 3CX	Dimensions (m): Depth 2.70	2.30 × 1.00
Client:	Wates Construction North East		

Date: 29/10/2021
Scale: 1:26
Logged: SM

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.20 - 0.30	ES		0.30	39.37		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 - 0.60	B+ES		0.60	39.07		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 - 1.30	B+ES					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)
	2.50 - 2.60	ES		2.40	37.27		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)
				2.70	36.97		End of Pit at 2.700m

Remarks: No groundwater encountered.
Hand vanes not undertaken.

Stability: Pit walls open and stable

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Trial Pit Log

TrialPit No
TP27
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 433327E - 558592N Level: 38.99
Plant Used:	JCB 3CX	Dimensions (m): Depth 2.50	2.60 × 0.90
Client:	Wates Construction North East		Scale 1:26 Logged SM

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.20 - 0.30	ES		0.40	38.59		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		1.50	37.49		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)
	1.70 - 1.80	B+ES		2.00	36.99		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		2.50	36.49		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)
							End of Pit at 2.500m

Remarks: No groundwater encountered.
Hand vanes not undertaken.

Stability: Pit walls open and stable

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Trial Pit Log

TrialPit No
TP28
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 433318E - 558636N Level: 38.69
Plant Used:	JCB 3CX	Dimensions (m): Depth 3.15	2.60 × 0.90
Client:	Wates Construction North East		Scale 1:26 Logged SM

Date 02/11/2021

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.20 - 0.30	ES		0.40	38.29		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 - 0.80	ES		1.00	37.69		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	ES		1.40	37.29		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		3.15	35.54		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)
							End of Pit at 3.150m

1 2 3 4 5

Remarks: No groundwater encountered.
Hand vanes not undertaken.

Stability: Pit walls open and stable

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Trial Pit Log

TrialPit No
TP29
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 433297E - 558686N Level: 38.70
Plant Used:	JCB 3CX	Dimensions (m): Depth 3.40	2.65 × 0.85
Client:	Wates Construction North East		Scale 1:26 Logged SM

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.20 - 0.30	ES		0.40	38.30		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.
				1.10	37.60		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)
	1.40 - 1.50	B+ES		1.80	36.90		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)
	2.40 - 2.50	B+ES		2.60	36.10		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)
	3.20 - 3.30	B+ES		3.40	35.30		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)
							End of Pit at 3.400m

Remarks: No groundwater encountered.
Hand vanes not undertaken.

Stability: Pit walls open and stable

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Trial Pit Log

TrialPit No: TP30
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 433271E - 558737N Level: 38.51
Plant Used:	JCB 3CX	Dimensions (m): Depth 3.20	2.70 × 1.10
Client:	Wates Construction North East		Scale 1:26 Logged SM

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.20 - 0.40	ES		0.20	38.31		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	38.11		Firm consistency dark grey slightly sandy slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone and quartz. (PELAW CLAY MEMBER)
	0.60	HV	58kPa				
	0.80 - 0.90	B					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)
	1.10 - 2.00	ES		1.10	37.41		
	1.20	HV	77kPa				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)
				2.00	36.51		
	2.20 - 2.40	B					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. (PELAW CLAY MEMBER)
	2.40	HV	97kPa				
	3.00 - 3.20	ES					
				3.20	35.31		End of Pit at 3.200m

Remarks: No groundwater encountered.

Stability: Pit walls open and stable

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Trial Pit Log

TrialPit No
TP31
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 433249E - 558788N Level: 38.27
Plant Used:	JCB 3CX	Dimensions (m): Depth 3.50	3.00 × 0.60
Client:	Wates Construction North East		Scale 1:26 Logged CG

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	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.
				0.40	37.87		
	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)
				0.80	37.47		
	1.00 - 1.20	B					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	B					
	2.60 - 2.80	ES					
	3.00 - 3.20	B					
				3.50	34.77		End of Pit at 3.500m

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Remarks: No groundwater encountered.
Hand vanes not undertaken.

Stability: Pit walls stable

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Trial Pit Log

TrialPit No: TP32
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 433193E - 558922N Level: 37.60
Plant Used:	JCB 3CX	Dimensions (m): Depth 3.50	3.00 × 0.60
Client:	Wates Construction North East		Scale 1:26 Logged CG

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	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.
				0.40	37.20		
	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)
				0.80	36.80		
	1.00 - 1.20	B					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	B					
	2.60 - 2.80	ES					
	3.00 - 3.20	B					
				3.50	34.10		End of Pit at 3.500m

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Remarks: No groundwater encountered.
Hand vanes not undertaken.

Stability: Pit walls stable

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Trial Pit Log

TrialPit No
TP33
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 433270E - 558900N Level: 37.24
Date	27/10/2021		
Plant Used:	JCB 3CX	Dimensions (m): Depth 3.50	3.00 × 0.60
Scale	1:26		
Client:	Wates Construction North East		
Logged	CG		

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	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.
				0.40	36.84		
	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)
				0.80	36.44		
	1.00 - 1.20	B					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	B					
	2.60 - 2.80	ES					
	3.00 - 3.20	B					
				3.50	33.74		End of Pit at 3.500m

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Remarks: No groundwater encountered.
Hand vanes not undertaken.

Stability: Pit walls stable

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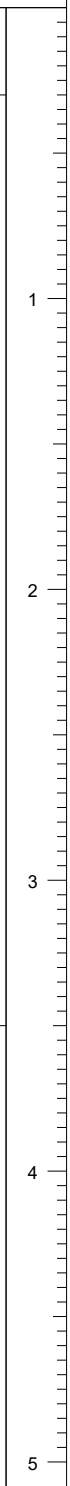
Trial Pit Log

TrialPit No: TP34
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 433301E - 558866N Level: 37.31
Plant Used:	JCB 3CX	Dimensions (m): Depth 3.50	3.00 × 0.60
Client:	Wates Construction North East		Scale 1:26 Logged CG

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.10 - 0.30	ES		0.30	37.01		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 - 0.60	ES					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)
	0.80 - 1.00	B					
	1.20 - 1.40	ES					
	1.80 - 2.00	B					
	2.20 - 2.40	ES					
	2.80 - 3.00	B		3.50	33.81		End of Pit at 3.500m



Remarks: No groundwater encountered.
Hand vanes not undertaken.

Stability: Pit walls stable

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Trial Pit Log

TrialPit No
TP35
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 433322E - 558826N Level: 37.67
Plant Used:	JCB 3CX	Dimensions (m): Depth 3.50	3.00 × 0.60
Client:	Wates Construction North East		Scale 1:26 Logged CG

Date 27/10/2021

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.10 - 0.30	ES		0.30	37.37		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		0.90	36.77		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)
	1.00 - 1.20	B					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)
	1.60 - 1.80	ES					
	2.00 - 2.20	B					
	2.60 - 2.80	ES					
	3.00 - 3.20	B		3.50	34.17		End of Pit at 3.500m

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Remarks: No groundwater encountered.
Hand vanes not undertaken.

Stability: Pit walls stable

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Trial Pit Log

TrialPit No
TP36
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 433344E - 558776N Level: 38.14
Plant Used:	JCB 3CX	Dimensions (m): Depth 2.30	2.60 × 1.00
Client:	Wates Construction North East		

Date: 02/11/2021
Scale: 1:26
Logged: SM

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.30 - 0.40	ES		0.40	37.74		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		1.10	37.04		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)
	1.60 - 1.70 1.60 - 1.80	ES B		1.80	36.34		Stiff consistency 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)
	1.90 - 2.10	B+ES		2.30	35.84		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)
							End of Pit at 2.300m

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Remarks: Surface water ingress.
Hand vanes not undertaken.

Stability: Small areas of instability

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Trial Pit Log

TrialPit No: TP37
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 433371E - 558722N Level: 38.39
Plant Used:	JCB 3CX	Dimensions (m): 2.50 × 0.95, Depth 3.10	Scale 1:26
Client:	Wates Construction North East		Logged SM

Date: 02/11/2021

Water Strike	Samples & In Situ Testing: Depth	Type	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.
				0.80	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, siltstone, mudstone, coal and quartz. Cobbles are sub angular of sandstone and mudstone. (PELAW CLAY MEMBER)
	1.20 - 1.30	B+ES		1.80	36.59		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		2.30	36.09		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		3.10	35.29		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)
							End of Pit at 3.100m

Remarks: No groundwater encountered.
Hand vanes not undertaken.

Stability: Pit walls open and stable

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Trial Pit Log

TrialPit No
TP38
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 433395E - 558669N Level: 38.36
Plant Used:	JCB 3CX	Dimensions (m): Depth 3.50	2.50 × 1.05
Client:	Wates Construction North East		

Date: 02/11/2021
Scale: 1:26
Logged: SM

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	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.
	0.80 - 0.90	B+ES		1.10	37.26		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)
	1.50 - 1.60	B+ES		2.00	36.36		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)
	2.80 - 2.90	B+ES		3.50	34.86		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)
							End of Pit at 3.500m

Remarks: No groundwater encountered.
Hand vanes not undertaken.

Stability: Pit walls open and stable

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Trial Pit Log

TrialPit No
TP39
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 433464E - 558650N Level: 38.30
Plant Used:	JCB 3CX	Dimensions (m): Depth 3.10	2.80 × 1.05
Client:	Wates Construction North East		Date 02/11/2021 Scale 1:26 Logged SM

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (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.
	0.50 - 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	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)
	2.40 - 2.50	B+ES		3.10	35.20		End of Pit at 3.100m

Remarks: No groundwater encountered.
Hand vanes not undertaken.

Stability: Pit walls open and stable

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Trial Pit Log

TrialPit No
TP40
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 433501E - 558688N Level: 37.82
Plant Used:	JCB 3CX	Dimensions (m): Depth 3.25	2.85 × 1.15
Client:	Wates Construction North East		Scale 1:26 Logged SM

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (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.
				0.40	37.42		
	0.80 - 1.00	ES					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				
				1.30	36.52		
	1.50	HV	90kPa				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					
	2.50	HV	117kPa				
	2.80 - 3.00	B+ES					
				3.20	34.62		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)
				3.25	34.56		End of Pit at 3.250m

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Remarks: No groundwater encountered.

Stability: Pit walls open and stable

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Trial Pit Log

TrialPit No
TP41
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 433465E - 558702N Level: 38.03
Plant Used:	JCB 3CX	Dimensions (m): 2.60 × 1.10	Scale 1:26
Client:	Wates Construction North East	Depth 3.20	Logged SM

Date 02/11/2021

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (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.
				0.40	37.63		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)
	0.90 - 1.00	B+ES					
				1.20	36.83		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)
	1.80 - 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. (PELAW CLAY MEMBER)
	2.40 - 2.50	B+ES					
				2.50	35.53		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)
				3.20	34.83		End of Pit at 3.200m

Remarks: No groundwater encountered.
Hand vanes not undertaken.

Stability: Pit walls open and stable

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Trial Pit Log

TrialPit No
TP42
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 433443E - 558754N Level: 37.99
Plant Used:	JCB 3CX	Dimensions (m): Depth 2.90	2.40 × 1.00
Client:	Wates Construction North East		

Date: 02/11/2021
Scale: 1:26
Logged: SM

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (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.
				0.40	37.59		
	0.60 - 0.70	B+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. (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		
	1.60 - 1.70 1.60 - 1.80	ES B					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 quartz. (PELAW CLAY MEMBER)
				2.00	35.99		
	2.40 - 2.50	B					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)
	2.60 - 2.70	ES					
				2.90	35.09		End of Pit at 2.900m

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Remarks: No groundwater encountered.
Hand vanes not undertaken.

Stability: Pit walls open and stable

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Trial Pit Log

TrialPit No
TP43
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 433471E - 558763N Level: 37.63
Plant Used:	JCB 3CX	Dimensions (m): Depth 3.20	2.65 × 1.10
Client:	Wates Construction North East		

Date: 02/11/2021
Scale: 1:26
Logged: SM

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.30 - 0.40	ES		0.40	37.23		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 - 0.60	ES		0.70	36.93		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)
	0.90 - 1.10	B+ES		1.60	36.03		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)
				2.20	35.43		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)
	2.50 - 2.60	B+ES		3.20	34.43		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)
							End of Pit at 3.200m

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Remarks: No groundwater encountered.
Hand vanes not undertaken.

Stability: Pit walls open and stable

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Trial Pit Log

TrialPit No
TP44
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 433417E - 558808N Level: 37.68
Plant Used:	JCB 3CX	Dimensions (m): Depth 2.70	2.65 × 1.15
Client:	Wates Construction North East		Scale 1:26 Logged SM

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (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.
	0.60 - 0.70	ES		0.80	36.88		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 - 1.40	B+ES		1.50	36.18		Stiff consistency dark grey slightly sandy slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse of sandstone, mudstone and siltstone. (PELAW CLAY MEMBER)
	2.10 - 2.20 2.10 - 2.30	B ES		2.70	34.98		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)
	2.50 - 2.60	B					End of Pit at 2.700m

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Remarks: No groundwater encountered.
Hand vanes not undertaken.

Stability: Pit walls open and stable

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Trial Pit Log

TrialPit No
TP45
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 433442E - 558819N Level: 37.56
Plant Used:	JCB 3CX	Dimensions (m): Depth 3.30	2.70 × 1.10
Client:	Wates Construction North East		Scale 1:26 Logged SM

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.30 - 0.40	ES		0.40	37.16		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.
	0.60 - 0.70	ES		0.80	36.76		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)
	1.50 - 1.60	B+ES		1.80	35.76		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 - 2.30	B+ES		2.70	34.86		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)
	3.00 - 3.10	B+ES		3.30	34.26		Stiff consistency brown slightly sandy slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse of sandstone. (PELAW CLAY MEMBER)
							End of Pit at 3.300m

Remarks: No groundwater encountered.
Hand vanes not undertaken.

Stability: Pit walls open and stable

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Trial Pit Log

TrialPit No
TP46
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 433394E - 558861N Level: 37.52
Plant Used:	JCB 3CX	Dimensions (m): Depth 3.50	3.00 × 0.60
Client:	Wates Construction North East		Scale 1:26 Logged CG

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	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.
				0.50	37.02		
	0.60 - 0.80	ES					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	B					
	1.60 - 1.80	ES					
	2.00 - 2.20	B					
	2.60 - 2.80	ES					
	3.00 - 3.20	B					
				3.50	34.02		End of Pit at 3.500m

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Remarks: No groundwater encountered.
Hand vanes not undertaken.

Stability: Pit walls stable

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Trial Pit Log

TrialPit No: TP47
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 433358E - 558894N Level: 36.98
Plant Used:	JCB 3CX	Dimensions (m): Depth 3.50	3.00 × 0.60
Client:	Wates Construction North East		Scale 1:26 Logged CG
			Date 27/10/2021

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	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.
				0.40	36.58		
	0.60 - 0.80	B					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	ES		0.80	36.18		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	B					
	1.80 - 2.00	ES					
	2.60 - 2.80	B					
	2.80 - 3.00	ES					
				3.50	33.48		End of Pit at 3.500m

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Remarks: No groundwater encountered.
Hand vanes not undertaken.

Stability: Pit walls stable

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Trial Pit Log

TrialPit No
TP48
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 433364E - 558972N Level: 36.60
Plant Used:	JCB 3CX	Dimensions (m): Depth 3.50	3.00 × 0.60
Client:	Wates Construction North East		Scale 1:26 Logged CG

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	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.
				0.40	36.20		
	0.50 - 0.70	B					Firm consistency yellowish brown sandy slightly gravelly slightly peaty CLAY. Gravel is sub angular to sub rounded fine to coarse sandstone, mudstone and coal. (PELAW CLAY MEMBER)
				0.70	35.90		
	0.80 - 1.00	ES					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)
	1.50 - 1.80	B					
	1.80 - 2.00	ES					
	2.00 - 2.20	B					
	2.50 - 2.80	B					
	2.80 - 3.00	ES					
				3.50	33.10		End of Pit at 3.500m

Remarks: No groundwater encountered.
Hand vanes not undertaken.

Stability: Pit wall stable

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Trial Pit Log

TrialPit No
TP49
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 433345E - 559003N Level: 36.29
Plant Used:	JCB 3CX	Dimensions (m): Depth 3.50	3.00 × 0.60
Client:	Wates Construction North East		Scale 1:26 Logged CG

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (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.
				0.60	35.69		
	0.80 - 1.00	ES					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	B		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	B					
	2.80 - 3.00	ES					
	3.00 - 3.20	B					
				3.50	32.79		End of Pit at 3.500m

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Remarks: No groundwater encountered.
Hand vanes not undertaken.

Stability: Pit walls stable

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Trial Pit Log

TrialPit No
TP50
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 433406E - 559032N Level: 36.15
Plant Used:	JCB 3CX	Dimensions (m): Depth 3.50	3.00 × 0.60
Client:	Wates Construction North East		Scale 1:26 Logged CG

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	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.
				0.40	35.75		
	0.60 - 0.80	ES					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	B					
	1.60 - 1.80	ES					
	2.00 - 2.20	B					
	2.60 - 2.80	ES					
				3.50	32.65		End of Pit at 3.500m

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Remarks: No groundwater encountered.
Hand vanes not undertaken.

Stability: Pit walls stable

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Trial Pit Log

TrialPit No
TP51
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 433365E - 559095N Level: 35.47
Plant Used:	JCB 3CX	Dimensions (m): Depth 3.50	3.00 × 0.60
Client:	Wates Construction North East		Scale 1:26 Logged CG

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	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.
	0.40 - 0.60	ES		0.40	35.07		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	B					
	1.40 - 1.60	ES					
	2.00 - 2.20	B					
	2.40 - 2.60	ES					
	3.00 - 3.20	B					
				3.50	31.97		End of Pit at 3.500m

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Remarks: No groundwater encountered.
Hand vanes not undertaken.

Stability: Pit walls stable

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Trial Pit Log

TrialPit No
TP52
Sheet 1 of 1

Project Name:	Envision Giga Factory, Sunderland	Project No. S211001	Co-ords: 433367E - 559033N Level: 35.85
Plant Used:	JCB 3CX	Dimensions (m): Depth 3.50	3.00 × 0.60
Client:	Wates Construction North East		Scale 1:26 Logged CG

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (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					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	B					
	1.60 - 1.80	ES					
	2.00 - 2.20	B					
	2.60 - 2.80	ES					
	3.00 - 3.20	B		3.50	32.35		End of Pit at 3.500m

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Remarks: No groundwater encountered.
Hand vanes not undertaken.

Stability: Pit walls stable

Plate 1: TP01 Faces

Plate 2: TP01 Spoil

Title	**Date**
Trial Pit Photographs	January 2022
Project	**Plate No.**
Envision Giga Factory, Sunderland	1
Client	
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Plate 3: TP02 Faces

Plate 4: TP02 Spoil

Title	**Date**
Trial Pit Photographs	January 2022
Project	**Plate No.**
Envision Giga Factory, Sunderland	2
Client	
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Plate 5: TP03 Faces

Plate 6: TP03 Spoil

Title	**Date**
Trial Pit Photographs	January 2022
Project	**Plate No.**
Envision Giga Factory, Sunderland	3
Client	
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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	

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Plate 9: TP05 Faces

Plate 10: TP05 Spoil

Title	**Date**
Trial Pit Photographs	January 2022
Project	**Plate No.**
Envision Giga Factory, Sunderland	5
Client	
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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	

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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	

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Plate 15: TP08 Faces

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	

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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	

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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	

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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	

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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	

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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	

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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	

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Plate 29: TP15 Spoil

Plate 30: TP16 Faces

Title	**Date**
Trial Pit Photographs	January 2022
Project	**Plate No.**
Envision Giga Factory, Sunderland	15
Client	
Wates Construction North East Ltd	

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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	

Solmek Ltd.
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www.solmek.com

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Plate 33: TP17 Spoil

Plate 34: TP18 Faces

Title	**Date**
Trial Pit Photographs	January 2022
Project	**Plate No.**
Envision Giga Factory, Sunderland	17
Client	
Wates Construction North East Ltd	

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Plate 35: TP18 Spoil

Plate 36: TP19 Faces

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

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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	

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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	

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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	

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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	

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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	

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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	

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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	

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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	

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Plate 53: TP27 Spoil

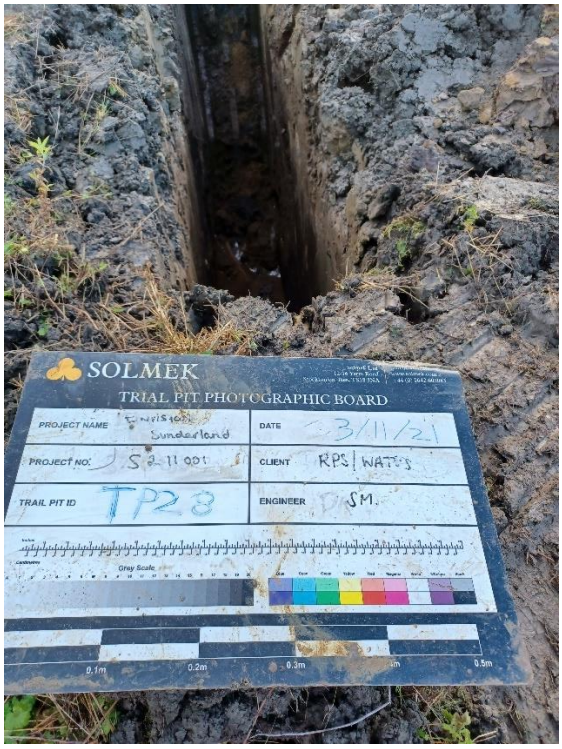

Plate 54: TP28 Faces

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

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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	

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Plate 57: TP29 Spoil

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	

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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	

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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	

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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	

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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	

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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	

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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	

Solmek Ltd.
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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	

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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	

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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	

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Plate 77: TP39 Spoil

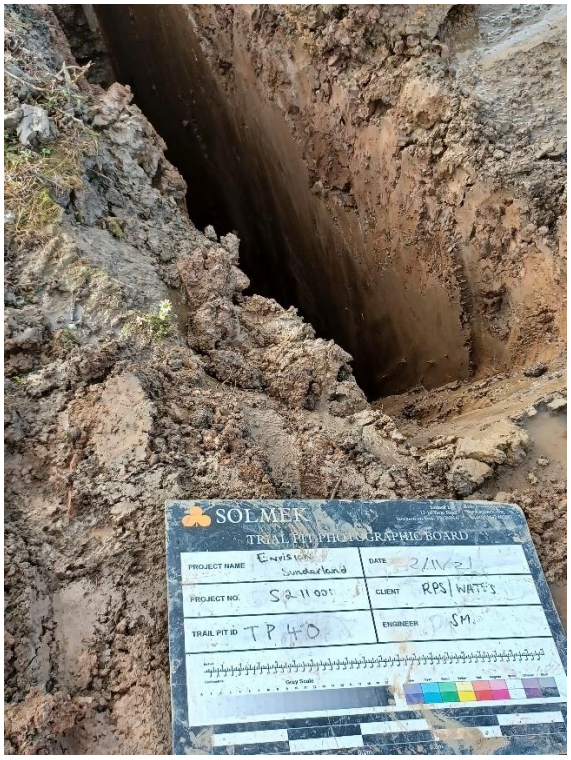

Plate 78: TP40 Faces

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

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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	

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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	

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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	

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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	

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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	

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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	

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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	

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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	

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Plate 95: TP49 Spoil

Plate 96: TP50 Faces

Title	**Date**
Trial Pit Photographs	January 2022
Project	**Plate No.**
Envision Giga Factory, Sunderland	48
Client	
Wates Construction North East Ltd	

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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	

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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	

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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	

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APPENDIX C

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

Results - Soil

Project: S211001 Envision, Sunderland

Client: Solmek Ltd			**Chemtest Job No.:**		21-38893	21-38893	21-38893	21-38893	21-38893	21-38893	21-38893	21-38893	21-38893
Quotation No.:			**Chemtest Sample ID.:**		1314198	1314199	1314200	1314201	1314202	1314203	1314204	1314205	1314206
			Sample Location:		CP+RO 01	CP+RO 04	CP+RO 06	CP04	CP04	WS02	WS05	WS05	WS05
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.50	0.20	0.30	0.10	0.60	02	0.3	0.9	1.6
			Bottom Depth (m):		0.60	0.30	0.40	0.20	0.70	0.3	0.4	1	1.7
			Date Sampled:		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
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	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 Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	
Moisture	N	2030	%	0.020	19	17	24	16	31	15	26	35	43
Soil Colour	N	2040		N/A	Brown	Brown	Brown	Brown	Brown	Black	Black	Black	Brown
Other Material	N	2040		N/A	Stones	Stones	Stones and Roots	Stones	Stones	Stones	Stones	Stones	Stones
Soil Texture	N	2040		N/A	Clay	Sand	Clay	Clay	Clay	Sand	Sand	Sand	Clay
pH	M	2010		4.0	8.6	7.8	8.5	8.4	8.3	8.3	8.0	7.6	
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	< 0.40	0.86	< 0.40	1.1	0.41	< 0.40	1.2	1.1	
Sulphate (2:1 Water Soluble) as SO4	M	2120	mg/l	10	13	< 10	< 10	10	< 10	21	110	41	
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50	0.60	0.50	0.60	< 0.50	< 0.50	< 0.50	< 0.50	
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	33	3.2	41	28	22	8.0	47	9.2	
Arsenic	M	2450	mg/kg	1.0	8.8	4.1	4.4	1.8	2.9	13	3.7	16	
Cadmium	M	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.25	< 0.10	0.19	
Copper	M	2450	mg/kg	0.50	370	43	38	140	20	110	48	88	
Mercury	M	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Nickel	M	2450	mg/kg	0.50	51	8.9	21	22	10	32	21	41	
Lead	M	2450	mg/kg	0.50	28	31	9.3	21	6.4	50	6.8	48	
Selenium	M	2450	mg/kg	0.20	0.28	< 0.20	0.23	< 0.20	< 0.20	1.1	< 0.20	< 0.20	
Zinc	M	2450	mg/kg	0.50	76	32	27	37	19	260	22	56	
Chromium (Trivalent)	N	2490	mg/kg	1.0	35	15	18	19	13	15	13	16	
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Organic Matter	M	2625	%	0.40	1.4	5.2	3.1	2.4	2.4	33	24	24	
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	57	< 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	340	210	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	650	560	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	100	130	230	260
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	100	1200	1000	260
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	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 >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	50	37	< 1.0

Results - Soil

Project: S211001 Envision, Sunderland

Client: Solmek Ltd			**Chemtest Job No.:**		21-38893	21-38893	21-38893	21-38893	21-38893	21-38893	21-38893	21-38893	21-38893
Quotation No.:			**Chemtest Sample ID.:**		1314198	1314199	1314200	1314201	1314202	1314203	1314204	1314205	1314206
			Sample Location:		CP+RO 01	CP+RO 04	CP+RO 06	CP04	CP04	WS02	WS05	WS05	WS05
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.50	0.20	0.30	0.10	0.60	02	0.3	0.9	1.6
			Bottom Depth (m):		0.60	0.30	0.40	0.20	0.70	0.3	0.4	1	1.7
			Date Sampled:		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
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	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	< 1.0	160	19	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 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	M	2760	µg/kg	1.0							< 1.0	< 1.0	< 1.0
Vinyl Chloride	M	2760	µg/kg	1.0							< 1.0	< 1.0	< 1.0
Bromomethane	M	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	M	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	M	2760	µg/kg	1.0							< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	M	2760	µg/kg	1.0							< 1.0	< 1.0	< 1.0
Tetrachloromethane	M	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	M	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	M	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	M	2760	µg/kg	1.0							< 1.0	< 1.0	< 1.0
Dibromomethane	M	2760	µg/kg	1.0							< 1.0	< 1.0	< 1.0
Bromodichloromethane	M	2760	µg/kg	5.0							< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10							< 10	< 10	< 10
Toluene	M	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	M	2760	µg/kg	10							< 10	< 10	< 10
Tetrachloroethene	M	2760	µg/kg	1.0							< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	U	2760	µg/kg	2.0							< 2.0	< 2.0	< 2.0
Dibromochloromethane	U	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							< 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

Results - Soil

Project: S211001 Envision, Sunderland

Client: Solmek Ltd					**Chemtest Job No.:**	21-38893	21-38893	21-38893	21-38893	21-38893	21-38893	21-38893	21-38893
Quotation No.:					**Chemtest Sample ID.:**	1314198	1314199	1314200	1314201	1314202	1314203	1314204	1314205	1314206
					Sample Location:	CP+RO 01	CP+RO 04	CP+RO 06	CP04	CP04	WS02	WS05	WS05	WS05
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.50	0.20	0.30	0.10	0.60	02	0.3	0.9	1.6
					Bottom Depth (m):	0.60	0.30	0.40	0.20	0.70	0.3	0.4	1	1.7
					Date Sampled:	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
					Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**										
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
Styrene	M	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	M	2760	µg/kg	1.0								< 1.0	< 1.0	< 1.0
Bromobenzene	M	2760	µg/kg	1.0								< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50								< 50	< 50	< 50
N-Propylbenzene	U	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								< 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	
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	0.82	5.5	0.76	
Benzo[b]fluoranthene	M	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.20	6.3	0.90	
Benzo[k]fluoranthene	M	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.34	2.9	0.25	
Benzo[a]pyrene	M	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.55	5.1	0.54	
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	
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.89	< 0.10	

Results - Soil

Project: S211001 Envision, Sunderland

Client: Solmek Ltd		**Chemtest Job No.:**			21-38893	21-38893	21-38893	21-38893	21-38893	21-38893	21-38893	21-38893	21-38893
Quotation No.:		**Chemtest Sample ID.:**			1314198	1314199	1314200	1314201	1314202	1314203	1314204	1314205	1314206
		Sample Location:			CP+RO 01	CP+RO 04	CP+RO 06	CP04	CP04	WS02	WS05	WS05	WS05
		Sample Type:			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			0.50	0.20	0.30	0.10	0.60	02	0.3	0.9	1.6
		Bottom Depth (m):			0.60	0.30	0.40	0.20	0.70	0.3	0.4	1	1.7
		Date Sampled:			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
		Asbestos Lab:			DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	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

Results - Soil

Project: S211001 Envision, Sunderland

Client: Solmek Ltd		**Chemtest Job No.:**			21-38893	21-38893	21-38893
Quotation No.:		**Chemtest Sample ID.:**			1314207	1314208	1314209
		Sample Location:			WS08	WS09	WS10
		Sample Type:			SOIL	SOIL	SOIL
		Top Depth (m):			0.1	0.5	0.1
		Bottom Depth (m):			0.3	0.6	0.3
		Date Sampled:			28-Oct-2021	28-Oct-2021	28-Oct-2021
		Asbestos Lab:			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
pH	M	2010		4.0	8.3	8.6	7.9
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	0.50	< 0.40	0.63
Sulphate (2:1 Water Soluble) as SO4	M	2120	mg/l	10	< 10	< 10	< 10
Cyanide (Total)	M	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	M	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Nickel	M	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	2490	mg/kg	1.0	27	15	20
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Organic Matter	M	2625	%	0.40	1.7	1.6	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	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

Results - Soil

Project: S211001 Envision, Sunderland

Client: Solmek Ltd		**Chemtest Job No.:**			21-38893	21-38893	21-38893
Quotation No.:		**Chemtest Sample ID.:**			1314207	1314208	1314209
			Sample Location:		WS08	WS09	WS10
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.1	0.5	0.1
			Bottom Depth (m):		0.3	0.6	0.3
			Date Sampled:		28-Oct-2021	28-Oct-2021	28-Oct-2021
			Asbestos 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	M	2760	µg/kg	1.0			
Vinyl Chloride	M	2760	µg/kg	1.0			
Bromomethane	M	2760	µg/kg	20			
Chloroethane	U	2760	µg/kg	2.0			
Trichlorofluoromethane	M	2760	µg/kg	1.0			
1,1-Dichloroethene	M	2760	µg/kg	1.0			
Trans 1,2-Dichloroethene	M	2760	µg/kg	1.0			
1,1-Dichloroethane	M	2760	µg/kg	1.0			
cis 1,2-Dichloroethene	M	2760	µg/kg	1.0			
Bromochloromethane	U	2760	µg/kg	5.0			
Trichloromethane	M	2760	µg/kg	1.0			
1,1,1-Trichloroethane	M	2760	µg/kg	1.0			
Tetrachloromethane	M	2760	µg/kg	1.0			
1,1-Dichloropropene	U	2760	µg/kg	1.0			
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	M	2760	µg/kg	2.0			
Trichloroethene	N	2760	µg/kg	1.0			
1,2-Dichloropropane	M	2760	µg/kg	1.0			
Dibromomethane	M	2760	µg/kg	1.0			
Bromodichloromethane	M	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			
1,1,1,2-Tetrachloroethane	M	2760	µg/kg	2.0			
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

Results - Soil

Project: S211001 Envision, Sunderland

Client: Solmek Ltd		**Chemtest Job No.:**			21-38893	21-38893	21-38893
Quotation No.:		**Chemtest Sample ID.:**			1314207	1314208	1314209
		Sample Location:			WS08	WS09	WS10
		Sample Type:			SOIL	SOIL	SOIL
		Top Depth (m):			0.1	0.5	0.1
		Bottom Depth (m):			0.3	0.6	0.3
		Date Sampled:			28-Oct-2021	28-Oct-2021	28-Oct-2021
		Asbestos 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	M	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	M	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	< 0.10
Phenanthrene	M	2800	mg/kg	0.10	< 0.10	< 0.10	0.33
Anthracene	M	2800	mg/kg	0.10	< 0.10	< 0.10	0.13
Fluoranthene	M	2800	mg/kg	0.10	0.14	< 0.10	0.37
Pyrene	M	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

Results - Soil

Project: S211001 Envision, Sunderland

Client: Solmek Ltd		**Chemtest Job No.:**			21-38893	21-38893	21-38893
Quotation No.:		**Chemtest Sample ID.:**			1314207	1314208	1314209
			Sample Location:		WS08	WS09	WS10
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.1	0.5	0.1
			Bottom Depth (m):		0.3	0.6	0.3
			Date Sampled:		28-Oct-2021	28-Oct-2021	28-Oct-2021
			Asbestos Lab:		DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Benzo[g,h,i]perylene	M	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	M	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	pH	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	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	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

U	UKAS accredited
M	MCERTS and UKAS accredited
N	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
T	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.:	21-38929-1
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

Results - Soil

Project: S211001 Envision, Sunderland

Client: Solmek Ltd				**Chemtest Job No.:**	21-38929	21-38929	21-38929	21-38929	21-38929	21-38929	21-38929	21-38929	21-38929
Quotation No.:				**Chemtest Sample ID.:**	1314359	1314360	1314361	1314362	1314363	1314364	1314365	1314366	1314367
				Sample Location:	CP+RO 02	CP+RO 03	CP+RO 05	CP02	CP03	CP07	CP07	WS01	WS01
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.10	0.20	0.30	0.20	0.10	0.10	0.60	0.20	0.70
				Bottom Depth (m):	0.20	0.30	0.40	0.40	0.20	0.20	0.70	0.50	0.90
				Date Sampled:	25-Oct-2021	25-Oct-2021	25-Oct-2021	25-Oct-2021	25-Oct-2021	25-Oct-2021	25-Oct-2021	28-Oct-2021	28-Oct-2021
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	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 Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	14	25	21	26	19	26	26	19	25
Soil Colour	N	2040		N/A	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown	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
Copper	M	2450	mg/kg	0.50	19	43	48	40	30	8.2	69	37	79
Mercury	M	2450	mg/kg	0.10	< 0.10	0.15	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Nickel	M	2450	mg/kg	0.50	25	28	26	13	32	2.8	16	50	33
Lead	M	2450	mg/kg	0.50	18	53	40	28	19	5.0	40	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	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	< 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	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 >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
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

Results - Soil

Project: S211001 Envision, Sunderland

Client: Solmek Ltd			**Chemtest Job No.:**		21-38929	21-38929	21-38929	21-38929	21-38929	21-38929	21-38929	21-38929	21-38929
Quotation No.:			**Chemtest Sample ID.:**		1314359	1314360	1314361	1314362	1314363	1314364	1314365	1314366	1314367
			Sample Location:		CP+RO 02	CP+RO 03	CP+RO 05	CP02	CP03	CP07	CP07	WS01	WS01
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.10	0.20	0.30	0.20	0.10	0.10	0.60	0.20	0.70
			Bottom Depth (m):		0.20	0.30	0.40	0.40	0.20	0.20	0.70	0.50	0.90
			Date Sampled:		25-Oct-2021	25-Oct-2021	25-Oct-2021	25-Oct-2021	25-Oct-2021	25-Oct-2021	25-Oct-2021	28-Oct-2021	28-Oct-2021
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	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	< 10	< 10	< 10
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	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	1.5	< 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	< 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	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	< 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	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
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
Fluoranthene	M	2800	mg/kg	0.10	0.40	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	M	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	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	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[k]fluoranthene	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[a]pyrene	M	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	M	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	M	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	M	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Results - Soil

Project: S211001 Envision, Sunderland

Client: Solmek Ltd		**Chemtest Job No.:**			21-38929	21-38929	21-38929	21-38929
Quotation No.:		**Chemtest Sample ID.:**			1314368	1314369	1314370	1314371
		Sample Location:			WS03	WS04	WS06	WS07
		Sample Type:			SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			0.70	0.20	0.10	0.10
		Bottom Depth (m):			0.80	0.30	0.20	0.30
		Date Sampled:			28-Oct-2021	28-Oct-2021	28-Oct-2021	28-Oct-2021
		Asbestos Lab:			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
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	M	2010		4.0	8.4	8.1	8.4	7.7
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	1.5	1.2	0.45	1.0
Sulphate (2:1 Water Soluble) as SO4	M	2120	mg/l	10	840	< 10	33	< 10
Cyanide (Total)	M	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	M	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	M	2450	mg/kg	0.50	52	43	50	51
Mercury	M	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.13
Nickel	M	2450	mg/kg	0.50	30	18	34	29
Lead	M	2450	mg/kg	0.50	16	45	14	50
Selenium	M	2450	mg/kg	0.20	0.48	< 0.20	0.27	< 0.20
Zinc	M	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	M	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	M	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	M	2680	mg/kg	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
Aliphatic TPH >C21-C35	M	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	M	2680	mg/kg	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
Aromatic TPH >C12-C16	M	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

Results - Soil

Project: S211001 Envision, Sunderland

Client: Solmek Ltd		**Chemtest Job No.:**			21-38929	21-38929	21-38929	21-38929
Quotation No.:		**Chemtest Sample ID.:**			1314368	1314369	1314370	1314371
			Sample Location:		WS03	WS04	WS06	WS07
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.70	0.20	0.10	0.10
			Bottom Depth (m):		0.80	0.30	0.20	0.30
			Date Sampled:		28-Oct-2021	28-Oct-2021	28-Oct-2021	28-Oct-2021
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Aromatic TPH >C21-C35	M	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	M	2760	µg/kg	1.0	5.5	< 1.0	< 1.0	< 1.0
Toluene	M	2760	µg/kg	1.0	5.2	< 1.0	< 1.0	< 1.0
Ethylbenzene	M	2760	µg/kg	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
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0	< 1.0	1.3	1.3
Naphthalene	M	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	M	2800	mg/kg	0.10	1.1	< 0.10	< 0.10	< 0.10
Fluorene	M	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	U	2815	mg/kg	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
PCB 90+101	U	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	U	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	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Phenols	M	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	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

U	UKAS accredited
M	MCERTS and UKAS accredited
N	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
T	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.:	21-39496-1		
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		

Results - Soil

Project: S211001 Envision, Sunderland

Client: Solmek Ltd			**Chemtest Job No.:**		21-39496	21-39496	21-39496	21-39496	21-39496	21-39496	21-39496	21-39496	21-39496
Quotation No.: Q21-25941			**Chemtest Sample ID.:**		1317261	1317262	1317263	1317264	1317265	1317266	1317267	1317268	1317269
			Sample Location:		TP05	TP05	TP17	TP18	TP19	TP20	TP21	TP22	TP31
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.1	0.6	0.1	0.1	0.1	0.5	0.1	0.1	0.1
			Bottom Depth (m):		0.3	0.8	0.3	0.3	0.3	0.7	0.3	0.3	0.3
			Date Sampled:		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
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	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 Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	20	14	22	22	24	14	26	26	21
Soil Colour	N	2040		N/A	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown	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	Loam	Loam	Loam	Loam	Loam	Loam
pH	M	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)	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	1.4	1.5	1.5	1.7	1.1	1.3	1.6	1.4	1.5
Arsenic	M	2450	mg/kg	1.0	5.9	7.6	9.5	2.4	4.1	6.5	< 1.0	5.2	4.0
Cadmium	M	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	M	2450	mg/kg	0.50	29	28	35	13	30	31	4.7	20	19
Mercury	M	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 >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	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 >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	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 >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
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

Results - Soil

Project: S211001 Envision, Sunderland

Client: Solmek Ltd			**Chemtest Job No.:**		21-39496	21-39496	21-39496	21-39496	21-39496	21-39496	21-39496	21-39496	21-39496
Quotation No.: Q21-25941			**Chemtest Sample ID.:**		1317261	1317262	1317263	1317264	1317265	1317266	1317267	1317268	1317269
			Sample Location:		TP05	TP05	TP17	TP18	TP19	TP20	TP21	TP22	TP31
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.1	0.6	0.1	0.1	0.1	0.5	0.1	0.1	0.1
			Bottom Depth (m):		0.3	0.8	0.3	0.3	0.3	0.7	0.3	0.3	0.3
			Date Sampled:		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
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
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	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	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 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	< 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	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	< 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	M	2800	mg/kg	0.10	0.12	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
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
Fluoranthene	M	2800	mg/kg	0.10	0.19	< 0.10	0.25	0.21	0.21	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	M	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	M	2800	mg/kg	0.10	0.14	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	M	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	M	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	M	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	M	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	M	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	N	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	M	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	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	M	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.13	< 0.10	< 0.10	< 0.10	< 0.10

Results - Soil

Project: S211001 Envision, Sunderland

Client: Solmek Ltd				**Chemtest Job No.:**	21-39496	21-39496	21-39496	21-39496	21-39496	21-39496	21-39496	21-39496	21-39496
Quotation No.: Q21-25941				**Chemtest Sample ID.:**	1317270	1317271	1317272	1317273	1317274	1317275	1317276	1317277	1317278
				Sample Location:	TP32	TP33	TP34	TP35	TP46	TP46	TP47	TP49	TP50
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.6	0.1	0.1	0.6	0.1	0.6	0.1	0.2	0.1
				Bottom Depth (m):	0.8	0.3	0.3	0.8	0.3	0.8	0.3	0.4	0.3
				Date Sampled:	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
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	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 Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	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	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown
Other Material	N	2040		N/A	None	None	None	None	None	None	None	None	NONE
Soil Texture	N	2040		N/A	Loam	Loam	Loam	Loam	Loam	Loam	Loam	Loam	Loam
pH	M	2010		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)	M	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	0.20	0.27	0.20	0.31	0.38	0.35	0.40	0.34	0.35	0.44
Zinc	M	2450	mg/kg	0.50	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
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	4.0	2.8	4.9	5.3	1.6	4.5	2.1	4.2	6.9
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	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	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 >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
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

Results - Soil

Project: S211001 Envision, Sunderland

Client: Solmek Ltd			**Chemtest Job No.:**		21-39496	21-39496	21-39496	21-39496	21-39496	21-39496	21-39496	21-39496	21-39496
Quotation No.: Q21-25941			**Chemtest Sample ID.:**		1317270	1317271	1317272	1317273	1317274	1317275	1317276	1317277	1317278
			Sample Location:		TP32	TP33	TP34	TP35	TP46	TP46	TP47	TP49	TP50
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.6	0.1	0.1	0.6	0.1	0.6	0.1	0.2	0.1
			Bottom Depth (m):		0.8	0.3	0.3	0.8	0.3	0.8	0.3	0.4	0.3
			Date Sampled:		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
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	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	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 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	< 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	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	< 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	M	2800	mg/kg	0.10	0.28	< 0.10	< 0.10	0.25	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	M	2800	mg/kg	0.10	0.11	< 0.10	< 0.10	0.15	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	M	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	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[k]fluoranthene	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[a]pyrene	M	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	M	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	M	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	M	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Results - Soil

Project: S211001 Envision, Sunderland

Client: Solmek Ltd			**Chemtest Job No.:**		21-39496	21-39496
Quotation No.: Q21-25941			**Chemtest Sample ID.:**		1317279	1317280
			Sample Location:		TP51	TP52
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.1	0.1
			Bottom Depth (m):		0.3	0.3
			Date Sampled:		03-Nov-2021	03-Nov-2021
			Asbestos 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
pH	M	2010		4.0	7.6	8.8
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	< 0.010	< 0.010
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50	< 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	0.61	0.64
Arsenic	M	2450	mg/kg	1.0	9.5	2.5
Cadmium	M	2450	mg/kg	0.10	0.22	< 0.10
Chromium	M	2450	mg/kg	1.0	33	9.2
Copper	M	2450	mg/kg	0.50	58	60
Mercury	M	2450	mg/kg	0.10	0.12	< 0.10
Nickel	M	2450	mg/kg	0.50	22	9.8
Lead	M	2450	mg/kg	0.50	65	11
Selenium	M	2450	mg/kg	0.20	0.41	< 0.20
Zinc	M	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	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	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	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	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	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0

Results - Soil

Project: S211001 Envision, Sunderland

Client: Solmek Ltd			**Chemtest Job No.:**		21-39496	21-39496
Quotation No.: Q21-25941			**Chemtest Sample ID.:**		1317279	1317280
			Sample Location:		TP51	TP52
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.1	0.1
			Bottom Depth (m):		0.3	0.3
			Date Sampled:		03-Nov-2021	03-Nov-2021
			Asbestos Lab:		DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Aromatic TPH >C21-C35	M	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	M	2760	µg/kg	1.0	< 1.0	< 1.0
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0	< 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	0.23	< 0.10
Pyrene	M	2800	mg/kg	0.10	0.14	< 0.10
Benzo[a]anthracene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Chrysene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[a]pyrene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	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	0.010	< 0.010	< 0.010
PCB 52	U	2815	mg/kg	0.010	< 0.010	< 0.010
PCB 90+101	U	2815	mg/kg	0.010	< 0.010	< 0.010
PCB 118	U	2815	mg/kg	0.010	< 0.010	< 0.010
PCB 153	U	2815	mg/kg	0.010	< 0.010	< 0.010
PCB 138	U	2815	mg/kg	0.010	< 0.010	< 0.010
PCB 180	U	2815	mg/kg	0.010	< 0.010	< 0.010
Total PCBs (7 Congeners)	U	2815	mg/kg	0.10	< 0.10	< 0.10
Total Phenols	M	2920	mg/kg	0.10	< 0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	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

U	UKAS accredited
M	MCERTS and UKAS accredited
N	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
T	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.:	21-39538-1		
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		

Results - Soil

Project: S211001 Envision, Sunderland

Client: Solmek Ltd			**Chemtest Job No.:**		21-39538	21-39538	21-39538
Quotation No.: Q21-25941			**Chemtest Sample ID.:**		1317503	1317504	1317505
			Sample Location:		CP01	CP05	CP06
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.1	0.1	0.5
			Bottom Depth (m):		0.2	0.2	0.6
			Date Sampled:		03-Nov-2021	03-Nov-2021	03-Nov-2021
			Asbestos 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 Asbestos 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 >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	76	< 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	76	< 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	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

Results - Soil

Project: S211001 Envision, Sunderland

Client: Solmek Ltd			**Chemtest Job No.:**		21-39538	21-39538	21-39538
Quotation No.: Q21-25941			**Chemtest Sample ID.:**		1317503	1317504	1317505
			Sample Location:		CP01	CP05	CP06
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.1	0.1	0.5
			Bottom Depth (m):		0.2	0.2	0.6
			Date Sampled:		03-Nov-2021	03-Nov-2021	03-Nov-2021
			Asbestos 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	M	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	M	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	M	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	M	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	M	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	M	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	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

U	UKAS accredited
M	MCERTS and UKAS accredited
N	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
T	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.:	21-39893-1
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

Results - Soil

Project: S211001 Envision, Sunderland

Client: Solmek Ltd				**Chemtest Job No.:**	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	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:	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
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	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 Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	12	16	14	16	15	14	16	16	24
Soil Colour	N	2040		N/A	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones	Stones	Stones and Roots	Stones and Roots	Stones	Stones and Roots	Stones and Roots	Stones and Roots
Soil Texture	N	2040		N/A	Clay	Clay	Clay	Clay	Sand	Sand	Clay	Sand	Clay
pH	M	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	M	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)	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	3.0	2.9	2.8	2.2	1.7	1.9	1.9	1.8	1.9
Arsenic	M	2450	mg/kg	1.0	9.0	7.4	7.3	8.3	9.0	6.9	7.5	9.9	11
Cadmium	M	2450	mg/kg	0.10	< 0.10	0.12	< 0.10	0.16	0.19	0.11	0.11	0.30	0.28
Chromium	M	2450	mg/kg	1.0	34	39	44	49	35	36	45	38	41
Copper	M	2450	mg/kg	0.50	33	26	28	31	31	23	27	28	30
Mercury	M	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.13	0.14
Nickel	M	2450	mg/kg	0.50	49	49	50	59	37	46	62	27	28
Lead	M	2450	mg/kg	0.50	24	31	24	31	44	22	27	80	83
Selenium	M	2450	mg/kg	0.20	0.31	0.22	0.30	0.39	0.31	0.33	0.50	0.39	0.44
Zinc	M	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	M	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 >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 Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	[C] < 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	22
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	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 >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

Results - Soil

Project: S211001 Envision, Sunderland

Client: Solmek Ltd			**Chemtest Job No.:**		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	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:		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
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	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	M	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	M	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	M	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	M	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	M	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	M	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	M	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	M	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	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.71
Fluorene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	1.1
Phenanthrene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	7.0
Anthracene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	1.8
Fluoranthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	5.8
Pyrene	M	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	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	2.2
Chrysene	M	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	M	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	M	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	M	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	M	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	M	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	< 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
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
Total Phenols	M	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Results - Soil

Project: S211001 Envision, Sunderland

Client: Solmek Ltd			**Chemtest Job No.:**		21-39893	21-39893	21-39893	21-39893	21-39893
Quotation No.:			**Chemtest Sample ID.:**		1319239	1319241	1319242	1319243	1319244
			Sample Location:		TP35	WS06	WS08	WS09	WS10
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.1	0.4	0.5	0.1	0.5
			Bottom Depth (m):						
			Date Sampled:		03-Nov-2021	03-Nov-2021	03-Nov-2021	03-Nov-2021	03-Nov-2021
			Asbestos 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 Asbestos Detected
Moisture	N	2030	%	0.020	18	24	15	18	12
Soil Colour	N	2040		N/A	Brown	Brown	Brown	Brown	Brown
Other Material	N	2040		N/A	Stones and Roots	Stones and Roots	Stones and Roots	Stones and Roots	Stones and 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	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	2.7	3.0	3.0	3.1	3.1
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	M	2680	mg/kg	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
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	M	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

Project: S211001 Envision, Sunderland

Client: Solmek Ltd			**Chemtest Job No.:**		21-39893	21-39893	21-39893	21-39893	21-39893
Quotation No.:			**Chemtest Sample ID.:**		1319239	1319241	1319242	1319243	1319244
			Sample Location:		TP35	WS06	WS08	WS09	WS10
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.1	0.4	0.5	0.1	0.5
			Bottom Depth (m):						
			Date Sampled:		03-Nov-2021	03-Nov-2021	03-Nov-2021	03-Nov-2021	03-Nov-2021
			Asbestos 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	M	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	M	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	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl Tert-Butyl Ether	M	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	M	2800	mg/kg	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
Phenanthrene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	M	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	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.10	< 0.10
Benzo[a]anthracene	M	2800	mg/kg	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
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	M	2800	mg/kg	0.10	< 0.10	< 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	< 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	M	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	2815	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	2815	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	U	2815	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 Phenols	M	2920	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	C	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	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

U	UKAS accredited
M	MCERTS and UKAS accredited
N	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
T	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.:	21-39897-1		
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

Project: S211001 Envision, Sunderland

Client: Solmek Ltd			**Chemtest Job No.:**		21-39897	21-39897
Quotation No.: Q21-25941			**Chemtest Sample ID.:**		1319275	1319276
			Sample Location:		TP39	TP39
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.1	0.5
			Bottom Depth (m):		0.3	0.8
			Date Sampled:		02-Nov-2021	02-Nov-2021
			Asbestos 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
pH	M	2010		4.0	8.0	8.5
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	< 0.010	0.036
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50	< 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	3.9	4.1
Arsenic	M	2450	mg/kg	1.0	16	10
Cadmium	M	2450	mg/kg	0.10	0.42	< 0.10
Chromium	M	2450	mg/kg	1.0	54	48
Copper	M	2450	mg/kg	0.50	54	33
Mercury	M	2450	mg/kg	0.10	0.23	< 0.10
Nickel	M	2450	mg/kg	0.50	39	59
Lead	M	2450	mg/kg	0.50	120	26
Selenium	M	2450	mg/kg	0.20	0.52	0.33
Zinc	M	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	M	2625	%	0.40	6.7	1.7
Aliphatic TPH >C5-C6	N	2680	mg/kg	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	M	2680	mg/kg	1.0	[C] < 1.0	[C] < 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	[C] < 1.0	[C] < 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	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	M	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	mg/kg	5.0	[C] < 5.0	[C] < 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	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	M	2680	mg/kg	1.0	[C] < 1.0	[C] < 1.0

Results - Soil

Project: S211001 Envision, Sunderland

Client: Solmek Ltd			**Chemtest Job No.:**		21-39897	21-39897
Quotation No.: Q21-25941			**Chemtest Sample ID.:**		1319275	1319276
			Sample Location:		TP39	TP39
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.1	0.5
			Bottom Depth (m):		0.3	0.8
			Date Sampled:		02-Nov-2021	02-Nov-2021
			Asbestos Lab:		DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Aromatic TPH >C16-C21	U	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] < 5.0	[C] < 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	[C] < 10	[C] < 10
Benzene	M	2760	µg/kg	1.0	[C] < 1.0	[C] < 1.0
Toluene	M	2760	µg/kg	1.0	[C] < 1.0	[C] < 1.0
Ethylbenzene	M	2760	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	M	2800	mg/kg	0.10	0.16	< 0.10
Chrysene	M	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	M	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[a]pyrene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	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	0.010	[C] < 0.010	[C] < 0.010
PCB 52	U	2815	mg/kg	0.010	[C] < 0.010	[C] < 0.010
PCB 90+101	U	2815	mg/kg	0.010	[C] < 0.010	[C] < 0.010
PCB 118	U	2815	mg/kg	0.010	[C] < 0.010	[C] < 0.010
PCB 153	U	2815	mg/kg	0.010	[C] < 0.010	[C] < 0.010
PCB 138	U	2815	mg/kg	0.010	[C] < 0.010	[C] < 0.010
PCB 180	U	2815	mg/kg	0.010	[C] < 0.010	[C] < 0.010
Total PCBs (7 Congeners)	U	2815	mg/kg	0.10	[C] < 0.10	[C] < 0.10
Total Phenols	M	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	C	Plastic Tub 500g
1319276			TP39	02-Nov-2021	C	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	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

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U	UKAS accredited
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S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
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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.:	21-40485-1
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

Project: S211001 Envision, Sunderland

Client: Solmek Ltd			**Chemtest Job No.:**		21-40485
Quotation No.: Q21-25941			**Chemtest Sample ID.:**		1322142
			Sample Location:		WS04
			Sample Type:		SOIL
			Top Depth (m):		0.70
			Bottom Depth (m):		0.80
			Date Sampled:		03-Nov-2021
			Asbestos Lab:		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
pH	M	2010		4.0	8.4
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	0.14
Cyanide (Total)	M	2300	mg/kg	0.50	[B] 0.60
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	14
Arsenic	M	2450	mg/kg	1.0	8.4
Cadmium	M	2450	mg/kg	0.10	0.22
Chromium	M	2450	mg/kg	1.0	8.8
Copper	M	2450	mg/kg	0.50	37
Mercury	M	2450	mg/kg	0.10	< 0.10
Nickel	M	2450	mg/kg	0.50	12
Lead	M	2450	mg/kg	0.50	96
Selenium	M	2450	mg/kg	0.20	0.40
Zinc	M	2450	mg/kg	0.50	190
Chromium (Trivalent)	N	2490	mg/kg	1.0	8.8
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Organic Matter	M	2625	%	0.40	28
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	[B] < 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	[B] < 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	[B] < 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	[B] < 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	[B] < 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	[B] < 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	[B] < 1.0
Aliphatic TPH >C35-C44	N	2680	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	M	2680	mg/kg	1.0	[B] < 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	[B] < 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	[B] < 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	[B] < 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	[B] < 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	[B] < 1.0

Results - Soil

Project: S211001 Envision, Sunderland

Client: Solmek Ltd			**Chemtest Job No.:**		21-40485
Quotation No.: Q21-25941			**Chemtest Sample ID.:**		1322142
			Sample Location:		WS04
			Sample Type:		SOIL
			Top Depth (m):		0.70
			Bottom Depth (m):		0.80
			Date Sampled:		03-Nov-2021
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	[B] < 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	[B] < 10
Benzene	M	2760	µg/kg	1.0	[B] < 1.0
Toluene	M	2760	µg/kg	1.0	[B] < 1.0
Ethylbenzene	M	2760	µg/kg	1.0	[B] < 1.0
m & p-Xylene	M	2760	µg/kg	1.0	[B] < 1.0
o-Xylene	M	2760	µg/kg	1.0	[B] < 1.0
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	[B] < 1.0
Naphthalene	M	2800	mg/kg	0.10	0.96
Acenaphthylene	N	2800	mg/kg	0.10	0.30
Acenaphthene	M	2800	mg/kg	0.10	0.32
Fluorene	M	2800	mg/kg	0.10	0.63
Phenanthrene	M	2800	mg/kg	0.10	2.3
Anthracene	M	2800	mg/kg	0.10	0.45
Fluoranthene	M	2800	mg/kg	0.10	3.6
Pyrene	M	2800	mg/kg	0.10	3.6
Benzo[a]anthracene	M	2800	mg/kg	0.10	2.5
Chrysene	M	2800	mg/kg	0.10	2.7
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	4.3
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	1.4
Benzo[a]pyrene	M	2800	mg/kg	0.10	3.0
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	2.6
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	0.56
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	2.8
Total Of 16 PAH's	N	2800	mg/kg	2.0	32
PCB 28	U	2815	mg/kg	0.010	< 0.010
PCB 52	U	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
Total Phenols	M	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	B	Amber Glass 250ml
1322142			WS04	03-Nov-2021	B	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	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.
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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
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Eurofins Chemtest Ltd
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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

Results - Water

Project: S211001 Envision, Sunderland

Client: Solmek Ltd		**Chemtest Job No.:**			21-42812	21-42812	21-42812	21-42812	21-42812	21-42812	21-42812	21-42812	21-42812
Quotation No.:		**Chemtest Sample ID.:**			1333581	1333582	1333583	1333584	1333585	1333586	1333587	1333588	1333589
		Sample Location:			CPRO2	CPRO5	CP03	CP04	CP05	CP07	WS03	WS04	WS05
		Sample Type:			WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
		Top Depth (m):			2.25	0.25	0.65	2.04	0.30	1.52	1.20	0.60	0.20
		Date Sampled:			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**									
pH	U	1010		N/A	8.4	8.4	8.3	8.3	8.1	8.2	8.2	8.4	8.4
Alkalinity (Total)	U	1220	mg/l	10	530	600	410	590	590	610	550	380	330
Ammonia (Free)	N	1220	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	0.35	0.070
Ammoniacal Nitrogen	U	1220	mg/l	0.050	0.39	0.16	0.078	0.065	0.078	0.20	0.070	3.1	0.60
Sulphate	U	1220	mg/l	1.0	260	270	410	220	840	290	220	44	14
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 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	< 0.050
Cyanide (Complex)	U	1300	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Arsenic (Total)	N	1455	µg/l	0.20	0.95	0.52	0.22	0.27	0.23	1.4	1.1	14	4.3
Boron (Total)	N	1455	µg/l	10.0	160	200	120	180	120	270	65	97	37
Barium (Total)	N	1455	µg/l	5.00	63	74	96	140	56	47	58	16	97
Beryllium (Total)	N	1455	µg/l	1.00	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cadmium (Total)	N	1455	µg/l	0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11
Copper (Total)	N	1455	µg/l	0.50	3.4	2.4	2.4	2.3	3.3	2.3	1.3	1.3	< 0.50
Mercury (Total)	N	1455	µg/l	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel (Total)	N	1455	µg/l	0.50	2.6	1.6	2.4	3.9	4.2	1.2	3.8	1.7	4.6
Lead (Total)	N	1455	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	1.2	< 0.50	< 0.50	< 0.50	< 0.50
Selenium (Total)	N	1455	µg/l	0.50	< 0.50	< 0.50	< 0.50	0.53	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Vanadium (Total)	N	1455	µg/l	0.50	< 0.50	1.3	< 0.50	< 0.50	< 0.50	2.4	< 0.50	4.9	0.62
Zinc (Total)	N	1455	µg/l	2.5	40	12	5.1	11	16	38	4.3	11	< 2.5
Chromium (Trivalent)	N	1490	µg/l	20	[B] < 20	[B] < 20	[B] < 20	[B] < 20	[B] < 20	[B] < 20	[B] < 20	[B] < 20	[B] < 20
Chromium (Hexavalent)	U	1490	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	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 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	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 >C21-C35	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 >C35-C44	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	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	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 >C8-C10	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 >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	19
Aromatic 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	240
Aromatic 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	< 0.10
Aromatic 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	39
Aromatic TPH >C35-C44	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 Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	300

Results - Water

Project: S211001 Envision, Sunderland

Client: Solmek Ltd		Chemtest Job No.:			21-42812	21-42812	21-42812	21-42812	21-42812	21-42812	21-42812	21-42812	21-42812
Quotation No.:		Chemtest Sample ID.:			1333581	1333582	1333583	1333584	1333585	1333586	1333587	1333588	1333589
		Sample Location:			CPRO2	CPRO5	CP03	CP04	CP05	CP07	WS03	WS04	WS05
		Sample Type:			WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
		Top Depth (m):			2.25	0.25	0.65	2.04	0.30	1.52	1.20	0.60	0.20
		Date Sampled:			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**									
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

Results - Water

Project: S211001 Envision, Sunderland

Client: Solmek Ltd		Chemtest Job No.:			21-42812	21-42812	21-42812	21-42812	21-42812	21-42812	21-42812	21-42812	21-42812
Quotation No.:		Chemtest Sample ID.:			1333581	1333582	1333583	1333584	1333585	1333586	1333587	1333588	1333589
		Sample Location:			CPRO2	CPRO5	CP03	CP04	CP05	CP07	WS03	WS04	WS05
		Sample Type:			WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
		Top Depth (m):			2.25	0.25	0.65	2.04	0.30	1.52	1.20	0.60	0.20
		Date Sampled:			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**									
N-Propylbenzene	U	1760	µg/l	1.0									[C] < 1.0
2-Chlorotoluene	U	1760	µg/l	1.0									[C] < 1.0
1,3,5-Trimethylbenzene	U	1760	µg/l	1.0									[C] < 1.0
4-Chlorotoluene	U	1760	µg/l	1.0									[C] < 1.0
Tert-Butylbenzene	U	1760	µg/l	1.0									[C] < 1.0
1,2,4-Trimethylbenzene	U	1760	µg/l	1.0									[C] < 1.0
Sec-Butylbenzene	U	1760	µg/l	1.0									[C] < 1.0
1,3-Dichlorobenzene	N	1760	µg/l	1.0									[C] < 1.0
4-Isopropyltoluene	U	1760	µg/l	1.0									[C] < 1.0
1,4-Dichlorobenzene	U	1760	µg/l	1.0									[C] < 1.0
N-Butylbenzene	U	1760	µg/l	1.0									[C] < 1.0
1,2-Dichlorobenzene	U	1760	µg/l	1.0									[C] < 1.0
1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50									[C] < 50
1,2,4-Trichlorobenzene	U	1760	µg/l	1.0									[C] < 1.0
Hexachlorobutadiene	U	1760	µg/l	1.0									[C] < 1.0
1,2,3-Trichlorobenzene	U	1760	µg/l	2.0									[C] < 2.0
Methyl Tert-Butyl Ether	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-Nitrosodimethylamine	N	1790	µg/l	0.50									< 0.50
Phenol	N	1790	µg/l	0.50									< 0.50
2-Chlorophenol	N	1790	µg/l	0.50									< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50									< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50									< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50									< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50									< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50									< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50									< 0.50
Hexachloroethane	N	1790	µg/l	0.50									< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50									< 0.50
4-Methylphenol	N	1790	µg/l	0.50									< 0.50
Nitrobenzene	N	1790	µg/l	0.50									< 0.50
Isophorone	N	1790	µg/l	0.50									< 0.50
2-Nitrophenol	N	1790	µg/l	0.50									< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50									< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50									< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50									< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50									< 0.50
Naphthalene	N	1790	µg/l	0.50									< 0.50
4-Chloroaniline	N	1790	µg/l	0.50									< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50									< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50									< 0.50

Results - Water

Project: S211001 Envision, Sunderland

Client: Solmek Ltd		Chemtest Job No.:			21-42812	21-42812	21-42812	21-42812	21-42812	21-42812	21-42812	21-42812	21-42812
Quotation No.:		Chemtest Sample ID.:			1333581	1333582	1333583	1333584	1333585	1333586	1333587	1333588	1333589
		Sample Location:			CPRO2	CPRO5	CP03	CP04	CP05	CP07	WS03	WS04	WS05
		Sample Type:			WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
		Top Depth (m):			2.25	0.25	0.65	2.04	0.30	1.52	1.20	0.60	0.20
		Date Sampled:			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									< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50									< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50									< 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

Results - Water

Project: S211001 Envision, Sunderland

Client: Solmek Ltd		**Chemtest Job No.:**			21-42812	21-42812	21-42812	21-42812	21-42812	21-42812	21-42812	21-42812	21-42812
Quotation No.:		**Chemtest Sample ID.:**			1333581	1333582	1333583	1333584	1333585	1333586	1333587	1333588	1333589
		Sample Location:			CPRO2	CPRO5	CP03	CP04	CP05	CP07	WS03	WS04	WS05
		Sample Type:			WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
		Top Depth (m):			2.25	0.25	0.65	2.04	0.30	1.52	1.20	0.60	0.20
		Date Sampled:			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**									
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

Results - Water

Project: S211001 Envision, Sunderland

Client: Solmek Ltd			**Chemtest Job No.:**		21-42812
Quotation No.:			**Chemtest Sample ID.:**		1333590
			Sample Location:		WS06
			Sample Type:		WATER
			Top Depth (m):		0.00
			Date Sampled:		29-Nov-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
pH	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	µg/l	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	µg/l	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	µg/l	20	[B] < 20
Chromium (Hexavalent)	U	1490	µg/l	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	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	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	µg/l	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	µg/l	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

Results - Water

Project: S211001 Envision, Sunderland

Client: Solmek Ltd			**Chemtest Job No.:**		21-42812
Quotation No.:			**Chemtest Sample ID.:**		1333590
			Sample Location:		WS06
			Sample Type:		WATER
			Top Depth (m):		0.00
			Date Sampled:		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	U	1760	µg/l	1.0	
1,3-Dichloropropane	U	1760	µg/l	2.0	
Dibromochloromethane	U	1760	µg/l	10	
1,2-Dibromoethane	U	1760	µg/l	5	
Chlorobenzene	N	1760	µg/l	1.0	
1,1,1,2-Tetrachloroethane	U	1760	µg/l	2.0	
Ethylbenzene	U	1760	µg/l	1.0	[C] < 1.0
m & p-Xylene	U	1760	µg/l	1.0	[C] < 1.0
o-Xylene	U	1760	µg/l	1.0	[C] < 1.0
Styrene	U	1760	µg/l	1.0	
Tribromomethane	U	1760	µg/l	1.0	
Isopropylbenzene	U	1760	µg/l	1.0	
Bromobenzene	U	1760	µg/l	1.0	
1,2,3-Trichloropropane	N	1760	µg/l	50	

Results - Water

Project: S211001 Envision, Sunderland

Client: Solmek Ltd			**Chemtest Job No.:**		21-42812
Quotation No.:			**Chemtest Sample ID.:**		1333590
			Sample Location:		WS06
			Sample Type:		WATER
			Top Depth (m):		0.00
			Date Sampled:		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	N	1790	µg/l	0.50	
2-Nitrophenol	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	0.50	
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	

Results - Water

Project: S211001 Envision, Sunderland

Client: Solmek Ltd			**Chemtest Job No.:**		21-42812
Quotation No.:			**Chemtest Sample ID.:**		1333590
			Sample Location:		WS06
			Sample Type:		WATER
			Top Depth (m):		0.00
			Date Sampled:		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	

Results - Water

Project: S211001 Envision, Sunderland

Client: Solmek Ltd			**Chemtest Job No.:**		21-42812
Quotation No.:			**Chemtest Sample ID.:**		1333590
			Sample Location:		WS06
			Sample Type:		WATER
			Top Depth (m):		0.00
			Date Sampled:		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	BC	Coloured Winchester 1000ml
1333582			CPRO5	29-Nov-2021	BC	Coloured Winchester 1000ml
1333583			CP03	29-Nov-2021	BC	Coloured Winchester 1000ml
1333584			CP04	29-Nov-2021	BC	Coloured Winchester 1000ml
1333585			CP05	29-Nov-2021	BC	Coloured Winchester 1000ml
1333586			CP07	29-Nov-2021	BC	Coloured Winchester 1000ml
1333587			WS03	29-Nov-2021	BC	Coloured Winchester 1000ml
1333588			WS04	29-Nov-2021	BC	Coloured Winchester 1000ml
1333589			WS05	29-Nov-2021	BC	Coloured Winchester 1000ml
1333590			WS06	29-Nov-2021	BC	Coloured Winchester 1000ml

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	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	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
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
M	MCERTS and UKAS accredited
N	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
T	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

UKAS TESTING
7607

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:
K Watkin	☐ J. Brischuck (Laboratory Manager) ☑ K. Watkin (Quality Manager) ☐

Summary of Classification Tests

Site name	Job number
Envision, Sunderland	S211001

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

UKAS TESTING
7607

Hole	Depth		Type	*w*	Oven temp.	wa	Pa	Pr	wL	wP	IP	IL	Plasticity class	Preparation method
	Top m	Base m		%	oc	%	%	%	%	%	%			
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	CH	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									

All tests found in Solmek UKAS Schedule of Accreditation are tested to standard unless otherwise indicated

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

Summary of Classification Tests

Site name	Job number
Envision, Sunderland	S211001

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

UKAS TESTING
7607

Hole	Depth		Type	*w*	Oven temp.	wa	Pa	Pr	wL	wP	IP	IL	Plasticity class	Preparation method
	Top m	Base m		%	oc	%	%	%	%	%	%			
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	B	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

All tests found in Solmek UKAS Schedule of Accreditation are tested to standard unless otherwise indicated

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

Summary of Classification Tests

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

UKAS TESTING
7607

Site name	Job number
Envision, Sunderland	S211001

Hole	Depth Top m	Depth Base m	Type	w %	Oven temp. oc	wa %	Pa %	Pr %	wL %	wP %	IP %	IL	Plasticity class	Preparation method
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	B	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	B	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	B	27	105	28	96	4	56-s	28	28	0.000	CH	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	B	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									

All tests found in Solmek UKAS Schedule of Accreditation are tested to standard unless otherwise indicated

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	25/11/2021 11:15
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Summary of Classification Tests

Site name	Job number
Envision, Sunderland	S211001

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

UKAS TESTING
7607

Hole	Depth		Type	*w*	Oven temp.	wa	Pa	Pr	wL	wP	IP	IL	Plasticity class	Preparation method
	Top m	Base m		%	oc	%	%	%	%	%	%			
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	B	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	B	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	B	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	B	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									

All tests found in Solmek UKAS Schedule of Accreditation are tested to standard unless otherwise indicated

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"		*	

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Summary of Classification Tests

Solmek
12-16 Yarm Road,
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01642 607083
lab@solmek.com

UKAS TESTING
7607

Site name	Job number
Envision, Sunderland	S211001

Hole	Depth		Type	*w*	Oven temp.	wa	Pa	Pr	wL	wP	IP	IL	Plasticity class	Preparation method
	Top m	Base m		%	oc	%	%	%	%	%	%			
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	B	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	B	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	B	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

All tests found in Solmek UKAS Schedule of Accreditation are tested to standard unless otherwise indicated

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"		*	

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Summary of Classification Tests

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

UKAS TESTING
7607

Site name	Job number
Envision, Sunderland	S211001

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

All tests found in Solmek UKAS Schedule of Accreditation are tested to standard unless otherwise indicated

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
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TP09 at 1.20m : Sample tested was deviating (78% retained on 425um sieve) : wa% and IL removed from report.

Summary of Classification Tests

Site name	Job number
Envision, Sunderland	S211001

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

UKAS TESTING
7607

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

All tests found in Solmek UKAS Schedule of Accreditation are tested to standard unless otherwise indicated

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
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Summary of Classification Tests

Site name	Job number
Envision, Sunderland	S211001

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

UKAS TESTING
7607

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

All tests found in Solmek UKAS Schedule of Accreditation are tested to standard unless otherwise indicated

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"		*	

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Summary of Classification Tests

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

UKAS TESTING
7607

Site name	Job number
Envision, Sunderland	S211001

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

All tests found in Solmek UKAS Schedule of Accreditation are tested to standard unless otherwise indicated

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 14:28
Date report generated	
Report Number	

Summary of Classification Tests

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

UKAS TESTING
7607

Site name	Job number
Envision, Sunderland	S211001

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

All tests found in Solmek UKAS Schedule of Accreditation are tested to standard unless otherwise indicated

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	02/12/2021 09:31
Date report generated	
Report Number	

Summary of Classification Tests

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

UKAS TESTING 7607

Site name	Job number
Envision, Sunderland	S211001

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

All tests found in Solmek UKAS Schedule of Accreditation are tested to standard unless otherwise indicated

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	02/12/2021 09:35
Date report generated	
Report Number	

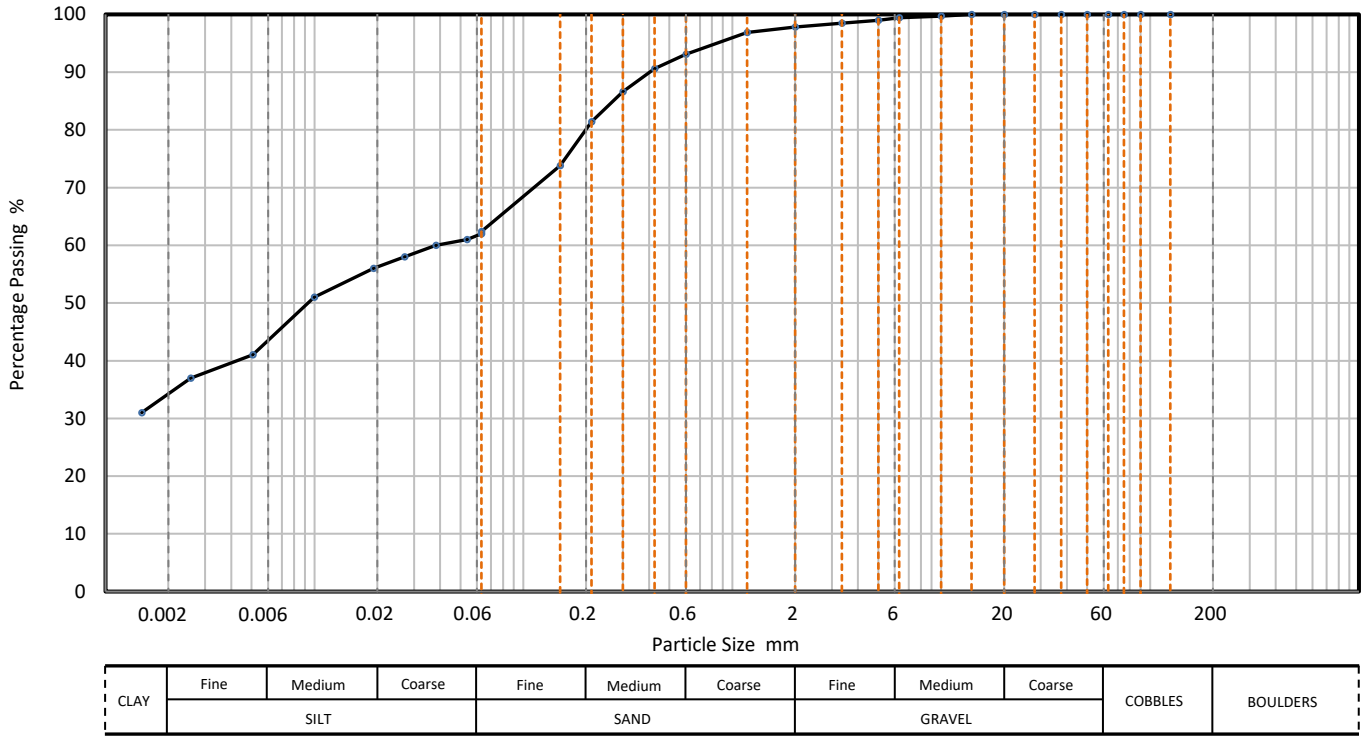
PARTICLE SIZE DISTRIBUTION

Site name	Job number
Envision, Sunderland	S211001

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

UKAS TESTING 7607

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, SAND.
Sample type	B		



Sieving		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		

Dry Mass of sample, g: 411

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		

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 13:50

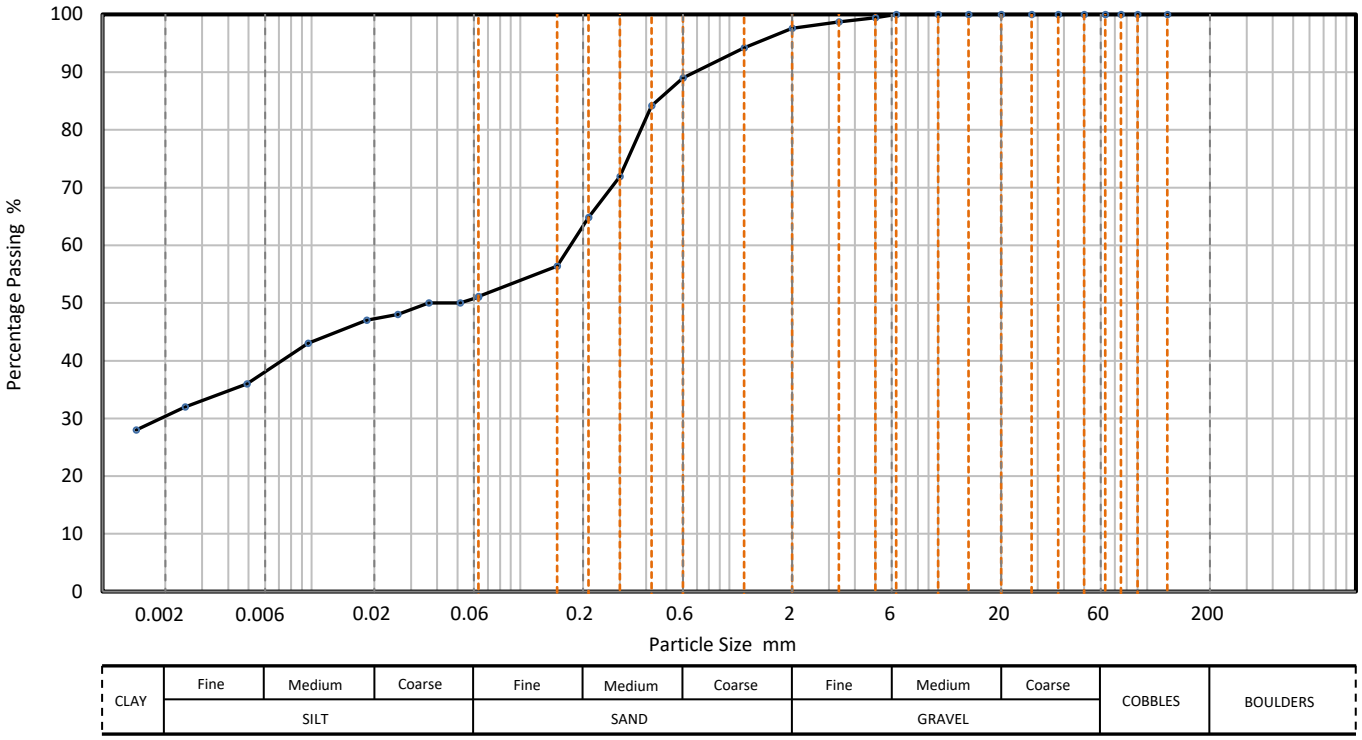
PARTICLE SIZE DISTRIBUTION

Site name	Job number
Envision, Sunderland	S211001

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

UKAS TESTING 7607

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	B		



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
Hydrometer is the usual Sedimentation method carried out by Solmek and is part of the Solmek UKAS accreditation schedule.

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

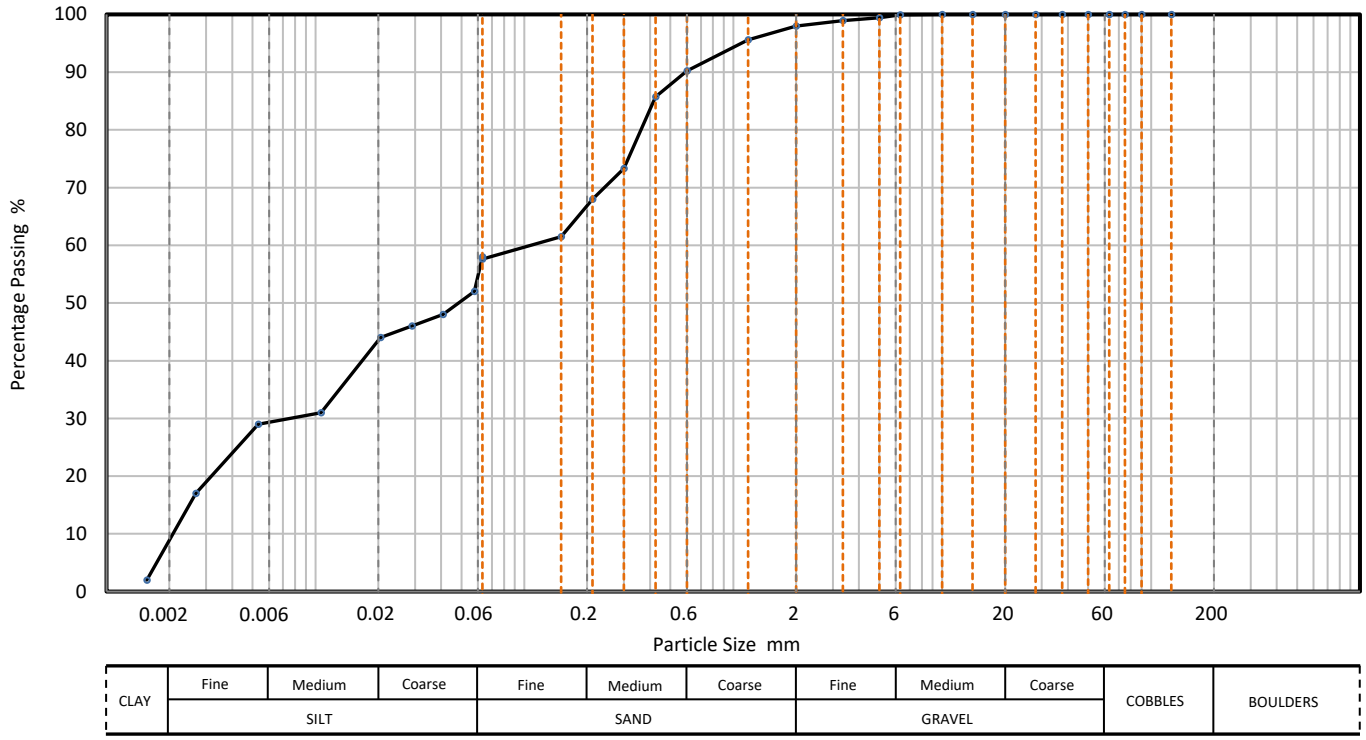
PARTICLE SIZE DISTRIBUTION

Site name	Job number
Envision, Sunderland	S211001

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

UKAS TESTING 7607

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	B		



Sieving		Sedimentation	
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		

Dry Mass of sample, g: 400

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
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	22/11/2021 12:24

PARTICLE SIZE DISTRIBUTION

Site name	Job number
Envision, Sunderland	S211001

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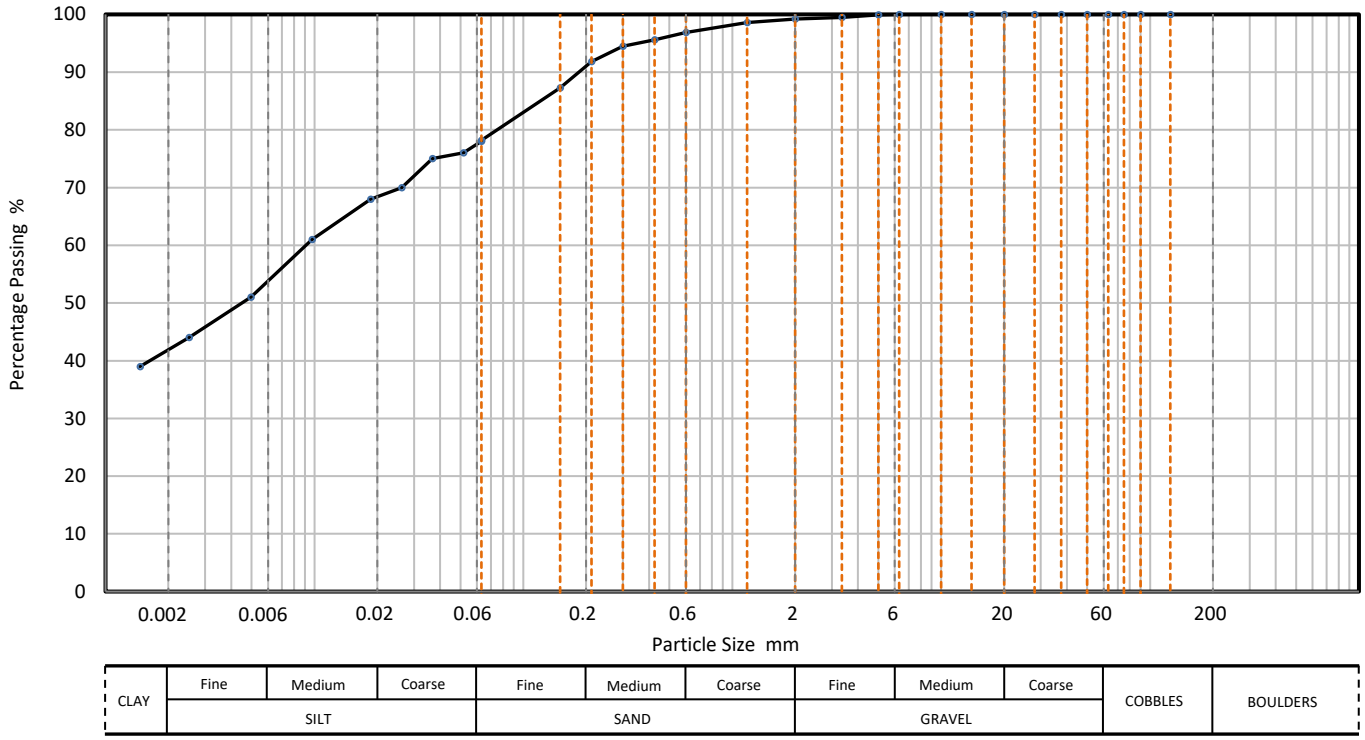
TS18 3NA
01642 607083
lab@solmek.com

UKAS TESTING 7607

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	B		



Sieving		Sedimentation	
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

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		

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	22/11/2021 12:25

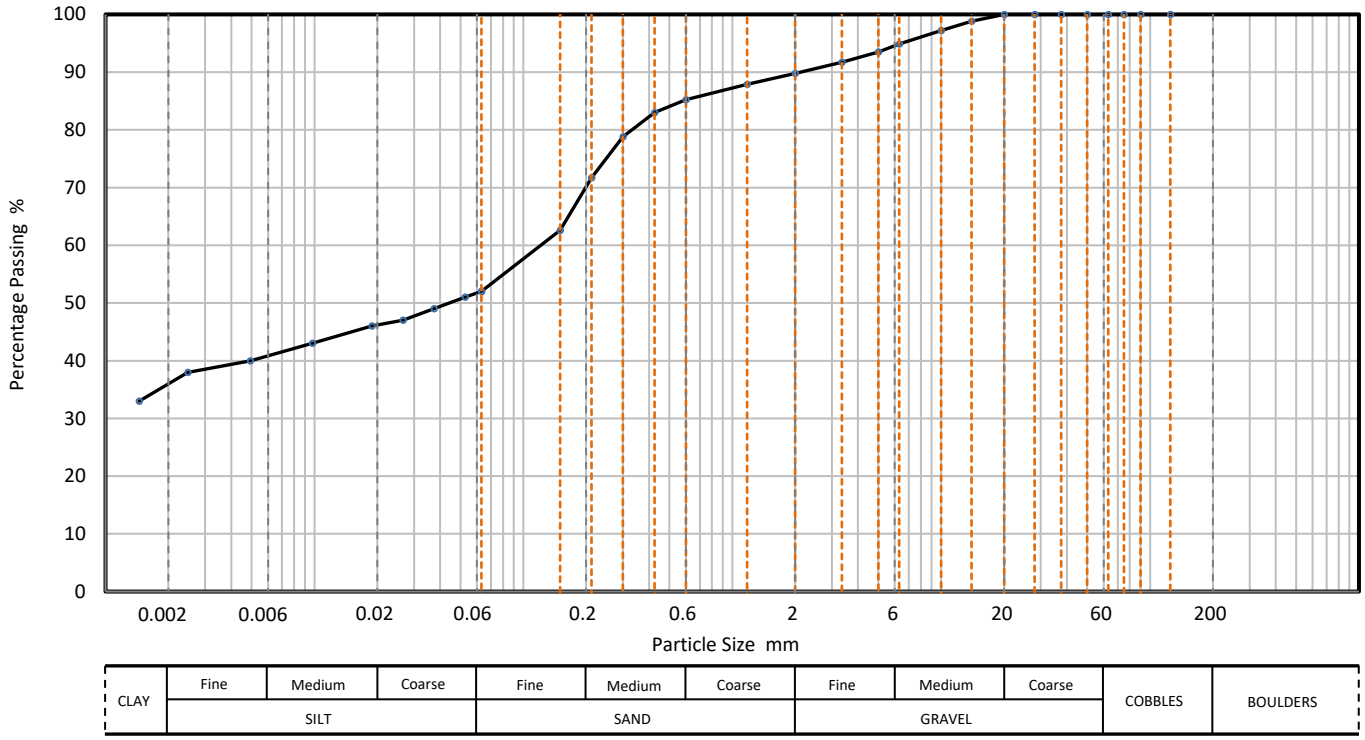
PARTICLE SIZE DISTRIBUTION

Site name	Job number
Envision, Sunderland	S211001

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

UKAS TESTING 7607

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	B		



Sieving		Sedimentation	
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 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 13:53

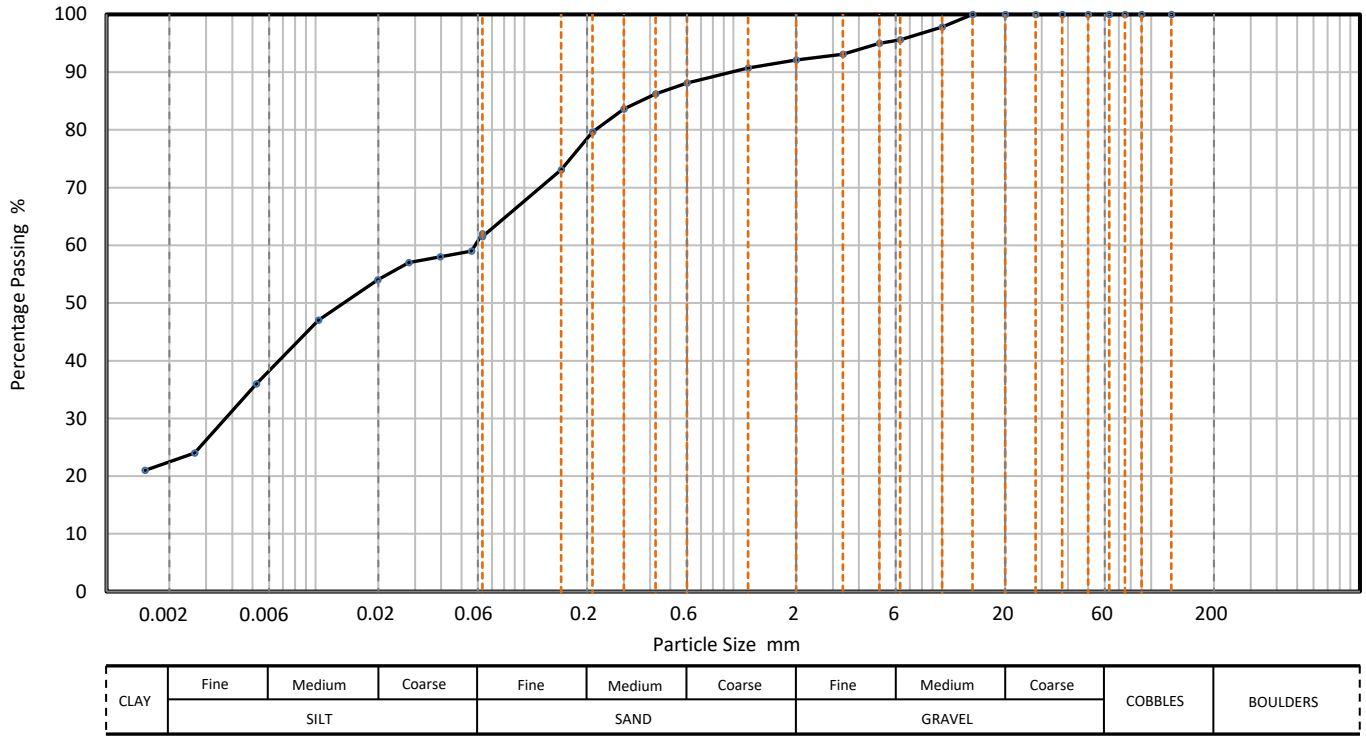
PARTICLE SIZE DISTRIBUTION

Site name	Job number
Envision, Sunderland	S211001

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

UKAS TESTING 7607

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	B		



Sieving		Sedimentation	
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
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	07/12/2021 15:31

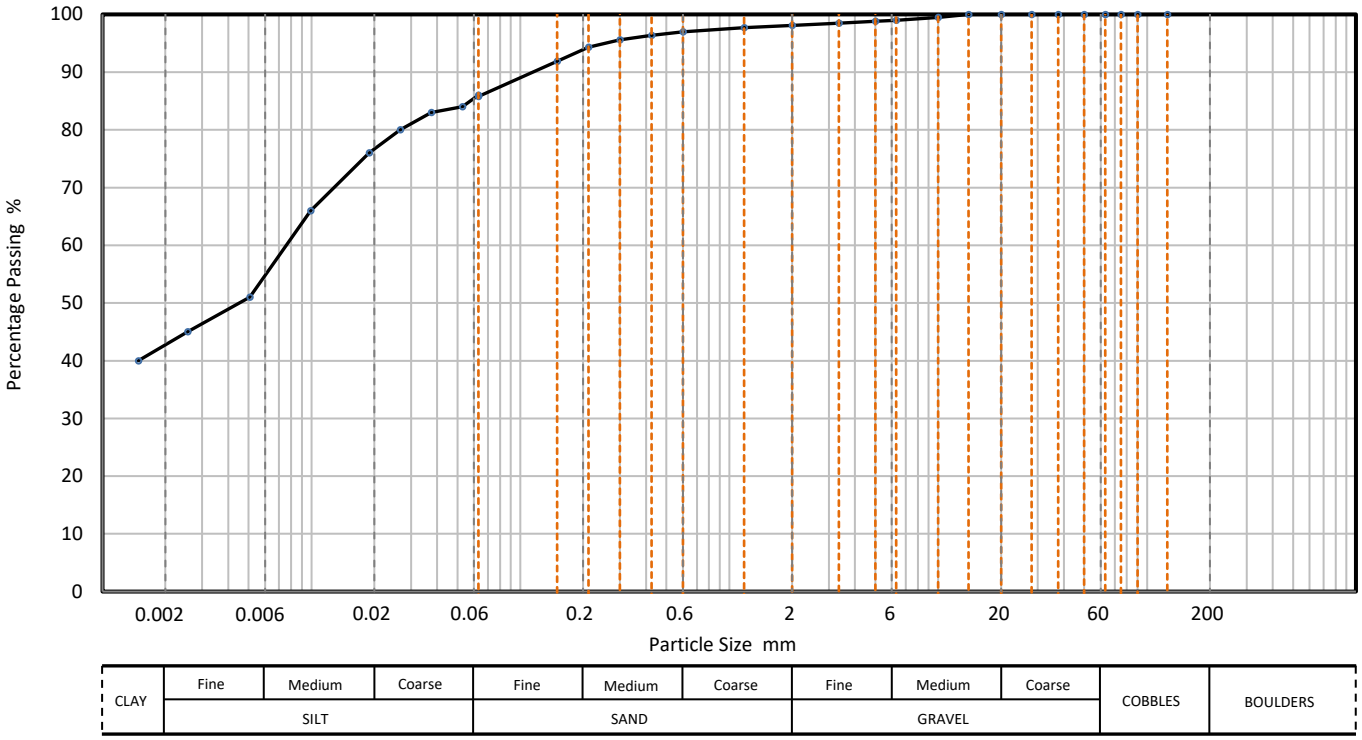
PARTICLE SIZE DISTRIBUTION

Site name	Job number
Envision, Sunderland	S211001

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

UKAS TESTING 7607

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	B		



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		

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 14:34

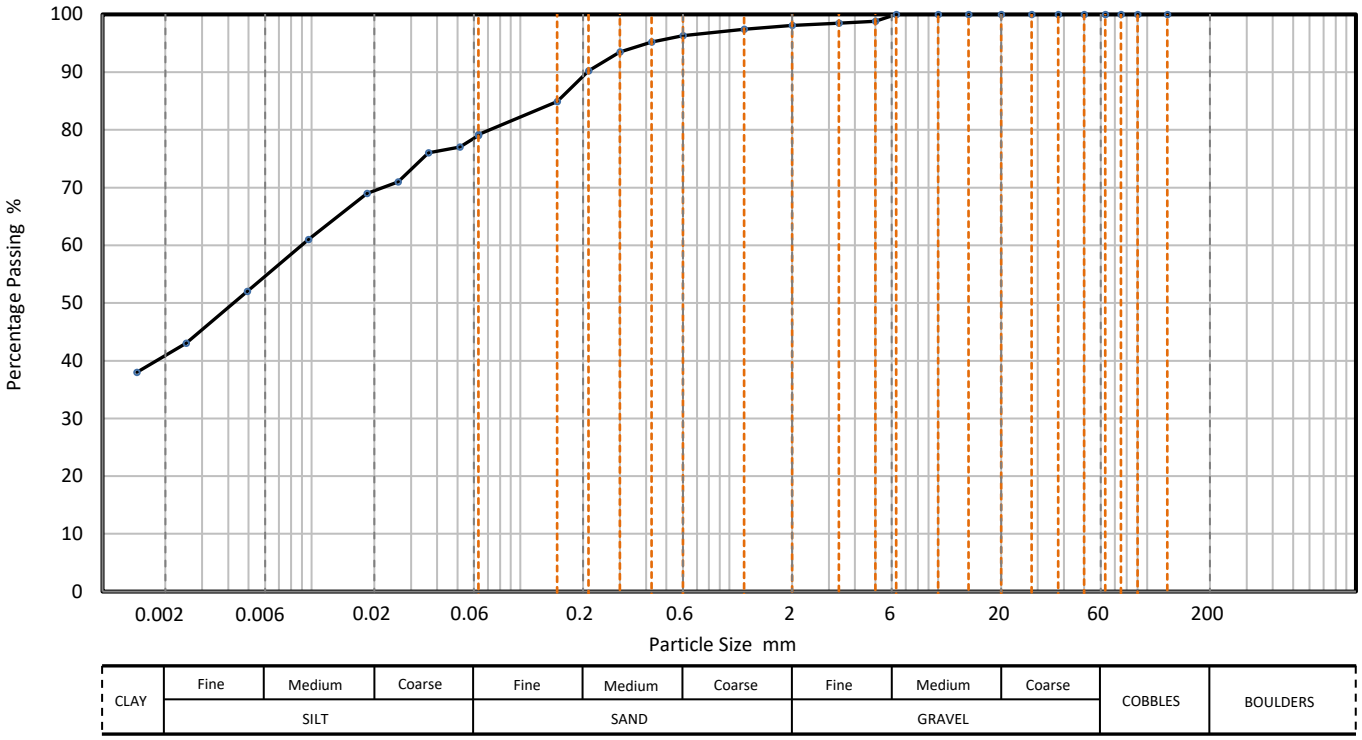
PARTICLE SIZE DISTRIBUTION

Site name	Job number
Envision, Sunderland	S211001

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

UKAS TESTING 7607

Hole	TP05	Lab sample ID	SLMK2021111673
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 Sandy, CLAY
Sample type	B		



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		

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	JBrischuk
Approval date	23/11/2021 08:18

PARTICLE SIZE DISTRIBUTION

Site name	Job number
Envision, Sunderland	S211001

Solmek
12-16 Yarm Road,
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TS18 3NA
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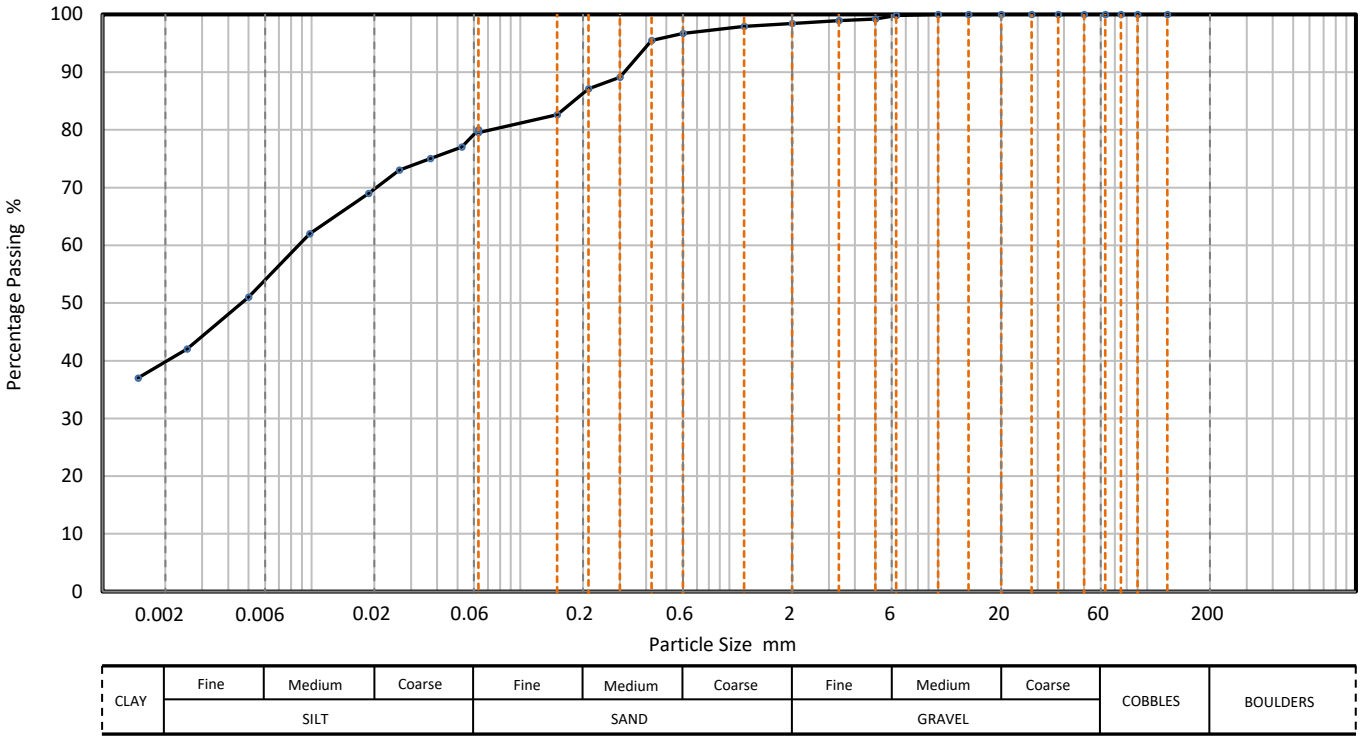
lab@solmek.com

UKAS TESTING 7607

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	B		



Sieving		Sedimentation	
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		

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 14:34

PARTICLE SIZE DISTRIBUTION

Site name	Job number
Envision, Sunderland	S211001

Solmek
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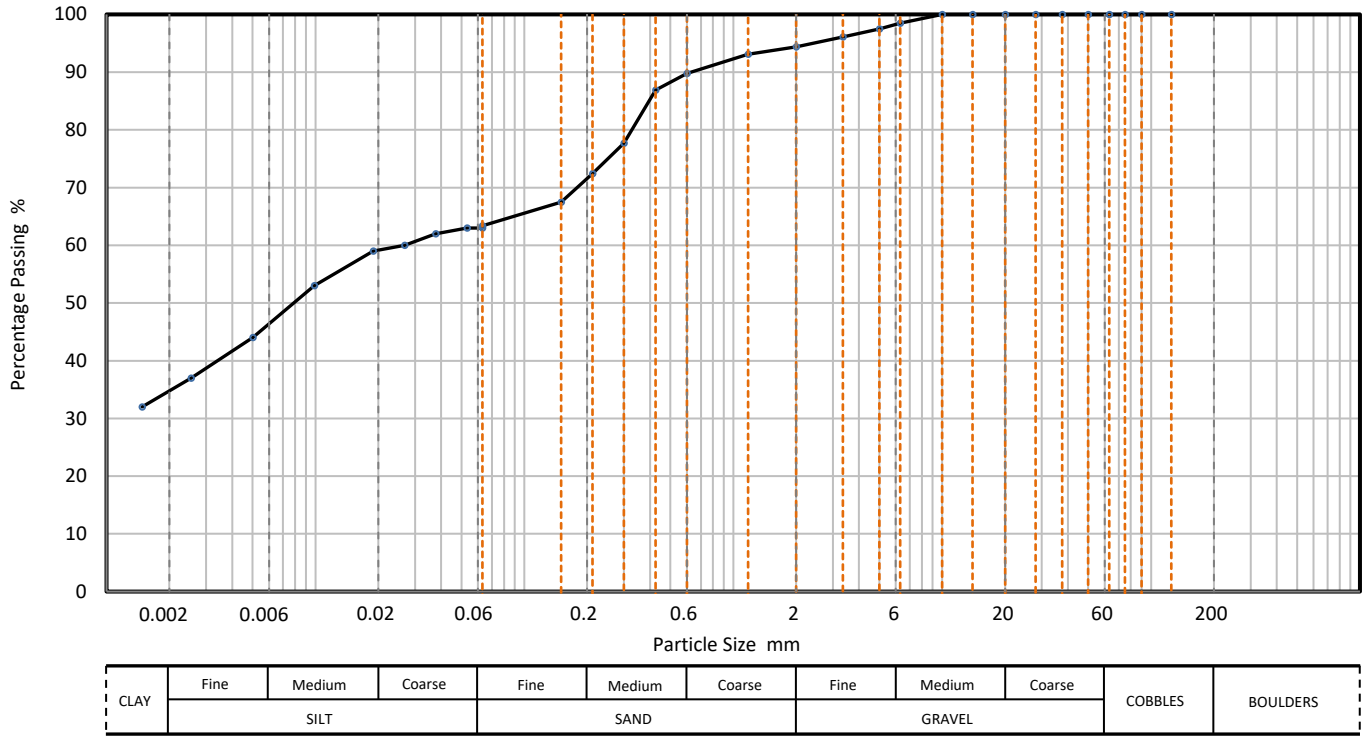
UKAS TESTING 7607

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	B		



Sieving		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		

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 14:34

PARTICLE SIZE DISTRIBUTION

Site name	Job number
Envision, Sunderland	S211001

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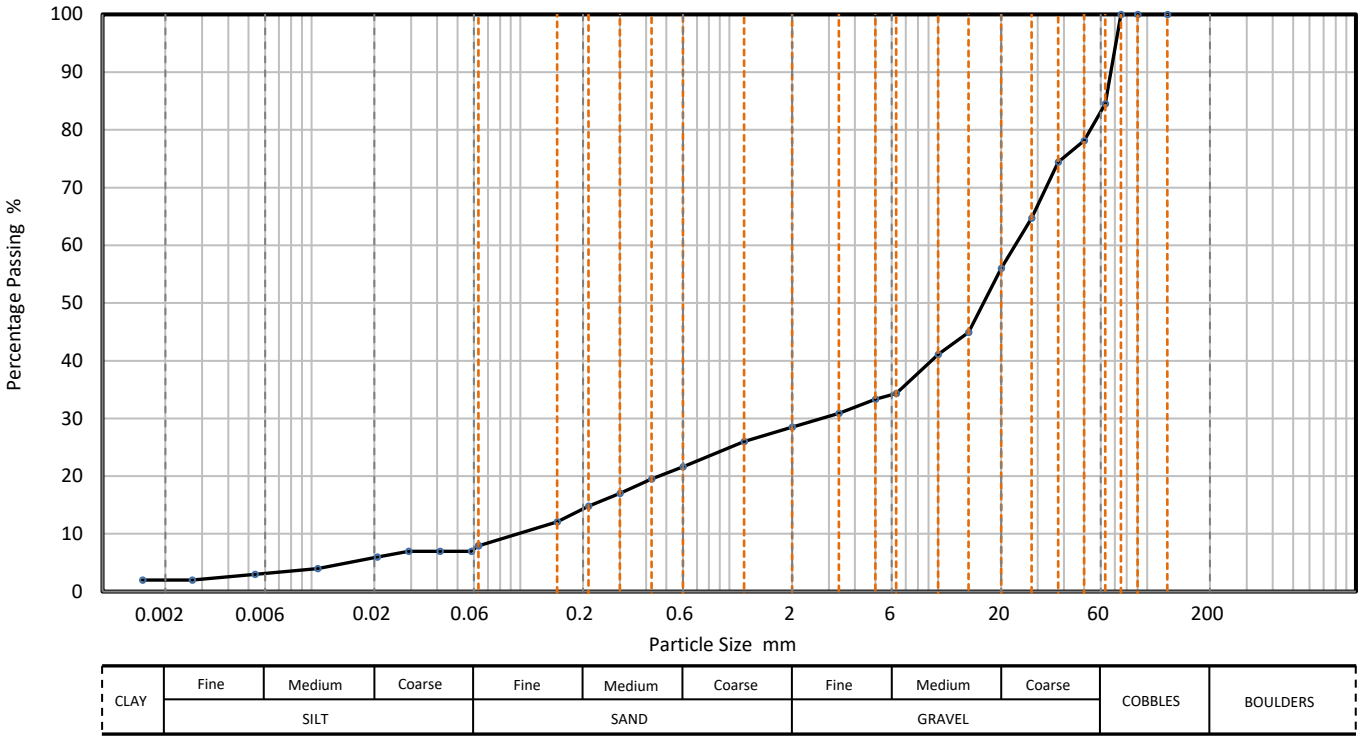
UKAS TESTING 7607

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, GRAVEL. (COBBLES PRESENT)
Sample type	B		



Sieving		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.

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	07/12/2021 15:33

PARTICLE SIZE DISTRIBUTION

Site name	Job number
Envision, Sunderland	S211001

Solmek
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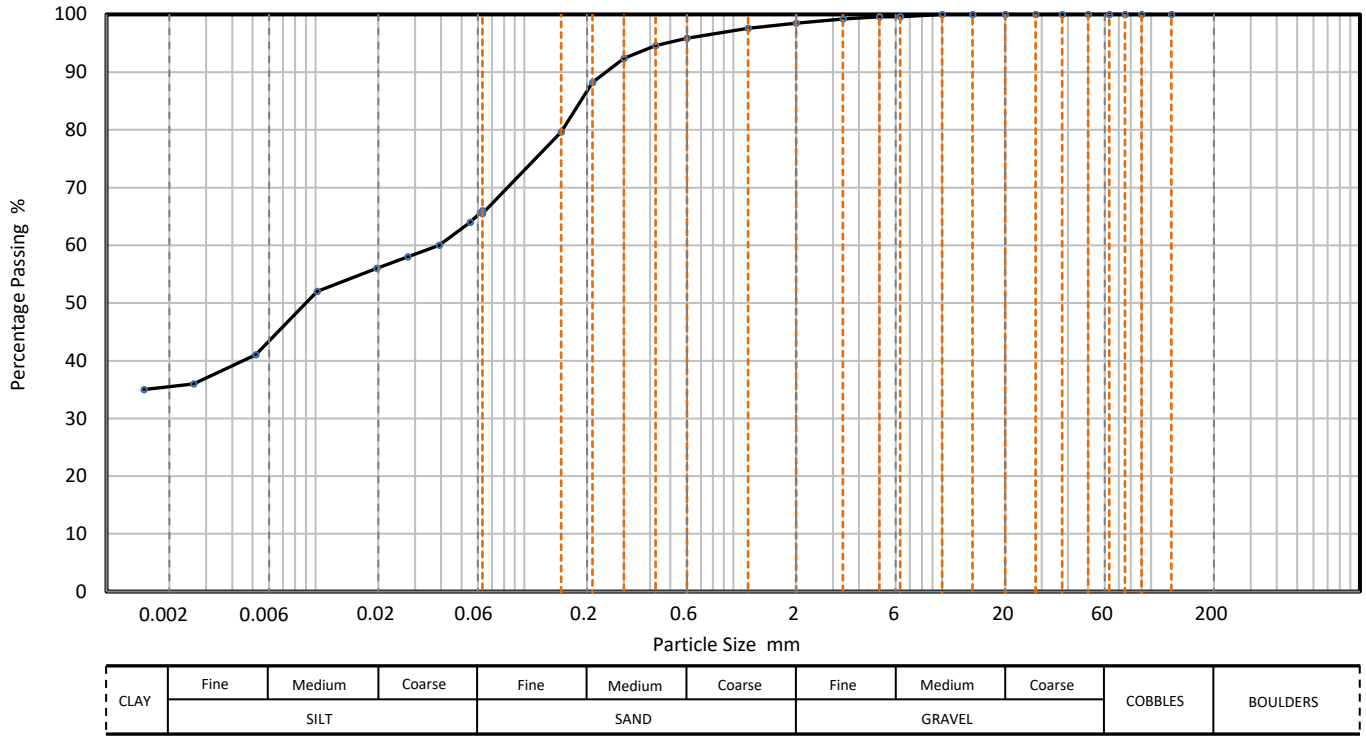
UKAS TESTING 7607

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, CLAY.
Sample type	B		



Sieving		Sedimentation	
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		

Dry Mass of sample, g: 298

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 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 14:35

PARTICLE SIZE DISTRIBUTION

Site name	Job number
Envision, Sunderland	S211001

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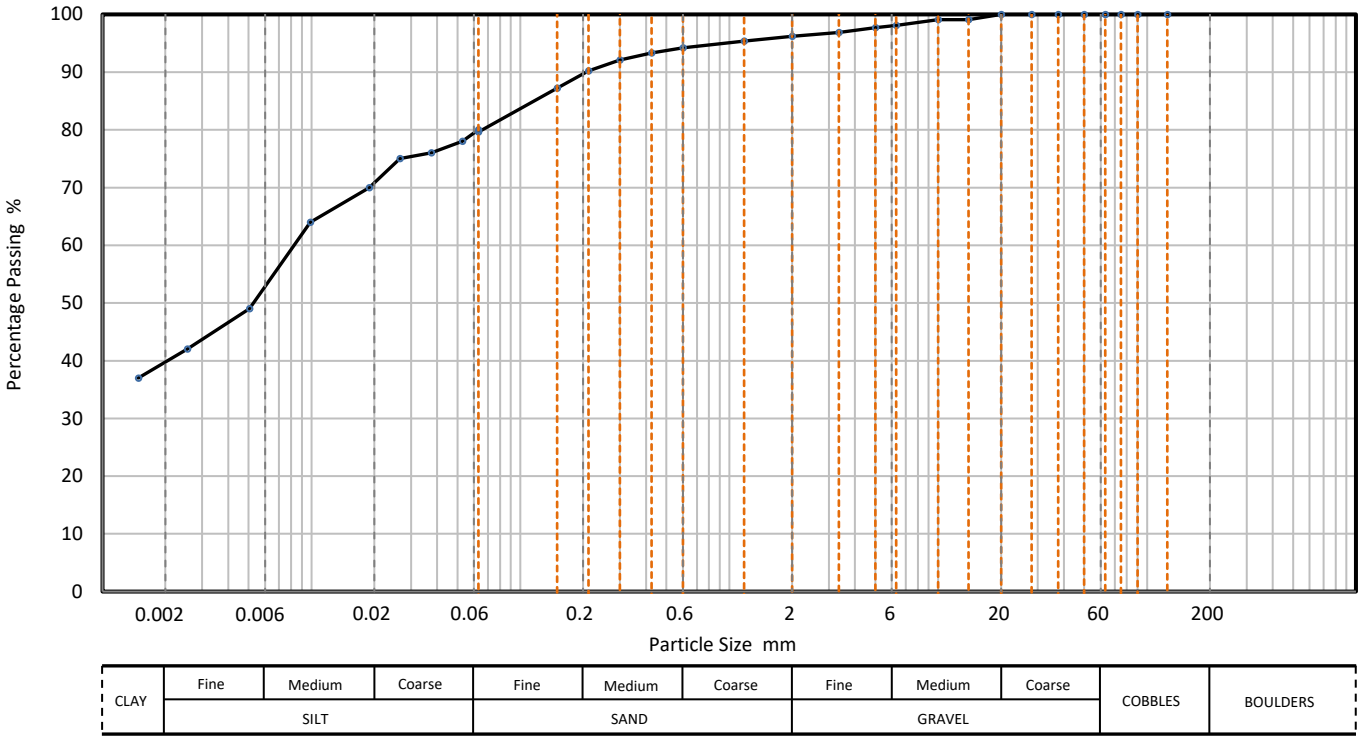
UKAS TESTING 7607

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	B		



Sieving		Sedimentation	
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		

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 15:29

PARTICLE SIZE DISTRIBUTION

Site name	Job number
Envision, Sunderland	S211001

Solmek
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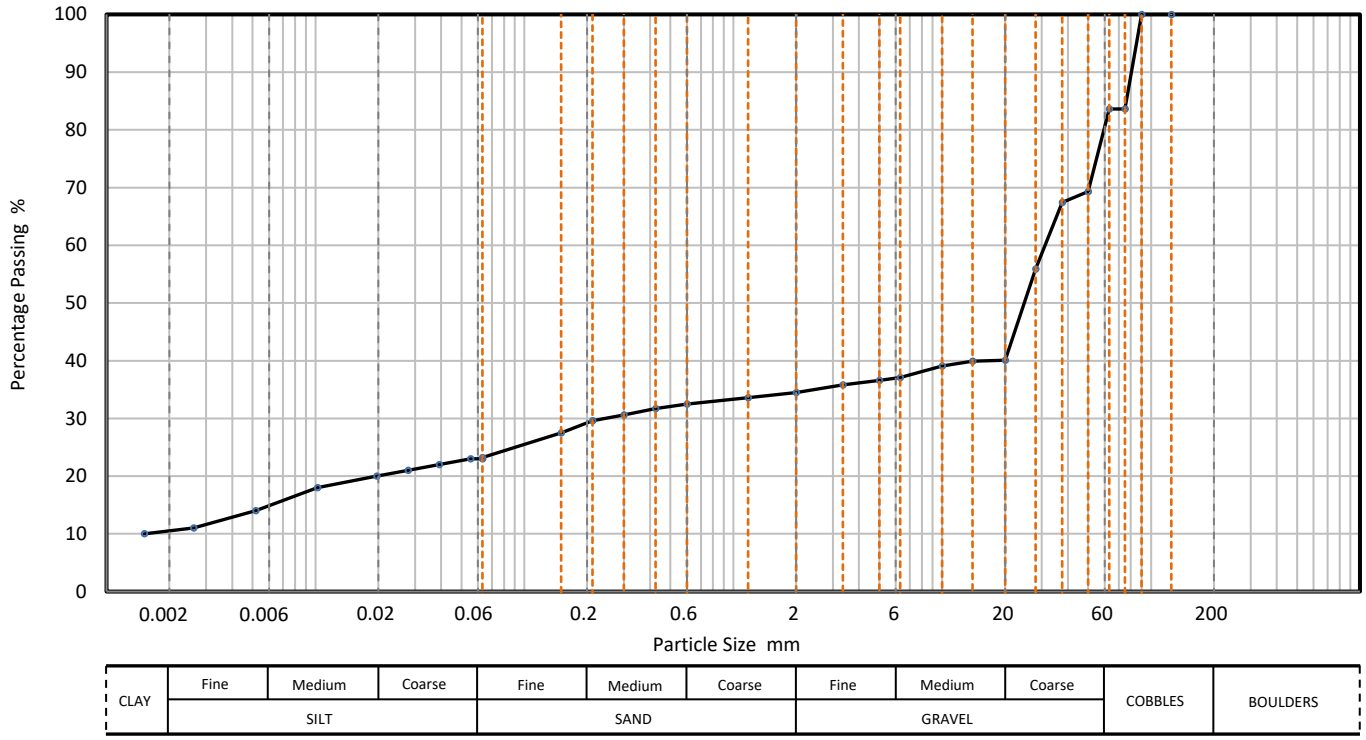
UKAS TESTING 7607

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



Sieving		Sedimentation	
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		

Dry Mass of sample, g: 4338

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 BS1377 test standard.

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	07/12/2021 15:34

PARTICLE SIZE DISTRIBUTION

Site name	Job number
Envision, Sunderland	S211001

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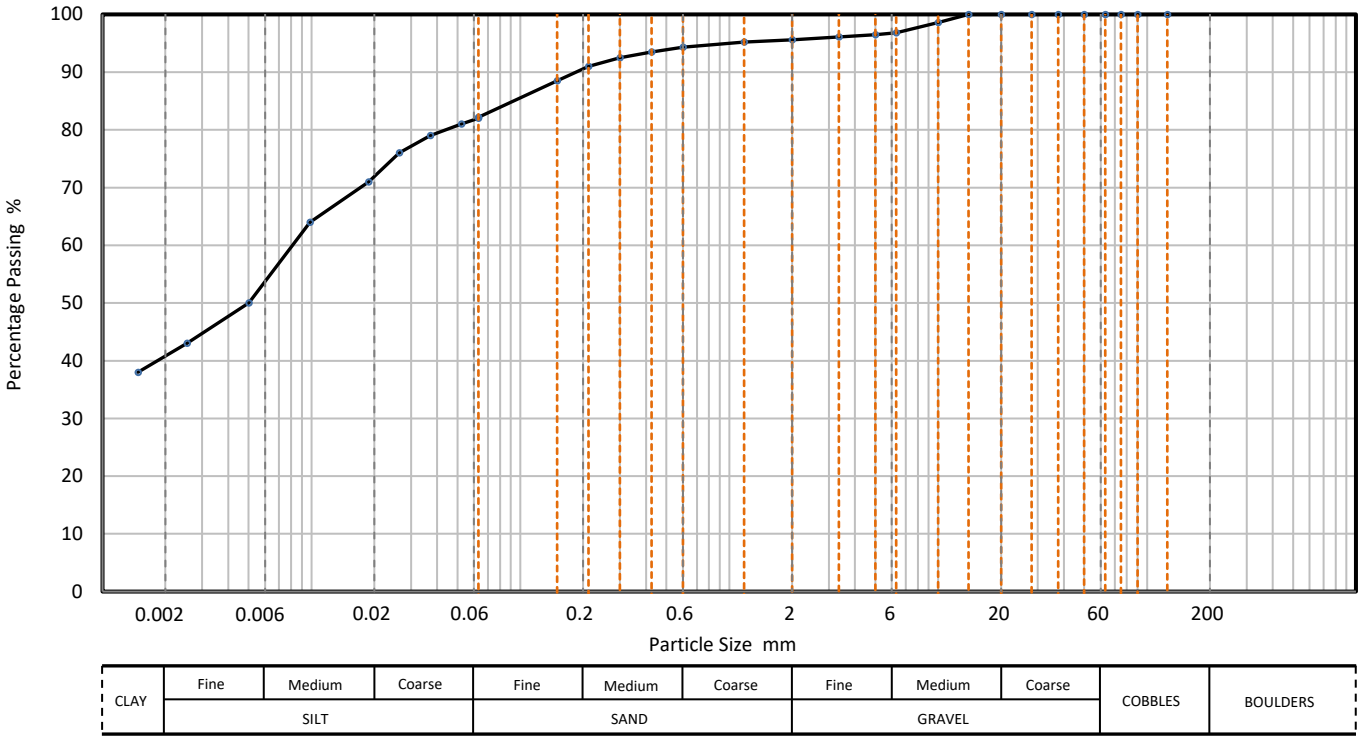
UKAS TESTING 7607

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	B		



Sieving		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		

Dry Mass of sample, g	327

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
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 14:36

PARTICLE SIZE DISTRIBUTION

Site name	Job number
Envision, Sunderland	S211001

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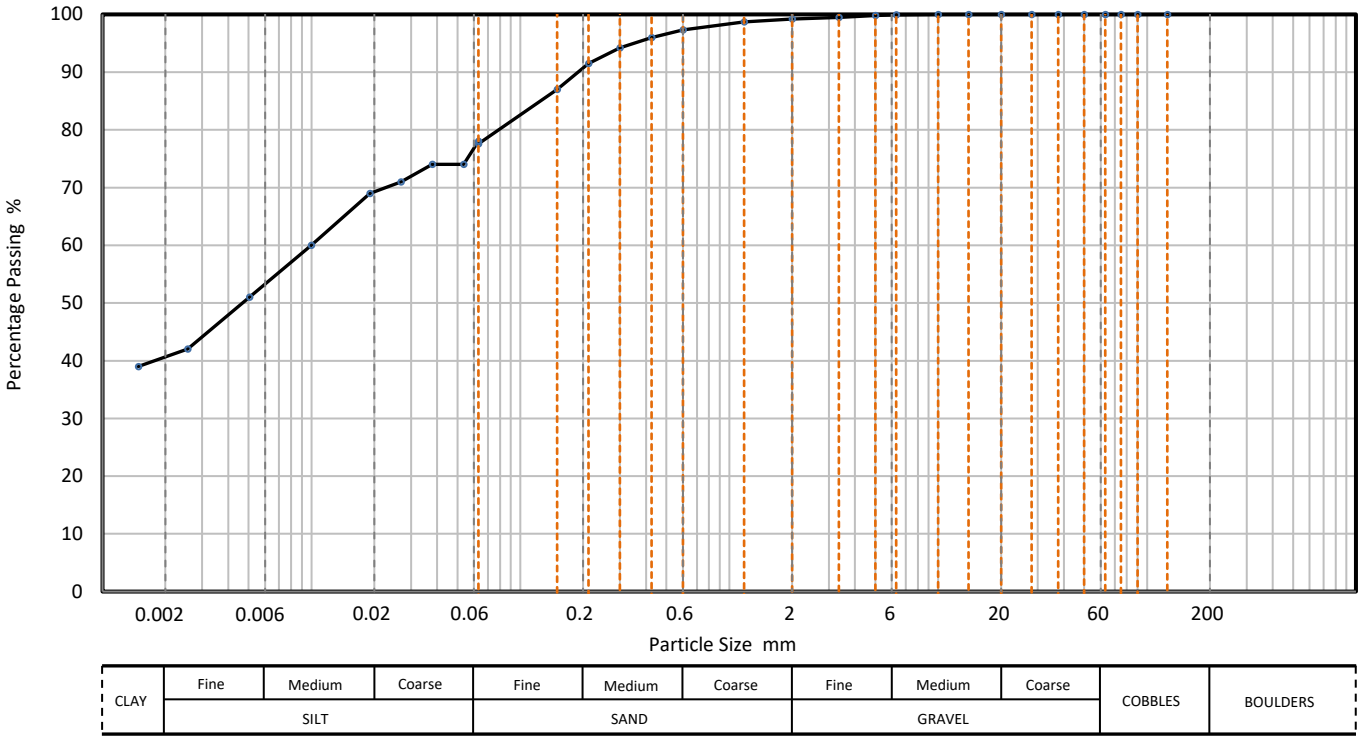
UKAS TESTING 7607

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	B		



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		
0.063	78		

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		

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 14:36

PARTICLE SIZE DISTRIBUTION

Site name	Job number
Envision, Sunderland	S211001

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01642 607083
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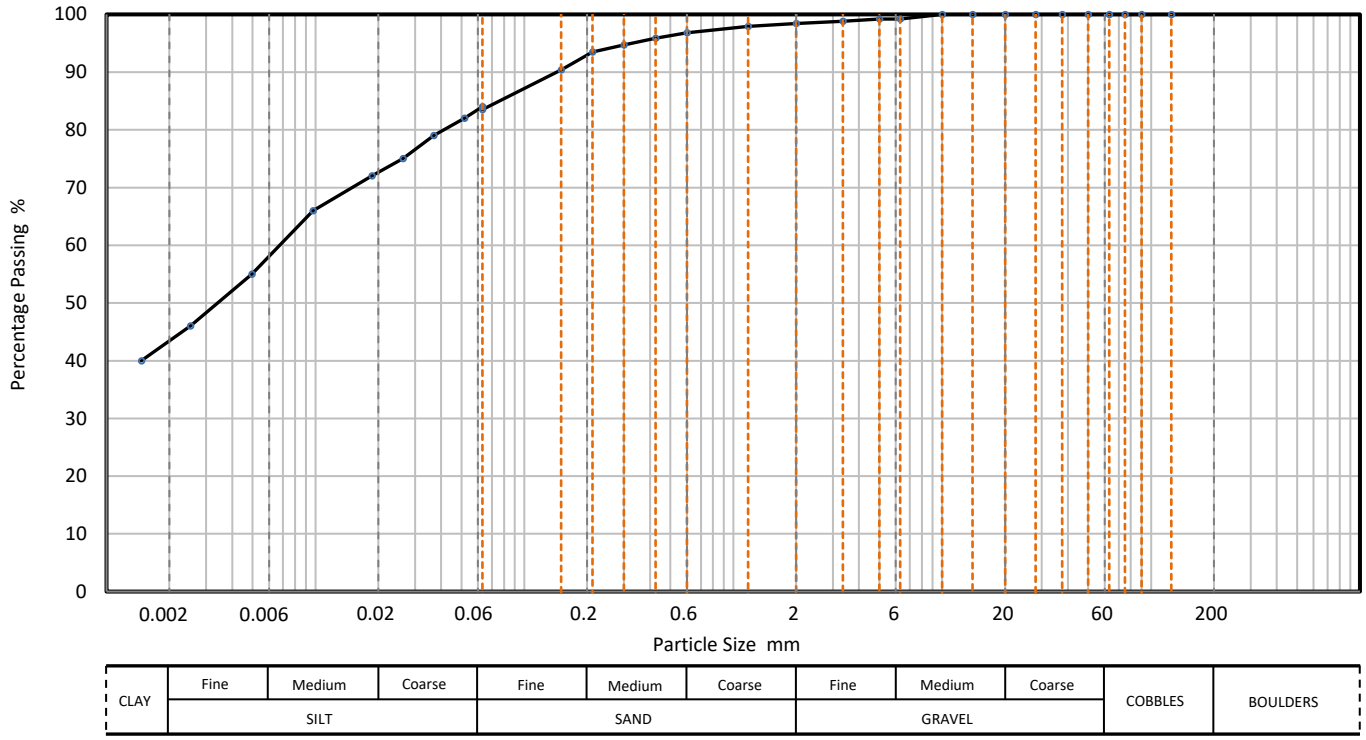
UKAS TESTING 7607

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	B		



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
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 14:37

PARTICLE SIZE DISTRIBUTION

Site name	Job number
Envision, Sunderland	S211001

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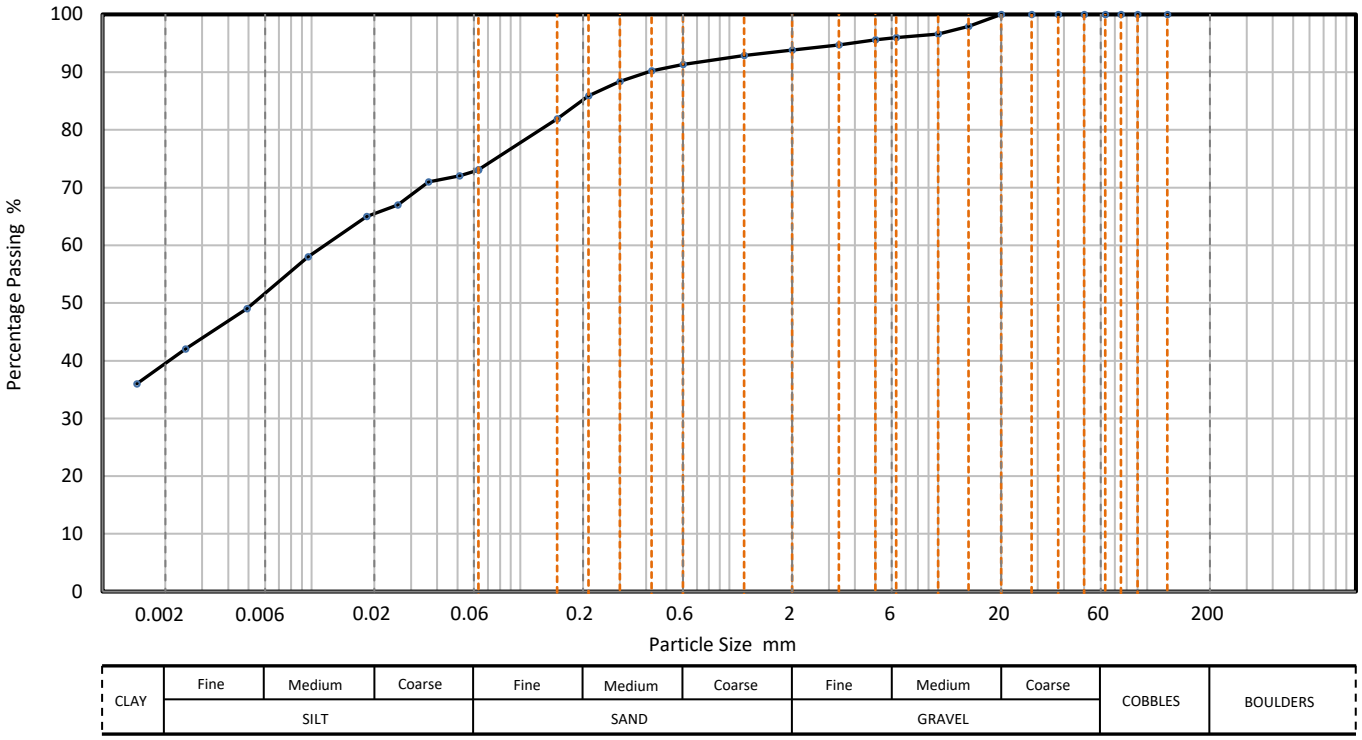
UKAS TESTING 7607

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	B		



Sieving		Sedimentation	
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
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 13:20

PARTICLE SIZE DISTRIBUTION

Site name	Job number
Envision, Sunderland	S211001

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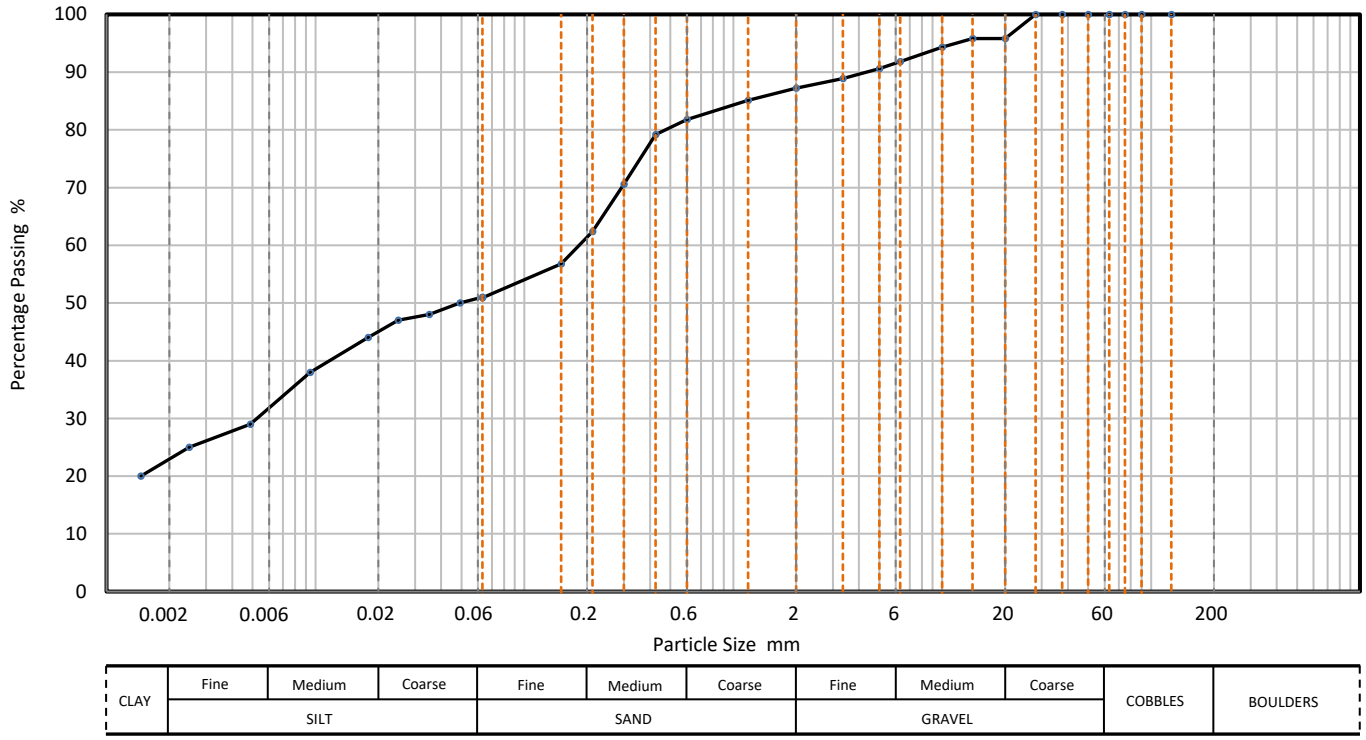
UKAS TESTING 7607

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	B		



Sieving		Sedimentation	
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 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 13:23

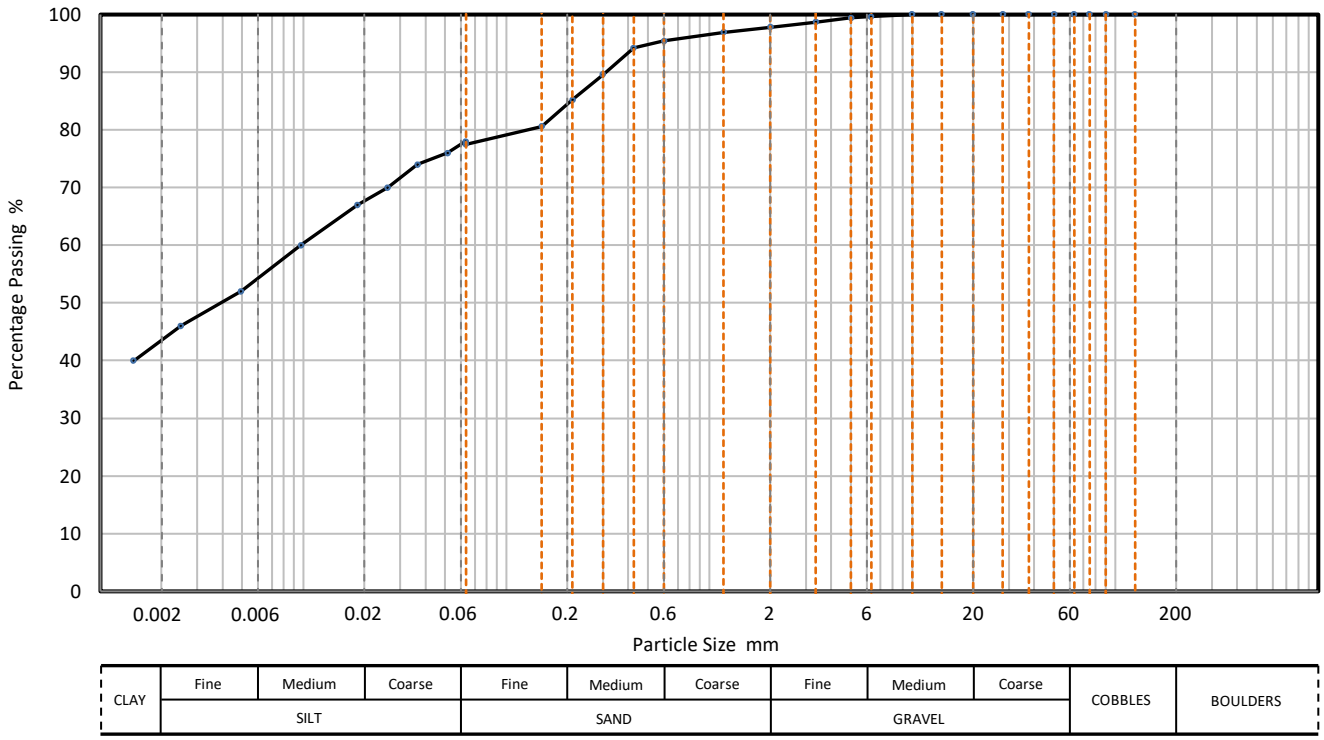
PARTICLE SIZE DISTRIBUTION

Site name	Job number
Envision, Sunderland	S211001

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

UKAS TESTING
7607

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. CLAY
Sample type	B		



Sieving		Sedimentation	
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		

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	KW
Approval date	10/01/2022 11:23

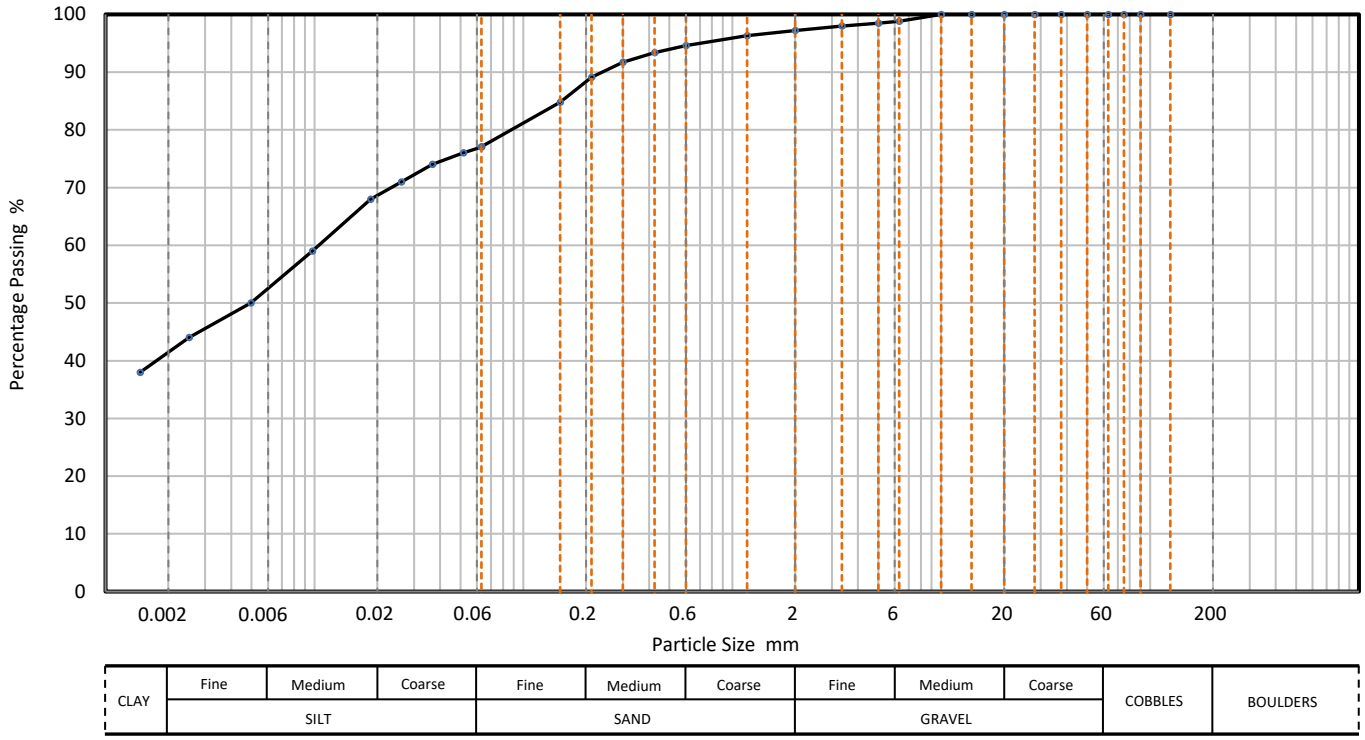
PARTICLE SIZE DISTRIBUTION

Site name	Job number
Envision, Sunderland	S211001

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

UKAS TESTING 7607

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	B		



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		

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 13:25

PARTICLE SIZE DISTRIBUTION

Site name	Job number
Envision, Sunderland	S211001

Solmek
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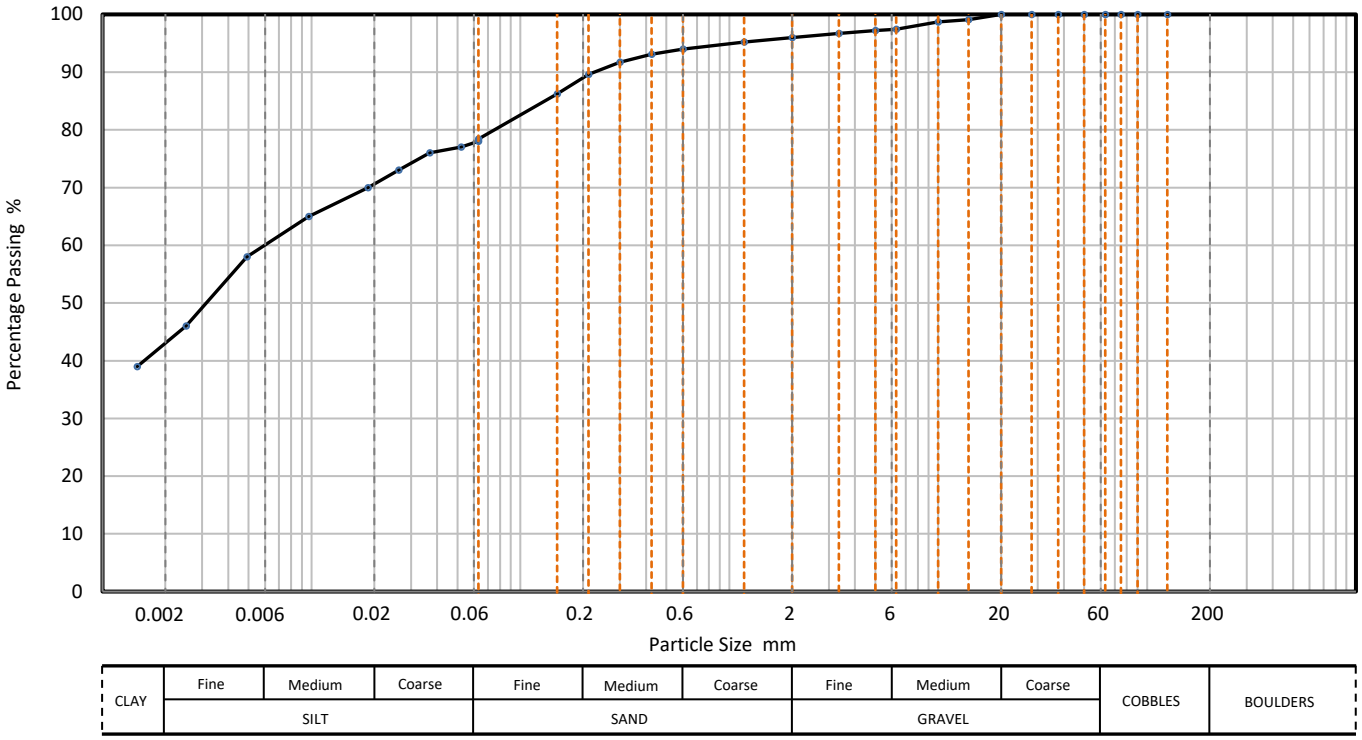
lab@solmek.com

UKAS TESTING 7607

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	B		



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		

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 13:06

PARTICLE SIZE DISTRIBUTION

Site name	Job number
Envision, Sunderland	S211001

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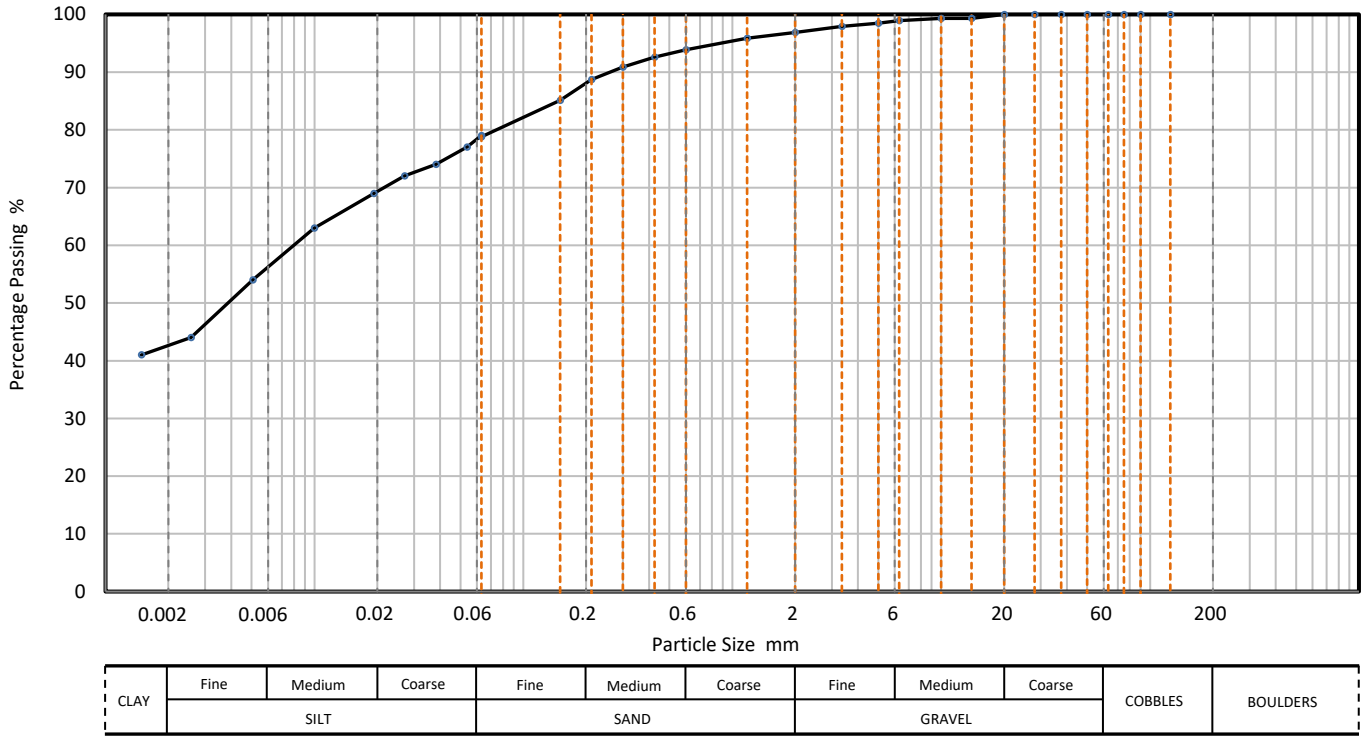
01642 607083
lab@solmek.com

UKAS TESTING
7607

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	B		



Sieving		Sedimentation	
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		

Dry Mass of sample, g	612

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		

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 14:37

PARTICLE SIZE DISTRIBUTION

Site name	Job number
Envision, Sunderland	S211001

Solmek
12-16 Yarm Road,
Stockton on Tees,
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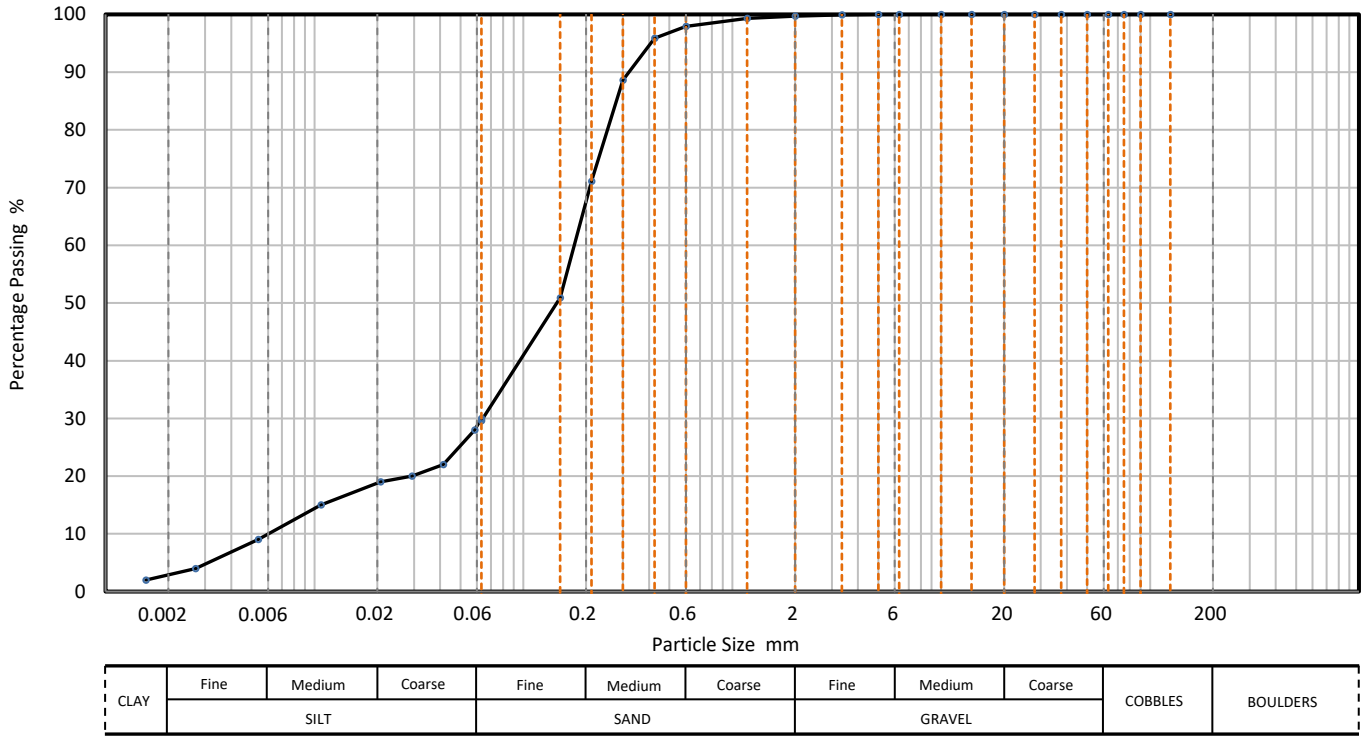
UKAS TESTING
7607

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	B		



Sieving		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		

Dry Mass of sample, g	560

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
Hydrometer is the usual Sedimentation method carried out by Solmek and is part of the Solmek UKAS accreditation schedule.

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

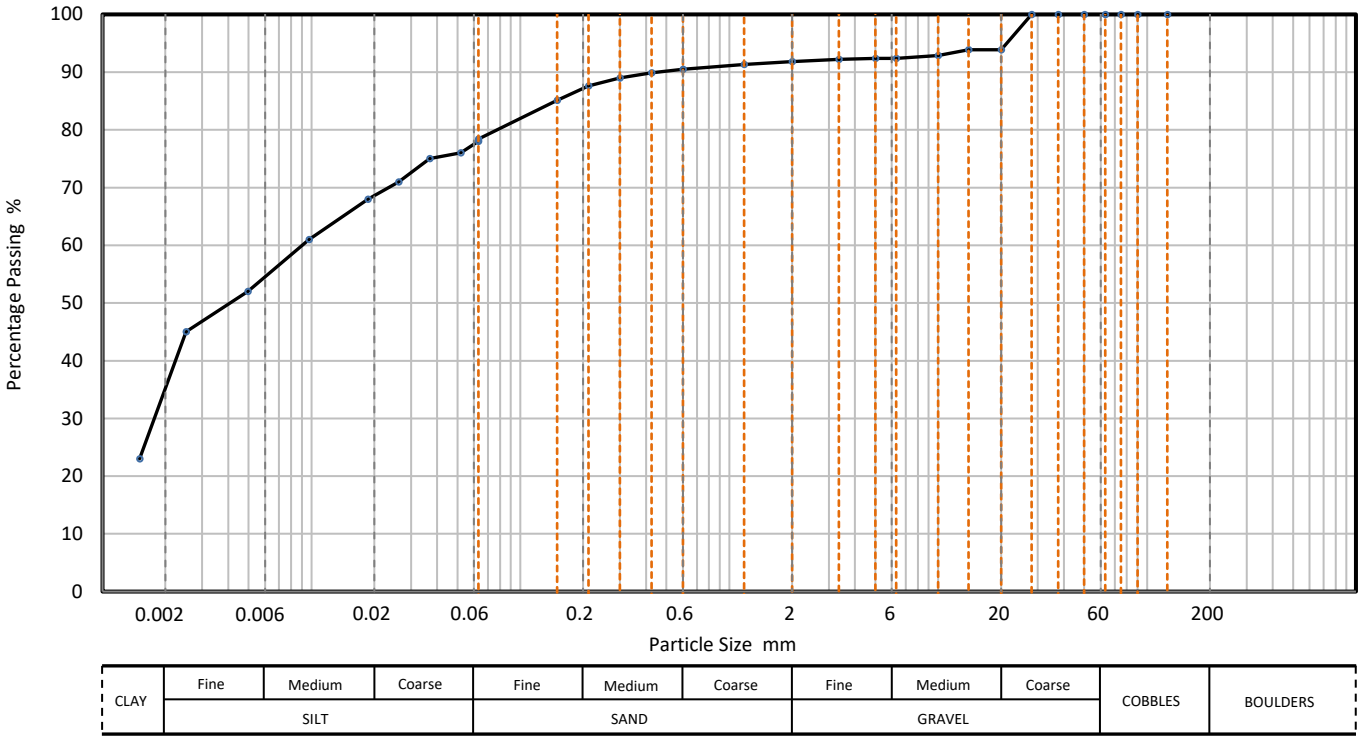
PARTICLE SIZE DISTRIBUTION

Site name	Job number
Envision, Sunderland	S211001

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

UKAS TESTING 7607

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	B		



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
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 13:34

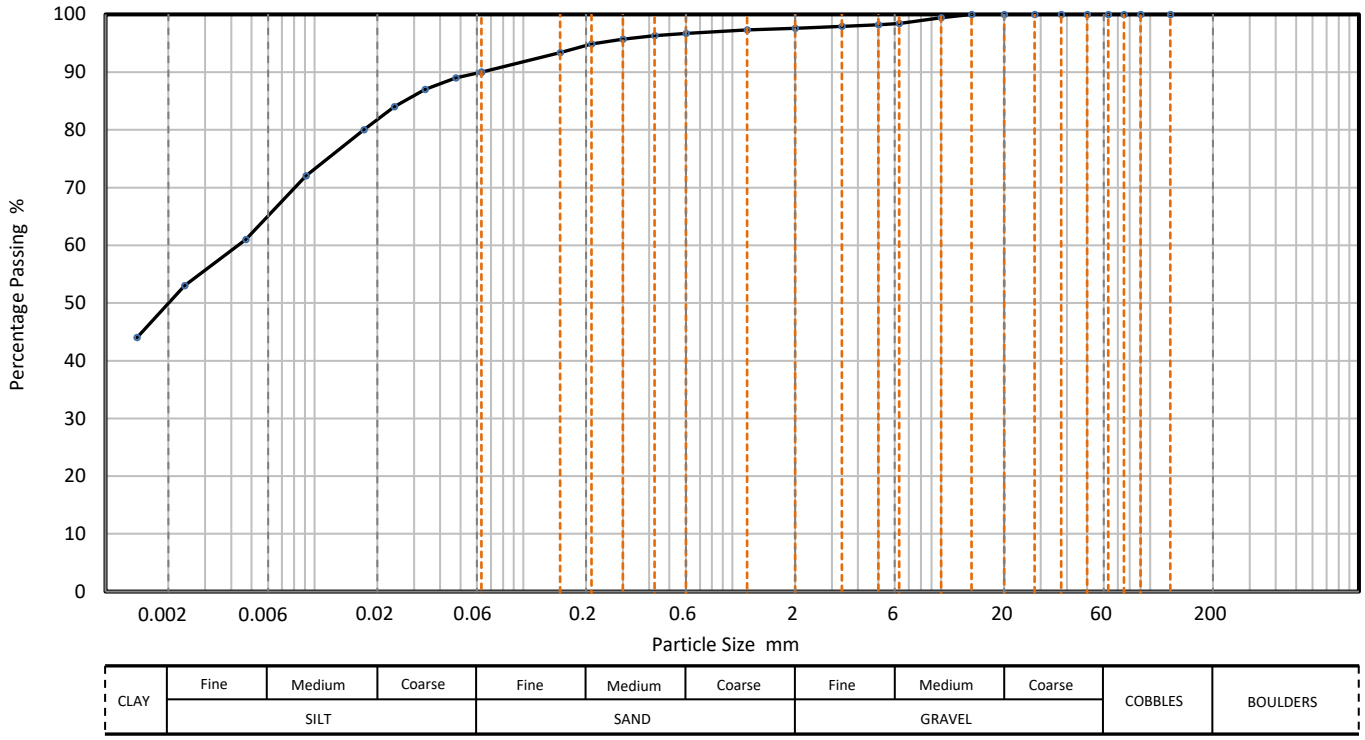
PARTICLE SIZE DISTRIBUTION

Site name	Job number
Envision, Sunderland	S211001

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

UKAS TESTING
7607

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	B		



Sieving		Sedimentation	
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 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 13:36

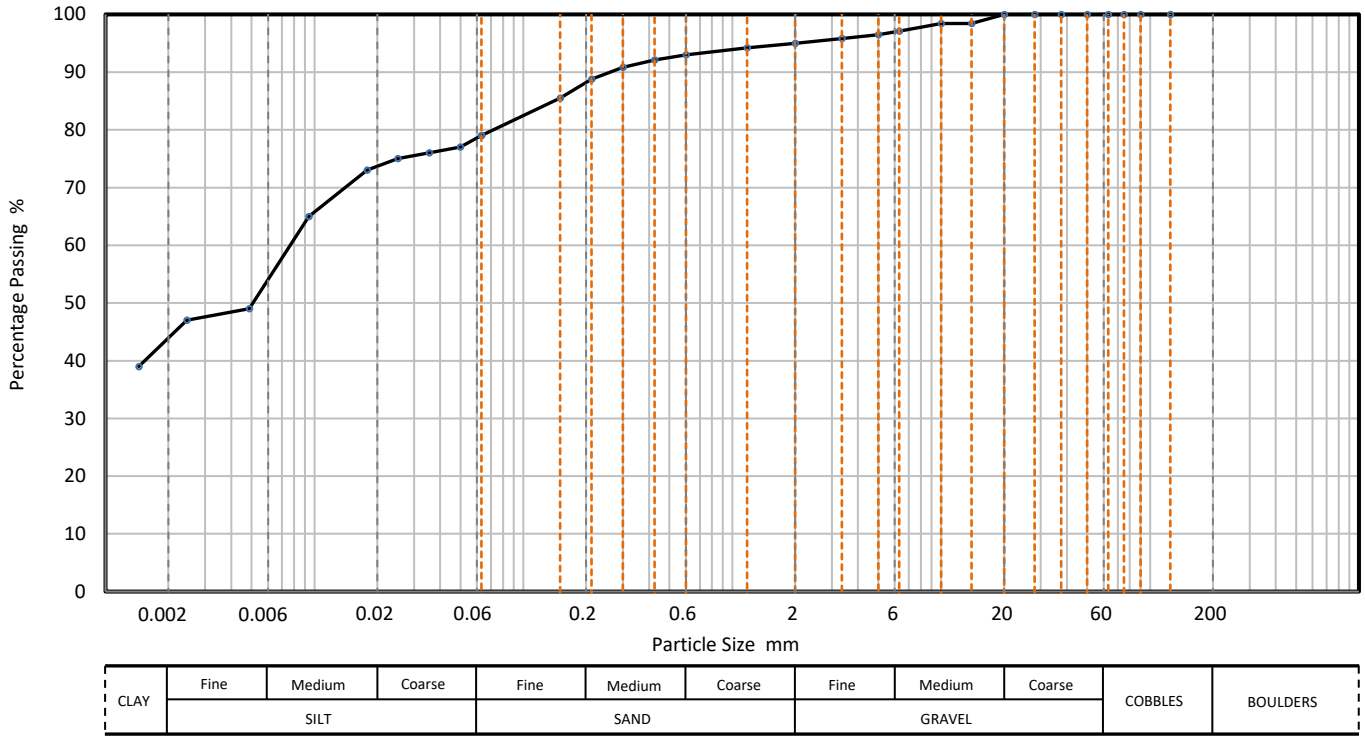
PARTICLE SIZE DISTRIBUTION

Site name	Job number
Envision, Sunderland	S211001

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

UKAS TESTING 7607

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	B		



Sieving		Sedimentation	
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
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	22/11/2021 12:29

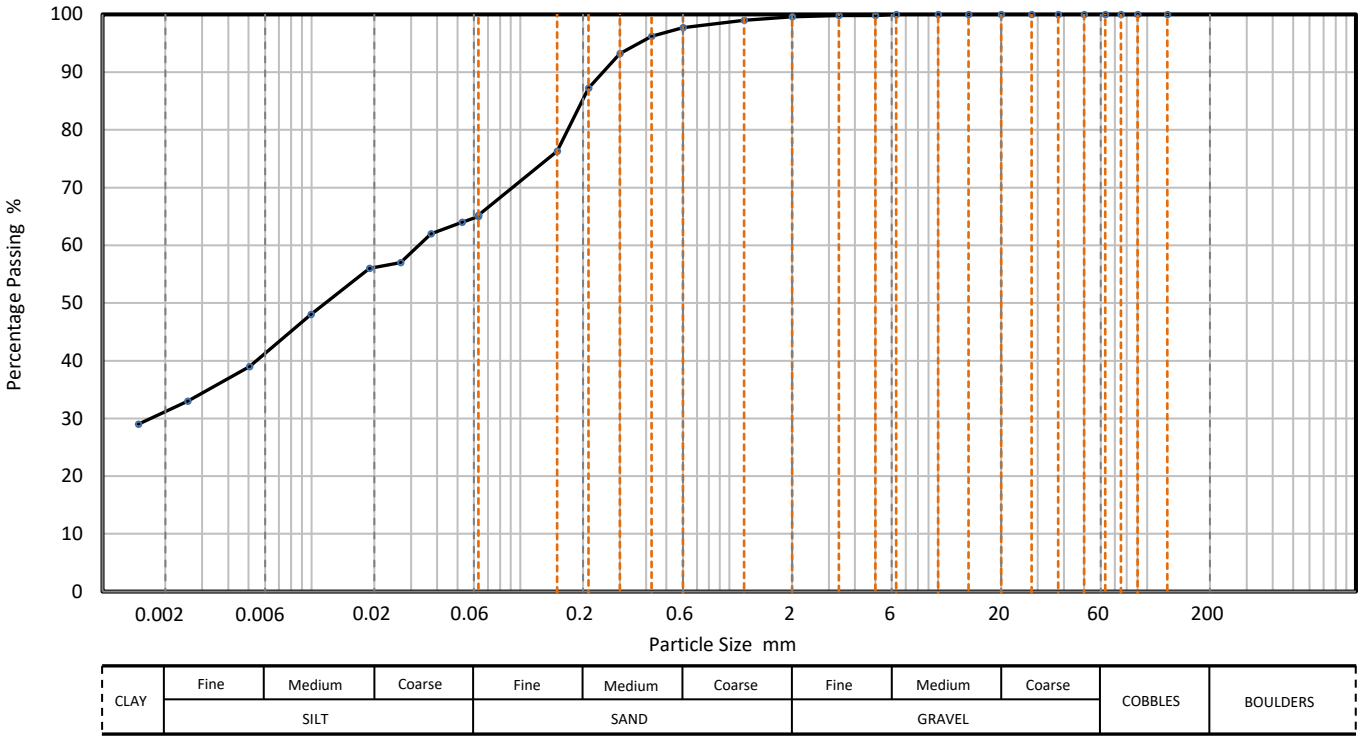
PARTICLE SIZE DISTRIBUTION

Site name	Job number
Envision, Sunderland	S211001

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

UKAS TESTING 7607

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, SAND.
Sample type	B		



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 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 13:39

PARTICLE SIZE DISTRIBUTION

Site name	Job number
Envision, Sunderland	S211001

Solmek
12-16 Yarm Road,
Stockton on Tees,
TS18 3NA
01642 607083
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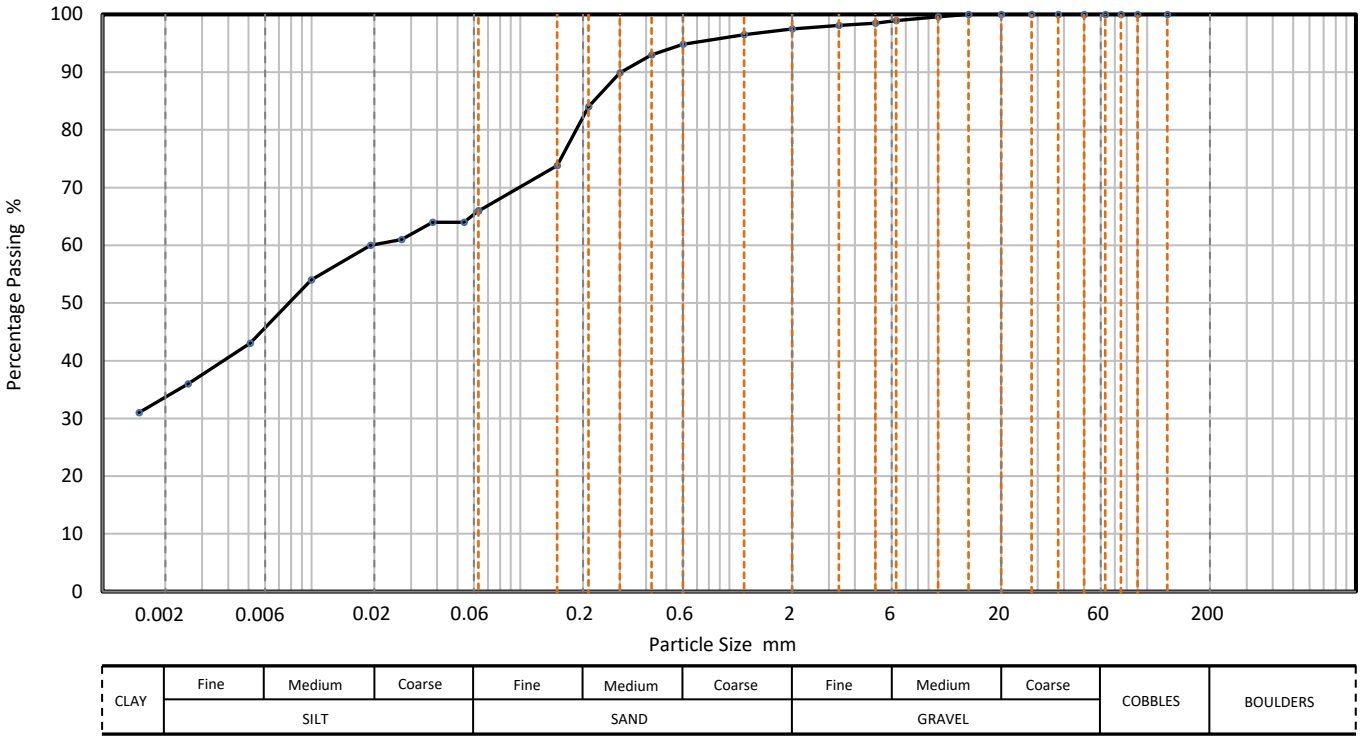
UKAS TESTING 7607

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	B		



Sieving		Sedimentation	
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		

Dry Mass of sample, g	450

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
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 13:40

PARTICLE SIZE DISTRIBUTION

Site name	Job number
Envision, Sunderland	S211001

Solmek
12-16 Yarm Road,
Stockton on Tees,
TS18 3NA
01642 607083
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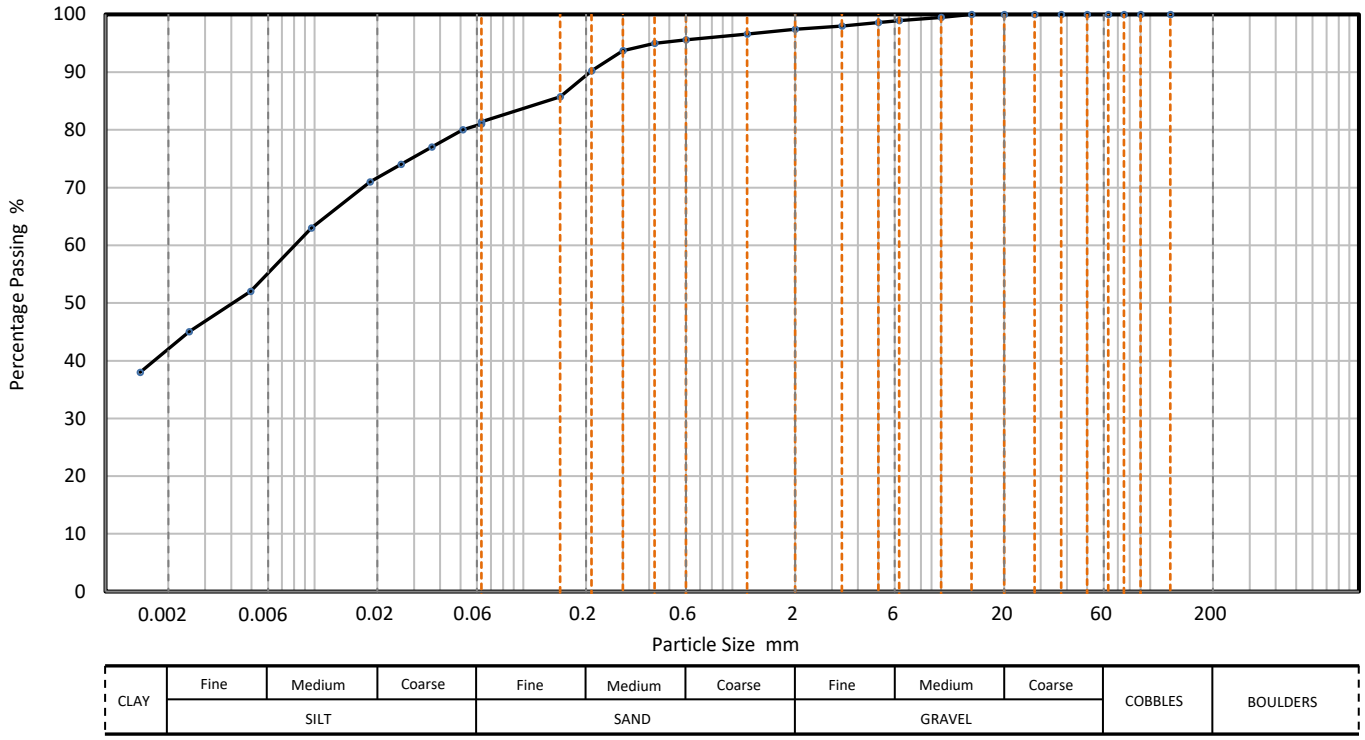
UKAS TESTING 7607

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	B		



Sieving		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

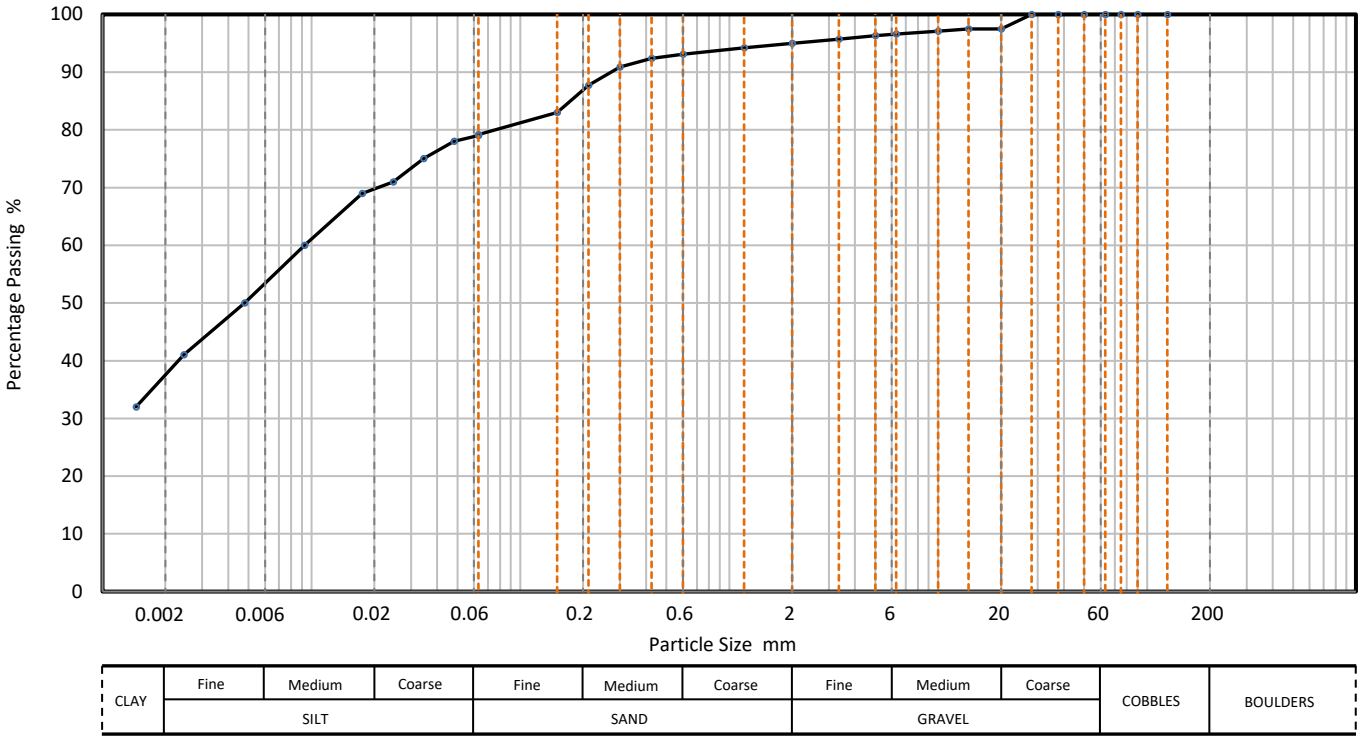
PARTICLE SIZE DISTRIBUTION

Site name	Job number
Envision, Sunderland	S211001

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

UKAS TESTING 7607

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	B		



Sieving		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

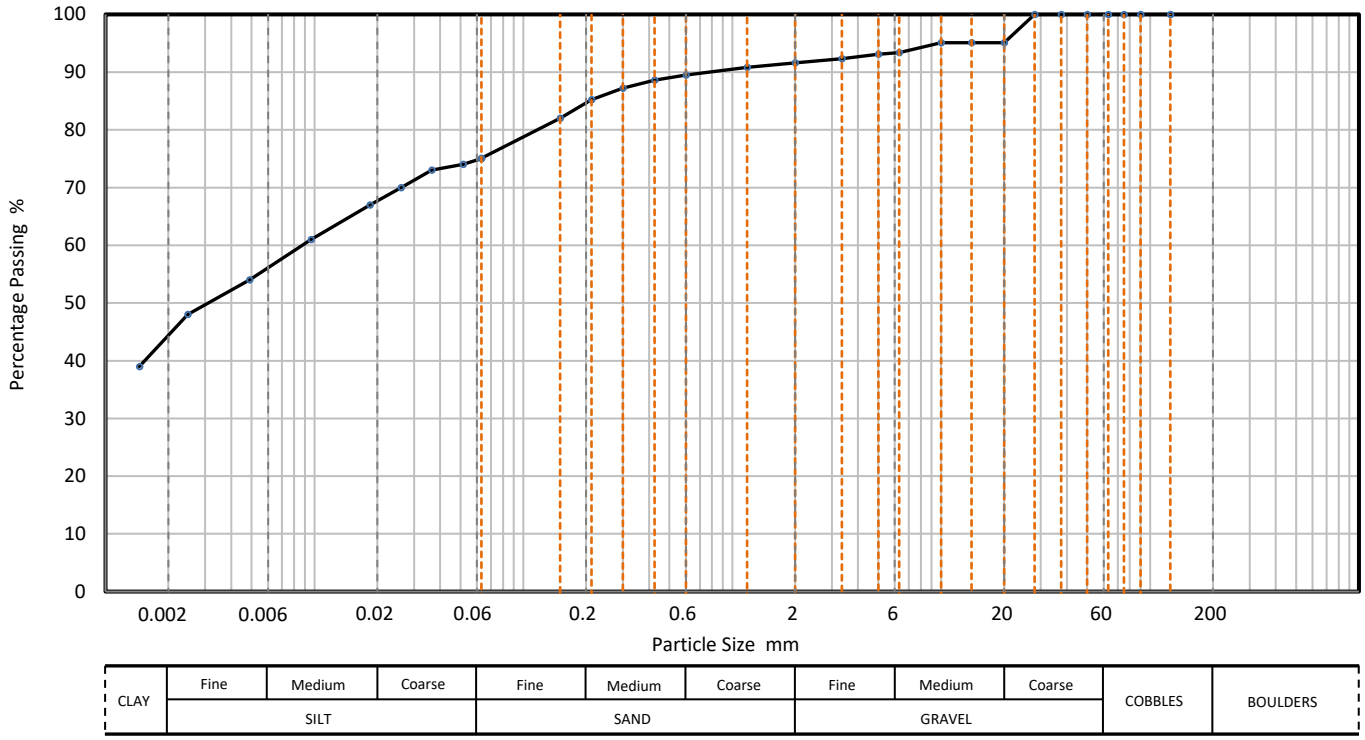
PARTICLE SIZE DISTRIBUTION

Site name	Job number
Envision, Sunderland	S211001

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

UKAS TESTING 7607

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	B		



Sieving		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

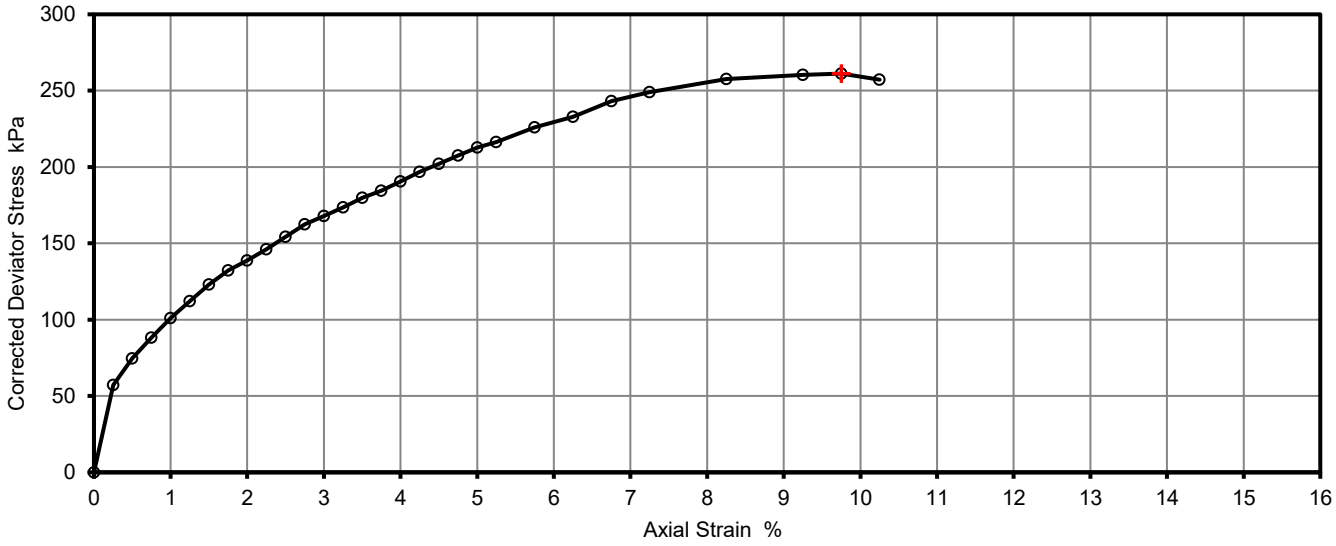
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen			Job Ref	S211001
				Borehole/Pit No.	CP01
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	2.00
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Firm, High Strength, CLAY.			KeyLAB ID	SLMK2021111610
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen			Date of test	

Test Number		1	
Length		76.0	mm
Diameter		38.0	mm
Bulk Density		2.11	Mg/m3
Moisture Content		22.0	%
Dry Density		1.73	Mg/m3
Rate of Strain		1.0	%/min
Cell Pressure		40	kPa
At failure	Axial Strain	9.8	%
	Deviator Stress, (σ1 - σ3)f	261	kPa
	Undrained Shear Strength, cu	131	kPa ½(σ1 - σ3)f
	Mode of Failure	Plastic	

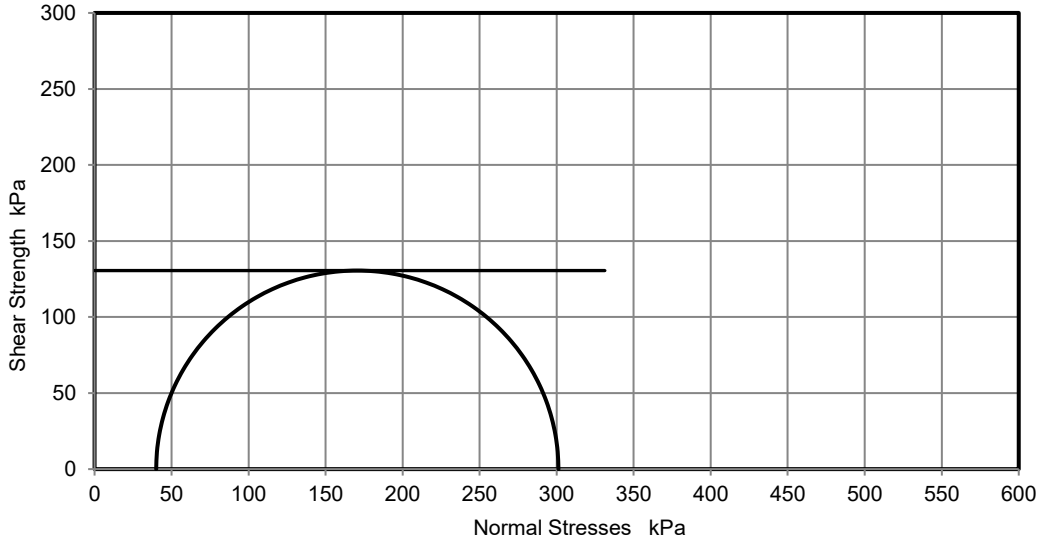
Tracable Equipment Record

Test Frame	TRI 004
Load Ring	LOAD CELL 003
Pressure Gauge	PRE 004
Digital Caliper	CAL-005
Balance	BAL-007

Deviator Stress v Axial Strain



Mohr Circles



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.

No of membranes used
1
Total thickness (mm)
0.25

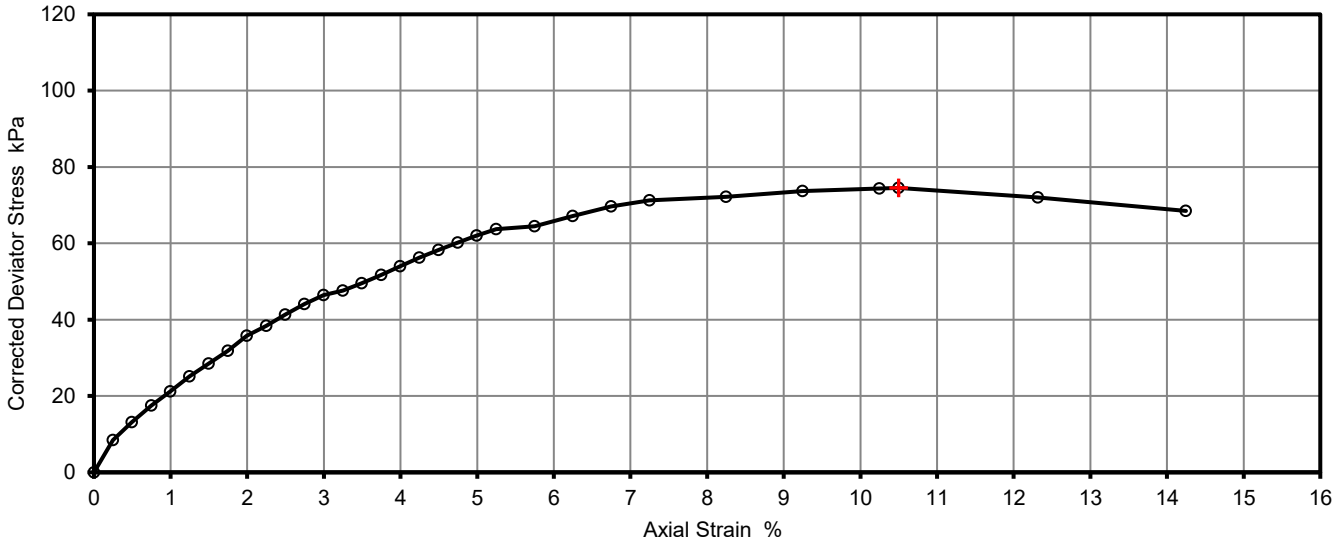
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen			Job Ref	S211001
				Borehole/Pit No.	CP01
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	4.00
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Firm, Low Strength, CLAY.			KeyLAB ID	SLMK2021111612
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen			Date of test	

Test Number		1	
Length		202.0	mm
Diameter		100.0	mm
Bulk Density		2.00	Mg/m3
Moisture Content		30.7	%
Dry Density		1.53	Mg/m3
Rate of Strain		1.0	%/min
Cell Pressure		80	kPa
At failure	Axial Strain	10.5	%
	Deviator Stress, (σ1 - σ3)f	75	kPa
	Undrained Shear Strength, cu	37	kPa ½(σ1 - σ3)f
	Mode of Failure	Plastic	

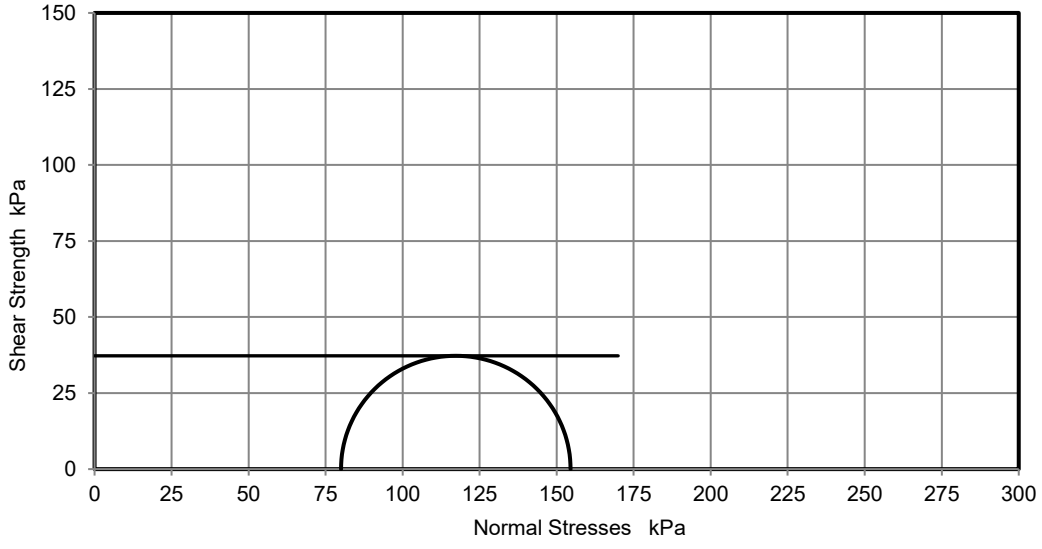
Tracable Equipment Record

Test Frame	TRI 003
Load Ring	LOAD CELL 001
Pressure Gauge	PRE 004
Digital Caliper	CAL-005
Balance	BAL-006

Deviator Stress v Axial Strain



Mohr Circles



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.

No of membranes used
1
Total thickness (mm)
0.35

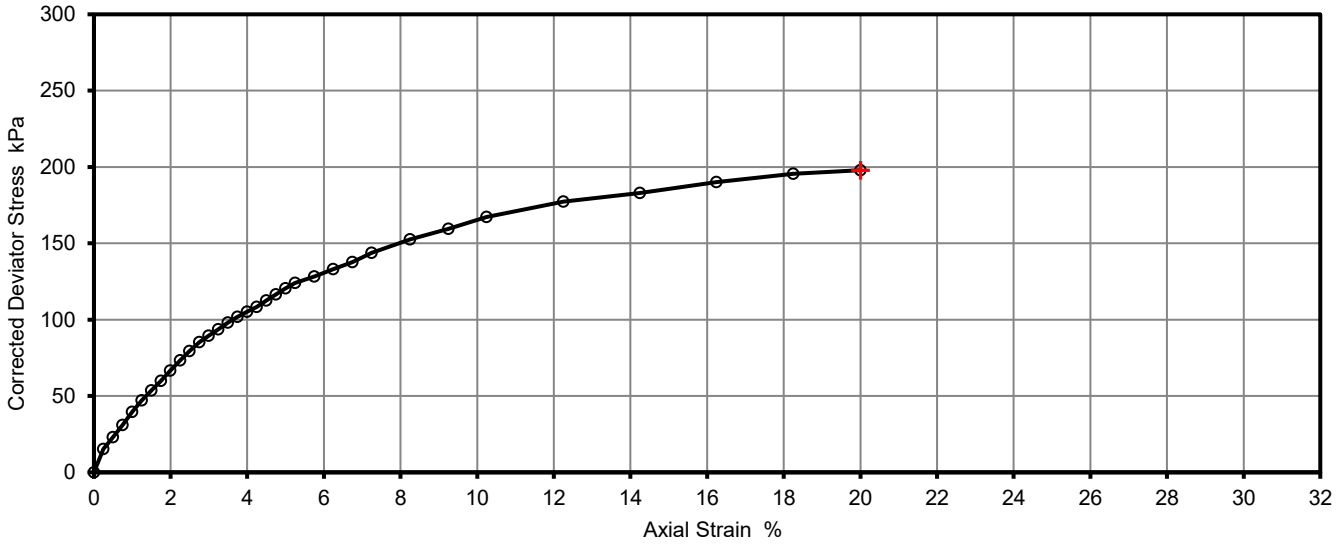
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen			Job Ref	S211001
				Borehole/Pit No.	CP02
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	2.00
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Firm, Brown, High Strength, CLAY.			KeyLAB ID	SLMK2021111618
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen			Date of test	

Test Number		1	
Length		202.0	mm
Diameter		100.0	mm
Bulk Density		2.13	Mg/m3
Moisture Content		25.7	%
Dry Density		1.69	Mg/m3
Rate of Strain		1.0	%/min
Cell Pressure		40	kPa
At failure	Axial Strain	20.0	%
	Deviator Stress, (σ1 - σ3)f	198	kPa
	Undrained Shear Strength, cu	99	kPa ½(σ1 - σ3)f
	Mode of Failure	Plastic	

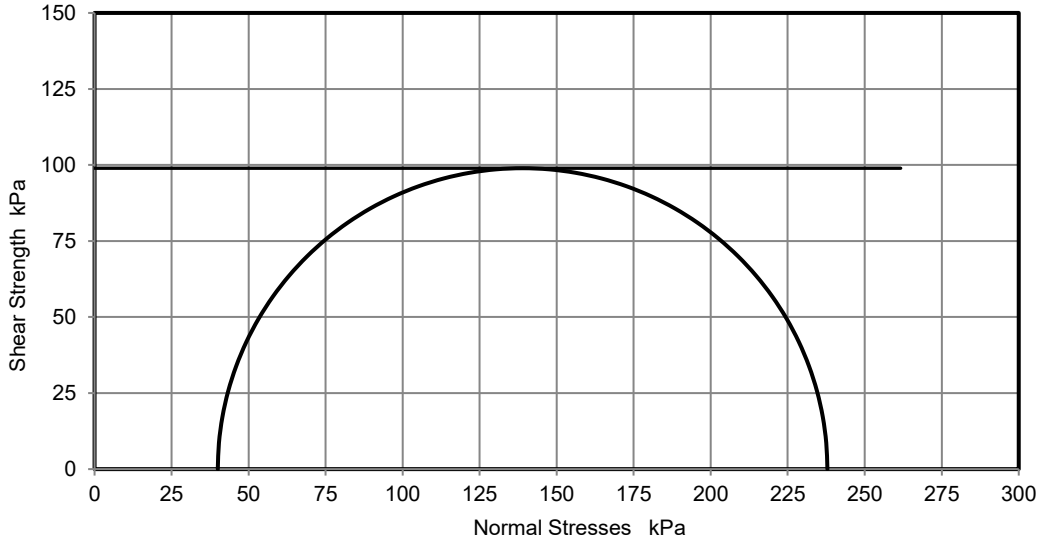
Tracable Equipment Record

Test Frame	TRI 003
Load Ring	LOAD CELL 001
Pressure Gauge	PRE 004
Digital Caliper	CAL 006
Balance	BAL-006

Deviator Stress v Axial Strain



Mohr Circles



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.

No of membranes used
1
Total thickness (mm)
0.35

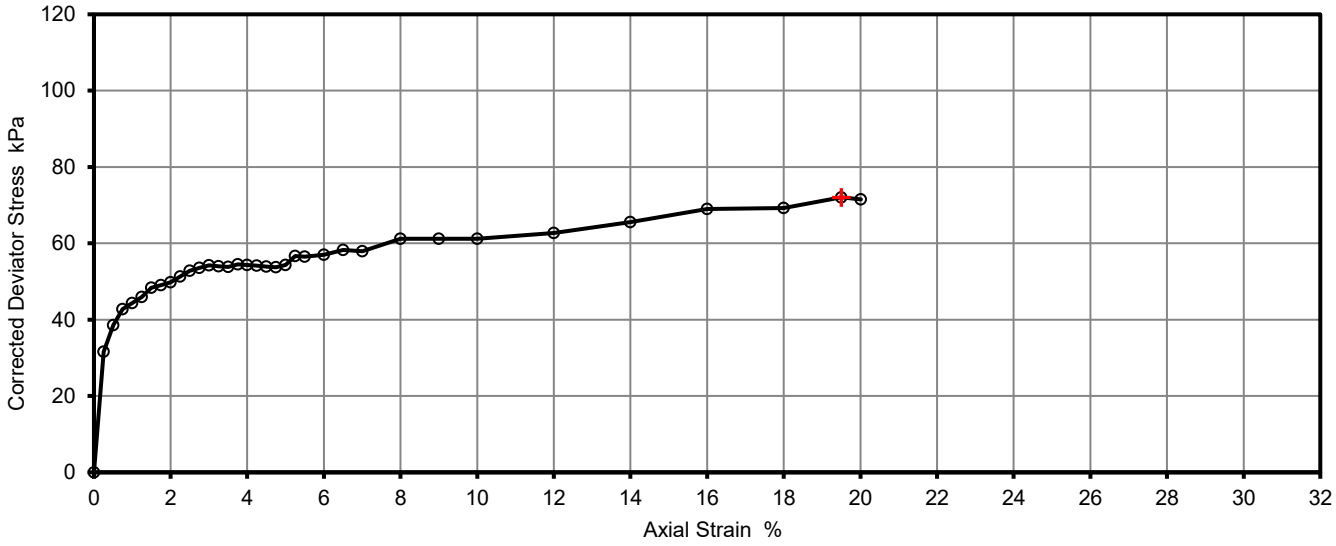
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen			Job Ref	S211001
				Borehole/Pit No.	CP02
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	4.00
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Soft, Brown, Low Strength, CLAY.			KeyLAB ID	SLMK2021111620
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen			Date of test	

Test Number	1	
Length	76.0	mm
Diameter	38.0	mm
Bulk Density	1.94	Mg/m3
Moisture Content	16.8	%
Dry Density	1.66	Mg/m3
Rate of Strain	1.0	%/min
Cell Pressure	80	kPa
At failure: 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
At failure: Mode of Failure	Plastic	

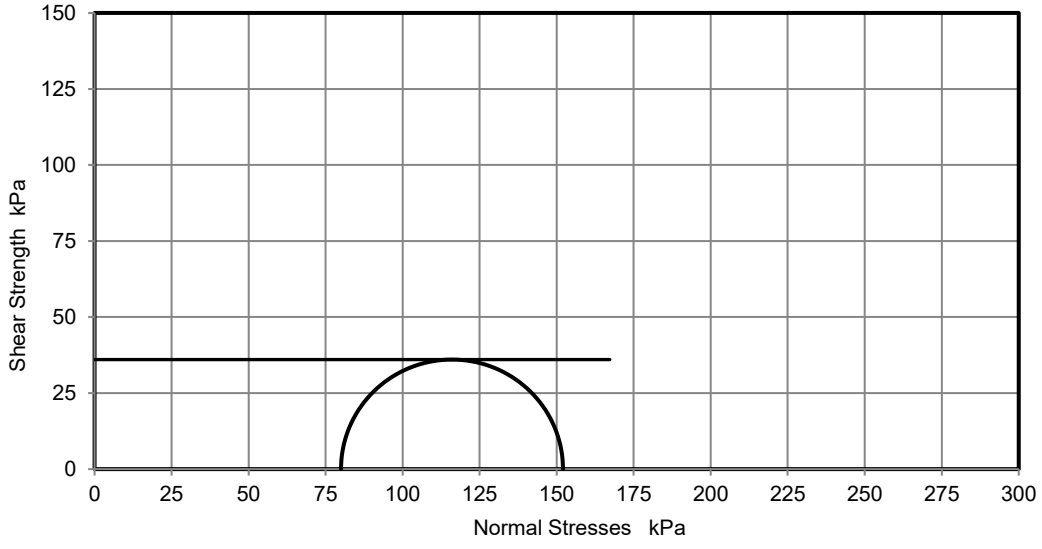
Tracable Equipment Record

Test Frame	TRI 003
Load Ring	LOAD CELL 001
Pressure Gauge	PRE 004
Digital Caliper	CAL-005
Balance	BAL-006

Deviator Stress v Axial Strain



Mohr Circles



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.

No of membranes used
1
Total thickness (mm)
0.25

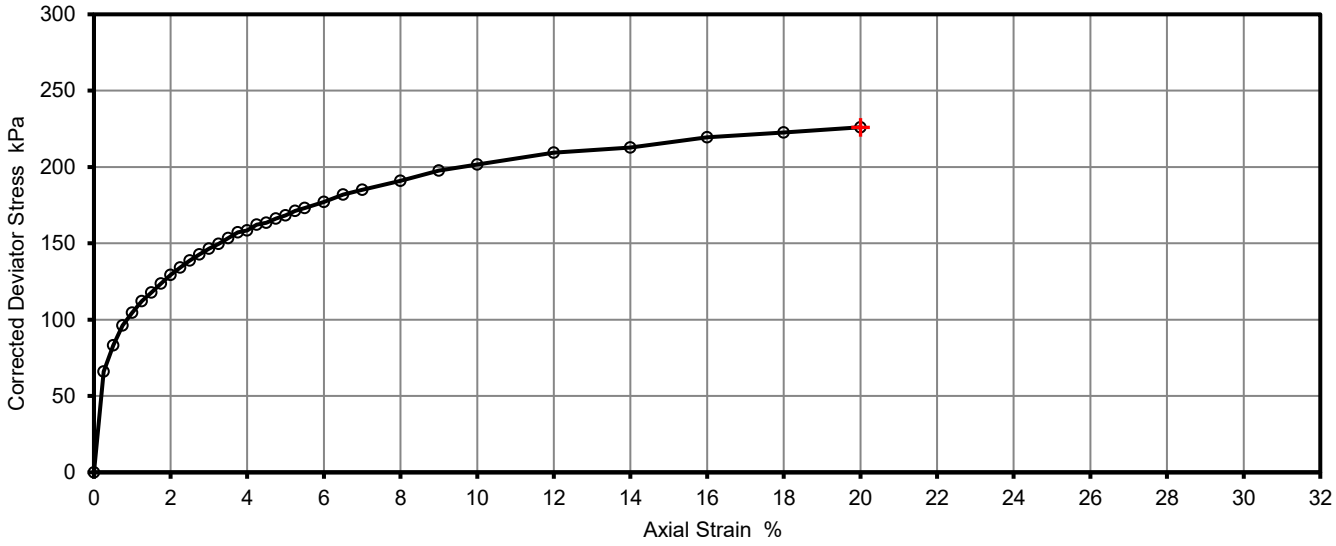
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen			Job Ref	S211001
				Borehole/Pit No.	CP02
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	6.00
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Firm, Brown, High Strength, CLAY.			KeyLAB ID	SLMK2021111622
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen			Date of test	

Test Number	1	
Length	76.0	mm
Diameter	38.0	mm
Bulk Density	2.14	Mg/m3
Moisture Content	14.6	%
Dry Density	1.87	Mg/m3
Rate of Strain	1.0	%/min
Cell Pressure	120	kPa
At failure: Axial Strain	20.0	%
At failure: Deviator Stress, (σ1 - σ3)f	226	kPa
At failure: Undrained Shear Strength, cu	113	kPa ½(σ1 - σ3)f
At failure: Mode of Failure	Plastic	

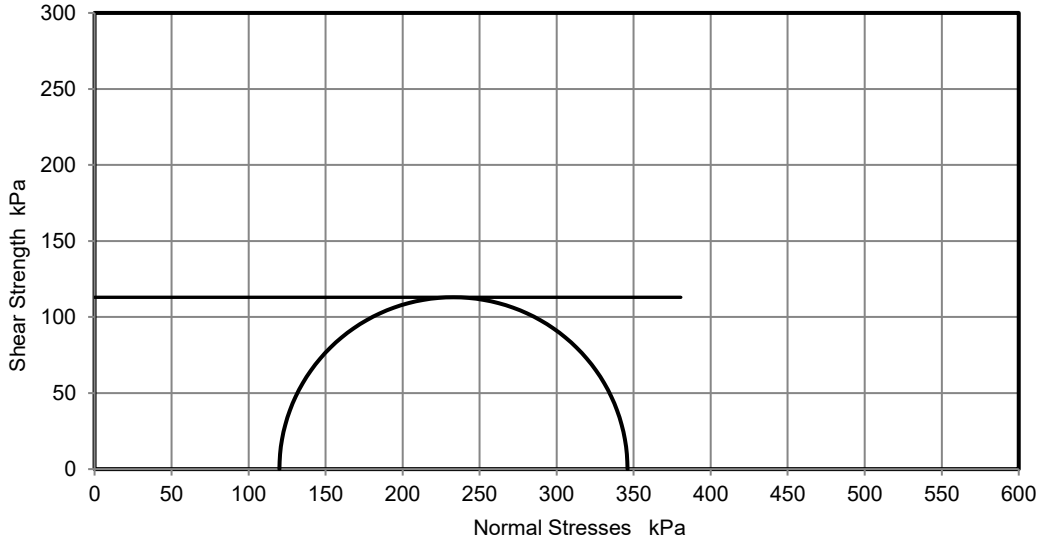
Tracable Equipment Record

Test Frame	TRI 003
Load Ring	LOAD CELL 001
Pressure Gauge	PRE 006
Digital Caliper	CAL-005
Balance	BAL-006

Deviator Stress v Axial Strain



Mohr Circles



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.

No of membranes used
1
Total thickness (mm)
0.25

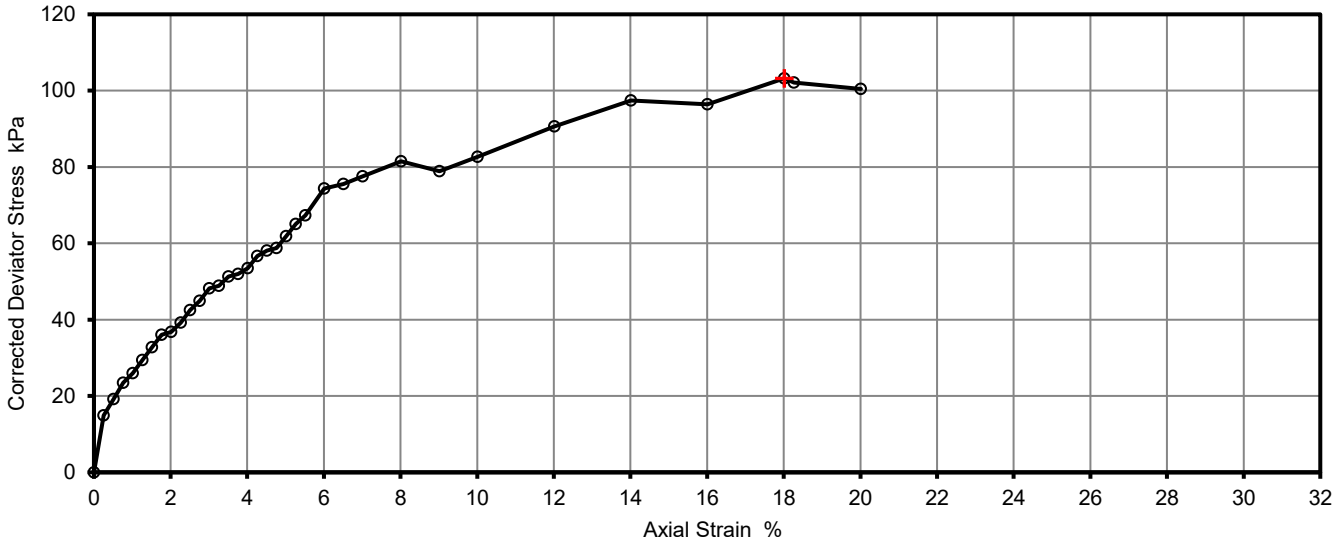
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen			Job Ref	S211001
				Borehole/Pit No.	CP03
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	4.00
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Firm, Brown, Medium Strength, CLAY.			KeyLAB ID	SLMK2021111627
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen			Date of test	

Test Number		1	
Length		76.0	mm
Diameter		38.0	mm
Bulk Density		2.12	Mg/m3
Moisture Content		18.5	%
Dry Density		1.79	Mg/m3
Rate of Strain		1.0	%/min
Cell Pressure		80	kPa
At failure	Axial Strain	18.0	%
	Deviator Stress, (σ1 - σ3)f	103	kPa
	Undrained Shear Strength, cu	52	kPa ½(σ1 - σ3)f
	Mode of Failure	Plastic	

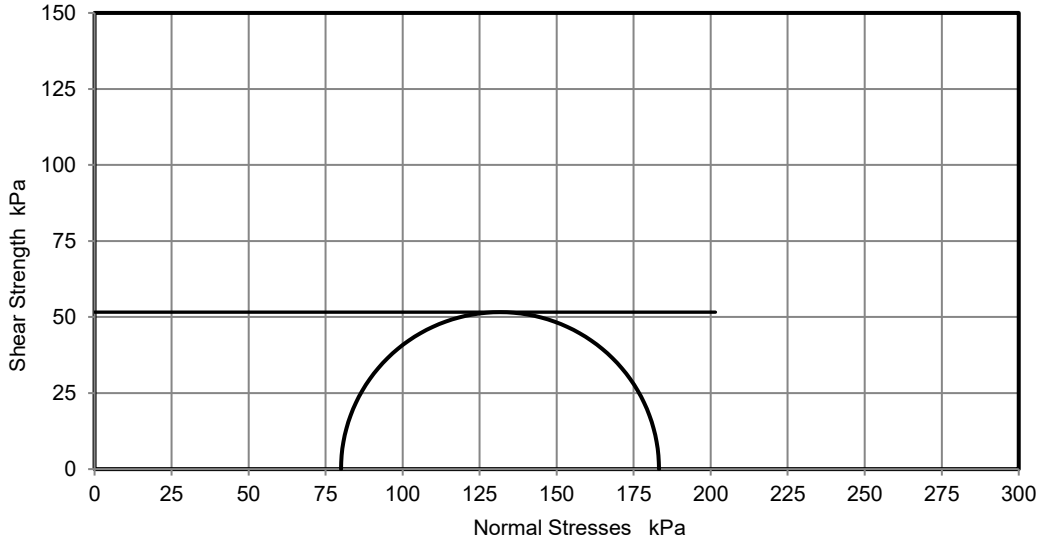
Tracable Equipment Record

Test Frame	TRI 003
Load Ring	LOAD CELL 001
Pressure Gauge	PRE 004
Digital Caliper	CAL-005
Balance	BAL-006

Deviator Stress v Axial Strain



Mohr Circles



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.

No of membranes used
1
Total thickness (mm)
0.25

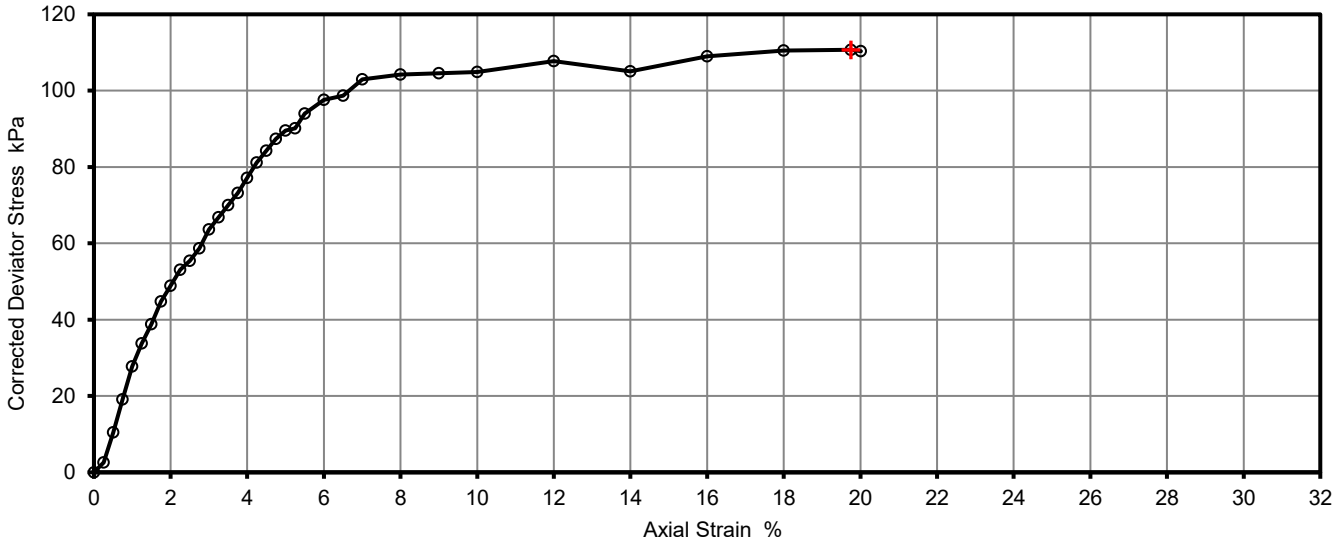
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen			Job Ref	S211001
				Borehole/Pit No.	CP04
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	4.00
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Firm, Medium Strength, CLAY.			KeyLAB ID	SLMK2021111634
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen			Date of test	

Test Number	1	
Length	76.0	mm
Diameter	38.0	mm
Bulk Density	2.02	Mg/m3
Moisture Content	23.6	%
Dry Density	1.64	Mg/m3
Rate of Strain	1.0	%/min
Cell Pressure	80	kPa
At failure: Axial Strain	19.8	%
At failure: Deviator Stress, (σ1 - σ3)f	111	kPa
At failure: Undrained Shear Strength, cu	55	kPa ½(σ1 - σ3)f
At failure: Mode of Failure	Plastic	

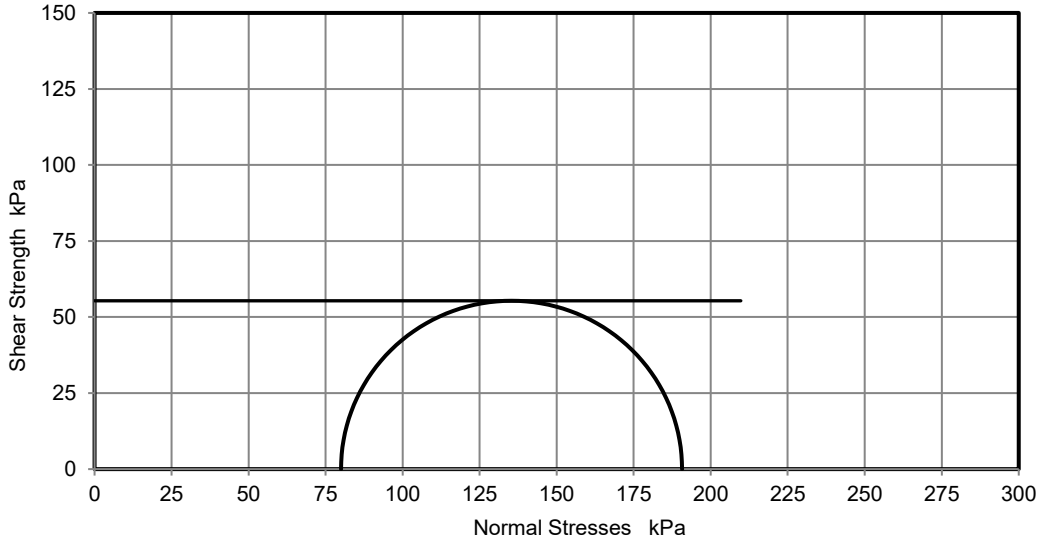
Tracable Equipment Record

Test Frame	TRI 003
Load Ring	LOAD CELL 001
Pressure Gauge	PRE 004
Digital Caliper	CAL-005
Balance	BAL-006

Deviator Stress v Axial Strain



Mohr Circles



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.

No of membranes used
1
Total thickness (mm)
0.25

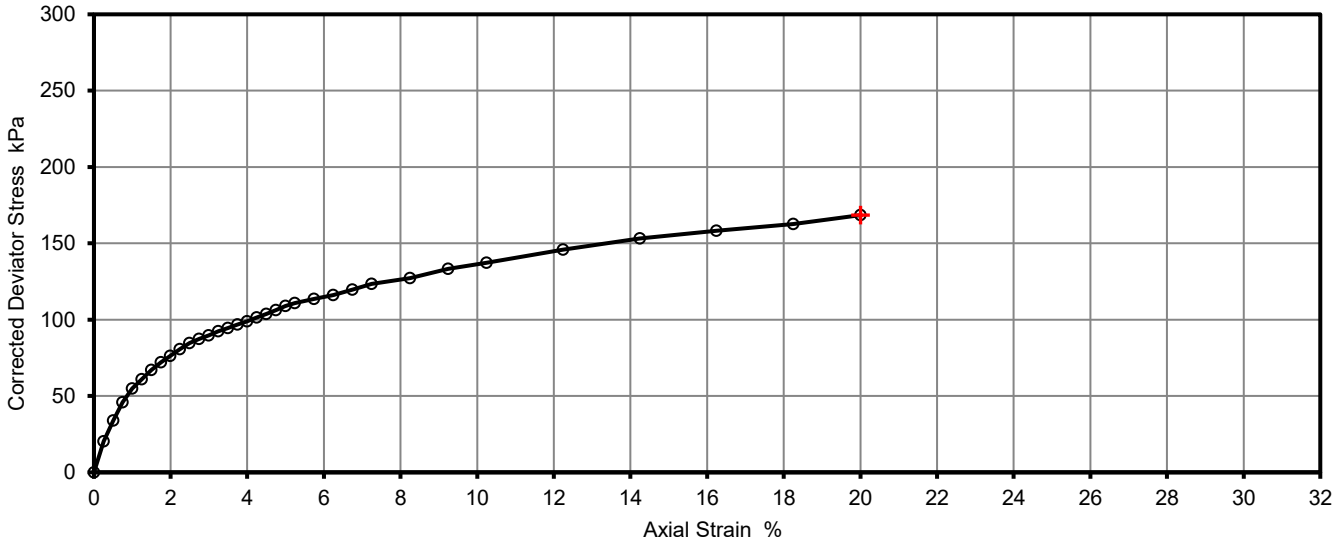
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen			Job Ref	S211001
				Borehole/Pit No.	CP05
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	2.00
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Firm, Brown, High Strength, CLAY.			KeyLAB ID	SLMK2021111640
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen			Date of test	

Test Number	1	
Length	200.0	mm
Diameter	100.0	mm
Bulk Density	2.21	Mg/m3
Moisture Content	27.5	%
Dry Density	1.73	Mg/m3
Rate of Strain	1.0	%/min
Cell Pressure	40	kPa
At failure: Axial Strain	20.0	%
At failure: Deviator Stress, (σ1 - σ3)f	168	kPa
At failure: Undrained Shear Strength, cu	84	kPa ½(σ1 - σ3)f
At failure: Mode of Failure	Plastic	

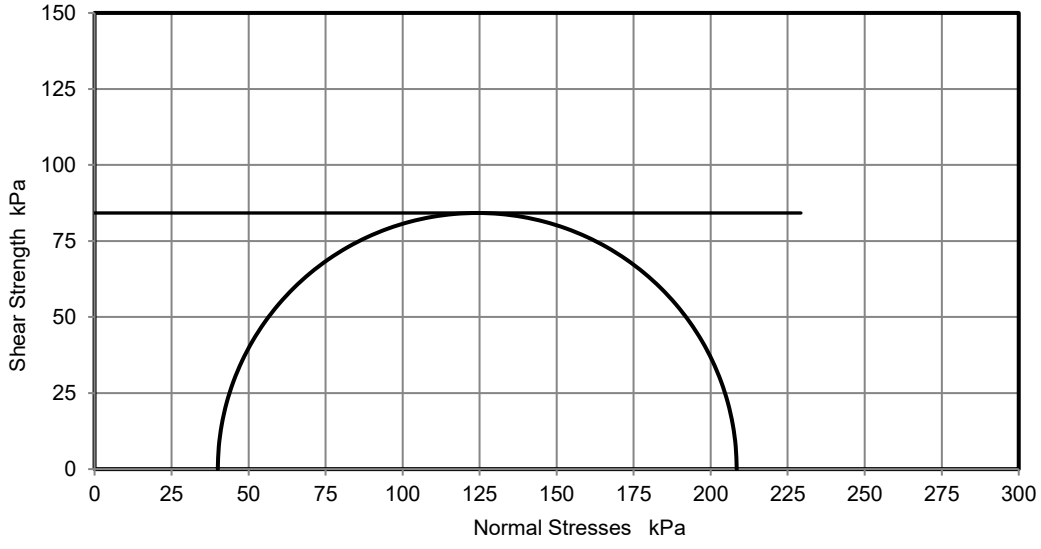
Tracable Equipment Record

Test Frame	TRI 004
Load Ring	LOAD CELL 001
Pressure Gauge	PRE 004
Digital Caliper	CAL-005
Balance	BAL-006

Deviator Stress v Axial Strain



Mohr Circles



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.

No of membranes used
1
Total thickness (mm)
0.35

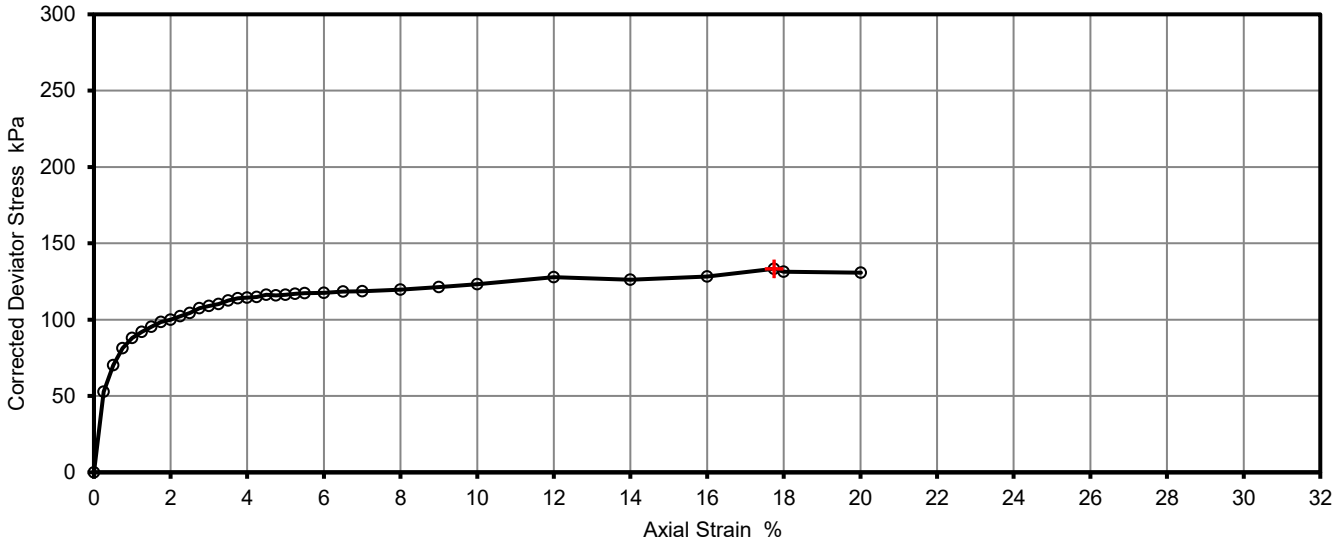
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen			Job Ref	S211001
				Borehole/Pit No.	CP05
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	5.00
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Firm, Brown, Medium Strength, CLAY.			KeyLAB ID	SLMK2021111643
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen			Date of test	

Test Number		1	
Length		76.0	mm
Diameter		38.0	mm
Bulk Density		2.26	Mg/m3
Moisture Content		12.6	%
Dry Density		2.01	Mg/m3
Rate of Strain		1.0	%/min
Cell Pressure		100	kPa
At failure	Axial Strain	17.8	%
	Deviator Stress, (σ1 - σ3)f	133	kPa
	Undrained Shear Strength, cu	67	kPa ½(σ1 - σ3)f
	Mode of Failure	Plastic	

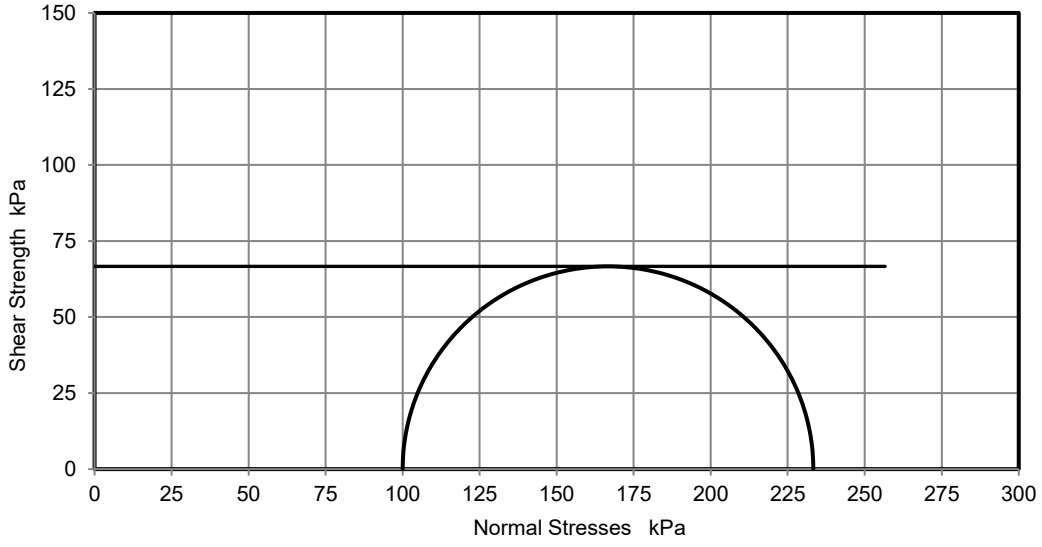
Tracable Equipment Record

Test Frame	TRI 004
Load Ring	LOAD CELL 001
Pressure Gauge	PRE 004
Digital Caliper	CAL-005
Balance	BAL-006

Deviator Stress v Axial Strain



Mohr Circles



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.

No of membranes used
1
Total thickness (mm)
0.25

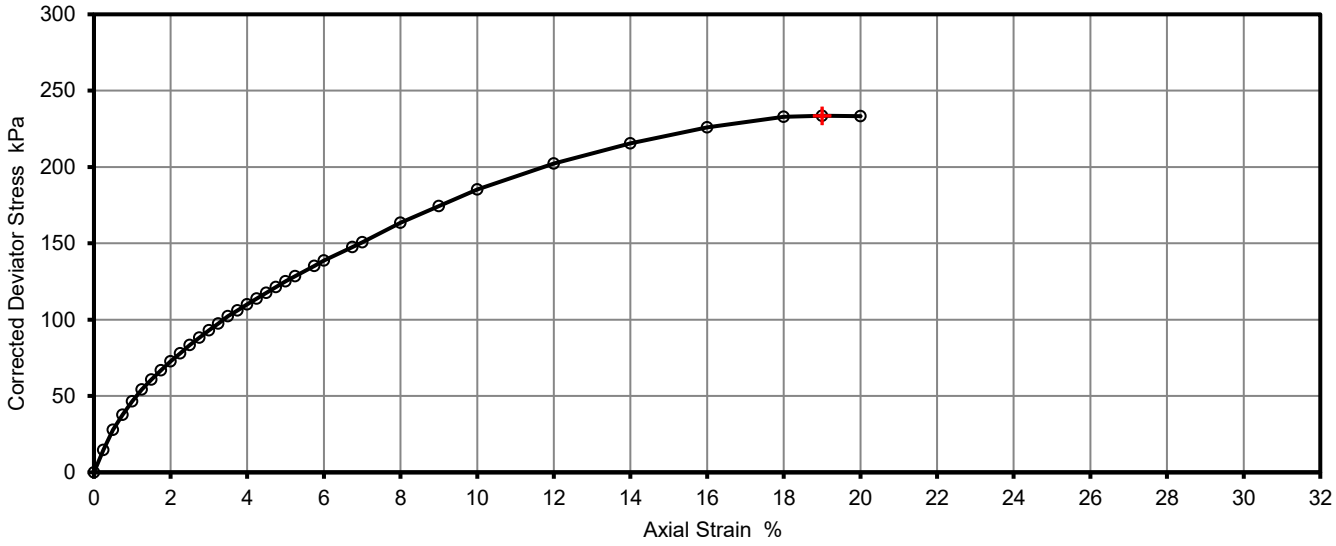
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen			Job Ref	S211001
				Borehole/Pit No.	CP06
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	2.00
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Firm, 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 Density		2.16	Mg/m3
Moisture Content		25.2	%
Dry Density		1.72	Mg/m3
Rate of Strain		1.0	%/min
Cell Pressure		40	kPa
At failure	Axial Strain	19.0	%
	Deviator Stress, (σ1 - σ3)f	234	kPa
	Undrained Shear Strength, cu	117	kPa ½(σ1 - σ3)f
	Mode of Failure	Plastic	

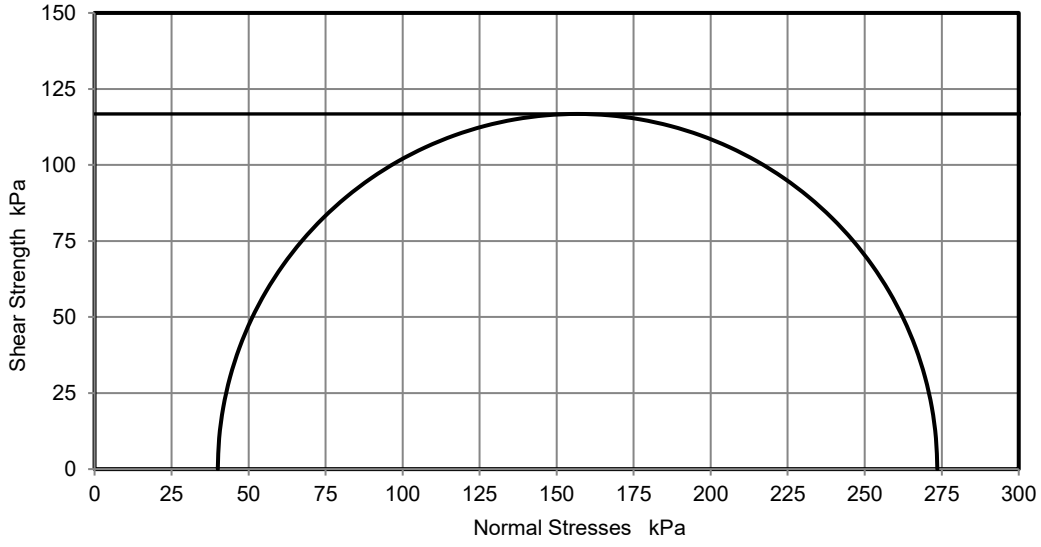
Tracable Equipment Record

Test Frame	TRI 003
Load Ring	LOAD CELL 001
Pressure Gauge	PRE 004
Digital Caliper	CAL 006
Balance	BAL-006

Deviator Stress v Axial Strain



Mohr Circles



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.

No of membranes used
1
Total thickness (mm)
0.35

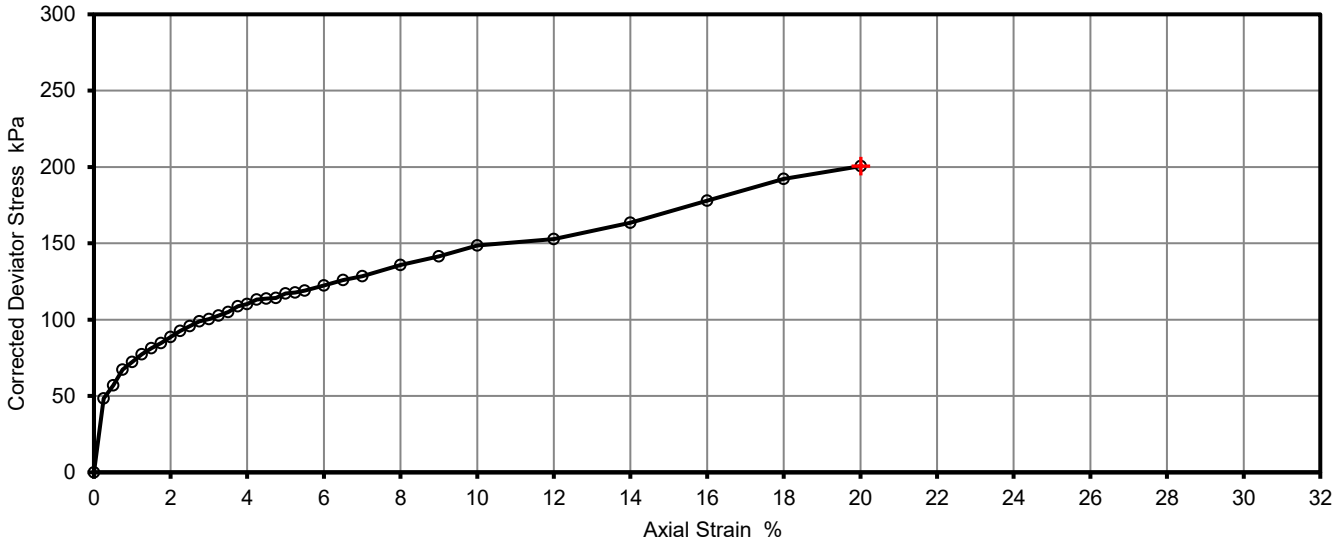
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen			Job Ref	S211001
				Borehole/Pit No.	CP06
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	4.00
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Firm, Brown. High Strength, CLAY.			KeyLAB ID	SLMK2021111648
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen			Date of test	

Test Number	1	
Length	76.0	mm
Diameter	38.0	mm
Bulk Density	1.94	Mg/m3
Moisture Content	32.2	%
Dry Density	1.47	Mg/m3
Rate of Strain	1.0	%/min
Cell Pressure	80	kPa
At failure: 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
At failure: Mode of Failure	Plastic	

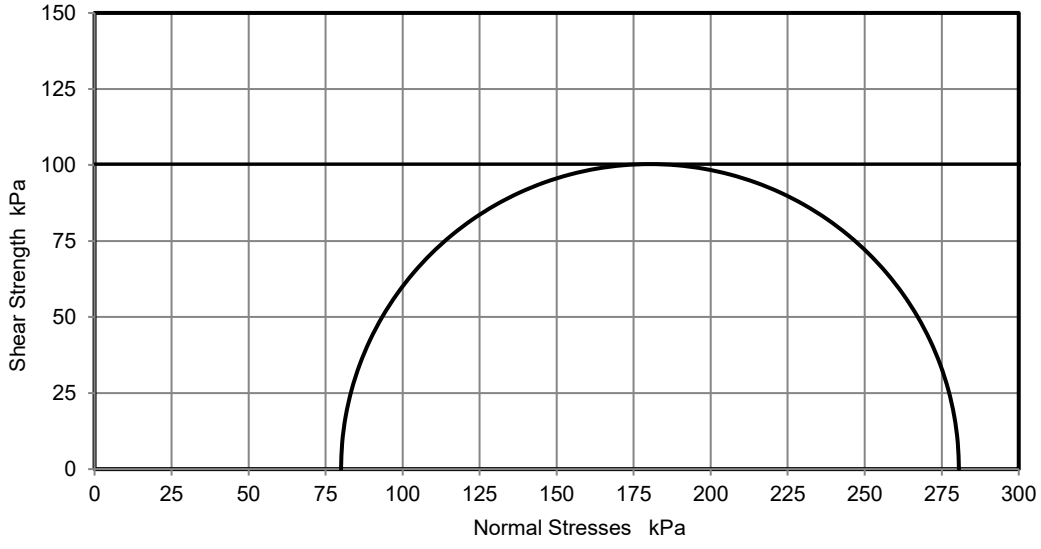
Tracable Equipment Record

Test Frame	TRI 003
Load Ring	LOAD CELL 001
Pressure Gauge	PRE 004
Digital Caliper	CAL-005
Balance	BAL-006

Deviator Stress v Axial Strain



Mohr Circles



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.

No of membranes used
1
Total thickness (mm)
0.25

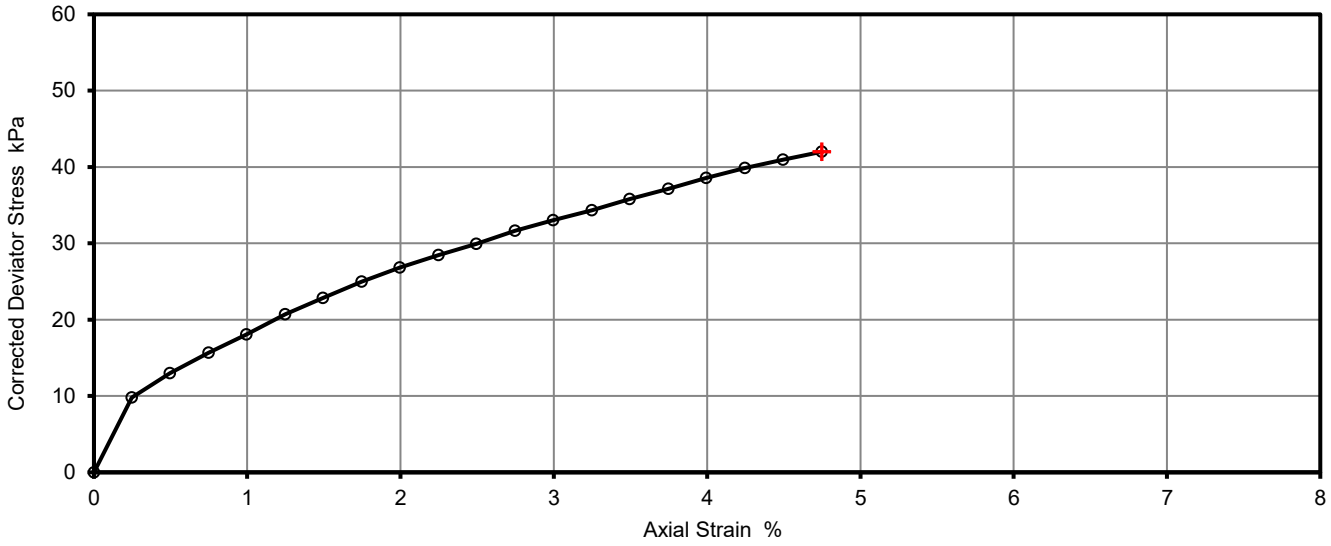
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen			Job Ref	S211001
				Borehole/Pit No.	CP06
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	6.00
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Soft, Low Strength CLAY			KeyLAB ID	SLMK2021111650
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen			Date of test	16/11/2021

Test Number	1	
Length	202.0	mm
Diameter	101.0	mm
Bulk Density	2.08	Mg/m3
Moisture Content	23.6	%
Dry Density	1.68	Mg/m3
Rate of Strain	1.0	%/min
Cell Pressure	120	kPa
At failure: 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
At failure: Mode of Failure	Plastic	

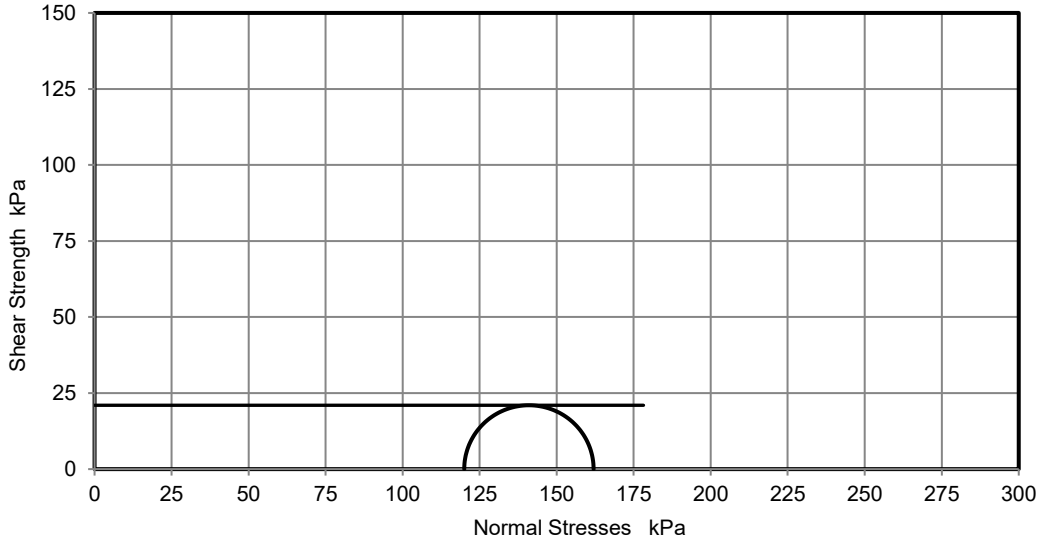
Tracable Equipment Record

Test Frame	TRI 004
Load Ring	LOAD CELL 003
Pressure Gauge	PRE 004
Digital Caliper	CAL-005
Balance	BAL-001

Deviator Stress v Axial Strain



Mohr Circles



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.

No of membranes used
1
Total thickness (mm)
0.35

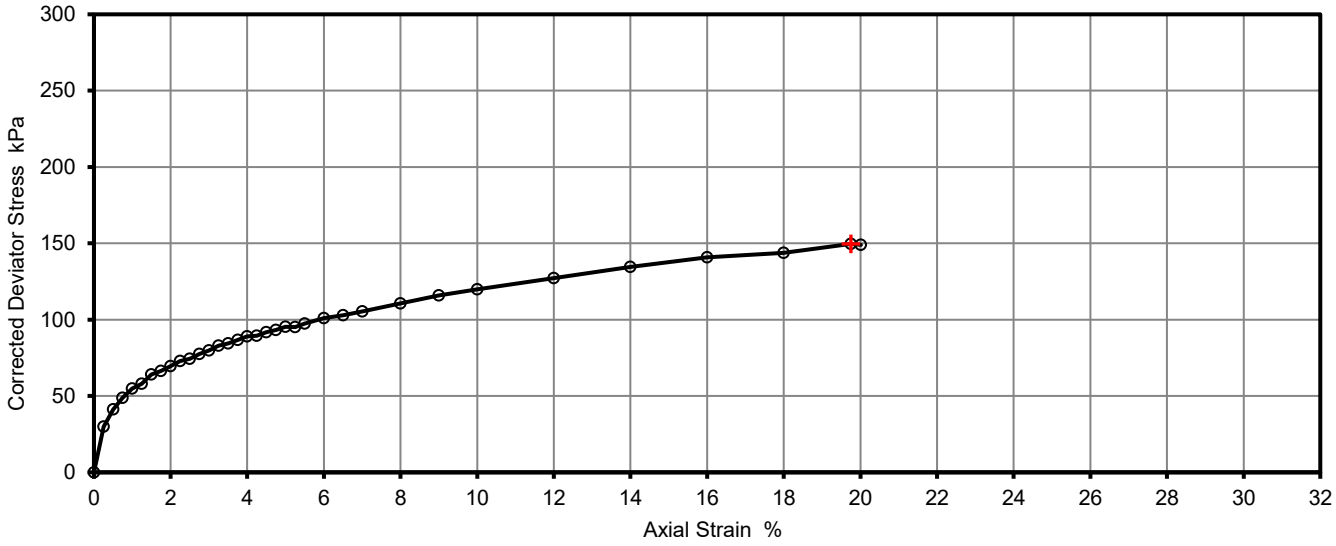
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen			Job Ref	S211001
				Borehole/Pit No.	CP06
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	12.00
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Firm, Brown, Medium Strength, CLAY.			KeyLAB ID	SLMK2021111655
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen			Date of test	

Test Number	1	
Length	76.0	mm
Diameter	38.0	mm
Bulk Density	2.16	Mg/m3
Moisture Content	21.6	%
Dry Density	1.77	Mg/m3
Rate of Strain	1.0	%/min
Cell Pressure	240	kPa
At failure: Axial Strain	19.8	%
At failure: Deviator Stress, (σ1 - σ3)f	150	kPa
At failure: Undrained Shear Strength, cu	75	kPa ½(σ1 - σ3)f
At failure: Mode of Failure	Plastic	

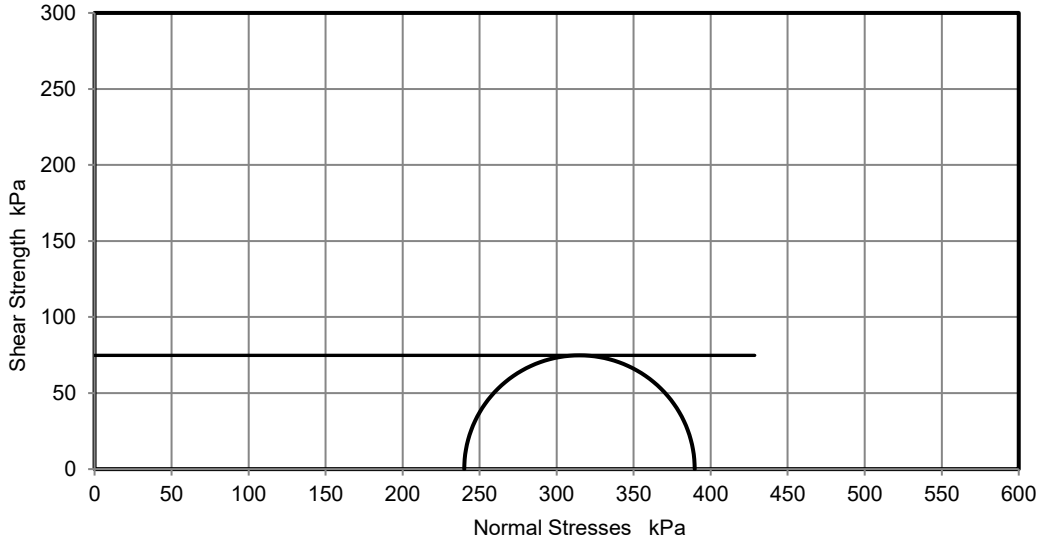
Tracable Equipment Record

Test Frame	TRI 003
Load Ring	LOAD CELL 001
Pressure Gauge	PRE 004
Digital Caliper	CAL-005
Balance	BAL-006

Deviator Stress v Axial Strain



Mohr Circles



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.

No of membranes used
1
Total thickness (mm)
0.25

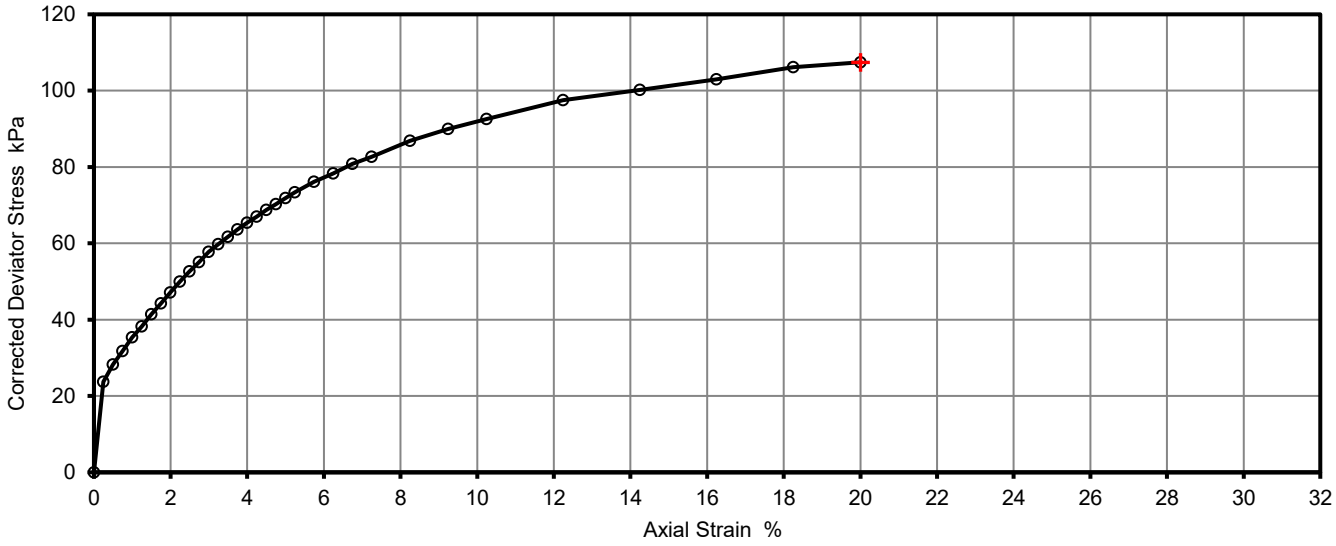
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen			Job Ref	S211001
				Borehole/Pit No.	CP07
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	3.00
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Firm, 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	
Length	204.0	mm
Diameter	100.0	mm
Bulk Density	2.20	Mg/m3
Moisture Content	23.4	%
Dry Density	1.78	Mg/m3
Rate of Strain	1.0	%/min
Cell Pressure	60	kPa
At failure: Axial Strain	20.0	%
At failure: Deviator Stress, (σ1 - σ3)f	107	kPa
At failure: Undrained Shear Strength, cu	54	kPa ½(σ1 - σ3)f
At failure: Mode of Failure	Plastic	

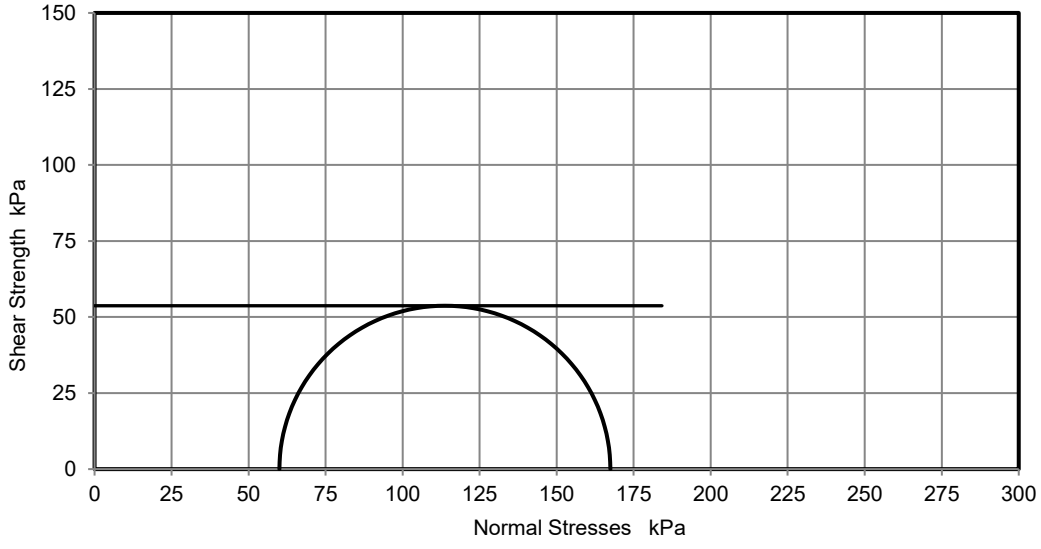
Tracable Equipment Record

Test Frame	TRI 004
Load Ring	LOAD CELL 003
Pressure Gauge	PRE 004
Digital Caliper	CAL-005
Balance	BAL-001

Deviator Stress v Axial Strain



Mohr Circles



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.

No of membranes used
1
Total thickness (mm)
0.35

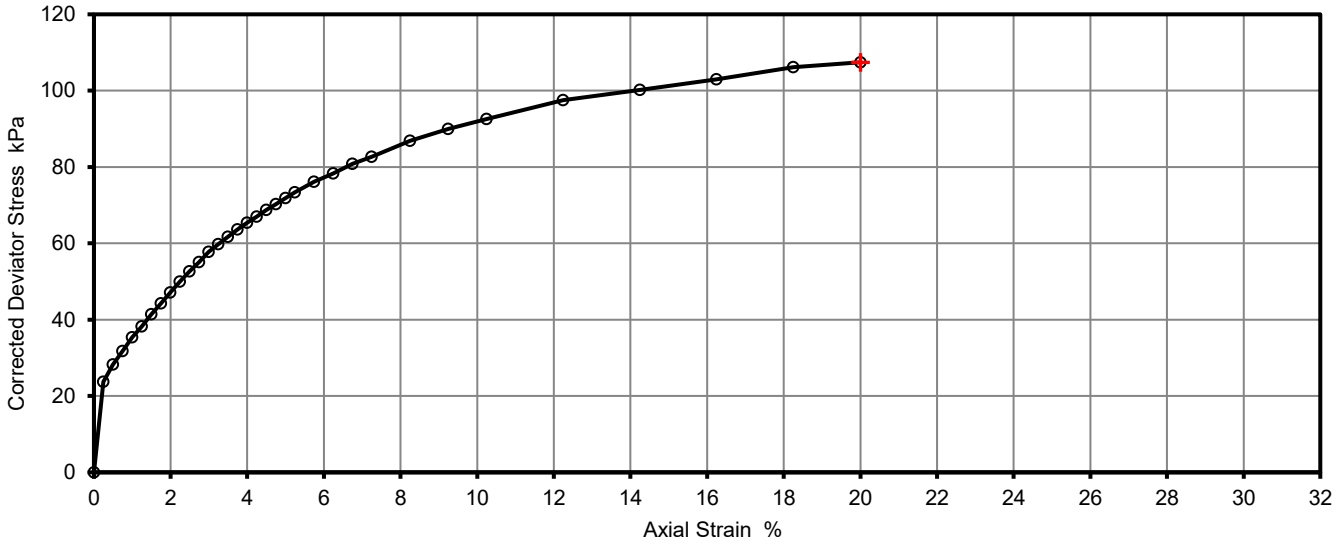
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen			Job Ref	S211001
				Borehole/Pit No.	CP07
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	5.00
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Firm, Brown, Medium Strength, CLAY.			KeyLAB ID	SLMK2021111664
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen			Date of test	

Test Number		1	
Length		204.0	mm
Diameter		100.0	mm
Bulk Density		2.20	Mg/m3
Moisture Content		28.0	%
Dry Density		1.72	Mg/m3
Rate of Strain		1.0	%/min
Cell Pressure		60	kPa
At failure	Axial Strain	20.0	%
	Deviator Stress, (σ1 - σ3)f	107	kPa
	Undrained Shear Strength, cu	54	kPa ½(σ1 - σ3)f
	Mode of Failure	Plastic	

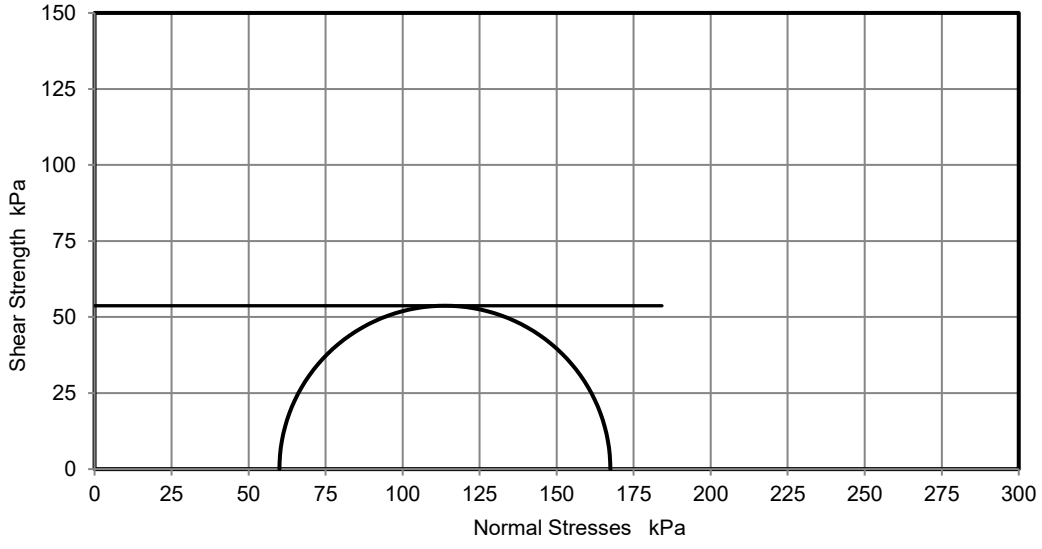
Tracable Equipment Record

Test Frame	TRI 003
Load Ring	LOAD CELL 001
Pressure Gauge	PRE 004
Digital Caliper	CAL-005
Balance	BAL-006

Deviator Stress v Axial Strain



Mohr Circles



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.

No of membranes used
1
Total thickness (mm)
0.35

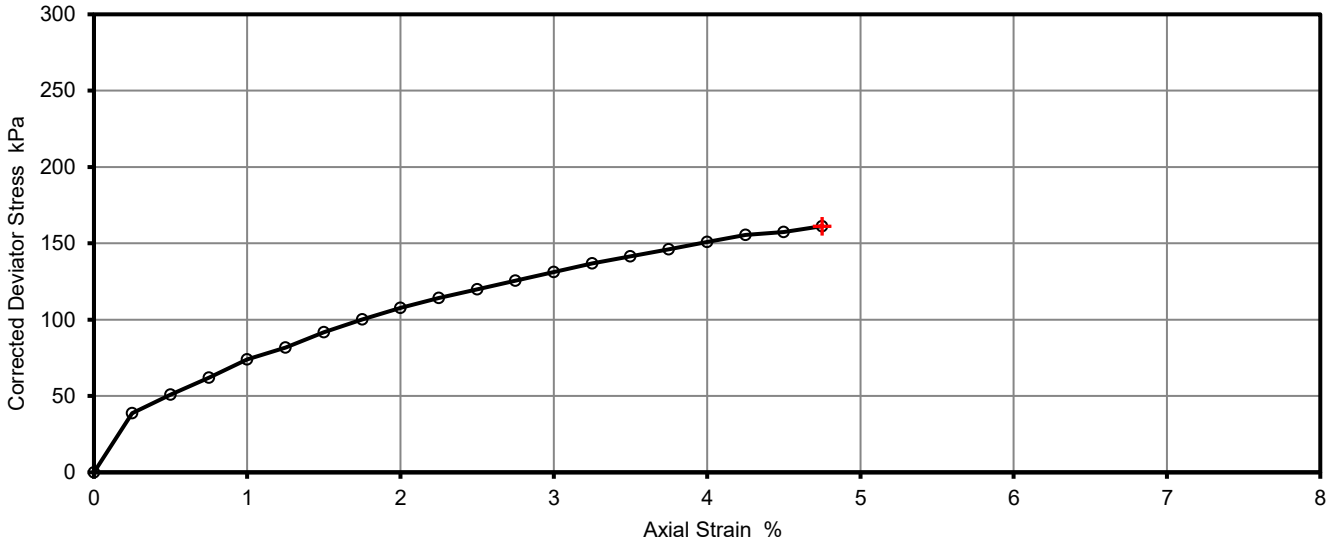
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen			Job Ref	S211001
				Borehole/Pit No.	CPRO01
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	1.20
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Firm, High Strength, CLAY.			KeyLAB ID	SLMK202111172
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen			Date of test	

Test Number		1	
Length		76.0	mm
Diameter		38.0	mm
Bulk Density		2.08	Mg/m3
Moisture Content		20.0	%
Dry Density		1.74	Mg/m3
Rate of Strain		1.0	%/min
Cell Pressure		24	kPa
At failure	Axial Strain	4.8	%
	Deviator Stress, (σ1 - σ3)f	161	kPa
	Undrained Shear Strength, cu	81	kPa ½(σ1 - σ3)f
	Mode of Failure	Plastic	

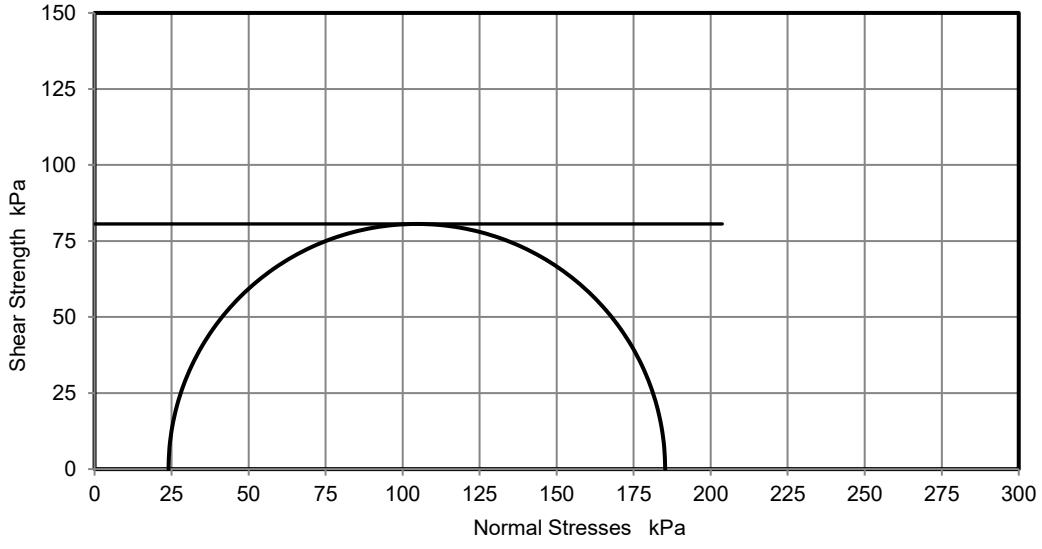
Tracable Equipment Record

Test Frame	TRI 003
Load Ring	LOAD CELL 001
Pressure Gauge	PRE 004
Digital Caliper	CAL-005
Balance	BAL-006

Deviator Stress v Axial Strain



Mohr Circles



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.

No of membranes used
1
Total thickness (mm)
0.25

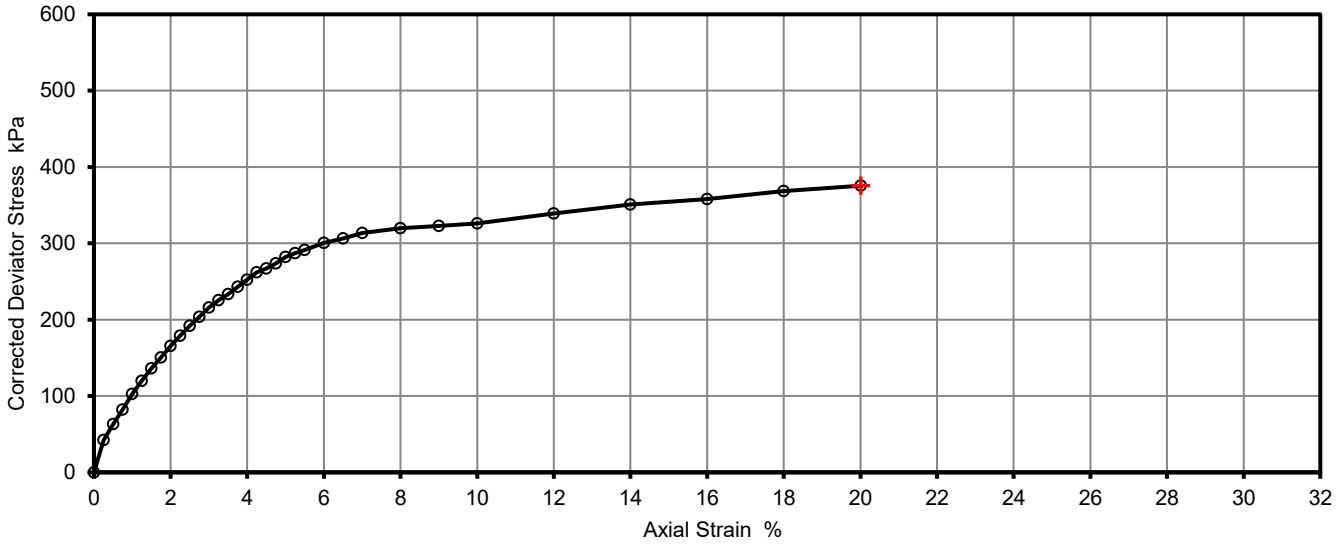
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen			Job Ref	S211001
				Borehole/Pit No.	CPRO01
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	2.00
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Firm, Very High Strength, CLAY.			KeyLAB ID	SLMK202111178
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen			Date of test	

Test Number	1	
Length	76.0	mm
Diameter	38.0	mm
Bulk Density	2.22	Mg/m3
Moisture Content	12.4	%
Dry Density	1.97	Mg/m3
Rate of Strain	1.0	%/min
Cell Pressure	40	kPa
At failure: Axial Strain	20.0	%
At failure: Deviator Stress, (σ1 - σ3)f	375	kPa
At failure: Undrained Shear Strength, cu	188	kPa ½(σ1 - σ3)f
At failure: Mode of Failure	Plastic	

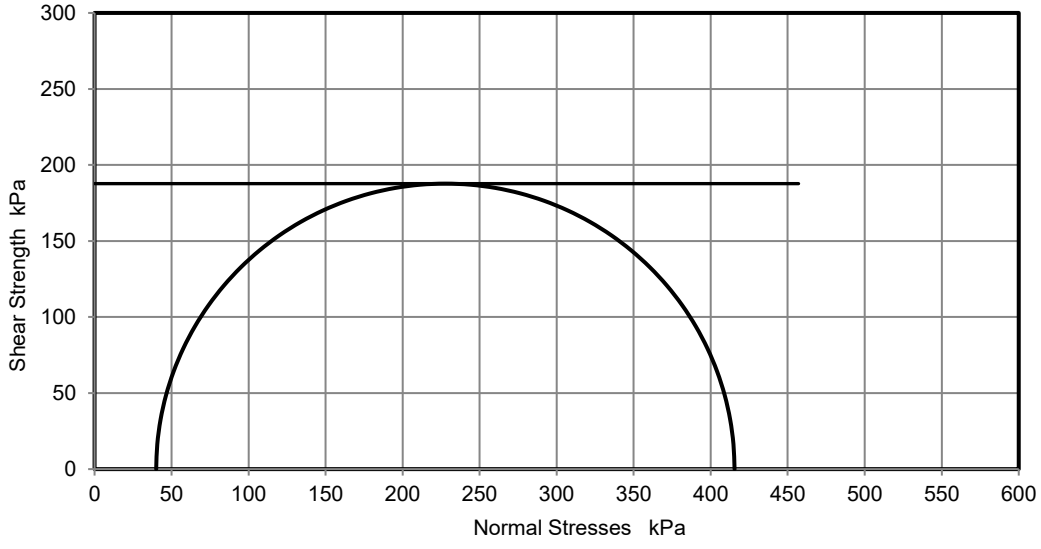
Tracable Equipment Record

Test Frame	TRI 003
Load Ring	LOAD CELL 001
Pressure Gauge	PRE 004
Digital Caliper	CAL-005
Balance	BAL-006

Deviator Stress v Axial Strain



Mohr Circles



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.

No of membranes used
1
Total thickness (mm)
0.25

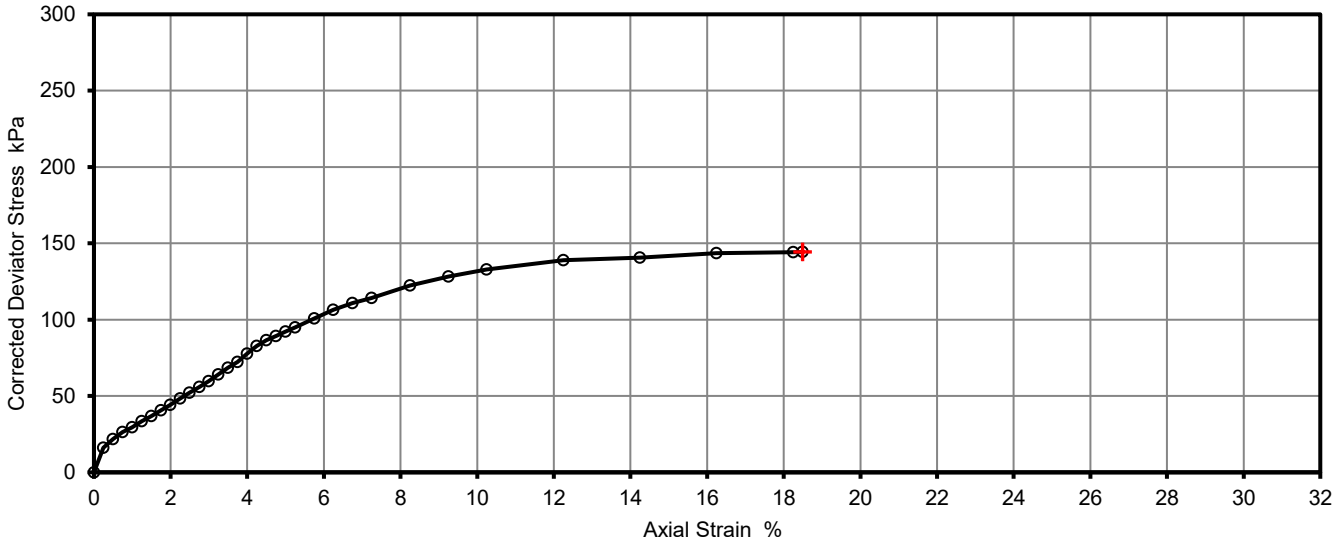
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen			Job Ref	S211001
				Borehole/Pit No.	CPRO01
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	3.00
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Firm, Medium Strength, CLAY.			KeyLAB ID	SLMK202111174
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen			Date of test	

Test Number	1	
Length	202.0	mm
Diameter	101.0	mm
Bulk Density	2.32	Mg/m3
Moisture Content	15.8	%
Dry Density	2.01	Mg/m3
Rate of Strain	1.0	%/min
Cell Pressure	60	kPa
At failure: Axial Strain	18.5	%
At failure: Deviator Stress, (σ1 - σ3)f	144	kPa
At failure: Undrained Shear Strength, cu	72	kPa ½(σ1 - σ3)f
At failure: Mode of Failure	Plastic	

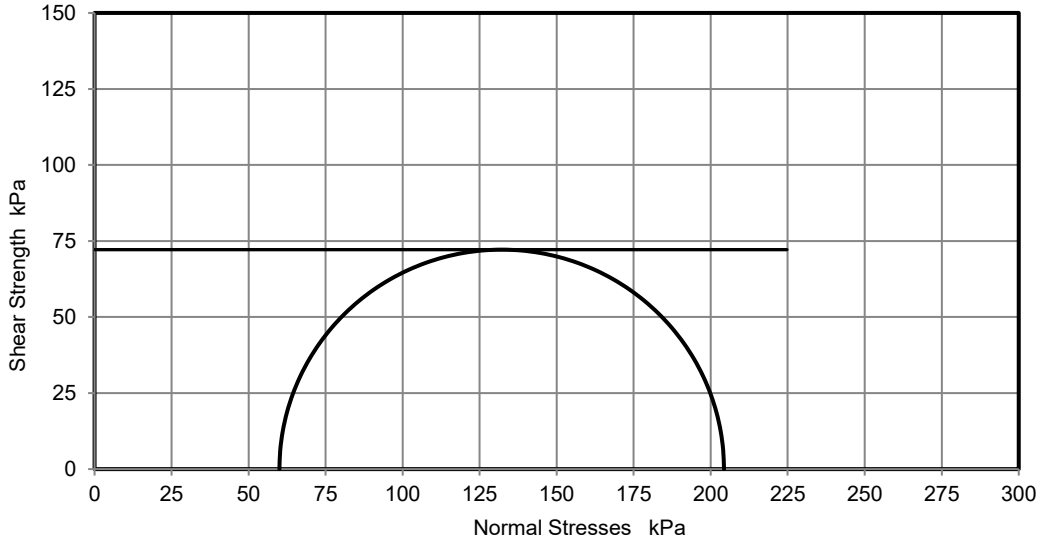
Tracable Equipment Record

Test Frame	TRI 003
Load Ring	LOAD CELL 001
Pressure Gauge	PRE 004
Digital Caliper	CAL-005
Balance	BAL-006

Deviator Stress v Axial Strain



Mohr Circles



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.

No of membranes used
1
Total thickness (mm)
0.35

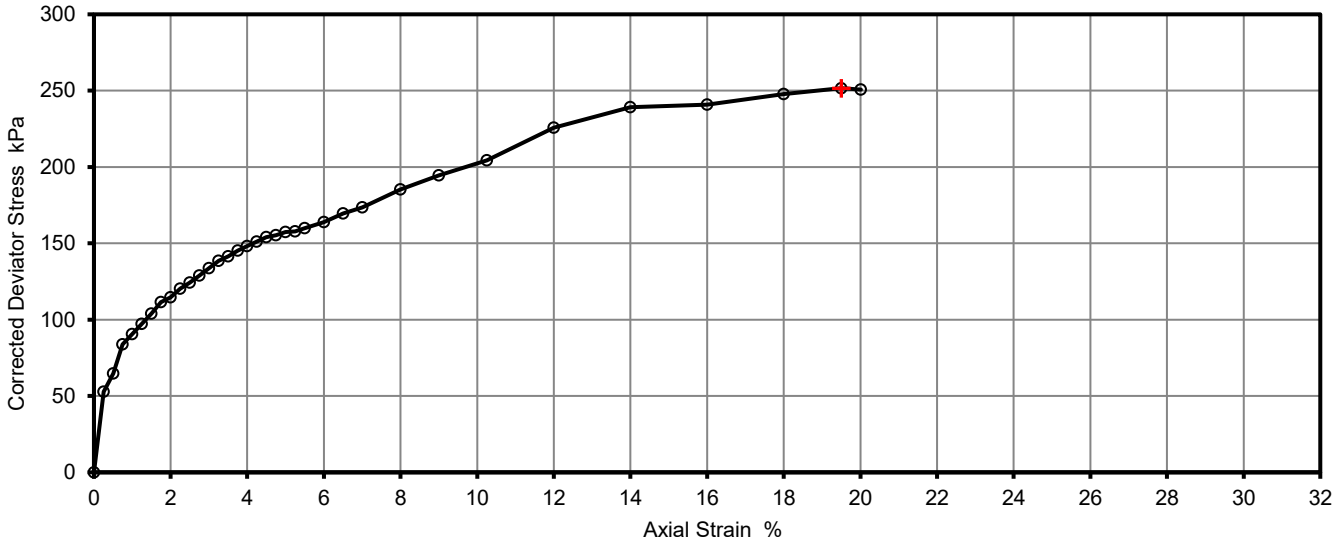
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen			Job Ref	S211001
				Borehole/Pit No.	CPRO02
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	4.00
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Firm, Brown, High Strength, CLAY.			KeyLAB ID	SLMK2021111710
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen			Date of test	

Test Number	1	
Length	76.0	mm
Diameter	38.0	mm
Bulk Density	2.18	Mg/m3
Moisture Content	14.0	%
Dry Density	1.91	Mg/m3
Rate of Strain	1.0	%/min
Cell Pressure	80	kPa
At failure: Axial Strain	19.5	%
At failure: Deviator Stress, (σ1 - σ3)f	252	kPa
At failure: Undrained Shear Strength, cu	126	kPa ½(σ1 - σ3)f
At failure: Mode of Failure	Plastic	

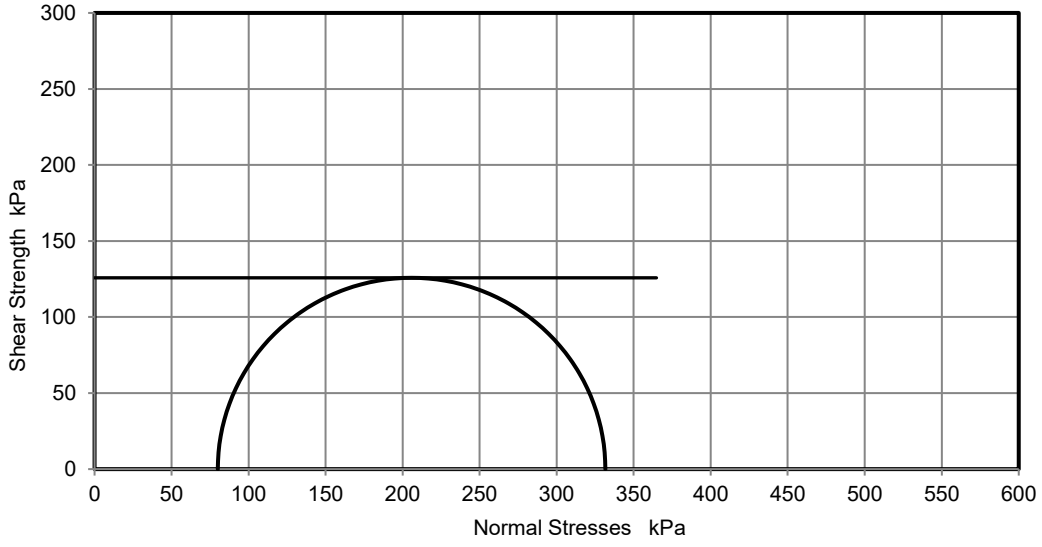
Tracable Equipment Record

Test Frame	TRI 003
Load Ring	LOAD CELL 001
Pressure Gauge	PRE 004
Digital Caliper	CAL-005
Balance	BAL-006

Deviator Stress v Axial Strain



Mohr Circles



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.

No of membranes used
1
Total thickness (mm)
0.25

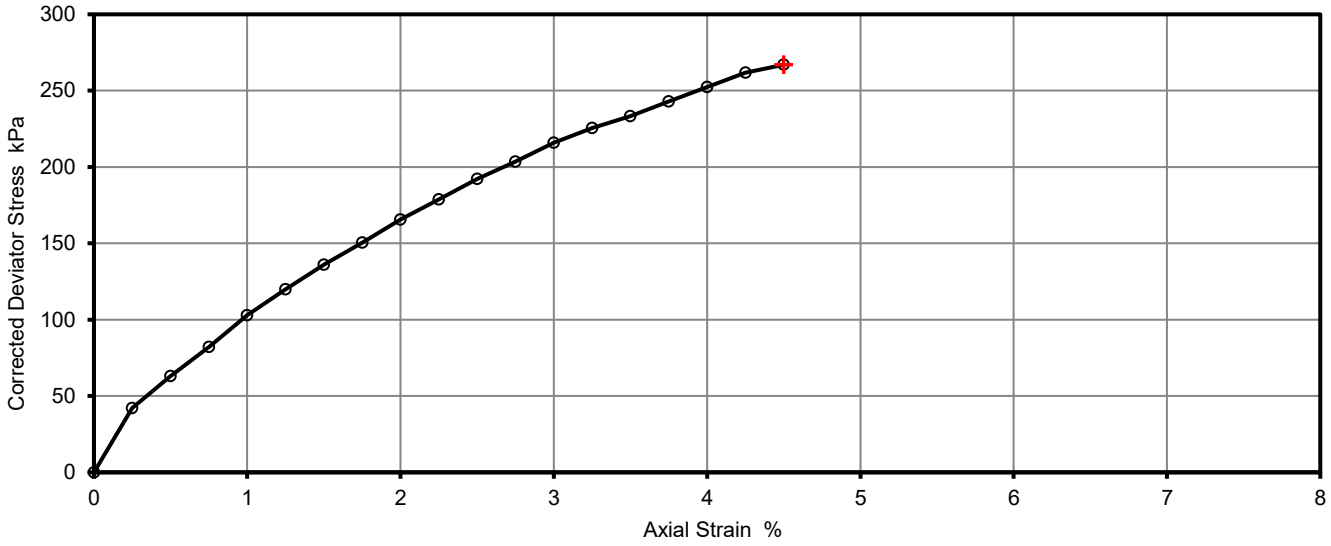
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen			Job Ref	S211001
				Borehole/Pit No.	CPRO03
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	2.00
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Firm, High Strength, CLAY.			KeyLAB ID	SLMK2021111714
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen			Date of test	

Test Number		1	
Length		76.0	mm
Diameter		38.0	mm
Bulk Density		2.22	Mg/m3
Moisture Content		17.2	%
Dry Density		1.89	Mg/m3
Rate of Strain		1.0	%/min
Cell Pressure		40	kPa
At failure	Axial Strain	4.5	%
	Deviator Stress, (σ1 - σ3)f	267	kPa
	Undrained Shear Strength, cu	133	kPa ½(σ1 - σ3)f
	Mode of Failure	Plastic	

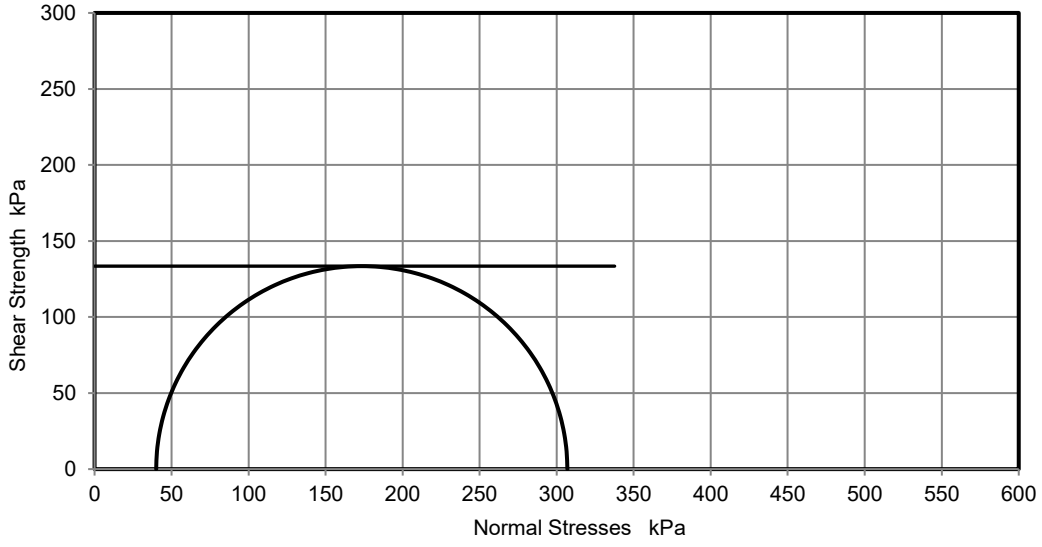
Tracable Equipment Record

Test Frame	TRI 003
Load Ring	LOAD CELL 001
Pressure Gauge	PRE 004
Digital Caliper	CAL-005
Balance	BAL-006

Deviator Stress v Axial Strain



Mohr Circles



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.

No of membranes used
1
Total thickness (mm)
0.25

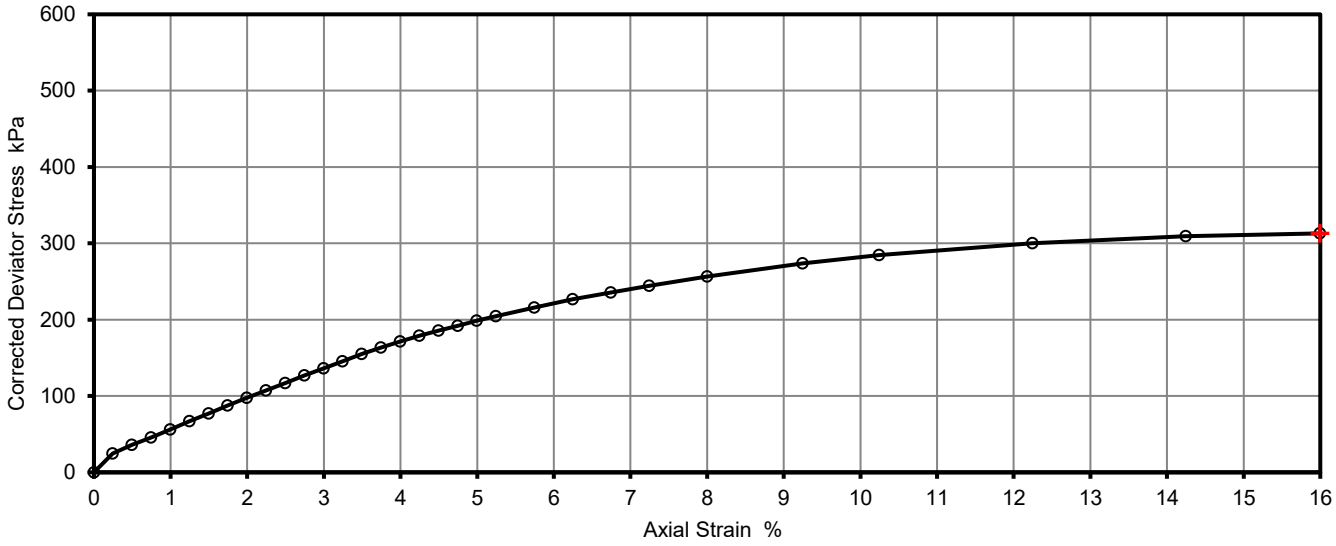
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen			Job Ref	S211001
				Borehole/Pit No.	CPRO04
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	2.00
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Firm, Very High Strength, CLAY.			KeyLAB ID	SLMK2021111720
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen			Date of test	

Test Number	1	
Length	200.0	mm
Diameter	100.0	mm
Bulk Density	2.18	Mg/m3
Moisture Content	26.7	%
Dry Density	1.72	Mg/m3
Rate of Strain	1.0	%/min
Cell Pressure	40	kPa
At failure: Axial Strain	16.0	%
At failure: Deviator Stress, (σ1 - σ3)f	313	kPa
At failure: Undrained Shear Strength, cu	157	kPa ½(σ1 - σ3)f
At failure: Mode of Failure	Plastic	

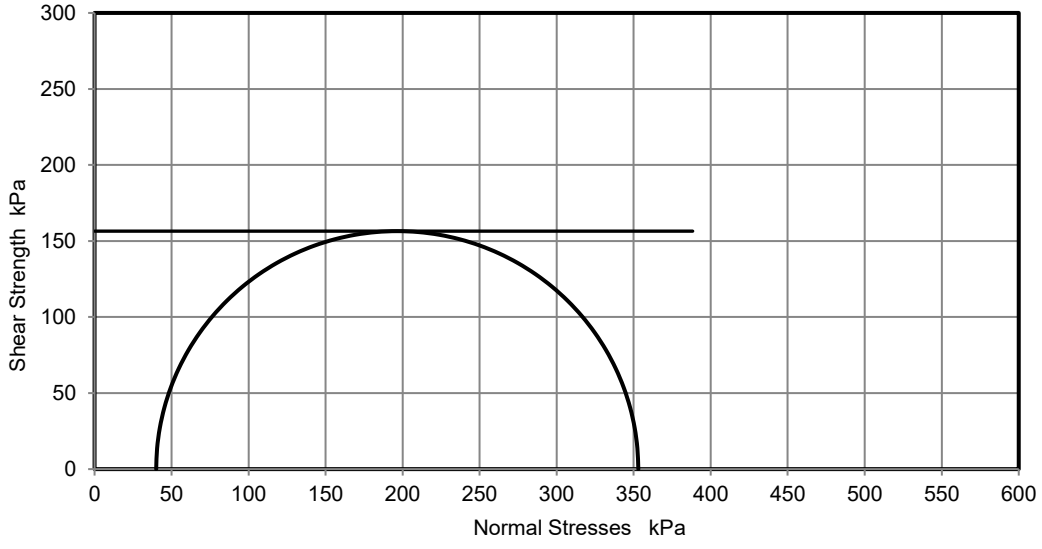
Tracable Equipment Record

Test Frame	TRI 003
Load Ring	LOAD CELL 001
Pressure Gauge	PRE 004
Digital Caliper	CAL-005
Balance	BAL-006

Deviator Stress v Axial Strain



Mohr Circles



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.

No of membranes used
1
Total thickness (mm)
0.35

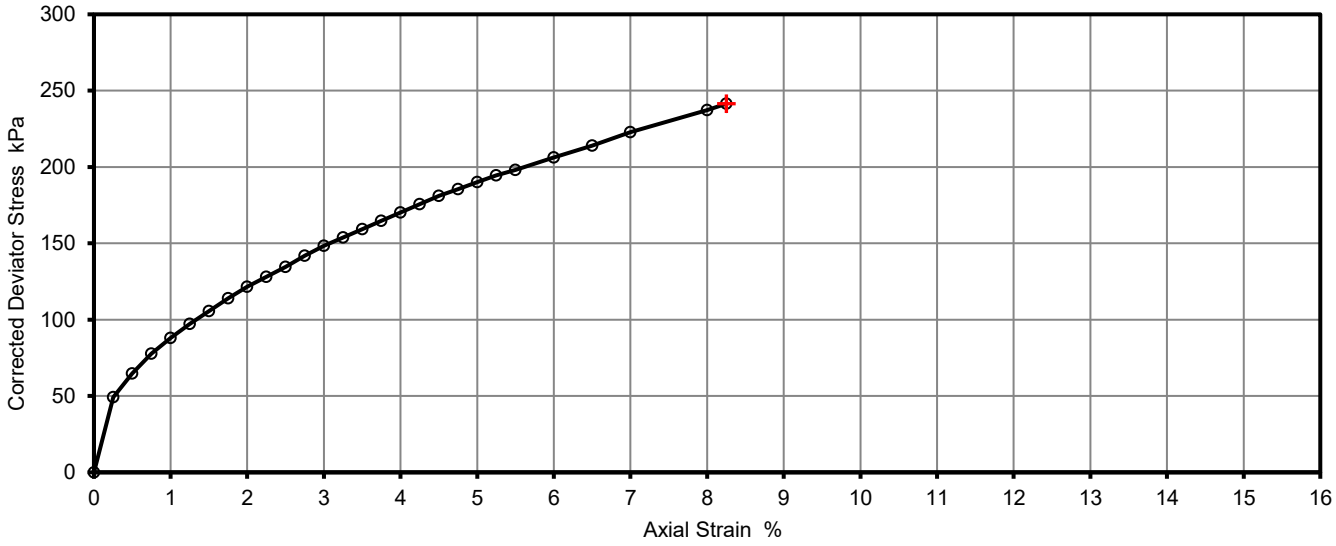
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen			Job Ref	S211001
				Borehole/Pit No.	CPRO04
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	4.00
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Firm, High Strength, CLAY.			KeyLAB ID	SLMK2021111722
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen			Date of test	

Test Number		1	
Length		76.0	mm
Diameter		38.0	mm
Bulk Density		2.27	Mg/m3
Moisture Content		12.2	%
Dry Density		2.02	Mg/m3
Rate of Strain		1.0	%/min
Cell Pressure		80	kPa
At failure	Axial Strain	8.3	%
	Deviator Stress, (σ1 - σ3)f	241	kPa
	Undrained Shear Strength, cu	121	kPa ½(σ1 - σ3)f
	Mode of Failure	Plastic	

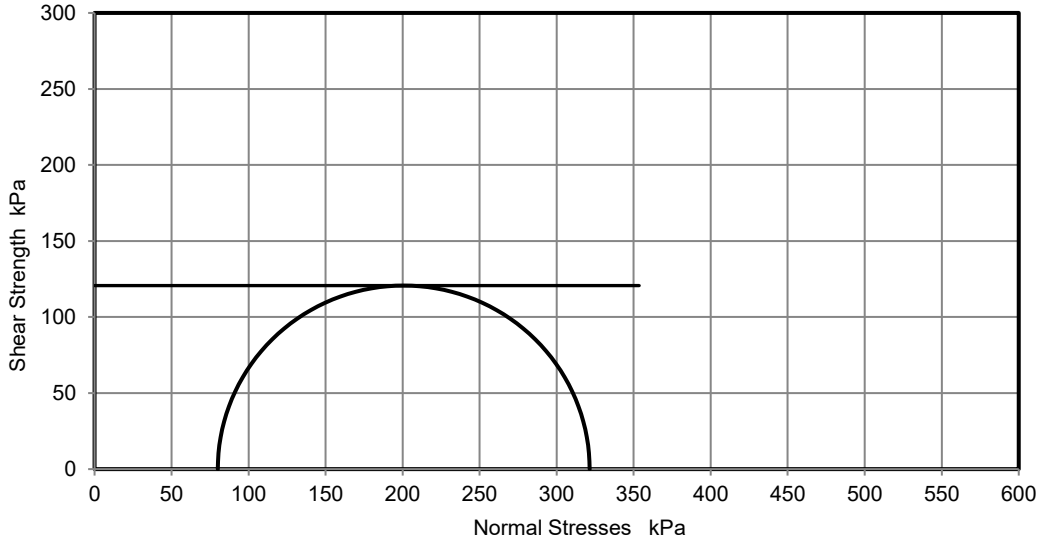
Tracable Equipment Record

Test Frame	TRI 003
Load Ring	LOAD CELL 001
Pressure Gauge	PRE 004
Digital Caliper	CAL-005
Balance	BAL-006

Deviator Stress v Axial Strain



Mohr Circles



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.

No of membranes used
1
Total thickness (mm)
0.25

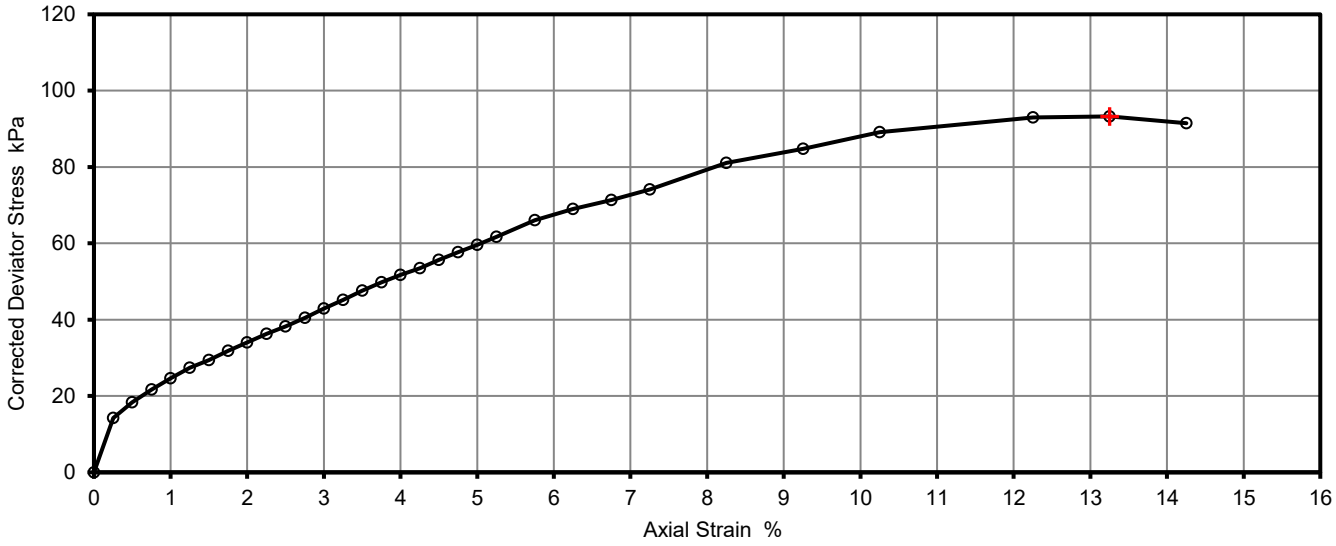
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen			Job Ref	S211001
				Borehole/Pit No.	CPRO05
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	4.00
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Firm, Medium Strength, CLAY.			KeyLAB ID	SLMK2021111728
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen			Date of test	

Test Number		1	
Length		202.0	mm
Diameter		100.0	mm
Bulk Density		2.07	Mg/m3
Moisture Content		21.9	%
Dry Density		1.70	Mg/m3
Rate of Strain		1.0	%/min
Cell Pressure		80	kPa
At failure	Axial Strain	13.3	%
	Deviator Stress, (σ1 - σ3)f	93	kPa
	Undrained Shear Strength, cu	47	kPa ½(σ1 - σ3)f
	Mode of Failure	Plastic	

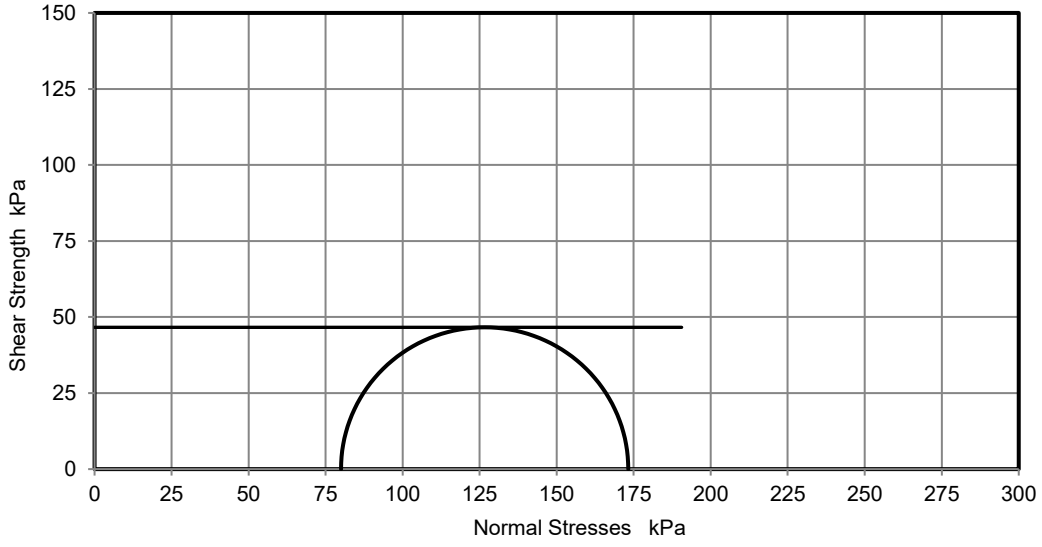
Tracable Equipment Record

Test Frame	TRI 003
Load Ring	LOAD CELL 001
Pressure Gauge	PRE 004
Digital Caliper	CAL-005
Balance	BAL-006

Deviator Stress v Axial Strain



Mohr Circles



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.

No of membranes used
1
Total thickness (mm)
0.35

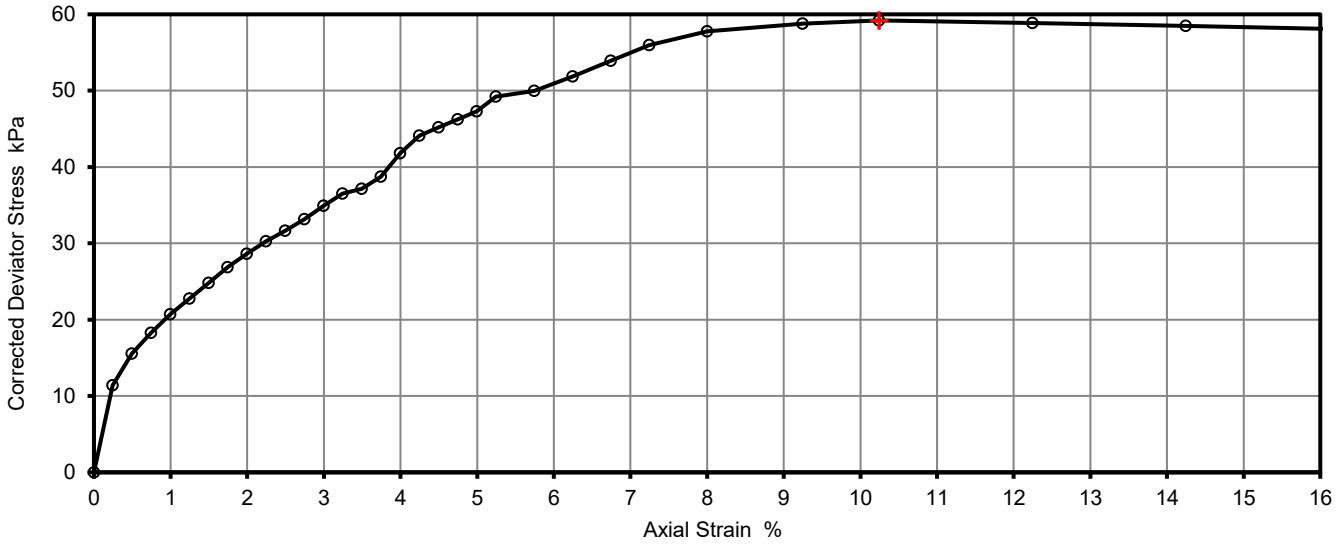
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen			Job Ref	S211001
				Borehole/Pit No.	CPRO05
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	9.00
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Soft, Low strength, CLAY.			KeyLAB ID	SLMK2021111731
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen			Date of test	

Test Number	1	
Length	200.0	mm
Diameter	100.0	mm
Bulk Density	2.09	Mg/m3
Moisture Content	14.6	%
Dry Density	1.82	Mg/m3
Rate of Strain	1.0	%/min
Cell Pressure	180	kPa
At failure: Axial Strain	10.2	%
At failure: Deviator Stress, (σ1 - σ3)f	59	kPa
At failure: Undrained Shear Strength, cu	30	kPa ½(σ1 - σ3)f
At failure: Mode of Failure	Plastic	

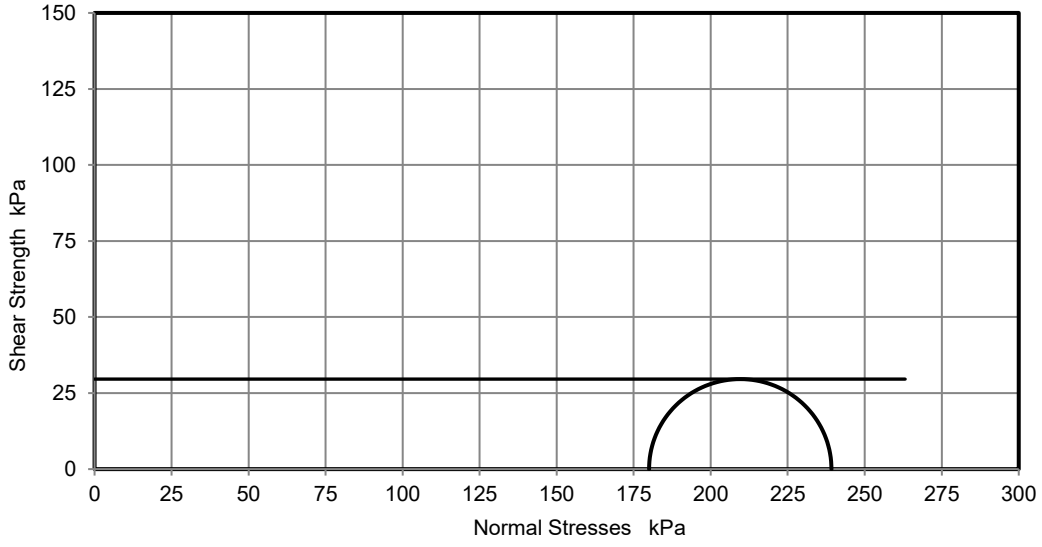
Tracable Equipment Record

Test Frame	TRI 003
Load Ring	LOAD CELL 001
Pressure Gauge	PRE 004
Digital Caliper	CAL-005
Balance	BAL-006

Deviator Stress v Axial Strain



Mohr Circles



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.

No of membranes used
1
Total thickness (mm)
0.35

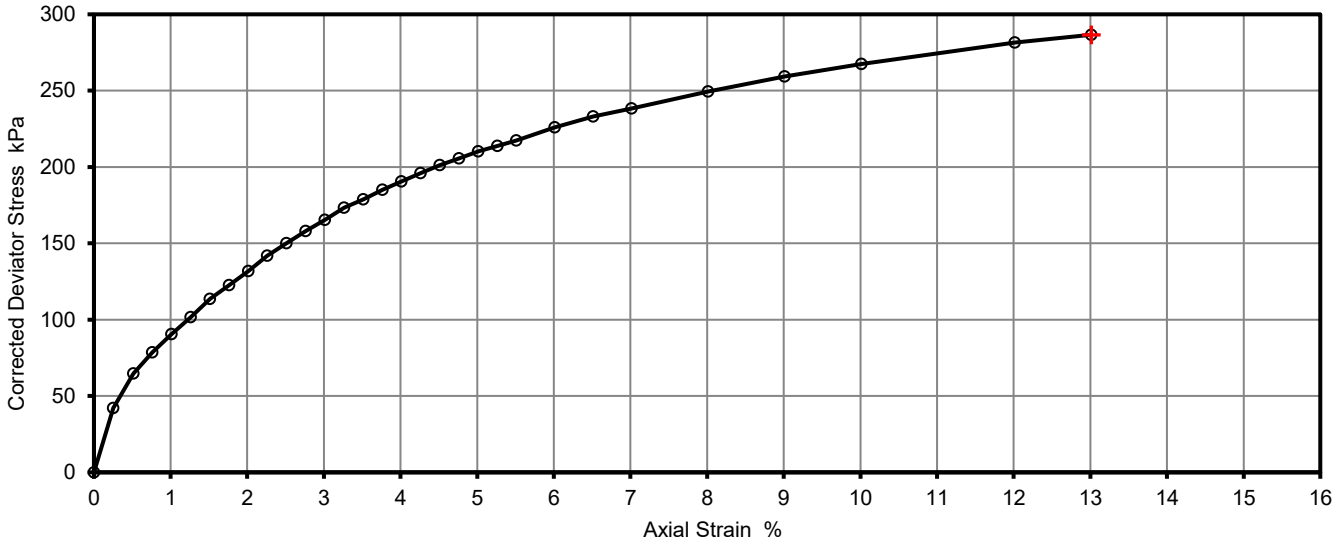
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen			Job Ref	S211001
				Borehole/Pit No.	CPRO06
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	2.00
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Firm, High Strength, CLAY.			KeyLAB ID	SLMK2021111736
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen			Date of test	

Test Number		1	
Length		76.0	mm
Diameter		38.0	mm
Bulk Density		2.26	Mg/m3
Moisture Content		12.4	%
Dry Density		2.01	Mg/m3
Rate of Strain		1.0	%/min
Cell Pressure		40	kPa
At failure	Axial Strain	13.0	%
	Deviator Stress, (σ1 - σ3)f	287	kPa
	Undrained Shear Strength, cu	143	kPa ½(σ1 - σ3)f
	Mode of Failure	Plastic	

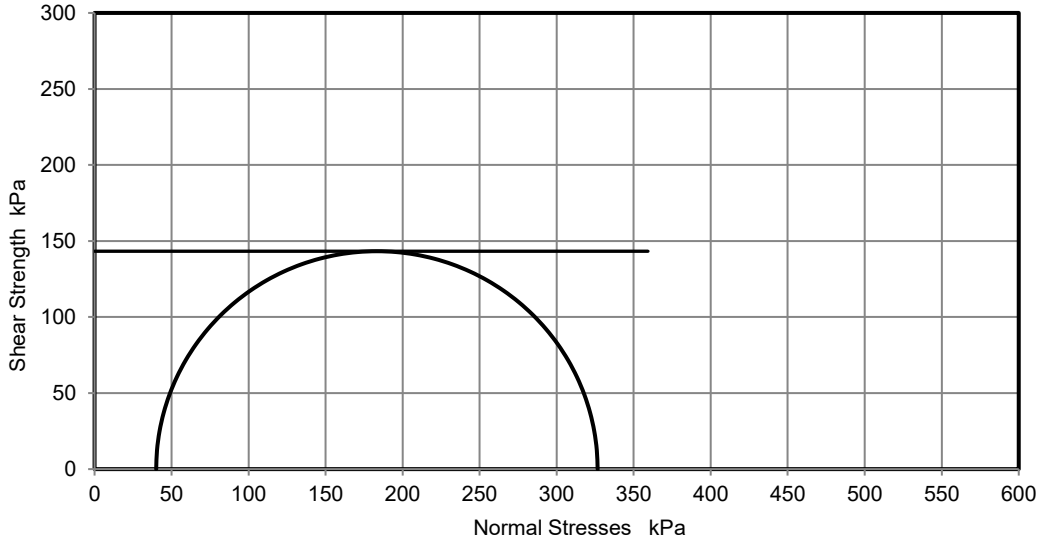
Tracable Equipment Record

Test Frame	TRI 003
Load Ring	LOAD CELL 001
Pressure Gauge	PRE 004
Digital Caliper	CAL-005
Balance	BAL-006

Deviator Stress v Axial Strain



Mohr Circles



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.

No of membranes used
1
Total thickness (mm)
0.25

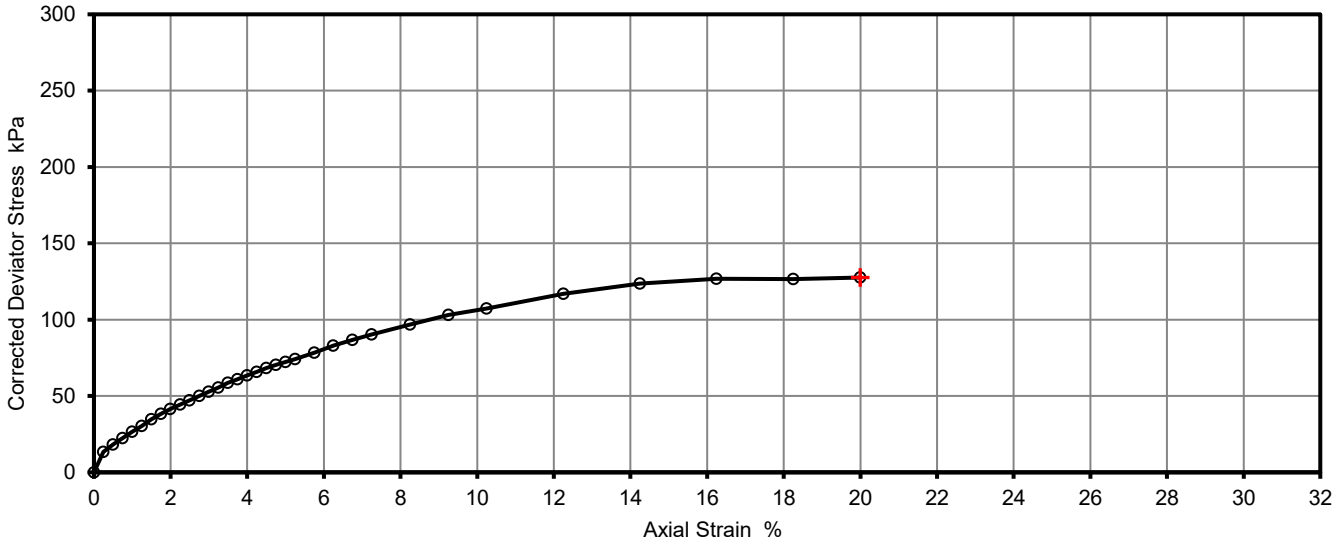
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen			Job Ref	S211001
				Borehole/Pit No.	CPRO06
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	4.00
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Firm, Brown, Medium Strength, CLAY.			KeyLAB ID	SLMK2021111738
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen			Date of test	

Test Number		1	
Length		202.0	mm
Diameter		101.0	mm
Bulk Density		2.35	Mg/m3
Moisture Content		26.3	%
Dry Density		1.86	Mg/m3
Rate of Strain		1.0	%/min
Cell Pressure		80	kPa
At failure	Axial Strain	20.0	%
	Deviator Stress, (σ1 - σ3)f	128	kPa
	Undrained Shear Strength, cu	64	kPa ½(σ1 - σ3)f
	Mode of Failure	Plastic	

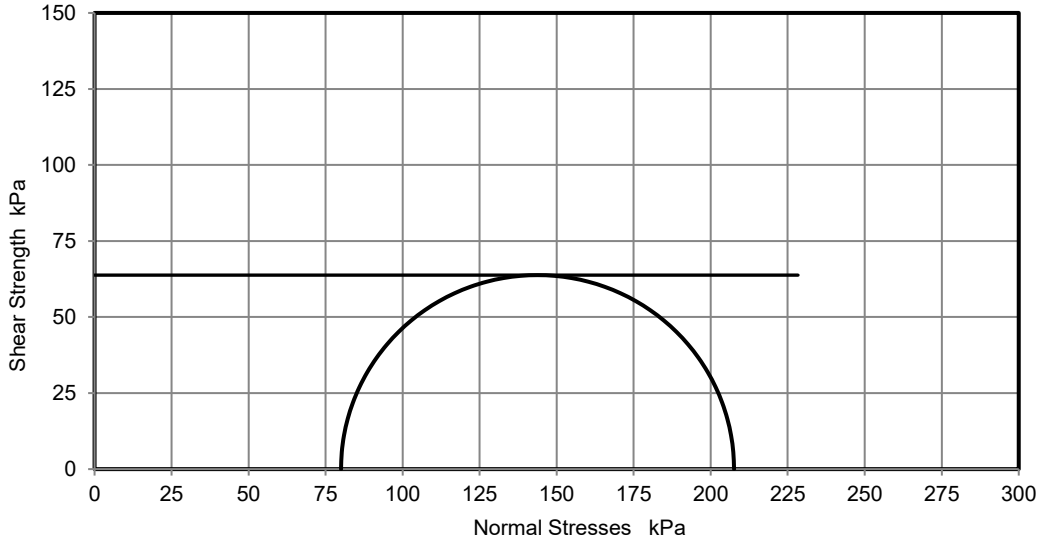
Tracable Equipment Record

Test Frame	TRI 003
Load Ring	LOAD CELL 001
Pressure Gauge	PRE 004
Digital Caliper	CAL-005
Balance	BAL-006

Deviator Stress v Axial Strain



Mohr Circles



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.

No of membranes used
1
Total thickness (mm)
0.35

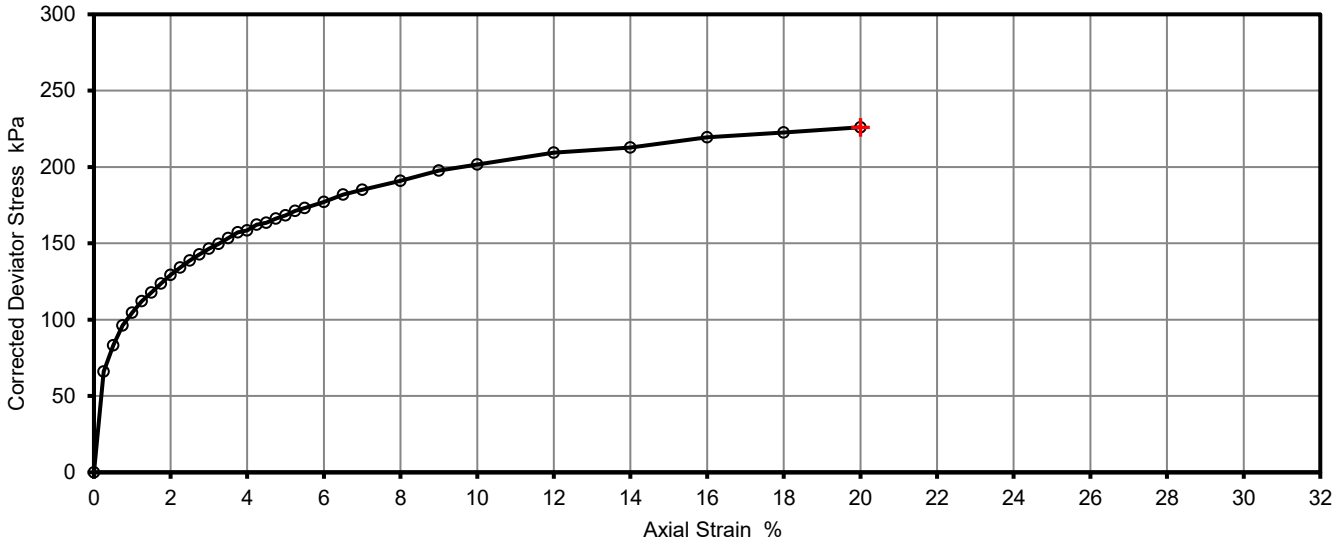
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen			Job Ref	S211001
				Borehole/Pit No.	CPRO06
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	6.00
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Firm, High Strength, CLAY.			KeyLAB ID	SLMK2021111740
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen			Date of test	

Test Number		1	
Length		76.0	mm
Diameter		38.0	mm
Bulk Density		2.14	Mg/m3
Moisture Content		22.7	%
Dry Density		1.74	Mg/m3
Rate of Strain		1.0	%/min
Cell Pressure		120	kPa
At failure	Axial Strain	20.0	%
	Deviator Stress, (σ1 - σ3)f	226	kPa
	Undrained Shear Strength, cu	113	kPa ½(σ1 - σ3)f
	Mode of Failure	Plastic	

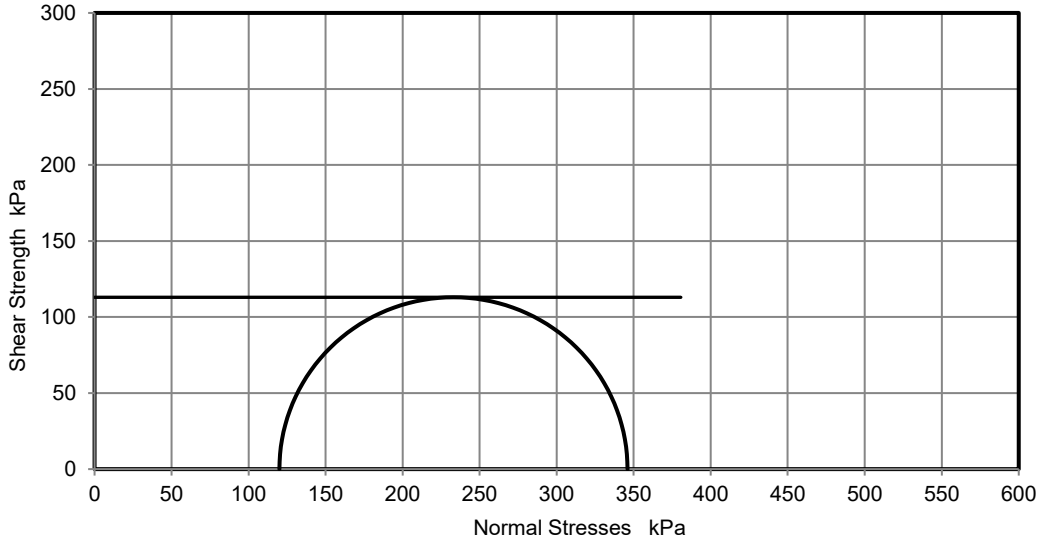
Tracable Equipment Record

Test Frame	TRI 003
Load Ring	LOAD CELL 001
Pressure Gauge	PRE 004
Digital Caliper	CAL-005
Balance	BAL-006

Deviator Stress v Axial Strain



Mohr Circles



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.

No of membranes used
1
Total thickness (mm)
0.25

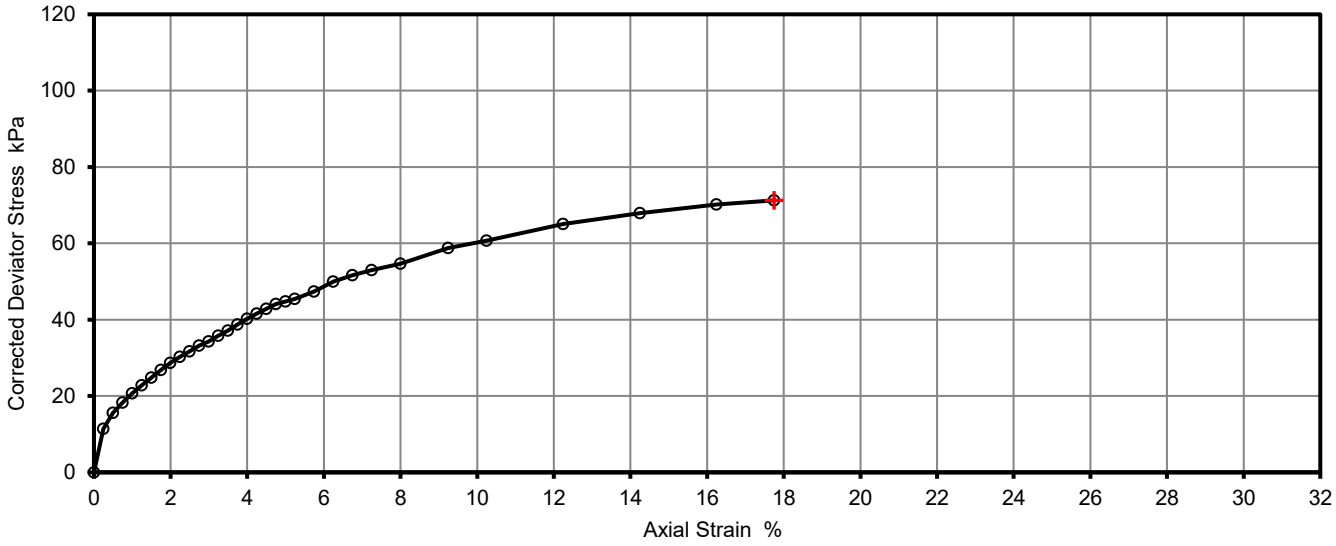
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen			Job Ref	S211001
				Borehole/Pit No.	CPRO06
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	9.00
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Soft/Firm, Low Strength, CLAY.			KeyLAB ID	SLMK2021111742
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen			Date of test	

Test Number		1	
Length		200.0	mm
Diameter		100.0	mm
Bulk Density		2.09	Mg/m3
Moisture Content		22.9	%
Dry Density		1.70	Mg/m3
Rate of Strain		1.0	%/min
Cell Pressure		180	kPa
At failure	Axial Strain	17.7	%
	Deviator Stress, (σ1 - σ3)f	71	kPa
	Undrained Shear Strength, cu	36	kPa ½(σ1 - σ3)f
	Mode of Failure	Plastic	

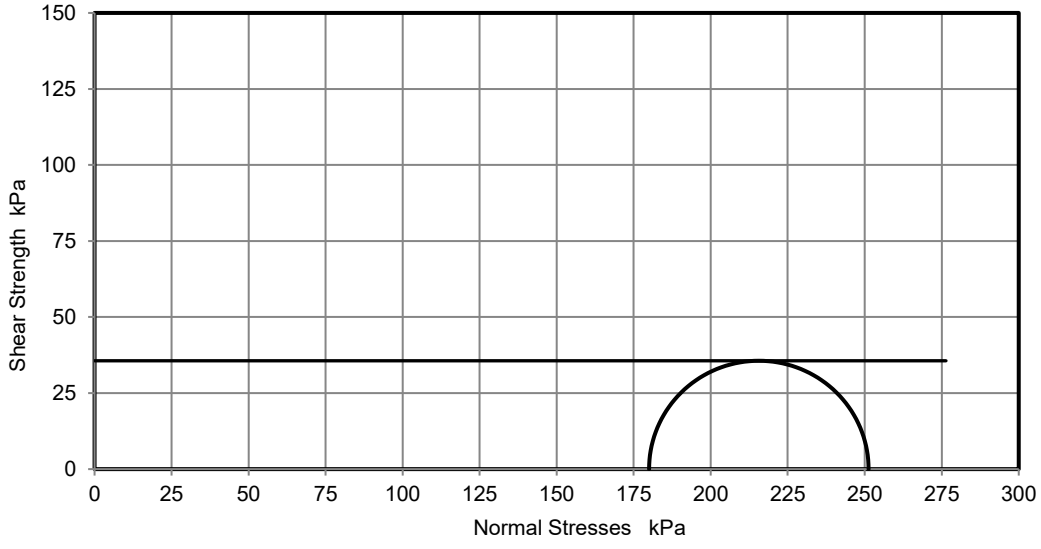
Tracable Equipment Record

Test Frame	TRI 003
Load Ring	LOAD CELL 001
Pressure Gauge	PRE 004
Digital Caliper	CAL-005
Balance	BAL-006

Deviator Stress v Axial Strain



Mohr Circles

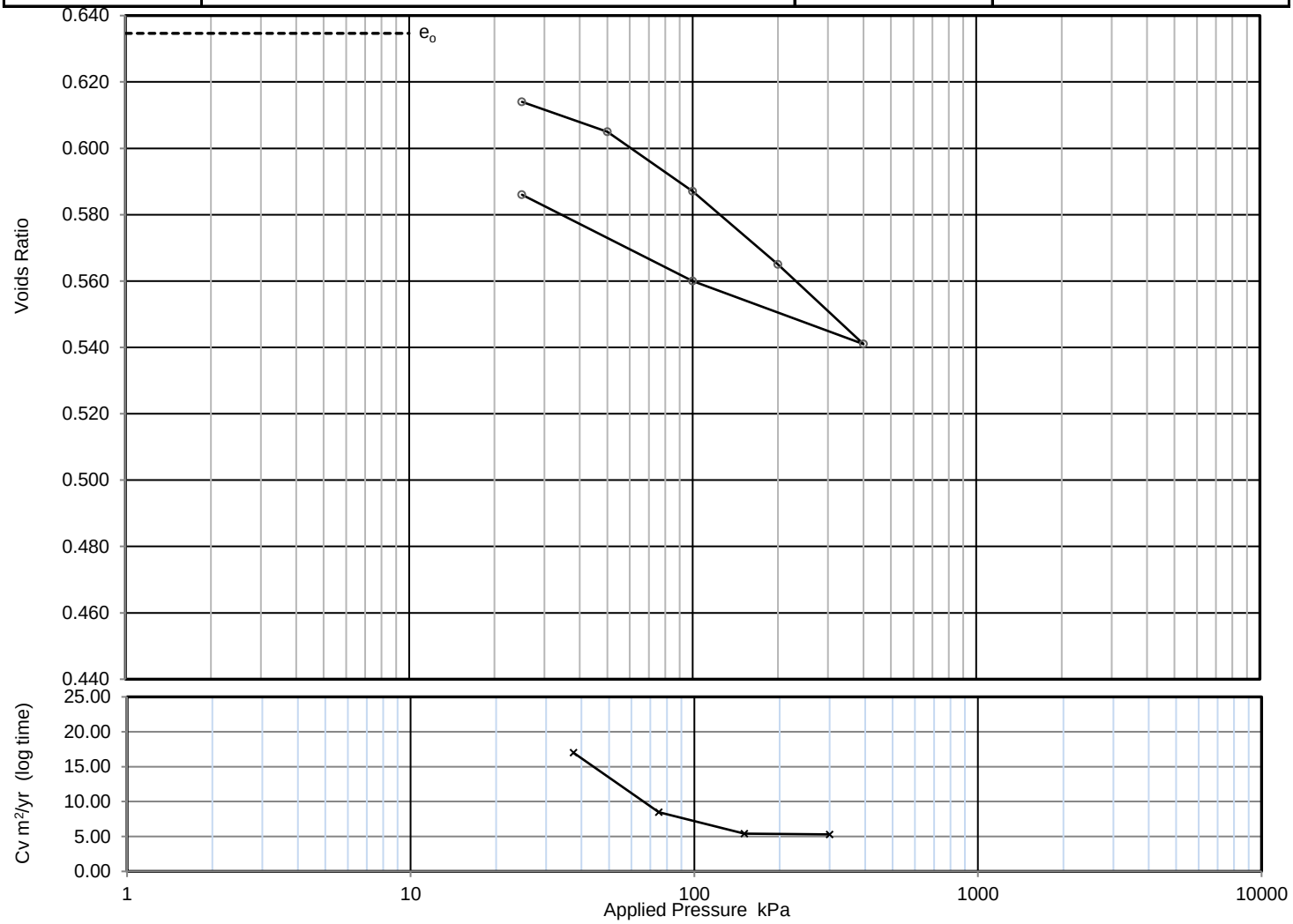


Deviator stress corrected for area change and membrane effects

Mohr circles and their interpretation is not covered by BS1377.
This is provided for information only.

No of membranes used
1
Total thickness (mm)
0.35

	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3			Job Ref	S211001
				Borehole/Pit No.	CP01
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	2
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Firm, Brown, CLAY			KeyLAB ID	SLMK2021111610
Test Method	BS1377:Part 5:1990, clause 3			Date started	



Applied Pressure kPa	Voids ratio	Mv m2/MN	Cv (t50, log) m2/yr	Cv (t90, root) m2/yr	Csec
0.0	0.635	-	-	-	-
25	0.614	0.49		16	0.00025
50	0.605	0.24	17	32	0.00028
100	0.587	0.22	8.5	25	0.00059
200	0.565	0.14	5.4	21	0.00046
400	0.541	0.077	5.3	12	0.00074
100	0.560	0.042			
25	0.586	0.22			

Preparation

Index tests Liquid limit % Plastic limit %

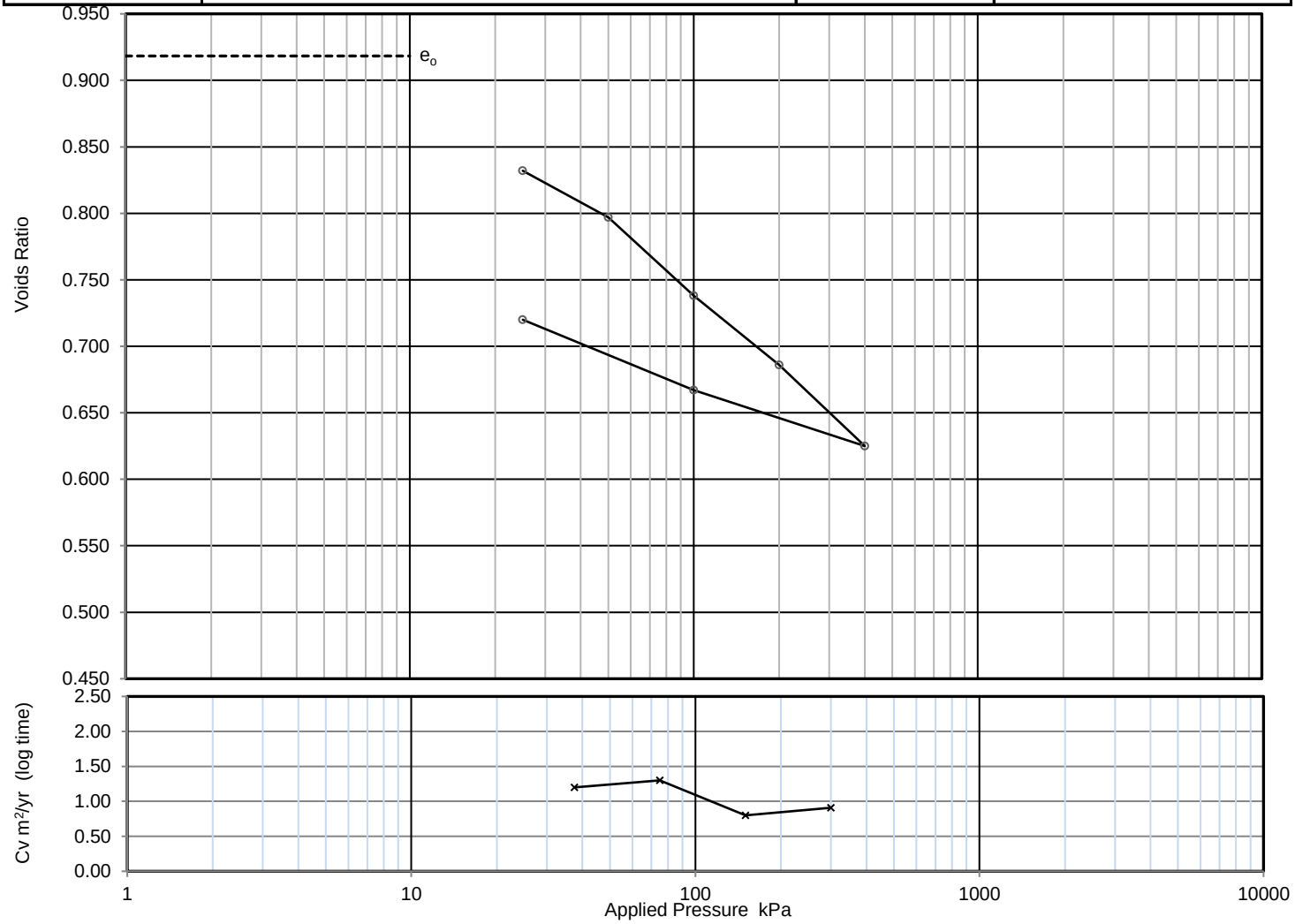
Particle density assumed 2.65 Mg/m3

Specimen details	Initial	Final	
Diameter	75.00	-	mm
Height	20.00	19.40	mm
Moisture Content	14.5	21.8	%
Bulk density	1.86		Mg/m3
Dry density	1.62		Mg/m3
Voids Ratio	0.635		
Saturation	60		%
Average temperature for test	19.0		oC
Swelling Pressure			kPa
Settlement on saturation			%

Remarks

Final values should be used with caution Cv plotted at mid point of load increments Cv corrected to 20oC	Tested	Checked	Approved	Printed :	Fig. No
	DS	KW	KW	10/01/2022 11:33	1

	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3			Job Ref	S211001
				Borehole/Pit No.	CP01
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	4
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Firm, Brown, CLAY.			KeyLAB ID	SLMK2021111612
Test Method	BS1377:Part 5:1990, clause 3			Date started	



Applied Pressure kPa	Voids ratio	Mv m2/MN	Cv (t50, log) m2/yr	Cv (t90, root) m2/yr	Csec
0.0	0.918	-	-	-	-
25	0.832	1.8		7.3	0.00094
50	0.797	0.76	1.2	4.6	0.0014
100	0.738	0.66	1.3	7.7	0.0016
200	0.686	0.3	0.8	1.8	0.0018
400	0.625	0.18	0.91	1.9	0.002
100	0.667	0.086			
25	0.720	0.43			

Preparation

Index tests Liquid limit % Plastic limit %

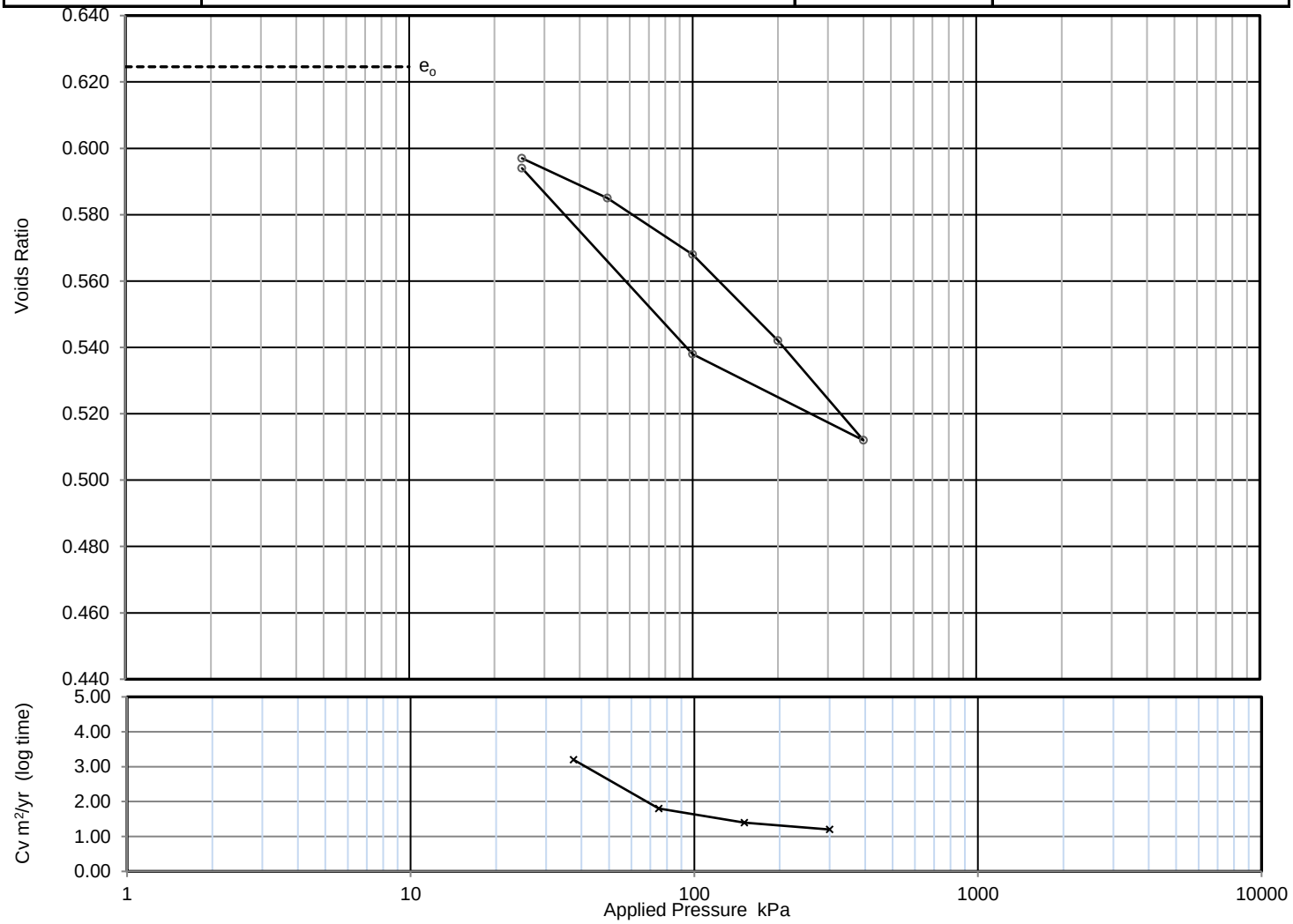
Particle density assumed 2.65 Mg/m3

Specimen details	Initial	Final	
Diameter	75.00	-	mm
Height	20.11	18.03	mm
Moisture Content	34.6	32.2	%
Bulk density	1.86		Mg/m3
Dry density	1.38		Mg/m3
Voids Ratio	0.918		
Saturation	100		%
Average temperature for test	19.0		oC
Swelling Pressure			kPa
Settlement on saturation			%

Remarks

Final values should be used with caution Cv plotted at mid point of load increments Cv corrected to 20oC	Tested	Checked	Approved	Printed :	Fig. No
	DS	KW	KW	10/01/2022 11:33	1

	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3			Job Ref	S211001
				Borehole/Pit No.	CP02
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	2
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Firm, Brown, Slightly Sandy, Slightly Gravelly, CLAY.			KeyLAB ID	SLMK2021111618
Test Method	BS1377:Part 5:1990, clause 3			Date started	



Applied Pressure kPa	Voids ratio	Mv m2/MN	Cv (t50, log) m2/yr	Cv (t90, root) m2/yr	Csec
0.0	0.625	-	-	-	-
25	0.597	0.67		97	0.00045
50	0.585	0.32	3.2	29	0.00071
100	0.568	0.21	1.8	8.3	0.0011
200	0.542	0.16	1.4	6.2	0.0011
400	0.512	0.098	1.2	5.7	0.0013
100	0.538	0.058			
25	0.594	0.48			

Preparation

Index tests Liquid limit % Plastic limit %

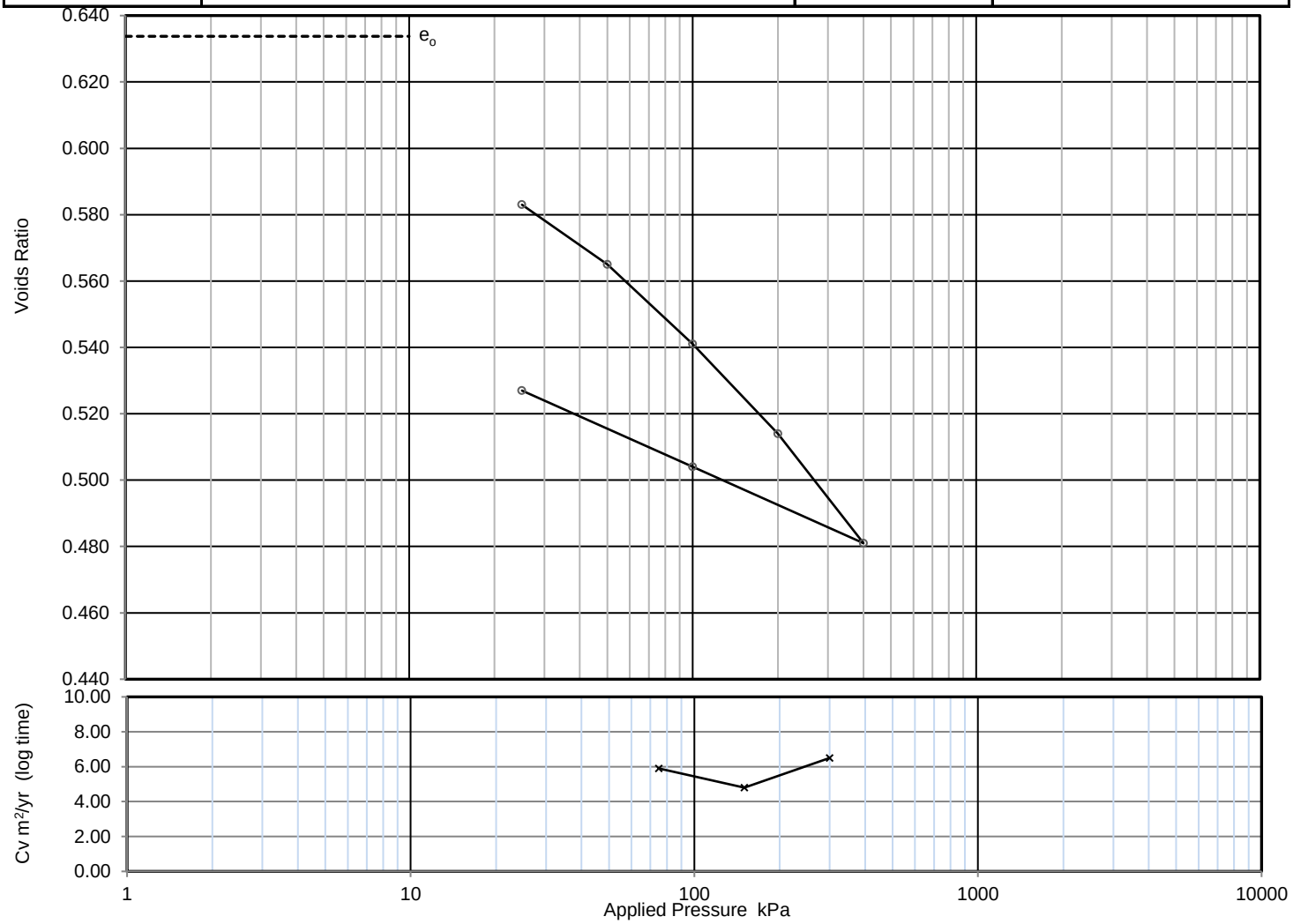
Particle density assumed 2.65 Mg/m3

Specimen details	Initial	Final	
Diameter	74.83	-	mm
Height	20.08	19.70	mm
Moisture Content	24.3	23.9	%
Bulk density	2.03		Mg/m3
Dry density	1.63		Mg/m3
Voids Ratio	0.625		
Saturation	103		%
Average temperature for test	19.0		oC
Swelling Pressure			kPa
Settlement on saturation			%

Remarks

Final values should be used with caution Cv plotted at mid point of load increments Cv corrected to 20oC	Tested	Checked	Approved	Printed :	Fig. No
	DS	KW	KW	10/01/2022 11:33	1

	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3			Job Ref	S211001
				Borehole/Pit No.	CP02
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	4
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Firm, Brown, CLAY.			KeyLAB ID	SLMK2021111620
Test Method	BS1377:Part 5:1990, clause 3			Date started	



Applied Pressure kPa	Voids ratio	Mv m2/MN	Cv (t50, log) m2/yr	Cv (t90, root) m2/yr	Csec
0.0	0.634	-	-	-	-
25	0.583	1.2		4	0.00086
50	0.565	0.46		13	0.00059
100	0.541	0.31	5.9	12	0.00083
200	0.514	0.17	4.8	8.2	0.001
400	0.481	0.11	6.5	11	0.0011
100	0.504	0.051			
25	0.527	0.2			

Preparation

Index tests Liquid limit % Plastic limit %

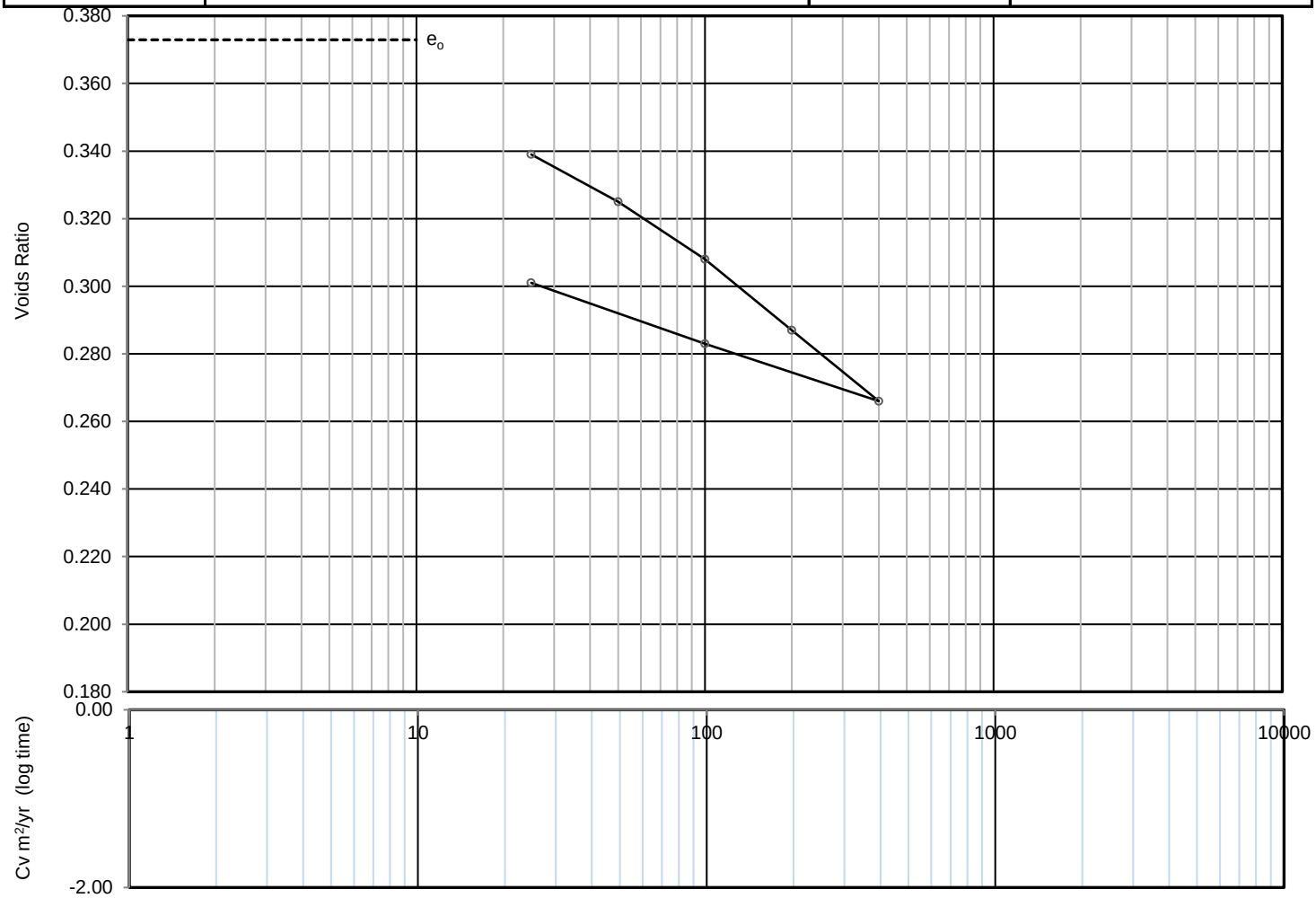
Particle density assumed 2.65 Mg/m3

Specimen details	Initial	Final	
Diameter	75.00	-	mm
Height	20.01	18.70	mm
Moisture Content	24.4	22.4	%
Bulk density	2.02		Mg/m3
Dry density	1.62		Mg/m3
Voids Ratio	0.634		
Saturation	102		%
Average temperature for test	19.0		oC
Swelling Pressure			kPa
Settlement on saturation			%

Remarks

Final values should be used with caution Cv plotted at mid point of load increments Cv corrected to 20oC	Tested	Checked	Approved	Printed :	Fig. No
	DS	KW	KW	10/01/2022 11:33	1

	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3			Job Ref	S211001
				Borehole/Pit No.	CP02
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	6
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Firm, Brown, Slightly Gravelly, Slightly Sandy, CLAY.			KeyLAB ID	SLMK2021111622
Test Method	BS1377:Part 5:1990, clause 3			Date started	



Applied Pressure kPa	Voids ratio	Mv m2/MN	Cv (t50, log) m2/yr	Cv (t90, root) m2/yr	Csec
0.0	0.373	-	-	-	-
25	0.339	0.98		74	0.00041
50	0.325	0.43	68	200	0.00063
100	0.308	0.26	100	140	0.00063
200	0.287	0.16	22	160	0.00063
400	0.266	0.081	11	100	0.001
100	0.283	0.043			
25	0.301	0.19			

Preparation

Index tests Liquid limit % Plastic limit %

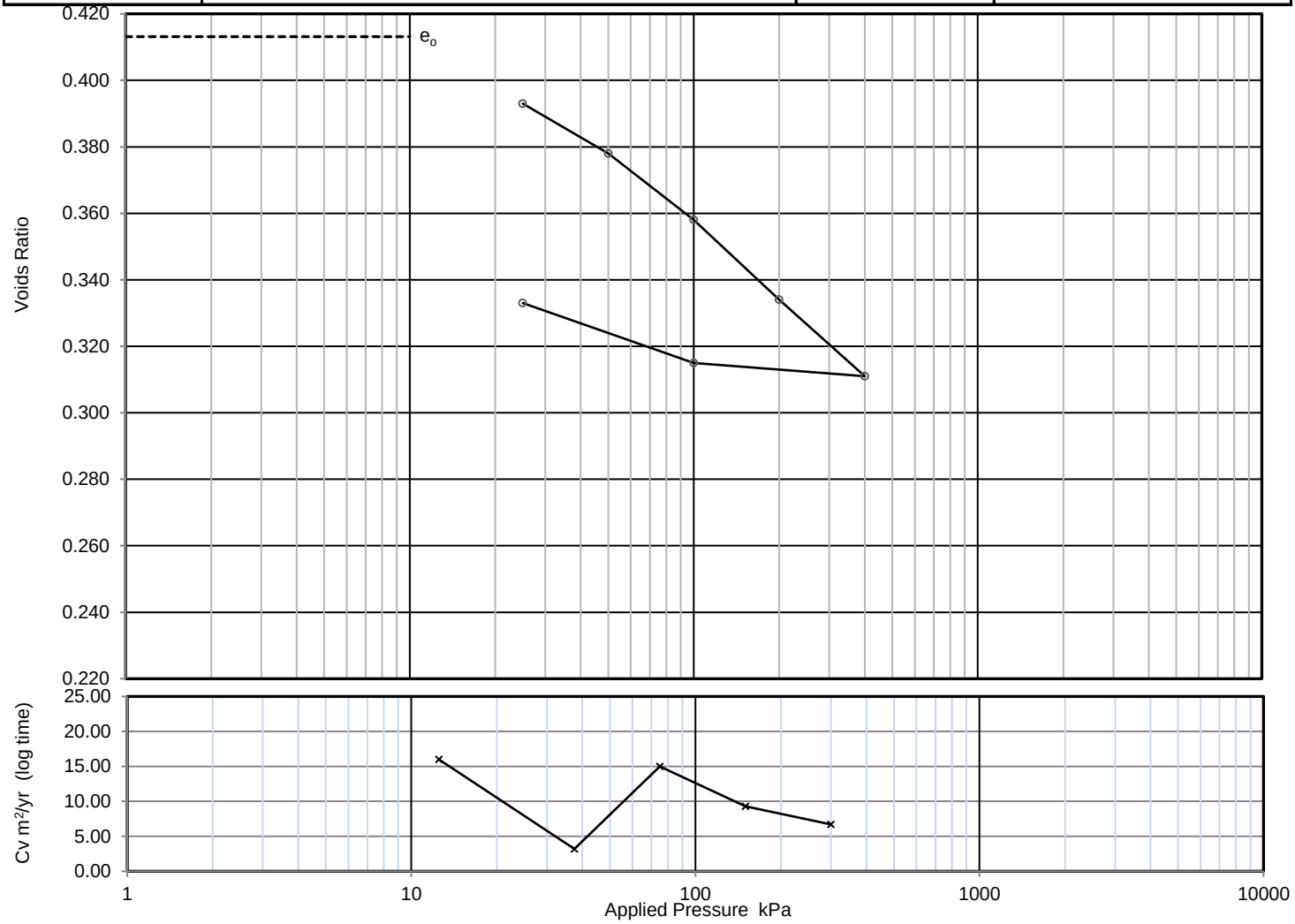
Particle density assumed 2.65 Mg/m3

Specimen details	Initial	Final	
Diameter	74.93	-	mm
Height	20.06	19.01	mm
Moisture Content	12.9	13.0	%
Bulk density	2.18		Mg/m3
Dry density	1.93		Mg/m3
Voids Ratio	0.373		
Saturation	92		%
Average temperature for test	19.0		oC
Swelling Pressure			kPa
Settlement on saturation			%

Remarks

Final values should be used with caution Cv plotted at mid point of load increments Cv corrected to 20oC	Tested	Checked	Approved	Printed :	Fig. No
	DS	KW	KW	10/01/2022 11:33	1

	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3			Job Ref	S211001
				Borehole/Pit No.	CP03
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	4
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Soft/Firm, Grey, Silty, CLAY.			KeyLAB ID	SLMK2021111627
Test Method	BS1377:Part 5:1990, clause 3			Date started	



Applied Pressure kPa	Voids ratio	Mv m2/MN	Cv (t50, log) m2/yr	Cv (t90, root) m2/yr	Csec
0.0	0.413	-	-	-	-
25	0.393	0.57	16	140	0.00063
50	0.378	0.42	3.2	29	0.00057
100	0.358	0.3	15	110	0.00063
200	0.334	0.18	9.3	26	0.00089
400	0.311	0.087	6.7	28	0.00047
100	0.315	0.01			
25	0.333	0.19			

Preparation

Index tests Liquid limit % Plastic limit %

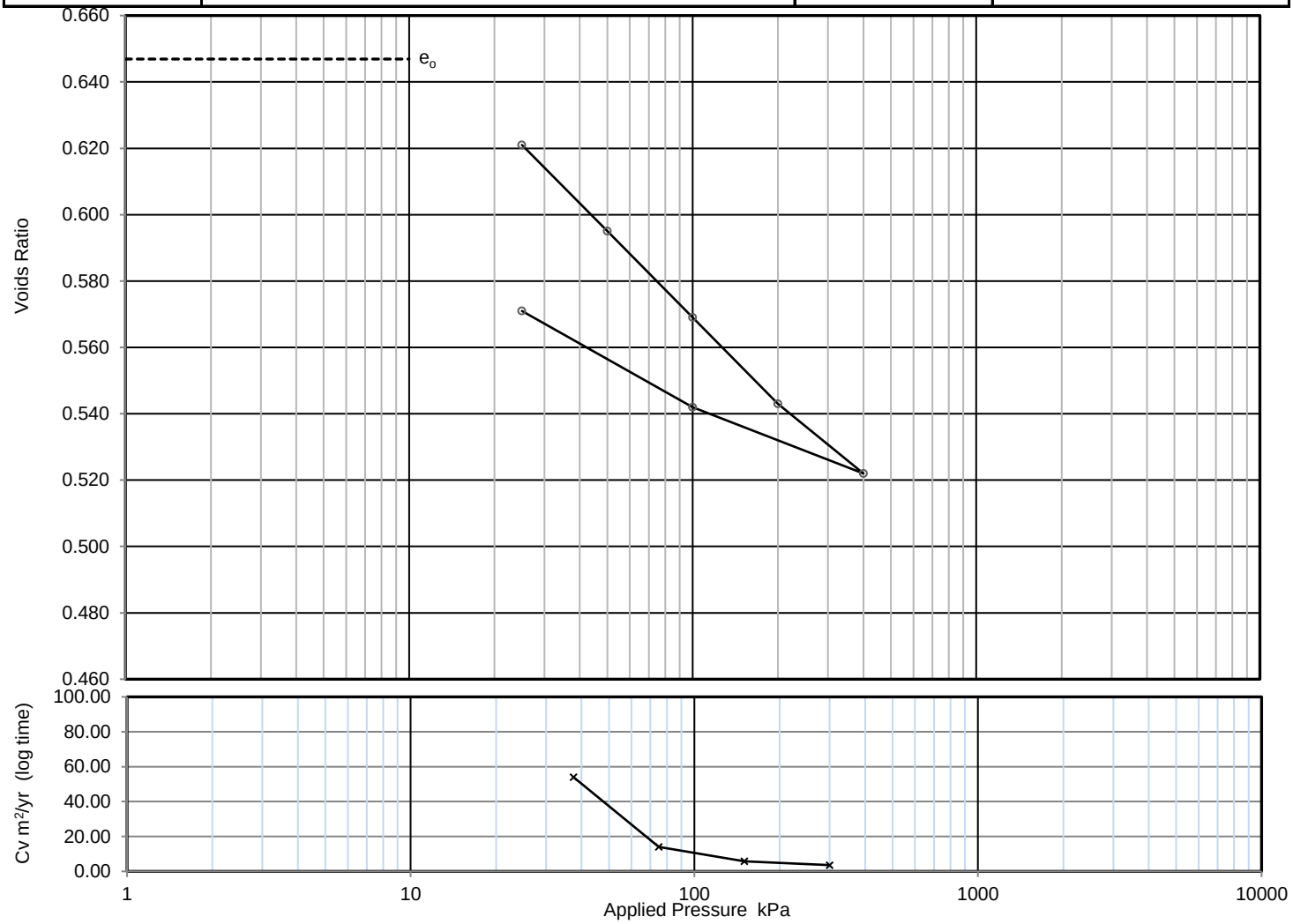
Particle density assumed 2.65 Mg/m3

Specimen details	Initial	Final	
Diameter	74.93	-	mm
Height	20.06	18.92	mm
Moisture Content	15.9	14.0	%
Bulk density	2.17		Mg/m3
Dry density	1.88		Mg/m3
Voids Ratio	0.413		
Saturation	102		%
Average temperature for test	19.0		oC
Swelling Pressure			kPa
Settlement on saturation			%

Remarks

Final values should be used with caution Cv plotted at mid point of load increments Cv corrected to 20oC	Tested	Checked	Approved	Printed :	Fig. No
	DS	KW	KW	10/01/2022 11:34	1

	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3			Job Ref	S211001
				Borehole/Pit No.	CP04
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	4
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Firm, Brown, Slightly Sandy, Slightly Gravelly, CLAY.			KeyLAB ID	SLMK2021111634
Test Method	BS1377:Part 5:1990, clause 3			Date started	



Applied Pressure kPa	Voids ratio	Mv m2/MN	Cv (t50, log) m2/yr	Cv (t90, root) m2/yr	Csec
0.0	0.647	-	-	-	-
25	0.621	0.63		93	0.00068
50	0.595	0.63	54	130	0.00086
100	0.569	0.33	14	86	0.0011
200	0.543	0.16	5.8	21	0.0013
400	0.522	0.077	3.6	17	0.0017
100	0.542	0.043			
25	0.571	0.25			

Preparation

Index tests Liquid limit % Plastic limit %

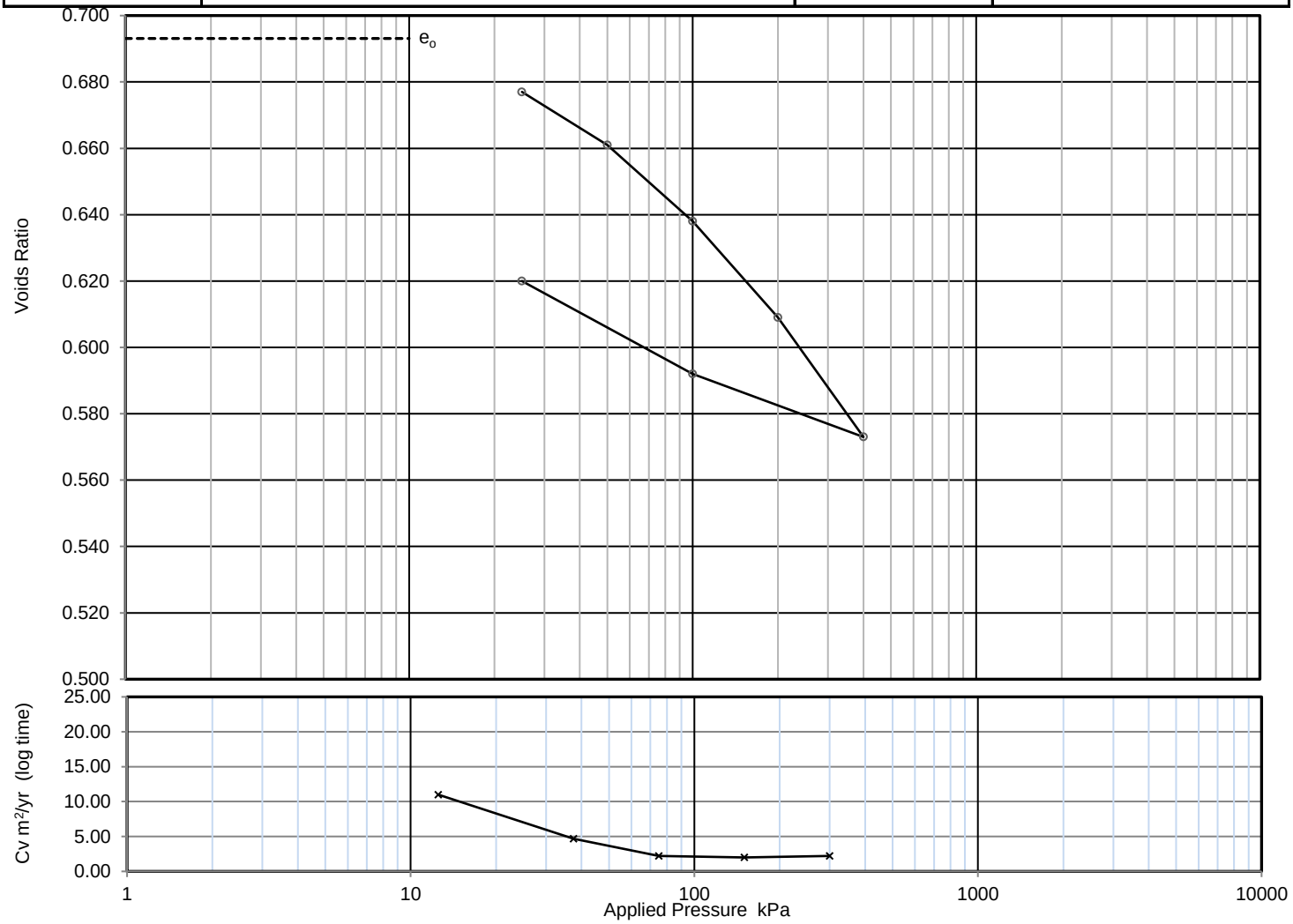
Particle density assumed 2.65 Mg/m3

Specimen details	Initial	Final	
Diameter	75.10	-	mm
Height	19.97	19.05	mm
Moisture Content	24.9	25.2	%
Bulk density	2.01		Mg/m3
Dry density	1.61		Mg/m3
Voids Ratio	0.647		
Saturation	102		%
Average temperature for test	19.0		oC
Swelling Pressure			kPa
Settlement on saturation			%

Remarks

Final values should be used with caution Cv plotted at mid point of load increments Cv corrected to 20oC	Tested	Checked	Approved	Printed :	Fig. No
	DS	KW	KW	10/01/2022 11:34	1

	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3			Job Ref	S211001
				Borehole/Pit No.	CP05
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	2
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Firm, Brown, slightly gravelly, CLAY.			KeyLAB ID	SLMK2021111640
Test Method	BS1377:Part 5:1990, clause 3			Date started	



Applied Pressure kPa	Voids ratio	Mv m2/MN	Cv (t50, log) m2/yr	Cv (t90, root) m2/yr	Csec
0.0	0.693	-	-	-	-
25	0.677	0.38	11	21	0.00052
50	0.661	0.38	4.7	18	0.00065
100	0.638	0.28	2.2	5.5	0.00083
200	0.609	0.18	2	3.9	0.00095
400	0.573	0.11	2.2	3.7	0.00099
100	0.592	0.042			
25	0.620	0.23			

Preparation

Index tests Liquid limit % Plastic limit %

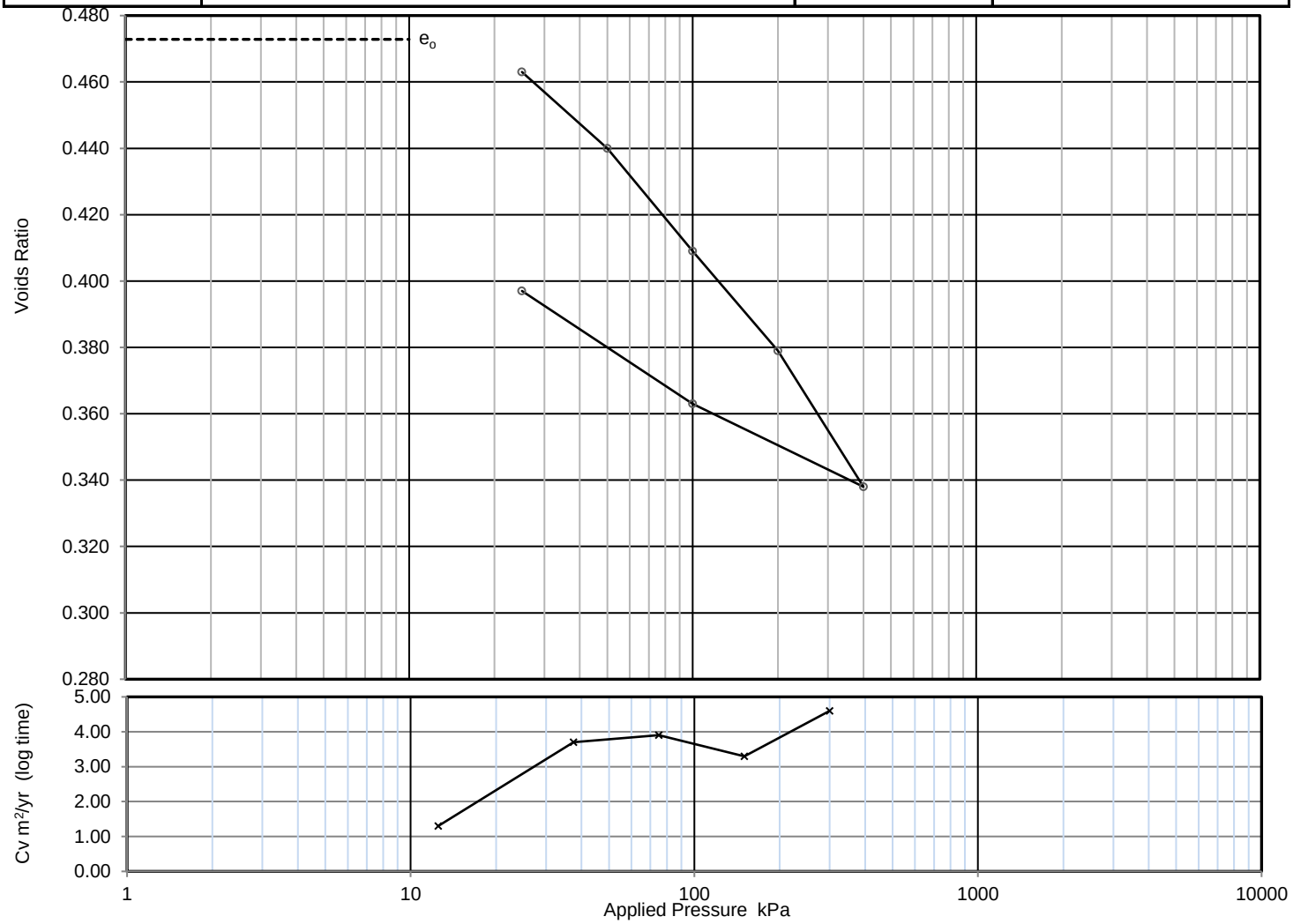
Particle density assumed 2.65 Mg/m3

Specimen details	Initial	Final	
Diameter	75.01	-	mm
Height	20.02	19.16	mm
Moisture Content	18.2	22.6	%
Bulk density	1.85		Mg/m3
Dry density	1.57		Mg/m3
Voids Ratio	0.693		
Saturation	70		%
Average temperature for test	19.0		oC
Swelling Pressure			kPa
Settlement on saturation			%

Remarks

Final values should be used with caution Cv plotted at mid point of load increments Cv corrected to 20oC	Tested	Checked	Approved	Printed :	Fig. No
	DS	KW	KW	10/01/2022 11:34	1

	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3			Job Ref	S211001
				Borehole/Pit No.	CP05
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	5
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Bfirm, Brown,. Slightly Sandy, Slightly Gravelly, CLAY.			KeyLAB ID	SLMK2021111643
Test Method	BS1377:Part 5:1990, clause 3			Date started	



Applied Pressure kPa	Voids ratio	Mv m2/MN	Cv (t50, log) m2/yr	Cv (t90, root) m2/yr	Csec
0.0	0.473	-	-	-	-
25	0.463	0.26	1.3	2.4	0.00094
50	0.440	0.64	3.7	11	0.00073
100	0.409	0.43	3.9	8.8	0.00073
200	0.379	0.22	3.3	10	0.00092
400	0.338	0.15	4.6	14	0.0016
100	0.363	0.06			
25	0.397	0.34			

Preparation

Index tests Liquid limit % Plastic limit %

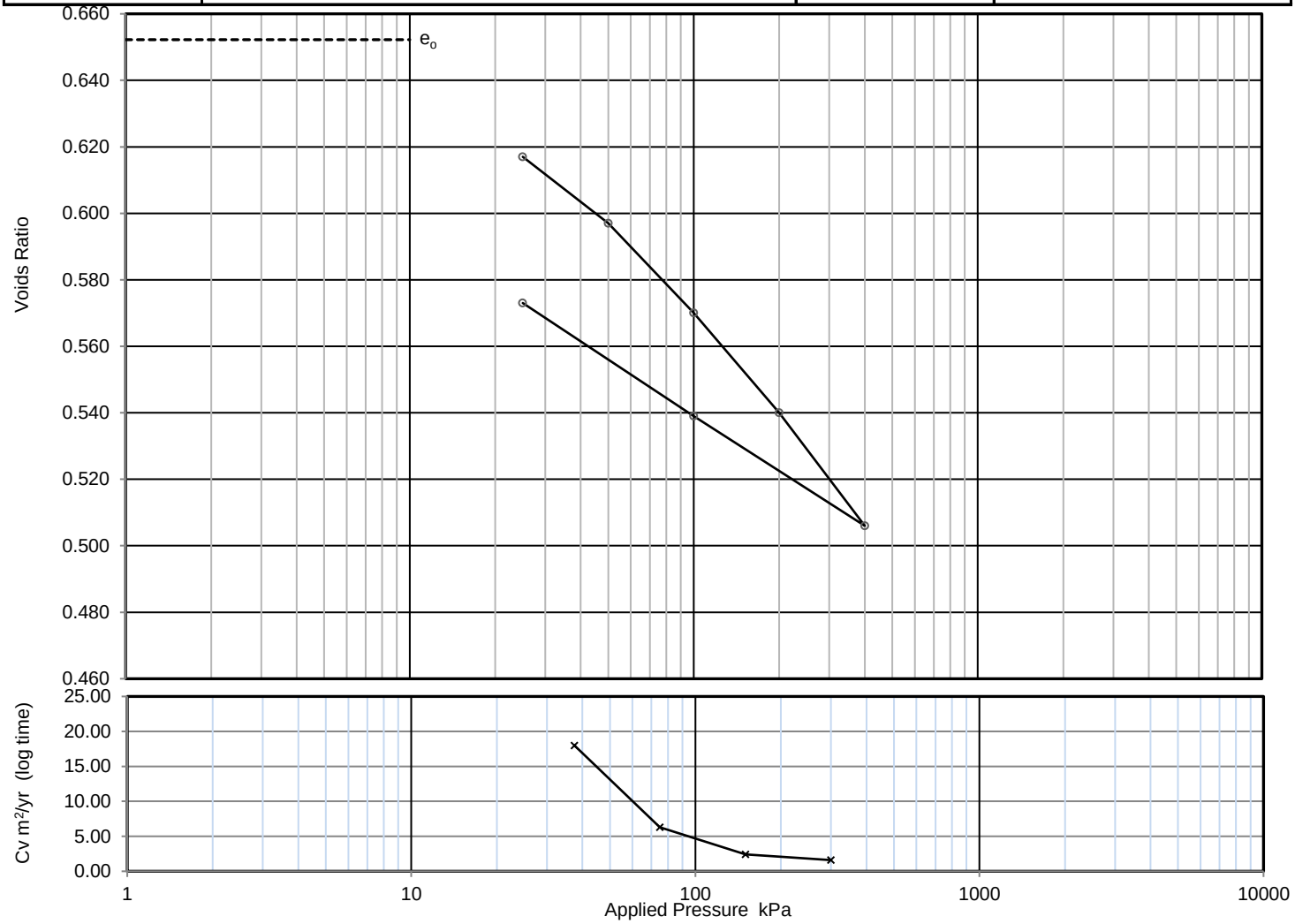
Particle density assumed 2.65 Mg/m3

Specimen details	Initial	Final	
Diameter	74.93	-	mm
Height	20.15	19.11	mm
Moisture Content	17.4	15.1	%
Bulk density	2.11		Mg/m3
Dry density	1.80		Mg/m3
Voids Ratio	0.473		
Saturation	97		%
Average temperature for test	19.0		oC
Swelling Pressure			kPa
Settlement on saturation			%

Remarks

Final values should be used with caution Cv plotted at mid point of load increments Cv corrected to 20oC	Tested	Checked	Approved	Printed :	Fig. No
	DS	KW	KW	10/01/2022 11:34	1

	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3			Job Ref	S211001
				Borehole/Pit No.	CP06
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	2
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Firm Brown, Slightly Sandy, Slightly Gravelly, CLAY.			KeyLAB ID	SLMK2021111646
Test Method	BS1377:Part 5:1990, clause 3			Date started	



Applied Pressure kPa	Voids ratio	Mv m2/MN	Cv (t50, log) m2/yr	Cv (t90, root) m2/yr	Csec
0.0	0.652	-	-	-	-
25	0.617	0.86		85	0.00011
50	0.597	0.48	18	120	0.00075
100	0.570	0.34	6.3	37	0.00075
200	0.540	0.19	2.4	15	0.0011
400	0.506	0.11	1.6	4.2	0.0014
100	0.539	0.073			
25	0.573	0.3			

Preparation

Index tests Liquid limit % Plastic limit %

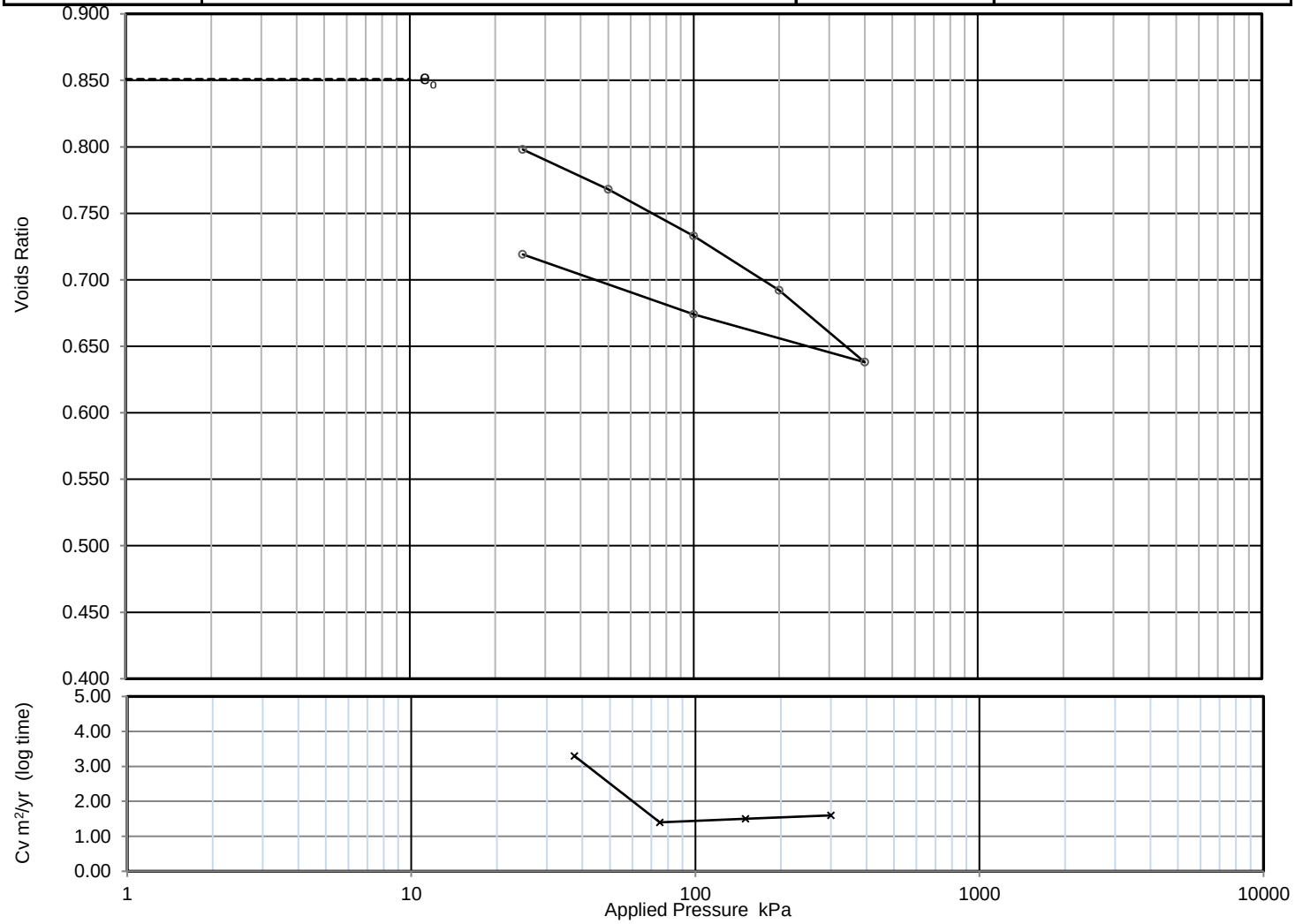
Particle density assumed 2.65 Mg/m3

Specimen details	Initial	Final	
Diameter	74.89	-	mm
Height	20.15	19.19	mm
Moisture Content	26.3	25.4	%
Bulk density	2.03		Mg/m3
Dry density	1.60		Mg/m3
Voids Ratio	0.652		
Saturation	107		%
Average temperature for test	19.0		oC
Swelling Pressure			kPa
Settlement on saturation			%

Remarks

Final values should be used with caution Cv plotted at mid point of load increments Cv corrected to 20oC	Tested	Checked	Approved	Printed :	Fig. No
	DS	KW	KW	10/01/2022 11:34	1

	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3			Job Ref	S211001
				Borehole/Pit No.	CP06
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	4
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Firm, Brown,Slightly Sandy, Slightly Gravelly, CLAY.			KeyLAB ID	SLMK2021111648
Test Method	BS1377:Part 5:1990, clause 3			Date started	



Applied Pressure kPa	Voids ratio	Mv m2/MN	Cv (t50, log) m2/yr	Cv (t90, root) m2/yr	Csec
0.0	0.851	-	-	-	-
25	0.798	1.1		12	0.00066
50	0.768	0.66	3.3	12	0.0009
100	0.733	0.39	1.4	3.3	0.0013
200	0.692	0.24	1.5	2.9	0.0018
400	0.638	0.16	1.6	2.8	0.002
100	0.674	0.072			
25	0.719	0.36			

Preparation

Index tests Liquid limit % Plastic limit %

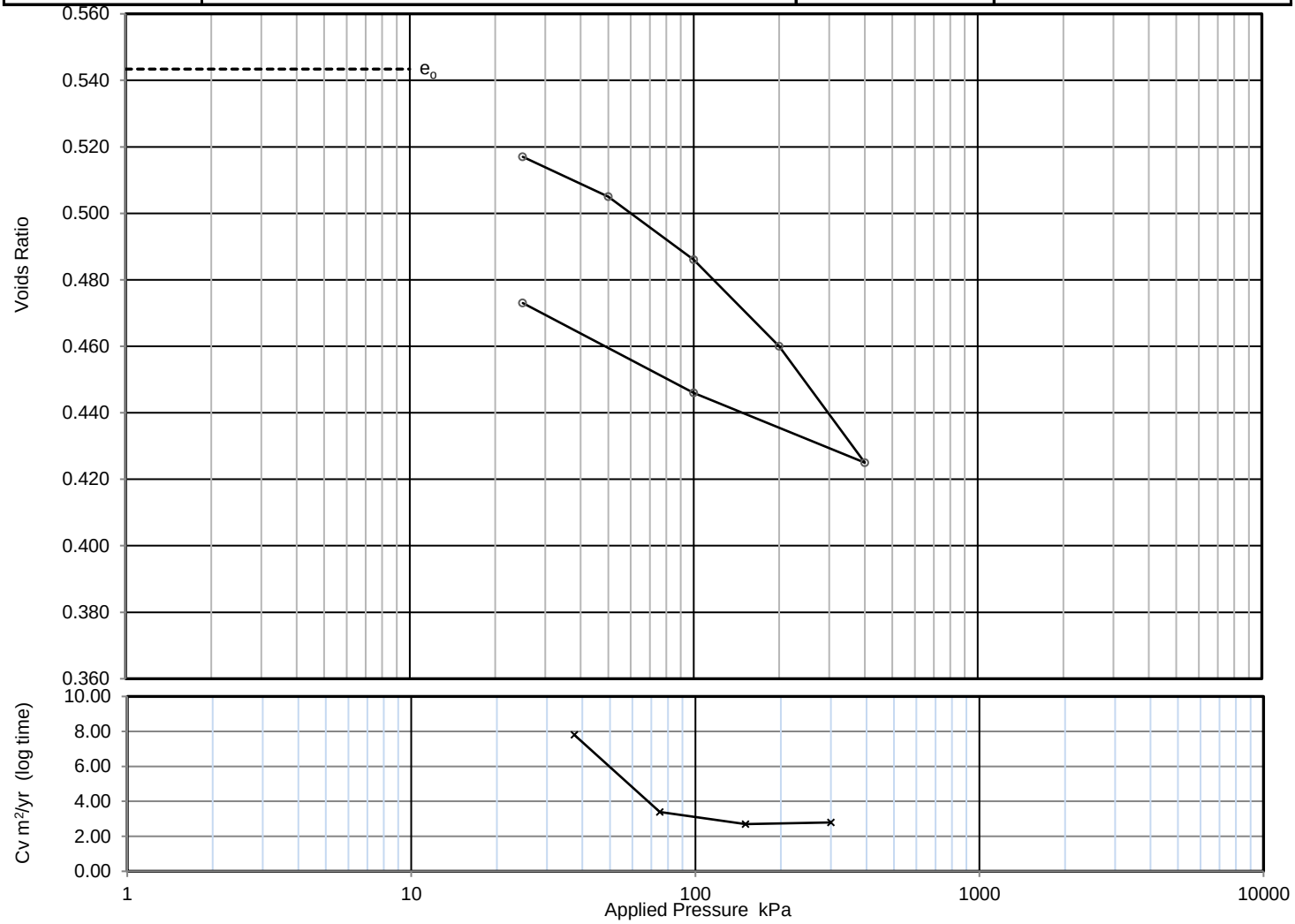
Particle density assumed 2.65 Mg/m3

Specimen details	Initial	Final	
Diameter	74.96	-	mm
Height	20.09	18.66	mm
Moisture Content	36.2	30.4	%
Bulk density	1.95		Mg/m3
Dry density	1.43		Mg/m3
Voids Ratio	0.851		
Saturation	113		%
Average temperature for test	19.0		oC
Swelling Pressure			kPa
Settlement on saturation			%

Remarks

Final values should be used with caution Cv plotted at mid point of load increments Cv corrected to 20oC	Tested	Checked	Approved	Printed :	Fig. No
	DS	KW	KW	10/01/2022 11:34	1

	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3			Job Ref	S211001
				Borehole/Pit No.	CP07
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	3
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Firm, Brown, Slightly Sandy, Slightly Gravelly, CLAY.			KeyLAB ID	SLMK2021111662
Test Method	BS1377:Part 5:1990, clause 3			Date started	



Applied Pressure kPa	Voids ratio	Mv m2/MN	Cv (t50, log) m2/yr	Cv (t90, root) m2/yr	Csec
0.0	0.543	-	-	-	-
25	0.517	0.69		14	0.00028
50	0.505	0.33	7.8	18	0.00068
100	0.486	0.25	3.4	12	0.00077
200	0.460	0.17	2.7	9.3	0.0011
400	0.425	0.12	2.8	7.5	0.0013
100	0.446	0.05			
25	0.473	0.25			

Preparation

Index tests Liquid limit % Plastic limit %

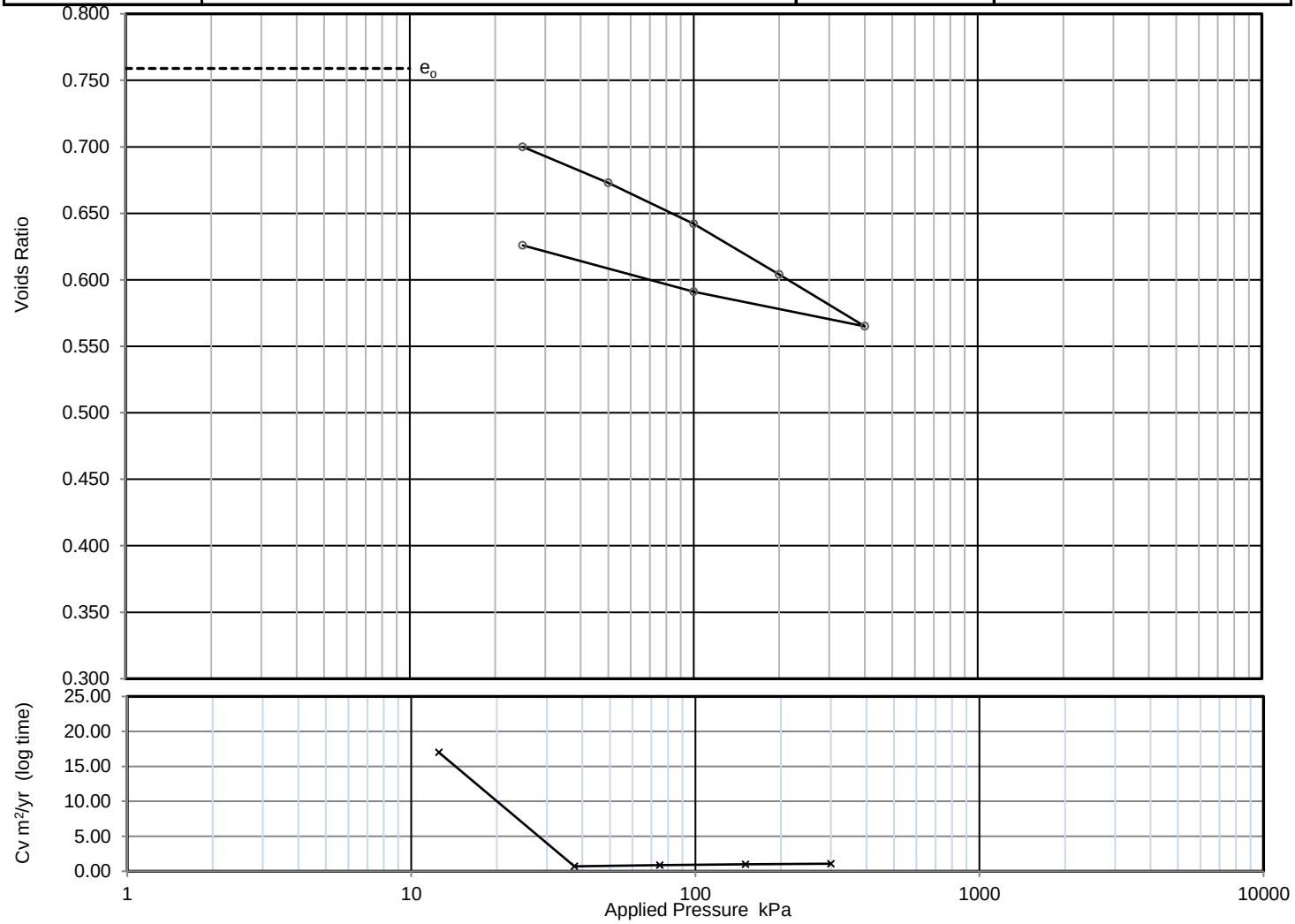
Particle density assumed 2.65 Mg/m3

Specimen details	Initial	Final	
Diameter	74.96	-	mm
Height	20.09	19.18	mm
Moisture Content	23.1	20.8	%
Bulk density	2.11		Mg/m3
Dry density	1.72		Mg/m3
Voids Ratio	0.543		
Saturation	113		%
Average temperature for test	19.0		oC
Swelling Pressure			kPa
Settlement on saturation			%

Remarks

Final values should be used with caution Cv plotted at mid point of load increments Cv corrected to 20oC	Tested	Checked	Approved	Printed :	Fig. No
	DS	KW	KW	10/01/2022 11:34	1

	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3			Job Ref	S211001
				Borehole/Pit No.	CP07
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	5
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Firm, Brown, Slightly Sandy, Slightly Gravelly, CLAY.			KeyLAB ID	SLMK2021111664
Test Method	BS1377:Part 5:1990, clause 3			Date started	



Applied Pressure kPa	Voids ratio	Mv m2/MN	Cv (t50, log) m2/yr	Cv (t90, root) m2/yr	Csec
0.0	0.759	-	-	-	-
25	0.700	1.3	17	41	0.00094
50	0.673	0.63	0.71	1.8	0.0014
100	0.642	0.38	0.89	2.1	0.0016
200	0.604	0.23	1	3	0.0022
400	0.565	0.13	1.1	3	0.002
100	0.591	0.055			
25	0.626	0.29			

Preparation

Index tests Liquid limit % Plastic limit %

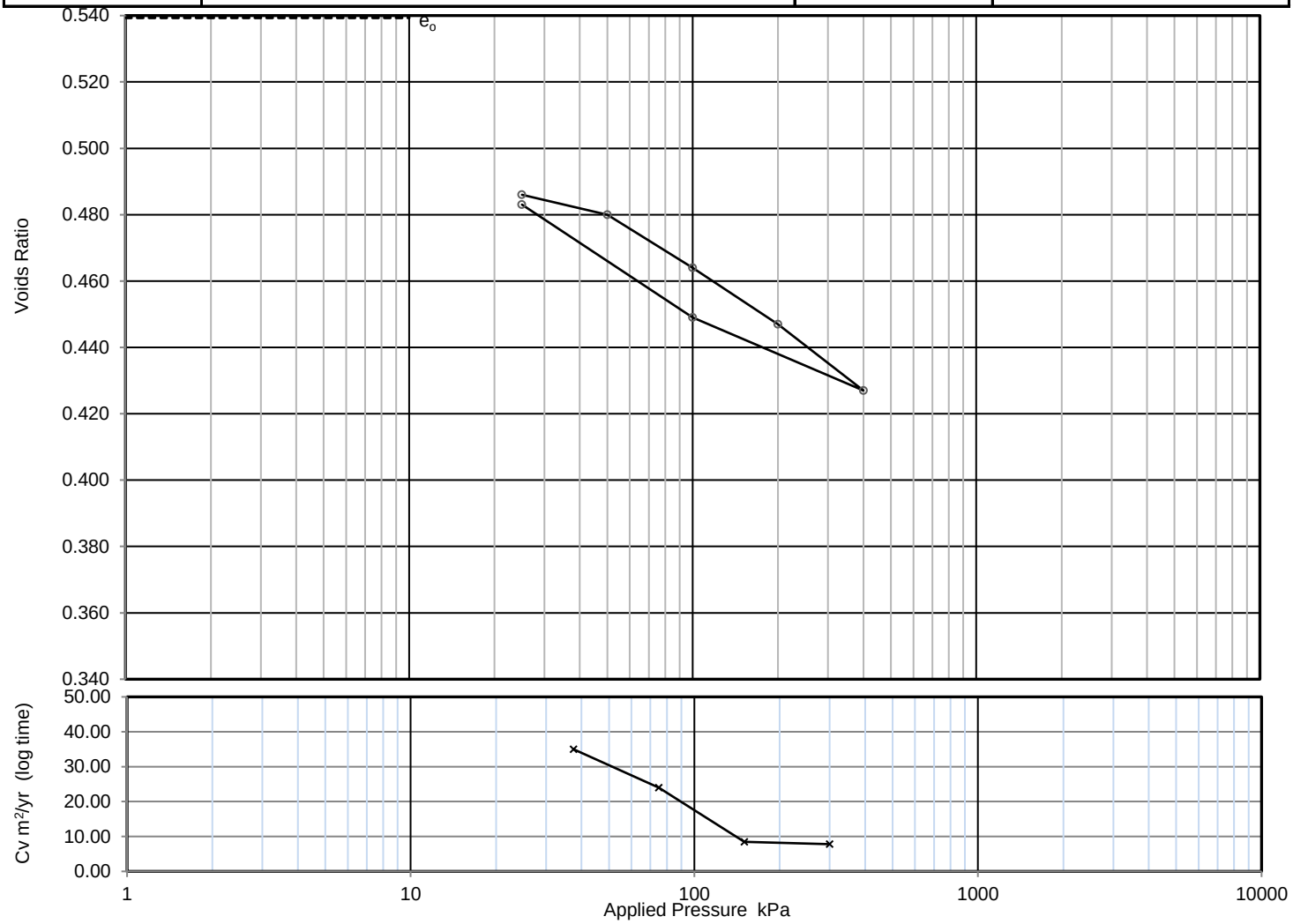
Particle density assumed 2.65 Mg/m3

Specimen details	Initial	Final	
Diameter	74.97	-	mm
Height	20.09	18.57	mm
Moisture Content	25.7	26.0	%
Bulk density	1.89		Mg/m3
Dry density	1.51		Mg/m3
Voids Ratio	0.759		
Saturation	90		%
Average temperature for test	19.0		oC
Swelling Pressure			kPa
Settlement on saturation			%

Remarks

Final values should be used with caution Cv plotted at mid point of load increments Cv corrected to 20oC	Tested	Checked	Approved	Printed :	Fig. No
	DS	KW	KW	10/01/2022 11:34	1

	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3			Job Ref	S211001
				Borehole/Pit No.	CPRO01
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	1.2
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Stiff, Brown, Slightly Sandy, Slightly Gravelly, CLAY.			KeyLAB ID	SLMK202111172
Test Method	BS1377:Part 5:1990, clause 3			Date started	



Applied Pressure kPa	Voids ratio	Mv m2/MN	Cv (t50, log) m2/yr	Cv (t90, root) m2/yr	Csec
0.0	0.539	-	-	-	-
25	0.486	1.4		52	0.000092
50	0.480	0.16	35	280	0.00011
100	0.464	0.22	24	240	0.00079
200	0.447	0.12	8.5	240	0.00063
400	0.427	0.067	7.8	31	0.00063
100	0.449	0.05			
25	0.483	0.31			

Preparation

Index tests Liquid limit % Plastic limit %

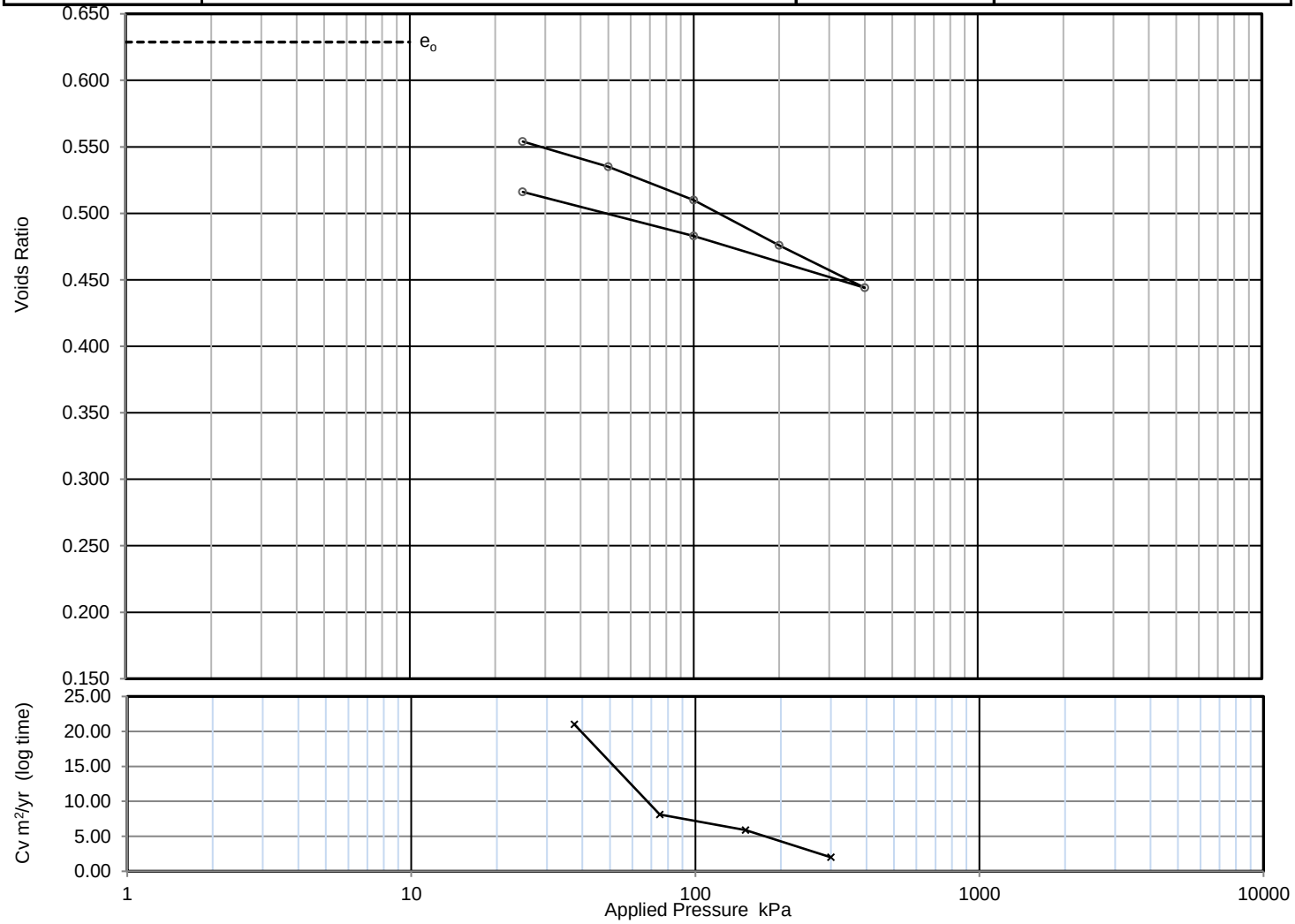
Particle density assumed 2.65 Mg/m3

Specimen details	Initial	Final	
Diameter	74.93	-	mm
Height	20.06	19.32	mm
Moisture Content	20.4	21.0	%
Bulk density	2.07		Mg/m3
Dry density	1.72		Mg/m3
Voids Ratio	0.539		
Saturation	100		%
Average temperature for test	19.0		oC
Swelling Pressure			kPa
Settlement on saturation			%

Remarks

Final values should be used with caution Cv plotted at mid point of load increments Cv corrected to 20oC	Tested	Checked	Approved	Printed :	Fig. No
	DS	KW	KW	10/01/2022 11:34	1

	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3			Job Ref	S211001
				Borehole/Pit No.	CPRO03
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	2
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Soft, Slightly Gravelly, Slightly Sandy, CLAY.			KeyLAB ID	SLMK2021111714
Test Method	BS1377:Part 5:1990, clause 3			Date started	



Applied Pressure kPa	Voids ratio	Mv m2/MN	Cv (t50, log) m2/yr	Cv (t90, root) m2/yr	Csec
0.0	0.629	-	-	-	-
25	0.554	1.8		42	0.0003
50	0.535	0.48	21	140	0.00075
100	0.510	0.32	8.1	90	0.001
200	0.476	0.23	5.9	30	0.0011
400	0.444	0.11	2	8.1	0.0011
100	0.483	0.089			
25	0.516	0.29			

Preparation

Index tests Liquid limit % Plastic limit %

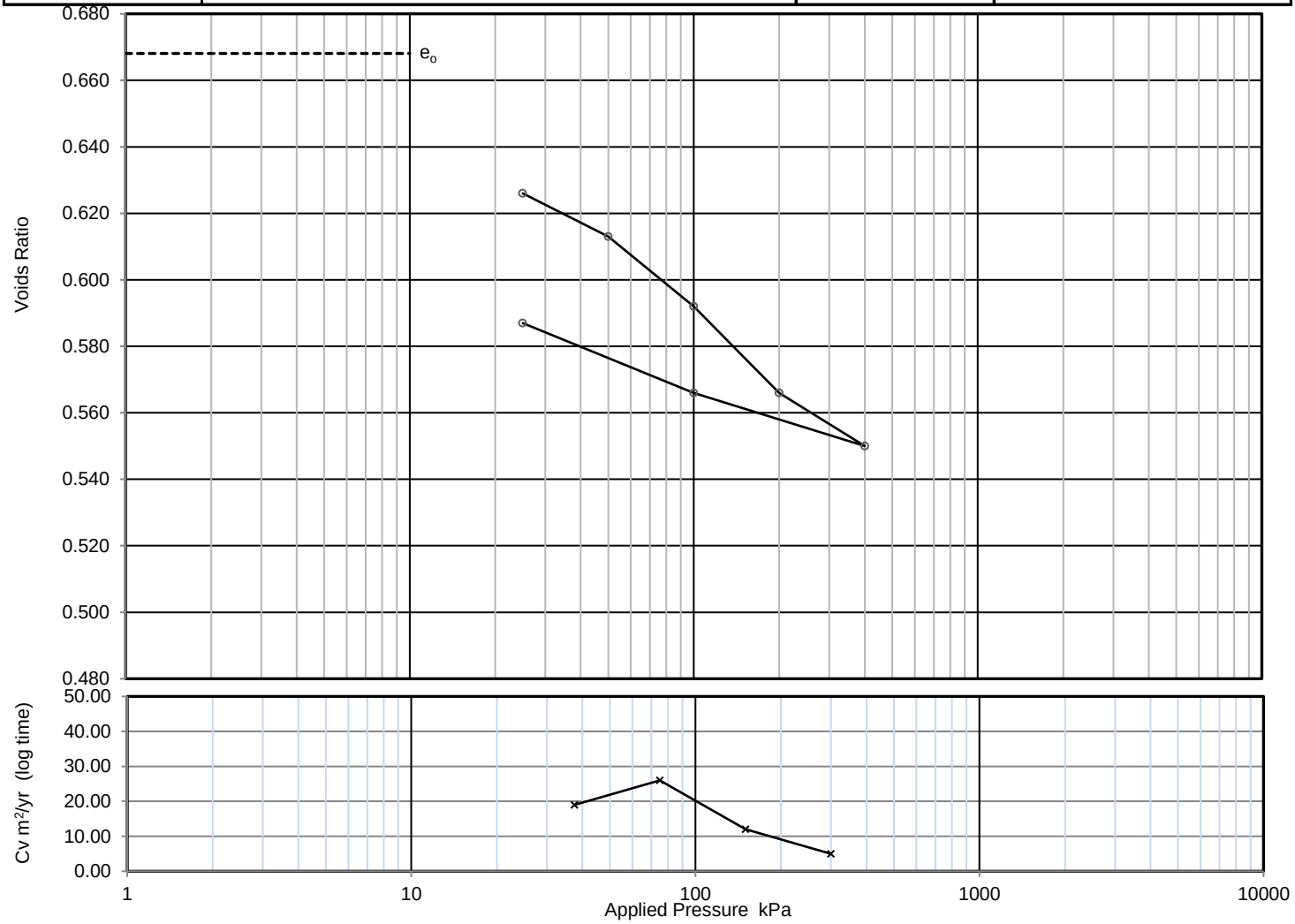
Particle density assumed 2.65 Mg/m3

Specimen details	Initial	Final	
Diameter	74.89	-	mm
Height	20.15	18.75	mm
Moisture Content	24.2	22.7	%
Bulk density	2.02		Mg/m3
Dry density	1.63		Mg/m3
Voids Ratio	0.629		
Saturation	102		%
Average temperature for test	19.0		oC
Swelling Pressure			kPa
Settlement on saturation			%

Remarks

Final values should be used with caution Cv plotted at mid point of load increments Cv corrected to 20oC	Tested	Checked	Approved	Printed :	Fig. No
	DS	KW	KW	10/01/2022 11:34	1

	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3			Job Ref	S211001
				Borehole/Pit No.	CPRO05
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	4
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Firm, Brown, CLAY			KeyLAB ID	SLMK2021111728
Test Method	BS1377:Part 5:1990, clause 3			Date started	



Applied Pressure kPa	Voids ratio	Mv m2/MN	Cv (t50, log) m2/yr	Cv (t90, root) m2/yr	Csec
0.0	0.668	-	-	-	-
25	0.626	1		72	0.00044
50	0.613	0.33	19	120	0.0006
100	0.592	0.25	26	210	0.00076
200	0.566	0.16	12	230	0.00081
400	0.550	0.05	5	37	0.00088
100	0.566	0.033			
25	0.587	0.18			

Preparation

Index tests Liquid limit % Plastic limit %

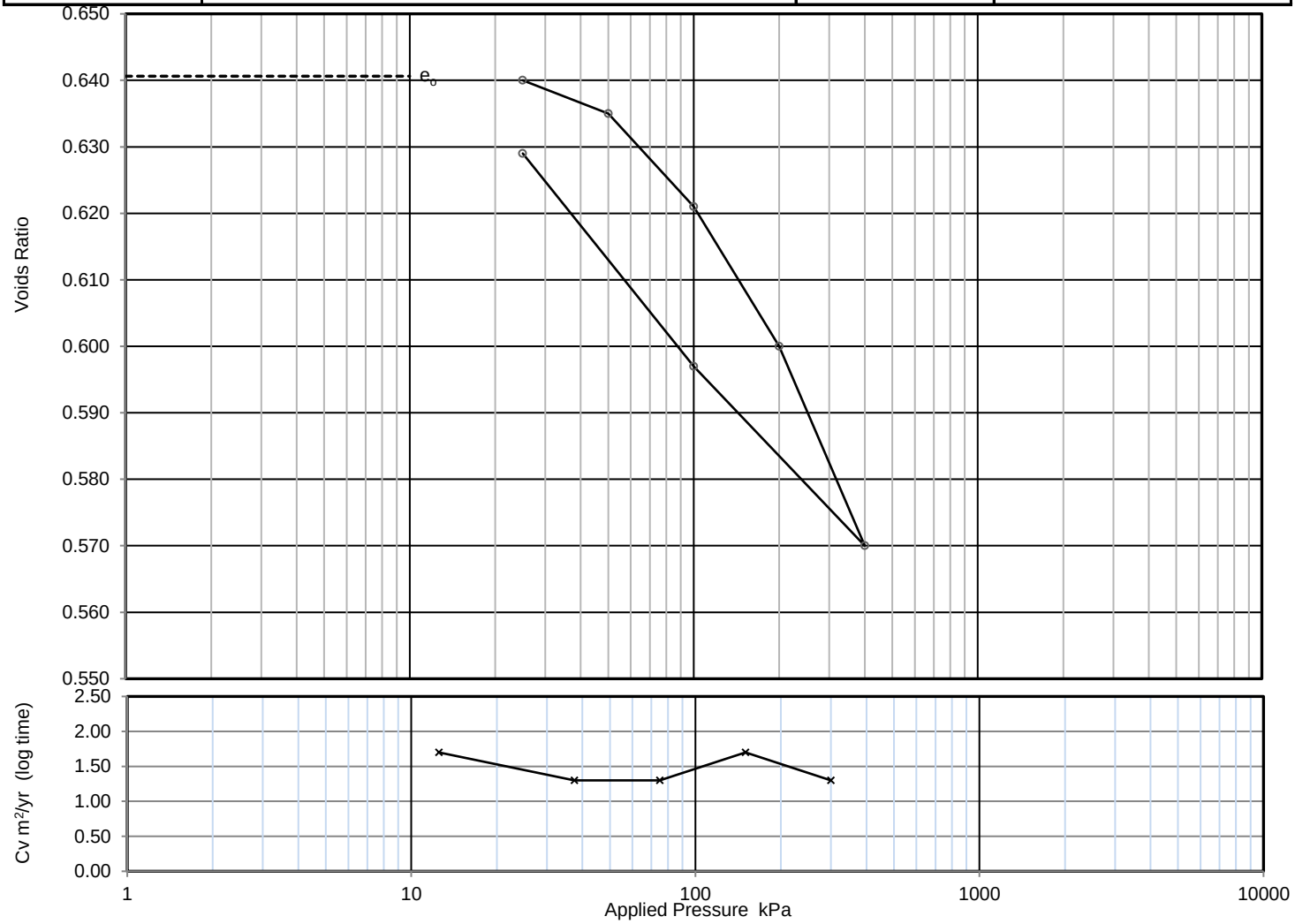
Particle density assumed 2.65 Mg/m3

Specimen details	Initial	Final	
Diameter	75.07	-	mm
Height	19.97	19.00	mm
Moisture Content	22.2	24.0	%
Bulk density	1.94		Mg/m3
Dry density	1.59		Mg/m3
Voids Ratio	0.668		
Saturation	88		%
Average temperature for test	19.0		oC
Swelling Pressure			kPa
Settlement on saturation			%

Remarks

Final values should be used with caution Cv plotted at mid point of load increments Cv corrected to 20oC	Tested	Checked	Approved	Printed :	Fig. No
	DS	KW	KW	10/01/2022 11:34	1

	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3			Job Ref	S211001
				Borehole/Pit No.	CPRO06
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	6
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Soft, Brown, Slightly Gravelly, CLAY.			KeyLAB ID	SLMK2021111740
Test Method	BS1377:Part 5:1990, clause 3			Date started	



Applied Pressure kPa	Voids ratio	Mv m2/MN	Cv (t50, log) m2/yr	Cv (t90, root) m2/yr	Csec
0.0	0.641	-	-	-	-
25	0.640	0.004	1.7	39	0.00096
50	0.635	0.15	1.3	10	0.00071
100	0.621	0.16	1.3	6.3	0.00096
200	0.600	0.13	1.7	5	0.0011
400	0.570	0.092	1.3	5.5	0.0013
100	0.597	0.058			
25	0.629	0.26			

Preparation

Index tests Liquid limit % Plastic limit %

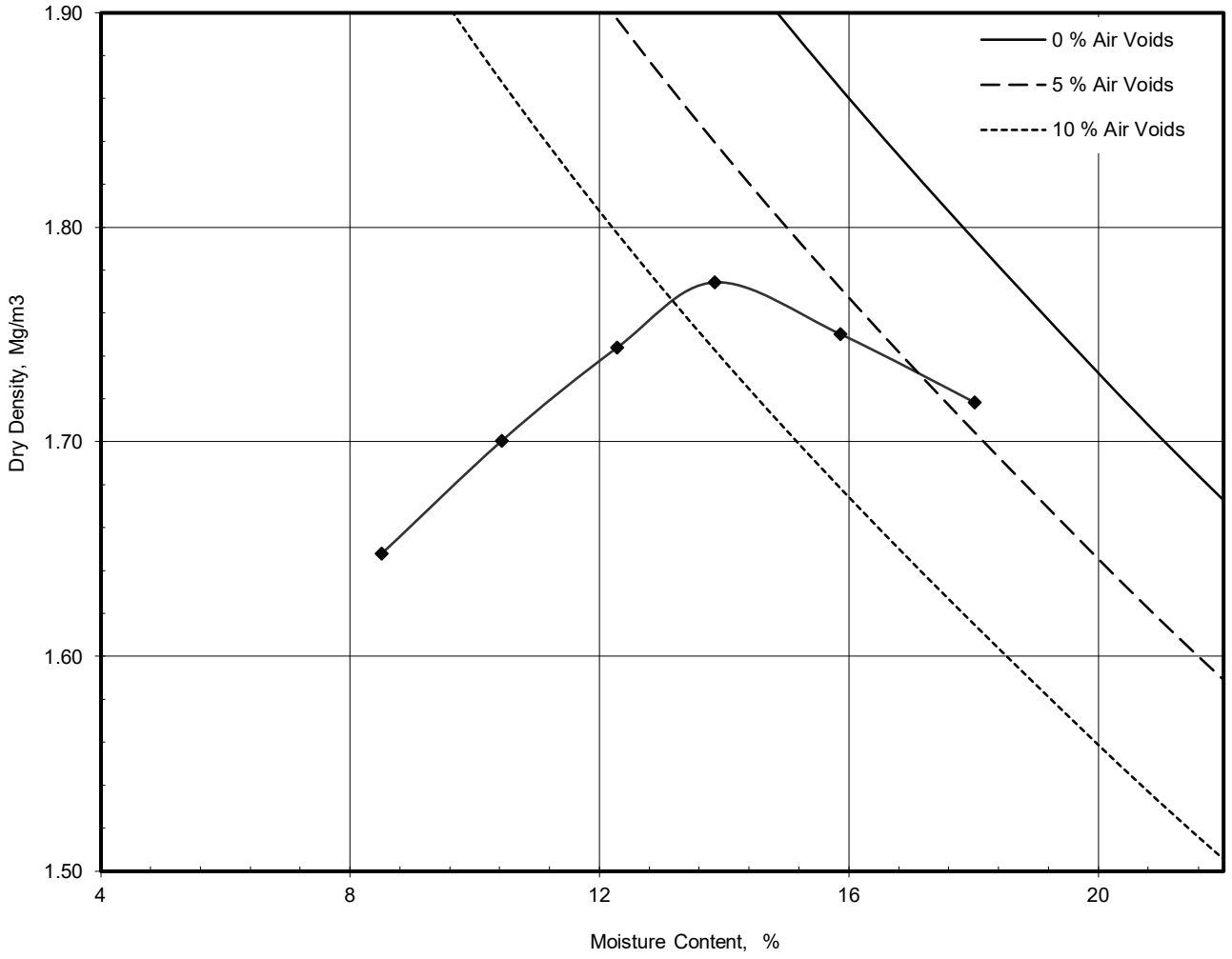
Particle density assumed 2.65 Mg/m3

Specimen details	Initial	Final	
Diameter	74.83	-	mm
Height	20.08	19.93	mm
Moisture Content	24.0	23.6	%
Bulk density	2.00		Mg/m3
Dry density	1.62		Mg/m3
Voids Ratio	0.641		
Saturation	99		%
Average temperature for test	19.0		oC
Swelling Pressure			kPa
Settlement on saturation			%

Remarks

Final values should be used with caution Cv plotted at mid point of load increments Cv corrected to 20oC	Tested	Checked	Approved	Printed :	Fig. No
	DS	KW	KW	10/01/2022 11:34	1

	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	S211001
				Borehole / Pit No	CP01
Site Name	**Envision, Sunderland**			Sample No	
Soil Description	Brown, CLAY			Depth	0.40 m
Specimen Ref.	1	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.3, 2.5kg rammer			Keylab ID	SLMK202111168
				Compaction Test Reference/No.	

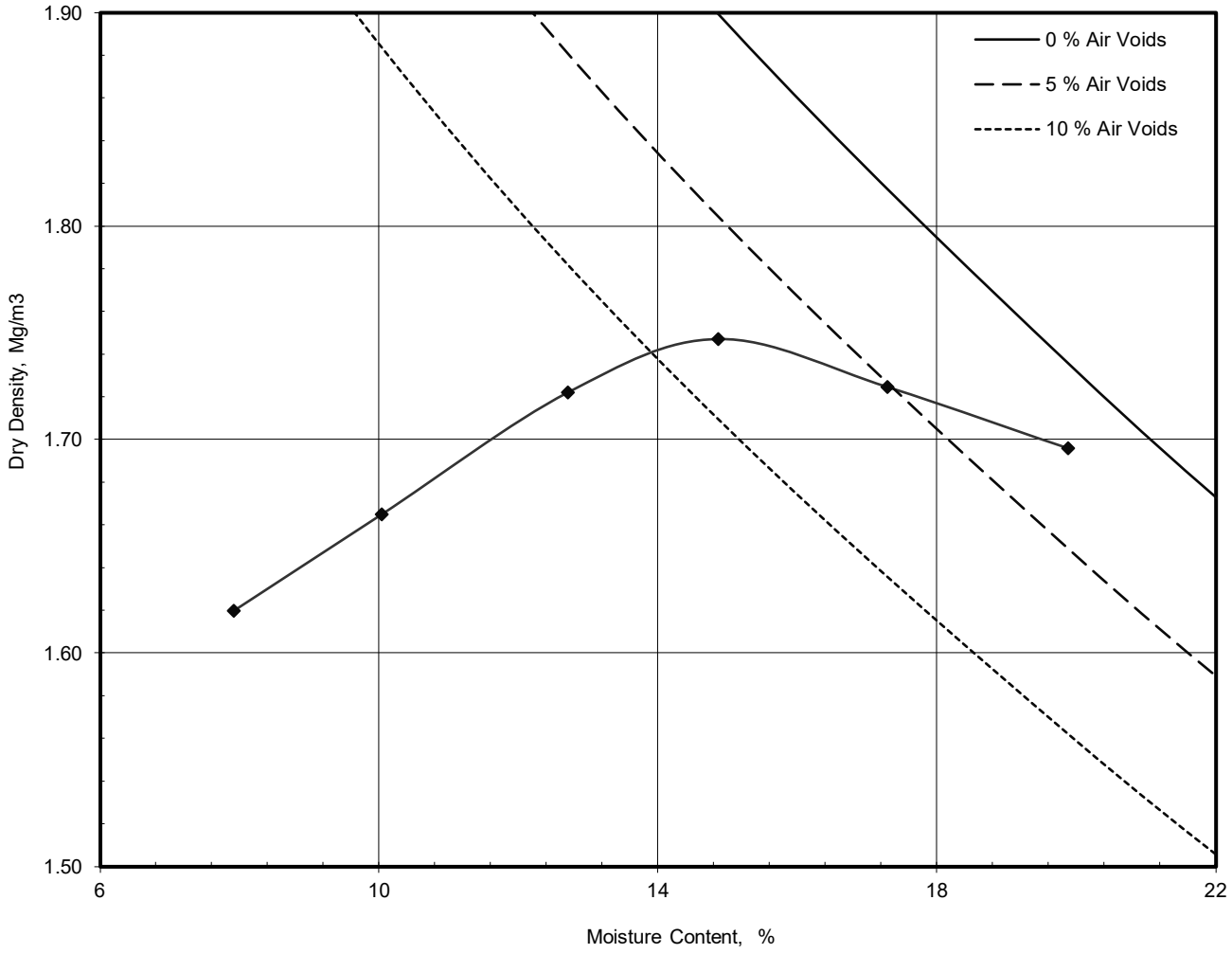


Mould Type		1 LITRE
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	1
Particle Density - Assumed	Mg/m³	2.65
Natural Moisture Content	%	18
Maximum Dry Density	Mg/m³	**1.77**

Optimum Moisture Content	%	**14**

Operator	Checked	Approved	Remarks	Fig
M.Southgate	KW	KW		Sheet 1 of 1

	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	S211001
				Borehole / Pit No	CP07
Site Name	**Envision, Sunderland**			Sample No	
Soil Description	Brown, CLAY			Depth	0.50 m
Specimen Ref.	1	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.3, 2.5kg rammer			Keylab ID	SLMK2021111659
				Compaction Test Reference/No.	

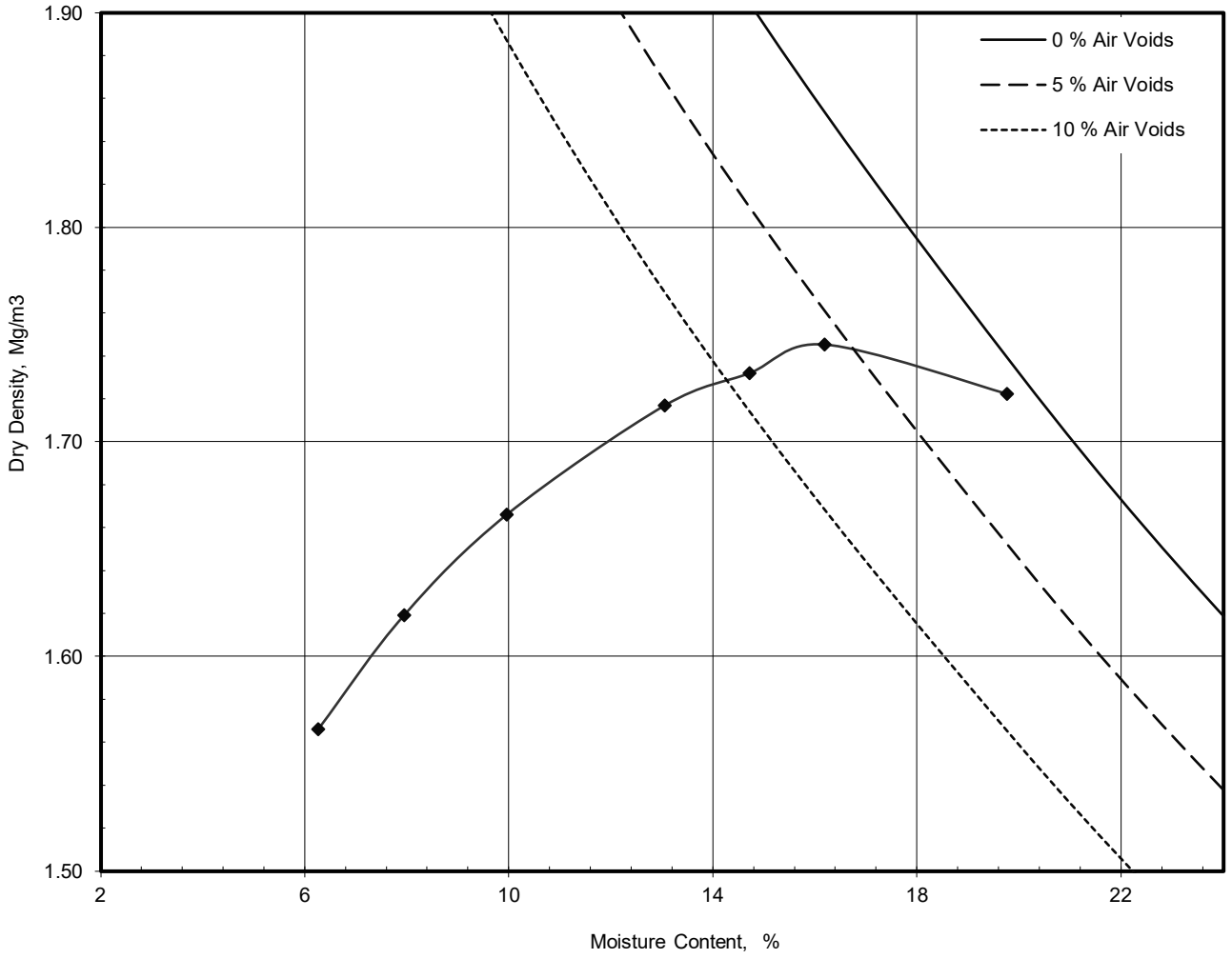


Mould Type		1 LITRE
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	1
Particle Density - Assumed	Mg/m³	2.65
Natural Moisture Content	%	20
Maximum Dry Density	Mg/m³	**1.75**

Optimum Moisture Content	%	**15**

Operator	Checked	Approved	Remarks	Fig
M.Southgate	KW	KW		Sheet 1 of 1

	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	S211001
				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	B
Test Method	BS1377:Part 4:1990, clause 3.3, 2.5kg rammer			Keylab ID	SLMK2021120189
				Compaction Test Reference/No.	

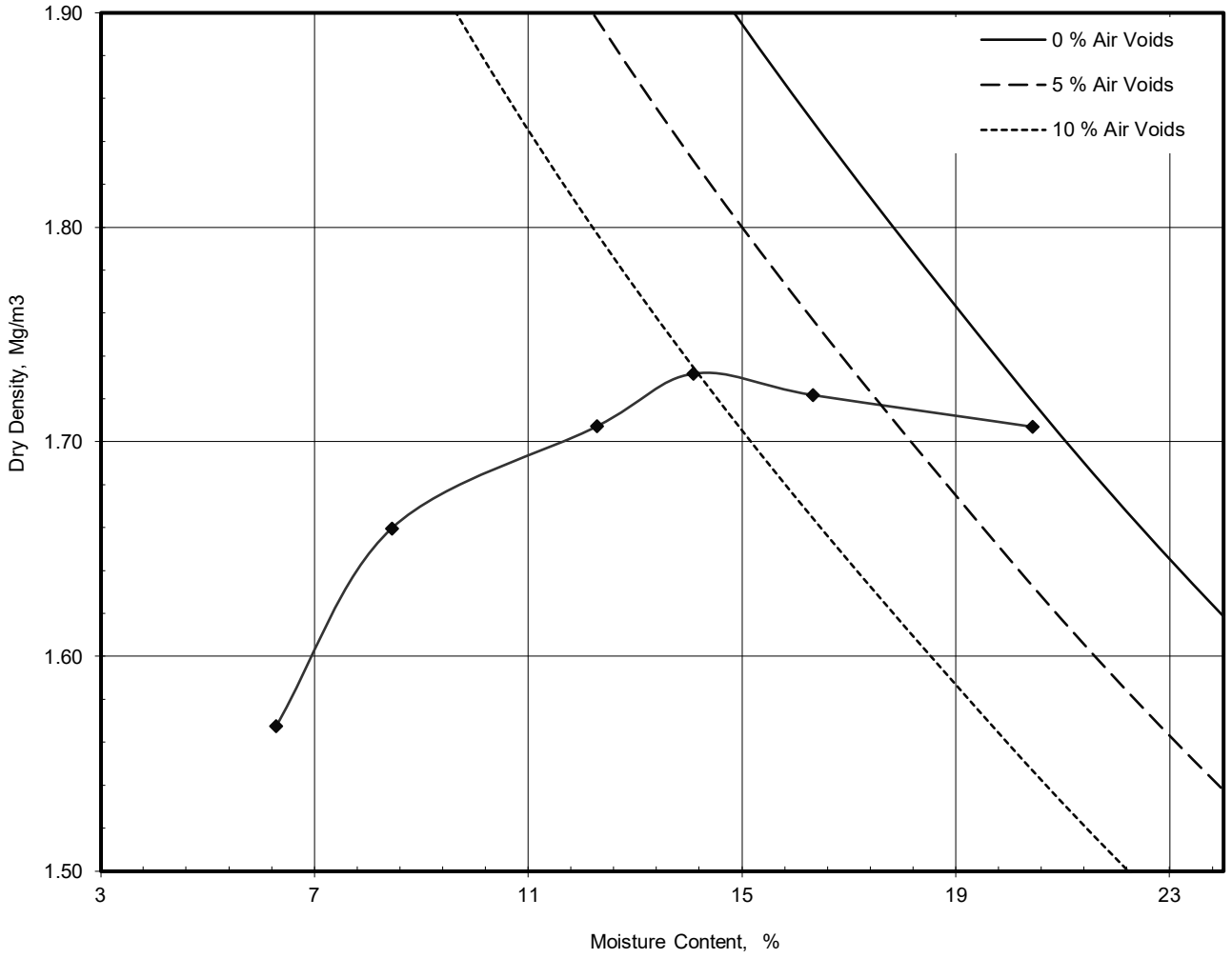


Mould Type		1 LITRE
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	1
Particle Density - Assumed	Mg/m³	2.65
Natural Moisture Content	%	24
Maximum Dry Density	Mg/m³	**1.75**

Optimum Moisture Content	%	**16**

Operator	Checked	Approved	Remarks	Fig
MS	T. Finnimore	T. Finnimore		Sheet 1 of 1

	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	S211001
				Borehole / Pit No	TP09
Site Name	**Envision, Sunderland**			Sample No	
Soil Description	Brown, CLAY			Depth	1.20 m
Specimen Ref.	1	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.3, 2.5kg rammer			Keylab ID	SLMK2021120196
				Compaction Test Reference/No.	

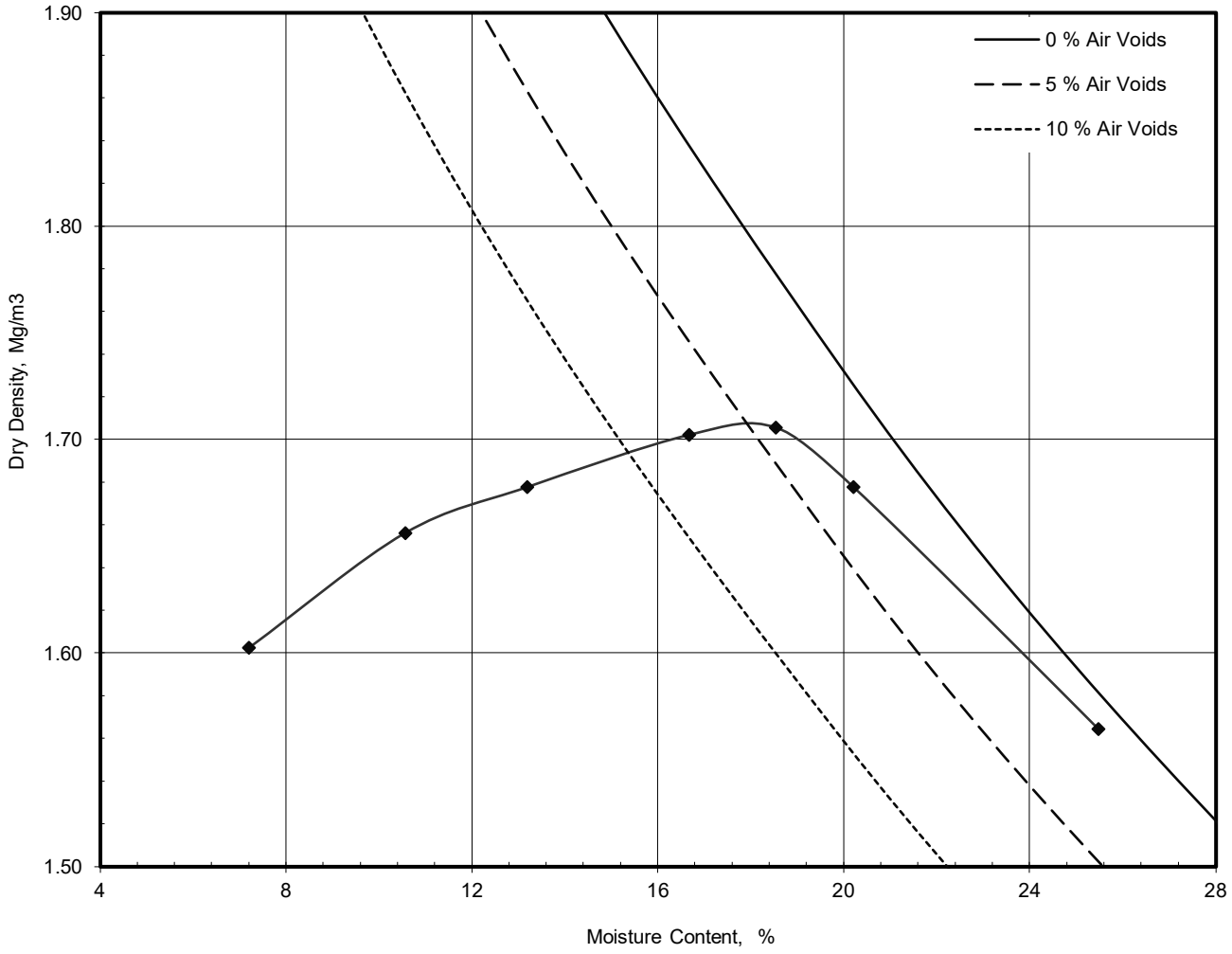


Mould Type		1 LITRE
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	0
Particle Density - Assumed	Mg/m³	2.65
Natural Moisture Content	%	20
Maximum Dry Density	Mg/m³	**1.73**

Optimum Moisture Content	%	**14**

Operator	Checked	Approved	Remarks	Fig
MS	T Finnimore	T. Finnimore		Sheet 1 of 1

	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	S211001
				Borehole / Pit No	TP10
Site Name	**Envision, SunderlandB**			Sample No	
Soil Description	Brown slightly gravelly, slightly sandy CLAY			Depth	0.80 m
Specimen Ref.	1	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.3, 2.5kg rammer			Keylab ID	SLMK2021120198
				Compaction Test Reference/No.	

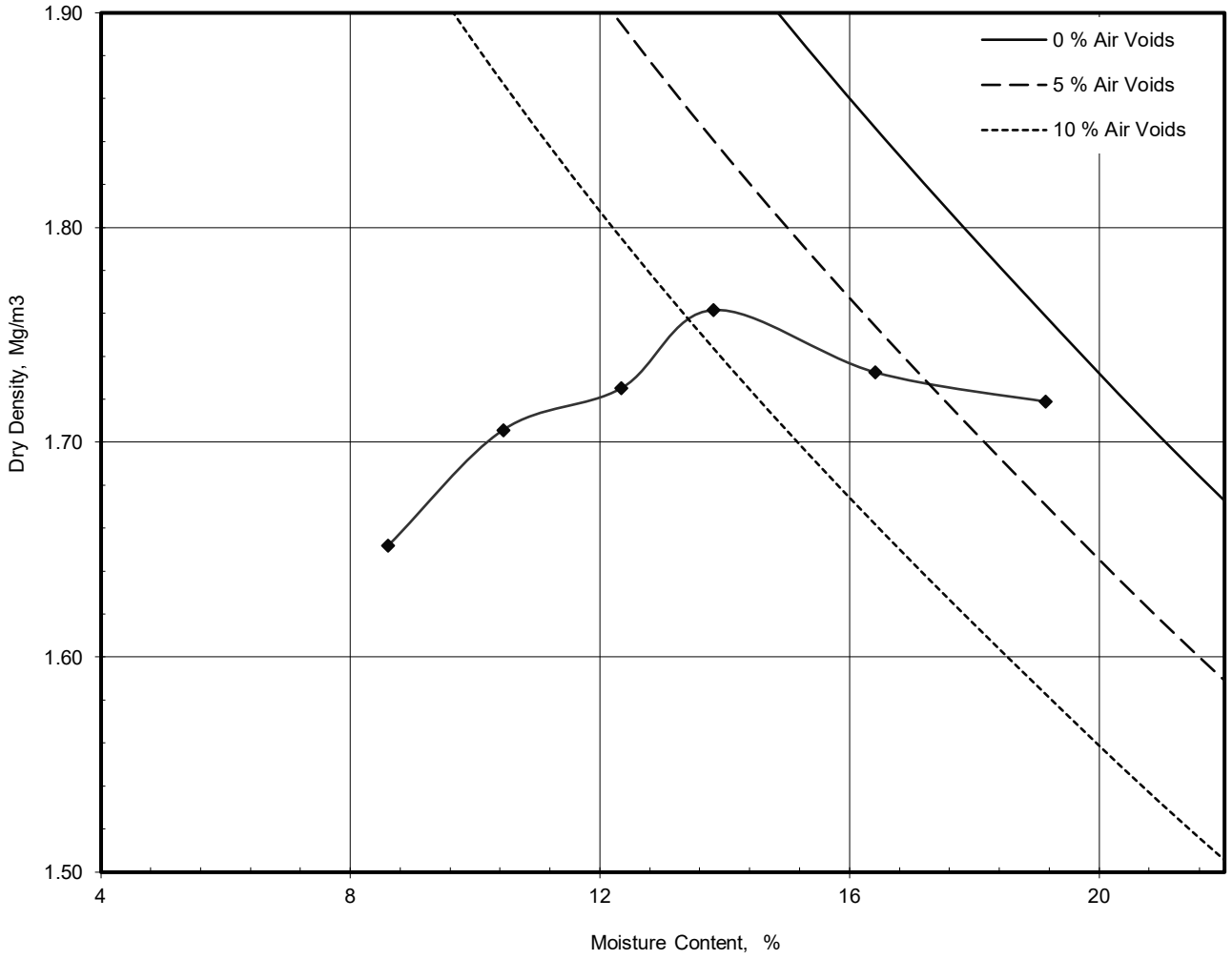


Mould Type		1 LITRE
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	0
Particle Density - Measured	Mg/m³	2.65
Natural Moisture Content	%	26
Maximum Dry Density	Mg/m³	**1.71**

Optimum Moisture Content	%	**19**

Operator	Checked	Approved	Remarks	Fig
MS	T Finnimore	T. Finnimore		Sheet 1 of 1

	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	S211001
				Borehole / Pit No	TP11
Site Name	**Envision, Sunderland**			Sample No	
Soil Description	Brown, slightly sandy, slightly gravelly, CLAY			Depth	0.50 m
Specimen Ref.	1	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.3, 2.5kg rammer			Keylab ID	SLMK20211201100
				Compaction Test Reference/No.	

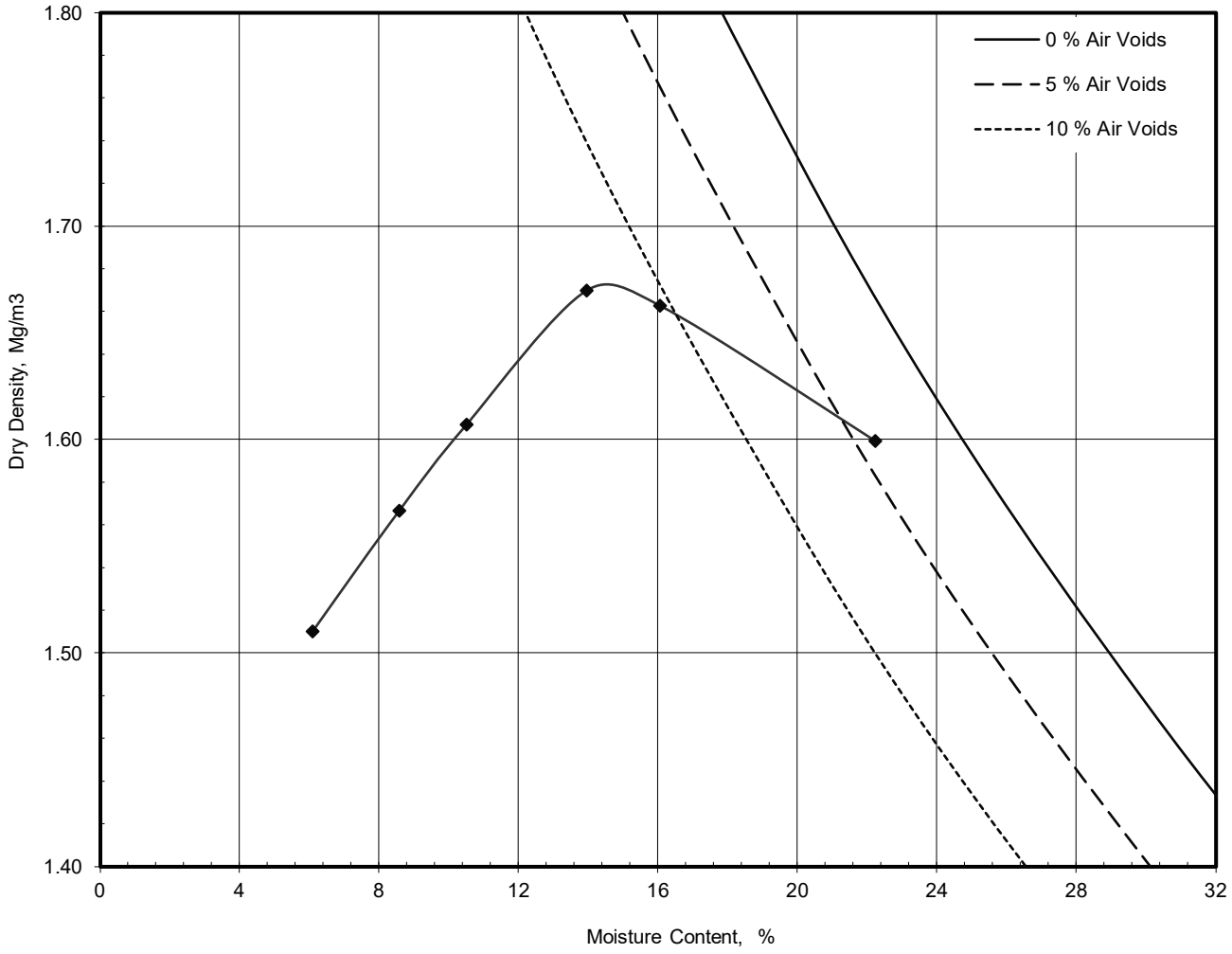


Mould Type		1 LITRE
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	33
Particle Density - Assumed	Mg/m³	2.65
Natural Moisture Content	%	19
Maximum Dry Density	Mg/m³	**1.76**

Optimum Moisture Content	%	**14**

Operator	Checked	Approved	Remarks	Fig
MS	T. Finnimore	T. Finnimore		Sheet 1 of 1

	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	S211001
				Borehole / Pit No	TP12
Site Name	**Envision, Sunderland**			Sample No	
Soil Description	Brown, CLAY			Depth	0.30 m
Specimen Ref.	1	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.3, 2.5kg rammer			Keylab ID	SLMK20211201102
				Compaction Test Reference/No.	

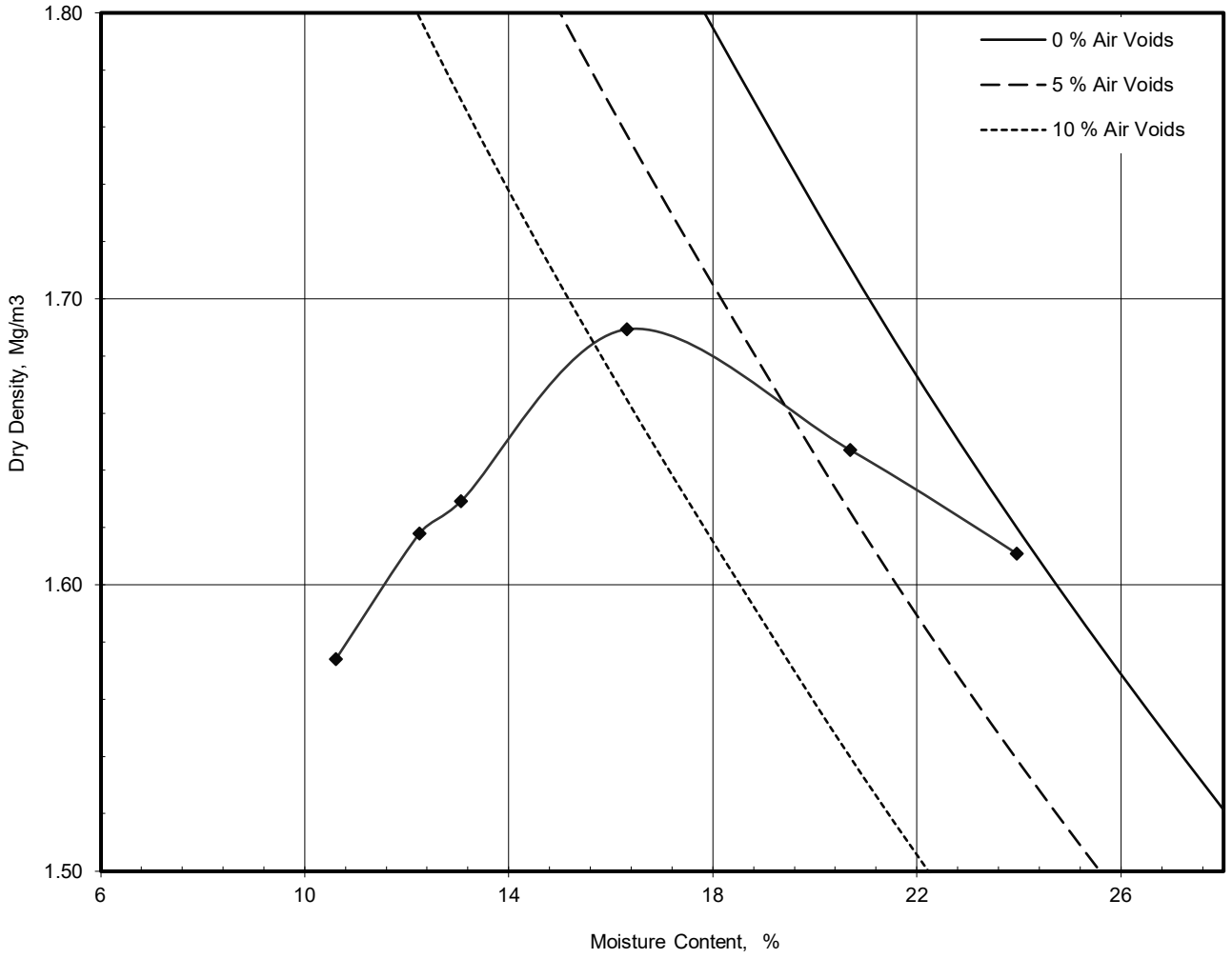


Mould Type		1 LITRE
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	1
Particle Density - Assumed	Mg/m³	2.65
Natural Moisture Content	%	22
Maximum Dry Density	Mg/m³	**1.67**

Optimum Moisture Content	%	**14**

Operator	Checked	Approved	Remarks	Fig
MS	T Finnimore	T. Finnimore		Sheet 1 of 1

	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	S211001
				Borehole / Pit No	TP15
Site Name	**Envision, Sunderland**			Sample No	
Soil Description	Brown, Slightly Sandy, Slightly Gravelly, CLAY.			Depth	0.60 m
Specimen Ref.	1	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.3, 2.5kg rammer			Keylab ID	SLMK20211201109
				Compaction Test Reference/No.	

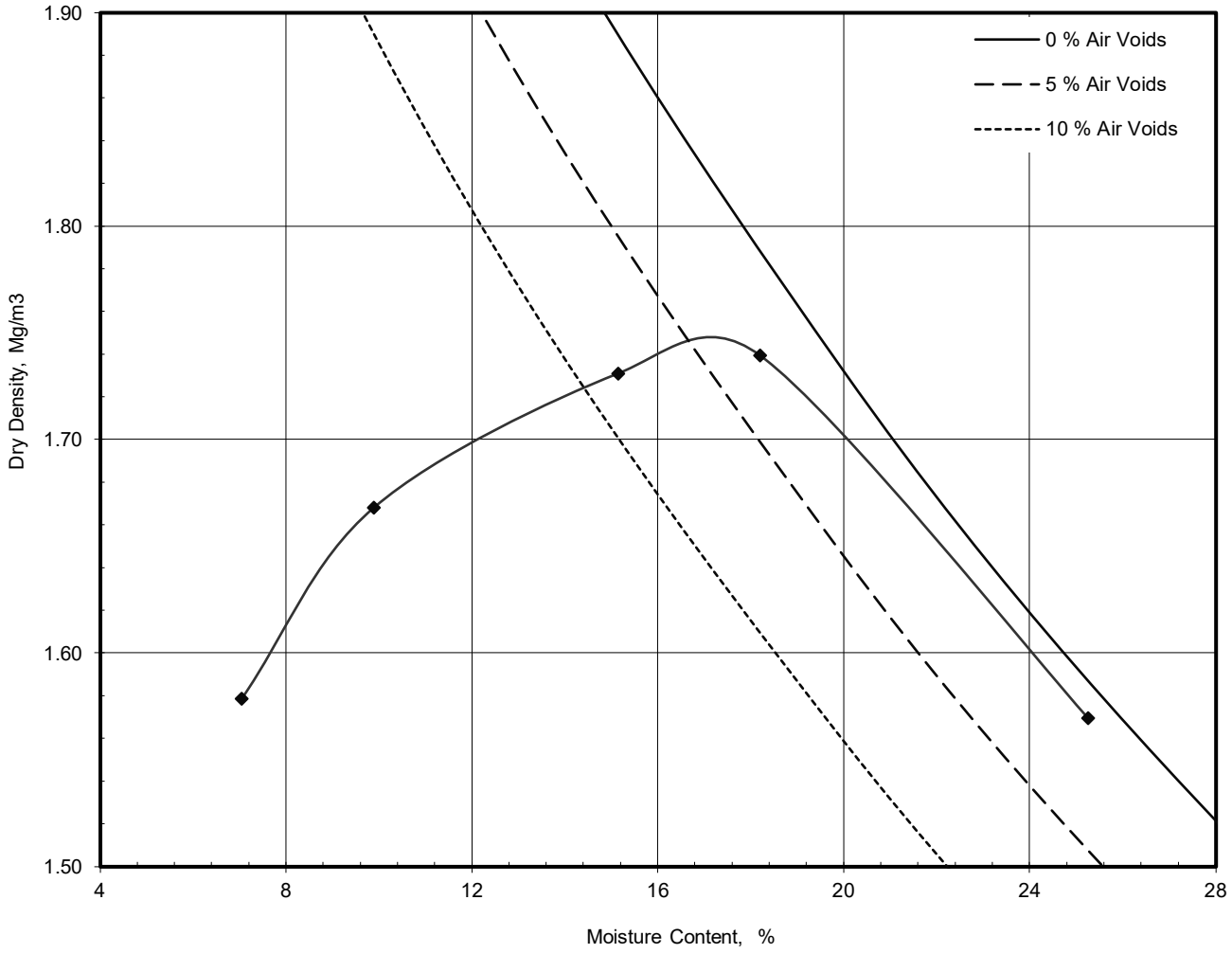


Mould Type		1 LITRE
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	1
Particle Density - Assumed	Mg/m³	2.65
Natural Moisture Content	%	23
Maximum Dry Density	Mg/m³	**1.69**

Optimum Moisture Content	%	**16**

Operator	Checked	Approved	Remarks	Fig
MS	T Finnimore	T. Finnimore		Sheet 1 of 1

	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	S211001
				Borehole / Pit No	TP17
Site Name	**Envision, Sunderland**			Sample No	
Soil Description	Brown, Sandy, CLAY.			Depth	1.00 m
Specimen Ref.	1	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.3, 2.5kg rammer			Keylab ID	SLMK2021111676
				Compaction Test Reference/No.	

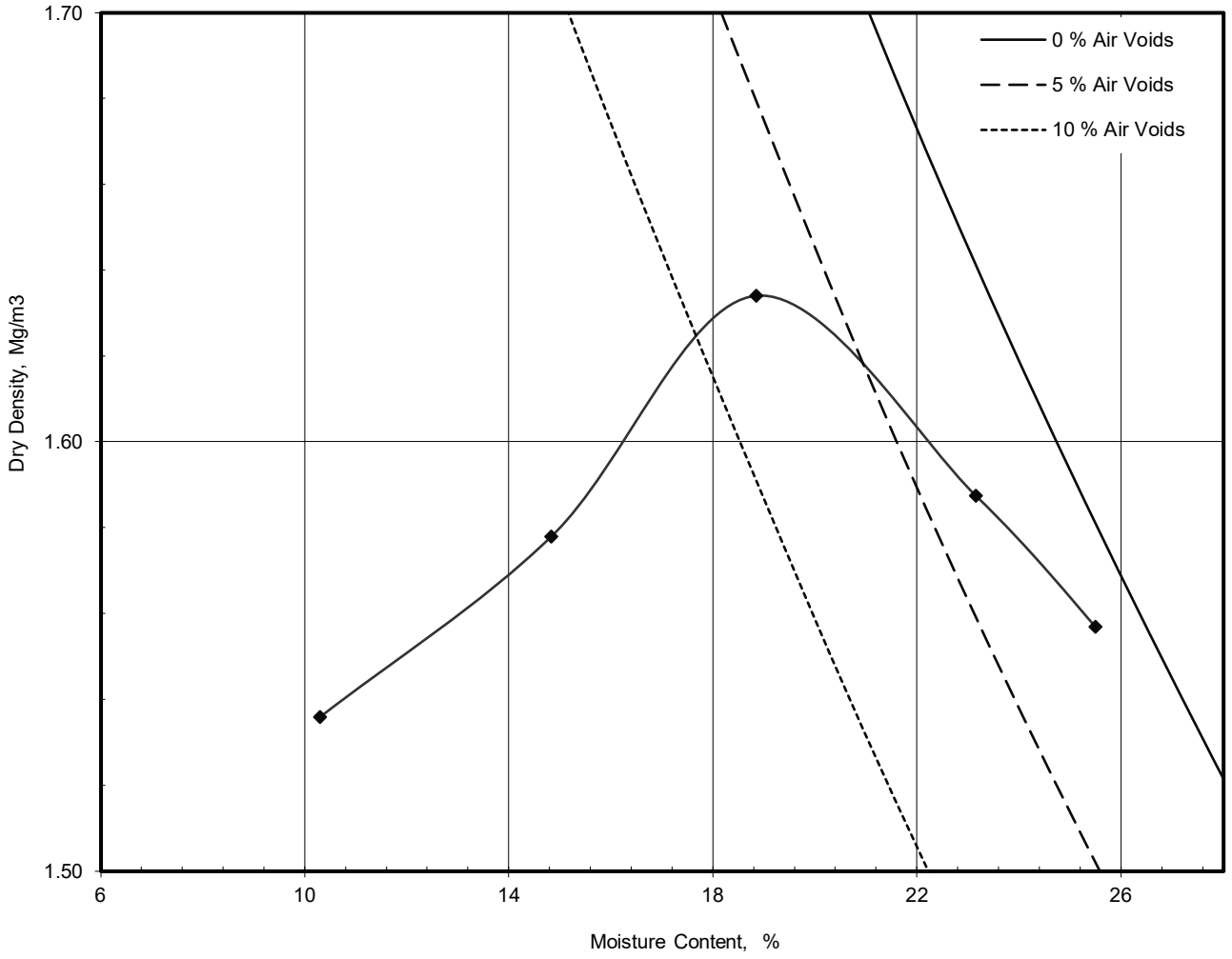


Mould Type		1 LITRE
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	0
Particle Density - Assumed	Mg/m³	2.65
Natural Moisture Content	%	25
Maximum Dry Density	Mg/m³	**1.74**

Optimum Moisture Content	%	**18**

Operator	Checked	Approved	Remarks	Fig
MS	T Finnimore	T. Finnimore		Sheet 1 of 1

	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	S211001
				Borehole / Pit No	TP19
Site Name	**Envision, Sunderland**			Sample No	
Soil Description	Brown, Sandy, CLAY.			Depth	1.00 m
Specimen Ref.	1	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.3, 2.5kg rammer			Keylab ID	SLMK2021111681
				Compaction Test Reference/No.	

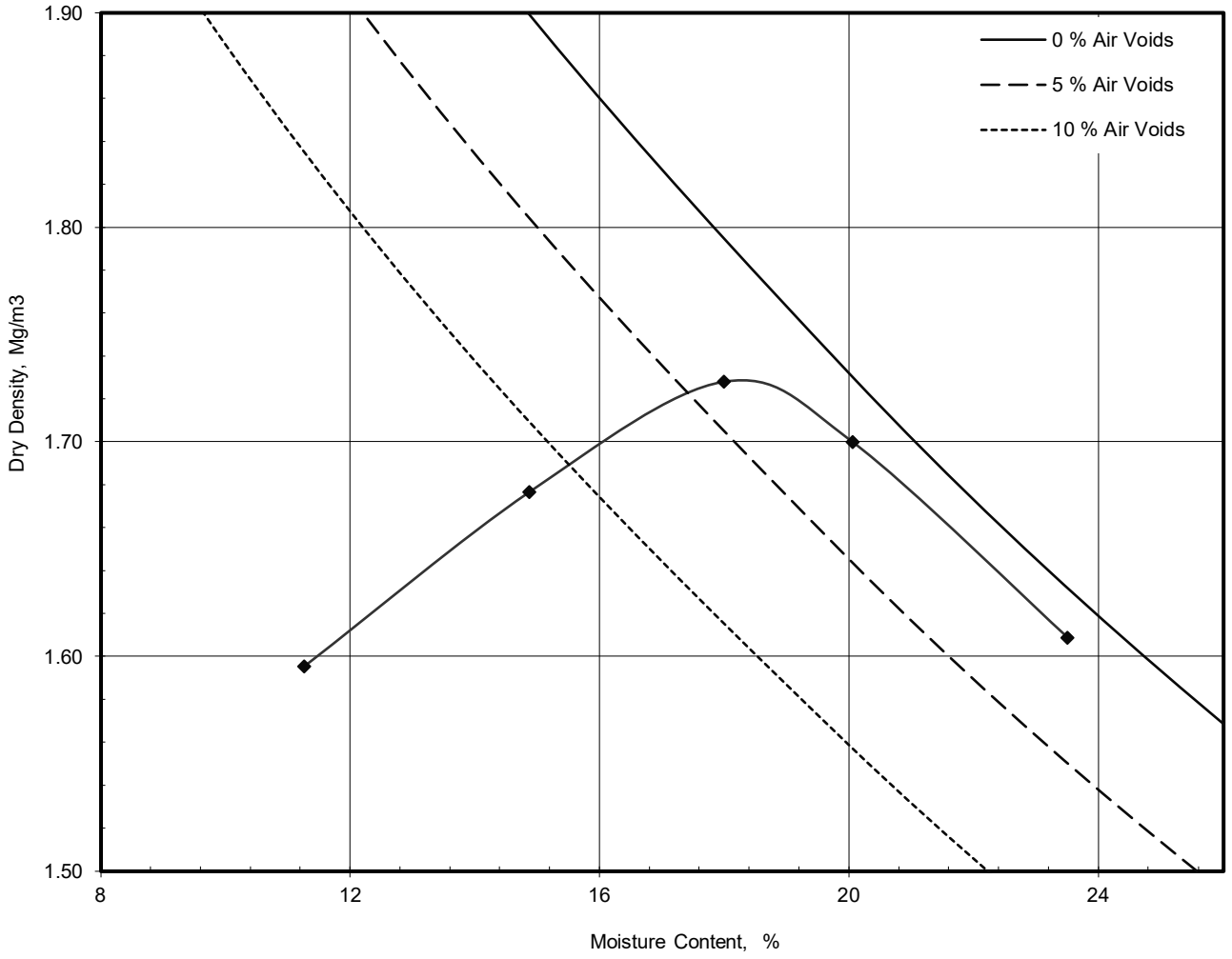


Mould Type		1 LITRE
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	0
Particle Density - Assumed	Mg/m³	2.65
Natural Moisture Content	%	26
Maximum Dry Density	Mg/m³	**1.63**

Optimum Moisture Content	%	**19**

Operator	Checked	Approved	Remarks	Fig
MS	T Finnimore	T. Finnimore		Sheet 1 of 1

	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	**S211001**
				Borehole / Pit No	TP22
Site Name	**Envision, Sunderland**			Sample No	
Soil Description	Brown, Sandy, CLAY.			Depth	1.00 m
Specimen Ref.	1	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.3, 2.5kg rammer			Keylab ID	SLMK2021111688
				Compaction Test Reference/No.	

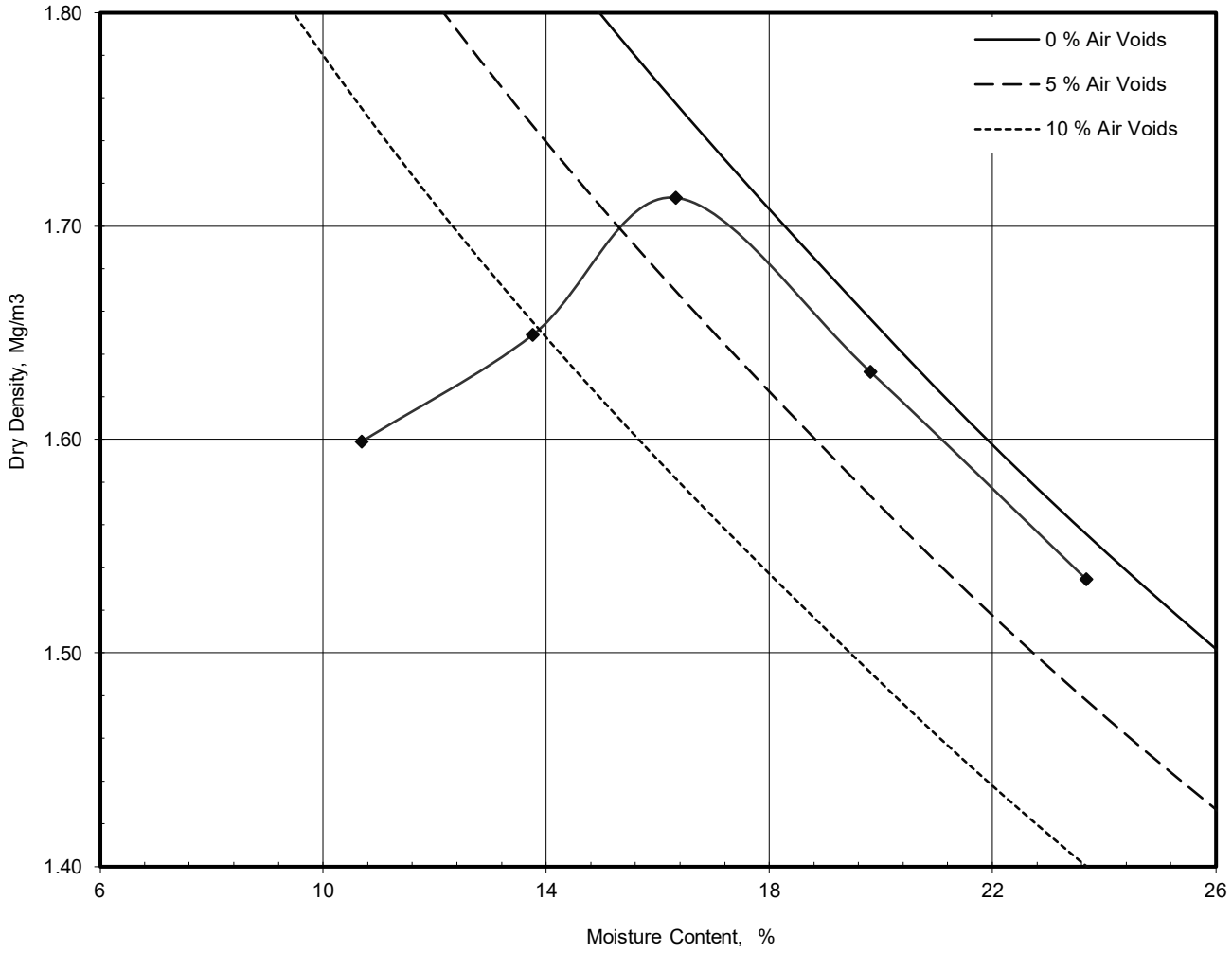


Mould Type		1 LITRE
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	1
Particle Density - Assumed	Mg/m³	2.65
Natural Moisture Content	%	20
Maximum Dry Density	Mg/m³	**1.73**

Optimum Moisture Content	%	**18**

Operator	Checked	Approved	Remarks	Fig
MS	KW	KW		Sheet 1 of 1

	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	S211001
				Borehole / Pit No	TP32
Site Name	**Envision, Sunderland**			Sample No	
Soil Description	Brown, Slightly Sandy, Slightly Gravelly, CLAY.			Depth	1.00 m
Specimen Ref.	1	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.3, 2.5kg rammer			Keylab ID	SLMK2021111693
				Compaction Test Reference/No.	

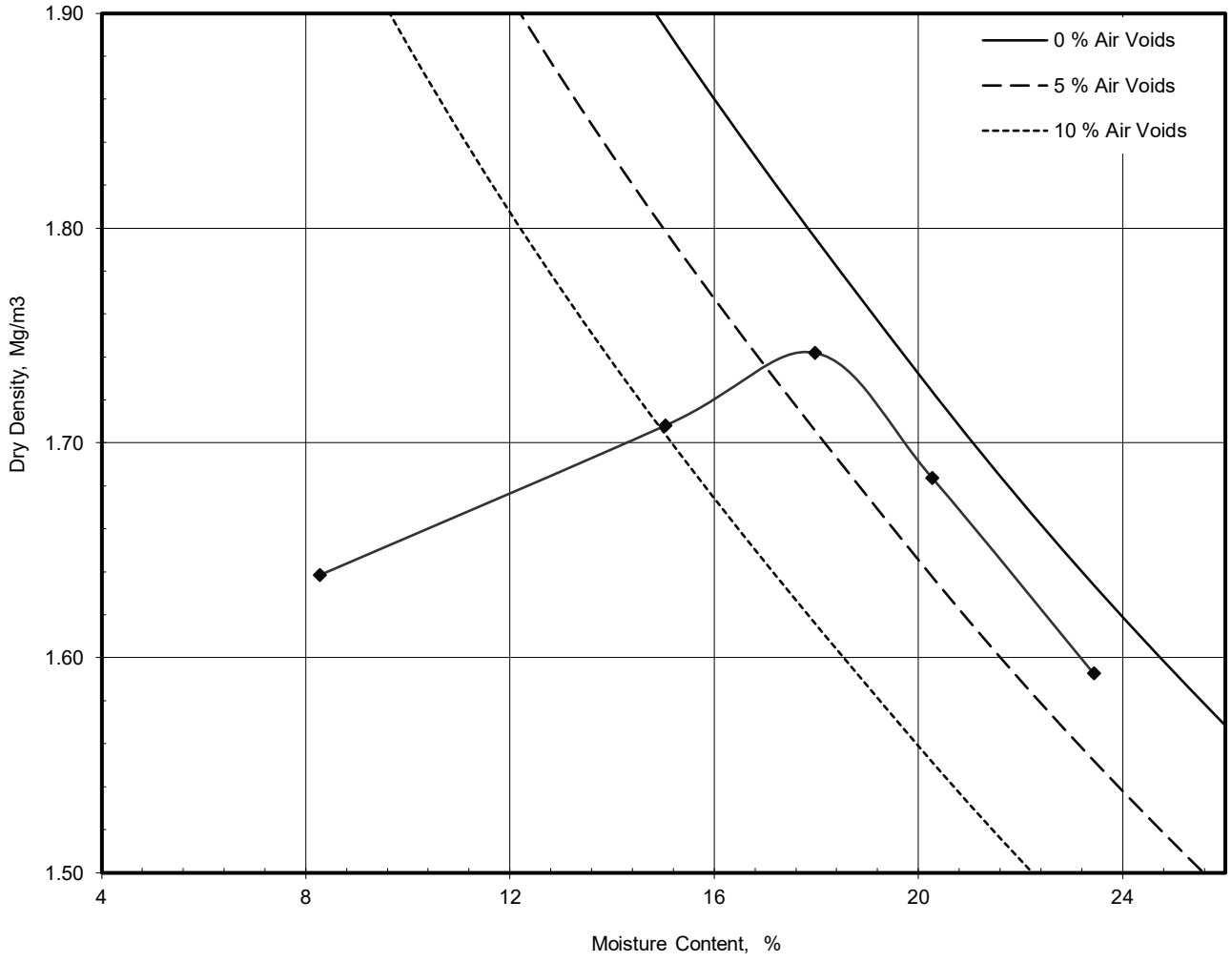


Mould Type		1 LITRE
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	1
Particle Density - Assumed	Mg/m³	2.47
Natural Moisture Content	%	19
Maximum Dry Density	Mg/m³	**1.71**

Optimum Moisture Content	%	**16**

Operator	Checked	Approved	Remarks	Fig
MS	T Finnimore	T. Finnimore		Sheet 1 of 1

	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	**S211001**
				Borehole / Pit No	TP51
Site Name	**Envision, Sunderland**			Sample No	
Soil Description	Brown, Slightly Gravelly, Slightly Sandy, CLAY.			Depth	1.00 m
Specimen Ref.	1	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.3, 2.5kg rammer			Keylab ID	SLMK20211116116
				Compaction Test Reference/No.	

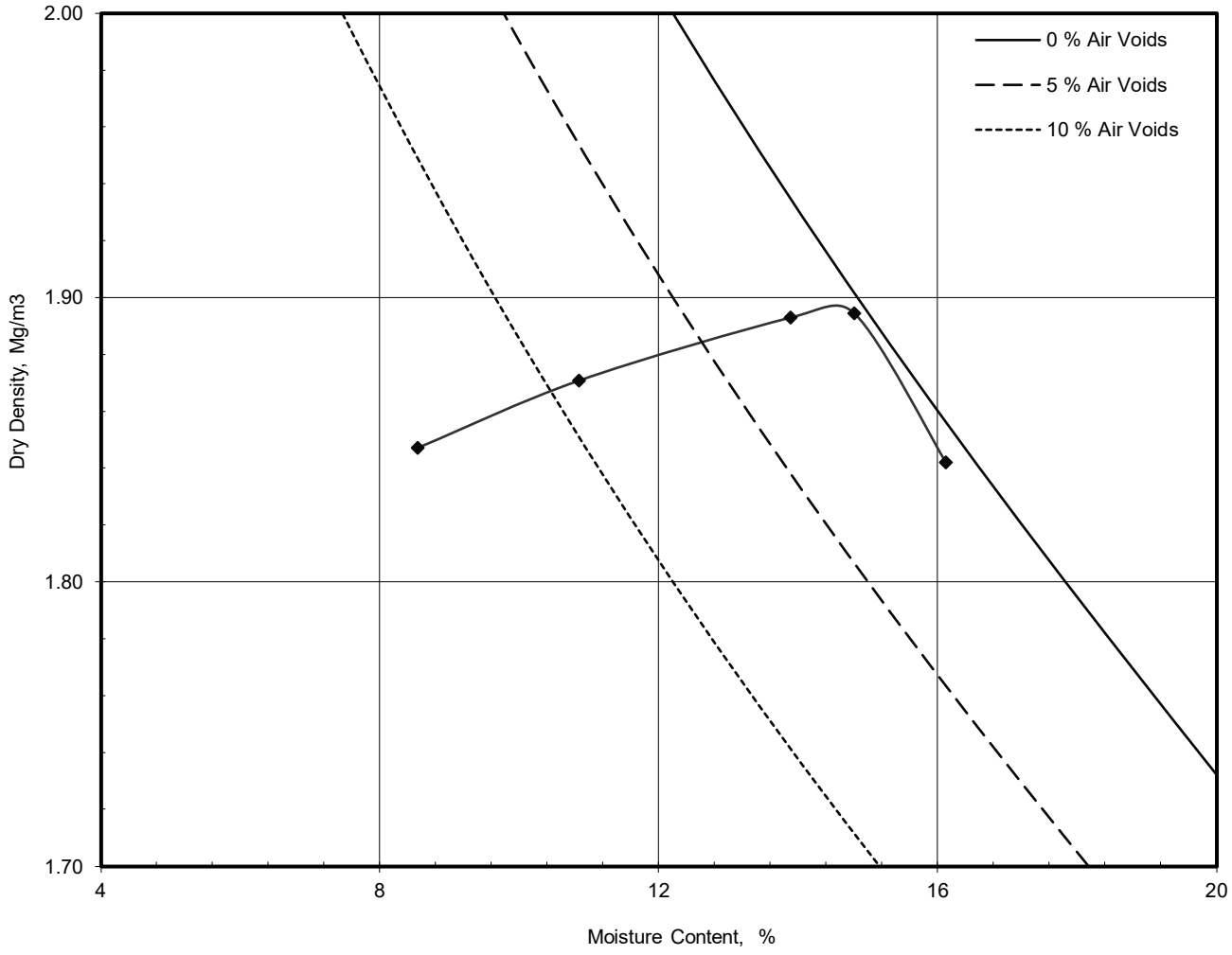


Mould Type		1 LITRE
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	2
Particle Density - Assumed	Mg/m³	2.65
Natural Moisture Content	%	20
Maximum Dry Density	Mg/m³	**1.74**

Optimum Moisture Content	%	**18**

Operator	Checked	Approved	Remarks	Fig
MS	T Finnimore	T. Finnimore		Sheet 1 of 1

	Dry Density / Moisture Content Relationship Heavy Compaction			Job Ref	S211001
				Borehole / Pit No	TP04
Site Name	Envision, Sunderland			Sample No	
Soil Description	Brown, Slightly Sandy, CLAY.			Depth	1.00 m
Specimen Ref.	1	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.5, 4.5kg rammer			Keylab ID	SLMK2021120190
				Compaction Test Reference/No.	

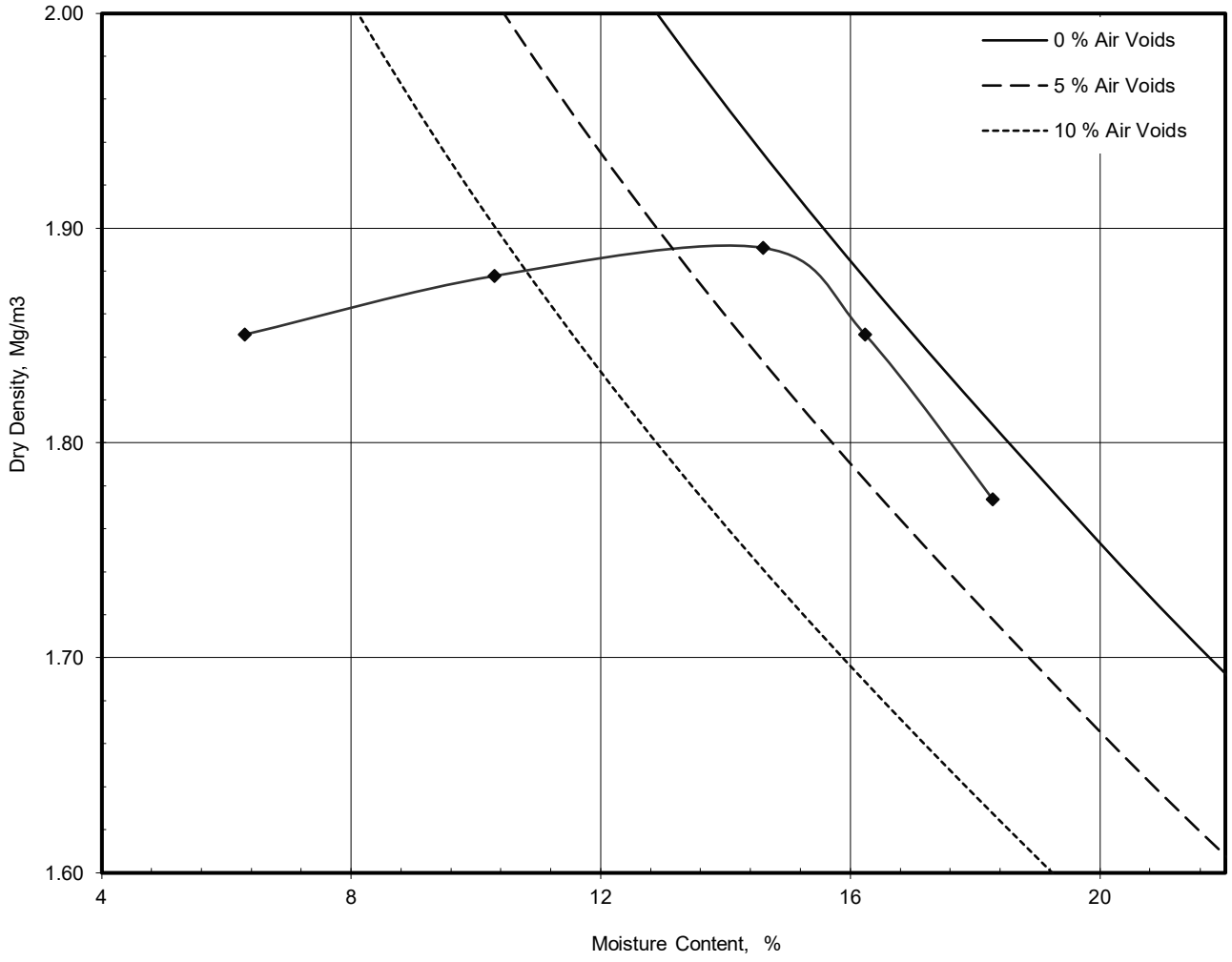


Preparation		Material used was oven dried at 30degC
Mould Type		1 LITRE
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	0
Particle Density - Assumed	Mg/m³	2.65
Natural Moisture Content	%	23
Maximum Dry Density	Mg/m³	**1.89**

Optimum Moisture Content	%	**15**

Operator	Checked	Approved	Remarks	Fig
MS	KW	KW		Sheet 1 of 1

	Dry Density / Moisture Content Relationship Heavy Compaction			Job Ref	S211001
				Borehole / Pit No	TP05
Site Name	Envision, Sunderland			Sample No	
Soil Description	Brown, CLAY.			Depth	1.00 m
Specimen Ref.	1	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.5, 4.5kg rammer			Keylab ID	SLMK2021111673
				Compaction Test Reference/No.	

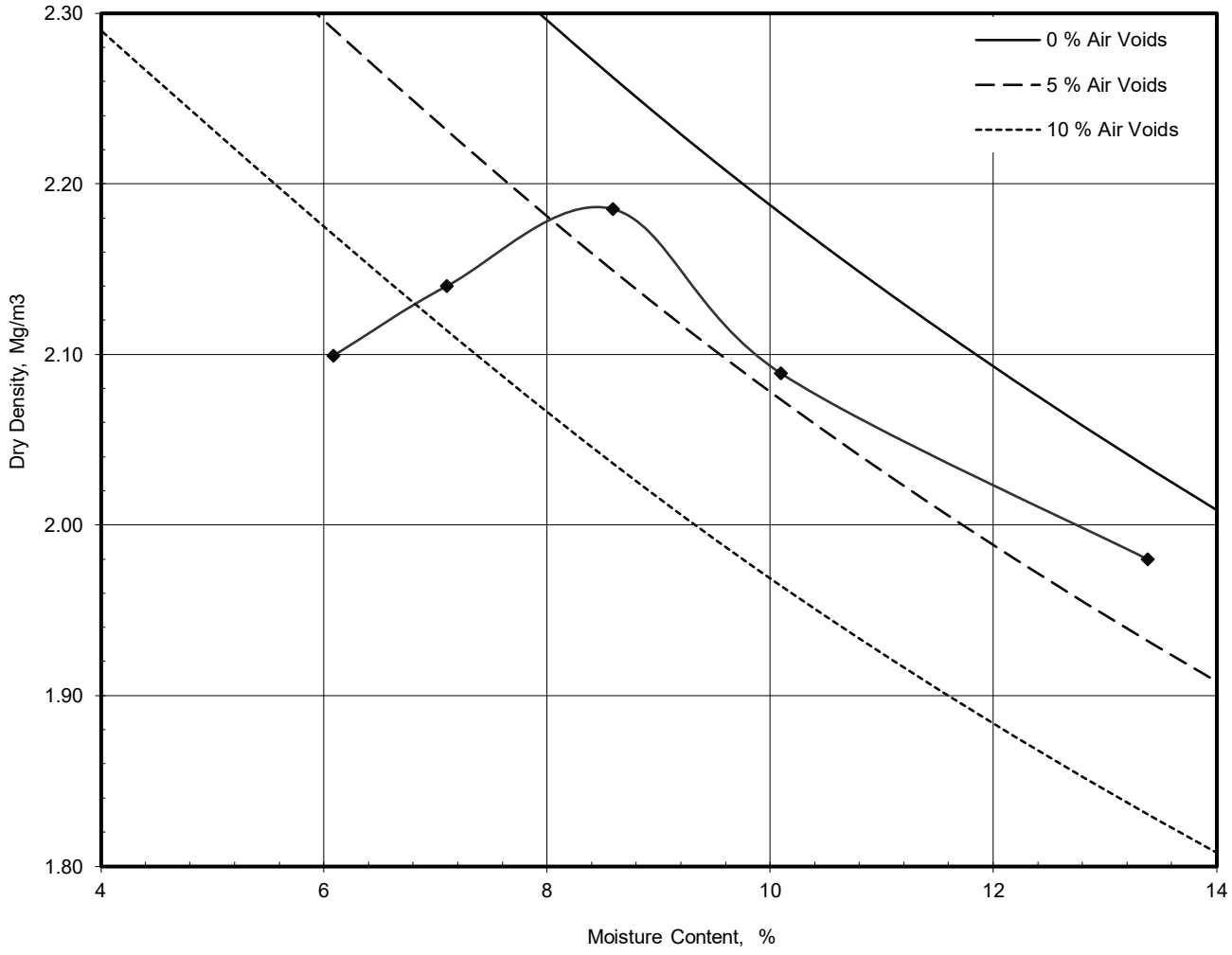


Preparation		Material used was natural
Mould Type		1 LITRE
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	0
Particle Density - Assumed	Mg/m³	2.70
Natural Moisture Content	%	21
Maximum Dry Density	Mg/m³	**1.89**

Optimum Moisture Content	%	**15**

Operator	Checked	Approved	Remarks	Fig
KW	T Finnimore	T. Finnimore		Sheet 1 of 1

	Dry Density / Moisture Content Relationship Heavy Compaction			Job Ref	S211001
				Borehole / Pit No	TP06
Site Name	Envision, Sunderland			Sample No	
Soil Description	Brown, CLAY			Depth	1.40 m
Specimen Ref.	1	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.5, 4.5kg rammer			Keylab ID	SLMK2021120193
				Compaction Test Reference/No.	

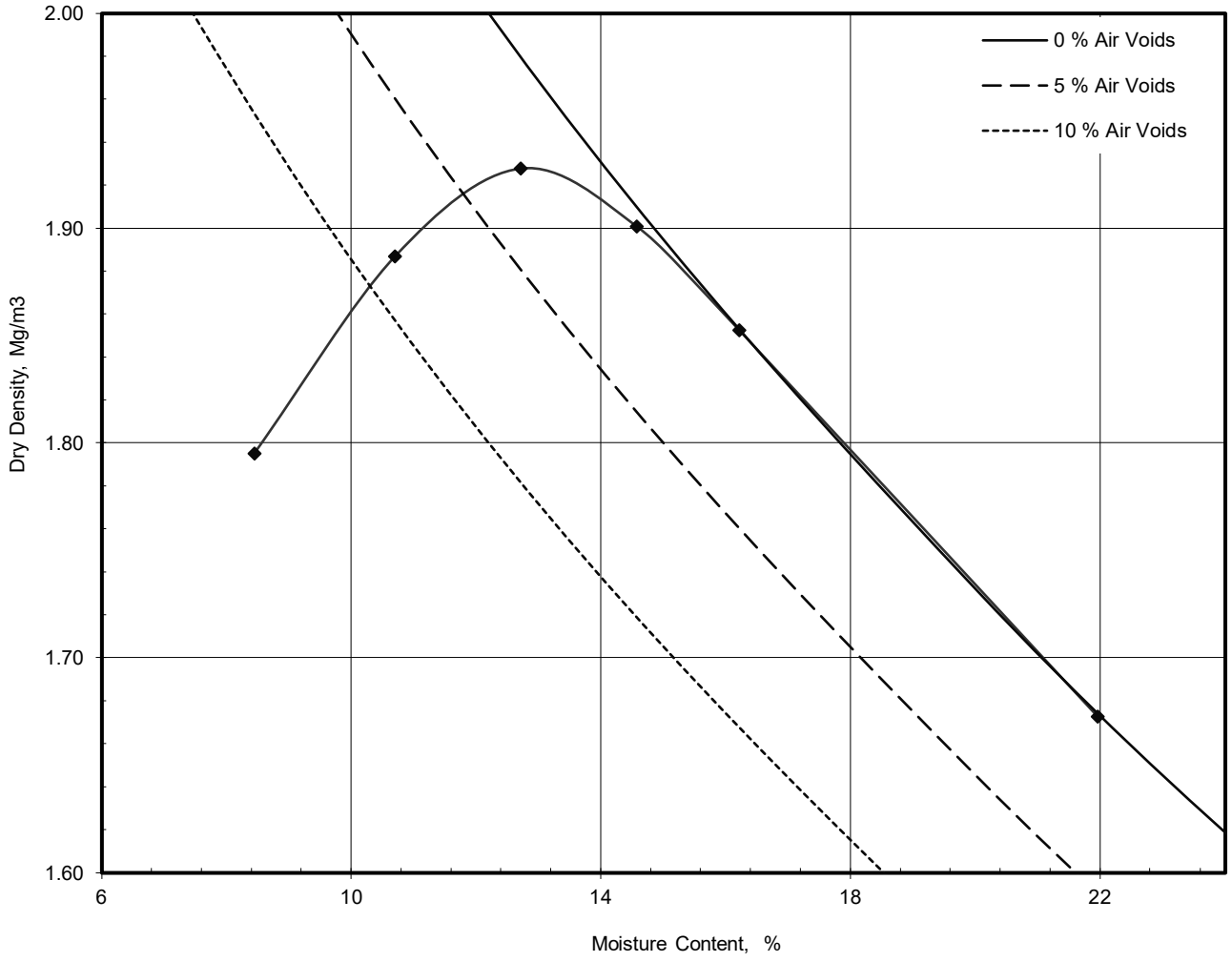


Preparation		Material used was air dried
Mould Type		1 LITRE
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	4
Particle Density - Assumed	Mg/m³	2.80
Natural Moisture Content	%	12
Maximum Dry Density	Mg/m³	**2.19**

Optimum Moisture Content	%	**8.6**

Operator	Checked	Approved	Remarks	Fig
MS	T Finnimore	T. Finnimore		Sheet 1 of 1

	Dry Density / Moisture Content Relationship Heavy Compaction			Job Ref	S211001
				Borehole / Pit No	TP08
Site Name	Envision, Sunderland			Sample No	
Soil Description	Brown, slightly sandy, slightly gravelly, CLAY			Depth	0.70 m
Specimen Ref.	1	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.5, 4.5kg rammer			Keylab ID	SLMK2021120194
				Compaction Test Reference/No.	

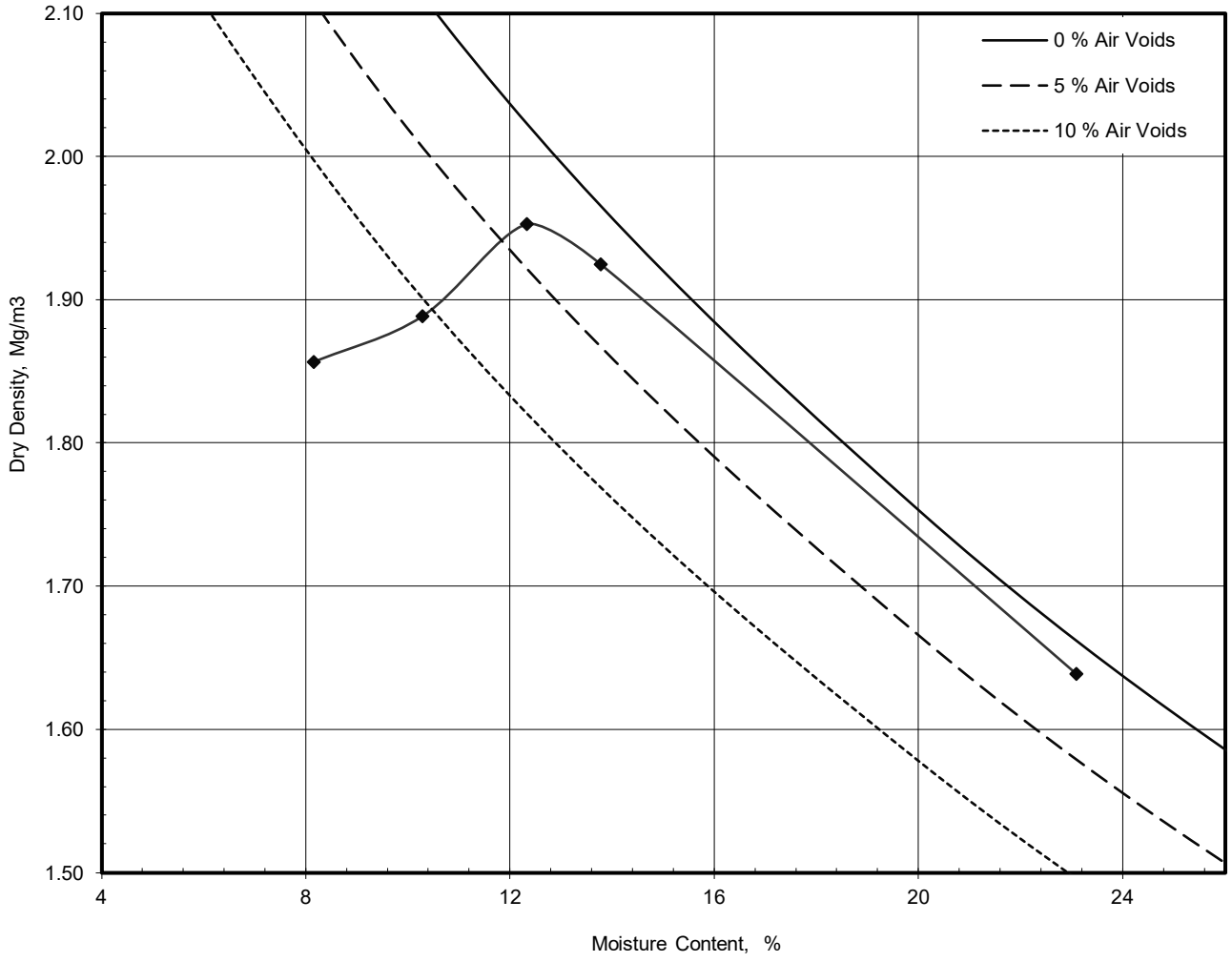


Preparation		Material used was oven dried at 30degC
Mould Type		1 LITRE
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	1
Particle Density - Assumed	Mg/m³	2.65
Natural Moisture Content	%	21
Maximum Dry Density	Mg/m³	**1.93**

Optimum Moisture Content	%	**13**

Operator	Checked	Approved	Remarks	Fig
MS	T. Finnimore	T. Finnimore		Sheet 1 of 1

	Dry Density / Moisture Content Relationship Heavy Compaction			Job Ref	S211001
				Borehole / Pit No	TP13
Site Name	Envision, Sunderland			Sample No	
Soil Description	Brown, slightly sandy, slightly gravelly. CLAY			Depth	1.20 m
Specimen Ref.	1	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.5, 4.5kg rammer			Keylab ID	SLMK20211201105
				Compaction Test Reference/No.	

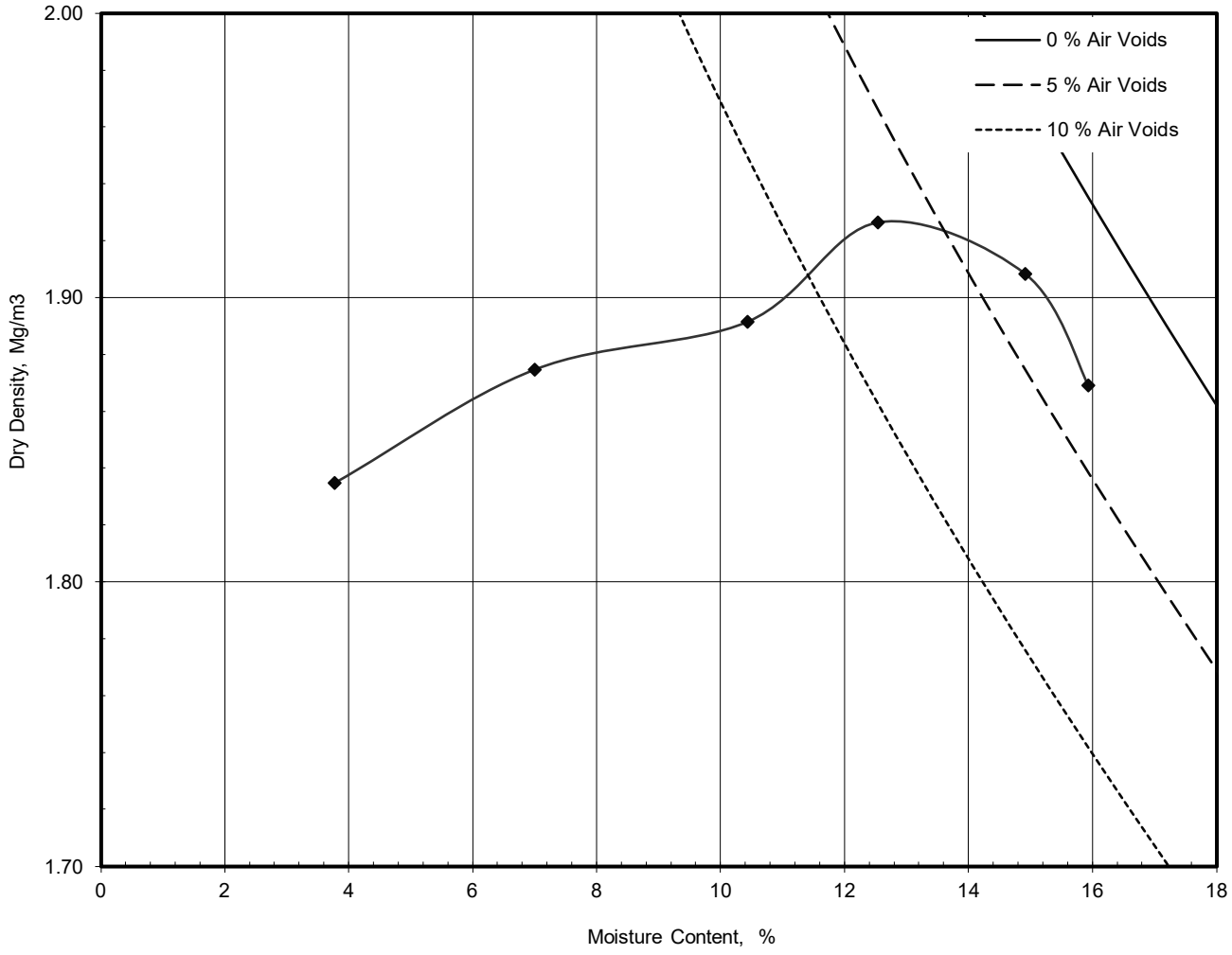


Preparation		Material used was oven dried at 30degC
Mould Type		1 LITRE
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	0
Particle Density - Assumed	Mg/m³	2.70
Natural Moisture Content	%	23
Maximum Dry Density	Mg/m³	**1.95**

Optimum Moisture Content	%	**12**

Operator	Checked	Approved	Remarks	Fig
MS	T. Finnimore	T. Finnimore		Sheet 1 of 1

	Dry Density / Moisture Content Relationship Heavy Compaction			Job Ref	S211001
				Borehole / Pit No	TP14
Site Name	**Envision, Sunderland**			Sample No	
Soil Description	Brown, Slightly Sandy, CLAY.			Depth	1.50 m
Specimen Ref.	1	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.5, 4.5kg rammer			Keylab ID	SLMK20211201107
				Compaction Test Reference/No.	

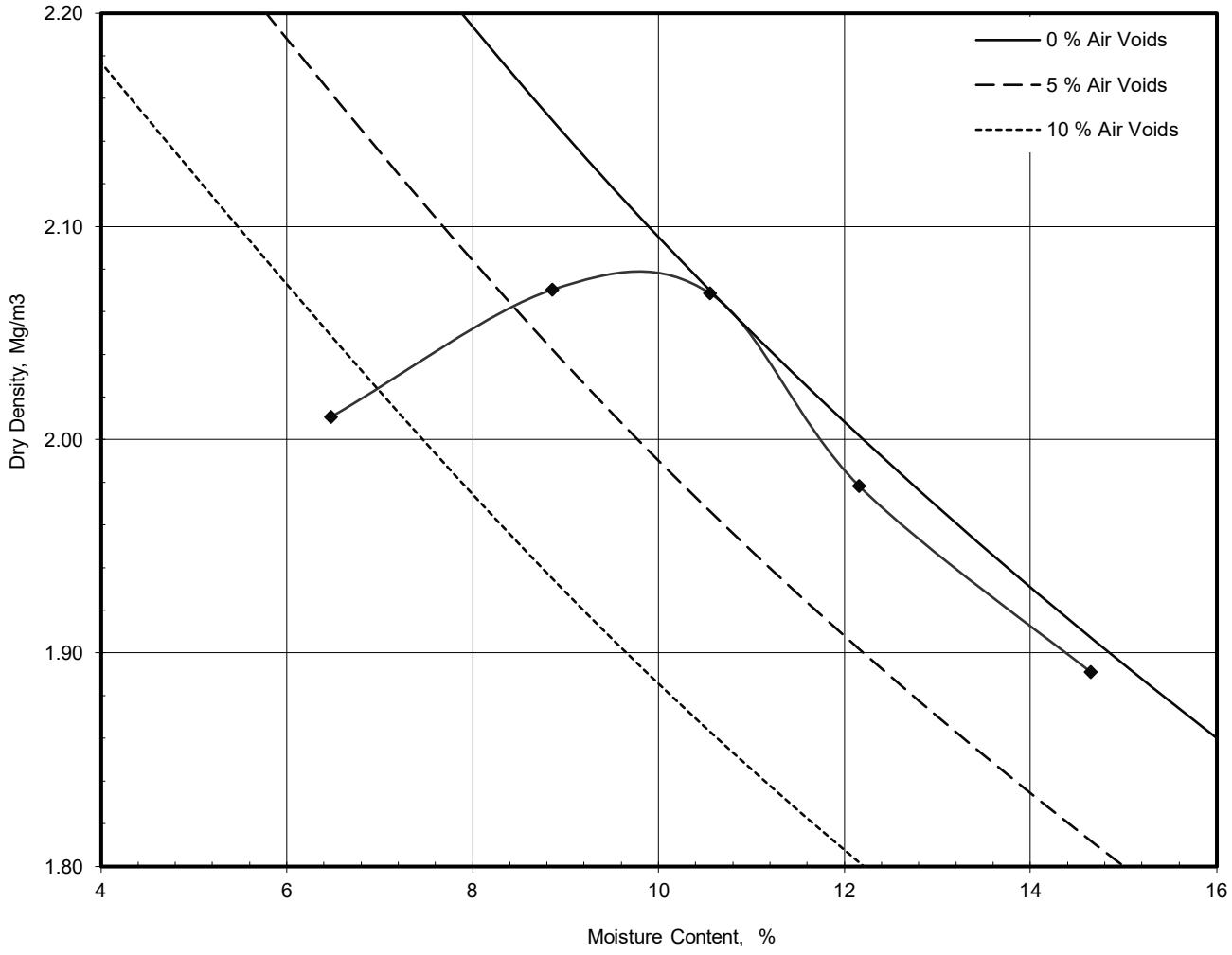


Preparation		Material used was oven dried at 30degC
Mould Type		1 LITRE
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	0
Particle Density - Assumed	Mg/m³	2.80
Natural Moisture Content	%	23
Maximum Dry Density	Mg/m³	**1.93**

Optimum Moisture Content	%	**13**

Operator	Checked	Approved	Remarks	Fig
MS	T Finnimore	T. Finnimore		Sheet 1 of 1

	Dry Density / Moisture Content Relationship Heavy Compaction			Job Ref	S211001
				Borehole / Pit No	TP18
Site Name	Envision, Sunderland			Sample No	
Soil Description	Brown, Slightly Sandy, Slightly Gravelly, CLAY.			Depth	1.00 m
Specimen Ref.	1	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.5, 4.5kg rammer			Keylab ID	SLMK2021111679
				Compaction Test Reference/No.	

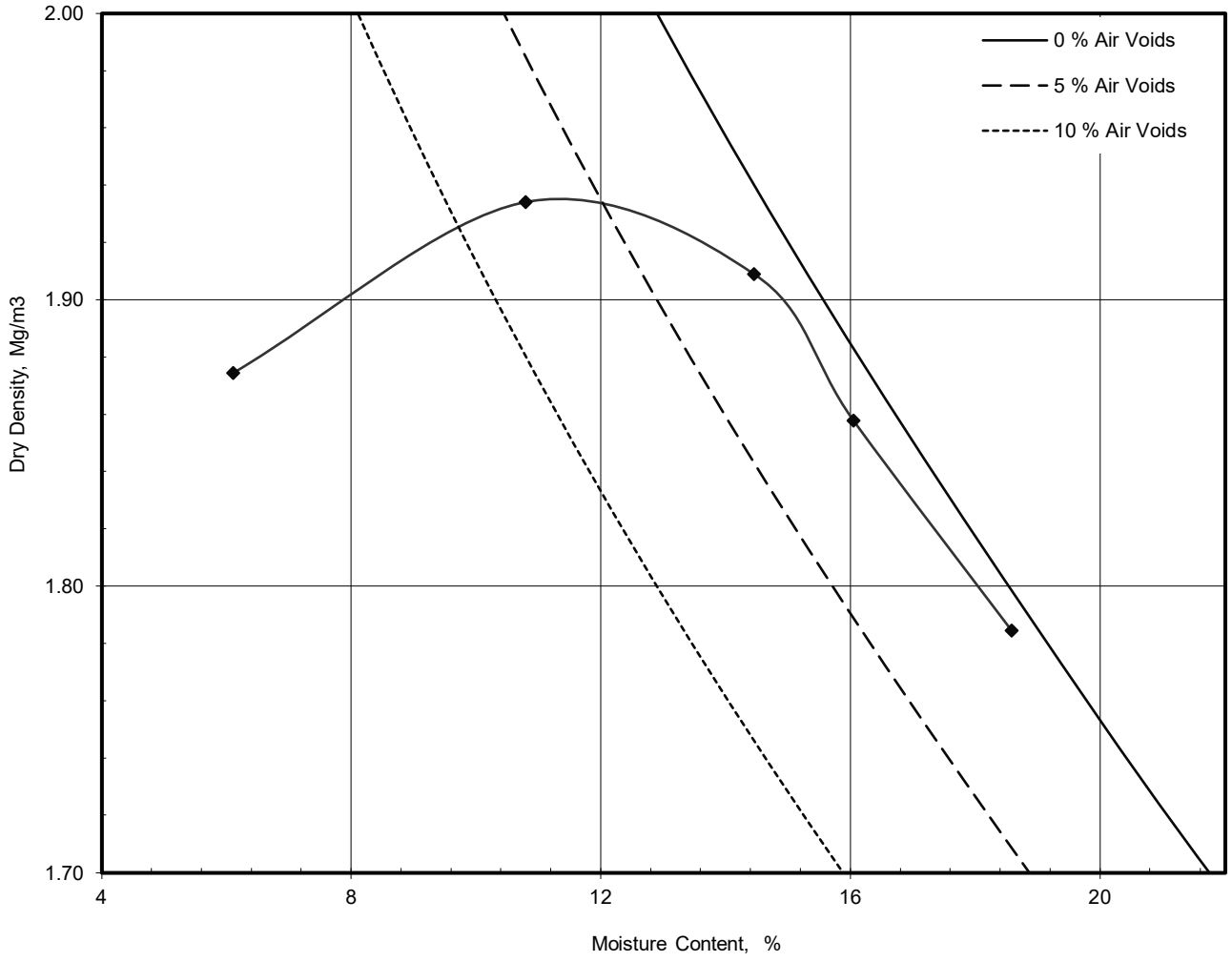


Preparation		Material used was oven dried at 30degC
Mould Type		1 LITRE
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	0
Particle Density - Assumed	Mg/m³	2.65
Natural Moisture Content	%	12
Maximum Dry Density	Mg/m³	**2.07**

Optimum Moisture Content	%	**8.9**

Operator	Checked	Approved	Remarks	Fig
MS	T. Finnimore	T. Finnimore		Sheet 1 of 1

	Dry Density / Moisture Content Relationship Heavy Compaction			Job Ref	S211001
				Borehole / Pit No	TP21
Site Name	Envision, Sunderland			Sample No	
Soil Description	Brown, Slightly Grvelly, Slightly Sandy, CLAY.			Depth	1.00 m
Specimen Ref.	1	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.5, 4.5kg rammer			Keylab ID	SLMK2021111685
				Compaction Test Reference/No.	

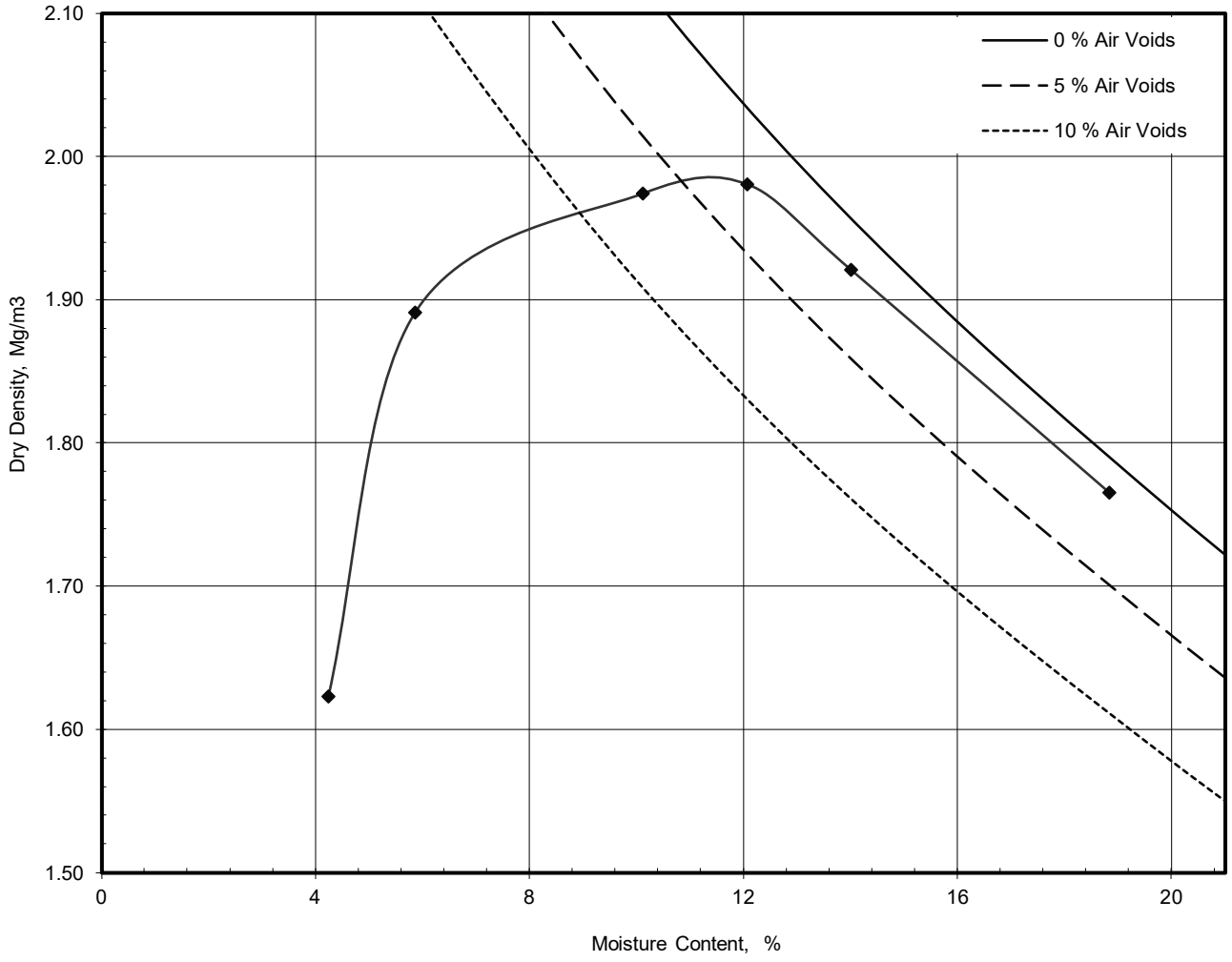


Preparation		Material used was oven dried at 50degC
Mould Type		1 LITRE
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	1
Particle Density - Assumed	Mg/m³	2.70
Natural Moisture Content	%	19
Maximum Dry Density	Mg/m³	**1.93**

Optimum Moisture Content	%	**11**

Operator	Checked	Approved	Remarks	Fig
MS	T Finnimore	T. Finnimore		Sheet 1 of 1

	Dry Density / Moisture Content Relationship Heavy Compaction			Job Ref	S211001
				Borehole / Pit No	TP23
Site Name	Envision, Sunderland			Sample No	
Soil Description	Brown, Slightly Gravelly, Slightly Sandy, CLAY.			Depth	1.60 m
Specimen Ref.	1	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.5, 4.5kg rammer			Keylab ID	SLMK20211201114
				Compaction Test Reference/No.	

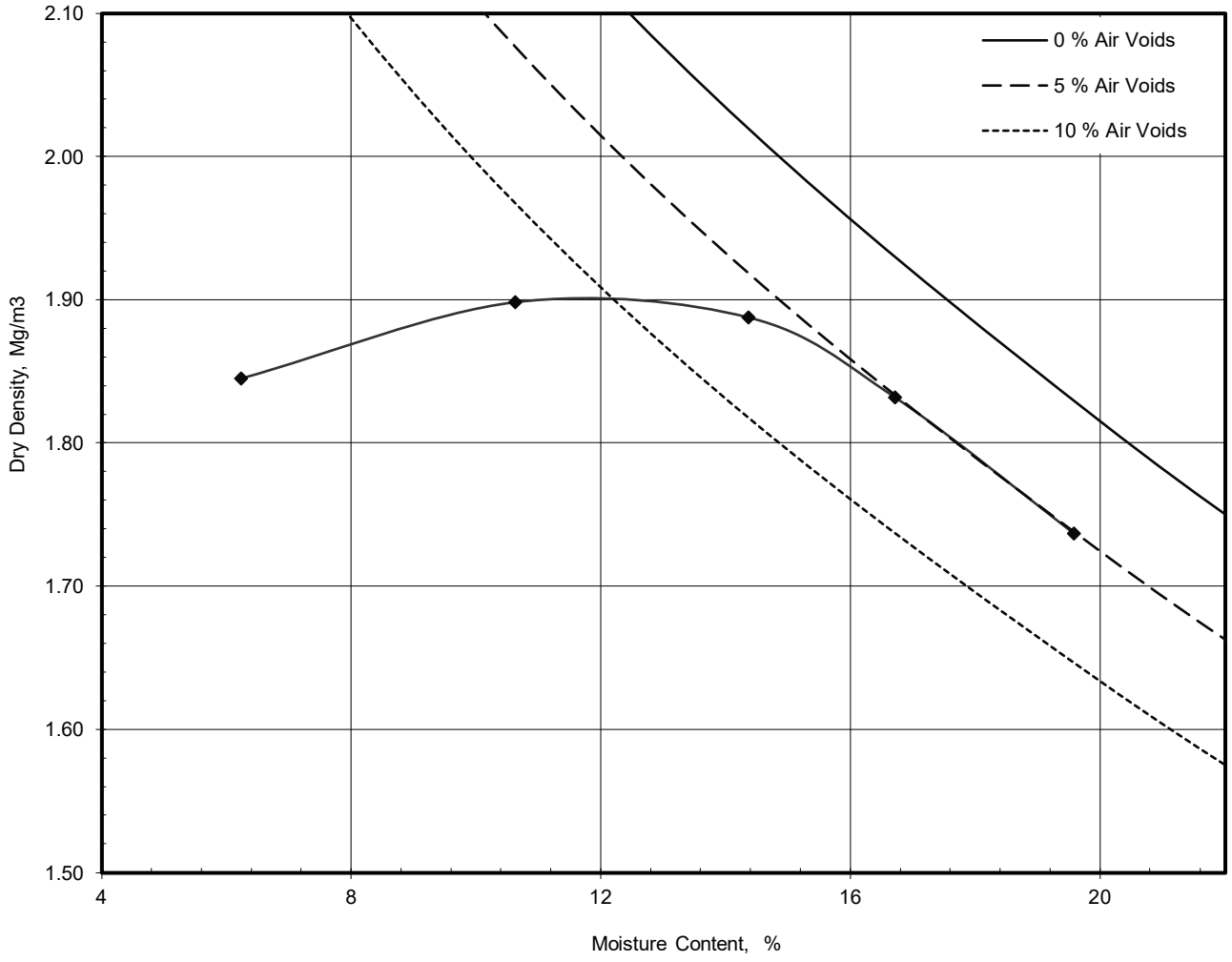


Preparation		Material used was oven dried at 30degC
Mould Type		1 LITRE
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	1
Particle Density - Assumed	Mg/m³	2.70
Natural Moisture Content	%	19
Maximum Dry Density	Mg/m³	**1.98**

Optimum Moisture Content	%	**12**

Operator	Checked	Approved	Remarks	Fig
MS	T Finnimore	T. Finnimore		Sheet 1 of 1

	Dry Density / Moisture Content Relationship Heavy Compaction			Job Ref	S211001
				Borehole / Pit No	TP31
Site Name	**Envision, Sunderland**			Sample No	
Soil Description	Brown, Slightly Gravelly, Slightly Sandy, CLAY.			Depth	1.00 m
Specimen Ref.	1	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.5, 4.5kg rammer			Keylab ID	SLMK2021111690
				Compaction Test Reference/No.	

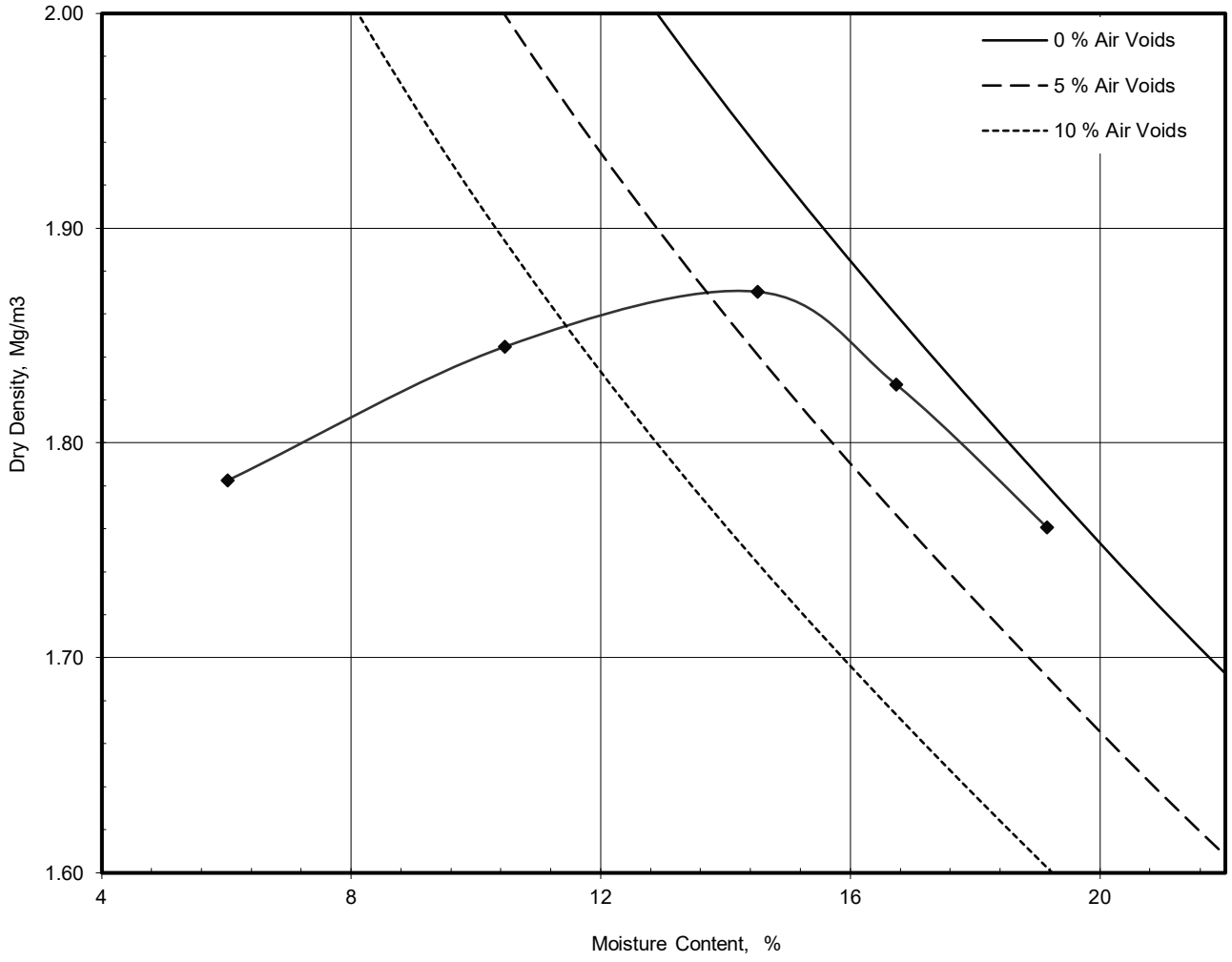


Preparation		Material used was oven dried at 30degC
Mould Type		1 LITRE
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	2
Particle Density - Assumed	Mg/m³	2.85
Natural Moisture Content	%	18
Maximum Dry Density	Mg/m³	**1.90**

Optimum Moisture Content	%	**11**

Operator	Checked	Approved	Remarks	Fig
MS	T Finnimore	T. Finnimore		Sheet 1 of 1

	Dry Density / Moisture Content Relationship Heavy Compaction			Job Ref	S211001
				Borehole / Pit No	TP33
Site Name	Envision, Sunderland			Sample No	
Soil Description	Brown, CLAY			Depth	1.00 m
Specimen Ref.	1	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.5, 4.5kg rammer			Keylab ID	SLMK2021111696
				Compaction Test Reference/No.	

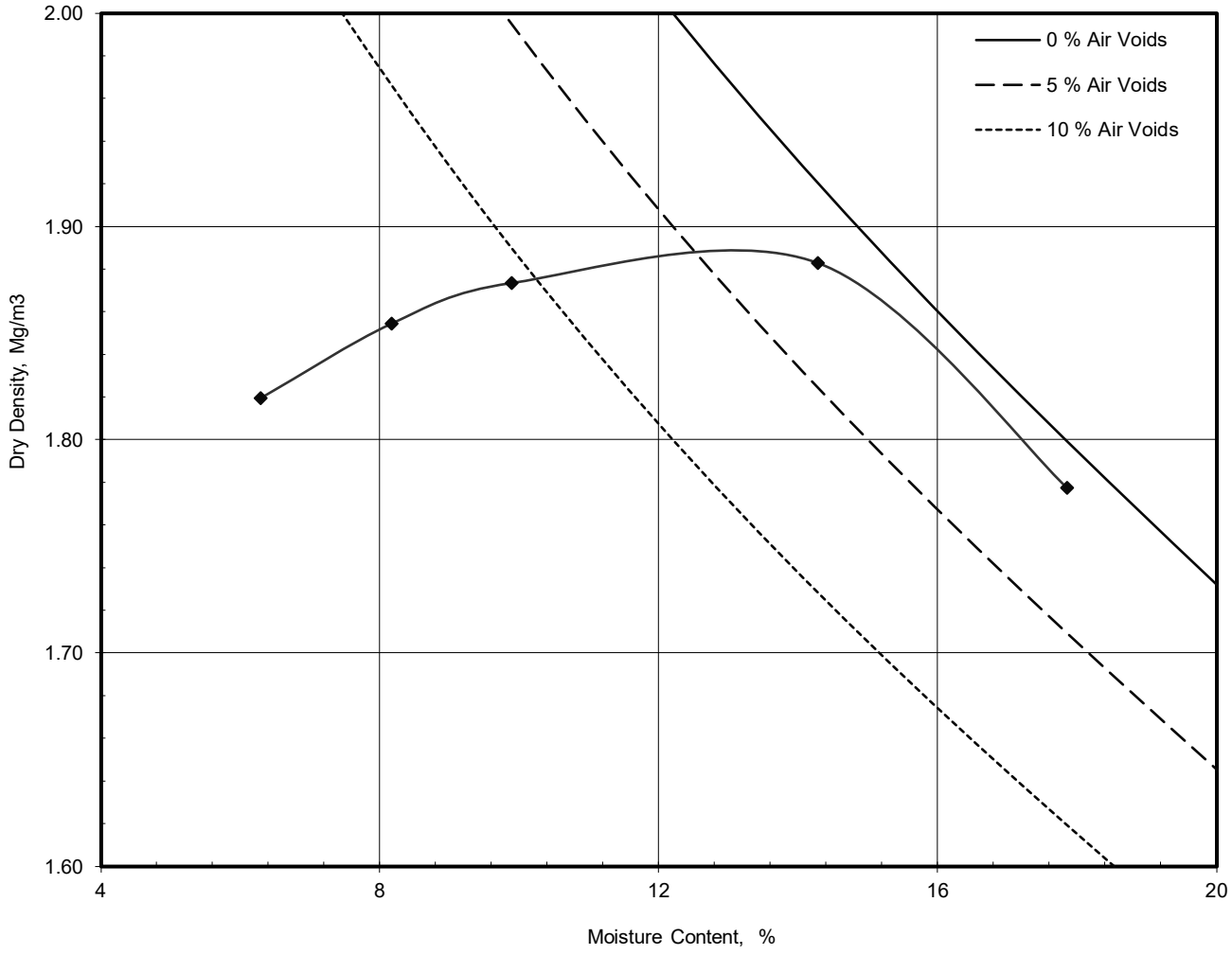


Preparation		Material used was oven dried at 30degC
Mould Type		1 LITRE
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	0
Particle Density - Assumed	Mg/m³	2.70
Natural Moisture Content	%	23
Maximum Dry Density	Mg/m³	**1.87**

Optimum Moisture Content	%	**15**

Operator	Checked	Approved	Remarks	Fig
MS	KW	KW		Sheet 1 of 1

	Dry Density / Moisture Content Relationship Heavy Compaction			Job Ref	S211001
				Borehole / Pit No	TP35
Site Name	**Envision, Sunderland**			Sample No	
Soil Description	Brown, Slightly Gravelly, Slightly Sandy, CLAY.			Depth	1.00 m
Specimen Ref.	1	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.5, 4.5kg rammer			Keylab ID	SLMK20211116102
				Compaction Test Reference/No.	

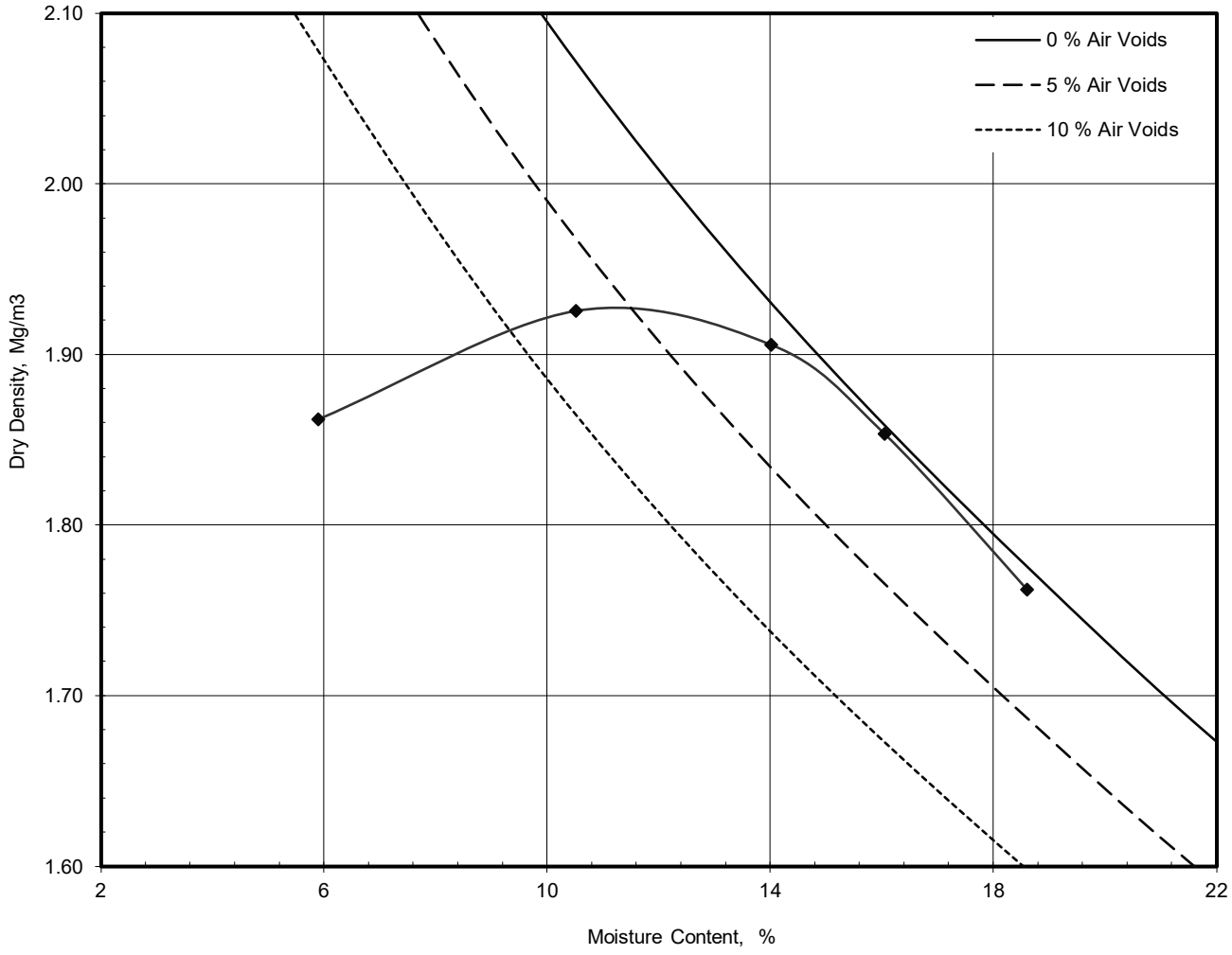


Preparation		Material used was oven dried at 30degC
Mould Type		1 LITRE
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	0
Particle Density - Assumed	Mg/m³	2.65
Natural Moisture Content	%	22
Maximum Dry Density	Mg/m³	**1.88**

Optimum Moisture Content	%	**14**

Operator	Checked	Approved	Remarks	Fig
MS	KW	KW		Sheet 1 of 1

	Dry Density / Moisture Content Relationship Heavy Compaction			Job Ref	S211001
				Borehole / Pit No	TP46
Site Name	Envision, Sunderland			Sample No	
Soil Description	Brown, Slightly Gravelly, Slightly Sandy CLAY.			Depth	1.00 m
Specimen Ref.	1	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.5, 4.5kg rammer			Keylab ID	SLMK20211116105
				Compaction Test Reference/No.	

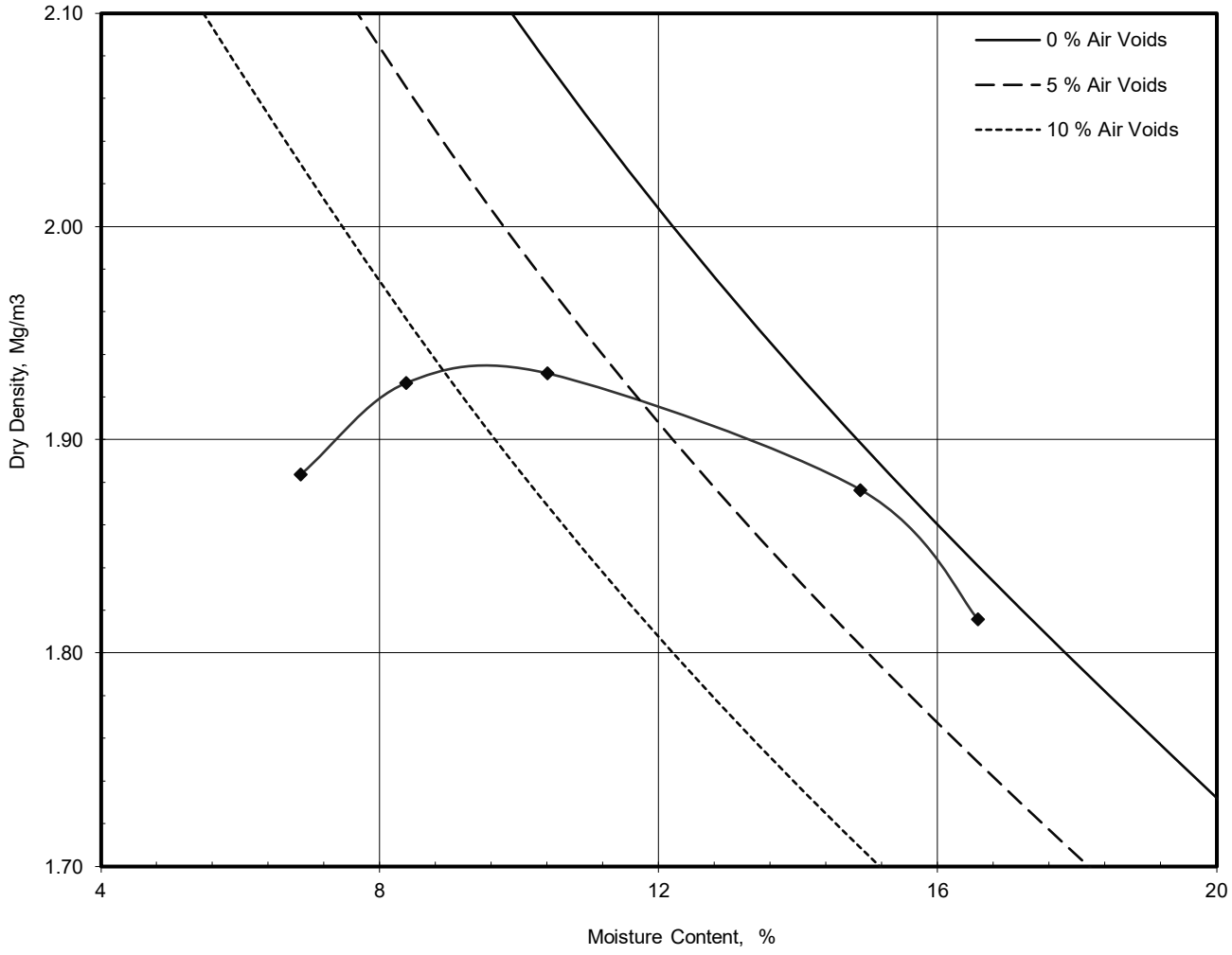


Preparation		Material used was oven dried at 30degC
Mould Type		1 LITRE
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	0
Particle Density - Assumed	Mg/m³	2.65
Natural Moisture Content	%	16
Maximum Dry Density	Mg/m³	**1.93**

Optimum Moisture Content	%	**11**

Operator	Checked	Approved	Remarks	Fig
MS	T Finnimore	T. Finnimore		Sheet 1 of 1

	Dry Density / Moisture Content Relationship Heavy Compaction			Job Ref	S211001
				Borehole / Pit No	TP50
Site Name	Envision, Sunderland			Sample No	
Soil Description	Brown, Slightly Sandy, Slightly Gravelly, CLAY.			Depth	1.00 m
Specimen Ref.	1	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.5, 4.5kg rammer			Keylab ID	SLMK20211116114
				Compaction Test Reference/No.	



Preparation		Material used was oven dried at 30degC
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
Particle Density - Assumed	Mg/m³	2.65
Natural Moisture Content	%	17
Maximum Dry Density	Mg/m³	**1.93**

Optimum Moisture Content	%	**10**

Operator	Checked	Approved	Remarks	Fig
MS	KW	KW		Sheet 1 of 1

	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	B
Specimen Description	Brown, CLAY			KeyLAB ID	SLMK202111168
Test Method	BS1377:Part4:1990:clause 5.5			Date started	15/12/2021

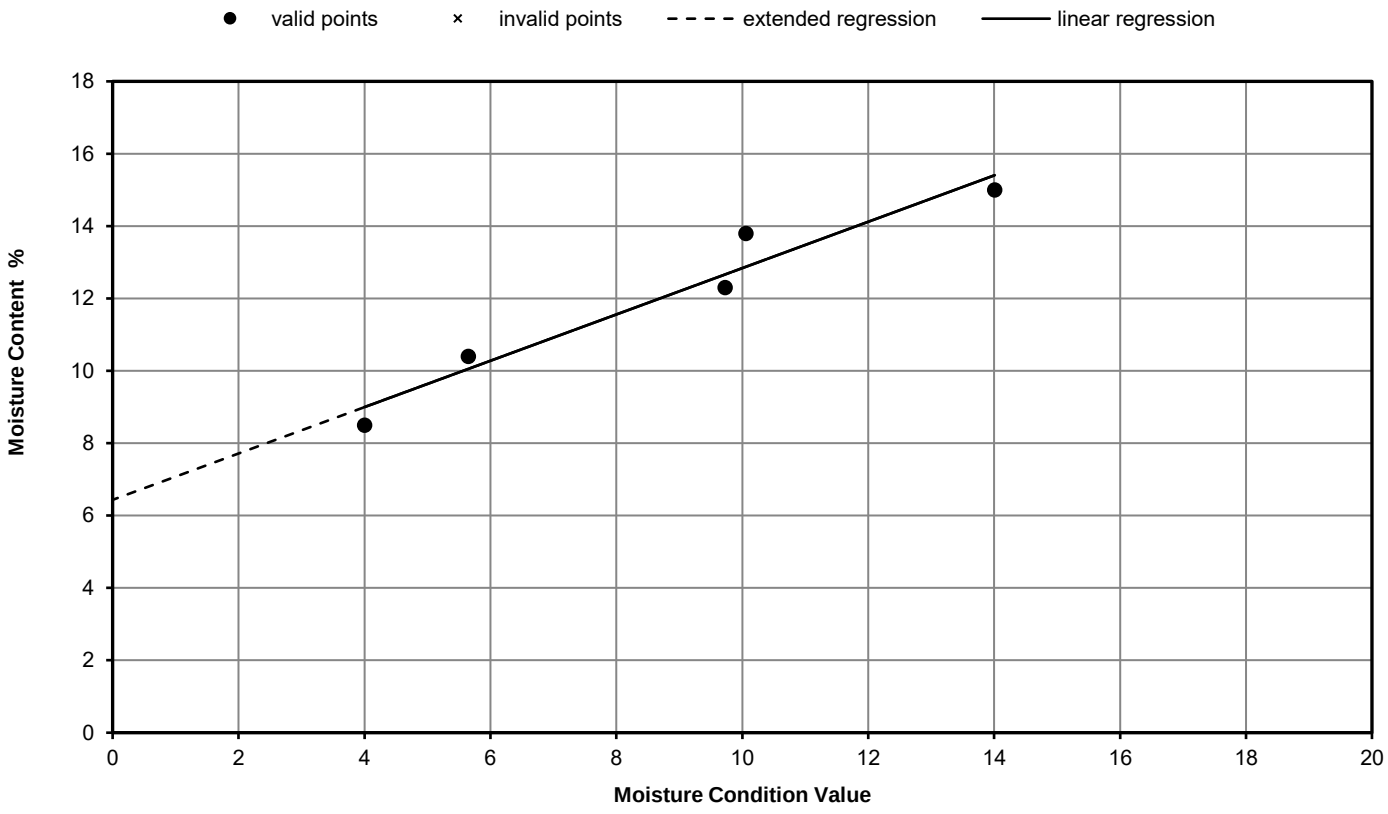
Sample preparation

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

MCV Test Number	1	2	3	4	5
Moisture Content, %	8.5	10.4	12.3	13.8	15.0
Moisture Condition Value	4.0	5.6	9.7	10.1	14.0
MCV report	4	5.6	9.7	10.1	14
Effective / Valid data point	YES	YES	YES	YES	YES
Specimen remarks					



Tested	Checked	Approved
MS	KW	KW

	Moisture Condition Value / Moisture Content Relationship			Job Ref	S211001
				Borehole/Pit No.	CP07
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	0.5
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown, CLAY			KeyLAB ID	SLMK2021111659
Test Method	BS1377:Part4:1990:clause 5.5			Date started	14/12/2021

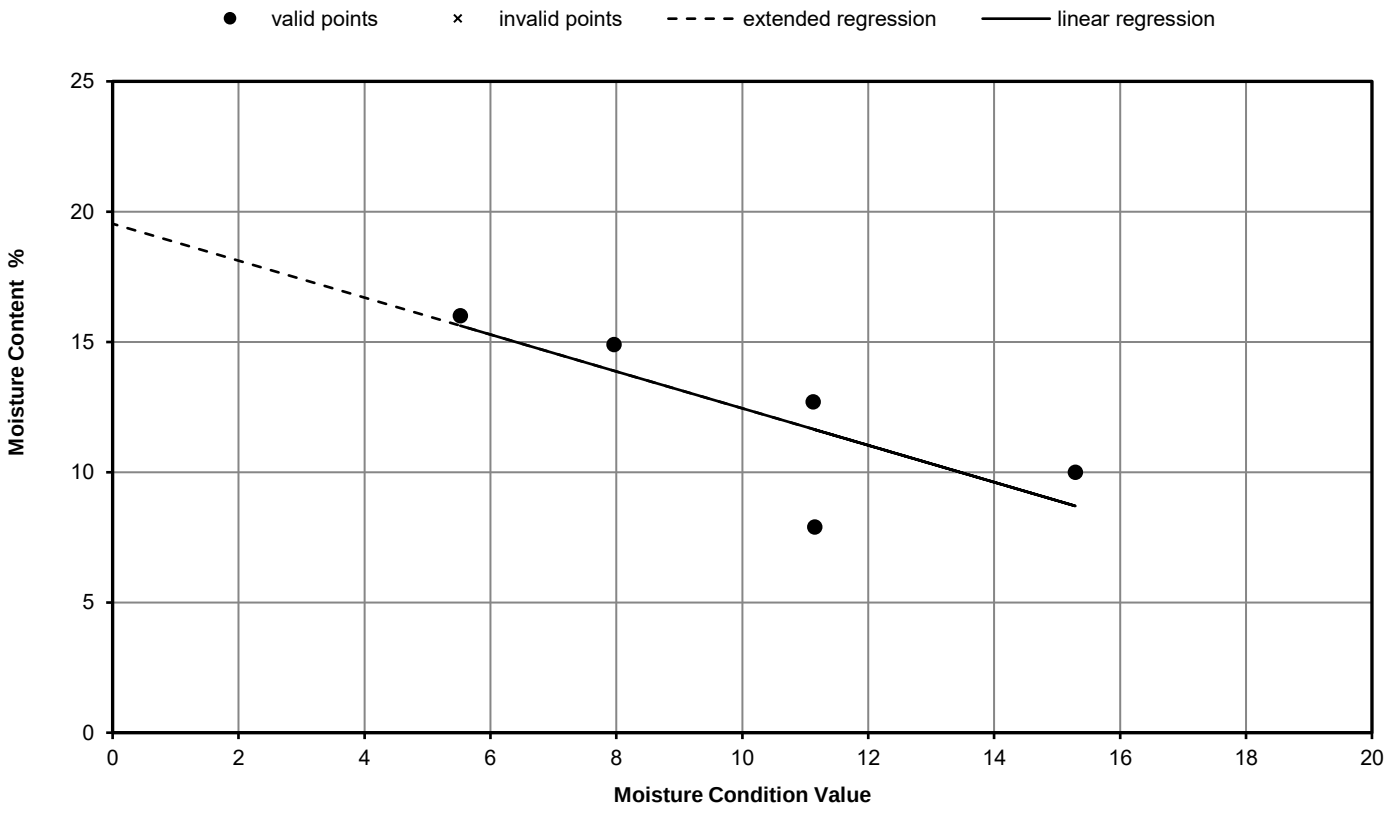
Sample preparation

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

MCV Test Number	1	2	3	4	5
Moisture Content, %	7.9	10.0	12.7	14.9	16.0
Moisture Condition Value	11.2	15.3	11.1	8.0	5.5
MCV report	11.2	15.3	11.1	8	5.5
Effective / Valid data point	YES	YES	YES	YES	YES
Specimen remarks					



Tested	Checked	Approved
MS	KW	KW

	Moisture Condition Value / Moisture Content Relationship			Job Ref	S211001
				Borehole/Pit No.	TP03
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	0.6
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown, slightly gravelly, slightly sandy CLAY			KeyLAB ID	SLMK2021120189
Test Method	BS1377:Part4:1990:clause 5.5			Date started	15/12/2021

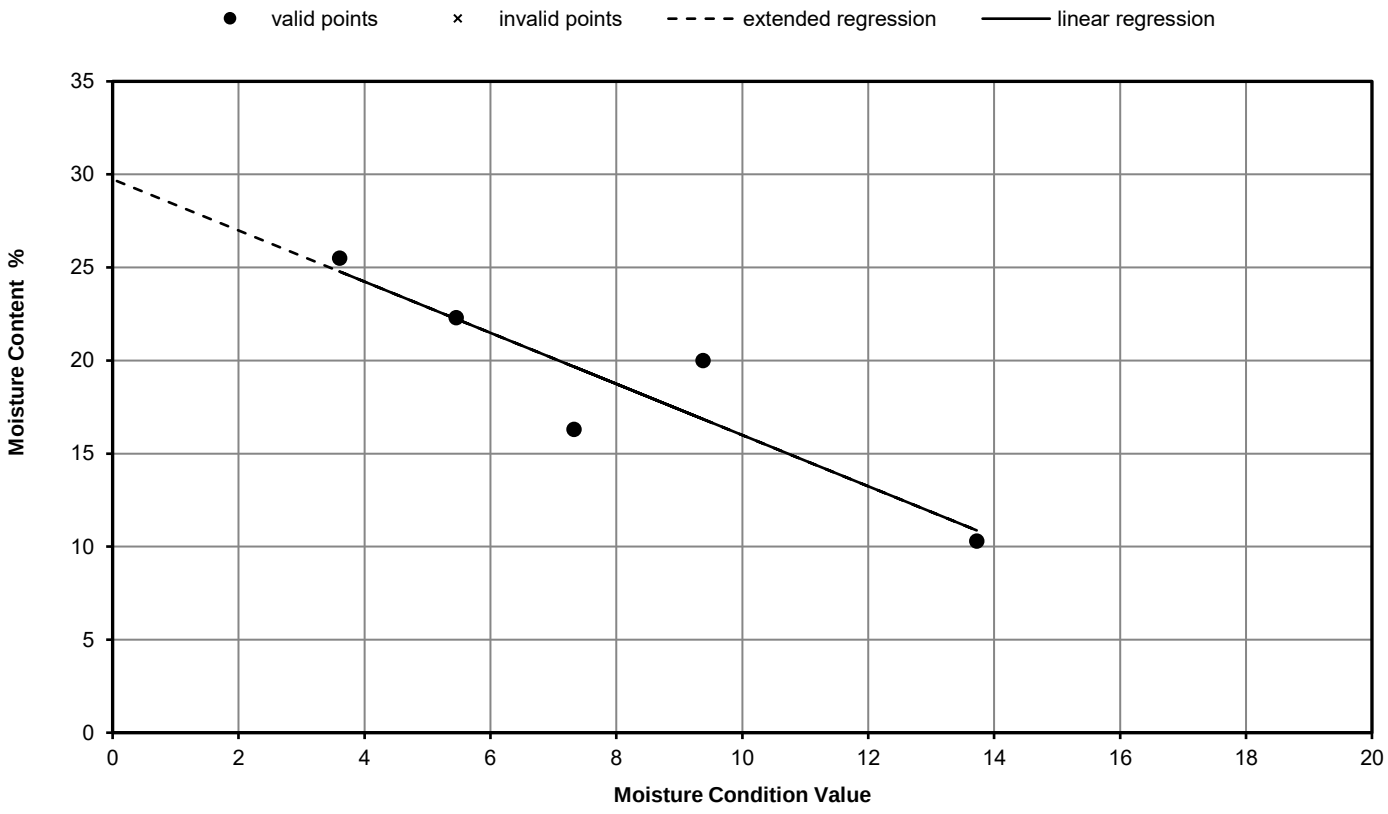
Sample preparation

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

MCV Test Number	1	2	3	4	5
Moisture Content, %	25.5	22.3	20.0	16.3	10.3
Moisture Condition Value	3.6	5.5	9.4	7.3	13.7
MCV report	3.6	5.5	9.4	7.3	13.7
Effective / Valid data point	YES	YES	YES	YES	YES
Specimen remarks					



Tested	Checked	Approved
MS	TT	T. Finnimore

	Moisture Condition Value / Moisture Content Relationship			Job Ref	S211001
				Borehole/Pit No.	TP04
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	1
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown,slightly sandy CLAY			KeyLAB ID	SLMK2021120190
Test Method	BS1377:Part4:1990:clause 5.5			Date started	17/12/2021

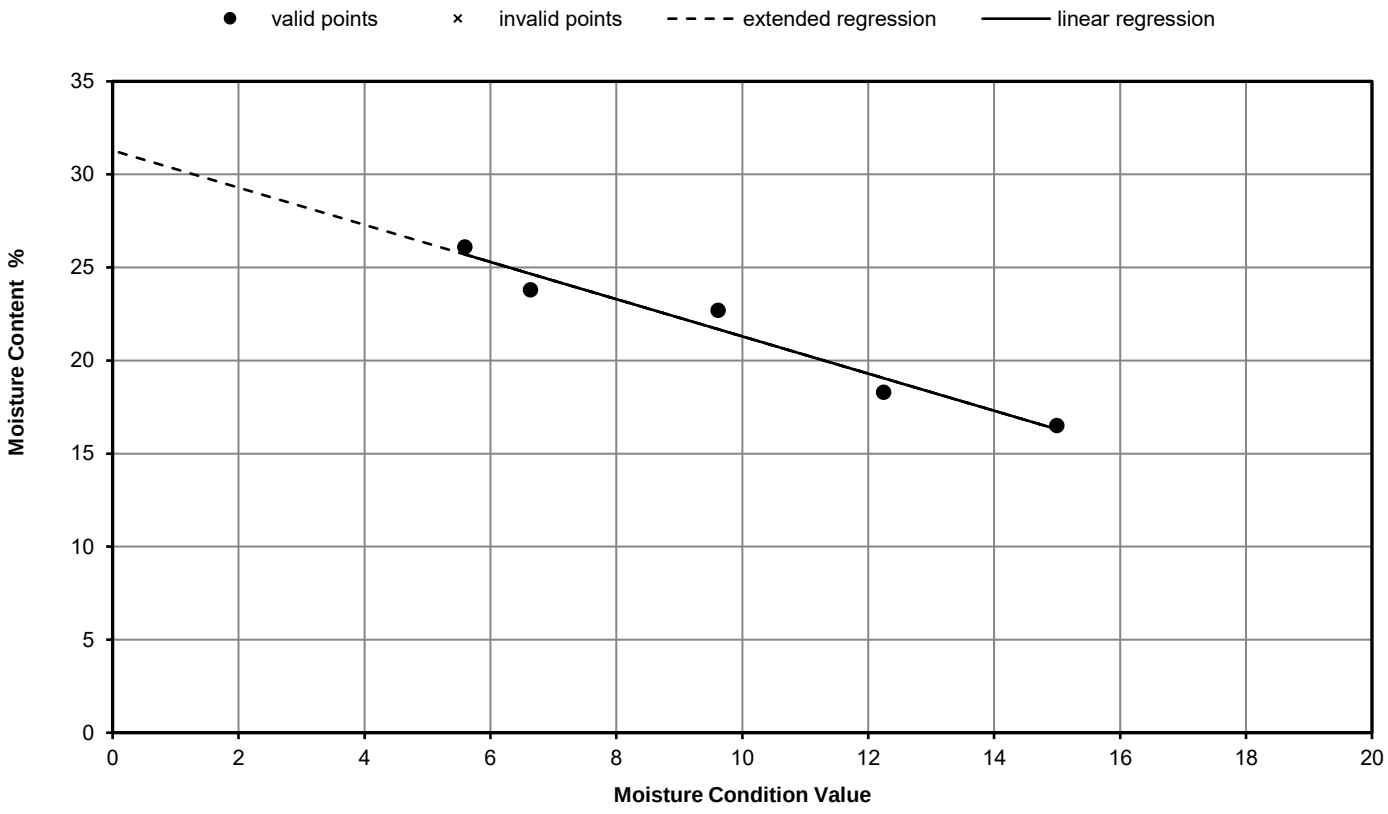
Sample preparation

Amount of material larger than 20mm sieve removed	0	%
Natural Moisture Content of sample	21	%
Initial Moisture Content of test sample below 20mm		%

General remarks

Table of results

MCV Test Number	1	2	3	4	5
Moisture Content, %	26.1	23.8	22.7	18.3	16.5
Moisture Condition Value	5.6	6.6	9.6	12.2	15.0
MCV report	5.6	6.6	9.6	12.2	15
Effective / Valid data point	YES	YES	YES	YES	YES
Specimen remarks					



Tested	Checked	Approved
MS	JB	JBrischuk

	Moisture Condition Value / Moisture Content Relationship			Job Ref	S211001
				Borehole/Pit No.	TP05
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	1
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown, CLAY			KeyLAB ID	SLMK2021111673
Test Method	BS1377:Part4:1990:clause 5.5			Date started	02/12/2021

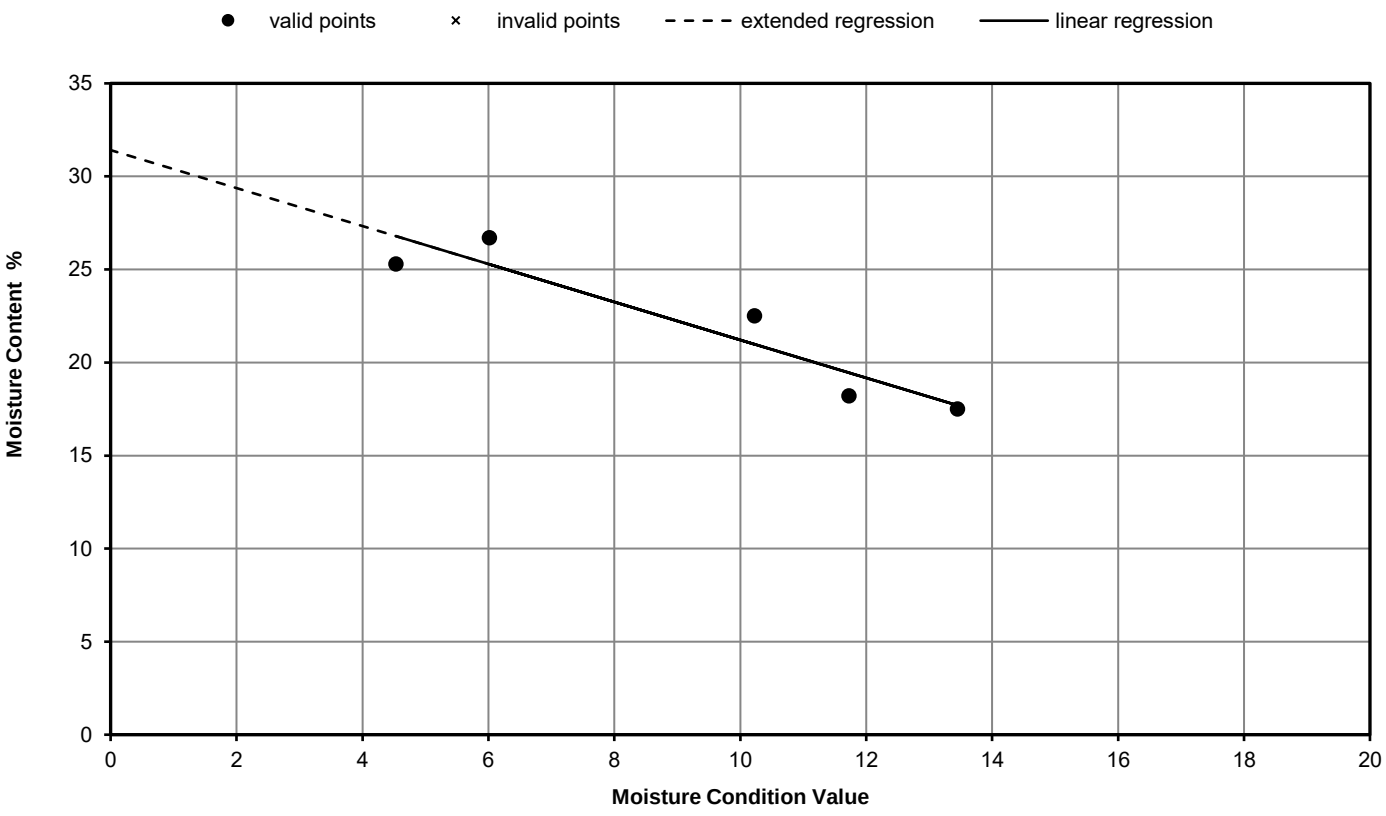
Sample preparation

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

MCV Test Number	1	2	3	4	5
Moisture Content, %	22.5	26.7	18.2	17.5	25.3
Moisture Condition Value	10.2	6.0	11.7	13.5	4.5
MCV report	10.2	6	11.7	13.5	4.5
Effective / Valid data point	YES	YES	YES	YES	YES
Specimen remarks					



Tested	Checked	Approved
MS	JB	JBrischuk

	Moisture Condition Value / Moisture Content Relationship			Job Ref	S211001
				Borehole/Pit No.	TP06
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	1.4
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown, CLAY			KeyLAB ID	SLMK2021120193
Test Method	BS1377:Part4:1990:clause 5.5			Date started	

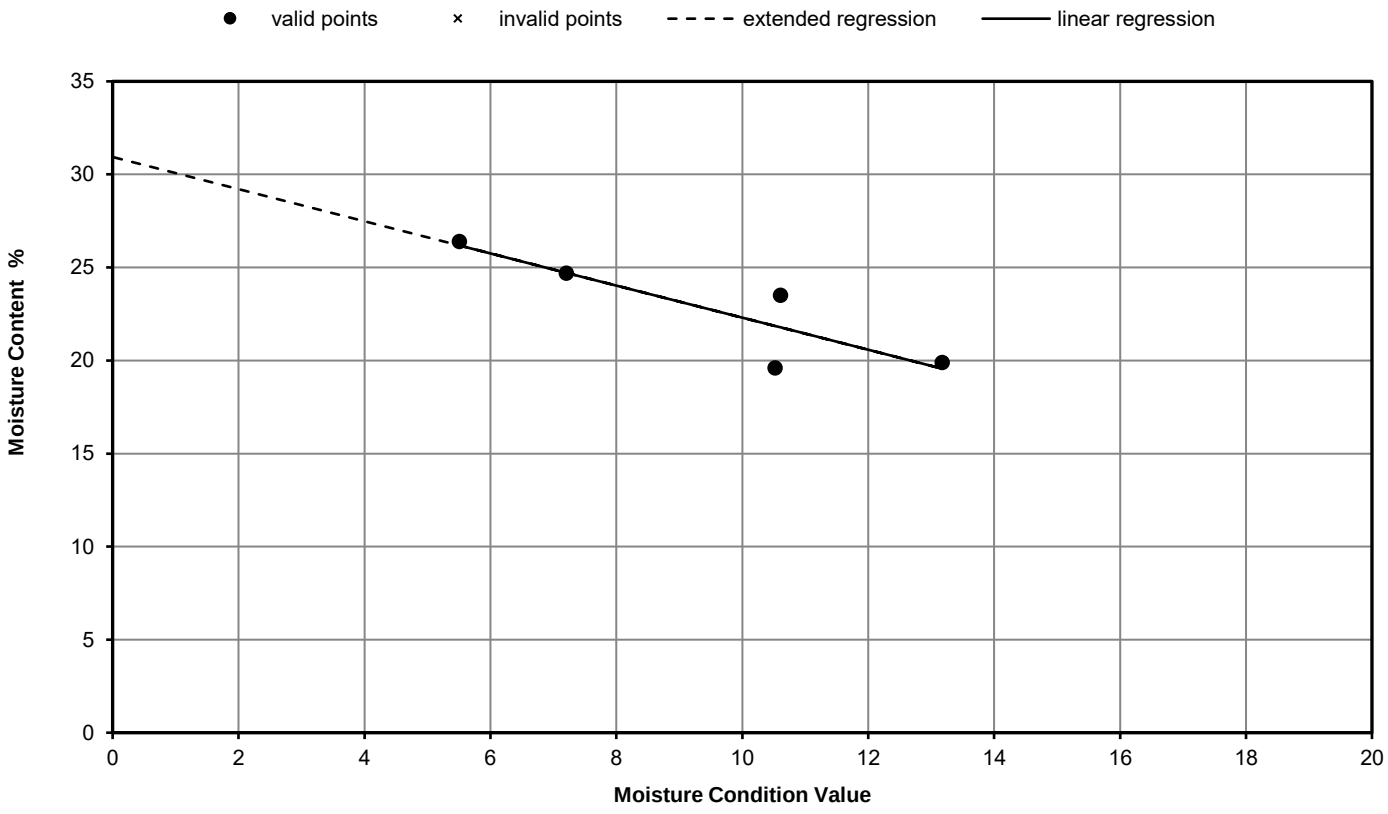
Sample preparation

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

MCV Test Number	1	2	3	4	5
Moisture Content, %	26.4	24.7	19.6	23.5	19.9
Moisture Condition Value	5.5	7.2	10.5	10.6	13.2
MCV report	5.5	7.2	10.5	10.6	13.2
Effective / Valid data point	YES	YES	YES	YES	YES
Specimen remarks					



Tested	Checked	Approved
MS	TF	T. Finnimore

	Moisture Condition Value / Moisture Content Relationship			Job Ref	S211001
				Borehole/Pit No.	TP08
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	0.7
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown, Slightly Gravelly, Slightly Sandy, CLAY.			KeyLAB ID	SLMK2021120194
Test Method	BS1377:Part4:1990:clause 5.5			Date started	

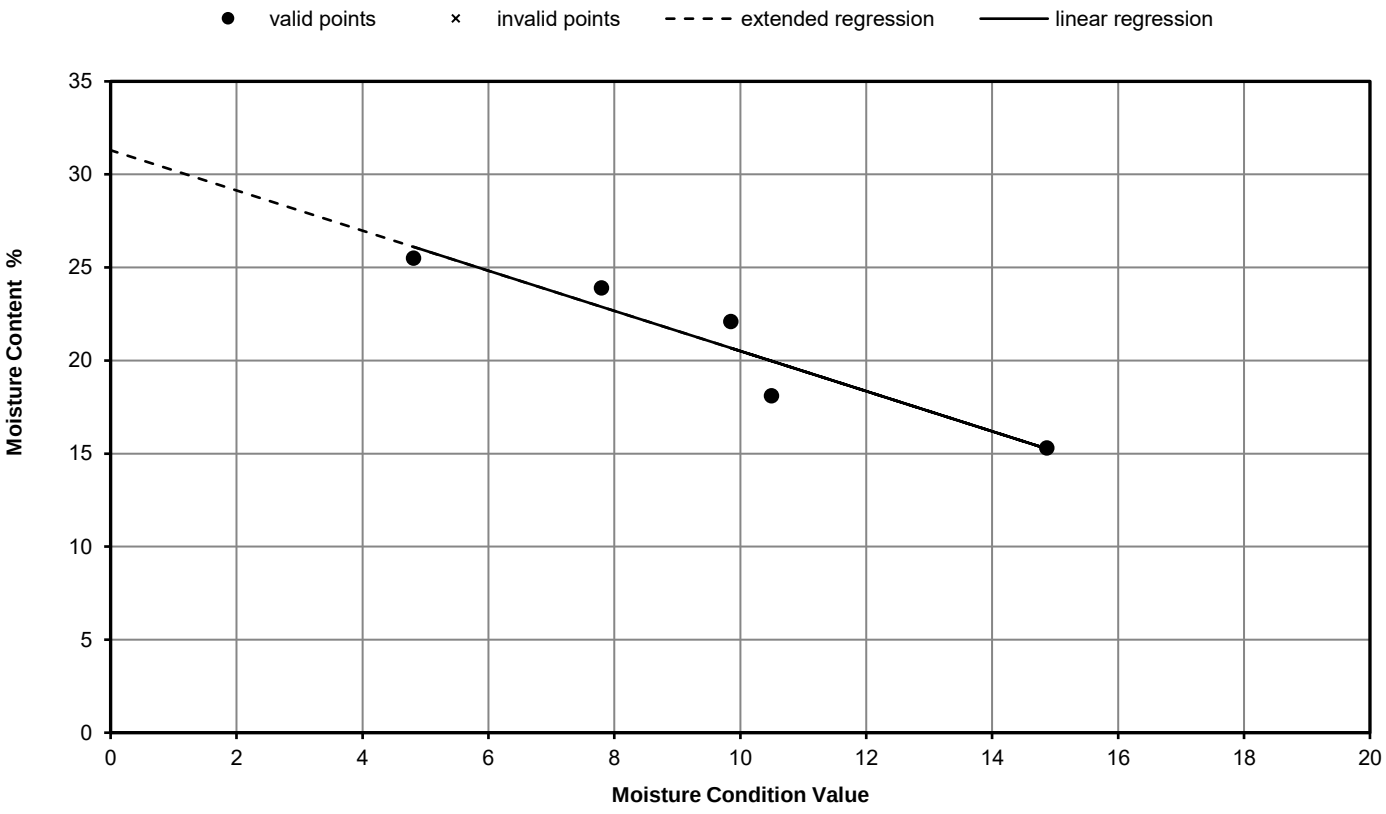
Sample preparation

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

MCV Test Number	1	2	3	4	5
Moisture Content, %	22.1	15.3	18.1	23.9	25.5
Moisture Condition Value	9.9	14.9	10.5	7.8	4.8
MCV report	9.9	14.9	10.5	7.8	4.8
Effective / Valid data point	YES	YES	YES	YES	YES
Specimen remarks					



Tested	Checked	Approved
MS	TF	T. Finnimore

	Moisture Condition Value / Moisture Content Relationship			Job Ref	S211001
				Borehole/Pit No.	TP09
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	1.2
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown, CLAY			KeyLAB ID	SLMK2021120196
Test Method	BS1377:Part4:1990:clause 5.5			Date started	17/12/2021

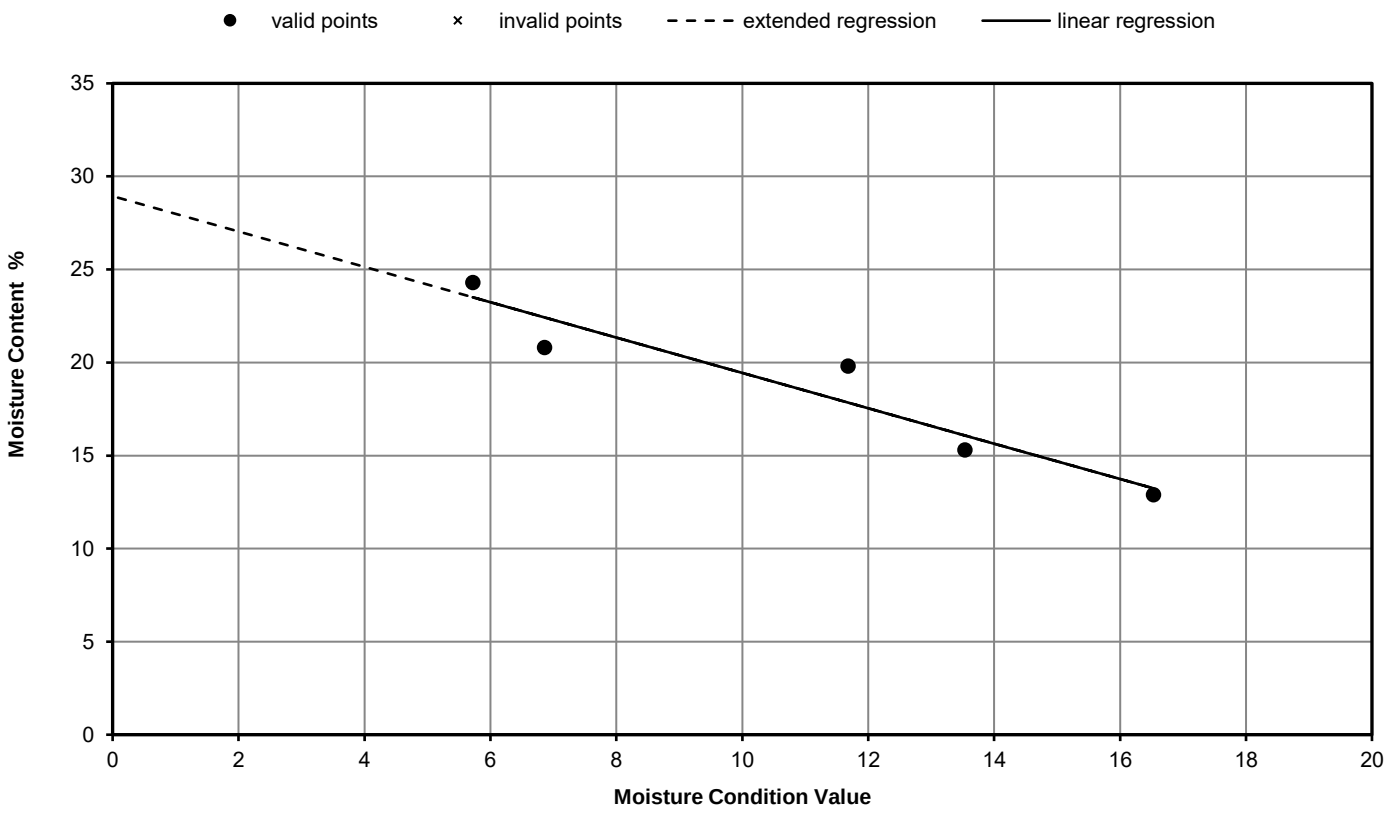
Sample preparation

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

MCV Test Number	1	2	3	4	5
Moisture Content, %	24.3	20.8	19.8	15.3	12.9
Moisture Condition Value	5.7	6.9	11.7	13.5	16.5
MCV report	5.7	6.9	11.7	13.5	16.5
Effective / Valid data point	YES	YES	YES	YES	YES
Specimen remarks					



Tested	Checked	Approved
MS	JB	JBrischuk

	Moisture Condition Value / Moisture Content Relationship			Job Ref	S211001
				Borehole/Pit No.	TP10
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	0.8
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown, Slightly Gravelly, Slightly Sandy, CLAY			KeyLAB ID	SLMK2021120198
Test Method	BS1377:Part4:1990:clause 5.5			Date started	

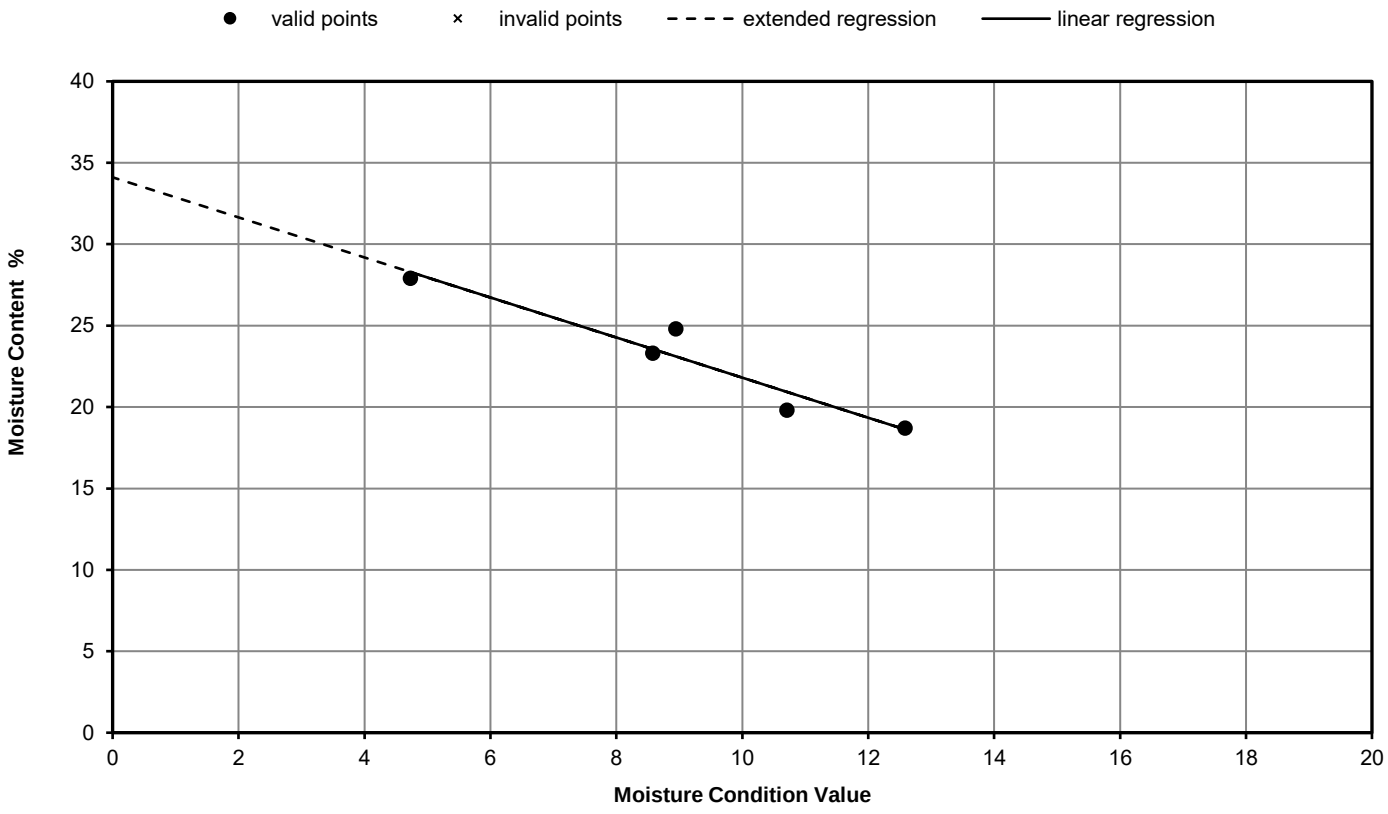
Sample preparation

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

MCV Test Number	1	2	3	4	5
Moisture Content, %	27.9	23.3	24.8	19.8	18.7
Moisture Condition Value	4.7	8.6	8.9	10.7	12.6
MCV report	4.7	8.6	8.9	10.7	12.6
Effective / Valid data point	YES	YES	YES	YES	YES
Specimen remarks					



Tested	Checked	Approved
MS	TF	T. Finnimore

	Moisture Condition Value / Moisture Content Relationship			Job Ref	S211001
				Borehole/Pit No.	TP11
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	0.5
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown, slightly sandy, slightly gravelly, CLAY			KeyLAB ID	SLMK20211201100
Test Method	BS1377:Part4:1990:clause 5.5			Date started	16/12/2021

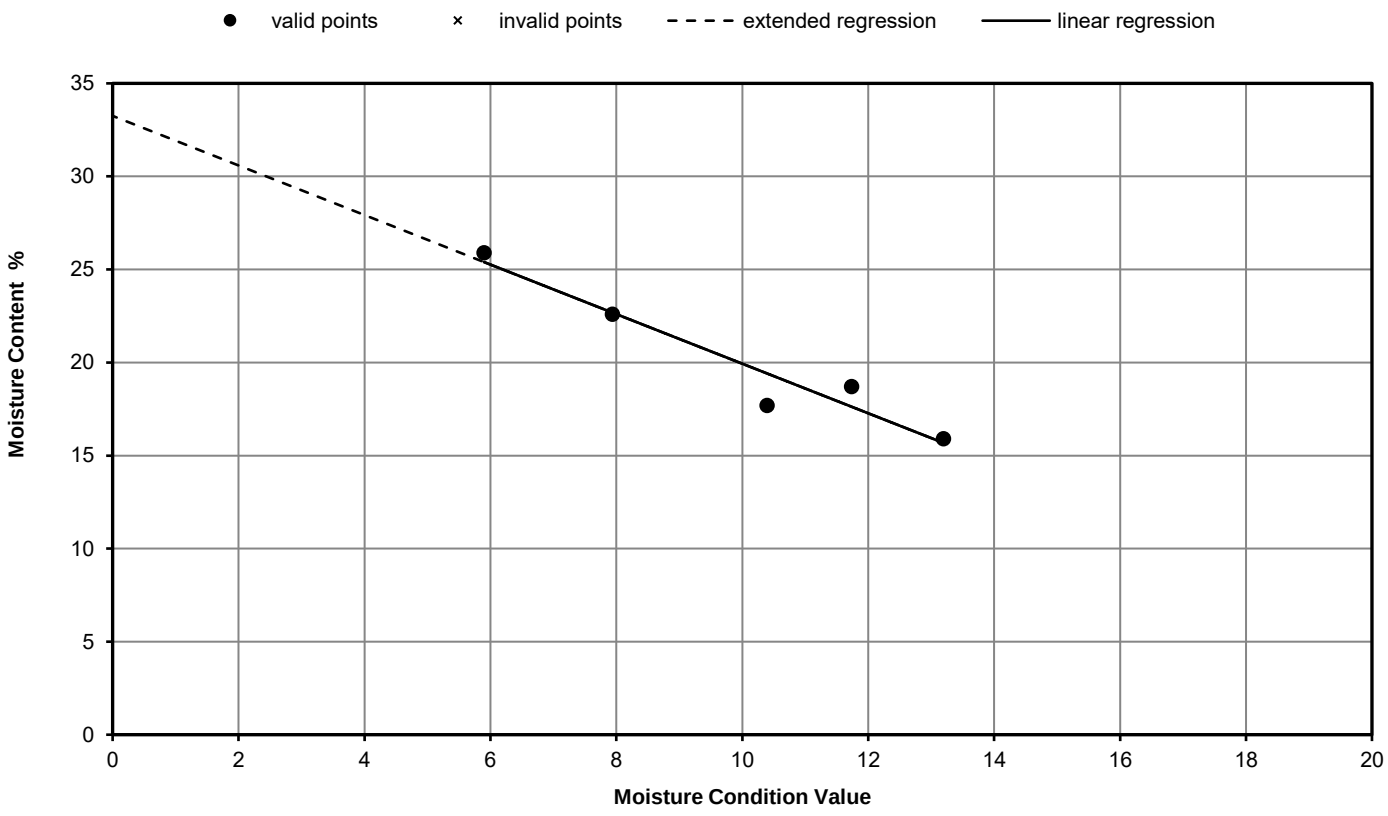
Sample preparation

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

MCV Test Number	1	2	3	4	5
Moisture Content, %	25.9	22.6	17.7	18.7	15.9
Moisture Condition Value	5.9	7.9	10.4	11.7	13.2
MCV report	5.9	7.9	10.4	11.7	13.2
Effective / Valid data point	YES	YES	YES	YES	YES
Specimen remarks					



Tested	Checked	Approved
MS	JB	JBrischuk

	Moisture Condition Value / Moisture Content Relationship			Job Ref	S211001
				Borehole/Pit No.	TP12
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	0.3
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown, CLAY			KeyLAB ID	SLMK20211201102
Test Method	BS1377:Part4:1990:clause 5.5			Date started	14/12/2021

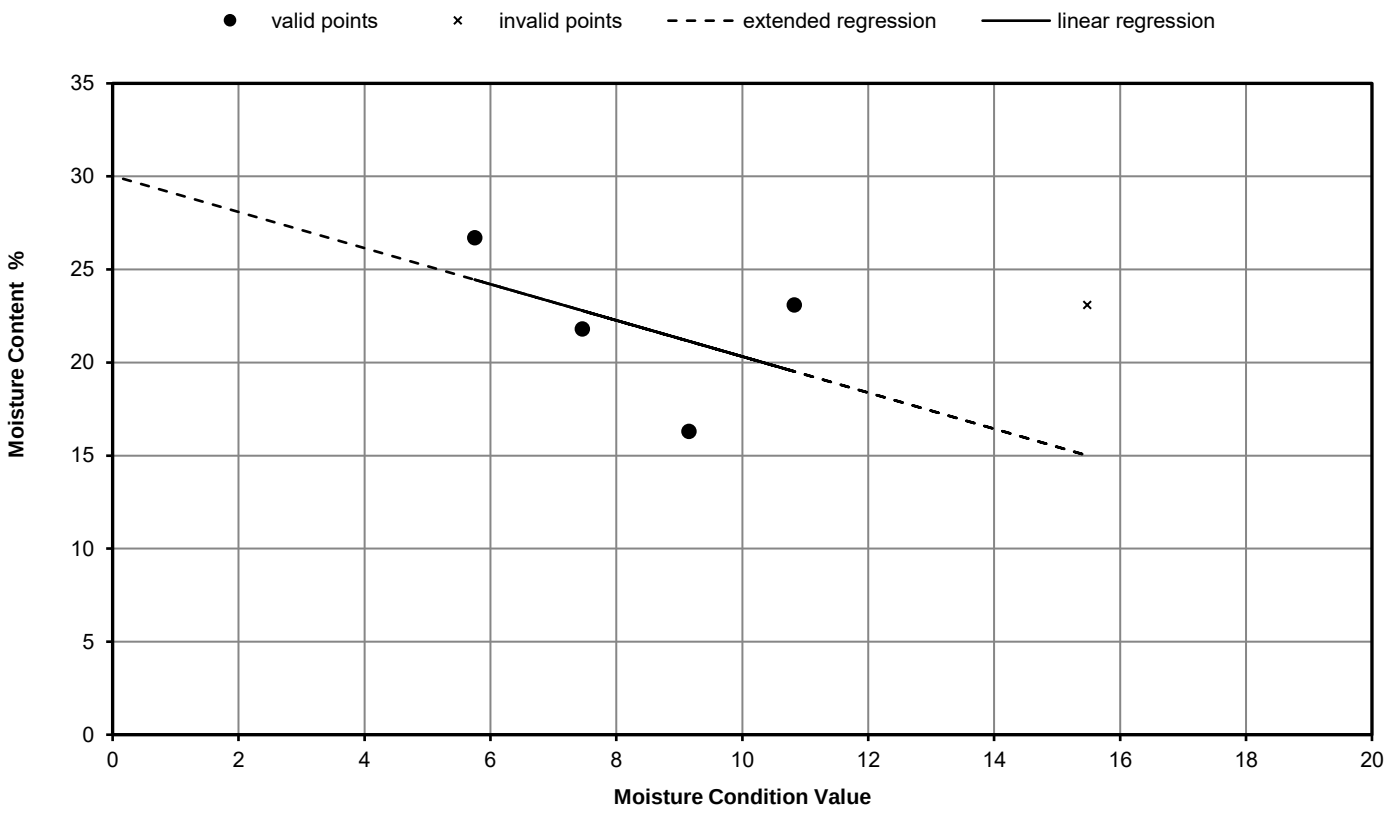
Sample preparation

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

MCV Test Number	1	2	3	4	5
Moisture Content, %	26.7	16.3	23.1	21.8	23.1
Moisture Condition Value	5.8	9.2	10.8	7.5	15.5
MCV report	5.8	9.2	10.8	7.5	15.5
Effective / Valid data point	YES	YES	YES	YES	NO
Specimen remarks					



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	B
Specimen Description	Brown, slightly sandy, slightly gravelly CLAY			KeyLAB ID	SLMK20211201105
Test Method	BS1377:Part4:1990:clause 5.5			Date started	24/11/2021

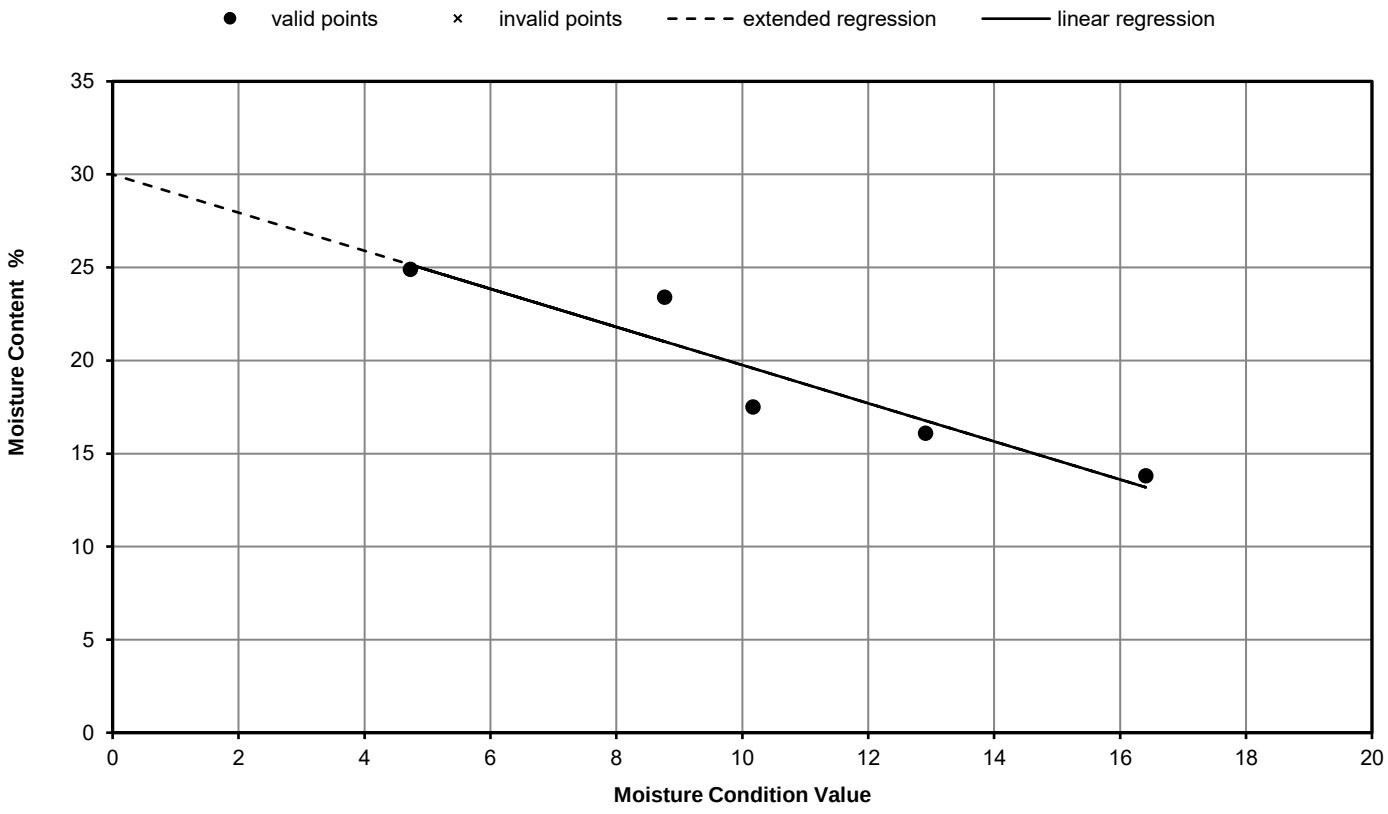
Sample preparation

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

MCV Test Number	1	2	3	4	5
Moisture Content, %	23.4	24.9	17.5	16.1	13.8
Moisture Condition Value	8.8	4.7	10.2	12.9	16.4
MCV report	8.8	4.7	10.2	12.9	16.4
Effective / Valid data point	YES	YES	YES	YES	YES
Specimen remarks					



Tested	Checked	Approved
MS	TF	T. Finnimore

	Moisture Condition Value / Moisture Content Relationship			Job Ref	S211001
				Borehole/Pit No.	TP14
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	1.5
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown, slightly sandy CLAY			KeyLAB ID	SLMK20211201107
Test Method	BS1377:Part4:1990:clause 5.5			Date started	10/12/2021

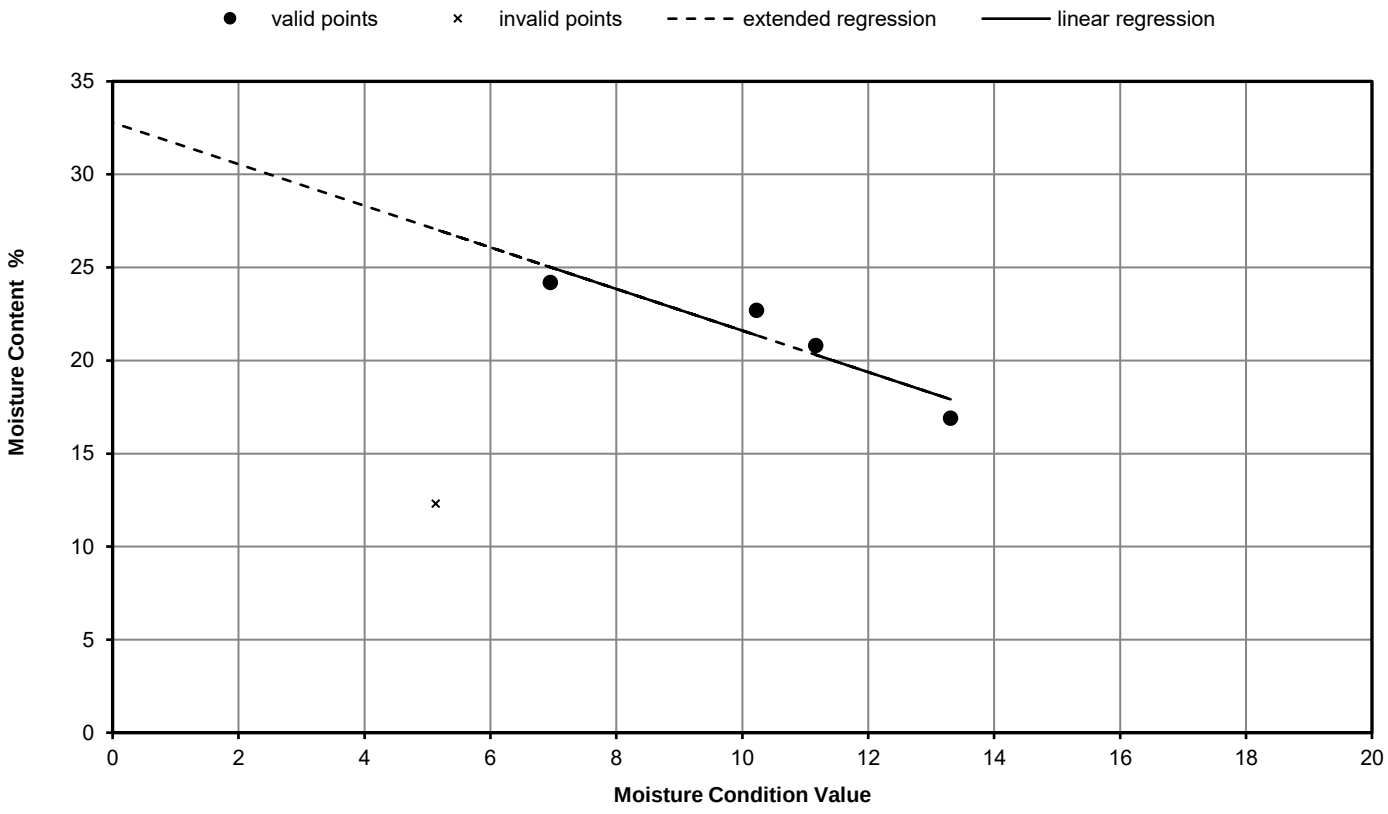
Sample preparation

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

MCV Test Number	1	2	3	4	5
Moisture Content, %	20.8	16.9	12.3	22.7	24.2
Moisture Condition Value	11.2	13.3	5.1	10.2	7.0
MCV report	11.2	13.3	5.1	10.2	7
Effective / Valid data point	YES	YES	NO	YES	YES
Specimen remarks					



Tested	Checked	Approved
M.Southgate	KW	KW

	Moisture Condition Value / Moisture Content Relationship			Job Ref	S211001
				Borehole/Pit No.	TP15
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	0.6
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown, Slightly Sandy, Slightly Gravelly, CLAY.			KeyLAB ID	SLMK20211201109
Test Method	BS1377:Part4:1990:clause 5.5			Date started	

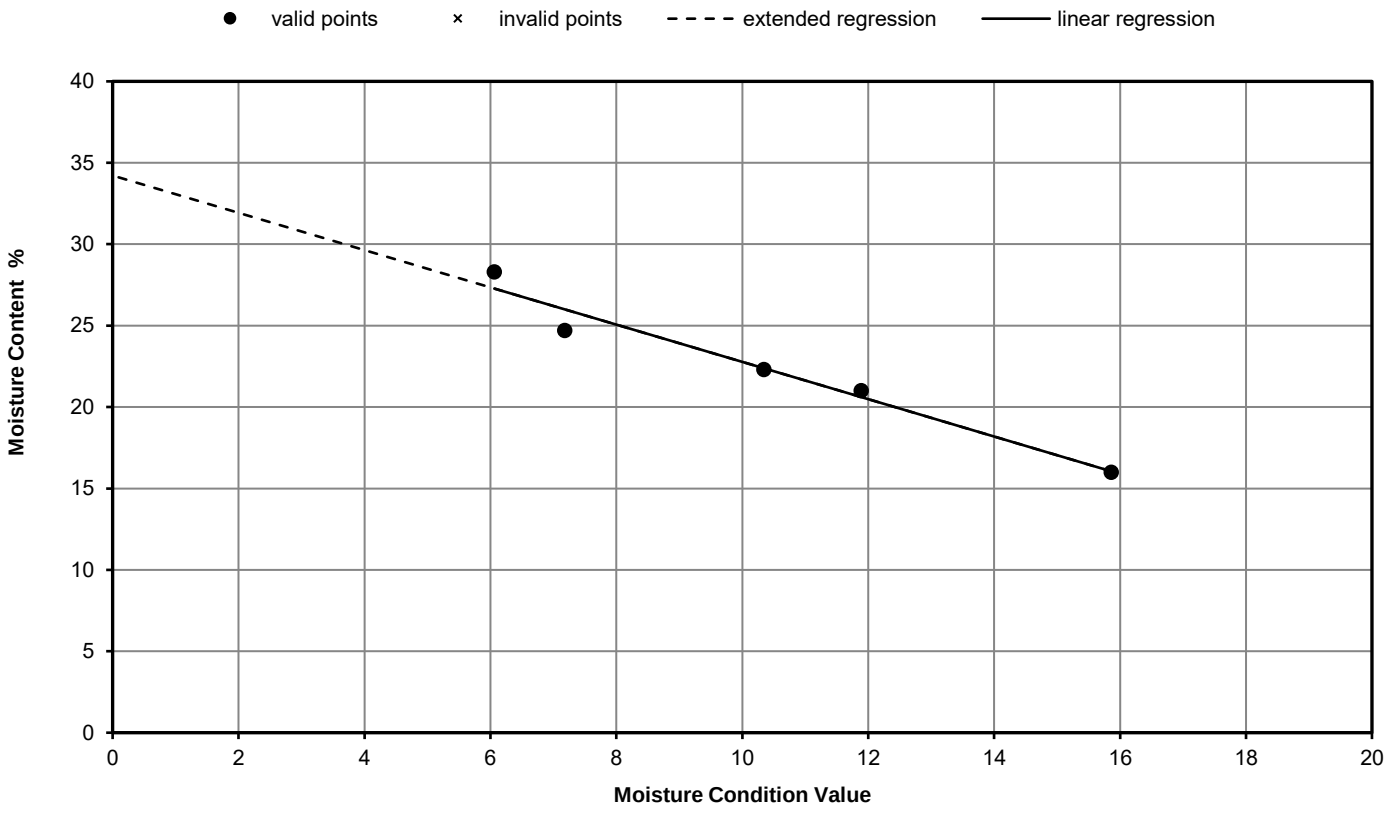
Sample preparation

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

MCV Test Number	1	2	3	4	5
Moisture Content, %	16.0	21.0	22.3	24.7	28.3
Moisture Condition Value	15.9	11.9	10.3	7.2	6.1
MCV report	15.9	11.9	10.3	7.2	6.1
Effective / Valid data point	YES	YES	YES	YES	YES
Specimen remarks					



Tested	Checked	Approved
MS	TF	T. Finnimore

	Moisture Condition Value / Moisture Content Relationship			Job Ref	S211001
				Borehole/Pit No.	TP21
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	1
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown, Slightly Gravelly, Slightly Sandy, CLAY.			KeyLAB ID	SLMK2021111685
Test Method	BS1377:Part4:1990:clause 5.5			Date started	

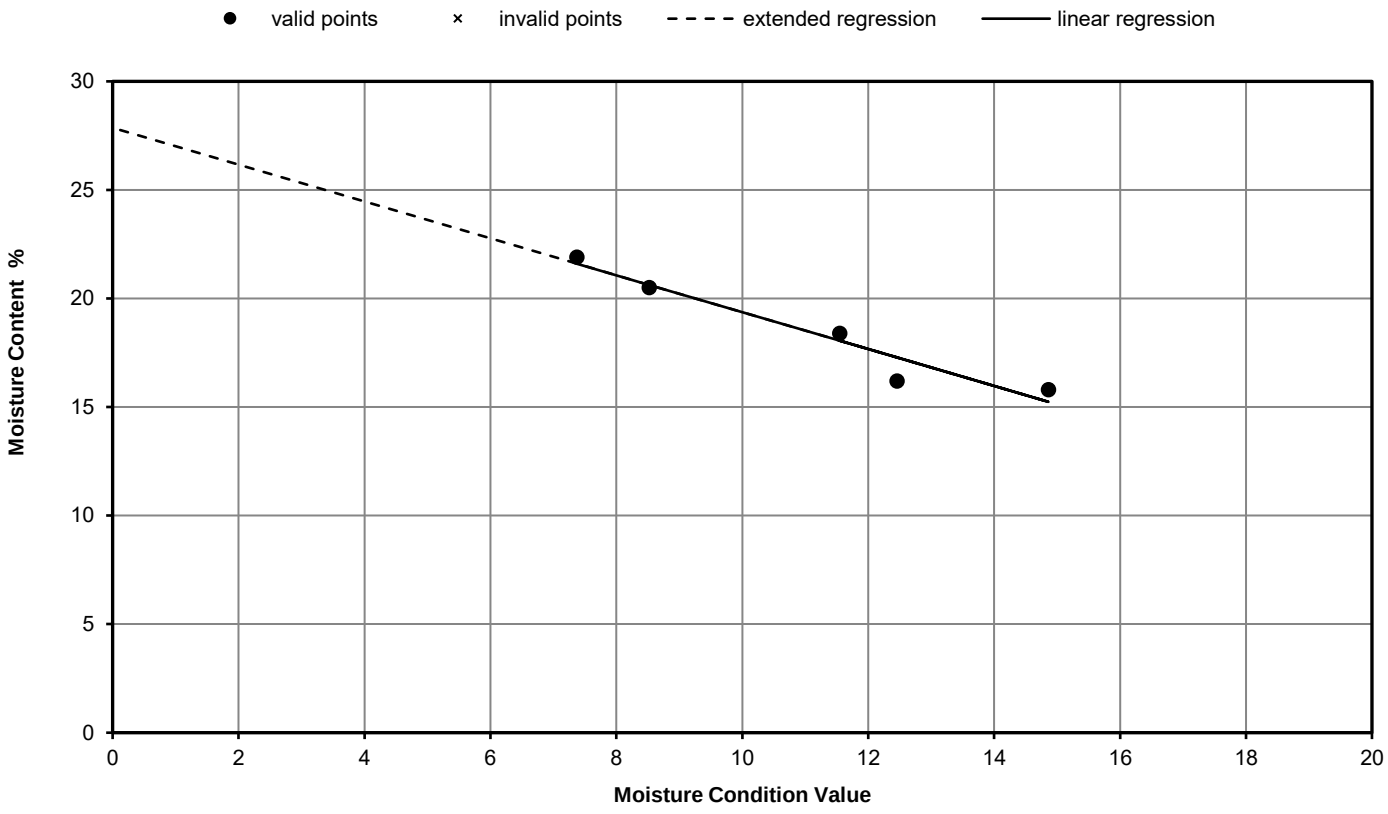
Sample preparation

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

MCV Test Number	1	2	3	4	5
Moisture Content, %	18.4	15.8	16.2	20.5	21.9
Moisture Condition Value	11.5	14.9	12.5	8.5	7.4
MCV report	11.5	14.9	12.5	8.5	7.4
Effective / Valid data point	YES	YES	YES	YES	YES
Specimen remarks					



Tested	Checked	Approved
MS	TF	T. Finnimore

	Moisture Condition Value / Moisture Content Relationship			Job Ref	S211001
				Borehole/Pit No.	TP23
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	1.6
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown, Slightly Gravelly, Slightly Sandy, CLAY.			KeyLAB ID	SLMK20211201114
Test Method	BS1377:Part4:1990:clause 5.5			Date started	

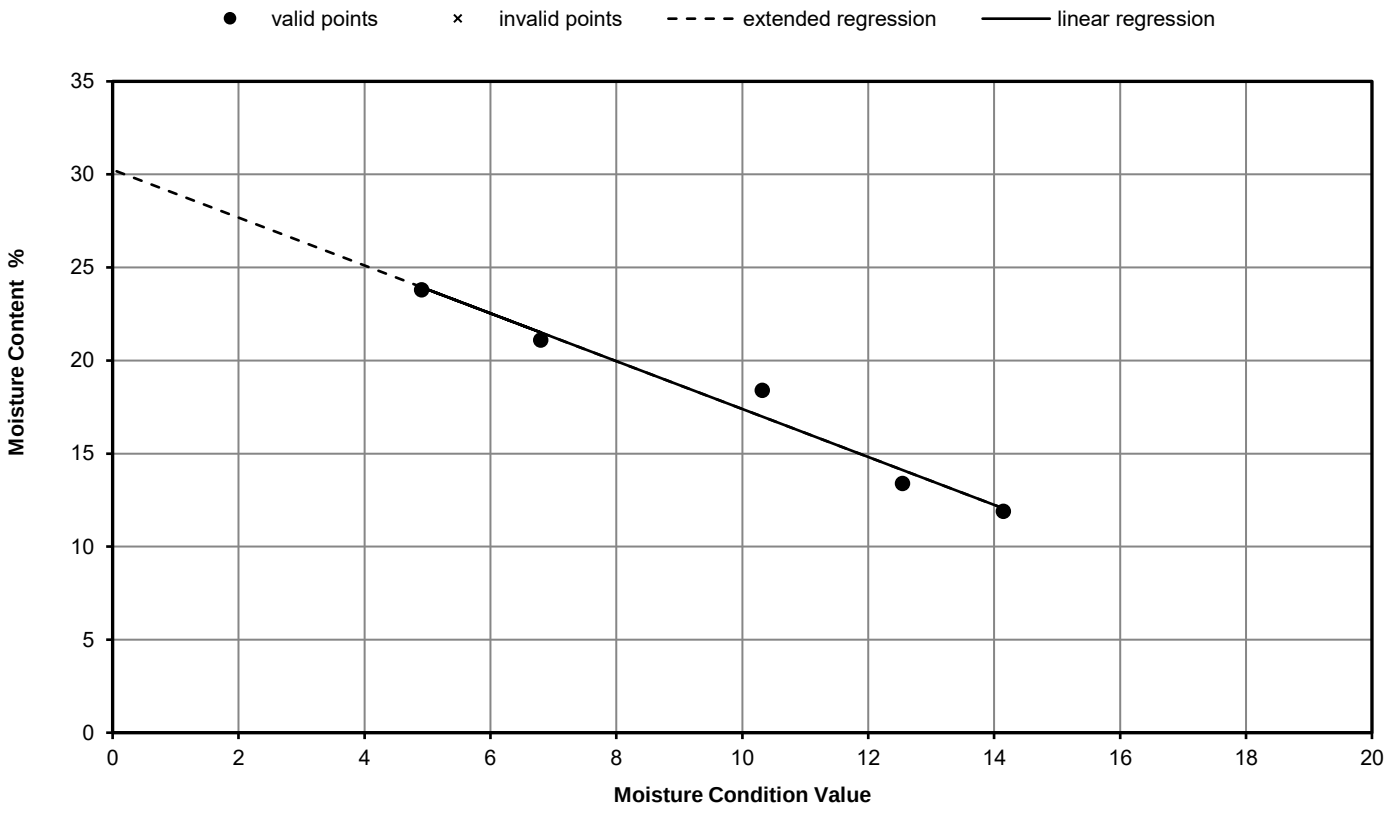
Sample preparation

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

MCV Test Number	1	2	3	4	5
Moisture Content, %	11.9	13.4	18.4	23.8	21.1
Moisture Condition Value	14.1	12.5	10.3	4.9	6.8
MCV report	14.1	12.5	10.3	4.9	6.8
Effective / Valid data point	YES	YES	YES	YES	YES
Specimen remarks					



Tested	Checked	Approved
MS	TF	T. Finnimore

	Moisture Condition Value / Moisture Content Relationship			Job Ref	S211001
				Borehole/Pit No.	TP33
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	1
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown CLAY			KeyLAB ID	SLMK2021111696
Test Method	BS1377:Part4:1990:clause 5.5			Date started	02/12/2021

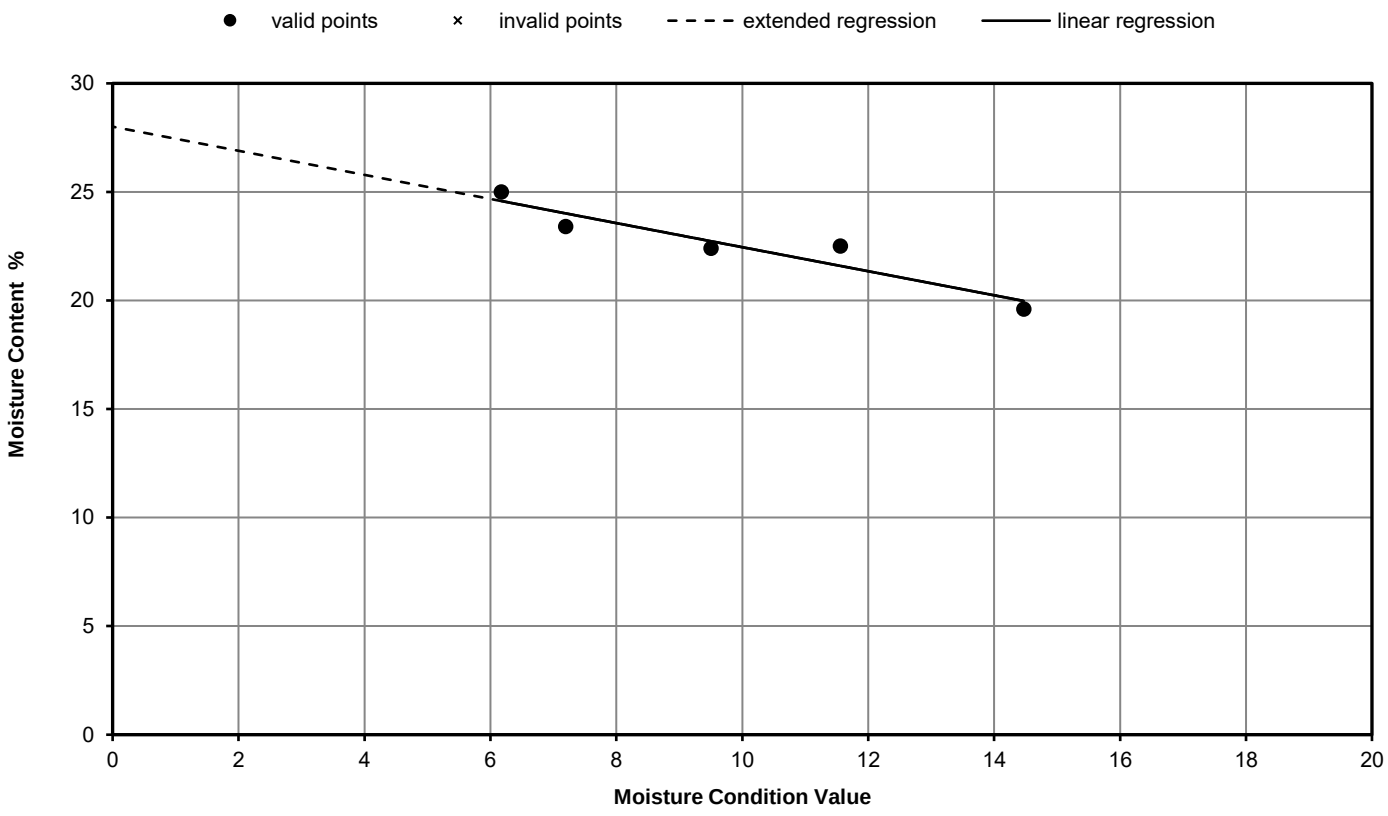
Sample preparation

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

MCV Test Number	1	2	3	4	5
Moisture Content, %	25.0	23.4	22.4	22.5	19.6
Moisture Condition Value	6.2	7.2	9.5	11.6	14.5
MCV report	6.2	7.2	9.5	11.6	14.5
Effective / Valid data point	YES	YES	YES	YES	YES
Specimen remarks					



Tested	Checked	Approved
MS	JB	JBrischuk

	Moisture Condition Value / Moisture Content Relationship			Job Ref	S211001
				Borehole/Pit No.	TP46
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth	1
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown, slightly gravelly, slightly sandy CLAY			KeyLAB ID	SLMK20211116105
Test Method	BS1377:Part4:1990:clause 5.5			Date started	16/11/2021

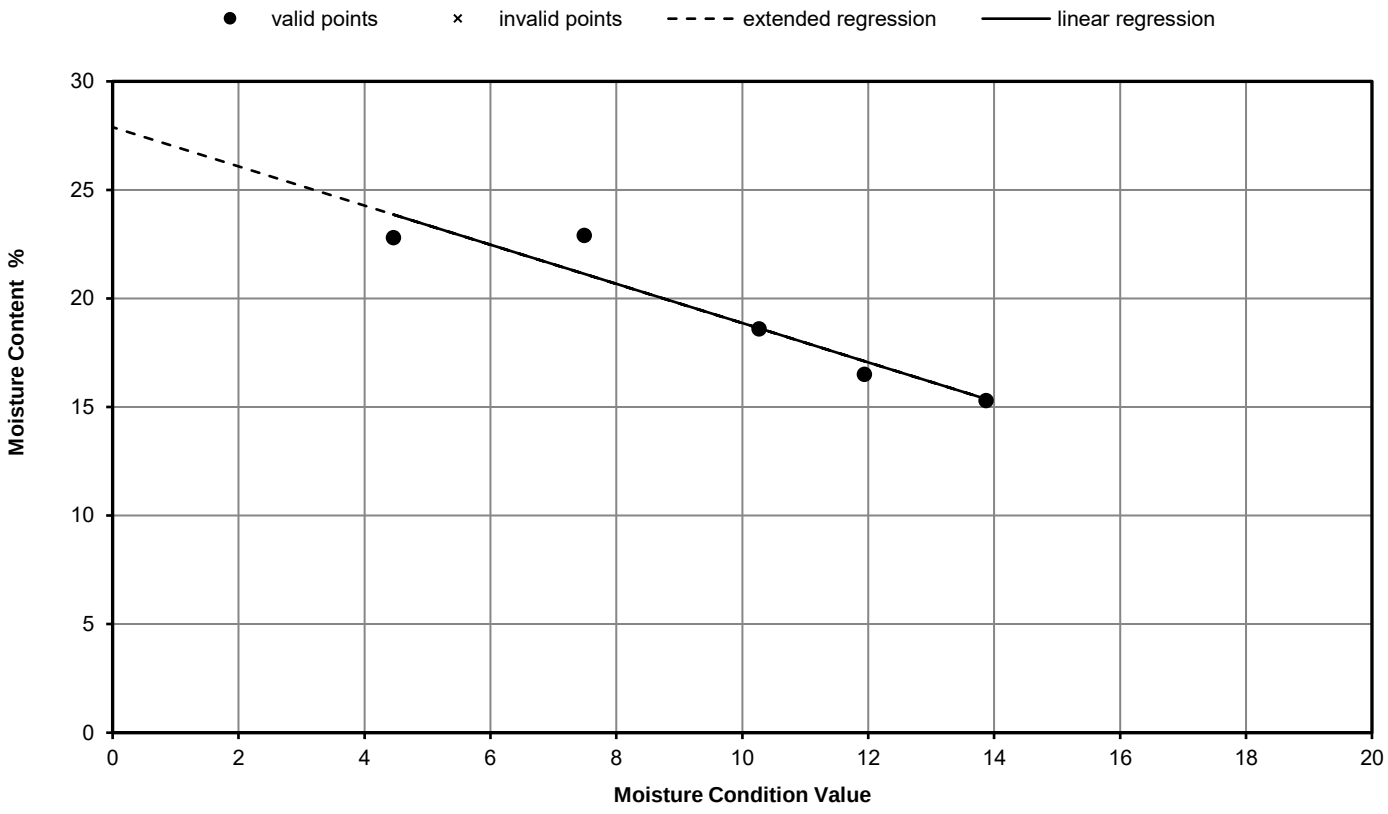
Sample preparation

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

MCV Test Number	1	2	3	4	5
Moisture Content, %	22.8	22.9	18.6	16.5	15.3
Moisture Condition Value	4.5	7.5	10.3	11.9	13.9
MCV report	4.5	7.5	10.3	11.9	13.9
Effective / Valid data point	YES	YES	YES	YES	YES
Specimen remarks					



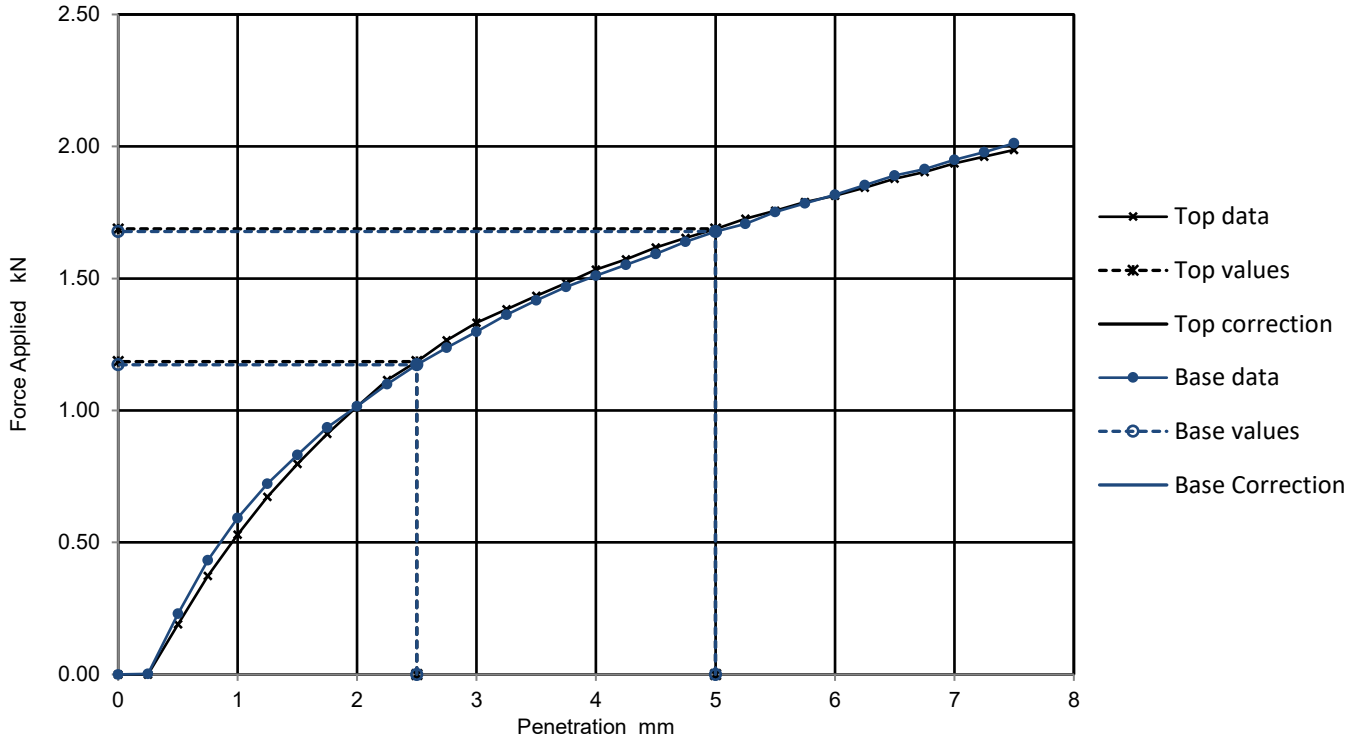
Tested	Checked	Approved
MS	JB	JBrischuk

	California Bearing 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	B
Specimen Description	Brown, CLAY			KeyLAB ID	SLMK202111168
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking	days
				Time to surface	days
				Amount of swell recorded	mm
Material retained on 20mm sieve removed		1	%	Dry density after soaking	Mg/m3
Initial Specimen details	Bulk density	2.06	Mg/m3	Surcharge applied	16.5 kg
	Dry density	1.71	Mg/m3		10 kPa
	Moisture content	20.4	%		

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, % 2.5mm	5mm	Highest	Average	Moisture Content %
TOP		9.0	8.4	9.0	8.9	20.9
BASE		8.9	8.4	8.9		20.3

General remarks	Test specific remarks	Approved
		KW

Fig No.	1
Sheet No	1

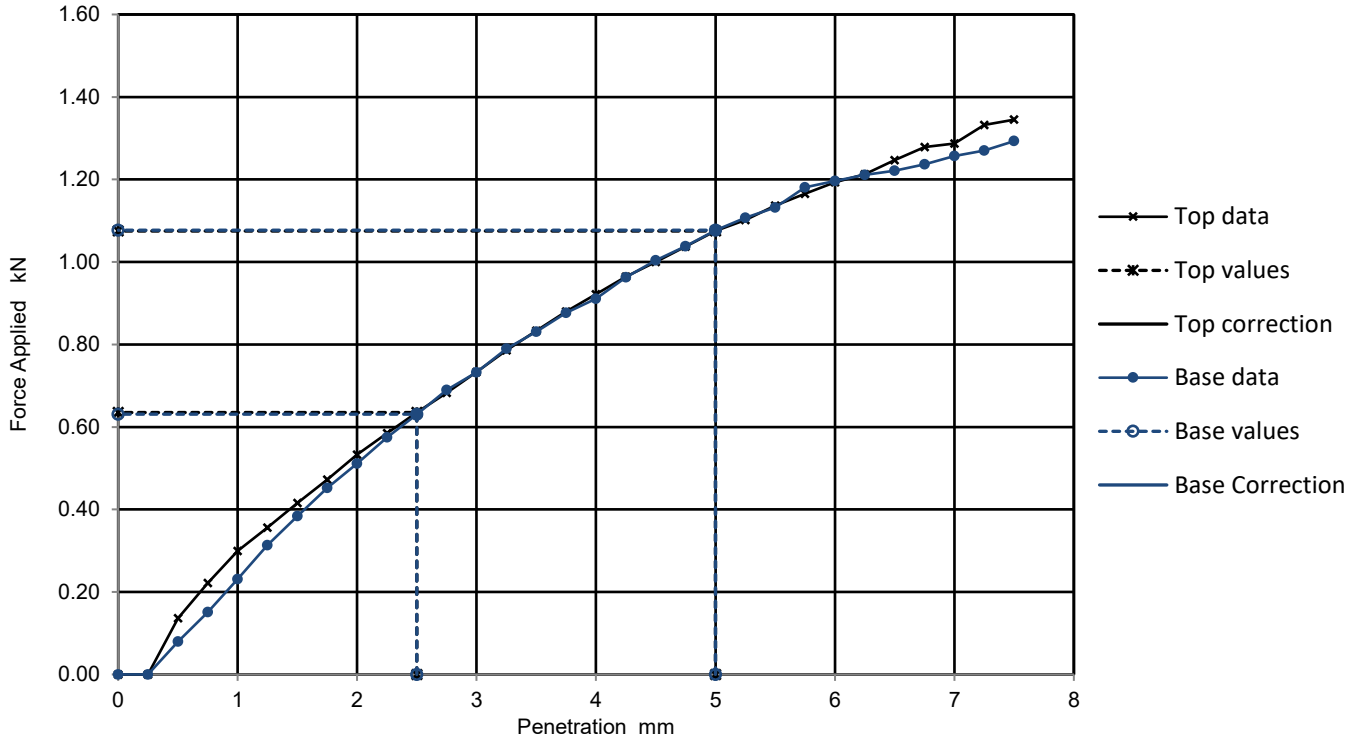
Lab Sheet Reference :

	California Bearing Ratio (CBR)			Job Ref	S211001
				Borehole/Pit No.	CP07
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth m	0.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown, CLAY			KeyLAB ID	SLMK2021111659
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		1	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.05	Mg/m3	Surcharge applied	16.5	kg
	Dry density	1.72	Mg/m3		10	kPa
	Moisture content	19.3	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, % 2.5mm	5mm	Highest	Average	Moisture Content %
TOP		4.8	5.4	5.4	5.4	19.7
BASE		4.8	5.4	5.4		21.0

General remarks	Test specific remarks	Approved
		KW

Fig No.	1
Sheet No	2

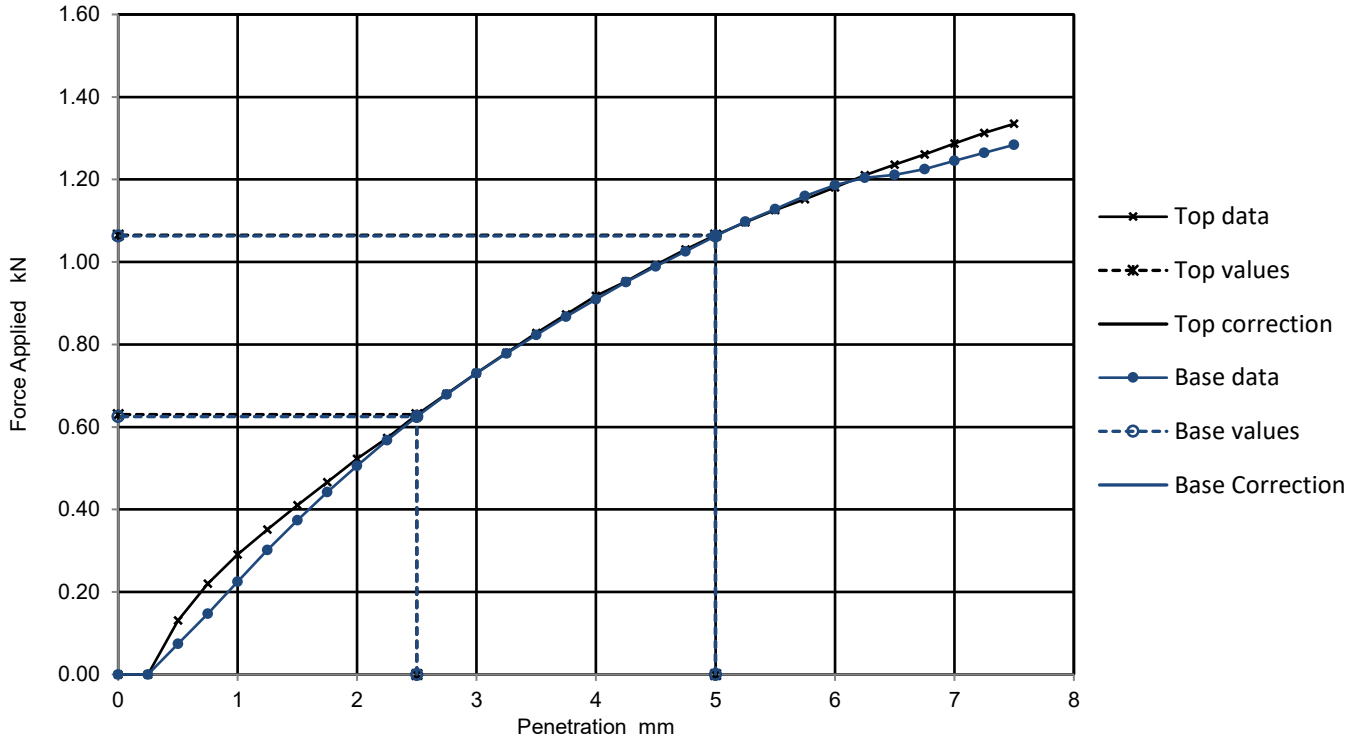
Lab Sheet Reference :

	California Bearing Ratio (CBR)			Job Ref	S211001
				Borehole/Pit No.	TP03
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth m	0.60
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown, Slightly Gravelly, Slightly Sandy, CLAY.			KeyLAB ID	SLMK2021120189
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		1	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.06	Mg/m3	Surcharge applied	16.5	kg
	Dry density	1.58	Mg/m3		10	kPa
	Moisture content	30.7	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, % 2.5mm	5mm	Highest	Average	Moisture Content %
TOP		4.8	5.3	5.3	5.3	18.9
BASE		4.7	5.3	5.3		18.6

General remarks	Test specific remarks	Approved
		T. Finnimore

Fig No.	1
Sheet No	3

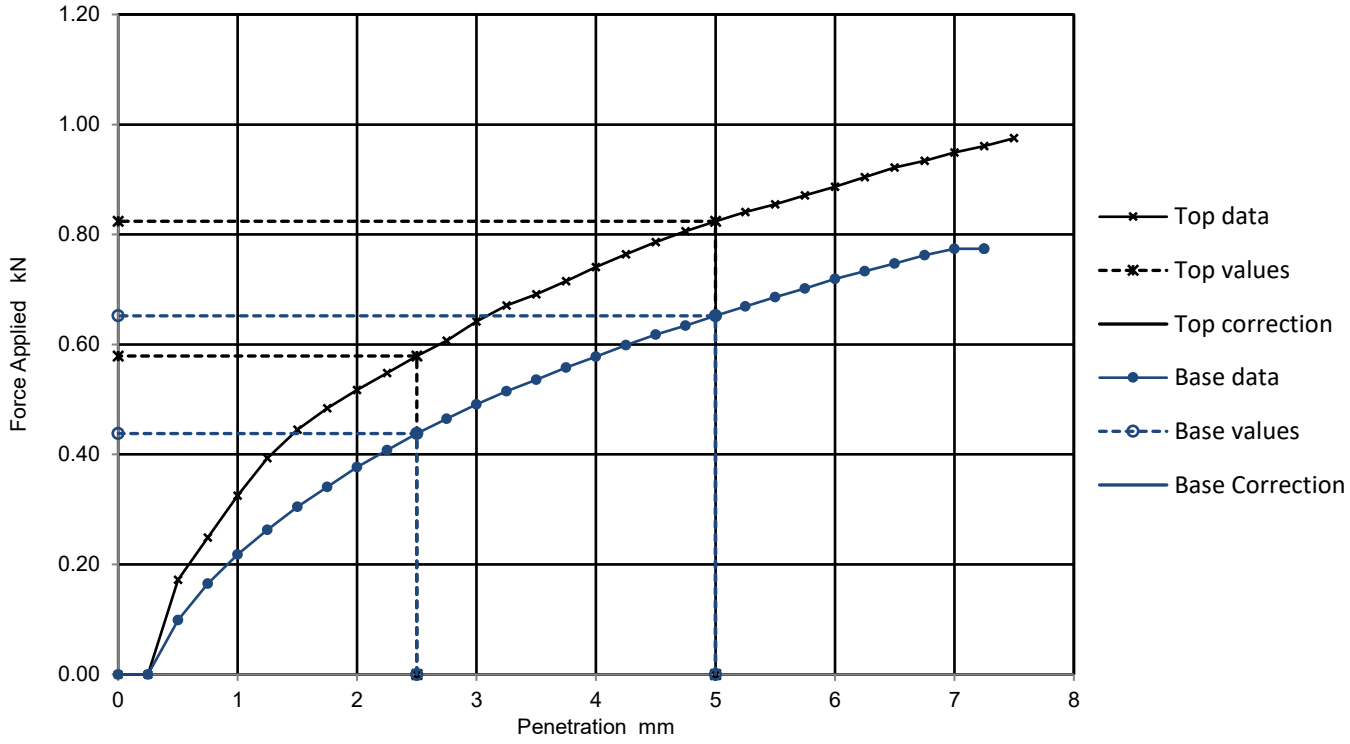
Lab Sheet Reference :

	California Bearing Ratio (CBR)			Job Ref	S211001
				Borehole/Pit No.	TP04
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown, Slightly Sandy, CLAY.			KeyLAB ID	SLMK2021120190
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		0	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	1.99	Mg/m3	Surcharge applied	16.5	kg
	Dry density	1.60	Mg/m3		10	kPa
	Moisture content	24.0	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, % 2.5mm	5mm	Highest	Average	Moisture Content %
TOP		4.4	4.1	4.4		23.4
BASE		3.3	3.3	3.3		24.0

General remarks	Test specific remarks	Approved
		KW

Fig No.	1
Sheet No	4

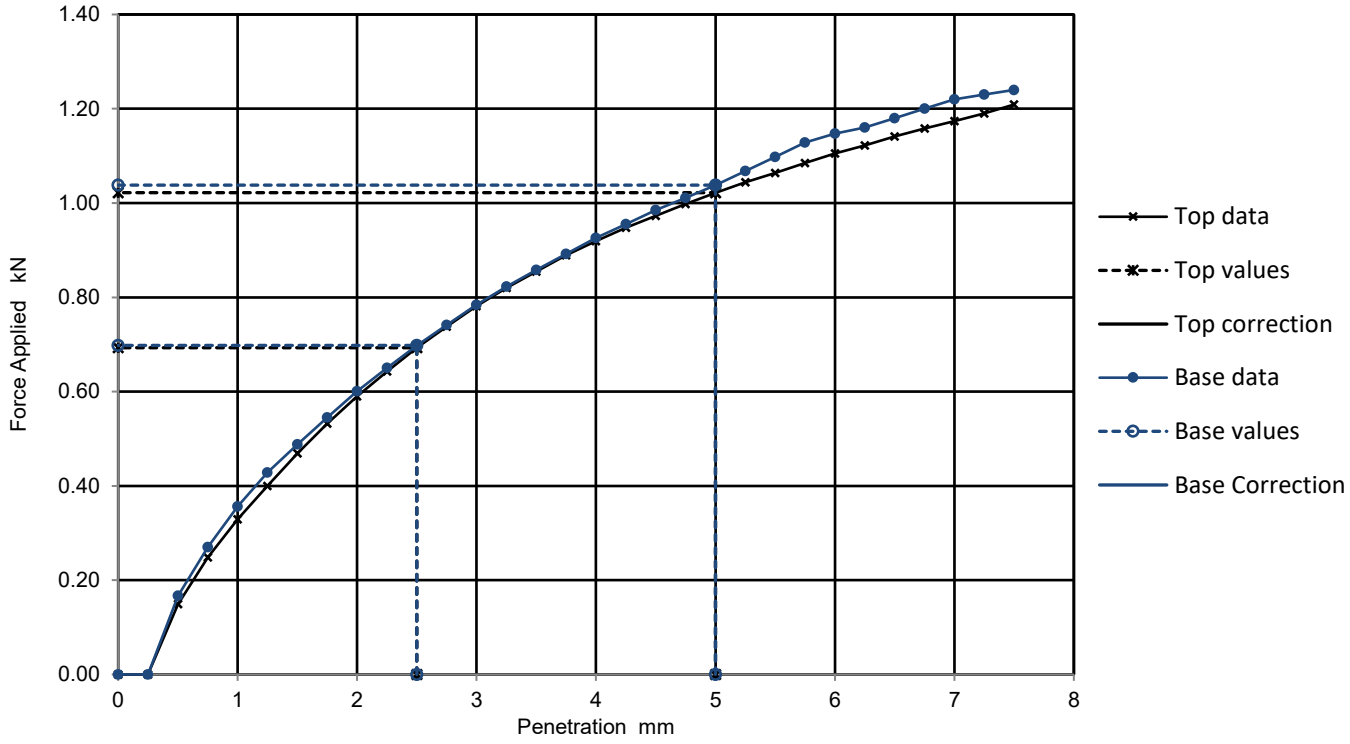
Lab Sheet Reference :

	California Bearing Ratio (CBR)			Job Ref	S211001
				Borehole/Pit No.	TP05
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown, CLAY.			KeyLAB ID	SLMK2021111673
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		0	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.01	Mg/m3	Surcharge applied	16.5	kg
	Dry density	1.64	Mg/m3		10	kPa
	Moisture content	22.3	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, % 2.5mm	5mm	Highest	Average	Moisture Content %
TOP		5.3	5.1	5.3	5.3	21.7
BASE		5.3	5.2	5.3		20.9

General remarks	Test specific remarks	Approved
		KW

Fig No.	1
Sheet No	5

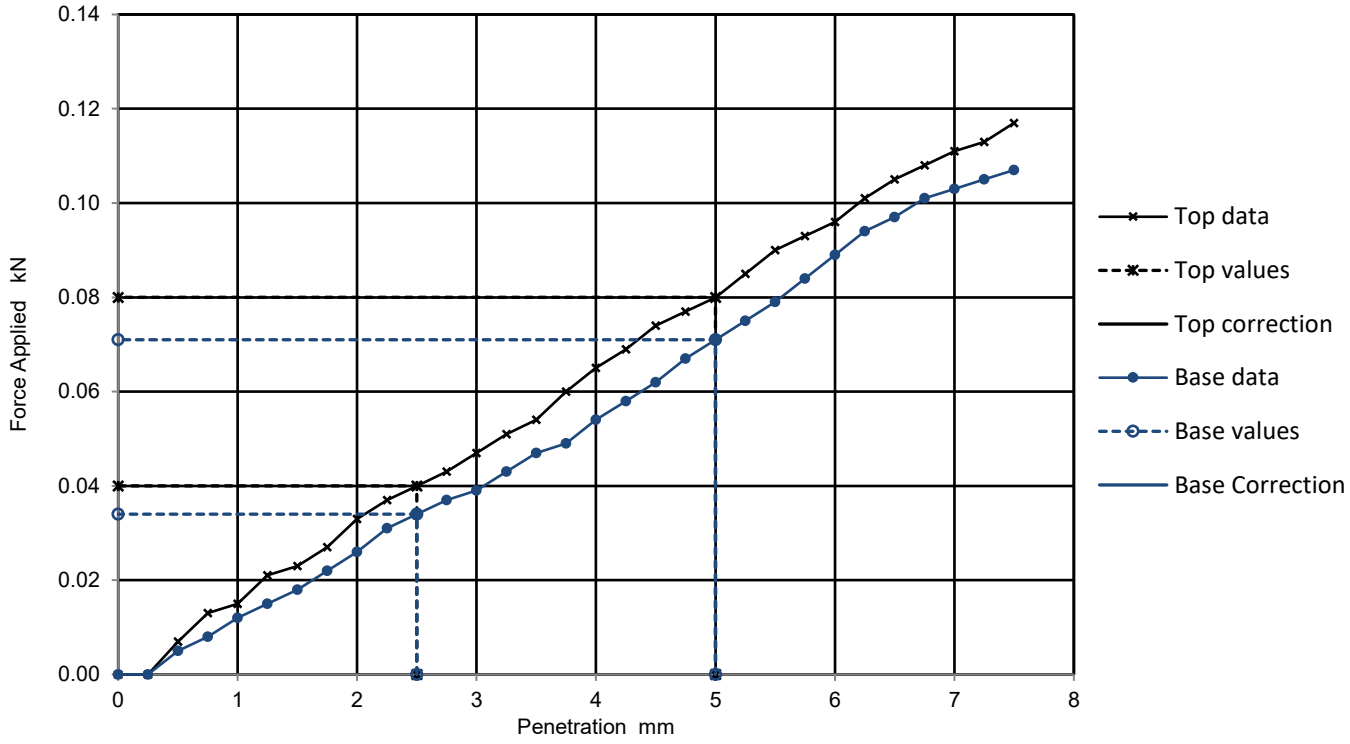
Lab Sheet Reference :

	California Bearing Ratio (CBR)			Job Ref	S211001
				Borehole/Pit No.	TP06
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth m	1.40
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown, CLAY.			KeyLAB ID	SLMK2021120193
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		5	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.11	Mg/m3	Surcharge applied	16.5	kg
	Dry density	1.78	Mg/m3		10	kPa
	Moisture content	18.5	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		0.3	0.4	0.4	0.4	18.2
BASE		0.3	0.4	0.4		17.4

General remarks	Test specific remarks	Approved
		KW

Fig No.	1
Sheet No	6

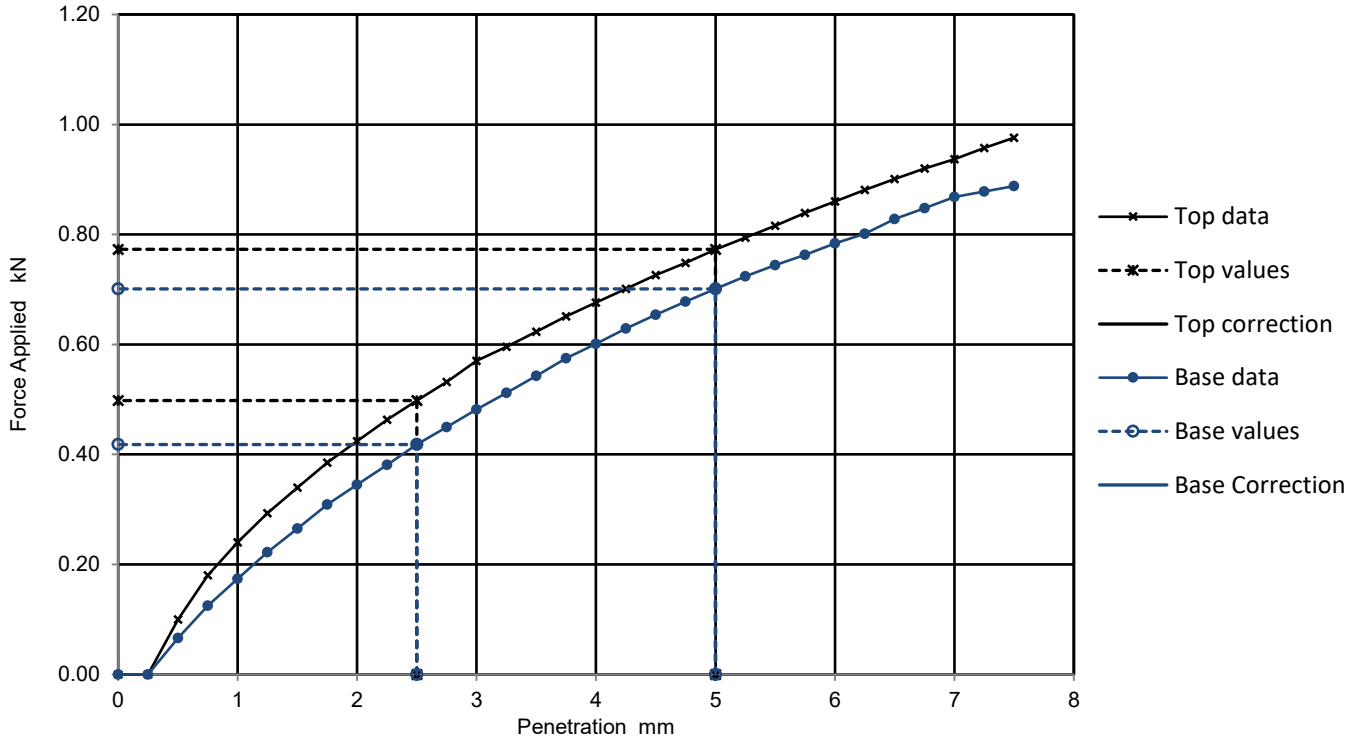
Lab Sheet Reference :

	California Bearing Ratio (CBR)			Job Ref	S211001
				Borehole/Pit No.	TP08
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth m	0.70
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown, slightly sandy, slightly gravelly, CLAY.			KeyLAB ID	SLMK2021120194
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		0	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.07	Mg/m3	Surcharge applied	16.5	kg
	Dry density	1.74	Mg/m3		10	kPa
	Moisture content	19.0	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, % 2.5mm	5mm	Highest	Average	Moisture Content %
TOP		3.8	3.9	3.9	3.7	19.9
BASE		3.2	3.5	3.5		19.6

General remarks	Test specific remarks	Approved
		KW

Fig No.	1
Sheet No	7

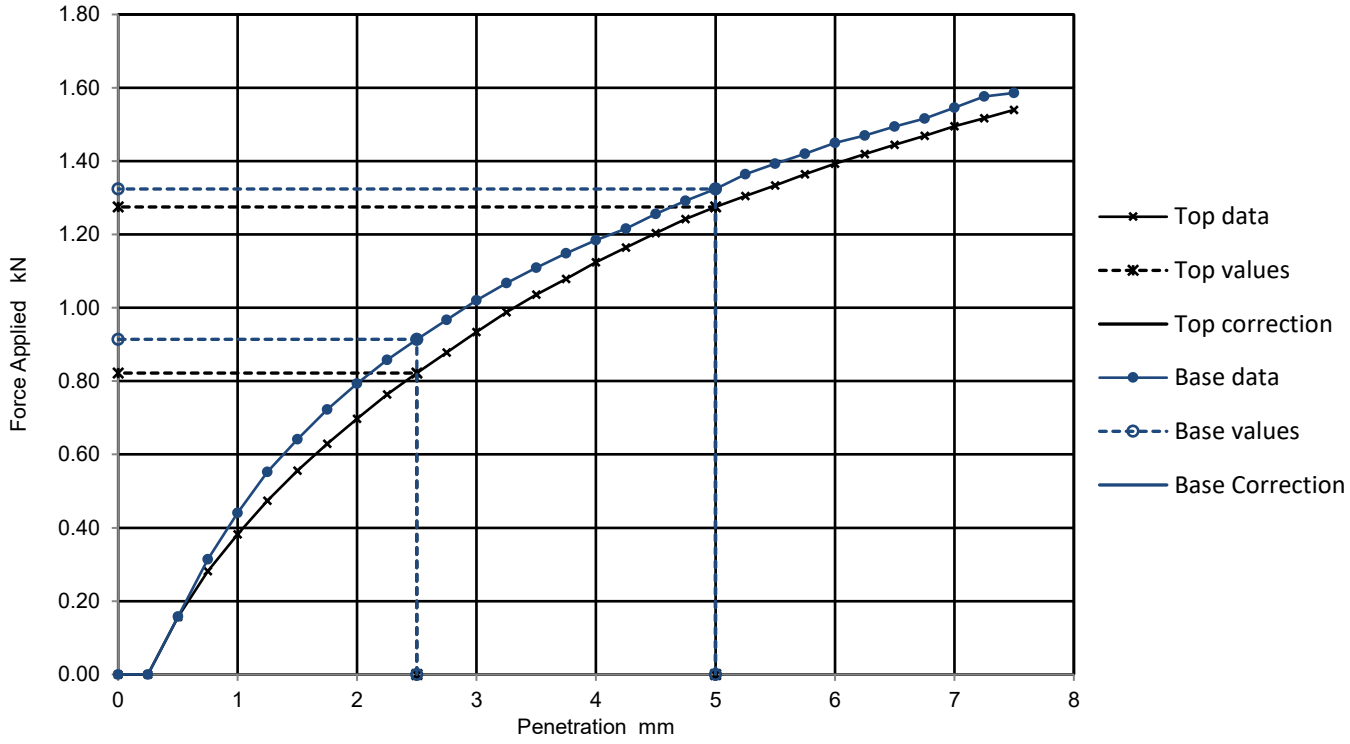
Lab Sheet Reference :

	California Bearing Ratio (CBR)			Job Ref	S211001
				Borehole/Pit No.	TP09
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth m	1.20
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown, CLAY.			KeyLAB ID	SLMK2021120196
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		0	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.04	Mg/m3	Surcharge applied	16.5	kg
	Dry density	1.69	Mg/m3		10	kPa
	Moisture content	20.6	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, % 2.5mm	5mm	Highest	Average	Moisture Content %
TOP		6.2	6.4	6.4	6.6	19.5
BASE		6.9	6.6	6.9		19.3

General remarks	Test specific remarks	Approved
		KW

Fig No.	1
Sheet No	8

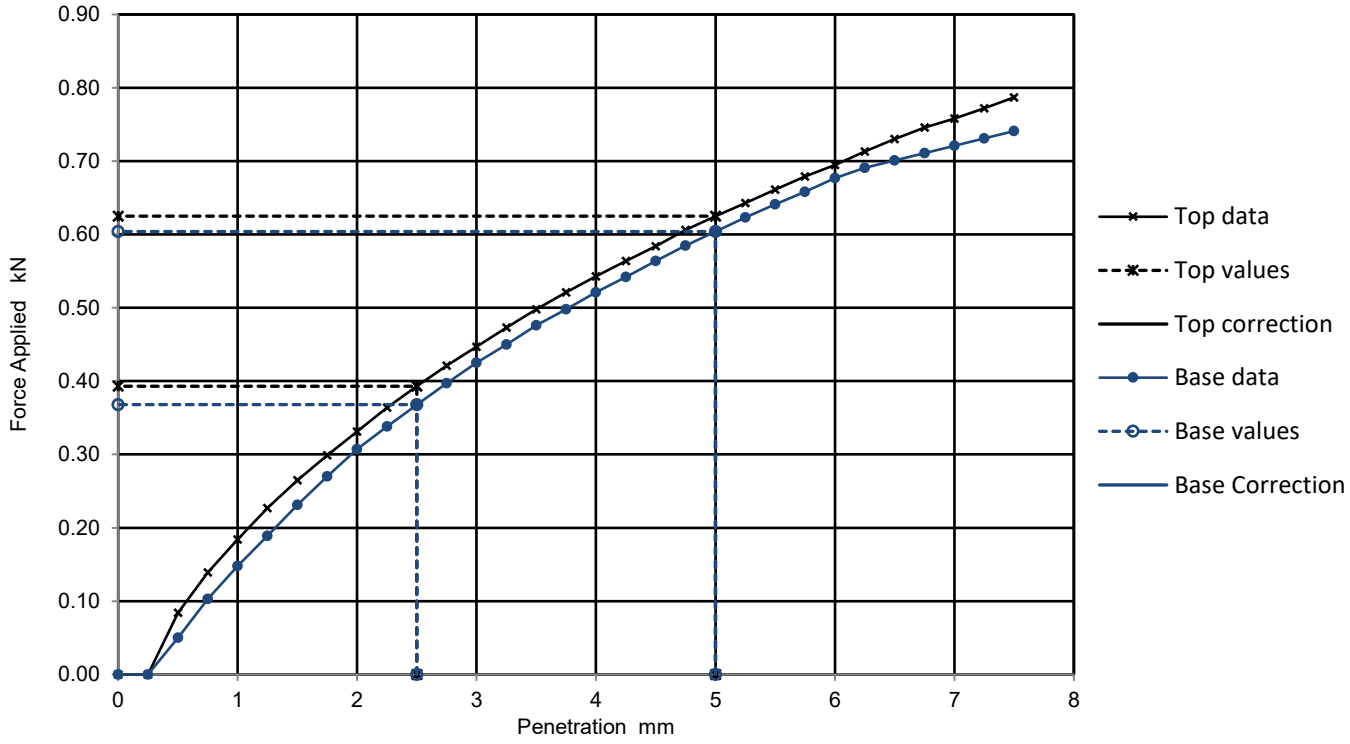
Lab Sheet Reference :

	California Bearing Ratio (CBR)			Job Ref	S211001
				Borehole/Pit No.	TP10
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth m	0.80
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown, Slightly Sandy, Slightly Gravelly, CLAY.			KeyLAB ID	SLMK2021120198
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		0	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	1.97	Mg/m3	Surcharge applied	16.5	kg
	Dry density	1.55	Mg/m3		10	kPa
	Moisture content	26.8	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, % 2.5mm	5mm	Highest	Average	Moisture Content %
TOP		3.0	3.1	3.1	3.1	24.5
BASE		2.8	3.0	3.0		25.0

General remarks	Test specific remarks	Approved
		T. Finnimore

Fig No.	1
Sheet No	9

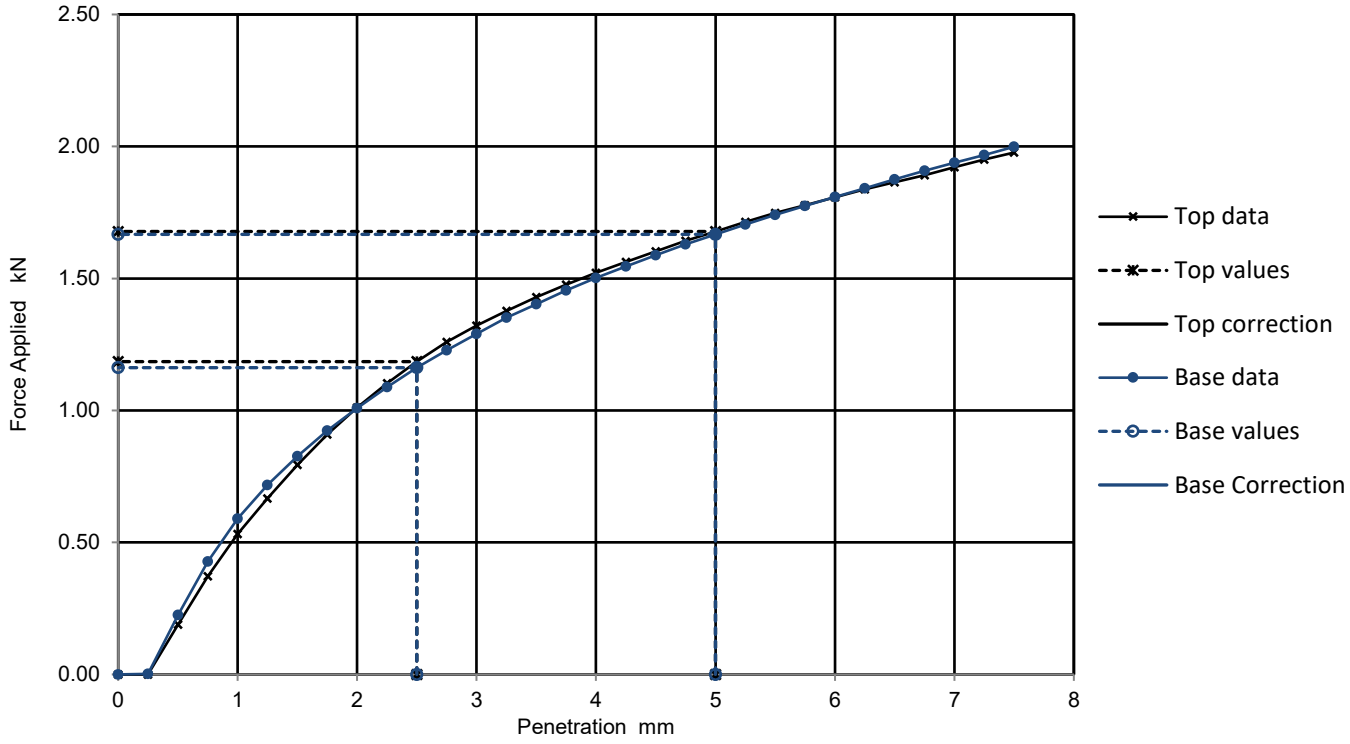
Lab Sheet Reference :

	California Bearing Ratio (CBR)			Job Ref	S211001
				Borehole/Pit No.	TP11
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth m	0.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown, Slightly Sandy, Slightly Gravelly, CLAY.			KeyLAB ID	SLMK20211201100
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		0	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.02	Mg/m3	Surcharge applied	16.5	kg
	Dry density	1.70	Mg/m3		10	kPa
	Moisture content	19.1	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, % 2.5mm	5mm	Highest	Average	Moisture Content %
TOP		9.0	8.4	9.0	8.9	19.0
BASE		8.8	8.3	8.8		19.3

General remarks	Test specific remarks	Approved
		KW

Fig No.	1
Sheet No	10

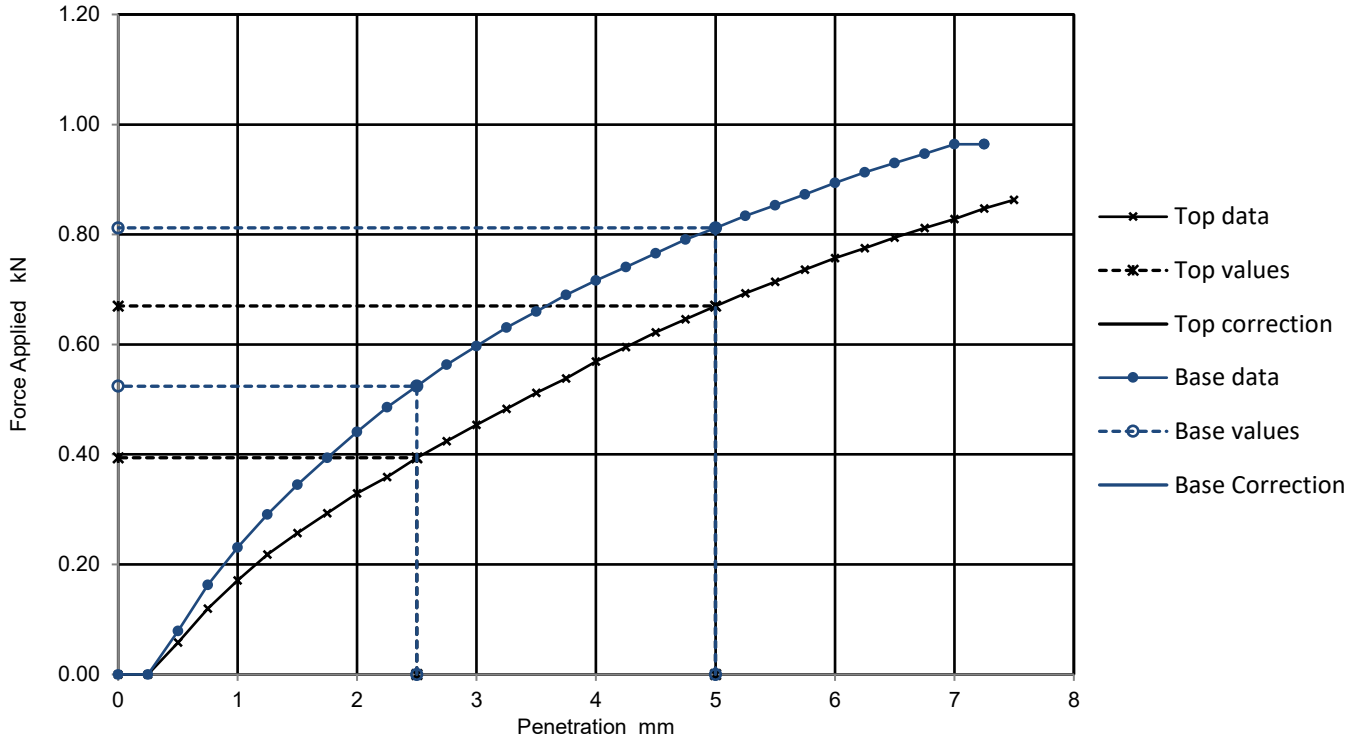
Lab Sheet Reference :

	California Bearing Ratio (CBR)			Job Ref	S211001
				Borehole/Pit No.	TP12
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth m	0.30
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown, CLAY.			KeyLAB ID	SLMK20211201102
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		1	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	1.94	Mg/m3	Surcharge applied	16.5	kg
	Dry density	1.55	Mg/m3		10	kPa
	Moisture content	25.0	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, % 2.5mm	5mm	Highest	Average	Moisture Content %
TOP		3.0	3.4	3.4	3.7	25.1
BASE		4.0	4.1	4.1		24.3

General remarks	Test specific remarks	Approved
		KW

Fig No.	1
Sheet No	11

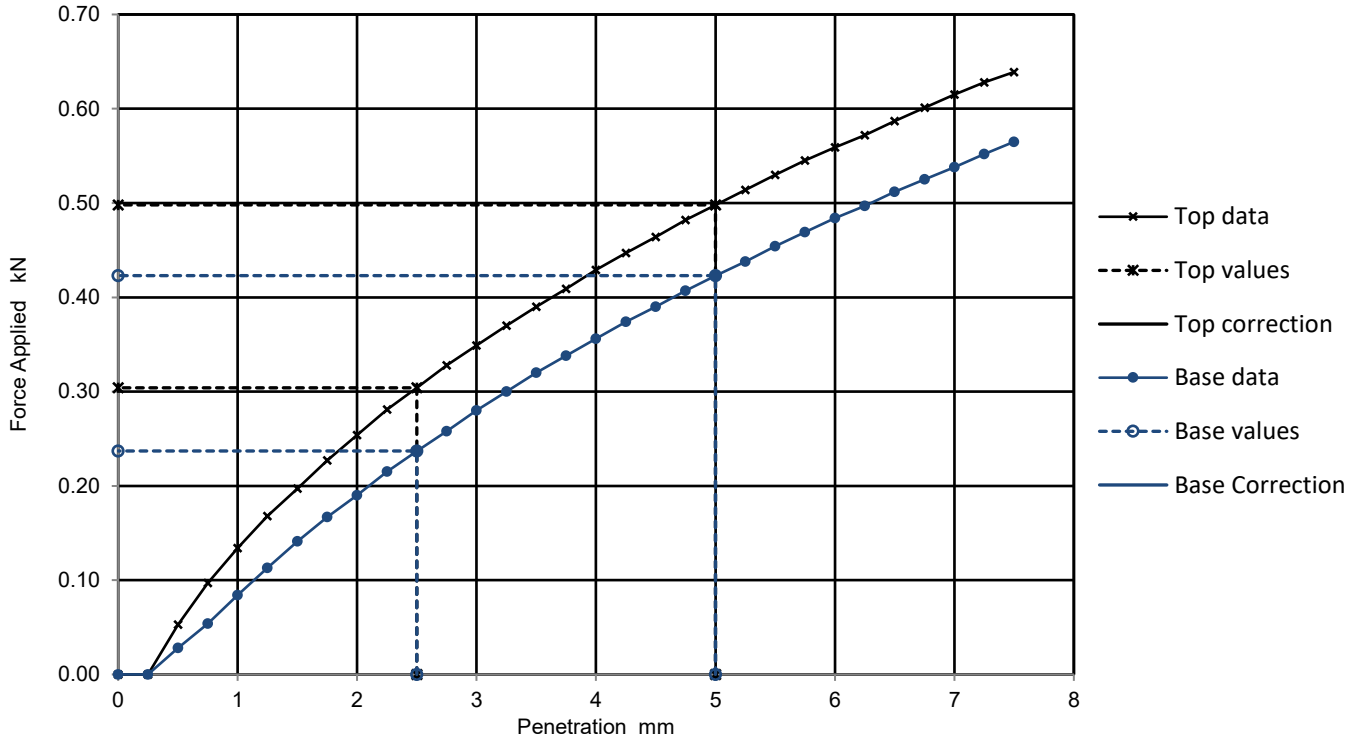
Lab Sheet Reference :

	California Bearing Ratio (CBR)			Job Ref	S211001
				Borehole/Pit No.	TP13
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth m	1.20
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown, Slightly Sandy, Slightly Gravelly, CLAY.			KeyLAB ID	SLMK20211201105
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		0	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.00	Mg/m3	Surcharge applied	16.5	kg
	Dry density	1.62	Mg/m3		10	kPa
	Moisture content	23.3	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, % 2.5mm	5mm	Highest	Average	Moisture Content %
TOP		2.3	2.5	2.5	2.3	23.6
BASE		1.8	2.1	2.1		23.3

General remarks	Test specific remarks	Approved
		KW

Fig No.	1
Sheet No	12

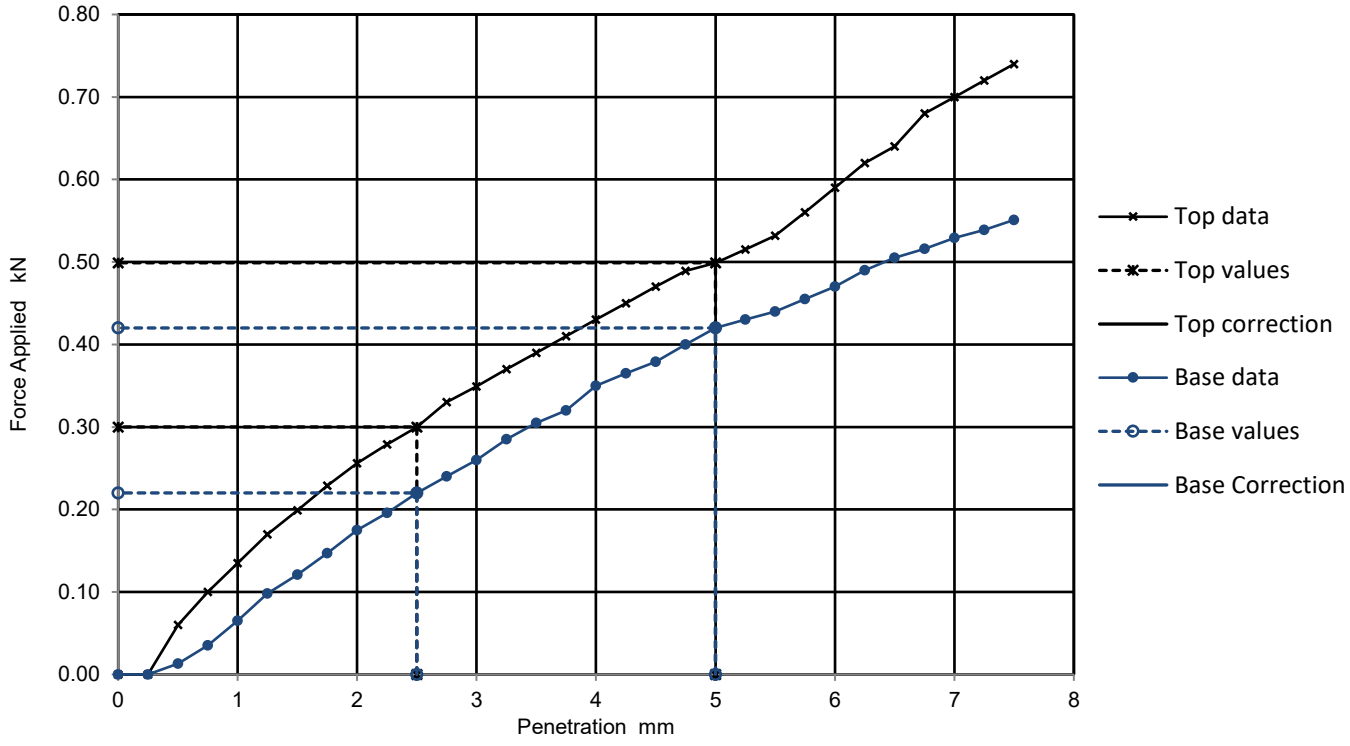
Lab Sheet Reference :

	California Bearing Ratio (CBR)			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	B
Specimen Description	Brown, Slightly Sandy, CLAY.			KeyLAB ID	SLMK20211201107
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		0	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.00	Mg/m3	Surcharge applied	16.5	kg
	Dry density	1.78	Mg/m3		10	kPa
	Moisture content	12.5	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		2.3	2.5	2.5	2.3	12.5
BASE		1.7	2.1	2.1		12.5

General remarks	Test specific remarks	Approved
		KW

Fig No.	1
Sheet No	13

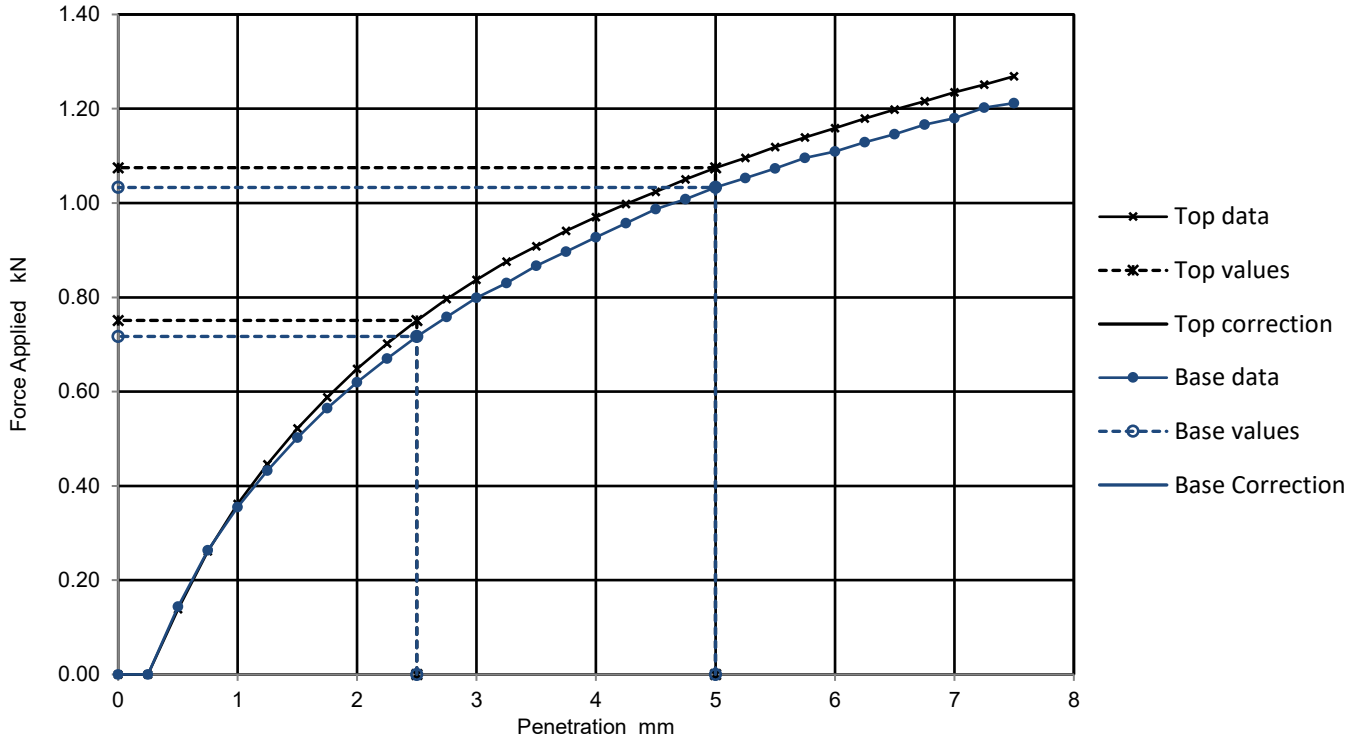
Lab Sheet Reference :

	California Bearing Ratio (CBR)			Job Ref	S211001
				Borehole/Pit No.	TP15
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth m	0.60
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown, Slightly Gravelly, Slighty Sandy, CLAY.			KeyLAB ID	SLMK20211201109
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		1	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	1.98	Mg/m3	Surcharge applied	16.5	kg
	Dry density	1.59	Mg/m3		10	kPa
	Moisture content	24.6	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, % 2.5mm	5mm	Highest	Average	Moisture Content %
TOP		5.7	5.4	5.7	5.6	22.8
BASE		5.4	5.2	5.4		24.3

General remarks	Test specific remarks	Approved
		KW

Fig No.	1
Sheet No	14

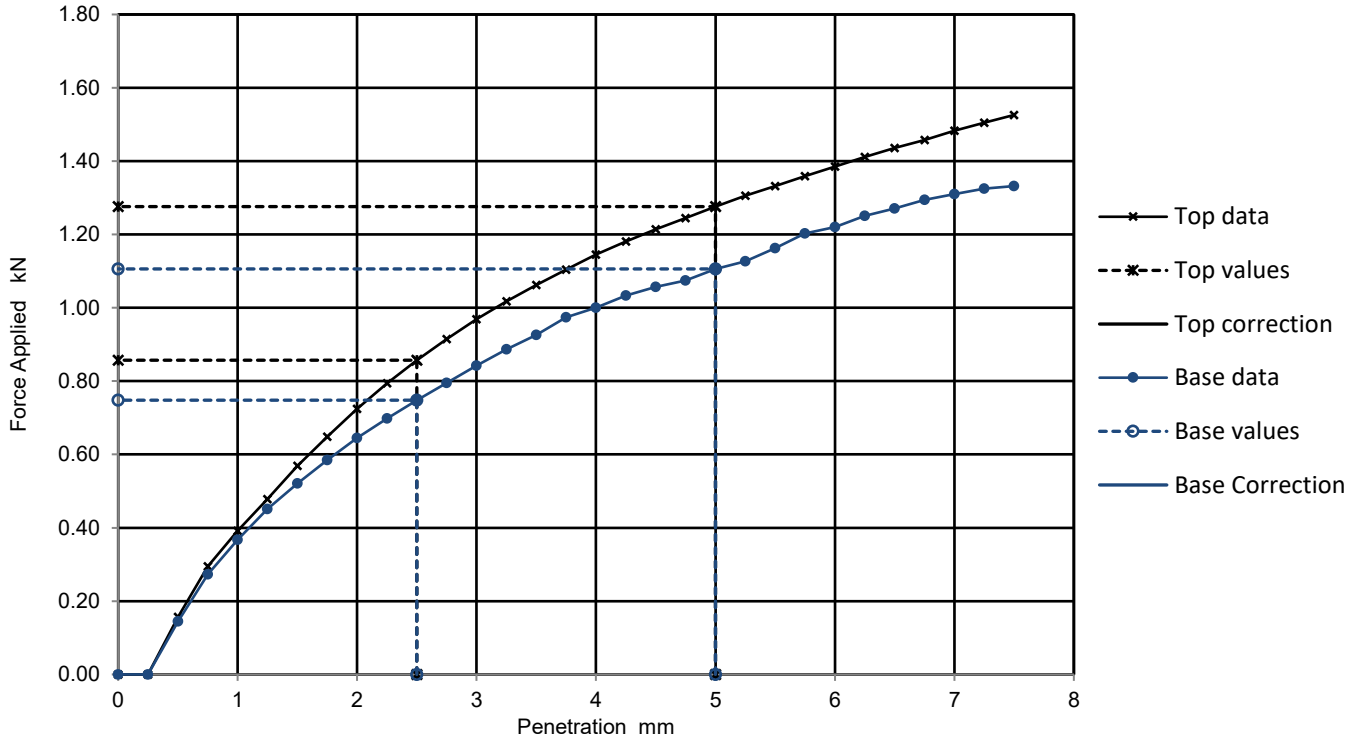
Lab Sheet Reference :

	California Bearing Ratio (CBR)			Job Ref	S211001
				Borehole/Pit No.	TP21
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown, slightly gravelly, slightly sandy CLAY			KeyLAB ID	SLMK2021111685
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		1	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.05	Mg/m3	Surcharge applied	16.5	kg
	Dry density	1.72	Mg/m3		10	kPa
	Moisture content	19.4	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		6.5	6.4	6.5	6.1	18.7
BASE		5.7	5.5	5.7		19.4

General remarks	Test specific remarks	Approved
		KW

Fig No.	1
Sheet No	15

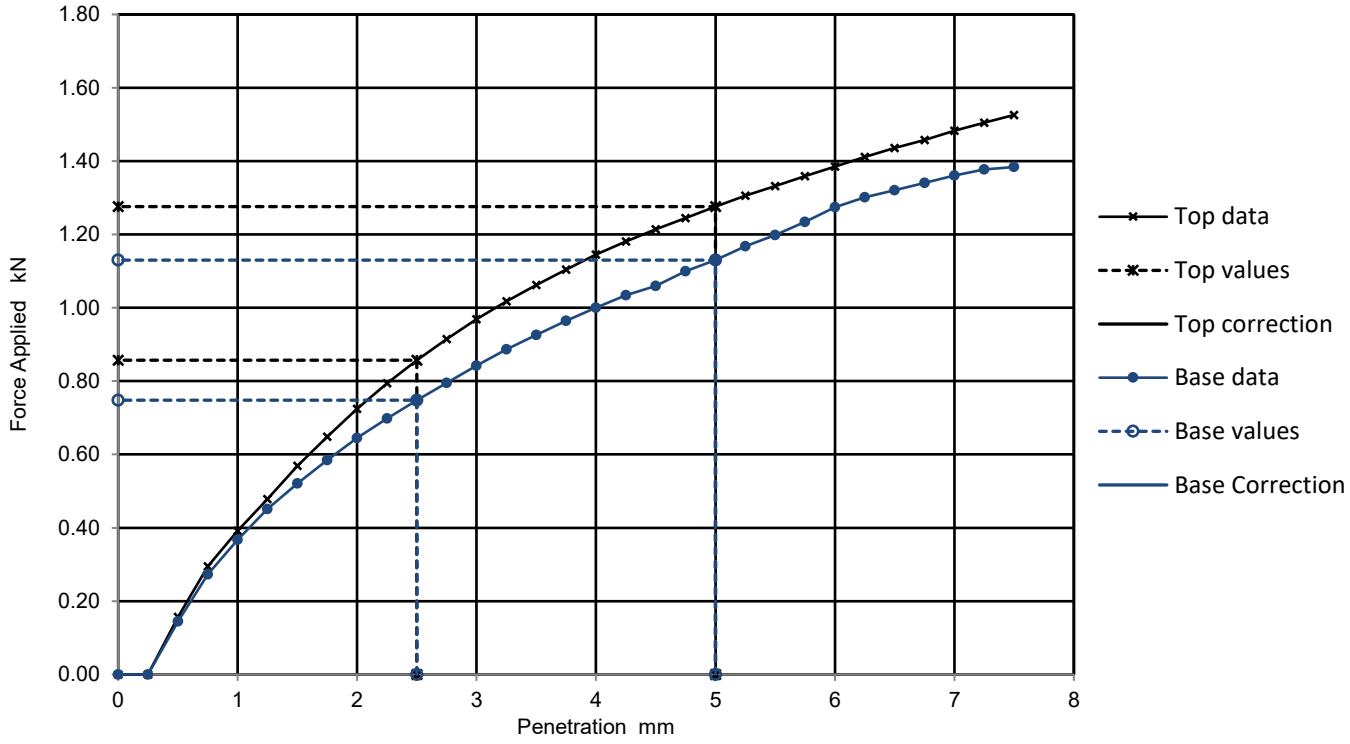
Lab Sheet Reference :

	California Bearing Ratio (CBR)			Job Ref	S211001
				Borehole/Pit No.	TP23
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth m	1.60
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown, Slightly Gravelly, Slightly Sandy, CLAY.			KeyLAB ID	SLMK20211201114
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		1	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.05	Mg/m3	Surcharge applied	16.5	kg
	Dry density	1.71	Mg/m3		10	kPa
	Moisture content	19.6	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, % 2.5mm	5mm	Highest	Average	Moisture Content %
TOP		6.5	6.4	6.5	6.1	18.8
BASE		5.7	5.7	5.7		19.3

General remarks	Test specific remarks	Approved
		KW

Fig No.	1
Sheet No	16

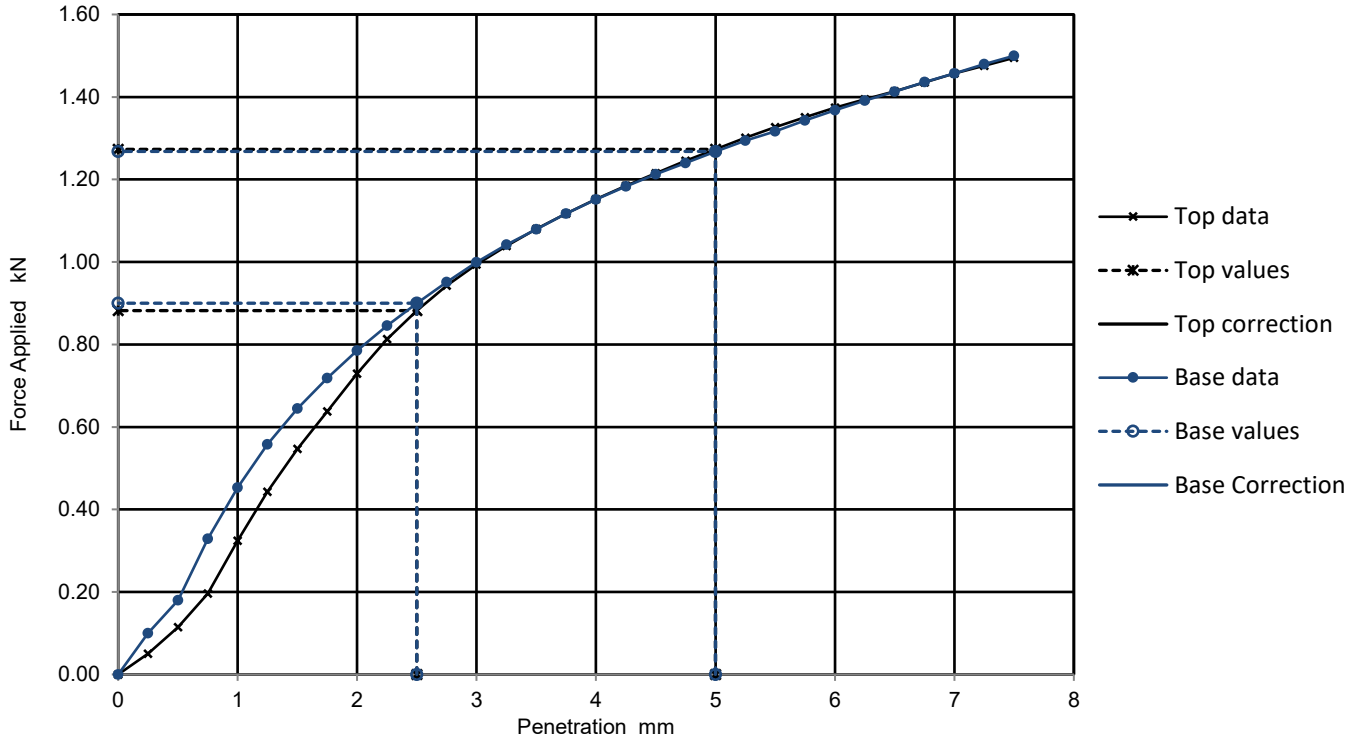
Lab Sheet Reference :

	California Bearing Ratio (CBR)			Job Ref	S211001
				Borehole/Pit No.	TP33
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown, CLAY			KeyLAB ID	SLMK2021111696
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		0	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	1.97	Mg/m3	Surcharge applied	16.5	kg
	Dry density	1.59	Mg/m3		10	kPa
	Moisture content	23.6	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, % 2.5mm	5mm	Highest	Average	Moisture Content %
TOP		6.7	6.4	6.7	6.8	22.6
BASE		6.8	6.3	6.8		22.0

General remarks	Test specific remarks	Approved
		KW

Fig No.	1
Sheet No	17

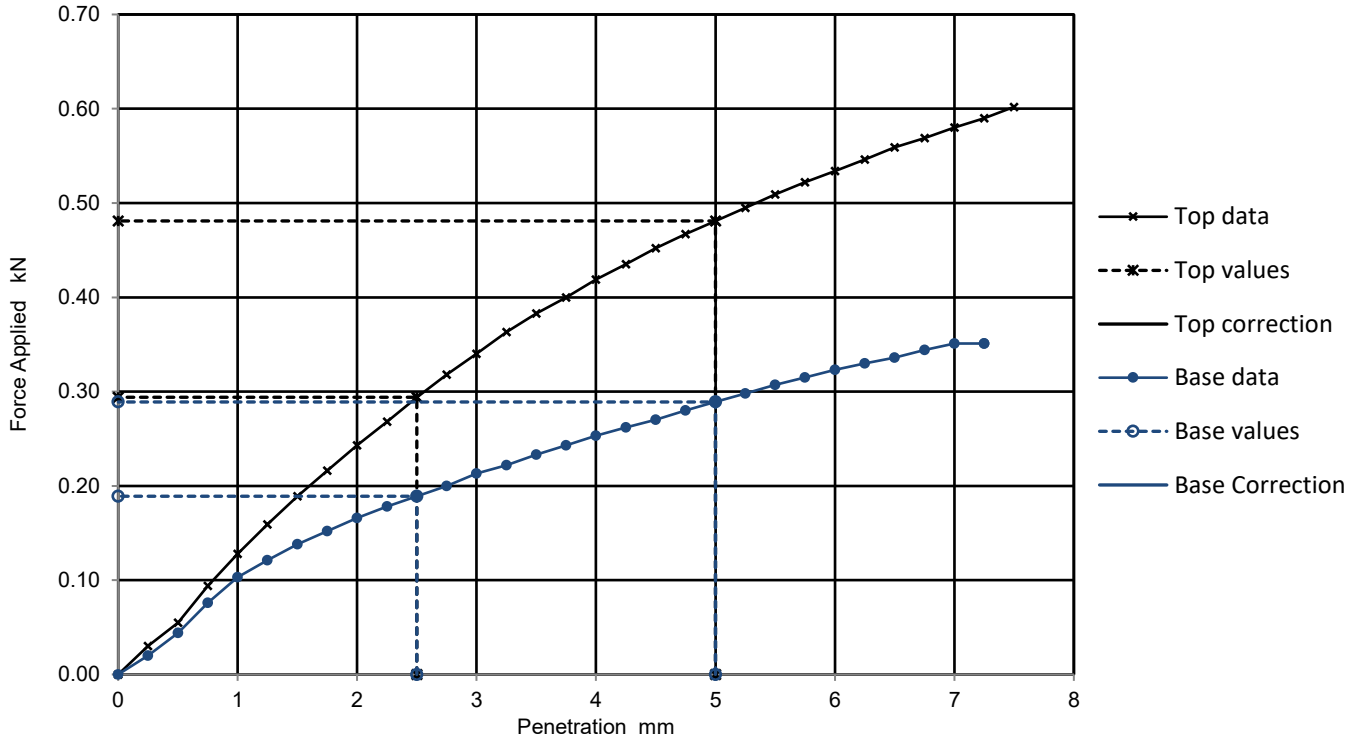
Lab Sheet Reference :

	California Bearing Ratio (CBR)			Job Ref	S211001
				Borehole/Pit No.	TP46
Site Name	Envision, Sunderland			Sample No.	
Soil Description				Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown, slightly gravelly, slightly sandy CLAY			KeyLAB ID	SLMK20211116105
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		0	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	1.98	Mg/m3	Surcharge applied	16.5	kg
	Dry density	1.61	Mg/m3		10	kPa
	Moisture content	23.1	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, % 2.5mm	5mm	Highest	Average	Moisture Content %
TOP		2.2	2.4	2.4		22.1
BASE		1.4	1.4	1.4		24.3

General remarks	Test specific remarks	Approved
		KW

Fig No.	1
Sheet No	18

Lab Sheet Reference :

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:
K Watkin	☐ J. Brischuck (Laboratory Manager) ☑ K. Watkin (Quality Manager) ☐

Density Tests - Summary of Results

Project No.: S211001

Project Name: Envision, Sunderland

Hole No.	Sample				Soil Description	Linear Measurement			Immersion in water			Water displacement			Remarks
	Ref	Top	Base	Type		Bulk density Mg/m^3	Dry density Mg/m^3	w %	Bulk density Mg/m^3	Dry density Mg/m^3	w %	Bulk density Mg/m^3	Dry density Mg/m^3	w %	
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

Tests carried out in accordance with BS1377:Part2:1990 and the following clauses unless annotated otherwise

Linear measurement	clause 7.2
Immersion in water	clause 7.3
Water displacement	clause 7.4

Date Printed: 10/01/2022

Approved By: KW

Table: sheet

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		

Results - Soil

Project: S211001 Envision, Sunderland

Client: Solmek Ltd			**Chemtest Job No.:**		21-39513	21-39513	21-39513	21-39513	21-39513	21-39513	21-39513	21-39513	21-39513
Quotation No.: Q20-21567			**Chemtest Sample ID.:**		1317370	1317371	1317372	1317373	1317374	1317375	1317376	1317377	1317378
			Sample Location:		CP01	CP01	CP02	CP02	CP02	CP03	CP03	CP04	CP04
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.40	4.45	0.30	2.45	5.00	0.40	4.45	0.40	4.45
			Bottom Depth (m):		0.80	4.55	0.40	2.55	5.95	0.80	4.55	0.80	4.55
			Date Sampled:		27-Oct-2021	27-Oct-2021	27-Oct-2021	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	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	

Results - Soil

Project: S211001 Envision, Sunderland

Client: Solmek Ltd		**Chemtest Job No.:**			21-39513	21-39513	21-39513	21-39513	21-39513	21-39513	21-39513	21-39513	21-39513
Quotation No.: Q20-21567		**Chemtest Sample ID.:**			1317379	1317380	1317381	1317382	1317383	1317384	1317385	1317386	1317387
		Sample Location:			CP04	CP05	CP06	CP06	CP06	CP06	CP07	CP07	CP07
		Sample Type:			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			10.00	0.40	0.20	4.45	9.45	16.00	0.50	3.45	7.95
		Bottom Depth (m):			10.45	0.80	0.40	4.55	9.55	16.45	0.90	3.55	8.05
		Date Sampled:			27-Oct-2021	27-Oct-2021	27-Oct-2021	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	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

Results - Soil

Project: S211001 Envision, Sunderland

Client: Solmek Ltd			**Chemtest Job No.:**		21-39513
Quotation No.: Q20-21567			**Chemtest Sample ID.:**		1317388
			Sample Location:		CP07
			Sample Type:		SOIL
			Top Depth (m):		14.00
			Bottom Depth (m):		14.45
			Date Sampled:		27-Oct-2021
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	pH	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

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customerservices@chemtest.com

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		

Results - Soil

Project: S211001 Envision, Sunderland

Client: Solmek Ltd			**Chemtest Job No.:**		21-39946	21-39946	21-39946	21-39946	21-39946	21-39946
Quotation No.: Q20-21567			**Chemtest Sample 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
			Bottom Depth (m):		2.20	2.20	2.20	2.20	1.00	2.20
			Date Sampled:		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	pH	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

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D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

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

Results - Soil

Project: S211001 Envision, Sunderland

Client: Solmek Ltd		**Chemtest Job No.:**			21-40245	21-40245	21-40245	21-40245	21-40245	21-40245
Quotation No.: Q20-21567		**Chemtest Sample ID.:**			1321014	1321015	1321016	1321017	1321018	1321019
			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
			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	pH	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

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Sample Retention and Disposal

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Newmarket
CB8 0AL
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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		

Results - Soil

Project: S211001 Envision, Sunderland

Client: Solmek Ltd		**Chemtest Job 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
		Sample Location:			TP06	TP10	TP11	TP14	TP23	TP30	TP37
		Sample Type:			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	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:			10-Nov-2021	10-Nov-2021	10-Nov-2021	10-Nov-2021	10-Nov-2021	10-Nov-2021	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	pH	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.

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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		

Results - Soil

Project: S211001 Envision, Sunderland

Client: Solmek Ltd			**Chemtest Job No.:**		21-42373	21-42373	21-42373
Quotation No.:			**Chemtest Sample ID.:**		1331389	1331390	1331391
			Sample Location:		CPRO01	CPRO04	CPRO06
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.70	4.45	16.00
			Bottom Depth (m):		0.80	4.55	16.45
			Date Sampled:		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	pH	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.

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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 (Director)
R Berriman (Quality Manager)
S Royle (Laboratory Manager)

L Knight (Assistant Laboratory Manager)
S Eyre (Senior Technician)
T Watkins (Senior Technician)

5 – 7 Hexthorpe Road, Hexthorpe,
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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		B	0.40	0.80	Brown slightly gravelly sandy CLAY.
CP02		B	0.40	0.70	Brown sandy CLAY.
CP03		B	0.40	0.80	Brown slightly gravelly sandy CLAY.
CP04		B	0.40	0.80	Brown slightly gravelly sandy CLAY.
CP07		B	0.50	0.90	Brown slightly gravelly sandy CLAY.

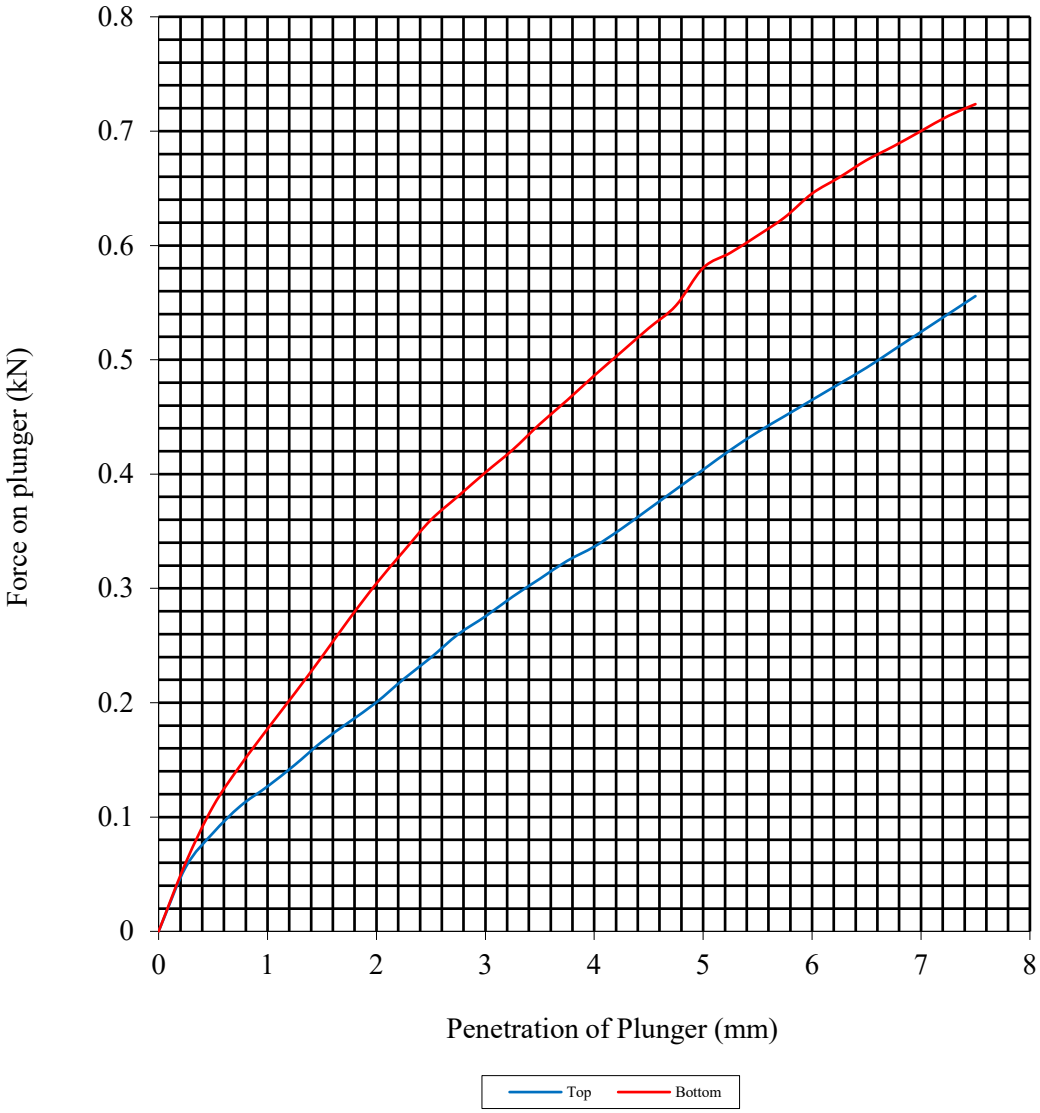
CALIFORNIA BEARING RATIO TEST

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 Preparation		Final Moisture Content %		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:	1.73	Swelling mm:	1.34	Remarks : Compacted to 95% MDD at natural moisture content			
Percentage retained on 20mm BS test sieve:			0				
Compaction Conditions		2.5kg					

UKAS TESTING 4043

PSL Professional Soils Laboratory

Envision, Sunderland

Contract No: PSL21/9587

Client Ref: S211001-1

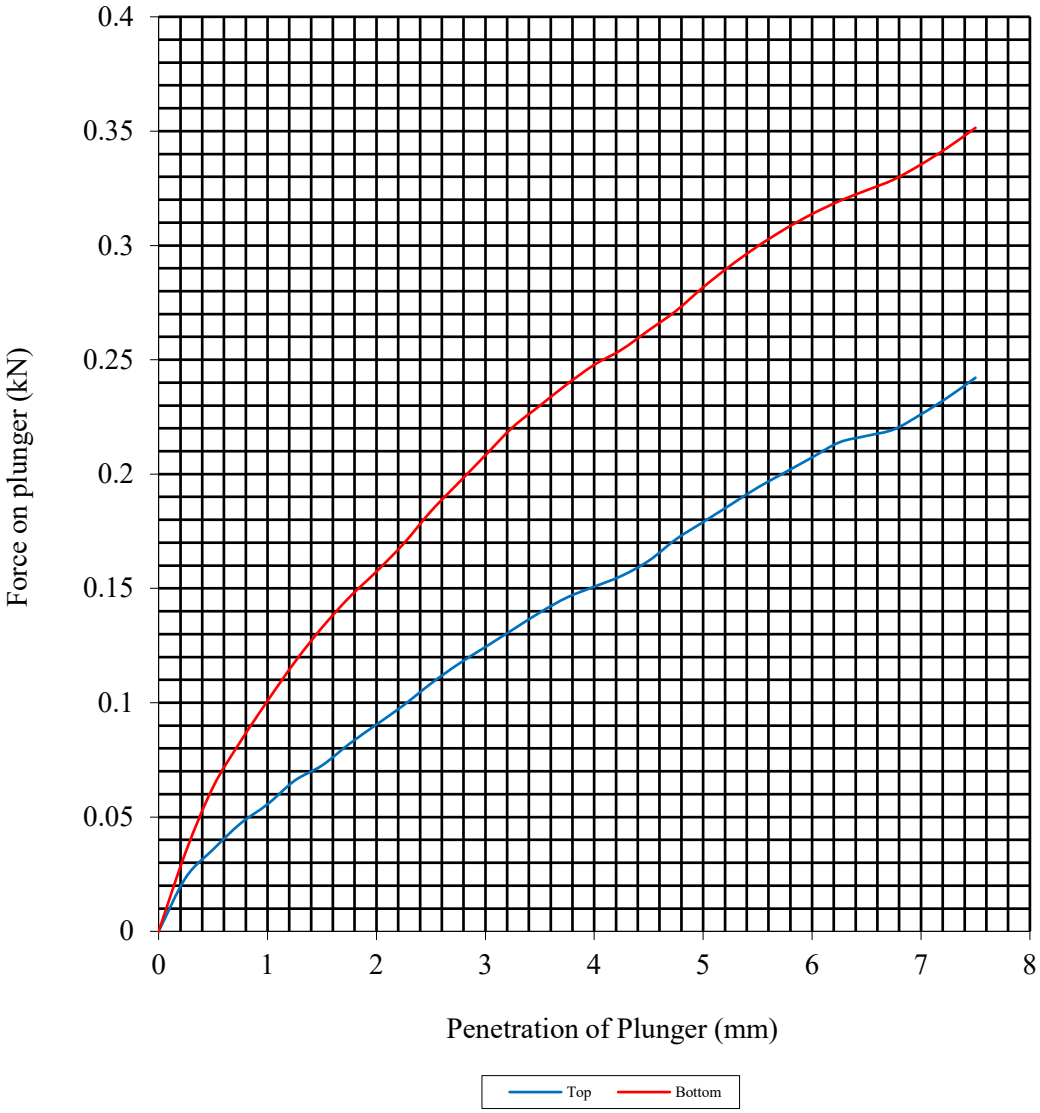
CALIFORNIA BEARING RATIO TEST

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 Preparation		Final Moisture Content %		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 95% MDD at natural moisture content			
Percentage retained on 20mm BS test sieve:			0				
Compaction Conditions		2.5kg					

UKAS TESTING 4043

PSL Professional Soils Laboratory

Envision, Sunderland

Contract No: PSL21/9587

Client Ref: S211001-1

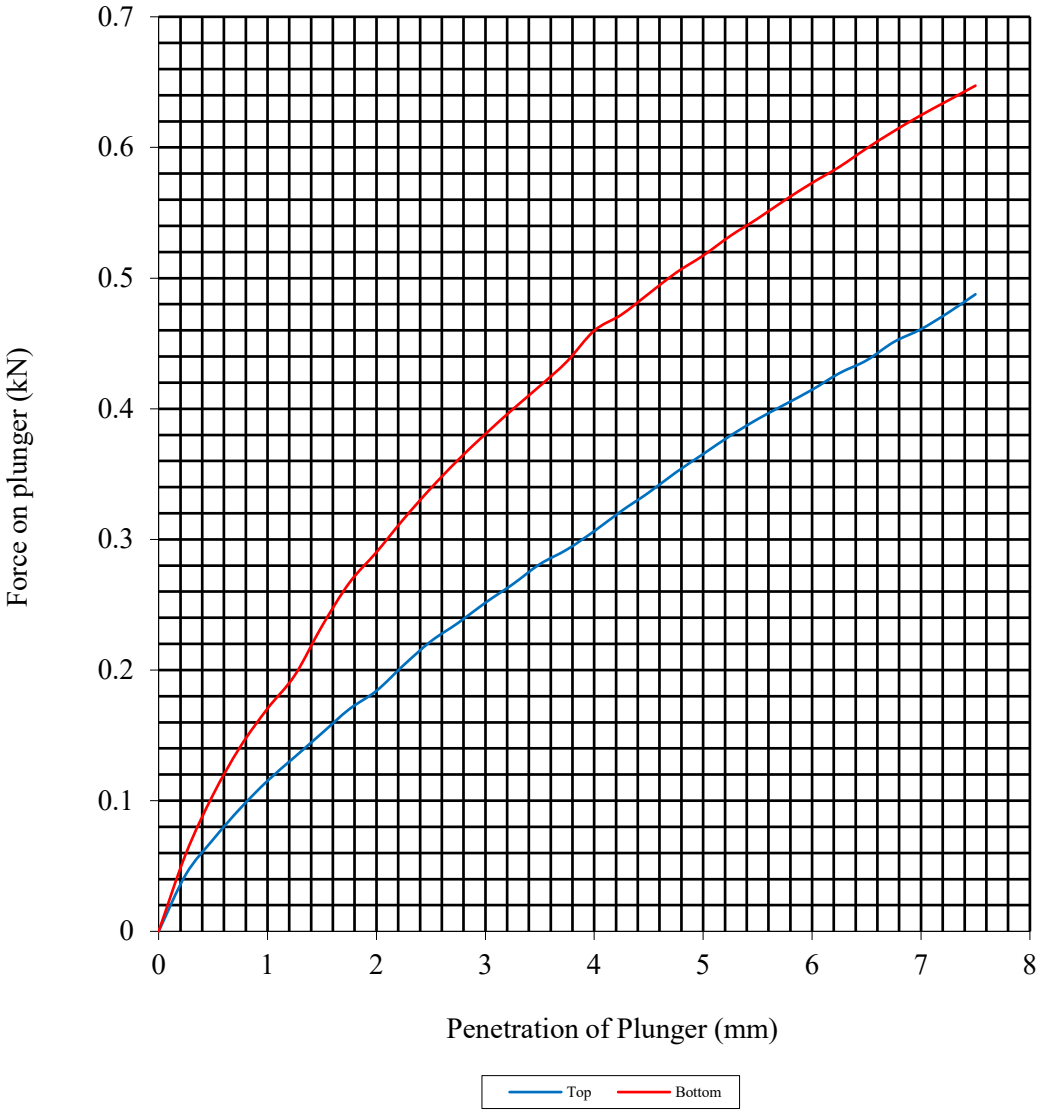
CALIFORNIA BEARING RATIO TEST

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 Preparation		Final Moisture Content %		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					

UKAS TESTING 4043

PSL Professional Soils Laboratory

Envision, Sunderland

Contract No: PSL21/9587

Client Ref: S211001-1

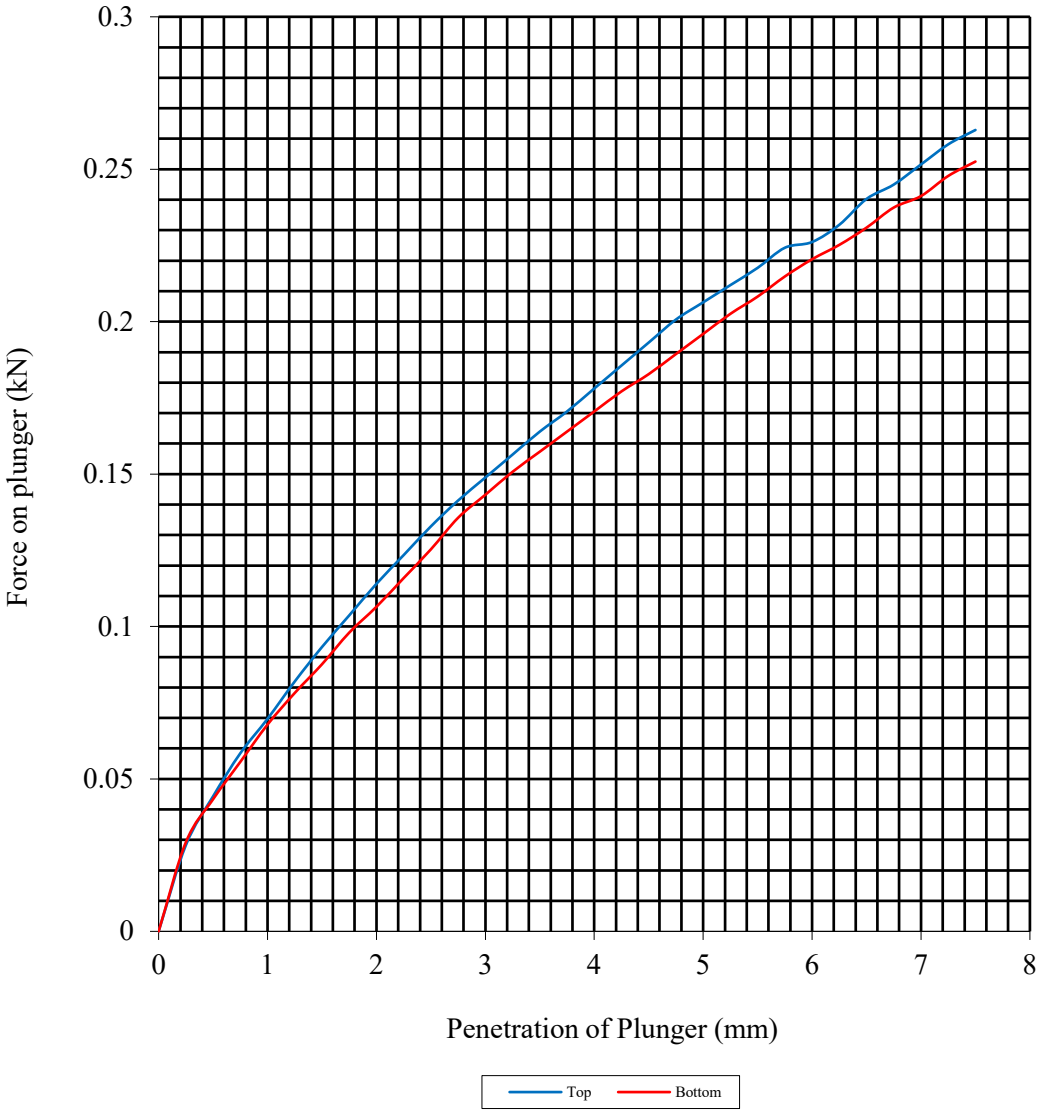
CALIFORNIA BEARING RATIO TEST

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		Sample Preparation		Final Moisture Content %		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 95% MDD at natural moisture content			
Percentage retained on 20mm BS test sieve:			0				
Compaction Conditions		2.5kg					

UKAS TESTING 4043

PSL Professional Soils Laboratory

Envision, Sunderland

Contract No: PSL21/9587

Client Ref: S211001-1

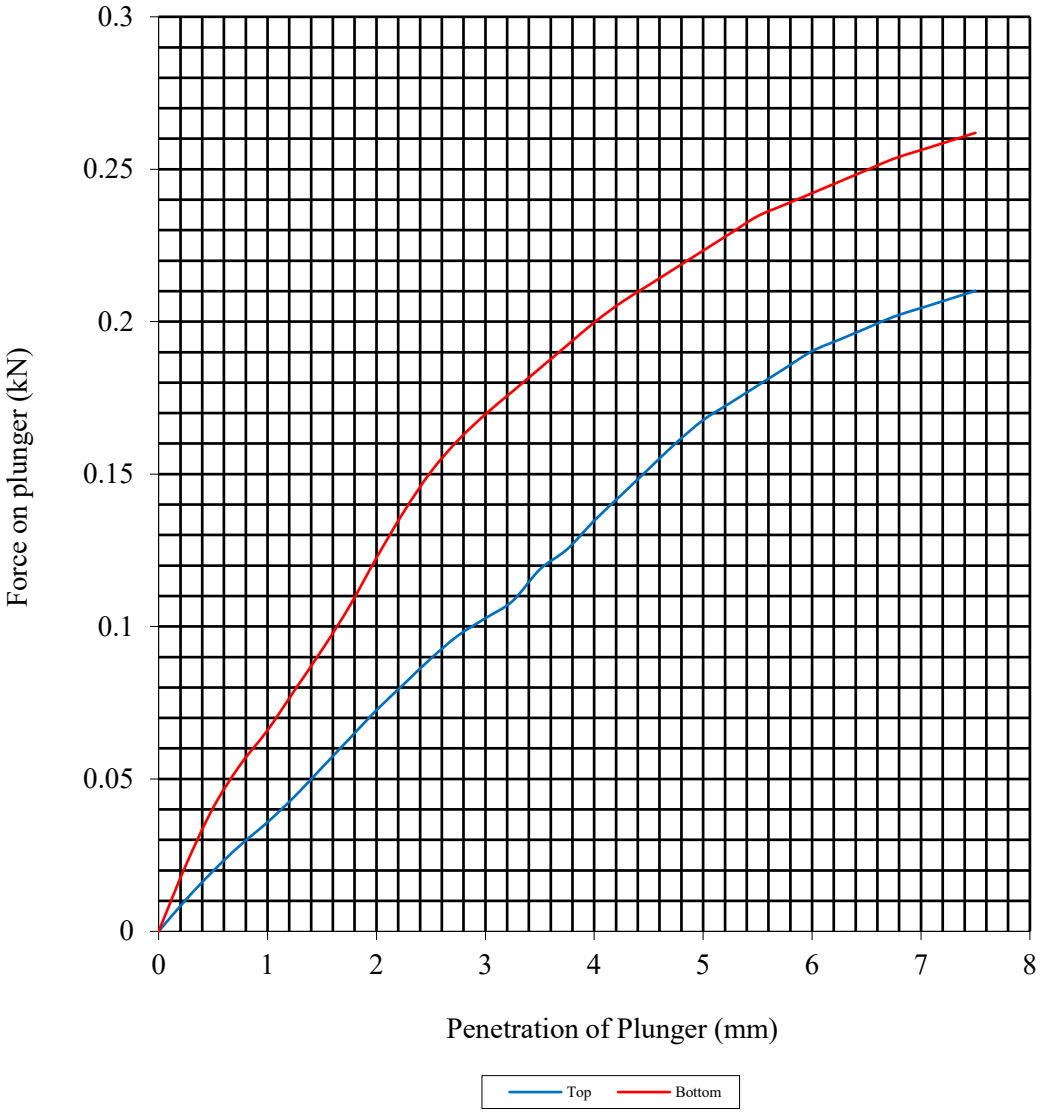
CALIFORNIA BEARING RATIO TEST

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					

UKAS TESTING 4043

PSL Professional Soils Laboratory

Envision, Sunderland

Contract No: PSL21/9587

Client Ref: S211001-1

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

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Checked and Approved Signatories:

A Watkins (Director)	R Berriman (Quality Manager)	S Royle (Laboratory Manager)
L Knight (Assistant Laboratory Manager)	S Eyre (Senior Technician)	T Watkins (Senior Technician)

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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		B	0.60	0.80	Brown slightly gravelly sandy CLAY.
TP04		B	1.00	1.20	Brown slightly gravelly sandy CLAY.
TP06		B	1.40	1.60	Brown slightly gravelly sandy CLAY.
TP08		B	0.70	0.80	Brown slightly gravelly sandy CLAY.
TP09		B	1.20	1.40	Brown slightly gravelly very sandy CLAY.
TP10		B	0.80		Brown slightly gravelly sandy CLAY.
TP11		B	0.50	0.60	Brown mottled grey slightly gravelly sandy CLAY.
TP12		B	0.30	0.40	Brown slightly gravelly sandy CLAY.
TP13		B	1.20	1.30	Brown slightly gravelly very sandy CLAY.
TP14		B	1.50		Brown slightly gravelly sandy CLAY.
TP15		B	0.60	0.80	Brown slightly gravelly sandy CLAY.
TP23		B	1.60	1.80	Brown slightly gravelly sandy CLAY.

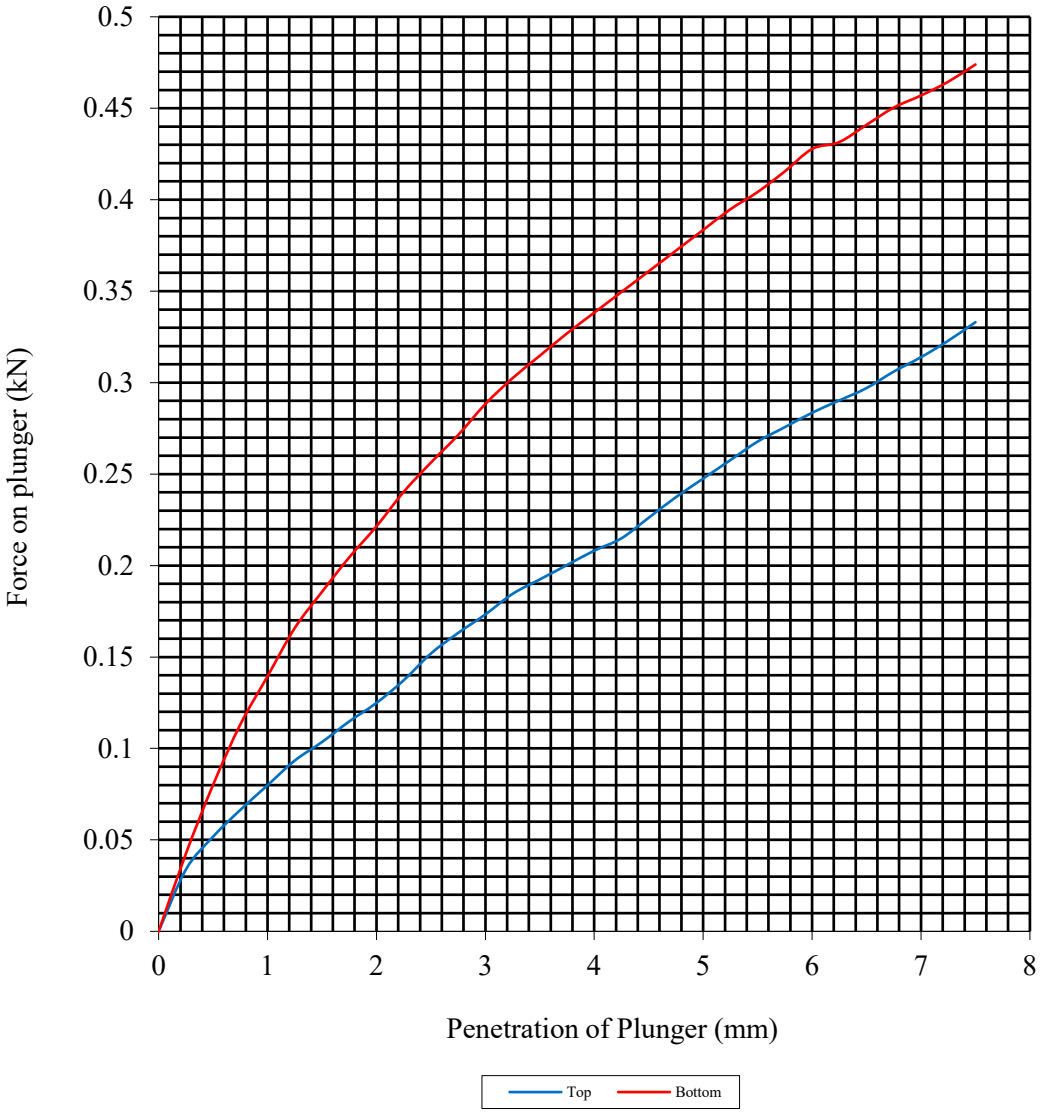
CALIFORNIA BEARING RATIO TEST

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 Preparation		Final Moisture Content %		C.B.R. 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 95% MDD at natural moisture content			
Percentage retained on 20mm BS test sieve:			0				
Compaction Conditions		2.5kg					

UKAS TESTING 4043

PSL Professional Soils Laboratory

Envision, Sunderland

Contract No: PSL21/9588

Client Ref: S211001

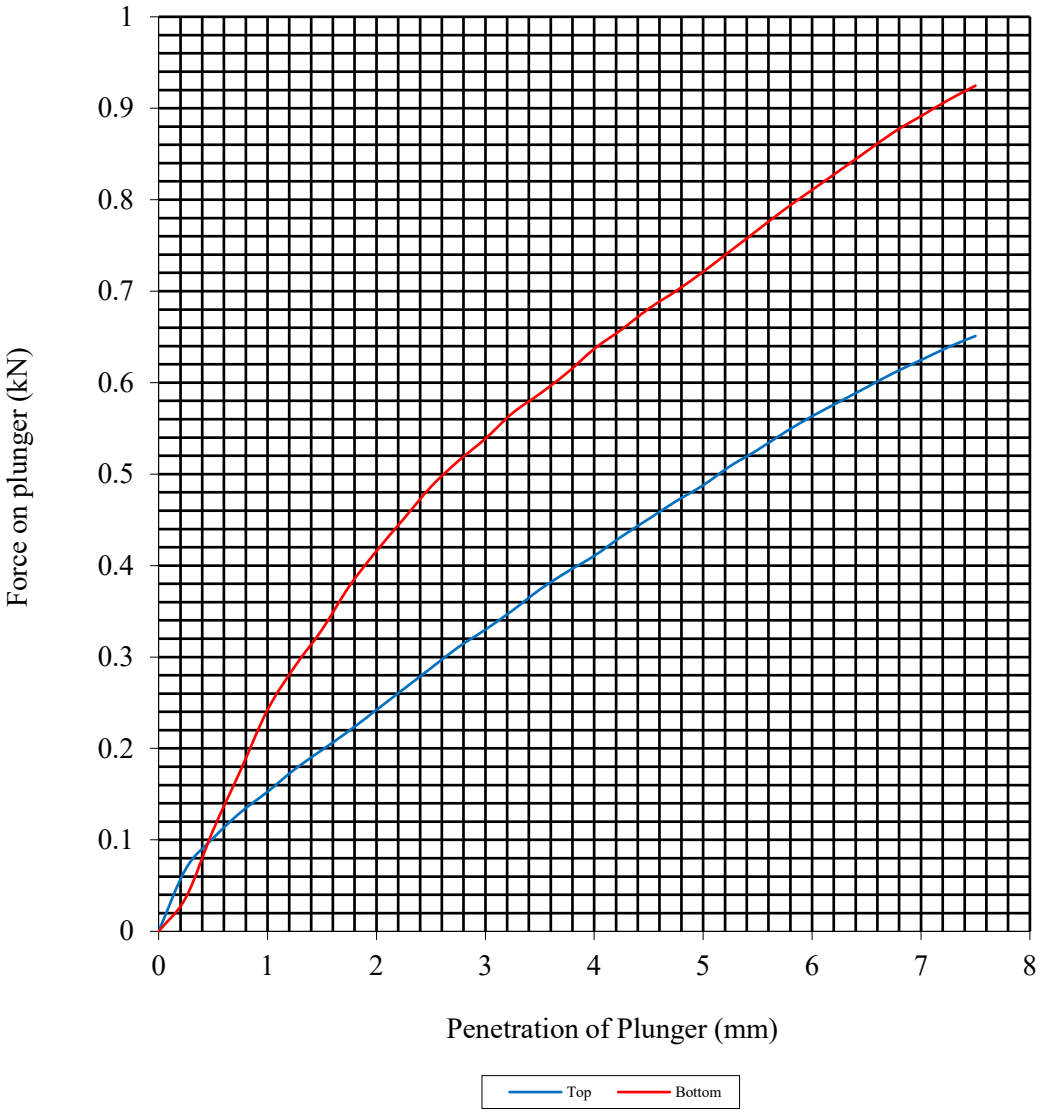
CALIFORNIA BEARING RATIO TEST

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 Preparation		Final Moisture Content %		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 95% MDD at natural moisture content			
Percentage retained on 20mm BS test sieve:			0				
Compaction Conditions		2.5kg					

UKAS TESTING 4043

PSL Professional Soils Laboratory

Envision, Sunderland

Contract No: PSL21/9588

Client Ref: S211001

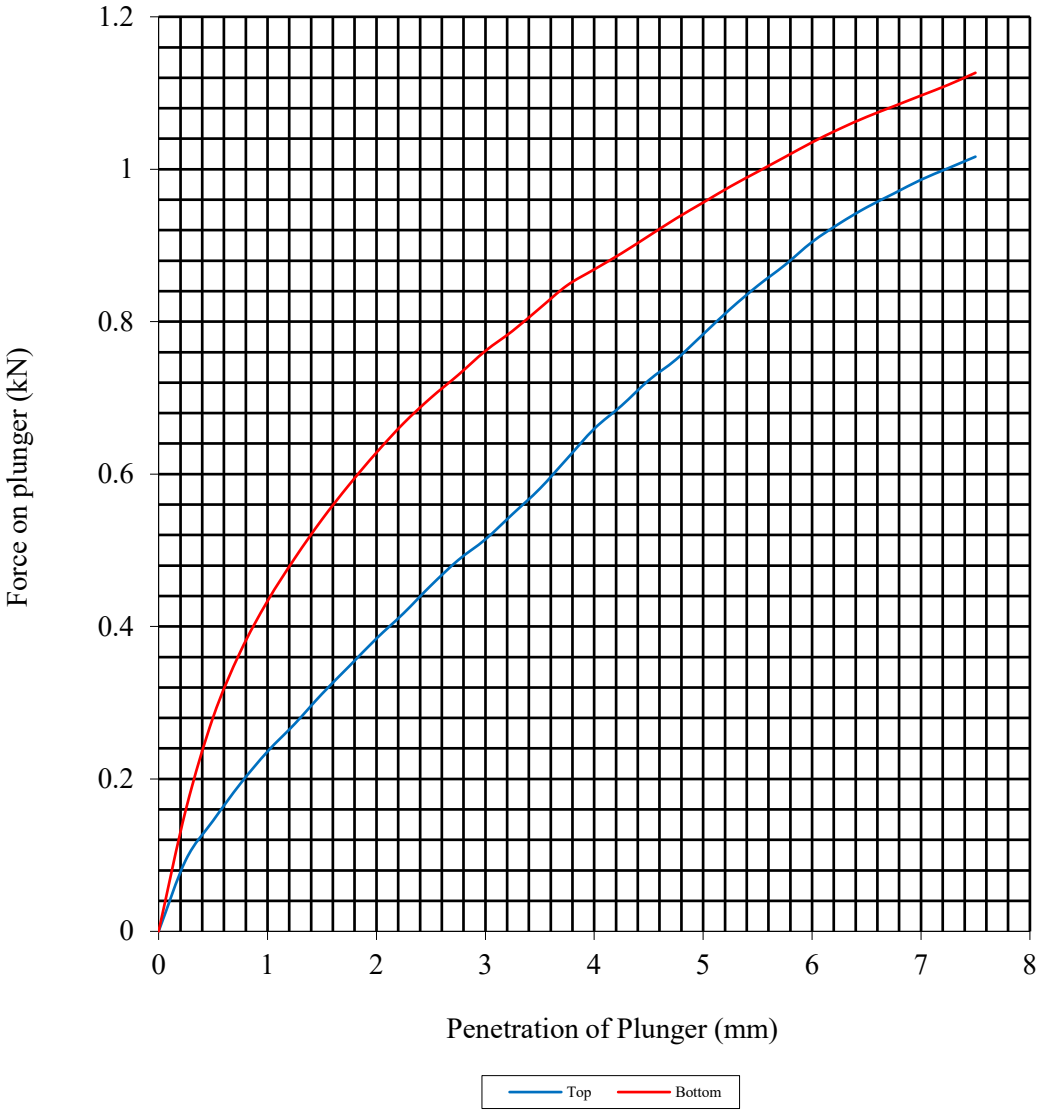
CALIFORNIA BEARING RATIO TEST

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 Preparation		Final Moisture Content %		C.B.R. 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 95% MDD at natural moisture content			
Percentage retained on 20mm BS test sieve:			0				
Compaction Conditions		2.5kg					

UKAS TESTING 4043

PSL Professional Soils Laboratory

Envision, Sunderland

Contract No: PSL21/9588

Client Ref: S211001

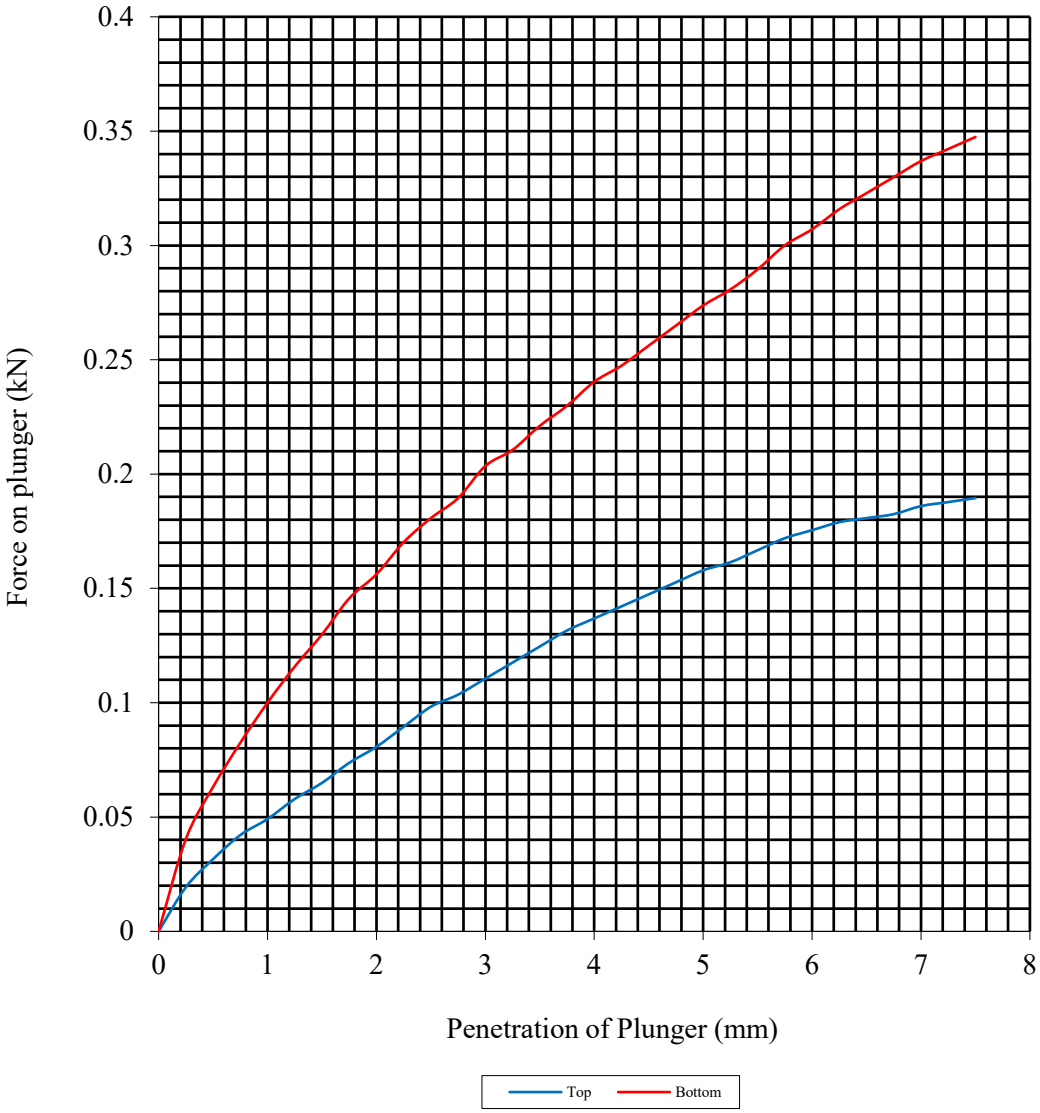
CALIFORNIA BEARING RATIO TEST

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 Preparation		Final Moisture Content %		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 95% MDD at natural moisture content			
Percentage retained on 20mm BS test sieve:			0				
Compaction Conditions		2.5kg					

UKAS TESTING 4043

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Envision, Sunderland

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Client Ref: S211001

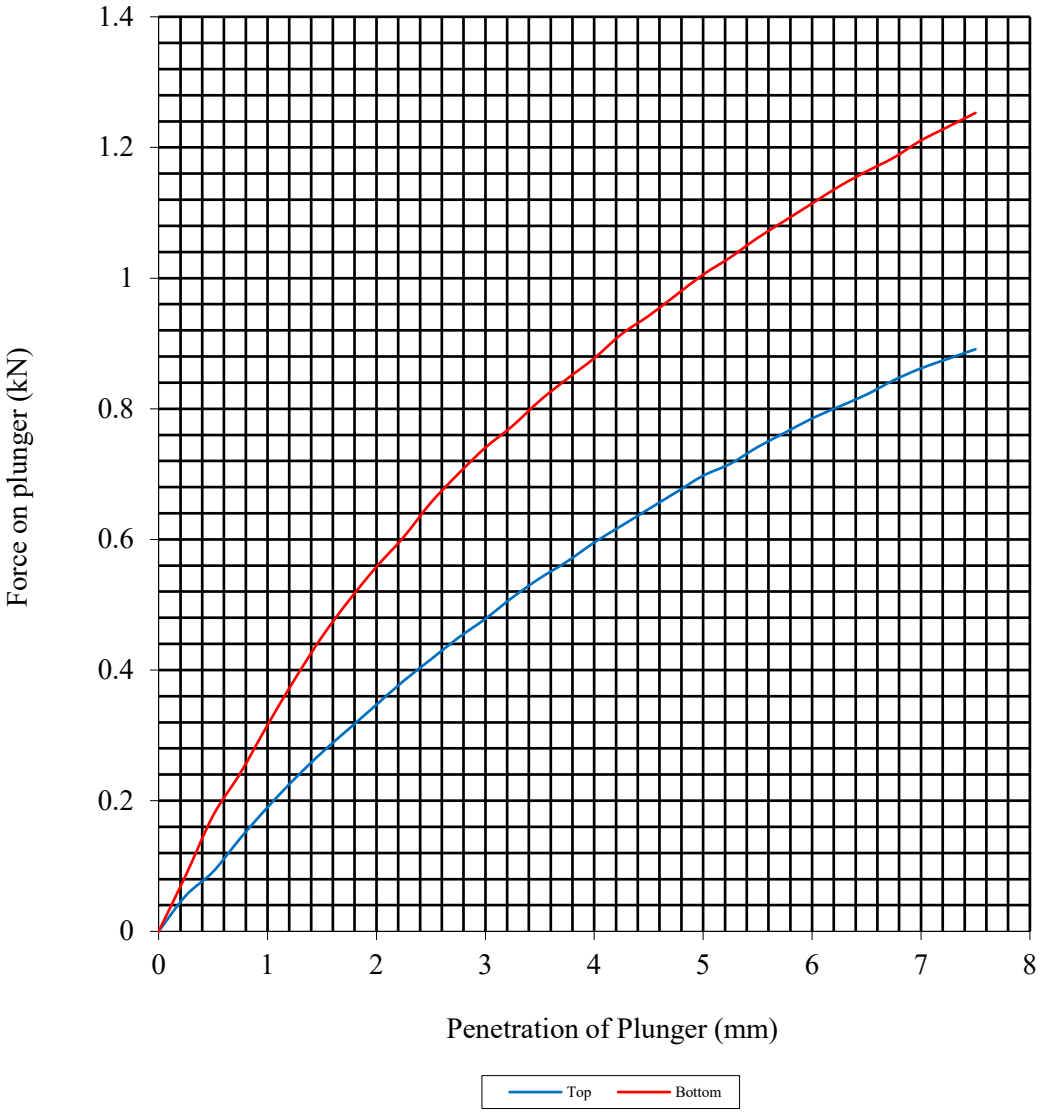
CALIFORNIA BEARING RATIO TEST

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 Preparation		Final Moisture Content %		C.B.R. 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 95% MDD at natural moisture content			
Percentage retained on 20mm BS test sieve:			0				
Compaction Conditions		2.5kg					

UKAS TESTING 4043

PSL Professional Soils Laboratory

Envision, Sunderland

Contract No: PSL21/9588

Client Ref: S211001

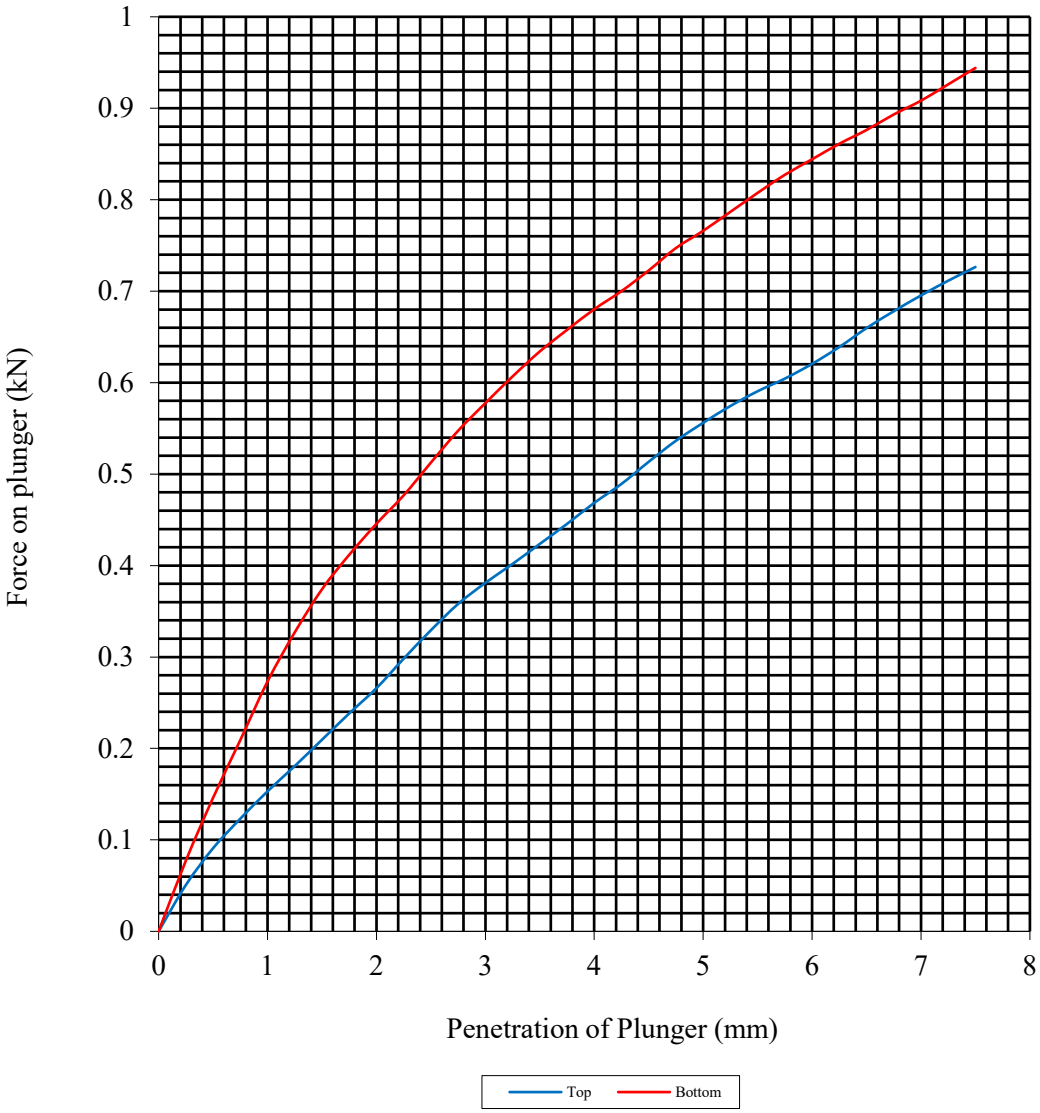
CALIFORNIA BEARING RATIO TEST

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 Preparation		Final Moisture Content %		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 95% MDD at natural moisture content			
Percentage retained on 20mm BS test sieve:			0				
Compaction Conditions		2.5kg					

UKAS TESTING 4043

PSL Professional Soils Laboratory

Envision, Sunderland

Contract No: PSL21/9588

Client Ref: S211001

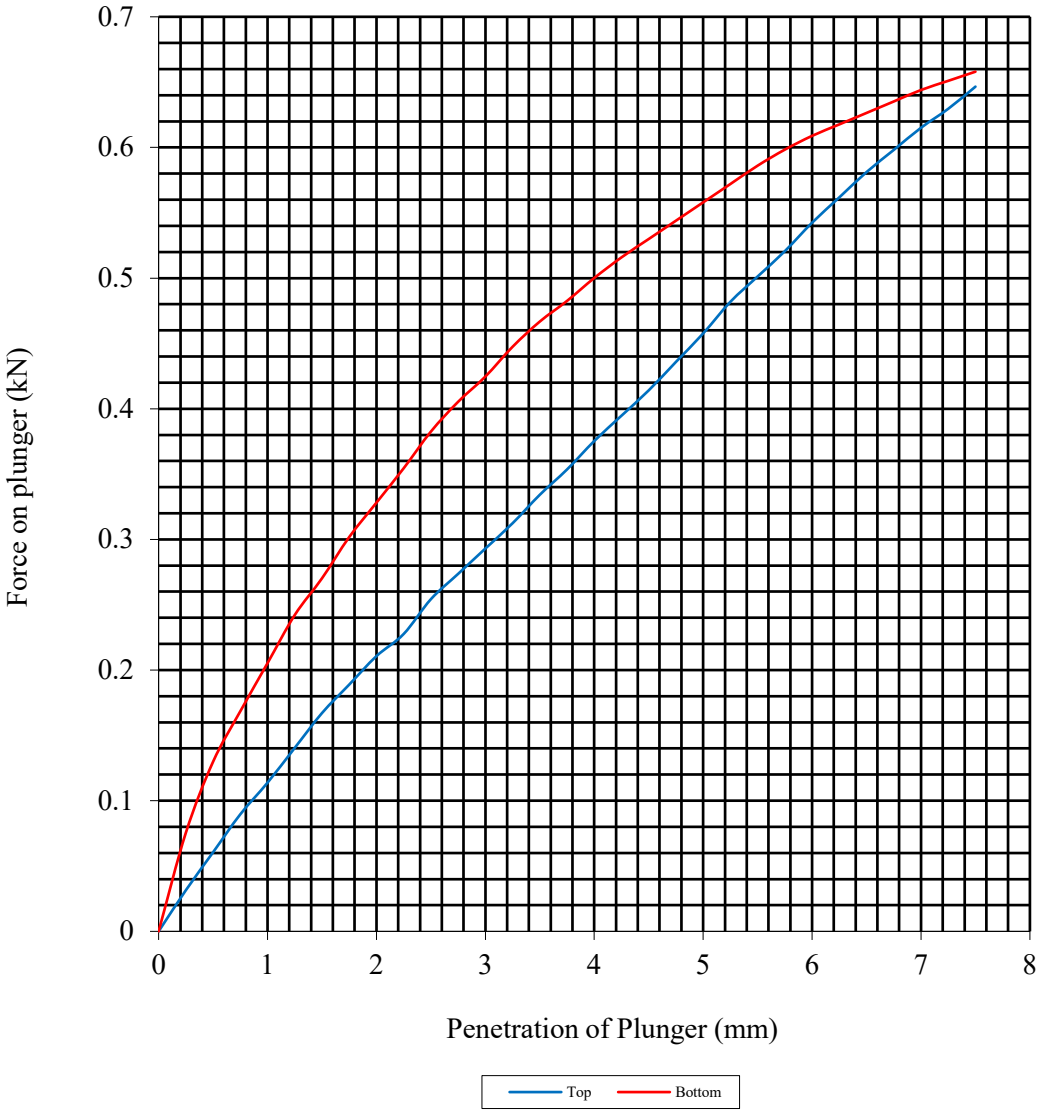
CALIFORNIA BEARING RATIO TEST

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 Preparation		Final Moisture Content %		C.B.R. 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 95% MDD at natural moisture content			
Percentage retained on 20mm BS test sieve:			0				
Compaction Conditions		2.5kg					

UKAS TESTING 4043

PSL Professional Soils Laboratory

Envision, Sunderland

Contract No: PSL21/9588

Client Ref: S211001

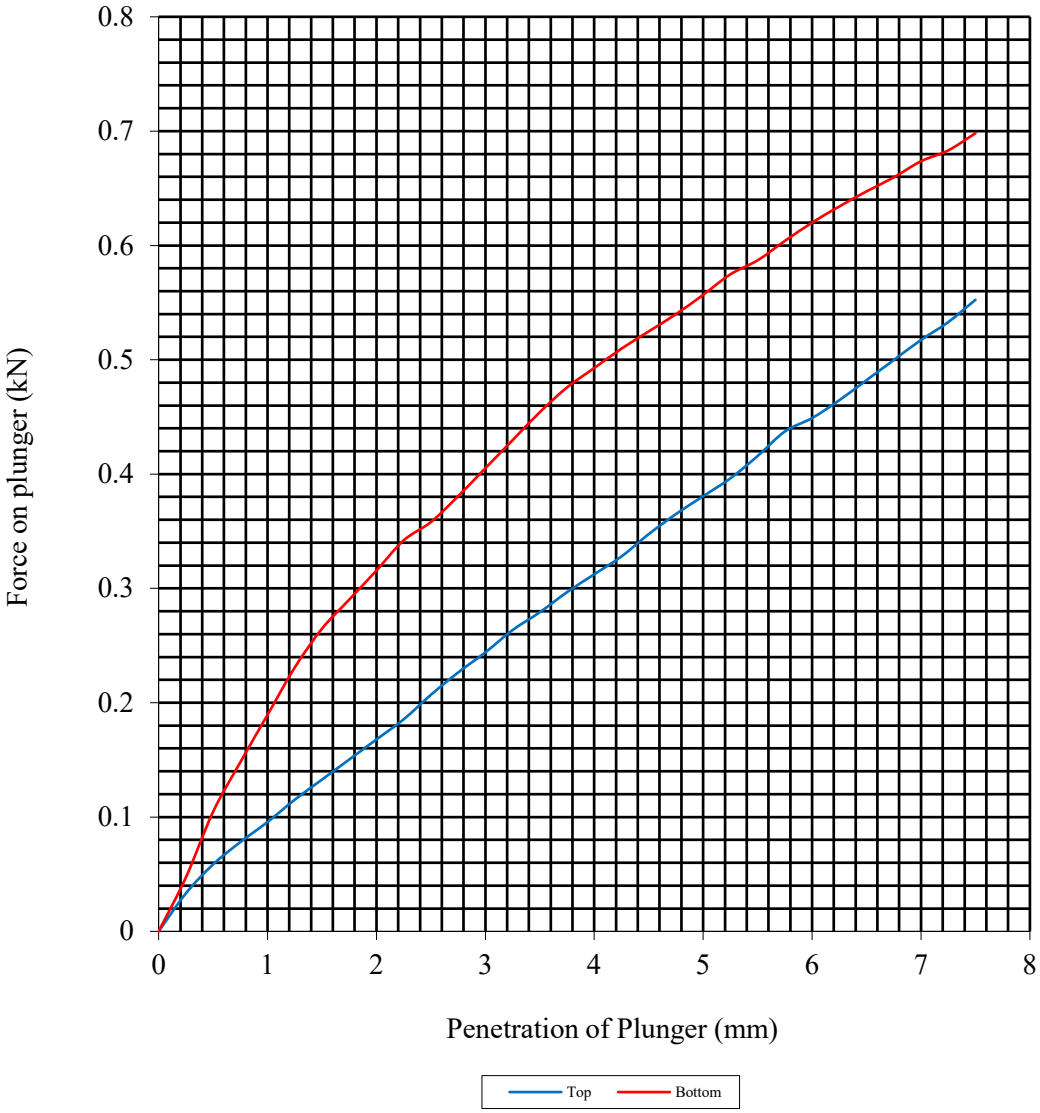
CALIFORNIA BEARING RATIO TEST

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 Preparation		Final Moisture Content %		C.B.R. 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 95% MDD at natural moisture content			
Percentage retained on 20mm BS test sieve:			0				
Compaction Conditions		2.5kg					

UKAS TESTING 4043

PSL Professional Soils Laboratory

Envision, Sunderland

Contract No: PSL21/9588

Client Ref: S211001

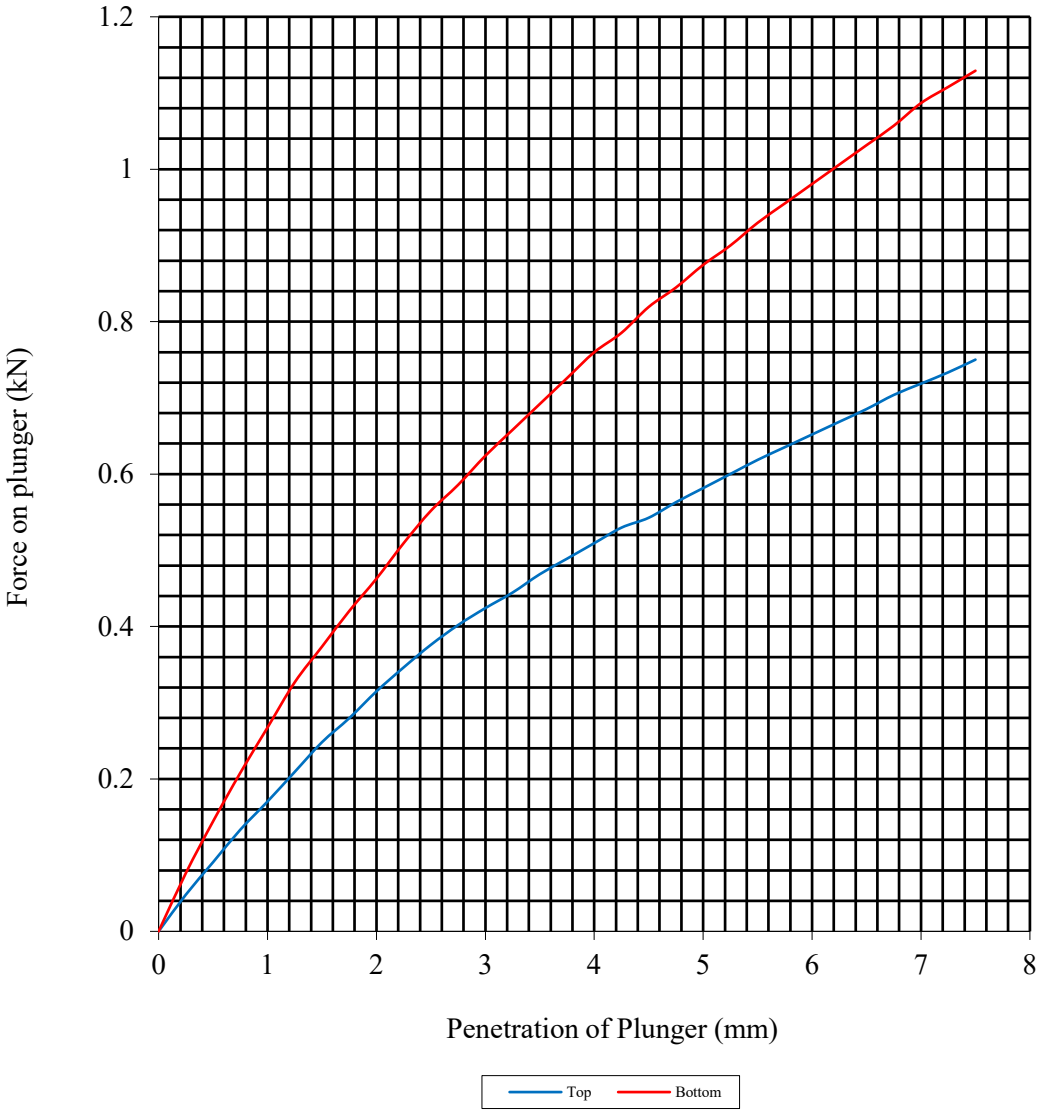
CALIFORNIA BEARING RATIO TEST

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 Preparation		Final Moisture Content %		C.B.R. Value %	
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 95% MDD at natural moisture content			
Percentage retained on 20mm BS test sieve:			2				
Compaction Conditions		2.5kg					

UKAS TESTING 4043

PSL Professional Soils Laboratory

Envision, Sunderland

Contract No: PSL21/9588

Client Ref: S211001

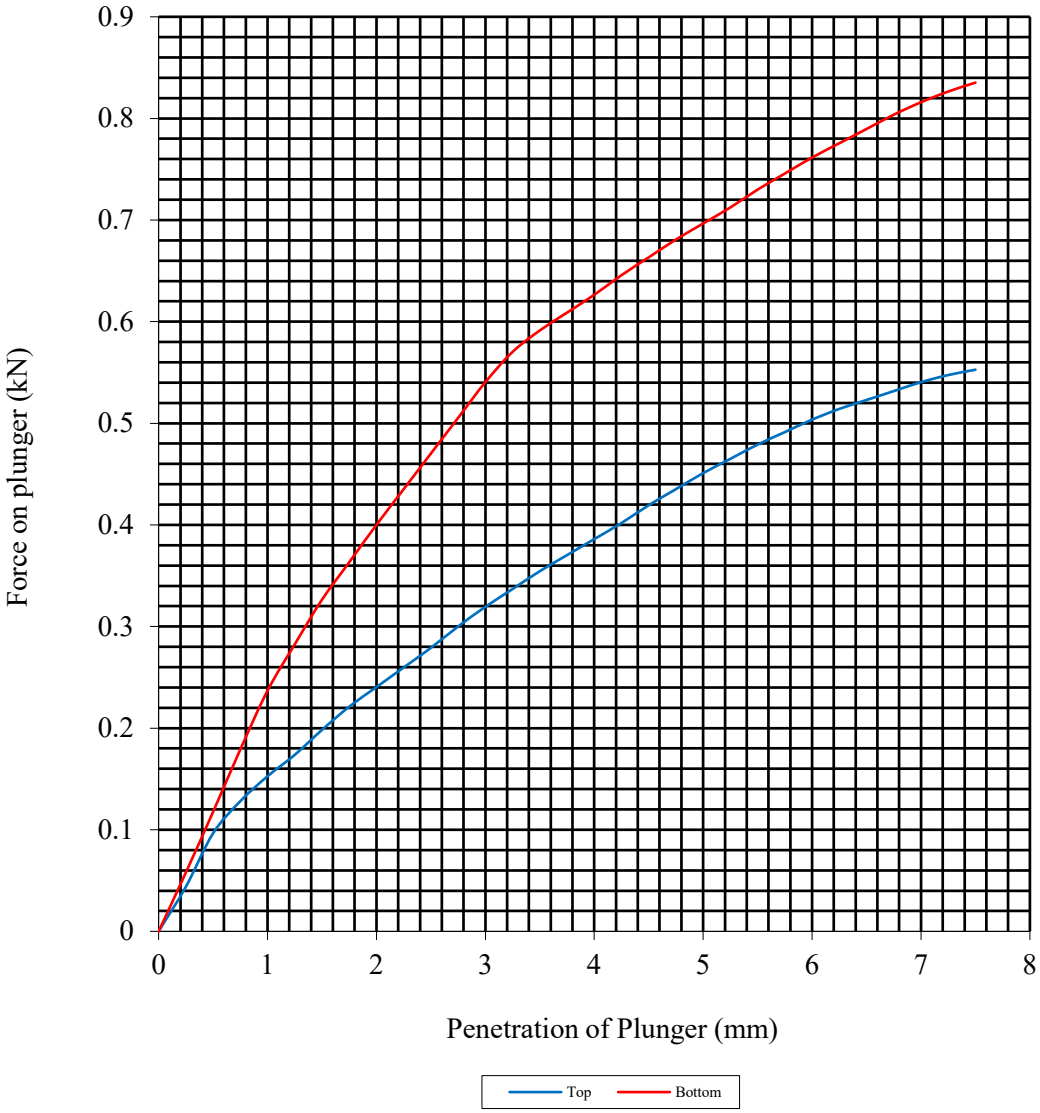
CALIFORNIA BEARING RATIO TEST

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 Preparation		Final Moisture Content %		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 95% MDD at natural moisture content			
Percentage retained on 20mm BS test sieve:			0				
Compaction Conditions		2.5kg					

UKAS TESTING 4043

PSL Professional Soils Laboratory

Envision, Sunderland

Contract No: PSL21/9588

Client Ref: S211001

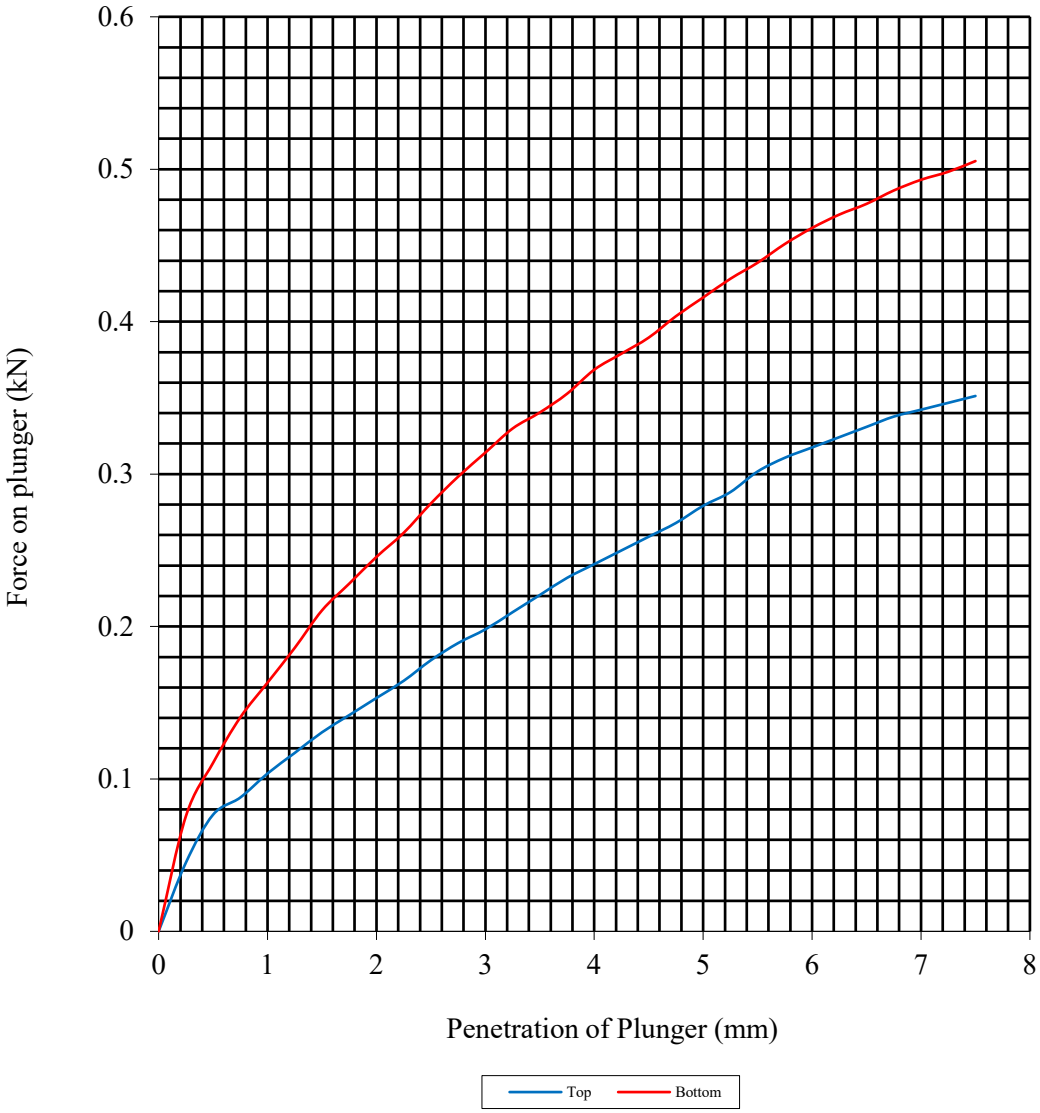
CALIFORNIA BEARING RATIO TEST

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 Preparation		Final Moisture Content %		C.B.R. 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 95% MDD at natural moisture content			
Percentage retained on 20mm BS test sieve:			0				
Compaction Conditions		2.5kg					

UKAS TESTING 4043

PSL Professional Soils Laboratory

Envision, Sunderland

Contract No: PSL21/9588

Client Ref: S211001

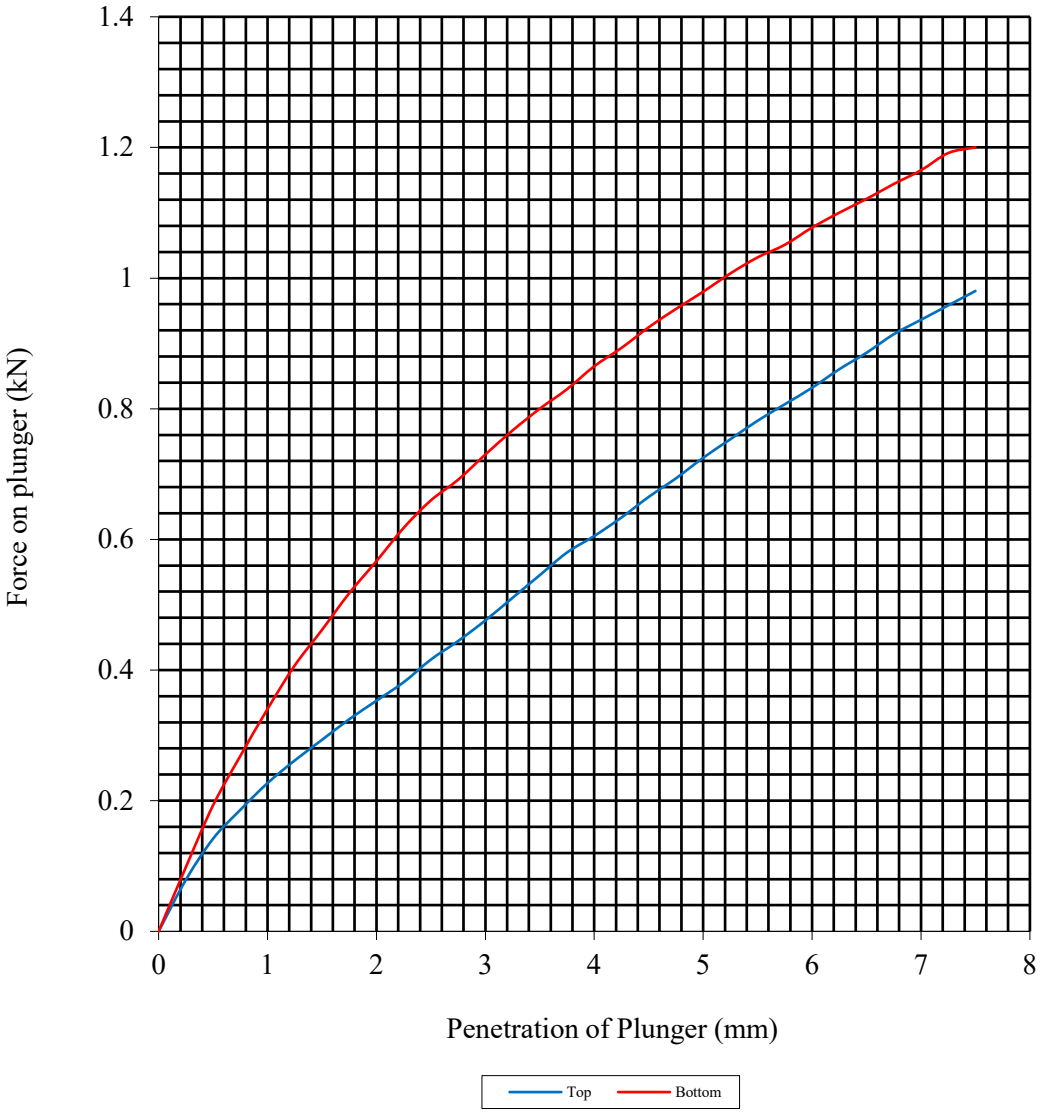
CALIFORNIA BEARING RATIO TEST

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 Preparation		Final Moisture Content %		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 95% MDD at natural moisture content			
Percentage retained on 20mm BS test sieve:			0				
Compaction Conditions		2.5kg					

UKAS TESTING 4043

PSL Professional Soils Laboratory

Envision, Sunderland

Contract No: PSL21/9588

Client Ref: S211001

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

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Checked and Approved Signatories:

A Watkins (Director)	R Berriman (Quality Manager)	S Royle (Laboratory Manager)
L Knight (Assistant Laboratory Manager)	S Eyre (Senior Technician)	T Watkins (Senior Technician)

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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		B	1.00	1.20	Brown slightly gravelly sandy CLAY.
TP21		B	1.00	1.20	Brown slightly gravelly sandy CLAY.
TP33		B	1.00	1.20	Brown sandy CLAY.
TP46		B	1.00	1.20	Brown slightly gravelly sandy CLAY.

UKAS TESTING
4043

Professional Soils Laboratory

Envision, Sunderland

Contract No:
PSL21/9589
Client Ref:
S211001

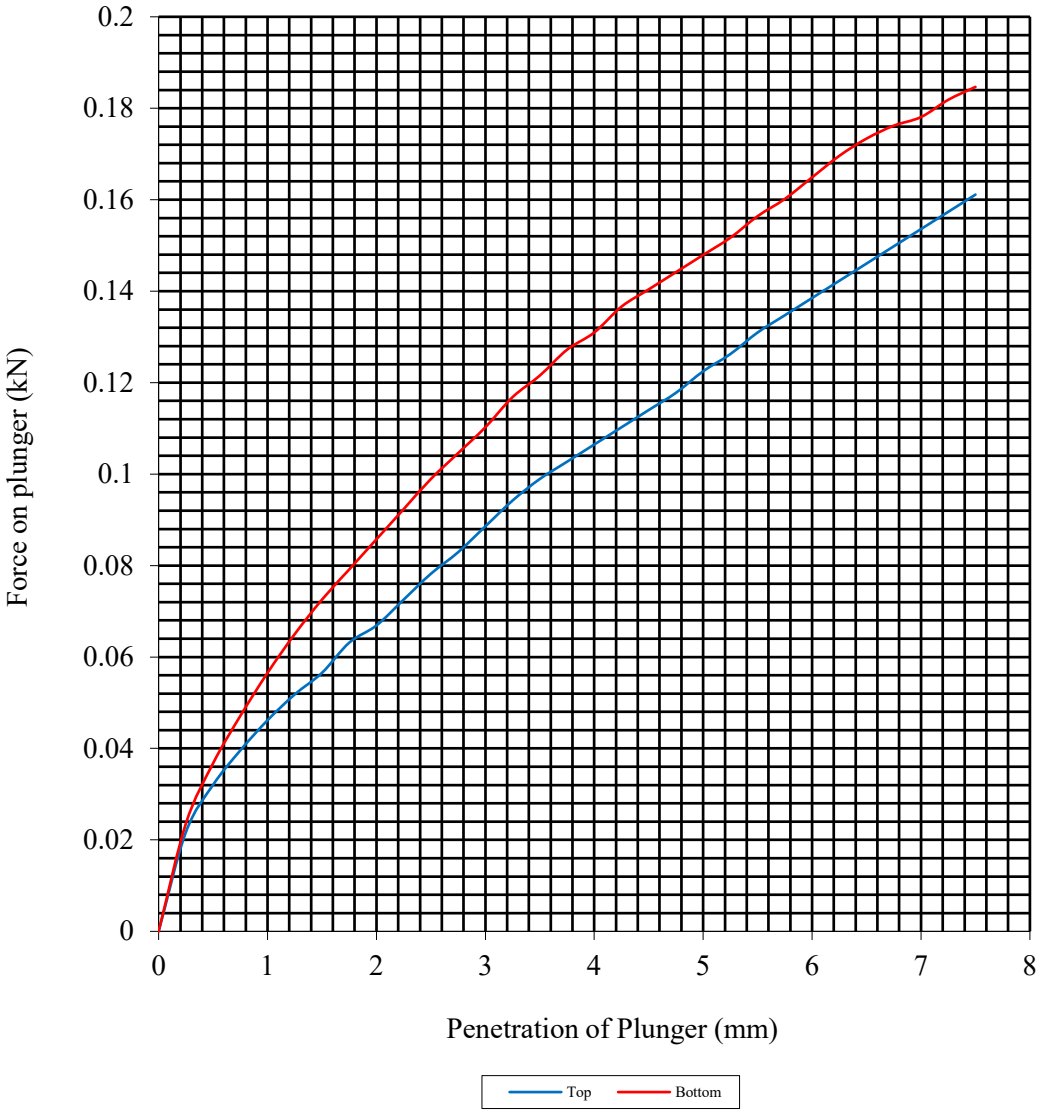
CALIFORNIA BEARING RATIO TEST

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			
Percentage retained on 20mm BS test sieve:			0				
Compaction Conditions		4.5kg					

UKAS TESTING 4043

PSL Professional Soils Laboratory

Envision, Sunderland

Contract No: PSL21/9589

Client Ref: S211001

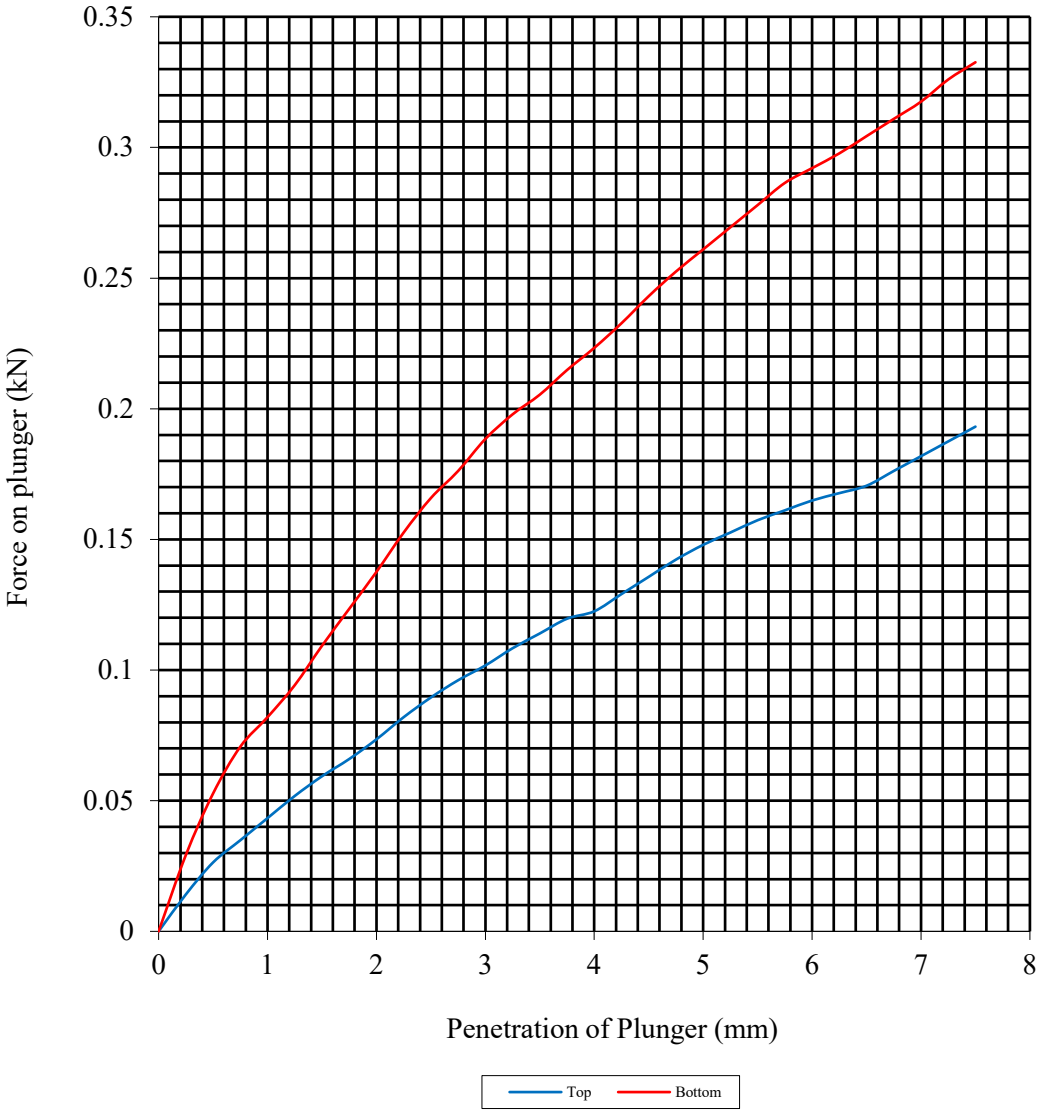
CALIFORNIA BEARING RATIO TEST

BS 1377 : Part 4 : 1990

Hole Number: TP21 **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:	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			
Percentage retained on 20mm BS test sieve:			0				
Compaction Conditions		4.5kg					

UKAS TESTING 4043

PSL Professional Soils Laboratory

Envision, Sunderland

Contract No: PSL21/9589

Client Ref: S211001

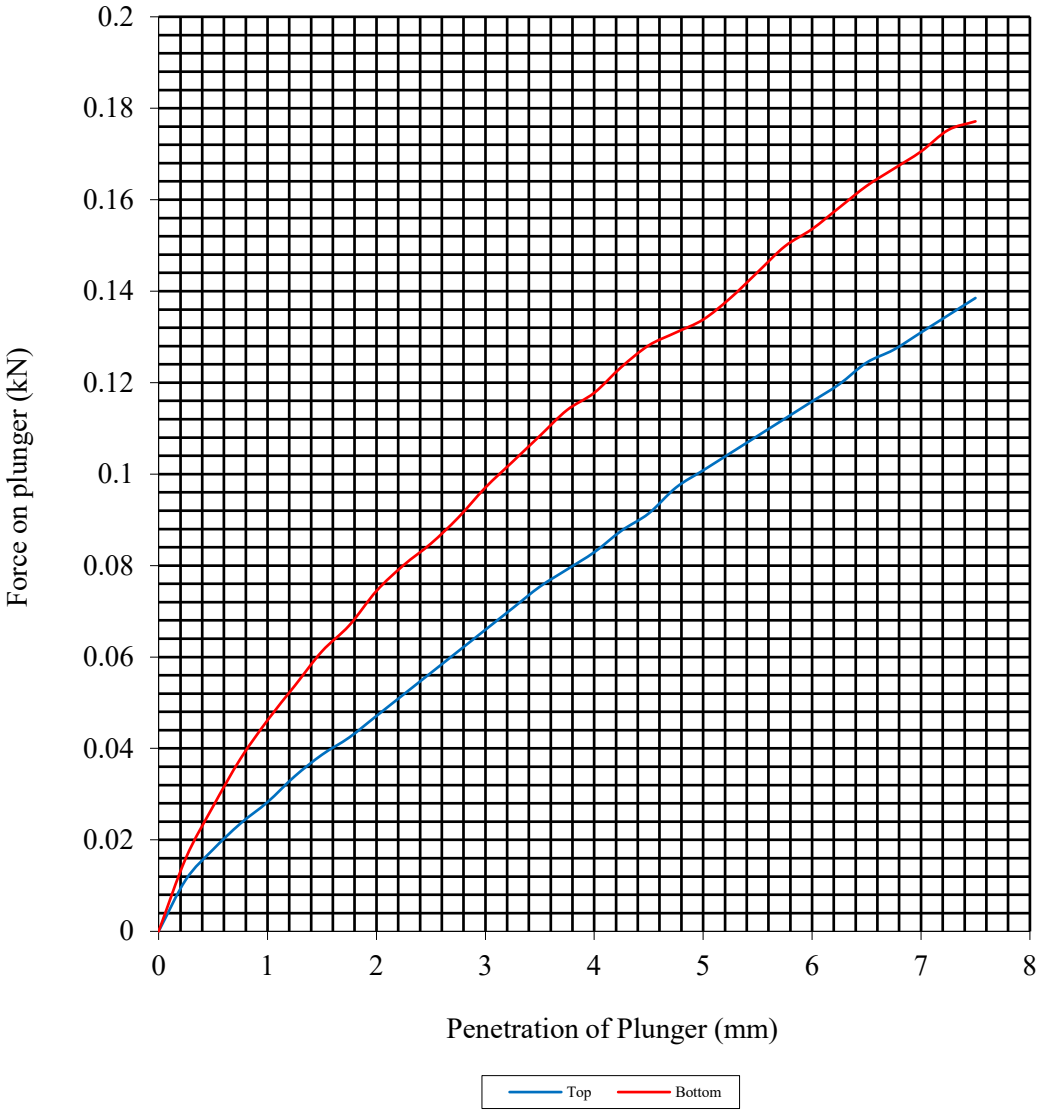
CALIFORNIA BEARING RATIO TEST

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 95% MDD at natural moisture content			
Percentage retained on 20mm BS test sieve:			0				
Compaction Conditions		4.5kg					

UKAS TESTING 4043

PSL Professional Soils Laboratory

Envision, Sunderland

Contract No: PSL21/9589

Client Ref: S211001

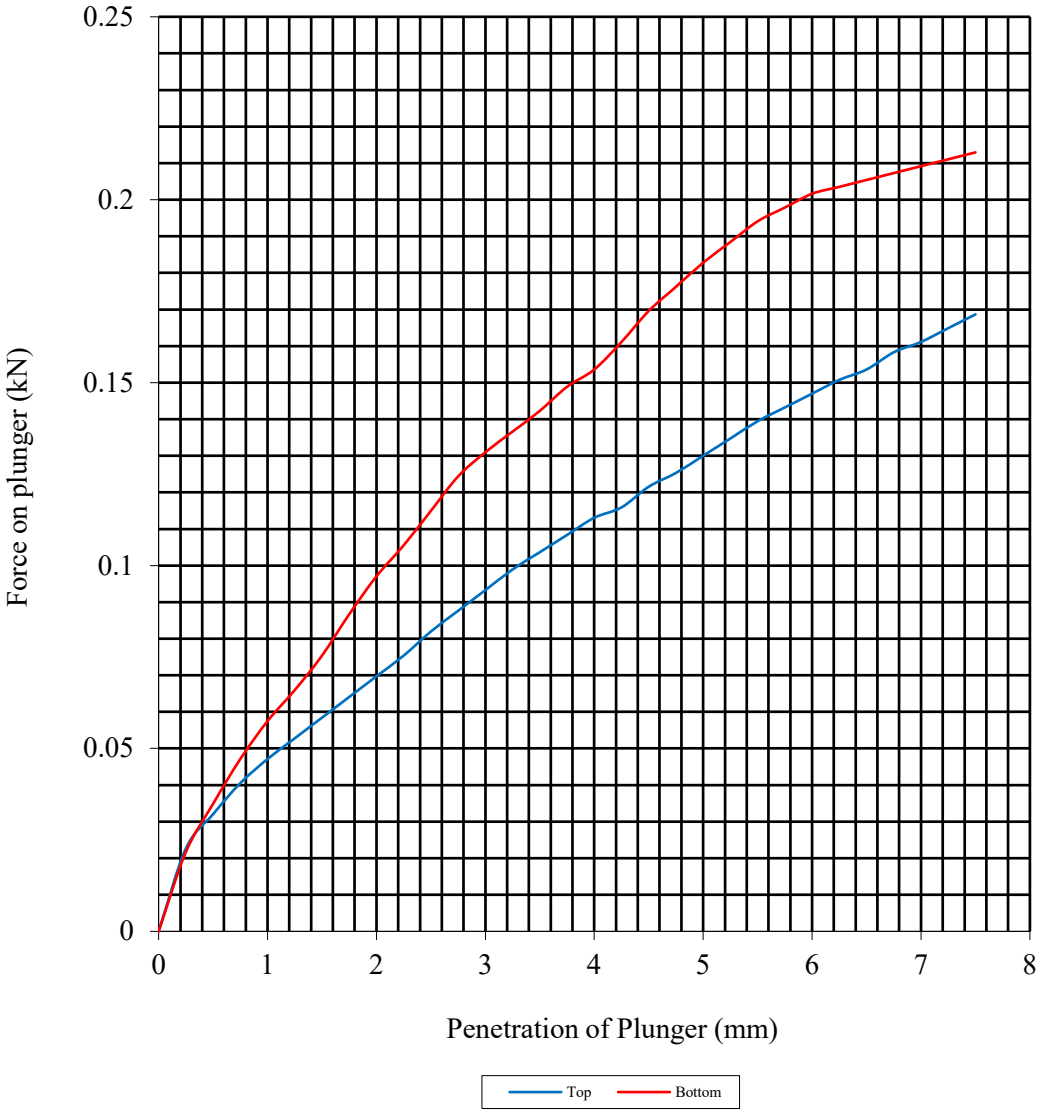
CALIFORNIA BEARING RATIO TEST

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			
Percentage retained on 20mm BS test sieve:			0				
Compaction Conditions		4.5kg					

UKAS TESTING 4043

PSL Professional Soils Laboratory

Envision, Sunderland

Contract No: PSL21/9589

Client Ref: S211001

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DYNAMIC CONE PENETROMETER TEST REPORT

Project: S211001

Project name: Envision, Sunderland

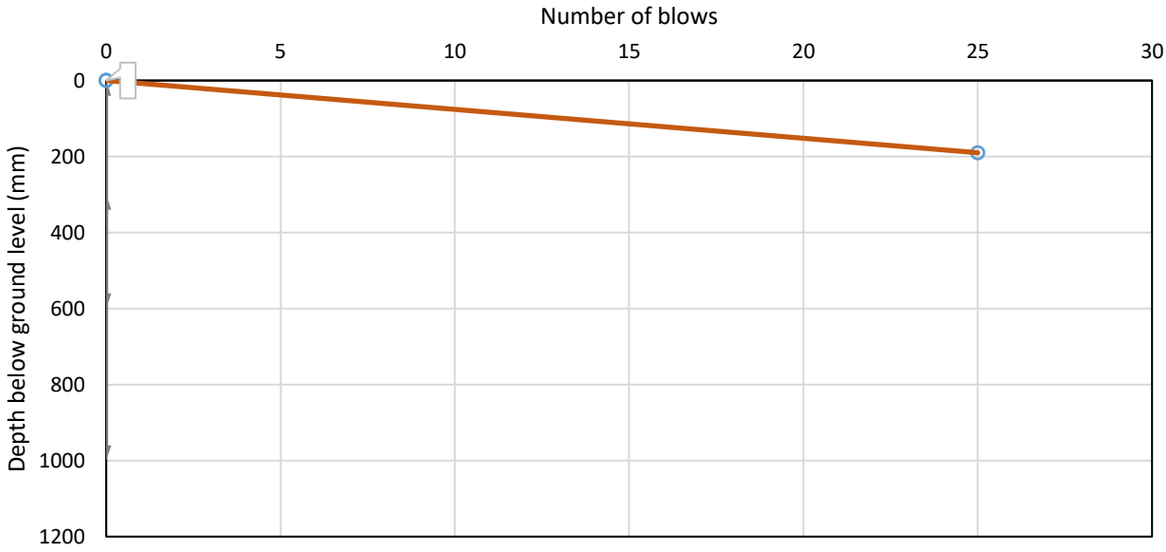
Report date:

Operator: Samuel McNiff

Notes:

Test date: 25/10/2021

Test location: DCP01



Layer 0-1000mm bgl

Penetration rate	8	mm/blow	
Equivalent CBR	35.4	%	[DMRB Vol.7 3.2 HD 29/08 - Section 7.31]
Equivalent surface modulus	172.3	kPa	[TRRL LR 1132 - Appendix C Equation C1]
Estimated bearing capacity	279.4	kPa	[PCA - Design of Concrete Pavement. 1955]

Produced by	Dated	Checked by	Dated
S McNiff			00/01/00

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DYNAMIC CONE PENETROMETER TEST REPORT

Project: S211001

Project name: Envision, Sunderland

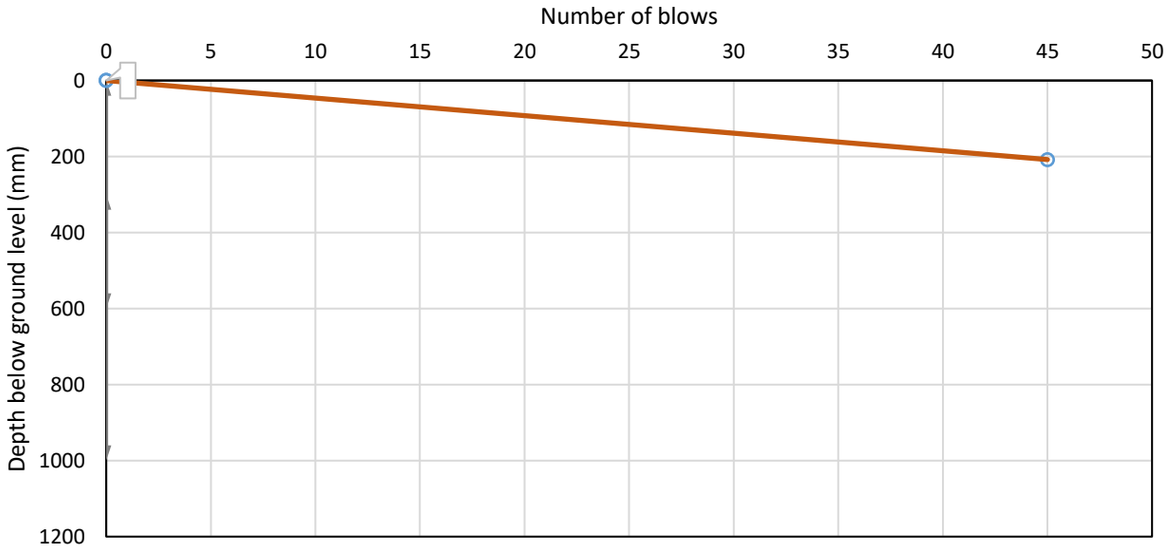
Report date:

Operator: Samuel McNiff

Notes:

Test date: 25/10/2021

Test location: DCP02



Layer 0-1000mm bgl

Penetration rate	5	mm/blow	
Equivalent CBR	59.9	%	[DMRB Vol.7 3.2 HD 29/08 - Section 7.31]
Equivalent surface modulus	241.2	kPa	[TRRL LR 1132 - Appendix C Equation C1]
Estimated bearing capacity	396.0	kPa	[PCA - Design of Concrete Pavement. 1955]

Produced by	Dated	Checked by	Dated
S McNiff			00/01/00

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DYNAMIC CONE PENETROMETER TEST REPORT

Project: S211001

Project name: Envision, Sunderland

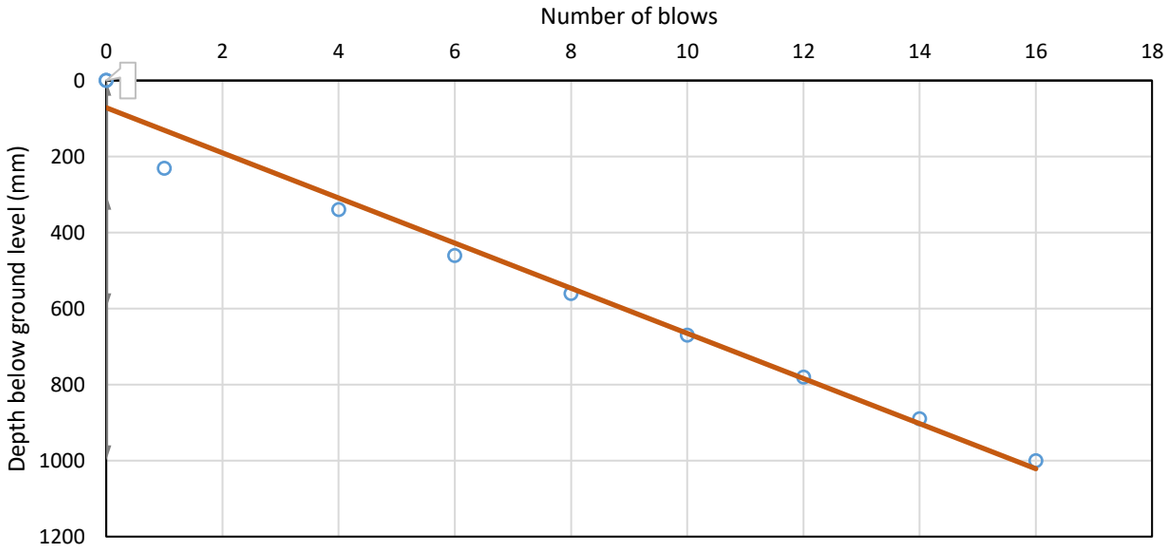
Report date:

Operator: Samuel McNiff

Notes:

Test date: 25/10/2021

Test location: DCP03



Layer 0-1000mm bgl

Penetration rate	57	mm/blow	
Equivalent CBR	4.2	%	[DMRB Vol.7 3.2 HD 29/08 - Section 7.31]
Equivalent surface modulus	44.0	kPa	[TRRL LR 1132 - Appendix C Equation C1]
Estimated bearing capacity	67.8	kPa	[PCA - Design of Concrete Pavement. 1955]

Produced by	Dated	Checked by	Dated
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DYNAMIC CONE PENETROMETER TEST REPORT

Project: S211001

Project name: Envision, Sunderland

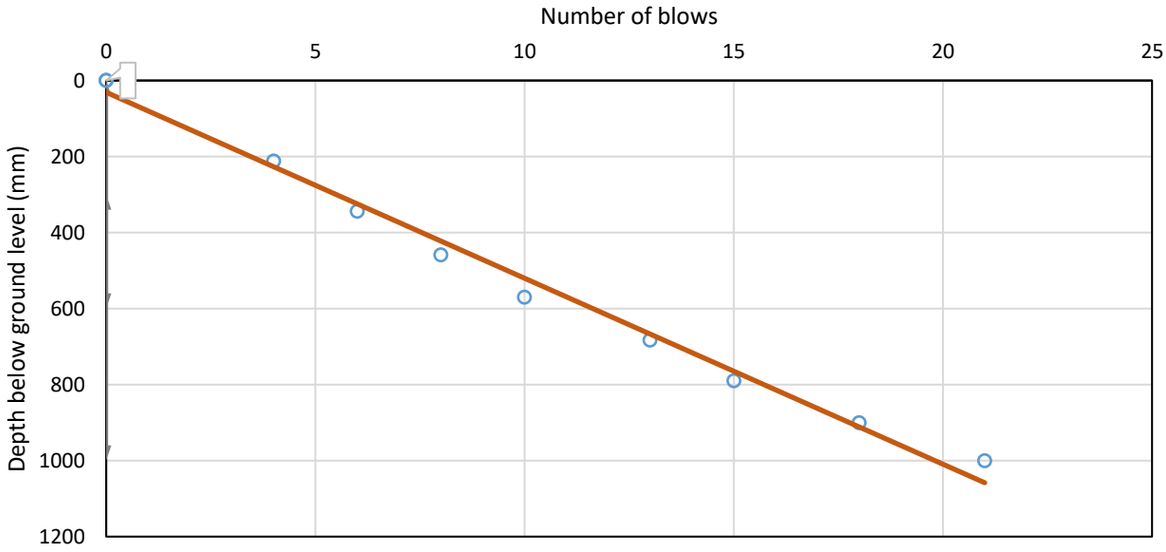
Report date:

Operator: Samuel McNiff

Notes:

Test date: 25/10/2021

Test location: DCP04



Layer 0-1000mm bgl

Penetration rate	48	mm/blow	
Equivalent CBR	5.0	%	[DMRB Vol.7 3.2 HD 29/08 - Section 7.31]
Equivalent surface modulus	49.5	kPa	[TRRL LR 1132 - Appendix C Equation C1]
Estimated bearing capacity	76.6	kPa	[PCA - Design of Concrete Pavement. 1955]

Produced by	Dated	Checked by	Dated
S McNiff			00/01/00

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DYNAMIC CONE PENETROMETER TEST REPORT

Project: S211001

Project name: Envision, Sunderland

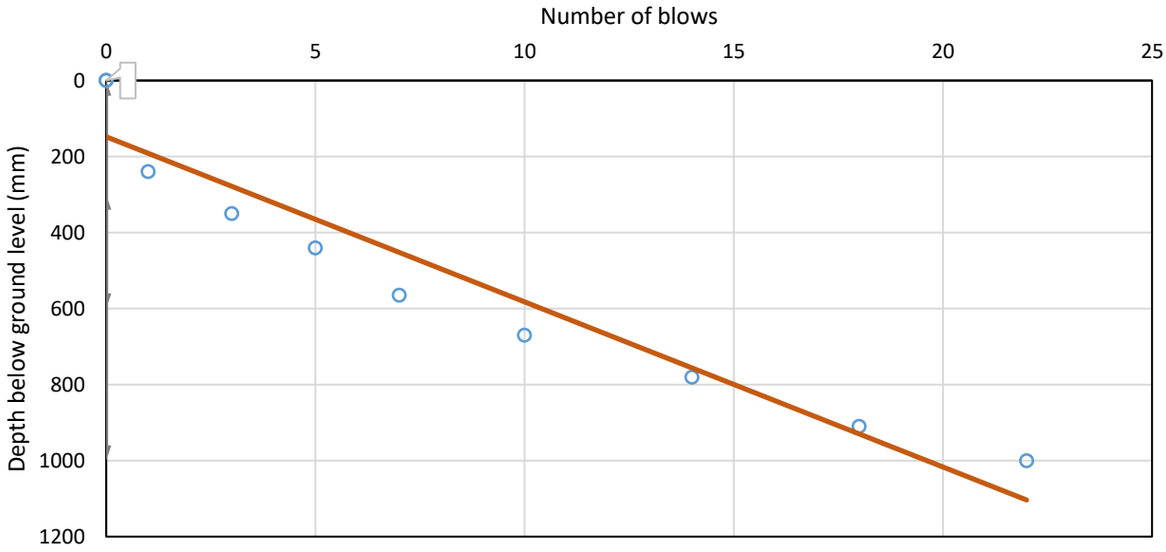
Report date:

Operator: Samuel McNiff

Notes:

Test date: 25/10/2021

Test location: DCP06



Layer 0-1000mm bgl

Penetration rate	41	mm/blow	
Equivalent CBR	6.0	%	[DMRB Vol.7 3.2 HD 29/08 - Section 7.31]
Equivalent surface modulus	55.4	kPa	[TRRL LR 1132 - Appendix C Equation C1]
Estimated bearing capacity	86.1	kPa	[PCA - Design of Concrete Pavement. 1955]

Produced by	Dated	Checked by	Dated
S McNiff			00/01/00

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DYNAMIC CONE PENETROMETER TEST REPORT

Project: S211001

Project name: Envision, Sunderland

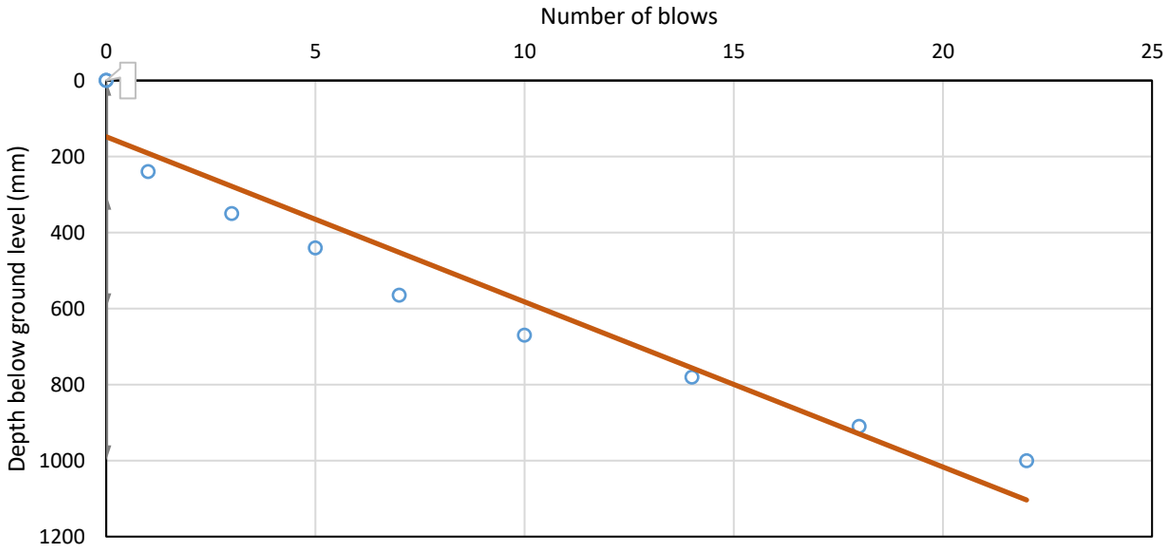
Report date:

Operator: Samuel McNiff

Notes:

Test date: 25/10/2021

Test location: DCP06



Layer 0-1000mm bgl

Penetration rate	41	mm/blow	
Equivalent CBR	6.0	%	[DMRB Vol.7 3.2 HD 29/08 - Section 7.31]
Equivalent surface modulus	55.4	kPa	[TRRL LR 1132 - Appendix C Equation C1]
Estimated bearing capacity	86.1	kPa	[PCA - Design of Concrete Pavement. 1955]

Produced by	Dated	Checked by	Dated
S McNiff			00/01/00

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DYNAMIC CONE PENETROMETER TEST REPORT

Project: S211001

Project name: Envision, Sunderland

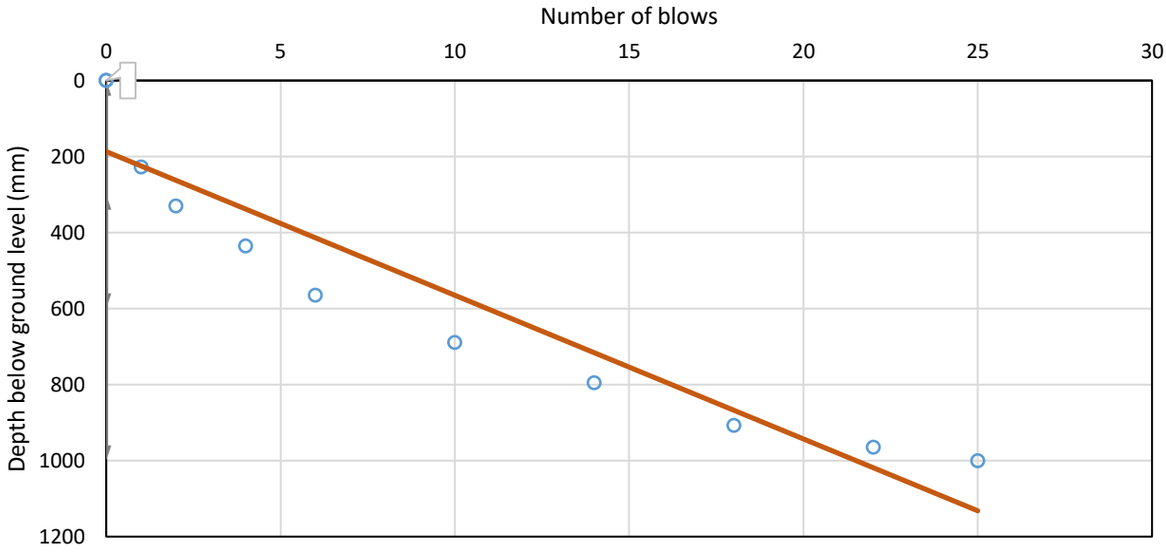
Report date:

Operator: Samuel McNiff

Notes:

Test date: 25/10/2021

Test location: DCP07



Layer 0-1000mm bgl

Penetration rate	35	mm/blow	
Equivalent CBR	7.0	%	[DMRB Vol.7 3.2 HD 29/08 - Section 7.31]
Equivalent surface modulus	61.0	kPa	[TRRL LR 1132 - Appendix C Equation C1]
Estimated bearing capacity	95.2	kPa	[PCA - Design of Concrete Pavement. 1955]

Produced by	Dated	Checked by	Dated
S McNiff			00/01/00

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DYNAMIC CONE PENETROMETER TEST REPORT

Project: S211001

Project name: Envision, Sunderland

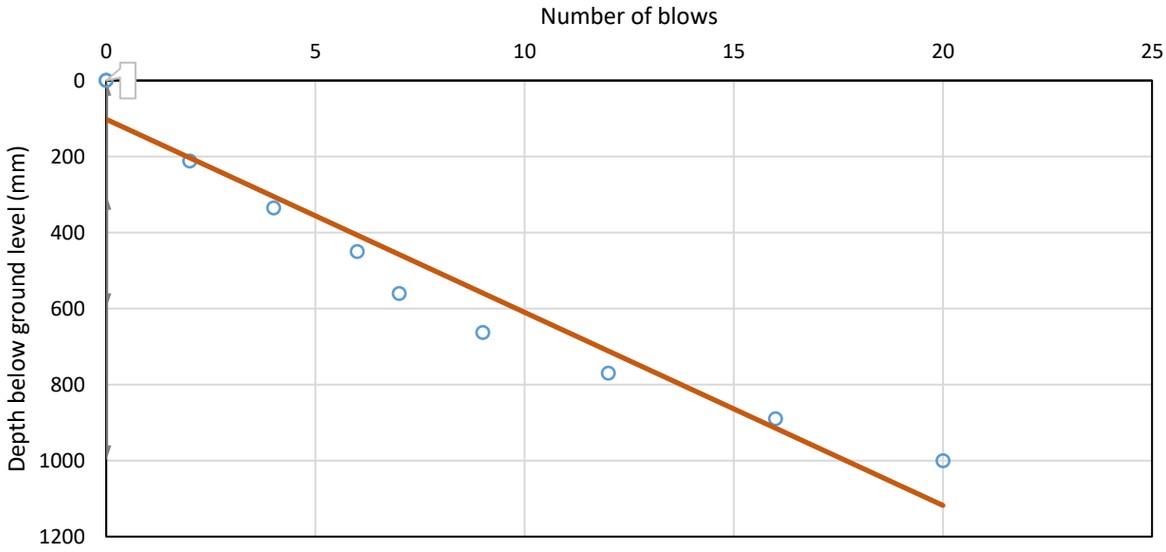
Report date:

Operator: Samuel McNiff

Notes:

Test date: 25/10/2021

Test location: DCP08



Layer 0-1000mm bgl

Penetration rate	48	mm/blow	
Equivalent CBR	5.0	%	[DMRB Vol.7 3.2 HD 29/08 - Section 7.31]
Equivalent surface modulus	49.3	kPa	[TRRL LR 1132 - Appendix C Equation C1]
Estimated bearing capacity	76.3	kPa	[PCA - Design of Concrete Pavement. 1955]

Produced by	Dated	Checked by	Dated
S McNiff			00/01/00

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DYNAMIC CONE PENETROMETER TEST REPORT

Project: S211001

Project name: Envision, Sunderland

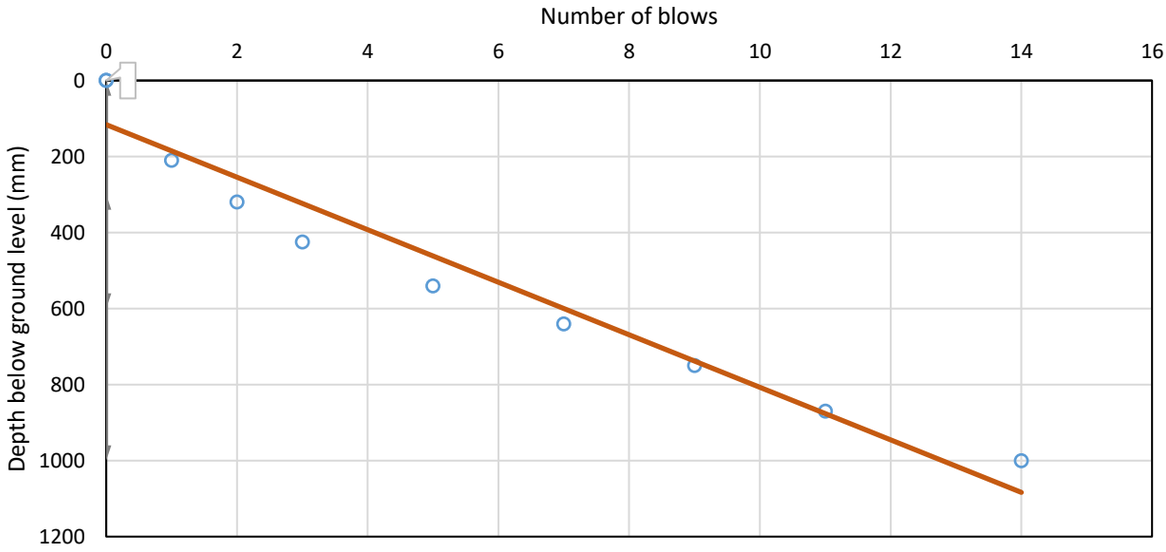
Report date:

Operator: Samuel McNiff

Notes:

Test date: 25/10/2021

Test location: DCP09



Layer 0-1000mm bgl

Penetration rate	65	mm/blow	
Equivalent CBR	3.6	%	[DMRB Vol.7 3.2 HD 29/08 - Section 7.31]
Equivalent surface modulus	40.1	kPa	[TRRL LR 1132 - Appendix C Equation C1]
Estimated bearing capacity	61.6	kPa	[PCA - Design of Concrete Pavement. 1955]

Produced by	Dated	Checked by	Dated
S McNiff			00/01/00

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DYNAMIC CONE PENETROMETER TEST REPORT

Project: S211001

Project name: Envision, Sunderland

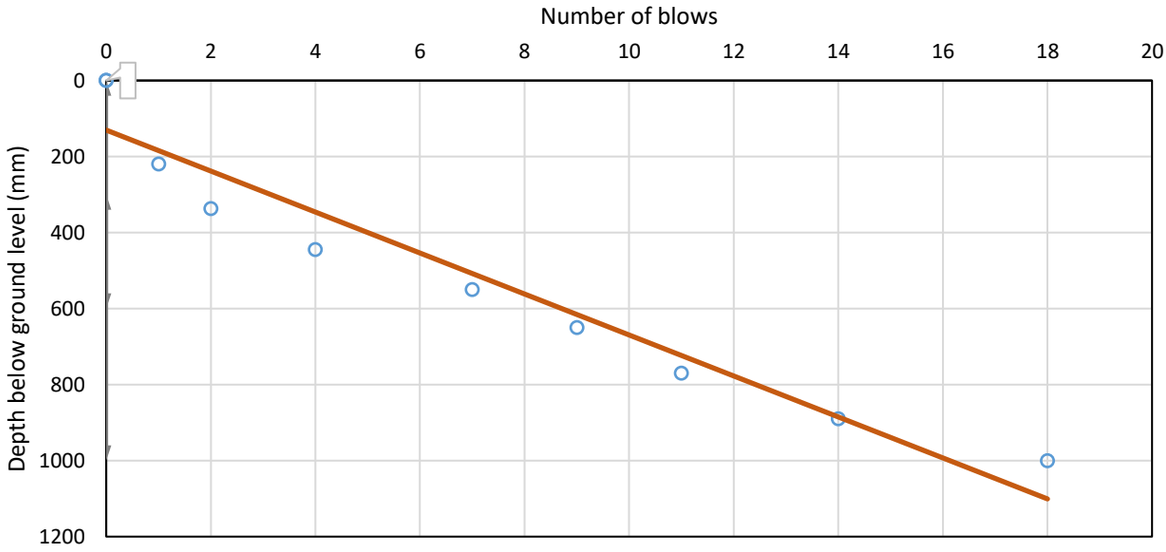
Report date:

Operator: Samuel McNiff

Notes:

Test date: 25/10/2021

Test location: DCP10



Layer 0-1000mm bgl

Penetration rate	51	mm/blow	
Equivalent CBR	4.8	%	[DMRB Vol.7 3.2 HD 29/08 - Section 7.31]
Equivalent surface modulus	47.7	kPa	[TRRL LR 1132 - Appendix C Equation C1]
Estimated bearing capacity	73.6	kPa	[PCA - Design of Concrete Pavement. 1955]

Produced by	Dated	Checked by	Dated
S McNiff			00/01/00

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DYNAMIC CONE PENETROMETER TEST REPORT

Project: S211001

Project name: Envision, Sunderland

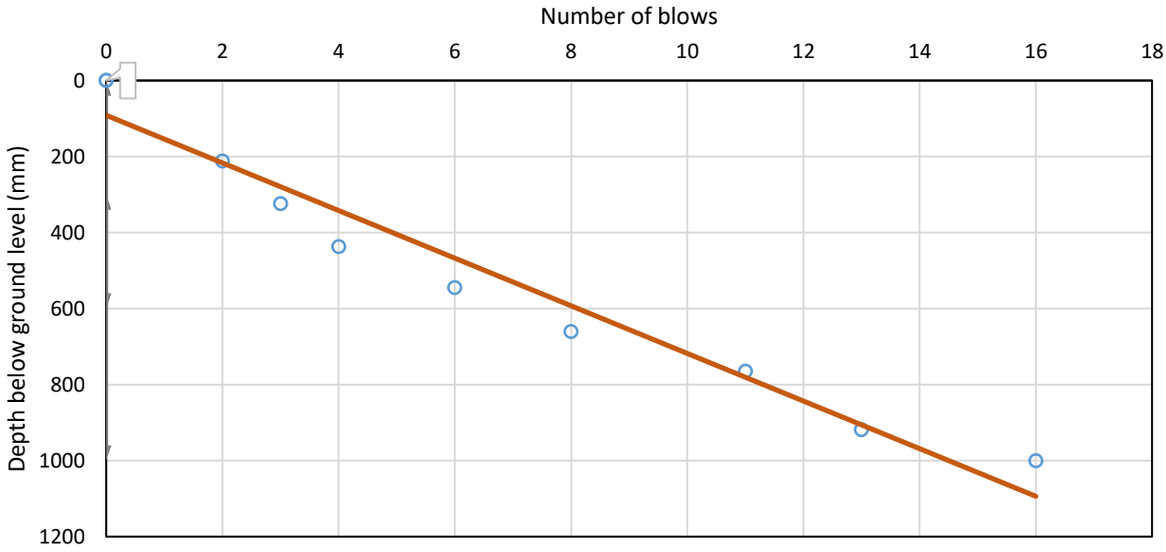
Report date:

Operator: Samuel McNiff

Notes:

Test date: 25/10/2021

Test location: DCP11



Layer 0-1000mm bgl

Penetration rate	60	mm/blow	
Equivalent CBR	4.0	%	[DMRB Vol.7 3.2 HD 29/08 - Section 7.31]
Equivalent surface modulus	42.6	kPa	[TRRL LR 1132 - Appendix C Equation C1]
Estimated bearing capacity	65.6	kPa	[PCA - Design of Concrete Pavement. 1955]

Produced by	Dated	Checked by	Dated
S McNiff			00/01/00

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DYNAMIC CONE PENETROMETER TEST REPORT

Project: S211001

Project name: Envision, Sunderland

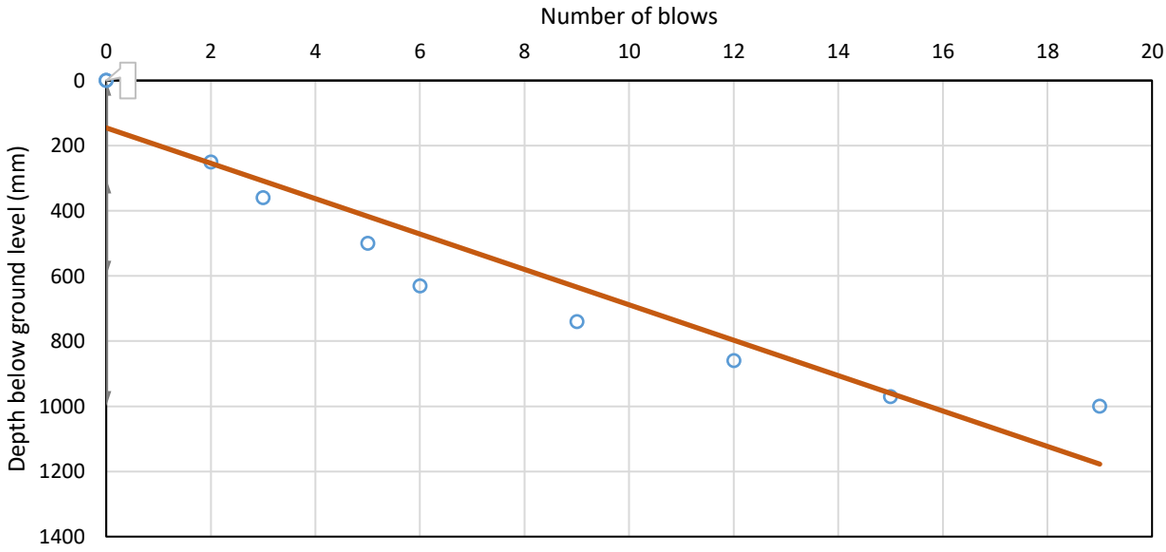
Report date:

Operator: Samuel McNiff

Notes:

Test date: 25/10/2021

Test location: DCP12



Layer 0-1000mm bgl

Penetration rate	51	mm/blow	
Equivalent CBR	4.8	%	[DMRB Vol.7 3.2 HD 29/08 - Section 7.31]
Equivalent surface modulus	47.7	kPa	[TRRL LR 1132 - Appendix C Equation C1]
Estimated bearing capacity	73.7	kPa	[PCA - Design of Concrete Pavement. 1955]

Produced by	Dated	Checked by	Dated
S McNiff			00/01/00

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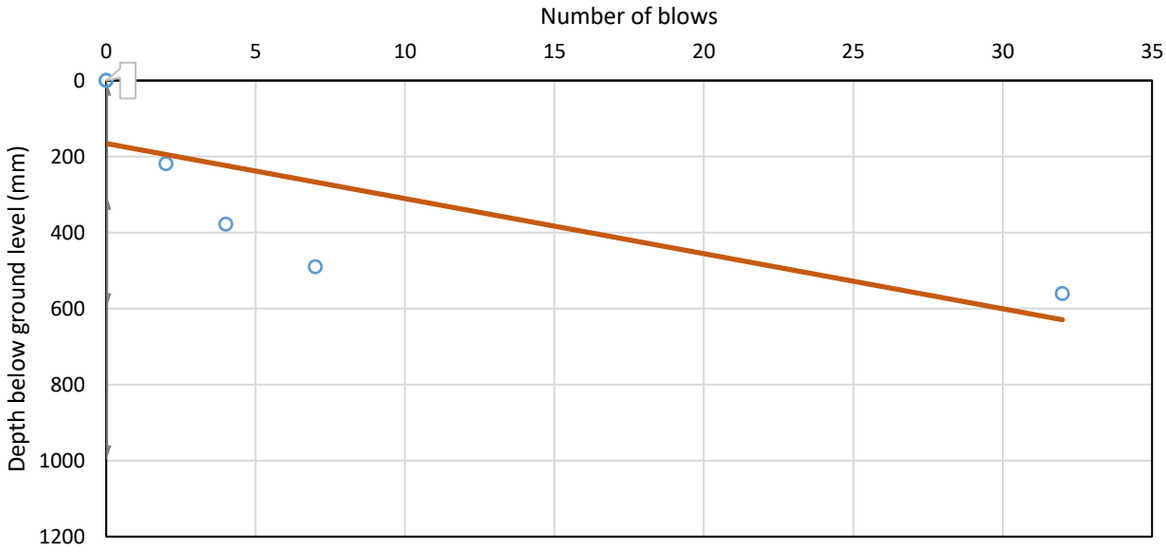
DYNAMIC CONE PENETROMETER TEST REPORT

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	12	mm/blow	
Equivalent CBR	21.2	%	[DMRB Vol.7 3.2 HD 29/08 - Section 7.31]
Equivalent surface modulus	124.3	kPa	[TRRL LR 1132 - Appendix C Equation C1]
Estimated bearing capacity	199.0	kPa	[PCA - Design of Concrete Pavement. 1955]

Produced by	Dated	Checked by	Dated
S McNiff			00/01/00

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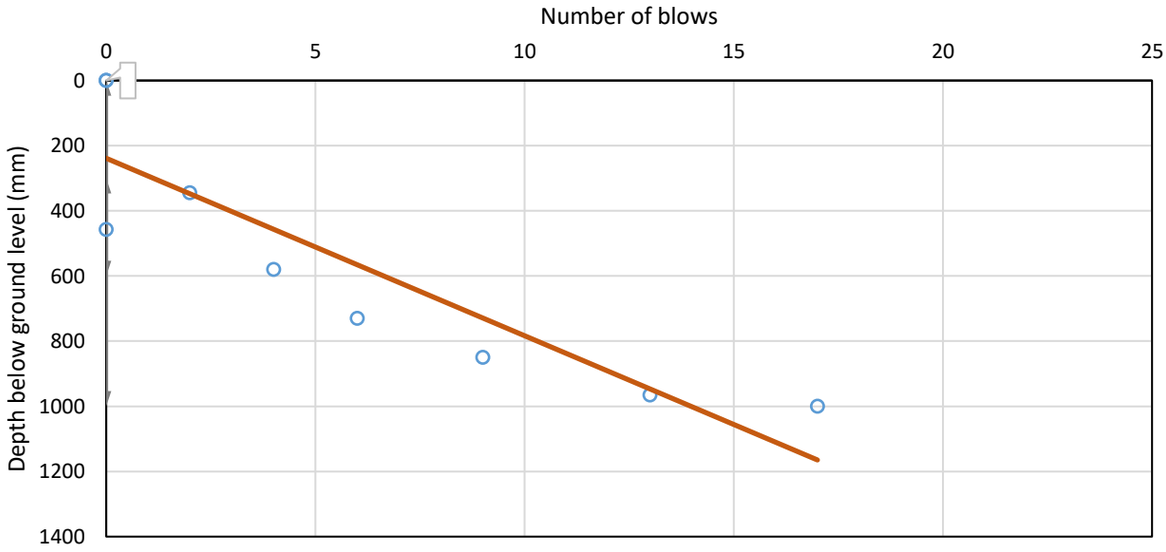
DYNAMIC CONE PENETROMETER TEST REPORT

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	54	mm/blow	
Equivalent CBR	4.5	%	[DMRB Vol.7 3.2 HD 29/08 - Section 7.31]
Equivalent surface modulus	45.8	kPa	[TRRL LR 1132 - Appendix C Equation C1]
Estimated bearing capacity	70.7	kPa	[PCA - Design of Concrete Pavement. 1955]

Produced by	Dated	Checked by	Dated
S McNiff			00/01/00

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DYNAMIC CONE PENETROMETER TEST REPORT

Project: S211001

Project name: Envision, Sunderland

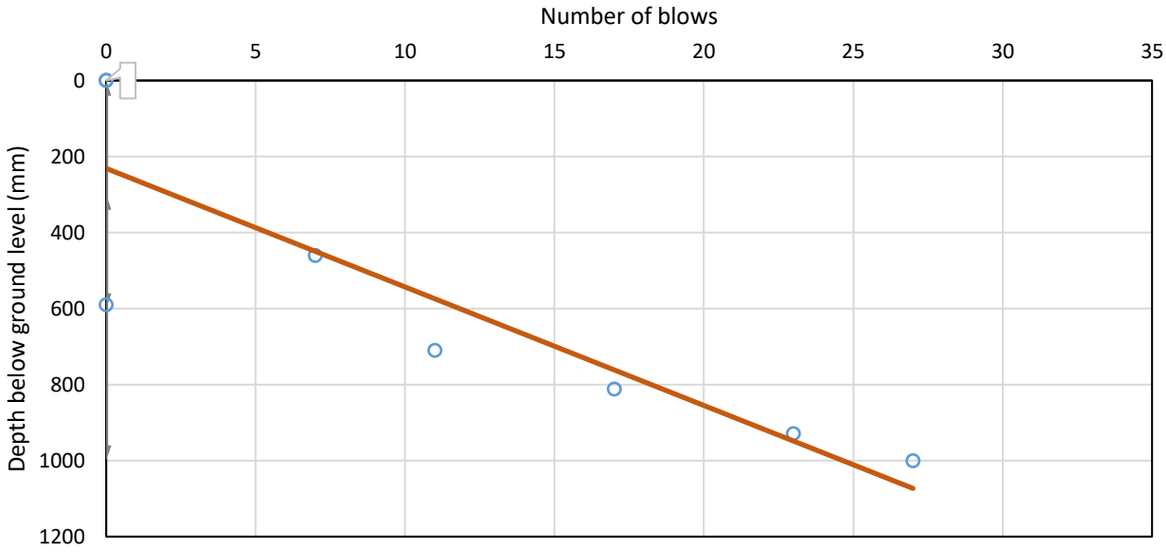
Report date:

Operator: Samuel McNiff

Notes:

Test date: 25/10/2021

Test location: DCP15



Layer 0-1000mm bgl

Penetration rate	35	mm/blow	
Equivalent CBR	7.1	%	[DMRB Vol.7 3.2 HD 29/08 - Section 7.31]
Equivalent surface modulus	61.7	kPa	[TRRL LR 1132 - Appendix C Equation C1]
Estimated bearing capacity	96.2	kPa	[PCA - Design of Concrete Pavement. 1955]

Produced by	Dated	Checked by	Dated
S McNiff			00/01/00

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DYNAMIC CONE PENETROMETER TEST REPORT

Project: S211001

Project name: Envision, Sunderland

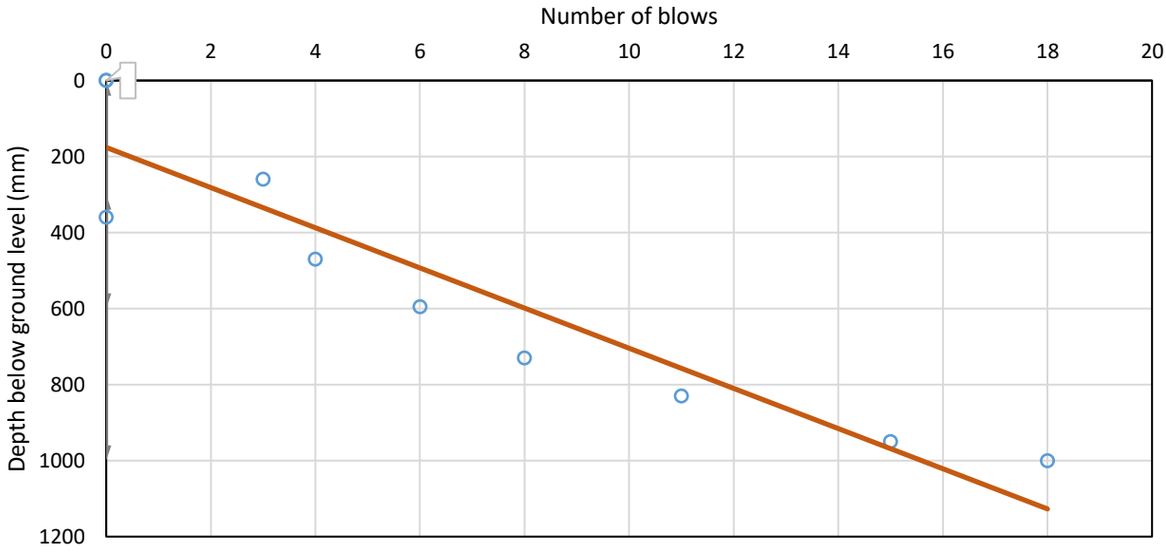
Report date:

Operator: Samuel McNiff

Notes:

Test date: 25/10/2021

Test location: DCP16



Layer 0-1000mm bgl

Penetration rate	53	mm/blow	
Equivalent CBR	4.5	%	[DMRB Vol.7 3.2 HD 29/08 - Section 7.31]
Equivalent surface modulus	46.3	kPa	[TRRL LR 1132 - Appendix C Equation C1]
Estimated bearing capacity	71.4	kPa	[PCA - Design of Concrete Pavement. 1955]

Produced by	Dated	Checked by	Dated
S McNiff			00/01/00

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DYNAMIC CONE PENETROMETER TEST REPORT

Project: S211001

Project name: Envision, Sunderland

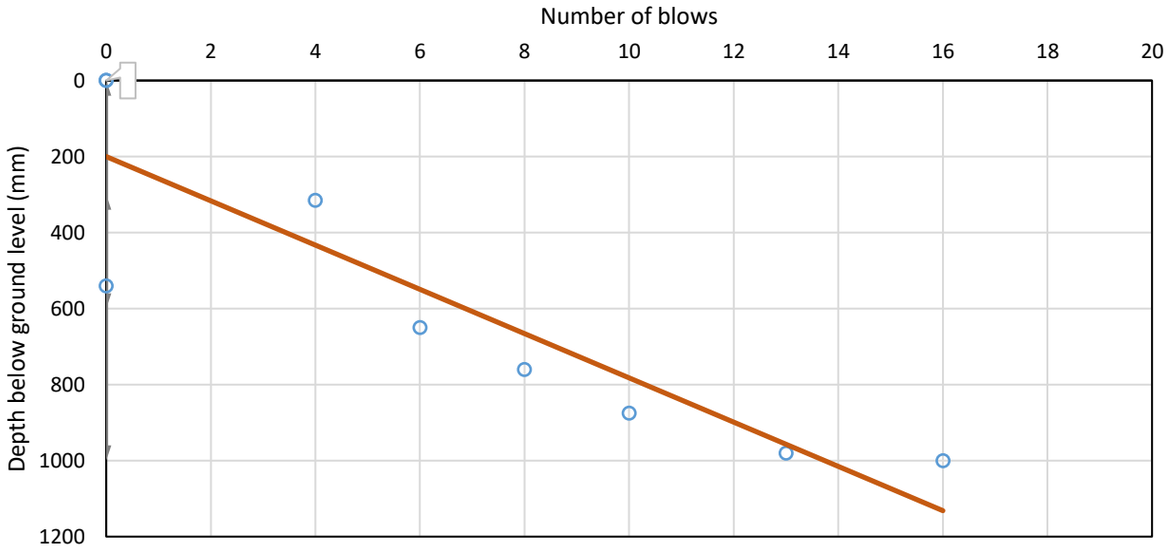
Report date:

Operator: Samuel McNiff

Notes:

Test date: 25/10/2021

Test location: DCP17



Layer 0-1000mm bgl

Penetration rate	65	mm/blow	
Equivalent CBR	3.7	%	[DMRB Vol.7 3.2 HD 29/08 - Section 7.31]
Equivalent surface modulus	40.5	kPa	[TRRL LR 1132 - Appendix C Equation C1]
Estimated bearing capacity	62.2	kPa	[PCA - Design of Concrete Pavement. 1955]

Produced by	Dated	Checked by	Dated
S McNiff			00/01/00

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DYNAMIC CONE PENETROMETER TEST REPORT

Project: S211001

Project name: Envision, Sunderland

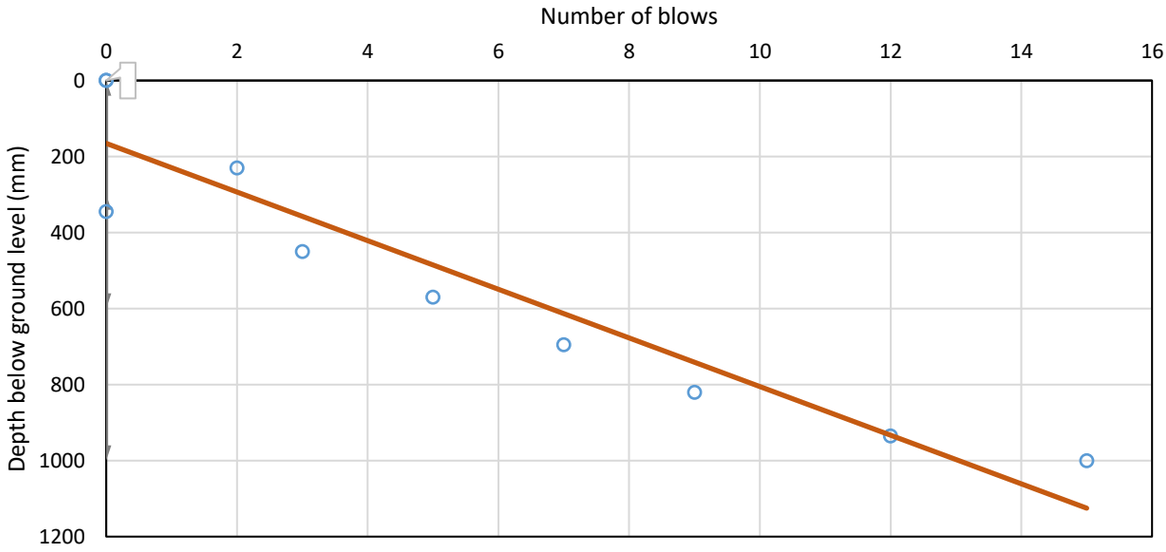
Report date:

Operator: Samuel McNiff

Notes:

Test date: 25/10/2021

Test location: DCP18



Layer 0-1000mm bgl

Penetration rate	64	mm/blow	
Equivalent CBR	3.7	%	[DMRB Vol.7 3.2 HD 29/08 - Section 7.31]
Equivalent surface modulus	40.6	kPa	[TRRL LR 1132 - Appendix C Equation C1]
Estimated bearing capacity	62.3	kPa	[PCA - Design of Concrete Pavement. 1955]

Produced by	Dated	Checked by	Dated
S McNiff			00/01/00

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DYNAMIC CONE PENETROMETER TEST REPORT

Project: S211001

Project name: Envision, Sunderland

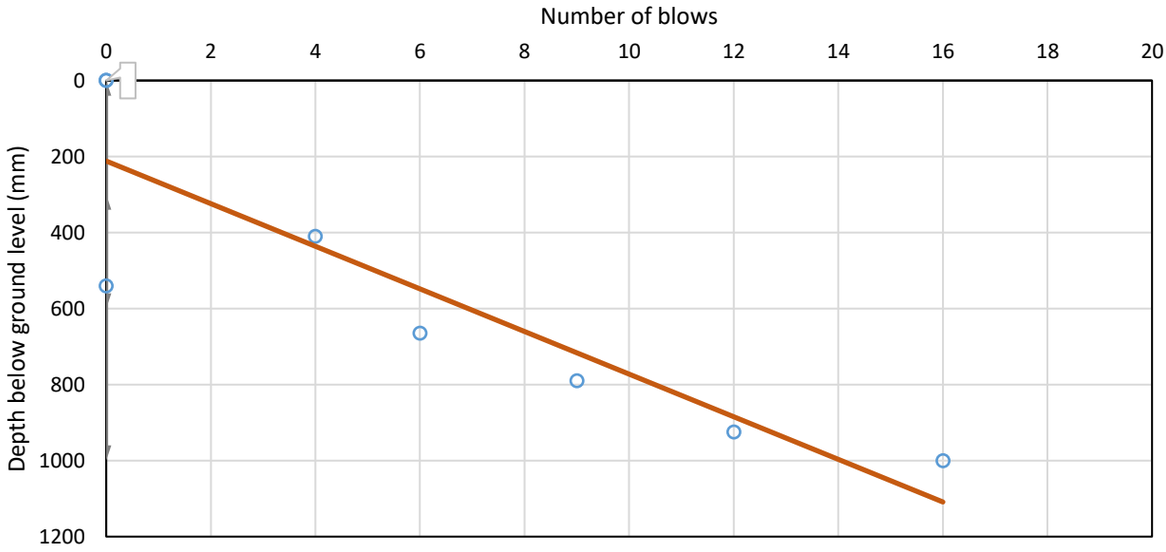
Report date:

Operator: Samuel McNiff

Notes:

Test date: 25/10/2021

Test location: DCP19



Layer 0-1000mm bgl

Penetration rate	62	mm/blow	
Equivalent CBR	3.9	%	[DMRB Vol.7 3.2 HD 29/08 - Section 7.31]
Equivalent surface modulus	41.8	kPa	[TRRL LR 1132 - Appendix C Equation C1]
Estimated bearing capacity	64.3	kPa	[PCA - Design of Concrete Pavement. 1955]

Produced by	Dated	Checked by	Dated
S McNiff			00/01/00

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DYNAMIC CONE PENETROMETER TEST REPORT

Project: S211001

Project name: Envision, Sunderland

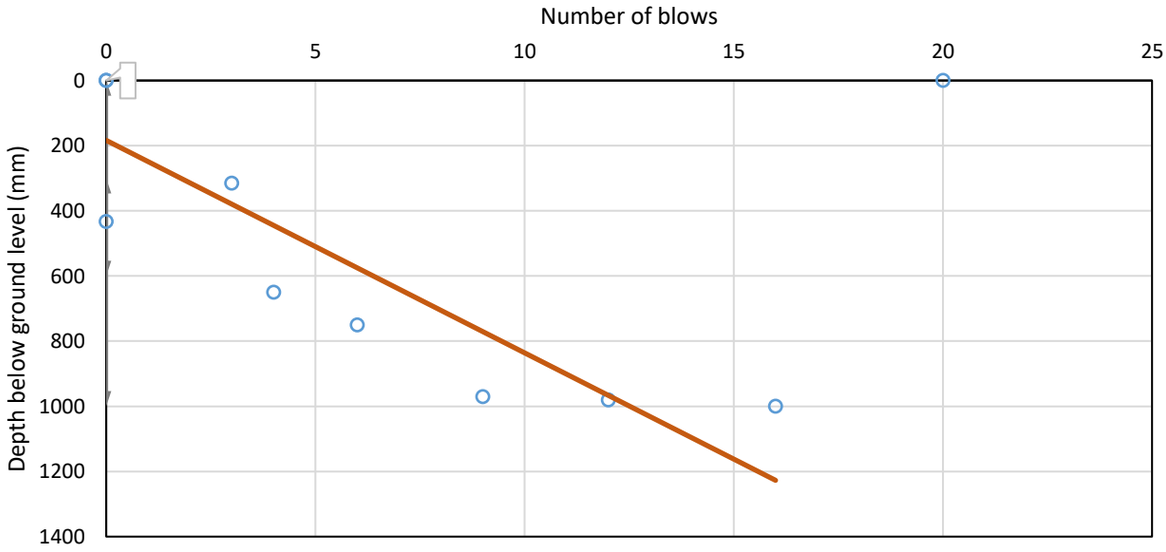
Report date:

Operator: Samuel McNiff

Notes:

Test date: 25/10/2021

Test location: DCP20



Layer 0-1000mm bgl

Penetration rate	61	mm/blow	
Equivalent CBR	3.9	%	[DMRB Vol.7 3.2 HD 29/08 - Section 7.31]
Equivalent surface modulus	42.3	kPa	[TRRL LR 1132 - Appendix C Equation C1]
Estimated bearing capacity	65.0	kPa	[PCA - Design of Concrete Pavement. 1955]

Produced by	Dated	Checked by	Dated
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DYNAMIC CONE PENETROMETER TEST REPORT

Project: S211001

Project name: Envision, Sunderland

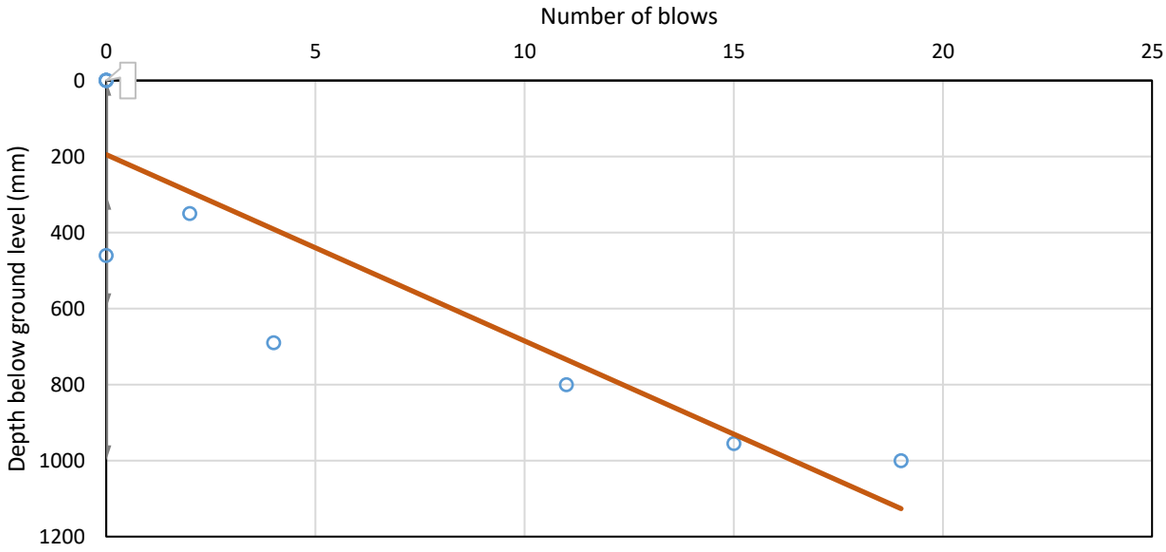
Report date:

Operator: Samuel McNiff

Notes:

Test date: 25/10/2021

Test location: DCP21



Layer 0-1000mm bgl

Penetration rate	45	mm/blow	
Equivalent CBR	5.4	%	[DMRB Vol.7 3.2 HD 29/08 - Section 7.31]
Equivalent surface modulus	51.4	kPa	[TRRL LR 1132 - Appendix C Equation C1]
Estimated bearing capacity	79.7	kPa	[PCA - Design of Concrete Pavement. 1955]

Produced by	Dated	Checked by	Dated
S McNiff			00/01/00

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DYNAMIC CONE PENETROMETER TEST REPORT

Project: S211001

Project name: Envision, Sunderland

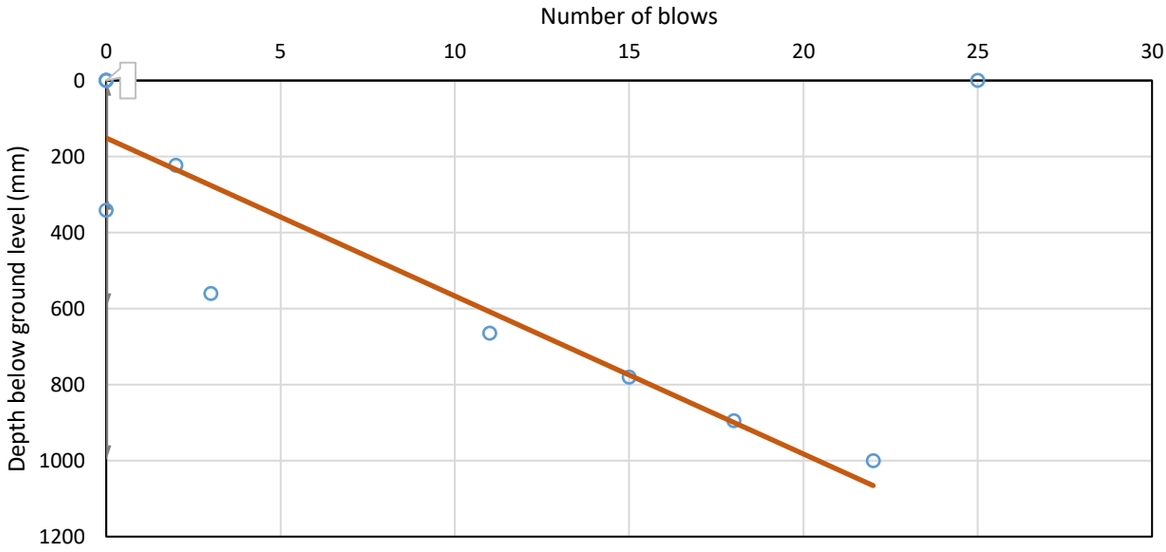
Report date:

Operator: Samuel McNiff

Notes:

Test date: 25/10/2021

Test location: DCP22



Layer 0-1000mm bgl

Penetration rate	39	mm/blow	
Equivalent CBR	6.3	%	[DMRB Vol.7 3.2 HD 29/08 - Section 7.31]
Equivalent surface modulus	57.0	kPa	[TRRL LR 1132 - Appendix C Equation C1]
Estimated bearing capacity	88.6	kPa	[PCA - Design of Concrete Pavement. 1955]

Produced by	Dated	Checked by	Dated
S McNiff			00/01/00

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DYNAMIC CONE PENETROMETER TEST REPORT

Project: S211001

Project name: Envision, Sunderland

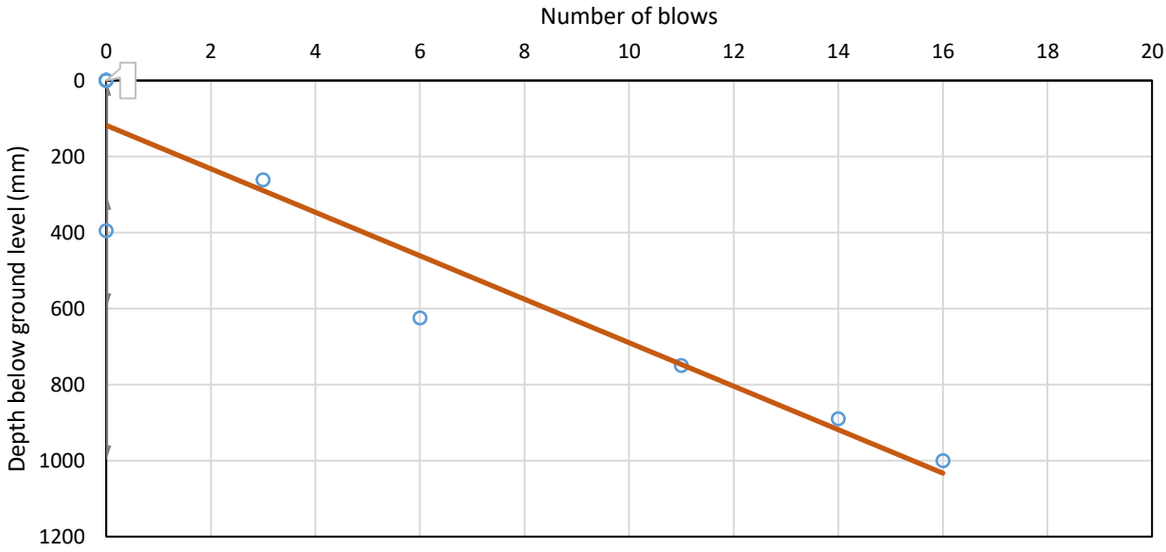
Report date:

Operator: Samuel McNiff

Notes:

Test date: 25/10/2021

Test location: DCP23



Layer 0-1000mm bgl

Penetration rate	59	mm/blow	
Equivalent CBR	4.1	%	[DMRB Vol.7 3.2 HD 29/08 - Section 7.31]
Equivalent surface modulus	43.1	kPa	[TRRL LR 1132 - Appendix C Equation C1]
Estimated bearing capacity	66.4	kPa	[PCA - Design of Concrete Pavement. 1955]

Produced by	Dated	Checked by	Dated
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DYNAMIC CONE PENETROMETER TEST REPORT

Project: S211001

Project name: Envision, Sunderland

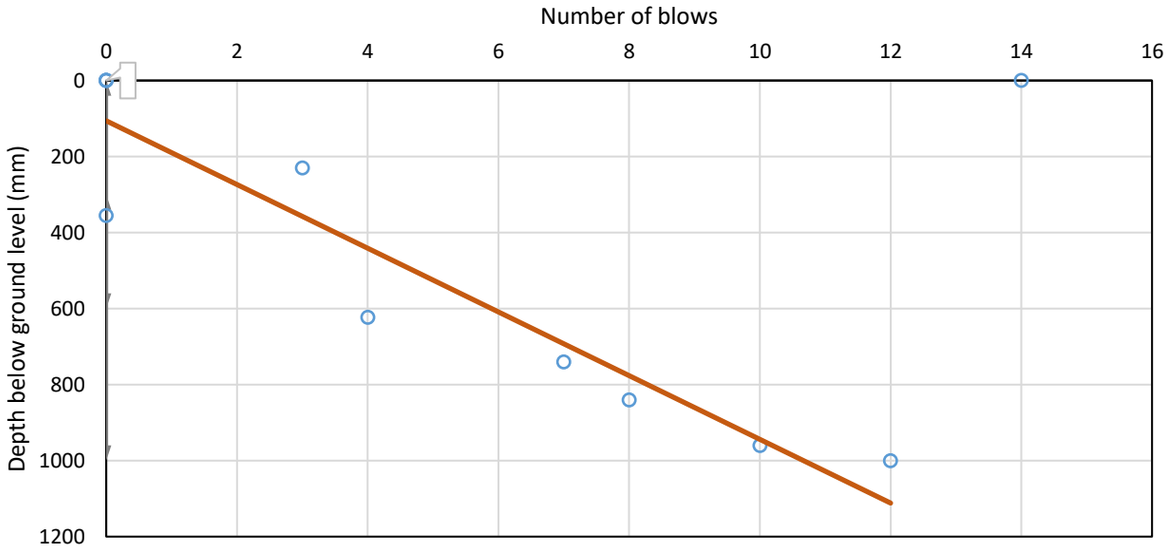
Report date:

Operator: Samuel McNiff

Notes:

Test date: 25/10/2021

Test location: DCP24



Layer 0-1000mm bgl

Penetration rate	86	mm/blow	
Equivalent CBR	2.7	%	[DMRB Vol.7 3.2 HD 29/08 - Section 7.31]
Equivalent surface modulus	33.4	kPa	[TRRL LR 1132 - Appendix C Equation C1]
Estimated bearing capacity	50.9	kPa	[PCA - Design of Concrete Pavement. 1955]

Produced by	Dated	Checked by	Dated
S McNiff			00/01/00

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DYNAMIC CONE PENETROMETER TEST REPORT

Project: S211001

Project name: Envision, Sunderland

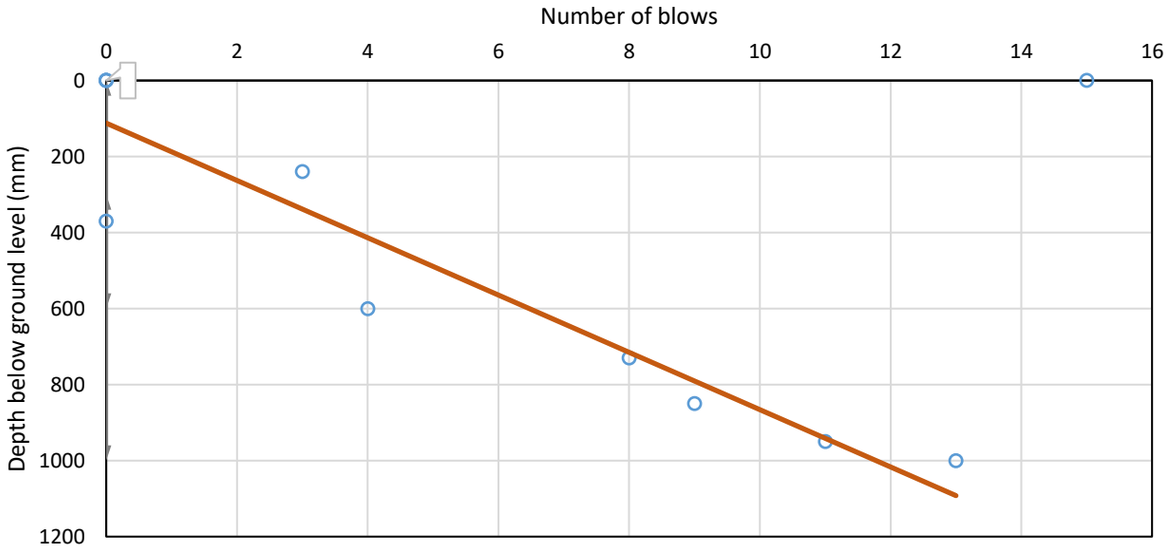
Report date:

Operator: Samuel McNiff

Notes:

Test date: 25/10/2021

Test location: DCP25



Layer 0-1000mm bgl

Penetration rate	77	mm/blow	
Equivalent CBR	3.1	%	[DMRB Vol.7 3.2 HD 29/08 - Section 7.31]
Equivalent surface modulus	35.9	kPa	[TRRL LR 1132 - Appendix C Equation C1]
Estimated bearing capacity	54.9	kPa	[PCA - Design of Concrete Pavement. 1955]

Produced by	Dated	Checked by	Dated
S McNiff			00/01/00

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DYNAMIC CONE PENETROMETER TEST REPORT

Project: S211001

Project name: Envision, Sunderland

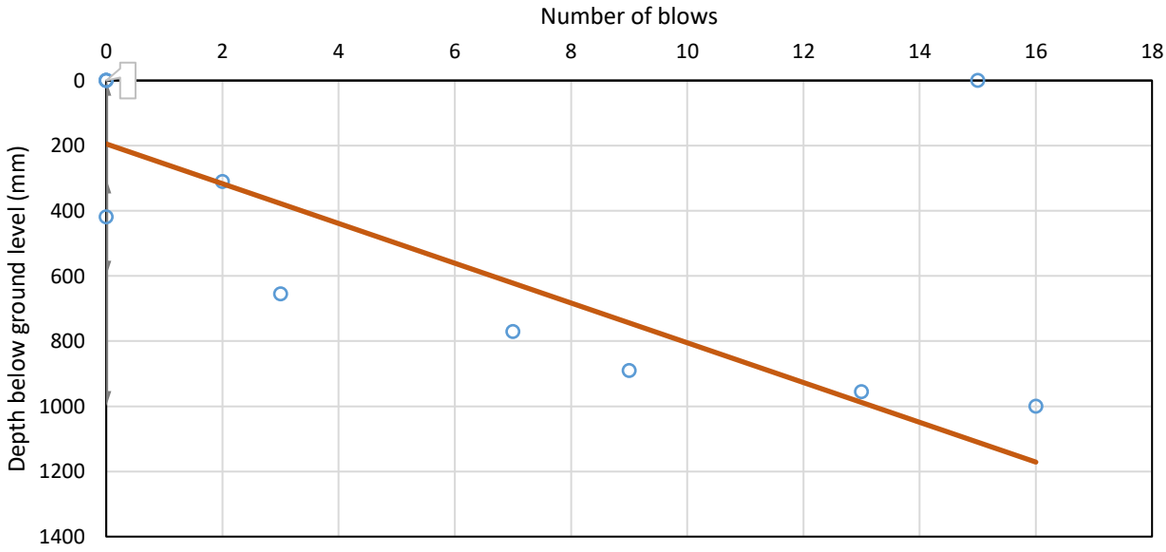
Report date:

Operator: Samuel McNiff

Notes:

Test date: 25/10/2021

Test location: DCP26



Layer 0-1000mm bgl

Penetration rate	55	mm/blow	
Equivalent CBR	4.3	%	[DMRB Vol.7 3.2 HD 29/08 - Section 7.31]
Equivalent surface modulus	44.9	kPa	[TRRL LR 1132 - Appendix C Equation C1]
Estimated bearing capacity	69.3	kPa	[PCA - Design of Concrete Pavement. 1955]

Produced by	Dated	Checked by	Dated
S McNiff			00/01/00

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DYNAMIC CONE PENETROMETER TEST REPORT

Project: S211001

Project name: Envision, Sunderland

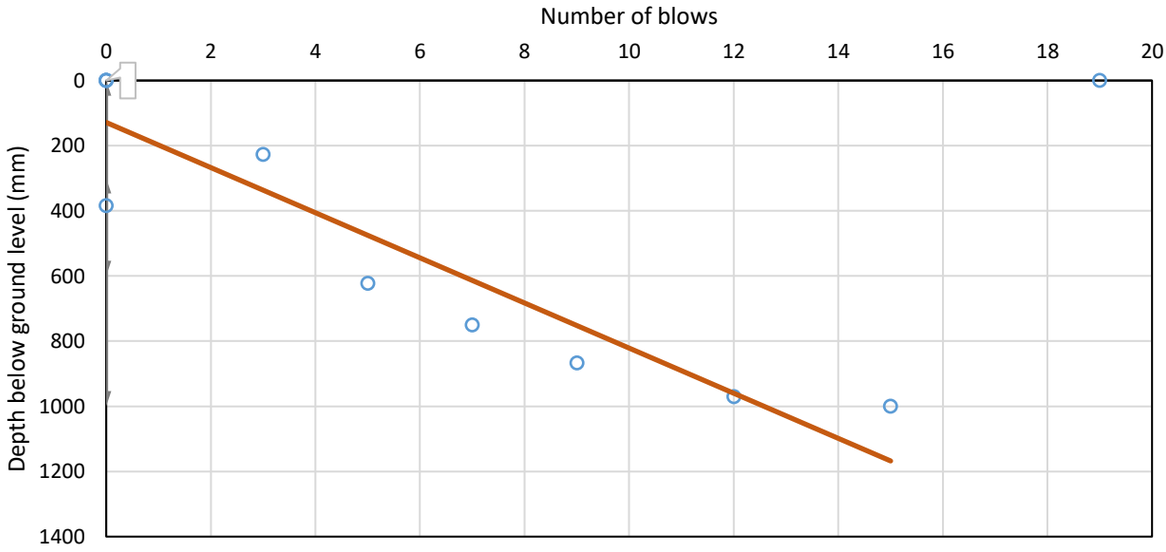
Report date:

Operator: Samuel McNiff

Notes:

Test date: 25/10/2021

Test location: DCP27



Layer 0-1000mm bgl

Penetration rate	69	mm/blow	
Equivalent CBR	3.4	%	[DMRB Vol.7 3.2 HD 29/08 - Section 7.31]
Equivalent surface modulus	38.7	kPa	[TRRL LR 1132 - Appendix C Equation C1]
Estimated bearing capacity	59.3	kPa	[PCA - Design of Concrete Pavement. 1955]

Produced by	Dated	Checked by	Dated
S McNiff			00/01/00

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DYNAMIC CONE PENETROMETER TEST REPORT

Project: S211001

Project name: Envision, Sunderland

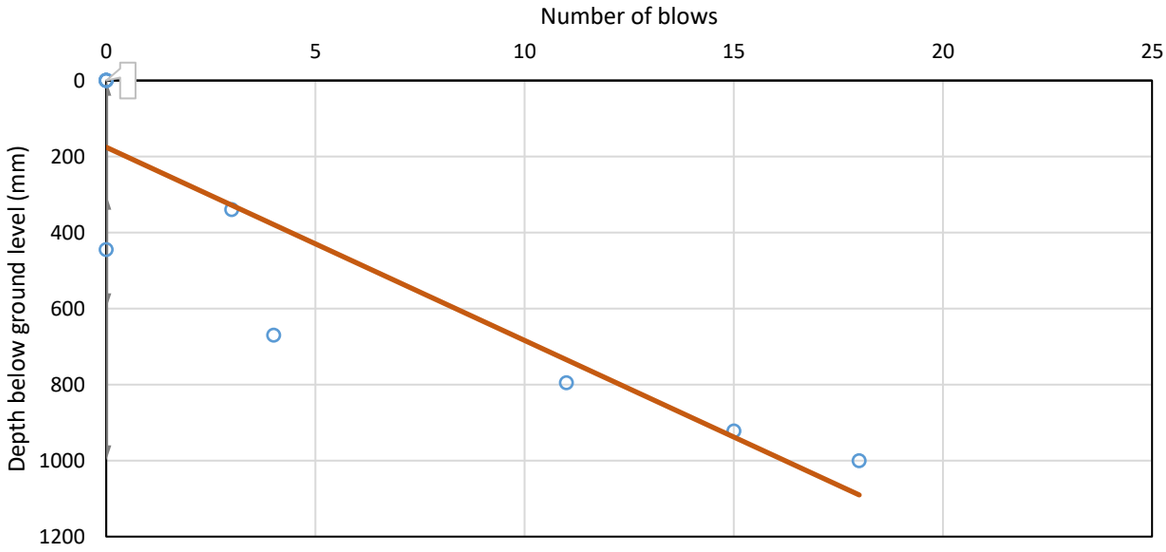
Report date:

Operator: Samuel McNiff

Notes:

Test date: 25/10/2021

Test location: DCP28



Layer 0-1000mm bgl

Penetration rate	48	mm/blow	
Equivalent CBR	5.0	%	[DMRB Vol.7 3.2 HD 29/08 - Section 7.31]
Equivalent surface modulus	49.4	kPa	[TRRL LR 1132 - Appendix C Equation C1]
Estimated bearing capacity	76.4	kPa	[PCA - Design of Concrete Pavement. 1955]

Produced by	Dated	Checked by	Dated
S McNiff			00/01/00

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DYNAMIC CONE PENETROMETER TEST REPORT

Project: S211001

Project name: Envision, Sunderland

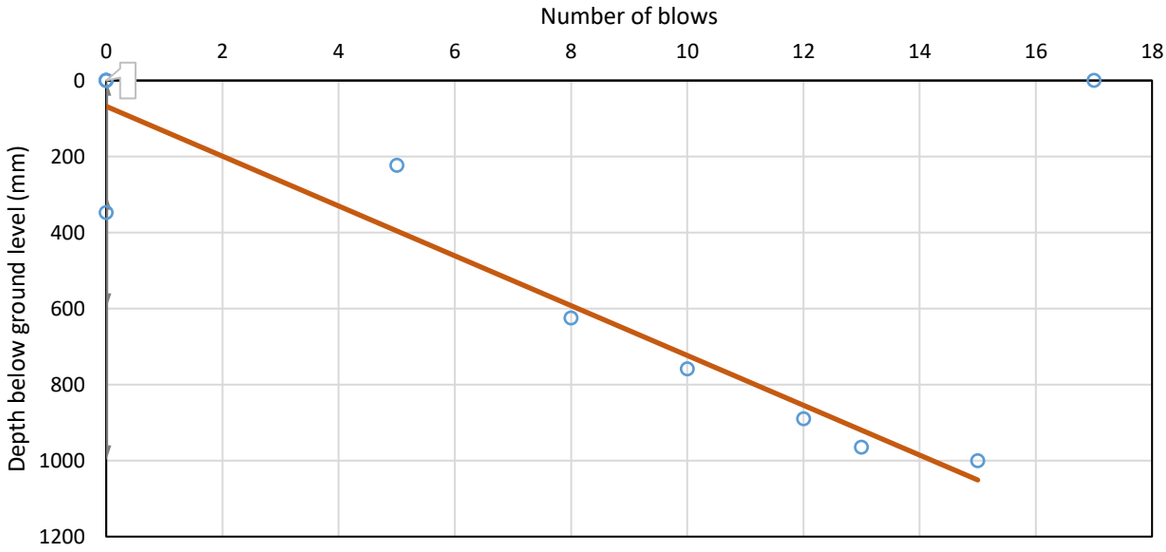
Report date:

Operator: Samuel McNiff

Notes:

Test date: 25/10/2021

Test location: DCP29



Layer 0-1000mm bgl

Penetration rate	74	mm/blow	
Equivalent CBR	3.2	%	[DMRB Vol.7 3.2 HD 29/08 - Section 7.31]
Equivalent surface modulus	37.1	kPa	[TRRL LR 1132 - Appendix C Equation C1]
Estimated bearing capacity	56.8	kPa	[PCA - Design of Concrete Pavement. 1955]

Produced by	Dated	Checked by	Dated
S McNiff			00/01/00

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DYNAMIC CONE PENETROMETER TEST REPORT

Project: S211001

Project name: Envision, Sunderland

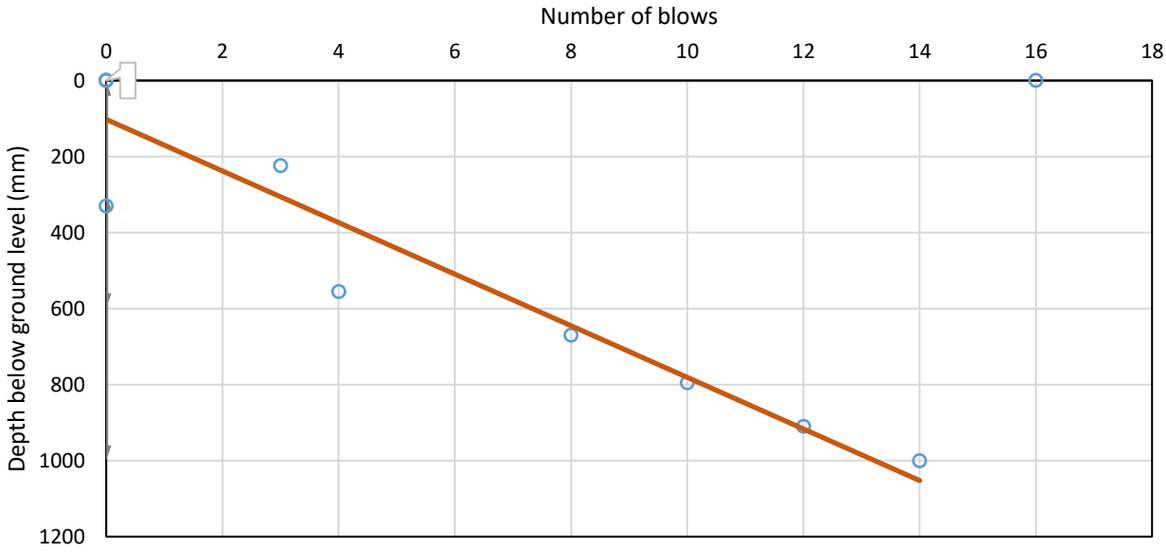
Report date:

Operator: Samuel McNiff

Notes:

Test date: 25/10/2021

Test location: DCP30



Layer 0-1000mm bgl

Penetration rate	69	mm/blow	
Equivalent CBR	3.4	%	[DMRB Vol.7 3.2 HD 29/08 - Section 7.31]
Equivalent surface modulus	38.8	kPa	[TRRL LR 1132 - Appendix C Equation C1]
Estimated bearing capacity	59.4	kPa	[PCA - Design of Concrete Pavement. 1955]

Produced by	Dated	Checked by	Dated
S McNiff			00/01/00

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DYNAMIC CONE PENETROMETER TEST REPORT

Project: S211001

Project name: Envision, Sunderland

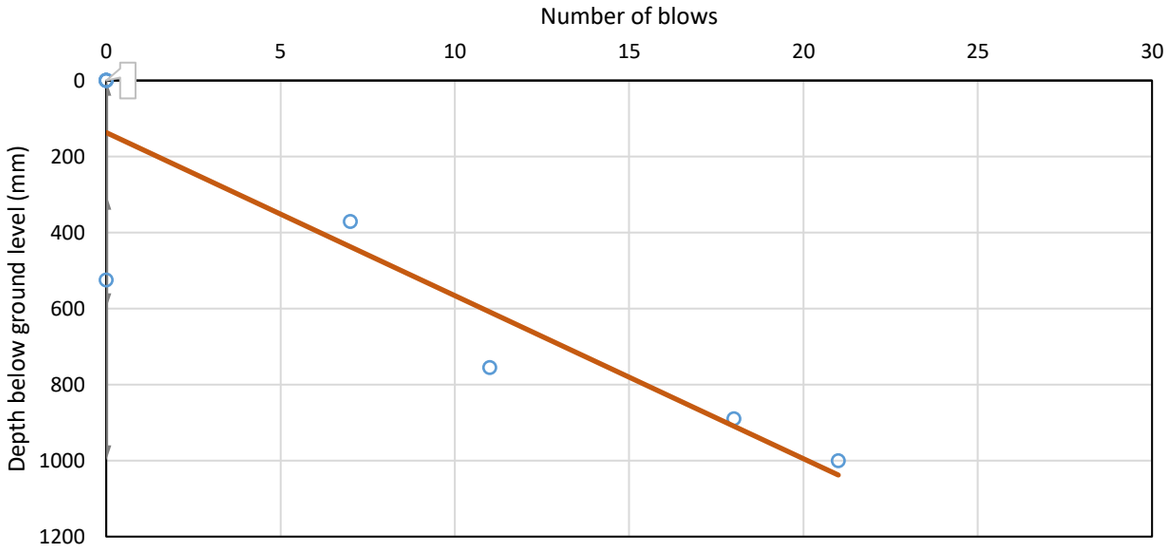
Report date:

Operator: Samuel McNiff

Notes:

Test date: 25/10/2021

Test location: DCP31



Layer 0-1000mm bgl

Penetration rate	47	mm/blow	
Equivalent CBR	5.1	%	[DMRB Vol.7 3.2 HD 29/08 - Section 7.31]
Equivalent surface modulus	49.9	kPa	[TRRL LR 1132 - Appendix C Equation C1]
Estimated bearing capacity	77.2	kPa	[PCA - Design of Concrete Pavement. 1955]

Produced by	Dated	Checked by	Dated
S McNiff			00/01/00

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DYNAMIC CONE PENETROMETER TEST REPORT

Project: S211001

Project name: Envision, Sunderland

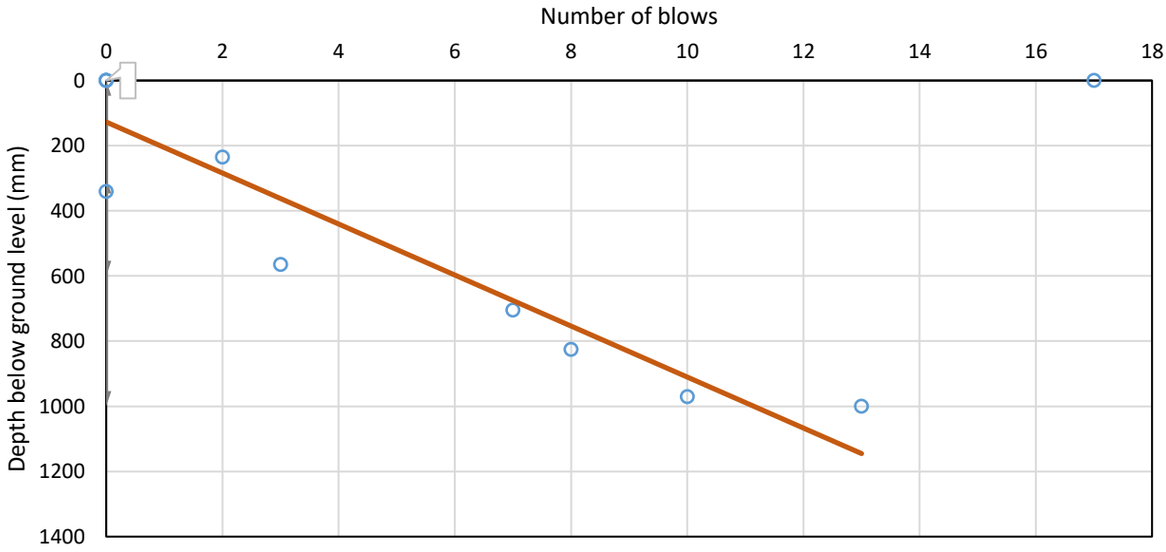
Report date:

Operator: Samuel McNiff

Notes:

Test date: 25/10/2021

Test location: DCP32



Layer 0-1000mm bgl

Penetration rate	76	mm/blow	
Equivalent CBR	3.1	%	[DMRB Vol.7 3.2 HD 29/08 - Section 7.31]
Equivalent surface modulus	36.2	kPa	[TRRL LR 1132 - Appendix C Equation C1]
Estimated bearing capacity	55.3	kPa	[PCA - Design of Concrete Pavement. 1955]

Produced by	Dated	Checked by	Dated
S McNiff			00/01/00

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DYNAMIC CONE PENETROMETER TEST REPORT

Project: S211001

Project name: Envision, Sunderland

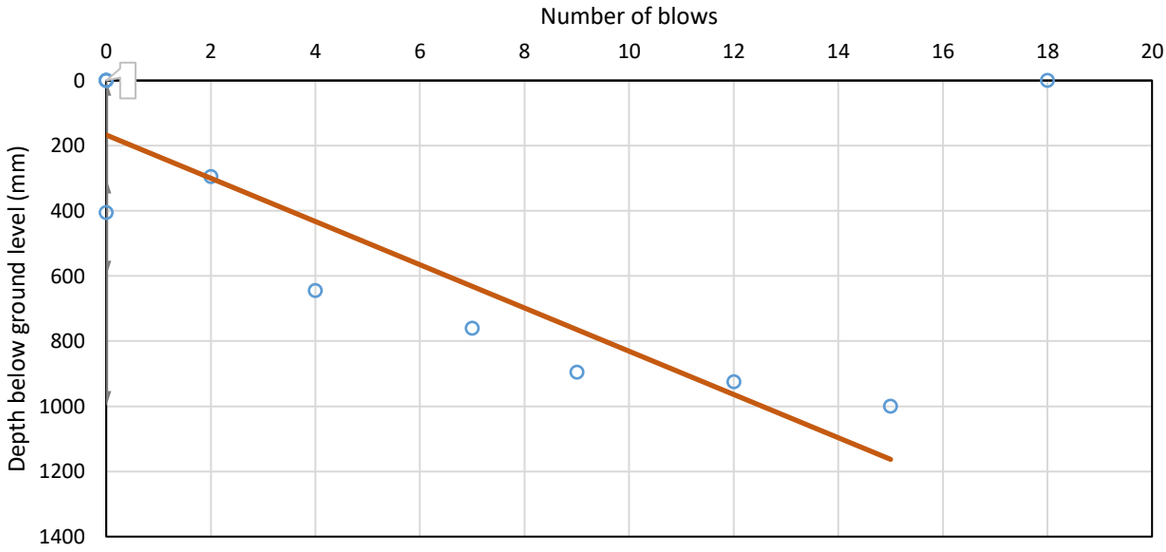
Report date:

Operator: Samuel McNiff

Notes:

Test date: 25/10/2021

Test location: DCP33



Layer 0-1000mm bgl

Penetration rate	63	mm/blow	
Equivalent CBR	3.8	%	[DMRB Vol.7 3.2 HD 29/08 - Section 7.31]
Equivalent surface modulus	41.4	kPa	[TRRL LR 1132 - Appendix C Equation C1]
Estimated bearing capacity	63.6	kPa	[PCA - Design of Concrete Pavement. 1955]

Produced by	Dated	Checked by	Dated
S McNiff			00/01/00

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DYNAMIC CONE PENETROMETER TEST REPORT

Project: S211001

Project name: Envision, Sunderland

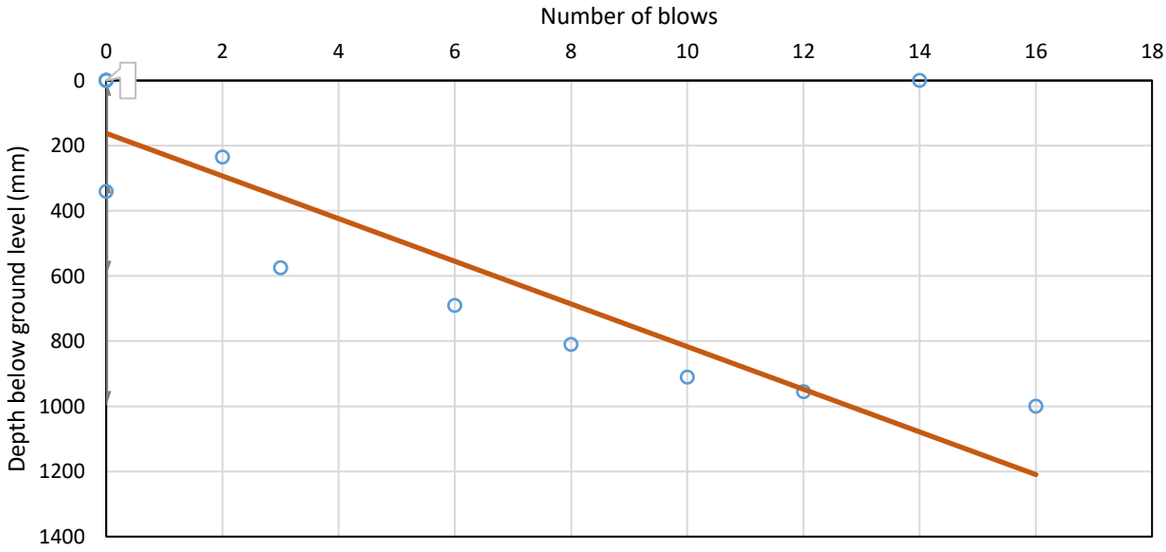
Report date:

Operator: Samuel McNiff

Notes:

Test date: 25/10/2021

Test location: DCP34



Layer 0-1000mm bgl

Penetration rate	60	mm/blow	
Equivalent CBR	4.0	%	[DMRB Vol.7 3.2 HD 29/08 - Section 7.31]
Equivalent surface modulus	42.4	kPa	[TRRL LR 1132 - Appendix C Equation C1]
Estimated bearing capacity	65.2	kPa	[PCA - Design of Concrete Pavement. 1955]

Produced by	Dated	Checked by	Dated
S McNiff			00/01/00

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DYNAMIC CONE PENETROMETER TEST REPORT

Project: S211001

Project name: Envision, Sunderland

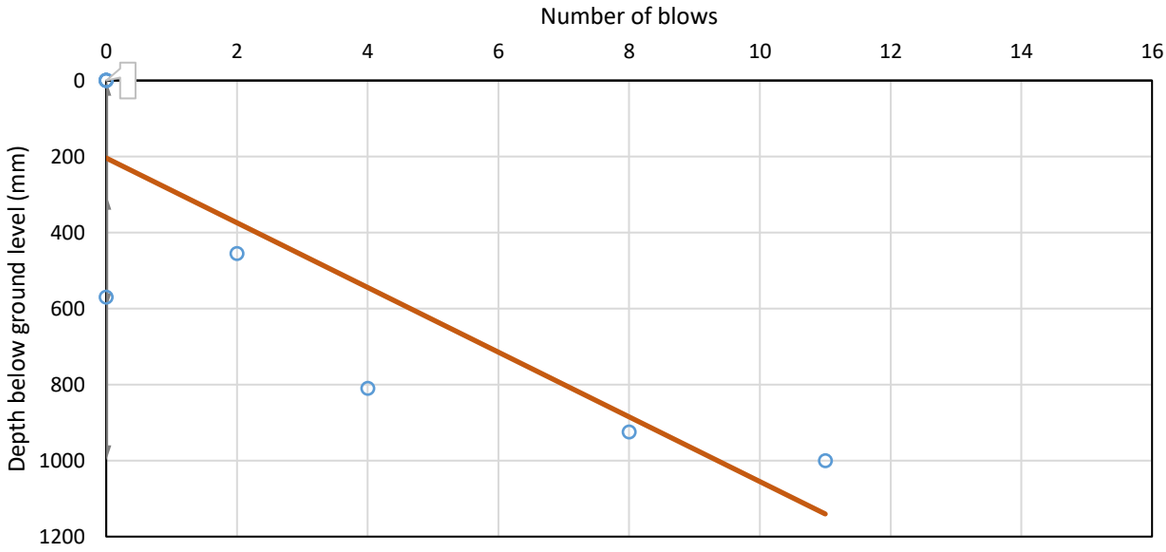
Report date:

Operator: Samuel McNiff

Notes:

Test date: 25/10/2021

Test location: DCP35



Layer 0-1000mm bgl

Penetration rate	83	mm/blow	
Equivalent CBR	2.8	%	[DMRB Vol.7 3.2 HD 29/08 - Section 7.31]
Equivalent surface modulus	34.3	kPa	[TRRL LR 1132 - Appendix C Equation C1]
Estimated bearing capacity	52.4	kPa	[PCA - Design of Concrete Pavement. 1955]

Produced by	Dated	Checked by	Dated
S McNiff			00/01/00

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DYNAMIC CONE PENETROMETER TEST REPORT

Project: S211001

Project name: Envision, Sunderland

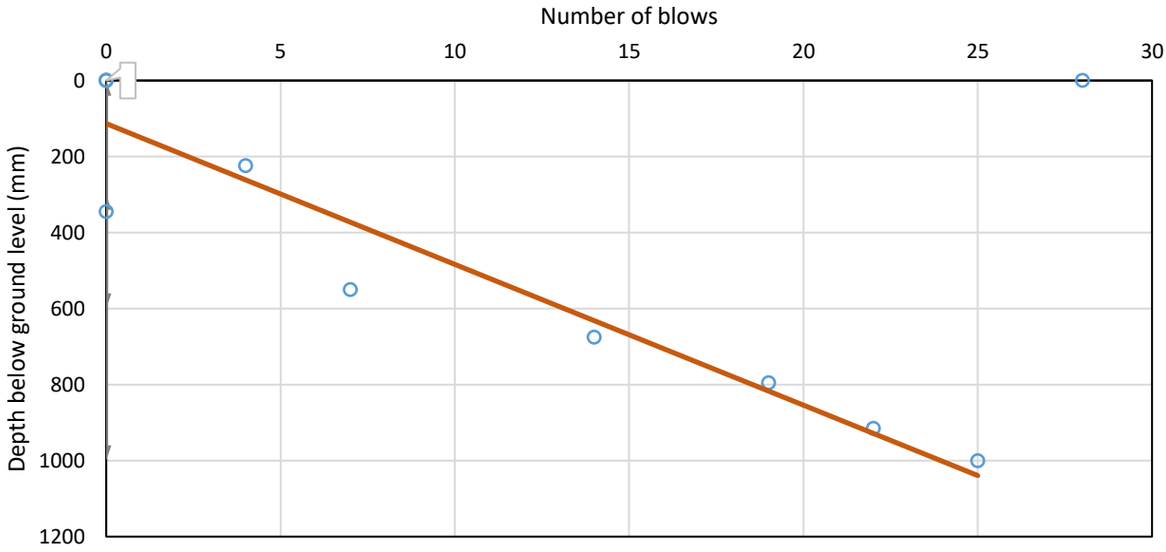
Report date:

Operator: Samuel McNiff

Notes:

Test date: 25/10/2021

Test location: DCP36



Layer 0-1000mm bgl

Penetration rate	37	mm/blow	
Equivalent CBR	6.6	%	[DMRB Vol.7 3.2 HD 29/08 - Section 7.31]
Equivalent surface modulus	58.9	kPa	[TRRL LR 1132 - Appendix C Equation C1]
Estimated bearing capacity	91.7	kPa	[PCA - Design of Concrete Pavement. 1955]

Produced by	Dated	Checked by	Dated
S McNiff			00/01/00

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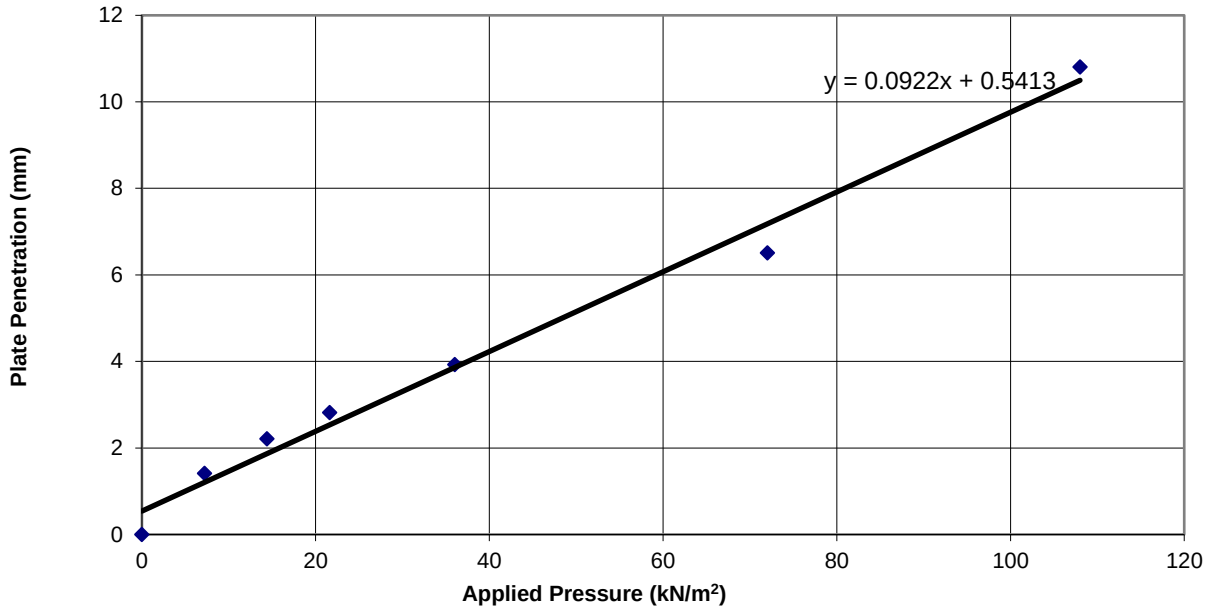
GEOTECHNICAL TESTING LABORATORY

PLATE BEARING TEST			**Date:**	01/11/2021
Project Number:	S211001		**Test No:**	PLT 01
Project Name:	Envision, Sunderland		**Test Level:**	0.30mbgl
Test Method: BS 1377 : Part 9 : 1990 (Incremental Method)			**Weather:**	Warm, dry and clear
Plate Diameter:	0.600 m		**Load Applied:**	108 kPa
Kentledge Type:	14T 360 Machine Excavator		**Remarks:**	Clay



	Pressure (kN/m^2)	Plate Pentration (mm)
Initial	0	0
Stage 1	7	1.41
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		

Conversion Factor	0.80
Stress Applied @ 1.25mm	6.74 kN/m^2
Total Plate Deflection	10.81 mm
Plate Diameter	600 mm
k600	5394
k762	4339
CBR	0.12 %

Produced by: D. McNuff

Checked by:

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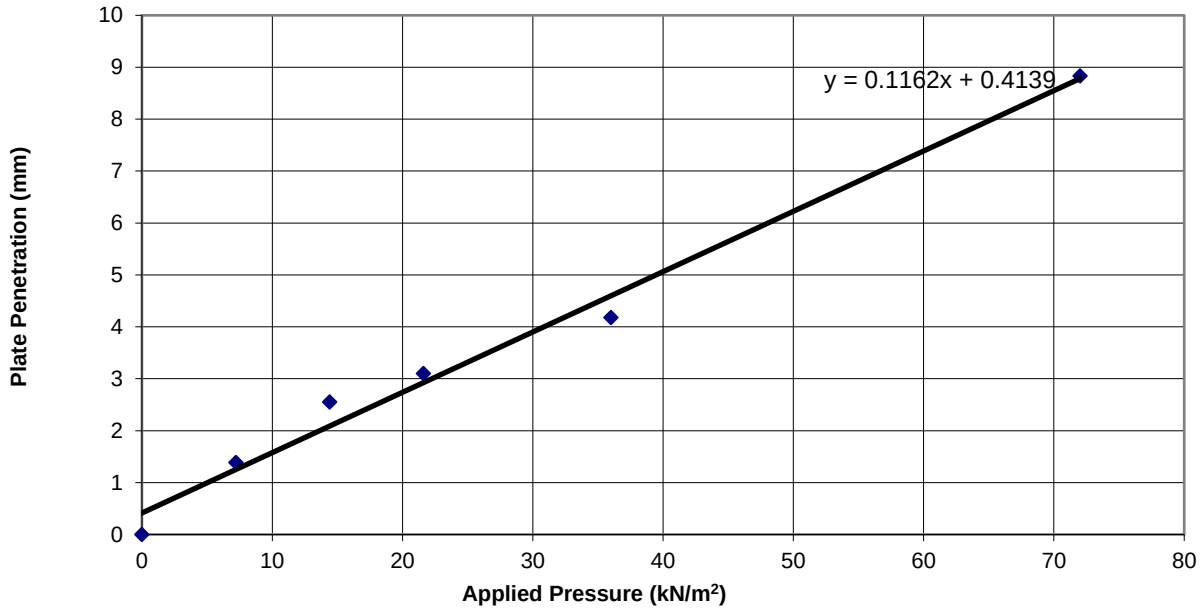
GEOTECHNICAL TESTING LABORATORY

PLATE BEARING TEST			**Date:**	29/10/2021
Project Number:	S211001		**Test No:**	PLT02
Project Name:	Envision, Sunderland		**Test Level:**	0.3mbgl
Test Method: BS 1377 : Part 9 : 1990 (Incremental Method)			**Weather:**	Warm, dry and clear
Plate Diameter:	0.600 m		**Load Applied:**	108 kPa
Kentledge Type:	14T 360 Machine Excavator		**Remarks:**	Clay



	Pressure (kN/m^2)	Plate Pentration (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	108	11.35
Stage 7		
Stage 8		

Conversion Factor	0.80	Produced by: D. McNuff
Stress Applied @ 1.25mm	#N/A kN/m^2	
Total Plate Deflection	11.35 mm	Checked by:
Plate Diameter	600 mm	
k600	#N/A	
k762	#N/A	
CBR	#N/A %	

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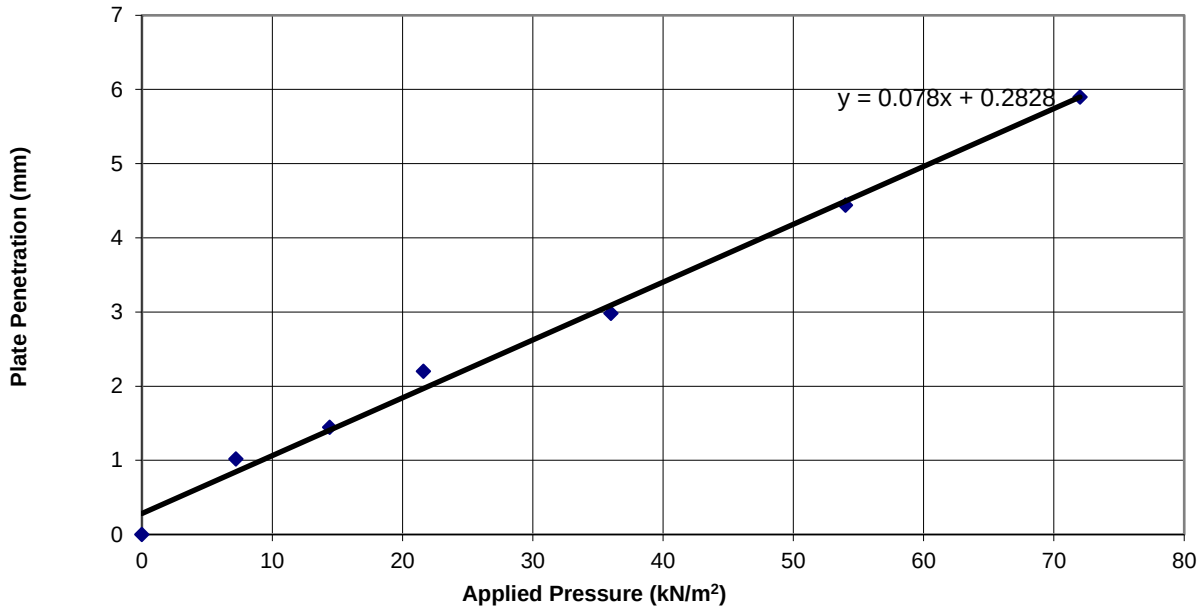
PLATE BEARING TEST			**Date:**	01/11/2021
Project Number:	S211001		**Test No:**	PLT 03
Project Name:	Envision, Sunderland		**Test Level:**	0.30mbgl
Test Method: BS 1377 : Part 9 : 1990 (Incremental Method)			**Weather:**	Warm, dry and clear
Plate Diameter:	0.600 m		**Load Applied:**	108 kPa
Kentledge Type:	14T 360 Machine Excavator		**Remarks:**	Clay



	Pressure (kN/m^2)	Plate Pentration (mm)
Initial	0	0
Stage 1	7	1.02
Stage 2	14	1.45
Stage 3	22	2.20
Stage 4	36	2.98
Stage 5	54	4.44
Stage 6	72	5.90
Stage 7	108	10.04
Stage 8		

Conversion Factor	0.80	Produced by: D. McNuff
Stress Applied @ 1.25mm	12.40 kN/m^2	
Total Plate Deflection	5.90 mm	Checked by:
Plate Diameter	600 mm	
k600	9919	
k762	7979	
CBR	0.35 %	

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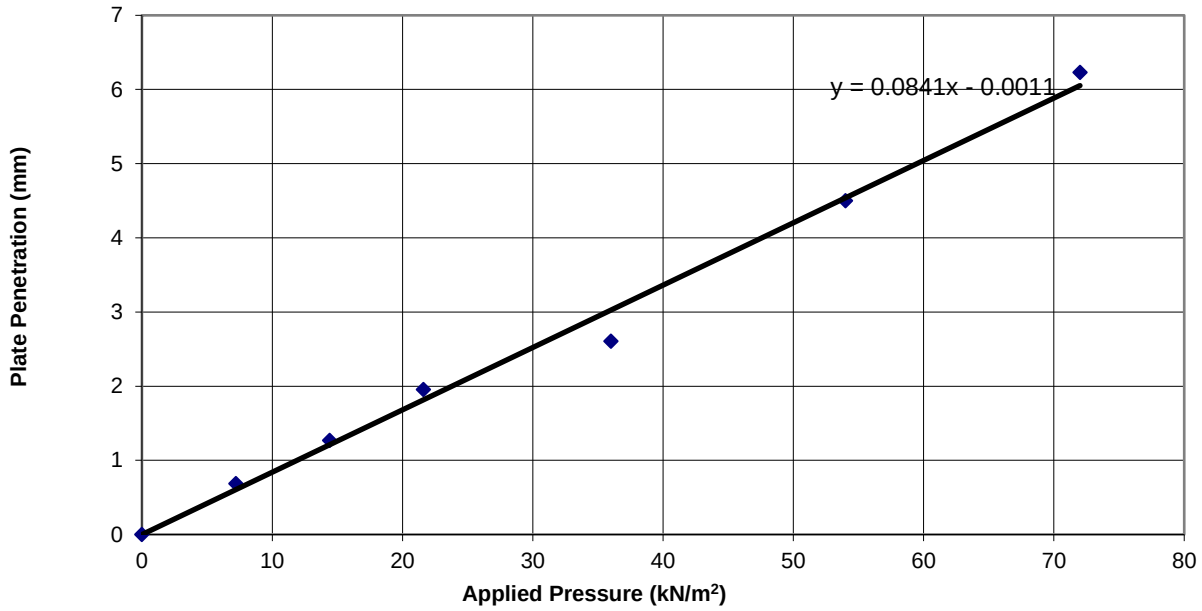
PLATE BEARING TEST			**Date:**	01/11/2021
Project Number:	S211001		**Test No:**	PLT 04
Project Name:	Envision, Sunderland		**Test Level:**	0.30mbgl
Test Method: BS 1377 : Part 9 : 1990 (Incremental Method)			**Weather:**	Warm, dry and clear
Plate Diameter:	0.600 m		**Load Applied:**	108 kPa
Kentledge Type:	14T 360 Machine Excavator		**Remarks:**	Clay



	Pressure (kN/m^2)	Plate Pentration (mm)
Initial	0	0
Stage 1	7	0.69
Stage 2	14	1.27
Stage 3	22	1.96
Stage 4	36	2.61
Stage 5	54	4.50
Stage 6	72	6.23
Stage 7	108	9.16
Stage 8		

Conversion Factor	0.80
Stress Applied @ 1.25mm	14.84 kN/m^2
Total Plate Deflection	6.23 mm
Plate Diameter	600 mm
k600	11873
k762	9551
CBR	0.48 %

Produced by: D. McNiff

Checked by:

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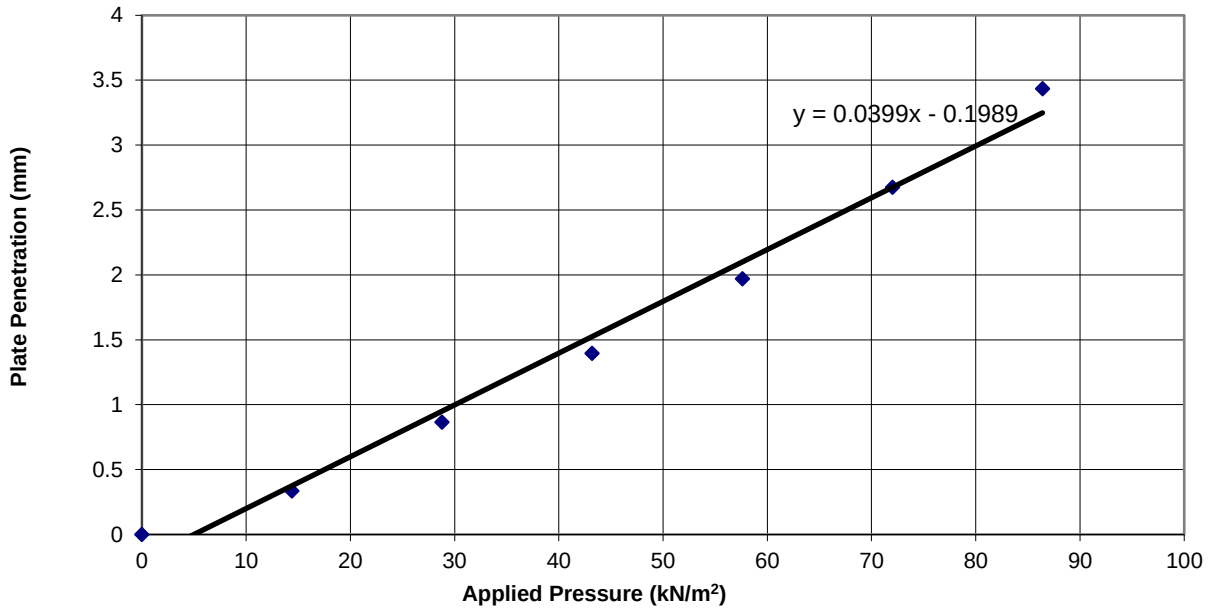
PLATE BEARING TEST			**Date:**	27/10/2021
Project Number:	S211001		**Test No:**	PLT 05
Project Name:	Envision, Sunderland		**Test Level:**	0.30mbgl
Test Method: BS 1377 : Part 9 : 1990 (Incremental Method)			**Weather:**	Warm, dry and clear
Plate Diameter:	0.600 m		**Load Applied:**	100.8 kPa
Kentledge Type:	14T 360 Machine Excavator		**Remarks:**	Clay



	Pressure (kN/m^2)	Plate Pentration (mm)
Initial	0	0
Stage 1	14	0.34
Stage 2	29	0.87
Stage 3	43	1.40
Stage 4	58	1.97
Stage 5	72	2.68
Stage 6	86	3.44
Stage 7	101	3.98
Stage 8		

Conversion Factor	0.80
Stress Applied @ 1.25mm	37.16 kN/m^2
Total Plate Deflection	3.44 mm
Plate Diameter	600 mm
k600	29729
k762	23914
CBR	2.36 %

Produced by: D. McNuff

Checked by:

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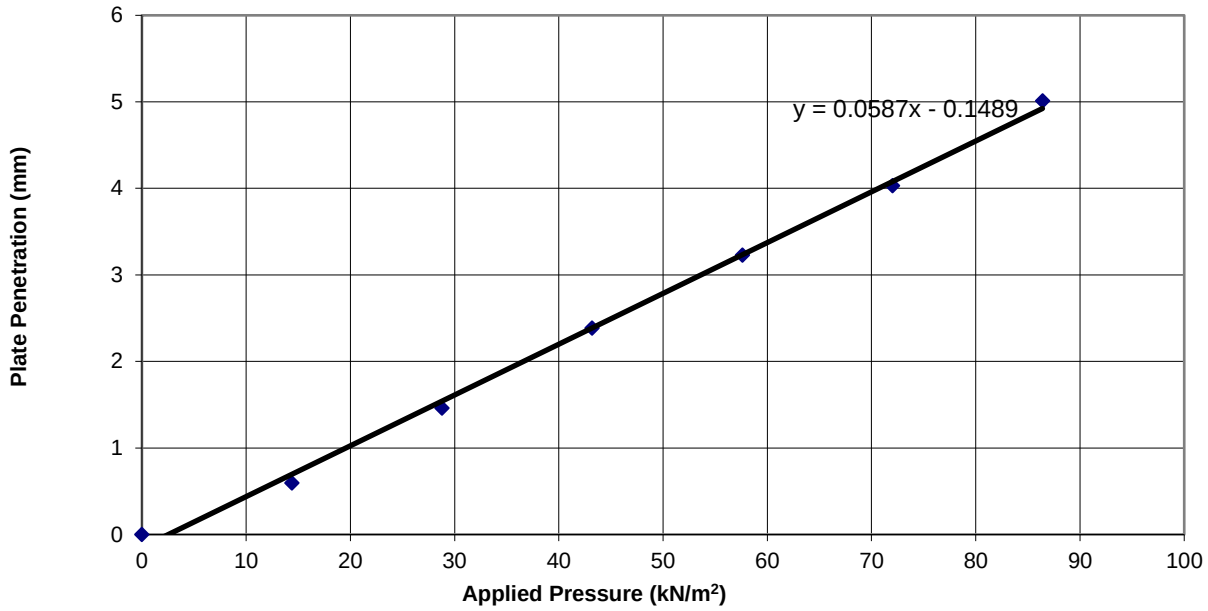
PLATE BEARING TEST			**Date:**	27/10/2021
Project Number:	S211001		**Test No:**	PLT 07
Project Name:	Envision, Sunderland		**Test Level:**	0.30mbgl
Test Method: BS 1377 : Part 9 : 1990 (Incremental Method)			**Weather:**	Warm, dry and clear
Plate Diameter:	0.600 m		**Load Applied:**	100.8 kPa
Kentledge Type:	14T 360 Machine Excavator		**Remarks:**	Clay



	Pressure (kN/m^2)	Plate Pentration (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	4.03
Stage 6	86	5.01
Stage 7	101	5.84
Stage 8		

Conversion Factor	0.80	Produced by: D. McNuff
Stress Applied @ 1.25mm	23.83 kN/m^2	
Total Plate Deflection	5.01 mm	Checked by:
Plate Diameter	600 mm	
k600	19061	
k762	15333	
CBR	1.09 %	

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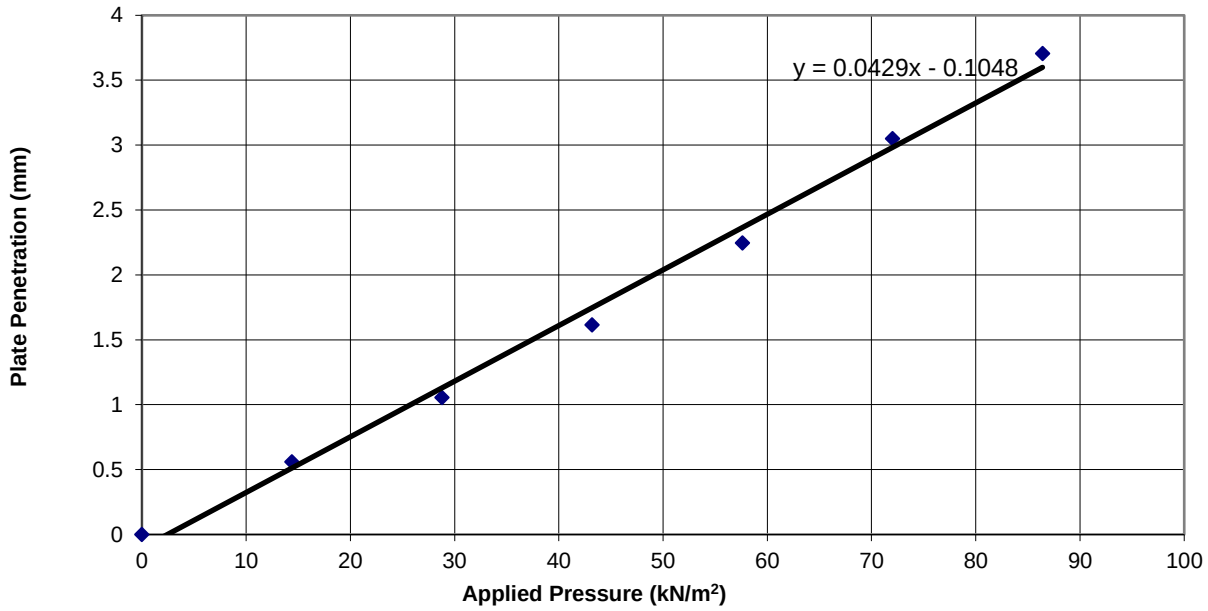
PLATE BEARING TEST			**Date:**	28/10/2021
Project Number:	S211001		**Test No:**	PLT 08
Project Name:	Envision, Sunderland		**Test Level:**	0.30mbgl
Test Method: BS 1377 : Part 9 : 1990 (Incremental Method)			**Weather:**	Warm, dry and clear
Plate Diameter:	0.600 m		**Load Applied:**	100.8 kPa
Kentledge Type:	14T 360 Machine Excavator		**Remarks:**	Clay



	Pressure (kN/m^2)	Plate Pentration (mm)
Initial	0	0
Stage 1	14	0.56
Stage 2	29	1.06
Stage 3	43	1.62
Stage 4	58	2.25
Stage 5	72	3.05
Stage 6	86	3.71
Stage 7	101	4.31
Stage 8		

Conversion Factor	0.80
Stress Applied @ 1.25mm	31.87 kN/m^2
Total Plate Deflection	3.71 mm
Plate Diameter	600 mm
k600	25499
k762	20511
CBR	1.81 %

Produced by: D. McNiff

Checked by:

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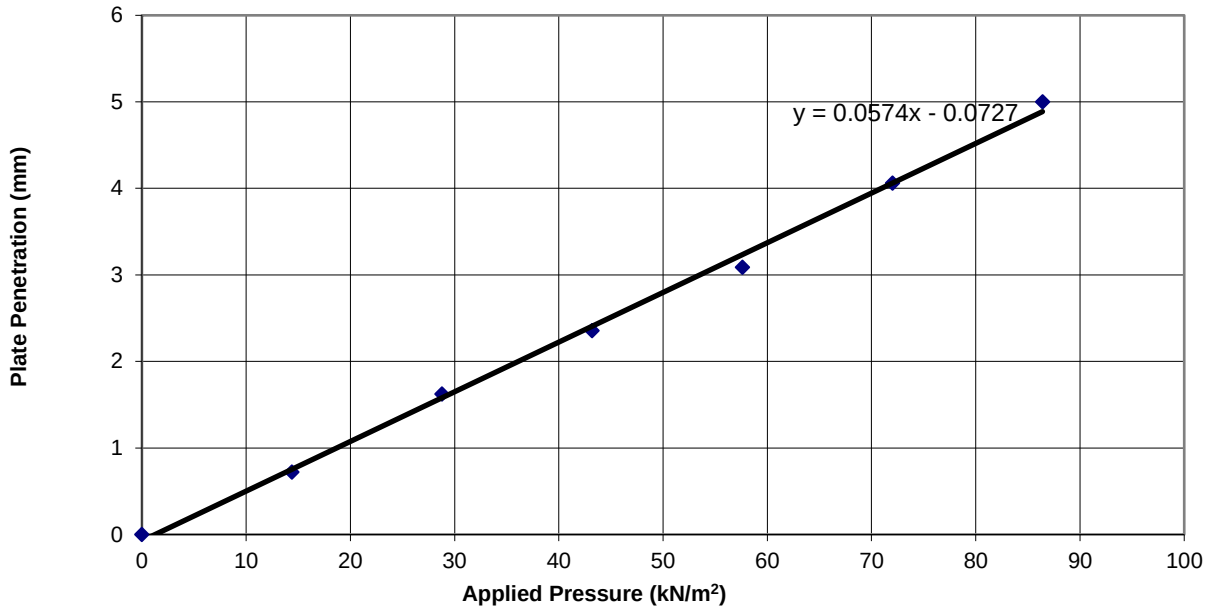
PLATE BEARING TEST			**Date:**	28/10/2021
Project Number:	S211001		**Test No:**	PLT 09
Project Name:	Envision, Sunderland		**Test Level:**	0.30mbgl
Test Method: BS 1377 : Part 9 : 1990 (Incremental Method)			**Weather:**	Warm, dry and clear
Plate Diameter:	0.600 m		**Load Applied:**	100.8 kPa
Kentledge Type:	14T 360 Machine Excavator		**Remarks:**	Clay



	Pressure (kN/m^2)	Plate Pentration (mm)
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: D. McNuff
Stress Applied @ 1.25mm	23.01 kN/m^2	
Total Plate Deflection	5.00 mm	Checked by:
Plate Diameter	600 mm	
k600	18412	
k762	14811	
CBR	1.03 %	

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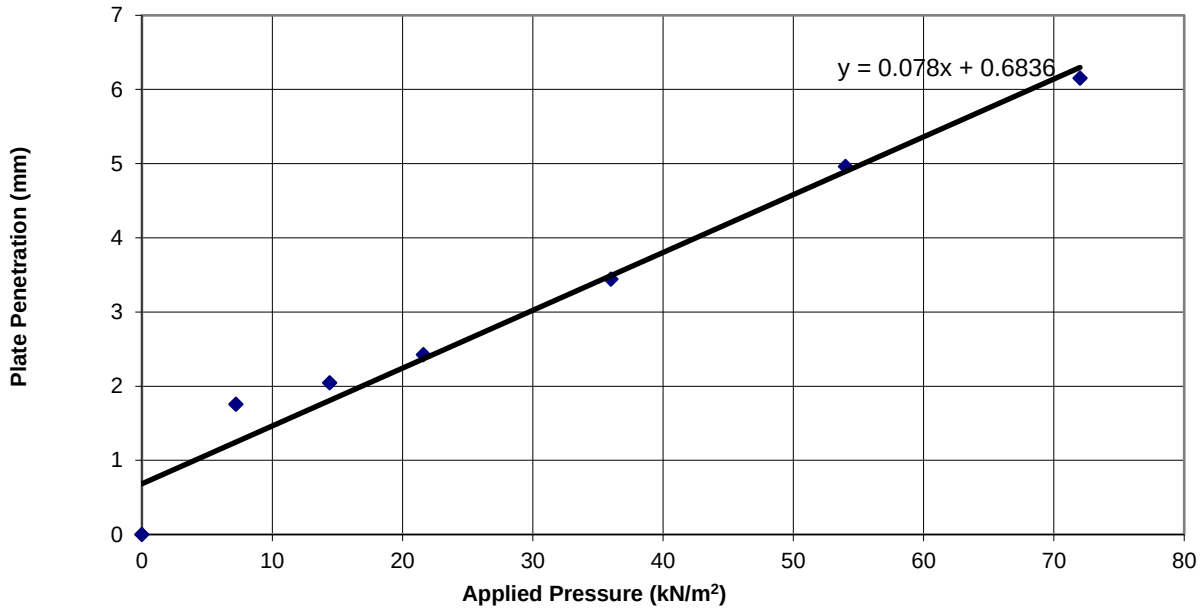
PLATE BEARING TEST			**Date:**	02/11/2021
Project Number:	S211001		**Test No:**	PLT 10
Project Name:	Envision, Sunderland		**Test Level:**	0.30mbgl
Test Method: BS 1377 : Part 9 : 1990 (Incremental Method)			**Weather:**	Warm, dry and clear
Plate Diameter:	0.600 m		**Load Applied:**	108 kPa
Kentledge Type:	14T 360 Machine Excavator		**Remarks:**	Clay



	Pressure (kN/m^2)	Plate Pentration (mm)
Initial	0	0
Stage 1	7	1.76
Stage 2	14	2.05
Stage 3	22	2.43
Stage 4	36	3.45
Stage 5	54	4.96
Stage 6	72	6.16
Stage 7	108	9.52
Stage 8		

Conversion Factor	0.80
Stress Applied @ 1.25mm	7.63 kN/m^2
Total Plate Deflection	6.16 mm
Plate Diameter	600 mm
k600	6103
k762	4909
CBR	0.15 %

Produced by: D. McNiff

Checked by:

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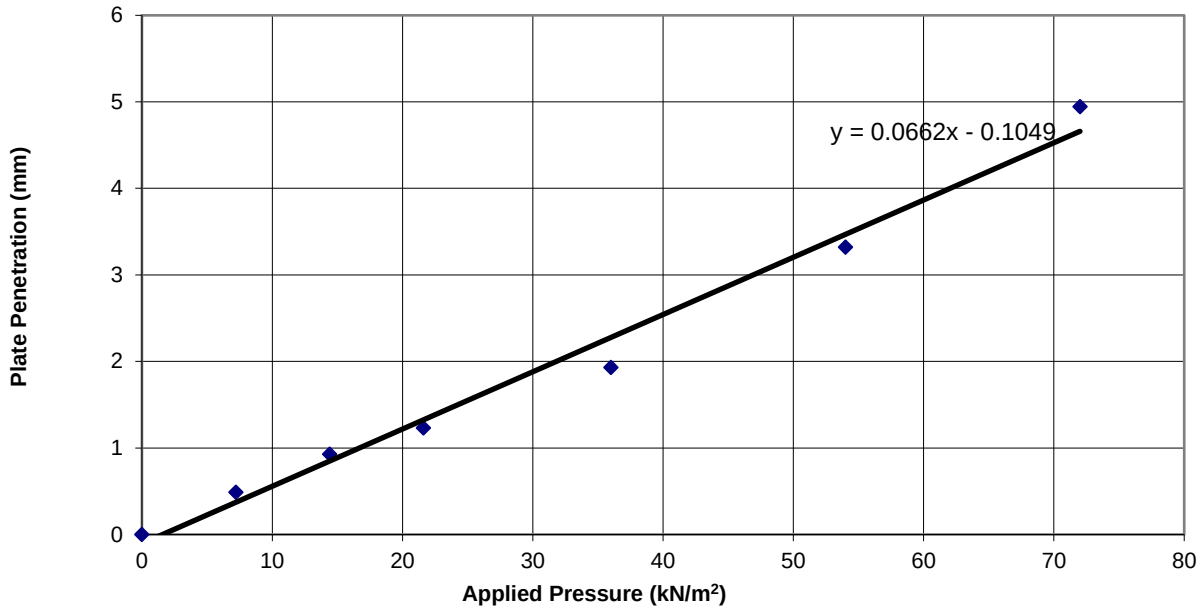
PLATE BEARING TEST			**Date:**	01/11/2021
Project Number:	S211001		**Test No:**	PLT 11
Project Name:	Envision, Sunderland		**Test Level:**	0.30mbgl
Test Method: BS 1377 : Part 9 : 1990 (Incremental Method)			**Weather:**	Warm, dry and clear
Plate Diameter:	0.600 m		**Load Applied:**	108 kPa
Kentledge Type:	14T 360 Machine Excavator		**Remarks:**	Clay



	Pressure (kN/m^2)	Plate Pentration (mm)
Initial	0	0
Stage 1	7	0.49
Stage 2	14	0.93
Stage 3	22	1.23
Stage 4	36	1.93
Stage 5	54	3.32
Stage 6	72	4.95
Stage 7	108	8.19
Stage 8		

Conversion Factor	0.80
Stress Applied @ 1.25mm	21.07 kN/m^2
Total Plate Deflection	4.95 mm
Plate Diameter	600 mm
k600	16856
k762	13559
CBR	0.88 %

Produced by: D. McNuff

Checked by:

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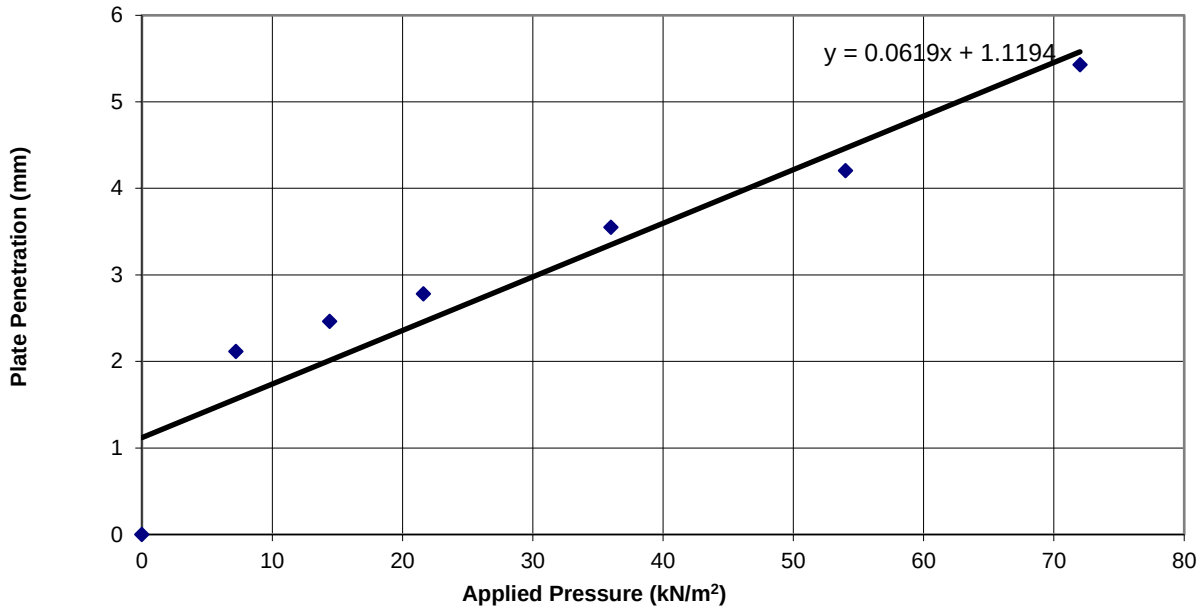
PLATE BEARING TEST			**Date:**	02/11/2021
Project Number:	S211001		**Test No:**	PLT 12
Project Name:	Envision, Sunderland		**Test Level:**	0.30mbgl
Test Method: BS 1377 : Part 9 : 1990 (Incremental Method)			**Weather:**	Warm, dry and clear
Plate Diameter:	0.600 m		**Load Applied:**	108 kPa
Kentledge Type:	14T 360 Machine Excavator		**Remarks:**	Clay



	Pressure (kN/m^2)	Plate Pentration (mm)
Initial	0	0
Stage 1	7	2.12
Stage 2	14	2.47
Stage 3	22	2.78
Stage 4	36	3.55
Stage 5	54	4.21
Stage 6	72	5.43
Stage 7	108	7.59
Stage 8		

Conversion Factor	0.80
Stress Applied @ 1.25mm	2.88 kN/m^2
Total Plate Deflection	5.43 mm
Plate Diameter	600 mm
k600	2301
k762	1851
CBR	0.03 %

Produced by: D. McNuff

Checked by:

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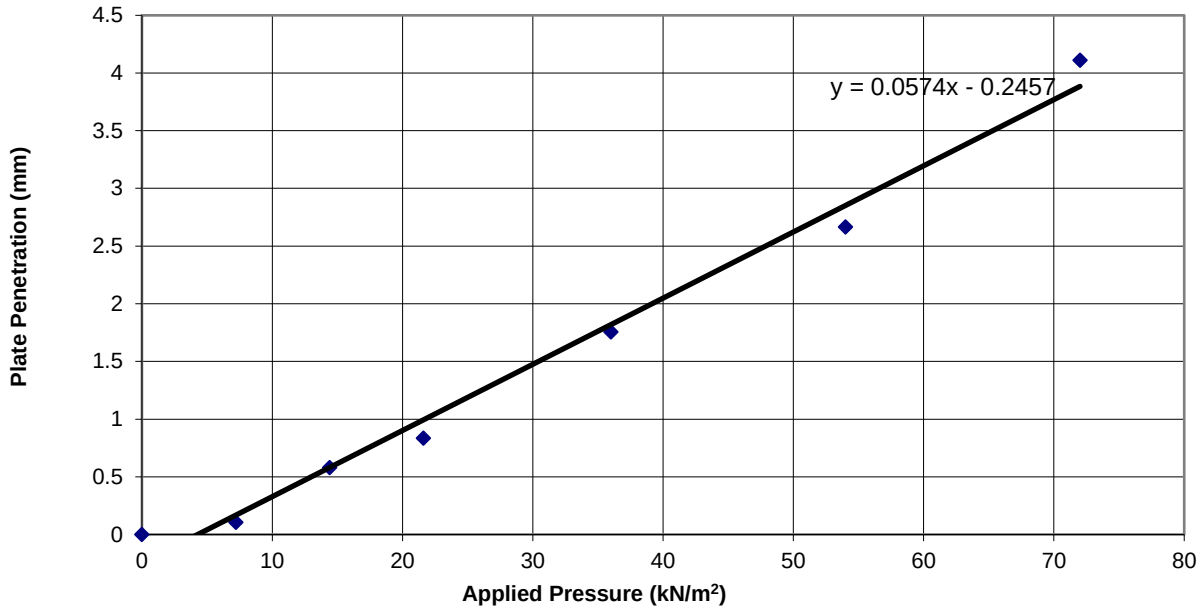
PLATE BEARING TEST			**Date:**	02/11/2021
Project Number:	S211001		**Test No:**	PLT 13
Project Name:	Envision, Sunderland		**Test Level:**	0.30mbgl
Test Method: BS 1377 : Part 9 : 1990 (Incremental Method)			**Weather:**	Warm, dry and clear
Plate Diameter:	0.600 m		**Load Applied:**	108 kPa
Kentledge Type:	14T 360 Machine Excavator		**Remarks:**	Clay



	Pressure (kN/m^2)	Plate Pentration (mm)
Initial	0	0
Stage 1	7	0.11
Stage 2	14	0.58
Stage 3	22	0.84
Stage 4	36	1.76
Stage 5	54	2.67
Stage 6	72	4.11
Stage 7	108	5.95
Stage 8		

Conversion Factor	0.80
Stress Applied @ 1.25mm	27.23 kN/m^2
Total Plate Deflection	4.11 mm
Plate Diameter	600 mm
k600	21785
k762	17524
CBR	1.38 %

Produced by: D. McNuff

Checked by:

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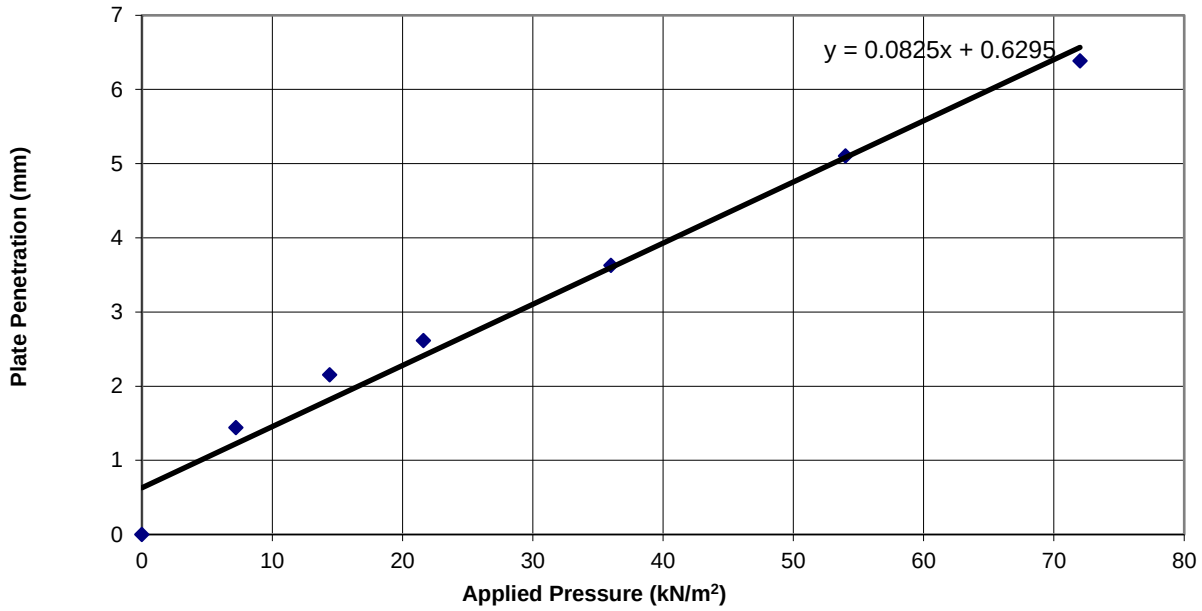
PLATE BEARING TEST			**Date:**	02/11/2021
Project Number:	S211001		**Test No:**	PLT 14
Project Name:	Envision, Sunderland		**Test Level:**	0.30mbgl
Test Method: BS 1377 : Part 9 : 1990 (Incremental Method)			**Weather:**	Warm, dry and clear
Plate Diameter:	0.600 m		**Load Applied:**	108 kPa
Kentledge Type:	14T 360 Machine Excavator		**Remarks:**	Clay



	Pressure (kN/m^2)	Plate Pentration (mm)
Initial	0	0
Stage 1	7	1.44
Stage 2	14	2.16
Stage 3	22	2.62
Stage 4	36	3.63
Stage 5	54	5.11
Stage 6	72	6.39
Stage 7	108	9.84
Stage 8		

Conversion Factor	0.80
Stress Applied @ 1.25mm	7.95 kN/m^2
Total Plate Deflection	6.39 mm
Plate Diameter	600 mm
k600	6359
k762	5115
CBR	0.16 %

Produced by: D. McNuff

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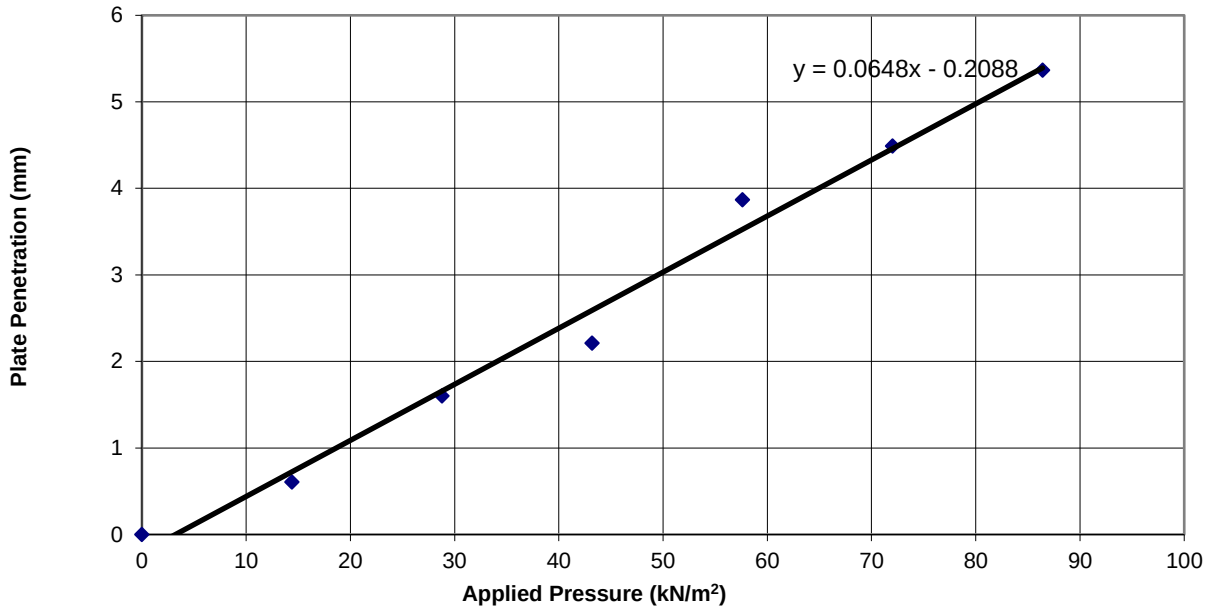
PLATE BEARING TEST			**Date:**	27/10/2021
Project Number:	S211001		**Test No:**	PLT 15
Project Name:	Envision, Sunderland		**Test Level:**	0.30mbgl
Test Method: BS 1377 : Part 9 : 1990 (Incremental Method)			**Weather:**	Warm, dry and clear
Plate Diameter:	0.600 m		**Load Applied:**	100.8 kPa
Kentledge Type:	14T 360 Machine Excavator		**Remarks:**	Clay



	Pressure (kN/m^2)	Plate Pentration (mm)
Initial	0	0
Stage 1	14	0.61
Stage 2	29	1.60
Stage 3	43	2.21
Stage 4	58	3.87
Stage 5	72	4.49
Stage 6	86	5.37
Stage 7	101	6.26
Stage 8		

Conversion Factor	0.80
Stress Applied @ 1.25mm	22.51 kN/m^2
Total Plate Deflection	5.37 mm
Plate Diameter	600 mm
k600	18011
k762	14488
CBR	0.99 %

Produced by: D. McNiff

Checked by:

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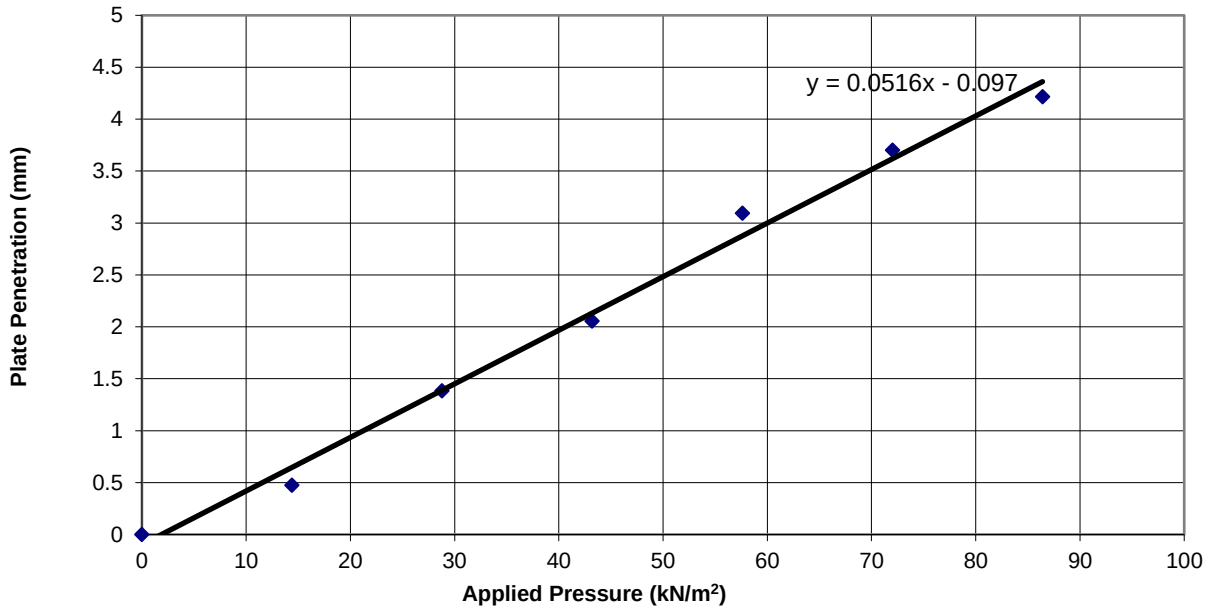
PLATE BEARING TEST			**Date:**	27/10/2021
Project Number:	S211001		**Test No:**	PLT 16
Project Name:	Envision, Sunderland		**Test Level:**	0.30mbgl
Test Method: BS 1377 : Part 9 : 1990 (Incremental Method)			**Weather:**	Warm, dry and clear
Plate Diameter:	0.600 m		**Load Applied:**	100.8 kPa
Kentledge Type:	14T 360 Machine Excavator		**Remarks:**	Clay



	Pressure (kN/m^2)	Plate Pentration (mm)
Initial	0	0
Stage 1	14	0.48
Stage 2	29	1.39
Stage 3	43	2.06
Stage 4	58	3.10
Stage 5	72	3.70
Stage 6	86	4.22
Stage 7	101	4.89
Stage 8		

Conversion Factor	0.80
Stress Applied @ 1.25mm	26.02 kN/m^2
Total Plate Deflection	4.22 mm
Plate Diameter	600 mm
k600	20820
k762	16747
CBR	1.27 %

Produced by: D. McNiff

Checked by:

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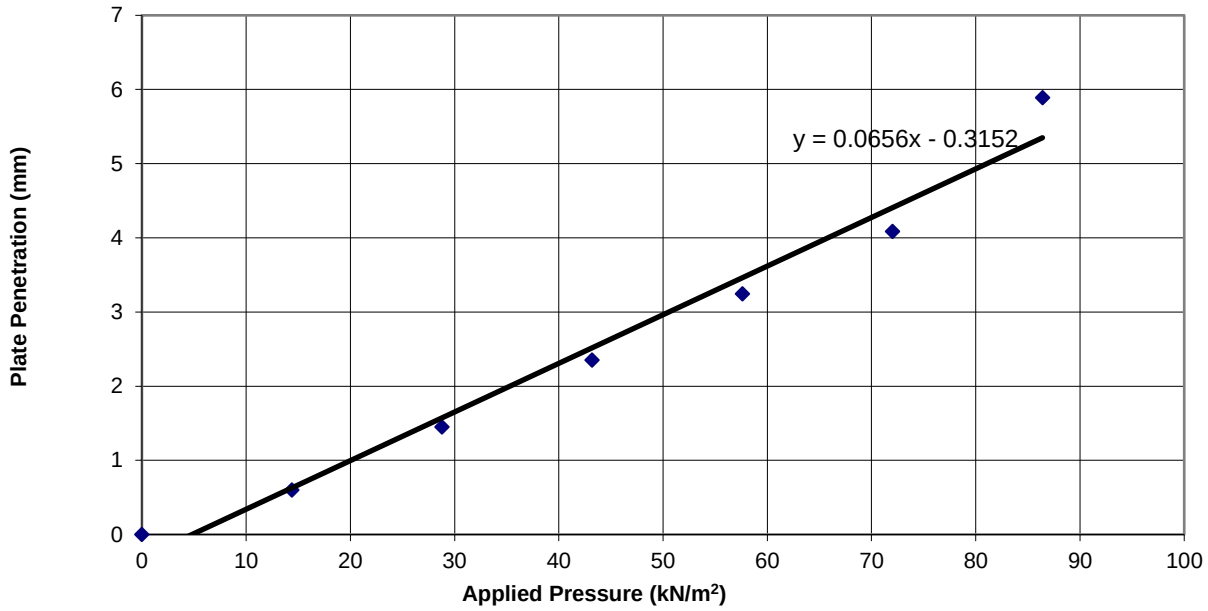
PLATE BEARING TEST			**Date:**	27/10/2021
Project Number:	S211001		**Test No:**	PLT 17
Project Name:	Envision, Sunderland		**Test Level:**	0.30mbgl
Test Method: BS 1377 : Part 9 : 1990 (Incremental Method)			**Weather:**	Warm, dry and clear
Plate Diameter:	0.600 m		**Load Applied:**	100.8 kPa
Kentledge Type:	14T 360 Machine Excavator		**Remarks:**	Clay



	Pressure (kN/m^2)	Plate Pentration (mm)
Initial	0	0
Stage 1	14	0.60
Stage 2	29	1.45
Stage 3	43	2.35
Stage 4	58	3.25
Stage 5	72	4.09
Stage 6	86	5.89
Stage 7	101	6.09
Stage 8		

Conversion Factor	0.80
Stress Applied @ 1.25mm	23.86 kN/m^2
Total Plate Deflection	5.89 mm
Plate Diameter	600 mm
k600	19085
k762	15352
CBR	1.1 %

Produced by: D. McNiff

Checked by:

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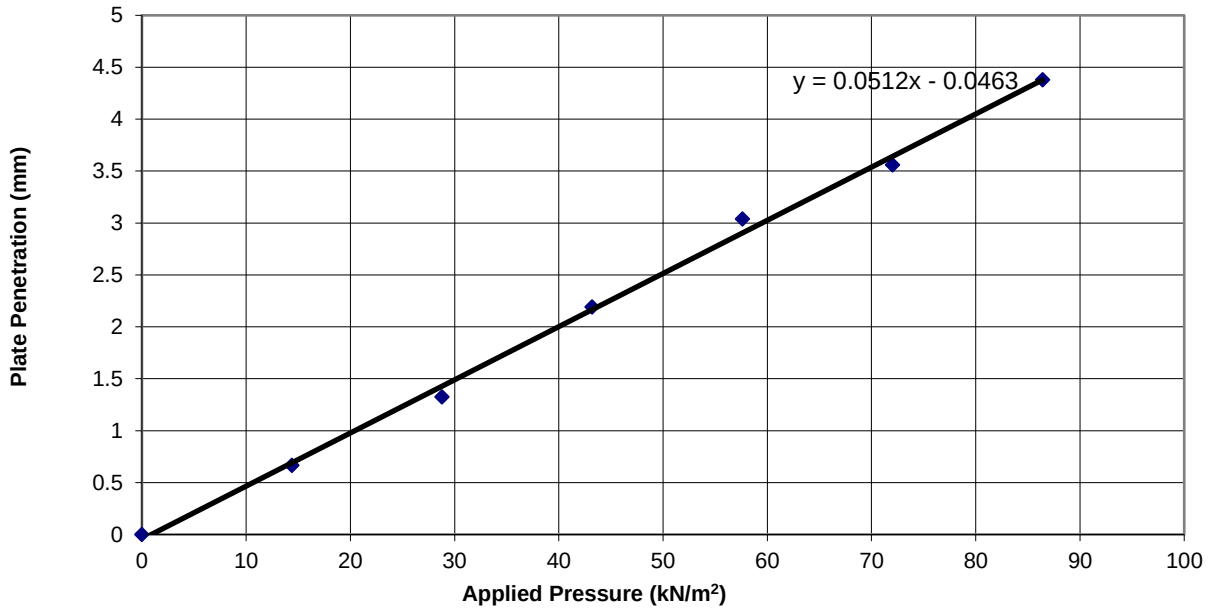
PLATE BEARING TEST			**Date:**	27/10/2021
Project Number:	S211001		**Test No:**	PLT 18
Project Name:	Envision, Sunderland		**Test Level:**	0.30mbgl
Test Method: BS 1377 : Part 9 : 1990 (Incremental Method)			**Weather:**	Warm, dry and clear
Plate Diameter:	0.600 m		**Load Applied:**	100.8 kPa
Kentledge Type:	14T 360 Machine Excavator		**Remarks:**	Clay



	Pressure (kN/m^2)	Plate Pentration (mm)
Initial	0	0
Stage 1	14	0.67
Stage 2	29	1.33
Stage 3	43	2.19
Stage 4	58	3.04
Stage 5	72	3.56
Stage 6	86	4.38
Stage 7	101	5.92
Stage 8		

Conversion Factor	0.80
Stress Applied @ 1.25mm	25.32 kN/m^2
Total Plate Deflection	4.38 mm
Plate Diameter	600 mm
k600	20253
k762	16292
CBR	1.22 %

Produced by: D. McNuff

Checked by:

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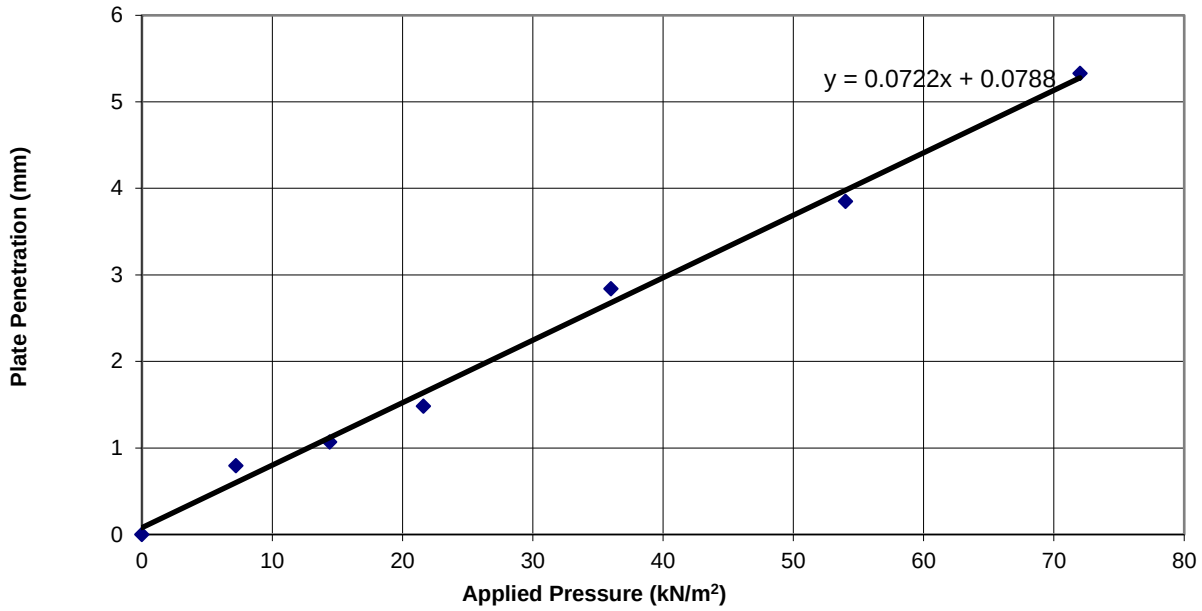
PLATE BEARING TEST			**Date:**	02/11/2021
Project Number:	S211001		**Test No:**	PLT 19
Project Name:	Envision, Sunderland		**Test Level:**	0.30mbgl
Test Method: BS 1377 : Part 9 : 1990 (Incremental Method)			**Weather:**	Warm, dry and clear
Plate Diameter:	0.600 m		**Load Applied:**	108 kPa
Kentledge Type:	14T 360 Machine Excavator		**Remarks:**	Clay



	Pressure (kN/m^2)	Plate Pentration (mm)
Initial	0	0
Stage 1	7	0.80
Stage 2	14	1.07
Stage 3	22	1.49
Stage 4	36	2.84
Stage 5	54	3.85
Stage 6	72	5.33
Stage 7	108	6.99
Stage 8		

Conversion Factor	0.80	Produced by: D. McNuff
Stress Applied @ 1.25mm	16.23 kN/m^2	
Total Plate Deflection	5.33 mm	Checked by:
Plate Diameter	600 mm	
k600	12984	
k762	10445	
CBR	0.56 %	

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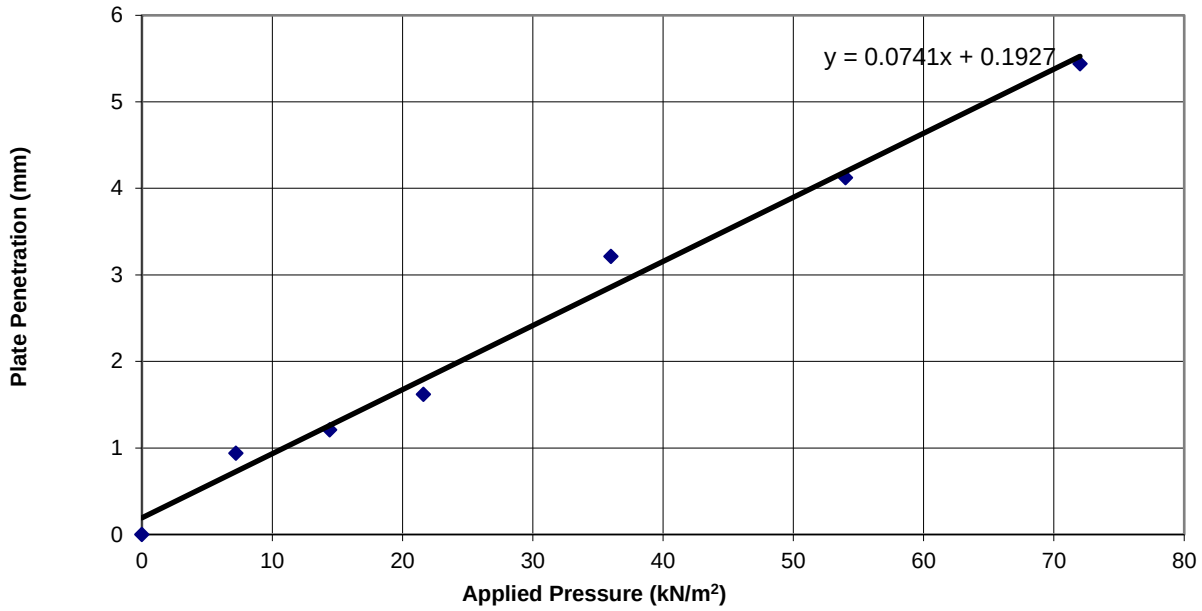
PLATE BEARING TEST			**Date:**	02/11/2021
Project Number:	S211001		**Test No:**	PLT 20
Project Name:	Envision, Sunderland		**Test Level:**	0.30mbgl
Test Method: BS 1377 : Part 9 : 1990 (Incremental Method)			**Weather:**	Warm, dry and clear
Plate Diameter:	0.600 m		**Load Applied:**	108 kPa
Kentledge Type:	14T 360 Machine Excavator		**Remarks:**	Clay



	Pressure (kN/m^2)	Plate Pentration (mm)
Initial	0	0
Stage 1	7	0.94
Stage 2	14	1.21
Stage 3	22	1.62
Stage 4	36	3.22
Stage 5	54	4.13
Stage 6	72	5.44
Stage 7	108	7.49
Stage 8		

Conversion Factor	0.80
Stress Applied @ 1.25mm	14.31 kN/m^2
Total Plate Deflection	5.44 mm
Plate Diameter	600 mm
k600	11448
k762	9208
CBR	0.45 %

Produced by: D. McNiff

Checked by:

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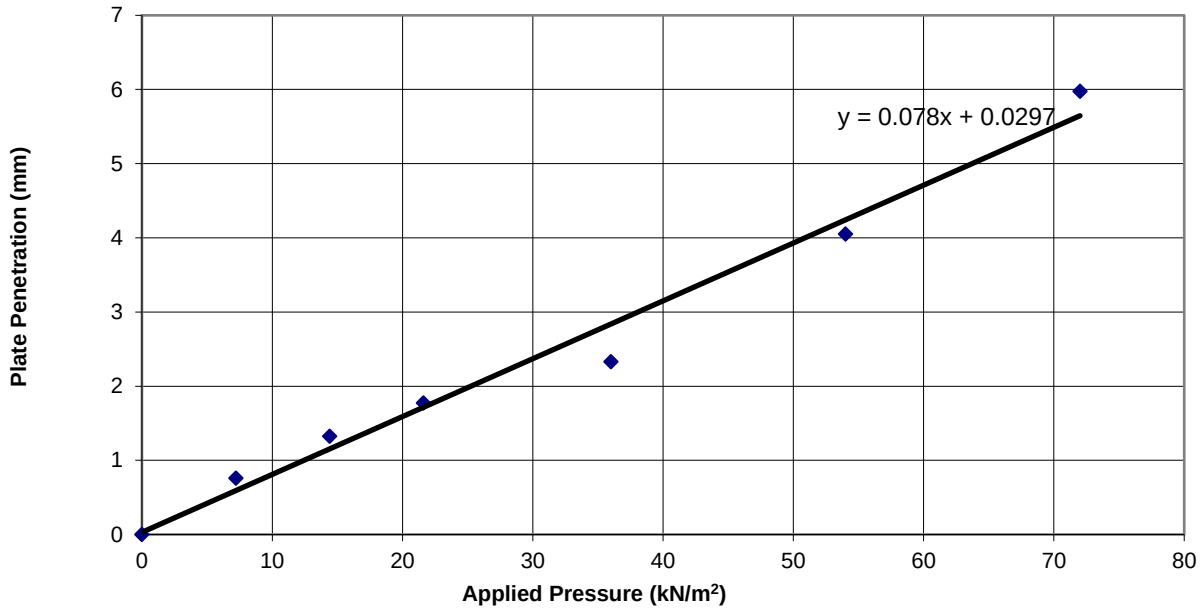
PLATE BEARING TEST			**Date:**	02/11/2021
Project Number:	S211001		**Test No:**	PLT 21
Project Name:	Envision, Sunderland		**Test Level:**	0.60mbgl
Test Method: BS 1377 : Part 9 : 1990 (Incremental Method)			**Weather:**	Warm, dry and clear
Plate Diameter:	0.600 m		**Load Applied:**	108 kPa
Kentledge Type:	14T 360 Machine Excavator		**Remarks:**	Clay



	Pressure (kN/m^2)	Plate Pentration (mm)
Initial	0	0
Stage 1	7	0.76
Stage 2	14	1.33
Stage 3	22	1.78
Stage 4	36	2.33
Stage 5	54	4.05
Stage 6	72	5.98
Stage 7	108	9.03
Stage 8		

Conversion Factor	0.80	Produced by: D. McNuff
Stress Applied @ 1.25mm	15.65 kN/m^2	
Total Plate Deflection	5.98 mm	Checked by:
Plate Diameter	600 mm	
k600	12522	
k762	10073	
CBR	0.53 %	

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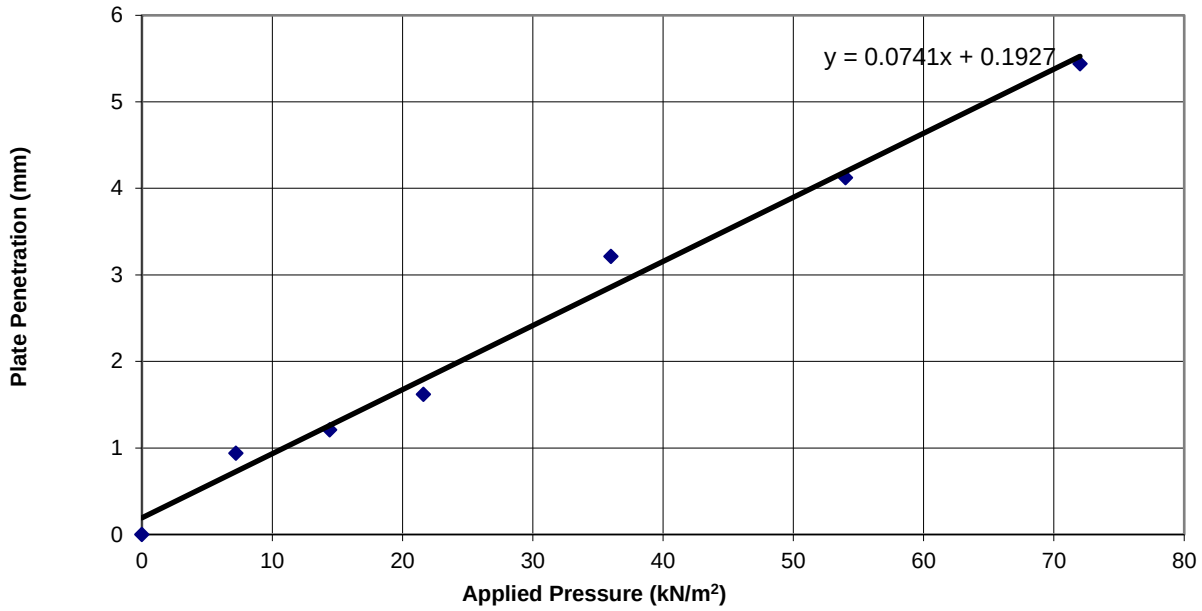
PLATE BEARING TEST			**Date:**	02/11/2021
Project Number:	S211001		**Test No:**	PLT 22
Project Name:	Envision, Sunderland		**Test Level:**	0.30mbgl
Test Method: BS 1377 : Part 9 : 1990 (Incremental Method)			**Weather:**	Warm, dry and clear
Plate Diameter:	0.600 m		**Load Applied:**	108 kPa
Kentledge Type:	14T 360 Machine Excavator		**Remarks:**	Clay



	Pressure (kN/m^2)	Plate Pentration (mm)
Initial	0	0
Stage 1	7	0.94
Stage 2	14	1.21
Stage 3	22	1.62
Stage 4	36	3.22
Stage 5	54	4.13
Stage 6	72	5.44
Stage 7	108	7.49
Stage 8		

Conversion Factor	0.80
Stress Applied @ 1.25mm	14.31 kN/m^2
Total Plate Deflection	5.44 mm
Plate Diameter	600 mm
k600	11448
k762	9208
CBR	0.45 %

Produced by: D. McNiff

Checked by:

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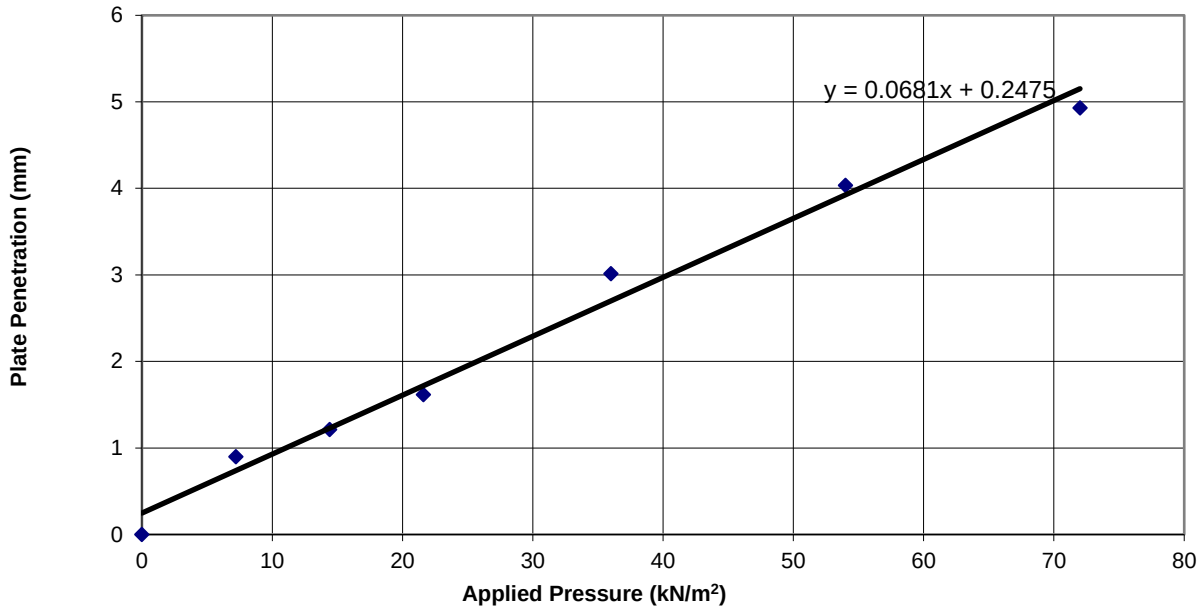
PLATE BEARING TEST			**Date:**	02/11/2021
Project Number:	S211001		**Test No:**	PLT 23
Project Name:	Envision, Sunderland		**Test Level:**	0.30mbgl
Test Method: BS 1377 : Part 9 : 1990 (Incremental Method)			**Weather:**	Warm, dry and clear
Plate Diameter:	0.600 m		**Load Applied:**	108 kPa
Kentledge Type:	14T 360 Machine Excavator		**Remarks:**	Clay



	Pressure (kN/m^2)	Plate Pentration (mm)
Initial	0	0
Stage 1	7	0.90
Stage 2	14	1.22
Stage 3	22	1.62
Stage 4	36	3.02
Stage 5	54	4.04
Stage 6	72	4.93
Stage 7	108	6.73
Stage 8		

Conversion Factor	0.80	Produced by: D. McNuff
Stress Applied @ 1.25mm	14.78 kN/m^2	
Total Plate Deflection	4.93 mm	Checked by:
Plate Diameter	600 mm	
k600	11826	
k762	9513	
CBR	0.48 %	

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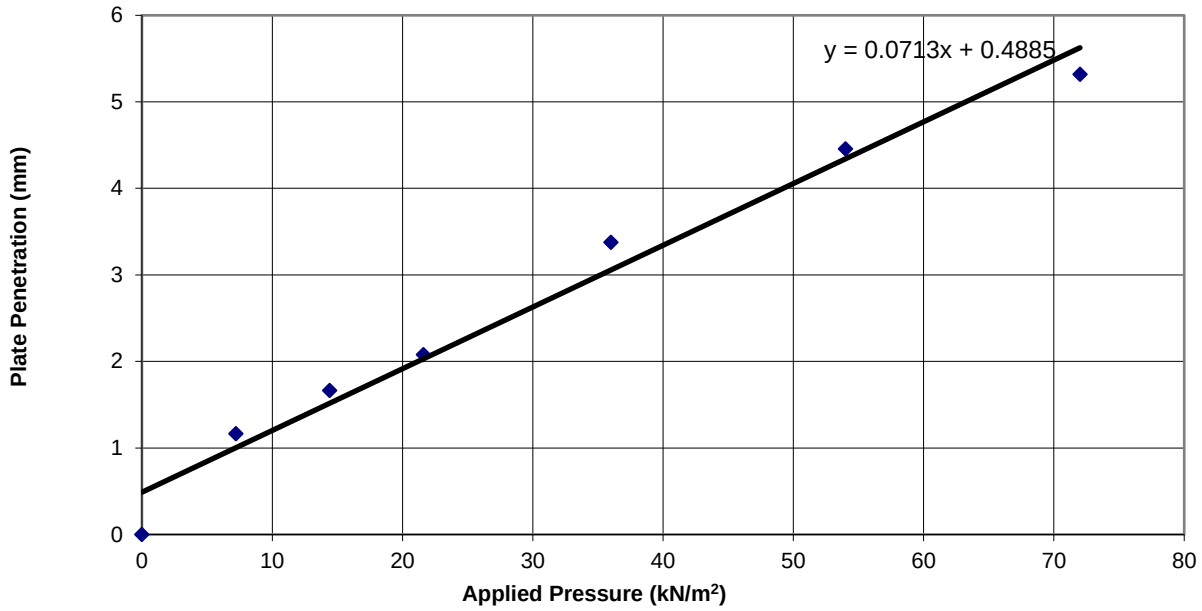
PLATE BEARING TEST			**Date:**	02/11/2021
Project Number:	S211001		**Test No:**	PLT 24
Project Name:	Envision, Sunderland		**Test Level:**	0.30mbgl
Test Method: BS 1377 : Part 9 : 1990 (Incremental Method)			**Weather:**	Warm, dry and clear
Plate Diameter:	0.600 m		**Load Applied:**	108 kPa
Kentledge Type:	14T 360 Machine Excavator		**Remarks:**	Clay



	Pressure (kN/m^2)	Plate Pentration (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	108	6.95
Stage 8		

Conversion Factor	0.80
Stress Applied @ 1.25mm	11.15 kN/m^2
Total Plate Deflection	5.32 mm
Plate Diameter	600 mm
k600	8919
k762	7175
CBR	0.29 %

Produced by: D. McNuff

Checked by:

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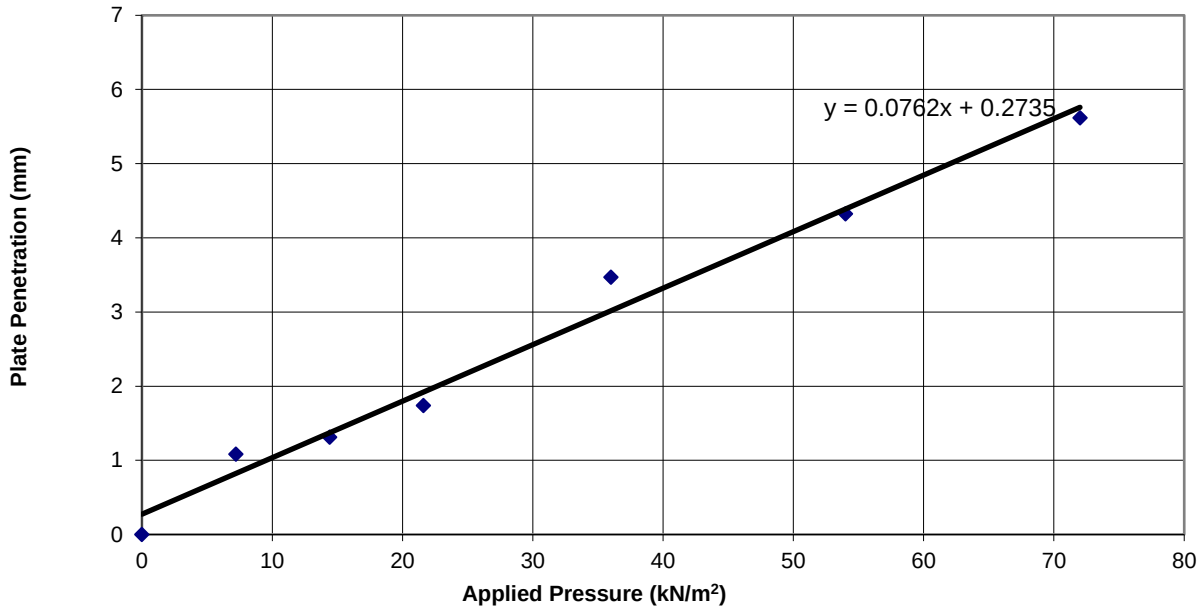
PLATE BEARING TEST			**Date:**	02/11/2021
Project Number:	S211001		**Test No:**	PLT 25
Project Name:	Envision, Sunderland		**Test Level:**	0.30mbgl
Test Method: BS 1377 : Part 9 : 1990 (Incremental Method)			**Weather:**	Warm, dry and clear
Plate Diameter:	0.600 m		**Load Applied:**	108 kPa
Kentledge Type:	14T 360 Machine Excavator		**Remarks:**	Clay



	Pressure (kN/m^2)	Plate Pentration (mm)
Initial	0	0
Stage 1	7	1.09
Stage 2	14	1.31
Stage 3	22	1.74
Stage 4	36	3.47
Stage 5	54	4.33
Stage 6	72	5.62
Stage 7	108	7.56
Stage 8		

Conversion Factor	0.80
Stress Applied @ 1.25mm	12.94 kN/m^2
Total Plate Deflection	5.62 mm
Plate Diameter	600 mm
k600	10350
k762	8325
CBR	0.38 %

Produced by: D. McNuff

Checked by:

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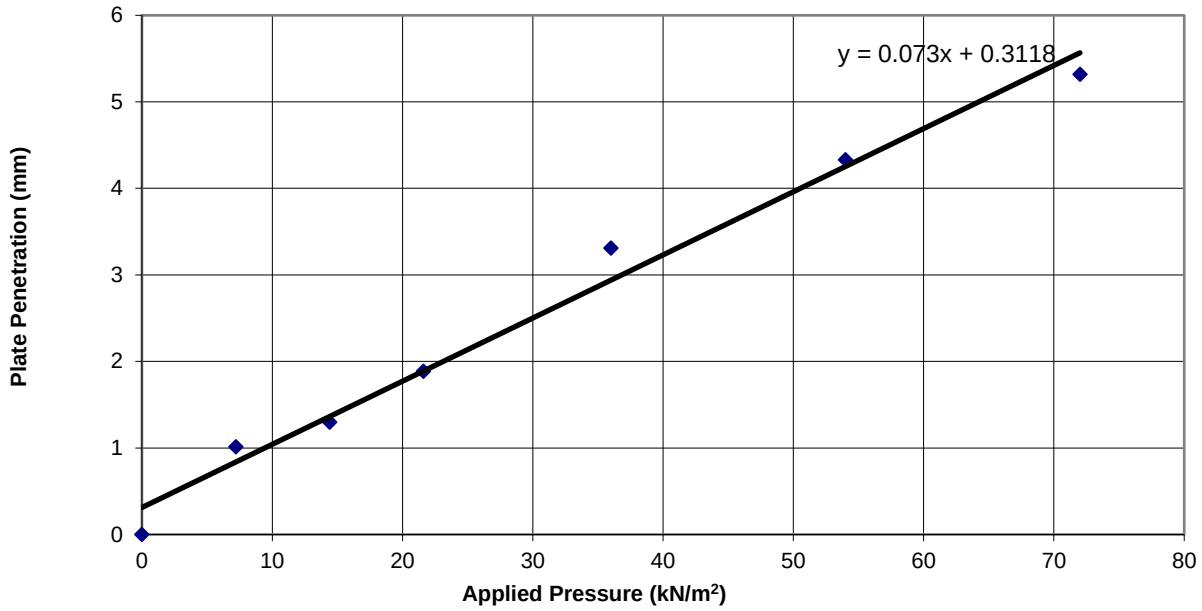
PLATE BEARING TEST			**Date:**	02/11/2021
Project Number:	S211001		**Test No:**	PLT 26
Project Name:	Envision, Sunderland		**Test Level:**	0.30mbgl
Test Method: BS 1377 : Part 9 : 1990 (Incremental Method)			**Weather:**	Warm, dry and clear
Plate Diameter:	0.600 m		**Load Applied:**	108 kPa
Kentledge Type:	14T 360 Machine Excavator		**Remarks:**	Clay



	Pressure (kN/m^2)	Plate Pentration (mm)
Initial	0	0
Stage 1	7	1.02
Stage 2	14	1.30
Stage 3	22	1.89
Stage 4	36	3.31
Stage 5	54	4.33
Stage 6	72	5.32
Stage 7	108	7.27
Stage 8		

Conversion Factor	0.80
Stress Applied @ 1.25mm	13.07 kN/m^2
Total Plate Deflection	5.32 mm
Plate Diameter	600 mm
k600	10454
k762	8409
CBR	0.39 %

Produced by: D. McNuff

Checked by:

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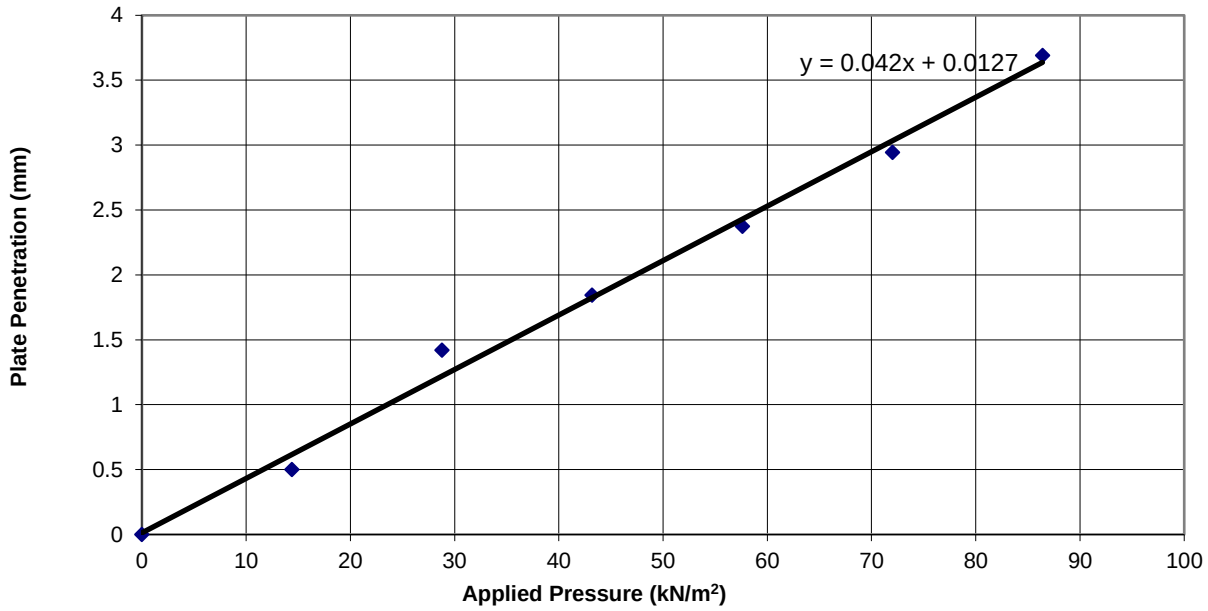
PLATE BEARING TEST			**Date:**	27/10/2021
Project Number:	S211001		**Test No:**	PLT 27
Project Name:	Envision, Sunderland		**Test Level:**	0.30mbgl
Test Method: BS 1377 : Part 9 : 1990 (Incremental Method)			**Weather:**	Warm, dry and clear
Plate Diameter:	0.600 m		**Load Applied:**	100.8 kPa
Kentledge Type:	14T 360 Machine Excavator		**Remarks:**	Clay



	Pressure (kN/m^2)	Plate Pentration (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	2.95
Stage 6	86	3.69
Stage 7	101	4.41
Stage 8		

Conversion Factor	0.80	Produced by: D. McNuff
Stress Applied @ 1.25mm	29.59 kN/m^2	
Total Plate Deflection	3.69 mm	Checked by:
Plate Diameter	600 mm	
k600	23673	
k762	19043	
CBR	1.59 %	

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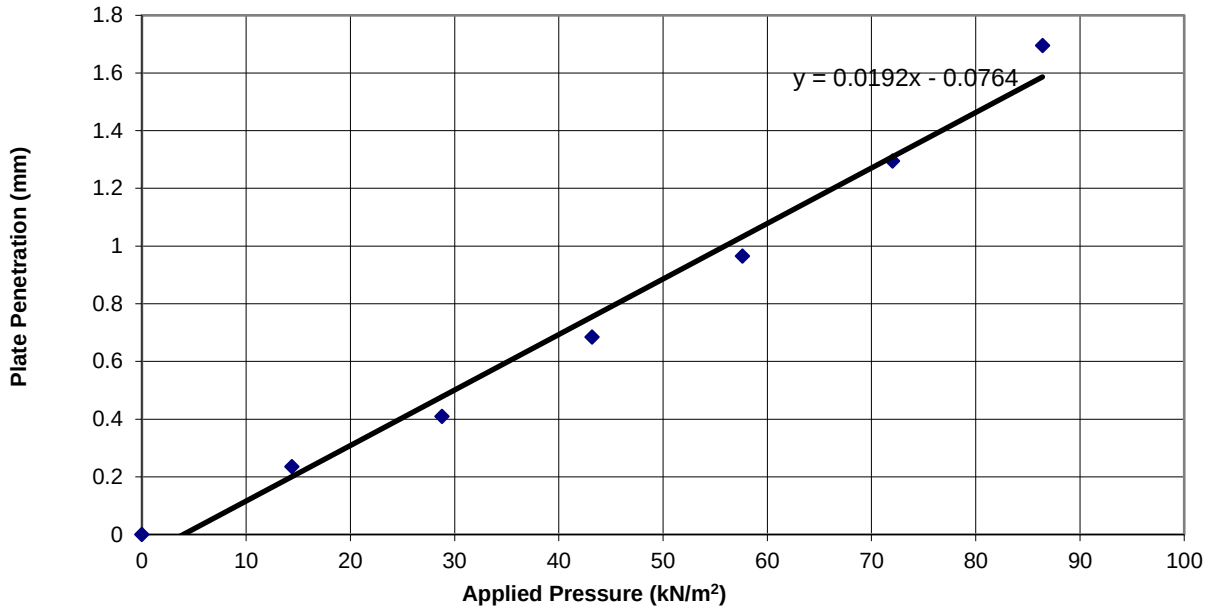
PLATE BEARING TEST			**Date:**	28/10/2021
Project Number:	S211001		**Test No:**	PLT 28
Project Name:	Envision, Sunderland		**Test Level:**	0.30mbgl
Test Method: BS 1377 : Part 9 : 1990 (Incremental Method)			**Weather:**	Warm, dry and clear
Plate Diameter:	0.600 m		**Load Applied:**	100.8 kPa
Kentledge Type:	14T 360 Machine Excavator		**Remarks:**	Clay



	Pressure (kN/m^2)	Plate Pentration (mm)
Initial	0	0
Stage 1	14	0.24
Stage 2	29	0.41
Stage 3	43	0.69
Stage 4	58	0.97
Stage 5	72	1.30
Stage 6	86	1.70
Stage 7	101	1.89
Stage 8		

Conversion Factor	0.80
Stress Applied @ 1.25mm	72.74 kN/m^2
Total Plate Deflection	1.70 mm
Plate Diameter	600 mm
k600	58191
k762	46809
CBR	7.57 %

Produced by: D. McNiff

Checked by:

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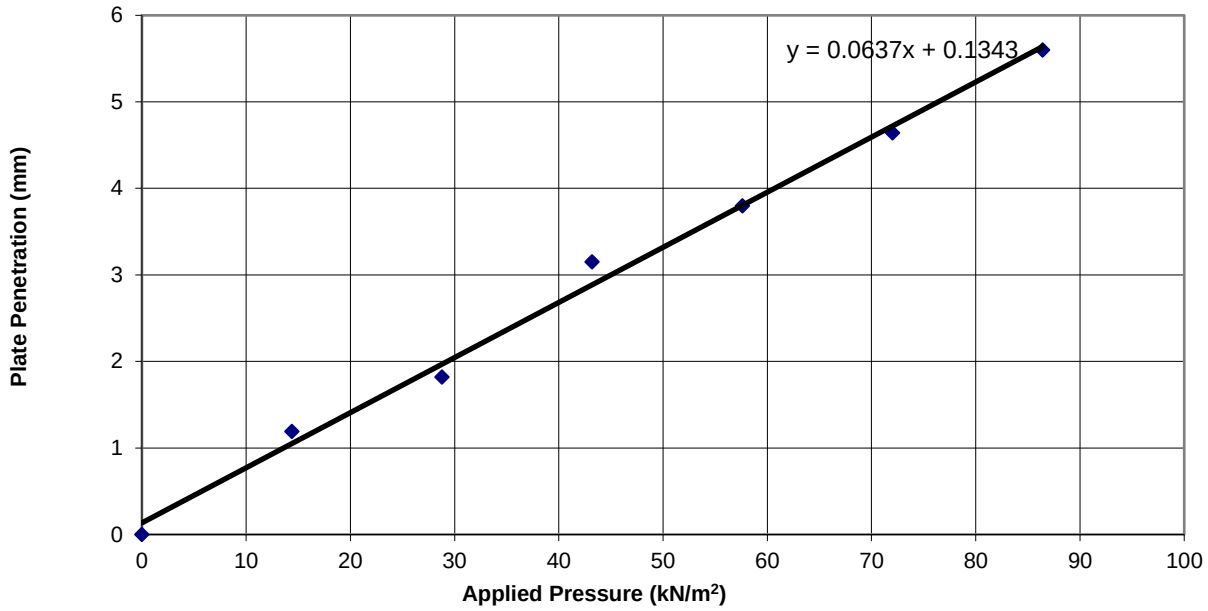
PLATE BEARING TEST			**Date:**	27/10/2021
Project Number:	S211001		**Test No:**	PLT 29
Project Name:	Envision, Sunderland		**Test Level:**	0.30mbgl
Test Method: BS 1377 : Part 9 : 1990 (Incremental Method)			**Weather:**	Warm, dry and clear
Plate Diameter:	0.600 m		**Load Applied:**	100.8 kPa
Kentledge Type:	14T 360 Machine Excavator		**Remarks:**	Clay



	Pressure (kN/m^2)	Plate Pentration (mm)
Initial	0	0
Stage 1	14	1.19
Stage 2	29	1.82
Stage 3	43	3.15
Stage 4	58	3.80
Stage 5	72	4.64
Stage 6	86	5.60
Stage 7	101	7.56
Stage 8		

Conversion Factor	0.80
Stress Applied @ 1.25mm	17.57 kN/m^2
Total Plate Deflection	5.60 mm
Plate Diameter	600 mm
k600	14056
k762	11307
CBR	0.65 %

Produced by: D. McNiff

Checked by:

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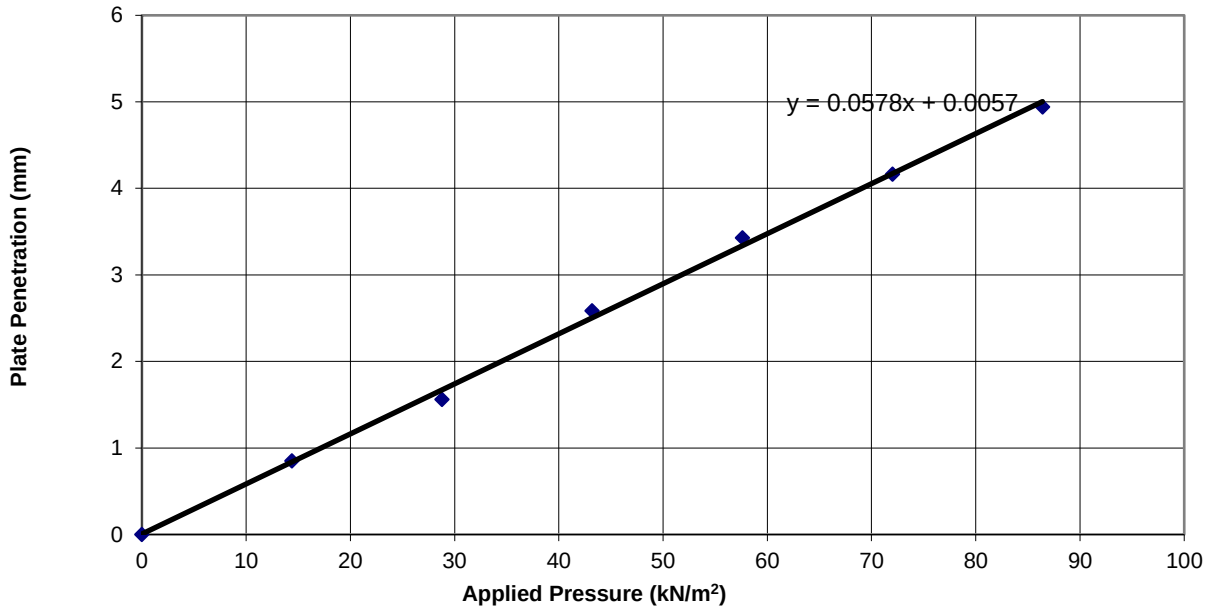
GEOTECHNICAL TESTING LABORATORY

PLATE BEARING TEST			**Date:**	26/10/2021
Project Number:	S211001		**Test No:**	PLT 30
Project Name:	Envision, Sunderland		**Test Level:**	0.30mbgl
Test Method: BS 1377 : Part 9 : 1990 (Incremental Method)			**Weather:**	Warm, dry and clear
Plate Diameter:	0.600 m		**Load Applied:**	100.8 kPa
Kentledge Type:	14T 360 Machine Excavator		**Remarks:**	Clay



	Pressure (kN/m^2)	Plate Pentration (mm)
Initial	0	0
Stage 1	14	0.85
Stage 2	29	1.56
Stage 3	43	2.59
Stage 4	58	3.43
Stage 5	72	4.17
Stage 6	86	4.94
Stage 7	101	6.92
Stage 8		

Conversion Factor	0.80
Stress Applied @ 1.25mm	21.55 kN/m^2
Total Plate Deflection	4.94 mm
Plate Diameter	600 mm
k600	17240
k762	13868
CBR	0.92 %

Produced by: D. McNuff

Checked by:

SOLMEK

APPENDIX E

ISRM Suggested Methods – Rock Characterization Testing and Monitoring 1974 - 2006

Strength of Rock Materials in Triaxial Compression: Revised Version

Borehole Ref.:	CPR03
Sample Ref.:	
Depth (m):	6.00-7.50

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
Height	76.50 mm
Bulk Density	2.29 Mg/m³
Dry Density	2.17 Mg/m³
Water Content	5.4 %

Degree of Saturation: 46.6 % Specific Gravity: 2.9 Mg/m³ (Assumed)

Hoek-Brown criterion

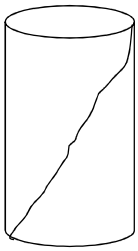
Number of tests	n	3
Uniaxial Strength	σ_{ci}	34.49
Hoek-Brown constant	m_i	13.00
Coef. of determination	r^2	1.00

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**
Internal Friction Angle, φ **46.2 º**
Apparent Cohesion, c **7 MPa**

Failure Sketch

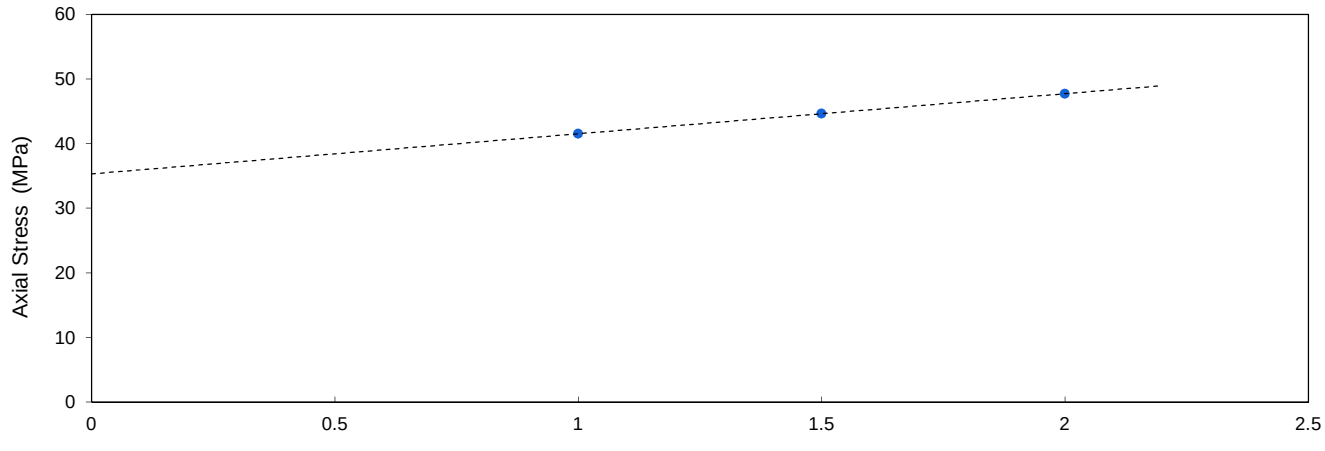
Mode of failure: Diagonal shearing

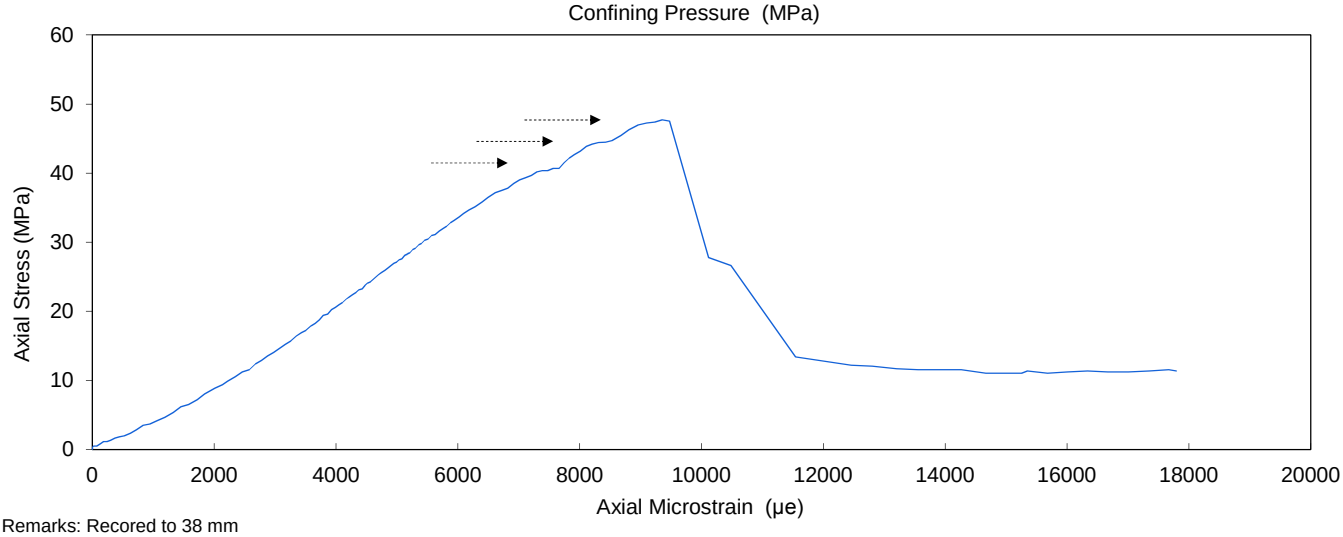


Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 120º

Solid lines for material failures.
Dashed lines for apparent weakness failure.

Date tested: 07-01-2022





Remarks: Recored to 38 mm

Checked and Approved by

CC

C Clergeaud (Snr. Geologist)

Date: 14/01/2022

Project Number:

GEO / 34555

Project Name:

ENVISION, SUNDERLAND
S211001

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ISRM Suggested Methods – Rock Characterization Testing and Monitoring 1974 - 2006

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
Height	78.00 mm
Bulk Density	2.52 Mg/m³
Dry Density	2.45 Mg/m³
Water Content	3.0 %

Degree of Saturation: 47.2 % Specific Gravity: 2.9 Mg/m³ (Assumed)

Hoek-Brown criterion

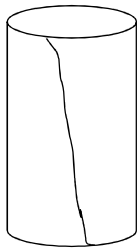
Number of tests	n	3
Uniaxial Strength	σ_{ci}	48.02
Hoek-Brown constant	m_i	20.99
Coef. of determination	r^2	0.99

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**
Ordinate of Slope, b **50 MPa**
Internal Friction Angle, φ **52.5 º**
Apparent Cohesion, c **9 MPa**

Failure Sketch

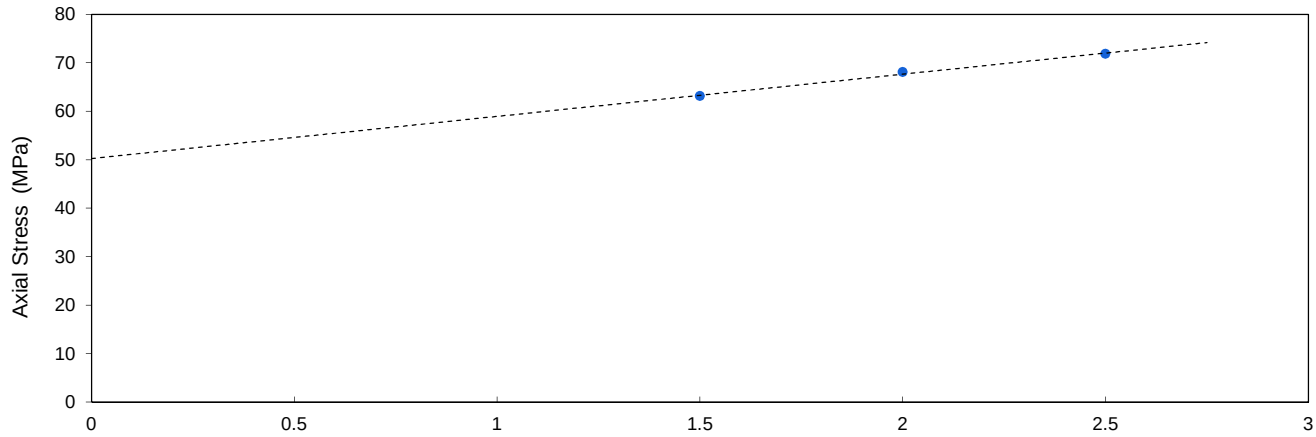
Mode of failure: Diagonal shearing

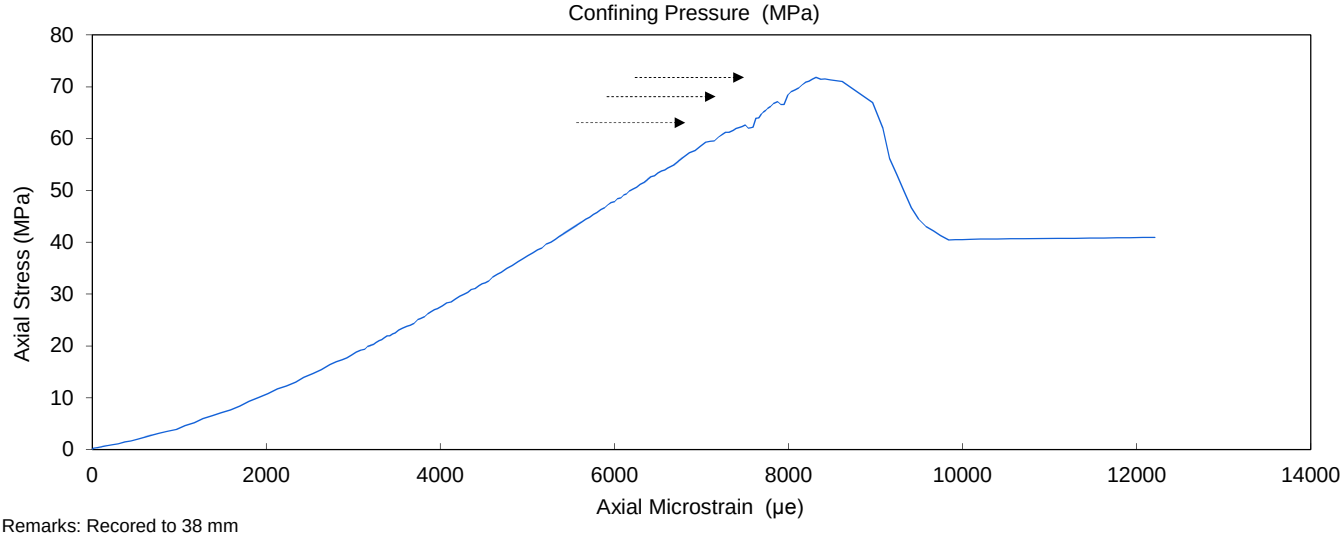


Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 75º

Solid lines for material failures.
Dashed lines for apparent weakness failure.

Date tested: 07-01-2022





Remarks: Recored to 38 mm

Checked and Approved by

CC

C Clergeaud (Snr. Geologist)

Date: 14/01/2022

Project Number:

GEO / 34555

Project Name:

ENVISION, SUNDERLAND
S211001

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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:

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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				

PSL 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 Number	Sample Number	Sample Type	Top Depth (m)	Base Depth (m)	Sample Diameter (mm)	Sample Length (mm)	Height Ratio	Initial Mass (g)	Bulk Density (Mg/m)	Moisture Content (%)	Dry Density (Mg/m)	Load Failure (kN)	UCS (MPa)	Failure Mode	Date Tested	Remarks
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	

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Envision, Sunderland

Contract No:
PSL21/9416
Client Ref:
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SUMMARY OF POINT LOAD TEST RESULTS

ISRM Suggested Methods : 2007

Borehole Number	Depth (m)	Sample Ref	Test Type	Orientation	Dimensions (mm)		Area	D_e^2	D_e	Failure Load (P)		I_s	Corr Fac	I_{s50}	Failure Type	Remarks
				Par / Perp	W	D	(mm2)		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)		
CPRO1	5.00		A	Perp	103	45	4635	5901.47	76.82	-	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	-	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	-	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

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PSL Professional Soils Laboratory

Envision, Sunderland

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SUMMARY OF POINT LOAD TEST RESULTS

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Borehole Number	Depth (m)	Sample Ref	Test Type	Orientation	Dimensions (mm)		D_e^2	D_e	Failure Load		I_s	Corr Fac	I_{s50}	Failure Type	Remarks
				Par / Perp	L	D		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)		
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	-	103	10609	103.00	-	5.01	0.472	1.384	0.65	Valid	

Note All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

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Borehole Number	Depth (m)	Sample Ref	Test Type	Orientation	Dimensions (mm)		Area	D_e^2	D_e	Failure Load (P)		I_s	Corr Fac	I_{s50}	Failure Type	Remarks
				Par / Perp	W	D	(mm2)		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)		
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

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Envision, Sunderland

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SUMMARY OF POINT LOAD TEST RESULTS

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Borehole Number	Depth (m)	Sample Ref	Test Type	Orientation	Dimensions (mm)		D_e^2	D_e	Failure Load		I_s	Corr Fac	I_{s50}	Failure Type	Remarks
				Par / Perp	L	D		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)		
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

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UKAS TESTING 4043	PSL Professional Soils Laboratory	**Envision, Sunderland**	**Contract No:** PSL21/9416 **Client Ref:** S211001

SUMMARY OF POINT LOAD TEST RESULTS

ISRM Suggested Methods : 2007

Borehole Number	Depth (m)	Sample Ref	Test Type	Orientation	Dimensions (mm)		Area	D_e^2	D_e	Failure Load (P)		I_s	Corr Fac	I_{s50}	Failure Type	Remarks
				Par / Perp	W	D	(mm2)		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)		
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	

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SUMMARY OF POINT LOAD TEST RESULTS

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Borehole Number	Depth (m)	Sample Ref	Test Type	Orientation	Dimensions (mm)		D_e^2	D_e	Failure Load		I_s	Corr Fac	I_{s50}	Failure Type	Remarks
				Par / Perp	L	D		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)		
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

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S211001

APPENDIX F

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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	22nd 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

CONTENTS

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 on-site 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: $B_q = (u_2 - u_0)/(q_t - \sigma_v)$
F_r	**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 m/s^2
G_0	**Small strain shear modulus**
Gs	**Specific gravity of solids**
HOC	**Heavily overconsolidated**
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**
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.
$q_{t\text{-}net}$	**Net cone resistance:** $q_{t\text{-}net} = q_t - \sigma_v$. 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**
u_0	**Equilibrium pore pressure**
u_2	**Pore pressure:** Dynamic pore pressure measured at the shoulder position (u_2) during penetration and during dissipation tests. $u_2 = \Delta u_2 + u_0$
Δu_2	**Excess pore pressure:** $\Delta u_2 = \Delta u_2 - u_0$
V_s, 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.
<u>Greek</u>	
γ	**Unit weight of soil**
γ_w	**Unit weight of water**
ρ	**Volumetric mass density (or specific mass) of soil:** $\rho = \gamma/g$
σ_v	**Total overburden stress**
σ'_v	**Effective overburden stress**
σ_{atm}, **or,** P_a	**Reference atmospheric stress:** σ_{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 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 (u_2 or u_1) .

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:

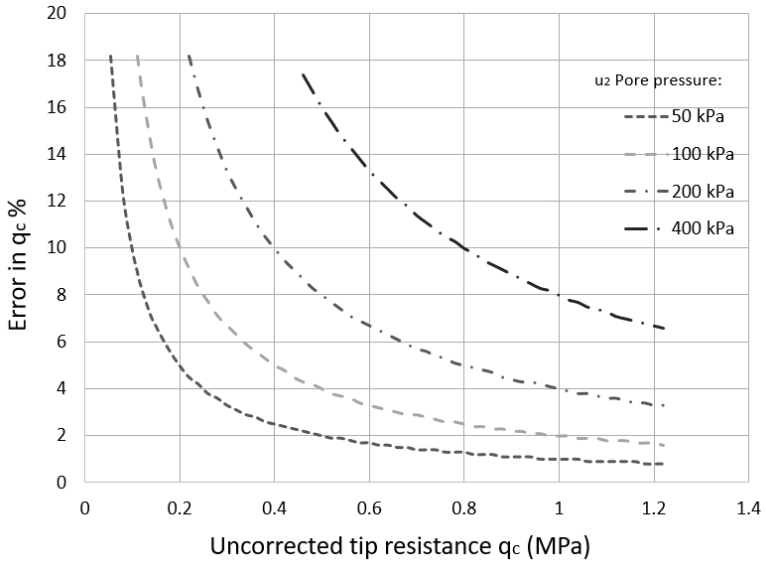

Figure 5-1 Uncorrected tip with measured tip resistance

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:

For LT >= 1, C = 85
For 0.5 <= LT < 1, C = 75
For 0 < LT < 0.5, C = 65

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 - I_C

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)*:*

$$I_c = [(3.47 - \log Q_t)^2 + (logF_r + 1.22)^2]^{0.5}$$

Non-normalised SBT index I_C (Robertson, 2010)*:*

$$I_c = \left[\left(3.47 - \log\left(\frac{q_c}{\sigma_{atm}}\right)\right)^2 + (logR_f + 1.22)^2\right]^{0.5}$$

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.

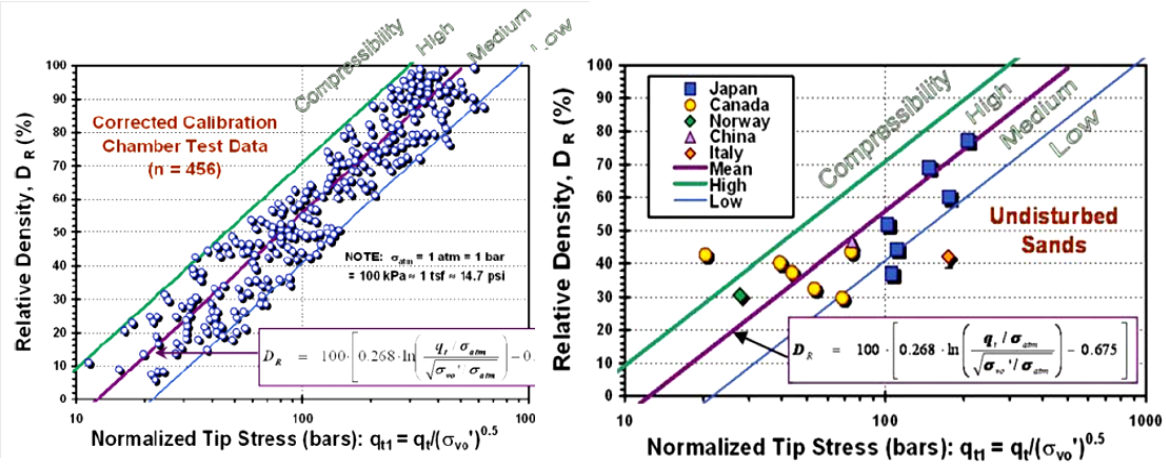

Figure 5-2 Relative density with normalised tip stress and sand compressibility from calibration chamber tests (left) and undisturbed frozen samples (right). Jamiolkowski *et al.* (2001). Reproduced from Mayne (2007).

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_{kt} factors with regression analysis details for five categories of clays shown in Table 1.

Table 1 Summary of CAUC s_u versus q_{net} for clays. Reproduced from Mayne and Peuchen (2018).

Clay Group	Number of sites	Nr Data	Correlation Coefficient r^2	Factor N_{kt}	Mean Pore 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

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:

$$N_{kt} = 10.5 - 4.6 \cdot \ln(B_q + 0.1)$$

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_u3*' 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):

$$\sigma'_p = k \cdot (q_t - \sigma_{vo})^{m'}$$

$$OCR = \sigma_p{}'/\sigma'_{v0}{}'$$

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:

$$m' = 1 - \frac{0.28}{1 + \left(\frac{I_c}{2.65}\right)^{25}}$$

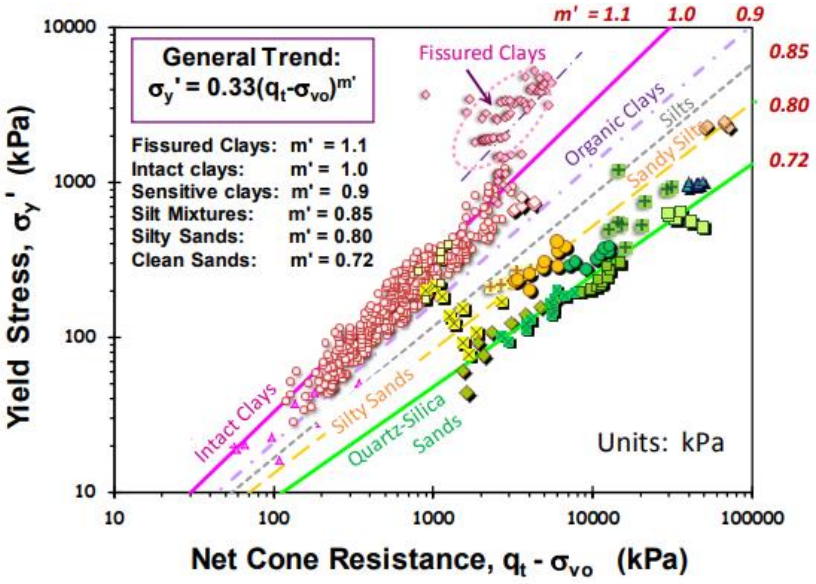

Figure 5-3 Preconsolidation stress with net cone resistance power law, reproduced from Mayne (2014).

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):

$$\frac{\left(\frac{q_t}{p_a}\right)}{N_{60}} = 10^{(1.268 - 0.2817 I_c)}$$

The correlations are intended for clays, silts and sands and not for carbonates or cemented geo-materials.

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.

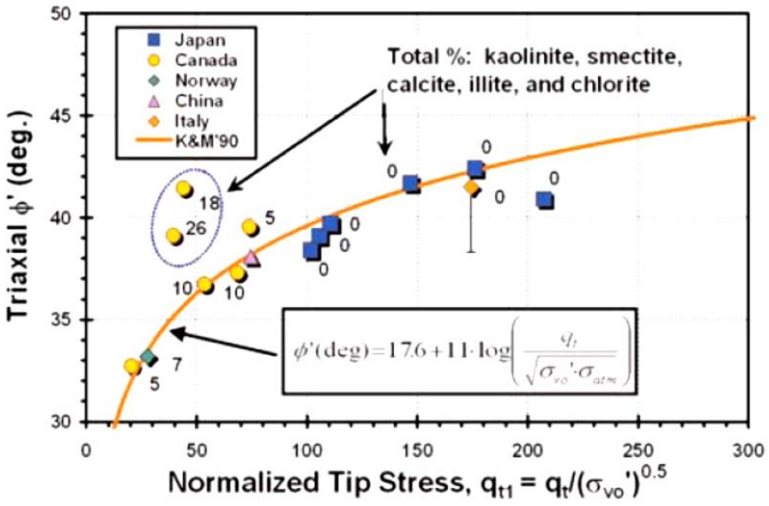

Figure 5-4 Peak triaxial friction angle from undisturbed sands with normalised cone resistance.

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.

$$\phi' = 29.5° \, B_q{}^{0.121}[0.256 + 0.336 \, B_q + \log Q]$$

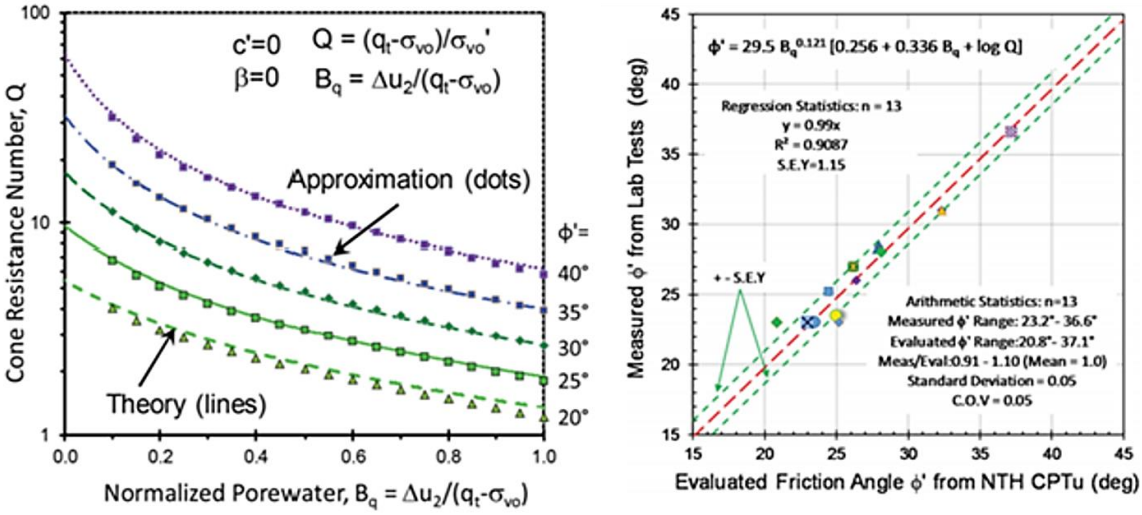

Figure 5-5 [Left] Theoretical curves with function approximation (dots) overlay [Right] calibration data from geotechnical centrifuge tests for a variety of soils. Redrawn from Ouyang & Mayne (2018).

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 pre-consolidation 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.

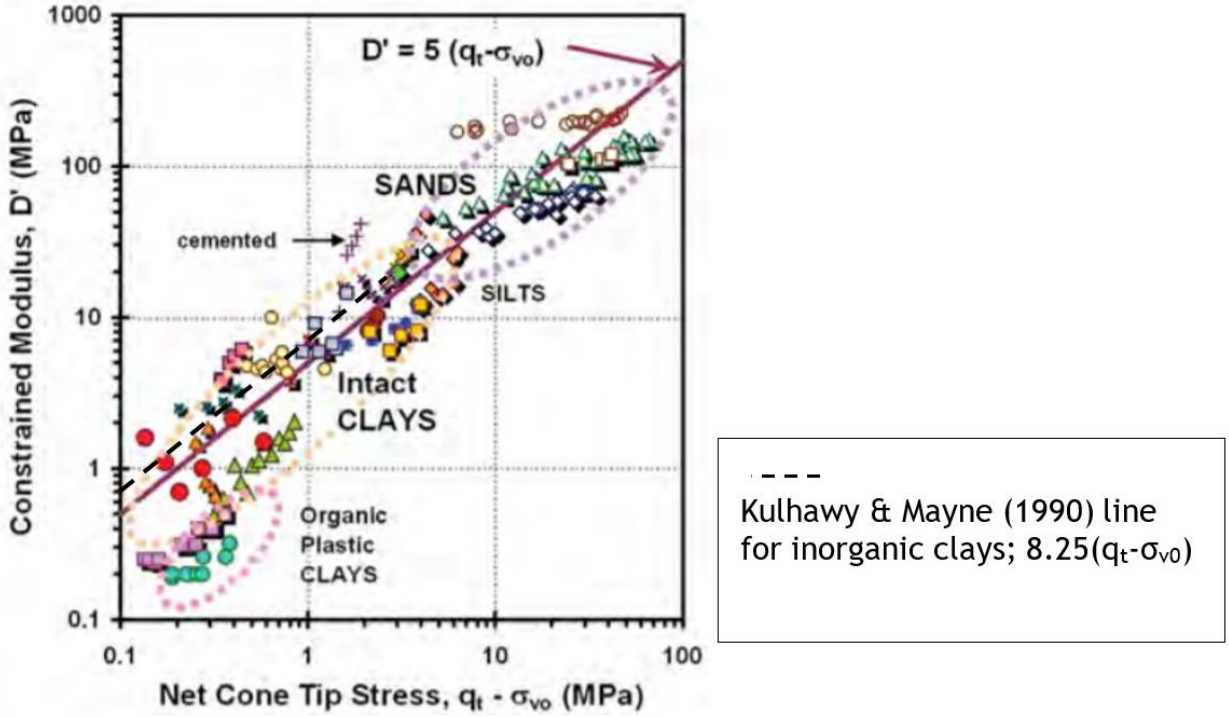

Figure 5-6 Constrained modulus of Mayne (2006). Annotated/redrawn from NCHRP Synthesis 368 (2007).

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:

$$\alpha = 0.015(10^{0.55\boldsymbol{Ic}+1.68})$$

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 u_2 (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 without 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 cm^2 projected cone tip area and 150 cm^2 friction sleeve area, however it is common to use a larger 15 cm^2 cone with a 225 cm^2 friction sleeve area for improved sensitivity, temperature stability, damage prevention and penetration depth potential due to the higher bending strength. Use of a 15 cm^2 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.

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APPENDICES

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
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	Data Loss: Operative error, test refusal at 1.77 m not 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

CERTIFICATE OF CALIBRATION

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:	**Calibration checked and dated by:**	**Calibration verification signed and dated by:**
P Metcalf	A N Harman	

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.
2. 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 units 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

LANKELMA

CERTIFICATE OF CALIBRATION

Certificate Number: 1365

Cone Serial Number: DS15-CFIIPM.841

CONE END RESISTANCE CALIBRATION

Table 1-a.

Low range calibration									High range calibration							
	Tip change In output (cts)				Reproducibility error *b*		Reversibility error *U_rev*			Tip change in output (cts)			Reproducibility error *b*		Reversibility error *U_rev*	
Ref LC	1	2	3	4					Ref LC	1	2	3				
(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		
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		
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		
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		
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		
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 range calibration							
Reference output		Linear equation			3rd order equation		
Ref Load Cell Nom. (MPa)	Ref Load Cell (0.1N)	Cone output (0.1N)	Expanded uncertainty *U** MPa	%	Equation output (0.1N)	Expanded uncertainty *U** 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 range calibration							
Reference output		Linear equation			3rd order equation		
Ref Load Cell Nom. (MPa)	Ref Load Cell (0.1N)	Cone output (0.1N)	Expanded uncertainty *U** MPa	%	Equation output (0.1N)	Expanded uncertainty *U** 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 corrected applied force

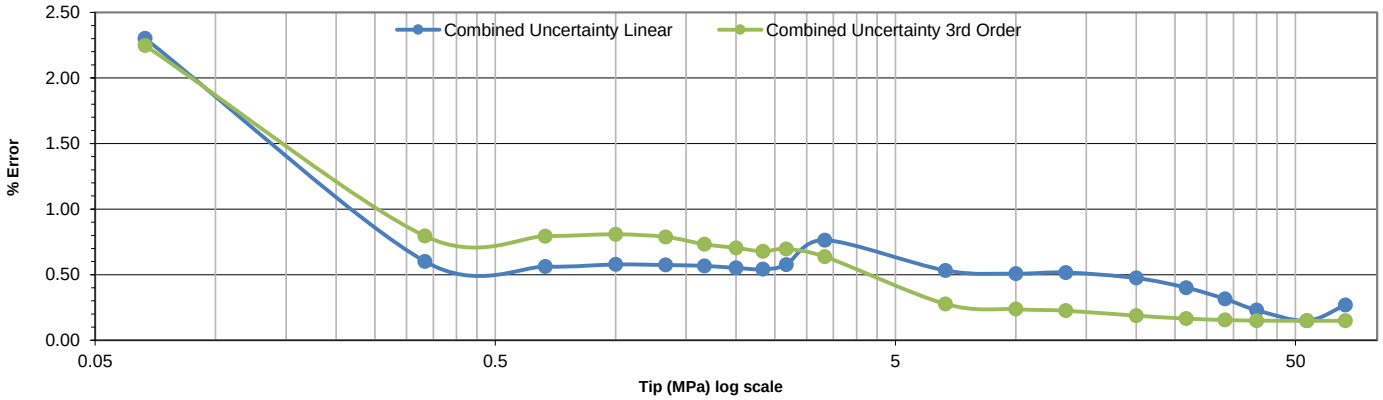
F (in 0.1N units) is calculated from :

$F = (a3 \times D^3) + (a2 \times D^2) + (a1 \times D) + a0$

a0	=	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

COMBINED EXPANDED UNCERTAINTY TIP



* The combined expanded uncertainties shown are to k=2 with a 95% coverage factor.

LANKELMA

CERTIFICATE OF CALIBRATION

Certificate Number: 1365

Cone Serial Number: DS15-CFIIPM.841

SLEEVE FRICTION CALIBRATION

Table1-b.

Low range calibration									High range calibration							
	Sleeve change In output (cts)				Reproducibility error *b*		Reversibility error *U_rev*			Sleeve change in output (cts)			Reproducibility error *b*		Reversibility error *U_rev*	
Ref LC	1	2	3	4					Ref LC	1	2	3				
(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 output		Linear factor output			3rd order equation		
Ref Load Cell Nom. (kPa)	Ref Load Cell (0.1N)	Cone output (0.1N)	Expanded uncertainty *U** kPa	%	Equation output (0.1N)	Expanded uncertainty *U** 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 range calibration							
Reference output		Linear factor output			3rd order equation		
Ref Load Cell Nom. (kPa)	Ref Load Cell (0.1N)	Cone output (0.1N)	Expanded uncertainty *U** kPa	%	Equation output (0.1N)	Expanded uncertainty *U** 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

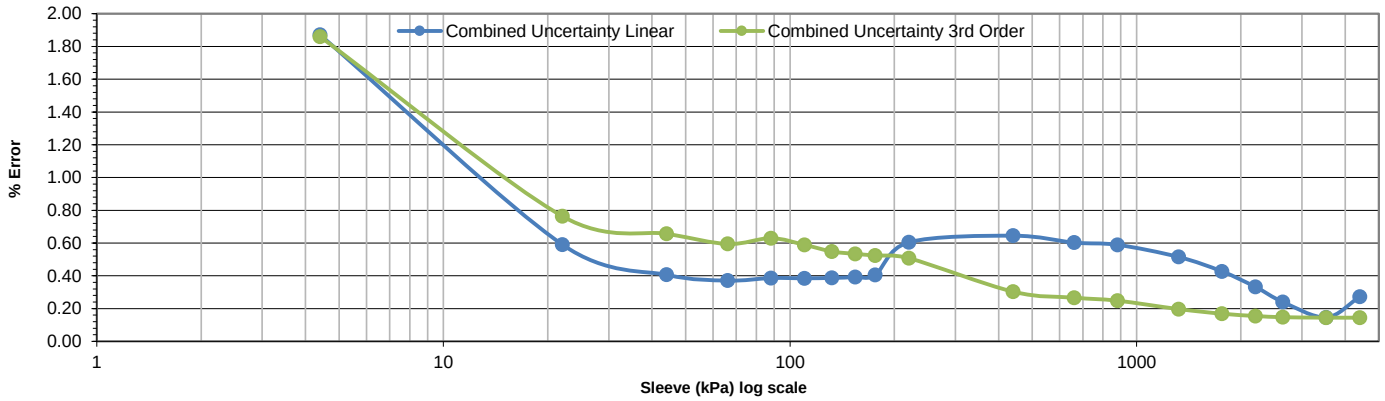
F (in 0.1N units) is calculated from :

$F = (a3 \times D^3) + (a2 \times D^2) + (a1 \times D) + a0$

a0	=	4.50324
a1	=	0.99681
a2	=	2.74188E-09
a3	=	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
Physical strength limited maximum sleeve reading (MPa) =	1.333
Sleeve resolution (Pa) =	4.4
Sleeve area (cm²) =	227
Sleeve area ratio factor =	-0.004

COMBINED EXPANDED UNCERTAINTY SLEEVE



* The combined expanded uncertainties shown are to k=2 with a 95% coverage factor.

Table 4-b Sleeve friction - tip subtraction combined standard uncertainty Uc_sub

Tip MPa	Sleeve linear equation subtraction error (%) Sleeve kPa → 4	22	44	66	110	154	220	661
0.07	3.0	0.7	0.4	0.3	0.3	0.3	0.3	0.3
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

Tip MPa	Sleeve 3rd order equation subtraction error (%) Sleeve kPa → 4	22	44	66	110	154	220	661
0.07	3.0	0.8	0.5	0.4	0.4	0.3	0.3	0.1
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

Table1-c.

Ref PR (kPa)	PWP change in output (cts) 1 0°	2 120°	3 240°	Reproducibility error *b* kPa	%	Reversibility error *U_rev* 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
50	1.986E+07	1.993E+07		0.1	0.12	-0.1	-0.27

Table 2-c.

Reference output: Ref Pressure (kPa)	Ref Pressure (0.1Pa)	Linear factor output: Cone output (0.1Pa)	Expanded uncertainty *U** kPa	%	3rd order equation: Equation output (0.1N)	Expanded uncertainty *U** 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 equation

For a given cone indicated output of D (0.1N units), the corrected applied force

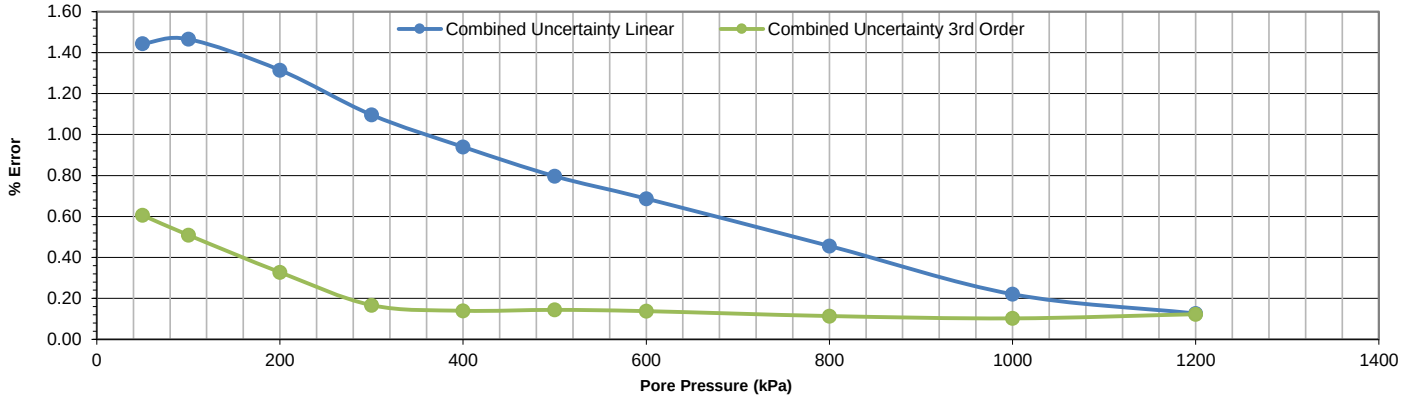
F (in 0.1N units) is calculated from :

$F = (a3 \times D^3) + (a2 \times D^2) + (a1 \times D) + a0$

a0	=	51.03216
a1	=	0.99273
a2	=	6.95886E-10
a3	=	-6.60237E-18

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

COMBINED EXPANDED UNCERTAINTY PORE PRESSURE



* The combined expanded uncertainties shown are to k=2 with a 95% coverage factor.

LANKELMA

CERTIFICATE OF CALIBRATION

Certificate Number: 1365

Cone Serial Number: DS15-CFIIPM.841

INCLINATION CALIBRATION

Ref Inclination (°C)	Cone inclination output 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

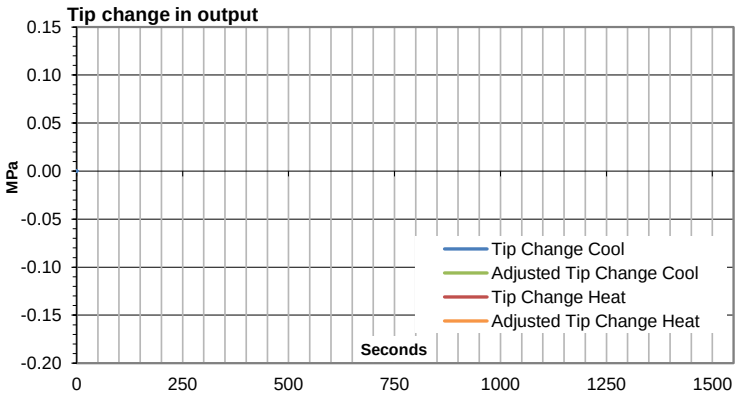
Recorded temp (°C)	Cone output 1 FS (°C)	Cone output 2 QC (°C)
0.00	#DIV/0!	#DIV/0!
0.00	#DIV/0!	#DIV/0!
0.00	#DIV/0!	#DIV/0!
0.00	#DIV/0!	#DIV/0!
0.00	#DIV/0!	#DIV/0!

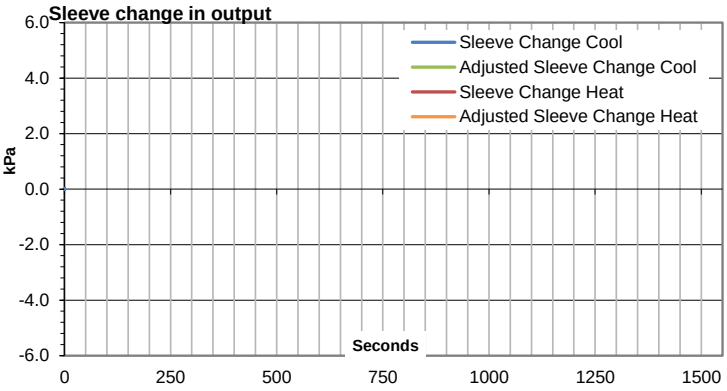
Factor used to convert from counts to 0.00001°C units =	#DIV/0!	#DIV/0!
Temperature error (°C) =	0.00	0.00

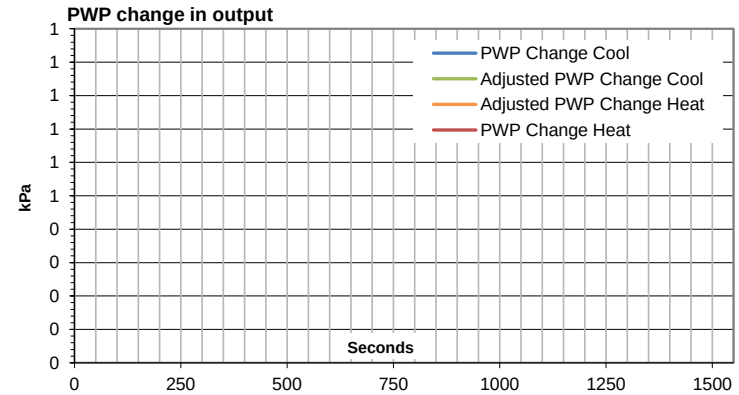
CONE TEMPERATURE EFFECT

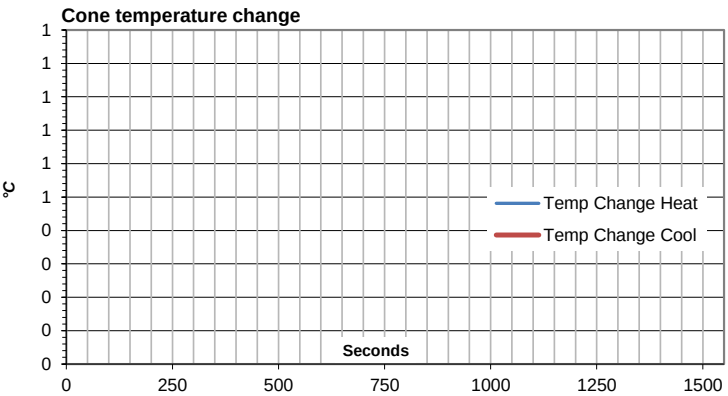
	Cooling	Heating
Start temperature =	0.00	0.00
End temperature =	0.00	0.00
Temperature change =	0.00	0.00

	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!









UK3
Track-truck

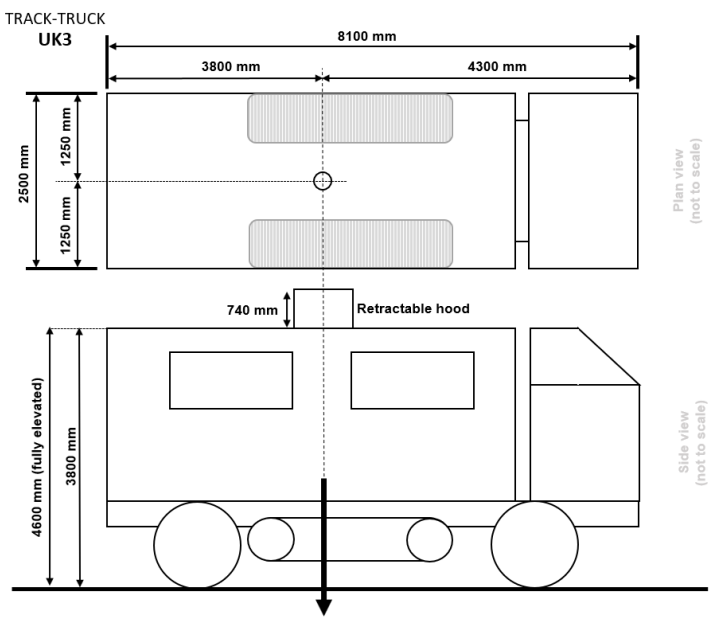
LANKELMA
01797 280050 – www.lankelma.com

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

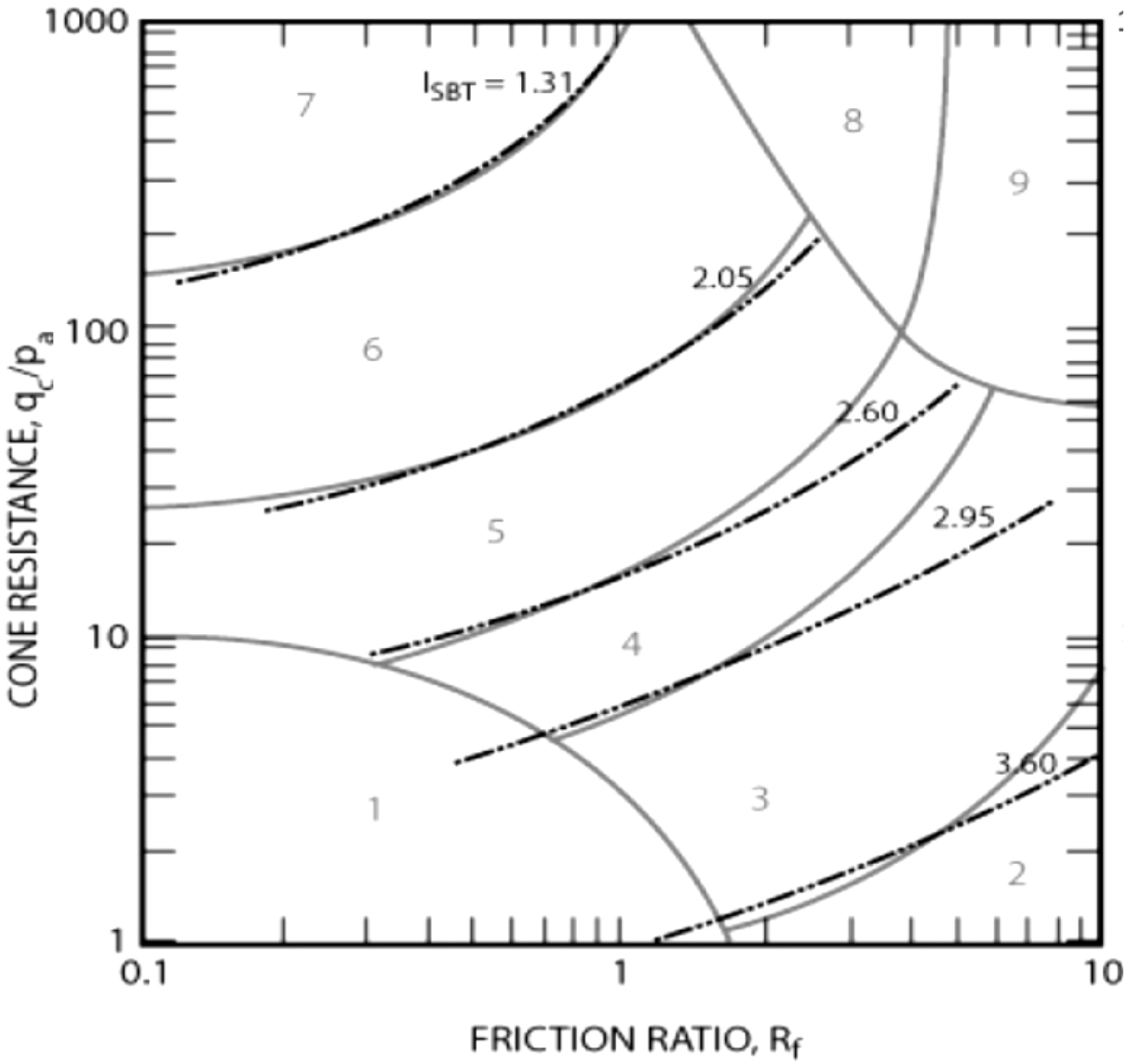
Lankelma's versatile track-truck is suitable for most geotechnical sites. The rig is driven to site as a self-contained HGV with tracks that can be deployed to cope with soft or uneven terrain. Fitted with a chalwyn valve and spark arrestor.

Typical production
An expected 100m+ of standard CPTu testing can be executed in a day (depending on conditions and access).

Specialist testing	Installations	Sampling
Seismic	VWP	MOSTAP
Pressuremeter	Piezometer	Shelby
Magnetometer	Inclinometer	
Video cone		
Wing cone		
Push-in shear vane		



CPT SOIL BEHAVIOUR TYPE CHART

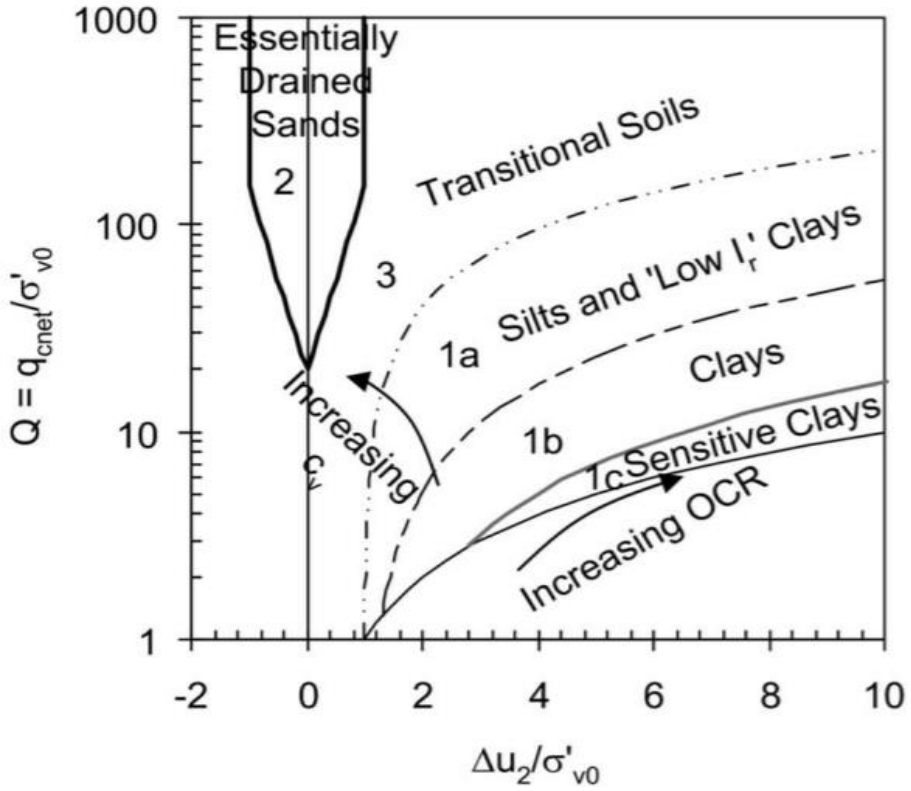


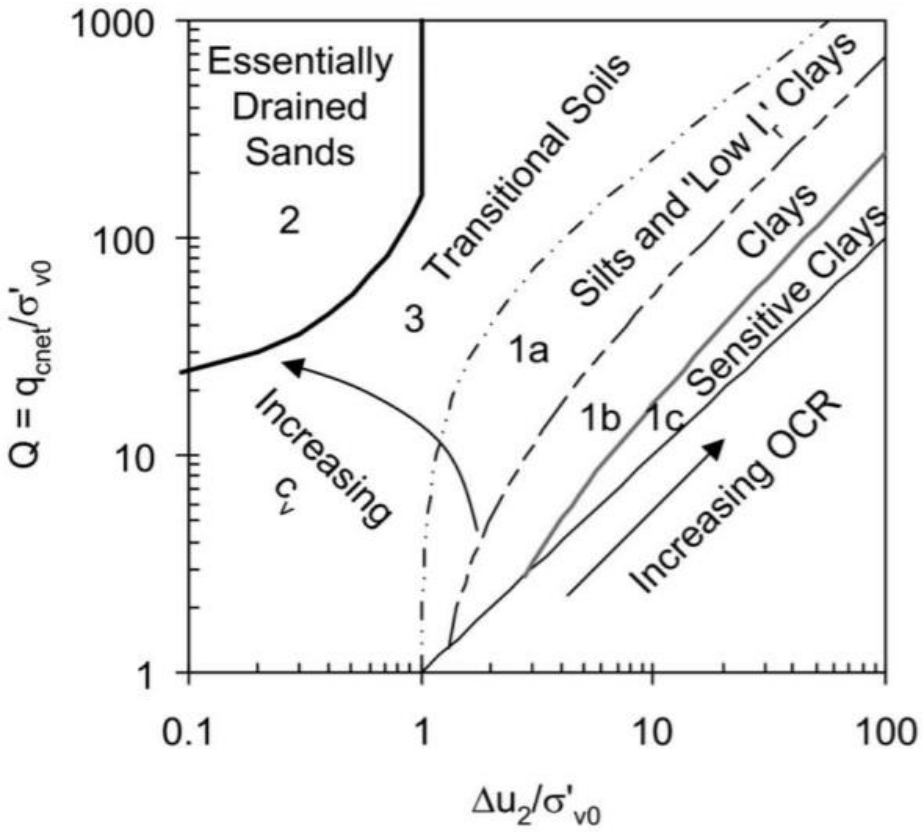
Non-normalised SBT chart by Robertson *et al.* (2010) based on dimensionless cone resistance (q_c/P_a) and friction ration, R_f, showing contours of SBT index I_{SBT} (denoted I_c on the test plots). The chart is also applicable to normalised tip and sleeve values Q_t and F_r.

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	*Heavily 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

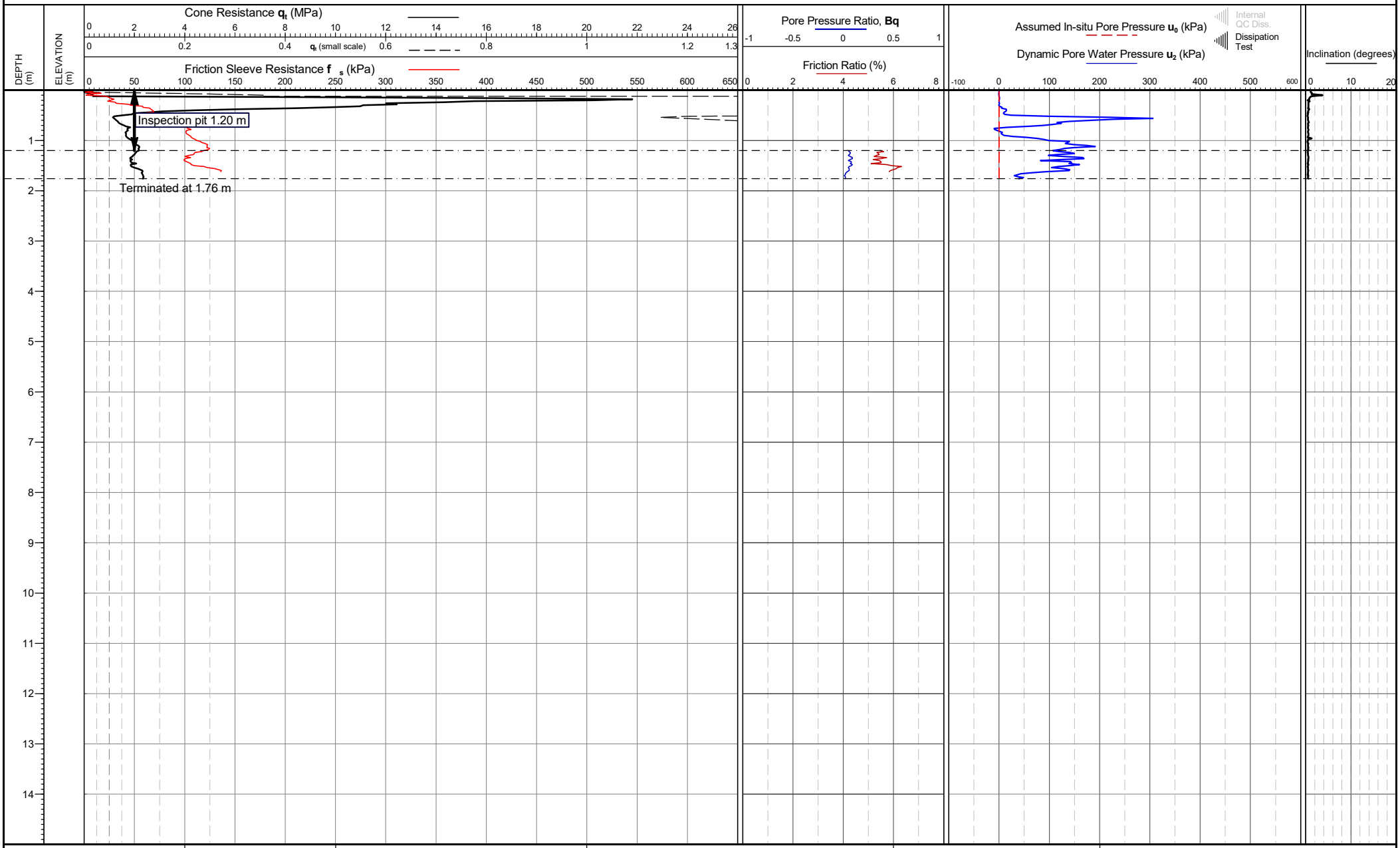
RAW DATA PLOTS

Plots are provided for all locations

LANKELMA

Project: SUNDERLAND BATTERY FARM

Client: SOLMEK

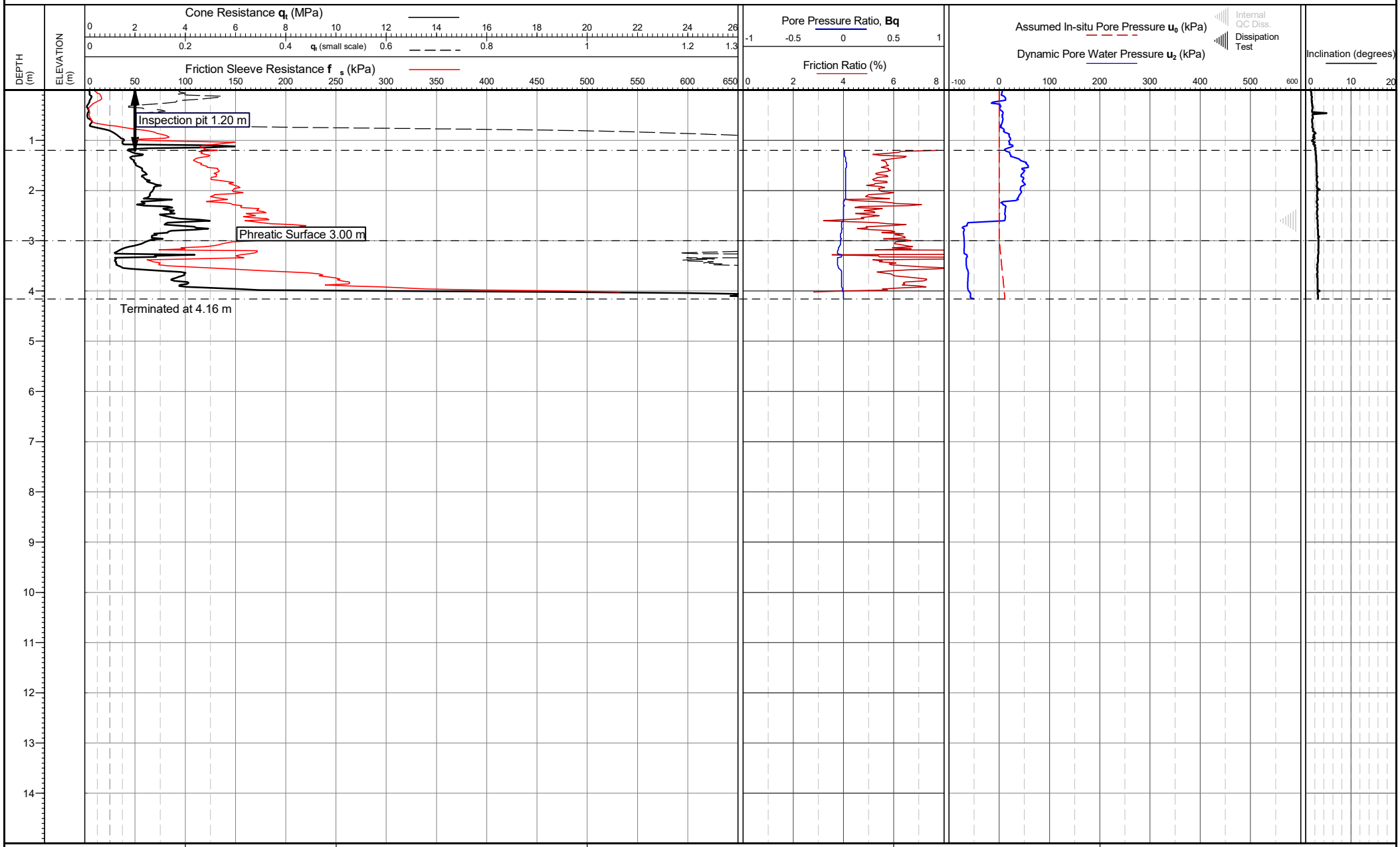


Cone area (mm2): Cone ID: S15-CFIPM(250).841 Operator: Jamie Butterworth Rig Used: UK3 Date of test: 21/10/2021 09:31:13	Zero drift (Pre/post test) q_c (kPa): -7.8 f_s (kPa): -0.1 ($f_{s\,drift}$ - $q_{c\,drift}$) U_2 (kPa): -5.4	Location: Tyne and Wear Coordinates: , Elevation: Coordinate system:	Remarks: Data Loss: Operative error, test refusal at 1.77m not captured. *Phreatic surface origin: Arbitrary value Termination Remark: Tip load	Date of plot: 28-10-21 Checked by: Chris Player	Lankelma Project Ref: P-107873-1

TEST ID: CPT01

Project: SUNDERLAND BATTERY FARM

Client: SOLMEK

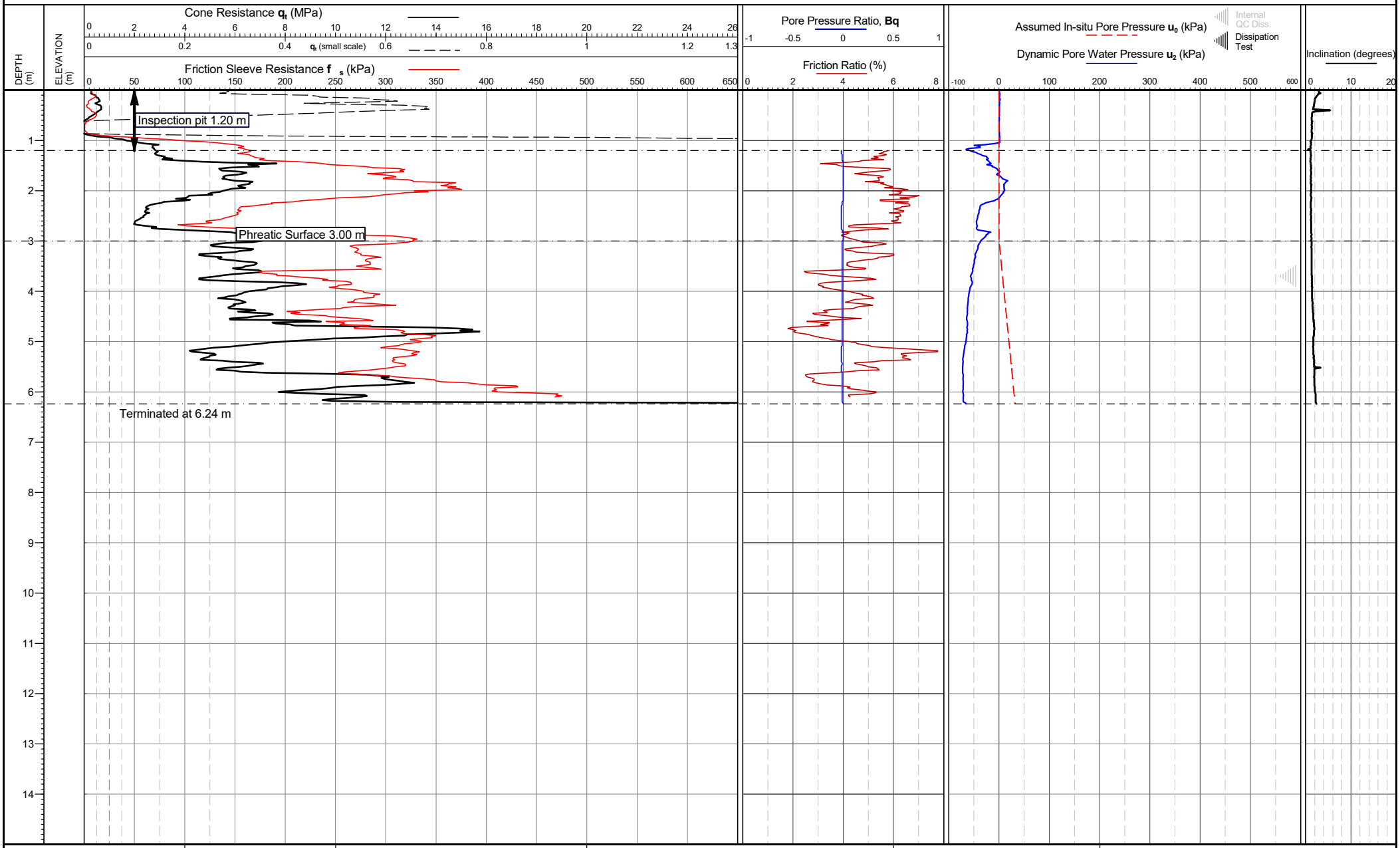


Cone area (mm2): Cone ID: S15-CFIPM(250).841 Operator: Jamie Butterworth Rig Used: UK3 Date of test: 21/10/2021 09:44:59	Zero drift (Pre/post test) q_c (kPa): 33.8 f_s (kPa): -2.1 ($f_{s\ drift}$ - $q_{c\ drift}$) U_2 (kPa): -3.5	Location: Tyne and Wear Coordinates: , Elevation: Coordinate system:	Remarks: *Phreatic surface origin: Arbitrary value Termination Remark: Tip load	Date of plot: 28-10-21 Checked by: Chris Player	Lankelma Project Ref: P-107873-1

TEST ID: CPT02

Project: SUNDERLAND BATTERY FARM

Client: SOLMEK



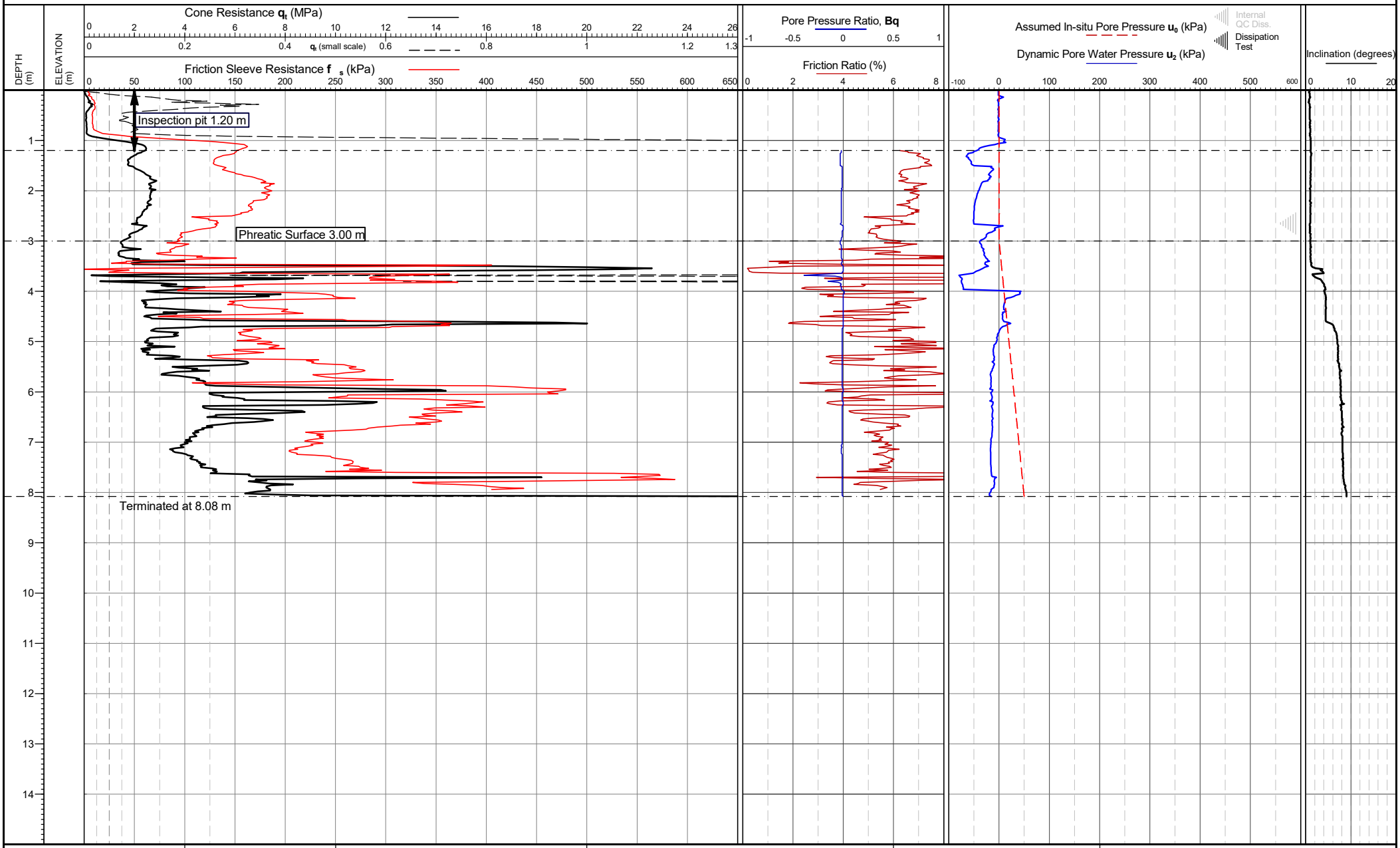
Cone area (mm2): Cone ID: S15-CFIPM(250).841 Operator: Jamie Butterworth Rig Used: UK3 Date of test: 22/10/2021 12:38:33	Zero drift (Pre/post test) q_c (kPa): 18.0 f_s (kPa): -1.2 ($f_{s\,drift}$ - $q_{c\,drift}$) U_2 (kPa): -0.1	Location: Tyne and Wear Coordinates: , Elevation: Coordinate system:	Remarks: *Phreatic surface origin: Arbitrary value Termination Remark: Lateral support	Date of plot: 28-10-21 Checked by: Chris Player	Lankelma Project Ref: P-107873-1

TEST ID: CPT03

LANKELMA

Project: SUNDERLAND BATTERY FARM

Client: SOLMEK

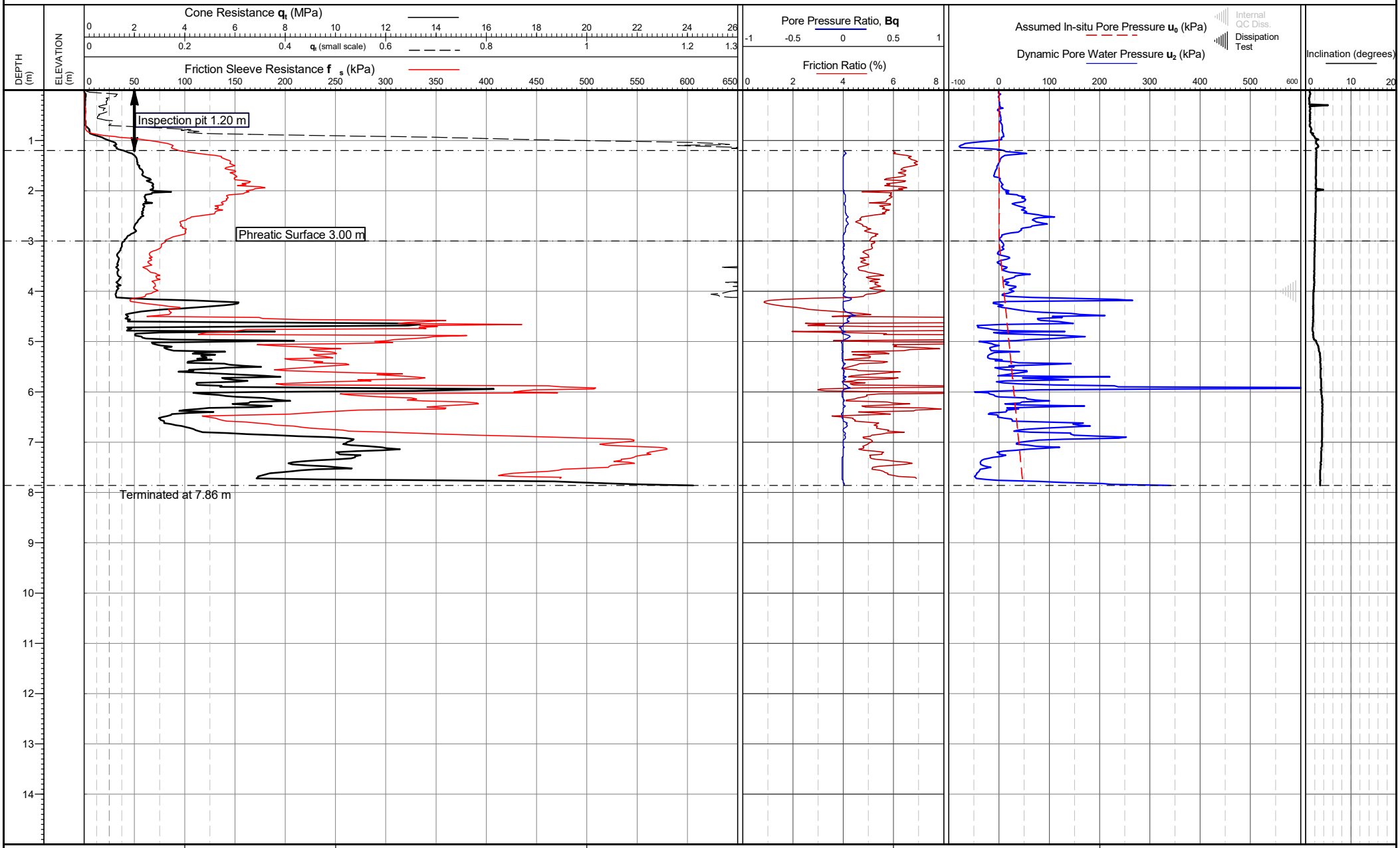


Cone area (mm2): Cone ID: S15-CFIPM(250).841 Operator: Jamie Butterworth Rig Used: UK3 Date of test: 22/10/2021 11:34:24	Zero drift (Pre/post test) q_c (kPa): -23.0 f_s (kPa): 0.6 ($f_{s\,drift}$ - $q_{c\,drift}$) U_2 (kPa): -3.5	Location: Tyne and Wear Coordinates: , Elevation: Coordinate system:	Remarks: *Phreatic surface origin: Arbitrary value Termination Remark: Tip load	Date of plot: 28-10-21 Checked by: Chris Player	Lankelma Project Ref: P-107873-1

TEST ID: CPT04

Project: SUNDERLAND BATTERY FARM

Client: SOLMEK

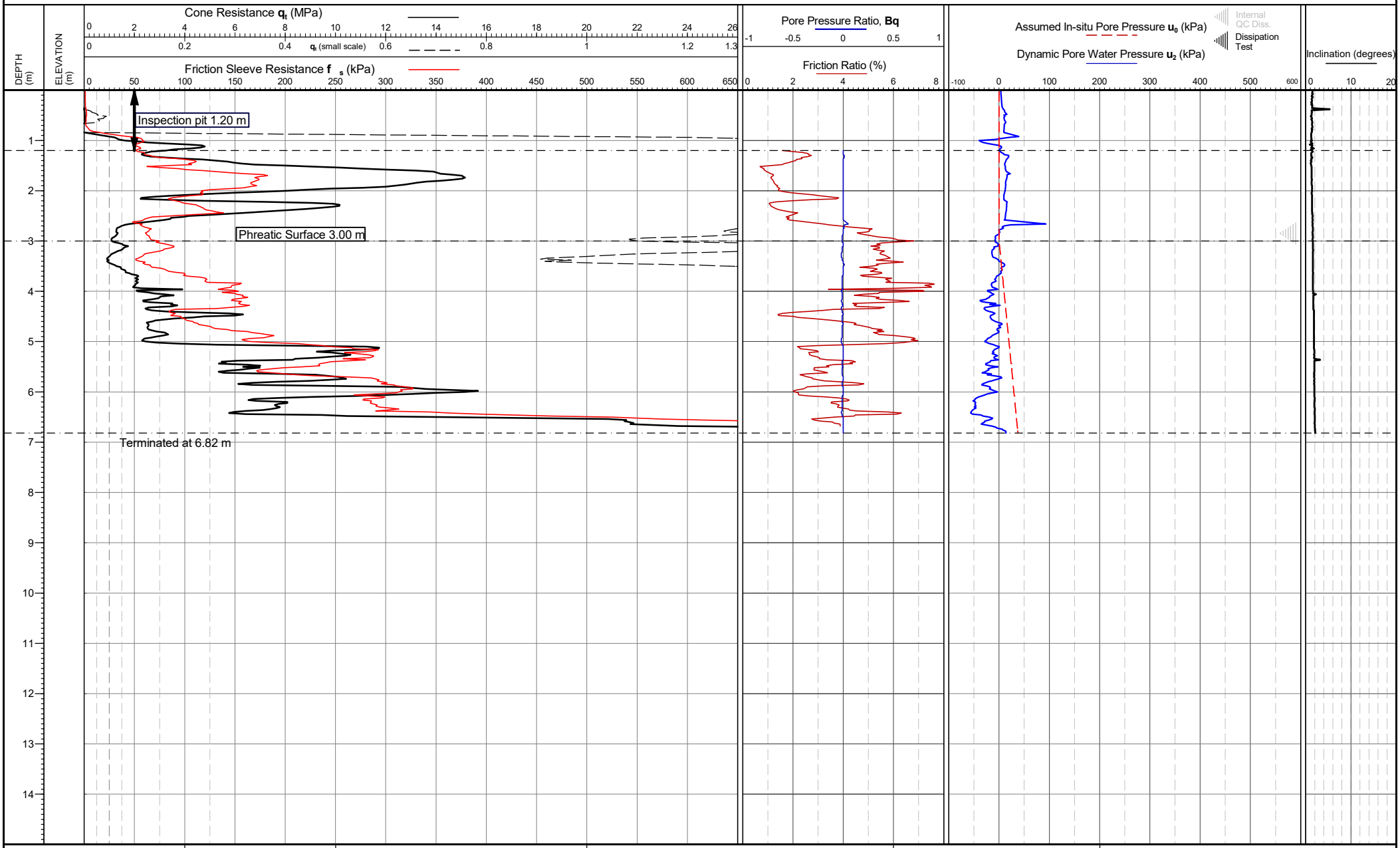


Cone area (mm2): Cone ID: S15-CFIPM(250).841 Operator: Jamie Butterworth Rig Used: UK3 Date of test: 22/10/2021 08:10:07	Zero drift (Pre/post test) q_c (kPa): 5.6 f_s (kPa): -1.5 ($f_{s\,drift}$ - $q_{c\,drift}$) U_2 (kPa): -4.0	Location: Tyne and Wear Coordinates: , Elevation: Coordinate system:	Remarks: *Phreatic surface origin: Arbitrary value Termination Remark: Lateral support	Date of plot: 28-10-21 Checked by: Chris Player	Lankelma Project Ref: P-107873-1

TEST ID: CPT05

Project: SUNDERLAND BATTERY FARM

Client: SOLMEK



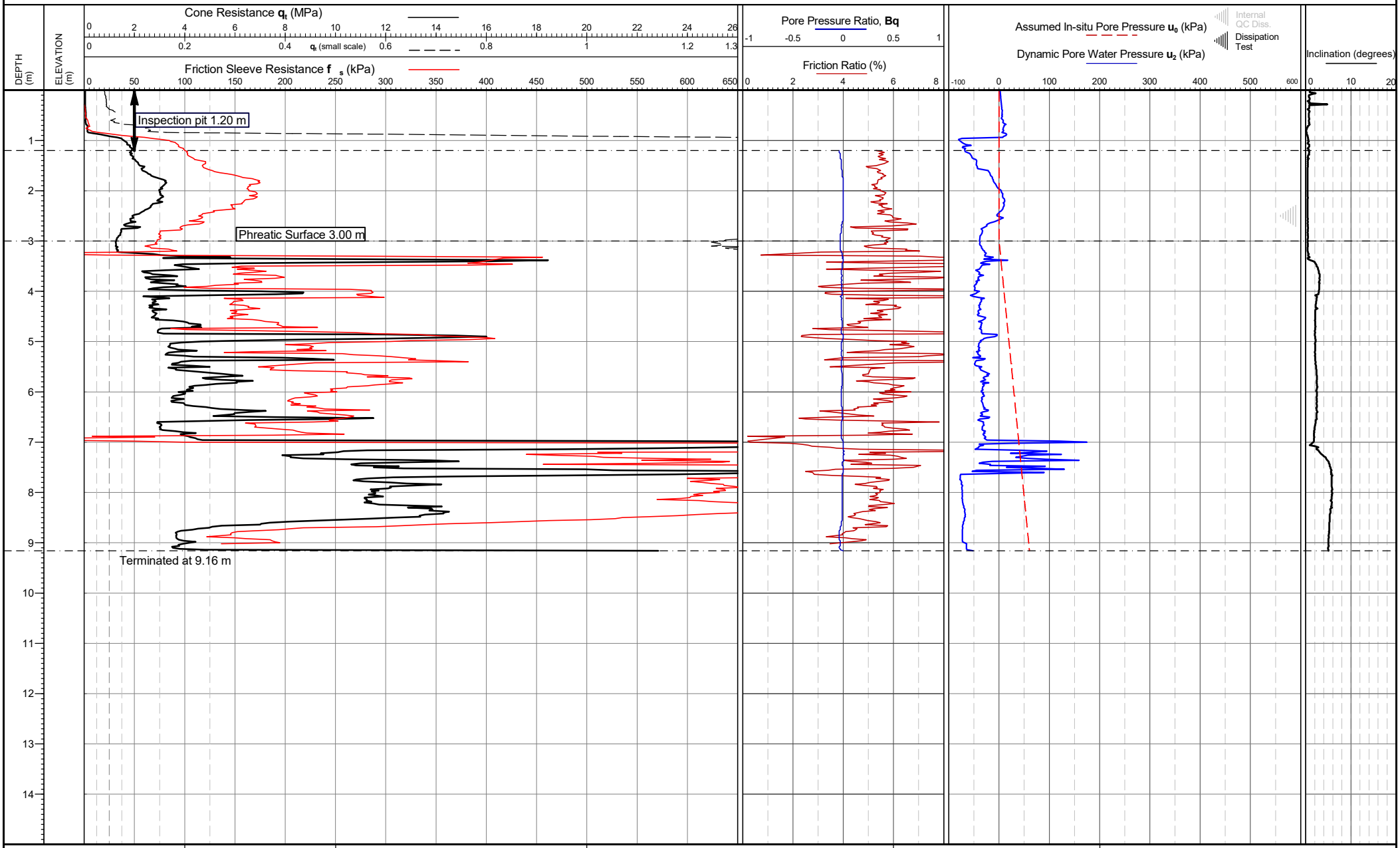
Cone area (mm2): Cone ID: S15-CFIPM(250).841 Operator: Jamie Butterworth Rig Used: UK3 Date of test: 21/10/2021 10:52:30	Zero drift (Pre/post test) q_c (kPa): -55.8 f_s (kPa): -0.3 ($f_{s\,drift}$ - $q_{c\,drift}$) U_2 (kPa): -0.1	Location: Tyne and Wear Coordinates: , Elevation: Coordinate system:	Remarks: *Phreatic surface origin: Arbitrary value Termination Remark: Lateral support	Date of plot: 28-10-21 Checked by: Chris Player	Lankelma Project Ref: P-107873-1

TEST ID: CPT06

LANKELMA

Project: SUNDERLAND BATTERY FARM

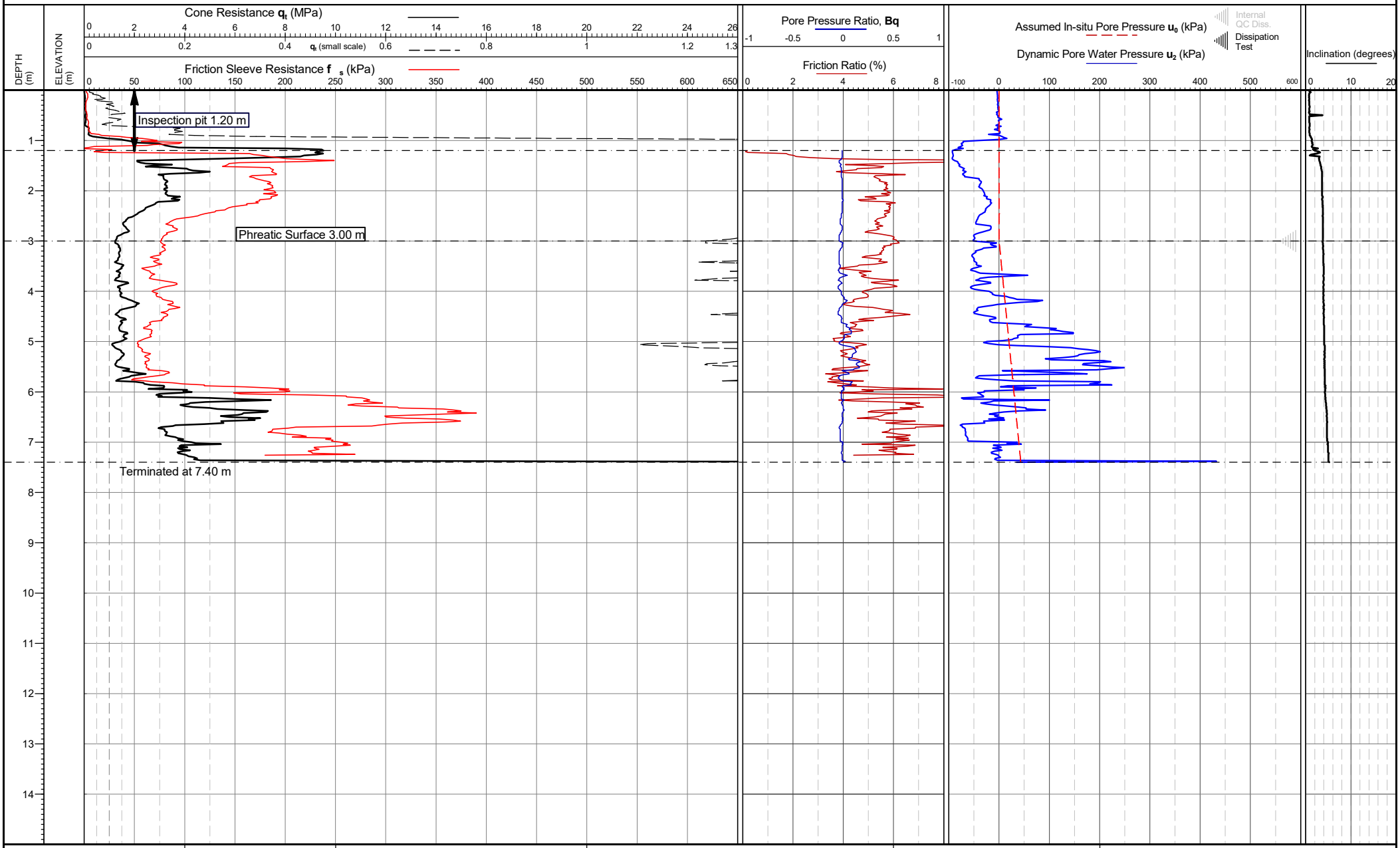
Client: SOLMEK



Cone area (mm2): Cone ID: S15-CFIPM(250).841 Operator: Jamie Butterworth Rig Used: UK3 Date of test: 21/10/2021 12:05:59	Zero drift (Pre/post test) q_c (kPa): -15.0 f_s (kPa): -3.1 ($f_{s\ drift}$ - $q_{c\ drift}$) U_2 (kPa): 1.9	Location: Tyne and Wear Coordinates: , Elevation: Coordinate system:	Remarks: *Phreatic surface origin: Arbitrary value Termination Remark: Tip load	Date of plot: 28-10-21 Checked by: Chris Player	Lankelma Project Ref: P-107873-1	**TEST ID: CPT07** Page 1 of 1

Project: SUNDERLAND BATTERY FARM

Client: SOLMEK

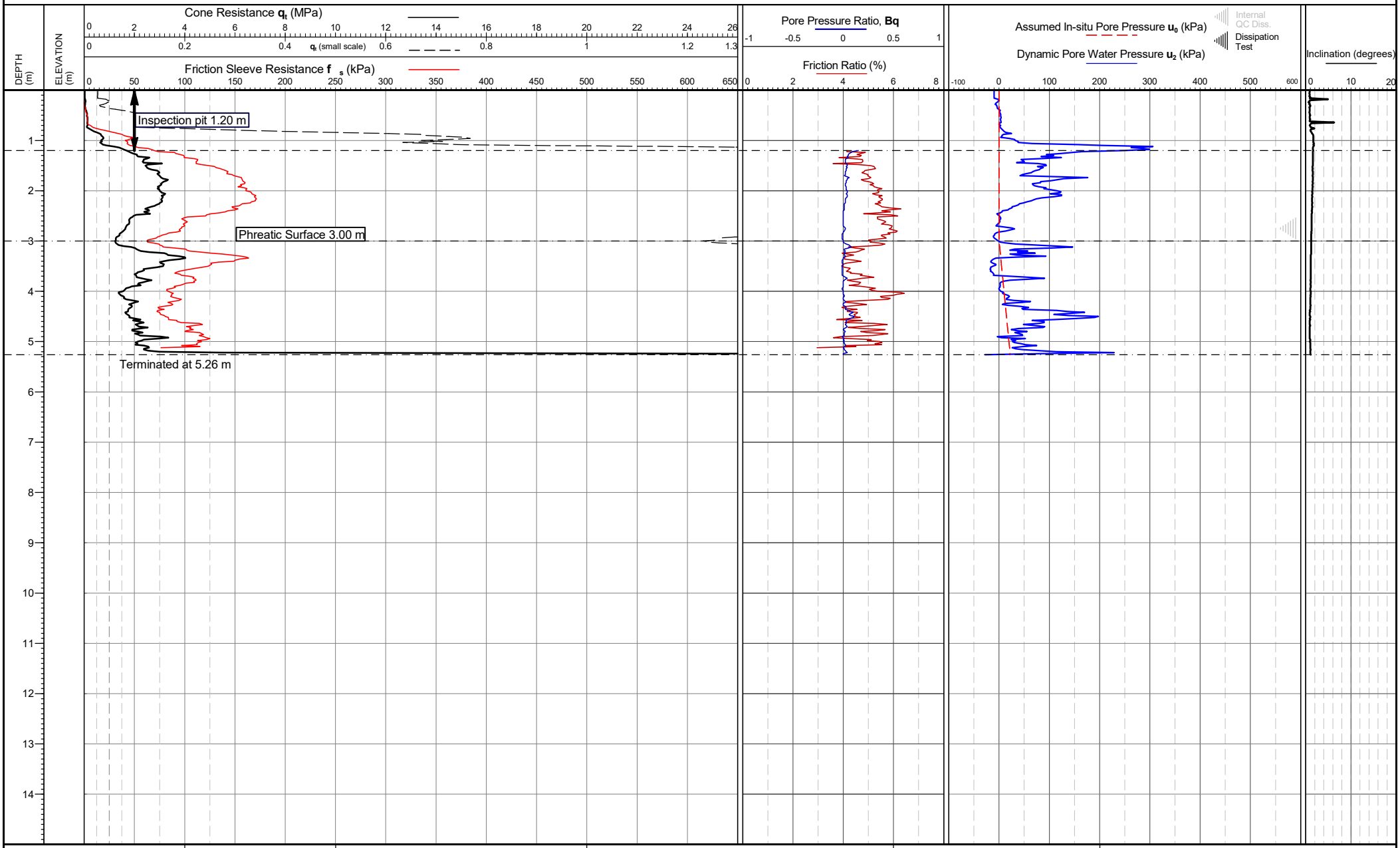


Cone area (mm2): Cone ID: S15-CFIPM(250).841 Operator: Jamie Butterworth Rig Used: UK3 Date of test: 21/10/2021 15:24:09	Zero drift (Pre/post test) q_c (kPa): 30.6 f_s (kPa): 0.6 ($f_{s\,drift}$ - $q_{c\,drift}$) U_2 (kPa): -0.5	Location: Tyne and Wear Coordinates: , Elevation: Coordinate system:	Remarks: *Phreatic surface origin: Arbitrary value Termination Remark: Tip load	Date of plot: 28-10-21 Checked by: Chris Player	Lankelma Project Ref: P-107873-1

TEST ID: CPT08

Project: SUNDERLAND BATTERY FARM

Client: SOLMEK



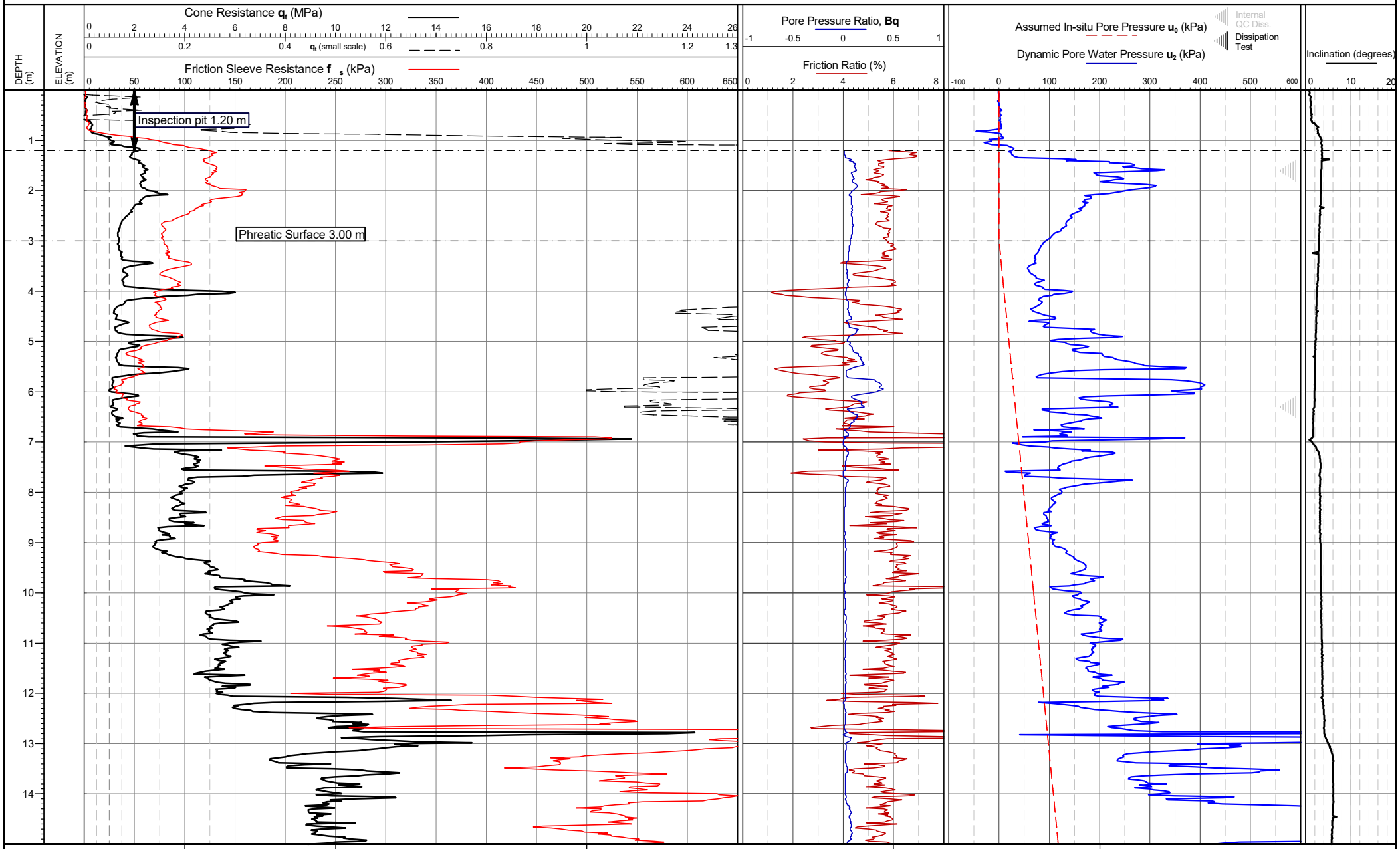
Cone area (mm2): Cone ID: S15-CFIPM(250).841 Operator: Jamie Butterworth Rig Used: UK3 Date of test: 21/10/2021 13:06:21	Zero drift (Pre/post test) q_c (kPa): 75.4 f_s (kPa): -1.8 ($f_{s\ drift}$ - $q_{c\ drift}$) U_2 (kPa): -3.5	Location: Tyne and Wear Coordinates: , Elevation: Coordinate system:	Remarks: *Phreatic surface origin: Arbitrary value Termination Remark: Tip load	Date of plot: 28-10-21 Checked by: Chris Player	Lankelma Project Ref: P-107873-1

TEST ID: CPT09

LANKELMA

Project: SUNDERLAND BATTERY FARM

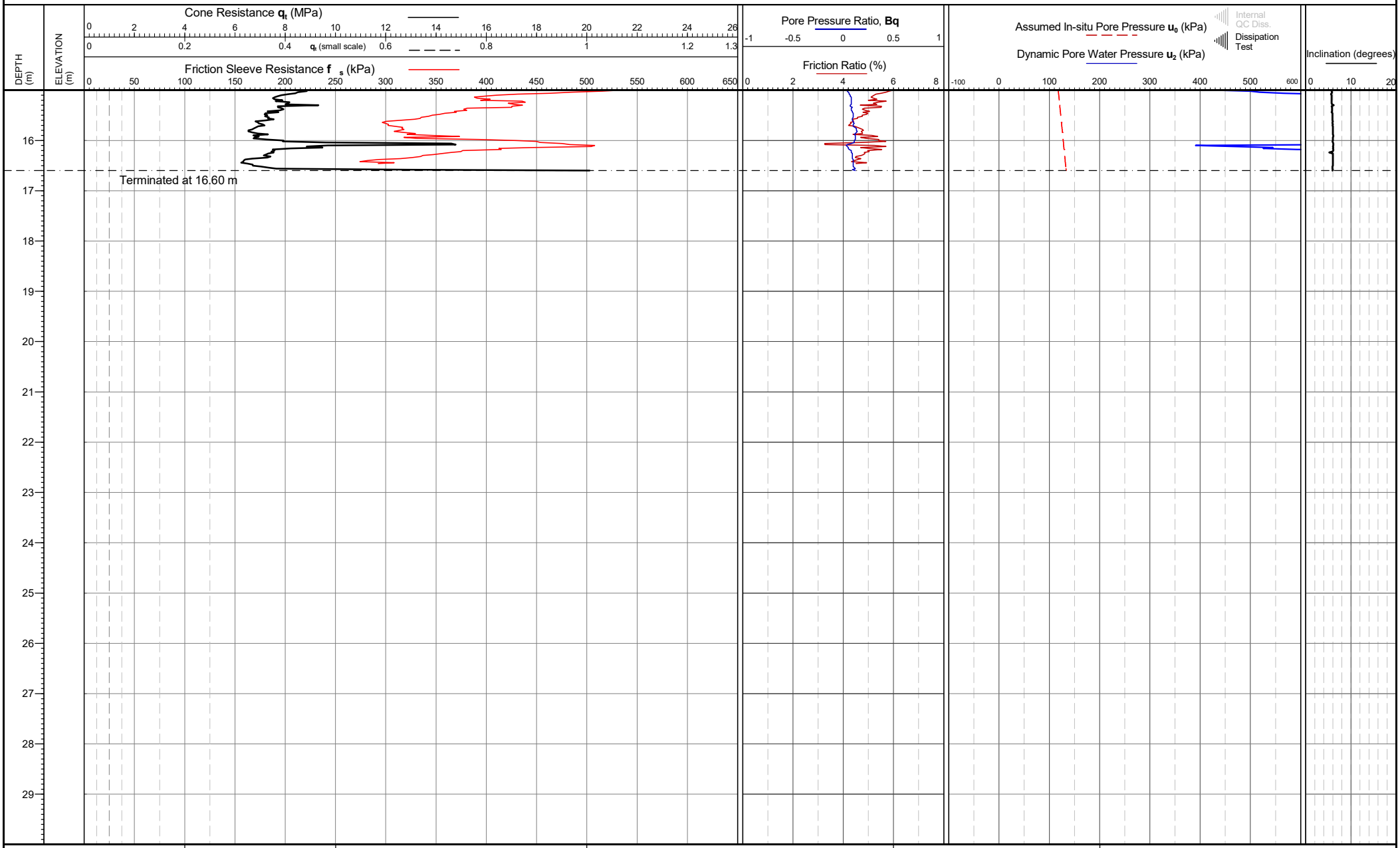
Client: SOLMEK



Cone area (mm2): Cone ID: S15-CFIPM(250).841 Operator: Jamie Butterworth Rig Used: UK3 Date of test: 21/10/2021 14:04:50	Zero drift (Pre/post test) q_c (kPa): -87.8 f_s (kPa): 1.2 ($f_{s\,drift}$ - $q_{c\,drift}$) U_2 (kPa): 4.3	Location: Tyne and Wear Coordinates: , Elevation: Coordinate system:	Remarks: *Phreatic surface origin: Arbitrary value Termination Remark: Lateral support	Date of plot: 28-10-21 Checked by: Chris Player	Lankelma Project Ref: P-107873-1	**TEST ID: CPT10** Page 1 of 2

Project: SUNDERLAND BATTERY FARM

Client: SOLMEK



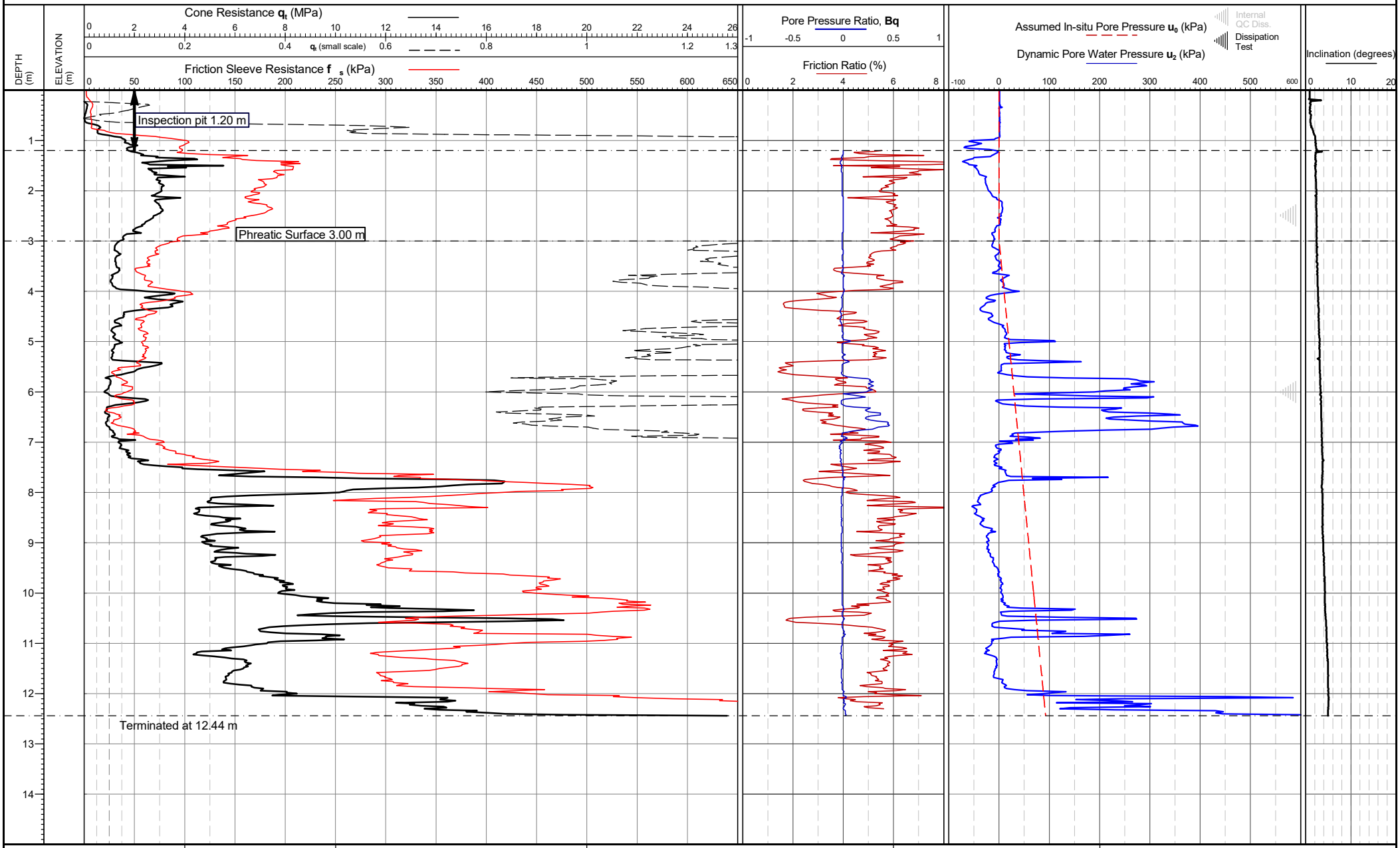
Cone area (mm2): Cone ID: S15-CFIPM(250).841 Operator: Jamie Butterworth Rig Used: UK3 Date of test: 21/10/2021 14:04:50	Zero drift (Pre/post test) q_c (kPa): -87.8 f_s (kPa): 1.2 ($f_{s\,drift}$ - $q_{c\,drift}$) U_2 (kPa): 4.3	Location: Tyne and Wear Coordinates: , Elevation: Coordinate system:	Remarks: *Phreatic surface origin: Arbitrary value Termination Remark: Lateral support	Date of plot: 28-10-21 Checked by: Chris Player	Lankelma Project Ref: P-107873-1

TEST ID: CPT10

LANKELMA

Project: SUNDERLAND BATTERY FARM

Client: SOLMEK

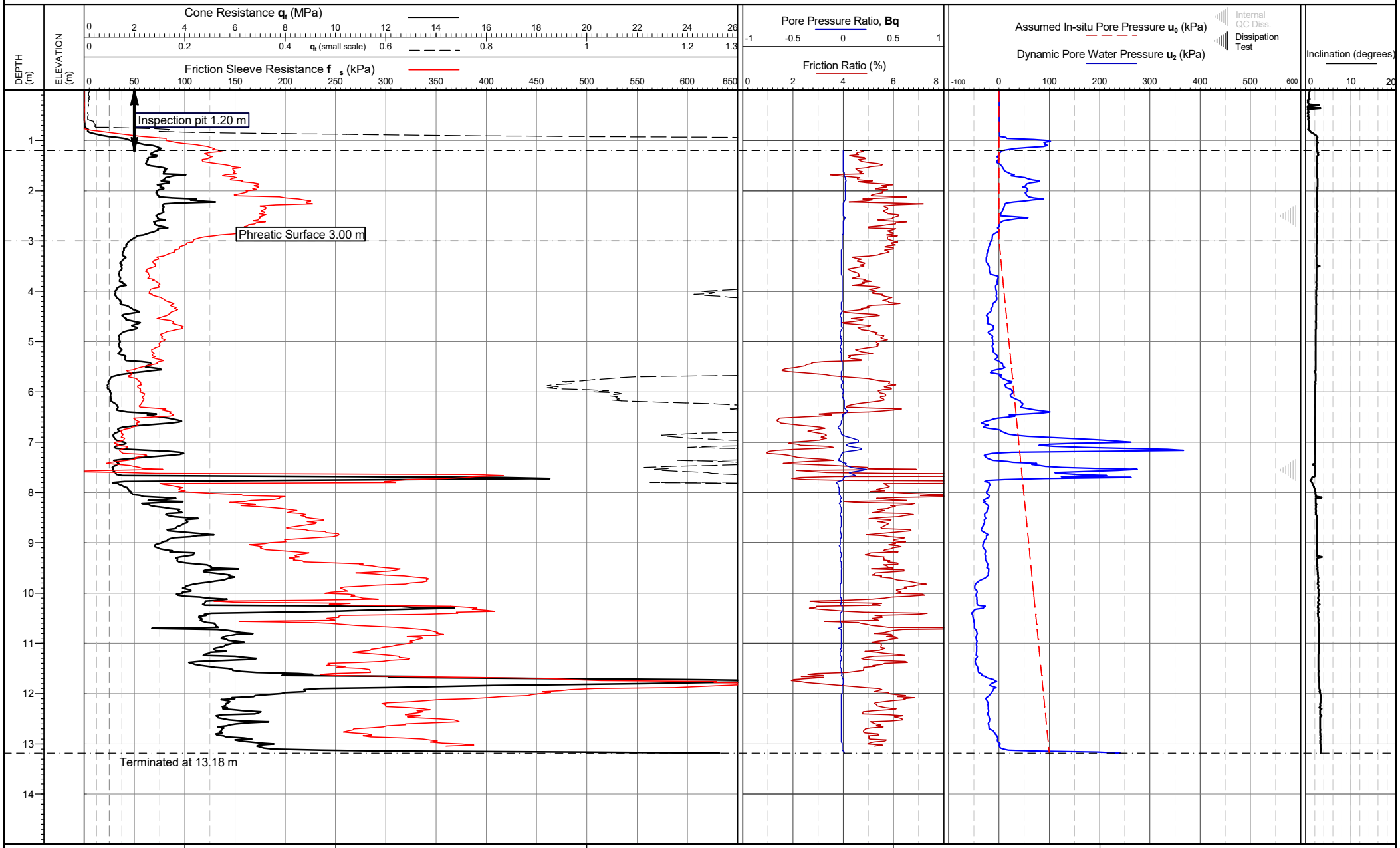


Cone area (mm2): Cone ID: S15-CFIPM(250).841 Operator: Jamie Butterworth Rig Used: UK3 Date of test: 22/10/2021 10:33:54	Zero drift (Pre/post test) q_c (kPa): -37.2 f_s (kPa): 1.3 ($f_{s\,drift}$ - $q_{c\,drift}$) U_2 (kPa): 2.2	Location: Tyne and Wear Coordinates: , Elevation: Coordinate system:	Remarks: *Phreatic surface origin: Arbitrary value Termination Remark: Lateral support	Date of plot: 28-10-21 Checked by: Chris Player	Lankelma Project Ref: P-107873-1

TEST ID: CPT11

Project: SUNDERLAND BATTERY FARM

Client: SOLMEK



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) q_c (kPa): 70.2 f_s (kPa): -3.6 ($f_{s\ drift}$ - $q_{c\ drift}$) U_2 (kPa): -2.8	Location: Tyne and Wear Coordinates: , Elevation: Coordinate system:	Remarks: *Phreatic surface origin: Arbitrary value Termination Remark: Lateral support	Date of plot: 28-10-21 Checked by: Chris Player	Lankelma Project Ref: P-107873-1	**TEST ID: CPT12** Page 1 of 1

APPENDIX D INTERPRETATION RESULTS - SET 1

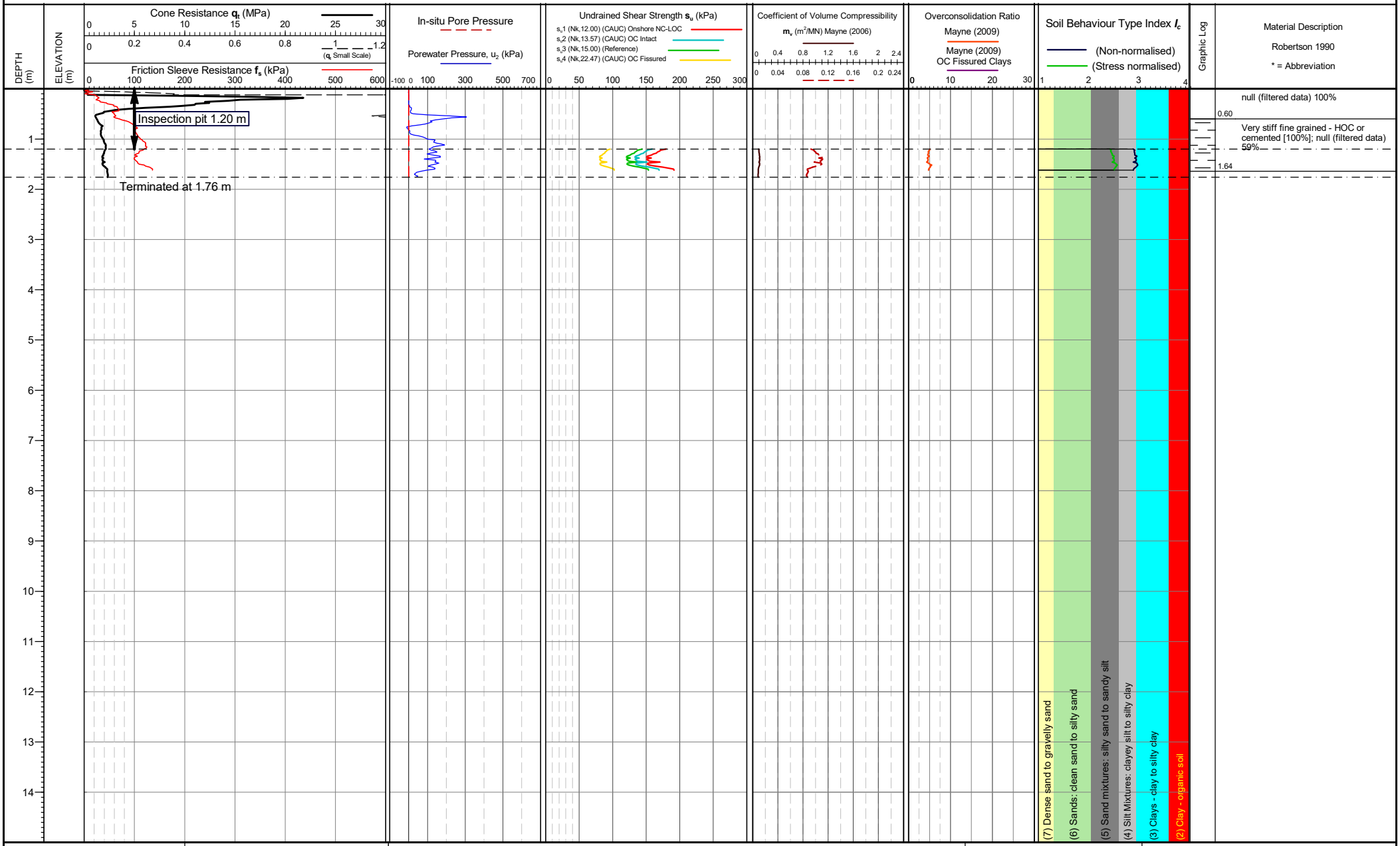
UNDRAINED SHEAR STRENGTH
COEFFICIENT OF VOLUME CHANGE
OVERCONSOLIDATION RATIO
SOIL BEHAVIOUR TYPE (SBT) DESCRIPTIONS

Plots are provided for all locations

LANKELMA

Project: SUNDERLAND BATTERY FARM

Client: SOLMEK



Cone area (mm2):
ConeID: S15-CFIPM(250).841
Operator: Jamie Butterworth
Rig Used: UK3
Date of test: 21/10/2021 09:31:13

Location: Tyne and Wear
Coordinates: ,
Elevation:
Coordinate system:

Remarks: Data Loss: Operative error, test refusal at 1.77m not captured. *Phreatic surface origin: Arbitrary value

Termination Remark:
Tip load

Internal QA Diss.
Dissipation Test
Penetration Pause (<1cm/s)

Both drained and undrained parameters are calculated for mixed SBTs = Ic 2.40-2.70. See report text for methods and discussion of parameter evaluation.

Date of plot: 28-10-21

Checked by: Chris Player

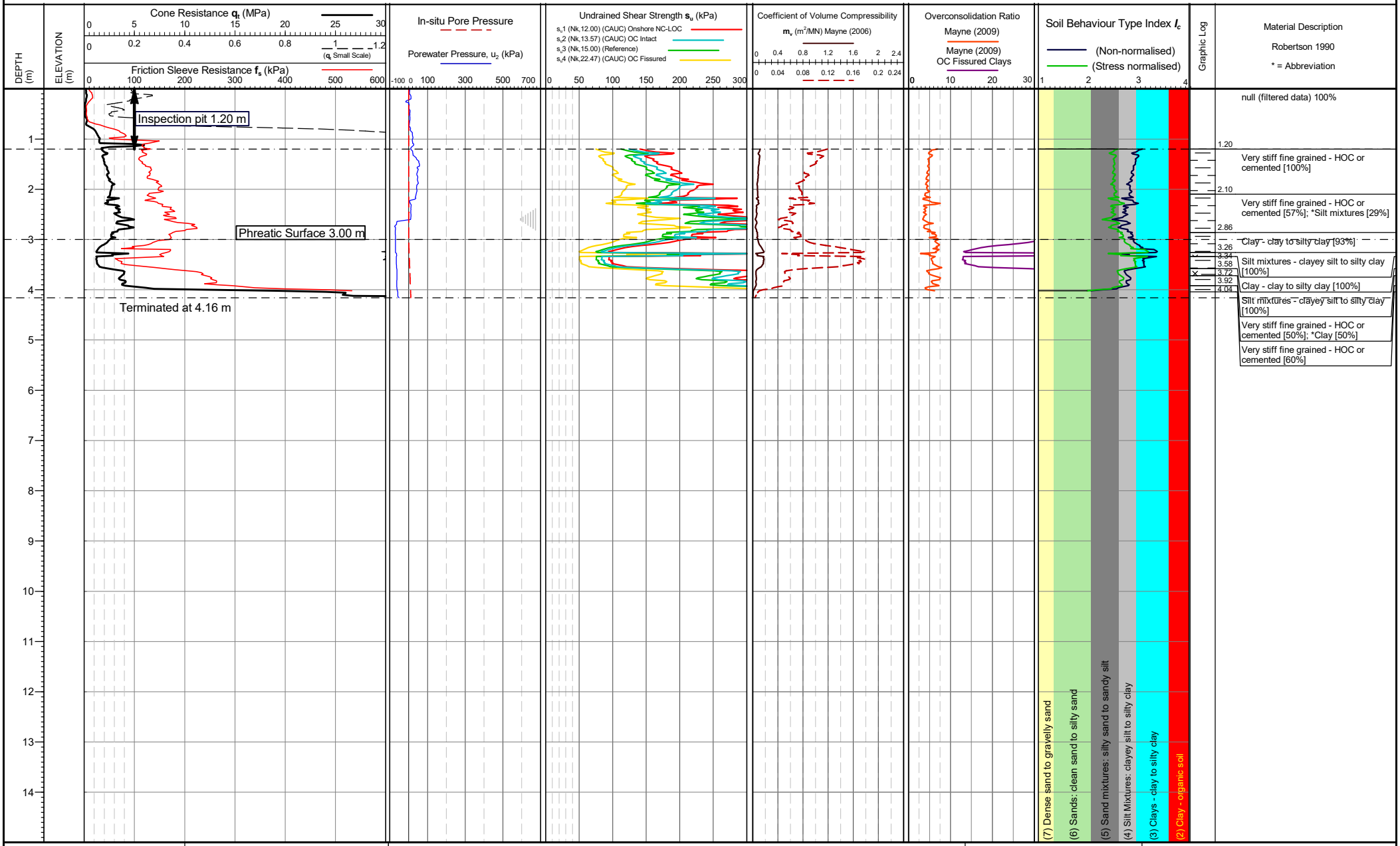
Lankelma Project Ref: P-107873-1

TEST ID: CPT01

LANKELMA

Project: SUNDERLAND BATTERY FARM

Client: SOLMEK



Cone area (mm2):
ConeID: S15-CFIPM(250).841
Operator: Jamie Butterworth
Rig Used: UK3
Date of test: 21/10/2021 09:44:59

Location: Tyne and Wear
Coordinates: ,
Elevation:
Coordinate system:

Remarks: *Phreatic surface origin: Arbitrary value

Termination Remark:
Tip load

Internal QA Diss.
Dissipation Test
Penetration Pause (<1cm/s)

Both drained and undrained parameters are calculated for mixed SBTs = Ic 2.40-2.70. See report text for methods and discussion of parameter evaluation.

Date of plot: 28-10-21
Lankelma Project Ref: P-107873-1

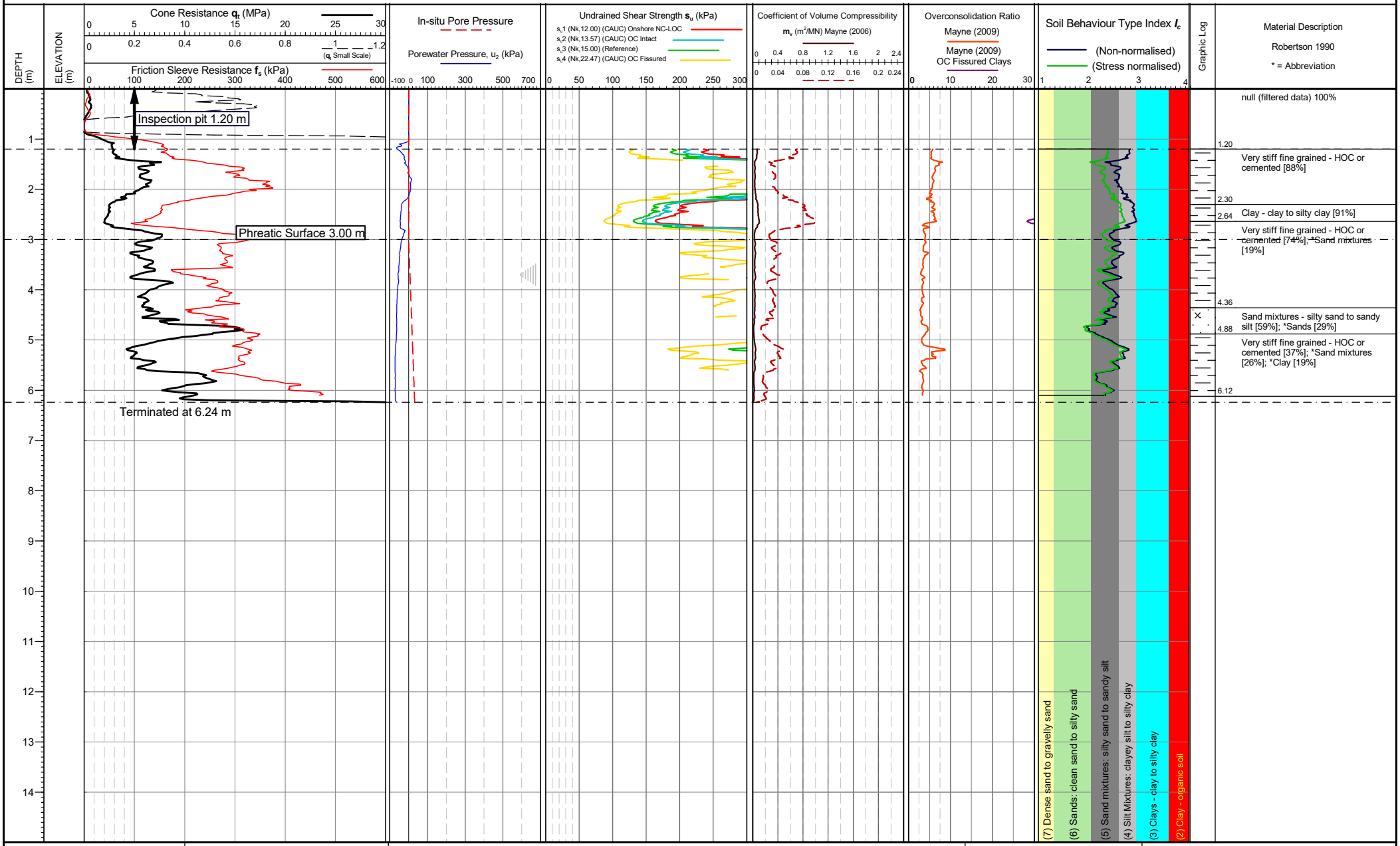
Checked by: Chris Player

TEST ID: CPT02

LANKELMA

Project: SUNDERLAND BATTERY FARM

Client: SOLMEK



Cone area (mm2):
ConeID: S15-CFIPM(250).841
Operator: Jamie Butterworth
Rig Used: UK3
Date of test: 22/10/2021 12:38:33

Location: Tyne and Wear
Coordinates: ,
Elevation:
Coordinate system:

Remarks: *Phreatic surface origin: Arbitrary value

Termination Remark:
Lateral support

Internal QA Diss.
Dissipation Test
Penetration Pause (<1cm/s)

Both drained and undrained parameters are calculated for mixed SBTs = Ic 2.40-2.70. See report text for methods and discussion of parameter evaluation.

Date of plot: 28-10-21

Checked by: Chris Player

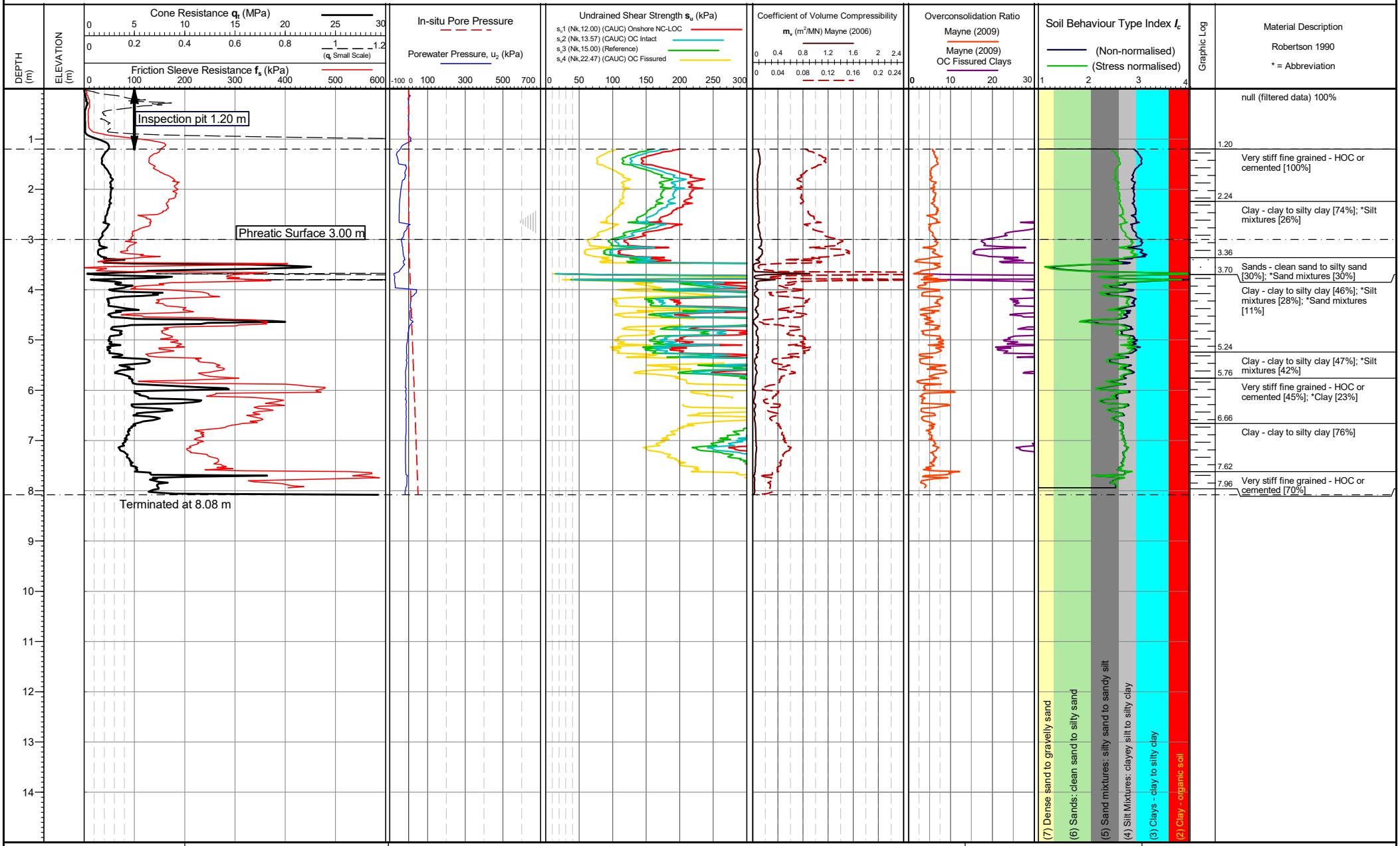
Lankelma Project Ref: P-107873-1

TEST ID: CPT03

LANKELMA

Project: SUNDERLAND BATTERY FARM

Client: SOLMEK



Cone area (mm2):
ConeID: S15-CFIPM(250).841
Operator: Jamie Butterworth
Rig Used: UK3
Date of test: 22/10/2021 11:34:24

Location: Tyne and Wear
Coordinates: ,
Elevation:
Coordinate system:

Remarks: *Phreatic surface origin: Arbitrary value

Termination Remark:
Tip load

Internal QA Diss.
Dissipation Test
Penetration Pause (<1cm/s)

Both drained and undrained parameters are calculated for mixed SBTs = Ic 2.40-2.70. See report text for methods and discussion of parameter evaluation.

Date of plot: 28-10-21

Lankelma Project Ref: P-107873-1

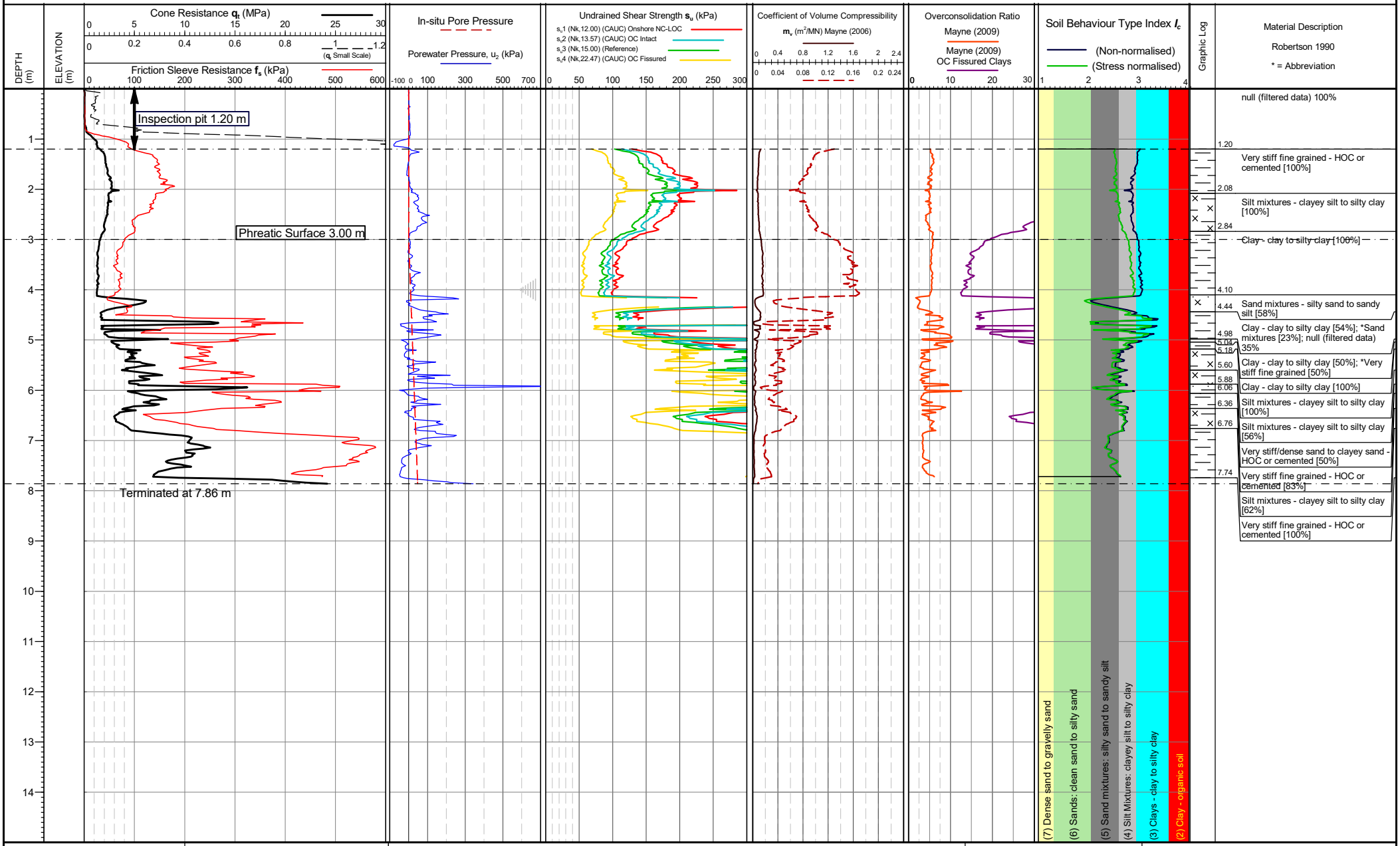
Checked by: Chris Player

TEST ID: CPT04

LANKELMA

Project: SUNDERLAND BATTERY FARM

Client: SOLMEK



Cone area (mm2):
ConeID: S15-CFIPM(250).841
Operator: Jamie Butterworth
Rig Used: UK3
Date of test: 22/10/2021 08:10:07

Location: Tyne and Wear
Coordinates: ,
Elevation:
Coordinate system:

Remarks: *Phreatic surface origin: Arbitrary value

Termination Remark:
Lateral support

Internal QA Diss.
Dissipation Test
Penetration Pause (<1cm/s)

Both drained and undrained parameters are calculated for mixed SBTs = Ic 2.40-2.70. See report text for methods and discussion of parameter evaluation.

Date of plot: 28-10-21

Checked by: Chris Player

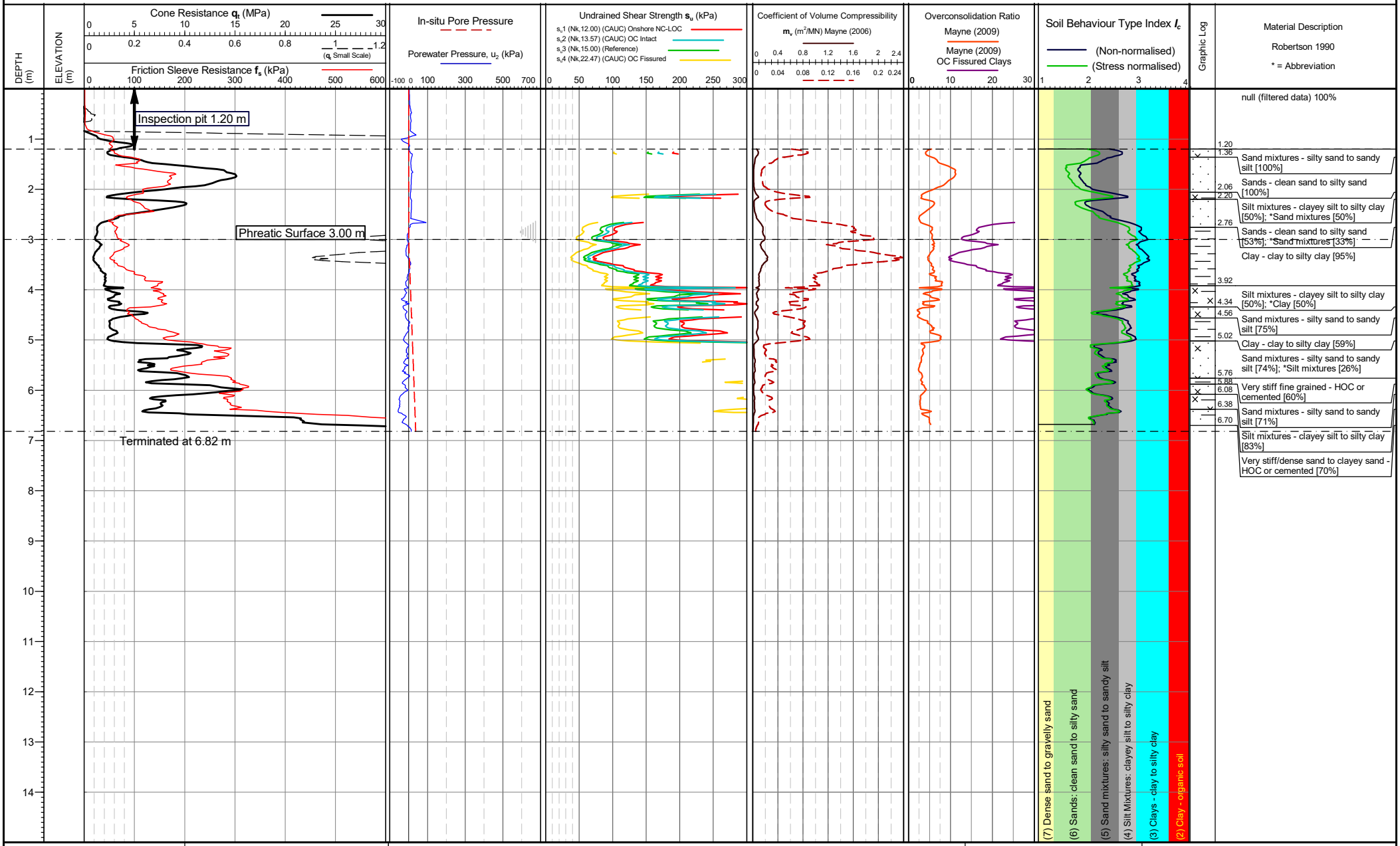
Lankelma Project Ref: P-107873-1

TEST ID: CPT05

LANKELMA

Project: SUNDERLAND BATTERY FARM

Client: SOLMEK



Cone area (mm2):
ConeID: S15-CFIPM(250).841
Operator: Jamie Butterworth
Rig Used: UK3
Date of test: 21/10/2021 10:52:30

Location: Tyne and Wear
Coordinates: ,
Elevation:
Coordinate system:

Remarks: *Phreatic surface origin: Arbitrary value

Termination Remark:
Lateral support

Internal QA Diss.
Dissipation Test
Penetration Pause (<1cm/s)

Both drained and undrained parameters are calculated for mixed SBTs = Ic 2.40-2.70. See report text for methods and discussion of parameter evaluation.

Date of plot: 28-10-21

Checked by: Chris Player

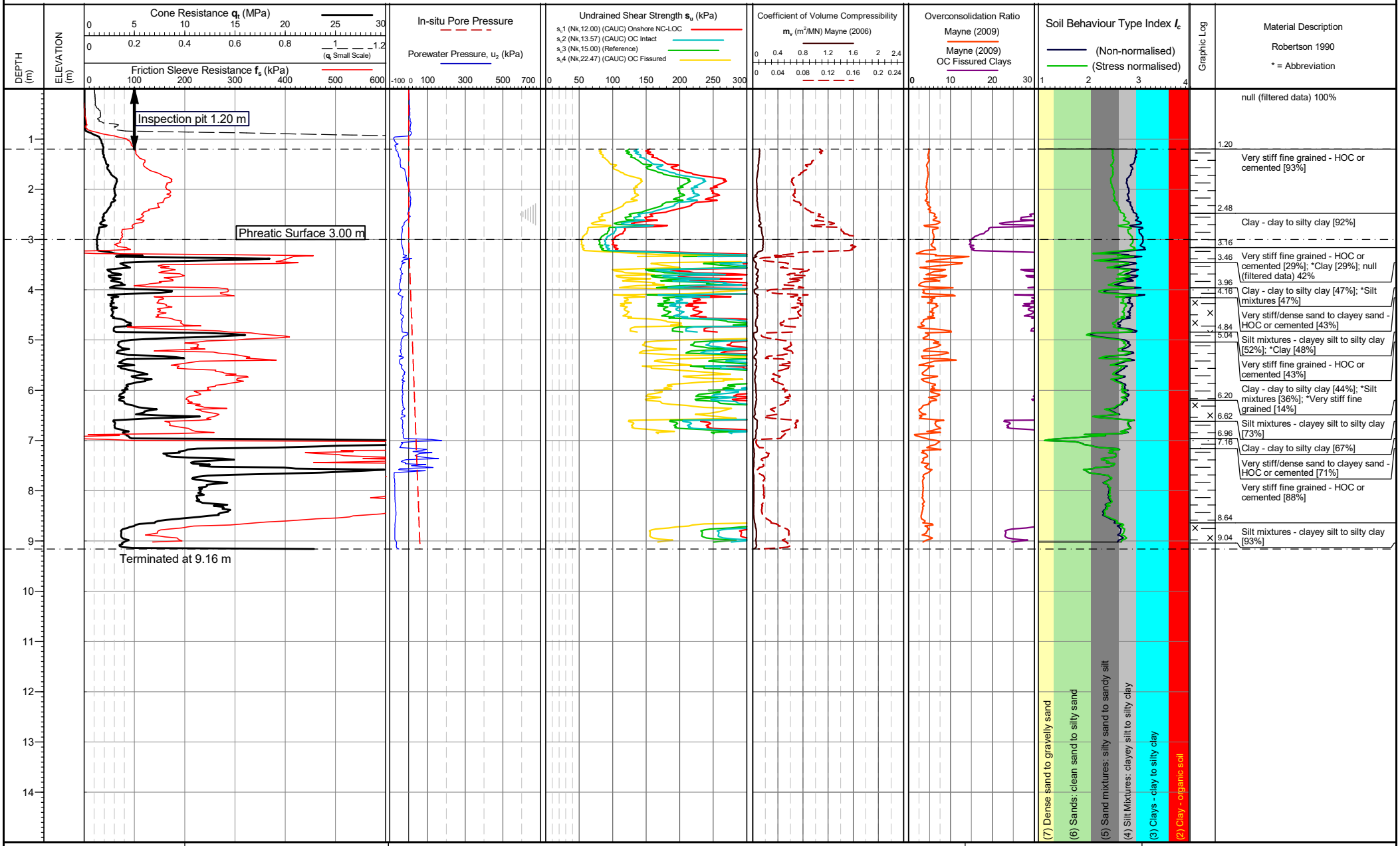
Lankelma Project Ref: P-107873-1

TEST ID: CPT06

LANKELMA

Project: SUNDERLAND BATTERY FARM

Client: SOLMEK



Cone area (mm2):
ConeID: S15-CFIPM(250).841
Operator: Jamie Butterworth
Rig Used: UK3
Date of test: 21/10/2021 12:05:59

Location: Tyne and Wear
Coordinates: ,
Elevation:
Coordinate system:

Remarks: *Phreatic surface origin: Arbitrary value

Termination Remark:
Tip load

Internal QA Diss.
Dissipation Test
Penetration Pause (<1cm/s)

Both drained and undrained parameters are calculated for mixed SBTs = Ic 2.40-2.70. See report text for methods and discussion of parameter evaluation.

Date of plot: 28-10-21

Checked by: Chris Player

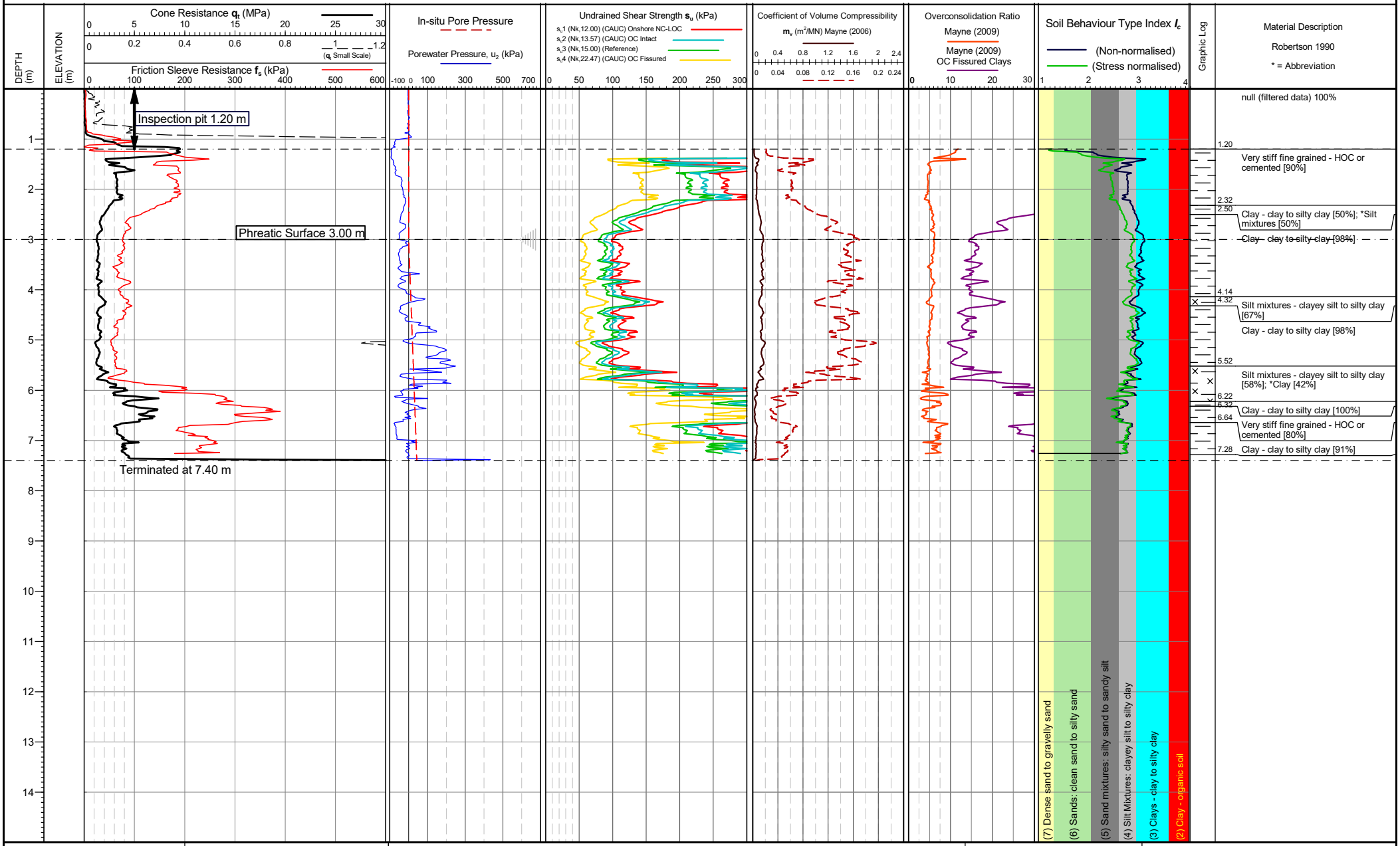
Lankelma Project Ref: P-107873-1

TEST ID: CPT07

LANKELMA

Project: SUNDERLAND BATTERY FARM

Client: SOLMEK



Cone area (mm2):
ConeID: S15-CFIPM(250).841
Operator: Jamie Butterworth
Rig Used: UK3
Date of test: 21/10/2021 15:24:09

Location: Tyne and Wear
Coordinates: ,
Elevation:
Coordinate system:

Remarks: *Phreatic surface origin: Arbitrary value

Termination Remark:
Tip load

Internal QA Diss.
Dissipation Test
Penetration Pause (<1cm/s)

Both drained and undrained parameters are calculated for mixed SBTs = Ic 2.40-2.70. See report text for methods and discussion of parameter evaluation.

Date of plot: 28-10-21

Checked by: Chris Player

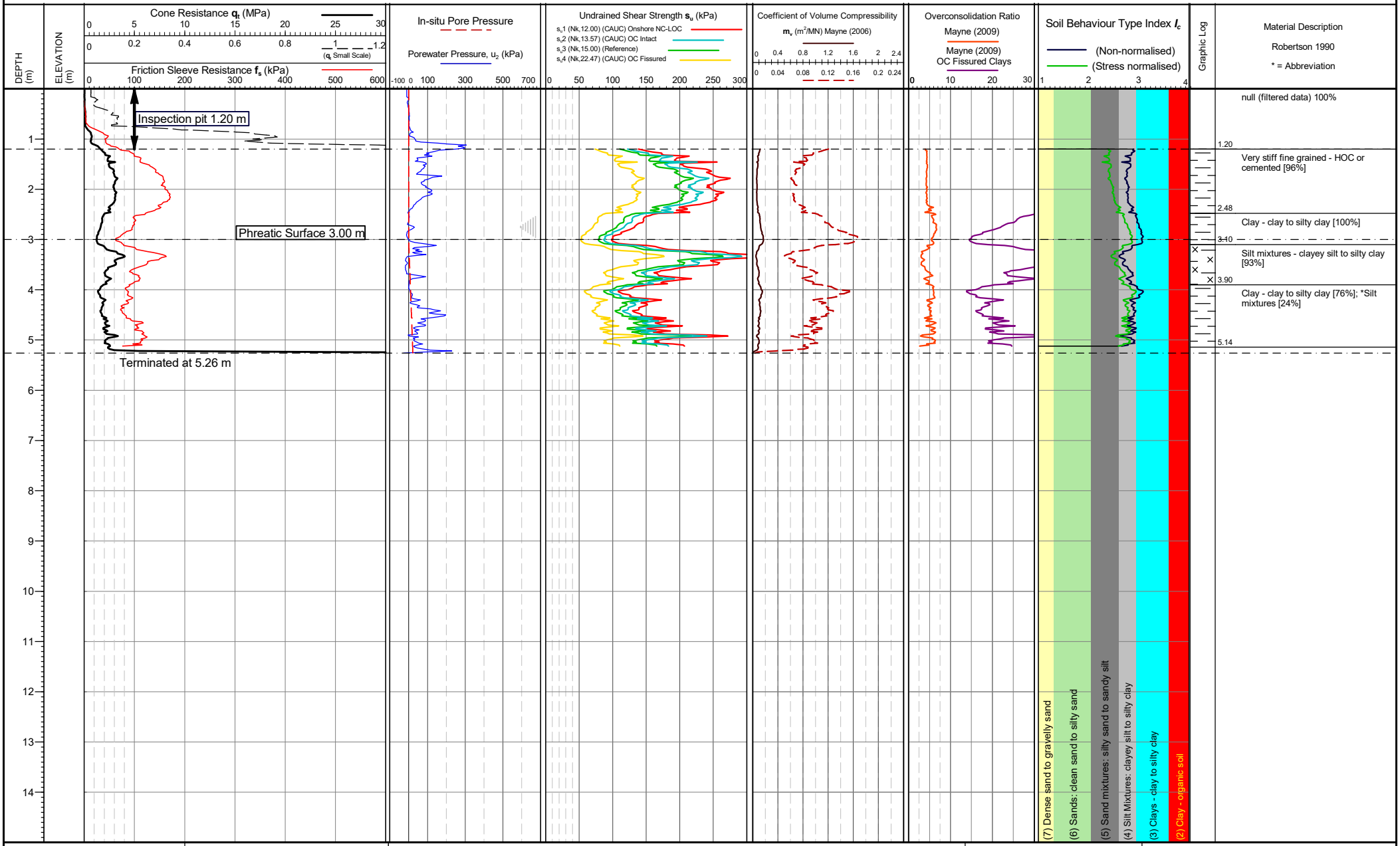
Lankelma Project Ref: P-107873-1

TEST ID: CPT08

LANKELMA

Project: SUNDERLAND BATTERY FARM

Client: SOLMEK



Cone area (mm2):
ConeID: S15-CFIPM(250).841
Operator: Jamie Butterworth
Rig Used: UK3
Date of test: 21/10/2021 13:06:21

Location: Tyne and Wear
Coordinates: ,
Elevation:
Coordinate system:

Remarks: *Phreatic surface origin: Arbitrary value

Termination Remark:
Tip load

Internal QA Diss.
Dissipation Test
Penetration Pause (<1cm/s)

Both drained and undrained parameters are calculated for mixed SBTs = Ic 2.40-2.70. See report text for methods and discussion of parameter evaluation.

Date of plot: 28-10-21

Checked by: Chris Player

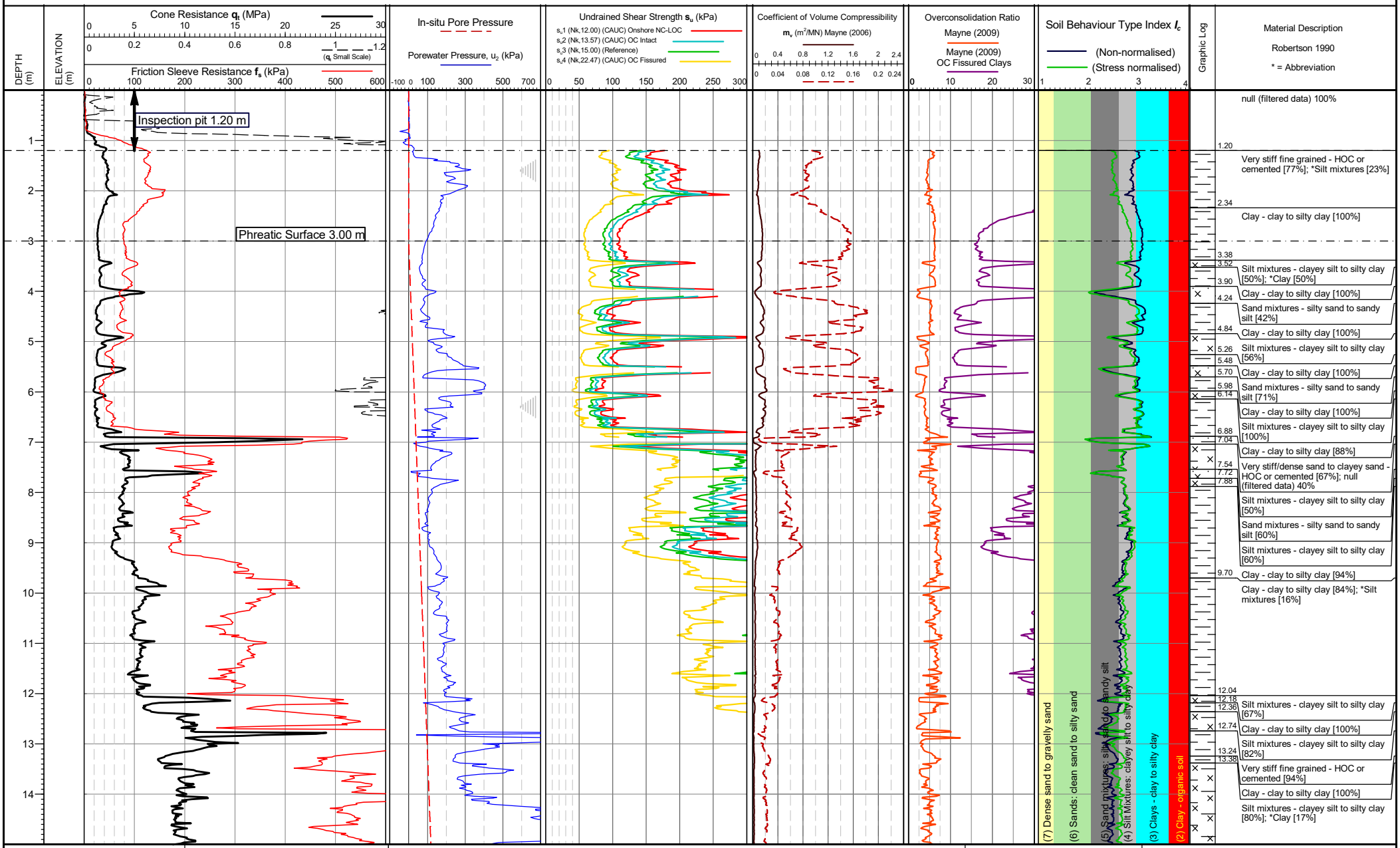
Lankelma Project Ref: P-107873-1

TEST ID: CPT09

LANKELMA

Project: SUNDERLAND BATTERY FARM

Client: SOLMEK



Cone area (mm2):
ConeID: S15-CFIPM(250).841
Operator: Jamie Butterworth
Rig Used: UK3
Date of test: 21/10/2021 14:04:50

Location: Tyne and Wear
Coordinates: ,
Elevation:
Coordinate system:

Remarks: *Phreatic surface origin: Arbitrary value

Termination Remark:
Lateral support

Internal QA Diss.
Dissipation Test
Penetration Pause (<1cm/s)

Both drained and undrained parameters are calculated for mixed SBTs = Ic 2.40-2.70. See report text for methods and discussion of parameter evaluation.

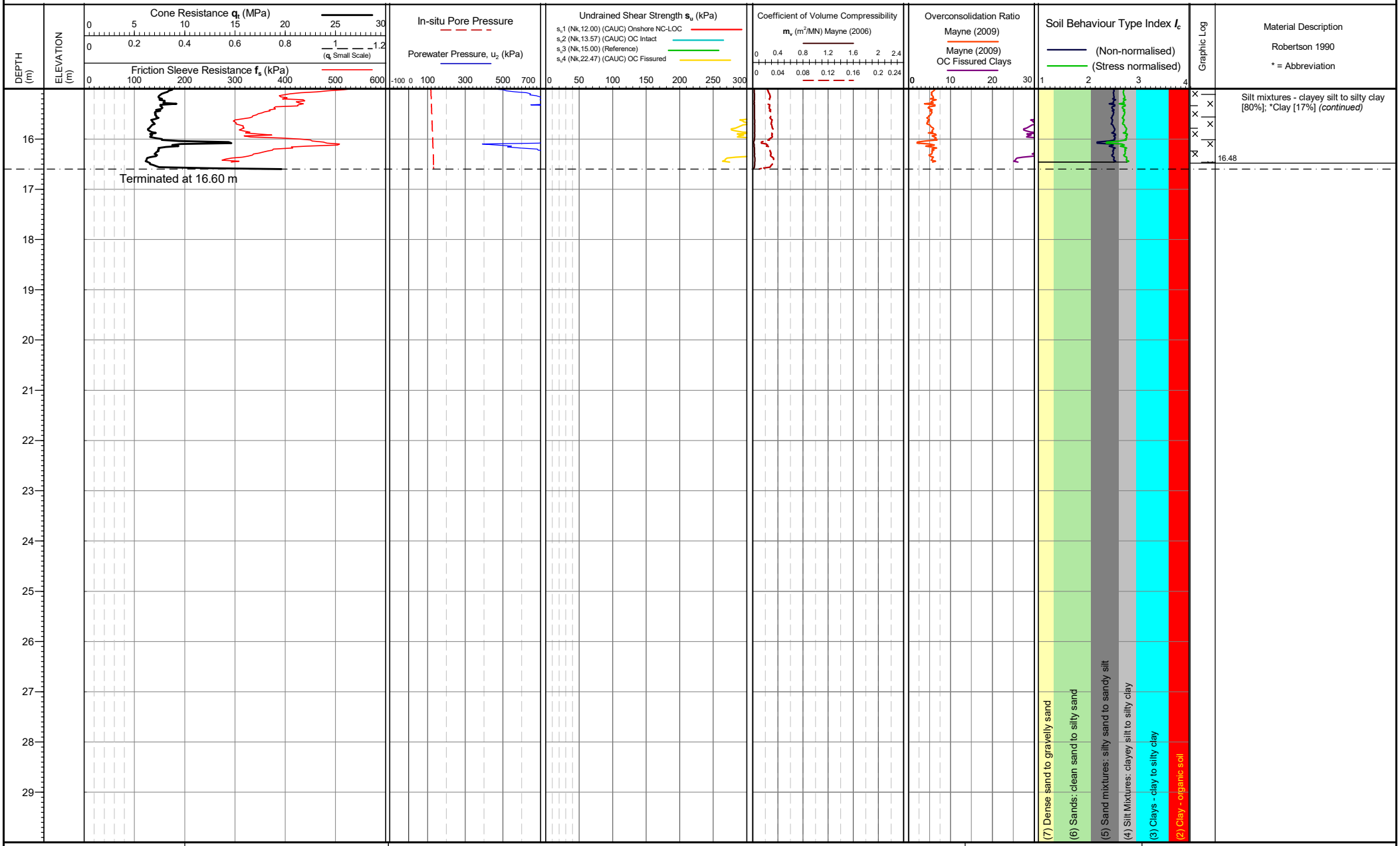
Date of plot: 28-10-21
Lankelma Project Ref: P-107873-1

Checked by:
Chris Player

TEST ID: CPT10

Project: SUNDERLAND BATTERY FARM

Client: SOLMEK



Cone area (mm2):
ConeID: S15-CFIPM(250).841
Operator: Jamie Butterworth
Rig Used: UK3
Date of test: 21/10/2021 14:04:50

Location: Tyne and Wear
Coordinates: ,
Elevation:
Coordinate system:

Remarks: *Phreatic surface origin: Arbitrary value

Termination Remark:
Lateral support

Internal QA Diss.
Dissipation Test
Penetration Pause (<1cm/s)

Both drained and undrained parameters are calculated for mixed SBTs = Ic 2.40-2.70. See report text for methods and discussion of parameter evaluation.

Date of plot: 28-10-21
Checked by: Chris Player

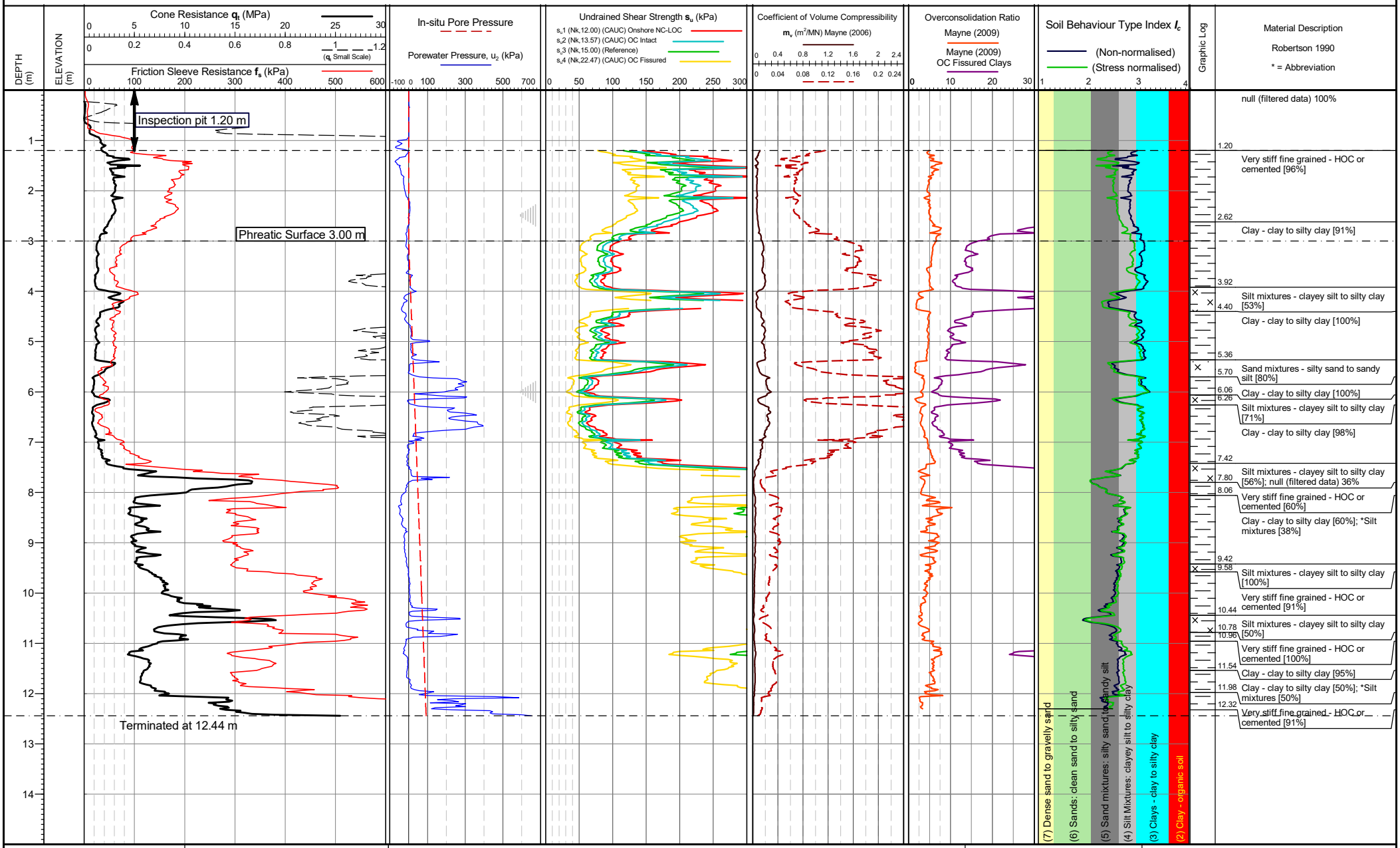
Lankelma Project Ref: P-107873-1

TEST ID: CPT10

LANKELMA

Project: SUNDERLAND BATTERY FARM

Client: SOLMEK



Cone area (mm2):
ConeID: S15-CFIPM(250).841
Operator: Jamie Butterworth
Rig Used: UK3
Date of test: 22/10/2021 10:33:54

Location: Tyne and Wear
Coordinates: ,
Elevation:
Coordinate system:

Remarks: *Phreatic surface origin: Arbitrary value

Termination Remark:
Lateral support

Internal QA Diss.
Dissipation Test
Penetration Pause (<1cm/s)

Both drained and undrained parameters are calculated for mixed SBTs = Ic 2.40-2.70. See report text for methods and discussion of parameter evaluation.

Date of plot: 28-10-21
Lankelma Project Ref: P-107873-1

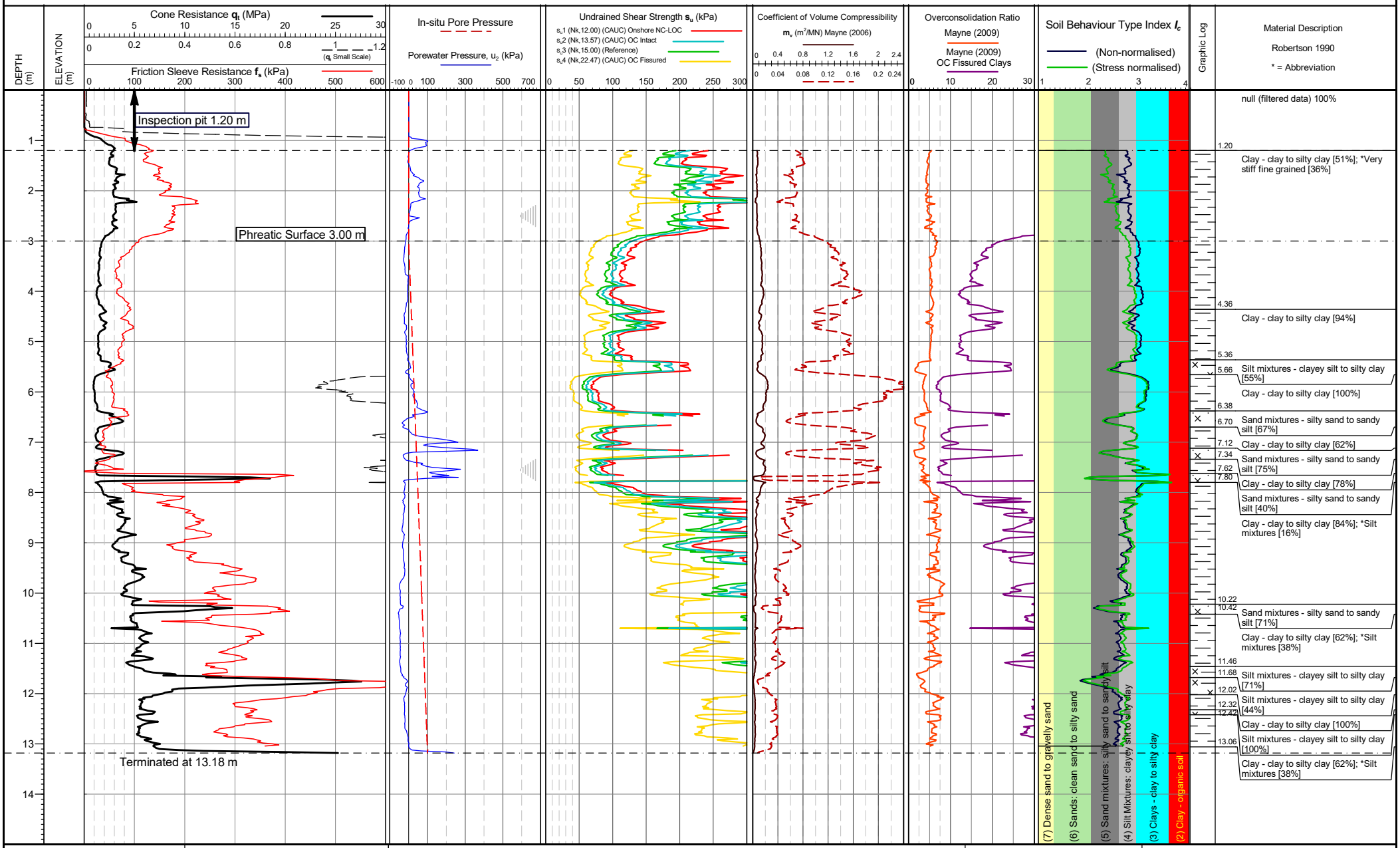
Checked by:
Chris Player

TEST ID: CPT11

LANKELMA

Project: SUNDERLAND BATTERY FARM

Client: SOLMEK



Cone area (mm2):
ConeID: S15-CFIPM(250).841
Operator: Jamie Butterworth
Rig Used: UK3
Date of test: 22/10/2021 09:02:06

Location: Tyne and Wear
Coordinates: ,
Elevation:
Coordinate system:

Remarks: *Phreatic surface origin: Arbitrary value

Termination Remark:
Lateral support

Internal QA Diss.
Dissipation Test
Penetration Pause (<1cm/s)

Both drained and undrained parameters are calculated for mixed SBTs = Ic 2.40-2.70. See report text for methods and discussion of parameter evaluation.

Date of plot: 28-10-21
Lankelma Project Ref: P-107873-1

Checked by:
Chris Player

TEST ID: CPT12

APPENDIX E INTERPRETATION RESULTS - SET 2

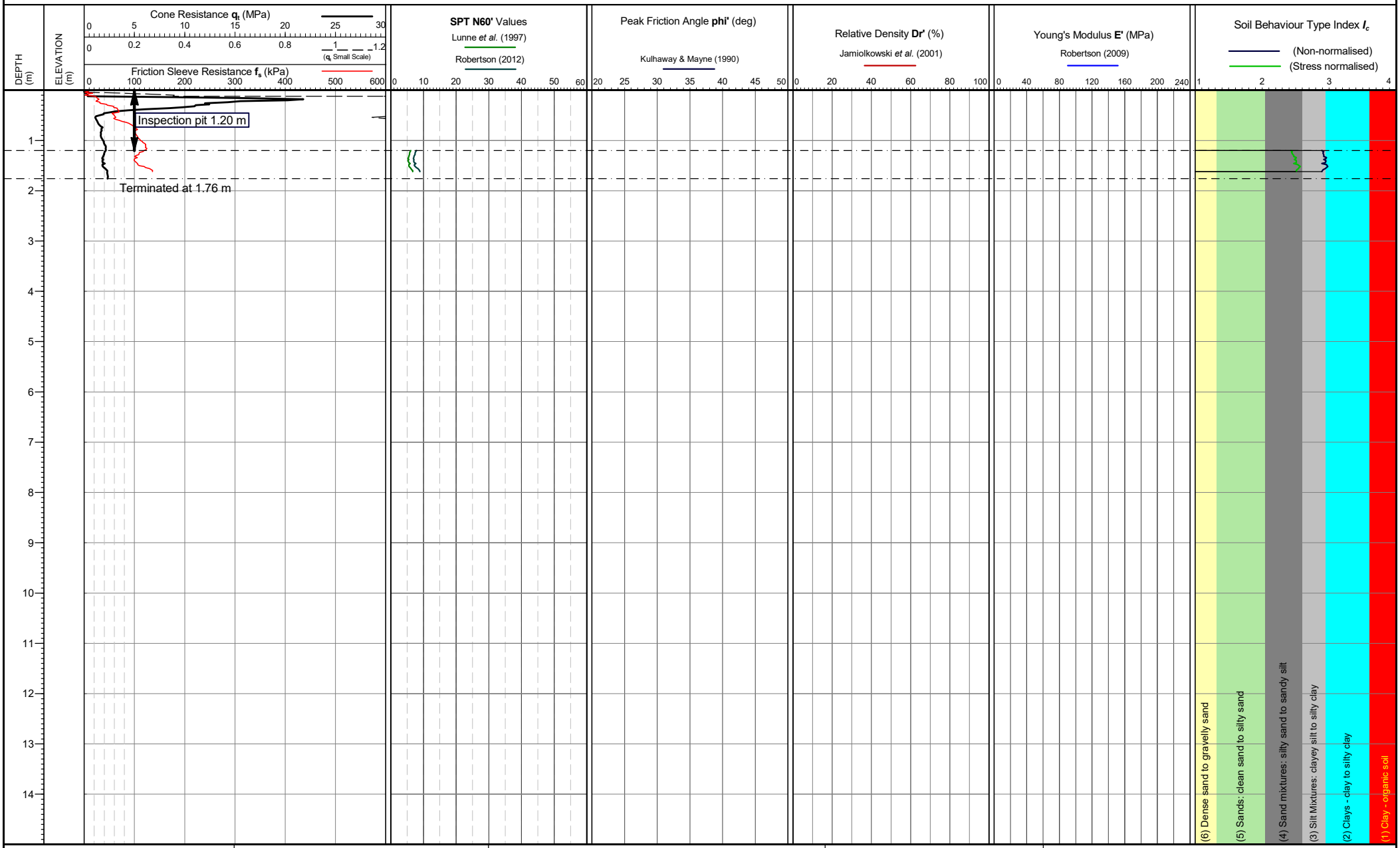
EQUIVALENT SPT N60
PEAK FRICTION ANGLE
RELATIVE DENSITY
YOUNG'S MODULUS

Plots are provided for all locations

LANKELMA

Project: SUNDERLAND BATTERY FARM

Client: SOLMEK



Cone area (mm2):
Cone ID: S15-CFIPM(250).841
Operator: Jamie Butterworth
Date of test: 21/10/2021 09:31:13

Location: Tyne and Wear
Coordinates: ,
Elevation:
Coordinate system:

Both drained and undrained parameters are calculated for mixed SBTs = Ic 2.40-2.70. See report text for methods and discussion of parameter evaluation.

Date of plot: 28-10-21
Checked by: Chris Player

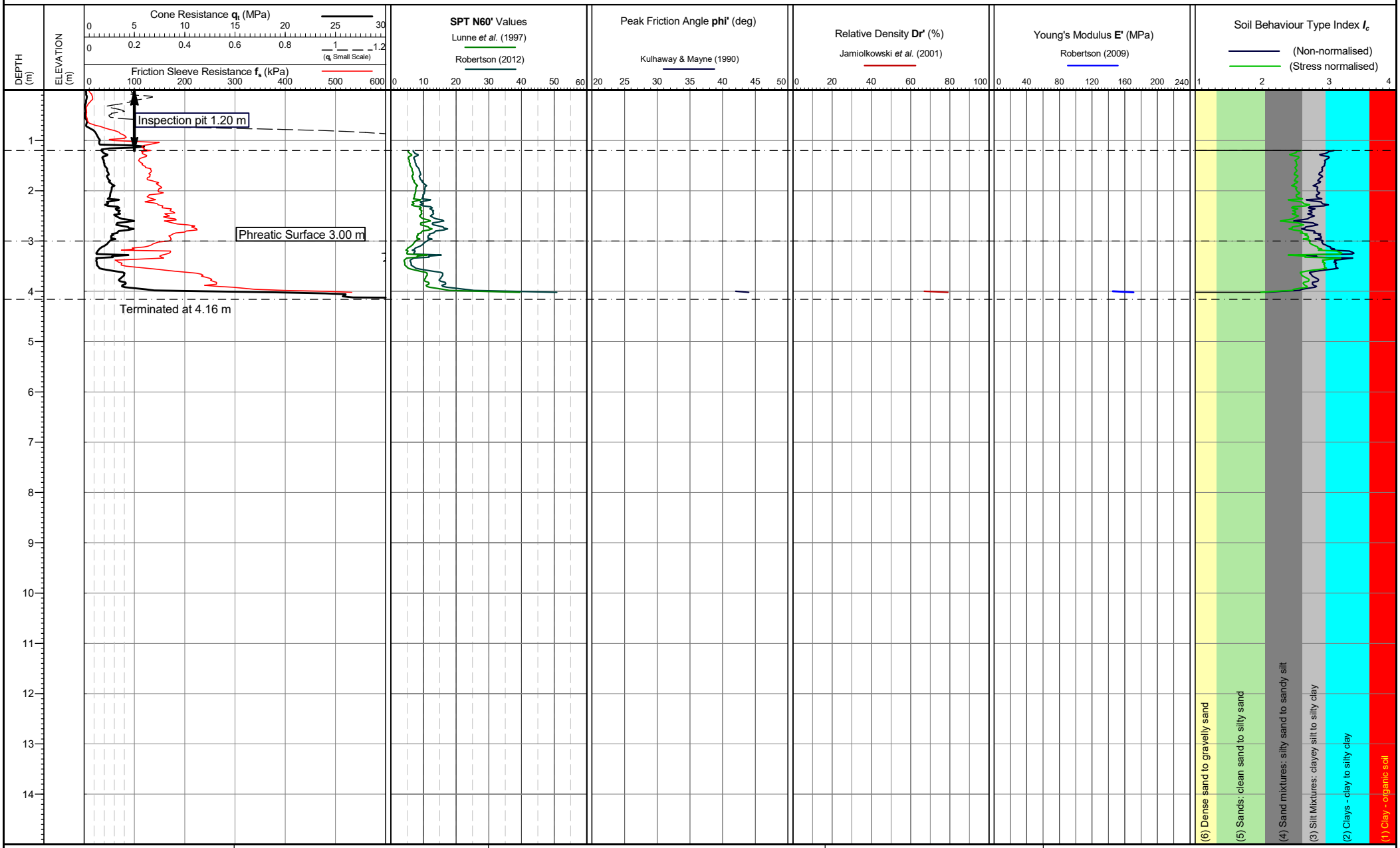
Lankelma Project Ref: P-107873-1

TEST ID: CPT01

LANKELMA

Project: SUNDERLAND BATTERY FARM

Client: SOLMEK



Cone area (mm2):
Cone ID: S15-CFIPM(250).841
Operator: Jamie Butterworth
Date of test: 21/10/2021 09:44:59

Location: Tyne and Wear
Coordinates: ,
Elevation:
Coordinate system:

Both drained and undrained parameters are calculated for mixed SBTs = Ic 2.40-2.70. See report text for methods and discussion of parameter evaluation.

Date of plot: 28-10-21
Checked by: Chris Player

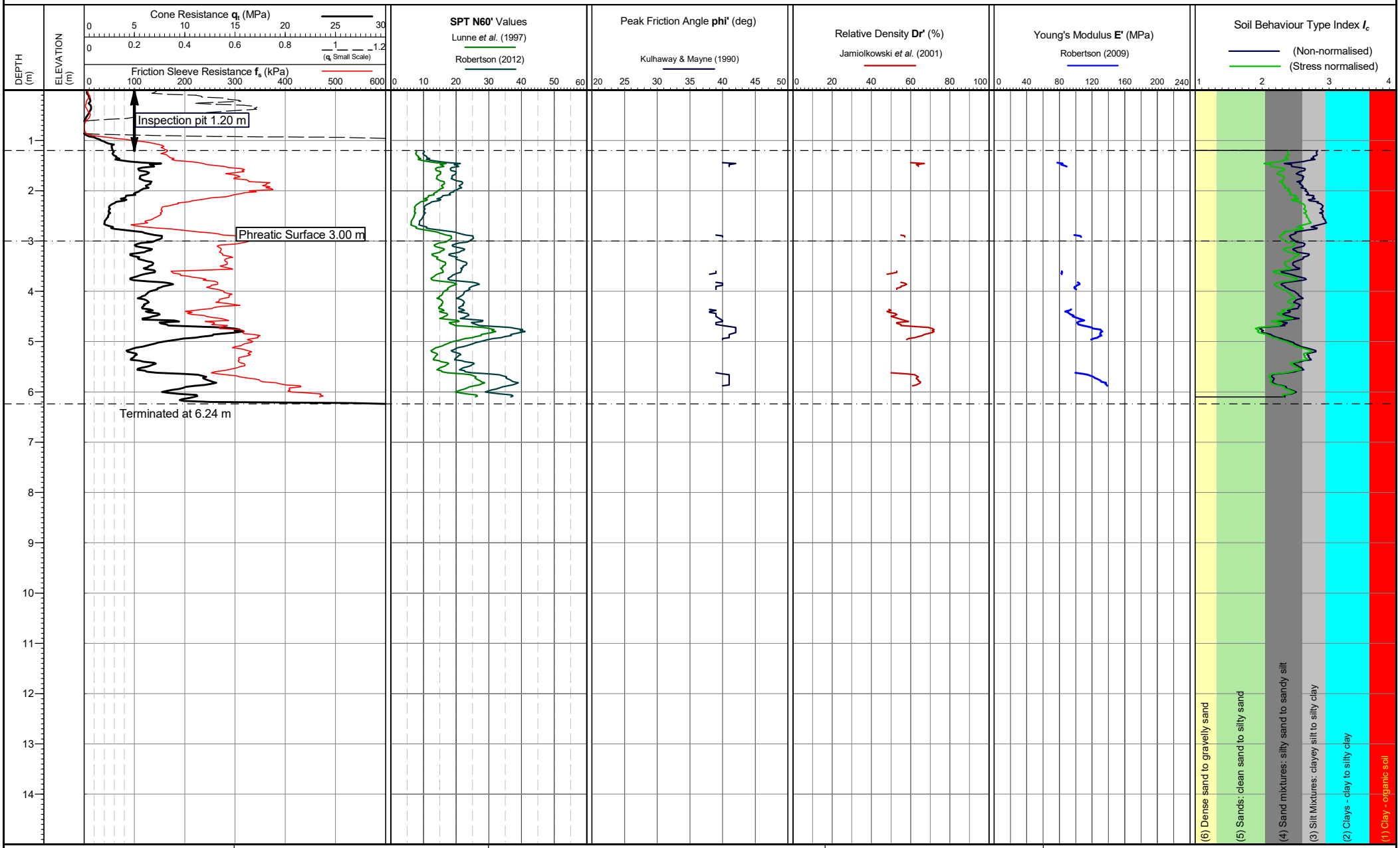
Lankelma Project Ref: P-107873-1

TEST ID: CPT02

LANKELMA

Project: SUNDERLAND BATTERY FARM

Client: SOLMEK



Cone area (mm2):
Cone ID: S15-CFIPM(250).841
Operator: Jamie Butterworth
Date of test: 22/10/2021 12:38:33

Location: Tyne and Wear
Coordinates: ,
Elevation:
Coordinate system:

Both drained and undrained parameters are calculated for mixed SBTs = Ic 2.40-2.70. See report text for methods and discussion of parameter evaluation.

Date of plot: 28-10-21
Checked by: Chris Player

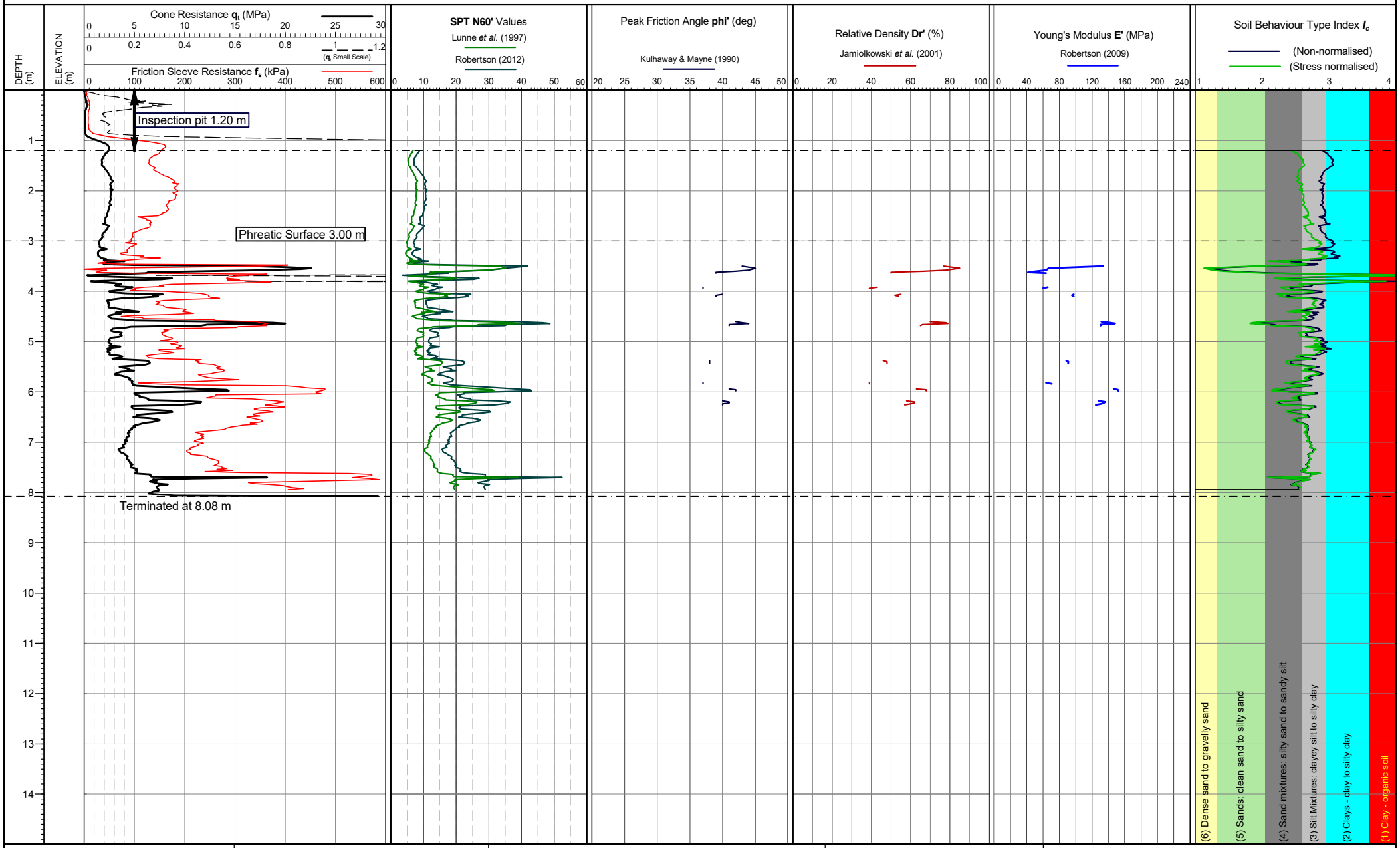
Lankelma Project Ref: P-107873-1

TEST ID: CPT03

LANKELMA

Project: SUNDERLAND BATTERY FARM

Client: SOLMEK



Cone area (mm2):
Cone ID: S15-CFIPM(250).841
Operator: Jamie Butterworth
Date of test: 22/10/2021 11:34:24

Location: Tyne and Wear
Coordinates: ,
Elevation:
Coordinate system:

Both drained and undrained parameters are calculated for mixed SBTs = Ic 2.40-2.70. See report text for methods and discussion of parameter evaluation.

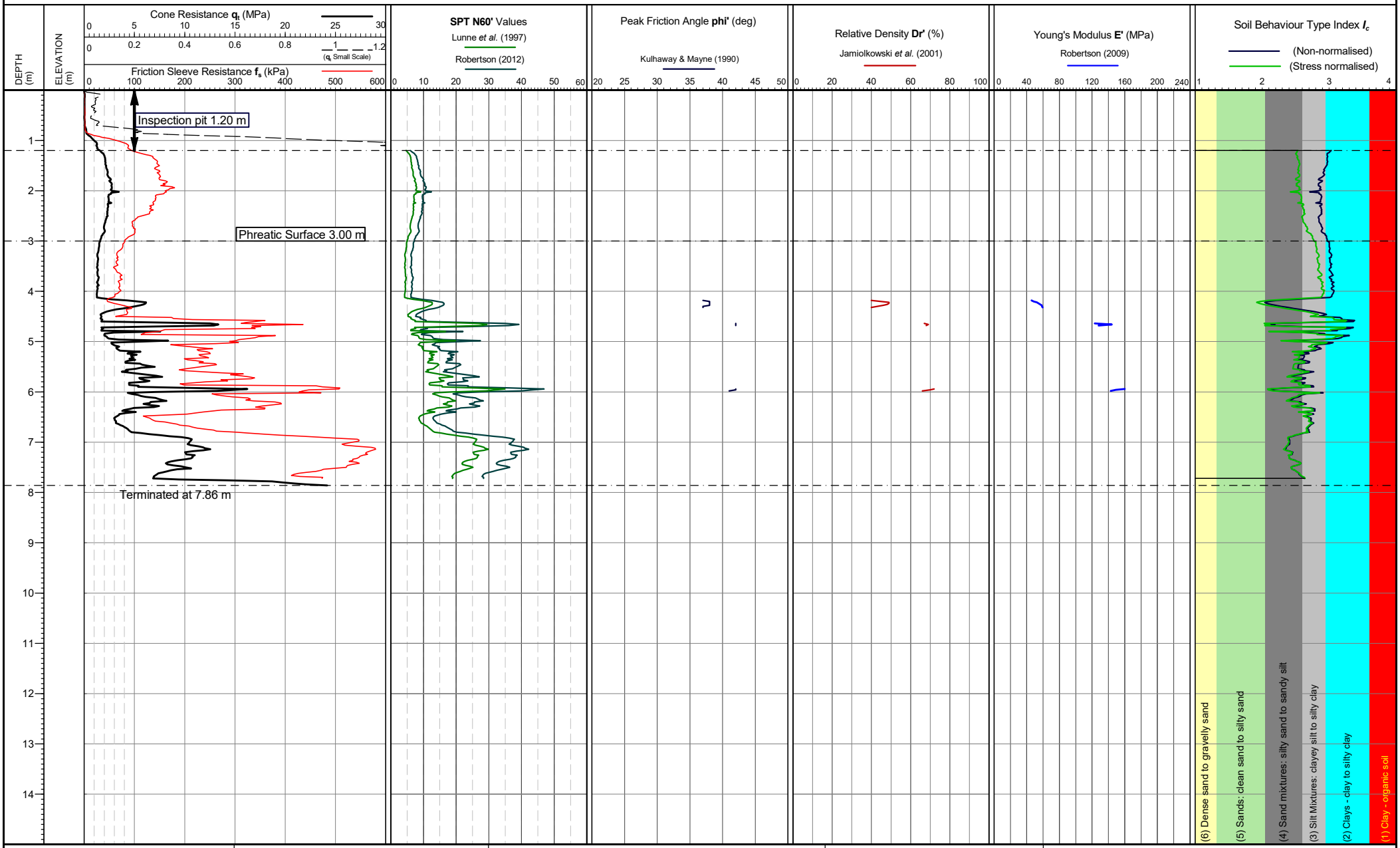
Date of plot: 28-10-21
Checked by: Chris Player

Lankelma Project Ref: P-107873-1

TEST ID: CPT04

Project: SUNDERLAND BATTERY FARM

Client: SOLMEK



Cone area (mm2):
Cone ID: S15-CFIPM(250).841
Operator: Jamie Butterworth
Date of test: 22/10/2021 08:10:07

Location: Tyne and Wear
Coordinates: ,
Elevation:
Coordinate system:

Both drained and undrained parameters are calculated for mixed SBTs = Ic 2.40-2.70. See report text for methods and discussion of parameter evaluation.

Date of plot: 28-10-21
Checked by: Chris Player

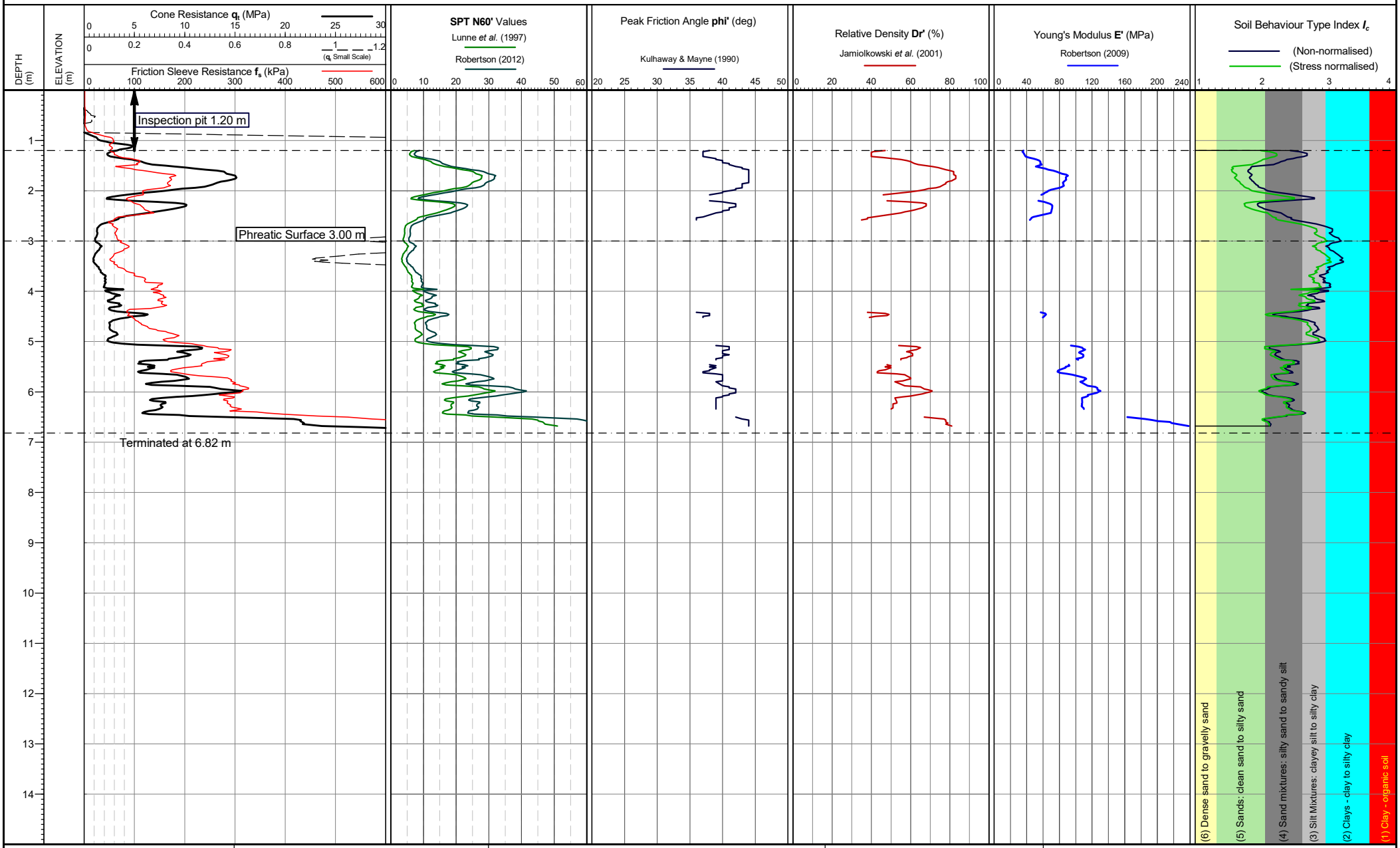
Lankelma Project Ref: P-107873-1

TEST ID: CPT05

LANKELMA

Project: SUNDERLAND BATTERY FARM

Client: SOLMEK



Cone area (mm2):
Cone ID: S15-CFIPM(250).841
Operator: Jamie Butterworth
Date of test: 21/10/2021 10:52:30

Location: Tyne and Wear
Coordinates: ,
Elevation:
Coordinate system:

Both drained and undrained parameters are calculated for mixed SBTs = Ic 2.40-2.70. See report text for methods and discussion of parameter evaluation.

Date of plot: 28-10-21
Checked by: Chris Player

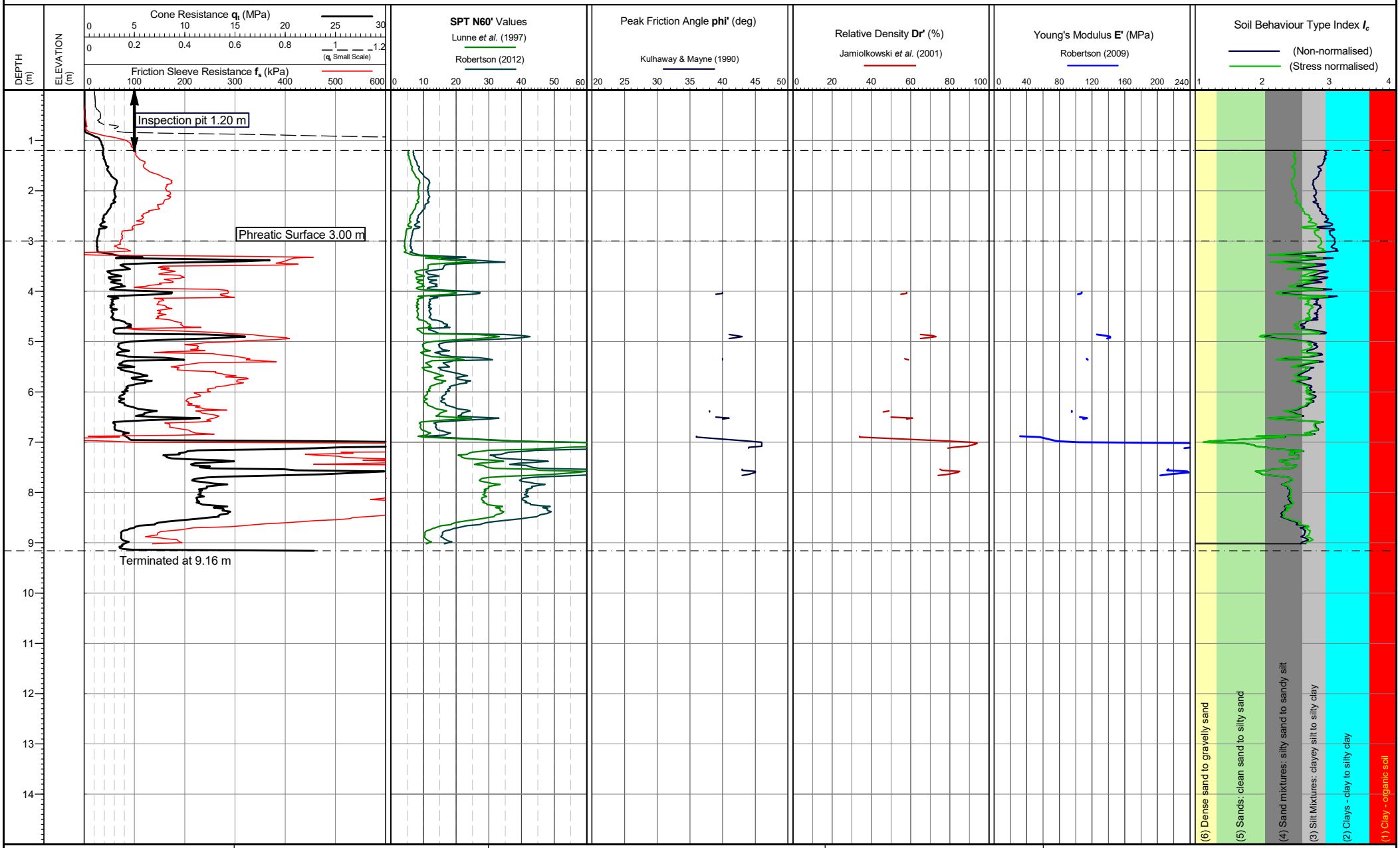
Lankelma Project Ref: P-107873-1

TEST ID: CPT06

LANKELMA

Project: SUNDERLAND BATTERY FARM

Client: SOLMEK



Cone area (mm2):
Cone ID: S15-CFIPM(250).841
Operator: Jamie Butterworth
Date of test: 21/10/2021 12:05:59

Location: Tyne and Wear
Coordinates: ,
Elevation:
Coordinate system:

Both drained and undrained parameters are calculated for mixed SBTs = Ic 2.40-2.70. See report text for methods and discussion of parameter evaluation.

Date of plot: 28-10-21
Checked by: Chris Player

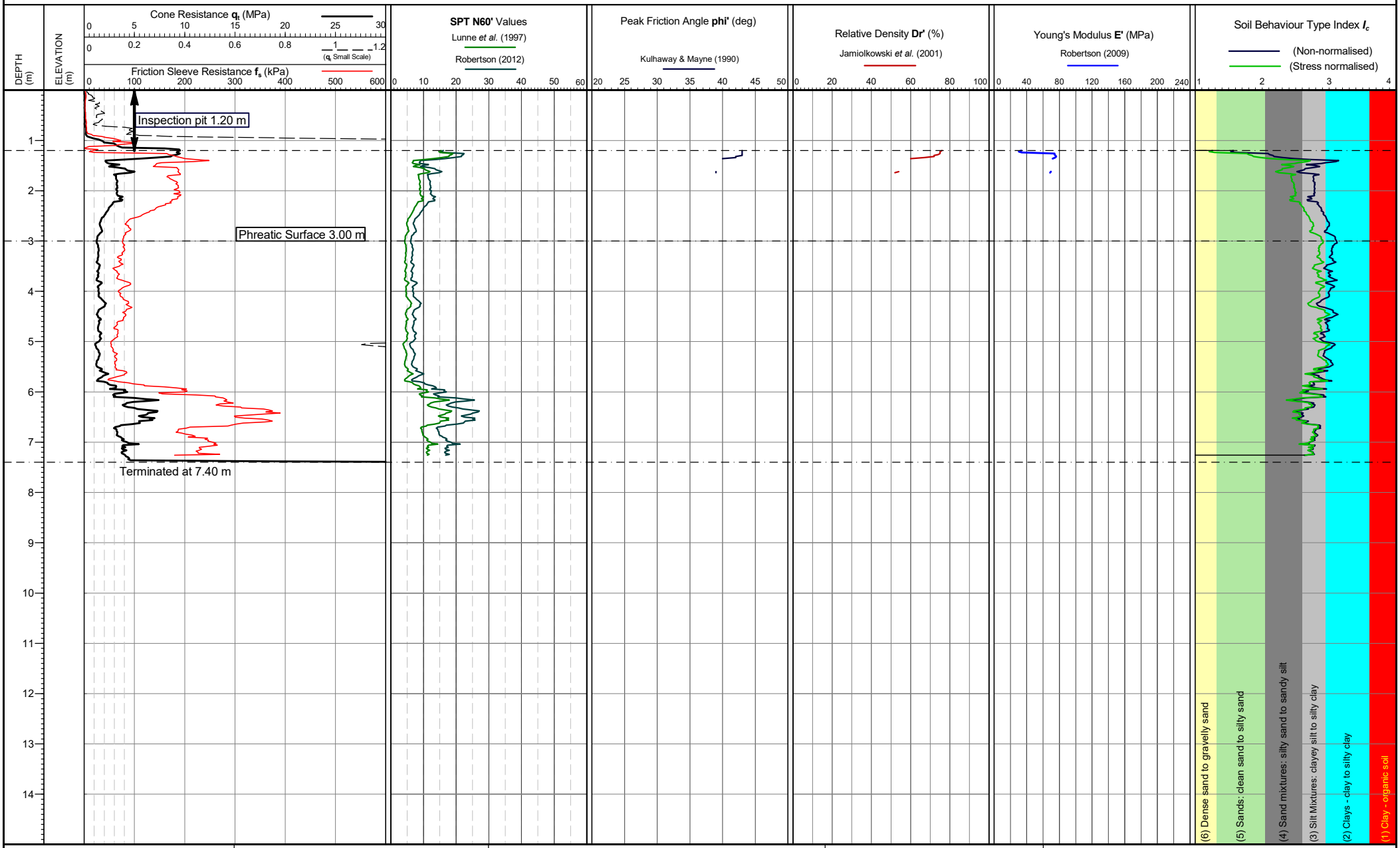
Lankelma Project Ref: P-107873-1

TEST ID: CPT07

LANKELMA

Project: SUNDERLAND BATTERY FARM

Client: SOLMEK



Cone area (mm2):
Cone ID: S15-CFIPM(250).841
Operator: Jamie Butterworth
Date of test: 21/10/2021 15:24:09

Location: Tyne and Wear
Coordinates: ,
Elevation:
Coordinate system:

Both drained and undrained parameters are calculated for mixed SBTs = Ic 2.40-2.70. See report text for methods and discussion of parameter evaluation.

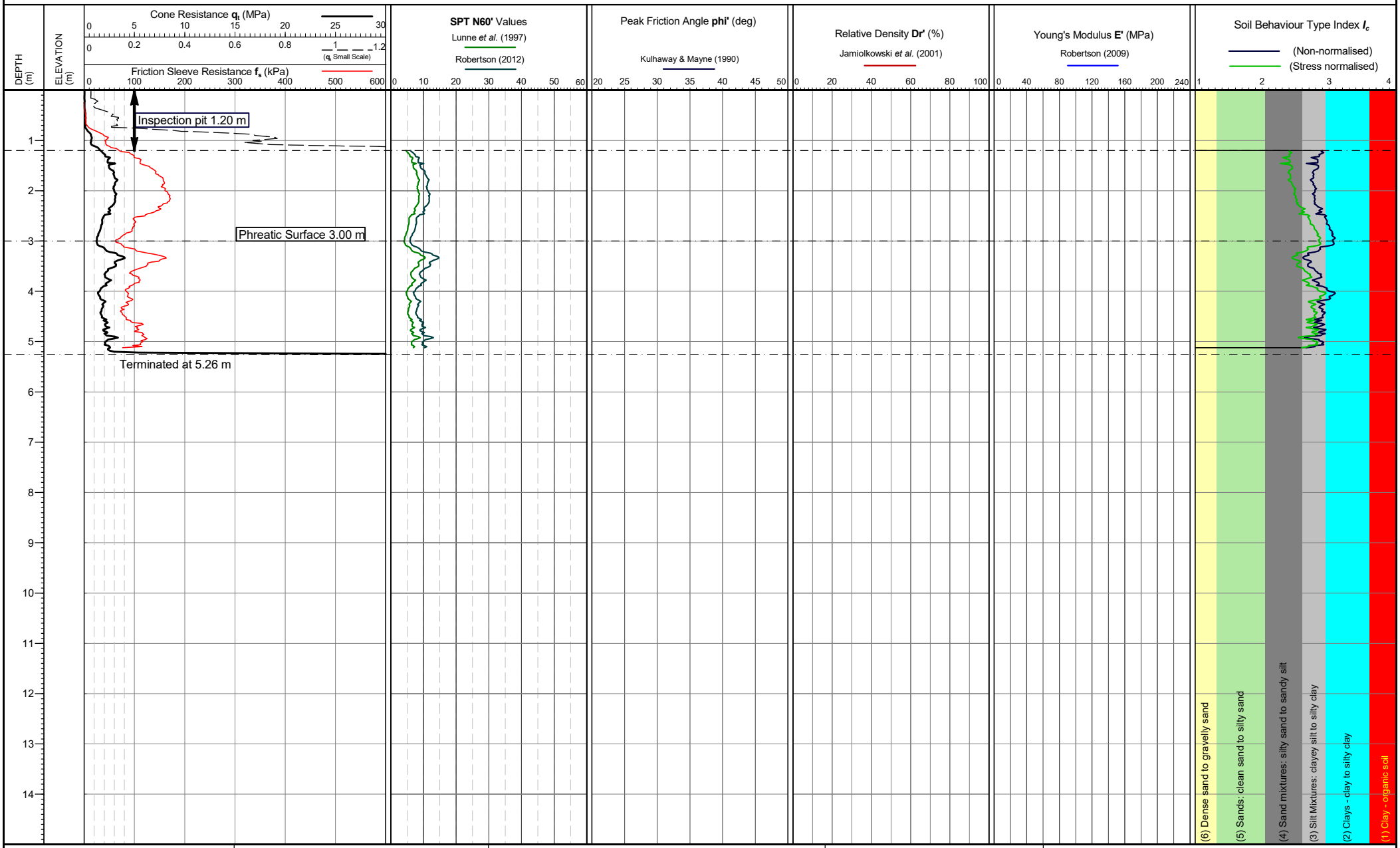
Date of plot: 28-10-21
Checked by: Chris Player

Lankelma Project Ref: P-107873-1

TEST ID: CPT08

Project: SUNDERLAND BATTERY FARM

Client: SOLMEK



Cone area (mm2):
Cone ID: S15-CFIPM(250).841
Operator: Jamie Butterworth
Date of test: 21/10/2021 13:06:21

Location: Tyne and Wear
Coordinates: ,
Elevation:
Coordinate system:

Both drained and undrained parameters are calculated for mixed SBTs = Ic 2.40-2.70. See report text for methods and discussion of parameter evaluation.

Date of plot: 28-10-21
Checked by: Chris Player

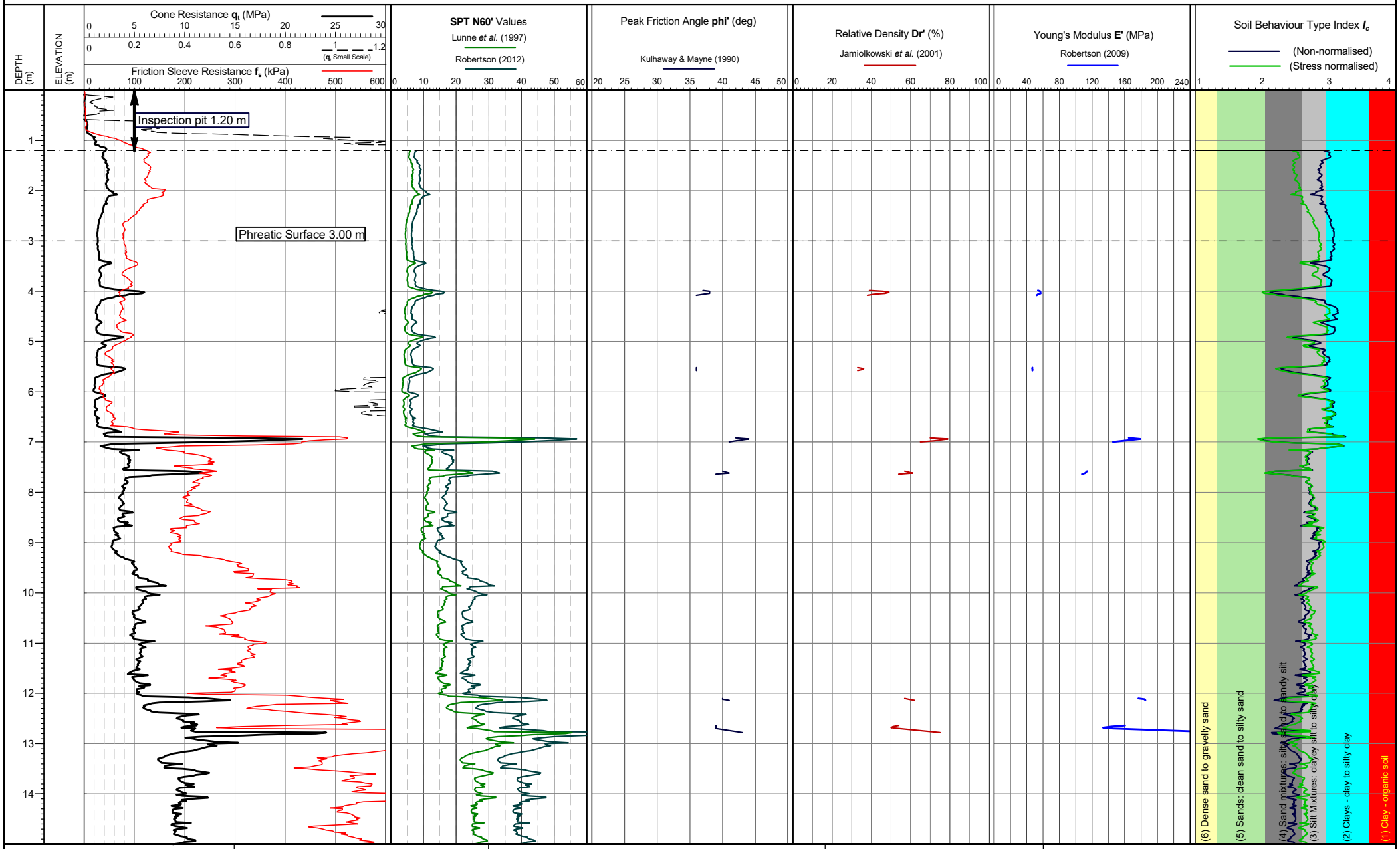
Lankelma Project Ref: P-107873-1

TEST ID: CPT09

LANKELMA

Project: SUNDERLAND BATTERY FARM

Client: SOLMEK



Cone area (mm2):
Cone ID: S15-CFIPM(250).841
Operator: Jamie Butterworth
Date of test: 21/10/2021 14:04:50

Location: Tyne and Wear
Coordinates: ,
Elevation:
Coordinate system:

Both drained and undrained parameters are calculated for mixed SBTs = Ic 2.40-2.70. See report text for methods and discussion of parameter evaluation.

Date of plot: 28-10-21
Checked by: Chris Player

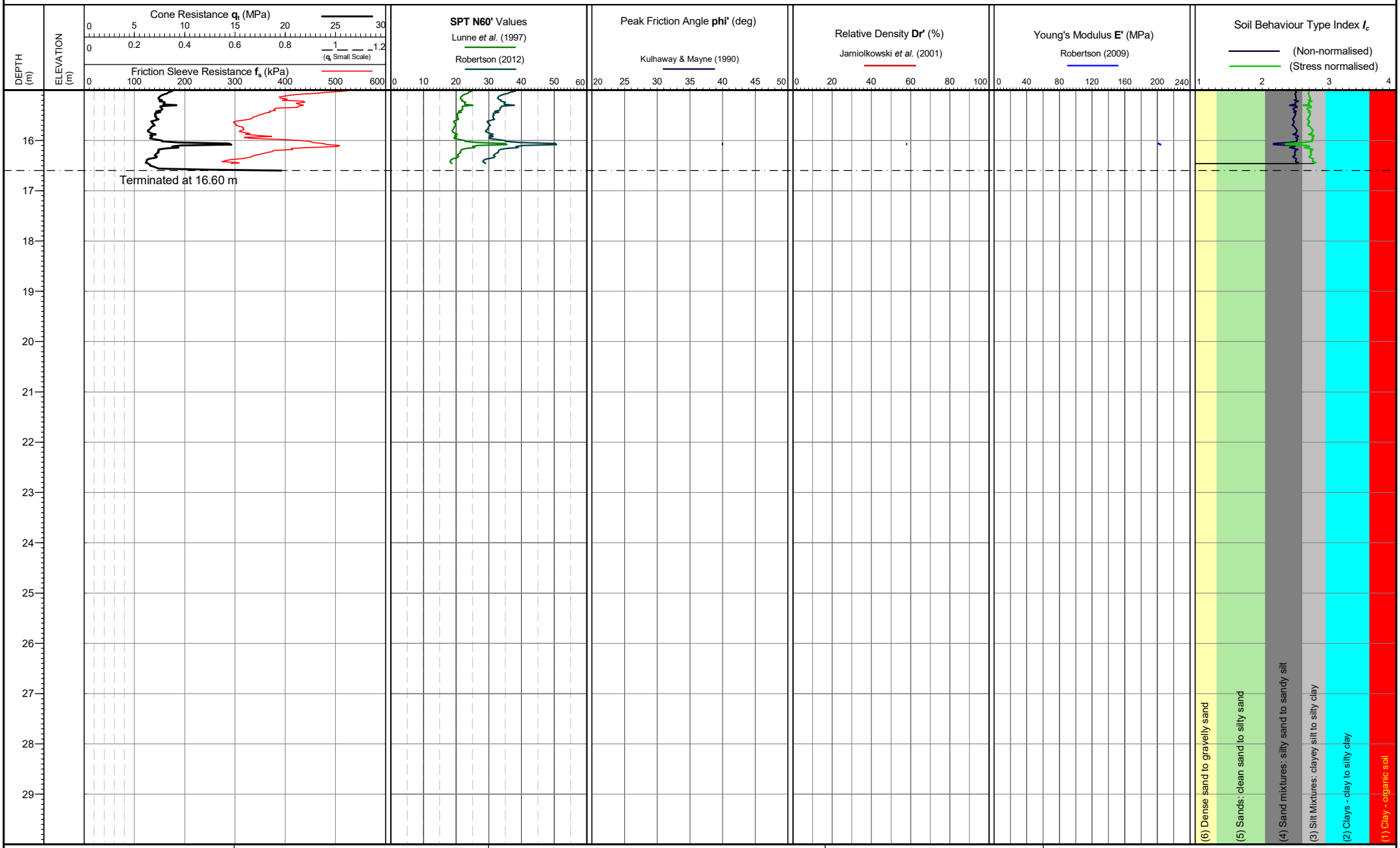
Lankelma Project Ref: P-107873-1

TEST ID: CPT10

LANKELMA

Project: SUNDERLAND BATTERY FARM

Client: SOLMEK



Cone area (mm2):
Cone ID: S15-CFIPM(250).841
Operator: Jamie Butterworth
Date of test: 21/10/2021 14:04:50

Location: Tyne and Wear
Coordinates: ,
Elevation:
Coordinate system:

Both drained and undrained parameters are calculated for mixed SBTs = Ic 2.40-2.70. See report text for methods and discussion of parameter evaluation.

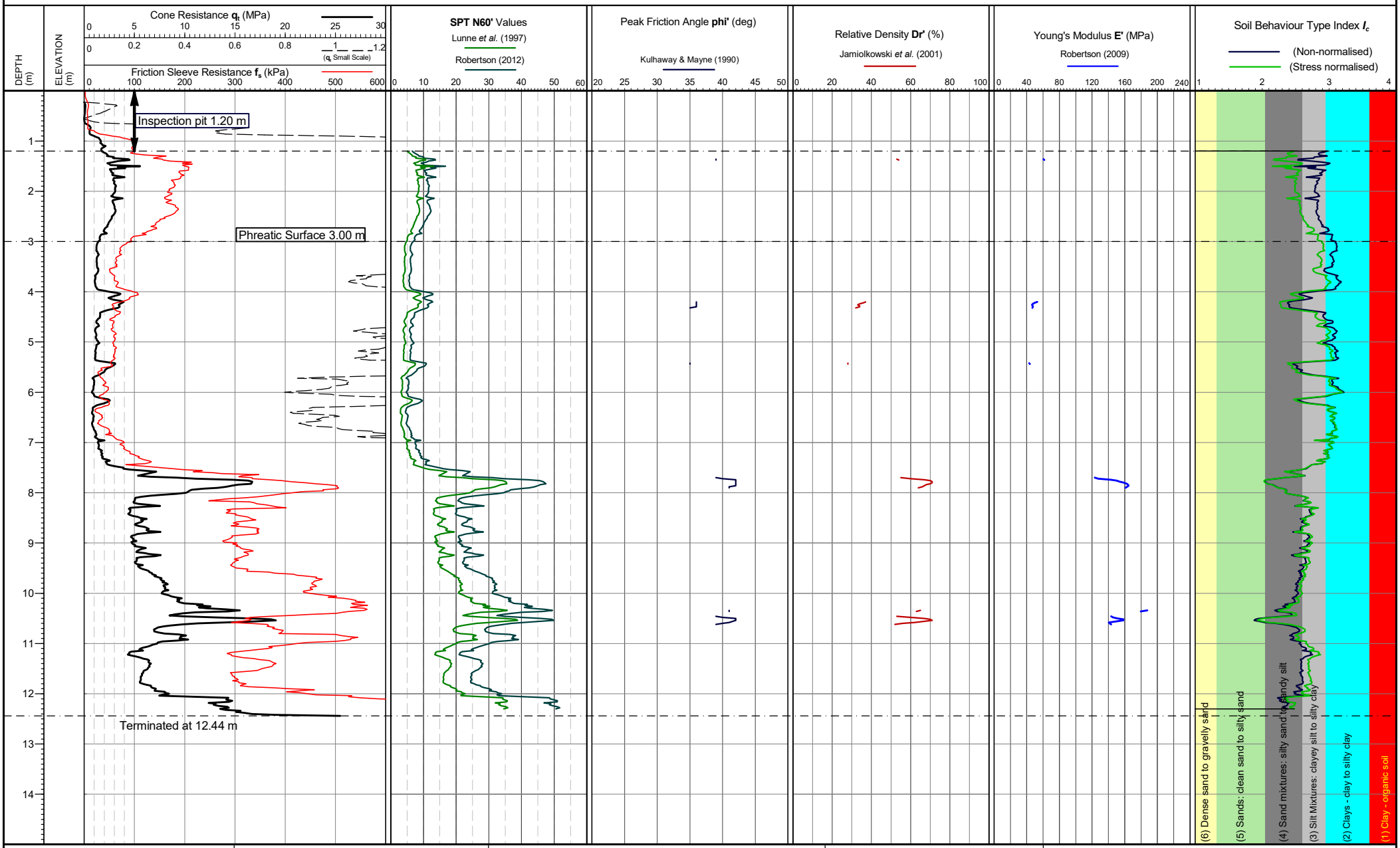
Date of plot: 28-10-21
Checked by: Chris Player

Lankelma Project Ref: P-107873-1

TEST ID: CPT10

Project: SUNDERLAND BATTERY FARM

Client: SOLMEK



Cone area (mm2):
Cone ID: S15-CFIPM(250).841
Operator: Jamie Butterworth
Date of test: 22/10/2021 10:33:54

Location: Tyne and Wear
Coordinates: ,
Elevation:
Coordinate system:

Both drained and undrained parameters are calculated for mixed SBTs = Ic 2.40-2.70. See report text for methods and discussion of parameter evaluation.

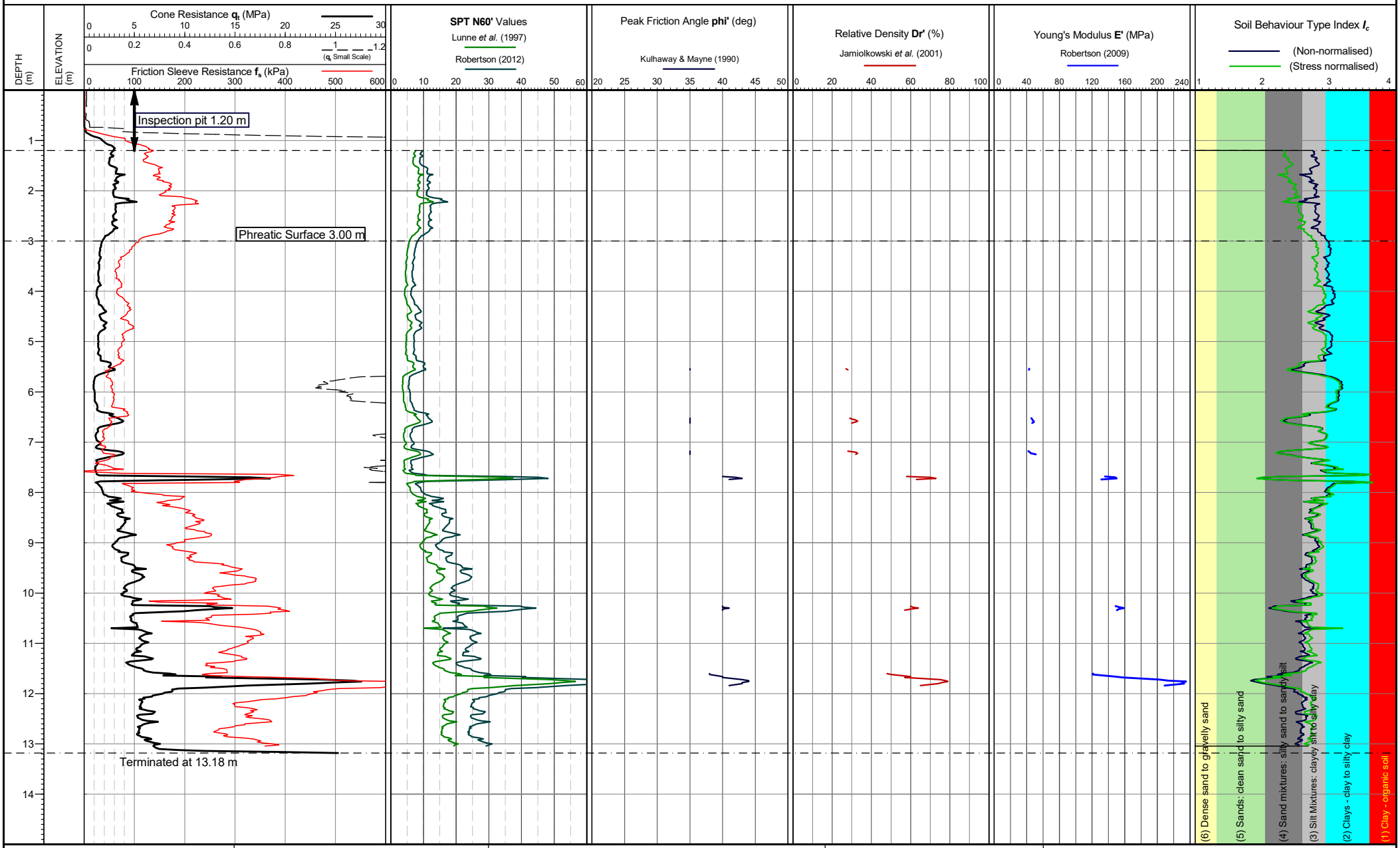
Date of plot: 28-10-21
Checked by: Chris Player

Lankelma Project Ref: P-107873-1

TEST ID: CPT11

Project: SUNDERLAND BATTERY FARM

Client: SOLMEK



Cone area (mm2):
Cone ID: S15-CFIPM(250).841
Operator: Jamie Butterworth
Date of test: 22/10/2021 09:02:06

Location: Tyne and Wear
Coordinates: ,
Elevation:
Coordinate system:

Both drained and undrained parameters are calculated for mixed SBTs = Ic 2.40-2.70. See report text for methods and discussion of parameter evaluation.

Date of plot: 28-10-21
Checked by: Chris Player

Lankelma Project Ref: P-107873-1

TEST ID: CPT12

APPENDIX G

SOLMEK

GAS MONITORING RESULTS

Project number	S211001
Project name	Envision, Sunderland
Client	Wates, Sunderland
Visit no	1
Date	12/11/2021
Equipment	GFM 435 Gas Analyser
Operator	LO

Weather Conditions	Cloudy
Ground Conditions	Wet
Ambient Atmospheric Pressure	996
Regional Pressure Trend	Rising

Position	Flow	Pressure	CH4		CO2		O2 (% v/v)	CO (ppm)	H2S (ppm)	Groundwater Level (mbgl)	Depth to Base (mbgl)	Notes
			(% v/v)	GSV (l/hr)	(% v/v)	GSV (l/hr)						
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	0.8	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	Unable 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

CH_4 = Methane, **CO_2** = Carbon Dioxide, **O_2** = Oxygen, **CO** = Carbon Monoxide, **H_2S** = Hydrogen Sulphide, **GSV** = Gas Screening Value (If no flow is recorded a value of 0.1 is assumed), ND = Not Detected, * = not measured, N/A = Not applicable, % = % by volume, mbgl = m below ground level, ppm = parts per million.

SOLMEK

GAS MONITORING RESULTS

Project number	S211001
Project name	Envision, Sunderland
Client	Wates, Sunderland
Visit no	2
Date	22/11/2021
Equipment	GFM 435 Gas Analyser
Operator	LO

Weather Conditions	Sunny
Ground Conditions	Wet
Ambient Atmospheric Pressure	1026
Regional Pressure Trend	Falling

Position	Flow	Pressure	CH4		CO2		O2 (% v/v)	CO (ppm)	H2S (ppm)	Groundwater Level (mbgl)	Depth to Base (mbgl)	Notes
			(% v/v)	GSV (l/hr)	(% v/v)	GSV (l/hr)						
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	0.8	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

CH_4 = Methane, **CO_2** = Carbon Dioxide, **O_2** = Oxygen, **CO** = Carbon Monoxide, **H_2S** = Hydrogen Sulphide, **GSV** = Gas Screening Value (If no flow is recorded a value of 0.1 is assumed), ND = Not Detected, * = not measured, N/A = Not applicable, % = % by volume, mbgl = m below ground level, ppm = parts per million.

SOLMEK

GAS MONITORING RESULTS

Project number	S211001
Project name	Envision, Sunderland
Client	Wates, Sunderland
Visit no	3
Date	29/11/2021
Equipment	GFM 435 Gas Analyser
Operator	LO

Weather Conditions	Cloudy
Ground Conditions	Wet/Frost
Ambient Atmospheric Pressure	1003
Regional Pressure Trend	Falling

Position	Flow	Pressure	CH4		CO2		O2 (% v/v)	CO (ppm)	H2S (ppm)	Groundwater Level (mbgl)	Depth to Base (mbgl)	Notes
			(% v/v)	GSV (l/hr)	(% v/v)	GSV (l/hr)						
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	Borehole has been Demolished											
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

CH_4 = Methane, **CO_2** = Carbon Dioxide, **O_2** = Oxygen, **CO** = Carbon Monoxide, **H_2S** = Hydrogen Sulphide, **GSV** = Gas Screening Value (If no flow is recorded a value of 0.1 is assumed), ND = Not Detected, * = not measured, N/A = Not applicable, % = % by volume, mbgl = m below ground level, ppm = parts per million.

SOLMEK

GAS MONITORING RESULTS

Project number	S211001
Project name	Envision, Sunderland
Client	Wates, Sunderland
Visit no	4
Date	06/12/2021
Equipment	GFM 435 Gas Analyser
Operator	LO

Weather Conditions	Cloudy
Ground Conditions	Wet
Ambient Atmospheric Pressure	994
Regional Pressure Trend	Falling

Position	Flow	Pressure	CH4		CO2		O2 (% v/v)	CO (ppm)	H2S (ppm)	Groundwater Level (mbgl)	Depth to Base (mbgl)	Notes
			(% v/v)	GSV (l/hr)	(% v/v)	GSV (l/hr)						
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	Borehole has been Demolished											
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

CH_4 = Methane, **CO_2** = Carbon Dioxide, **O_2** = Oxygen, **CO** = Carbon Monoxide, **H_2S** = Hydrogen Sulphide, **GSV** = Gas Screening Value (If no flow is recorded a value of 0.1 is assumed), ND = Not Detected, * = not measured, N/A = Not applicable, % = % by volume, mbgl = m below ground level, ppm = parts per million.

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

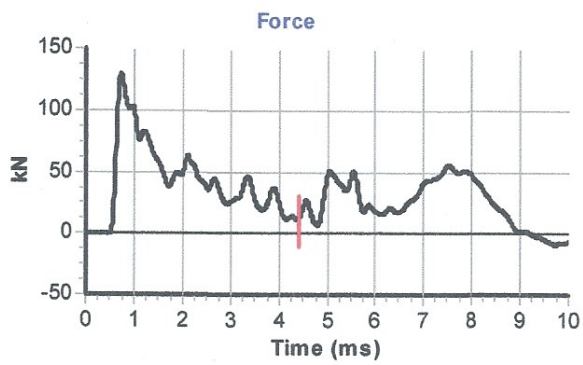
Diameter d_r (mm):	54
Wall Thickness t_r (mm):	6.3
Assumed Modulus E_a (GPa):	208
Accelerometer No.1:	7080
Accelerometer No.2:	11609

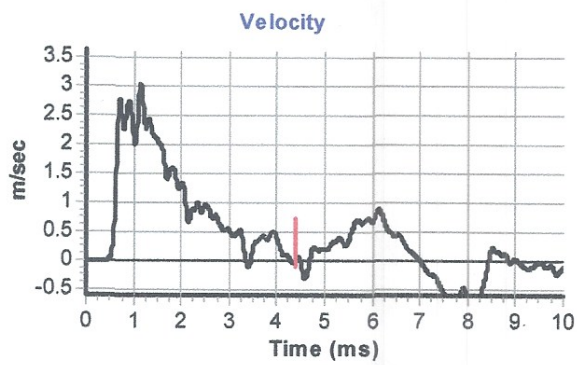
SPT Hammer Information

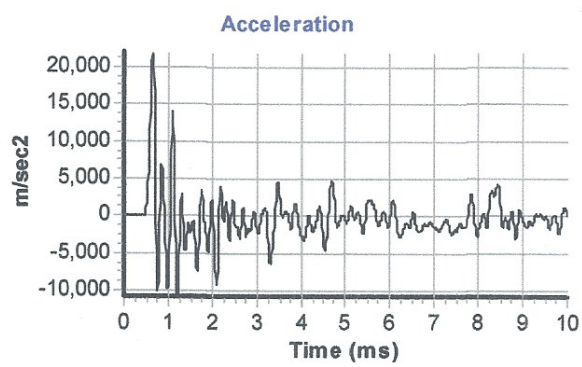
Hammer Mass m (kg):	63.5
Falling Height h (mm):	760
SPT String Length L (m):	10.0

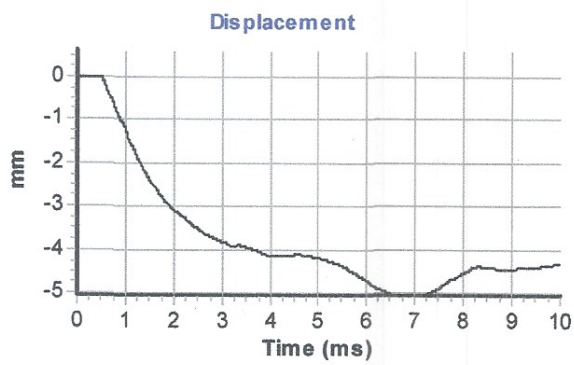
Comments / Location

BAINBRIDGE BROTHERS - 73694









Calculations

Area of Rod A (mm2):	944
Theoretical Energy E_{theor} (J):	473
Measured Energy E_{meas} (J):	301

Energy Ratio E_r (%): **64**

Signed: J.LOCK

Title: FITTER

The recommended calibration interval is 12 months

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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

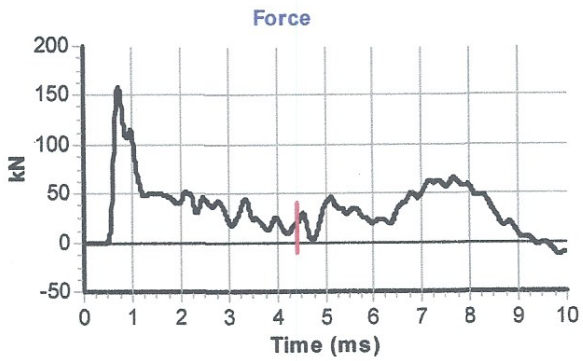
Diameter d_r (mm):	54
Wall Thickness t_r (mm):	6.3
Assumed Modulus E_a (GPa):	208
Accelerometer No.1:	7080
Accelerometer No.2:	11609

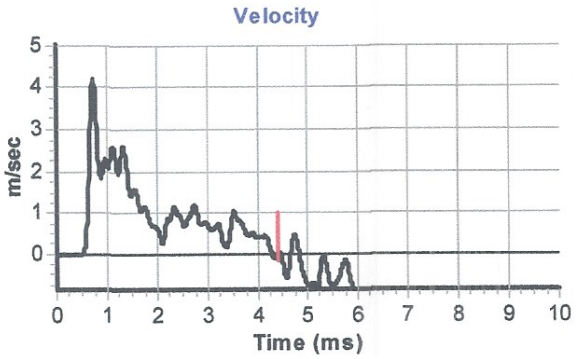
SPT Hammer Information

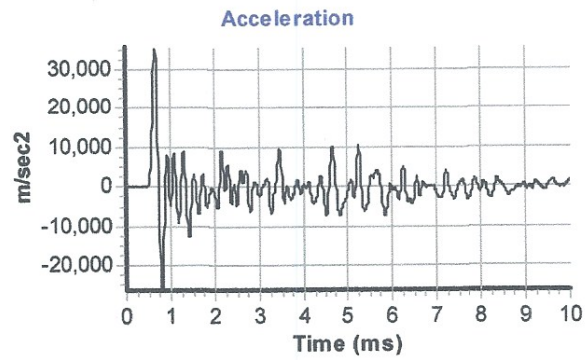
Hammer Mass m (kg):	63.5
Falling Height h (mm):	760
SPT String Length L (m):	10.0

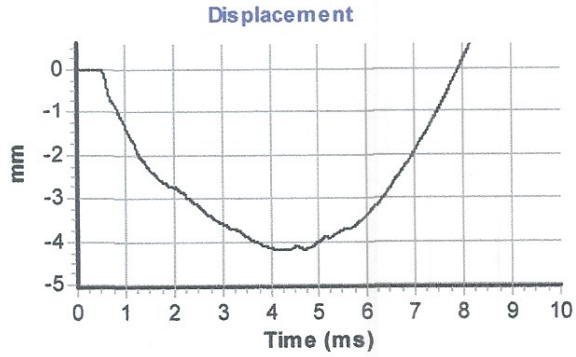
Comments / Location

BAINBRIDGE BROTHERS - 73694









Calculations

Area of Rod A (mm2):	944
Theoretical Energy E_{theor} (J):	473
Measured Energy E_{meas} (J):	298

Energy Ratio E_r (%): **63**

Signed: J.LOCK

Title: FITTER

The recommended calibration interval is 12 months

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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

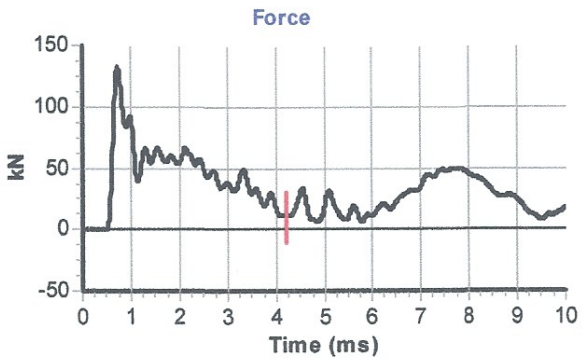
Diameter d_r (mm):	54
Wall Thickness t_r (mm):	6.3
Assumed Modulus E_a (GPa):	208
Accelerometer No.1:	7080
Accelerometer No.2:	11609

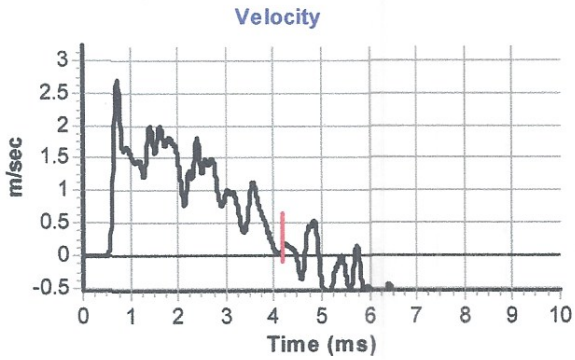
SPT Hammer Information

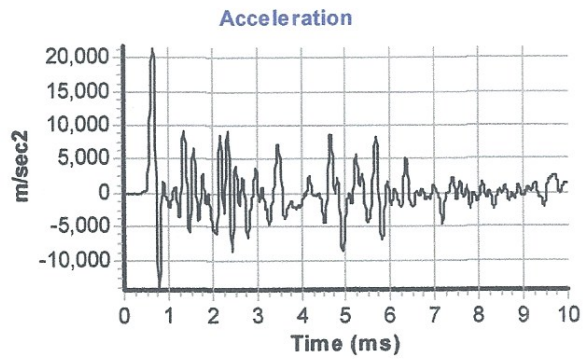
Hammer Mass m (kg):	63.5
Falling Height h (mm):	760
SPT String Length L (m):	10.0

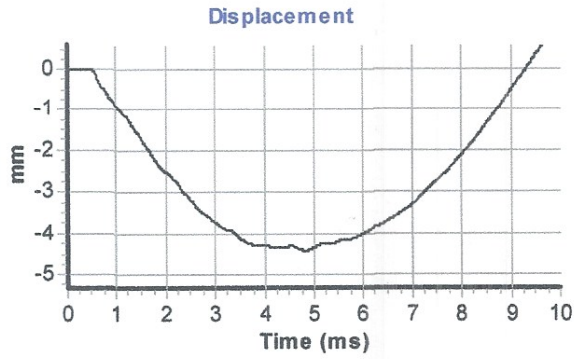
Comments / Location

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

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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 = Probability 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 ($CaCO_3$) 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.

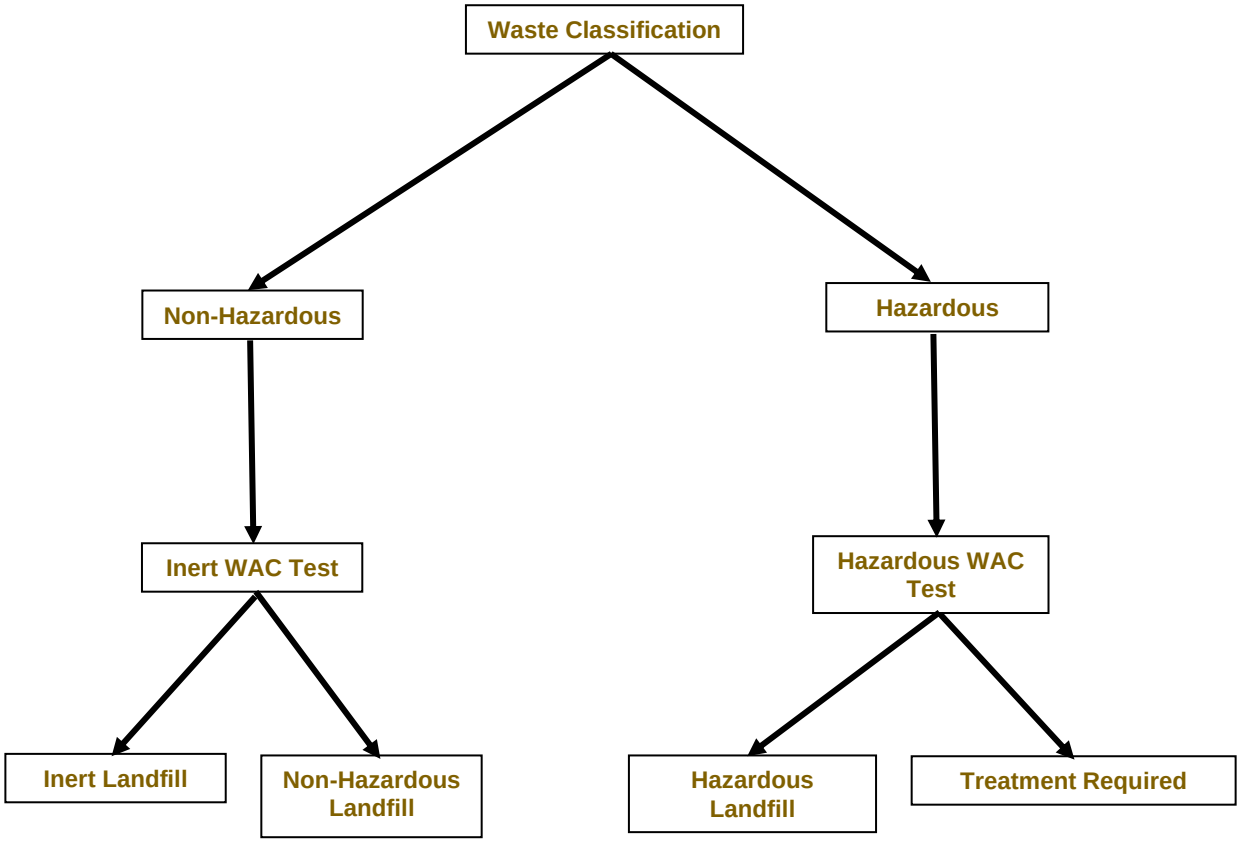
WASTE CLASSIFICATION AND WASTE ACCEPTANCE CRITERIA

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 identified as relevant following site investigation						
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 only 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.