East Midlands Gateway
Phase 2 (EMG2)

Document DCO 6.14B/MCO 6.14B

ENVIRONMENTAL STATEMENT

Technical Appendices

Appendix 14B

Ground Investigation Report (EMG2)

October 2025

14

The East Midlands Gateway Phase 2 and Highway Order 202X and The East Midlands Gateway Rail Freight and Highway (Amendment) Order 202X

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SEGRO

Ground Investigation Report

East Midlands Gateway Phase 2, Land South of East Midlands Airport, Derby

August 2025

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CONTROL SHEET

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EXECUTIVE SUMMARY

Introduction	Fairhurst have been commissioned by SEGRO PLC (the Client) to provide a Ground Investigation Report (GIR) associated with the proposed development at East Midlands Gateway Phase 2, Land South of East Midlands Airport, Derby. This report has been prepared in support of a Development Consent Order (DCO) and Material Change Order (MCO) Applications, whereby SEGRO is proposing to develop a second phase of its East Midlands Gateway Logistic Park (EMG1). This second phase is referred to as the EMG2 Project and comprises the DCO Scheme (**EMG2 Works**, **Highway Works**) and the MCO Scheme (**EMG1 Works)**. This report is based on the **EMG2 Works** component, forming part of the DCO Application/Scheme.
Scope & Objectives	The report has been prepared in support of the DCO application and also aims to provide geotechnical assessment and recommendations with respect to earthworks, foundations, external hard cover and floor slab proposals. The specific objectives include: • Carry out and report on an intrusive ground investigation designed to determine the characteristic ground conditions and hydrogeology underlying the site and to identify any potentially significant environmental or geotechnical development constraints; • Review and assess the chemical and geotechnical test results to inform and update the conceptual site model; • Make recommendations for further actions, if applicable, relating to any remaining pollutant linkages identified by the ground investigation; and • Make recommendations relating to any geotechnical constraints to development identified by the ground investigation.
Ground & Groundwater Conditions	The intrusive ground investigation encountered the following ground conditions: Topsoil was encountered from surface to a maximum depth of between 0.10m and 0.85m bgl (91.0m AOD and 58.8m AOD) where it was found to generally comprise firm to very stiff brown/reddish brown clay with silt, sand and gravel; Made Ground was encountered in isolated instances at a number of locations across the site, namely BH04, BH12, BH25, CP27, TP08, TP25, and TP37 where it extended to maximum depths of between 0.20m and 3.00m bgl (86.0m AOD and 53.0m AOD). The material was generally found to be cohesive dominant; The Oadby Member was encountered below the Topsoil/Made Ground in 21 of the 93 exploratory and was found to extend to depths of between 1.70m and 16.40m bgl (85.8m AOD and 63.9m AOD). The soils are generally described as stiff to very stiff greyish brown / dark grey clay with subordinate silt, sand and gravel; Glaciofluvial deposits was encountered below the Topsoil/Made Ground/Oadby Member where more extensive deposits were found in the central regions of the site. It was found to extend to maximum depths of between 0.40m and 17.30m bgl (89.7m AOD and 53.4m AOD). The deposits consisted variable interbedded cohesive and granular soils with limited lateral continuity of strata observed between exploratory positions; The Gunthorpe Member (subset of the Mercia Mudstone Group) was found across the entirety of the site and comprised predominantly mudstone interbedded with siltstone and sandstones. These deposits were found beneath the superficial soils where present, and from surface elsewhere, with a weathered profile invariably encountered at shallower depths. The weathered soils comprised predominantly stiff to very stiff reddish brown clays with silt, sand and gravel where the gravel fraction consisted of mudstone and siltstone lithorelicts. Pockets / lenses of grey silty sand / sandy silt and black staining on fracture surfaces were locally observed. Laminae of extremely weak mudstone and fine grained sandstone were recorded, generally increasing in frequency with depth suggesting a decrease in weathering grade; The bedrock was encountered below this weathered material where present, and below the Topsoil / Made Ground / superficial soils elsewhere; its upper surface varies between 1.40m and 18.50m bgl (86.8m AOD and 54.9m AOD) and extended the remaining extent of depths investigated where encountered. It comprised extremely weak to medium strong reddish brown; The Diseworth Sandstone, a subset of the Gunthorpe Member was also encountered where it was described as very weak to medium strong greenish grey fine to medium grained sandstone. The deposit was not found to be continuous between exploratory locations and appears as discrete sandstone strata interbedded with mudstone and siltstone;

	Groundwater strikes were observed during drilling at a range of depths within the Glaciofluvial and Gunthorpe Member (including weathered) Deposits. The strikes ranged from 2.80m to 26.50m bgl and from +49.60m AOD to +81.80m AOD; and, Monitoring suggests groundwater is present between depths of 1.25 m bgl and 15.32 m bgl (84.9 m AOD and 52.7 m AOD),.This is considered to comprise shallow, perched and discontinuous groundwater within the Made Ground and superficial Glaciofluvial Deposits and a deeper, more continuous groundwater body within the underlying bedrock of the Weathered Gunthorpe Member and Gunthorpe Member.
Geotechnical Assessment	The following geotechnical considerations/recommendations have been identified: • Utility searches and/or surveys are recommended prior to further design development to confirm the absence of services and verify the locations of any utilities that are identified on site; • It is recommended that foundations are inspected by a suitably qualified Geotechnical Engineer in order to confirm the absence of Made Ground or soft/loose soils within foundation excavations where foundations will require local deepening if encountered. Provision should be made for removal of the soils when encountered within the footprint of proposed structures. Excavations will need to be backfilled and re-compacted / compacted with material suitable for use as general fill; • Battering/shoring of excavations is recommended where collapsible, granular deposits are encountered. Battering of excavations to a suitable angle is recommended where excavations encounter cohesive strata; • Given shallow groundwater has been identified across the site, there is potential for groundwater induced instability and flooding of excavations. Therefore, provision of suitable shoring and appropriate dewatering measure are recommended; • All foundations and associated structures in contact with the underlying superficial soils and weathered bedrock should be designed to DS-2 AC-2. It may be possible to reduce this classification where buried structures are in contact with the solid bedrock however this will require careful consideration given the varied ground conditions and cut/fill configurations; • For the cohesive soils, prescriptive bearing capacities of c. 150kPa can be assumed where a minimum undrained shear strength of 75kPa is achieved. Where granular soils are encountered at foundation depth, a prescriptive bearing capacity of c. 150kPa can be assumed; • The competent Gunthorpe Member is likely to exhibit bearing capabilities in excess of 200kPa based on a minimum Unconfined Compressive Strength of 0.20MPa. However, the bearing capabilities of this stratum will need careful consideration given the variable weathering grade observed across the site. Where the bedrock is highly to moderately weathered (Grade Iva to Grade III) the bearing capacity is likely to be in the region of 150kPa; • Heavy plant and expensive breaking and ripping techniques may be required where excavations are within the competent bedrock; • Design of foundations within areas of fill will be dictated by the depth and type of engineering fill utilised. Where fill is shallow and bedrock is present near surface, foundations should be extended through the fill into the competent natural strata. Where deeper fill is present or superficial soils are present at shallow depth, foundations will need to be formed in accordance with the standards or engineering fill placed or suitably designed based on the geotechnical criteria of the superficial material; • Preliminary settlement analysis suggests careful consideration is needed when assessing the potential for settlement across the site and the use of in-situ compaction on fill formation layers by use of rollers is likely required prior to the placement of fill to decrease the potential for settlement; • Collapsible deposits and strata susceptible to settlement have been identified on site therefore, the risk of failure of any proposed embankments as a result of the formation soils below will need to be carefully considered; • It is recommended that staged construction is undertaken and basal and interim granular layers are installed and linked to the wider drainage network to avoid build-up of pore-water pressure where embankments are formed from fine grained material. Drainage will

	also need to be carefully considered to cope with surface water and avoid softening of the slope faces and foundation soils, in particular at the toe of slopes; • Options for increasing the angle of embankment slopes thus reducing the footprint and volume of embankments may be explored; these may include reinforced soil embankments (geogrids) or even retaining walls if required; • Clean, natural soils are present within areas of cut and these materials should be suitable for re-use provided they are carefully selected and managed in accordance with a suitable earthworks specification. • Given the similarity in appearance of the cohesive superficial soils, it is likely these materials will become mixed during the earthworks. For this reason, supplementary testing will be required to reassess the material properties in terms of its earthworks suitability; • As elevated sulphates have been identified within the on-site soils, careful consideration should be given to the design specification of earthworks in relation to sulphate induced heave where lime stabilisation is used. Specialist advice should be sought to assess the suitability of utilising lime stabilisation as a moisture content control; and • CBR testing on prepared sub-formation should be undertaken to confirm adequate road construction details. Yard spaces may be surfaced in concrete slabs and therefore appropriate compaction to Series 600 of the specification for Highway works and a site specific Earthworks Specification will be required.
Geo-Environmental Assessment	No exceedances of the site specific assessment criteria or commercial or public open space (park) end use generic assessment criteria have been identified with respect to human health, and therefore the risk to site end users is considered low. Risks to controlled waters were also assessed as low. Visual and olfactory evidence of contamination was identified at CP27 and there were measurable quantities of hydrocarbons, SVOCs and VOCs within the Mercia Mudstone at a depth of 4.0 m bgl at this location which is in the approximate location of a former diesel generator. Although this area did not show exceedances of screening criteria, remediation via localised excavation/ removal is recommended. During this removal, the vertical distribution and associated risks should be suitably assessed. Based on the assessments presented in Section 7.0 of this report the conceptual site model was updated. The assessment confirms that the majority of source-pathway-receptor linkages are low or very low risk and require no further assessment or mitigation with limited exceptions. It is recommended that the following is implemented for the development of the site: • Suitable drinking water supply pipes are to be installed. A WIR assessment may be required along the proposed drinking water pipe route to demonstrate material suitability. Alternatively the use of barrier pipe would negate the need for further testing. In both events, the local water company should be contacted to agree the chosen pipe material suitability; • Visual and olfactory evidence of contamination was identified at CP27 and there were measurable quantities of hydrocarbons, SVOCs and VOCs. Although it is considered that this impact is localised and not posing an unacceptable risk to identified receptors, localised remediation is recommended as a betterment measure. In addition, potential vertical distribution of impact should be suitably assessed; • In the event that unexpected contamination is encountered at the site, works in the area are to stop and the Local Authority and the appointed geo-environmental consultant should be contacted. The contamination should be sampled, tested and risk assessed and if required a remediation strategy should be agreed and implemented; • Based on the ground gas risk assessment, the site is classed as a Characteristic Situation CS1 (very low risk) site and no mitigation are required; • Risks to controlled waters were assessed as low and no further works are required; • Despite the low risk of encountering asbestos as part of the construction works, the Principal Contractor should develop appropriate RAMS to address the potential to encounter Asbestos during the construction works; • Shallow groundwater is likely to be encountered during excavation / construction works. Suitable allowance should be made for the disposal of groundwater and surface water; • Should offsite disposal of material be required, specific waste classification testing should be undertaken prior to disposal and liaison with the receiving facility should be sought. Given the

	site's agricultural history, there is low potential to encounter grossly contaminated soils or groundwater not encountered during the investigation; • An Earthworks Specification should be prepared to specify the geotechnical requirements for material re-use on site; and • Prior to undertaking any cut and fill operations, consideration will have to be given to materials management onsite upon development; particularly for earthworks, in the form of a CL:AIRE DoWCoP Materials Management Plan (MMP) or Environmental Permit. Further testing under a site-specific earthworks specification is recommended to determine the suitability of site-won material for re-use.

1 INTRODUCTION

1.1 General

Fairhurst have been appointed by SEGRO to provide a Ground Investigation Report associated with the proposed development at East Midlands Gateway Phase 2, Land South of East Midlands Airport, Derby.

This report has been prepared in support of a Development Consent Order (DCO) and Material Change Order (MCO) Applications, whereby SEGRO is proposing to develop a second phase of its East Midlands Gateway Logistics Park (EMG1). This second phase is referred to as the EMG2 Project and comprises the following main components:

1. **EMG2 Works (DCO Scheme)**;
2. **Highway Works (DCO Scheme)**; and
3. **EMG1 Works (MCO Scheme).**

Chapter 3: Project Description (Document DCO/MCO 6.3) of the Environmental Statement describes these components in more detail. This ground investigation report is based on the **EMG2 Works**, forming part of the DCO Application. The **EMG2 Works** Location Plan is presented as **Document DCO 2.1**.

1.2 Proposed Development

The proposed development at the **EMG2 Works** comprises logistics and advanced manufacturing development located on the EMG2 Main Site, south of East Midlands Airport and the A453 and west of the M1 Motorway, together with an upgrade to the EMG1 substation and the provision of a community park and HGV parking.

The components of the proposed development at the **EMG2 Works** are presented on the **EMG2 Project** Components Plan (**Document DCO/MCO 2.7**).

In order to facilitate the development, bulk earthworks in the form of cut and fill, are anticipated across the site. A maximum cut of up to c.10 m and maximum fill of up to c.15 m is proposed. It is understood that several development plateaus are to be created across the **EMG2 Works**, ranging from 66.75 m AOD in the south east to 89.00 m AOD in the north east. The EMG2 Main Site Cut and Fill Plan and Finished Levels Plan are presented as **Figure 14M.5** and **14M.6**, respectively, of **Chapter 14: Ground Conditions** of the Environmental Statement (**Document MCO/DCO 6.14M**).

1.3 Scope and Objectives

The report has been prepared in support of the forthcoming DCO application and also aims to provide geotechnical assessment and recommendations with respect to earthworks, foundations, external hard cover and floor slab proposals.

The specific objectives include:

- Carry out and report on an intrusive ground investigation designed to determine the characteristic ground conditions and hydrogeology underlying the site and to identify any potentially significant environmental or geotechnical development constraints;
- Review and assess the chemical and geotechnical test results to inform and update the conceptual site model;
- Make recommendations for further actions, if applicable, relating to any remaining pollutant linkages identified by the ground investigation; and

- Make recommendations relating to any geotechnical constraints to development identified by the ground investigation.

1.4 Sources of Information

The following available resources have been utilised and referenced within this report.

- BRE Special Digest 1:2005, Concrete in Aggressive Ground;
- BS 10175:2011+A2:2017 Investigation of potentially contaminated sites. Code of practice;
- BS 8002:2015 Code of practice for earth retaining structures;
- BS 8485:2015+A1:2019 - Code of Practice for the Design of Protective Measures for Methane and Carbon Dioxide Ground Gases for New Buildings;
- BS EN ISO 14688-2:2018, Geotechnical investigation and testing. Identification and classification of soil;
- BS EN ISO 14689:2018, Geotechnical investigation and testing. Identification and classification of rock;
- CIRIA C570 Engineering in Mercia Mudstone, October 2021;
- CIRIA C665 Assessing risks posed by hazardous ground gases to buildings, December 2007;
- CIRIA C733 Asbestos in soil and made ground: a guide to understanding and managing risks, March 2014;
- CIRIA R143 The standard penetration test (SPT): methods and use, 1995;
- Foundation Design and Construction, Seventh Edition M. J. Tomlinson 2001;
- Land Contamination Risk Assessment (LCRM), October 2020 updated April 2021 https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm;
- NHBC Chapter 4.2 'Building Near Trees' (2024);
- Published Category 4 Screening Values (C4SLs) derived by CL:AIRE on behalf of DEFRA;
- The measurement of soil stiffness in the triaxial apparatus, Géotechnique 34(3):323-340, Jardine, R.J., Symes, M.J., Burland, J.B., (1984)
- The Standard Penetration Test and the Engineering Properties of Glacial Materials, M. A. Stroud & F. G. Butler (1975);
- Suitable 4 Use Screening Levels (S4USLs) derived by LQM/CIEH;
- UK Drinking Water Standards (UKDWS) and freshwater environmental quality standard (EQS); and,
- UK Water Industry Research (UKWIR) Guidance for the selection of water supply pipes to be used in brownfield sites, 2010.

The following site specific sources of information have been utilised in the preparation of this report:

- Fairhurst Phase 1 Geo-Environmental and Geotechnical Preliminary Risk Assessment (148749/R5, August 2024);
- Structural Soils Ltd; Factual Report on Ground Investigation, EMG Phase 2, ref. 765514-01 (02), May 2023 (Appendix B);

1.5 Limitations

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The nature of ground investigation is such that differing ground conditions, whether geotechnical or geo-environmental may be present between sampling positions and exploratory hole locations.

2 SITE SETTING

The following provides a summary of the Phase 1 Geo-Environmental and Geotechnical Preliminary Risk Assessment (ref. 148749/R5.0) which should be read and understood in conjunction with this report.

2.1 Site Description

The site is located immediately south of East Midlands Airport and to the east of the village of Diseworth in a triangle between Loughborough (approximately 15 km to the south-east), Derby (approximately 25 km to the north-west) and Nottingham (approximately 25 km to the north-east). It is located immediately north-west of Junction 23a of the M1 motorway and approximately 3 km south of Junction 24.

The site has an area of approximately 100ha and currently comprises undeveloped arable land with hedgerows and trees dividing the various fields. A public byway, known as Hyam's Lane, dissects the site from south-west to north-east. Overhead power cables are present extending across the western area of the site in a north to south direction.

The site is bound to the north by Ashby Road (A453) with East Midlands Airport beyond. Donington Park Services, including a petrol station, is located immediately adjacent to the north-east. To the east lies an undeveloped parcel of land, the A42 and the M1. Whilst the Long Holden public byway with fields beyond is immediately south and to the south-west is the village of Diseworth.

The **EMG2 Works** Parameters Plan which shows the site boundary is presented as **Document DCO 2.5** and a Topographic Survey of the site is presented within **Appendix A**.

2.2 History of the Site and its Surroundings

Figure 14M.1 of **Chapter 14: Ground Conditions** of the Environmental Statement (**Document DCO/MCO 14M**) presents the **EMG2 Works** Potential Sources of Contamination Plan.

On site

Historical mapping from the Envirocheck report indicates the site is occupied by agricultural fields with numerous ponds from the earliest mapping available (1883). In 1921, a pump was identified at the pond, north-east of the site. A drainage ditch was also noted extending southwards of a pond north of the site. In 1955, the pond in the south-east of the site was no longer labelled and this has been assumed to be infilled. Similarly, in 1972-1975, the pond in the north-eastern corner of the site is no longer labelled and assumed infilled.

The Envirocheck report also records 1 waste transfer site on site (dated 1986, operated by East Midlands Airport Authority). This had had an input rate of less than 10,000 tonnes per year and the source of waste being the waste produced on site (waste included commercial waste and commercial waste of a domestic nature). Correspondence between Fairhurst and the Environment Agency as part of the statutory consultation associated with **Chapter 14: Ground Conditions** (**Document DCO/MCO 6.14)** of the Environmental Statement (ES) confirms that the EA regard the waste transfer station as a geo-referencing error. The data supporting this erroneous result was accepted by the EA on 22nd April 2025, and therefore it has been discounted as a potential source of contamination within Chapter 14 of the ES.

Nevertheless, this was unknown at the time of the ground investigation and thus potential contamination associated with this historical feature was investigated.Off-site

The Historical mapping from the Envirocheck report indicates the surrounding land as agricultural fields with ponds as of the 1883 map edition. A brick yard was also noted 100m south-west of the site. Though, in 1921, the brick yard was cleared with a stream shown extending along the western site boundary. In 1955, additional ponds were labelled from 50m south-west of the site along with an airfield, 400m north of the site. This airfield was extended to within 50m north-west of the site in 1962. In 1966, the M1

motorway and associated embankments was constructed from 100m east of the site. The airfield north of the site was also labelled as East Midlands Airport. Between 1972 and 1984, numerous ponds were no longer mapped and assumed to be infilled, with tanks being noted 260m north-west of the site. In 1989, commercial buildings and a hotel was noted 100m north of the site with a junction linking the M1 to the A453 (adjacent to the northern site boundary) shown as of the 1992-1994 map edition. Further commercial buildings were constructed in 2000 (north of the site) along with Donington Park Service Station. In 2006, a drain/stream was noted linking the 2 ponds 100m east of the site and in 2021, 2 sewage pumping stations were noted, one 240m west of the site and the other within Donington Park Service Station, 50m north-east of the site.

Information provided by the Environment Agency identifies the following pollution sources within influential distance of the site (within 250m of site):

- Pollution Incident to Controlled Waters (Diesel) is identified 26m east of site in 1997;
- Substantiated Pollution Incident 195m north-west, listed as significant incident comprising a Kerosene and Aviation Fuel spill in 2002; and,
- Historic landfill 250m west, listed as decommissioned in 1970.

2.3 Geology

The British Geological Survey (BGS) 1:50,000, Sheet No. 141, Loughborough, Solid and Drift (dated 2001) and historical BGS borehole records have been reviewed to provide information on the published and proven underlying geology and ground conditions at the site.

The site has undergone some minor development in isolated localities. A limited thickness of topsoil is likely present (identified in historical BGS boreholes) given the agricultural history of the site.

Due to the absence of widespread historical development on site, Made Ground is not anticipated consistently across the site. However, as identified on the historical mapping, 2 No. infilled clay pits are situated on the northern boundary which were reportedly infilled c.10 years prior to the Fairhurst visit although the nature of the infill material is unknown.

The BGS mapping indicates the presence of 3 types of superficial deposits on site;

- Head deposits comprising clay, silt sand and gravel are identified surrounding the inland river in the north-western corner of the northern field. According to BGS Lexicon of Named Rock Units, the deposits are poorly sorted and poorly stratified, and deposited by solifluction processes;
- Glaciofluvial deposits comprising sand and gravel are identified across most of the central region in the northern site and in the north-eastern corner of the southern site. Glaciofluvial Deposits are a general a term for sand and gravels deposited in supraglacial, englacial, subglacial and ice-marginal drainage systems. Some silt and clay deposits are also expected within these strata; and,
- Oadby Member (Diamicton Till) is identified in the north-eastern corner of the southern site and southern centre portion of the northern site. Generally, this unit is a heterogeneous mixture of clay, sand, gravel and boulders deposited directly beneath a glacier.

The site is predominantly underlain by The Gunthorpe Member, comprising mudstone with subordinate dolomitic siltstone and fine-grained sandstones. It is considered that the upper zone of the Gunthorpe Member will be encountered as a weathered material consisting of clay with mudstone lithorelicts.

The Diseworth Sandstone, a subgroup of the Gunthorpe Member, is shown to outcrop in the western, central and eastern areas of the site and is expected to be encountered at depth elsewhere. Based on the BGS map, the stratum demonstrates a dip of 0.5 to the south.

Geological faults are identified across both northern and southern sites which predominantly show a north-west, south-east trend with the exception of an east-west fault running along the northern boundary of the northern site. Review of the available in-house 1:50,000 geological map of the area (sheet number 141) indicates that numerous faults down through to west, north-east, east and south-west potentially creating a complex horst-graben structure.

2.4 Hydrology

A drainage ditch was observed running along the north-western boundary where it enters site in the north-eastern corner and turns west halfway down the boundary length. It appears to originate offsite, flowing in a southerly direction.

2 No. drainage ditches that appear to converge in the south-eastern corner of the site are also present; one that runs from the central south-eastern area and one that runs along the south-eastern boundary, both flowing in a southerly direction. It is stipulated these ditches are in hydraulic connectivity with the groundwater although the ground investigation will need to confirm this.

2 No. inland rivers have been identified south of the site (Diseworth Brook 320m south and Long Whatton Brook 500m south-east of the site) which appear to be partially fed by the aforementioned drainage ditches. It is therefore considered that if the ground investigation finds the ditches to be in connectivity with the groundwater, they are valid pathways for groundwater contamination to enter these inland rivers.

3 No. ponds have been identified onsite, located in the centre, northeast and northern areas. A review of the Envirocheck report (Appendix B of the Preliminary Risk Assessment) indicates a number of off-site ponds situated 65m east, 85m east, 50m west, 70 north and 180m south-west of the site.

Information provided from the Environment Agency (EA) Flood Map for Planning indicates that the site is located in Flood Zone 1 (not considered to be at risk of flooding from rivers or seas up to the 1 in 1,000-year annual exceedance probability event (0.1% AEP). The Flood Map identifies potential for surface water flooding during heavy rainfall in the western part of the northern site and south-eastern part of the southern site which may impact construction works and require mitigation as part of the site drainage strategy.

2.5 Hydrogeology

Information provided by the Environment Agency classifies the bedrock as a High Vulnerability Secondary B Aquifer (Gunthorpe Member) and the superficial deposits as a Secondary A Aquifer (Glaciofluvial deposits) and Secondary Undifferentiated Aquifer (Oadby Member and Head deposits).

The site is not located in a groundwater Source Protection Zone (SPZ) but it is located within a Nitrate Vulnerable Zone.

The Envirocheck Report indicates that there are no groundwater abstraction points within 1000m of the site boundary.

2.6 Ecology

An assessment of protected species is outside the scope of this report. This report considers ecology with respect to the Environmental Protection Act 1990 Part IIA (as amended) only and the Envirocheck report has identified the site is within a Nitrate Vulnerable Zone.

2.7 Geo-Environmental Considerations

The Fairhurst Geo-Environmental and Geotechnical Preliminary Risk Assessment (ref. 148749/R5 dated June 2023) concluded the proposed development does not result in an increased sensitivity with respect to land use (Commercial end use, with public open space associated with the proposed Community Park). Based on the initial CSM and Preliminary Risk Assessment (PRA), the majority of complete pollutant linkages is of **Moderate/Low** or **Low** risk. The PRA is conservative in its approach and therefore intrusive ground investigation is recommended in order to confirm the CSM and quantify the risks associated with the potential pollutant linkages.

The PRA has identified the following potential contaminative sources are present on/near to site:

- Waste Transfer Site (on site) – later confirmed as a geo-referencing error;
- Infilled Clay Pits (2 No. on site);
- Pollution Incident (Diesel) to Controlled Waters (26m E);
- Potentially infilled land (29m SW);
- Petrol filling station (67m NE);
- Pollution Incident (Kerosene and Aviation Fuel) (195m NW); and,
- Historic landfill (250m W).

The ground investigation should confirm the presence/nature of Made Ground soils in association with infilled ground on site and potential contamination from the identified sources listed above to ascertain the risk to human health via dermal contact / ingestion and / or inhalation of contaminated soils and via ground gas and / or soil vapour accumulation within voids or beneath structures; to building foundations from chemical attack due to direct contact with aggressive soil conditions; and, to drinking water supply pipes from direct contact with any hydrocarbon-impacted soils which may be identified during the investigation.

With this in mind, the investigation should also include a groundwater and ground gas monitoring regime and geo-environmental soil testing to assess the potential risks to human health and the environment including confirming the presence/absence of asbestos.

Following the ground investigation, an Interpretative Ground Investigative Report will be required to present the findings of the ground investigation and compile an updated CSM including a review of the geotechnical considerations and geo-environmental risks.

2.8 Figure 14M.1 of Chapter 14: Ground Conditions of the Environmental Statement (Document DCO/MCO 14M) presents the EMG2 Works Potential Sources of Contamination Plan. Geotechnical Considerations

The following potential geotechnical constraints to development may be present at the site inferred from desk based findings identified to date:

- The desk study has identified infilled ground around the site and its composition or compaction regime is not known. This gives rise to potential settlement (total and differential) risks;
- The BGS mapping indicates the presence of numerous geological faults intersecting across the site; these introduce numerous geotechnical issues including introduction of pathways for water flow (including contaminated waters), fractured/poor quality rockmass leading to instabilities and potential for sudden changes in rockhead depth (due to upthrow and downthrow of fault);
- Made Ground and Superficial deposits may contain obstructions typically in the form of brick, building rubble, cobbles and boulders;

- Pyrite (sulphate ‘attack’) may represent a risk to the proposed building structures and foundations associated with Made Ground, groundwater and natural soils.
- Potential for a groundwater body within the near-surface superficial/bedrock which may require pumping/dewatering during an intrusive works;
- The cohesive dominant superficial deposits may represent a potential risk to the proposed development with regards to shrink swell (heave);
- There is potential for surface water flooding during heavy rainfall in the western (northern site) and south-eastern part of the southern site which may impact on site works;
- Three different types of superficial deposit are shown on the BGS mapping, therefore there is the potential for variable strength superficial deposits underlying the site and due to lack of ground investigation data ground conditions cannot be conclusively assessed at this stage; and
- 3 No. ponds have been identified on site. There is the potential for silt rich soils to be present underlying these, which may require excavation and backfilling with geotechnically suitable material in accordance with a site-specific earthworks specification.

3 GROUND INVESTIGATION

3.1 Rationale

The following recommendations were made within the Geo-Environmental Assessment Report (ref. 148749/R5.0) with respect to the intrusive investigation and risk assessment:

- Confirm the nature and extent of infilled ground and potential contamination to assess the identified potential pollution sources listed in Section 2.7 above and provide a general coverage across the site;
- Groundwater monitoring to confirm the groundwater regime to inform design of a drainage strategy and undertake a groundwater and surface water sampling regime to identify any existing contamination and assess the contaminative effects of the project post construction;
- Ground gas monitoring to confirm the ground gas regime and potential risks to human health and the environment;
- Further understand and address the geotechnical constraints identified in relation to the proposed development.

The table below sets out the rationale behind the location of exploratory holes and the sampling strategy required to ensure the necessary information is acquired.

Table 1 Summary of the rationale behind selected exploratory locations

Location ID	Rationale	Sampling Strategy
All exploratory locations	Assess presence and nature of infilled ground and any potential obstructions/material unsuitable for re-use in earthworks	Geotechnical samples to assess settlement risk and suitability for re-use and geo-environmental samples to assess remediation requirements and suitability for re-use
All exploratory locations	Establish risk to buried concrete from pyrite (sulphate 'attack')	Geotechnical sampling at a range of depths for BRE SD1 testing
All exploratory locations	Investigate presence of groundwater and ascertain groundwater flow direction	Installation of groundwater monitoring installations to capture any groundwater encountered and monitor elevations
All exploratory locations	Investigate ground conditions to inform the geological ground model and geotechnical design	In-situ geotechnical testing and geotechnical sampling for laboratory testing
CP04, BH12	Establish deep ground conditions at bridge location for pile design	In-situ geotechnical testing and geotechnical sampling for laboratory testing
CP08. TP07, TP10	Assess presence of contamination from Waste Transfer Site	Geo-environmental soil samples, gas/groundwater monitoring pipe to screen any Made Ground/polluted soils
BH04 (s), TP08	Assess composition and nature of identified infilled clay pits. Assess potential contamination from off-site Distribution and Haulage site (159m N) and Freight Forwarders/Services (160m N).	In-situ geotechnical testing and sampling for laboratory testing. Geo-environmental soil samples and gas/groundwater monitoring installation to assess soil/groundwater contamination
CP28, BH27	Intercept migration pathway for groundwater contamination from pollution incident (26m E) listed as oil spill from ruptured diesel tank on lorry (1997)	Ground gas/groundwater installations for gas/groundwater monitoring. Geo-environmental soil and groundwater sampling for contaminant testing

Location ID	Rationale	Sampling Strategy
CP21, TP24	Intercept migration pathway for gas and groundwater contamination from potentially infilled ground (29m SW)	Ground gas/groundwater installations for monitoring. Geo-environmental soil and groundwater sampling for contaminant testing
CP01, CP12, BH13, BH01, BH02	Intercept migration pathway for gas and groundwater contamination from petrol filling station (67m NE). Assess potential contamination from printed circuit services (89m NE), vehicle cleaning services (67m NE) and service area (67m NE).	Ground gas/groundwater installations for gas and groundwater monitoring. Geo-environmental soil and groundwater sampling for contaminant testing
CP09, BH10	Intercept migration pathway for gas and groundwater contamination from pollution incident (195m NW). Assess potential contamination historic landfill (254m NW), recent/active landfill site (256m NW), and potential infilled land (169m NW)	Ground gas/groundwater installations for gas and groundwater monitoring. Geo-environmental soil and groundwater sampling for contaminant testing
CP11, TP15	Assess contamination from Historic landfill site (254m NW)	Ground gas/groundwater installations for gas and groundwater monitoring. Geo-environmental soil and groundwater sampling for contaminant testing

3.2 Scope of Investigation

Structural Soils Ltd undertook the role of Principal Contractor and subcontracted the environmental laboratory testing to Envirolab to fulfil the scope of works.

The 2023 intrusive investigation comprised:

- Buried utility services search to clear proposed exploratory hole locations of buried utilities and establish the location (x, y, z) of each location;
- 27 No. cable percussive boreholes with rotary core follow on to depths of between 20.00m and 31.00m bgl. CP drilling was carried out until competent bedrock was encountered. In-situ testing and undisturbed and disturbed sampling for laboratory analysis was also specified;
- 28 No. cable percussive boreholes to establish the depth to rockhead was carried out, taken to depths of between 4.50m bgl and 17.00m bgl. In-situ testing and undisturbed/disturbed sampling for laboratory analysis also specified;
- 38 No. machine excavated trial pits were completed (37 No. proposed, 1 No. additional to investigate extent of contaminated Made Ground), with hand shear vane testing and collection of samples for laboratory analysis;
- 8 No. soakaway infiltration tests in selected trial pits in accordance with BRE Digest 365, three repeat fillings of the pits were not undertaken due to slow infiltration rates;
- 2 No. variable head permeability tests carried out in BH11 and CP06 in accordance with BS EN ISO 22282-1:2012 and -2:2012;
- Installation of 25 No. groundwater and ground gas monitoring wells within selected borehole locations, 2 of which were dual installations. Following the monitoring period, all the installations were decommissioned aside from those at BH09, BH12, BH18, BH24, CP01 and CP27, this was to minimise disruption to the land owners;
- 3 No. further return visits to site to undertake groundwater and ground gas monitoring;

- 3 No. surface water sampling sets (downstream, midstream and upstream) from waterbodies situated in the south-eastern area of the site, along the western and south-eastern site boundaries and from a pond in the north-east of the site;
- Geotechnical laboratory testing of selected soil and groundwater samples (using UKAS accredited laboratory) allowing for targeted geotechnical testing based on the proposed development plans;
- Chemical laboratory testing of selected soil sample, groundwater and surface water (using a UKAS and MCERTS accredited laboratory) allowing for testing of a suite of contaminants based on historical land use;

Photo-ionisation detector (PID) headspace readings has been undertaken on all geo-environmental samples during the GI. Ground gas monitoring included semi-quantitative monitoring of volatile organic compounds (VOCs) via PID.

The ground investigation was specified in accordance with the ICE UK Specification for Ground Investigation (2012) and was undertaken in general accordance with techniques outlined in Eurocodes 7 - BS EN 1997-2:2007, BS 5930:2015 Code of Practice for Site Investigations and BS 10175 Investigation of potentially contaminated sites. The works were carried out under the supervision of an experienced Geotechnical Engineer from/contracted by Structural Soils Ltd.

The Structural Soils Ltd Factual Report is included as Appendix B.

3.3 Ground Gas / Vapour and Groundwater Monitoring

Ground gas / vapour monitoring was undertaken at 15 No. locations across 3 no return monitoring visits 13/14th October, 26/27th October and 10-14th November 2022). Groundwater sampling was undertaken at all monitoring well locations on a single return monitoring visit.

The construction / targeted screening zones of the monitoring wells installed at the site are summarised in Table 2**.**

Table 2 – Locations of Groundwater, Ground Gas and Vapour Monitoring

Monitoring Well ID	Screened Section (m bgl) (Stratum Targeted)	Screened section (m AOD)
BH01	1.00 – 7.00 (WGM / GUN)	+ 88.22 – 82.22
BH02	4.00 – 20.00 (GFDU / WGM / GUN)	+ 86.55 – 70.55
BH04	1.00 – 2.50 (WGM)	+ 86.21 – 84.71
BH04(d)	6.00 – 30.30(WGM / GUN)	+ 81.21 – 56.91
BH05	5.00 – 7.00 (GFDU)	+ 82.17 – 80.17
BH06	18.00 – 30.80 (WGM / GUN)	+ 62.29 – 49.49
BH09	7.00 – 12.50 (WGM / GUN)	+ 67.23 – 61.73
BH09(d)	14.00 – 18.00 (GUN)	+ 60.23 – 56.23
BH10	3.00 – 20.00 (WGM / GUN)	+ 84.35 – 67.35
BH11	13.00 – 31.00 (GFDU / WGM)	+ 66.89 – 48.89
BH12	16.00 – 30.80 (WGM / GUN)	+ 64.23 – 49.43
BH13	8.00 – 30.00 (WGM / GUN)	+ 80.03 – 58.03
BH14	1.00 – 11.50 (ODT / GFDU)	+ 83.68 – 73.18

Monitoring Well ID	Screened Section (m bgl) (Stratum Targeted)	Screened section (m AOD)
BH16	2.00 – 20.00 (GFDU / WGM / GUN)	+ 71.98 – 53.98
BH17	1.00 – 4.50 (GFDU / WGM)	+ 73.45 – 69.95
BH18	4.50 – 16.00 (WGM / GUN)	+ 73.12 – 61.62
BH21	5.00 – 30.00 (GUN)	+ 70.56 – 45.56
BH23	1.00 – 8.00 (WGM / GUN)	+ 69.77 – 62.77
BH24	1.00 – 5.00 (WGM / GUN)	+ 66.02 – 62.02
BH25	4.00 – 20.00 (GUN)	+ 59.15 – 43.15
BH27	1.00 – 4.00 (WGM)	+ 58.09 – 55.09
CP01	1.00 – 7.50 (WGM)	+ 90.40 – 83.90
CP06	1.00 – 10.90 (ODT / GFDU / WGM)	+ 86.01 – 76.11
CP10	1.00 – 8.40 (ODT/GFDU)	+ 74.02 – 66.62
CP11	1.00 – 6.20 (WGM)	+ 67.97 – 62.77
CP16	5.60 – 9.00 (GFDU)	+ 71.64 – 68.24
CP17	14.00 – 17.00 (GFDU)	+ 68.31 – 65.31
CP21	1.00 – 5.00 (WGM)	+ 67.05 – 63.05
CP27	1.00 – 3.00 (MGR)	+ 54.98 – 52.98
CP28	1.00 – 4.60 (WGM)	+ 63.08 – 59.48

MGR – Made Ground, ODT – Oadby Member, GFDU – Glaciofluvial, WGM – Weathered Gunthorpe Member, GUN – Gunthorpe Member (Mudstone)

The groundwater and ground gas / vapour monitoring visits included use of a PID (Phocheck Tiger) to provide a semi-quantitative measure Volatile Organic Compounds (VOC) and a ground gas monitor. The gas monitor models used include the GFM430 and GA5000 for which calibration certificates (dated 06/06/2022 and 06/10/2022 respectively) are provided within the Structural Soils Factual Report. The gas monitoring recorded concentrations of carbon monoxide (CO), carbon dioxide (CO_2), hydrogen sulphide (H_2S), methane (CH_4) and oxygen (O_2). Atmospheric pressure readings and gas flow rates were also recorded.

3.4 Laboratory Testing

Geotechnical and geo-environmental laboratory testing was scheduled by Fairhurst and undertaken on soil and groundwater samples recovered from the ground investigation. Geotechnical analysis was carried out by Structural Soils Ltd within their UKAS accredited laboratories. Geo-Environmental testing was carried out by Envirolab UKAS and MCERT accredited laboratories. The laboratory analytical certificates are included in the Structural Soils Ltd Factual Report and assessment of the results is provided herein.

Table 3 below summarises the instances where geo-environmental testing is recorded as deviated as the maximum holding time was exceeded for the contaminants tested.

Table 3 – Summary of Deviated Samples

Location ID	Sample Depth (m)	Sample type	Testing type
BH07	4.50	S	Organic Matter
BH12	1.00	S	PAH-16MS Organic Matter EPHCWG VPHCWG
BH25	0.50	S	PAH-16MS VPHCWG
CP01	0.50	S	PAH-16MS VPHCWG
CP08	0.50	S	PAH-16MS TPH Banded 1 with ID
CP24	0.10	S	PAH-16MS Organic Matter EPHCWG VPHCWG
CP28	1.00	S	PAH-16MS VPHCWG Organic Matter VOC SVOC excluding PAH-16
TP27	1.60	S	PAH-16MS Organic Matter EPHCWG VPHCWG
TP29	1.40	S	PAH-16MS Organic Matter EPHCWG VPHCWG

The deviated results have been assessed to ascertain whether the results can be included in the overall assessment. In all cases, the deviated results are within the range of the overall results and so these results have tentatively been included in the overall assessment.

4 GROUND CONDITIONS

The following section provides a summary of the ground conditions encountered during the Fairhurst September / October 2022 ground investigation works and a comparison to the findings of previous works undertaken.

The Ground conditions encountered broadly corroborated the findings of British Geological Survey mapping review with the superficial soils more extensively encountered in the central portion of the site with little to no superficial cover in the northern and southern portions of the site. It must be noted that, although head deposits are indicated on site, the investigation did not identify any. This is likely because there was no discernible difference between the head deposits and the parent material.

Throughout the report the following abbreviations have been adopted using the BGS codes where available for ease of presentation:

Topsoil	**TS**
Made Ground	**MGR**
Oadby Member	**ODT**
Glaciofluvial Deposits	**GFDU where (c) = cohesive and (g) = granular**
Weathered Gunthorpe Member	**WGM**
Gunthorpe Member	**GUN**

Ground conditions encountered during the recent investigation are summarised in Table 4. Cross sections across the site are presented within **Figure 14M.3** of **Chapter 14: Ground Conditions** of the Environmental Statement (**Document DCO/MCO 6.14M**).

Table 4 – Summary of Ground Conditions

Lithology	Location	Base of Lithology (m bgl)	Base of Lithology (m AOD)
Topsoil	All exploratory hole locations (aside from where Made Ground is encountered)	0.10 – 0.85	91.0 - 58.5
Made Ground	(BH04, BH12, BH25, CP27, TP08, TP25, and TP37)	0.20 – 3.00	86.0 – 53.0
Oadby Member	21 No. positions, most extensively found E-W through the centre of the site (cross section line B-B)	1.70 – 16.40	85.8 – 64.0
Glaciofluvial	61 No. Positions, most extensively found E-W through the centre of the site (cross section line B-B)	0.40 – 17.30	89.7 – 53.4
Weathered Gunthorpe Member	73 No. positions, less extensively present where significant superficials soils are found	1.40 – 18.50	88.2 – 51.0
Gunthorpe Member	33 No. positions	>33.35	<28.0

4.1 Topsoil

Topsoil was encountered at the majority of exploratory location (aside from where Made Ground was encountered) to maximum depths of between 0.10m and 0.85m bgl (91.0m AOD and 58.8m AOD). Although the material was described as Topsoil, observations made during the investigation indicate this material to generally comprise firm to very stiff brown/reddish brown clay with silt, sand, and gravel where the gravel comprised quartzite, mudstone, siltstone, sandstone, flint and quartz.

Cobbles were locally encountered, generally comprising subangular to well-rounded mudstone, sandstone and quartzite.

4.2 Made Ground

Made Ground was encountered from surface at 7 No. positions (BH04, BH12, BH25, CP27, TP08, TP25, and TP37) and extended to maximum depths of between 0.20m and 3.00m bgl (86.0m AOD and 53.0m AOD).

At BH04, BH12 and BH25, Made Ground was encountered to depths of 0.20m to 1.20m (86.0m AOD to 62.75m AOD) where it comprised clay/silt with subordinate sand and gravel. The gravel comprised mudstone, limestone, siltstone, quartzite and sandstone. Despite an absence of anthropogenic material found within these soils, these soils appeared disturbed due to human activity.

The material encountered at CP27 comprised clay with sand and gravel where the gravel was flint, sandstone, siltstone and quartzite. A moderate hydrocarbon odour was noted from 0.30m to 2.15m bgl with a strong hydrocarbon odour and iridescent sheen subsequently noted from 2.15m to 2.25m bgl. PID headspace testing recorded values of 4.0ppm and 13.5ppm at 3.00m and 4.00m bgl respectively. Subsequently, geo-environmental testing for a range of contaminants was scheduled on a sample of this material and a sample from the top of the natural soils to ascertain the nature and extent of this contamination.

At TP08 the Made Ground, found to a depth of 2.80m bgl (82.2m AOD), comprised silty sandy gravel of brick, tile, mudstone and quartzite with occasional brick and concrete blocks.

At TP25 and TP37 Made Ground was encountered to depths of 0.40m bgl (65.0m AOD) and 0.30m bgl (55.1m AOD) respectively. The soils comprised predominantly clay with subordinate sand and gravel; where the gravel consisted of brick, glass and ceramic tile.

No suspected Asbestos Containing Materials (ACMs) were recorded on the logs. Aside from the aforementioned instance at CP27, no visual or olfactory evidence of contamination was observed within the Made Ground soils.

4.3 Oadby Member

The Oadby Member was encountered below the Topsoil/Made Ground in 21 of the 93 exploratory holes and was found to extend to depths of between 1.70m and 16.40m bgl (85.8m AOD and 63.9m AOD). The most extensive deposits occur through the middle section of the site, roughly in the region of the B-B section line on the Cross Section Plan included as **Figure 14M.3** of **Chapter 14: Ground Conditions** (Document **DCO/MCO 6.14M**) It is considered this area is representative of a glacial cutting with subglacial deposition running through the site.

The soils are generally described as stiff to very stiff greyish brown / dark grey clay with subordinate silt, sand and gravel. The gravel consisted of fine to coarse mudstone, siltstone, sandstone, quartz, quartzite, flint and chalk with occasional cobbles also noted.

Some deposits of sand and gravel with subordinate clay and silt content were observed within the Oadby Member although these are only a minor component of the soils as a whole.

No visual evidences of desiccation were recorded within the deposit on any of the exploratory hole logs.

4.4 Glaciofluvial Deposits

Glaciofluvial deposits were found to underlay the Oadby Member where present and was encountered below the Topsoil/Made Ground elsewhere. It was found to extend to maximum depths of between 0.40m and 17.30m bgl (89.7m AOD and 53.4m AOD). The deposits consisted variable interbedded cohesive and granular soils with limited lateral continuity of strata observed between exploratory positions.

The majority of the deposit was found to be cohesive, where it generally comprised firm to very stiff reddish brown / orangish brown / yellowish brown clay with variable silt, sand and gravel content. The gravel was found to consist of predominantly mudstone with siltstone, sandstone, flint, quartz and quartzite. Light grey / grey mottling was encountered locally within this deposit.

The granular soils encountered were recorded as medium dense to very dense orangish brown / greyish brown gravel with variable clay, silt and sand content or medium dense to dense greyish brown / brown / reddish brown / orangish brown silty sand found to be locally clayey and gravelly. The gravel fraction of these deposits was found to comprise mudstone, siltstone, sandstone, flint, quartz and quartzite.

No visual evidences of desiccation were recorded within the cohesive soils on any of the exploratory hole logs.

4.5 Gunthorpe Member (Mercia Mudstone Group)

The Gunthorpe Member (subset of the Mercia Mudstone Group) was found across the entirety of the site and comprised predominantly mudstone interbedded with siltstone and sandstones. These deposits were found beneath the superficial soils where present, and from surface elsewhere, with a weathered profile invariably encountered at shallower depths. The weathered soils comprised predominantly stiff to very stiff reddish brown clays with silt, sand and gravel where the gravel fraction consisted of mudstone and siltstone lithorelicts. Pockets / lenses of grey silty sand / sandy silt and black staining on fracture surfaces were locally observed. Laminae of extremely weak mudstone and fine grained sandstone were recorded, generally increasing in frequency with depth suggesting a decrease in weathering grade.

Generally speaking, a much less extensive profile of weathered material is observed where extensive superficial soils are present overlying the Gunthorpe Member suggesting the weathered soils have been eroded away or the bedrock has not been exposed near surface allowing weathering processes to occur. The depth to the upper surface of the weathered Gunthorpe Member varied between depths of between 0.10m and 17.30m bgl (91.0m AOD and 53.0m AOD), reflective of the topography and variable degree of superficial cover encountered across the site.

The Weathered Gunthorpe Member has been separated from the bedrock material in the following geotechnical testing and assessment sections of this report for ease of presentation and analysis. In general, the material deemed to be weathered is logged as Grade IVb to Grade III whilst the bedrock is defined as Grade III to Grade I. The stratum is graded in accordance with CIRIA C570 and this distinction is based on observations made on the exploratory hole logs.

The bedrock was encountered below this weathered material where present, and below the Topsoil / Made Ground / superficial soils elsewhere; its upper surface varies between 1.40m and 18.50m bgl (86.8m AOD and 54.9m AOD) and extended the remaining extent of depths investigated where encountered. It comprised extremely weak to medium strong reddish brown mudstone with pockets / laminae of greenish grey sandy silt / siltstone locally recorded. Bedding fractures were recorded as closely to medium spaced, rough / smooth and planar / undulating with black staining and red clay infill along bedding fractures occasionally noted. Very closely spaced, randomly orientated, rough, undulating fractures with black staining are also noted.

Closely to very closely spaced laminae, generally 5mm to 20mm, of crystallised gypsum are occasionally present. Horizons of mudstone weathered to clay are encountered within the bedrock also, these are generally recorded stiff to very stiff laminated clay / silty clay with occasional mudstone lithorelicts.

Within the Gunthorpe, discrete stratum of extremely weak to strong, thinly laminated greenish grey siltstone with pockets of calcium carbonate were also encountered.

The Diseworth Sandstone, a subset of the Gunthorpe Member was also encountered where it was described as very weak to medium strong greenish grey fine to medium grained sandstone. The deposit

was not found to be continuous between exploratory locations and appears as discrete sandstone strata interbedded with mudstones and siltstone.

4.6 Groundwater

Groundwater strikes were observed during drilling at a range of depths within the Glaciofluvial and Gunthorpe Member (including weathered) Deposits. The strikes ranged from 2.80m to 26.50m bgl and from +49.60m AOD to +81.80m AOD; a summary of these strikes is provided below in Table 5.

Table 5 - Summary of Depths to Groundwater Strikes

Location ID	Strike depth (m bgl)	Strike Elevation (m AOD)	Stratum type
BH07	11.0	+ 76.2	GUN
BH08	8.0	+ 80.3	GUN
BH08	19.0	+ 69.3	GUN
BH09	4.0	+ 70.3	GFDU (g)
BH09	11.6	+ 62.6	GUN
BH09	16.7	+ 57.5	GUN
BH11	9.0	+ 70.9	GFDU (g)
BH11	21.0	+ 58.9	GUN
BH13	9.0	+ 79.0	WGM
BH13	26.5	+ 61.5	WGM
BH17	3.1	+ 71.4	GFDU (g)
BH18	15.5	+ 62.1	GUN
BH20	10.7	+ 66.2	GUN
BH21	26.0	+ 49.6	GUN
BH23	12.0	+ 58.8	GUN
BH24	10.5	+ 56.5	GUN
BH25	9.6	+ 53.5	GUN
CP02	6.0	+ 81.8	WGM
CP04	17.0	+ 64.7	GFDU (g)
CP06	9.0	+ 78.0	WGM
CP07	13.4	+ 64.7	GFDU (c)
CP08	8.2	+ 73.5	GFDU (g)
CP10	7.3	+ 67.7	GFDU (c)
CP16	5.75	+ 71.5	GFDU (c)
CP23	5.4	+ 65.9	WGM
TP13	3.3	+ 69.7	GFDU (g)
TP19	3.2	+ 72.5	GFDU (c)
TP22	3.3	+ 74.3	GFDU (g)
TP35	2.8	+ 56.7	WGM

Location ID	Strike depth (m bgl)	Strike Elevation (m AOD)	Stratum type
TP39	2.8	+ 52.9	WGM

Where not listed, exploratory holes did not encounter groundwater strikes whilst drilling. It should be noted that the speed of drilling, use of water flush and casing of holes can often mask minor seepages and water strikes.

3 No. gas and groundwater monitoring were completed between the dates of 13th October 2022 and 14th November 2022 and includes water monitoring of the well installations. A summary of the groundwater level monitoring results is presented as Table 6 below and is presented on the **EMG2 Works** Groundwater Levels Plan included as **Figure 14M.4** of **Chapter 14: Ground Conditions** of the Environmental Statement (**Document DCO/MCO 6/14M**).

Table 6 – Summary Depths to Groundwater

Monitoring Well ID	Depth of Installation (m bgl)	Groundwater Levels (m AOD)		
		Round 1	Round 2	Round 3
BH01	1.00 – 7.00	83.49	83.43	83.39
BH02	4.00 – 20.00	82.83	82.75	82.63
BH04	1.00 – 2.50	-	84.89	84.72
BH04A	6.00 – 30.30	76.51	-	76.33
BH05	5.00 – 7.00	82.25	82.18	82.33
BH06	18.00 – 30.80	77.21	-	73.44
BH09	7.00 – 12.50	71.48	-	-
BH09A	14.00 – 18.00	70.55	70.71	71.12
BH10	3.00 – 20.00	72.13	72.20	68.22
BH11	13.00 – 31.00	71.18	77.73	71.21
BH12	16.00 – 30.80	73.48	73.26	73.26
BH13	8.00 – 30.00	76.83	76.93	58.81
BH14	1.00 – 11.50	76.07	75.93	75.89
BH16	2.00 – 20.00	69.43	69.50	69.56
BH17	1.00 – 4.50	72.74	72.80	68.02
BH18	4.50 – 20.50	71.8	71.77	72.62
BH21	5.00 – 30.00	66.22	66.11	46.15
BH23	1.00 – 8.00	64.57	64.52	62.84
BH24	1.00 – 5.00	63.83	63.67	63.44
BH25	4.00 – 20.00	59.22	59.26	58.95
BH27	1.00 – 4.00	56.05	56.19	56.52
CP01	1.00 – 7.50	84.29	84.20	83.92
CP06	1.00 – 11.00	80.14	80.09	75.99

Monitoring Well ID	Depth of Installation (m bgl)	Groundwater Levels (m AOD)		
		Round 1	Round 2	Round 3
CP10	1.00 – 8.50	70.70	70.75	66.39
CP11	1.00 – 6.20	66.70	-	66.94
CP16	5.75 – 9.00	73.39	-	73.36
CP17	14.00 – 17.00	75.11	75.93	74.45
CP21	1.00 – 5.00	Dry	Dry	63.15
CP27	1.00 – 3.00	54.58	54.73	54.58
CP28	1.00 – 4.60	Dry	Dry	60.27

Monitoring suggests that groundwater is present between depths of 1.25m and 15.32m bgl (84.9m AOD and 54.6m AOD) within the Made Ground, Glaciofluvial, Weathered Gunthorpe Member and Gunthorpe Member where the Glaciofluvial deposit is classified as a Secondary A Aquifer and the Gunthorpe Member is classified as a Secondary B Aquifer.

The monitoring data indicates groundwater levels beneath the site from depths of 1.25 m bgl to 15.32 m bgl (84.9 m AOD and 54.6 m AOD).

Isolated instances of groundwater is considered to be present within the Made Ground and superficial Glaciofluvial Deposits (for example, at 1.25 m bgl within the Made Ground of CP27 and at 3.85 m bgl within the Glaciofluvial Deposits of CP16).

The interpreted groundwater in bedrock is at variable depth suspected to be due to the variation in elevation across the site from north to south.

4.7 Visual and Olfactory Contamination

Visual and olfactory evidence was not recorded at the vast majority of exploratory positions advanced during the Structural Soils Ltd intrusive ground investigation. The only position where this was recorded was at CP27 where, as previously mentioned, an iridescent sheen and moderate to strong hydrocarbon odour was observed within the soils to a depth of 3.00m bgl. The source of this contamination is unknown but is stipulated to originate from the historic diesel power generator identified in the PRA. It is not considered likely that this contamination originated from the pollution incident to controlled waters identified nearby (26m E of site) as contamination was not identified at CP28 which is situated between the location of the pollution incident and CP27.

5 GEOTECHNICAL TESTING & ENGINEERING PROPERTIES

The geotechnical in-situ and laboratory data referred to is provided within the Structural Soils Ltd Factual Report included as Appendix B. Where necessary, characteristic parameters have been cautiously estimated using published correlations in conjunction with engineering judgement and consideration of the relevant limit state. The parameters are not considered to be absolute and should be referenced with the specific strata text in this section and reviewed when considering a specific area or development requirement of the site.

The below figures should be referenced accordingly in relation to the field and laboratory testing results.

Figure 1 Casagrande Plasticity Chart
Figure 2 Particle Size Distribution Chart – Topsoil
Figure 3 Particle Size Distribution Chart – Made Ground
Figure 4 Particle Size Distribution Chart – Oadby Member
Figure 5 Particle Size Distribution Chart – Glaciofluvial Deposits (cohesive)
Figure 6 Particle Size Distribution Chart – Glaciofluvial Deposits (granular)
Figure 7 Particle Size Distribution Chart – Weathered Gunthorpe Member
Figure 8 Particle Size Distribution Chart – Gunthorpe Member
Figure 9 SPT 'N' Value vs Depth (m bgl) – Made Ground
Figure 10 SPT 'N' Value vs Elevation (m AOD) – Made Ground
Figure 11 SPT 'N' Value vs Depth (m bgl) – Oadby Member
Figure 12 SPT 'N' Value vs Elevation (m AOD) – Oadby Member
Figure 13 SPT 'N' Value vs Depth (m bgl) – Glaciofluvial Deposits (cohesive)
Figure 14 SPT 'N' Value vs Elevation (m AOD) – Glaciofluvial Deposits (cohesive)
Figure 15 SPT 'N' Value vs Depth (m bgl) – Glaciofluvial Deposits (granular)
Figure 16 SPT 'N' Value vs Elevation (m AOD) – Glaciofluvial Deposits (granular)
Figure 17 SPT 'N' Value vs Depth (m bgl) – Weathered Gunthorpe Member
Figure 18 SPT 'N' Value vs Elevation (m AOD) – Weathered Gunthorpe Member
Figure 19 SPT 'N' Value vs Depth (m bgl) – Gunthorpe Member
Figure 20 SPT 'N' Value vs Elevation (m AOD) – Gunthorpe Member
Figure 21 Undrained Shear Strength vs Depth (m bgl) – Oadby Member
Figure 22 Undrained Shear Strength vs Elevation (m AOD) – Oadby Member
Figure 23 Undrained Shear Strength vs Depth (m bgl) – Glaciofluvial (cohesive)
Figure 24 Undrained Shear Strength vs Elevation (m AOD) – Glaciofluvial (cohesive)
Figure 25 Undrained Shear Strength vs Depth (m bgl) – Weathered Gunthorpe Member
Figure 26 Undrained Shear Strength vs Elevation (m AOD) – Weathered Gunthorpe Member
Figure 27 Unconfined Compressive Strength vs Depth (m bgl)
Figure 28 Unconfined Compressive Strength vs Elevation (m AOD)

A summary of the in-situ and laboratory soil and rock geotechnical testing undertaken is detailed in Table 7 below.

Table 7 – Summary of Soil Geotechnical Testing Undertaken

Geotechnical Test		Topsoil	Made Ground	Oadby Member	Glaciofluvial – cohesive	Glaciofluvial – granular	Weathered Gunthorpe Member	Gunthorpe Member
In-situ	Standard Penetration Tests (SPT)	0	2	49	50	27	171	16

Geotechnical Test		Topsoil	Made Ground	Oadby Member	Glaciofluvial – cohesive	Glaciofluvial – granular	Weathered Gunthorpe Member	Gunthorpe Member
	Hand Shear Vanes (HSV)	0	0	16	20	0	35	0
Laboratory – Soil	Moisture Content	0	3	38	36	2	64	4
	Atterberg Limit Determination	0	3	38	37	1	64	4
	Particle Size Distribution (sieve)	2	1	6	18	12	13	1
	Particles Size Distribution (sedimentation)	2	1	6	14	12	13	1
	Organic Matter	13	4	15	26	2	36	1
	Undrained Triaxial Compression Test	0	0	11	2	0	3	0
	OMC DD (2.5kg rammer	1	3	9	7	1	21	0
	OMC DD (4.5kg rammer)	0	1	6	2	1	2	1
	One-dimensional Consolidation	0	0	3	1	0	4	0
	Moisture Condition Value	0	0	1	3	0	5	1
	BRE SD1 Suite D 2005	1	3	5	3	2	22	2
Laboratory – Rock	Point Load Index (axial, dimetral and irregular)	-	-	-	-	-	-	304
	Unconfined Compressive Strength	-	-	-	-	-	-	24
	Slake Durability	-	-	-	-	-	-	1

Upon receipt of the Structural Soils Ltd Factual Report, an assessment of the geotechnical properties of the strata has been undertaken and is detailed below.

Please note the SPT data has been converted to N60 values using the formula:

$$N_{60} = N_{field} \times E\% \text{ where } E\% = \text{hammer energy ratio}$$

5.1 Topsoil

Table 8 – Summary table of in-situ and laboratory testing for the Topsoil

Parameter	No. of tests	Range	Characteristic value
Classification			
Moisture Content (%)	1	-	11
Particle Size Distribution	2	-	Class 5A
Compaction			
Optimum Moisture Content and Maximum Dry Density	1	-	OMC 16%
		-	MDD 1.6Mg/m3

		-	Air voids >10%
Organic Content			
Soil Organic Matter (%)	13	0.2 – 6.1	3.1

Particle Size Distribution

Particle Size Distribution testing was undertaken on 2 No. samples of the Topsoil, collected from depths of 0.10m bgl (73.7m AOD) and 0.50m bgl (71.5m AOD). The testing identified the soils to consist of 0% to 15% gravel, 5% to 11% sand, 33% to 46% silt and 28% to 62% clay.

It should be noted that as 2 No. tests were undertaken, these results cannot be considered representative of the Topsoil across the entirety of the site. Further testing is recommended if comprehensive classification of the Topsoil is required.

Optimum Moisture Content and Maximum Dry Density Analysis (OMC & MDD)

1 No. compaction test was undertaken on a Topsoil sample from BH10 at 0.30m bgl (87.0m AOD) utilising a 2.5kg rammer. The results recorded air voids exceeding 10% at the MDD, with an MDD of 1.60Mg/m^3, and OMC of 16%.

Comparison of the OMC & MDD results with the moisture content of the Topsoil suggests the material is dry of the optimum.

Chemical Analysis and Sulphate Classification

1 No. samples of the Topsoil was scheduled for Suite D aggressive chemical environment for concrete (ACEC) classification in accordance with BRE Special Digest 1:2005, Concrete in Aggressive Ground, the results of which are discussed within Section 6.0 of this report.

Organic Matter

13 No. samples of the Topsoil from depths of 0.10m bgl to 0.50m bgl (89.3m AOD to 63.8m AOD) were submitted for organic matter analysis which identified concentrations ranging from 0.7% to 6.1%.

5.2 Made Ground

Table 9 – Summary table of in-situ and laboratory testing for the Made Ground

Parameter	No. of tests	Range	Characteristic value
Classification			
Moisture Content (%)	3	20 – 24	22
Atterberg Limits (%)	3	LL 46 – 67	LL 56
		PL 20 - 26	PL 23
		PI 26 – 43	PI 33
Modified Plasticity (%)		20 – 39	29
Plasticity term		-	Medium
Volume Change Potential		-	Medium
Particle Size Distribution	1	-	Class 2C
Particle Density Mg/m^3	2	2.49 – 2.67	2.58
Strength & Stiffness			
SPT ‘N60’ Value	2	9	9
Consistency term		-	Soft
Strength term		-	Low strength
Compaction			
Optimum Moisture Content and Maximum Dry Density	4	OMC 14 – 24%	OMC 19%
		MDD 1.57 – 1.88Mg/m3	MDD 1.7Mg/m3

Parameter	No. of tests	Range	Characteristic value
		Air voids <5%	Air voids <5%
Organic Content			
Soil Organic Matter (%)	4	0.5 – 6.7	2.9

Moisture Content and classification testing

3 No. Moisture Content tests and 3 No. Atterberg tests were undertaken on samples of the Made Ground taken at depths of between 0.90m and 2.40m bgl (86.3m AOD and 55.0m AOD). Moisture contents ranged between 20% and 24%. The testing reported liquid limits of 46% to 67%, plastic limits of 20% to 26%, and plasticity indexes of 26% to 43% with modified plasticity indexes of 20% to 39%. The results are consistent with an intermediate to high plasticity clay with medium to potentially high volume change potential in accordance with NHBC Chapter 4.2 'Building Near Trees' (2024).

Particle Size Distribution

Particle Size Distribution testing was undertaken on 1 No. sample of the Made Ground from TP08 at 0.50m bgl (84.5m AOD) where the results identified a 29% gravel, 19% sand, 32% silt and 20% clay content.

It should be noted that Made Ground is variable by nature thus these results cannot be considered representative of the Made Ground encountered elsewhere on site.

Particle Density

Particle density testing was undertaken on 2 No. samples of the Made ground; BH04 at 0.10m bgl (87.2m AOD) and TP08 at 1.50m bgl (85.0m AOD) and results of 2.67Mg/m^3 and 2.49Mg/m^3 were recorded respectively. Given the variability of Made Ground, these values cannot be considered as representative of the Made Ground as a whole.

In-Situ Testing, Strength & Stiffness

2 No. SPT tests were undertaken within the Made Ground at CP27, one at 1.20m bgl (54.8m AOD) and the other at 2.00m bgl (54.0m AOD), both of which were undertaken in cohesive deposits. In both instances an SPT N60 value of 9 was recorded.

Using the correlation proposed by Stroud & Butler (1974) and an f_1 factor of 4.4, the undrained shear strength of the cohesive material is derived to be 35kPa, corresponding to a low strength material in accordance with BS EN ISO 14688-2:2018.

No discernible correlation was derived from the data, reflective of the soils' variable nature. See Figures 9-26 for the SPT and Undrained Shear Strength data charts.

Optimum Moisture Content and Maximum Dry Density Analysis (OMC & MDD)

4 No. compaction tests were undertaken on Made Ground samples from depths of 0.10m to 2.40m bgl (87.1m AOD to 55.0m AOD), 3 of which utilising a 2.5kg rammer and 1 utilising a 4.5kg rammer. The results invariably recorded air voids of less than 5% at MDD, with MDDs of between 1.57Mg/m^3 and 1.88Mg/m^3, and OMC of between 14% and 24%.

Comparison of the moisture content of the Made Ground with the MDD/OMC results indicates the material is dry of the optimum in 2 instances (BH04 at 0.10m bgl [87.1m AOD] and CP27 at 1.00m bgl [55.0m AOD]), wet of the optimum in 1 instance (TP08 at 1.50m bgl [83.5m AOD]) and at the optimum in 1 instance (TP08 at 2.40m bgl [82.6m AOD]).

Chemical Analysis and Sulphate Classification

4 No. samples of the Made Ground were scheduled for Suite D aggressive chemical environment for concrete (ACEC) classification in accordance with BRE Special Digest 1:2005, Concrete in Aggressive Ground, the results of which are discussed within Section 6.0 of this report.

Organic Matter

4 No. samples of the Made Ground sampled from depths of 0.50m to 3.00m bgl (53.0m AOD to 84.5m AOD) were submitted for organic matter analysis which identified concentrations ranging from 0.5% to 6.7%.

5.3 Oadby member

Table 10 – Summary table of in-situ and laboratory testing for the Oadby Member

Parameter	No. of tests	Range	Characteristic value/trend
Classification			
Natural Moisture Content (%)	36	10 – 26	17
Atterberg Limits (%)	35	LL 27 – 51	LL 38
		PL 14 – 22	PL 18
		PI 8 – 33	PI 20
Modified Plasticity (%)		7 – 30	17
Plasticity term		Low – High	Low – High
Volume Change Potential		Low – Medium	Low – Medium
Particle Size Distribution	6	-	Class 2A/B & Class 2C
Particle Density (Mg/m^3)	10	2.47 – 2.62	2.55
Strength & Stiffness			
SPT N_{60} value	49	11 – 111 (6 No. ref. at N_{field} = 50, 1 No. ref. at N_{field} = 100)	-
Undrained Shear Strength – Undrained Triaxial Compression test (kPa)	11	41 – 365	50 + 15(z-2)
Undrained Shear Strength – Hand Shear Vane (kPa)	16	68 – 146	-
Compaction, Compressibility & Consolidation			
Optimum Moisture Content and Maximum Dry Density	15	OMC 9 – 20%	OMC 16%
		MDD 1.67 – 2.01Mg/m^3	MDD 1.80Mg/m^3
		Air voids 0 - 10%	Air voids <5%
Coefficient of consolidation, c_v (m^2/yr) *at overburden*	4	0.067 – 0.24	0.16
Coefficient of compressibility, m_v (m^2/MN) *at existing overburden*		0.10 – 0.29	0.19
Compressibility term		Medium	Medium
Moisture Condition Value	1	-	11
Organic Content			
Soil Organic Matter (%)	15	0.4 – 2.1	<1

Moisture Content and classification testing

38 No. Moisture Content tests and 38 No. Atterberg tests were undertaken on samples of the Oadby Member taken at depths of between 0.50m and 14.70m bgl (87.0m AOD and 65.5m AOD). Moisture contents ranged between 10% and 26%. The testing reported liquid limits of 27% to 51%, plastic limits of 14% to 22%, and plasticity indexes of 8% to 33% with modified plasticity indexes of 7% to 30%. The

results are consistent with a low to moderate plasticity clay and a low to medium volume change potential in accordance with NHBC Chapter 4.2 'Building Near Trees' (2024).

Particle Size Distribution

Particle Size Distribution testing was undertaken on 6 No. samples of the Oadby Member from depths of between 1.20m and 4.50m bgl (78.3m AOD and 71.7m AOD) where the results invariably indicate the material to be cohesive dominant with 2% to 8% gravel, 18% to 25% sand, 37% to 43% silt and 27% to 43% clay content.

Particle Density

Particle density testing was undertaken on 10 No. samples of the Oadby Member from depths of 0.50m to 2.10m bgl (86.7m AOD to 75.4m AOD) where results of between 2.47Mg/m^3 and 2.62Mg/m^3 were recorded. A characteristic value of 2.55Mg/m^3 was calculated from an average of the individual results.

In-Situ Testing, Strength & Stiffness

49 No. SPT tests were undertaken within the Oadby Member at depths of 1.20m to 15.00m bgl (86.0m AOD to 65.2m AOD); SPT N_{60} values of 11 to 111 were recorded with 6 No. refusals recorded at N_{field} = 50 and 1 No. refusal at N_{field} = 100. The data is considered to indicate an increasing strength with depth correlation, increase from N_{60} = 10 at 2.00m bgl to N60 = 40 at 16.00m.

Using the correlation proposed by Stroud & Butler (1974) and an f_1 factor of 4.5, the undrained shear strength of the cohesive material is derived to be 41kPa to >300kPa, corresponding to a medium to extremely high strength clay in accordance with BS EN ISO 14688-2:2018.

The 11 No. Unconsolidated Undrained Triaxial Compression Tests undertaken on the Oadby Member at depths of between 2.00m and 12.00m bgl (79.7m AOD and 66.2m AOD) have confirmed the soils are largely of very high strength with undrained shear strengths between 158kPa and 365kPa for the majority of samples. However, 1 No. test recorded a result outside of this range where an undrained shear strength of 41kPa was recorded (BH09 at 4.00m [70.2m AOD]), indicating a medium strength material.

Hand shear vane testing undertaken in the boreholes and trial pits at depths of between 1.20m and 6.00m bgl (88.2m AOD and 71.8m AOD) recorded undrained shear strengths of between 68kPa and >140kPa indicating firm to very stiff conditions.

Based on these testing results, the following characteristic undrained shear strength (c_u) profile vs. depth (z) has been derived:

$$c_u = 50 + 15(z\text{-}2)$$

This means undrained shear strength linearly increases from 50kPa at 2.00m bgl to 200kPa at 12.00m bgl.

The undrained stiffness (E_u) at an axial strain of 0.1% (typical for foundations) has been derived using the recommendations in Jardine et al. (1984):

$$E_u = 400.c_u$$

Therefore, using the characteristic undrained shear strength profile presented above, the following equation can be used to derive the undrained stiffness of the Oadby Member at any depth:

$$E_u = 400(50 + 15[z\text{-}2])$$

The following correlation is considered appropriate to derive the drained stiffness (E'):

$$E' = 0.8E_u$$

3 No. one dimensional consolidation tests were undertaken on samples of Oadby Member from 2.00m to 5.00m bgl (75.2m AOD to 72.2m AOD). The reported coefficient of compressibility (m_v) results for the

corresponding pressures approximately equal to overburden pressure for each sample ranged between 0.10m²/MN and 0.29m²/MN. This suggests a medium compressibility clay, which is typical of a stiff fluvio-glacial clay (M.J. Tomlinson, 2001). The reported coefficient of consolidation (c_v) at overburden pressure ranged between 0.067m²/yr and 0.24m²/yr with an average result of 0.157m²/yr.

Moisture Condition Value

Moisture Condition Value testing was carried out on a number of samples of the Oadby Member with 2 No. Moisture Condition Calibration tests (MCC) (CP06 at 4.00m bgl [83.0m AOD] and CP10 at 4.00m bgl [71.0m AOD]) and 1 No. MCV test (TP07 at 1.00m bgl [82.7m AOD]) undertaken. The testing indicates MCVs of 8 and above at moisture contents at 22% and below.

Optimum Moisture Content and Maximum Dry Density Analysis (OMC & MDD)

15 No. compaction tests were undertaken on Oadby Member samples taken from depths of 0.40m to 4.00m bgl (86.7m AOD to 75.4m AOD), 9 of which utilising a 2.5kg rammer and 6 utilising a 4.5kg rammer. The results generally recorded air voids of less than 5% at MDD with 1 result indicating air voids of 5-10%; MDDs of between 1.67Mg/m³ and 2.01Mg/m³ were recorded with OMC of between 9% and 20%.

Comparison of the moisture content with the MDD/OMC results indicates the material is dry of the optimum for the majority of results with 1 instance where the sample was wet of the optimum (BH06 at 4.00m bgl [76.3m AOD]) and at the optimum in 4 instances (BH05 at 0.50m bgl [86.7m AOD], BH06 at 0.70m bgl [79.6m AOD], BH14 at 0.70m bgl [84.0m AOD] and CP08 at 1.00m bgl [80.7m AOD]).

Chemical Analysis and Sulphate Classification

5 No. samples of the Oadby Member were scheduled for Suite D aggressive chemical environment for concrete (ACEC) classification in accordance with BRE Special Digest 1:2005, Concrete in Aggressive Ground, the results of which are discussed within Section 6.0 of this report.

Organic Matter

15 No. samples of the Oadby Member sampled from depths of 0.40m to 13.50m bgl (88.5m AOD to 68.2m AOD) were submitted for organic matter analysis which identified concentrations ranging from 0.4% to 2.1%, although the majority of results were recorded as <1%.

5.4 Glaciofluvial Deposits

Cohesive Glaciofluvial Deposits

Table 11 – Summary table of in-situ and laboratory testing for the Cohesive Glaciofluvial Deposits

Parameter	No. of tests	Range	Characteristic value
Classification			
Natural Moisture Content (%)	35	5 – 28	17
Atterberg Limits (%)	35	LL 20 – 51	LL 37
		PL 11 – 34	PL 19
		PI 9 – 31	PI 19
Modified Plasticity (%)		6 – 30	15
Plasticity term		Low – Medium	Low – Medium
Volume Change Potential		Low – Medium	Low – Medium
Particle Size Distribution	12	-	Class 2A/B & Class 2C
Particle Density (Mg/m³)	2	2.32 – 2.43	2.38

Parameter	No. of tests	Range	Characteristic value
Strength & Stiffness			
SPT N60 value	50	4 – 140 (2 No. ref. at N_{field}=50, 5 No. ref. at N_{field}=100)	-
Undrained Shear Strength – Undrained Triaxial Compression test (kPa)	2	105 – 258	50 + 15(z-2)
Undrained Shear Strength – Hand Shear Vane (kPa)	20	36 – 140	-
Compaction, Compressibility & Consolidation			
Optimum Moisture Content and Maximum Dry Density	9	OMC 13 – 20%	OMC 16%
		MDD 1.70 – 1.98Mg/m3	MDD 1.57 – 1.88Mg/m3
		Air voids 0% - 10%	Air voids <5%
Coefficient of consolidation c_v (m^2/yr) *at overburden*	2	0.057*	0.057*
Coefficient of compressibility m_v (m^2/MN) *at existing overburden*		0.41*	0.41*
Compressibility term		Medium	Medium
Moisture Condition Value	3	7.6 – 17.4	11.6
Organic Content			
Soil Organic Matter (%)	46	0.2 – 4.2	<1

*result is not considered representative of the stratum as only 1 No. test was successfully carried out.

Moisture Content and classification testing

38 No. Moisture Content tests and 38 No. Atterberg tests were undertaken on cohesive dominant samples of the Glaciofluvial Deposits taken at depths of between 0.30m and 11.20m bgl (89.9m AOD and 61.3m AOD). Moisture contents ranged between 5% and 26%. Liquid limits of 20% to 51%, plastic limits of 11% to 34%, and plasticity indexes of 9% to 31% with modified plasticity indexes of 6% to 30% recorded. The results are largely indicative of a low to moderate plasticity clay with a low to intermediate volume change potential where a number of results plot below the 'A-Line' suggesting predominantly silt soil in accordance with NHBC Chapter 4.2 'Building Near Trees' (2024).

Particle Size Distribution

Particle Size Distribution testing was undertaken on 12 No. samples of the cohesive dominant Glaciofluvial Deposits from depths of between 0.50m and 6.00m bgl (87.0m AOD and 68.9m AOD) where the results indicate the material to consist of 0% to 30% gravel, 7% to 61% sand, 21% to 71% silt and 12% to 45% clay where the fines content is >40% in all samples tested.

Particle Density

Particle density testing was undertaken on 2 No. samples of the cohesive Glaciofluvial Deposits; BH02 at 0.70m bgl (89.6m AOD) and BH13 at 4.00m bgl (84.0m AOD) and results of 2.32Mg/m^3 and 2.43Mg/m^3 were recorded respectively. A characteristic value for this deposit has therefore been calculated as 2.38Mg/m^3 from an average of these two results.

In-Situ Testing, Strength & Stiffness

50 No. SPT tests were undertaken within the cohesive dominant Glaciofluvial Deposits at depths of 1.20m to 13.50m bgl (88.2m AOD to 62.7m AOD). SPT N_{60} values of 4 to 140 were recorded with 2 No.

refusals recorded at N_{field} = 50 and 5 No. refusals at N_{field} = 100. The data is considered to exhibit an increasing strength with depth trend with SPT N_{60} values increasing from 10 at 2.00m bgl to 50 at 14.00m bgl.

Using the correlation proposed by Stroud & Butler (1974) and an f_1 factor of 4.5, the undrained shear strength is derived to be 36kPa to >300kPa, corresponding to a very low to extremely high strength clay in accordance with BS EN ISO 14688-2:2018.

The 2 No. Unconsolidated Undrained Triaxial Compression Tests undertaken on the cohesive Glaciofluvial Deposits (BH13 at 5.00m bgl [88.0m AOD] and CP17 at 7.50m bgl [82.3m AOD]) indicated the clay is generally of high to very high strength with undrained shear strengths of 105kPa and 258kPa recorded.

Hand shear vane testing undertaken in the boreholes and trial pits on samples of the cohesive dominant Glaciofluvial Deposits at depths of 0.40m to 4.00m (88.1m AOD to 54.0m AOD) recorded undrained shear strengths of between 32kPa and >140kPa indicating firm to very stiff conditions.

Based on these testing results, the following characteristic trend for undrained shear strength (c_u) vs. depth (z) has been derived:

$$c_u = 50 + 15(z\text{-}2)$$

This means undrained shear strength linearly increases from 50kPa at 2.00m bgl to 200kPa at 12.00m bgl.

The undrained stiffness (E_u) at an axial strain of 0.1% (typical for foundations) has been derived using the recommendations in Jardine et al. (1984):

$$E_u = 400.c_u$$

in which E_u/c_u is estimated to be 400. Therefore, using the characteristic trend presented above, the following equation can be used to derive the undrained stiffness of the cohesive Glaciofluvial Deposits at any depth:

$$E_u = 400(50 + 15[z\text{-}2])$$

The following correlation is considered appropriate to derive the drained stiffness (E'):

$$E' = 0.8E_u$$

1 No. One Dimensional Consolidation test was undertaken on a sample of the cohesive dominant Glaciofluvial Deposits from 2.00m bgl (61.9m AOD). The reported coefficient of compressibility (m_v) results for the corresponding pressure approximately equal to overburden pressure for the sample was 0.41; indicative of a high compressibility clay.

Optimum Moisture Content and Maximum Dry Density Analysis (OMC & MDD)

9 No. compaction tests were undertaken on the cohesive dominant Glaciofluvial Deposit samples taken from depths of 0.50m to 5.00m bgl (90.0m AOD to 72.6m AOD), 7 of which utilising a 2.5kg rammer and 2 utilising a 4.5kg rammer. The results generally recorded air voids of less than 5% at MDD with 1 result indicating air voids of 5-10%; MDDs of between 1.70Mg/m³ and 1.98Mg/m³ were recorded with OMCs of between 13% and 20%.

Comparison of the moisture content with the MDD/OMC results indicates the material is dry of the optimum in 4 instances, wet of the optimum in 3 instances and at the optimum in 2 instances.

Moisture Condition Value

Moisture Condition Value testing was carried out on a number of samples of the Cohesive Glaciofluvial soils with 1 No. MCC test (BH14 at 4.00m bgl [80.7m AOD]) and 3 No. MCV tests (BH18 at 0.80m bgl [76.8m AOD], CP17 at 7.60m bgl [74.7m AOD] and TP14 at 0.40m bgl [81.7m AOD]) undertaken. The

testing indicates MCVs of 8 and above at moisture contents at c. 14% and below although 1 No. result recorded at MCV of 9.7 at a moisture content of 23%.

Chemical Analysis and Sulphate Classification

3 No. samples of the cohesive Glaciofluvial Deposit were scheduled for Suite D aggressive chemical environment for concrete (ACEC) classification in accordance with BRE Special Digest 1:2005, Concrete in Aggressive Ground, the results of which are discussed within Section 6.0 of this report.

Organic Matter

26 No. samples of the cohesive dominant Glaciofluvial Deposits sampled from depths of 0.40m to 10.50m bgl (89.6m AOD to 54.3m AOD) were submitted for organic matter analysis which identified concentrations ranging from 0.2% to 2.3%, although the majority of results were recorded as <1%.

Granular Glaciofluvial Deposits

Table 12 – Summary table of in-situ and laboratory testing for the Granular Glaciofluvial Deposits

Parameter	No. of tests	Range	Characteristic value
Classification			
Natural Moisture Content (%)	2	13 – 16	15
Particle Size Distribution	12	-	Class 2A/B & Class 2C
Particle Density (Mg/m^3)	1	-	2.45
Strength & Density			
SPT N_{60} value	27	5 – 107 (9 No. ref. at N_{field} = 50, 2 No. ref. at N_{field} = 100)	10 at 3.0m bgl 50 at 16.0m bgl
Density term		Very loose – Very dense	Medium dense
Compaction			
Optimum Moisture Content and Maximum Dry Density	2	OMC 8 – 18%	OMC 13%
		MDD 1.78 – 2.08Mg/m^3	MDD 1.93Mg/m^3
		Air voids 0 – 5%	Air voids <5%
Organic Content			
Soil Organic Matter	2	0.7 – 1.4%	1.1%

Particle Size Distribution

PSD testing was also undertaken on 18 No. samples of the granular dominant Glaciofluvial Deposits from depths of between 0.70m and 16.50m bgl (86.8m AOD and 64.3m AOD) where results indicate the material to consist of 12% to 28% cobbles, 0% to 71% gravel, 10% to 77% sand, 15% to 68% silt and 5% to 21% clay with 6% to 12% fines recorded for the 4 No. samples where sedimentation testing was not undertaken.

Particle Density

1 No. particle density test was undertaken on the granular Glaciofluvial Deposits; BH15 at 5.00m (81.5m AOD) where a result of 2.45Mg/m^3 was recorded.

In-Situ Testing, Strength & Stiffness

27 No. SPT tests were undertaken within the granular dominant Glaciofluvial Deposits at depths of 3.00m to 16.50m bgl (82.2m AOD to 65.2m AOD). SPT N_{60} values of 5 to 107 were recorded with 9 No.

refusals recorded at N_{field} = 50 and 2 No. refusals recorded at N_{field} = 100 indicating loose to very dense conditions.

The results are considered to indicate an increasing strength with depth correlation with N_{60} values increasing from 10 at 3.0m bgl to 50 at 16.0m bgl.

Optimum Moisture Content and Maximum Dry Density Analysis (OMC & MDD)

2 No. compaction tests were undertaken on the granular dominant Glaciofluvial Deposit samples taken from depths of 1.00m and 5.00m bgl (72.0m AOD and 74.5m AOD respectively); 1 utilising a 2.5kg rammer and the other a 4.5kg rammer. The results generally recorded air voids of equal to and less than 5% at MDD with MDDs of 1.78Mg/m³ and 2.08Mg/m³ and OMCs of 8% and 18%.

Comparison of the moisture content with the MDD/OMC results indicates the material is dry of the optimum for in 1 instance (BH15 at 5.00m [76.5m AOD]) and wet of the optimum in the other (TP13 at 1.00m [72.0m AOD]).

Chemical Analysis and Sulphate Classification

2 No. samples of the Glaciofluvial Deposit were scheduled for Suite D aggressive chemical environment for concrete (ACEC) classification in accordance with BRE Special Digest 1:2005, Concrete in Aggressive Ground, the results of which are discussed within Section 6.0 of this report.

Organic Matter

2 No. samples of the granular Glaciofluvial Deposits from depths of 4.50m and 9.70m (69.7m AOD and 77.5m AOD) were also submitted for organic matter analysis in which concentrations of 0.7% and 1.4% were recorded respectively.

5.5 Gunthorpe Member

Weathered Gunthorpe Member

Table 13 – Summary table of in-situ and laboratory testing for the Weathered Gunthorpe Member

Parameter	No. of tests	Range	Characteristic value
Classification			
Natural Moisture Content (%)	35	10 – 29	18
Atterberg Limits (%)	35	LL 28 – 62	LL 38
		PL 15 – 26	PL 20
		PI 12 – 39	PI 18
Modified Plasticity (%)		8 – 35	15
Plasticity term		Low – High	Low – Medium
Volume Change Potential		Low – Medium	Low – Medium
Particle Size Distribution	6	-	Class 2A/B & Class 2C
Particle Density (Mg/m³)	6	2.48 – 2.71	2.60
Strength & Stiffness			
SPT N_{60} value	49	10 – 113 (59 No. ref. at N_{field} = 50, 35 No. ref. at N_{field} = 100)	-
Undrained Shear Strength – Undrained Triaxial Compression test (kPa)	11	44 – 221	50 + 25(z-2)
Undrained Shear Strength – Hand Shear Vane (kPa)	16	24 – >140	-
Compaction, Compressibility & Consolidation			
	23	OMC 10 – 23%	OMC 17%

Optimum Moisture Content and Maximum Dry Density		MDD 1.56 – 2.11Mg/m3	MDD 1.79Mg/m3
		Air voids 0% - 5%	Air voids <5%
Coefficient of compressibility m_v (m^2/MN) *at existing overburden*	3	m_v (at overburden pressure) 0.14 – 0.22	m_v (at overburden pressure) 0.19
Compressibility term		Medium	Medium
Moisture Condition Value	1	3.5 – 18	10.3
Organic Content			
Soil Organic Matter	15	0.3 – 3.8%	1.5%

Moisture Content and classification testing

64 No. Moisture Content tests and 64 No. Atterberg tests were undertaken on samples of the Weathered Gunthorpe Member taken at depths of between 0.40m and 11.70m bgl (89.6m AOD and 52.0m AOD). Moisture contents ranged between 10% and 29%. Liquid limits of 28% to 62%, plastic limits of 15% to 26%, and plasticity indexes of 12% to 39% with modified plasticity indexes of 8% to 35% recorded. The results are indicative of a low to moderate plasticity clay with a low to medium volume change potential in accordance with NHBC Chapter 4.2 'Building Near Trees' (2024).

Particle Size Distribution

Particle Size Distribution testing was undertaken on 13 No. samples of the Weathered Gunthorpe Member from depths of between 0.50m and 6.40m bgl (87.2m AOD and 67.8m AOD) where the results indicate the material to consist of 0% to 14% cobble, 0% to 25% gravel, 1% to 66% sand, 16% to 84% silt and 0% to 34% clay.

Particle Density

Particle density testing was undertaken on 6 No. samples of the Weathered Gunthorpe Member between depths of 0.60m and 2.60m bgl (89.6m AOD and 70.4m AOD). A characteristic value of 2.60Mg/m^3 has been calculated from an average of the results.

In-Situ Testing, Strength & Stiffness

173 No. SPT tests were undertaken within the Oadby Member at depths of 1.00m to 26.00m bgl (90.2m AOD to 50.6m AOD); SPT N_{60} values of 10 to 113 were recorded with 59 No. refusals recorded at N_{field} = 50 and 35 No. refusal at N_{field} = 100.

Using the correlation proposed by Stroud & Butler (1974) and an f_1 factor of 4.5, the undrained shear strength of the cohesive material is derived to be 43kPa to >300kPa, corresponding to a medium to extremely high strength clay in accordance with BS EN ISO 14688-2:2018.

Hand shear vane testing undertaken on 36 No. samples in the boreholes and trial pits at depths of between 0.40m and 4.00m bgl (89.6m AOD and 57.0m AOD) recorded undrained shear strengths of between 24kPa and >140kPa indicating soft to very stiff conditions.

3 No. Unconsolidated Undrained Triaxial Compression Tests were undertaken on the Weathered Gunthorpe Member at depths of between 1.20m and 2.00m bgl (74.9m AOD and 66.9m AOD) have confirmed the soils are largely of medium to very high strength with undrained shear strengths between 44kPa and 221kP. These results corroborate the findings of the Hand shear vane testing.

Based on these testing results, the following characteristic trend for undrained shear strength (c_u) vs. depth (z) has been derived:

$$c_u = 50 + 25(z\text{-}2)$$

This means undrained shear strength linearly increases from 50kPa at 2.00m bgl to 125kPa at 5.00m bgl.

The undrained stiffness (E_u) at an axial strain of 0.1% (typical for foundations) has been derived using the recommendations in Jardine et al. (1984):

$$E_u = 400.c_u$$

in which E_u/c_u is estimated to be 400. Therefore, using the characteristic trend presented above, the following equation can be used to derive the undrained stiffness of the Weathered Gunthorpe Member:

$$E_u = 400(50 + 25[z\text{-}2])$$

The following correlation is considered appropriate to derive the drained stiffness (E'):

$$E' = 0.8E_u$$

4 No. one dimensional consolidation tests were undertaken on the Weathered Gunthorpe Member from 2.00m to 4.00m bgl (85.2m AOD to 66.1m AOD). The reported coefficient of compressibility (m_v) results for the corresponding pressures approximately equal to overburden pressure for each sample ranged between 0.14m^2/yr and 0.22m^2/yr. This suggests a medium compressibility clay (M.J. Tomlinson, 2001).

Moisture Condition Value

Moisture Condition Value testing was carried out on a number of samples of the Weathered Gunthorpe member with 1 No. MCC test (BH19 at 3.00m bgl [73.6m AOD]) and 5 No. MCV tests between depths of 0.40m and 7.50m bgl (88.6m AOD and 69.8m AOD) undertaken. The testing indicates MCVs of 8 and above at moisture contents at c. 22% and below.

Optimum Moisture Content and Maximum Dry Density Analysis (OMC & MDD)

23 No. compaction tests were undertaken on Weathered Gunthorpe Member samples taken from depths of 0.50m to 7.50m bgl (88.2m AOD to 62.9m AOD), 21 of which utilising a 2.5kg rammer and 2 utilising a 4.5kg rammer. The results invariably recorded air voids of less than 5% at MDD with MDDs of between 1.56Mg/m^3 and 2.11Mg/m^3, and OMCs of 10% to 24%.

Comparison of the moisture content with the MDD/OMC results indicates the material was wet of the optimum for the majority of results with 6 instances where samples were dry of the optimum and 5 instances where samples were at the optimum.

Chemical Analysis and Sulphate Classification

22 No. samples of the Weathered Gunthorpe Member were scheduled for Suite D aggressive chemical environment for concrete (ACEC) classification in accordance with BRE Special Digest 1:2005, Concrete in Aggressive Ground, the results of which are discussed within Section 6.0 of this report.

Organic Matter

36 No. samples of the Weathered Gunthorpe Member sampled from depths of 0.10m to 6.50m bgl (90.9m AOD to 52.0m AOD) were submitted for organic matter analysis which identified concentrations ranging from 0.3% to 3.8%.

Gunthorpe Member – bedrock

Table 14 – Summary table of in-situ and laboratory testing for the Gunthorpe Member

Parameter	No. of tests	Range	Characteristic value
Classification			
Natural Moisture Content (%)	17	11 – 17	15
Atterberg Limits (%)	4	LL 32 – 37	LL 35
		PL 18 – 21	PL 20
		PI 13 – 17	PI 16

Parameter	No. of tests	Range	Characteristic value
Modified Plasticity (%)		8 – 12	11
Plasticity term		Low – Medium	Low – Medium
Volume Change Potential		Low – Medium	Low – Medium
Particle Size Distribution	1	-	Class 2C
Strength & Stiffness			
SPT N_{60} value	49	53 – 107 (11 No. ref. at N_{field} = 50, 4 No. ref. at N_{field} = 100)	-
Undrained Shear Strength – Hand Shear Vane (kPa)	1	150	-
Compaction, Compressibility and Consolidation			
Optimum Moisture Content and Maximum Dry Density	1	-	OMC 15%
		-	MDD 1.82Mg/m3
		-	Air voids <5%
Moisture Condition Value	1	-	11.4
Organic Matter			
Soil Organic Matter	1	-	1.1%
Rock Strength			
Unconfined Compressive Strength – **Mudstone**	15	0.2 – 24.4MPa	-
Unconfined Compressive Strength (converted from Axial Point Load tests) – **Mudstone**	129	0 – 38.6MPa	-
Unconfined Compressive Strength – **Siltstone**	8	3.4 – 30.1MPa	-
Unconfined Compressive Strength (converted from Axial Point Load tests) – **Siltstone**	6	0.5 – 28.3MPa	-
Unconfined Compressive Strength – **Sandstone**	1	57.8MPa	-
Unconfined Compressive Strength (converted from Axial Point Load tests) – **Sandstone**	3	5.1 – 12.7MPa	-

Moisture Content and classification testing

17 No. Moisture Content tests were undertaken on samples of the Gunthorpe Member taken at depths of between 2.10m and 14.30 bgl (84.2m AOD and 54.5m AOD) where moisture contents were found to range between 11% and 17%.

4 No. Atterberg tests were undertaken on samples from depths of between 2.75m and 4.70m bgl (72.2m AOD and 62.4m AOD) recorded Liquid limits of 32% to 37%, plastic limits of 18% to 21%, and plasticity indexes of 13% to 17% with modified plasticity indexes of 8% to 12% recorded. The results are indicative of a low to moderate plasticity clay with a low to intermediate volume change potential in accordance with NHBC Chapter 4.2 'Building Near Trees' (2024).

Particle Size Distribution

Particle Size Distribution testing was undertaken on 1 No. sample of the Gunthorpe Member from a depth of 2.70 bgl (69.1m AOD) where the results indicate the material to consist of 0% cobble, 34% gravel, 19% sand, 34% silt and 13% clay.

In-Situ Testing, Strength & Stiffness

16 No. SPT tests were undertaken within the Gunthorpe Member at depths of 3.50m to 18.50m bgl (82.5m AOD to 54.2m AOD); SPT N values of 50 to 100 were recorded with 11 No. refusals recorded at N = 50 and 4 No. refusal at N = 100.

Using the correlation proposed by Stroud & Butler (1974) and an f_1 factor of 4.5, the undrained shear strength of the cohesive material is derived to be 240kPa to >300kPa, corresponding to a very high strength/ hard rock in accordance with BS EN ISO 14688-2:2018.

No discernible trend is considered derivable from the data.

To further assess the strength of the Gunthorpe Member, a combination Unconfined Compressive Strength (UCS) Point Load testing was undertaken on selected sub samples of the rock cores achieved from the rotary cored borehole positions. Table 15 below displays the number of each test carried out on samples of the Mudstone, Siltstone and Sandstone encountered within the Gunthorpe Member.

Table 15 – Summary of Point Load and UCS testing

Rock Type	No. of UCS tests	No. of Axial Point Load tests	No. of Diametral Point Load tests	No. of Irregular Point Load tests
Mudstone	15	130	122	26
Siltstone	8	6	6	4
Sandstone	1	3	4	3

The axial Point Load tests undertaken within the Mudstone from depths of between 4.25m and 30.33m bgl (84.2m AOD and 31.6m AOD) returned I_{s50} values of between 0.00MPa and 1.68MPa. These values have been converted to UCS using a correction factor of 23, as commonly used for Mudstones, giving UCS ranging between 0.00MPa and 38.64MPa; indicative of extremely weak to medium strong rock in accordance with BS 14689. However, the majority of results were between 0.20MPa and c. 5.00MPa indicating extremely weak to weak rock.

The results of the 15 No. UCS tests undertaken on samples from 8.60m to 33.1m bgl (69.5m AOD to 37.2m AOD) recorded the Mudstone strength between 0.20MPa and 24.40MPa indicating extremely weak to moderately weak rock. This suggests the correction factor may be an over estimation. Additionally, consideration should be given to the volume of Point Load testing undertaken versus the volume of UCS testing as the variation in strength observed within the converted UCS results may be the result of a larger data set.

The wide range of strengths recorded within the Mudstone reflects the variability in weathering grade observed within the bedrock. It should be noted that, in accordance with BS EN 14689, materials with strength below 0.6MPa should be classed and described as soil. Following this guidance, 57 No. of 130 No. axial Plate Load tests and 10 No. of the 15 No. UCS tests indicate the material to fall below this threshold. However, in the interest of reporting simplicity, this guidance has not been applied when determining stratum designations.

The axial Point Load tests undertaken within the Siltstone from depths of between 9.77m and 24.64m bgl (73.0m AOD and 57.2m AOD) returned Is50 values of between 0.02MPa and 1.23MPa. When converted to UCS, using a factor of 23, the UCS generally ranges between 4.6MPa and 28.29MPA with one result of 0.46MPa recorded also. The results are indicative of very weak to medium strong rock in accordance with BS 14689.

The 8 No. UCS tests undertaken on Siltstone samples from depths of between 11.21m and 23.00m bgl (71.9m AOD and 51.5m AOD) recorded strengths of 3.40MPa to 30.10MPa indicating very weak to

medium strong rock in accordance with BS EN 14689. These results are clearly in corroboration with the converted axial Point Load tests, supporting the utilisation of a conversion factor of 23.

The axial Point Load tests undertaken within the Sandstone from depths of between 11.70m and 15.65m bgl (55.1m AOD and 53.2m AOD) returned Is50 values of between 0.22MPa and 0.55MPa. When converted to UCS, using a factor of 23, the UCS ranges between 5.06MPa and 12.65MPa indicating weak to moderately weak rock in accordance with BS EN 14689.

1 No. UCS tests was undertake on the Sandstone from BH10 at a depth of 16.27m bgl (71.1m AOD) where a strength of 57.80MPa was recorded indicative of a strong rock in accordance with BS 14689. It should be noted that this description is at odds with the geological logs as the stratum at this depth is described as Siltstone.

For avoidance of doubt, the results of the irregular and diametral Point Load tests have been omitted from the above assessment as they are widely considered to provide a less accurate result compared to axial testing when converting the results to UCS. However, the diametral and irregular results are presented within the Structural Soils Ltd Factual Report.

Optimum Moisture Content and Maximum Dry Density Analysis (OMC & MDD)

1 No. compaction tests was undertaken on a Gunthorpe Member sample taken from a depth of 2.00m bgl (86.7m AOD) utilising a 4.5kg rammer. The results indicated air voids of less than 5% at MDD with an MDD of 1.82Mg/m^3 and an OMC of 15%.

Comparison of the moisture content with the MDD/OMC results indicates the material was dry of the optimum.

Moisture Condition Value

MCV testing was carried out on 1 No. sample (TP33 at 2.20m bgl [64.4m AOD]) of the Gunthorpe Member Bedrock. The testing recorded an MCV of 11.4 at a moisture content of 16%.

Chemical Analysis and Sulphate Classification

2 No. samples of the Gunthorpe Member were scheduled for Suite D aggressive chemical environment for concrete (ACEC) classification in accordance with BRE Special Digest 1:2005, Concrete in Aggressive Ground, the results of which are discussed within Section 6.0 of this report.

Organic Matter

1 No. sample of the Gunthorpe Member sampled from a depth of 10.00m bgl (78.0m AOD) was submitted for organic matter analysis which identified a concentration of 1.1%.

5.6 Soakaway Infiltration Testing

Soakaway infiltration testing was carried out in 8 No. machine excavated trial pits to ascertain infiltration rates of the shallow soils to assess the feasibility of utilising soakaways for storm water attenuation and dispersal. Out of the 8 tests undertaken, only 1 returned an infiltration rate; 3.64x10^{-6} m/s recorded at TP15 within cohesive Glaciofluvial deposits. It was not possible to calculate infiltration rates for the remaining tests (TP01, TP02, TP18, TP26, TP30, TP33 and TP37) as the soils did not have sufficient drainage. Full details of the soakaway tests are presented in the Structural Soils Factual Report in Appendix B.

5.7 Variable Head Permeability Testing

2 No. variable head permeability tests were undertaken in CP06 at 7.20m bgl and BH11 at 11.70m bgl. An in-situ permeability of 1.86x10^{-6} m/s was recorded at BH11 which was undertaken within the granular Glaciofuvial deposits whilst an in-situ permeability of 1.43x10^{-6} m/s was recorded at CP06, within the weathered Gunthorpe Member.

Full details of the soakaway tests are presented in the Structural Soils Factual Report in Appendix B.

5.8 Buried Concrete in Aggressive Ground

A total of 42 No. soil samples, 15 No. groundwater samples and 2 No. surface water samples were scheduled for BRE Suite D aggressive chemical environment for concrete (ACEC) classification testing in accordance with BRE Special Digest 1:2005.

The results indicate a Design Sulphate class of DS-1 and an ACEC class of AC-1 for the Made Ground, Topsoil, Oadby Member, cohesive Glaciofluvial Deposits, granular Glaciofluvial Deposits, Weathered Gunthorpe Member and Gunthorpe Member bedrock. The results also indicate a class of DS-1 AC-1 for the surface water however, a class of DS-2 AC-2 has been indicated for the groundwater on site.

It is therefore considered that all shallow foundations and associated buried structures in contact with the underlying soils should be designed to DS-1 AC-1. Where foundations and associated structures are at risk of contact with the groundwater, concrete should be designed to DS-2 AC-2.

Table 16 – BRE Concrete Classification Assessment

Test Source	Number of tests	Parameter	Characteristic Value
Made Ground	3	Water soluble sulphate (mg/l)	72
		pH	7.9
		Total potential sulphate (%)	0.09
		Classification	**DS-1 AC-1**
Topsoil	1	Water soluble sulphate (mg/l)	<10
		pH	7.3
		Total potential sulphate (%)	0.06
		Classification	**DS-1 AC-1**
Oadby Member	5	Water soluble sulphate (mg/l)	40
		pH	8.3
		Total potential sulphate (%)	0.08
		Classification	**DS-1 AC-1**
Glaciofluvial – Cohesive	3	Water soluble sulphate (mg/l)	14
		pH	9.0
		Total potential sulphate (%)	0.075
		Classification	**DS-1 AC-1**
Glaciofluvial – Granular	2	Water soluble sulphate (mg/l)	11
		pH	8.3
		Total potential sulphate (%)	0.045
		Classification	**DS-1 AC-1**
Weathered Gunthorpe Member	24	Water soluble sulphate (mg/l)	109
		pH	7.9
		Total potential sulphate (%)	0.34
		Classification	**DS-1 AC-1**
	4	Water soluble sulphate (mg/l)	493

Test Source	Number of tests	Parameter	Characteristic Value
Gunthorpe Member (bedrock)		pH	8.1
		Total potential sulphate (%)	1.77
		Classification	**DS-1 AC-1**
Groundwater	15	Sulphate (mg/l)	598
		pH	7.2
		Classification	**DS-2 AC-2**
Surface water	2	Sulphate (mg/l)	76
		pH	7.8
		Classification	**DS-1 AC-1**

6 GEOTECHNICAL ASSESSMENT

6.1 Proposed Development

The proposed development at the **EMG2 Works** comprises logistics and advanced manufacturing development, together with an upgrade to the EMG1 substation and the provision of a community park. The components of the proposed development at the **EMG2 Works** are presented on the **EMG2 Project** Components Plan (**Document DCO/MCO 2.7**) and the associated Parameters Plan is presented as **Document DCO 2.5**.

The EMG2 Main Site Cut and Fill Plan (**Figure 14M.6** of **Chapter 14: Ground Conditions** of the Environmental Statement (ES), **Document MCO/DCO 6.14M**) indicates up to c.10 m of cut and up to c.15 m of fill is proposed.

The Finished Levels Plan (**Figure 14M.5** of **Chapter 14: Ground Conditions**, as referenced above) indicates the creation of 7 No. plateau zones with finished floor levels ranging from +66.75mAOD to +89.00mAOD.

It should be noted that final formation levels and cut/fill volumetrics may be subject to change during detailed design and the recommendations provided within this report are based on information available at the time of reporting.

6.2 Geotechnical Considerations

Presence of Existing Services

Although no services were encountered during the intrusive site investigation, it is recommended that searches and/or surveys are commissioned prior to further design development to identify and verify the locations of any utilities that may be present on site.

The presence of existing services may require capping and or diversion associated with the development, this should be managed through the appropriate utility suppliers during the construction phase. The Principal Contractor should ensure that appropriate mitigation measures are put in place during the construction phase (i.e. during foundation excavation).

Made Ground and Soft/Loose Soils

The presence of Made Ground on site has been proven through the intrusive ground investigation where it was encountered in isolated instances across the site. Given the variable nature of Made Ground, these soils cannot be considered a suitable bearing stratum, as such provision should be made for removal of the soils when encountered within the footprint of proposed structures. Excavations will need to be backfilled and re-compacted / compacted with material suitable for use as general fill.

Made Ground was encountered to a maximum depth of 3.00m (53.0m AOD) at CP27 where it comprised clay with subordinate sand and gravel. The material is described as becoming very soft at a depth of 2.15m to 2.25m bgl. Given CP27 is located in the south-eastern corner of Zone 1 (as indicated on the **EMG2 Works** Parameters Plan, **Document DCO 2.5**), where approximately 10-12m of fill is to be placed in accordance with the most recent cut and fill plan, it is recommended that this material is excavated and recompacted to a suitable earthworks specification in order to mitigate the risk of significant settlement during placement of the fill.

The geotechnical testing undertaken on the Made Ground suggests it is largely suitable for re-use as general fill although elevated organic contents were observed at TP08. In this instance, the material may not be suitable as general fill but can be used as landscaping fill. Testing to date suggest the material could be within 1 or 2% of the optimum moisture content if not at the optimum in its natural state at the time of the investigation. Following appropriate processing the material should be classified prior to re-use to confirm suitability.

Generally speaking, soft/loose soils were not encountered across the site with the vast majority of the shallow soils classifying as firm to very stiff. Nevertheless, the presence of soft/loose soils elsewhere (i.e. between exploratory positions) cannot be ruled out.

Made Ground and soft/loose soils should not be considered a suitable founding stratum. It is recommended that foundations are inspected by a suitably qualified Geotechnical Engineer in order to confirm the absence of Made Ground or soft/loose soils within foundation excavations. Foundations will require local deepening, if Made Ground or soft/loose soils are encountered within foundation excavations.

Groundwater and Excavations

The intrusive ground investigation has identified collapsible, granular deposits at a range of depths across the site. Where these deposits are encountered, excavations will require battering back or appropriate shoring to prevent collapse. Excavations within cohesive strata may retain stability in the short term however, battering to a suitable angle or shoring will be required should they require man entry or long-term stability.

For this reason, suitable shoring should be provided to allow both safe ingress and access routes as the potential for collapse cannot be discounted.

Groundwater strikes were encountered within both the superficial soils and the bedrock. Within the superficials, groundwater strikes were recorded at depths of between 3.20m and 17.00m bgl, (74.3m AOD and 64.7m AOD), where they were exclusively encountered within the Glaciofluvial deposits. Within the Gunthorpe Member (weathered and bedrock), strikes were recorded from 2.80m bgl to 26.50m bgl (81.8m AOD to 52.9m AOD).

On completion of the intrusive ground investigation a programme of groundwater monitoring was undertaken (see Table 6) which found shallow, perched groundwater within the Made Ground and discontinuous superficial Glaciofluvial Deposits and a deeper, more continuous groundwater body within the Weathered Gunthorpe Member and Gunthorpe Member bedrock.

There is potential for groundwater to be encountered in foundation excavations in some plateau zones leading to instability of pits, particularly where water bearing, granular deposits are encountered. Therefore, provision of suitable shoring is recommended to allow maintenance of excavation stability. Groundwater seepages are expected where excavations expose the Gunthorpe Member (weathered and bedrock). Careful consideration will need to be given to the design and implementation of dewatering measures to avoid the loss of fines and inundation collapse in cut areas.

This assessment uses the groundwater data from the installations only, for this reason the potential for shallow groundwater outside of the areas identified above cannot be ruled out given the lack of data between exploratory locations.

Drainage and Soakaways

Appendix 13J (Document DCO/MCO 6.13J) of **Chapter 13: Flood Risk and Drainage** (**Document DCO 6.13**) provides information on the drainage strategy for the **EMG2 Works**.

The results of the infiltration testing completed during the ground investigation indicate that the use of soakaways is not considered viable given the presence of cohesive clay soils with low infiltration rates as well as shallow groundwater. Despite this, if the use of soakaways is required or further feasibility is to be explored, it is recommended that confirmatory BRE 365 soakage testing is undertaken at the specific intended soakaway locations mimicking the proposed volumes/depths, once the drainage design is finalised.

Chemical Attack on Buried Concrete

A number of soil and water samples were scheduled for BRE Suite D aggressive chemical environment for concrete (ACEC) classification in accordance with BRE Special Digest 1:2005. The results indicate that all shallow foundations and associated buried structures in contact with the underlying soils should be designed to DS-1 AC-1. Where foundations and associated structures are at risk of contact with the groundwater, concrete should be designed to DS-2 AC-2. This will therefore apply to any proposed piled foundations.

A summary of the associated testing is presented in Table 16 found in Section 5.8 above.

Volume Change of the Soil Including Presence of Desiccated Soils

A review of the moisture content and Atterberg testing indicated the following characteristic volume change potential for each stratum, Table 17 below summarises the Volume Change Potential of each stratum:

Table 17 – Summary of Volume Change Potential of each stratum

Stratum	Volume Change Potential
Made Ground	Medium
Oadby Member	Low – Medium
Glaciofluvial – cohesive	Low – Medium
Weathered Gunthorpe Member	Low – Medium
Gunthorpe Member	Low – Medium

Comparison between the ground model and the EMG2 Main Site Cut and Fill Plan submitted in support of the DCO Application (**Figure 14M.5** of **Chapter 14: Ground Conditions**, **Document DCO/MCO 6.14M)**) indicates in areas where foundations are to be formed within natural, in-situ strata (i.e. in areas of cut, no cut or fill, or where minimal fill is proposed) they will be formed within the cohesive Glaciofluvial deposits, Weathered Gunthorpe Member and Gunthorpe Member bedrock for the vast majority of the site. Foundations should be designed to appropriate minimum depths as specified in NHBC Chapter 4.2 'Building Near Trees' for medium volume change potential soils (i.e. 1.25m allowing for restricted new planting or 0.90m where outside the influence of new planting).

Although no visual signs of desiccation were recorded during the intrusive investigation, a review using 'Driscoll's Formula' (Driscoll R. [1983] "Influence of Vegetation on Clay Soils" Geotechnique. Vol 33), which states if MC < 0.4 * Liquid Limit then the soils may be desiccated, has indicated 45 No. samples of the Oadby Member, cohesive Glaciofluvial deposits and Weathered Gunthorpe Member are desiccated. These samples which classify as desiccated were taken from across the site, at depths of between 0.30m and 11.20m bgl (89.6m AOD and 57.9m AOD) with no discernible patterns/trends observed. It is important to note, this is a crude relationship that cannot be solely relied upon and, given there were no soils reported as visually desiccated during the investigation and the somewhat random nature of the location/depth of soils classified as desiccated using Driscoll's, the risk of significant desiccation on site is considered low.

Additionally, foundations are envisaged to be outside the zone of influence of any trees across the site and minimal additional planting is proposed as part of the development. Therefore, the risk from seasonal shrink swell of these cohesive soils from tree action is considered low. With this in mind, consultation with the landscape architect is recommended to ensure all trees/extensive vegetation are positioned so they are not within influential distance of any foundations.

Furthermore, given the reduction in infiltration of surface water run off as part of the development, the potential for increased moisture contents of the soils following development is also considered low.

However, in areas where shallow groundwater is present (previously identified under “Groundwater and Excavations” heading) there is an increased risk of moisture content fluctuations resulting from rise and fall of the water table. It is considered the risk of shrink and swell from cohesive soils is low as, although shallow groundwater has been identified, the soils are predominantly low to medium volume change potential.

On this basis, active treatment of the sub-formation is not considered necessary in order to support ground bearing slabs above a sufficient granular sub-base assuming the formation layer is prepared in accordance with an appropriate earthworks specification.

Given low to moderate plasticity clays have been identified on site, heave protection measures are not considered required as part of the development however, more in depth heave analysis specific to each plot/unit is required during geotechnical design stage to confirm this.

Proposed ground solutions

The Made Ground and any soft soils are considered unsuitable bearing stratum. Owing to the proposed earthworks and variable ground conditions, there is potential for the Oadby Member, Glaciofluvial (both cohesive and granular), Weathered Gunthorpe Member and the Gunthorpe Member bedrock to be present at formation and/or foundation level. As such, foundation solutions will have to be specific to the configuration of the ground conditions vs. elevation of each plateau. Detailed assessment of the required foundation configurations is beyond the scope of this report and will be undertaken at geotechnical design stage.

Cut areas

In the areas proposed for cut, it is likely that across each plateau elevation a combination of different strata types will be encountered at formation level. Therefore, there is potential for firm to stiff cohesive strata to be partially present under the proposed structures in combination with competent mudstone strata. As the cohesive soils are subject to a much greater degree of consolidation than lithified strata, careful consideration needs to be given to the potential for differential settlement across the footprint of proposed structures.

Bearing capacities have been calculated for the different strata however, please note the cohesive soils (Oadby, Glaciofluvial and Weathered Gunthorpe) have been grouped together as it is envisaged that distinction between them via visual inspection and as such, conservative bearing capacities have been calculated. For the cohesive soils, prescriptive bearing capacities of c. 150kPa can be assumed where a minimum undrained shear strength of 75kPa is achieved. Where granular soils are encountered at foundation depth, a prescriptive bearing capacity of c. 150kPa can be assumed.

The bearing capacity in the competent Gunthorpe Member is likely to be higher however, the bearing capabilities of this stratum will need careful consideration given the variance in weathering grade observed within the stratum.

Proposed cut slope design

With reference to the Cut and Fill Drawing (**Document DCO/MCO 6.14M**) and Parameters Plan (**Document DCO 2.5**), significant cut slopes are required along the northern boundary of Zone 1, Zone 2 and Zone 3, and along the north-eastern boundary of Zones 4 and 6, with minor cut slopes also widespread across the site.

Cuttings are anticipated to encounter bedrock (Gunthorpe Member) in the northwest of Zone 1, the north ofZone 2 and the north of Zone 3. Therefore, heavy plant and expensive breaking and ripping techniques may be required to excavate these slopes. The possibility of cuttings encountering bedrock should be assessed against **Document DCO/MCO 6.14M**, and cannot be ruled out between exploratory positions.

The Geotechnical Design Report (GDR) should consider the safe angle of repose in temporary and permanent condition due to the height and extent of some cuttings and, subject to engineering levels and development loadings, this may require slope stability analysis. Further investigation is required at design stage should slope angles require increasing to reduce cut volumes.

Table 18 sets out the characteristic peak friction angle (φ') for each stratum. For cohesive strata, in accordance with BS8004:2015, the equation below has been utilised:

$$\varphi' = 42^{o} - 12.5\log_{10}(I_P)$$

For granular strata, a conservative characteristic value has been selected following the guidance in BS8004:2015.

Table 18 – Summary table showing the peak friction angle for strata types

Stratum	Peak Friction Angle (φ')
Oadby	26º
Cohesive Glaciofluvial	26º
Granular Glaciofluvial	38º
Weathered Gunthorpe Member	26º*

*The peak friction angle given here has been calculated using the plasticity index results for the Weathered Gunthorpe Member, the characteristic peak friction angle of this stratum is also set out in CIRIA C570 which is presented in Table 19 below.

The friction angle for the Weathered Gunthorpe Member and Gunthorpe Member bedrock should be ascertained following the guidance set out in CIRIA C570 to take account of the weathering grade of the material. Table 19 below sets out the typical effective stress strength parameters for the Mercia Mudstone.

Table 19 – Summary table showing the typical stress strength parameters of the Mercia Mudstone weathering grades

Weathering Grade	Cohesion – c' (kPa)	Peak Friction Angle - φ' (º)
IV	<20	32-25
III	<20	42-32
I-II	>25	>40

Fill areas

Design of foundations within areas of fill will be dictated by the depth and type of engineering fill utilised. Where fill is shallow and bedrock is present near surface, foundations could be extended through the fill into the competent natural strata. Where deeper fill is present or superficial soils are present at shallow depth, foundations will need to be formed in accordance with the standards of engineering fill placed or suitably designed based on the geotechnical criteria of the superficial material. Detailed foundation design specific to each unit is beyond the scope of this report and will be captured as part of the geotechnical design stage.

Fairhurst have carried out an initial settlement analysis for a number of locations (Situation 1, Situation 2 and Situation 3) across the site where the risk of settlement is considered greatest; i.e. situations where a significant thickness of fill is to be placed on a significant thickness of superficial (compressible) strata. It is important to highlight the settlements provided below are likely to be overestimated as the calculations consider a uniform stress over the entire thickness of each stratum whereas, in reality the stresses will dissipate with depth. More in depth settlement analysis will be undertaken as part of the Geotechnical Design Report and these predictions are provided to highlight the areas where significant settlement is expected only. It should be noted that these assessments were based on cut and fill plans

which have been superseded at the time of this report revision, and thus may not reflect the current cut and fill proposals presented as **Figure 14M.5** of **Chapter 14: Ground Conditions** of the Environmental Statement (**Document MCO/DCO 6.14M**). The changes to the proposed fill across the EMG2 Works are discussed within each Situation modelled below.

Due to a lack of representative one-dimensional consolidation testing data, especially at greater depth, these analyses utilise characteristic compressibility (m_v) values derived from SPT N values using the following correlation presented in CIRIA R143:

$$m_v = f_2.N\ (m^2/MN)$$

wherein f_2 is a factor based on the plasticity index. Using this equation the following m_v values (m^2/MN) for each stratum have been utilised in the settlement calculations presented below:

Oadby Member	0.040m^2/MN throughout the stratum
Glaciofluvial Deposits (cohesive)	0.06m^2/MN at 2.00m bgl linearly decreasing to 0.02m^2/MN at 12.00m bgl
Weathered Gunthorpe Member	0.04m^2/MN at 2.00m bgl linearly decreasing to 0.01m^2/MN at 10.00m bgl

As this approach does not factor the likely decrease in compressibility due to increased confining pressure it is likely to over predict the settlements. Given this these findings are not considered suitable for design stage and are presented only to highlight the potential for settlement on site due to the presence of significant thicknesses of compressible deposits and the substantial thicknesses of fill proposed.

Situation 1 looks at the southern area of Zone 3 on the Parameters Plan (**Document DCO 2.5**).

The model is based on a maximum fill thickness of c. 10.00m with plateau area and the ground conditions have been assessed to comprise 4.00m of Cohesive Glaciofluvial Deposits underlain by 3.00m of the Weathered Gunthorpe Member with bedrock below based on borehole data from BH16, BH17, CP13, CP14 and CP15. This is generally consistent with the current cut and fill plan at the time of the report revision (**Figure 14M.5** of **Chapter 14: Ground Conditions** of the Environmental Statement (**Document MCO/DCO 6.14M**) whereby the maximum fill within this vicinity is indicated as up to c.9.5 m.

A loading scenario consisting of Fill only (10.0m = 200kPa), Fill + Slab (200kPa + 50kPa = 250kPa) and Fill + Pad (200kPa + 150kPa = 350kPa). Where there is fill only placed, settlements of c. 45mm are predicted, where the Fill and Slab are placed settlements of c. 50mm are predicted whilst where Fill and the Pad are situated, settlements of c. 80mm were predicted.

Situation 2 looks at the southern area of Zone 5 on the Parameters Plan (**Document DCO 2.5**). The Cut and Fill Plan indicates a maximum fill thickness of 8.00m in this area and the ground conditions have been assessed to comprise 4.00m of Oadby Member underlain by 1.50m of cohesive Glaciofluvial Deposits and 5.50m of the Weathered Gunthorpe Member below this based on data from BH09. This is generally consistent with the current cut and fill plan at the time of the report revision (referenced above) whereby the maximum fill within this vicinity is indicated as up to 9.11 m.

The loading scenarios consisted of Fill only (8.00m = 160kPa), Fill + Slab (160kPa + 50kPa = 210kPa) and Fill + Pad (160kPa + 150kPa = 310kPa). Where there is fill only placed, settlements of c. 55mm are predicted, where the Fill and Slab are placed settlements of c. 75mm are predicted whilst where Fill and Pad foundations are situated, settlements of c. 110mm are predicted.

Situation 3 looks at the southern area of Zone 6 is situated on the Parameters Plan (**Document DCO 2.5**).

The model is based on a maximum fill thickness of 6.0m in this area and the ground conditions have been assessed to comprise 13.0m of Oadby Member with bedrock below based data from CP07. The

current cut and fill plan at the time of the report revision (referenced above) indicates a decrease in the proposed fill from the preliminary value of 6.0 m used within the modelling to a maximum of c. 0.023 m in this southern area. The remaining part of the southern area of Zone 6 is to be cut.

The loading scenarios consisted of Fill only (6.0m = 120kPa), Fill + Slab (120kPa + 50kPa = 170kPa) and Fill + Pad (120kPa + 150kPa = 270kPa). Where there is fill only placed, settlements of c. 60mm are predicted, where the Fill and Slab are placed settlements of c. 90mm are predicted whilst where Fill and Pad foundations are situated, settlements of c. 140mm are predicted.

From this analysis it is clear careful consideration is needed when assessing the potential for settlement across the site, particularly (but not exclusively) in the areas highlighted above.

Embankment slope design

Mitigation landscaped mounds are proposed to the south of Zone 1 and to the west of Zone 2 to Zone 5 (Parameters Plan - **Document DCO 2.5)** with minor embankments proposed elsewhere. It is therefore anticipated that significant cost will be incurred in the formation of these mounds due to the volumes of material required to be placed. It is assumed that clean, site won materials will be suitable for use within embankment constructions to avoid excessive cost of importing material. Options for increasing side slopes and reducing the footprint and volume of embankments may be explored; these may include reinforced embankments (geogrids) or soil stabilisation (lime and cement) or even retaining walls if required.

The investigation has identified both collapsible deposits and strata susceptible to settlement on site therefore, the risk of failure of any proposed embankments as a result of the formation soils below will need to be carefully considered.

It is recommended that staged construction is undertaken and basal and interim granular layers are installed and linked to the wider drainage network to avoid build-up of pore-water pressure where embankments are formed from fine grained material. Drainage will also need to be carefully considered to cope with surface water and avoid softening of the slope faces and foundation soils, in particular at the toe of slopes.

Earthworks

Significant cut and fill earthworks are required as part of the development to form plateau levels for construction of the proposed structures. In order to reduce the risk of excessive cost for offsite disposal or importation of material, it is assumed that site won materials will be utilised and a cut and fill volume balance will be achieved.

The ground investigation has determined that clean natural soils are present within the areas of cut and these materials should be suitable for re-use provided they are carefully selected and managed in accordance with a suitable earthworks specification. In particular, careful moisture content control is anticipated as the majority of site won material is likely to be cohesive superficial clays or mudstone weathered to cohesive material. Resultantly, consideration will need to be given to the prevailing weather conditions and, subject to testing, it may be possible that lime modification or stabilisation techniques could be used to allow marginal materials to be used within structural fill.

Given the similarity in appearance of the cohesive superficial soils, it is likely these materials will become mixed during the earthworks. For this reason, supplementary testing will be required to reassess the material properties in terms of its earthworks suitability.

An initial classification of the materials likely to be encountered is included below as Table 20, the material class has been assigned in accordance with the Specification for Road Works Series 600.

Table 20 – Summary of material classification for use during earthworks

Stratum	Material description	Material Class	Material use
TS	Firm CLAY with sand and gravel	Class 5A	Fill to Landscape
MGR	Firm to stiff CLAY with sand, gravel and rare brick	Class 2C	General Fill/Fill to Landscape
ODT	Stiff to very stiff CLAY with silt, sand and mudstone, siltstone, sandstone, quartz, quartzite, flint and chalk gravel with occasional cobbles also noted	Class 2A/B	General Fill
GFDU(c)	Firm to very stiff CLAY with silt, sand and mudstone, siltstone, sandstone, quartz, quartzite and flint gravel.	Class 2A/B Class 2C	General Fill
GFDU(g)	Medium dense to very dense GRAVEL with variable clay, silt and sand content or medium dense to dense silty SAND locally clayey and gravelly. The gravel comprised mudstone, siltstone, sandstone, flint, quartz and quartzite.	Class 1A Class 1B	General Fill
WGM	Stiff to very stiff CLAY with silt, sand and gravel where the gravel fraction consisted of mudstone and siltstone lithorelicts	Class 2A/B Class 2C	General Fill
GUN	Mudstone, Siltstone and Sandstone bedrock – likely to disintegrate to a gravelly clay during excavation	Class 2A/B Class 2C	General Fill

Although the PSD results did not identify any clasts >100mm, which would deem the material unsuitable for use as general fill, the logs suggest there are some cobbles/boulders present within all the superficial soils and weathered bedrock. Additionally, the competent mudstone is likely to breakdown under excavation to form more cohesive soils therefore, for these reasons it is anticipated that some material sorting and crushing will be required as part of the earthworks.

As there is a risk the Weathered Gunthorpe Member will contain elevated sulphates, careful consideration should be given to the design specification of earthworks in relation to sulphate induced heave where lime stabilisation is used. Specialist advice should be sought to assess the suitability of utilising lime stabilisation as a moisture content control.

Bridge foundation recommendations

Should there be proposals for a bridge over Hyam's Lane Bridleway, it is considered construction of this structure will require a piled foundation solution due to the deep superficial soils and limited spread of the load. This would require detailed design calculations however, it is envisaged that piles would need to extend to a depth of c. 18.00m to socket into the competent Gunthorpe Member ensuring sufficient bearing capacity is achieved.

External yard space and road pavement

Subject to the cut and filling across the site, it is considered that re-engineered material and the natural deposits beneath the site could provide a minimum California Bearing Ratio (CBR) value of 5%. Made Ground in its present untreated condition, owing to its cohesive nature is likely to result in a lower CBR of c. 2%. CBR testing on prepared sub-formation should be undertaken to confirm adequate road construction details. Yard spaces may be surfaced in concrete slabs and therefore appropriate compaction to Series 600 of the specification for Highway works and a site specific Earthworks Specification will be required.

Unexploded Ordnance

An assessment of online Zetica UXO resources highlighted the site as Low risk with respect to unexploded ordnance. A Zetica site specific UXO Desk Study and Risk Assessment (ref. P11996-22-R1 was obtained on behalf of the Client. The report concludes the site is of Low risk and no special mitigation measures are required with regards to ground investigation or groundworks.

7 GENERIC QUANTITATIVE RISK ASSESSMENT

7.1 General

Geo-Environmental laboratory analysis was conducted on Made Ground and natural soil samples from across the site based on the contaminants of concern identified within the Geo-Environmental Preliminary Risk Assessment. The geo-environmental testing is provided in Appendix B, with a preliminary screening assessment provided as Appendix C.

7.2 Summary of Soil Analytical Laboratory Testing Undertaken

Table 21 provides a summary of the chemical analysis completed on soil samples collected during the October/November 2022 ground investigation works.

Table 21 – Summary of Geo-environmental Laboratory Soil Testing

Geo-Environmental Test	MGR	TS	ODT	GFDU	WGM	GUN
Metals (including Arsenic, Barium, Beryllium, Boron, Cadmium, Chromium (total), Chromium III, Chromium VI, Copper, Lead, Mercury, Nickel, Selenium and Zinc)	2	15	8	16	23	1
Soil Organic Matter	2	15	8	16	23	1
Total Petroleum Hydrocarbon (TPH) (Aliphatic and Aromatic Split using the Criteria Working Group Methodology) and BTEX.	2	15	8	16	23	1
Polycyclic aromatic hydrocarbons (PAH) - Speciated (EPA 16)	2	15	8	16	23	1
Selected Volatile Organic Compound (VOC) and Semi-volatile Organic Compound (SVOC)	2	2	0	2	23	0
Methyl tert-butyl ether (MTBE)	2	13	8	16	23	1
Phenol	2	2	0	2	3	0
Asbestos screen (quantification if required)	2	0	0	0	0	0

7.3 Assessment Criteria and Approach – Risks to Human Health

For the assessment of the soil analytical results the human health generic assessment criteria (GAC) applied are the LQM/CIEH ‘Suitable 4 Use Levels’ (S4ULs) that have been developed in accordance with developments in UK human health risk assessment since 2009.

The S4ULs are based on Health Criteria that represent minimal or tolerable levels of risks to health as described in the Environment Agency's SR2 guidance, ensuring that the resulting assessment criteria are 'suitable for use' under planning.

For each substance, S4ULs have been derived for six generic land uses (including the two Public Open Space land uses defined in S4UL guidance) and a range of Soil Organic Matter contents (organic contaminants only). All toxicological and physical-chemical data inputs used in the derivation of the S4ULs are presented and discussed in the publication.

The assessment criteria outlined above have been used to provide a Generic Quantitative Risk Assessment (GQRA). No statistical analysis has been completed and recorded concentrations have been compared directly to the applied S4ULs.

The Soil Organic Matter test results ranged between 0.2% and 6.1%, with an average of 1.6%. However, the S4ULs have been applied on the basis of a 1% SOM as a conservative approach in the first instance given the variability.

There is no set screening criteria for the protection of human health with respect to asbestos / ACMs in soil. Industry best practice document 'Asbestos in soil and Made Ground: a guide to understanding and managing risks', CIRIA C733, 2014, identifies that soils containing an asbestos concentration of 0.001 % w/w may be able to liberate airborne fibre concentrations and potentially exceed the contemporary occupational exposure limit for nuisance dust, and as such appropriate mitigation measure should be implemented. However, as detailed in recent research, and publications such as the CAR-SOIL Industry Guidance (2016), in circumstances where very low concentrations of asbestos are identified in soil, the associated risks are considered low.

Given the proposed future end use of the site, human health receptors on site are considered to be commercial site end-users and therefore detected soil concentrations have been assessed against generic assessment criteria (GAC) derived for this receptor. The soil concentrations have also been assessed against the Public Open Space (Park) end use, with consideration to the proposed Community Park – DCO Works No. 21 on the Components Plan (**Document DCO/MCO 2.7**).Should any future development plans vary from this end use, the contaminated land risk assessment should be revised.

Individual laboratory results are presented within Appendix B and screening tables comparing the soil laboratory results to assessment criteria is provided as Appendix C.

7.4 Quantitative Assessment – Risks To Human Health

Utilising the commercial end use assessment criteria, a summary of results from the soil assessment for human health are presented in **Table 22** and **Table 23**.

Table 22 – Summary Soil Screening Table – Risks to Human Health – Made Ground

Determinand	No. of Tests	Contaminant Range (mg/kg) above LoD	Commercial Assessment Criteria (mg/kg)	Public Open Space (POS) (Park) Assessment Criteria (mg/kg)	Number of Exceedances	
					Commercial Assessment Criteria	POS Park Assessment Criteria
Metals						
Arsenic	2	0.5 – 3.2	640	170	0	0
Cadmium	2	3	190	650	0	0
Chromium (total)	2	34 - 40	8,600	33,000	0	0
Chromium III	1	40	8,600	33,000	0	0
Chromium VI	1	-	33	220	0	0
Copper	2	8 – 21	68,000	44,000	0	0
Mercury	2	0.34 – 0.46	320	68	0	0
Nickel	2	29 – 32	980	800	0	0
Lead	2	6 – 40	2,330	1,300	0	0
Selenium	2	-	12,000	1,800	0	0
Zinc	2	55 - 132	730,000	170,000	0	0
Total Petroleum Hydrocarbons						

Determinand	No. of Tests	Contaminant Range (mg/kg) above LoD	Commercial Assessment Criteria (mg/kg)	Public Open Space (POS) (Park) Assessment Criteria (mg/kg)	Number of Exceedances	
					Commercial Assessment Criteria	POS Park Assessment Criteria
Aliphatic >EC5 – EC6	2	-	3,200	95,000	0	0
Aliphatic >EC6 – EC8	2	-	7,800	150,000	0	0
Aliphatic >EC8 – EC10	2	-	2,000	14,000	0	0
Aliphatic >EC10 - EC12	2	-	9,700	21,000	0	0
Aliphatic >EC12 - EC16	2	-	59,000	25,000	0	0
Aliphatic >EC16 - EC21	2	2	1600000	7,600	0	0
Aliphatic >EC21 - EC35	2	31	1600000	7,800	0	0
Aromatic >EC5 – EC7	2	-	26000	76,000	0	0
Aromatic >EC7 – EC8	2	-	56000	87,000	0	0
Aromatic >EC8 - EC10	2	-	3500	7,200	0	0
Aromatic >EC10 - EC12	2	-	16000	9,200	0	0
Aromatic >EC12 - EC16	2	2	36000	10,000	0	0
Aromatic >EC16 - EC21	2	25	28000	7,600	0	0
Aromatic >EC21 – EC35	2	189	28000	7,800	0	0
TPH (Ali & Aro >C5 – C35)	2	249	28000	7,800	0	0
BTEX - Benzene	2	-	27	90	0	0
BTEX - Toluene	2	-	56000	87,000	0	0
BTEX - Ethyl Benzene	2	-	5700	17,000	0	0
BTEX - m & p Xylene	2	-	5900	17,000	0	0
BTEX - o Xylene	2	-	6600	17,000	0	0
MTBEs						
MTBE	2	-	7900	-	0	0
Phenols						
Total Phenols	2	-	440	440	0	0
PAHs-16						
Naphthalene	2	-	190	1,200	0	0
Acenaphthylene	2	0.02	83,000	29,000	0	0

Determinand	No. of Tests	Contaminant Range (mg/kg) above LoD	Commercial Assessment Criteria (mg/kg)	Public Open Space (POS) (Park) Assessment Criteria (mg/kg)	Number of Exceedances	
					Commercial Assessment Criteria	POS Park Assessment Criteria
Acenaphthene	2	0.02 – 0.03	84,000	29,000	0	0
Fluorene	2	-	63,000	20,000	0	0
Phenanthrene	2	0.03 – 0.26	22,000	600	0	0
Anthracene	2	0.06	520,000	150,000	0	0
Fluoranthene	2	0.88	23,000	6,300	0	0
Pyrene	2	0.86	54,000	15,000	0	0
Benzo[a]anthracene	2	0.48	170	49	0	0
Chrysene	2	0.51	350	93	0	0
Benzo[b]fluoranthene	2	0.62	44	13	0	0
Benzo[k]fluoranthene	2	0.24	1,200	370	0	0
Benzo[a]pyrene	2	0.55	35	11	0	0
Indeno(1,2,3c,d)Pyrene	2	0.35	500	150	0	0
Dibenz(a,h)Anthracene	2	0.06	3.5	1.1	0	0
Benzo[g,h,i]perylene	2	0.31	3,900	1,400	0	0
VOCs & SVOCs						
A suite of VOCs was conducted on 2 No. samples in the Made Ground, all determinands were recorded as below the limit of detection for both samples						
Asbestos						
No asbestos was detected within the samples put forward for testing.						

Table 23 – Summary Soil Screening Table – Risks to Human Health – Natural Soils

Determinand	No. of Tests	Contaminant Range (mg/kg) above LoD	Commercial Assessment Criteria (mg/kg)	Public Open Space (POS) (Park) Assessment Criteria (mg/kg)	Number of Exceedances	
					Commercial Assessment Criteria	POS Park Assessment Criteria
Metals						
Arsenic	56	1.0 - 27	640	170	0	0
Cadmium	56	0.5 – 1.3	190	650	0	0
Chromium (total)	56	21 – 70	8,600	33,000	0	0
Chromium III	30	21 – 64	8,600	33,000	0	0
Chromium VI	30	-	33	220	0	0
Copper	56	7 – 27	68,000	44,000	0	0
Mercury	56	0.2 – 1.97	320	68	0	0
Nickel	56	17 – 60	980	800	0	0

Determinand	No. of Tests	Contaminant Range (mg/kg) above LoD	Commercial Assessment Criteria (mg/kg)	Public Open Space (POS) (Park) Assessment Criteria (mg/kg)	Number of Exceedances	
					Commercial Assessment Criteria	POS Park Assessment Criteria
Lead	56	3 – 136	2,330	1,300	0	0
Selenium	56	1 – 2	12,000	1,800	0	0
Zinc	56	43 - 92	730,000	170,000	0	0
	Total Petroleum Hydrocarbons					
Aliphatic >EC5 – EC6	56	-	3200	95,000	0	0
Aliphatic >EC6 – EC8	56	-	7800	150,000	0	0
Aliphatic >EC8 – EC10	56	-	2000	14,000	0	0
Aliphatic >EC10 - EC12	56	1	700	21,000	0	0
Aliphatic >EC12 - EC16	56	1 – 40	59000	25,000	0	0
Aliphatic >EC16 - EC21	56	1 – 37	1600000	7,600	0	0
Aliphatic >EC21 - EC35	56	1 – 18	1600000	7,800	0	0
Aromatic >EC5 – EC7	56	-	26000	76,000	0	0
Aromatic >EC7 – EC8	56	-	56000	87,000	0	0
Aromatic >EC8 - EC10	56	1 – 2	3500	7,200	0	0
Aromatic >EC10 - EC12	56	7	16000	9,200	0	0
Aromatic >EC12 - EC16	56	1 – 40	36000	10,000	0	0
Aromatic >EC16 - EC21	56	1 - 37	28000	7,600	0	0
Aromatic >EC21 – EC35	56	1 - 17	28000	7,800	0	0
TPH (Ali & Aro >C5 – C35)	56	1 – 111	8000	7,800	0	0
BTEX - Benzene	56	-	27	90	0	0
BTEX - Toluene	56	-	56000	87,000	0	0
BTEX - Ethyl Benzene	56	-	5700	17,000	0	0
BTEX - m & p Xylene	56	-	5900	17,000	0	0
BTEX - o Xylene	56	-	6600	17,000	0	0
	MTBEs					
MTBE	56	-	7900	-	0	0
	Phenols					

Determinand	No. of Tests	Contaminant Range (mg/kg) above LoD	Commercial Assessment Criteria (mg/kg)	Public Open Space (POS) (Park) Assessment Criteria (mg/kg)	Number of Exceedances	
					Commercial Assessment Criteria	POS Park Assessment Criteria
Total Phenols	6	-	440	440	0	0
PAH-16						
Naphthalene	56	0.27	190	1,200	0	0
Acenaphthylene	56	0.05	83,000	29,000	0	0
Acenaphthene	56	1.48	84,000	29,000	0	0
Fluorene	56	0.44	63,000	20,000	0	0
Phenanthrene	56	0.05 – 0.94	22,000	600	0	0
Anthracene	56	0.31	520,000	150,000	0	0
Fluoranthene	56	0.88	23,000	6,300	0	0
Pyrene	56	0.56	54,000	15,000	0	0
Benzo[a]anthracene	56	0.1	170	49	0	0
Chrysene	56	0.11	350	93	0	0
Benzo[b]fluoranthene	56	0.06 – 0.07	44	13	0	0
Benzo[k]fluoranthene	56	-	1,200	370	0	0
Benzo[a]pyrene	56	0.06	35	11	0	0
Indeno(1,2,3c,d)Pyrene	56	0.03	500	150	0	0
Dibenz(a,h)Anthracene	56	-	3.5	1.1	0	0
Benzo[g,h,i]perylene	56	-	3,900	1,400	0	0
VOCs & SVOCs						
A suite of VOCs & SVOCs was conducted on 8 No. samples in the natural soils. The values above the LOD are detailed below.						
Dibenzofuran	6	529	-	-	0	0
2-Methylnaphthalene	6	132	-	-	0	0
n-Dibutylphthalate	6	286	-	-	0	0
1,3,5-Trimethylbenzene	6	6	-	-	0	0
1,2,4-Trimethylbenzene	6	1	42	-	0	0

7.5 Assessment of Soil Contamination – Risks to Human Health

All concentrations of contaminants analysed were below the commercial and public open space (park) end use assessment criteria where, in the majority of instances, results were below the limit of detection.

Of note, are the samples from CP27 which were identified as potentially contaminated during the intrusive investigation based on visual and olfactory evidence. The results from the sample of Made Ground from 3.00m bgl recorded 2 No. instances where contaminants were elevated above the limit of detection (Acenaphthene – 0.03mg/kg and Phenanthrene – 0.03mg/kg). The results from the top of the natural soils at 4.00m bgl indicated a number of occasions where PAHs, VOCs and SVOCs were above the limit of detection. It is noted that a single sample was elevated (529ug/kg, at 4m bgl) This was a sample in the natural strata, and considering the absence of identified potential sources, this is considered unlikely to be reflective of a site wide issue, or to pose a significant risk to end users. It is acknowledged that the detection limit was variable and a sample had a detection limit of 1,000ug/kg.

Risks to future commercial and public open space end users are therefore assessed as low.

Despite this, localised areas of contamination may be present at the site and the developer should keep a watching brief during construction works. Should any unexpected contamination be encountered, the contractor should contact the geo-environmental consultant and the Local Authority to discuss assessment of risks and mitigation measures, if required.

There are 5 No. instances (BH04, BH12, BH25, TP25 and TP37) where no geo-environmental testing was undertaken despite the identification of Made Ground at this locations. This was due to the soils not being logged as Made Ground until after the geo-environmental scheduling was undertaken. Despite this, the risk from gross contamination of these soils is considered low, as the soil in locations of BH04, BH12, BH25 does not contain any anthropogenic components and no visual or olfactory signs of contamination were recorded. This material has been described as Made Ground due to its reworked nature suggesting these are backfilled pits that have been infilled with natural material.

At TP25 and TP37 the risk of gross contamination is considered low as the soils descriptions indicate largely natural components with a few glass fragments, ceramics and plastic sheet with no visual or olfactory signs of contamination.

No occurrences of asbestos were identified during the ground investigation works. However, in order to inform future construction and maintenance workers, Risk Assessments and Method Statements (RAMS), this report should be issued to the Principal Contractor responsible for development of the site.

It is understood the development includes the creation of bunds at the site with a view of re-use of material. Based on the above the material appears to be suitable with regard to risks to human health. Further testing may be required in any forthcoming earthworks specification and materials management plan.

7.6 Controlled Waters Risk Assessment – Summary of Water Analytical Testing Undertaken

The initial CSM suggests a low/moderate risk to Controlled Waters. Groundwater monitoring completed at the site indicates the presence of shallow, perched and discontinuous groundwater within the Made Ground and superficial Glaciofluvial Deposits (for example at 1.25 m bgl within the Made Ground of CP27 and at 3.85 m bgl within the Glaciofluvial Deposits of CP16). Deeper, more continuous groundwater is thought to be present within the underlying bedrock across the site (for example, at 15.32 m bgl within BH10). The groundwater elevation data suggests the groundwater is flowing in a southerly direction.

The PRA has identified 2 No. watercourses within influential distance of the site, the closest being Diseworth Brook c. 248m south-west. Diseworth Brook flows south easterly and intercepts the Long Whatton Brook c. 545m south-east of the site. The Long Whatton Brook appears to be partially fed by drainage ditches which converge in the south-eastern corner of the site and continue off-site. As it has been identified that these ditches are in hydraulic connectivity with the groundwater, it is considered they are a pathway for groundwater contamination identified on-site to enter the 2 nearby watercourses.

With this in mind a suite of groundwater and surface water testing has been undertaken based on the range of contaminants identified in the Preliminary Risk Assessment.

15 No. groundwater samples from the following monitoring wells were taken and tested for a range of contaminants:

BH02, BH04 (d), BH05, BH06, BH09 (d), BH10, BH13, BH17, BH18, BH21, BH24, BH25, CP06, CP10 and CP27

Groundwater was at depths of between 2.51m (shallow, perched groundwater) and 19.00m bgl (deeper, continuous groundwater) at these positions. Table 24 below sets out the list of contaminants tested for.

Table 24 – Summary of Geo-environmental Laboratory Groundwater Testing

Geo-Environmental Test	No. of tests
Metals (including Arsenic, Barium, Beryllium, Boron, Cadmium, Chromium (total), Chromium VI, Copper, Lead, Mercury, Nickel, Selenium and Zinc)	15
TPH (Aliphatic and Aromatic Split using the Criteria Working Group Methodology), BTEX.	15
PAH - Speciated (EPA 16)	15
SVOC and VOC	15
MTBE	15
Phenol	15
OCP and OPP Combined Pesticide Suite	14
PCBs (16MS)	14

2 No. surface water samples were taken from the drainage ditch that flows south from the central south-eastern area of the site to the south-eastern corner; one taken from the top of the ditch and one taken in the south-eastern corner. Table 25 below presents the range of contaminants that were tested for in these samples.

Table 25 – Summary of Geo-environmental Laboratory Surface Water Testing

Geo-Environmental Test	No. of tests
Metals (including Arsenic, Barium, Beryllium, Boron, Cadmium, Chromium (total), Chromium VI, Copper, Lead, Mercury, Nickel, Selenium and Zinc)	2
TPH (Aliphatic and Aromatic Split using the Criteria Working Group Methodology), BTEX.	2
PAH - Speciated (EPA 16)	2
SVOC and VOC	2
MTBE	2
Phenol	2
OCP and OPP Combined Pesticide Suite	2
PCBs (16MS)	2

7.7 Quantitative Risk Assessment – Risks to Controlled Waters

All surface water results have been assessed to EQS freshwater criteria on the basis that the nearby surface waters are receiving drainage waters from the site via drainage ditches. Where criteria are not available, groundwater quality standards, such as UK or WHO drinking water standards have been utilised for initial screening purposes.

All groundwater samples were assessed against UKDWS or WHO drinking water standards.

The results of the groundwater and surface water testing are included in the Structural Soils factual report, Appendix B. The results of the testing indicated contaminant levels were below the level of detection for the majority of contaminant types. A small number samples were found to exceed the Generic Assessment Criteria for PAHs (0.1 ug/l), these instances are summarised below in Table 26 and Table 27.

Table 26 – Summary Screening Table – Controlled Waters Risk Assessment – Groundwater

Determinant	Contaminant Range (µg/l)	No. of Results Elevated	GAC for PAHs (ug/l)
Acenaphthylene	0.13 – 0.15	2	0.1
Naphthalene	0.14 – 1.14	4	
Pyrene	0.13	1	

Table 27 – Summary exceedances – Controlled Waters Risk Assessment – Surface Water

Determinant	Contaminant Range (ug/l) above Limit of Detection (LoD)	No. of Results Elevated above LoD	GAC for PAHs (ug/l)
Naphthalene	0.18	1	0.1

Groundwater

Contaminant levels recorded within groundwater samples were generally below the Generic Assessment Criteria for the majority of samples, with the exception of a small number of PAHs exceedances as shown in Table 26 above.

PAHs are generally understood to derive from combustion of fuels such as coal, oil, gas and wood/crops and, although these activities may have occurred on site given the site's agricultural history, it is considered unlikely as PAH contamination was not identified within the soil testing on site. Exceedances were generally detected in samples taken from a greater depth (up to 19.0m bgl), and greater PAH exceedances in groundwater were detected in the northern reaches of the site (CP06 = 1.14 ug/l), with concentrations generally decreasing in samples obtained in the southern reaches of the site (CP27 = 0.13 ug/l).

Therefore, this PAH contamination is considered likely to have leached into the groundwater from an off-site source.

Considering the absence of abstraction points within 1,000m of the site and proposed betterment through the managed drainage system and reduced infiltration, risks to controlled water quality are assessed as low.

Surface Waters

As it can be seen, the 1 No. surface water sample detected a slight exceedance in Naphthalene. It has been identified that the drainage ditches are in hydraulic connectivity with the groundwater on site therefore, these elevated contaminants are thought to derive from the groundwater.

No other EQS exceedances have been identified. Where Drinking Water Standard exceedances are identified above, the risk to offsite controlled water receptors is considered low as these are not widespread. As such, the risk to Controlled Waters is considered to be low and no remedial activities are proposed in this regard.

7.8 Quantitative Risk Assessment – Risks to Drinking Water Supply Pipes

Routes of proposed drinking water supply pipes are unknown at the time of writing; however soil concentrations recorded across the site have been compared against UKWIR "*Guidance for the selection of Water Supply Pipes to be used in Brownfield Sites (Ref 10/WM/03/21)*" assessment guidance (Table 28).

Table 28 – Assessment of Maximum Soil Concentrations against UKWIR Assessment Criteria

UKWIR Assessment Criteria	Polyethylene (PE) Threshold (mg/kg)	Polyvinyl Chloride Pipe (PVC) Threshold (mg/kg)	Maximum Soil Concentration Detected (mg/kg)
Total VOCs	0.5	0.125	0.007 (CP27 4.00m)
Total BTEX & MTBE	0.1	0.03	<0.01
Total SVOCs excluding PAH	2	1.4	0.947 (CP27 4.00m)
C5-10 aliphatic / aromatic hydrocarbons	2	1.4	2 (BH20 0.10m, CP27 4.00m)
C10-16 aliphatic / aromatic hydrocarbons	10	n/a	47 (CP27 4.00m)
C16-40 aliphatic / aromatic hydrocarbons	500	n/a	214 (CP27 4.00m)
Phenols	2	0.4	<0.10

Thresholds are highlighted yellow where they have been exceeded in 1 or more samples

Based on the above assessment, 2 No. samples returned results over the threshold for polyethylene pipe, and 1 No. over the threshold for polyvinyl chloride pipe specification. Although these exceedances have been observed, the use of upgraded drinking water supply pipes is not considered necessary. This is because the elevated C5-10 aliphatic / aromatic hydrocarbons recorded at BH20 are within the Topsoil which would be stripped as part of the development.

Additionally, the elevated C5-10 and C16-40 aliphatic / aromatic hydrocarbons recorded at CP27 are considered to be representative of a hotspot of contamination. It is recommended the soils here are excavated and either processed to remove the contamination or suitably disposed of off-site therefore, mitigating the risk of hydrocarbons permeating any drinking water supply pipes.

Although measurable concentrations of SVOCs and VOCs were also recorded within CP27 at a depth of 4.0 m bgl, neither exceeded the PE or PVC threshold. As measurable concentrations of TPHs, SVOCs and VOCs were detected within the natural soils of CP27 (Mercia Mudstone Group, 4.0 m bgl), the vertical distribution and associated risks should be suitably assessed.

As an additional preventative measure, suitable sampling and testing along the proposed pipe routes could be undertaken to determine if PE/PVC pipes are suitable, subject to consultation with the water supplier.

7.9 Ground Gas / Soil Vapour Risk Assessment (Human Health and Buildings)

3 No. gas monitoring visits have been completed where installations were selected for monitoring to assess the potential sources of ground gas identified within the PRA as well as to provide general coverage across the site.

Additionally, there were a number of positions (BH05, BH06, BH09, BH12 and CP16) where groundwater was sat within the non-perforated section of pipe. These were identified after the first round of monitoring and not scheduled for further gas monitoring.

The ground gas risk assessment has been undertaken in general accordance with the CIRIA Report C665 and BS8485:2015. The field records are included in Appendix B of the Structural Soils Ltd Factual report with the results under steady state conditions summarised in Appendix D of this report.

Across the monitoring visits, atmospheric pressures were recorded between 997-1019mb.

In accordance with BS8485:2015 A1:2019, the hazardous Gas Screening Value (GSV) is based on a 'worst-case' scenario whereby GSV equals the maximum hazardous gas concentration divided by 100 and multiplied by the maximum flow rate recorded in any of the monitored boreholes.

The worst case scenario is based on the maximum carbon dioxide concentration of 2.5%v/v and a maximum steady flow rate of 8.1l/hr which results in a worst case GSV of 0.2025l/hr recorded at BH04 (d). The worst case scenario for methane is based on a maximum concentration of 0.1% v/v meaning there is no risk posed from methane concentrations. CIRIA C665 recommends potentially increasing the site Characteristic Situation CS2, based on BS 8485:2015+A1:2019 (CS2 threshold is 0.07 to 0.7l/hr). A review of the data however shows elevated flow was only recorded on one occasion in one deep borehole and is not considered representative of the site conditions. This approach is supported by site observations, where soil organic matter was generally reported at low concentrations and not conducive to ground gas generation. The Made Ground thicknesses encountered are generally < 1m with exception of CP27 where up to three metres of Made Ground were encountered. CP27 was included in the ground gas assessment and reported Characteristic Situation CS1 conditions.

For the reasons outlined above, Characteristic Situation CS1 is considered appropriate for this site based on BS 8485.

As outlined within the BS 8485 the proposed development is considered a Type D Building with the smaller office spaces classed as Type C buildings:

'Type D Building: *industrial style building having large volume internal space(s) that are well ventilated. Corporate ownership with building management controls on alterations to the ground floor and basement areas of the building and on maintenance of ground gas protective measures. Probably civil engineering construction. Examples are retail park sales buildings, factory shop floor areas, warehouses. (Small rooms within these style buildings should be separately categorised as Type B or Type C.'*

'Type C building: *commercial building with central building management control of any alterations to the building or its uses and central building management control of the maintenance of the building, including the gas protection measures. Single occupancy of ground floor and basement areas. Small to large size rooms with active ventilation or good passive ventilation of all rooms and other internal spaces throughout ground floor and basement areas. Probably civil engineering construction. Examples include offices, some retail premises, and parts of some public buildings (such as schools, hospitals, leisure centres and parts of hotels).'*

Given a Characteristic situation of CS1 has been established for the site, Table 4 of BS 8485:2015+A1:2019 indicates there is no requirement (0 points) for gas protection measures for both Type C and Type D structures on site.

The long term occupational exposure limit (OEL) for carbon monoxide is 30ppm and hydrogen sulphide is 5ppm; both concentrations of which are based on eight hour working day ambient conditions. No concentrations of either gas (in ground) were recorded in excess of their long term OEL across the entire site. Carbon monoxide concentrations were typically <10 across the site and hydrogen sulphide concentrations were invariably elevated above 0. It is considered that carbon monoxide and hydrogen sulphide represent a low risk from to the proposed development and that no mitigation for these gasses is required.

VOCs were recorded at low concentrations during monitoring and were generally absent from soil sample head-space readings. It is considered the soil vapour represents a low risk to the proposed development and that no mitigation is required.

The risk with respect to bulk ground gas and volatile vapours is low and no ground gas or vapour protection measures are proposed.

7.10 Updated Conceptual Site Model

Based on the assessments presented in Section 7.0 of this report, the preliminary qualitative risk assessment has been updated based on the quantitative findings.

As it can be seen below, the majority of source-pathway-receptor linkages are low or very low risk and require no further assessment or mitigation. The exceptions are:

- Mitigation of potential risks to human health associated with permeation of drinking water supply pipes
- Mitigation of the potential risks to human health associated with accumulation and inhalation of ground gas

Potential Source	Potential Pathway (s)	Potential Receptor (s)	Assessment	Probability	Consequence	Risk Class
Identified On-Site Sources	Dermal contact, ingestion and / or inhalation of contaminated soils, dusts and waters;	Human health (on-site)	All soil determinants analysed were below the thresholds for commercial and public open space (park) end use with no instances of Asbestos Containing Materials identified within soil samples. Therefore, risk to human health is considered low and no further action is required.	Unlikely	Medium	Low
	Migration and accumulation of ground gas / soil vapour, followed by inhalation.		The site has been characterised as Characteristic Situation 1 (CS1). Due to this, ground gas protection measures are not required.	Unlikely	Medium	Low
	Ingestion of contaminated mains water supply as a result of permeation of water supply pipe.		Contaminants with the potential to deteriorate water supply pipes and migrate into the on-site water supply have been encountered on site with recorded levels above the UKWIR guidance for Polyethylene piping in 2 No. instances. Therefore, it is recommended that barrier pipe and/or clean corridors are implemented to block this potential pathway.	Low Likelihood	Medium	Moderate/Low
	Inhalation of windblown dust / soils from the site.	Human health (off-site)	All soil determinants analysed were below the thresholds for commercial and public open space (park) end use with no instances of Asbestos Containing Materials identified within soil samples. The risk to offsite human health receptors is low and off-site	Unlikely	Medium	Low

Potential Source	Potential Pathway (s)	Potential Receptor (s)	Assessment	Probability	Consequence	Risk Class
			migration of contamination unlikely following development. There is a risk of contaminated soils migrating off site during construction as a result of wind-blown material, this should be managed with appropriate dust suppression methods.			
	Off-site migration followed by accumulation and inhalation of ground gas and / or soil vapour.		The risk of off-site migration of ground gas is considered low given the cohesive nature of the majority of soils on site, the discontinuity of granular strata and as the site was categorised as CS1.	Unlikely	Medium	Low
	Off-site migration of contamination followed by permeation of pipe materials and subsequent contamination of water supply.		Although a groundwater body that is near-surface and quantities of PAHs have been identified above the limit of detection in a number of groundwater and surface water samples the risk to off-site human health is considered low as it is unlikely groundwater will be shallow enough to come into contact with water supply pipes.	Unlikely	Medium	Low
	Migration of contaminants and direct contact with the building fabric	Property (on-site)	Buried concrete is specified as DS-2 AC-2 for the superficial and Weathered Gunthorpe Member soils and DS-2 AC-2 for the groundwater. The use of sulphate resistant concrete will mitigate the risk of degradation therefore the risk to building fabric is low.	Likely	Minor	Low
	Migration and accumulation of ground gas / soil vapours, followed by ignition		The site has been characterised as Characteristic Situation 1 (CS1). Therefore use of gas protection measures is not required. Elevated VOC levels were not encountered, as such the risk to end users from potential vapours is low.	Unlikely	Medium	Low
	Off-site migration and accumulation of ground gas / soil vapours, followed by ignition	Property (off-site)	Although elevated levels of CO2 have been identified at certain localities on-site resulting in a CS2 categorisation for the site, the risk of off-site migration of ground gas is considered low given the cohesive nature of the majority of soils on site and the discontinuity of granular strata.	Unlikely	Medium	Low

Potential Source	Potential Pathway (s)	Potential Receptor (s)	Assessment	Probability	Consequence	Risk Class
	Off-site migration of contaminants followed by direct contact with building fabric		Shallow groundwater in certain localities has been identified on site and slight exceedances of PAHs have been identified in groundwater and surface water samples. Despite this, the risk to off-site property is considered low given the low mobility of these contaminants in groundwater.	Unlikely	Medium	Low
	Vertical leaching and migration of contaminants from soil to groundwater and lateral leaching and migration into the adjacent source water systems	Controlled waters	No elevated levels of contaminants were identified within soil samples so risk of leaching considered low	Unlikely	Medium	Low
Identified Off-Site Sources	Migration onto site followed by accumulation and inhalation of ground gas and / or soil vapour	Human health (on-site)	Given the predominantly cohesive nature of the soils and the site characterisation as a CS1, off-site ground gas sources such as landfills are considered a low risk to site.	Unlikely	Medium	Low
	Migration onto site followed by ingestion of contaminated mains water supply		Groundwater and surface water has been identified on-site with slightly elevated levels of PAHs recorded. The origin of the PAH source has not been determined. However, the risk to on-site receptors is considered low given there are no abstraction points within 1,000m and the surface water bodies will be reconfigured to swales running off site as part of the drainage strategy.	Unlikely	Medium	Low
	Migration of contaminants onto site followed by direct contact with building fabric	Property (on -site)	No evidence of on-site contamination above human health GAC originating from offsite sources has been identified.	Unlikely	Medium	Low
	Migration onto site, followed by accumulation of ground		The site has been characterised as a Characteristic Situation CS1 (very low risk) indicating that offsite sources are not impacting on the site conditions.	Unlikely	Medium	Low

Potential Source	Potential Pathway (s)	Potential Receptor (s)	Assessment	Probability	Consequence	Risk Class
	gas / soil vapours and ignition					

8 CONCLUSIONS

The on-site ground conditions and geotechnical considerations identified within this report have been summarised below.

8.1 Geotechnical Conclusions

The following geotechnical considerations/recommendations have been identified:

- Utility searches and/or surveys are recommended prior to further design development to confirm the absence of services and verify the locations of any utilities that are identified on site;
- It is recommended that foundations are inspected by a suitably qualified Geotechnical Engineer in order to confirm the absence of Made Ground or soft/loose soils within foundation excavations where foundations will require local deepening if encountered. Provision should be made for removal of the soils when encountered within the footprint of proposed structures. Excavations will need to be backfilled and re-compacted / compacted with material suitable for use as general fill;
- Battering/shoring of excavations is recommended where collapsible, granular deposits are encountered. Battering of excavations to a suitable angle is recommended where excavations encounter cohesive strata;
- Given shallow groundwater has been identified across the site, there is potential for groundwater induced instability and flooding of excavations. Therefore, provision of suitable shoring and appropriate dewatering measure are recommended;
- All foundations and associated structures in contact with the underlying superficial soils and weathered bedrock should be designed to DS-1 AC-1 except where foundations and buried structures have the potential to come into contact with groundwater. In this instance, a design class of DS-2 AC-2 should be adopted;
- For the cohesive soils, prescriptive bearing capacities of c. 150kPa can be assumed where a minimum undrained shear strength of 75kPa is achieved. Where granular soils are encountered at foundation depth, a prescriptive bearing capacity of c. 150kPa can be assumed;
- The bearing capacity in the competent Gunthorpe Member is likely to be higher however, the bearing capabilities of this stratum will need careful consideration given the variance in weathering grade observed within the stratum;
- Heavy plant and expensive breaking and ripping techniques may be required where excavations are within the competent bedrock;
- Preliminary settlement analysis suggests careful consideration is needed when assessing the potential for settlement across the site and the use of in-situ compaction on fill formation layers by use of rollers is likely required prior to the placement of fill to decrease the potential for settlement;
- Collapsible deposits and strata susceptible to settlement have been identified on site therefore, the risk of failure of any proposed embankments as a result of the formation soils below will need to be carefully considered;
- It is recommended that staged construction is undertaken and basal and interim granular layers are installed and linked to the wider drainage network to avoid build-up of pore-water pressure where embankments are formed from fine grained material. Drainage will also need to be carefully considered to cope with surface water and avoid softening of the slope faces and foundation soils, in particular at the toe of slopes;

- Options for increasing the angle of embankment slopes thus reducing the footprint and volume of embankments may be explored; these may include reinforced embankments (geogrids) or soil stabilisation (lime and cement) or even retaining walls if required;
- Clean, natural soils are present within areas of cut and these materials should be suitable for re-use provided they are carefully selected and managed in accordance with a suitable earthworks specification;
- Given the similarity in appearance of the cohesive superficial soils, it is likely these materials will become mixed during the earthworks. For this reason, supplementary testing will be required to reassess the material properties in terms of its earthworks suitability;
- As elevated sulphates have been identified within the on-site soils, careful consideration should be given to the design specification of earthworks in relation to sulphate induced heave where lime stabilisation is used. Specialist advice should be sought to assess the suitability of utilising lime stabilisation as a moisture content control; and
- CBR testing on prepared sub-formation should be undertaken to confirm adequate road construction details. Yard spaces may be surfaced in concrete slabs and therefore appropriate compaction to Series 600 of the specification for Highway works and a site specific Earthworks Specification will be required.

8.2 Geo-environmental Conclusions and Recommendations

No exceedances of the site specific assessment criteria or commercial or public open space (park) end use generic assessment criteria have been identified with respect to human health, and therefore the risk to site end users is considered low. Risks to controlled waters were also assessed as low.

The PRA identified a waste transfer station on the site, however the historical mapping and ground investigation found no evidence of Made Ground / filling. This was later confirmed as a geo-referencing error by the EA, during the preparation of **Chapter 14: Ground Conditions** (**Document DCO/MCO 6.14**) of the Environmental Statement and thus has not been considered further in the Chapter.

Based on the assessments presented in Section 7.0 of this report the conceptual site model was updated. The assessment confirms that the majority of source-pathway-receptor linkages are low or very low risk and require no further assessment or mitigation with limited exceptions. It is recommended that the following is implemented for the development of the site:

- Suitable drinking water supply pipes are to be installed. A WIR assessment may be required along the proposed drinking water pipe route to demonstrate material suitability. Alternatively the use of barrier pipe would negate the need for further testing. In both events, the local water company should be contacted to agree the chosen pipe material suitability;
- Visual and olfactory evidence of contamination was identified at CP27 and there were measurable quantities of hydrocarbons, SVOCs and VOCs. Although it is considered that this impact is localised and not posing an unacceptable risk to identified receptors, localised remediation is recommended as a betterment measure. In addition, potential vertical distribution of impact should be further assessed;
- In the event that unexpected contamination is encountered at the site, works in the area are to stop and the Local Authority and the appointed geo-environmental consultant should be contacted. The contamination should be sampled, tested and risk assessed and if required a remediation strategy should be agreed and implemented;
- Based on the ground gas risk assessment, the site is classed as a Characteristic Situation CS1 (very low risk) site and no mitigation are required;
- Risks to controlled waters were assessed as low and no further works are required;

- Despite the low risk of encountering asbestos as part of the construction works, the Principal Contractor should develop appropriate RAMS to address the potential to encounter Asbestos during the construction works;
- Shallow groundwater is likely to be encountered during excavation / construction works. Suitable allowance should be made for the disposal of groundwater and surface water;
- Should offsite disposal of material be required, specific waste classification testing should be undertaken prior to disposal and liaison with the receiving facility should be sought. Given the site's agricultural history, there is low potential to encounter grossly contaminated soils or groundwater not encountered during the investigation;
- An Earthworks Specification should be prepared to specify the geotechnical requirements for material re-use on site; and
- Prior to undertaking any cut and fill operations, consideration will have to be given to materials management onsite upon development; particularly for earthworks, in the form of a CL:AIRE DoWCoP Materials Management Plan (MMP) or Environmental Permit. Further testing under a site-specific earthworks specification is recommended to determine the suitability of site-won material for re-use. Further costs are likely to be incurred as a result of importation of material or offsite waste disposals, should they be deemed necessary.

FIGURE 1 - CASAGRANDE PLASTICITY CHART

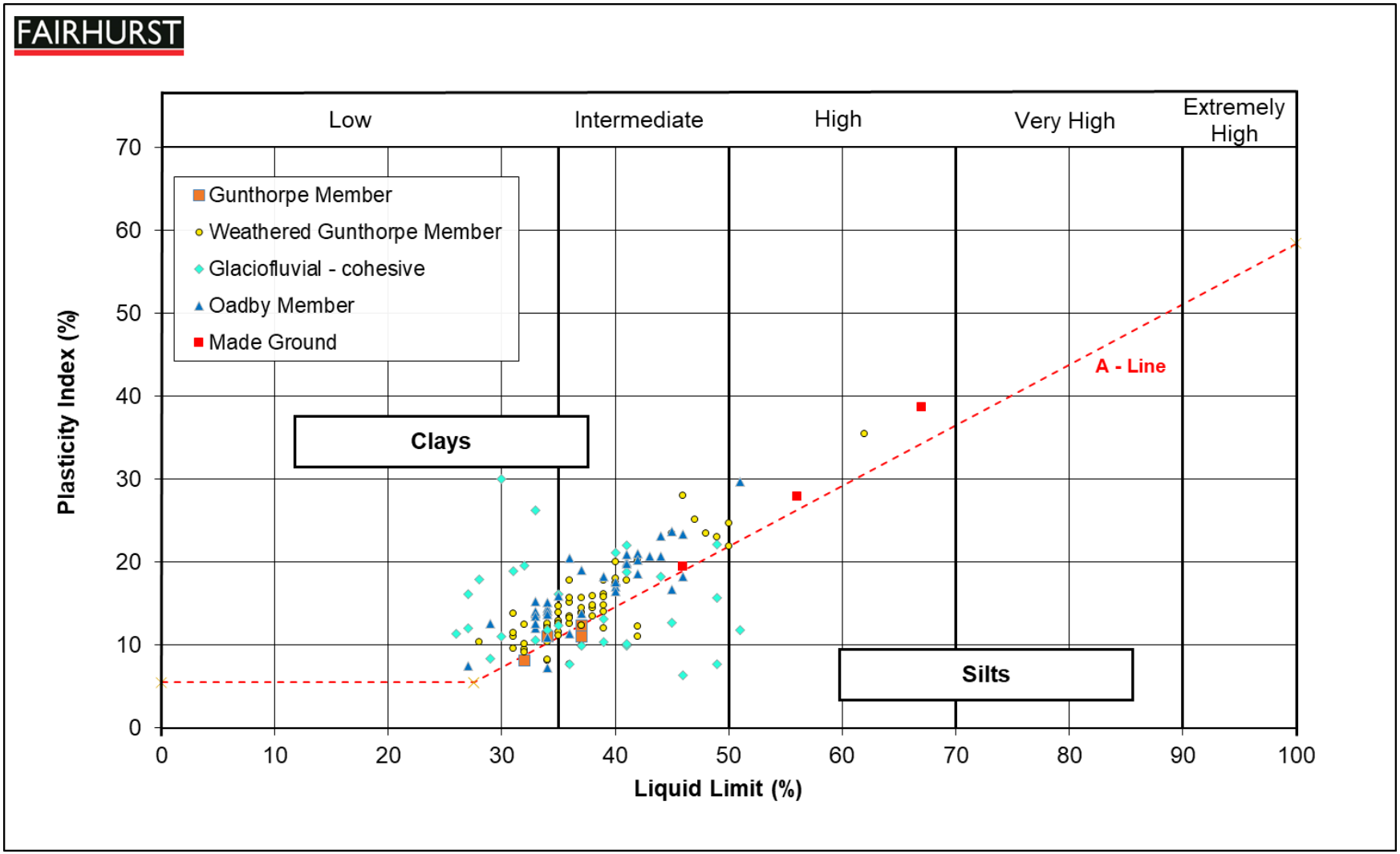


FIGURE 2 – PARTICLE SIZE DISTRIBUTION CHART (TOPSOIL)

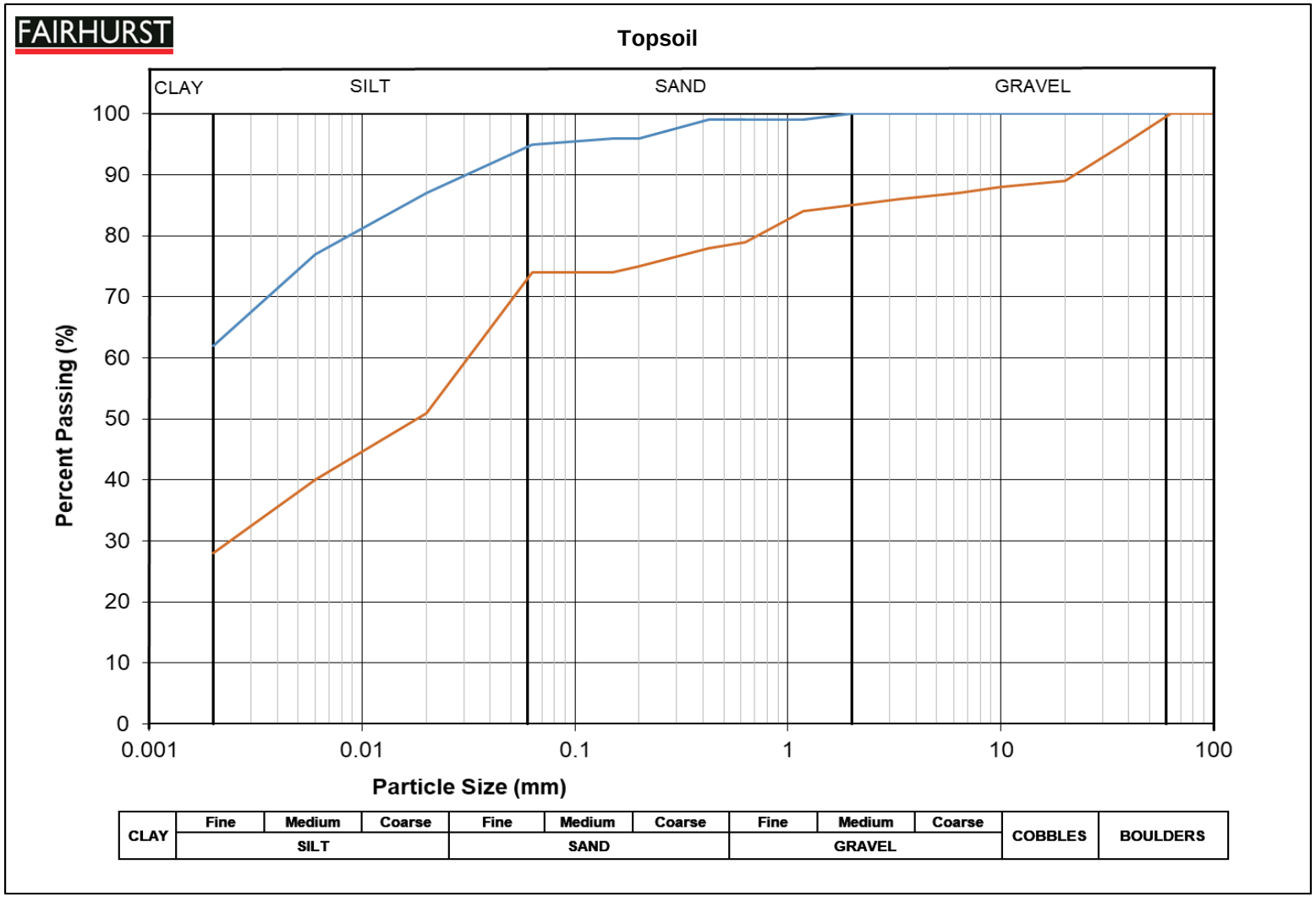


FIGURE 3 – PARTICLE SIZE DISTRIBUTION CHART (MADE GROUND)

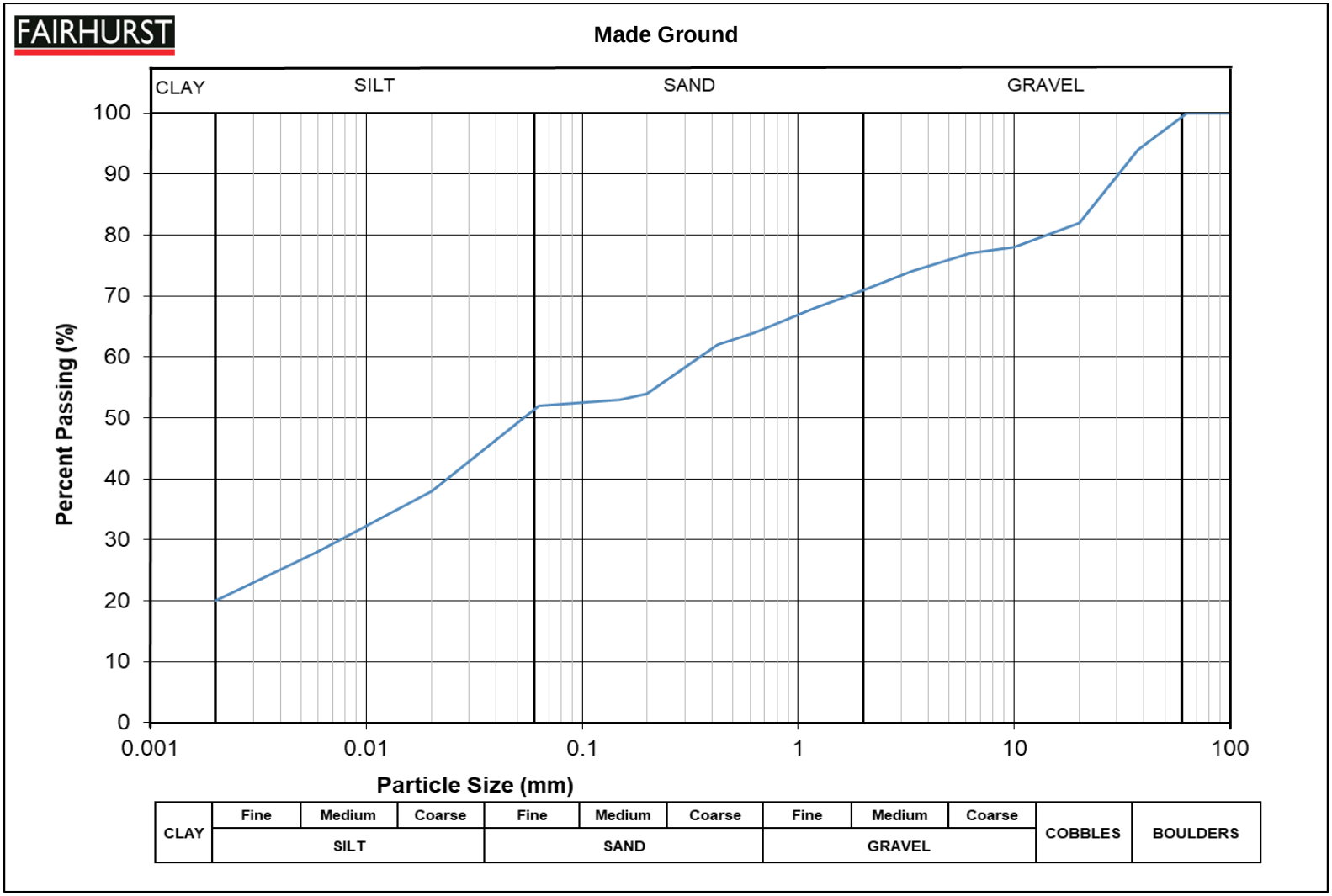


FIGURE 4 – PARTICLE SIZE DISTRIBUTION CHART (OADBY MEMBER)

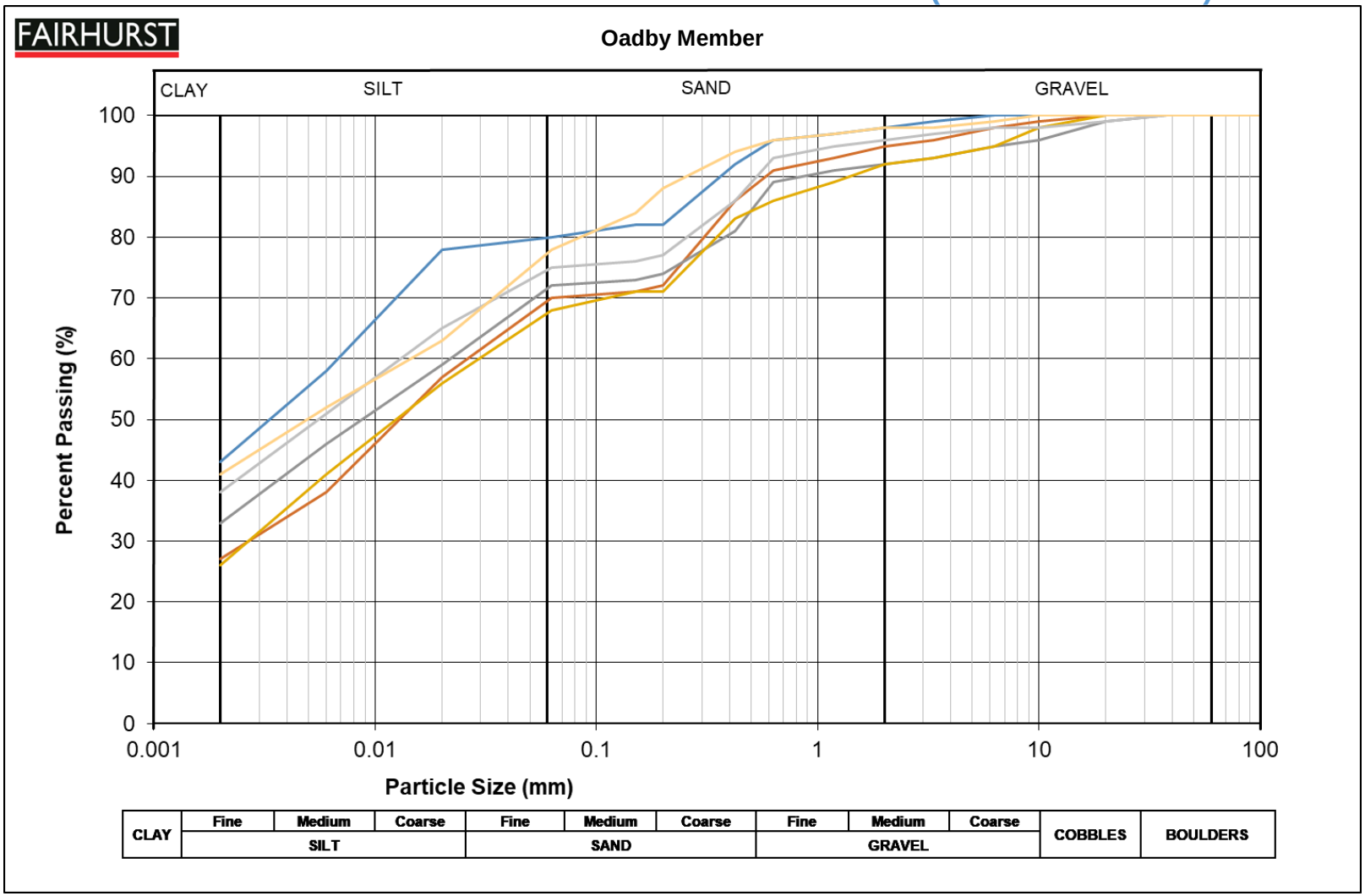


FIGURE 5 – PARTICLE SIZE DISTRIBUTION CHART (COHESIVE GLACIOFLUVIAL)

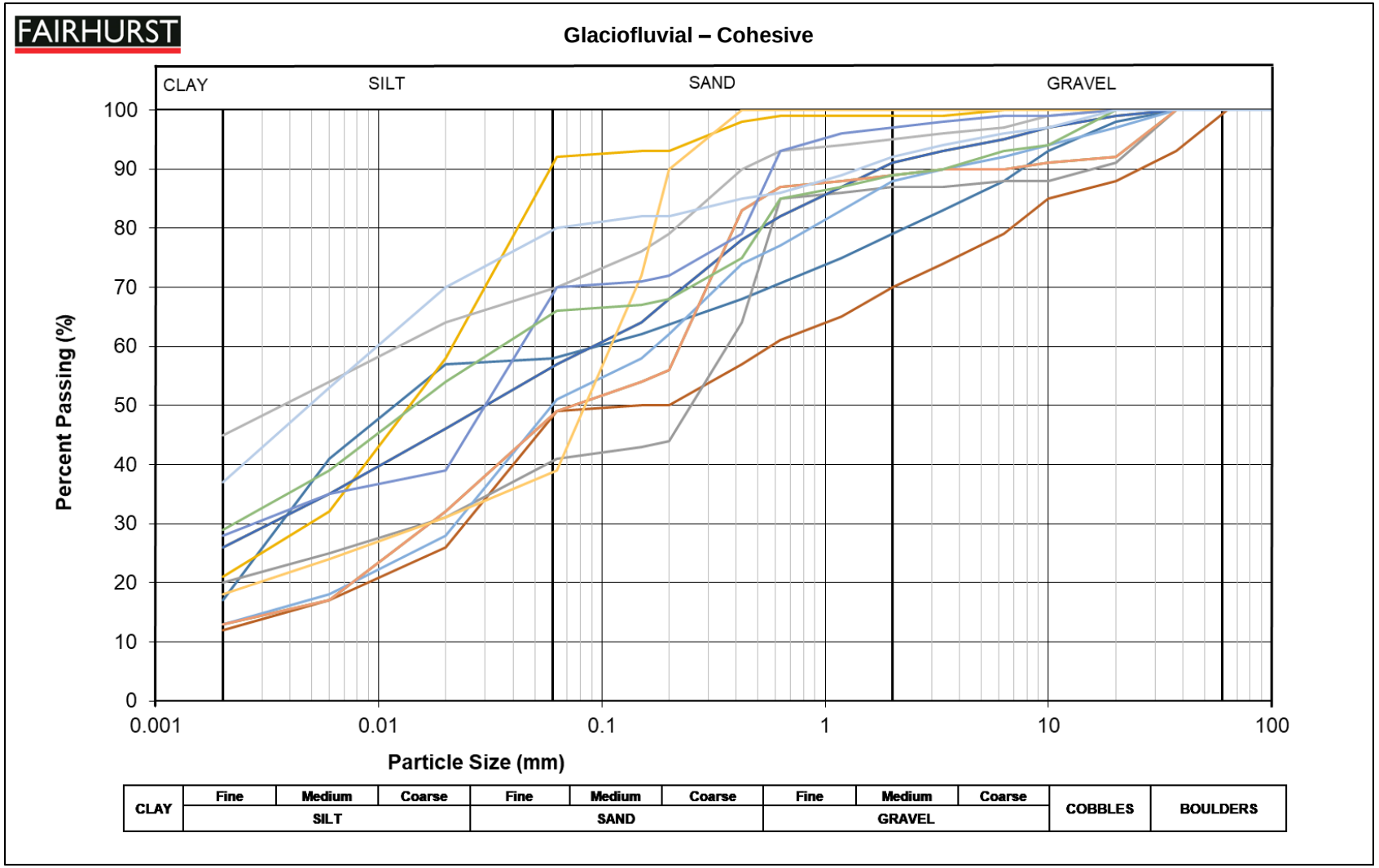


FIGURE 6 – PARTICLE SIZE DISTRIBUTION CHART (GRANULAR GLACIOFLUVIAL)

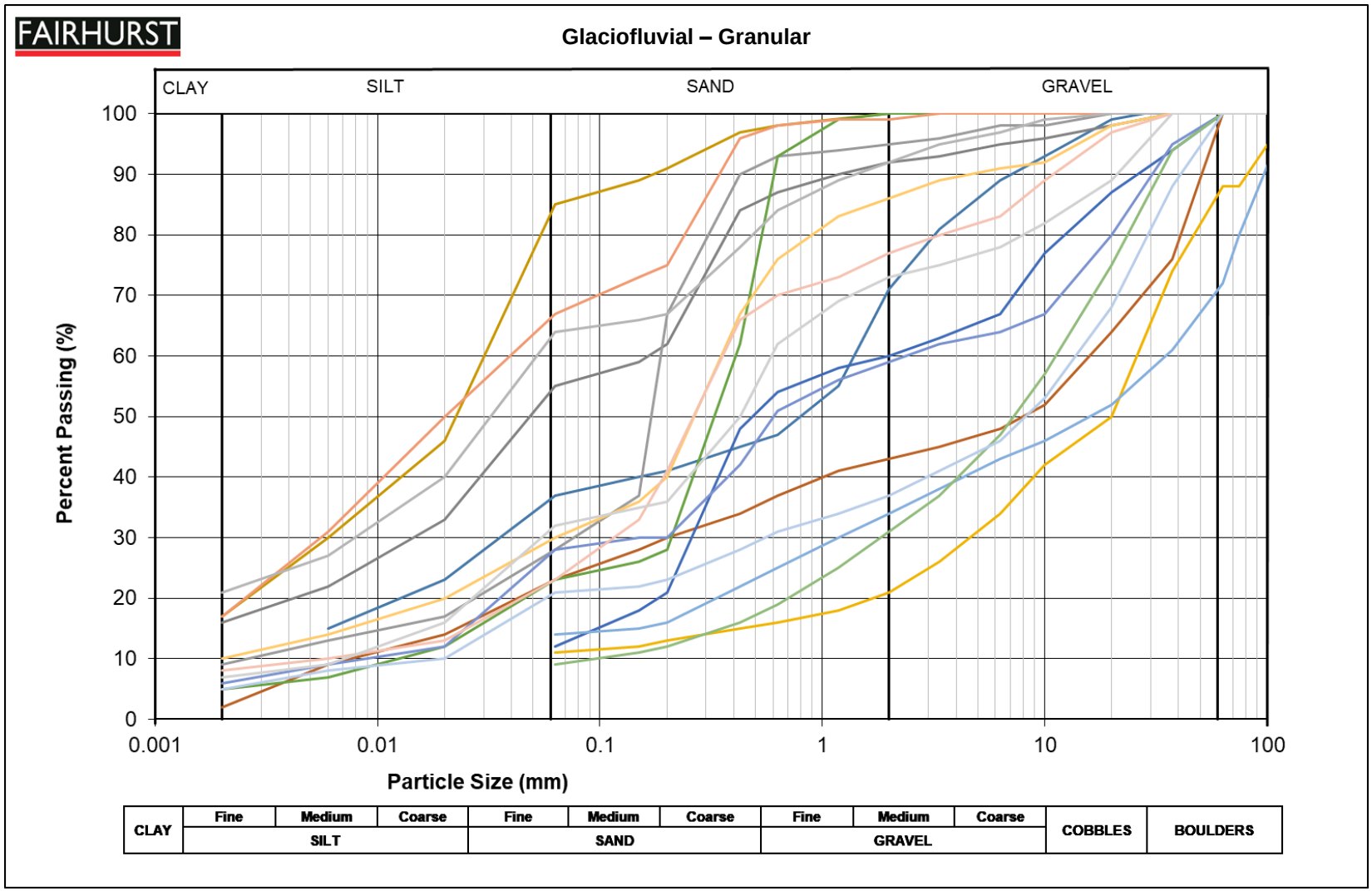


FIGURE 7 – PARTICLE SIZE DISTRIBUTION CHART (WEATHERED GUNTHORPE MEMBER)

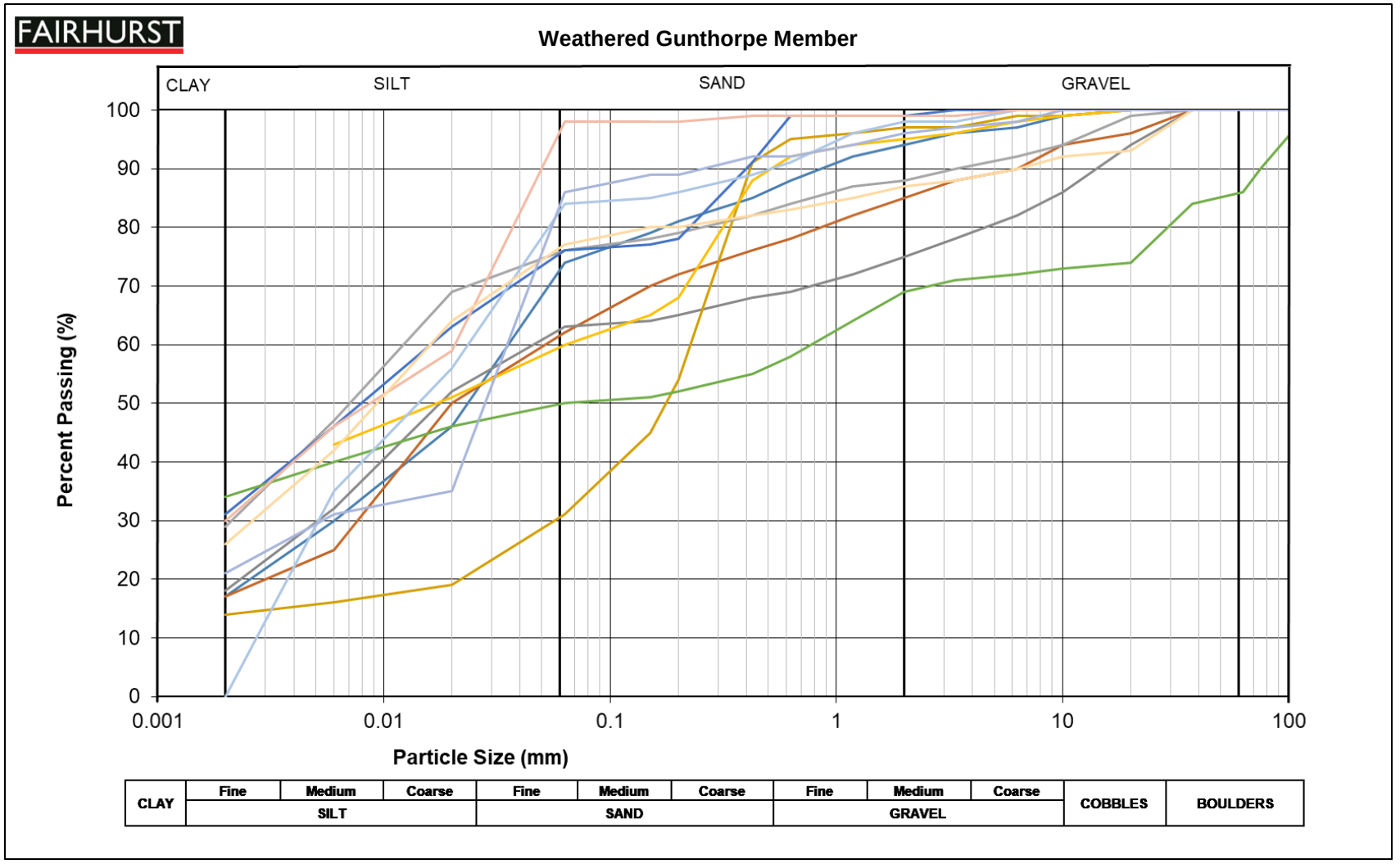


FIGURE 8 – PARTICLE SIZE DISTRIBUTION CHART (GUNTHORPE MEMBER)

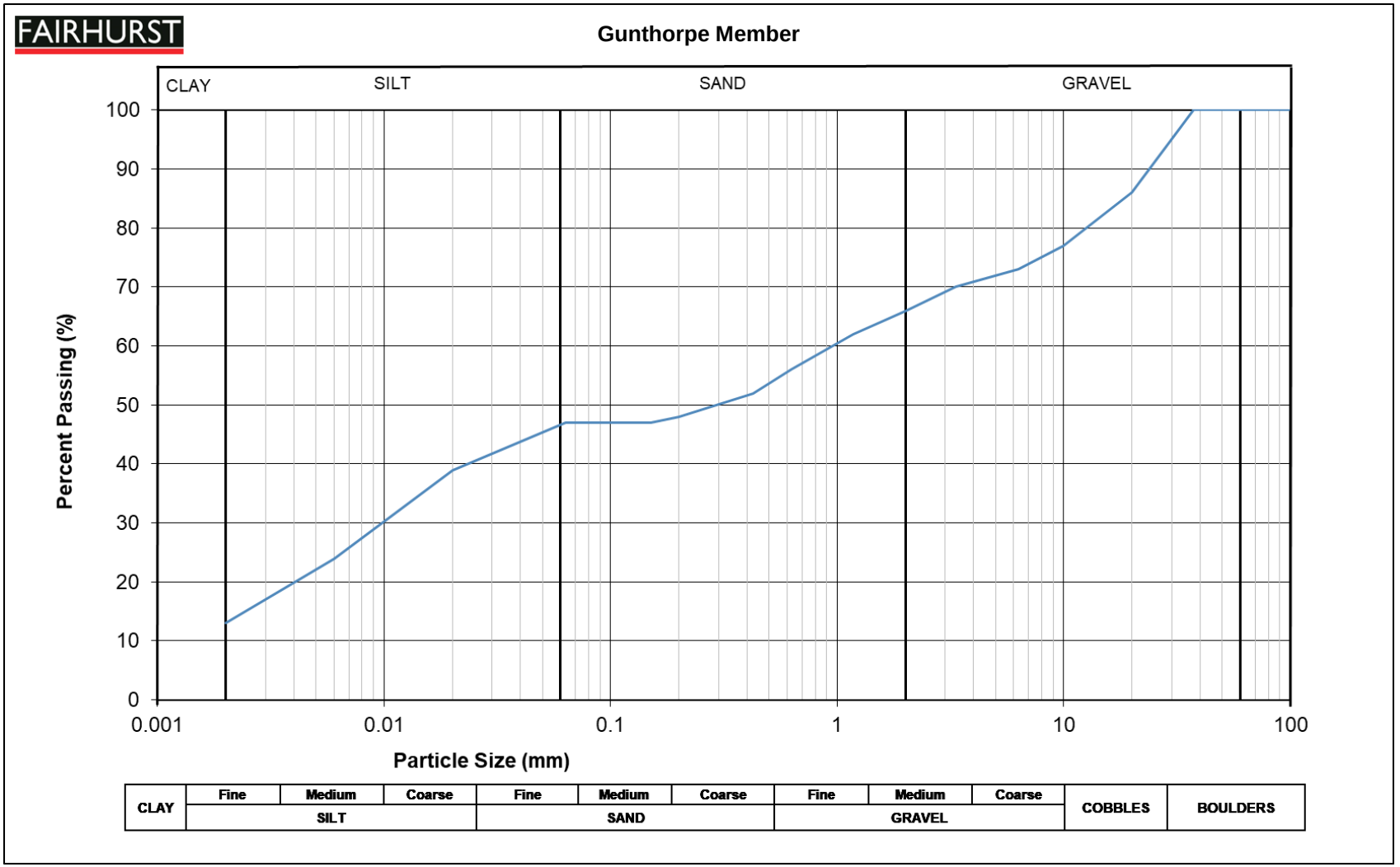


FIGURE 9 – SPT N_{60} VALUE VS DEPTH (MADE GROUND)

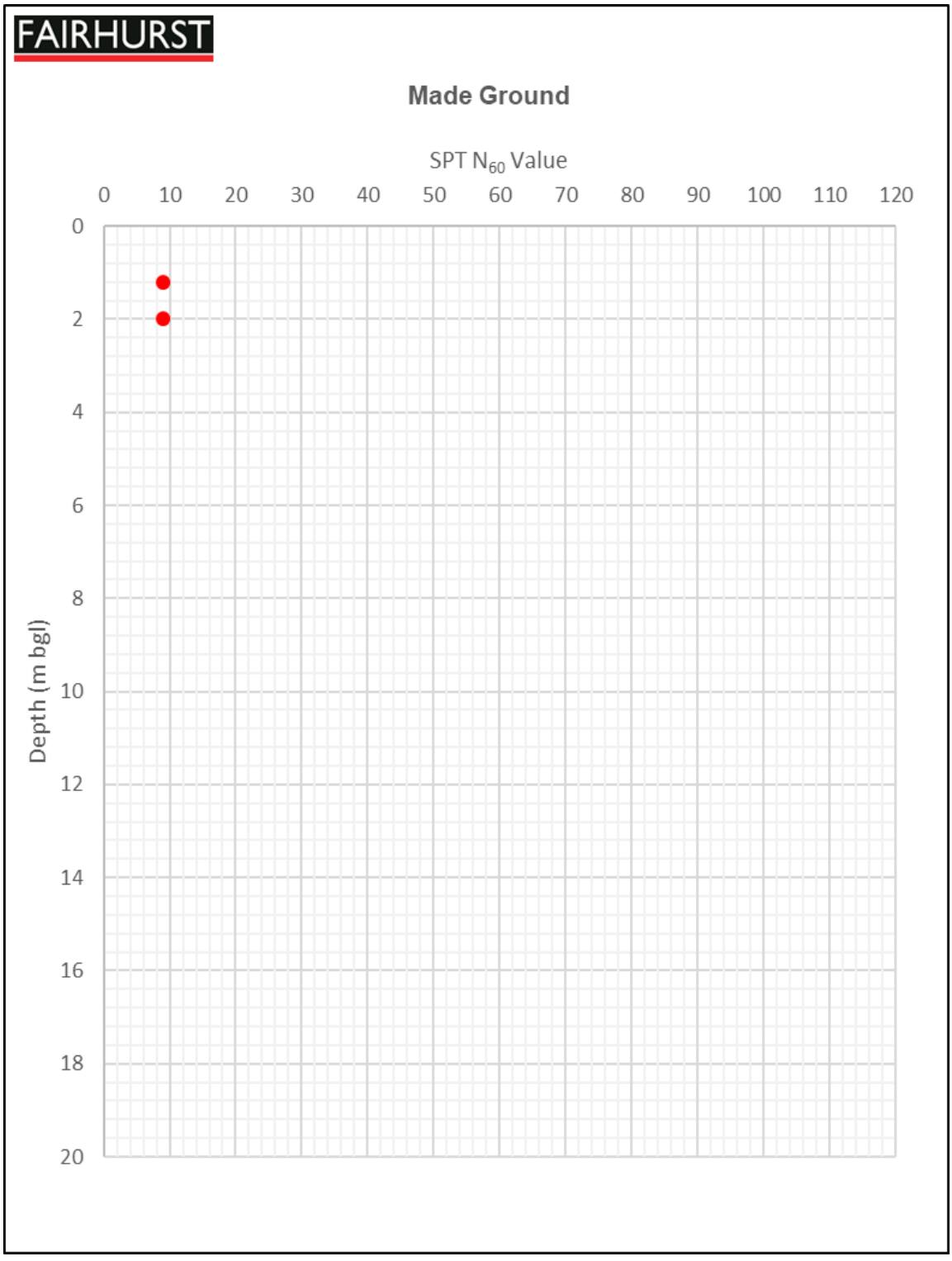


FIGURE 10 – SPT 'N60' VALUE VS ELEVATION (MADE GROUND)

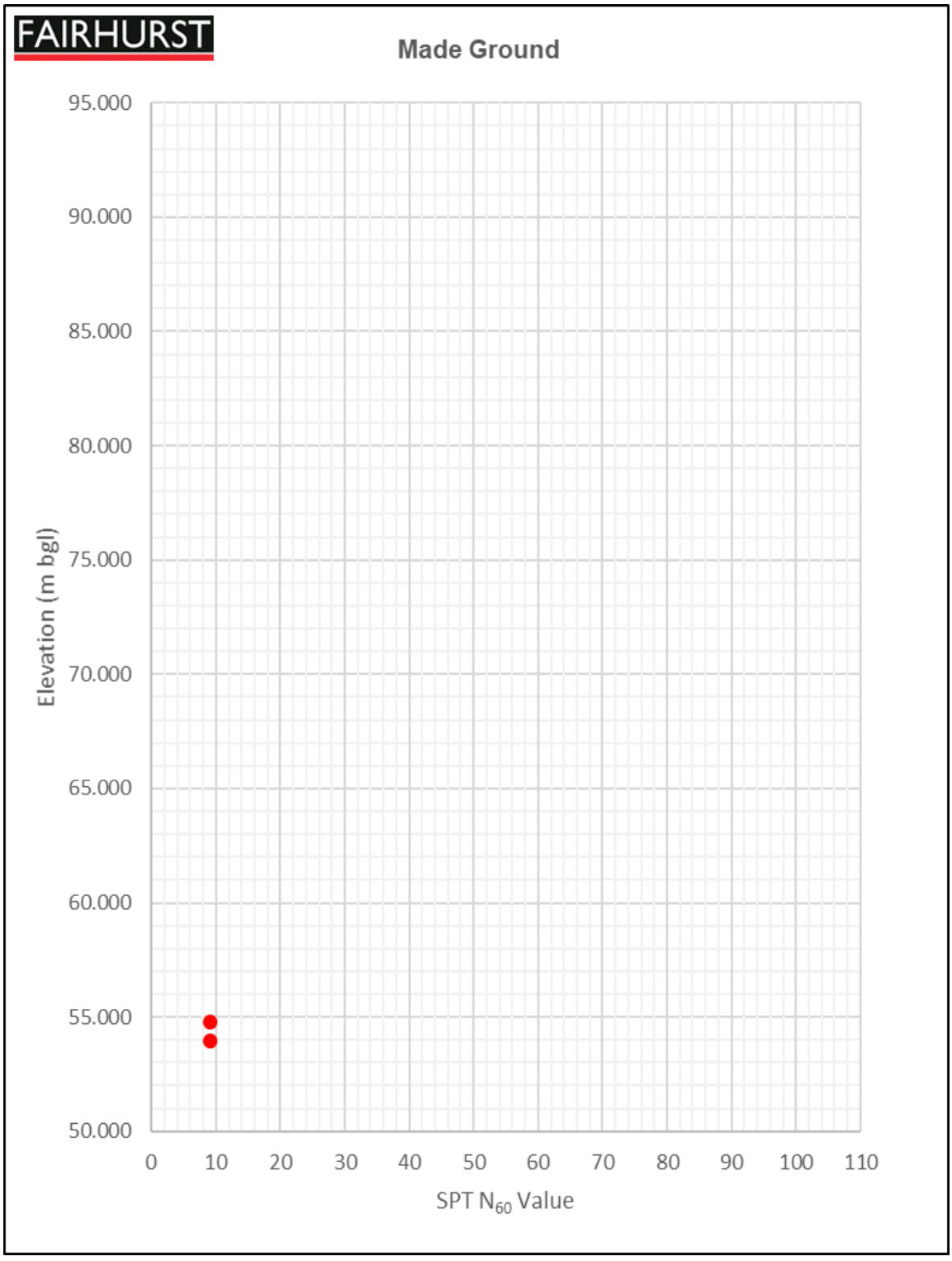


FIGURE 11 – SPT 'N60' VALUE VS DEPTH (OADBY MEMBER)

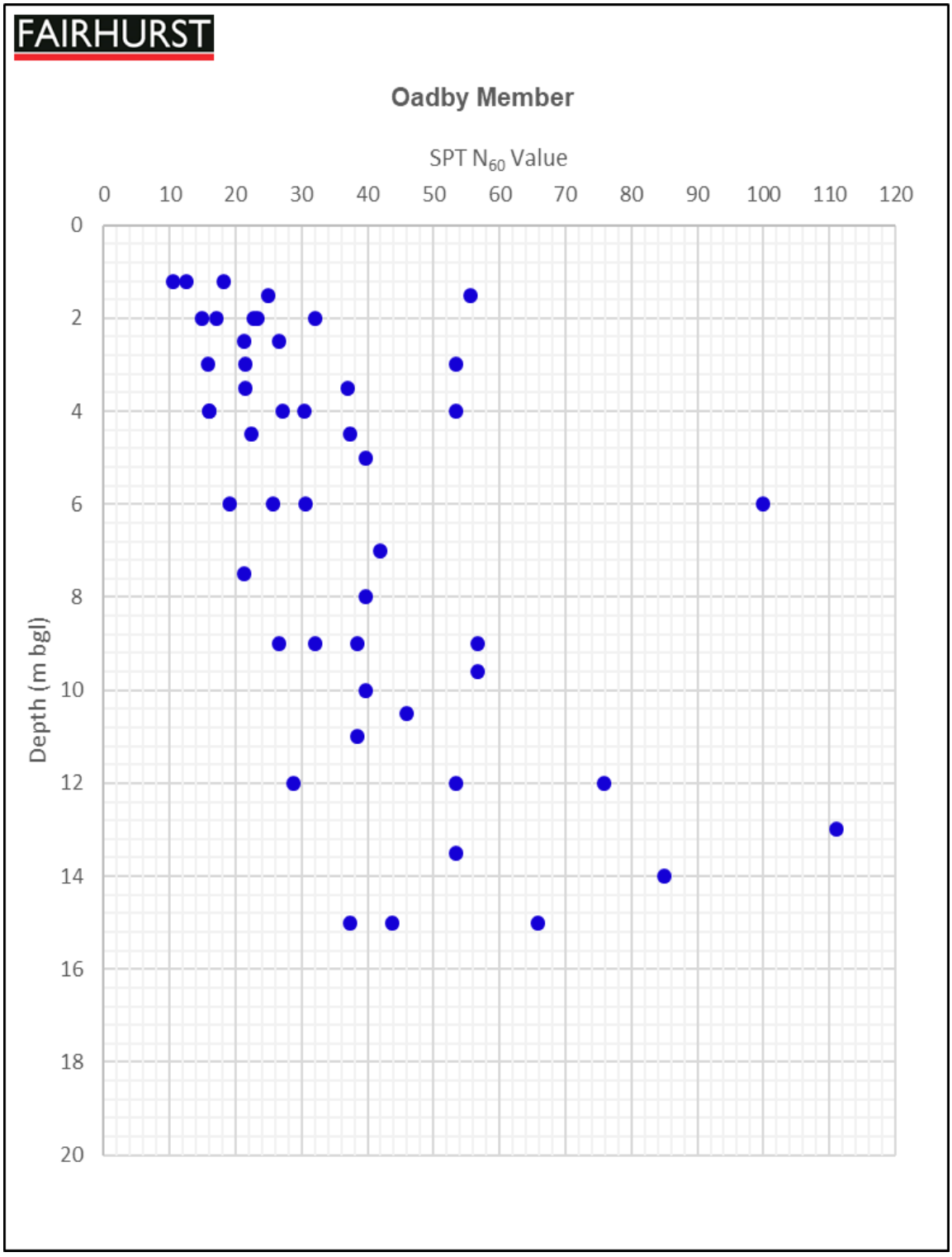


FIGURE 12 – SPT 'N60' VALUE VS ELEVATION (OADBY MEMBER)

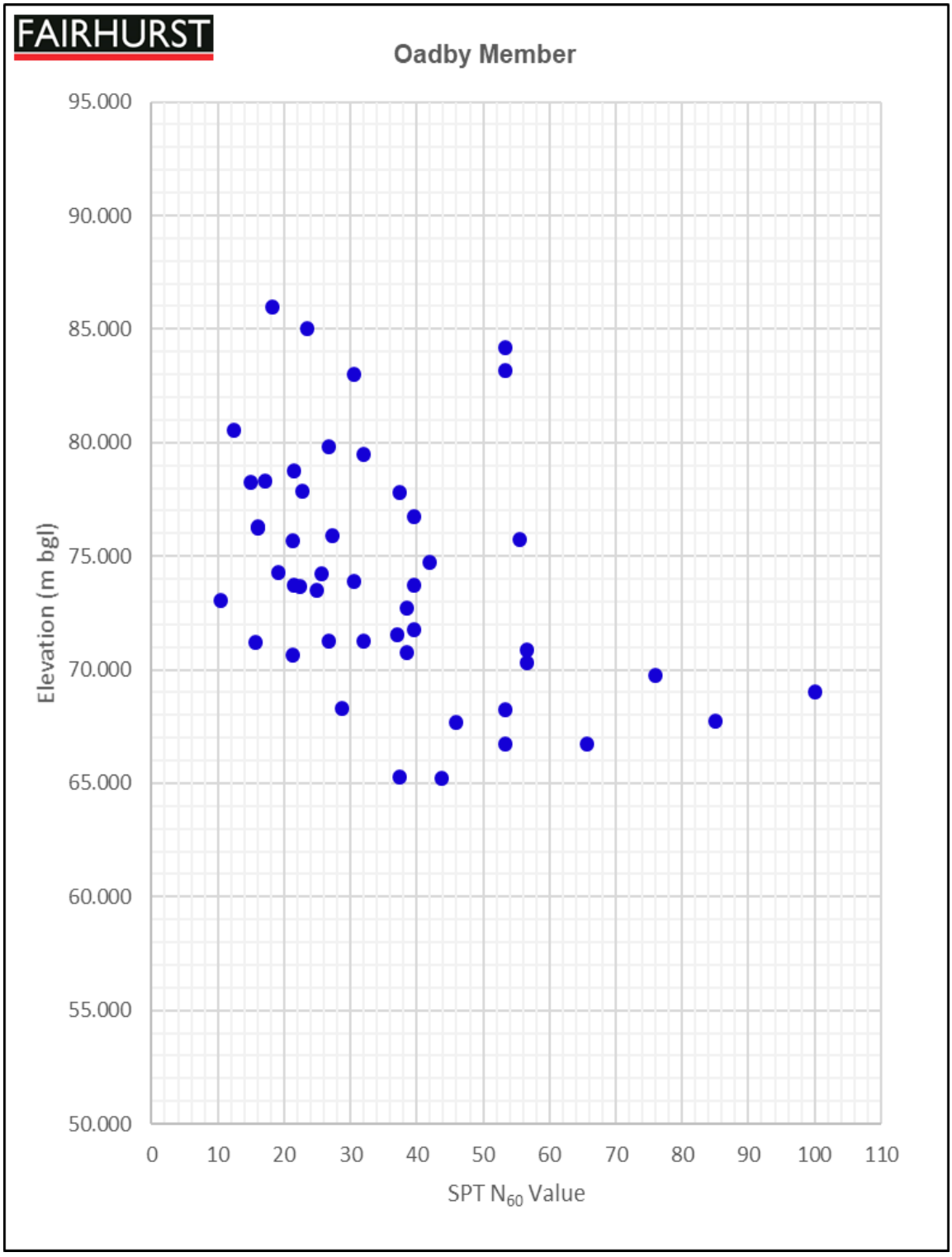


FIGURE 13 – SPT 'N60' VALUE VS DEPTH (COHESIVE GLACIOFLUVIAL)

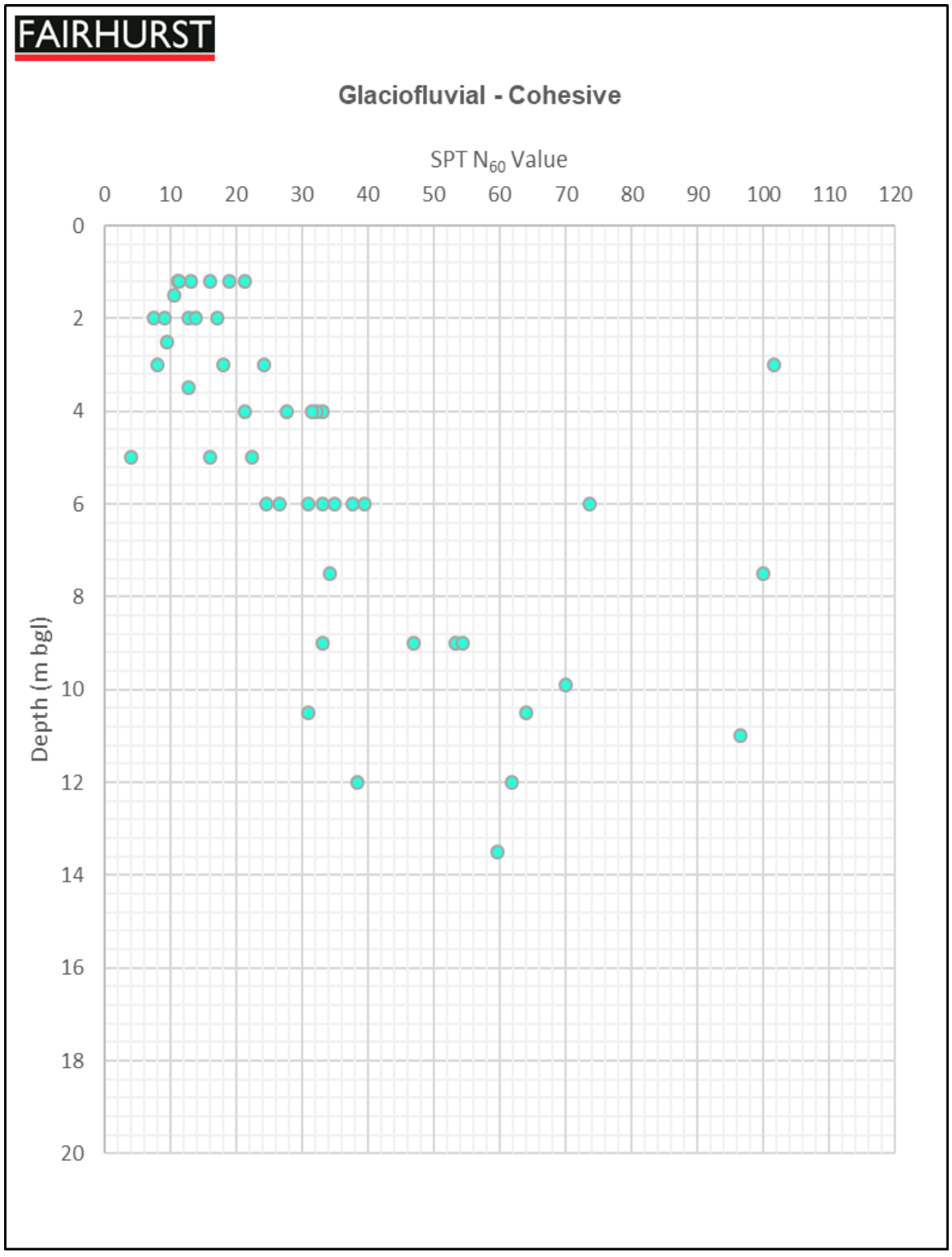


FIGURE 14 – SPT 'N60' VALUE VS ELEVATION (COHESIVE GLACIOFLUVIAL)

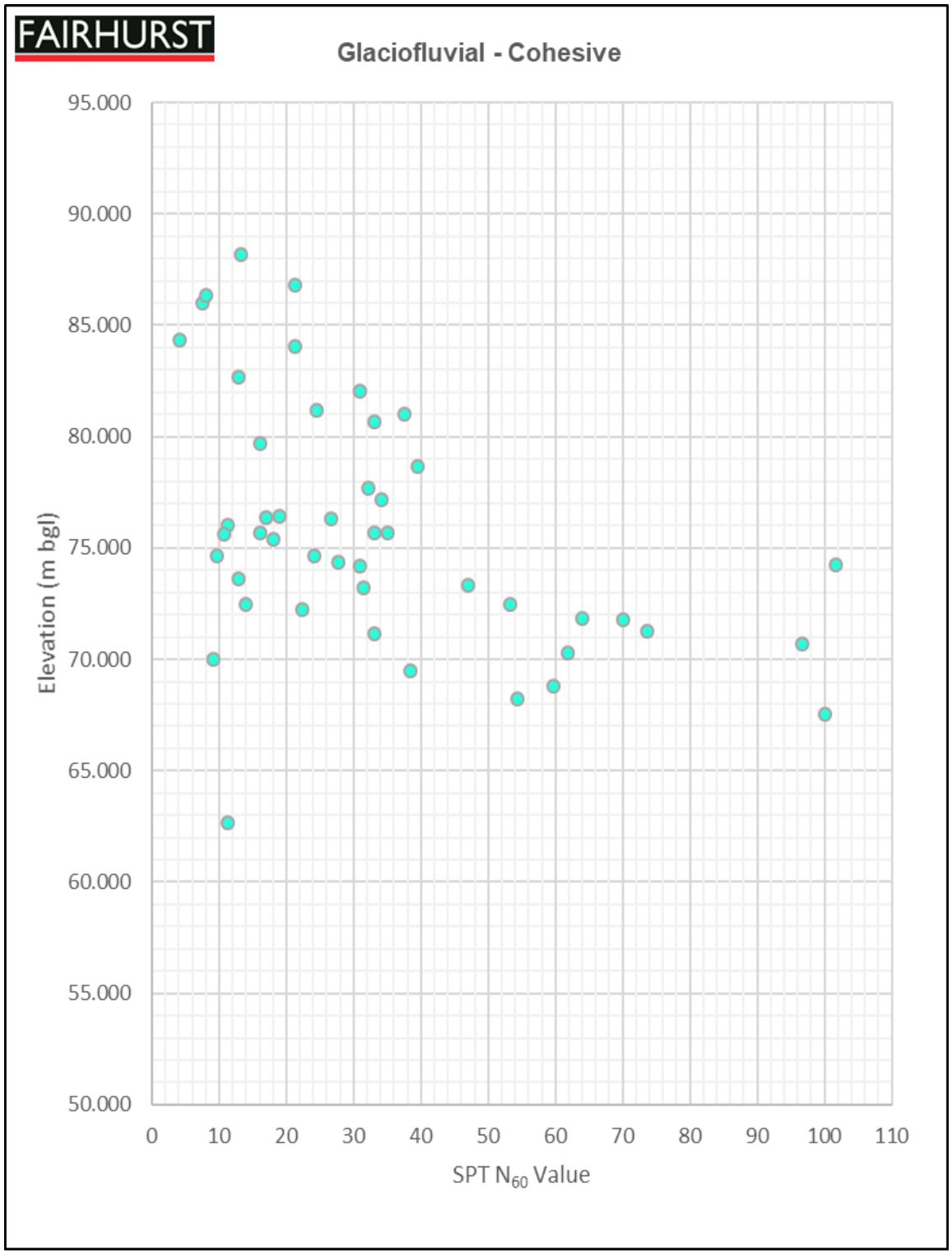


FIGURE 15 – SPT 'N60' VALUE VS DEPTH (GRANULAR GLACIOFLUVIAL)

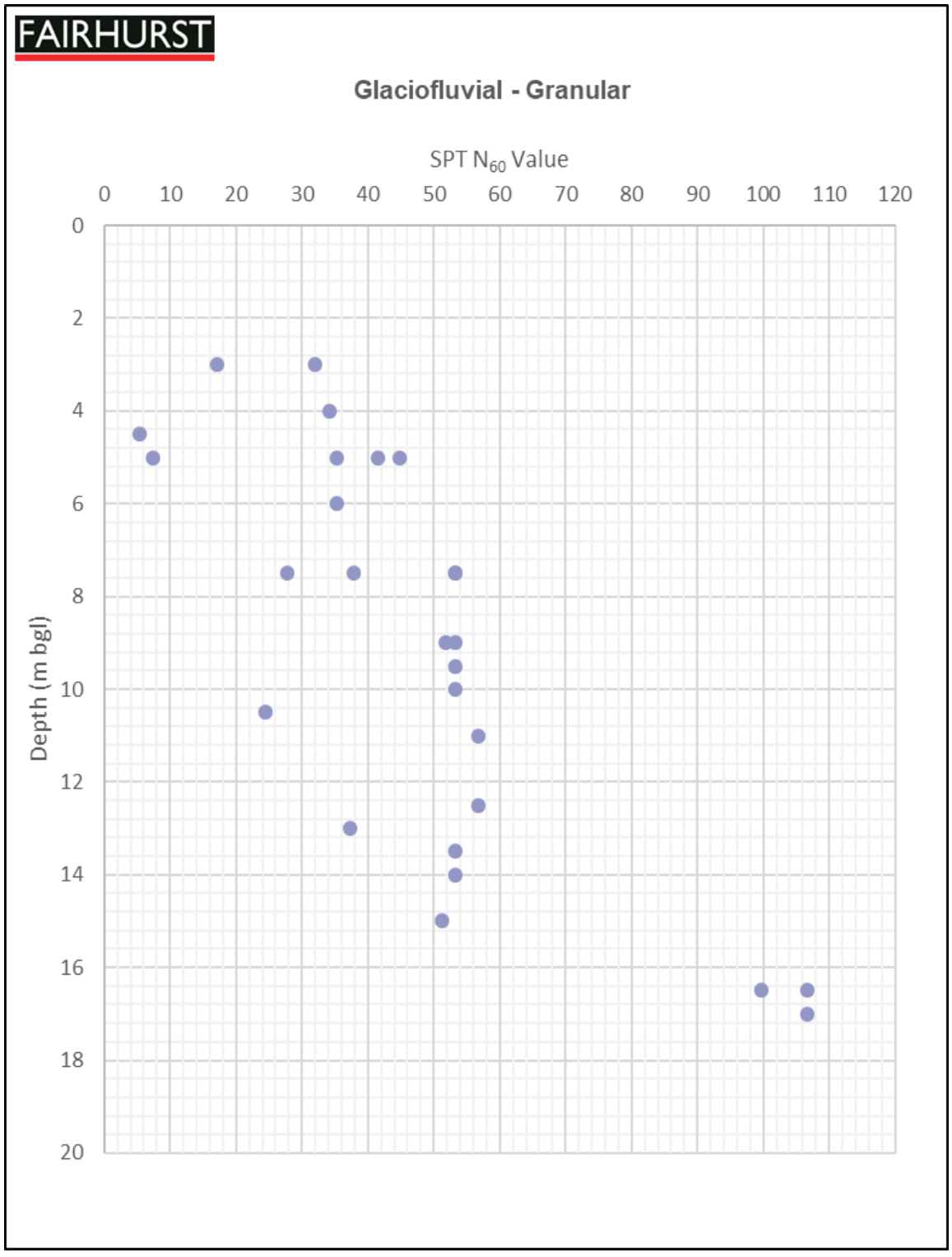


FIGURE 16 – SPT 'N60' VALUE VS ELEVATION (GRANULAR GLACIOFLUVIAL)

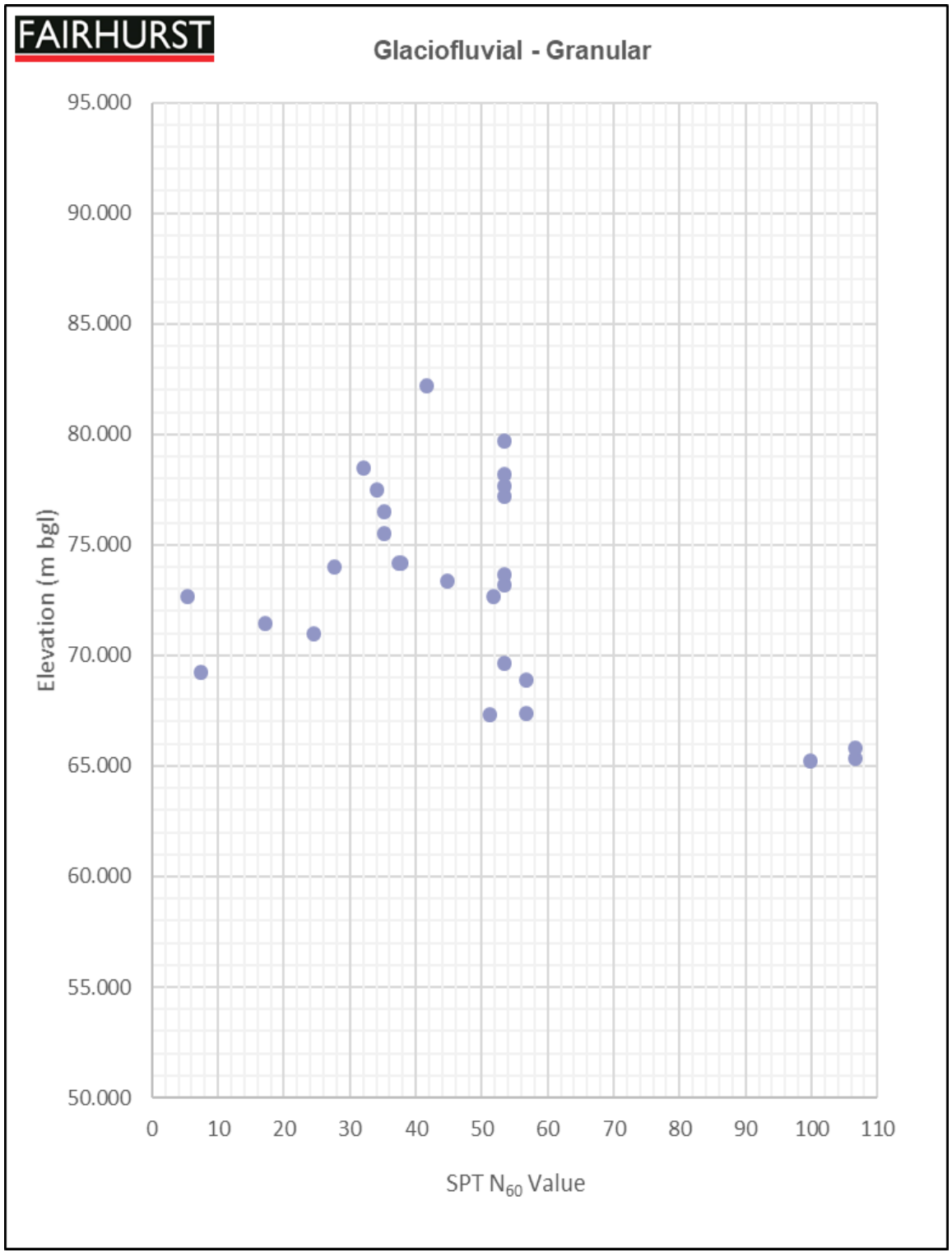


FIGURE 17 – SPT 'N60' VALUE VS DEPTH (WEATHERED GUNTHORPE MEMBER)

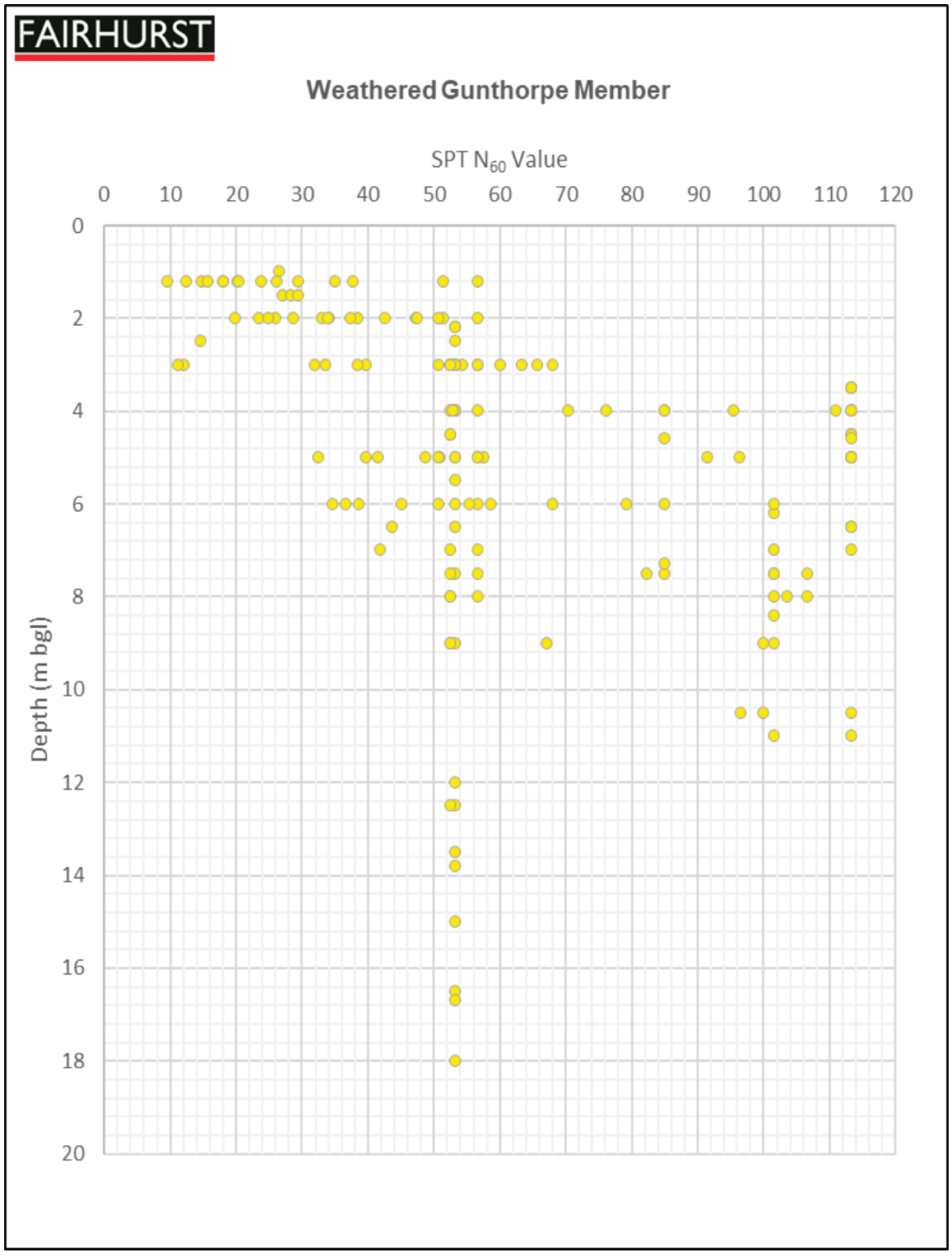


FIGURE 18 – SPT 'N60' VALUE VS ELEVATION (WEATHERED GUNTHORPE MEMBER)

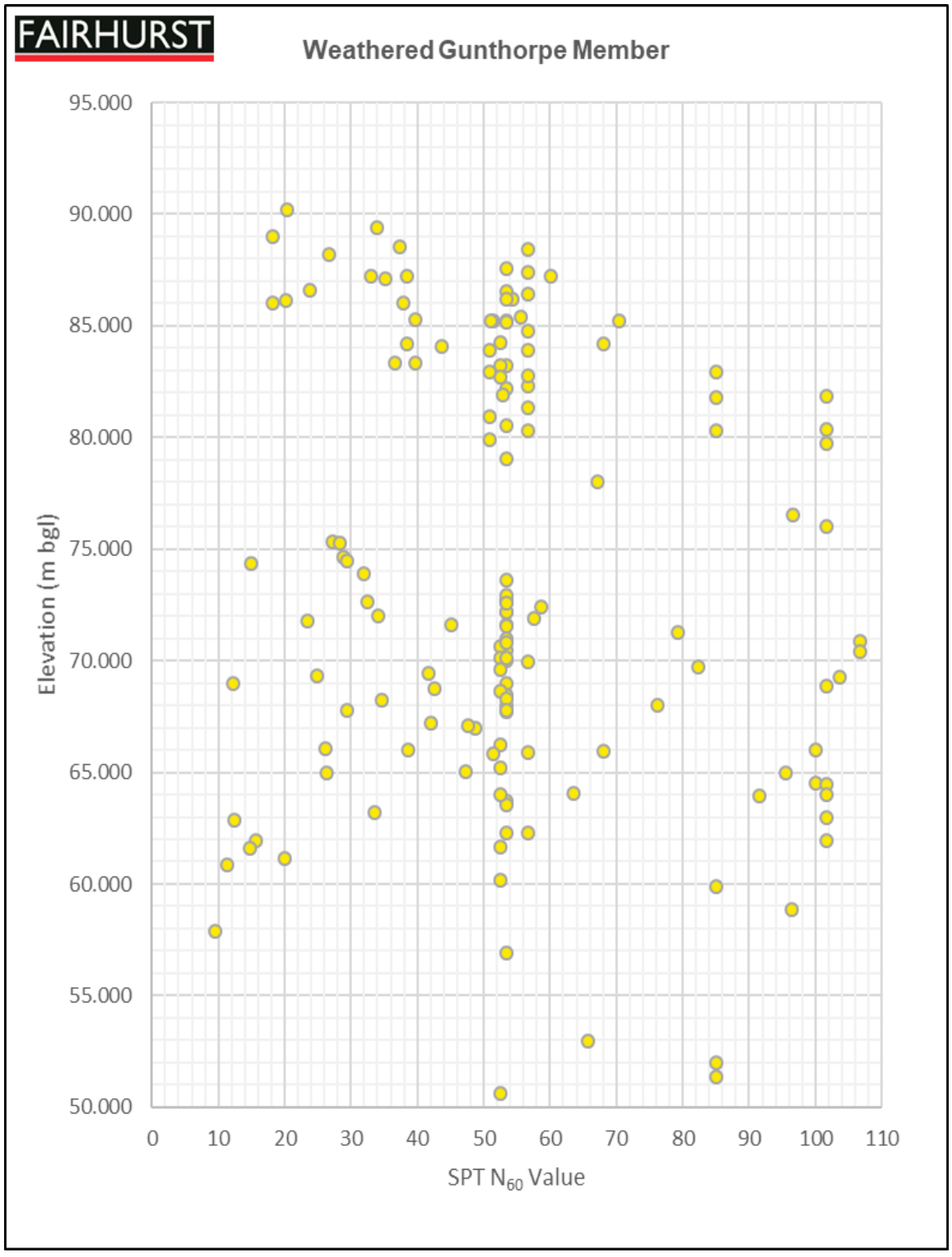


FIGURE 19 – SPT 'N60' VALUE VS DEPTH (GUNTHORPE MEMBER)

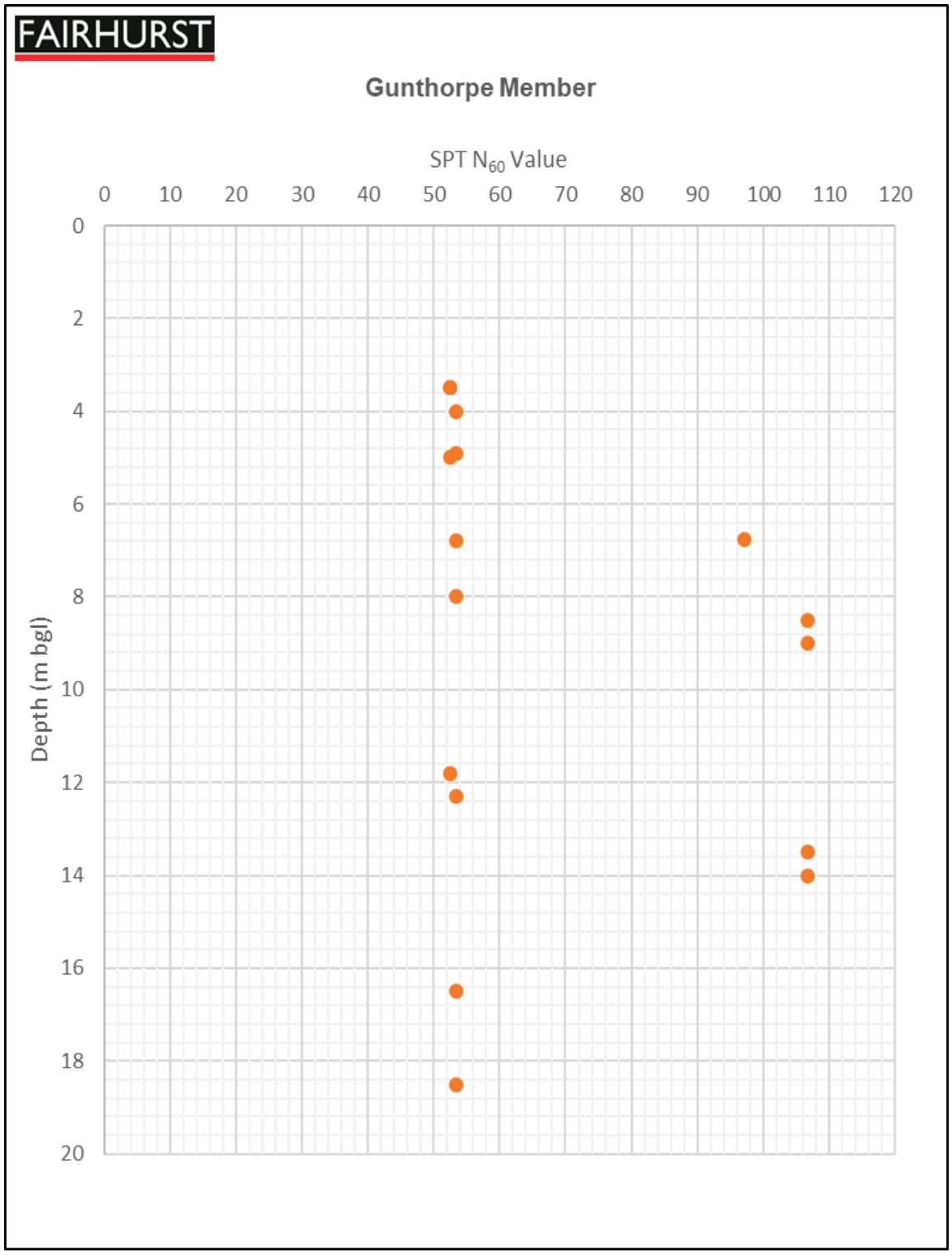


FIGURE 20 – SPT 'N60' VALUE VS ELEVATION (GUNTHORPE MEMBER)

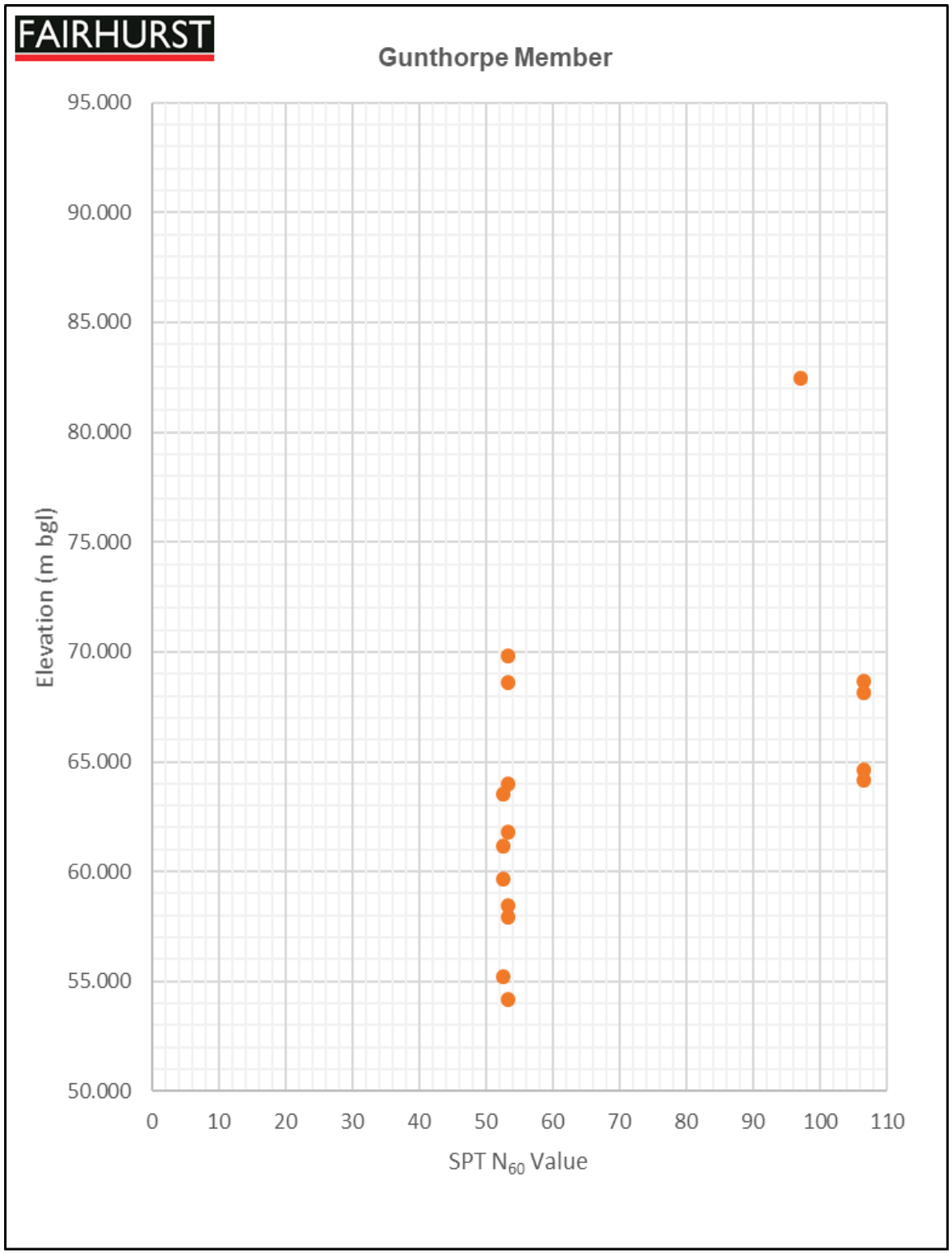


FIGURE 21 – UNDRAINED SHEAR STRENGTH VS DEPTH (M BGL)

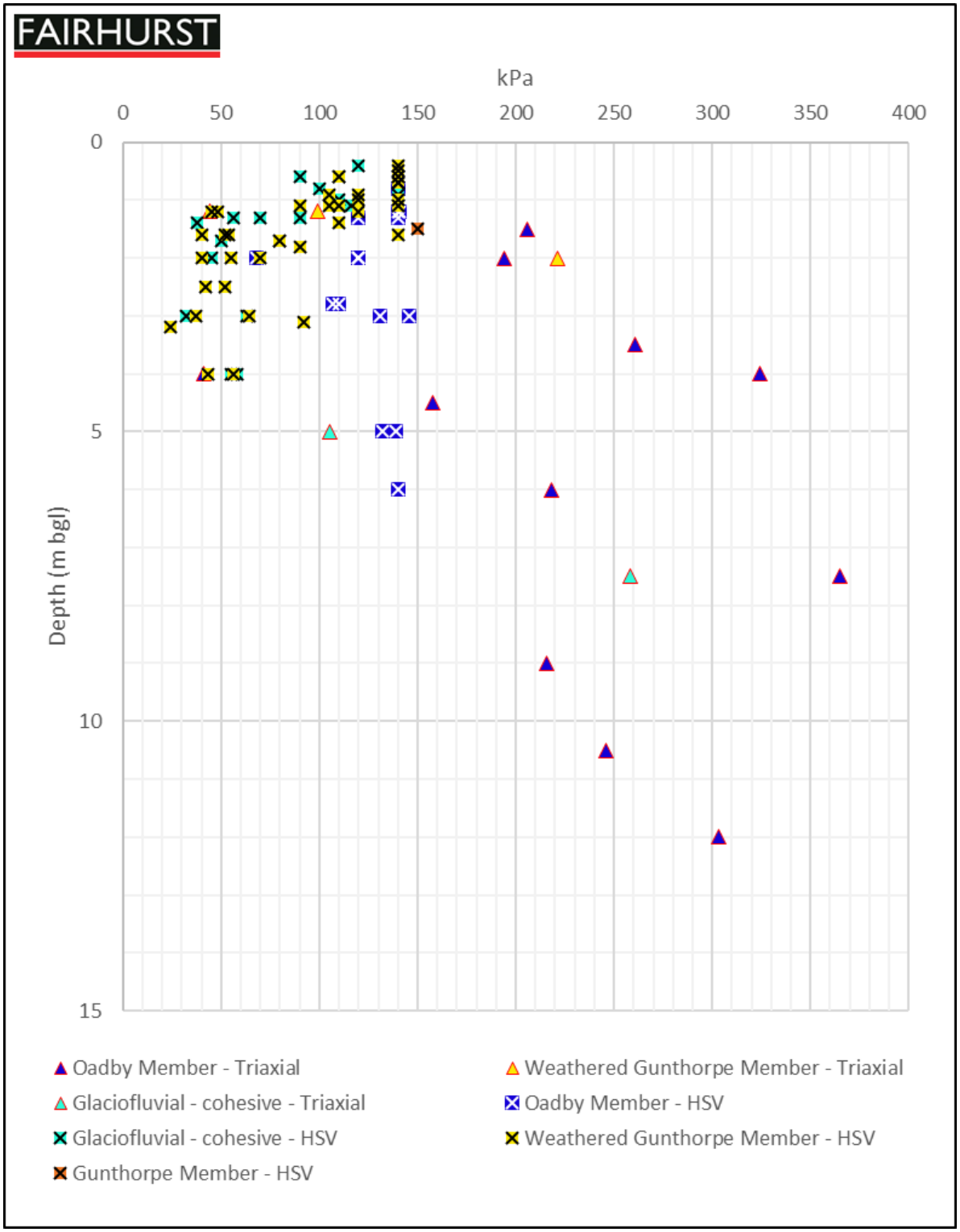


FIGURE 22 – UNDRAINED SHEAR STRENGTH VS ELEVATION (M AOD)

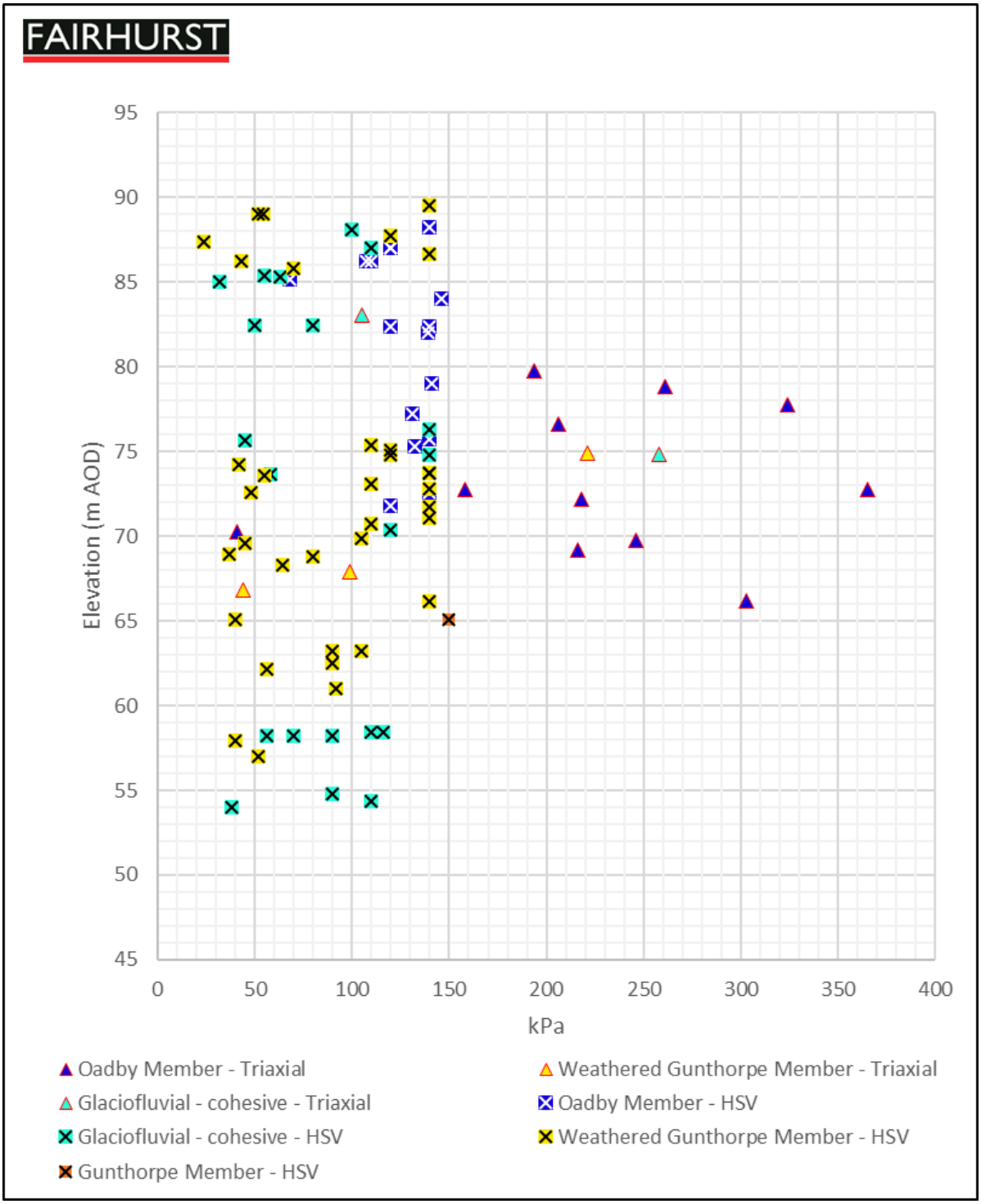


FIGURE 23 – UNCONFINED COMPRESSIVE STRENGTH VS DEPTH (M BGL)

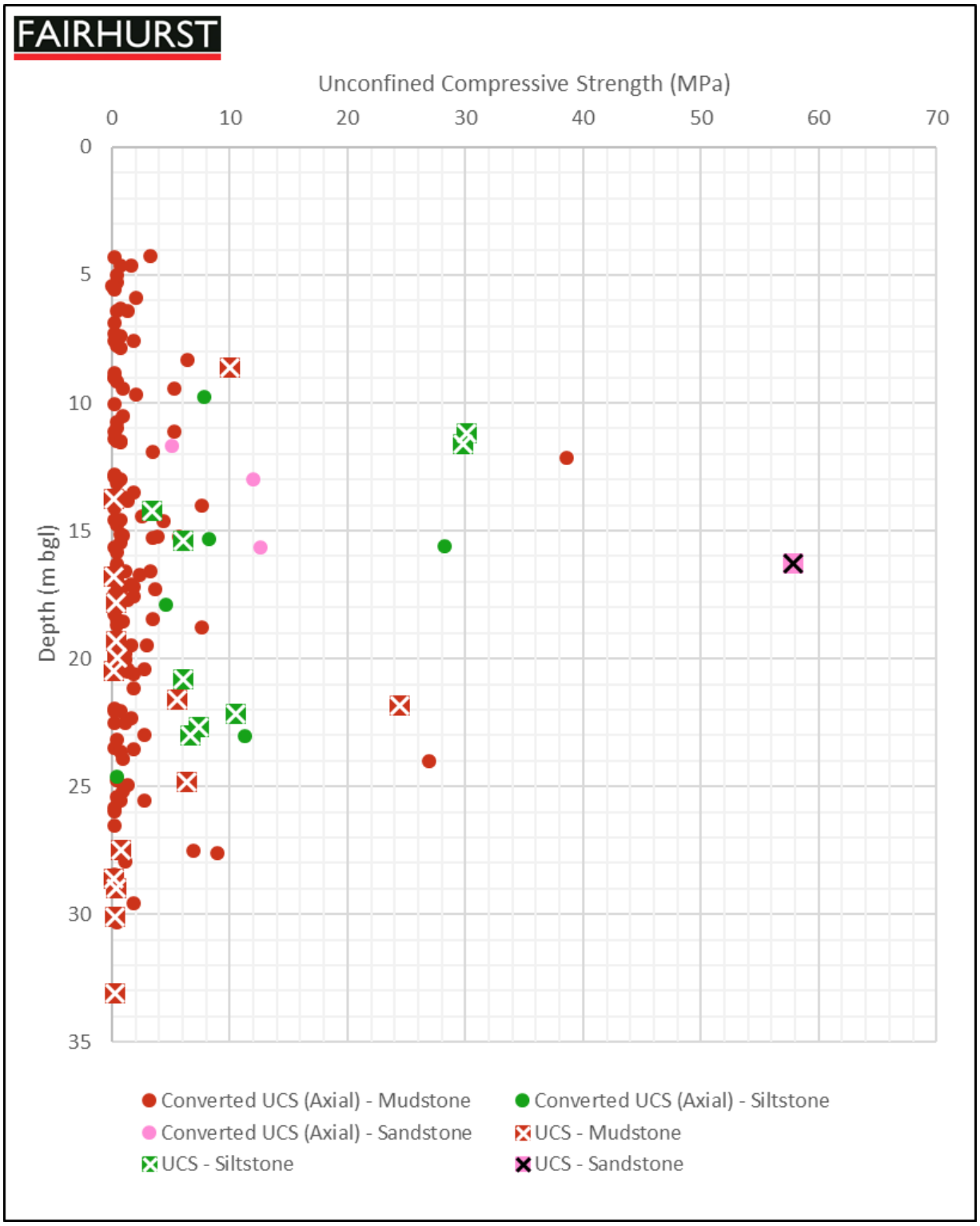
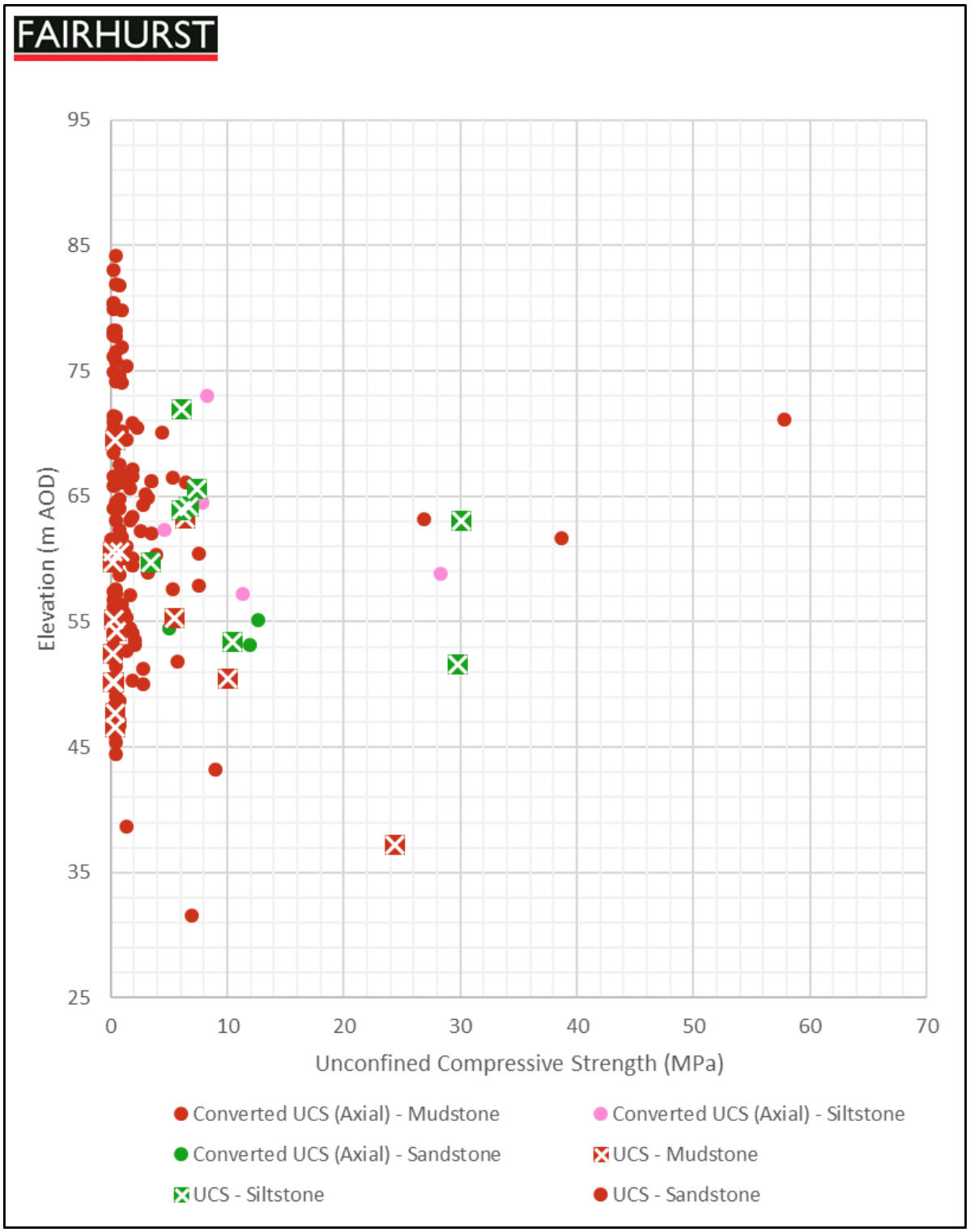
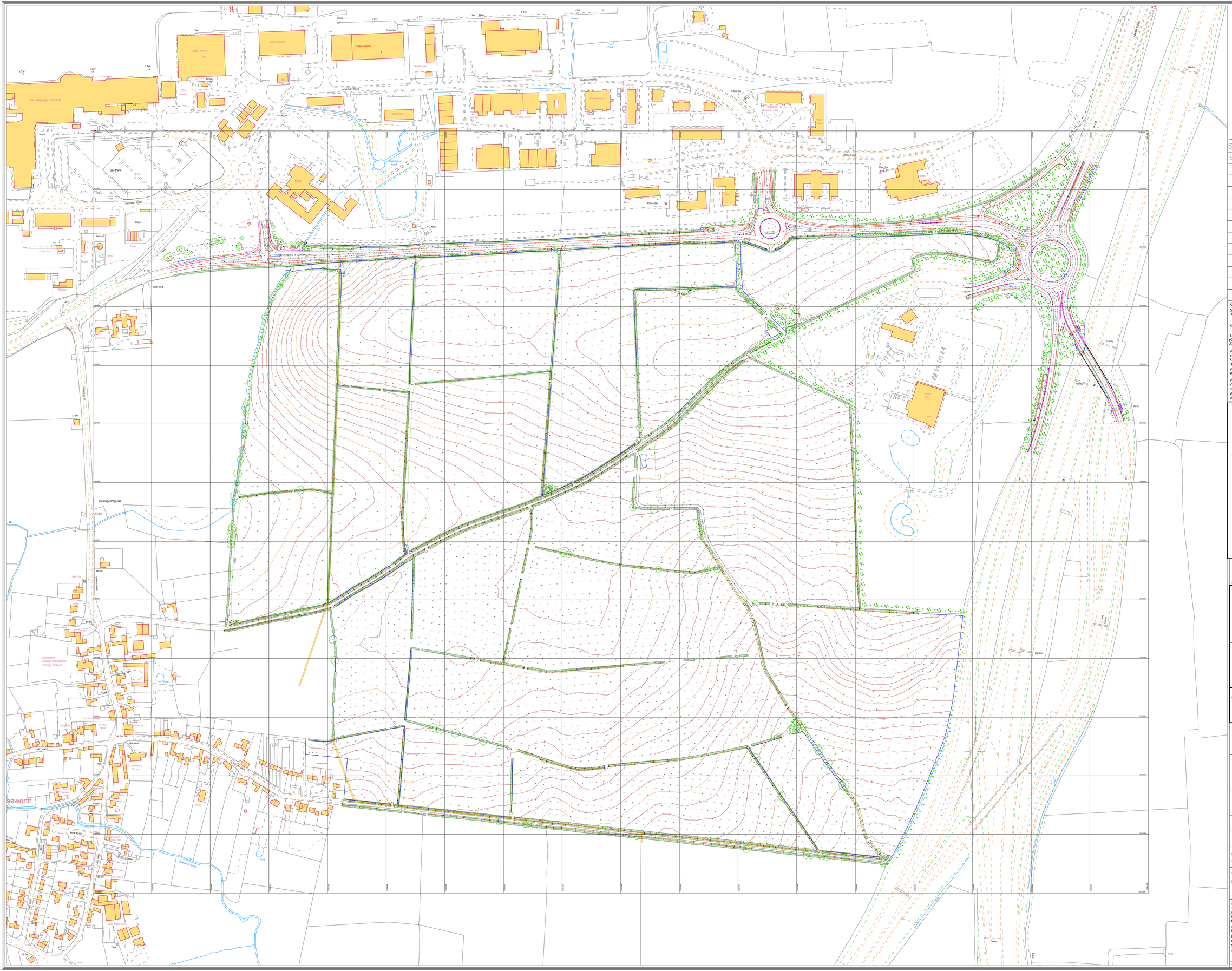


FIGURE 24 – UNCONFINED COMPRESSIVE STRENGTH VS ELEVATION (M AOD)



APPENDIX A

TOPOGRAPHICAL SURVEY


N
Station Information:
Station | Easting (m) | Northing (m) | Level (m)
D1 | 446495.174 | 325438.125 | 87.825
D2 | 446600.470 | 325437.555 | 88.372
D3 | 446736.974 | 325433.074 | 88.162
D4 | 446866.060 | 325436.925 | 86.081
D5 | 446878.948 | 325372.322 | 85.201
D6 | 446947.221 | 325448.280 | 84.444
GH2 | 446101.602 | 325402.684 | 84.812
GH3 | 445856.595 | 325399.844 | 81.922
N2 | 446987.475 | 325220.991 | 83.873
R1 | 445582.903 | 325381.6610 | 75.930
R2 | 445469.850 | 325374.391 | 79.274
SA1 | 446415.699 | 325424.224 | 87.303
OS Note:
Some services may have been omitted due to parked vehicles. The Ordnance Survey tile is to be used as a guide only.
OS Buildings
Surveyed Buildings
This survey has been orientated to the Ordnance Survey (O.S) National Grid OSGB36(15) via Global Navigation Satellite Systems (GNSS) and the O.S. Active Network (OS Net).
A true OSGB36 coordinate has been established near to the site centre via a transformation using the OSTN15GB & OSGM15GB transformation models.
The survey has been correlated to this point and a further one or more OSGB36 (15) points established to create a true O.S. bearing for angle orientation.
No scale factor has been applied to the survey therefore the coordinates shown are arbitrary & not true O.S. Coordinates which have a scale factor applied.
Please refer to Survey Station Table to enable establishment of the on-site grid and datum.
Legend:
Rev | Date | Description | Drawn | Ck. Rev
greenhatch group
Topographical Surveys
Site Engineering
Utility / CCTV Surveys
Measured Building Surveys
3D Laser Scanning
Revit & BIM Models
Rowan House
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Armthrpt Road
Newcastle Bus. Park
Newcastle-U-Tyne
NE4 7YL
t. (01912) 736391
London
27, Cornwall Terrace Mews
Regents Park
London
NW1 5LL
t. (02072) 241806
CLIENT
SEGRO PLC
PROJECT
EMG Phase 2 (Freeport)
Hyam's Lane, Diseworth
Derby, DE74 2QD
TITLE
Topographical Survey
SCALE
A0@ 1: 2000
DATE
19.04.22
DRAWN
JM
QUALITY REF
GH13710
Level datum
See note
Grid orientation
See note
Job number
34529A
Drawing No.
34529A_T
Rev.
0
Comments
This plan should only be used for its original purpose. Greenhatch Group accepts no responsibility for this plan if supplied to any party other than the original client.
All dimensions should be checked on site prior to design and construction.
Drainage information (where applicable) has been visually inspected from the surface and therefore should be treated as approximate only.
Notes:
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APPENDIX B

STRUCTURAL SOILS LTD FACTUAL REPORT – MAY 2023

EMG PHASE 2

Factual Report on Ground Investigation

Report No: 765514-01 (02)

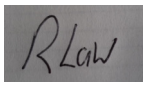
Client: SEGRO Properties Limited

MAY 2023

STRUCTURAL SOILS LTD

DOCUMENT ISSUE RECORD

Project No.:	765514
Report No.:	765514-1 (02)
Project Name:	EMG Phase 2
Document Title	Factual Report on Ground Investigation
Client:	SEGRO Properties Limited
Engineer:	Fairhurst
Status:	Final

Author	pp.	T Clifford BEng FGS
Approved by		R Law BSc (Hons)
Report Issue Date		05/05/2023

ISSUE RECORD

Issue	Date	Description	Prepared by
00	24/02/23	Draft Factual Report	TC
01	23/03/23	Draft Factual Report	RL
02	03/05/23	Final Factual Report	AJ

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1 INTRODUCTION

This investigation was carried out by Structural Soils Ltd (SSL) on the instructions of Fairhurst (the Engineer) on behalf of SEGRO Properties Limited (the Client) at Diseworth, Leicestershire. The purpose of the work was to obtain geotechnical and geoenvironmental information for a proposed commercial warehousing development and associated infrastructure.

The scope of the investigation comprised cable percussion and rotary boreholes, trial pits, in situ testing, laboratory testing and the preparation of this report. The report contains a description of the site and the works carried out, the exploratory hole logs, in-situ and laboratory testing results.

The ground investigation has been carried out in accordance with the contract specification (48749/SPEC/01), and the general requirements of BS 5930:2015+A1:2020, BS 10175:2011+A2:2017, BS EN 1997-2:2007, BS EN ISO 22475-1:2021 and other relevant standards as identified below or elsewhere in this report.

This report presents the factual information obtained by the ground investigation, including records of all field and laboratory work carried out. All information given in this report is based on the ground conditions encountered during the site work, and on the results of the field and laboratory work performed during the investigation.

Whilst every attempt is made to record full details of the strata encountered in the exploratory holes, techniques of hole formation and sampling will inevitably lead to disturbance, mixing or loss of material in some soils and rocks. There may be conditions at the site that have not been taken into account, such as unpredictable soil strata, contaminant concentrations, and water conditions between or below exploratory holes.

This report was prepared by SSL for the sole and exclusive use of SEGRO Properties Limited in response to particular instructions. Any other parties using the information contained in this report do so at their own risk and any duty of care to those parties is excluded. No liability will be accepted after a period of 6 years from the date of the report.

2 SITE DESCRIPTION

2.1 Location and Topography

The site is located on Hyam's Lane in Leicestershire, between the village of Diseworth, to the west, and Junction 23A of the M1 motorway, to the east, (see Site Location Map in Appendix A). The British National Grid Reference of the site is SK 459 249.

The site is undeveloped agricultural (arable) land, to the north and south of Hyam's Lane. There are a total of twenty fields; field boundaries of predominantly hedgerows and trees, with gated field entrances.

The site is an irregular shape, approximately 1100 m by 950 m, covering an area of about 100 hectares (see Exploratory Hole Location Plan in Appendix A).

The site is bounded to the east by the M1, East Midlands Airport to the north, agricultural land to the south and west, low rise residential development adjacent to the southwestern corner. Hyam's Lane traverses the approximate centre of the site in a southwest/north east direction.

The site slopes gradually downward from north to south, between approximately 91.5 m and 55.0 m above Ordnance Datum (AOD).

2.2 Geology

Information on the geology of the site was obtained from the following sources published by the British Geological Survey (BGS):

- BGS map (Loughborough, sheet 141, scale 1:50,000, published 2001).
- The BGS GeoIndex (onshore) digital geology map, which utilises the most up to date names for geological units. (https://www.bgs.ac.uk/map-viewers/geoindex-onshore/)
- The BGS Lexicon of Named Rock Units, which provides typical descriptions for most geological units (https://webapps.bgs.ac.uk/lexicon/).

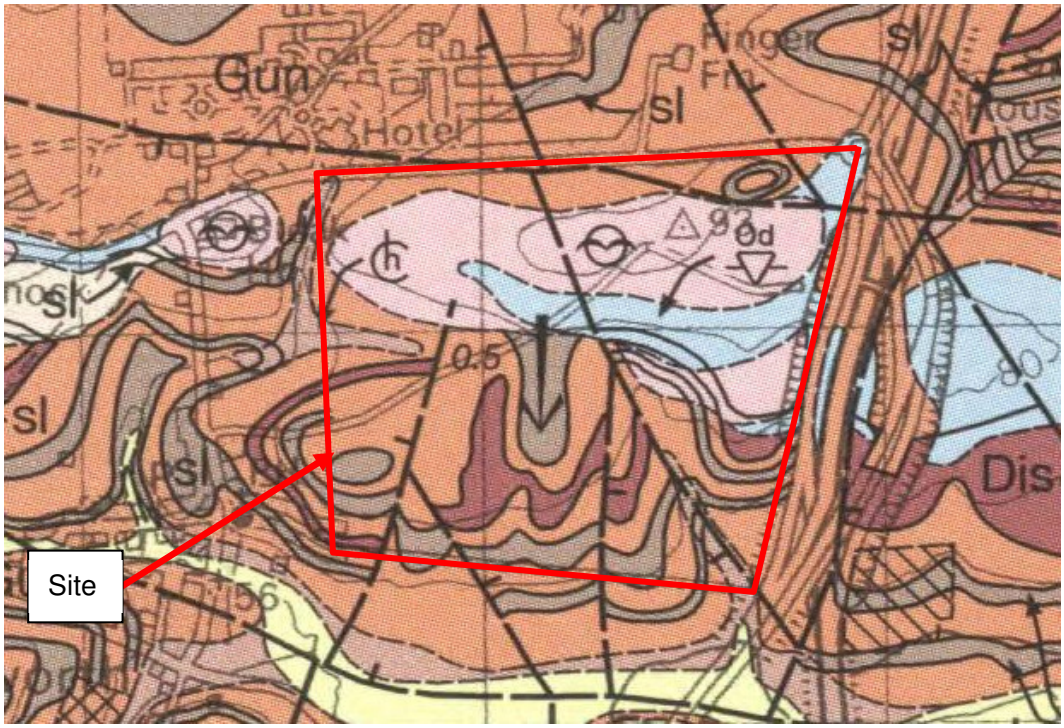
The site is shown to be underlain by the following descending sequence of strata:

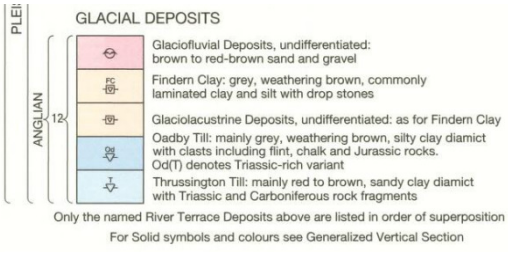
TABLE 1 : SUMMARY OF EXPECTED SITE GEOLOGY	
Geological Unit Name	**Description**
SUPERFICIAL DEPOSITS	
Glaciofluvial Deposits	Sand and Gravel
Oadby Member	Diamicton, grey, weathering brown, characterised by Cretaceous and Jurassic rock fragments; subordinate lenses of sand and gravel, clay and silt. Clay, brown to grey, and silty clay, with chalk and flint fragments
Head Deposits	Clay, silt, sand and gravel. Sedimentary superficial deposit formed between 2.588 million years ago and the present during the Quaternary period.

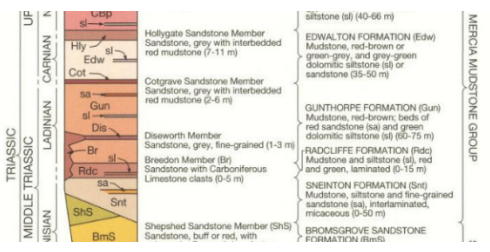
Superficial deposits are only shown across the northern portion of the site, predominantly north of Hyam's Lane, but also locally in the fields immediately south of Hyam's Lane. The map indicates the head deposits to be situated near and along existing waterbodies to the west with a spur entering the approximate centre of the site and also to the south east of the site.	
SOLID GEOLOGY	
Mercia Mudstone Group including:	
Gunthorpe Member (Sidmouth Mudstone Formation)	Mudstone, red-brown, with subordinate dolomitic siltstone and fine-grained sandstone, greenish grey, common gypsum veins and nodules.
Diseworth Sandstone (Gunthorpe Member)	Pale greenish grey siltstone and fine-grained sandstone.

Note: Information obtained from BGS digital records © NERC.

The BGS online maps portal provides access to scans of almost all maps produced by the BGS since 1932. An extract of the most recent available scanned map for the site is included below:







Note: Above images contain British Geological Survey materials ©NERC [2023].

The geological maps show several faults crossing the site and details the dip of the solid geology to be 0.5 degrees to the south in the centre of the site.

3 FIELDWORK

3.1 General

The ground investigation was carried out by SSL between 5 September and 6 October 2022. The investigation was supervised by an engineer from SSL. The scope of works and positions were selected by Fairhurst, set out by SSL and adjusted where necessary to take account of buried or overhead services, or other restrictions. The exploratory hole and in-situ test locations are shown on the Exploratory Hole Location Plan presented in Appendix A.

Prior to the commencement of any exploratory hole a ground penetrating radar (GPR) survey was undertaken around each field boundary - the survey was carried out by RSK SafeGround. All locations were additionally checked for buried services using a cable avoidance tool (CAT) and signal generator ('genny').

Inspection pits were hand dug, to nominally 1.20 m, at all borehole locations.

On completion of the works, a survey of the exploratory hole locations was undertaken using specialist Global Positioning System (GPS) equipment. The coordinates of each exploratory hole were measured relative to British National Grid, and the level relative to Ordnance Datum. These are shown on the exploratory hole logs contained in Appendix B which have been printed with a reduced level column.

3.2 Exploratory Holes

The exploratory holes are listed in the following table.

TABLE 2 :SCOPE OF INTRUSIVE WORKS

Quantity	Exploratory Hole Type	Maximum depth (m)	Hole / Test Numbers
28	Cable Percussion Boreholes.	17.21	CP01 to CP28
25	Cable Percussion Boreholes extended by Rotary Drilling.	33.35	BH01 to BH09 & BH11 to BH26
2	Dynamic Sample Boreholes extended by Rotary Drilling.	31.10	BH10 & BH27
39	Machine Dug Trial Pits.	4.00	TP01 to TP37, TP33A & TP39

The exploratory hole logs are presented in Appendix B. These provide information including the equipment and methods used, samples taken, tests carried out, water observations and descriptions of the strata encountered. Explanation of the terms and abbreviations used on the logs is given in the Key to Exploratory Hole Records in Appendix B, together with other explanatory information.

The holes were logged by an engineer in general accordance with the recommendations of BS 5930:2015+A1:2020 (which incorporates the requirements of BS EN ISO 14688-1:2018, 14688-2:2018 and 14689:2018), and CIRIA Report C570 *Engineering in Mercia mudstone*. Detailed descriptions, together with relevant comments, are given on the logs.

Due to the nature of Mercia mudstone determining fracture indices accurately is difficult for some of the core recovered using rotary drilling methods. Where a fracture index could be logged this has been recorded and is presented in Appendix B.

Standard penetration tests (SPT) in the boreholes were carried out in accordance with BS EN ISO 22476-3:2005+A1:2011 and are presented on the logs in Appendix B as uncorrected 'N' values. The SPT hammer energy ratio certificates, a test result summary sheet, and 'N' value vs. depth plot are presented in Appendix C.

Hand shear vane tests we carried in trial pits on suitable material, and suitably sized lumps recovered during excavation; results are presented on the relevant logs in Appendix B.

Photographs of the rotary drilled core and trial pits are presented in Appendix B, alongside the exploratory hole logs.

3.3 In-Situ Testing

The in-situ tests are listed in the following table. The test methods used are detailed on the test result sheets included in Appendix C, unless otherwise noted.

TABLE 3 : SCOPE OF IN-SITU TESTING		
Quantity	**In-situ Test**	**Remarks**
8	Soakaway Infiltration Tests in trial pits.	Single fill for all tests with minimal drainage after 3 hours.
2	Variable Head Permeability Tests.	Falling head tests carried out in BH11 and CP06.

The Soakaway tests were undertaken in trial pits in general accordance with recommended practice given in BRE Digest 365. Three fillings of the pits were not undertaken due to slow infiltration rates.

The Variable Head Permeability tests were undertaken in general accordance with BS EN ISO 22282-1:2012 and -2:2012.

3.4 Backfill and Instrumentation

On completion 50 mm diameter gas/groundwater monitoring wells were installed in selected exploratory holes, the design having been decided by Fairhurst. The installation details are shown on the exploratory hole logs and on a summarised in Appendix B.

Each installation was protected with a raised cover and marked with a wooden stake, nominally 1.20 m high.

The remaining boreholes were backfilled with bentonite pellets and arisings. The trial pits were backfilled with arisings, compacted in layers by the excavator bucket.

3.5 Monitoring and Post Fieldwork Environmental Sampling

Gas and groundwater monitoring was undertaken during three post fieldwork monitoring visits, between 13 October and 14 November 2022; the results are tabulated in Appendix F.

An infrared gas meter was used to measure concentrations of carbon dioxide (CO_2), methane (CH_4) and oxygen (O_2) in percentage by volume, GGGG whilst hydrogen sulphide (H_2S) and carbon monoxide (CO) were recorded in parts per million. Initial and steady state concentrations were recorded. An integral flow meter was used to measure borehole flow rates (initial and steady state) in litres per hour (l/hr). In addition the atmospheric pressure before and during monitoring, together with the weather conditions were recorded.

Boreholes were also screened with a Photo-Ionisation Detector (PID) to establish if there are any interferences and cross-sensitivity of other hydrocarbons with the infrared gas meter. The results are recorded as ppm (isobutylene equivalent).

It should be noted that groundwater levels, gas concentrations and gas flows usually vary due to seasonal, atmospheric and/or other effects and may at times differ to those measured during the investigation.

During the second round of monitoring, groundwater samples were retrieved using low-flow purging and sampling equipment. Samples were also recovered from two surface water locations, referenced SW2 and SW3. Sampling scheduled at SW1 was not possible.

Groundwater levels in the monitoring well and water quality indicator parameters (pH, temperature, electrical conductivity, redox potential and dissolved oxygen) were monitored during low-flow purging, with parameter stabilisation indicating that purging is complete and sampling can begin. *In situ* water quality measurements undertaken during the purging process and are provided in Appendix F.

Groundwater samples were sent to Envirolab Limited, an MCERTS and UKAS accredited testing laboratory.

3.6 Well Decommissioning

The following monitoring wells were required to be retained after completion of the final monitoring round; CP01, CP27, BH09, BH12, BH18 and BH24.

All other monitoring wells were decommissioned, which comprised the removal of the protective steel cover, concrete surround, and the top 1 m of pipe. The locations were reinstated with topsoil.

4 LABORATORY TESTING

Samples for potential geotechnical testing were returned to one of the Company's UKAS accredited laboratories, and those for potential geoenvironmental testing were sent to a sister company Envirolab Limited, a MCERTS and UKAS accredited testing laboratory. Laboratory tests were scheduled by the Engineer. Tests carried out in accordance with MCERTS/UKAS standards where noted on the results sheets.

4.1 Geotechnical Laboratory Testing

Geotechnical laboratory testing was generally carried out in accordance with the relevant parts of:

- BS EN ISO 17892:2014-2022 Parts 1-12, *Geotechnical investigation and testing – Laboratory testing of soil*,
- BS 1377:2016-2022 Parts 1-3, *Methods of test for soils for civil engineering purposes* (for test methods not covered in BS EN ISO 17892),
- BS 1377:1990 Parts 1-8, *Methods of test for soils for civil engineering purposes* (for tests carried out to older legacy methods),
- International Society for Rock Mechanics and Rock Engineering (ISRM) *Suggested Methods for Rock Characterization, Testing and Monitoring*, 1974-2006, 2007-2014 and 2015+
- BRE Special Digest 1:2005 (SD1) *Concrete in aggressive ground. Assessing the aggressive chemical environment*. Third edition.

The number of tests of each type completed are summarised below. The results are reported in tabular and/or graphical form and included as Appendix D of this report. The test methods used are detailed on the report sheets, and where non-standard procedures have been undertaken, this is recorded on the report sheet.

TABLE 4 :SUMMARY OF GEOTECHNICAL TESTING

Test	Number of tests	Remarks
Classification Tests		
Water content.	151	
Liquid and plastic (Atterberg) limits.	151	
Particle size distribution by sieving.	53	
Particle size distribution by sedimentation.	48	
Particle Density	28	

TABLE 4 :SUMMARY OF GEOTECHNICAL TESTING		
Test	**Number of tests**	**Remarks**
Performance Tests		
Light Compaction (2.5kg)	42	
Heavy Compaction (4.5kg)	13	
MCV	14	
Compressibility, Permeability and Durability Tests		
One-dimensional consolidation test.	20	
Shear Strength - Total Stress		
Single stage unconsolidated undrained triaxial compression tests without the measurement of pore pressure.	16	
Hand vane tests using undisturbed soil samples.	23	
Rock Tests		
Rock moisture content	13	
Uniaxial compressive strength tests.	24	
Uniaxial compressive strength tests – with radial and axial deformation	1	
Point Load Index.	152	The natural ('as received') water content of the samples was determined. Note, each test contains a pair of specimens.
Slake Durability	1	
Chemical Tests: Soil*		
Water soluble sulphate, total (acid soluble) sulphate and total sulphur contents and pH value.	41	Test(s) carried out to method approved in BRE Special Digest 1.
Organic content.	27	

4.2 Geoenvironmental Laboratory Testing

The geoenvironmental testing carried out is summarised in the following table. The results are included as Appendix E of this report, and include details of the test method.

TABLE 5 : SUMMARY OF GEOENVIRONMENTAL LABORATORY TESTING		
Description	**Notes**	**Numbers of tests**
SOIL		
SSL HHB Human Assessment suite.	Comprises arsenic, cadmium, chromium (total), lead, mercury, selenium, copper, nickel, zinc, speciated polycyclic aromatic hydrocarbons (PAH), total petroleum hydrocarbons (TPHCWG (speciated)), soluble organic matter, soluble sulphate and pH.	83
Volatile organic compounds (VOC).		12
Semi volatile organic compounds (SVOC)		12
Asbestos presence screen.	Identification was undertaken if/where asbestos fibres were detected.	2
WATER		
Suite F (Schedule 1.20.3) Groundwater Screening suite.	Comprises arsenic, boron, cadmium, chromium (total), copper, lead, mercury, selenium, nickel, zinc, speciated polyaromatic hydrocarbons (PAH – USEPA 16), total petroleum hydrocarbons, sulphate (SO4), phenol, cyanide and pH.	17
Chromium (Hexavalent)		17
Chromium (Trivalent)		17
Speciated PCB-WHO12		17
OCP+OPP Combined Pesticide Suite (incl. Atrazine + Simazine)		17

5 REFERENCES

5.1 BS 5930:2015+A1:2020 *Code of practice for ground investigations*

5.2 BS 10175:2011+A2:2017 *Investigation of potentially contaminated sites: Code of practice*

5.3 BS EN 1997-2:2007 *Eurocode 7 — Geotechnical design. Part 2: Ground investigation and testing*

5.4 BS EN ISO 22475-1:2021 *Geotechnical investigation and testing - Sampling methods and groundwater measurements. Part 1: Technical principles for the sampling of soil, rock and groundwater*

5.5 British Geological Survey sheet 141 scale 1:50,000, published 2001

5.6 British Geological Survey, Geoindex (onshore) digital map viewer. Available online: https://www.bgs.ac.uk/map-viewers/geoindex-onshore/

5.7 British Geological Survey, Lexicon of Named Rock Units. Available online: https://webapps.bgs.ac.uk/lexicon/

5.8 British Geological Survey, BGS maps portal. Available online: https://www.bgs.ac.uk/information-hub/bgs-maps-portal/

5.9 BS EN ISO 14688-1:2018 *Geotechnical investigation and testing – Identification and classification of soil. Part 1: Identification and description*

5.10 BS EN ISO 14688-2:2018 *Geotechnical investigation and testing – Identification and classification of soil. Part 2: Principles for a classification*

5.11 BS EN ISO 14689:2018 *Geotechnical investigation and testing – Identification, description and classification of rock*

5.12 BS EN ISO 22476-3:2005+A1:2011 *Geotechnical investigation and testing – Field testing. Part 3: Standard penetration test*

5.13 BS 1377-9:1990 *Methods for test for soils for civil engineering purposes. Part 9: In-situ tests*, incorporating Amendments Nos. 1 and 2

5.14 BRE Digest 365 (2016) *Soakaway Design*

5.15 BS EN ISO 22282-1:2012 *Geotechnical investigation and testing — Geohydraulic testing. Part 1: General rules*

5.16 BS EN ISO 22282-2:2012 *Geotechnical investigation and testing — Geohydraulic testing. Part 2: Water permeability tests in a borehole using open systems*

5.17 BS EN ISO 17892:2014-2022 *Geotechnical investigation and testing – Laboratory testing of soil. Parts 1-12*

5.18 BS 1377:2016-2022 *Methods of test for soils for civil engineering purposes. Parts 1-3*. (for test methods not covered by BS EN ISO 17892 series of standards)

5.19 BS 1377:1990 *Methods of test for soils for civil engineering purposes. Parts 1-8*. (for tests carried out using legacy methods)

5.20 International Society for Rock Mechanics and Rock Engineering (ISRM, 1974-2006, 2007-2014, and 2015+), *The ISRM Suggested Methods for Rock Characterization, Testing and Monitoring*

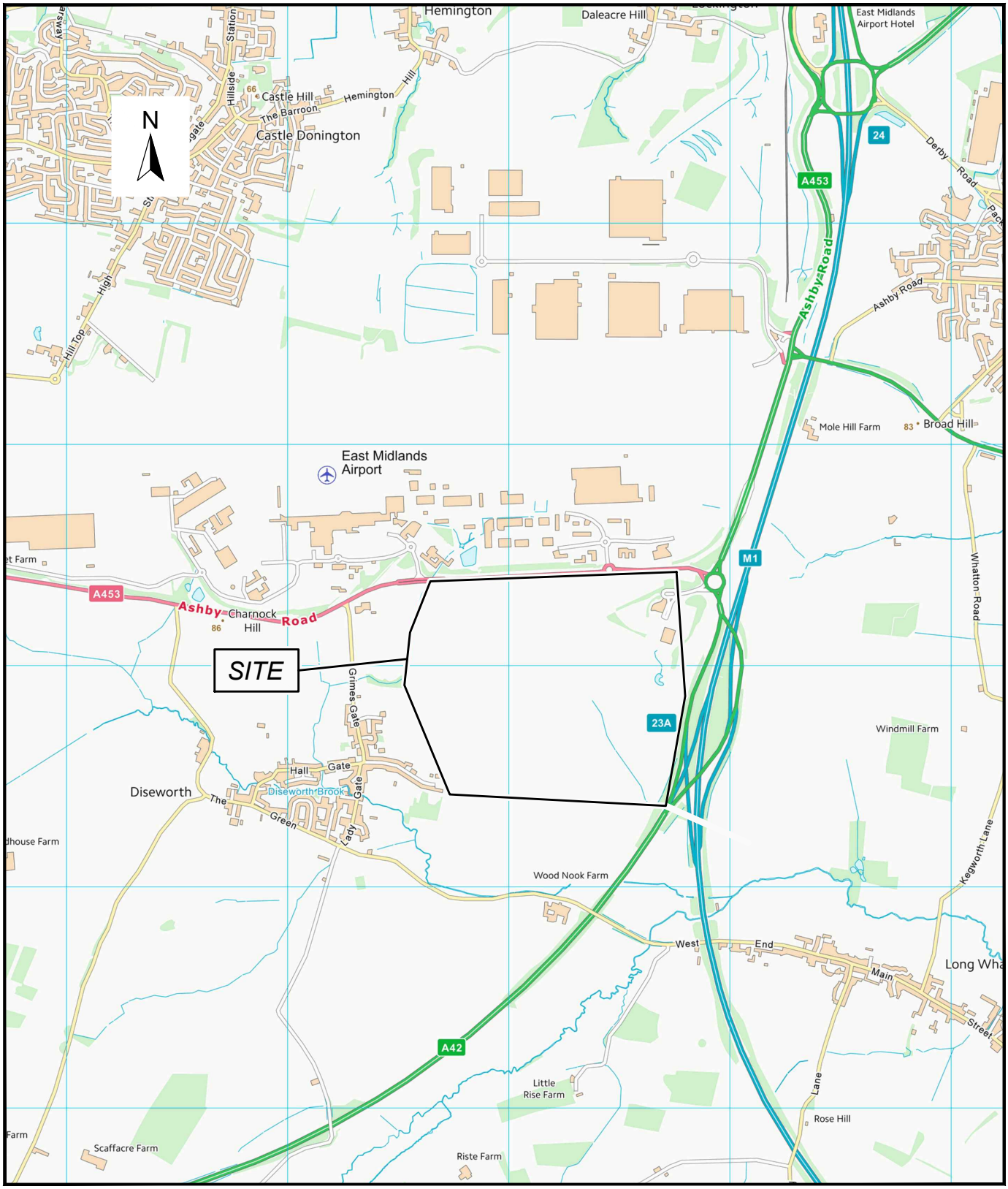
5.21 BRE Special Digest 1:2005 (SD1), *Concrete in aggressive ground. Assessing the aggressive chemical environment. Third Edition*

5.22 BS EN IS/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*

APPENDIX A -
PLANS AND DRAWINGS

(i) Site Location Plan

(ii) Exploratory Hole Location Plan



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REV.	DATE	DESCRIPTION	BY	CHD.	APR.
00	12.01.2023	FIRST ISSUE	MW	TC	AJ

DIMENSION	SCALE	DRAWING STATUS
m	1:25,000	-

CLIENT

SEGRO Properties Limited

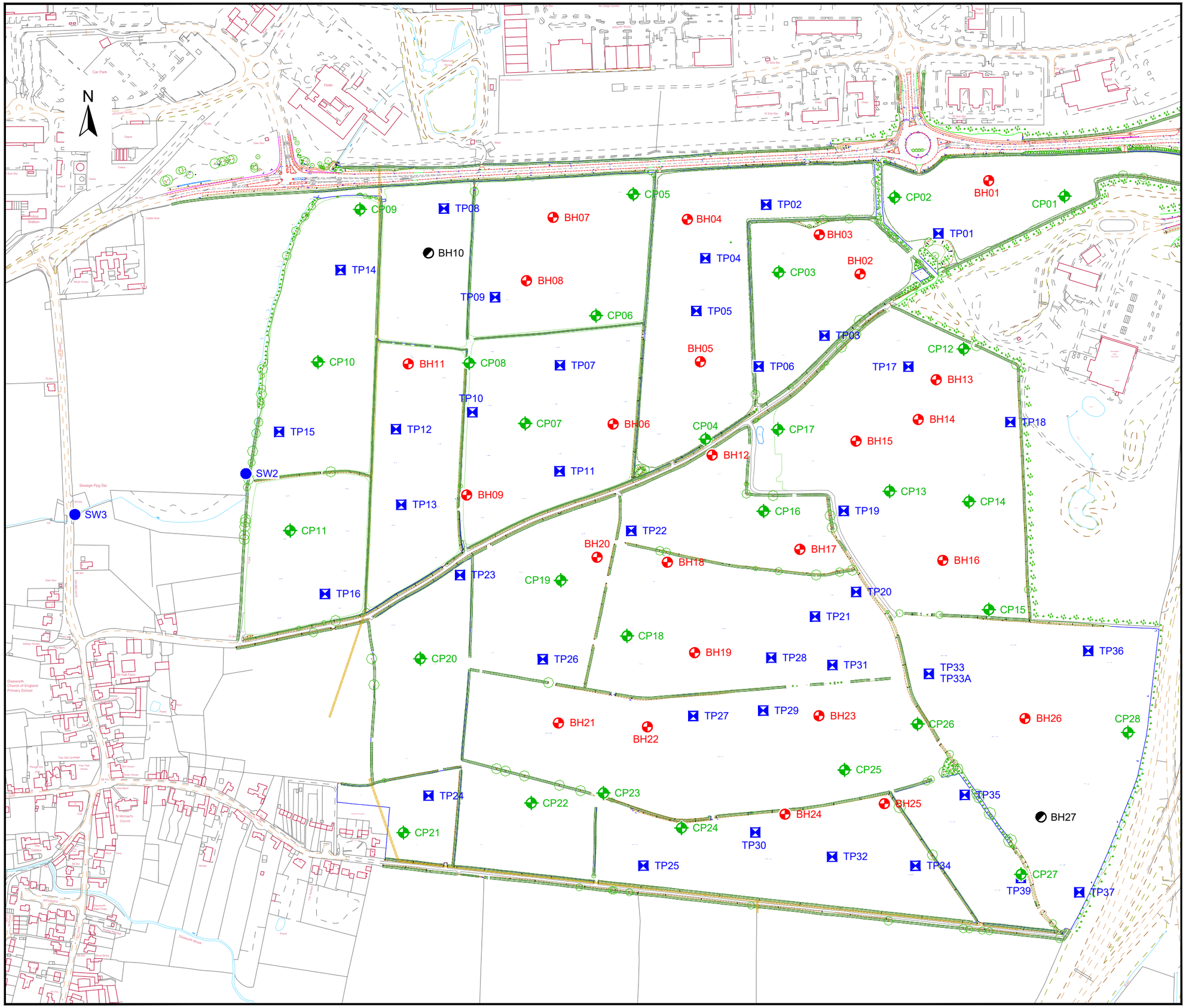
PROJECT

EMG Phase 2

TITLE

SITE LOCATION MAP

JOB NO	GRID REF	SCALE BAR	ORIGIN SIZE	FIGURE
765514	SK 460 244	0 250 500 750 1,000m	A4	1



LEGEND

- TRIAL PIT LOCATION
- CABLE PERCUSSION BOREHOLE EXTENDED BY ROTARY DRILLING LOCATION
- CABLE PERCUSSION BOREHOLE LOCATION
- DYNAMIC SAMPLE BOREHOLE EXTENDED BY ROTARY DRILLING
- SURFACE WATER SAMPLING LOCATION

REV	DATE	DESCRIPTION	BY	CHD	APR
00	18.01.2023	-	MW	TC	AJ

DIMENSION	SCALE	ORIGIN SIZE
m	1:5,000	A3

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CLIENT

SEGRO Properties Limited

PROJECT

EMG Phase 2

TITLE

EXPLORATORY HOLE LOCATION PLAN

JOB NO	FIGURE
765514	2
DRAWING STATUS	REV
-	00

SCALE BAR

0 50 100 150 200 250m

APPENDIX B - EXPLORATORY HOLE RECORDS

(i) Key to Exploratory Hole Logs

(ii) Borehole Logs

(iii) Trial Pit Logs

(iv) Standpipe Summary Table

KEY TO EXPLORATORY HOLE LOGS - SUMMARY OF ABBREVIATIONS

SAMPLING

Sample type codes:

B	=	Bulk disturbed sample.
C	=	Core sample.
D	=	Small disturbed sample.
DSPT	=	Small disturbed sample originating from SPT test.
ES	=	Soil sample for environmental testing.
EW	=	Water sample for environmental testing.
LB	=	Large bulk disturbed sample.
NR	=	
U	=	Undisturbed driven tube sample - Number of blows indicated. % recovery reported.
UT	=	Undisturbed thin wall sample.
UT-NR	=	Undisturbed thin wall sample - no recovery
W	=	Water sample.

Undisturbed sample detail codes:

$U_{(100)}$	=	100mm diameter undisturbed sample.
$U_{(UT100)}$	=	Undisturbed sample UT100.

IN-SITU TESTING

$SPT_{(c)}$	=	Standard Penetration Test using a solid 60 degree cone.
SPT	=	Standard Penetration Test using split spoon sampler. ($_{(NR)}$ indicates 'No Sample Recovery').
	=	* denotes extrapolated N value. NP denotes 'No Penetration'.
V	=	Field Vane Test. Peak value (c_u) & Residual value (c_r), given as shear strength in kPa.

ROTARY DRILLING INFORMATION

W	=	Water flush returns (%)
TCR	=	Total core recovery (%)
SCR	=	Solid core recovery (%)
RQD	=	Rock quality designations (%)
If	=	Fracture spacing (mm). Where variable the minimum - mode - maximum spacing may be quoted.

In fracture column (i) denotes discontinuity is infilled (refer to Fracture Table for details).
'NI' denotes non-intact core. 'NA' denotes not applicable.

- All lengths used to determine rock core mechanical properties taken along the centre line of the core.
- Obvious induced fractures have been ignored.
- The assessment of solid core is based on lengths that show a full diameter and not necessarily a full circumference.

Where used Rotary flushing medium abbreviations:

A+M	=	Air+Mist
Air+Mist	=	

AZCL	=	Assessed zone of core loss.

ADDITIONAL NOTES

1. All soil and rock descriptions and legends in general accordance with BS EN ISO 14688-1:2018, 14688-2:2018, 14689:2018, and BS5930:2015+A1:2020.
2. Material types divided by a broken line (- - -) indicates an unclear boundary.
3. Fracture spacings (If) quoted in the Description of Strata for specific strata or specific fracture sets are also quoted in mm, e.g. (25/80/230) referring to (Min/Avg/Max).
4. The data on any sheet within the report showing the AGS icon is available in the AGS format.

GINT_LIBRARY_V10_01.GLB|GrfcText G - LEGEND - 1 OF 2 | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01 | 04/05/23 - 14:50 | A|4.
Structural Soils Ltd, Branch Office - Castleford: The Potteries, Pottery Street, Castleford, West Yorkshire, WF10 1NJ. Tel: 01977-552255, Fax: 01977-552299, Web: www.soils.co.uk, Email:north@soils.co.uk.

STRUCTURAL SOILS

Contract Reference: **765514**

KEY TO EXPLORATORY HOLE LOGS - SUMMARY OF GRAPHIC SYMBOLS

WATER COLUMN SYMBOLS

First water strike, second water strike etc.

Standing water level following first strike, standing water level following second strike etc.

Seepage.

Standing water level recorded at documented date.

MATERIAL GRAPHIC LEGENDS

BOULDERS & COBBLES

BOULDERS

CLAY

Clayey GRAVEL

Clayey gravelly SAND

Gravelly clayey SAND

Clayey SAND

Clayey sandy GRAVEL with COBBLES

Sandy clayey GRAVEL with COBBLES

GRAVEL with COBBLES

Gravelly CLAY

Gravelly silty CLAY

Silty gravelly CLAY

Gravelly SAND

Gravelly SAND with COBBLES

Gravelly SILT

MADE GROUND

Mudstone

Possible MADE GROUND

SAND & GRAVEL

Sandstone

Sandy CLAY

Sandy silty CLAY

Sandy CLAY with COBBLES

Sandy GRAVEL

Sandy GRAVEL with COBBLES

Sandy GRAVEL with COBBLES and BOULDERS

Gravelly sandy CLAY

Sandy gravelly CLAY

Sandy gravelly silty CLAY

Sandy gravelly CLAY with BOULDERS

Sandy gravelly CLAY with COBBLES

Sandy gravelly CLAY with COBBLES and BOULDERS

Sandy gravelly clayey SILT

Sandy gravelly SILT

Sandy gravelly SILT with COBBLES

Siltstone

Sandy clayey SILT

Sandy SILT

Topsoil

Clayey SILT

Silty CLAY

Gravelly silty SAND

Silty SAND

Silty sandy GRAVEL

INSTRUMENTATION SYMBOLS

Backfill

Bentonite cement grout

Bentonite cement pellets

Bentonite seal

Concrete

Gravel filter

Upstanding cover

Plain pipe

Slotted pipe

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH01**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**05.09.22** End: **13.09.22**	**89.22**	**E:446551.3 N:325384.8**	**1** of **16**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instru-mentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
0.10-0.10	1	D									TOPSOIL		(0.35)	
0.10-0.30	2	B										88.87	0.35	
0.50-0.50	101	ES	1xT+1xJ+1xV								Very stiff reddish brown mottled grey slightly sandy slightly gravelly CLAY. Gravel is subangular fine to coarse of mudstone lithorelicts. (MERCIA MUDSTONE GROUP)			
0.50-0.50	3	D												
0.50-1.00	4	B												
1.00-1.00	102	ES	1xT+1xJ+1xV											
1.10-1.10	5	D												
1.20-1.50	6	$UT_{(UT100)}$	150 blows 83% recovery											
1.50-1.70	7	D												
1.70-1.70	8	D												
2.00-2.45		SPT	N=36											
2.00-2.45	10	DSPT												
2.00-2.45	11	B											(4.10)	
2.70	12	D												
3.00-3.45		SPT	N=51											
3.00-3.45	15	DSPT												
3.00-3.45	16	B												
3.70	17	D												
4.00-4.45		SPT	N=66											
4.00-4.45	19	DSPT									. . . 4.00-4.45m: becoming orangish in colour			
												84.77	4.45	

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
05/09/22	16:31	2.50	2.50	200	Dry
06/09/22	07:52	2.50	2.50	200	Dry
06/09/22	12:00	4.45	3.00	200	-
13/09/22	09:00	4.45	None	200	
13/09/22	17:00	11.25	4.45	146	10.90
14/09/22	08:30	11.25	4.45	146	5.90
14/09/22	17:00	30.75	4.45	146	28.15

Chiselling / Slow Progress

From	To	Duration (hh:mm)
3.80	4.00	00:30

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Cable percussion drilled using 200mm diameter tools and casing.
4. Rotary cored from 4.45m using Geobor-S with air mist flush.
5. Unable to determine ground water strikes due to flush method.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 Mark 2 + Comacchio GEO 601	Jonny Hutt + Sam Carter	JAlton + RStan	

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log COMPOSITE LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
Structural Soils Ltd, Branch Office - Castleford: The Potteries, Pottery Street, Castleford, West Yorkshire, WF10 1NJ. Tel: 01977-552255, Fax: 01977-552299, Web: www.soils.co.uk, Email: ask@soils.co.uk. | 08/05/23 - 20:42 | AJ4 |

STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH01**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**05.09.22** End: **13.09.22**	**89.22**	**E:446551.3 N:325384.8**	**2** of **16**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
4.45-5.25 (0:03)				88	78	44		Air+Mist (Brown)			Extremely weak to weak reddish brown MUDSTONE. Occasional pockets of grey siltstone. GRADE III. Bedding fractures: Closely spaced, 0-10°, undulating, rough, with abundant black staining. Rare reddish brown silty clay infill. (MERCIA MUDSTONE GROUP)			
				88	78	44							(0.80)	
5.00-5.12	20	C										83.97	5.25	
5.25-6.75 (0:06)											. . . 4.45-4.55m: AZCL.*(stratum copied from 4.45m from previous* sheet) . . . 4.55-4.64m: Grey siltstone. . . . 4.73-4.75m: 4°, undulating, rough, abundant black staining, clay infill >3mm. . . . 4.85-4.87m: 9° undulating rough occasional black stained infill silty clay >3mm. . . . 4.96-4.99m: 8°, undulating, rough, >3mm infill clay. Grey silstone. . . . 5.10-5.11m: 3°, undulating, rough, >3mm infill clay. . . . 5.15-5.17m: Grey siltstone. . . . 5.22-5.25m: Grey siltstone with 5°, undulating, rough fracture, >3mm clay infill.			
5.80-5.90	21	D												
				85	21	0		Air+Mist (Brown)					(1.65)	
6.75-8.25 (0:04)											Extremely weak locally thinly laminated reddish brown MUDSTONE. Occasional to frequent pockets of grey siltstone. Bedding fractures: Closely spaced, 0-10°, undulating, rough and smooth, with occasional to abundant black staining. Fracture set 2: Widely spaced, 60-80°, undulating, rough, occasional black staining. (MERCIA MUDSTONE GROUP)	82.32	6.90	
6.75-7.20		SPT	N=91											
7.40-7.60	22	C									. . . 5.25-5.43m: AZCL. . . . 5.43-5.47m: Fine to medium grained broken sandstone. . . . 5.49-5.68m: Thinly laminated grey siltstone. . . . 5.68-5.80m: Abundant black stained incipient fractures. . . . 6.01-6.02m, 6.46-6.48m and 6.60-6.75m: Grey siltstone.			
				90	83	83		Air+Mist (Brown)						
8.25-9.75 (0:04)											8.25-8.35m: Drilling disturbed. *Description on next sheet*			
				100	93	93		Air+Mist (Brown)			. . . 8.62-8.70m: 8° undulating rough occasional black staining with clay infill >3mm. *Description on next sheet*		(3.58)	
8.83-8.94	23	C												

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress

From	To	Duration (hh:mm)

General Remarks

6. Installed with 50mm standpipe on completion (response zone 1.00m to 7.00m).
7. SPT hammers AR3104-2022 (E_r = 64.00%) , AR3830-2021 (E_r = 67.00%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 Mark 2 + Comacchio GEO 601	Jonny Hutt + Sam Carter	JAlton + RStan	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH01**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**05.09.22** End: **13.09.22**	**89.22**	**E:446551.3 N:325384.8**	**3** of **16**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
				100	93	93		Air+Mist (Brown)			. . . 8.77-8.79m: 5° undulating rough abundant black stained >3mm silty clay. Extremely weak to weak reddish brown MUDSTONE. GRADE III. Bedding fractures: Widely spaced, 0 to 10°, undulating, rough with occasional black staining. Rare clay infill. Occasional to abundant yellow staining. (MERCIA MUDSTONE GROUP) *(stratum copied from 6.90m from* previous sheet) . . . 9.26-9.29m: Weak grey siltstone. . . . 9.75-9.82m: Drilling disturbed.			
9.75-11.25 (0:05)														
10.28-10.48	24	C										78.74	10.48	
				95	95	95		Air+Mist (Brown)			Extremely weak thinly to thickly laminated reddish brown MUDSTONE. Locally interbedded with weak grey siltstone. Bedding fractures: Closely to widely spaced, subhorizontal, planar, undulating, occasional to abundant black staining. (MERCIA MUDSTONE GROUP) . . . 11.04-11.14m: Interbedded with grey siltstone. . . . 11.25-11.36m: Gravelly silty clay.			
10.70-10.96	25	C												
11.25-12.75 (0:06)														
11.38-11.70	26	C												
				100	65	54		Air+Mist (Brown)			. . . 11.71-11.73m: Grey siltstone. . . . 11.80-11.96m: Extremely weak thickly laminated mudstone, interbedded with weak siltstone. . . . 11.91-11.96m: Clay . . . 12.28-12.46m: Siltstone and mudstone. . . . 12.55-12.75m: NI.			
12.75-14.25 (0:07)														
				100	95	89		Air+Mist (Brown)						

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	**Dando 3000 Mark 2 + Comacchio GEO 601**	**Jonny Hutt + Sam Carter**	**JAlton + RStan**	AGS

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH01**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**05.09.22** End: **13.09.22**	**89.22**	**E:446551.3 N:325384.8**	**4** of **16**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
				100	95	89		Air+Mist (Brown)			Extremely weak thinly to thickly laminated reddish brown MUDSTONE. Locally interbedded with weak grey siltstone. Bedding fractures: Closely to widely spaced, subhorizontal, planar, undulating, occasional to abundant black staining. (MERCIA MUDSTONE GROUP) *(stratum copied from 10.48m from* previous sheet)		(6.77)	
14.25-15.75 (0:04)	27	C									. . . 13.50-13.53m: Grey siltstone.			
14.26-14.50											. . . 13.53-13.55m: Sandstone.			
14.56-14.69	28	C									. . . 13.55-13.57m: 4°, clay infill.			
											. . . 13.57m: Thinly interlaminated with siltstone (<10mm)			
				87	75	75		Air+Mist (Brown)			. . . 13.86-13.89m: 11°, incipient, planar, rough, abundant black staining.			
											. . . 13.86-13.90m: Siltstone.			
											. . . 13.89-14.07m: 88°, incipient, planar, rough, occasional black staining.			
15.38-15.47	29	D									. . . 14.25-14.45m: AZCL.			
											. . . 14.71-14.72m: 5°, clay infill, undulating, rough.			
											. . . 14.87-14.89m: 9°, clay infill, undulating, rough.			
											. . . 15.38-15.46m: Clay.			
15.75-17.25 (0:04)											. . . . 15.38-15.59m: Locally interbedded with reddish clay.			
											. . . . 15.59-15.64m and 15.70-15.75m: NI.			
											. . . 15.75-15.83m: Grey siltstone.			
16.23-16.34	30	C									. . . 15.83-15.85m: Planar, rough, clay infill.			
				100	86	71		Air+Mist (Brown)			. . . . 15.90-16.08m: 82°, undulating, rough, abundant black staining, incipient.			
											. . . . 15.95-16.23: Clay and mudstone.			
											. . . . 16.35-16.37: Clay and mudstone.			
											. . . . 16.38-16.59m: 63°, undulating, rough, occasional black staining, incipient.			
											. . . . 16.45-16.79: Clay and mudstone.	71.97	17.25	
17.25-18.75 (0:05)											. . . 16.51-16.65m: 66° undulating rough occasional black staining incipient.			
				100	82	73		Air+Mist (Brown)			. . . 16.89-16.95m: Clay, siltstone and mudstone.			
											. . . 17.05-17.16m: 83° undulating ough abundant black staining incipient.			

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	**Dando 3000 Mark 2 + Comacchio GEO 601**	**Jonny Hutt + Sam Carter**	**JAlton + RStan**	AGS

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH01**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
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Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
17.93-18.18	31	C		100	82	73		Air+Mist (Brown)			*Description on next sheet* 17.51-17.57m: NI. Rare black staining on discontinuity surfaces. . . . 17.70-17.73m: NI. Thinly laminated. . . . 17.73-17.93m: 77° undulating rough abundant black staining and occasional yellow staining. Extremely weak to weak reddish brown MUDSTONE. Occasional beds of grey siltstone (<90mm). GRADE II. (MERCIA MUDSTONE GROUP)		(3.00)	
18.75-20.25 (0:04)											. . . 17.25-17.31m: NI.*(stratum copied from 17.25m from previous* sheet) . . . 18.18-18.22m: 15° planar rough occasional black staining. . . . 18.20-8.30m: 60° undulating rough abundant black staining. . . . 18.30-18.36m: Clay. . . . 18.42-18.43m: 7° planar rough occasional black staining. . . . 18.42-18.50m: 70° undulating rough abundant black staining. . . . 18.50-18.56m: 35° planar rough abundant black staining. . . . 18.67-18.73m: Grey siltstone. . . . 18.78-19.05m: 87° planar rough rare black staining incipient.			
19.50-19.82	32	C		100	100	100		Air+Mist (Brown)				68.97	20.25	
20.25-21.75 (0:06)											. . . 19.50-19.52m: Grey siltstone. . . . 19.62-19.67m: Grey siltstone. . . . 19.96-20.03m: 52° undulating rough occasional black staining incipient. Extremely weak to very weak reddish brown mottled grey MUDSTONE. Occasional to frequent closely spaced beds of grey siltstone. (MERCIA MUDSTONE GROUP)			
21.14-21.37	33	C		100	100	100		Air+Mist (Brown)			. . . 20.25-20.51m: Medium strong grey siltstone. . . . 20.80-21.05m: Thinly and thickly cross laminate. . . . 21.37-21.80m: Medium strong grey siltstone. . . . 21.64-21.70m: 23°, undulating, rough, >3mm clay infill, occasional black staining. . . . 21.80-21.92m: Medium strong grey siltstone.			
21.37-21.58	34	C												
21.75-23.25 (0:05)				100	100	100		Air+Mist (Brown)					(3.23)	

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	**Dando 3000 Mark 2 + Comacchio GEO 601**	**Jonny Hutt + Sam Carter**	**JAlton + RStan**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH01**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**05.09.22** End: **13.09.22**	**89.22**	**E:446551.3 N:325384.8**	**6** of **16**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
22.51-22.76	35	C		100	100	100		Air+Mist (Brown)			Extremely weak to very weak reddish brown mottled grey MUDSTONE. Occasional to frequent closely spaced beds of grey siltstone. (MERCIA MUDSTONE GROUP) . . . 20.25-20.51m: Medium strong grey siltstone. *(stratum copied from* 20.25m from previous sheet)			
23.25-24.75 (0:07)												65.74	23.48	
23.68-24.02	36	C		100	100	100		Air+Mist (Brown)			Weak to medium strong reddish brown mottled grey fine and medium grained silty SANDSTONE. Frequent beds of grey siltstone. (MERCIA MUDSTONE GROUP)		(0.64)	
												65.10	24.12	
24.75-26.25 (0:06)											Extremely weak to weak reddish brown mottled grey MUDSTONE. Occasional to frequent beds of grey siltstone. (MERCIA MUDSTONE GROUP)			
24.75-24.98	37	C		100	100	100		Air+Mist (Brown)			. . . 25.39-25.46m: 39° undulating rough occasionally yellow staining incipient fracture. . . . 25.40-25.46m: 26° undulating rough occasionally yellow staining incipient fracture. . . . 25.44-25.49m: 29° undulating rough occasionally yellow stained incipient fracture.			
26.25-27.75 (0:06)				100	100	100		Air+Mist (Brown)			. . . 26.41-26.46m: Medium strong grey siltstone. . . . 26.67-26.72m: Medium strong grey siltstone.			

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress

From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 Mark 2 + Comacchio GEO 601	Jonny Hutt + Sam Carter	JAlton + RStan	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH01**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**05.09.22** End: **13.09.22**	**89.22**	**E:446551.3 N:325384.8**	**7** of **16**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
27.23-27.49	38	C		100	100	100		Air+Mist (Brown)			Extremely weak to weak reddish brown mottled grey MUDSTONE. Occasional to frequent beds of grey siltstone. (MERCIA MUDSTONE GROUP) *(stratum copied from 24.12m from* previous sheet)		(6.63)	
27.75-29.25 (0:07)				100	100	100		Air+Mist (Brown)			. . . 27.13-27.26m: Weak to medium strong grey siltstone. . . . 27.25-27.30m: 21° planar rough occasional yellow staining incipient. . . . 27.26-27.48m: Reddish brown sandy MUDSTONE. . . . 27.88-27.92m: 20° planar rough. Rare black staining incipient. . . . 28.13-28.23m: Weak grey siltstone.			
28.61-29.00	39	C												
29.25-30.75 (0:05)				97	97	97		Air+Mist (Brown)			. . . 29.28-29.78m: Interbedded with weak grey siltstone.			
29.76-29.98	40	C									. . . 30.26-30.32m: Medium strong grey siltstone. . . . 30.41-30.49m: 51° undulating rough occasionally stained yellow, incipient.	58.47	30.75	
											Borehole terminated at 30.75m depth.			

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	**Dando 3000 Mark 2 + Comacchio GEO 601**	**Jonny Hutt + Sam Carter**	**JAlton + RStan**	AGS

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH01**
Contract Ref:	Start: **05.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **13.09.22**	**89.22**	**E:446551.3 N:325384.8**	**8** of **16**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 Mark 2 + Comacchio GEO 601	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	JAlton + RStan	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH01**
Contract Ref:	Start: **05.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **13.09.22**	**89.22**	**E:446551.3 N:325384.8**	**9** of **16**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 Mark 2 + Comacchio GEO 601	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	JAlton + RStan	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH01**
Contract Ref:	Start: **05.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **13.09.22**	**89.22**	**E:446551.3 N:325384.8**	**10** of **16**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 Mark 2 + Comacchio GEO 601	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	JAlton + RStan	Checked By:	AGS

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH01**
Contract Ref:	Start: **05.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **13.09.22**	**89.22**	**E:446551.3 N:325384.8**	**11** of **16**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 Mark 2 + Comacchio GEO 601	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	JAlton + RStan	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH01**
Contract Ref:	Start: **05.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **13.09.22**	**89.22**	**E:446551.3 N:325384.8**	**12** of **16**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 Mark 2 + Comacchio GEO 601	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	JAlton + RStan	Checked By:	AGS

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH01**
Contract Ref:	Start: **05.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **13.09.22**	**89.22**	**E:446551.3 N:325384.8**	**13** of **16**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 Mark 2 + Comacchio GEO 601	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	JAlton + RStan	Checked By:	AGS

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH01**
Contract Ref:	Start: **05.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **13.09.22**	**89.22**	**E:446551.3 N:325384.8**	**14** of **16**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 Mark 2 + Comacchio GEO 601	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	JAlton + RStan	Checked By:	AGS

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH01**
Contract Ref:	Start: **05.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **13.09.22**	**89.22**	**E:446551.3 N:325384.8**	**15** of **16**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 Mark 2 + Comacchio GEO 601	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	JAlton + RStan	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH01**
Contract Ref:	Start: **05.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **13.09.22**	**89.22**	**E:446551.3 N:325384.8**	**16** of **16**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 Mark 2 + Comacchio GEO 601	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	JAlton + RStan	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH02**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**06.09.22** End: **15.09.22**	**90.55**	**E:446375.9 N:325257.4**	**1** of **12**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
											TOPSOIL	90.35	0.20	
0.30	1	D									Firm to stiff brown slightly sandy gravelly CLAY. Low boulder content. Gravel is angular to rounded coarse of sandstone and mudstone.	90.15	0.40	
0.30-0.50	2	B												
0.50	101	ES	1xT+1xJ+1xV											
0.70	3	D									Very stiff dark brown slightly sandy slightly gravelly silty CLAY. Sand is fine and coarse. Gravel is subangular to subrounded of quartzite, sandstone, and siltstone.		(0.60)	
0.70-1.00	4	B										89.55	1.00	
1.00	102	ES	1xT+1xJ+1xV								Very stiff reddish brown slightly sandy slightly gravelly CLAY. Sand is fine and medium of mudstone. Gravel is angular to subangular fine and medium of extremely weak mudstone lithorelicts. (MERCIA MUDSTONE GROUP)			
1.20	5	D												
1.20-1.55	6	$UT_{(UT100)}$	150 blows 100% recovery											
1.55-1.65	7	D									. . . 1.00-4.15m: frequent thin laminae (<2mm) of siltstone.			
1.70	8	D												
2.00-2.45		SPT	N=35											
2.00-2.45	10	DSPT												
2.00-2.45	11	B											(3.00)	
2.70	12	D												
3.00-3.36		SPT	6,8/16,19,15 for 60mm											
3.00-3.36	14	DSPT												
3.00-3.36	15	B												
3.70-3.70	16	D										86.55	4.00	
4.00-5.00 (0:07)											AZCL. (MERCIA MUDSTONE GROUP)			
4.00-4.42		SPT	3,8/12,14,14,10 for 40mm	45	0	0		Air+Mist (Brown)					(0.55)	AZCL
4.00-4.42	18	DSPT												

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
06/09/22	17:49	3.40	3.00	200	Dry
07/09/22	08:06	3.40	3.00	200	Dry
07/09/22	11:00	4.00	2.00	200	-
16/09/22	08:50	8.00	4.00	146	6.40
16/09/22	15:25	21.50	4.00	146	20.60
15/09/22	14:00	4.00	None	200	3.50
15/09/22	17:00	8.00	4.00	146	7.65
16/09/23	07:30	8.00	4.00	146	6.40

Chiselling / Slow Progress

From	To	Duration (hh:mm)
3.00	3.40	00:30
3.40	4.00	00:45

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Cable percussion drilled using 200mm diameter tools and casing.
4. Rotary cored from 4.00m using Geobor-S with air mist flush.
5. Unable to determine ground water strikes due to flush method.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 601	Jonny Hutt + Sam Carter	DNeylon + JAlton	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH02**

Contract Ref:	Start: **06.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **15.09.22**	**90.55**	**E:446375.9 N:325257.4**	**2** of **12**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
				45	0	0		Air+Mist (Brown)			Firm to stiff reddish brown slightly sandy gravelly CLAY with rare pockets (up to 20mm) of silt. Sand is fine to coarse of mudstone. Gravel is angular to subangular fine and medium of mudstone lithorelicts. GRADE III. (MERCIA MUDSTONE GROUP)	86.00	4.55	AZCL
4.90	19	D												
5.00-6.50 (0:07)											. . . 5.00-5.30m: AZCL.			
				80	0	0		Air+Mist (Brown)					(2.70)	
6.30	20	D												
6.50-7.25 (0:03)											. . . 6.50-6.90m: AZCL.			
6.50-6.95		SPT	N=41											
				47	0	0		Air+Mist (Brown)						
7.20	21	D										83.30	7.25	
7.25-8.00 (0:03)											Extremely weak reddish brown MUDSTONE. GRADE II. Fractures: Closely spaced, randomly orientated, tight, black staining on surfaces. (MERCIA MUDSTONE GROUP)			
7.55-7.70	22	C		109	109	85		Air+Mist (Brown)					(1.00)	
8.00-9.50 (0:00)												82.30	8.25	
				97	15	0		Air+Mist (Brown)			Extremely weak reddish brown MUDSTONE thinly interbedded with very weak greenish grey siltstone and beds of thinly laminated reddish brown clay. GRADE II. (MERCIA MUDSTONE GROUP)			
8.90	23	D									. . . 8.40-8.42m: Greenish grey siltstone.			

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
16/09/23	12:30	21.50	4.00	146	20.60

Chiselling / Slow Progress

From	To	Duration (hh:mm)

General Remarks

6. Installed with 50mm standpipe on completion (response zone 4.00m to 20.00m).
7. SPT hammers AR3104-2022 (E_r = 64.00%) , AR3830-2021 (E_r = 67.00%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 601	Jonny Hutt + Sam Carter	DNeylon + JAlton	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH02**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**06.09.22** End: **15.09.22**	**90.55**	**E:446375.9 N:325257.4**	**3** of **12**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
9.03		EW		97	15	0		Air+Mist (Brown)			. . . 8.75-9.15m: NI, recovered as angular to subrounded fine to medium gravel of mudstone. Extremely weak reddish brown MUDSTONE thinly interbedded with very weak greenish grey siltstone and beds of thinly laminated reddish brown clay. GRADE II. (MERCIA MUDSTONE GROUP) *(stratum copied from 8.25m from* previous sheet) . . . 9.50-10.10m: No siltstone laminae / beds. . . . 10.10-10.15m: NI. . . . 10.15m: Siltstone.		(2.05)	
9.50-11.00 (0:00)				97	45	20		Air+Mist (Brown)				80.25	10.30	
10.60	24	D									Extremely weak reddish brown MUDSTONE. GRADE II. Fractures: Very closely spaced, randomly orientated, smooth, planar, undulating, black staining on surfaces. (MERCIA MUDSTONE GROUP) . . . 10.30-10.80m: Frequent fine to coarse gravel size pockets of greenish grey siltstone. . . . 10.30-13.55m: Heavily fissured with sample breaking easily when handled. . . . 11.20-12.00m: Occasional fine to medium gravel size pockets of greenish grey siltstone.			
11.00-12.50 (0:00)														
11.50-11.75	25	C		100	67	20		Air+Mist (Brown)					(3.85)	
12.50-14.00 (0:00)											. . . 12.25-12.30m: Reddish brown very sandy CLAY.			
				100	80	40		Air+Mist (Brown)						

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	**Dando 3000 + Comacchio GEO 601**	**Jonny Hutt + Sam Carter**	**DNeylon + JAlton**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH02**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **15.09.22**	**90.55**	**E:446375.9 N:325257.4**	**4** of **12**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
13.70-13.85	26	C		100	80	40		Air+Mist (Brown)			. . . 13.55-13.70m: Coarse gravel size pockets and lenses of greenish grey siltstone.			
14.00-15.50 (0:00)											. . . 14.00-14.15m: Becoming thinly laminated.	76.40	14.15	
14.75-15.20	27	C		90	63	54		Air+Mist (Brown)			Extremely weak reddish brown MUDSTONE. GRADE II. (MERCIA MUDSTONE GROUP) . . . 14.35-14.45m: Recovered as sandy gravel.	75.25	(1.15) 15.30	
15.50-17.00 (0:00)											Extremely weak thinly laminated reddish brown MUDSTONE thinly interbedded with extremely weak greenish grey siltstone with occasional clay bands along laminae/bedding. (MERCIA MUDSTONE GROUP)		(0.70)	
15.65-15.85	28	C									. . . 15.90m: Thickly laminated siltstone.	74.55	16.00	
				97	37	23		Air+Mist (Brown)			Very weak reddish brown MUDSTONE. GRADE II. Fractures: Closely spaced, randomly orientated, tight. (MERCIA MUDSTONE GROUP)		(1.15)	
17.00-18.50 (0:00)												73.40	17.15	
17.60-17.70	29	C		97	59	30		Air+Mist (Brown)			Extremely weak reddish brown MUDSTONE with pockets (up to 60mm) and lenses (up to 10mm) of greenish grey siltstone. GRADE II. Bedding fractures: Very closely spaced, rough, planar, infilled with reddish brown clay. (MERCIA MUDSTONE GROUP) . . . 17.20-17.25m: Recovered as fine to medium angular gravel.	73.00	(0.40) 17.55	

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 601	Jonny Hutt + Sam Carter	DNeylon + JAlton	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH02**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**06.09.22** End: **15.09.22**	**90.55**	**E:446375.9 N:325257.4**	**5** of **12**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instru-mentation	Water	Description of Strata	Reduced Level	Depth (Thick ness)	Material Graphic Legend
18.50-20.00 (0:00)				97	59	30		Air+Mist (Brown)			Extremely weal to very weak reddish brown MUDSTONE. GRADE II. Fractures: Closely spaced, randomly orientated, smooth, undulating, black staining on surfaces. (MERCIA MUDSTONE GROUP) *(stratum copied from 17.55m from* previous sheet) . . . 18.15-18.20m: Very clayey angular to subangular fine gravel of mudstone. . . . 18.35-18.40m: Extremely weak greenish grey siltstone. . . . 18.95-19.00m: Stiff greenish grey silt. . . . 19.00-19.10m: Firm laminated reddish brown gravelly CLAY. Gravel is angular fine mudstone lithorelicts. . . . 19.45-19.55m: Weak greenish grey fine grained sandstone.			
19.55-19.65	30	C		100	53	40		Air+Mist (Brown)					(3.95)	
20.00-21.50 (0:00)											. . . 19.95-20.00m: Greenish grey siltstone.			
21.00-21.10	31	C		90	73	55		Air+Mist (Brown)			. . . 20.50-20.55m: Coarse gravel size pockets of greenish grey siltstone.	69.05	21.50	
											Borehole terminated at 21.50m depth.			

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	**Dando 3000 + Comacchio GEO 601**	**Jonny Hutt + Sam Carter**	**DNeylon + JAlton**	

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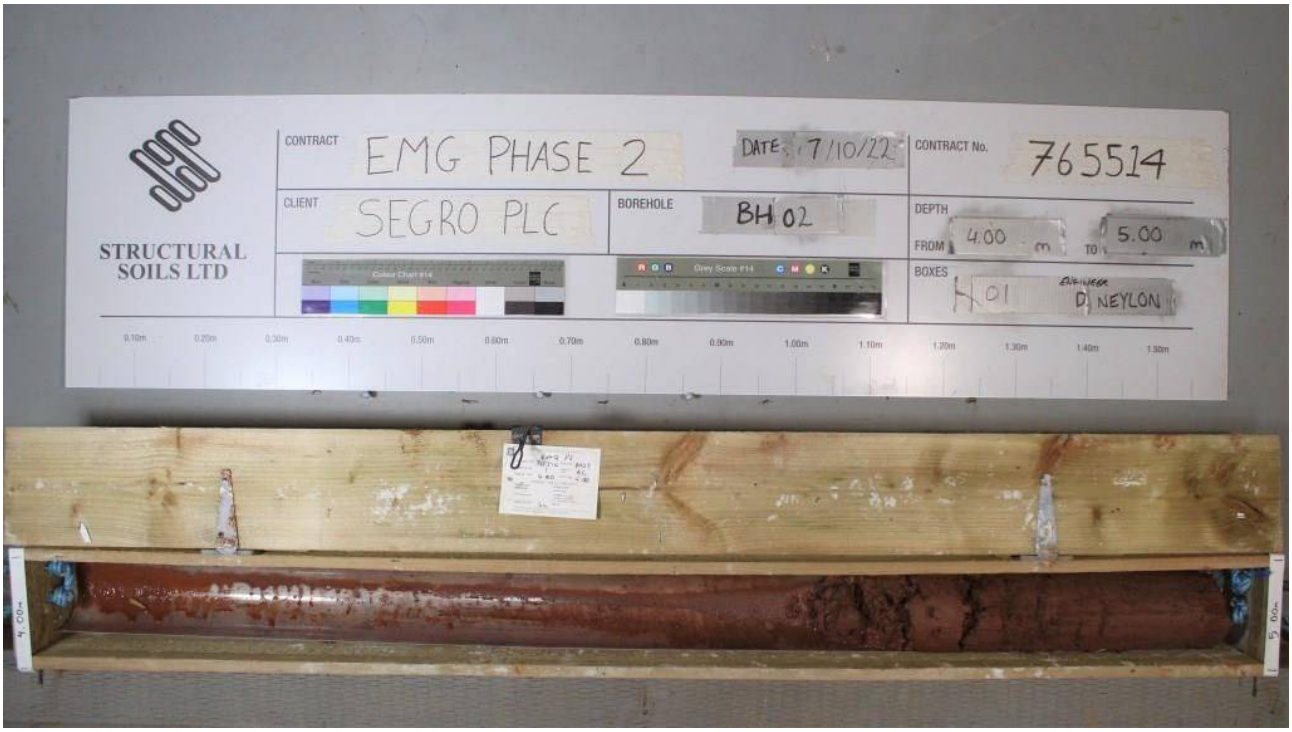
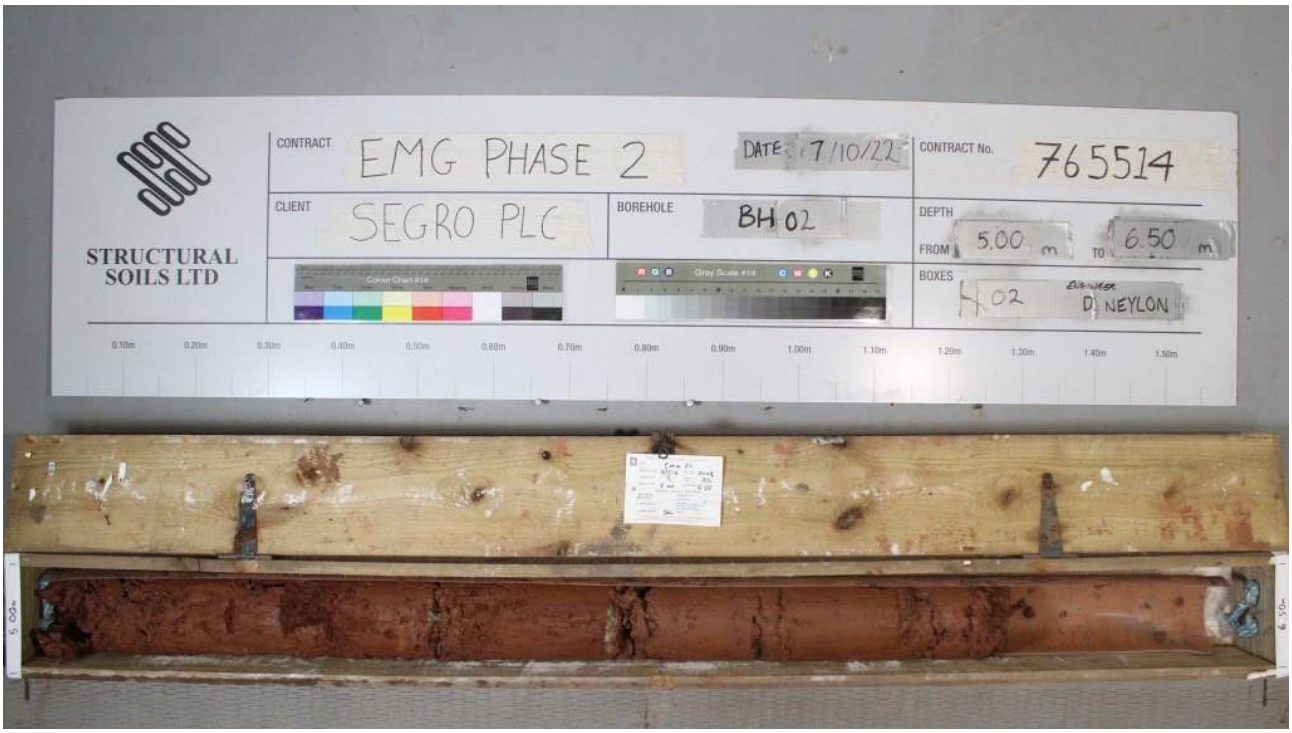
STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH02**
Contract Ref:	Start: **06.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **15.09.22**	**90.55**	**E:446375.9 N:325257.4**	**6** of **12**





Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 601	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	DNeylon + JAlton	Checked By:	

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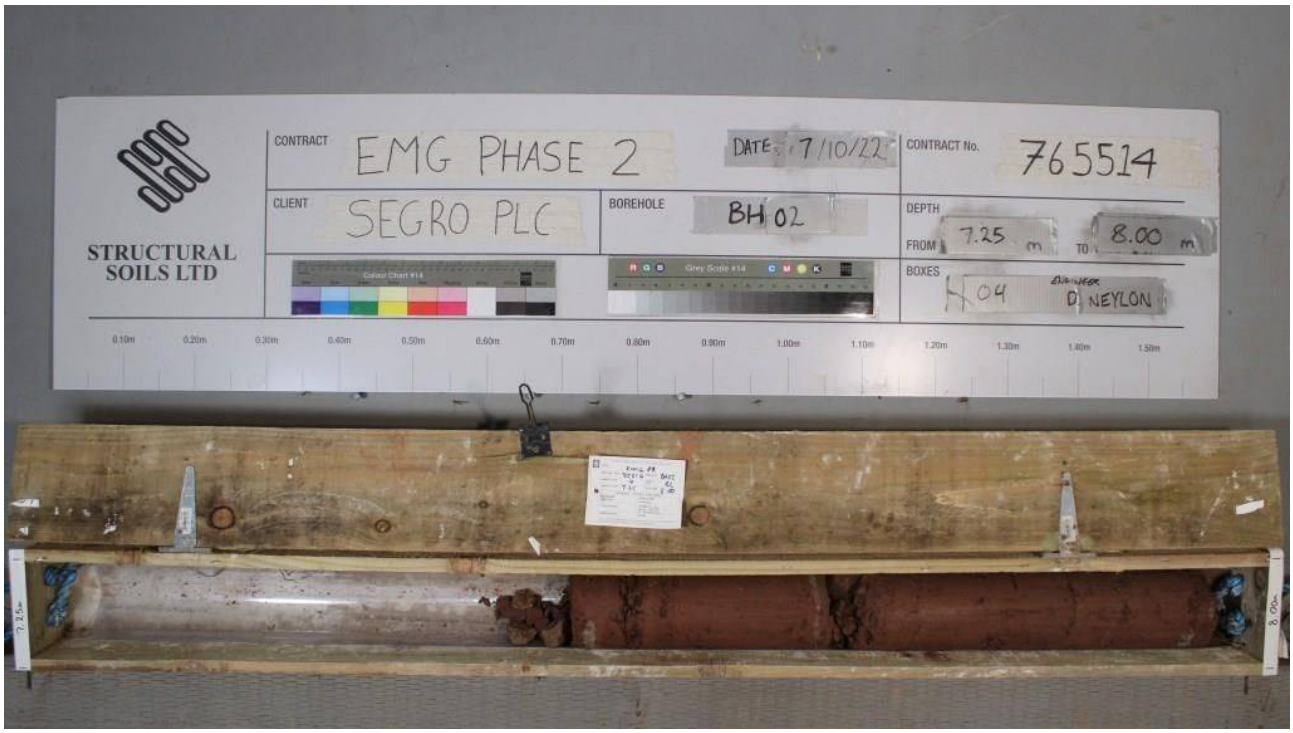
STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH02**
Contract Ref:	Start: **06.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **15.09.22**	**90.55**	**E:446375.9 N:325257.4**	**7** of **12**



Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 601	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	DNeylon + JAlton	Checked By:	AGS

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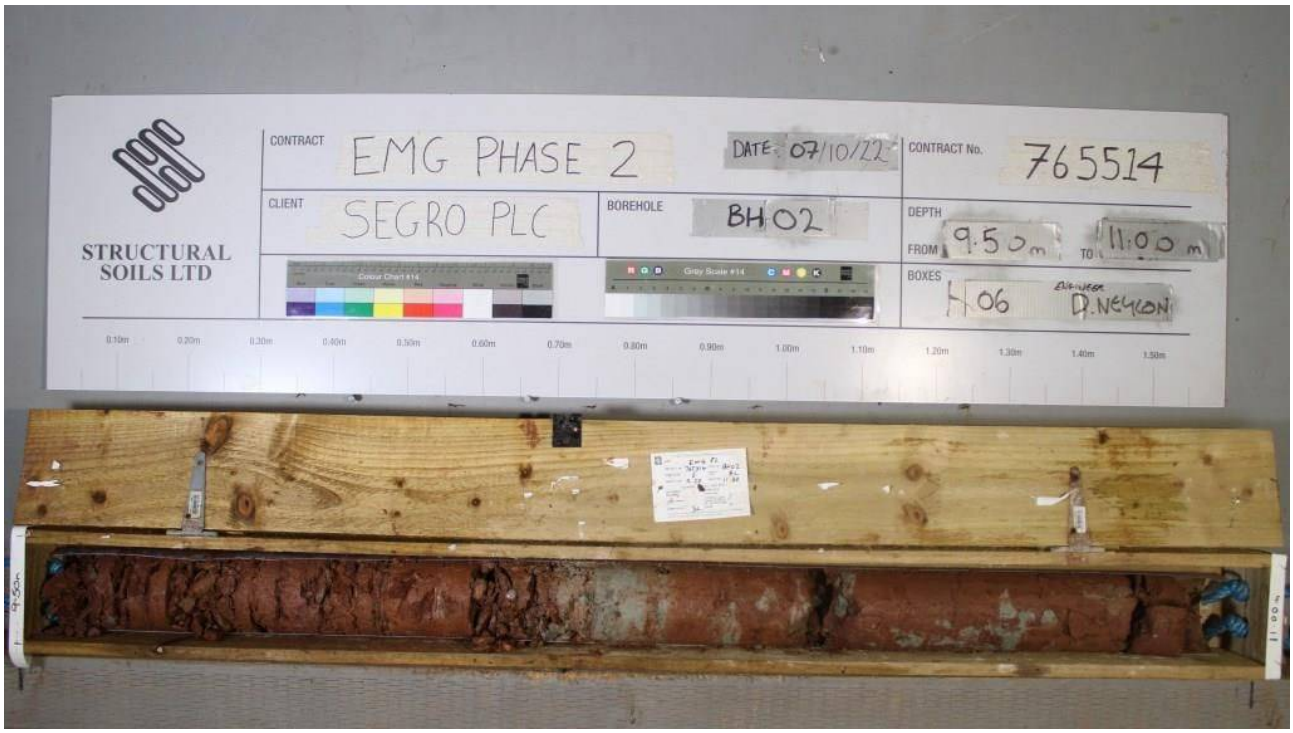
STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH02**
Contract Ref:	Start: **06.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **15.09.22**	**90.55**	**E:446375.9 N:325257.4**	**8** of **12**



Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 601	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	DNeylon + JAlton	Checked By:	AGS

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH02**
Contract Ref:	Start: **06.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **15.09.22**	**90.55**	**E:446375.9 N:325257.4**	**9** of **12**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 601	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	DNeylon + JAlton	Checked By:	

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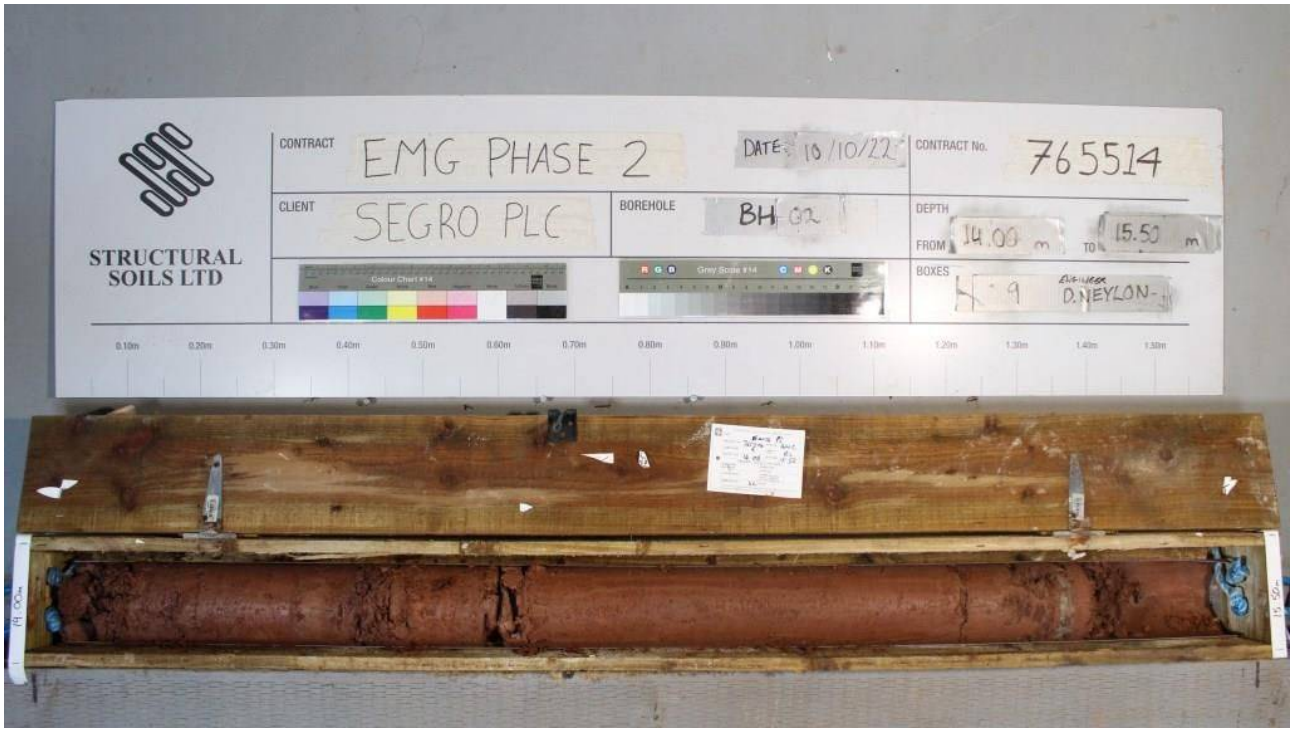
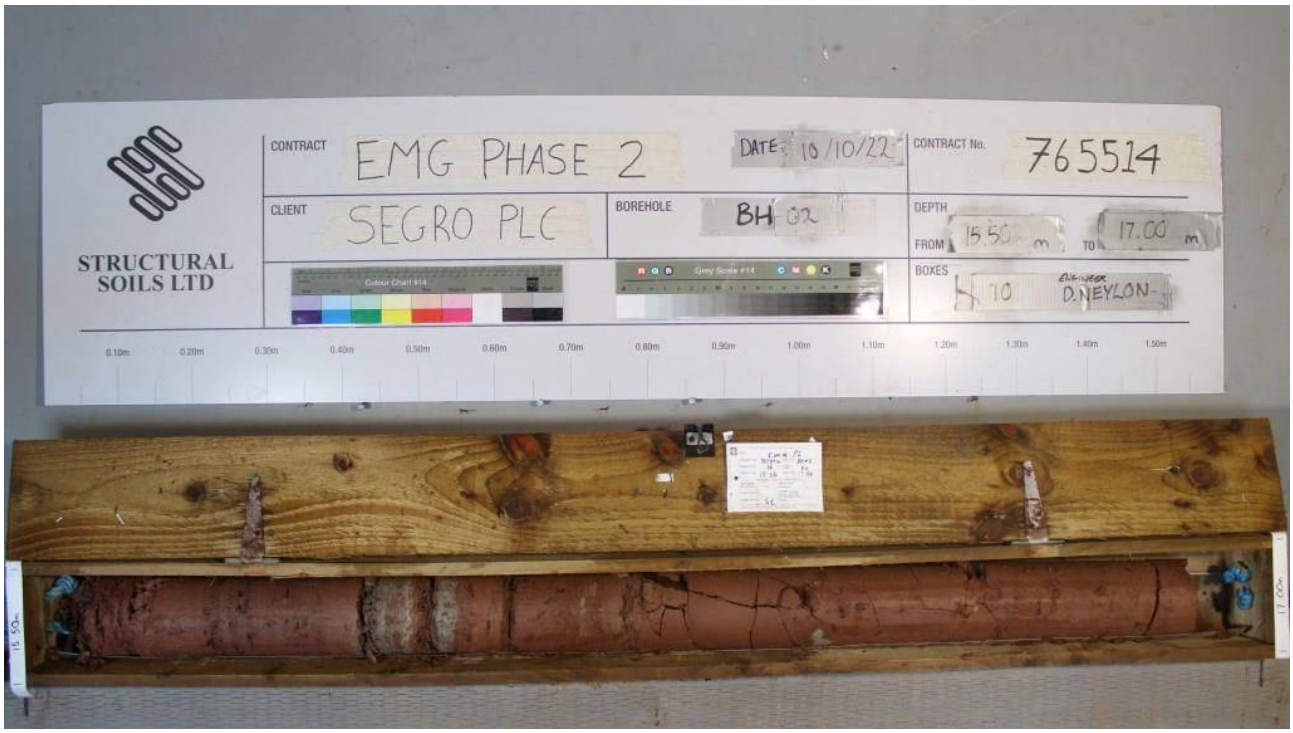
STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH02**
Contract Ref:	Start: **06.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **15.09.22**	**90.55**	**E:446375.9 N:325257.4**	**10** of **12**





Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 601	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	DNeylon + JAlton	Checked By:	AGS

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH02**
Contract Ref:	Start: **06.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **15.09.22**	**90.55**	**E:446375.9 N:325257.4**	**11** of **12**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 601	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	DNeylon + JAlton	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH02**
Contract Ref:	Start: **06.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **15.09.22**	**90.55**	**E:446375.9 N:325257.4**	**12** of **12**

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Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 601	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	DNeylon + JAlton	Checked By:	AGS

STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH03**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**07.09.22** End: **21.09.22**	**89.21**	**E:446320.3 N:325311.0**	**1** of **12**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
											TOPSOIL		(0.35)	
												88.86	0.35	
0.40-0.40	1	D									Stiff reddish brown mottled grey slightly sandy gravelly CLAY. Low cobble content. Gravel is subangular fine to coarse of mudstone and siltstone lithorelicts. Cobbles are angular tabular of siltstone. Frequent beds (up to 300mm) of silt / siltstone. (MERCIA MUDSTONE GROUP)			
0.40-0.60	2	B												
0.50-0.50	101	ES	1xT+1xJ+1xV											
0.60-1.00	4	B												
0.70-0.70	3	D												
1.00-1.00	5	D												
1.00-1.45		SPT	N=25											
1.00-1.00	102	ES	1xT+1xJ+1xV											
1.00-1.45	7	DSPT												
1.00-1.45	8	B												
1.70-1.70	9	D												
2.00-2.45		SPT	N=31								. . . Below 2.00m: Very stiff.			
2.00-2.45	11	DSPT												
2.00-2.45	12	B											(4.15)	
2.70-2.70	13	D												
3.00-3.44		SPT	6,8/8,15,15,12 for 60mm											
3.00-3.44	15	DSPT												
3.00-3.45	16	B												
3.70-3.70	17	D												
4.00-5.00 (0:00)											. . . 4.00-4.50m: AZCL.			
4.00-4.39		SPT	4,5/12,15,17,6 for 15mm	45	0	0		Air+Mist (Brown)						
4.00-4.39	19	DSPT										84.71	4.50	

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
07/09/22	17:10	4.00	3.00	200	-
20/09/22	13:15	4.00	None	200	3.80
20/09/22	16:30	14.00	4.00	146	13.60
21/09/22	08:00	14.00	4.00	146	-
21/09/22	13:00	20.00	4.00	146	-

Chiselling / Slow Progress

From	To	Duration (hh:mm)
3.50	4.00	00:30

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Cable percussion drilled using 200mm diameter tools and casing.
4. Rotary cored from 4.00m using Geobor-S with air mist flush.
5. Unable to determine ground water strikes due to flush method.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 Mark 2 + Comacchio Geo 602	Jonny Hutt + Sam Carter	JAlton + RStan	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH03**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**07.09.22** End: **21.09.22**	**89.21**	**E:446320.3 N:325311.0**	**2** of **12**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
4.80	20	D		45	0	0		Air+Mist (Brown)			Firm to stiff thinly to thickly laminated locally very thinly bedded reddish brown silty CLAY with occasional to frequent angular to subangular fine to medium gravel sized lithorelicts of mudstone. Occasional laminae (5 to 10mm) of extremely weak siltstone. GRADE III. (MERCIA MUDSTONE GROUP)			
5.00-6.50 (0:00)														
5.80	21	D		100	10	0		Air+Mist (Brown)			. . . 5.72-5.76m: Very weak light grey siltstone.		(2.30)	
6.50-8.00 (0:00)											. . . 6.22-6.28m: Very weak light grey siltstone. . . . 6.39-6.46m: Very weak thinly to thickly laminated reddish brown mudstone. Bedding fractures are extremely closely spaced, 0°, undulating, smooth, <1mm soft clay on surfaces.	82.41	6.80	
7.10	22	D		93	6	0	NI 30 90	Air+Mist (Brown)			. . . 6.59-6.71m: Extremely weak thickly to very thinly bedded light greenish grey siltstone. Bedding fractures are extremely closely spaced, undulating, smooth, with a little clay smear and occasional black specks on surfaces. Extremely weak locally very weak very thinly bedded reddish brown MUDSTONE. GRADE II. Discontinuities: Extremely closely to closely spaced, randomly orientated, undulating, smooth, black stained, locally clean. Rare thin clay smears on surfaces. (MERCIA MUDSTONE GROUP)			
8.00-9.50 (0:00)											. . . 7.01-7.04m: Siltstone recovered as gravelly clay. . . . 7.11-7.28m: 75° to 80° undulating rough discontinuity with 1m clay on surfaces.		(3.30)	
8.50	23	D		97	11	0		Air+Mist (Brown)			. . . 7.30-7.33m: Moderately weak light greenish grey siltstone. . . . 7.33-7.60m: 80° to 90° undulating rough clean discontinuity.			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

6. Borehole backfilled with bentonite on completion.
7. SPT hammer AR3104-2022 (E_r = 64.00%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 Mark 2 + Comacchio Geo 602	Jonny Hutt + Sam Carter	JAlton + RStan	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH03**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **21.09.22**	**89.21**	**E:446320.3 N:325311.0**	**3** of **12**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
											. . . 7.78-7.86m: Band of extremely weak light greenish grey siltstone.			
				97	11	0		Air+Mist (Brown)			. . . 8.05-8.30m: 80°-90° undulating smooth black stained discontinuity.			
9.43	24	C					NI 30 90				. . . 8.87-8.93m: 60°-70° undulating smooth black stained discontinuity.			
9.50-11.00 (0:00)											Extremely weak locally very weak very thinly bedded reddish brown MUDSTONE. GRADE II.			
9.94	25	C									Discontinuities: Extremely closely to closely spaced, randomly orientated, undulating, smooth, black stained, locally clean. Rare thin clay smears on surfaces.	79.11	10.10	
				100	53	38		Air+Mist (Brown)			(MERCIA MUDSTONE GROUP) *(stratum copied from 6.80m from* previous sheet)			
							NI 70 300				. . . 9.40-9.50m: 40°-50° undulating smooth black stained discontinuity.		(1.10)	
											Very weak very thinly to medium bedded reddish brown MUDSTONE. GRADE II.			
11.00-12.50 (0:00)											Bedding fractures: Very closely to medium spaced, 0° to 5°, undulating, smooth, locally black stained, occasionally clean.	78.01	11.20	
11.45	26	C									(MERCIA MUDSTONE GROUP)			
				97	68	51		Air+Mist (Brown)			. . . 10.10-10.27m: 75° undulating smooth, locally black stained, discontinuity, with a little clay smear on surfaces.			
											. . . 10.46-10.49m: Very weak light greenish grey siltstone.			
											. . . 10.47-10.56m: 65° undulating smooth black stained discontinuity.			
											. . . 10.56-10.73m: Randomly orientated extremely closely to very closely spaced undulating smooth clean discontinuities.		(2.18)	
							NI 20 120				. . . 10.70-11.00m: Occasional 3-5mm diameter light grey reduction spots.			
12.50-14.00 (0:00)											. . . 10.80-10.86m: 40° undulating smooth discontinuity with a little clay smear on surfaces.			
				97	37	8		Air+Mist (Brown)			. . . 10.90-10.95m: Randomly orientated extremely closely to very closely spaced undulating smooth clean locally black stained discontinuities.			
											Extremely weak thinly laminated to thinly bedded reddish brown MUDSTONE. GRADE II.	75.83	13.38	

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 Mark 2 + Comacchio Geo 602	Jonny Hutt + Sam Carter	JAlton + RStan	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH03**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **21.09.22**	**89.21**	**E:446320.3 N:325311.0**	**4** of **12**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
13.83	27	C		97	37	8		Air+Mist (Brown)			Bedding fractures: Extremely closely to closely spaced, 0° to 5°, undulating, smooth, locally rough, clean, locally black stained (MERCIA MUDSTONE GROUP) . . . 11.40-11.43m: Very weak light greenish grey siltstone. . . . 11.45-12.00m: Occasional fine to medium gravel size light greenish grey siltstone inclusions. . . . 11.79-11.80m: 2 no laminae (<2mm) of extremely weak light greenish grey siltstone. . . . 12.25-12.30m: Weak light greenish grey siltstone. . . . 12.30-12.50m: Rare light greenish grey reduction spots. . . . 12.30-13.20m: Extremely closely to very closely spaced randomly orientated undulating smooth, locally rough, clean, locally black stained discontinuities. . . . 13.00m: Thin lamination (<5mm) of extremely weak siltstone. . . . 13.15-13.18m: Moderately weak greenish grey siltstone.			
14.00-15.50 (0:00)				100	70	15	NI 20 120	Air+Mist (Brown)						
15.17	28	C											(3.49)	
15.50-17.00 (0:00)														
16.00	29	C		97	40	27		Air+Mist (Brown)			Extremely weak to very weak very thinly to thinly bedded reddish brown MUDSTONE. GRADE II. Bedding fractures: Very closely to closely spaced, 0° to 15°, undulating, smooth, black stained, with occasional black specks. (MERCIA MUDSTONE GROUP) *(stratum copied from 13.38m from* previous sheet) . . . 13.50-13.58m: Extremely weak light greenish grey clayey siltstone. . . . 13.58-13.61m: Very weak light greenish grey siltstone. . . . 13.71-13.74m: Very weak light greenish grey siltstone. . . . 14.48-14.68m: 85° to 90° undulating rough discontinuity with frequent black specks. . . . 14.62-14.67m: 45° undulating rough discontinuity with frequent black specks. . . . 14.80-14.81m: Extremely weak light greenish grey siltstone. . . . 14.97-15.00m: Weak light greenish grey siltstone. . . . 15.01-15.21m: Frequent thin laminae (<5mm) of extremely weak to very weak siltstone.	72.34	16.87	
17.00-18.50 (0:00)				100	63	37	NI 50 230	Air+Mist (Brown)						

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 Mark 2 + Comacchio Geo 602	Jonny Hutt + Sam Carter	JAlton + RStan	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH03**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **21.09.22**	**89.21**	**E:446320.3 N:325311.0**	**5** of **12**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
18.28	30	C		100	63	37		Air+Mist (Brown)			. . . 15.34-15.50m: 80° to 90° undulating smooth black stained discontinuity. . . . 15.50-15.55m: 70° undulating smooth clean discontinuity locally black stained. . . . 15.66-15.72m: Drilling disturbed. . . . 15.73-15.82m: 50° undulating smooth discontinuity with 1mm clay infill. . . . 15.82-15.86m: Very weak light greenish grey siltstone. . . . 16.13-16.52m: Extremely to very closely spaced, randomly orientated black stained, locally clean, discontinuities. Occasional black specks on surfaces. . . . 16.32-16.48m: 80° to 90° undulating smooth black stained discontinuity. . . . 16.48-16.51m: (Soft to firm) light greenish grey gravelly silt. . . . 16.60-16.82m: Thinly and thickly laminated.		(3.13)	
18.50-20.00 (0:00)							NI 50 230							
19.30	31	C		100	49	28		Air+Mist (Brown)				69.21	20.00	
											. . . 17.04-17.06m: Weak light greenish grey siltstone. . . . 17.10-17.38m: 2 no parallel 80° very closely spaced undulating smooth black stained discontinuity. . . . 17.37-17.41m: Extremely closely spaced thick laminae (<10mm) of very weak light greenish grey siltstone. . . . 17.53-17.58m: Very weak light greenish grey siltstone. . . . 17.88-18.00m: 85° undulating smooth clean discontinuity. Very weak locally extremely weak thickly laminated to thinly bedded locally medium bedded reddish brown MUDSTONE. GRADE II. Bedding fractures: Extremely closely to medium spaced, 0° to 10°, planar and undulating, smooth, clean, locally with black specks on surfaces. (MERCIA MUDSTONE GROUP) *(stratum copied from 16.87m from* previous sheet) . . . 18.21-18.25m: Weak light greenish grey siltstone. . . . 18350-18.95m: Extremely closely to very closely spaced, randomly orientated clean discontinuity with occasional black specks on surfaces.			

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 Mark 2 + Comacchio Geo 602	Jonny Hutt + Sam Carter	JAlton + RStan	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH03**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **21.09.22**	**89.21**	**E:446320.3 N:325311.0**	**6** of **12**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
											. . . 18.55-18.92m: 85° to 90° undulating smooth discontinuity with occasional black specks. . . . 18.98-19.20m: 85° to 90° undulating smooth discontinuity with occasional black specks. . . . 19.07-19.12m: 30° undulating smooth discontinuity with occasional black specks. . . . 19.20-19.27m: 60° undulating smooth discontinuity with occasional black specks. . . . 19.60-20.00m: 85° undulating rough discontinuity with frequent black specks. . . . 19.83-19.88m: Very weak light greenish grey siltstone. Borehole terminated at 20.00m depth.			

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	**Dando 3000 Mark 2 + Comacchio Geo 602**	**Jonny Hutt + Sam Carter**	**JAlton + RStan**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH03**
Contract Ref:	Start: **07.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **21.09.22**	**89.21**	**E:446320.3 N:325311.0**	**7** of **12**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 Mark 2 + Comacchio Geo 602	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	JAlton + RStan	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH03**
Contract Ref:	Start: **07.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **21.09.22**	**89.21**	**E:446320.3 N:325311.0**	**8** of **12**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 Mark 2 + Comacchio Geo 602	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	JAlton + RStan	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH03**
Contract Ref:	Start: **07.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **21.09.22**	**89.21**	**E:446320.3 N:325311.0**	**9** of **12**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 Mark 2 + Comacchio Geo 602	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	JAlton + RStan	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH03**
Contract Ref:	Start: **07.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **21.09.22**	**89.21**	**E:446320.3 N:325311.0**	**10** of **12**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 Mark 2 + Comacchio Geo 602	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	JAlton + RStan	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH03**
Contract Ref:	Start: **07.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **21.09.22**	**89.21**	**E:446320.3 N:325311.0**	**11** of **12**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 Mark 2 + Comacchio Geo 602	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	JAlton + RStan	Checked By:	AGS

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH03**
Contract Ref:	Start: **07.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **21.09.22**	**89.21**	**E:446320.3 N:325311.0**	**12** of **12**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 Mark 2 + Comacchio Geo 602	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	JAlton + RStan	Checked By:	AGS

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH04**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**09.09.22** End: **26.09.22**	**87.21**	**E:446140.2 N:325331.9**	**1** of **16**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instru-mentation	Water	Description of Strata	Reduced Level	Depth (Thick ness)	Material Graphic Legend
0.10	1	D									MADE GROUND: Firm to stiff dark brown sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of mudstone. Cobbles (up to 100mm) are subangular to well rounded. (TOPSOIL)			
0.10	101	ES	1xT+1xJ+1xV											
0.10-0.30	2	B											(1.20)	
0.80	3	D												
0.80-1.10	4	B												
0.90	5	D												
0.90-1.20	6	B										86.01	1.20	
1.00	102	ES	1xT+1xJ+1xV											
1.00	103	ES	1xT+1xJ+1xV								Firm to stiff dark brown sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of mudstone. Cobbles are subangular to well rounded of mudstone (up to 100mm).			
1.20-1.65		SPT	N=17										(0.40)	
1.20-1.65	7	B										85.61	1.60	
1.70	8	D									. . . 1.20-1.60m: With frequently thin laminae (<3mm) of extremely weak light bluish grey mudstone / siltstone.			
2.00	104	ES	1xT+1xJ+1xV											
2.00-2.45	9	$UT_{(UT100)}$	53 blows 100% recovery										(1.10)	
2.70	10	D									Firm reddish brown slightly sandy slightly gravelly CLAY with occasional pockets (up to 20mm) of grey silty sand. Sand is fine of mudstone. Gravel is angular to subangular fine of extremely weak mudstone lithorelicts. (MERCIA MUDSTONE GROUP)	84.51	2.70	
3.00-3.45		SPT	N=36								Very stiff reddish brown slightly gravelly slightly sandy CLAY with frequent pockets (up to 20mm) and lenses (up to 25mm) of grey silty sand. Sand is fine and coarse of mudstone. Gravel is angular to subangular fine to medium of extremely weak to very weak mudstone lithorelicts with relic laminae observed on some of the fragments. Destructured mudstone Grade IVa. (GUNTHORPE MEMBER) (MERCIA MUDSTONE GROUP)			
3.00	105	ES	1xT+1xJ+1xV											
3.00-3.45	12	DSPT												
3.00-3.45	13	B												
3.70	14	D											(2.30)	
4.00-4.38		SPT	4,8/10,18,22 for 75mm											
4.00-4.38	16	DSPT												
4.00-4.45	17	B												

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
09/09/22	14:00	1.20	None	200	Dry
12/09/22	08:00	1.20	None	200	-
12/09/22	13:40	5.31	3.00	200	Dry
22/09/22	08:30	5.00	5.00	200	4.90
22/09/22	16:30	30.30	5.00	146	20.90
23/09/22	08:15	30.30	5.00	146	10.90
23/09/22	16:30	30.30	None	146	-

Chiselling / Slow Progress

From	To	Duration (hh:mm)
4.70	5.00	00:30

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Cable percussion drilled using 200mm diameter tools and casing.
4. Rotary cored from 5.00m using Geobor-S with air mist flush.
5. Unable to determine ground water strikes due to flush method.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 601	Jonny Hutt + Sam Carter	DNeylon + JAlton	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH04**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**09.09.22** End: **26.09.22**	**87.21**	**E:446140.2 N:325331.9**	**2** of **16**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
4.70	18	D										82.21	5.00	
5.00-6.30 (0:05)											Very stiff reddish brown slightly sandy gravelly CLAY. Sand is fine to coarse of mudstone. Gravel is angular of extremely weak mudstone lithorelicts. GRADE IVa. (MERCIA MUDSTONE GROUP)			
5.00-5.31		SPT	15,10/18,21,11 for 35mm											
5.00-5.31	20	DSPT		69	3	0		Air+Mist (Brown)			. . . 5.10-5.30m: trace thick laminae and very closely spaced thin laminae (<4mm) of extremely weak mudstone.			
											. . . 5.30-5.38m: weak greenish grey thickly laminated fine grained sandstone.		(1.90)	
6.00	29	D												
6.30-7.80 (0:03)											. . . 6.20-6.25m and 6.35-6.40m: extremely weak thickly laminated mudstone . . . below 6.40m: frequent fine to coarse gravel size pockets of greenish grey sandy silt.			
											. . . 6.70-6.80m: Weak greenish thickly laminated grey sandstone.	80.31	6.90	
7.05-7.23	30	C		93	60	56		Air+Mist (Brown)			. . . Extremely weak greenish grey SILTSTONE. Fractures: Very closely spaced, incipient, smooth, planar, with black specks on surfaces.			
											Extremely weak reddish brown MUDSTONE. GRADE II. Fractures: Closely spaced, randomly orientated, smooth, planar, tight, with black staining on surfaces. (MERCIA MUDSTONE GROUP)			
7.80-9.30 (0:05)													(2.60)	
				100	48	27		Air+Mist (Brown)						
8.80	31	D									. . . 8.70-9.10m: fine to medium gravel size pockets and lenses (<10mm) of greenish grey siltstone.			

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress

From	To	Duration (hh:mm)

General Remarks

6. Installed with dual 50mm standpipes on completion (response zone 1.00m to 2.50m and 6.00m to 30.00m).
7. SPT hammer AR3104-2022 (E_r = 64.00%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 601	Jonny Hutt + Sam Carter	DNeylon + JAlton	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH04**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **26.09.22**	**87.21**	**E:446140.2 N:325331.9**	**3** of **16**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
				100	48	27					. . . 9.10-9.15m: gravelly clay.			
9.30-10.80 (0:06)												77.71	9.50	
								Air+Mist (Brown)			Extremely weak reddish brown MUDSTONE, recovered as clayey sandy angular to subangular fine to coarse gravel. GRADE III. (MERCIA MUDSTONE GROUP)	77.26	(0.45) 9.95	
				100	60	33					Extremely weak reddish brown MUDSTONE with pockets (up to 6mm) and lenses (up to 20mm) of greenish grey siltstone with black specks. GRADE II. Bedding fractures: Closely spaced, smooth, undulating, with frequent black staining along surfaces Fracture set 2: Very closely spaced, randomly orientated, smooth, undulating, with black staining on fracture surfaces. (MERCIA MUDSTONE GROUP)			
10.15-10.20	32	C											(1.45)	
10.80-12.30 (0:06)											. . . below 10.80m: no randomly orientated fractures.			
											. . . 11.15-11.20m: extremely weak greenish grey siltstone.			
11.40-11.70	33	C		97	62	51		Air+Mist (Brown)			. . . 11.20-11.40m: very sandy clayey gravel. Gravel is angular to subangular mudstone.	75.81	11.40	
11.90		EW									Extremely weak reddish brown MUDSTONE with pockets (up to 20mm) of greenish grey siltstone. GRADE II. Bedding fractures: Medium to widely spaced, rough, undulating, infilled with greenish grey sandy gravel of angular to subangular fine to medium siltstone (likely to laminae of siltstone). Fracture set 2: Closely spaced, randomly orientated, undulating, smooth, with occasional black staining along surfaces. (MERCIA MUDSTONE GROUP)			
12.30-13.80 (0:04)														
12.90-13.00	34	C		97	78	45		Air+Mist (Brown)						

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 601	Jonny Hutt + Sam Carter	DNeylon + JAlton	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH04**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**09.09.22** End: **26.09.22**	**87.21**	**E:446140.2 N:325331.9**	**4** of **16**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
				97	78	45					Extremely weak reddish brown MUDSTONE with pockets (up to 20mm) of greenish grey siltstone. GRADE II.			
13.80-15.30 (0:04)											Bedding fractures: Medium to widely spaced, rough, undulating, infilled with greenish grey sandy gravel of angular to subangular fine to medium siltstone (likely to laminae of siltstone).			
14.05-14.32	35	C									Fracture set 2: Closely spaced, randomly orientated, undulating, smooth, with occasional black staining along surfaces. (MERCIA MUDSTONE GROUP) *(stratum copied from 11.40m from* previous sheet)		(5.80)	
				100	73	63		Air+Mist (Brown)						
15.30-16.80 (0:05)											. . . 15.40-15.60m: extremely weak grey siltstone.			
				93	53	29		Air+Mist (Brown)			. . . below 16.30m: with closely spaced thin and thick laminae of siltstone.			
16.60-16.80	36	C												
16.80-18.30 (0:05)												70.01	17.20	
				100	21	0		Air+Mist (Brown)			Extremely weak reddish brown MUDSTONE. GRADE II. Fractures: Very closely spaced, randomly orientated, rough, undulating fractures with dark brown staining along surfaces. (MERCIA MUDSTONE GROUP) . . . 17.50-17.60m and 17.80-17.85m, clayey gravel of angular to subangluar fine to		(1.10)	

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 601	Jonny Hutt + Sam Carter	DNeylon + JAlton	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH04**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **26.09.22**	**87.21**	**E:446140.2 N:325331.9**	**5** of **16**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instru-mentation	Water	Description of Strata	Reduced Level	Depth (Thick ness)	Material Graphic Legend
											medium mudstone. . . . below 17.85m: increased proportion of fractures.	68.91	18.30	
18.20 18.30-19.80 (0:05)	37	D		100	21	0					Extremely weak reddish brown MUDSTONE with pockets (up to 20mm) of greenish grey siltstone. GRADE II. (MERCIA MUDSTONE GROUP) . . . 18.30-18.45m: approximate 85°, smooth, planar fracture, with black staining along surfaces.	68.41	(0.50) 18.80	
19.05-19.25	38	C		100	97	45		Air+Mist (Brown)			Medium strong greenish grey fine grained SANDSTONE. Partially weathered. (MERCIA MUDSTONE GROUP) . . . below 19.00m: verging towards sitlstone. Bedding fractures infilled with silty sand.	68.16	19.05	
19.80-21.30 (0:05)				100	67	55		Air+Mist (Brown)			Extremely weak reddish brown MUDSTONE. Occasional pockets (up to 20mm) of siltstone. GRADE II. Fractures: Closely spaced, randomly orientated, rough, undulating, with dark brown staining along surfaces. (MERCIA MUDSTONE GROUP)	66.56	(1.60) 20.65	
20.80-20.90	39	C									Weak to medium strong greenish grey fine grained SANDSTONE with frequent black specks. (MERCIA MUDSTONE GROUP)	66.26	(0.30) 20.95	
21.30-22.80 (0:06)				100	75	51		Air+Mist (Brown)			Extremely weak reddish brown MUDSTONE closely interbedded with extremely weak greenish grey SILTSTONE. Bedding fractures: Closely spaced, rough, undulating. (MERCIA MUDSTONE GROUP)	65.71	(0.55) 21.50	
											Weak to medium strong greenish grey fine grained SANDSTONE with frequent black specks. Bedding fractures: Closely spaced, rough, undulating. (MERCIA MUDSTONE GROUP)	65.01	(0.70) 22.20	
22.20-22.45	40	C									*Description on next sheet*		(0.40)	

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 601	Jonny Hutt + Sam Carter	DNeylon + JAlton	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH04**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**09.09.22** End: **26.09.22**	**87.21**	**E:446140.2 N:325331.9**	**6** of **16**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
											Extremely weak reddish brown MUDSTONE very closely interbedded with greenish grey SILTSTONE. GRADE II. Fractures: Closely spaced, randomly orientated, rough, undulating, with frequent black staining along surfaces and frequent black specks on siltstone. (MERCIA MUDSTONE GROUP) *(stratum copied from 22.20m from* previous sheet)	64.61	22.60	
22.80-24.30 (0:05)				100	75	51		Air+Mist (Brown)					(1.00)	
				100	40	23					Very stiff reddish brown sandy slightly gravelly CLAY. Sand is fine of mudstone. Gravel is angular to subangular fine and medium of mudstone lithorelicts. GRADE IVa. (MERCIA MUDSTONE GROUP) . . . 23.05-23.15m: band of thickly cross laminated greenish grey sandstone. . . . below 23.15m: randomly interspersed with stiff greenish grey sandy silt.	63.61	23.60	
24.00-24.10	41	C											(0.75)	
24.30-25.80 (0:06)				100	100	97		Air+Mist (Brown)			Extremely weak reddish brown MUDSTONE. Bedding fractures: Closely spaced, rough, undulating. (MERCIA MUDSTONE GROUP) . . . below 24.25m: becoming slightly interbedded/interspersed with greenish grey siltstone.	62.86	24.35	
25.25-25.60	42	C									Extremely weak greenish grey SILTSTONE. With incipient fractures observed on breaking up the core - yellow staining along surfaces. (MERCIA MUDSTONE GROUP)	62.41	(0.45) 24.80	
25.80-27.30 (0:06) 25.90-26.25	43	C		100	60	49		Air+Mist (Brown)			Extremely weak reddish brown MUDSTONE. GRADE II. (MERCIA MUDSTONE GROUP) . . . 24.80-25.30m: frequent fine gravel size pockets of extremely weak greenish grey siltstone. . . . below 25.90m: Bedding fractures: Widely to medium spaced, smooth, planar, with black staining along fracture surfaces. . . . 26.50-26.85m: fractures: very closely spaced, randomly orientated, rough, undulating, and closely interbedded with extremely weak greenish grey siltstone.		(4.30)	
26.60-28.30	44	C												

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 601	Jonny Hutt + Sam Carter	DNeylon + JAlton	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH04**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**09.09.22** End: **26.09.22**	**87.21**	**E:446140.2 N:325331.9**	**7** of **16**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instru-mentation	Water	Description of Strata	Reduced Level	Depth (Thick ness)	Material Graphic Legend
27.30-28.80 (0:05)				100	60	49		Air+Mist (Brown)			Extremely weak reddish brown MUDSTONE. GRADE II. (MERCIA MUDSTONE GROUP) . . . 24.80-25.30m: frequent fine gravel size pockets of extremely weak greenish grey siltstone.*(stratum copied from* 24.80m from previous sheet) . . . 27.20-27.30m: extremely weak to weak greenish grey siltstone. . . . 27.30-27.40m: recovered as very sandy clayey fine to medium gravel. Gravel is angular to subangular mudstone. GRADE III. . . . 27.70-27.75m: extremely weak greenish grey fine grained sandstone. . . . below 27.90m: fine to coare gravel size pockets of extremely weak greenish grey siltstone.			
				100	83	80								
28.80-30.30 (0:06)												58.11	29.10	
											Extremely weak greenish grey SILTSTONE. (MERCIA MUDSTONE GROUP) . . . 29.20-29.25m: thickly cross laminated sandstone with fine to medium sand size vugs. . . . 29.35-29.38m: sandstone with fine to medium gravel size vugs.	57.71	(0.40) 29.50	
29.55-29.75	45	C		97	77	70		Air+Mist (Brown)			Extremely weak reddish brown MUDSTONE. (MERCIA MUDSTONE GROUP)	57.21	(0.50) 30.00	
											Weak greenish grey fine to medium grained SANDSTONE with abundant vugs (up to 0.6mm). (MERCIA MUDSTONE GROUP) . . . below 30.20m: verging towards extremely weak siltstone.	56.91	(0.30) 30.30	
											Borehole terminated at 30.30m depth.			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	**Dando 3000 + Comacchio GEO 601**	**Jonny Hutt + Sam Carter**	**DNeylon + JAlton**	

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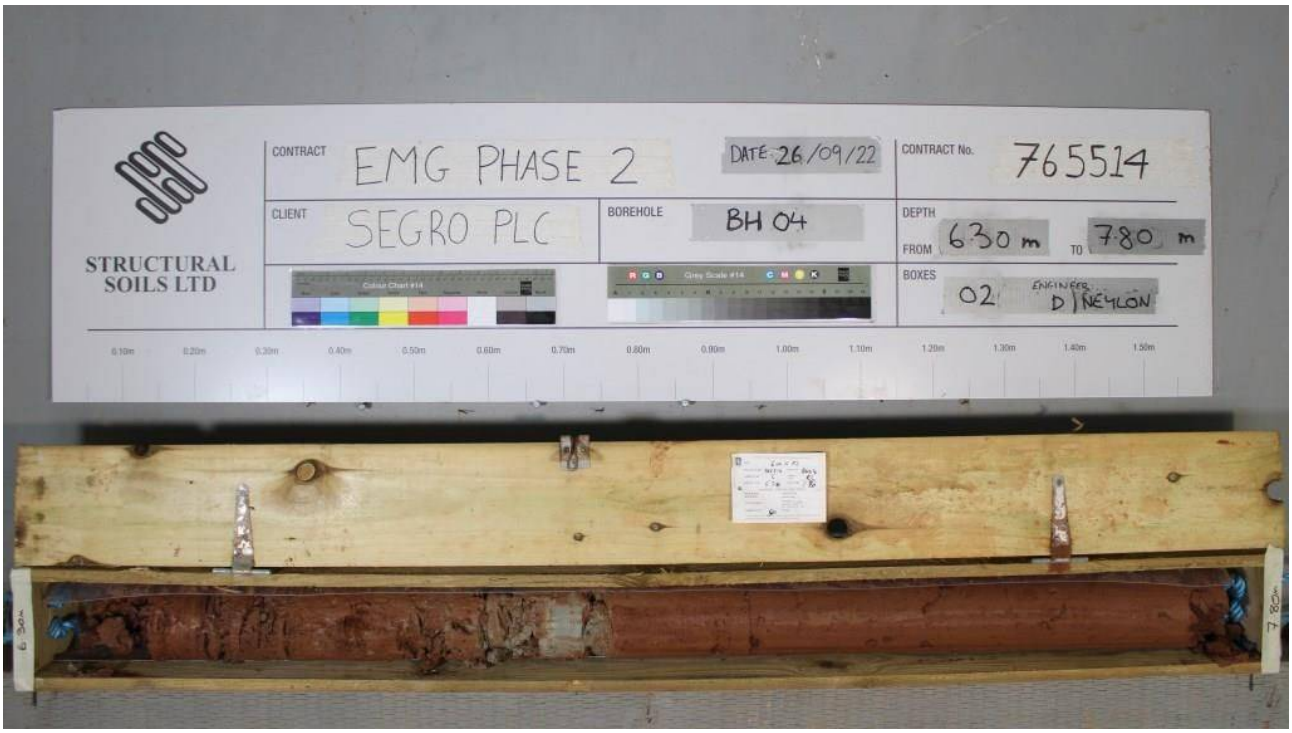
STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH04**
Contract Ref:	Start: **09.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **26.09.22**	**87.21**	**E:446140.2 N:325331.9**	**8** of **16**



Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 601	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	DNeylon + JAlton	Checked By:	AGS

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH04**
Contract Ref:	Start: **09.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **26.09.22**	**87.21**	**E:446140.2 N:325331.9**	**9** of **16**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 601	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	DNeylon + JAlton	Checked By:	AGS

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH04**
Contract Ref:	Start: **09.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **26.09.22**	**87.21**	**E:446140.2 N:325331.9**	**10** of **16**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 601	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	DNeylon + JAlton	Checked By:	AGS

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH04**
Contract Ref:	Start: **09.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **26.09.22**	**87.21**	**E:446140.2 N:325331.9**	**11** of **16**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 601	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	DNeylon + JAlton	Checked By:	

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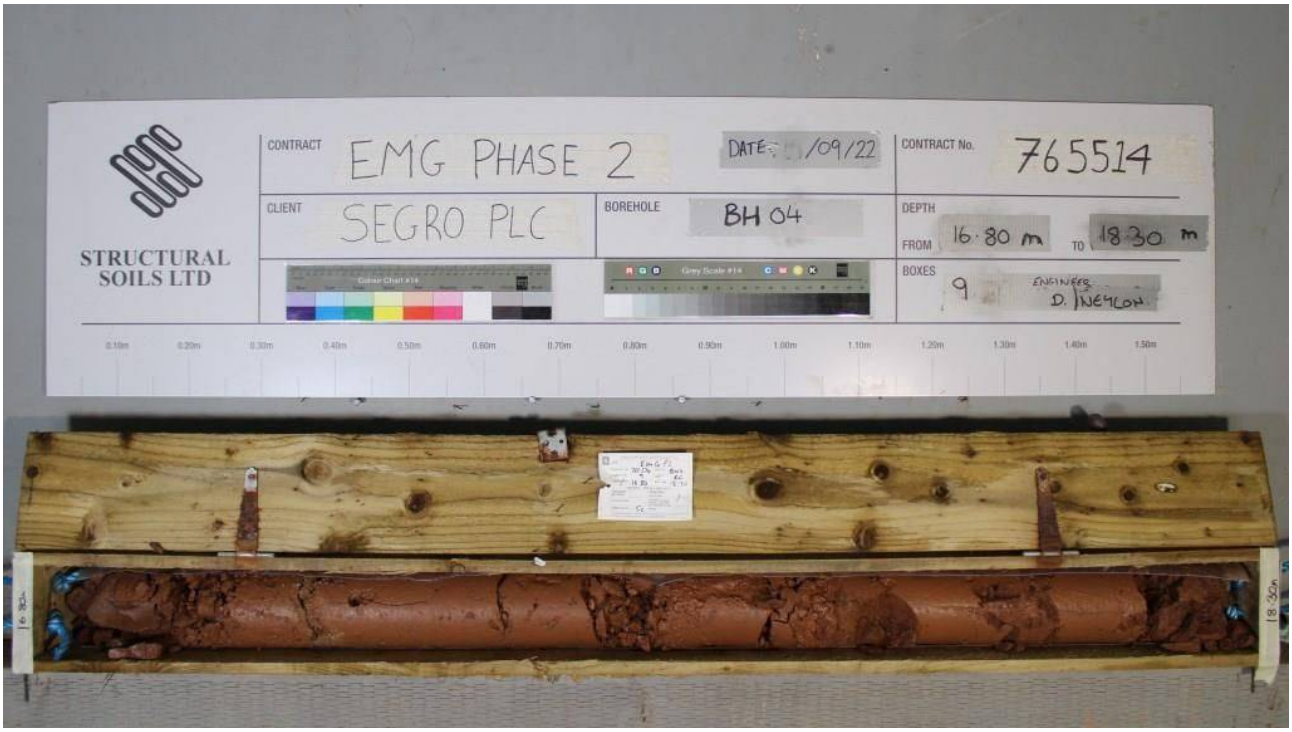
STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH04**
Contract Ref:	Start: **09.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **26.09.22**	**87.21**	**E:446140.2 N:325331.9**	**12** of **16**



Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 601	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	DNeylon + JAlton	Checked By:	AGS

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH04**
Contract Ref:	Start: **09.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **26.09.22**	**87.21**	**E:446140.2 N:325331.9**	**13** of **16**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 601	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	DNeylon + JAlton	Checked By:	AGS

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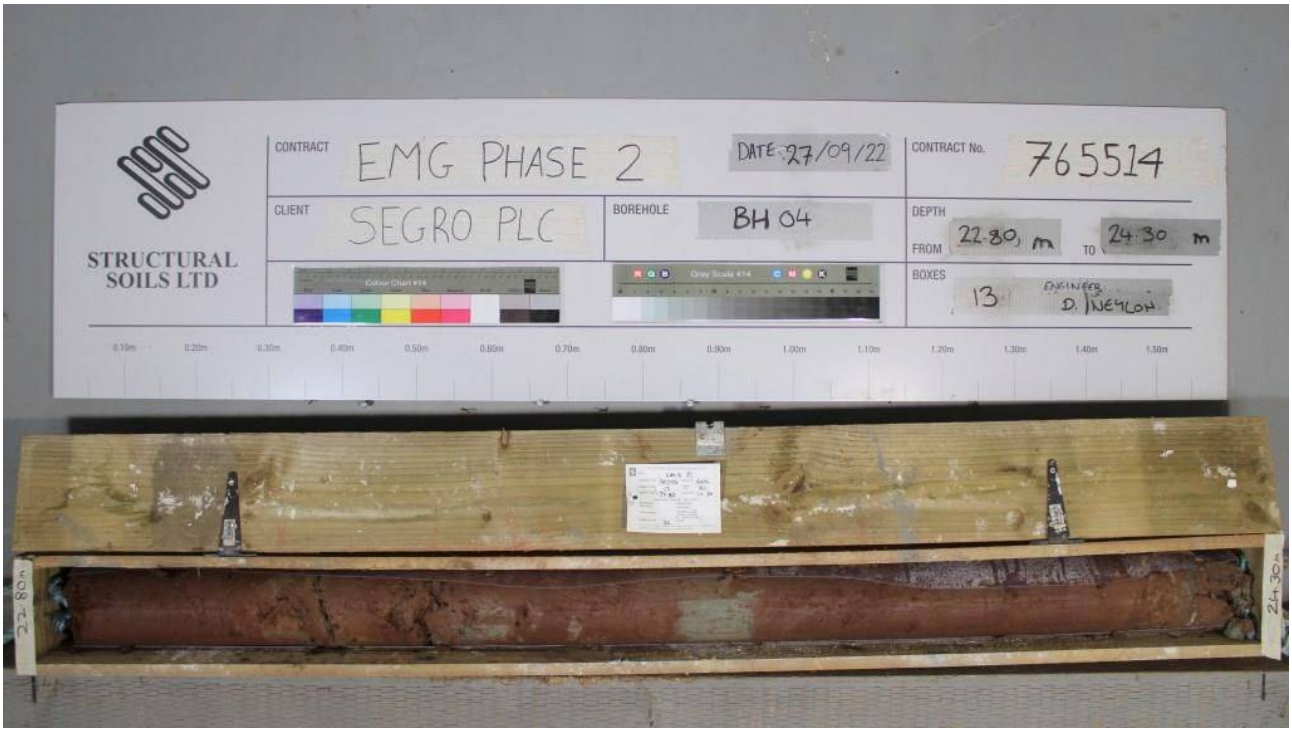
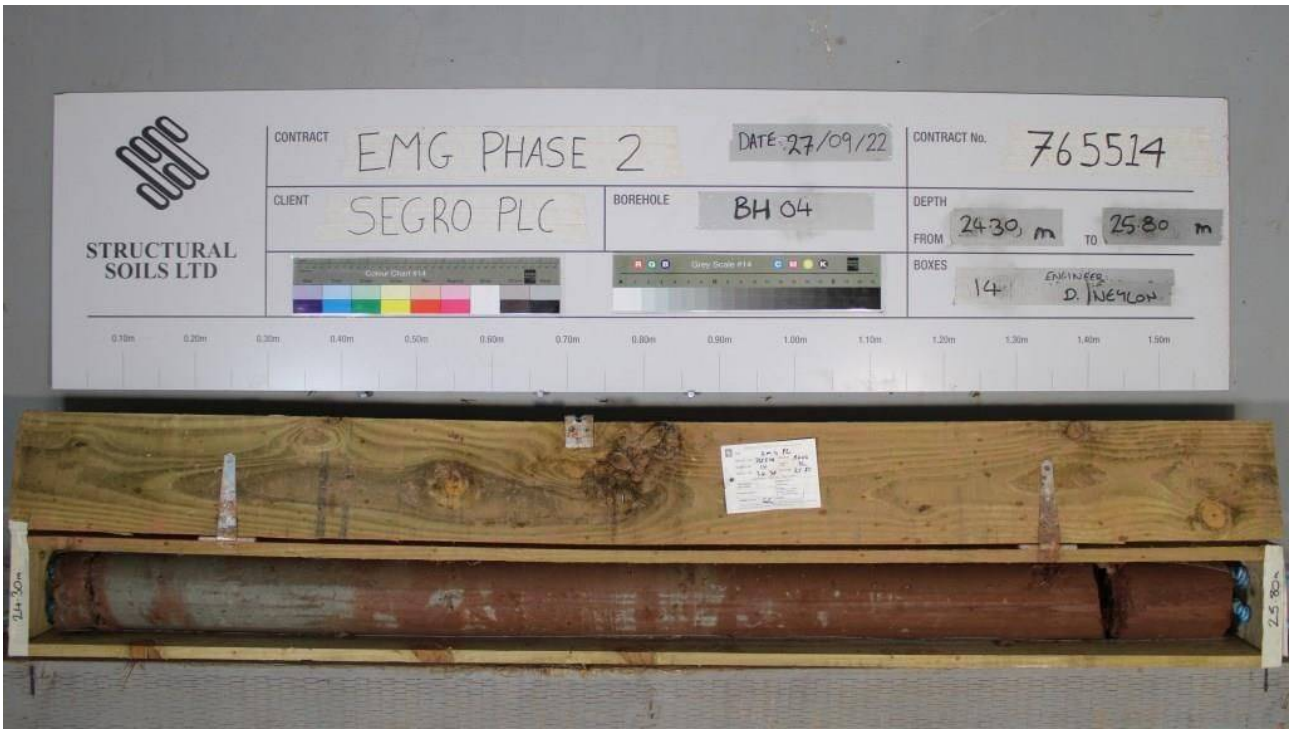
STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH04**
Contract Ref:	Start: **09.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **26.09.22**	**87.21**	**E:446140.2 N:325331.9**	**14** of **16**





Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 601	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	DNeylon + JAlton	Checked By:	AGS

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH04**
Contract Ref:	Start: **09.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **26.09.22**	**87.21**	**E:446140.2 N:325331.9**	**15** of **16**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 601	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	DNeylon + JAlton	Checked By:	AGS

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH04**
Contract Ref:	Start: **09.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **26.09.22**	**87.21**	**E:446140.2 N:325331.9**	**16** of **16**

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Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 601	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	DNeylon + JAlton	Checked By:	AGS

STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH05**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**09.09.22** End: **14.09.22**	**87.17**	**E:446157.9 N:325137.8**	**1** of **12**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
0.10-0.10	1	D								TOPSOIL		(0.30)	
0.10-0.10	101	ES	1xT+1xJ+1xV								86.87	0.30	
0.10-0.30	2	B								Soft to firm orangish brown sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of mudstone. Cobbles are subangular to well rounded of mudstone (up to 90mm).			
0.50-0.50	3	D											
0.50-0.80	4	B											
0.60-0.60	102	ES	1xT+1xJ+1xV										
0.90-0.90	5	D											
0.90-1.20	6	B											
1.00-1.00	103	ES	1xT+1xJ+1xV										
1.20-1.65		SPT	N=17									(2.50)	
1.20-1.65	8	DSPT											
1.20-1.65	9	B											
1.70-1.70	10	D											
2.00-2.45	11	$UT_{(UT100)}$	80 blows 78% recovery										
2.45-2.55	12	D											
2.70-2.70	13	D									84.37	2.80	
3.00-3.30		SPT	3,4/20,30 for 75mm							NO RECOVERY - driller notes, obstruction, possibly sandstone or mudstone boulder.			
3.00-3.30	15	DSPT											
3.00-3.30	16	B										(1.70)	
4.00-4.26		SPT(c)	11,14/26,24 for 45mm								82.67	4.50	

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
08/09/22	17:11	9.50	9.00	200	Dry
12/09/22	10:00	9.50	9.00	200	-
12/09/22	17:00	13.00	13.00	150	-
13/09/22	08:00	13.00	13.00	150	5.80
13/09/22	15:00	25.00	15.00	150	-

Chiselling / Slow Progress

From	To	Duration (hh:mm)
3.20	3.70	01:00
9.00	9.50	01:00

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Cable percussion drilled using 200mm diameter tools and casing.
4. Rotary cored from 9.20m using SWF core barrel and 150mm diameter casing and air mist flush.
5. No groundwater strikes in the cable percussion section. Unable to determine ground water

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Jonny Hutt + Luke Bamford	JAlton + RSenior	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH05**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**09.09.22** End: **14.09.22**	**87.17**	**E:446157.9 N:325137.8**	**2** of **12**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
4.70-4.70	18	D								Dense multicolored (grey, orange, brown, white, and red) very clayey fine to coarse SAND AND subangular to well rounded fine to coarse GRAVEL of various lithologies. Medium cobble content of tabular subrounded to well rounded mudstone (up to 180mm).		(1.00)	
5.00-5.45		SPT(c)	N=39										
5.00-5.00	104	ES	1xT+1xJ+1xV										
5.00-5.45	20	B									81.67	5.50	
5.70-5.70	21	D								Stiff reddish brown sandy gravelly CLAY with low and medium cobble content. Sand is fine and medium. Gravel is angular to subrounded fine to coarse of mudstone. Cobbles are subangular to well rounded (up to 90mm).			
5.97		EW											
6.00-6.45		SPT	N=23										
6.00-6.45	23	DSPT										(1.70)	
6.00-6.45	24	B											
7.00	105	ES	1xT+1xJ+1xV								79.97	7.20	
7.20-7.20	105	ES	1xT+1xJ+1xV							Very dense multicoloured (grey, orange, brown, white, and red) very sandy very clayey subangular to well rounded fine to coarse GRAVEL of various lithologies. Medium cobble content (up to 80mm).			
7.30-7.30	25	D											
7.50-7.92		SPT	10,10/9,15,15,11 for 45mm										
7.50-7.92	27	DSPT										(1.50)	
7.50-7.92	28	B											
											78.47	8.70	
8.70-8.70	29	D								Probable boulder.			

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress

From	To	Duration (hh:mm)

General Remarks

strikes due to flush method.
6. Installed with 50mm standpipe on completion (response zone 5.00m to 7.00m).
7. SPT hammers AR3104-2022 (E_r = 64.00%) , AR3293-2022 (E_r = 73.00%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Jonny Hutt + Luke Bamford	JAlton + RSenior	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH05**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **14.09.22**	**87.17**	**E:446157.9 N:325137.8**	**3** of **12**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
9.00-9.30		SPT	13,12/21,29 for 70mm							Probable boulder. *(stratum copied from 8.70m from previous* sheet)		(1.00)	
9.00-9.00	106	ES	1xT+1xJ+1xV										
9.00-9.30	31	DSPT											
9.00-9.50	32	B											
9.20-10.00													
9.50-9.73		SPT(c)	13,12/32,18 for 40mm	62	0	0					77.47	9.70	
9.50-9.73	33	C											
9.70	34	D								Drilling disturbed, very limited recovery. Recovered as probably very dense, grey, reddish brown and yellowish brown angular to subrounded medium and coarse GRAVEL of mudstone, limestone, and sandstone. High cobble content of subangular to subrounded mudstone, limestone, and sandstone.			
10.00-11.50													
10.00-10.34		SPT	5,7/12,18,20 for 40mm	20	0	0						(1.50)	
											75.97	11.20	
11.20	35	D								Drilling disturbed, very limited recovery. Recovered as stiff reddish brown mottled light grey slightly sandy slightly gravelly CLAY. Sand is fine and medium. Gravel is subangular to subrounded fine to coarse of mudstone and limestone.			
11.50-12.50				20	0	0						(1.10)	
											74.87	12.30	
12.30	36	D								Drilling disturbed, very limited recovery. Recovered as grey yellowish brown and reddish brown subangular to subrounded coarse GRAVEL of mudstone, limestone, and sandstone. High cobble content. Cobbles are of mudstone and sandstone.			
12.50-13.00				40	0	0						(0.70)	
12.80-13.00	37	B								. . . 12.80-13.00m: 1 no. cobble of very strong dark grey limestone.	74.17	13.00	
13.00-13.45		SPT	N=35							Open hole drilling.			
13.00	38	D								SAND AND GRAVEL (Driller's Description)			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Jonny Hutt + Luke Bamford	JAlton + RSenior	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH05**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**09.09.22** End: **14.09.22**	**87.17**	**E:446157.9 N:325137.8**	**4** of **12**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
13.50-13.79		SPT	7,12/18,32 for 60mm							Open hole drilling. SAND AND GRAVEL (Driller's Description) *(stratum copied from 13.00m from previous sheet)*		(1.70)	
14.00-14.09		SPT	25/50 for 40mm										
14.00	39	D									72.47	14.70	
										Open hole drilling. MUDSTONE (Driller's Description) (MERCIA MUDSTONE GROUP)		(0.30)	
											72.17	15.00	
15.00-16.00										Extremely weak thickly laminated to very thinly bedded reddish brown MUDSTONE. GRADE II Bedding fractures: Closely spaced, 0° to 5°, undulating, smooth, clean. (MERCIA MUDSTONE GROUP) . . . 15.00-15.40m: AZCL.		(0.70)	
15.00-15.12		SPT	25/50 for 50mm										
15.00	40	D											
15.50	41	D		60	16	10	NI NI NI				71.47	15.70	
15.78-15.90	42	C								Extremely weak thinly bedded reddish brown MUDSTONE. GRADE II. Bedding fractures: Closely spaced, 0° to 5°, undulating, smooth, clean. (MERCIA MUDSTONE GROUP) . . . 16.10-16.45m: AZCL.			
16.00-17.50										. . . 16.45-16.73m: NI, recovered as clayey gravel.			
16.73-16.87	43	C		63	63	13	NI 600 200			. . . 17.02-17.05m: Moderately weak light grey siltstone. . . . 17.10m: Thin lamination (<3mm) of weak grey siltstone. . . . 17.17-17.19m: Weak grey siltstone.		(3.40)	
17.24	44	D											
17.50-19.00													
17.70-17.84	45	C		93	93	24							

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Jonny Hutt + Luke Bamford	JAlton + RSenior	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH05**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **14.09.22**	**87.17**	**E:446157.9 N:325137.8**	**5** of **12**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
18.50	46	D		93	93	24	NI NI 150			. . . 17.93-17.98m: 30°, undulating, smooth, clean discontinuity. Extremely weak thinly bedded reddish brown MUDSTONE. GRADE II. Bedding fractures: Closely spaced, 0° to 5°, undulating, smooth, clean. (MERCIA MUDSTONE GROUP) *(stratum copied from 15.70m from* previous sheet) . . . 18.00-18.01m: Very weak light grey siltstone. . . . 18.00-18.14m: 80°, undulating rough clean discontinuity.			
19.00-20.50										. . . 18.03-18.04m: Very weak light grey siltstone.	68.07	19.10	
19.30	47	D		95	95	23	NI 60 250			. . . 18.27-18.32m: Strong light grey siltstone. . . . 18.39-18.40m: Strong light grey siltstone. . . . 18.55-18.57m: Moderately weak light grey siltstone. . . . 18.60-19.10m: Extremely weak to very weak. . . . 19.00-19.10m: NI, recovered as subangular fine to medium gravel.		(1.10)	
20.20-20.40	48	C								Very weak locally extremely weak thinly to medium bedded reddish brown MUDSTONE. GRADE II. Bedding fractures: Closely to medium spaced, 0° to 10°, undulating smooth, locally rough, clean. (MERCIA MUDSTONE GROUP)	66.97	20.20	
20.50-22.00													
20.60-20.84	49	C								. . . 19.20-19.32m: 65° undulating smooth discontinuity with occasional black specks on surfaces. . . . 19.21-19.25m: 25° undulating smooth discontinuity with occasional black specks on surfaces. . . . 19.25-19.27m: 20° undulating smooth discontinuity with occasional black specks on surfaces.			
21.50	50	D		95	95	68	NI 120 300			. . . 19.33-19.38m: 2 no. parallel extremely closely spaced 80° undulating smooth clean discontinuities. . . . 19.46-19.52: Weak greenish grey siltstone. 80° undulating rough discontinuity with a little clay smear on surfaces. . . . 19.60-19.72m: 50° undulating smooth clean discontinuity. . . . 19.68-19.70m: 25° undulating smooth clean discontinuity. . . . 19.84-20.16m: 85° to 90° undulating smooth clean discontinuity intersected by 80° undulating smooth clean discontinuity. . . . 20.85-20.88m: 30° undulating smooth clean discontinuity.		(2.78)	
22.00-23.50													
22.40	51	D		100	100	65				*Description on next sheet*			

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Jonny Hutt + Luke Bamford	JAlton + RSenior	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH05**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **14.09.22**	**87.17**	**E:446157.9 N:325137.8**	**6** of **12**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
										. . . 20.91-20.93m: 10° planar rough discontinuity with 1mm thick calcite vein. . . . 21.05-21.07m: 10° planar rough discontinuity with 1mm thick calcite vein. . . . 21.15-21.17m: 10° planar rough discontinuity with 1mm thick calcite vein.	64.19	22.98	
23.00-23.23	52	C		100	100	65				. . . 21.18-21.19m: Weak grey siltstone. . . . 21.24-21.40m: Weak grey siltstone. . . . 21.43-21.58m: 88° undulating rough clean discontinuity. . . . 22.08-22.64m: 75° to 85° undulating rough locally stepped clean discontinuity. . . . 22.27-22.39m: Weak grey siltstone.	63.62	(0.57) 23.55	
23.50-25.00							NI 120 300			Very weak to weak thinly to medium bedded reddish brown MUDSTONE. GRADE II. Bedding fractures: Closely to medium spaced, 0° to 5°, undulating, rough, clean. (MERCIA MUDSTONE GROUP) *(stratum copied from 20.20m from previous sheet)*	63.14	(0.48) 24.03	
23.90	53	D											
24.00-24.18	54	C		93	93	37				Moderately weak thinly bedded light grey SILTSTONE. GRADE II. Bedding fractures: Closely spaced, 0° to 5°, undulating, rough, clean. (MERCIA MUDSTONE GROUP) . . . 23.40-23.45m: 40° undulating rough clean discontinuity.	62.17	(0.97) 25.00	
										Very weak to weak thinly bedded light grey SILTSTONE. GRADE II. Bedding fractures: Closely spaced, 0° to 5°, undulating, rough, clean. (MERCIA MUDSTONE GROUP) . . . 23.72-23.84m: Moderately weak grey siltstone.			
										Medium strong thinly bedded light grey SILTSTONE. GRADE II. Bedding fractures: Closely spaced, 0° to 5°, undulating, rough, clean. (MERCIA MUDSTONE GROUP) . . . 24.38-24.41m: Extremely weak reddish brown mudstone. . . . 24.72-24.78m: 60° undulating rough clean discontinuity. . . . 24.85-25.00m: Extremely weak reddish brown mudstone.			
										Borehole terminated at 25.00m.			

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Jonny Hutt + Luke Bamford	JAlton + RSenior	

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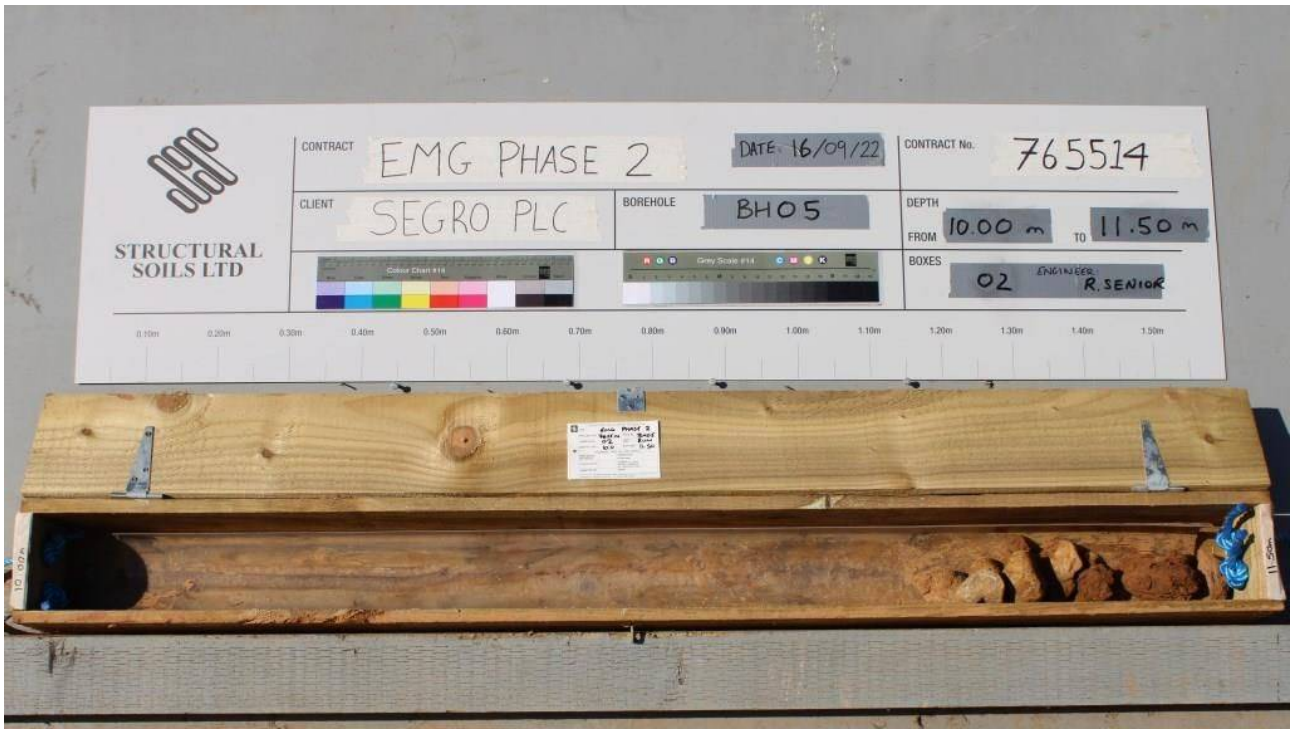
STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH05**
Contract Ref:	Start: **09.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **14.09.22**	**87.17**	**E:446157.9 N:325137.8**	**7** of **12**



Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Luke Bamford	Logged By:	JAlton + RSenior	Checked By:	

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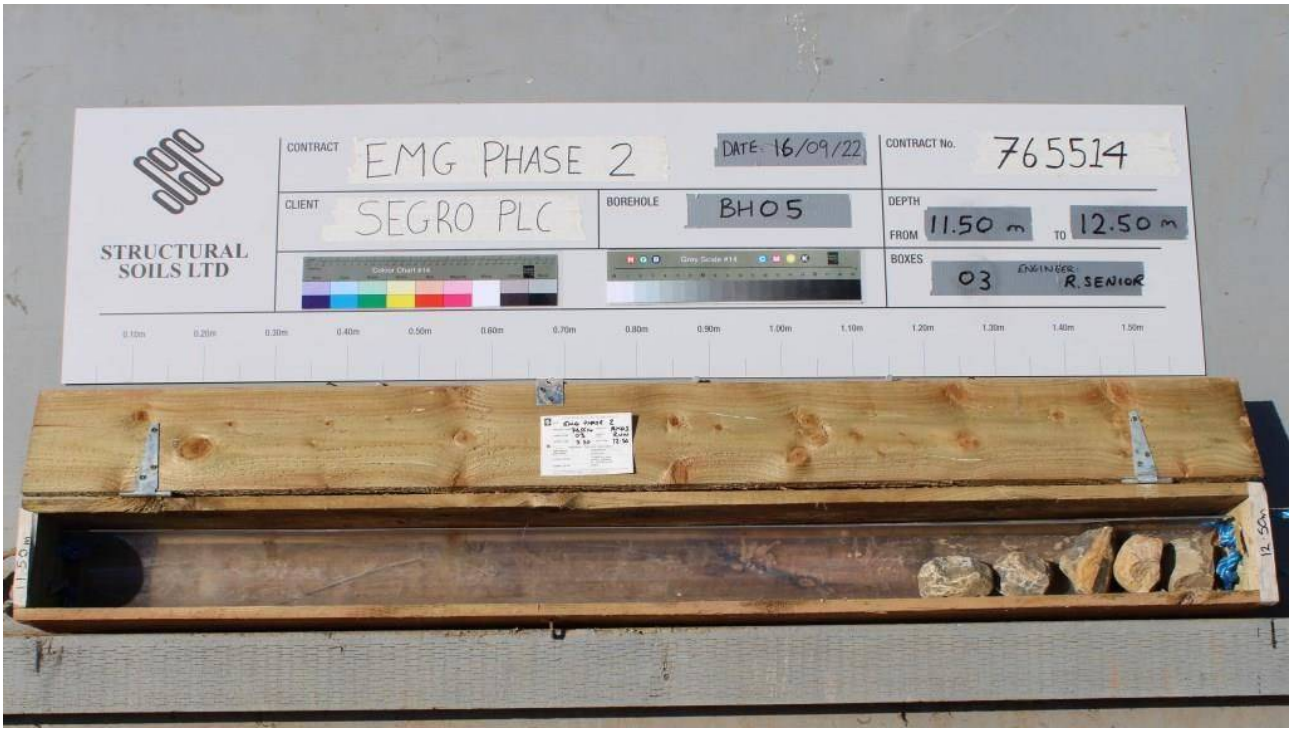
STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH05**
Contract Ref:	Start: **09.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **14.09.22**	**87.17**	**E:446157.9 N:325137.8**	**8** of **12**



Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Luke Bamford	Logged By:	JAlton + RSenior	Checked By:	

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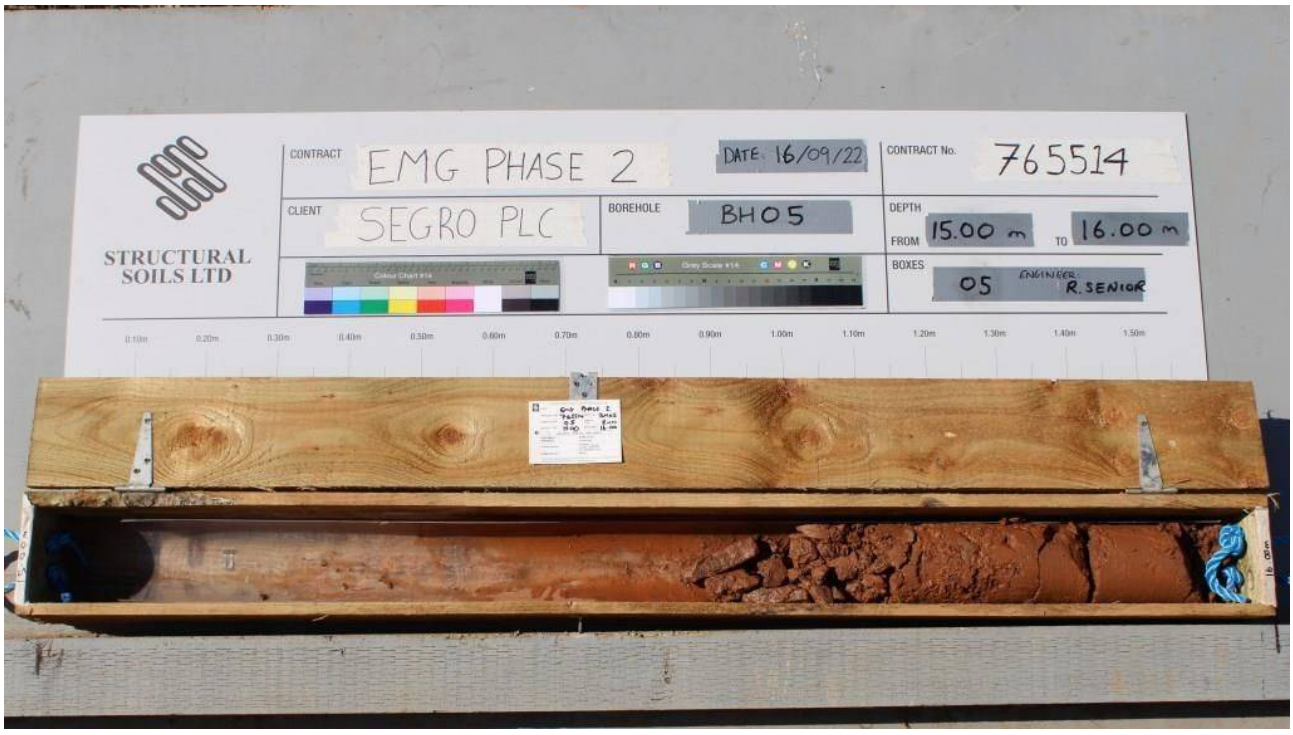
STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH05**
Contract Ref:	Start: **09.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **14.09.22**	**87.17**	**E:446157.9 N:325137.8**	**9** of **12**



Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Luke Bamford	Logged By:	JAlton + RSenior	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH05**
Contract Ref:	Start: **09.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **14.09.22**	**87.17**	**E:446157.9 N:325137.8**	**10** of **12**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Luke Bamford	Logged By:	JAlton + RSenior	Checked By:	AGS

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH05**
Contract Ref:	Start: **09.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **14.09.22**	**87.17**	**E:446157.9 N:325137.8**	**11** of **12**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Luke Bamford	Logged By:	JAlton + RSenior	Checked By:	

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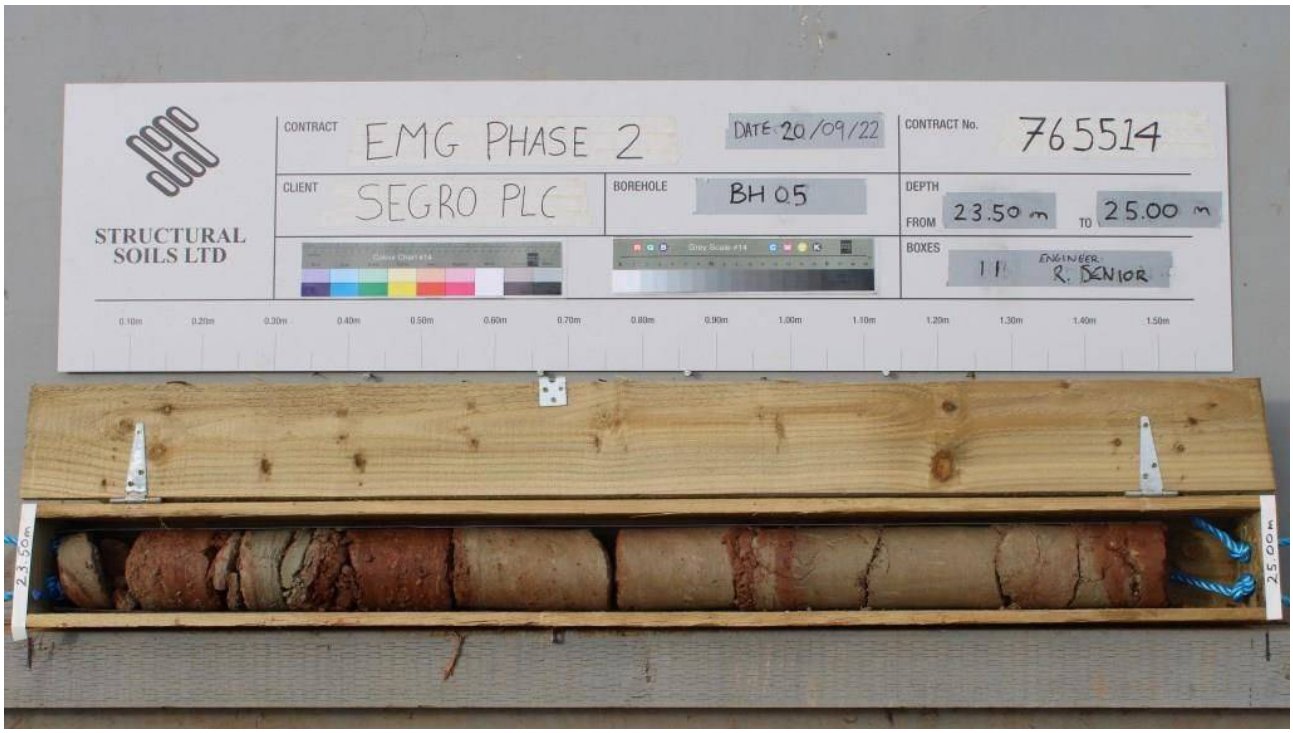
STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH05**
Contract Ref:	Start: **09.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **14.09.22**	**87.17**	**E:446157.9 N:325137.8**	**12** of **12**



Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Luke Bamford	Logged By:	JAlton + RSenior	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH06**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**28.09.22** End: **10.10.22**	**80.29**	**E:446038.9 N:325052.6**	**1** of **12**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instru-mentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
0.10	1	D									TOPSOIL		(0.30)	
0.10-0.20	2	B										79.99	0.30	
0.20	101	ES									Stiff fissured grey mottled brown slightly sandy slightly gravelly CLAY with pockets of chalk. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of mixed lithologies including sandstone, siltstone, and quartz.			
0.70	3	D												
0.70-1.00	4	B												
0.80	102	ES												
1.20	5	D												
1.20-1.50	6	$UT_{(UT100)}$	150 blows 100% recovery											
1.50-1.60	7	D											(2.70)	
1.80	8	D												
2.00-2.45		SPT	N=16											
2.00-2.45	10	DSPT												
2.00-2.45	11	B												
2.70	12	D										77.29	3.00	
3.00-3.45	13	$UT_{(UT100)}$	150 blows 0% recovery								Firm to stiff fissured dark grey slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of mixed lithologies including sandstone, siltstone, mudstone, and occasional chalk.			
3.00-3.45	14	B												
3.70	15	D												
4.00-4.45		SPT	N=15											
4.00-4.45	17	DSPT												
4.00-4.45	18	B												

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
28/09/22	18:05	8.00	7.50	200	Dry
29/09/22	07:44	8.00	7.50	200	Dry
29/09/22	17:48	18.50	18.50	200	Dry
04/10/22	08:30	18.50	17.00	200	15.50
04/10/22	17:00	30.80	None	146	-

Chiselling / Slow Progress

From	To	Duration (hh:mm)
18.00	18.50	01:00

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Cable percussion drilled using 200mm diameter tools and casing.
4. Rotary cored from 18.50m using Geobor-S and air mist flush.
5. No groundwater strikes in the cable percussion section. Unable to determine ground water

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 601	Jonny Hutt + Sam Carter	DNeylon + RStan	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH06**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**28.09.22** End: **10.10.22**	**80.29**	**E:446038.9 N:325052.6**	**2** of **12**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instru-mentation	Water	Description of Strata	Reduced Level	Depth (Thick ness)	Material Graphic Legend
4.70	19	D									Firm to stiff fissured dark grey slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of mixed lithologies including sandstone, siltstone, mudstone, and occasional chalk. *(stratum copied from 3.00m from* previous sheet)			
5.00-5.45	20	$UT_{(UT100)}$	110 blows 100% recovery											
5.45	21	D												
5.70	22	D												
6.00-6.45		SPT	N=18											
6.00-6.45	24	DSPT												
6.00-6.45	25	B												
7.30	26	D												
7.50-7.95	27	$UT_{(UT100)}$	91 blows 100% recovery											
7.95-8.05	28	D												
8.70	29	D												

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

strikes due to flush method.
6. Installed with 50mm standpipe on completion (response zone 18.00m to 30.80m).
7. SPT hammer AR3104-2022 (E_r = 64.00%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 601	Jonny Hutt + Sam Carter	DNeylon + RStan	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH06**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**28.09.22** End: **10.10.22**	**80.29**	**E:446038.9 N:325052.6**	**3** of **12**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instru-mentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
9.00-9.45		SPT	N=30								Firm to stiff fissured dark grey slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of mixed lithologies including sandstone, siltstone, mudstone, and occasional chalk. *(stratum copied from 3.00m from* previous sheet)		(13.40)	
9.00-9.45	31	DSPT												
9.00-9.45	32	B												
10.30	33	D												
10.50-10.95	34	$UT_{(UT100)}$	150 blows 89% recovery											
10.95-11.05	35	D												
11.70	36	D												
12.00-12.45		SPT	N=27											
12.00-12.45	38	DSPT												
12.00-12.45	39	B												
13.30	40	D												

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	**Dando 3000 + Comacchio GEO 601**	**Jonny Hutt + Sam Carter**	**DNeylon + RStan**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH06**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**28.09.22** End: **10.10.22**	**80.29**	**E:446038.9 N:325052.6**	**4** of **12**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
13.50-13.80	41	$UT_{(UT100)}$	150 blows 83% recovery								Firm to stiff fissured dark grey slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of mixed lithologies including sandstone, siltstone, mudstone, and occasional chalk. *(stratum copied from 3.00m from* previous sheet) . . . 13.90m: sandy.			
13.80-13.90	42	D												
14.70	43	D												
15.00-15.45		SPT	N=35											
15.00-15.45	45	DSPT												
15.00-15.45	46	B												
												63.89	16.40	
16.40	47	D									Stiff to very stiff laminated grey slightly sandy SILT. Sand is fine.			
16.50-16.80	48	$UT_{(UT100)}$	150 blows 67% recovery											
16.80-16.90	49	D											(0.90)	
17.20	50	D										62.99	17.30	
											Stiff to very stiff reddish brown gravelly sandy silty CLAY. Sand is fine. Gravel is angular to subangular fine to coarse of mudstone lithorelicts. Occasional pockets of grey siltstone. (MERCIA MUDSTONE GROUP)		(1.20)	

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	**Dando 3000 + Comacchio GEO 601**	**Jonny Hutt + Sam Carter**	**DNeylon + RStan**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH06**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **10.10.22**	**80.29**	**E:446038.9 N:325052.6**	**5** of **12**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
18.00-18.26		SPT	10,15/24,26 for 60mm											
18.00-18.26	52	DSPT												
18.00-18.50	53	B										61.79	18.50	
18.50-18.80 (0:02)				100	50	0		Air+Mist (Brown)			Extremely weak reddish brown MUDSTONE, recovered as angular to subangular gravel with occasional fragments of greenish grey siltstone. GRADE III. (MERCIA MUDSTONE GROUP)		(0.40)	
18.50-18.72		SPT	8,17/34,16 for 30mm									61.39	18.90	
18.50-18.72	55	DSPT												
18.55-18.70	56	C												
18.80-20.30 (0:03)		EW									Extremely weak reddish brown MUDSTONE. GRADE II. Fractures: Closely spaced, randomly orientated, smooth, undulating, with occasional black staining along some surfaces. (MERCIA MUDSTONE GROUP)		(0.40)	
19.00												60.99	19.30	
19.30-19.50	57	C		93	40	10		Air+Mist (Brown)			Extremely weak greenish grey fine and medium grained SANDSTONE with frequent vugs (up to 2mm). (MERCIA MUDSTONE GROUP) . . . 19.70-19.75m: Extremely weak reddish brown MUDSTONE with rough planar fractures either side up to 5mm infilled with sandy clay. . . . 19.75m: Verging towards a very weak to medium strong and no vugs. . . . 20.10-20.30m: Becoming very weak reddish brown mudstone.		(1.65)	
20.30-21.80 (0:06)												59.34	20.95	
21.00-21.15	58	C		67	46	18		Air+Mist (Brown)			Very weak to weak reddish brown MUDSTONE. GRADE II. Fractures: Closely spaced, randomly orientated, with yellow staining on surfaces. (MERCIA MUDSTONE GROUP)		(0.30)	
												59.04	21.25	
											. . . 20.95m: Reddish brown sandy clay.	58.89	21.40	
											Very weak greenish grey fine and medium grained SANDSTONE. Bedding fractures: Closely spaced, planar, with yellow staining on surfaces. (MERCIA MUDSTONE GROUP)		(0.40)	
21.80-23.30 (0:04)												58.49	21.80	
				93	27	15		Air+Mist (Brown)			Very stiff reddish brown slightly sandy slightly gravelly CLAY with occasional pockets (up to 20mm) of greenish grey silt. GRADE IVa. (MERCIA MUDSTONE GROUP)		(0.60)	
												57.89	22.40	

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress

From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 601	Jonny Hutt + Sam Carter	DNeylon + RStan	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH06**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**28.09.22** End: **10.10.22**	**80.29**	**E:446038.9 N:325052.6**	**6** of **12**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instru-mentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
											Extremely weak greenish grey SILTSTONE interspersed with reddish brown mudstone verging towards a silt interspersed with clay. (MERCIA MUDSTONE GROUP)	57.49	(0.40) 22.80	
22.90-23.05	59	C		93	27	15		Air+Mist (Brown)			Very stiff reddish brown sandy CLAY. Sand is fine of mudstone and siltstone. GRADE IVa. (MERCIA MUDSTONE GROUP) *(stratum copied from 22.40m from* previous sheet)	57.24	23.05	
23.30-24.80 (0:05)				97	59	14		Air+Mist (Brown)			Extremely weak greenish grey SILTSTONE thinly interbedded with reddish brown MUDSTONE. (MERCIA MUDSTONE GROUP) Very weak reddish brown MUDSTONE with occasional pockets (up to 20mm) of greenish grey siltstone. GRADE II. Bedding fractures: Medium to closely spaced, rough, undulating. (MERCIA MUDSTONE GROUP) . . . 23.35m: Recovered as sandy fine gravel of siltstone and mudstone. . . . 23.60-23.70m: Greenish grey siltstone.		(2.80)	
24.50-24.65	60	C												
24.80-26.30 (0:05)				100	48	0		Air+Mist (Brown)			. . . 25.25-25.30m: Greenish grey siltstone. . . . 25.35-25.40m: Greenish grey siltstone.	54.44	25.85	
25.85-25.95	61	C									Extremely weak to medium strong thinly cross laminated greenish grey SANDSTONE. (MERCIA MUDSTONE GROUP)	54.24	26.05	
26.30-27.80 (0:05)				100	77	57		Air+Mist (Brown)			Extremely weak to very weak reddish brown MUDSTONE with occasional pockets (up to 20mm) of greenish grey siltstone. GRADE II. (MERCIA MUDSTONE GROUP) . . . 26.35-26.55m: Interspersed with laminae and lenses (<10mm) of greenish grey siltstone.		(1.80)	

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 601	Jonny Hutt + Sam Carter	DNeylon + RStan	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH06**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**28.09.22** End: **10.10.22**	**80.29**	**E:446038.9 N:325052.6**	**7** of **12**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
27.10-27.30	62	C		100	77	57		Air+Mist (Brown)			. . . 26.95-27.15m: Very closely spaced, randomly orientated, smooth, undulating, fractures. Extremely weak to very weak reddish brown MUDSTONE with occasional pockets (up to 20mm) of greenish grey siltstone. GRADE II. (MERCIA MUDSTONE GROUP) *(stratum copied from 26.05m from* previous sheet)	52.44	27.85	
27.80-29.30 (0:05)											Very weak greenish grey SILTSTONE. Bedding fractures: Very closely spaced, rough, planar, infilled with clayey sand. (MERCIA MUDSTONE GROUP)	51.89	(0.55) 28.40	
28.40-28.70	63	C		100	87	60		Air+Mist (Brown)			. . . 27.98-28.02m: Clayey gravelly sand. . . . 28.10-28.20m: Interspersed with lense (<2mm) of reddish brown clay. . . . 28.25m: Verging towards a sandy silt. Extremely weak reddish brown MUDSTONE with occasional pockets (up to 20mm) of greenish grey siltstone. GRADE II. (MERCIA MUDSTONE GROUP)		(1.15)	
29.30-30.80 (0:05)											. . . 28.80-28.83m: Sandy clay. . . . 28.83-28.83m: Sandy clay. . . . 29.08-29.19m: Weak thickly laminated siltstone.	50.74	29.55	
											Very weak greenish grey SILTSTONE with frequent pockets (up to 60mm) and laminae (up to 10mm) of reddish brown clay. (MERCIA MUDSTONE GROUP)	50.34	(0.40) 29.95	
30.10-30.40	64	C		97	90	83		Air+Mist (Brown)			Extremely weak reddish brown MUDSTONE with occasional pockets (up to 20mm) of greenish grey siltstone. GRADE II. (MERCIA MUDSTONE GROUP) . . . 30.40-30.45m: Sandy clay.	49.49	(0.85) 30.80	
											Borehole terminated at 30.80m depth.			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	**Dando 3000 + Comacchio GEO 601**	**Jonny Hutt + Sam Carter**	**DNeylon + RStan**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH06**
Contract Ref:	Start: **28.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **10.10.22**	**80.29**	**E:446038.9 N:325052.6**	**8** of **12**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 601	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	DNeylon + RStan	Checked By:	

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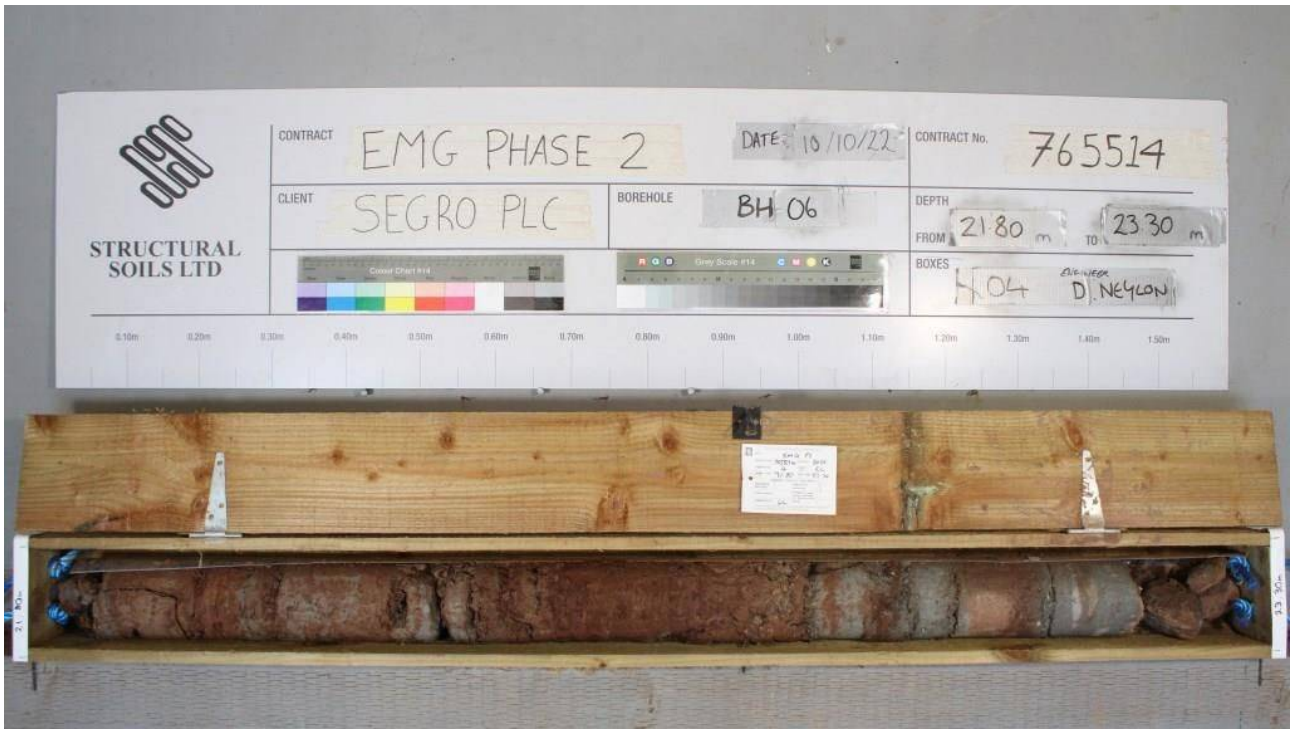
STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH06**
Contract Ref:	Start: **28.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **10.10.22**	**80.29**	**E:446038.9 N:325052.6**	**9** of **12**



Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 601	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	DNeylon + RStan	Checked By:	

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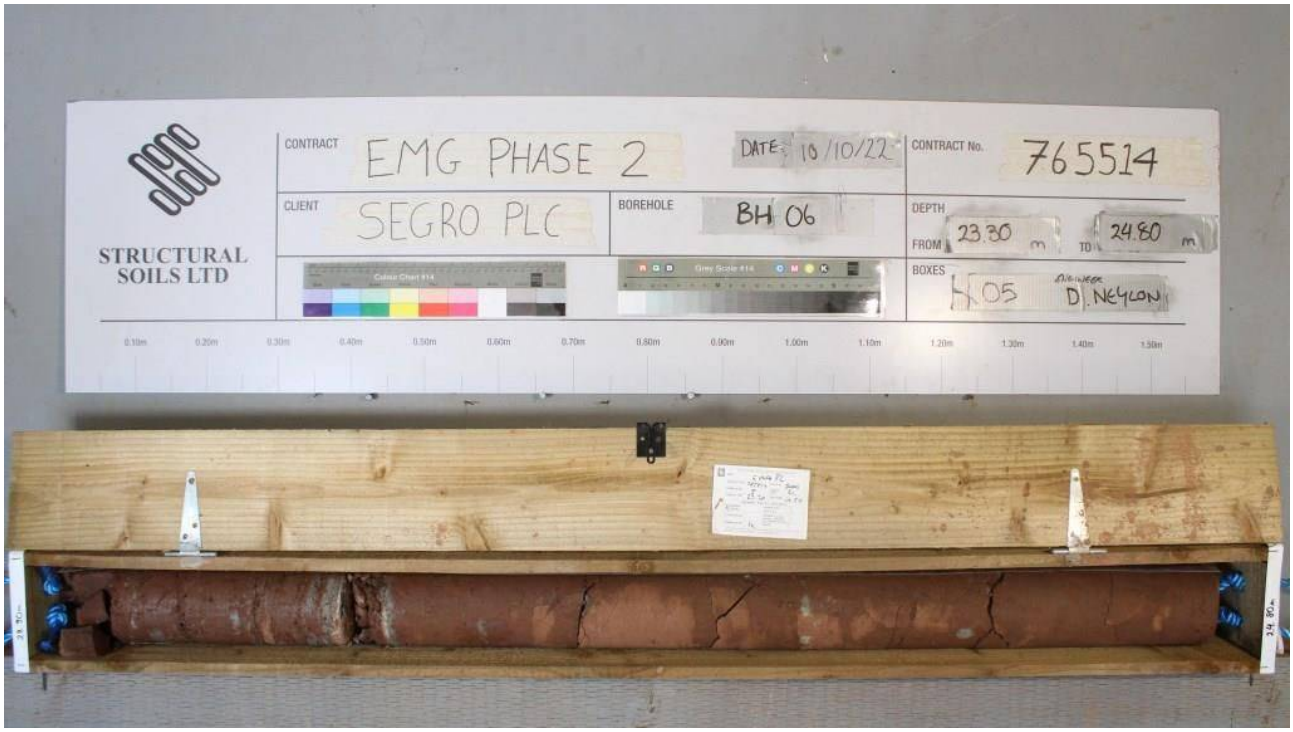
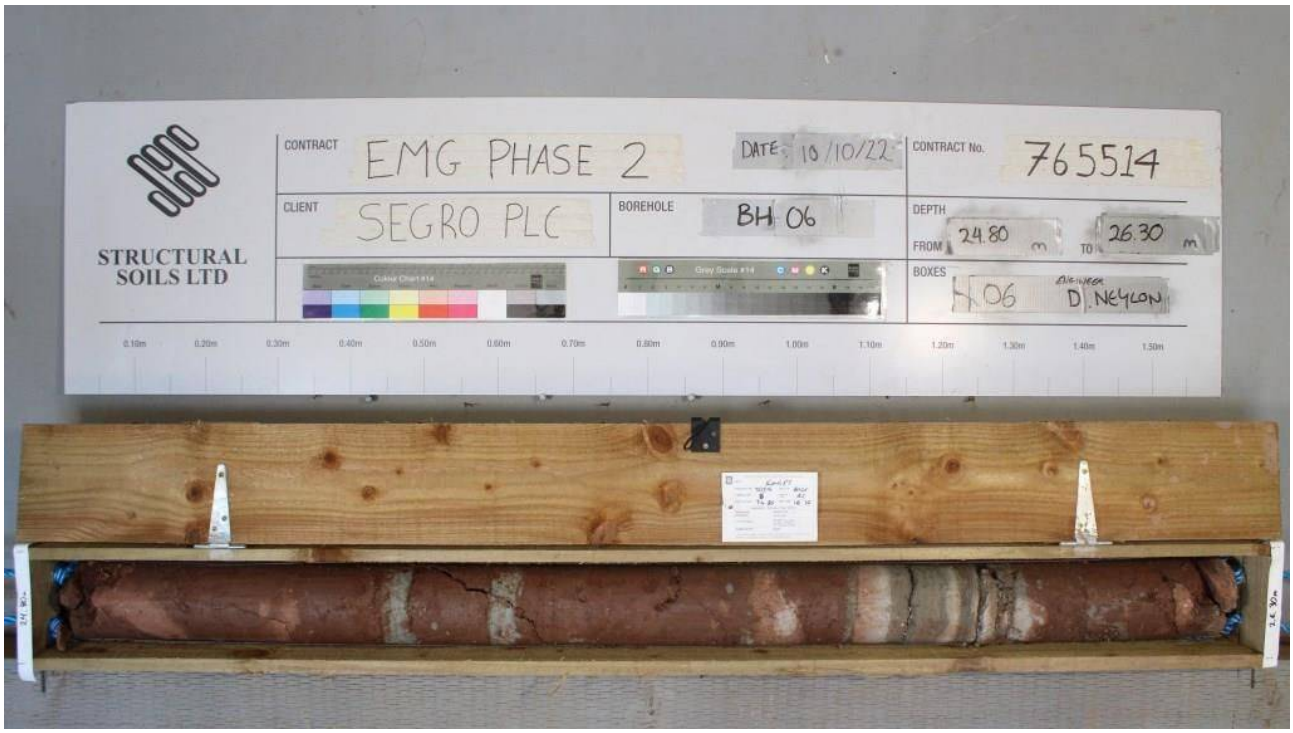
STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH06**
Contract Ref:	Start: **28.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **10.10.22**	**80.29**	**E:446038.9 N:325052.6**	**10** of **12**





Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 601	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	DNeylon + RStan	Checked By:	AGS

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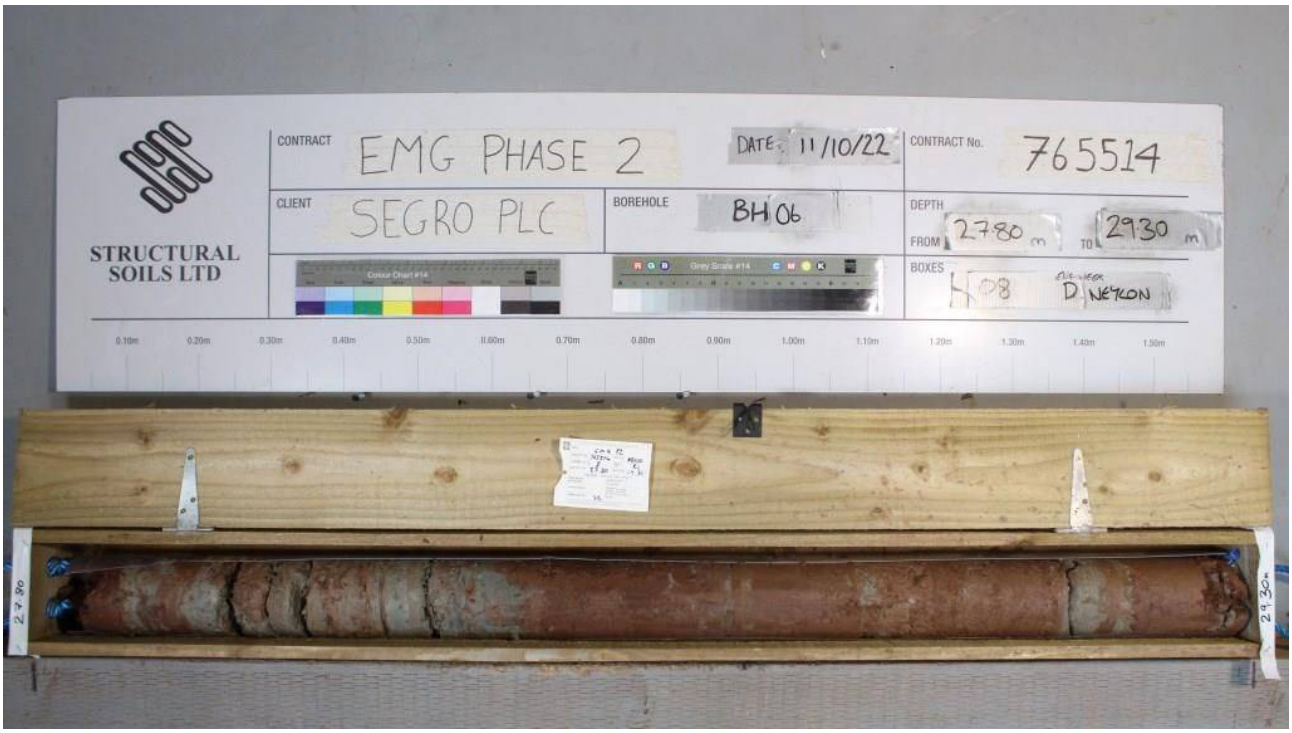
STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH06**
Contract Ref:	Start: **28.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **10.10.22**	**80.29**	**E:446038.9 N:325052.6**	**11** of **12**



Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 601	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	DNeylon + RStan	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH06**
Contract Ref:	Start: **28.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **10.10.22**	**80.29**	**E:446038.9 N:325052.6**	**12** of **12**

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Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 601	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	DNeylon + RStan	Checked By:	AGS

STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH07**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**21.09.22** End: **26.09.22**	**87.23**	**E:445957.0 N:325334.7**	**1** of **11**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
0.00	1	D								TOPSOIL	87.13	0.10	
0.00-0.10	3	B								Very stiff orangish brown slightly gravelly sandy SILT. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of mixed lithologies including quartzite, metamorphic rock, sandstone, and rare mudstone.		(0.30)	
0.10	4	D									86.83	0.40	
0.10-0.40	6	B											
0.20	5	ES											
0.40	7	D											
0.40-1.00	9	B											
0.50	2	ES											
0.50	8	ES								Stiff to very stiff reddish brown slightly gravelly sandy silty CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of mudstone. Occasional pockets of grey fine grained siltstone. (MERCIA MUDSTONE GROUP)			
1.00	10	ES											
1.20	11	D											
1.20-1.65		SPT	N=36										
1.20-1.65	12	DSPT											
1.20-1.70	13	B											
2.00-2.45		SPT	N=49										
2.00-2.45	15	DSPT											
2.00-2.50	16	B											
2.50	17	D										(4.45)	
3.00-3.45		SPT	N=50										
3.00-3.45	18	DSPT											
3.00-3.50	19	B											
3.50	20	D											
4.00-4.31		SPT	11,14/19,24,7 for 28mm				NI						
4.00-4.45	21	DSPT					NI						
4.00-4.50	22	B					200						

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
21/09/22	17:00	4.00	3.00	200	Dry
22/09/22	08:00	4.00	4.00	200	Dry
22/09/22	17:00	15.50	4.00	150	-
23/09/22	08:00	15.50	4.00	150	5.50
23/09/22	16:00	20.00	4.00	150	-
26/09/22	08:00	20.00	4.00	150	6.50
26/09/22	10:00	20.00	4.00	150	6.50

Chiselling / Slow Progress

From	To	Duration (hh:mm)
4.30	4.50	00:30

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Cable percussion drilled using 200mm diameter tools and casing.
4. Rotary cored from 4.50m using SWF core barrel and 150mm diameter casing and air mist flush.
5. No groundwater strikes in the cable percussion section. Unable to determine ground water

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Chris Jobson + Martin Speedie	JAlton + RStan	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH07**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**21.09.22** End: **26.09.22**	**87.23**	**E:445957.0 N:325334.7**	**2** of **11**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
4.50-5.50 4.50-4.67		SPT	19,6/42,8 for 5mm										
4.50-4.95	24	DSPT									82.38	4.85	
				45	29	20	NI NI 200			Extremely weak locally thickly laminated reddish brown MUDSTONE. Occasional pockets and laminae of very weak to weak fine grained siltstone. GRADE IVb. Bedding fractures: Closely to widely spaced, planar, rough, locally with clay infill. (MERCIA MUDSTONE GROUP) . . . 4.95-5.21m: NI, recovered as gravel. . . . 5.14-5.50m: frequent grey silstsone. . . . 5.29m: clay infill (<3mm). . . . 5.50-5.65m: AZCL . . . 5.65-6.17m: NI, recovered as gravel.			
5.30-5.50	25	C											
5.50-7.00												(2.45)	
				90	37	19	NI NI 580			. . . 6.17-6.36m: thinly and thickly laminated. . . . 6.42-6.54m: NI, recovered as gravel of mudstone and siltstone. . . . 6.72-6.86m: thinly and thickly interlaminated with weak grey siltstone.			
6.86-7.00	26	C											
7.00-8.50										. . . 7.00-7.12m: grey siltstone			
											79.93	7.30	
7.30-7.46	27	C								Extremely weak to weak reddish brown MUDSTONE. Fractures: Very closely to closely spaced, randomly orientated, planar, rarely undulating, smooth and rough, with abundant black staining. (MERCIA MUDSTONE GROUP)			
				100	43	36	NI NI 30						
8.50-12.00												(2.78)	
				43	0	0	NI NI 20			. . . 8.88-8.99m: grey siltstone.			

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress

From	To	Duration (hh:mm)

General Remarks

strikes due to flush method.
6. Borehole backfilled with bentonite on completion.
7. Borehole drilled using 150mm tools and casing.
8. Groundwater struck at 11.00m. Rose to 8.90m after 20 minutes.
9. Borehole backfilled with bentonite upon completion.
10. SPT hammer JB14-2022 (E_r = 63.00%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Chris Jobson + Martin Speedie	JAlton + RStan	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH07**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **26.09.22**	**87.23**	**E:445957.0 N:325334.7**	**3** of **11**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
9.00-9.25	28	C					NI NI 20			Extremely weak to weak reddish brown MUDSTONE. Fractures: Very closely to closely spaced, randomly orientated, planar, rarely undulating, smooth and rough, with abundant black staining. (MERCIA MUDSTONE GROUP) *(stratum copied from 7.30m from previous* sheet)			
10.00-11.00										. . . 10.00-10.17m: NI.	77.15	10.08	
10.16-10.44	29	C		43 100	0 84	0 73	NI NI 250			Extremely weak thinly and thickly laminated reddish brown MUDSTONE. With widely spaced laminae and pockets of grey siltstone. Occasional grey reduction spots (up to 5mm). GRADE III. Bedding fractures: Widely and very widely spaced, 0-10°, planar, rough, clean. (MERCIA MUDSTONE GROUP) . . . 10.44-10.45m: grey siltstone.			
11.00-12.50									1	. . . 11.00-11.03m: grey siltstone.			
11.10-11.40	30	C		100	27	21	NI NI 70			. . . 11.00-11.10m: NI. . . . 11.74-11.75m: grey siltstone. . . . 11.94-11.99m, thinkly interlaminated with grey siltstone.		(2.57)	
12.50-14.00											74.58	12.65	
12.50-12.65	31	C		87	10	10	NI 10 80			Extremely weak locally thinly laminated reddish brown MUDSTONE. Occasional pockets of grey siltstone. GRADE III. (MERCIA MUDSTONE GROUP)			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Chris Jobson + Martin Speedie	JAlton + RStan	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH07**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **26.09.22**	**87.23**	**E:445957.0 N:325334.7**	**4** of **11**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
				87	10	10	NI 10 80			Extremely weak locally thinly laminated reddish brown MUDSTONE. Occasional pockets of grey siltstone. GRADE III. (MERCIA MUDSTONE GROUP) *(stratum copied from 12.65m from* previous sheet) . . . 13.80-14.00m, AZCL.			
14.65-15.00	32	C					NI NI 45						
15.00-17.00										. . . 15.32-15.50m, thickly interlaminated with grey siltstone.		(5.85)	
				75	14	14				. . . 16.03-16.20m, thickly interlaminated with grey siltstone.			
16.25-16.50	33	C					NI NI 40						
										. . . 16.77-16.89m, thickly interlaminated with grey siltstone.			
17.00-18.50				100	3	0	NI NI 150			. . . 17.78-17.99m, thickly laminated.			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Chris Jobson + Martin Speedie	JAlton + RStan	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH07**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**21.09.22** End: **26.09.22**	**87.23**	**E:445957.0 N:325334.7**	**5** of **11**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
				100	3	0	NI NI 150			Extremely weak locally thinly laminated reddish brown MUDSTONE. Occasional pockets of grey siltstone. GRADE III. (MERCIA MUDSTONE GROUP) *(stratum copied from 12.65m from* previous sheet)	68.73	18.50	
18.50-20.00										. . . 18.27-18.37m, thickly interlaminated with grey siltstone.			
				100	70	64	NI NI			Extremely weak to weak locally thinly laminated reddish brown MUDSTONE. Occasional thin laminae of grey siltstone. GRADE II. (MERCIA MUDSTONE GROUP) . . . 19.18-19.30m: thinly laminated grey siltstone.	67.68	(1.05) 19.55	
										Extremely weak reddish brown MUDSTONE, recovered as sandy silty angular fine to coarse gravel. GRADE III. Fractures: Randomly orientated, planar, rough, non-intact. (MERCIA MUDSTONE GROUP)	67.23	(0.45) 20.00	
										Borehole terminated at 20.00m depth.			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Chris Jobson + Martin Speedie	JAlton + RStan	

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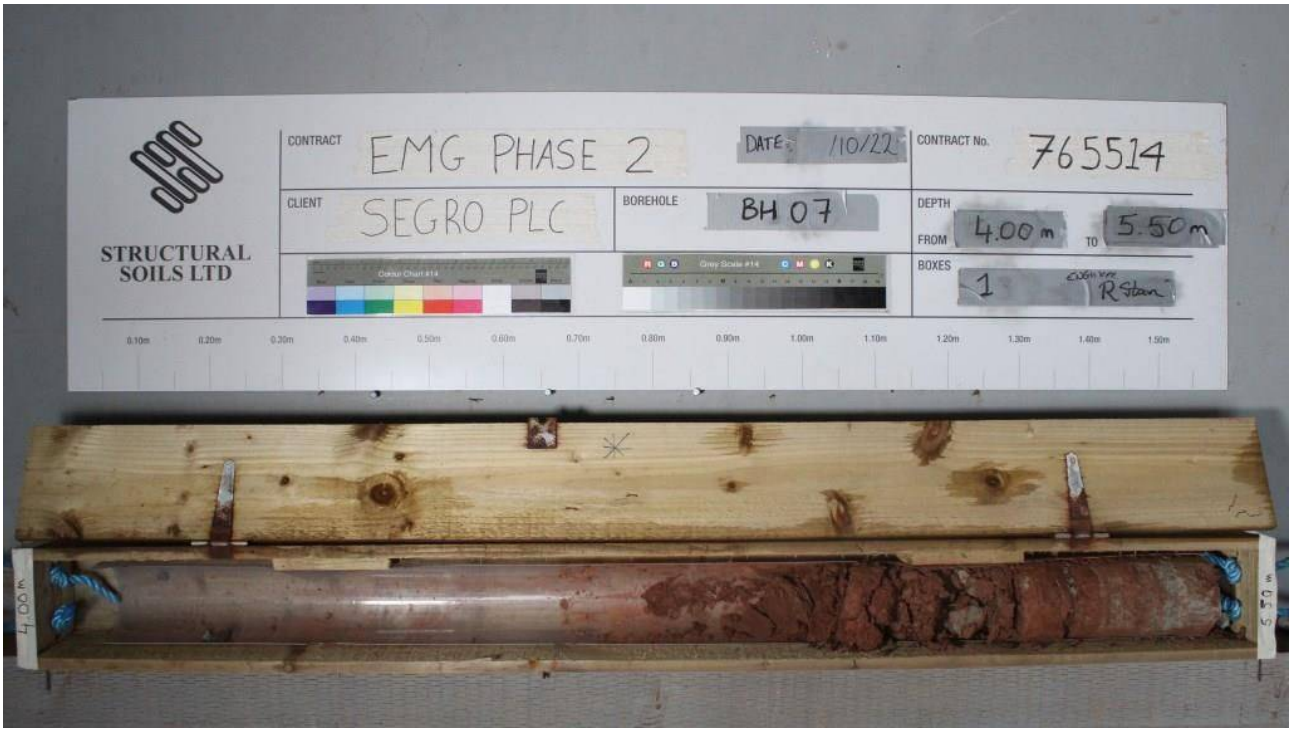
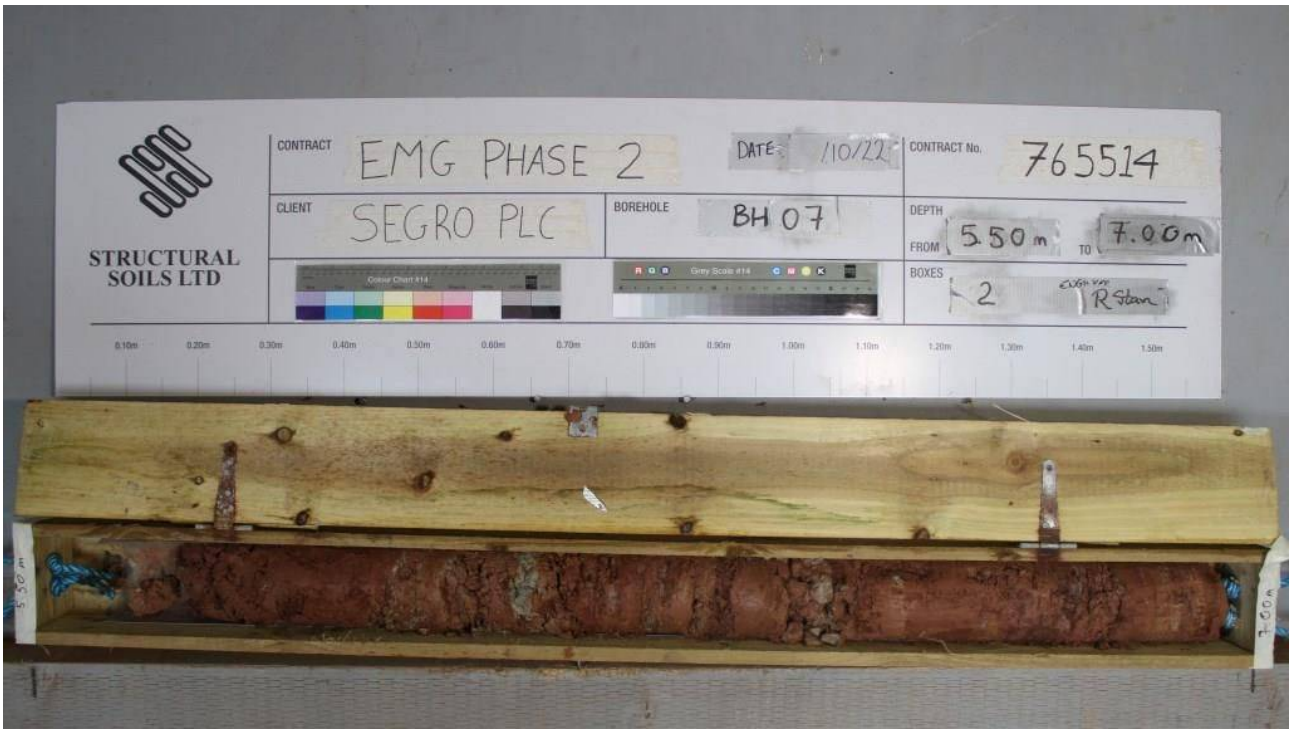
STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH07**
Contract Ref:	Start: **21.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **26.09.22**	**87.23**	**E:445957.0 N:325334.7**	**6** of **11**





Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Chris Jobson + Martin Speedie	Logged By:	JAlton + RStan	Checked By:	AGS

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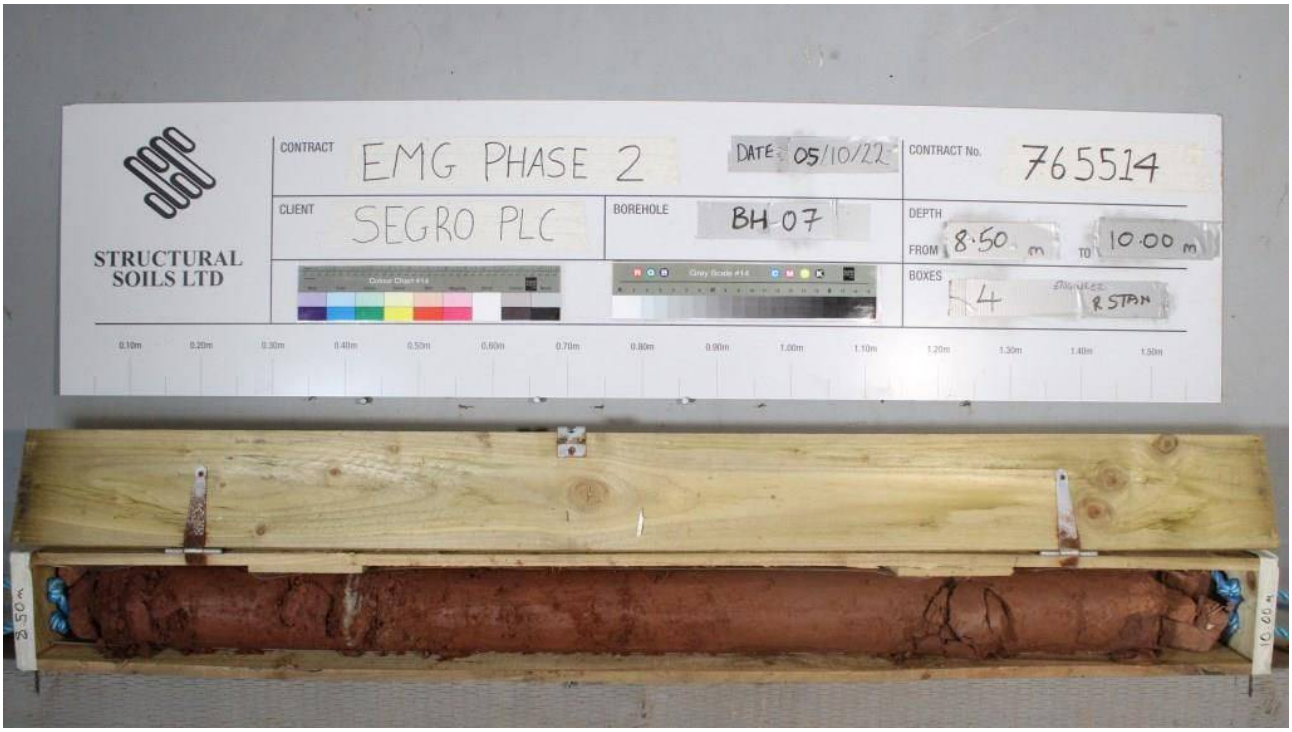
STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH07**
Contract Ref:	Start: **21.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **26.09.22**	**87.23**	**E:445957.0 N:325334.7**	**7** of **11**



Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Chris Jobson + Martin Speedie	Logged By:	JAlton + RStan	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH07**
Contract Ref:	Start: **21.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **26.09.22**	**87.23**	**E:445957.0 N:325334.7**	**8** of **11**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Chris Jobson + Martin Speedie	Logged By:	JAlton + RStan	Checked By:	

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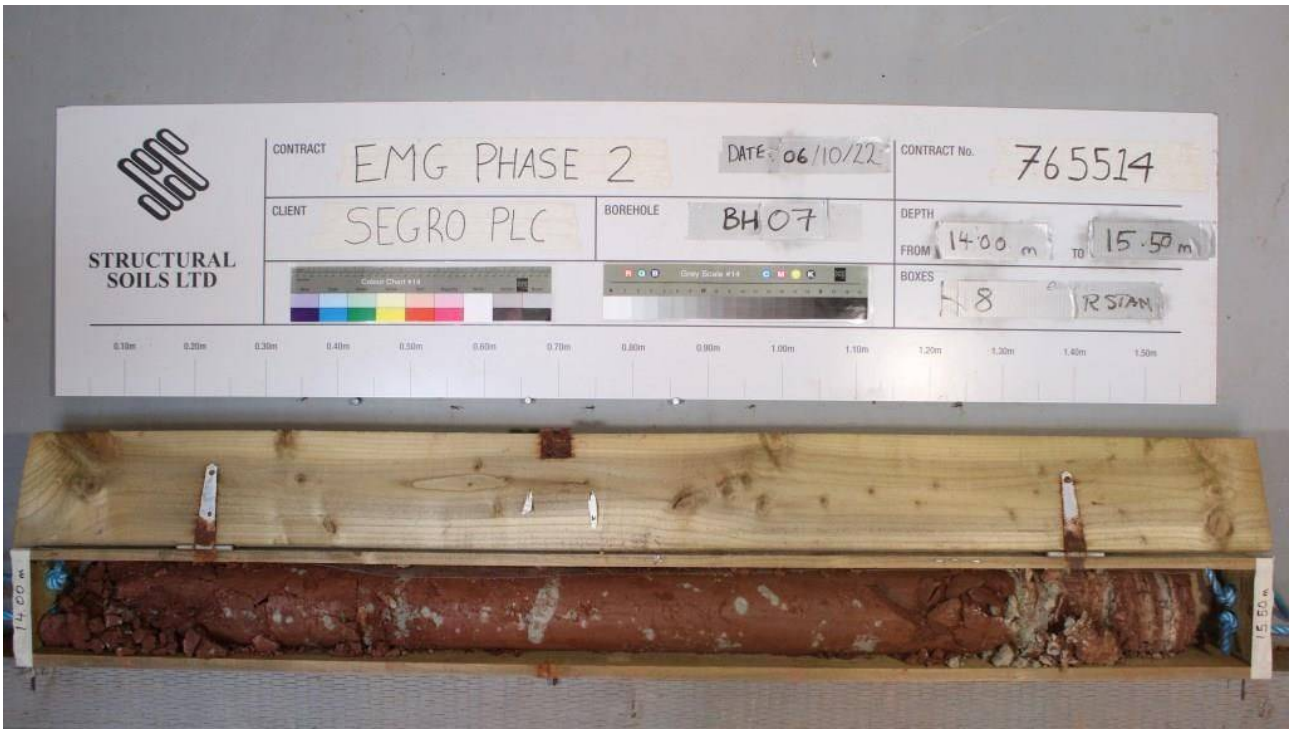
STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH07**
Contract Ref:	Start: **21.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **26.09.22**	**87.23**	**E:445957.0 N:325334.7**	**9** of **11**



Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Chris Jobson + Martin Speedie	Logged By:	JAlton + RStan	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH07**
Contract Ref:	Start: **21.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **26.09.22**	**87.23**	**E:445957.0 N:325334.7**	**10** of **11**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Chris Jobson + Martin Speedie	Logged By:	JAlton + RStan	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH07**
Contract Ref:	Start: **21.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **26.09.22**	**87.23**	**E:445957.0 N:325334.7**	**11** of **11**

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Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Chris Jobson + Martin Speedie	Logged By:	JAlton + RStan	Checked By:	AGS

STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH08**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**22.09.22** End: **28.09.22**	**88.31**	**E:445920.7 N:325248.3**	**1** of **16**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
0.00	1	D											
0.00-0.10	3	B								TOPSOIL			
0.05	2	ES	1xT+1xJ+1xV										
0.10	4	D									88.01	0.30	
0.10-0.30	6	B								Stiff dark reddish brown slightly gravelly sandy SILT with low cobble content of subrounded quartzite. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of sandstone, siltstone, and quartzite.			
0.20	5	ES	1xT+1xJ+1xV										
0.30	7	D										(0.60)	
0.30-0.90	9	B											
0.50	8	ES	1xT+1xJ+1xV								87.41	0.90	
0.90	10	D								Stiff reddish brown mottled grey slightly gravelly sandy silty CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of sandstone and quartzite.			
0.90-1.20	12	B											
1.00	11	ES	1xT+1xJ+1xV										
1.00	5	D										(0.60)	
1.20-1.65		SPT	N=31										
1.20-1.65	13	DSPT											
1.20-1.70	14	B									86.81	1.50	
1.70	15	D								Stiff greenish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of sandstone, siltstone, and quartzite.			
1.80	16	ES	1xT+1xJ+1xV										
2.00-2.45	17	UT											
2.50	18	D											
2.50-3.00	19	B											
												(3.00)	
3.00-3.45		SPT	N=35										
3.00-3.45	20	DSPT											
3.00-3.50	21	B											
3.50	16	D											
4.00-4.45	19	B											
											83.81	4.50	

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
22/09/22	17:00	7.00	3.00	200	-
23/09/22	08:00	7.00	3.00	200	-
23/09/22	10:30	8.00	3.00	200	4.25
27/09/22	08:00	17.00	8.00	150	8.40
27/09/22	17:00	30.50	17.00	150	-
28/09/22	08:00	30.50	17.00	150	12.70
28/09/22	10:00	30.50	17.00	150	12.70

Chiselling / Slow Progress

From	To	Duration (hh:mm)
7.80	8.00	00:30

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Cable percussion drilled using 200mm diameter tools and casing.
4. Rotary cored from 4.50m using SWF core barrel and 150mm diameter casing and air mist flush.
5. Groundwater struck at 8.00m depth, rising to 4.55m depth after 20 minutes.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Chris Jobson + Martin Speedie	RSenior + RStan	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH08**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**22.09.22** End: **28.09.22**	**88.31**	**E:445920.7 N:325248.3**	**2** of **16**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
4.50	24	D								Stiff to very stiff reddish brown slightly gravelly sandy silty CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of mudstone. Occasional pockets (up to 300mm) of grey siltstone. GRADE IVb. (MERCIA MUDSTONE GROUP)			
4.50-5.00	26	B											
4.60	25	ES	1xT+1xJ+1xV										
5.00-5.45		SPT	N=35										
5.00-5.45	27	DSPT											
5.00-5.50	28	B											
5.50	22	D											
6.00-6.45		SPT	N=50										
6.00-6.45	30	DSPT											
6.00-6.50	31	B										(3.50)	
6.50	32	D											
7.00-7.34		SPT	8,13/17,19,14 for 40mm										
7.00-7.45	33	DSPT											
7.00-7.50	34	B											
7.50	35	D									80.31	8.00	
8.00-9.50										Strong light greyish green SILTSTONE. Drilling disturbed, recovered as subangular to subrounded fine to coarse gravel. GRADE II. (MERCIA MUDSTONE GROUP)			
8.00-8.30		SPT	11,14/18,23,9 for 14mm								80.16	8.15	
8.00-8.45	36	DSPT									79.99	8.32	
8.60	37	D		97	7	7	NI 20 100			Stiff thinly and thickly laminated reddish brown silty CLAY with occasional subangular fine to medium gravel sized mudstone lithorelicts. GRADE IVa. (MERCIA MUDSTONE GROUP) 8.45-8.95m: Discontinuities are extremely closely to very closely spaced			

Description on next sheet

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	6. Groundwater struck at 19.00m depth. Fast inflow. 7. Borehole backfilled with bentonite on completion.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Chris Jobson + Martin Speedie	RSenior + RStan	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH08**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **28.09.22**	**88.31**	**E:445920.7 N:325248.3**	**3** of **16**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
				97	7	7				randomly orientated undulating smooth stained black. . . . 8.97-9.07m: Very weak light greenish grey siltstone with 85° to 90° undulating rough discontinuity with occasional black specks.		(2.24)	
9.50-11.00				70	10	0				Extremely weak very thinly to thinly bedded reddish brown MUDSTONE. Bedding fractures: Closely spaced, 0° to 15°, undulating, smooth, black stained, locally with a little clay smear on surfaces. GRADE II. (MERCIA MUDSTONE GROUP) *(stratum copied from 8.32m from previous sheet)* . . . 9.07-9.35m: 75° to 90° undulating smooth black stained discontinuity. . . . 9.40-10.30m: Discontinuities are very closely spaced randomly orientated undulating smooth, locally rough, black stained.	77.75	10.56	
10.70	38	D								. . . 9.50-9.95m: AZCL. . . . 10.29m: laminae (<2mm) of extremely weak light greenish grey siltstone.		(0.74)	
11.00-12.50							NI 20 100			Stiff thickly laminated to very thinly bedded reddish brown silty CLAY with occasional subangular fine gravel sized mudstone lithorelicts. GRADE III. (MERCIA MUDSTONE GROUP) . . . 10.88-10.89m: Extremely weak light greenish grey siltstone with occasional black specks. . . . 11.00-11.30m: Drilling disturbed. NI, recovered as slightly gravelly clay.	77.01	11.30	
11.50	39	D		77	27	27				Extremely weak to very weak very thinly to thinly bedded reddish brown MUDSTONE. GRADE II. Bedding fractures: Very closely to closely spaced, 0° to 5°, undulating, smooth and rough, clean, locally stained black. (MERCIA MUDSTONE GROUP) . . . 11.34-11.38m: 40° undulating smooth discontinuity with <1mm clay on surfaces. . . . 11.38-11.50m: 80° undulating rough clean discontinuity. . . . 11.48-11.52m: Occasional fine to medium gravel size light greenish grey siltstone lithorelicts and occasional reduction spots. . . . 11.64-11.66m: Very weak light grey sandy siltstone. . . . 11.73-11.74m: Extremely weak light greenish grey siltstone. . . . 12.02-12.12m: Thickly laminated. . . . 12.27-12.38m: 50° to 60° undulating smooth discontinuity with 1mm soft clay		(3.90)	
12.50-14.00				60	0	0							

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Chris Jobson + Martin Speedie	RSenior + RStan	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH08**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**22.09.22** End: **28.09.22**	**88.31**	**E:445920.7 N:325248.3**	**4** of **16**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
13.60	40	D		60	0	0				infill on surfaces. . . . 12.40-12.50m: Stiff thickly laminated to very thickly bedded silty clay. . . . 12.50-13.10m: AZCL. . . . 13.10-13.15m: Very weak to weak light greenish grey siltstone. . . . 13.15-13.70m: Discontinuities are extremely closely to very closely spaced randomly orientated undulating smooth and rough predominantly stained black with frequent black specks.			
14.00-15.00										Extremely weak to very weak very thinly to thinly bedded reddish brown MUDSTONE. GRADE II. Bedding fractures: Very closely to closely spaced, 0° to 5°, undulating, smooth and rough, clean, locally stained black. (MERCIA MUDSTONE GROUP) *(stratum copied from 11.30m from* previous sheet) . . . 13.75-14.00m: Drilling disturbed, recovered as clayey angular to subangular fine to medium gravel of mudstone.	73.11	15.20	
14.40	41	D		145	48	30							
15.33-15.41	42	C								. . . 14.00-14.25m: Drilling disturbed, recovered as clayey angular to subangular fine to medium gravel od mudstone.	72.81	(0.30) 15.50	
15.50-17.00							NI 20 100			. . . 14.10-14.15m: Light greenish grey siltstone band recovered as clayey gravel. . . . 14.40-14.80m: Discontinuities are very closely spaced randomly orientated undulating rough and smooth locally black stained and locally with a little clay smear on surfaces. Occasional reduction spots <20mm. . . . 14.65-15.27m: 80° to 90° undulating smooth and rough lack stained discontinuity. . . . 15.08-15.12m: 20° Undulating smooth black stained discontinuity.			
16.00	43	D		97	9	0				Very weak to weak very thinly to thinly bedded light greenish grey SILTSTONE. GRADE II. Bedding fractures: Very closely to closely spaced, 0° to 10°, undulating, smooth, with 1-5mm soft clay on surfaces. (MERCIA MUDSTONE GROUP) . . . 15.20-15.23m: Extremely weak light greenish grey siltstone.			
17.00-18.50										*Description on next sheet* . . . 16.02-16.17m: 85° to 90° undulating smooth clean discontinuity. . . . 16.32-16.62m: 85° to 90° undulating smooth black stained discontinuity. . . . 16.67-16.74m: 80° to 85° undulating smooth black stained discontinuity. . . . 16.74-16.80m: Very weak to weak thickly laminated light greenish grey siltstone.			
				97	63	37							

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Chris Jobson + Martin Speedie	RSenior + RStan	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH08**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**22.09.22** End: **28.09.22**	**88.31**	**E:445920.7 N:325248.3**	**5** of **16**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
17.93-18.03	44	C		97	63	37				. . . 16.80-17.00m: Recovered as stiff thinly to thickly laminated reddish brown clay, possibly drilling disturbed. . . . 17.24-17.45m: 85° to 90° undulating smooth black stained discontinuity locally with a little clay smear on surfaces. . . . 17.55-17.60m: Extremely weak light greenish grey siltstone. Extremely weak to very weak thickly laminated to thinly bedded reddish brown MUDSTONE. GRADE II to III. Bedding fractures: Very closely to closely spaced, locally extremely closely spaced, undulating, smooth and rough, clean, with occasional clay smear on surfaces. (MERCIA MUDSTONE GROUP)			
18.50-20.00				97	45	27				. . . 15.50-15.83m: Discontinuities are extremely closely to very closely spaced randomly orientated undulating smooth and rough clean with occasional black specks on surfaces.*(stratum copied from* 15.50m from previous sheet) . . . 18.14-18.28m: 80° to 90° undulating smooth lack stained discontinuity.		(6.40)	
20.00-21.50				97	54	39	NI 20 100			. . . 18.50-18.80m: Drilling disturbed, recovered as slightly clayey angular to subangular fine to coarse mudstone gravel. . . . 18.80-19.00m: 85° undulating smooth black stained discontinuity. . . . 19.10-19.23m: 85° undulating clean discontinuity. . . . 19.43-19.75m: 85° to 90° undulating, locally stepped, smooth black stained discontinuity. . . . 19.68-19.71m: Very stiff thinly laminated reddish brown clay. . . . 19.80-19.84m: Very stiff thinly laminated reddish brown clay.			
21.15-21.35	45	C								. . . 20.20-20.48m: Very weak to weak very thinly to thickly bedded light greenish grey siltstone. Bedding fractures are very closely to closely spaced undulating rough locally smooth, with occasional black specks on surfaces.			
21.50-23.00				100	65	50	30 120 340			. . . 20.22-20.43m: 85° to 90° undulating rough discontinuity with occasional black specks on surfaces. . . . 20.70-20.76m: Extremely closely to very closely spaced randomly orientated clean locally lightly black stained discontinuities. . . . 20.74-20.90m: 65° undulating rough black stained discontinuity. . . . 20.90-21.16m: 2 no parallel closely spaced, locally black stained discontinuities.	66.41	21.90	
												(1.10)	

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Chris Jobson + Martin Speedie	RSenior + RStan	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH08**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**22.09.22** End: **28.09.22**	**88.31**	**E:445920.7 N:325248.3**	**6** of **16**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
22.70-23.00	46	C		100	65	50	30 120 340			. . . 21.28-21.42m: Band of extremely weak light greenish grey siltstone. . . . 21.50-21.90m: Drilling disturbed, recovered as clayey angular to subangular fine to coarse gravel of mudstone.	65.31	23.00	
23.00-24.50 23.18-23.52	47	C		100	74	60	NI NI 130			Very weak to weak very thinly to thinly bedded light greenish grey SILTSTONE with occasional very thin to thin beds of reddish brown mudstone. GRADE II. Bedding fractures: Very closely to closely spaced, 0° to 5°, undulating, rough, with a little clay smear on surfaces. (MERCIA MUDSTONE GROUP) *(stratum copied from 21.90m from previous sheet)*	64.76	(0.55) 23.55	
24.50-26.00				33	0	0				Very strong thickly to medium bedded light grey SILTSTONE. GRADE I. Bedding fractures: closely to medium spaced, 0°, undulating, rough, with occasional black specks and staining. (MERCIA MUDSTONE GROUP) Extremely weak to very weak thickly laminated to thinly bedded reddish brown MUDSTONE with occasional thick laminae and very thin beds of siltstone. GRADE II to III. Bedding fractures: Extremely closely to closely spaced, 0° to 5°, undulating, smooth and rough, clean, locally black stained. (MERCIA MUDSTONE GROUP) . . . 23.65-23.78m: 80° to 90° undulating rough clean discontinuity. AZCL. (MERCIA MUDSTONE GROUP)	63.81 62.81	(0.95) 24.50 (1.00) 25.50	AZCL
25.90 26.00-27.50 26.00-26.13	48	D SPT	25/50 for 60mm				NI NI 20			Stiff thinly to thickly laminated reddish brown mottled light greenish grey CLAY. Occasional thick laminae and very thin beds of silt and extremely weak siltstone. Occasional fine to medium gravel sized mudstone lithorelicts. GRADE III. (MERCIA MUDSTONE GROUP) . . . 26.13-26.23m: 40° undulating rough clean discontinuity.	62.01	(0.80) 26.30	
				100	20	0	NI 60 200			Extremely weak to very weak very thinly to thickly bedded reddish brown mottled grey silty MUDSTONE. GRADE II. Bedding fractures: Very closely to closely spaced, 0° to 15°, undulating, smooth and rough, clean, locally with black specks. (MERCIA MUDSTONE GROUP) *Description on next sheet*			

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Chris Jobson + Martin Speedie	RSenior + RStan	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH08**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **28.09.22**	**88.31**	**E:445920.7 N:325248.3**	**7** of **16**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
27.00	49	D		100	20	0				. . . 26.40-26.55m: 60° undulating rough black stained discontinuity . . . . 26.60-26.67m: 70° to 20° curved undulating rough clean discontinuity . . . . 26.67-26.81m: 45° undulating rough clean discontinuity . . . . 26.80-26.95m: Randomly orientated extremely closely spaced undulating clean discontinuities. Extremely weak to very weak very thinly to thickly bedded reddish brown mottled grey silty MUDSTONE. GRADE II. Bedding fractures: Very closely to closely spaced, 0° to 15°, undulating, smooth and rough, clean, locally with black specks. (MERCIA MUDSTONE GROUP) *(stratum copied from 26.30m from* previous sheet) . . . 27.04-27.19m: 50° undulating rough clean discontinuity. . . . 27.24-27.34m: 40° undulating smooth clean discontinuity, . . . 27.35-27.6m: Discontinuities are extremely closely to very closely spaced randomly orientated undulating smooth and rough clean. . . . 27.69-28.68m: With closely to medium spaced thin and thick laminae of Extremely weak to very weak light greenish grey siltstone. . . . 28.68-28.90m: 50° to 80° undulating rough lightly black stained discontinuity, . . . 29.00-29.17m: Band of stiff reddish brown silty clay. . . . 29.25-29.30m: Occasional 5-10mm diameter light greenish grey siltstone inclusions. . . . 29.36-29.40m: 50° undulating rough orangish brown stained discontinuity. . . . 29.40-29.41m: Non penetrative orangish brown stained on bedding fracture. . . . 29.86-29.91m: 15° to 20° undulating rough orangish brown stained discontinuity. . . . 30.44-30.50m: 40° undulating smooth discontinuity with 1-3mm soft clay on surfaces.			
27.50-29.00													
27.95-28.08	50	C		90	37	25	NI 60 200						
29.00-30.50													
				90	67	42						(7.05)	
30.10-30.35	51	C											

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	**Dando 3000 + Comacchio GEO 205**	**Chris Jobson + Martin Speedie**	**RSenior + RStan**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH08**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **28.09.22**	**88.31**	**E:445920.7 N:325248.3**	**8** of **16**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
										Extremely weak to very weak very thinly to thickly bedded reddish brown mottled grey silty MUDSTONE. GRADE II. Bedding fractures: Very closely to closely spaced, 0° to 15°, undulating, smooth and rough, clean, locally with black specks. (MERCIA MUDSTONE GROUP) *(stratum copied from 26.30m from* previous sheet)	54.96	33.35	
										Borehole terminated at 30.50m depth.			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Chris Jobson + Martin Speedie	RSenior + RStan	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH08**
Contract Ref:	Start: **22.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **28.09.22**	**88.31**	**E:445920.7 N:325248.3**	**9** of **16**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Chris Jobson + Martin Speedie	Logged By:	RSenior + RStan	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH08**
Contract Ref:	Start: **22.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **28.09.22**	**88.31**	**E:445920.7 N:325248.3**	**10** of **16**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Chris Jobson + Martin Speedie	Logged By:	RSenior + RStan	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH08**
Contract Ref:	Start: **22.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **28.09.22**	**88.31**	**E:445920.7 N:325248.3**	**11** of **16**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Chris Jobson + Martin Speedie	Logged By:	RSenior + RStan	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH08**
Contract Ref:	Start: **22.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **28.09.22**	**88.31**	**E:445920.7 N:325248.3**	**12** of **16**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Chris Jobson + Martin Speedie	Logged By:	RSenior + RStan	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH08**
Contract Ref:	Start: **22.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **28.09.22**	**88.31**	**E:445920.7 N:325248.3**	**13** of **16**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Chris Jobson + Martin Speedie	Logged By:	RSenior + RStan	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH08**
Contract Ref:	Start: **22.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **28.09.22**	**88.31**	**E:445920.7 N:325248.3**	**14** of **16**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Chris Jobson + Martin Speedie	Logged By:	RSenior + RStan	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH08**
Contract Ref:	Start: **22.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **28.09.22**	**88.31**	**E:445920.7 N:325248.3**	**15** of **16**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Chris Jobson + Martin Speedie	Logged By:	RSenior + RStan	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH08**
Contract Ref:	Start: **22.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **28.09.22**	**88.31**	**E:445920.7 N:325248.3**	**16** of **16**

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log COMPOSITE LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Chris Jobson + Martin Speedie	Logged By:	RSenior + RStan	Checked By:	AGS

STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH09**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**16.09.22** End: **26.09.22**	**74.23**	**E:445839.0 N:324955.9**	**1** of **14**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
0.00-0.00	1	D								TOPSOIL			
0.00-0.20	3	B										(0.40)	
0.10-0.10	2	ES	1xT+1xJ+1xV										
0.20-0.20	4	D											
0.20-0.40	6	B									73.83	0.40	
0.30-0.30	5	ES	1xT+1xJ+1xV							Stiff thinly laminated dark and light brown mottled orangish brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular fine to coarse of mudstone and metamorphic rock.			
0.40-0.40	7	D											
0.40-0.80	9	B										(0.80)	
0.50-0.50	8	ES	1xT+1xJ+1xV										
0.80-0.80	10	D											
0.80-1.20	12	B											
1.00-1.00	11	ES	1xT+1xJ+1xV								73.03	1.20	
1.20-1.65		SPT	N=10							Firm reddish brown slightly sandy slightly gravelly CLAY. Sand is fine and medium. Gravel is subangular to subrounded fine of mudstone, sandstone, and chalk.			
1.20-1.65	13	DSPT											
1.20-1.70	14	B											
1.40	15	ES											
1.70	16	D											
1.80	17	ES											
2.00-2.45	18	UT	42 blows 100% recovery										
2.50	19	D										(2.80)	
2.50-3.00	20	B											
3.00	21	ES											
3.00-3.45		SPT	N=15										
3.00-3.45	22	DSPT							1				
3.00-3.50	23	B											
3.50	24	D											
3.80	25	ES							1				
4.00-4.45	26	UT	36 blows 100% recovery							Brown slightly gravelly clayey fine to coarse SAND. Gravel is subangular to subrounded fine and medium of mudstone and sandstone. Driller notes, with bands of clay.	70.23	4.00	

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
16/09/22	13:00	1.20	1.20	200	-
20/09/22	08:00	1.20	1.20	200	-
20/09/22	16:00	9.00	7.50	200	8.65
22/09/22	08:30	9.00	None	200	7.80
22/09/22	16:00	25.50	9.00	150	-
23/09/22	08:00	25.50	9.00	150	2.70
23/09/22	16:00	30.00	9.00	150	23.40
26/09/22	08:00	30.00	9.00	150	2.85

Chiselling / Slow Progress

From	To	Duration (hh:mm)
8.80	9.00	00:30

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Cable percussion drilled using 200mm diameter tools and casing.
4. Rotary cored from 9.00m using SWF core barrel and 150mm diameter casing and air mist flush.
5. Groundwater encountered at 11.60m depth rising to 7.10m after 30 minutes.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 2000 Mark 2 + Comacchio GEO 205	Chris Jobson + Marc Pearson	JAlton + RStan	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH09**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**16.09.22** End: **26.09.22**	**74.23**	**E:445839.0 N:324955.9**	**2** of **14**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
4.50	27	D								Brown slightly gravelly clayey fine to coarse SAND. Gravel is subangular to subrounded fine and medium of mudstone and sandstone. Driller notes, with bands of clay. *(stratum copied from 4.00m from previous* sheet)		(1.50)	
4.50-5.00	28	B											
5.00-5.45		SPT	N=7										
5.00	29	DSPT											
5.00-5.50	30	B											
											68.73	5.50	
5.50	31	D								Very stiff reddish brown slightly sandy slightly gravelly CLAY. Sand is fine and medium of mudstone. Gravel is angular to subangular of mudstone lithorelicts. (MERCIA MUDSTONE GROUP)			
6.00-6.45		SPT	N=33										
6.00-6.45	32	DSPT											
6.00-6.50	33	B											
6.50	34	ES											
6.50	35	D											
7.00-7.45		SPT	N=40						▽				
7.00-7.45	36	DSPT											
7.00-7.50	37	B										(3.90)	
7.50	38	D											
8.00-8.33		SPT	8,17/17,23,10 for 39mm							. . . Occasional thin bands of fine and medium gravel size pockets of sandy silt.			
8.00	39	DSPT											
8.00-8.50	40	B											
8.50	41	D											

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
26/09/22	10:30	30.00	9.00	150	2.85

Chiselling / Slow Progress

From	To	Duration (hh:mm)

General Remarks

6. Borehole installed with dual standpipes on completion (response zones 7.00m to 12.50m (19mm) and 14.00m to 18.00m (50mm)).
7. SPT hammer JB14-2022 (E_r = 63.00%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 2000 Mark 2 + Comacchio GEO 205	Chris Jobson + Marc Pearson	JAlton + RStan	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH09**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**16.09.22** End: **26.09.22**	**74.23**	**E:445839.0 N:324955.9**	**3** of **14**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
9.00-9.28		SPT	15,10/24,26 for 70mm							. . . 9.00-9.40m: AZCL. ??? SPT			
9.00	42	DSPT									64.83	9.40	
										Weak grey SILTSTONE. Occasional laminae of extremely weak reddish brown mudstone. GRADE III. Bedding fractures: closely spaced, incipient, undulating, rough . (MERCIA MUDSTONE GROUP)			
9.77-10.01	43	C								. . . 9.40-9.65m: Extremely weka mudstone. . . . 10.00-10.03m: 9° undulating smooth clean. . . . 10.12-10.13m: 5° undulating smooth clean. . . . 10.33-10.38m: NI. . . . 10.33-10.41m: Mottled grey and reddish brown siltstone and mudstone. Fracture bedding closely spaced 0-10° undulating smooth possible incipient. . . . 10.44-10.45m: 7° undulating rough partial yellow stained. . . . 10.50-10.65m: AZCL. . . . 10.65-10.92m: NI. . . . 10.68-10.75m: 36° undulating rough occasionally yellow stained.		(2.20)	
11.21-11.60	44	C								. . . 10.86-10.88m: 4° undulating rough infill clayey silt and mudstone lithorelicts. . . . 11.17-11.19m: Band of MUDSTONE recovered as angular gravel. Fine to coarse.	62.63	11.60	
12.00-13.50				100	95	95				Extremely weak locally weak reddish brown MUDSTONE. Frequent laminae of grey siltstone and occasional reddish brown fine grained sandstone. Bedding fractures: widely spaced, 0-10°, planar, rough, rarely undulating, with some black, locally yellow, staining. (MERCIA MUDSTONE GROUP) . . . 11.98-12.00m: Grey siltstone. . . . 12.54-13.21m: Sandstone fine grained interbedded with grey siltstone and local mudstone.			
12.79-12.97	45	C											

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 2000 Mark 2 + Comacchio GEO 205	Chris Jobson + Marc Pearson	JAlton + RStan	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH09**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**16.09.22** End: **26.09.22**	**74.23**	**E:445839.0 N:324955.9**	**4** of **14**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
13.50-15.00										. . . 13.42-13.50m: NI. Extremely weak locally weak reddish brown MUDSTONE. Frequent laminae of grey siltstone and occasional reddish brown fine grained sandstone. Bedding fractures: widely spaced, 0-10°, planar, rough, rarely undulating, with some black, locally yellow, staining. (MERCIA MUDSTONE GROUP) *(stratum copied from 11.60m from* previous sheet) . . . 13.50-13.58m: NI. . . . 13.64-13.69m: NI. . . . 13.65-13.69m: Frequent yellow stained on discontinuities surface. Randomly orientated. . . . 13.69-13.74m: Band of siltstone. . . . 13.85-14.00m: Frequent pockets of grey siltstone. . . . 13.98-14.03m: Band of siltstone. . . . 14.18-14.29m: ??? siltstone and mudstone. . . . 14.38-14.39m: 6° planar rough fine reddish brown sandy infill <3mm. . . . 14.54-14.61m: 15° planar rough fine reddish brown infill <3mm. . . . 14.74-14.93m: 75° planar rough occasionally yellow brown stained. . . . 15.22-15.75m: Reddish brown inbedded carbonate fine to medium grained sandstone. . . . 15.50-15.53m: NI. . . . 15.373-16.07m: Interbedded sandstone with reddish brown mudstone and grey siltstone. . . . 16.93-17.02m: Thin lamanite mudstone. . . . 16.38-16.50m: AZCL. . . . 16.50-16.66m: Grey siltstone band. . . . 17.31-17.66m: Reddish brown mudstone with infill and pockets of reddish brown sand, locally sandy MUDSTONE. . . . 17.44-17.52m: NI. . . . 17.59-17.66m: NI. . . . 17.66-17.90m: Recover as angular MUDSTONE with occasional pockets of siltstone.		(9.40)	
14.08-14.18	46	C		100	91	91			3				
15.00-16.00 15.00		EW											
15.48-15.74	48	C		138	135	119							
16.03-16.25	47	C											
16.50-18.00									3				
17.00-17.20	49	C		93	77	43							

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 2000 Mark 2 + Comacchio GEO 205	Chris Jobson + Marc Pearson	JAlton + RStan	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH09**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**16.09.22** End: **26.09.22**	**74.23**	**E:445839.0 N:324955.9**	**5** of **14**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
18.00-19.50										. . . 17.90-18.00m: AZCL. Extremely weak locally weak reddish brown MUDSTONE. Frequent laminae of grey siltstone and occasional reddish brown fine grained sandstone. Bedding fractures: widely spaced, 0-10°, planar, rough, rarely undulating, with some black, locally yellow, staining. (MERCIA MUDSTONE GROUP) *(stratum copied from 11.60m from* previous sheet) . . . 18.00-18.06m: NI. . . . 18.00-18.37m: Occasional pockets of reddish brown fine sand. . . . 18.32-19.81m: 13° >3mm open with sandy silt infill. (reddish brown) . . . 18.33-18.34m: 4° planar rough <3mm open fine reddish brown sand infill. . . . 18.57-18.86m: NI due to difference rocks and ?? level: weak sandy MUDSTONE and weak to medium strong siltstone interbedded. Recovery as silty sandy gravel of mudstone and siltstone. . . . 18.57-19.06m: Interbeds siltstone.mudstone. . . . 19.40-19.50m: NI. . . . 19.50-19.60m: AZCL. . . . 19.60-19.71m: Pockets reddish brown fine sand and partings. . . . 19.82-19.96m: Band of grey siltstone. . . . 20.38-20.40m: NI due to weakness. Lithorelicts of grey siltstone, 4° planar rough due to weakness. . . . 20.40-20.65m: Bands of grey siltstone. . . . 20.55-20.56m: 5° undulating rough reddish brown silty CLAY infill (up to 4mm) >3mm ??.			
18.06-18.33	50	C		100	74	71							
19.50-21.00													
19.96-20.38	51	C		82	79	61					53.23	21.00	
21.00-22.50										. . . 20.65-20.85m: Interbedding grey siltstone and mudstone. Extremely weak to weak reddish brown fine grained SANDSTONE. Rare pockets of weak grey siltstone. Local laminae of reddish brown mudstone. (MERCIA MUDSTONE GROUP) . . . 21.26-21.37m: NI due to weakness. . . . 21.40-21.62m: Mudstone. . . . 21.53-21.68m: 79° undulating rough clean possible induce.		(1.78)	
21.97-22.19	52	C		100	93	93							

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	**Dando 2000 Mark 2 + Comacchio GEO 205**	**Chris Jobson + Marc Pearson**	**JAlton + RStan**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH09**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**16.09.22** End: **26.09.22**	**74.23**	**E:445839.0 N:324955.9**	**6** of **14**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
22.50-24.00										. . . 22.50-22.60m: AZCL. . . . 22.71-22.76m: NI due to weakness.	51.45	22.78	
22.98-23.29	53	C		89	85	80				Weak locally extremely weak to very weak reddish brown MUDSTONE. Occasional laminae of weak reddish brown fine grained sandstone. GRADE II. (MERCIA MUDSTONE GROUP) . . . 22.78m: Weak local very weak slightly carbonate unbedded fine MUDSTONE. Occasional bedded of reddish brown weak fine grained sandstone. . . . 22.89-22.90m: 6° planar rough clean, possible induce. . . . 22.99-23.03m: 2° undulating rough clean slightly fine sand infill. . . . 23.53-23.55m: 9° planar rough >3mm fine sand infill, clean. . . . 23.82-23.93m: Weak sandstone. . . . 23.93-24.00m: AZCL. . . . 24.00-24.05m: AZCL.			
24.00-25.50										. . . 24.34m: 3° undulating rough induce. . . . 24.42m24.45m: NI due to weakness. . . . 24.42-24.63m: Planar rough.			
24.58-24.84	54	C		97	95	89				. . . 24.82-24.91m: Planar rough.		(4.22)	
25.50-27.00										. . . 25.35-25.50m: Pockets of fine sand. . . . 25.57m: Slightly sandy occasional pockets of reddish brown fine sand.			
25.98-26.28	55	C		100	100	84				. . . 26.27-26.28m: Extremely weak sandstone mottled with grey siltstone. (band and pockets)			
										. . . 26.89-27.00m: Drilling disturbed.	47.23	27.00	

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 2000 Mark 2 + Comacchio GEO 205	Chris Jobson + Marc Pearson	JAlton + RStan	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH09**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**16.09.22** End: **26.09.22**	**74.23**	**E:445839.0 N:324955.9**	**7** of **14**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
27.00-28.50										Extremely weak reddish brown locally mottled grey MUDSTONE. GRADE III. Bedding fractures: 0-10°, closely spaced, planar, rough, clean. (MERCIA MUDSTONE GROUP)			
27.35-27.56	56	C								. . . 27.00m: Extremely weak reddish brown local mottled grey unbedded slightly carbonate fine MUDSTONE. Fracture bedding 0-10° planar rough clean. Fracture 60-70 undulating rough clean, CIRIA GRADE III)			
				100	88	67				. . . 27.00-27.08m: NI.			
										. . . 27.07-27.09m dept: 3° planar rough clean.			
										. . . 27.18-27.19m: 8° planar rough clean.			
										. . . 27.28-27.29m: 6° undulating rough clean.			
										. . . 27.32-27.34m: Undulating rough silty lithorelicts.		(3.00)	
28.50-30.00										. . . 27.55-27.57m: 8° undulating rough clean.			
										. . . 27.65-27.73m: NI.			
										. . . 27.73-27.74m: 4° planar rough clean.			
										. . . 27.83-27.84m: 5° planar rough clean.			
										. . . 27.83-27.87m: NI.			
										. . . 27.92-28.06m: 69° undulating rough clean.			
										. . . 28.07-28.30m: 64° undulating rough clean.			
				100	95	77				. . . 28.36-28.50m: NI.			
										. . . 28.61-28.63m: 14° undulating rough clean.			
29.44-29.65	57	C								. . . 28.84-28.87m: 7° undulating rough clean.			
										. . . 28.94-30.00m: Grey siltstone interbedding with mudstone.,			
										. . . 29.00-29.07m: 28° undulating rough clean.	44.23	30.00	
										. . . 29.16-29.28m: NI, recover as silty gravel of mudstone and siltstone angular.			
										. . . 29.36-29.37m: 4° undulating rough clean.			
										. . . 29.43-29.44m: 6° undulating rough clean.			
										. . . 29.64-29.65m: 6° planar rough clean.			
										. . . 29.80-29.81m: 3° planar rough clean.			
										. . . 29.95-29.96m: Planar rough clean.			
										Borehole terminated at 30.00m depth.			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 2000 Mark 2 + Comacchio GEO 205	Chris Jobson + Marc Pearson	JAlton + RStan	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH09**
Contract Ref:	Start: **16.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **26.09.22**	**74.23**	**E:445839.0 N:324955.9**	**8** of **14**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 2000 Mark 2 + Comacchio GEO 205	Drilled By:	Chris Jobson + Marc Pearson	Logged By:	JAlton + RStan	Checked By:	AGS

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH09**
Contract Ref:	Start: **16.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **26.09.22**	**74.23**	**E:445839.0 N:324955.9**	**9** of **14**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 2000 Mark 2 + Comacchio GEO 205	Drilled By:	Chris Jobson + Marc Pearson	Logged By:	JAlton + RStan	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH09**
Contract Ref:	Start: **16.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **26.09.22**	**74.23**	**E:445839.0 N:324955.9**	**10** of **14**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 2000 Mark 2 + Comacchio GEO 205	Drilled By:	Chris Jobson + Marc Pearson	Logged By:	JAlton + RStan	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH09**
Contract Ref:	Start: **16.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **26.09.22**	**74.23**	**E:445839.0 N:324955.9**	**11** of **14**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 2000 Mark 2 + Comacchio GEO 205	Drilled By:	Chris Jobson + Marc Pearson	Logged By:	JAlton + RStan	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH09**
Contract Ref:	Start: **16.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **26.09.22**	**74.23**	**E:445839.0 N:324955.9**	**12** of **14**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 2000 Mark 2 + Comacchio GEO 205	Drilled By:	Chris Jobson + Marc Pearson	Logged By:	JAlton + RStan	Checked By:	AGS

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH09**
Contract Ref:	Start: **16.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **26.09.22**	**74.23**	**E:445839.0 N:324955.9**	**13** of **14**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 2000 Mark 2 + Comacchio GEO 205	Drilled By:	Chris Jobson + Marc Pearson	Logged By:	JAlton + RStan	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH09**
Contract Ref:	Start: **16.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **26.09.22**	**74.23**	**E:445839.0 N:324955.9**	**14** of **14**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 2000 Mark 2 + Comacchio GEO 205	Drilled By:	Chris Jobson + Marc Pearson	Logged By:	JAlton + RStan	Checked By:	AGS

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH10**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **28.09.22**	**87.35**	**E:445787.3 N:325286.2**	**1** of **12**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
0.10-0.10	1	ES	1xT+1xJ+1xV							TOPSOIL		(0.60)	
0.30-0.30	2	D											
0.30-0.50	3	B									86.75	0.60	
0.70-0.70	4	ES	1xT+1xJ+1xV							Reddish brown slightly gravelly to gravelly clayey coarse SAND. Gravel is subrounded to rounded fine and medium of mudstone, siltstone, and sandstone.		(0.60)	
0.70-0.90	5	B											
0.90-0.90	6	D									86.15	1.20	
1.20-2.20										Stiff reddish brown mottled light grey slightly sandy silty CLAY with frequent angular to subangular fine and medium gravel sized mudstone lithorelicts. Occasional rootlets. (MMG, GRADE IVA) (MERCIA MUDSTONE GROUP)	86.00	1.35	
1.20-1.65		SPT	N=19										
1.20-1.20	7	DSPT										(0.40)	
1.30	8	D									85.60	1.75	
				100	0	0				Stiff thinly laminated to very thinly bedded light greenish grey clayey SILT with frequent angular to subangular fine and medium gravel sized siltstone lithorelicts and frequent thick laminae and very thin beds of extremely weak siltstone. (MMG, GRADE III) (MERCIA MUDSTONE GROUP)			
2.20-3.70													
2.20-2.62		SPT	8,10/10,11,16,13 for 40mm										
										Stiff thinly and thickly laminated reddish brown silty CLAY with frequent fine gravel sized mudstone lithorelicts. (MMG, GRADE III) (MERCIA MUDSTONE GROUP)			
2.70	9	D								. . . 1.98-2.02m: Thinly to thickly laminated light greenish grey siltstone.		(2.05)	
				100	0	0				. . . 2.54-2.70m: Lithorelics are angular to subangular fine to coarse gravel size.			
3.70-5.20											83.55	3.80	
4.00	10	D		100	10	0				*Description on next sheet* . . . 3.90-4.15m: 75° undulating smooth discontinuity with <1mm clay smear on surfaces. . . . 4.02-4.08m: Drilling disturbed, recovered as soft gravelly clay. . . . 4.10-4.70m: With extremely closely to closely spaced undulating smooth black			

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
27/09/22	16:00	17.20	2.20	150	-
28/09/22	08:00	17.20	2.20	150	15.50
28/09/22	10:30	20.20	2.20	150	-

General Remarks

1. Position cleared using CAT and Genny
2. Hand dug inspection pit to 1.20m.
3. Borehole dynamic sampled to 2.20m.
4. Rotary cored from 2.20m using SWF core barrel and 150mm diameter casing and air mist flush.
5. No groundwater strikes in the cable percussion section. Unable to determine ground water strikes due to flush method.
6. Borehole installed with 50mm standpipe on completion (response zone 3.00m to

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Dynamic sampling + Rotary Cored	Comacchio GEO 205	Marc Pearson	RSenior	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH10**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**27.09.22** End: **28.09.22**	**87.35**	**E:445787.3 N:325286.2**	**2** of **12**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
				100	10	0				stained discontinuities. Extremely weak very thinly to thickly bedded reddish brown MUDSTONE. Bedding fractures are very closely to closely spaced 0° to 5° planar and undulating smooth clean and locally with black spots and with <1mm clay smear on surfaces. (MMG, GRADE II) (MERCIA MUDSTONE GROUP) *(stratum copied from 3.80m from previous* sheet)			
5.20-6.70													
5.40	11	D								. . . 4.68-4.74m: Drilling disturbed recovered as clayey angular to subangular fine mudstone gravel. . . . 4.75-4.92m: 80° to 90° undulating rough slightly black stained discontinuity. . . . 4.92-4.95m: Very weak light greenish grey siltstone.			
				100	0	0				. . . 4.96-5.02m: 45° undulating smooth clean discontinuity . . . . . 5.20-5.25m: Weak reddish brown mudstone. . . . 5.41-5.42m: Extremely weak light greenish grey siltstone. . . . 5.52-5.60m: (Soft) reddish brown silty clay with frequent angular fine to medium gravel size lithorelics.		(4.40)	
6.20	12	D								. . . 5.66-5.82m: (Soft) reddish brown silty clay with frequent angular fine to medium gravel size lithorelics.			
6.70-8.20										. . . 6.00-6.20m: (Soft to firm) reddish brown silty clay with frequent angular fine to medium gravel size lithorelics. . . . 6.47-6.52m: Extremely weak light greenish grey siltstone. . . . 6.60-6.70m: Drilling disturbed, recovered as soft gravelly clay.			
7.30	13	D								. . . 6.70-6.85m: (Firm) reddish brown silty clay with occasional angular to subangular fine to medium gravel size lithorelics. . . . 7.02-7.15m: (Soft to firm) reddish brown silty clay with occasional angular to subangular fine to medium gravel size lithorelics.			
				95	0	0				. . . 7.15-7.25m: Moderately weak light greenish grey siltstone.			
										. . . 7.15-7.32m: 75° undulating smooth discontinuity with occasional black specks.	79.15	8.20	
8.20-9.70										. . . 7.40-7.85m: 75° to 90° undulating rough clean locally lightly black stained discontinuity . . . . . 8.50-8.51m: Weak light greenish grey siltstone.			
				90	47	7				*Description on next sheet* . . . 8.55-8.95m: With extremely closely to very closely spaced randomly orientated undulating smooth and rough clean locally black stained discontinuities.			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

General Remarks

20.20m).
7. SPT hammer LS01-2022 (E_r = 64.00%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Dynamic sampling + Rotary Cored	Comacchio GEO 205	Marc Pearson	RSenior	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH10**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**27.09.22** End: **28.09.22**	**87.35**	**E:445787.3 N:325286.2**	**3** of **12**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
9.15-9.35	14	C		90	47	7				. . . 8.69-8.71m: Very weak to weak light greenish grey siltstone. . . . 8.96-9.06m: Stiff reddish brown silty clay.		(2.25)	
9.70-11.20										Very weak thickly laminated to thickly locally medium bedded reddish brown MUDSTONE. Bedding fractures are very closely to closely locally medium spaced 0° to 5° planar and undulating smooth with >1mm clay smear of surfaces locally with rare to occasional black staining. (MMG, GRADE II) (MERCIA MUDSTONE GROUP) *(stratum copied from 8.20m from previous* sheet) . . . 9.50-9.65m: AZCL. . . . 9.70-9.85m: 90° undulating smooth discontinuity with 1-2mm soft clay on surfaces.	76.90	10.45	
9.88-10.22	15	C		100	53	33				Extremely weak thickly laminated to thickly bedded reddish brown mottled grey slightly sandy locally sandy MUDSTONE. Bedding fractures are extremely closely to closely spaced 0° planar and undulating clean locally with <1mm clay smear on surfaces. (MERCIA MUDSTONE GROUP) . . . 10.82-11.00m: Firm to stiff thinly laminated reddish brown silty clay with occasional subangular fine gravel size mudstone lithorelics. . . . 11.20-11.45m: AZCL. . . . 11.45-11.80m: With very closely spaced randomly orientated undulating smooth and rough black stained locally clean discontinuity. . . . 11.80-12.22m: 85° to 90° undulating smooth and rough black stained discontinuity.		(2.15)	
11.20-12.70													
11.50	16	C		83	53	33				. . . 12.24-12.28m: Weak light greenish grey siltstone. . . . 12.45-12.60m: Drilling disturbed, recovered as gravelly clay.	74.75	12.60	
12.70-14.20										Extremely to very weak very thickly to thinly bedded reddish brown MUDSTONE. Bedding fractures are very closely to closely spaced 0° to 5° undulating smooth and rough locally black stained and locally with <1mm clay smear on surfaces. (MERCIA MUDSTONE GROUP) . . . 12.70-12.92m: 85° to 90° undulating rough blacks stained discontinuity. . . . 13.25-13.32m: 45° undulating rough clean discontinuity .			
12.99-13.12	17	C		93	42	21							

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Dynamic sampling + Rotary Cored	Comacchio GEO 205	Marc Pearson	RSenior	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH10**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **28.09.22**	**87.35**	**E:445787.3 N:325286.2**	**4** of **12**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
				93	42	21				Extremely to very weak very thickly to thinly bedded reddish brown MUDSTONE. Bedding fractures are very closely to closely spaced 0° to 5° undulating smooth and rough locally black stained and locally with <1mm clay smear on surfaces. (MERCIA MUDSTONE GROUP) *(stratum copied from 12.60m from* previous sheet)		(2.71)	
14.20-15.70										. . . 13.50-13.56m: Extremely weak light greenish grey siltstone. . . . 13.56-13.70m: Extremely weak mudstone with extremely closely spaced randomly orientated rough clean discontinuity. . . . 13.77-13.86m: Moderately weak light greenish grey siltstone. . . . 13.86-13.96m: Strong light greenish grey siltstone. . . . 13.91-13.97m: 50° undulating smooth black stained discontinuity. . . . 13.97-14.10m: Drilling disturbed, recovered NI as subangular fine to coarse gravel.	72.04	15.31	
				100	59	49							
15.40-15.60	18	C								. . . 14.10-14.20m: AZCL. . . . 14.70-14.77m: Weak siltstone, NI, recovered as subangular fine to coarse gravel. . . . 14.84-14.98m: 2No. parallel very closely spaced 50° undulating smooth black stained discontinuities. . . . 15.12-15.24m: 2No. parallel very closely spaced 85° to 90° undulating smooth black stained discontinuities.		(1.59)	
15.70-17.20													
16.27-16.57	19	C								Weak to strong thickly to medium bedded light greenish grey SILTSTONE. Bedding fractures are closely to medium spaced 0° to 10° undulating rough clean locally with occasional black specks on surfaces. (MMG, GRADE I) (MERCIA MUDSTONE GROUP)			
16.42		EW		100	73	41				. . . 15.31-15.36m: 30° undulating rough light black stained discontinuity, with occasional black specks. . . . 15.70-15.90m: Extremely weak reddish brown mudstone. . . . 15.99-16.01m: Extremely weak reddish brown mudstone. . . . 16.20-16.23m: Stiff reddish brown clay with frequent angular fine gravel size lithorelics.	70.45	16.90	
17.20-18.70										. . . 17.37-17.42m: Beddin fractures are with black staining.			
17.20-17.38	20	C											
				95	13	7				. . . 17.44-17.58m: 70° to 80° undulating rough clean locally black stained discontinuity.			
17.84-18.28	21	C											

Description on next sheet

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Dynamic sampling + Rotary Cored	**Comacchio GEO 205**	**Marc Pearson**	**RSenior**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH10**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **28.09.22**	**87.35**	**E:445787.3 N:325286.2**	**5** of **12**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
				95	13	7				. . . 17.62-17.83m: Very weak light greenish grey siltstone. . . . 17.90-18.70m: Driling disturbed, recovered as (very soft to soft) gravelly clay.			
18.70-20.20				100	47	36				Extremely weak to very weak very thinly to thickly locally medium bedded reddish brown MUDSTONE. Bedding fractures are very closely to medium spaced undulating smooth and rough clean locally with <1mm clay of surfaces. (MMG, GRADE II) (MERCIA MUDSTONE GROUP) *(stratum copied from 16.90m from* previous sheet) . . . 19.76-19.83m: 80° undulating rough locally black stained discontinuity. . . . 19.95-20.11m: 75° undulating rough black stained discontinuity.	67.15	(3.30) 20.20	
										Borehole terminated at 20.20m depth.			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Dynamic sampling + Rotary Cored	**Comacchio GEO 205**	**Marc Pearson**	**RSenior**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH10**
Contract Ref:	Start: **27.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **28.09.22**	**87.35**	**E:445787.3 N:325286.2**	**6** of **12**

Method Used:	Dynamic sampling + Rotary Cored	Plant Used:	Comacchio GEO 205	Drilled By:	Marc Pearson	Logged By:	RSenior	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH10**
Contract Ref:	Start: **27.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **28.09.22**	**87.35**	**E:445787.3 N:325286.2**	**7** of **12**

Method Used:	Dynamic sampling + Rotary Cored	Plant Used:	Comacchio GEO 205	Drilled By:	Marc Pearson	Logged By:	RSenior	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH10**
Contract Ref:	Start: **27.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **28.09.22**	**87.35**	**E:445787.3 N:325286.2**	**8** of **12**

Method Used:	Dynamic sampling + Rotary Cored	Plant Used:	Comacchio GEO 205	Drilled By:	Marc Pearson	Logged By:	RSenior	Checked By:	

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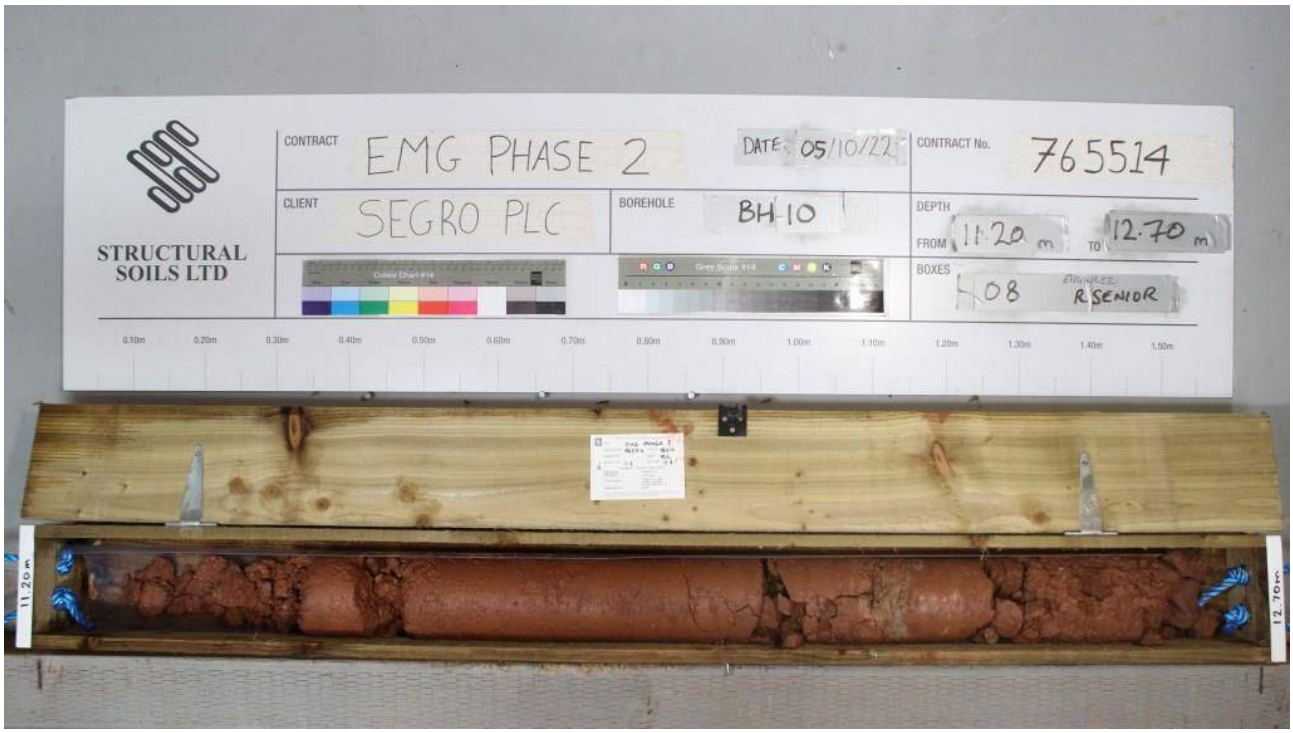
STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH10**
Contract Ref:	Start: **27.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **28.09.22**	**87.35**	**E:445787.3 N:325286.2**	**9** of **12**



Method Used:	Dynamic sampling + Rotary Cored	Plant Used:	Comacchio GEO 205	Drilled By:	Marc Pearson	Logged By:	RSenior	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH10**
Contract Ref:	Start: **27.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **28.09.22**	**87.35**	**E:445787.3 N:325286.2**	**10** of **12**

Method Used:	Dynamic sampling + Rotary Cored	Plant Used:	Comacchio GEO 205	Drilled By:	Marc Pearson	Logged By:	RSenior	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH10**
Contract Ref:	Start: **27.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **28.09.22**	**87.35**	**E:445787.3 N:325286.2**	**11** of **12**

Method Used:	Dynamic sampling + Rotary Cored	Plant Used:	Comacchio GEO 205	Drilled By:	Marc Pearson	Logged By:	RSenior	Checked By:	

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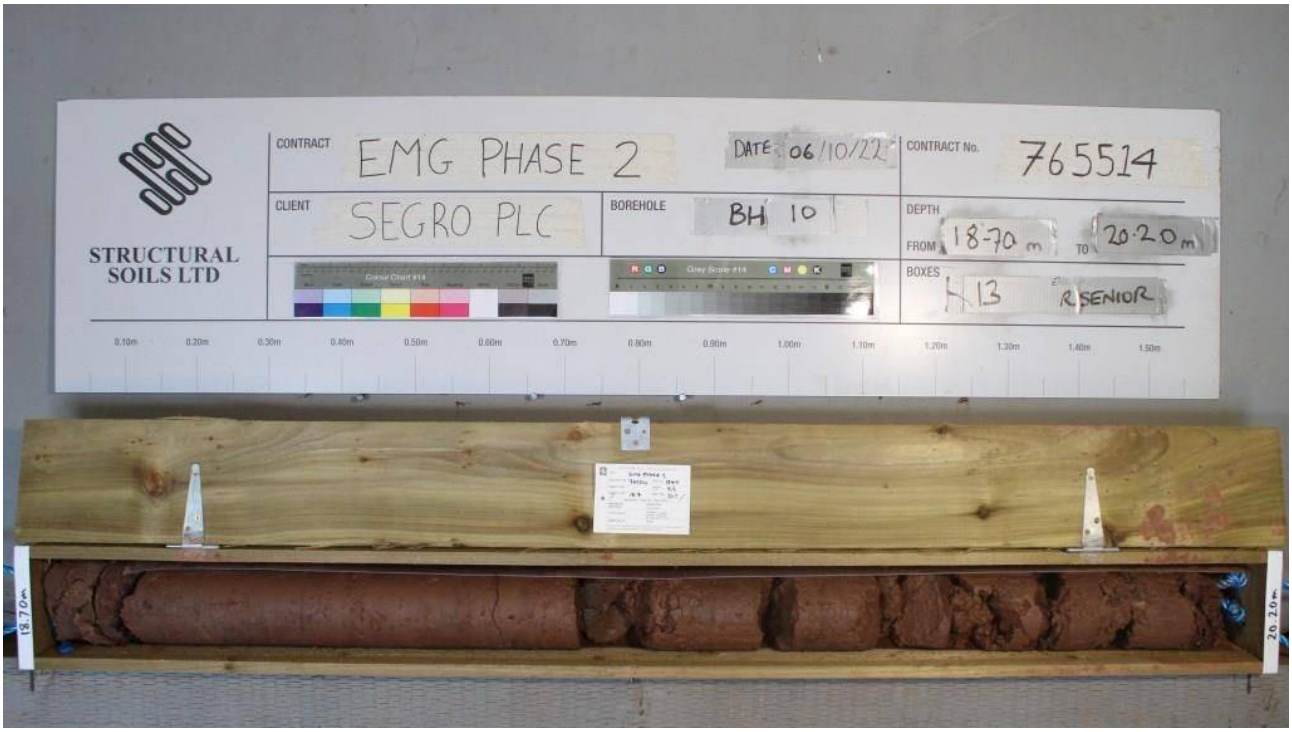
STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH10**
Contract Ref:	Start: **27.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **28.09.22**	**87.35**	**E:445787.3 N:325286.2**	**12** of **12**



Method Used:	Dynamic sampling + Rotary Cored	Plant Used:	Comacchio GEO 205	Drilled By:	Marc Pearson	Logged By:	RSenior	Checked By:	AGS

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH11**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **30.09.22**	**79.89**	**E:445759.5 N:325134.8**	**1** of **13**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
0.10-0.10	1	ES	1xT+1xJ+1xV							TOPSOIL		(0.80)	
0.50-0.50	2	B											
0.50-0.50	3	D									79.09	0.80	
0.80-0.80	4	ES	1xT+1xJ+1xV							Firm to stiff dark orangish brown slightly sandy gravelly CLAY. Sand is fine and medium. Gravel is subangular to rounded fine to coarse of mudstone, siltstone, and sandstone.		(0.40)	
1.00-1.00	5	B											
1.10-1.10	6	D									78.69	1.20	
1.20-1.65	7	UT	90 blows							Very stiff greyish brown slightly sandy slightly gravelly CLAY. Sand is fine and medium. Gravel is subangular to subrounded fine to coarse of sandstone, chalk, quartzite, and mudstone.		(1.30)	
1.70	8	D											
2.00-2.45		SPT	N=20										
2.00	10	D											
2.00-2.50	11	B									77.39	2.50	
3.00-3.45	12	UT	70 blows							Firm greyish brown locally reddish brown slightly sandy slightly gravelly CLAY. Sand is fine and medium. Gravel is subangular to subrounded predominantly fine occasionally medium to coarse of chalk, sandstone, and mudstone.			
3.00	13	D											
3.00	14	ES											
3.50-4.00	15	B											
4.00-4.45		SPT	N=24									(3.20)	
4.00	17	D											
4.00-4.50	18	B											

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
27/09/22	17:00	7.50	7.50	200	-
28/09/22	08:00	7.50	7.50	200	-
28/09/22	17:00	12.50	12.50	200	11.45
29/09/22	08:00	12.50	12.50	200	-
29/09/22	16:00	13.10	12.50	200	-
30/09/22	07:00	13.10	12.50	200	-
30/09/22	14:00	31.00	13.50	150	-

Chiselling / Slow Progress

From	To	Duration (hh:mm)
10.00	10.50	01:00
10.50	11.00	01:00
11.00	11.50	01:00
11.50	12.00	01:00
12.00	12.50	01:00

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Cable percusssion borehole drilled using 200mm tools and casing.
4. Rotary cored from 12.50m using SWF core barrel and 150mm diameter casing and air mist flush.
5. Groundwater struck at 9.00m depth, rising to 8.40m depth after 20 minutes.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 2000 + Comacchio GEO 205	Mathew Heath + Lee Smith	DNeylon + JAlton	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH11**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**27.09.22** End: **30.09.22**	**79.89**	**E:445759.5 N:325134.8**	**2** of **13**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
										Firm greyish brown locally reddish brown slightly sandy slightly gravelly CLAY. Sand is fine and medium. Gravel is subangular to subrounded predominantly fine occasionally medium to coarse of chalk, sandstone, and mudstone. *(stratum copied from 2.50m from previous* sheet)			
5.00-5.45	19	UT	80 blows										
5.00	20	D											
5.50	21	ES											
5.50-6.00	23	B									74.19	5.70	
5.70	22	D								Firm greyish brown slightly sandy slightly gravelly CLAY. Sand is fine. Gravel is subangular to subrounded fine of chalk and occasionally mudstone.			
6.00-6.45		SPT	N=27										
6.00	25	D											
6.00-6.50	26	B											
7.00	27	D										(3.30)	
7.50-7.95	28	UT	90 blows 100% recovery										
8.00	29	D							1		70.89	9.00	

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

6. Groundwater struck at 21.00m depth. Rose to 18.70m after 20 minutes.
7. Borehole installed with 50mm standpipe upon completion (response zone 13.00m to 31.00m).
8. SPT hammer JB05-2022 (E_r = 68.00%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 2000 + Comacchio GEO 205	Mathew Heath + Lee Smith	DNeylon + JAlton	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH11**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**27.09.22** End: **30.09.22**	**79.89**	**E:445759.5 N:325134.8**	**3** of **13**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
9.00-9.45		SPT	N=50							Dense reddish brown gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse of mudstone, quartzite, flint, and sandstone.		(0.45)	
9.00-9.45	30	DSPT											
9.00-9.50	31	B											
9.00	32	D									70.44	9.45	
										Brown very sandy subangular to subrounded fine to coarse GRAVEL of quartzite, flint, and sandstone.	70.29	9.60	
9.60-10.02		SPT	10,13/15,15,12,8 for 45mm							Stiff greyish brown mottled blue and reddish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of chalk, quartzite, sandstone, and mudstone.		(0.40)	
10.00	34	D									69.89	10.00	
10.00-10.50	35	B								Dense brown very sandy subangular to subrounded fine to coarse GRAVEL of quartzite, sandstone, mudstone, and flint.			
11.00	36	D											
11.00-11.22		SPT	10,15/40,10 for 25mm										
11.00	37	DSPT										(3.50)	
11.00-11.50	38	B											
12.00-12.50	39	B											
12.50-12.82		SPT	12,13/24,19,7 for 15mm										
12.50	40	DSPT											
13.00-13.50											66.39	13.50	

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 2000 + Comacchio GEO 205	Mathew Heath + Lee Smith	DNeylon + JAlton	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH11**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**27.09.22** End: **30.09.22**	**79.89**	**E:445759.5 N:325134.8**	**4** of **13**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
13.50-15.00										AZCL.	66.16	13.73	AZCL
										Extremely weak reddish brown MUDSTONE. NI, recovered as slightly clayey angular to subangular fine to medium gravel. Occasional laminae of grey siltstone. GRADE IVa. (MERCIA MUDSTONE GROUP)	65.88	(0.28) 14.01	
14.09-14.29	41	C		85	53	47	NI 150 210			Extremely weak to weak reddish brown MUDSTONE. Occasional laminae of greenish grey siltstone. Frequent calcite pockets (up to 40x30x30mm). GRADE III. Bedding fractures: 0-10°, closely spaced, planar, rough, occasionally with silty clay infill. (MERCIA MUDSTONE GROUP) . . . 14.09-14.10m: 9° planar rough clean. . . . 14.29-14.33m: 5° undulating rough clean silty clay infill.			
15.00-16.50													
15.12-15.43	42	C		100	95	90	NI 180 310			. . . 14.41-14.61m: Grey siltstone. . . . 14.47-14.49m: 7° undulating rough clean silty clay infill. . . . 14.55-14.56m: 3° planar rough clean. . . . 14.67-14.68m: 4° planar rough clean. . . . 14.82m: NI, recovery as sandy angular gravel. . . . 15.05-15.14m: Reddish brown mudstone. . . . 15.12-15.13m: 6° planar rough clean. . . . 15.36-15.43m: NI recovery as angular fine to coarse gravel. . . . 15.41-15.46m: 27° undulating rough clean. . . . 15.45-15.59m: 68° undulating rough. Occasionally yellow stained. . . . 15.51-15.52m: 5° planar rough. Occasionally yellow stained.		(3.26)	
16.50-18.00										. . . 15.70-16.11m: 7° planar rough. . . . 16.25-16.38m: 50° undulating rough clean. . . . 16.50-16.65m: AZCL. . . . 16.95-17.19m: Weak grey siltstone.			
				90	69	62	NI 85 300			. . . 17.19-17.27m: NI.	62.62	17.27	
17.56-17.75	43	C								Extremely weak to weak reddish brown MUDSTONE. Rare to occasional pockets of grey siltstone. GRADE II. Fractures: Widely and extremely widely spaced, 0-10°, planar, rough clean. (MERCIA MUDSTONE GROUP) . . . 17.48-17.56m: NI. . . . 17.84-18.06m: NI, mottled with grey siltstone.			

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 2000 + Comacchio GEO 205	Mathew Heath + Lee Smith	DNeylon + JAlton	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH11**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **30.09.22**	**79.89**	**E:445759.5 N:325134.8**	**5** of **13**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
18.00-19.50										Extremely weak to weak reddish brown MUDSTONE. Rare to occasional pockets of grey siltstone. GRADE II. Fractures: Widely and extremely widely spaced, 0-10°, planar, rough clean. (MERCIA MUDSTONE GROUP) *(stratum copied from 17.27m from* previous sheet)			
18.10-18.45	44	C		100			NI NI NI		1				
19.50-21.00										. . . 19.02-19.06m: Pockets of grey siltstone. . . . 19.50-19.57m: Pockets of grey siltstone. . . . 19.65-19.68m: Sandy silty mudstone.			
19.60-19.97	45	C		100	97	97	NI NI NI			. . . 19.88-20.50m: interbedded with grey siltstone. . . . 20.02-20.06m: 14° planar rough clean.			
21.00-22.50									1	. . . 20.76-20.83m: Pockets of silty fine sand. . . . 20.86-21.23m: Very weak to weak grey siltstone. . . . 21.08-21.09m: 5° planar rough <3mm silty clay infill.		(7.73)	
21.60-21.82	46	C		100	100	95	30 460			. . . 21.55-21.59m: Medium strong reddish brown fine grained sandstone. . . . 21.55-21.79m: Pockets of siltstone. . . . 21.59-21.60m: 4° undulating rough fine sand infill <3mm. . . . 21.78-22.00m: 85° undulating rough clean. . . . 22.00-22.25m: 69° undulating rough clean.			

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 2000 + Comacchio GEO 205	Mathew Heath + Lee Smith	DNeylon + JAlton	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH11**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **30.09.22**	**79.89**	**E:445759.5 N:325134.8**	**6** of **13**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
22.50-23.50 22.50-22.73	47	C		100	78	78	NI NI 320			Extremely weak to weak reddish brown MUDSTONE. Rare to occasional pockets of grey siltstone. GRADE II. Fractures: Widely and extremely widely spaced, 0-10°, planar, rough clean. (MERCIA MUDSTONE GROUP) *(stratum copied from 17.27m from* previous sheet) . . . 23.30-23.41m: Grey siltstone. . . . 23.38-23.50m: NI.			
23.50-25.00										. . . 23.77-23.78m: 5° planar rough clean. . . . 23.90-23.92m: 8° undulating rough clean.			
24.02-24.20	48	C		100	97	91	NI 80 323			. . . 24.23-24.38m: 74° undulating rough. Rare laminae of siltstone. . . . 24.35-24.41m: 52° planar rough clean. . . . 24.35-24.44m: 52° and 57° intersecting planar rough clean discontinuities. . . . 24.43-24.53m: 48° planar rough clean. . . . 24.67-24.68m: 4° planar rough clean. . . . 24.76-24.84m: NI.	54.89	25.00	
25.00-26.50 25.16-25.47	49	C		100	83	83	NI NI 480			Very weak reddish brown MUDSTONE. Locally grey siltstone. Occasional laminae and pockets of grey siltstone. GRADE II. Fractures: randomly orientated, closely to widely spaced, undulating, rough, clean. (MERCIA MUDSTONE GROUP) . . . 25.14-25.18m: 8° undulating rough clean. . . . 25.50-25.65m: 7° occasional laminae of siltstone. . . . 25.50-25.70m: Occasional laminae of siltstone. . . . 25.50-25.74m: 69° undulating rough clean. . . . 25.72-25.81m: 85° undulating rough clean. . . . 25.75-25.85m: 44° undulating rough clean. . . . 25.83-25.92m: 52° undulating rough clean. . . . 25.86-25.98m: 5° planar rough clean. . . . 26.20-26.22m: 14° planar rough clean.			
26.50-28.00 26.59-26.80	50	C		100	67	57	NI 80 480						

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	**Dando 2000 + Comacchio GEO 205**	**Mathew Heath + Lee Smith**	**DNeylon + JAlton**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH11**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **30.09.22**	**79.89**	**E:445759.5 N:325134.8**	**7** of **13**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
										. . . 26.37-26.61m: Grey siltstone.			
										. . . 26.78-26.86m: 39° planar rough clean.			
										Very weak reddish brown MUDSTONE. Locally grey siltstone. Occasional laminae and pockets of grey siltstone. GRADE II. Fractures: randomly orientated, closely to widely spaced, undulating, rough, clean. (MERCIA MUDSTONE GROUP)			
				100	67	57	NI 80 480			*(stratum copied from 25.00m from* previous sheet)			
										. . . 27.07-27.41m: NI, fractures closely spaced randomly orientated planar rough clean.		(6.00)	
28.00-29.50										. . . 27.62-27.66m: NI.			
										. . . 27.77-27.84m: NI fracture randomly orientated 60-80°			
										. . . 27.87-27.93m: Grey siltstone.			
										. . . 28.00-28.10m: NI.			
										. . . 28.26-28.43m: NI, randomly orientated, undulating, rough, incipient fractures with yellow staining on surfaces.			
				100	82	82	NI NI 830			. . . 28.64-28.83m: Grey siltstone.			
										. . . 28.67-28.69m: Extremely weak mudstone.			
29.07-29.30	51	C								. . . 29.11-29.42m: Grey siltstone.			
										. . . 29.35-29.36m: 6° planar rough clean.			
29.50-31.00										. . . 29.50-30.34m: With laminae of very weak to weak grey siltstone.			
29.59-29.83	52	C											
				100	84	75	NI NI 530			. . . 30.34-30.47m: NI.			
										. . . 30.55-31.00m: Very weak to medium strong fine to medium grained SANDSTONE.			
										. . . 30.57-30.66m: NI.			
										. . . 30.89-31.00m: NI.	48.89	31.00	
										Borehole terminated at 31.00m depth.			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	**Dando 2000 + Comacchio GEO 205**	**Mathew Heath + Lee Smith**	**DNeylon + JAlton**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH11**
Contract Ref:	Start: **27.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **30.09.22**	**79.89**	**E:445759.5 N:325134.8**	**8** of **13**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 2000 + Comacchio GEO 205	Drilled By:	Mathew Heath + Lee Smith	Logged By:	DNeylon + JAlton	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH11**
Contract Ref:	Start: **27.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **30.09.22**	**79.89**	**E:445759.5 N:325134.8**	**9** of **13**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 2000 + Comacchio GEO 205	Drilled By:	Mathew Heath + Lee Smith	Logged By:	DNeylon + JAlton	Checked By:	AGS

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH11**
Contract Ref:	Start: **27.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **30.09.22**	**79.89**	**E:445759.5 N:325134.8**	**10** of **13**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 2000 + Comacchio GEO 205	Drilled By:	Mathew Heath + Lee Smith	Logged By:	DNeylon + JAlton	Checked By:	AGS

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH11**
Contract Ref:	Start: **27.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **30.09.22**	**79.89**	**E:445759.5 N:325134.8**	**11** of **13**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 2000 + Comacchio GEO 205	Drilled By:	Mathew Heath + Lee Smith	Logged By:	DNeylon + JAlton	Checked By:	AGS

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH11**
Contract Ref:	Start: **27.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **30.09.22**	**79.89**	**E:445759.5 N:325134.8**	**12** of **13**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 2000 + Comacchio GEO 205	Drilled By:	Mathew Heath + Lee Smith	Logged By:	DNeylon + JAlton	Checked By:	AGS

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH11**
Contract Ref:	Start: **27.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **30.09.22**	**79.89**	**E:445759.5 N:325134.8**	**13** of **13**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 2000 + Comacchio GEO 205	Drilled By:	Mathew Heath + Lee Smith	Logged By:	DNeylon + JAlton	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH12**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**26.09.22** End: **30.09.22**	**80.23**	**E:446174.0 N:325010.3**	**1** of **12**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
0.00-0.20	1	B									MADE GROUND: Firm dark brown gravelly sandy SILT with roots and rootlets. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of sandstone, limestone, siltstone, and quartzite. (TOPSOIL)	80.03	0.20	
0.10	101	ES	1xT+1xJ+1xV											
0.10	2	D												
0.40	3	D												
0.40-0.60	4	B												
1.00	5	D									Firm fissured dark greyish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of sandstone, siltstone, and quartzite.			
1.00-1.20	6	B												
1.20-1.40	7	$UT_{(UT100)}$	100 blows 100% recovery											
1.40-1.50	8	D												
1.70	9	D												
2.00-2.45		SPT	N=14										(3.70)	
2.00-2.45	11	DSPT												
2.00-2.45	12	B												
2.70	13	D												
3.00-3.45	14	$UT_{(UT100)}$	150 blows 78% recovery											
3.45-3.55	15	D												
3.70	16	D										76.33	3.90	
4.00-4.45		SPT	N=15								*Description on next sheet*			
4.00-4.45	18	DSPT												
4.00-4.45	19	B												

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
26/09/22	17:15	3.90	3.00	200	Dry
27/09/22	08:26	4.00	3.00	200	Dry
27/09/22	17:33	16.50	16.50	200	14.00
28/09/22	08:14	16.50	16.50	200	14.10
28/09/22	10:54	16.80	16.50	200	-
29/09/22	15:30	16.80	16.50	200	15.50
29/09/22	17:00	23.30	16.50	146	20.70
30/09/22	08:30	23.30	16.50	146	6.80

Chiselling / Slow Progress

From	To	Duration (hh:mm)
16.50	16.70	01:00

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Cable percussion drilled using 200mm diameter tools and casing.
4. Rotary cored from 16.80m using Geobor-S and air mist flush.
5. No groundwater strikes in the cable percussion section. Unable to determine ground water

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio Geo 602	Jonny Hutt + Sam Carter	RSenior + RStan	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH12**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**26.09.22** End: **30.09.22**	**80.23**	**E:446174.0 N:325010.3**	**2** of **12**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instru-mentation	Water	Description of Strata	Reduced Level	Depth (Thick ness)	Material Graphic Legend
4.70	20	D									Firm fissured greyish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of mixed lithologies including sandstone, quartzite, and siltstone. *(stratum copied from 3.90m from* previous sheet)			
5.00-5.45	21	$UT_{(UT100)}$	80 blows 89% recovery											
5.45-5.55	22	D												
5.70	23	D												
6.00-6.45		SPT	N=24								. . . Below 6.00m, becoming stiff to very stiff.		(6.30)	
6.00-6.45	25	DSPT												
6.00-6.45	26	B												
7.30	27	D												
7.50-7.95	28	$UT_{(UT100)}$	150 blows 100% recovery											
8.70	29	D												

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
30/09/22	13:30	30.80	16.50	146	-

Chiselling / Slow Progress

From	To	Duration (hh:mm)

General Remarks

strikes due to flush method.
6. Borehole installed with 50mm standpipe on completion (response zone 16.00m to 30.80m).
7. SPT hammer AR3104-2022 (E_r = 64.00%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio Geo 602	Jonny Hutt + Sam Carter	RSenior + RStan	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH12**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**26.09.22** End: **30.09.22**	**80.23**	**E:446174.0 N:325010.3**	**3** of **12**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
9.00-9.45		SPT	N=25								Firm fissured greyish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of mixed lithologies including sandstone, quartzite, and siltstone. *(stratum copied from 3.90m from* previous sheet)			
9.00-9.45	31	DSPT												
9.00-9.45	32	B												
												70.03	10.20	
10.30	33	D									Very stiff fissured dark brown slightly sandy gravelly CLAY. Sand is fine. Gravel is subangular to subrounded fine of mixed lithologies including sandstone, mudstone, and siltstone.			
10.50-10.95	34	$UT_{(UT100)}$	150 blows 89% recovery										(1.20)	
												68.83	11.40	
11.70	35	D									Very stiff reddish brown mottled grey slightly gravelly sandy silty CLAY. Sand is fine. Gravel is angular to subangular fine of mixed lithologies including sandstone and mudstone.			
12.00-12.37		SPT	5,7/7,20,23 for 70mm										(1.60)	
12.00-12.30	37	DSPT												
12.00-12.30	38	B												
												67.23	13.00	
13.00-13.50	39	B									Firm fissured sandy silty CLAY.			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	**Dando 3000 + Comacchio Geo 602**	**Jonny Hutt + Sam Carter**	**RSenior + RStan**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH12**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**26.09.22** End: **30.09.22**	**80.23**	**E:446174.0 N:325010.3**	**4** of **12**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
13.50-13.84		SPT	7,9/16,23,11 for 40mm								Firm fissured sandy silty CLAY. *(stratum copied from 13.00m from* previous sheet)			
13.50-13.84	41	DSPT												
13.50-13.95	42	B												
													(2.50)	
14.70	43	D												
15.00-15.45		SPT	N=41											
15.00-15.45	45	DSPT												
15.00-15.45	46	B										64.73	15.50	
15.50-16.00	47	B									Greyish brown sandy silty subangular to subrounded fine to coarse GRAVEL of mixed lithologies including sandstone, siltstone, and flint. Sand is fine to coarse. Cobbles of flint noted.		(0.60)	
												64.13	16.10	
16.30	48	D									Very stiff reddish brown sandy gravelly CLAY. Sand is fine. Gravel is angular to subangular fine of mudstone lithorelicts. With laminae of grey siltstone. (MERCIA MUDSTONE GROUP)		(0.62)	
16.50-17.30 (0:03)												63.51	16.72	
16.50-16.72		SPT	7,9/50 for 70mm								AZCL (MERCIA MUDSTONE GROUP)	63.39	16.84	AZCL
16.50-16.72	50	DSPT												
16.50-16.80	51	B		57	30	0		Air+Mist (Brown)			Very weak thinly to thickly bedded reddish brown MUDSTONE. GRADE II. Bedding fractures: Very closely to closely spaced, 0° to 5°, planar, undulating, smooth, clean, locally lightly black stained. (MERCIA MUDSTONE GROUP)			
16.70-16.84		SPT	25/50 for 75mm											
16.70-16.84	53	DSPT												
17.11-17.20	54	C												
17.30-18.80 (0:05)				97	53	37		Air+Mist (Brown)			. . . 16.90-17.00m: 50° undulating smooth black stained discontinuity. . . . 17.00-17.18m: 85°-90° undulating rough lightly black stained discontinuity.		(1.09)	
17.91-18.01	55	C										62.30	17.93	

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	**Dando 3000 + Comacchio Geo 602**	**Jonny Hutt + Sam Carter**	**RSenior + RStan**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH12**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**26.09.22** End: **30.09.22**	**80.23**	**E:446174.0 N:325010.3**	**5** of **12**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
											. . . 17.20-17.25m: 70° undulating rough clean discontinuity. . . . 17.33-17.43m: 2 no 70° and 50° undulating rough clean discontinuities.			
				97	53	37		Air+Mist (Brown)			Very weak to medium strong thinly bedded light greenish grey SILTSTONE. GRADE I. Bedding fractures: Closely spaced, 0° to 10°, undulating, rough, clean, locally black stained. (MERCIA MUDSTONE GROUP) *(stratum copied from 17.93m from* previous sheet)		(1.54)	
18.80-20.30 (0:05)											. . . 18.08-18.18m: 40° undulating rough clean rough clean discontinuity. . . . 18.64-18.80m: Extremely weak reddish brown mudstone.	60.76	19.47	
19.15-19.30	56	C		100	79	47		Air+Mist (Brown)			. . . 18.90-19.15m: Very weak very thinly bedded reddish brown mudstone. Extremely weak thinly to medium bedded reddish brown MUDSTONE. GRADE II. Bedding fractures: closely to medium spaced, 0° to 5°, planar to undulating, smooth and rough, clean, locally lightly stained black. (MERCIA MUDSTONE GROUP)			
20.30-21.80 (0:04)													(1.76)	
20.50-20.77	57	C									. . . 19.75-19.85m: Weak light grey siltstone. . . . 19.80-19.98m: 80° to 90° undulating rough lightly black stained discontinuity. . . . 20.17-20.30m: 85°to 90° undulating rough clean discontinuity. . . . 20.30-20.70m: occasional medium to coarse gravel size siltstone inclusions.	59.00	21.23	
				98	44	37		Air+Mist (Brown)			. . . 20.85-21.20m: 80° undulating smooth discontinuity with <1mm of silt on surfaces. . . . 21.02-21.23m: extremely weak light greenish grey siltstone. . . . 21.07-21.23m: extremely weak light greenish grey siltstone.	58.43	(0.57) 21.80	
21.80-23.30 (0:05)											Stiff very thinly to thickly bedded reddish brown silty CLAY with occasional subangular fine and medium gravel size mudstone lithorelicts. (MERCIA MUDSTONE GROUP)	58.07	(0.36) 22.16	
				97	90	52		Air+Mist (Brown)			. . . 21.76-21.80m: very weak light greenish grey siltstone.			

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	**Dando 3000 + Comacchio Geo 602**	**Jonny Hutt + Sam Carter**	**RSenior + RStan**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH12**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**26.09.22** End: **30.09.22**	**80.23**	**E:446174.0 N:325010.3**	**6** of **12**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
				97	90	52		Air+Mist (Brown)			Extremely weak to very weak thinly bedded light grey SILTSTONE. GRADE II. Bedding fractures: Closely spaced, undulating and stepped, rough, clean, locally stained orangish brown. (MERCIA MUDSTONE GROUP)			
23.05-23.30	58	C									. . . 22.33-22.45m: 70° undulating rough clean discontinuity.			
23.30-24.80 (0:04)											. . . 22.43-22.46m: 20° undulating rough clean discontinuity. Extremely weak to very weak thinly to medium bedded reddish brown silty MUDSTONE. Bedding fracture: Closely to medium spaced, 0° to 10°, undulating, smooth and rough, clean, locally with <1mm clay smear on surfaces. (MERCIA MUDSTONE GROUP) *(stratum copied from 22.16m from* previous sheet) . . . 22.74-22.77m: 20° undulating rough clean discontinuity.			
23.90-24.15	59	C		100	81	55		Air+Mist (Brown)			. . . 24.22-24.24m: 20° undulating rough clean discontinuity. . . . 24.27-24.32m: very weak light greenish grey siltstone.		(4.64)	
24.80-26.30 (0:04)											. . . 24.38-24.40m: weak light greenish grey siltstone. . . . 24.72-24.90m: Very thickly to thinly bedded light greenish grey siltstone. . . . 24.85-24.92m: 70mm diameter siltstone inclusion. . . . 24.94-24.96m: 20° undulating rough clean discontinuity. . . . 25.24-25.30m: 40° undulating rough clean discontinuity. . . . 25.41-25.43m: light greenish grey siltstone. . . . 25.90-26.00m: 90° undulating rough clean discontinuity.			
24.95-25.12	60	C		100	78	70		Air+Mist (Brown)						
26.30-27.80 (0:06)														
26.55-26.78	61	C		99	73	61		Air+Mist (Brown)				53.43	26.80	
											Description on next sheet			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	**Dando 3000 + Comacchio Geo 602**	**Jonny Hutt + Sam Carter**	**RSenior + RStan**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH12**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**26.09.22** End: **30.09.22**	**80.23**	**E:446174.0 N:325010.3**	**7** of **12**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
											Very weak to weak very thinly to thickly bedded light greenish grey SILTSTONE. GRADE II. Bedding fracture: Very closely to closely spaced, 0° to 5°, undulating, rough, with <1mm clay on surfaces. (MERCIA MUDSTONE GROUP) *(stratum copied from 26.80m from* previous sheet) . . . 27.03-27.04m: firm reddish brown silty clay.	52.93	(0.50) 27.30	
				99	73	61		Air+Mist (Brown)						
27.80-29.30 (0:04)											Very weak thinly to medium bedded reddish brown silty MUDSTONE. GRADE II. Bedding fractures: Closely to medium spaced, 0° to 10°, undulating, rough, clean, locally with <1mm clay smear on surfaces. (MERCIA MUDSTONE GROUP) . . . 27.73-28.00m: light greenish grey siltstone. . . . 27.97-28.05m: weak light greenish grey siltstone. . . . 28.18-28.29m: 70° undulating rough discontinuity with <1mm clay smear of surfaces. . . . 28.68-28.86m: Very weak thinly bedded light greenish grey siltstone. . . . 29.16-29.18m: moderately weak light greenish grey siltstone.		(2.00)	
				100	77	71		Air+Mist (Brown)						
28.78-29.00	62	C										50.93	29.30	
29.30-30.80 (0:04)											Extremely weak to very weak thinly to medium bedded reddish brown silty MUDSTONE. GRADE II. Bedding fractures: Closely to medium spaced, 0° to 15°, undulating, rough, clean, locally with <1mm clay on surfaces. (MERCIA MUDSTONE GROUP) . . . 29.30-29.35m: Drilling disturbed. NI / soft gravelly clay. . . . 29.37-29.42m: 30° undulating rough clean locally black stained discontinuity. . . . 29.45-29.50m: 25° undulating rough clean locally light stained orangish brown discontinuity. . . . 29.45-29.80m: Occasional fine to medium gravel size siltstone inclusions. . . . 30.20m030.23m: 20° undulating smooth lightly orange stained discontinuity locally with <1mm clay on surfaces.		(1.50)	
				97	67	60		Air+Mist (Brown)						
30.33-30.50	63	C										49.43	30.80	
											Borehole terminated at 30.80m depth.			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio Geo 602	Jonny Hutt + Sam Carter	RSenior + RStan	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH12**
Contract Ref:	Start: **26.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
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Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio Geo 602	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	RSenior + RStan	Checked By:	

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BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH12**
Contract Ref:	Start: **26.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
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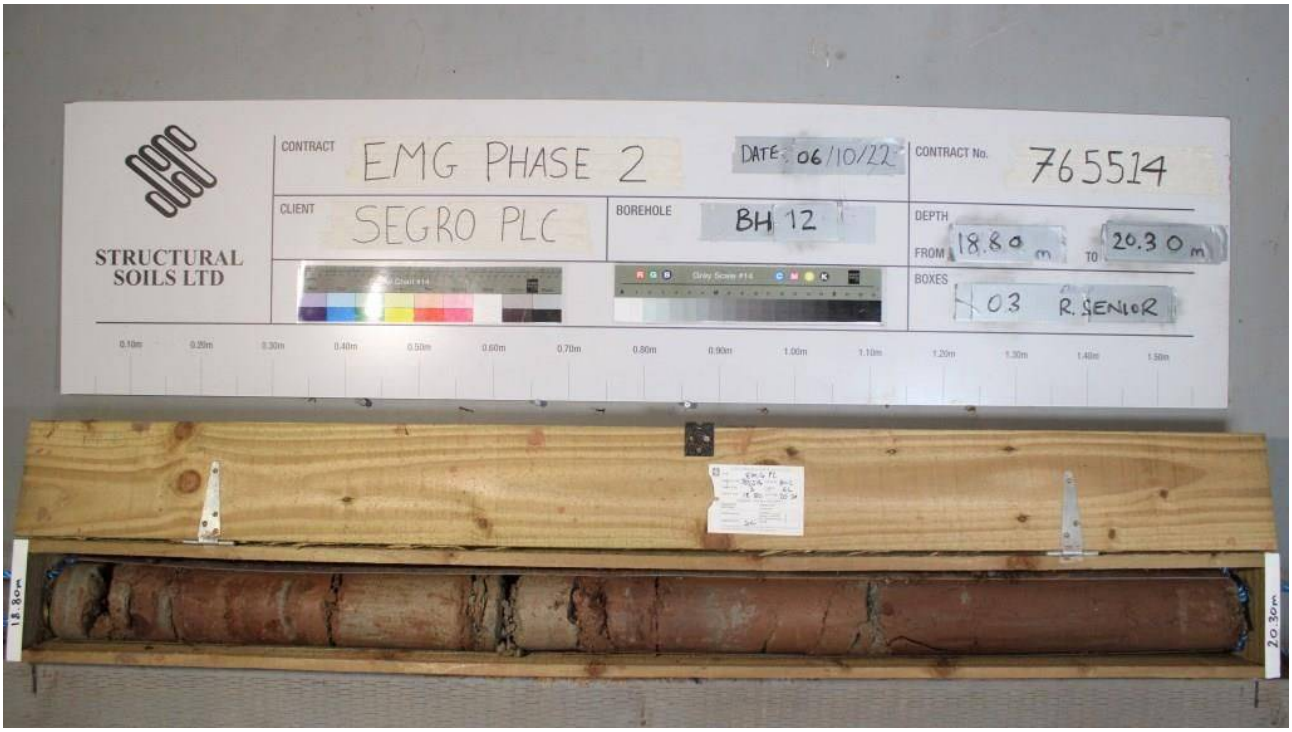

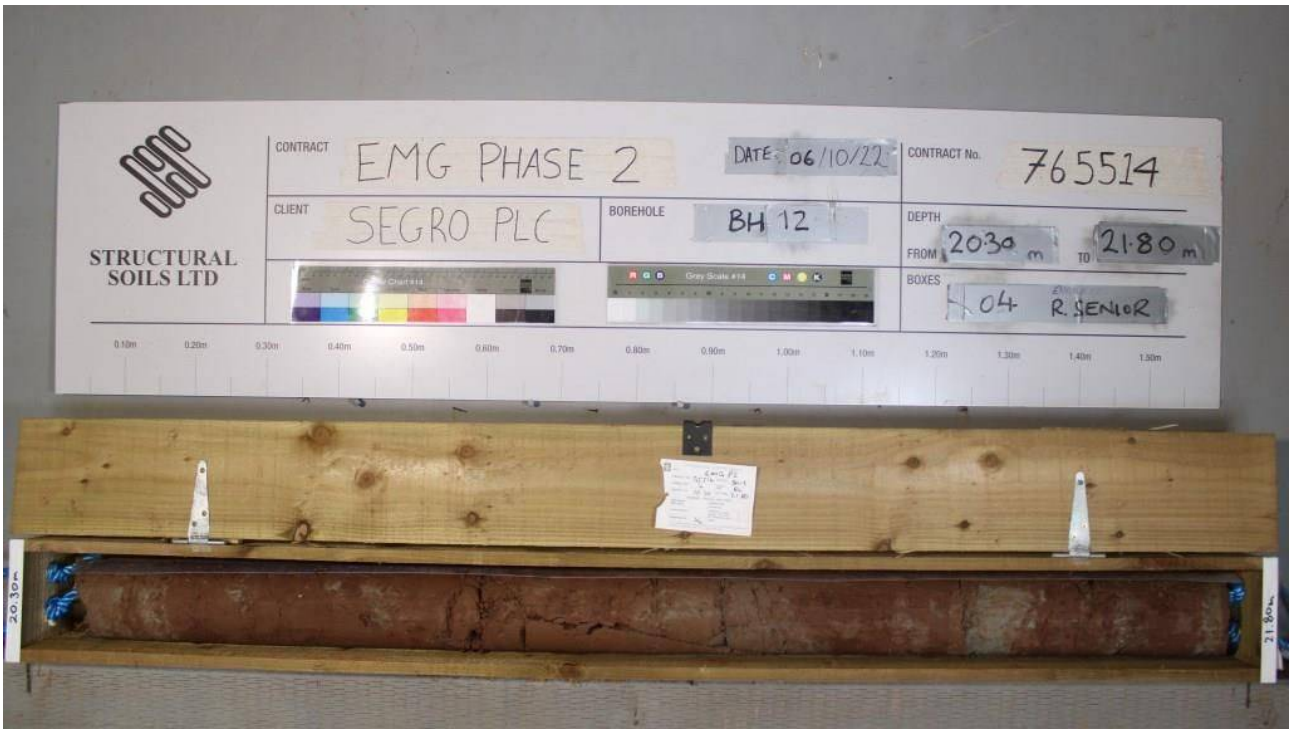

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio Geo 602	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	RSenior + RStan	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH12**
Contract Ref:	Start: **26.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **30.09.22**	**80.23**	**E:446174.0 N:325010.3**	**10** of **12**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio Geo 602	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	RSenior + RStan	Checked By:	AGS

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH12**
Contract Ref:	Start: **26.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **30.09.22**	**80.23**	**E:446174.0 N:325010.3**	**11** of **12**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio Geo 602	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	RSenior + RStan	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH12**
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765514	End: **30.09.22**	**80.23**	**E:446174.0 N:325010.3**	**12** of **12**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio Geo 602	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	RSenior + RStan	Checked By:	AGS

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH13**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**20.09.22** End: **23.09.22**	**88.03**	**E:446479.7 N:325113.2**	**1** of **14**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
0.10	1	D								TOPSOIL		(0.30)	
0.10-0.20	2	B									87.73	0.30	
0.20	101	ES	1xT+1xJ+1xV							Firm orangish brown gravelly sandy SILT. Sand is fine to coarse, predominantly coarse. Gravel is subangular to subrounded fine to coarse of mixed lithologies. Occasional roots and pockets of organic matter (up to 5mm).			
0.50	102	ES	1xT+1xJ+1xV									(0.90)	
0.50	3	D											
0.50-0.70	4	B									86.83	1.20	
1.20	5	D								Firm to stiff reddish brown slightly gravelly sandy SILT. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of mixed lithologies.			
1.20-1.65		SPT	N=20									(0.50)	
1.20-1.65	7	DSPT											
1.20-1.65	8	B									86.33	1.70	
1.80	9	D								Stiff reddish brown mottled grey slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of mixed lithologies.			
2.00-2.45		SPT	N=7									(1.90)	
2.00-2.45	11	DSPT											
2.00-2.45	12	B											
2.70	13	D											
3.00-3.45	14	$UT_{(UT100)}$	62 blows 94% recovery										
3.45-3.55	15	D									84.43	3.60	
3.70	16	D								Stiff reddish brown mottled grey slightly sandy slightly gravelly silty CLAY. Sand is fine to coarse. Gravel is subangular and subrounded fine to coarse of mixed lithologies.			
4.00-4.45		SPT	N=20										
4.00-4.45	18	DSPT											
4.00-4.45	19	B											

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
20/09/22	16:10	9.00	7.50	200	8.00
21/09/22	12:30	9.00	None	200	6.70
21/09/22	17:00	15.00	9.00	150	-
22/09/22	08:00	15.00	9.00	150	9.30
22/09/22	17:00	28.50	9.00	150	24.00
23/09/22	08:00	28.50	9.00	150	-
23/09/22	10:00	30.00	9.00	150	-

Chiselling / Slow Progress

From	To	Duration (hh:mm)
8.70	9.00	00:30

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Groundwater struck at 9.00m depth, rising to 8.00m depth after 20 minutes.
4. Cable percussion drilled using 200mm diameter tools and casing.
5. Rotary cored from 9.38m using SWF core barrel and 150mm diameter casing and air mist flush.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 Mark 2 + Comacchio GEO 205	Jonny Hutt + Luke Bamford	DNeylon + RStan	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH13**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**20.09.22** End: **23.09.22**	**88.03**	**E:446479.7 N:325113.2**	**2** of **14**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
4.90	20	D								Stiff reddish brown mottled grey slightly sandy slightly gravelly silty CLAY. Sand is fine to coarse. Gravel is subangular and subrounded fine to coarse of mixed lithologies. *(stratum copied from 3.60m from previous* sheet)			
5.00-5.45	21	$UT_{(UT100)}$	150 blows 78% recovery										
												(3.60)	
5.45-5.55	22	D											
5.70	23	D											
6.00-6.45		SPT	N=29										
6.00-6.45	25	DSPT											
6.00-6.45	26	B									80.83	7.20	
7.30	27	D								Stiff to very stiff reddish brown slightly gravelly sandy silty CLAY. Sand is fine to coarse of mudstone. Gravel is subangular fine to coarse of mudstone. (MERCIA MUDSTONE GROUP)			
7.50-7.95		SPT	6,6/9,12,15,14 for 70mm										
7.50-7.95	29	DSPT											
7.50-7.95	30	B							1				
												(1.80)	
8.70	31	D							1		79.03	9.00	

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

6. Unable to determine ground water strikes due to flush method.
7. Borehole installed with 50mm standpipe on completion (response zone 8.00m to 30.00m)
8. SPT hammer AR3104-2022 (E_r = 64.00%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 Mark 2 + Comacchio GEO 205	Jonny Hutt + Luke Bamford	DNeylon + RStan	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH13**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**20.09.22** End: **23.09.22**	**88.03**	**E:446479.7 N:325113.2**	**3** of **14**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
9.00-10.50													
9.00-9.38		SPT	8,12/14,16,20 for 75mm							AZCL. (MERCIA MUDSTONE GROUP)			
9.00-9.38	33	DSPT										(0.55)	AZCL
											78.48	9.55	
										Extremely weak reddish brown MUDSTONE, recovered as very clayey subangular to subrounded fine and medium gravel. GRADE IVa. (MERCIA MUDSTONE GROUP)			
				57	29	16					78.23	9.80	
											78.03	10.00	
10.00	35	ES								Extremely weak thinly laminated greenish grey SILTSTONE, partly recovered as angular fine and medium gravel. (MERCIA MUDSTONE GROUP)			
10.05-10.22	36	C											
10.50-12.00										Extremely weak reddish brown MUDSTONE. Fractures: Closely spaced, randomly orientated, smooth, undulating, occasionally stained black on surfaces. (MERCIA MUDSTONE GROUP) . . . 10.20-10.50m: Closely spaced sub-horizontal rough undulating bedding fractures.			
				97	19	0							
11.50-11.62	37	C										(3.55)	
12.00-13.50										. . . 12.00-12.25m: Firm reddish brown very gravelly CLAY. Gravel is fine to medium mudstone lithorelics. . . . 12.25m: very closely to closely spaced randomly orientated fractures, stained black. . . . 12.45-12.50m: Bedding fractures infilled with very gravelly clay.			
12.42		EW											
				90	35	10				. . . 12.80-12.85m: Bedding fractures infilled with very gravelly clay.			
13.10-13.20	38	C											

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 Mark 2 + Comacchio GEO 205	Jonny Hutt + Luke Bamford	DNeylon + RStan	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH13**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **23.09.22**	**88.03**	**E:446479.7 N:325113.2**	**4** of **14**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
13.50-15.00										. . . 13.45-13.48m: extremely weak greenish grey siltstone.	74.48	13.55	
										Extremely weak thinly laminated reddish brown MUDSTONE with pockets (up to 20mm) of greenish grey siltstone. GRADE III. (MERCIA MUDSTONE GROUP)	73.98	(0.50) 14.05	
13.85-13.97	39	C							▽ 2				
				90	50	0				Extremely weak reddish brown MUDSTONE. GRADE II. Fractures: Very closely spaced, randomly orientated, smooth, planar. (MERCIA MUDSTONE GROUP)		(0.50)	
										. . . 14.50-14.55m: greenish grey siltstone with bedding fractures infilled with reddish brown very gravelly clay.	73.48	14.55	
										Extremely weak reddish brown MUDSTONE with occasional pockets (up to 20mm) of greenish grey siltstone. GRADE II.		(0.55)	
15.00-16.50										Fractures: Closely spaced, randomly orientated. (MERCIA MUDSTONE GROUP)	72.93	15.10	
15.30	40	D								Reddish brown very clayey sandy angular to subangular fine to coarse GRAVEL of extremely weak mudstone lithorelicts. GRADE III. (MERCIA MUDSTONE GROUP)	72.63	(0.30) 15.40	
				90	50	0				Very stiff slightly sandy gravelly CLAY. Sand is fine to coarse of mudstone. Gravel is angular to subangular fine to coarse of mudstone lithorelicts. (MERCIA MUDSTONE GROUP)	72.33	(0.30) 15.70	
										Stiff thinly laminated greenish grey slightly gravelly SILT. (MERCIA MUDSTONE GROUP)	72.18	15.85	
										Extremely weak greenish grey SILTSTONE. (MERCIA MUDSTONE GROUP)	72.08	15.95	
16.50-18.00										Extremely weak reddish brown MUDSTONE. GRADE II. Fractures: Closely spaced, randomly orientated, with black specks on surfaces. (MERCIA MUDSTONE GROUP)	71.53	(0.55) 16.50	
										Extremely weak reddish brown MUDSTONE, recovered as NI. GRADE II. Fractures: Very closely spaced, randomly orientated, with dark brown staining. (MERCIA MUDSTONE GROUP)	71.08	(0.45) 16.95	
17.20-17.30	41	C		93	25	0				Extremely weak reddish brown MUDSTONE. GRADE II. (MERCIA MUDSTONE GROUP)	70.73	(0.35) 17.30	
										Extremely weak reddish brown MUDSTONE thickly interlaminated with greenish grey fine grained SANDSTONE	70.48	17.55	

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	**Dando 3000 Mark 2 + Comacchio GEO 205**	**Jonny Hutt + Luke Bamford**	**DNeylon + RStan**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH13**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**20.09.22** End: **23.09.22**	**88.03**	**E:446479.7 N:325113.2**	**5** of **14**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
18.00-19.50										and SILTSTONE. (MERCIA MUDSTONE GROUP) Extremely weak reddish brown MUDSTONE. GRADE II. Fractures: Closely spaced, randomly orientated. (MERCIA MUDSTONE GROUP) *(stratum copied from 17.55m from* previous sheet) . . . 8.15-18.30m: Thinly interlaminated with greenish grey siltstone.		(1.40)	
18.45-18.70	42	C		97	50	43					69.08	18.95	
										Stiff reddish brown slightly sandy gravelly CLAY with frequent thick laminae (up to 10mm) of greenish grey silt. Sand is fine and medium of mudstone. Gravel is angular to subangular fine to coarse of mudstone lithorelicts. GRADE IVa. (MERCIA MUDSTONE GROUP)	68.68	(0.40) 19.35	
19.50-21.00										Black thinly cross laminated greenish grey SANDSTONE. (MERCIA MUDSTONE GROUP) Extremely weak reddish brown MUDSTONE. GRADE II. (MERCIA MUDSTONE GROUP) . . . 19.65-19.70m: Weak greenish grey siltstone. . . . 19.95-20.20m: Bedding fractures: very closely spaced, rough, undulating, infilled with subangular gravel. . . . 20.30m: Becoming very weak with closely spaced randomly orientated rough undulating fractures, with occasional black staining on fracture surfaces.	68.53	19.50	
20.20-20.35	43	C		90	57	48						(3.00)	
21.00-22.50										. . . 21.00m: Closely spaced randomly orientated smooth undulating fractures with occasional black staining along surfaces.			
				107	27	15							
										. . . 21.95-22.20m: Rough undulating bedding fractures, infilled (<50mm) with sandy gravel.			
22.35-22.50	44	C									65.53	22.50	

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 Mark 2 + Comacchio GEO 205	Jonny Hutt + Luke Bamford	DNeylon + RStan	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH13**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**20.09.22** End: **23.09.22**	**88.03**	**E:446479.7 N:325113.2**	**6** of **14**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
22.50-24.00										Weak greenish grey fine to medium grained SANDSTONE with occasional vugs (up to 0.6mm). (MERCIA MUDSTONE GROUP)	65.28	22.75	
22.63-22.85	45	C								Extremely weak reddish brown MUDSTONE. Fractures: Very closely to closely spaced, randomly orientated, undulating, with dark brown staining on surfaces. (MERCIA MUDSTONE GROUP) . . . 23.05-23.15m: Greenish grey siltstone. . . . 23.15-23.70m: Rough undulating fracture, approximately 80°, with dark brown staining along the fracture surface. . . . 23.70-23.80m: Extremely weak greenish grey thinly laminated siltstone.		(1.60)	
				97	21	13							
24.00-25.50											63.68	24.35	
										Weak greenish grey fine to medium grained SANDSTONE with occasional vugs (up to 0.6mm). (MERCIA MUDSTONE GROUP)	63.23	(0.45) 24.80	
				90	47	29							
24.82-25.12	46	C								Extremely weak to weak reddish brown MUDSTONE thinly interbedded with greenish grey SILTSTONE. Bedding fractures: Closely spaced, rough, infilled with reddish brown gravelly clay and green silt. (MERCIA MUDSTONE GROUP) . . . 24.95-25.00m: Bedding fracture infilled (<100mm) with reddish brown clay.	62.53	(0.70) 25.50	
25.50-27.00										. . . 25.45m: Thinly interbedded. Weak to medium strong greenish grey fine to medium grained SANDSTONE. (MERCIA MUDSTONE GROUP) . . . 25.65-25.80m: Interspersed with reddish brown siltstone.	62.03	(0.50) 26.00	
										. . . 25.90m: Abundant fine to medium sand size vugs,			
				93	29	23				Very stiff reddish brown slightly sandy CLAY. Sand is fine of mudstone. GRADE IVb. (MERCIA MUDSTONE GROUP)			
26.50-26.72	47	C								. . . 26.38-26.45m: Weak greenish grey fine to medium grained sandstone with fine to medium sand size vugs.		(1.45)	

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress

From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 Mark 2 + Comacchio GEO 205	Jonny Hutt + Luke Bamford	DNeylon + RStan	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH13**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**20.09.22** End: **23.09.22**	**88.03**	**E:446479.7 N:325113.2**	**7** of **14**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
27.00-28.50										Very stiff reddish brown slightly sandy CLAY. Sand is fine of mudstone. GRADE IVb. (MERCIA MUDSTONE GROUP) *(stratum copied from 26.00m from* previous sheet)	60.58	27.45	
27.50-27.75	48	C								. . . 27.00m: Fine to coarse gravel size pockets of greenish grey silt.	60.33	27.70	
				100	53	0				Stiff greenish grey sandy SILT. (MERCIA MUDSTONE GROUP)			
										Stiff reddish brown slightly sandy slightly gravelly CLAY. Interspersed with greenish grey sandy silt. Sand is fine and medium of mudstone and siltstone. Gravel is angular to subangular fine and medium of mudstone and siltstone lithorelicts. GRADE IVa. (MERCIA MUDSTONE GROUP)	59.58	(0.75) 28.45	
28.50-30.00										Extremely weak reddish brown MUDSTONE with occasional pockets (up to 20mm) of siltstone. GRADE II. (MERCIA MUDSTONE GROUP) . . . 28.45-28.55m: Thinly interbedded with greenish grey siltstone. . . . 28.55-28.75m: Very closely spaced randomly orientated fractures. . . . 29.00m: Rare pockets of siltstone.			
29.20-29.50	49	C		100	6	4						(1.55)	
											58.03	30.00	
										Borehole terminated at 30.00m depth.			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	**Dando 3000 Mark 2 + Comacchio GEO 205**	**Jonny Hutt + Luke Bamford**	**DNeylon + RStan**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH13**
Contract Ref:	Start: **20.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **23.09.22**	**88.03**	**E:446479.7 N:325113.2**	**8** of **14**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 Mark 2 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Luke Bamford	Logged By:	DNeylon + RStan	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH13**
Contract Ref:	Start: **20.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **23.09.22**	**88.03**	**E:446479.7 N:325113.2**	**9** of **14**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 Mark 2 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Luke Bamford	Logged By:	DNeylon + RStan	Checked By:	AGS

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH13**
Contract Ref:	Start: **20.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **23.09.22**	**88.03**	**E:446479.7 N:325113.2**	**10** of **14**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 Mark 2 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Luke Bamford	Logged By:	DNeylon + RStan	Checked By:	AGS

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH13**
Contract Ref:	Start: **20.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **23.09.22**	**88.03**	**E:446479.7 N:325113.2**	**11** of **14**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 Mark 2 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Luke Bamford	Logged By:	DNeylon + RStan	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH13**
Contract Ref:	Start: **20.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **23.09.22**	**88.03**	**E:446479.7 N:325113.2**	**12** of **14**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 Mark 2 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Luke Bamford	Logged By:	DNeylon + RStan	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH13**
Contract Ref:	Start: **20.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **23.09.22**	**88.03**	**E:446479.7 N:325113.2**	**13** of **14**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 Mark 2 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Luke Bamford	Logged By:	DNeylon + RStan	Checked By:	AGS

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH13**
Contract Ref:	Start: **20.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **23.09.22**	**88.03**	**E:446479.7 N:325113.2**	**14** of **14**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 Mark 2 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Luke Bamford	Logged By:	DNeylon + RStan	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH14**

Contract Ref:	Start: **15.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **27.09.22**	**84.68**	**E:446455.2 N:325059.0**	**1** of **12**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instru-mentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
0.10	1	D									TOPSOIL			
0.10-0.30	2	B											(0.40)	
0.20	101	ES	1xT+1xJ+1xV									84.28	0.40	
0.50	102	ES	1xT+1xJ+1xV								Stiff reddish brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of mixed lithologies including quartzite, metamorphic rock, and sandstone.			
0.70	3	D												
0.70-0.90	4	B												
1.00	103	ES	1xT+1xJ+1xV										(1.30)	
1.20	5	D												
1.20-1.50	6	$UT_{(UT100)}$	150 blows 83% recovery											
1.50-1.63	7	D										82.98	1.70	
1.80	8	D									Firm reddish brown sandy CLAY. Sand is fine to coarse, predominantly coarse.			
2.00-2.45		SPT	N=12											
2.00-2.45	10	DSPT												
2.00-2.45	11	B											(1.10)	
												81.88	2.80	
2.90	12	D									Stiff thinly to thickly laminated reddish brown sandy CLAY. Sand is fine to coarse.			
3.00-3.45	13	$UT_{(UT100)}$	150 blows 89% recovery											
3.00-3.50	15	B												
3.45-3.55	14	D											(1.50)	
3.70	16	D												
4.00-4.45		SPT	N=31											
4.00-4.45	18	DSPT												
4.00-4.45	19	B										80.38	4.30	
											Description on next sheet			

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
21/09/22	17:34	12.50	12.00	200	10.80
26/09/22	10:00	12.50	12.50	200	9.20
26/09/22	16:30	21.90	12.50	146	-
27/09/22	09:00	21.90	12.50	146	9.20
27/09/22	16:30	24.90	12.50	146	-

Chiselling / Slow Progress

From	To	Duration (hh:mm)
12.30	12.50	00:30

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Cable percussion borehole drilled using 200mm tools and casing.
4. 200 litres of water added added between 9.00m and 12.00m to aid drilling.
5. Rotary cored from 12.50m using Geobor-S and air mist flush.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	**Dando 3000 + Comacchio GEO 601**	**Jonny Hutt + Sam Carter**	**JAlton + RSenior**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH14**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**15.09.22** End: **27.09.22**	**84.68**	**E:446455.2 N:325059.0**	**2** of **12**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instru-mentation	Water	Description of Strata	Reduced Level	Depth (Thick ness)	Material Graphic Legend
4.70	20	D									Stiff fissured reddish brown mottled grey sandy CLAY. Sand is fine to coarse. *(stratum copied from 4.30m from* previous sheet)			
5.00-5.45		SPT	N=15											
5.00-5.45	22	DSPT											(1.70)	
5.00-5.45	23	B												
5.70	24	D										78.68	6.00	
6.00-6.45		SPT	N=37								Stiff fissured dark brown sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of mixed lithologies including quartzite, metamorphic rock, and sandstone.			
6.00-6.45	26	B											(1.20)	
												77.48	7.20	
7.30	27	D									Stiff dark brown sandy CLAY. Sand is fine to coarse.			
7.50-7.95		SPT	N=32											
7.50-7.95	29	DSPT											(2.50)	
7.50-7.95	30	B												
8.70	31	D												

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

6. No groundwater strikes in the cable percussion section. Unable to determine ground water strikes due to flush method.
7. Borehole installed with 50mm standpipe upon completion (response zone 1.00m to 11.50m).
8. SPT hammer AR3104-2022 (E_r = 64.00%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 601	Jonny Hutt + Sam Carter	JAlton + RSenior	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH14**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**15.09.22** End: **27.09.22**	**84.68**	**E:446455.2 N:325059.0**	**3** of **12**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
9.00-9.45		SPT	N=31								Stiff dark brown sandy CLAY. Sand is fine to coarse. *(stratum copied from 7.20m from* previous sheet)			
9.00-9.45	33	DSPT												
9.00-9.45	34	B										74.98	9.70	
10.30	35	D									Stiff dark reddish brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subrounded to subangular fine to coarse of mixed lithologies including quartzite, metamorphic rock, sandstone, and mudstone.		(1.50)	
10.50-10.95		SPT	N=29											
10.50-10.95	37	DSPT												
10.50-10.95	38	B										73.48	11.20	
11.70	39	D									Stiff to very stiff reddish brown mottled light greenish grey gravelly silty CLAY. Gravel is angular to subangular fine to coarse of mudstone lithorelicts. With occasional pockets of grey siltstone. GRADE IVb. (MERCIA MUDSTONE GROUP)		(1.30)	
12.00-12.43		SPT	3,6/10,11,15,14 for 55mm											
12.00-12.43	41	DSPT												
12.00-12.45	42	B										72.18	12.50	
12.50-12.90 (0:01)											AZCL (MERCIA MUDSTONE GROUP)	71.98	12.70	AZCL
12.50-12.77		SPT	13,12/24,26 for 65mm	50	0	0		Air+Mist (Brown)						
12.50-12.77	44	DSPT									Stiff to very stiff thickly laminated to very thinly bedded reddish brown mottled light greenish grey silty CLAY with frequent angular to subangular fine and medium gravel sized lithorelicts. GRADE III. (MERCIA MUDSTONE GROUP)	71.78	12.90	
12.80	45	D												
12.90-14.40 (0:05)				93	43	0	NI 30 80	Air+Mist (Brown)			*Description on next sheet* 13.32-13.55m: 85°-90° undulating rough black stained		(1.10)	

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 601	Jonny Hutt + Sam Carter	JAlton + RSenior	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH14**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**15.09.22** End: **27.09.22**	**84.68**	**E:446455.2 N:325059.0**	**4** of **12**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
											locally orangish brown stained discontinuity. Extremely weak to very weak thickly laminated to thinly bedded reddish brown MUDSTONE. GRADE II.			
13.90	46	D		93	43	0	NI 30 80	Air+Mist (Brown)			Bedding fractures: Very close to closely spaced, 0° to 5°, undulating, smooth, locally stained black and orangish brown.	70.68	14.00	
											Fracture set 2: Extremely closely to very closely spaced, randomly orientated, smooth and rough, locally black and orangish brown stained. (MERCIA MUDSTONE GROUP) *(stratum copied from 12.90m from* previous sheet)	70.33	(0.35) 14.35	
14.40-15.90 (0:05)											. . . 13.59-13.61m: Very weak light greenish grey siltstone. . . . 13.60-13.80m: 60° undulating smooth clean locally orangish brown stained discontinuity. . . . 13.98-14.00m: Very weak light greenish grey siltstone with occasional black specks on discontinuity surfaces.			
14.62-14.78	47	C		97	73	20		Air+Mist (Brown)			Very stiff thickly laminated to very thinly bedded reddish brown CLAY with frequent angular to subangular fine and medium gravel sized lithorelicts. GRADE III. (MERCIA MUDSTONE GROUP) . . . 14.10-14.12m: Stiff light greenish grey silt.			
15.90-17.40 (0:06)							NI 50 130				Extremely weak to weak thickly laminated to thinly bedded reddish brown mottled light greenish grey MUDSTONE.			
16.63-16.75	48	C		97	47	7		Air+Mist (Brown)			Bedding fracture: Very closely to closely spaced, locally extremely closely spaced, undulating, smooth, clean, locally rough, with occasional black staining on surfaces. (MERCIA MUDSTONE GROUP) . . . 14.78-14.85m: Weak silty mudstone. . . . 15.08-15.42m: 85° to 90° undulating smooth orangish brown stained and black speckled discontinuity. . . . 15.29-15.36m: 50° undulating smooth locally orangish brown stained discontinuity with rare black specks.		(4.75)	
17.40-18.90 (0:05)				100	47	27		Air+Mist (Brown)						

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress

From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 601	Jonny Hutt + Sam Carter	JAlton + RSenior	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH14**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**15.09.22** End: **27.09.22**	**84.68**	**E:446455.2 N:325059.0**	**5** of **12**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
18.44-18.63	50	C		100	47	27	NI 50 130	Air+Mist (Brown)			. . . 15.60-15.62m: Extremely weak light greenish grey siltstone. . . . 15.69-15.70m: Extremely weak light greenish grey siltstone. . . . 15.75-15.90m: Extremely weak and thinly laminated mudstone. . . . 15.95-15.97m: Strong light grey siltstone. . . . 16.14-16.16m: Strong light grey siltstone. . . . 16.27-16.30m: Strong light grey siltstone.			
18.90-20.40 (0:05)											. . . 16.30-16.39m: Drilling disturbed, recovered as (soft) gravelly clay. . . . 16.48-16.58m: 90° undulating smooth clean, locally lightly stained orange. . . . 16.59-16.60m: Light greenish grey siltstone. . . . 16.84-17.06m: 75° undulating smooth black stained discontinuity. . . . 17.05-17.15m: 80°-90° undulating smooth black stained locally orangish brown stained discontinuity. . . . 17.27-17.29m: Extremely weak light greenish grey siltstone. . . . 17.40-17.50m: Drilling disturbed, recovered as angular fine to coarse gravel size fragments. . . . 17.50-17.65m: 85° to 90° undulating rough discontinuity with frequent black specks on surface.	65.58	19.10	
19.50-19.80	51	C		100	72	45	NI 80 300	Air+Mist (Brown)					(1.65)	
20.40-21.90 (0:05)												63.93	20.75	
20.40-20.53	52	C												
20.80-21.05	53	C		100	97	81	NI 120 260	Air+Mist (Brown)			. . . 17.65-17.80m: 90° undulating rough black stained discontinuity. . . . 17.80-19.10m: extremely closely to very closely spaced, randomly orientated, undulating, smooth and rough, clean and black stained discontinuities. Extremely weak to weak thickly laminated to thinly bedded reddish brown mottled light greenish grey MUDSTONE. Bedding fracture: Very closely to closely spaced, locally extremely closely spaced, undulating, smooth, clean, locally rough, with occasional black staining on surfaces. (MERCIA MUDSTONE GROUP) *(stratum copied from 14.35m from* previous sheet) . . . 18.90-19.10m: strong thinly bedded light grey siltstone.		(1.00)	
21.90-23.40 (0:05)				100	53	17	NI 60 260	Air+Mist (Brown)				62.93	21.75	
												62.78	21.90	
													(0.62)	

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 601	Jonny Hutt + Sam Carter	JAlton + RSenior	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH14**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**15.09.22** End: **27.09.22**	**84.68**	**E:446455.2 N:325059.0**	**6** of **12**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instru-mentation	Water	Description of Strata	Reduced Level	Depth (Thick ness)	Material Graphic Legend
23.19-23.33	54	C		100	53	17	NI 60 260	Air+Mist (Brown)			Extremely weak to very weak very thickly to thinly locally medium bedded reddish brown mottled light greenish grey MUDSTONE. Bedding fractures: Very closely to medium spaced, 0° to 5°, undulating, smooth, clean and lightly black stained. (MERCIA MUDSTONE GROUP) . . . 20.09-20.15m: Extremely weak to very weak thinly and thickly laminated light greenish grey siltstone.	62.16	22.52 (0.98)	
23.40-24.90 (0:06)												61.18	23.50	
24.00	55	D		100	22	13	NI NI 280	Air+Mist (Brown)			Very weak to weak thinly to medium bedded light greenish grey SILTSTONE with frequent vugs (up to 5mm). GRADE III. Bedding fractures: Closely to medium spaced, 0° to 5°, undulating, rough, with frequent black specks locally clean. (MERCIA MUDSTONE GROUP) . . . 21.25-21.57m: Siltstone is very thinly to thinly bedded with interbeds of very weak reddish brown mudstone.		(1.40)	
24.64-24.90	56	C									Extremely weak thickly laminated to very thinly bedded reddish brown mottled light greenish grey MUDSTONE. GRADE II. Bedding fractures: Very closely spaced, undulating, rough, clean, locally black stained. (MERCIA MUDSTONE GROUP)	59.78	24.90	
											. . . 22.40-22.50m: 50° undulating rough discontinuity with occasional black specks. Medium strong thinly to medium bedded light greenish grey SILTSTONE. GRADE I. Bedding fractures: Closely to medium spaced, 0° to 10°, undulating, rough, clean, locally with occasional black specks on surface. (MERCIA MUDSTONE GROUP) *(stratum copied from 21.90m from* previous sheet)			
											Extremely weak to very weak thinly bedded reddish brown MUDSTONE. GRADE II. Bedding fractures: Closely spaced, 0° to 5°, undulating, rough, clean, locally with <1mm clay surfaces. (MERCIA MUDSTONE GROUP) *Description on next sheet*			

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 601	Jonny Hutt + Sam Carter	JAlton + RSenior	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH14**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**15.09.22** End: **27.09.22**	**84.68**	**E:446455.2 N:325059.0**	**7** of **12**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instru-mentation	Water	Description of Strata	Reduced Level	Depth (Thick ness)	Material Graphic Legend
											. . . 22.55-22.65m: 50° undulating rough clean discontinuity. . . . 22.74-22.77m: Extremely weak light greenish grey siltstone. . . . 23.21-23.40m: Very weak very thinly bedded light greenish grey siltstone. . . . 23.40-23.49m: 88° to 90° undulating rough clean discontinuity.			
											Stiff to very stiff thickly laminated to very thinly bedded reddish brown silty CLAY with frequent angular to subangular fine and medium gravel sized lithorelicts. GRADE III. (MERCIA MUDSTONE GROUP) . . . 23.93-24.09m: Extremely weak light greenish grey siltstone. . . . 24.32-24.40m: Extremely weak light greenish grey siltstone. . . . 24.46-24.50m: Weak light greenish grey siltstone. . . . 24.64-24.73m: Very weak to weak light greenish grey siltstone.			
											Borehole terminated at 24.90m depth.			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	**Dando 3000 + Comacchio GEO 601**	**Jonny Hutt + Sam Carter**	**JAlton + RSenior**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH14**
Contract Ref:	Start: **15.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **27.09.22**	**84.68**	**E:446455.2 N:325059.0**	**8** of **12**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 601	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	JAlton + RSenior	Checked By:	AGS

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH14**
Contract Ref:	Start: **15.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **27.09.22**	**84.68**	**E:446455.2 N:325059.0**	**9** of **12**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 601	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	JAlton + RSenior	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH14**
Contract Ref:	Start: **15.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **27.09.22**	**84.68**	**E:446455.2 N:325059.0**	**10** of **12**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 601	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	JAlton + RSenior	Checked By:	AGS

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH14**
Contract Ref:	Start: **15.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **27.09.22**	**84.68**	**E:446455.2 N:325059.0**	**11** of **12**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 601	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	JAlton + RSenior	Checked By:	AGS

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH14**
Contract Ref:	Start: **15.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **27.09.22**	**84.68**	**E:446455.2 N:325059.0**	**12** of **12**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 601	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	JAlton + RSenior	Checked By:	AGS

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH15**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **29.09.22**	**81.49**	**E:446370.2 N:325029.4**	**1** of **13**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
0.10	1	D									TOPSOIL			
0.10	101	ES	1xT+1xJ+1xV										(0.40)	
0.10-0.30	2	B										81.09	0.40	
0.60	102	ES	1xT+1xJ+1xV								Stiff reddish brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of mixed lithologies including sandstone, siltstone, and mudstone.			
0.70	3	D												
0.70-0.90	4	B												
1.20	5	D												
1.20-1.50	6	$UT_{(UT100)}$	150 blows 83% recovery											
1.50-1.60	7	D											(2.20)	
1.70	8	D												
2.00-2.45		SPT	N=30											
2.00-2.45	10	DSPT												
2.00-2.45	11	B										78.89	2.60	
2.60-3.00	12	B									Greyish brown sandy silty very angular to subangular coarse GRAVEL of mixed lithologies including sandstone and quartzite. Sand is fine to coarse.		(0.40)	
3.00-3.45		SPT	N=30									78.49	3.00	
3.00-3.45	14	DSPT									Medium dense to dense greyish brown silty SAND.			
3.00-3.45	15	B											(0.45)	
3.70	16	D										78.04	3.45	
4.00-4.45		SPT(c)	N=32								Dense greyish brown very gravelly silty fine to coarse SAND. Gravel is fine to coarse of mixed lithologies including sandstone and siltstone.			
4.00-4.45	18	B												

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
22/09/22	17:00	3.00	3.00	200	Dry
23/09/22	07:42	3.00	3.00	200	Dry
23/09/22	15:00	12.00	12.00	200	9.10
26/09/22	09:20	12.00	12.00	200	6.60
26/09/22	13:24	14.00	13.50	200	-
28/09/22	11:00	14.00	13.50	200	12.50
28/09/22	17:00	26.35	13.50	146	24.50
29/09/22	08:30	26.35	13.50	146	6.40

Chiselling / Slow Progress

From	To	Duration (hh:mm)
9.20	9.60	01:00
11.20	11.70	01:00
13.30	13.80	01:00

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Cable percussion drilled using 200mm diameter tools and casing.
4. 200 litres of water added from 3.00m to 12.00m to aid drilling.
5. Rotary cored from 14.00m using Geobor-S and air mist flush.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 601	Jonny Hutt + Sam Carter	DNartey + RStan	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH15**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**22.09.22** End: **29.09.22**	**81.49**	**E:446370.2 N:325029.4**	**2** of **13**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
											Dense greyish brown very gravelly silty fine to coarse SAND. Gravel is fine to coarse of mixed lithologies including sandstone and siltstone. *(stratum copied from 3.45m from* previous sheet)		(2.55)	
4.70	19	D												
5.00-5.45		SPT(c)	N=33								. . . Below 5.00m: Gravelly.			
5.00-5.45	21	B												
5.70	22	D										75.49	6.00	
6.00-6.45		SPT(c)	N=33								Medium dense to dense orangish brown very gravelly silty fine to coarse SAND. Gravel is fine of mixed lithologies including sandstone, siltstone, and limestone.			
6.00-6.45	24	B											(2.30)	
7.30	25	D												
7.50-7.95		SPT	N=26											
7.50-7.95	27	DSPT												
7.50-7.95	28	B										73.19	8.30	
											Description on next sheet			
8.70	29	D											(0.90)	

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
29/09/22	17:00	30.85	13.50	146	-

Chiselling / Slow Progress

From	To	Duration (hh:mm)

General Remarks

6. No groundwater strikes in the cable percussion section. Unable to determine ground water strikes due to flush method.
7. Borehole backfilled with bentonite on completion.
8. SPT hammer AR3104-2022 (E_r = 64.00%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 601	Jonny Hutt + Sam Carter	DNartey + RStan	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH15**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**22.09.22** End: **29.09.22**	**81.49**	**E:446370.2 N:325029.4**	**3** of **13**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
9.00-9.32		SPT	4,5,7,26,17 for 20mm								Stiff laminated reddish brown mottled grey slightly sandy gravelly SILT. Sand is fine to coarse, predominantly coarse. Gravel is subangular to subrounded fine to coarse of mixed lithologies including sandstone, siltstone, mudstone, and coal. Low cobble content of flint. *(stratum copied from 8.30m from* previous sheet)	72.29	9.20	
9.00-9.32	31	DSPT												
9.00-9.32	32	B										71.89	(0.40) 9.60	
											Cobbles and boulders of flint.			
											Medium dense orangish brown silty sandy angular to subangular fine to coarse GRAVEL of mixed lithologies including sandstone, siltstone, and flint. With low cobble content.			
10.30	33	D												
10.50-10.95		SPT	N=23											
10.50-10.95	35	DSPT											(2.10)	
10.50-10.95	36	B												
11.20-11.70	37	B										69.79	11.70	
11.80	38	D									Stiff reddish brown mottled grey gravelly sandy SILT. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of mixed lithologies including mudstone and flint.			
12.00-12.45		SPT	N=36											
12.00-12.45	40	DSPT											(1.00)	
12.00-12.45	41	B												
12.50	42	W										68.79	12.70	
											Stiff to very stiff reddish brown gravelly sandy SILT. Sand is fine. Gravel is angular to subangular fine of mudstone. Occasional band and pockets of grey siltstone. (MERCIA MUDSTONE GROUP)			
13.30	43	D											(1.30)	

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 601	Jonny Hutt + Sam Carter	DNartey + RStan	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH15**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**22.09.22** End: **29.09.22**	**81.49**	**E:446370.2 N:325029.4**	**4** of **13**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
13.50-13.80		SPT	3,4/19,31 for 75mm								Stiff to very stiff reddish brown gravelly sandy SILT. Sand is fine. Gravel is angular to subangular fine of mudstone. Occasional band and pockets of grey siltstone. (MERCIA MUDSTONE GROUP)			
13.50-13.80	45	DSPT												
13.50-13.80	46	B												
13.80-14.02		SPT	25/26,24 for 70mm									67.49	14.00	
13.80-14.02	48	DSPT									*(stratum copied from 12.70m from previous sheet)*			
14.00-14.35 (0:02)				100	14	0	NI NI NI	Air+Mist (Brown)			Extremely weak reddish brown MUDSTONE. GRADE III. Fractures: Very closely spaced, randomly orientated, planar, locally NI, rough, frequently black stained. (MERCIA MUDSTONE GROUP)			
14.20-14.30	49	D												
14.30-14.35	50	C												
14.35-15.85 (0:05)				100	25	13	NI NI 100	Air+Mist (Brown)			. . . 14.33-14.35m: Grey siltstone. . . . 14.35-15.08m: NI, recovered as angular fine to coarse gravel, with abundant black stained on surface. Fractures are randomly orientated, predominantly 0-10°, planar, rough, abundant black staining, silty clay infill.	66.41	15.08	
15.29-15.39	51	C									Extremely weak to weak reddish brown silty MUDSTONE. Fractures: Closely spaced, 0-10°, planar, rough, frequently black stained. (MERCIA MUDSTONE GROUP) . . . 15.08-15.09m: 6° planar rough with silty clay infill (<3mm). . . . 15.10-15.30m: NI, fractures are randomly orientated with abundant black staining. . . . 15.32-15.40m: 22° planar rough with abundant black staining, with clayey silt infill (<3mm). . . . 15.74-15.85m: NI, fractures are randomly orientated with abundant black staining on discontinue surface. . . . 15.85-15.98m: 86° undulating rough abundant black staining. . . . 15.98-15.99m depth; 7° undulating rough abundant black staining. . . . 15.99-16.26m: Weak and medium strong grey siltstone. . . . 16.01-16.02m: 5° planar rough abundant black staining. . . . 16.04-16.05m: 3° planar rough, occasional brown staining. . . . 16.14-16.15m: 6° undulating rough clean. . . . 16.23-16.24m: 6° undulating rough clean.			
15.85-17.35 (0:04)				100	91	53	NI 70 540	Air+Mist (Brown)						
16.59-16.87	52	C												
17.35-18.85 (0:04)				100	92	66	15 350 830	Air+Mist (Brown)					(4.90)	
17.49-17.69	53	C									*Description on next sheet*			

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	**Dando 3000 + Comacchio GEO 601**	**Jonny Hutt + Sam Carter**	**DNartey + RStan**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH15**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**22.09.22** End: **29.09.22**	**81.49**	**E:446370.2 N:325029.4**	**5** of **13**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
				100	92	66	15 350 830	Air+Mist (Brown)			. . . 16.27-16.28m: 4° undulating grough clean. . . . 16.30-16.31m: 5° planar rough abundant black staining. . . . 16.35-16.40m: NI, recovered as silty angular fine to medium gravel. . . . 16.40-16.46m: 84° planar rough abundant black staining. . . . 16.46-16.50m: NI, recovered as clayey silty angular fine to medium gravel. . . . 16.50-16.59m: 82° undulating rough abundant black staining. . . . 16.59-16.60m: 5° planar rough abundant black staining. . . . 17.12-17.14m: Grey siltstone. . . . 17.16-17.18m: NI, recovered as silty sandy gravel. . . . 17.18-17.24m: Grey siltstone. . . . 17.35-17.43m: 43° undulating rough occasional black staining. . . . 17.79-18.20m: Weak grey siltstone. . . . 17.95-17.99m: 12° undulating rough occasional brown staining. . . . 17.98-17.99m: 4° undulating rough occasional brown staining.			
18.85-20.35 (0:06)												61.51	19.98	
19.61-19.89	54	C		100	100	96	70 120 490	Air+Mist (Brown)			Extremely weak to weak reddish brown silty MUDSTONE. Fractures: Closely spaced, 0-10°, planar, rough, frequently black stained. (MERCIA MUDSTONE GROUP) . . . 15.08-15.09m: 6° planar rough with silty clay infill (<3mm).*(stratum copied from 15.08m from previous* sheet) . . . 18.02-18.05m: 15° planar rough abundant brown staining. . . . 18.07-18.08m: 6° undulating grough abundant brown staining. . . . 18.16-18.17m: 5° undulating rough abundant brown and yellow staining. . . . 18.20-18.23m: NI. . . . 18.20-18.66m: Grey mottled reddish brown siltstone interbedded with mudstone. . . . 18.32-18.38m: 29° planar rough occasional black staining. . . . 18.98-19.00m: NI. . . . 19.01-19.26m: Medium strong grey siltstone. . . . 19.11-19.13m: 9° planar rough occasional brown staining.		(0.44)	
20.35-21.85 (0:06)												61.07	20.42	
20.51-20.69	55	C		100	77	77	NI NI NI	Air+Mist (Brown)					(1.48)	
21.85-23.35 (0:05)												59.59	21.90	
22.03-22.26	56	C		100	97	97	NI NI NI	Air+Mist (Brown)						

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	**Dando 3000 + Comacchio GEO 601**	**Jonny Hutt + Sam Carter**	**DNartey + RStan**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH15**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**22.09.22** End: **29.09.22**	**81.49**	**E:446370.2 N:325029.4**	**6** of **13**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
				100	97	97	NI NI NI	Air+Mist (Brown)			. . . 19.26-19.97m: Grey mottled reddish brown siltstone and mudstone. . . . 19.34-19.41m: 40° planar rough abundant black staining. . . . 19.59-19.64m: 27° planar rough clean.			
											Very weak to weak reddish brown silty sandy MUDSTONE. GRADE II. (MERCIA MUDSTONE GROUP)			
23.35-24.85 (0:06)											Very weak to weak reddish brown mottled grey fine and medium grained SANDSTONE interbedded with grey siltstone. (MERCIA MUDSTONE GROUP) . . . 21.50-21.90m: NI. . . . 22.26-22.28m: Reddish brown fine to medium grained sandstone.			
24.20-24.51	57	C		95	92	67	60 80 NI	Air+Mist (Brown)			Very weak to weak reddish brown MUDSTONE. Occasional pockets and laminae of grey siltstone. Rare laminae of reddish brown fine to medium grained sandstone. GRADE II. (MERCIA MUDSTONE GROUP) *(stratum copied from 21.90m from* previous sheet) . . . 23.35-23.40m: 43° undulating rough clean. . . . 23.41-23.43m: 9° planar rough brown stained. . . . 23.48-23.52m: 33° planar rough brown stained. . . . 23.53-23.56m: 16° planar rough brown stained. . . . 24.66-24.78m: With laminae of grey siltstone.			
24.85-26.35 (0:06)														
25.55-25.91	58	C		100	100	100	NI NI NI	Air+Mist (Brown)			. . . 25.20-25.43m: Grey mottled reddish brown siltstone and mudstone. . . . 25.60-25.71m: Pockets grey siltstone. . . . 25.98-26.65m: Weak fine grained sandstone.		(7.62)	
26.35-27.85 (0:06)														
26.60-26.90	59	C		100	98	98	NI NI NI	Air+Mist (Brown)			. . . 26.65-27.05m: Grey siltstone. . . . 26.90-26.93m: NI.			

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 601	Jonny Hutt + Sam Carter	DNartey + RStan	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH15**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**22.09.22** End: **29.09.22**	**81.49**	**E:446370.2 N:325029.4**	**7** of **13**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
				100	98	98	NI NI NI	Air+Mist (Brown)			Very weak to weak reddish brown MUDSTONE. Occasional pockets and laminae of grey siltstone. Rare laminae of reddish brown fine to medium grained sandstone. GRADE II. (MERCIA MUDSTONE GROUP) *(stratum copied from 21.90m from* previous sheet) . . . 27.34-27.38m: Grey siltstone. . . . 27.47-27.75m: Weak grey siltstone . . . 27.75-27.85m: Sandy mudstone. . . . 28.08-28.14m: Medium strong grey siltstone. . . . 28.14-28.60m: Grey mottled reddish brown siltstone. . . . 28.36-28.43m: 35° planar rough brown stained.			
27.85-29.35 (0:06)														
28.43-28.68	60	C		100	100	100	NI NI NI	Air+Mist (Brown)			. . . 28.95-28.97m: Reddish brown fine grained sandstone.			
29.35-30.85 (0:04)												51.97	29.52	
29.35-30.85	61	C		100	100	100		Air+Mist (Brown)			Weak reddish brown fine and medium grained SANDSTONE. Occasional pockets and laminae of grey siltstone and very weak reddish brown mudstone. (MERCIA MUDSTONE GROUP) . . . 30.03-30.18m: Reddish brown mudstone.		(1.33)	
											. . . 30.82-30.85m: Grey siltstone.	50.64	30.85	
											Borehole terminated at 30.85m depth.			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 601	Jonny Hutt + Sam Carter	DNartey + RStan	

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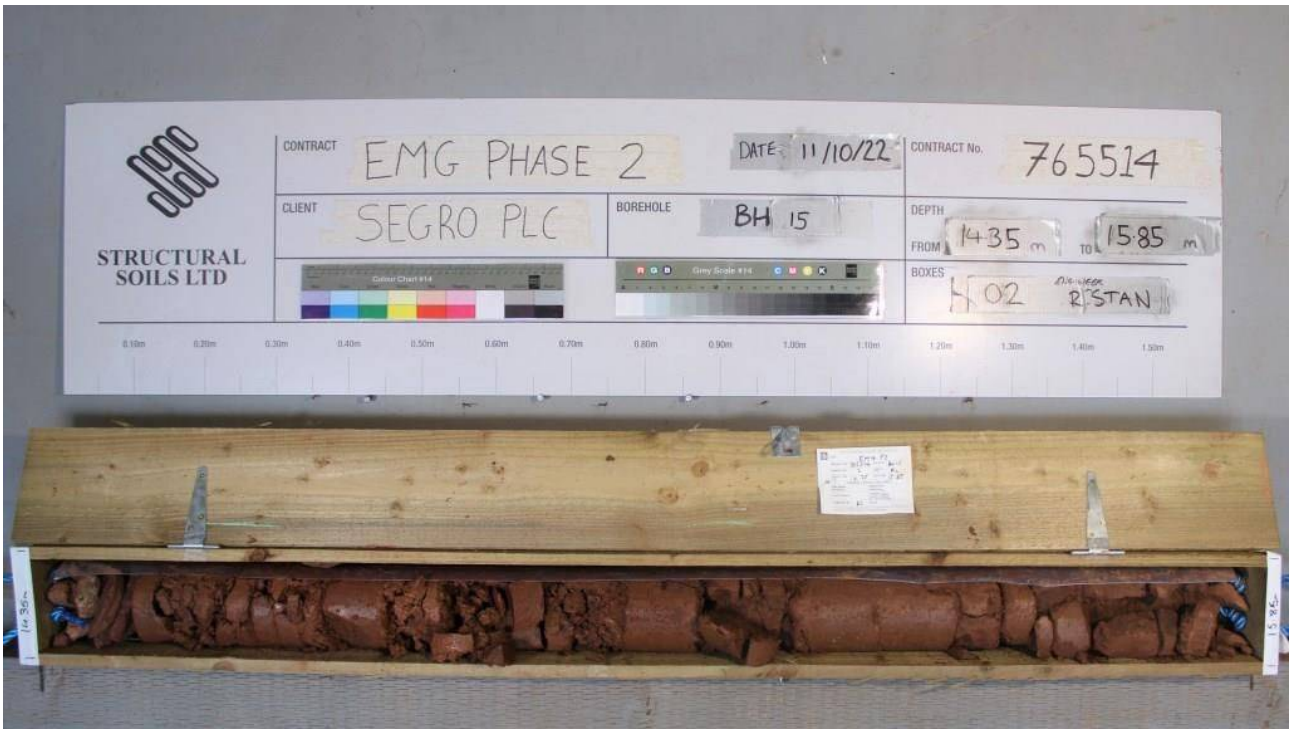
STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH15**
Contract Ref:	Start: **22.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **29.09.22**	**81.49**	**E:446370.2 N:325029.4**	**8** of **13**



Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 601	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	DNartey + RStan	Checked By:	

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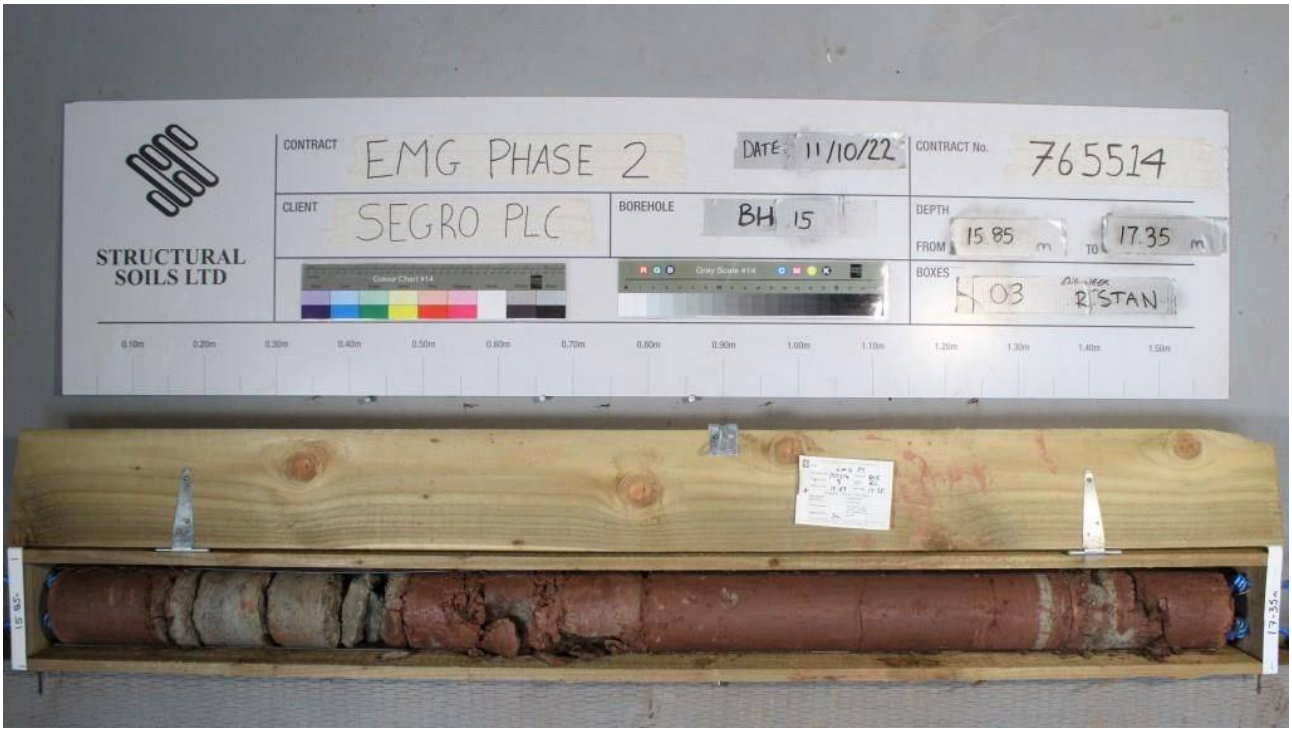
STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH15**
Contract Ref:	Start: **22.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **29.09.22**	**81.49**	**E:446370.2 N:325029.4**	**9** of **13**



Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 601	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	DNartey + RStan	Checked By:	AGS

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH15**
Contract Ref:	Start: **22.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **29.09.22**	**81.49**	**E:446370.2 N:325029.4**	**10** of **13**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 601	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	DNartey + RStan	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH15**
Contract Ref:	Start: **22.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **29.09.22**	**81.49**	**E:446370.2 N:325029.4**	**11** of **13**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 601	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	DNartey + RStan	Checked By:	

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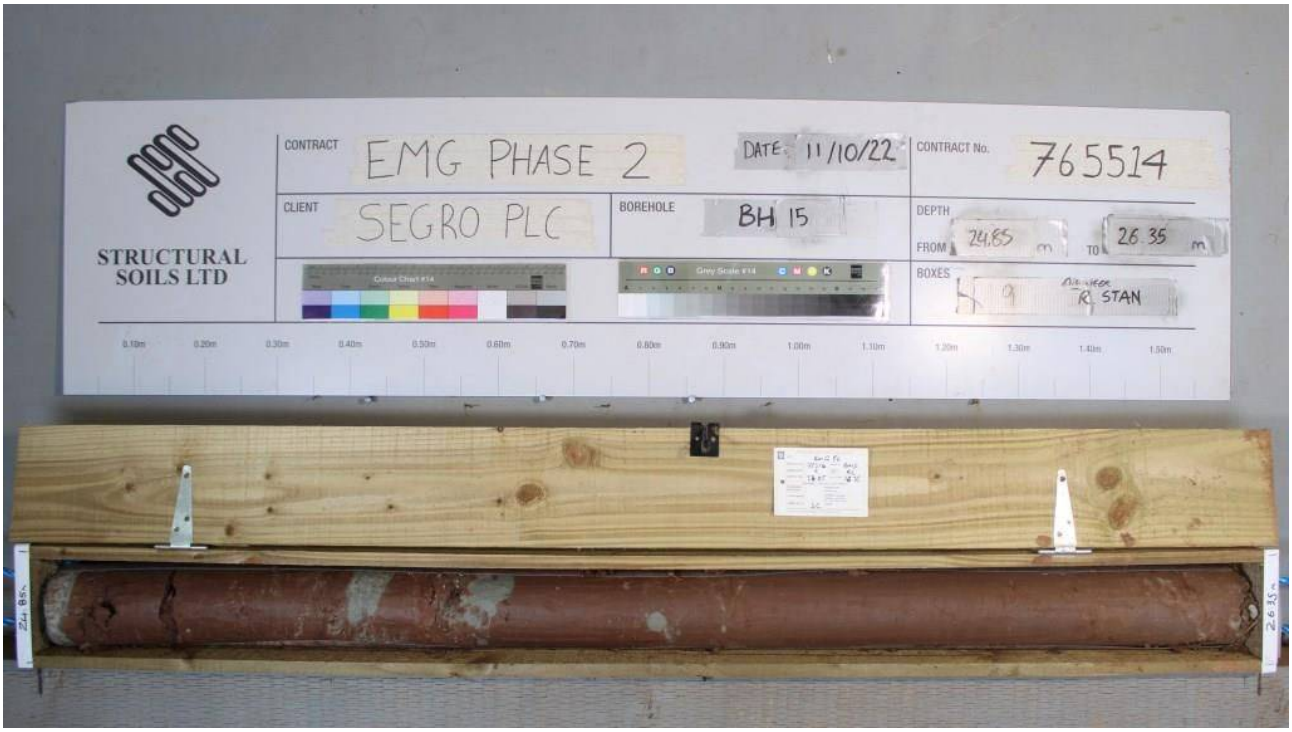
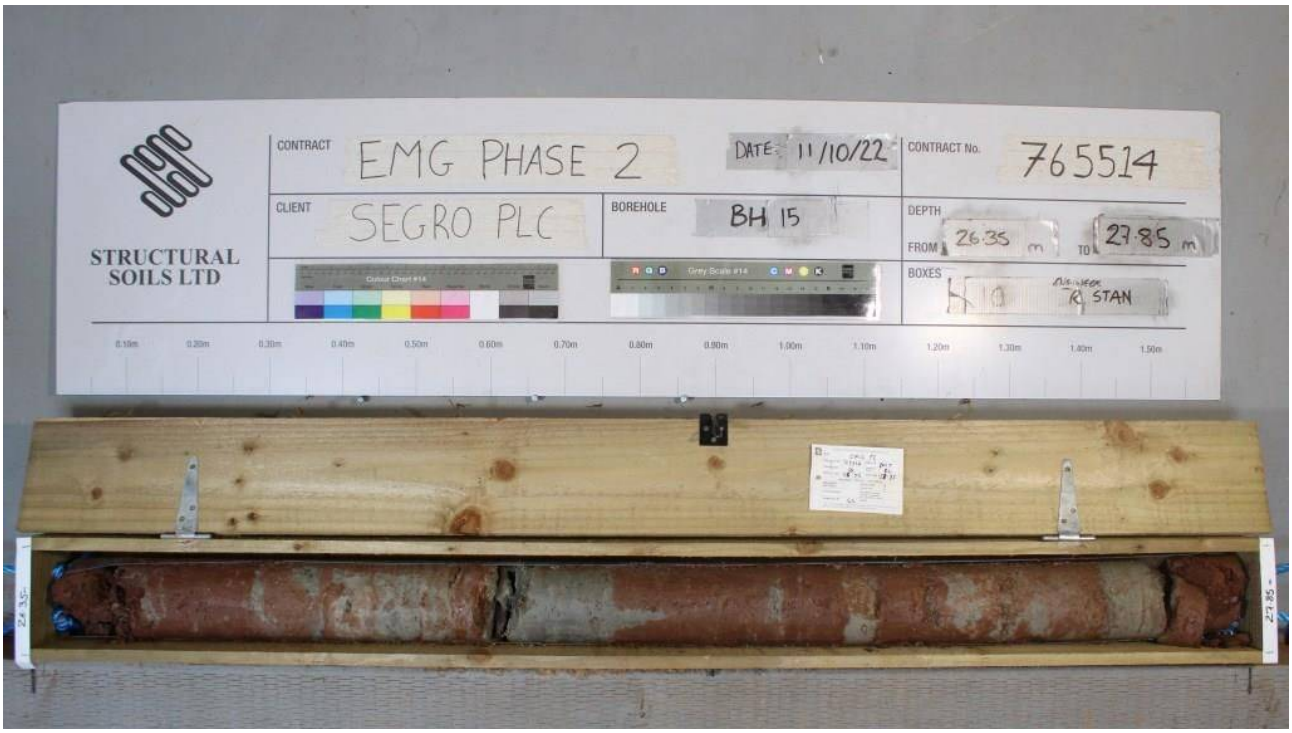
STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH15**
Contract Ref:	Start: **22.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **29.09.22**	**81.49**	**E:446370.2 N:325029.4**	**12** of **13**





Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 601	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	DNartey + RStan	Checked By:	

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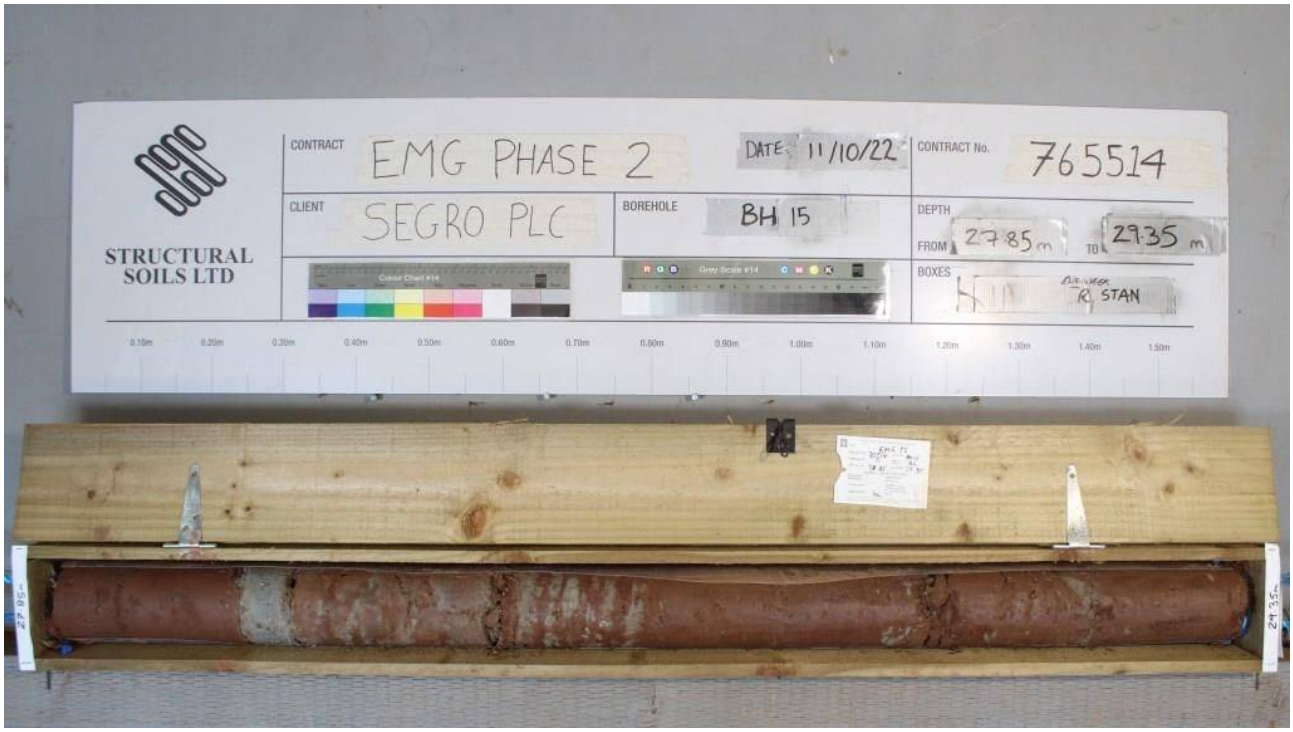
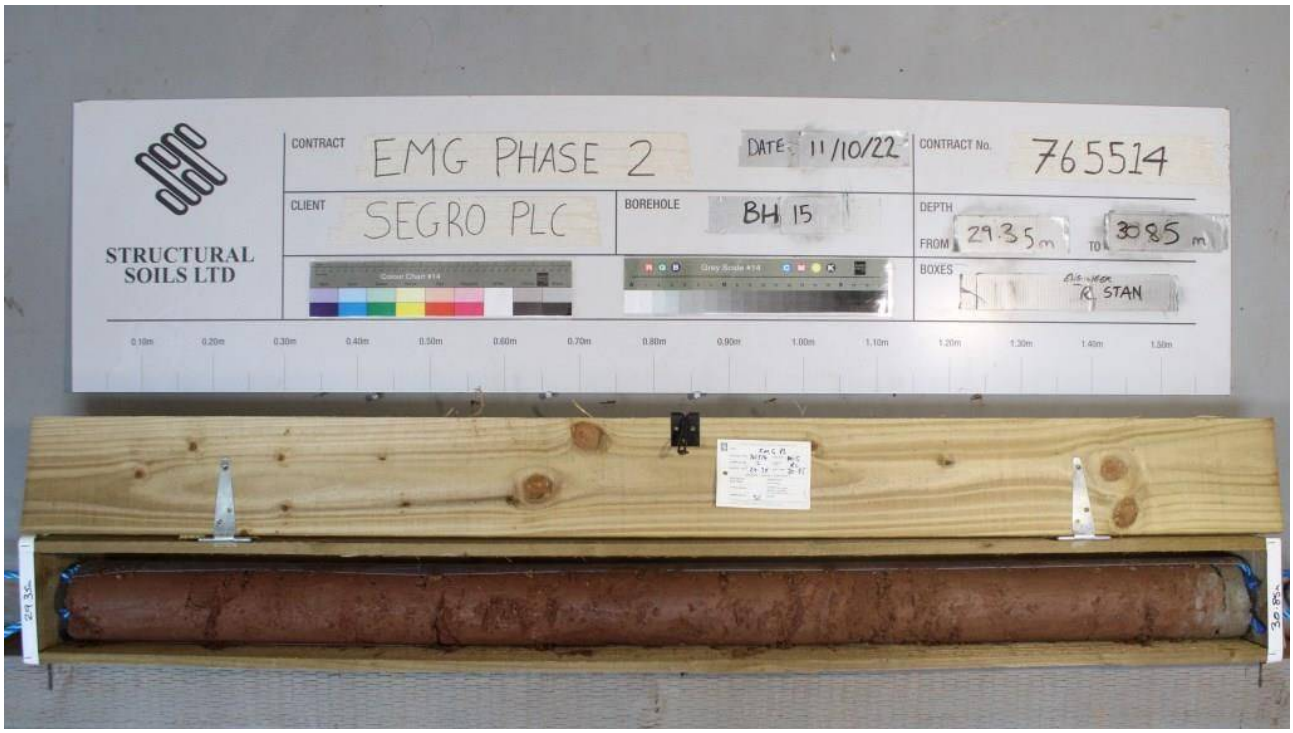
STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH15**
Contract Ref:	Start: **22.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **29.09.22**	**81.49**	**E:446370.2 N:325029.4**	**13** of **13**





Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 601	Drilled By:	Jonny Hutt + Sam Carter	Logged By:	DNartey + RStan	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH16**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**15.09.22** End: **15.09.22**	**73.98**	**E:446488.6 N:324866.7**	**1** of **11**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
0.00-4.50										TOPSOIL			
0.20	1	D										(0.60)	
0.20-0.40	2	B									73.38	0.60	
0.70	3	D								Firm reddish brown gravelly sandy SILT. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of quartzite and sandstone.		(0.30)	
0.70-0.80	4	B									73.08	0.90	
1.00-1.20	5	B								Stiff reddish brown slightly gravelly sandy CLAY. Sand is fine to coarse, predominant coarse. Gravel is subangular to subrounded fine to coarse of metamorphic rocks, sandstone, and occasional quartzite.		(0.40)	
1.20-1.40	6	$UT_{(UT100)}$	150 blows 100% recovery								72.68	1.30	
1.40-1.50	7	D								Stiff to very stiff reddish brown slightly gravelly sandy CLAY. Sand is fine. Gravel is angular to subangular of mudstone lithorelicts. GRADE IVb. (MERCIA MUDSTONE GROUP)			
1.70	8	D											
2.00-2.45		SPT	N=32										
2.00-2.45	10	DSPT											
2.00-2.45	11	B											
2.70	12	D										(3.20)	
3.00-3.43		SPT	9,9/9,13,16,12 for 55mm										
3.00-3.43	14	DSPT											
3.00-3.45	15	B											
3.70	16	D											
4.00-4.36		SPT	9,12/16,18,16 for 60mm										
4.00-4.36	18	DSPT									69.48	4.50	

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
16/09/22	16:00	4.00	3.00	200	Dry
20/09/22	11:00	4.00	None	200	3.20
20/09/22	17:00	14.00	4.50	150	-
21/09/22	08:00	14.00	4.50	150	5.30
21/08/32	11:00	20.00	4.50	150	13.00

Chiselling / Slow Progress

From	To	Duration (hh:mm)
3.60	4.00	00:30

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Cable percussion drilled using 200mm diameter tools and casing.
4. Rotary cored from 4.50m using SWF core barrel and 150mm diameter casing and air mist flush.
5. No groundwater strikes in the cable percussion section. Unable to determine ground water

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Jonny Hutt + Luke Bamford	DNartey + DNeylon	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH16**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**15.09.22** End: **15.09.22**	**73.98**	**E:446488.6 N:324866.7**	**2** of **11**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
4.50-5.00				60	0	0				Stiff reddish brown slightly sandy gravelly CLAY. Sand is fine to coarse of mudstone. Gravel is angular to subangular fine to coarse of mudstone lithorelicts with some exhibiting thin laminae. GRADE III. (MERCIA MUDSTONE GROUP)		(1.05)	
4.90	20	D									68.43	5.55	
5.00-6.50													
5.55-5.75	21	C		73	13	13				Extremely weak reddish brown thinly laminated MUDSTONE. GRADE II. (MERCIA MUDSTONE GROUP)	68.18	5.80	
										Firm reddish brown slightly sandy gravelly CLAY with fine to coarse gravel sized pockets of sandy silt. Sand is fine to coarse of mudstone. Gravel is angular to subangular fine to coarse of mudstone lithorelicts. GRADE III. (MERCIA MUDSTONE GROUP)		(0.65)	
6.30	22	D									67.53	6.45	
6.50-8.00				77	17	17				Extremely weak reddish brown MUDSTONE with frequent randomly orientated smooth planar clean fractures. GRADE II. (MERCIA MUDSTONE GROUP) . . . 7.10-7.25m: Very closely spaced laminae (<10mm) and medium to coarse gravel size pockets of thinly cross laminated siltstone. . . . 7.35-7.45m: Very closely spaced laminae (<10mm) of extremely weak greenish grey thinly cross laminated siltstone, with occasional clay.		(3.00)	
7.50-8.00	23	C											
8.00-9.50				77	15	8				. . . 8.25-8.30m: Thinly laminated cream siltstone and mudstone. . . . 8.40-8.45m: Thinly laminated coloured siltstone and mudstone.			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

strikes due to flush method.
6. Borehole installed with 50mm diameter standpipe on completion (response zone 2.00m to 20.00m).
7. SPT hammer AR3104-2022 (E_r = 64.00%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Jonny Hutt + Luke Bamford	DNartey + DNeylon	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH16**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**15.09.22** End: **15.09.22**	**73.98**	**E:446488.6 N:324866.7**	**3** of **11**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
				77	15	8				Extremely weak reddish brown MUDSTONE with frequent randomly orientated smooth planar clean fractures. GRADE II. (MERCIA MUDSTONE GROUP) *(stratum copied from 6.45m from previous sheet)*	64.53	9.45	
9.50-11.00										Extremely weak reddish brown MUDSTONE. (MERCIA MUDSTONE GROUP)			
10.20	24	D		100	3	0				. . . 10.25-10.85m: Smooth planar incipient fracture at approx angle of 85° running through the centre of the core.			
11.00-12.50										. . . 10.85-10.95m: Fine to coarse gravel size pockets of greenish grey siltstone. . . . 10.90-11.50m: Very closely spaced randomly orientated closed fractures.		(2.95)	
11.25	25	D		93	49	45							
11.90-12.10	26	C									61.58	12.40	
12.50-14.00										Extremely weak to very weak thinly laminated greenish grey SILTSTONE with vugs (up to 20mm). (MERCIA MUDSTONE GROUP)		(0.50)	
				93	29	0					61.08	12.90	
										Description on next sheet			
13.30-13.40	27	C											

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	**Dando 3000 + Comacchio GEO 205**	**Jonny Hutt + Luke Bamford**	**DNartey + DNeylon**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH16**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**15.09.22** End: **15.09.22**	**73.98**	**E:446488.6 N:324866.7**	**4** of **11**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
				93	29	0				Extremely weak reddish brown MUDSTONE. GRADE II. Fractures: Closely spaced, randomly orientated, undulating, smooth, with occasional yellow staining and black specks on surfaces. (MERCIA MUDSTONE GROUP) *(stratum copied from 12.90m from* previous sheet)	59.78	(1.30) 14.20	
14.00-15.50													
14.25-14.55	28	C								Extremely weak to very weak thinly laminated greenish grey SILTSTONE with vugs (up to 20mm). (MERCIA MUDSTONE GROUP)	59.38	(0.40) 14.60	
				100	63	45				Extremely weak reddish brown MUDSTONE closely interbedded with extremely weak greenish grey SILTSTONE. Boundaries of interbeds are transitional and not distinct. Bedding fractures: Closely spaced, rough, planar, with sandy clay infill. (MERCIA MUDSTONE GROUP)	58.63	(0.75) 15.35	
15.10-15.35	29	C											
15.50-17.00										Very weak to weak thickly cross laminated greenish grey SANDSTONE. (MERCIA MUDSTONE GROUP) . . . 15.35-15.70m: Rough undulating fracture at approx 85° through the core with black specks and yellow stain along surfaces.	58.08	(0.55) 15.90	
				93	53	42				. . . 15.70-15.75m: Subhorizontal rough undulating wide bedding fracture infilled with sandy gravel of sandstone and red clay. . . . 15.75m: Verging towards an extremely weak siltstone with frequent fine to medium gravel size vugs.		(0.85)	
16.40-16.70	30	C								Extremely weak reddish brown MUDSTONE with occasional pockets (2 to 6mm) of greenish grey siltstone. GRADE II. (MERCIA MUDSTONE GROUP)	57.23	16.75	
17.00-18.50										Firm reddish brown slightly gravelly sandy CLAY with frequent pockets (2 to 20mm) of greenish grey sandy silt. Sand is fine to coarse of mudstone. Gravel is angular to subangular fine to coarse of extremely weak mudstone lithorelicts. GRADE III. (MERCIA MUDSTONE GROUP)		(0.95)	
17.30	31	D									56.28	17.70	
				80	32	28				*Description on next sheet* . . . 17.75-17.80m: Weak greenish grey fine grained sandstone.			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	**Dando 3000 + Comacchio GEO 205**	**Jonny Hutt + Luke Bamford**	**DNartey + DNeylon**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH16**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**15.09.22** End: **15.09.22**	**73.98**	**E:446488.6 N:324866.7**	**5** of **11**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
				80	32	28				Extremely weak to very weak greenish grey SILTSTONE closely interbedded with extremely weak reddish brown MUDSTONE. (MERCIA MUDSTONE GROUP)	55.58	(0.70) 18.40	
18.50-20.00										*(stratum copied from 17.70m from previous sheet)*			
18.70-18.90	32	C								Extremely weak reddish brown MUDSTONE with occasional pockets (up to 60mm) of greenish grey siltstone. Bedding fractures: Medium spaced, rough, undulating, infilled with sandy clay. Fracture set 2: rough, planar, infilled with clayey sand. (MERCIA MUDSTONE GROUP)			
				93	17	17				. . . 18.70-18.80m: Extremely weak greenish grey thickly cross laminated SILTSTONE with thin laminae (<2mm) of SANDSTONE.	53.98	(1.60) 20.00	
										Borehole terminated at 20.00m depth.			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	**Dando 3000 + Comacchio GEO 205**	**Jonny Hutt + Luke Bamford**	**DNartey + DNeylon**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH16**
Contract Ref:	Start: **15.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **15.09.22**	**73.98**	**E:446488.6 N:324866.7**	**6** of **11**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Luke Bamford	Logged By:	DNartey + DNeylon	Checked By:	

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log COMPOSITE LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH16**
Contract Ref:	Start: **15.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **15.09.22**	**73.98**	**E:446488.6 N:324866.7**	**7** of **11**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Luke Bamford	Logged By:	DNartey + DNeylon	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH16**
Contract Ref:	Start: **15.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **15.09.22**	**73.98**	**E:446488.6 N:324866.7**	**8** of **11**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Luke Bamford	Logged By:	DNartey + DNeylon	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH16**
Contract Ref:	Start: **15.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **15.09.22**	**73.98**	**E:446488.6 N:324866.7**	**9** of **11**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Luke Bamford	Logged By:	DNartey + DNeylon	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH16**
Contract Ref:	Start: **15.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **15.09.22**	**73.98**	**E:446488.6 N:324866.7**	**10** of **11**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Luke Bamford	Logged By:	DNartey + DNeylon	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH16**
Contract Ref:	Start: **15.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **15.09.22**	**73.98**	**E:446488.6 N:324866.7**	**11** of **11**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Luke Bamford	Logged By:	DNartey + DNeylon	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH17**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**15.09.22** End: **16.09.22**	**74.45**	**E:446293.6 N:324881.8**	**1** of **10**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
										TOPSOIL	74.25	0.20	
0.20	1	D								Firm dark yellowish brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular and subrounded fine to coarse of mixed lithologies including quartzite and siltstone.			
0.20	101	ES	1xT+1xJ+1xV										
0.20-0.50	2	B											
0.50	102	ES	1xT+1xJ+1xV										
										. . . Below 1.80m: Stiff.		(1.30)	
0.90	3	D											
0.90-1.20	4	B											
1.00	103	ES	1xT+1xJ+1xV										
1.20-1.65	5	$UT_{(UT100)}$	32 blows 100% recovery								72.95	1.50	
										Soft to firm reddish brown very sandy CLAY. Sand is fine to coarse.			
1.70	6	D											
2.00-2.45		SPT	N=13									(1.10)	
2.00-2.45	8	DSPT											
2.00-2.45	9	B							1		71.85	2.60	
										Medium dense dark brown mottled grey silty fine to coarse SAND.			
2.70	10	D											
2.86		EW											
3.00-3.45		SPT	N=16										
3.00-3.45	12	DSPT											
3.00-3.45	13	B										(1.30)	
											70.55	3.90	
3.90	14	D								Stiff to very stiff reddish brown mottled grey sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular and subangular fine to coarse of mudstone. Occasional pockets of grey silt (up to 20mm). (MERCIA MUDSTONE GROUP)			
3.90	27	W											
4.00-4.44		SPT	6,10/12,13,13,12 for 60mm										
4.00-4.44	16	DSPT											
4.00-4.44	17	B											

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
15/09/22	15:15	5.00	4.50	200	Dry
16/09/22	08:25	5.00	4.50	200	3.90
16/09/22	09:55	6.00	4.50	200	-
21/09/22	08:00	6.00	None	200	1.60
21/09/22	17:00	21.00	6.00	150	-
22/09/22	08:00	21.00	6.00	150	1.80
22/09/22	11:00	21.00	6.00	150	1.80

Chiselling / Slow Progress

From	To	Duration (hh:mm)
5.50	6.00	00:30

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Cable percussion drilled using 200mm diameter tools and casing.
4. Groundwater strike at 3.10m rising to 3.80m after 20 minutes.
5. Rotary cored from 6.00m using SWF core barrel and 150mm diameter casing and air mist flush.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Jonny Hutt + Martin Speedie	DNartey + RStan	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH17**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**15.09.22** End: **16.09.22**	**74.45**	**E:446293.6 N:324881.8**	**2** of **10**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
										Stiff to very stiff reddish brown mottled grey sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular and subangular fine to coarse of mudstone. Occasional pockets of grey silt (up to 20mm). (MERCIA MUDSTONE GROUP) *(stratum copied from 3.90m from previous* sheet)			
4.70	18	D										(2.10)	
5.00-5.45		SPT	N=39										
5.00-5.45	20	DSPT											
5.00-5.45	21	B											
5.50-5.84		SPT	8,12/15,21,14 for 40mm										
5.50-5.84	23	DSPT											
5.50-6.00	24	B									68.45	6.00	
6.00-7.50										AZCL. (MERCIA MUDSTONE GROUP)		(0.30)	AZCL
6.00-6.30		SPT	12,13/19,24,7 for 15mm								68.15	6.30	
6.00-6.30	26	DSPT											
										Extremely weak MUDSTONE, recovered as slightly sandy silty gravel. GRADE IV. (MERCIA MUDSTONE GROUP) . . . 6.30-6.81m: NI.		(0.62)	
6.70-6.77	27	D		80	35	21				. . . 6.86-6.92m: NI.	67.53	6.92	
										Extremely weak thinly laminated MUDSTONE. Occasional pockets and laminae of grey siltstone. GRADE III. (MERCIA MUDSTONE GROUP)		(0.38)	
7.33-7.41	26	C								. . . 6.92-6.97m: Thin laminae of grey siltstone. . . . 6.97-7.00m: NI. . . . 7.00-7.30m: Thinly interlaminated mudstone and siltstone.	67.15	7.30	
7.50-9.00										Extremely weak to weak MUDSTONE. Occasional pockets and laminae of grey siltstone. GRADE III. Fractures: Very closely spaced, randomly orientated, incipient, undulating, smooth and rough, with occasional black staining on surface. (MERCIA MUDSTONE GROUP) . . . 7.50-7.70m: AZCL. . . . 7.70-7.93m: NI. . . . 8.05-8.10m: Pockets of grey siltstone. . . . 8.14-8.21m: Thinly laminated. . . . 8.30-8.38m: Grey siltstone.			
				87	70	62							
8.30-8.47	28	C											

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress

From	To	Duration (hh:mm)

General Remarks

6. Borehole installed with 50mm standpipe on completion (response zone 1.00m to 4.50m).
7. SPT hammers AR3104-2022 (E_r = 64.00%) , AR3784-2022 (E_r = 71.00%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Jonny Hutt + Martin Speedie	DNartey + RStan	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH17**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**15.09.22** End: **16.09.22**	**74.45**	**E:446293.6 N:324881.8**	**3** of **10**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
9.00-10.50										. . . 8.95-9.00m: Pocket of silty clay. Extremely weak to weak MUDSTONE. Occasional pockets and laminae of grey siltstone. GRADE III. Fractures: Very closely spaced, randomly orientated, incipient, undulating, smooth and rough, with occasional black staining on surface. (MERCIA MUDSTONE GROUP) *(stratum copied from 7.30m from previous* sheet)			
				100	77	69				. . . 9.11-10.03m: Thin laminated, locally mottled grey, interlaminated with grey siltstone.		(5.51)	
10.21-10.41	29	C								. . . 9.13-9.16m: Clay mudstone. . . . . 9.32-9.37m: Dark laminae of mudstone and siltstone. . . . 9.46-9.54m: Grey siltstone. . . . . 9.93-10.03m: Recovery as sandy gravel. . . . 10.45-10.50m: NI. . . . 10.50-10.64m: NI with band of weak grey siltstone. . . . . 10.80-10.96m: 71° planar rough clean.			
10.50-12.00													
10.90-11.20	30	C											
				100	84	84							
12.00-13.50										. . . 11.95-12.00m: NI. . . . 12.00-12.27m: NI. . . . 12.19-12.27m: Thinly laminated. . . . 12.27-12.29m: Bedding fracture, 5° undulating rough silty clay infill.			
12.41-12.61	31	C								. . . . 12.27-12.39m: 85° planar rough yellow and grey stained. . . . . 12.34-12.49m: Thinly laminated greenish grey siltstone, with occasional yellow staining.	61.64	12.81	
				100	64	55				. . . 12.49-12.81m: Weak. . . . 12.75-12.95m: 63° planar rough with calcite infill (<3mm).			
										Description on next sheet			
										. . . . 13.24-13.41m: Thinly laminated mudstone and grey siltstone. Rare calcite.			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	**Dando 3000 + Comacchio GEO 205**	**Jonny Hutt + Martin Speedie**	**DNartey + RStan**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH17**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**15.09.22** End: **16.09.22**	**74.45**	**E:446293.6 N:324881.8**	**4** of **10**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
13.50-15.00										Extremely weak reddish brown slightly sandy MUDSTONE interbedded with weak to medium strong grey SILTSTONE. Occasional calcite bands (up to 3mm). GRADE III. (MERCIA MUDSTONE GROUP)		(2.32)	
14.01-14.26	32	C		100	83	71				*(stratum copied from 12.81m from* previous sheet) . . . 13.50-13.56m: NI. . . . 13.98-14.01m: Grey siltstone. . . . 14.01-14.52m: Weak to medium strong grey siltstone. . . . 14.52-14.63m: with thin laminae of grey siltstone. . . . 14.68-14.71m: Medium strong siltstone. . . . 14.74-14.81m: Thinly laminated mudstone. . . . 14.81-15.10m: Frequent calcite pockets (<30mm).			
15.00-16.50										. . . 15.00-15.13m: NI.	59.32	15.13	
15.60-15.81	33	C		100	91	84				Medium strong grey SILTSTONE. (MERCIA MUDSTONE GROUP) . . . 15.13-15.22m: 36° undulating rough, rare brown staining. . . . 15.35-15.36m: 8° planar rough, clay infill with occasional brown staining. . . . 15.43-15.58m: 70° undulating rough occasionally yellow and brown staining. . . . 15.58-15.62m: 15° undulating rough. Rare yellow staining.	58.62	(0.70) 15.83	
16.50-18.00										Weak reddish brown MUDSTONE interbedded with reddish brown fine to medium grained SANDSTONE. Occasional pockets and laminae of grey siltstone. GRADE III. (MERCIA MUDSTONE GROUP) . . . 15.83-15.96m: 50° planar rough. . . . 16.07-16.20m: Grey siltstone. . . . 16.28-16.40m: 53° planar rough. . . . 16.63-17.30m: AZCL.		(1.47)	
16.50-16.61		SPT	25/50 for 50mm										
				52	47	43					57.15	17.30	
17.72-17.89	34	C								Extremely weak to weak reddish brown slightly sandy MUDSTONE interbedded with weak fine grained SANDSTONE. Occasional laminae of weak grey siltstone. GRADE III. (MERCIA MUDSTONE GROUP)			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Jonny Hutt + Martin Speedie	DNartey + RStan	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH17**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**15.09.22** End: **16.09.22**	**74.45**	**E:446293.6 N:324881.8**	**5** of **10**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
18.00-19.50										Extremely weak to weak reddish brown slightly sandy MUDSTONE interbedded with weak fine grained SANDSTONE. Occasional laminae of weak grey siltstone. GRADE III. (MERCIA MUDSTONE GROUP) *(stratum copied from 17.30m from* previous sheet)			
				100	93	87				. . . 18.00-18.46m: Interlaminated sandstone and grey siltstone.			
18.91-19.14	35	C								. . . 18.46-18.62m: with sandy silt matrix, GRADE IVb.		(3.31)	
										. . . 18.62-18.75m: Siltstone with local yellow staining.			
										. . . 19.11-19.30m: Very weak mudstone interlaminated with grey siltstone.			
										. . . 19.30m: NI.			
19.50-21.00										. . . 19.60-20.24m: Pockets of calcite.			
										. . . 19.65-19.75m: 75° planar rough calcite infill (<3mm).			
20.04-20.43	36	C											
				100	95	95					53.84	20.61	
										Extremely weak to weak reddish brown mottled grey occasional pockets and laminae grey siltstone. GRADE II. (MERCIA MUDSTONE GROUP)		(0.39)	
										. . . 20.61-20.68m: NI.	53.45	21.00	
										Borehole terminated at 21.00m depth.			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	**Dando 3000 + Comacchio GEO 205**	**Jonny Hutt + Martin Speedie**	**DNartey + RStan**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH17**
Contract Ref:	Start: **15.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **16.09.22**	**74.45**	**E:446293.6 N:324881.8**	**6** of **10**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Martin Speedie	Logged By:	DNartey + RStan	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH17**
Contract Ref:	Start: **15.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **16.09.22**	**74.45**	**E:446293.6 N:324881.8**	**7** of **10**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Martin Speedie	Logged By:	DNartey + RStan	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH17**
Contract Ref:	Start: **15.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **16.09.22**	**74.45**	**E:446293.6 N:324881.8**	**8** of **10**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Martin Speedie	Logged By:	DNartey + RStan	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH17**
Contract Ref:	Start: **15.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **16.09.22**	**74.45**	**E:446293.6 N:324881.8**	**9** of **10**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Martin Speedie	Logged By:	DNartey + RStan	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH17**
Contract Ref:	Start: **15.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **16.09.22**	**74.45**	**E:446293.6 N:324881.8**	**10** of **10**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Martin Speedie	Logged By:	DNartey + RStan	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH18**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**15.09.22** End: **06.10.22**	**77.62**	**E:446112.9 N:324864.2**	**1** of **12**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
0.00	1	D								TOPSOIL			
0.00-0.20	3	B									77.42	0.20	
0.10	2	ES								Stiff to very stiff brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of mixed lithology included siltstone and occasional quartzite.			
0.20	4	D											
0.20-0.40	6	B											
0.30	5	ES											
0.40	7	D											
0.50	10	D											
0.50	8	ES											
0.50-0.80	9	B											
0.80-1.20	12	B											
1.00	11	ES											
1.20-1.65		SPT	N=18										
1.20-1.65	13	DSPT											
1.20-1.70	14	B											
1.70	15	D											
2.00	16	ES											
2.00-2.45	17	$UT_{(UT100)}$	95 blows 100% recovery									(3.90)	
2.50	18	D											
2.50-3.00	20	B											
2.60	19	ES											
3.00	21	ES											
3.00-3.45		SPT	N=23										
3.00-3.45	22	DSPT											
3.00-3.50	23	B											
3.50	24	D											
4.00	25	ES									73.52	4.10	
4.00-4.45	26	$UT_{(UT100)}$	116 blows 100% recovery							*Description on next sheet*			

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
14/09/22	17:00	1.20	None	N/R	Dry
15/09/22	08:00	1.20	None	N/R	Dry
15/09/22	17:00	7.50	6.00	200	-
16/09/22	08:30	7.50	6.00	200	5.80
16/09/22	11:00	9.00	6.00	200	-
20/09/22	09:00	9.00	None	200	6.30
20/09/22	17:00	25.50	9.00	150	-
21/09/22	08:30	25.50	9.00	150	6.20

Chiselling / Slow Progress

From	To	Duration (hh:mm)
7.30	7.50	00:30
8.50	9.00	01:00

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Cable percussion drilled using 200mm diameter tools and casing.
4. Rotary cored from 4.50m using SWF core barrel and 150mm diameter casing and air mist flush.
5. Groundwater strike at 15.50m, fast flow noted.
6. Borehole installed with 50mm diameter standpipe

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Chris Jobson + Martin Speedie	DNeylon + JAlton	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH18**

Contract Ref:	Start: **15.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **06.10.22**	**77.62**	**E:446112.9 N:324864.2**	**2** of **12**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
4.50	27	D								Firm fissured light brown mottled reddish brown slightly gravelly sandy CLAY. Sand is fine to coarse, predominant coarse. Gravel is angular and subangular fine to coarse of mixed lithology.		(0.90)	
4.50	28	ES											
4.50-5.00	29	B											
										(stratum copied from 4.10m from previous sheet)	72.62	5.00	
5.00	30	ES								Stiff to very stiff reddish brown slightly gravelly sandy CLAY. Sand is fine and medium. Gravel is angular and subangular of mudstone. Occasional pockets (up to 30mm) of grey siltstone. GRADE IVb. (MERCIA MUDSTONE GROUP)			
5.00-5.45		SPT	N=31										
5.00-5.45	31	DSPT											
5.00-5.50	32	B											
5.50	33	D											
6.00	34	ES											
6.00-6.45		SPT	N=43										
6.00-6.45	35	DSPT											
6.00-6.50	36	B											
6.50	37	D											
												(4.00)	
7.00-7.36		SPT	8,12/14,19,17 for 61mm										
7.00-7.45	38	DSPT											
7.00-7.50	39	B											
7.18		EW											
7.50	40	D											
7.50-7.83		SPT	10,13/18,26,6 for 25mm										
7.50-7.95	41	DSPT											
7.50-8.00	42	B											
8.00-8.38		SPT	8,10/11,15,24 for 75mm										
8.00-8.45	43	DSPT											
8.00-8.50	44	B											
8.50	45	D									68.62	9.00	

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
21/09/22	10:00	25.50	9.00	150	6.20

Chiselling / Slow Progress

From	To	Duration (hh:mm)

General Remarks

on completion (response zone 4.50m to 16.00m).
7. SPT hammer JB14-2022 (E_r = 63.00%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Chris Jobson + Martin Speedie	DNeylon + JAlton	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH18**

Contract Ref:	Start: **15.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **06.10.22**	**77.62**	**E:446112.9 N:324864.2**	**3** of **12**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
9.00-10.50 9.00-9.21		SPT	18,7/31,19 for 42mm							AZCL. (MERCIA MUDSTONE GROUP)		(0.40)	AZCL
9.00-9.45	46	DSPT									68.22	9.40	
				80	15	0				Reddish brown clayey angular to subangular fine to coarse GRAVEL of mudstone. Sand is fine to coarse of mudstone. Gravels and matrix showing traces of thin laminations. GRADE III. (MERCIA MUDSTONE GROUP)		(0.75)	
9.90	47	D									67.47	10.15	
										Very weak greenish grey SILTSTONE. Bedding fractures: Very closely spaced, rough, undulating. (MERCIA MUDSTONE GROUP)		(0.35)	
10.50-12.00										. . . 10.40-10.45m: Extremely weak reddish brown mudstone.	67.12	10.50	
										Very weak reddish brown MUDSTONE with occasional pockets (up to 20mm) of greenish grey siltstone. GRADE II. (MERCIA MUDSTONE GROUP)		(1.05)	
11.10-11.30	48	C									66.07	11.55	
				87	63	41				Extremely weak reddish brown MUDSTONE very thinly to thickly interlaminated with very weak greenish grey SILTSTONE. Bedding fractures: Very closely spaced, rough, undulating, infilled with reddish brown clay. (MERCIA MUDSTONE GROUP)		(0.45)	
12.00-13.50										. . . 11.65-11.70m: Moderately weak light reddish brown sandstone.	65.62	12.00	
										Very weak reddish brown MUDSTONE with occasional pockets (up to 60mm) of greenish grey siltstone. GRADE II. Fractures: Closely spaced, randomly orientated. (MERCIA MUDSTONE GROUP)		(1.25)	
12.60	49	D									64.37	13.25	
				100	39	0				. . . 12.15-12.25m: Recovered as sandy angular fine to coarse gravel, verging towards GRADE III.			
										Description on next sheet			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Chris Jobson + Martin Speedie	DNeylon + JAlton	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH18**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**15.09.22** End: **06.10.22**	**77.62**	**E:446112.9 N:324864.2**	**4** of **12**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
13.50-15.00										Weak greenish grey SILTSTONE very thinly interbedded with extremely weak reddish brown mudstone and clay bands. (MERCIA MUDSTONE GROUP) *(stratum copied from 13.25m from* previous sheet)	63.82	(0.55) 13.80	
				100	17	0				Extremely weak reddish brown MUDSTONE. GRADE II. Fractures: Very closely spaced, randomly orientated, rough, undulating, with occasional black staining along surfaces. (MERCIA MUDSTONE GROUP) . . . 14.00-14.03m: Trace thin laminae and recovered partly as clayey gravel. . . . 14.40-14.75m: Some fractures are stained yellow. . . . 14.75-14.80m: Very weak greenish grey siltstone.	62.62	(1.20) 15.00	
14.50	50	D											
15.00-16.50										AZCL. (MERCIA MUDSTONE GROUP)	62.42	15.20	AZCL
									1	Extremely weak reddish brown MUDSTONE, recovered as sandy angular to subangular fine to coarse gravel. GRADE III. (MERCIA MUDSTONE GROUP)	61.92	(0.50) 15.70	
				87	0	0				Extremely weak reddish brown MUDSTONE. GRADE II. Fractures: Very closely spaced, randomly orientated, with occasional black staining on surfaces. (MERCIA MUDSTONE GROUP)	61.06	(0.86) 16.56	
15.90	51	D											
16.50-18.00										Very weak greenish grey fine grained SANDSTONE. Bedding fractures: Closely spaced, rough, undulating. (MERCIA MUDSTONE GROUP)	60.87	16.75	
										Extremely weak thinly laminated reddish brown MUDSTONE. GRADE II. (MERCIA MUDSTONE GROUP)	60.52	(0.35) 17.10	
				77	50	35				. . . 16.90-17.00m: Randomly orientated fractures. AZCL	60.07	(0.45) 17.55	AZCL
17.55-17.80	52	C								Very weak to weak reddish brown MUDSTONE with occasional gravel size pockets of siltstone. GRADE II. (MERCIA MUDSTONE GROUP)			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Chris Jobson + Martin Speedie	DNeylon + JAlton	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH18**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **06.10.22**	**77.62**	**E:446112.9 N:324864.2**	**5** of **12**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
18.00-19.50										Very weak to weak reddish brown MUDSTONE with occasional gravel size pockets of siltstone. GRADE II. (MERCIA MUDSTONE GROUP) *(stratum copied from 17.55m from* previous sheet)	59.07	(1.00) 18.55	
				97	69	37				Very weak greenish grey fine grained SANDSTONE with occasional vugs (up to 0.6mm). Bedding fractures: Very closely spaced, rough, undulating. (MERCIA MUDSTONE GROUP)	58.37	(0.70) 19.25	
19.10-19.20	53	C											
										Extremely weak reddish brown MUDSTONE interspersed with greenish grey siltstone. GRADE II. (MERCIA MUDSTONE GROUP)	58.27	19.35	
19.50-21.00										Moderately weak to medium strong greenish grey fine grained SANDSTONE. (MERCIA MUDSTONE GROUP) . . . 19.50-19.60m: Reddish brown very clayey angular medium to coarse gravel. . . . 19.80m: Rough planar bedding fracture, infilled with reddish brown clay. . . . 19.83-19.87m and 19.90-19.95m: Extremely weak reddish brown mudstone.	57.32	(0.95) 20.30	
				97	77	61				. . . 20.10m: Rough planar bedding fracture, infilled with reddish brown clay. . . . 20.10-20.15m: Thinly laminated with some thin beds of reddish brown clay. . . . 20.23-20.30m: Thinly laminated and partly recovered as fine to medium size gravel.		(1.00)	
20.75-20.85	54	C								Extremely weak reddish brown MUDSTONE with frequent pockets (2 to 60mm) of greenish grey silt. GRADE II. (MERCIA MUDSTONE GROUP) . . . 20.30-20.70m: 75° undulating rough fracture.	56.32	21.30	
21.00-22.50										Extremely weak to very weak greenish grey SILTSTONE interspersed with extremely weak reddish brown mudstone. Generally recovered as a sandy gravel to cobbles, with laminae in some gravel fragments. Randomly orientated fractures in larger gravel / cobbles. (MERCIA MUDSTONE GROUP)	55.57	(0.75) 22.05	
				93	40	40				Stiff reddish brown sandy CLAY with occasional pockets (up to 20mm) of greenish grey silt. GRADE IVa. (MERCIA MUDSTONE GROUP)	55.27	(0.30) 22.35	
21.80-22.05	55	C								*Description on next sheet*	55.12	22.50	

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Chris Jobson + Martin Speedie	DNeylon + JAlton	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH18**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **06.10.22**	**77.62**	**E:446112.9 N:324864.2**	**6** of **12**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
22.50-24.00										Very weak greenish grey fine to medium grained SANDSTONE. (MERCIA MUDSTONE GROUP)			
										Extremely weak to very weak reddish brown MUDSTONE with frequent pockets (up to 60mm) of greenish grey siltstone. GRADE II. (MERCIA MUDSTONE GROUP) . . . 22.50-22.80m: Very closely spaced randomly orientated rough undulating fractures, partly recovered as angular fine to medium gravel. . . . 22.90-23.05m: Thinly interlaminated with greenish grey siltstone and sandstone.		(1.95)	
				97	77	53							
23.55-23.70	56	C											
24.00-25.50											53.17	24.45	
										Extremely weak greenish grey SILTSTONE interspersed with laminae and lenses of extremely weak reddish brown mudstone and clay. Grading towards a silt in some of the siltstone bands. (MERCIA MUDSTONE GROUP)		(0.40)	
				100	67	42					52.77	24.85	
24.80-24.92	57	C										(0.35)	
										Extremely weak reddish brown MUDSTONE. GRADE II. (MERCIA MUDSTONE GROUP)	52.42	25.20	
										Very weak greenish grey SILTSTONE. (MERCIA MUDSTONE GROUP)		(0.30)	
											52.12	25.50	
										Borehole terminated at 24.50m depth.			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Chris Jobson + Martin Speedie	DNeylon + JAlton	

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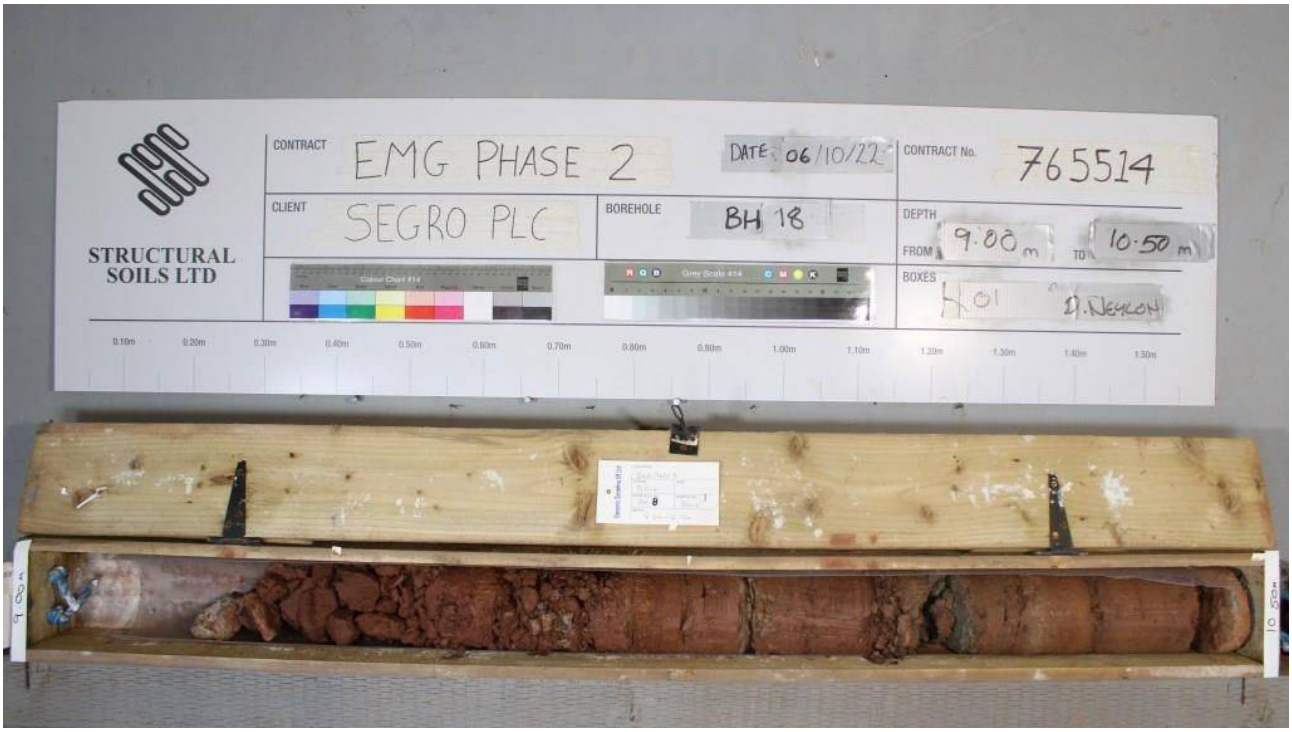
STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH18**
Contract Ref:	Start: **15.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **06.10.22**	**77.62**	**E:446112.9 N:324864.2**	**7** of **12**



Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Chris Jobson + Martin Speedie	Logged By:	DNeylon + JAlton	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH18**
Contract Ref:	Start: **15.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **06.10.22**	**77.62**	**E:446112.9 N:324864.2**	**8** of **12**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Chris Jobson + Martin Speedie	Logged By:	DNeylon + JAlton	Checked By:	

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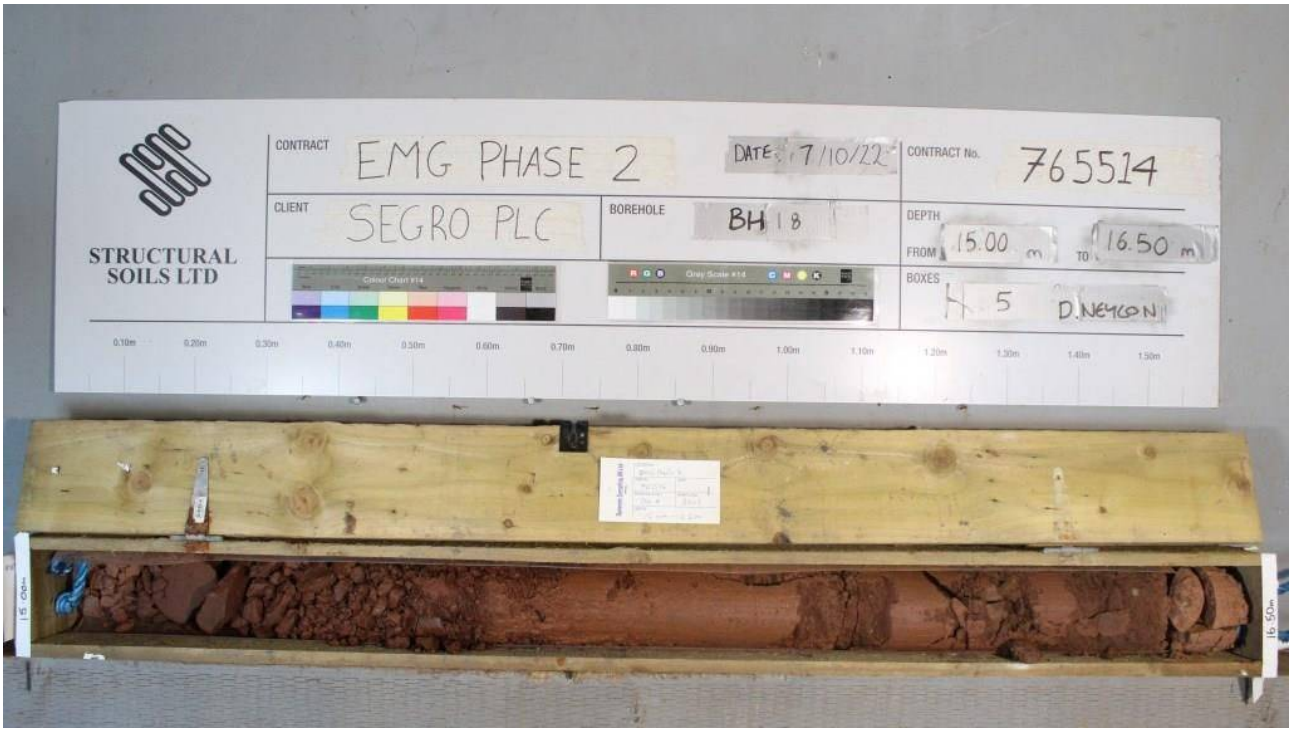
STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH18**
Contract Ref:	Start: **15.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **06.10.22**	**77.62**	**E:446112.9 N:324864.2**	**9** of **12**



Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Chris Jobson + Martin Speedie	Logged By:	DNeylon + JAlton	Checked By:	

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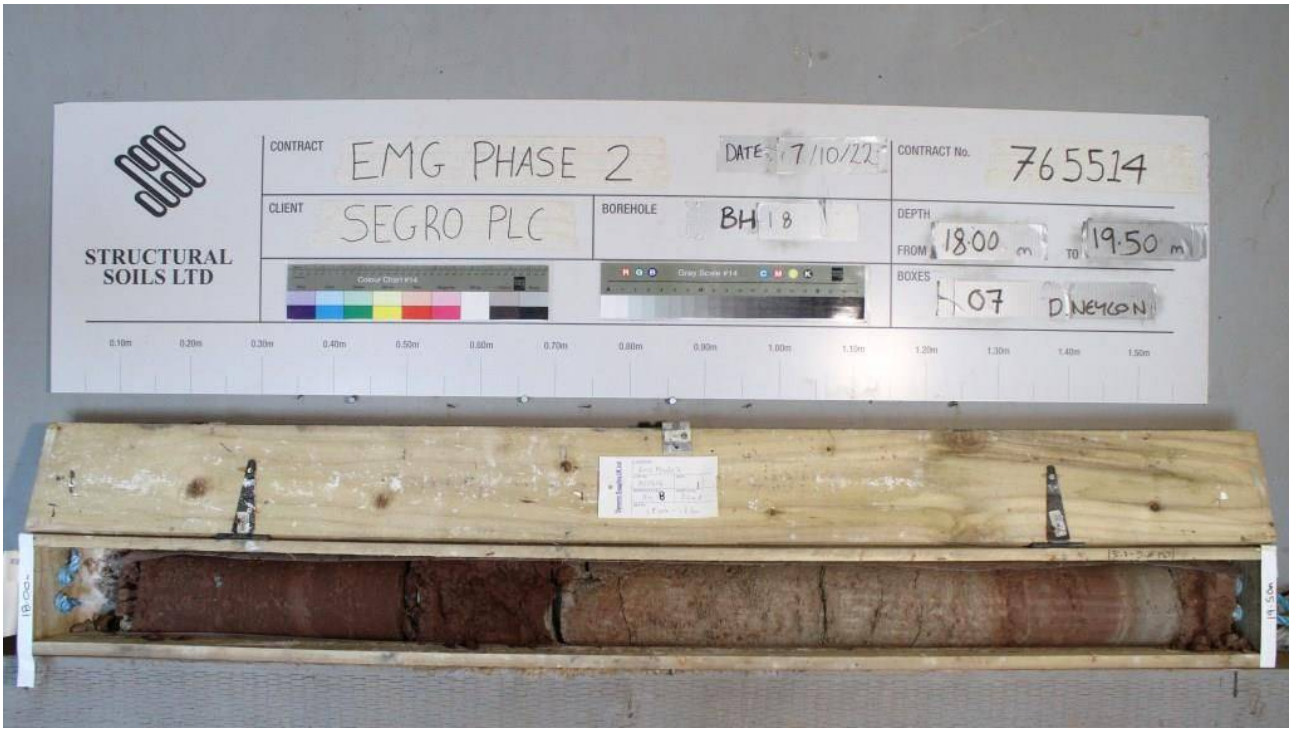
STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH18**
Contract Ref:	Start: **15.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **06.10.22**	**77.62**	**E:446112.9 N:324864.2**	**10** of **12**



Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Chris Jobson + Martin Speedie	Logged By:	DNeylon + JAlton	Checked By:	

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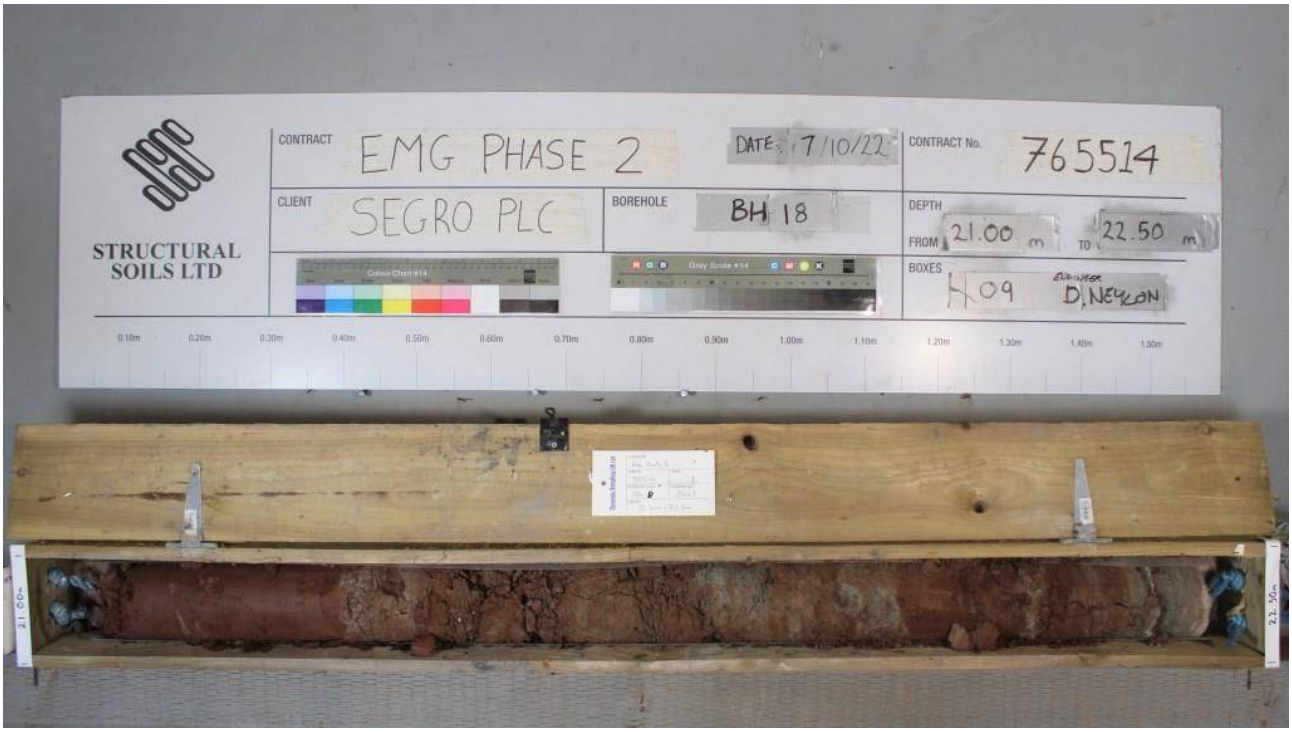
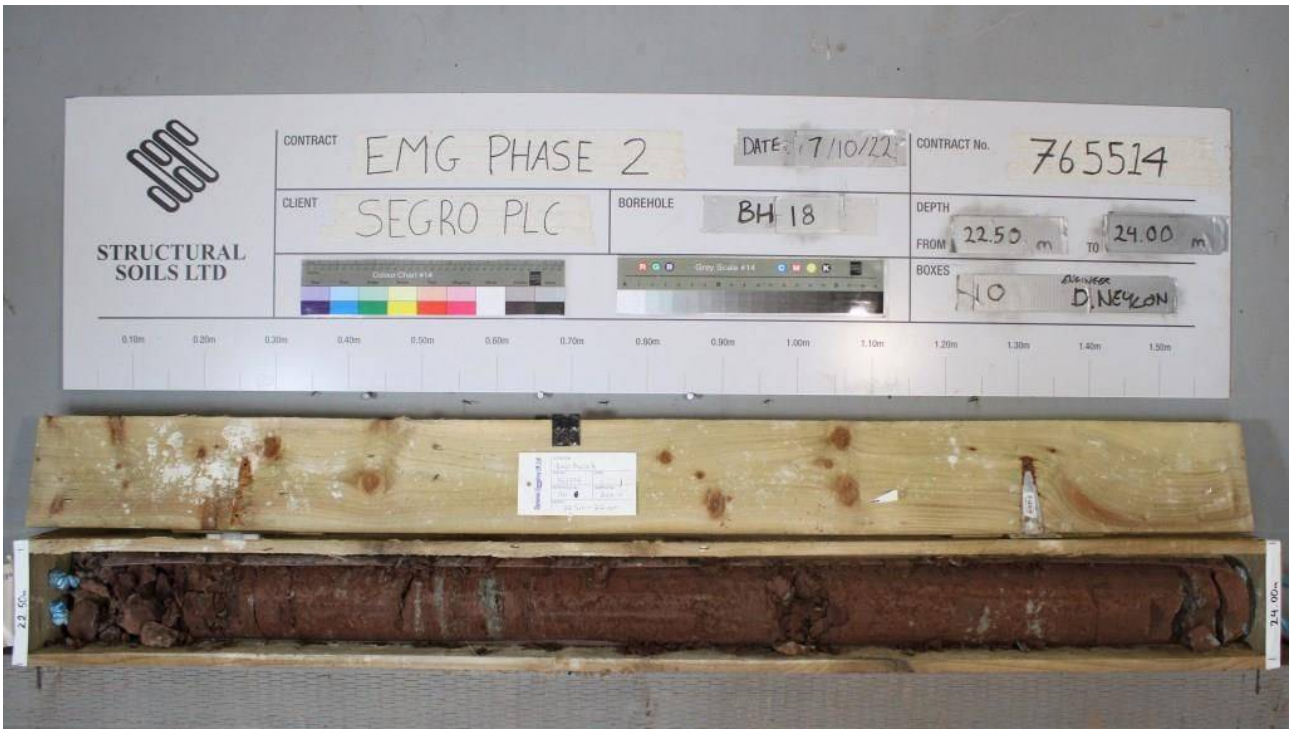
STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH18**
Contract Ref:	Start: **15.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **06.10.22**	**77.62**	**E:446112.9 N:324864.2**	**11** of **12**





Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Chris Jobson + Martin Speedie	Logged By:	DNeylon + JAlton	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH18**
Contract Ref:	Start: **15.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **06.10.22**	**77.62**	**E:446112.9 N:324864.2**	**12** of **12**

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Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Chris Jobson + Martin Speedie	Logged By:	DNeylon + JAlton	Checked By:	AGS

STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH19**

Contract Ref:	Start: **14.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **16.09.22**	**76.63**	**E:446150.1 N:324740.8**	**1** of **11**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
0.10	1	D								TOPSOIL		(0.35)	
0.10-0.30	2	B											
0.20	101	ES	1xT+1xJ+1xV								76.28	0.35	
										Stiff reddish brown mottled grey slightly gravelly sandy CLAY. Gravel is angular to subangular fine to coarse of sandstone and mudstone lithorelicts. GRADE IVa. (MERCIA MUDSTONE GROUP)			
0.90	3	D											
0.90-1.20	4	B											
1.00	102	ES	1xT+1xJ+1xV										
1.20-1.65	5	$UT_{(UT100)}$	150 blows 78% recovery										
1.65-1.75	6	D											
1.90	7	D											
2.00-2.45		SPT	N=27										
2.00-2.45	10	B											
2.00-2.45	9	DSPT											
2.70	11	D										(4.65)	
3.00-3.44		SPT	6,7/10,13,13,14 for 65mm										
3.00-3.44	13	DSPT											
3.00-3.45	14	B											
3.70	15	D											
4.00-4.44		SPT	10,13/13,13,13,11 for 60mm										
4.00-4.44	17	DSPT											
4.00-4.45	18	B								. . . 4.35-4.45m: medium strong grey siltstone			

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
14/09/22	16:20	5.00	3.00	200	Dry
16/09/22	08:00	5.00	5.00	150	Dry
16/09/22	17:00	20.00	5.00	150	Dry

Chiselling / Slow Progress

From	To	Duration (hh:mm)

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Cable percussion drilled using 200mm diameter tools and casing.
4. Rotary cored from 5.00m using SWF core barrel and 150mm diameter casing and air mist flush.
5. No groundwater strikes in the cable percussion section. Unable to determine ground water

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Jonny Hutt + Martin Speedie	JAlton + RSenior	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH19**

Contract Ref:	Start: **14.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **16.09.22**	**76.63**	**E:446150.1 N:324740.8**	**2** of **11**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
4.70	19	D								Stiff reddish brown mottled grey slightly gravelly sandy CLAY. Gravel is angular to subangular fine to coarse of sandstone and mudstone lithorelicts. GRADE IVa. (MERCIA MUDSTONE GROUP) *(stratum copied from 0.35m from previous* sheet)	71.63	5.00	
5.00-6.50 5.00-5.39		SPT	8,12/13,16,16,5 for 15mm							Stiff thickly laminated to thinly bedded reddish brown mottled light grey CLAY with occasional subangular fine to medium gravel sized mudstone lithorelicts. GRADE III. (MERCIA MUDSTONE GROUP)			
5.00-5.39	21	DSPT								. . . 5.00-5.74m: AZCL (SPT).			
				51	0	0	NI NI NI			. . . 5.83-5.84m: extremely weak siltstone.		(2.25)	
6.20	21	D								. . . 6.36-6.50m: 3 no very closely spaced thin beds of extremely weak to very weak siltstone.			
6.50-8.00 6.50-6.90		SPT	5,7/10,14,16,10 for 25mm							. . . 6.50-7.25m: AZCL (SPT).			
				50	0	0				. . . 7.18-7.26m: 80° undulating smooth discontinuity with occasional black spots on surface.	69.38	7.25	
7.50	22	D					NI 20 130			Extremely weak very thinly bedded locally thickly laminated reddish brown MUDSTONE. GRADE II. Bedding fractures: Very closely to closely spaced, undulating, rough, with a little clay smear on surfaces and locally stained black. (MERCIA MUDSTONE GROUP)			
8.00-9.50 8.00-8.30		SPT	2,10/19,31 for 70mm							. . . 7.32m: 5° undulating smooth discontinuity with frequent black spots and a little yellowish brown staining.		(2.00)	
				97	23	7				. . . 7.40-7.53m: 80° to 90° undulating rough black stained discontinuity. . . . 7.45-7.50m: 50° undulating smooth black stained discontinuity.			
8.80	23	D					NI NI 30			. . . 7.54-7.57m: 50° undulating smooth black stained discontinuity. . . . 7.58-7.62m: 45° undulating smooth black stained discontinuity.			

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress

From	To	Duration (hh:mm)

General Remarks

strikes due to flush method.
6. Borehole backfilled with bentonite on completion.
7. SPT hammer AR3104-2022 (E_r = 64.00%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Jonny Hutt + Martin Speedie	JAlton + RSenior	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH19**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**14.09.22** End: **16.09.22**	**76.63**	**E:446150.1 N:324740.8**	**3** of **11**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
							NI NI 30			. . . 7.62-7.74m: very stiff clay with occasional subangular fine to coarse gravel size lithorelics of extremely weak mudstone.			
				97	23	7					67.38	9.25	
										. . . 8.00-8.20m: Drilling disturbed, recovered NI as gravel.			
9.50-11.00										. . . 8.33-8.50m: 80° to 90° undulating smooth black stained discontinuity occasionally with a little clay smear on surfaces.		(0.70)	
										. . . 8.50-8.56m: NI with extremely closely spaced randomly oriented undulating smooth clay smeared discontinuities, locally black stained.	66.68	9.95	
										. . . 8.87-8.89m: extremely weak siltstone.			
										. . . 8.90-8.93: very weak mudstone.			
				87	37	0				Very weak very thinly to thinly bedded reddish brown MUDSTONE. GRADE II. Bedding fracture: Very closely to closely spaced, 0° to 5°, planar and undulating, smooth, clean, locally with a little clay smear and black staining on surfaces. (MERCIA MUDSTONE GROUP)			
10.53-10.63	24	C								. . . 9.26-9.32m: 85° undulating rough discontinuity with frequent black specks.			
							NI			. . . 9.32-9.43m: 90° undulating smooth black stained discontinuity.			
11.00-12.50							10 70			. . . 9.35-9.45m: 50° undulating rough discontinuity with a little clay smear on surfaces.		(2.85)	
										. . . 9.50-9.75m: extremely weak very thinly to thinly bedded mudstone.			
										. . . 9.64-9.75m: Recovered NI as gravel.			
				100	11	0				Extremely weak thickly laminated to thinly bedded reddish brown MUDSTONE. GRADE II. Bedding fractures: Extremely closely to closely spaced, undulating, smooth, with a little clay smear on surfaces. (MERCIA MUDSTONE GROUP)			
12.00	25	D								. . . 9.95-10.15m: Discontinuity are extremely closely to very closely spaced randomly orientated undulating smooth with black staining on surfaces.			
12.50-14.00										. . . 10.15-10.21m: extremely weak light greenish grey siltstone.			
										. . . 10.26-10.40m: 70° undulating smooth black stained discontinuity.	63.83	12.80	
										. . . 10.29-10.31m: 20° undulating smooth black stained discontinuities.			
12.93-13.16	26	C		95	27	0				. . . 10.42-10.55m: firm to stiff thinly to thickly laminated reddish brown clay with frequent gravel size lithorelics.		(0.73)	
							NI NI 100			. . . 10.75-10.85m: 75° undulating smooth discontinuity with occasional black staining on surfaces.			

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Jonny Hutt + Martin Speedie	JAlton + RSenior	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH19**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**14.09.22** End: **16.09.22**	**76.63**	**E:446150.1 N:324740.8**	**4** of **11**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
										. . . 10.85-11.00m: AZCL. . . . . 11.00-11.15m: drilling disturned, recovered NI as clayey gravel.	63.10	13.53	
				95	27	0				. . . 11.18-11.23m: very weak to weak very thinly bedded greenish grey siltstone. . . . 11.25-11.36m: 85° undulating rough discontinuity with frequent black specks on surfaces.		(0.72)	
14.00-15.50										. . . . 11.36-11.45m: Discontinuities are extremely closely to closely spaced randomly orientated with <1mm clay on surfaces. Locally surfaces are clean. . . . 12.43-12.50m: extremely weak light grey siltstone. . . . 12.55-12.80m: 85° undulating rough discontinuities with frequent black spots on surfaces.	62.38	14.25	
14.45-14.59	27	C		97	40	17					61.78	(0.60) 14.85	
										Stiff thickly laminated to very thinly bedded reddish brown mottled light grey CLAY with occasional angular and subangular fine to medium gravel size mudstone lithorelicts. GRADE III. Bedding fractures: Extremely closely to very closely spaced, 0° to 5°, undulating, smooth and rough, clean, locally with a little clay smear on surfaces. (MERCIA MUDSTONE GROUP) *(stratum copied from 12.80m from* previous sheet)		(0.65)	
15.50-17.00							NI 20 200				61.13	15.50	
										Extremely weak very thinly to thickly bedded reddish brown MUDSTONE. GRADE II. Bedding fractures: Extremely closely to very closely spaced, 0° to 5°, planar, smooth and undulating, rough, locally stained black and with occasional black spots. (MERCIA MUDSTONE GROUP) . . . 13.56-13.63m: 85° to 90° undulating smooth black stained discontinuity. . . . . 13.68-13.71m: very weak light greenish grey siltstone. . . . . 13.76-13.80m: very weak light greenish grey siltstone. . . . . 13.82-13.85m: very weak light greenish grey siltstone. . . . 13.85-13.90m: stiff reddish brown clay. . . . 13.90-13.95m: very weak greenish grey siltstone. . . . . 14.06m: 1 no 15mm diameter reduction spot. . . . 14.16-14.22m: 88° undulating smooth black stained discontinuity.	60.48	(0.65) 16.15	
				100	49	7							
16.58-16.65	28	C										(1.65)	
17.00-18.50													
				100	24	13							
17.70	29	D									58.83	17.80	
										Very weak very thinly to thickly bedded reddish brown MUDSTONE. GRADE II.			

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Jonny Hutt + Martin Speedie	JAlton + RSenior	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH19**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**14.09.22** End: **16.09.22**	**76.63**	**E:446150.1 N:324740.8**	**5** of **11**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
				100	24	13	NI 20 200			Bedding fractures: Very closely to closely spaced, subhorizontal, undulating, smooth, stained black locally clean. (MERCIA MUDSTONE GROUP) . . . 14.30-14.33m: 85° undulating smooth black stained discontinuity.	58.13	(0.70) 18.50	
18.50-20.00										. . . 14.33-14.42m: 80° to 90° undulating rough clean locally black stained discontinuity. . . . 14.35-14.45m: extremely weak clayey siltstone. . . . 14.60-14.72m: 85° undulating rough discontinuity with occasional black specks on surfaces. . . . 14.72m: thin lamination (3mm) of greenish grey siltstone band.			
18.80-18.96	30	C		100	67	50	NI 20 60			Extremely weak very thinly to thickly bedded reddish brown MUDSTONE. GRADE II. Bedding fractures: Very closely to closely spaced, subhorizontal, undulating, smooth, black stained and occasionally clean. (MERCIA MUDSTONE GROUP) . . . 14.86-14.89m: siltstone inclusions (<50mm).	56.63	(1.50) 20.00	
19.50-19.70	31	C								. . . 15.00-15.40m: randomly orientated extremely closely to very closely spaced undulating smooth black stained discontinuities. . . . 15.40-15.50m: 75° undulating rough black stained discontinuity.			
										Extremely weak thinly and thickly laminated reddish brown MUDSTONE with occasional thin laminae of siltstone. GRADE II. Bedding fractures: Extremely closely to very closely spaced, subhorizontal, undulating, smooth, clean. Occasionally with a little silt on surfaces. (MERCIA MUDSTONE GROUP) . . . 15.90-15.98m: weak grey siltstone. . . . 16.07-16.14m: very weak light grey siltstone.			
										Extremely weak to very weak thickly laminated to very thinly bedded reddish brown mottled light grey MUDSTONE. GRADE II. Bedding fractures: Extremely closely to closely spaced, 0° to 5°, undulating, smooth, with a little clay smear on surfaces and locally with occasional black spots. (MERCIA MUDSTONE GROUP) . . . 16.15-16.50m: randomly orientated extremely closely to very closely spaced undulating smooth black stained			

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Jonny Hutt + Martin Speedie	JAlton + RSenior	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH19**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**14.09.22** End: **16.09.22**	**76.63**	**E:446150.1 N:324740.8**	**6** of **11**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
										discontinuities, occasionally clean. . . . 16.58-16.61m: siltstone inclusions (<40mm). . . . 16.70-16.80m: 85° to 90° undulating smooth black stained discontinuity. . . . 17.10-17.21m: 80° to 85° undulating smooth black stained discontinuity with <1mm clay on surfaces. . . . 17.40-17.80m: Randomly oreintated extremely closely to closely spaced undulating smooth predominantly black stained discontinuities. . . . 17.60-17.80m: Recovered NI as gravel.			
										Very weak to weak thinly bedded reddish brown MUDSTONE. GRADE I. Bedding fractures: Very closely to closely spaced, 0° to 5°, undulating and planar, smooth, black stained. (MERCIA MUDSTONE GROUP) . . . 17.80-8.20m: 80° to 90° undulating smooth black stained discontinuity.*(stratum copied from 17.80m* from previous sheet)			
										Very weak very thinly to thinly bedded reddish brown MUDSTONE. GRADE II. Bedding fractures: Extremely closely to closely spaced, 0° to 5°, undulating, smooth, clean, locally black stained with occasional clay smear on surfaces. (MERCIA MUDSTONE GROUP) . . . 18.50-18.56m: drilling disturbed, recovered as gravel. . . . 18.88-19.04m: moderately weak light greenish grey siltstone. . . . 19.10-19.14m: 30° undulating smooth black stained discontinuity. . . . 19.20-19.21m: 20° undulating smooth black stained discontinuity. . . . 19.42-19.45m: 30° undulating smooth discontinuity with occasional black specks. . . . 19.74-19.80m: 60° undulating smooth black stained discontinuity.			
										Borehole terminated at 20.00m depth.			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	**Dando 3000 + Comacchio GEO 205**	**Jonny Hutt + Martin Speedie**	**JAlton + RSenior**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH19**
Contract Ref:	Start: **14.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **16.09.22**	**76.63**	**E:446150.1 N:324740.8**	**7** of **11**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Martin Speedie	Logged By:	JAlton + RSenior	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH19**
Contract Ref:	Start: **14.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **16.09.22**	**76.63**	**E:446150.1 N:324740.8**	**8** of **11**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Martin Speedie	Logged By:	JAlton + RSenior	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH19**
Contract Ref:	Start: **14.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **16.09.22**	**76.63**	**E:446150.1 N:324740.8**	**9** of **11**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Martin Speedie	Logged By:	JAlton + RSenior	Checked By:	AGS

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH19**
Contract Ref:	Start: **14.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **16.09.22**	**76.63**	**E:446150.1 N:324740.8**	**10** of **11**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Martin Speedie	Logged By:	JAlton + RSenior	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH19**
Contract Ref:	Start: **14.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **16.09.22**	**76.63**	**E:446150.1 N:324740.8**	**11** of **11**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Martin Speedie	Logged By:	JAlton + RSenior	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH20**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**15.09.22** End: **15.09.22**	**76.91**	**E:446017.0 N:324870.9**	**1** of **16**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
0.00-0.20	1	B									TOPSOIL			
0.10	101	ES	1xT+1xJ+1xV										(0.40)	
0.10	2	D												
0.25	3	D												
0.25-0.40	4	B										76.51	0.40	
0.30	102	ES	1xT+1xJ+1xV								Firm reddish brown slightly gravelly sandy SILT. Sand is fine to coarse, predominantly coarse. Gravel is subangular to subrounded fine to coarse of quartzite.			
0.60	103	ES	1xT+1xJ+1xV											
0.60	5	D												
0.60-0.90	6	B											(1.10)	
1.00	104	ES	1xT+1xJ+1xV											
1.00	7	D												
1.00-1.20	8	B												
1.20-1.65		SPT	N=15											
1.20-1.65	10	DSPT												
1.20-1.65	11	B										75.41	1.50	
1.60-1.80	12	B									Very stiff reddish brown mottled grey slightly gravelly sandy CLAY. Sand is fine to coarse, predominantly coarse. Gravel is angular to subangular fine of mudstone lithorelicts. GRADE IVa. (MERCIA MUDSTONE GROUP)			
1.80	13	D												
2.00-2.45	14	$UT_{(UT100)}$	120 blows 89% recovery					Air+Mist (Red/Grey Mudstone.)					(1.20)	
2.45-2.55	15	D												
												74.21	2.70	
2.80	16	D									Extremely weak reddish brown MUDSTONE with rare greenish grey laminae and pockets of siltstone. GRADE IVb. (MERCIA MUDSTONE GROUP)			
3.00-3.45		SPT	N=30											
3.00-3.45	18	DSPT												
3.00-3.45	19	B												
3.70	20	D											(2.50)	
4.00-4.41		SPT	7,9/10,13,18,9 for 30mm											
4.00-4.41	22	DSPT												
4.00-4.45	23	B												

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
15/09/22	12:00	5.00	4.50	200	-
20/09/22	10:00	5.00	None	200	-
20/09/22	17:00	21.00	5.20	150	-
21/09/22	08:30	21.00	5.20	150	8.30
21/09/22	12:30	30.00	5.20	150	25.90

Chiselling / Slow Progress

From	To	Duration (hh:mm)

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Cable percussion drilled using 200mm diameter tools and casing.
4. Rotary cored from 5.20m using SWF core barrel and 150mm diameter casing and air mist flush.
5. Groudwater strike at 10.70m rising to 9.80m after 20 minutes.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Jonny Hutt + Marc Pearson	DNartey + DNeylon	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH20**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**15.09.22** End: **15.09.22**	**76.91**	**E:446017.0 N:324870.9**	**2** of **16**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
4.70	24	D									Extremely weak reddish brown MUDSTONE with rare greenish grey laminae and pockets of siltstone. GRADE IVb. (MERCIA MUDSTONE GROUP) *(stratum copied from 2.70m from* previous sheet)			
5.00-5.36		SPT	12,13/16,21,17 for 55mm											
5.00-5.36	26	DSPT										71.71	5.20	
5.20-6.00											Extremely weak to very weak reddish brown MUDSTONE with frequent beds of greenish grey siltstone. GRADE II. Fractures: Extremely closely spaced, randomly orientated, planar, smooth, with frequent black and yellow staining. (MERCIA MUDSTONE GROUP)			
5.48-5.65	28	C		69	25	25		Air+Mist (Red/Grey Mudstone)						
6.00-7.50							NI 20 150				. . . 5.20-5.45m: AZCL. . . . 5.45-5.75m: NI. . . . 6.55-6.72m: 60° planar smooth clean. . . . 6.70-7.10m: 9° undulating rough with black and yellow staining. GRADE II. . . . 6.90-7.00m: 60° planar smooth clean.		(2.30)	
7.25-7.40	29	C		100	9	9		Air+Mist (Red/Grey Mudstone)				69.41	7.50	
7.50-9.00											Extremely weak to very weak thinly laminated to very thinly bedded reddish brown MUDSTONE with thin laminations of greenish grey siltstone. Fracture Set 1: Randomly orientated, very closely spaced, planar and undulating, smooth and rough, with black and yellow staining. Fracture Set 2: 45°, closely spaced, planar, smooth, with black and yellow staining. (MERCIA MUDSTONE GROUP)			
8.24	30	D		100	67	60	NI 30 70	Air+Mist (Red/Grey Mudstone)			*Description on next sheet*			

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	6. Borehole backfilled with bentonite on completion. 7. SPT hammer AR3104-2022 (E_r = 64.00%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Jonny Hutt + Marc Pearson	DNartey + DNeylon	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH20**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**15.09.22** End: **15.09.22**	**76.91**	**E:446017.0 N:324870.9**	**3** of **16**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
9.00-10.50											. . . 8.90-8.95m: Greenish grey siltstone. Extremely weak to very weak thinly laminated to very thinly bedded reddish brown MUDSTONE with thin laminations of greenish grey siltstone. Fracture Set 1: Randomly orientated, very closely spaced, planar and undulating, smooth and rough, with black and yellow staining. Fracture Set 2: 45°, closely spaced, planar, smooth, with black and yellow staining. (MERCIA MUDSTONE GROUP) *(stratum copied from 7.50m from* previous sheet)			
9.08-9.36	31	C												
				100	47	47	NI 30 70	Air+Mist (Red/Grey Mudstone)					(3.90)	
10.50-12.00											. . . 9.36-9.42m: Medium strong. . . . 9.75-9.82m: (Firm) reddish brown clay with lithorelics of mudstone. . . . 9.82-9.92m: Greenish grey siltstone. . . . 10.45-10.60m: (Soft) reddish brown silty clay with lithorelics of mudstone.			
11.00-11.20	32	C												
				77	77	77		Air+Mist (Red/Grey Mudstone)				65.51	11.40	
12.00-13.50											Extremely weak to weak reddish brown and greenish grey MUDSTONE with closely spaced very thin to thin beds of greenish grey SILTSTONE. GRADE II. Fractures: Randomly orientated, very closely spaced, planar and undulating, smooth, clean. (MERCIA MUDSTONE GROUP)			
12.30	33	D												
				97	60	47	NI 50 170	Air+Mist (Red/Grey Mudstone)					(2.85)	

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Jonny Hutt + Marc Pearson	DNartey + DNeylon	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH20**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**15.09.22** End: **15.09.22**	**76.91**	**E:446017.0 N:324870.9**	**4** of **16**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
13.50-15.00											Extremely weak to weak reddish brown and greenish grey MUDSTONE with closely spaced very thin to thin beds of greenish grey SILTSTONE. GRADE II. Fractures: Randomly orientated, very closely spaced, planar and undulating, smooth, clean. (MERCIA MUDSTONE GROUP)			
13.50-13.65	34	C		97	40	30	NI 50 170	Air+Mist (Red/Grey Mudstone)				62.66	14.25	
							NI 5 60				*(stratum copied from 11.40m from* previous sheet) Extremely weak reddish brown clayey MUDSTONE with abundant very closely spaced thin beds of greenish grey siltstone.	62.21	(0.45) 14.70	
15.00-16.50				87	53	43	NI 10 10	Air+Mist (Red/Grey Mudstone)			Fractures: Randomly orientated, extremely closely spaced, planar, smooth, clean. (MERCIA MUDSTONE GROUP) . . . 14.50-14.65m: Clay with frequent lithoerlicts. Very weak reddish brown MUDSTONE with medium spaced thin beds of greenish grey SILTSTONE. Fracture Set 1: 0-15°, closely spaced, undulating, smooth, clean. GRADE I. Fracture set 2: Randomly orientated, extremely closely spaced, planar, smooth, clean. . . . 14.80-15.25m: NI - drilling disturbed.		(1.80)	
15.89-16.05	35	C									. . . 16.30-16.50m: NI - drilling disturbed.	60.41	16.50	
16.50-18.00				97	31	0		Air+Mist (Red/Grey Mudstone)			Extremely weak to very weak reddish brown MUDSTONE. Frequent gravel size pockets and lenses (<15mm) of greenish grey siltstone. GRADE II. Bedding fractures: Closely spaced, rough, planar. Fractures Set 2: Very closely spaced, randomly orientated, smooth, planar. (MERCIA MUDSTONE GROUP)			
17.30-17.50	36	C									. . . 17.00-18.00m: Becoming extremely weak to very weak .			

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Jonny Hutt + Marc Pearson	DNartey + DNeylon	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH20**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**15.09.22** End: **15.09.22**	**76.91**	**E:446017.0 N:324870.9**	**5** of **16**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
18.00-19.50				97	43	20		Air+Mist (Red/Grey Mudstone)			Extremely weak to very weak reddish brown MUDSTONE. Frequent gravel size pockets and lenses (<15mm) of greenish grey siltstone. GRADE II. Bedding fractures: Closely spaced, rough, planar. Fractures Set 2: Very closely spaced, randomly orientated, smooth, planar. (MERCIA MUDSTONE GROUP) *(stratum copied from 16.50m from* previous sheet)		(3.25)	
18.90-19.10	37	C									. . . 18.00-18.15m: Weak to medium strong greenish grey SANDSTONE with fine to medium sand size vugs.			
19.50-21.00				97	65	27		Air+Mist (Red/Grey Mudstone)				57.16	19.75	
20.45-20.70	38	C									Weak greenish grey fine to medium grained SANDSTONE with frequent vugs (up to 0.60mm). Interspaced with thin laminae of siltstone. Bedding fractures: Closely spaced, rough, undulating. (MERCIA MUDSTONE GROUP) . . . 19.80m to 19.85m: Siltstone.	56.46	(0.70) 20.45	
											. . . 20.20-20.40m: Sandstone is interspersed with reddish brown clay with mudstone lithorelics.		(0.35)	
											Weak reddish brown MUDSTONE. GRADE II. (MERCIA MUDSTONE GROUP)	56.11	20.80	
21.00-22.50											. . . 20.70-20.80m: Very closely spaced randomly orientated fractures and recovered as gravel of mudstone.		(0.90)	
											Weak to medium strong greenish grey fine to medium grained SANDSTONE. (MERCIA MUDSTONE GROUP)			
21.60-21.95	39	C		70	53	33		Air+Mist (Red Mudstone)			. . . 21.00-21.45m: AZCL.	55.21	21.70	
											Very weak greenish grey SILTSTONE. (MERCIA MUDSTONE GROUP)	54.91	(0.30) 22.00	
											Description on next sheet			
											. . . 22.35-22.50m: Siltstone.			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	**Dando 3000 + Comacchio GEO 205**	**Jonny Hutt + Marc Pearson**	**DNartey + DNeylon**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH20**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**15.09.22** End: **15.09.22**	**76.91**	**E:446017.0 N:324870.9**	**6** of **16**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
22.50-24.00											Extremely weak to weak reddish brown MUDSTONE with occasional gravel size pockets of greenish grey siltstone. Medium interbedded with extremely weak to very weak greenish grey SILTSTONE. GRADE II. Bedding fractures: Medium spaced, rough, undulating, infilled with red sandy clay. (MERCIA MUDSTONE GROUP) *(stratum copied from 22.00m from* previous sheet) . . . 22.70-22.95m: Siltstone. . . . 23.70-23.95m: Extremely weak siltstone verging towards silt.			
23.25-23.40	40	C		100	40	0		Air+Mist (Red Mudstone)					(2.95)	
24.00-25.50											. . . 24.10-24.25m: Siltstone.			
24.35-24.55	41	C		100	69	21		Air+Mist (Red Mudstone)				51.96	24.95	
25.50-27.00											Extremely weak reddish brown fine grained SANDSTONE. Fractures: Closely spaced, randomly orientated, smooth, undulating. (MERCIA MUDSTONE GROUP)		(1.15)	
26.65-26.90	42	C		97	93	83		Air+Mist (Red Mudstone)				50.81	26.10	
											Extremely weak reddish brown MUDSTONE very thinly interbedded with extremely weak greenish grey SILTSTONE. GRADE II. . . . 26.25m: Sandstone.		(0.80)	
												50.01	26.90	
											Description on next sheet			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Jonny Hutt + Marc Pearson	DNartey + DNeylon	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH20**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**15.09.22** End: **15.09.22**	**76.91**	**E:446017.0 N:324870.9**	**7** of **16**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
27.00-28.50											Medium strong greenish grey thinly to thickly laminated SANDSTONE. (MERCIA MUDSTONE GROUP) *(stratum copied from 26.90m from* previous sheet)	49.81	27.10	
				100	87	30		Air+Mist (Red Mudstone)			Extremely weak reddish brown MUDSTONE with abundant fine to medium gravel size pockets of greenish grey siltstone. GRADE II. (MERCIA MUDSTONE GROUP)	49.06	(0.75) 27.85	
27.85-28.15	43	C									. . . 27.10-27.40m: 70°, smooth, planar fracture.			
											Weak reddish brown fine grained SANDSTONE with occasional pockets (up to 20mm) of greenish grey siltstone. (MERCIA MUDSTONE GROUP)			
28.50-30.00													(1.45)	
											. . . 28.80m: Bedding fracture is infilled with subangular gravel of reddish mudstone.			
				87	50	28		Air+Mist (Red Mudstone)			. . . 29.20-29.50m: Thinly cross laminated.	47.61	29.30	
29.40-29.60	44	C									Extremely weak reddish brown fine grained SANDSTONE. (MERCIA MUDSTONE GROUP)		(0.70)	
											. . . 29.95m: Greenish grey siltstone.	46.91	30.00	
											Borehole terminated at 30.00m depth.			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	**Dando 3000 + Comacchio GEO 205**	**Jonny Hutt + Marc Pearson**	**DNartey + DNeylon**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH20**
Contract Ref:	Start: **15.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **15.09.22**	**76.91**	**E:446017.0 N:324870.9**	**8** of **16**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Marc Pearson	Logged By:	DNartey + DNeylon	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH20**
Contract Ref:	Start: **15.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **15.09.22**	**76.91**	**E:446017.0 N:324870.9**	**9** of **16**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Marc Pearson	Logged By:	DNartey + DNeylon	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH20**
Contract Ref:	Start: **15.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **15.09.22**	**76.91**	**E:446017.0 N:324870.9**	**10** of **16**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Marc Pearson	Logged By:	DNartey + DNeylon	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH20**
Contract Ref:	Start: **15.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **15.09.22**	**76.91**	**E:446017.0 N:324870.9**	**11** of **16**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Marc Pearson	Logged By:	DNartey + DNeylon	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH20**
Contract Ref:	Start: **15.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **15.09.22**	**76.91**	**E:446017.0 N:324870.9**	**12** of **16**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Marc Pearson	Logged By:	DNartey + DNeylon	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH20**
Contract Ref:	Start: **15.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **15.09.22**	**76.91**	**E:446017.0 N:324870.9**	**13** of **16**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Marc Pearson	Logged By:	DNartey + DNeylon	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH20**
Contract Ref:	Start: **15.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **15.09.22**	**76.91**	**E:446017.0 N:324870.9**	**14** of **16**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Marc Pearson	Logged By:	DNartey + DNeylon	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH20**
Contract Ref:	Start: **15.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **15.09.22**	**76.91**	**E:446017.0 N:324870.9**	**15** of **16**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Marc Pearson	Logged By:	DNartey + DNeylon	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH20**
Contract Ref:	Start: **15.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **15.09.22**	**76.91**	**E:446017.0 N:324870.9**	**16** of **16**

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Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Marc Pearson	Logged By:	DNartey + DNeylon	Checked By:	AGS

STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH21**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**14.09.22** End: **16.09.22**	**75.56**	**E:445964.3 N:324644.9**	**1** of **17**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
0.10	1	D								TOPSOIL		(0.30)	
0.10-0.30	2	B									75.26	0.30	
0.20	101	ES	1xT+1xJ+1xV							Stiff orangish brown mottled grey slightly gravelly silty CLAY. Gravel is subangular to subrounded fine to coarse of extremely weak mudstone and siltstone lithorelicts and occasional sandstone. GRADE IVa. (MERCIA MUDSTONE GROUP)			
0.40	102	ES	1xT+1xJ+1xV									(0.50)	
0.40	3	D											
0.40-0.60	4	B									74.76	0.80	
0.80	5	D								Stiff to very stiff reddish brown slightly sandy slightly gravelly silty CLAY. Sand is predominantly coarse. Gravel is subangular fine to coarse of extremely weak mudstone and siltstone lithorelics and occasional sandstone. GRADE IVa. (MERCIA MUDSTONE GROUP)			
0.80-1.20	6	B											
1.00	103	ES	1xT+1xJ+1xV										
1.20-1.65		SPT	N=14										
1.20-1.65	8	DSPT											
1.20-1.65	9	B											
1.70	10	D											
2.00-2.40	11	$UT_{(UT100)}$	150 blows 88% recovery										
2.40-2.50	12	D										(3.70)	
2.70	13	D											
3.00-3.40		SPT	5,10/10,13,18,9 for 20mm							. . . below 3.00m: becoming very stiff.			
3.00-3.40	15	DSPT											
3.00-3.45	16	B											
3.70	17	D											
4.00-4.37		SPT	6,8/13,20,17 for 65mm										
4.00-4.37	19	DSPT									71.06	4.50	

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
13/09/22	16:45	1.90	1.90	200	Dry
14/09/22	07:45	1.90	1.90	200	Dry
14/09/22	11:00	4.00	3.00	200	Dry
16/09/22	08:20	4.00	None	200	Dry
16/09/22	17:00	30.00	4.50	150	26.00
17/09/22	08:30	30.00	4.50	150	10.30
17/09/22	10:00	30.00	4.50	150	10.30

Chiselling / Slow Progress

From	To	Duration (hh:mm)

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Cable percussion drilled using 200mm diameter tools and casing.
4. Rotary cored from 4.37m using SWF core barrel and 150mm diameter casing and air mist flush.
5. Groundwater strike at 26.00m rising 25.50m after 20 minutes.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Jonny Hutt + Luke Bamford	JAlton + RSenior	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH21**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**14.09.22** End: **16.09.22**	**75.56**	**E:445964.3 N:324644.9**	**2** of **17**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
4.50-6.00							NI NI NI			AZCL. (MERCIA MUDSTONE GROUP)		(0.70)	AZCL
											70.36	5.20	
				53	9	9				Extremely weak to very weak very thinly to thinly bedded reddish brown MUDSTONE. GRADE II. Bedding fractures: Very closely to closely spaced, 0° to 10°, undulating, smooth and rough, clean, with rare black specks. (MERCIA MUDSTONE GROUP)			
5.60	23	D											
6.00-7.50										. . . 6.00-6.15m: AZCL.			
										. . . 6.30-6.50m: Stiff reddish brown silty clay with occasional subangular fine to coarse gravel size mudstone lithorelicts.			
				83	22	0							
7.00	24	D					NI 60 170			. . . 7.02m: thin laminae (5mm) of weak light greenish grey siltstone. . . . 7.12-7.38m: With frequent thick laminae and very thin beds of very weak light greenish grey siltstone. . . . 7.34-7.36m: 45° undulating rough discontinuity with frequent black specks. . . . 7.34-7.62m: 85° undulating rough locally orangish brown stained discontinuity with frequent black specks.			
7.50-9.00													
8.00	25	D								. . . 7.94-8.00m: 40° undulating rough black stained discontinuity.		(5.97)	
				99	33	7				. . . 8.12-8.46m: 85° to 90° undulating smooth discontinuity with frequent black specks. . . . 8.39-8.86m: 3 no parallel 50° closely spaced undulating smooth black stained discontinuities. . . . 8.60-9.00m: 80° to 90° undulating smooth rough black stained discontinuity.			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

6. Borehole installed with 50mm standpipe on completion (response zone 5.00m to 30.00m).
7. SPT hammer AR3104-2022 (E_r = 64.00%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Jonny Hutt + Luke Bamford	JAlton + RSenior	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH21**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**14.09.22** End: **16.09.22**	**75.56**	**E:445964.3 N:324644.9**	**3** of **17**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
9.00-10.50 9.00-9.27	26	C		97	61	43	NI 60 170			Extremely weak to very weak very thinly to thinly bedded reddish brown MUDSTONE. GRADE II. Bedding fractures: Very closely to closely spaced, 0° to 10°, undulating, smooth and rough, clean, with rare black specks. (MERCIA MUDSTONE GROUP) *(stratum copied from 5.20m from previous sheet)* . . . 9.27m: Thick laminae (15mm)of very weak light greenish grey siltstone. . . . 9.69-9.78m: 50° undulating rough black stained discontinuity. . . . 10.00-10.20m: 85° to 90° undulating rough black stained discontinuity. . . . 10.13-10.320m: 50° undulating rough discontinuity with frequent black specks. . . . 10.35-10.50m: With very closely spaced randomly orientated undulating smooth and rough discontinuities with occasional black specks. . . . 10.50-10.55m: Moderately weak light grey siltstone. . . . 10.72-10.80m: 50° undulating smooth discontinuity with <1mm clay on surfaces. . . . 10.72-10.89m: Discontinuities are closely to very closely spaced randomly orientated undulating smooth and rough clean locally stained black. . . . 10.89-11.00m: Thinly and thickly laminated.			
10.44 10.50-12.00		EW											
11.02-11.17	27	C		95	80	69					64.39	11.17	
11.56-11.76	28	C					NI 60 200			Very weak thinly to medium bedded reddish brown MUDSTONE. GRADE II. Bedding fractures: Very closely to medium spaced, 0°, undulating, smooth, clean, locally with a little clay smear on surfaces. (MERCIA MUDSTONE GROUP) . . . 11.29-11.35m: Coarse gravel size siltstone inclusion. . . . 11.38-11.42m: Extremely weak light greenish grey siltstone. . . . 12.00-12.20m: AZCL. . . . 12.20-12.30m: Thickly laminated. . . . 12.30-12.50m: Drilling disturbed, recovered as clayey gravel. . . . 12.50-12.65m: Thickly laminated.		(1.48)	
12.00-13.50											62.91	12.65	
13.28-13.42	29	C		87	47	17	NI NI 90 NI 60 170			Stiff thinly to thickly laminated silty CLAY with frequent angular to subangular fine to medium gravel size lithorelicts. GRADE III. (MERCIA MUDSTONE GROUP) . . . 12.70-12.72m: Thick laminae of stiff light greenish grey silt. . . . 12.86-13.07m: Thinly laminated to very thickly bedded stiff to very stiff light greenish grey clay. *Description on next sheet*		(0.50)	
											62.41	13.15	

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	**Dando 3000 + Comacchio GEO 205**	**Jonny Hutt + Luke Bamford**	**JAlton + RSenior**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH21**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **16.09.22**	**75.56**	**E:445964.3 N:324644.9**	**4** of **17**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
13.50-15.00										. . . 13.08-13.15m: Thin bed of moderately weak light greenish grey siltstone. Very weak to weak very thinly to thinly bedded reddish brown MUDSTONE. GRADE II. Bedding fractures: Very closely to closely spaced, 0° to 10°, undulating, rough, black stained locally orangish brown stained. (MERCIA MUDSTONE GROUP) *(stratum copied from 13.15m from* previous sheet)			
				100	75	38	NI 60 170			. . . 13.55-13.65m: 85° undulating rough orangish brown stained discontinuity. . . . 14.04-14.07m: Moderately weak light grey siltstone. . . . 14.06-14.17m: Incipient fractures very closely to closely spaced randomly orientated rough clean. . . . 14.16-14.24m: 45° undulating rough black and orangish brown stained discontinuity.		(2.68)	
15.00-16.50													
15.24-15.42	31	C								. . . 14.34-14.35m: Weak light greenish grey siltstone. . . . 14.39-14.40m: Weak light greenish grey siltstone. . . . 14.55-14.70m: Extremely closely to very closely spaced randomly orientated undulating rough clean locally orangish brown stained discontinuities.			
				93	43	28	NI NI 30			. . . 15.12-15.16m: Moderately weak light greenish grey siltstone. . . . 15.40-15.45m: 90° undulating rough discontinuity with rare black specks. . . . 15.58-15.67m: 85° to 90° undulating rough black stained discontinuity. . . . 15.66-15.72m: 35° undulating rough black stained discontinuity.	59.73	15.83	
												(0.30)	
										Stiff thinly and thickly laminated silty CLAY with occasional subangular fine to medium gravel size lithorelicts of mudstone. Occasional thin laminae of very weak light grey siltstone. GRADE III. (MERCIA MUDSTONE GROUP)	59.43	16.13	
16.50-18.00													
17.00	32	D								Very weak very thinly to thinly bedded reddish brown MUDSTONE. GRADE II. Bedding fractures: 0° to 15°, very closely to closely spaced, undulating, rough, clean, occasional black staining. (MERCIA MUDSTONE GROUP)			
				97	31	13	NI 50 100			. . . 16.15-16.19m: Moderately weak light grey siltstone with occasional vugs (<2mm). . . . 16.30-16.38m: Moderately weak light grey siltstone with frequent vugs (<2mm). . . . 16.50-16.70m: Drilling disturbed, NI / recovered as gravel.		(2.94)	

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Jonny Hutt + Luke Bamford	JAlton + RSenior	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH21**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**14.09.22** End: **16.09.22**	**75.56**	**E:445964.3 N:324644.9**	**5** of **17**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
18.00-19.50				93	23	8	NI 50 100			. . . 16.81-16.82m: Very weak light greenish grey siltstone. . . . 16.83-17.05m: 85°-90° undulating rough black stained discontinuity. . . . 17.05-17.35m: Extremely close to very closely spaced randomly orientated clean and black stained discontinuities. . . . 17.13-17.38m: 75°-85° undulating smooth and rough clean locally black stained discontinuity. . . . 17.39-17.50m: 50° undulating rough discontinuity with 1-2mm soft clay on surfaces.			
											56.49	19.07	
19.25-19.37	33	C								. . . 17.50-17.78m: 60° undulating smooth lightly black stained discontinuity. . . . 17.75-17.78m: 60° undulating smooth lightly lack stained discontinuity. . . . 17.80-17.93m: Extremely closely to very closely spaced randomly orientated undulating smooth clean locally black stained discontinuities. . . . 17.85-18.00m: 65° undulating smooth clean discontinuity.			
19.50-21.00													
19.82-20.05	34	C								Very weak very thinly to thinly bedded reddish brown MUDSTONE. GRADE II. Bedding fractures: 0° to 15°, very closely to closely spaced, undulating, rough, clean, occasional black staining. (MERCIA MUDSTONE GROUP) *(stratum copied from 16.13m from* previous sheet) . . . 18.00-18.20m: Drilling disturbed. Recovered NI as subangular coarse gravel and cobble size fragments. . . . 18.20-18.30m: 45° undulating smooth black stained discontinuity.		(1.93)	
				100	60	53	NI 120 300			. . . 18.30-18.55m: Extremely closely to very closely spaced undulating smooth and roughly lean locally lightly black stained discontinuities. . . . 18.40-18.46m: 75° undulating smooth clean locally lightly black stained discontinuity. . . . 18.43-18.47m: 30° undulating smooth discontinuity with <1mm clay smear on surfaces and locally stained black. . . . 18.60-18.90m: 70° undulating smooth clean locally light black stained discontinuity. . . . 19.06-19.10m: 20° planar smooth lightly black stained discontinuities.	54.56	21.00	
21.00-22.50				95	73	43						(1.80)	
22.15-22.45	35	C								Weak to moderately weak very thinly to thinly bedded reddish brown MUDSTONE. GRADE II. Bedding fractures: Very closely to closely spaced, undulating, smooth and rough, clean, locally black stained and locally with			

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	**Dando 3000 + Comacchio GEO 205**	**Jonny Hutt + Luke Bamford**	**JAlton + RSenior**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH21**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**14.09.22** End: **16.09.22**	**75.56**	**E:445964.3 N:324644.9**	**6** of **17**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
22.50-24.00							NI 120 300			<1mm silt on surfaces. (MERCIA MUDSTONE GROUP) . . . 19.07-19.20m: 75°-90° curved undulating rough black stained discontinuity. . . . 19.25-19.42m: Moderately weak light greenish grey siltstone. . . . 19.50-19.77m: Occasional fine to medium gravel size inclusions of siltstone. . . . 19.82-19.97m: 85°-90° undulating smooth and rough clean and locally with frequent black specks. . . . 20.19-20.23m: Thinly interlaminated stiff reddish brown clay and very weak light greenish grey siltstone. . . . 20.23-20.27m: Moderately weak light greenish grey siltstone. . . . 20.27-20.45m: 50°-70° undulating smooth and rough clean locally black stained discontinuity. . . . 20.38-20.40m: 50° undulating smooth black stained discontinuity. . . . 20.70-20.82m: Extremely closely to very closely spaced randomly orientated undulating rough and smooth clean locally lightly black stained discontinuities.	52.76	22.80	
				97	32	19							
23.52-23.74	36	C											
							NI NI 220						
24.00-25.50												(2.42)	
				97	36	25				. . . 21.62-21.63m: Stiff reddish brown clay. . . . 21.77-22.00m: Stiff thinly bedded reddish brown mudstone locally trending to extremely weak mudstone. Weak to strong thinly to medium bedded light greenish grey SILTSTONE with occasional vugs (up to 2mm). GRADE II. Bedding fractures: 0° to 10°, undulating, rough, clean, locally orange stained. (MERCIA MUDSTONE GROUP) *(stratum copied from 21.00m from* previous sheet)			
25.12-25.50	37	C							1		50.34	25.22	
25.50-27.00										Extremely weak very thinly to medium bedded reddish brown silty MUDSTONE. GRADE II. Bedding fractures: Very closely to medium spaced, 0° to 15°, undulating, rough, clean, locally with up to 1mm clay or silt on surfaces. (MERCIA MUDSTONE GROUP) . . . 22.93-23.20m: Extremely closely spaced very thin beds of very stiff light greenish grey silt. . . . 23.45-23.75m: Occasional fine to coarse gravel size inclusions of extremely weak light greenish grey siltstone. . . . 23.75-23.79m: 25° undulating rough discontinuity with <1mm silt on surfaces. . . . 23.75-23.84m: Weak light greenish grey siltstone.			
25.55-25.79	38	C							1				
							NI 150 380						
				97	77	69							

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	**Dando 3000 + Comacchio GEO 205**	**Jonny Hutt + Luke Bamford**	**JAlton + RSenior**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH21**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**14.09.22** End: **16.09.22**	**75.56**	**E:445964.3 N:324644.9**	**7** of **17**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
27.00-28.50										. . . 23.80-23.84m: 40° undulating rough clean discontinuity. . . . 24.09-24.15m: Firm reddish brown silty clay. . . . 24.25-24.30m: Firm reddish brown silty clay. . . . 24.30-24.58m: Thinly interbedded extremely weak light greenish grey siltstone with stiff reddish brown silty clay. . . . 24.88-25.22m: Extremely weak thickly laminated to very thinly bedded light greenish grey siltstone. . . . 25.50-25.55m: Thickly interlaminated to very thinly interbedded very weak greenish grey siltstone and extremely weak reddish brown mudstone. . . . 25.93-25.97m: 25° undulating smooth lightly black stained discontinuity. . . . 26.02-26.15m: 80°-90° undulating rough clean discontinuity. . . . 26.40-26.50m: Weak light greenish grey siltstone with 85° undulating rough clean locally orangish brown stained discontinuity. . . . 26.65-26.68m: 15° undulating rough black stained discontinuity.			
27.28-29.46	39	C		97	80	60	NI					(4.78)	
28.50-30.00							150						
29.00-29.32	40	C		97	69	57	380						
										Extremely weak to very weak thinly to medium bedded reddish brown mottled light greenish grey silty MUDSTONE. GRADE II. Bedding fractures: Closely to medium spaced, 0° to 10°, undulating, rough, stained, orangish brown, locally with up to 1mm silt on surfaces. (MERCIA MUDSTONE GROUP) *(stratum copied from 25.22m from* previous sheet)			
										. . . 27.10-27.12m: Weak light grey siltstone. . . . 27.18-27.21m: Weak light grey siltstone. . . . 27.30-27.34m: 2 no very thin bands of weak light grey siltstone. . . . 27.48-27.60m: 85°-90° undulating rough discontinuity with light orangish brown staining over lower 30mm. . . . 28.13-28.33m: 60°-90° curved undulating rough clean discontinuity. . . . 28.69-28.79m: Very weak light greenish grey siltstone. . . . 28.97-29.00m: 0°-25°undulating smooth clean discontinuity locally with <1mm silt on surfaces. . . . 29.35-29.43m: Extremely weak to very weak light greenish grey siltstone. . . . 29.37-29.45m: 40° undulating rough discontinuity with 1-2mm of firm clay on	45.56	30.00	

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Jonny Hutt + Luke Bamford	JAlton + RSenior	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH21**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**14.09.22** End: **16.09.22**	**75.56**	**E:445964.3 N:324644.9**	**8** of **17**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
										surfaces. . . . 29.60-29.77m: Very stiff reddish brown silty clay. . . . 29.80-30.00m: 70° undulating rough clean discontinuity. Borehole terminated at 30.00m depth.			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	**Dando 3000 + Comacchio GEO 205**	**Jonny Hutt + Luke Bamford**	**JAlton + RSenior**	

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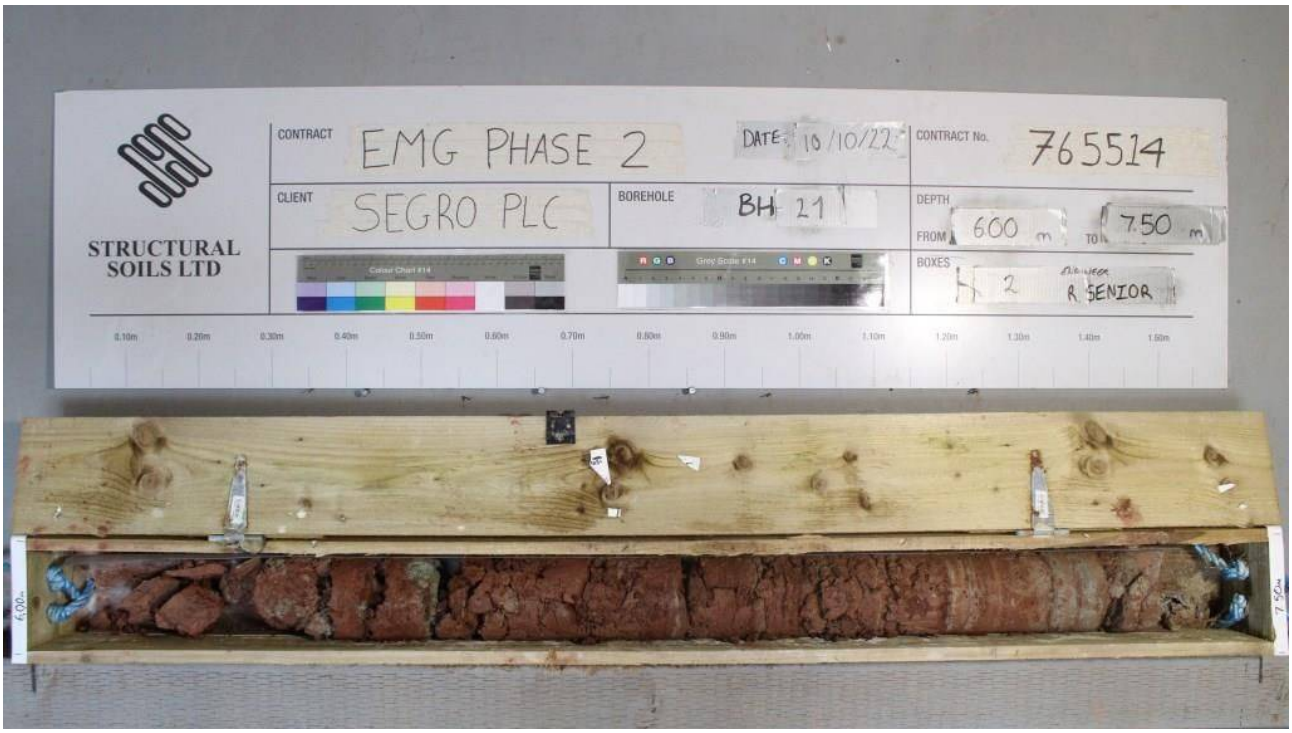
STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH21**
Contract Ref:	Start: **14.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **16.09.22**	**75.56**	**E:445964.3 N:324644.9**	**9** of **17**



Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Luke Bamford	Logged By:	JAlton + RSenior	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH21**
Contract Ref:	Start: **14.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **16.09.22**	**75.56**	**E:445964.3 N:324644.9**	**10** of **17**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Luke Bamford	Logged By:	JAlton + RSenior	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH21**
Contract Ref:	Start: **14.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **16.09.22**	**75.56**	**E:445964.3 N:324644.9**	**11** of **17**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Luke Bamford	Logged By:	JAlton + RSenior	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH21**
Contract Ref:	Start: **14.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **16.09.22**	**75.56**	**E:445964.3 N:324644.9**	**12** of **17**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Luke Bamford	Logged By:	JAlton + RSenior	Checked By:	AGS

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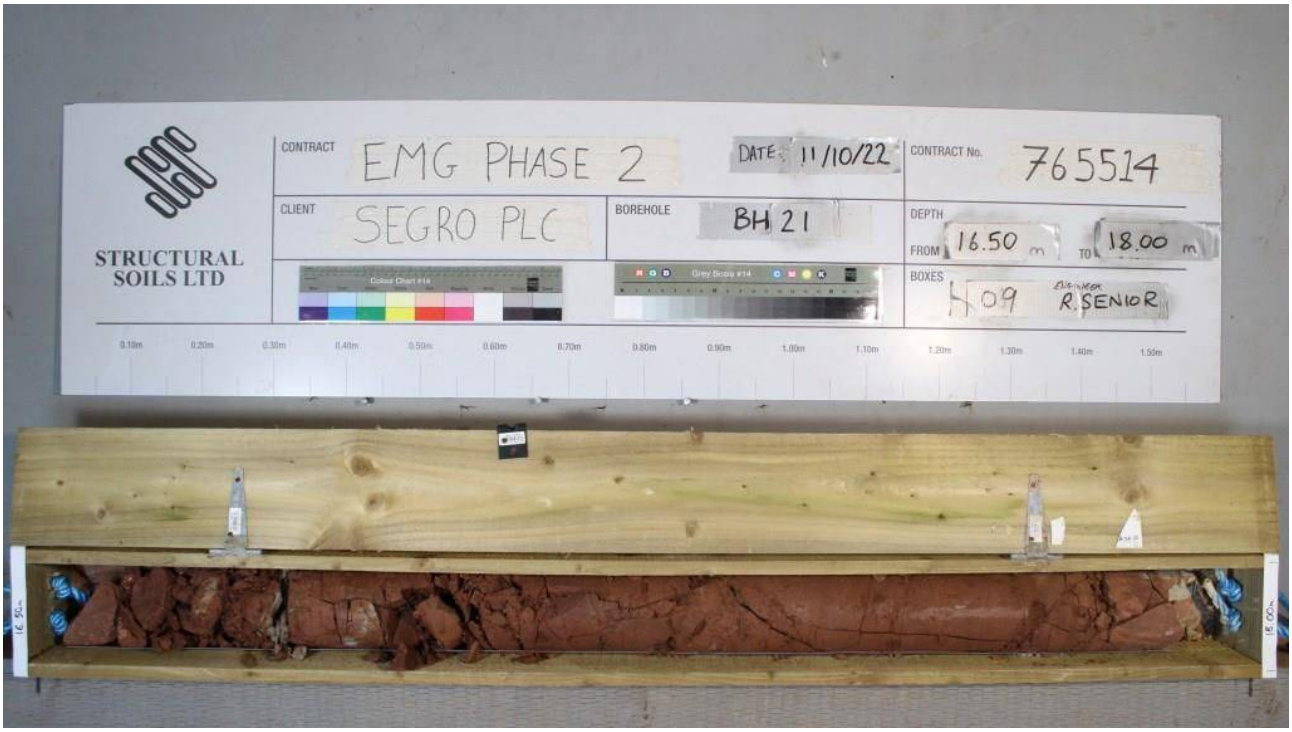
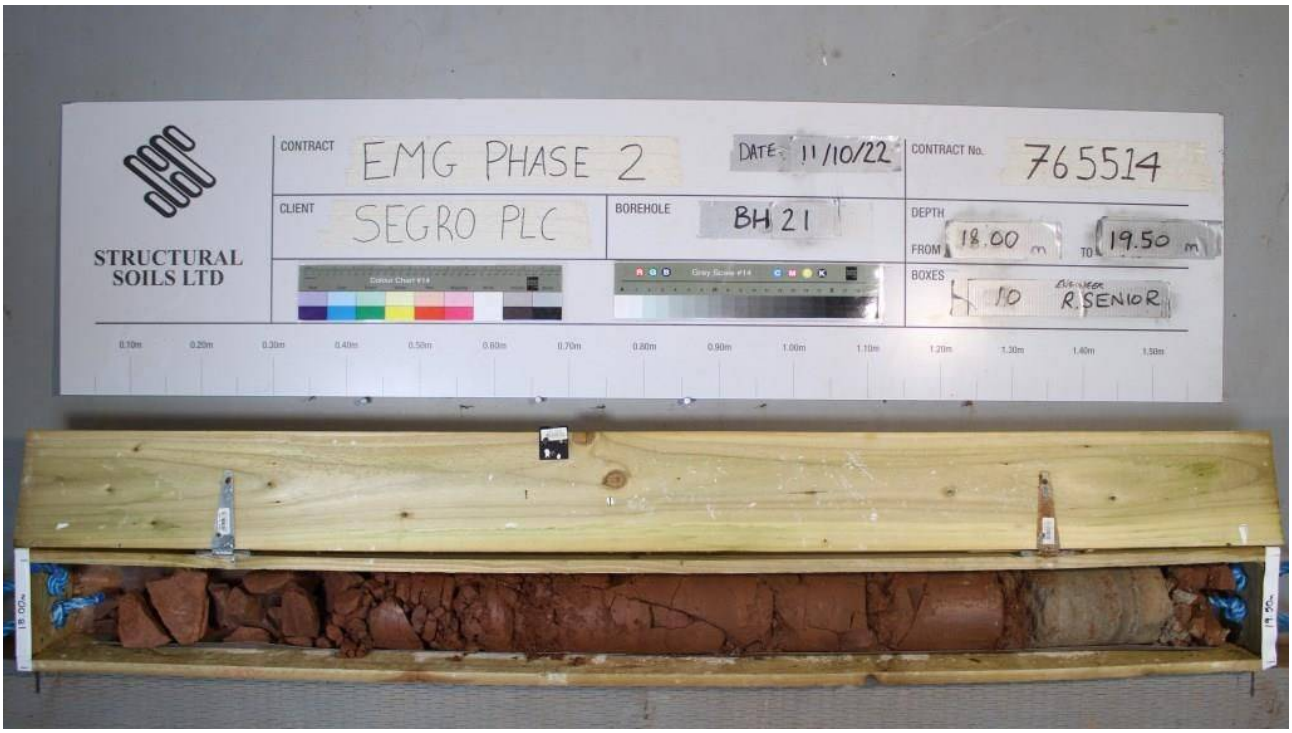
STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH21**
Contract Ref:	Start: **14.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **16.09.22**	**75.56**	**E:445964.3 N:324644.9**	**13** of **17**





Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Luke Bamford	Logged By:	JAlton + RSenior	Checked By:	AGS

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH21**
Contract Ref:	Start: **14.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **16.09.22**	**75.56**	**E:445964.3 N:324644.9**	**14** of **17**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Luke Bamford	Logged By:	JAlton + RSenior	Checked By:	

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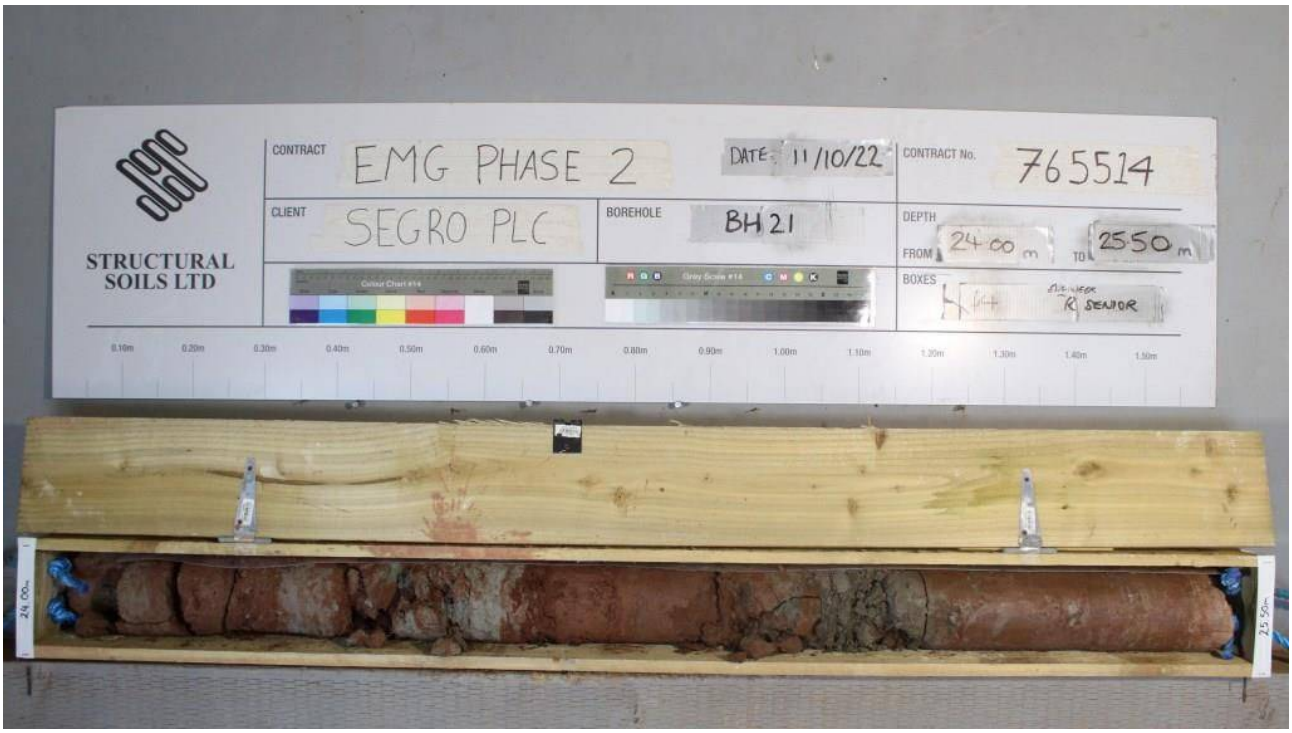
STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH21**
Contract Ref:	Start: **14.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **16.09.22**	**75.56**	**E:445964.3 N:324644.9**	**15** of **17**



Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Luke Bamford	Logged By:	JAlton + RSenior	Checked By:	AGS

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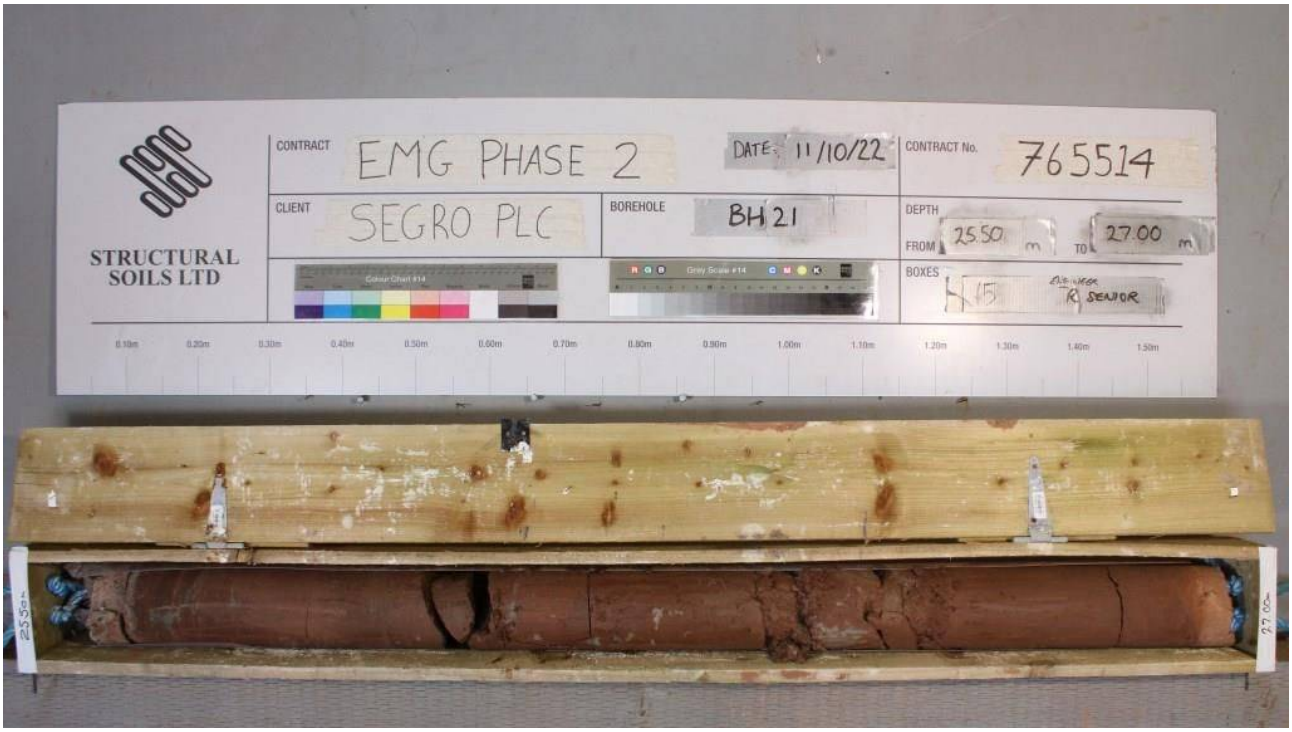
STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH21**
Contract Ref:	Start: **14.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **16.09.22**	**75.56**	**E:445964.3 N:324644.9**	**16** of **17**



Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Luke Bamford	Logged By:	JAlton + RSenior	Checked By:	AGS

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH21**
Contract Ref:	Start: **14.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **16.09.22**	**75.56**	**E:445964.3 N:324644.9**	**17** of **17**

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Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Luke Bamford	Logged By:	JAlton + RSenior	Checked By:	AGS

STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH22**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**13.09.22** End: **15.09.22**	**73.80**	**E:446085.7 N:324639.6**	**1** of **13**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
										TOPSOIL		(0.30)	
0.20	1	D									73.50	0.30	
0.20-0.50	2	B								Firm dark brown slightly gravelly sandy SILT. Sand is fine to coarse, predominantly coarse. Gravel is subangular to subrounded fine to coarse of sandstone, mudstone, and occasional quartzite.	73.25	0.55	
0.50	101	ES	1xT+1xJ+1xV										
0.60	102	ES	1xT+1xJ+1xV										
0.80	3	D								Stiff orangish brown mottled grey slightly sandy slightly gravelly silty CLAY. Sand is fine to coarse, predominantly coarse. Gravel is subangular to subrounded fine to coarse of extremely weak mudstone and siltstone lithorelicts and occasionally sandstone. GRADE IVa. (MERCIA MUDSTONE GROUP)			
0.80-1.20	4	B											
1.20-1.65	5	$UT_{(UT100)}$	150 blows 67% recovery										
1.65-1.75	6	D								. . . Below 1.00m: Reddish brown			
1.70	7	D											
2.00-2.45		SPT	N=22										
2.00-2.45	10	B											
2.00-2.45	9	DSPT										(3.45)	
2.70	11	D											
3.00-3.39		SPT	8,8/10,18,18,4 for 10mm										
3.00-3.39	13	DSPT											
3.00-3.45	14	B											
3.70	15	D											
											69.80	4.00	
4.00-5.00										*Description on next sheet*			
4.00-4.37		SPT	5,11/14,26,10 for 65mm				NI						
4.00-4.37	17	DSPT		100	90	16	NI						
4.30-4.40	18	C					110						

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
13/09/22	14:00	4.00	3.00	200	Dry
15/09/22	08:00	4.00	None	200	2.30
15/09/22	15:15	20.00	4.00	150	16.00

Chiselling / Slow Progress

From	To	Duration (hh:mm)

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Cable percussion drilled using 200mm diameter tools and casing.
4. Rotary cored from 4.00m using SWF core barrel and 150mm diameter casing and air mist flush.
5. No groundwater strikes in the cable percussion section. Unable to determine ground water

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Jonny Hutt + Luke Bamford	DNartey + RSenior	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH22**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**13.09.22** End: **15.09.22**	**73.80**	**E:446085.7 N:324639.6**	**2** of **13**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
										. . . 4.42-4.80m: NI with extremely closely spaced randomly orientated planar and undulating smooth clean locally black stained discontinuities.			
				100	90	16				. . . 4.46-4.55m: Extremely weak light greenish grey siltstone.			
4.90	19	D								Very weak very thinly to thinly bedded reddish brown MUDSTONE. GRADE II.			
5.00-6.50										Bedding fractures: Very closely spaced, 0° to 10°, undulating, smooth, clean, locally with a little clay smear on surfaces and locally with black non-penetrative staining. (MERCIA MUDSTONE GROUP)		(2.29)	
							NI NI 110						
5.50	20	D								. . . 4.00-4.15m: NI with extremely closely spaced randomly orientated planar and undulating smooth clean locally black stained discontinuities.*(stratum copied* from 4.00m from previous sheet)			
				100	87	37				. . . 4.65-4.73m: Extremely closely spaced bands of very weak greenish grey siltstone.			
										. . . 4.78-4.82m: Strong grey siltstone.			
										. . . 5.00-5.20m: AZCL.	67.51	6.29	
6.30-6.50	21	C								. . . 5.35-5.40m: NI recovered as clayey angular fine to medium gravel.			
6.50-8.00										. . . 5.45-5.50m: NI recovered as clayey angular fine to medium gravel.			
										. . . 5.59-5.95m: NI recovered as clayey angular fine to medium gravel.			
6.80	22	D								. . . 5.89-6.29m: Extremely closely to very closely spaced thin and thick laminae (3 to 20mm) of light grey siltstone.			
				100	97	43				Very weak to weak thinly to medium bedded reddish brown MUDSTONE. GRADE II.			
7.35	23	D								Bedding fractures: Closely spaced, 0° to 5°, undulating, smooth with frequent black non-penetrative staining. (MERCIA MUDSTONE GROUP)			
							NI 80 230			. . . 6.50-6.58m: 40° undulating smooth discontinuity with 1mm clay infill on surfaces.			
										. . . 6.69-6.85m: 65° undulating smooth discontinuity with black non-penetrative staining on surfaces.			
8.00-9.50										. . . 6.71-6.88m: 40° to 75° undulating smooth discontinuity with black non-penetrative staining on surfaces.			
8.33-8.44	24	C								. . . 6.84-6.91m: Undulating smooth discontinuity with black non-penetrative staining on surfaces.			
				100	97	12				. . . 6.93-6.97m: 10° to 20° undulating smooth black stained discontinuity.			
										. . . 7.02-7.18m: 30° to 50° undulating smooth black stained discontinuity.		(5.11)	
										. . . 7.17-7.23m: 40° undulating smooth discontinuity with 1mm clay infill on			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

strikes due to flush method.
6. Borehole backfilled with bentonite on completion.
7. SPT hammer AR3104-2022 (E_r = 64.00%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Jonny Hutt + Luke Bamford	DNartey + RSenior	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH22**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**13.09.22** End: **15.09.22**	**73.80**	**E:446085.7 N:324639.6**	**3** of **13**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
9.00	25	D								surfaces. . . . 7.20-7.36m: 50° undulating rough clean discontinuity. . . . 7.35-7.45m: NI with extremely closely to very closely spaced randomly orientated undulating smooth clean locally black stained discontinuities. . . . 7.40-7.53m: 70° undulating smooth black stained discontinuity. . . . 7.45m: 3mm diameter light grey reduction spot. . . . 7.56-7.58m: 10° undulating smooth black stained discontinuity. . . . 7.68-7.70m: Thick laminae (20mm) with fine to medium gravel size siltstone inclusions. . . . 7.80-7.93m: 2 no. very closely spaced 30° undulating smooth discontinuities with a little clay smear on surfaces. . . . 8.00-8.12m: NI with extremely closely spaced randomly orientated undulating smooth discontinuities with a little clay smear on surfaces. . . . 8.24-8.26m: Greenish grey siltstone. . . . 8.26-8.36m: Extremely weak reddish brown mudstone with extremely closely spaced randomly orientated discontinuities, 1mm clay infill. . . . 8.46-8.56m: 30° to 70° curved undulating smooth black stained discontinuity. . . . 8.54-8.62m: 60° undulating smooth black stained discontinuity. . . . 8.61-8.73m: 85° to 90° undulating smooth black stained discontinuity. . . . 8.65-8.71m: 2 no. parallel very closely spaced undulating smooth black stained discontinuity. . . . 8.82-8.95m: 60° undulating rough black stained discontinuity. . . . 8.95-9.30m: 3 no. parallel 70° to 85° extremely closely spaced undulating smooth clean locally black stained discontinuities. Very weak to weak thinly to medium bedded reddish brown MUDSTONE. GRADE II. Bedding fractures: Closely spaced, 0° to 5°, undulating, smooth with frequent black non-penetrative staining. (MERCIA MUDSTONE GROUP) *(stratum copied from 6.29m from previous* sheet) . . . 9.50-9.65m: Drilling disturbed, NI, recovered as gravel. . . . 9.92-10.10m: Stiff clay with 50% lithorelicts.			
9.50-11.00				100	97	12							
10.00	26	D					NI 80 230						
10.75-10.94	27	C		100	90	65							
11.00-12.50											62.40	11.40	
11.50	28	D					NI NI 40					(0.75)	
12.15-12.32	29	C		100	85	50					61.65	12.15	
12.50-14.00							NI 100 160					(0.45)	
13.00	30	D		100	96	47	NI 60 180				61.20	12.60	

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	**Dando 3000 + Comacchio GEO 205**	**Jonny Hutt + Luke Bamford**	**DNartey + RSenior**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH22**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**13.09.22** End: **15.09.22**	**73.80**	**E:446085.7 N:324639.6**	**4** of **13**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
13.50	31	D								. . . 9.99-10.02m: 15° undulating rough discontinuity with 1mm clay on surfaces. . . . 10.30-10.40m: Occasional medium gravel size siltstone inclusions. . . . 10.41-10.60m: 70° to 80° undulating rough clean discontinuity. . . . 10.55-10.61m: 70° to 80° undulating rough clean discontinuity. . . . 10.61-10.70m: 80° to 90° undulating rough black stained discontinuity.			
14.00-15.50				100	96	47						(3.40)	
14.42-14.57	32	C		100	92	53	NI 60 180			Extremely weak very thinly bedded reddish brown MUDSTONE thickly interlaminated with (soft) clay with 20% lithorelicts of extremely weak mudstone. Grade III. Bedding fractures: Very closely spaced, 0° to 5°, planar and undulating, smooth, clean. (MERCIA MUDSTONE GROUP) . . . 11.50-11.68m: Stiff thinly to thickly laminated reddish brown clay with occasional mudstone lithorelicts. . . . 11.88-12.17m: Stiff thickly laminated reddish brown mottled light grey clay.			
15.00	33	D											
15.50-17.00										Extremely weak thinly bedded reddish brown MUDSTONE. GRADE II. Bedding fractures: Closely spaced, 0° to 5°, undulating, rough with a little clay smear on surfaces. (MERCIA MUDSTONE GROUP)			
15.90	34	D								. . . 12.66-12.71m: 2 no. parallel extremely closely spaced undulating rough clean discontinuities.	57.80	16.00	
16.28-16.43	35	C		100	90	62				. . . 12.71-12.75m: 35° undulating smooth discontinuity with a little clay smear on surfaces. . . . 12.72-13.20m: 80° to 90° undulating / stepped rough locally black stained discontinuity. . . . 12.90-12.92m: 5° to 15° undulating rough black stained discontinuity. . . . 13.29-13.42m: Thick laminae to very thin beds (20-30mm) of moderately weak grey siltstone.			
17.00-18.50							NI 80 200			. . . 13.32-13.60m: Bedding fractures are 5° to 15° undulating rough locally smooth mainly clean locally with a little clay smear on surfaces. . . . 13.42-13.62m: Stiff very thinly bedded reddish brown clay with occasional angular to subangular fine to medium gravel size lithorelics. Extremely weak to very weak very thinly to thinly bedded reddish brown MUDSTONE. GRADE II. Bedding fractures: Very closely to closely spaced, 0° to 5°, planar and undulating,			
				100	93	39							
17.68-17.78	36	C										(4.00)	

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Jonny Hutt + Luke Bamford	DNartey + RSenior	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH22**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**13.09.22** End: **15.09.22**	**73.80**	**E:446085.7 N:324639.6**	**5** of **13**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
18.20	37	D		100	93	39				smooth and rough, clean with occasional clay smear on surfaces. (MERCIA MUDSTONE GROUP) *(stratum copied from 12.60m from* previous sheet) . . . 13.62-13.64m: Occasional 5 to 10mm diameter grey reduction spots. . . . 13.63-13.69m: 50° planar smooth clean discontinuity. . . . 13.65-13.75m: 40° planar smooth clean discontinuity with 1mm soft clay on surfaces. . . . 13.78-13.83m: 85° undulating smooth black stained discontinuity. . . . 13.80-14.00m: 85° to 90° undulating smooth black stained discontinuity. . . . 14.00-14.15m: Drilling disturbed, NI, recovered as gravel. . . . 14.15-14.32m: 85° to 90° undulating rough black stained discontinuity. . . . 14.30-14.45m: Occasional fine to medium gravel size light grey siltstone inclusions. . . . 14.57-14.66m: 85° to 90° undulating smooth black stained discontinuity.			
18.50-20.00													
18.80-18.90	38	C					NI 80 200						
				100	98	43					53.80	20.00	
19.50	39	D								. . . 14.60-14.90m: Extremely closely to very closely spaced randomly orientated undulating smooth black stained discontinuities. . . . 14.93-14.98m: Extremely weak light grey siltstone. . . . 14.98-15.13m: Thinly to thickly laminated stiff reddish brown clay interbedded with extremely weak mudstone. . . . 15.14-15.15m: Extremely weak siltstone. . . . 15.45-15.50m: Extremely weak siltstone. . . . 15.55-15.65m: Moderately weak thickly laminated greenish grey siltstone. . . . 15.65-16.00m: Extremely weak thickly laminated reddish brown mudstone. . . . 16.01-16.05m: Weak light grey siltstone. . . . 16.05-16.24m: 80° to 85° undulating rough yellow brown stained discontinuity. . . . 16.43-16.48m: 40° undulating rough yellow brown stained discontinuity. . . . 16.48-16.51m: 30° undulating rough clean discontinuity. . . . 16.53-16.56m: 15° undulating smooth yellow brown stained discontinuity. . . . 16.54-16.60m: 80° undulating smooth clean discontinuity. . . . 16.60-16.64m: Drilling disturbed, NI, recovered as gravel.			

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	**Dando 3000 + Comacchio GEO 205**	**Jonny Hutt + Luke Bamford**	**DNartey + RSenior**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH22**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**13.09.22** End: **15.09.22**	**73.80**	**E:446085.7 N:324639.6**	**6** of **13**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
										. . . 16.65-16.90m: 75° to 85° undulating rough yellow brown stained discontinuity. . . . 16.77-16.84m: 40° undulating smooth clean discontinuity. . . . 16.90-17.00m: AZCL. . . . 17.15-17.32m: 60° to 85° curved undulating rough clean discontinuity. . . . 17.28-17.31m: 70° undulating smooth yellow brown stained discontinuity. . . . 17.31-17.40m: Randomly orientated extremely closely spaced undulating rough yellow brown stained discontinuities. . . . 17.58-17.62m: 15° undulating smooth yellow brown stained discontinuity. . . . 17.72-17.80m: Occasional 2-5mm diameter grey reduction spots. . . . 17.75-17.80m deph: 30° undulating smooth yellow brown stained discontinuity. . . . 17.82-17.89m: 75° to 85° undulating smooth yellow brown stained discontinuity. . . . 17.94-18.02: 60° undulating smooth yellow brown stained discontinuity. Very weak thinly bedded reddish brown MUDSTONE. GRADE II. Bedding fractures: Closely spaced, 0° to 5°, planar and undulating, smooth, occasional yellowish brown staining on surfaces. (MERCIA MUDSTONE GROUP) *(stratum copied from 16.00m from* previous sheet) . . . 18.00-18.10m: Randomly orientated extremely closely spaced undulating smooth clean discontinuities. . . . 18.10-18.26m: 75° undulating smooth yellow brown stained discontinuity. . . . 18.12-18.15m: 30° undulating smooth yellow brown stained discontinuity. . . . 18.25-18.40m: Weak grey siltstone. . . . 18.25-18.40m: 60° undulating smooth clean discontinuity locally lightly stained yellow brown. . . . 18.68-18.76m: 80° to 90° undulating rough clean discontinuity. . . . 18.78-18.80m: Moderately weak light grey siltstone. . . . 19.11-19.30m: 50° undulating rough clean discontinuity. . . . 19.30-19.33m: Extremely weak light grey siltstone. . . . 19.40-19.48m: 5 no. parallel extremely closely spaced 80° to 85° undulating rough clean discontinuities. . . . 19.55-19.57m: Very weak light grey siltstone. . . . 19.57-19.60m: 20° undulating smooth clean discontinuity.			

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	**Dando 3000 + Comacchio GEO 205**	**Jonny Hutt + Luke Bamford**	**DNartey + RSenior**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH22**

Contract Ref:	Start: **13.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **15.09.22**	**73.80**	**E:446085.7 N:324639.6**	**7** of **13**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
										. . . 19.60-19.79m: 70° undulating smooth yellow brown stained discontinuity. . . . 19.68-19.72m: 25° undulating smooth yellow brown stained discontinuity. . . . 19.81-19.85m: 50° undulating smooth discontinuity with a little clay smear on surfaces. . . . 19.83-19.87m: 20° planar smooth clean discontinuity.			
										Borehole terminated at 20.00m depth.			

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	**Dando 3000 + Comacchio GEO 205**	**Jonny Hutt + Luke Bamford**	**DNartey + RSenior**	

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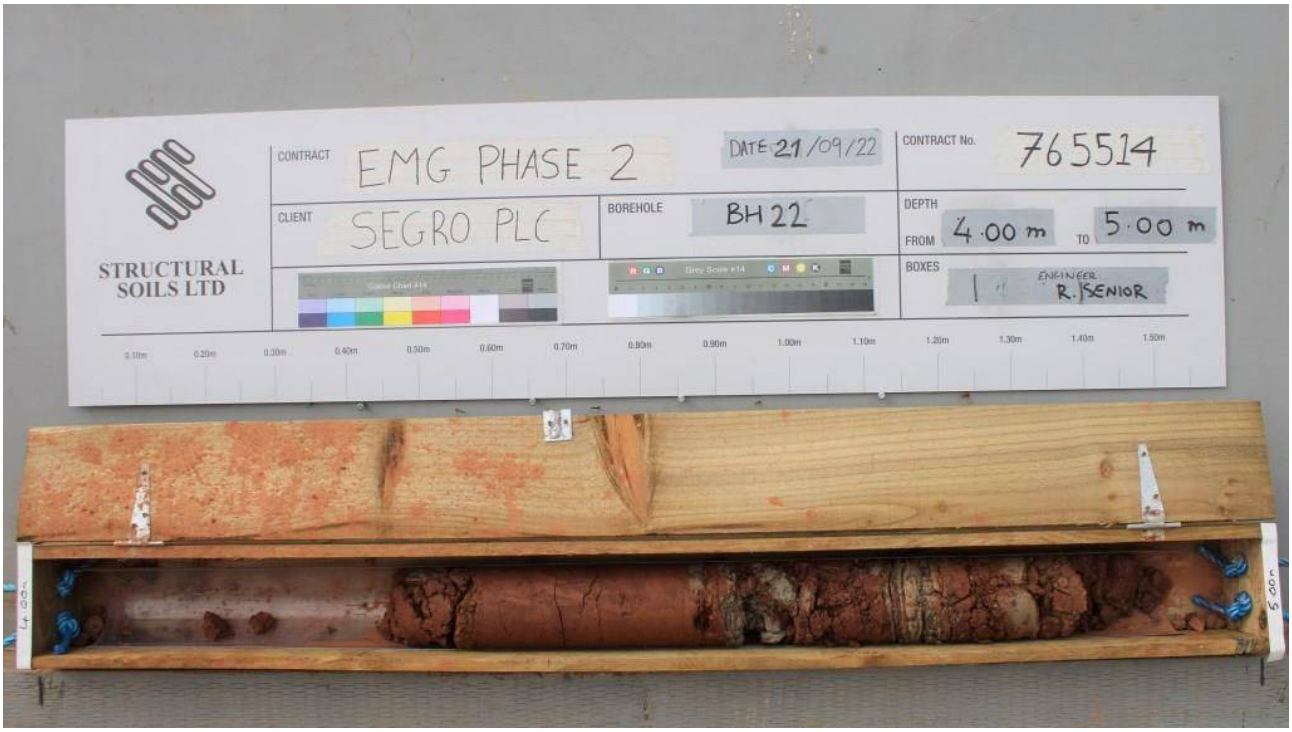
STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH22**
Contract Ref:	Start: **13.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **15.09.22**	**73.80**	**E:446085.7 N:324639.6**	**8** of **13**



Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Luke Bamford	Logged By:	DNartey + RSenior	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH22**
Contract Ref:	Start: **13.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **15.09.22**	**73.80**	**E:446085.7 N:324639.6**	**9** of **13**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Luke Bamford	Logged By:	DNartey + RSenior	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH22**
Contract Ref:	Start: **13.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **15.09.22**	**73.80**	**E:446085.7 N:324639.6**	**10** of **13**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Luke Bamford	Logged By:	DNartey + RSenior	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH22**
Contract Ref:	Start: **13.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **15.09.22**	**73.80**	**E:446085.7 N:324639.6**	**11** of **13**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Luke Bamford	Logged By:	DNartey + RSenior	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH22**
Contract Ref:	Start: **13.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **15.09.22**	**73.80**	**E:446085.7 N:324639.6**	**12** of **13**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Luke Bamford	Logged By:	DNartey + RSenior	Checked By:	

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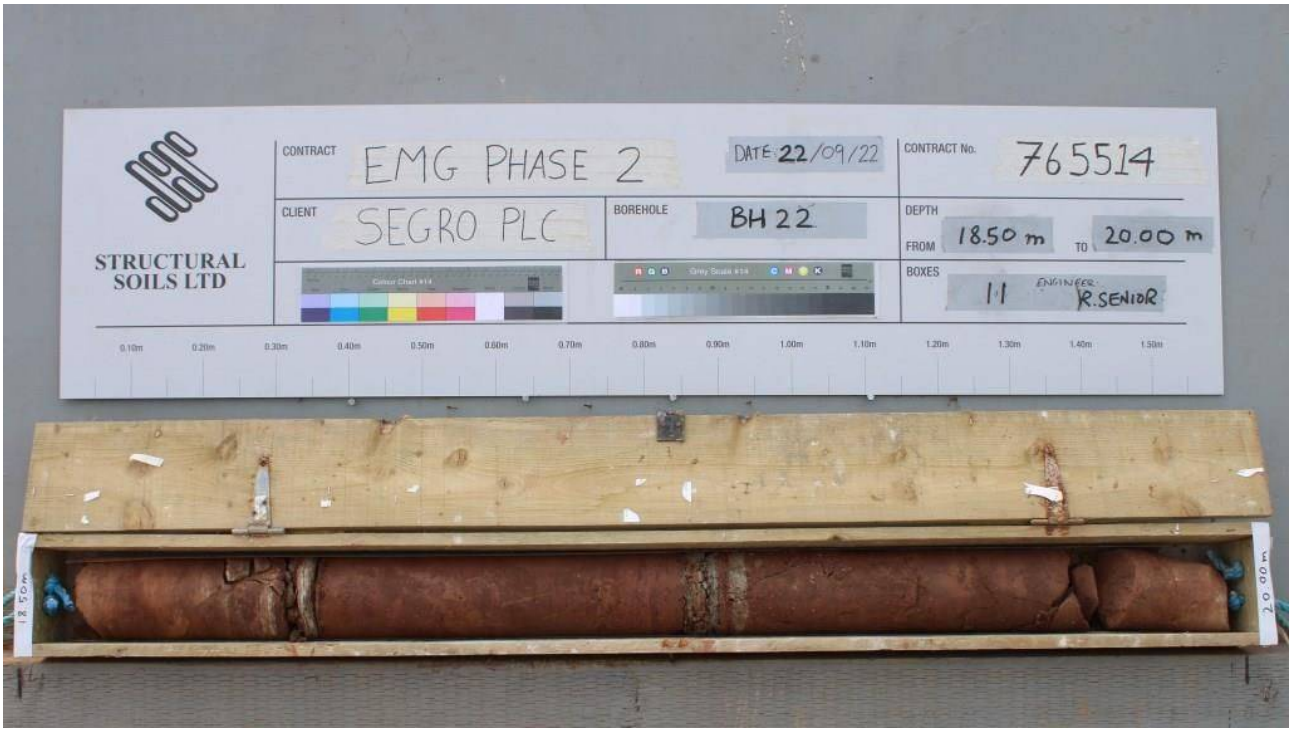
STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH22**
Contract Ref:	Start: **13.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **15.09.22**	**73.80**	**E:446085.7 N:324639.6**	**13** of **13**



Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Luke Bamford	Logged By:	DNartey + RSenior	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH23**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**13.09.22** End: **14.09.22**	**70.77**	**E:446319.7 N:324654.7**	**1** of **16**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
0.10	1	D								TOPSOIL			
0.10	101	ES	1xT+1xJ+1xV									(0.40)	
0.10-0.30	2	B									70.37	0.40	
0.60	102	ES	1xT+1xJ+1xV							Very stiff reddish brown slightly sandy slightly gravelly CLAY. Sand is fine and medium of mudstone. Gravel is angular to subangular fine of extremely weak to very weak mudstone lithorelicts. Occasional pockets (up to 20mm) of grey silty sand. GRADE IVa. (MERCIA MUDSTONE GROUP)		(0.60)	
0.70	3	D											
0.70-1.00	4	B									69.77	1.00	
1.00	103	ES	1xT+1xJ+1xV							Very stiff reddish brown slightly sandy slightly gravelly CLAY with frequent laminae (up to 10mm) of very weak to weak brown sandstone. Sand is fine and medium of mudstone. Gravel is angular to subangular fine to coarse of extremely weak to very weak mudstone lithorelicts and weak fine grained sandstone. GRADE III verging towards GRADE IVb. (MERCIA MUDSTONE GROUP)		(1.00)	
1.20	5	D											
1.20-1.50	6	$UT_{(UT100)}$	150 blows 100% recovery										
1.50-1.60	7	D											
1.70	8	D									68.77	2.00	
2.00-2.45		SPT	N=40							Very stiff reddish brown slightly sandy slightly gravelly CLAY with frequent pockets (up to 20mm) of grey silty sand. Sand is fine of mudstone. Gravel is angular and subangular fine to coarse of extremely weak to very weak mudstone lithorelicts and weak fine grained sandstone. GRADE IVb. (MERCIA MUDSTONE GROUP)			
2.00-2.45	10	DSPT											
2.00-2.45	11	B											
2.50-2.88		SPT	8,12/13,14,23 for 75mm									(1.30)	
2.50-2.88	13	DSPT											
2.50-3.00	14	B											
3.00-3.37		SPT	9,14/15,17,18 for 70mm										
3.00-3.37	16	DSPT									67.47	3.30	
3.30-4.80										AZCL. (MERCIA MUDSTONE GROUP)	67.27	3.50	AZCL
										Very stiff reddish brown slightly sandy gravelly CLAY. Sand is fine and medium of mudstone. Gravel is angular to subangular fine to coarse of extremely weak mudstone. GRADE III. (MERCIA MUDSTONE GROUP)	67.02	3.75	
3.90	25	D		80	33	0				*Description on next sheet*		(0.90)	

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
12/09/22	16:30	2.50	1.50	200	Dry
13/09/22	08:00	2.50	1.50	200	Dry
13/09/22	11:00	3.30	3.00	200	Dry
14/09/22	09:00	3.30	None	150	-
14/09/22	17:00	15.30	4.00	150	-
15/09/22	08:00	15.30	4.00	150	6.10
15/09/22	16:30	30.30	4.00	150	7.80

Chiselling / Slow Progress

From	To	Duration (hh:mm)
2.50	3.00	00:45

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Cable percussion drilled using 200mm diameter tools and casing.
4. Rotary cored from 3.30m using SWF core barrel and 150mm diameter casing and air mist flush.
5. Groundwater encountered at 12.00m.
6. Borehole Installed with 50mm standpipe on

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Jonny Hutt + Martin Speedie	DNartey + DNeylon	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH23**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**13.09.22** End: **14.09.22**	**70.77**	**E:446319.7 N:324654.7**	**2** of **16**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
				80	33	0				Extremely weak reddish brown MUDSTONE. GRADE II Fractures: Very closely spaced, randomly orientated, rough, undulating, dark brown staining on surfaces.. (MERCIA MUDSTONE GROUP) *(stratum copied from 3.75m from previous sheet)*	66.12 65.97	4.65 4.80	
4.80-6.30													
5.20	26	D								Extremely weak greenish grey SILTSTONE. (MERCIA MUDSTONE GROUP)	65.32	(0.65) 5.45	
				97	21	0				Extremely weak thickly laminated reddish brown MUDSTONE with very closely spaced laminae and very thin beds (up to 25mm) of gravelly clay. GRADE II verging towards GRADE III. (MERCIA MUDSTONE GROUP)	65.22	5.55	
										Extremely weak thinly laminated greenish grey SILTSTONE. (MERCIA MUDSTONE GROUP)	64.67	(0.55) 6.10	
										Very stiff reddish brown slightly sandy slightly gravelly CLAY. Sand is fine and medium of mudstone. Gravel is fine and medium of mudstone lithorelicts. GRADE III. (MERCIA MUDSTONE GROUP)	64.47	6.30	
6.30-7.80													
6.80-7.17		SPT	2,9/11,14,25 for 70mm							Extremely weak thinly laminated reddish brown MUDSTONE. GRADE II verging towards GRADE III. (MERCIA MUDSTONE GROUP)	63.77	(0.70) 7.00	AZCL
				53	18	0				AZCL. (MERCIA MUDSTONE GROUP)			
7.20	27	D								Extremely weak reddish brown MUDSTONE. GRADE II. (MERCIA MUDSTONE GROUP) . . . 7.00-7.40m: Thinly laminated. . . . . 7.40-7.45m: Thinly laminated greenish grey silt. . . . 7.45-7.55m: Extremely weak greenish grey thinly laminated siltstone. . . . 7.55-7.85m: Thickly laminated. . . . 7.85-8.20m: Very closely spaced randomly orientated rough undulating fractures with black staining on surfaces.			
7.80-9.30													
8.40	28	D		100	9	0				. . . 8.35-8.65m: Extremely closely spaced rough planar bedding fractures and very closely spaced randomly orientated rough undulating fractures with dark brown staining on surfaces. . . . . 8.65-8.70m: Thinly laminated greenish grey silt. . . . 8.70-8.95m: Recovered as gravel.			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

completion (1.00m to 8.00m).
7. SPT hammer AR3104-2022 (E_r = 64.00%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Jonny Hutt + Martin Speedie	DNartey + DNeylon	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH23**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**13.09.22** End: **14.09.22**	**70.77**	**E:446319.7 N:324654.7**	**3** of **16**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
				100	9	0				. . . 8.95-9.40m: Very closely spaced randomly orientated rough undulating fractures with black staining on surfaces. Extremely weak reddish brown MUDSTONE. GRADE II. (MERCIA MUDSTONE GROUP) . . . 7.00-7.40m: Thinly laminated.*(stratum* copied from 7.00m from previous sheet) . . . 9.40-9.45m: Extremely weak laminated greenish grey siltstone. . . . 9.45-9.70m: Very closely to extremely closely spaced randomly orientated rough planar and undulating fractures with black staining on surfaces. . . . 9.90-9.95m: Thinly laminated greenish grey sandstone, recovered as subangular fine to medium gravel. . . . 10.35-10.40m: Thinly laminated greenish grey sandstone, recovered as subangular fine to medium gravel. . . . 10.40-10.65m: Stiff thinly laminated reddish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse mudstone derived. Gravel is fine to medium angular to subangular mudstone lithorelicts. GRADE III.		(5.70)	
9.30-10.80													
				97	35	11							
10.55	29	D											
10.80-12.30													
				77	33	28				. . . 11.15-11.45m: Recovered as gravel . . . . . 11.45-12.70m: Very closely spaced randomly orientated rough undulating fractures with black staining on surfaces and closely to very closely spaced bedding fractures with black and yellow staining on surfaces.			
11.70	30	D							1				
12.30-13.80													
12.30-12.43		SPT	25/50 for 60mm								58.07	12.70	
				77	33	28				Extremely weak reddish brown MUDSTONE, recovered as sandy angular to subangular fine to medium gravel. GRADE III. (MERCIA MUDSTONE GROUP)		(0.50)	
											57.57	13.20	
13.20	31	D								*Description on next sheet*			
												(0.60)	

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Jonny Hutt + Martin Speedie	DNartey + DNeylon	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH23**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**13.09.22** End: **14.09.22**	**70.77**	**E:446319.7 N:324654.7**	**4** of **16**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
				77	33	28				Extremely weak reddish brown MUDSTONE GRADE II. Fractures: Very closely spaced, randomly orientated, rough, undulating, black staining on surfaces. (MERCIA MUDSTONE GROUP)	56.97	13.80	
13.80-15.30										*(stratum copied from 13.20m from* previous sheet)	56.62	(0.35) 14.15	
										Very weak greenish grey thickly laminated SILTSTONE. (MERCIA MUDSTONE GROUP)			
14.60-14.95	32	C		100	37	37				Extremely weak reddish brown MUDSTONE. GRADE II. Fractures: Closely spaced, randomly orientated, rough, undulating, black staining on surfaces. (MERCIA MUDSTONE GROUP)	55.12	(1.50) 15.65	
15.30-16.80													
15.65-15.90	33	C		100	52	40				Weak to medium strong greenish grey fine and medium grained SANDSTONE. (MERCIA MUDSTONE GROUP) . . . 15.65-15.75: Greenish grey silt.	54.47	(0.65) 16.30	
										Extremely weak reddish brown MUDSTONE with lenses of greenish grey siltstone. GRADE II. (MERCIA MUDSTONE GROUP) . . . 16.30-16.50m: NI, recovered as gravel. . . . 16.70-16.80m: Medium strong greenish grey sandstone.	53.82	(0.65) 16.95	
										Very weak greenish grey SILTSTONE. (MERCIA MUDSTONE GROUP) . . . 17.05-17.15m: 45°, rough undulating fracture, infilled with reddish brown clay. . . . 17.60-17.70m: Reddish brown mudstone.	52.97	(0.85) 17.80	
17.90	34	D								*Description on next sheet*			

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Jonny Hutt + Martin Speedie	DNartey + DNeylon	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH23**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**13.09.22** End: **14.09.22**	**70.77**	**E:446319.7 N:324654.7**	**5** of **16**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
18.30-19.80										Very stiff reddish brown slightly sandy slightly gravelly CLAY. Sand is fine and medium of mudstone. Gravel is angular fine to coarse of mudstone lithorelicts. GRADE IVa. (MERCIA MUDSTONE GROUP) *(stratum copied from 17.80m from* previous sheet)	52.47	(0.50) 18.30	
										AZCL. (MERCIA MUDSTONE GROUP)	52.07	(0.40) 18.70	AZCL
				73	29	0				Extremely weak thinly laminated reddish brown MUDSTONE. GRADE II. Bedding fractures: Extremely closely spaced, rough, planar. (MERCIA MUDSTONE GROUP)	51.47	(0.60) 19.30	
19.40	35	D								Stiff reddish brown sandy CLAY. Sand is fine and medium of mudstone. GRADE IVb. (MERCIA MUDSTONE GROUP)	51.07	(0.40) 19.70	
19.80-21.30										Extremely weak greenish grey SILTSTONE. (MERCIA MUDSTONE GROUP) . . . 19.80-19.85m: Stiff reddish brown sandy clay. . . . 19.85-20.00m: Very closely spaced randomly orientated fractures with yellow staining on surfaces.	50.77	(0.30) 20.00	
				100	0	0				Extremely weak reddish brown MUDSTONE with occasional pockets (up to 20mm) of greenish grey siltstone. GRADE II. Bedding fractures: Closely spaced, rough, planar. (MERCIA MUDSTONE GROUP)	49.77	(1.00) 21.00	
21.20-21.30	36	C								Extremely weak reddish brown MUDSTONE. GRADE II. (MERCIA MUDSTONE GROUP)			
21.30-22.80										. . . 21.50m: Firm reddish brown clay.	49.12	(0.65) 21.65	
				100	41	35				Extremely weak reddish brown MUDSTONE with frequent pockets (up to 60mm) of greenish grey siltstone. GRADE II. (MERCIA MUDSTONE GROUP)			
22.05-22.25	37	C								. . . 22.00-22.50m: Closely interbedded with weak greenish grey siltstone. Bedding fractures: Closely spaced, rough, planar, infilled with reddish brown clay.			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Jonny Hutt + Martin Speedie	DNartey + DNeylon	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH23**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**13.09.22** End: **14.09.22**	**70.77**	**E:446319.7 N:324654.7**	**6** of **16**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
22.80-24.30				100	41	35				Extremely weak reddish brown MUDSTONE with frequent pockets (up to 60mm) of greenish grey siltstone. GRADE II. (MERCIA MUDSTONE GROUP) *(stratum copied from 21.65m from* previous sheet) . . . 22.50-22.55m: Recovered as clayey gravel. . . . 22.90-23.15m: Recovered as sandy clayey gravel.	47.27	(1.85) 23.50	
23.65-24.00	38	C		97	67	43				Extremely weak reddish brown MUDSTONE, grading towards very stiff clay. GRADE II. (MERCIA MUDSTONE GROUP)	46.27	(1.00) 24.50	
24.30-25.80										Very stiff reddish brown slightly sandy CLAY. GRADE IVb. (MERCIA MUDSTONE GROUP)	45.92	(0.35) 24.85	
25.40-25.65	39	C		100	20	0				Extremely weak thinly interbedded greenish grey SILTSTONE with fine grained SANDSTONE. Bedding fractures: Closely spaced, rough, undulating, infilled with sandy fine to medium gravel of siltstone. (MERCIA MUDSTONE GROUP)	45.57	(0.35) 25.20	
25.80-27.30										Very stiff reddish brown slightly sandy slightly gravelly CLAY. Sand is fine and medium of mudstone. Gravel is angular fine to coarse of mudstone lithorelicts. GRADE III verging towards GRADE II. (MERCIA MUDSTONE GROUP)	44.42	(1.15) 26.35	
26.85-27.15	40	C		100	20	0				Extremely weak thickly interlaminated greenish grey SILTSTONE with fine grained SANDSTONE. Bedding fractures: Closely spaced, rough, undulating, infilled with sandy fine to medium gravel. (MERCIA MUDSTONE GROUP) *Description on next sheet*	44.07	(0.35) 26.70	

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress

From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Jonny Hutt + Martin Speedie	DNartey + DNeylon	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH23**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**13.09.22** End: **14.09.22**	**70.77**	**E:446319.7 N:324654.7**	**7** of **16**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
27.30-28.80				100	20	0				Very stiff reddish brown slightly sandy slightly gravelly CLAY. Sand is fine and medium of mudstone. Gravel is angular fine to coarse of mudstone lithorelicts. GRADE III verging towards GRADE II. (MERCIA MUDSTONE GROUP)		(0.85)	
27.60-27.80	41	C								*(stratum copied from 26.70m from* previous sheet)	43.22	27.55	
				93	71	50				Very weak reddish brown MUDSTONE with closely spaced, planar, gypsum veins, typically between 5 to 20mm thickness. (MERCIA MUDSTONE GROUP)			
										. . . 28.55-29.25m: Becoming weak and light reddish brown.			
28.80-30.30 28.80-29.05	42	C										(2.77)	
				100	85	75				. . . 29.25-29.40m: Greenish grey siltstone. . . . 29.40m: Becoming very weak to extremely weak.			
										Borehole terminated at 30.32m depth.	40.45	30.32	

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	**Dando 3000 + Comacchio GEO 205**	**Jonny Hutt + Martin Speedie**	**DNartey + DNeylon**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH23**
Contract Ref:	Start: **13.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **14.09.22**	**70.77**	**E:446319.7 N:324654.7**	**8** of **16**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Martin Speedie	Logged By:	DNartey + DNeylon	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH23**
Contract Ref:	Start: **13.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **14.09.22**	**70.77**	**E:446319.7 N:324654.7**	**9** of **16**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Martin Speedie	Logged By:	DNartey + DNeylon	Checked By:	AGS

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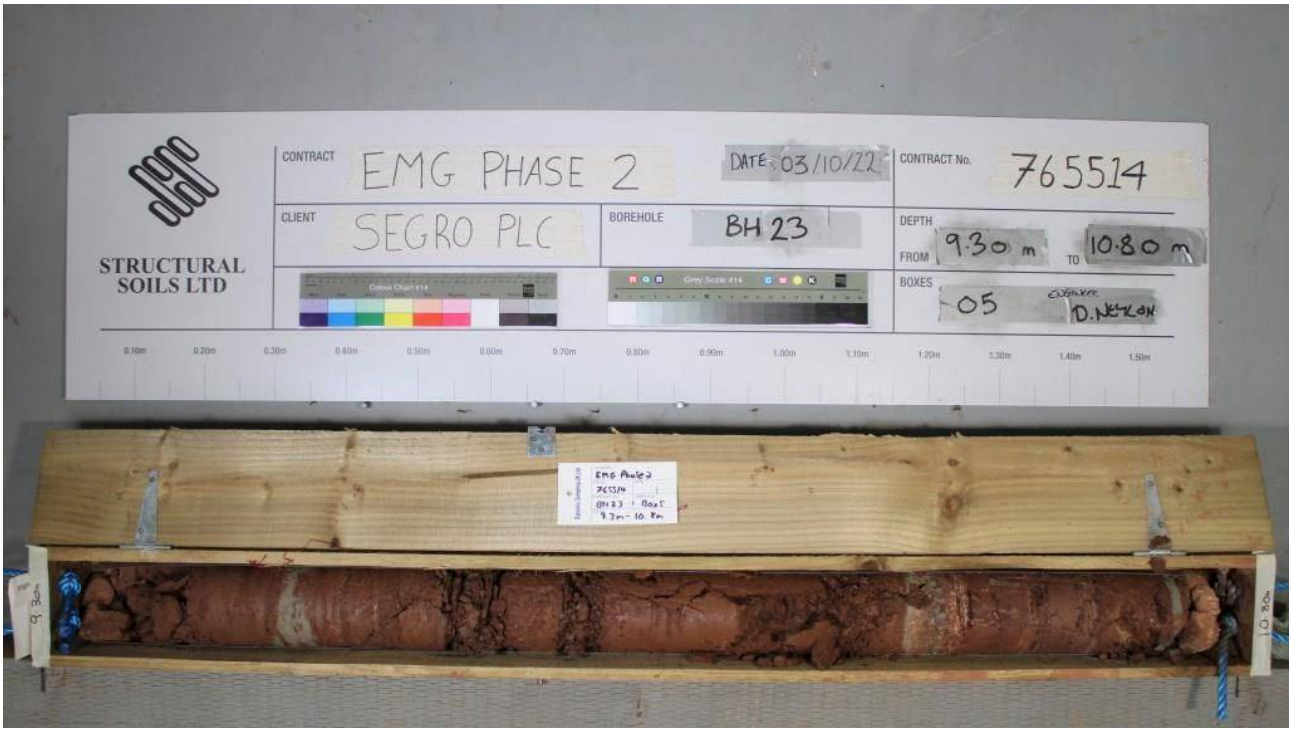
STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH23**
Contract Ref:	Start: **13.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **14.09.22**	**70.77**	**E:446319.7 N:324654.7**	**10** of **16**



Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Martin Speedie	Logged By:	DNartey + DNeylon	Checked By:	

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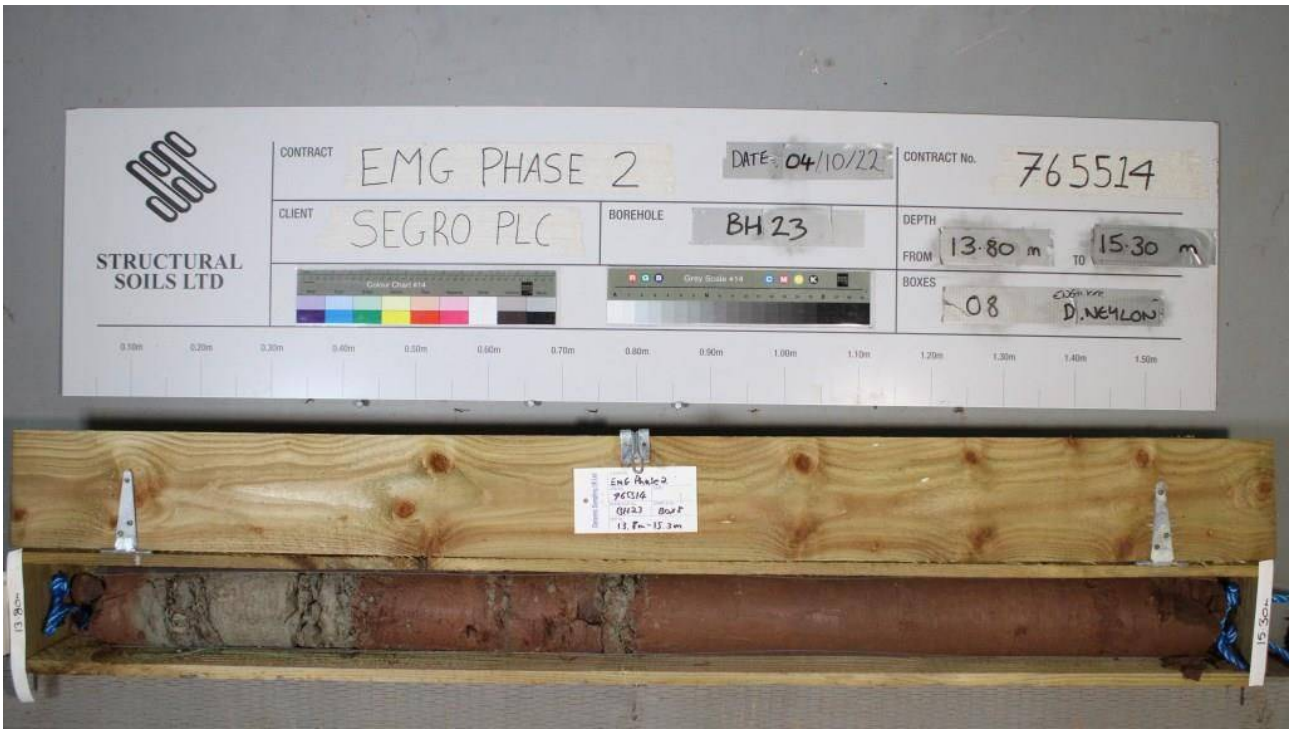
STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH23**
Contract Ref:	Start: **13.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **14.09.22**	**70.77**	**E:446319.7 N:324654.7**	**11** of **16**



Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Martin Speedie	Logged By:	DNartey + DNeylon	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH23**
Contract Ref:	Start: **13.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **14.09.22**	**70.77**	**E:446319.7 N:324654.7**	**12** of **16**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Martin Speedie	Logged By:	DNartey + DNeylon	Checked By:	AGS

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH23**
Contract Ref:	Start: **13.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **14.09.22**	**70.77**	**E:446319.7 N:324654.7**	**13** of **16**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Martin Speedie	Logged By:	DNartey + DNeylon	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH23**
Contract Ref:	Start: **13.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **14.09.22**	**70.77**	**E:446319.7 N:324654.7**	**14** of **16**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Martin Speedie	Logged By:	DNartey + DNeylon	Checked By:	

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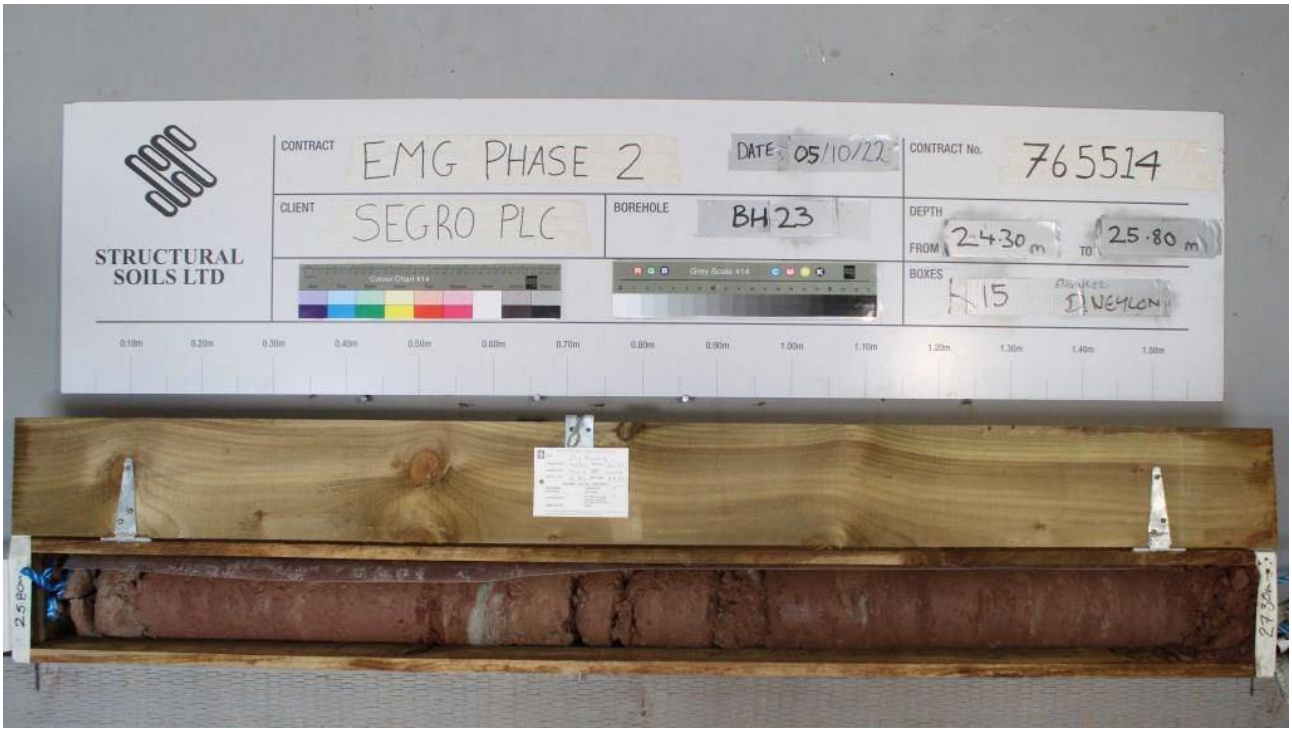
STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH23**
Contract Ref:	Start: **13.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **14.09.22**	**70.77**	**E:446319.7 N:324654.7**	**15** of **16**



Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Martin Speedie	Logged By:	DNartey + DNeylon	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH23**
Contract Ref:	Start: **13.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **14.09.22**	**70.77**	**E:446319.7 N:324654.7**	**16** of **16**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Jonny Hutt + Martin Speedie	Logged By:	DNartey + DNeylon	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH24**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**12.09.22** End: **14.09.22**	**67.02**	**E:446273.4 N:324520.3**	**1** of **11**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
0.00-0.00	1	D								TOPSOIL			
0.00-0.10	3	B										(0.40)	
0.05-0.05	2	ES	1xT+1xJ+1xV										
0.10-0.10	4	D											
0.10-0.40	6	B									66.62	0.40	
0.20-0.20	5	ES	1xT+1xJ+1xV							Firm light orangish brown gravelly CLAY. Gravel is angular to subrounded fine and medium of mudstone.			
0.40-0.40	7	D											
0.40-1.00	9	B										(0.60)	
0.50-0.50	8	ES	1xT+1xJ+1xV										
											66.02	1.00	
1.00-1.00	10	ES	1xT+1xJ+1xV							Firm thinly laminated orangish brown mottled grey slightly sandy gravelly CLAY. Sand is fine and medium. Gravel is fine and medium of mudstone.	65.82	1.20	
1.20-1.65		SPT	N=49							. . . 1.00-1.20m: possible mercia mudstone. Possible extremely weathered to destructured mudstone.			
1.20-1.65	12	DSPT								Dense greenish grey gravelly silty fine to medium SAND. Gravel is angular to subangular fine to coarse of strong siltstone. Frequent pockets (up to 20mm) and lenses (up to 15mm) of brown silty sand. GRADE III.		(0.80)	
1.20-1.70	13	B											
1.70	14	D									65.02	2.00	
2.00	15	ES								(MERCIA MUDSTONE GROUP)			
2.00-2.45		SPT	N=45							Very stiff reddish brown slightly sandy slightly gravelly CLAY. Sand is fine and medium of mudstone. Gravel is angular to subangular fine of mudstone lithorelicts. GRADE IVa.			
2.00-2.45	16	DSPT								(MERCIA MUDSTONE GROUP)			
2.00-2.50	17	B											
2.50	18	D										(1.50)	
3.00	19	ES											
3.00-3.34		SPT	3,9/14,23,13 for 43mm										
3.00-3.45	20	DSPT											
3.00-3.50	21	B									63.52	3.50	
3.50-5.00										Extremely weak to very weak reddish brown MUDSTONE, recovered as slightly clayey sandy angular fine to coarse gravel. Occasional thin and thick laminae of grey siltstone.			
3.50	22	D											
3.50-3.78		SPT	7,15/26,24 for 50mm										
3.50-3.95	23	DSPT											
				100	0	0	3 15			Fractures: Randomly orientated, very closely spaced, undulating rough to undulating smooth, abundant black staining. (MERCIA MUDSTONE GROUP) . . . 3.50-3.75m: NI, clayey sandy gravel. . . . 4.00-4.23m: NI, silty sandy gravel.			

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
13/09/22	16:00	3.50	1.50	200	Dry
14/09/22	09:00	3.50	None	200	Dry
14/09/22	17:00	9.00	3.50	150	Dry
15/09/22	08:30	9.00	3.50	150	3.40
15/09/22	12:30	20.80	3.50	150	-

Chiselling / Slow Progress

From	To	Duration (hh:mm)
3.30	3.50	00:30

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Cable percussion drilled using 200mm diameter tools and casing.
4. Rotary cored from 3.50m using SWF core barrel and 150mm diameter casing and air mist flush.
5. Groundwater strike at 10.50m rising to 9.50m after 20 minutes.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 2000 Mark2 + Comacchio GEO 205	Chris Jobson + Lee Smith	JAlton + RStan	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH24**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**12.09.22** End: **14.09.22**	**67.02**	**E:446273.4 N:324520.3**	**2** of **11**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
4.56 4.60-4.70	27	EW D		100	0	0				Extremely weak to very weak reddish brown MUDSTONE, recovered as slightly clayey sandy angular fine to coarse gravel. Occasional thin and thick laminae of grey siltstone. Fractures: Randomly orientated, very closely spaced, undulating rough to undulating smooth, abundant black staining. (MERCIA MUDSTONE GROUP) . . . 3.50-3.75m: NI, clayey sandy gravel.*(stratum copied from 3.50m from* previous sheet) . . . 4.60-4.74m: NI, clayey sandy gravel. . . . 5.00-6.00m: Fracture 0-10°, 60-80° predominantly very closely spaced undulating rough occasional and abundant black staining. . . . 5.13-5.30m: NI, sandy gravel. . . . 5.40-5.43m: grey siltstone. . . . 5.43-5.51m: NI, sandy gravel. . . . 5.62-5.73m: thinly interlaminated with grey siltstone. . . . 5.84-5.87m: medium strong grey siltstone. . . . 5.94-6.00m: weak grey siltstone.		(2.50)	
5.00-6.00							3 15						
5.41-5.54	25	C		100	0	0							
5.74-5.83	26	D									61.02	6.00	
6.00-7.50										Extremely weak locally thinly laminated dark reddish brown MUDSTONE. Occasional pockets and laminae of weak to medium strong grey siltstone. GRADE III. Fractures: Incipient, randomly orientated, undulating, rough, occasional black staining and discolouration on surface. (MERCIA MUDSTONE GROUP) . . . 6.00-6.42m: multifractured randomly orientated incipient undulating rough with occasional black staining. Recovered as angular gravel. Rare reduction spots (<5mm). . . . 6.30-6.42m: 50° undulating rough. . . . 6.62m: 18° undulating rough, silty clay infill up to 3mm. . . . 6.64-7.08m: thinly and thickly interlaminated with grey siltstone. . . . 6.96-7.05m: 51° undulating rough yellow stained. . . . 7.00-7.06m: 50° undulating rough yellow stained. . . . 7.04-7.06m: 4° undulating rough, silty clay infill up to 3mm. . . . 7.16-7.17m: 5° planar rough occasional black staining . . . 7.50-7.55m: NI. . . . 7.72-7.73m: 4° planar rough rare black staining			
6.39-6.63	27	C		100	62	40							
7.50-9.00 7.55-7.71	28	C		100	67	40	NI 270				58.02	(3.00) 9.00	

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	6. Borehole backfilled with bentonite on completion. 7. SPT hammer JB14-2022 (E_r = 63.00%) used.
									All dimensions in metres. Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 2000 Mark2 + Comacchio GEO 205	Chris Jobson + Lee Smith	JAlton + RStan	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH24**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**12.09.22** End: **14.09.22**	**67.02**	**E:446273.4 N:324520.3**	**3** of **11**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
9.00-10.50										. . . 7.85-7.86m: 9° planar rough rare black specks. . . . 7.88-7.96m: 77° undulating rough clean. . . . 8.01-8.12m: 37° planar rough clean. . . . 8.05-8.21m: 31° undulating rough occasional black staining. . . . 8.18-8.33m: NI. . . . 8.31-8.46m: 81° undulating rough occasionally black staining. . . . 8.56-8.71m: NI, thinly interlaminated with grey siltstone. . . . 8.73-8.87m: 76° planar rough occasional black specks.		(0.55)	AZCL
9.42-9.55	29	C							1		57.47	9.55	
				87	19	8				AZCL (MERCIA MUDSTONE GROUP) Extremely weak thinly laminated locally dessicated reddish brown MUDSTONE. Occasional interlaminae of grey fine siltstone. GRADE III. Fractures: Randomly orientated, predominantly planar, rough, with occasional clayey silt infill. (MERCIA MUDSTONE GROUP) . . . 9.55-9.81m: NI, recovered as clayey gravel. . . . 9.81-10.01m: extremely weak mudstone.		(1.72)	
10.50-11.80				72	40	18			1		55.75	11.27	
11.48-11.68	30	C								. . . 10.01-10.45m: thinly laminated mudstone with occasional interlaminae of grey siltstone. . . . 10.45-10.50m: NI recovered as gravel. . . . 10.50-10.86m: AZCL. . . . 10.86-11.00m: Weak interlaminated mudstone and grey siltstone. . . . 11.00-11.27m: NI, recovered as sandy angular gravel.			
11.80-13.30													
11.80-11.89		SPT	26/50 for 20mm										
11.88-12.18	31	C					170 1080			Extremely weak to very weak reddish brown MUDSTONE. Occasionally interbedded with weak to medium strong siltstone. GRADE III. Bedding fracture: 0-10°, closely to widely spaced, predominantly planar, rough, with occasional black staining on surface, rare infill of silt. (MERCIA MUDSTONE GROUP) . . . 11.27-11.28m: 4° planar rough occasional black staining. . . . 11.32-11.39m: 7° planar rough occasional black staining, silt infill up to 3mm. . . . 11.39-11.40m: 6° planar rough occasional black staining, silt infill.		(2.03)	
				100	91	71					53.72	13.30	
13.30-14.80				100	88	84				. . . 12.32-12.33m: 4° planar rough occasional black staining.			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	**Dando 2000 Mark2 + Comacchio GEO 205**	**Chris Jobson + Lee Smith**	**JAlton + RStan**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH24**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **14.09.22**	**67.02**	**E:446273.4 N:324520.3**	**4** of **11**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
										. . . 12.32-12.39m: 71° planar rough abundant black staining . . . 12.50-12.52m: 7° planar rough occasional black staining. . . . 12.61-12.71m: 69° undulating rough abundant black staining. . . . 12.70-12.71m: 5° planar rough clean. . . . 12.87-12.88m: 11° undulating rough rare black staining. . . . 12.88-12.92m: 7° planar rough occasional black staining. . . . 13.11-13.20m: NI. . . . 13.31-13.45m: 54° planar rough occasional black staining. . . . 13.36-13.37m: 4° planar rough occasional black staining.			
13.74-13.95	32	D		100	88	84							
14.80-16.30										Extremely weak to very weak reddish brown MUDSTONE. Occasionally interbedded with weak to medium strong siltstone. GRADE II. Fractures: 80-90° and 0-10°, planar, rough, occasional black staining. (MERCIA MUDSTONE GROUP) . . . 13.30-13.74m: medium strong fragmented siltstone.*(stratum copied from* 13.30m from previous sheet) . . . 13.63-13.65m: 9° planar rough occasional black staining. . . . 13.91-14.59m: 82° planar rough occasional black staining. . . . 14.51-14.55m: weak siltstone. . . . 14.70-14.80m: NI, recovered as angular gravel. . . . 14.80-14.99m: NI, fractures randomly orientated and 40-50° closely spaced planar rough clean. . . . 15.15-15.80m: Grey weak and medium strong siltstone. . . . 15.67-15.92m: reddish brown mottled grey mudstone and siltstone. . . . 16.04-16.22m: 86° undulating rough rare black staining. . . . 16.34-16.50m: grey siltstone. . . . 16.78-16.86m: grey siltstone.			
15.21-15.45	33	C		100	87	82							
16.30-17.80													
16.81-17.08	34	C		100	100	100						(7.50)	
17.80-19.30				100	91	81				. . . 17.03-17.05m: grey siltstone. . . . 17.12-17.15m: grey siltstone. . . . 17.22-17.23m: 8° planar rough clean. . . . 17.23-17.31m: grey siltstone. . . . 17.80-17.86m: NI. . . . 17.80-18.30m: grey siltstone.			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	**Dando 2000 Mark2 + Comacchio GEO 205**	**Chris Jobson + Lee Smith**	**JAlton + RStan**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH24**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**12.09.22** End: **14.09.22**	**67.02**	**E:446273.4 N:324520.3**	**5** of **11**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
										. . . 17.93-17.97m: thinly laminated siltstone. . . . 17.97-18.00m: 8° undulating rough occasional black staining. Extremely weak to very weak reddish brown MUDSTONE. Occasionally interbedded with weak to medium strong siltstone. GRADE II. Fractures: 80-90° and 0-10°, planar, rough, occasional black staining. (MERCIA MUDSTONE GROUP) . . . 13.30-13.74m: medium strong fragmented siltstone.*(stratum copied from* 13.30m from previous sheet)			
				100	91	81							
19.13-19.30	35	C								. . . 18-07-18.08m: 4° planar rough occasional black staining. . . . 18.15-18.26m: 44° planar rough clean. . . . 18.60-18.62m: NI. . . . 18.70-18.72m: 9° planar rough occasional black staining. . . . 18.87-18.90m: 10° planar rough occasional black specks. . . . 19.00-19.05m: 21° undulating smooth, polished, occasional yellow staining. . . . 19.13-19.14m: 4° planar rough clean. . . . 19.30-19.67m: interbedded weak fine siltstone. . . . 19.77-19.81m: 69° undulating rough calcite infill <3mm. . . . 19.82-20.29m: 79° planar rough clean. . . . 20.31-20.42m: 56° undulating rough clean.			
19.30-20.80 19.30-19.57	36	C		100	95	95							
										. . . 20.45-20.42m: 56° undulating rough clean. . . . 20.56-20.57m: 7° planar rough occasional black staining. . . . 20.68-20.69m: 9° planar rough clean. Borehole terminated at 20.80m depth.	46.22	20.80	

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	**Dando 2000 Mark2 + Comacchio GEO 205**	**Chris Jobson + Lee Smith**	**JAlton + RStan**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH24**
Contract Ref:	Start: **12.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **14.09.22**	**67.02**	**E:446273.4 N:324520.3**	**6** of **11**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 2000 Mark2 + Comacchio GEO 205	Drilled By:	Chris Jobson + Lee Smith	Logged By:	JAlton + RStan	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH24**
Contract Ref:	Start: **12.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **14.09.22**	**67.02**	**E:446273.4 N:324520.3**	**7** of **11**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 2000 Mark2 + Comacchio GEO 205	Drilled By:	Chris Jobson + Lee Smith	Logged By:	JAlton + RStan	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH24**
Contract Ref:	Start: **12.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **14.09.22**	**67.02**	**E:446273.4 N:324520.3**	**8** of **11**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 2000 Mark2 + Comacchio GEO 205	Drilled By:	Chris Jobson + Lee Smith	Logged By:	JAlton + RStan	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH24**
Contract Ref:	Start: **12.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **14.09.22**	**67.02**	**E:446273.4 N:324520.3**	**9** of **11**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 2000 Mark2 + Comacchio GEO 205	Drilled By:	Chris Jobson + Lee Smith	Logged By:	JAlton + RStan	Checked By:	AGS

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH24**
Contract Ref:	Start: **12.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **14.09.22**	**67.02**	**E:446273.4 N:324520.3**	**10** of **11**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 2000 Mark2 + Comacchio GEO 205	Drilled By:	Chris Jobson + Lee Smith	Logged By:	JAlton + RStan	Checked By:	

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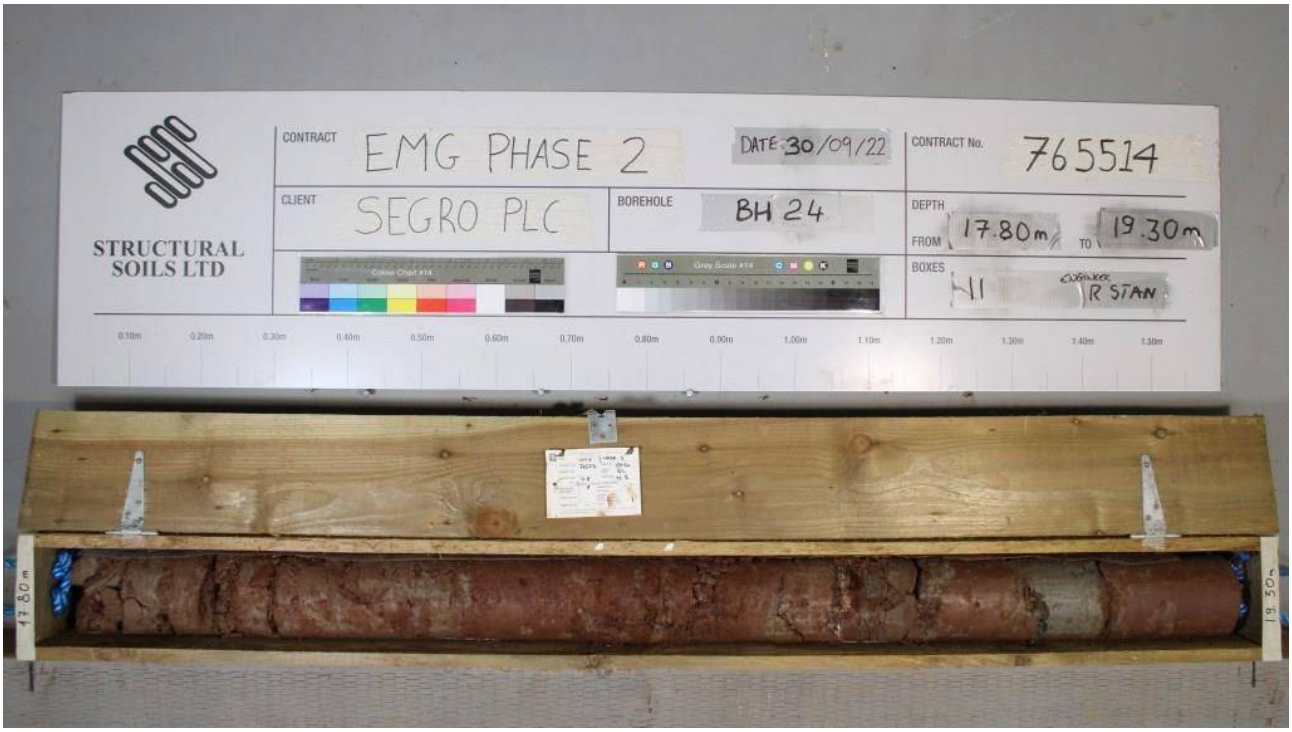
STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH24**
Contract Ref:	Start: **12.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **14.09.22**	**67.02**	**E:446273.4 N:324520.3**	**11** of **11**



Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 2000 Mark2 + Comacchio GEO 205	Drilled By:	Chris Jobson + Lee Smith	Logged By:	JAlton + RStan	Checked By:	AGS

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH25**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**12.09.22** End: **15.09.22**	**63.15**	**E:446409.0 N:324534.7**	**1** of **11**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
0.00-0.00	1	D								MADE GROUND: Firm to stiff orangish brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subrounded fine of mudstone. (TOPSOIL)			
0.00-0.10	3	B											
0.05-0.05	2	ES	1xT+1xJ+1xV									(0.40)	
0.10-0.10	4	D											
0.10-0.40	6	B									62.75	0.40	
0.20-0.20	5	ES	1xT+1xJ+1xV							Firm light orangish brown sandy gravelly CLAY. Sand is fine and medium. Gravel is angular to subrounded fine and medium of mudstone.			
0.40-0.40	7	D											
0.40-1.00	9	B										(0.60)	
0.50-0.50	8	ES	1xT+1xJ+1xV										
											62.15	1.00	
1.00-1.00	10	ES	1xT+1xJ+1xV							Reddish brown slightly clayey gravelly medium and coarse SAND. Gravel is angular to subrounded fine to coarse of mudstone and sandstone.	61.95	1.20	
1.20-1.20	11	D								Stiff reddish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine and medium of extremely weak mudstone and siltstone lithorelicts. Frequent pockets and lens (up to 10mm) of grey silty sand. GRADE IVa. (MERCIA MUDSTONE GROUP)			
1.20-1.65		SPT	N=15										
1.20-1.65	12	DSPT											
1.20-1.70	13	B											
1.70	14	D											
2.00	15	ES										(1.80)	
2.00-2.45		SPT	N=19										
2.00-2.45	16	DSPT											
2.00-2.50	17	B											
2.50	18	D									60.15	3.00	
3.00	19	ES								Very stiff reddish brown slightly sandy slightly gravelly CLAY. Sand is fine and medium. Gravel is angular to subangular fine to coarse of mudstone and siltstone lithorelicts. GRADE IVa and verging towards GRADE III. (MERCIA MUDSTONE GROUP)			
3.00-3.36		SPT	5,18/18,18,14 for 57mm									(0.50)	
3.00-3.45	20	DSPT											
3.00-3.50	21	B									59.65	3.50	
3.50-5.00										Extremely weak thickly laminated reddish brown MUDSTONE. GRADE II. Bedding fractures: Very closely spaced, rough, undulating, with dark brown staining on surfaces. (MERCIA MUDSTONE GROUP)			
3.50	22	D											
3.50-3.79		SPT	7,18/21,29 for 72mm									(0.45)	
3.50-3.96	23	DSPT											
				87	21	0					59.20	3.95	
										Description on next sheet			
4.25	25	C											

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
13/09/22	17:00	1.20	None	N/R	Dry
14/09/22	08:00	1.20	None	N/R	Dry
14/09/22	10:00	3.50	1.50	200	Dry
15/09/22	15:30	3.50	None	200	Dry
15/09/22	16:30	3.50	3.50	200	Dry
16/09/22	08:00	3.50	3.50	200	Dry
16/09/22	15:45	20.00	3.50	150	-

Chiselling / Slow Progress

From	To	Duration (hh:mm)
3.30	3.50	00:30

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Cable percussion drilled using 200mm diameter tools and casing.
4. Rotary cored from 3.50m using SWF core barrel and 150mm diameter casing and air mist flush.
5. Groundwater strike at 9.60m rising to 7.80m after 20 minutes.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 2000 Mark2 + Comacchio GEO 205	Chris Jobson + Marc Pearson	DNeylon + JAlton	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH25**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**12.09.22** End: **15.09.22**	**63.15**	**E:446409.0 N:324534.7**	**2** of **11**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
				87	21	0				Extremely weak reddish brown MUDSTONE. GRADE II. Fractures: Very closely spaced, randomly orientated, rough, undulating, dark brown staining on surfaces. (MERCIA MUDSTONE GROUP) *(stratum copied from 3.95m from previous sheet)*		(1.35)	
5.00-6.50 5.05		EW									57.85	5.30	
				97	8	0				Stiff reddish brown slightly sandy gravelly CLAY with occasional pockets (up to 20mm) and lenses (up to 15mm) of greenish grey silt. Sand is fine to coarse of mudstone. Gravel is angular to subangular fine and medium of mudstone and siltstone lithorelicts. GRADE III. (MERCIA MUDSTONE GROUP) . . . 5.75-5.90m: Extremely weak mudstone.		(0.85)	
											57.00	6.15	
6.35-6.45	26	C								Extremely weak reddish brown MUDSTONE. GRADE II. Bedding fractures: Closely spaced, rough, undulating. Fracture set 2: Very closely spaced, randomly orientated, rough, undulating, dark brown staining on surfaces. (MERCIA MUDSTONE GROUP)			
6.50-8.00				87	64	58				. . . 6.90-7.00m: Thinly cross laminated greenish grey siltstone.		(3.00)	
7.84-8.00	27	C											
8.00-9.50				100	59	53							
8.60-8.70	28	C								. . . 8.70-8.85m: Thinly laminated greenish grey siltstone.			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

6. Borehole installed with 50mm standpipe on completion (response zone 4.00m to 20.00m).
7. SPT hammer JB14-2022 (E_r = 63.00%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	Dando 2000 Mark2 + Comacchio GEO 205	Chris Jobson + Marc Pearson	DNeylon + JAlton	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH25**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**12.09.22** End: **15.09.22**	**63.15**	**E:446409.0 N:324534.7**	**3** of **11**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
										. . . 9.00-9.15m: Thickly laminated greenish grey siltstone.	54.00	9.15	
9.50-11.00				100	59	53				Extremely weak reddish brown MUDSTONE. GRADE II. Bedding fractures: Closely spaced, rough, undulating, black staining on surfaces. (MERCIA MUDSTONE GROUP)			
9.65-9.80	29	C										(1.25)	
				100	56	33				. . . 1.25m: Very closely spaced randomly orientated rough planar fractures with dark brown staining on surfaces.	52.75	10.40	
10.45-10.60	30	C								Very weak locally medium strong greenish grey SILTSTONE. (MERCIA MUDSTONE GROUP)			
11.00-12.50										. . . 11.05-11.10m: Reddish brown sandy very clayey fine to medium gravel of mudstone, suspected to be infilled bedding fractures. . . . 11.10-11.18m depth: Extremely weak reddish brown mudstone.		(1.90)	
11.60-11.85	31	C								. . . 11.33-11.368m: Extremely weak reddish brown sandstone.			
				83	70	56				. . . 12.10m: Verging towards medium strong fine grained sandstone.	50.85	12.30	
12.50-14.00										Very stiff reddish brown slightly sandy slightly gravelly CLAY with frequent pockets (up to 20mm) and lenses (up to 15mm) of greenish grey sandy silt. GRADE IVa. (MERCIA MUDSTONE GROUP)			
12.50-12.58		SPT	25/50 for 45mm							. . . 12.55-12.65m: Extremely weak greenish grey sandstone with fine to medium sand size vugs.			
				93	0	0							
13.15-13.35	32	C											

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	**Dando 2000 Mark2 + Comacchio GEO 205**	**Chris Jobson + Marc Pearson**	**DNeylon + JAlton**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH25**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**12.09.22** End: **15.09.22**	**63.15**	**E:446409.0 N:324534.7**	**4** of **11**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
				93	0	0				Very stiff reddish brown slightly sandy slightly gravelly CLAY with frequent pockets (up to 20mm) and lenses (up to 15mm) of greenish grey sandy silt. GRADE IVa. (MERCIA MUDSTONE GROUP) *(stratum copied from 12.30m from* previous sheet)		(2.50)	
14.00-15.50													
14.25-14.45	33	C											
				103	5	0					48.35	14.80	
										Extremely weak reddish brown MUDSTONE with occasional pockets (up to 60mm) of greenish grey siltstone. GRADE II. Fractures: Closely spaced, randomly orientated, rough, undulating, brown staining on surfaces. (MERCIA MUDSTONE GROUP)			
15.50-17.00												(1.65)	
15.85-16.10	34	C											
				103	70	42					46.70	16.45	
										Stiff reddish brown slightly sandy CLAY. Sand is fine of mudstone. GRADE IVb. (MERCIA MUDSTONE GROUP)		(0.30)	
											46.40	16.75	
										Very weak greenish grey fine and medium grained SANDSTONE very thinly interbedded with extremely weak reddish brown MUDSTONE. (MERCIA MUDSTONE GROUP)	46.15	17.00	
17.00-18.50													
										Extremely weak reddish brown MUDSTONE. GRADE II. (MERCIA MUDSTONE GROUP)	45.90	17.25	
17.28-17.45	35	C										(0.30)	
				93	68	47				Extremely weak greenish grey SILTSTONE thickly interlaminated with very weak fine and medium grained SANDSTONE. (MERCIA MUDSTONE GROUP) . . . 17.45m: Lenses (<4mm) of reddish brown clay.	45.60	17.55	

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	**Dando 2000 Mark2 + Comacchio GEO 205**	**Chris Jobson + Marc Pearson**	**DNeylon + JAlton**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH25**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **15.09.22**	**63.15**	**E:446409.0 N:324534.7**	**5** of **11**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
18.50-20.00				93	68	47				Extremely weak reddish brown MUDSTONE with occasional pockets (up to 60mm) of greenish grey siltstone. GRADE II. (MERCIA MUDSTONE GROUP) *(stratum copied from 17.55m from* previous sheet) . . . 18.10-18.25m: Recovered as sandy gravel with trace thick interlaminae with greenish grey extremely weak siltstone. Suspected interlaminated zone, verging towards GRADE III.		(1.51)	
18.70-18.85	36	C									44.09	19.06	
				100	30	0				Stiff reddish brown slightly sandy CLAY with occasional pockets (up to 20mm) of greenish grey silt. GRADE IVb. (MERCIA MUDSTONE GROUP)		(0.54)	
											43.55	19.60	
										Very weak greenish grey SILTSTONE. (MERCIA MUDSTONE GROUP) . . . 19.60-19.75m: 85°, rough undulating fractures. . . . 19.85-19.90m: Band of greenish grey sandy silt.		(0.40)	
											43.15	20.00	
										Borehole terminated at 20.00m depth.			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable Percussion + Rotary Cored	**Dando 2000 Mark2 + Comacchio GEO 205**	**Chris Jobson + Marc Pearson**	**DNeylon + JAlton**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH25**
Contract Ref:	Start: **12.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **15.09.22**	**63.15**	**E:446409.0 N:324534.7**	**6** of **11**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 2000 Mark2 + Comacchio GEO 205	Drilled By:	Chris Jobson + Marc Pearson	Logged By:	DNeylon + JAlton	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH25**
Contract Ref:	Start: **12.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **15.09.22**	**63.15**	**E:446409.0 N:324534.7**	**7** of **11**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 2000 Mark2 + Comacchio GEO 205	Drilled By:	Chris Jobson + Marc Pearson	Logged By:	DNeylon + JAlton	Checked By:	AGS

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH25**
Contract Ref:	Start: **12.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **15.09.22**	**63.15**	**E:446409.0 N:324534.7**	**8** of **11**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 2000 Mark2 + Comacchio GEO 205	Drilled By:	Chris Jobson + Marc Pearson	Logged By:	DNeylon + JAlton	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH25**
Contract Ref:	Start: **12.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **15.09.22**	**63.15**	**E:446409.0 N:324534.7**	**9** of **11**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 2000 Mark2 + Comacchio GEO 205	Drilled By:	Chris Jobson + Marc Pearson	Logged By:	DNeylon + JAlton	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH25**
Contract Ref:	Start: **12.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **15.09.22**	**63.15**	**E:446409.0 N:324534.7**	**10** of **11**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 2000 Mark2 + Comacchio GEO 205	Drilled By:	Chris Jobson + Marc Pearson	Logged By:	DNeylon + JAlton	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH25**
Contract Ref:	Start: **12.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **15.09.22**	**63.15**	**E:446409.0 N:324534.7**	**11** of **11**

Method Used:	Inspection pit + Cable Percussion + Rotary Cored	Plant Used:	Dando 2000 Mark2 + Comacchio GEO 205	Drilled By:	Chris Jobson + Marc Pearson	Logged By:	DNeylon + JAlton	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH26**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**09.09.22** End: **20.09.22**	**66.17**	**E:446600.8 N:324651.0**	**1** of **10**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
0.00	1	D								TOPSOIL	66.07	0.10	
0.10	2	D								Stiff reddish brown slightly sandy CLAY with occasional pockets (up to 2mm) of greenish grey silt. Sand is fine to coarse. (MERCIA MUDSTONE GROUP)			
0.10-0.40	3	B											
0.20	101	ES											
0.40	4	D											
0.40-1.00	5	B											
0.50	102	ES											
1.00	103	ES											
1.00	6	D											
1.00-1.20	7	B											
1.20-1.65		SPT	N=25									(2.40)	
1.20-1.65	8	DSPT											
1.20-1.70	9	B											
1.70	10	D											
2.00	104	ES											
2.00-2.45	11	UT	150 blows 78% recovery								63.67	2.50	
2.50	12	D								Stiff reddish brown and greenish grey slightly gravelly sandy CLAY with abundant pockets (up to 15mm) of greenish grey silt. Sand is fine to coarse. Gravel is subangular fine to coarse of mudstone and siltstone. (MERCIA MUDSTONE GROUP)			
2.50-3.00	13	B											
3.00-3.45		SPT	N=32										
3.00-3.45	14	DSPT											
3.00-3.50	15	B											
3.50	16	D								. . . 3.50-4.50m: Dark reddish brown.		(2.00)	
4.00-4.45	17	UT	150 blows										
4.00-4.50	18	B									61.67	4.50	

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
09/09/22	15:00	1.20	None	N/R	Dry
12/09/22	08:30	1.20	None	N/R	Dry
12/09/22	14:00	5.00	1.50	200	-
14/09/22	08:00	5.00	None	200	4.10
14/09/22	15:30	21.00	5.00	150	18.00

Chiselling / Slow Progress

From	To	Duration (hh:mm)
4.80	5.00	00:30

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Cable percussion drilled using 200mm diameter tools and casing.
4. Rotary cored from 5.00m using SWF core barrel and 150mm diameter casing and air mist flush.
5. No groundwater strikes in the cable percussion section. Unable to determine ground water

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Chris Jobson + Luke Bamford	DNartey + RStan	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH26**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **20.09.22**	**66.17**	**E:446600.8 N:324651.0**	**2** of **10**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
4.50	19	D								Very stiff reddish brown slightly sandy slightly gravelly CLAY. Sand is fine and medium of mudstone. Gravel is angular to subangular fine and medium of extremely weak mudstone lithorelicts. Occasional pockets (up to 20mm) of grey silty sand and trace evidence of bedding. GRADE IVa. (MERCIA MUDSTONE GROUP)	61.17	(0.50) 5.00	
4.50-4.78		SPT	8,14/28,22 for 51mm										
4.50-4.95	20	DSPT											
4.50-5.00	21	B											
5.00-6.00													
5.00-5.17		SPT	19,6/39,11 for 8mm										
5.50	23	D		85	8	0				Extremely weak reddish brown MUDSTONE with frequent pockets (up to 6mm) and laminae (up to 15mm) of greenish grey siltstone, recovered as clayey sand angular fine to coarse gravel. (MERCIA MUDSTONE GROUP)	60.67	(0.50) 5.50	
6.00-7.50										Extremely weak reddish brown MUDSTONE. GRADE II. Bedding fractures: Very closely spaced, smooth, undulating, black staining. Fracture set 2: Randomly orientated, very closely spaced, smooth, planar, black staining on surfaces. (MERCIA MUDSTONE GROUP)		(1.00)	
6.35	24	D									59.67	6.50	
				87	38	0				Extremely weak reddish brown MUDSTONE recovered as clayey sandy angular fine to coarse gravel. With gravel size fragments of greenish grey siltstone. GRADE II. (MERCIA MUDSTONE GROUP) . . . 6.90-7.10m: Extremely weak siltstone.	59.07	(0.60) 7.10	
7.50-9.00										Extremely weak reddish brown MUDSTONE with pockets (up to 20mm) of greenish grey siltstone. GRADE II. Bedding fractures: Closely spaced, smooth, planar, black staining on surfaces. Fracture set 2: Randomly orientated, smooth, planar. (MERCIA MUDSTONE GROUP) . . . 7.55-7.60m: Greenish grey siltstone.			
7.90	25	D											
				93	41	29				. . . 8.50-8.60m: Recovered as angular gravel, suspected bedding fracture.		(2.85)	

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

strikes due to flush method.
6. Borehole backfilled with bentonite on completion.
7. SPT hammer JB14-2022 (E_r = 63.00%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Chris Jobson + Luke Bamford	DNartey + RStan	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH26**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **20.09.22**	**66.17**	**E:446600.8 N:324651.0**	**3** of **10**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
9.00-10.50										Extremely weak reddish brown MUDSTONE with pockets (up to 20mm) of greenish grey siltstone. GRADE II. Bedding fractures: Closely spaced, smooth, planar, black staining on surfaces. Fracture set 2: Randomly orientated, smooth, planar. (MERCIA MUDSTONE GROUP) *(stratum copied from 7.10m from previous* sheet)			
9.25	26	D		93	41	29				. . . 9.60-9.65m: Recovered as angular gravel, suspected bedding fracture.	56.22	9.95	
										. . . 9.85-9.90m: Recovered as angular gravel, suspected bedding fracture. Extremely weak reddish brown MUDSTONE thinly interbedded with greenish grey SILTSTONE. GRADE II. Fractures: Randomly orientated, smooth, planar, frequent black staining on surfaces. (MERCIA MUDSTONE GROUP)	55.67	(0.55) 10.50	
10.50-12.00										Extremely weak reddish brown MUDSTONE with occasional pockets (up to 20mm) of greenish grey siltstone. Bedding fractures: Medium spaced, smooth, planar, with black staining on surfaces. Fracture set 2: Randomly orientated, smooth, planar, with black staining on surfaces. (MERCIA MUDSTONE GROUP)		(1.10)	
11.20	27	D		100	67	40					54.57	11.60	
11.70-11.90	28	C								Extremely weak thinly to thickly laminated greenish grey SANDSTONE with pockets (up to 6mm) and occasional laminae of brown coloured carbonate minerals and siltstone. GRADE II. (MERCIA MUDSTONE GROUP)		(0.55)	
12.00-13.50											54.02	12.15	
12.20	29	D								Extremely weak reddish brown MUDSTONE thinly interbedded with greenish grey SILTSTONE. GRADE I. Bedding fractures: Very closely spaced, rough, undulating. (MERCIA MUDSTONE GROUP)		(0.50)	
				90	63	47					53.52	12.65	
										Weak thinly cross laminated greenish grey SANDSTONE. (MERCIA MUDSTONE GROUP)			
13.00-13.15	30	C								. . . 13.00m: 60° fracture.		(0.95)	

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	**Dando 3000 + Comacchio GEO 205**	**Chris Jobson + Luke Bamford**	**DNartey + RStan**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH26**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **20.09.22**	**66.17**	**E:446600.8 N:324651.0**	**4** of **10**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
13.50-15.00											52.57	13.60	
13.75-14.10	31	C		100	80	73				Extremely weak reddish brown MUDSTONE with occasional pockets (up to 20mm) of greenish grey siltstone. GRADE II. (MERCIA MUDSTONE GROUP)	51.57	(1.00) 14.60	
14.75	32	D								Very stiff greenish grey sandy SILT. Sand is fine of siltstone. GRADE IVa. (MERCIA MUDSTONE GROUP)	51.17	(0.40) 15.00	
15.00-16.50													
15.30	33	D								Very stiff reddish brown slightly sandy slightly gravelly CLAY. Sand is fine and medium of mudstone. GRADE IVa. (MERCIA MUDSTONE GROUP)	50.67	(0.50) 15.50	
16.30-16.50	34	C		87	60	37				Extremely weak reddish brown MUDSTONE with occasional pockets (up to 20mm) of greenish grey siltstone. GRADE II. (MERCIA MUDSTONE GROUP) . . . 15.85m: 35°, smooth planar fracture, infilled with sandy clay. . . . 16.00-16.05m: Thinly cross laminated siltstone.			
16.50-18.00											48.57	(2.10) 17.60	
17.05-17.20	35	C		93	63	60				*Description on next sheet*			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	Dando 3000 + Comacchio GEO 205	Chris Jobson + Luke Bamford	DNartey + RStan	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH26**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **20.09.22**	**66.17**	**E:446600.8 N:324651.0**	**5** of **10**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
18.00-19.50										Extremely weak thinly to thickly laminated reddish brown MUDSTONE thinly interbedded with extremely weak thinly to thickly cross laminated greenish grey SILTSTONE. GRADE II. (MERCIA MUDSTONE GROUP) *(stratum copied from 17.60m from* previous sheet) . . . 18.00-18.90m: Randomly orientated rough planar fractures.		(1.30)	
18.50	36	D		90	7	0					47.27	18.90	
19.50-21.00										Extremely weak reddish brown MUDSTONE with frequent pockets (up to 20mm) of greenish grey siltstone. (MERCIA MUDSTONE GROUP) . . . 18.90-19.30m: Randomly orientated planar fractures.		(1.30)	
19.50-19.90	37	C		80	73	60					45.97	20.20	
										Extremely weak thinly to thickly cross laminated greenish grey SILTSTONE with closely spaced laminae (up to 15mm) of sandstone. (MERCIA MUDSTONE GROUP)		(0.80)	
										Borehole terminated at 21.00m depth.	45.17	21.00	

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	**Dando 3000 + Comacchio GEO 205**	**Chris Jobson + Luke Bamford**	**DNartey + RStan**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH26**
Contract Ref:	Start: **09.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **20.09.22**	**66.17**	**E:446600.8 N:324651.0**	**6** of **10**

Method Used:	Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Chris Jobson + Luke Bamford	Logged By:	DNartey + RStan	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH26**
Contract Ref:	Start: **09.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **20.09.22**	**66.17**	**E:446600.8 N:324651.0**	**7** of **10**

Method Used:	Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Chris Jobson + Luke Bamford	Logged By:	DNartey + RStan	Checked By:	

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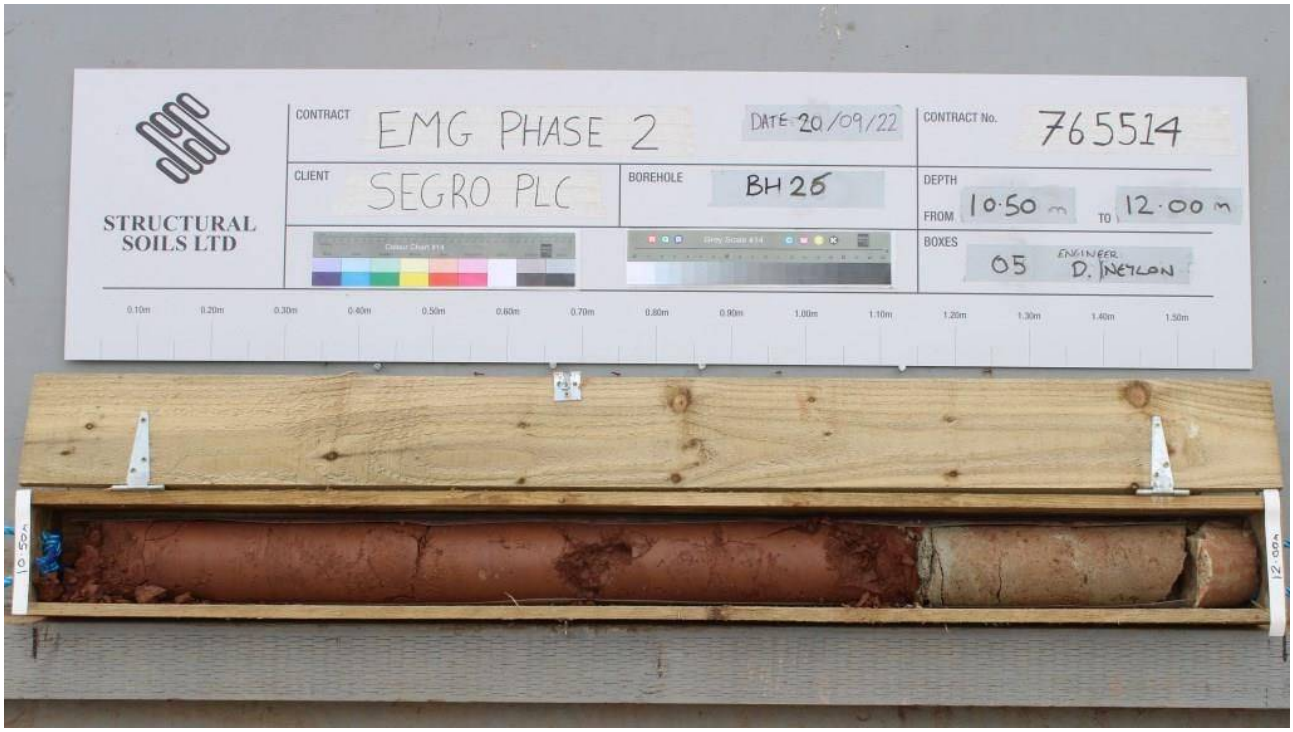
STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH26**
Contract Ref:	Start: **09.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **20.09.22**	**66.17**	**E:446600.8 N:324651.0**	**8** of **10**



Method Used:	Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Chris Jobson + Luke Bamford	Logged By:	DNartey + RStan	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH26**
Contract Ref:	Start: **09.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **20.09.22**	**66.17**	**E:446600.8 N:324651.0**	**9** of **10**

Method Used:	Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Chris Jobson + Luke Bamford	Logged By:	DNartey + RStan	Checked By:	

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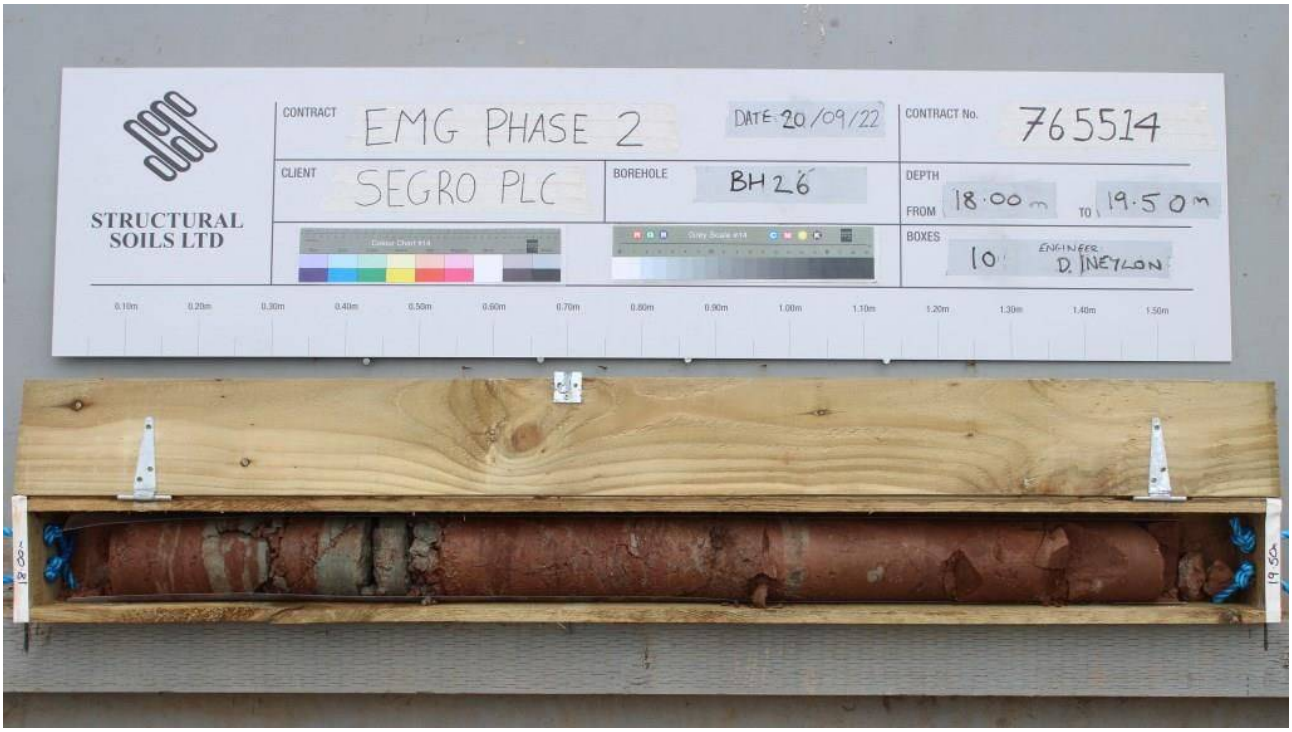
STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH26**
Contract Ref:	Start: **09.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **20.09.22**	**66.17**	**E:446600.8 N:324651.0**	**10** of **10**



Method Used:	Cable Percussion + Rotary Cored	Plant Used:	Dando 3000 + Comacchio GEO 205	Drilled By:	Chris Jobson + Luke Bamford	Logged By:	DNartey + RStan	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH27**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**12.09.22** End: **14.09.22**	**59.09**	**E:446622.8 N:324516.7**	**1** of **17**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
0.10-0.10	101	ES	1xT+1xJ+1xV							TOPSOIL	58.79	(0.30) 0.30	
0.40-0.40	102	ES	1xT+1xJ+1xV							Firm to stiff reddish brown slightly sandy gravelly CLAY. Sand is fine and medium. Gravel is angular to subrounded fine to coarse of mudstone. (MERCIA MUDSTONE GROUP)	57.89	(0.90) 1.20	
1.20-2.20 1.20-1.65 1.20-1.20	1	SPT DSPT	N=9	100	0	0				Very stiff brown slightly sandy gravelly CLAY. Sand is fine to coarse of mudstone. Gravel is angular to subangular fine to coarse of mudstone and siltstone lithorelicts. Frequent randomly orientated fractures with black staining on surfaces. GRADE IVa. (MERCIA MUDSTONE GROUP)			
1.90-2.00 2.00-2.10 2.10-2.20 2.20-3.00 2.20-2.53	103 4 5	ES D C SPT	6,8/12,21,17 for 30mm	113	0	0					56.34	(1.55) 2.75	
2.80-2.90 2.90-3.00 3.00-3.40 3.10-3.20 3.40-4.90	106 7 8	ES D D		138 77	23 35	0 15				Very stiff reddish brown slightly sandy gravelly CLAY. Sand is fine to coarse of mudstone. Gravel is angular to subangular fine to coarse of extremely weak mudstone lithorelicts and occasional very weak siltstone lithorelicts . GRADE III. Bedding: Extremely closely to very closely spaced, rough, undulating, black staining. Discontinuities: Tight to very tight, randomly orientated. (MERCIA MUDSTONE GROUP)	54.89	(1.45) 4.20	
4.30-4.40	9	D								*Description on next sheet*			

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
12/09/22	16:30	4.90	2.00	150	Dry
13/09/22	08:30	4.90	2.00	150	3.90
13/09/22	17:00	22.80	2.00	150	-
14/09/22	08:30	22.80	2.00	150	2.90
14/09/22	13:00	30.30	2.00	150	-

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Borehole drilled using dynamic sampling to 2.20m.
4. Rotary cored from 2.20m using SWF core barrel and 150mm diameter casing and air mist flush.
5. No groundwater enountered.
6. Borehole installed with 50mm diameter standpipe on completion (response zone 1.00m to 4.00m).

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Dynamic sampling + Rotary Cored	Comacchio GEO 205	Lee Smith	DNeylon + JAlton	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH27**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**12.09.22** End: **14.09.22**	**59.09**	**E:446622.8 N:324516.7**	**2** of **17**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
4.65-4.80	10	C		77	35	15				Very weak reddish brown MUDSTONE with medium spaced laminae and very thin beds (up to 40mm) of weak greenish grey siltstone. (MERCIA MUDSTONE GROUP)			
4.90-6.30										. . . 4.20-5.10m: Very closely spaced smooth planar bedding fractures with frequent black staining and extremely closely spaced smooth planar fractures, 60° and frequently stained dark brown and black on fracture surfaces. *(stratum copied* from 4.20m from previous sheet)			
4.90-5.04		SPT	17,8/50 for 50mm									(2.15)	
				89	46	0				. . . 5.10-5.30m: Slightly sandy slightly gravelly clay. . . . Below 5.30m: Bedding: Very closely spaced, smooth, planar. Fractures: 60°, closely spaced, planar. GRADE II.			
5.90-6.00	11	C											
6.15	12	D											
6.30-7.80										. . . 6.30-6.45m: Frequent thin laminae (<5mm) of cream sandstone.	52.74	6.35	
6.35	13	D											
6.40-6.55	14	C								Weak greenish grey fine grained SANDSTONE with pockets (up to 20mm) of very weak siltstone. GRADE II. Bedding fractures: Closely spaced, smooth, undulating. (MERCIA MUDSTONE GROUP)	52.14	(0.60)	
				90	79	13				. . . 6.45-6.60m: Rough undulating fracture. . . . 6.65m: Extremely weak siltstone. . . . Below 6.70m: reddish brown (transition zone) and very weak with lenses of very weak mudstone.	52.14	6.95	
										Very weak reddish brown MUDSTONE with frequent pockets (up to 6mm) of greenish grey siltstone with black specs. GRADE II. Bedding fractures: Closely spaced, smooth, planar, brown staining. Fracture set 2: 80°, rough, undulating. (MERCIA MUDSTONE GROUP)		(1.30)	
7.80-9.30											50.84	8.25	
				100	100	73				Extremely weak greenish grey SILTSTONE. Fractures: Closely spaced, 20°, undulating, smooth. (MERCIA MUDSTONE GROUP)		(0.75)	
8.60-8.80	15	C											
8.90	16	D									50.09	9.00	

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

General Remarks

7. SPT hammer LS01-2022 (E_f = 64.00%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Dynamic sampling + Rotary Cored	Comacchio GEO 205	Lee Smith	DNeylon + JAlton	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH27**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**12.09.22** End: **14.09.22**	**59.09**	**E:446622.8 N:324516.7**	**3** of **17**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
				100	100	73				Extremely weak reddish brown MUDSTONE with occasional lenses (up to 15mm) of greenish grey siltstone and closely to very closely spaced smooth planar tight bedding fractures with slight darker staining. (MERCIA MUDSTONE GROUP) . . . 9.15m: 80° fracture, with slight dark brown staining along surface. GRADE II.		(0.35)	
9.30-10.80											49.74	9.35	
9.50-9.75	17	C								Weak greenish grey SANDSTONE. Bedding fractures: Closely to medium spaced, rough, undulating, infilled with silt. (MERCIA MUDSTONE GROUP) . . . 10.00-10.15m: Extremely weak reddish brown mudstone. . . . Below 10.15m: Interbedded with siltstone and thin laminae (<2mm) of slightly harder carbonate material.		(1.05)	
				100	71	63					48.69	10.40	
10.50	18	D								Extremely weak locally very weak reddish brown MUDSTONE with frequent pockets (up to 20mm) of greenish grey sandy silt. GRADE II. Bedding fractures: Closely spaced, rough, planar. (MERCIA MUDSTONE GROUP) . . . 10.80-11.00m: Weak brown sandstone with very closely spaced bedding fractures with red clay infill.			
10.80-12.30													
				80	67	20							
11.65-11.85	19	C											
11.85	20	D										(3.30)	
12.30-13.80										. . . 12.15-12.55m: Very weak light greenish grey siltstone becoming extremely weak and darker in colour from 12.35m depth. . . . 12.30m: 70° smooth planar fracture.			
12.90-13.00	21	C		100	35	29				. . . 12.85-13.00m: Extremely weak greenish grey siltstone with yellow staining along bedding.			
13.40	22	D											

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Dynamic sampling + Rotary Cored	**Comacchio GEO 205**	**Lee Smith**	**DNeylon + JAlton**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH27**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**12.09.22** End: **14.09.22**	**59.09**	**E:446622.8 N:324516.7**	**4** of **17**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
				100	35	29					45.39	13.70	
13.80-15.30										Extremely weak reddish brown MUDSTONE thinly interbedded with extremely weak to very weak greenish grey SILTSTONE. Often siltstone beds are formed as lenses and only partially observed in the core. GRADE II. Bedding fractures: Closely spaced, rough, planar, infilled with red clay. (MERCIA MUDSTONE GROUP)			
				100	37	9							
14.70-14.90	23	C										(2.50)	
15.10	24	D								. . . 15.00-15.20m: Siltstone with laminae of cream coloured calcium carbonate and sedimentary deposit features observed.			
15.30-16.80													
15.65-16.10	25	C											
				100	46	38							
16.10	26	D								. . . 16.10-16.20m: Weak reddish brown with thin laminae of cream coloured calcium carbonate which is harder than the host mudstone.	42.89	16.20	
16.80-18.30										Extremely weak reddish brown MUDSTONE with frequent pockets (up to 20mm) of greenish grey sandy silt. GRADE II. Bedding fractures: Medium spaced, smooth, planar. (MERCIA MUDSTONE GROUP)		(1.00)	
											41.89	17.20	
17.20-17.40	27	C								Extremely weak thinly to thickly laminated greenish grey SILTSTONE. Frequent thin laminae (up to 2mm) of calcium carbonate slightly harder than the surrounding matrix. Bedding fractures: Closely spaced, undulating, rough, infilled with reddish brown clay. (MERCIA MUDSTONE GROUP)		(0.55)	
				87	83	70							
17.50	28	D									41.34	17.75	
										Description on next sheet			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Dynamic sampling + Rotary Cored	Comacchio GEO 205	Lee Smith	DNeylon + JAlton	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH27**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**12.09.22** End: **14.09.22**	**59.09**	**E:446622.8 N:324516.7**	**5** of **17**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
18.30-19.80				87	83	70				Extremely weak reddish brown MUDSTONE with frequent pockets and lenses (up to 15mm) of extremely weak greenish grey siltstone. GRADE II. (MERCIA MUDSTONE GROUP) *(stratum copied from 17.75m from* previous sheet) . . . 18.30-18.60m: thinly interbedded (<60mm) with greenish grey siltstone.		(1.15)	
											40.19	18.90	
				77	33	19				AZCL (MERCIA MUDSTONE GROUP)		(0.30)	AZCL
											39.89	19.20	
19.50	29	D								Extremely weak reddish brown MUDSTONE with frequent pockets (up to 6mm) of greenish grey sandy silt. GRADE II. (MERCIA MUDSTONE GROUP)			
19.80-21.30												(1.90)	
20.40-20.60	30	C		97	41	41							
											37.99	21.10	
21.30-22.80										Very weak reddish brown MUDSTONE with closely to very closely spaced (up to 40mm, generally 5mm to 20mm) of crystalised gypsum, generally parallel with bedding. GRADE I. (MERCIA MUDSTONE GROUP)			
21.85-22.20	31	C		83	83	63							

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Dynamic sampling + Rotary Cored	Comacchio GEO 205	Lee Smith	DNeylon + JAlton	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH27**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **14.09.22**	**59.09**	**E:446622.8 N:324516.7**	**6** of **17**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
22.80-24.30				83	83	63				Very weak reddish brown MUDSTONE with closely to very closely spaced (up to 40mm, generally 5mm to 20mm) of crystalised gypsum, generally parallel with bedding. GRADE I. (MERCIA MUDSTONE GROUP) *(stratum copied from 21.10m from* previous sheet)			
23.50-23.80	32	C		100	70	61							
24.30-25.80													
24.60	33	C											
				97	97	97						(8.20)	
25.80-27.30													
				100	100	100				. . . 26.30-26.50m: Extremely weak greenish grey siltstone.			

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Dynamic sampling + Rotary Cored	Comacchio GEO 205	Lee Smith	DNeylon + JAlton	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**BH27**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**12.09.22** End: **14.09.22**	**59.09**	**E:446622.8 N:324516.7**	**7** of **17**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
27.00-27.30	34	C		100	100	100				Very weak reddish brown MUDSTONE with closely to very closely spaced (up to 40mm, generally 5mm to 20mm) of crystalised gypsum, generally parallel with bedding. GRADE I. (MERCIA MUDSTONE GROUP) *(stratum copied from 21.10m from* previous sheet) . . . 27.30-27.90m: Thinly laminated with occasional siltstone laminae (<5mm).			
27.30-28.80													
27.50	35	C		100	77	58				. . . 28.30-28.55m: Random orientated fractures breaking up the core, generally closely spaced.			
28.80-30.30											29.79	29.30	
				100	100	87				Weak thinly to thickly laminated greenish grey SILTSTONE with pockets (up to 20mm) of calcium carbonate, material slightly harder than the surrounding matrix. Unweathered. (MERCIA MUDSTONE GROUP)	29.34	(0.45) 29.75	
29.75-31.10	36	C								. . . 29.45-29.55m: Extremely weak thinly laminated reddish brown mudstone. Weak to medium strong thinly to thickly cross laminated reddish brown SANDSTONE with intermittent lenses of greenish grey weak siltstone. Unweathered. (MERCIA MUDSTONE GROUP)		(1.35)	
											27.99	31.10	
										Borehole terminated at 31.10m depth.			

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Dynamic sampling + Rotary Cored	Comacchio GEO 205	Lee Smith	DNeylon + JAlton	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH27**
Contract Ref:	Start: **12.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **14.09.22**	**59.09**	**E:446622.8 N:324516.7**	**8** of **17**

Method Used:	Inspection pit + Dynamic sampling + Rotary Cored	Plant Used:	Comacchio GEO 205	Drilled By:	Lee Smith	Logged By:	DNeylon + JAlton	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH27**
Contract Ref:	Start: **12.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **14.09.22**	**59.09**	**E:446622.8 N:324516.7**	**9** of **17**

Method Used:	Inspection pit + Dynamic sampling + Rotary Cored	Plant Used:	Comacchio GEO 205	Drilled By:	Lee Smith	Logged By:	DNeylon + JAlton	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH27**
Contract Ref:	Start: **12.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **14.09.22**	**59.09**	**E:446622.8 N:324516.7**	**10** of **17**

Method Used:	Inspection pit + Dynamic sampling + Rotary Cored	Plant Used:	Comacchio GEO 205	Drilled By:	Lee Smith	Logged By:	DNeylon + JAlton	Checked By:	AGS

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH27**
Contract Ref:	Start: **12.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **14.09.22**	**59.09**	**E:446622.8 N:324516.7**	**11** of **17**

Method Used:	Inspection pit + Dynamic sampling + Rotary Cored	Plant Used:	Comacchio GEO 205	Drilled By:	Lee Smith	Logged By:	DNeylon + JAlton	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH27**
Contract Ref:	Start: **12.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **14.09.22**	**59.09**	**E:446622.8 N:324516.7**	**12** of **17**

Method Used:	Inspection pit + Dynamic sampling + Rotary Cored	Plant Used:	Comacchio GEO 205	Drilled By:	Lee Smith	Logged By:	DNeylon + JAlton	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH27**
Contract Ref:	Start: **12.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **14.09.22**	**59.09**	**E:446622.8 N:324516.7**	**13** of **17**

Method Used:	Inspection pit + Dynamic sampling + Rotary Cored	Plant Used:	Comacchio GEO 205	Drilled By:	Lee Smith	Logged By:	DNeylon + JAlton	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH27**
Contract Ref:	Start: **12.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **14.09.22**	**59.09**	**E:446622.8 N:324516.7**	**14** of **17**

Method Used:	Inspection pit + Dynamic sampling + Rotary Cored	Plant Used:	Comacchio GEO 205	Drilled By:	Lee Smith	Logged By:	DNeylon + JAlton	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH27**
Contract Ref:	Start: **12.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **14.09.22**	**59.09**	**E:446622.8 N:324516.7**	**15** of **17**

Method Used:	Inspection pit + Dynamic sampling + Rotary Cored	Plant Used:	Comacchio GEO 205	Drilled By:	Lee Smith	Logged By:	DNeylon + JAlton	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH27**
Contract Ref:	Start: **12.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **14.09.22**	**59.09**	**E:446622.8 N:324516.7**	**16** of **17**

Method Used:	Inspection pit + Dynamic sampling + Rotary Cored	Plant Used:	Comacchio GEO 205	Drilled By:	Lee Smith	Logged By:	DNeylon + JAlton	Checked By:	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:		Client:		Borehole:
EMG Phase 2		**SEGRO**		**BH27**
Contract Ref:	Start: **12.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **14.09.22**	**59.09**	**E:446622.8 N:324516.7**	**17** of **17**

Method Used:	Inspection pit + Dynamic sampling + Rotary Cored	Plant Used:	Comacchio GEO 205	Drilled By:	Lee Smith	Logged By:	DNeylon + JAlton	Checked By:	AGS

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**CP01**

Contract Ref:	Start: **05.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **06.09.22**	**91.40**	**E:446654.8 N:325363.5**	**1** of **1**

Samples and In-situ Tests				Water	Backfill & Instrumentation	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
0.10	1	ES	1xT+1xJ+1xV			TOPSOIL . . . 0.20-0.40m: becomes stiff . . . . 0.30-0.40m: With low cobble content. Cobbles are subangular of sandstone (<250x150x100mm).	91.00	0.40	
0.50	2	ES	1xT+1xJ+1xV			Stiff dark reddish brown slightly sandy slightly gravelly silty CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of quartzite and sandstone.	90.75	0.65	
1.00	3	ES	1xT+1xJ+1xV						
1.20-1.65		SPT	N=18			Stiff dark reddish brown slightly sandy CLAY with low cobble content. Cobbles are subangular of dark grey siltstone (up to 150x90x80mm). Occasional light greenish grey reduction spots. (MERCIA MUDSTONE GROUP)			
1.20-1.65	4	DSPT							
1.20-1.70	5	B							
1.80	6	D							
2.00-2.45		SPT	N=30			. . . 0.65m: Cobbles are subangular of dark grey siltstone (<230x150x100mm).			
2.00-2.45	7	DSPT							
2.00-2.50	8	B							
2.80	9	D							
3.00-3.31		SPT	13,12/18,22,10 for 5mm						
3.00-3.30	10	DSPT							
3.00-3.50	11	B							
3.80	12	D							
4.00-4.45		SPT	N=50					(7.16)	
4.00-4.45	13	DSPT							
4.00-4.50	14	B							
4.80	15	D							
5.00-5.38		SPT	6,10/10,10,20,10 for 5mm			. . . 5.00-7.95m: very stiff			
5.00-5.30	16	DSPT							
5.00-5.50	17	B							
5.80	18	D							
6.00-6.45		SPT	N=49						
6.00-6.45	19	DSPT							
6.00-6.50	20	B							
6.80	21	D							
7.50-7.81		SPT	6,8/17,23,10 for 5mm				83.59	7.81	
7.50-7.81	22	DSPT				Cable percussion borehole terminated at 7.81m depth.			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
05/09/22	17:00	1.20	-		Dry
06/09/22	08:00	1.20	-		Dry
06/09/22	14:00	7.81	3.00	150	Dry

Chiselling / Slow Progress		
From	To	Duration (hh:mm)
3.30	3.50	00:30
5.60	6.00	00:30

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Drilled using 150mm diameter tools and casing.
4. No groundwater encountered during drilling.
5. Borehole installed with 50mm standpipe on completion (response zone 1.00m to 7.81m).
6. SPT hammer JB05-2022 (E_r = 68.00%) used.

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable percussion	**Dando 2000**	**Will Nevins**	**GKalaher**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**CP02**

Contract Ref:	Start: **07.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **07.09.22**	**87.79**	**E:446423.0 N:325361.8**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
						TOPSOIL . . . 0.20-0.35m: stiff	87.44	0.35	
0.50	1	ES	1xT+1xJ+1xV			Stiff dark reddish brown slightly sandy gravelly CLAY with occasional pockets (up to 60mm) and lenses (up to 10mm) of greenish grey sandy silt with trace laminae and brown bands (up to 3mm). Sand is fine and medium of mudstone. Gravel is angular to subangular fine to coarse of extremely weak mudstone. (MERCIA MUDSTONE GROUP)		(1.25)	
0.50	2	D							
1.00	3	ES	1xT+1xJ+1xV						
1.00	4	D							
1.20-1.65		SPT	N=21						
1.20-1.65	5	DSPT					86.19	1.60	
1.20-1.70	6	B				Very stiff dark reddish brown slightly sandy gravelly CLAY with occasional pockets (up to 60mm) of greenish grey sandy silt. Sand is fine and medium of mudstone. Gravel is angular to subangular fine to coarse of mudstone. (MERCIA MUDSTONE GROUP)			
1.80	7	D							
2.00-2.45	8	$UT_{(UT100)}$	60 blows 100% recovery						
2.60	9	D							
2.60-3.00	10	B							
3.00-3.41		SPT	5,5/13,13,15,9 for 35mm			. . . 3.00-3.30m: verging towards Grade III with extremely weak to very weak mudstone and occasional fine gravel size fragments of dark brown fossilised organic matter.		(4.40)	
3.00-3.40	11	DSPT							
3.00-3.50	12	B							
3.80	13	D							
4.00-4.45	14	$UT_{(UT100)}$	90 blows 100% recovery						
4.60	15	D							
4.60-5.00	16	B							
5.00-5.31		SPT	5,7/12,28,10 for 5mm			. . . 5.00-5.30m: occasional fine gravel size fragments of dark brown fossilised organic matter.			
5.00-5.30	17	DSPT							
5.00-5.50	18	B		1					
5.80	19	D					81.79	6.00	
6.00-6.37		SPT	8,14/25,25,25 for 70mm			Very stiff dark reddish brown slightly sandy gravelly CLAY with infrequent beds (up to 30mm) of light greenish grey siltstone. Sand is fine to coarse of mudstone. Gravel is angular to subangular fine to coarse of extremely weak mudstone and siltstone. (MERCIA MUDSTONE GROUP) . . . 7.00-7.63m: gravel size fraction extremely weak to very weak		(1.63)	
6.00-6.40	20	DSPT							
6.00-6.50	21	B							
6.80	22	D							
7.50-7.63		SPT	25/75 for 55mm				80.16	7.63	
7.50-7.63	23	DSPT				Cable percussion borehole terminated at 7.63m depth.			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
07/09/22	16:00	7.63	1.50	150	-

Chiselling / Slow Progress		
From	To	Duration (hh:mm)
3.40	3.60	00:30
6.80	7.00	00:30

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Drilled using 150mm diameter tools and casing.
4. Groundwater strike at 6.00m. Rise to 5.70m after 20 minutes.
5. Borehole backfilled with bentonite on completion.
6. SPT hammer JB05-2022 (E_r = 68.00%) used.

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable percussion	**Dando 2000**	**Will Nevins**	**RStan**	RL

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**CP03**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**08.09.22** End: **08.09.22**	**90.21**	**E:446264.9 N:325259.7**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
0.10	1	ES	1xT+1xJ+1xV			TOPSOIL			
0.20	2	D				. . . 0.20-0.35m: becoming stiff.	89.86	0.35	
0.50	3	ES	1xT+1xJ+1xV			Stiff dark orangish brown slightly gravelly sandy SILT. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of quartzite, sandstone, and flint.	89.51	0.70	
0.50	4	D						(0.50)	
1.00	5	B				Stiff to very stiff dark reddish brown slightly sandy slightly gravelly CLAY with frequent rootlets (up to 1mm) and occasional pockets (up to 6mm) of greenish grey silt. Sand is fine to coarse. Gravel is subangular to rounded fine to coarse of quartzite, flint, and sandstone. Occasional pockets (up to 6mm) of dark brown decayed organic matter.	89.01	1.20	
1.00	6	ES	1xT+1xJ+1xV			. . . 0.80-1.20m: occasional lenses (<10mm) of dark reddish brown fine to coarse sand			
1.00	7	D							
1.20	8	B							
1.20-1.65		SPT	N=16						
1.20-1.70	10	B							
1.20-1.65	9	DSPT							
1.80	11	D							
2.00-2.45	12	$UT_{(UT100)}$	120 blows 100% recovery			Very stiff dark reddish brown slightly sandy slightly gravelly CLAY with occasional beds and lenses (up to 25mm) of greenish grey sandy silt with trace laminae and brown silt bands (up to 3mm). Sand is fine and medium of mudstone. Gravel is angular to subangular fine to coarse of extremely weak mudstone.			
2.60	13	D				(MERCIA MUDSTONE GROUP)			
2.60-3.00	14	B				. . . 2.60-3.00m: friable			
3.00-3.45		SPT	N=53			. . . 3.00-6.50m: frequent gravel size pockets of greenish grey sandy silt			
3.00-3.45	15	DSPT							
3.00-3.50	16	B						(5.30)	
3.80	17	D							
4.00-4.40	18	$UT_{(UT100)}$	150 blows 100% recovery						
4.00	19	D							
4.40-5.00	20	B							
5.00-5.45		SPT	N=45						
5.00-5.45	21	DSPT							
5.00-5.50	22	B							
5.80	23	D							
6.00-6.45		SPT	N=60						
6.00-6.45	24	DSPT							
6.00-6.50	25	B					83.71	6.50	
6.80	26	D				Very stiff dark reddish brown slightly sandy gravelly CLAY with occasional beds (up to 20mm) of light greenish grey siltstone. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of extremely weak mudstone and siltstone. (MERCIA MUDSTONE GROUP)		(1.11)	
7.00-7.25		SPT	8,15/40,60 for 20mm						
7.00-7.25	27	DSPT							
7.00-7.30	28	B					82.60	7.61	
7.30-7.61		SPT	13,12/20,40,15 for 10mm			Cable percussion borehole terminated at 7.61m depth.			
7.30-7.61	29	DSPT							

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
08/09/22	18:00	7.00	1.50	150	Dry
08/09/22	08:00	7.00	1.50	150	Dry
09/09/22	09:00	7.61	1.50	150	Dry

Chiselling / Slow Progress		
From	To	Duration (hh:mm)
2.60	3.00	00:30
7.00	7.30	00:30

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Drilled using 150mm diameter tools and casing.
4. No groundwater encountered during drilling.
5. Borehole backfilled with bentonite on completion.
6. SPT hammer JB05-2022 (E_f = 68.00%) used.

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable percussion	**Dando 2000**	**Will Nevins**	**RStan**	RL

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**CP04**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **13.09.22**	**81.74**	**E:446165.0 N:325032.0**	**1** of **2**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
0.00-0.50	3	B				TOPSOIL	81.44	0.30	
0.50	1	ES				Stiff brown slightly gravelly sandy CLAY with occasional rootlets (up to 1mm). Sand is fine and medium. Gravel is angular to subrounded fine and medium of mudstone and sandstone.			
0.50	2	D							
0.50-1.00	6	B				. . . 0.85-1.00m: low cobble content. Cobbles (<100mm x 70mm x 40mm) are subrounded quartzite.			
1.00	4	ES							
1.00	5	D						(1.90)	
1.20-1.65		SPT	N=11						
1.20-1.65	7	DSPT							
1.20-1.70	8	B							
1.80	9	D							
2.00-2.45	10	$UT_{(UT100)}$	80 blows 100% recovery				79.54	2.20	
2.60	11	D				Stiff brownish grey occasionally mottled brown and reddish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of mudstone, sandstone, siltstone, chalk, and unknown metamorphic rock.			
2.60-3.00	12	B							
3.00-3.45		SPT	N=19						
3.00-3.45	13	DSPT							
3.00-3.50	14	B							
3.80	15	D							
4.00-4.45	16	$UT_{(UT100)}$	90 blows 100% recovery			. . . below 4.00m: becoming very stiff			
4.60	17	D							
4.60-5.00	18	B							
5.00-5.45		SPT	N=35						
5.00-5.45	19	DSPT							
5.00-5.50	20	B							
5.80	21	D							
6.00-6.45	22	$UT_{(UT100)}$	110 blows 100% recovery						
6.60	23	D							
6.60-7.00	24	B							
7.00-7.45		SPT	N=37						
7.00-7.45	25	DSPT							
7.00-7.50	26	B							
7.80	27	D							
8.00-8.45		SPT	N=35						
8.00-8.45	28	DSPT							
8.00-8.50	29	B							
8.80	30	D							

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
12/09/22	18:00	11.00	3.00	150	-
13/09/22	08:00	11.00	3.00	150	-
13/09/22	18:00	17.00	13.50	150	12.10
14/09/22	08:00	13.50	13.50	150	11.00
14/09/22	11:00	15.00	15.00	150	-

Chiselling / Slow Progress

From	To	Duration (hh:mm)

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Drilled using 150mm diameter tools and casing.
4. Groundwater strike at 17m. Rose to 10.20m after 20 minutes.
5. Borehole was backfilled with bentonite seal upon completion.
6. SPT hammer JB05-2022 (E_r = 68.00%) used.

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable percussion	**Dando 2000**	**Will Nevins**	**GKalaher**	RL

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**CP04**

Contract Ref:	Start: **12.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **13.09.22**	**81.74**	**E:446165.0 N:325032.0**	**2** of **2**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
9.00-9.45		SPT	N=34			Stiff brownish grey occasionally mottled brown and reddish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of mudstone, sandstone, siltstone, chalk, and unknown metamorphic rock.		(13.80)	
9.00-9.45	31	DSPT							
9.00-9.50	32	B							
9.80	33	D				*(stratum copied from 2.20m from previous sheet)*			
10.00-10.45		SPT	N=35			. . . 9.00-11.80m: becoming reddish brown			
10.00-10.45	34	DSPT							
10.00-10.50	35	B		1					
10.80	36	D							
11.00-11.45		SPT	N=34						
11.00-11.45	37	DSPT							
11.00-11.50	38	B							
11.50	39	D							
12.00-12.45		SPT	N=67			. . . 12.00: becoming dark reddish brown			
12.00-12.45	40	DSPT							
12.00-12.50	41	B							
12.50	42	D							
13.00-13.45		SPT	N=98						
13.00-13.45	43	DSPT							
13.00-13.50	44	B							
13.50	45	D							
14.00-14.45		SPT	N=75						
14.00-14.45	46	DSPT							
14.00-14.50	47	B							
14.50	48	D							
15.00-15.45		SPT	N=58						
15.00-15.45	49	DSPT							
15.00-15.50	50	B							
15.80	51	D					65.74	16.00	
16.00-16.50	52	B				Dense SAND AND GRAVEL. (Driller's Description)		(1.00)	
16.50-16.95		SPT	N=88						
16.50-16.95	53	DSPT							
16.50-17.00	54	B		1			64.74	17.00	
17.00	55	D				Cable percussion borehole terminated at 17.00m depth.			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable percussion	**Dando 2000**	**Will Nevins**	**GKalaher**	RL

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**CP05**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **27.09.22**	**85.91**	**E:446066.5 N:325366.2**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
0.00-0.50	1	B				TOPSOIL	85.61	0.30	
0.00-0.30	101	ES							
0.30-0.30	2	D				Stiff to very stiff reddish brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is angular to subangular fine of mudstone and siltstone. (MERCIA MUDSTONE GROUP)			
0.50-1.00	3	B							
0.50-0.50	102	ES							
0.70-0.70	4	D							
1.00-1.00	103	ES							
1.20-1.65	5	UT	18 blows 100% recovery						
1.65-1.75	6	D							
2.00-2.45		SPT	4,9/9,13,13,15 for 70mm						
2.00-2.45	7.1	DSPT							
2.00-2.45	8	B							
2.75-2.75	9	D							
3.00-3.44		SPT	6,11/13,12,12,13 for 65mm					(6.11)	
3.00-3.45	10.1	DSPT							
3.00-3.45	11	B							
3.75-3.75	12	D							
4.00-4.39		SPT	4,6/14,15,17,6 for 10mm						
4.00-4.45	13.1	DSPT							
4.00-4.45	14	B							
4.75-4.75	15	D							
5.00-5.30		SPT	8,10/15,31,4 for 0mm						
5.00-5.45	16.1	DSPT							
5.00-5.45	17	B							
5.75	18	D							
6.00-6.25		SPT	10,15/36,14 for 25mm						
6.00-6.45	19.1	DSPT					79.50	6.41	
6.20-6.41		SPT	25/38,62 for 60mm			Cable percussion borehole terminated at 6.41m depth.			
6.20	104	ES							
6.20-6.65	20.1	DSPT							

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
27/09/22	14:00	6.41	6.20	150	Dry

Chiselling / Slow Progress		
From	To	Duration (hh:mm)
6.00	6.20	00:30

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Drilled using 150mm diameter tools and casing.
4. No groundwater encountered during drilling.
5. Borehole backfilled with bentonite.
6. SPT hammer DS5-1-22 (E_r = 61.00%) used.

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable percussion	**Dando 2000**	**Nathan Topping**	**RStan**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**CP06**

Contract Ref:	Start: **28.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **29.09.22**	**87.01**	**E:446015.6 N:325200.5**	**1** of **2**

Samples and In-situ Tests				Water	Backfill & Instru-mentation	Description of Strata	Reduced Level	Depth (Thick ness)	Material Graphic Legend
Depth	No	Type	Results						
0.00-0.50	1	B				TOPSOIL			
0.00-0.10	101	ES					86.71	0.30	
0.20	2	D				Stiff fissured dark greyish brown sandy gravelly silty CLAY with pockets of chalk. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of mixed lithologies including sandstone, siltstone, and quartzite.			
0.50-1.00	3	B							
0.50	102	ES						(1.00)	
0.70	4	D							
1.00	103	ES							
1.20-1.65	5	UT	80 blows 40% recovery				85.71	1.30	
1.30	104	ES				Stiff fissured dark greyish brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of mixed lithologies including sandstone and flint with occasional cobbles noted.			
1.65	6	D							
2.00-2.45		SPT	N=23						
2.00-2.45	7	DSPT							
2.00-2.45	8	D							
2.75	9	D							
3.00-3.45	10	UT	28 blows 50% recovery						
3.65	11	D						(4.65)	
4.00-4.45		SPT	N=30						
4.00-4.45	12	DSPT							
4.00-4.45	13	B							
4.75	14	D							
5.00-5.45	15	UT	26 blows 50% recovery						
5.65	16	D					81.06	5.95	
6.00-6.45		SPT	N=37			Stiff fissured orangish brown mottled grey gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of mixed lithologies included sandstone, siltstone, and mudstone.			
6.00	105	ES							
6.00	17	DSPT							
6.00	18	B						(1.75)	
7.00	19	D		1					
7.50-7.95	20	UT	50 blows 20% recovery				79.31	7.70	
7.70	106	ES				Stiff to very stiff reddish brown sandy gravelly silty CLAY. Sand is fine. Gravel is angular to subangular fine to coarse of mudstone. Occasional bands of grey siltstone. (MERCIA MUDSTONE GROUP)			
8.07		EW							
8.50	21	D		1					

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
28/09/22	18:00	11.26	11.00	150	Dry
29/09/22	08:00	11.26	11.00	150	-
29/09/22	11:00	11.26	11.00	150	-

Chiselling / Slow Progress		
From	To	Duration (hh:mm)
10.60	11.00	00:30

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Borehole drilled using 150mm tools and casing.
4. Groundwater struck at 9.00m depth, rising to 7.20m depth after 20 minutes.
5. Borehole installed with 50mm standpipe (response zone 1.00m to 11.26m).
6. SPT hammer DS5-1-22 (E_r = 61.00%) used.

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable percussion	**Dando 2000**	**Nathan Topping**	**RStan**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**CP06**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **29.09.22**	**87.01**	**E:446015.6 N:325200.5**	**2** of **2**

Samples and In-situ Tests				Water	Backfill & Instrumentation	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
9.00-9.45		SPT	N=66			Stiff to very stiff reddish brown sandy gravelly silty CLAY. Sand is fine. Gravel is angular to subangular fine to coarse of mudstone. Occasional bands of grey siltstone. (MERCIA MUDSTONE GROUP) *(stratum copied from 7.70m from previous sheet)*		(3.56)	
9.00-9.45	22	DSPT							
9.00	23	B							
10.00	24	D							
10.50-10.83		SPT	12,12/24,51,20 for 30mm						
10.50-10.83	25	DSPT							
11.00-11.26		SPT	12,14/29,71 for 50mm				75.75	11.26	
11.00	107	ES				Cable percussion borehole terminated at 11.26m depth.			
11.00-11.26	26	DSPT							

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable percussion	**Dando 2000**	**Nathan Topping**	**RStan**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**CP07**

Contract Ref:	Start: **30.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **03.10.22**	**78.15**	**E:445919.0 N:325053.4**	**1** of **2**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
0.00-0.00	1	D				TOPSOIL	77.85	0.30	
0.10-0.20	2	B							
0.20-0.20	101	ES	1xT+1xJ+1xV			Stiff, becoming very stiff, brown mottled grey slightly sandy slightly gravelly CLAY. Sand is fine and medium. Gravel is subangular to rounded fine to coarse of quartzite, chalk, mudstone, sandstone, and coal. Occasional cobbles (up to 100mm) of quartzite and sandstone.			
0.40-0.40	102	ES	1xT+1xJ+1xV						
0.60-0.60	3	D							
0.60-0.80	4	B							
1.30	5	D							
1.50-1.95	6	$UT_{(UT100)}$	150 blows 89% recovery			. . . below 1.50m, very stiff.			
2.30	7	D							
2.50-2.95		SPT	N=20						
2.50-2.95	10	B							
2.50-2.95	9	DSPT							
3.20	11	D							
3.50-3.95	12	$UT_{(UT100)}$	100 blows 89% recovery						
3.50-3.95	13	D							
4.30	14	D							
4.50-4.95		SPT	N=21						
4.50-4.95	16	DSPT							
4.50-4.95	17	B							
5.70	18	D							
6.00-6.45	19	$UT_{(UT100)}$	100 blows 93% recovery						
6.45-6.55	20	D						(13.00)	
7.30	21	D							
7.50-7.95		SPT	N=20						
7.50-7.95	23	DSPT							
7.50-7.95	24	B							
8.70	25	D		1					

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
30/09/22	18:00	8.00	7.50	200	Dry
03/10/22	08:00	8.00	7.50	200	Dry
03/10/22	15:00	14.21	9.00	200	-

Chiselling / Slow Progress		
From	To	Duration (hh:mm)
13.50	14.00	01:00

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Drilled using 150mm diameter tools and casing.
4. Groundwater struck at 13.40m depth, rising to 8.40m depth after 20 minutes.
5. Borehole backfilled with bentonite upon completion.
6. SPT hammer AR3104-2022 (E_r = 64.00%) used.

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable percussion	**Dando 3000**	**Jonny Hutt**	**RStan**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**CP07**

Contract Ref:	Start: **30.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **03.10.22**	**78.15**	**E:445919.0 N:325053.4**	**2** of **2**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
9.00-9.45	26	$UT_{(UT100)}$	100 blows 100% recovery			Stiff, becoming very stiff, brown mottled grey slightly sandy slightly gravelly CLAY. Sand is fine and medium. Gravel is subangular to rounded fine to coarse of quartzite, chalk, mudstone, sandstone, and coal. Occasional cobbles (up to 100mm) of quartzite and sandstone. *(stratum copied from 0.30m from previous sheet)*			
9.45-9.55	27	D							
10.30	28	D							
10.50-10.95		SPT	N=43						
10.50-10.95	30	DSPT							
10.50-10.95	31	B							
11.70	32	D							
12.00-12.30	33	$UT_{(UT100)}$	150 blows 83% recovery						
12.30-12.40	34	D		1			64.85	13.30	
13.40	35	D				Light brownish grey slightly sandy clayey SILT. Sand is fine.	64.65	13.50	
13.50-13.78		SPT	21,4/32,40,28 for 40mm			Extremely weak reddish brown mottled grey MUDSTONE. (MERCIA MUDSTONE GROUP)		(0.71)	
13.50-13.78	37	DSPT					63.94	14.21	
13.50-13.80	38	B							
13.50	39	EW							
13.50	39	W							
14.00-14.21		SPT	25/54,46 for 60mm			Cable percussion borehole terminated at 14.21m depth.			
14.00-14.21	41	DSPT							

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable percussion	**Dando 3000**	**Jonny Hutt**	**RStan**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**CP08**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **08.09.22**	**81.68**	**E:445842.6 N:325135.8**	**1** of **2**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
0.30-0.50	1	B				TOPSOIL		(0.85)	
0.50	2	D							
0.50	3	ES	1xT+1xJ+1xV				80.83	0.85	
1.00-1.20	4	B				Reddish brown gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse of quartzite and rare chalk.		(0.55)	
1.00	5	D							
1.00	6	ES	1xT+1xJ+1xV				80.28	1.40	
						Very stiff brown slightly sandy gravelly SILT. Sand is fine to coarse. Gravel is subangular to subrounded fine and medium of chalk and quartzite.	79.88	1.80	
2.00-2.50	13	B				Stiff brown mottled grey and locally reddish brown slightly gravelly CLAY. Gravel is subangular to subrounded fine and medium of quartzite and chalk.		(0.90)	
2.50	14	D					78.98	2.70	
						Very stiff thinly and thickly laminated brown mottled grey CLAY.		(0.50)	
3.00-3.45	15	$U_{(100)}$	49 blows 100% recovery				78.48	3.20	
3.50	16	D				Brown slightly gravelly clayey fine to coarse SAND. Gravel is subangular to subrounded fine to coarse of mixed lithologies including quartzite.		(0.80)	
							77.68	4.00	
4.00-4.45		SPT	N=23			Stiff thinly and thickly laminated brown mottled grey slightly sandy, locally slightly gravelly, CLAY. Gravel is subangular to subrounded of mixed lithologies.			
4.00-4.45	18	DSPT							
4.00-4.50	19	B							
4.50	20	D							
5.00-5.50	21	B						(2.10)	
5.50	22	D							
							75.58	6.10	
6.00-6.45		SPT	N=25						
6.00-6.45	24	DSPT							
6.00-6.50	25	B				Stiff brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of mixed lithologies including quartzite.	75.23	6.45	
6.50	26	D				Medium dense reddish brown gravelly silty fine and medium SAND. Gravel is subangular to subrounded fine to coarse of mixed lithologies including quartzite.			
7.00	27	D				. . . 7.10-8.50m: with fine gravel to cobble size pockets (<100mm x 70mm x 30mm) of yellowish brown sand and some fine to coarse gravel size pockets of grey clay.		(2.05)	
7.50-7.95		SPT	N=27	1					
7.50-7.95	29	DSPT							
7.50-8.00	30	B							
8.00	31	D		1			73.18	8.50	
8.50	32	D				*Description on next sheet*		(1.00)	

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
06/09/22	18:00	2.00	2.00	150	-
07/09/22	07:30	2.00	2.00	150	-
07/09/22	17:00	8.50	8.50	150	-
08/09/22	08:00	8.50	8.50	150	5.80
07/09/22	15:00	12.63	12.00	150	-

Chiselling / Slow Progress		
From	To	Duration (hh:mm)
9.30	12.30	05:00

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Drilled using 150mm diameter tools and casing.
4. No groundwater encountered during drilling.
5. Borehole backfilled with bentonite on completion.
6. SPT hammer AR3469-2022 (E_r = 84.00%) used.

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable percussion	**Dando 2000 Mark 2**	**Ben Wilson**	**RStan**	RL

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**CP08**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **08.09.22**	**81.68**	**E:445842.6 N:325135.8**	**2** of **2**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
9.00-9.45		SPT	N=37			Dense brown mottled reddish brown slightly gravelly silty fine to coarse SAND with occasional bands (up to 50mm) of strong grey siltstone. Gravel is subangular to subrounded fine to coarse of quartzite and siltstone.			
9.00-9.45	34	DSPT							
9.00-9.50	35	B					72.18	9.50	
9.50	36	D				*(stratum copied from 8.50m from previous sheet)*			
							71.78	9.90	
9.90-10.22		SPT	4,10/13,28,9 for 20mm			Stiff grey mottled reddish brown slightly sandy slightly gravelly CLAY interbedded with reddish brown gravelly clayey fine to coarse SAND. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of quartzite and rare siltstone.			
9.90-10.22	38	DSPT							
9.90-10.20	39	B							
10.20	40	D							
10.50	41	D				Very stiff brown mottled reddish brown sandy gravelly CLAY with occasional to frequent pockets (up to 20mm) of grey silty clay. Sand is fine to coarse. Gravel is subangular to subrounded fine and medium of mixed lithologies including quartzite and coal.		(2.73)	
11.00-11.45		SPT	N=69						
11.00-11.45	43	DSPT							
11.00-11.50	44	B							
11.50-11.91		SPT	10,13/19,24,32,25 for 30mm						
11.50-11.91	46	DSPT							
11.50-12.00	47	B							
12.00	48	D							
12.10-12.50		SPT	10,14/21,26,26,27 for 25mm						
12.10-12.50	50	DSPT					69.05	12.63	
12.30	51	D				Cable percussion borehole terminated at 12.63m depth.			
12.30-12.63		SPT	12,12/25,40,35 for 30mm						
12.30-12.63	53	DSPT							

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable percussion	**Dando 2000 Mark 2**	**Ben Wilson**	**RStan**	RL

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**CP09**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **29.09.22**	**77.24**	**E:445693.6 N:325345.4**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
0.00-0.50	1	B				TOPSOIL	76.94	0.30	
0.01	101	ES							
0.20	2	D				Stiff reddish brown mottled grey sandy silty CLAY with pockets of siltstone. Sand is fine to coarse. Gravel is angular to subangular fine of mudstone.			
0.50-1.00	3	D							
0.50	102	ES							
0.70	4	D							
1.00	103	ES							
1.20-1.65		SPT	N=11						
1.20-1.65	5	DSPT							
1.20-1.65	6	B						(3.00)	
1.75	7	D							
2.00-2.45	8	UT	28 blows 80% recovery						
2.45	9	D							
3.00-3.29		SPT	7,8/10,90 for 60mm				73.94	3.30	
3.00-3.45	10	DSPT				Stiff grey mottled reddish brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of mixed lithologies including sandstone, siltstone, and mudstone. With low cobble content of siltstone.	73.49	3.75	
3.00-3.45	11	B							
3.30	104	ES							
3.75	12	D							
3.75	105	ES							
4.00-4.45		SPT	N=31			Firm reddish brown mottled grey slightly sandy slightly gravelly CLAY. Sand is fine. Gravel is angular to subangular fine of mixed lithologies including siltstone and mudstone.			
4.00-4.45	13	DSPT							
4.00-4.45	14	B							
4.75	15	D						(2.35)	
5.00-5.45		SPT	N=22						
5.00-5.45	16	DSPT							
5.00-5.45	17	B							
5.75	18	D					71.14	6.10	
6.00-6.45		SPT	N=78			Stiff to very stiff reddish brown gravelly sandy CLAY. Gravel is angular to subangular fine to coarse of mudstone and occasionally grey siltstone. (MERCIA MUDSTONE GROUP)			
6.00-6.45	19	DSPT							
6.00-6.45	20	B							
7.00	21	D						(2.55)	
7.50-7.95		SPT	N=81						
7.50-7.95	22	DSPT							
7.50-7.95	23	B							
8.00-8.36		SPT	25/31,24,26,21 for 60mm						
8.00	106	ES							
8.00-8.36	24	DSPT					68.59	8.65	
8.40-8.65		SPT	25/26,32,34,8 for 0mm			Cable percussion borehole terminated at 8.65m depth.			
8.40-8.65	25	DSPT							

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
29/09/22	17:00	8.65	8.40	150	Dry

Chiselling / Slow Progress		
From	To	Duration (hh:mm)
7.60	8.00	00:30
8.00	8.40	00:30

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Borehole drilled using 150mm tools and casing.
4. No groundwater encountered during drilling.
5. Borehole backfilled with bentonite upon completion.
6. SPT hammer DS5-1-22 (E_r = 61.00%) used.

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable percussion	**Dando 2000**	**Nathan Topping**	**GKalaher**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**CP10**

Contract Ref:	Start: **29.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **30.09.22**	**75.02**	**E:445636.3 N:325137.2**	**1** of **2**

Samples and In-situ Tests				Water	Backfill & Instrumentation	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
0.10-0.20	1	B				TOPSOIL	74.82	0.20	
0.10	2	D				Stiff brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of mixed lithologies including sandstone, mudstone, and quartzite.		(0.60)	
0.10	101	ES	1xT+1xJ+1xV						
0.30-0.60	3	B					74.22	0.80	
0.30	102	ES	1xT+1xJ+1xV			Stiff light brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of sandstone, siltstone, mudstone, and chalk.			
0.50	4	D							
0.90-1.20	5	B							
0.90	103	ES	1xT+1xJ+1xV					(2.00)	
1.00	6	D							
1.50-1.95		SPT	N=25						
1.50-1.95	8	DSPT							
1.50-1.95	9	B							
2.50-2.95	10	$UT_{(UT100)}$	125 blows 100% recovery				72.22	2.80	
2.95-3.05	11	D				Stiff fissured greyish brown slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of mixed lithologies including sandstone and siltstone.			
3.00-3.30	12	B							
3.00	104	ES	1xT+1xJ+1xV					(1.20)	
3.50-3.95		SPT	N=37						
3.50-3.95	14	DSPT							
3.50-3.95	15	B					71.02	4.00	
4.00	16	D				Stiff brown mottled grey sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine of mixed lithologies including sandstone, siltstone, and flint.			
4.00-4.40	17	B							
4.00	105	ES	1xT+1xJ+1xV						
4.50-4.95	18	$UT_{(UT100)}$	150 blows 100% recovery						
4.95-5.10	19	D							
5.45		EW						(3.30)	
5.50	20	D							
6.00-6.12		SPT	25/100 for 75mm						
6.00-6.12	22	DSPT							
6.00-6.50	23	B							
7.00	24	D					67.72	7.30	
7.30	106	ES	1xT+1xJ+1xV			Stiff reddish brown mottled grey gravelly sandy silty CLAY. Sand is fine. Gravel is fine of mudstone and siltstone.			
7.50-7.83		SPT	6,10/25,25,50 for 30mm					(0.70)	
7.50-7.83	26	DSPT					67.02	8.00	
7.50-8.00	27	B							
8.00-8.50	28	B				Reddish brown sandy subangular to subrounded predominantly coarse GRAVEL of mixed lithologies including sandstone, mudstone, siltstone, and flint. Sand is fine to coarse. With low cobble content of flint.	66.52	(0.50) 8.50	
8.50-9.00	29	B							
8.50	30	D							
8.50	107	ES	1xT+1xJ+1xV			*Description on next sheet*			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
29/09/22	17:00	7.83	7.50	150	7.30
30/09/22	08:00	7.83	7.50	150	5.10
30/09/22	13:00	10.84	9.00	150	4.40

Chiselling / Slow Progress		
From	To	Duration (hh:mm)
6.00	6.20	00:30
8.00	8.50	01:00

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Borehole drilled using 150mm tools and casing.
4. Not enough sample between 7.30 and 7.50 to take geotechnical sample.
5. Groundwater strike at 10.30m. Rose to 7.10m in 20 minutes.
6. Borehole installed with 50mm standpipe on

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable percussion	**Dando 2500**	**Robert Foster**	**RStan**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**CP10**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **30.09.22**	**75.02**	**E:445636.3 N:325137.2**	**2** of **2**

Samples and In-situ Tests				Water	Backfill & Instru-mentation	Description of Strata	Reduced Level	Depth (Thick ness)	Material Graphic Legend
Depth	No	Type	Results						
9.00-9.29		SPT	8,16/40,60 for 65mm			Stiff to very stiff reddish brown gravelly sandy silty CLAY. Sand is fine. Gravel is fine angular to subangular of mudstone. Occasional bands of grey siltstone. (MERCIA MUDSTONE GROUP) *(stratum copied from 8.50m from previous sheet)*		(2.34)	
9.00-9.29	32	DSPT							
9.00-9.50	33	B							
10.00	34	D							
10.50-10.84		SPT	13,12/20,30,50 for 70mm				64.18	10.84	
10.50-10.84	36	DSPT				Cable percussion borehole terminated at 10.84m depth.			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

completion (response zone 1.00 to 8.60m).
7. SPT hammer AR1862-2022 (E_r = 65.00%) used.

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable percussion	**Dando 2500**	**Robert Foster**	**RStan**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**CP11**

Contract Ref:	Start: **30.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **03.10.22**	**68.97**	**E:445598.3 N:324907.3**	**1** of **1**

Samples and In-situ Tests				Water	Backfill & Instru-mentation	Description of Strata	Reduced Level	Depth (Thick ness)	Material Graphic Legend
Depth	No	Type	Results						
0.00-0.50	1	B				TOPSOIL	68.67	0.30	
0.00	2	D							
0.01	101	ES				Stiff reddish brown mottled grey slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine of mixed lithologies including sandstone, siltstone, and mudstone.			
0.30	102	ES							
0.50-1.00	3	B							
0.70	4	D							
1.00-1.65	103	ES							
1.20-1.65		SPT	N=29						
1.20-1.65	5	DSPT							
1.20-1.65	6	B							
1.75	7	D							
2.00-2.45	8	UT	29 blows 40% recovery						
2.65	9	D							
3.00-3.45		SPT	N=67					(5.90)	
3.00-3.45	10	DSPT							
3.00-3.45	11	B							
3.75	12	D							
4.00-4.45		SPT	N=94						
4.00-4.45	13	DSPT							
4.00-4.45	14	B							
4.75	15	D							
5.00-5.45		SPT	N=90						
5.00-5.45	16	DSPT							
5.00-5.45	17	B							
5.75	18	D							
6.00-6.45		SPT	9,7/13,15,27,45 for 70mm				62.77	6.20	
6.00-6.45	19	DSPT				Stiff to very stiff reddish brown gravelly sandy silty CLAY. Sand is fine. Gravel is angular to subangular of mudstone. Occasional pockets of grey siltstone. (MERCIA MUDSTONE GROUP)			
6.00-6.45	20	B						(1.09)	
6.75	21	D							
7.00-7.29		SPT	16,9/41,44,15 for 10mm				61.68	7.29	
7.00-7.29	22	DSPT				Cable percussion borehole terminated at 7.29m depth.			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
30/09/22	17:00	6.00	6.00	150	Dry
03/10/22	08:00	6.00	6.00	150	-
03/10/22	11:00	7.29	7.00	150	-

Chiselling / Slow Progress		
From	To	Duration (hh:mm)
3.50	3.90	00:40
6.50	7.00	00:30

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Borehole drilled using 150mm tools and casing.
4. No groundwater encountered during drilling.
5. Borehole installed with 50mm standpipe upon completion (response zone 1.00m to 6.20m).
6. SPT hammer DS5-1-22 (E_r = 61.00%) used.

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable percussion	**Dando 2000**	**Nathan Topping**	**RStan**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**CP12**

Contract Ref:	Start: **30.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **30.09.22**	**89.36**	**E:446517.1 N:325155.1**	**1** of **2**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
0.00-0.50	1	B				TOPSOIL	88.96	0.40	
0.10-0.10	101	ES							
0.30-0.30	2	B							
0.50-1.00	3	B				Firm dark reddish brown mottled grey gravelly sandy silty CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of mixed lithologies including sandstone, limestone, and quartzite.		(4.50)	
0.50-0.50	102	ES							
0.70	4	D							
1.00-1.00	103	ES							
1.20-1.65		SPT	N=13						
1.20-1.65	5	DSPT							
1.20-1.65	6	B							
1.75-1.75	7	D							
2.00-2.45	8	UT							
2.75-2.75	9	D							
3.00-3.45		SPT	N=8						
3.00-3.45	10	DSPT							
3.00-3.45	11	B							
3.75-3.75	12	D							
4.00-4.45	13	UT							
4.65-4.65	14	UT					84.46	4.90	
5.00-5.45		SPT	N=4			Soft orangish brown gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of mixed lithologies including sandstone and siltstone.		(1.30)	
5.00-5.45	15	NR							
5.00-5.45	16	B							
5.75	17	D							
6.00-6.45		SPT	N=36				83.16	6.20	
6.00-6.45	18	DSPT							
6.00-6.50	19	B				Stiff to very stiff reddish brown gravelly sandy silty CLAY. Sand is fine. Gravel is angular to subangular fine to coarse of mudstone and occasionally siltstone. (MERCIA MUDSTONE GROUP)		(3.16)	
7.00	20	D							
7.50-7.94		SPT	4,10/16,24,29,31 for 60mm						
7.50-7.94	21	DSPT							
7.50-8.00	22	B							
8.50	23	D							

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
05/10/22	17:00	9.36	9.00	150	-

Chiselling / Slow Progress		
From	To	Duration (hh:mm)
8.80	9.00	00:30

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Borehole drilled using 150mm tools and casing.
4. No groundwater encountered during drilling.
5. Borehole backfilled with bentonite on completion.
6. SPT hammer DS5-1-22 (E_r = 61.00%) used.

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable percussion	**Dando 2000**	**Nathan Topping**	**RStan**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**CP12**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**30.09.22**	**89.36**	**E:446517.1 N:325155.1**	**2** of **2**
	End: **30.09.22**			

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
9.00-9.36		SPT	10,11/26,37,37 for 60mm				80.00	9.36	
9.00	104	ES				Cable percussion borehole terminated at 9.36m depth.			
9.00-9.36	24	DSPT							

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable percussion	**Dando 2000**	**Nathan Topping**	**RStan**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**CP13**

Contract Ref:	Start: **05.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **05.10.22**	**77.14**	**E:446416.1 N:324961.0**	**1** of **2**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
0.10	1	D				TOPSOIL	76.84	0.30	
0.10-0.20	2	B							
0.20	101	ES	1xT+1xJ+1xV			Soft light orangish brown slightly gravelly sandy SILT. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of sandstone and mudstone.			
0.40	102	ES	1xT+1xJ+1xV						
0.60	3	D							
0.60-0.80	4	B						(1.40)	
1.20	5	D							
1.50-1.95		SPT	N=10				75.44	1.70	
1.50-1.95	7	B							
1.80-2.00	8	B				Soft reddish brown slightly sandy gravelly CLAY. Sand is fine and medium of mudstone. Gravel is subangular to rounded fine to coarse of sandstone, mudstone, and siltstone.		(0.60)	
1.80	103	ES	1xT+1xJ+1xV				74.84	2.30	
2.40	9	D				Firm light orangish brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of sandstone and mudstone.			
2.40	104	ES	1xT+1xJ+1xV						
2.50-2.95		SPT	N=9						
2.50-2.95	11	DSPT							
2.50-2.95	12	B						(1.70)	
3.00	23	W							
3.30	13	D							
3.50-3.95		SPT	N=12						
3.50-3.95	15	DSPT							
3.50-3.95	16	B					73.14	4.00	
4.00-4.50	17	B				Loose multicolored (greenish blue, red, white, grey) very sandy clayey subangular to rounded fine to coarse GRAVEL of siltstone, mudstone, sandstone, quartzite, and chalk with low cobble content. Sand is fine to coarse. Cobbles (up to 100mm) are subrounded.			
4.50-4.95		SPT(c)	N=5						
4.50-4.95	19	B						(1.60)	
5.70	20	D					71.54	5.60	
6.00-6.45		SPT	N=31			Stiff becoming very stiff reddish brown mottled grey slightly sandy gravelly CLAY. Sand is fine to coarse of mudstone. Gravel is subrounded to rounded of siltstone, sandstone, and mudstone. Occasional bluish grey silt beds (up to 50mm).		(0.60)	
6.00-6.45	22	DSPT					70.94	6.20	
6.00-6.20	24	B				Medium dense multicolored (greenish blue, red, white, grey) slightly sandy clayey rounded to subangular fine to coarse GRAVEL of siltstone, mudstone, sandstone, quartzite, and chalk with low cobble content. Sand is fine to coarse. Cobbles (up to 100mm) are subrounded of siltstone, quartzite, and sandstone.			
6.20-6.45	25	B						(1.40)	
7.30	26	D					69.54	7.60	
7.50-7.86		SPT(c)	6,9/11,20,19 for 60mm			Extremely weak light reddish brown mottled grey MUDSTONE. (MERCIA MUDSTONE GROUP)			
7.50-7.95	28	B							
8.30	29	D						(1.64)	
8.50-8.72		SPT	25/42,58 for 70mm						
8.50-8.72	31	DSPT							

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
05/10/22	18:36	6.00	6.00	200	4.10
06/10/22	07:35	6.00	6.00	200	3.10
06/10/22	16:00	9.24	8.50	200	-

Chiselling / Slow Progress		
From	To	Duration (hh:mm)
5.80	6.00	00:30
8.50	9.00	01:00

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Borehole drilled using 200mm tools and casing.
4. No groundwater encountered during drilling.
5. Borehole backfilled with bentonite on completion.
6. SPT hammer AR3104-2022 (E_r = 64.00%) used.

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable percussion	**Dando 3000**	**Jonny Hutt**	**RStan**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**CP13**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**05.10.22** End: **05.10.22**	**77.14**	**E:446416.1 N:324961.0**	**2** of **2**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
8.50-9.00	32	B					67.90	9.24	
9.00-9.24		SPT	20,5/34,56,10 for 10mm			Cable percussion borehole terminated at 9.24m depth.			
9.00-9.24	34	DSPT							

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable percussion	**Dando 3000**	**Jonny Hutt**	**RStan**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**CP14**

Contract Ref:	Start: **04.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **04.10.22**	**78.39**	**E:446524.3 N:324946.9**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
0.00-0.50	1	B				TOPSOIL	77.99	0.40	
0.10	101	ES							
0.30-0.50	2	D							
0.50-1.00	4	B				Stiff dark reddish brown gravelly sandy CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of mixed lithologies including sandstone, siltstone, mudstone, and quartz.	77.49	(0.50)	
0.50	102	ES						0.90	
0.70	3	D							
1.00	103	ES				Stiff reddish brown mottled grey slightly gravelly sandy CLAY. Gravel is angular to subangular fine of mixed lithologies including siltstone and mudstone.			
1.20-1.65	5	UT							
1.65	6	UT							
2.00-2.45		SPT	N=16						
2.00-2.45	7	DSPT						(2.90)	
2.00-2.45	8	B							
2.75	9	D							
3.00-3.45		SPT	N=17						
3.00-3.45	10	DSPT							
3.00-3.45	11	B					74.59	3.80	
3.75	12	D				Firm orangish brown occasionally gravelly sandy silty CLAY. Sand is fine. Gravel is subangular to subrounded fine to coarse of mixed lithologies including sandstone and siltstone.			
3.80	104	ES						(0.60)	
3.80	105	ES							
4.00-4.45		SPT	N=26				73.99	4.40	
4.00-4.45	14	B				Medium dense orangish brown very sandy silty angular to subangular fine to coarse GRAVEL of predominantly flint with low cobble content. Sand is fine.		(0.90)	
5.00-5.45		SPT(c)	N=42						
5.00-5.45	16	B					73.09	5.30	
6.00-6.45		SPT	N=55			Very stiff reddish brown slightly sandy slightly gravelly silty CLAY with low cobble content. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of mudstone. (MERCIA MUDSTONE GROUP)		(1.60)	
6.00-6.45	17	B							
6.40-6.45	18	B					71.49	6.90	
7.00	19	D				Very stiff reddish brown gravelly sandy silty CLAY with occasional pockets of siltstone. Gravel is angular to subangular fine of mudstone. (MERCIA MUDSTONE GROUP)			
7.50-7.95		SPT	6,11/13,20,32,35 for 70mm					(1.50)	
7.50-7.95	20	DSPT							
7.50-7.95	21	B							
8.00-8.40		SPT	10,14/18,28,41,13 for 20mm				69.99	8.40	
8.00-8.40	22	DSPT				Cable percussion borehole terminated at 8.40m depth.			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
04/10/22	16:00	8.40	8.00	150	-

Chiselling / Slow Progress		
From	To	Duration (hh:mm)
4.50	5.00	00:50
7.50	8.00	00:30

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Borehole drilled using 200mm tools and casing.
4. No groundwater encountered during drilling.
5. Borehole backfilled with bentonite on completion.
6. SPT hammer AR3104-2022 (E_r = 64.00%) used.

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable percussion	**Dando 2000**	**Jonny Hutt**	**RStan**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**CP15**

Contract Ref:	Start: **03.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **03.10.22**	**71.98**	**E:446551.5 N:324799.4**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
0.00-0.50	1	B				TOPSOIL	71.78	0.20	
0.10	101	ES				Stiff reddish brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of mixed lithologies including sandstone, siltstone, and quartz.			
0.30	2	D							
0.50-1.00	3	B							
0.50	102	ES						(1.10)	
0.70	4	D							
1.00	103	ES							
1.20-1.65	5	UT					70.68	1.30	
1.30	104	ES				Stiff reddish brown mottled grey slightly gravelly sandy silty CLAY. Sand is fine. Gravel is angular to subangular fine to coarse of mixed lithologies including siltstone and mudstone.			
1.65	6	D						(1.00)	
2.00-2.45		SPT	N=9				69.68	2.30	
2.00-2.45	7	DSPT							
2.00-2.45	8	B				Stiff to very stiff reddish brown slightly sandy slightly gravelly silty CLAY. Gravel is angular to subangular fine to coarse of mudstone. Occasional pockets of grey mudstone and siltstone. (MERCIA MUDSTONE GROUP)			
2.30	105	ES							
2.75	9	D							
3.00-3.45		SPT	N=12						
3.00-3.45	10	DSPT							
3.00-3.45	11	B							
3.75	12	D							
4.00-4.45		SPT	N=75						
4.00-4.45	13	DSPT							
4.00-4.45	14	B							
4.75	15	D							
5.00-5.45		SPT	N=48						
5.00-5.45	16	DSPT						(5.96)	
5.00-5.45	17	B							
5.75	18	D							
6.00-6.45		SPT	N=38						
6.00-6.45	19	DSPT							
6.00-6.45	20	B							
7.00	21	D							
7.50-7.86		SPT	10,15/21,32,47 for 60mm						
7.50-7.95	22	DSPT							
7.50-8.00	23	B							
8.00-8.26		SPT	14,11/30,48,22 for 20mm				63.72	8.26	
8.00	106	ES				Cable percussion borehole terminated at 8.26m depth.			
8.00-8.26	24	DSPT							

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
03/10/22	16:00	8.26	8.00	150	Dry

Chiselling / Slow Progress		
From	To	Duration (hh:mm)
7.50	8.00	00:30

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Borehole drilled using 150mm tools and casing.
4. No groundwater encountered during drilling.
5. Borehole backfilled with bentonite upon completion.
6. SPT hammer DS5-1-22 (E_r = 61.00%) used.

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable percussion	**Dando 2000**	**Nathan Topping**	**RStan**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**CP16**

Contract Ref:	Start: **04.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **04.10.22**	**77.24**	**E:446244.3 N:324933.8**	**1** of **2**

Samples and In-situ Tests				Water	Backfill & Instrumentation	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
0.10-0.30	1	B				TOPSOIL	76.89	0.35	
0.10	101	ES	1xT+1xJ+1xV						
0.40-0.70	2	B				Stiff orangish brown gravelly sandy silty CLAY. Gravel is subangular to subrounded fine to coarse of mixed lithologies including sandstone, quartz, chalk, and siltstone.			
0.50	3	D							
0.50	102	ES	1xT+1xJ+1xV						
0.90-1.20	4	B							
1.00	5	D							
1.00	103	ES	1xT+1xJ+1xV						
1.50-1.94		SPT	N=49					(3.05)	
1.50-1.94	7	DSPT							
1.50-1.94	8	B							
2.50-2.95	9	$UT_{(UT100)}$	100 blows 100% recovery						
2.95-3.10	10	D					73.84	3.40	
3.40	11	D				Very stiff dark reddish brown mottled grey gravelly sandy silty CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of mixed lithologies including sandstone, siltstone, and mudstone.			
3.40	104	ES							
3.50-3.95		SPT	N=19						
3.50-3.95	13	DSPT							
3.50-3.95	14	B							
4.50-4.95	15	$UT_{(UT100)}$	100 blows 100% recovery	▽1				(2.35)	
5.00	16	D							
5.50	17	D		▼1			71.49	5.75	
5.80	105	ES	1xT+1xJ+1xV			Stiff to very stiff grey sandy silty CLAY. Sand is fine to coarse.			
6.00-6.45		SPT	N=65						
6.00-6.45	19	DSPT							
6.00-6.45	20	B							
7.00	21	D						(3.25)	
7.50-7.95	22	$UT_{(UT100)}$	125 blows 100% recovery						
8.00	23	D							
8.50	24	D					68.24	9.00	

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
04/10/22	17:00	3.10	2.50	150	Dry
05/10/22	08:00	3.10	2.50	150	Dry
05/10/22	17:15	11.15	10.50	150	-
06/10/22	08:00	11.15	10.50	150	9.25
06/10/22	11:15	11.15	10.50	150	-

Chiselling / Slow Progress

From	To	Duration (hh:mm)
10.50	11.00	01:00

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Borehole drilled using 150mm tools and casing.
4. 15 litres of water added between 1.20m and 2.50m to aid drilling.
5. Groundwater strike at 5.75m rising to 5.00m after 20 minutes.
6. Borehole installed with 50mm standpipe on

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable percussion	**Dando 2500**	**Robert Foster**	**RStan**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**CP16**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**04.10.22** End: **04.10.22**	**77.24**	**E:446244.3 N:324933.8**	**2** of **2**

Samples and In-situ Tests				Water	Backfill & Instru-mentation	Description of Strata	Reduced Level	Depth (Thick ness)	Material Graphic Legend
Depth	No	Type	Results						
9.00-9.45		SPT	N=48			Stiff reddish brown mottled grey gravelly sandy silty CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of mixed lithologies including sandstone, siltstone, and mudstone. (MERCIA MUDSTONE GROUP)			
9.00	106	ES	1xT+1xJ+1xV						
9.00-9.45	26	DSPT							
9.00-9.45	27	B						(1.00)	
							67.24	10.00	
10.00-10.50	28	B				Stiff to very stiff reddish brown gravelly sandy silty CLAY. Sand is fine. Gravel is angular to subangular fine to coarse of mudstone. Occasional bands of grey siltstone. (MERCIA MUDSTONE GROUP)			
10.00	107	ES	1xT+1xJ+1xV						
10.50-10.70		SPT	25/50,50 for 55mm					(1.15)	
10.50-10.70	30	DSPT							
10.50-11.00	31	B							
11.00-11.15		SPT	25/60,40 for 40mm				66.09	11.15	
11.00-11.15	33	DSPT				Cable percussion borehole terminated at 11.15m depth.			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

completion (response zone 5.75m to 9.10m).
7. SPT hammer AR1862-2022 (E_r = 65.00%) used.

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable percussion	**Dando 2500**	**Robert Foster**	**RStan**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**CP17**

Contract Ref:	Start: **15.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **05.10.22**	**82.31**	**E:446263.8 N:325045.2**	**1** of **2**

Samples and In-situ Tests				Water	Backfill & Instru-mentation	Description of Strata	Reduced Level	Depth (Thick ness)	Material Graphic Legend
Depth	No	Type	Results						
0.00	1	D				TOPSOIL	82.01	0.30	
0.00-0.00	2	B							
0.10	1	D				Firm reddish brown slightly sandy gravelly CLAY. Sand is fine and medium. Gravel is subangular to rounded fine to coarse of quartzite, sandstone, mudstone, and chalk. Frequent bluish grey silt beds (up to 50mm).			
0.10-0.20	2	B							
0.10	101	ES							
0.20	101	ES	1xT+1xJ+1xV						
0.40	102	ES	1xT+1xJ+1xV						
0.60	3	D							
0.60-0.80	4	B							
1.20	5	D							
1.50-1.70	6	$UT_{(UT100)}$	100 blows 100% recovery						
1.70-1.80	7	D							
2.30	8	D							
2.50-2.95		SPT	N=25			. . . Below 2.50m: becoming stiff.		(5.10)	
2.50-2.95	10	DSPT							
2.50-2.95	11	B							
3.30	12	D							
3.50-3.95	13	$UT_{(UT100)}$	100 blows 89% recovery			. . . Below 3.50m: becoming very stiff.			
3.50-3.95	14	D							
3.95-4.05	14	D							
4.30	15	D							
4.50-4.95		SPT	N=35						
4.50-4.95	17	DSPT							
4.50-4.95	18	B					76.91	5.40	
5.50	103	ES	1xT+1xJ+1xV			Stiff light reddish brown mottled grey slightly gravelly sandy silty CLAY with low cobble content. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of mudstone and sandstone. Cobbles (up to 80mm) are of mudstone and sandstone. Frequent bluish grey siltstone beds (up to 50mm).			
5.70	19	D							
6.00-6.45		SPT	N=25						
6.00-6.45	21	DSPT							
6.00-6.45	22	B							
7.30	23	D				. . . Below 7.30m: very stiff, slightly sandy slightly gravelly. Gravels decreasing in size.			
7.50-7.95	24	$UT_{(UT100)}$	80 blows 89% recovery						
7.95-8.05	25	D						(5.30)	
8.70	26	D							

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
04/10/22	17:45	16.00	16.00	200	12.10
05/10/22	08:15	16.00	16.00	200	10.40
05/10/22	12:00	17.21	16.50	200	-

Chiselling / Slow Progress		
From	To	Duration (hh:mm)
16.60	17.00	01:00

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Borehole drilled using 150mm tools and casing.
4. Water added between 15.00m and 16.00m to aid drilling.
5. No groundwater encountered during drilling.
6. Borehole installed with 50mm standpipe upon completion (response zone 14.00m to 17.21m).

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable percussion	**Dando 3000**	**Jonny Hutt**	**RStan**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**CP17**

Contract Ref:	Start: **15.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **05.10.22**	**82.31**	**E:446263.8 N:325045.2**	**2** of **2**

Samples and In-situ Tests				Water	Backfill & Instru-mentation	Description of Strata	Reduced Level	Depth (Thick ness)	Material Graphic Legend
Depth	No	Type	Results						
9.00-9.45		SPT	N=44			Stiff light reddish brown mottled grey slightly gravelly sandy silty CLAY with low cobble content. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of mudstone and sandstone. Cobbles (up to 80mm) are of mudstone and sandstone. Frequent bluish grey siltstone beds (up to 50mm). *(stratum copied from 5.40m from previous sheet)*			
9.00-9.45	28	DSPT							
9.00-9.45	29	B							
10.30	30	D							
10.50-10.95		SPT	N=60				71.61	10.70	
10.50-10.95	32	DSPT							
10.50-10.95	33	B				Firm to stiff greyish brown slightly sandy slightly gravelly SILT with low cobble content. Sand is fine and medium. Gravel is angular to subrounded fine and medium of siltstone. Frequent bluish grey siltstone beds (up to 80mm).			
10.80	104	ES	1xT+1xJ+1xV						
11.70	34	D							
12.00-12.45		SPT	N=58						
12.00-12.45	36	DSPT						(4.00)	
12.00-12.45	37	B							
13.30	38	D							
13.50-13.95		SPT	N=56						
13.50-13.95	40	DSPT							
13.50-13.95	41	B					67.61	14.70	
14.70	42	D				Dense multicolored (greenish blue, red, white, grey) sandy clayey subangular to rounded fine to coarse GRAVEL of siltstone, mudstone, sandstone, quartzite, and chalk with low cobble content. Sand is fine to coarse. Cobbles (up to 100mm) are subrounded of siltstone, quartzite, and sandstone.			
15.00-15.45		SPT(c)	N=48						
15.00-15.45	44	B							
16.30	45	D						(2.51)	
16.50-16.88		SPT	8,17/26,32,42 for 75mm						
16.50-16.88	47	DSPT							
16.50-16.90	48	B							
17.00-17.21		SPT	25/46,54 for 65mm				65.10	17.21	
17.00-17.21	50	DSPT				Cable percussion borehole terminated at 17.21m depth.			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

7. SPT hammer AR3104-2022 (E_r = 64.00%) used.

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable percussion	**Dando 3000**	**Jonny Hutt**	**RStan**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**CP18**

Contract Ref:	Start: **04.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **04.10.22**	**76.81**	**E:446057.8 N:324763.5**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
0.10-0.30	1	B				TOPSOIL	76.46	0.35	
0.10	101	ES	1xT+1xJ+1xV						
0.40-0.70	2	B				Stiff to very stiff reddish brown slightly sandy slightly gravelly silty CLAY. Sand is fine to coarse. Gravel is angular to subangular fine of mudstone. Occasional pockets of grey siltstone. (MERCIA MUDSTONE GROUP)		(4.50)	
0.50	3	D							
0.50	102	ES	1xT+1xJ+1xV						
0.90-1.20	4	B							
1.00	5	D							
1.00	103	ES	1xT+1xJ+1xV						
1.50-1.95		SPT	N=24						
1.50-1.95	7	DSPT							
1.50-1.95	8	B							
2.50-2.95	9	$UT_{(UT100)}$	125 blows 100% recovery						
3.00	10	D							
3.50-3.91		SPT	6,10/16,25,36,23 for 35mm						
3.50-3.91	12	DSPT							
3.50-3.91	13	B							
4.50-4.85		SPT	15,10/17,27,56 for 70mm						
4.50	104	ES	1xT+1xJ+1xV				71.96	4.85	
4.50-4.85	15	DSPT				Cable percussion borehole terminated at 4.85m depth.			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
04/10/22	13:15	4.85	3.00	150	Dry

Chiselling / Slow Progress		
From	To	Duration (hh:mm)
3.50	4.50	01:00

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Borehole drilled using 150mm tools and casing.
4. 15 litres of water added between 1.20m and 4.50m to aid drilling.
5. No groundwater encountered during drilling.
6. Borehole backfilled with bentonite upon completion.
7. SPT hammer AR1862-2022 (E_r = 65.00%) used.

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable percussion	**Dando 2500**	**Robert Foster**	**RStan**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**CP19**

Contract Ref:	Start: **30.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **30.09.22**	**76.75**	**E:445967.7 N:324839.4**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
0.10-0.30	1	B				TOPSOIL	76.45	0.30	
0.10	101	ES	1xT+1xJ+1xV			Stiff dark orangish brown slightly gravelly silty CLAY. Sand is fine to coarse. Gravel is angular to subangular fine of mixed lithologies including sandstone and siltstone.		(0.60)	
0.40-0.70	2	B					75.85	0.90	
0.50	3	D							
0.50	102	ES	1xT+1xJ+1xV						
0.90-1.20	4	B				Stiff to very stiff reddish brown gravelly sandy silty CLAY with occasional bands of grey siltstone. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of mudstone. (MERCIA MUDSTONE GROUP)			
1.00	5	D							
1.00	103	ES	1xT+1xJ+1xV						
1.50-1.95		SPT	N=25						
1.50-1.95	7	DSPT							
1.50-1.98	8	B							
2.50-2.95	9	$UT_{(UT100)}$	100 blows 100% recovery					(3.97)	
3.00	10	D							
3.50-3.93		SPT	7,12/17,23,28,32 for 55mm						
3.50-3.93	12	DSPT							
3.50-3.93	13	B							
4.50-4.87		SPT	8,10/20,30,50 for 70mm				71.88	4.87	
4.50	104	ES	1xT+1xJ+1xV						
4.50-4.87	15	DSPT				Cable percussion borehole terminated at 4.87m depth.			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
03/10/22	16:30	4.87	3.00	150	Dry

Chiselling / Slow Progress		
From	To	Duration (hh:mm)
3.50	4.50	01:00

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Borehole drilled using 150mm tools and casing.
4. 20 litres of water between 1.20m to 4.50 meters to aid drilling.
5. No groundwater encountered during drilling.
6. Borehole backfilled with bentonite on completion.
7. SPT hammer AR1862-2022 (E_r = 65.00%) used.

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable percussion	**Dando 2500**	**Robert Foster**	**RStan**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**CP20**

Contract Ref:	Start: **30.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **03.10.22**	**75.98**	**E:445775.9 N:324732.4**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
0.10-0.30	1	B				TOPSOIL	75.58	0.40	
0.10	101	ES	1xT+1xJ+1xV						
0.40-0.70	2	B				Stiff dark orangish brown slightly gravelly sandy silty CLAY. Sand is fine to coarse. Gravel is angular to subangular fine of mixed lithologies including sandstone and siltstone.	75.18	0.80	
0.50	3	D							
0.50	102	ES	1xT+1xJ+1xV						
0.90-1.20	4	B				Stiff to very stiff reddish brown gravelly sandy silty CLAY with occasional bands of grey siltstone. Sand is fine. Gravel is angular to subangular fie to coarse of mudstone. (MERCIA MUDSTONE GROUP)			
1.00	5	D							
1.00	103	ES	1xT+1xJ+1xV						
1.50-1.95		SPT	N=26						
1.50-1.95	7	DSPT							
1.50-1.95	8	B							
2.50-2.95	9	$UT_{(UT100)}$	100 blows 67% recovery					(3.99)	
3.00	10	D							
3.50-3.91		SPT	5,12/20,25,35,20 for 35mm						
3.50-3.91	12	DSPT							
3.50-3.91	13	B							
4.50-4.79		SPT	10,15/40,60 for 75mm				71.19	4.79	
4.50-4.79	15	DSPT				Cable percussion borehole terminated at 4.79m depth.			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
03/10/22	13:00	4.79	3.00	150	Dry

Chiselling / Slow Progress		
From	To	Duration (hh:mm)
3.50	4.50	01:00

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Borehole drilled using 150mm tools and casing.
4. 20 litres of water added between 1.20m and 4.50m to aid drilling.
5. No groundwater encountered during drilling.
6. Borehole backfilled with bentonite on completion.
7. SPT hammer AR1862-2022 (E_r = 65.00%) used.

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable percussion	**Dando 2500**	**Robert Foster**	**RStan**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**CP21**

Contract Ref:	Start: **04.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **04.10.22**	**68.05**	**E:445752.9 N:324495.1**	**1** of **1**

Samples and In-situ Tests				Water	Backfill & Instru-mentation	Description of Strata	Reduced Level	Depth (Thick ness)	Material Graphic Legend
Depth	No	Type	Results						
0.10	1	ES				TOPSOIL	67.55	(0.50) 0.50	
0.50	2	ES				Firm light reddish brown slightly sandy gravelly CLAY. Sand is fine and medium of mudstone. Gravel is subangular to rounded fine to coarse of siltstone and mudstone. Occasional gravel size bluish grey silt pockets (up to 50mm). (MERCIA MUDSTONE GROUP)			
0.50	3	B							
0.50	4	D							
1.00	5	B							
1.00	6	D							
1.00	7	B							
1.20-1.65	8	U	35 blows						
1.70	9	D							
2.00-2.45		SPT	N=23						
2.00-2.45	10	DSPT							
2.00-2.50	11	B							
2.80	12	D						(4.88)	
3.00-3.45	13	U	120 blows						
3.70	14	D				. . . 3.60-4.80m: clay becoming stiff.			
4.00-4.45		SPT	N=100						
4.00-4.40	15	DSPT							
4.00-4.50	16	B							
4.80	17	D				. . . 4.80-5.30m: clay becoming very stiff.			
5.00-5.38		SPT	13,12/27,30,43 for 75mm						
5.00-5.38	18	DSPT					62.67	5.38	
						Cable percussion borehole terminated at 5.38m depth.			

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
03/10/22	18:00	5.38	5.00	150	Dry
04/10/22	08:00	5.38	5.00	150	Dry
04/10/22	11:00	5.38	5.00	150	Dry

Chiselling / Slow Progress

From	To	Duration (hh:mm)
4.70	5.00	00:30

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Borehole drilled using 150mm tools and casing.
4. No groundwater encountered during drilling.
5. Borehole installed with 50mm standpipe upon completion response zone 1.00m to 5.38m).
6. SPT hammer JB05-2022 (E_r = 68.00%) used.

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable percussion	**Dando 2500**	**Matthew Heath**	**RStan**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**CP22**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **04.10.22**	**71.96**	**E:445927.4 N:324535.6**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
0.10	101	ES				TOPSOIL.	71.46	(0.50) 0.50	
0.50	3	D				Very stiff reddish brown slightly sandy CLAY with frequent lithorelicts of mudstone and light grey siltstone. Locally grading to extremely weak mudstone. (MERCIA MUDSTONE GROUP)			
0.50	4	B							
0.50	102	ES							
1.00	5	D							
1.00	6	B							
1.20-1.65	7	U	50 blows						
1.70	8	D							
2.00-2.45		SPT	N=50						
2.00-2.50	10	B							
2.00-2.45	9	DSPT							
2.50	11	D						(4.80)	
3.00-3.45	12	U	150 blows						
4.00-4.42		SPT	5,7/10,20,33,37 for 40mm						
4.00-4.45	14	DSPT							
4.00-4.50	15	B							
4.50	16	D							
5.00-5.30		SPT	10,15/42,58 for 75mm				66.66	5.30	
5.00-5.30	17	DSPT				Cable percussion borehole terminated at 5.30m depth.			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
04/10/22	18:00	5.30	3.00	150	Dry

Chiselling / Slow Progress		
From	To	Duration (hh:mm)
4.50	5.00	00:30

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Borehole drilled using 150mm tools and casing.
4. No groundwater encountered during drilling.
5. Borehole backfilled with bentonite on completion.
6. SPT hammer JB05-2022 (E_f = 68.00%) used.

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable percussion	**Dando 2000**	**Mathew Heath**	**RStan**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**CP23**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **23.09.22**	**71.31**	**E:446025.7 N:324549.2**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
0.10	1	ES				TOPSOIL.		(0.60)	
0.50	2	B					70.71	0.60	
0.50	3	D				Very stiff reddish brown slightly sandy CLAY with occasional lithorelicts of mudstone. (MERCIA MUDSTONE GROUP)			
0.60	4	ES							
1.00	5	B							
1.00	6	D							
1.20-1.65	7	UT							
1.70	8	D							
2.00-2.45		SPT	N=22			. . . 2.00m: With occasional gravel size pocket/lense (<15mm) of greenish grey sandy silt.			
2.00-2.50	10	B							
2.00-2.45	9	DSPT						(4.00)	
2.80	11	D							
3.00-3.45	12	UT	140 blows						
3.50	13	D							
4.00-4.43		SPT	10,15/16,17,29,38 for 50mm						
4.00-4.43	14	DSPT							
4.00-4.50	15	B					66.71	4.60	
4.80-5.00	16	B				Very stiff reddish brown slightly sandy CLAY with frequent lithorelicts of mudstone and light grey siltstone. Locally grading to extremely weak mudstone. (MERCIA MUDSTONE GROUP)		(0.81)	
4.80	17	D							
5.00-5.41		SPT	15,10/22,21,25,32 for 45mm	1			65.90	5.41	
5.00-5.41	18	DSPT							
						Cable percussion borehole terminated at 5.41m depth.			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
22/09/22	18:00	2.00	1.50	150	Dry
23/09/22	08:00	2.00	1.50	150	Dry
23/09/22	15:00	5.41	1.50	150	5.37

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Borehole drilled using 150mm diameter tools and casing.
4. Groundwater strike at 5.40m. Did not rise after 20 minutes.
5. Borehole backfilled with bentonite upon completion.
6. SPT hammer JB05-2022 (E_r = 68.00%) used.

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable percussion	**Dando 2000**	**Matthew Heath**	**RStan**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**CP24**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**26.09.22** End: **26.09.22**	**69.09**	**E:446132.1 N:324501.5**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
0.10	1	ES				TOPSOIL (TOPSOIL)	68.79	0.30	
0.50	2	B				Very stiff dark brown slightly sandy CLAY. Sand is fine and medium of mudstone. (MERCIA MUDSTONE GROUP)	68.39	0.70	
0.50	3	D							
0.60	4	ES							
1.00	5	B				Stiff reddish brown slightly gravelly slightly sandy CLAY with frequent pockets (up to 60mm) and lenses (up to 10mm) of greenish grey sandy silt. Gravel is fine to medium of mudstone. (MERCIA MUDSTONE GROUP)		(1.30)	
1.00	6	D							
1.20-1.65	7	UT	60 blows						
1.70	8	D					67.09	2.00	
2.00-2.45		SPT	N=42			Firm reddish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse of mudstone. Gravel is angular to subangular fine and medium of mudstone lithorelicts. (MERCIA MUDSTONE GROUP)			
2.00	10	D							
2.00-2.50	11	B						(1.10)	
2.00-2.45	9	DSPT							
2.80	12	D					65.99	3.10	
3.00-3.45	13	UT	150 blows			Very stiff reddish brown slightly sandy slightly gravelly CLAY with frequent pockets (up to 20mm) and lenses (up to 15mm) of greenish grey sandy silt. Sand is fine and medium of mudstone. Gravel is angular fine and medium of mudstone lithorelicts. (MERCIA MUDSTONE GROUP)			
3.50	14	D							
3.50-4.00	15	B							
4.00-4.41		SPT	5,10/17,25,34,24 for 30mm					(2.30)	
4.00-4.41	16	DSPT							
4.00-4.50	17	B							
4.80	18	D							
5.00-5.40		SPT	7,8/16,33,34,17 for 20mm						
5.00-5.40	19	DSPT					63.69	5.40	
						Cable percussion borehole terminated at 5.40m depth.			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
26/09/22	16:00	5.40	4.50	150	Dry

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m
3. Borehole drilled using 150mm tools and casing.
4. No groundwater encountered.
5. Borehole backfilled with bentonite upon completion.
6. SPT hammer JB05-2022 (E_r = 68.00%) used.

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable percussion	**Dando 2000**	**Matthew Heath**	**RStan**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**CP25**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **22.09.22**	**67.07**	**E:446354.7 N:324580.7**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
0.00-0.10	1	ES				TOPSOIL	66.67	0.40	
0.10	2	D							
0.10-0.40	3	B							
0.30	4	D				Stiff to very stiff reddish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse of mudstone. Gravel is subangular fine to coarse mudstone. (MERCIA MUDSTONE GROUP)			
0.50	5	D							
0.50	6	ES							
0.50	7	D							
0.90-1.00	8	B							
1.00	9	ES							
1.00	10	D							
1.00-1.20	11	B						(2.40)	
1.20-1.65		SPT	N=50						
1.20-1.65	12	DSPT							
1.20-1.70	13	B							
1.90	14	D							
2.00-2.45	15	UT	150 blows						
2.50	16	D					64.27	2.80	
2.80-3.00	17	B				Very stiff reddish brown locally light grey slightly sandy gravelly CLAY. Sand is fine to coarse of mudstone. Gravel is subangular fine to coarse of mudstone and light grey siltstone. (MERCIA MUDSTONE GROUP)	64.07	3.00	
2.90	18	D							
3.00-3.45		SPT	N=56						
3.00-3.45	19	DSPT							
3.00-3.50	20	B							
3.80	21	D				Very stiff dark orangish brown slightly sandy CLAY. Occasional very thin beds and lenses of light grey siltstone. (MERCIA MUDSTONE GROUP)			
4.00-4.45	22	UT							
4.50	23	D						(3.88)	
5.00-5.39		SPT	8,17/20,26,37,17 for 15mm						
5.00-5.40	24	DSPT							
5.00-5.40	25	B							
6.00	26	D							
6.50-6.88		SPT	10,15/23,31,40,6 for 5mm						
6.50-6.88	27	DSPT					60.19	6.88	
						Cable percussion borehole terminated at 6.88m depth.			

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
21/09/22	18:00	3.00	3.00	150	Dry
22/09/22	08:00	3.00	3.00	150	Dry
22/09/22	13:00	6.88	6.00	150	Dry

Chiselling / Slow Progress

From	To	Duration (hh:mm)

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Borehole drilled using 150mm diameter tools and casing.
4. No groundwater encountered during drilling.
5. Borehole backfilled with bentonite upon completion.
6. SPT hammer JB05-2022 (E_r = 68.00%) used.

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable percussion	**Dando 2000**	**Matthew Heath**	**RStan**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**CP26**

Contract Ref:	Start: **16.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **21.09.22**	**63.86**	**E:446454.2 N:324643.3**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
0.10	1	ES				TOPSOIL	63.76	0.10	
0.10	2	D				Stiff dark brown slightly sandy slightly gravelly silty CLAY. Sand is fine to coarse. Gravel is subrounded to rounded fine to coarse predominantly fine and medium of quartzite and mudstone.			
0.10-0.40	3	B							
0.30	4	ES							
0.30	5	D						(1.40)	
0.50	6	ES							
0.50	7	D							
0.50	8	B							
1.00	9	ES							
1.00	10	D					62.36	1.50	
1.00	11	B				Stiff dark orangish brown slightly sandy slightly gravelly silty CLAY. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of flint, quartzite sandstone, and siltstone. Occasional patches (up to 4x4mm) and fragments (up to 3x3mm) of black organic decayed plant matter.			
1.20-1.65		SPT	N=10						
1.20-1.65	12	DSPT							
1.20-1.70	13	B							
1.80	14	D						(1.60)	
2.00-2.45	15	$UT_{(UT100)}$	30 blows 100% recovery						
2.60	16	D							
2.60-3.00	17	B					60.76	3.10	
3.00-3.45		SPT	N=10			Stiff dark reddish brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse of light grey siltstone. (MERCIA MUDSTONE GROUP)			
3.00-3.45	18	DSPT							
3.00-3.50	19	B						(0.90)	
3.80	20	D					59.86	4.00	
4.00-4.38		SPT	5,8/10,15,50 for 75mm	1		Very stiff dark orangish brown mottled reddish brown slightly sandy CLAY. Occasional very thin lenses of light grey siltstone. (MERCIA MUDSTONE GROUP)			
4.00-4.40	21	DSPT							
4.00-4.50	22	B							
4.00	23	D							
5.00-5.35		SPT	5,10/20,30,35 for 45mm					(2.76)	
5.00-5.40	24	DSPT							
5.00-5.50	25	B							
6.00	26	D							
6.50-6.76		SPT	8,17/33,47,20 for 10mm				57.10	6.76	
6.50-6.76	27	DSPT				Cable percussion borehole terminated at 6.76m depth.			

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
16/09/22	16:00	5.00	3.00	150	Dry
21/09/22	08:00	5.00	3.00	150	4.60
21/09/22	11:00	6.76	6.00	150	Dry

Chiselling / Slow Progress

From	To	Duration (hh:mm)
4.50	5.00	00:30

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Borehole drilled using 150mm tools and casing.
4. Groundwater strike at 4.60m.
5. Borehole backfilled with bentonite upon completion.
6. SPT hammer JB05-2022 (E_r = 68.00%) used.

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable percussion	**Dando 2000**	**Will Nevins**	**RStan**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**CP27**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**15.09.22** End: **15.09.22**	**55.98**	**E:446595.5 N:324438.4**	**1** of **1**

Samples and In-situ Tests				Water	Backfill & Instru-mentation	Description of Strata	Reduced Level	Depth (Thick ness)	Material Graphic Legend
Depth	No	Type	Results						
0.10	1	ES				MADE GROUND: Very stiff slightly sandy slightly gravelly silty CLAY. Sand is fine to coarse. Gravel is subangular fine and medium of quartzite. (TOPSOIL)	55.68	0.30	
0.10	2	D							
0.50	3	ES				Firm dark brown mottled grey locally dark blue and grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of flint, sandstone, siltstone, and quartzite. Moderate hydrocarbon odour observed. (MADE GROUND - REWORKED)			
0.50	4	D							
0.50	5	B							
1.00	6	ES							
1.00	7	D							
1.00-1.65	8	B							
1.20-1.65		SPT	N=8					(2.70)	
1.20-1.70	10	B							
1.20-1.65	9	DSPT							
1.80	11	D							
2.00	12	ES							
2.00	13	D							
2.00-2.45		SPT	N=8			. . . 2.15-2.25m: becoming very soft with strong hydrocarbon odour and iridescent sheen to extracted materials.			
2.00-2.45	14	DSPT							
2.00-2.50	15	B				. . . 2.50-3.00m: occasional grey organic roots and rootlet remnants.			
2.51		EW							
2.80	16	D					52.98	3.00	
3.00-3.45		SPT	N=58			Very stiff reddish brown slightly sandy slightly gravelly CLAY with frequent pockets (up to 20mm) of greenish grey sandy silt. Sand is fine and medium of mudstone. Gravel is angular to subangular fine to coarse of mudstone lithorelicts. (MERCIA MUDSTONE GROUP)			
3.00-3.45	17	DSPT							
3.00	18	ES							
3.00	19	D							
3.00-3.50	20	B							
3.80	21	D						(1.95)	
4.00-4.35		SPT	10,15/15,20,40 for 45mm						
4.00-4.40	22	DSPT							
4.00	23	ES							
4.00	24	D							
4.60-4.95		SPT	15,10/20,30,25 for 45mm				51.03	4.95	
4.60-4.95	25	DSPT				Cable percussion borehole terminated at 4.95m depth.			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
15/09/22	18:00	4.95	3.00	150	Dry

Chiselling / Slow Progress		
From	To	Duration (hh:mm)
4.40	4.60	00:30

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Borehole drilled using 150mm tools and casing.
4. No groundwater encountered during drilling.
5. Borehole installed with 50mm standpipe on completion (response zone 1.00m to 3.00m).
6. SPT hammer JB05-2022 (E_r = 68.00%) used.

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable percussion	**Dando 2000**	**Will Nevins**	**RStan**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
EMG Phase 2	**SEGRO**	**CP28**

Contract Ref:	Start: **14.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **15.09.22**	**64.08**	**E:446741.3 N:324631.8**	**1** of **1**

Samples and In-situ Tests				Water	Backfill & Instru-mentation	Description of Strata	Reduced Level	Depth (Thick ness)	Material Graphic Legend
Depth	No	Type	Results						
0.00-0.50	3	B				TOPSOIL	63.58	(0.50) 0.50	
0.50	1	ES				Stiff reddish brown slightly sandy silty CLAY. Sand is fine to coarse. (MERCIA MUDSTONE GROUP)	63.08	(0.50) 1.00	
0.50	2	D							
0.50-1.00	6	B							
1.00	4	ES				Stiff reddish brown slightly gravelly slightly sandy silty CLAY with occasional pockets (up to 10mm) of greenish grey siltstone. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of flint and mudstone. (MERCIA MUDSTONE GROUP)	61.58	(1.50) 2.50	
1.00	5	D							
1.20-1.65		SPT	N=11						
1.20-1.65	7	DSPT							
1.20-1.70	8	B							
1.80	9	D							
2.00-2.45	10	UT-NR$_{(UT100)}$	55 blows 0% recovery						
2.50-2.95		SPT	N=13			Stiff to very stiff reddish brown slightly sandy silty CLAY with occasional pockets of greenish grey siltstone. Sand is fine to coarse. (MERCIA MUDSTONE GROUP)	59.08	(2.50) 5.00	
2.50-2.95	11	DSPT							
2.50-2.90	12	B							
2.90	13	D							
3.10-3.45	14	UT$_{(UT100)}$	150 blows 129% recovery						
3.60	15	D							
3.60-4.00	16	B							
4.00-4.42		SPT	6,12/13,17,33,35 for 40mm						
4.00-4.42	17	DSPT							
4.60-5.00		SPT	13,12/20,20,30,30 for 20mm						
4.60-5.00	18	DSPT							
						Cable percussion borehole terminated at 5.00m depth.			

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
14/09/22	18:00	3.60	3.00	150	Dry
15/09/22	08:00	3.60	3.00	150	Dry
15/09/22	11:00	5.00	3.00	150	Dry

Chiselling / Slow Progress

From	To	Duration (hh:mm)
4.40	4.60	00:30

General Remarks

1. Position cleared using CAT and Genny.
2. Hand dug inspection pit to 1.20m.
3. Borehole drilled using 150mm tools and casing.
4. No groundwater encountered during drilling.
5. Borehole installed with 50mm standpipe upon completion (response zone 1.00m to 5.00m).
6. SPT hammer JB05-2022 (E_r = 68.00%) used.

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable percussion	**Dando 2000**	**Will Nevins**	**RStan**	

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STRUCTURAL SOILS

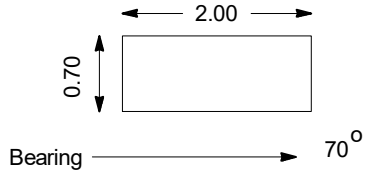
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
EMG Phase 2	**SEGRO**	**TP01**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**27.09.22** End: **27.09.22**	**90.15**	**E:446482.7 N:325312.7**	**1** of **3**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
0.10	1	ES				TOPSOIL	89.95	0.20	
0.10	2	D							
0.30	3	ES				Very stiff dark orangish brown to reddish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of quartzite.		(0.30)	
0.30	4	D							
0.30-0.40	5	LB					89.65	0.50	
0.60	6	ES				Very stiff dark reddish brown slightly sandy CLAY with frequent beds (up to 40mm) of extremely weak to very weak light greenish grey siltstone. (MERCIA MUDSTONE GROUP)		(1.50)	
0.60	7	D							
0.60-0.70	8	LB							
0.60		V	c_u=>140						
						. . . 1.90-2.00m: Thin bed (<100mm) of very weak light grey siltstone.	88.15	2.00	
						Trial pit terminated at 2.00m depth.			

Plan (Not to Scale)



General Remarks

1. All faces similar and stable.
2. No groundwater encountered during excavation.
3. Soakaway carried out at 2.00m.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP01**
Contract Ref:	Start: **27.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **27.09.22**	**90.15**	**E:446482.7 N:325312.7**	**2** of **3**

Face 1

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP01**
Contract Ref:	Start: **27.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **27.09.22**	**90.15**	**E:446482.7 N:325312.7**	**3** of **3**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

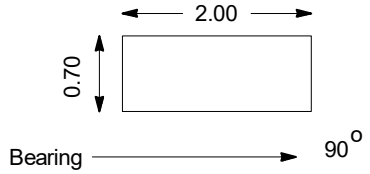
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
EMG Phase 2	**SEGRO**	**TP02**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**27.09.22** End: **27.09.22**	**87.34**	**E:446247.8 N:325352.0**	**1** of **3**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
0.15	1	ES				TOPSOIL		(0.30)	
0.15	2	D					87.04	0.30	
0.40	3	ES				Very stiff dark orangish brown slightly sandy slightly gravelly clayey SILT. Sand is fine to coarse. Gravel is subangular to rounded fine to coarse of quartzite and flint.		(0.30)	
0.40	4	D					86.74	0.60	
0.40-0.50	5	LB				Very stiff dark reddish brown slightly gravelly slightly sandy silty CLAY / clayey SILT with frequent (up to 20mm) mudstone lithorelicts and occasional very thin beds (up to 30mm) of very weak light greenish grey siltstone. (MERCIA MUDSTONE GROUP)		(1.40)	
0.70	6	ES							
0.70	7	D							
0.70-0.80	8	LB							
0.70		V	c_u=>140				85.34	2.00	
						Trial pit terminated at 2.00m depth.			

Plan (Not to Scale)



General Remarks

1. All faces similar and stable.
2. No groundwater encountered during excavation.
3. Soakaway carried out at 2.00m.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP02**
Contract Ref:	Start: **27.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **27.09.22**	**87.34**	**E:446247.8 N:325352.0**	**2** of **3**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP02**
Contract Ref:	Start: **27.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **27.09.22**	**87.34**	**E:446247.8 N:325352.0**	**3** of **3**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

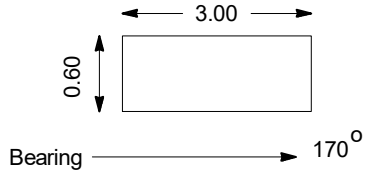
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
EMG Phase 2	**SEGRO**	**TP03**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**03.10.22** End: **03.10.22**	**90.59**	**E:446327.3 N:325173.4**	**1** of **5**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
						TOPSOIL.		(0.30)	
0.15	1	ES							
0.15	2	D					90.29	0.30	
						Light orangish brown very gravelly fine to coarse SAND. Gravel is subangular to rounded fine to coarse of flint and quartzite.		(0.50)	
0.40	3	ES							
0.40	4	D							
0.40-0.50	5	B					89.79	0.80	
						Stiff dark orangish brown to reddish brown slightly sandy slightly gravelly clayey SILT. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of flint and quartzite. (MERCIA MUDSTONE GROUP)		(0.50)	
1.00	6	ES							
1.00	7	D							
1.00-1.10	8	B					89.29	1.30	
						Stiff dark reddish brown slightly sandy slightly gravelly CLAY with frequent lenses of reddish brown gravelly fine to coarse sand and occasional to frequent pockets (up to 50mm) of green silt. (MERCIA MUDSTONE GROUP)		(2.20)	
1.50	10	D							
1.50-1.60	11	B							
1.50	9	ES							
1.60		V	c_u=52/54						
						. . . 2.00m: Sand lenses absent. Occasional pockets (<100x50mm) of reddish brown sand.			
3.00	12	D				. . . 3.00m: Firm, low cobble content and occasional boulders. Cobbles (<200x150x100mm) subangular siltstone. Boulders (<450x350x100mm) subangular siltstone.			
3.20		V	c_u=24						
3.40-3.50	13	B					87.09	3.50	
						Trial pit terminated at 3.50m depth.			

Plan (Not to Scale)



General Remarks

1. All faces similar and stable.
2. No groundwater encountered during excavation.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP03**
Contract Ref:	Start: **03.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **03.10.22**	**90.59**	**E:446327.3 N:325173.4**	**2** of **5**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP03**
Contract Ref:	Start: **03.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **03.10.22**	**90.59**	**E:446327.3 N:325173.4**	**3** of **5**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP03**
Contract Ref:	Start: **03.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **03.10.22**	**90.59**	**E:446327.3 N:325173.4**	**4** of **5**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP03**
Contract Ref:	Start: **03.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **03.10.22**	**90.59**	**E:446327.3 N:325173.4**	**5** of **5**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

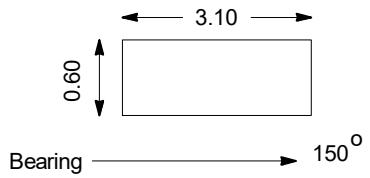
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
EMG Phase 2	**SEGRO**	**TP04**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **03.10.22**	**88.71**	**E:446164.8 N:325278.9**	**1** of **4**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
0.15	1	ES				TOPSOIL.		(0.30)	
0.15	2	D					88.41	0.30	
0.40	3	ES				Stiff to very stiff dark reddish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subrounded to rounded fine to coarse of quartz and mudstone.		(0.50)	
0.40	4	D							
0.40-0.50	5	B					87.91	0.80	
1.00	6	ES				Stiff dark reddish brown and light grey slightly sandy CLAY with occasional thin beds (up to 100mm) of extremely weak to very weak light greenish grey siltstone. (MERCIA MUDSTONE GROUP)			
1.00	7	D							
1.00-1.10	8	B							
1.00		V	c_u=120			. . . 1.00m: Friable.			
						. . . 1.20-1.30m: Siltstone bed.		(1.10)	
						. . . 1.65-1.75m: Siltstone bed.			
							86.81	1.90	
2.00	10	D				Very weak light grey SILTSTONE with occasional very thin beds (up to 30mm) of extremely weak dark reddish brown mudstone. (MERCIA MUDSTONE GROUP)		(0.30)	
2.00-2.20	9	B					86.51	2.20	
						Trial pit terminated at 2.20m depth.			

Plan (Not to Scale)



General Remarks

1. All faces similar and stable.
2. No groundwater encountered during excavation.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP04**
Contract Ref:	Start: **03.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **03.10.22**	**88.71**	**E:446164.8 N:325278.9**	**2** of **4**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP04**
Contract Ref:	Start: **03.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **03.10.22**	**88.71**	**E:446164.8 N:325278.9**	**3** of **4**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP04**
Contract Ref:	Start: **03.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **03.10.22**	**88.71**	**E:446164.8 N:325278.9**	**4** of **4**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

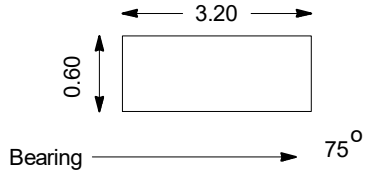
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
EMG Phase 2	**SEGRO**	**TP05**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**03.10.22** End: **03.10.22**	**89.03**	**E:446152.5 N:325207.0**	**1** of **4**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
0.20	1	D				TOPSOIL.		(0.40)	
0.20	2	ES					88.63	0.40	
0.50	3	D				Very stiff dark yellowish brown slightly sandy slightly gravelly clayey SILT with occasional lenses (up to 100x30mm) and pockets (up to 30x30mm) of reddish brown fine to coarse sand. Sand is fine to coarse. Gravel is subangular to rounded fine to coarse of quartzite and flint.			
0.50	4	ES							
0.50-0.60	5	B							
0.80		V	c_u=>140					(0.90)	
							87.73	1.30	
1.50	6	ES				Very stiff dark brown mottled light grey slightly sandy sightly gravelly CLAY with occasional pockets (up to 30x30mm) of orange to yellow silt and sand. Sand is fine to coarse. Gravel is subangular to rounded fine to coarse of quartz, siltstone, mudstone, sandstone, and chalk.			
1.50	7	D							
1.50-1.60	8	B							
2.00		V	c_u=120					(1.90)	
2.80		V	c_u=110						
3.00-3.10	10	B							
3.00	9	D					85.83	3.20	
						Trial pit terminated at 3.20m depth.			

Plan (Not to Scale)



General Remarks

1. All faces similar and stable.
2. No groundwater encountered during excavation.

All dimensions in metres | Scale: **1:23**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP05**
Contract Ref:	Start: **03.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **03.10.22**	**89.03**	**E:446152.5 N:325207.0**	**2** of **4**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP05**
Contract Ref:	Start: **03.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **03.10.22**	**89.03**	**E:446152.5 N:325207.0**	**3** of **4**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP05**
Contract Ref:	Start: **03.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **03.10.22**	**89.03**	**E:446152.5 N:325207.0**	**4** of **4**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

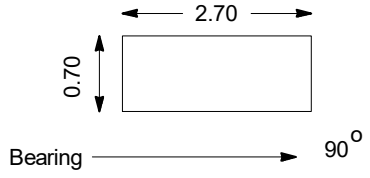
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
EMG Phase 2	**SEGRO**	**TP06**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**03.10.22** End: **03.10.22**	**88.88**	**E:446237.5 N:325131.3**	**1** of **5**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
0.15	1	ES				TOPSOIL	88.53	(0.35) 0.35	
0.15	2	D							
0.40	3	ES				Dark orangish brown gravelly fine to coarse SAND. Gravel is subangular to rounded fine to coarse of quartz, flint, and mudstone.	88.23	(0.30) 0.65	
0.40	4	D							
0.40-0.50	5	B							
0.80	6	ES				Stiff dark orangish brown to reddish brown slightly sandy slightly gravelly CLAY with occasional locally frequent pockets (up to 40mm) of silt. Sand is fine to coarse. Gravel is subangular to rounded fine to coarse of quartz, sandstone, siltstone, flint, and mudstone.	87.38	(0.85) 1.50	
0.80	7	D							
0.80-0.90	8	B							
0.80		V	c_u=100						
1.60	10	D				Dark orangish brown gravelly fine to coarse SAND with medium cobble content and occasional thin beds (up to 20mm) of stiff orangish brown slightly sandy silty clay. Gravel is angular to rounded fine to coarse of siltstone, quartzite, and flint.	86.88	(0.50) 2.00	
1.60-1.70	11	B							
1.60	9	ES							
2.10	12	ES				Dark yellowish brown sandy clayey angular to rounded fine to coarse GRAVEL siltstone, quartz, mudstone, sandstone, and flint with medium cobble and low boulder content. Sand is fine to coarse. Cobbles and boulders (up to 450mm) are subangular to subrounded of siltstone. (GROVESEND BEDS - UPPER PENNANT MEASURES)		(1.70)	
2.10	13	D							
2.10-2.20	14	B							
3.50	15	D				. . . Below 3.40m: Medium boulder content (<600x400x200m)	85.18	3.70	
						Trial pit terminated at 3.70m depth.			

Plan (Not to Scale)



General Remarks

1. All faces similar and stable.
2. No groundwater encountered during excavation.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP06**
Contract Ref:	Start: **03.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **03.10.22**	**88.88**	**E:446237.5 N:325131.3**	**2** of **5**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP06**
Contract Ref:	Start: **03.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **03.10.22**	**88.88**	**E:446237.5 N:325131.3**	**3** of **5**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP06**
Contract Ref:	Start: **03.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **03.10.22**	**88.88**	**E:446237.5 N:325131.3**	**4** of **5**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP06**
Contract Ref:	Start: **03.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **03.10.22**	**88.88**	**E:446237.5 N:325131.3**	**5** of **5**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

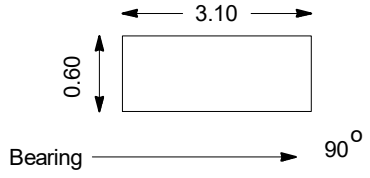
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
EMG Phase 2	**SEGRO**	**TP07**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**03.10.22** End: **03.10.22**	**83.70**	**E:445966.4 N:325132.9**	**1** of **3**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
						TOPSOIL		(0.40)	
0.20	1	ES							
0.20	2	D					83.30	0.40	
						Dark yellowish brown to orangish brown slightly gravelly sandy CLAY.		(0.40)	
0.50	3	ES							
0.50	4	D							
0.50-0.60	5	B					82.90	0.80	
						Stiff to very stiff dark reddish brown slightly sandy slightly gravelly CLAY.		(0.40)	
1.00	6	ES							
1.00	7	D							
1.00-1.10	8	B					82.50	1.20	
1.30	10	D				Stiff to very stiff dark yellowish brown mottled grey slightly sandy slightly gravelly CLAY with low cobble content, occasional pockets (up to 30x30mm) of orange and yellow silt, and lenses (up to 100x20mm) of reddish brown fine to coarse sand. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of siltstone, quartzite, and chalk. Cobbles (up to 150mm) are subangular of siltstone.		(1.80)	
1.30-1.40	11	B							
1.30	9	ES							
1.30		V	c_u=120/>140						
							80.70	3.00	
						Trial pit terminated at 3.00m depth.			

Plan (Not to Scale)



General Remarks

1. All faces similar and stable.
2. No groundwater encountered during excavation.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP07**
Contract Ref:	Start: **03.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **03.10.22**	**83.70**	**E:445966.4 N:325132.9**	**2** of **3**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP07**
Contract Ref:	Start: **03.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **03.10.22**	**83.70**	**E:445966.4 N:325132.9**	**3** of **3**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

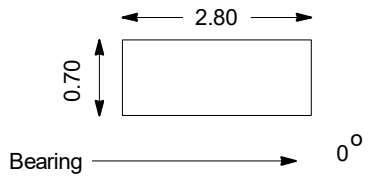
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
EMG Phase 2	**SEGRO**	**TP08**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**04.10.22**	**84.97**	**E:445808.1 N:325346.7**	**1** of **4**
	End: **04.10.22**			

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
0.20	1	ES				MADE GROUND: Firm dark brown slightly sandy slightly gravelly silty CLAY with low cobble content. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of quartzite, flint, brick, glass, and ceramic tile. Cobbles (up to 215x100x65mm) are angular of full and half brick. (TOPSOIL)		(0.40)	
0.20	2	D					84.57	0.40	
0.50	3	ES				MADE GROUND: Reddish brown sandy very silty angular to rounded fine to coarse GRAVEL of brick, tile, quartzite, and mudstone. With low cobble content, cobbles (up to 215x100x65mm) are angular of full and half brick, with occasional concrete blocks (up to 400x150x120mm).			
0.50	4	D							
0.50-0.60	5	LB							
								(1.80)	
1.50	6	ES							
1.50	7	D							
1.50-1.60	8	LB							
2.00	9	ES				. . . below 2.00m: frequent cobbles of full and half brick, and occasional fragments of rope.	82.77	2.20	
2.40	10	ES				POSSIBLE MADE GROUND: Firm to stiff dark reddish brown locally dark grey slightly sandy slightly gravelly silty CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of quartzite and flint.			
2.40	11	D						(0.60)	
2.40-2.50	12	LB					82.17	2.80	
2.90-3.00	13	LB				Stiff dark reddish brown mottled light grey slightly sandy CLAY. Sand is fine to coarse. (MERCIA MUDSTONE GROUP)			
2.90	14	D						(0.40)	
							81.77	3.20	
						Trial pit terminated at 3.20m depth.			

Plan (Not to Scale)



General Remarks

1. All faces similar and stable.
2. No groundwater encountered during excavation.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Hand dug	**Hand tools**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP08**
Contract Ref:	Start: **04.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **04.10.22**	**84.97**	**E:445808.1 N:325346.7**	**2** of **4**

Method Used:	Plant Used:	Logged By:	Checked By:
Hand dug	**Hand tools**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP08**
Contract Ref:	Start: **04.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **04.10.22**	**84.97**	**E:445808.1 N:325346.7**	**3** of **4**

Method Used:	Plant Used:	Logged By:	Checked By:
Hand dug	**Hand tools**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP08**
Contract Ref:	Start: **04.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **04.10.22**	**84.97**	**E:445808.1 N:325346.7**	**4** of **4**

Method Used:	Plant Used:	Logged By:	Checked By:
Hand dug	**Hand tools**	**GKalaher**	RL

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STRUCTURAL SOILS

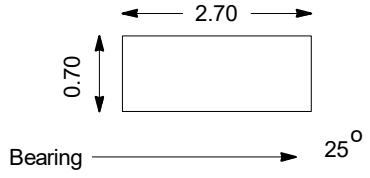
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
EMG Phase 2	**SEGRO**	**TP09**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **04.10.22**	**87.60**	**E:445878.0 N:325225.7**	**1** of **4**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
0.20	1	ES				TOPSOIL		(0.35)	
0.20	2	D					87.25	0.35	
0.60	3	ES				Stiff to very stiff dark greyish brown slightly sandy slightly gravelly silty CLAY. Sand is fine to coarse. Gravel is angular to rounded fine to coarse of flint and quartzite.			
0.60	4	D						(0.75)	
0.60-0.70	5	LB							
0.60		V	c_u=110				86.50	1.10	
1.30	6	ES				Firm to stiff dark reddish brown mottled greenish grey slightly sandy gravelly silty CLAY with abundant pockets (up to 100x30mm) of yellowish orange and red silt and occasional lenses (up to 50mm) of reddish brown fine to coarse sand.			
1.30	7	D							
1.30-1.40	8	LB				. . . below 1.80m: firm, locally soft and firm.		(2.60)	
3.30	10	D				. . . below 2.70m: with medium cobble and boulder content. Cobbles (<200x150x100mm) are subangular and subrounded of siltstone. Boulders (<350x250x150mm) are subangular of siltstone.			
3.30-3.40	9	LB					83.90	3.70	
						Trial pit terminated at 3.70m depth.			

Plan (Not to Scale)



General Remarks

1. All faces similar and stable.
2. No groundwater encountered during excavation.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Hand dug	**Hand tools**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP09**
Contract Ref:	Start: **04.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **04.10.22**	**87.60**	**E:445878.0 N:325225.7**	**2** of **4**

Method Used:	Plant Used:	Logged By:	Checked By:
Hand dug	**Hand tools**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP09**
Contract Ref:	Start: **04.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **04.10.22**	**87.60**	**E:445878.0 N:325225.7**	**3** of **4**

Method Used:	Plant Used:	Logged By:	Checked By:
Hand dug	**Hand tools**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP09**
Contract Ref:	Start: **04.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **04.10.22**	**87.60**	**E:445878.0 N:325225.7**	**4** of **4**

Method Used:	Plant Used:	Logged By:	Checked By:
Hand dug	**Hand tools**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

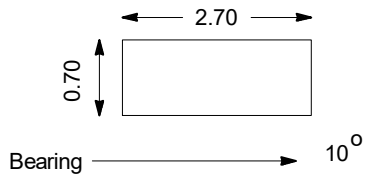
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
EMG Phase 2	**SEGRO**	**TP10**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**04.10.22** End: **04.10.22**	**77.53**	**E:445846.9 N:325068.8**	**1** of **4**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
						TOPSOIL		(0.40)	
0.20	1	ES							
0.20	2	D					77.13	0.40	
						Stiff dark yellowish brown to orangish brown slightly sandy gravelly CLAY with frequent pockets (up to 40x40mm) of reddish brown fine to coarse sand. Sand is fine to coarse. Gravel is subangular to rounded fine to coarse of quartzite, mudstone, and flint.		(0.30)	
0.50	3	ES							
0.50	4	D					76.83	0.70	
0.50-0.60	5	LB							
						Very stiff dark orangish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to rounded fine to coarse of quartzite, flint, and chalk.		(0.55)	
0.80	6	ES							
0.80	7	D					76.28	1.25	
0.80-0.90	8	LB							
						Very stiff friable light yellowish brown mottled grey slightly sandy slightly gravelly CLAY with occasional pockets (up to 20x10mm) of yellow and orange silt. Sand is fine to coarse. Gravel is subangular to rounded fine to coarse of chalk and siltstone.		(0.75)	
1.40	10	D							
1.40-1.50	11	LB							
1.40	9	ES					75.53	2.00	
						Stiff dark brown mottled grey slightly sandy slightly gravelly CLAY with occasional pockets (up to 20x20mm) of orange and yellow silt. Sand is fine to coarse. Gravel is subangular fine to coarse of siltstone, flint, chalk, and mudstone.			
2.10	12	ES							
2.10	13	D							
2.10-2.20	14	LB							
						. . . below 2.50m: stiff to very stiff.		(1.20)	
3.10	15	D					74.33	3.20	
						Trial pit terminated at 3.20m depth.			

Plan (Not to Scale)



General Remarks

1. All faces similar and stable.
2. No groundwater encountered during excavation.
3. Ceramic land drain 1.00-1.10m depth.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Hand dug	**Hand tools**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP10**
Contract Ref:	Start: **04.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **04.10.22**	**77.53**	**E:445846.9 N:325068.8**	**2** of **4**

Method Used:	Plant Used:	Logged By:	Checked By:
Hand dug	**Hand tools**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP10**
Contract Ref:	Start: **04.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **04.10.22**	**77.53**	**E:445846.9 N:325068.8**	**3** of **4**

Method Used:	Plant Used:	Logged By:	Checked By:
Hand dug	**Hand tools**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP10**
Contract Ref:	Start: **04.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **04.10.22**	**77.53**	**E:445846.9 N:325068.8**	**4** of **4**

Method Used:	Plant Used:	Logged By:	Checked By:
Hand dug	**Hand tools**	**GKalaher**	RL

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STRUCTURAL SOILS

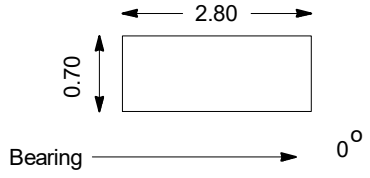
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
EMG Phase 2	**SEGRO**	**TP11**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **04.10.22**	**77.02**	**E:445965.8 N:324988.4**	**1** of **5**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
0.20	1	ES				TOPSOIL	76.62	(0.40) 0.40	
0.20	2	D							
0.60	3	ES				Dark orangish brown slightly gravelly sandy SILT. Sand is fine to coarse. Gravel is angular to rounded fine to coarse of quartzite.	76.02	(0.60) 1.00	
0.60	4	D							
0.60-0.70	5	B							
1.20	6	ES				Stiff dark orangish brown and greyish brown slightly sandy slightly gravelly clayey SILT. Sand is fine to coarse. Gravel is subangular to rounded fine to coarse of flint, quartzite, and chalk.	75.32	(0.70) 1.70	
1.20	7	D							
1.20-1.30	8	B							
1.80	10	D				Stiff dark orangish brown mottled grey slightly sandy slightly gravelly CLAY with frequent lenses (up to 50mm) of reddish brown fine to coarse sand with frequent pockets (up to 50x30mm) of yellow and orange silt. Sand is fine to coarse. Gravel is subangular to rounded fine to coarse of quartzite, siltstone, mudstone, chalk, and flint.		(1.50)	
1.80-1.90	11	B							
1.80	9	ES				. . . Below 2.90m: with frequent lenses of reddish brown and yellowish orange firm silt (<100mm).	73.82	3.20	
3.30	12	ES				Dark orangish brown gravelly clayey SAND with occasional very thin beds (up to 30mm) of firm slightly sandy silty clay.	73.52	(0.30) 3.50	
3.30	13	D							
3.30	14	B							
						Trial pit terminated at 3.50m depth.			

Plan (Not to Scale)



General Remarks

1. All faces similar and stable.
2. No groundwater encountered during excavation.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP11**
Contract Ref:	Start: **04.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **04.10.22**	**77.02**	**E:445965.8 N:324988.4**	**2** of **5**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP11**
Contract Ref:	Start: **04.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **04.10.22**	**77.02**	**E:445965.8 N:324988.4**	**3** of **5**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP11**
Contract Ref:	Start: **04.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **04.10.22**	**77.02**	**E:445965.8 N:324988.4**	**4** of **5**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP11**
Contract Ref:	Start: **04.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **04.10.22**	**77.02**	**E:445965.8 N:324988.4**	**5** of **5**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

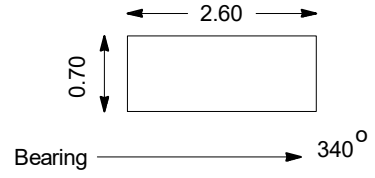
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
EMG Phase 2	**SEGRO**	**TP12**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **04.10.22**	**73.79**	**E:445742.7 N:325045.7**	**1** of **4**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
						TOPSOIL		(0.40)	
0.20	1	ES							
0.20	2	D					73.39	0.40	
						Stiff dark yellowish brown sandy slightly gravelly SILT. Sand is fine to coarse. Gravel is subangular to rounded fine to coarse of quartz and flint.		(0.60)	
0.50	3	ES							
0.50	4	D							
0.50-0.60	5	B				. . . Below 0.60m: very stiff clayey SILT	72.79	1.00	
						Very stiff dark yellowish brown to reddish brown mottled light grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of flint, chalk, and quartzite.		(0.80)	
1.10	6	ES							
1.10	7	D							
1.20-1.30	8	B							
1.20		V	c_u=>140			. . . 1.45m: thin bands (<50mm) of reddish brown gravelly fine to coarse sand.	71.99	1.80	
						Stiff dark greyish brown mottled bluish grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to rounded fine to coarse of flint, chalk, and quartzite.		(1.90)	
2.00	10	D							
2.00	11	B							
2.00	9	ES							
2.00		V	c_u=120						
3.50	12	D					70.09	3.70	
						Trial pit terminated at 3.70m depth.			

Plan (Not to Scale)



General Remarks

1. All faces similar and stable.
2. No groundwater encountered during excavation.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP12**
Contract Ref:	Start: **04.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **04.10.22**	**73.79**	**E:445742.7 N:325045.7**	**2** of **4**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP12**
Contract Ref:	Start: **04.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **04.10.22**	**73.79**	**E:445742.7 N:325045.7**	**3** of **4**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP12**
Contract Ref:	Start: **04.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **04.10.22**	**73.79**	**E:445742.7 N:325045.7**	**4** of **4**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

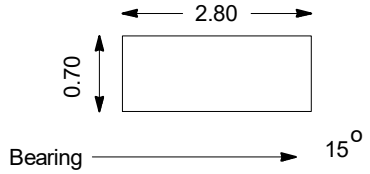
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
EMG Phase 2	**SEGRO**	**TP13**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**05.10.22** End: **05.10.22**	**73.00**	**E:445749.9 N:324942.5**	**1** of **4**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
						TOPSOIL	72.65	(0.35) 0.35	
0.50	1	ES				Light orangish brown slightly gravelly sandy SILT. Sand is fine to coarse. Gravel is angular to rounded fine to coarse of quartzite and flint.			
0.50	2	D							
0.50	3	B					72.20	(0.45) 0.80	
1.00	4	ES				Light yellowish orangish brown very gravelly silty fine to coarse SAND. Gravel is subangular to rounded fine to coarse of quartzite and flint.			
1.00	5	D							
1.00-1.10	6	B					71.80	(0.40) 1.20	
1.50	7	ES				Stiff dark orangish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to rounded fine to coarse of quartzite and flint.			
1.50	8	D							
1.50-1.60	9	B				. . . Below 1.70m: dark reddish brown	70.60	(1.20) 2.40	
2.50	10	ES				Soft dark orangish brown slightly gravelly very sandy CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse of flint.			
2.50	11	D							
2.50-2.60	12	B					69.80	(0.80) 3.20	
3.30	13	ES				Brown slightly gravelly fine to coarse SAND with occasional pockets (up to 150x150x100mm) of firm dark orangish brown clay.			
3.30	14	D							
3.30-3.40	15	B					69.50	(0.30) 3.50	
						Trial pit terminated at 3.50m depth.			

Plan (Not to Scale)



General Remarks

1. All faces similar and stable.
2. Water strike at 3.30m depth, rose to 3.05m after 20 mins.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP13**
Contract Ref:	Start: **05.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **05.10.22**	**73.00**	**E:445749.9 N:324942.5**	**2** of **4**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP13**
Contract Ref:	Start: **05.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **05.10.22**	**73.00**	**E:445749.9 N:324942.5**	**3** of **4**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP13**
Contract Ref:	Start: **05.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **05.10.22**	**73.00**	**E:445749.9 N:324942.5**	**4** of **4**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

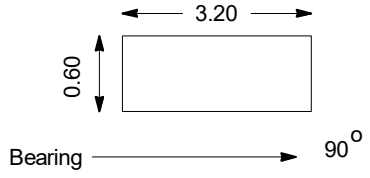
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
EMG Phase 2	**SEGRO**	**TP14**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**29.09.22** End: **29.09.22**	**82.12**	**E:445667.1 N:325262.9**	**1** of **4**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
						TOPSOIL		(0.35)	
0.20	1	ES					81.77	0.35	
0.40	2	D				Stiff reddish brown to grey slightly sandy slightly gravelly CLAY with low cobble and boulder content. Gravel is angular to rounded fine to coarse of siltstone, quartzite, and chert.			
0.40-0.60	3	B							
0.40	4	ES						(0.65)	
0.80	5	D							
0.80-1.00	6	B							
0.80	7	ES					81.12	1.00	
						Very stiff reddish brown mottled light grey CLAY with some gravel sized lithorelicts of mudstone and siltstone. (MERCIA MUDSTONE GROUP)			
						. . . 1.40-1.60m: Lense of light grey silt. (2mx0.20m)			
1.50	8	D				. . . Below 1.50m: Locally silty.			
1.80	9	D							
								(2.50)	
2.50-2.70	10	B							
						. . . Below 2.90m: With tabular gravel to cobbles of light grey siltstone and mudstone.			
3.00	11	D							
							78.62	3.50	
3.50	2	D				Trial pit terminated at 3.50m depth.			

Plan (Not to Scale)



General Remarks

1. Unsuitable for hand vanes.
2. All faces similar and stable.
3. No groundwater encountered during excavation.
4. Terminated due to difficulty of excavation.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**TClifford**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP14**
Contract Ref:	Start: **29.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **29.09.22**	**82.12**	**E:445667.1 N:325262.9**	**2** of **4**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**TClifford**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP14**
Contract Ref:	Start: **29.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **29.09.22**	**82.12**	**E:445667.1 N:325262.9**	**3** of **4**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**TClifford**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP14**
Contract Ref:	Start: **29.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **29.09.22**	**82.12**	**E:445667.1 N:325262.9**	**4** of **4**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**TClifford**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

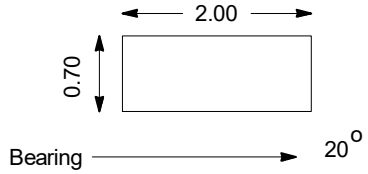
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
EMG Phase 2	**SEGRO**	**TP15**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**29.09.22**	**69.53**	**E:445583.3 N:325042.1**	**1** of **2**
	End: **29.09.22**			

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
0.30	1	ES				TOPSOIL		(0.50)	
0.30	2	D					69.03	0.50	
0.60	3	ES				Firm dark yellowish brown to orangish brown slightly sandy slightly gravelly CLAY with occasional lenses (up to 50mm) of reddish brown fine to coarse sand. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of flint and quartzite.		(0.80)	
0.60	4	D							
0.60-0.70	5	B					68.23	1.30	
1.50	6	ES				Firm to stiff dark brown mottled light grey slightly sandy gravelly CLAY with high cobble content. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of quartzite, flint, and siltstone. Cobbles (up to 200x150x110mm) are subangular of siltstone.		(0.70)	
1.50	7	D							
1.50-1.60	8	B					67.53	2.00	
						Trial pit terminated at 2.00m depth.			

Plan (Not to Scale)



General Remarks

1. All faces similar and stable.
2. No groundwater encountered during excavation.
3. Soakaway carried out at 2.00m.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP15**
Contract Ref:	Start: **29.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **29.09.22**	**69.53**	**E:445583.3 N:325042.1**	**2** of **2**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

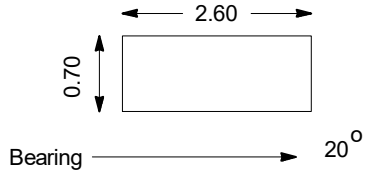
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
EMG Phase 2	**SEGRO**	**TP16**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**29.09.22** End: **29.09.22**	**72.11**	**E:445645.8 N:324820.9**	**1** of **5**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
						TOPSOIL		(0.30)	
0.20	1	ES					71.81	0.30	
0.20	2	D				Dark orangish brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular to rounded fine to coarse of quartzite.		(0.35)	
0.40	3	ES							
0.40	4	D							
0.40-0.50	5	LB					71.46	0.65	
						Very stiff dark reddish brown slightly sandy silty CLAY. Sand is fine to coarse.	71.26	0.85	
0.70	6	ES							
0.70	7	D							
0.70-0.80	8	LB				Stiff to very stiff locally friable dark reddish brown and light grey slightly sandy CLAY with frequent very thin beds (up to 40mm) of very weak light grey siltstone.		(0.45)	
1.00	10	D							
1.00-1.10	11	LB							
1.00	9	ES							
1.00		V	c_u=>140				70.81	1.30	
1.40	12	ES				Stiff friable dark reddish brown locally mottled light grey slightly sandy CLAY with occasional mudstone lithorelicts (up to 10x10mm).			
1.40	13	D							
1.40-1.50	14	LB							
1.40		V	c_u=110						
2.10	15	D				. . . below 2.00m: with frequent very thin beds (<40mm) of extremely weak and very weak reddish brown mudstone and siltstone.		(1.90)	
2.80	16	D				. . . 2.70-2.90m: thin bed (<200mm) of extremely weak and very weak light greenish grey siltstone.	68.91	3.20	
3.30-3.40	17	LB				Extremely weak locally friable dark reddish brown MUDSTONE.			
3.30	18	D						(0.50)	
							68.41	3.70	
						Trial pit terminated at 3.70m depth.			

Plan (Not to Scale)



General Remarks

1. All faces similar and stable.
2. No groundwater encountered during excavation.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP16**
Contract Ref:	Start: **29.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **29.09.22**	**72.11**	**E:445645.8 N:324820.9**	**2** of **5**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP16**
Contract Ref:	Start: **29.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **29.09.22**	**72.11**	**E:445645.8 N:324820.9**	**3** of **5**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP16**
Contract Ref:	Start: **29.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **29.09.22**	**72.11**	**E:445645.8 N:324820.9**	**4** of **5**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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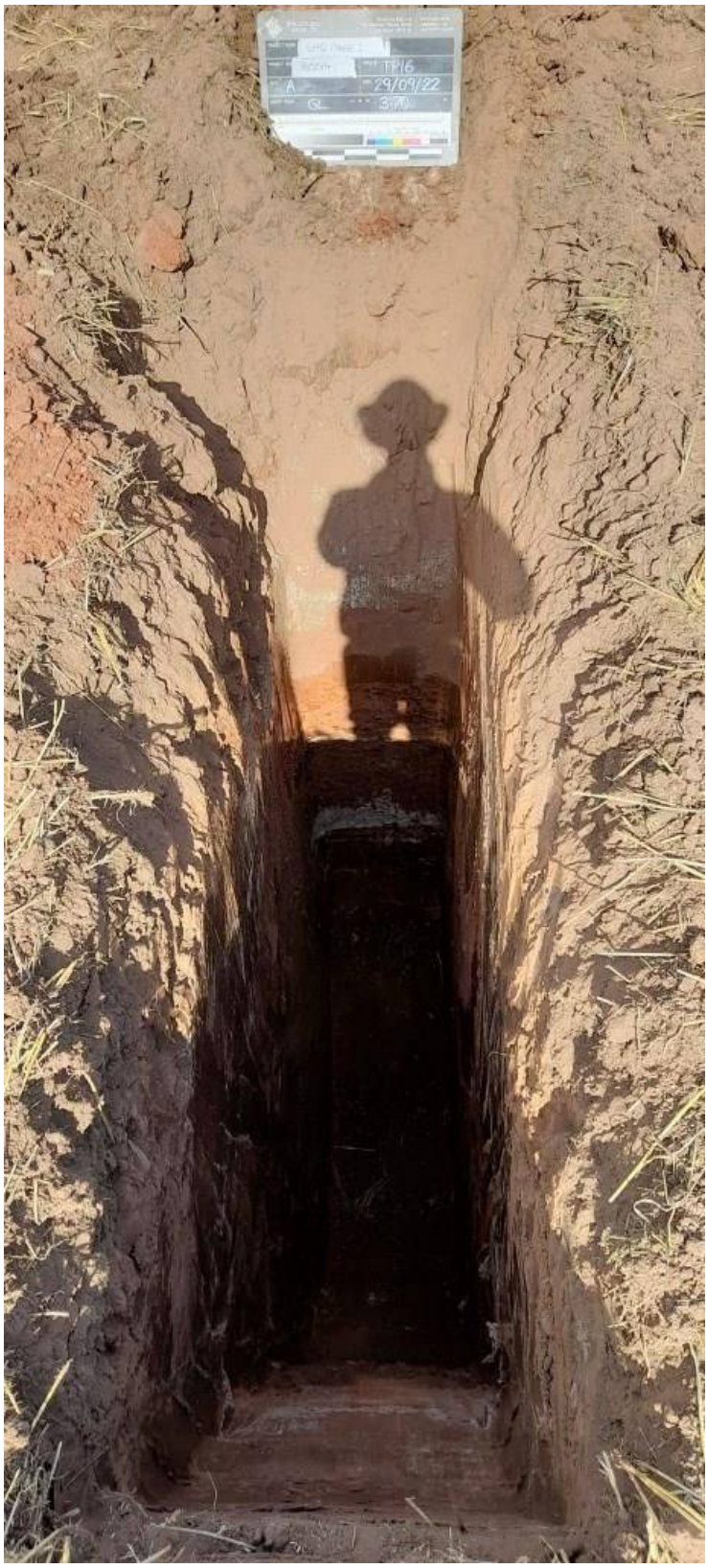
STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP16**
Contract Ref:	Start: **29.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **29.09.22**	**72.11**	**E:445645.8 N:324820.9**	**5** of **5**



Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

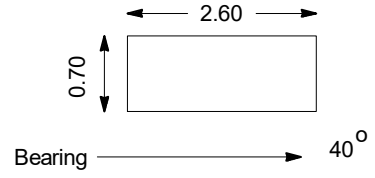
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
EMG Phase 2	**SEGRO**	**TP17**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**28.09.22** End: **28.09.22**	**89.01**	**E:446441.7 N:325131.0**	**1** of **4**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
						TOPSOIL		(0.40)	
0.20	1	ES							
0.20	2	D					88.61	0.40	
						Orangish brown very gravelly silty SAND. Sand is fine to coarse. Gravel is subangular to rounded fine to coarse of quartzite, mudstone, and flint.		(0.35)	
0.50	3	ES							
0.50	4	D							
0.50-0.60	6	LB					88.26	0.75	
						Very stiff dark greyish brown slightly sandy slightly gravelly silty CLAY with occasional very thin lenses (up to 100mm) of reddish brown gravelly fine to coarse sand and frequent pockets (up to 30x30mm) of orange and yellow silt. Sand is fine to coarse. Gravel is subangular to rounded fine to coarse of quartzite, flint, chalk, siltstone, and sandstone.			
0.80	7	ES							
0.80	8	D							
0.80-0.90	9	LB							
								(2.45)	
2.00		V	c_u=120						
						. . . 2.50m: Cobble (<260x150x110mm) of subangular flint.			
2.80-2.90	10	LB							
2.80	11	D							
2.80		V	c_u=107				85.81	3.20	
						Trial pit terminated at 3.20m depth.			

Plan (Not to Scale)



General Remarks

1. All faces similar and stable.
2. No groundwater encountered during excavation.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP17**
Contract Ref:	Start: **28.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **28.09.22**	**89.01**	**E:446441.7 N:325131.0**	**2** of **4**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP17**
Contract Ref:	Start: **28.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **28.09.22**	**89.01**	**E:446441.7 N:325131.0**	**3** of **4**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP17**
Contract Ref:	Start: **28.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **28.09.22**	**89.01**	**E:446441.7 N:325131.0**	**4** of **4**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

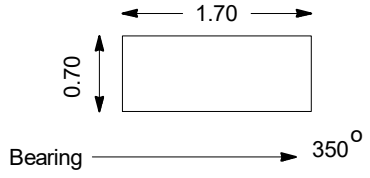
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
EMG Phase 2	**SEGRO**	**TP18**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**28.09.22** End: **28.09.22**	**84.13**	**E:446580.8 N:325055.4**	**1** of **4**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
						TOPSOIL (TOPSOIL)		(0.35)	
0.20	1	ES							
0.20	2	D					83.78	0.35	
0.40	3	ES				Firm dark orangish brown slightly gravelly sandy SILT. Sand is fine to coarse. Gravel is subangular to rounded fine to coarse of quartzite and flint.			
0.40	4	D							
0.40-0.50	5	LB					83.53	0.60	
0.70	6	ES				Very stiff dark reddish brown slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to rounded fine to coarse of quartzite, mudstone, and flint. Cobbles (up to 130x80x70mm) and subrounded of quartzite.			
0.70	7	D							
0.70-0.80	8	LB						(0.90)	
							82.63	1.50	
1.70	10	D				Stiff dark reddish brown slightly sandy slightly gravelly silty CLAY with medium cobble and boulder content, frequent pockets (up to 30x30mm) and thin lenses (up to 15x100mm) of orange silt and yellow sand, and occasional subrounded nodules (up to 90x60x40mm) of mudstone. Cobbles (up to 200x120x100mm) are subangular to subrounded of siltstone. Boulders (up to 400x300x150mm) are subangular to subrounded of siltstone. Sand is fine to coarse. Gravel is subangular to rounded fine to coarse of quartzite, siltstone, and sandstone.			
1.70-1.80	11	LB						(0.70)	
1.70	9	ES							
1.70		V	c_u=50/80				81.93	2.20	
						Trial pit terminated at 2.20m depth.			

Plan (Not to Scale)



General Remarks

1. All faces similar and stable.
2. No groundwater encountered during excavation.
3. Soakaway carried out at 2.20m.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP18**
Contract Ref:	Start: **28.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **28.09.22**	**84.13**	**E:446580.8 N:325055.4**	**2** of **4**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP18**
Contract Ref:	Start: **28.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **28.09.22**	**84.13**	**E:446580.8 N:325055.4**	**3** of **4**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP18**
Contract Ref:	Start: **28.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **28.09.22**	**84.13**	**E:446580.8 N:325055.4**	**4** of **4**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

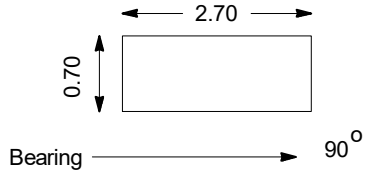
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
EMG Phase 2	**SEGRO**	**TP19**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**28.09.22** End: **28.09.22**	**75.72**	**E:446353.6 N:324934.2**	**1** of **5**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
						TOPSOIL		(0.30)	
0.15	1	ES							
0.15	2	D					75.42	0.30	
						Stiff dark orangish brown slightly sandy slightly gravelly clayey SILT. Sand is fine to coarse. Gravel is subangular to rounded fine to coarse of quartzite and flint.		(0.50)	
0.40	3	ES							
0.40	4	D							
0.40	5	LB					74.92	0.80	
						Stiff to very stiff dark brown mottled grey, yellow, and orange slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to rounded fine to coarse of quartzite, siltstone, sandstone, and flint.		(0.80)	
0.90	6	ES							
0.90	7	D							
0.90	8	LB							
0.90		V	c_u=>140				74.12	1.60	
						Stiff dark reddish brown mottled grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to rounded fine to coarse of quartzite.		(0.30)	
1.70	10	D							
1.70	11	LB							
1.70	9	ES				. . . 1.80m: Boulder (<200x200x150mm) of subangular siltstone.	73.82	1.90	
						Stiff yellowish brown to orangish brown mottled grey slightly sandy locally sandy SILT. Sand is fine to coarse.			
2.00	12	ES							
2.00	13	D							
2.00	14	LB							
				≈		. . . 2.50m: Firm and stiff with occasional thin lenses (<100mm) of firm dark orangish brown mottled grey silty clay. Locally with frequent pockets of (<100mmx80mm) of black organic carbonaceous plant remains.		(2.00)	
							71.82	3.90	
3.90	17	LB				Dark brown gravelly clayey fine to coarse SAND with occasional very thin lenses (up to 25mm) of firm dark brown slightly sandy silty clay. Gravel is subangular to rounded fine and medium of quartzite, mudstone, and flint.	71.72	4.00	
3.95	15	ES							
3.95	16	D							
						Trial pit terminated at 4.00m depth.			

Plan (Not to Scale)



General Remarks

1. All faces similar and stable.
2. Water seepage at 3.20m-3.90m - rose 5cm - 20min.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP19**
Contract Ref:	Start: **28.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **28.09.22**	**75.72**	**E:446353.6 N:324934.2**	**2** of **5**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP19**
Contract Ref:	Start: **28.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **28.09.22**	**75.72**	**E:446353.6 N:324934.2**	**3** of **5**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP19**
Contract Ref:	Start: **28.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **28.09.22**	**75.72**	**E:446353.6 N:324934.2**	**4** of **5**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP19**
Contract Ref:	Start: **28.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **28.09.22**	**75.72**	**E:446353.6 N:324934.2**	**5** of **5**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

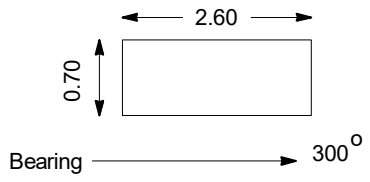
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
EMG Phase 2	**SEGRO**	**TP20**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**06.10.22** End: **06.10.22**	**70.53**	**E:446370.4 N:324823.6**	**1** of **5**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
						TOPSOIL		(0.35)	
0.20	1	ES					70.18	0.35	
0.20	2	D							
						Dark yellowish orangish brown slightly gravelly sandy CLAY.		(0.75)	
0.50	3	ES					69.43	1.10	
0.50	4	D							
						Dark reddish brown silty fine to coarse SAND.		(0.50)	
1.20	6	ES					68.93	1.60	
1.20	7	D							
						Firm to stiff dark reddish brown mottled greenish grey slightly sandy CLAY. Sand is fine to coarse. (MERCIA MUDSTONE GROUP)		(1.20)	
1.70	10	D					67.73	2.80	
1.70-1.80	11	B							
1.70	9	ES							
1.70		V	c_u=80						
						Very stiff friable dark reddish brown slightly sandy CLAY with frequent very thin beds (up to 40mm) of extremely weak reddish brown mudstone and very weak light grey siltstone. (MERCIA MUDSTONE GROUP)		(0.50)	
2.90	12	ES					67.23	3.30	
2.90	13	D							
2.90-3.00	14	B							
						Trial pit terminated at 3.30m depth.			

Plan (Not to Scale)



General Remarks

1. All faces similar and stable.
2. No groundwater encountered during excavation.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP20**
Contract Ref:	Start: **06.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **06.10.22**	**70.53**	**E:446370.4 N:324823.6**	**2** of **5**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP20**
Contract Ref:	Start: **06.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **06.10.22**	**70.53**	**E:446370.4 N:324823.6**	**3** of **5**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP20**
Contract Ref:	Start: **06.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **06.10.22**	**70.53**	**E:446370.4 N:324823.6**	**4** of **5**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP20**
Contract Ref:	Start: **06.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **06.10.22**	**70.53**	**E:446370.4 N:324823.6**	**5** of **5**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

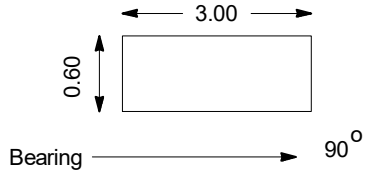
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
EMG Phase 2	**SEGRO**	**TP21**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**06.10.22**	**72.83**	**E:446314.3 N:324790.0**	**1** of **6**
	End: **06.10.22**			

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
0.15	1	ES				TOPSOIL		(0.30)	
0.15	2	D					72.53	0.30	
0.50	3	ES				Very stiff dark reddish brown mottled grey slightly sandy CLAY with occasional very thin beds (up to 25mm) of very weak light grey siltstone. Sand is fine to coarse. (MERCIA MUDSTONE GROUP)		(0.70)	
0.50	4	D				. . . Below 0.80m, friable.	71.83	1.00	
1.10	6	ES				Stiff to very stiff friable dark reddish brown slightly sandy CLAY with frequent beds (up to 40mm) of extremely weak dark reddish brown mudstone and very weak light grey siltstone. (MERCIA MUDSTONE GROUP)			
1.10	7	D							
1.10-1.20	8	B							
1.10		V	c_u=>140					(2.20)	
						. . . Below 2.90m: grading to extremely weak mudstone.			
3.10-3.20	9	B					69.63	3.20	
3.20	10	D				Trial pit terminated at 3.20m depth.			

Plan (Not to Scale)



General Remarks

1. All faces similar and stable.
2. No groundwater encountered during excavation.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP21**
Contract Ref:	Start: **06.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **06.10.22**	**72.83**	**E:446314.3 N:324790.0**	**2** of **6**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP21**
Contract Ref:	Start: **06.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **06.10.22**	**72.83**	**E:446314.3 N:324790.0**	**3** of **6**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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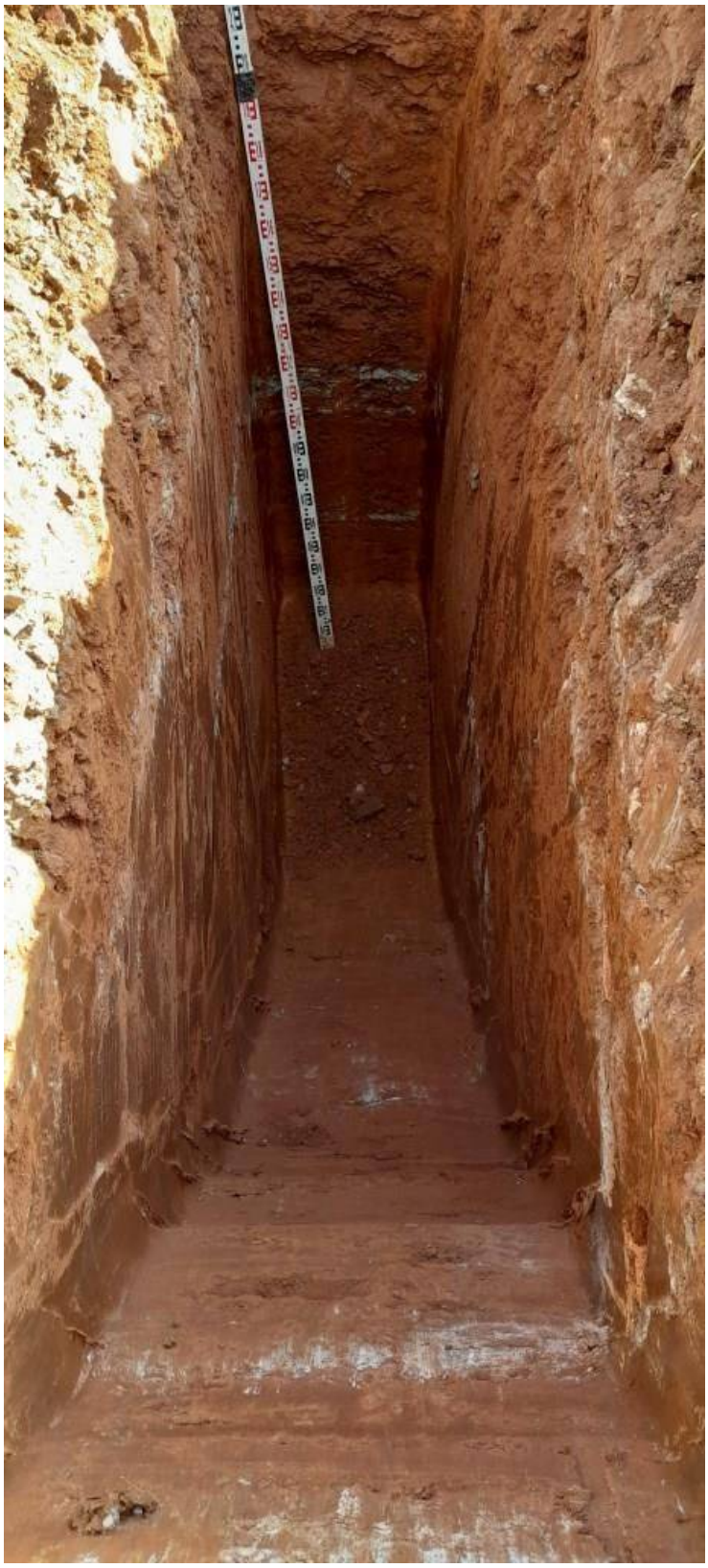
STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP21**
Contract Ref:	Start: **06.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **06.10.22**	**72.83**	**E:446314.3 N:324790.0**	**4** of **6**



Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP21**
Contract Ref:	Start: **06.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **06.10.22**	**72.83**	**E:446314.3 N:324790.0**	**5** of **6**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP21**
Contract Ref:	Start: **06.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **06.10.22**	**72.83**	**E:446314.3 N:324790.0**	**6** of **6**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

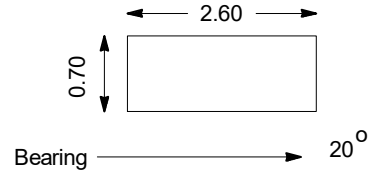
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
EMG Phase 2	**SEGRO**	**TP22**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**05.10.22** End: **05.10.22**	**71.96**	**E:445927.4 N:324535.6**	**1** of **5**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
						TOPSOIL		(0.30)	
0.15	1	ES					71.66	0.30	
0.15	2	D							
						Stiff yellowish brown and orangish brown slighty sandy slightly gravelly clayey SILT. Sand is fine to coarse. Gravel is subangular to rounded fine to coarse of quartzite and flint.		(0.90)	
0.40	3	ES							
0.40	4	D							
0.50-0.50	5	B					70.76	1.20	
						Firm stiff dark orangish brown and reddish brown slightly sandy slightly gravelly silty CLAY with frequent pockets (up to 50x30mm) of yellow and orange silt and sand with occasional very thin lenses (up to 40mm) of reddish brown fine to coarse sand. Sand is fine to coarse. Gravel is angular to rounded fine to coarse of quartzite, flint, chalk, siltstone, sandstone, and mudstone.		(2.10)	
1.30	6	ES							
1.30	7	D							
1.30-1.40	8	B		1			68.66	3.30	
						Dark orangish brown slightly gravelly silty fine to coarse SAND. Gravel is subangular to rounded fine to coarse of quartzite and flint.		(0.30)	
3.40	10	D							
3.40-3.50	11	B					68.36	3.60	
3.40	9	ES				Trial pit terminated at 3.60m depth.			

Plan (Not to Scale)



General Remarks

1. All faces similar and stable.
2. Slight water seepage at base of trial pit.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP22**
Contract Ref:	Start: **05.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **05.10.22**	**71.96**	**E:445927.4 N:324535.6**	**2** of **5**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP22**
Contract Ref:	Start: **05.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **05.10.22**	**71.96**	**E:445927.4 N:324535.6**	**3** of **5**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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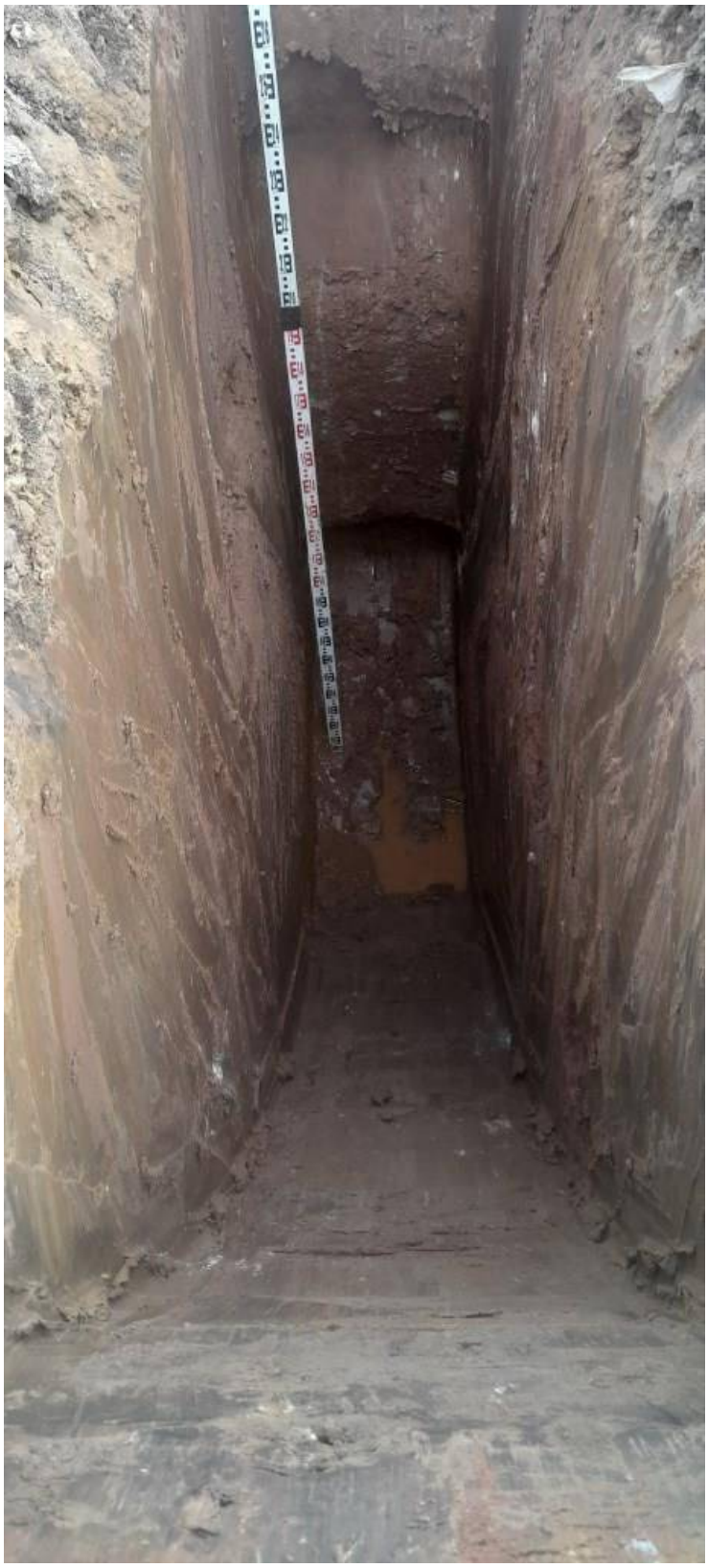
STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP22**
Contract Ref:	Start: **05.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **05.10.22**	**71.96**	**E:445927.4 N:324535.6**	**4** of **5**



Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP22**
Contract Ref:	Start: **05.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **05.10.22**	**71.96**	**E:445927.4 N:324535.6**	**5** of **5**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

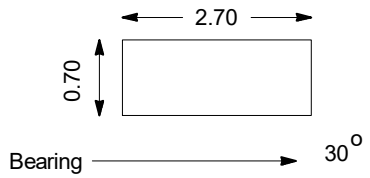
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
EMG Phase 2	**SEGRO**	**TP23**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**05.10.22** End: **05.10.22**	**71.31**	**E:446025.7 N:324549.2**	**1** of **3**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
0.20	1	ES				TOPSOIL		(0.40)	
0.20	2	D					70.91	0.40	
0.50	3	ES				Very stiff dark reddish brown slightly sandy slightly gravelly clayey SILT. Sand is fine to coarse. Gravel is angular to rounded fine to coarse of quartzite and flint.		(0.40)	
0.50	4	D							
0.50-0.60	5	B							
0.70-1.00	8	B					70.51	0.80	
0.90	6	ES				Stiff to very stiff friable dark reddish brown slightly sandy CLAY with occasional very thin beds (up to 25mm) of light greenish grey siltstone. (MERCIA MUDSTONE GROUP)			
0.90	7	D							
0.90		V	c_u=120					(2.40)	
2.90-3.00	9	B							
3.00	10	D					68.11	3.20	
						Trial pit terminated at 3.20m depth.			

Plan (Not to Scale)



General Remarks

1. All faces similar and stable.
2. No groundwater encountered during excavation.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP23**
Contract Ref:	Start: **05.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **05.10.22**	**71.31**	**E:446025.7 N:324549.2**	**2** of **3**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP23**
Contract Ref:	Start: **05.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **05.10.22**	**71.31**	**E:446025.7 N:324549.2**	**3** of **3**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

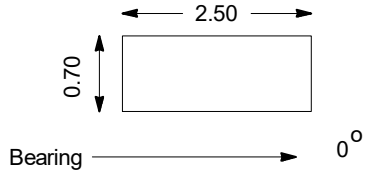
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
EMG Phase 2	**SEGRO**	**TP24**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **05.10.22**	**69.09**	**E:446132.1 N:324501.5**	**1** of **5**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
0.05	1	ES				TOPSOIL	68.99	0.10	
0.05	2	D				Dark yellowish brown slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is angular to rounded fine to coarse of quartzite and flint. Cobbles (up to 100x90x60mm) are rounded of quartzite.		(0.40)	
0.30	3	ES							
0.30	4	D					68.59	0.50	
0.30-0.40	5	B				Stiff to very stiff friable dark reddish brown and light grey slightly sandy CLAY with frequent very thin beds (up to 60mm) of very weak light grey siltstone. Sand is fine to coarse. (MERCIA MUDSTONE GROUP)			
0.60	6	ES						(0.60)	
0.60	7	D							
0.60-0.70	8	B							
0.60		V	c_u=110				67.99	1.10	
1.20	10	D				Stiff to very stiff dark reddish brown slightly sandy CLAY with frequent very thin beds (up to 40mm) of extremely weak to very weak dark reddish brown mudstone. (MERCIA MUDSTONE GROUP)			
1.20-1.30	11	B							
1.20	9	ES						(2.00)	
1.20		V	c_u=120						
							65.99	3.10	
						Trial pit terminated at 3.10m depth.			

Plan (Not to Scale)



General Remarks

1. All faces similar and stable.
2. No groundwater encountered during excavation.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP24**
Contract Ref:	Start: **05.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **05.10.22**	**69.09**	**E:446132.1 N:324501.5**	**2** of **5**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP24**
Contract Ref:	Start: **05.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **05.10.22**	**69.09**	**E:446132.1 N:324501.5**	**3** of **5**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP24**
Contract Ref:	Start: **05.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **05.10.22**	**69.09**	**E:446132.1 N:324501.5**	**4** of **5**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP24**
Contract Ref:	Start: **05.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **05.10.22**	**69.09**	**E:446132.1 N:324501.5**	**5** of **5**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

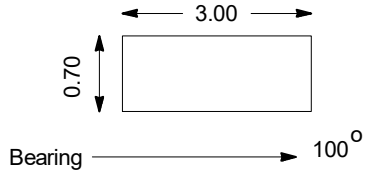
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
EMG Phase 2	**SEGRO**	**TP25**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**27.09.22** End: **27.09.22**	**65.37**	**E:446080.2 N:324450.2**	**1** of **4**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
0.20	1	ES				MADE GROUND: Firm dark brown slightly sandy slightly gravelly silty CLAY with occasional fragments of plastic sheet (up to 100x40mm). Sand is fine to coarse. Gravel is subangular to rounded fine to coarse of quartzite, mudstone, and brick. (TOPSOIL)		(0.40)	
0.20	2	D					64.97	0.40	
0.60	3	ES				Very stiff dark orangish brown slightly sandy slightly gravelly SILT with occasional pockets (up to 10x10mm) of black organic carbonised plant remains. Sand is fine to coarse. Gravel is subangular fine to coarse of quartzite.		(0.50)	
0.60	4	D							
0.60-0.70	5	LB					64.47	0.90	
1.10	6	ES				Firm to stiff dark reddish brown mottled grey slightly sandy CLAY with occasional very thin beds (up to 30mm) of very weak light grey siltstone with frequent mudstone lithorelicts (up to 20x20mm). (MERCIA MUDSTONE GROUP)		(0.90)	
1.10	7	D							
1.10-1.20	8	LB					63.57	1.80	
2.00	10	D				Stiff to very stiff friable dark reddish brown slightly sandy CLAY with frequent very thin beds (up to 40mm) of very weak reddish brown mudstone and light greenish grey siltstone. Sand is fine to coarse. (MERCIA MUDSTONE GROUP)		(1.30)	
2.00-2.10	11	LB							
2.00	9	ES					62.27	3.10	
3.20	12	ES				Very stiff locally friable dark reddish brown slightly sandy CLAY with frequent very thin beds (up to 30mm) of very weak light grey siltstone. (MERCIA MUDSTONE GROUP)	62.17	3.20	
3.20	13	D				Trial pit terminated at 3.20m depth.			

Plan (Not to Scale)



General Remarks

1. All faces similar and stable.
2. No groundwater encountered during excavation.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP25**
Contract Ref:	Start: **27.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **27.09.22**	**65.37**	**E:446080.2 N:324450.2**	**2** of **4**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP25**
Contract Ref:	Start: **27.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **27.09.22**	**65.37**	**E:446080.2 N:324450.2**	**3** of **4**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP25**
Contract Ref:	Start: **27.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **27.09.22**	**65.37**	**E:446080.2 N:324450.2**	**4** of **4**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

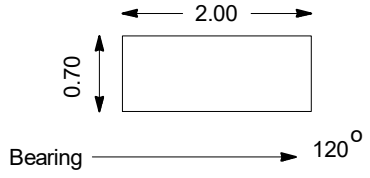
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
EMG Phase 2	**SEGRO**	**TP26**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**30.09.22** End: **30.09.22**	**76.87**	**E:445943.0 N:324731.8**	**1** of **3**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
0.20	1	ES				TOPSOIL		(0.40)	
0.20	2	D					76.47	0.40	
0.60	3	ES				Very stiff dark purplish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse of siltstone.		(0.55)	
0.60	4	D							
0.60	5	LB							
0.60		V	c_u=>140				75.92	0.95	
1.10	6	ES				Stiff dark purplish brown mottled light grey and greenish grey slightly sandy CLAY with frequent mudstone lithorelicts (up to 10x10mm), occasional thick laminae (up to 20mm), and very thin beds (up to 30mm) of extremely weak light greenish grey siltstone. (MERCIA MUDSTONE GROUP)		(0.55)	
1.10	7	D							
1.10	8	LB					75.37	1.50	
1.60	10	D				Stiff to very stiff friable dark reddish brown mottled greenish grey slightly sandy CLAY with frequent mudstone lithorelicts (up to 20x20mm) and occasional very thin beds (up to 30mm) of very weak dark reddish brown mudstone and light greenish grey siltstone. (MERCIA MUDSTONE GROUP)		(0.50)	
1.60	11	LB							
1.60	9	ES					74.87	2.00	
						Trial pit terminated at 2.00m depth.			

Plan (Not to Scale)



General Remarks

1. All faces similar and stable.
2. No groundwater encountered during excavation.
3. Soakaway carried out at 2.00m.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP26**
Contract Ref:	Start: **30.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **30.09.22**	**76.87**	**E:445943.0 N:324731.8**	**2** of **3**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP26**
Contract Ref:	Start: **30.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **30.09.22**	**76.87**	**E:445943.0 N:324731.8**	**3** of **3**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

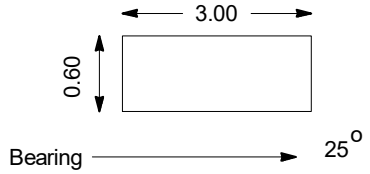
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
EMG Phase 2	**SEGRO**	**TP27**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**26.09.22** End: **26.09.22**	**74.42**	**E:446148.2 N:324654.3**	**1** of **5**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
						TOPSOIL.		(0.40)	
0.20	1	ES							
0.20	2	D							
0.20-0.30	3	B					74.02	0.40	
						Very stiff light brown and light grey slightly sandy slightly gravelly silty CLAY. Sand is fine to coarse. Gravel is angular to subangular tabular of siltstone.			
0.50	4	ES							
0.50	5	D					73.77	0.65	
0.50-0.60	6	B				(MERCIA MUDSTONE GROUP)			
0.70	7	ES				Very stiff dark reddish brown slightly sandy CLAY with occasional mudstone lithorelicts (up to 10x10m). Sand is fine to coarse.			
0.70	8	D							
0.70-0.80	9	B							
0.70		V	c_u=>140			(MERCIA MUDSTONE GROUP)		(0.85)	
							72.92	1.50	
1.60	10	ES				Stiff to very stiff friable dark reddish brown slightly sandy CLAY with frequent mudstone lithorelicts and occasional very thin beds (up to 25mm) of light grey siltstone.			
1.60	11	D				(MERCIA MUDSTONE GROUP)			
1.60-1.70	12	B							
1.60		V	c_u=>140					(1.50)	
						. . . 2.50m: With frequent thick laminate to very thin beds (<30mm) of reddish brown mudstone.			
2.60-2.70	13	B							
2.60	14	D					71.42	3.00	
						Trial pit terminated at 3.00m depth.			

Plan (Not to Scale)



General Remarks

1. All faces similar and stable.
2. No groundwater encountered during excavation.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP27**
Contract Ref:	Start: **26.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **26.09.22**	**74.42**	**E:446148.2 N:324654.3**	**2** of **5**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP27**
Contract Ref:	Start: **26.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **26.09.22**	**74.42**	**E:446148.2 N:324654.3**	**3** of **5**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP27**
Contract Ref:	Start: **26.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **26.09.22**	**74.42**	**E:446148.2 N:324654.3**	**4** of **5**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP27**
Contract Ref:	Start: **26.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **26.09.22**	**74.42**	**E:446148.2 N:324654.3**	**5** of **5**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

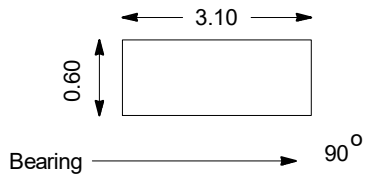
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
EMG Phase 2	**SEGRO**	**TP28**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **06.10.22**	**74.20**	**E:446254.6 N:324734.0**	**1** of **5**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
0.15	1	ES				TOPSOIL.		(0.30)	
0.15	2	D					73.90	0.30	
0.50	3	ES				Very stiff dark brown slightly sandy CLAY. Sand is fine to coarse.			
0.50	4	D							
0.50-0.60	5	B						(0.70)	
0.50		V	c_u=>140						
							73.20	1.00	
1.10	6	ES				Stiff to very stiff friable dark reddish brown and light greenish grey slightly sandy CLAY with frequent closely to medium spaced very thin beds (up to 40mm) of very weak light greenish grey siltstone. (MERCIA MUDSTONE GROUP)			
1.10	7	D							
1.10-1.20	8	B							
1.10		V	c_u=110						
1.60	10	D							
						. . . Below 2.00m: Occasional siltstone and frequent extremely weak reddish brown mudstone beds.		(2.30)	
							70.90	3.30	
3.30-3.40	11	B				Extremely weak dark reddish brown MUDSTONE. (MERCIA MUDSTONE GROUP)	70.80	3.40	
3.35	10	D				Trial pit terminated at 3.40m depth.			
3.35	9	ES							

Plan (Not to Scale)



General Remarks

1. All faces similar and stable.
2. No groundwater encountered during excavation.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP28**
Contract Ref:	Start: **06.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **06.10.22**	**74.20**	**E:446254.6 N:324734.0**	**2** of **5**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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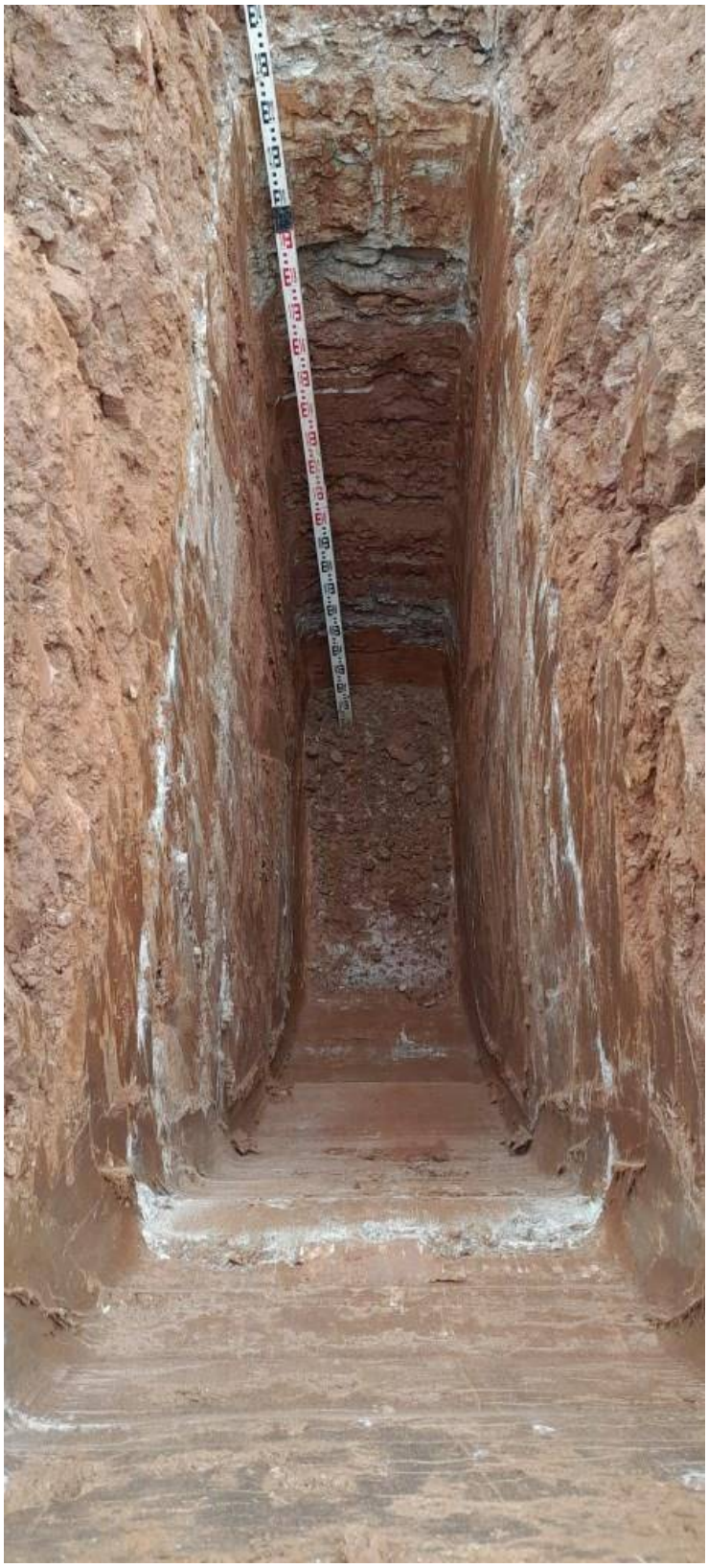
STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP28**
Contract Ref:	Start: **06.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **06.10.22**	**74.20**	**E:446254.6 N:324734.0**	**3** of **5**



Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP28**
Contract Ref:	Start: **06.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **06.10.22**	**74.20**	**E:446254.6 N:324734.0**	**4** of **5**

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Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP28**
Contract Ref:	Start: **06.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **06.10.22**	**74.20**	**E:446254.6 N:324734.0**	**5** of **5**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

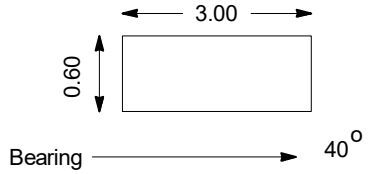
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
EMG Phase 2	**SEGRO**	**TP29**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**26.09.22** End: **26.09.22**	**73.09**	**E:446243.6 N:324661.8**	**1** of **5**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
						TOPSOIL		(0.35)	
0.20	1	ES							
0.20	2	D					72.74	0.35	
0.20-0.30	3	B				Stiff to very stiff dark orangish brown to reddish brown slightly sandy slightly gravelly clayey SILT. Sand is fine to coarse. Gravel is subangular fine to coarse of mudstone and quartzite.			
0.50	4	ES							
0.50	5	D							
0.50-0.60	6	B				. . . Below 0.70m: Friable.		(0.95)	
							71.79	1.30	
1.40	7	ES				Stiff dark reddish brown slightly sandy CLAY with frequent mudstone lithorelicts (up to 30x30m) and occasional thin beds (up to 40mm) of light greenish grey siltstone (spacing: 300 to 800mm). (MERCIA MUDSTONE GROUP)			
1.40	8	D							
1.40-1.50	9	B				. . . Below 1.60m: Friable.		(1.80)	
2.40-2.50	10	B							
2.40	11	D				. . . Below 2.80m: With occasional thin to thick laminae (<20mm) of orangish brown SILT.			
							69.99	3.10	
						Trial pit terminated at 3.10m depth.			

Plan (Not to Scale)



General Remarks

1. All faces similar and stable.
2. No groundwater encountered during excavation.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP29**
Contract Ref:	Start: **26.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **26.09.22**	**73.09**	**E:446243.6 N:324661.8**	**2** of **5**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP29**
Contract Ref:	Start: **26.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **26.09.22**	**73.09**	**E:446243.6 N:324661.8**	**3** of **5**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP29**
Contract Ref:	Start: **26.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **26.09.22**	**73.09**	**E:446243.6 N:324661.8**	**4** of **5**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP29**
Contract Ref:	Start: **26.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **26.09.22**	**73.09**	**E:446243.6 N:324661.8**	**5** of **5**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

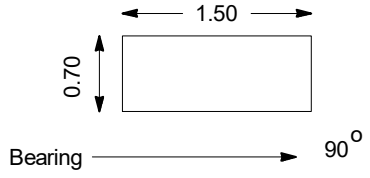
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
EMG Phase 2	**SEGRO**	**TP30**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**22.09.22** End: **22.09.22**	**66.68**	**E:446232.9 N:324495.5**	**1** of **3**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
						TOPSOIL	66.48	0.20	
0.20-0.20	1	ES	1xT+1xJ+1xV			Very stiff dark reddish brown slightly sandy slightly gravelly SILT. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of sandstone and siltstone.			
0.20-0.20	2	D							
0.20-0.35	3	LB							
0.40-0.40	4	ES	1xT+1xJ+1xV					(0.60)	
0.40-0.40	5	D							
0.40-0.40	6	LB					65.88	0.80	
						Stiff friable dark reddish brown slightly sandy CLAY with occasional very thin beds (up to 30mm) of light greenish grey siltstone. Sand is fine to coarse. (MERCIA MUDSTONE GROUP)			
0.90-0.90	7	ES	1xT+1xJ+1xV						
0.90-0.90	8	D						(0.45)	
0.90-0.90	9	LB					65.43	1.25	
1.30-1.40	12	LB				Extremely weak friable dark reddish brown MUDSTONE with frequent very thin beds (up to 40mm) of very weak light greenish grey siltstone. (MERCIA MUDSTONE GROUP)			
1.40-1.40	10	ES	1xT+1xJ+1xV						
1.40-1.40	11	D						(0.75)	
							64.68	2.00	
						Trial pit terminated at 2.00m depth.			

Plan (Not to Scale)



General Remarks

1. All faces similar and stable.
2. No groundwater encountered during excavation.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP30**
Contract Ref:	Start: **22.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **22.09.22**	**66.68**	**E:446232.9 N:324495.5**	**2** of **3**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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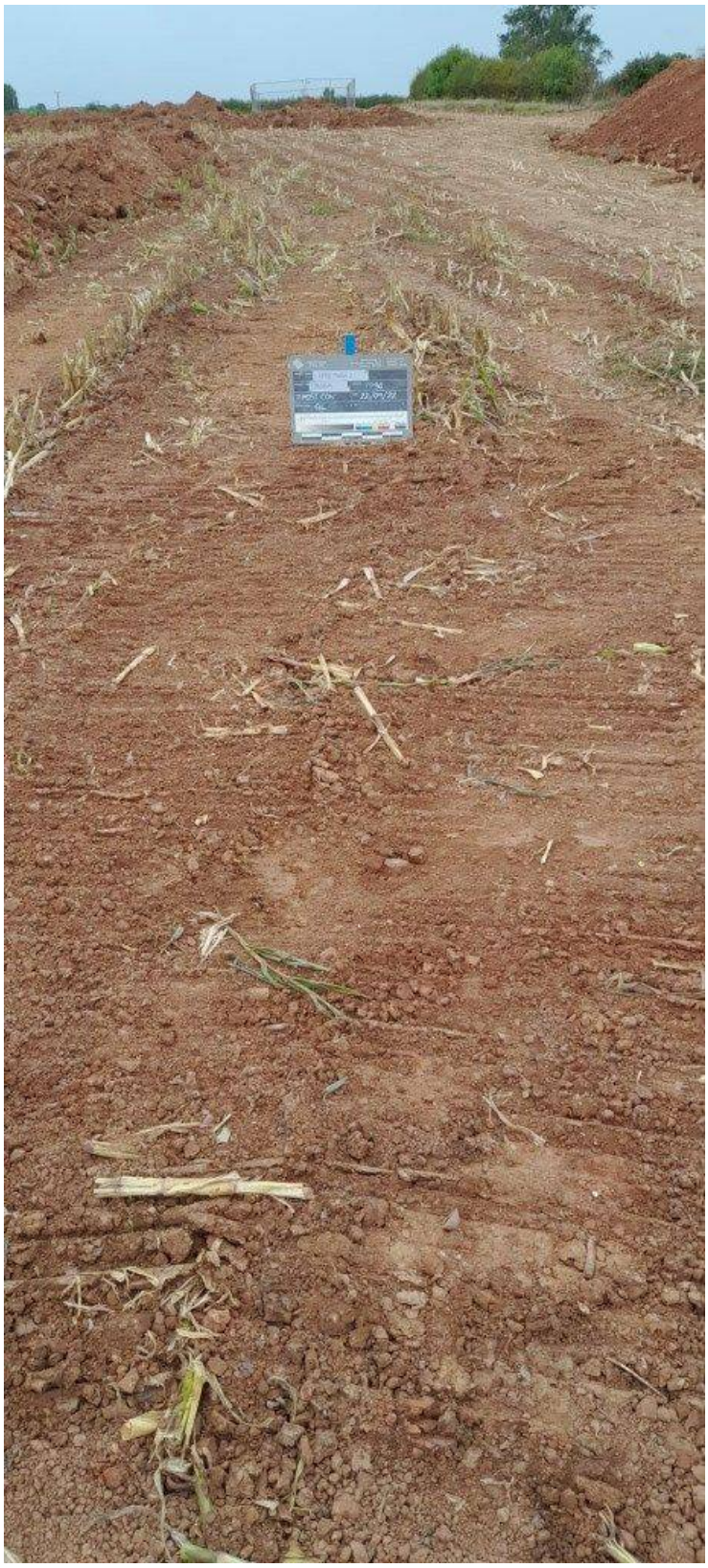
STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP30**
Contract Ref:	Start: **22.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **22.09.22**	**66.68**	**E:446232.9 N:324495.5**	**3** of **3**



Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

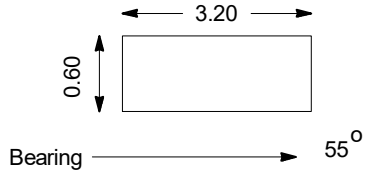
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
EMG Phase 2	**SEGRO**	**TP31**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**06.10.22** End: **06.10.22**	**70.79**	**E:446338.0 N:324723.9**	**1** of **5**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
0.15	1	ES				TOPSOIL		(0.30)	
0.15	2	D					70.49	0.30	
0.40	3	ES				Very stiff dark reddish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subrounded to rounded fine to coarse of quartzite.			
0.40	4	D						(0.50)	
0.40		V	c_u=120						
0.50-0.60	5	B					69.99	0.80	
0.90	6	ES				Stiff to very stiff friable dark orangish brown to reddish brown slightly sandy CLAY with frequent mudstone lithorelicts (up to 15x15mm), occasional very thin beds (up to 60mm) of very weak light greenish grey siltstone, and frequent very thin beds (up to 60mm) of extremely weak to very weak reddish brown mudstone. (MERCIA MUDSTONE GROUP)			
0.90	7	D							
0.90-1.00	8	B							
0.90		V	c_u=105					(2.40)	
2.90	10	D							
2.90-3.00	11	B							
2.90	9	ES					67.59	3.20	
						Trial pit terminated at 3.20m depth.			

Plan (Not to Scale)



General Remarks

1. All faces similar and stable.
2. No groundwater encountered during excavation.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP31**
Contract Ref:	Start: **06.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **06.10.22**	**70.79**	**E:446338.0 N:324723.9**	**2** of **5**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP31**
Contract Ref:	Start: **06.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **06.10.22**	**70.79**	**E:446338.0 N:324723.9**	**3** of **5**

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP31**
Contract Ref:	Start: **06.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **06.10.22**	**70.79**	**E:446338.0 N:324723.9**	**4** of **5**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP31**
Contract Ref:	Start: **06.10.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **06.10.22**	**70.79**	**E:446338.0 N:324723.9**	**5** of **5**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

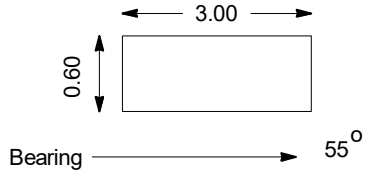
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
EMG Phase 2	**SEGRO**	**TP32**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **23.09.22**	**64.32**	**E:446337.6 N:324462.3**	**1** of **4**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
						TOPSOIL		(0.35)	
0.20	1	ES							
0.20	2	D					63.97	0.35	
0.20-0.30	3	B				Very stiff dark brown slightly sandy CLAY with frequent very thin beds (up to 30mm) of extremely weak light grey siltstone.			
0.50	4	ES						(0.55)	
0.50	5	D							
0.50-0.60	6	B					63.42	0.90	
						Stiff to very stiff dark orangish brown to reddish brown slightly sandy CLAY. Sand is fine to coarse. (MERCIA MUDSTONE GROUP)			
1.10	7	ES							
1.10	8	D							
1.10-1.20	9	B						(0.90)	
1.10		V	c_u=90/105						
							62.52	1.80	
1.80		V	c_u=90			Stiff to very stiff friable dark reddish brown slightly sandy CLAY with frequent mudstone lithorelicts (up to 20x20mm) and occasional very thin beds (up to 30mm) of extremely weak brown mudstone. Sand is fine to coarse. (MERCIA MUDSTONE GROUP)			
2.00	10	ES							
2.00	11	D						(1.20)	
2.00-2.10	12	B							
							61.32	3.00	
						Trial pit terminated at 3.00m depth.			

Plan (Not to Scale)



General Remarks

1. All faces similar and stable.
2. No groundwater encountered during excavation.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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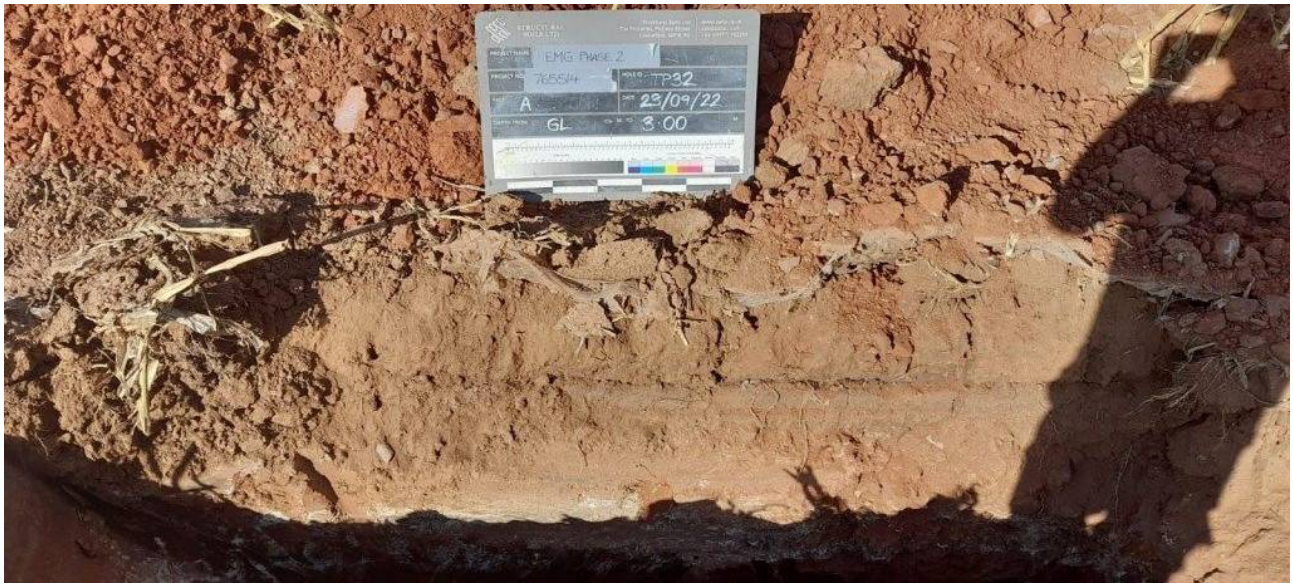
STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP32**
Contract Ref:	Start: **23.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **23.09.22**	**64.32**	**E:446337.6 N:324462.3**	**2** of **4**



Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP32**
Contract Ref:	Start: **23.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **23.09.22**	**64.32**	**E:446337.6 N:324462.3**	**3** of **4**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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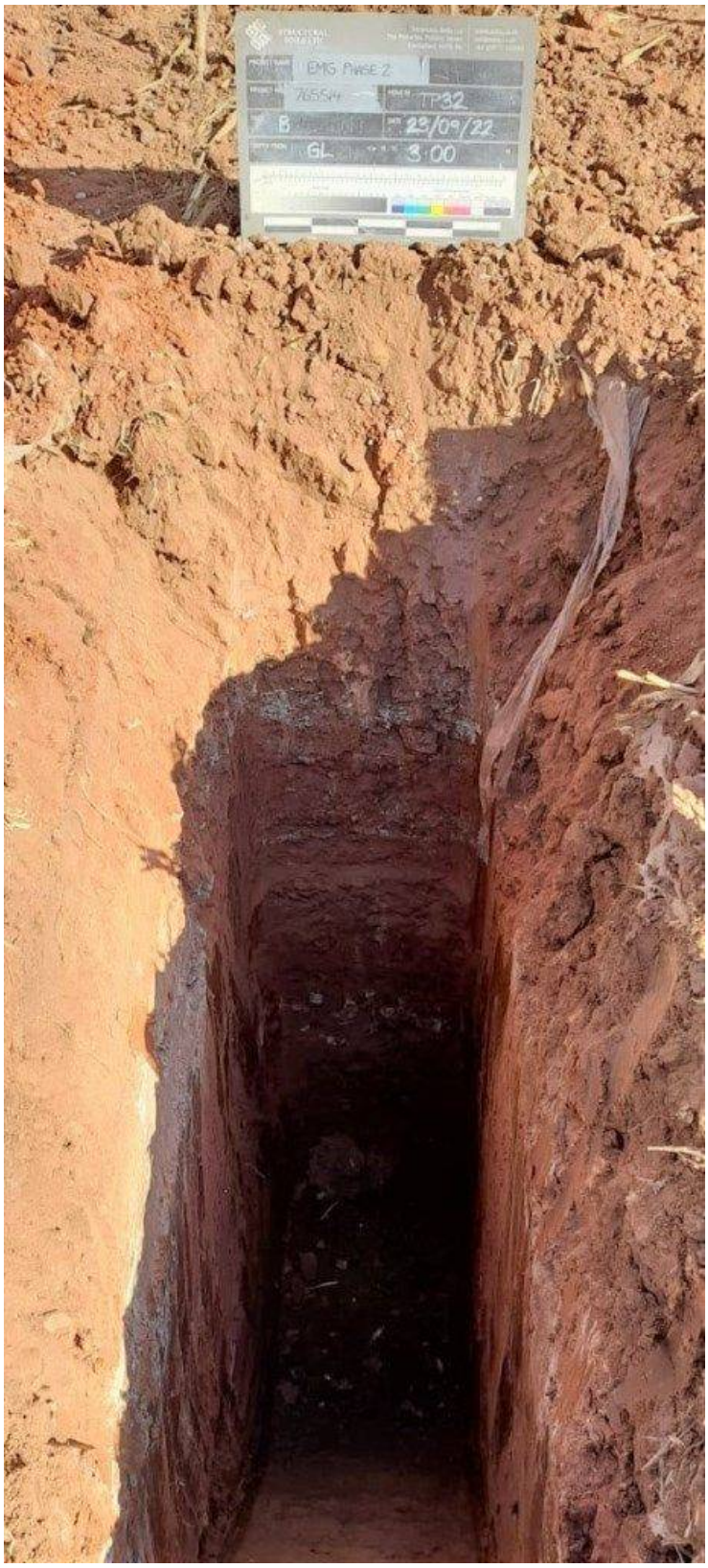
STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP32**
Contract Ref:	Start: **23.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **23.09.22**	**64.32**	**E:446337.6 N:324462.3**	**4** of **4**



Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

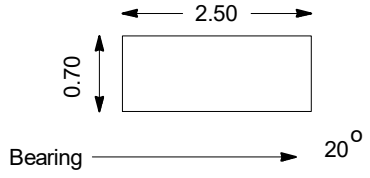
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
EMG Phase 2	**SEGRO**	**TP33**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**21.09.22** End: **21.09.22**	**66.58**	**E:446469.7 N:324711.9**	**1** of **4**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
						TOPSOIL		(0.35)	
0.20-0.20	1	ES	1xT+1xJ+1xV						
0.20-0.20	2	D					66.23	0.35	
0.20-0.35	3	LB				Very stiff reddish brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of mudstone and siltstone. (MERCIA MUDSTONE GROUP)			
0.40-0.40	4	ES	1xT+1xJ+1xV						
0.40-0.40	5	D							
0.40		V	c_u=140			. . . 0.50-0.60m: thin bedded (up to 100mm) of extremely weak lightl grey silstone.			
						. . . 0.50-1.40m: become friable.		(1.05)	
						. . . 0.75-1.40m: frequent mudstone lithorelicts (up to 25x25x30mm) and thick laminate of extremely weak mudstone (up to 20mm)			
1.20-1.20	6	D							
1.20-1.40	7	LB					65.18	1.40	
						Extremely weak friable dark reddish brown MUDSTONE with occasional closely spaced thin beds (up to 40mm) of light greenish grey siltstone. (MERCIA MUDSTONE GROUP)			
1.50-1.50	8	ES	1xT+1xJ+1xV						
1.50-1.50	9	D							
1.50		V	c_u=150					(1.40)	
2.20-2.80	10	LB							
2.20-2.20	11	D							
							63.78	2.80	
						Extremely weak dark reddish brown MUDSTONE with occasional thin beds of extremely weak and very weak light greenish grey siltstone. (MERCIA MUDSTONE GROUP)			
2.90-2.90	12	ES	1xT+1xJ+1xV					(0.40)	
2.90-2.90	13	D							
2.90-3.20	14	LB					63.38	3.20	
						Trial pit terminated at 3.20m depth.			

Plan (Not to Scale)



General Remarks

1. All faces similar and stable.
2. No groundwater encountered during excavation.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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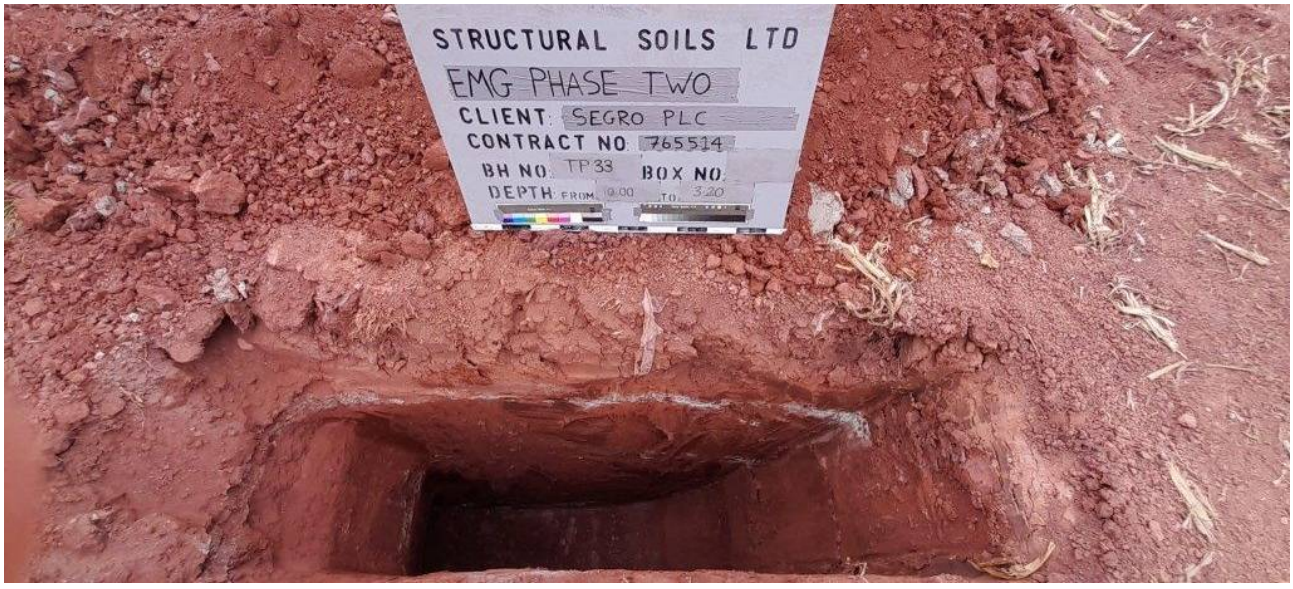
STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP33**
Contract Ref:	Start: **21.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **21.09.22**	**66.58**	**E:446469.7 N:324711.9**	**2** of **4**



Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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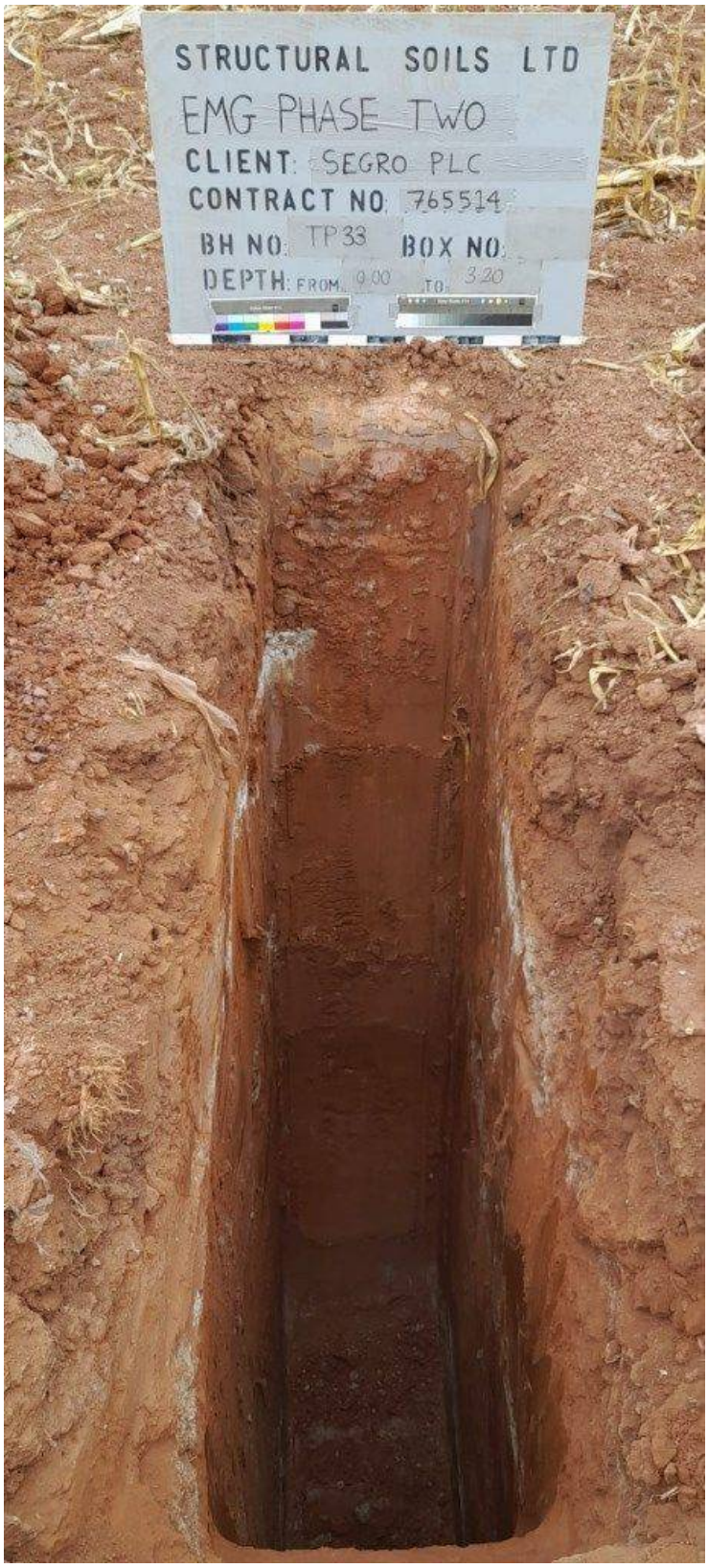
STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP33**
Contract Ref:	Start: **21.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **21.09.22**	**66.58**	**E:446469.7 N:324711.9**	**3** of **4**



Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP33**
Contract Ref:	Start: **21.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **21.09.22**	**66.58**	**E:446469.7 N:324711.9**	**4** of **4**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

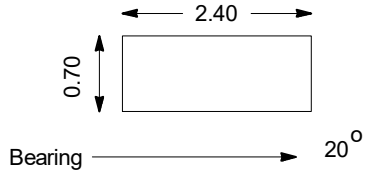
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
EMG Phase 2	**SEGRO**	**TP33A**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**22.09.22** End: **22.09.22**	**66.58**	**E:446469.7 N:324711.9**	**1** of **3**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
						TOPSOIL	66.23	(0.35) 0.35	
						Very stiff reddish brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of mudstone and siltstone. (MERCIA MUDSTONE GROUP)	65.18	(1.05) 1.40	
						Extremely weak friable dark reddish brown MUDSTONE with occasional closely spaced thin beds (up to 40mm) of light greenish grey siltstone. (MERCIA MUDSTONE GROUP)	64.58	(0.60) 2.00	
						Trial pit terminated at 2.00m depth.			

Plan (Not to Scale)



General Remarks

1. All faces similar and stable.
2. No groundwater encountered during excavation.
3. Soakaway carried out at 2.00m.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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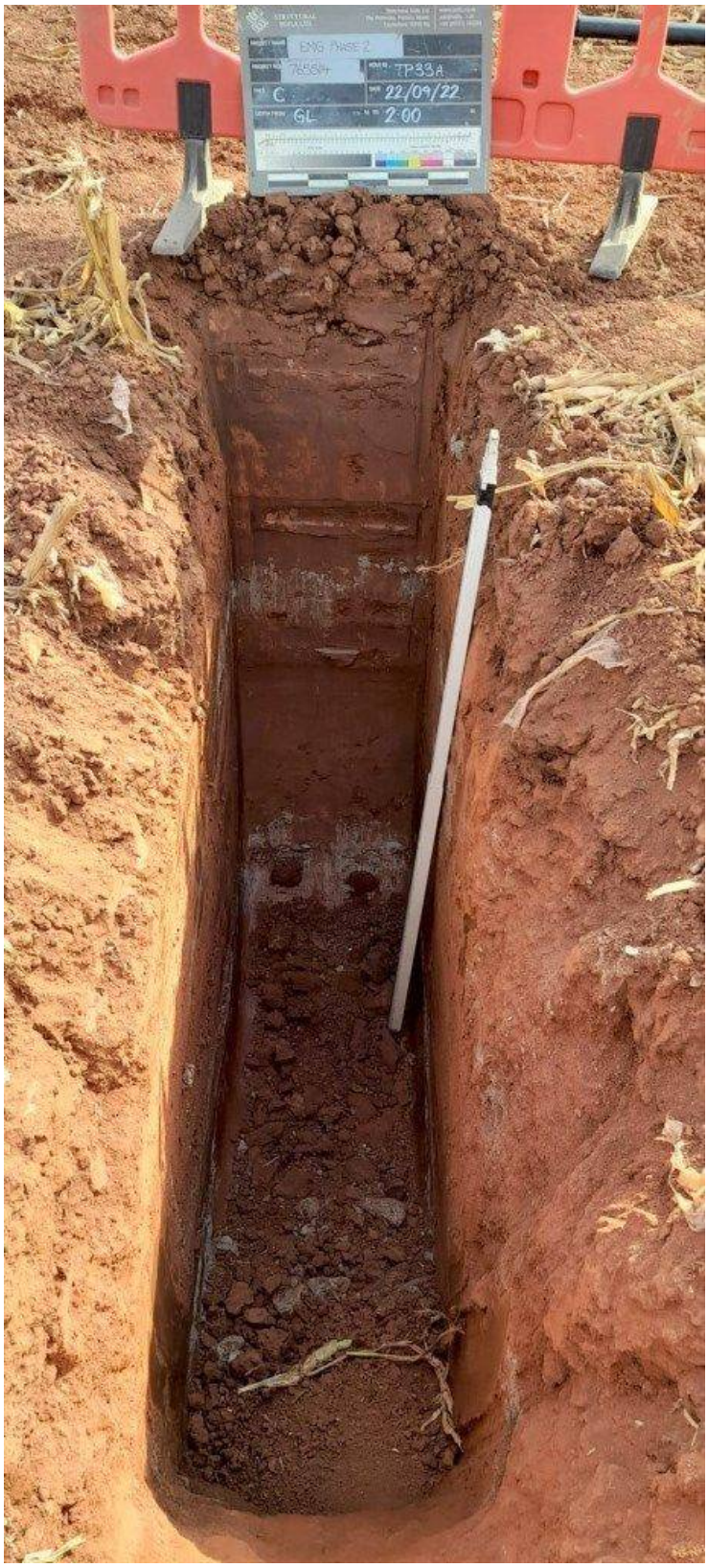
STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP33A**
Contract Ref:	Start: **22.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **22.09.22**	**66.58**	**E:446469.7 N:324711.9**	**2** of **3**



Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP33A**
Contract Ref:	Start: **22.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **22.09.22**	**66.58**	**E:446469.7 N:324711.9**	**3** of **3**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

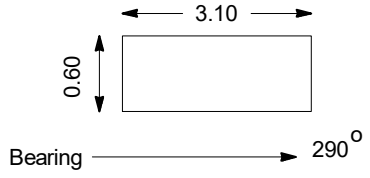
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
EMG Phase 2	**SEGRO**	**TP34**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**23.09.22** End: **23.09.22**	**60.51**	**E:446451.3 N:324450.0**	**1** of **4**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
						TOPSOIL		(0.40)	
0.20	1	ES							
0.20	2	D							
0.20-0.30	3	B					60.11	0.40	
						Firm to stiff dark reddish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse of siltstone. (MERCIA MUDSTONE GROUP)		(0.80)	
0.50	4	ES							
0.50	5	D							
0.50-0.60	6	B				. . . 1.00-1.10m: Very thin bed (<100mm) of very weak light greenish grey siltstone.	59.31	1.20	
						Stiff to very stiff friable dark reddish brown slightly sandy CLAY with frequent mudstone lithorelicts (up to 30x30mm). (MERCIA MUDSTONE GROUP)		(0.80)	
1.30	7	ES							
1.30	8	D							
1.30-1.40	9	B					58.51	2.00	
						Extremely weak dark purplish brown MUDSTONE with occasional light greenish grey reduction horizons (up to 20mm). (MERCIA MUDSTONE GROUP)		(1.10)	
2.10	10	ES							
2.10	11	D							
2.10-2.20	12	B				. . . 2.30-2.45m: Extremely weak light greenish grey siltstone.			
						. . . 2.60m: Friable.	57.41	3.10	
						Trial pit terminated at 3.10m depth.			

Plan (Not to Scale)



General Remarks

1. All faces similar and stable.
2. No groundwater encountered during excavation.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP34**
Contract Ref:	Start: **23.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **23.09.22**	**60.51**	**E:446451.3 N:324450.0**	**2** of **4**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP34**
Contract Ref:	Start: **23.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **23.09.22**	**60.51**	**E:446451.3 N:324450.0**	**3** of **4**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP34**
Contract Ref:	Start: **23.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **23.09.22**	**60.51**	**E:446451.3 N:324450.0**	**4** of **4**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

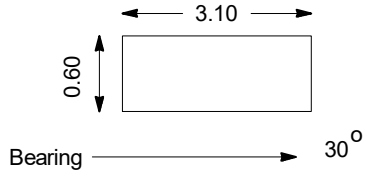
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
EMG Phase 2	**SEGRO**	**TP35**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**23.09.22** End: **23.09.22**	**59.52**	**E:446518.6 N:324546.7**	**1** of **4**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
						TOPSOIL		(0.30)	
0.20	1	ES					59.22	0.30	
0.20	2	D				Friable dark orangish brown slightly sandy SILT with occasional pockets (up to 40x30mm) of light grey silt and black organic carbonaceous material. Sand is fine to coarse.			
0.20-0.30	3	B						(0.80)	
0.40	4	ES							
0.40-0.50	5	B					58.42	1.10	
1.10		V	c_u=110/116			Stiff dark orangish brown slightly sandy slightly gravelly silty CLAY with occasional pockets (up to 30x30mm) of yellow and grey silt. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of quartzite and flint.			
1.20	6	ES						(0.50)	
1.20	7	D							
1.20-1.30	8	B							
1.30		V	c_u=56/70/90			. . . 1.30m: Locally with frequent thin lenses (<20mm) of light yellow and orange silt. Becoming firm to stiff.	57.92	1.60	
1.60		V	c_u=40			Firm to stiff dark reddish brown mottled light grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse of light grey siltstone. (MERCIA MUDSTONE GROUP)			
1.75	10	D							
1.75-1.85	11	B						(1.20)	
1.75	9	ES							
2.50		V	c_u=52	≈		. . . 2.50m: Stiff.	56.72	2.80	
						Very stiff friable dark reddish brown CLAY with abundant mudstone and siltstone lithorelicts (up to 50x50mm). (MERCIA MUDSTONE GROUP)			
						. . . 2.80m: Groundwater seepage (low inflow insufficient for water sample) No significant/measureable rise.		(0.60)	
						. . . 3.00m: Becoming firm to stiff with frequent thin beds (<30mm) of light greenish grey siltstone.			
						. . . 3.2-3.40m: Friable.	56.12	3.40	
						Trial pit terminated at 3.40m depth.			

Plan (Not to Scale)



General Remarks

1. All faces similar and stable.
2. Water seepage at 2.80m.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP35**
Contract Ref:	Start: **23.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **23.09.22**	**59.52**	**E:446518.6 N:324546.7**	**2** of **4**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP35**
Contract Ref:	Start: **23.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **23.09.22**	**59.52**	**E:446518.6 N:324546.7**	**3** of **4**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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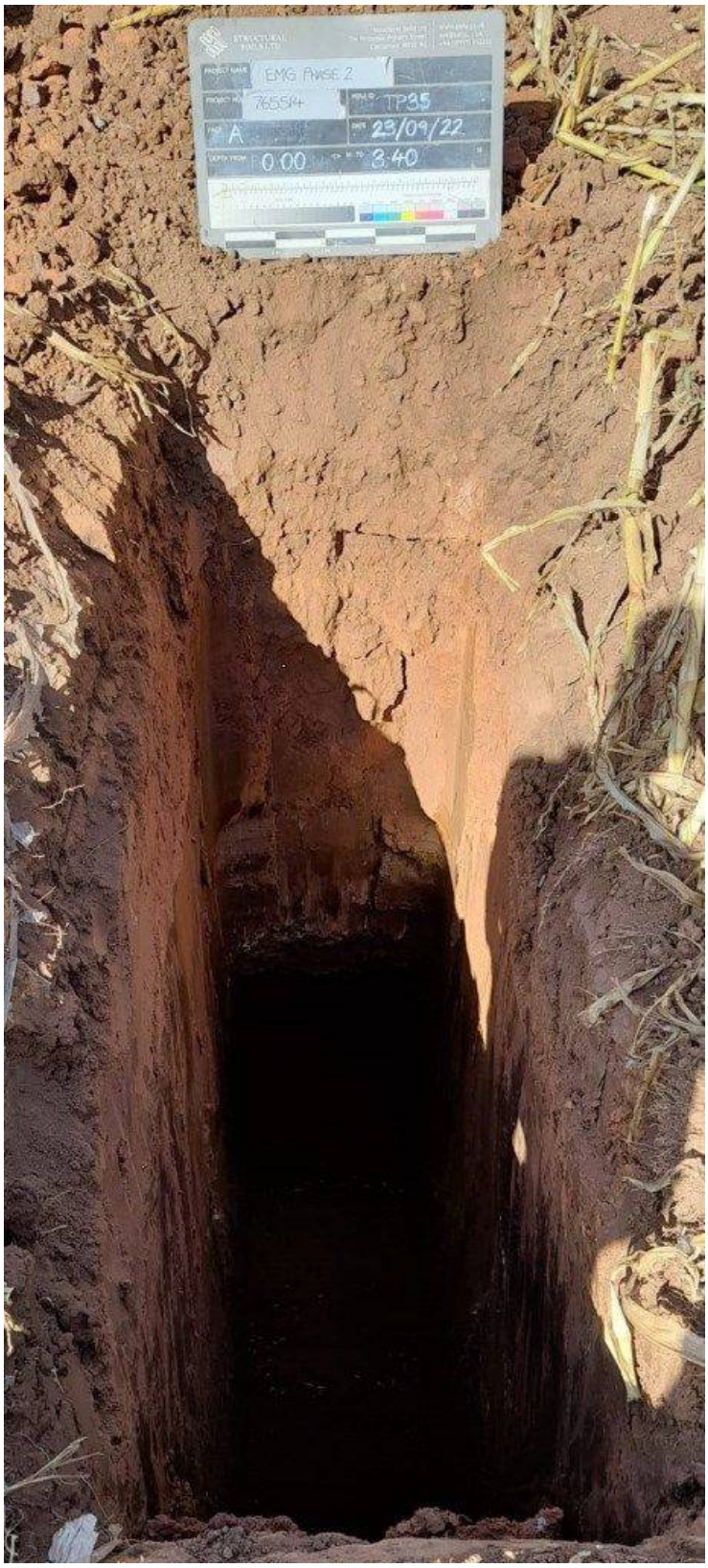
STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP35**
Contract Ref:	Start: **23.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **23.09.22**	**59.52**	**E:446518.6 N:324546.7**	**4** of **4**



Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	

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STRUCTURAL SOILS

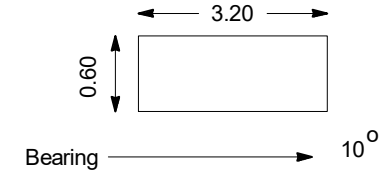
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
EMG Phase 2	**SEGRO**	**TP36**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**23.09.22** End: **23.09.22**	**71.78**	**E:446687.0 N:324743.3**	**1** of **5**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
0.10-0.20	3	B				TOPSOIL		(0.30)	
0.20	1	ES					71.48	0.30	
0.20	2	D				Stiff to very stiff dark reddish brown slightly sandy slighty gravelly silty CLAY. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of quartzite and mudstone.			
0.45	4	ES						(0.45)	
0.45	5	D							
0.45	6	B					71.03	0.75	
0.80	7	ES				Stiff to very stiff dark reddish brown slightly sandy slightly gravelly CLAY with occasional very thin beds (up to 60mm) of very weak light grey siltstone. Sand is fine to coarse. Gravel is subangular fine to coarse of siltstone. (MERCIA MUDSTONE GROUP)			
0.80	8	D						(0.35)	
0.80-0.90	9	B					70.68	1.10	
1.10-1.30	12	B				Stiff to very stiff friable dark orangish brown slightly sandy slightly gravelly CLAY with frequent thin to thick laminae (up to 15mm) of orange silt, occasional very thin beds (up to 30mm) of light greenish grey siltstone, and occasional pockets (up to 4x4mm) of black organic carbonaceous plant matter. (MERCIA MUDSTONE GROUP) . . . Below 1.30m: Reddish brown.			
1.30	10	ES						(0.80)	
1.30	11	D					69.88	1.90	
2.00	13	ES				Stiff dark reddish brown slightly sandy CLAY with frequent mudstone lithorelicts (up to 25x25mm) and frequent very thin beds (up to 35mm) of light grey and brown siltstone. Sand is fine to coarse. (MERCIA MUDSTONE GROUP)			
2.00	14	D						(0.80)	
2.00-2.10	15	B							
2.00		V	c_r=62			. . . 2.50-2.70m: Thin bed (<200mm) of very weak light greenish grey siltstone.	69.08	2.70	
2.70-2.80	18	B				Extremely weak dark reddish brown locally light grey MUDSTONE. (MERCIA MUDSTONE GROUP)	68.98	2.80	
2.75	16	ES							
2.75	17	D							
						Trial pit terminated at 2.80m depth.			

Plan (Not to Scale)



General Remarks

1. All faces similar and stable.
2. No groundwater encountered during excavation.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP36**
Contract Ref:	Start: **23.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **23.09.22**	**71.78**	**E:446687.0 N:324743.3**	**2** of **5**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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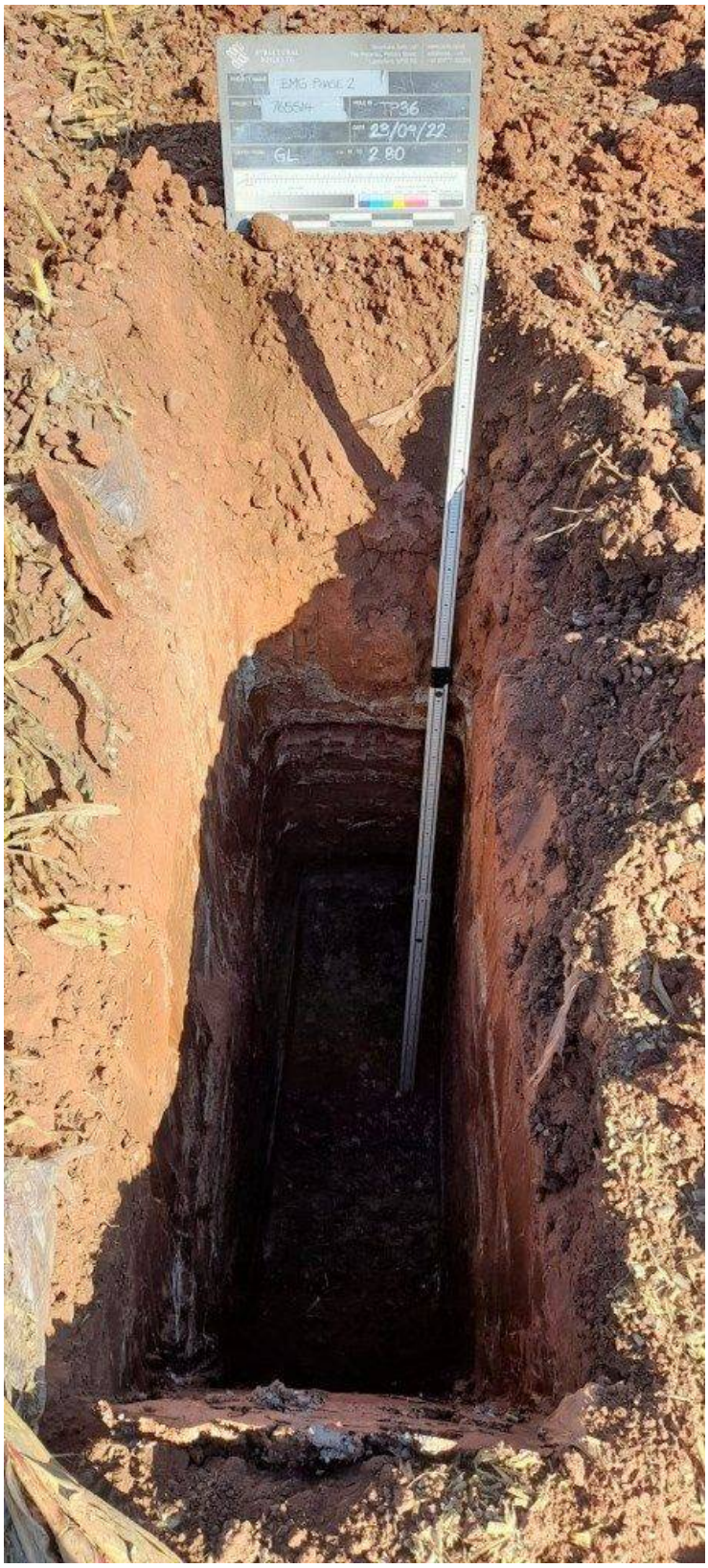
STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP36**
Contract Ref:	Start: **23.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **23.09.22**	**71.78**	**E:446687.0 N:324743.3**	**3** of **5**



Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP36**
Contract Ref:	Start: **23.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **23.09.22**	**71.78**	**E:446687.0 N:324743.3**	**4** of **5**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP36**
Contract Ref:	Start: **23.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **23.09.22**	**71.78**	**E:446687.0 N:324743.3**	**5** of **5**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

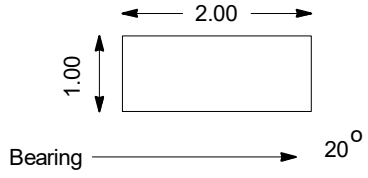
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
EMG Phase 2	**SEGRO**	**TP37**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**21.09.22** End: **21.09.22**	**55.37**	**E:446674.7 N:324413.8**	**1** of **4**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
0.10-0.10	1	ES	1xT+1xJ+1xV			MADE GROUND: Stiff dark brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of quartzite, granodiorite, siltstone, glass, ceramic tile, and plastic sheet. (TOPSOIL)		(0.30)	
0.10-0.10	2	D							
0.10-0.10	3	LB					55.07	0.30	
0.40-0.40	4	ES	1xT+1xJ+1xV			Stiff dark brown slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of quartzite and flint.			
0.40-0.40	5	D							
0.60		V	c_u=90					(0.60)	
						. . . 0.80-0.90m: gravel is subangular fine to coarse of flint.	54.47	0.90	
1.00		V	c_u=110			Stiff dark brown locally mottled dark grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse of quartzite, sandstone, and siltstone.			
1.10-1.10	6	ES	1xT+1xJ+1xV					(0.45)	
1.10-1.10	7	D							
1.10-1.10	8	LB					54.02	1.35	
1.40-1.40	10	D				Firm multicoloured (dark brown, light brown, yellowish brown, grey) slightly gravelly sandy SILT, locally silty clay. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of flint, sandstone, and siltstone			
1.40-1.40	9	ES	1xT+1xJ+1xV						
1.40		V	c_u=38					(0.65)	
1.50-1.50	11	LB				. . . 1.60-2.00m: becoming firm to stiff silty CLAY. Occasional very thin beds of fine to coarse sand.	53.37	2.00	
						Trial pit terminated at 2.00m depth.			

Plan (Not to Scale)



General Remarks

1. All faces similar and stable.
2. No groundwater encountered during excavation.
3. Soakaway carried out at 2.00m.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP37**
Contract Ref:	Start: **21.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **21.09.22**	**55.37**	**E:446674.7 N:324413.8**	**2** of **4**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP37**
Contract Ref:	Start: **21.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **21.09.22**	**55.37**	**E:446674.7 N:324413.8**	**3** of **4**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP37**
Contract Ref:	Start: **21.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **21.09.22**	**55.37**	**E:446674.7 N:324413.8**	**4** of **4**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKalaher**	RL

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STRUCTURAL SOILS

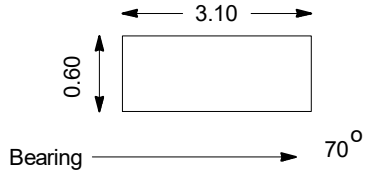
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
EMG Phase 2	**SEGRO**	**TP39**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	**26.09.22** End: **26.09.22**	**55.65**	**E:446595.2 N:324433.4**	**1** of **4**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
						TOPSOIL		(0.30)	
0.15	1	ES							
0.15	2	D					55.35	0.30	
0.15-0.25	3	B				Very stiff dark brown slightly sandy slightly gravelly silty CLAY. Sand is fine to coarse. Gravel is subangular to rounded fine to coarse of quartzite and mudstone.			
0.40	4	ES					55.10	0.55	
0.40	5	D							
0.40-0.50	6	B				Firm to stiff thinly to thickly laminated dark brown slightly sandy CLAY. Sand is fine to coarse.			
0.70	7	ES							
0.70	8	D							
0.70-0.80	9	B				. . . 0.80m: Stiff greyish brown.		(0.65)	
							54.45	1.20	
						Firm dark greyish brown and reddish brown slightly sandy gravelly silty CLAY with frequent pockets (up to 40mm) and laminae (up to 20mm) of yellow and orange silt. Sand is fine to coarse. Gravel is subangular to rounded fine to coarse of quartzite.			
1.30	10	ES						(0.40)	
1.30	11	D							
1.30-1.40	12	B					54.05	1.60	
						Firm to stiff dark reddish brown mottled light grey slightly sandy CLAY with frequent mudstone lithorelicts (up to 30x30mm) and occasional very thin beds (up to 30mm) of extremely weak to very weak light grey siltstone. (MERCIA MUDSTONE GROUP)			
1.80	13	ES							
1.80	14	D							
1.80-1.90	15	B						(1.20)	
							52.85	2.80	
						Firm to stiff friable dark reddish brown slightly sandy silty CLAY with abundant mudstone lithorelicts (up to 60x60x30mm). (MERCIA MUDSTONE GROUP)			
2.90	16	ES							
2.90	17	D							
2.90-3.00	18	B				. . . 3.00m: With frequent very thin beds (<50mm) of mudstone and siltstone.		(0.80)	
							52.05	3.60	
						Trial pit terminated at 3.60m depth.			

Plan (Not to Scale)



General Remarks

1. All faces similar and stable.
2. Water strike at 2.80m rising to 2.63m after 20 minutes.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKavanagh**	

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP39**
Contract Ref:	Start: **26.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **26.09.22**	**55.65**	**E:446595.2 N:324433.4**	**2** of **4**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKavanagh**	

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP39**
Contract Ref:	Start: **26.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **26.09.22**	**55.65**	**E:446595.2 N:324433.4**	**3** of **4**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKavanagh**	

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STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
EMG Phase 2		**SEGRO**		**TP39**
Contract Ref:	Start: **26.09.22**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
765514	End: **26.09.22**	**55.65**	**E:446595.2 N:324433.4**	**4** of **4**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**GKavanagh**	

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SUMMARY OF INSTALLATION AND PIEZOMETER CHARACTERISTICS

Exploratory Position ID	Pipe Caption	Cover Level (m)	Pipe Top Level (m)	Ground Level (m AOD)	Length of Pipe (m)	Piezo meter Depth (m)	Response Zone Top (m)	Response Zone Base (m)	Slotted Pipe Top (m)	Slotted Pipe Base (m)	Pipe Internal Diameter (mm)	Targetted Ground	Remarks
BH01	---	---	---	89.22	7.00	---	1.00	7.00	1.00	7.00	50	---	
BH02	NA	---	---	90.55	20.00	---	4.00	20.00	4.00	20.00	50	---	
BH04	NA	---	---	87.21	30.00	---	6.00	30.30	6.00	30.00	50	---	
BH04	NA	---	---	87.21	2.50	---	1.00	2.50	1.00	2.50	50	---	
BH05	---	---	---	87.17	7.00	---	5.00	7.00	5.00	7.00	50	---	
BH06	NA	---	---	80.29	30.80	---	18.00	30.80	18.00	30.80	50	---	
BH09	Deep	---	---	74.23	18.00	---	14.00	18.00	14.00	18.00	50	---	
BH09	Shallow	---	---	74.23	12.50	---	7.00	12.50	7.00	12.50	19	---	
BH10	---	---	---	87.35	20.20	---	3.00	20.20	3.00	20.20	50	---	
BH11	---	---	---	79.89	31.00	---	13.00	31.00	13.00	31.00	50	---	

STRUCTURAL SOILS
The Potteries
Pottery Street
Castleford
W. Yorkshire WF10 1NJ

Compiled By	Date	Contract Ref:
AJONES	05.05.23	765514

Contract: **EMG Phase 2**

SUMMARY OF INSTALLATION AND PIEZOMETER CHARACTERISTICS

Exploratory Position ID	Pipe Caption	Cover Level (m)	Pipe Top Level (m)	Ground Level (m AOD)	Length of Pipe (m)	Piezo meter Depth (m)	Response Zone Top (m)	Response Zone Base (m)	Slotted Pipe Top (m)	Slotted Pipe Base (m)	Pipe Internal Diameter (mm)	Targetted Ground	Remarks
BH12	NA	---	---	80.23	30.80	---	16.00	30.80	16.00	30.80	50	---	
BH13	---	---	---	88.03	30.00	---	8.00	30.00	8.00	30.00	50	---	
BH14	NA	---	---	84.68	11.50	---	1.00	11.50	1.00	11.50	50	---	
BH16	---	---	---	73.98	20.00	---	2.00	20.00	2.00	20.00	50	---	
BH17	---	---	---	74.45	4.50	---	1.00	4.50	1.00	4.50	50	---	
BH18	---	---	---	77.62	16.00	---	4.50	16.00	4.50	16.00	50	---	
BH21	---	---	---	75.56	30.00	---	5.00	30.00	5.00	30.00	50	---	
BH23	---	---	---	70.77	8.00	---	1.00	8.00	1.00	8.00	50	---	

STRUCTURAL SOILS
The Potteries
Pottery Street
Castleford
W. Yorkshire WF10 1NJ

Compiled By	Date	Contract Ref:
AJONES	05.05.23	765514

Contract: **EMG Phase 2**

AGS

SUMMARY OF INSTALLATION AND PIEZOMETER CHARACTERISTICS

Exploratory Position ID	Pipe Caption	Cover Level (m)	Pipe Top Level (m)	Ground Level (m AOD)	Length of Pipe (m)	Piezo meter Depth (m)	Response Zone Top (m)	Response Zone Base (m)	Slotted Pipe Top (m)	Slotted Pipe Base (m)	Pipe Internal Diameter (mm)	Targetted Ground	Remarks
BH24	---	---	---	67.02	5.00	---	1.00	5.00	1.00	5.00	50	---	
BH25	---	---	---	63.15	20.00	---	4.00	20.00	4.00	20.00	50	---	
BH27	---	---	---	59.09	4.00	---	1.00	4.00	1.00	4.00	50	---	
CP01	---	---	---	91.40	7.50	---	1.00	7.81	1.00	7.50	50	---	
CP06	---	---	---	87.01	11.00	---	1.00	11.26	1.00	11.00	50	---	
CP10	Deep	---	---	75.02	8.50	---	1.00	8.60	1.00	8.50	50	---	
CP11	---	---	---	68.97	6.20	---	1.00	6.20	1.00	6.20	50	---	
CP16	Deep	---	---	77.24	9.00	---	5.75	9.10	5.75	9.00	50	---	
CP17	NA	---	---	82.31	17.00	---	14.00	17.21	14.00	17.00	50	---	

SUMMARY OF INSTALLATION AND PIEZOMETER CHARACTERISTICS

Exploratory Position ID	Pipe Caption	Cover Level (m)	Pipe Top Level (m)	Ground Level (m AOD)	Length of Pipe (m)	Piezo meter Depth (m)	Response Zone Top (m)	Response Zone Base (m)	Slotted Pipe Top (m)	Slotted Pipe Base (m)	Pipe Internal Diameter (mm)	Targetted Ground	Remarks
CP21	---	---	---	68.05	5.00	---	1.00	5.38	1.00	5.00	50	---	
CP27	---	---	---	55.98	3.00	---	1.00	3.00	1.00	3.00	50	---	
CP28	---	---	---	64.08	4.60	---	1.00	5.00	1.00	4.60	50	---	

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APPENDIX C -
IN-SITU TESTING

(i) Standard Penetration Test (SPT) Summary Sheet

(ii) Permeability Test Results

(iii) Soakaway Test Results

STANDARD PENETRATION TEST SUMMARY TABLE

Exploratory Position ID	Depth (m)	Hole Dia (mm)	Casing Depth (m)	Water Depth (m)	Seating Drive		Test Drive			Hammer ID	Calibration Date	Energy Ratio (%)	N_{60}	Comments
					Blows	Pen (mm)	Blows	R (mm)	Result					
BH01	2.00	200	1.50	Dry	3,4	150	5,6,12,13		N=36	AR3104-2022	25/04/2022	64	38	
	3.00	200	3.00	Dry	6,10	150	12,13,13,13		N=51	AR3104-2022	25/04/2022	64	54	
	4.00	200	3.00	Dry	6,8	150	13,15,18,20		N=66	AR3104-2022	25/04/2022	64	70	
	6.75	146	4.45	6.10	4,10	150	14,23,25,29		N=91	AR3830-2021	19/11/2021	67	102	
BH02	2.00	200	1.50	Dry	4,6	150	8,8,9,10		N=35	AR3104-2022	25/04/2022	64	37	
	3.00	200	3.00	Dry	6,8	150	16,19,15+	210	6,8/16,19,15	AR3104-2022	25/04/2022	64		
									for 60mm					
	4.00	200	3.00	Dry	3,8	150	12,14,14,10+	265	3,8/12,14,14,10	AR3104-2022	25/04/2022	64		
									for 40mm					
	6.50	146	4.00	6.00	3,4	150	7,8,11,15		N=41	AR3830-2021	19/11/2021	67	46	
BH03	1.00	200	0.00	Dry	4,6	150	6,6,6,7		N=25	AR3104-2022	25/04/2022	64	27	
	2.00	200	1.50	Dry	4,6	150	7,8,8,8		N=31	AR3104-2022	25/04/2022	64	33	
	3.00	200	3.00	Dry	6,8	150	8,15,15,12+	285	6,8/8,15,15,12	AR3104-2022	25/04/2022	64		
									for 60mm					
	4.00	200	3.00	Dry	4,5	150	12,15,17,6+	240	4,5/12,15,17,6	AR3104-2022	25/04/2022	64		
									for 15mm					

Notes:
1. Tests carried out in general accordance with BS EN ISO 22476-3:2005+A1:2011.
2. Reported blows are for 75mm penetration unless indicated "+".
3. Where full test drive was not achieved, actual penetration (R) and total test drive blows are reported.
4. Tests carried out using a split spoon sampler unless noted as SPT(c) (denotes use of solid cone method) in the comments column.
5. Entries in the water depth column reflects the measured water depth at time of test.

N_{60} = (Measured hammer energy ratio / 60) x N value

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STANDARD PENETRATION TEST SUMMARY TABLE

Exploratory Position ID	Depth (m)	Hole Dia (mm)	Casing Depth (m)	Water Depth (m)	Seating Drive		Test Drive			Hammer ID	Calibration Date	Energy Ratio (%)	N_{60}	Comments
					Blows	Pen (mm)	Blows	R (mm)	Result					
BH04	1.20	200	0.00	Dry	3,3	150	4,4,5,4		N=17	AR3104-2022	25/04/2022	64	18	
	3.00	200	3.00	Dry	4,8	150	8,9,9,10		N=36	AR3104-2022	25/04/2022	64	38	
	4.00	200	3.00	Dry	4,8	150	10,18,22	225	4,8/10,18,22	AR3104-2022	25/04/2022	64		
									for 75mm					
	5.00	200	3.00	Dry	15,10	125	18,21,11+	185	15,10/18,21,11	AR3104-2022	25/04/2022	64		
									for 35mm					
BH05	1.20	200	0.00	Dry	3,3	150	4,4,4,5		N=17	AR3104-2022	25/04/2022	64	18	
	3.00	200	3.00	Dry	3,4	150	20,30	150	3,4/20,30	AR3104-2022	25/04/2022	64		
									for 75mm					
	4.00	200	4.00	Dry	11,14	135	26,24+	120	11,14/26,24	AR3104-2022	25/04/2022	64		SPT(c)
									for 45mm					
	5.00	200	5.00	Dry	5,6	150	10,9,10,10		N=39	AR3104-2022	25/04/2022	64	42	SPT(c)
	6.00	200	6.00	Dry	3,4	150	4,6,6,7		N=23	AR3104-2022	25/04/2022	64	25	
	7.50	200	7.50	Dry	10,10	150	9,15,15,11+	270	10,10/9,15,15,11	AR3104-2022	25/04/2022	64		
									for 45mm					
	9.00	200	9.00	Dry	13,12	150	21,29+	145	13,12/21,29	AR3104-2022	25/04/2022	64		
									for 70mm					
	9.50	200	9.00	Dry	13,12	115	32,18+	115	13,12/32,18	AR3104-2022	25/04/2022	64		SPT(c)

Notes:
1. Tests carried out in general accordance with BS EN ISO 22476-3:2005+A1:2011.
2. Reported blows are for 75mm penetration unless indicated "+".
3. Where full test drive was not achieved, actual penetration (R) and total test drive blows are reported.
4. Tests carried out using a split spoon sampler unless noted as SPT(c) (denotes use of solid cone method) in the comments column.
5. Entries in the water depth column reflects the measured water depth at time of test.

N_{60} = (Measured hammer energy ratio / 60) x N value

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STANDARD PENETRATION TEST SUMMARY TABLE

Exploratory Position ID	Depth (m)	Hole Dia (mm)	Casing Depth (m)	Water Depth (m)	Seating Drive		Test Drive			Hammer ID	Calibration Date	Energy Ratio (%)	N_{60}	Comments
					Blows	Pen (mm)	Blows	R (mm)	Result					
									for 40mm					
	10.00	200	9.00	Dry	5,7	150	12,18,20+	190	5,7/12,18,20	AR3293-2022	09/09/2022	73		
									for 40mm					
	13.00	200	9.00	Dry	3,5	150	5,6,9,15		N=35	AR3293-2022	09/09/2022	73	43	
	13.50	200	9.00	Dry	7,12	150	18,32+	135	7,12/18,32	AR3293-2022	09/09/2022	73		
									for 60mm					
	14.00	200	9.00	Dry	25	50	50+	40	25/50	AR3293-2022	09/09/2022	73		
									for 40mm					
	15.00	200	9.00	Dry	25	70	50+	50	25/50	AR3293-2022	09/09/2022	73		
									for 50mm					
BH06	2.00	200	1.50	Dry	3,4	150	4,3,4,5		N=16	AR3104-2022	25/04/2022	64	17	
	4.00	200	3.00	Dry	3,2	150	3,3,4,5		N=15	AR3104-2022	25/04/2022	64	16	
	6.00	200	6.00	Dry	4,3	150	4,4,5,5		N=18	AR3104-2022	25/04/2022	64	19	
	9.00	200	9.00	Dry	3,4	150	5,7,9,9		N=30	AR3104-2022	25/04/2022	64	32	
	12.00	200	12.00	Dry	4,4	150	6,6,8,7		N=27	AR3104-2022	25/04/2022	64	29	
	15.00	200	15.00	Dry	5,6	150	6,9,10,10		N=35	AR3104-2022	25/04/2022	64	37	
	18.00	200	16.50	Dry	10,15	125	24,26+	135	10,15/24,26	AR3104-2022	25/04/2022	64		
									for 60mm					

Notes:
1. Tests carried out in general accordance with BS EN ISO 22476-3:2005+A1:2011.
2. Reported blows are for 75mm penetration unless indicated "+".
3. Where full test drive was not achieved, actual penetration (R) and total test drive blows are reported.
4. Tests carried out using a split spoon sampler unless noted as SPT(c) (denotes use of solid cone method) in the comments column.
5. Entries in the water depth column reflects the measured water depth at time of test.

N_{60} = (Measured hammer energy ratio / 60) x N value

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STANDARD PENETRATION TEST SUMMARY TABLE

Exploratory Position ID	Depth (m)	Hole Dia (mm)	Casing Depth (m)	Water Depth (m)	Seating Drive		Test Drive			Hammer ID	Calibration Date	Energy Ratio (%)	N_{60}	Comments
					Blows	Pen (mm)	Blows	R (mm)	Result					
BH06	18.50	200	16.50	Dry	8,17	115	34,16+	105	8,17/34,16	AR3104-2022	25/04/2022	64		
									for 30mm					
BH07	1.20	200	1.20	Dry	3,5	150	8,8,9,11		N=36	JB14-2022	16/06/2022	63	38	
	2.00	200	1.50	Dry	5,8	150	9,11,14,15		N=49	JB14-2022	16/06/2022	63	51	
	3.00	200	3.00	Dry	5,7	150	9,12,13,16		N=50	JB14-2022	16/06/2022	63	52	
	4.00	200	3.00	Dry	11,14	133	19,24,7+	178	11,14/19,24,7	JB14-2022	16/06/2022	63		
									for 28mm					
	4.50	200	3.00	Dry	19,6	93	42,8+	80	19,6/42,8	JB14-2022	16/06/2022	63		
									for 5mm					
BH08	1.20	200	1.20	Dry	2,3	150	6,7,8,10		N=31					
	3.00	200	1.50	Dry	4,6	150	7,9,9,10		N=35					
	5.00	200	3.00	Dry	3,5	150	6,8,10,11		N=35					
	6.00	200	3.00	Dry	5,8	150	9,12,16,13		N=50					
	7.00	200	3.00	Dry	8,13	150	17,19,14+	190	8,13/17,19,14					
									for 40mm					
	8.00	200	3.00	Dry	11,14	137	18,23,9+	164	11,14/18,23,9					
									for 14mm					
BH08	26.00	150	8.00		25	70	50+	60	25/50					

Notes:
1. Tests carried out in general accordance with BS EN ISO 22476-3:2005+A1:2011.
2. Reported blows are for 75mm penetration unless indicated "+".
3. Where full test drive was not achieved, actual penetration (R) and total test drive blows are reported.
4. Tests carried out using a split spoon sampler unless noted as SPT(c) (denotes use of solid cone method) in the comments column.
5. Entries in the water depth column reflects the measured water depth at time of test.

N_{60} = (Measured hammer energy ratio / 60) x N value

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STANDARD PENETRATION TEST SUMMARY TABLE

Exploratory Position ID	Depth (m)	Hole Dia (mm)	Casing Depth (m)	Water Depth (m)	Seating Drive		Test Drive			Hammer ID	Calibration Date	Energy Ratio (%)	N_{60}	Comments
					Blows	Pen (mm)	Blows	R (mm)	Result					
									for 60mm					
BH09	1.20	200	1.20	Dry	1,2	150	2,2,3,3		N=10	JB14-2022	16/06/2022	63	10	
	3.00	200	1.50	Dry	2,2	150	3,3,4,5		N=15	JB14-2022	16/06/2022	63	16	
	5.00	200	4.50	3.95	1,1	150	2,2,1,2		N=7	JB14-2022	16/06/2022	63	7	
	6.00	200	6.00	5.20	1,2	150	5,8,9,11		N=33	JB14-2022	16/06/2022	63	35	
	7.00	200	6.00	6.40	3,4	150	6,9,11,14		N=40	JB14-2022	16/06/2022	63	42	
	8.00	200	7.50	7.10	8,17	136	17,23,10+	189	8,17/17,23,10	JB14-2022	16/06/2022	63		
									for 39mm					
	9.00	200	7.50	8.65	15,10	134	24,26+	145	15,10/24,26	JB14-2022	16/06/2022	63		
									for 70mm					
BH10	1.20	150	0.00	Dry	3,3	150	3,4,4,8		N=19	LS01-2022	06/05/2022	64	20	
	2.20	150	0.00	Dry	8,10	150	10,11,16,13+	265	8,10/10,11,16,13	LS01-2022	06/05/2022	64		
									for 40mm					
BH11	2.00	200			1,2	150	5,5,4,6		N=20	JB05-2022	25/08/2022	68	23	
	4.00	200			1,2	150	4,5,6,9		N=24	JB05-2022	25/08/2022	68	27	
	6.00	200			2,3	150	5,5,7,10		N=27	JB05-2022	25/08/2022	68	31	
	9.00	200			4,10	150	10,11,12,17		N=50	JB05-2022	25/08/2022	68	57	
	9.60	200			10,13	150	15,15,12,8+	270	10,13/15,15,12,8	JB05-2022	25/08/2022	68		

Notes:
1. Tests carried out in general accordance with BS EN ISO 22476-3:2005+A1:2011.
2. Reported blows are for 75mm penetration unless indicated "+".
3. Where full test drive was not achieved, actual penetration (R) and total test drive blows are reported.
4. Tests carried out using a split spoon sampler unless noted as SPT(c) (denotes use of solid cone method) in the comments column.
5. Entries in the water depth column reflects the measured water depth at time of test.

N_{60} = (Measured hammer energy ratio / 60) x N value

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STANDARD PENETRATION TEST SUMMARY TABLE

Exploratory Position ID	Depth (m)	Hole Dia (mm)	Casing Depth (m)	Water Depth (m)	Seating Drive		Test Drive			Hammer ID	Calibration Date	Energy Ratio (%)	N_{60}	Comments
					Blows	Pen (mm)	Blows	R (mm)	Result					
									for 45mm					
	11.00	200			10,15	115	40,10+	100	10,15/40,10	JB05-2022	25/08/2022	68		
									for 25mm					
	12.50	200			12,13	150	24,19,7+	165	12,13/24,19,7	JB05-2022	25/08/2022	68		
									for 15mm					
BH12	2.00	200	1.50	Dry	2,3	150	2,4,4,4		N=14	AR3104-2022	25/04/2022	64	15	
	4.00	200	3.00	Dry	3,2	150	3,4,4,4		N=15	AR3104-2022	25/04/2022	64	16	
	6.00	200	4.50	Dry	1,3	150	4,6,7,7		N=24	AR3104-2022	25/04/2022	64	26	
	9.00	200	9.00	Dry	4,5	150	4,6,7,8		N=25	AR3104-2022	25/04/2022	64	27	
	12.00	200	12.00	Dry	5,7	150	7,20,23+	220	5,7/7,20,23	AR3104-2022	25/04/2022	64		
									for 70mm					
	13.50	200	13.50	Dry	7,9	150	16,23,11+	190	7,9/16,23,11	AR3104-2022	25/04/2022	64		
									for 40mm					
	15.00	200	15.00	13.10	6,5	150	9,9,12,11		N=41	AR3104-2022	25/04/2022	64	44	
	16.50	200	16.50	14.20	7,9	150	50+	70	7,9/50	AR3104-2022	25/04/2022	64		
									for 70mm					
	16.70	200	16.50	16.20	25	60	50	75	25/50	AR3104-2022	25/04/2022	64		
									for 75mm					

Notes:
1. Tests carried out in general accordance with BS EN ISO 22476-3:2005+A1:2011.
2. Reported blows are for 75mm penetration unless indicated "+".
3. Where full test drive was not achieved, actual penetration (R) and total test drive blows are reported.
4. Tests carried out using a split spoon sampler unless noted as SPT(c) (denotes use of solid cone method) in the comments column.
5. Entries in the water depth column reflects the measured water depth at time of test.

N_{60} = (Measured hammer energy ratio / 60) x N value

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STANDARD PENETRATION TEST SUMMARY TABLE

Exploratory Position ID	Depth (m)	Hole Dia (mm)	Casing Depth (m)	Water Depth (m)	Seating Drive		Test Drive			Hammer ID	Calibration Date	Energy Ratio (%)	N_{60}	Comments
					Blows	Pen (mm)	Blows	R (mm)	Result					
BH13	1.20	200	0.00	Dry	4,5	150	6,4,5,5		N=20	AR3104-2022	25/04/2022	64	21	
	2.00	200	1.50	Dry	2,1	150	2,2,1,2		N=7	AR3104-2022	25/04/2022	64	7	
	4.00	200	3.00	Dry	3,2	150	3,5,6,6		N=20	AR3104-2022	25/04/2022	64	21	
	6.00	200	6.00	Dry	6,6	150	7,8,7,7		N=29	AR3104-2022	25/04/2022	64	31	
	7.50	200	7.50	Dry	6,6	150	9,12,15,14+	295	6,6/9,12,15,14	AR3104-2022	25/04/2022	64		
									for 70mm					
	9.00	200	7.50	8.00	8,12	150	14,16,20	225	8,12/14,16,20	AR3104-2022	25/04/2022	64		
									for 75mm					
BH14	2.00	200	1.50	Dry	1,2	150	3,2,3,4		N=12	AR3104-2022	25/04/2022	64	13	
	4.00	200	3.00	Dry	7,8	150	9,8,6,8		N=31	AR3104-2022	25/04/2022	64	33	
	5.00	200	4.50	Dry	6,5	150	4,3,4,4		N=15	AR3104-2022	25/04/2022	64	16	
	6.00	200	6.00	Dry	6,7	150	8,10,9,10		N=37	AR3104-2022	25/04/2022	64	39	
	7.50	200	7.50	Dry	5,6	150	6,8,9,9		N=32	AR3104-2022	25/04/2022	64	34	
	9.00	200	9.00	8.80	5,4	150	5,5,10,11		N=31	AR3104-2022	25/04/2022	64	33	
	10.50	200	10.50	10.30	3,5	150	7,8,7,7		N=29	AR3104-2022	25/04/2022	64	31	
	12.00	200	12.00	9.50	3,6	150	10,11,15,14+	280	3,6/10,11,15,14	AR3104-2022	25/04/2022	64		
									for 55mm					
BH14	12.50	200	12.00	10.10	13,12	125	24,26+	140	13,12/24,26	AR3104-2022	25/04/2022	64		

Notes:
1. Tests carried out in general accordance with BS EN ISO 22476-3:2005+A1:2011.
2. Reported blows are for 75mm penetration unless indicated "+".
3. Where full test drive was not achieved, actual penetration (R) and total test drive blows are reported.
4. Tests carried out using a split spoon sampler unless noted as SPT(c) (denotes use of solid cone method) in the comments column.
5. Entries in the water depth column reflects the measured water depth at time of test.

N_{60} = (Measured hammer energy ratio / 60) x N value

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STANDARD PENETRATION TEST SUMMARY TABLE

Exploratory Position ID	Depth (m)	Hole Dia (mm)	Casing Depth (m)	Water Depth (m)	Seating Drive		Test Drive			Hammer ID	Calibration Date	Energy Ratio (%)	N_{60}	Comments
					Blows	Pen (mm)	Blows	R (mm)	Result					
									for 65mm					
BH15	2.00	200	1.50	Dry	3,4	150	6,7,6,11		N=30	AR3104-2022	25/04/2022	64	32	
	3.00	200	3.00	Dry	10,10	150	10,6,7,7		N=30	AR3104-2022	25/04/2022	64	32	
	4.00	200	4.00	3.00	4,6	150	8,7,8,9		N=32	AR3104-2022	25/04/2022	64	34	SPT(c)
	5.00	200	4.50	4.00	8,7	150	8,9,8,8		N=33	AR3104-2022	25/04/2022	64	35	SPT(c)
	6.00	200	6.00	5.20	4,6	150	7,7,10,9		N=33	AR3104-2022	25/04/2022	64	35	SPT(c)
	7.50	200	7.50	5.40	4,5	150	6,6,7,7		N=26	AR3104-2022	25/04/2022	64	28	
	9.00	200	9.00	8.20	4,5	150	7,26,17+	170	4,5/7,26,17	AR3104-2022	25/04/2022	64		
									for 20mm					
	10.50	200	10.50	10.00	4,6	150	5,6,4,8		N=23	AR3104-2022	25/04/2022	64	25	
	12.00	200	12.00	9.20	4,7	150	6,4,16,10		N=36	AR3104-2022	25/04/2022	64	38	
	13.50	200	13.50	12.10	3,4	150	19,31	150	3,4/19,31	AR3104-2022	25/04/2022	64		
									for 75mm					
	13.80	200	13.50	Dry	25	75	26,24+	145	25/26,24	AR3104-2022	25/04/2022	64		
									for 70mm					
BH16	2.00	200	1.50	Dry	3,5	150	7,8,8,9		N=32	AR3104-2022	25/04/2022	64	34	
	3.00	200	3.00	Dry	9,9	150	9,13,16,12+	280	9,9/9,13,16,12	AR3104-2022	25/04/2022	64		
									for 55mm					

Notes:
1. Tests carried out in general accordance with BS EN ISO 22476-3:2005+A1:2011.
2. Reported blows are for 75mm penetration unless indicated "+".
3. Where full test drive was not achieved, actual penetration (R) and total test drive blows are reported.
4. Tests carried out using a split spoon sampler unless noted as SPT(c) (denotes use of solid cone method) in the comments column.
5. Entries in the water depth column reflects the measured water depth at time of test.

N_{60} = (Measured hammer energy ratio / 60) x N value

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Exploratory Position ID	Depth (m)	Hole Dia (mm)	Casing Depth (m)	Water Depth (m)	Seating Drive		Test Drive			Hammer ID	Calibration Date	Energy Ratio (%)	N_{60}	Comments
					Blows	Pen (mm)	Blows	R (mm)	Result					
BH16	4.00	200	3.00	Dry	9,12	150	16,18,16+	210	9,12/16,18,16	AR3104-2022	25/04/2022	64		
									for 60mm					
BH17	2.00	200	1.50	Dry	2,3	150	2,3,4,4		N=13	AR3104-2022	25/04/2022	64	14	
	3.00	200	3.00	Dry	3,3	150	4,3,4,5		N=16	AR3104-2022	25/04/2022	64	17	
	4.00	200	4.00	Dry	6,10	150	12,13,13,12+	285	6,10/12,13,13,12	AR3104-2022	25/04/2022	64		
									for 60mm					
	5.00	200	4.50	Dry	6,6	150	6,10,11,12		N=39	AR3104-2022	25/04/2022	64	42	
	5.50	200	4.50	Dry	8,12	150	15,21,14+	190	8,12/15,21,14	AR3104-2022	25/04/2022	64		
									for 40mm					
	6.00	200	4.50	Dry	12,13	135	19,24,7+	165	12,13/19,24,7	AR3104-2022	25/04/2022	64		
									for 15mm					
	16.50	150	6.00		25	60	50+	50	25/50	AR3784-2022	09/09/2022	71		
									for 50mm					
BH18	1.20	200	1.20	Dry	2,3	150	3,4,5,6		N=18	JB14-2022	16/06/2022	63	19	
	3.00	200	1.50	Dry	3,3	150	4,5,7,7		N=23	JB14-2022	16/06/2022	63	24	
	5.00	200	4.50	Dry	4,5	150	6,8,8,9		N=31	JB14-2022	16/06/2022	63	33	
	6.00	200	6.00	Dry	3,6	150	8,10,11,14		N=43	JB14-2022	16/06/2022	63	45	
	7.00	200	6.00	Dry	8,12	150	14,19,17+	211	8,12/14,19,17	JB14-2022	16/06/2022	63		

Notes:
1. Tests carried out in general accordance with BS EN ISO 22476-3:2005+A1:2011.
2. Reported blows are for 75mm penetration unless indicated "+".
3. Where full test drive was not achieved, actual penetration (R) and total test drive blows are reported.
4. Tests carried out using a split spoon sampler unless noted as SPT(c) (denotes use of solid cone method) in the comments column.
5. Entries in the water depth column reflects the measured water depth at time of test.

N_{60} = (Measured hammer energy ratio / 60) x N value

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STANDARD PENETRATION TEST SUMMARY TABLE

Exploratory Position ID	Depth (m)	Hole Dia (mm)	Casing Depth (m)	Water Depth (m)	Seating Drive		Test Drive			Hammer ID	Calibration Date	Energy Ratio (%)	N_{60}	Comments
					Blows	Pen (mm)	Blows	R (mm)	Result					
									for 61mm					
	7.50	200	6.00	Dry	10,13	150	18,26,6+	175	10,13/18,26,6	JB14-2022	16/06/2022	63		
									for 25mm					
	8.00	200	6.00	6.10	8,10	150	11,15,24	225	8,10/11,15,24	JB14-2022	16/06/2022	63		
									for 75mm					
	9.00	200	6.00	6.35	18,7	96	31,19+	117	18,7/31,19	JB14-2022	16/06/2022	63		
									for 42mm					
BH19	2.00	200	1.50	Dry	3,4	150	6,7,7,7		N=27	AR3104-2022	25/04/2022	64	29	
	3.00	200	3.00	Dry	6,7	150	10,13,13,14+	290	6,7/10,13,13,14	AR3104-2022	25/04/2022	64		
									for 65mm					
	4.00	200	3.00	Dry	10,13	150	13,13,13,11+	285	10,13/13,13,13,11	AR3104-2022	25/04/2022	64		
									for 60mm					
	5.00	200	5.00	Dry	8,12	150	13,16,16,5+	240	8,12/13,16,16,5	AR3104-2022	25/04/2022	64		
									for 15mm					
	6.50	200	5.00	Dry	5,7	150	10,14,16,10+	250	5,7/10,14,16,10	AR3104-2022	25/04/2022	64		No Sample number given
									for 25mm					
	8.00	200	5.00	Dry	2,10	150	19,31+	145	2,10/19,31	AR3104-2022	25/04/2022	64		No Sample number given
									for 70mm					

Notes:
1. Tests carried out in general accordance with BS EN ISO 22476-3:2005+A1:2011.
2. Reported blows are for 75mm penetration unless indicated "+".
3. Where full test drive was not achieved, actual penetration (R) and total test drive blows are reported.
4. Tests carried out using a split spoon sampler unless noted as SPT(c) (denotes use of solid cone method) in the comments column.
5. Entries in the water depth column reflects the measured water depth at time of test.

N_{60} = (Measured hammer energy ratio / 60) x N value

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STANDARD PENETRATION TEST SUMMARY TABLE

Exploratory Position ID	Depth (m)	Hole Dia (mm)	Casing Depth (m)	Water Depth (m)	Seating Drive		Test Drive			Hammer ID	Calibration Date	Energy Ratio (%)	N_{60}	Comments
					Blows	Pen (mm)	Blows	R (mm)	Result					
BH20	1.20	200	0.00	Dry	2,3	150	4,4,3,4		N=15	AR3104-2022	25/04/2022	64	16	
	3.00	200	3.00	Dry	3,5	150	7,7,8,8		N=30	AR3104-2022	25/04/2022	64	32	
	4.00	200	4.00	Dry	7,9	150	10,13,18,9+	255	7,9/10,13,18,9	AR3104-2022	25/04/2022	64		
									for 30mm					
	5.00	200	4.50	Dry	12,13	150	16,21,17+	205	12,13/16,21,17	AR3104-2022	25/04/2022	64		
									for 55mm					
BH21	1.20	200	0.00	Dry	2,3	150	3,4,3,4		N=14	AR3104-2022	25/04/2022	64	15	
	3.00	200	3.00	Dry	5,10	150	10,13,18,9+	245	5,10/10,13,18,9	AR3104-2022	25/04/2022	64		
									for 20mm					
	4.00	200	3.00	Dry	6,8	150	13,20,17+	215	6,8/13,20,17	AR3104-2022	25/04/2022	64		
									for 65mm					
BH22	2.00	200	1.50	Dry	3,2	150	3,4,7,8		N=22	AR3104-2022	25/04/2022	64	23	
	3.00	200	3.00	Dry	8,8	150	10,18,18,4+	235	8,8/10,18,18,4	AR3104-2022	25/04/2022	64		
									for 10mm					
	4.00	200	3.00	Dry	5,11	150	14,26,10+	215	5,11/14,26,10	AR3104-2022	25/04/2022	64		
									for 65mm					
BH23	2.00	200	1.50	Dry	4,6	150	7,10,10,13		N=40	AR3104-2022	25/04/2022	64	43	
	2.50	200	2.50	Dry	8,12	150	13,14,23	225	8,12/13,14,23	AR3104-2022	25/04/2022	64		

Notes:
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2. Reported blows are for 75mm penetration unless indicated "+".
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4. Tests carried out using a split spoon sampler unless noted as SPT(c) (denotes use of solid cone method) in the comments column.
5. Entries in the water depth column reflects the measured water depth at time of test.

N_{60} = (Measured hammer energy ratio / 60) x N value

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Exploratory Position ID	Depth (m)	Hole Dia (mm)	Casing Depth (m)	Water Depth (m)	Seating Drive		Test Drive			Hammer ID	Calibration Date	Energy Ratio (%)	N_{60}	Comments
					Blows	Pen (mm)	Blows	R (mm)	Result					
									for 75mm					
	3.00	200	3.00	Dry	9,14	150	15,17,18+	220	9,14/15,17,18	AR3104-2022	25/04/2022	64		
									for 70mm					
	6.80	200	4.00		2,9	150	11,14,25+	220	2,9/11,14,25	AR3104-2022	25/04/2022	64		
									for 70mm					
	12.30	200	4.00		25	70	50+	60	25/50	AR3104-2022	25/04/2022	64		
									for 60mm					
BH24	1.20	200	1.20		3,4	150	6,12,14,17		N=49	JB14-2022	16/06/2022	63	51	
	2.00	200	1.50	Dry	6,11	150	11,10,12,12		N=45	JB14-2022	16/06/2022	63	47	
	3.00	200	1.50	Dry	3,9	150	14,23,13+	193	3,9/14,23,13	JB14-2022	16/06/2022	63		
									for 43mm					
	3.50	200	1.50	Dry	7,15	150	26,24+	125	7,15/26,24	JB14-2022	16/06/2022	63		
									for 50mm					
	11.80	200	3.50	Dry	26	65	50+	20	26/50	JB14-2022	16/06/2022	63		
									for 20mm					
BH25	1.20	200	1.20	Dry	1,1	150	2,4,4,5		N=15	JB14-2022	16/06/2022	63	16	
	2.00	200	1.50	Dry	2,3	150	4,4,5,6		N=19	JB14-2022	16/06/2022	63	20	
	3.00	200	1.50	Dry	5,18	150	18,18,14+	207	5,18/18,18,14	JB14-2022	16/06/2022	63		

Notes:
1. Tests carried out in general accordance with BS EN ISO 22476-3:2005+A1:2011.
2. Reported blows are for 75mm penetration unless indicated "+".
3. Where full test drive was not achieved, actual penetration (R) and total test drive blows are reported.
4. Tests carried out using a split spoon sampler unless noted as SPT(c) (denotes use of solid cone method) in the comments column.
5. Entries in the water depth column reflects the measured water depth at time of test.

N_{60} = (Measured hammer energy ratio / 60) x N value

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Exploratory Position ID	Depth (m)	Hole Dia (mm)	Casing Depth (m)	Water Depth (m)	Seating Drive		Test Drive			Hammer ID	Calibration Date	Energy Ratio (%)	N_{60}	Comments
					Blows	Pen (mm)	Blows	R (mm)	Result					
									for 57mm					
	3.50	200	1.50	Dry	7,18	140	21,29+	147	7,18/21,29	JB14-2022	16/06/2022	63		
									for 72mm					
	12.50	200	3.50	Dry	25	35	50+	45	25/50	JB14-2022	16/06/2022	63		
									for 45mm					
BH26	1.20	200	1.20	Dry	2,3	150	4,5,7,9		N=25	JB14-2022	16/06/2022	63	26	
	3.00	200	1.50	Dry	1,4	150	11,7,7,7		N=32	JB14-2022	16/06/2022	63	34	
	4.50	200	1.50	Dry	8,14	150	28,22+	126	8,14/28,22	JB14-2022	16/06/2022	63		
									for 51mm					
	5.00	200	1.50	Dry	19,6	86	39,11+	83	19,6/39,11	JB14-2022	16/06/2022	63		
									for 8mm					
BH27	1.20	150	0.00	Dry	1,2	150	2,2,2,3		N=9	LS01-2022	06/05/2022	64	10	
	2.20	150	2.00	Dry	6,8	150	12,21,17+	180	6,8/12,21,17	LS01-2022	06/05/2022	64		
									for 30mm					
	4.90	150	2.00	Dry	17,8	90	50+	50	17,8/50	LS01-2022	06/05/2022	64		
									for 50mm					
CP01	1.20	150		Dry	3,3	150	4,3,6,5		N=18	JB05-2022	25/08/2022	68	20	
	2.00	150		Dry	2,4	150	6,7,8,9		N=30	JB05-2022	25/08/2022	68	34	

Notes:
1. Tests carried out in general accordance with BS EN ISO 22476-3:2005+A1:2011.
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N_{60} = (Measured hammer energy ratio / 60) x N value

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Exploratory Position ID	Depth (m)	Hole Dia (mm)	Casing Depth (m)	Water Depth (m)	Seating Drive		Test Drive			Hammer ID	Calibration Date	Energy Ratio (%)	N_{60}	Comments
					Blows	Pen (mm)	Blows	R (mm)	Result					
CP01	3.00	150		Dry	13,12	150	18,22,10+	155	13,12/18,22,10	JB05-2022	25/08/2022	68		
									for 5mm					
	4.00	150		Dry	4,6	150	10,12,12,16		N=50	JB05-2022	25/08/2022	68	57	
	5.00	150		Dry	6,10	150	10,10,20,10+	230	6,10/10,10,20,10	JB05-2022	25/08/2022	68		
									for 5mm					
	6.00	150		Dry	6,8	150	10,11,12,16		N=49	JB05-2022	25/08/2022	68	56	
	7.50	150		Dry	6,8	150	17,23,10+	155	6,8/17,23,10	JB05-2022	25/08/2022	68		
									for 5mm					
CP02	1.20				3,7	150	5,5,5,6		N=21	JB05-2022	25/08/2022	68	24	
	3.00	150			5,5	150	13,13,15,9+	260	5,5/13,13,15,9	JB05-2022	25/08/2022	68		
									for 35mm					
	5.00	150			5,7	150	12,28,10+	155	5,7/12,28,10	JB05-2022	25/08/2022	68		
									for 5mm					
	6.00	150			8,14	150	25,25,25+	220	8,14/25,25,25	JB05-2022	25/08/2022	68		
									for 70mm					
	7.50	150			25	75	75+	55	25/75	JB05-2022	25/08/2022	68		
									for 55mm					
CP03	1.20	150			2,3	150	2,4,5,5		N=16	JB05-2022	25/08/2022	68	18	

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STANDARD PENETRATION TEST SUMMARY TABLE

Exploratory Position ID	Depth (m)	Hole Dia (mm)	Casing Depth (m)	Water Depth (m)	Seating Drive		Test Drive			Hammer ID	Calibration Date	Energy Ratio (%)	N_{60}	Comments
					Blows	Pen (mm)	Blows	R (mm)	Result					
CP03	3.00	150			3,7	150	10,13,13,17		N=53	JB05-2022	25/08/2022	68	60	
	5.00	150			3,7	150	8,10,13,14		N=45	JB05-2022	25/08/2022	68	51	
	6.00	150			2,7	150	8,13,15,24		N=60	JB05-2022	25/08/2022	68	68	
	7.00	150			8,15	150	40,60+	95	8,15/40,60	JB05-2022	25/08/2022	68		
									for 20mm					
	7.30	150			13,12	150	20,40,15+	160	13,12/20,40,15	JB05-2022	25/08/2022	68		
									for 10mm					
CP04	1.20	150			1,2	150	2,3,3,3		N=11	JB05-2022	25/08/2022	68	12	
	3.00	150			1,2	150	3,4,6,6		N=19	JB05-2022	25/08/2022	68	22	
	5.00	150			3,4	150	6,7,10,12		N=35	JB05-2022	25/08/2022	68	40	
	7.00	150			4,6	150	6,8,11,12		N=37	JB05-2022	25/08/2022	68	42	
	8.00	150			3,4	150	7,8,9,11		N=35	JB05-2022	25/08/2022	68	40	
	9.00	150			3,4	150	7,8,9,10		N=34	JB05-2022	25/08/2022	68	39	
	10.00	150			4,6	150	7,8,9,11		N=35	JB05-2022	25/08/2022	68	40	
	11.00	150			4,6	150	7,7,8,12		N=34	JB05-2022	25/08/2022	68	39	
	12.00	150			4,7	150	11,13,20,23		N=67	JB05-2022	25/08/2022	68	76	
	13.00	150			7,11	150	13,15,30,40		N=98	JB05-2022	25/08/2022	68	111	
	14.00	150			5,12	150	15,20,20,20		N=75	JB05-2022	25/08/2022	68	85	

Notes:
1. Tests carried out in general accordance with BS EN ISO 22476-3:2005+A1:2011.
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Exploratory Position ID	Depth (m)	Hole Dia (mm)	Casing Depth (m)	Water Depth (m)	Seating Drive		Test Drive			Hammer ID	Calibration Date	Energy Ratio (%)	N_{60}	Comments
					Blows	Pen (mm)	Blows	R (mm)	Result					
CP04	15.00	150			5,8	150	10,13,15,20		N=58	JB05-2022	25/08/2022	68	66	
	16.50	150			5,7	150	11,12,23,42		N=88	JB05-2022	25/08/2022	68	100	
CP05	2.00	150	2.00	Dry	4,9	150	9,13,13,15+	295	4,9/9,13,13,15	DS5-1-22	10/01/2022	61		
									for 70mm					
	3.00	150	3.00	Dry	6,11	150	13,12,12,13+	290	6,11/13,12,12,13	DS5-1-22	10/01/2022	61		
									for 65mm					
	4.00	150	4.00	Dry	4,6	150	14,15,17,6+	235	4,6/14,15,17,6	DS5-1-22	10/01/2022	61		
									for 10mm					
	5.00	150	5.00	Dry	8,10	150	15,31,4+	150	8,10/15,31,4	DS5-1-22	10/01/2022	61		
									for 0mm					
	6.00	150	6.00	Dry	10,15	150	36,14+	100	10,15/36,14	DS5-1-22	10/01/2022	61		
									for 25mm					
	6.20	150	6.20	Dry	25	75	38,62+	135	25/38,62	DS5-1-22	10/01/2022	61		
									for 60mm					
CP06	2.00	150	2.00	Dry	4,4	150	4,6,6,7		N=23	DS5-1-22	10/01/2022	61	23	
	4.00	150	4.00	Dry	4,5	150	7,7,8,8		N=30	DS5-1-22	10/01/2022	61	30	
	6.00	150	6.00	Dry	6,7	150	7,9,10,11		N=37	DS5-1-22	10/01/2022	61	38	

Notes:
1. Tests carried out in general accordance with BS EN ISO 22476-3:2005+A1:2011.
2. Reported blows are for 75mm penetration unless indicated "+".
3. Where full test drive was not achieved, actual penetration (R) and total test drive blows are reported.
4. Tests carried out using a split spoon sampler unless noted as SPT(c) (denotes use of solid cone method) in the comments column.
5. Entries in the water depth column reflects the measured water depth at time of test.

N_{60} = (Measured hammer energy ratio / 60) x N value

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Exploratory Position ID	Depth (m)	Hole Dia (mm)	Casing Depth (m)	Water Depth (m)	Seating Drive		Test Drive			Hammer ID	Calibration Date	Energy Ratio (%)	N_{60}	Comments
					Blows	Pen (mm)	Blows	R (mm)	Result					
CP06	9.00	150	9.00	8.50	12,13	150	20,24,12,10		N=66	DS5-1-22	10/01/2022	61	67	
	10.50	150	1.50	Dry	12,12	150	24,51,20+	180	12,12/24,51,20	DS5-1-22	10/01/2022	61		
									for 30mm					
	11.00	150	11.00	Dry	12,14	135	29,71+	125	12,14/29,71	DS5-1-22	10/01/2022	61		
									for 50mm					
CP07	2.50	200	1.50	Dry	3,4	150	4,5,5,6		N=20	AR3104-2022	25/04/2022	64	21	
	4.50	200	4.50	Dry	3,4	150	5,5,5,6		N=21	AR3104-2022	25/04/2022	64	22	
	7.50	200	7.50	Dry	3,4	150	4,5,5,6		N=20	AR3104-2022	25/04/2022	64	21	
	10.50	200	9.00	Dry	5,7	150	9,11,11,12		N=43	AR3104-2022	25/04/2022	64	46	
	13.50	200	9.00	8.40	21,4	85	32,40,28+	190	21,4/32,40,28	AR3104-2022	25/04/2022	64		
									for 40mm					
	14.00	200	9.00	8.10	25	70	54,46+	135	25/54,46	AR3104-2022	25/04/2022	64		
									for 60mm					
CP08	4.00	150	3.80	Dry	3,3	150	5,5,6,7		N=23	AR3469-2022	04/08/2022	84	32	
	6.00	150	4.50	Dry	2,4	150	4,7,7,7		N=25	AR3469-2022	04/08/2022	84	35	
	7.50	150	4.50	Dry	3,5	150	5,6,8,8		N=27	AR3469-2022	04/08/2022	84	38	
	9.00	150	8.80	5.80	6,7	150	10,9,9,9		N=37	AR3469-2022	04/08/2022	84	52	
	9.90	150	9.70	7.90	4,10	150	13,28,9+	170	4,10/13,28,9	AR3469-2022	04/08/2022	84		

Notes:
1. Tests carried out in general accordance with BS EN ISO 22476-3:2005+A1:2011.
2. Reported blows are for 75mm penetration unless indicated "+".
3. Where full test drive was not achieved, actual penetration (R) and total test drive blows are reported.
4. Tests carried out using a split spoon sampler unless noted as SPT(c) (denotes use of solid cone method) in the comments column.
5. Entries in the water depth column reflects the measured water depth at time of test.

N_{60} = (Measured hammer energy ratio / 60) x N value

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Exploratory Position ID	Depth (m)	Hole Dia (mm)	Casing Depth (m)	Water Depth (m)	Seating Drive		Test Drive			Hammer ID	Calibration Date	Energy Ratio (%)	N_{60}	Comments
					Blows	Pen (mm)	Blows	R (mm)	Result					
									for 20mm					
	11.00	150	10.50	8.00	5,5	150	7,21,22,19		N=69	AR3469-2022	04/08/2022	84	97	
	11.50	150	11.30	10.00	10,13	150	19,24,32,25+	255	10,13/19,24,32,25	AR3469-2022	04/08/2022	84		
									for 30mm					
	12.10	150	12.00	10.00	10,14	150	21,26,26,27+	250	10,14/21,26,26,27	AR3469-2022	04/08/2022	84		
									for 25mm					
	12.30	150	12.00	10.30	12,12	150	25,40,35+	180	12,12/25,40,35	AR3469-2022	04/08/2022	84		
									for 30mm					
CP09	1.20	150	1.20	Dry	1,2	150	2,2,3,4		N=11	DS5-1-22	10/01/2022	61	11	
	3.00	150	2.00	Dry	7,8	150	10,90+	135	7,8/10,90	DS5-1-22	10/01/2022	61		
									for 60mm					
	4.00	150	4.00	Dry	4,5	150	6,9,8,8		N=31	DS5-1-22	10/01/2022	61	32	
	5.00	150	5.00	Dry	3,3	150	4,6,6,6		N=22	DS5-1-22	10/01/2022	61	22	
	6.00	150	6.00	Dry	7,11	150	17,19,22,20		N=78	DS5-1-22	10/01/2022	61	79	
	7.50	150	7.50	Dry	7,8	150	11,5,21,44		N=81	DS5-1-22	10/01/2022	61	82	
	8.00	150	8.00	Dry	25	75	31,24,26,21+	285	25/31,24,26,21	DS5-1-22	10/01/2022	61		
									for 60mm					
CP09	8.40	150	8.40	Dry	25	20	26,32,34,8+	225	25/26,32,34,8	DS5-1-22	10/01/2022	61		

Notes:
1. Tests carried out in general accordance with BS EN ISO 22476-3:2005+A1:2011.
2. Reported blows are for 75mm penetration unless indicated "+".
3. Where full test drive was not achieved, actual penetration (R) and total test drive blows are reported.
4. Tests carried out using a split spoon sampler unless noted as SPT(c) (denotes use of solid cone method) in the comments column.
5. Entries in the water depth column reflects the measured water depth at time of test.

N_{60} = (Measured hammer energy ratio / 60) x N value

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STANDARD PENETRATION TEST SUMMARY TABLE

Exploratory Position ID	Depth (m)	Hole Dia (mm)	Casing Depth (m)	Water Depth (m)	Seating Drive		Test Drive			Hammer ID	Calibration Date	Energy Ratio (%)	N_{60}	Comments
					Blows	Pen (mm)	Blows	R (mm)	Result					
									for 0mm					
CP10	1.50	150	1.50	Dry	3,4	150	4,5,7,9		N=25	AR1862-2022	01/04/2022	65	27	
	3.50	150	3.00	Dry	4,6	150	11,10,9,7		N=37	AR1862-2022	01/04/2022	65	40	
	6.00	150	6.00	Dry	25	45	100	75	25/100	AR1862-2022	01/04/2022	65		
									for 75mm					
	7.50	150	7.50	7.30	6,10	150	25,25,50+	180	6,10/25,25,50	AR1862-2022	01/04/2022	65		
									for 30mm					
	9.00	150	9.00	8.80	8,16	150	40,60+	140	8,16/40,60	AR1862-2022	01/04/2022	65		
									for 65mm					
	10.50	150	9.00	8.00	13,12	120	20,30,50+	220	13,12/20,30,50	AR1862-2022	01/04/2022	65		
									for 70mm					
CP11	1.20	150	1.70	Dry	2,3	150	3,6,10,10		N=29	DS5-1-22	10/01/2022	61	29	
	3.00	150	2.00	Dry	2,4	150	17,11,8,31		N=67	DS5-1-22	10/01/2022	61	68	
	4.00	150	4.00	Dry	9,12	150	15,16,26,37		N=94	DS5-1-22	10/01/2022	61	96	
	5.00	150	5.00	Dry	6,9	150	15,20,26,29		N=90	DS5-1-22	10/01/2022	61	92	
	6.00	150	6.00	Dry	9,7	150	13,15,27,45+	295	9,7/13,15,27,45	DS5-1-22	10/01/2022	61		
									for 70mm					
CP11	7.00	150	6.00	Dry	16,9	125	41,44,15+	160	16,9/41,44,15	DS5-1-22	10/01/2022	61		

Notes:
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2. Reported blows are for 75mm penetration unless indicated "+".
3. Where full test drive was not achieved, actual penetration (R) and total test drive blows are reported.
4. Tests carried out using a split spoon sampler unless noted as SPT(c) (denotes use of solid cone method) in the comments column.
5. Entries in the water depth column reflects the measured water depth at time of test.

N_{60} = (Measured hammer energy ratio / 60) x N value

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STANDARD PENETRATION TEST SUMMARY TABLE

Exploratory Position ID	Depth (m)	Hole Dia (mm)	Casing Depth (m)	Water Depth (m)	Seating Drive		Test Drive			Hammer ID	Calibration Date	Energy Ratio (%)	N_{60}	Comments
					Blows	Pen (mm)	Blows	R (mm)	Result					
									for 10mm					
CP12	1.20	150	1.20	Dry	2,3	150	4,3,3,3		N=13	DS5-1-22	10/01/2022	61	13	
	3.00	150	3.00	Dry	2,2	150	2,2,2,2		N=8	DS5-1-22	10/01/2022	61	8	
	5.00	150	5.00	Dry	1,0	150	1,1,1,1		N=4	DS5-1-22	10/01/2022	61	4	
	6.00	150	6.00	Dry	7,6	150	6,10,10,10		N=36	DS5-1-22	10/01/2022	61	37	
	7.50	150	7.50	Dry	4,10	150	16,24,29,31+	285	4,10/16,24,29,31	DS5-1-22	10/01/2022	61		
									for 60mm					
	9.00	150	9.00	Dry	10,11	150	26,37,37+	210	10,11/26,37,37	DS5-1-22	10/01/2022	61		
									for 60mm					
CP13	1.50	200	1.50	Dry	2,1	150	2,3,3,2		N=10	AR3104-2022	25/04/2022	64	11	
	2.50	200	2.50	Dry	2,2	150	3,1,2,3		N=9	AR3104-2022	25/04/2022	64	10	
	3.50	200	3.00	2.00	3,3	150	4,3,3,2		N=12	AR3104-2022	25/04/2022	64	13	
	4.50	200	4.50	4.10	2,3	150	1,0,0,4		N=5	AR3104-2022	25/04/2022	64	5	SPT(c)
	6.00	200	6.00	4.10	1,2	150	5,6,10,10		N=31	AR3104-2022	25/04/2022	64	33	
	7.50	200	7.50	5.30	6,9	150	11,20,19+	210	6,9/11,20,19	AR3104-2022	25/04/2022	64		SPT(c)
									for 60mm					
	8.50	200	8.50	3.20	25	75	42,58+	145	25/42,58	AR3104-2022	25/04/2022	64		
									for 70mm					

Notes:
1. Tests carried out in general accordance with BS EN ISO 22476-3:2005+A1:2011.
2. Reported blows are for 75mm penetration unless indicated "+".
3. Where full test drive was not achieved, actual penetration (R) and total test drive blows are reported.
4. Tests carried out using a split spoon sampler unless noted as SPT(c) (denotes use of solid cone method) in the comments column.
5. Entries in the water depth column reflects the measured water depth at time of test.

N_{60} = (Measured hammer energy ratio / 60) x N value

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STANDARD PENETRATION TEST SUMMARY TABLE

Exploratory Position ID	Depth (m)	Hole Dia (mm)	Casing Depth (m)	Water Depth (m)	Seating Drive		Test Drive			Hammer ID	Calibration Date	Energy Ratio (%)	N_{60}	Comments
					Blows	Pen (mm)	Blows	R (mm)	Result					
CP13	9.00	200	8.50	3.30	20,5	80	34,56,10+	160	20,5/34,56,10	AR3104-2022	25/04/2022	64		
									for 10mm					
CP14	2.00	200	2.00	Dry	3,3	150	4,4,4,4		N=16	AR3104-2022	25/04/2022	64	17	
	3.00	200	3.00	Dry	3,3	150	4,4,4,5		N=17	AR3104-2022	25/04/2022	64	18	
	4.00	200	4.00	Dry	3,3	150	4,7,7,8		N=26	AR3104-2022	25/04/2022	64	28	
	5.00	200	5.00	4.00	10,10	150	18,8,8,8		N=42	AR3104-2022	25/04/2022	64	45	SPT(c)
	6.00	200	6.00	Dry	6,10	150	10,13,15,17		N=55	AR3104-2022	25/04/2022	64	59	
	7.50	200	7.50	Dry	6,11	150	13,20,32,35+	295	6,11/13,20,32,35	AR3104-2022	25/04/2022	64		
									for 70mm					
	8.00	200	8.00	Dry	10,14	150	18,28,41,13+	245	10,14/18,28,41,13	AR3104-2022	25/04/2022	64		
									for 20mm					
CP15	2.00	150	2.00	Dry	2,3	150	2,2,2,3		N=9	DS5-1-22	10/01/2022	61	9	
	3.00	150	3.00	Dry	2,3	150	3,3,3,3		N=12	DS5-1-22	10/01/2022	61	12	
	4.00	150	4.00	Dry	8,10	150	12,15,18,30		N=75	DS5-1-22	10/01/2022	61	76	
	5.00	150	5.00	Dry	4,6	150	8,8,13,19		N=48	DS5-1-22	10/01/2022	61	49	
	6.00	150	6.00	Dry	6,8	150	8,9,8,13		N=38	DS5-1-22	10/01/2022	61	39	
	7.50	150	7.50	Dry	10,15	150	21,32,47+	210	10,15/21,32,47	DS5-1-22	10/01/2022	61		
									for 60mm					

Notes:
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2. Reported blows are for 75mm penetration unless indicated "+".
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4. Tests carried out using a split spoon sampler unless noted as SPT(c) (denotes use of solid cone method) in the comments column.
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STANDARD PENETRATION TEST SUMMARY TABLE

Exploratory Position ID	Depth (m)	Hole Dia (mm)	Casing Depth (m)	Water Depth (m)	Seating Drive		Test Drive			Hammer ID	Calibration Date	Energy Ratio (%)	N_{60}	Comments
					Blows	Pen (mm)	Blows	R (mm)	Result					
CP15	8.00	150	8.00	Dry	14,11	85	30,48,22+	170	14,11/30,48,22	DS5-1-22	10/01/2022	61		
									for 20mm					
CP16	1.50	150	3.00	Dry	4,21	140	27,9,8,5		N=49	AR1862-2022	01/04/2022	65	0	
	3.50	150	3.00	Dry	1,2	150	3,5,5,6		N=19	AR1862-2022	01/04/2022	65	0	
	6.00	150	6.00	5.00	3,4	150	9,17,18,21		N=65	AR1862-2022	01/04/2022	65	0	
	9.00	150	9.00	5.00	6,10	150	10,12,12,14		N=48	AR1862-2022	01/04/2022	65	0	
	10.50	150	10.50	Dry	25	70	50,50+	130	25/50,50	AR1862-2022	01/04/2022	65		
									for 55mm					
	11.00	150	10.50	Dry	25	35	60,40+	115	25/60,40	AR1862-2022	01/04/2022	65		
									for 40mm					
CP17	2.50	200	2.50	Dry	3,4	150	5,6,7,7		N=25	AR3104-2022	25/04/2022	64	27	
	4.50	200	4.50	Dry	3,3	150	4,5,12,14		N=35	AR3104-2022	25/04/2022	64	37	
	6.00	200	6.00	Dry	2,3	150	6,6,6,7		N=25	AR3104-2022	25/04/2022	64	27	
	9.00	200	7.50	Dry	5,6	150	8,8,12,16		N=44	AR3104-2022	25/04/2022	64	47	
	10.50	200	7.50	Dry	5,6	150	9,12,16,23		N=60	AR3104-2022	25/04/2022	64	64	
	12.00	200	7.50	Dry	6,7	150	9,16,16,17		N=58	AR3104-2022	25/04/2022	64	62	
	13.50	200	7.50	Dry	8,7	150	11,13,16,16		N=56	AR3104-2022	25/04/2022	64	60	
	15.00	200	15.00	12.50	7,8	150	11,10,12,15		N=48	AR3104-2022	25/04/2022	64	51	SPT(c)

Notes:
1. Tests carried out in general accordance with BS EN ISO 22476-3:2005+A1:2011.
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Exploratory Position ID	Depth (m)	Hole Dia (mm)	Casing Depth (m)	Water Depth (m)	Seating Drive		Test Drive			Hammer ID	Calibration Date	Energy Ratio (%)	N_{60}	Comments
					Blows	Pen (mm)	Blows	R (mm)	Result					
CP17	16.50	200	16.50	10.70	8,17	150	26,32,42	225	8,17/26,32,42	AR3104-2022	25/04/2022	64		
									for 75mm					
	17.00	200	16.50	11.10	25	70	46,54+	140	25/46,54	AR3104-2022	25/04/2022	64		
									for 65mm					
CP18	1.50	150	1.50	Dry	3,4	150	5,6,6,7		N=24	AR1862-2022	01/04/2022	65	26	
	3.50	150	3.00	Dry	6,10	150	16,25,36,23+	260	6,10/16,25,36,23	AR1862-2022	01/04/2022	65		
									for 35mm					
	4.50	150	3.00	Dry	15,10	130	17,27,56+	220	15,10/17,27,56	AR1862-2022	01/04/2022	65		
									for 70mm					
CP19	1.50	150	1.50	Dry	4,5	150	4,6,7,8		N=25	AR1862-2022	01/04/2022	65	27	
	3.50	150	3.00	Dry	7,12	150	17,23,28,32+	280	7,12/17,23,28,32	AR1862-2022	01/04/2022	65		
									for 55mm					
	4.50	150	3.00	Dry	8,10	150	20,30,50+	220	8,10/20,30,50	AR1862-2022	01/04/2022	65		
									for 70mm					
CP20	1.50	150	1.50	Dry	7,8	150	7,6,6,7		N=26	AR1862-2022	01/04/2022	65	28	
	3.50	150	3.00	Dry	5,12	150	20,25,35,20+	260	5,12/20,25,35,20	AR1862-2022	01/04/2022	65		
									for 35mm					
CP20	4.50	150	3.00	Dry	10,15	140	40,60	150	10,15/40,60	AR1862-2022	01/04/2022	65		

Notes:
1. Tests carried out in general accordance with BS EN ISO 22476-3:2005+A1:2011.
2. Reported blows are for 75mm penetration unless indicated "+".
3. Where full test drive was not achieved, actual penetration (R) and total test drive blows are reported.
4. Tests carried out using a split spoon sampler unless noted as SPT(c) (denotes use of solid cone method) in the comments column.
5. Entries in the water depth column reflects the measured water depth at time of test.

N_{60} = (Measured hammer energy ratio / 60) x N value

STRUCTURAL SOILS
The Potteries
Pottery Street
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W. Yorkshire WF10 1NJ

Compiled By		Date	Contract Ref:
	AJONES	**05.05.23**	**765514**
Contract: **EMG Phase 2**			Page: **23** of **26**

STANDARD PENETRATION TEST SUMMARY TABLE

Exploratory Position ID	Depth (m)	Hole Dia (mm)	Casing Depth (m)	Water Depth (m)	Seating Drive		Test Drive			Hammer ID	Calibration Date	Energy Ratio (%)	N_{60}	Comments
					Blows	Pen (mm)	Blows	R (mm)	Result					
									for 75mm					
CP21	2.00	150	2.00	Dry	1,4	150	4,6,6,7		N=23	JB05-2022	25/08/2022	68	26	
	4.00	150	3.00	Dry	11,14	150	15,24,40,21		N=100	JB05-2022	25/08/2022	68	113	
	5.00	150	3.00	Dry	13,12	150	27,30,43	225	13,12/27,30,43	JB05-2022	25/08/2022	68		
									for 75mm					
CP22	2.00	150	2.00	Dry	5,9	150	10,11,14,15		N=50	JB05-2022	25/08/2022	68	57	
	4.00	150	3.00	Dry	5,7	150	10,20,33,37+	265	5,7/10,20,33,37	JB05-2022	25/08/2022	68		
									for 40mm					
	5.00	150	3.00	Dry	10,15	150	42,58	150	10,15/42,58	JB05-2022	25/08/2022	68		
									for 75mm					
CP23	2.00	150	2.00	Dry	4,3	150	5,4,6,7		N=22	JB05-2022	25/08/2022	68	25	
	4.00	150	4.50	Dry	10,15	150	16,17,29,38+	275	10,15/16,17,29,38	JB05-2022	25/08/2022	68		
									for 50mm					
	5.00	150	4.50	5.40	15,10	135	22,21,25,32+	270	15,10/22,21,25,32	JB05-2022	25/08/2022	68		
									for 45mm					
CP24	2.00	150	2.00	Dry	2,4	150	10,10,12,10		N=42	JB05-2022	25/08/2022	68	48	
	4.00	150	4.00	Dry	5,10	150	17,25,34,24+	255	5,10/17,25,34,24	JB05-2022	25/08/2022	68		
									for 30mm					

Notes:
1. Tests carried out in general accordance with BS EN ISO 22476-3:2005+A1:2011.
2. Reported blows are for 75mm penetration unless indicated "+".
3. Where full test drive was not achieved, actual penetration (R) and total test drive blows are reported.
4. Tests carried out using a split spoon sampler unless noted as SPT(c) (denotes use of solid cone method) in the comments column.
5. Entries in the water depth column reflects the measured water depth at time of test.

N_{60} = (Measured hammer energy ratio / 60) x N value

STRUCTURAL SOILS
The Potteries
Pottery Street
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W. Yorkshire WF10 1NJ

Compiled By		Date	Contract Ref:
	AJONES	**05.05.23**	**765514**
Contract: **EMG Phase 2**			Page: **24** of **26**

STANDARD PENETRATION TEST SUMMARY TABLE

Exploratory Position ID	Depth (m)	Hole Dia (mm)	Casing Depth (m)	Water Depth (m)	Seating Drive		Test Drive			Hammer ID	Calibration Date	Energy Ratio (%)	N_{60}	Comments
					Blows	Pen (mm)	Blows	R (mm)	Result					
CP24	5.00	150	4.50	Dry	7,8	150	16,33,34,17+	245	7,8/16,33,34,17	JB05-2022	25/08/2022	68		
									for 20mm					
CP25	1.20	150	1.20	Dry	4,6	150	9,14,14,13		N=50	JB05-2022	25/08/2022	68	57	
	3.00	150	3.00	Dry	3,7	150	9,14,15,18		N=56	JB05-2022	25/08/2022	68	63	
	5.00	150	5.00	Dry	8,17	150	20,26,37,17+	240	8,17/20,26,37,17	JB05-2022	25/08/2022	68		
									for 15mm					
	6.50	150	6.00	Dry	10,15	150	23,31,40,6+	230	10,15/23,31,40,6	JB05-2022	25/08/2022	68		
									for 5mm					
CP26	1.20	150	1.20		3,2	150	2,3,2,3		N=10	JB05-2022	25/08/2022	68	11	
	3.00	150	3.00		1,1	150	2,3,2,3		N=10	JB05-2022	25/08/2022	68	11	
	4.00	150	4.00		5,8	150	10,15,50	225	5,8/10,15,50	JB05-2022	25/08/2022	68		
									for 75mm					
	5.00	150	5.00		5,10	150	20,30,35+	195	5,10/20,30,35	JB05-2022	25/08/2022	68		
									for 45mm					
	6.50	150	6.00		8,17	95	33,47,20+	160	8,17/33,47,20	JB05-2022	25/08/2022	68		
									for 10mm					
CP27	1.20	150	1.20	Dry	1,2	150	2,2,2,2		N=8	JB05-2022	25/08/2022	68	9	
	2.00	150	2.00	Dry	1,1	150	1,2,2,3		N=8	JB05-2022	25/08/2022	68	9	

Notes:
1. Tests carried out in general accordance with BS EN ISO 22476-3:2005+A1:2011.
2. Reported blows are for 75mm penetration unless indicated "+".
3. Where full test drive was not achieved, actual penetration (R) and total test drive blows are reported.
4. Tests carried out using a split spoon sampler unless noted as SPT(c) (denotes use of solid cone method) in the comments column.
5. Entries in the water depth column reflects the measured water depth at time of test.

N_{60} = (Measured hammer energy ratio / 60) x N value

STRUCTURAL SOILS
The Potteries
Pottery Street
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W. Yorkshire WF10 1NJ

Compiled By		Date	Contract Ref:
	AJONES	**05.05.23**	**765514**
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STANDARD PENETRATION TEST SUMMARY TABLE

Exploratory Position ID	Depth (m)	Hole Dia (mm)	Casing Depth (m)	Water Depth (m)	Seating Drive		Test Drive			Hammer ID	Calibration Date	Energy Ratio (%)	N_{60}	Comments
					Blows	Pen (mm)	Blows	R (mm)	Result					
CP27	3.00	150	3.00	Dry	6,7	150	11,15,15,17		N=58	JB05-2022	25/08/2022	68	66	
	4.00	150	3.00	Dry	10,15	150	15,20,40+	195	10,15/15,20,40	JB05-2022	25/08/2022	68		
									for 45mm					
	4.60	150	3.00	Dry	15,10	150	20,30,25+	195	15,10/20,30,25	JB05-2022	25/08/2022	68		
									for 45mm					
CP28	1.20	150	1.20	Dry	1,2	150	2,3,3,3		N=11	JB05-2022	25/08/2022	68	12	
	2.50	150	2.50	Dry	1,2	150	3,2,3,5		N=13	JB05-2022	25/08/2022	68	15	
	4.00	150	3.00	Dry	6,12	150	13,17,33,35+	265	6,12/13,17,33,35	JB05-2022	25/08/2022	68		
									for 40mm					
	4.60	150	3.00	Dry	13,12	150	20,20,30,30+	245	13,12/20,20,30,30	JB05-2022	25/08/2022	68		
									for 20mm					

Notes:
1. Tests carried out in general accordance with BS EN ISO 22476-3:2005+A1:2011.
2. Reported blows are for 75mm penetration unless indicated "+".
3. Where full test drive was not achieved, actual penetration (R) and total test drive blows are reported.
4. Tests carried out using a split spoon sampler unless noted as SPT(c) (denotes use of solid cone method) in the comments column.
5. Entries in the water depth column reflects the measured water depth at time of test.

N_{60} = (Measured hammer energy ratio / 60) x N value

STRUCTURAL SOILS
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Compiled By	Date	Contract Ref:
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IN-SITU PERMEABILITY TEST - FALLING HEAD
In accordance with BS EN ISO 22282-2:2012

Borehole : **BH11** Depth (m below GL): **12.50-13.10** Test Number: **1**

Test Date: **29/09/2022** Test Supervisor: **CJobson**

Ground Level (m AOD): **79.89** National Grid Co-ordinates: **E:445759.5 N:325134.8**

TEST SETUP DETAILS

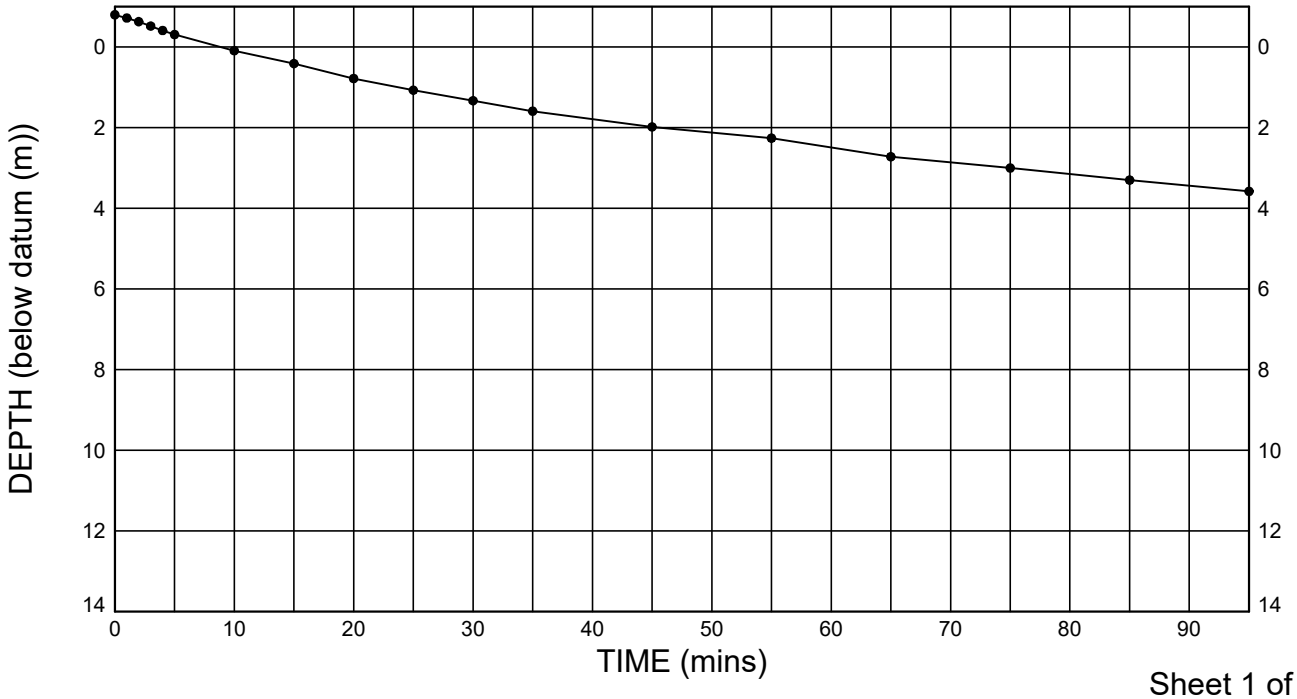
Depth measurements recorded from ground level.

Depth to top of response zone:	**12.50** m	Borehole diameter:	**200** mm
Depth to base of response zone:	**13.10** m	Depth to base of casing:	**12.50** m
Length of response zone:	**0.60** m	Casing diameter:	**200** mm
Initial groundwater level prior to test:	**8.40** m	Soil/Rock Description:	**Dense very sandy GRAVEL.**
Depth to base of borehole at start of test:	**13.10** m	Hydrogeological conditions:	**Entire test section below GW**
Depth to base of borehole at completion of test:	**13.10** m	Weather:	**-**

TEST MEASUREMENTS

Time (hh:mm:ss)	Water depth (m)	Head (m)	H/Ho	Time (hh:mm:ss)	Water depth (m)	Head (m)	H/Ho	Time (hh:mm:ss)	Water depth (m)	Head (m)	H/Ho	Time (hh:mm:ss)	Water depth (m)	Head (m)	H/Ho
08:00:00	-0.80	9.20	1.00	08:30:00	1.33	7.07	0.77								
08:01:00	-0.72	9.12	0.99	08:35:00	1.59	6.81	0.74								
08:02:00	-0.63	9.03	0.98	08:45:00	1.98	6.42	0.70								
08:03:00	-0.52	8.92	0.97	08:55:00	2.26	6.14	0.67								
08:04:00	-0.41	8.81	0.96	09:05:00	2.72	5.68	0.62								
08:05:00	-0.31	8.71	0.95	09:15:00	3.00	5.40	0.59								
08:10:00	0.09	8.31	0.90	09:25:00	3.30	5.10	0.55								
08:15:00	0.41	7.99	0.87	09:35:00	3.58	4.82	0.52								
08:20:00	0.78	7.62	0.83												
08:25:00	1.07	7.33	0.80												

PLOT OF WATER DEPTH AGAINST TIME



STRUCTURAL SOILS
The Potteries
Pottery Street
Castleford
W. Yorkshire WF10 1NJ

Test Operator	Checked By	Date
Christopher Jobson		**04/05/23**

Contract: **EMG Phase 2**

Contract Ref: **765514**

Client: **SEGRO**

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Graph I - BH PERM 22282 - 1 OF 2 - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01. | 04/05/23 - 16:35 | AML1 |

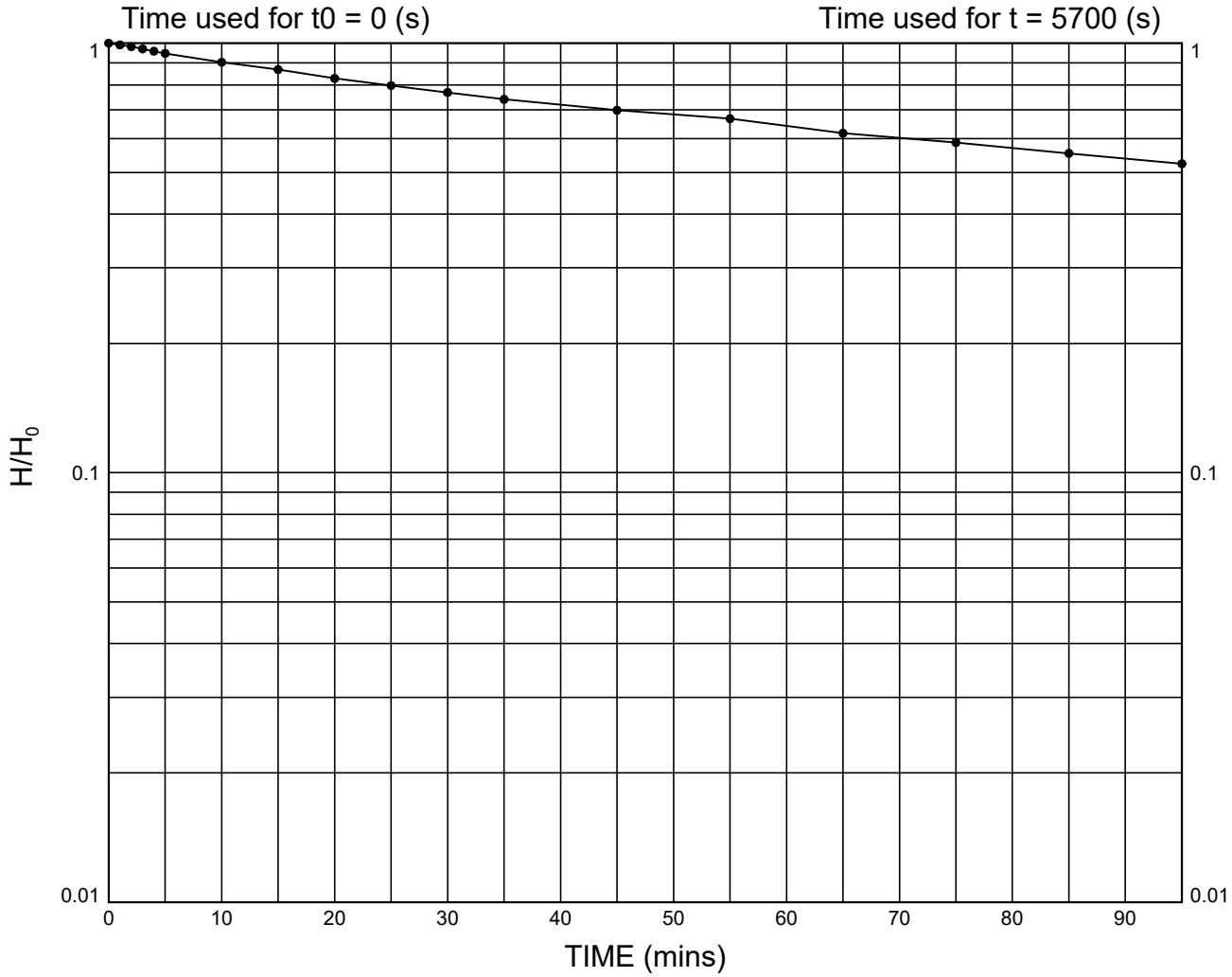
IN-SITU PERMEABILITY TEST - FALLING HEAD
In accordance with BS EN ISO 22282-2:2012

Borehole : **BH11** Depth (m below GL): **12.50-13.10** Test Number: **1**

Test Date: **29/09/2022** Test Supervisor: **CJobson**

Ground Level (m AOD): **79.89** Co-ordinates: E:445759.5 N:325134.8

PLOT OF H/Ho AGAINST TIME



Diameter of Test Section, D	=	**0.2**	m
Cross Sectional Area of Liaison Tube, A	=	**0.03142**	m^2
Test Section Length, L	=	**0.60**	m
Shape Factor, F	=	**2.07**	m
Time, $t - t_0$	=	**5700**	sec
In-situ Permeability, k	=	**$1.719x10^{-6}$**	m/sec

Notes : **Permeability calculated using velocity graph method in accordance with BS EN ISO 22282-2 (2012). To enable calculation of permeability a measured standing water level of 8.4m below datum prior to the test was used to determine head, H. Test carried out with casing raised above ground level.**

STRUCTURAL SOILS
The Potteries
Pottery Street
Castleford
W. Yorkshire WF10 1NJ

Test Operator	Checked By	Date
Christopher Jobson		**04/05/23**

Contract: **EMG Phase 2**

Contract Ref: **765514**

Client: **SEGRO**

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Graph I - BH PERM 22282 - 2 OF 2 - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01. | 04/05/23 - 16:34 | AML1 |

IN-SITU PERMEABILITY TEST - FALLING HEAD
In accordance with BS EN ISO 22282-2:2012

Position ID : **CP06** Depth (m below GL): **7.50-11.00** Test Number: **1**

Test Date: **28/09/2022** Test Supervisor: **NTopping**

Ground Level (m AOD): **87.01** National Grid Co-ordinates: **E:446015.6 N:325200.5**

TEST SETUP DETAILS

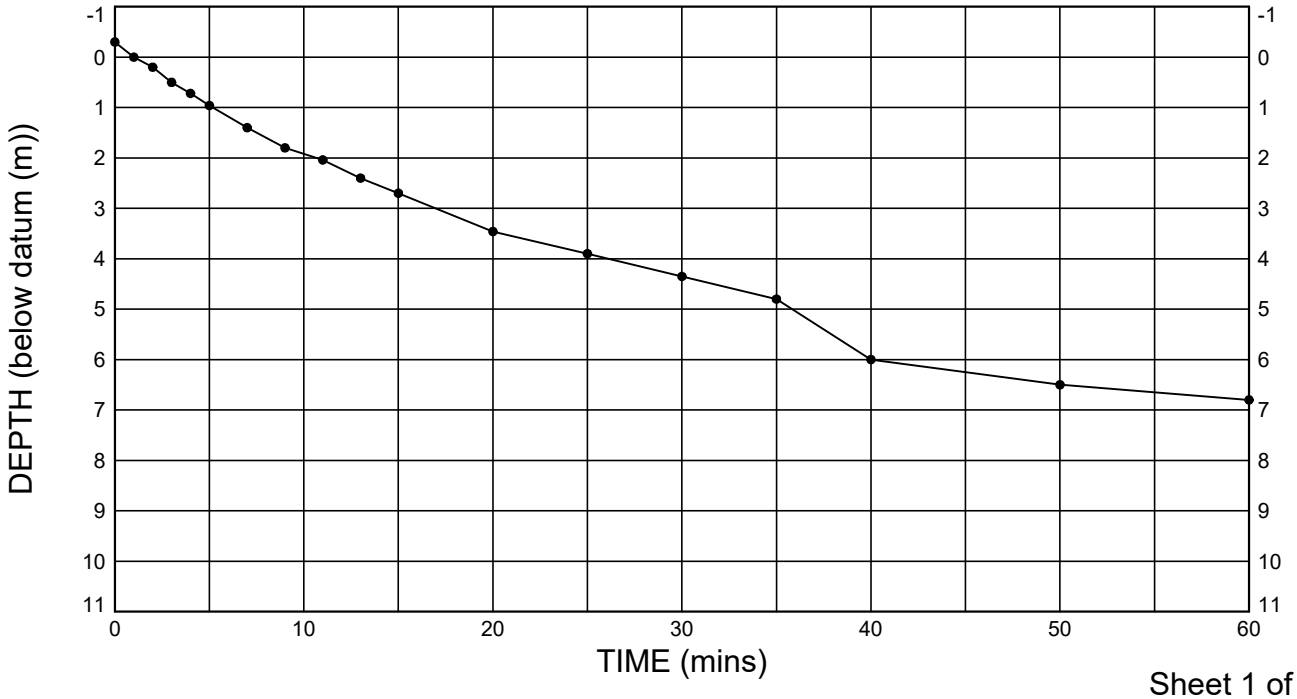
Depth measurements recorded from ground level.

Depth to top of response zone:	**7.50** m	Borehole diameter:	**150** mm
Depth to base of response zone:	**11.00** m	Depth to base of casing:	**7.50** m
Length of response zone:	**3.50** m	Casing diameter:	**150** mm
Initial groundwater level prior to test:	**8.50** m	Soil/Rock Description:	**Stiff sandy gravelly silty CLAY.**
Depth to base of borehole at start of test:	**11.00** m	Hydrogeological conditions:	**Entire test section below GW**
Depth to base of borehole at completion of test:	**11.00** m	Weather:	**Dry**

TEST MEASUREMENTS

Time (hh:mm:ss)	Water depth (m)	Head (m)	H/Ho	Time (hh:mm:ss)	Water depth (m)	Head (m)	H/Ho	Time (hh:mm:ss)	Water depth (m)	Head (m)	H/Ho	Time (hh:mm:ss)	Water depth (m)	Head (m)	H/Ho
15:30:00	-0.30	7.50	1.00	15:45:00	2.70	4.50	0.60								
15:31:00	0.00	7.20	0.96	15:50:00	3.46	3.74	0.50								
15:32:00	0.20	7.00	0.93	15:55:00	3.90	3.30	0.44								
15:33:00	0.50	6.70	0.89	16:00:00	4.35	2.85	0.38								
15:34:00	0.72	6.48	0.86	16:05:00	4.80	2.40	0.32								
15:35:00	0.96	6.24	0.83	16:10:00	6.00	1.20	0.16								
15:37:00	1.40	5.80	0.77	16:20:00	6.50	0.70	0.09								
15:39:00	1.80	5.40	0.72	16:30:00	6.80	0.40	0.05								
15:41:00	2.04	5.16	0.69												
15:43:00	2.40	4.80	0.64												

PLOT OF WATER DEPTH AGAINST TIME



STRUCTURAL SOILS
The Potteries
Pottery Street
Castleford
W. Yorkshire WF10 1NJ

Test Operator	Checked By	Date
Nathan Topping		**04/05/23**

Contract: **EMG Phase 2**

Contract Ref: **765514**

Client: **SEGRO**

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Graph I - BH PERM 22282 - 1 OF 2 - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01. | 04/05/23 - 16:35 | AML1 |

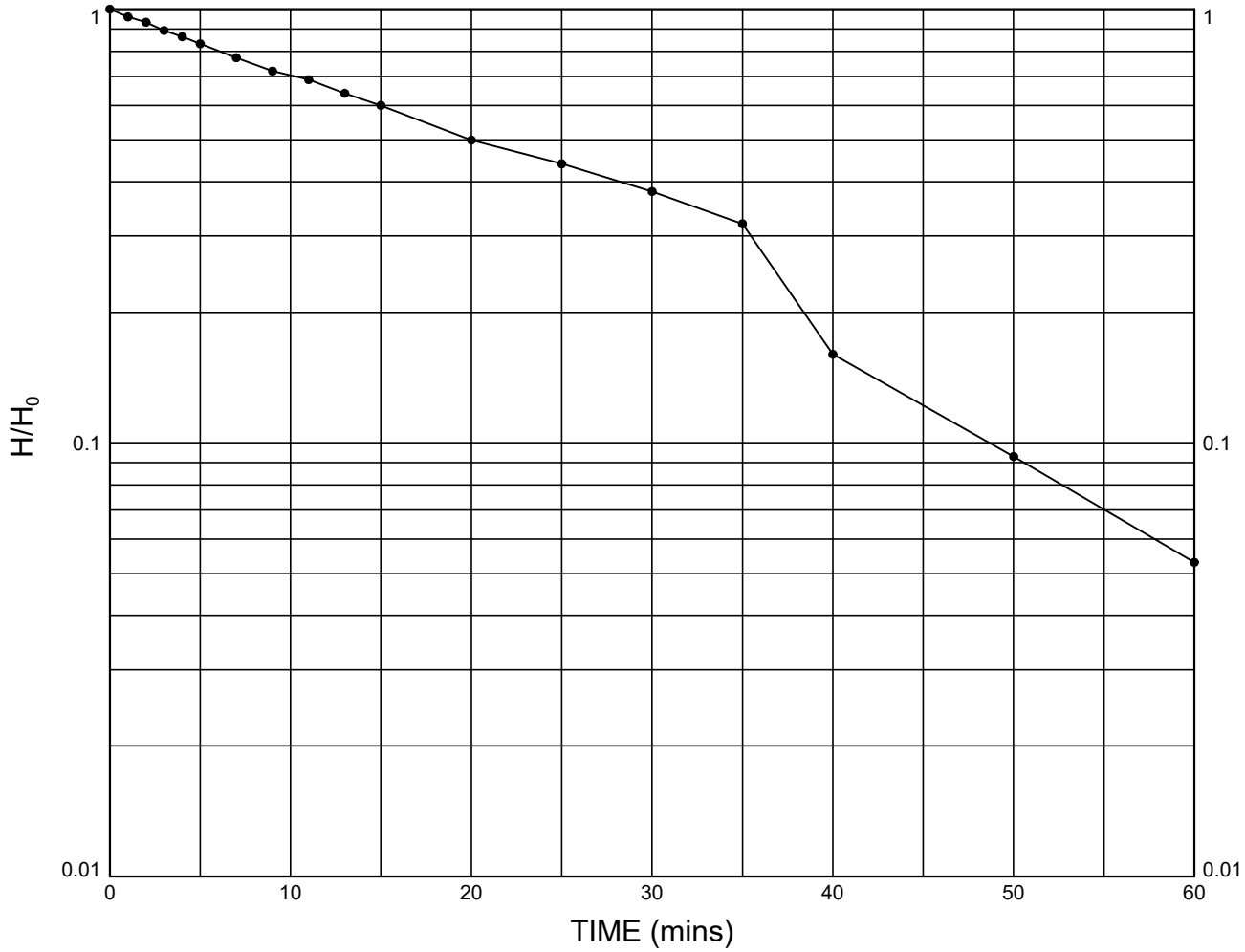
IN-SITU PERMEABILITY TEST - FALLING HEAD
In accordance with BS EN ISO 22282-2:2012

Position ID : **CP06** Depth (m below GL): **7.50-11.00** Test Number: **1**

Test Date: **28/09/2022** Test Supervisor: **NTopping**

Ground Level (m AOD): **87.01** Co-ordinates: E:446015.6 N:325200.5

PLOT OF H/Ho AGAINST TIME



Cross Sectional Area, A	=	**0.01767**	m^2
Intake Factor, F	=	**NA**	m
Basic Time Lag, T (from plot)	=	**1847**	sec
In-situ Permeability, k	=	**1.67×10^{-6}**	m/sec

Notes : **Permeability calculated using Hvorslev method in accordance with BS EN ISO 22282-2 (2012). To enable calculation of permeability an assumed standing water level of 7.2m below datum was used to determine head, H. Although the previous assumed standing water level has been used in the calculation of permeability the measured groundwater level prior to the test was recorded as 8.5m below datum. Assumed standing groundwater level of 7.20m bgl based on groundwater observations during drilling. Test carried out with casing raised above ground level, and water level raised to top of casing.**

STRUCTURAL SOILS
The Potteries
Pottery Street
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W. Yorkshire WF10 1NJ

Test Operator	Checked By	Date
Nathan Topping		**04/05/23**

Contract: **EMG Phase 2**

Contract Ref: **765514**

Client: **SEGRO**

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Graph I - BH PERM 22282 - 2 OF 2 - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01. | 04/05/23 - 16:34 | AML1 |

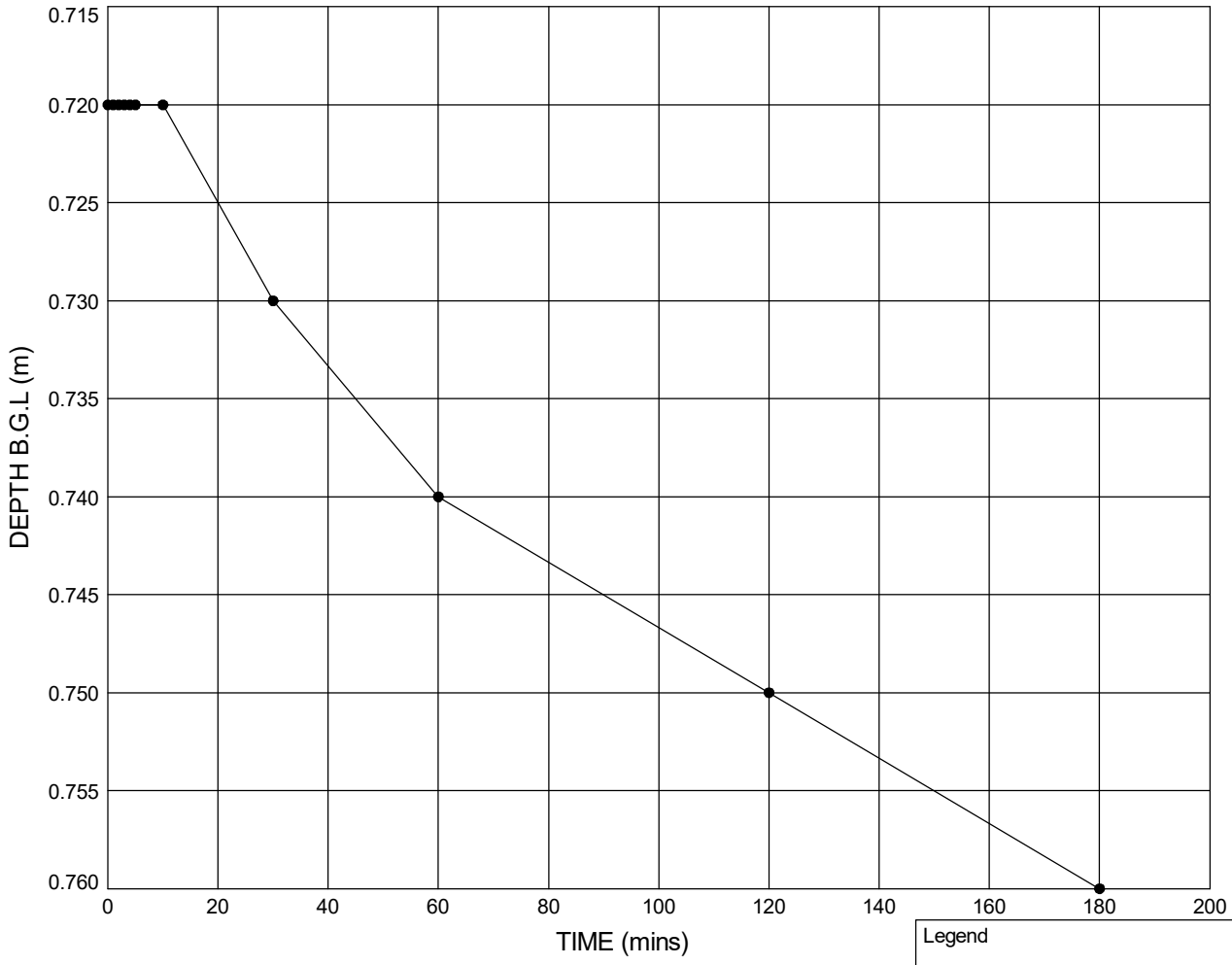
FULL SCALE SOAKAWAY TEST

Non-standard test

Soakaway Test - Position ID : **TP01**

Ground Level (m AOD): **90.15** National Grid Co-ordinates: **E:446482.7 N:325312.7**

PLOT OF DEPTH OF WATER BELOW GROUND LEVEL AGAINST TIME



Test 1

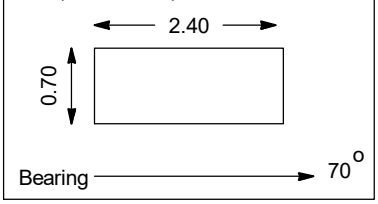
Pit start depth: RES 1	=	**2.00**	m
Pit final depth:	=	**1.83**	m
Effective depth, De	=	**1.11**	m
Effective storage volume, V_{p75-25}	=	**0.9324**	m^3
Surface area, a_{s50}	=	**5.1210**	m^2
Time, t_{p75-25}	=	**N/A**	secs
Infiltration rate, f	=	**N/A**	m/s

Notes: Test 1 - Unable to calculate infiltration rate due to insufficient drop in water level.

Legend

● Test 1 (27.09.22)

Plan (Not to scale)



STRUCTURAL SOILS
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Compiled By	Date	Checked By	Date
	16/01/23		

Contract	Contract Ref:
EMG Phase 2	**765514**

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Graph I - TP SOAKAWAY - 2 - FINAL REPORT - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01. | 16/01/23 - 14:48 | TC9 |

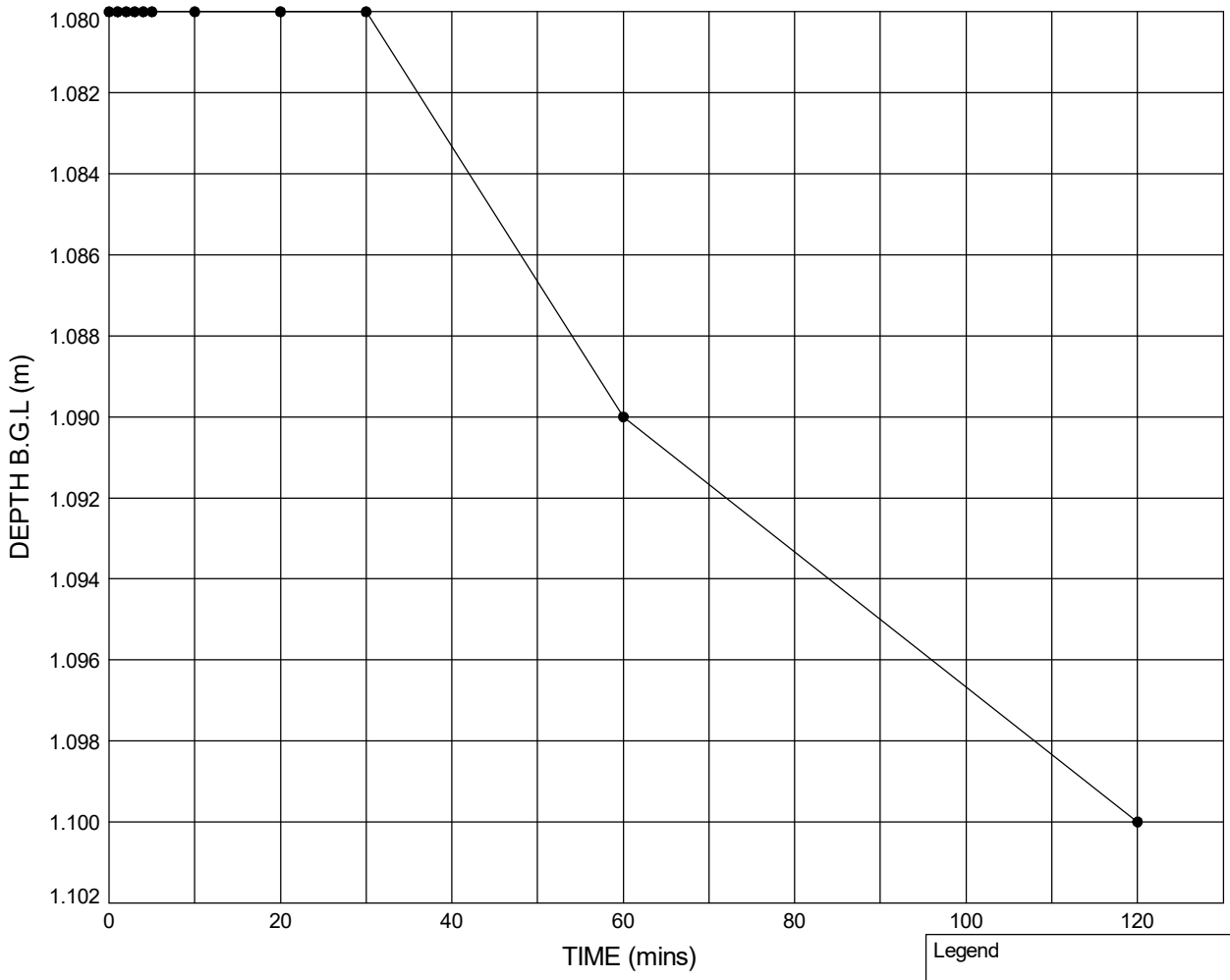
FULL SCALE SOAKAWAY TEST

Non-standard test

Soakaway Test - Position ID : **TP02**

Ground Level (m AOD): **87.34** National Grid Co-ordinates: **E:446247.8 N:325352.0**

PLOT OF DEPTH OF WATER BELOW GROUND LEVEL AGAINST TIME



Test 1

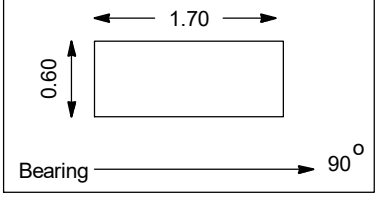
Pit start depth: RES 1	=	**2.00**	m
Pit final depth:	=	**1.94**	m
Effective depth, De	=	**0.86**	m
Effective storage volume, V_{p75-25}	=	**0.4386**	m^3
Surface area, a_{s50}	=	**2.9980**	m^2
Time, t_{p75-25}	=	**N/A**	secs
Infiltration rate, f	=	**N/A**	m/s

Notes: Test 1 - Unable to calculate infiltration rate due to insufficient drop in water level.

Legend

● Test 1 (27.09.22)

Plan (Not to scale)



STRUCTURAL SOILS
The Potteries
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Compiled By	Date	Checked By	Date
	16/01/23		

Contract	Contract Ref:
EMG Phase 2	**765514**

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Graph I - TP SOAKAWAY - 2 - FINAL REPORT - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01. | 16/01/23 - 14:48 | TC9 |

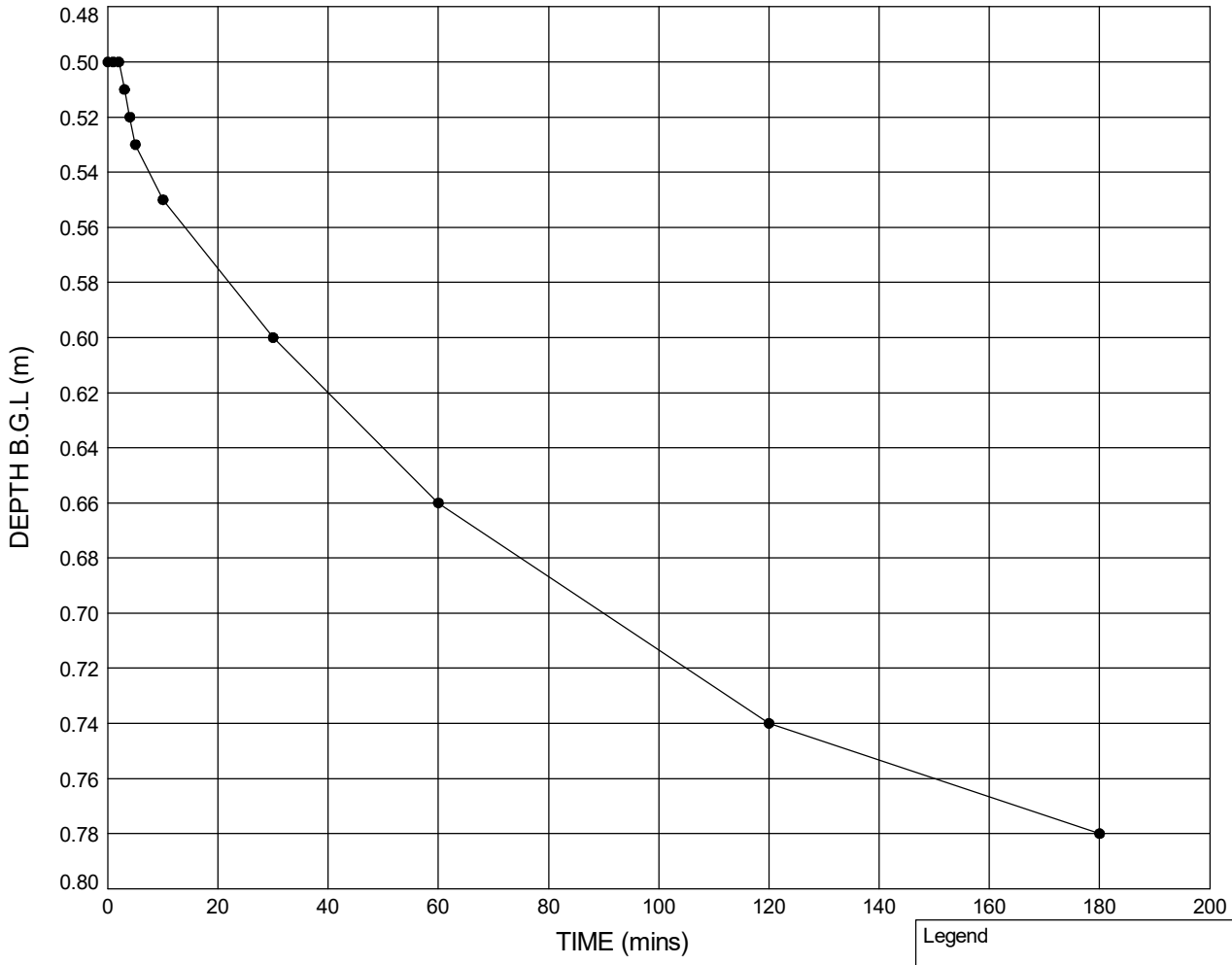
FULL SCALE SOAKAWAY TEST

Non-standard test

Soakaway Test - Position ID : **TP15**

Ground Level (m AOD): **69.53** National Grid Co-ordinates: **E:445583.3 N:325042.1**

PLOT OF DEPTH OF WATER BELOW GROUND LEVEL AGAINST TIME



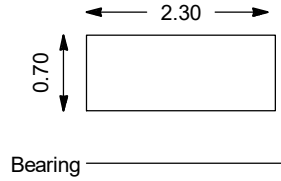
Pit start depth: RES 1	=	**2.00**	m
Pit final depth:	=	**1.60**	m
Effective depth, De	=	**1.10**	m
Effective storage volume, V_{p75-25}	=	**0.8855**	m^3
Surface area, a_{s50}	=	**4.9100**	m^2
Time, t_{p75-25}	=	**49500.0**	secs
Infiltration rate, f	=	**3.64×10^{-6}**	m/s

Please note test data was extrapolated to obtain tp75-tp25.

Legend

● Test 1 (29.09.22)

Plan (Not to scale)



STRUCTURAL SOILS
The Potteries
Pottery Street
Castleford
W. Yorkshire WF10 1NJ

Compiled By	Date	Checked By	Date
	16/01/23		

Contract	Contract Ref:
EMG Phase 2	**765514**

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Graph I - TP SOAKAWAY - 2 - FINAL REPORT - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01. | 16/01/23 - 14:48 | TC9 |

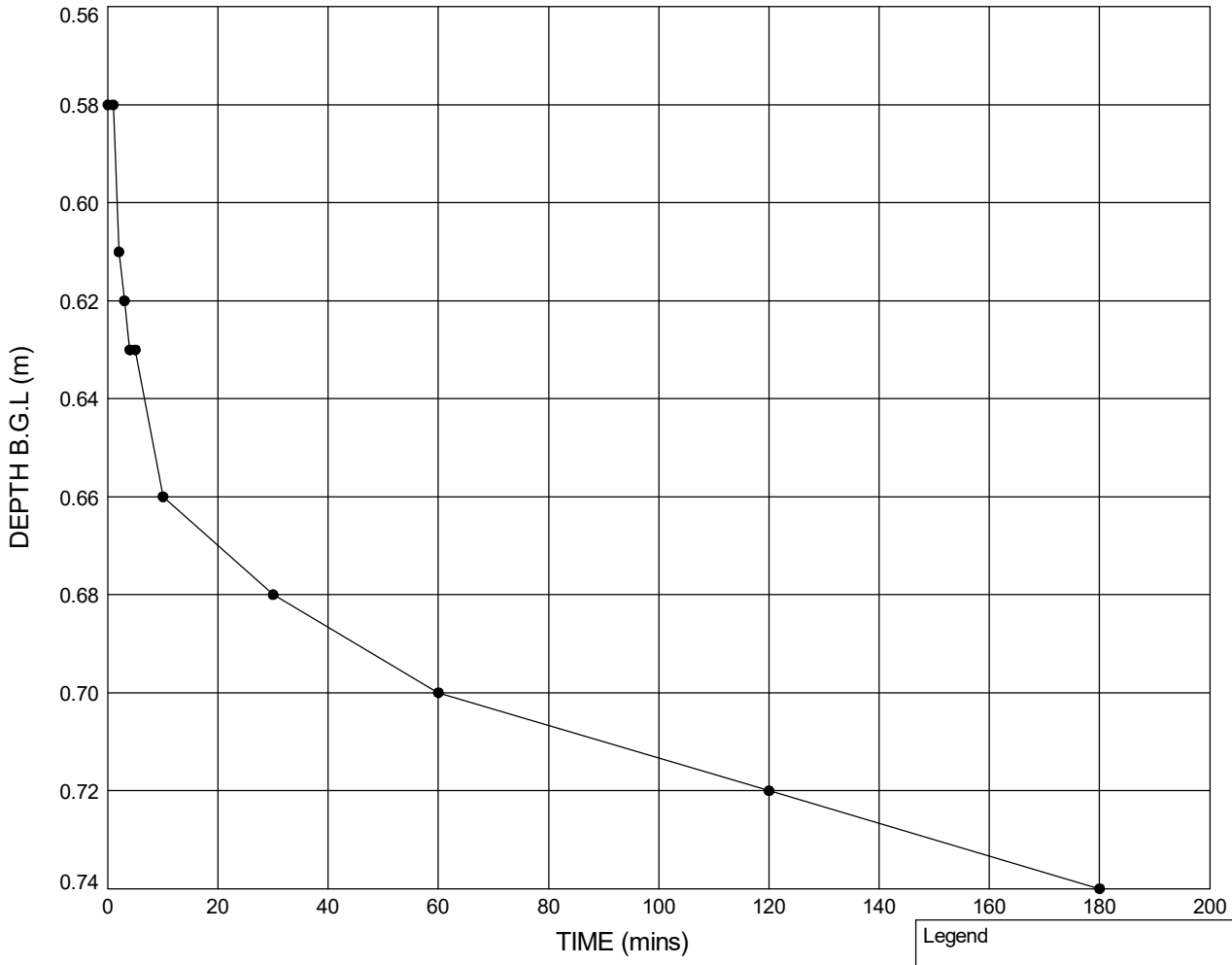
FULL SCALE SOAKAWAY TEST

Non-standard test

Soakaway Test - Position ID : **TP18**

Ground Level (m AOD): **84.13** National Grid Co-ordinates: **E:446580.8 N:325055.4**

PLOT OF DEPTH OF WATER BELOW GROUND LEVEL AGAINST TIME



Test 1

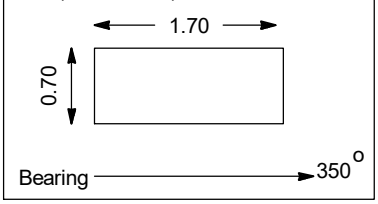
Pit start depth: RES 1	=	**2.20**	m
Pit final depth:	=	**1.83**	m
Effective depth, De	=	**1.25**	m
Effective storage volume, V_{p75-25}	=	**0.7438**	m^3
Surface area, a_{s50}	=	**4.1900**	m^2
Time, t_{p75-25}	=	**N/A**	secs
Infiltration rate, f	=	**N/A**	m/s

Notes: Test 1 - Unable to calculate infiltration rate due to insufficient drop in water level.

Legend

● Test 1 (27.09.22)

Plan (Not to scale)



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Contract	Contract Ref:
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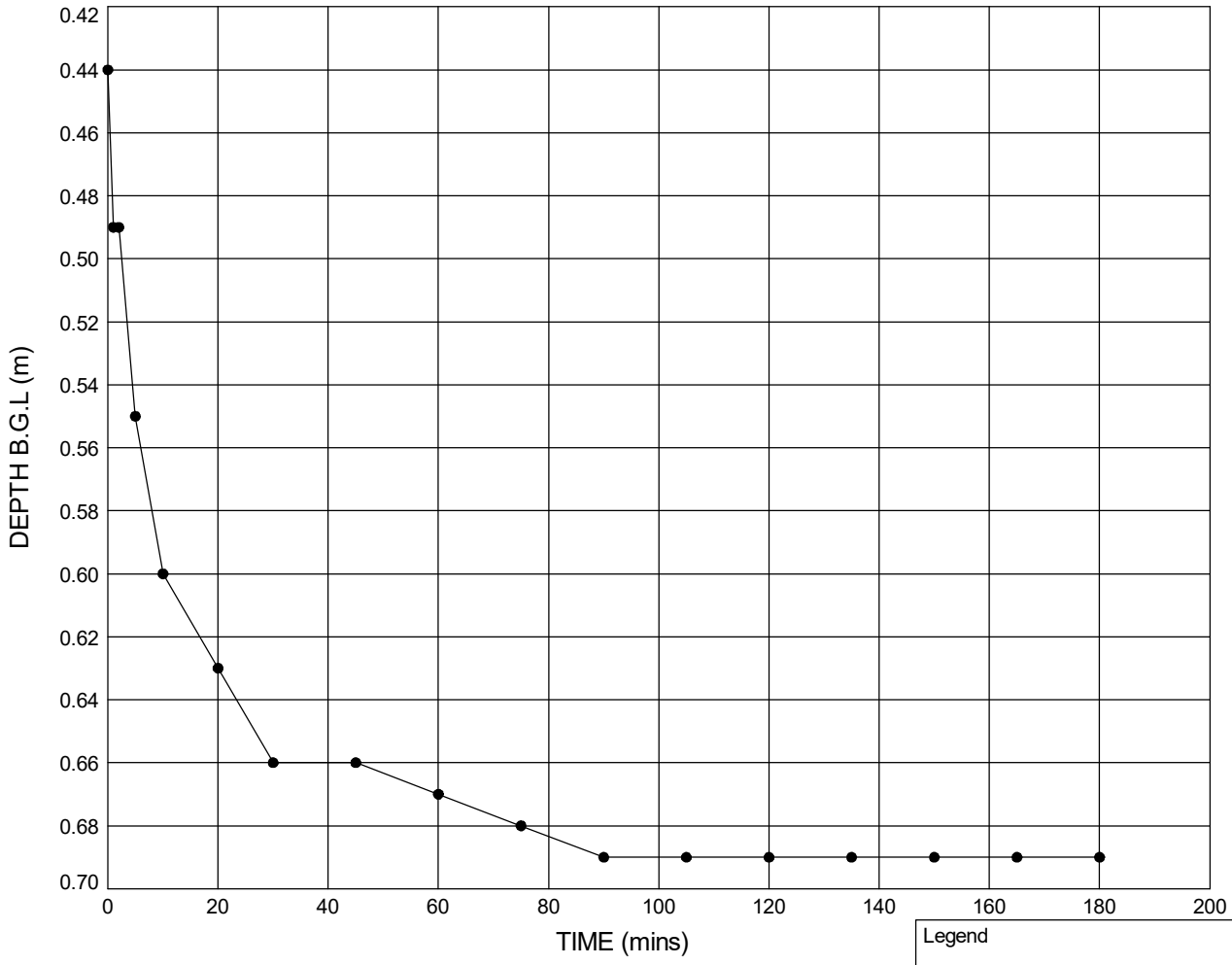
FULL SCALE SOAKAWAY TEST

Non-standard test

Soakaway Test - Position ID : **TP26**

Ground Level (m AOD): **76.87** National Grid Co-ordinates: **E:445943.0 N:324731.8**

PLOT OF DEPTH OF WATER BELOW GROUND LEVEL AGAINST TIME



Test 1

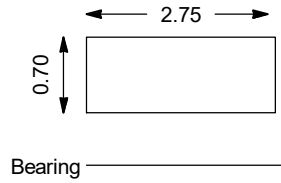
Pit start depth: RES 1	=	**2.00**	m
Pit final depth:	=	**1.61**	m
Effective depth, De	=	**1.17**	m
Effective storage volume, V_{p75-25}	=	**1.1261**	m^3
Surface area, a_{s50}	=	**5.9615**	m^2
Time, t_{p75-25}	=	**N/A**	secs
Infiltration rate, f	=	**N/A**	m/s

Notes: Test 1 - Unable to calculate infiltration rate due to insufficient drop in water level

Legend

● Test 1 (30.09.22)

Plan (Not to scale)



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Contract	Contract Ref:
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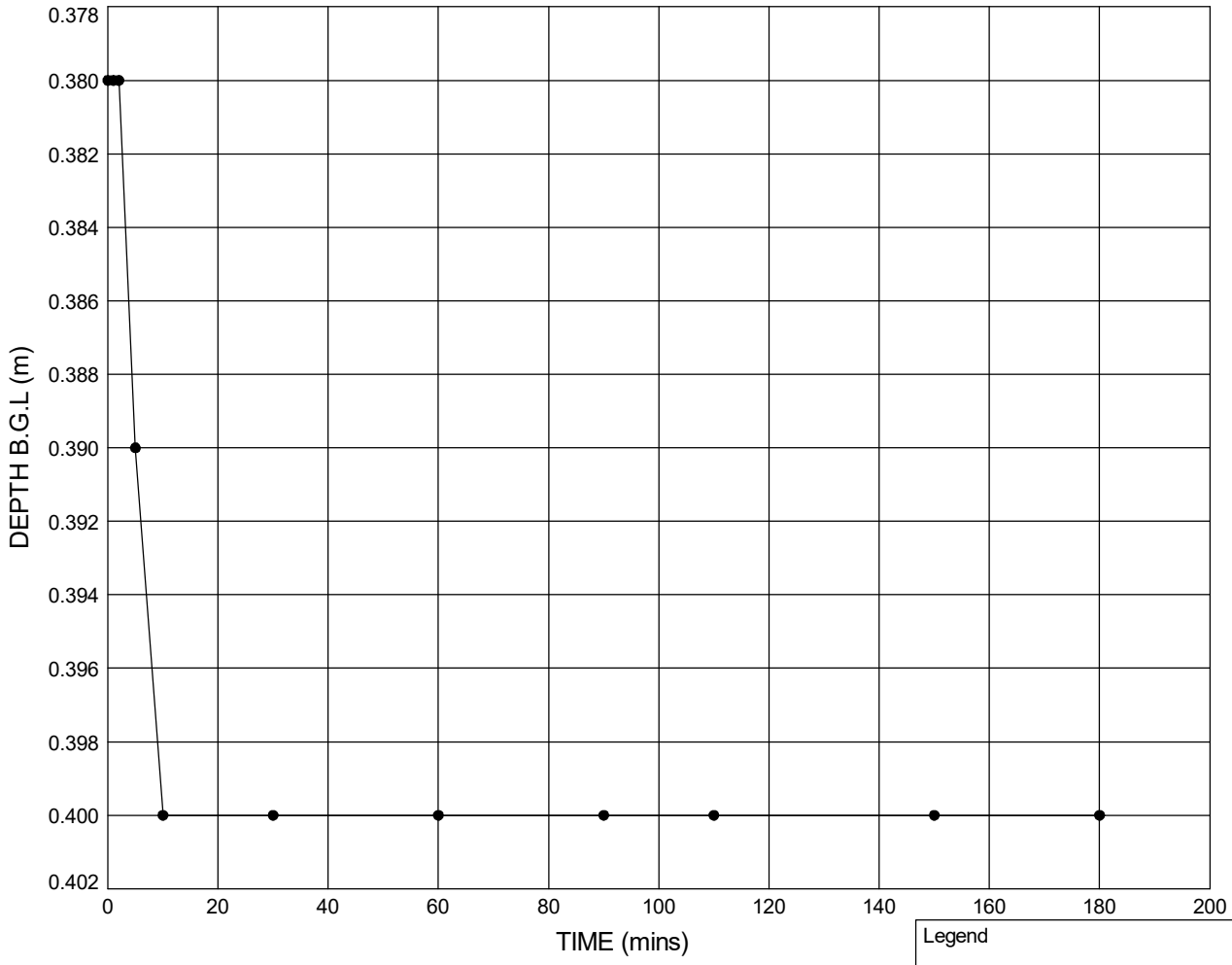
FULL SCALE SOAKAWAY TEST

Non-standard test

Soakaway Test - Position ID : **TP30**

Ground Level (m AOD): **66.68** National Grid Co-ordinates: **E:446232.9 N:324495.5**

PLOT OF DEPTH OF WATER BELOW GROUND LEVEL AGAINST TIME



Test 1

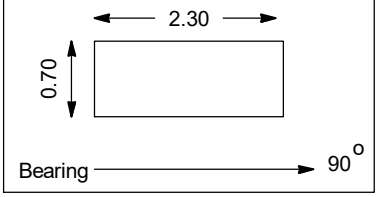
Pit start depth: RES 1	=	**2.00**	m
Pit final depth:	=	**2.00**	m
Effective depth, De	=	**1.62**	m
Effective storage volume, V_{p75-25}	=	**1.3041**	m^3
Surface area, a_{s50}	=	**6.4700**	m^2
Time, t_{p75-25}	=	**N/A**	secs
Infiltration rate, f	=	**N/A**	m/s

Notes: Test 1 - Unable to calculate infiltration rate due to insufficient drop in water level

Legend

● Test 1 (22.09.22)

Plan (Not to scale)



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Contract	Contract Ref:
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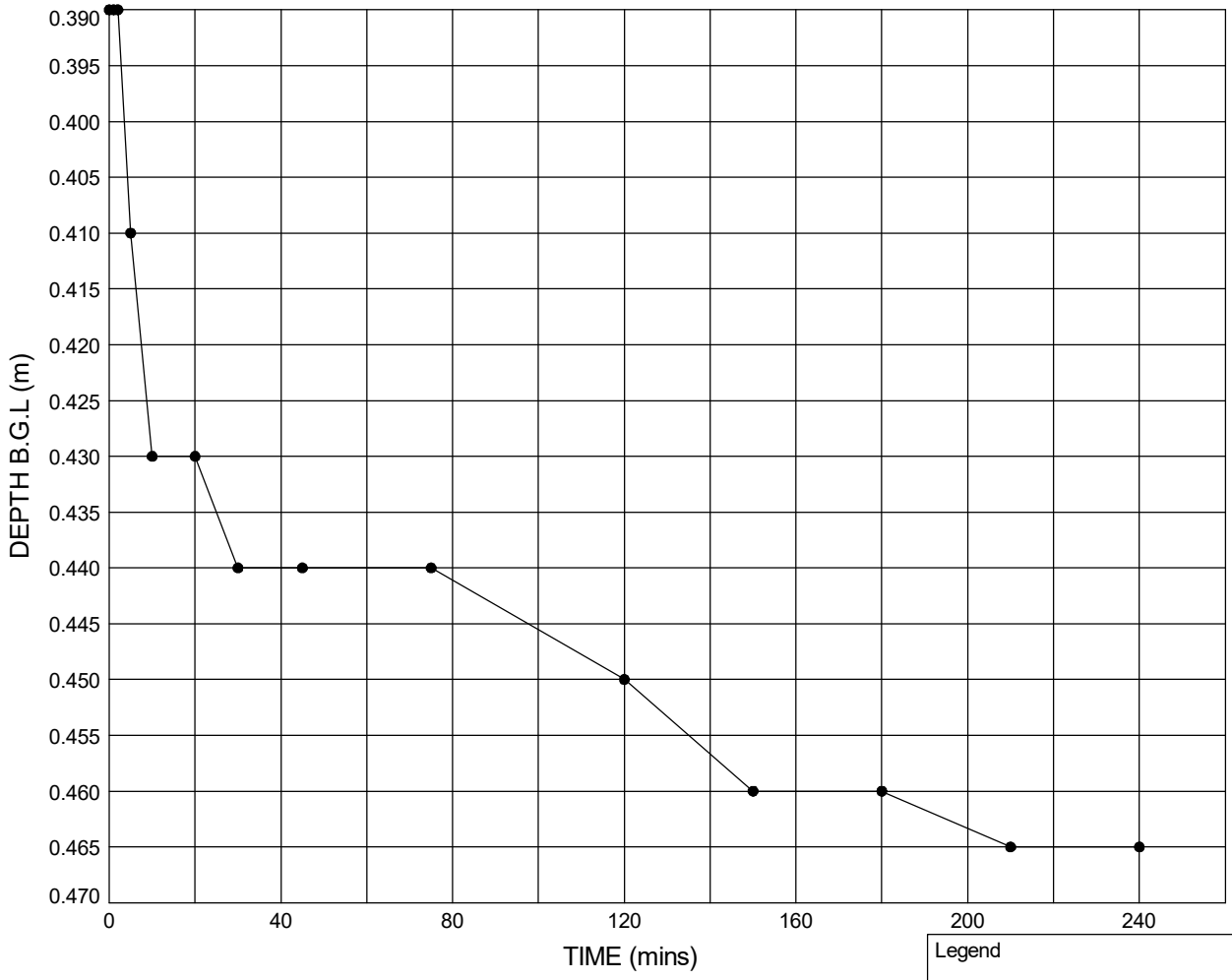
FULL SCALE SOAKAWAY TEST

Non-standard test

Soakaway Test - Position ID : **TP33**

Ground Level (m AOD): **66.58** National Grid Co-ordinates: **E:446469.7 N:324711.9**

PLOT OF DEPTH OF WATER BELOW GROUND LEVEL AGAINST TIME



Test 1

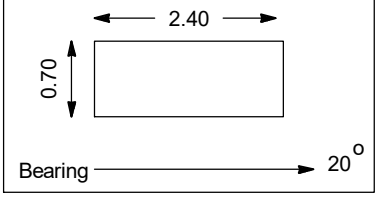
Pit start depth: RES 1	=	**2.00**	m
Pit final depth:	=	**2.00**	m
Effective depth, De	=	**1.61**	m
Effective storage volume, V_{p75-25}	=	**1.3524**	m^3
Surface area, a_{s50}	=	**6.6710**	m^2
Time, t_{p75-25}	=	**N/A**	secs
Infiltration rate, f	=	**N/A**	m/s

Notes: Test 1 - Unable to calculate infiltration rate due to insufficient drop in water level

Legend

● Test 1 (22.09.22)

Plan (Not to scale)



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W. Yorkshire WF10 1NJ

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Contract	Contract Ref:
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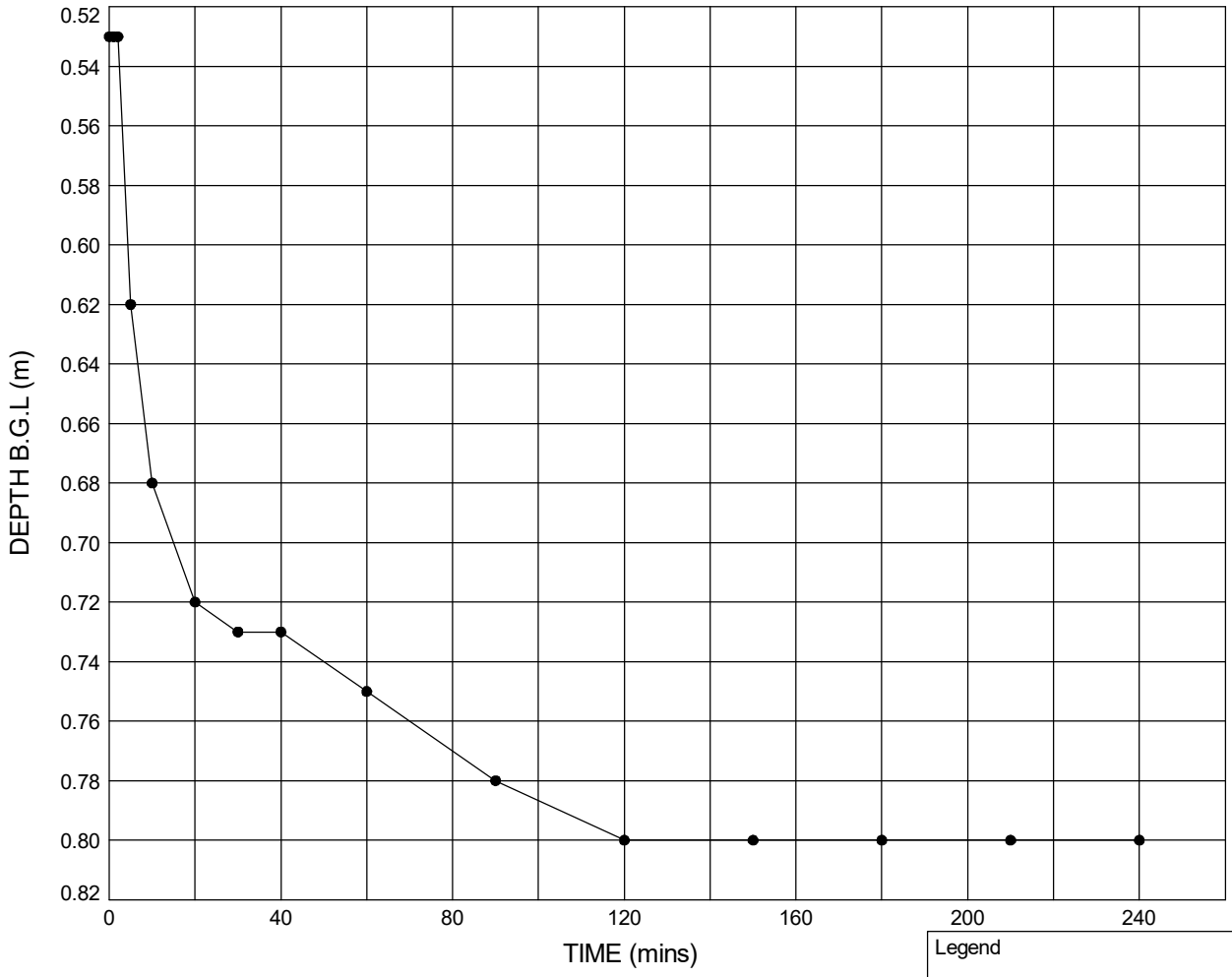
FULL SCALE SOAKAWAY TEST

Non-standard test

Soakaway Test - Position ID : **TP37**

Ground Level (m AOD): **55.37** National Grid Co-ordinates: **E:446674.7 N:324413.8**

PLOT OF DEPTH OF WATER BELOW GROUND LEVEL AGAINST TIME



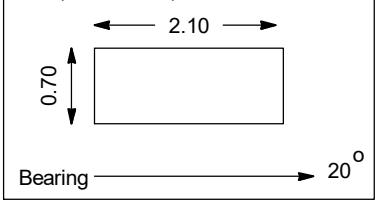
Pit start depth: RES 1	=	**2.00**	m
Pit final depth:	=	**2.00**	m
Effective depth, De	=	**1.47**	m
Effective storage volume, V_{p75-25}	=	**1.0805**	m^3
Surface area, a_{s50}	=	**5.5860**	m^2
Time, t_{p75-25}	=	**N/A**	secs
Infiltration rate, f	=	**N/A**	m/s

Notes: Test 1 - Unable to calculate infiltration rate due to insufficient drop in water level.

Legend

● Test 1 (21.09.22)

Plan (Not to scale)



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	Contract **EMG Phase 2**		Contract Ref: **765514**	

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Graph I - TP SOAKAWAY - 2 - FINAL REPORT - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01. | 16/01/23 - 14:49 | TC9 |

APPENDIX D - GEOTECHNICAL LABORATORY TESTING

(i) Laboratory Test Verification Sheet

(ii) Laboratory Test Results

TESTING VERIFICATION CERTIFICATE

UKAS TESTING
1774

The test results included in this report are certified as:-

ISSUE STATUS: **FINAL**

In accordance with the Structural Soils Ltd Laboratory Quality Management System, results sheets and summaries of results issued by the laboratory are checked by an approved signatory. The integrity of the test data and results are ensured by control of the computer system employed by the laboratory as part of the Software Verification Program as detailed in the Laboratory Quality Manual.

This testing verification certificate covers all testing compiled on or before the following datetime: **09/03/2023 16:37:09**.

Testing reported after this date is not covered by this Verification Certificate.

Approved Signatory
Luke Fisher (Laboratory Manager)

(Head Office)
Bristol Laboratory
Unit 1A, Princess Street
Bedminster
Bristol
BS3 4AG

Castleford Laboratory
The Potteries, Pottery Street
Castleford
West Yorkshire
WF10 1NJ

Hemel Laboratory
18 Frogmore Road
Hemel Hempstead
Hertfordshire
HP3 9RT

Tonbridge Laboratory
Anerley Court, Half Moon Lane
Hildenborough
Tonbridge
TN11 9HU

STRUCTURAL SOILS LTD	Contract: **EMG Phase 2**	Job No: **765514**

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GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | GrfcText L - LAB VERIFICATION REPORT - V02 - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01
Structural Soils Ltd, Branch Office - Castleford: The Potteries, Pottery Street, Castleford, West Yorkshire, WF10 1NJ. Tel: 01977-552255, Fax: 01977-552299, Web: www.soils.co.uk, Email: ask@soils.co.uk. | 09/03/23 - 16:38 | LF1 |

TESTING VERIFICATION CERTIFICATE

UKAS TESTING
1774

The test results included in this report are certified as:-

ISSUE STATUS: **FINAL**

In accordance with the Structural Soils Ltd Laboratory Quality Management System, results sheets and summaries of results issued by the laboratory are checked by an approved signatory. The integrity of the test data and results are ensured by control of the computer system employed by the laboratory as part of the Software Verification Program as detailed in the Laboratory Quality Manual.

This testing verification certificate covers all testing compiled on or before the following datetime: **09/03/2023 16:37:09**.

Testing reported after this date is not covered by this Verification Certificate.

Approved Signatory
Luke Fisher (Laboratory Manager)

(Head Office)
Bristol Laboratory
Unit 1A, Princess Street
Bedminster
Bristol
BS3 4AG

Castleford Laboratory
The Potteries, Pottery Street
Castleford
West Yorkshire
WF10 1NJ

Hemel Laboratory
18 Frogmore Road
Hemel Hempstead
Hertfordshire
HP3 9RT

Tonbridge Laboratory
Anerley Court, Half Moon Lane
Hildenborough
Tonbridge
TN11 9HU

STRUCTURAL SOILS LTD	Contract: **EMG Phase 2**	Job No: **765514**

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GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | GrfcText L - LAB VERIFICATION REPORT - V02 - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01
Structural Soils Ltd, Branch Office - Castleford: The Potteries, Pottery Street, Castleford, West Yorkshire, WF10 1NJ. Tel: 01977-552255, Fax: 01977-552299, Web: www.soils.co.uk, Email: ask@soils.co.uk. | 09/03/23 - 16:38 | LF1 |

SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with Part 1,Part 12 of BS EN ISO 17892

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Water Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425um	Description of Sample
CP20	9	UT	2.50	10.6	37	18	19	90	Brpwn slightly gravelly CLAY

SYMBOLS: * denotes BS 1377

STRUCTURAL SOILS LTD	Contract: **EMG Phase 2**	Contract Ref: **765514**

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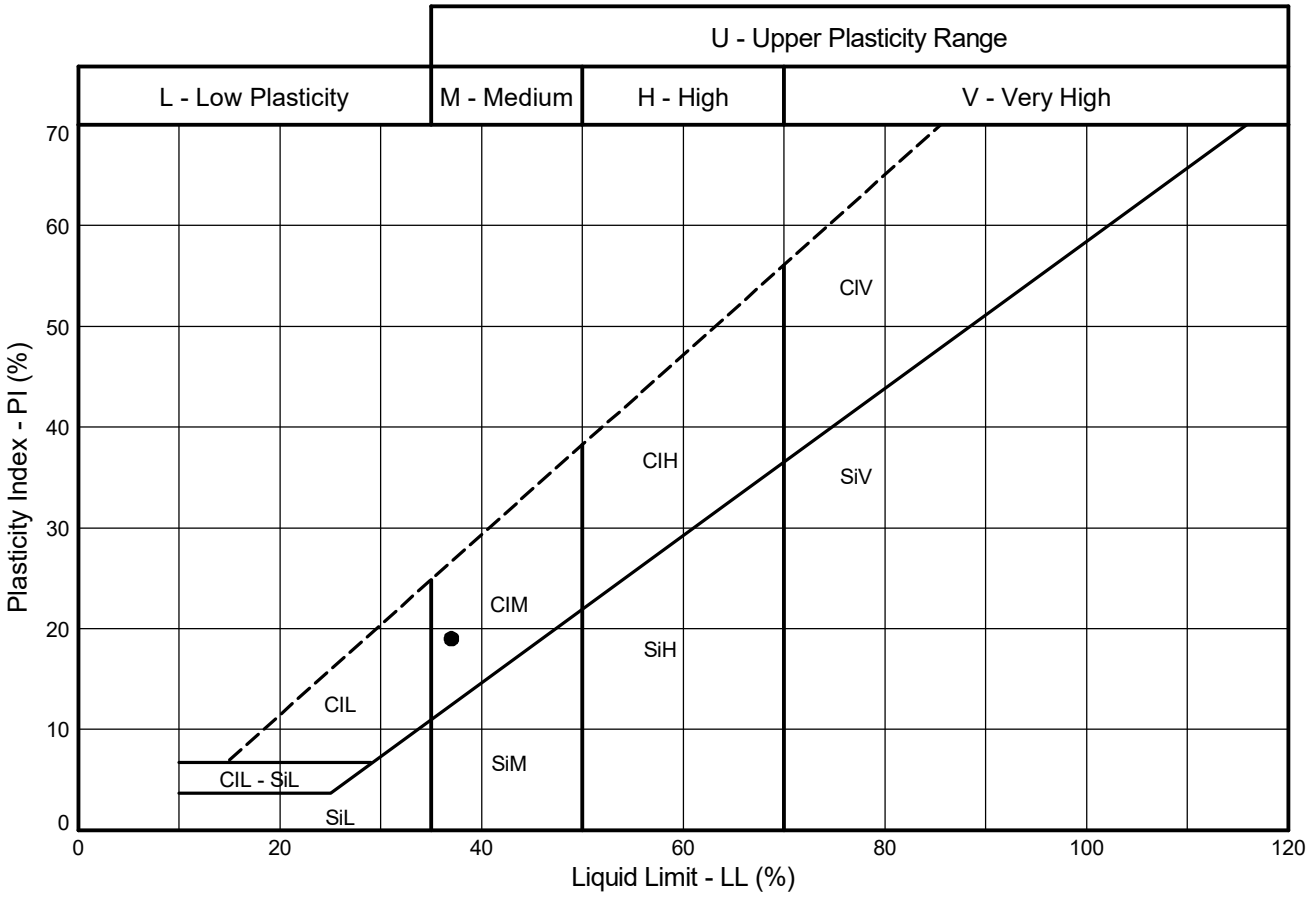
PI vs LL CHART

According to BS EN 14688-2:2018
Testing in accordance with BS EN ISO 17892-12:2018+A1:2021



Sample Identification				Test Method #	Preparation Method +	WC %	LL %	PL %	PI %	<425µm %	Lab location	Notes
	Exploratory Position ID	Sample	Depth (m)									
●	CP20	9UT	2.50	5.3/5.5/6.5	5.2.7	10.6	37	18	19	90	C	

Tested in accordance with the following clauses of BS EN ISO 17892-12:2018+A1:2021
5.3 - Cone Penetrometer Method; 5.3.14 - One-Point Cone Penetrometer Method; 5.4 - Casagrande Method; 5.5 - Plastic Limit Method; 6.5 - Plasticity Index

Water Content (WC) tested in accordance with BS EN ISO 17892-1:2014

+ Tested in accordance with the following clauses of BS EN ISO 17892-12:2018+A1:2021
5.2.1 - Natural State and 5.2.7 - Wet Sieved

Key: * = Non-standard test, NP = Non plastic, I = Increasing WC, D = Decreasing WC.

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

STRUCTURAL SOILS
The Potteries
Pottery Street
Castleford
W. Yorkshire WF10 1NJ

Compiled By		Date
	LORNA WHITWORTH	30/03/23

Contract	Contract Ref:
EMG Phase 2	765514

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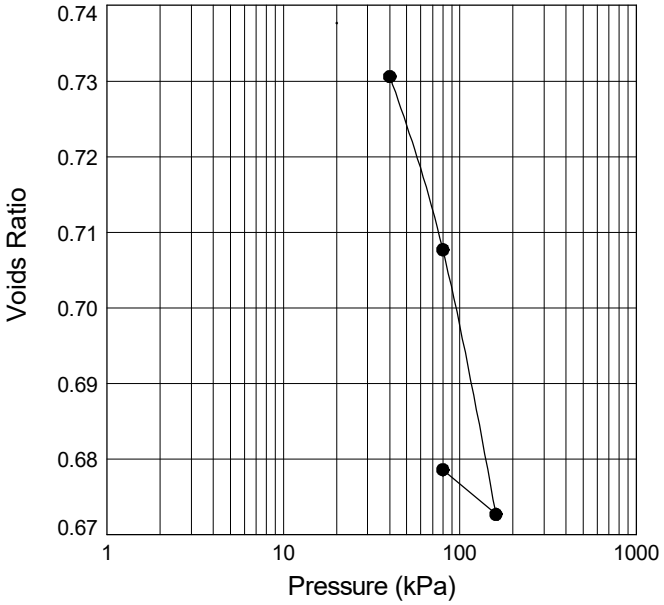
Structural Soils Ltd, Branch Office - Castleford: The Potteries, Pottery Street, Castleford, West Yorkshire, WF10 1NJ. Tel: 01977-552255, Fax: 01977-552299, Web: www.soils.co.uk, Email: ask@soils.co.uk. | 30/03/23 - 10:52 | LW5 |

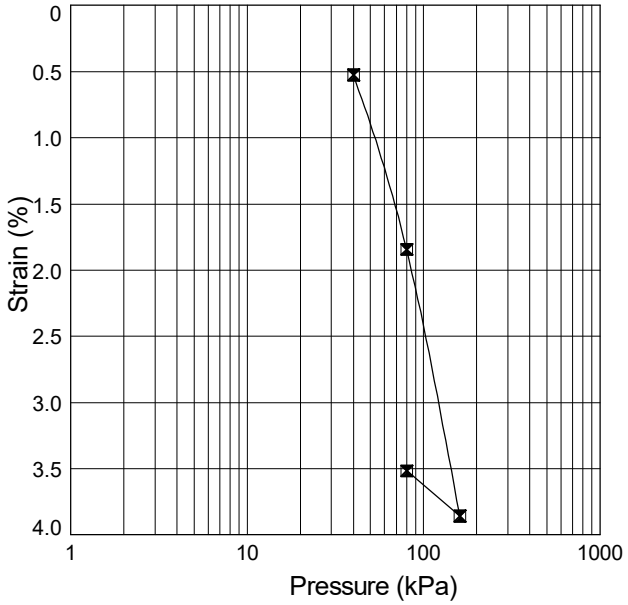
ONE-DIMENSIONAL CONSOLIDATION TEST

In accordance with BS EN ISO 17892 Part 5

Borehole: **BH04** Sample Ref: **9** Sample Type: **UT** Depth (m): **2.00**

Description : Brown slightly gravelly CLAY





SPECIMEN DETAILS	INITIAL	FINAL
Diameter (mm) :	75.05	75.05
Height (mm) :	19.96	19.26
Assumed Particle Density (Mg/m^3) :	2.65	2.65
Water Content (%) :	28.7	28.4
Wet Density (Mg/m^3) :	1.96	2.03
Dry Density (Mg/m^3) :	1.52	1.58
Voids Ratio :	0.7398	0.6786

TEST DETAILS

Stage	Duration (days)	Pressure (kPa)	Strain (%)	Void Ratio	M_v (m^2/MN)	T_{90} (min)	C_v (m^2/yr)	Comments etc.
Swelling		0 - 20	0.120	0.7377	NA	NA	NA	
Loading		20 - 40	0.526	0.7306	0.20	247	0.18	
Loading		40 - 80	1.844	0.7077	0.33	3587	0.012	
Loading		80 - 160	3.858	0.6727	0.26	2228	0.019	
Unloading		160 - 80	3.517	0.6786	NA	NA	NA	Unloading stage

Notes: Method of time-setting used (min): **T_{90}**. Temperature range during test (degC): **13.2 - 23.4**.

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Pottery Street
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Compiled By		Date
	LORNA WHITWORTH	30/03/23

Contract	Contract Ref:
EMG Phase 2	**765514**

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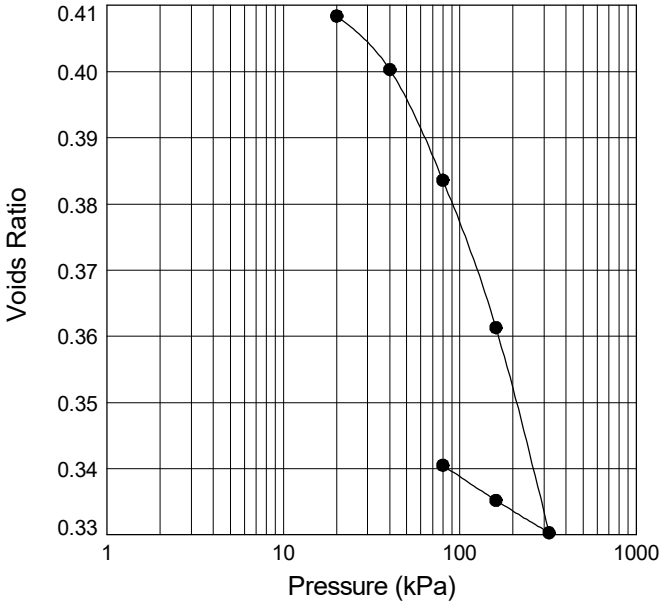
GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Graph L - 1D CONSOL DL -1- A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
Structural Soils Ltd, Branch Office - Castleford: The Potteries, Pottery Street, Castleford, West Yorkshire, WF10 1NJ. Tel: 01977-552255, Fax: 01977-552299, Web: www.soils.co.uk, Email: ask@soils.co.uk. | 30/03/23 - 10:59 | LW5 |

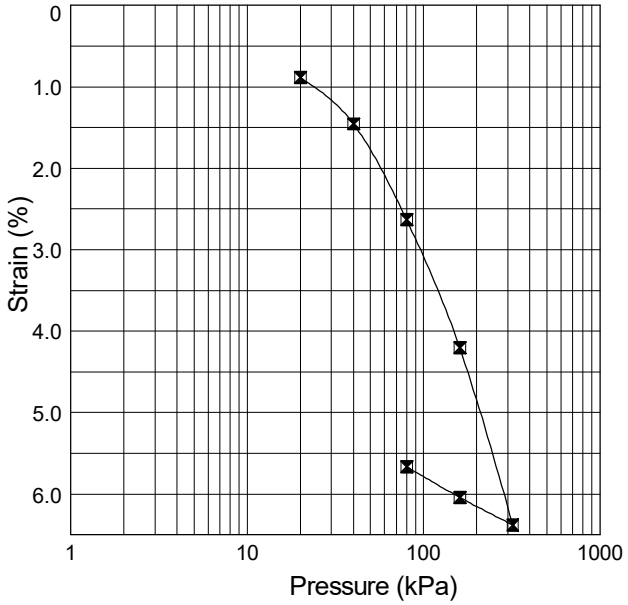
ONE-DIMENSIONAL CONSOLIDATION TEST

In accordance with BS EN ISO 17892 Part 5

Borehole: **BH09** Sample Ref: **18** Sample Type: **UT** Depth (m): **2.00**

Description : Brown slightly sandy slightly gravelly CLAY





SPECIMEN DETAILS	INITIAL	FINAL
Diameter (mm) :	75.00	75.00
Height (mm) :	19.95	18.82
Assumed Particle Density (Mg/m^3) :	2.65	2.65
Water Content (%) :	16.3	15.6
Wet Density (Mg/m^3) :	2.17	2.29
Dry Density (Mg/m^3) :	1.86	1.98
Voids Ratio :	0.4210	0.3405

TEST DETAILS

Stage	Duration (days)	Pressure (kPa)	Strain (%)	Void Ratio	M_v (m^2/MN)	T_{90} (min)	C_v (m^2/yr)	Comments etc.
Loading		0 - 20	0.887	0.4084	0.44	11	4.0	
Loading		20 - 40	1.454	0.4003	0.29	645	0.067	
Loading		40 - 80	2.632	0.3836	0.30	1850	0.023	
Loading		80 - 160	4.201	0.3613	0.20	1155	0.036	
Loading		160 - 320	6.381	0.3303	0.14	1825	0.022	
Unloading		320 - 160	6.040	0.3352	NA	NA	NA	
Unloading		160 - 80	5.664	0.3405	NA	NA	NA	

Notes: Method of time-setting used (min): **T_{90}**. Temperature range during test (degC): **13.2 - 23.4**.

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Compiled By		Date
	LORNA WHITWORTH	30/03/23

Contract	Contract Ref:
EMG Phase 2	**765514**

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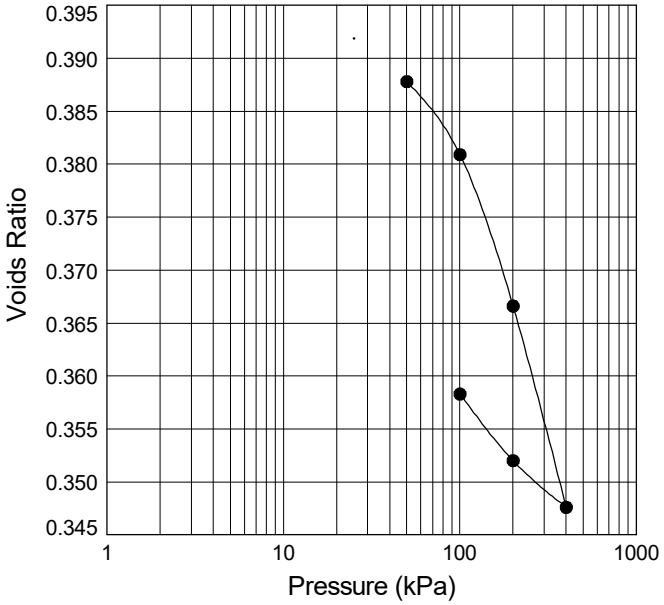
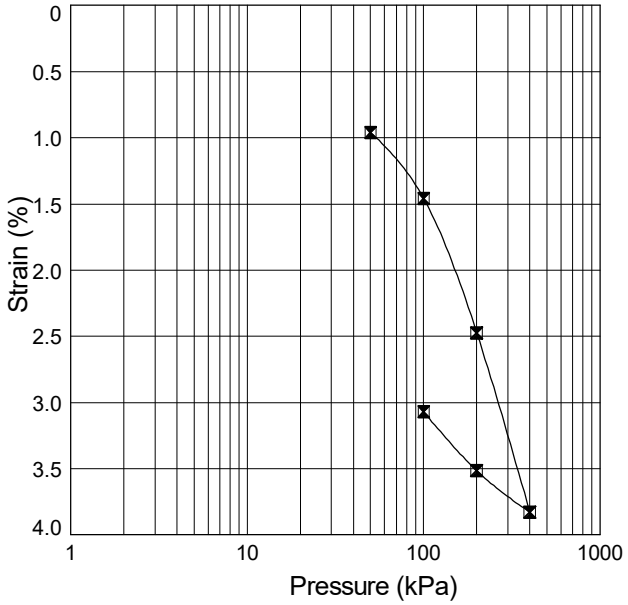
ONE-DIMENSIONAL CONSOLIDATION TEST

In accordance with BS EN ISO 17892 Part 5

Borehole: **BH12** Sample Ref: **21** Sample Type: **UT** Depth (m): **5.00**

Description : Dark brown slightly gravelly slightly sandy CLAY





SPECIMEN DETAILS	INITIAL	FINAL
Diameter (mm) :	75.03	75.03
Height (mm) :	19.48	18.88
Assumed Particle Density (Mg/m^3) :	2.65	2.65
Water Content (%) :	15.6	15.3
Wet Density (Mg/m^3) :	2.19	2.25
Dry Density (Mg/m^3) :	1.89	1.95
Voids Ratio :	0.4013	0.3583

TEST DETAILS

Stage	Duration (days)	Pressure (kPa)	Strain (%)	Void Ratio	M_v (m^2/MN)	T_{90} (min)	C_v (m^2/yr)	Comments etc.
Swelling		0 - 25	0.673	0.3919	NA	NA	NA	
Loading		25 - 50	0.960	0.3878	0.12	380	0.11	
Loading		50 - 100	1.458	0.3809	0.10	169	0.24	
Loading		100 - 200	2.474	0.3666	0.10	212	0.19	
Loading		200 - 400	3.830	0.3476	0.069	332	0.12	
Unloading		400 - 200	3.516	0.3520	NA	NA	NA	
Unloading		200 - 100	3.070	0.3583	NA	NA	NA	

Notes: Method of time-setting used (min): **T_{90}**. Temperature range during test (degC): **17.1 - 23.2**.

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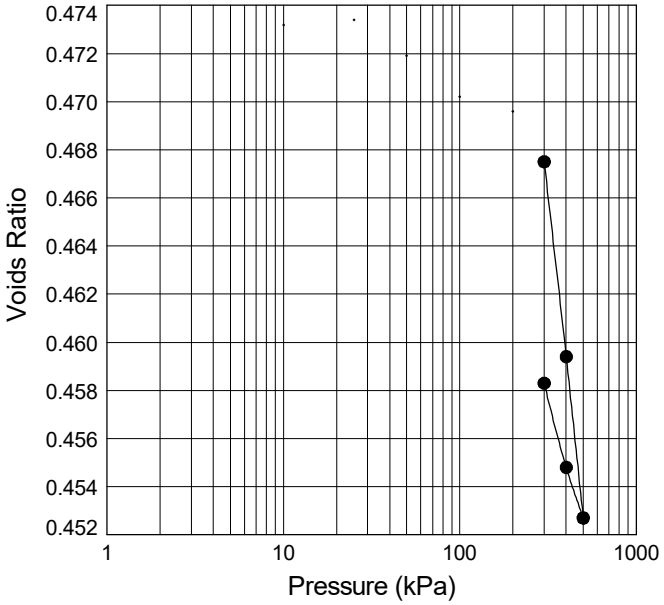
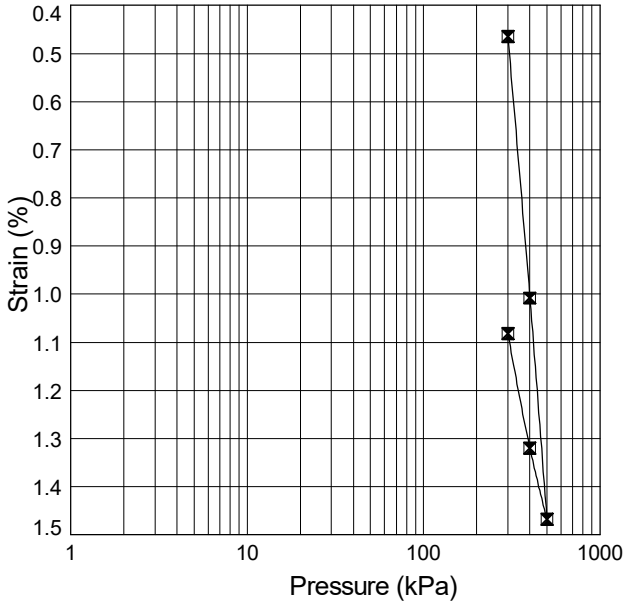
ONE-DIMENSIONAL CONSOLIDATION TEST

In accordance with BS EN ISO 17892 Part 5

Borehole: **BH16** Sample Ref: **6** Sample Type: **UT** Depth (m): **1.20**

Description : Brown gravelly CLAY





SPECIMEN DETAILS	INITIAL	FINAL
Diameter (mm) :	75.02	75.02
Height (mm) :	18.94	18.74
Assumed Particle Density (Mg/m^3) :	2.65	2.65
Water Content (%) :	17.7	20.4
Wet Density (Mg/m^3) :	2.11	2.19
Dry Density (Mg/m^3) :	1.80	1.82
Voids Ratio :	0.4743	0.4583

TEST DETAILS

Stage	Duration (days)	Pressure (kPa)	Strain (%)	Void Ratio	M_v (m^2/MN)	T_{90} (min)	C_v (m^2/yr)	Comments etc.
Swelling		0 - 10	0.074	0.4732	NA	NA	NA	
Swelling		10 - 25	0.058	0.4734	NA	NA	NA	
Swelling		25 - 50	0.164	0.4719	NA	NA	NA	
Swelling		50 - 100	0.280	0.4702	NA	NA	NA	
Swelling		100 - 200	0.322	0.4696	NA	NA	NA	
Loading		200 - 300	0.465	0.4675	0.014	1883	0.021	
Loading		300 - 400	1.008	0.4594	0.055	3463	0.011	
Loading		400 - 500	1.468	0.4527	0.046	2185	0.018	
Unloading		500 - 400	1.320	0.4548	NA	NA	NA	
Unloading		400 - 300	1.082	0.4583	NA	NA	NA	

Notes: Method of time-setting used (min): **T_{90}**. Temperature range during test (degC): **13.2 - 23.4**.

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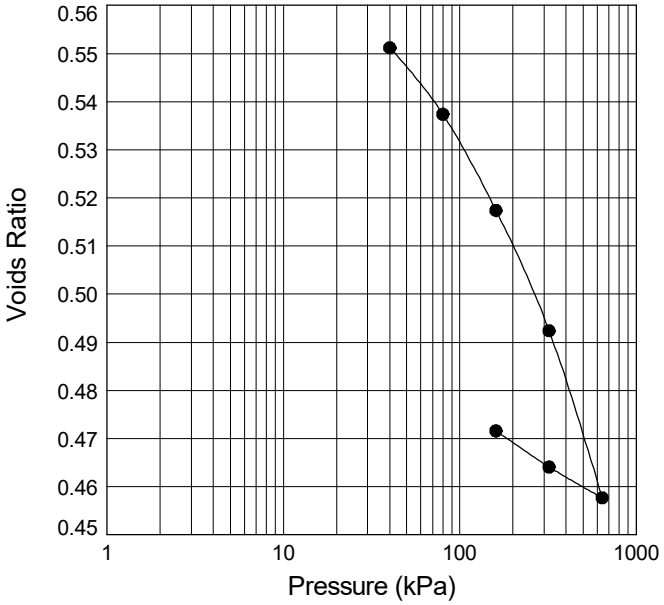
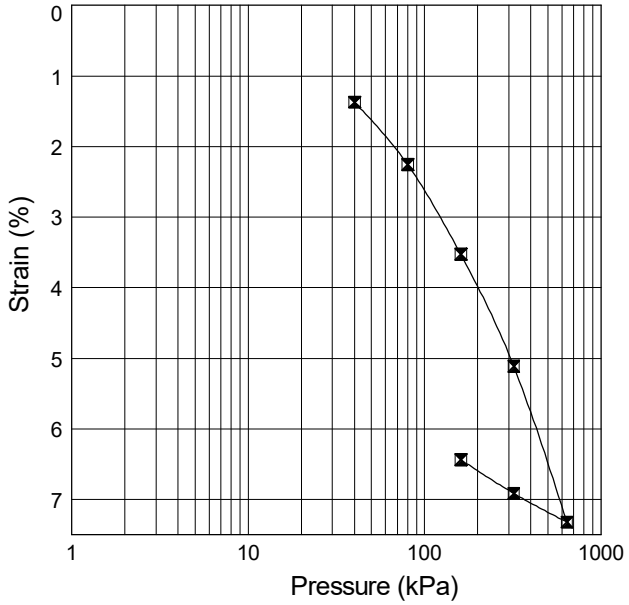
ONE-DIMENSIONAL CONSOLIDATION TEST

In accordance with BS EN ISO 17892 Part 5

Position ID: **CP02** Sample Ref: **14** Sample Type: **UT** Depth (m): **4.00**

Description : Brown grey slightly gravelly slightly sandy CLAY





SPECIMEN DETAILS	INITIAL	FINAL
Diameter (mm) :	74.98	74.98
Height (mm) :	19.18	17.95
Assumed Particle Density (Mg/m^3) :	2.65	2.65
Water Content (%) :	20.2	18.9
Wet Density (Mg/m^3) :	2.03	2.14
Dry Density (Mg/m^3) :	1.68	1.80
Voids Ratio :	0.5728	0.4716

TEST DETAILS

Stage	Duration (days)	Pressure (kPa)	Strain (%)	Void Ratio	M_v (m^2/MN)	T_{90} (min)	C_v (m^2/yr)	Comments etc.
Loading		0 - 40	1.371	0.5512	0.34	0.4	101	
Loading		40 - 80	2.252	0.5374	0.22	129	0.31	
Loading		80 - 160	3.525	0.5174	0.16	600	0.064	
Loading		160 - 320	5.115	0.4924	0.10	463	0.081	
Loading		320 - 640	7.320	0.4577	0.073	268	0.13	
Unloading		640 - 320	6.914	0.4641	NA	NA	NA	
Unloading		320 - 160	6.434	0.4716	NA	NA	NA	

Notes: Method of time-setting used (min): **T_{90}**. Temperature range during test (degC): **13.2 - 23.4**.

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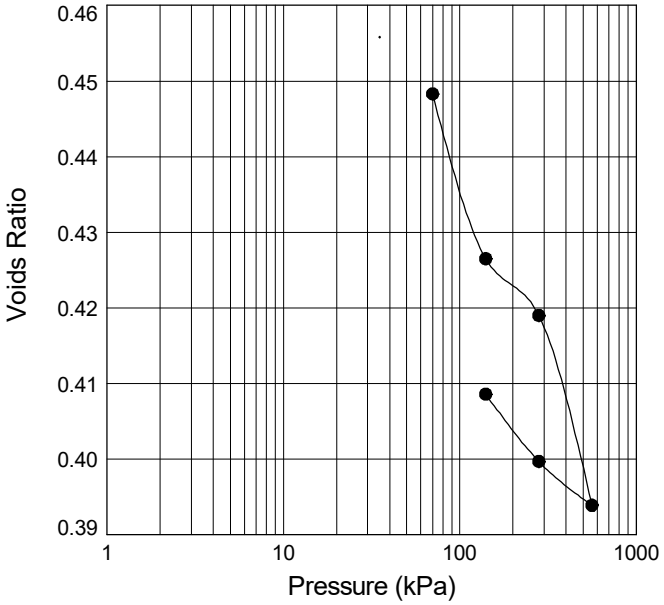
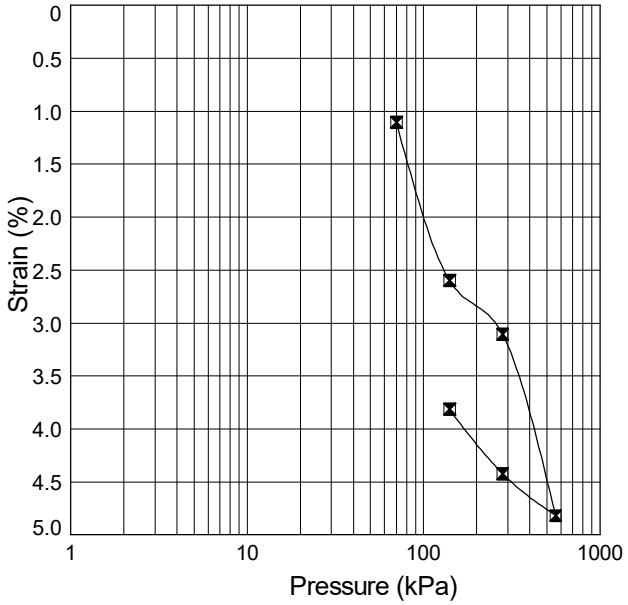
ONE-DIMENSIONAL CONSOLIDATION TEST

In accordance with BS EN ISO 17892 Part 5

Position ID: **CP07** Sample Ref: **12** Sample Type: **UT** Depth (m): **3.50**

Description : Brown slightly gravelly CLAY





SPECIMEN DETAILS	INITIAL	FINAL
Diameter (mm) :	75.01	75.01
Height (mm) :	18.90	18.18
Assumed Particle Density (Mg/m^3) :	2.65	2.65
Water Content (%) :	18.2	17.5
Wet Density (Mg/m^3) :	2.14	2.21
Dry Density (Mg/m^3) :	1.81	1.88
Voids Ratio :	0.4645	0.4086

TEST DETAILS

Stage	Duration (days)	Pressure (kPa)	Strain (%)	Void Ratio	M_v (m^2/MN)	T_{90} (min)	C_v (m^2/yr)	Comments etc.
Swelling		0 - 35	0.593	0.4558	NA	NA	NA	
Loading		35 - 70	1.106	0.4483	0.15	184	0.21	
Loading		70 - 140	2.598	0.4265	0.22	119	0.32	
Loading		140 - 280	3.106	0.4190	0.037	1850	0.020	
Loading		280 - 560	4.820	0.3939	0.063	223	0.16	
Unloading		560 - 280	4.423	0.3997	NA	NA	NA	
Unloading		280 - 140	3.815	0.4086	NA	NA	NA	

Notes: Method of time-setting used (min): **T_{90}**. Temperature range during test (degC): **13.2 - 23.4**.

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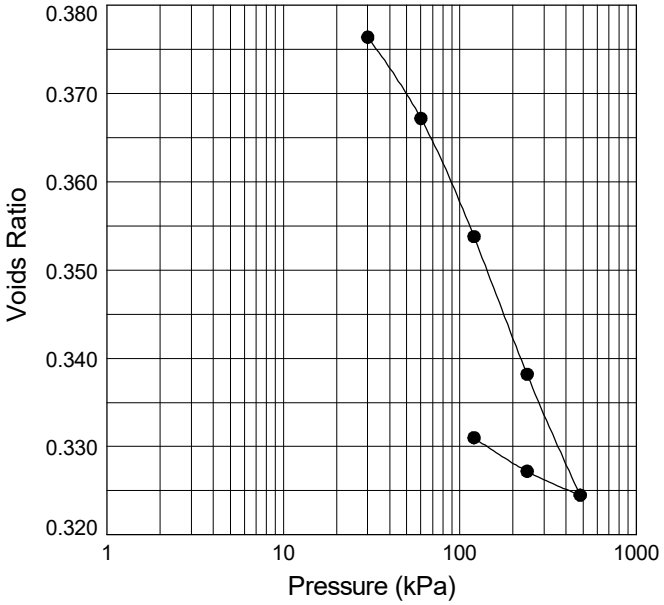
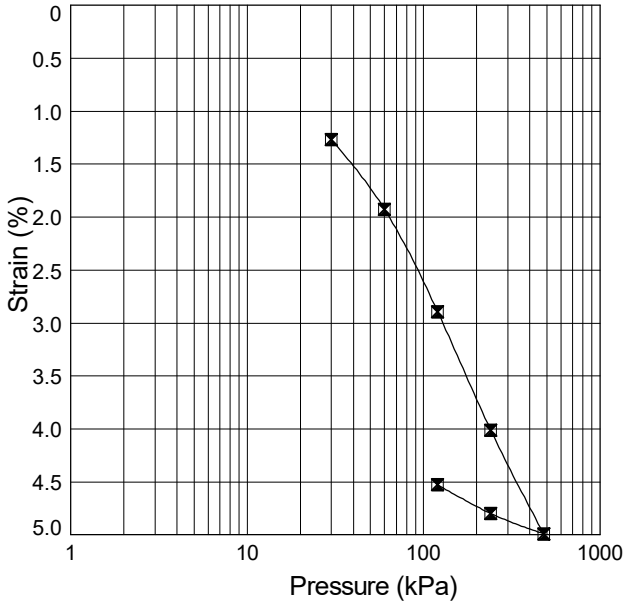
ONE-DIMENSIONAL CONSOLIDATION TEST

In accordance with BS EN ISO 17892 Part 5

Position ID: **CP08** Sample Ref: **15** Sample Type: **U** Depth (m): **3.00**

Description : Brown slightly gravelly CLAY





SPECIMEN DETAILS	INITIAL	FINAL
Diameter (mm) :	75.01	75.01
Height (mm) :	19.57	18.68
Assumed Particle Density (Mg/m^3) :	2.65	2.65
Water Content (%) :	15.7	14.5
Wet Density (Mg/m^3) :	2.20	2.28
Dry Density (Mg/m^3) :	1.90	1.99
Voids Ratio :	0.3941	0.3310

TEST DETAILS

Stage	Duration (days)	Pressure (kPa)	Strain (%)	Void Ratio	M_v (m^2/MN)	T_{90} (min)	C_v (m^2/yr)	Comments etc.
Loading		0 - 30	1.267	0.3764	0.42	19	2.3	
Loading		30 - 60	1.926	0.3672	0.22	380	0.11	
Loading		60 - 120	2.892	0.3538	0.16	327	0.12	
Loading		120 - 240	4.011	0.3382	0.096	431	0.092	
Loading		240 - 480	4.992	0.3245	0.043	248	0.16	
Loading		480 - 240	4.798	0.3272	0.009	0.0	0.16	
Loading		240 - 120	4.527	0.3310	0.024	0.0	0.16	

Notes: Method of time-setting used (min): **T_{90}**. Temperature range during test (degC): **16.5 - 24.2**.

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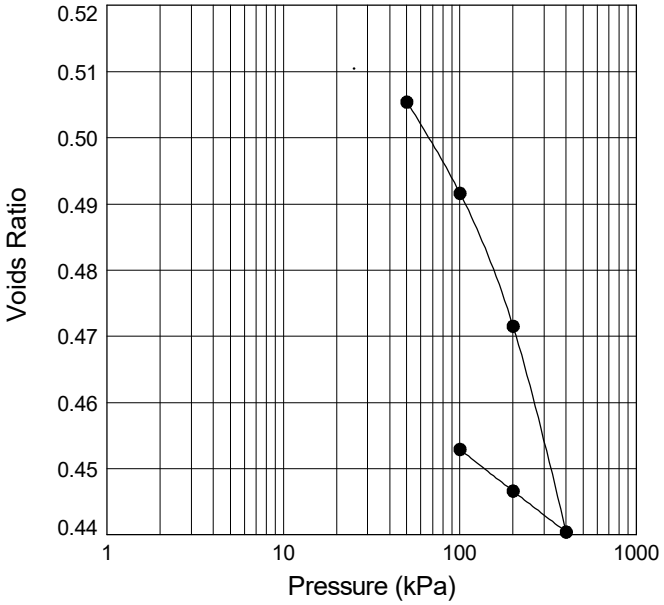
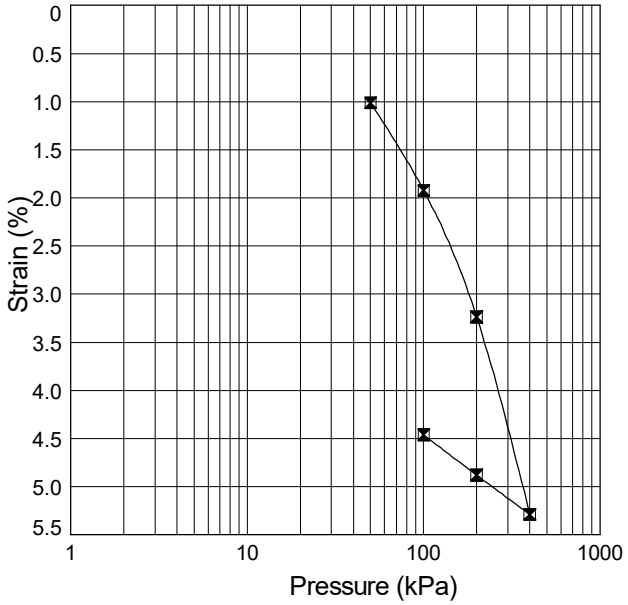
ONE-DIMENSIONAL CONSOLIDATION TEST

In accordance with BS EN ISO 17892 Part 5

Position ID: **CP18** Sample Ref: **9** Sample Type: **UT** Depth (m): **2.50**

Description : Brown CLAY





SPECIMEN DETAILS	INITIAL	FINAL
Diameter (mm) :	75.05	75.05
Height (mm) :	19.36	18.50
Assumed Particle Density (Mg/m^3) :	2.65	2.65
Water Content (%) :	17.3	19.7
Wet Density (Mg/m^3) :	2.04	2.18
Dry Density (Mg/m^3) :	1.74	1.82
Voids Ratio :	0.5208	0.4529

TEST DETAILS

Stage	Duration (days)	Pressure (kPa)	Strain (%)	Void Ratio	M_v (m^2/MN)	T_{90} (min)	C_v (m^2/yr)	Comments etc.
Swelling		0 - 25	0.677	0.5105	NA	NA	NA	
Loading		25 - 50	1.012	0.5054	0.14	731	0.056	
Loading		50 - 100	1.922	0.4916	0.18	604	0.067	
Loading		100 - 200	3.239	0.4715	0.13	1020	0.039	
Loading		200 - 400	5.289	0.4404	0.11	189	0.20	
Loading		400 - 200	4.881	0.4466	0.022	0.0	0.20	
Unloading		200 - 100	4.463	0.4529	NA	NA	NA	

Notes: Method of time-setting used (min): **T_{90}**. Temperature range during test (degC): **13.2 - 23.4**.

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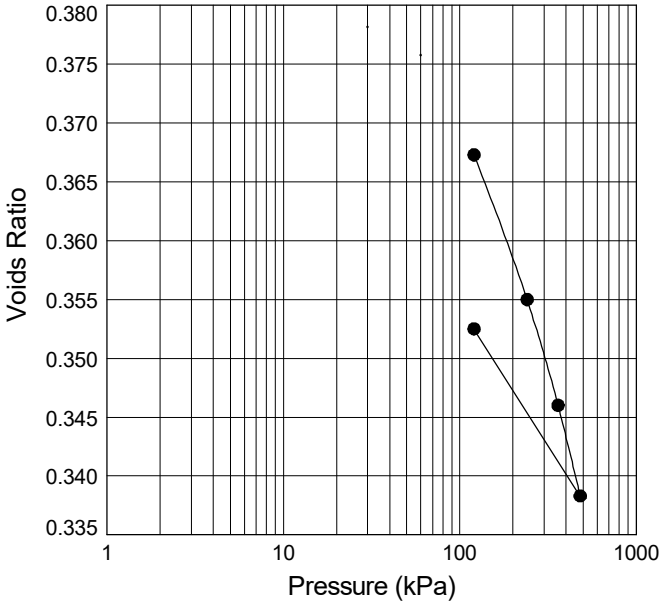
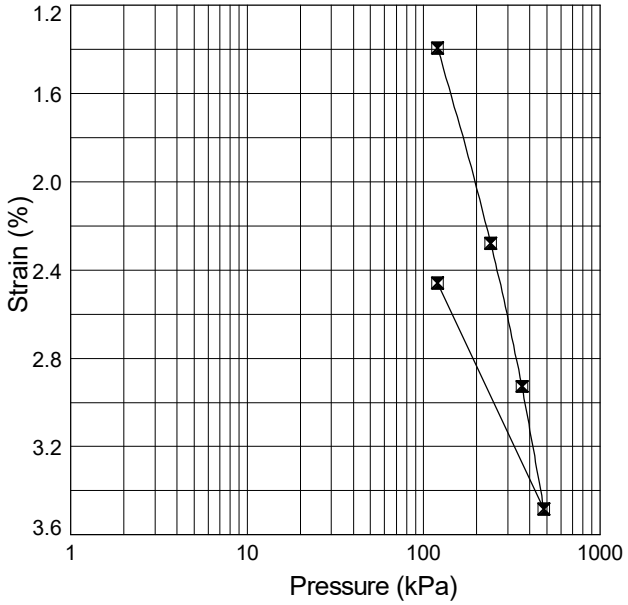
ONE-DIMENSIONAL CONSOLIDATION TEST

In accordance with BS EN ISO 17892 Part 5

Position ID: **CP24** Sample Ref: **13** Sample Type: **UT** Depth (m): **3.00**

Description : Brown CLAY





SPECIMEN DETAILS	INITIAL	FINAL
Diameter (mm) :	75.03	75.03
Height (mm) :	19.44	18.96
Assumed Particle Density (Mg/m^3) :	2.65	2.65
Water Content (%) :	15.0	16.7
Wet Density (Mg/m^3) :	2.20	2.29
Dry Density (Mg/m^3) :	1.91	1.96
Voids Ratio :	0.3866	0.3525

TEST DETAILS

Stage	Duration (days)	Pressure (kPa)	Strain (%)	Void Ratio	M_v (m^2/MN)	T_{90} (min)	C_v (m^2/yr)	Comments etc.
Swelling		0 - 30	0.607	0.3782	NA	NA	NA	
Swelling		30 - 60	0.782	0.3758	NA	NA	NA	
Loading		60 - 120	1.394	0.3673	0.10	67	0.61	
Loading		120 - 240	2.279	0.3550	0.075	195	0.21	
Loading		240 - 360	2.927	0.3460	0.055	965	0.041	
Loading		360 - 480	3.483	0.3383	0.048	1075	0.037	
Unloading		480 - 120	2.459	0.3525	NA	NA	NA	

Notes: Method of time-setting used (min): **T_{90}**. Temperature range during test (degC): **13.2 - 23.4**.

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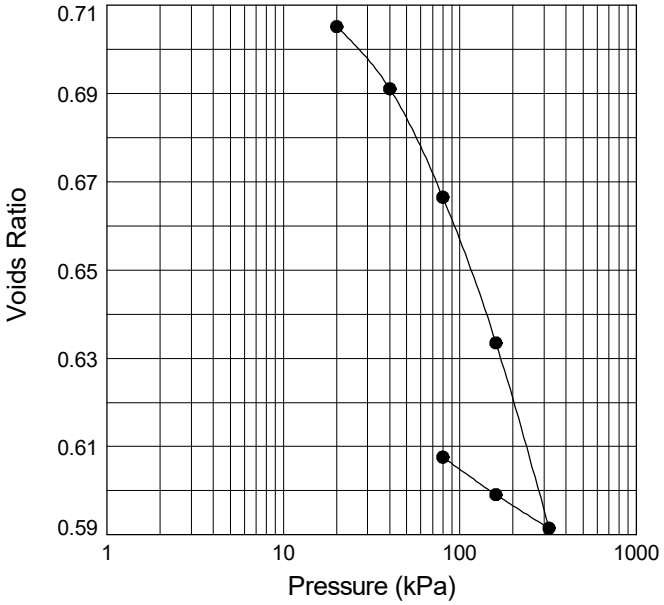
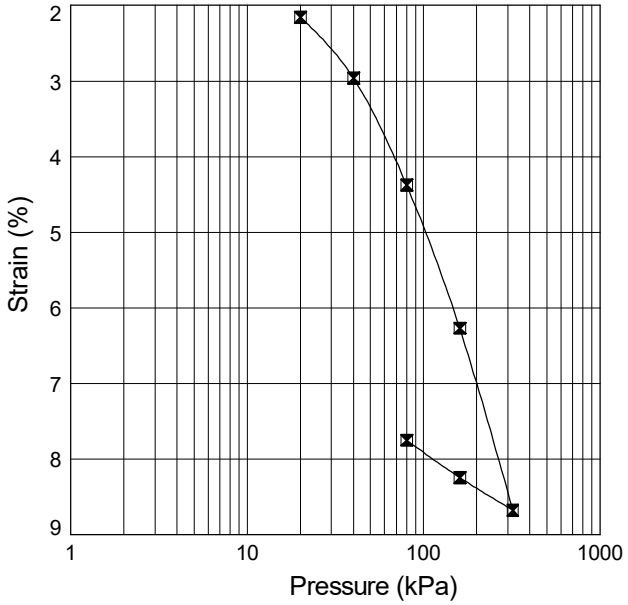
ONE-DIMENSIONAL CONSOLIDATION TEST

In accordance with BS EN ISO 17892 Part 5

Position ID: **CP26** Sample Ref: **15** Sample Type: **UT** Depth (m): **2.00**

Description : Brown CLAY





SPECIMEN DETAILS	INITIAL	FINAL
Diameter (mm) :	74.99	74.99
Height (mm) :	19.91	18.37
Assumed Particle Density (Mg/m^3) :	2.65	2.65
Water Content (%) :	29.6	27.2
Wet Density (Mg/m^3) :	1.97	2.10
Dry Density (Mg/m^3) :	1.52	1.65
Voids Ratio :	0.7427	0.6076

TEST DETAILS

Stage	Duration (days)	Pressure (kPa)	Strain (%)	Void Ratio	M_v (m^2/MN)	T_{90} (min)	C_v (m^2/yr)	Comments etc.
Loading		0 - 20	2.155	0.7052	1.1	36	1.2	
Loading		20 - 40	2.963	0.6911	0.41	729	0.057	
Loading		40 - 80	4.375	0.6665	0.36	645	0.063	
Loading		80 - 160	6.268	0.6335	0.25	1389	0.028	
Loading		160 - 320	8.674	0.5915	0.16	1109	0.034	
Unloading		320 - 160	8.242	0.5991	NA	NA	NA	
Unloading		160 - 80	7.750	0.6076	NA	NA	NA	

Notes: Method of time-setting used (min): **T_{90}**. Temperature range during test (degC): **13.2 - 23.4**.

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Castleford
W. Yorkshire WF10 1NJ

Compiled By	Date
LORNA WHITWORTH	30/03/23

Contract	Contract Ref:
EMG Phase 2	**765514**

AGS

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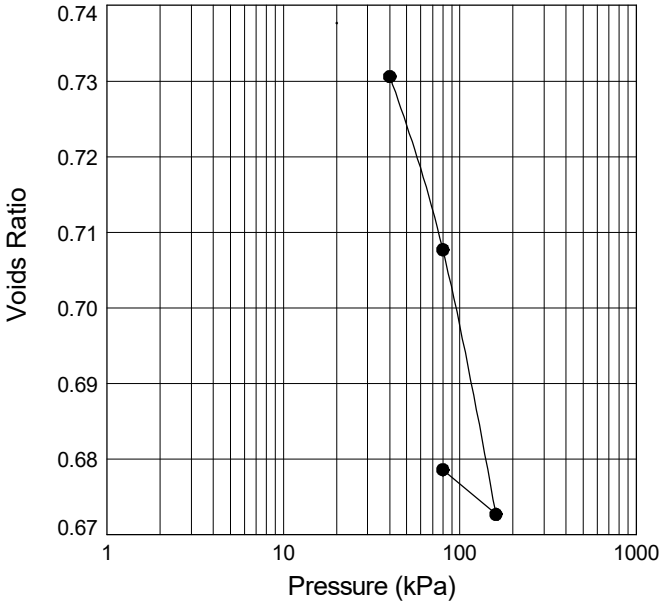
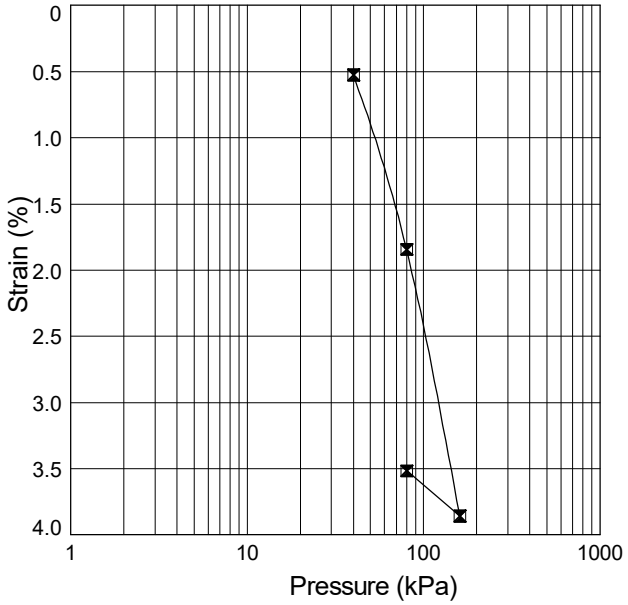
ONE-DIMENSIONAL CONSOLIDATION TEST

In accordance with BS EN ISO 17892 Part 5

Borehole: **BH04** Sample Ref: **9** Sample Type: **UT** Depth (m): **2.00**

Description : Brown slightly gravelly CLAY





SPECIMEN DETAILS	INITIAL	FINAL
Diameter (mm) :	75.05	75.05
Height (mm) :	19.96	19.26
Assumed Particle Density (Mg/m^3) :	2.65	2.65
Water Content (%) :	28.7	28.4
Wet Density (Mg/m^3) :	1.96	2.03
Dry Density (Mg/m^3) :	1.52	1.58
Voids Ratio :	0.7398	0.6786

TEST DETAILS

Stage	Duration (days)	Pressure (kPa)	Strain (%)	Void Ratio	M_v (m^2/MN)	T_{90} (min)	C_v (m^2/yr)	Comments etc.
Swelling		0 - 20	0.120	0.7377	NA	NA	NA	
Loading		20 - 40	0.526	0.7306	0.20	247	0.18	
Loading		40 - 80	1.844	0.7077	0.33	3587	0.012	
Loading		80 - 160	3.858	0.6727	0.26	2228	0.019	
Unloading		160 - 80	3.517	0.6786	NA	NA	NA	Unloading stage

Notes: Method of time-setting used (min): **T_{90}**. Temperature range during test (degC): **13.2 - 23.4**.

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EMG Phase 2	**765514**

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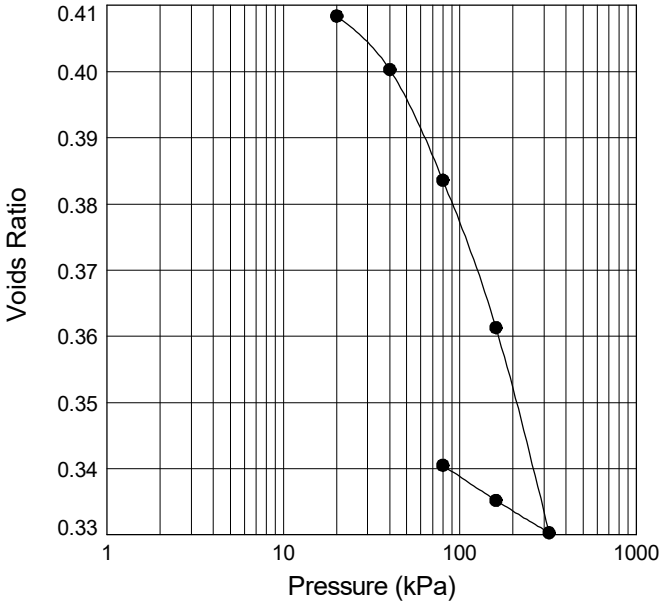
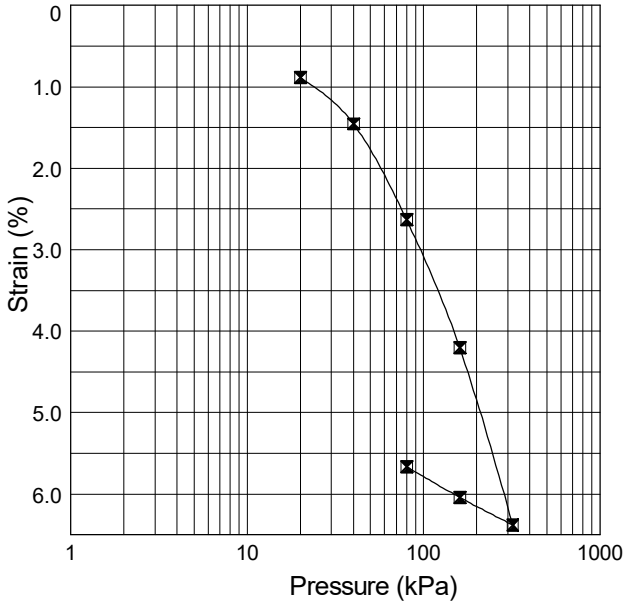
ONE-DIMENSIONAL CONSOLIDATION TEST

In accordance with BS EN ISO 17892 Part 5

Borehole: **BH09** Sample Ref: **18** Sample Type: **UT** Depth (m): **2.00**

Description : Brown slightly sandy slightly gravelly CLAY





SPECIMEN DETAILS	INITIAL	FINAL
Diameter (mm) :	75.00	75.00
Height (mm) :	19.95	18.82
Assumed Particle Density (Mg/m^3) :	2.65	2.65
Water Content (%) :	16.3	15.6
Wet Density (Mg/m^3) :	2.17	2.29
Dry Density (Mg/m^3) :	1.86	1.98
Voids Ratio :	0.4210	0.3405

TEST DETAILS

Stage	Duration (days)	Pressure (kPa)	Strain (%)	Void Ratio	M_v (m^2/MN)	T_{90} (min)	C_v (m^2/yr)	Comments etc.
Loading		0 - 20	0.887	0.4084	0.44	11	4.0	
Loading		20 - 40	1.454	0.4003	0.29	645	0.067	
Loading		40 - 80	2.632	0.3836	0.30	1850	0.023	
Loading		80 - 160	4.201	0.3613	0.20	1155	0.036	
Loading		160 - 320	6.381	0.3303	0.14	1825	0.022	
Unloading		320 - 160	6.040	0.3352	NA	NA	NA	
Unloading		160 - 80	5.664	0.3405	NA	NA	NA	

Notes: Method of time-setting used (min): **T_{90}**. Temperature range during test (degC): **13.2 - 23.4**.

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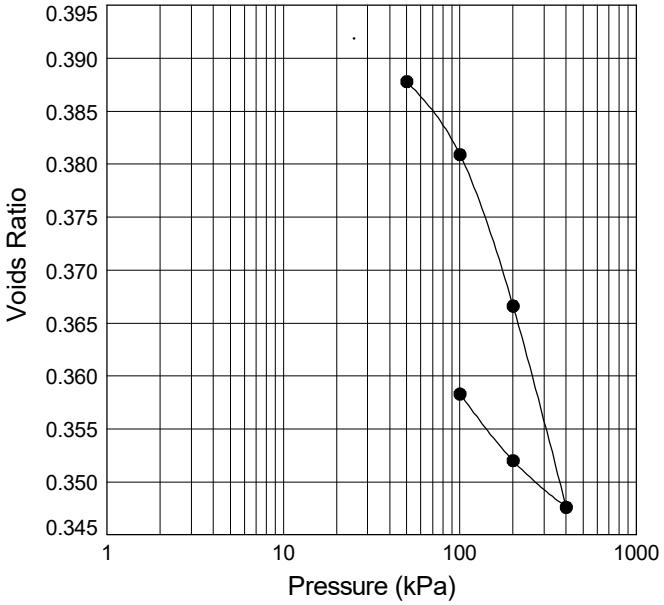
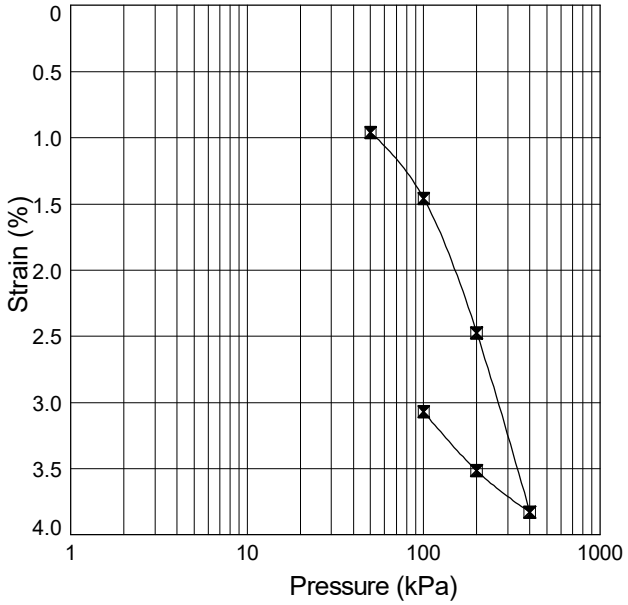
ONE-DIMENSIONAL CONSOLIDATION TEST

In accordance with BS EN ISO 17892 Part 5

Borehole: **BH12** Sample Ref: **21** Sample Type: **UT** Depth (m): **5.00**

Description : Dark brown slightly gravelly slightly sandy CLAY





SPECIMEN DETAILS	INITIAL	FINAL
Diameter (mm) :	75.03	75.03
Height (mm) :	19.48	18.88
Assumed Particle Density (Mg/m^3) :	2.65	2.65
Water Content (%) :	15.6	15.3
Wet Density (Mg/m^3) :	2.19	2.25
Dry Density (Mg/m^3) :	1.89	1.95
Voids Ratio :	0.4013	0.3583

TEST DETAILS

Stage	Duration (days)	Pressure (kPa)	Strain (%)	Void Ratio	M_v (m^2/MN)	T_{90} (min)	C_v (m^2/yr)	Comments etc.
Swelling		0 - 25	0.673	0.3919	NA	NA	NA	
Loading		25 - 50	0.960	0.3878	0.12	380	0.11	
Loading		50 - 100	1.458	0.3809	0.10	169	0.24	
Loading		100 - 200	2.474	0.3666	0.10	212	0.19	
Loading		200 - 400	3.830	0.3476	0.069	332	0.12	
Unloading		400 - 200	3.516	0.3520	NA	NA	NA	
Unloading		200 - 100	3.070	0.3583	NA	NA	NA	

Notes: Method of time-setting used (min): **T_{90}**. Temperature range during test (degC): **17.1 - 23.2**.

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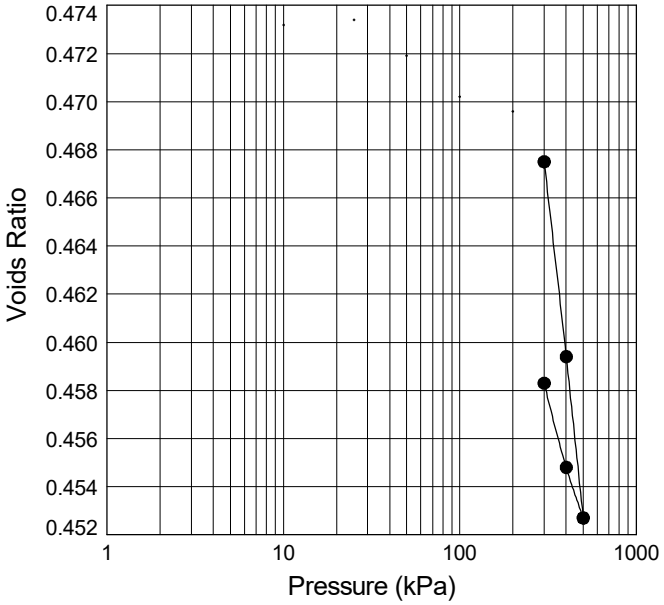
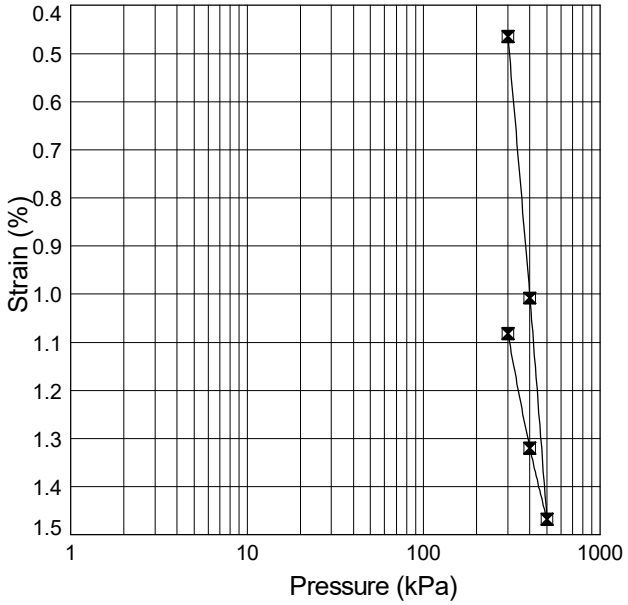
ONE-DIMENSIONAL CONSOLIDATION TEST

In accordance with BS EN ISO 17892 Part 5

Borehole: **BH16** Sample Ref: **6** Sample Type: **UT** Depth (m): **1.20**

Description : Brown gravelly CLAY





SPECIMEN DETAILS	INITIAL	FINAL
Diameter (mm) :	75.02	75.02
Height (mm) :	18.94	18.74
Assumed Particle Density (Mg/m^3) :	2.65	2.65
Water Content (%) :	17.7	20.4
Wet Density (Mg/m^3) :	2.11	2.19
Dry Density (Mg/m^3) :	1.80	1.82
Voids Ratio :	0.4743	0.4583

TEST DETAILS

Stage	Duration (days)	Pressure (kPa)	Strain (%)	Void Ratio	M_v (m^2/MN)	T_{90} (min)	C_v (m^2/yr)	Comments etc.
Swelling		0 - 10	0.074	0.4732	NA	NA	NA	
Swelling		10 - 25	0.058	0.4734	NA	NA	NA	
Swelling		25 - 50	0.164	0.4719	NA	NA	NA	
Swelling		50 - 100	0.280	0.4702	NA	NA	NA	
Swelling		100 - 200	0.322	0.4696	NA	NA	NA	
Loading		200 - 300	0.465	0.4675	0.014	1883	0.021	
Loading		300 - 400	1.008	0.4594	0.055	3463	0.011	
Loading		400 - 500	1.468	0.4527	0.046	2185	0.018	
Unloading		500 - 400	1.320	0.4548	NA	NA	NA	
Unloading		400 - 300	1.082	0.4583	NA	NA	NA	

Notes: Method of time-setting used (min): **T_{90}**. Temperature range during test (degC): **13.2 - 23.4**.

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EMG Phase 2	**765514**

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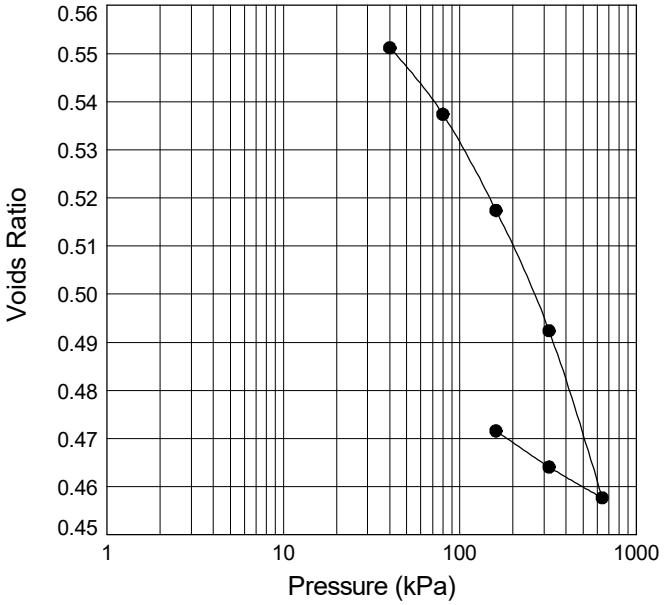
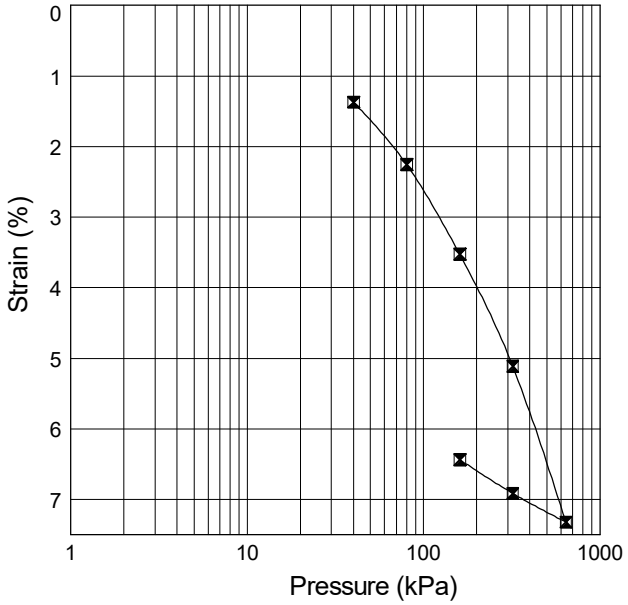
ONE-DIMENSIONAL CONSOLIDATION TEST

In accordance with BS EN ISO 17892 Part 5

Position ID: **CP02** Sample Ref: **14** Sample Type: **UT** Depth (m): **4.00**

Description : Brown grey slightly gravelly slightly sandy CLAY





SPECIMEN DETAILS	INITIAL	FINAL
Diameter (mm) :	74.98	74.98
Height (mm) :	19.18	17.95
Assumed Particle Density (Mg/m^3) :	2.65	2.65
Water Content (%) :	20.2	18.9
Wet Density (Mg/m^3) :	2.03	2.14
Dry Density (Mg/m^3) :	1.68	1.80
Voids Ratio :	0.5728	0.4716

TEST DETAILS

Stage	Duration (days)	Pressure (kPa)	Strain (%)	Void Ratio	M_v (m^2/MN)	T_{90} (min)	C_v (m^2/yr)	Comments etc.
Loading		0 - 40	1.371	0.5512	0.34	0.4	101	
Loading		40 - 80	2.252	0.5374	0.22	129	0.31	
Loading		80 - 160	3.525	0.5174	0.16	600	0.064	
Loading		160 - 320	5.115	0.4924	0.10	463	0.081	
Loading		320 - 640	7.320	0.4577	0.073	268	0.13	
Unloading		640 - 320	6.914	0.4641	NA	NA	NA	
Unloading		320 - 160	6.434	0.4716	NA	NA	NA	

Notes: Method of time-setting used (min): **T_{90}**. Temperature range during test (degC): **13.2 - 23.4**.

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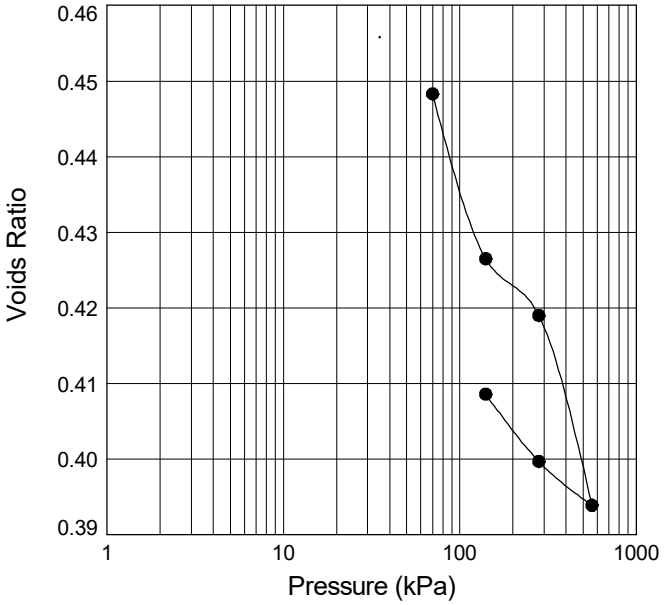
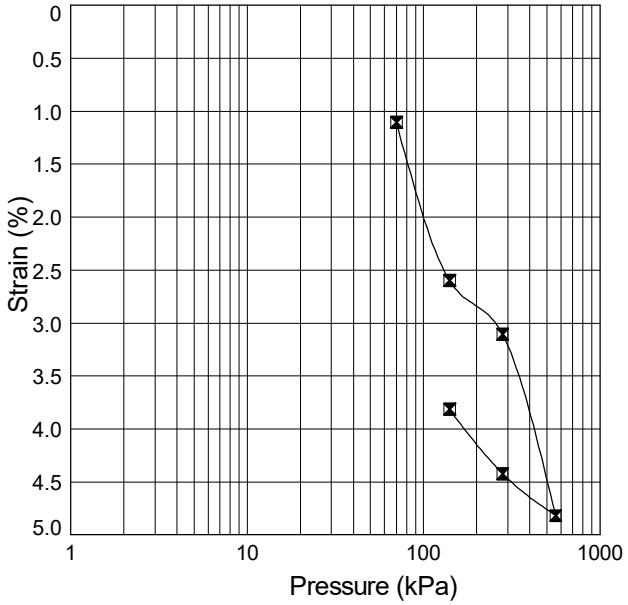
ONE-DIMENSIONAL CONSOLIDATION TEST

In accordance with BS EN ISO 17892 Part 5

Position ID: **CP07** Sample Ref: **12** Sample Type: **UT** Depth (m): **3.50**

Description : Brown slightly gravelly CLAY





SPECIMEN DETAILS	INITIAL	FINAL
Diameter (mm) :	75.01	75.01
Height (mm) :	18.90	18.18
Assumed Particle Density (Mg/m^3) :	2.65	2.65
Water Content (%) :	18.2	17.5
Wet Density (Mg/m^3) :	2.14	2.21
Dry Density (Mg/m^3) :	1.81	1.88
Voids Ratio :	0.4645	0.4086

TEST DETAILS

Stage	Duration (days)	Pressure (kPa)	Strain (%)	Void Ratio	M_v (m^2/MN)	T_{90} (min)	C_v (m^2/yr)	Comments etc.
Swelling		0 - 35	0.593	0.4558	NA	NA	NA	
Loading		35 - 70	1.106	0.4483	0.15	184	0.21	
Loading		70 - 140	2.598	0.4265	0.22	119	0.32	
Loading		140 - 280	3.106	0.4190	0.037	1850	0.020	
Loading		280 - 560	4.820	0.3939	0.063	223	0.16	
Unloading		560 - 280	4.423	0.3997	NA	NA	NA	
Unloading		280 - 140	3.815	0.4086	NA	NA	NA	

Notes: Method of time-setting used (min): **T_{90}**. Temperature range during test (degC): **13.2 - 23.4**.

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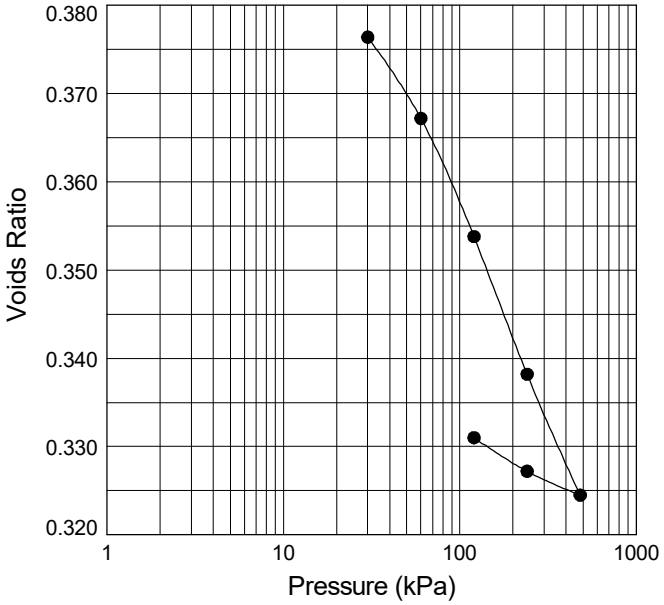
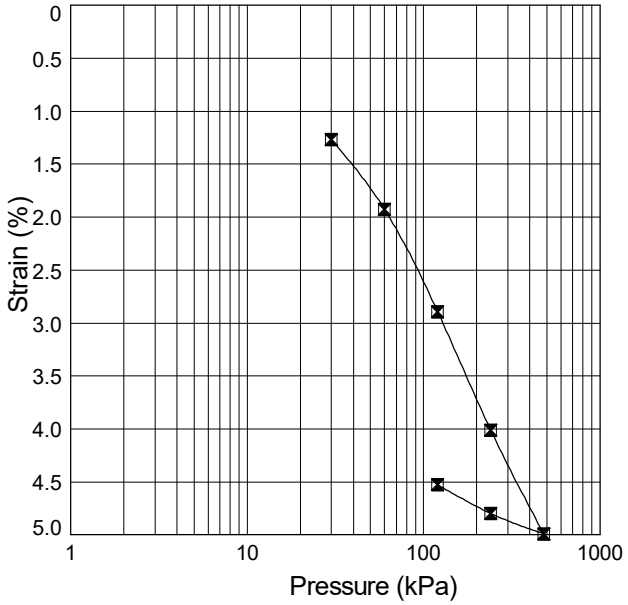
ONE-DIMENSIONAL CONSOLIDATION TEST

In accordance with BS EN ISO 17892 Part 5

Position ID: **CP08** Sample Ref: **15** Sample Type: **U** Depth (m): **3.00**

Description : Brown slightly gravelly CLAY





SPECIMEN DETAILS	INITIAL	FINAL
Diameter (mm) :	75.01	75.01
Height (mm) :	19.57	18.68
Assumed Particle Density (Mg/m^3) :	2.65	2.65
Water Content (%) :	15.7	14.5
Wet Density (Mg/m^3) :	2.20	2.28
Dry Density (Mg/m^3) :	1.90	1.99
Voids Ratio :	0.3941	0.3310

TEST DETAILS

Stage	Duration (days)	Pressure (kPa)	Strain (%)	Void Ratio	M_v (m^2/MN)	T_{90} (min)	C_v (m^2/yr)	Comments etc.
Loading		0 - 30	1.267	0.3764	0.42	19	2.3	
Loading		30 - 60	1.926	0.3672	0.22	380	0.11	
Loading		60 - 120	2.892	0.3538	0.16	327	0.12	
Loading		120 - 240	4.011	0.3382	0.096	431	0.092	
Loading		240 - 480	4.992	0.3245	0.043	248	0.16	
Loading		480 - 240	4.798	0.3272	0.009	0.0	0.16	
Loading		240 - 120	4.527	0.3310	0.024	0.0	0.16	

Notes: Method of time-setting used (min): **T_{90}**. Temperature range during test (degC): **16.5 - 24.2**.

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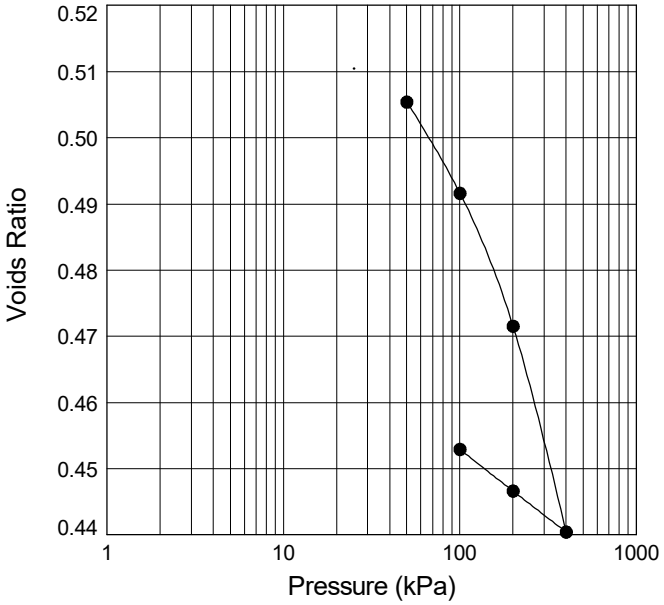
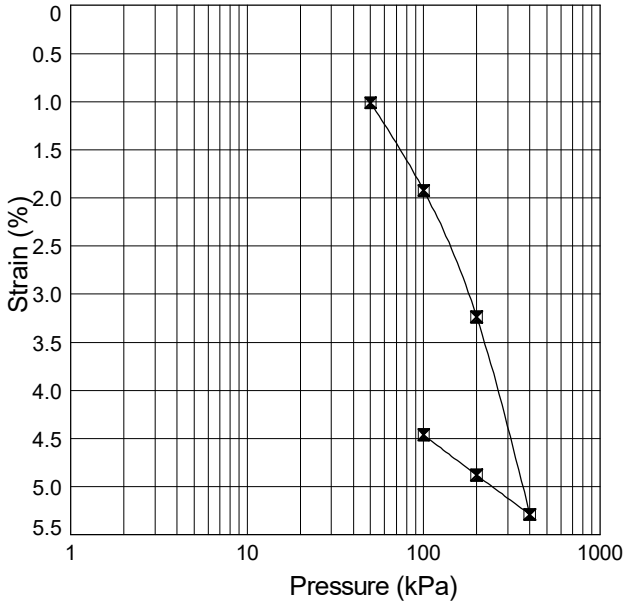
ONE-DIMENSIONAL CONSOLIDATION TEST

In accordance with BS EN ISO 17892 Part 5

Position ID: **CP18** Sample Ref: **9** Sample Type: **UT** Depth (m): **2.50**

Description : Brown CLAY





SPECIMEN DETAILS	INITIAL	FINAL
Diameter (mm) :	75.05	75.05
Height (mm) :	19.36	18.50
Assumed Particle Density (Mg/m^3) :	2.65	2.65
Water Content (%) :	17.3	19.7
Wet Density (Mg/m^3) :	2.04	2.18
Dry Density (Mg/m^3) :	1.74	1.82
Voids Ratio :	0.5208	0.4529

TEST DETAILS

Stage	Duration (days)	Pressure (kPa)	Strain (%)	Void Ratio	M_v (m^2/MN)	T_{90} (min)	C_v (m^2/yr)	Comments etc.
Swelling		0 - 25	0.677	0.5105	NA	NA	NA	
Loading		25 - 50	1.012	0.5054	0.14	731	0.056	
Loading		50 - 100	1.922	0.4916	0.18	604	0.067	
Loading		100 - 200	3.239	0.4715	0.13	1020	0.039	
Loading		200 - 400	5.289	0.4404	0.11	189	0.20	
Loading		400 - 200	4.881	0.4466	0.022	0.0	0.20	
Unloading		200 - 100	4.463	0.4529	NA	NA	NA	

Notes: Method of time-setting used (min): **T_{90}**. Temperature range during test (degC): **13.2 - 23.4**.

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	LORNA WHITWORTH	30/03/23

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EMG Phase 2	**765514**

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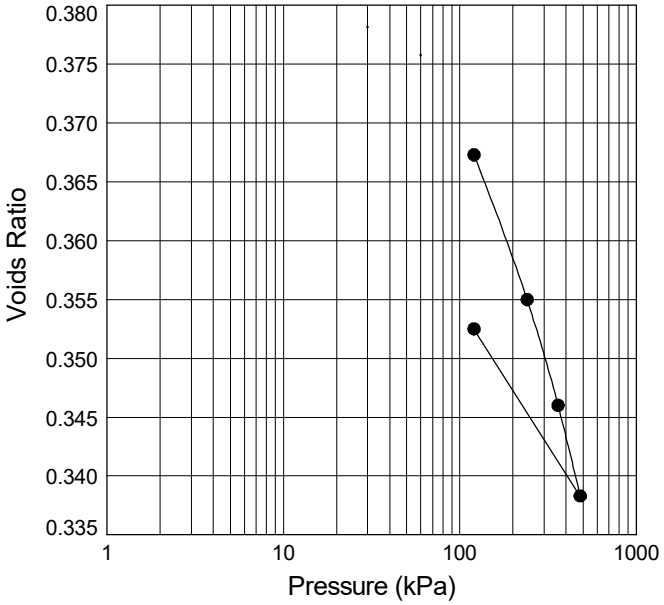
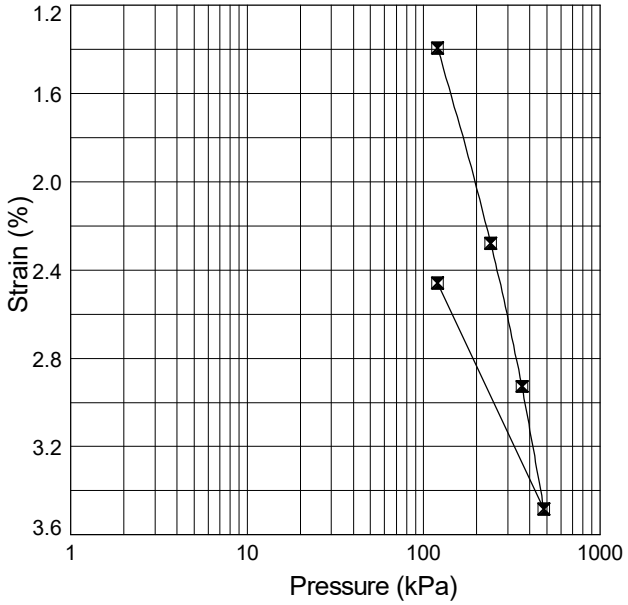
ONE-DIMENSIONAL CONSOLIDATION TEST

In accordance with BS EN ISO 17892 Part 5

Position ID: **CP24** Sample Ref: **13** Sample Type: **UT** Depth (m): **3.00**

Description : Brown CLAY





SPECIMEN DETAILS	INITIAL	FINAL
Diameter (mm) :	75.03	75.03
Height (mm) :	19.44	18.96
Assumed Particle Density (Mg/m^3) :	2.65	2.65
Water Content (%) :	15.0	16.7
Wet Density (Mg/m^3) :	2.20	2.29
Dry Density (Mg/m^3) :	1.91	1.96
Voids Ratio :	0.3866	0.3525

TEST DETAILS

Stage	Duration (days)	Pressure (kPa)	Strain (%)	Void Ratio	M_v (m^2/MN)	T_{90} (min)	C_v (m^2/yr)	Comments etc.
Swelling		0 - 30	0.607	0.3782	NA	NA	NA	
Swelling		30 - 60	0.782	0.3758	NA	NA	NA	
Loading		60 - 120	1.394	0.3673	0.10	67	0.61	
Loading		120 - 240	2.279	0.3550	0.075	195	0.21	
Loading		240 - 360	2.927	0.3460	0.055	965	0.041	
Loading		360 - 480	3.483	0.3383	0.048	1075	0.037	
Unloading		480 - 120	2.459	0.3525	NA	NA	NA	

Notes: Method of time-setting used (min): **T_{90}**. Temperature range during test (degC): **13.2 - 23.4**.

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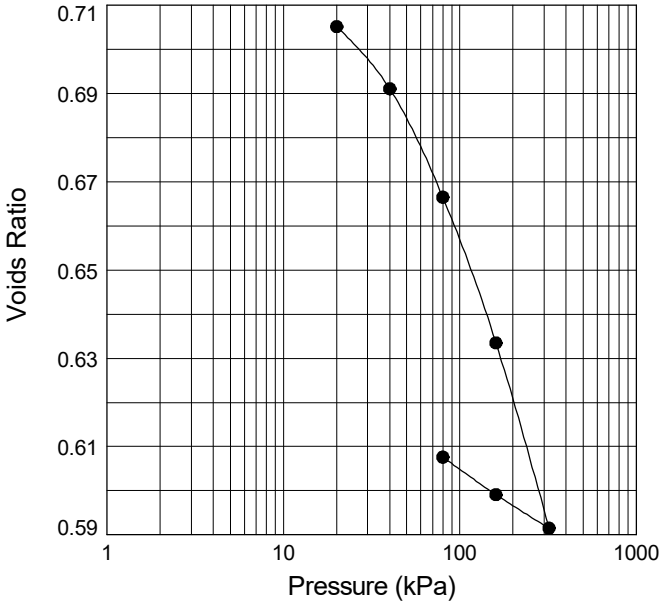
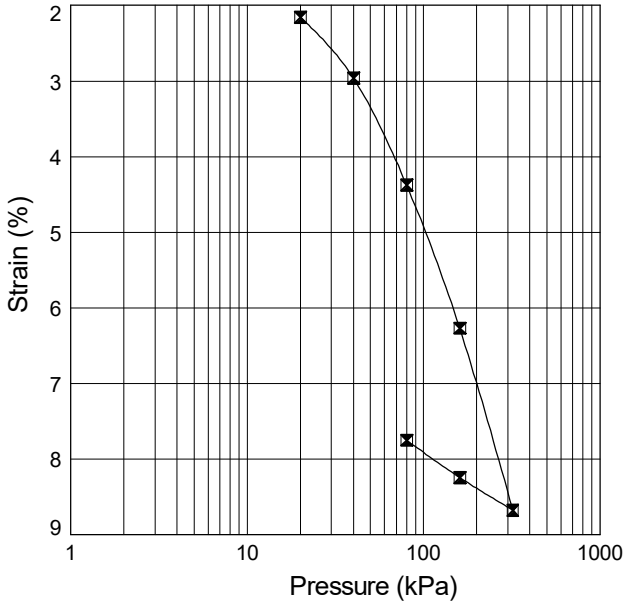
ONE-DIMENSIONAL CONSOLIDATION TEST

In accordance with BS EN ISO 17892 Part 5

Position ID: **CP26** Sample Ref: **15** Sample Type: **UT** Depth (m): **2.00**

Description : Brown CLAY





SPECIMEN DETAILS	INITIAL	FINAL
Diameter (mm) :	74.99	74.99
Height (mm) :	19.91	18.37
Assumed Particle Density (Mg/m^3) :	2.65	2.65
Water Content (%) :	29.6	27.2
Wet Density (Mg/m^3) :	1.97	2.10
Dry Density (Mg/m^3) :	1.52	1.65
Voids Ratio :	0.7427	0.6076

TEST DETAILS

Stage	Duration (days)	Pressure (kPa)	Strain (%)	Void Ratio	M_v (m^2/MN)	T_{90} (min)	C_v (m^2/yr)	Comments etc.
Loading		0 - 20	2.155	0.7052	1.1	36	1.2	
Loading		20 - 40	2.963	0.6911	0.41	729	0.057	
Loading		40 - 80	4.375	0.6665	0.36	645	0.063	
Loading		80 - 160	6.268	0.6335	0.25	1389	0.028	
Loading		160 - 320	8.674	0.5915	0.16	1109	0.034	
Unloading		320 - 160	8.242	0.5991	NA	NA	NA	
Unloading		160 - 80	7.750	0.6076	NA	NA	NA	

Notes: Method of time-setting used (min): **T_{90}**. Temperature range during test (degC): **13.2 - 23.4**.

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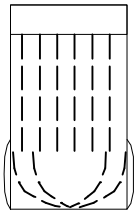
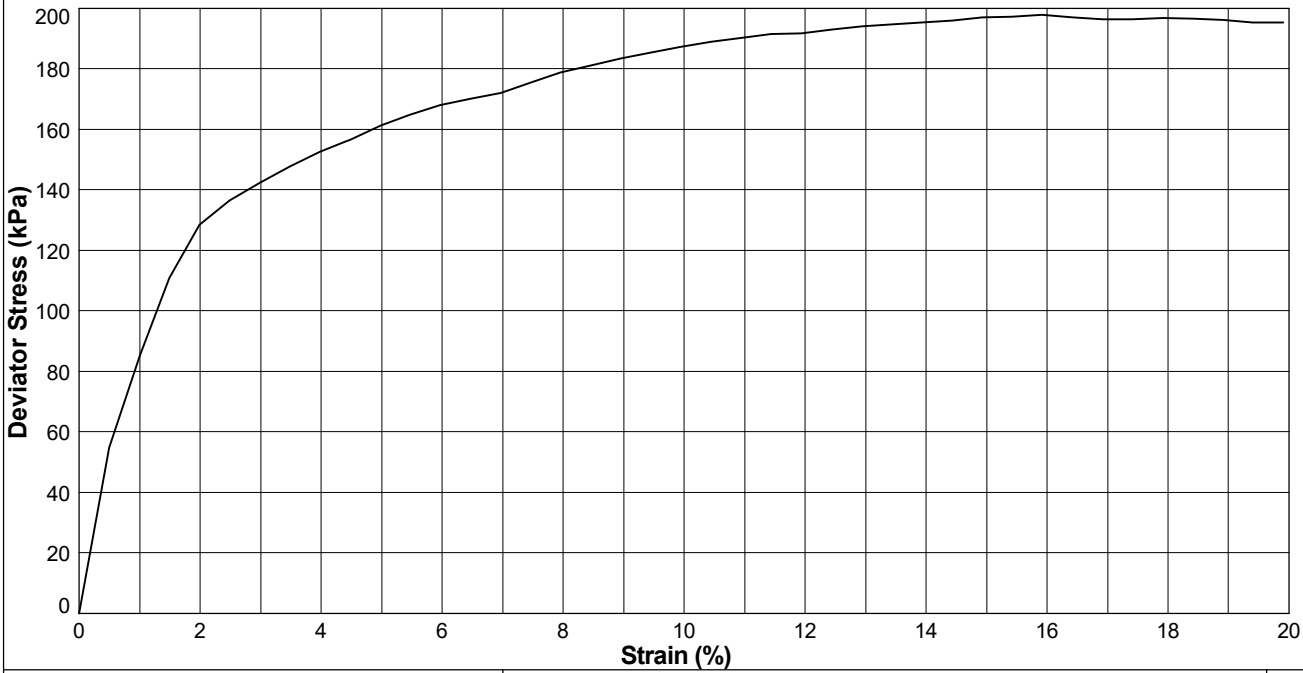
UNCONSOLIDATED UNDRAINED (QUICK) TRIAXIAL COMPRESSION TEST

In accordance with BS EN ISO 17892 Part 8

Position ID: **CP24** Sample Ref: **7** Sample Type: **UT** Depth (m): **1.20**

Description : **Brown slightly gravelly sandy CLAY**

STAGE/SPECIMEN NUMBER			1	2	3
SPECIMEN DETAILS	Sample Condition		**Undisturbed**		
	Orientation of sample		**Vertical**		
	Diameter	(mm)	**99.50**		
	Height	(mm)	**201.00**		
	Water Content	(%)	**17.9**		
	Bulk Density	(Mg/m^3)	**2.17**		
	Dry Density	(Mg/m^3)	**1.84**		
	Void Ratio		**0.4420**		
TEST DETAILS	Membrane Type		**Rubber**		
	Membrane Thickness	(mm)	**0.50**		
	Rate of Axial Displacement	(%/min)	**2.01**		
	Cell Pressure	(kPa)	**24**		
	Membrane Correction	(kPa)	**1.54**		
	Corrected Deviator Stress	(kPa)	**197**		
	Undrained Shear Strength	(kPa)	**99**		
FAILURE DETAILS	Strain at Failure	(%)	**15.0**		
	Mode of Failure 1 : **Semi-plastic (bulging, shear & axial splitting)**				



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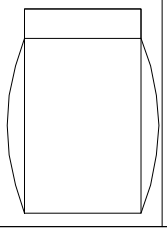
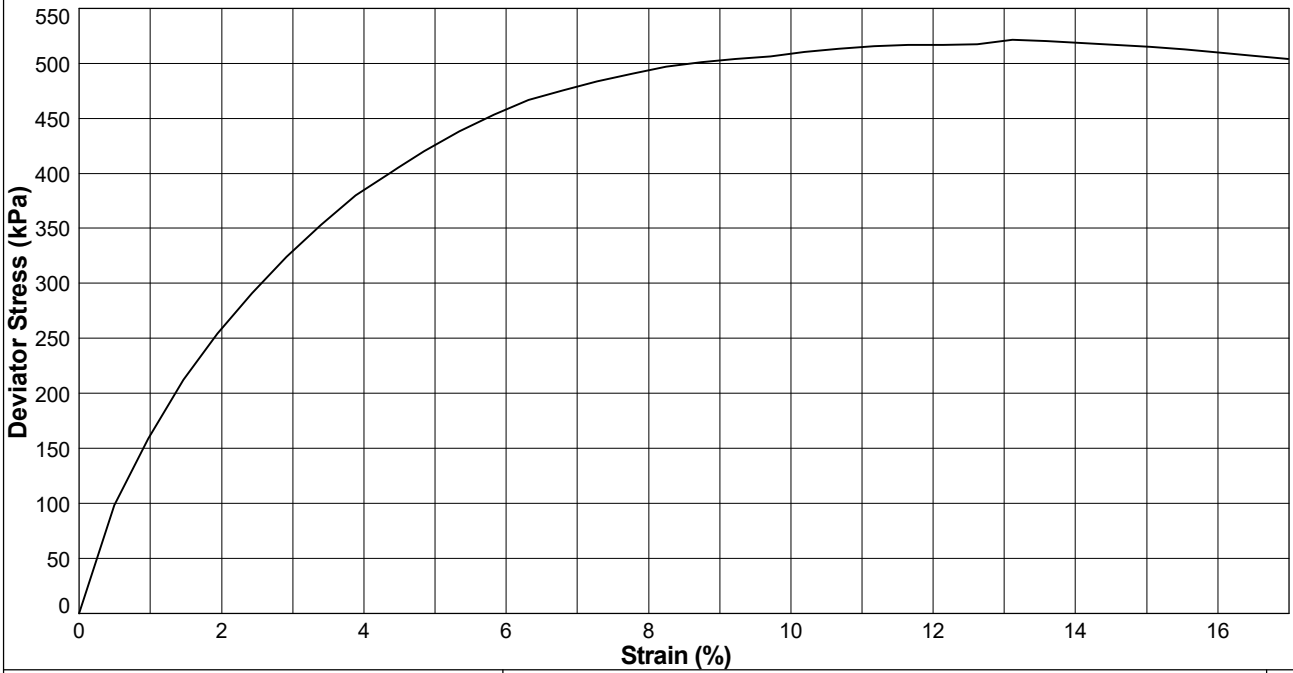
UNCONSOLIDATED UNDRAINED (QUICK) TRIAXIAL COMPRESSION TEST

In accordance with BS EN ISO 17892 Part 8

Position ID: **CP17** Sample Ref: **13** Sample Type: **UT** Depth (m): **3.50**

Description : **Brown gravelly slightly sandy CLAY**

STAGE/SPECIMEN NUMBER			1	2	3
SPECIMEN DETAILS	Sample Condition		**Undisturbed**		
	Orientation of sample		**Vertical**		
	Diameter	(mm)	**99.00**		
	Height	(mm)	**206.00**		
	Water Content	(%)	**14.1**		
	Bulk Density	(Mg/m^3)	**2.40**		
	Dry Density	(Mg/m^3)	**2.10**		
	Void Ratio		**0.2618**		
TEST DETAILS	Membrane Type		**Rubber**		
	Membrane Thickness	(mm)	**0.50**		
	Rate of Axial Displacement	(%/min)	**2.00**		
	Cell Pressure	(kPa)	**70**		
	Membrane Correction	(kPa)	**1.40**		
	Corrected Deviator Stress	(kPa)	**521**		
	Undrained Shear Strength	(kPa)	**261**		
FAILURE DETAILS	Strain at Failure	(%)	**13.1**		
	Mode of Failure 1 : **Plastic (Barrelling)**				



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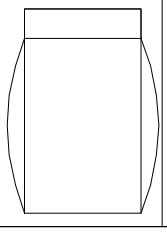
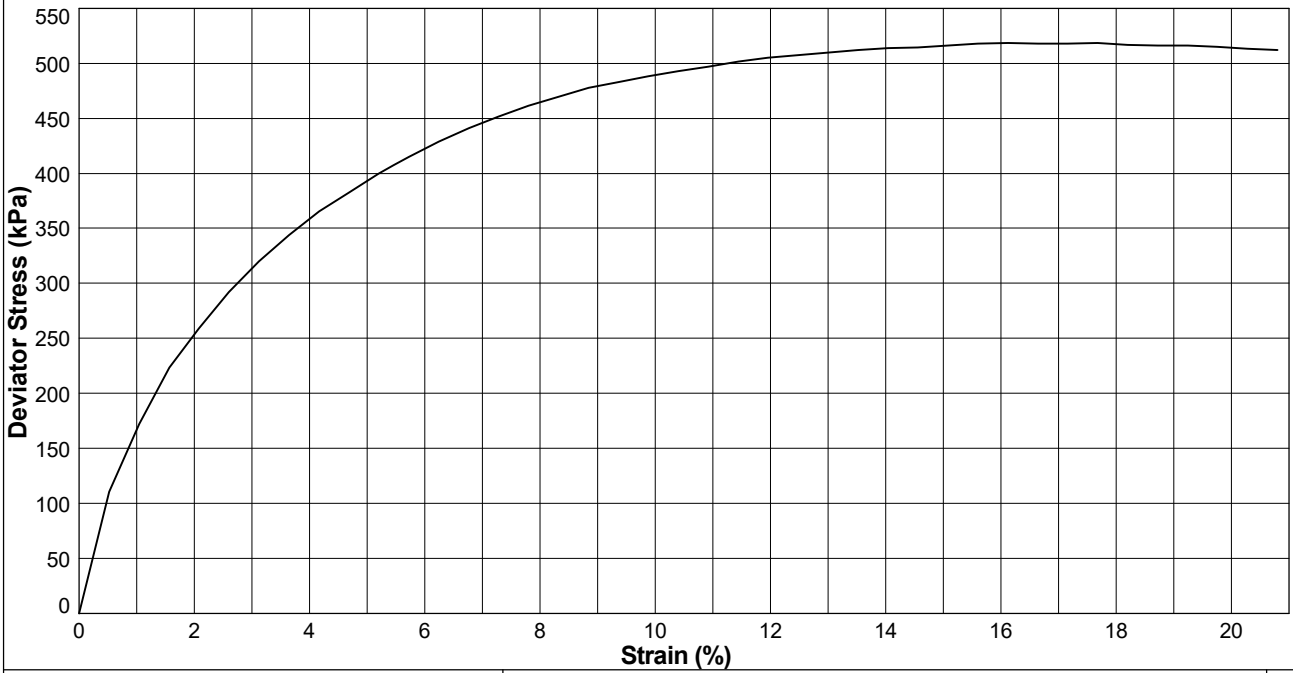
UNCONSOLIDATED UNDRAINED (QUICK) TRIAXIAL COMPRESSION TEST

In accordance with BS EN ISO 17892 Part 8

Position ID: **CP17** Sample Ref: **24** Sample Type: **UT** Depth (m): **7.50**

Description : **Brown slightly gravelly sandy CLAY**

STAGE/SPECIMEN NUMBER			1	2	3
SPECIMEN DETAILS	Sample Condition		**Undisturbed**		
	Orientation of sample		**Vertical**		
	Diameter	(mm)	**99.17**		
	Height	(mm)	**192.33**		
	Water Content	(%)	**14.2**		
	Bulk Density	(Mg/m^3)	**2.41**		
	Dry Density	(Mg/m^3)	**2.11**		
	Void Ratio		**0.2584**		
TEST DETAILS	Membrane Type		**Rubber**		
	Membrane Thickness	(mm)	**0.50**		
	Rate of Axial Displacement	(%/min)	**2.00**		
	Cell Pressure	(kPa)	**150**		
	Membrane Correction	(kPa)	**1.55**		
	Corrected Deviator Stress	(kPa)	**516**		
	Undrained Shear Strength	(kPa)	**258**		
FAILURE DETAILS	Strain at Failure	(%)	**15.0**		
	Mode of Failure 1 : **Plastic (Barrelling)**				



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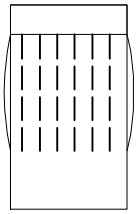
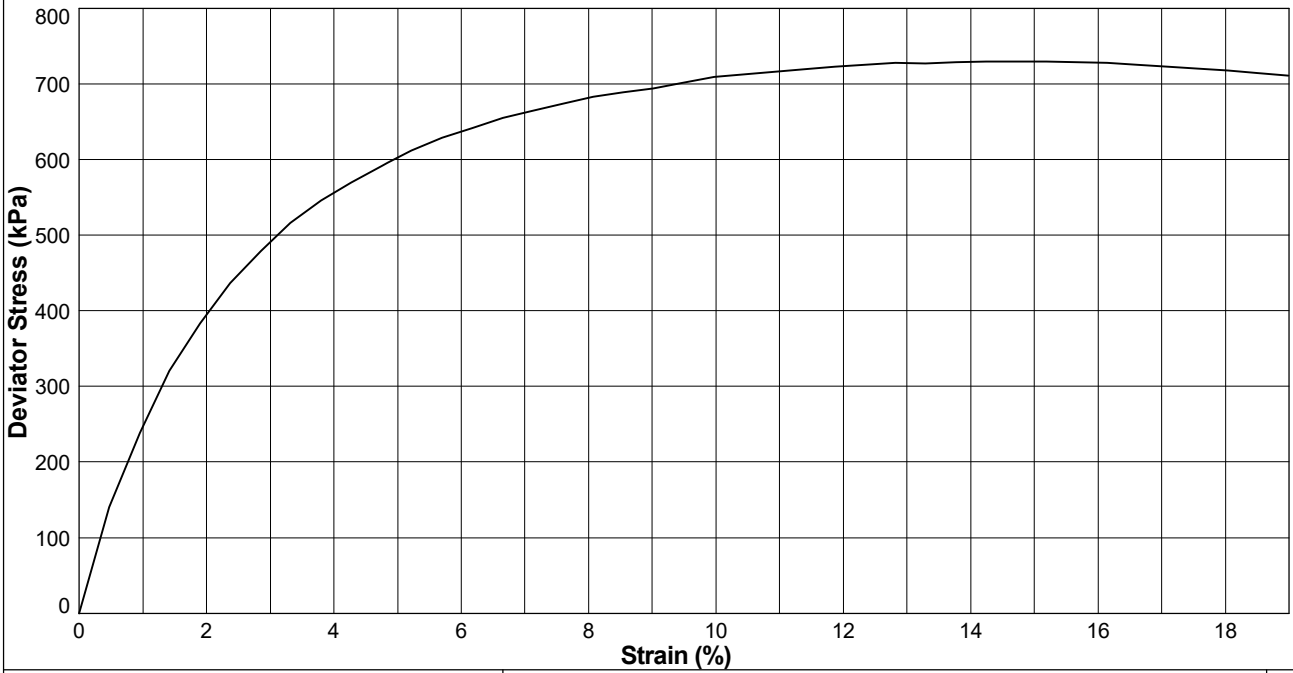
UNCONSOLIDATED UNDRAINED (QUICK) TRIAXIAL COMPRESSION TEST

In accordance with BS EN ISO 17892 Part 8

Borehole: **BH12** Sample Ref: **28** Sample Type: **UT** Depth (m): **7.50**

Description : **Dark brown gravelly slightly sandy CLAY with chalk**

STAGE/SPECIMEN NUMBER			1	2	3
SPECIMEN DETAILS	Sample Condition		**Undisturbed**		
	Orientation of sample		**Vertical**		
	Diameter	(mm)	**95.83**		
	Height	(mm)	**210.67**		
	Water Content	(%)	**13.5**		
	Bulk Density	(Mg/m^3)	**2.57**		
	Dry Density	(Mg/m^3)	**2.27**		
	Void Ratio		**0.1695**		
TEST DETAILS	Membrane Type		**Rubber**		
	Membrane Thickness	(mm)	**0.50**		
	Rate of Axial Displacement	(%/min)	**2.00**		
	Cell Pressure	(kPa)	**150**		
	Membrane Correction	(kPa)	**1.54**		
	Corrected Deviator Stress	(kPa)	**730**		
	Undrained Shear Strength	(kPa)	**365**		
FAILURE DETAILS	Strain at Failure	(%)	**14.2**		
	Mode of Failure 1 : **Semi-plastic (axial splitting with bulging)**				



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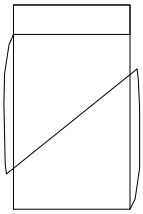
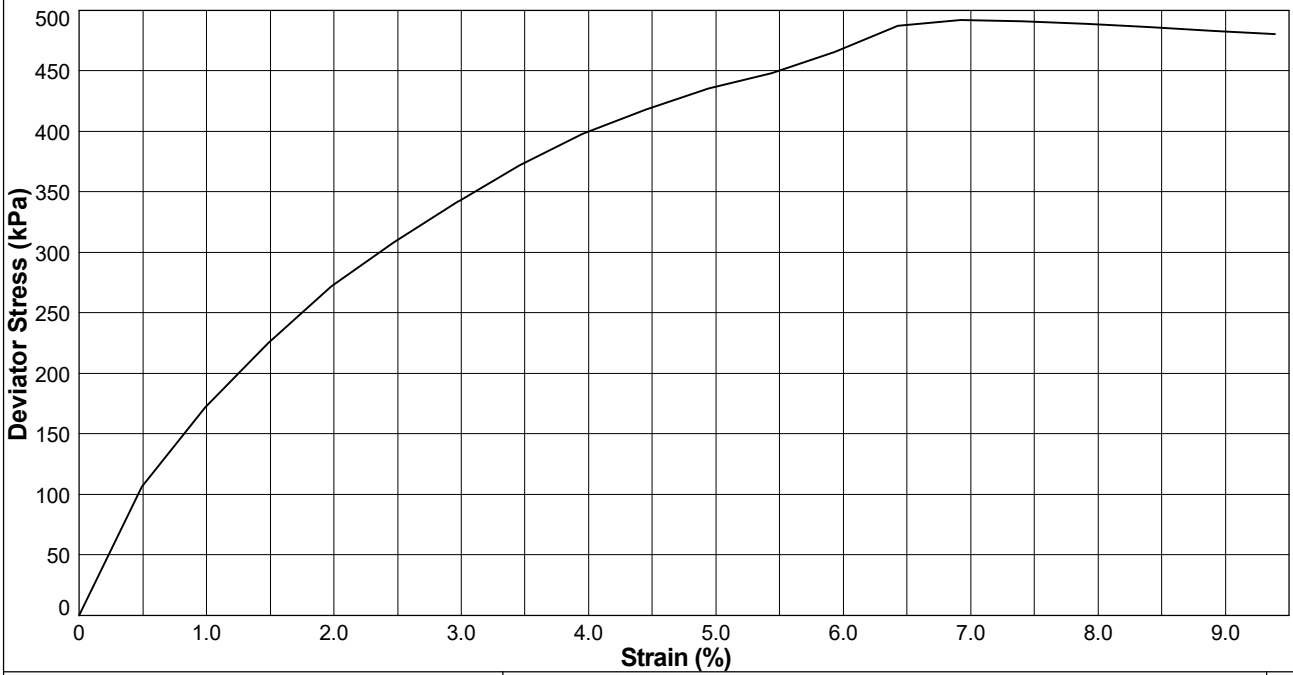
UNCONSOLIDATED UNDRAINED (QUICK) TRIAXIAL COMPRESSION TEST

In accordance with BS EN ISO 17892 Part 8

Borehole: **BH12** Sample Ref: **34** Sample Type: **UT** Depth (m): **10.50**

Description : **Dark brown slightly gravelly slightly sandy CLAY**

STAGE/SPECIMEN NUMBER			1	2	3
SPECIMEN DETAILS	Sample Condition		**Undisturbed**		
	Orientation of sample		**Vertical**		
	Diameter	(mm)	**99.00**		
	Height	(mm)	**202.33**		
	Water Content	(%)	**17.3**		
	Bulk Density	(Mg/m^3)	**2.34**		
	Dry Density	(Mg/m^3)	**2.00**		
	Void Ratio		**0.3257**		
TEST DETAILS	Membrane Type		**Rubber**		
	Membrane Thickness	(mm)	**0.50**		
	Rate of Axial Displacement	(%/min)	**2.00**		
	Cell Pressure	(kPa)	**210**		
	Membrane Correction	(kPa)	**0.87**		
	Corrected Deviator Stress	(kPa)	**492**		
	Undrained Shear Strength	(kPa)	**246**		
FAILURE DETAILS	Strain at Failure	(%)	**6.9**		
	Mode of Failure 1 : **Brittle (shear plane)**				



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LAURA SCHRAMM	30/03/23

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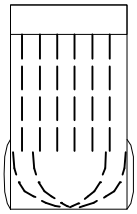
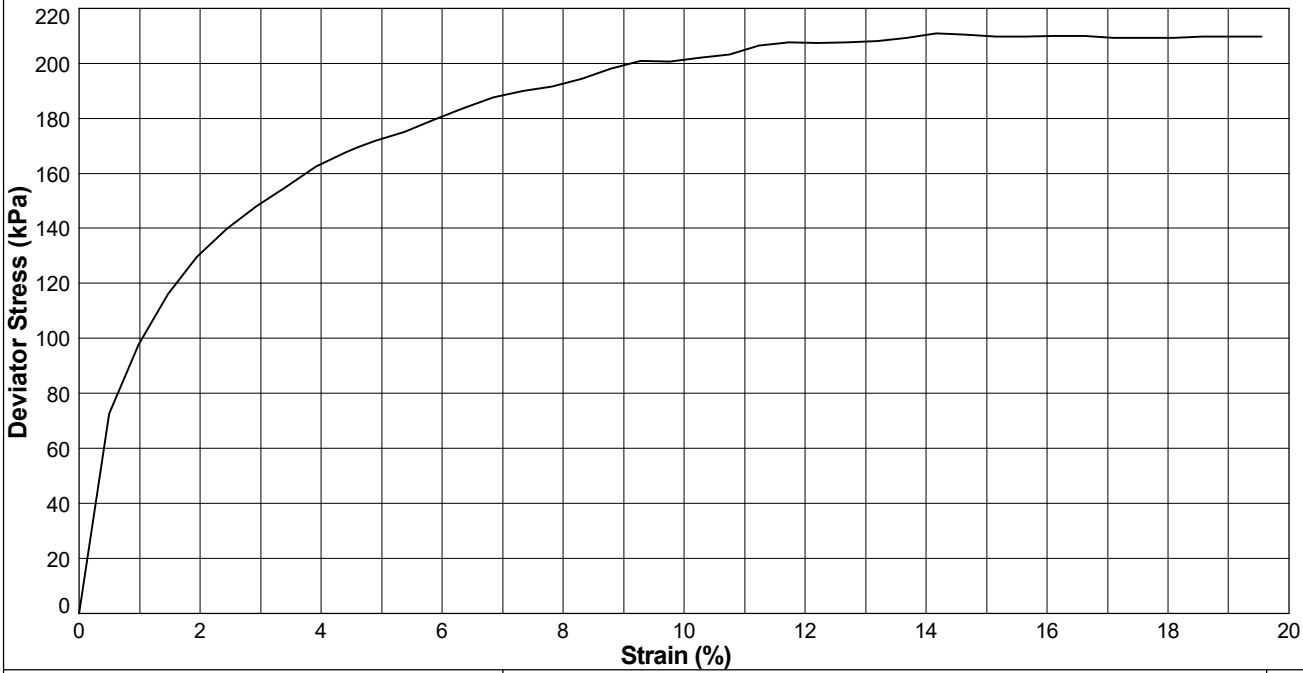
UNCONSOLIDATED UNDRAINED (QUICK) TRIAXIAL COMPRESSION TEST

In accordance with BS EN ISO 17892 Part 8

Borehole: **BH13** Sample Ref: **21** Sample Type: **UT** Depth (m): **5.00**

Description : **Brown slightly gravelly sandy CLAY**

STAGE/SPECIMEN NUMBER			1	2	3
SPECIMEN DETAILS	Sample Condition		**Undisturbed**		
	Orientation of sample		**Vertical**		
	Diameter	(mm)	**98.83**		
	Height	(mm)	**204.67**		
	Water Content	(%)	**19.0**		
	Bulk Density	(Mg/m^3)	**2.37**		
	Dry Density	(Mg/m^3)	**1.99**		
	Void Ratio		**0.3302**		
TEST DETAILS	Membrane Type		**Rubber**		
	Membrane Thickness	(mm)	**0.50**		
	Rate of Axial Displacement	(%/min)	**2.00**		
	Cell Pressure	(kPa)	**100**		
	Membrane Correction	(kPa)	**1.49**		
	Corrected Deviator Stress	(kPa)	**211**		
	Undrained Shear Strength	(kPa)	**105**		
FAILURE DETAILS	Strain at Failure	(%)	**14.2**		
	Mode of Failure 1 : **Semi-plastic (bulging, shear & axial splitting)**				



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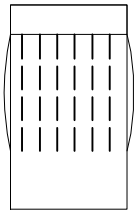
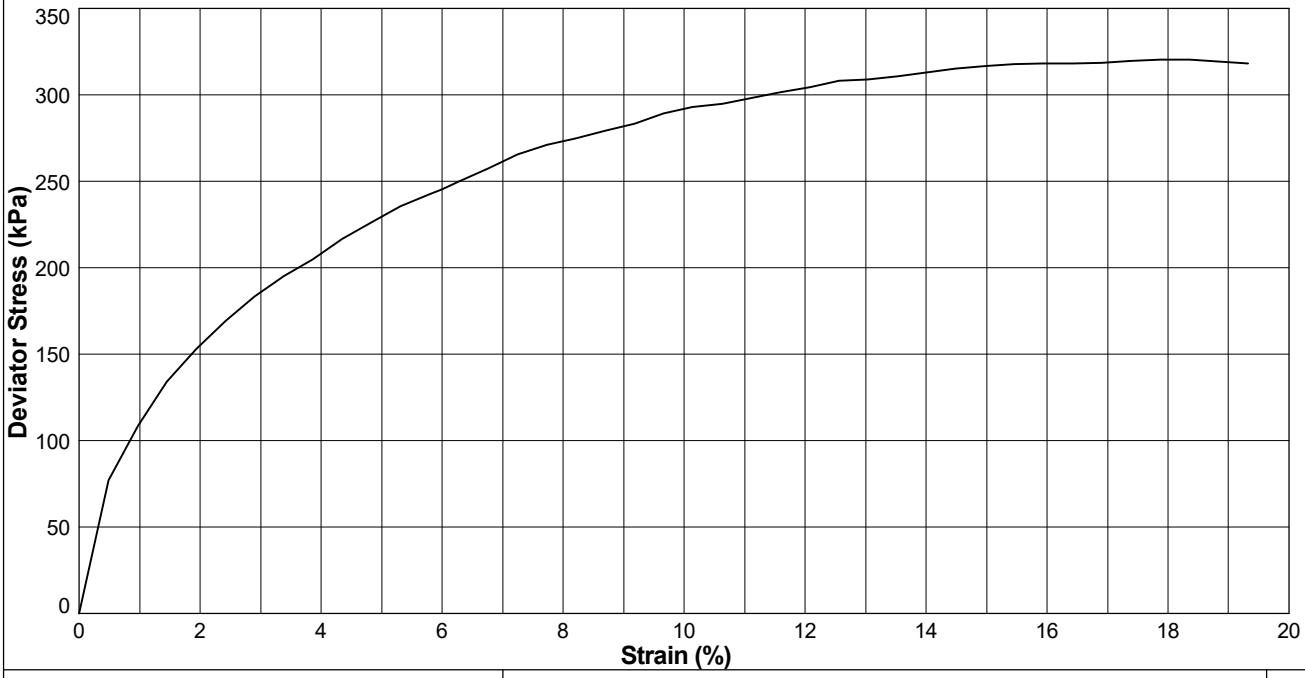
UNCONSOLIDATED UNDRAINED (QUICK) TRIAXIAL COMPRESSION TEST

In accordance with BS EN ISO 17892 Part 8

Position ID: **CP16** Sample Ref: **15** Sample Type: **UT** Depth (m): **4.50**

Description : **Dark brown slightly sandy slightly gravelly CLAY**

STAGE/SPECIMEN NUMBER			1	2	3
SPECIMEN DETAILS	Sample Condition		**Undisturbed**		
	Orientation of sample		**Vertical**		
	Diameter	(mm)	**100.67**		
	Height	(mm)	**207.00**		
	Water Content	(%)	**13.7**		
	Bulk Density	(Mg/m^3)	**2.34**		
	Dry Density	(Mg/m^3)	**2.06**		
	Void Ratio		**0.2894**		
TEST DETAILS	Membrane Type		**Rubber**		
	Membrane Thickness	(mm)	**0.50**		
	Rate of Axial Displacement	(%/min)	**2.00**		
	Cell Pressure	(kPa)	**24**		
	Membrane Correction	(kPa)	**1.52**		
	Corrected Deviator Stress	(kPa)	**316**		
	Undrained Shear Strength	(kPa)	**158**		
FAILURE DETAILS	Strain at Failure	(%)	**15.0**		
	Mode of Failure 1 : **Semi-plastic (axial splitting with bulging)**				



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Compiled By	Date
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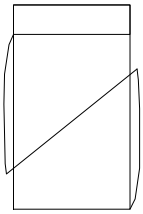
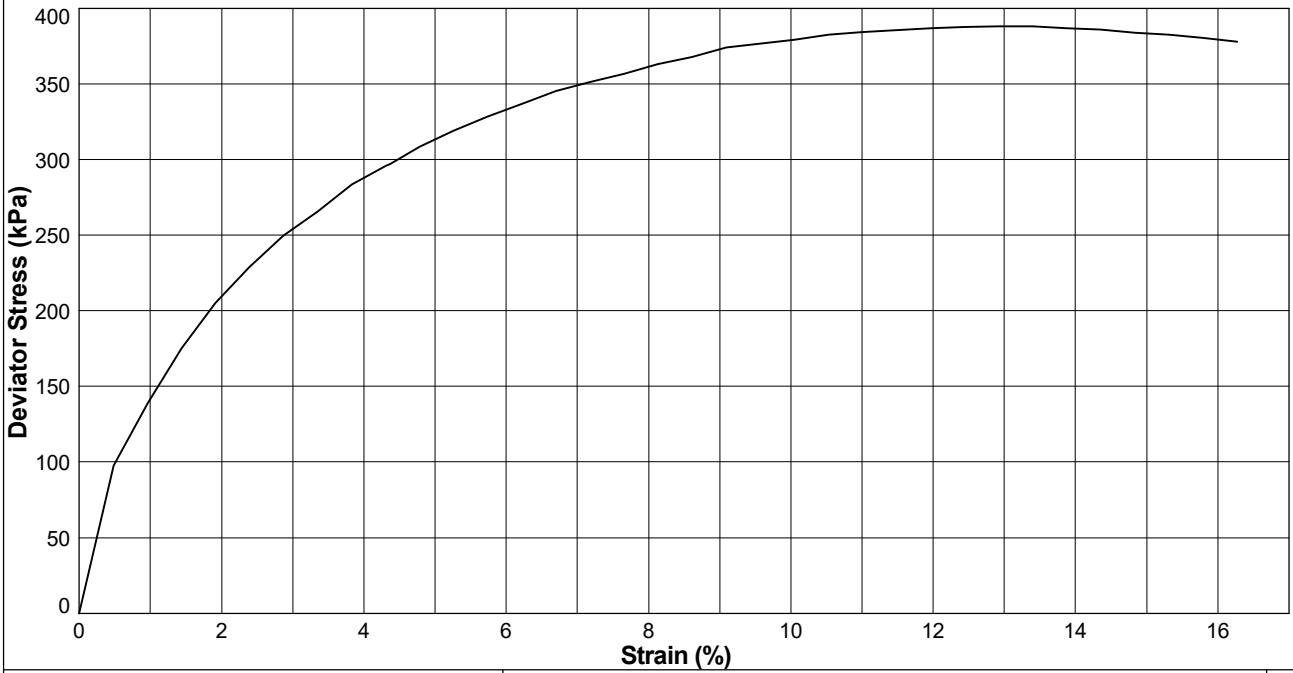
UNCONSOLIDATED UNDRAINED (QUICK) TRIAXIAL COMPRESSION TEST

In accordance with BS EN ISO 17892 Part 8

Position ID: **CP04** Sample Ref: **10** Sample Type: **UT** Depth (m): **2.00**

Description : **Dark brown slightly gravelly slightly sandy CLAY**

STAGE/SPECIMEN NUMBER			1	2	3
SPECIMEN DETAILS	Sample Condition		**Undisturbed**		
	Orientation of sample		**Vertical**		
	Diameter	(mm)	**99.00**		
	Height	(mm)	**209.00**		
	Water Content	(%)	**20.5**		
	Bulk Density	(Mg/m^3)	**2.31**		
	Dry Density	(Mg/m^3)	**1.92**		
	Void Ratio		**0.3810**		
TEST DETAILS	Membrane Type		**Rubber**		
	Membrane Thickness	(mm)	**0.50**		
	Rate of Axial Displacement	(%/min)	**2.00**		
	Cell Pressure	(kPa)	**40**		
	Membrane Correction	(kPa)	**1.43**		
	Corrected Deviator Stress	(kPa)	**388**		
	Undrained Shear Strength	(kPa)	**194**		
FAILURE DETAILS	Strain at Failure	(%)	**13.4**		
	Mode of Failure 1 : **Brittle (shear plane)**				



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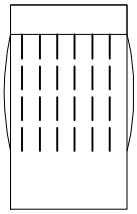
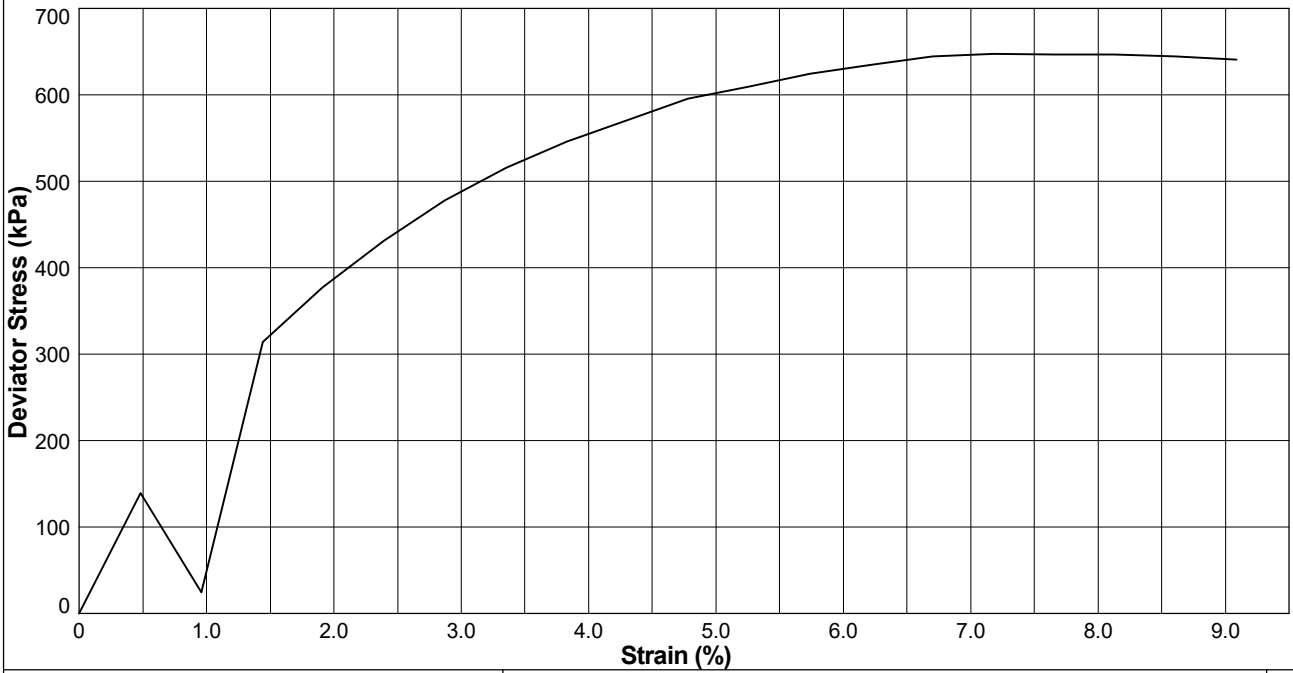
UNCONSOLIDATED UNDRAINED (QUICK) TRIAXIAL COMPRESSION TEST

In accordance with BS EN ISO 17892 Part 8

Position ID: **CP04** Sample Ref: **16** Sample Type: **UT** Depth (m): **4.00**

Description : **Dark brown slightly gravelly slightly sandy CLAY with chalk**

STAGE/SPECIMEN NUMBER			1	2	3
SPECIMEN DETAILS	Sample Condition		**Undisturbed**		
	Orientation of sample		**Vertical**		
	Diameter	(mm)	**98.83**		
	Height	(mm)	**209.00**		
	Water Content	(%)	**18.0**		
	Bulk Density	(Mg/m^3)	**2.31**		
	Dry Density	(Mg/m^3)	**1.96**		
	Void Ratio		**0.3520**		
TEST DETAILS	Membrane Type		**Rubber**		
	Membrane Thickness	(mm)	**0.50**		
	Rate of Axial Displacement	(%/min)	**2.00**		
	Cell Pressure	(kPa)	**80**		
	Membrane Correction	(kPa)	**0.89**		
	Corrected Deviator Stress	(kPa)	**647**		
	Undrained Shear Strength	(kPa)	**324**		
FAILURE DETAILS	Strain at Failure	(%)	**7.2**		
	Mode of Failure 1 : **Semi-plastic (axial splitting with bulging)**				



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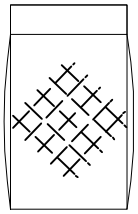
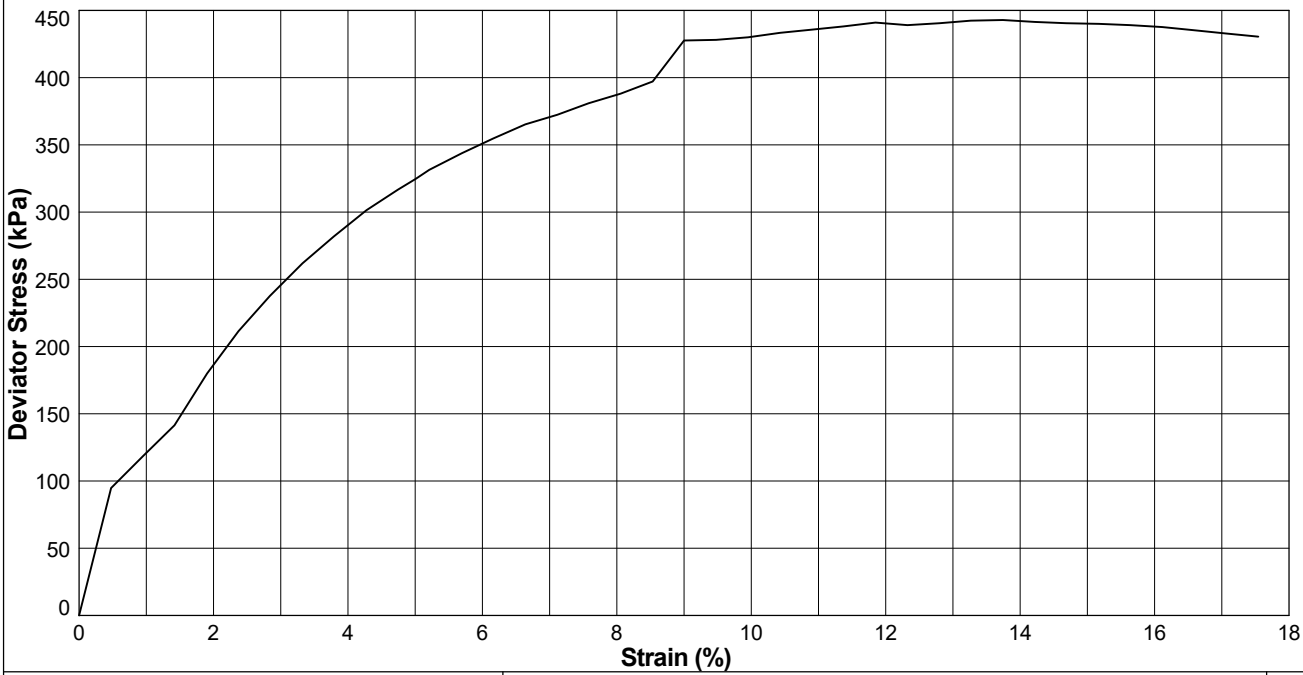
UNCONSOLIDATED UNDRAINED (QUICK) TRIAXIAL COMPRESSION TEST

In accordance with BS EN ISO 17892 Part 8

Borehole: **BH20** Sample Ref: **14** Sample Type: **UT** Depth (m): **2.00**

Description : **Brown slightly sandy slightly gravelly CLAY**

STAGE/SPECIMEN NUMBER			1	2	3
SPECIMEN DETAILS	Sample Condition		**Undisturbed**		
	Orientation of sample		**Vertical**		
	Diameter	(mm)	**99.17**		
	Height	(mm)	**211.00**		
	Water Content	(%)	**14.7**		
	Bulk Density	(Mg/m^3)	**2.40**		
	Dry Density	(Mg/m^3)	**2.10**		
	Void Ratio		**0.2638**		
TEST DETAILS	Membrane Type		**Rubber**		
	Membrane Thickness	(mm)	**0.50**		
	Rate of Axial Displacement	(%/min)	**2.00**		
	Cell Pressure	(kPa)	**40**		
	Membrane Correction	(kPa)	**1.45**		
	Corrected Deviator Stress	(kPa)	**443**		
	Undrained Shear Strength	(kPa)	**221**		
FAILURE DETAILS	Strain at Failure	(%)	**13.7**		
	Mode of Failure 1 : **Semi-plastic (intermediate)**				



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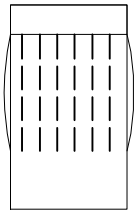
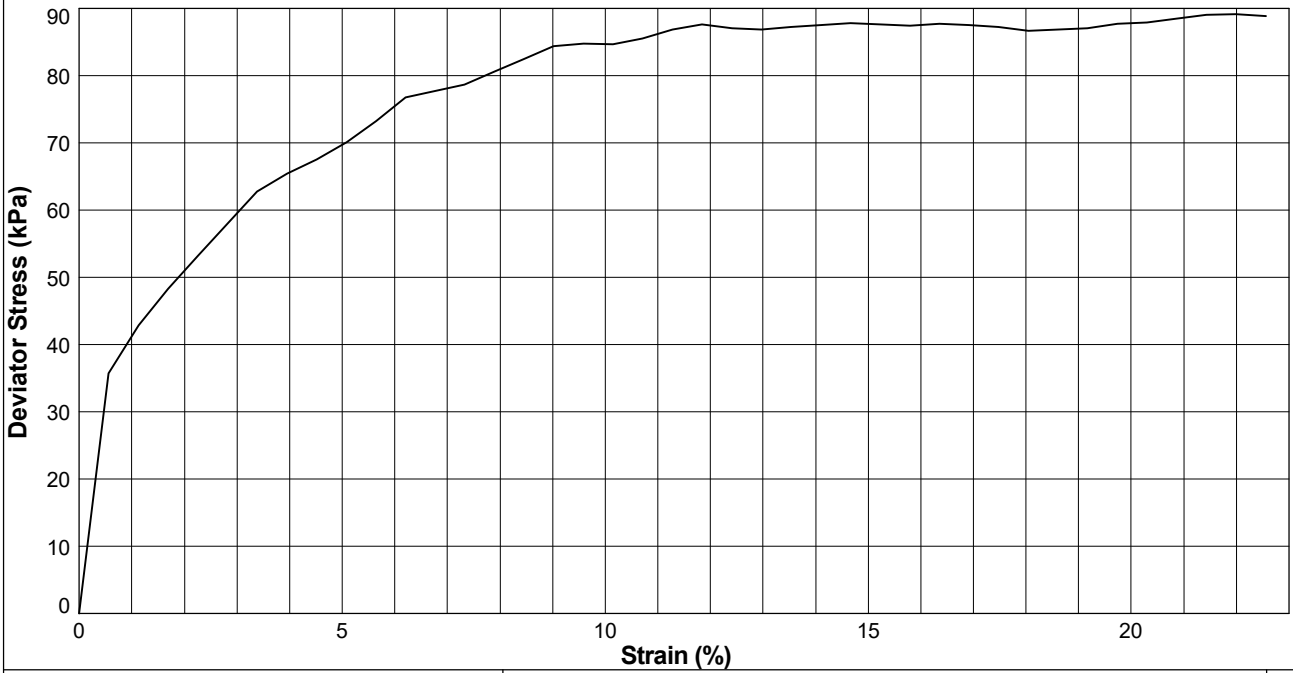
UNCONSOLIDATED UNDRAINED (QUICK) TRIAXIAL COMPRESSION TEST

In accordance with BS EN ISO 17892 Part 8

Position ID: **CP21** Sample Ref: **8** Sample Type: **U** Depth (m): **1.20**

Description : **Brown and grey slightly sandy CLAY**

STAGE/SPECIMEN NUMBER			1	2	3
SPECIMEN DETAILS	Sample Condition		**Undisturbed**		
	Orientation of sample		**Vertical**		
	Diameter	(mm)	**98.83**		
	Height	(mm)	**177.33**		
	Water Content	(%)	**24.8**		
	Bulk Density	(Mg/m^3)	**2.18**		
	Dry Density	(Mg/m^3)	**1.75**		
	Void Ratio		**0.5142**		
TEST DETAILS	Membrane Type		**Rubber**		
	Membrane Thickness	(mm)	**0.50**		
	Rate of Axial Displacement	(%/min)	**2.00**		
	Cell Pressure	(kPa)	**24**		
	Membrane Correction	(kPa)	**1.55**		
	Corrected Deviator Stress	(kPa)	**88**		
	Undrained Shear Strength	(kPa)	**44**		
FAILURE DETAILS	Strain at Failure	(%)	**15.0**		
	Mode of Failure 1 : **Semi-plastic (axial splitting with bulging)**				



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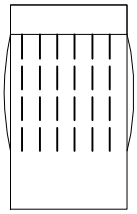
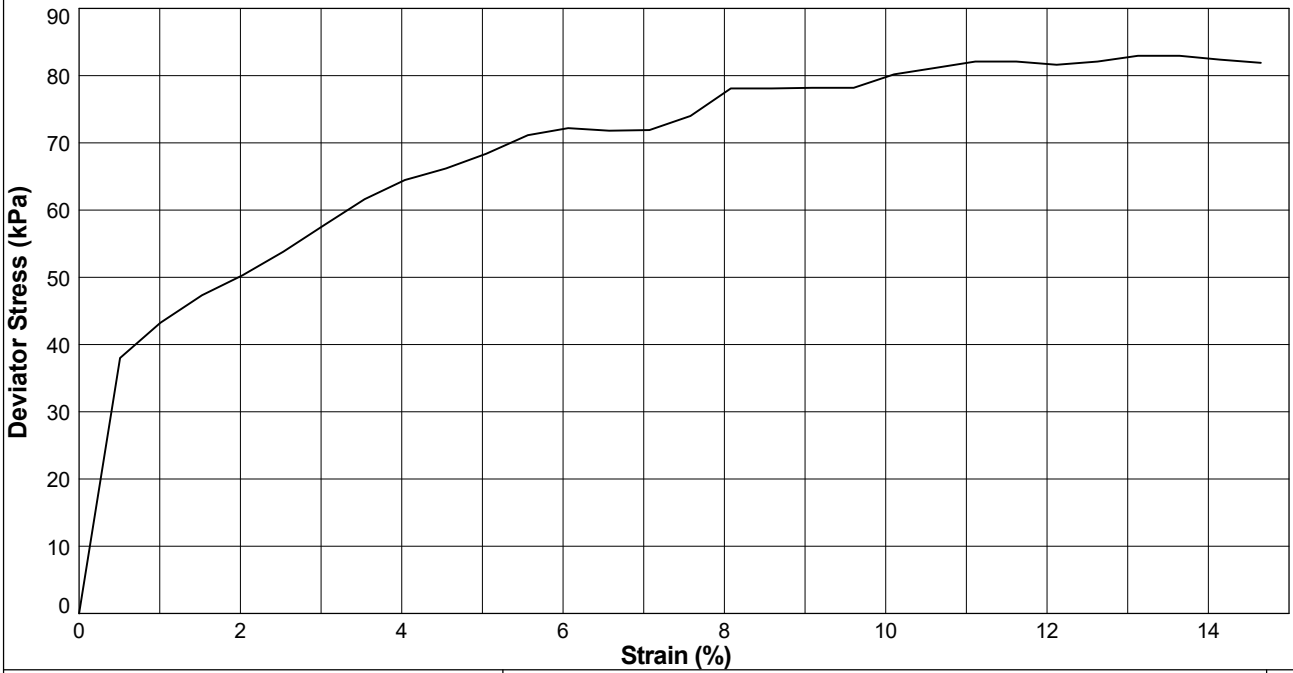
UNCONSOLIDATED UNDRAINED (QUICK) TRIAXIAL COMPRESSION TEST

In accordance with BS EN ISO 17892 Part 8

Borehole: **BH09** Sample Ref: **26** Sample Type: **UT** Depth (m): **4.00**

Description : **Brown slightly gravelly sandy CLAY**

STAGE/SPECIMEN NUMBER			1	2	3
SPECIMEN DETAILS	Sample Condition		**Undisturbed**		
	Orientation of sample		**Vertical**		
	Diameter	(mm)	**97.17**		
	Height	(mm)	**198.00**		
	Water Content	(%)	**19.4**		
	Bulk Density	(Mg/m^3)	**2.45**		
	Dry Density	(Mg/m^3)	**2.05**		
	Void Ratio		**0.2904**		
TEST DETAILS	Membrane Type		**Rubber**		
	Membrane Thickness	(mm)	**0.50**		
	Rate of Axial Displacement	(%/min)	**2.00**		
	Cell Pressure	(kPa)	**80**		
	Membrane Correction	(kPa)	**1.43**		
	Corrected Deviator Stress	(kPa)	**83**		
	Undrained Shear Strength	(kPa)	**41**		
FAILURE DETAILS	Strain at Failure	(%)	**13.1**		
	Mode of Failure 1 : **Semi-plastic (axial splitting with bulging)**				



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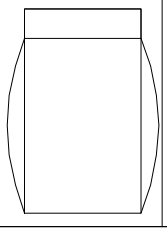
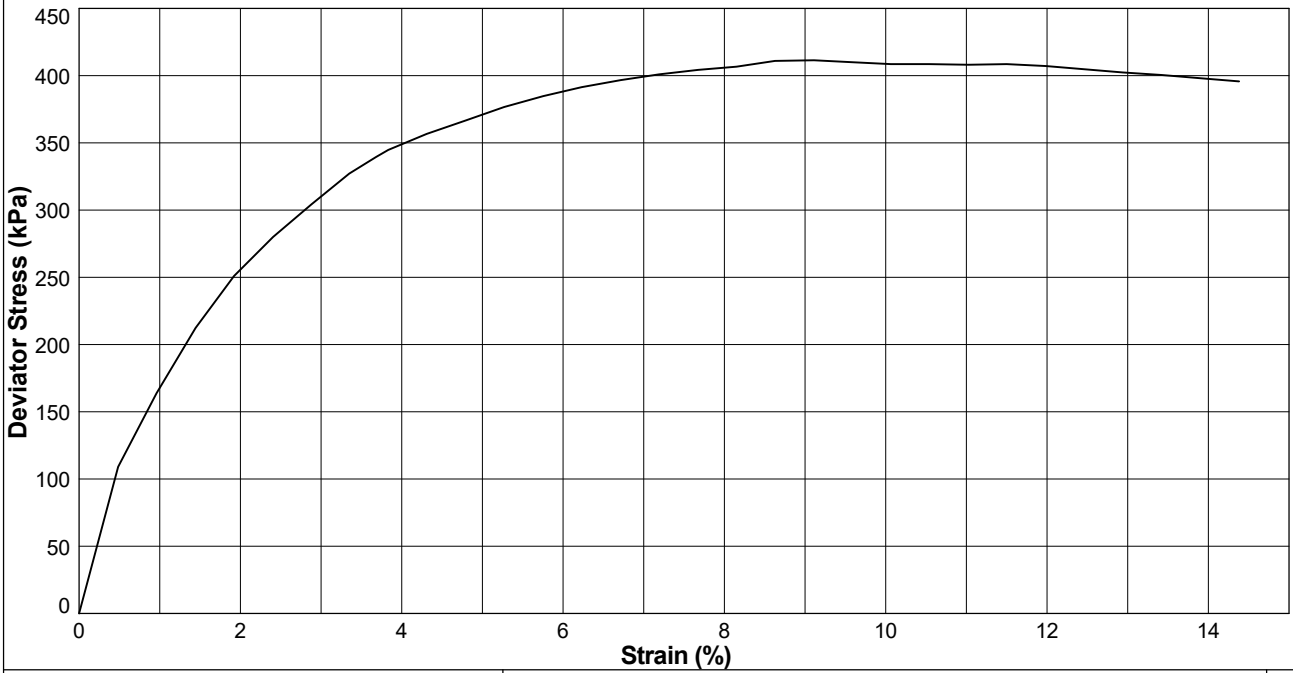
UNCONSOLIDATED UNDRAINED (QUICK) TRIAXIAL COMPRESSION TEST

In accordance with BS EN ISO 17892 Part 8

Position ID: **CP07** Sample Ref: **6** Sample Type: **UT** Depth (m): **1.50**

Description : **Brown gravelly slightly sandy CLAY**

STAGE/SPECIMEN NUMBER			1	2	3
SPECIMEN DETAILS	Sample Condition		**Undisturbed**		
	Orientation of sample		**Vertical**		
	Diameter	(mm)	**98.00**		
	Height	(mm)	**208.67**		
	Water Content	(%)	**17.2**		
	Bulk Density	(Mg/m^3)	**2.34**		
	Dry Density	(Mg/m^3)	**2.00**		
	Void Ratio		**0.3271**		
TEST DETAILS	Membrane Type		**Rubber**		
	Membrane Thickness	(mm)	**0.50**		
	Rate of Axial Displacement	(%/min)	**2.00**		
	Cell Pressure	(kPa)	**30**		
	Membrane Correction	(kPa)	**1.09**		
	Corrected Deviator Stress	(kPa)	**411**		
	Undrained Shear Strength	(kPa)	**206**		
FAILURE DETAILS	Strain at Failure	(%)	**9.1**		
	Mode of Failure 1 : **Plastic (Barrelling)**				



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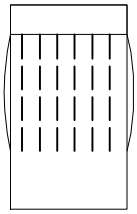
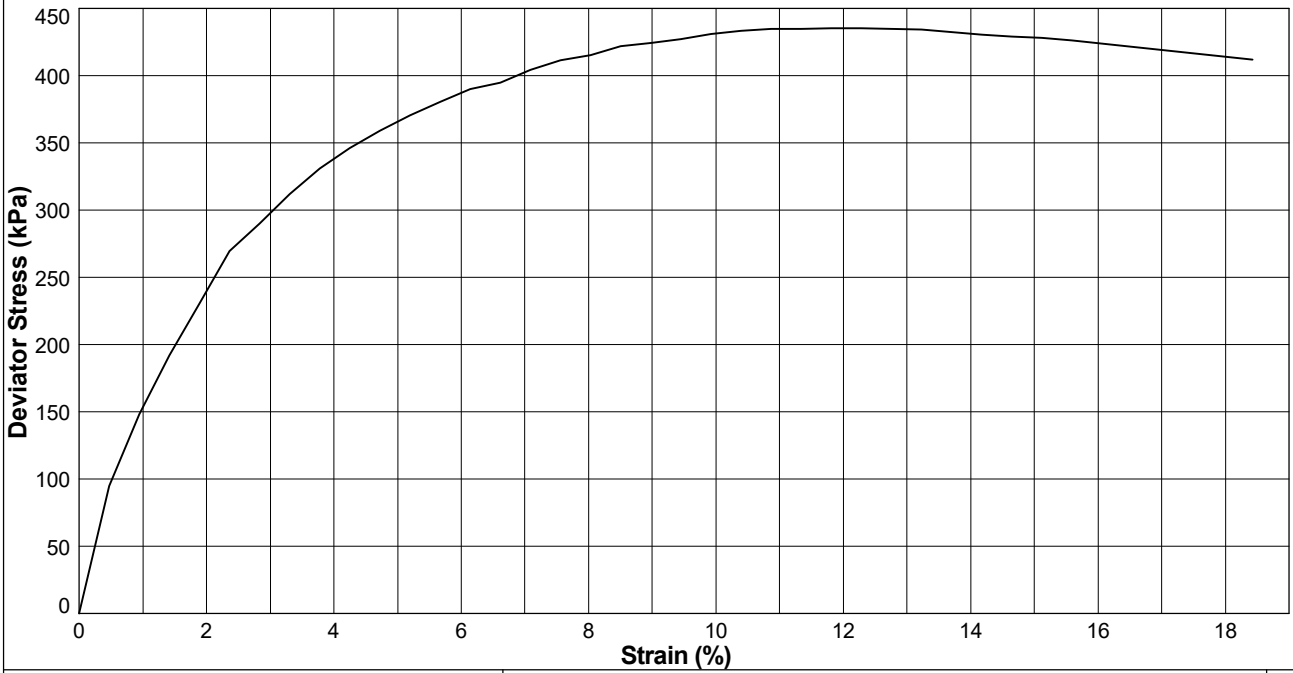
UNCONSOLIDATED UNDRAINED (QUICK) TRIAXIAL COMPRESSION TEST

In accordance with BS EN ISO 17892 Part 8

Position ID: **CP07** Sample Ref: **19** Sample Type: **UT** Depth (m): **6.00**

Description : **Brown slightly gravelly slightly sandy CLAY**

STAGE/SPECIMEN NUMBER			1	2	3
SPECIMEN DETAILS	Sample Condition		**Undisturbed**		
	Orientation of sample		**Vertical**		
	Diameter	(mm)	**99.17**		
	Height	(mm)	**211.67**		
	Water Content	(%)	**14.7**		
	Bulk Density	(Mg/m^3)	**2.38**		
	Dry Density	(Mg/m^3)	**2.08**		
	Void Ratio		**0.2750**		
TEST DETAILS	Membrane Type		**Rubber**		
	Membrane Thickness	(mm)	**0.50**		
	Rate of Axial Displacement	(%/min)	**2.00**		
	Cell Pressure	(kPa)	**120**		
	Membrane Correction	(kPa)	**1.30**		
	Corrected Deviator Stress	(kPa)	**435**		
	Undrained Shear Strength	(kPa)	**218**		
FAILURE DETAILS	Strain at Failure	(%)	**11.8**		
	Mode of Failure 1 : **Semi-plastic (axial splitting with bulging)**				



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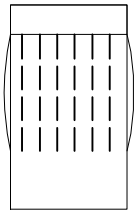
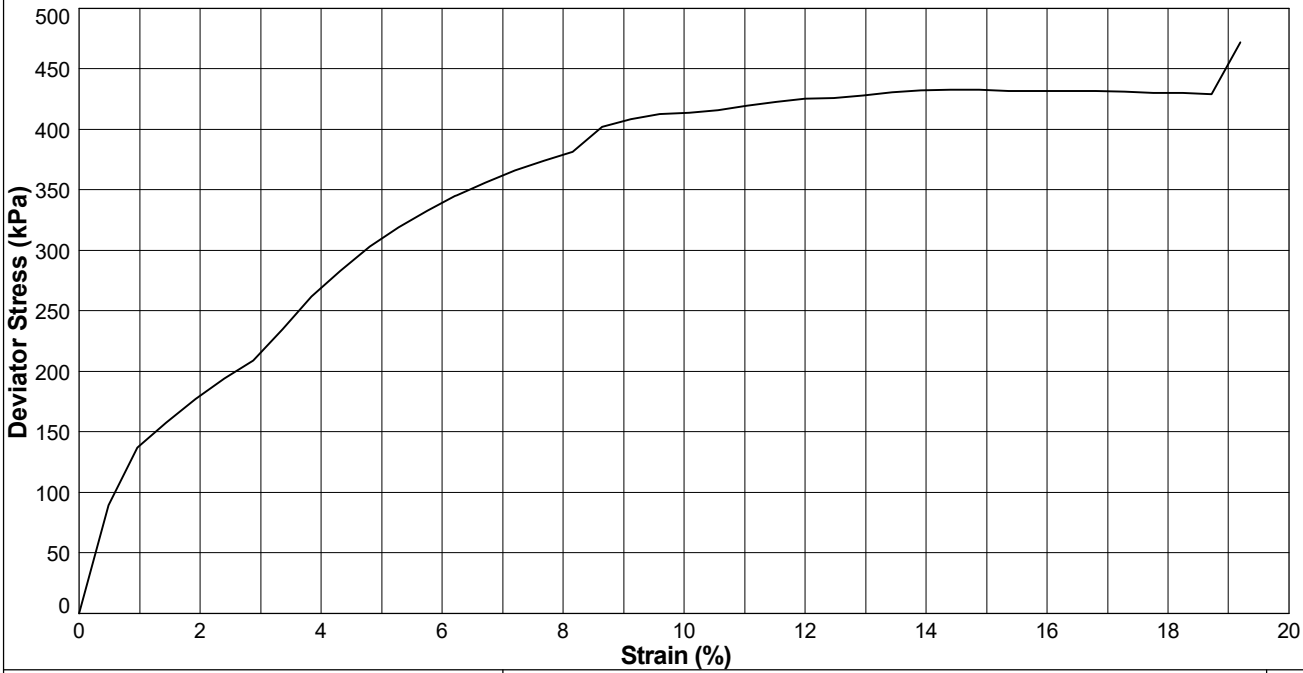
UNCONSOLIDATED UNDRAINED (QUICK) TRIAXIAL COMPRESSION TEST

In accordance with BS EN ISO 17892 Part 8

Position ID: **CP07** Sample Ref: **26** Sample Type: **UT** Depth (m): **9.00**

Description : **Brown gravelly slightly sandy CLAY**

STAGE/SPECIMEN NUMBER			1	2	3
SPECIMEN DETAILS	Sample Condition		**Undisturbed**		
	Orientation of sample		**Vertical**		
	Diameter	(mm)	**99.33**		
	Height	(mm)	**208.33**		
	Water Content	(%)	**14.7**		
	Bulk Density	(Mg/m^3)	**2.40**		
	Dry Density	(Mg/m^3)	**2.09**		
	Void Ratio		**0.2650**		
TEST DETAILS	Membrane Type		**Rubber**		
	Membrane Thickness	(mm)	**0.50**		
	Rate of Axial Displacement	(%/min)	**2.00**		
	Cell Pressure	(kPa)	**180**		
	Membrane Correction	(kPa)	**1.54**		
	Corrected Deviator Stress	(kPa)	**432**		
	Undrained Shear Strength	(kPa)	**216**		
FAILURE DETAILS	Strain at Failure	(%)	**15.0**		
	Mode of Failure 1 : **Semi-plastic (axial splitting with bulging)**				



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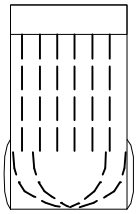
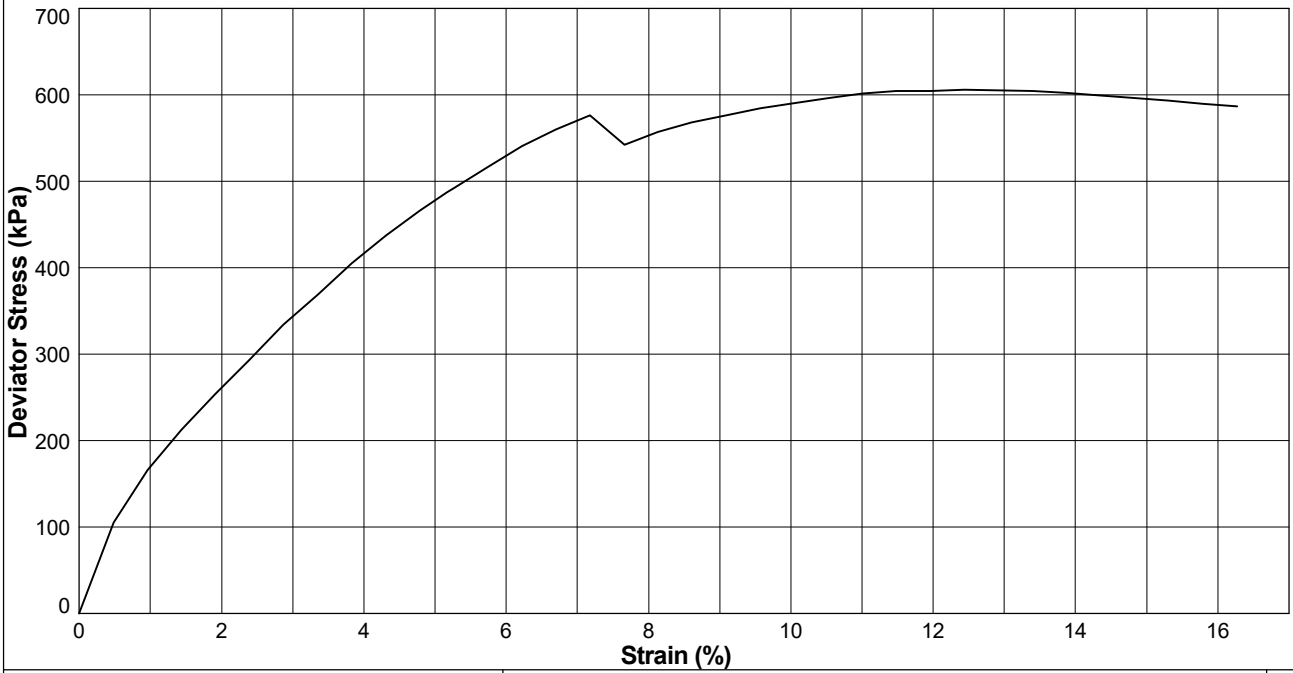
UNCONSOLIDATED UNDRAINED (QUICK) TRIAXIAL COMPRESSION TEST

In accordance with BS EN ISO 17892 Part 8

Position ID: **CP07** Sample Ref: **33** Sample Type: **UT** Depth (m): **12.00**

Description : **Brown slightly gravelly slightly sandy CLAY**

STAGE/SPECIMEN NUMBER			1	2	3
SPECIMEN DETAILS	Sample Condition		**Undisturbed**		
	Orientation of sample		**Vertical**		
	Diameter	(mm)	**99.00**		
	Height	(mm)	**209.00**		
	Water Content	(%)	**14.1**		
	Bulk Density	(Mg/m^3)	**2.31**		
	Dry Density	(Mg/m^3)	**2.02**		
	Void Ratio		**0.3112**		
TEST DETAILS	Membrane Type		**Rubber**		
	Membrane Thickness	(mm)	**0.50**		
	Rate of Axial Displacement	(%/min)	**2.00**		
	Cell Pressure	(kPa)	**240**		
	Membrane Correction	(kPa)	**1.35**		
	Corrected Deviator Stress	(kPa)	**606**		
	Undrained Shear Strength	(kPa)	**303**		
FAILURE DETAILS	Strain at Failure	(%)	**12.4**		
	Mode of Failure 1 : **Semi-plastic (bulging, shear & axial splitting)**				



STRUCTURAL SOILS
The Potteries
Pottery Street
Castleford
W. Yorkshire WF10 1NJ

Compiled By	Date
LORNA WHITWORTH	30/03/23

Contract	Contract Ref:
EMG Phase 2	**765514**

AGS

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Graph L - TRIAXIAL - BS - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01
Structural Soils Ltd, Branch Office - Castleford: The Potteries, Pottery Street, Castleford, West Yorkshire, WF10 1NJ. Tel: 01977-552255, Fax: 01977-552299, Web: www.soils.co.uk, Email: ask@soils.co.uk. | 30/03/23 - 11:45 | LW5 |

SUMMARY OF HAND PENETROMETER & HAND VANE & TORVANE TEST RESULTS

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Moisture Content (%)	Vane Type	Average Reading (kPa)	Sample Description	Lab location
BH05	11	UT	2.00	21	HVP	68	Brown slightly gravelly sandy CLAY	**C**
BH06	20	UT	5.00	16	HVP	132	Brown grey slightly gravelly CLAY	**C**
BH08	20	DSPT	3.00	15	HVP	63	Brown grey CLAY	**C**
BH12	7	UT	1.20	16	HVP	141	Brown slightly gravelly CLAY	**C**
BH12	14	UT	3.00	17	HVP	131	Grey brown slightly gravelly CLAY	**C**
BH13	14	UT	3.00	18	HVP	32	Brown slightly gravelly sandy CLAY	**C**
BH18	17	UT	2.00	17	HVP	45	Brown slightly sandy CLAY	**C**
BH18	26	UT	4.00	18	HVP	58	Brown CLAY	**C**

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)
Key : HVP = Hand Vane (Peak), HVR = Hand Vane (Remoulded), PP = Pocket Penetrometer, TV = Torvane.

STRUCTURAL SOILS
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Pottery Street
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W. Yorkshire WF10 1NJ

Compiled By	Date	Contract Ref:
LORNA WHITWORTH	**30.03.23**	**765514**

Contract: **EMG Phase 2**

SUMMARY OF HAND PENETROMETER & HAND VANE & TORVANE TEST RESULTS

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Moisture Content (%)	Vane Type	Average Reading (kPa)	Sample Description	Lab location
BH21	11	UT	2.00	17	HVP	55	Brown CLAY	**C**
BH22	5	UT	1.20	16	HVP	48	Brown CLAY	**C**
BH23	6	UT	1.20	19	HVP	45	Brown grey CLAY	**C**
BH26	17	UT	4.00	15	HVP	56	Brown CLAY	**C**
CP02	8	UT	2.00	17	HVP	70	Brown grey CLAY	**C**
CP03	18	UT	4.00	15	HVP	43	Brown grey CLAY	**C**
CP04	22	UT	6.00	15	HVP	140	Dark brown slightly gravelly slightly sandy CLAY	**C**
CP06	10	UT	3.00	13	HVP	146	Dark brown CLAY	**C**

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)
Key : HVP = Hand Vane (Peak), HVR = Hand Vane (Remoulded), PP = Pocket Penetrometer, TV = Torvane.

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Compiled By	Date	Contract Ref:
LORNA WHITWORTH	**30.03.23**	**765514**

Contract: **EMG Phase 2**

SUMMARY OF HAND PENETROMETER & HAND VANE & TORVANE TEST RESULTS

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Moisture Content (%)	Vane Type	Average Reading (kPa)	Sample Description	Lab location
CP06	15	UT	5.00	13	HVP	139	Dark brown slightly gravelly CLAY	**C**
CP12	13	UT	4.00	14	HVP	55	Brown gravelly CLAY	**C**
CP19	9	UT	2.50	17	HVP	42	Brown CLAY	**C**
CP22	12	U	3.00	14	HVP	37	Brown grey CLAY	**C**
CP23	12	UT	3.00	17	HVP	64	Brown CLAY	**C**
CP25	15	UT	2.00	14	HVP	40	Brown CLAY	**C**
CP28	14	UT	3.10	27	HVP	92	Grey brown CLAY	**C**

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)
Key : HVP = Hand Vane (Peak), HVR = Hand Vane (Remoulded), PP = Pocket Penetrometer, TV = Torvane.

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Compiled By	Date	Contract Ref:
LORNA WHITWORTH	**30.03.23**	**765514**

Contract: **EMG Phase 2**

SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with Part 1,Part 3,Part 12 of BS EN ISO 17892

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Water Content %	Particle Density Mg/m^3	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425um	Description of Sample
BH01	7	D	1.50	23.8		42	24	18	68	Brown red slightly sandy slightly gravelly clayey SILT
BH02	3	D	0.70	19.1		41	19	22	95	Brown red slighty gravelly slightly sandy CLAY with organic material
BH02	7	D	1.55	13.2		35	20	15	98	Brown red slightly gravelly slightly sandy CLAY
BH02	14	DSPT	3.00	12.6		36	17	19	94	Brown slightly gravelly slightly sandy CLAY
BH03	1	D	0.40	12.5		36	20	16	84	Brown slightly gravelly sandy CLAY
BH03	13	D	2.70	18.2		38	19	19	84	Brown slightly gravelly sandy CLAY
BH03	21	D	5.80	21.2		37	20	17	73	Brown slightly sandy CLAY
BH04	5	D	0.90	23.0		46	20	26	75	Brown slightly gravelly sandy CLAY

SYMBOLS: * denotes BS 1377

SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with Part 1,Part 3,Part 12 of BS EN ISO 17892

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Water Content %	Particle Density Mg/m^3	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425um	Description of Sample
BH04	8	D	1.70	28.5		50	24	26	95	Brown gravelly sandy CLAY
BH04	12	DSPT	3.00	27.3		49	24	25	92	Brown red slightly gravelly slightly sandy CLAY
BH04	20	DSPT	5.00	11.1		34	18	16	77	Brown slightly gravelly slightly sandy CLAY
BH05	3	D	0.50	13.4		45	18	27	62	Brown slightly gravelly slightly sandy CLAY
BH05	10	D	1.70	25.8		46	21	25	73	Brown slightly gravelly slightly sandy CLAY
BH05	21	D	5.70	22.2		41	21	20	34	Brown gravelly sandy CLAY
BH05	35	D	11.20	8.4		35	17	18	68	Brown gravelly sandy CLAY
BH06	15	D	3.70	22.0		41	18	23	87	Grey slightly sandy gravelly CLAY

SYMBOLS: * denotes BS 1377

SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with Part 1,Part 3,Part 12 of BS EN ISO 17892

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Water Content %	Particle Density Mg/m^3	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425um	Description of Sample
BH06	35	D	10.95	14.8		34	15	19	76	Brown gravelly slightly sandy CLAY
BH06	40	D	13.30	14.0		33	16	17	82	Dark brown gravelly sandy CLAY with chalk
BH07	17	D	2.50	18.9		39	18	21	85	Brown/red slightly gravelly slightly sandy CLAY
BH08	5	D	1.00	19.2		37	19	18	85	Brown slightly gravelly sandy CLAY
BH08	16	D	3.50	13.6		41	18	23	82	Brown grey slightly gravelly slightly sandy CLAY
BH08	22	D	5.50	20.7		35	19	16	81	Brown red slightly gravelly slightly sandy CLAY
BH09	10	D	0.80	14.6		41	19	22	95	Brown slightly sandy slightly gravelly CLAY
BH09	19	D	2.50	14.9		33	17	16	86	Brown/red slightly gravelly slightly sandy clayey SILT

SYMBOLS: * denotes BS 1377

STRUCTURAL SOILS LTD

Contract: **EMG Phase 2**

Contract Ref: **765514**

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SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with Part 1,Part 3,Part 12 of BS EN ISO 17892

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Water Content %	Particle Density Mg/m^3	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425um	Description of Sample
BH10	9	D	2.70	16.3		36	20	16	48	Red brown sandy CLAY
BH10	10	D	4.00	17.6		39	21	18	67	Red brown slightly silty gravelly sandy CLAY
BH11	10	D	2.00	20.4		42	22	20	93	Brown gravelly sandy chalky CLAY
BH11	17	D	4.00	20.4		33	17	16	88	Brown gravelly sandy chalky CLAY
BH12	13	D	2.70	25.1		40	19	21	81	Brown gravelly slightly sandy CLAY
BH12	23	D	5.70	17.5		33	15	18	85	Dark brown slightly gravelly silty CLAY with chalk
BH12	33	D	10.30	15.9		33	16	17	71	Dark brown slightly gravelly slightly sandy CLAY with chalk
BH12	43	D	14.70	22.5		27	19	8	93	Dark brown silty CLAY

SYMBOLS: * denotes BS 1377

SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with Part 1,Part 3,Part 12 of BS EN ISO 17892

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Water Content %	Particle Density Mg/m^3	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425um	Description of Sample
BH13	3	D	0.50	5.4		NP	NP	NP	63	Brown sandy slightly silty GRAVEL
BH13	13	D	2.70	20.6		46	28	18	55	Brown slightly gravelly sandy clayey SILT
BH13	22	D	5.45	20.1		32	19	13	76	Brown grey slightly gravelly slightly sandy CLAY
BH13	27	D	7.30	18.6		36	21	15	84	Brown slightly gravelly sandy CLAY
BH14	14	D	3.45	14.8		27	14	13	78	Brown sandy slightly silty CLAY
BH14	27	D	7.30	14.1		26	15	11	58	Brown sandy CLAY
BH14	39	D	11.70	24.4		34	18	16	51	Red sandy clayey GRAVEL
BH15	7	D	1.50	14.6		40	21	19	87	Brown sandy slightly gravelly CLAY

SYMBOLS: * denotes BS 1377

SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with Part 1,Part 3,Part 12 of BS EN ISO 17892

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Water Content %	Particle Density Mg/m^3	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425um	Description of Sample
BH16	8	D	1.70	22.0		41	19	22	81	Brown slightly gravelly slightly sandy CLAY
BH16	16	D	3.70	12.6		32	20	12	79	Brown red sandy silty CLAY
BH16	20	D	4.90	17.3		37	18	19	73	Brown slightly sandy slightly silty CLAY
BH17	3	D	0.90	18.4		44	21	23	85	Brown slightly gravelly sandy CLAY
BH18	18	D	2.50	15.8		34	14	20	81	Brown gravelly CLAY
BH18	27	D	4.50	19.6		28	16	12	95	Brown sandy CLAY
BH18	37	D	6.50	16.4		32	20	12	85	Brown red slightly gravelly slightly sandy CLAY
BH18	40	D	7.50	21.4		35	19	16	79	Brown slightly sandy slightly gravelly CLAY

SYMBOLS: * denotes BS 1377

STRUCTURAL SOILS LTD

Contract: **EMG Phase 2**

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SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with Part 1,Part 3,Part 12 of BS EN ISO 17892

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Water Content %	Particle Density Mg/m^3	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425um	Description of Sample
BH18	45	D	8.50	27.0		31	18	13	85	Brown grey gravelly slightly sandy CLAY
BH19	6	D	1.65	17.8		39	23	16	88	Red brown sandy slightly gravelly CLAY
BH19	21	DSPT	5.00	17.1		35	20	15	77	Brown gravelly sandy CLAY
BH20	24	D	4.70	16.6		34	18	16	69	Brown redish slightly gravelly sandy CLAY
BH21	5	D	0.80	17.8		40	19	21	83	Brown grey gravelly sandy CLAY
BH21	15	DSPT	3.00	21.6		34	21	13	80	Brown red slightly sandy slightly gravelly clayey SILT
BH22	6	D	1.65	16.4		42	26	16	69	Brown red slightly gravelly sandy CLAY
BH23	8	D	1.70	14.6		37	22	15	73	Brown slightly gravelly sandy CLAY

SYMBOLS: * denotes BS 1377

SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with Part 1,Part 3,Part 12 of BS EN ISO 17892

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Water Content %	Particle Density Mg/m^3	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425um	Description of Sample
BH23	26	D	5.20	14.8		37	20	17	73	Brown slightly gravelly slightly sandy silty CLAY with mudstone
BH23	28	D	8.40	11.2		32	19	13	63	Brown red sandy clayey GRAVEL
BH24	7	D	0.40	10.0		31	18	13	88	Brown gravelly sandy CLAY
BH25	7	D	0.40	13.8		39	18	21	87	Brown red gravelly sandy CLAY
BH26	4	D	0.40	19.3		40	21	19	95	Brown red gravelly sandy CLAY
BH26	16	D	3.50	16.3		36	19	17	78	Brown grey slightly gravelly sandy CLAY
BH27	4	D	2.00	14.6		35	18	17	74	Brown red sandy CLAY
CP01	12	D	3.80	16.5		38	20	18	75	Brown slightly sandy slightly gravelly CLAY

SYMBOLS: * denotes BS 1377

STRUCTURAL SOILS LTD

Contract: **EMG Phase 2**

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SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with Part 1,Part 3,Part 12 of BS EN ISO 17892

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Water Content %	Particle Density Mg/m^3	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425um	Description of Sample
CP02	2	D	0.50	20.2		62	23	39	91	Brown slightly gravelly slightly sandy CLAY
CP02	22	D	6.80	25.5		37	21	16	98	Brown slightly gravelly slightly sandy
CP03	13	D	2.60	20.3		38	19	19	76	Brown red slightly gravelly slightly sandy CLAY
CP03	19	D	4.00	13.6		39	20	19	85	Brown slightly gravelly sandy CLAY
CP03	26	D	6.80	21.9		37	19	18	77	Brown slightly gravelly sandy CLAY
CP04	5	D	1.00	13.3		36	17	19	73	Brown sandy slightly gravelly CLAY
CP04	17	D	4.60	18.9		44	18	26	89	Brown sandy gravelly CLAY with chalk
CP04	42	D	12.50	13.9		34	16	18	84	Brown gravelly sandy CLAY with chalk

SYMBOLS: * denotes BS 1377

STRUCTURAL SOILS LTD

Contract:

EMG Phase 2

Contract Ref:

765514

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SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with Part 1,Part 3,Part 12 of BS EN ISO 17892

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Water Content %	Particle Density Mg/m^3	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425um	Description of Sample
CP04	48	D	14.50	14.0		35	16	19	84	Brown gravelly sandy CLAY
CP05	4	D	0.70	17.0		28	16	12	86	Brown sandy CLAY
CP05	7.1	DSPT	2.00	16.3		36	18	18	84	Brown gravelly sandy CLAY
CP05	9	D	2.75	19.8		34	17	17	73	Brown slightly gravelly slightly sandy CLAY
CP05	18	D	5.75	16.6		40	17	23	87	Brown grey sandy CLAY
CP06	11	D	3.65	17.2		36	18	18	63	Dark brown gravelly slightly sandy CLAY
CP06	19	D	7.00	16.3		36	19	17	80	Brown red slightly gravelly sandy CLAY
CP07	5	D	1.30	18.6		45	19	26	91	Brown slightly gravelly slightly sandy CLAY

SYMBOLS: * denotes BS 1377

STRUCTURAL SOILS LTD

Contract: **EMG Phase 2**

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SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with Part 1,Part 3,Part 12 of BS EN ISO 17892

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Water Content %	Particle Density Mg/m^3	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425um	Description of Sample
CP07	20	D	6.45	15.5		34	17	17	83	Brown gravelly sandy CLAY
CP07	25	D	8.70	16.4		33	17	16	84	Brown slightly sandy gravelly CLAY
CP08	13	B	2.00	18.7		42	16	26	81	Brown red slightly gravelly slightly sandy CLAY
CP08	18	DSPT	4.00	18.1		39	16	23	78	Brown slightly gravelly slightly sandy clayey SILT
CP08	22	D	5.50	12.4		34	18	16	65	Brown slightly gravelly slightly sandy
CP08	40	D	10.20	17.2		30	14	16	48	Brown sandy gravelly CLAY
CP09	4	D	0.70	12.1		36	14	22	93	Brown red slightly gravelly sandy CLAY with organic material
CP09	15	D	4.75	18.0		29	16	13	97	Brown slightly sandy silty CLAY

SYMBOLS: * denotes BS 1377

SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with Part 1,Part 3,Part 12 of BS EN ISO 17892

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Water Content %	Particle Density Mg/m^3	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425um	Description of Sample
CP09	21	D	7.00	13.7		31	19	12	80	Grey brown sandy CLAY
CP10	4	D	0.50	12.0		43	19	24	86	Brown grey slightly sandy CLAY
CP10	11	D	2.95	19.9		41	19	22	90	Brown gravelly sandy CLAY
CP10	19	D	4.95	14.2		34	21	13	56	Brown sandy very gravelly CLAY with medium cobble content
CP11	7	D	1.75	15.2		33	17	16	82	Brown red sandy CLAY
CP11	15	D	4.75	23.7		29	16	13	91	Brown sandy CLAY
CP11	20	B	6.00	14.8		34	20	14	84	Brown grey slightly sandy slightly gravelly CLAY
CP12	7	D	1.75	15.6		40	17	23	48	Brown slightly gravelly sandy CLAY

SYMBOLS: * denotes BS 1377

SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with Part 1,Part 3,Part 12 of BS EN ISO 17892

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Water Content %	Particle Density Mg/m^3	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425um	Description of Sample
CP12	17	D	5.75	17.1		35	16	19	56	Brown slightly gravelly sandy CLAY
CP13	9	D	2.40	28.0		27	18	9	93	Brown slightly gravelly silty CLAY
CP14	3	D	0.70	13.8		45	20	25	69	Brown gravelly sandy CLAY
CP14	9	D	2.75	15.2		35	16	19	85	Brown red slightly gravelly sandy CLAY
CP15	4	D	0.70	9.5		30	16	14	86	Brown gravelly sandy CLAY
CP16	5	D	1.00	10.4		42	19	23	88	Brown slightly gravelly sandy CLAY
CP16	11	D	3.40	11.4		33	14	19	67	Brown slightly gravelly slightly sandy CLAY
CP16	21	D	7.00	20.8		31	17	14	88	Brown slightly gravelly slightly sandy silty CLAY

SYMBOLS: * denotes BS 1377

SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with Part 1,Part 3,Part 12 of BS EN ISO 17892

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Water Content %	Particle Density Mg/m^3	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425um	Description of Sample
CP17	12	D	3.30	18.6		33	17	16	79	Grey brown slightly sandy gravelly CLAY
CP17	15	D	4.30	17.0		34	19	15	73	Brown gravelly sandy CLAY
CP18	10	D	3.00	26.9		42	21	21	96	Brown red slightly gravelly sandy CLAY
CP20	2	B	0.40	18.0		49	18	31	97	Brown slightly sandy gravelly CLAY
CP21	14	D	3.70	24.8		37	21	16	62	Brown slightly sandy CLAY
CP21	18	DSPT	5.00	11.4		32	17	15	83	Brown reddish grey sandy CLAY with mudstone
CP22	5	D	1.00	16.3		45	20	25	94	Brown slightly sandy slightly gravelly CLAY
CP22	16	D	4.50	17.4		37	18	19	76	Brown slightly sandy slightly gravelly CLAY

SYMBOLS: * denotes BS 1377

STRUCTURAL SOILS LTD

Contract: **EMG Phase 2**

Contract Ref: **765514**

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SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with Part 1,Part 3,Part 12 of BS EN ISO 17892

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Water Content %	Particle Density Mg/m^3	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425um	Description of Sample
CP24	8	D	1.70	16.5		36	18	18	87	Brown red grey slightly gravelly slightly sandy silty CLAY
CP24	10	D	2.00	23.3		35	19	16	87	Brown red gravelly slightly sandy CLAY
CP26	10	D	1.00	18.3		51	24	27	97	Brown slightly gravelly sandy CLAY
CP26	16	D	2.60	27.3		40	18	22	86	Brown slightly gravelly slightly sandy CLAY
CP26	26	D	6.00	11.7		32	20	12	76	Brown red slightly gravelly sandy CLAY
CP27	7	D	1.00	19.6		56	26	30	93	Brown slightly gravelly sandy CLAY
CP27	19	D	3.00	15.0		34	19	15	84	Brown red sandy CLAY
CP27	24	D	4.00	25.1		34	20	14	86	Brown red slightly gravelly sandy CLAY

SYMBOLS: * denotes BS 1377

SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with Part 1,Part 3,Part 12 of BS EN ISO 17892

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Water Content %	Particle Density Mg/m^3	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425um	Description of Sample
CP28	2	D	0.50	12.8		39	22	17	93	Brown red gravelly slightly clayey SAND
CP28	9	D	1.80	14.7		31	15	16	86	Brown red slightly gravelly sandy CLAY
CP28	15	D	3.60	16.8		38	20	18	82	Brown red slightly gravelly slightly sandy CLAY
TP01	7	D	0.60	11.9		40	17	23	76	Brown slightly sandy slightly gravelly CLAY
TP07	4	D	0.50	10.0		34	16	18	76	Brown slightly gravelly sandy CLAY
TP07	10	D	1.30	17.1	2.55	46	20	26	90	Brown slightly sandy slightly gravelly CLAY
TP08	11	D	2.40	23.9		67	24	43	90	Brown slightly gravelly CLAY
TP08	14	D	2.90	21.3		48	23	25	94	Brown sandy gravelly CLAY

SYMBOLS: * denotes BS 1377

STRUCTURAL SOILS LTD

Contract:

EMG Phase 2

Contract Ref:

765514

AGS

SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with Part 1,Part 3,Part 12 of BS EN ISO 17892

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Water Content %	Particle Density Mg/m^3	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425um	Description of Sample
TP09	4	D	0.60	17.8		51	18	33	90	Brown slightly gravelly slightly sandy silty CLAY
TP09	10	D	3.30	21.7	2.54	49	23	26	85	Brown slightly gravelly slightly sandy CLAY
TP10	10	D	1.40	12.4		44	20	24	86	Brown slightly gravelly slightly sandy silty CLAY
TP11	4	D	0.60	5.1		NP	NP	NP	86	Brown red slightly gravelly slightly silty SAND
TP12	10	D	2.00	17.3		40	20	20	88	Brown sandy gravelly CLAY
TP13	8	D	1.50	17.0		37	17	20	95	Brown/red slightly gravelly sandy CLAY
TP14	9	D	1.80	14.7		39	21	18	82	Red slightly gravelly sandy CLAY
TP14	2	D	3.50	18.9		35	22	13	86	Red slightly gravelly sandy CLAY

SYMBOLS: * denotes BS 1377

STRUCTURAL SOILS LTD

Contract: **EMG Phase 2**

Contract Ref: **765514**

AGS

SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with Part 1,Part 3,Part 12 of BS EN ISO 17892

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Water Content %	Particle Density Mg/m^3	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425um	Description of Sample
TP15	4	D	0.60	15.6		49	34	15	79	Brown slightly gravelly slightly sandy clayey SILT
TP16	4	D	0.40	11.9		40	20	20	86	Brown slightly sandy slightly gravelly CLAY
TP18	10	D	1.70	14.8		41	20	21	75	Brown slightly gravelly slightly sandy clayey SILT
TP20	4	D	0.50	7.9		20	11	9	86	Brown slightly gravelly clayey SAND
TP20	10	D	1.70	25.5		50	23	27	81	Brown red slightly gravelly slightly sandy CLAY
TP22	7	D	1.30	16.8		39	17	22	83	Brown slightly sandy slightly gravelly CLAY
TP23	10	D	3.00	12.1		34	21	13	64	Brown gravelly clayey SAND
TP24	4	D	0.30	10.0		45	22	23	92	Brown red gravelly slightly sandy CLAY

SYMBOLS: * denotes BS 1377

SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with Part 1,Part 3,Part 12 of BS EN ISO 17892

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Water Content %	Particle Density Mg/m^3	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425um	Description of Sample
TP28	4	D	0.50	18.2		44	22	22	100	Brown red slightly gravelly sandy CLAY
TP28	7	D	1.10	19.2	2.64	46	18	28	100	Brown red slightly gravelly slightly sandy CLAY
TP28	10	D	1.60	20.2		47	20	27	93	Red slightly gravelly slightly sandy CLAY
TP36	15	B		24*						Brown red slightly sandy slightly gravelly CLAY
TP36	17	D	2.75	17.1		37	21	16	69	Brown red slightly gravelly sandy CLAY

SYMBOLS: * denotes BS 1377

STRUCTURAL SOILS LTD

Contract: **EMG Phase 2**

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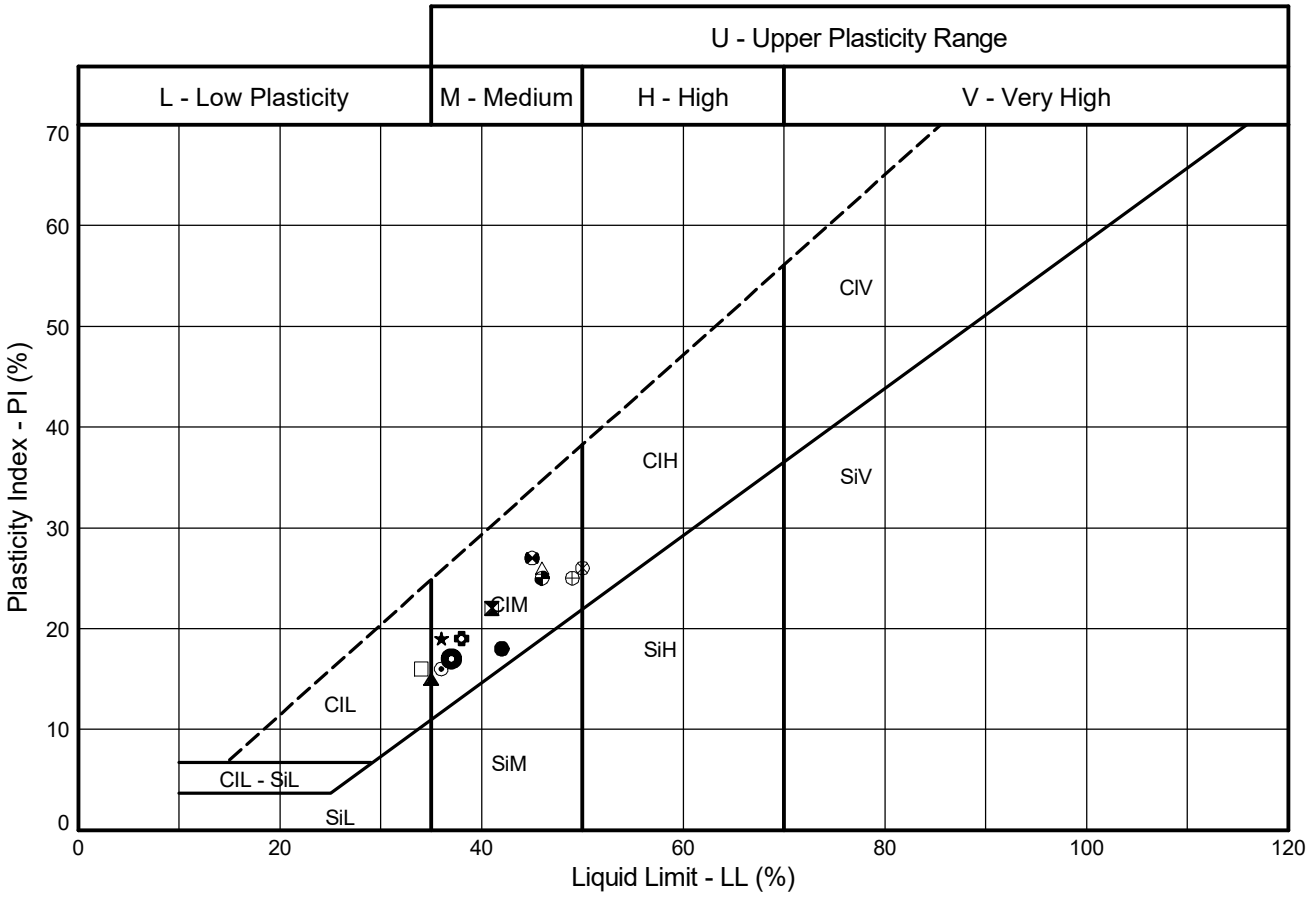
AGS

PI vs LL CHART

According to BS EN 14688-2:2018
Testing in accordance with BS EN ISO 17892-12:2018+A1:2021



Sample Identification				Test Method #	Preparation Method +	WC	LL	PL	PI	<425µm	Lab location	Notes
	Exploratory Position ID	Sample	Depth (m)			%	%	%	%	%		
●	BH01	7D	1.50	5.3/5.5/6.5	5.2.7	23.8	42	24	18	68	C	
⊠	BH02	3D	0.70	5.3/5.5/6.5	5.2.7	19.1	41	19	22	95	C	
▲	BH02	7D	1.55	5.3/5.5/6.5	5.2.7	13.2	35	20	15	98	C	
★	BH02	14DSPT	3.00	5.3/5.5/6.5	5.2.7	12.6	36	17	19	94	C	
⊙	BH03	1D	0.40	5.3/5.5/6.5	5.2.7	12.5	36	20	16	84	C	
✿	BH03	13D	2.70	5.3/5.5/6.5	5.2.7	18.2	38	19	19	84	C	
◉	BH03	21D	5.80	5.3/5.5/6.5	5.2.7	21.2	37	20	17	73	C	
△	BH04	5D	0.90	5.3/5.5/6.5	5.2.7	23.0	46	20	26	75	C	
⊗	BH04	8D	1.70	5.3/5.5/6.5	5.2.7	28.5	50	24	26	95	C	
⊕	BH04	12DSPT	3.00	5.3/5.5/6.5	5.2.7	27.3	49	24	25	92	C	
□	BH04	20DSPT	5.00	5.3.14/5.5/6.5	5.2.7	11.1	34	18	16	77	C	
⊠	BH05	3D	0.50	5.3/5.5/6.5	5.2.7	13.4	45	18	27	62	C	
◓	BH05	10D	1.70	5.3/5.5/6.5	5.2.7	25.8	46	21	25	73	C	

Tested in accordance with the following clauses of BS EN ISO 17892-12:2018+A1:2021
5.3 - Cone Penetrometer Method; 5.3.14 - One-Point Cone Penetrometer Method; 5.4 - Casagrande Method; 5.5 - Plastic Limit Method; 6.5 - Plasticity Index

Water Content (WC) tested in accordance with BS EN ISO 17892-1:2014

+ Tested in accordance with the following clauses of BS EN ISO 17892-12:2018+A1:2021
5.2.1 - Natural State and 5.2.7 - Wet Sieved

Key: * = Non-standard test, NP = Non plastic, I = Increasing WC, D = Decreasing WC.

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

STRUCTURAL SOILS
The Potteries
Pottery Street
Castleford
W. Yorkshire WF10 1NJ

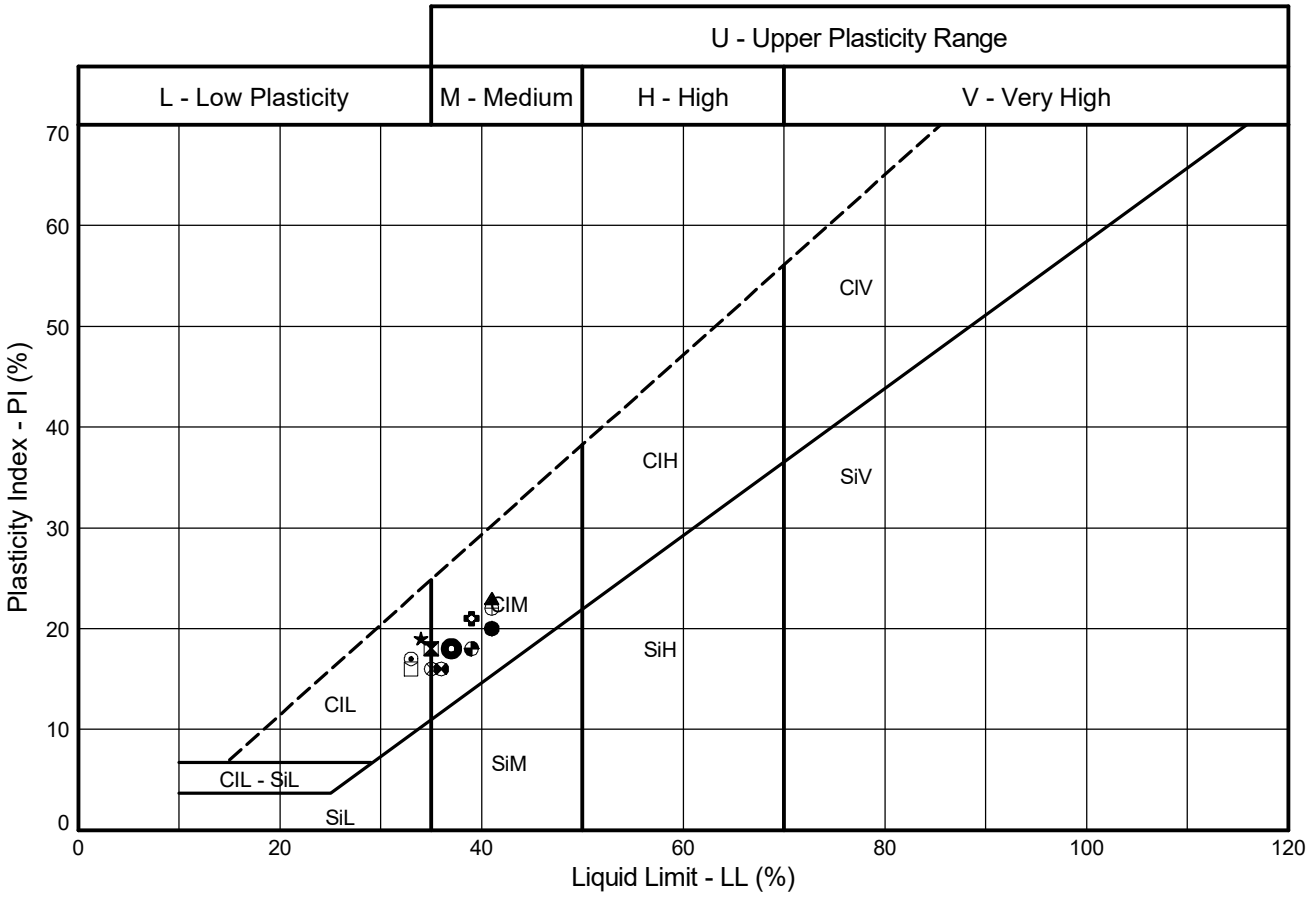
Compiled By		Date
	LORNA WHITWORTH	27/02/23

Contract	Contract Ref:
EMG Phase 2	765514

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Graph L - ALINE STANDARD - 17892 - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
Structural Soils Ltd, Branch Office - Castleford: The Potteries, Pottery Street, Castleford, West Yorkshire, WF10 1NJ. Tel: 01977-552255, Fax: 01977-552299, Web: www.soils.co.uk, Email: ask@soils.co.uk. | 27/02/23 - 12:01 | LW5 |

PI vs LL CHART

According to BS EN 14688-2:2018
Testing in accordance with BS EN ISO 17892-12:2018+A1:2021



Sample Identification				Test Method #	Preparation Method +	WC	LL	PL	PI	<425µm	Lab location	Notes
	Exploratory Position ID	Sample	Depth (m)			%	%	%	%	%		
●	BH05	21D	5.70	5.3/5.5/6.5	5.2.7	22.2	41	21	20	34	C	
⊠	BH05	35D	11.20	5.3/5.5/6.5	5.2.7	8.4	35	17	18	68	C	
▲	BH06	15D	3.70	5.3/5.5/6.5	5.2.7	22.0	41	18	23	87	C	
★	BH06	35D	10.95	5.3/5.5/6.5	5.2.7	14.8	34	15	19	76	C	
⊙	BH06	40D	13.30	5.3/5.5/6.5	5.2.7	14.0	33	16	17	82	C	
✿	BH07	17D	2.50	5.3/5.5/6.5	5.2.7	18.9	39	18	21	85	C	
◉	BH08	5D	1.00	5.3/5.5/6.5	5.2.7	19.2	37	19	18	85	C	
△	BH08	16D	3.50	5.3/5.5/6.5	5.2.7	13.6	41	18	23	82	C	
⊗	BH08	22D	5.50	5.3/5.5/6.5	5.2.7	20.7	35	19	16	81	C	
⊕	BH09	10D	0.80	5.3/5.5/6.5	5.2.7	14.6	41	19	22	95	C	
□	BH09	19D	2.50	5.3/5.5/6.5	5.2.7	14.9	33	17	16	86	C	
⊠	BH10	9D	2.70	5.3/5.5/6.5	5.2.7	16.3	36	20	16	48	C	
◓	BH10	10D	4.00	5.3/5.5/6.5	5.2.7	17.6	39	21	18	67	C	

Tested in accordance with the following clauses of BS EN ISO 17892-12:2018+A1:2021
5.3 - Cone Penetrometer Method; 5.3.14 - One-Point Cone Penetrometer Method; 5.4 - Casagrande Method; 5.5 - Plastic Limit Method; 6.5 - Plasticity Index

Water Content (WC) tested in accordance with BS EN ISO 17892-1:2014

+ Tested in accordance with the following clauses of BS EN ISO 17892-12:2018+A1:2021
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Key: * = Non-standard test, NP = Non plastic, I = Increasing WC, D = Decreasing WC.

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

STRUCTURAL SOILS
The Potteries
Pottery Street
Castleford
W. Yorkshire WF10 1NJ

Compiled By		Date
	LORNA WHITWORTH	27/02/23

Contract	Contract Ref:
EMG Phase 2	765514

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Structural Soils Ltd, Branch Office - Castleford: The Potteries, Pottery Street, Castleford, West Yorkshire, WF10 1NJ. Tel: 01977-552255, Fax: 01977-552299, Web: www.soils.co.uk, Email: ask@soils.co.uk. | 27/02/23 - 12:01 | LW5 |

PI vs LL CHART

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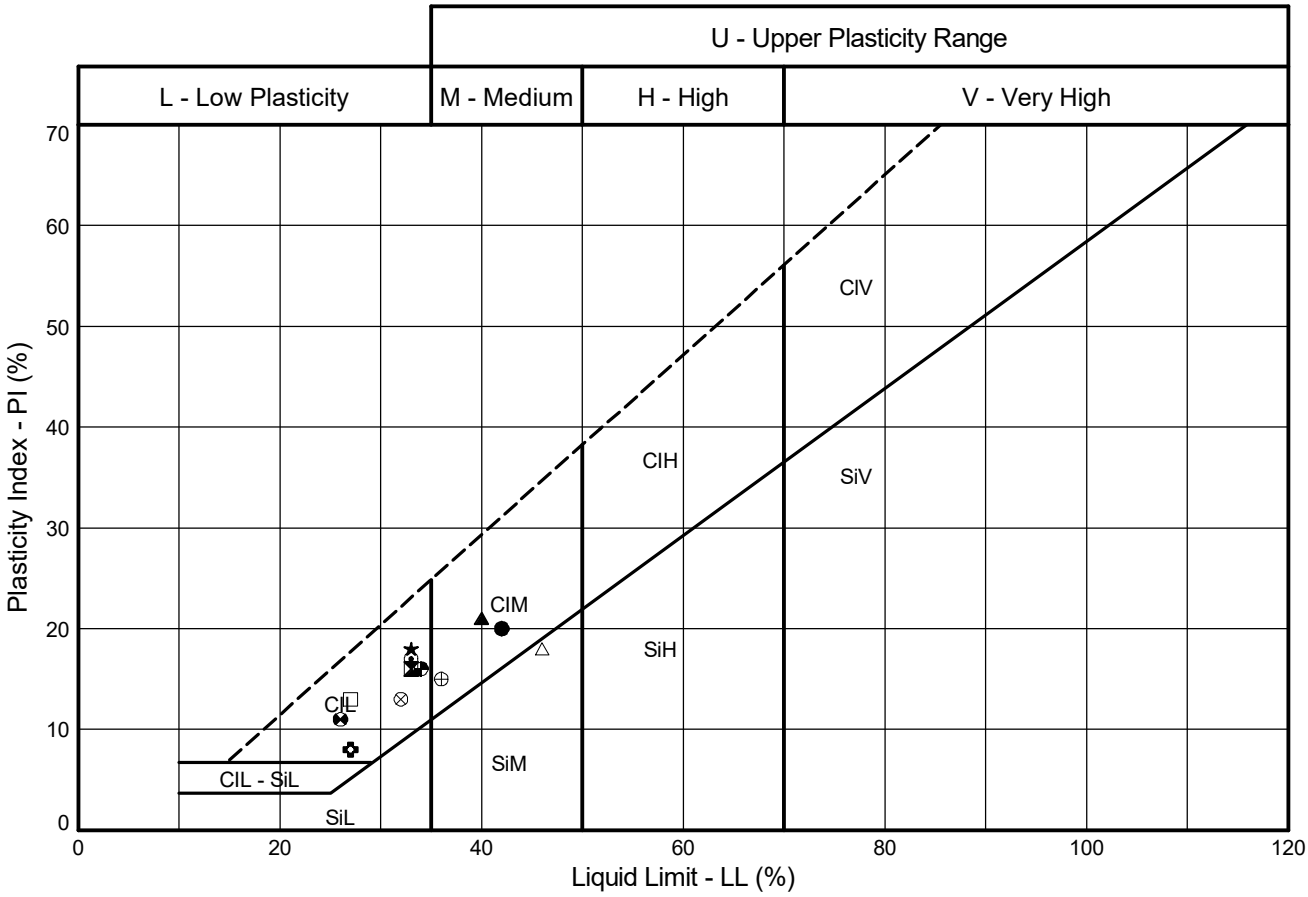

Sample Identification				Test Method #	Preparation Method +	WC	LL	PL	PI	<425µm	Lab location	Notes
	Exploratory Position ID	Sample	Depth (m)			%	%	%	%	%		
●	BH11	10D	2.00	5.3/5.5/6.5	5.2.7	20.4	42	22	20	93	C	
⊠	BH11	17D	4.00	5.3/5.5/6.5	5.2.7	20.4	33	17	16	88	C	
▲	BH12	13D	2.70	5.3/5.5/6.5	5.2.7	25.1	40	19	21	81	C	
★	BH12	23D	5.70	5.3/5.5/6.5	5.2.7	17.5	33	15	18	85	C	
⊙	BH12	33D	10.30	5.3/5.5/6.5	5.2.7	15.9	33	16	17	71	C	
✿	BH12	43D	14.70	5.3/5.5/6.5	5.2.7	22.5	27	19	8	93	C	
	BH13	3D	0.50	5.3/5.5/6.5	5.2.7	5.4	NP	NP	NP	63	C	
△	BH13	13D	2.70	5.3/5.5/6.5	5.2.7	20.6	46	28	18	55	C	
⊗	BH13	22D	5.45	5.3/5.5/6.5	5.2.1	20.1	32	19	13	76	C	
⊕	BH13	27D	7.30	5.3/5.5/6.5	5.2.7	18.6	36	21	15	84	C	
□	BH14	14D	3.45	5.3/5.5/6.5	5.2.7	14.8	27	14	13	78	C	
⊗	BH14	27D	7.30	5.3/5.5/6.5	5.2.7	14.1	26	15	11	58	C	
◒	BH14	39D	11.70	5.3/5.5/6.5	5.2.7	24.4	34	18	16	51	C	

Tested in accordance with the following clauses of BS EN ISO 17892-12:2018+A1:2021
5.3 - Cone Penetrometer Method; 5.3.14 - One-Point Cone Penetrometer Method; 5.4 - Casagrande Method; 5.5 - Plastic Limit Method; 6.5 - Plasticity Index

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The Potteries
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Compiled By		Date
	LORNA WHITWORTH	27/02/23

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PI vs LL CHART

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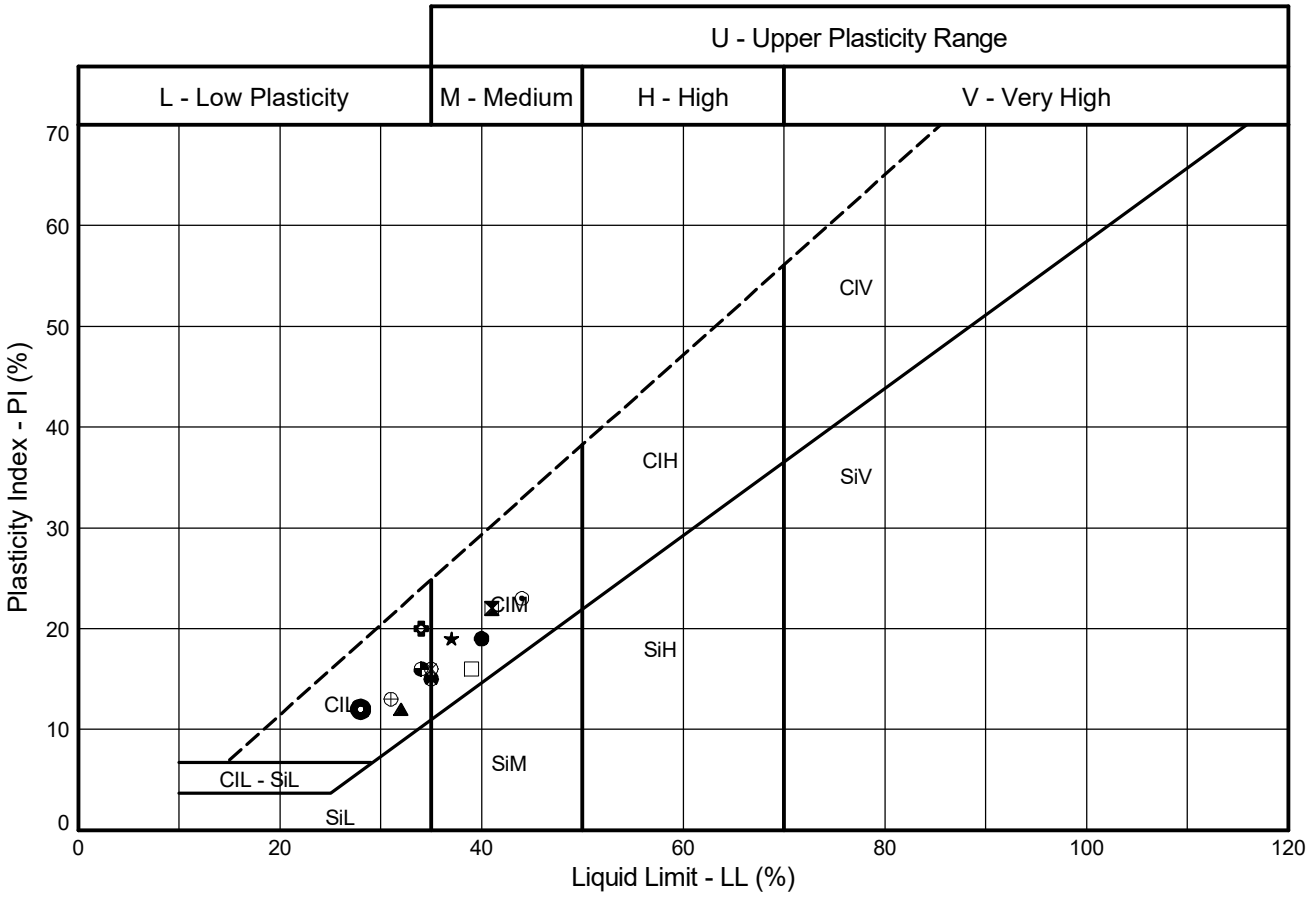

Sample Identification				Test Method #	Preparation Method +	WC	LL	PL	PI	<425µm	Lab location	Notes
	Exploratory Position ID	Sample	Depth (m)			%	%	%	%	%		
●	BH15	7D	1.50	5.3/5.5/6.5	5.2.7	14.6	40	21	19	87	C	
⊠	BH16	8D	1.70	5.3/5.5/6.5	5.2.7	22.0	41	19	22	81	C	
▲	BH16	16D	3.70	5.3/5.5/6.5	5.2.7	12.6	32	20	12	79	C	
★	BH16	20D	4.90	5.3/5.5/6.5	5.2.7	17.3	37	18	19	73	C	
⊙	BH17	3D	0.90	5.3/5.5/6.5	5.2.7	18.4	44	21	23	85	C	
✿	BH18	18D	2.50	5.3/5.5/6.5	5.2.7	15.8	34	14	20	81	C	
◉	BH18	27D	4.50	5.3/5.5/6.5	5.2.7	19.6	28	16	12	95	C	
△	BH18	37D	6.50	5.3/5.5/6.5	5.2.7	16.4	32	20	12	85	C	
⊗	BH18	40D	7.50	5.3/5.5/6.5	5.2.7	21.4	35	19	16	79	C	
⊕	BH18	45D	8.50	5.3/5.5/6.5	5.2.7	27.0	31	18	13	85	C	
□	BH19	6D	1.65	5.3/5.5/6.5	5.2.7	17.8	39	23	16	88	C	
⊠	BH19	21DSPT	5.00	5.3/5.5/6.5	5.2.7	17.1	35	20	15	77	C	
◓	BH20	24D	4.70	5.3/5.5/6.5	5.2.7	16.6	34	18	16	69	C	

Tested in accordance with the following clauses of BS EN ISO 17892-12:2018+A1:2021
5.3 - Cone Penetrometer Method; 5.3.14 - One-Point Cone Penetrometer Method; 5.4 - Casagrande Method; 5.5 - Plastic Limit Method; 6.5 - Plasticity Index

Water Content (WC) tested in accordance with BS EN ISO 17892-1:2014

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	LORNA WHITWORTH	27/02/23

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EMG Phase 2	**765514**

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PI vs LL CHART

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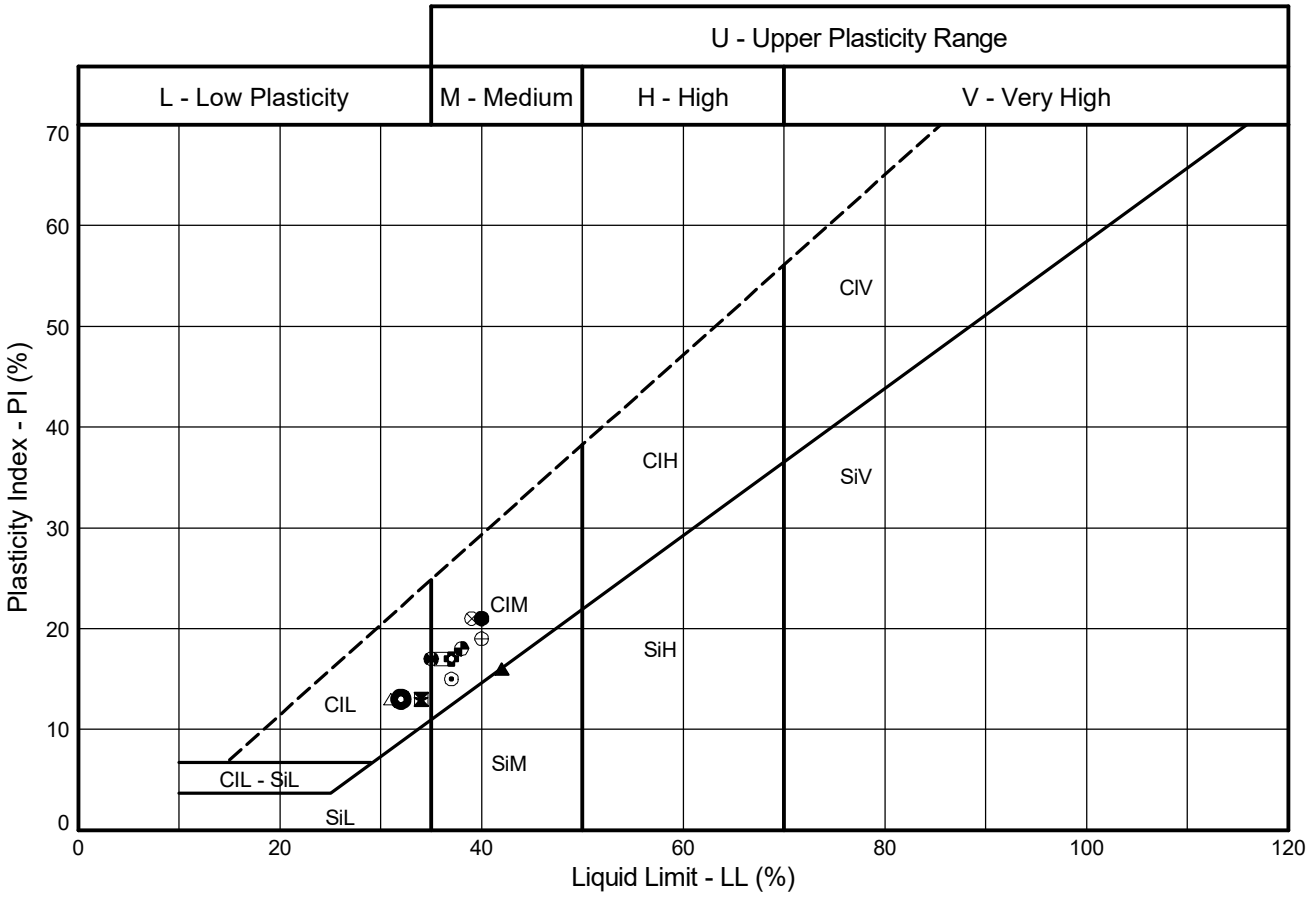

Sample Identification				Test Method #	Preparation Method +	WC	LL	PL	PI	<425µm	Lab location	Notes
	Exploratory Position ID	Sample	Depth (m)			%	%	%	%	%		
●	BH21	5D	0.80	5.3/5.5/6.5	5.2.7	17.8	40	19	21	83	C	
⊠	BH21	15DSPT	3.00	5.3/5.5/6.5	5.2.7	21.6	34	21	13	80	C	
▲	BH22	6D	1.65	5.3/5.5/6.5	5.2.7	16.4	42	26	16	69	C	
★	BH22	14B	3.00	5.3/5.5/6.5	5.2.7	23.3	34	21	13	78	C	
⊙	BH23	8D	1.70	5.3/5.5/6.5	5.2.7	14.6	37	22	15	73	C	
✿	BH23	26D	5.20	5.3/5.5/6.5	5.2.7	14.8	37	20	17	73	C	
◉	BH23	28D	8.40	5.3/5.5/6.5	5.2.7	11.2	32	19	13	63	C	
△	BH24	7D	0.40	5.3/5.5/6.5	5.2.7	10.0	31	18	13	88	C	
⊗	BH25	7D	0.40	5.3/5.5/6.5	5.2.7	13.8	39	18	21	87	C	
⊕	BH26	4D	0.40	5.3/5.5/6.5	5.2.7	19.3	40	21	19	95	C	
□	BH26	16D	3.50	5.3/5.5/6.5	5.2.7	16.3	36	19	17	78	C	
⊠	BH27	4D	2.00	5.3/5.5/6.5	5.2.7	14.6	35	18	17	74	C	
◓	CP01	12D	3.80	5.3/5.5/6.5	5.2.7	16.5	38	20	18	75	C	

Tested in accordance with the following clauses of BS EN ISO 17892-12:2018+A1:2021
5.3 - Cone Penetrometer Method; 5.3.14 - One-Point Cone Penetrometer Method; 5.4 - Casagrande Method; 5.5 - Plastic Limit Method; 6.5 - Plasticity Index

Water Content (WC) tested in accordance with BS EN ISO 17892-1:2014

+ Tested in accordance with the following clauses of BS EN ISO 17892-12:2018+A1:2021
5.2.1 - Natural State and 5.2.7 - Wet Sieved

Key: * = Non-standard test, NP = Non plastic, I = Increasing WC, D = Decreasing WC.

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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The Potteries
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Compiled By		Date
	LORNA WHITWORTH	27/02/23

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EMG Phase 2	765514

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Graph L - ALINE STANDARD - 17892 - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
Structural Soils Ltd, Branch Office - Castleford: The Potteries, Pottery Street, Castleford, West Yorkshire, WF10 1NJ. Tel: 01977-552299, Fax: 01977-552255, Web: www.soils.co.uk, Email: ask@soils.co.uk. | 27/02/23 - 12:02 | LW5 |

PI vs LL CHART

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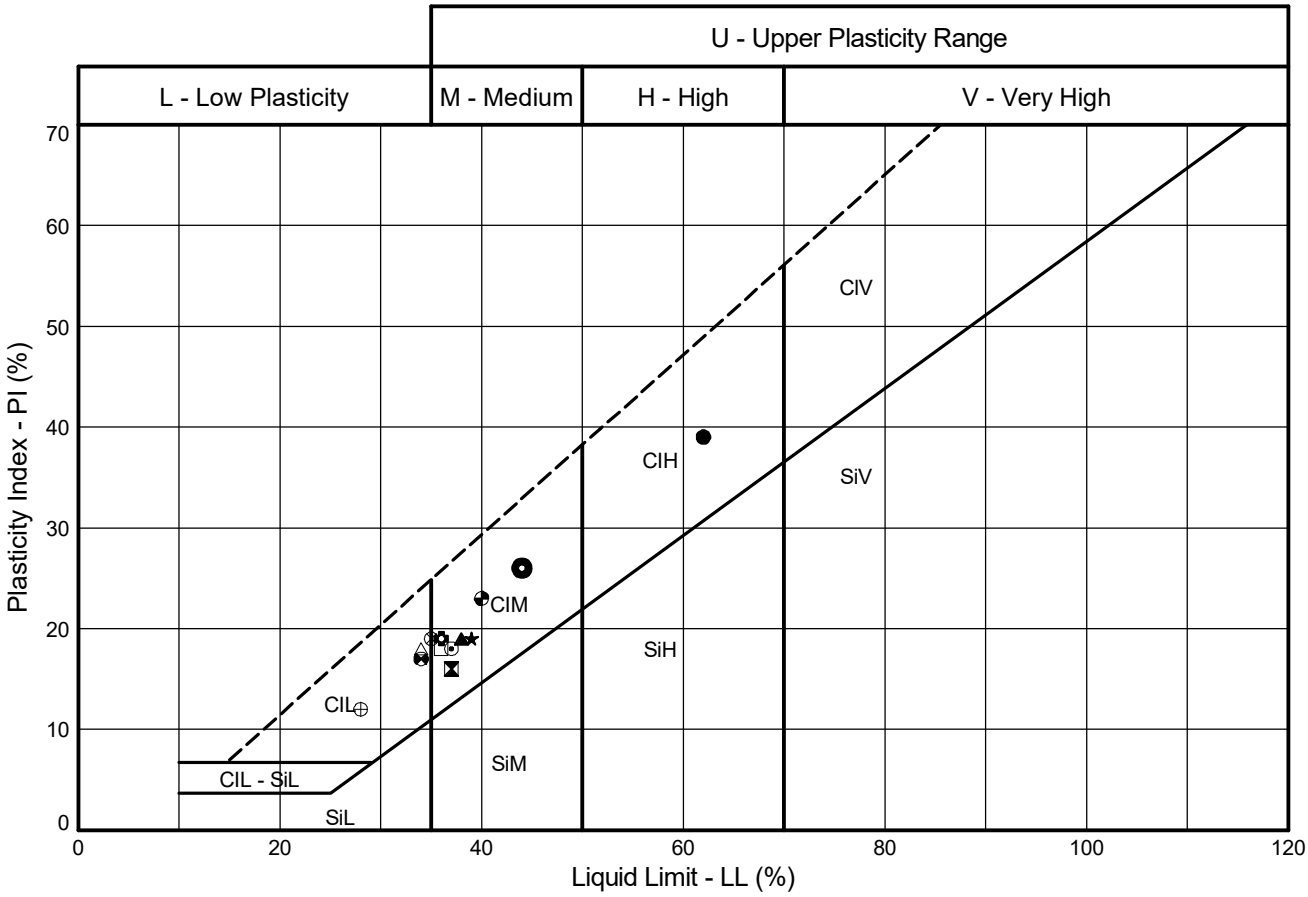


Sample Identification				Test Method #	Preparation Method +	WC	LL	PL	PI	<425µm	Lab location	Notes
	Exploratory Position ID	Sample	Depth (m)			%	%	%	%	%		
●	CP02	2D	0.50	5.3/5.5/6.5	5.2.7	20.2	62	23	39	91	C	
⊠	CP02	22D	6.80	5.3/5.5/6.5	5.2.7	25.5	37	21	16	98	C	
▲	CP03	13D	2.60	5.3/5.5/6.5	5.2.7	20.3	38	19	19	76	C	
★	CP03	19D	4.00	5.3/5.5/6.5	5.2.7	13.6	39	20	19	85	C	
⊙	CP03	26D	6.80	5.3/5.5/6.5	5.2.7	21.9	37	19	18	77	C	
✿	CP04	5D	1.00	5.3/5.5/6.5	5.2.7	13.3	36	17	19	73	C	
◉	CP04	17D	4.60	5.3/5.5/6.5	5.2.7	18.9	44	18	26	89	C	
△	CP04	42D	12.50	5.3/5.5/6.5	5.2.7	13.9	34	16	18	84	C	
⊗	CP04	48D	14.50	5.3/5.5/6.5	5.2.7	14.0	35	16	19	84	C	
⊕	CP05	4D	0.70	5.3/5.5/6.5	5.2.7	17.0	28	16	12	86	C	
□	CP05	7.1DSPT	2.00	5.3/5.5/6.5	5.2.7	16.3	36	18	18	84	C	
⊠	CP05	9D	2.75	5.3/5.5/6.5	5.2.7	19.8	34	17	17	73	C	
◓	CP05	18D	5.75	5.3/5.5/6.5	5.2.7	16.6	40	17	23	87	C	

Tested in accordance with the following clauses of BS EN ISO 17892-12:2018+A1:2021
5.3 - Cone Penetrometer Method; 5.3.14 - One-Point Cone Penetrometer Method; 5.4 - Casagrande Method; 5.5 - Plastic Limit Method; 6.5 - Plasticity Index

Water Content (WC) tested in accordance with BS EN ISO 17892-1:2014

+ Tested in accordance with the following clauses of BS EN ISO 17892-12:2018+A1:2021
5.2.1 - Natural State and 5.2.7 - Wet Sieved

Key: * = Non-standard test, NP = Non plastic, I = Increasing WC, D = Decreasing WC.

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

STRUCTURAL SOILS
The Potteries
Pottery Street
Castleford
W. Yorkshire WF10 1NJ

Compiled By		Date
	LORNA WHITWORTH	27/02/23

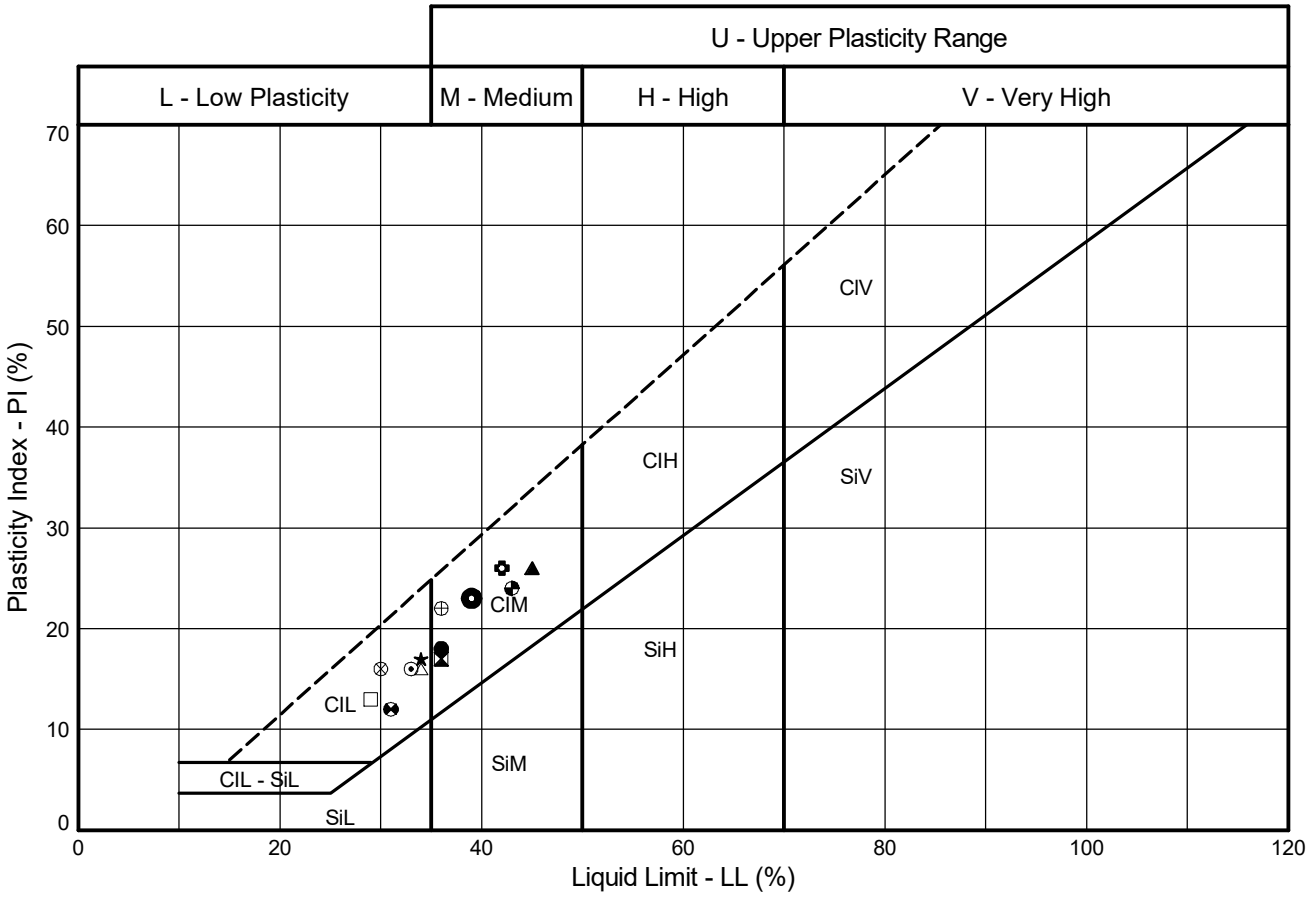
Contract	Contract Ref:
EMG Phase 2	**765514**

AGS

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Graph L - ALINE STANDARD - 17892 - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
Structural Soils Ltd, Branch Office - Castleford: The Potteries, Pottery Street, Castleford, West Yorkshire, WF10 1NJ. Tel: 01977-552255, Fax: 01977-552299, Web: www.soils.co.uk, Email: ask@soils.co.uk. | 27/02/23 - 12:02 | LW5 |

PI vs LL CHART

According to BS EN 14688-2:2018
Testing in accordance with BS EN ISO 17892-12:2018+A1:2021



Sample Identification				Test Method #	Preparation Method +	WC	LL	PL	PI	<425µm	Lab location	Notes
	Exploratory Position ID	Sample	Depth (m)			%	%	%	%	%		
●	CP06	11D	3.65	5.3/5.5/6.5	5.2.7	17.2	36	18	18	63	C	
⊠	CP06	19D	7.00	5.3/5.5/6.5	5.2.7	16.3	36	19	17	80	C	
▲	CP07	5D	1.30	5.3/5.5/6.5	5.2.7	18.6	45	19	26	91	C	
★	CP07	20D	6.45	5.3/5.5/6.5	5.2.7	15.5	34	17	17	83	C	
⊙	CP07	25D	8.70	5.3/5.5/6.5	5.2.7	16.4	33	17	16	84	C	
✿	CP08	13B	2.00	5.3/5.5/6.5	5.2.7	18.7	42	16	26	81	C	
◉	CP08	18DSPT	4.00	5.3/5.5/6.5	5.2.7	18.1	39	16	23	78	C	
△	CP08	22D	5.50	5.3/5.5/6.5	5.2.7	12.4	34	18	16	65	C	
⊗	CP08	40D	10.20	5.3.14/5.5/6.5	5.2.7	17.2	30	14	16	48	C	
⊕	CP09	4D	0.70	5.3/5.5/6.5	5.2.7	12.1	36	14	22	93	C	
□	CP09	15D	4.75	5.3/5.5/6.5	5.2.7	18.0	29	16	13	97	C	
⊠	CP09	21D	7.00	5.3/5.5/6.5	5.2.7	13.7	31	19	12	80	C	
◕	CP10	4D	0.50	5.3/5.5/6.5	5.2.7	12.0	43	19	24	86	C	

Tested in accordance with the following clauses of BS EN ISO 17892-12:2018+A1:2021
5.3 - Cone Penetrometer Method; 5.3.14 - One-Point Cone Penetrometer Method; 5.4 - Casagrande Method; 5.5 - Plastic Limit Method; 6.5 - Plasticity Index

Water Content (WC) tested in accordance with BS EN ISO 17892-1:2014

+ Tested in accordance with the following clauses of BS EN ISO 17892-12:2018+A1:2021
5.2.1 - Natural State and 5.2.7 - Wet Sieved

Key: * = Non-standard test, NP = Non plastic, I = Increasing WC, D = Decreasing WC.

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

STRUCTURAL SOILS
The Potteries
Pottery Street
Castleford
W. Yorkshire WF10 1NJ

Compiled By		Date
	LORNA WHITWORTH	27/02/23

Contract	Contract Ref:
EMG Phase 2	765514

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Graph L - ALINE STANDARD - 17892 - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
Structural Soils Ltd, Branch Office - Castleford: The Potteries, Pottery Street, Castleford, West Yorkshire, WF10 1NJ. Tel: 01977-552255, Fax: 01977-552299, Web: www.soils.co.uk, Email: ask@soils.co.uk. | 27/02/23 - 12:02 | LW5 |

PI vs LL CHART

According to BS EN 14688-2:2018
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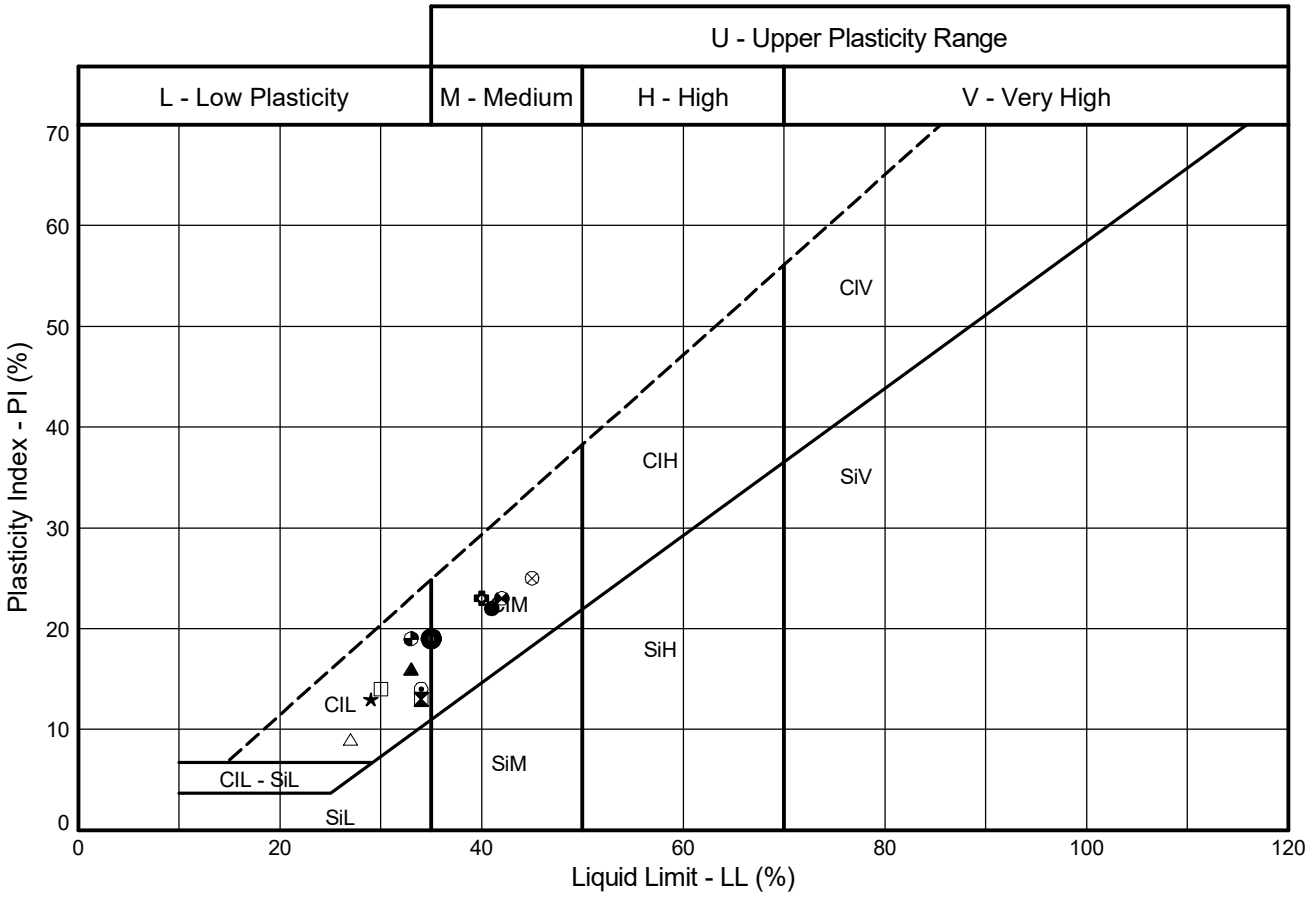

Sample Identification				Test Method #	Preparation Method +	WC	LL	PL	PI	<425µm	Lab location	Notes
	Exploratory Position ID	Sample	Depth (m)			%	%	%	%	%		
●	CP10	11D	2.95	5.3/5.5/6.5	5.2.7	19.9	41	19	22	90	C	
⊠	CP10	19D	4.95	5.3/5.5/6.5	5.2.7	14.2	34	21	13	56	C	
▲	CP11	7D	1.75	5.3/5.5/6.5	5.2.7	15.2	33	17	16	82	C	
★	CP11	15D	4.75	5.3/5.5/6.5	5.2.7	23.7	29	16	13	91	C	
⊙	CP11	20B	6.00	5.3/5.5/6.5	5.2.7	14.8	34	20	14	84	C	
✿	CP12	7D	1.75	5.3/5.5/6.5	5.2.7	15.6	40	17	23	48	C	
◉	CP12	17D	5.75	5.3/5.5/6.5	5.2.7	17.1	35	16	19	56	C	
△	CP13	9D	2.40	5.3/5.5/6.5	5.2.7	28.0	27	18	9	93	C	
⊗	CP14	3D	0.70	5.3/5.5/6.5	5.2.7	13.8	45	20	25	69	C	
⊕	CP14	9D	2.75	5.3/5.5/6.5	5.2.7	15.2	35	16	19	85	C	
□	CP15	4D	0.70	5.3/5.5/6.5	5.2.7	9.5	30	16	14	86	C	
⊠	CP16	5D	1.00	5.3/5.5/6.5	5.2.7	10.4	42	19	23	88	C	
◕	CP16	11D	3.40	5.3.14/5.5/6.5	5.2.7	11.4	33	14	19	67	C	

Tested in accordance with the following clauses of BS EN ISO 17892-12:2018+A1:2021
5.3 - Cone Penetrometer Method; 5.3.14 - One-Point Cone Penetrometer Method; 5.4 - Casagrande Method; 5.5 - Plastic Limit Method; 6.5 - Plasticity Index

Water Content (WC) tested in accordance with BS EN ISO 17892-1:2014

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5.2.1 - Natural State and 5.2.7 - Wet Sieved

Key: * = Non-standard test, NP = Non plastic, I = Increasing WC, D = Decreasing WC.

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

STRUCTURAL SOILS
The Potteries
Pottery Street
Castleford
W. Yorkshire WF10 1NJ

Compiled By		Date
	LORNA WHITWORTH	27/02/23

Contract	Contract Ref:
EMG Phase 2	765514

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Structural Soils Ltd, Branch Office - Castleford: The Potteries, Pottery Street, Castleford, West Yorkshire, WF10 1NJ. Tel: 01977-552255, Fax: 01977-552299, Web: www.soils.co.uk, Email: ask@soils.co.uk. | 27/02/23 - 12:02 | LW5 |

PI vs LL CHART

According to BS EN 14688-2:2018
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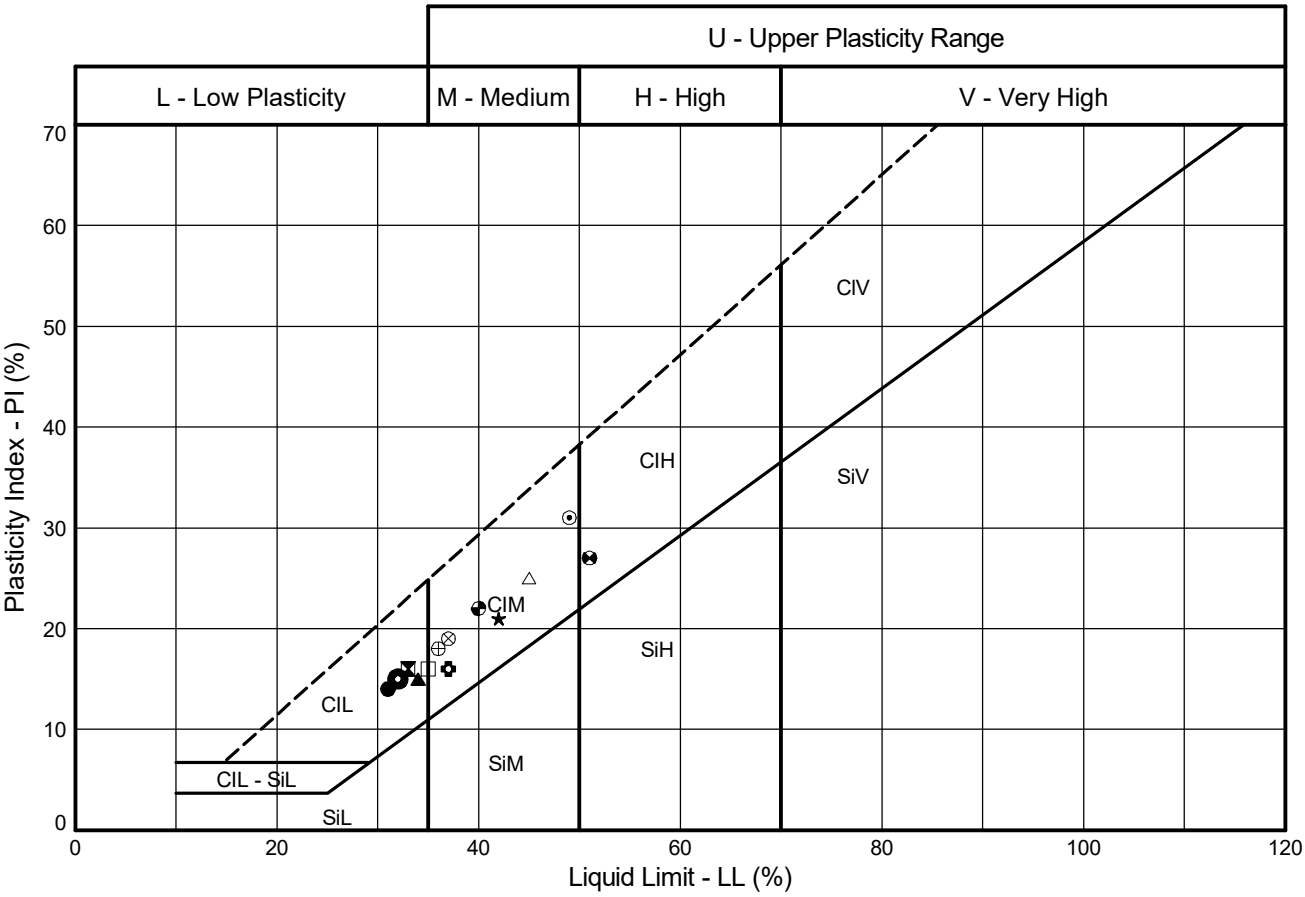

Sample Identification				Test Method #	Preparation Method +	WC	LL	PL	PI	<425µm	Lab location	Notes
	Exploratory Position ID	Sample	Depth (m)			%	%	%	%	%		
●	CP16	21D	7.00	5.3/5.5/6.5	5.2.7	20.8	31	17	14	88	C	
⊠	CP17	12D	3.30	5.3/5.5/6.5	5.2.7	18.6	33	17	16	79	C	
▲	CP17	15D	4.30	5.3/5.5/6.5	5.2.7	17.0	34	19	15	73	C	
★	CP18	10D	3.00	5.3/5.5/6.5	5.2.7	26.9	42	21	21	96	C	
⊙	CP20	2B	0.40	5.3/5.5/6.5	5.2.7	18.0	49	18	31	97	C	
✿	CP21	14D	3.70	5.3/5.5/6.5	5.2.7	24.8	37	21	16	62	C	
◉	CP21	18DSPT	5.00	5.3.14/5.5/6.5	5.2.7	11.4	32	17	15	83	C	
△	CP22	5D	1.00	5.3/5.5/6.5	5.2.7	16.3	45	20	25	94	C	
⊗	CP22	16D	4.50	5.3/5.5/6.5	5.2.7	17.4	37	18	19	76	C	
⊕	CP24	8D	1.70	5.3/5.5/6.5	5.2.7	16.5	36	18	18	87	C	
□	CP24	10D	2.00	5.3/5.5/6.5	5.2.7	23.3	35	19	16	87	C	
⊠	CP26	10D	1.00	5.3/5.5/6.5	5.2.7	18.3	51	24	27	97	C	
◓	CP26	16D	2.60	5.3/5.5/6.5	5.2.7	27.3	40	18	22	86	C	

Tested in accordance with the following clauses of BS EN ISO 17892-12:2018+A1:2021
5.3 - Cone Penetrometer Method; 5.3.14 - One-Point Cone Penetrometer Method; 5.4 - Casagrande Method; 5.5 - Plastic Limit Method; 6.5 - Plasticity Index

Water Content (WC) tested in accordance with BS EN ISO 17892-1:2014

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Key: * = Non-standard test, NP = Non plastic, I = Increasing WC, D = Decreasing WC.

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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The Potteries
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W. Yorkshire WF10 1NJ

Compiled By		Date
	LORNA WHITWORTH	27/02/23

Contract	Contract Ref:
EMG Phase 2	765514

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Structural Soils Ltd, Branch Office - Castleford: The Potteries, Pottery Street, Castleford, West Yorkshire, WF10 1NJ. Tel: 01977-552255, Fax: 01977-552299, Web: www.soils.co.uk, Email: ask@soils.co.uk. | 27/02/23 - 12:02 | LW5 |

PI vs LL CHART

According to BS EN 14688-2:2018
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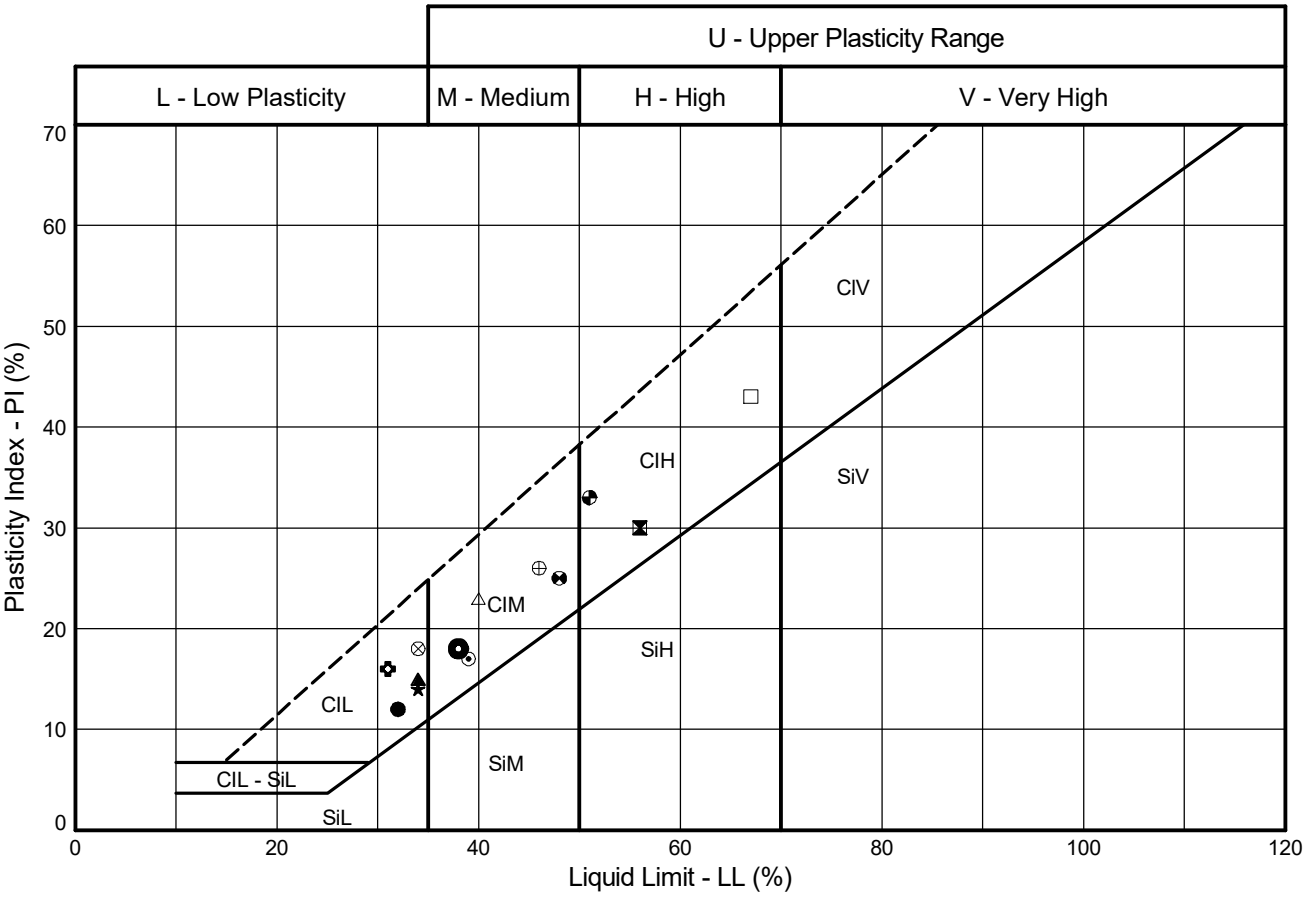

Sample Identification				Test Method #	Preparation Method +	WC	LL	PL	PI	<425µm	Lab location	Notes
	Exploratory Position ID	Sample	Depth (m)			%	%	%	%	%		
●	CP26	26D	6.00	5.3/5.5/6.5	5.2.7	11.7	32	20	12	76	C	
⊠	CP27	7D	1.00	5.3/5.5/6.5	5.2.7	19.6	56	26	30	93	C	
▲	CP27	19D	3.00	5.3/5.5/6.5	5.2.7	15.0	34	19	15	84	C	
★	CP27	24D	4.00	5.3/5.5/6.5	5.2.7	25.1	34	20	14	86	C	
⊙	CP28	2D	0.50	5.3/5.5/6.5	5.2.7	12.8	39	22	17	93	C	
✿	CP28	9D	1.80	5.3/5.5/6.5	5.2.7	14.7	31	15	16	86	C	
◉	CP28	15D	3.60	5.3/5.5/6.5	5.2.7	16.8	38	20	18	82	C	
△	TP01	7D	0.60	5.3/5.5/6.5	5.2.7	11.9	40	17	23	76	C	
⊗	TP07	4D	0.50	5.3/5.5/6.5	5.2.7	10.0	34	16	18	76	C	
⊕	TP07	10D	1.30	5.3/5.5/6.5	5.2.7	17.1	46	20	26	90	C	
□	TP08	11D	2.40	5.3/5.5/6.5	5.2.7	23.9	67	24	43	90	C	
⊠	TP08	14D	2.90	5.3/5.5/6.5	5.2.7	21.3	48	23	25	94	C	
◓	TP09	4D	0.60	5.3/5.5/6.5	5.2.7	17.8	51	18	33	90	C	

Tested in accordance with the following clauses of BS EN ISO 17892-12:2018+A1:2021
5.3 - Cone Penetrometer Method; 5.3.14 - One-Point Cone Penetrometer Method; 5.4 - Casagrande Method; 5.5 - Plastic Limit Method; 6.5 - Plasticity Index

Water Content (WC) tested in accordance with BS EN ISO 17892-1:2014

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5.2.1 - Natural State and 5.2.7 - Wet Sieved

Key: * = Non-standard test, NP = Non plastic, I = Increasing WC, D = Decreasing WC.

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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The Potteries
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Contract	Contract Ref:
EMG Phase 2	765514

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PI vs LL CHART

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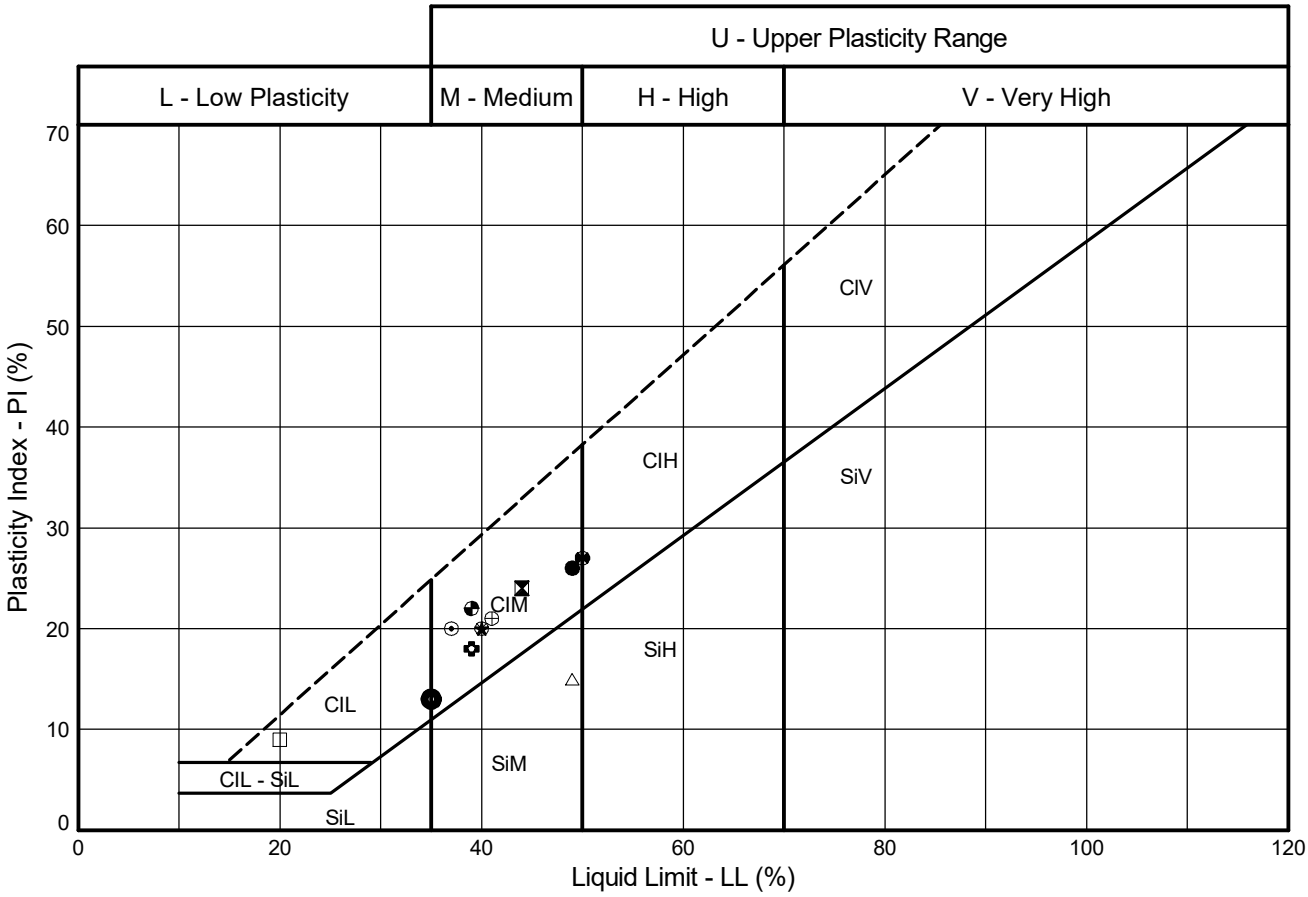

Sample Identification				Test Method #	Preparation Method +	WC	LL	PL	PI	<425µm	Lab location	Notes
	Exploratory Position ID	Sample	Depth (m)			%	%	%	%	%		
●	TP09	10D	3.30	5.3/5.5/6.5	5.2.7	21.7	49	23	26	85	C	
⊠	TP10	10D	1.40	5.3/5.5/6.5	5.2.7	12.4	44	20	24	86	C	
	TP11	4D	0.60	5.3/5.5/6.5	5.2.7	5.1	NP	NP	NP	86	C	
★	TP12	10D	2.00	5.3/5.5/6.5	5.2.7	17.3	40	20	20	88	C	
⊙	TP13	8D	1.50	5.3/5.5/6.5	5.2.7	17.0	37	17	20	95	C	
✿	TP14	9D	1.80	5.3/5.5/6.5	5.2.7	14.7	39	21	18	82	C	
◉	TP14	2D	3.50	5.3/5.5/6.5	5.2.7	18.9	35	22	13	86	C	
△	TP15	4D	0.60	5.3/5.5/6.5	5.2.7	15.6	49	34	15	79	C	
⊗	TP16	4D	0.40	5.3/5.5/6.5	5.2.7	11.9	40	20	20	86	C	
⊕	TP18	10D	1.70	5.3/5.5/6.5	5.2.7	14.8	41	20	21	75	C	
□	TP20	4D	0.50	5.3/5.5/6.5	5.2.7	7.9	20	11	9	86	C	
⊠	TP20	10D	1.70	5.3/5.5/6.5	5.2.7	25.5	50	23	27	81	C	
◒	TP22	7D	1.30	5.3/5.5/6.5	5.2.7	16.8	39	17	22	83	C	

Tested in accordance with the following clauses of BS EN ISO 17892-12:2018+A1:2021
5.3 - Cone Penetrometer Method; 5.3.14 - One-Point Cone Penetrometer Method; 5.4 - Casagrande Method; 5.5 - Plastic Limit Method; 6.5 - Plasticity Index

Water Content (WC) tested in accordance with BS EN ISO 17892-1:2014

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5.2.1 - Natural State and 5.2.7 - Wet Sieved

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PI vs LL CHART

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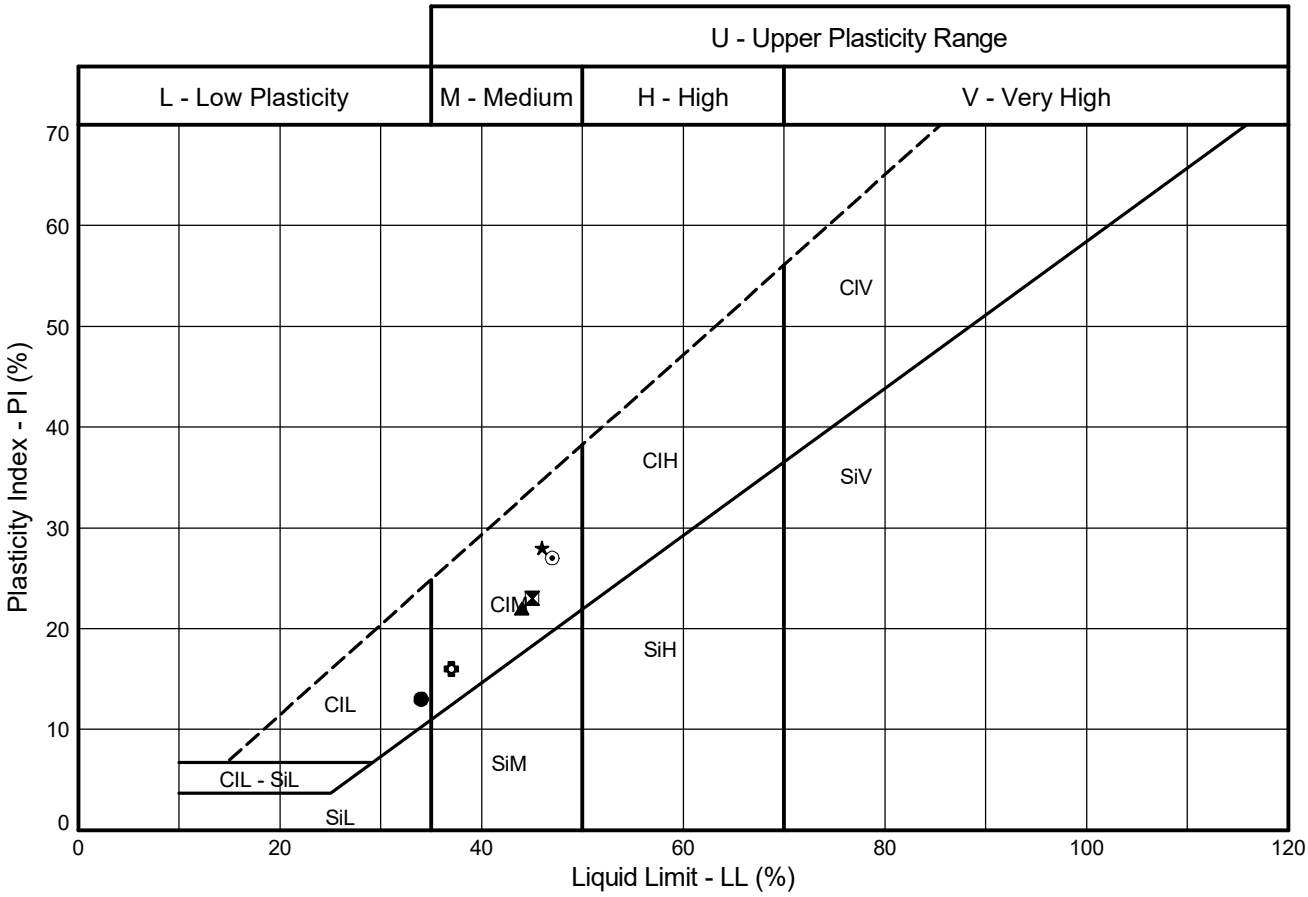

Sample Identification				Test Method #	Preparation Method +	WC	LL	PL	PI	<425µm	Lab location	Notes
	Exploratory Position ID	Sample	Depth (m)			%	%	%	%	%		
●	TP23	10D	3.00	5.3/5.5/6.5	5.2.7	12.1	34	21	13	64	C	
⊠	TP24	4D	0.30	5.3/5.5/6.5	5.2.7	10.0	45	22	23	92	C	
▲	TP28	4D	0.50	5.3/5.5/6.5	5.2.7	18.2	44	22	22	100	C	
★	TP28	7D	1.10	5.3/5.5/6.5	5.2.7	19.2	46	18	28	100	C	
⊙	TP28	10D	1.60	5.3/5.5/6.5	5.2.7	20.2	47	20	27	93	C	
✿	TP36	17D	2.75	5.3/5.5/6.5	5.2.7	17.1	37	21	16	69	C	

Tested in accordance with the following clauses of BS EN ISO 17892-12:2018+A1:2021
5.3 - Cone Penetrometer Method; 5.3.14 - One-Point Cone Penetrometer Method; 5.4 - Casagrande Method; 5.5 - Plastic Limit Method; 6.5 - Plasticity Index

Water Content (WC) tested in accordance with BS EN ISO 17892-1:2014

+ Tested in accordance with the following clauses of BS EN ISO 17892-12:2018+A1:2021
5.2.1 - Natural State and 5.2.7 - Wet Sieved

Key: * = Non-standard test, NP = Non plastic, I = Increasing WC, D = Decreasing WC.

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

STRUCTURAL SOILS
The Potteries
Pottery Street
Castleford
W. Yorkshire WF10 1NJ

Compiled By		Date
	LORNA WHITWORTH	27/02/23

Contract	Contract Ref:
EMG Phase 2	765514

AGS

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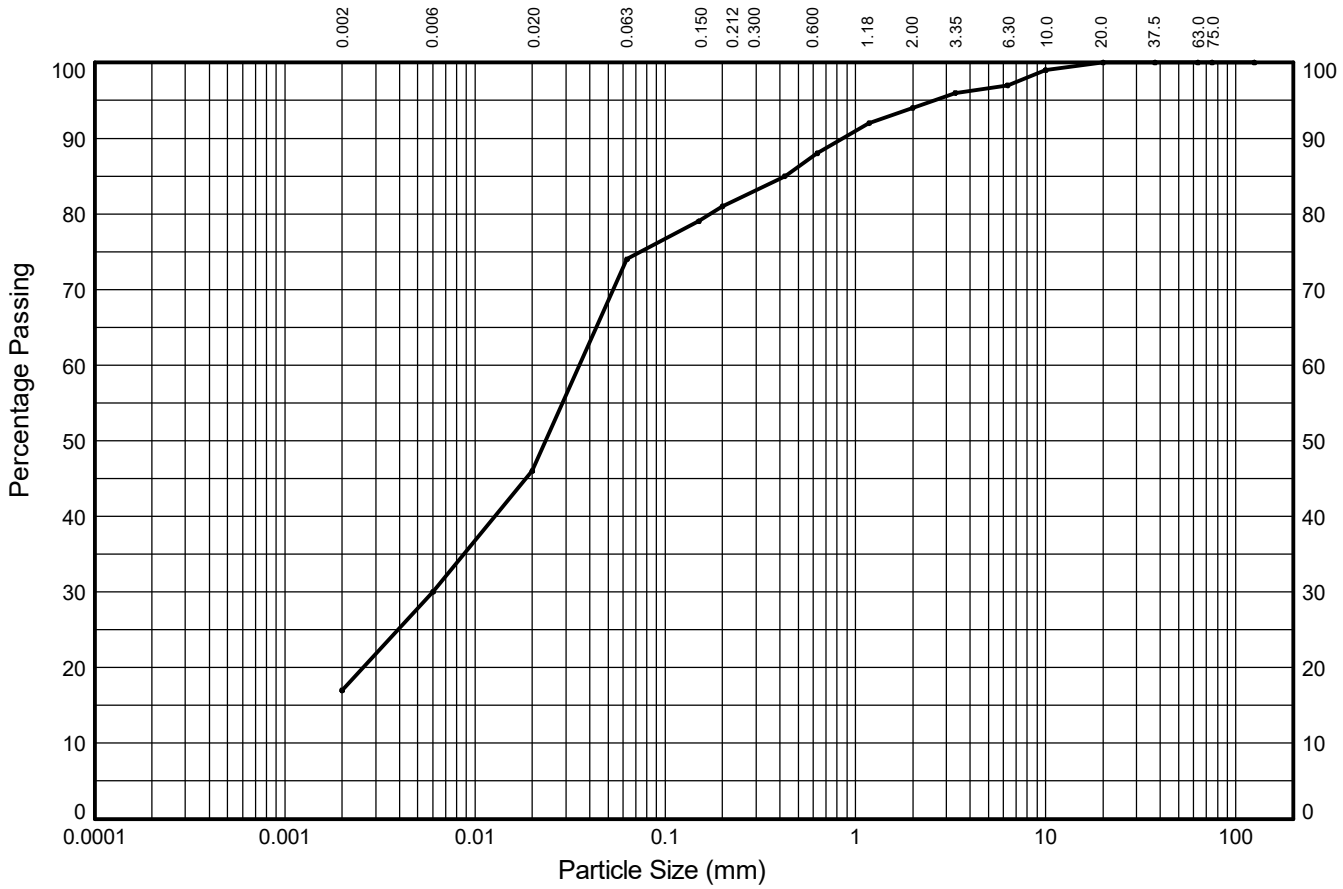
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Borehole: **BH04** Sample Ref: **10** Sample Type: **D** Depth (m): **2.70**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	13%	16%	28%	7%	7%	6%	3%	3%	0%	
	SILT			SAND			GRAVEL			
17%	57%			20%			6%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**100**
10.0	**99**
6.30	**97**
3.35	**96**
2.00	**94**
1.18	**92**
0.630	**88**
0.425	**85**
0.200	**81**
0.150	**79**
0.063	**74**

Particle Diameter (mm)	Percent Passing (%)
0.02	**46**
0.006	**30**
0.002	**17**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**0.006**
D_{50} (mm)	**0.024**
D_{60} (mm)	**0.035**
D_{85} (mm)	**0.425**
D_{90} (mm)	**0.862**
C_U	**NA**
C_C	**NA**

Soil Description:

Red brown slightly gravelly slightly sandy clayey SILT

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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Compiled By	Date
LORNA WHITWORTH	27/02/23

Contract	Contract Ref:
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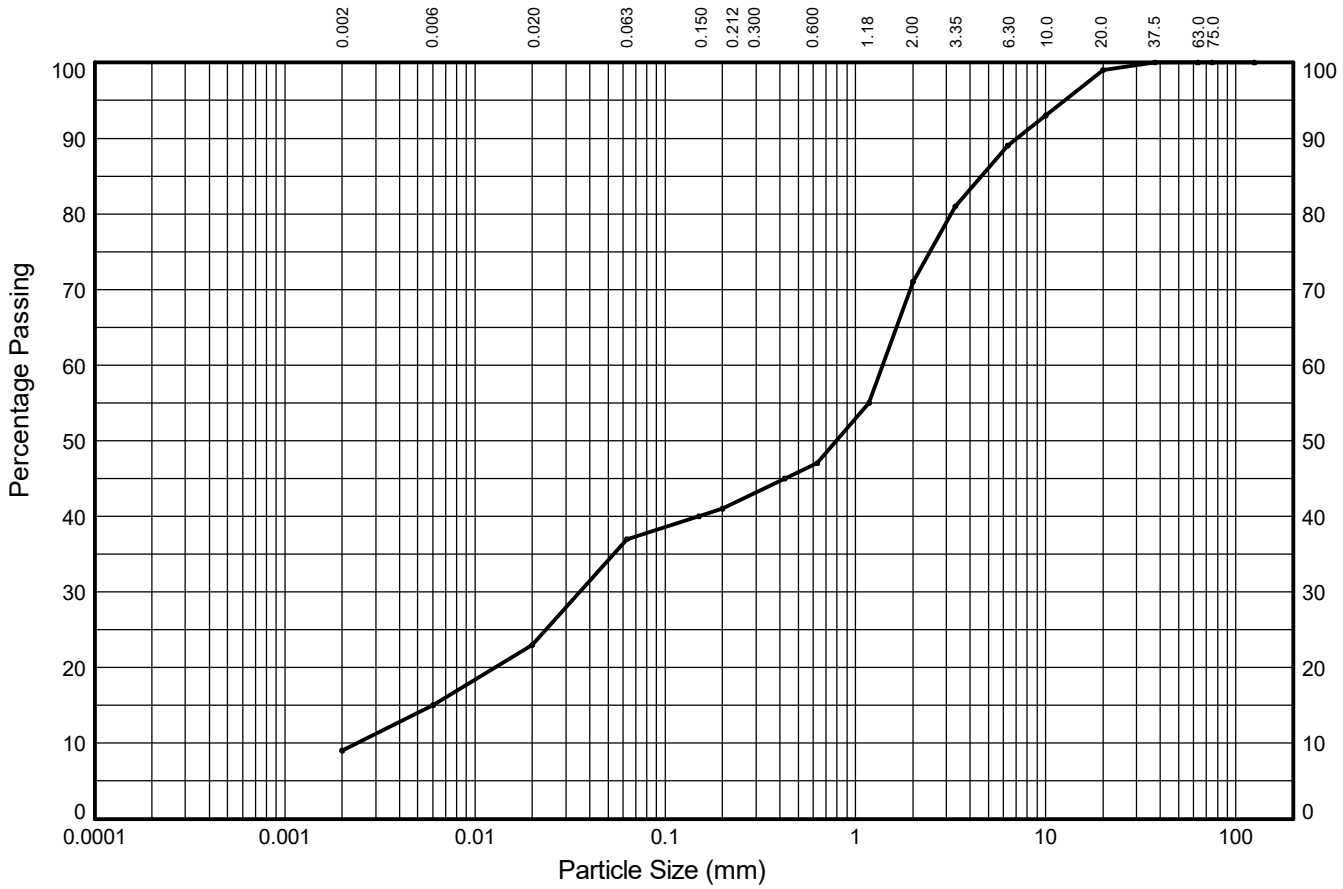
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Borehole: **BH05** Sample Ref: **20** Sample Type: **B** Depth (m): **5.00**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	6%	8%	14%	4%	6%	24%	18%	10%	1%	
	SILT			SAND			GRAVEL			
9%	28%			34%			29%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**99**
10.0	**93**
6.30	**89**
3.35	**81**
2.00	**71**
1.18	**55**
0.630	**47**
0.425	**45**
0.200	**41**
0.150	**40**
0.063	**37**

Particle Diameter (mm)	Percent Passing (%)
0.02	**23**
0.006	**15**
0.002	**9**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**0.002**
D_{15} (mm)	**0.006**
D_{30} (mm)	**0.035**
D_{50} (mm)	**0.797**
D_{60} (mm)	**1.392**
D_{85} (mm)	**4.594**
D_{90} (mm)	**7.071**
C_U	**579**
C_C	**0.38**

Soil Description:

Brown slightly gravelly slightly sandy clayey SILT

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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Compiled By	Date
LORNA WHITWORTH	27/02/23

Contract	Contract Ref:
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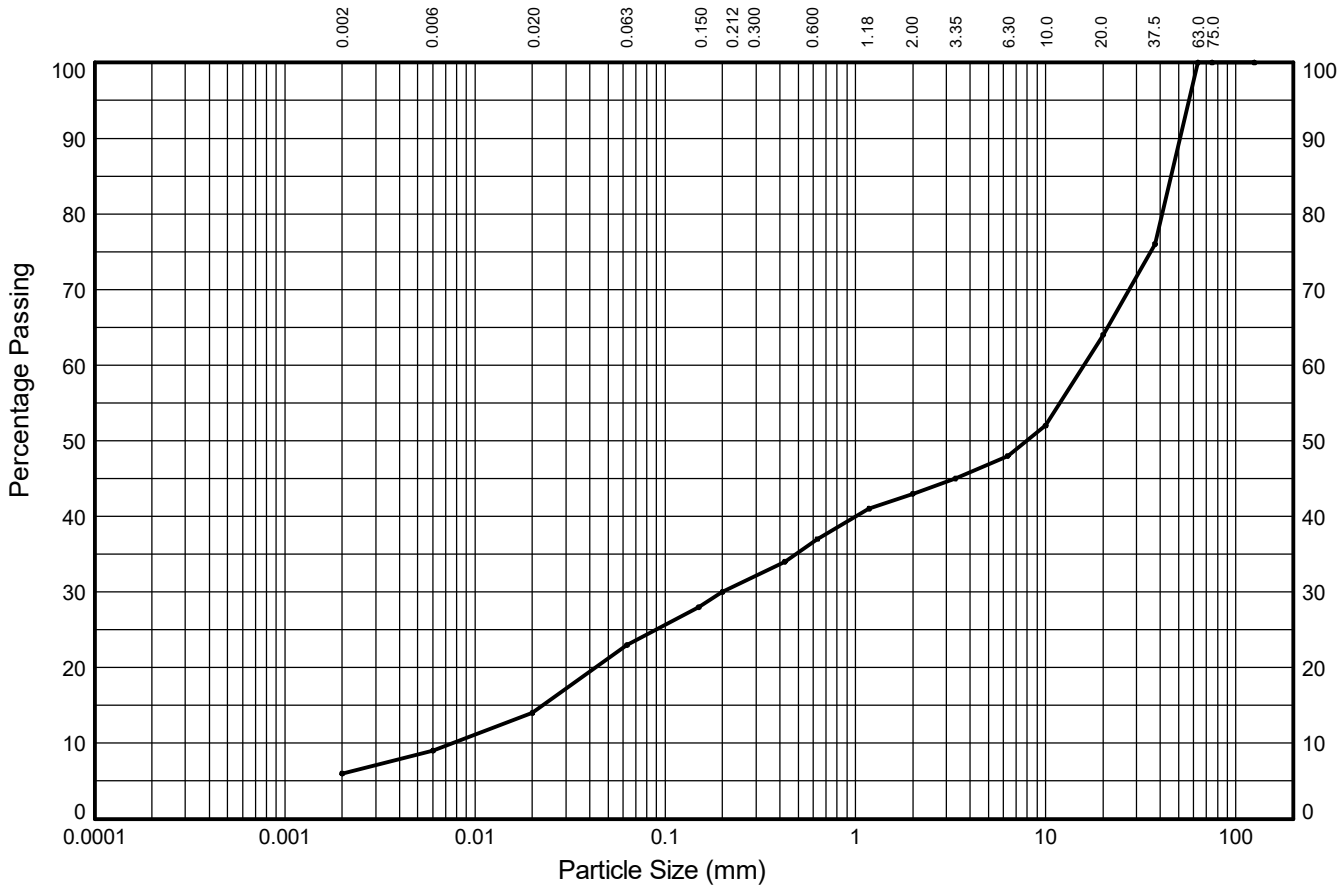
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

NON-STANDARD TEST

Borehole: **BH05** Sample Ref: **28** Sample Type: **B** Depth (m): **7.50**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	3%	5%	9%	7%	7%	6%	5%	16%	36%	
	SILT			SAND			GRAVEL			
6%	17%			20%			57%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**76**
20.0	**64**
10.0	**52**
6.30	**48**
3.35	**45**
2.00	**43**
1.18	**41**
0.630	**37**
0.425	**34**
0.200	**30**
0.150	**28**
0.063	**23**

Particle Diameter (mm)	Percent Passing (%)
0.02	**14**
0.006	**9**
0.002	**6**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**0.008**
D_{15} (mm)	**0.023**
D_{30} (mm)	**0.200**
D_{50} (mm)	**7.937**
D_{60} (mm)	**15.874**
D_{85} (mm)	**45.554**
D_{90} (mm)	**50.753**
C_U	**2080**
C_C	**0.33**

Soil Description:

Brown sandy clayey silty GRAVEL

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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Pottery Street
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Compiled By	Date
LAURA SCHRAMM	27/02/23

Contract	Contract Ref:
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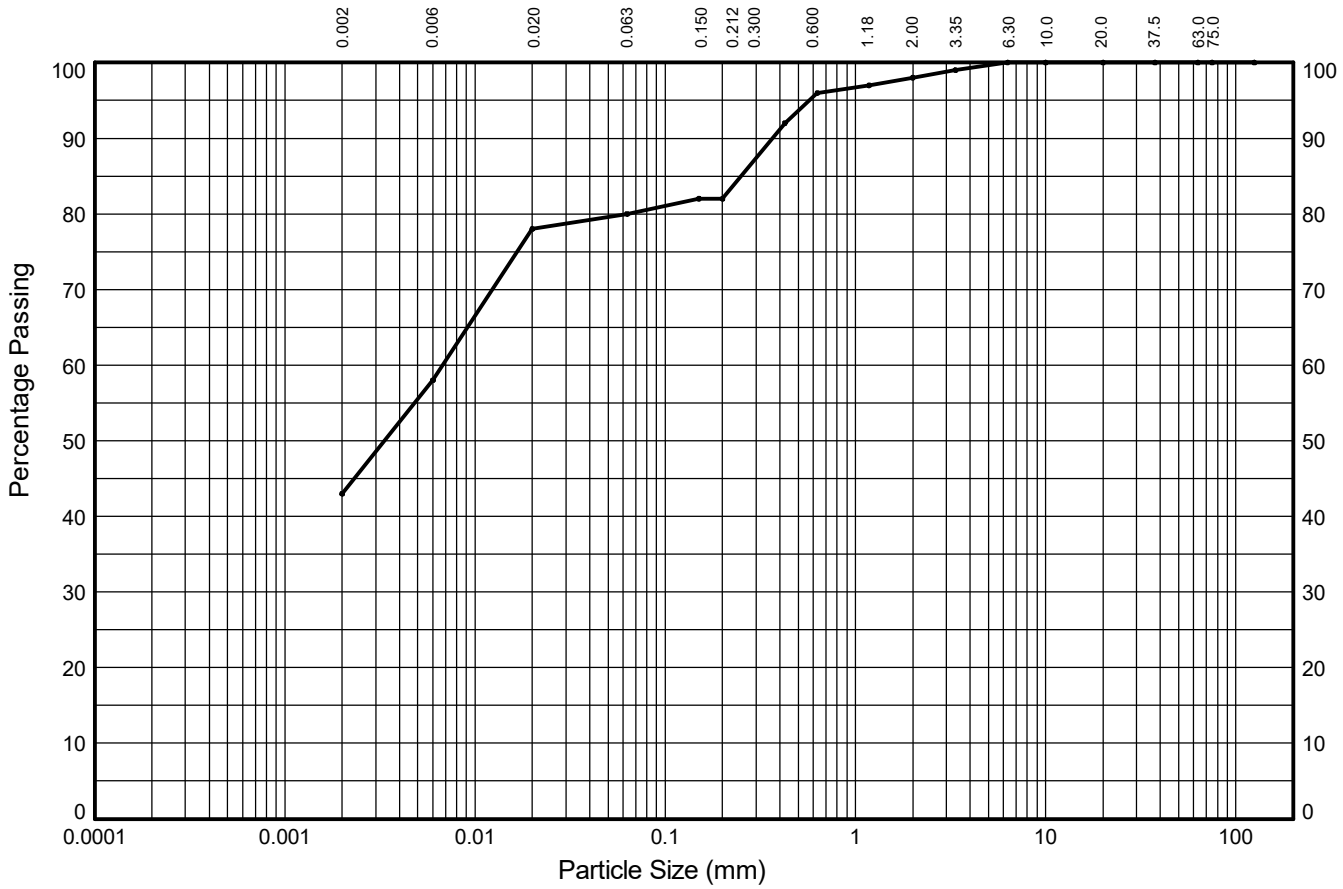
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Borehole: **BH06** Sample Ref: **11** Sample Type: **B** Depth (m): **2.00**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	15%	20%	2%	2%	14%	2%	2%	0%	0%	
	SILT			SAND			GRAVEL			
43%	37%			18%			2%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**100**
10.0	**100**
6.30	**100**
3.35	**99**
2.00	**98**
1.18	**97**
0.630	**96**
0.425	**92**
0.200	**82**
0.150	**82**
0.063	**80**

Particle Diameter (mm)	Percent Passing (%)
0.02	**78**
0.006	**58**
0.002	**43**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**NA**
D_{50} (mm)	**0.003**
D_{60} (mm)	**0.007**
D_{85} (mm)	**0.251**
D_{90} (mm)	**0.366**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown slightly gravelly slightly sandy silty CLAY

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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Compiled By		Date
	LAURA SCHRAMM	**27/02/23**

Contract	Contract Ref:
EMG Phase 2	**765514**

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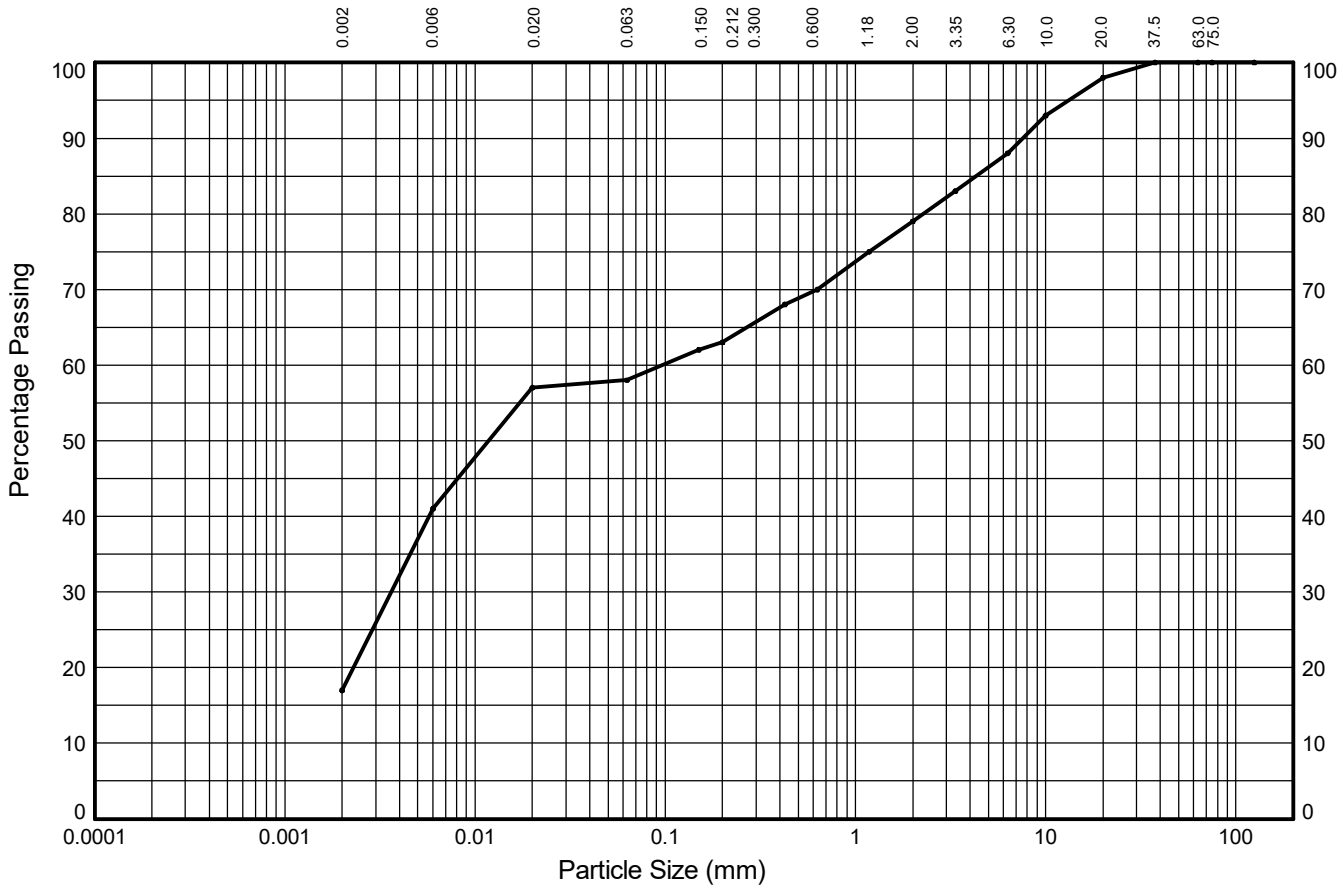
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2, 9.4 of BS1377:Part 2:1990

Borehole: **BH08** Sample Ref: **19** Sample Type: **B** Depth (m): **4.00**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	24%	16%	1%	5%	7%	9%	9%	10%	2%	
	SILT			SAND			GRAVEL			
17%	41%			21%			21%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**98**
10.0	**93**
6.30	**88**
3.35	**83**
2.00	**79**
1.18	**75**
0.600	
0.425	**68**
0.212	
0.150	**62**
0.063	**58**

Particle Diameter (mm)	Percent Passing (%)
0.02	**57**
0.006	**41**
0.002	**17**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**0.004**
D_{50} (mm)	**0.012**
D_{60} (mm)	**0.097**
D_{85} (mm)	**4.313**
D_{90} (mm)	**7.579**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown slightly gravelly slightly sandy clayey SILT

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

STRUCTURAL SOILS
The Potteries
Pottery Street
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Compiled By	Date
LUKE FISHER	27/02/23

Contract	Contract Ref:
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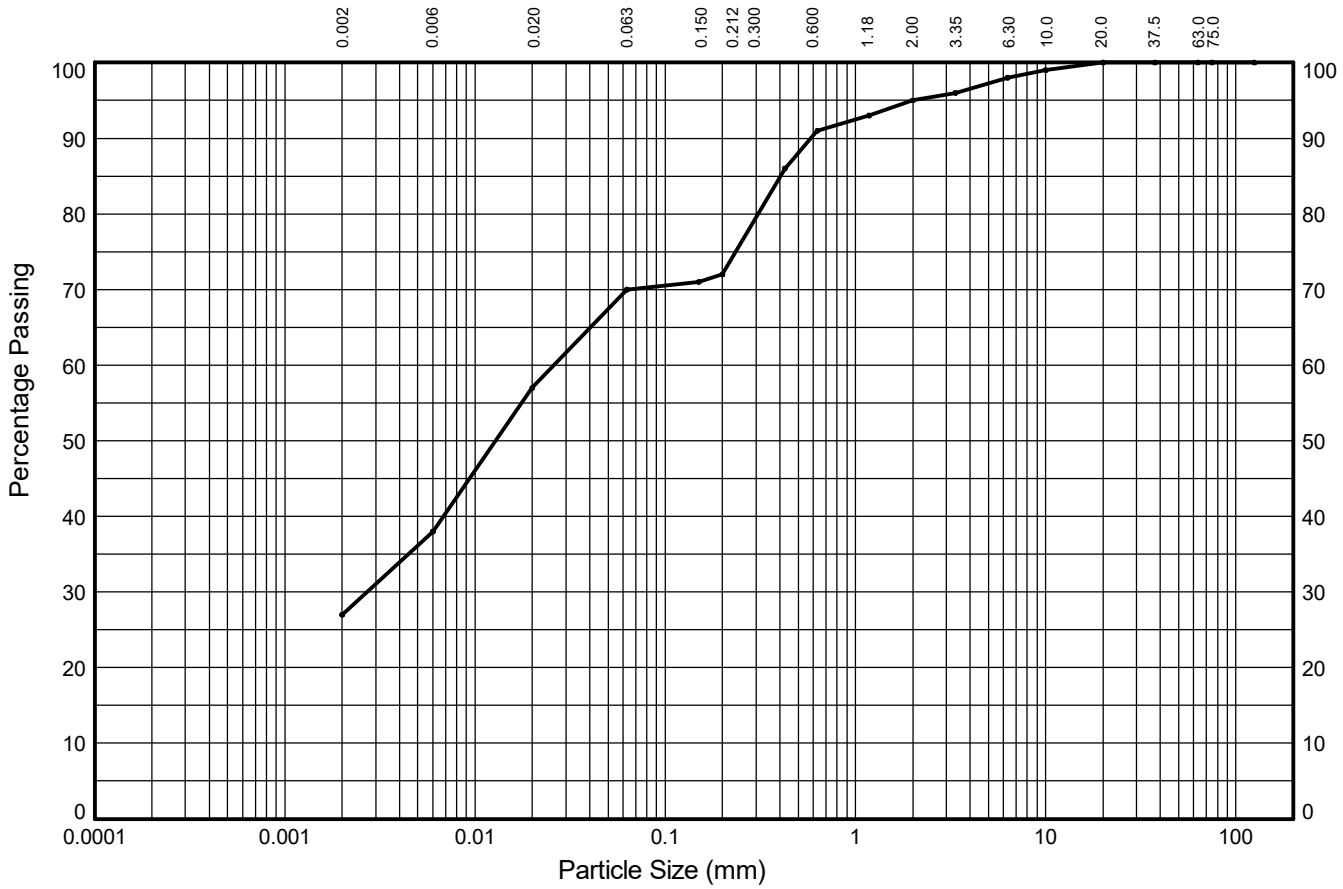
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Borehole: **BH09** Sample Ref: **20** Sample Type: **B** Depth (m): **2.50**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	11%	19%	13%	2%	19%	4%	3%	2%	0%	
	SILT			SAND			GRAVEL			
27%	43%			25%			5%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**100**
10.0	**99**
6.30	**98**
3.35	**96**
2.00	**95**
1.18	**93**
0.630	**91**
0.425	**86**
0.200	**72**
0.150	**71**
0.063	**70**

Particle Diameter (mm)	Percent Passing (%)
0.02	**57**
0.006	**38**
0.002	**27**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**0.003**
D_{50} (mm)	**0.013**
D_{60} (mm)	**0.026**
D_{85} (mm)	**0.403**
D_{90} (mm)	**0.582**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown/red slightly gravelly slightly sandy clayey SILT

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

STRUCTURAL SOILS
The Potteries
Pottery Street
Castleford
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Compiled By		Date
	LAURA SCHRAMM	**17/03/23**
Contract: **EMG Phase 2**	Contract Ref: **765514**	

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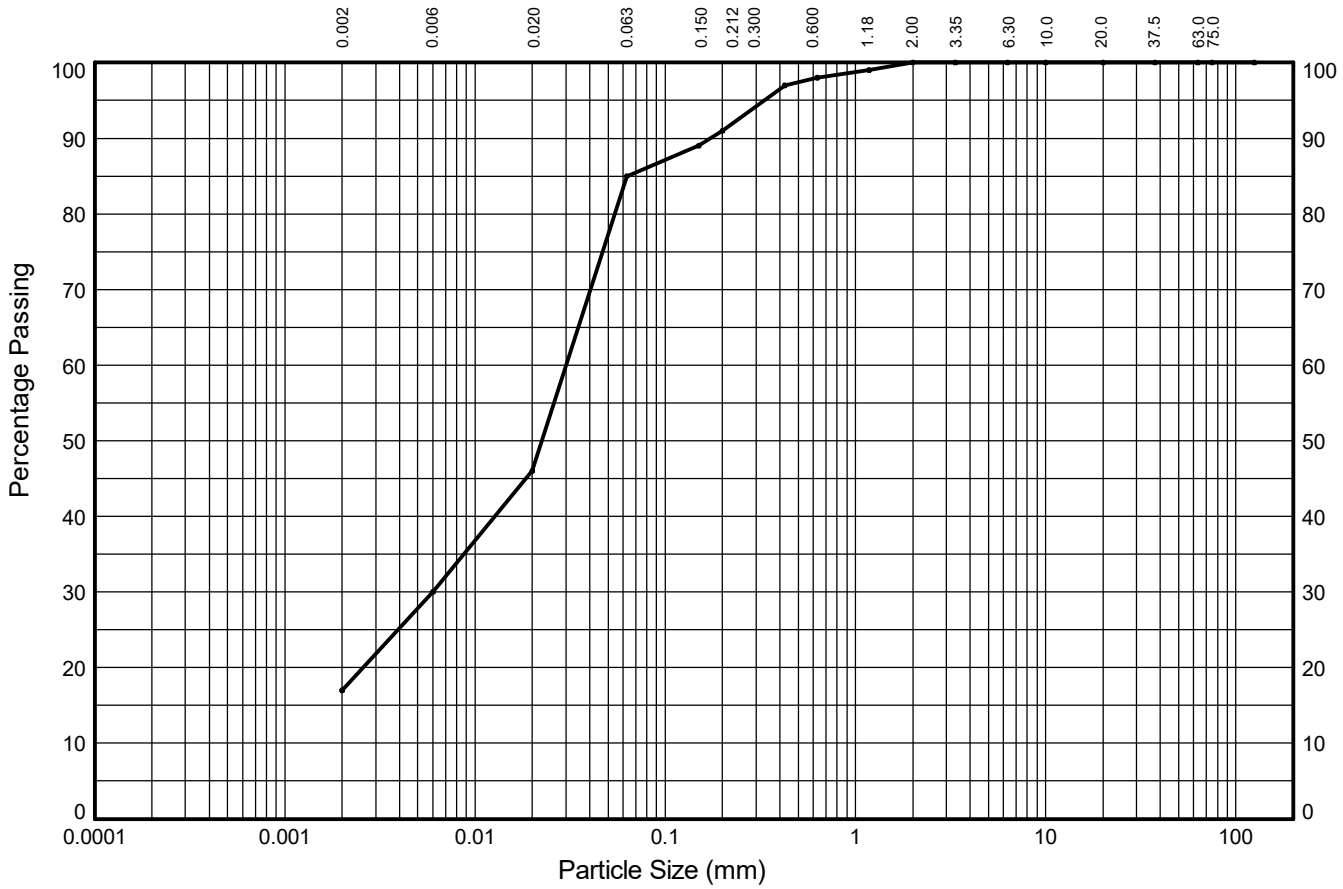
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Borehole: **BH09** Sample Ref: **28** Sample Type: **B** Depth (m): **4.50**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	13%	16%	39%	6%	7%	2%	0%	0%	0%	
	SILT			SAND			GRAVEL			
17%	68%			15%			0%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**100**
10.0	**100**
6.30	**100**
3.35	**100**
2.00	**100**
1.18	**99**
0.630	**98**
0.425	**97**
0.200	**91**
0.150	**89**
0.063	**85**

Particle Diameter (mm)	Percent Passing (%)
0.02	**46**
0.006	**30**
0.002	**17**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**0.006**
D_{50} (mm)	**0.022**
D_{60} (mm)	**0.030**
D_{85} (mm)	**0.063**
D_{90} (mm)	**0.173**
C_U	**NA**
C_C	**NA**

Soil Description:

Red brown slightly sandy clayey SILT

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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The Potteries
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Compiled By	Date
LORNA WHITWORTH	17/03/23

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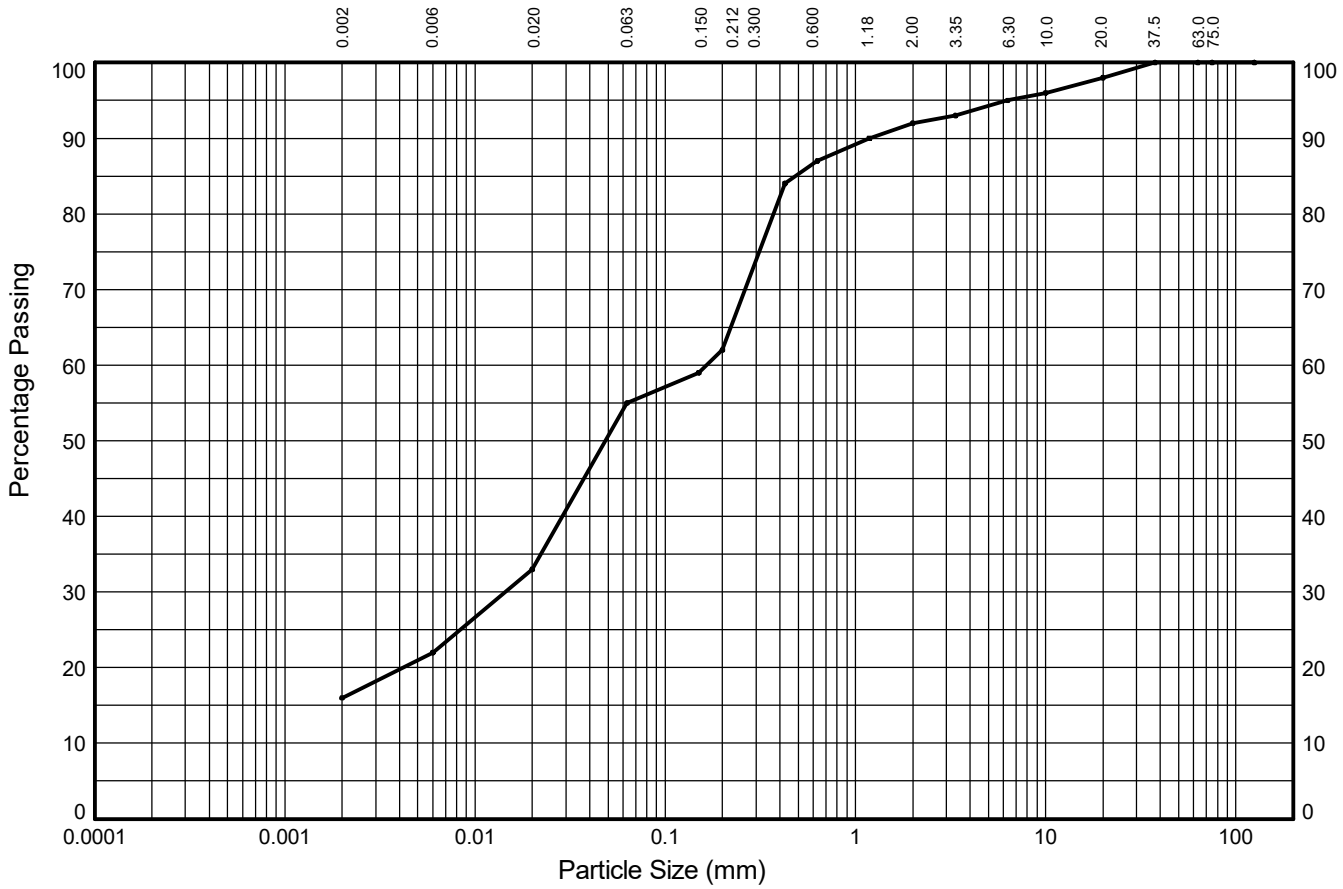
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Borehole: **BH10** Sample Ref: **5** Sample Type: **B** Depth (m): **0.70**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	6%	11%	22%	7%	25%	5%	3%	3%	2%	
	SILT			SAND			GRAVEL			
16%	39%			37%			8%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**98**
10.0	**96**
6.30	**95**
3.35	**93**
2.00	**92**
1.18	**90**
0.630	**87**
0.425	**84**
0.200	**62**
0.150	**59**
0.063	**55**

Particle Diameter (mm)	Percent Passing (%)
0.02	**33**
0.006	**22**
0.002	**16**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**0.014**
D_{50} (mm)	**0.049**
D_{60} (mm)	**0.165**
D_{85} (mm)	**0.485**
D_{90} (mm)	**1.180**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown grey slightly gravelly sandy clayey SILT

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

STRUCTURAL SOILS
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Compiled By	Date
LORNA WHITWORTH	27/02/23

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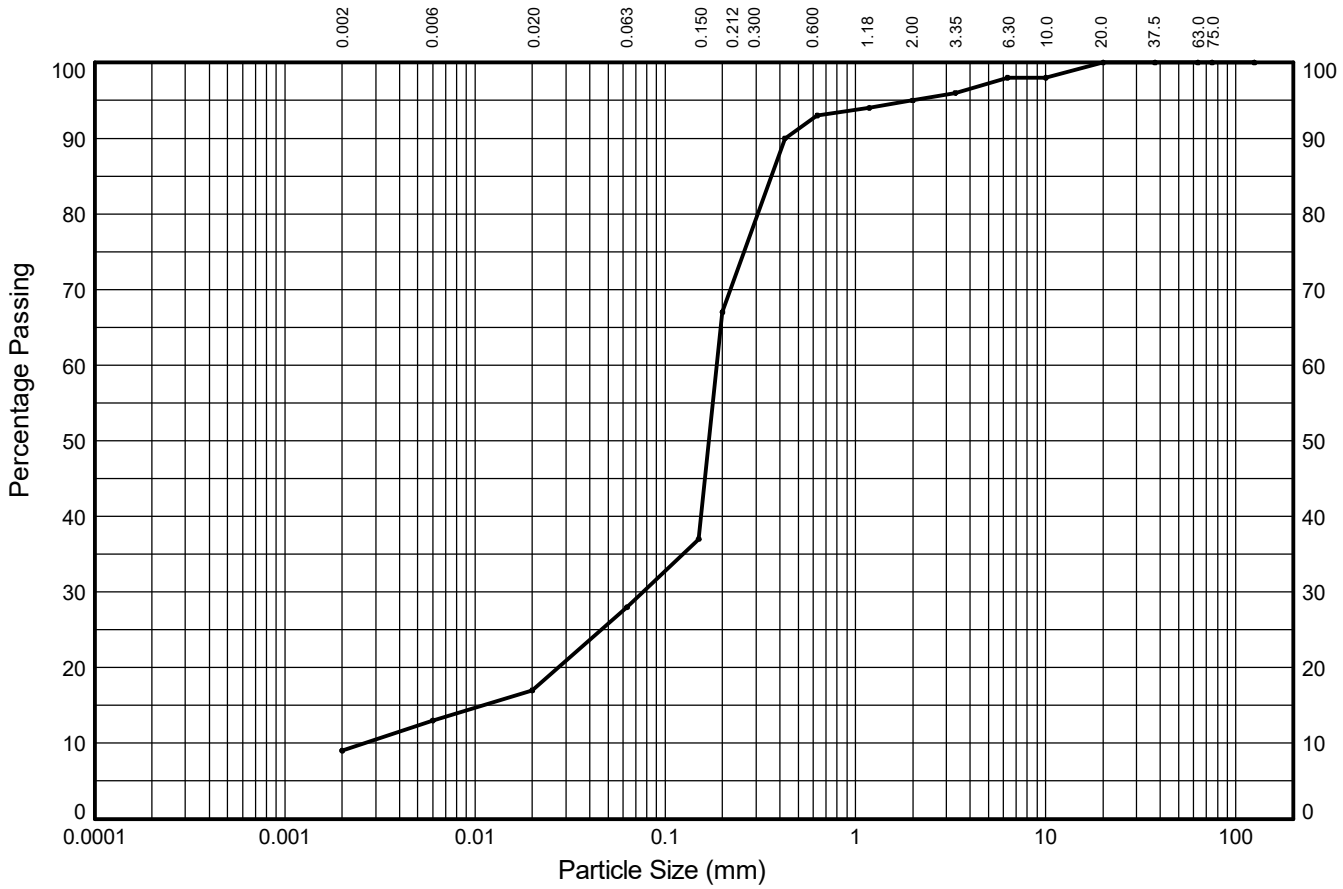
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016
NON-STANDARD TEST

Borehole: **BH10** Sample Ref: **6** Sample Type: **D** Depth (m): **0.90**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	4%	4%	11%	39%	26%	2%	3%	2%	0%	
	SILT			SAND			GRAVEL			
9%	19%			67%			5%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**100**
10.0	**98**
6.30	**98**
3.35	**96**
2.00	**95**
1.18	**94**
0.630	**93**
0.425	**90**
0.200	**67**
0.150	**37**
0.063	**28**

Particle Diameter (mm)	Percent Passing (%)
0.02	**17**
0.006	**13**
0.002	**9**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**0.003**
D_{15} (mm)	**0.011**
D_{30} (mm)	**0.076**
D_{50} (mm)	**0.170**
D_{60} (mm)	**0.187**
D_{85} (mm)	**0.361**
D_{90} (mm)	**0.425**
C_U	**71**
C_C	**12**

Soil Description:

Brown gravelly clayey silty SAND

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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Compiled By		Date
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Contract: **EMG Phase 2**		Contract Ref: **765514**

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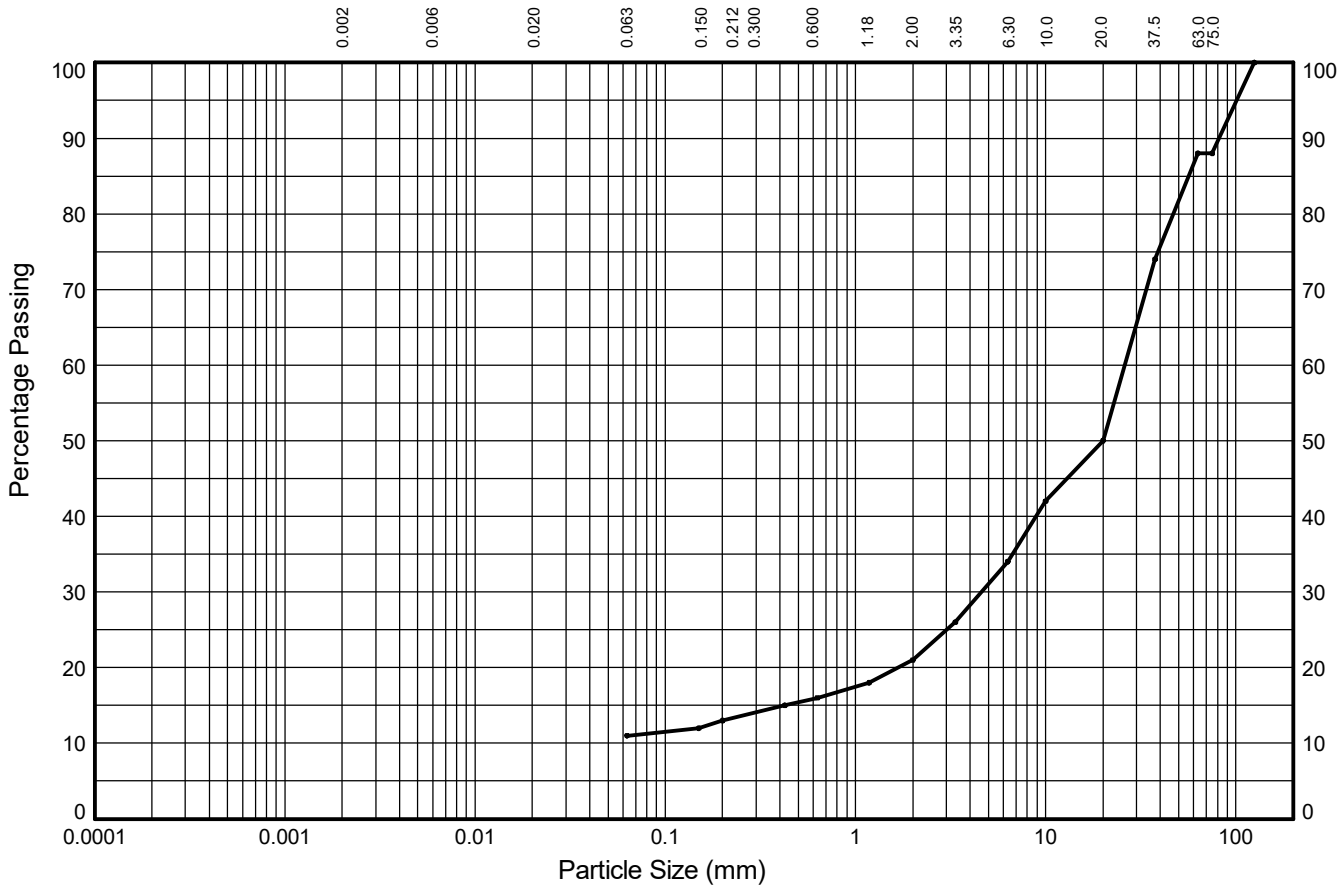
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2 of BS EN ISO 17892:Part 4:2016
NON-STANDARD TEST

Borehole: **BH12** Sample Ref: **47** Sample Type: **B** Depth (m): **15.50**



CLAY										
fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
-	-	-	2%	3%	5%	13%	16%	38%	
SILT			SAND			GRAVEL			
11%			10%			67%			12%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**88**
63.0	**88**
37.5	**74**
20.0	**50**
10.0	**42**
6.30	**34**
3.35	**26**
2.00	**21**
1.18	**18**
0.630	**16**
0.425	**15**
0.200	**13**
0.150	**12**
0.063	**11**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**0.425**
D_{30} (mm)	**4.594**
D_{50} (mm)	**20.000**
D_{60} (mm)	**25.988**
D_{85} (mm)	**56.372**
D_{90} (mm)	**81.665**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown sandy silty/clayey GRAVEL with medium cobble content

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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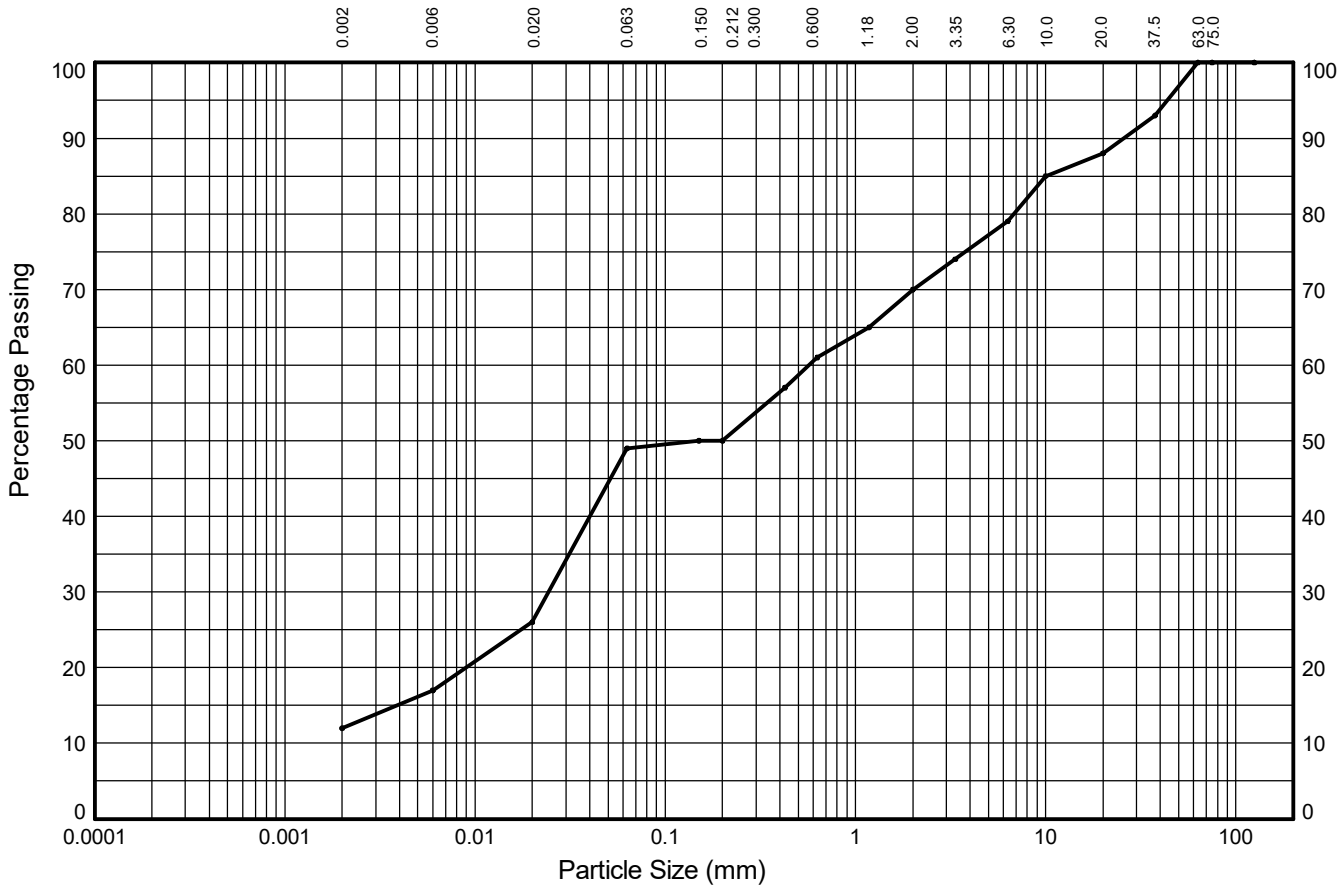
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Borehole: **BH13** Sample Ref: **26** Sample Type: **B** Depth (m): **6.00**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	5%	9%	23%	1%	11%	9%	9%	9%	12%	
	SILT			SAND			GRAVEL			
12%	37%			21%			30%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**93**
20.0	**88**
10.0	**85**
6.30	**79**
3.35	**74**
2.00	**70**
1.18	**65**
0.630	**61**
0.425	**57**
0.200	**50**
0.150	**50**
0.063	**49**

Particle Diameter (mm)	Percent Passing (%)
0.02	**26**
0.006	**17**
0.002	**12**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**0.004**
D_{30} (mm)	**0.024**
D_{50} (mm)	**0.150**
D_{60} (mm)	**0.571**
D_{85} (mm)	**10.000**
D_{90} (mm)	**25.718**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown/red slightly sandy slightly gravelly clayey SILT

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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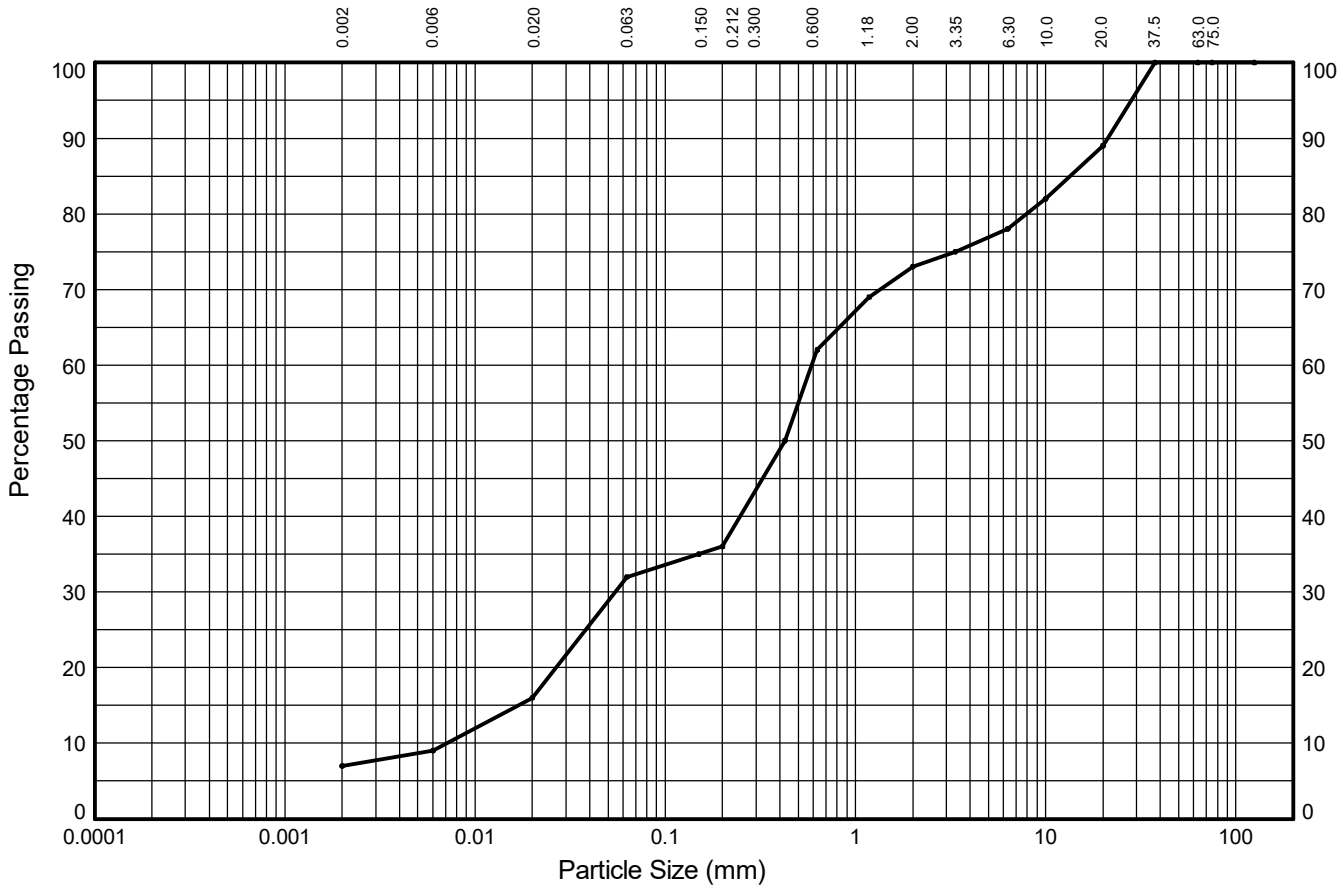
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016
NON-STANDARD TEST

Borehole: **BH14** Sample Ref: **26** Sample Type: **B** Depth (m): **6.00**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	2%	7%	16%	4%	26%	11%	5%	11%	11%	
	SILT			SAND			GRAVEL			
7%	25%			41%			27%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**89**
10.0	**82**
6.30	**78**
3.35	**75**
2.00	**73**
1.18	**69**
0.630	**62**
0.425	**50**
0.200	**36**
0.150	**35**
0.063	**32**

Particle Diameter (mm)	Percent Passing (%)
0.02	**16**
0.006	**9**
0.002	**7**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**0.007**
D_{15} (mm)	**0.017**
D_{30} (mm)	**0.055**
D_{50} (mm)	**0.425**
D_{60} (mm)	**0.590**
D_{85} (mm)	**13.459**
D_{90} (mm)	**21.176**
C_U	**83**
C_C	**0.71**

Soil Description:

Brown very gravelly clayey very silty SAND

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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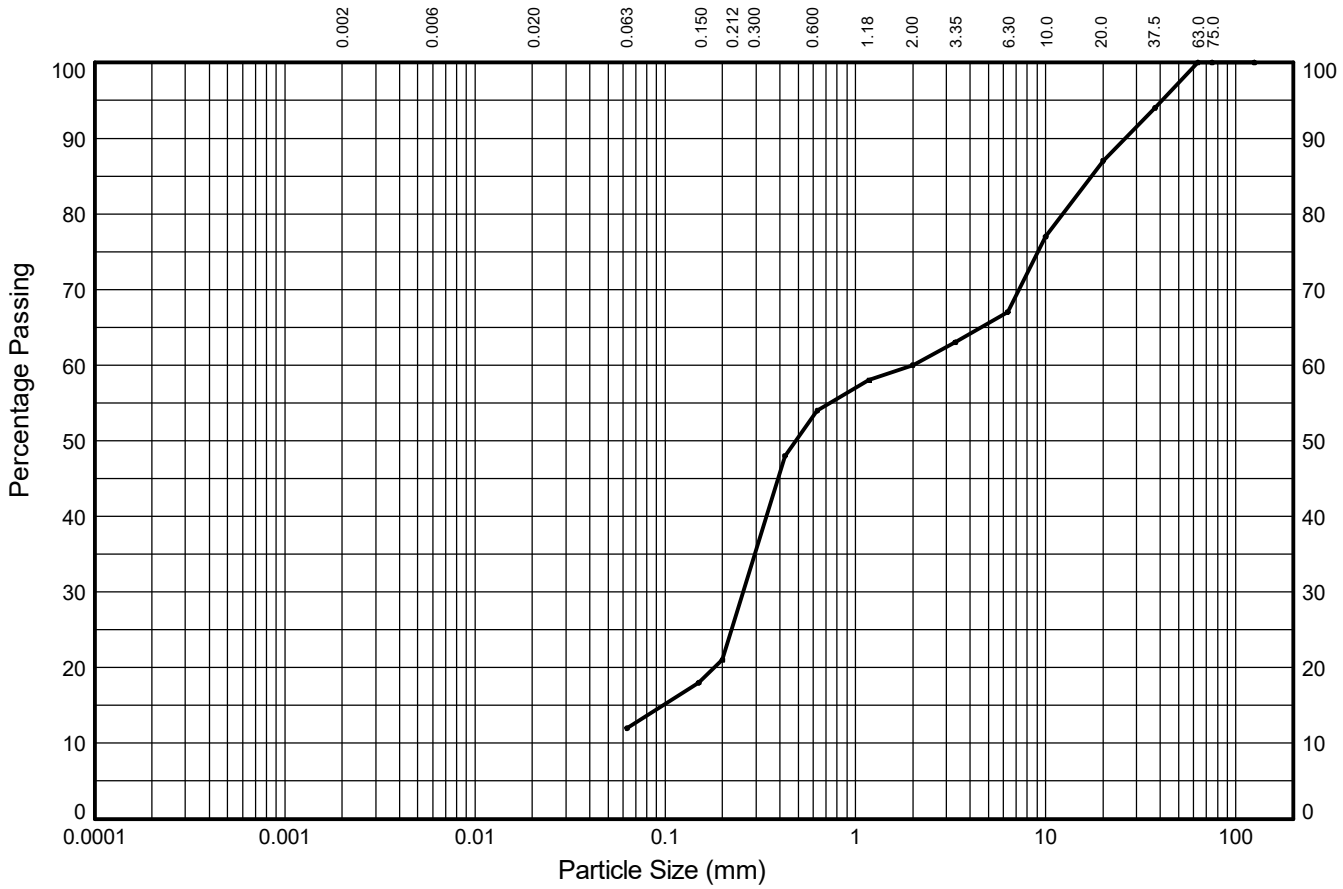
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2 of BS EN ISO 17892:Part 4:2016
NON-STANDARD TEST

Borehole: **BH15** Sample Ref: **18** Sample Type: **B** Depth (m): **4.00**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	-	-	-	9%	33%	6%	7%	20%	13%	
	SILT			SAND			GRAVEL			
12%				48%			40%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**94**
20.0	**87**
10.0	**77**
6.30	**67**
3.35	**63**
2.00	**60**
1.18	**58**
0.630	**54**
0.425	**48**
0.200	**21**
0.150	**18**
0.063	**12**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**0.097**
D_{30} (mm)	**0.257**
D_{50} (mm)	**0.485**
D_{60} (mm)	**2.000**
D_{85} (mm)	**17.411**
D_{90} (mm)	**26.184**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown very gravelly silty/clayey SAND

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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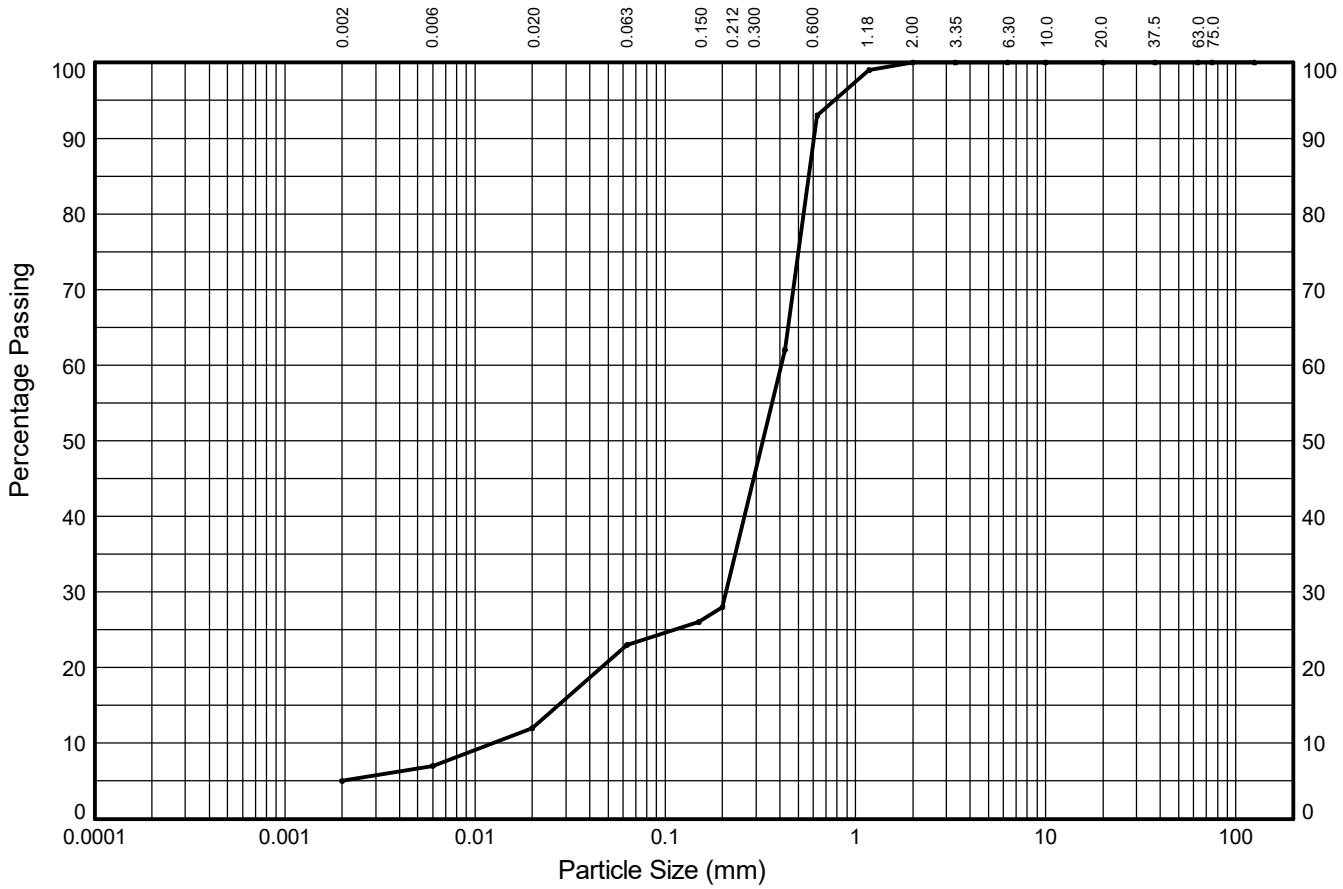
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016
NON-STANDARD TEST

Borehole: **BH15** Sample Ref: **24** Sample Type: **B** Depth (m): **6.00**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	2%	5%	11%	5%	65%	7%	0%	0%	0%	
	SILT			SAND			GRAVEL			
5%	18%			77%			0%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**100**
10.0	**100**
6.30	**100**
3.35	**100**
2.00	**100**
1.18	**99**
0.630	**93**
0.425	**62**
0.200	**28**
0.150	**26**
0.063	**23**

Particle Diameter (mm)	Percent Passing (%)
0.02	**12**
0.006	**7**
0.002	**5**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**0.012**
D_{15} (mm)	**0.027**
D_{30} (mm)	**0.209**
D_{50} (mm)	**0.326**
D_{60} (mm)	**0.407**
D_{85} (mm)	**0.569**
D_{90} (mm)	**0.606**
C_U	**33**
C_C	**9**

Soil Description:

Brown clayey silty SAND

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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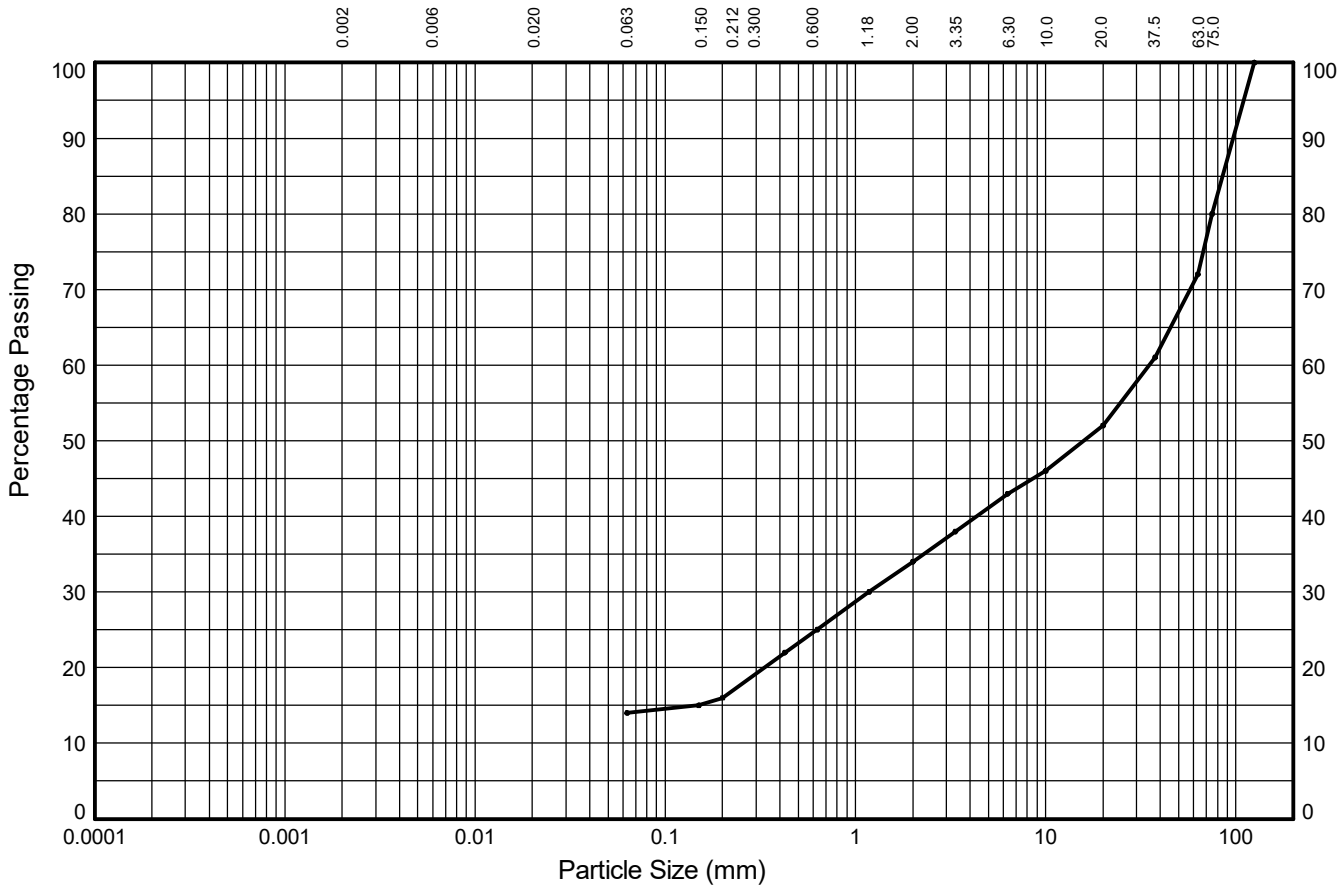
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2 of BS EN ISO 17892:Part 4:2016
NON-STANDARD TEST

Borehole: **BH15** Sample Ref: **36** Sample Type: **B** Depth (m): **10.50**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	-	-	-	2%	9%	9%	9%	9%	20%	
	SILT			SAND			GRAVEL			
14%				20%			38%			28%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**80**
63.0	**72**
37.5	**61**
20.0	**52**
10.0	**46**
6.30	**43**
3.35	**38**
2.00	**34**
1.18	**30**
0.630	**25**
0.425	**22**
0.200	**16**
0.150	**15**
0.063	**14**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**0.150**
D_{30} (mm)	**1.180**
D_{50} (mm)	**15.874**
D_{60} (mm)	**34.970**
D_{85} (mm)	**85.216**
D_{90} (mm)	**96.825**
C_U	**NA**
C_C	**NA**

Soil Description:

Red brown sandy silty/clayey GRAVEL with high cobble content

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Borehole: **BH17** Sample Ref: **13** Sample Type: **B** Depth (m): **3.00**

CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	14%	19%	17%	8%	23%	1%	1%	0%	0%	
	SILT			SAND			GRAVEL			
17%	50%			32%			1%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**100**
10.0	**100**
6.30	**100**
3.35	**100**
2.00	**99**
1.18	**99**
0.630	**98**
0.425	**96**
0.200	**75**
0.150	**73**
0.063	**67**

Particle Diameter (mm)	Percent Passing (%)
0.02	**50**
0.006	**31**
0.002	**17**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**0.006**
D_{50} (mm)	**0.020**
D_{60} (mm)	**0.039**
D_{85} (mm)	**0.286**
D_{90} (mm)	**0.343**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown slightly gravelly slightly sandy clayey SILT

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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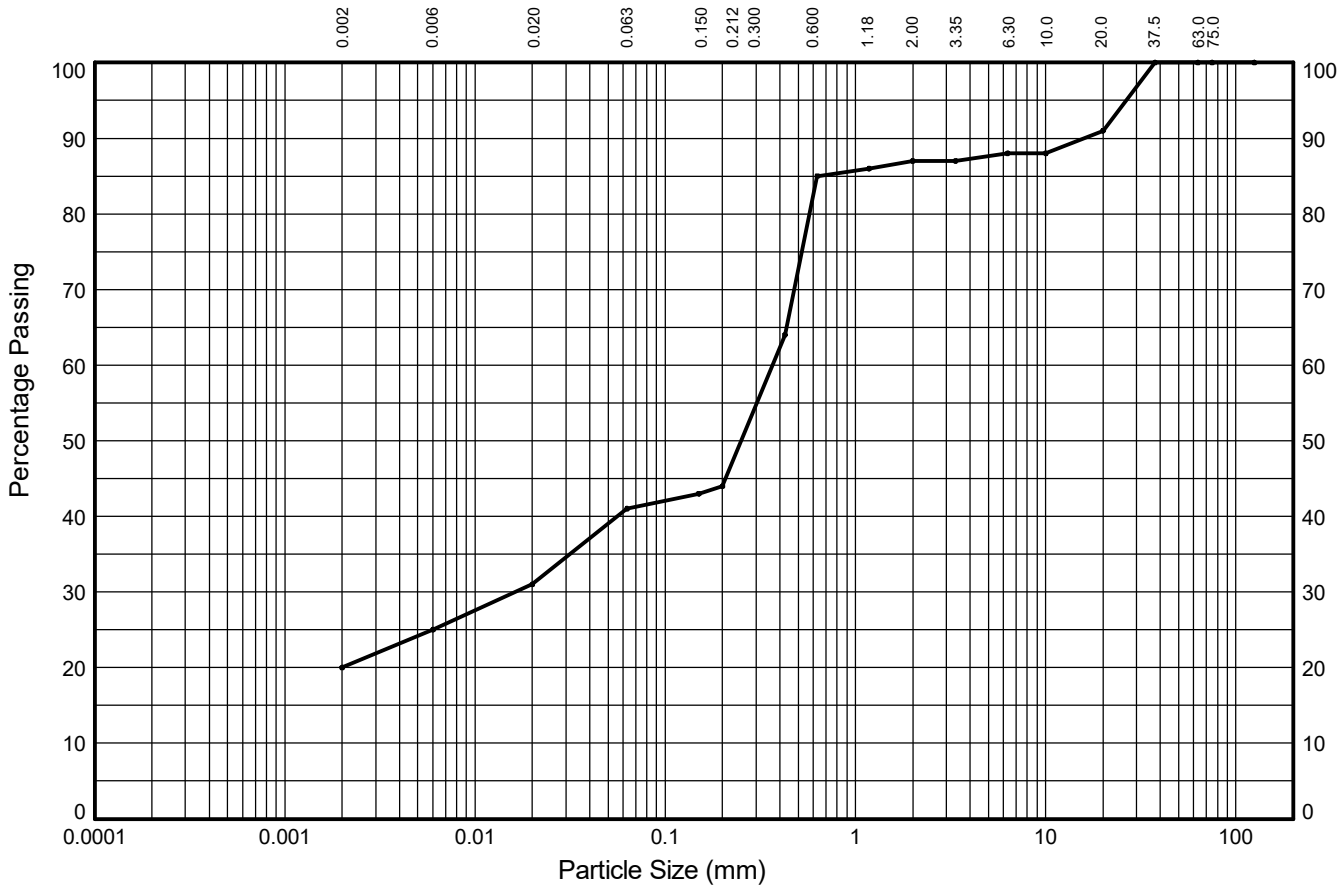
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Borehole: **BH20** Sample Ref: **6** Sample Type: **B** Depth (m): **0.60**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	5%	6%	10%	3%	41%	2%	1%	3%	9%	
	SILT			SAND			GRAVEL			
20%	21%			46%			13%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**91**
10.0	**88**
6.30	**88**
3.35	**87**
2.00	**87**
1.18	**86**
0.630	**85**
0.425	**64**
0.200	**44**
0.150	**43**
0.063	**41**

Particle Diameter (mm)	Percent Passing (%)
0.02	**31**
0.006	**25**
0.002	**20**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**0.016**
D_{50} (mm)	**0.251**
D_{60} (mm)	**0.366**
D_{85} (mm)	**0.630**
D_{90} (mm)	**15.874**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown/red slightly gravelly sandy clayey SILT

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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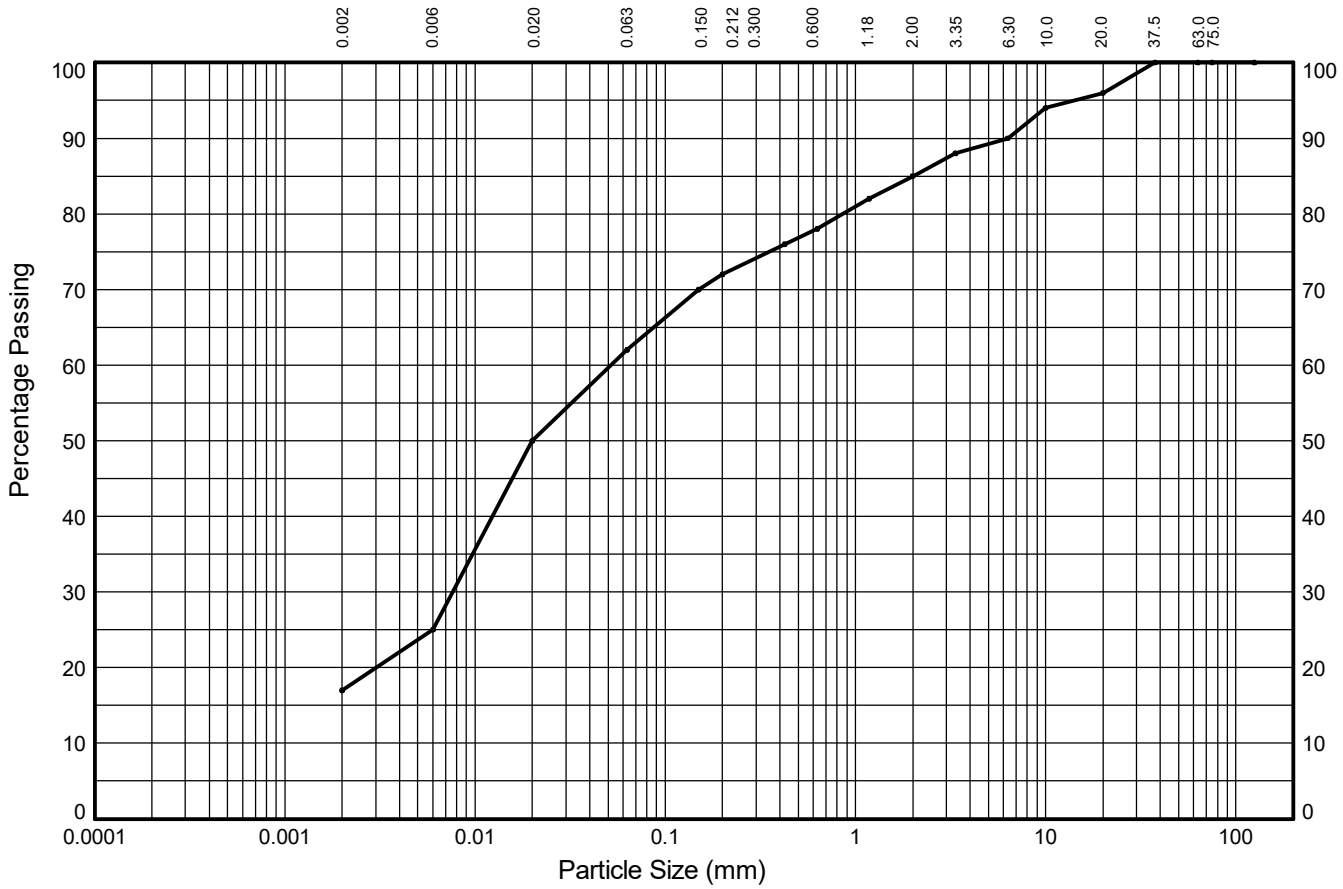
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Borehole: **BH21** Sample Ref: **17** Sample Type: **D** Depth (m): **3.70**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	9%	24%	12%	10%	6%	7%	5%	6%	4%	
	SILT			SAND			GRAVEL			
17%	45%			23%			15%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**96**
10.0	**94**
6.30	**90**
3.35	**88**
2.00	**85**
1.18	**82**
0.630	**78**
0.425	**76**
0.200	**72**
0.150	**70**
0.063	**62**

Particle Diameter (mm)	Percent Passing (%)
0.02	**50**
0.006	**25**
0.002	**17**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**0.008**
D_{50} (mm)	**0.020**
D_{60} (mm)	**0.052**
D_{85} (mm)	**2.000**
D_{90} (mm)	**6.300**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown slightly gravelly slightly sandy clayey SILT

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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Compiled By	Date
LORNA WHITWORTH	27/02/23

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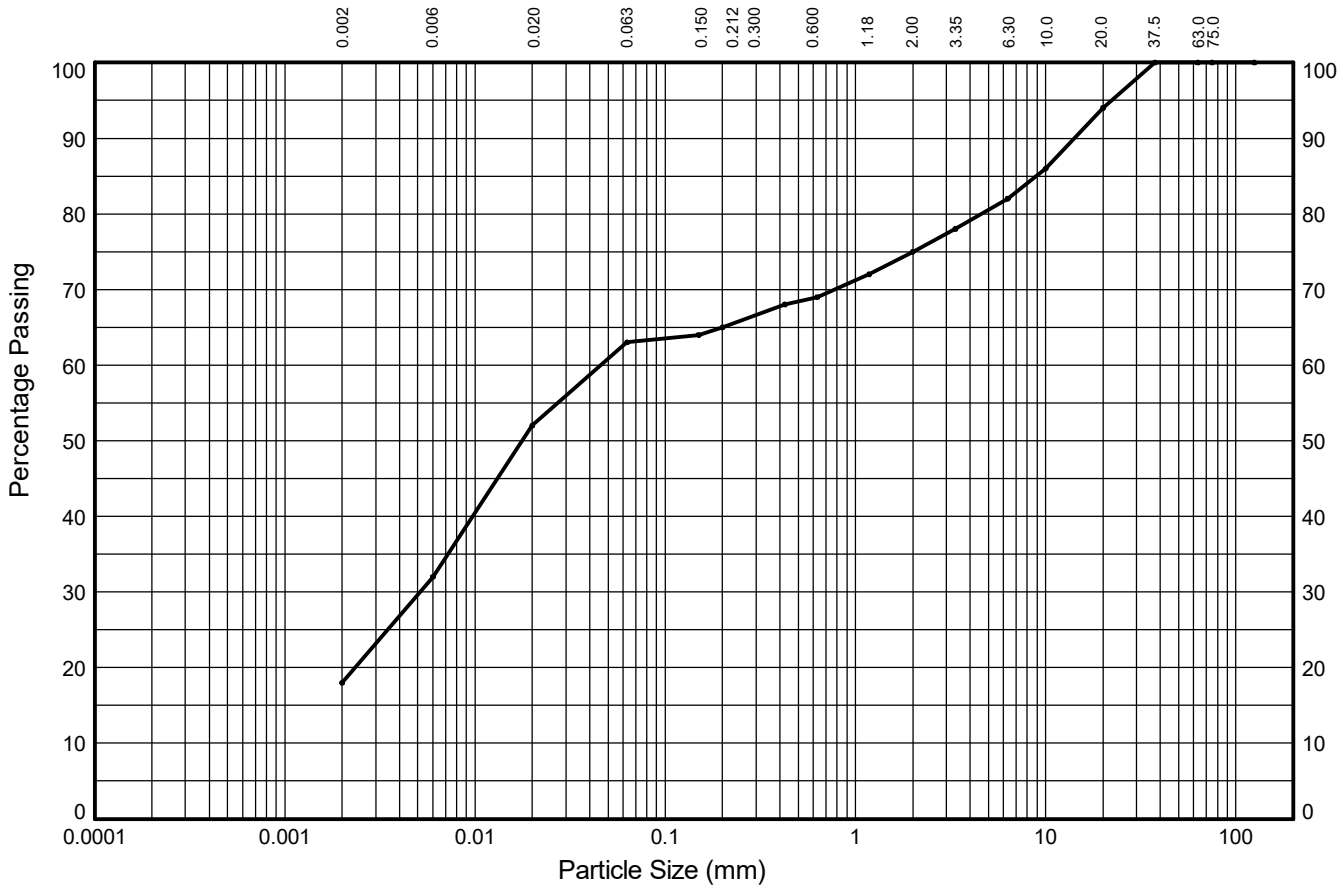
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Borehole: **BH22** Sample Ref: **14** Sample Type: **B** Depth (m): **3.00**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	14%	20%	11%	2%	4%	6%	7%	12%	6%	
	SILT			SAND			GRAVEL			
18%	45%			12%			25%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**94**
10.0	**86**
6.30	**82**
3.35	**78**
2.00	**75**
1.18	**72**
0.630	**69**
0.425	**68**
0.200	**65**
0.150	**64**
0.063	**63**

Particle Diameter (mm)	Percent Passing (%)
0.02	**52**
0.006	**32**
0.002	**18**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**0.005**
D_{50} (mm)	**0.018**
D_{60} (mm)	**0.046**
D_{85} (mm)	**8.909**
D_{90} (mm)	**14.142**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown slightly sandy slightly gravelly clayey SILT

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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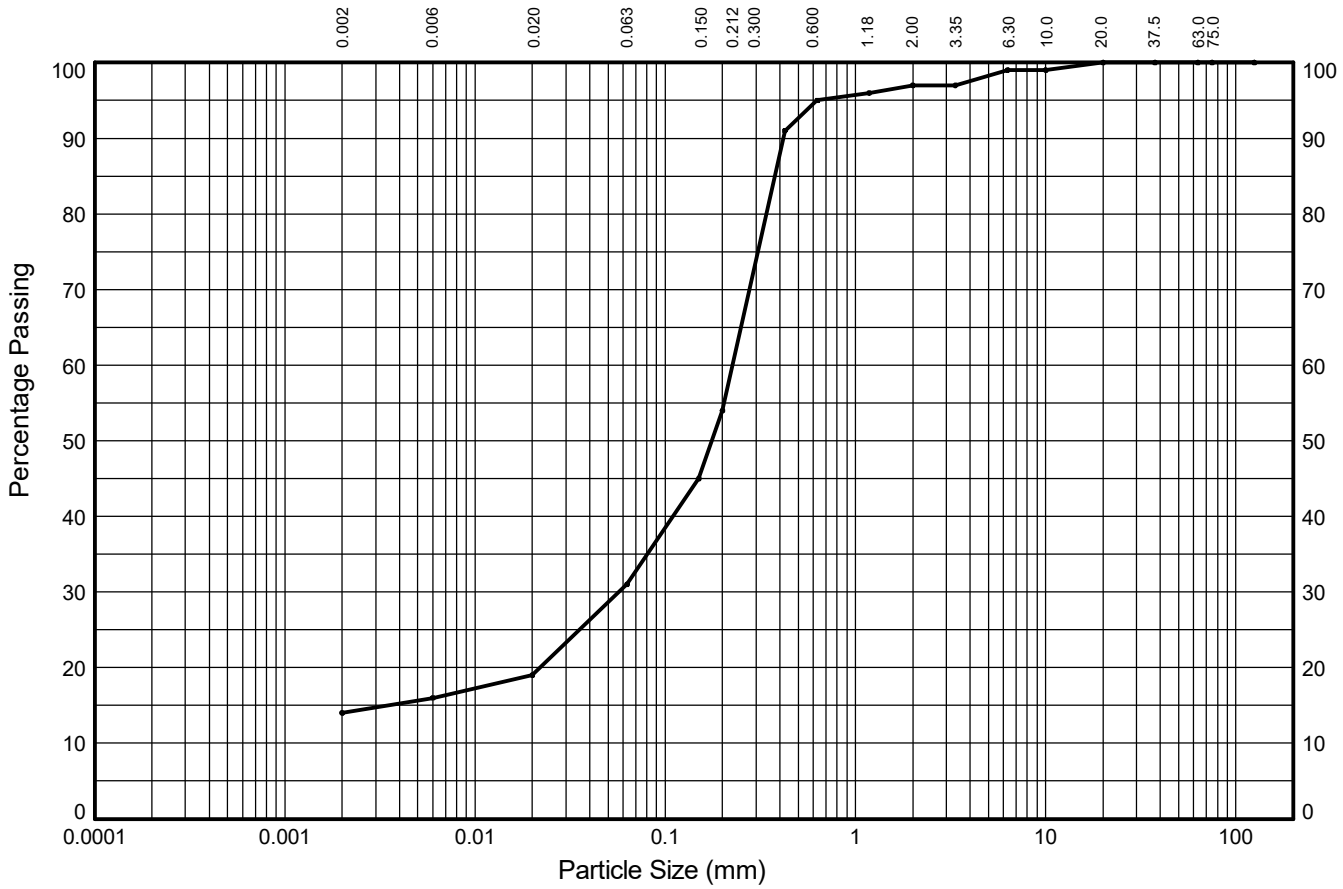
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016
NON-STANDARD TEST

Borehole: **BH25** Sample Ref: **13** Sample Type: **B** Depth (m): **1.20**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	2%	3%	12%	23%	41%	2%	2%	1%	0%	
	SILT			SAND			GRAVEL			
14%	17%			66%			3%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**100**
10.0	**99**
6.30	**99**
3.35	**97**
2.00	**97**
1.18	**96**
0.630	**95**
0.425	**91**
0.200	**54**
0.150	**45**
0.063	**31**

Particle Diameter (mm)	Percent Passing (%)
0.02	**19**
0.006	**16**
0.002	**14**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**0.003**
D_{30} (mm)	**0.057**
D_{50} (mm)	**0.176**
D_{60} (mm)	**0.226**
D_{85} (mm)	**0.376**
D_{90} (mm)	**0.416**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown red slightly gravelly clayey silty SAND

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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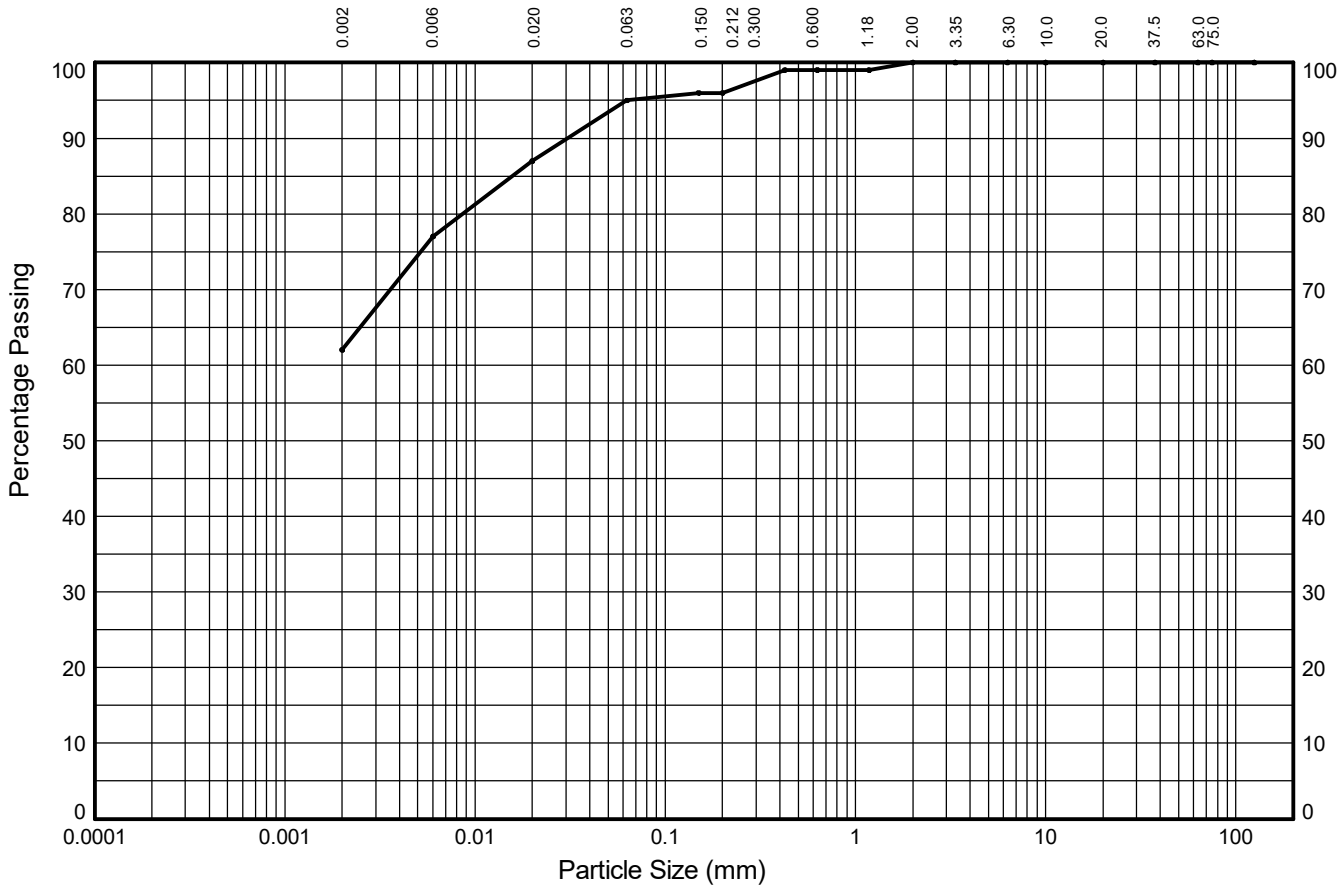
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Borehole: **BH26** Sample Ref: **3** Sample Type: **B** Depth (m): **0.10**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	15%	10%	8%	1%	3%	1%	0%	0%	0%	
	SILT			SAND			GRAVEL			
62%	33%			5%			0%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**100**
10.0	**100**
6.30	**100**
3.35	**100**
2.00	**100**
1.18	**99**
0.630	**99**
0.425	**99**
0.200	**96**
0.150	**96**
0.063	**95**

Particle Diameter (mm)	Percent Passing (%)
0.02	**87**
0.006	**77**
0.002	**62**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**NA**
D_{50} (mm)	**NA**
D_{60} (mm)	**NA**
D_{85} (mm)	**0.016**
D_{90} (mm)	**0.031**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown slightly sandy silty CLAY

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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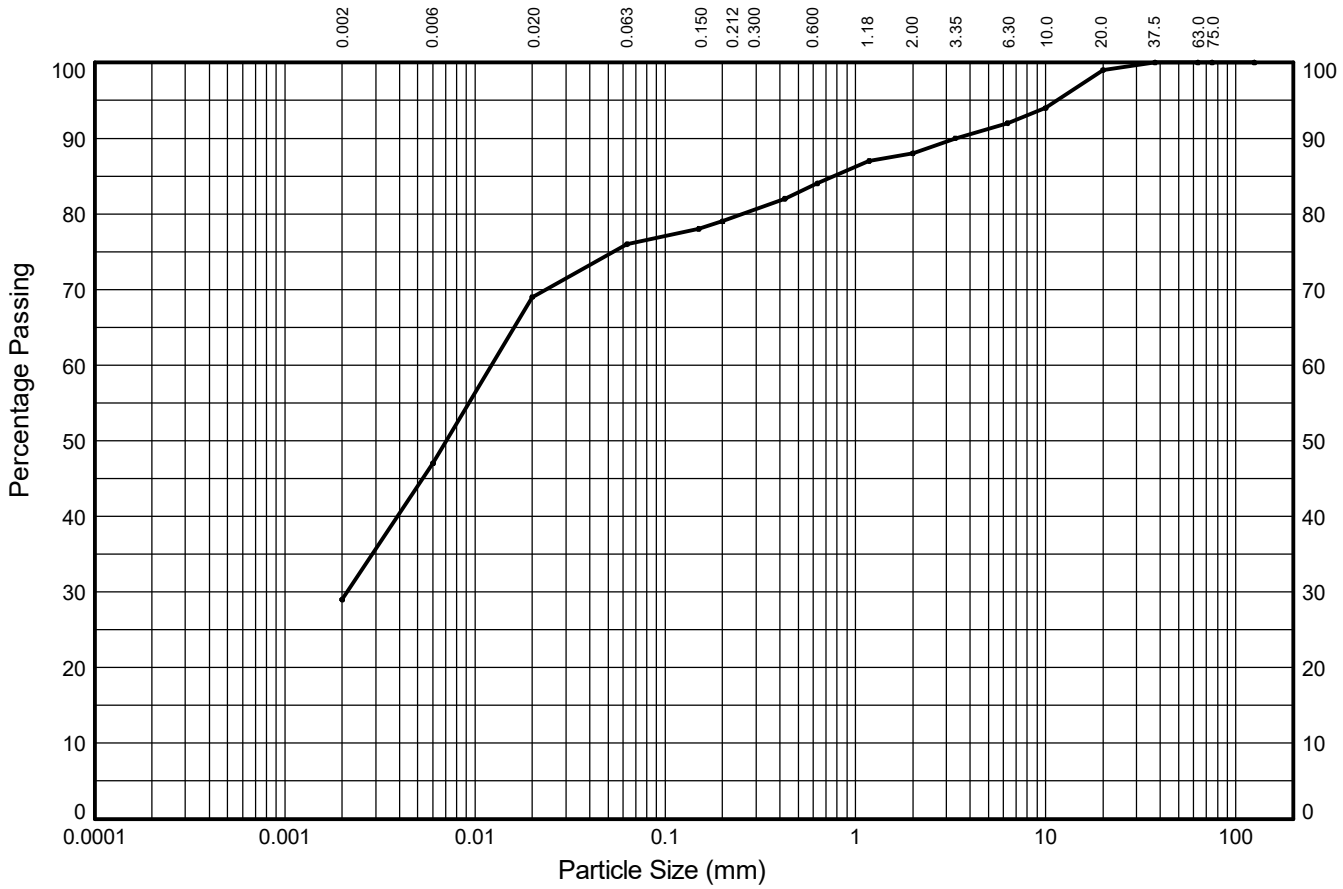
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Position ID: **CP03** Sample Ref: **16** Sample Type: **B** Depth (m): **3.00**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	18%	22%	7%	3%	5%	4%	4%	7%	1%	
	SILT			SAND			GRAVEL			
29%	47%			12%			12%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**99**
10.0	**94**
6.30	**92**
3.35	**90**
2.00	**88**
1.18	**87**
0.630	**84**
0.425	**82**
0.200	**79**
0.150	**78**
0.063	**76**

Particle Diameter (mm)	Percent Passing (%)
0.02	**69**
0.006	**47**
0.002	**29**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**0.002**
D_{50} (mm)	**0.007**
D_{60} (mm)	**0.012**
D_{85} (mm)	**0.777**
D_{90} (mm)	**3.350**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown slightly gravelly slightly sandy clayey SILT

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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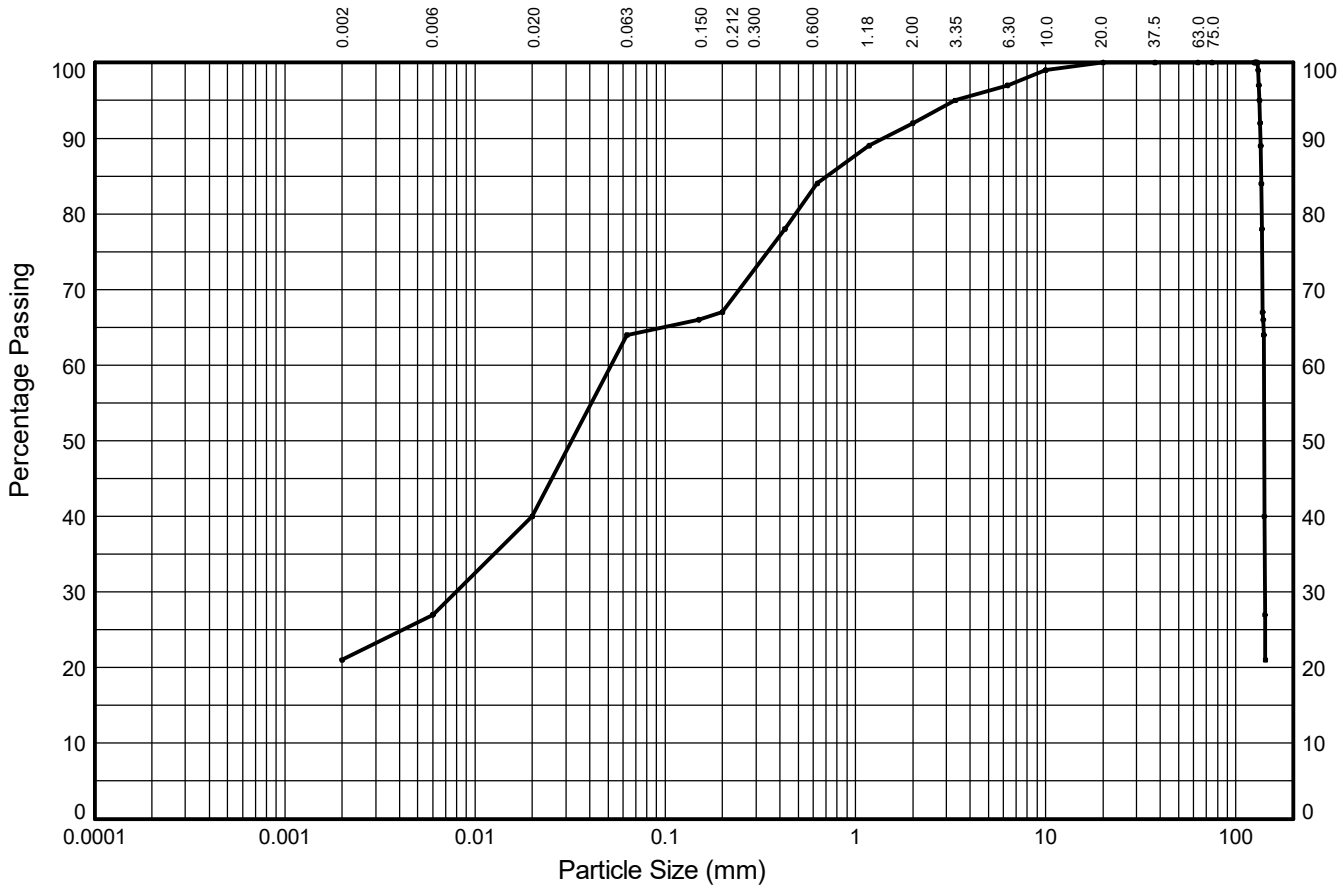
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Position ID: **CP04** Sample Ref: **54** Sample Type: **B** Depth (m): **16.50**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	6%	13%	24%	3%	17%	8%	5%	3%	0%	
	SILT			SAND			GRAVEL			
21%	43%			28%			8%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**100**
10.0	**99**
6.30	**97**
3.35	**95**
2.00	**92**
1.18	**89**
0.630	**84**
0.425	**78**
0.200	**67**
0.150	**66**
0.063	**64**

Particle Diameter (mm)	Percent Passing (%)
0.02	**40**
0.006	**27**
0.002	**21**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**0.008**
D_{50} (mm)	**0.032**
D_{60} (mm)	**0.052**
D_{85} (mm)	**0.714**
D_{90} (mm)	**1.407**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown slightly gravelly slightly sandy clayey SILT

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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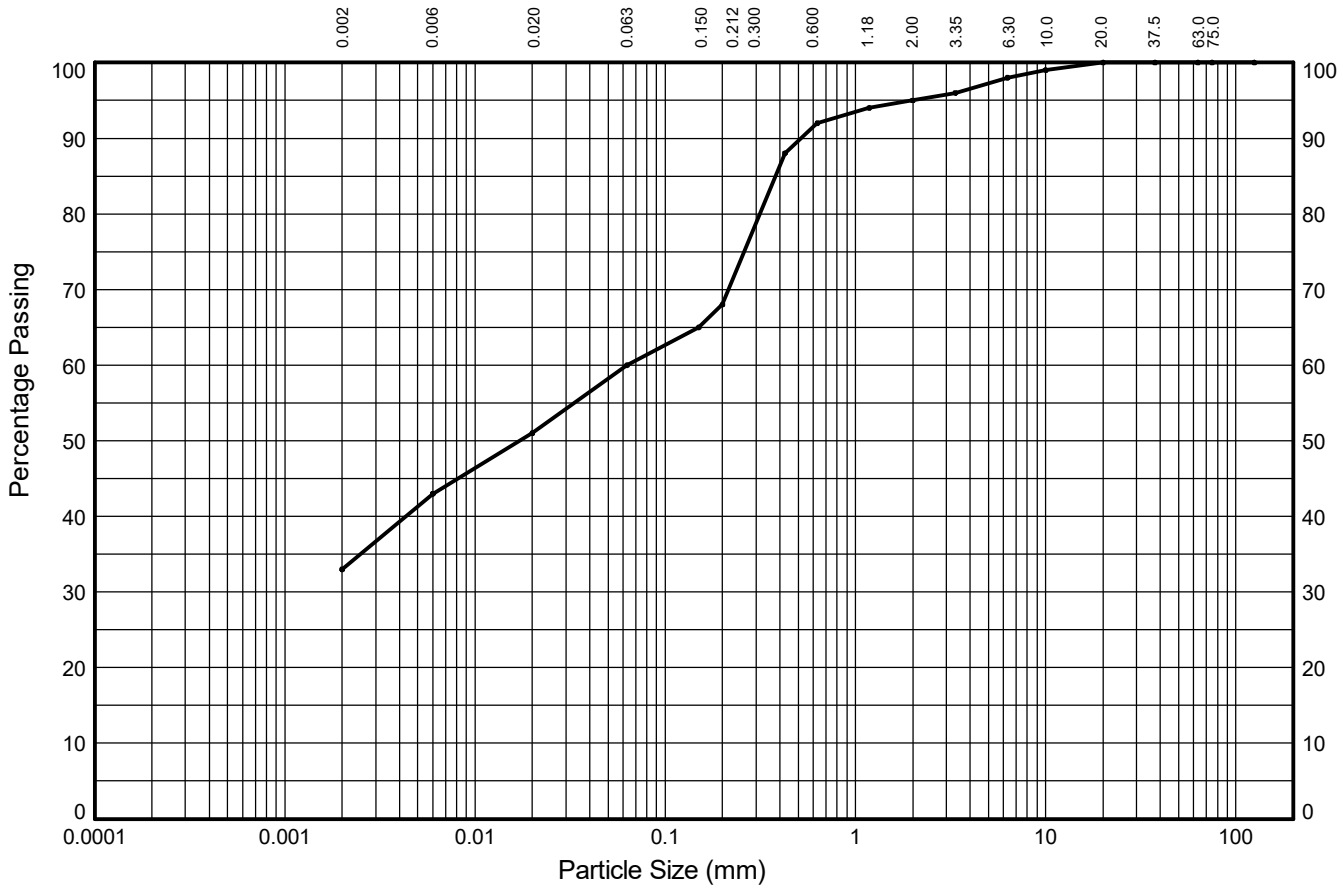
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Position ID: **CP05** Sample Ref: **3** Sample Type: **B** Depth (m): **0.50**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	10%	8%	9%	8%	24%	3%	3%	2%	0%	
	SILT			SAND			GRAVEL			
33%	27%			35%			5%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**100**
10.0	**99**
6.30	**98**
3.35	**96**
2.00	**95**
1.18	**94**
0.630	**92**
0.425	**88**
0.200	**68**
0.150	**65**
0.063	**60**

Particle Diameter (mm)	Percent Passing (%)
0.02	**51**
0.006	**43**
0.002	**33**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**NA**
D_{50} (mm)	**0.017**
D_{60} (mm)	**0.063**
D_{85} (mm)	**0.380**
D_{90} (mm)	**0.517**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown red slightly gravelly sandy silty CLAY

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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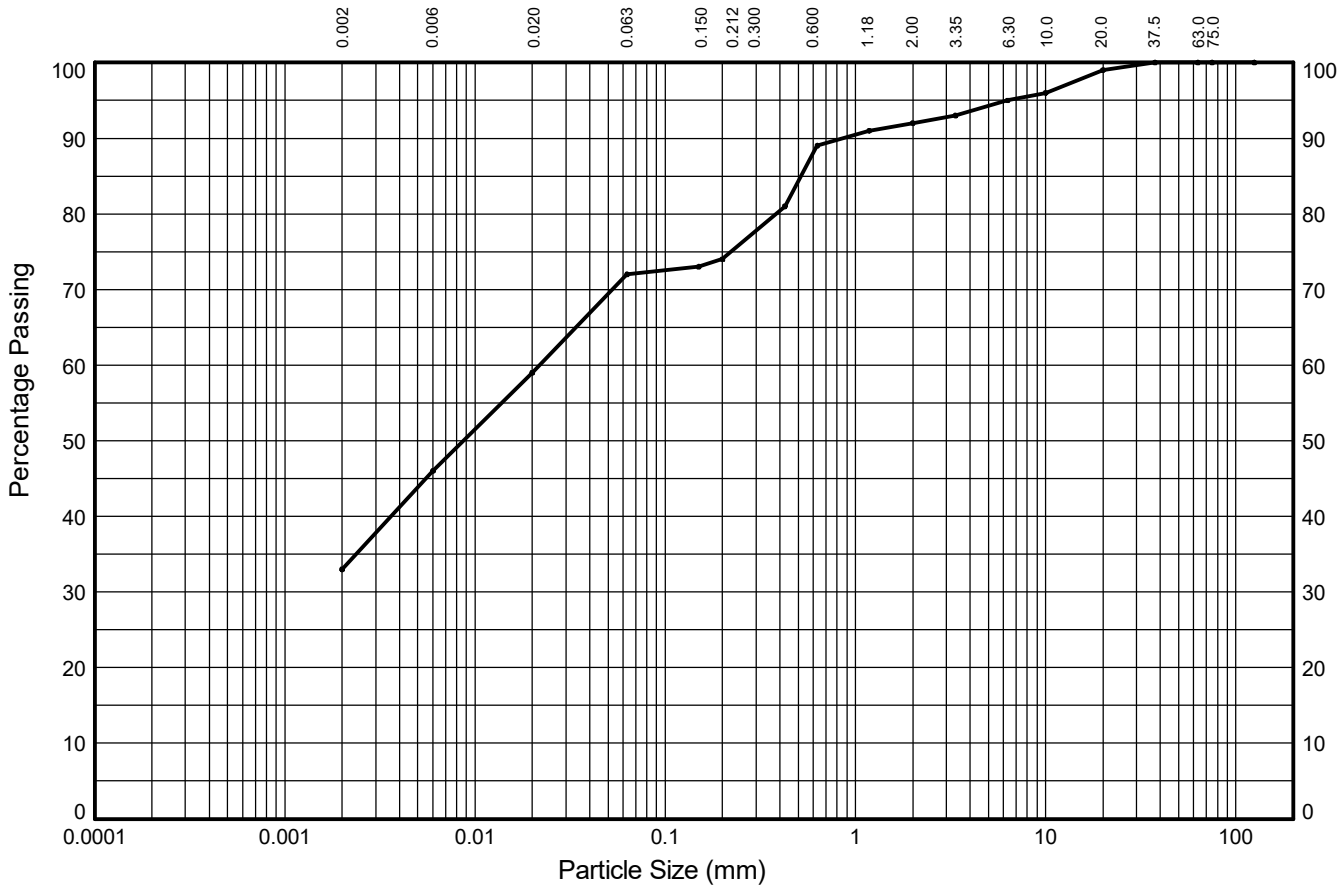
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Position ID: **CP07** Sample Ref: **10** Sample Type: **B** Depth (m): **2.50**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	13%	13%	13%	2%	15%	3%	3%	4%	1%	
	SILT			SAND			GRAVEL			
33%	39%			20%			8%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**99**
10.0	**96**
6.30	**95**
3.35	**93**
2.00	**92**
1.18	**91**
0.630	**89**
0.425	**81**
0.200	**74**
0.150	**73**
0.063	**72**

Particle Diameter (mm)	Percent Passing (%)
0.02	**59**
0.006	**46**
0.002	**33**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**NA**
D_{50} (mm)	**0.009**
D_{60} (mm)	**0.022**
D_{85} (mm)	**0.517**
D_{90} (mm)	**0.862**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown slightly gravelly slightly sandy clayey SILT

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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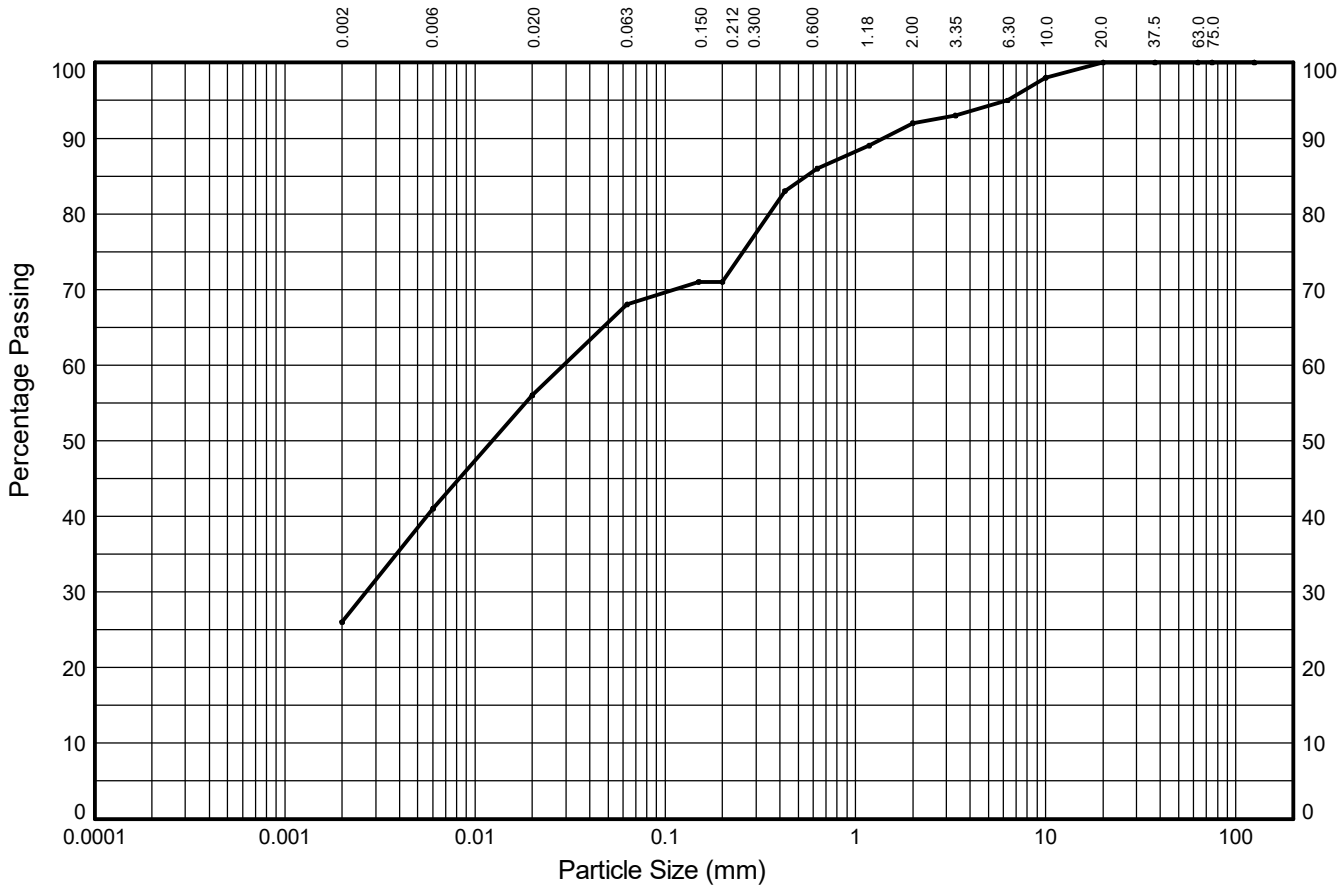
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Position ID: **CP07** Sample Ref: **17** Sample Type: **B** Depth (m): **4.50**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	15%	15%	12%	3%	15%	6%	3%	5%	0%	
	SILT			SAND			GRAVEL			
26%	42%			24%			8%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**100**
10.0	**98**
6.30	**95**
3.35	**93**
2.00	**92**
1.18	**89**
0.630	**86**
0.425	**83**
0.200	**71**
0.150	**71**
0.063	**68**

Particle Diameter (mm)	Percent Passing (%)
0.02	**56**
0.006	**41**
0.002	**26**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**0.003**
D_{50} (mm)	**0.012**
D_{60} (mm)	**0.029**
D_{85} (mm)	**0.553**
D_{90} (mm)	**1.407**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown slightly gravelly slightly sandy clayey SILT

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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LORNA WHITWORTH	27/02/23

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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Position ID: **CP08** Sample Ref: **19** Sample Type: **B** Depth (m): **4.00**

CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	9%	11%	11%	11%	14%	9%	4%	4%	1%	
	SILT			SAND			GRAVEL			
26%	31%			34%			9%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**99**
10.0	**97**
6.30	**95**
3.35	**93**
2.00	**91**
1.18	**87**
0.630	**82**
0.425	**78**
0.200	**68**
0.150	**64**
0.063	**57**

Particle Diameter (mm)	Percent Passing (%)
0.02	**46**
0.006	**35**
0.002	**26**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**0.003**
D_{50} (mm)	**0.030**
D_{60} (mm)	**0.091**
D_{85} (mm)	**0.918**
D_{90} (mm)	**1.753**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown slightly gravelly slightly sandy clayey SILT

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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Compiled By	Date
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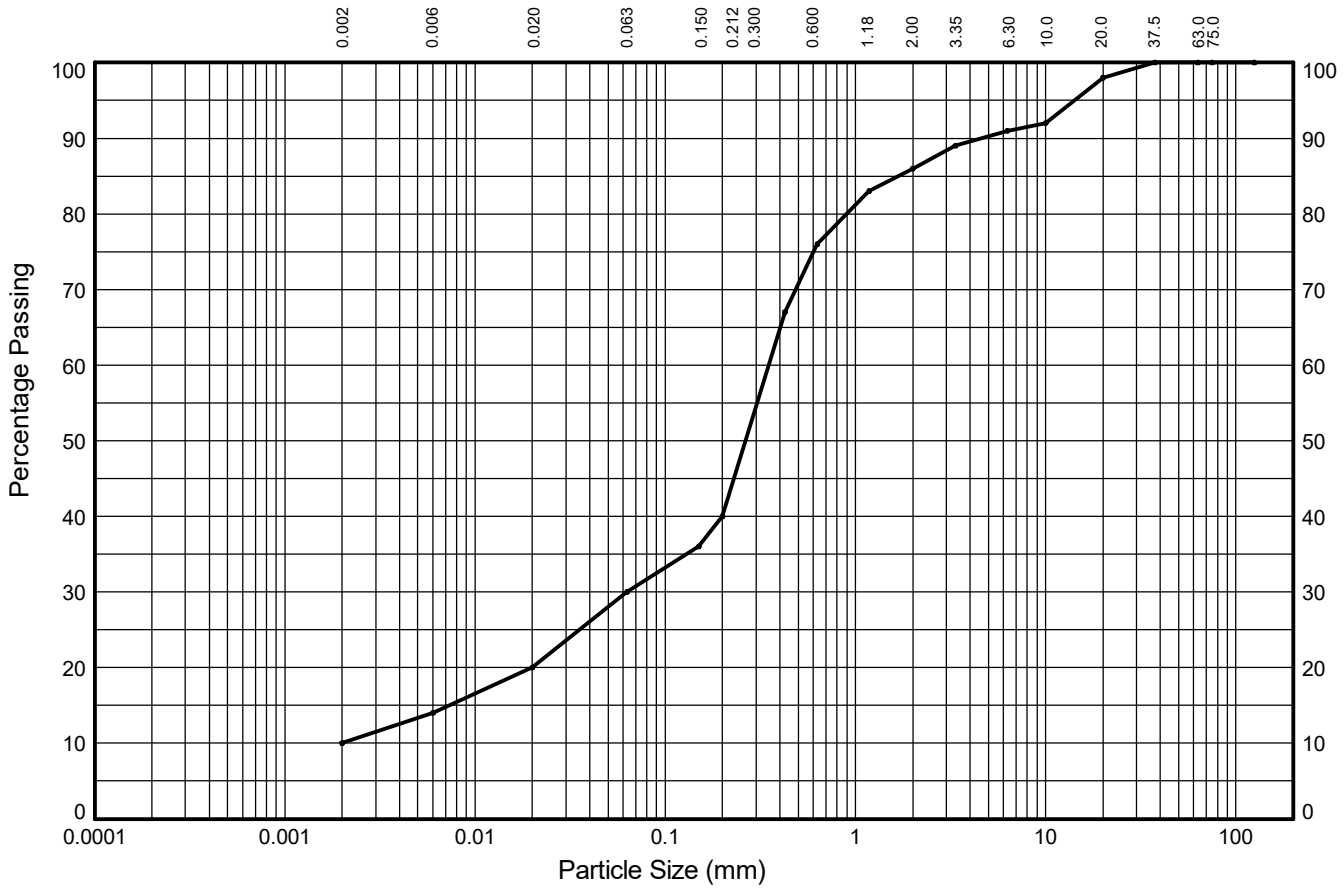
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Position ID: **CP08** Sample Ref: **30** Sample Type: **B** Depth (m): **7.50**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	4%	6%	10%	10%	36%	10%	5%	7%	2%	
	SILT			SAND			GRAVEL			
10%	20%			56%			14%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**98**
10.0	**92**
6.30	**91**
3.35	**89**
2.00	**86**
1.18	**83**
0.630	**76**
0.425	**67**
0.200	**40**
0.150	**36**
0.063	**30**

Particle Diameter (mm)	Percent Passing (%)
0.02	**20**
0.006	**14**
0.002	**10**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**0.002**
D_{15} (mm)	**0.007**
D_{30} (mm)	**0.063**
D_{50} (mm)	**0.264**
D_{60} (mm)	**0.350**
D_{85} (mm)	**1.677**
D_{90} (mm)	**4.594**
C_U	**175**
C_C	**6**

Soil Description:

Brown red gravelly clayey silty SAND

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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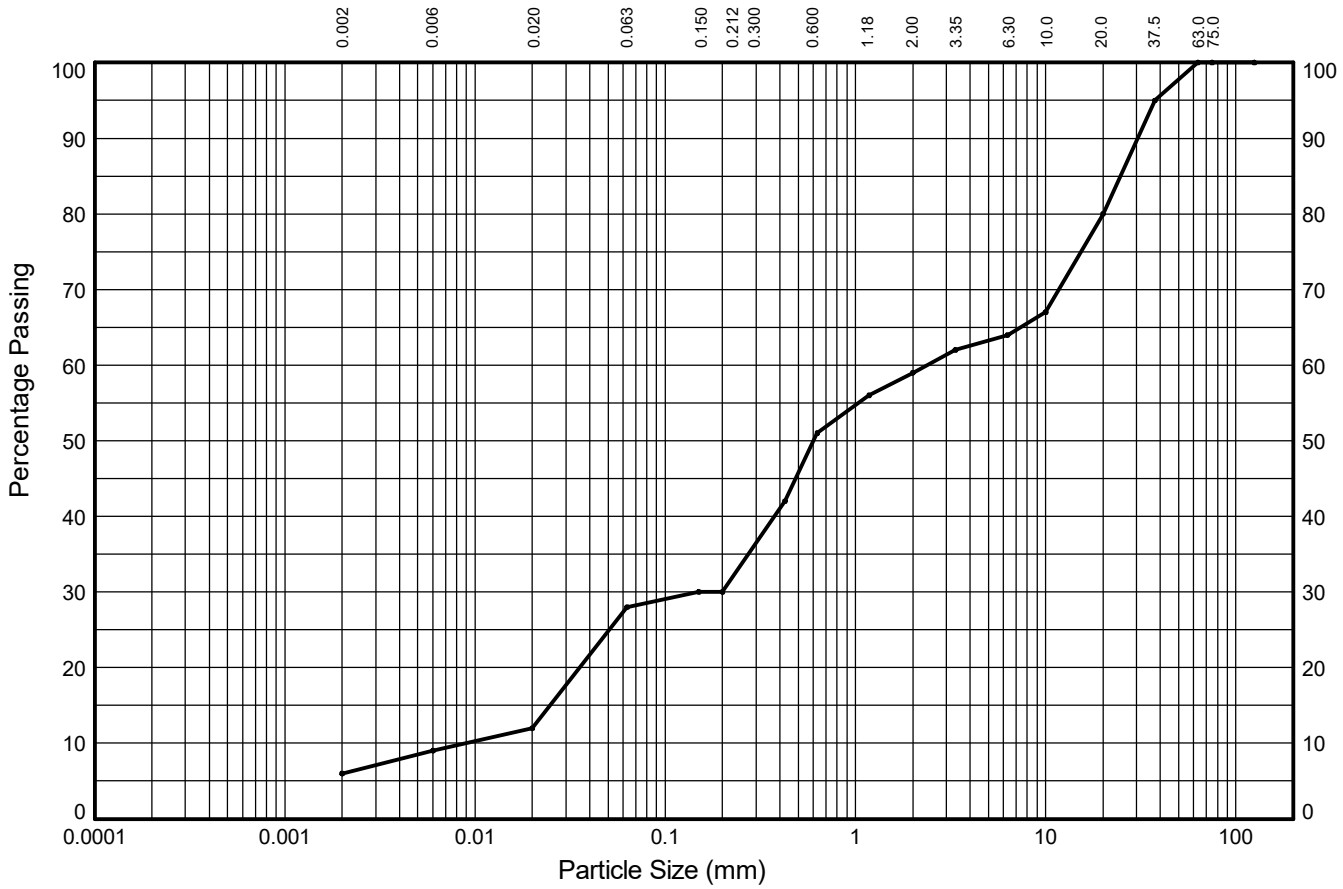
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016
NON-STANDARD TEST

Position ID: **CP08** Sample Ref: **35** Sample Type: **B** Depth (m): **9.00**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	3%	3%	16%	2%	21%	8%	5%	16%	20%	
	SILT			SAND			GRAVEL			
6%	22%			31%			41%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**95**
20.0	**80**
10.0	**67**
6.30	**64**
3.35	**62**
2.00	**59**
1.18	**56**
0.630	**51**
0.425	**42**
0.200	**30**
0.150	**30**
0.063	**28**

Particle Diameter (mm)	Percent Passing (%)
0.02	**12**
0.006	**9**
0.002	**6**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**0.009**
D_{15} (mm)	**0.025**
D_{30} (mm)	**0.150**
D_{50} (mm)	**0.603**
D_{60} (mm)	**2.375**
D_{85} (mm)	**24.662**
D_{90} (mm)	**30.411**
C_U	**265**
C_C	**1**

Soil Description:

Brown very sandy clayey very silty GRAVEL

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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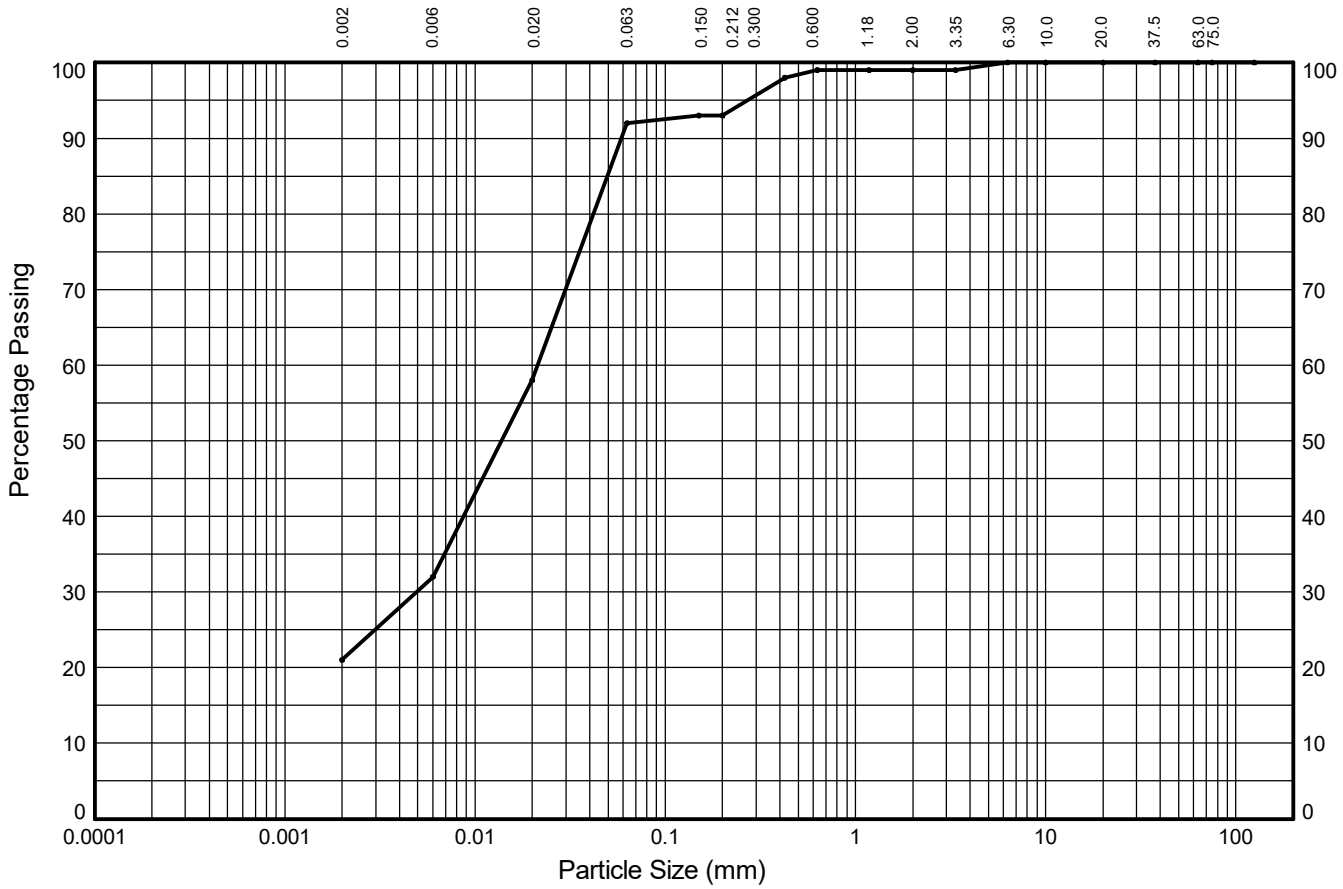
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Position ID: **CP09** Sample Ref: **14** Sample Type: **B** Depth (m): **4.00**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	12%	25%	34%	1%	6%	0%	1%	0%	0%	
	SILT			SAND			GRAVEL			
21%	71%			7%			1%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**100**
10.0	**100**
6.30	**100**
3.35	**99**
2.00	**99**
1.18	**99**
0.630	**99**
0.425	**98**
0.200	**93**
0.150	**93**
0.063	**92**

Particle Diameter (mm)	Percent Passing (%)
0.02	**58**
0.006	**32**
0.002	**21**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**0.005**
D_{50} (mm)	**0.014**
D_{60} (mm)	**0.021**
D_{85} (mm)	**0.050**
D_{90} (mm)	**0.059**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown/red slightly gravelly slightly sandy clayey SILT

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Position ID: **CP11** Sample Ref: **6** Sample Type: **B** Depth (m): **1.20**

CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	15%	17%	13%	2%	21%	0%	1%	0%	0%	
	SILT			SAND			GRAVEL			
31%	45%			23%			1%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**100**
10.0	**100**
6.30	**100**
3.35	**100**
2.00	**99**
1.18	**99**
0.630	**99**
0.425	**91**
0.200	**78**
0.150	**77**
0.063	**76**

Particle Diameter (mm)	Percent Passing (%)
0.02	**63**
0.006	**46**
0.002	**31**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**NA**
D_{50} (mm)	**0.008**
D_{60} (mm)	**0.016**
D_{85} (mm)	**0.300**
D_{90} (mm)	**0.401**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown/red slightly gravelly slightly sandy clayey SILT

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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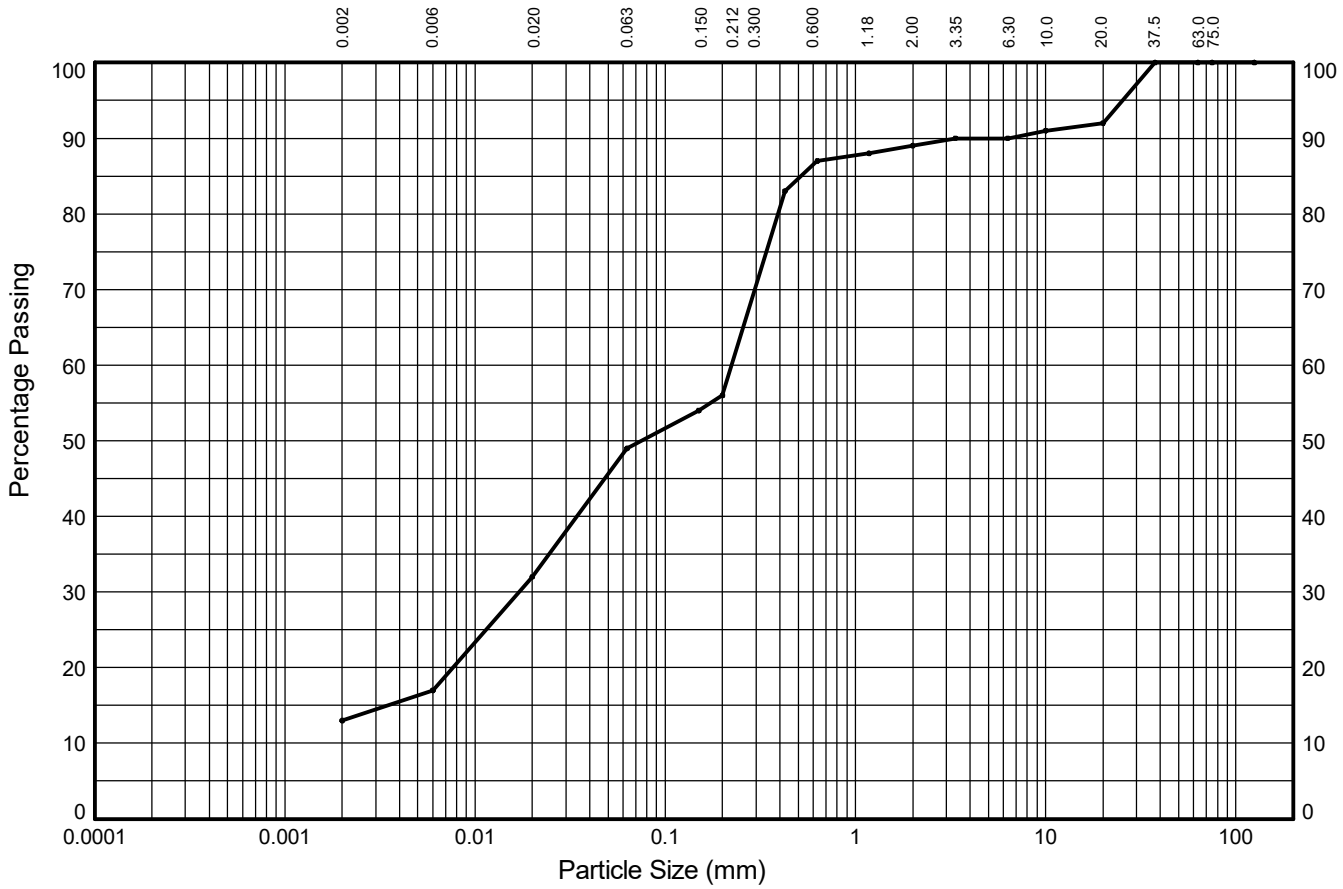
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Position ID: **CP13** Sample Ref: **4** Sample Type: **B** Depth (m): **0.60**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	4%	15%	17%	7%	31%	2%	1%	2%	8%	
	SILT			SAND			GRAVEL			
13%	36%			40%			11%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**92**
10.0	**91**
6.30	**90**
3.35	**90**
2.00	**89**
1.18	**88**
0.630	**87**
0.425	**83**
0.200	**56**
0.150	**54**
0.063	**49**

Particle Diameter (mm)	Percent Passing (%)
0.02	**32**
0.006	**17**
0.002	**13**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**0.003**
D_{30} (mm)	**0.017**
D_{50} (mm)	**0.075**
D_{60} (mm)	**0.224**
D_{85} (mm)	**0.517**
D_{90} (mm)	**3.350**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown red slightly gravelly sandy clayey SILT

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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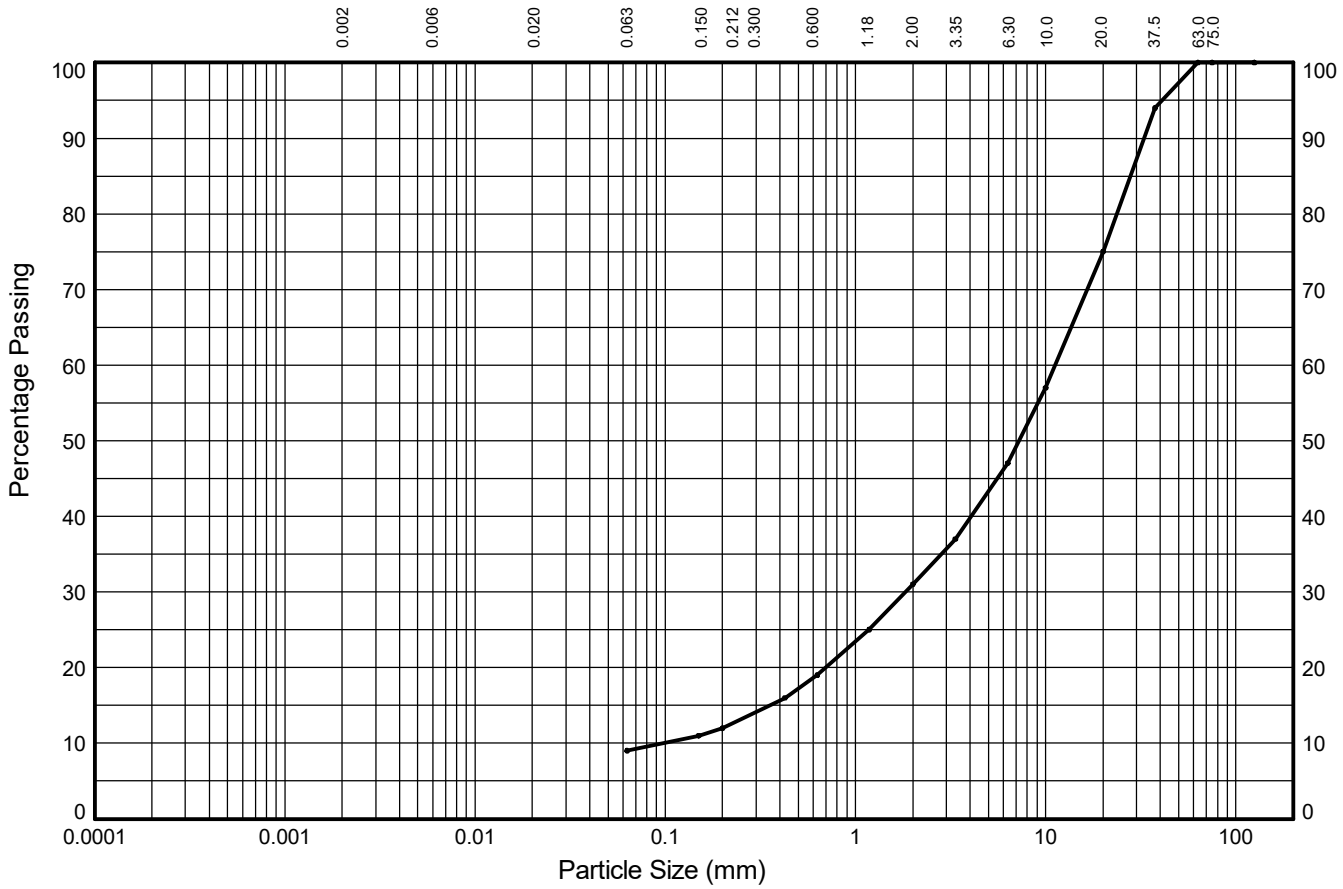
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2 of BS EN ISO 17892:Part 4:2016
NON-STANDARD TEST

Position ID: **CP13** Sample Ref: **19** Sample Type: **B** Depth (m): **4.50**



CLAY										
	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	-	-	-	3%	7%	12%	16%	28%	25%	
	SILT			SAND			GRAVEL			
9%				22%			69%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**94**
20.0	**75**
10.0	**57**
6.30	**47**
3.35	**37**
2.00	**31**
1.18	**25**
0.630	**19**
0.425	**16**
0.200	**12**
0.150	**11**
0.063	**9**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**0.097**
D_{15} (mm)	**0.352**
D_{30} (mm)	**1.832**
D_{50} (mm)	**7.237**
D_{60} (mm)	**11.225**
D_{85} (mm)	**27.843**
D_{90} (mm)	**32.852**
C_U	**115**
C_C	**3**

Soil Description:

Brown sandy silty/clayey GRAVEL

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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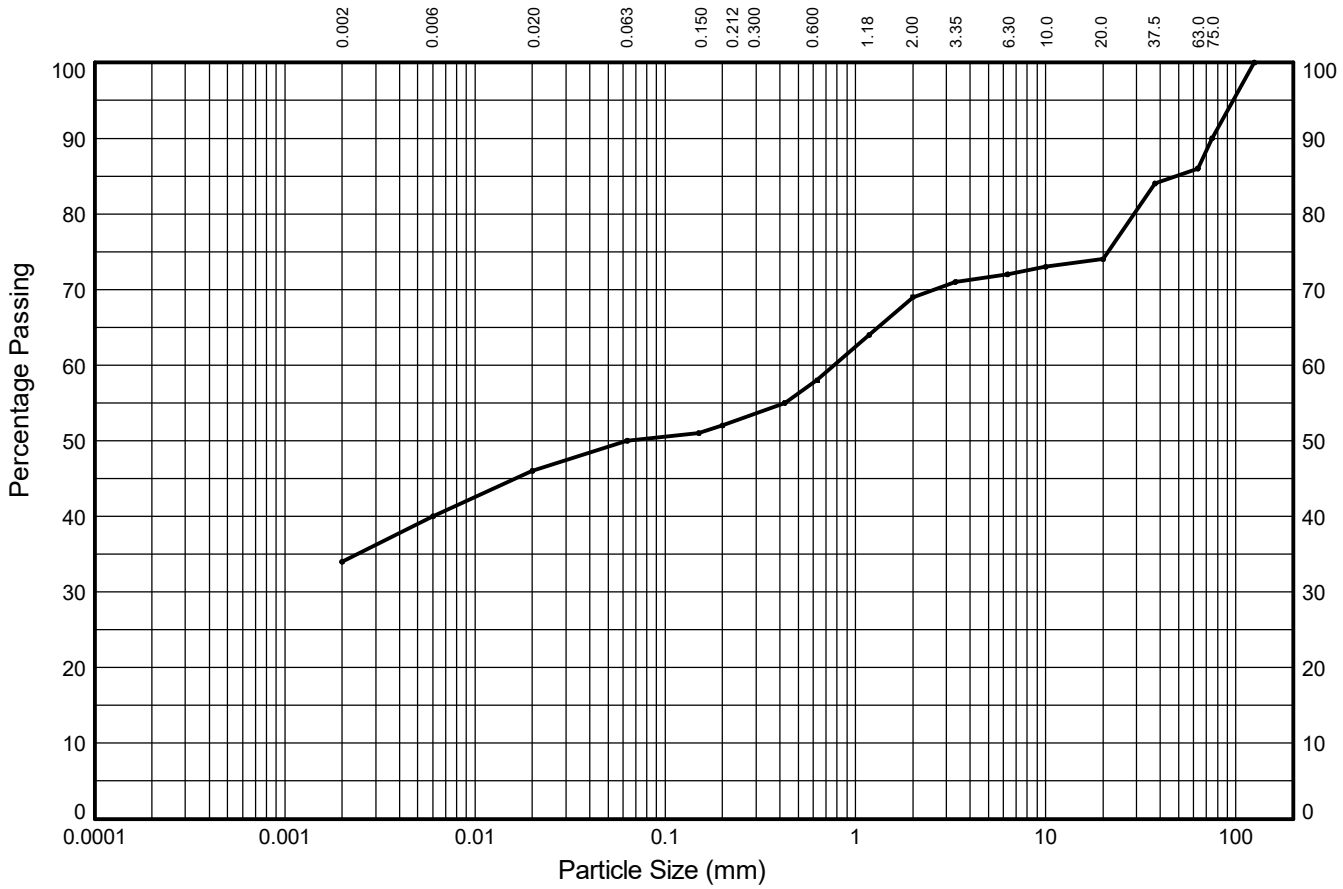
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Position ID: **CP14** Sample Ref: **18** Sample Type: **B** Depth (m): **6.40**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	6%	6%	4%	2%	6%	11%	3%	2%	12%	
	SILT			SAND			GRAVEL			
34%	16%			19%			17%			14%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**90**
63.0	**86**
37.5	**84**
20.0	**74**
10.0	**73**
6.30	**72**
3.35	**71**
2.00	**69**
1.18	**64**
0.630	**58**
0.425	**55**
0.200	**52**
0.150	**51**
0.063	**50**

Particle Diameter (mm)	Percent Passing (%)
0.02	**46**
0.006	**40**
0.002	**34**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**NA**
D_{50} (mm)	**0.063**
D_{60} (mm)	**0.777**
D_{85} (mm)	**48.606**
D_{90} (mm)	**75.000**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown slightly gravelly slightly sandy silty CLAY with medium cobble content

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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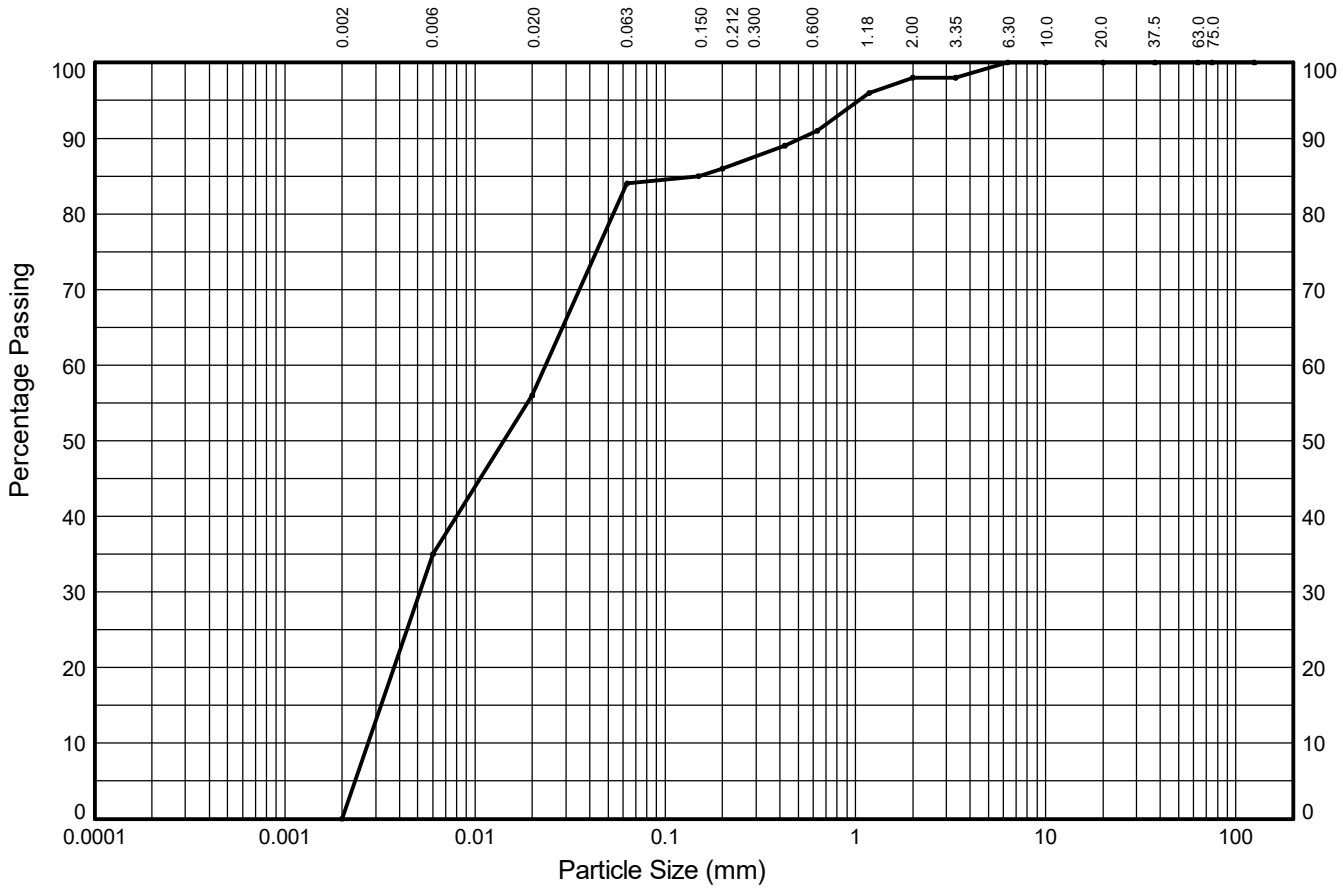
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Position ID: **CP15** Sample Ref: **11** Sample Type: **B** Depth (m): **3.00**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	35%	21%	28%	2%	5%	7%	2%	0%	0%	
	SILT			SAND			GRAVEL			
0%	84%			14%			2%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**100**
10.0	**100**
6.30	**100**
3.35	**98**
2.00	**98**
1.18	**96**
0.630	**91**
0.425	**89**
0.200	**86**
0.150	**85**
0.063	**84**

Particle Diameter (mm)	Percent Passing (%)
0.02	**56**
0.006	**35**
0.002	**0**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**0.003**
D_{15} (mm)	**0.003**
D_{30} (mm)	**0.005**
D_{50} (mm)	**0.014**
D_{60} (mm)	**0.024**
D_{85} (mm)	**0.150**
D_{90} (mm)	**0.517**
C_U	**8.6**
C_C	**0.41**

Soil Description:

Brown/red slightly gravelly slightly sandy SILT

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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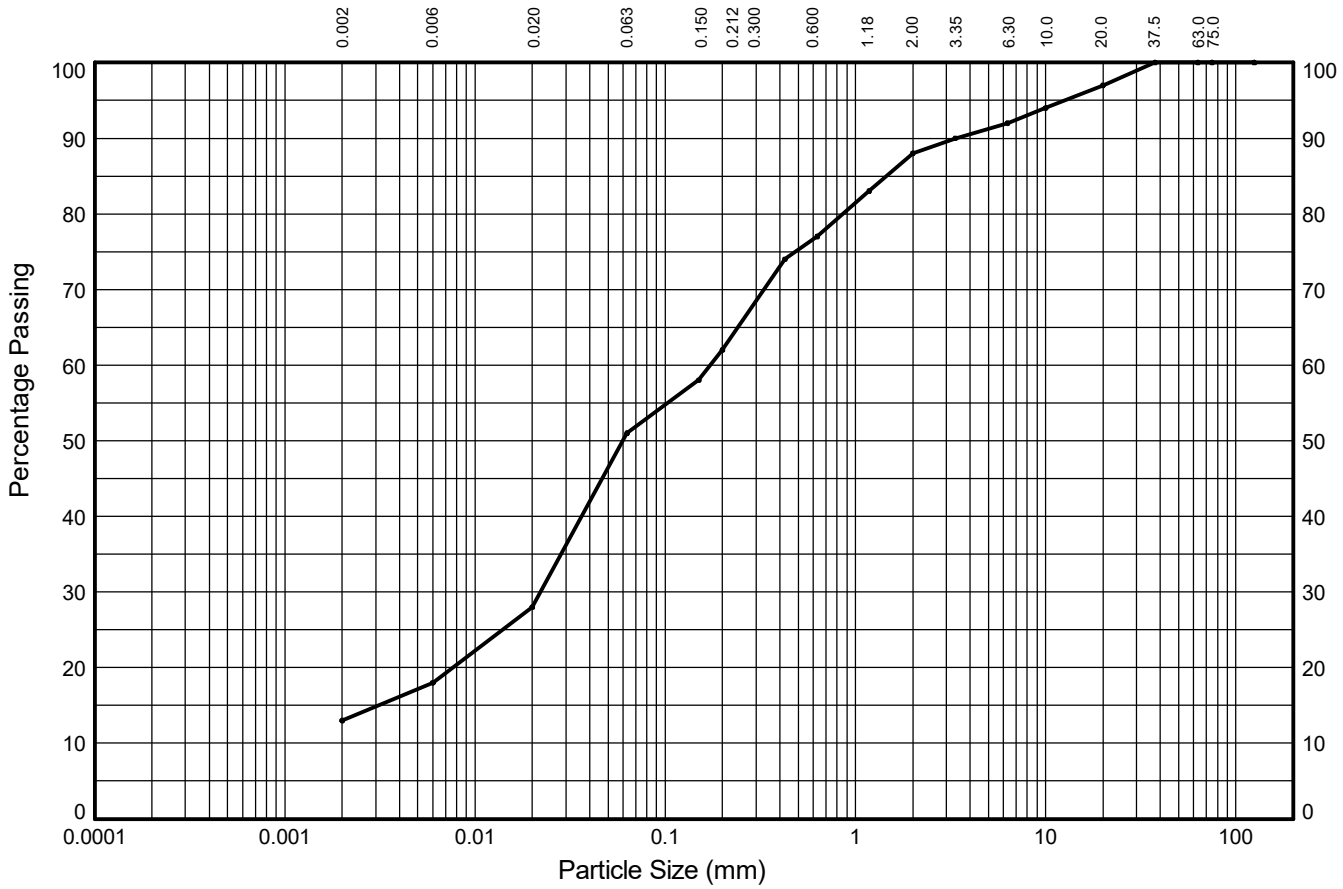
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Position ID: **CP17** Sample Ref: **22** Sample Type: **B** Depth (m): **6.00**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	5%	10%	23%	11%	15%	11%	4%	5%	3%	
	SILT			SAND			GRAVEL			
13%	38%			37%			12%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**97**
10.0	**94**
6.30	**92**
3.35	**90**
2.00	**88**
1.18	**83**
0.630	**77**
0.425	**74**
0.200	**62**
0.150	**58**
0.063	**51**

Particle Diameter (mm)	Percent Passing (%)
0.02	**28**
0.006	**18**
0.002	**13**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**0.003**
D_{30} (mm)	**0.022**
D_{50} (mm)	**0.060**
D_{60} (mm)	**0.173**
D_{85} (mm)	**1.457**
D_{90} (mm)	**3.350**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown slightly gravelly slightly sandy clayey SILT

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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Compiled By	Date
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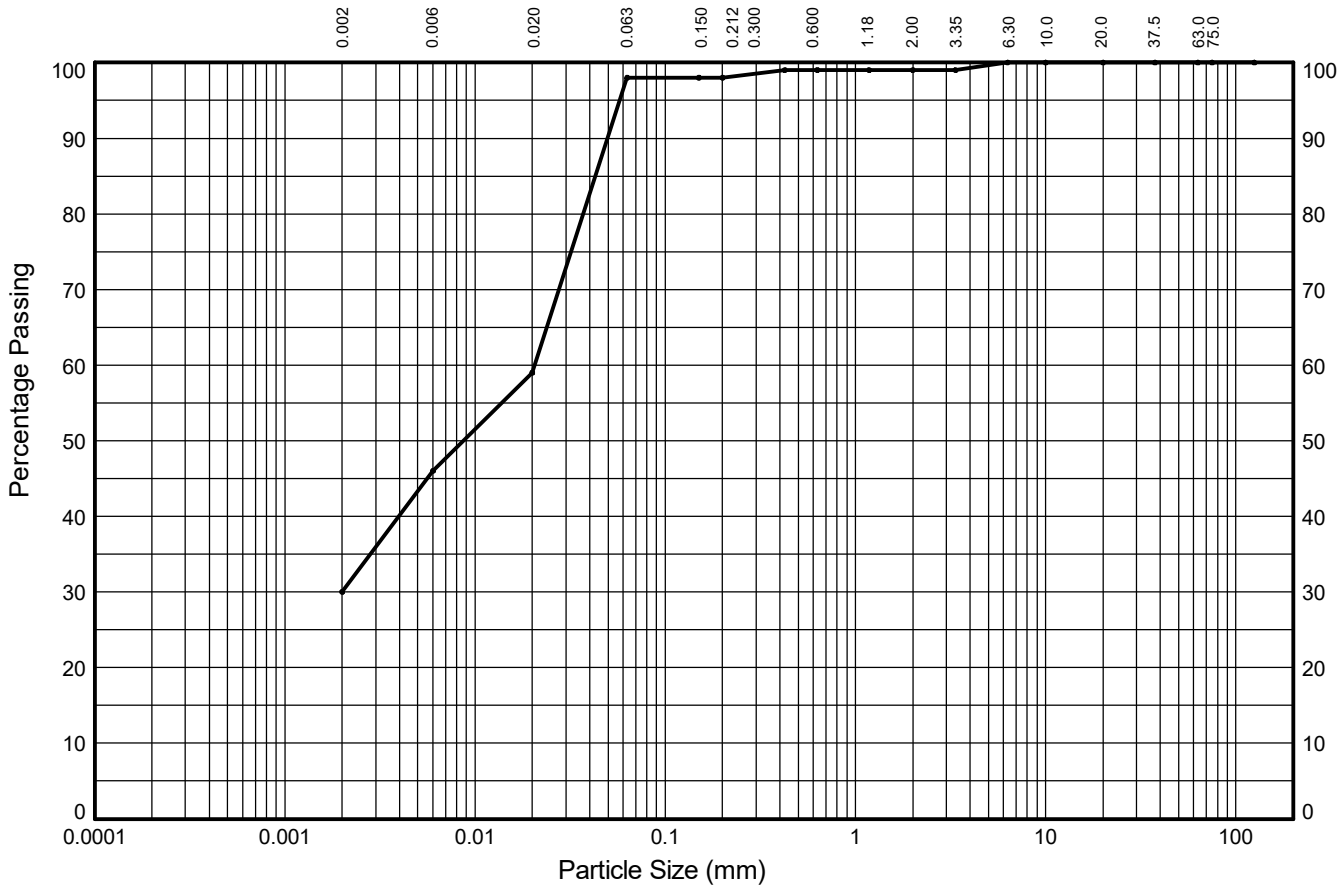
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Position ID: **CP18** Sample Ref: **4** Sample Type: **B** Depth (m): **0.90**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	16%	13%	39%	0%	1%	0%	1%	0%	0%	
	SILT			SAND			GRAVEL			
30%	68%			1%			1%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**100**
10.0	**100**
6.30	**100**
3.35	**99**
2.00	**99**
1.18	**99**
0.630	**99**
0.425	**99**
0.200	**98**
0.150	**98**
0.063	**98**

Particle Diameter (mm)	Percent Passing (%)
0.02	**59**
0.006	**46**
0.002	**30**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**0.002**
D_{50} (mm)	**0.009**
D_{60} (mm)	**0.021**
D_{85} (mm)	**0.043**
D_{90} (mm)	**0.050**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown slightly gravelly slightly sandy clayey SILT

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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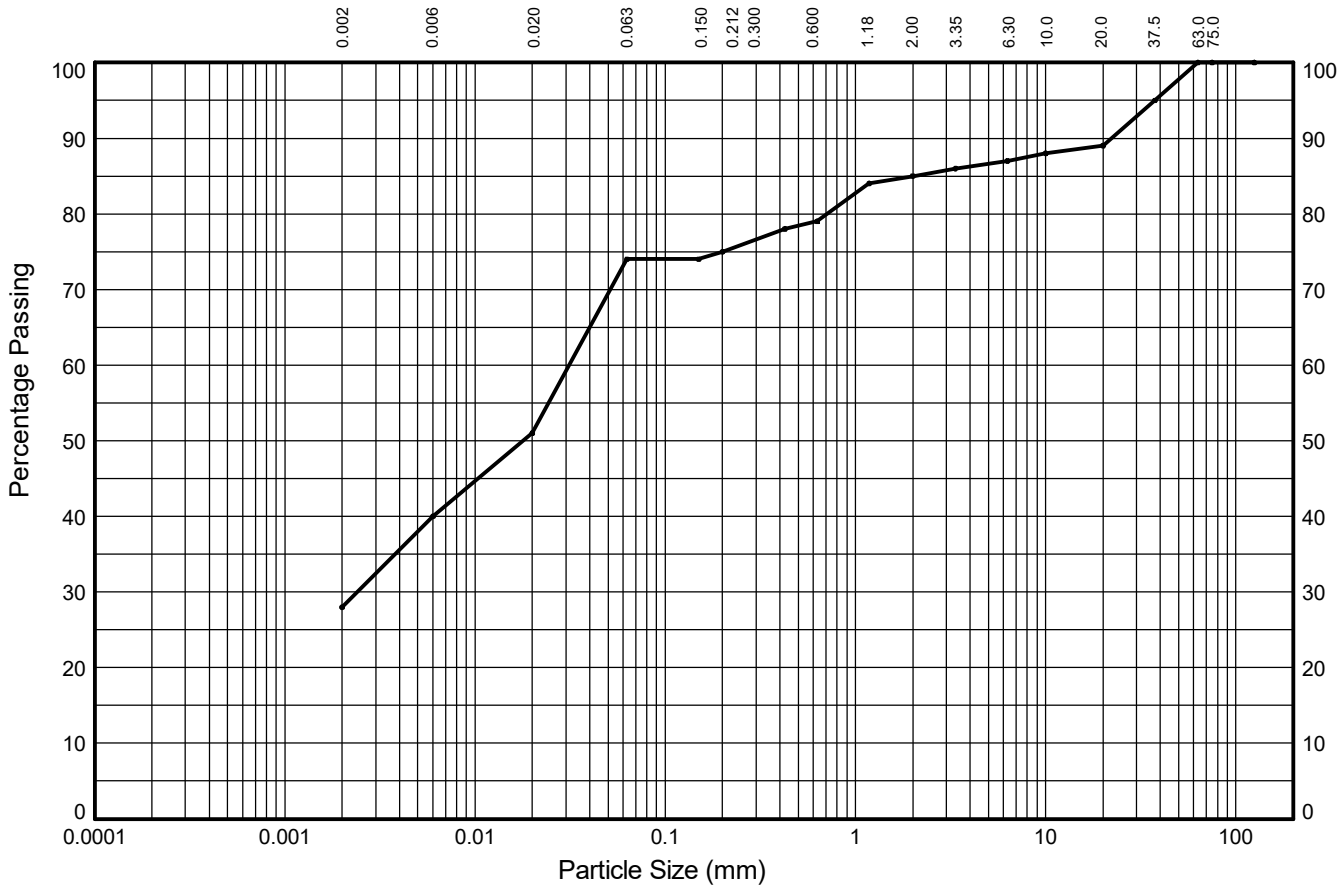
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Position ID: **CP22** Sample Ref: **4** Sample Type: **B** Depth (m): **0.50**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	12%	11%	23%	1%	4%	6%	2%	2%	11%	
	SILT			SAND			GRAVEL			
28%	46%			11%			15%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**95**
20.0	**89**
10.0	**88**
6.30	**87**
3.35	**86**
2.00	**85**
1.18	**84**
0.630	**79**
0.425	**78**
0.200	**75**
0.150	**74**
0.063	**74**

Particle Diameter (mm)	Percent Passing (%)
0.02	**51**
0.006	**40**
0.002	**28**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**0.002**
D_{50} (mm)	**0.018**
D_{60} (mm)	**0.031**
D_{85} (mm)	**2.000**
D_{90} (mm)	**22.209**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown slightly sandy slightly gravelly clayey SILT

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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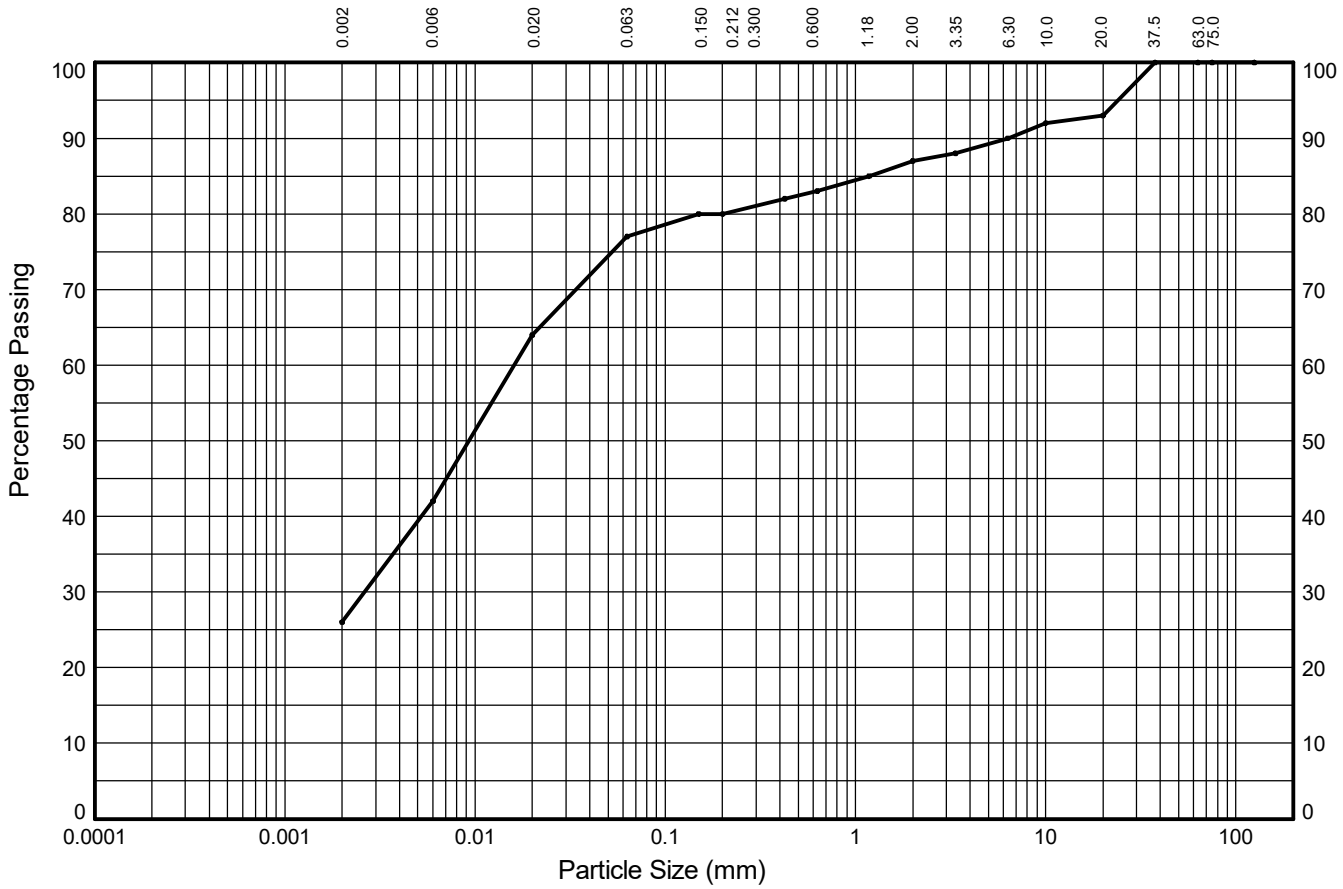
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Position ID: **CP24** Sample Ref: **5** Sample Type: **B** Depth (m): **1.00**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	16%	22%	13%	3%	3%	4%	3%	3%	7%	
	SILT			SAND			GRAVEL			
26%	51%			10%			13%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**93**
10.0	**92**
6.30	**90**
3.35	**88**
2.00	**87**
1.18	**85**
0.630	**83**
0.425	**82**
0.200	**80**
0.150	**80**
0.063	**77**

Particle Diameter (mm)	Percent Passing (%)
0.02	**64**
0.006	**42**
0.002	**26**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**0.003**
D_{50} (mm)	**0.009**
D_{60} (mm)	**0.016**
D_{85} (mm)	**1.180**
D_{90} (mm)	**6.300**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown red slightly sandy slightly gravelly clayey SILT

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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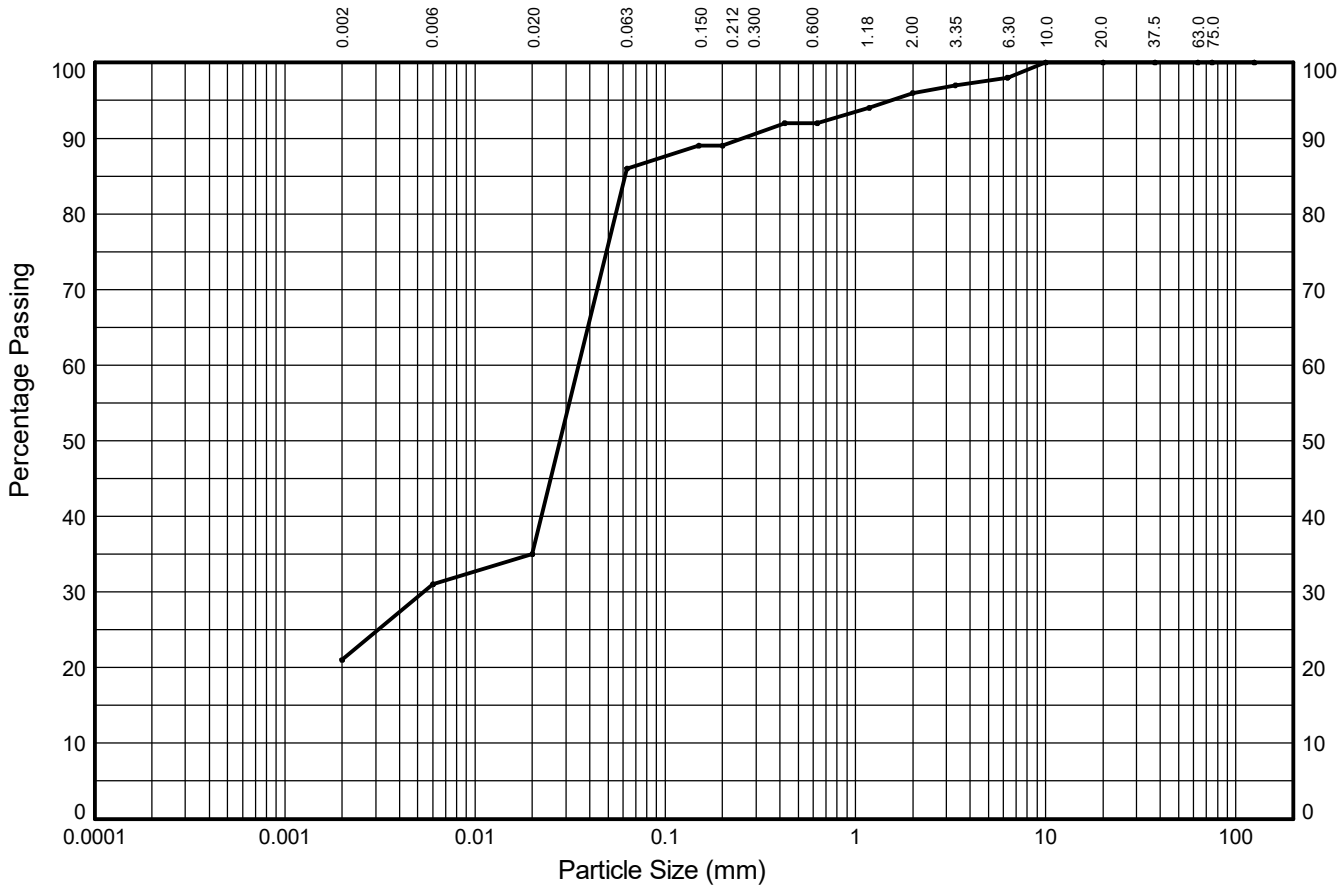
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Trial Pit: **TP02** Sample Ref: **7** Sample Type: **D** Depth (m): **0.70**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	10%	4%	51%	3%	3%	4%	2%	2%	0%	
	SILT			SAND			GRAVEL			
21%	65%			10%			4%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**100**
10.0	**100**
6.30	**98**
3.35	**97**
2.00	**96**
1.18	**94**
0.630	**92**
0.425	**92**
0.200	**89**
0.150	**89**
0.063	**86**

Particle Diameter (mm)	Percent Passing (%)
0.02	**35**
0.006	**31**
0.002	**21**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**0.005**
D_{50} (mm)	**0.028**
D_{60} (mm)	**0.035**
D_{85} (mm)	**0.062**
D_{90} (mm)	**0.257**
C_U	**NA**
C_C	**NA**

Soil Description:

Red brown slightly gravelly slightly sandy slightly clayey SILT

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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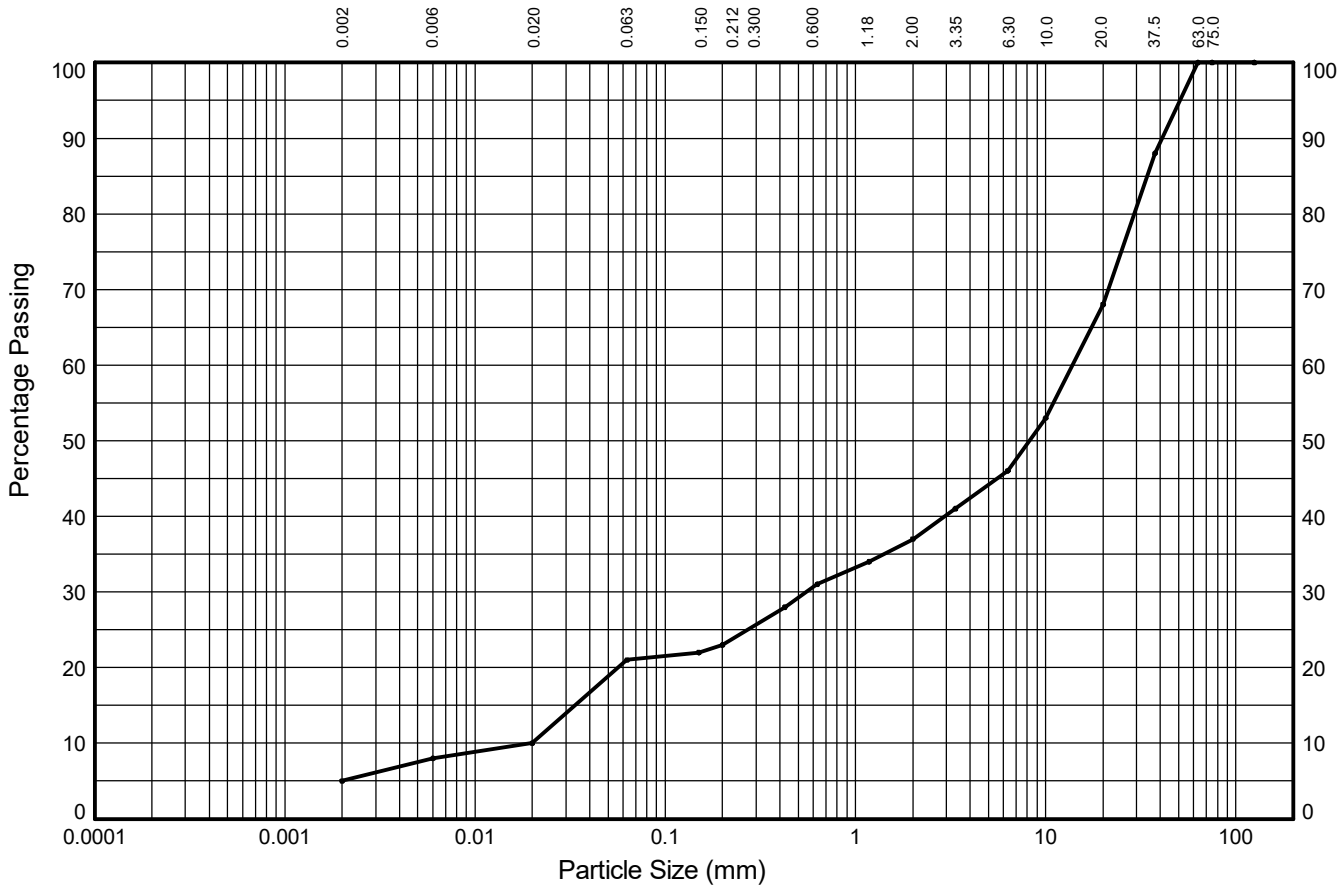
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016
NON-STANDARD TEST

Trial Pit: **TP06** Sample Ref: **14** Sample Type: **B** Depth (m): **2.10**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	3%	2%	11%	2%	8%	6%	9%	22%	32%	
	SILT			SAND			GRAVEL			
5%	16%			16%			63%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**88**
20.0	**68**
10.0	**53**
6.30	**46**
3.35	**41**
2.00	**37**
1.18	**34**
0.630	**31**
0.425	**28**
0.200	**23**
0.150	**22**
0.063	**21**

Particle Diameter (mm)	Percent Passing (%)
0.02	**10**
0.006	**8**
0.002	**5**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**0.020**
D_{15} (mm)	**0.034**
D_{30} (mm)	**0.553**
D_{50} (mm)	**8.204**
D_{60} (mm)	**13.819**
D_{85} (mm)	**34.126**
D_{90} (mm)	**40.887**
C_U	**691**
C_C	**1**

Soil Description:

Brown sandy clayey silty GRAVEL

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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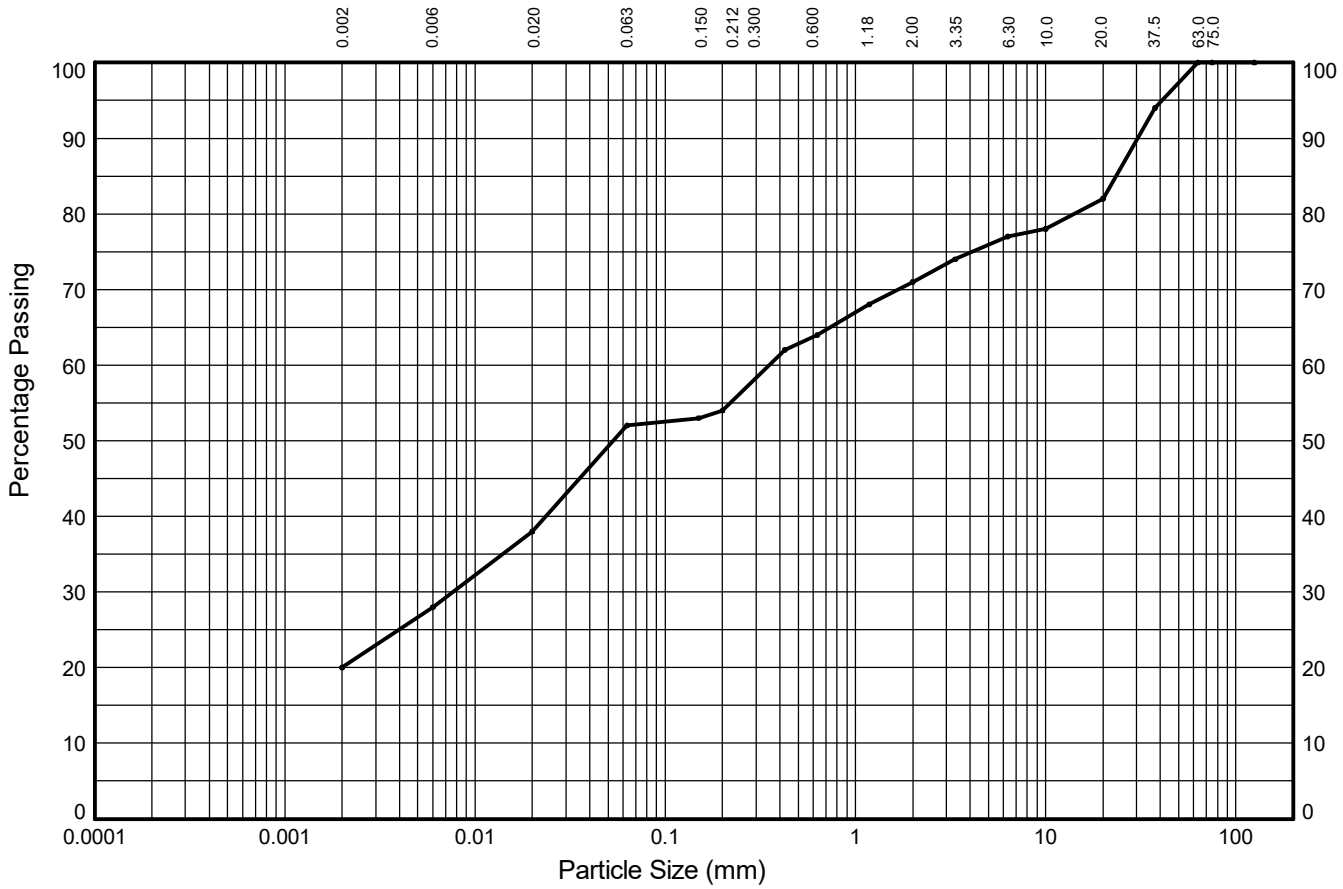
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Trial Pit: **TP08** Sample Ref: **5** Sample Type: **LB** Depth (m): **0.50**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	8%	10%	14%	2%	10%	7%	6%	5%	18%	
	SILT			SAND			GRAVEL			
20%	32%			19%			29%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**94**
20.0	**82**
10.0	**78**
6.30	**77**
3.35	**74**
2.00	**71**
1.18	**68**
0.630	**64**
0.425	**62**
0.200	**54**
0.150	**53**
0.063	**52**

Particle Diameter (mm)	Percent Passing (%)
0.02	**38**
0.006	**28**
0.002	**20**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**0.008**
D_{50} (mm)	**0.053**
D_{60} (mm)	**0.352**
D_{85} (mm)	**23.403**
D_{90} (mm)	**30.411**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown slightly sandy slightly gravelly clayey SILT

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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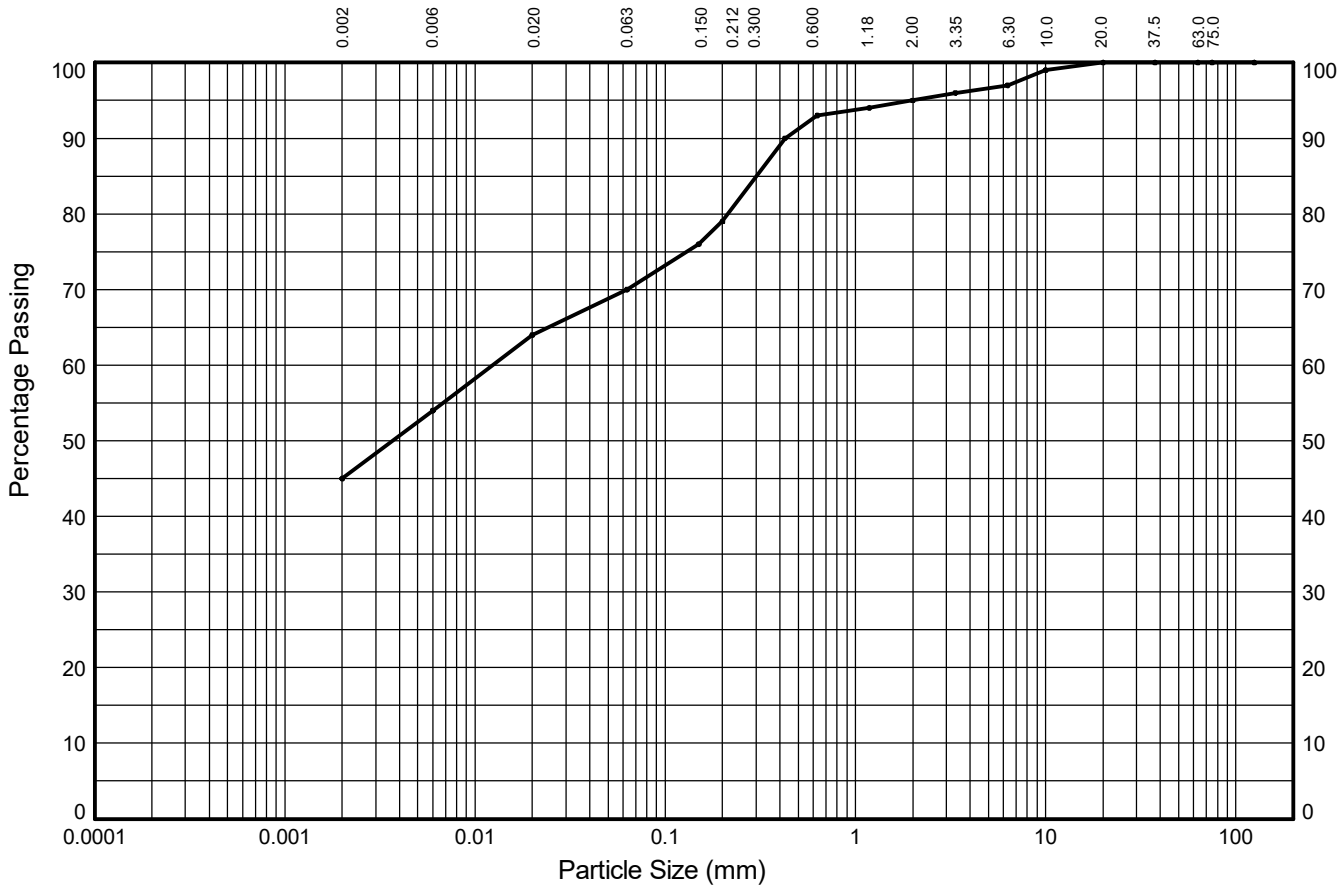
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Trial Pit: **TP09** Sample Ref: **5** Sample Type: **LB** Depth (m): **0.60**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	9%	10%	6%	9%	14%	2%	2%	3%	0%	
	SILT			SAND			GRAVEL			
45%	25%			25%			5%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**100**
10.0	**99**
6.30	**97**
3.35	**96**
2.00	**95**
1.18	**94**
0.630	**93**
0.425	**90**
0.200	**79**
0.150	**76**
0.063	**70**

Particle Diameter (mm)	Percent Passing (%)
0.02	**64**
0.006	**54**
0.002	**45**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**NA**
D_{50} (mm)	**0.004**
D_{60} (mm)	**0.012**
D_{85} (mm)	**0.302**
D_{90} (mm)	**0.425**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown slightly gravelly slightly sandy silty CLAY

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Trial Pit: **TP10** Sample Ref: **11** Sample Type: **LB** Depth (m): **1.40**

CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	13%	14%	10%	2%	16%	3%	2%	1%	1%	
	SILT			SAND			GRAVEL			
38%	37%			21%			4%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**99**
10.0	**98**
6.30	**98**
3.35	**97**
2.00	**96**
1.18	**95**
0.630	**93**
0.425	**86**
0.200	**77**
0.150	**76**
0.063	**75**

Particle Diameter (mm)	Percent Passing (%)
0.02	**65**
0.006	**51**
0.002	**38**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**NA**
D_{50} (mm)	**0.006**
D_{60} (mm)	**0.013**
D_{85} (mm)	**0.391**
D_{90} (mm)	**0.532**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown slightly gravelly slightly sandy silty CLAY

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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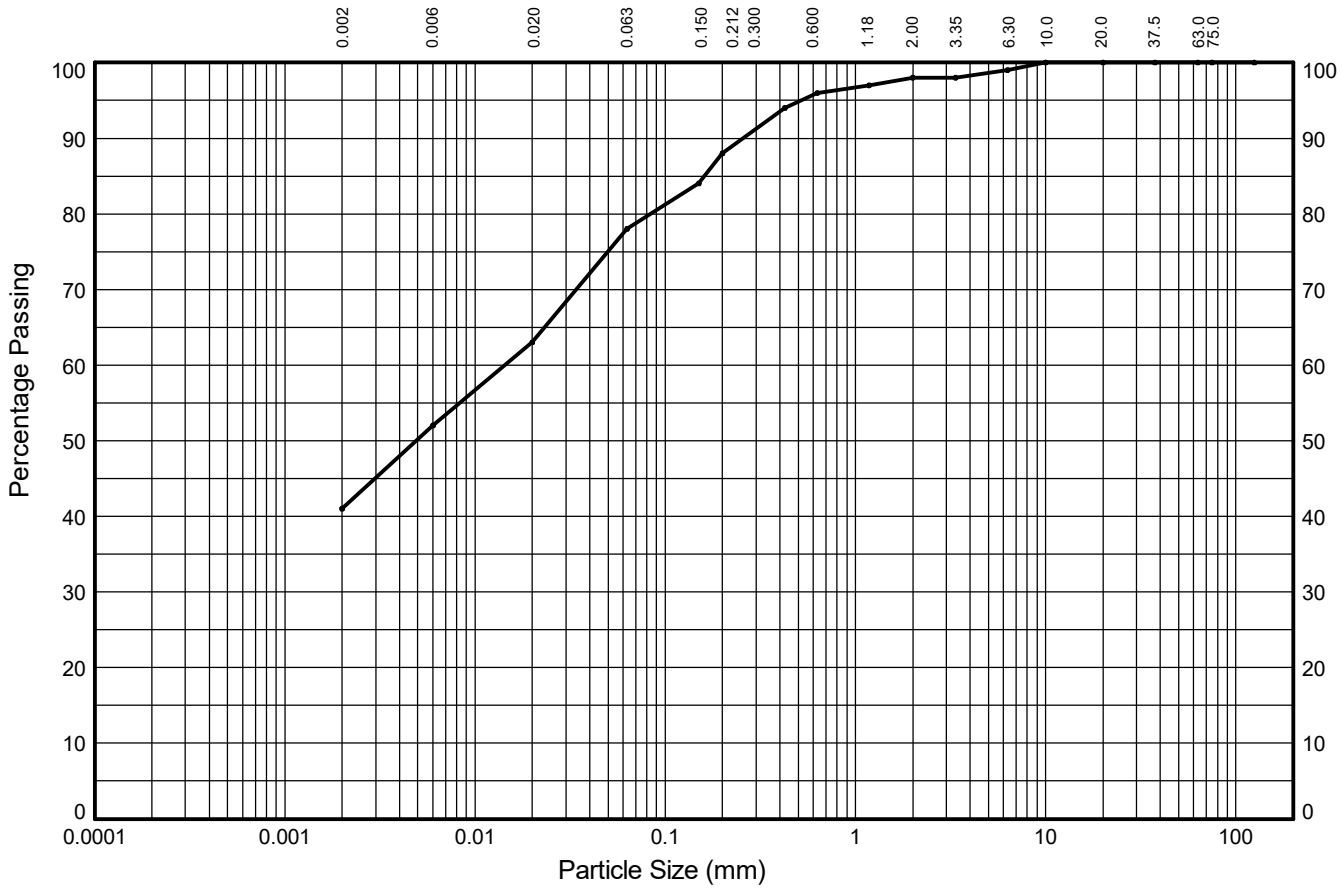
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Trial Pit: **TP11** Sample Ref: **8** Sample Type: **B** Depth (m): **1.20**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	11%	11%	15%	10%	8%	2%	1%	1%	0%	
	SILT			SAND			GRAVEL			
41%	37%			20%			2%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**100**
10.0	**100**
6.30	**99**
3.35	**98**
2.00	**98**
1.18	**97**
0.630	**96**
0.425	**94**
0.200	**88**
0.150	**84**
0.063	**78**

Particle Diameter (mm)	Percent Passing (%)
0.02	**63**
0.006	**52**
0.002	**41**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**NA**
D_{50} (mm)	**0.005**
D_{60} (mm)	**0.014**
D_{85} (mm)	**0.161**
D_{90} (mm)	**0.257**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown slightly gravelly slightly sandy silty CLAY

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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The Potteries
Pottery Street
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Compiled By	Date
LORNA WHITWORTH	27/02/23

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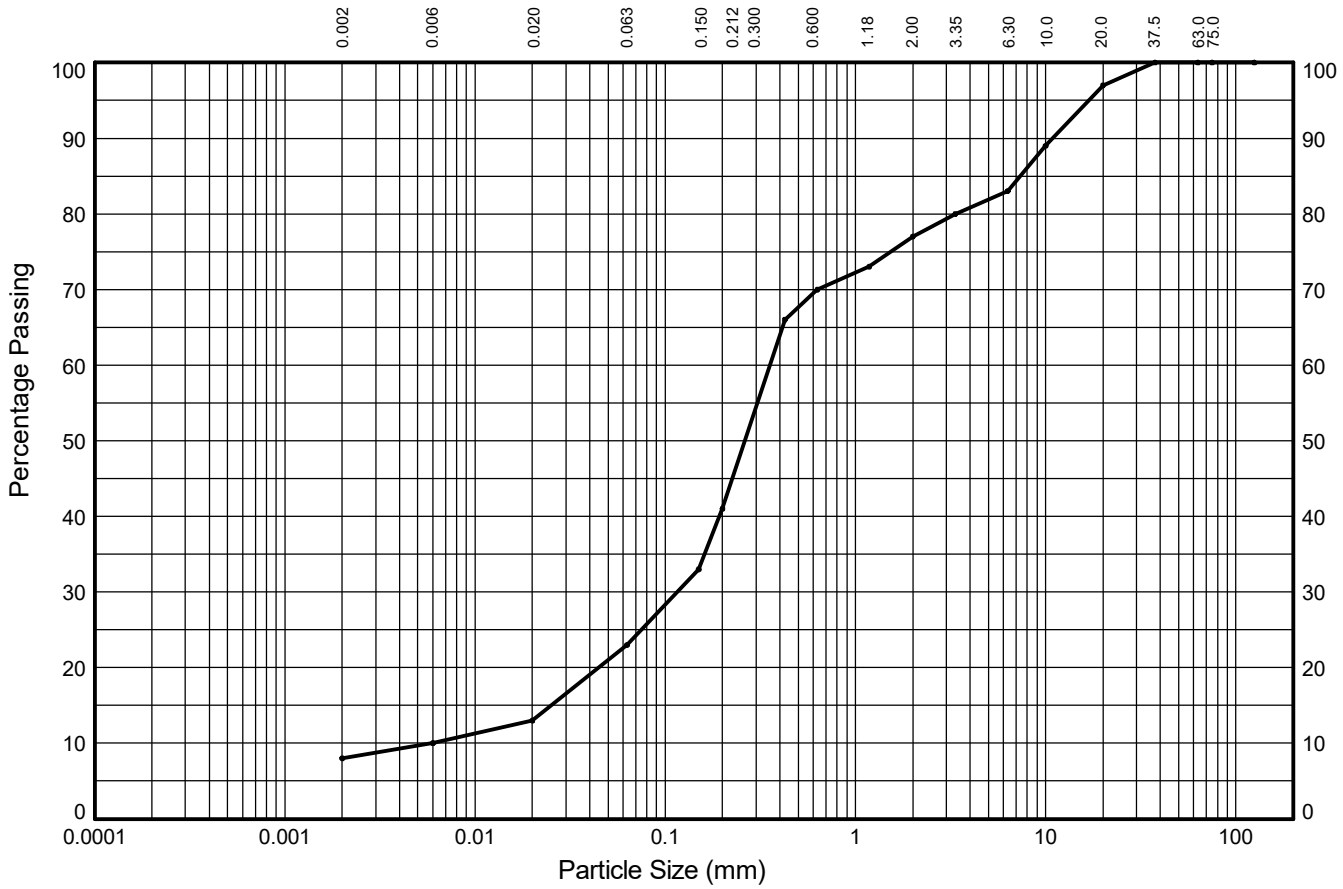
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016
NON-STANDARD TEST

Trial Pit: **TP13** Sample Ref: **5** Sample Type: **D** Depth (m): **1.00**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	2%	3%	10%	18%	29%	7%	6%	14%	3%	
	SILT			SAND			GRAVEL			
8%	15%			54%			23%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**97**
10.0	**89**
6.30	**83**
3.35	**80**
2.00	**77**
1.18	**73**
0.630	**70**
0.425	**66**
0.200	**41**
0.150	**33**
0.063	**23**

Particle Diameter (mm)	Percent Passing (%)
0.02	**13**
0.006	**10**
0.002	**8**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**0.006**
D_{15} (mm)	**0.025**
D_{30} (mm)	**0.116**
D_{50} (mm)	**0.262**
D_{60} (mm)	**0.355**
D_{85} (mm)	**7.349**
D_{90} (mm)	**10.905**
C_U	**59**
C_C	**6**

Soil Description:

Brown very gravelly clayey silty SAND

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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Contract	Contract Ref:
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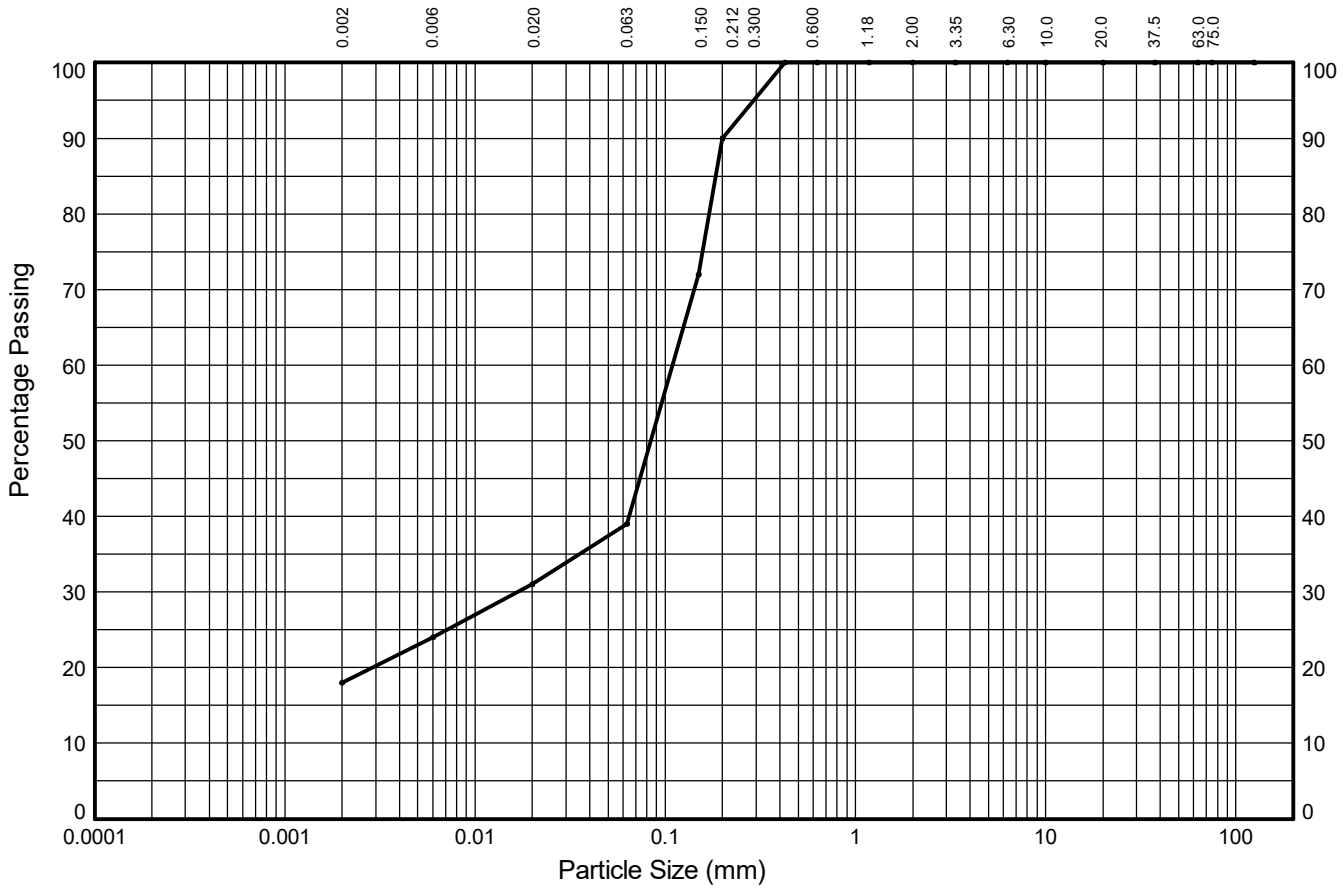
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Trial Pit: **TP13** Sample Ref: **12** Sample Type: **B** Depth (m): **2.50**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	6%	7%	8%	51%	10%	0%	0%	0%	0%	
	SILT			SAND			GRAVEL			
18%	21%			61%			0%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**100**
10.0	**100**
6.30	**100**
3.35	**100**
2.00	**100**
1.18	**100**
0.630	**100**
0.425	**100**
0.200	**90**
0.150	**72**
0.063	**39**

Particle Diameter (mm)	Percent Passing (%)
0.02	**31**
0.006	**24**
0.002	**18**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**0.017**
D_{50} (mm)	**0.084**
D_{60} (mm)	**0.109**
D_{85} (mm)	**0.185**
D_{90} (mm)	**0.200**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown sandy clayey SILT

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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Compiled By	Date
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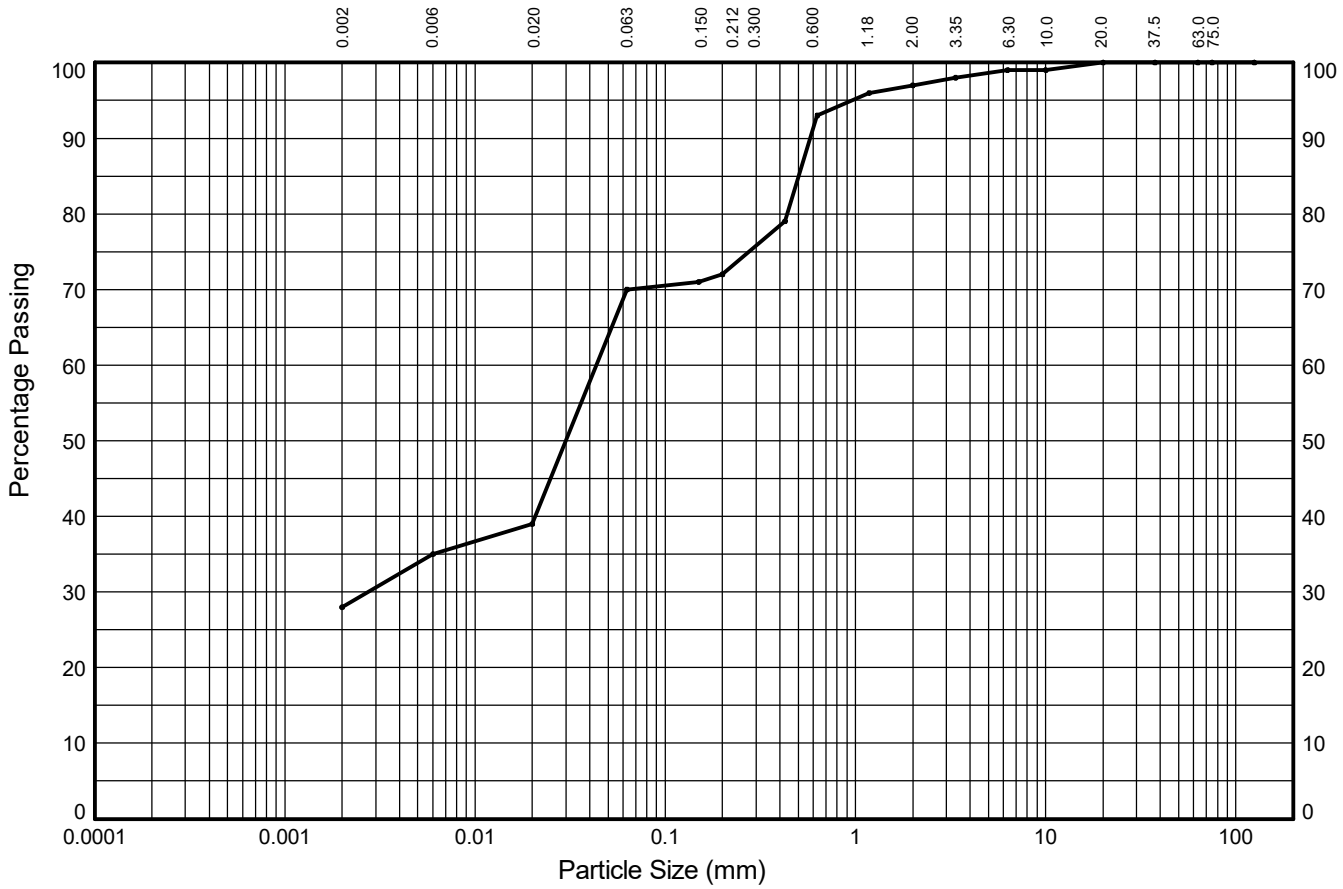
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Trial Pit: **TP15** Sample Ref: **5** Sample Type: **B** Depth (m): **0.60**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	7%	4%	31%	2%	21%	4%	2%	1%	0%	
	SILT			SAND			GRAVEL			
28%	42%			27%			3%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**100**
10.0	**99**
6.30	**99**
3.35	**98**
2.00	**97**
1.18	**96**
0.630	**93**
0.425	**79**
0.200	**72**
0.150	**71**
0.063	**70**

Particle Diameter (mm)	Percent Passing (%)
0.02	**39**
0.006	**35**
0.002	**28**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**0.003**
D_{50} (mm)	**0.030**
D_{60} (mm)	**0.044**
D_{85} (mm)	**0.503**
D_{90} (mm)	**0.579**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown slightly gravelly slightly sandy clayey SILT

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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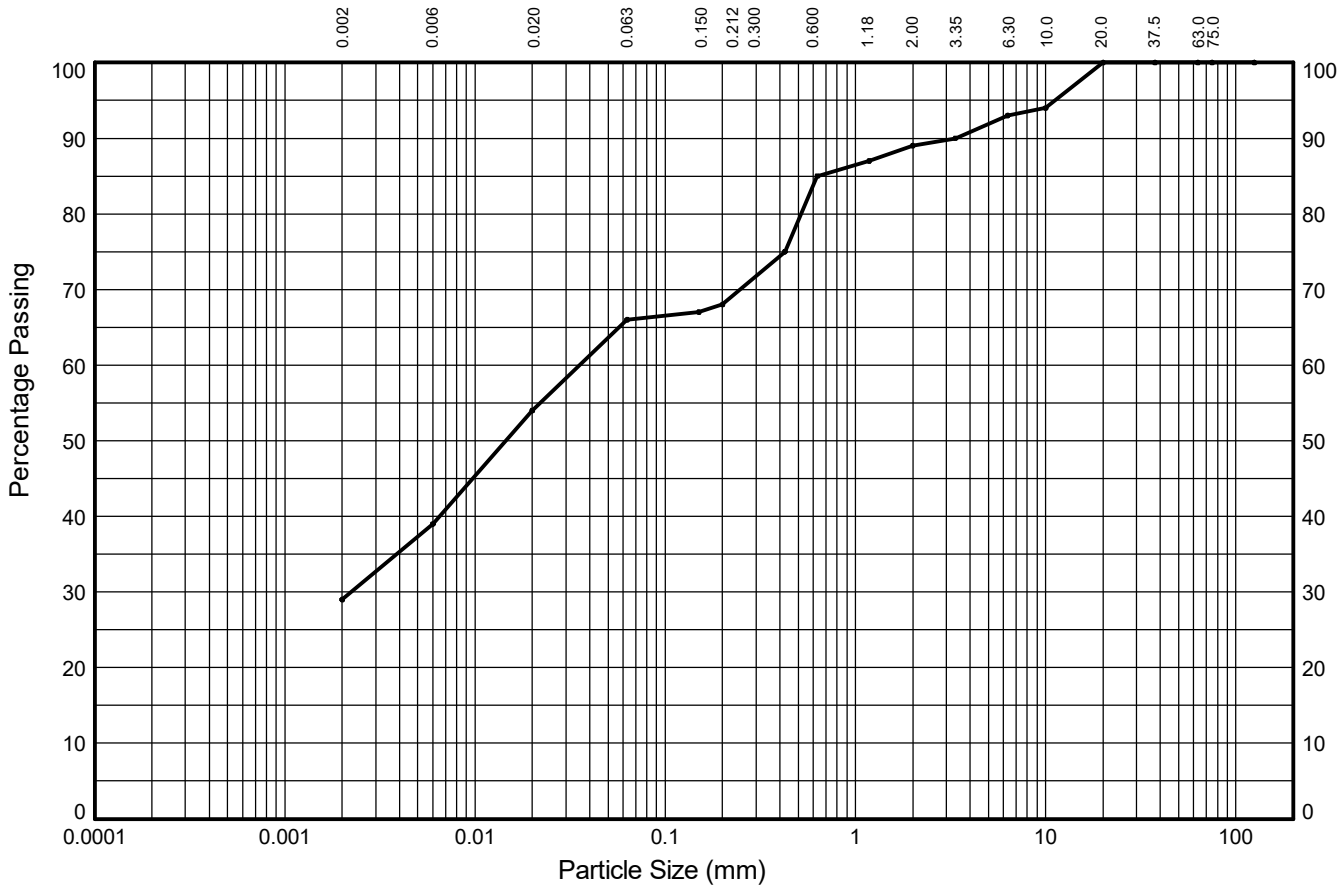
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Trial Pit: **TP18** Sample Ref: **11** Sample Type: **LB** Depth (m): **1.70**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	10%	15%	12%	2%	17%	4%	4%	7%	0%	
	SILT			SAND			GRAVEL			
29%	37%			23%			11%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**100**
10.0	**94**
6.30	**93**
3.35	**90**
2.00	**89**
1.18	**87**
0.630	**85**
0.425	**75**
0.200	**68**
0.150	**67**
0.063	**66**

Particle Diameter (mm)	Percent Passing (%)
0.02	**54**
0.006	**39**
0.002	**29**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**0.002**
D_{50} (mm)	**0.015**
D_{60} (mm)	**0.035**
D_{85} (mm)	**0.630**
D_{90} (mm)	**3.350**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown slightly gravelly slightly sandy clayey SILT

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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Compiled By	Date
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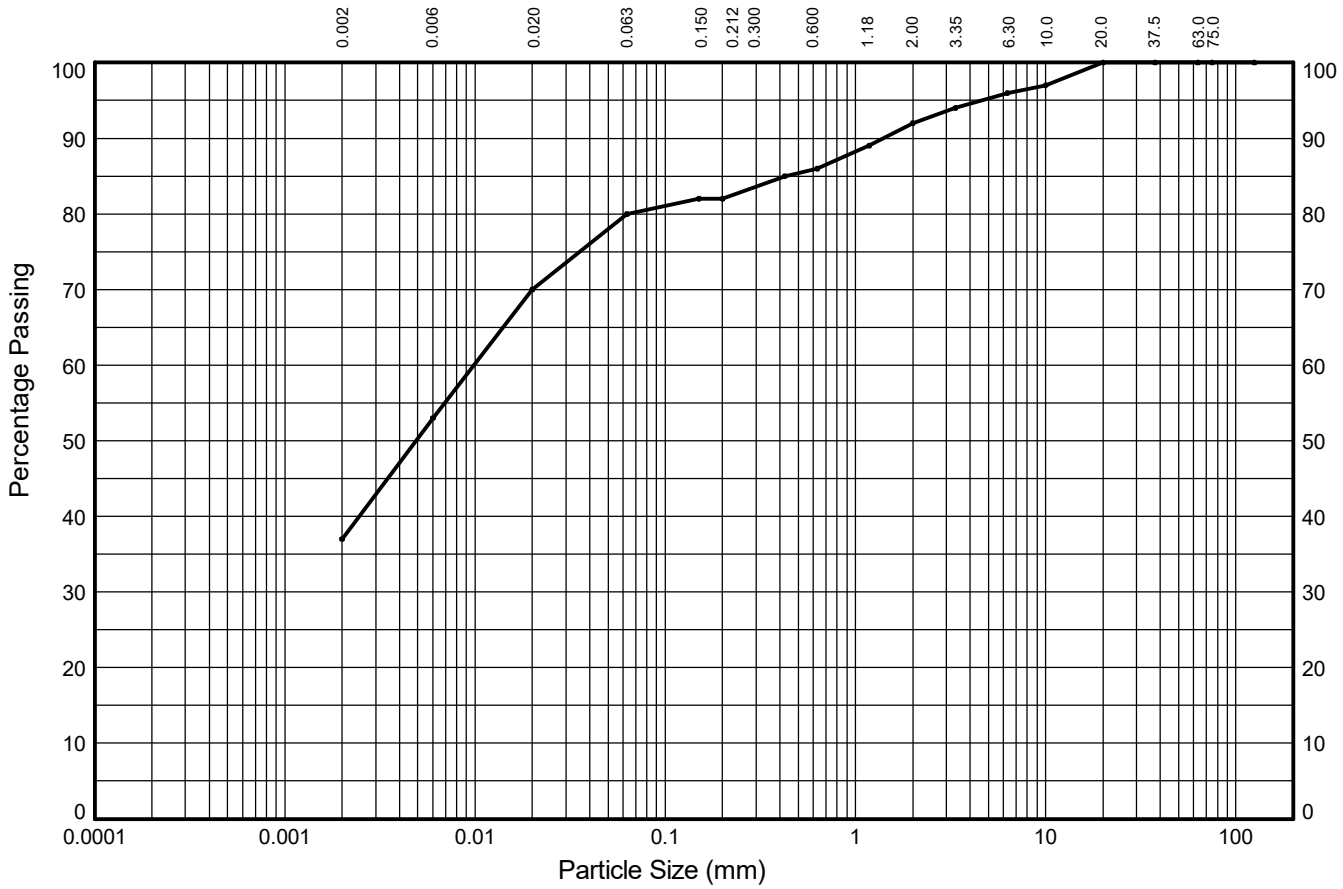
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Trial Pit: **TP29** Sample Ref: **5** Sample Type: **D** Depth (m): **0.50**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	16%	17%	10%	2%	4%	6%	4%	4%	0%	
	SILT			SAND			GRAVEL			
37%	43%			12%			8%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**100**
10.0	**97**
6.30	**96**
3.35	**94**
2.00	**92**
1.18	**89**
0.630	**86**
0.425	**85**
0.200	**82**
0.150	**82**
0.063	**80**

Particle Diameter (mm)	Percent Passing (%)
0.02	**70**
0.006	**53**
0.002	**37**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**NA**
D_{50} (mm)	**0.005**
D_{60} (mm)	**0.010**
D_{85} (mm)	**0.425**
D_{90} (mm)	**1.407**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown slightly gravelly slightly sandy clayey SILT

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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Compiled By	Date
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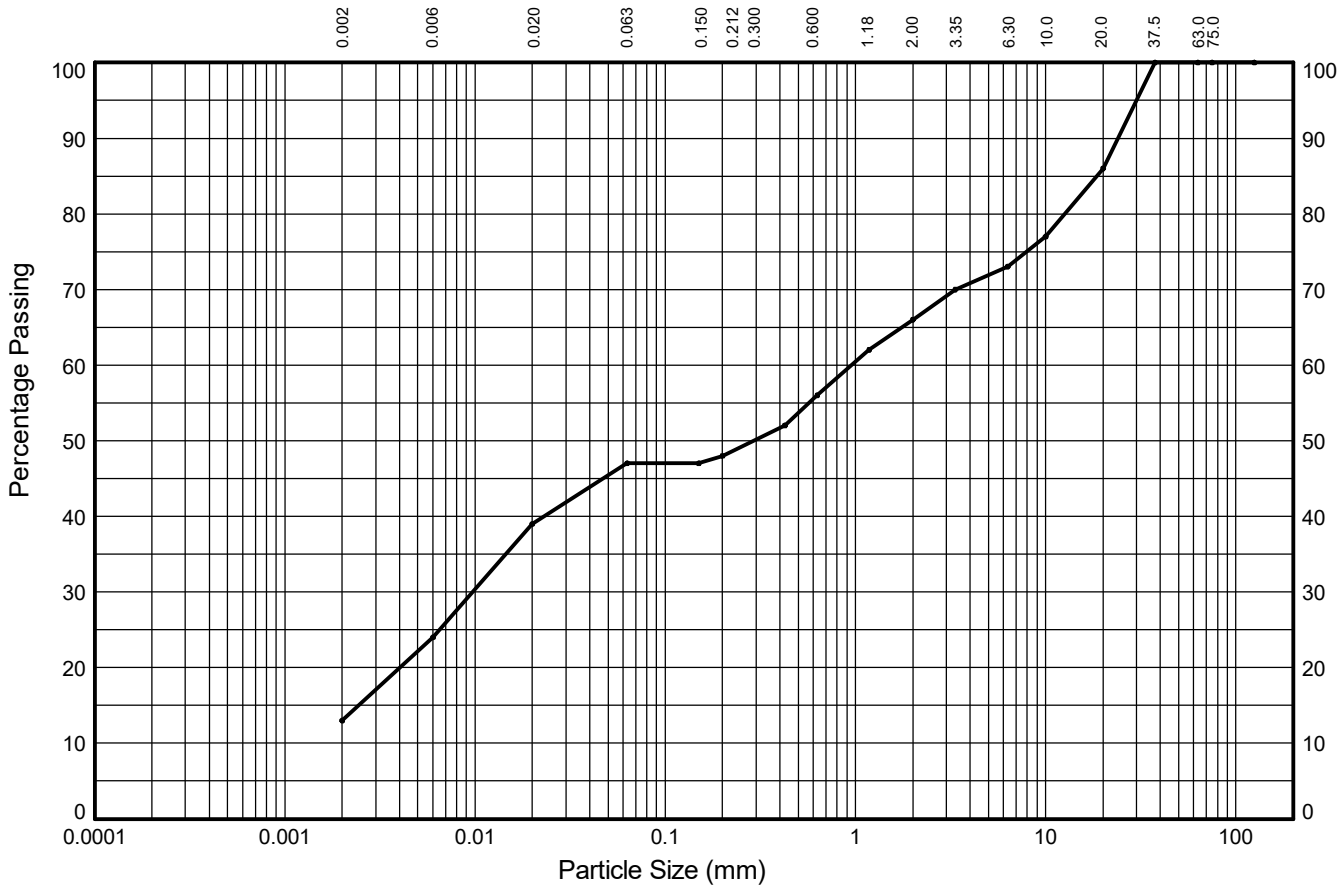
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Trial Pit: **TP36** Sample Ref: **18** Sample Type: **B** Depth (m): **2.70**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	11%	15%	8%	1%	8%	10%	7%	13%	14%	
	SILT			SAND			GRAVEL			
13%	34%			19%			34%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**86**
10.0	**77**
6.30	**73**
3.35	**70**
2.00	**66**
1.18	**62**
0.630	**56**
0.425	**52**
0.200	**48**
0.150	**47**
0.063	**47**

Particle Diameter (mm)	Percent Passing (%)
0.02	**39**
0.006	**24**
0.002	**13**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**0.002**
D_{30} (mm)	**0.010**
D_{50} (mm)	**0.292**
D_{60} (mm)	**0.957**
D_{85} (mm)	**18.517**
D_{90} (mm)	**23.935**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown slightly sandy slightly gravelly clayey SILT

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

STRUCTURAL SOILS
The Potteries
Pottery Street
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Compiled By		Date
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Contract	Contract Ref:
EMG Phase 2	**765514**

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SUMMARY OF PARTICLE DENSITY TESTS

In accordance with BS EN ISO 17892 - 3 : 2015

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Particle Density (Mg/m^3)	Test Type	Measured Water Density (Mg/m^3)	Description	Lab location
BH02	4	B	0.70	2.61	Liquid Pycnometer	0.9980	Brown red slighty gravelly slightly sandy CLAY with organic material	C
BH04	2	B	0.10	2.67	Liquid Pycnometer	0.9960	Brown slightly gravelly slightly sandy CLAY	C
BH05	4	B	0.50	2.62	Liquid Pycnometer	0.9980	Brown slightly gravelly slightly sandy CLAY	C
BH06	4	B	0.70	2.63	Liquid Pycnometer	0.9980	Brown slightly gravelly sandy CLAY	C
BH12	12	B	2.00	2.60	Liquid Pycnometer	0.9960	Brown slightly gravelly slightly sandy CLAY	C
BH13	19	B	4.00	2.66	Liquid Pycnometer	0.9980	Brown slightly gravelly slightly sandy CLAY	C
BH14	4	B	0.70	2.50	Liquid Pycnometer	0.9960	Brown red slightly gravelly sandy CLAY	C
BH15	21	B	5.00	2.65	Liquid Pycnometer	0.9980	Brown very sandy silty/clayey GRAVEL	C
BH19	18	B	4.00	2.73	Liquid Pycnometer	0.9970	Brown slightly gravelly slightly sandy CLAY	C
CP04	6	B	0.50	2.53	Liquid Pycnometer	0.9970	Brown slightly sandy slightly gravelly CLAY	C
CP08	4	B	1.00	2.67	Liquid Pycnometer	0.9970	Brown slightly gravelly clayey SAND	C
CP14	17	B	6.00	2.72	Liquid Pycnometer	0.9980	Brown red very gravelly CLAY	C
CP17	4	B	0.60	2.62	Liquid Pycnometer	0.9960	Brown slightly gravelly sandy CLAY	C
CP22	4	B	0.50	2.57	Liquid Pycnometer	0.9970	Brown slightly sandy slightly gravelly clayey SILT	C
CP28	8	B	1.20	2.51	Liquid Pycnometer	0.9970	Brown red slightly gravelly slightly sandy CLAY	C
TP01	8	LB	0.60	2.56	Liquid Pycnometer	0.9970	Brown slightly sandy slightly gravelly CLAY	C
TP04	9	B	2.00	2.57	Liquid Pycnometer	0.9960	Brown gravelly sandy CLAY with organic material	C
TP07	11	B	1.30	2.68	Liquid Pycnometer	0.9970	Brown slightly sandy slightly gravelly CLAY	C

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

STRUCTURAL SOILS
The Potteries
Pottery Street
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W. Yorkshire WF10 1NJ

Compiled By		Date	Contract Ref:
	LORNA WHITWORTH	20.03.23	765514
Contract: EMG Phase 2			

SUMMARY OF PARTICLE DENSITY TESTS

In accordance with BS EN ISO 17892 - 3 : 2015

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Particle Density (Mg/m^3)	Test Type	Measured Water Density (Mg/m^3)	Description	Lab location
TP08	8	LB	1.50	2.43	Liquid Pycnometer	0.9980	Brown slightly sandy gravelly CLAY	C
TP09	10	D	3.30	2.61	Liquid Pycnometer	0.9980	Brown slightly gravelly slightly sandy CLAY	C
TP10	14	LB	2.10	2.61	Liquid Pycnometer	0.9980	Brown slightly sandy gravelly CLAY	C
TP14	10	B	2.50	2.71	Liquid Pycnometer	0.9960	Brown red slightly sandy gravelly CLAY	C
TP22	5	B	0.50	2.54	Liquid Pycnometer	0.9960	Brown slightly gravelly slightly sandy CLAY	C
TP24	11	B	1.20	2.69	Liquid Pycnometer	0.9970	Brown slightly sandy slightly gravelly CLAY	C
TP27	13	B	2.60	2.67	Liquid Pycnometer	0.9980	Brown red slightly gravelly sandy CLAY	C
TP28	5	B	0.50	2.65	Liquid Pycnometer	0.9980	Brown slightly gravelly slightly sandy CLAY	C
TP28	7	D	1.10	2.64	Liquid Pycnometer	0.9960	Brown red slightly gravelly slightly sandy CLAY	C
TP36	12	B	1.10	2.61	Liquid Pycnometer	0.9980	Brown red slightly gravelly slightly sandy CLAY	C

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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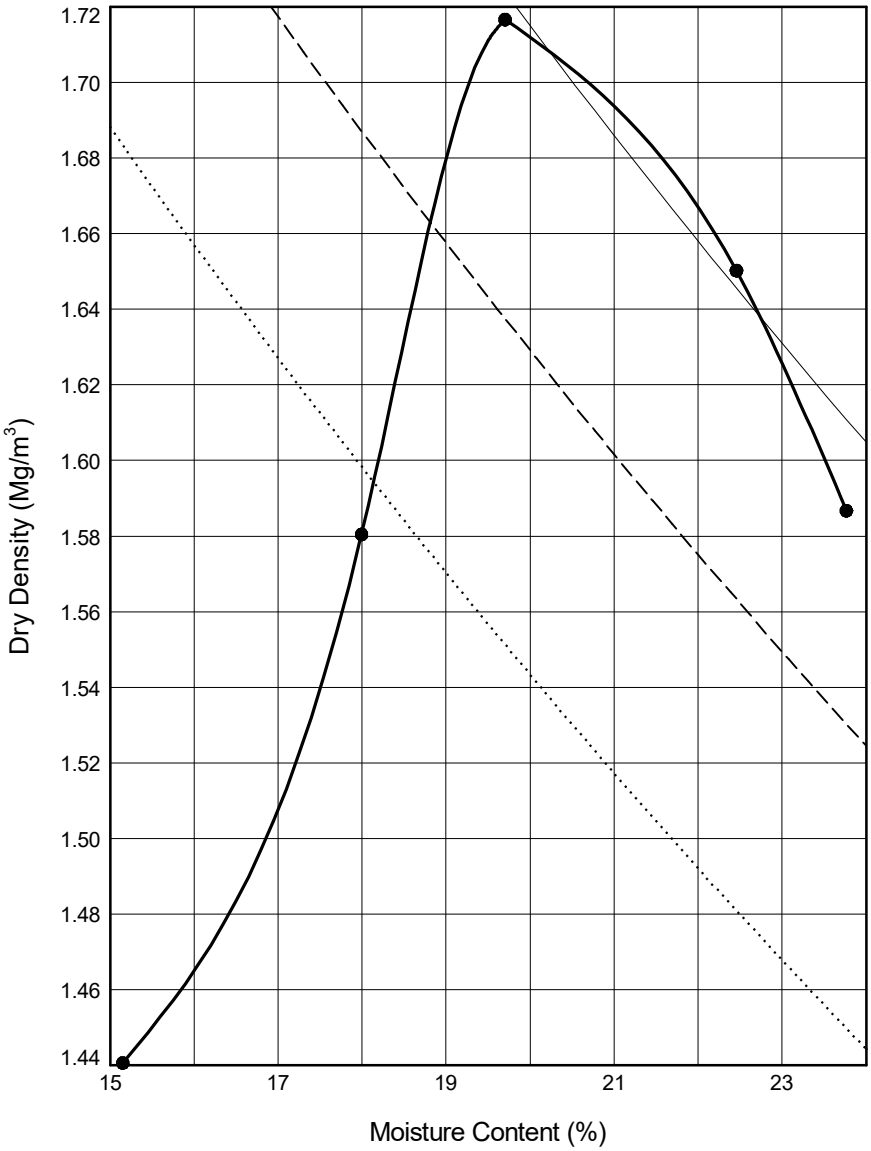
Compiled By	Date	Contract Ref:
LORNA WHITWORTH	20.03.23	765514

Contract: **EMG Phase 2**

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990

Borehole: **BH02** Sample Ref: **4** Sample Type: **B** Depth (m): **0.70**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**18**	Compaction Type	: **Light**	Maximum Dry Density (Mg/m^3)	:	**1.72**
% Retained on 37.5mm BS Sieve	:	**0**	Mass of Rammer (kg):	**2.5**	Optimum Moisture Content (%)	:	**20**
% Retained on 20.0mm BS Sieve	:	**0**	Type of Mould	: **1 LITRE**	Method Used: **Clause 3.3**		
Particle Density - measured (Mg/m^3)	:	**2.61**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Separate samples were used.				

Sample Description	Key to Air Voids Lines		
Brown red slighty gravelly slightly sandy CLAY with organic material	——— 0%	– – – – 5%	····· 10%

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Compiled By		Date
	LAURA SCHRAMM	**09/03/23**

Contract	Contract Ref:
EMG Phase 2	**765514**

AGS

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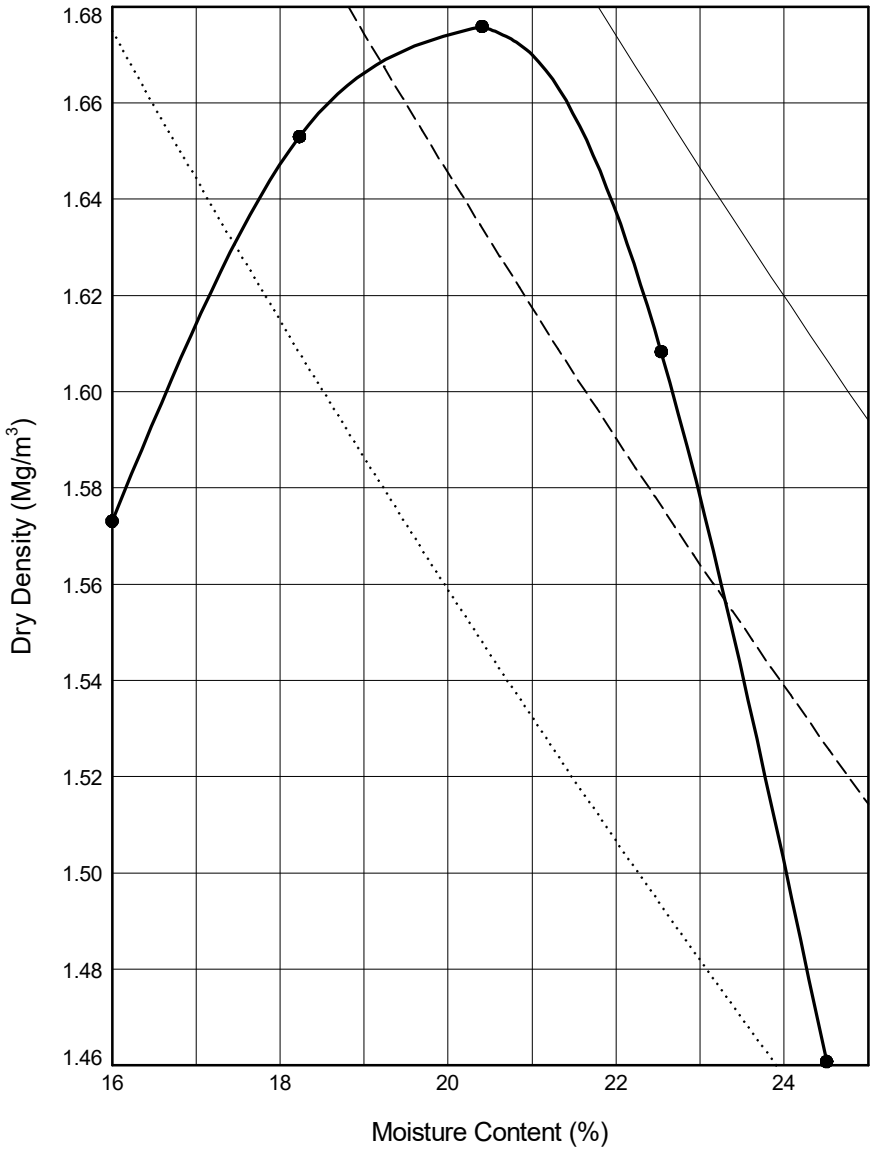
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990

Borehole: **BH03** Sample Ref: **8** Sample Type: **B** Depth (m): **1.00**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**16**	Compaction Type	: **Light**	Maximum Dry Density (Mg/m^3)	:	**1.68**
% Retained on 37.5mm BS Sieve	:	**0**	Mass of Rammer (kg):	**2.5**	Optimum Moisture Content (%)	:	**20**
% Retained on 20.0mm BS Sieve	:	**4**	Type of Mould	: **1 LITRE**	Method Used: **Clause 3.3**		
Particle Density - assumed (Mg/m^3)	:	**2.65**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Separate samples were used.				

Sample Description	Key to Air Voids Lines		
Brown slightly sandy slightly gravelly CLAY	——— 0%	– – – – 5%	····· 10%

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Compiled By		Date
	LAURA SCHRAMM	**09/03/23**

Contract	Contract Ref:
EMG Phase 2	**765514**

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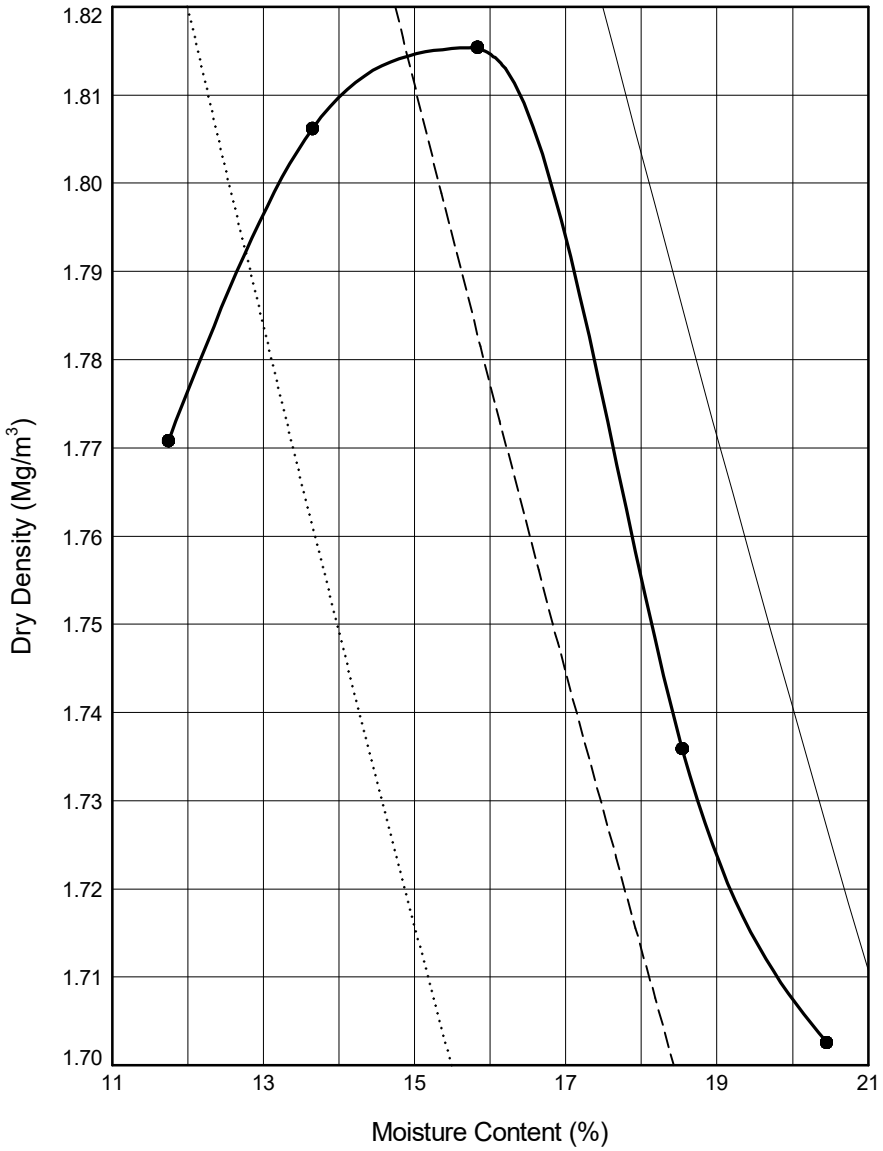
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990
NON-STANDARD TEST

Borehole: **BH04** Sample Ref: **2** Sample Type: **B** Depth (m): **0.10**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**14**	Compaction Type	: **Light**	Maximum Dry Density (Mg/m^3)	:	**1.82**
% Retained on 37.5mm BS Sieve	:	**5**	Mass of Rammer (kg):	**2.5**	Optimum Moisture Content (%)	:	**16**
% Retained on 20.0mm BS Sieve	:	**4**	Type of Mould	: **1 LITRE**	Method Used: **Clause 3.3**		
Particle Density - measured (Mg/m^3)	:	**2.67**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Separate samples were used.				

Sample Description	Key to Air Voids Lines		
Brown slightly gravelly slightly sandy CLAY	——— 0%	– – – – 5%	····· 10%

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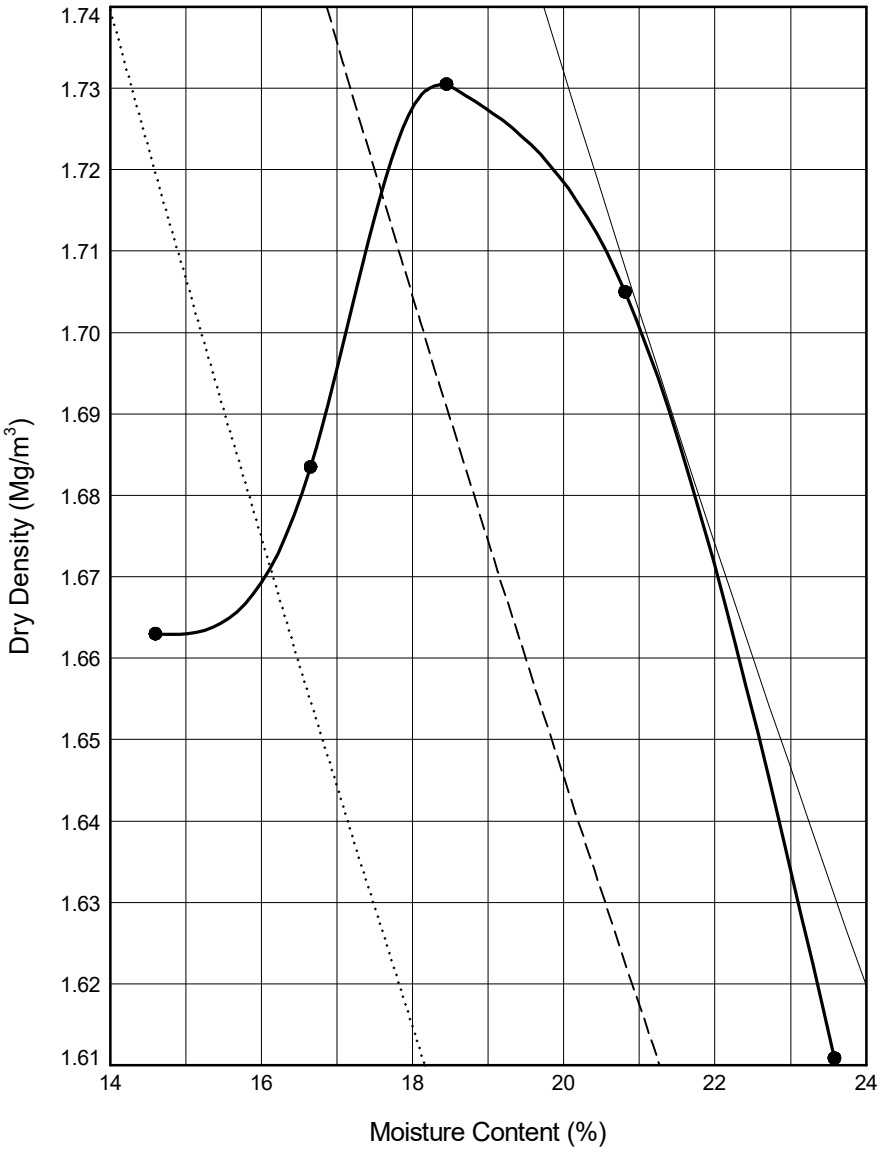
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990

Borehole: **BH04** Sample Ref: **13** Sample Type: **B** Depth (m): **3.00**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**21**	Compaction Type	: **Light**	Maximum Dry Density (Mg/m^3)	:	**1.73**
% Retained on 37.5mm BS Sieve	:	**0**	Mass of Rammer (kg):	**2.5**	Optimum Moisture Content (%)	:	**18**
% Retained on 20.0mm BS Sieve	:	**1**	Type of Mould	: **1 LITRE**	Method Used: **Clause 3.3**		
Particle Density - assumed (Mg/m^3)	:	**2.65**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Single sample was used.				

Sample Description	Key to Air Voids Lines		
Brown slightly gravelly slightly sandy CLAY	——— 0%	– – – – 5%	····· 10%

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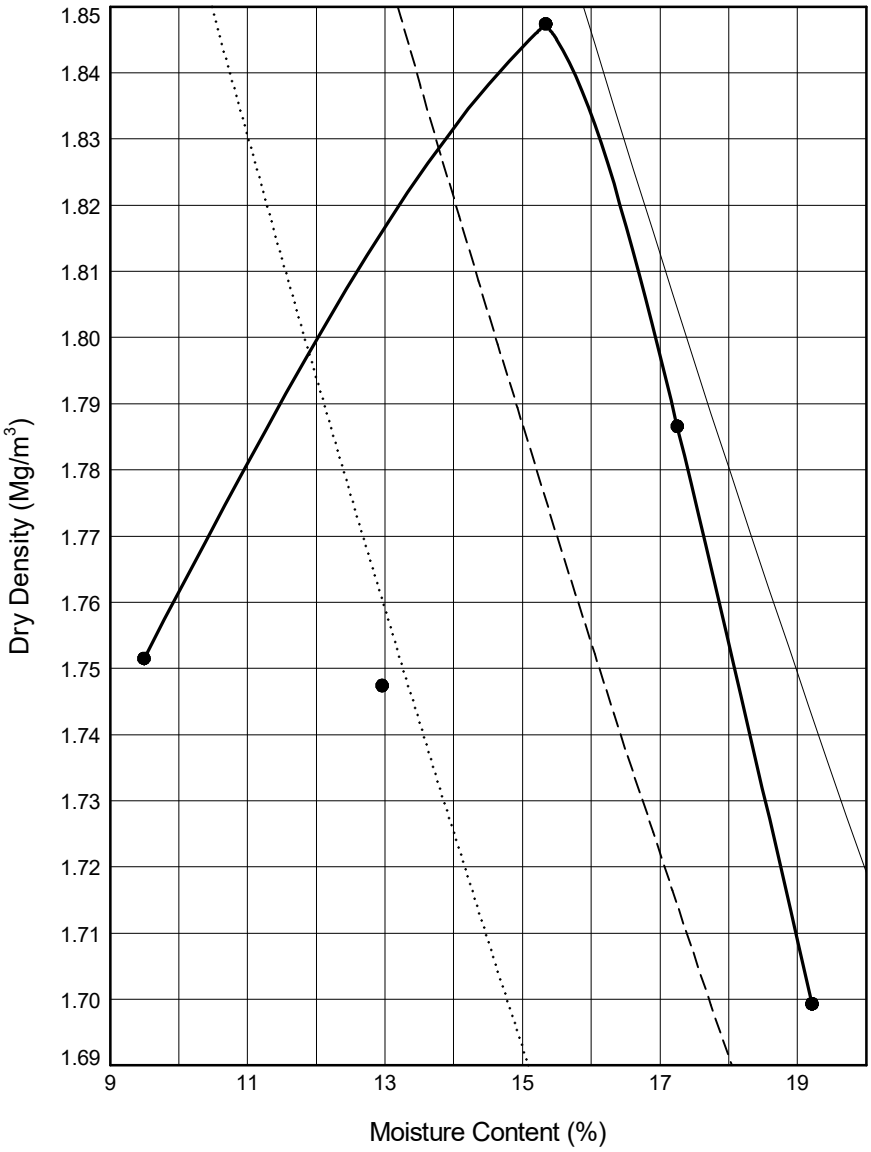
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990
NON-STANDARD TEST

Borehole: **BH05** Sample Ref: **3** Sample Type: **D** Depth (m): **0.50**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**15**	Compaction Type	: **Light**	Maximum Dry Density (Mg/m³)	:	**1.85**
% Retained on 37.5mm BS Sieve	:	**7**	Mass of Rammer (kg):	**2.5**	Optimum Moisture Content (%)	:	**15**
% Retained on 20.0mm BS Sieve	:	**2**	Type of Mould	: **1 LITRE**	Method Used: **Clause 3.3**		
Particle Density - measured (Mg/m³)	:	**2.62**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Single sample was used.				

Sample Description	Key to Air Voids Lines		
Brown slightly gravelly slightly sandy CLAY	——— 0%	– – – – 5%	····· 10%

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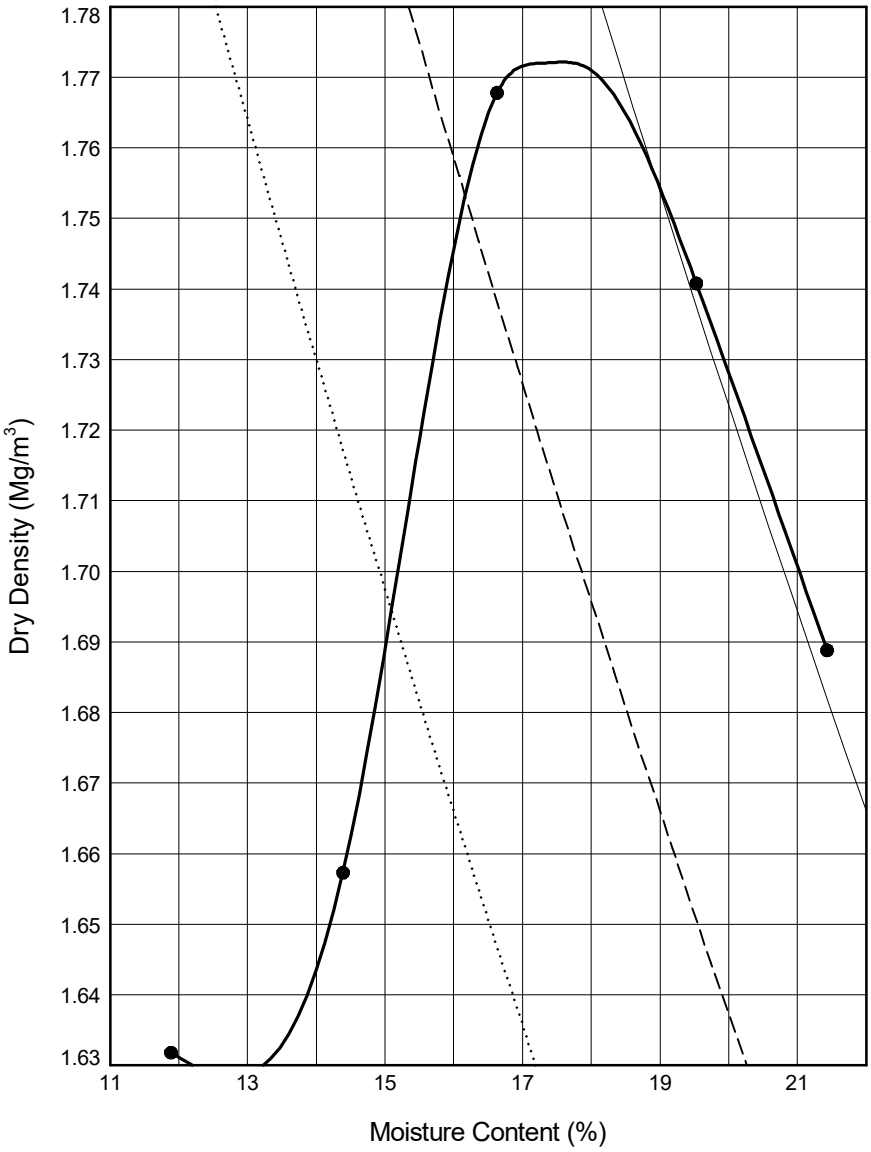
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990

Borehole: **BH06** Sample Ref: **4** Sample Type: **B** Depth (m): **0.70**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**17**	Compaction Type	: **Light**	Maximum Dry Density (Mg/m^3)	:	**1.77**
% Retained on 37.5mm BS Sieve	:	**0**	Mass of Rammer (kg):	**2.5**	Optimum Moisture Content (%)	:	**17**
% Retained on 20.0mm BS Sieve	:	**1**	Type of Mould	: **1 LITRE**	Method Used: **Clause 3.3**		
Particle Density - measured (Mg/m^3)	:	**2.63**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Separate samples were used.				

Sample Description	Key to Air Voids Lines		
Brown slightly gravelly sandy CLAY	——— 0%	– – – – 5%	····· 10%

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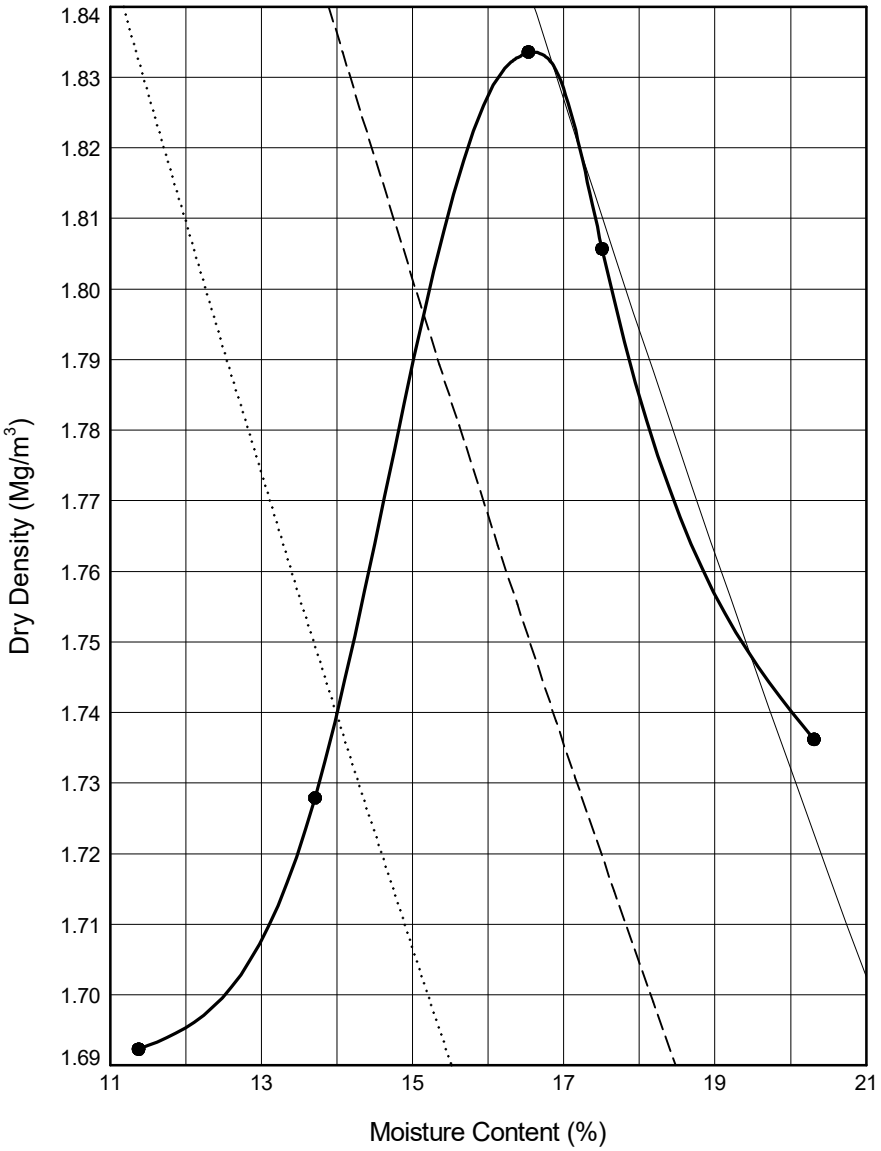
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990
NON-STANDARD TEST

Borehole: **BH06** Sample Ref: **18** Sample Type: **B** Depth (m): **4.00**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**18**	Compaction Type	: **Light**	Maximum Dry Density (Mg/m^3)	:	**1.83**
% Retained on 37.5mm BS Sieve	:	**5**	Mass of Rammer (kg):	**2.5**	Optimum Moisture Content (%)	:	**17**
% Retained on 20.0mm BS Sieve	:	**3**	Type of Mould	: **1 LITRE**	Method Used: **Clause 3.3**		
Particle Density - assumed (Mg/m^3)	:	**2.65**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Single sample was used.				

Sample Description	Key to Air Voids Lines		
Brown slightly gravelly CLAY	——— 0%	– – – – 5%	····· 10%

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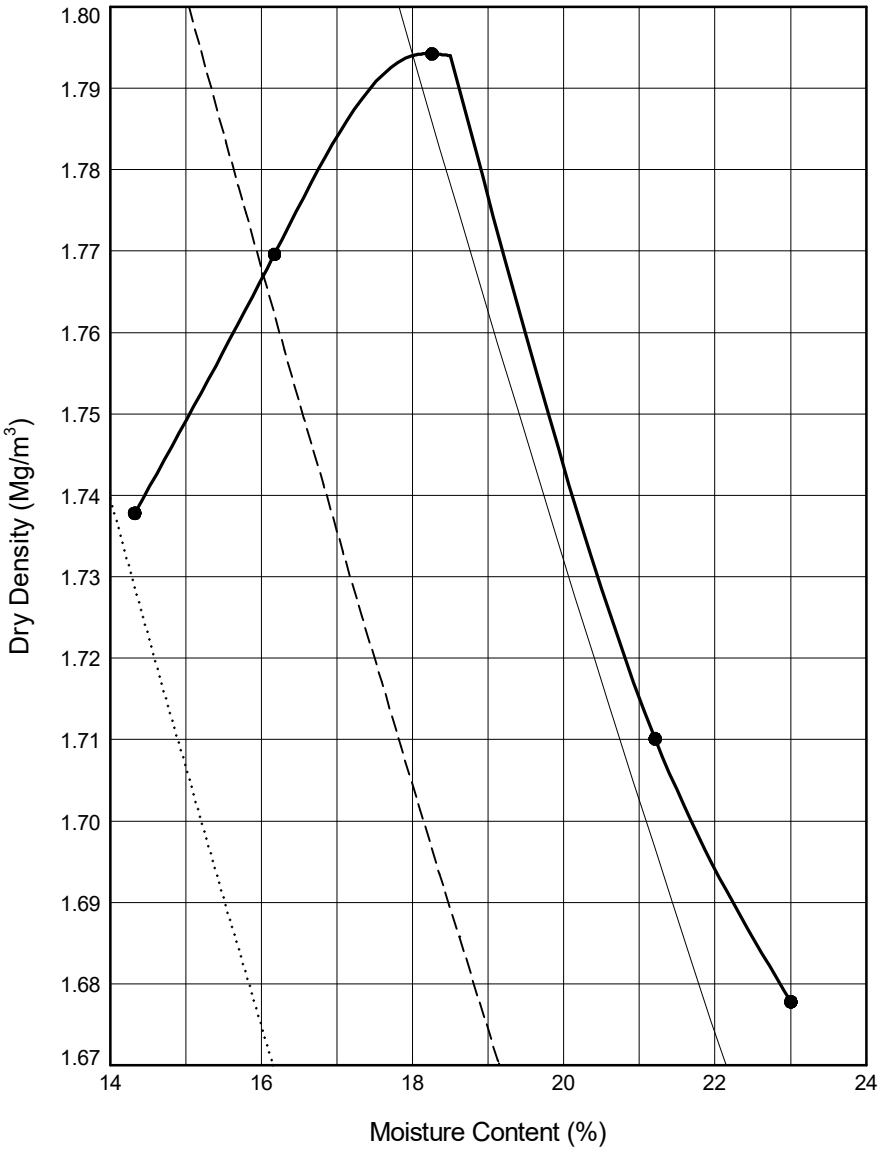
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990

Borehole: **BH07** Sample Ref: **13** Sample Type: **B** Depth (m): **1.20**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**18**	Compaction Type	: **Light**	Maximum Dry Density (Mg/m^3)	:	**1.79**
% Retained on 37.5mm BS Sieve	:	**0**	Mass of Rammer (kg):	**2.5**	Optimum Moisture Content (%)	:	**18**
% Retained on 20.0mm BS Sieve	:	**0**	Type of Mould	: **1 LITRE**	Method Used: **Clause 3.3**		
Particle Density - assumed (Mg/m^3)	:	**2.65**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Separate samples were used.				

Sample Description	Key to Air Voids Lines		
Red brown slightly sandy slightly gravelly CLAY	——— 0%	– – – – 5%	····· 10%

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Compiled By		Date
	LUKE FISHER	**09/03/23**

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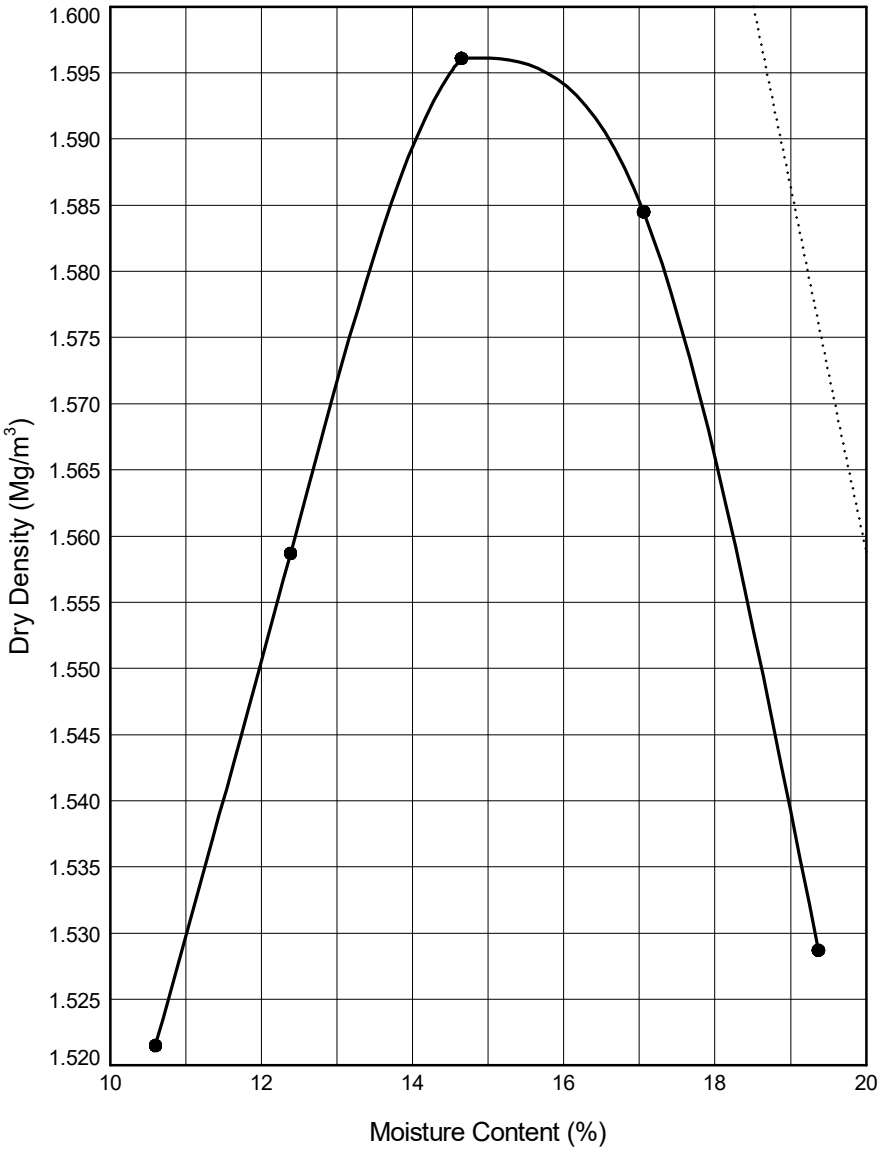
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990

Borehole: **BH10** Sample Ref: **3** Sample Type: **B** Depth (m): **0.30**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**11**	Compaction Type	: **Light**	Maximum Dry Density (Mg/m^3)	:	**1.60**
% Retained on 37.5mm BS Sieve	:	**0**	Mass of Rammer (kg):	**2.5**	Optimum Moisture Content (%)	:	**16**
% Retained on 20.0mm BS Sieve	:	**8**	Type of Mould	: **1 LITRE**	Method Used: **Clause 3.3**		
Particle Density - assumed (Mg/m^3)	:	**2.65**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Single sample was used.				

Sample Description	Key to Air Voids Lines		
Brown slightly gravelly CLAY	——— 0%	– – – – 5%	····· 10%

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	LAURA SCHRAMM	**09/03/23**

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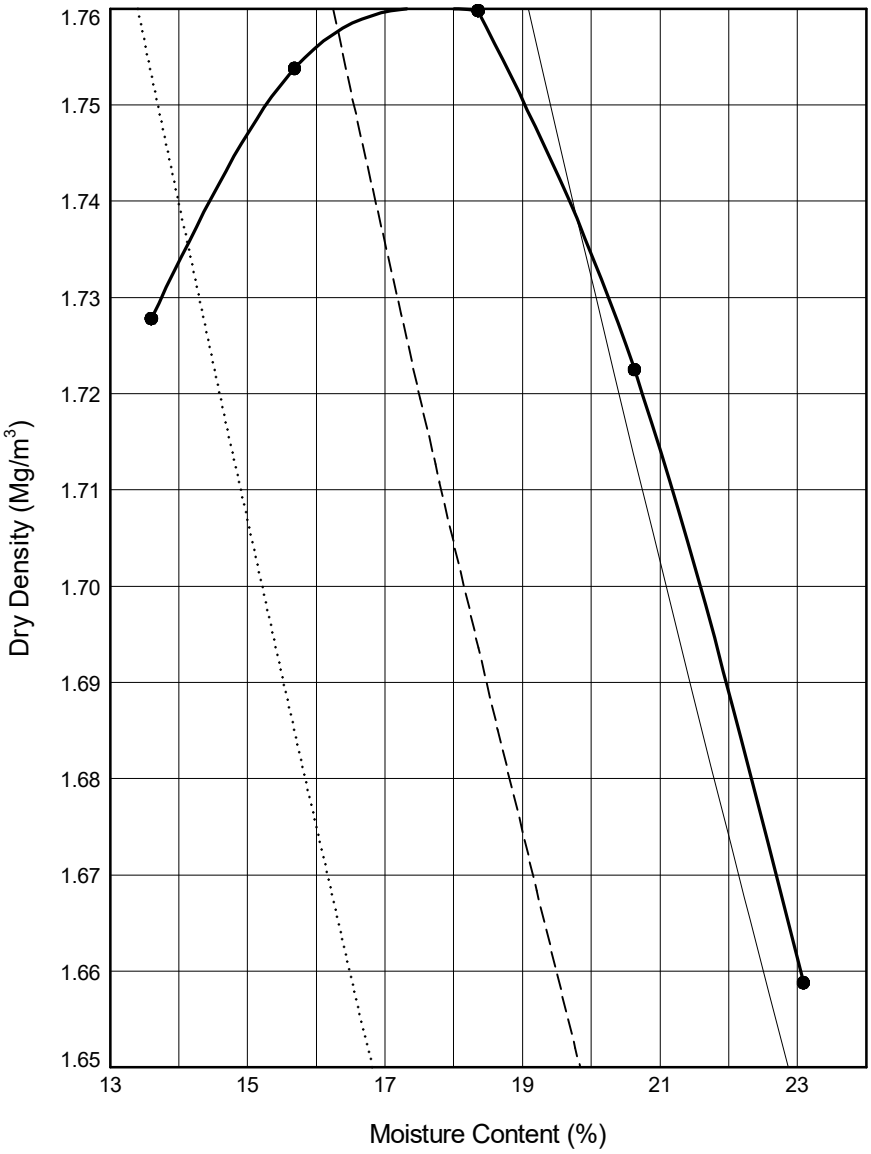
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990
NON-STANDARD TEST

Borehole: **BH12** Sample Ref: **12** Sample Type: **B** Depth (m): **2.00**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**21**	Compaction Type	: **Light**	Maximum Dry Density (Mg/m^3)	:	**1.76**
% Retained on 37.5mm BS Sieve	:	**5**	Mass of Rammer (kg):	**2.5**	Optimum Moisture Content (%)	:	**18**
% Retained on 20.0mm BS Sieve	:	**2**	Type of Mould	: **1 LITRE**	Method Used: **Clause 3.3**		
Particle Density - assumed (Mg/m^3)	:	**2.65**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Separate samples were used.				

Sample Description	Key to Air Voids Lines		
Brown slightly gravelly slightly sandy CLAY	——— 0%	– – – – 5%	····· 10%

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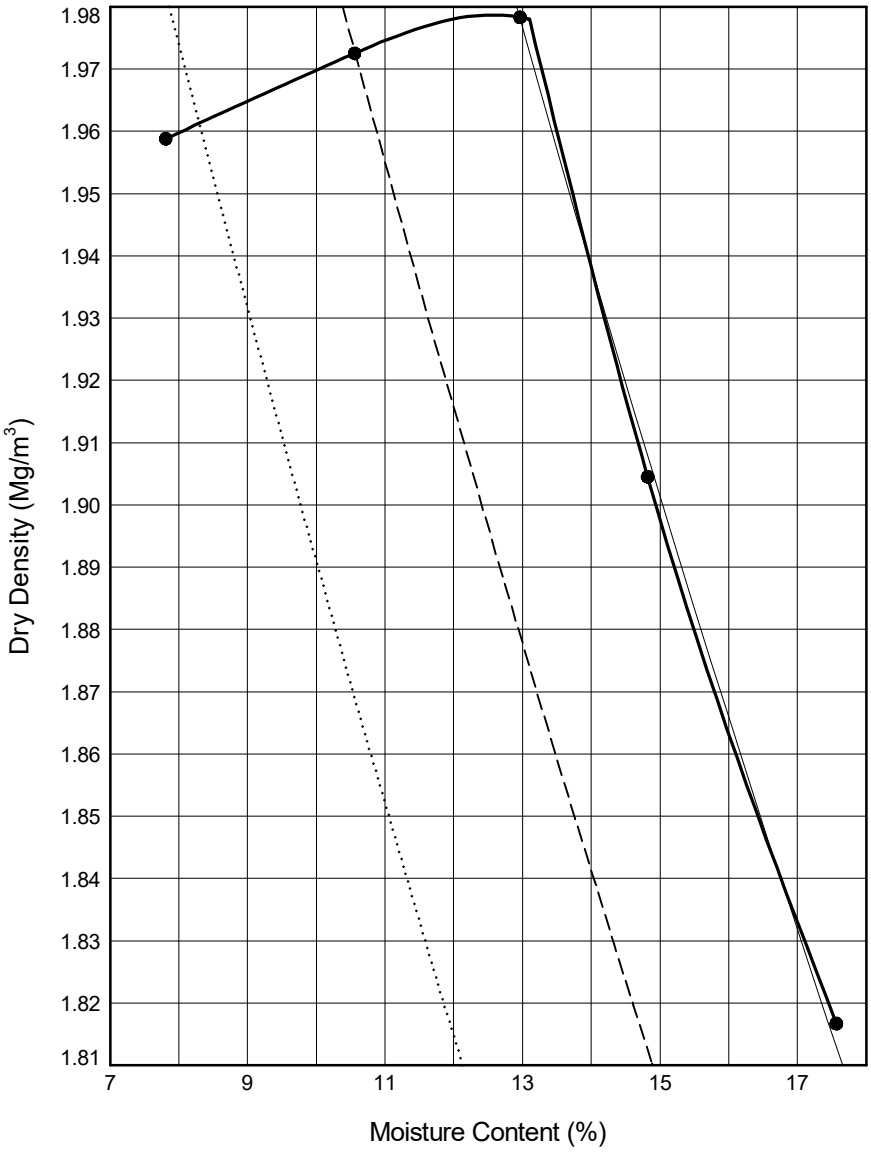
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990
NON-STANDARD TEST

Borehole: **BH13** Sample Ref: **19** Sample Type: **B** Depth (m): **4.00**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**15**	Compaction Type	: **Heavy**	Maximum Dry Density (Mg/m^3)	:	**1.98**
% Retained on 37.5mm BS Sieve	:	**9**	Mass of Rammer (kg):	**4.5**	Optimum Moisture Content (%)	:	**13**
% Retained on 20.0mm BS Sieve	:	**4**	Type of Mould	: **1 LITRE**	Method Used:		**Clause 3.5**
Particle Density - measured (Mg/m^3)	:	**2.66**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Single sample was used.				

Sample Description	Key to Air Voids Lines		
Brown slightly gravelly slightly sandy CLAY	——— 0%	– – – – 5%	····· 10%

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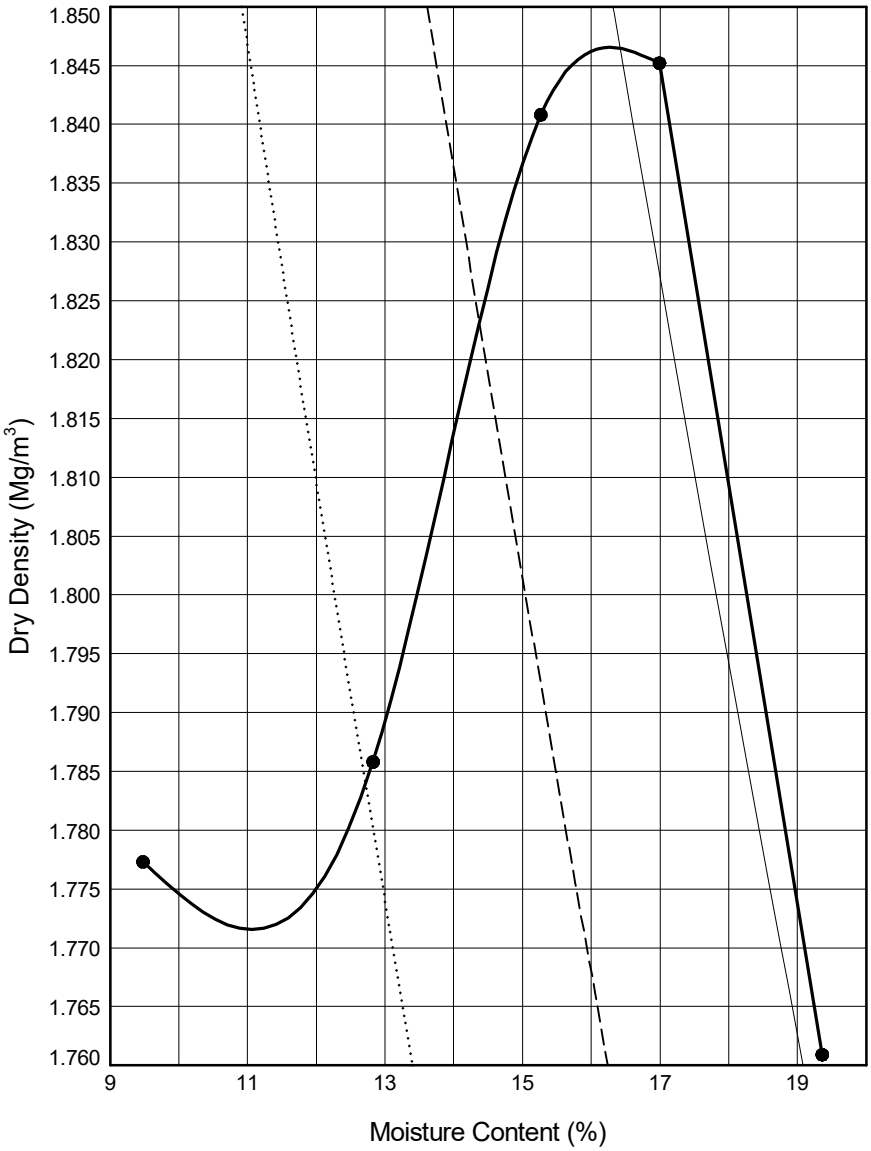
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990

Borehole: **BH13** Sample Ref: **30** Sample Type: **B** Depth (m): **7.50**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**17**	Compaction Type	: **Light**	Maximum Dry Density (Mg/m^3)	:	**1.85**
% Retained on 37.5mm BS Sieve	:	**0**	Mass of Rammer (kg):	**2.5**	Optimum Moisture Content (%)	:	**16**
% Retained on 20.0mm BS Sieve	:	**3**	Type of Mould	: **1 LITRE**	Method Used: **Clause 3.3**		
Particle Density - assumed (Mg/m^3)	:	**2.65**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Separate samples were used.				

Sample Description	Key to Air Voids Lines		
Brown red slightly gravelly slightly sandy CLAY	——— 0%	– – – – 5%	····· 10%

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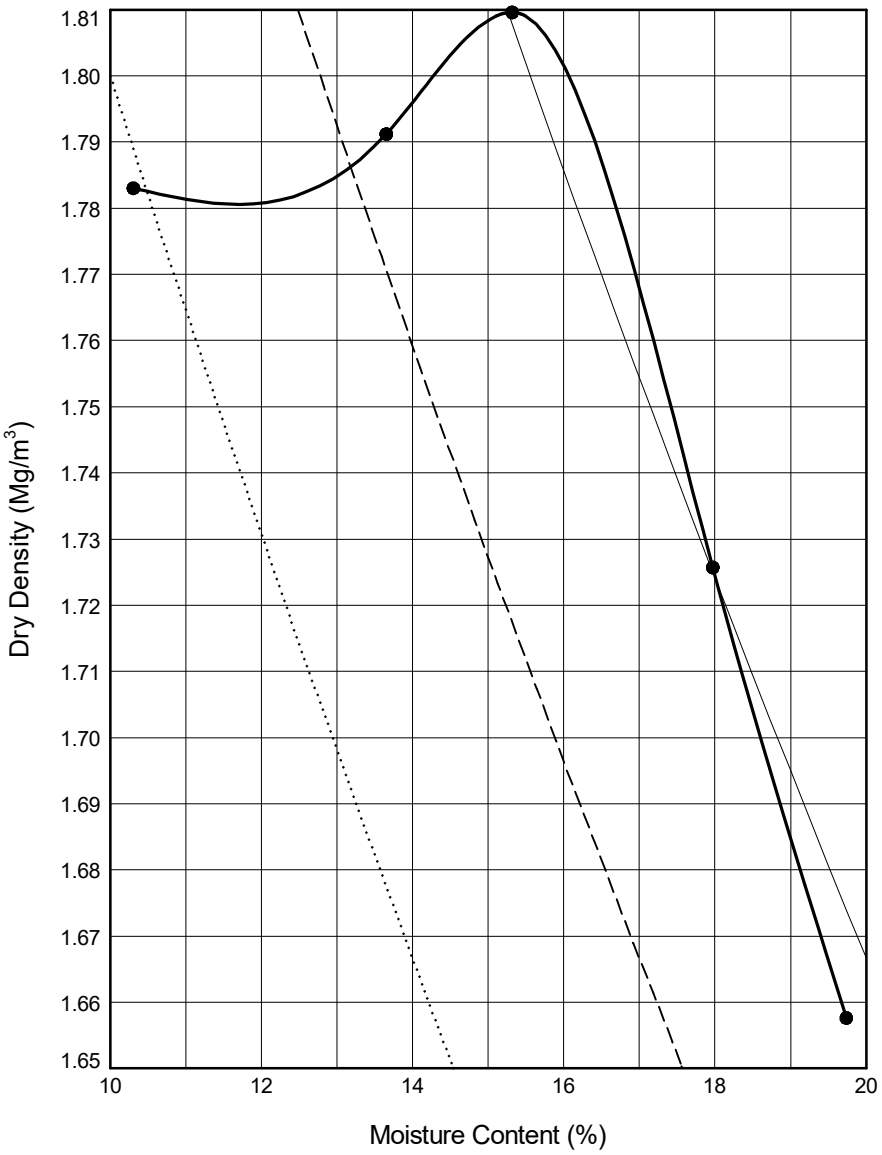
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990
NON-STANDARD TEST

Borehole: **BH14** Sample Ref: **4** Sample Type: **B** Depth (m): **0.70**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**15**	Compaction Type	: **Light**	Maximum Dry Density (Mg/m^3)	:	**1.81**
% Retained on 37.5mm BS Sieve	:	**2**	Mass of Rammer (kg):	**2.5**	Optimum Moisture Content (%)	:	**15**
% Retained on 20.0mm BS Sieve	:	**8**	Type of Mould	: **1 LITRE**	Method Used: **Clause 3.3**		
Particle Density - measured (Mg/m^3)	:	**2.50**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Single sample was used.				

Sample Description	Key to Air Voids Lines		
Brown red slightly gravelly sandy CLAY	——— 0%	– – – – 5%	····· 10%

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Contract	Contract Ref:
EMG Phase 2	**765514**

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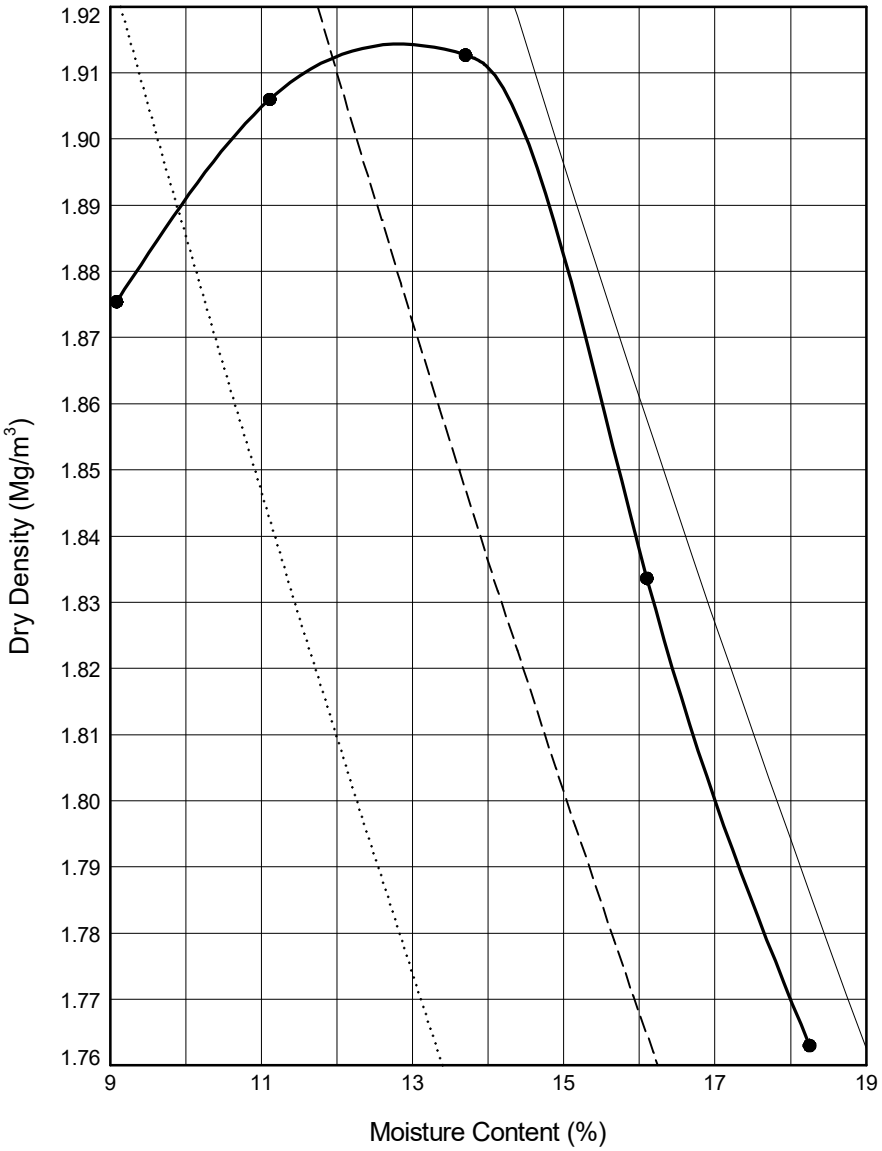
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990

Borehole: **BH14** Sample Ref: **23** Sample Type: **B** Depth (m): **5.00**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**16**	Compaction Type	: **Light**	Maximum Dry Density (Mg/m^3)	:	**1.92**
% Retained on 37.5mm BS Sieve	:	**0**	Mass of Rammer (kg):	**2.5**	Optimum Moisture Content (%)	:	**13**
% Retained on 20.0mm BS Sieve	:	**0**	Type of Mould	: **1 LITRE**	Method Used: **Clause 3.3**		
Particle Density - assumed (Mg/m^3)	:	**2.65**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Separate samples were used.				

Sample Description	Key to Air Voids Lines		
Brown slightly gravelly silty CLAY	——— 0%	– – – – 5%	····· 10%

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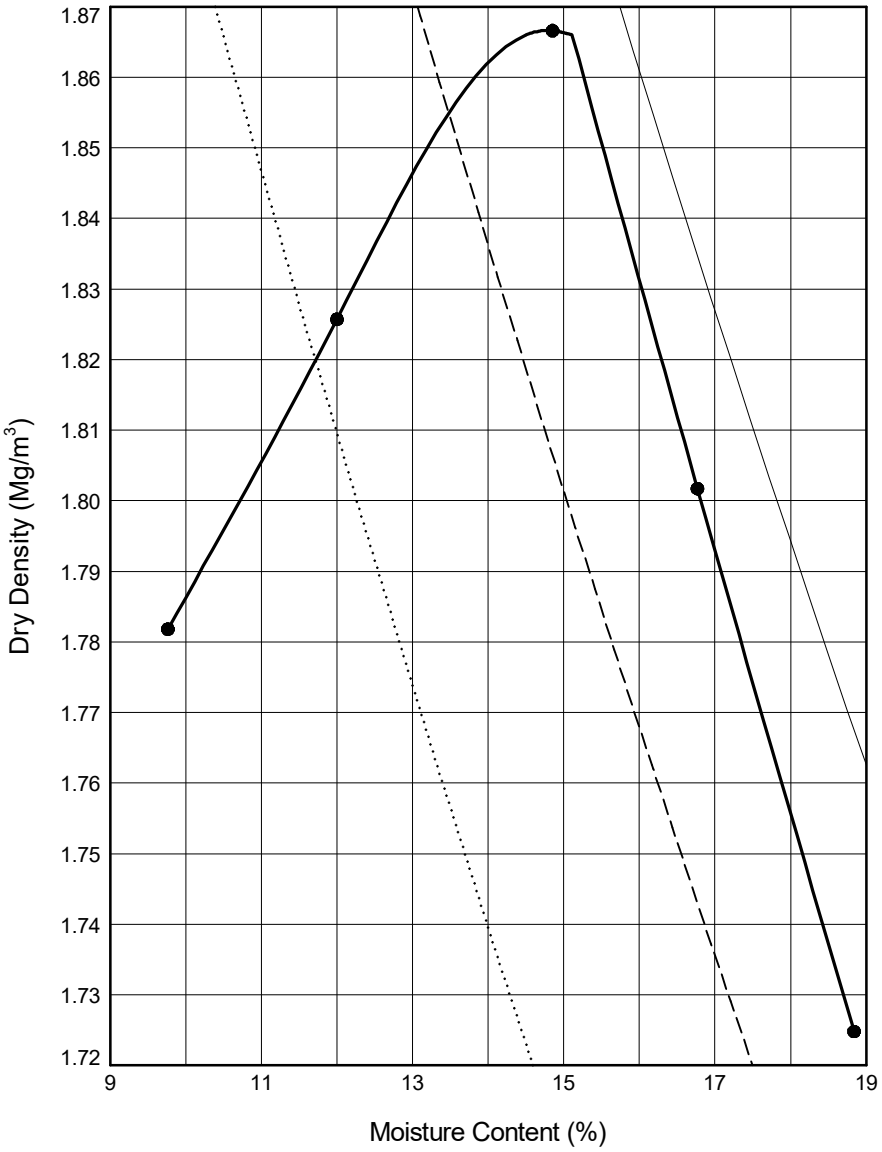
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990

Borehole: **BH15** Sample Ref: **4** Sample Type: **B** Depth (m): **0.70**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**12**	Compaction Type	: **Light**	Maximum Dry Density (Mg/m^3)	:	**1.87**
% Retained on 37.5mm BS Sieve	:	**0**	Mass of Rammer (kg):	**2.5**	Optimum Moisture Content (%)	:	**15**
% Retained on 20.0mm BS Sieve	:	**2**	Type of Mould	: **1 LITRE**	Method Used: **Clause 3.3**		
Particle Density - assumed (Mg/m^3)	:	**2.65**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Separate samples were used.				

Sample Description	Key to Air Voids Lines		
Brown slightly sandy slightly gravelly CLAY	——— 0%	– – – – 5%	····· 10%

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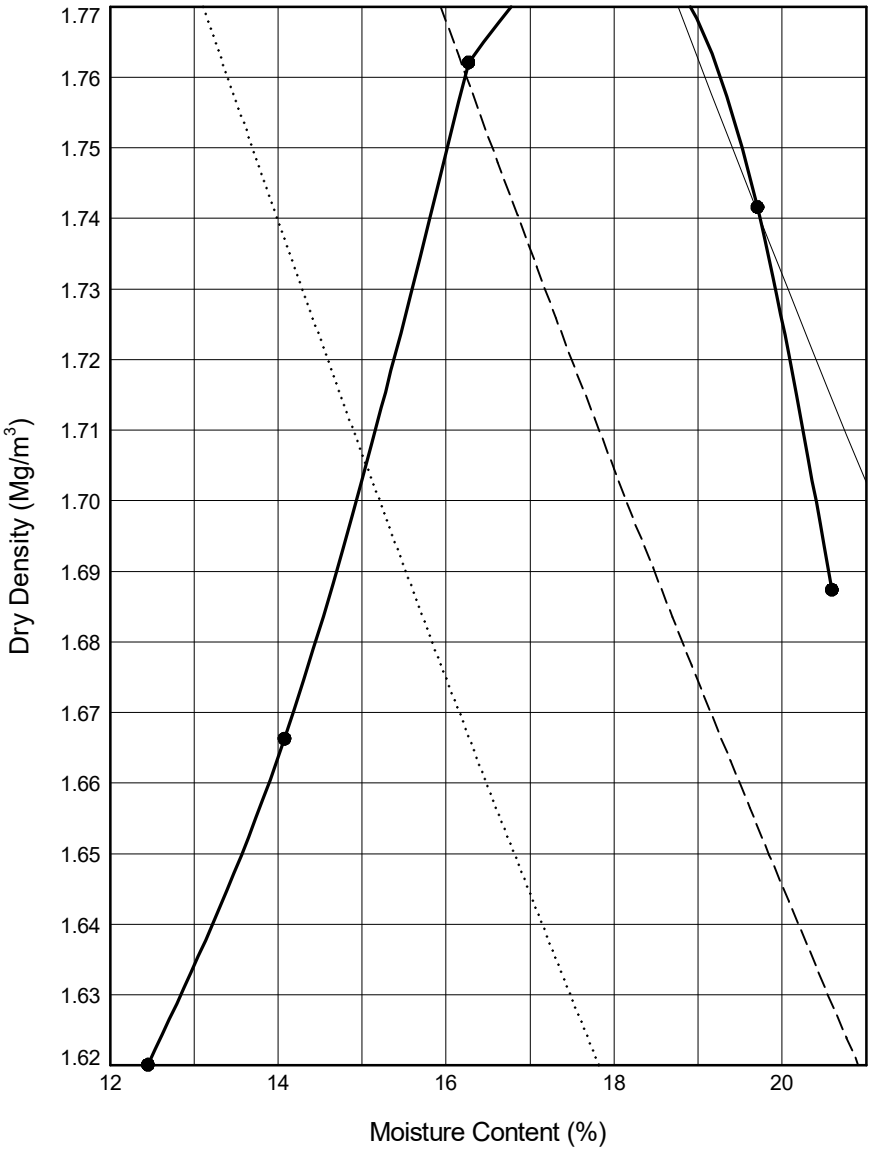
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990

Borehole: **BH15** Sample Ref: **21** Sample Type: **B** Depth (m): **5.00**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**16**	Compaction Type	: **Light**	Maximum Dry Density (Mg/m^3)	:	**1.78**
% Retained on 37.5mm BS Sieve	:	**0**	Mass of Rammer (kg):	**2.5**	Optimum Moisture Content (%)	:	**18**
% Retained on 20.0mm BS Sieve	:	**0**	Type of Mould	: **1 LITRE**	Method Used: **Clause 3.3**		
Particle Density - measured (Mg/m^3)	:	**2.65**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Single sample was used.				

Sample Description	Key to Air Voids Lines		
Brown very sandy silty/clayey GRAVEL	——— 0%	– – – – 5%	····· 10%

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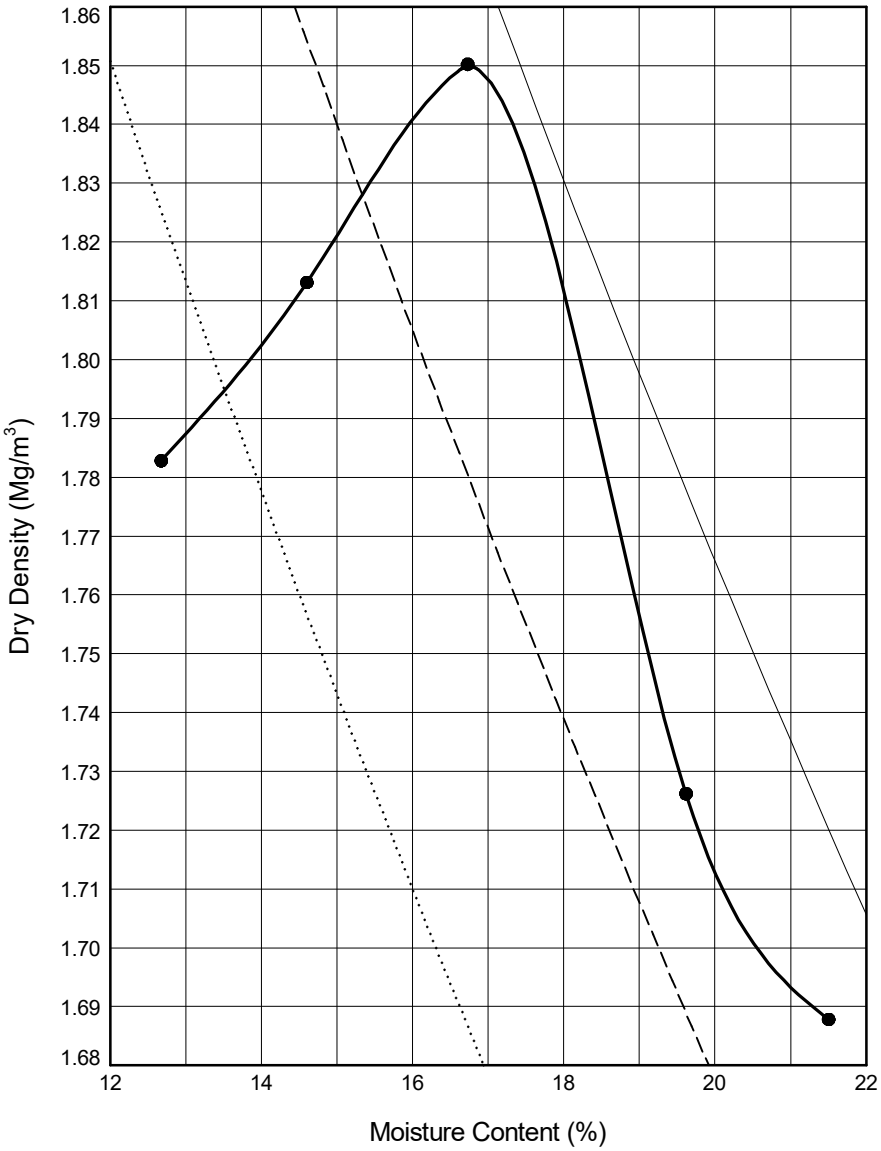
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990
NON-STANDARD TEST

Borehole: **BH19** Sample Ref: **18** Sample Type: **B** Depth (m): **4.00**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**17**	Compaction Type	: **Light**	Maximum Dry Density (Mg/m^3)	:	**1.85**
% Retained on 37.5mm BS Sieve	:	**1**	Mass of Rammer (kg):	**2.5**	Optimum Moisture Content (%)	:	**17**
% Retained on 20.0mm BS Sieve	:	**1**	Type of Mould	: **1 LITRE**	Method Used:		**Clause 3.3**
Particle Density - measured (Mg/m^3)	:	**2.73**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Separate samples were used.				

Sample Description	Key to Air Voids Lines		
Brown slightly gravelly slightly sandy CLAY	——— 0%	– – – – 5%	····· 10%

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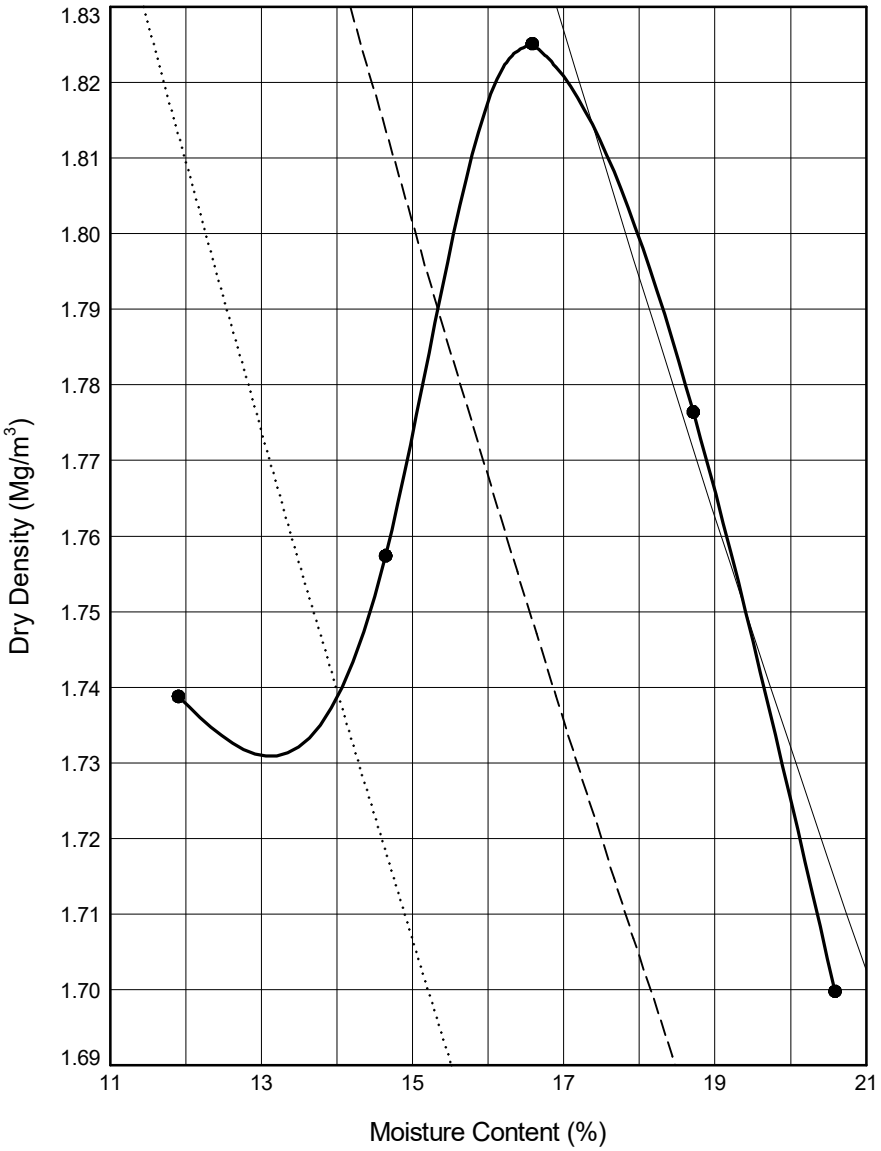
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990
NON-STANDARD TEST

Borehole: **BH20** Sample Ref: **12** Sample Type: **B** Depth (m): **1.60**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**19**	Compaction Type	: **Light**	Maximum Dry Density (Mg/m^3)	:	**1.83**
% Retained on 37.5mm BS Sieve	:	**3**	Mass of Rammer (kg):	**2.5**	Optimum Moisture Content (%)	:	**17**
% Retained on 20.0mm BS Sieve	:	**1**	Type of Mould	: **1 LITRE**	Method Used: **Clause 3.3**		
Particle Density - assumed (Mg/m^3)	:	**2.65**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Single sample was used.				

Sample Description	Key to Air Voids Lines		
Brown gravelly sandy CLAY	——— 0%	– – – – 5%	····· 10%

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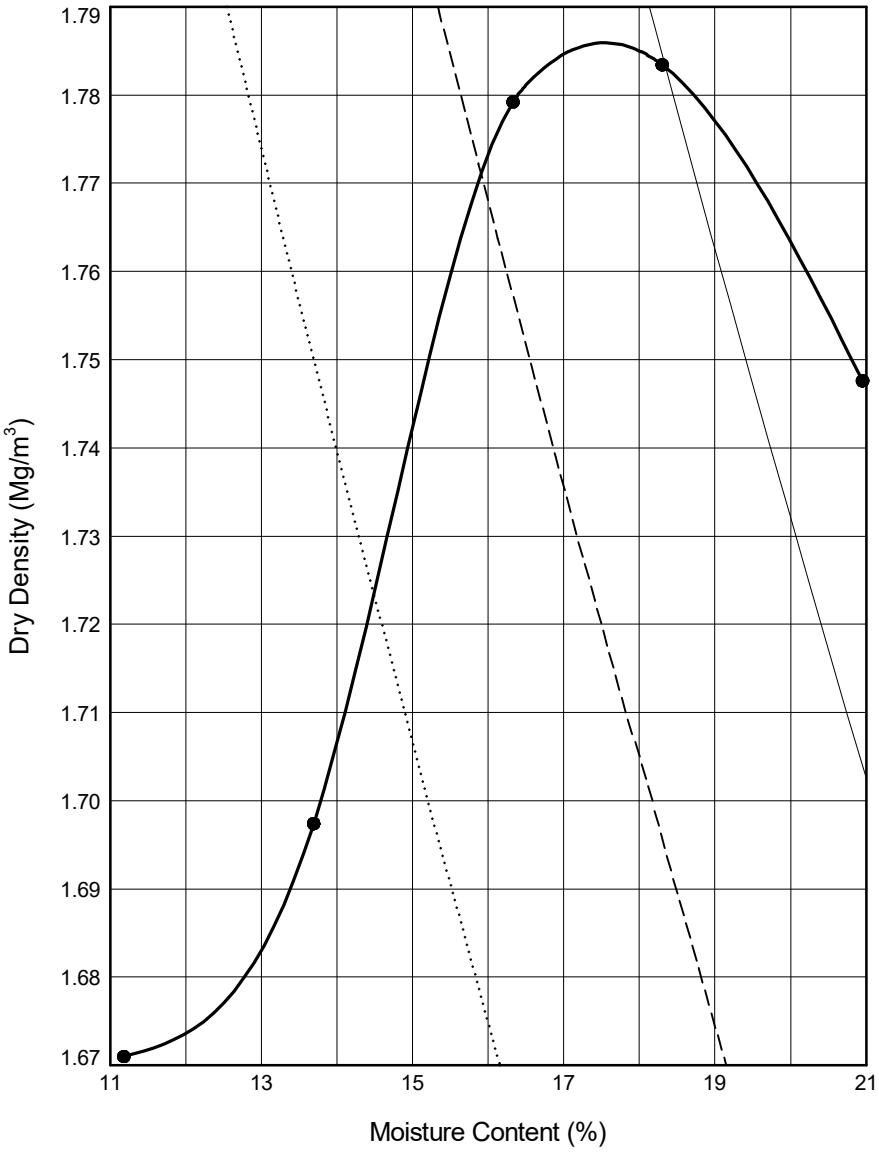
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990

Borehole: **BH21** Sample Ref: **15** Sample Type: **DSPT** Depth (m): **3.00**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**21**	Compaction Type	: **Light**	Maximum Dry Density (Mg/m³)	:	**1.79**
% Retained on 37.5mm BS Sieve	:	**0**	Mass of Rammer (kg):	**2.5**	Optimum Moisture Content (%)	:	**18**
% Retained on 20.0mm BS Sieve	:	**2**	Type of Mould	: **1 LITRE**	Method Used: **Clause 3.3**		
Particle Density - assumed (Mg/m³)	:	**2.65**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Single sample was used.				

Sample Description	Key to Air Voids Lines		
Brown red slightly sandy slightly gravelly clayey SILT	——— 0%	– – – – 5%	····· 10%

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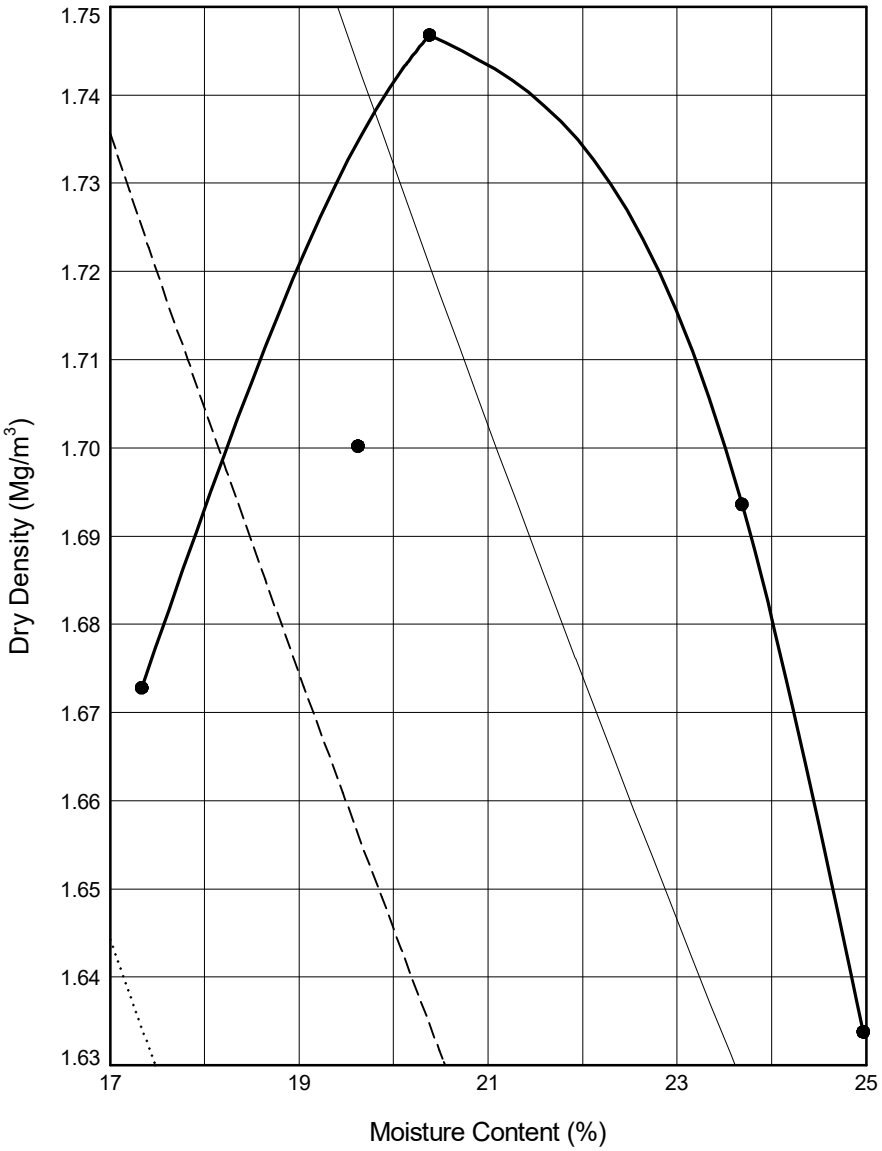
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990

Borehole: **BH23** Sample Ref: **14** Sample Type: **B** Depth (m): **2.50**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**25**	Compaction Type	: **Light**	Maximum Dry Density (Mg/m³)	:	**1.75**
% Retained on 37.5mm BS Sieve	:	**0**	Mass of Rammer (kg):	**2.5**	Optimum Moisture Content (%)	:	**20**
% Retained on 20.0mm BS Sieve	:	**7**	Type of Mould	: **1 LITRE**	Method Used: **Clause 3.3**		
Particle Density - assumed (Mg/m³)	:	**2.65**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Separate samples were used.				

Sample Description	Key to Air Voids Lines		
Red brown slightly gravelly slightly sandy CLAY	——— 0%	– – – – 5%	····· 10%

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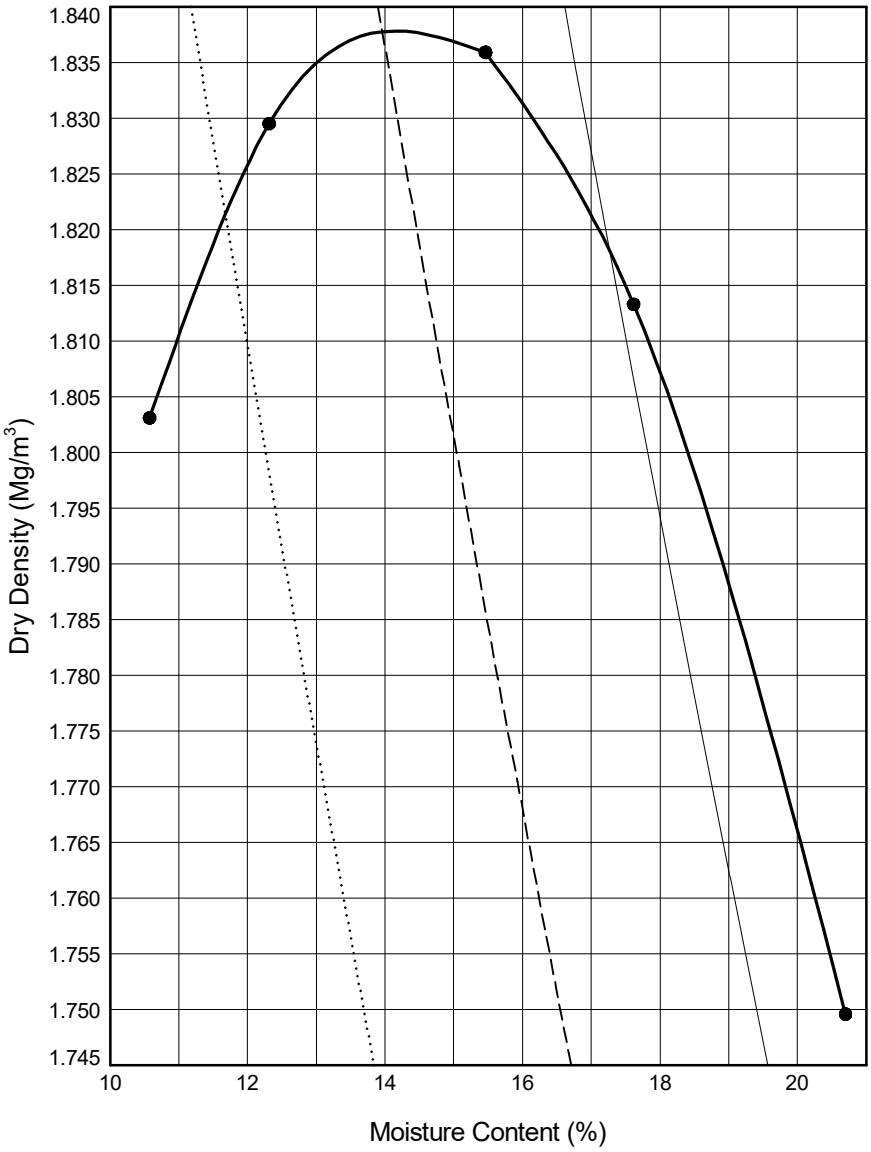
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990

Position ID: **CP03** Sample Ref: **14** Sample Type: **B** Depth (m): **2.60**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**18**	Compaction Type	: **Light**	Maximum Dry Density (Mg/m^3)	:	**1.84**
% Retained on 37.5mm BS Sieve	:	**0**	Mass of Rammer (kg):	**2.5**	Optimum Moisture Content (%)	:	**14**
% Retained on 20.0mm BS Sieve	:	**8**	Type of Mould	: **1 LITRE**	Method Used: **Clause 3.3**		
Particle Density - assumed (Mg/m^3)	:	**2.65**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Single sample was used.				

Sample Description	Key to Air Voids Lines		
Brown red slightly gravelly CLAY	——— 0%	– – – – 5%	····· 10%

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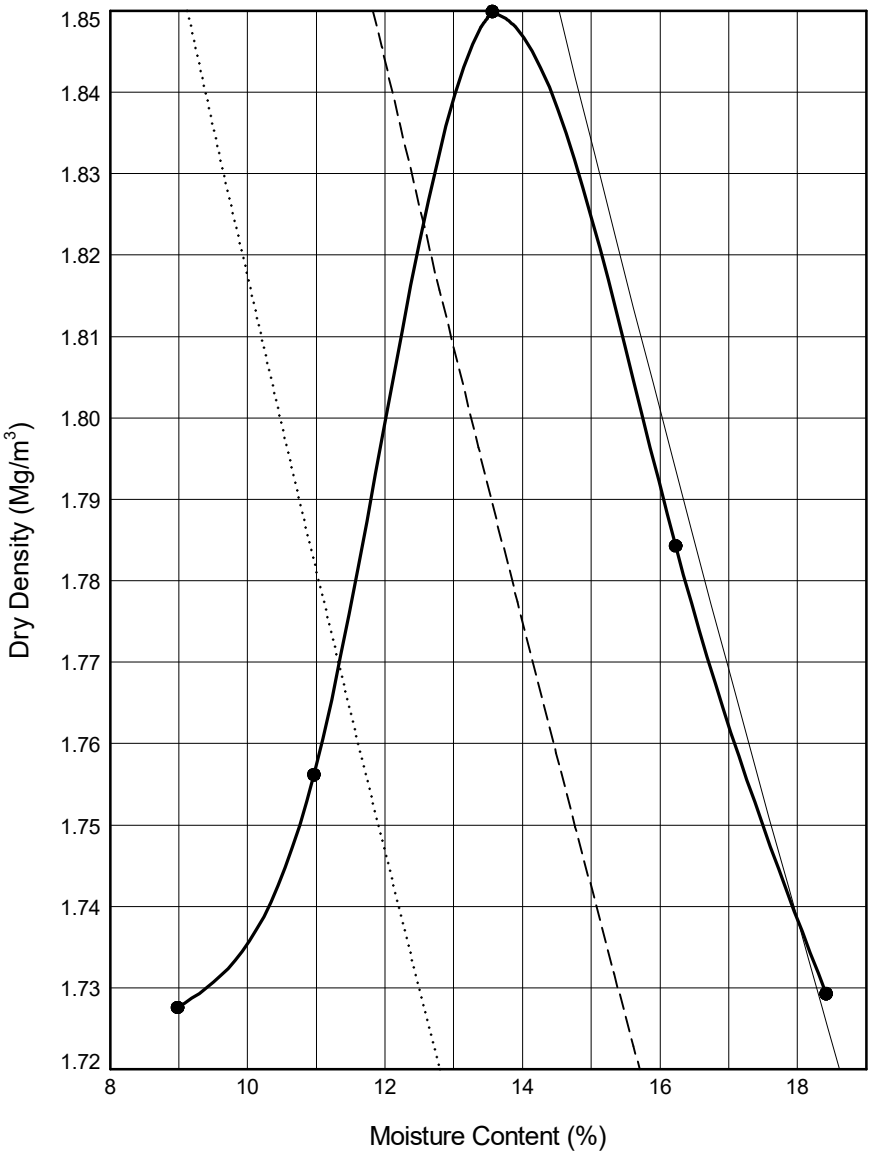
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990
NON-STANDARD TEST

Position ID: **CP04** Sample Ref: **6** Sample Type: **B** Depth (m): **0.50**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**11**	Compaction Type	: **Light**	Maximum Dry Density (Mg/m^3)	:	**1.85**
% Retained on 37.5mm BS Sieve	:	**9**	Mass of Rammer (kg):	**2.5**	Optimum Moisture Content (%)	:	**14**
% Retained on 20.0mm BS Sieve	:	**3**	Type of Mould	: **1 LITRE**	Method Used: **Clause 3.3**		
Particle Density - measured (Mg/m^3)	:	**2.53**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Single sample was used.				

Sample Description	Key to Air Voids Lines		
Brown slightly sandy slightly gravelly CLAY	——— 0%	– – – – 5%	····· 10%

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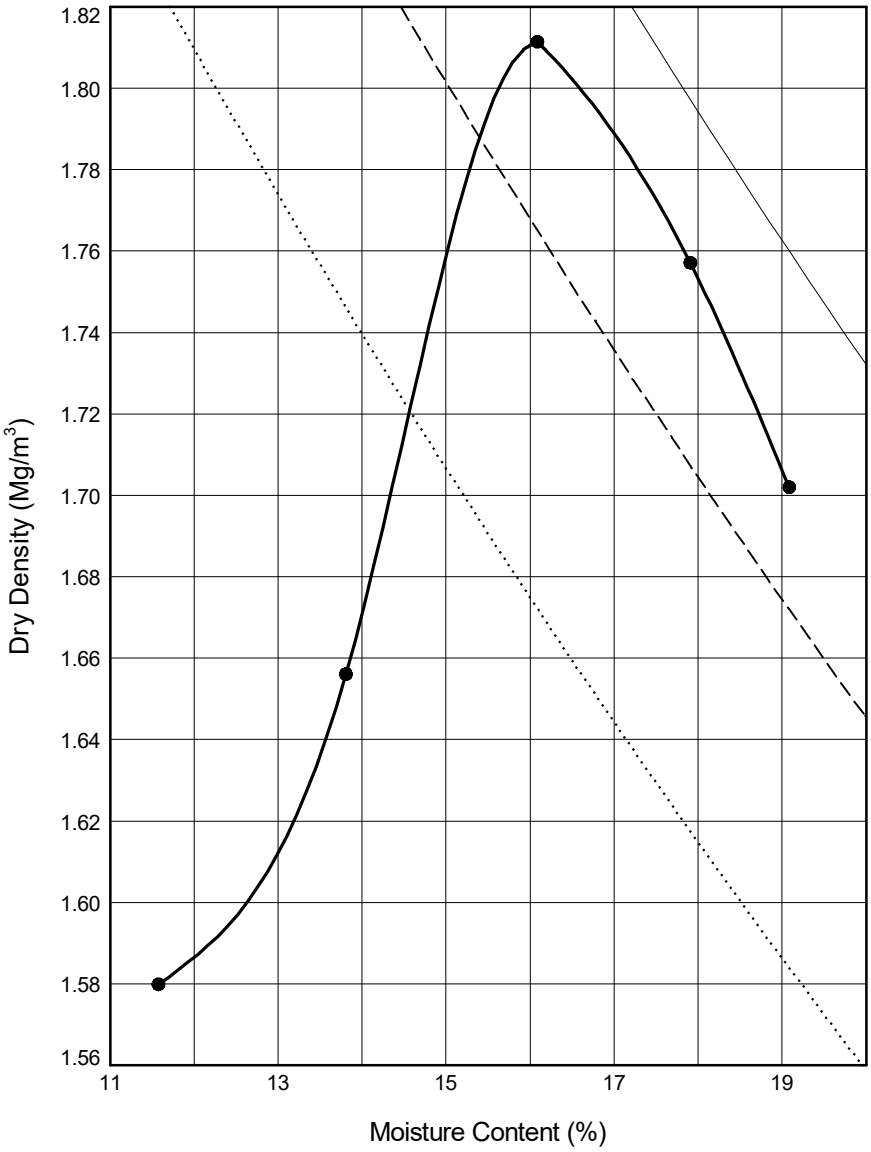
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990

Position ID: **CP06** Sample Ref: **3** Sample Type: **B** Depth (m): **0.50**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**12**	Compaction Type	: **Light**	Maximum Dry Density (Mg/m^3)	:	**1.81**
% Retained on 37.5mm BS Sieve	:	**0**	Mass of Rammer (kg):	**2.5**	Optimum Moisture Content (%)	:	**16**
% Retained on 20.0mm BS Sieve	:	**0**	Type of Mould	: **1 LITRE**	Method Used: **Clause 3.3**		
Particle Density - assumed (Mg/m^3)	:	**2.65**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Single sample was used.				

Sample Description	Key to Air Voids Lines		
Grey brown slightly gravelly slightly sandy CLAY	——— 0%	– – – – 5%	····· 10%

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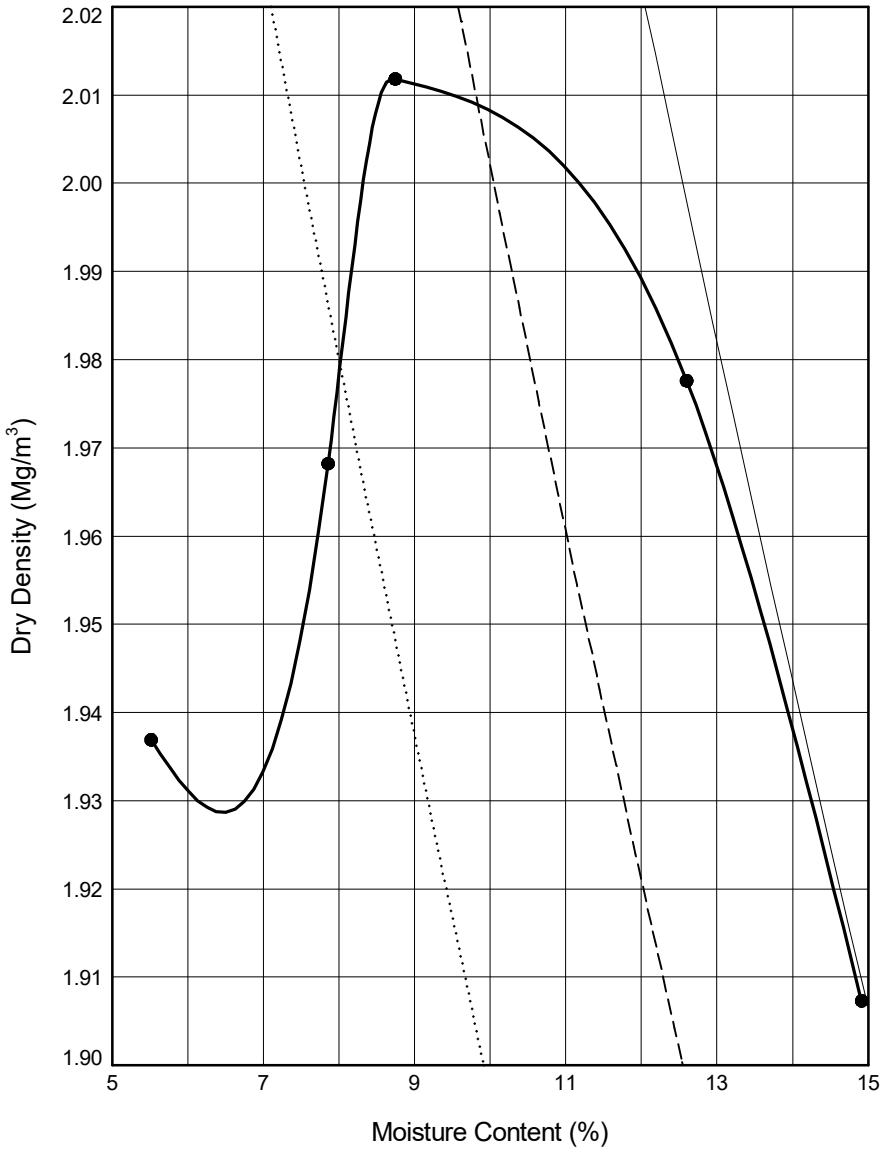
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990
NON-STANDARD TEST

Position ID: **CP08** Sample Ref: **4** Sample Type: **B** Depth (m): **1.00**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**8.7**	Compaction Type	: **Heavy**	Maximum Dry Density (Mg/m^3)	:	**2.01**
% Retained on 37.5mm BS Sieve	:	**0**	Mass of Rammer (kg):	**4.5**	Optimum Moisture Content (%)	:	**8.7**
% Retained on 20.0mm BS Sieve	:	**3**	Type of Mould	: **1 LITRE**	Method Used:		**Clause 3.5**
Particle Density - measured (Mg/m^3)	:	**2.67**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Single sample was used.				

Sample Description	Key to Air Voids Lines		
Brown slightly gravelly clayey SAND	——— 0%	– – – – 5%	····· 10%

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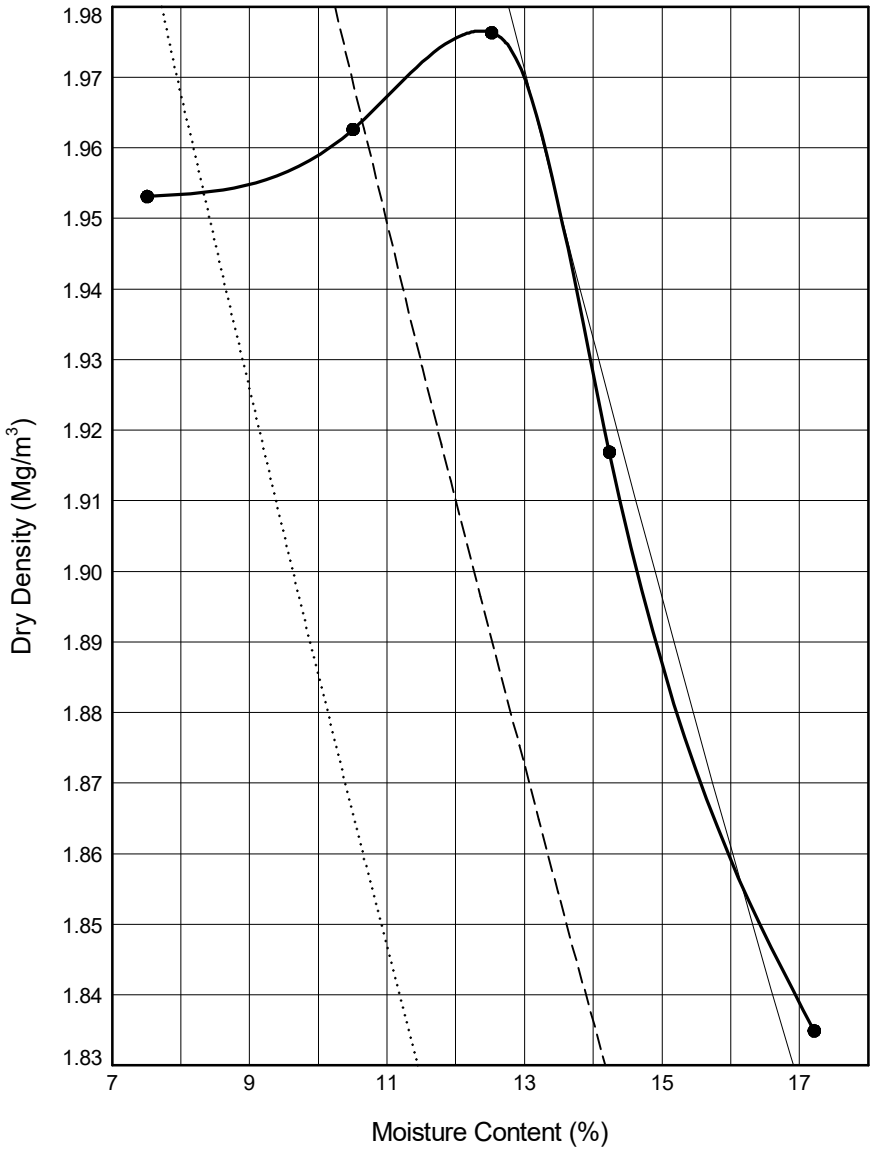
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990

Position ID: **CP09** Sample Ref: **4** Sample Type: **D** Depth (m): **0.70**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**17**	Compaction Type	: **Heavy**	Maximum Dry Density (Mg/m^3)	:	**1.98**
% Retained on 37.5mm BS Sieve	:	**0**	Mass of Rammer (kg):	**4.5**	Optimum Moisture Content (%)	:	**13**
% Retained on 20.0mm BS Sieve	:	**0**	Type of Mould	: **1 LITRE**	Method Used:		**Clause 3.5**
Particle Density - assumed (Mg/m^3)	:	**2.65**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Single sample was used.				

Sample Description	Key to Air Voids Lines		
Brown red slightly gravelly sandy CLAY with organic material	——— 0%	– – – – 5%	····· 10%

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Compiled By		Date
	LAURA SCHRAMM	**09/03/23**

Contract	Contract Ref:
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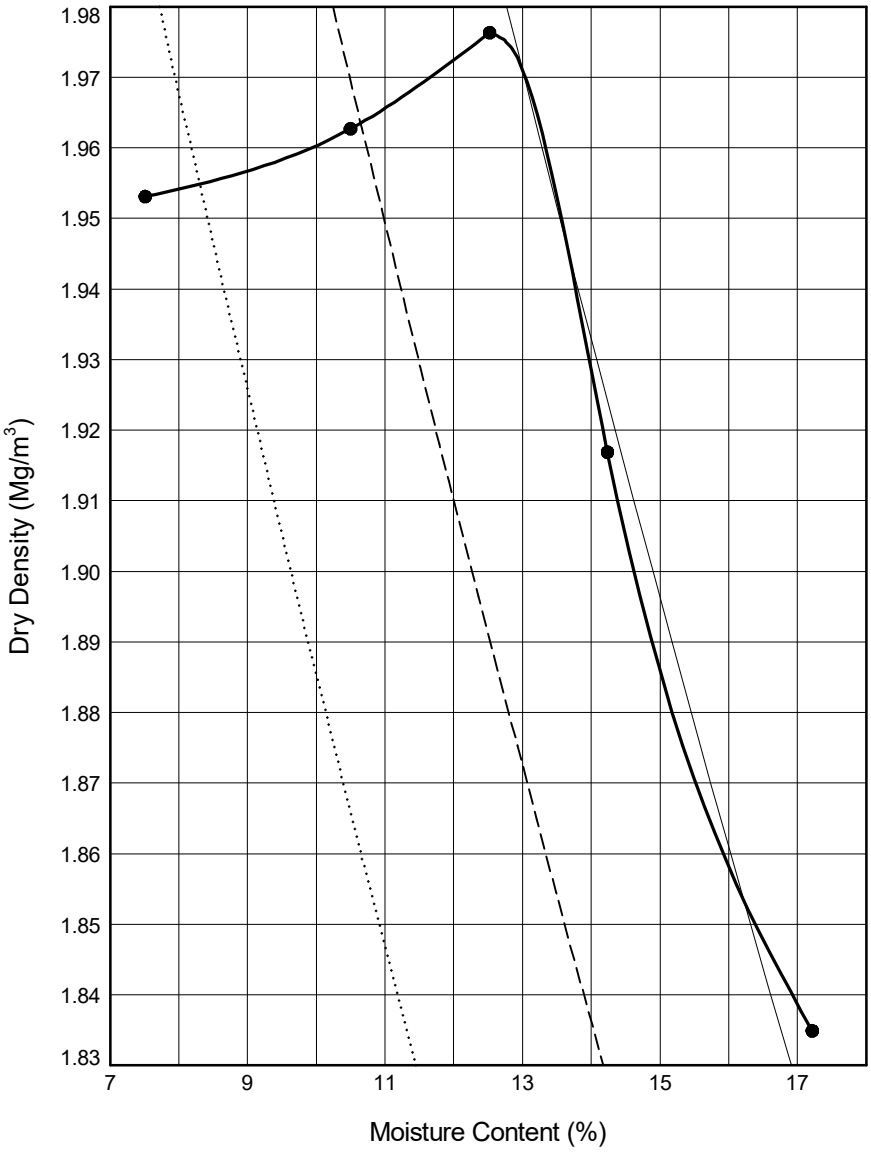
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990

Position ID: **CP09** Sample Ref: **20** Sample Type: **B** Depth (m): **6.00**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**17**	Compaction Type	: **Heavy**	Maximum Dry Density (Mg/m^3)	:	**1.98**
% Retained on 37.5mm BS Sieve	:	**0**	Mass of Rammer (kg):	**4.5**	Optimum Moisture Content (%)	:	**13**
% Retained on 20.0mm BS Sieve	:	**0**	Type of Mould	: **1 LITRE**	Method Used:		**Clause 3.5**
Particle Density - assumed (Mg/m^3)	:	**2.65**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Separate samples were used.				

Sample Description	Key to Air Voids Lines		
Red brown slightly gravelly CLAY	——— 0%	– – – – 5%	····· 10%

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Compiled By		Date
	LUKE FISHER	**09/03/23**

Contract	Contract Ref:
EMG Phase 2	**765514**

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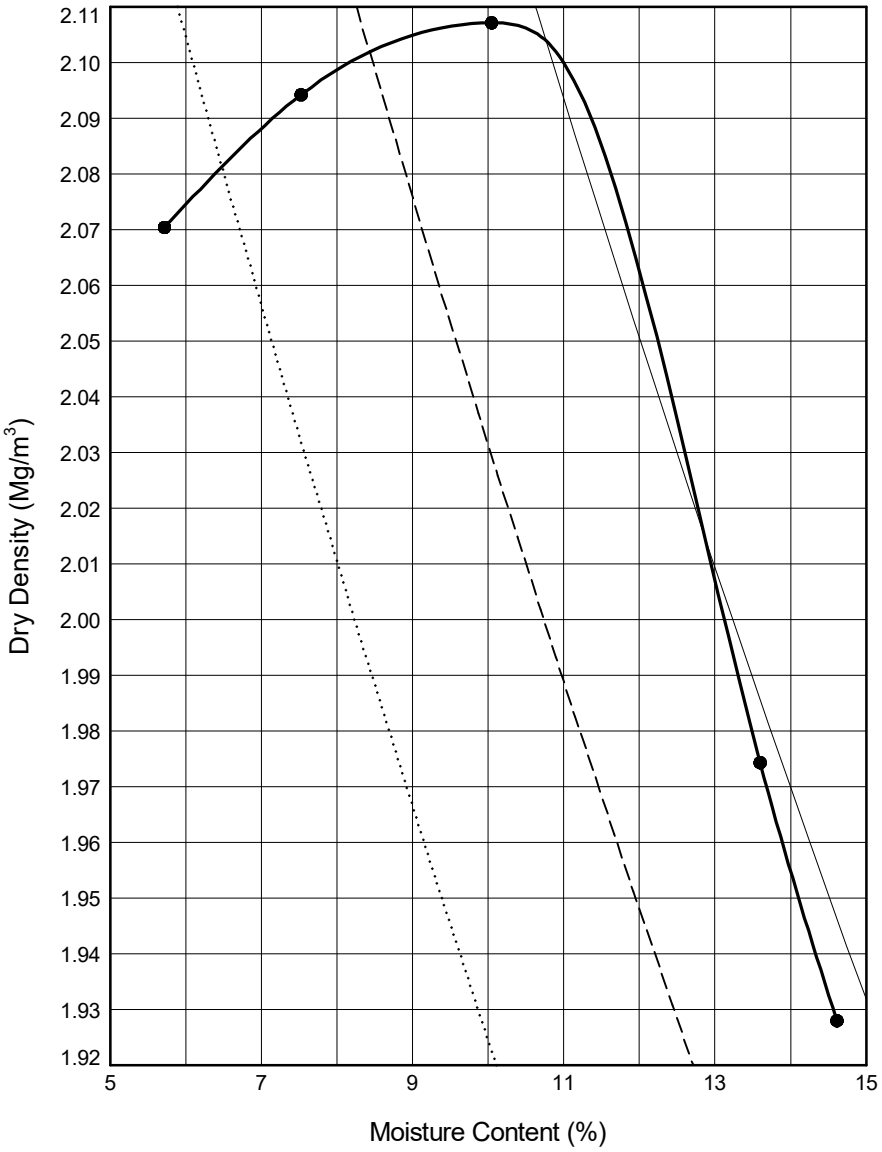
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990
NON-STANDARD TEST

Position ID: **CP14** Sample Ref: **17** Sample Type: **B** Depth (m): **6.00**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**15**	Compaction Type	: **Heavy**	Maximum Dry Density (Mg/m^3)	:	**2.11**
% Retained on 37.5mm BS Sieve	:	**69**	Mass of Rammer (kg):	**4.5**	Optimum Moisture Content (%)	:	**10**
% Retained on 20.0mm BS Sieve	:	**7**	Type of Mould	: **1 LITRE**	Method Used:		**Clause 3.5**
Particle Density - measured (Mg/m^3)	:	**2.72**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Single sample was used.				

Sample Description	Key to Air Voids Lines		
Brown red very gravelly CLAY	——— 0%	– – – – 5%	····· 10%

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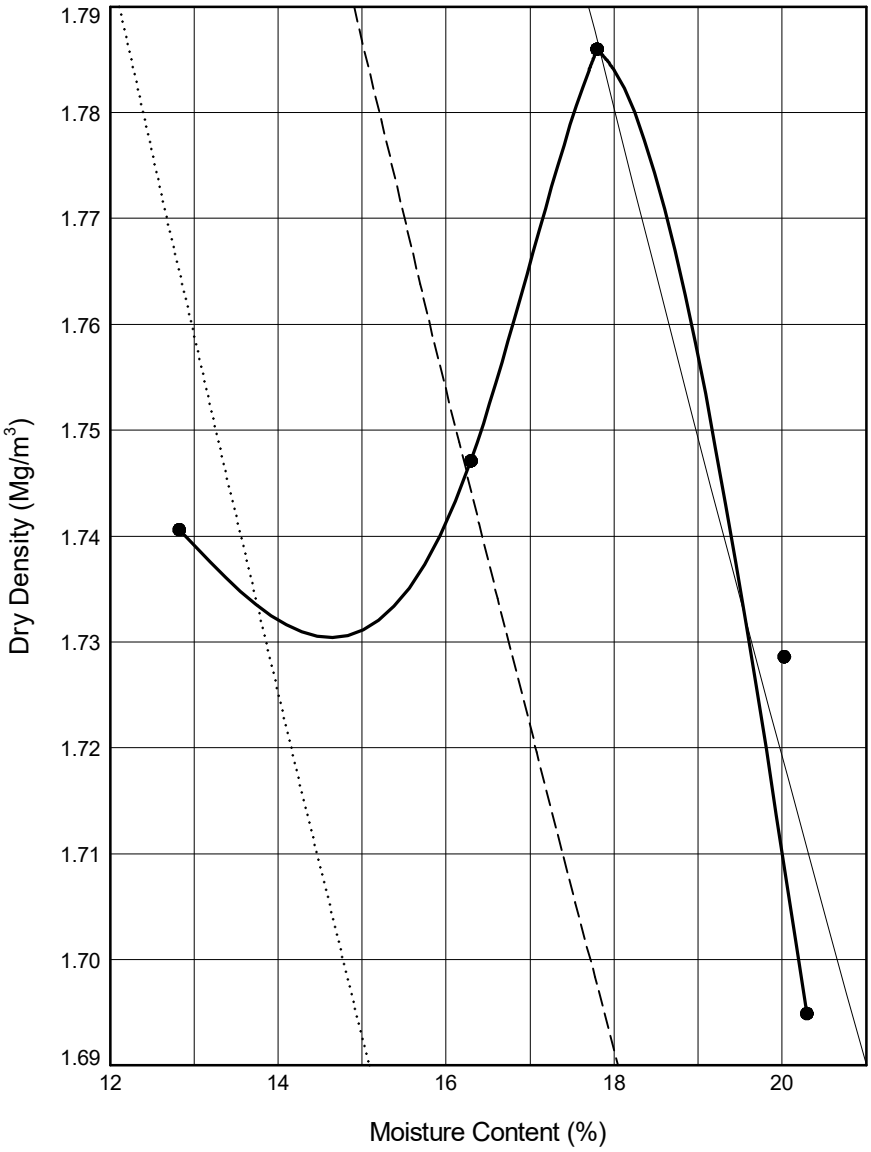
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990

Position ID: **CP17** Sample Ref: **4** Sample Type: **B** Depth (m): **0.60**



Initial Sample Conditions		Test Details	Test Results
Initial Moisture Content (%) : **18**		Compaction Type : **Heavy**	Maximum Dry Density (Mg/m^3) : **1.75**
% Retained on 37.5mm BS Sieve : **0**		Mass of Rammer (kg): **4.5**	Optimum Moisture Content (%) : **16**
% Retained on 20.0mm BS Sieve : **3**		Type of Mould : **1 LITRE**	Method Used: **Clause 3.3**
Particle Density - measured (Mg/m^3) : **2.62**			Remarks:
Size of Soil Pieces : **<20mm**		Single sample was used.	

Sample Description	Key to Air Voids Lines		
Brown slightly sandy silty gravelly CLAY	——— 0%	– – – – 5%	····· 10%

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Compiled By		Date
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Contract	Contract Ref:
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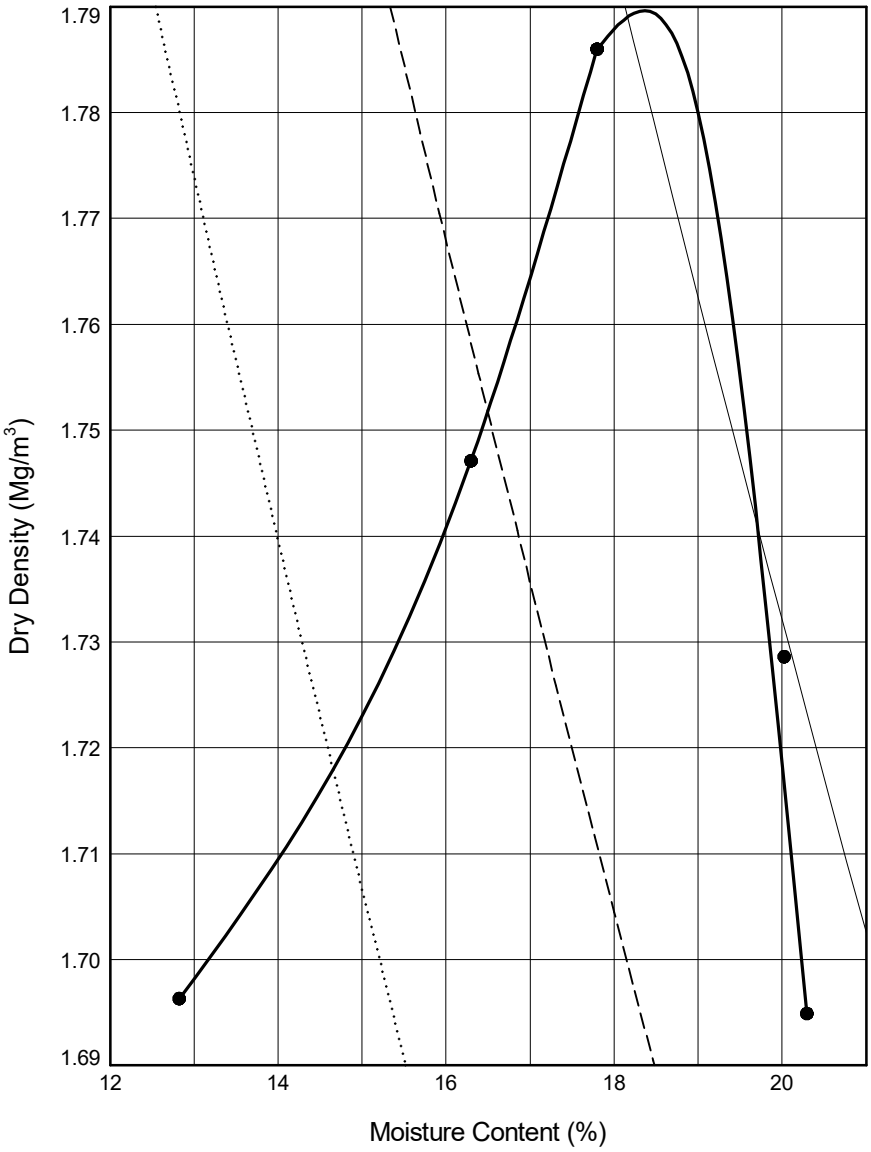
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990

Position ID: **CP17** Sample Ref: **11** Sample Type: **B** Depth (m): **2.50**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**18**	Compaction Type	: **Light**	Maximum Dry Density (Mg/m^3)	:	**1.79**
% Retained on 37.5mm BS Sieve	:	**0**	Mass of Rammer (kg):	**2.5**	Optimum Moisture Content (%)	:	**18**
% Retained on 20.0mm BS Sieve	:	**3**	Type of Mould	: **1 LITRE**	Method Used: **Clause 3.3**		
Particle Density - assumed (Mg/m^3)	:	**2.65**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Single sample was used.				

Sample Description	Key to Air Voids Lines		
Brown slightly sandy slightly gravelly CLAY	——— 0%	– – – – 5%	····· 10%

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Contract	Contract Ref:
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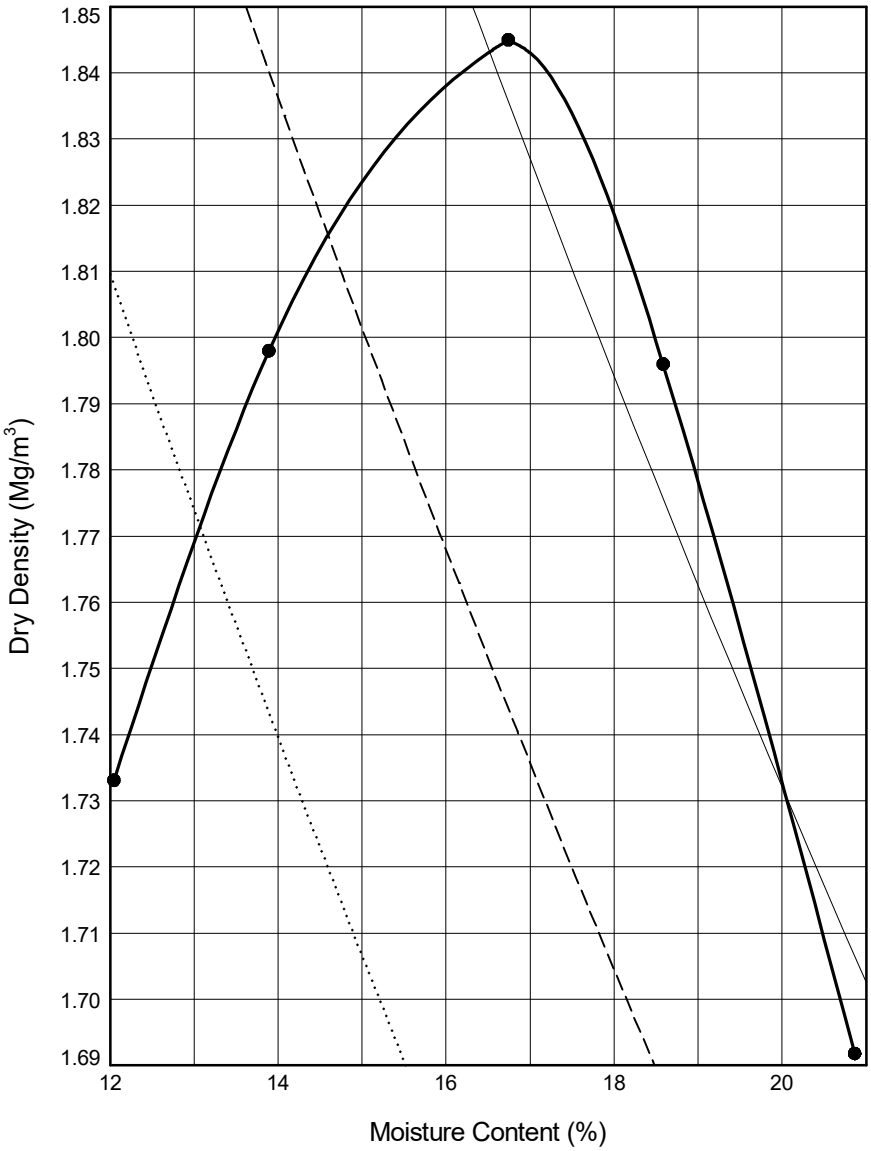
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990
NON-STANDARD TEST

Position ID: **CP21** Sample Ref: **16** Sample Type: **B** Depth (m): **4.00**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**21**	Compaction Type	: **Light**	Maximum Dry Density (Mg/m^3)	:	**1.85**
% Retained on 37.5mm BS Sieve	:	**1**	Mass of Rammer (kg):	**2.5**	Optimum Moisture Content (%)	:	**17**
% Retained on 20.0mm BS Sieve	:	**2**	Type of Mould	: **1 LITRE**	Method Used:		**Clause 3.3**
Particle Density - assumed (Mg/m^3)	:	**2.65**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Single sample was used.				

Sample Description	Key to Air Voids Lines		
Brown red slightly gravelly CLAY	——— 0%	– – – – 5%	····· 10%

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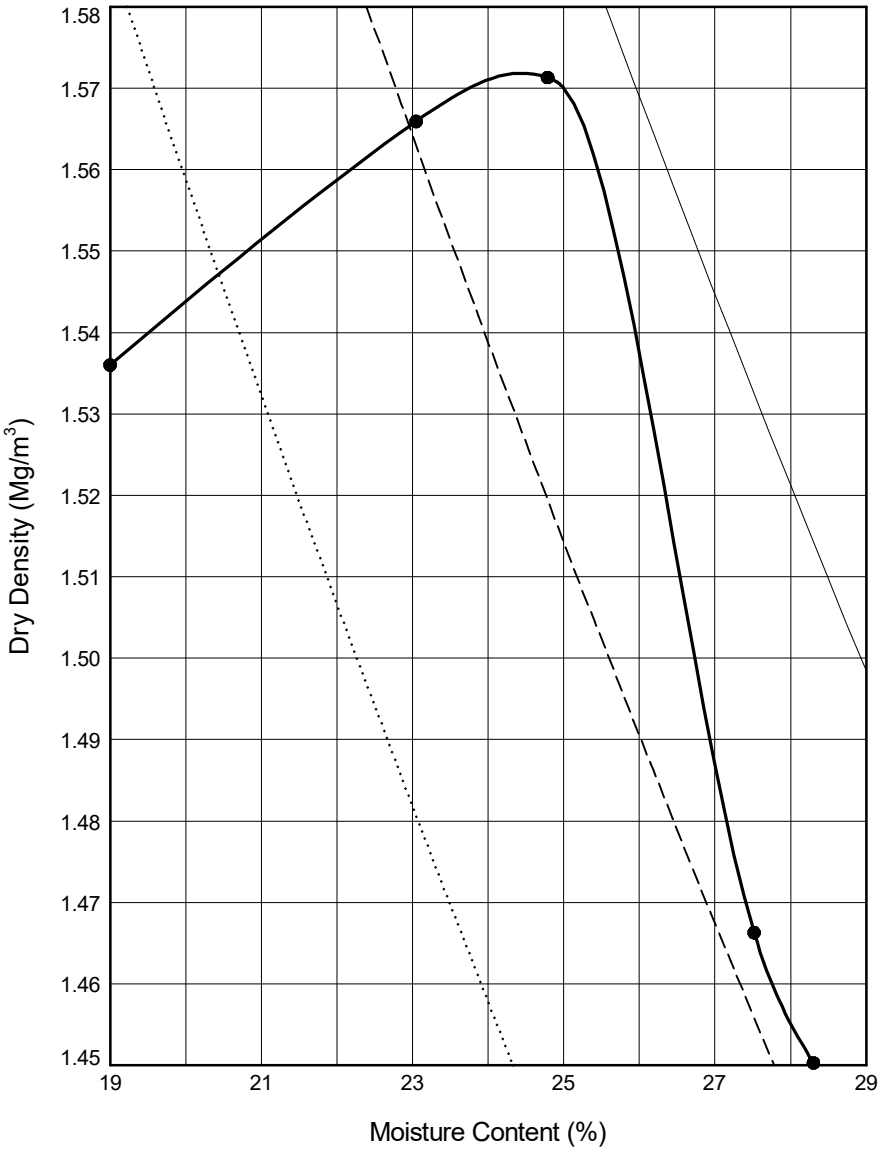
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990

Position ID: **CP27** Sample Ref: **8** Sample Type: **B** Depth (m): **1.00**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**25**	Compaction Type	: **Light**	Maximum Dry Density (Mg/m^3)	:	**1.57**
% Retained on 37.5mm BS Sieve	:	**0**	Mass of Rammer (kg):	**2.5**	Optimum Moisture Content (%)	:	**24**
% Retained on 20.0mm BS Sieve	:	**2**	Type of Mould	: **1 LITRE**	Method Used: **Clause 3.3**		
Particle Density - assumed (Mg/m^3)	:	**2.65**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Separate samples were used.				

Sample Description	Key to Air Voids Lines		
Brown slightly gravelly sandy CLAY	——— 0%	– – – – 5%	····· 10%

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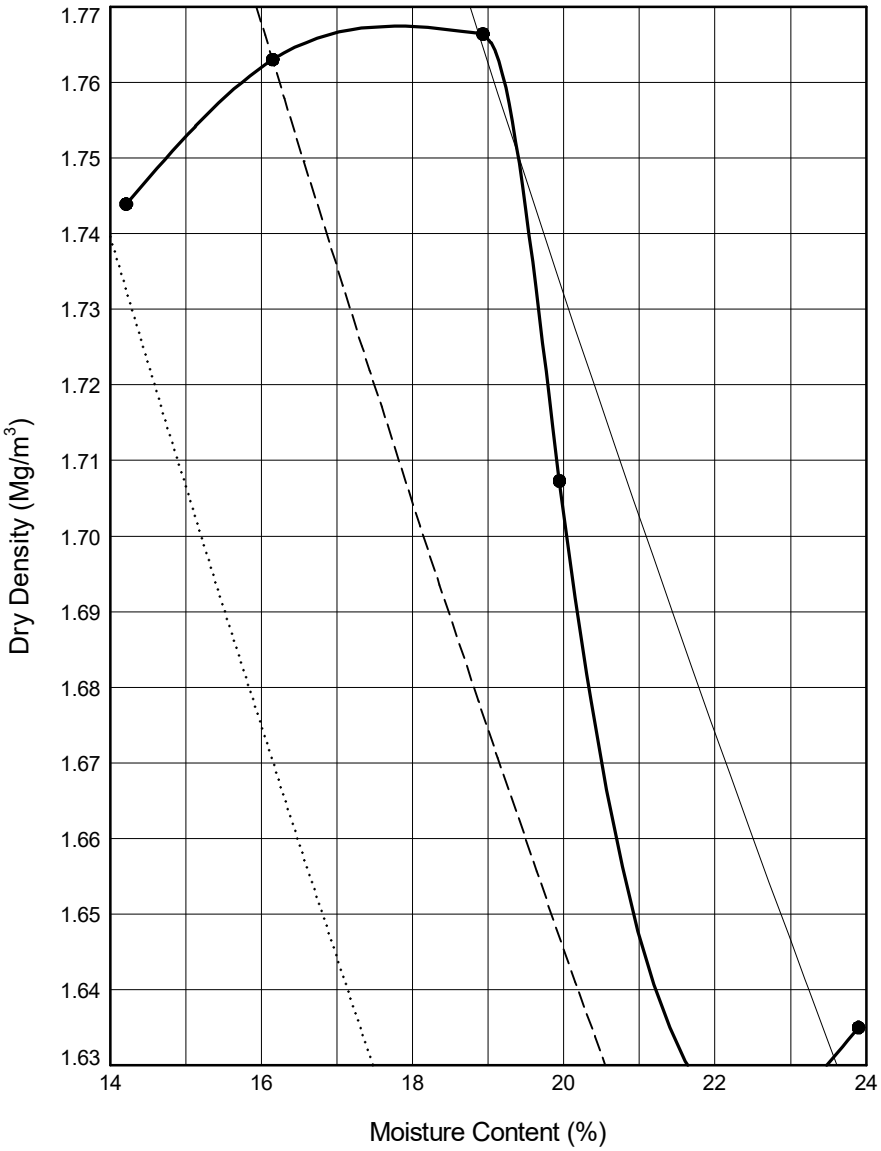
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990
NON-STANDARD TEST

Position ID: **CP28** Sample Ref: **8** Sample Type: **B** Depth (m): **1.20**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**20**	Compaction Type	: **Light**	Maximum Dry Density (Mg/m^3)	:	**1.77**
% Retained on 37.5mm BS Sieve	:	**1**	Mass of Rammer (kg):	**2.5**	Optimum Moisture Content (%)	:	**18**
% Retained on 20.0mm BS Sieve	:	**1**	Type of Mould	: **1 LITRE**	Method Used: **Clause 3.3**		
Particle Density - assumed (Mg/m^3)	:	**2.65**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Single sample was used.				

Sample Description	Key to Air Voids Lines		
Brown red slightly gravelly slightly sandy CLAY	——— 0%	– – – – 5%	····· 10%

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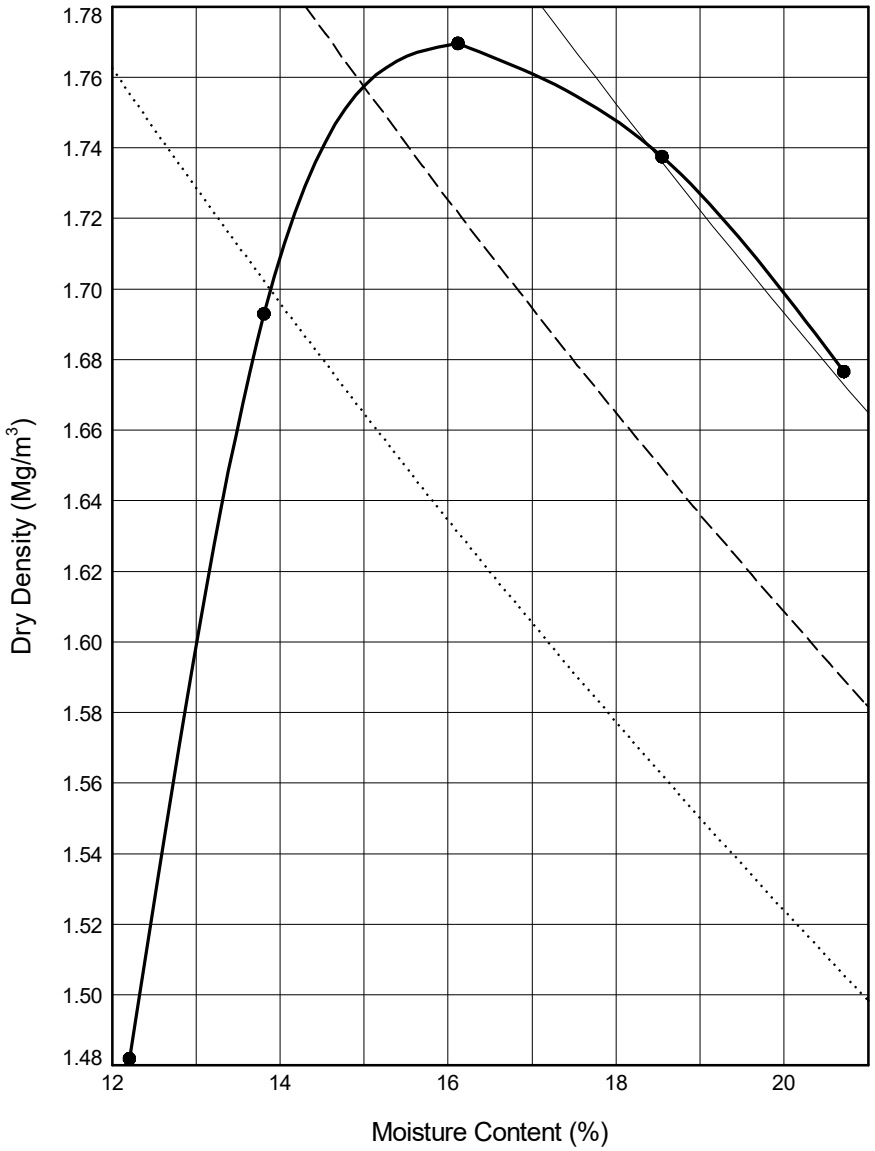
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990
NON-STANDARD TEST

Trial Pit: **TP01** Sample Ref: **7** Sample Type: **D** Depth (m): **0.60**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**12**	Compaction Type	: **Light**	Maximum Dry Density (Mg/m^3)	:	**1.77**
% Retained on 37.5mm BS Sieve	:	**2**	Mass of Rammer (kg):	**2.5**	Optimum Moisture Content (%)	:	**16**
% Retained on 20.0mm BS Sieve	:	**1**	Type of Mould	: **1 LITRE**	Method Used: **Clause 3.3**		
Particle Density - measured (Mg/m^3)	:	**2.56**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Single sample was used.				

Sample Description	Key to Air Voids Lines		
Brown slightly sandy slightly gravelly CLAY	——— 0%	– – – – 5%	····· 10%

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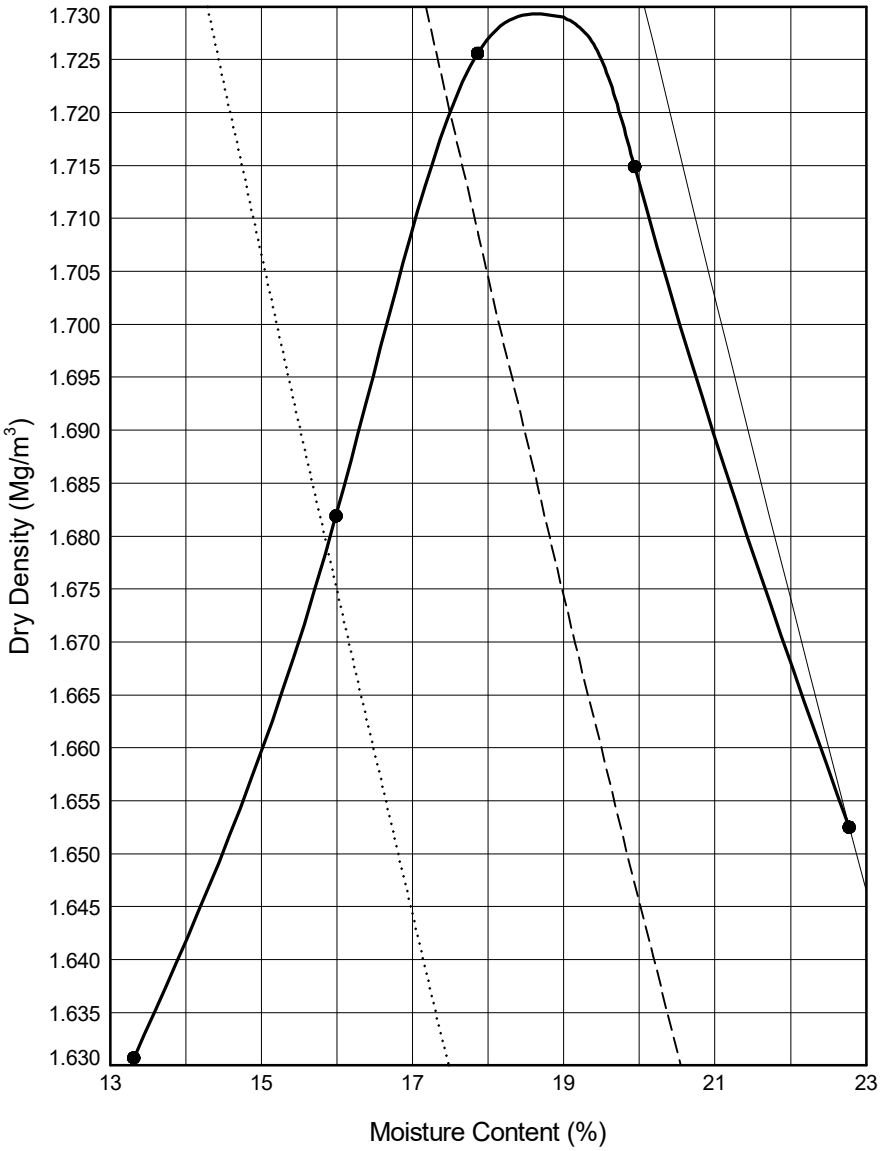
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990
NON-STANDARD TEST

Trial Pit: **TP02** Sample Ref: **8** Sample Type: **LB** Depth (m): **0.70**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**16**	Compaction Type	: **Light**	Maximum Dry Density (Mg/m³)	:	**1.73**
% Retained on 37.5mm BS Sieve	:	**3**	Mass of Rammer (kg):	**2.5**	Optimum Moisture Content (%)	:	**19**
% Retained on 20.0mm BS Sieve	:	**7**	Type of Mould	: **1 LITRE**	Method Used: **Clause 3.3**		
Particle Density - assumed (Mg/m³)	:	**2.65**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Single sample was used.				

Sample Description	Key to Air Voids Lines		
Red brown slightly gravelly slightly sandy slightly clayey SILT	——— 0%	– – – – 5%	····· 10%

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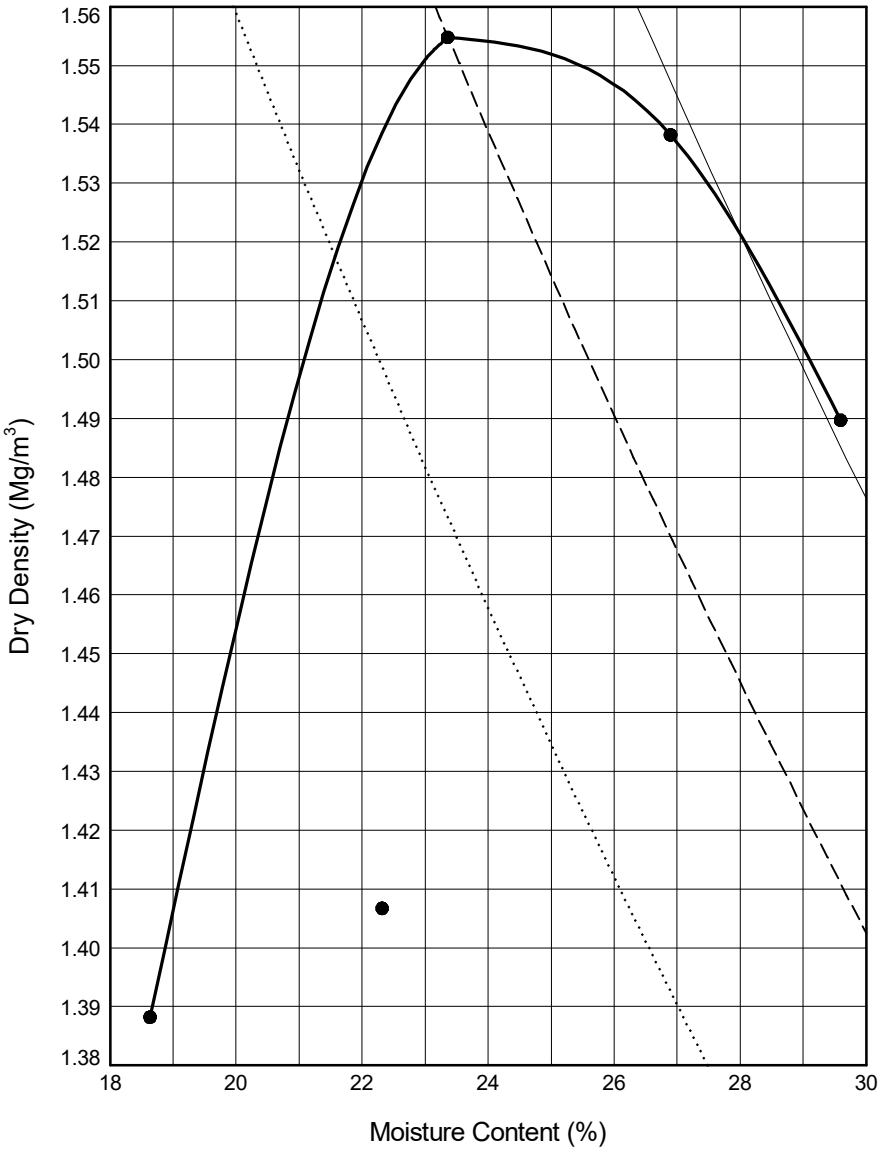
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990
NON-STANDARD TEST

Trial Pit: **TP03** Sample Ref: **13** Sample Type: **B** Depth (m): **3.40**



Initial Sample Conditions			Test Details			Test Results		
Initial Moisture Content (%)	:	**30**	Compaction Type	:	**Light**	Maximum Dry Density (Mg/m³)	:	**1.56**
% Retained on 37.5mm BS Sieve	:	**7**	Mass of Rammer (kg):		**2.5**	Optimum Moisture Content (%)	:	**23**
% Retained on 20.0mm BS Sieve	:	**5**	Type of Mould	:	**CBR**	Method Used: **Clause 3.4**		
Particle Density - assumed (Mg/m³)	:	**2.65**				Remarks:		
Size of Soil Pieces	:	**<20nn**	Separate samples were used.					

Sample Description	Key to Air Voids Lines		
Brown slightly sandy slightly gravelly CLAY	——— 0%	– – – – 5%	····· 10%

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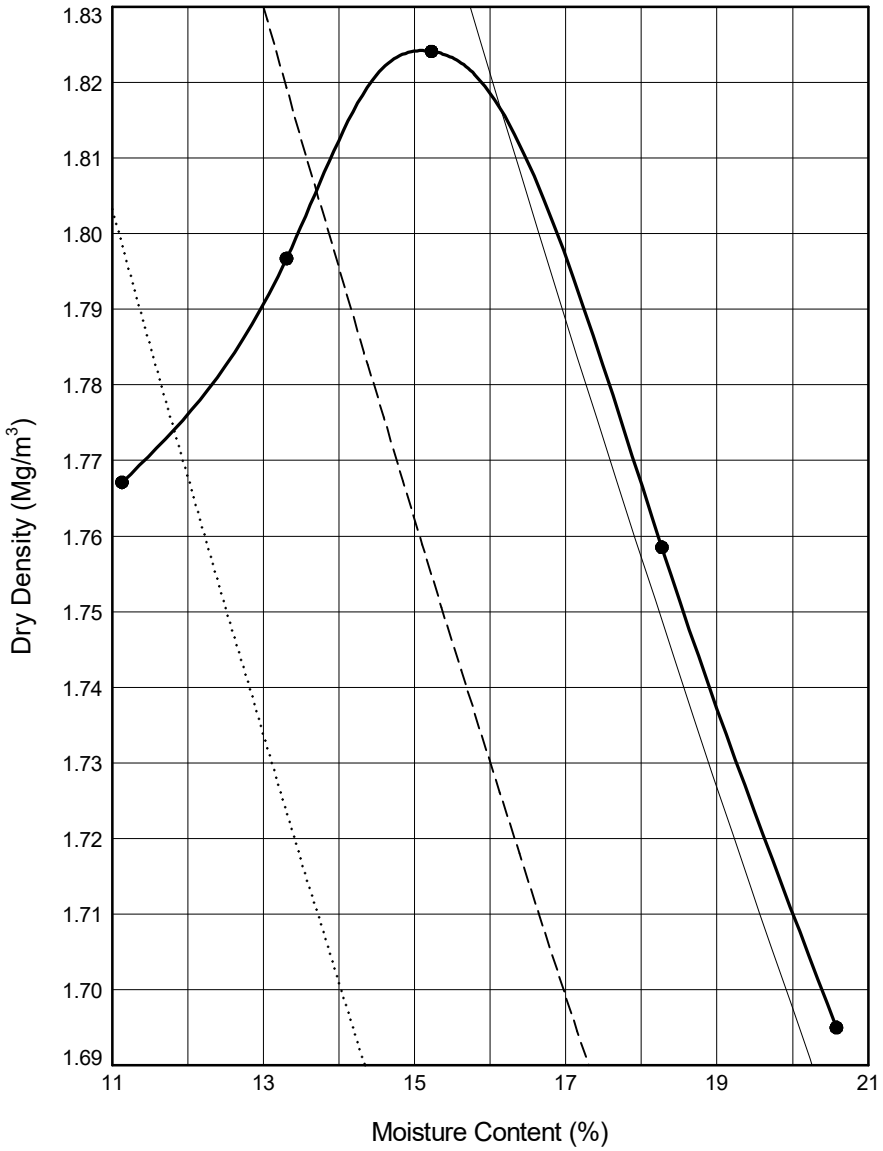
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990
NON-STANDARD TEST

Trial Pit: **TP04** Sample Ref: **9** Sample Type: **B** Depth (m): **2.00**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**13**	Compaction Type	: **Heavy**	Maximum Dry Density (Mg/m³)	:	**1.82**
% Retained on 37.5mm BS Sieve	:	**12**	Mass of Rammer (kg):	**4.5**	Optimum Moisture Content (%)	:	**15**
% Retained on 20.0mm BS Sieve	:	**5**	Type of Mould	: **1 LITRE**	Method Used:		**Clause 3.5**
Particle Density - measured (Mg/m³)	:	**2.57**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Single sample was used.				

Sample Description	Key to Air Voids Lines		
Brown gravelly sandy CLAY with organic material	——— 0%	– – – – 5%	····· 10%

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	LAURA SCHRAMM	**09/03/23**

Contract	Contract Ref:
EMG Phase 2	**765514**

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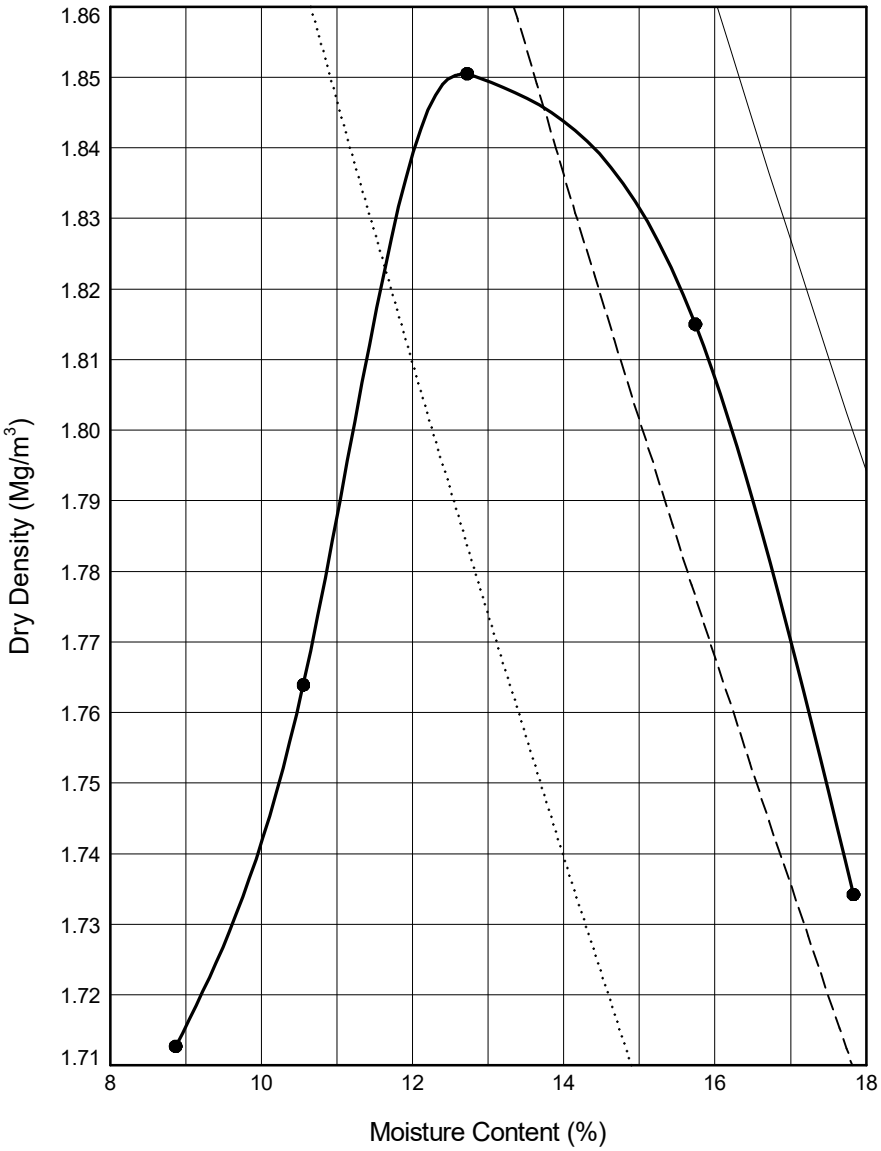
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990
NON-STANDARD TEST

Trial Pit: **TP06** Sample Ref: **11** Sample Type: **B** Depth (m): **1.60**



Initial Sample Conditions			Test Details			Test Results		
Initial Moisture Content (%)	:	**13**	Compaction Type	:	**Light**	Maximum Dry Density (Mg/m^3)	:	**1.85**
% Retained on 37.5mm BS Sieve	:	**8**	Mass of Rammer (kg):		**2.5**	Optimum Moisture Content (%)	:	**13**
% Retained on 20.0mm BS Sieve	:	**8**	Type of Mould	:	**CBR**	Method Used: **Clause 3.4**		
Particle Density - assumed (Mg/m^3)	:	**2.65**				Remarks:		
Size of Soil Pieces	:	**<20mm**	Separate samples were used.					

Sample Description	Key to Air Voids Lines		
Brown slightly gravelly sandy CLAY	——— 0%	– – – – 5%	····· 10%

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Compiled By		Date
	LAURA SCHRAMM	**09/03/23**

Contract	Contract Ref:
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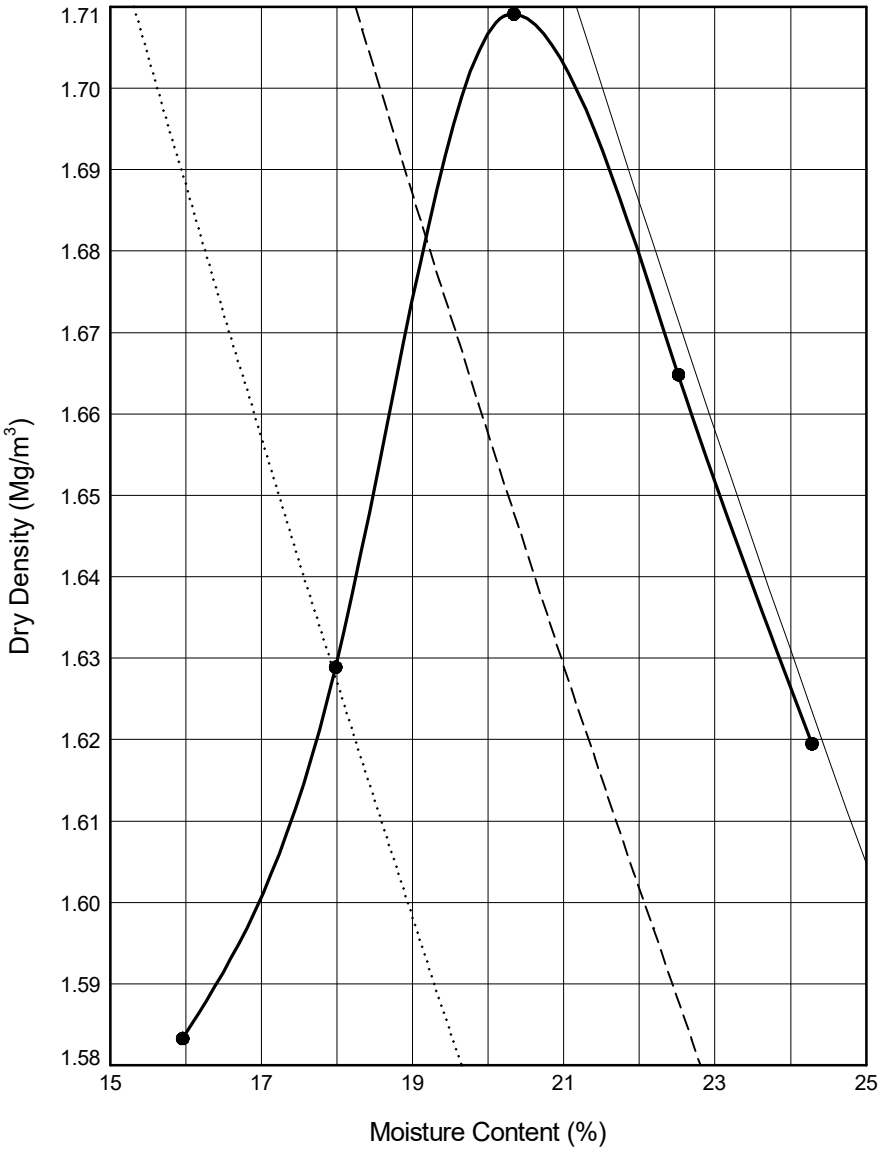
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990

Trial Pit: **TP07** Sample Ref: **11** Sample Type: **B** Depth (m): **1.30**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**18**	Compaction Type	: **Heavy**	Maximum Dry Density (Mg/m^3)	:	**1.71**
% Retained on 37.5mm BS Sieve	:	**0**	Mass of Rammer (kg):	**4.5**	Optimum Moisture Content (%)	:	**20**
% Retained on 20.0mm BS Sieve	:	**0**	Type of Mould	: **1 LITRE**	Method Used:		**Clause 3.5**
Particle Density - measured (Mg/m^3)	:	**2.68**			Remarks:		
Size of Soil Pieces	:	**<20MM**	Separate samples were used.				

Sample Description	Key to Air Voids Lines		
Brown slightly sandy slightly gravelly CLAY	——— 0%	– – – – 5%	····· 10%

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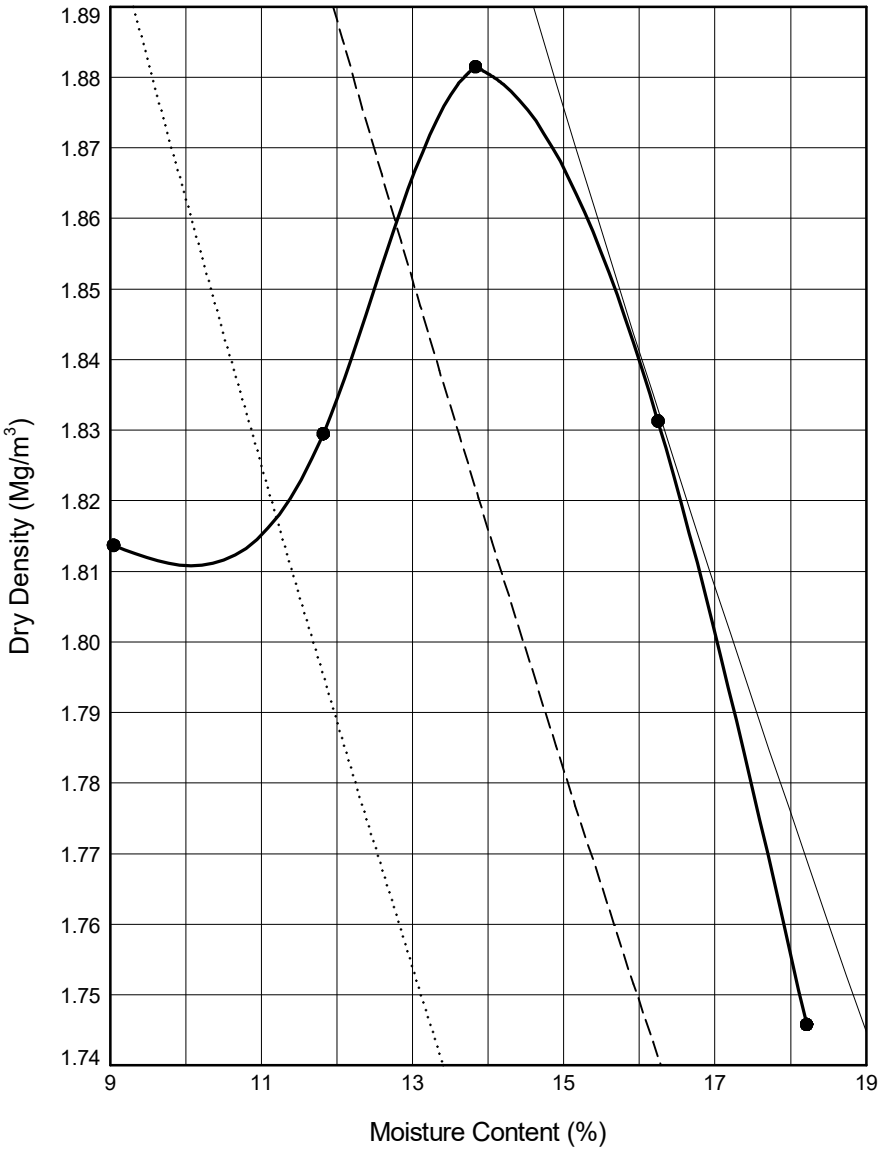
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990
NON-STANDARD TEST

Trial Pit: **TP08** Sample Ref: **8** Sample Type: **LB** Depth (m): **1.50**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**16**	Compaction Type	: **Heavy**	Maximum Dry Density (Mg/m^3)	:	**1.88**
% Retained on 37.5mm BS Sieve	:	**5**	Mass of Rammer (kg):	**4.5**	Optimum Moisture Content (%)	:	**14**
% Retained on 20.0mm BS Sieve	:	**6**	Type of Mould	: **1 LITRE**	Method Used:		**Clause 3.5**
Particle Density - assumed (Mg/m^3)	:	**2.61**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Single sample was used.				

Sample Description	Key to Air Voids Lines		
Brown slightly sandy gravelly CLAY	——— 0%	– – – – 5%	····· 10%

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Compiled By		Date
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Contract	Contract Ref:
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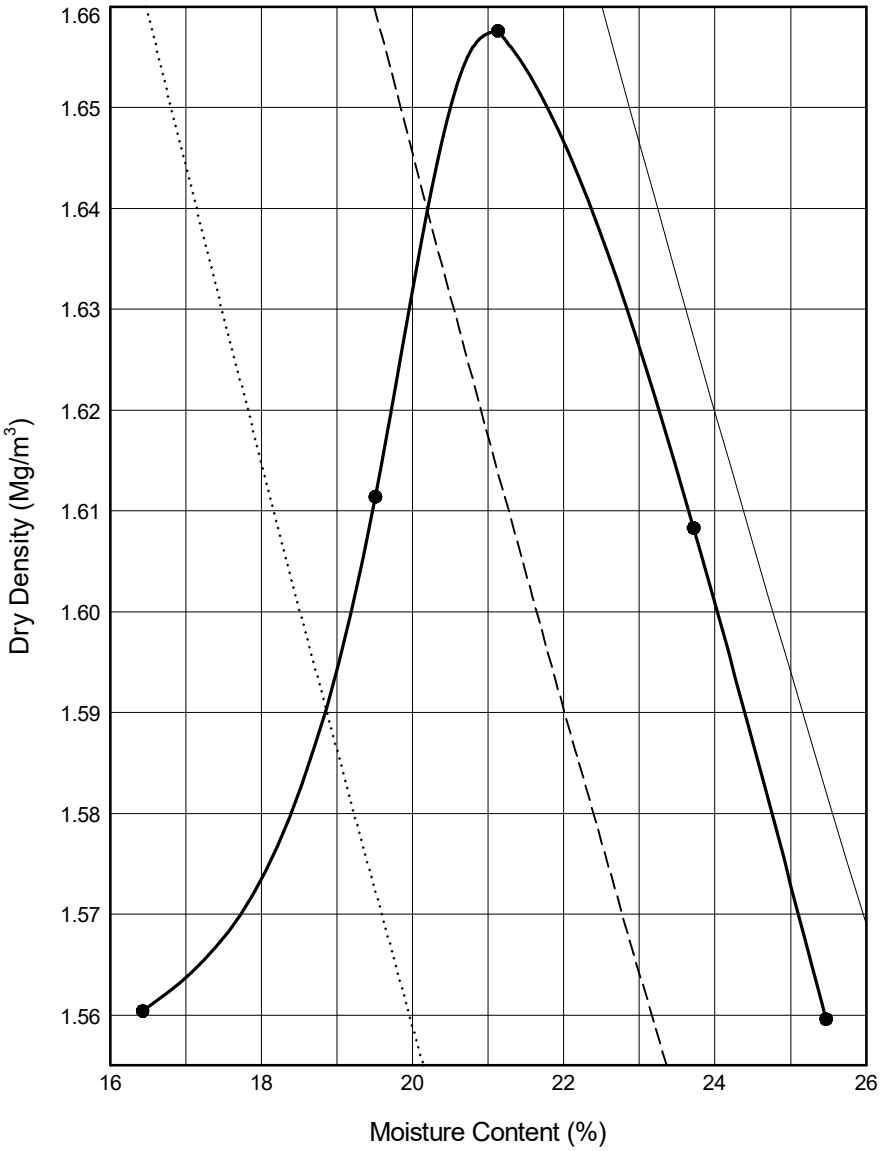
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990
NON-STANDARD TEST

Trial Pit: **TP08** Sample Ref: **12** Sample Type: **LB** Depth (m): **2.40**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**21**	Compaction Type	: **Light**	Maximum Dry Density (Mg/m³)	:	**1.66**
% Retained on 37.5mm BS Sieve	:	**18**	Mass of Rammer (kg):	**2.5**	Optimum Moisture Content (%)	:	**21**
% Retained on 20.0mm BS Sieve	:	**1**	Type of Mould	: **1 LITRE**	Method Used: **Clause 3.3**		
Particle Density - assumed (Mg/m³)	:	**2.65**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Single sample was used.				

Sample Description	Key to Air Voids Lines		
Brown slightly gravelly CLAY	——— 0%	– – – – 5%	····· 10%

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Compiled By		Date
	LUKE FISHER	**09/03/23**

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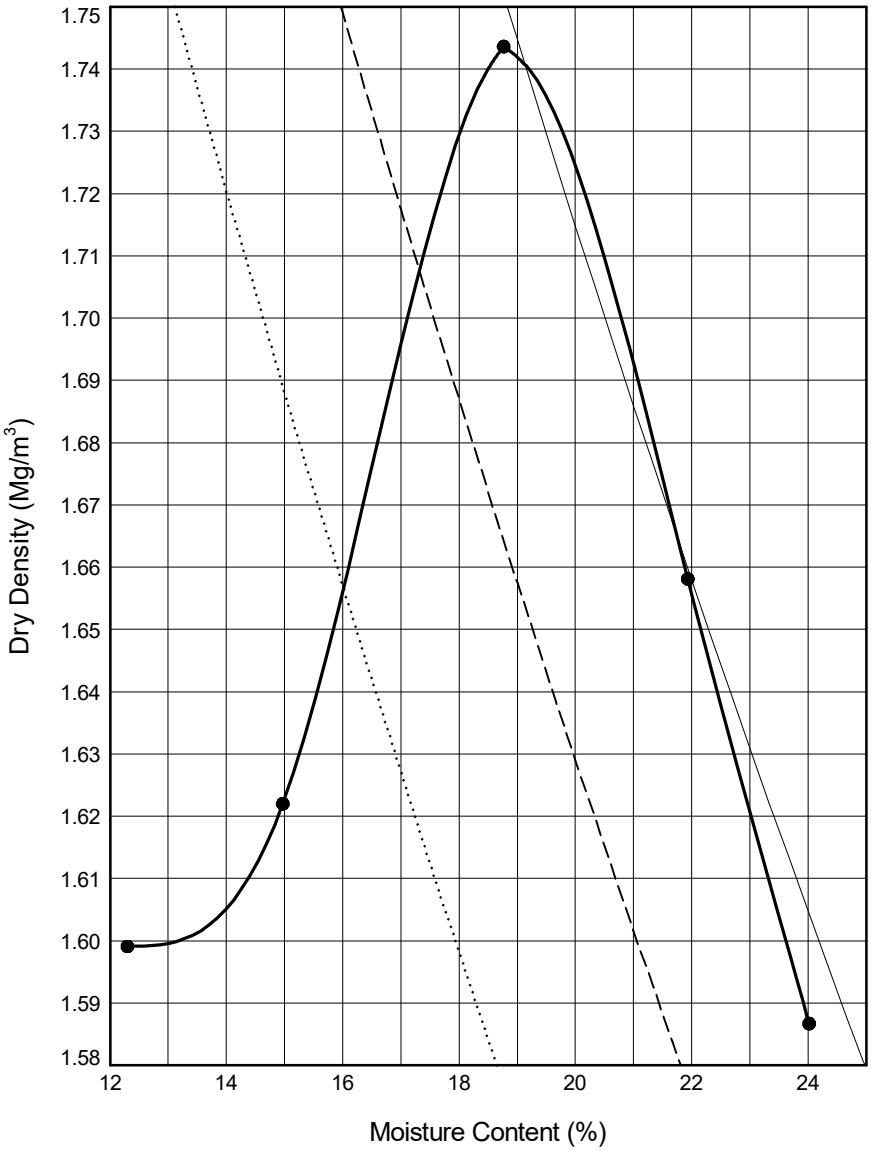
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990
NON-STANDARD TEST

Trial Pit: **TP09** Sample Ref: **9** Sample Type: **LB** Depth (m): **3.30**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**19**	Compaction Type	: **Light**	Maximum Dry Density (Mg/m³)	:	**1.74**
% Retained on 37.5mm BS Sieve	:	**8**	Mass of Rammer (kg):	**2.5**	Optimum Moisture Content (%)	:	**19**
% Retained on 20.0mm BS Sieve	:	**14**	Type of Mould	: **1 LITRE**	Method Used: **Clause 3.3**		
Particle Density - measured (Mg/m³)	:	**2.61**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Single sample was used.				

Sample Description	Key to Air Voids Lines		
Brown very sandy slightly gravelly CLAY	——— 0%	– – – – 5%	····· 10%

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	LAURA SCHRAMM	**09/03/23**

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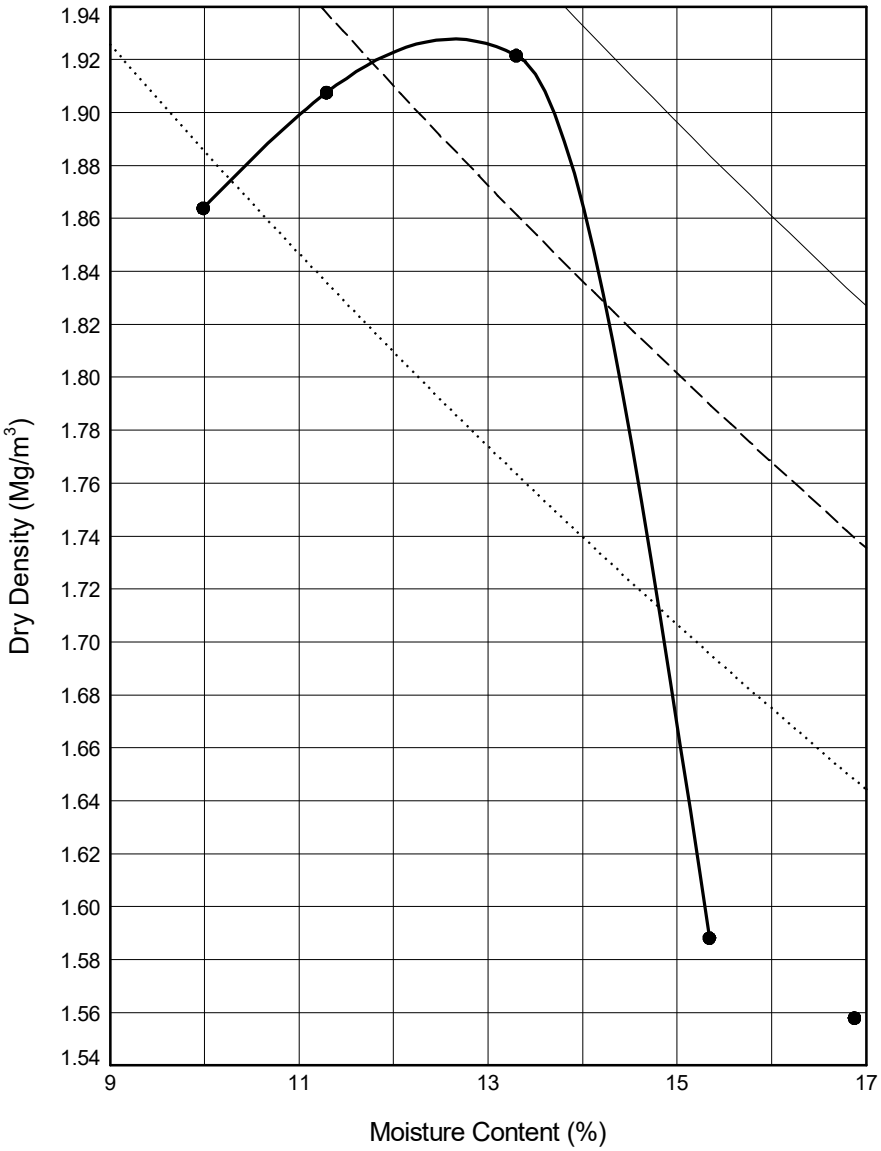
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990
NON-STANDARD TEST

Trial Pit: **TP10** Sample Ref: **5** Sample Type: **LB** Depth (m): **0.50**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**11**	Compaction Type	: **Heavy**	Maximum Dry Density (Mg/m^3)	:	**1.93**
% Retained on 37.5mm BS Sieve	:	**2**	Mass of Rammer (kg):	**4.5**	Optimum Moisture Content (%)	:	**13**
% Retained on 20.0mm BS Sieve	:	**4**	Type of Mould	: **CBR**	Method Used:		**Clause 3.6**
Particle Density - assumed (Mg/m^3)	:	**2.65**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Single sample was used.				

Sample Description	Key to Air Voids Lines		
Brown slightly sandy slightly gravelly CLAY	——— 0%	– – – – 5%	····· 10%

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Contract	Contract Ref:
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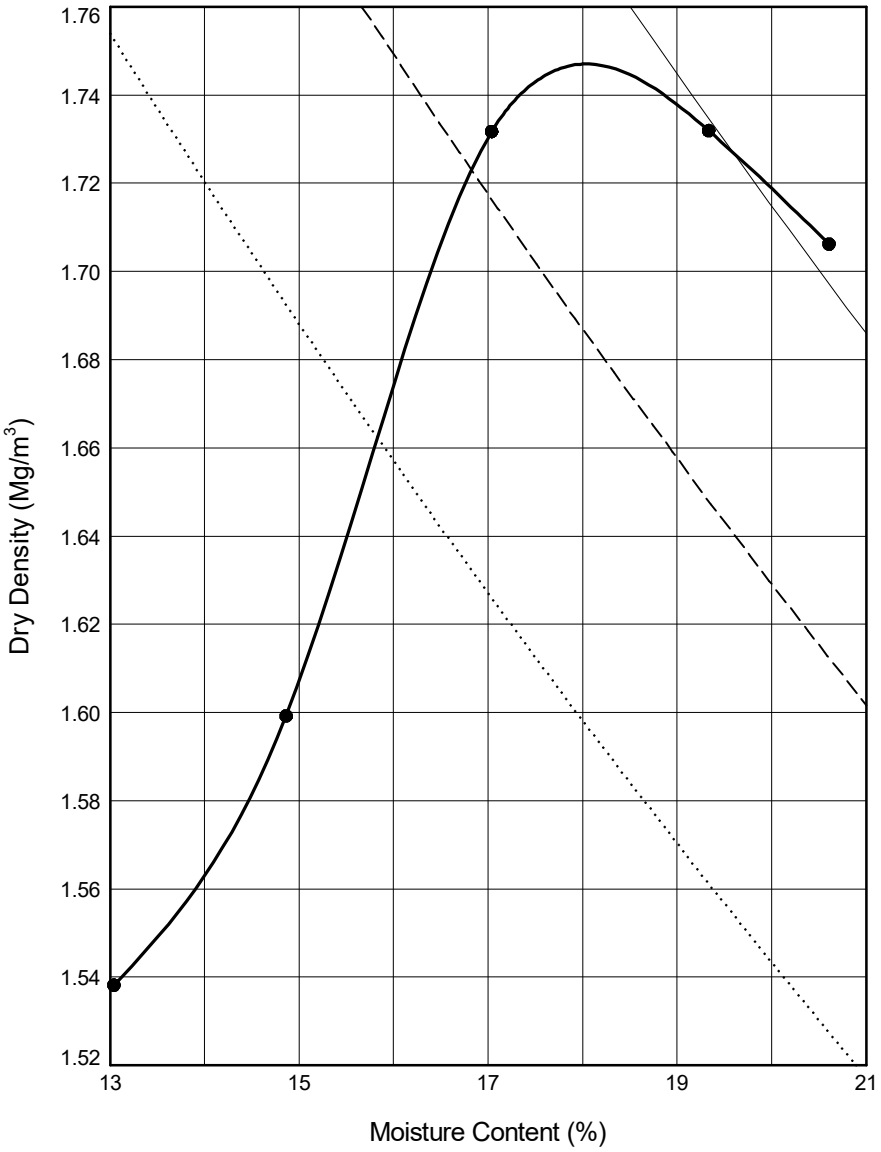
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990
NON-STANDARD TEST

Trial Pit: **TP10** Sample Ref: **14** Sample Type: **LB** Depth (m): **2.10**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**15**	Compaction Type	: **Light**	Maximum Dry Density (Mg/m^3)	:	**1.75**
% Retained on 37.5mm BS Sieve	:	**0**	Mass of Rammer (kg):	**2.5**	Optimum Moisture Content (%)	:	**18**
% Retained on 20.0mm BS Sieve	:	**1**	Type of Mould	: **1 LITRE**	Method Used: **Clause 3.3**		
Particle Density - measured (Mg/m^3)	:	**2.61**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Separate samples were used.				

Sample Description	Key to Air Voids Lines		
Brown slightly sandy gravelly CLAY	——— 0%	– – – – 5%	····· 10%

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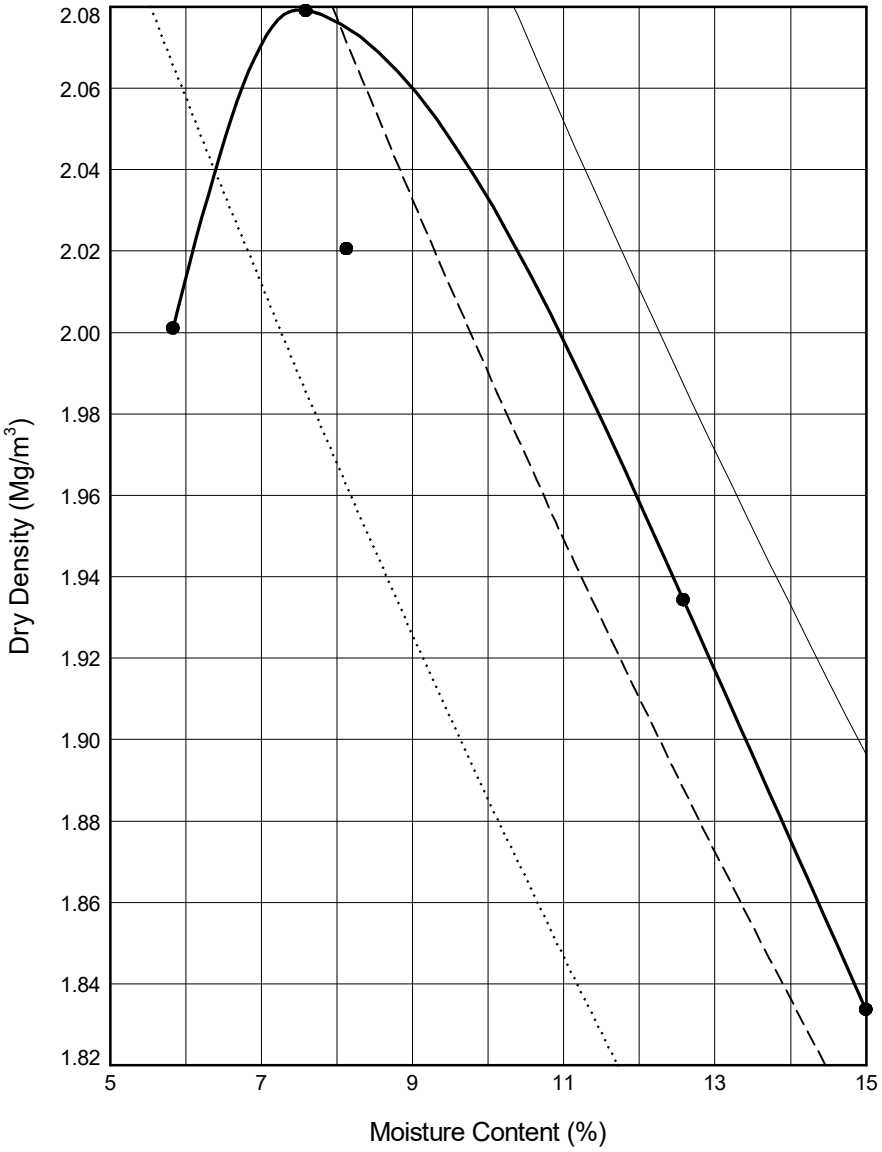
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990
NON-STANDARD TEST

Trial Pit: **TP13** Sample Ref: **6** Sample Type: **B** Depth (m): **1.00**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**13**	Compaction Type	: **Heavy**	Maximum Dry Density (Mg/m³)	:	**2.08**
% Retained on 37.5mm BS Sieve	:	**0**	Mass of Rammer (kg):	**4.5**	Optimum Moisture Content (%)	:	**7.6**
% Retained on 20.0mm BS Sieve	:	**3**	Type of Mould	: **1 LITRE**	Method Used: **Clause 3.5**		
Particle Density - assumed (Mg/m³)	:	**2.65**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Single sample was used.				

Sample Description	Key to Air Voids Lines		
Brown very gravelly clayey silty SAND	——— 0%	– – – – 5%	····· 10%

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Contract	Contract Ref:
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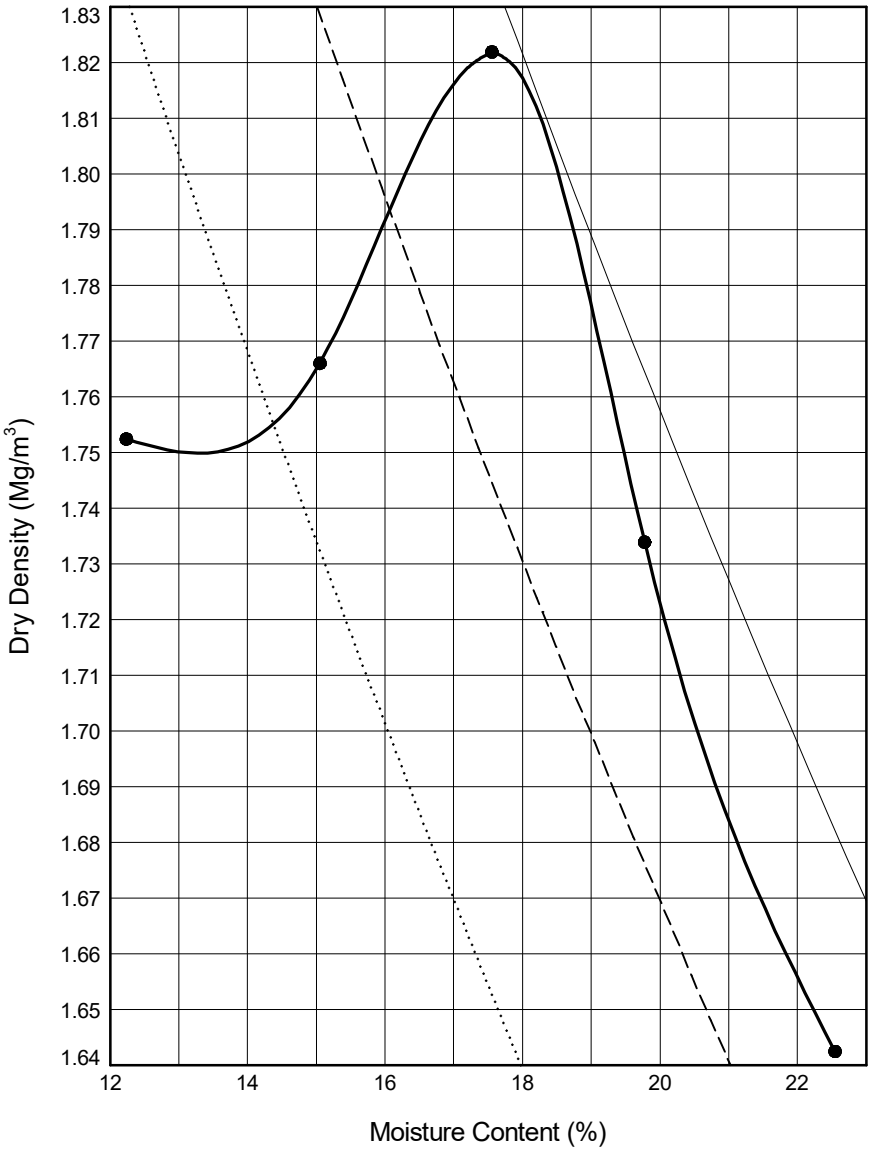
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990
NON-STANDARD TEST

Trial Pit: **TP14** Sample Ref: **10** Sample Type: **B** Depth (m): **2.50**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**18**	Compaction Type	: **Light**	Maximum Dry Density (Mg/m^3)	:	**1.82**
% Retained on 37.5mm BS Sieve	:	**1**	Mass of Rammer (kg):	**2.5**	Optimum Moisture Content (%)	:	**18**
% Retained on 20.0mm BS Sieve	:	**5**	Type of Mould	: **1 LITRE**	Method Used: **Clause 3.3**		
Particle Density - measured (Mg/m^3)	:	**2.71**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Single sample was used.				

Sample Description	Key to Air Voids Lines		
Brown red slightly sandy gravelly CLAY	——— 0%	– – – – 5%	····· 10%

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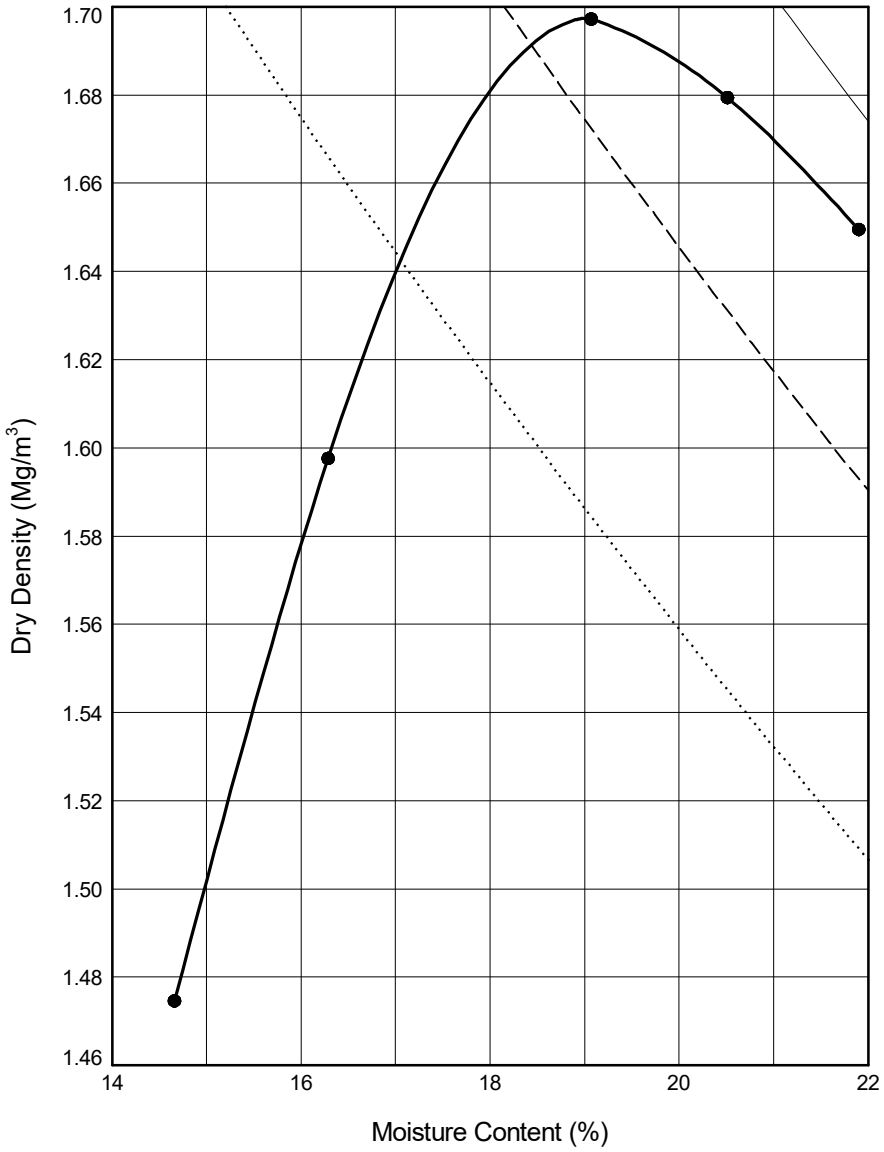
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990

Trial Pit: **TP18** Sample Ref: **8** Sample Type: **LB** Depth (m): **0.80**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**15**	Compaction Type	: **Light**	Maximum Dry Density (Mg/m^3)	:	**1.70**
% Retained on 37.5mm BS Sieve	:	**0**	Mass of Rammer (kg):	**2.5**	Optimum Moisture Content (%)	:	**19**
% Retained on 20.0mm BS Sieve	:	**0**	Type of Mould	: **1 LITRE**	Method Used: **Clause 3.3**		
Particle Density - assumed (Mg/m^3)	:	**2.65**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Separate samples were used.				

Sample Description	Key to Air Voids Lines		
Brown slightly gravelly slightly sandy CLAY	——— 0%	– – – – 5%	····· 10%

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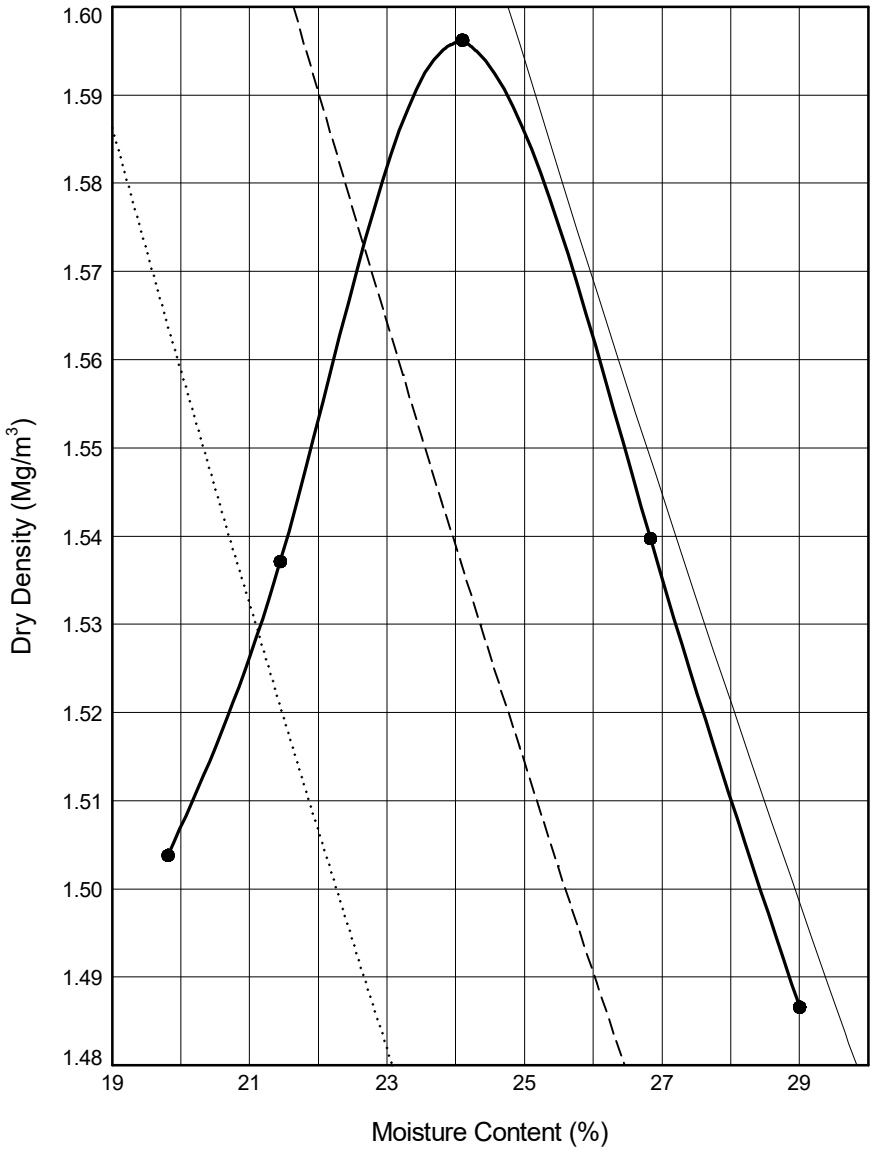
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990
NON-STANDARD TEST

Trial Pit: **TP20** Sample Ref: **11** Sample Type: **B** Depth (m): **1.70**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**21**	Compaction Type	: **Light**	Maximum Dry Density (Mg/m^3)	:	**1.60**
% Retained on 37.5mm BS Sieve	:	**2**	Mass of Rammer (kg):	**2.5**	Optimum Moisture Content (%)	:	**24**
% Retained on 20.0mm BS Sieve	:	**0**	Type of Mould	: **1 LITRE**	Method Used: **Clause 3.3**		
Particle Density - assumed (Mg/m^3)	:	**2.65**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Single sample was used.				

Sample Description	Key to Air Voids Lines		
Brown red slightly gravelly slightly sandy CLAY	——— 0%	– – – – 5%	····· 10%

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	LAURA SCHRAMM	**09/03/23**

Contract	Contract Ref:
EMG Phase 2	**765514**

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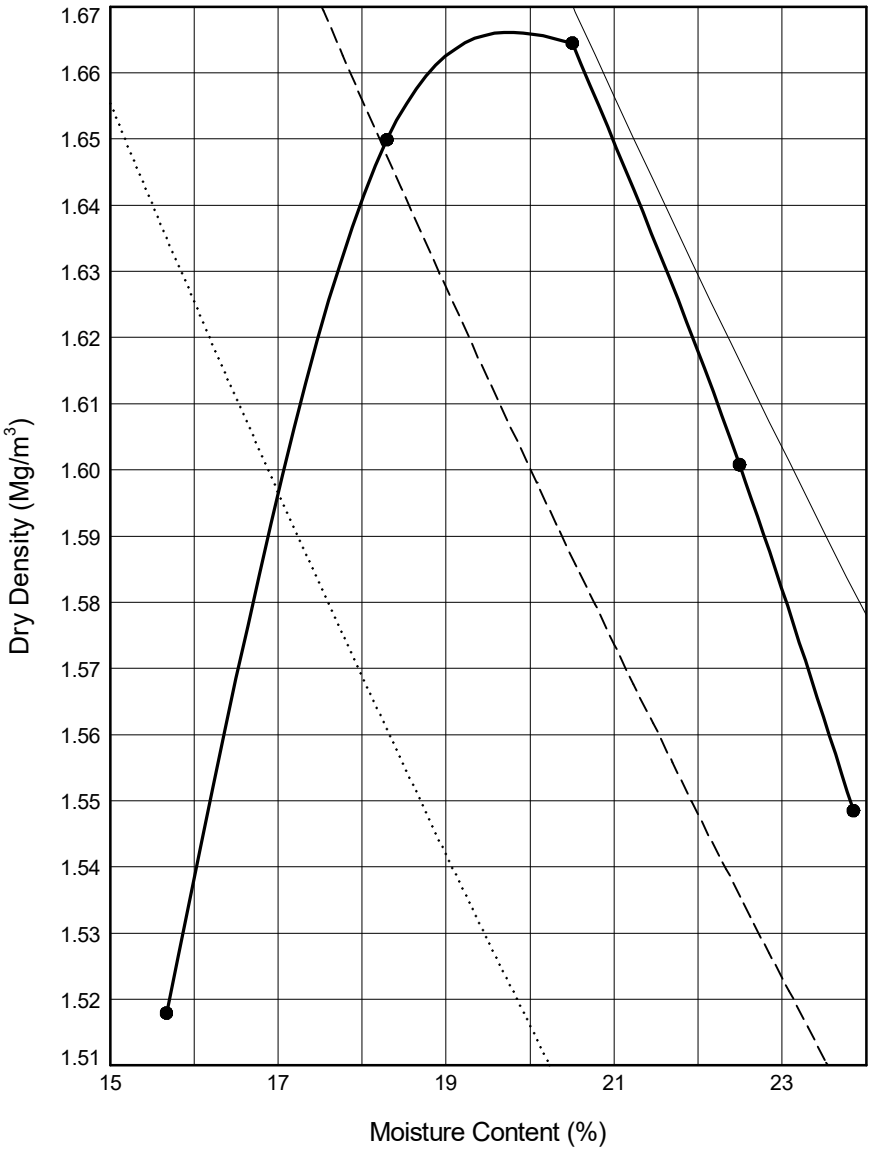
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990

Trial Pit: **TP22** Sample Ref: **4** Sample Type: **D** Depth (m): **0.40**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**16**	Compaction Type	: **Heavy**	Maximum Dry Density (Mg/m^3)	:	**1.67**
% Retained on 37.5mm BS Sieve	:	**0**	Mass of Rammer (kg):	**4.5**	Optimum Moisture Content (%)	:	**20**
% Retained on 20.0mm BS Sieve	:	**2**	Type of Mould	: **1 LITRE**	Method Used:		**Clause 3.5**
Particle Density - measured (Mg/m^3)	:	**2.54**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Separate samples were used.				

Sample Description	Key to Air Voids Lines		
Brown slightly sandy slightly gravelly CLAY	——— 0%	– – – – 5%	····· 10%

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Compiled By		Date
	LAURA SCHRAMM	**09/03/23**

Contract	Contract Ref:
EMG Phase 2	**765514**

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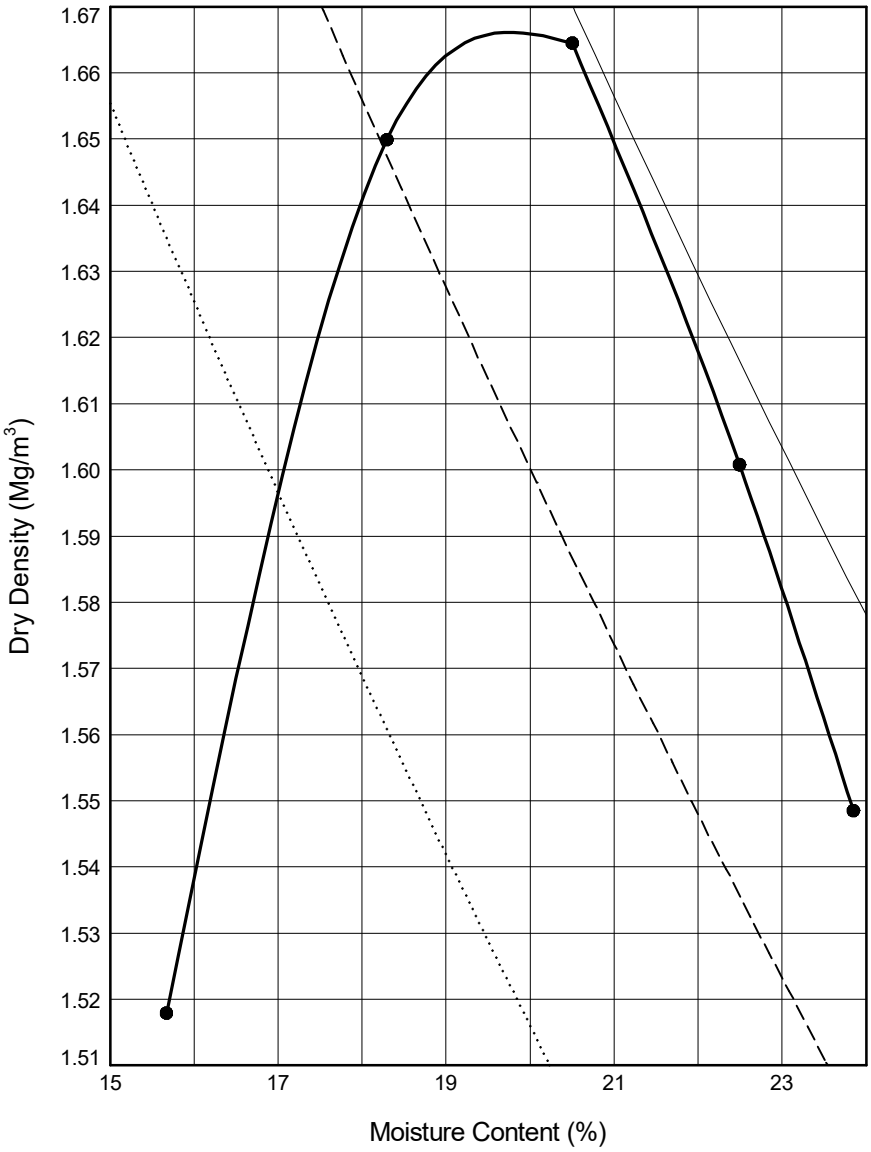
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990

Trial Pit: **TP22** Sample Ref: **5** Sample Type: **B** Depth (m): **0.50**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**16**	Compaction Type	: **Heavy**	Maximum Dry Density (Mg/m^3)	:	**1.67**
% Retained on 37.5mm BS Sieve	:	**0**	Mass of Rammer (kg):	**4.5**	Optimum Moisture Content (%)	:	**20**
% Retained on 20.0mm BS Sieve	:	**2**	Type of Mould	: **1 LITRE**	Method Used:		**Clause 3.5**
Particle Density - measured (Mg/m^3)	:	**2.54**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Separate samples were used.				

Sample Description	Key to Air Voids Lines		
Brown slightly gravelly slightly sandy CLAY	——— 0%	– – – – 5%	····· 10%

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Compiled By		Date
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Contract	Contract Ref:
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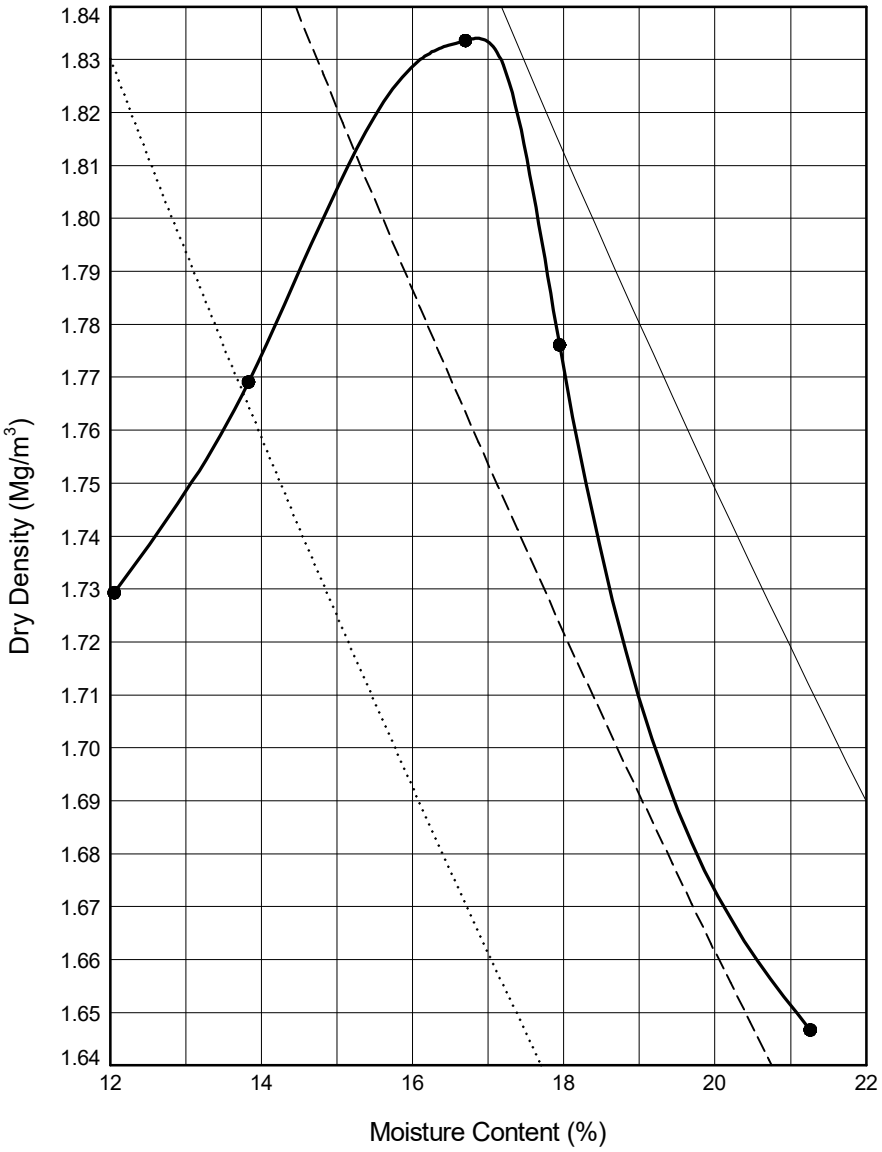
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990

Trial Pit: **TP24** Sample Ref: **11** Sample Type: **B** Depth (m): **1.20**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**14**	Compaction Type	: **Light**	Maximum Dry Density (Mg/m^3)	:	**1.83**
% Retained on 37.5mm BS Sieve	:	**0**	Mass of Rammer (kg):	**2.5**	Optimum Moisture Content (%)	:	**17**
% Retained on 20.0mm BS Sieve	:	**0**	Type of Mould	: **1 LITRE**	Method Used: **Clause 3.3**		
Particle Density - measured (Mg/m^3)	:	**2.69**			Remarks:		
Size of Soil Pieces	:	**<20MM**	Single sample was used.				

Sample Description	Key to Air Voids Lines		
Brown slightly sandy slightly gravelly CLAY	——— 0%	– – – – 5%	····· 10%

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Contract	Contract Ref:
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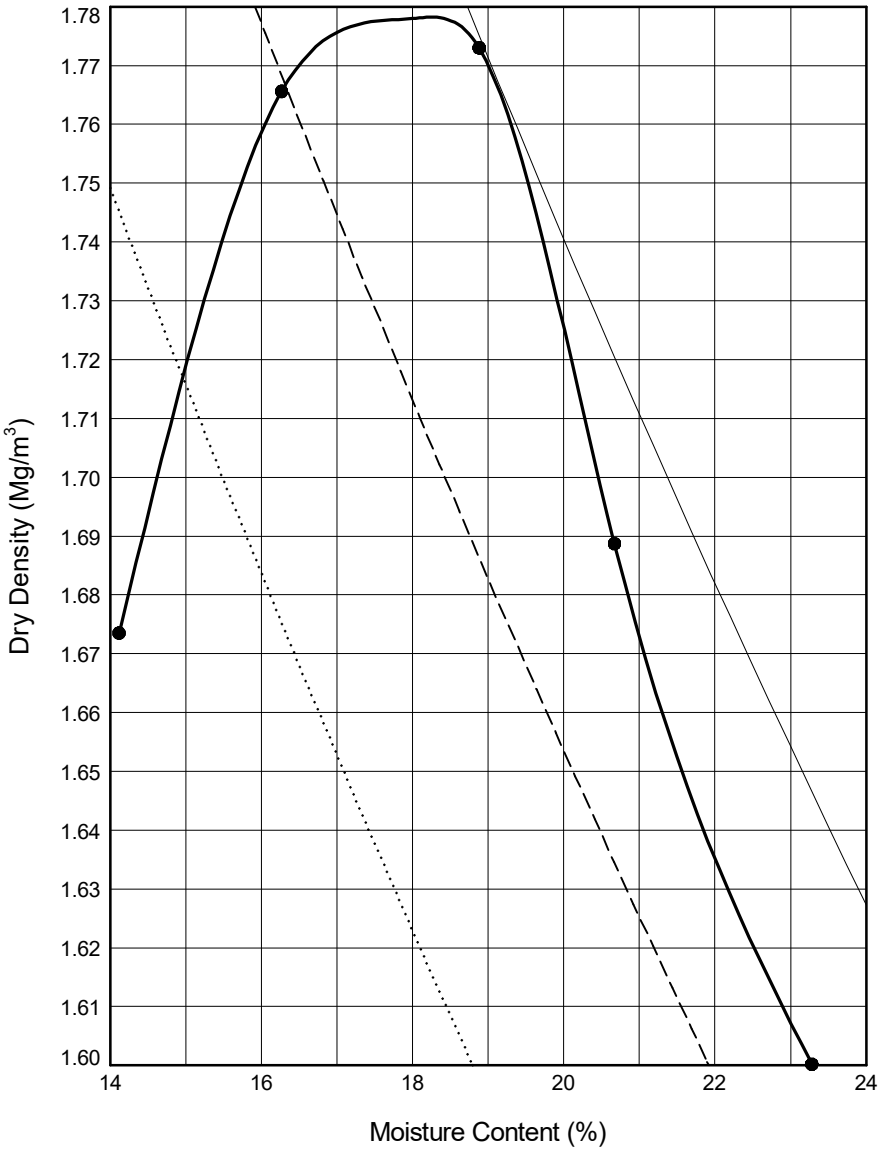
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990
NON-STANDARD TEST

Trial Pit: **TP27** Sample Ref: **13** Sample Type: **B** Depth (m): **2.60**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**16**	Compaction Type	: **Light**	Maximum Dry Density (Mg/m^3)	:	**1.78**
% Retained on 37.5mm BS Sieve	:	**9**	Mass of Rammer (kg):	**2.5**	Optimum Moisture Content (%)	:	**18**
% Retained on 20.0mm BS Sieve	:	**6**	Type of Mould	: **1 LITRE**	Method Used: **Clause 3.3**		
Particle Density - measured (Mg/m^3)	:	**2.67**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Single sample was used.				

Sample Description	Key to Air Voids Lines		
Brown red slightly gravelly sandy CLAY	——— 0%	– – – – 5%	····· 10%

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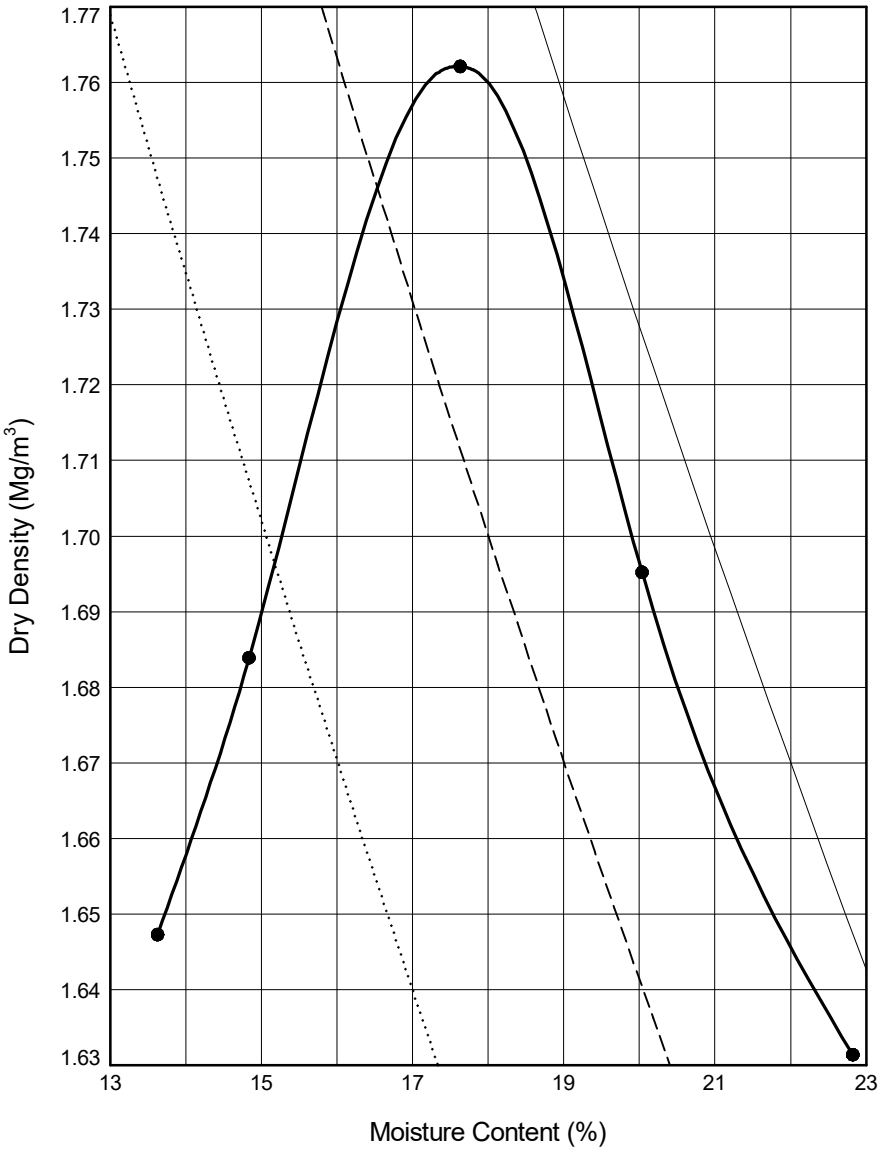
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990

Trial Pit: **TP28** Sample Ref: **5** Sample Type: **B** Depth (m): **0.50**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**27**	Compaction Type	: **Light**	Maximum Dry Density (Mg/m^3)	:	**1.76**
% Retained on 37.5mm BS Sieve	:	**0**	Mass of Rammer (kg):	**2.5**	Optimum Moisture Content (%)	:	**18**
% Retained on 20.0mm BS Sieve	:	**0**	Type of Mould	: **1 LITRE**	Method Used: **Clause 3.3**		
Particle Density - measured (Mg/m^3)	:	**2.64**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Single sample was used.				

Sample Description	Key to Air Voids Lines		
Brown slightly gravelly slightly sandy CLAY	——— 0%	– – – – 5%	····· 10%

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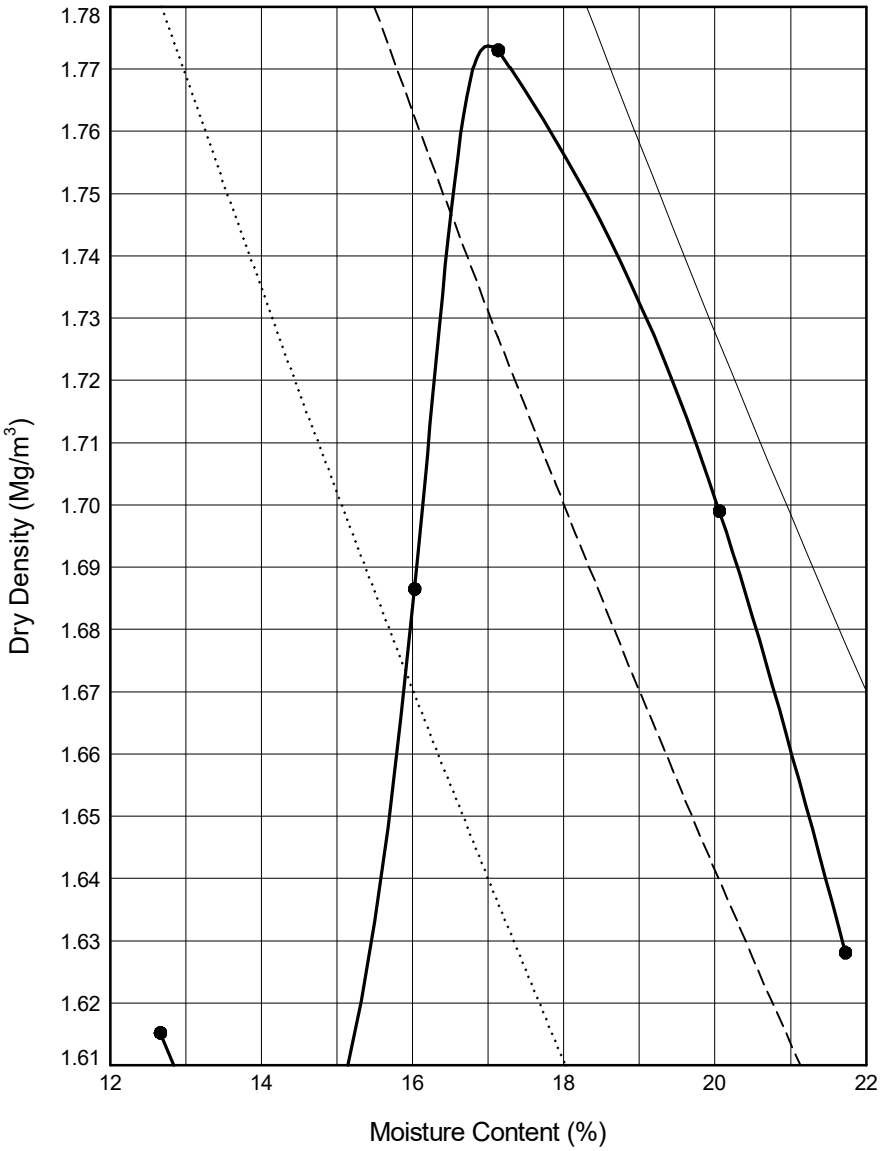
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990

Trial Pit: **TP28** Sample Ref: **8** Sample Type: **B** Depth (m): **1.10**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**13**	Compaction Type	: **Light**	Maximum Dry Density (Mg/m^3)	:	**1.77**
% Retained on 37.5mm BS Sieve	:	**0**	Mass of Rammer (kg):	**2.5**	Optimum Moisture Content (%)	:	**17**
% Retained on 20.0mm BS Sieve	:	**38**	Type of Mould	: **1 LITRE**	Method Used: **Clause 3.3**		
Particle Density - measured (Mg/m^3)	:	**2.64**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Single sample was used.				

Sample Description	Key to Air Voids Lines		
Brown red slightly gravelly slightly sandy CLAY	——— 0%	– – – – 5%	····· 10%

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Contract	Contract Ref:
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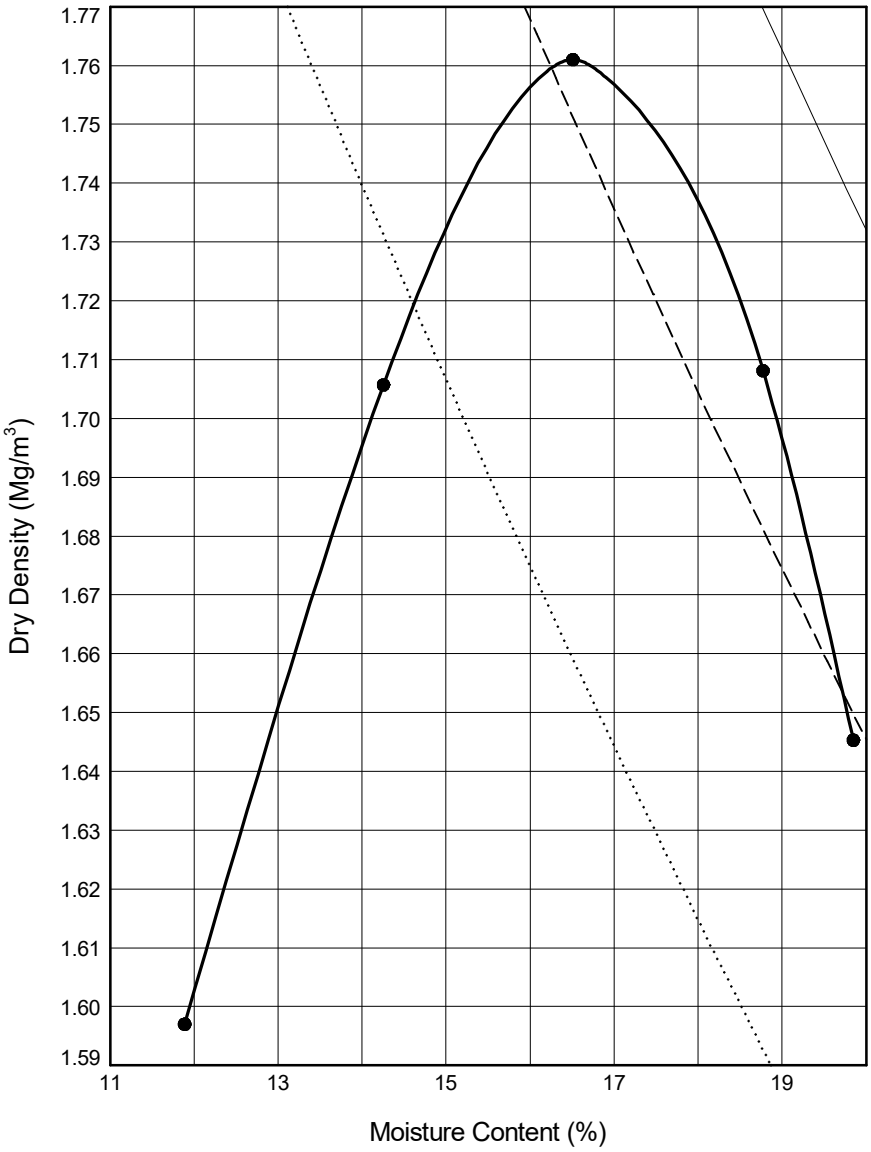
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990

Trial Pit: **TP29** Sample Ref: **6** Sample Type: **B** Depth (m): **0.50**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**12**	Compaction Type	: **Light**	Maximum Dry Density (Mg/m^3)	:	**1.76**
% Retained on 37.5mm BS Sieve	:	**0**	Mass of Rammer (kg):	**2.5**	Optimum Moisture Content (%)	:	**17**
% Retained on 20.0mm BS Sieve	:	**0**	Type of Mould	: **1 LITRE**	Method Used: **Clause 3.3**		
Particle Density - assumed (Mg/m^3)	:	**2.65**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Separate samples were used.				

Sample Description	Key to Air Voids Lines		
Brown slightly gravelly slightly sandy clayey SILT	——— 0%	– – – – 5%	····· 10%

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Contract	Contract Ref:
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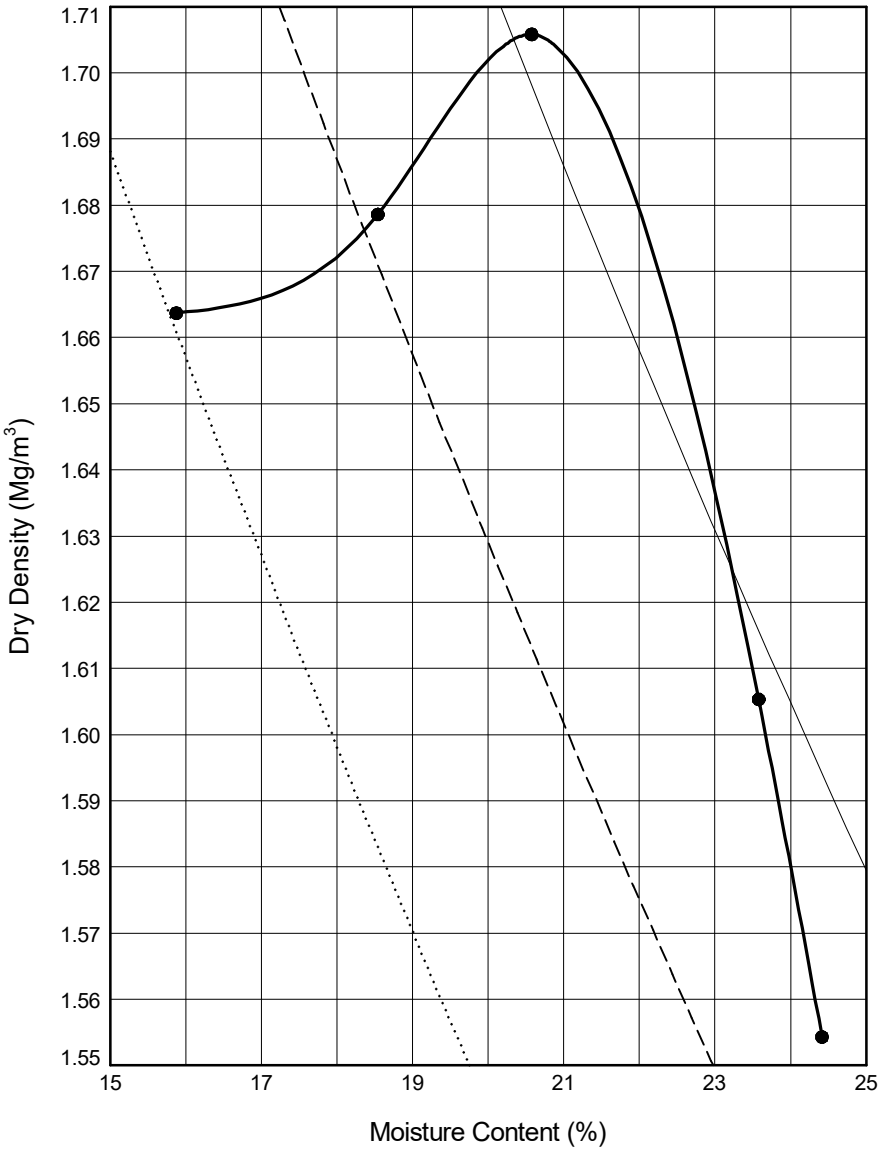
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990

Trial Pit: **TP36** Sample Ref: **12** Sample Type: **B** Depth (m): **1.10**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**21**	Compaction Type	: **Light**	Maximum Dry Density (Mg/m³)	:	**1.71**
% Retained on 37.5mm BS Sieve	:	**0**	Mass of Rammer (kg):	**2.5**	Optimum Moisture Content (%)	:	**21**
% Retained on 20.0mm BS Sieve	:	**5**	Type of Mould	: **1 LITRE**	Method Used:		**Clause 3.3**
Particle Density - measured (Mg/m³)	:	**2.61**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Single sample was used.				

Sample Description	Key to Air Voids Lines		
Brown red slightly gravelly slightly sandy CLAY	——— 0%	– – – – 5%	····· 10%

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Compiled By		Date
	LAURA SCHRAMM	**09/03/23**

Contract	Contract Ref:
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TESTING VERIFICATION CERTIFICATE

UKAS TESTING
1774

The test results included in this report are certified as:-

ISSUE STATUS: **FINAL**

In accordance with the Structural Soils Ltd Laboratory Quality Management System, results sheets and summaries of results issued by the laboratory are checked by an approved signatory. The integrity of the test data and results are ensured by control of the computer system employed by the laboratory as part of the Software Verification Program as detailed in the Laboratory Quality Manual.

This testing verification certificate covers all testing compiled on or before the following datetime: **09/03/2023 16:37:09**.

Testing reported after this date is not covered by this Verification Certificate.

Approved Signatory
Luke Fisher (Laboratory Manager)

(Head Office)
Bristol Laboratory
Unit 1A, Princess Street
Bedminster
Bristol
BS3 4AG

Castleford Laboratory
The Potteries, Pottery Street
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Hemel Laboratory
18 Frogmore Road
Hemel Hempstead
Hertfordshire
HP3 9RT

Tonbridge Laboratory
Anerley Court, Half Moon Lane
Hildenborough
Tonbridge
TN11 9HU

STRUCTURAL SOILS LTD	Contract: **EMG Phase 2**	Job No: **765514**

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MOISTURE CONDITION VALUE CALIBRATION

In accordance with clause 5.5 of BS1377:Part 4:1990

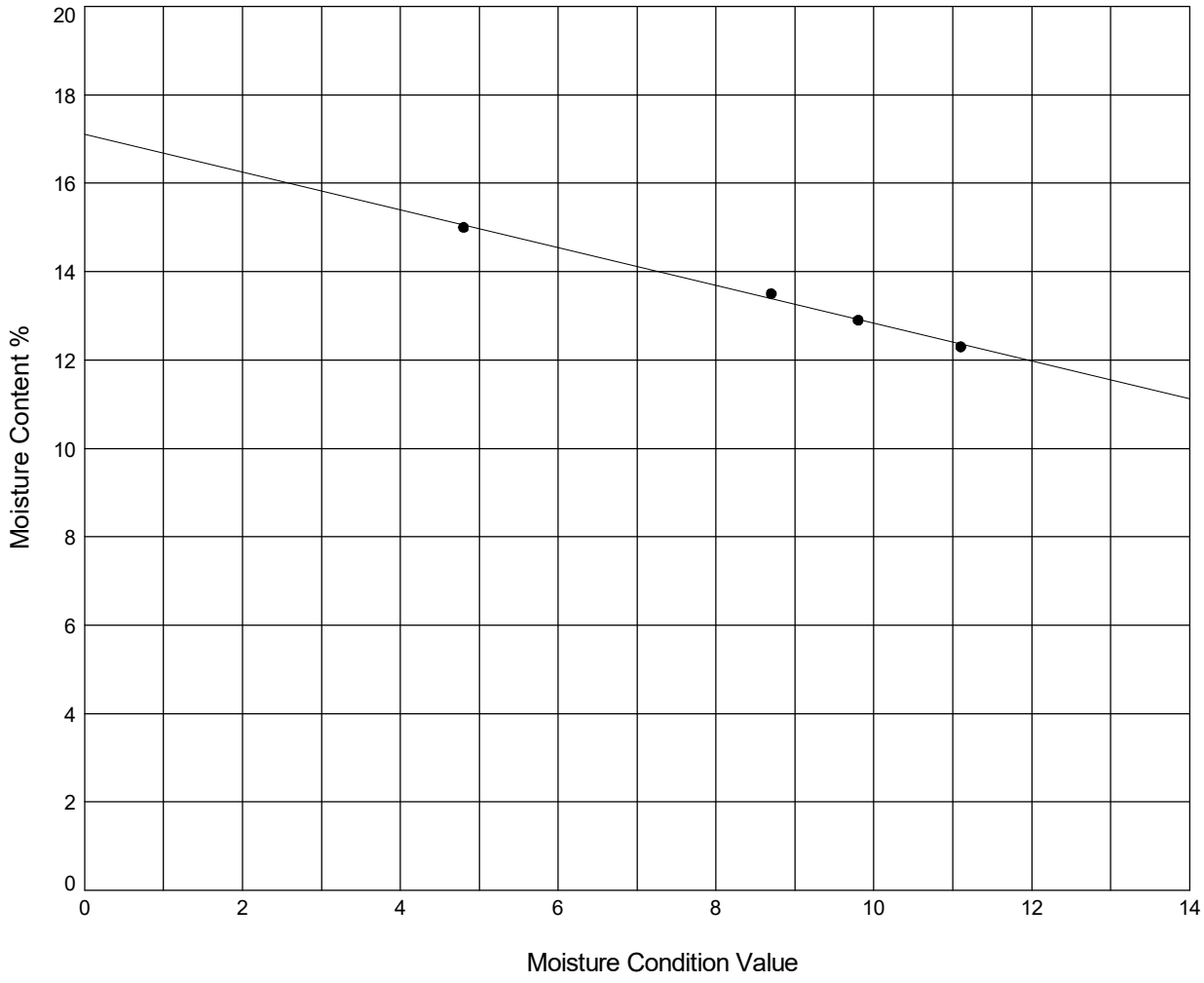
Borehole: **BH14** Sample Ref: **19** Sample Type: **B** Depth (m): **4.00**

Percentage retained on 20mm sieve : **0**

Description : **Brown slightly gravelly sandy CLAY**

Single/Separate Sample Used : **Single**

Test Number	1	2	3	4	5
Moisture Content	15.0	13.5	12.3	12.9	-
MCV	4.8	8.7	11.1	9.8	-
Interpretation Method	Steepest straight line - Fig 9	Steepest straight line - Fig 9	Steepest straight line - Fig 9	Steepest straight line - Fig 9	-



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Compiled By		Date
	LORNA WHITWORTH	24/02/23

Contract	Contract Ref:
EMG Phase 2	**765514**

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MOISTURE CONDITION VALUE CALIBRATION

In accordance with clause 5.5 of BS1377:Part 4:1990

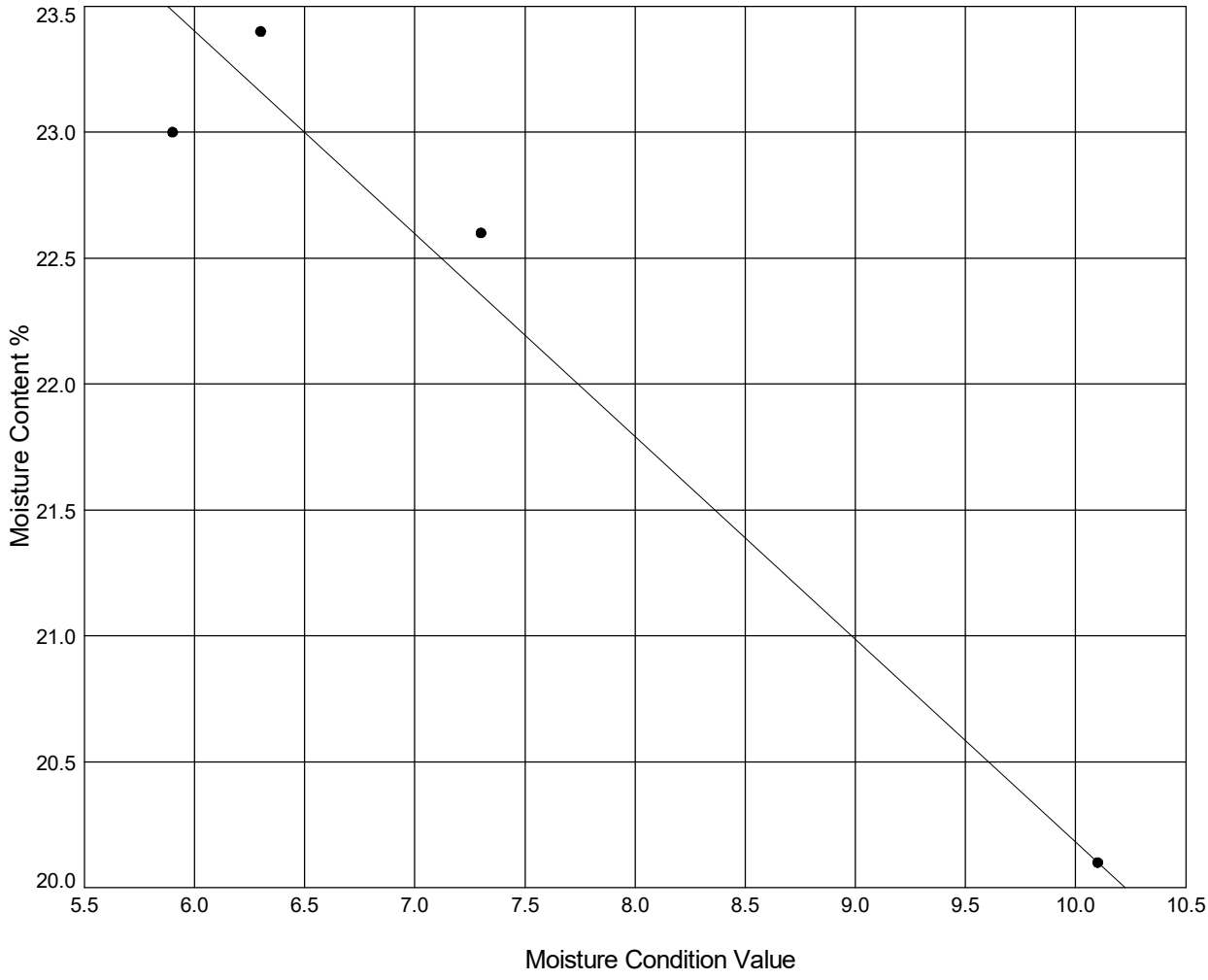
Borehole: **BH19** Sample Ref: **14** Sample Type: **B** Depth (m): **3.00**

Percentage retained on 20mm sieve : **0**

Description : **Red brown slightly sandy slightly gravelly CLAY**

Single/Separate Sample Used : **Single**

Test Number	1	2	3	4	5
Moisture Content	23.0	22.6	20.1	23.4	-
MCV	5.9	7.3	10.1	6.3	-
Interpretation Method	Steepest straight line - Fig 9	Steepest straight line - Fig 9	Steepest straight line - Fig 9	Steepest straight line - Fig 9	-



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Compiled By		Date
	LORNA WHITWORTH	28/02/23

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MOISTURE CONDITION VALUE CALIBRATION

In accordance with clause 5.5 of BS1377:Part 4:1990

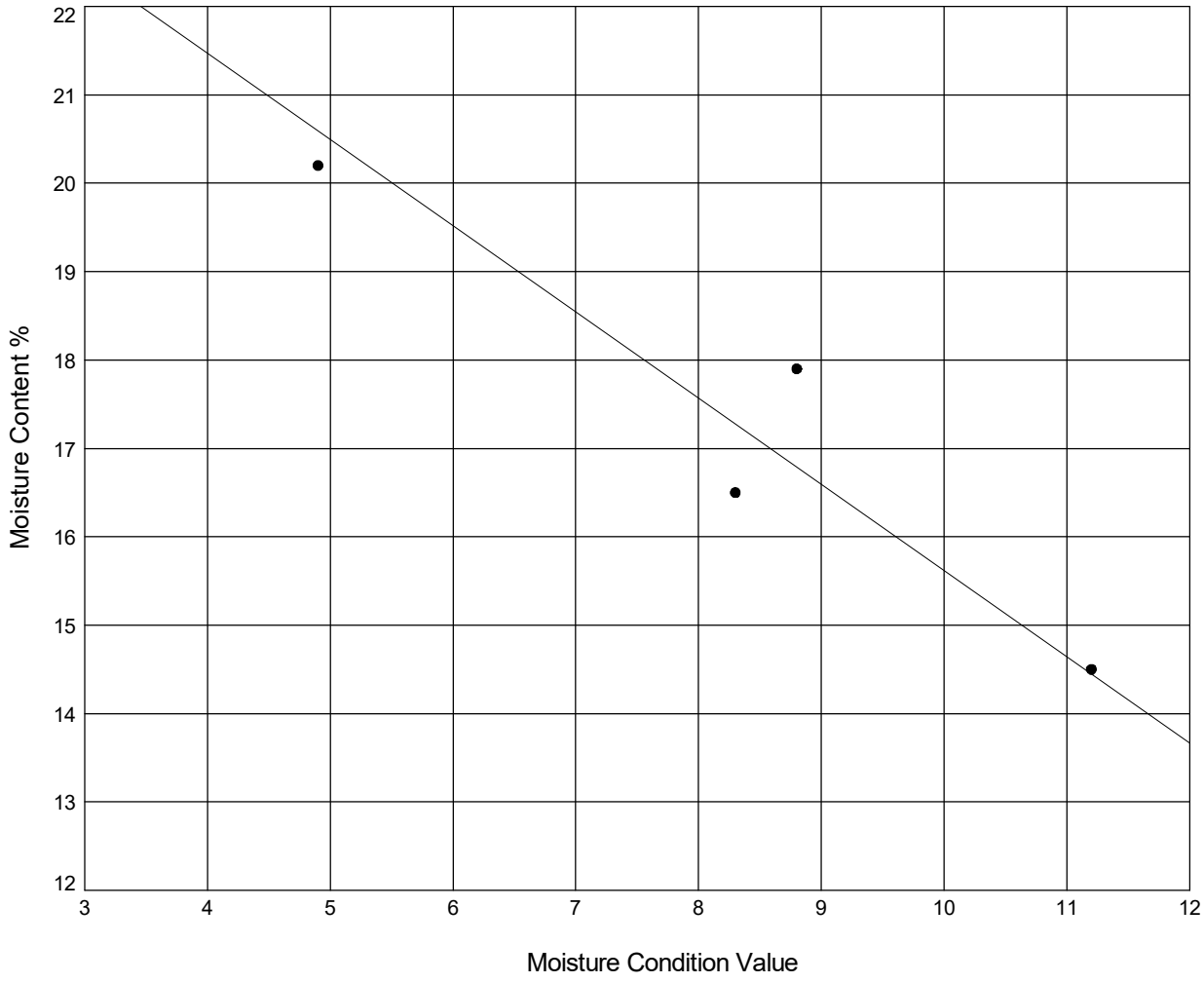
Position ID: **CP06** Sample Ref: **13** Sample Type: **B** Depth (m): **4.00**

Percentage retained on 20mm sieve : **15**

Description : **Grey slightly gravelly CLAY with medium cobble content**

Single/Separate Sample Used : **Single**

Test Number	1	2	3	4	5
Moisture Content	20.2	17.9	16.5	14.5	-
MCV	4.9	8.8	8.3	11.2	-
Interpretation Method	Steepest straight line - Fig 9	Steepest straight line - Fig 9	Steepest straight line - Fig 9	Steepest straight line - Fig 9	-



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MOISTURE CONDITION VALUE CALIBRATION

In accordance with clause 5.5 of BS1377:Part 4:1990

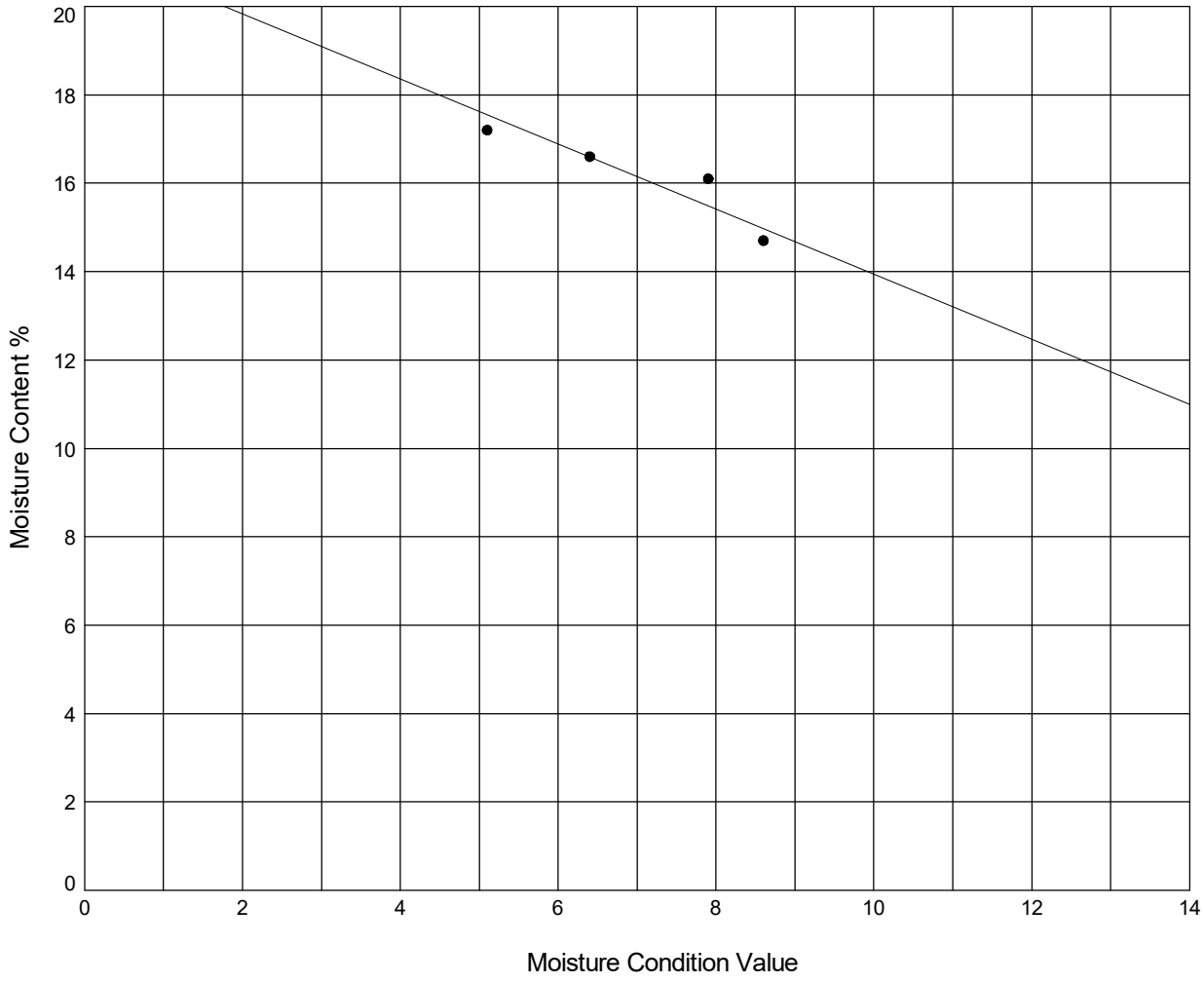
Position ID: **CP10** Sample Ref: **17** Sample Type: **B** Depth (m): **4.00**

Percentage retained on 20mm sieve : **26**

Description : **Brown slightly sandy gravelly CLAY**

Single/Separate Sample Used : **Separate**

Test Number	1	2	3	4	5
Moisture Content	17.2	16.6	16.1	14.7	-
MCV	5.1	6.4	7.9	8.6	-
Interpretation Method	Steepest straight line - Fig 9	Steepest straight line - Fig 9	Steepest straight line - Fig 9	Steepest straight line - Fig 9	-



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	LORNA WHITWORTH	24/02/23

Contract	Contract Ref:
EMG Phase 2	**765514**

AGS

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Graph L - MCV -3- CALIBRATION FINAL - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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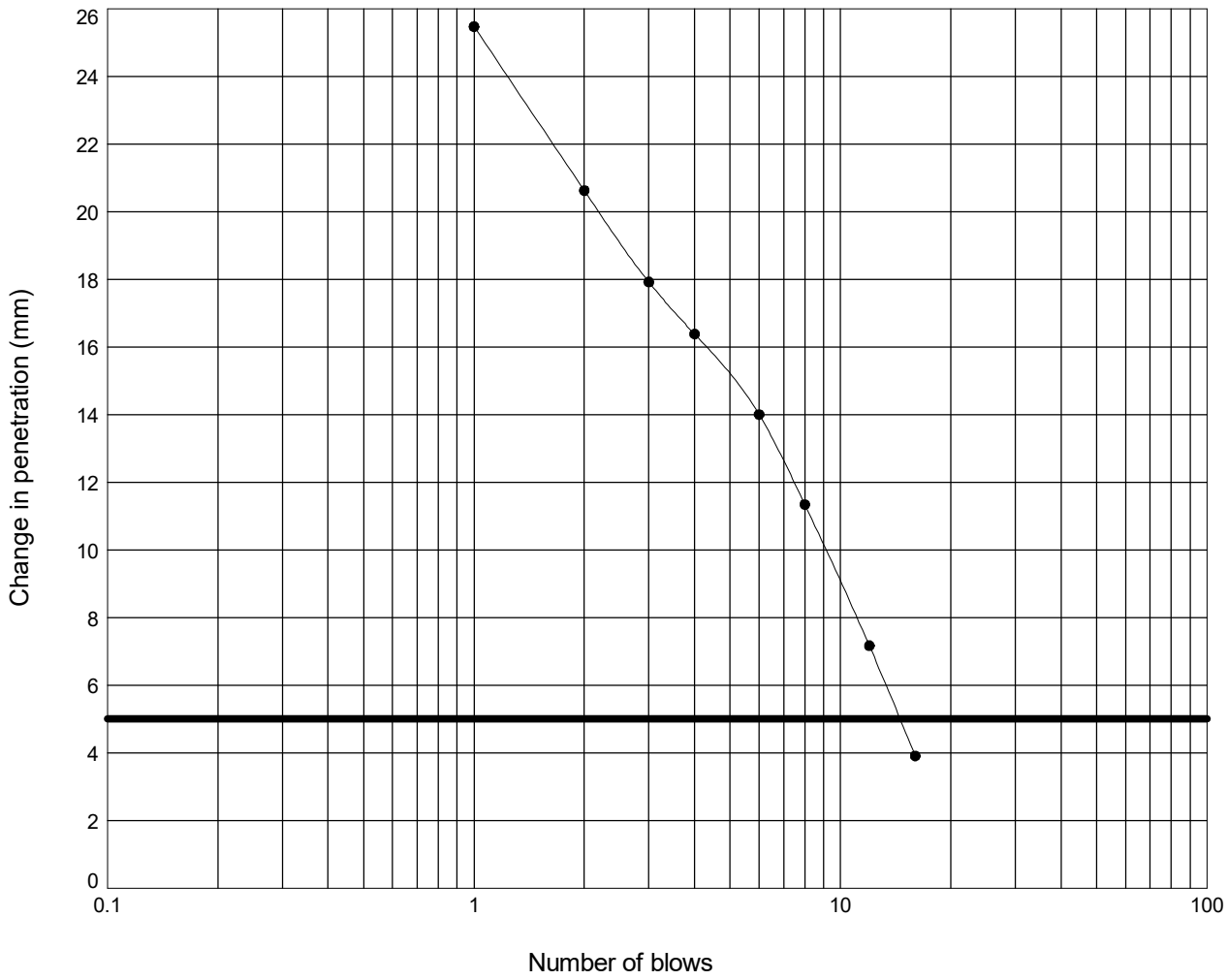
MOISTURE CONDITION VALUE

In accordance with clause 5 of BS1377:Part 4:1990

Borehole: **BH02** Sample Ref: **11** Sample Type: **B** Depth (m): **2.00**

Description : **Brown slightly sandy CLAY**



Moisture Content :	=	22	%
Percentage retained on 20 mm sieve :	=	0	%
Moisture Condition Value :	=	11.6	
Interpretation of curve:	=	Steepest straight line - Fig 9	

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The Potteries
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W. Yorkshire WF10 1NJ

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Contract	Contract Ref:
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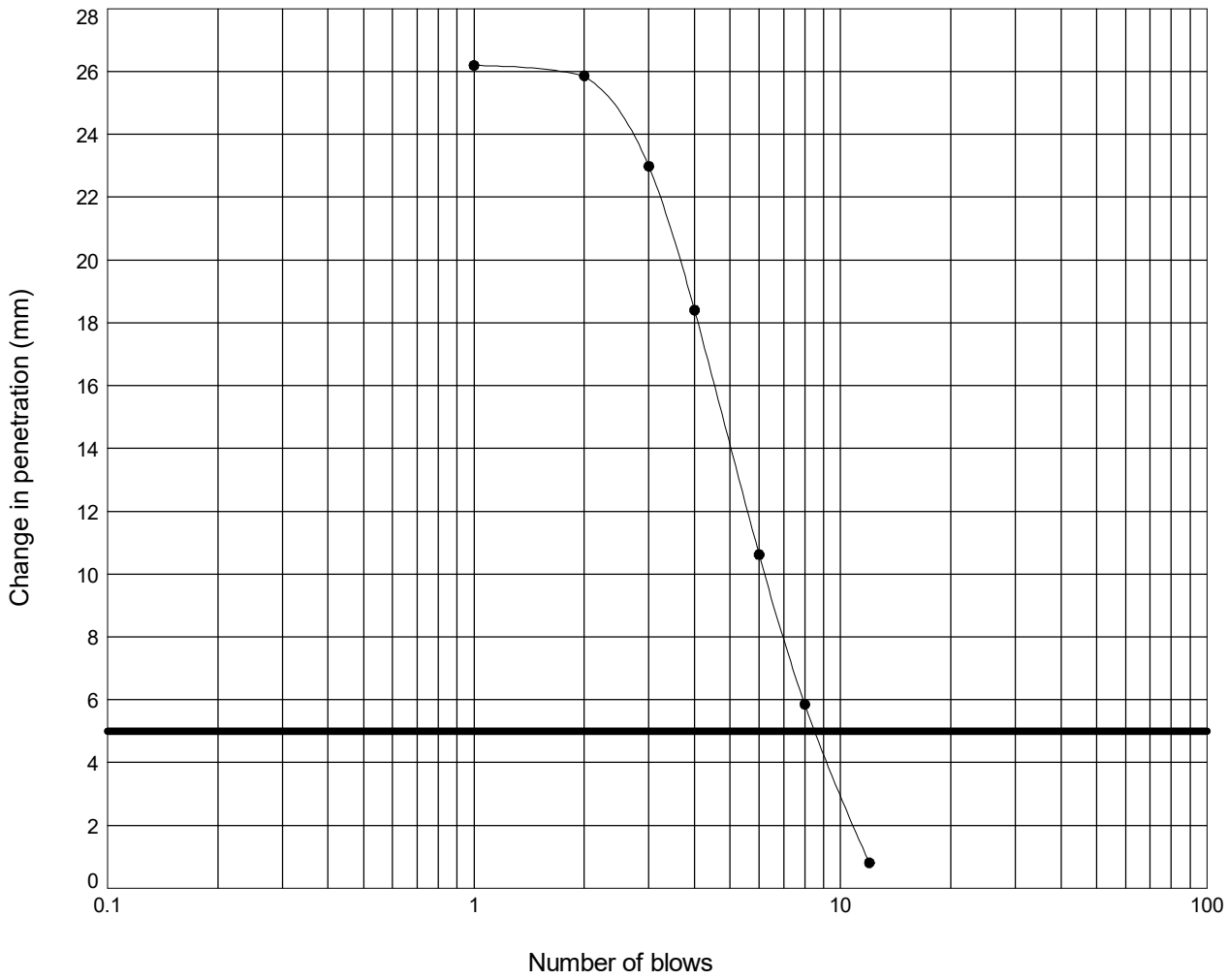
MOISTURE CONDITION VALUE

In accordance with clause 5 of BS1377:Part 4:1990

Borehole: **BH07** Sample Ref: **19** Sample Type: **B** Depth (m): **3.00**

Description : **Red brown CLAY**



Moisture Content :	=	21	%
Percentage retained on 20 mm sieve :	=	7	%
Moisture Condition Value :	=	9.1	
Interpretation of curve:	=	Steepest straight line - Fig 9	

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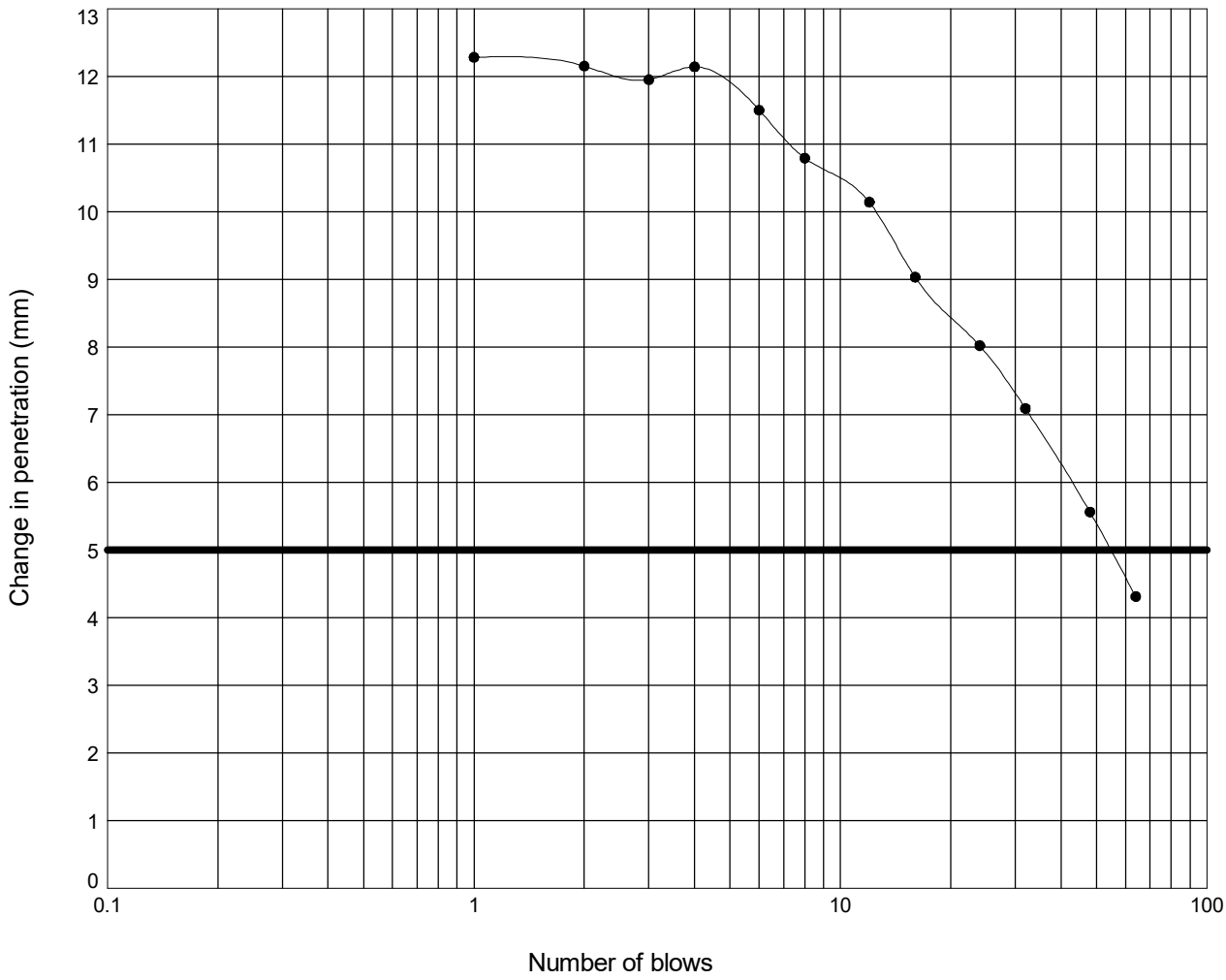
MOISTURE CONDITION VALUE

In accordance with clause 5 of BS1377:Part 4:1990

Borehole: **BH18** Sample Ref: **12** Sample Type: **B** Depth (m): **0.80**

Description : **Brown gravelly CLAY**



Moisture Content :	=	9.8	%
Percentage retained on 20 mm sieve :	=	28	%
Moisture Condition Value :	=	17.4	
Interpretation of curve:	=	Steepest straight line - Fig 9	

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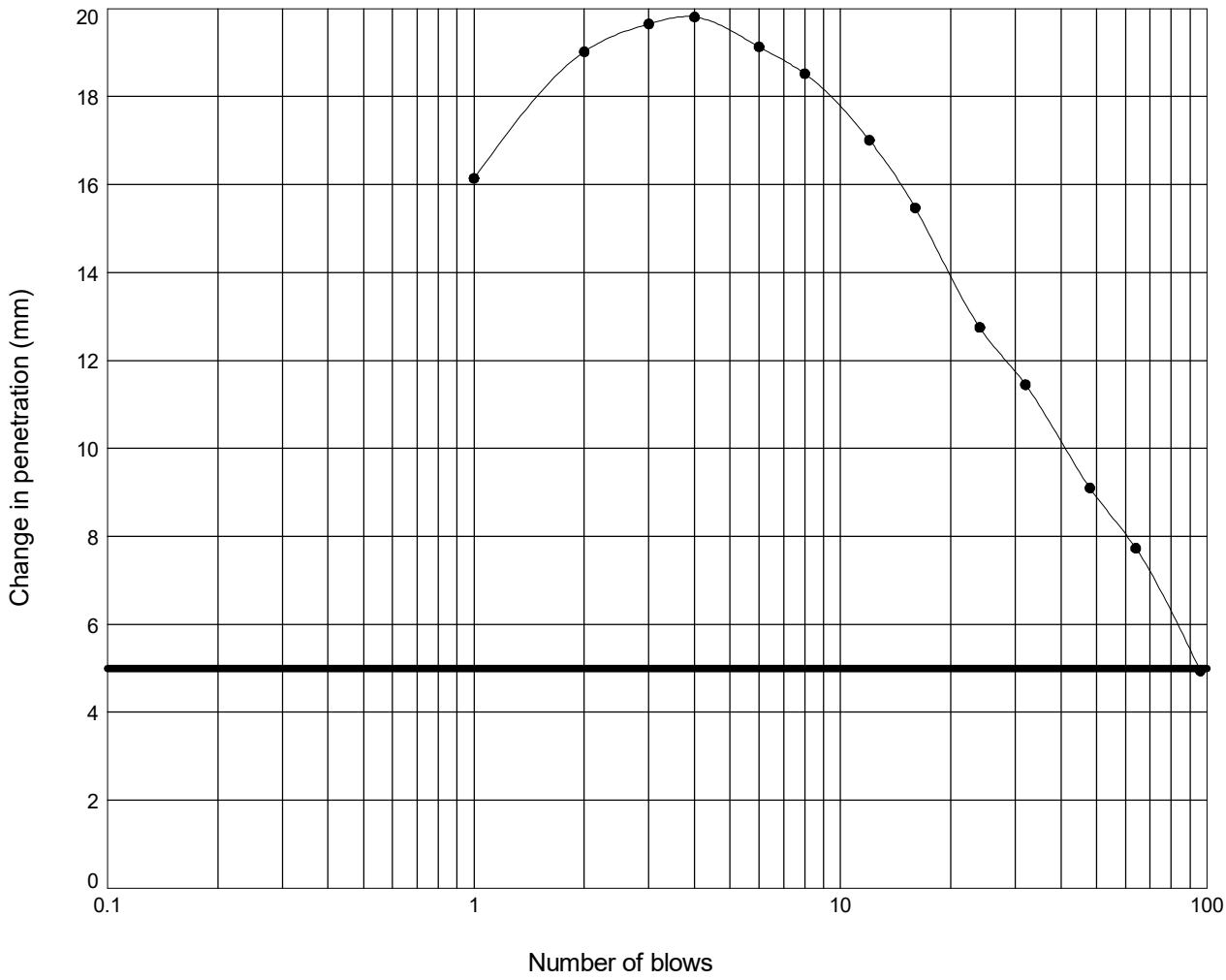
MOISTURE CONDITION VALUE

In accordance with clause 5 of BS1377:Part 4:1990

Borehole: **BH21** Sample Ref: **4** Sample Type: **B** Depth (m): **0.40**

Description : **Brown slightly gravelly CLAY (TOPSOIL)**



Moisture Content :	=	14	%
Percentage retained on 20 mm sieve :	=	3	%
Moisture Condition Value :	=	>18	
Interpretation of curve:	=	Steepest straight line - Fig 9	

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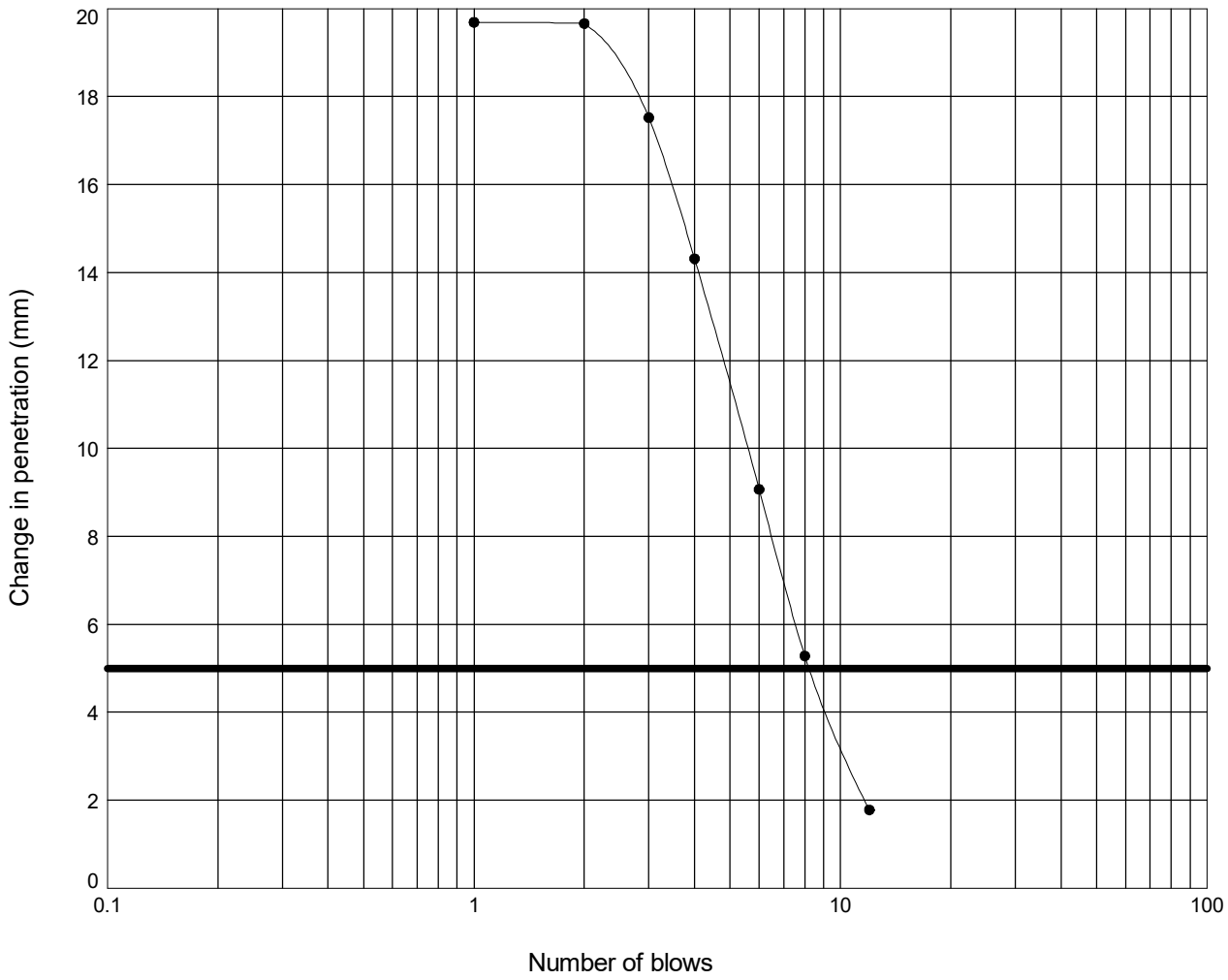
MOISTURE CONDITION VALUE

In accordance with clause 5 of BS1377:Part 4:1990

Position ID: **CP12** Sample Ref: **22** Sample Type: **B** Depth (m): **7.50**

Description : **Red brown slightly sandy slightly gravelly CLAY**



Moisture Content :	=	19	%
Percentage retained on 20 mm sieve :	=	0	%
Moisture Condition Value :	=	9.1	
Interpretation of curve:	=	Steepest straight line - Fig 9	

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Compiled By	Date
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Contract	Contract Ref:
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GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Graph L - MCV -3- NATURAL FINAL - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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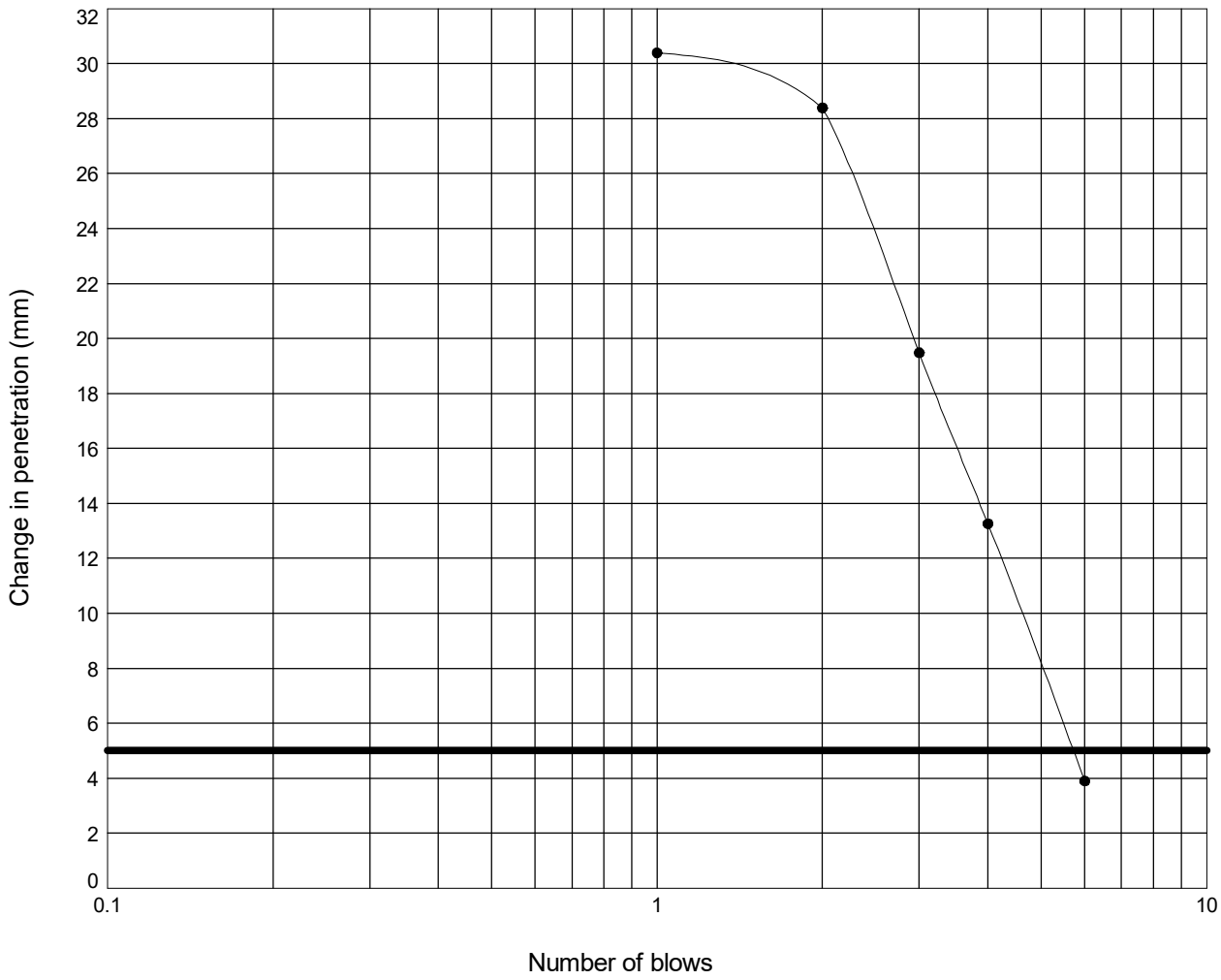
MOISTURE CONDITION VALUE

In accordance with clause 5 of BS1377:Part 4:1990

Position ID: **CP17** Sample Ref: **11** Sample Type: **B** Depth (m): **2.50**

Description : **Brown slightly sandy slightly gravelly CLAY**



Moisture Content :	=	18	%
Percentage retained on 20 mm sieve :	=	8	%
Moisture Condition Value :	=	7.6	
Interpretation of curve:	=	Steepest straight line - Fig 9	

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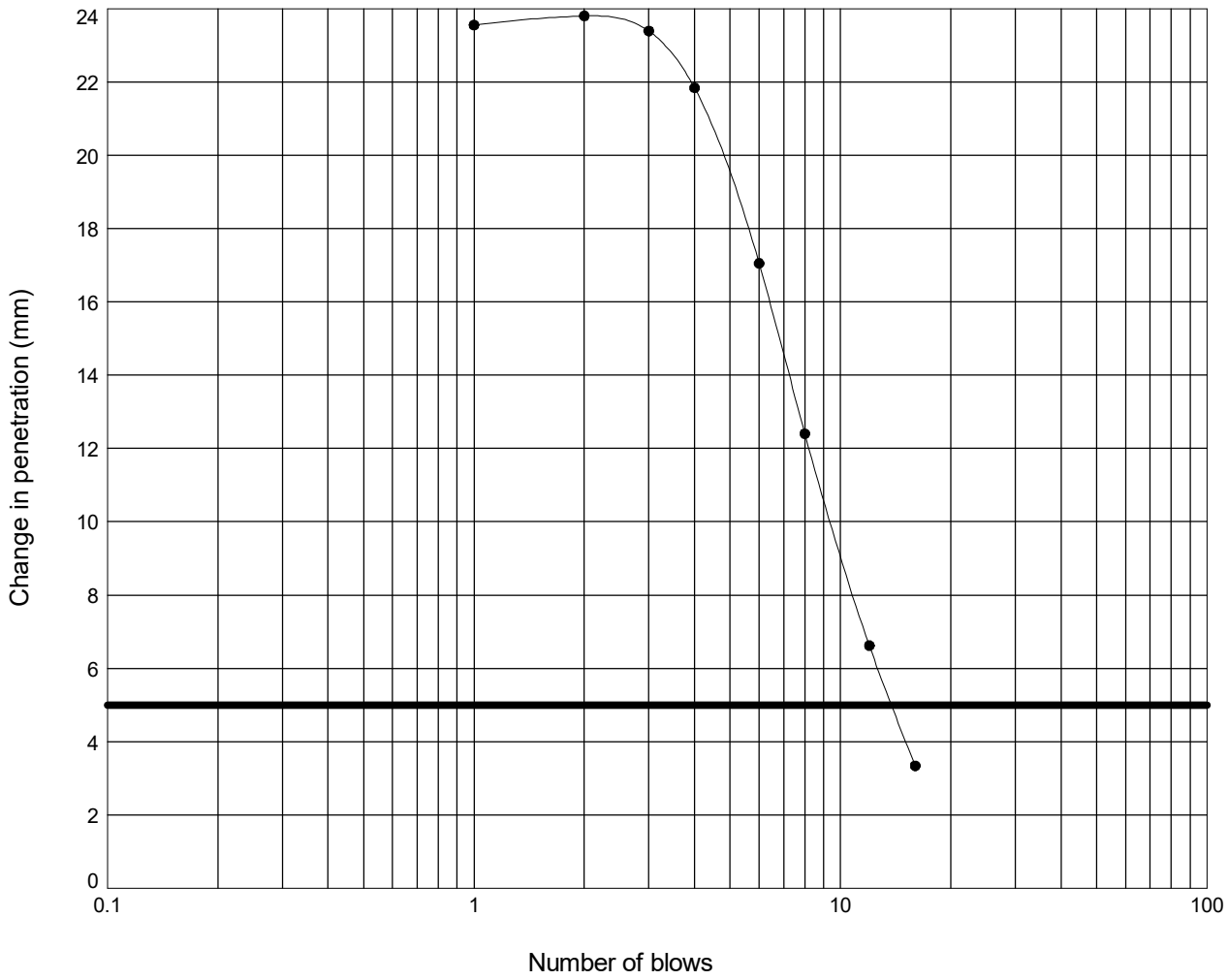
MOISTURE CONDITION VALUE

In accordance with clause 5 of BS1377:Part 4:1990

Trial Pit: **TP07** Sample Ref: **8** Sample Type: **B** Depth (m): **1.00**

Description : **Red brown slightly sandy slightly gravelly CLAY**



Moisture Content :	=	14	%
Percentage retained on 20 mm sieve :	=	0	%
Moisture Condition Value :	=	11.0	
Interpretation of curve:	=	Steepest straight line - Fig 9	

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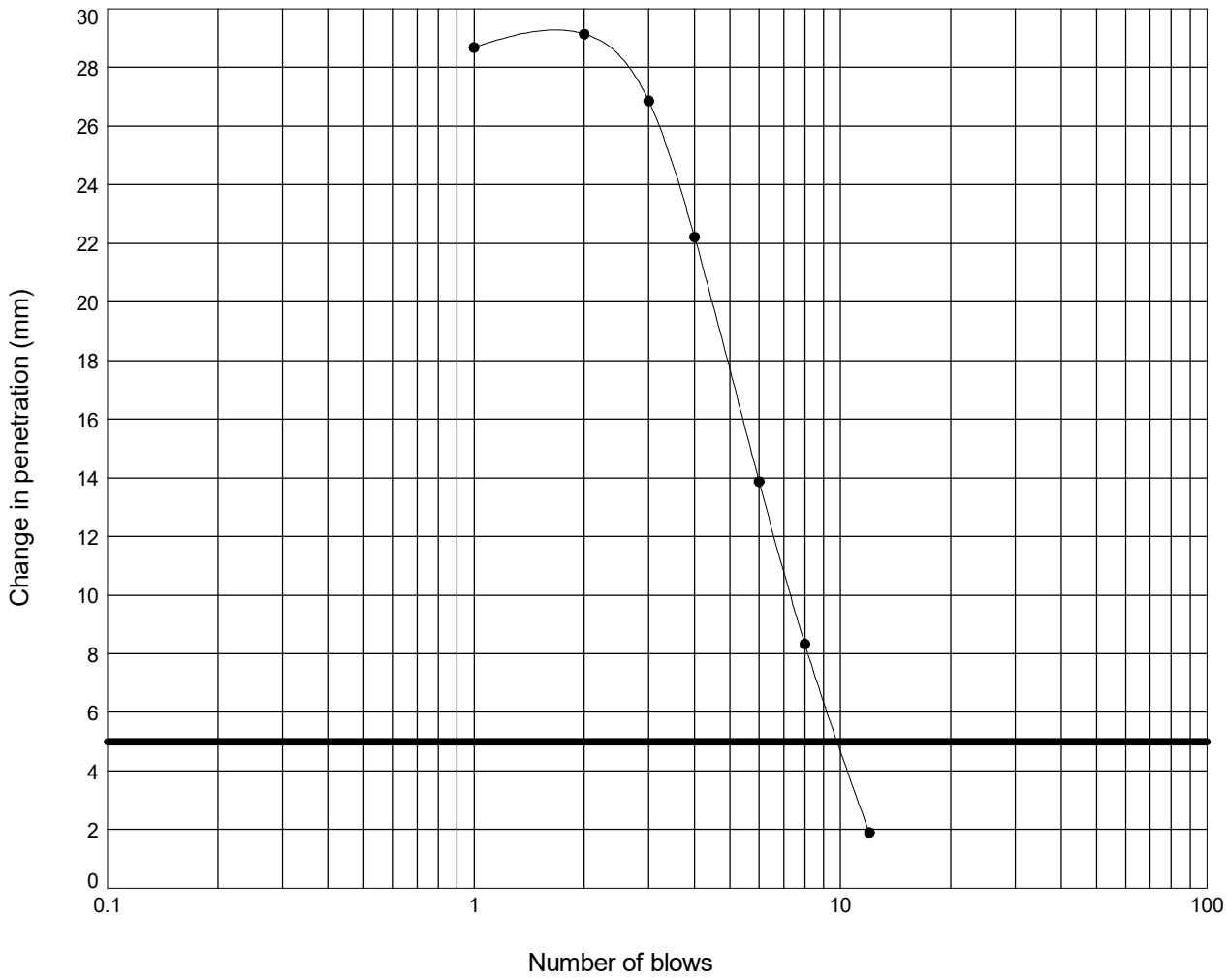
MOISTURE CONDITION VALUE

In accordance with clause 5 of BS1377:Part 4:1990

Trial Pit: **TP14** Sample Ref: **3** Sample Type: **B** Depth (m): **0.40**

Description : **Brown slightly sandy slightly gravelly CLAY**



Moisture Content :	=	23	%
Percentage retained on 20 mm sieve :	=	2	%
Moisture Condition Value :	=	9.7	
Interpretation of curve:	=	Steepest straight line - Fig 9	

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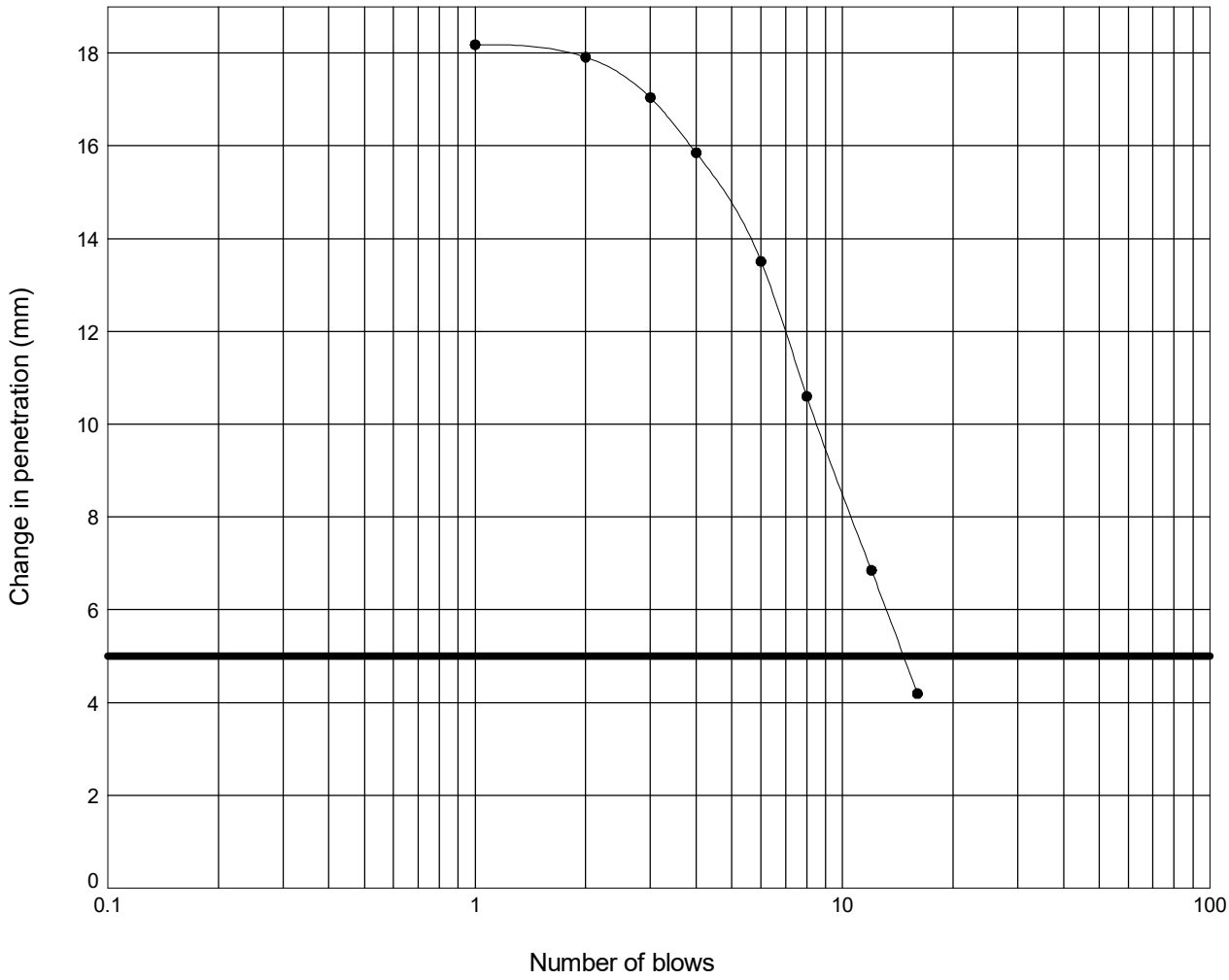
MOISTURE CONDITION VALUE

In accordance with clause 5 of BS1377:Part 4:1990

Trial Pit: **TP33** Sample Ref: **10** Sample Type: **LB** Depth (m): **2.20**

Description : **Red slightly gravelly CLAY**



Moisture Content :	=	16	%
Percentage retained on 20 mm sieve :	=	1	%
Moisture Condition Value :	=	11.4	
Interpretation of curve:	=	Steepest straight line - Fig 9	

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	LAURA SCHRAMM	**24/02/23**

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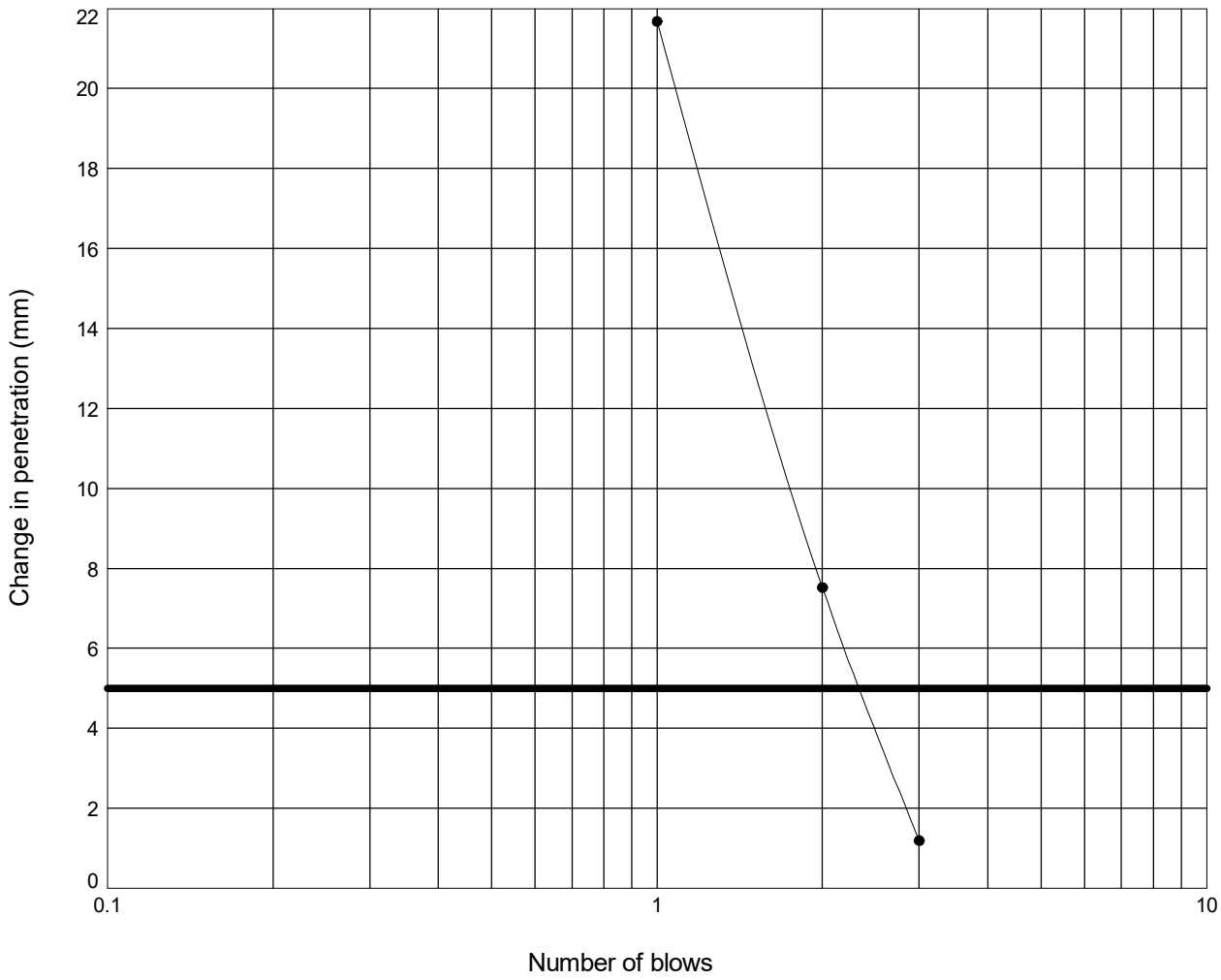
MOISTURE CONDITION VALUE

In accordance with clause 5 of BS1377:Part 4:1990

Trial Pit: **TP36** Sample Ref: **15** Sample Type: **B** Depth (m): **2.00**

Description : **Brown red slightly sandy slightly gravelly CLAY**



Moisture Content :	=	24	%
Percentage retained on 20 mm sieve :	=	31	%
Moisture Condition Value :	=	3.5	
Interpretation of curve:	=	Steepest straight line - Fig 9	

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LORNA WHITWORTH	24/02/23

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SUMMARY OF WATER CONTENT TESTS

RT08 Water Content of Rock (in accordance with ISRM 2007)

Exploratory Position ID	Sample Ref	Depth (m)	Sample Type	Water Content (%)	Lab	
BH01	**20**	**5.00**	**C**	**16.6**	**B**	
BH01	**22**	**7.40**	**C**	**13.1**	**B**	
BH02	**22**	**7.55**	**C**	**14.8**	**B**	
BH03	**25**	**9.94**	**C**	**20.4**	**B**	
BH07	**25**	**5.30**	**C**	**16.9**	**B**	
BH13	**36**	**10.05**	**C**	**15.0**	**B**	
BH15	**50**	**14.30**	**C**	**8.9**	**B**	
BH16	**21**	**5.55**	**C**	**15.3**	**B**	
BH21	**26**	**9.00**	**C**	**17.9**	**B**	
BH22	**18**	**4.30**	**C**	**14.7**	**B**	
BH25	**25**	**4.25**	**C**	**9.6**	**B**	
BH25	**28**	**8.60**	**C**	**9.9**	**B**	
BH27	**5**	**2.10**	**C**	**14.1**	**B**	

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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BS3 4AG

Compiled By		Date
Daria Ignaczak	**DARIA IGNACZAK**	**23/03/23**
Contract: **EMG Phase 2**	Contract Ref: **765514**	

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | GrfcTbl L - SUMMARY OF ROCK STANDALONE WC - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH01	20	5.00	D	60	102	0.128	102	0.01	1.38	0.02 (✓)	17	MUDSTONE	**B**
BH01	20	5.00	A	102	59	0.146	88	0.02	1.29	0.02 (✓)	17	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.02** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.02** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.45** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

Type of Test column:, A = Axial, D = Diametral, I = Irregular, B = Block, L = Parallel, P = Perpendicular, [NS] denotes Non-standard Test.
Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

Compiled By		Date	Contract Ref:
A.D.Frost	**ALAN FROST**	**16.03.23**	**765514**
Contract: **EMG Phase 2**			

DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH01	22	7.40	D	70	103	0.076	103	0.01	1.38	0.01 (✓)	13	MUDSTONE	**B**
BH01	22	7.40	A	103	72	0.180	97	0.02	1.35	0.03 (✓)	13	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.03** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **2.59** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

Type of Test column:, A = Axial, D = Diametral, I = Irregular, B = Block, L = Parallel, P = Perpendicular, [NS] denotes Non-standard Test.
Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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Compiled By		Date	Contract Ref:
A.D. Frost	**ALAN FROST**	**16.03.23**	**765514**
Contract: **EMG Phase 2**			

DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH01	23	8.83	A	103	90	0.086	109	0.01	1.42	0.01 (✓)	20	MUDSTONE	**B**
BH01	23	8.83	I	72	93	0.048	92	0.006	1.32	0.007	20	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.01** MN/m^2
$I_s(50)$ Mean Irregular tests = **0.01** MN/m^2
Unable to calculate $I_a(50)$ Strength Anisotropy Index from this dataset.
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

Type of Test column:, A = Axial, D = Diametral, I = Irregular, B = Block, L = Parallel, P = Perpendicular, [NS] denotes Non-standard Test.
Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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Compiled By		Date	Contract Ref:
A.D. Frost	**ALAN FROST**	**16.03.23**	**765514**
Contract: **EMG Phase 2**			

DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH01	26	11.38	D	60	102	0.074	102	0.01	1.38	0.01 (✓)	16	MUDSTONE	**B**
BH01	26	11.38	A	102	62	0.066	90	0.01	1.30	0.01 (✓)	16	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.01** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.09** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

Type of Test column:, A = Axial, D = Diametral, I = Irregular, B = Block, L = Parallel, P = Perpendicular, [NS] denotes Non-standard Test.
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Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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A.D. Frost	**ALAN FROST**	**16.03.23**	**765514**
Contract: **EMG Phase 2**			

DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH01	28	14.56	A	103	95	0.260	112	0.02	1.44	0.03 (✓)	13	MUDSTONE	**B**
BH01	28	14.56	I	79	51	0.216	72	0.04	1.18	0.05	13	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.03** MN/m^2
$I_s(50)$ Mean Irregular tests = **0.05** MN/m^2
Unable to calculate $I_a(50)$ Strength Anisotropy Index from this dataset.
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

Type of Test column:, A = Axial, D = Diametral, I = Irregular, B = Block, L = Parallel, P = Perpendicular, [NS] denotes Non-standard Test.
Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH01	31	17.93	D	86	101	0.084	101	0.01	1.37	0.01 (✓)	11	MUDSTONE	**B**
BH01	31	17.93	A	101	59	0.092	87	0.01	1.28	0.02 (✓)	11	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.02** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.38** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

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Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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Contract: **EMG Phase 2**

Contract Ref: **765514**

AGS

DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH01	35	22.51	D	56	101	0.204	101	0.02	1.37	0.03 (✓)	12	MUDSTONE	**B**
BH01	35	22.51	A	101	49	0.260	79	0.04	1.23	0.05 (✓)	12	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.05** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.03** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.85** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH01	37	24.75	D	90	102	0.260	102	0.02	1.38	0.03 (✓)	12	MUDSTONE	**B**
BH01	37	24.75	A	102	98	0.200	113	0.02	1.44	0.02 (✓)	12	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.02** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.03** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.52** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH02	22	7.55	D	73	101	0.048	101	0.005	1.37	0.006 (✓)	15	MUDSTONE	**B**
BH02	22	7.55	A	101	71	0.096	96	0.01	1.34	0.01 (✓)	15	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.01** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **2.18** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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DETERMINATION OF POINT LOAD STRENGTH

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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH02	25	11.60	D	63	102	0.086	102	0.01	1.38	0.01 (✓)	13	MUDSTONE	**B**
BH02	25	11.60	I	85	51	0.030	74	0.005	1.20	0.006	13	MUDSTONE	**B**

Results

$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_s(50)$ Mean Irregular tests = **0.01** MN/m^2
Unable to calculate $I_a(50)$ Strength Anisotropy Index from this dataset.
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH02	26	13.70	D	85	102	0.140	102	0.01	1.38	0.02 (✓)	11	MUDSTONE	**B**
BH02	26	13.70	A	102	48	0.196	79	0.03	1.23	0.04 (✓)	11	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.04** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.02** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **2.08** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH02	27	14.75	D	71	101	0.068	101	0.007	1.37	0.009 (✓)	12	MUDSTONE	**B**
BH02	27	14.75	A	101	76	0.144	99	0.01	1.36	0.02 (✓)	12	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.02** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **2.19** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH02	28	15.65	D	65	100	0.072	100	0.01	1.37	0.01 (✓)	20	MUDSTONE	**B**
BH02	28	15.65	A	100	82	0.066	102	0.006	1.38	0.009 (✓)	20	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.01** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.13** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH02	30	19.55	D	65	93	0.054	93	0.006	1.32	0.008 (✓)	18	MUDSTONE	**B**
BH02	30	19.55	I	94	57	0.062	83	0.01	1.25	0.01	18	MUDSTONE	**B**

Results

$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_s(50)$ Mean Irregular tests = **0.01** MN/m^2
Unable to calculate $I_a(50)$ Strength Anisotropy Index from this dataset.
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH03	24	9.43	A	103	59	0.246	88	0.03	1.29	0.04 (✓)	11	MUDSTONE	**B**
BH03	24	9.43	I	86	59	0.186	80	0.03	1.24	0.04	11	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.04** MN/m^2
$I_s(50)$ Mean Irregular tests = **0.04** MN/m^2
Unable to calculate $I_a(50)$ Strength Anisotropy Index from this dataset.
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

Type of Test column:, A = Axial, D = Diametral, I = Irregular, B = Block, L = Parallel, P = Perpendicular, [NS] denotes Non-standard Test.
Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH03	26	11.45	D	56	102	0.102	102	0.01	1.38	0.01 (✓)	15	MUDSTONE	**B**
BH03	26	11.45	A	102	61	0.140	89	0.02	1.30	0.02 (✓)	15	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.02** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.7** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH03	27	13.83	D	70	102	0.120	102	0.01	1.38	0.02 (✓)	11	MUDSTONE	**B**
BH03	27	13.83	A	102	60	0.352	88	0.05	1.29	0.06 (✓)	11	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.06** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.02** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **3.67** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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BH03	28	15.17	D	60	101	0.140	101	0.01	1.37	0.02 (✓)	14	MUDSTONE	**B**
BH03	28	15.17	A	101	49	0.201	79	0.03	1.23	0.04 (✓)	14	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.04** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.02** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **2.09** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

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Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH03	30	18.28	D	52	101	0.074	101	0.01	1.37	0.01 (✓)	11	MUDSTONE	**B**
BH03	30	18.28	A	101	110	0.106	119	0.01	1.48	0.01 (✓)	11	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.01** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.11** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

Type of Test column:, A = Axial, D = Diametral, I = Irregular, B = Block, L = Parallel, P = Perpendicular, [NS] denotes Non-standard Test.
Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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Contract: **EMG Phase 2**			

DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH05	43	16.73	D	66	104	0.216	104	0.02	1.39	0.03 (✓)	9.6	MUDSTONE	**B**
BH05	43	16.73	A	104	63	0.622	91	0.07	1.31	0.10 (✓)	9.6	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.1** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.03** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **3.52** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

Type of Test column:, A = Axial, D = Diametral, I = Irregular, B = Block, L = Parallel, P = Perpendicular, [NS] denotes Non-standard Test.
Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
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In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH05	45	17.70	D	75	106	0.132	106	0.01	1.40	0.02 (✓)	11	MUDSTONE	**B**
BH05	45	17.70	A	106	63	0.404	92	0.05	1.32	0.06 (✓)	11	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.06** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.02** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **3.8** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH05	49	20.60	D	90	104	0.134	104	0.01	1.39	0.02 (✓)	14	MUDSTONE	**B**
BH05	49	20.60	A	104	75	0.556	100	0.06	1.36	0.08 (✓)	14	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.08** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.02** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **4.43** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH05	54	24.00	D	80	106	10.946	106	0.97	1.40	1.37 (✓)	9.4	SILTSTONE	**B**
BH05	54	24.00	A	106	75	8.644	101	0.85	1.37	1.17 (✓)	9.4	SILTSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **1.17** MN/m^2
$I_s(50)$ Mean Diametral tests = **1.37** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.17** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH06	56	18.55	D	60	102	0.136	102	0.01	1.38	0.02 (✓)	10	MUDSTONE	**B**
BH06	56	18.55	A	102	64	0.262	91	0.03	1.31	0.04 (✓)	10	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.04** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.02** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **2.29** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH06	57	19.30	I	91	51	0.228	77	0.04	1.21	0.05	14	SANDSTONE	**B**
BH06	57	19.30	I	90	62	1.722	84	0.24	1.26	0.31	14	SANDSTONE	**B**

Results

$I_s(50)$ Mean Irregular tests = **0.18** MN/m^2
Unable to calculate $I_a(50)$ Strength Anisotropy Index from this dataset.
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

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Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH06	58	21.00	I	70	49	0.880	66	0.20	1.13	0.23	8.5	MUDSTONE	**B**
BH06	58	21.00	I	70	45	0.104	63	0.03	1.11	0.03	8.5	MUDSTONE	**B**

Results

$I_s(50)$ Mean Irregular tests = **0.13** MN/m^2
Unable to calculate $I_a(50)$ Strength Anisotropy Index from this dataset.
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

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Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH06	61	25.85	D	75	101	0.186	101	0.02	1.37	0.03 (✓)	13	MUDSTONE	**B**
BH06	61	25.85	A	101	103	0.098	115	0.01	1.46	0.01 (✓)	13	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.01** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.03** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **2.32** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH07	25	5.30	D	58	105	0.098	105	0.01	1.40	0.01 (✓)	17	MUDSTONE	**B**
BH07	25	5.30	A	105	41	0.106	74	0.02	1.19	0.02 (✓)	17	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.02** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.86** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

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Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH07	26	6.86	D	55	105	0.104	105	0.01	1.40	0.01 (✓)	15	MUDSTONE	**B**
BH07	26	6.86	A	105	56	0.046	87	0.006	1.28	0.008 (✓)	15	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.01** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.67** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH07	27	7.30	A	105	111	0.058	122	0.004	1.49	0.006 (✓)	12	MUDSTONE	**B**
BH07	27	7.30	I	85	58	0.128	79	0.02	1.23	0.03	12	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.01** MN/m^2
$I_s(50)$ Mean Irregular tests = **0.03** MN/m^2
Unable to calculate $I_a(50)$ Strength Anisotropy Index from this dataset.
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

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Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH07	28	9.00	D	65	104	0.058	104	0.005	1.39	0.007 (✓)	16	MUDSTONE	**B**
BH07	28	9.00	A	104	79	0.072	102	0.007	1.38	0.009 (✓)	16	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.01** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.27** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

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Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
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DETERMINATION OF POINT LOAD STRENGTH

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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH07	30	11.10	D	59	104	0.057	104	0.005	1.39	0.007 (✓)	13	MUDSTONE	**B**
BH07	30	11.10	A	104	37	0.046	70	0.01	1.16	0.01 (✓)	13	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.01** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.49** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

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Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH08	42	15.33	A	105	81	2.780	104	0.26	1.39	0.36 (✓)	7.0	SILTSTONE	**B**
BH08	42	15.33	I	75	40	1.636	62	0.43	1.10	0.47	7.0	SILTSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.36** MN/m^2
$I_s(50)$ Mean Irregular tests = **0.47** MN/m^2
Unable to calculate $I_a(50)$ Strength Anisotropy Index from this dataset.
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

Type of Test column:, A = Axial, D = Diametral, I = Irregular, B = Block, L = Parallel, P = Perpendicular, [NS] denotes Non-standard Test.
Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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Compiled By		Date	Contract Ref:
A.D. Frost	**ALAN FROST**	**16.03.23**	**765514**
Contract: **EMG Phase 2**			

DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH08	44	17.93	D	55	106	0.046	106	0.004	1.40	0.006 (✓)	11	MUDSTONE	**B**
BH08	44	17.93	A	106	56	0.062	87	0.01	1.28	0.01 (✓)	11	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.01** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.83** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

Type of Test column:, A = Axial, D = Diametral, I = Irregular, B = Block, L = Parallel, P = Perpendicular, [NS] denotes Non-standard Test.
Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH08	45	21.15	D	64	105	0.404	105	0.04	1.40	0.05 (✓)	11	MUDSTONE	**B**
BH08	45	21.15	A	105	94	0.662	112	0.05	1.44	0.08 (✓)	11	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.08** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.05** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.48** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

Type of Test column:, A = Axial, D = Diametral, I = Irregular, B = Block, L = Parallel, P = Perpendicular, [NS] denotes Non-standard Test.
Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH08	50	27.95	D	65	106	0.168	106	0.01	1.40	0.02 (✓)	13	MUDSTONE	**B**
BH08	50	27.95	A	106	62	0.296	91	0.04	1.31	0.05 (✓)	13	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.05** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.02** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **2.21** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

Type of Test column:, A = Axial, D = Diametral, I = Irregular, B = Block, L = Parallel, P = Perpendicular, [NS] denotes Non-standard Test.
Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH09	43	9.77	D	70	106	3.012	106	0.27	1.40	0.38 (✓)	14	SILTSTONE	**B**
BH09	43	9.77	A	100	85	2.632	104	0.24	1.39	0.34 (✓)	14	SILTSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.34** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.38** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.11** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

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Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH09	45	12.79	D	70	102	0.026	102	0.002	1.38	0.003 (✓)	19	MUDSTONE	**B**
BH09	45	12.79	A	102	56	0.034	85	0.005	1.27	0.006 (✓)	19	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.01** MN/m^2
$I_s(50)$ Mean Diametral tests = **0** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.73** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

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Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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Contract: **EMG Phase 2**

Contract Ref: **765514**

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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH09	48	15.48	D	59	107	0.084	107	0.01	1.41	0.01 (✓)	17	MUDSTONE	**B**
BH09	48	15.48	A	107	47	0.164	80	0.03	1.24	0.03 (✓)	17	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.03** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **3.06** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH09	49	17.00	D	75	105	0.082	105	0.01	1.40	0.01 (✓)	15	MUDSTONE	**B**
BH09	49	17.00	A	105	72	0.108	98	0.01	1.35	0.02 (✓)	15	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.02** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.46** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

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Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH09	52	21.97	A	105	62	0.035	91	0.004	1.31	0.006 (✓)	16	MUDSTONE	**B**
BH09	52	21.97	I	80	65	0.042	81	0.006	1.24	0.008	16	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.01** MN/m^2
$I_s(50)$ Mean Irregular tests = **0.01** MN/m^2
Unable to calculate $I_a(50)$ Strength Anisotropy Index from this dataset.
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

Type of Test column:, A = Axial, D = Diametral, I = Irregular, B = Block, L = Parallel, P = Perpendicular, [NS] denotes Non-standard Test.
Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH09	53	22.98	D	80	105	0.186	105	0.02	1.40	0.02 (✓)	11	MUDSTONE	**B**
BH09	53	22.98	A	105	77	0.872	101	0.08	1.37	0.12 (✓)	11	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.12** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.02** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **4.94** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

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Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
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DETERMINATION OF POINT LOAD STRENGTH

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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH09	55	25.98	D	60	105	0.094	105	0.01	1.40	0.01 (✓)	15	MUDSTONE	**B**
BH09	55	25.98	A	104	74	0.064	99	0.007	1.36	0.009 (✓)	15	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.01** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.34** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

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Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH10	14	9.15	D	75	106	0.066	106	0.006	1.40	0.008 (✓)	16	MUDSTONE	**B**
BH10	14	9.15	A	106	85	0.148	107	0.01	1.41	0.02 (✓)	16	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.02** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **2.21** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

Type of Test column:, A = Axial, D = Diametral, I = Irregular, B = Block, L = Parallel, P = Perpendicular, [NS] denotes Non-standard Test.
Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH10	15	9.88	D	70	106	0.060	106	0.005	1.40	0.007 (✓)	14	MUDSTONE	**B**
BH10	15	9.88	A	106	76	0.024	101	0.002	1.37	0.003 (✓)	14	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **2.33** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

Type of Test column:, A = Axial, D = Diametral, I = Irregular, B = Block, L = Parallel, P = Perpendicular, [NS] denotes Non-standard Test.
Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH10	16	11.50	I	57	49	0.198	60	0.06	1.08	0.06	11	MUDSTONE	**B**
BH10	16	11.50	I	45	39	0.042	47	0.02	0.98	0.02	11	MUDSTONE	**B**

Results

$I_s(50)$ Mean Irregular tests = **0.04** MN/m^2
Unable to calculate $I_a(50)$ Strength Anisotropy Index from this dataset.
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

Type of Test column:, A = Axial, D = Diametral, I = Irregular, B = Block, L = Parallel, P = Perpendicular, [NS] denotes Non-standard Test.
Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH10	17	12.99	D	65	105	0.138	105	0.01	1.40	0.02 (✓)	14	MUDSTONE	**B**
BH10	17	12.99	A	105	57	0.204	87	0.03	1.29	0.03 (✓)	14	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.03** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.02** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.97** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

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Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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BS3 4AG

Compiled By		Date	Contract Ref:
A.D. Frost	**ALAN FROST**	**16.03.23**	**765514**
Contract: **EMG Phase 2**			

DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH10	20	17.20	D	65	105	0.228	105	0.02	1.40	0.03 (✓)	12	MUDSTONE	**B**
BH10	20	17.20	A	105	87	0.290	108	0.02	1.41	0.04 (✓)	12	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.04** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.03** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.22** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

Type of Test column:, A = Axial, D = Diametral, I = Irregular, B = Block, L = Parallel, P = Perpendicular, [NS] denotes Non-standard Test.
Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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Contract: **EMG Phase 2**

Contract Ref: **765514**

AGS

DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH11	41	14.09	D	55	105	0.084	105	0.01	1.40	0.01 (✓)	14	MUDSTONE	**B**
BH11	41	14.09	A	105	74	0.094	99	0.01	1.36	0.01 (✓)	14	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.01** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.22** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

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Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
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In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH11	42	15.12	D	55	101	0.160	101	0.02	1.37	0.02 (✓)	14	MUDSTONE	**B**
BH11	42	15.12	A	101	68	0.208	94	0.02	1.33	0.03 (✓)	14	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.03** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.02** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.46** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

Type of Test column:, A = Axial, D = Diametral, I = Irregular, B = Block, L = Parallel, P = Perpendicular, [NS] denotes Non-standard Test.
Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH11	43	17.56	D	65	105	0.086	105	0.01	1.40	0.01 (✓)	18	MUDSTONE	**B**
BH11	43	17.56	A	105	65	0.176	93	0.02	1.32	0.03 (✓)	18	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.03** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **2.46** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH11	45	19.60	D	54	103	0.144	103	0.01	1.38	0.02 (✓)	12	MUDSTONE	**B**
BH11	45	19.60	A	103	94	0.176	111	0.01	1.43	0.02 (✓)	12	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.02** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.02** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.09** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH11	31	22.50	D	70	102	0.034	102	0.003	1.38	0.005 (✓)	18	MUDSTONE	**B**
BH11	31	22.50	A	102	65	0.044	92	0.005	1.31	0.007 (✓)	18	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.01** MN/m^2
$I_s(50)$ Mean Diametral tests = **0** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.52** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH11	49	25.16	A	103	54	0.220	84	0.03	1.26	0.04 (✓)	12	MUDSTONE	**B**
BH11	49	25.16	I	73	57	0.094	73	0.02	1.18	0.02	12	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.04** MN/m^2
$I_s(50)$ Mean Irregular tests = **0.02** MN/m^2
Unable to calculate $I_a(50)$ Strength Anisotropy Index from this dataset.
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH11	52	29.59	D	60	106	0.322	106	0.03	1.40	0.04 (✓)	10	MUDSTONE	**B**
BH11	52	29.59	A	106	51	0.418	83	0.06	1.26	0.08 (✓)	10	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.08** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.04** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.9** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH12	54	17.11	D	55	102	0.270	102	0.03	1.38	0.04 (✓)	10	MUDSTONE	**B**
BH12	54	17.11	A	102	36	0.272	68	0.06	1.15	0.07 (✓)	10	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.07** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.04** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.87** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH12	55	17.91	A	101	67	1.324	93	0.15	1.32	0.20 (✓)	16	SILTSTONE	**B**
BH12	55	17.91	I	85	57	0.786	79	0.13	1.23	0.16	16	SILTSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.2** MN/m^2
$I_s(50)$ Mean Irregular tests = **0.16** MN/m^2
Unable to calculate $I_a(50)$ Strength Anisotropy Index from this dataset.
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH12	56	19.15	D	57	101	11.886	101	1.17	1.37	1.60 (✓)	9.0	SILTSTONE	**B**
BH12	56	19.15	I	71	65	3.092	77	0.53	1.21	0.64	9.0	SILTSTONE	**B**

Results

$I_s(50)$ Mean Diametral tests = **1.6** MN/m^2
$I_s(50)$ Mean Irregular tests = **0.64** MN/m^2
Unable to calculate $I_a(50)$ Strength Anisotropy Index from this dataset.
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH12	58	23.05	D	53	102	0.322	102	0.03	1.38	0.04 (✓)	7.7	SILTSTONE	**B**
BH12	58	23.05	A	102	66	3.154	93	0.37	1.32	0.49 (✓)	7.7	SILTSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.49** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.04** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **11.38** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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BH12	59	23.90	D	60	101	0.168	101	0.02	1.37	0.02 (✓)	10	MUDSTONE	**B**
BH12	59	23.90	A	101	63	0.234	90	0.03	1.30	0.04 (✓)	10	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.04** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.02** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.67** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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BH12	60	24.95	D	80	103	0.160	103	0.02	1.38	0.02 (✓)	9.4	MUDSTONE	**B**
BH12	60	24.95	A	103	85	0.488	106	0.04	1.40	0.06 (✓)	9.4	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.06** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.02** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **2.94** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH12	61	26.55	D	73	100	0.104	100	0.01	1.37	0.01 (✓)	15	MUDSTONE	**B**
BH12	61	26.55	A	100	62	0.042	89	0.005	1.30	0.007 (✓)	15	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.01** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **2.06** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

Type of Test column:, A = Axial, D = Diametral, I = Irregular, B = Block, L = Parallel, P = Perpendicular, [NS] denotes Non-standard Test.
Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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Compiled By		Date	Contract Ref:
A.D.Frost	**ALAN FROST**	**16.03.23**	**765514**
Contract: **EMG Phase 2**			

DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH12	62	28.78	D	50	100	0.104	100	0.01	1.37	0.01 (✓)	15	MUDSTONE	**B**
BH12	62	28.78	A	100	70	0.124	94	0.01	1.33	0.02 (✓)	15	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.02** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.3** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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Compiled By		Date
Daria Ignaczak	**DARIA IGNACZAK**	**23.03.23**

Contract: **EMG Phase 2**

Contract Ref: **765514**

DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH12	63	30.33	D	50	100	0.098	100	0.01	1.37	0.01 (✓)	14	MUDSTONE	**B**
BH12	63	30.33	A	100	73	0.124	96	0.01	1.34	0.02 (✓)	14	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.02** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.34** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

Type of Test column:, A = Axial, D = Diametral, I = Irregular, B = Block, L = Parallel, P = Perpendicular, [NS] denotes Non-standard Test.
Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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Daria Ignaczak	**DARIA IGNACZAK**	**23.03.23**	**765514**
Contract: **EMG Phase 2**			

DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH13	36	10.05	D	68	106	0.056	106	0.005	1.40	0.007 (✓)	15	MUDSTONE	**B**
BH13	36	10.05	A	106	76	0.054	101	0.005	1.37	0.007 (✓)	15	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.01** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.03** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

Type of Test column:, A = Axial, D = Diametral, I = Irregular, B = Block, L = Parallel, P = Perpendicular, [NS] denotes Non-standard Test.
Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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Contract: **EMG Phase 2**			

DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH13	37	11.50	D	55	105	0.024	105	0.002	1.40	0.003 (✓)	12	MUDSTONE	**B**
BH13	37	11.50	A	105	56	0.116	87	0.02	1.28	0.02 (✓)	12	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.02** MN/m^2
$I_s(50)$ Mean Diametral tests = **0** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **6.52** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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Compiled By		Date
A.D.Frost	**ALAN FROST**	**16.03.23**

Contract: **EMG Phase 2**

Contract Ref: **765514**

AGS

DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH13	39	13.85	D	60	105	0.054	105	0.005	1.40	0.007 (✓)	15	MUDSTONE	**B**
BH13	39	13.85	A	105	55	0.124	86	0.02	1.27	0.02 (✓)	15	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.02** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **3.14** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

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Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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Contract: **EMG Phase 2**			

DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH13	41	17.20	A	105	90	0.682	110	0.06	1.42	0.08 (✓)	9.4	MUDSTONE	**B**
BH13	41	17.20	I	90	53	0.582	78	0.10	1.22	0.12	9.4	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.08** MN/m^2
$I_s(50)$ Mean Irregular tests = **0.12** MN/m^2
Unable to calculate $I_a(50)$ Strength Anisotropy Index from this dataset.
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

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Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH13	42	18.45	D	68	103	0.068	103	0.006	1.38	0.009 (✓)	13	MUDSTONE	**B**
BH13	42	18.45	A	103	84	0.142	105	0.01	1.40	0.02 (✓)	13	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.02** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **2.03** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

Type of Test column:, A = Axial, D = Diametral, I = Irregular, B = Block, L = Parallel, P = Perpendicular, [NS] denotes Non-standard Test.
Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH13	44	22.35	D	65	107	0.252	107	0.02	1.41	0.03 (✓)	8.9	MUDSTONE	**B**
BH13	44	22.35	A	107	67	0.472	96	0.05	1.34	0.07 (✓)	8.9	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.07** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.03** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **2.23** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH14	47	14.62	D	53	102	0.186	102	0.02	1.38	0.02 (✓)	11	MUDSTONE	**B**
BH14	47	14.62	A	102	53	1.018	83	0.15	1.26	0.19 (✓)	11	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.19** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.02** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **7.54** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

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Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH14	50	18.44	D	67	101	0.138	101	0.01	1.37	0.02 (✓)	8.4	MUDSTONE	**B**
BH14	50	18.44	A	101	85	1.140	105	0.10	1.39	0.15 (✓)	8.4	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.15** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.02** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **7.83** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH14	51	19.50	D	59	101	0.046	101	0.005	1.37	0.006 (✓)	10	MUDSTONE	**B**
BH14	51	19.50	A	101	75	0.956	98	0.10	1.35	0.13 (✓)	10	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.13** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **21.71** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH14	52	20.40	D	70	101	0.254	101	0.02	1.37	0.03 (✓)	10	MUDSTONE	**B**
BH14	52	20.40	A	101	74	0.862	98	0.09	1.35	0.12 (✓)	10	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.12** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.03** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **3.58** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH14	54	23.19	D	66	102	0.092	102	0.01	1.38	0.01 (✓)	13	MUDSTONE	**B**
BH14	54	23.19	A	102	56	0.096	85	0.01	1.27	0.02 (✓)	13	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.02** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.38** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH14	56	24.64	D	60	102	0.096	102	0.01	1.38	0.01 (✓)	13	SILTSTONE	**B**
BH14	56	24.64	A	102	76	0.114	99	0.01	1.36	0.02 (✓)	13	SILTSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.02** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.24** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

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Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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Compiled By		Date	Contract Ref:
A.D. Frost	**ALAN FROST**	**16.03.23**	**765514**
Contract: **EMG Phase 2**			

DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH15	51	15.29	D	54	101	0.194	101	0.02	1.37	0.03 (✓)	10	MUDSTONE	**B**
BH15	51	15.29	A	101	41	0.654	73	0.12	1.18	0.15 (✓)	10	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.15** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.03** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **5.62** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

Type of Test column:, A = Axial, D = Diametral, I = Irregular, B = Block, L = Parallel, P = Perpendicular, [NS] denotes Non-standard Test.
Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH15	52	16.59	A	104	85	1.102	106	0.10	1.40	0.14 (✓)	9.2	MUDSTONE	**B**
BH15	52	16.59	I	91	76	0.636	94	0.07	1.33	0.10	9.2	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.14** MN/m^2
$I_s(50)$ Mean Irregular tests = **0.1** MN/m^2
Unable to calculate $I_a(50)$ Strength Anisotropy Index from this dataset.
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

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Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH15	53	17.49	D	100	97	0.052	97	0.006	1.35	0.007 (✓)	16	MUDSTONE	**B**
BH15	53	17.49	A	97	90	0.100	105	0.01	1.40	0.01 (✓)	16	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.01** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.69** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH15	54	19.61	D	65	103	0.084	103	0.01	1.38	0.01 (✓)	13	MUDSTONE	**B**
BH15	54	19.61	A	103	68	0.216	94	0.02	1.33	0.03 (✓)	13	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.03** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **2.94** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH15	55	20.51	D	86	101	0.200	101	0.02	1.37	0.03 (✓)	17	MUDSTONE	**B**
BH15	55	20.51	A	101	97	0.506	112	0.04	1.44	0.06 (✓)	17	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.06** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.03** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **2.16** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH15	56	22.03	D	81	101	0.116	101	0.01	1.37	0.02 (✓)	13	MUDSTONE	**B**
BH15	56	22.03	A	101	88	0.072	106	0.006	1.40	0.009 (✓)	13	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.01** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.02** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.75** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH15	58	25.55	D	61	101	0.168	101	0.02	1.37	0.02 (✓)	9.4	MUDSTONE	**B**
BH15	58	25.55	A	101	62	0.190	89	0.02	1.30	0.03 (✓)	9.4	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.03** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.02** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.37** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

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Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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Contract: **EMG Phase 2**

Contract Ref: **765514**

AGS

DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH15	60	28.43	D	65	105	0.114	105	0.01	1.40	0.01 (✓)	13	MUDSTONE	**B**
BH15	60	28.43	A	105	72	0.102	98	0.01	1.35	0.01 (✓)	13	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.01** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.01** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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Contract: **EMG Phase 2**			

DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH16	21	5.55	D	55	108	0.034	108	0.003	1.41	0.004 (✓)	15	MUDSTONE	**B**
BH16	21	5.55	A	108	55	0.034	87	0.004	1.28	0.006 (✓)	15	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.01** MN/m^2
$I_s(50)$ Mean Diametral tests = **0** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.4** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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DETERMINATION OF POINT LOAD STRENGTH

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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH16	23	7.75	D	58	105	0.098	105	0.01	1.40	0.01 (✓)	15	MUDSTONE	**B**
BH16	23	7.75	A	105	91	0.186	110	0.02	1.43	0.02 (✓)	15	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.02** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.76** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH16	26	11.90	D	54	105	0.248	105	0.02	1.40	0.03 (✓)	8.1	MUDSTONE	**B**
BH16	26	11.90	A	105	59	0.944	89	0.12	1.30	0.15 (✓)	8.1	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.15** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.03** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **4.93** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH16	30	16.40	D	61	105	0.118	105	0.01	1.40	0.01 (✓)	15	MUDSTONE	**B**
BH16	30	16.40	A	105	66	0.163	94	0.02	1.33	0.02 (✓)	15	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.02** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.64** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH17	28	8.30	D	55	105	0.052	105	0.005	1.40	0.007 (✓)	8.3	MUDSTONE	**B**
BH17	28	8.30	A	105	44	1.378	77	0.23	1.21	0.28 (✓)	8.3	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.28** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **43.12** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH17	30	10.90	I	72	54	0.190	70	0.04	1.17	0.04	11	MUDSTONE	**B**
BH17	30	10.90	I	57	54	0.250	63	0.06	1.11	0.07	11	MUDSTONE	**B**

Results

$I_s(50)$ Mean Irregular tests = **0.06** MN/m^2
Unable to calculate $I_a(50)$ Strength Anisotropy Index from this dataset.
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

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Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH17	32	14.01	D	81	105	4.942	105	0.45	1.40	0.63 (✓)	14	MUDSTONE	**B**
BH17	32	14.01	A	105	70	2.282	97	0.24	1.35	0.33 (✓)	14	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.33** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.63** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.91** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH17	33	15.60	D	70	106	8.550	106	0.76	1.40	1.07 (✓)	8.1	SILTSTONE	**B**
BH17	33	15.60	A	106	46	6.244	79	1.01	1.23	1.23 (✓)	8.1	SILTSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **1.23** MN/m^2
$I_s(50)$ Mean Diametral tests = **1.07** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.16** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH17	34	17.72	D	65	105	0.030	105	0.003	1.40	0.004 (✓)	15	MUDSTONE	**B**
BH17	34	17.72	A	105	59	0.056	89	0.007	1.30	0.009 (✓)	15	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.01** MN/m^2
$I_s(50)$ Mean Diametral tests = **0** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **2.42** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
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Contract: **EMG Phase 2**

Contract Ref: **765514**

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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH17	36	20.04	D	73	105	0.170	105	0.02	1.40	0.02 (✓)	13	MUDSTONE	**B**
BH17	36	20.04	A	105	72	0.340	98	0.04	1.35	0.05 (✓)	13	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.05** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.02** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **2.22** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH18	48	11.10	A	105	57	1.342	87	0.18	1.29	0.23 (✓)	8.4	MUDSTONE	**B**
BH18	48	11.10	I	65	47	0.418	62	0.11	1.10	0.12	8.4	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.23** MN/m^2
$I_s(50)$ Mean Irregular tests = **0.12** MN/m^2
Unable to calculate $I_a(50)$ Strength Anisotropy Index from this dataset.
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

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Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH18	52	17.55	D	56	107	0.102	107	0.01	1.41	0.01 (✓)	10	MUDSTONE	**B**
BH18	52	17.55	A	107	39	0.346	73	0.07	1.18	0.08 (✓)	10	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.08** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **6.15** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

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Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
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In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH18	55	21.80	D	65	102	0.022	102	0.002	1.38	0.003 (✓)	16	SILTSTONE	**B**
BH18	55	21.80	I	95	63	0.134	87	0.02	1.29	0.02	16	SILTSTONE	**B**

Results

$I_s(50)$ Mean Diametral tests = **0** MN/m^2
$I_s(50)$ Mean Irregular tests = **0.02** MN/m^2
Unable to calculate $I_a(50)$ Strength Anisotropy Index from this dataset.
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

Type of Test column:, A = Axial, D = Diametral, I = Irregular, B = Block, L = Parallel, P = Perpendicular, [NS] denotes Non-standard Test.
Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH18	56	23.55	D	75	105	0.134	105	0.01	1.40	0.02 (✓)	7.7	MUDSTONE	**B**
BH18	56	23.55	A	105	72	0.586	98	0.06	1.35	0.08 (✓)	7.7	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.08** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.02** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **4.86** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH19	24	10.53	D	55	104	0.074	104	0.01	1.39	0.01 (✓)	15	MUDSTONE	**B**
BH19	24	10.53	A	104	45	0.174	77	0.03	1.22	0.04 (✓)	15	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.04** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **3.73** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

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Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH19	26	12.93	D	60	105	0.806	105	0.07	1.40	0.10 (✓)	9.5	MUDSTONE	**B**
BH19	26	12.93	I	83	71	1.074	87	0.14	1.28	0.18	9.5	MUDSTONE	**B**

Results

$I_s(50)$ Mean Diametral tests = **0.1** MN/m^2
$I_s(50)$ Mean Irregular tests = **0.18** MN/m^2
Unable to calculate $I_a(50)$ Strength Anisotropy Index from this dataset.
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH19	27	14.45	D	70	106	0.164	106	0.01	1.40	0.02 (✓)	9.9	MUDSTONE	**B**
BH19	27	14.45	A	106	86	0.900	108	0.08	1.41	0.11 (✓)	9.9	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.11** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.02** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **5.35** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH19	28	16.58	A	100	100	0.442	113	0.03	1.44	0.05 (✓)	13	MUDSTONE	**B**
BH19	28	16.58	I	80	30	0.368	55	0.12	1.05	0.13	13	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.05** MN/m^2
$I_s(50)$ Mean Irregular tests = **0.13** MN/m^2
Unable to calculate $I_a(50)$ Strength Anisotropy Index from this dataset.
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

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Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
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DETERMINATION OF POINT LOAD STRENGTH

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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH19	30	18.80	D	75	105	0.692	105	0.06	1.40	0.09 (✓)	7.5	MUDSTONE	**B**
BH19	30	18.80	A	105	68	2.222	95	0.24	1.34	0.33 (✓)	7.5	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.33** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.09** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **3.73** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

Type of Test column:, A = Axial, D = Diametral, I = Irregular, B = Block, L = Parallel, P = Perpendicular, [NS] denotes Non-standard Test.
Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH19	31	19.50	D	62	105	0.080	105	0.01	1.40	0.01 (✓)	10	MUDSTONE	**B**
BH19	31	19.50	A	105	68	0.462	95	0.05	1.34	0.07 (✓)	10	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.07** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **6.71** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

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Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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Compiled By		Date	Contract Ref:
A.D.Frost	**ALAN FROST**	**16.03.23**	**765514**
Contract: **EMG Phase 2**			

DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH20	28	5.48	D	78	105	0.028	105	0.003	1.40	0.004 (✓)	13	MUDSTONE	**B**
BH20	28	5.48	A	105	78	0.050	102	0.005	1.38	0.007 (✓)	13	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.01** MN/m^2
$I_s(50)$ Mean Diametral tests = **0** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.86** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH20	32	11.00	D	70	105	0.010	105	0.001	1.40	0.001 (✓)	12	MUDSTONE	**B**
BH20	32	11.00	A	105	58	0.096	88	0.01	1.29	0.02 (✓)	12	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.02** MN/m^2
$I_s(50)$ Mean Diametral tests = **0** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **12.61** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH20	34	13.50	D	63	103	0.266	103	0.03	1.38	0.03 (✓)	7.7	MUDSTONE	**B**
BH20	34	13.50	A	103	70	0.526	96	0.06	1.34	0.08 (✓)	7.7	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.08** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.03** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **2.21** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH20	36	17.30	D	65	106	0.274	106	0.02	1.40	0.03 (✓)	10	MUDSTONE	**B**
BH20	36	17.30	A	106	81	1.286	105	0.12	1.39	0.16 (✓)	10	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.16** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.03** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **4.79** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH20	41	24.35	D	95	105	0.166	105	0.02	1.40	0.02 (✓)	12	MUDSTONE	**B**
BH20	41	24.35	I	95	85	0.460	101	0.04	1.37	0.06	12	MUDSTONE	**B**

Results

$I_s(50)$ Mean Diametral tests = **0.02** MN/m^2
$I_s(50)$ Mean Irregular tests = **0.06** MN/m^2
Unable to calculate $I_a(50)$ Strength Anisotropy Index from this dataset.
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

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Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH20	43	27.85	D	60	104	0.042	104	0.004	1.39	0.005 (✓)	9.6	SANDSTONE	**B**
BH20	43	27.85	I	84	66	0.550	84	0.08	1.26	0.10	9.6	SANDSTONE	**B**

Results

$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_s(50)$ Mean Irregular tests = **0.1** MN/m^2
Unable to calculate $I_a(50)$ Strength Anisotropy Index from this dataset.
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

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Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH21	26	9.00	D	70	106	0.058	106	0.005	1.40	0.007 (✓)	18	MUDSTONE	**B**
BH21	26	9.00	A	106	81	0.070	105	0.006	1.39	0.009 (✓)	18	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.01** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.23** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Contract: **EMG Phase 2**

Contract Ref: **765514**

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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH21	28	11.56	D	76	106	0.078	106	0.01	1.40	0.01 (✓)	12	MUDSTONE	**B**
BH21	28	11.56	A	106	76	0.200	101	0.02	1.37	0.03 (✓)	12	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.03** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **2.75** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH21	31	15.24	D	66	104	0.146	104	0.01	1.39	0.02 (✓)	10	MUDSTONE	**B**
BH21	31	15.24	A	104	70	1.170	96	0.13	1.34	0.17 (✓)	10	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.17** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.02** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **9.03** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH21	34	19.82	D	75	104	0.154	104	0.01	1.39	0.02 (✓)	10	MUDSTONE	**B**
BH21	34	19.82	A	104	71	0.340	97	0.04	1.35	0.05 (✓)	10	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.05** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.02** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **2.46** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH21	36	23.52	D	74	105	0.044	105	0.004	1.40	0.006 (✓)	14	MUDSTONE	**B**
BH21	36	23.52	A	105	69	0.078	96	0.01	1.34	0.01 (✓)	14	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.01** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **2.04** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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DETERMINATION OF POINT LOAD STRENGTH

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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH21	38	25.55	D	65	103	0.178	103	0.02	1.38	0.02 (✓)	9.0	MUDSTONE	**B**
BH21	38	25.55	A	103	56	0.674	86	0.09	1.27	0.12 (✓)	9.0	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.12** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.02** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **5.04** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH22	18	4.30	D	59	106	0.062	106	0.006	1.40	0.008 (✓)	15	MUDSTONE	**B**
BH22	18	4.30	A	106	49	0.046	81	0.007	1.24	0.009 (✓)	15	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.01** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.12** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH22	21	6.30	D	56	105	0.042	105	0.004	1.40	0.005 (✓)	13	MUDSTONE	**B**
BH22	21	6.30	A	105	56	0.196	87	0.03	1.28	0.03 (✓)	13	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.03** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **6.3** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Contract: **EMG Phase 2**			

DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH22	24	8.33	D	58	106	0.198	106	0.02	1.40	0.02 (✓)	12	MUDSTONE	**B**
BH22	24	8.33	I	73	52	0.222	70	0.05	1.16	0.05	12	MUDSTONE	**B**

Results

$I_s(50)$ Mean Diametral tests = **0.02** MN/m^2
$I_s(50)$ Mean Irregular tests = **0.05** MN/m^2
Unable to calculate $I_a(50)$ Strength Anisotropy Index from this dataset.
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

Type of Test column:, A = Axial, D = Diametral, I = Irregular, B = Block, L = Parallel, P = Perpendicular, [NS] denotes Non-standard Test.
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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH22	27	10.75	D	64	105	0.178	105	0.02	1.40	0.02 (✓)	13	MUDSTONE	**B**
BH22	27	10.75	A	105	58	0.110	88	0.01	1.29	0.02 (✓)	13	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.02** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.02** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.23** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

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Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH22	29	12.15	D	60	105	0.040	105	0.004	1.40	0.005 (✓)	5.3	MUDSTONE	**B**
BH22	29	12.15	A	105	64	10.908	93	1.27	1.32	1.68 (✓)	5.3	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **1.68** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **331.9** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

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Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH22	35	16.28	D	60	105	0.546	105	0.05	1.40	0.07 (✓)	8.6	MUDSTONE	**B**
BH22	35	16.28	I	93	31	0.412	61	0.11	1.09	0.12	8.6	MUDSTONE	**B**

Results

$I_s(50)$ Mean Diametral tests = **0.07** MN/m^2
$I_s(50)$ Mean Irregular tests = **0.12** MN/m^2
Unable to calculate $I_a(50)$ Strength Anisotropy Index from this dataset.
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

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Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH23	32	14.60	D	60	105	0.036	105	0.003	1.40	0.005 (✓)	9.4	MUDSTONE	**B**
BH23	32	14.60	A	105	78	0.052	102	0.005	1.38	0.007 (✓)	9.4	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.01** MN/m^2
$I_s(50)$ Mean Diametral tests = **0** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.51** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
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Contract: **EMG Phase 2**

Contract Ref: **765514**

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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH23	33	15.65	D	73	106	4.830	106	0.43	1.40	0.60 (✓)	11	SANDSTONE	**B**
BH23	33	15.65	A	106	48	2.870	80	0.44	1.24	0.55 (✓)	11	SANDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.55** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.6** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.1** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH23	37	22.05	D	68	105	0.080	105	0.01	1.40	0.01 (✓)	12	MUDSTONE	**B**
BH23	37	22.05	A	105	80	0.204	103	0.02	1.39	0.03 (✓)	12	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.03** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **2.61** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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DETERMINATION OF POINT LOAD STRENGTH

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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH23	38	23.65	D	55	105	0.078	105	0.007	1.40	0.010 (✓)	12	MUDSTONE	**B**
BH23	38	23.65	A	105	63	0.204	92	0.02	1.31	0.03 (✓)	12	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.03** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **3.22** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH23	39	25.40	D	58	105	0.178	105	0.02	1.40	0.02 (✓)	12	MUDSTONE	**B**
BH23	39	25.40	A	105	65	0.154	93	0.02	1.32	0.02 (✓)	12	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.02** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.02** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.04** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH23	41	27.60	D	62	105	0.096	105	0.01	1.40	0.01 (✓)	7.9	MUDSTONE	**B**
BH23	41	27.60	A	105	70	2.706	97	0.29	1.35	0.39 (✓)	7.9	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.39** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **32.01** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH24	25	5.41	A	105	98	0.020	114	0.002	1.45	0.002 (✓)	16	MUDSTONE	**B**
BH24	25	5.41	I	85	86	0.084	96	0.01	1.34	0.01	16	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0** MN/m^2
$I_s(50)$ Mean Irregular tests = **0.01** MN/m^2
Unable to calculate $I_a(50)$ Strength Anisotropy Index from this dataset.
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH24	27	6.39	D	66	104	0.152	104	0.01	1.39	0.02 (✓)	16	MUDSTONE	**B**
BH24	27	6.39	A	104	87	0.138	107	0.01	1.41	0.02 (✓)	16	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.02** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.02** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.16** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH24	28	7.55	D	84	100	0.062	100	0.006	1.37	0.008 (✓)	9.9	MUDSTONE	**B**
BH24	28	7.55	A	100	64	0.476	90	0.06	1.30	0.08 (✓)	9.9	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.08** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **9** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH24	29	9.42	D	60	105	0.962	105	0.09	1.40	0.12 (✓)	9.0	MUDSTONE	**B**
BH24	29	9.42	A	105	63	1.468	92	0.17	1.31	0.23 (✓)	9.0	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.23** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.12** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.88** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH24	30	11.48	D	59	105	0.054	105	0.005	1.40	0.007 (✓)	11	MUDSTONE	**B**
BH24	30	11.48	A	105	68	0.198	95	0.02	1.34	0.03 (✓)	11	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.03** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **4.26** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

Type of Test column:, A = Axial, D = Diametral, I = Irregular, B = Block, L = Parallel, P = Perpendicular, [NS] denotes Non-standard Test.
Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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Compiled By		Date	Contract Ref:
A.D.Frost	**ALAN FROST**	**16.03.23**	**765514**
Contract: **EMG Phase 2**			

DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH24	33	15.21	D	57	106	0.802	106	0.07	1.40	0.10 (✓)	14	MUDSTONE	**B**
BH24	33	15.21	A	106	66	1.674	94	0.19	1.33	0.25 (✓)	14	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.25** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.1** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **2.5** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

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Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH25	25	4.25	D	60	105	0.032	105	0.003	1.40	0.004 (✓)	9.6	MUDSTONE	**B**
BH25	25	4.25	A	105	62	0.898	91	0.11	1.31	0.14 (✓)	9.6	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.14** MN/m^2
$I_s(50)$ Mean Diametral tests = **0** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **35.01** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

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Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH25	27	7.84	D	70	105	0.022	105	0.002	1.40	0.003 (✓)	12	MUDSTONE	**B**
BH25	27	7.84	A	105	70	0.214	97	0.02	1.35	0.03 (✓)	12	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.03** MN/m^2
$I_s(50)$ Mean Diametral tests = **0** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **11.04** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

Type of Test column:, A = Axial, D = Diametral, I = Irregular, B = Block, L = Parallel, P = Perpendicular, [NS] denotes Non-standard Test.
Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH25	29	9.65	D	55	105	0.170	105	0.02	1.40	0.02 (✓)	9.4	MUDSTONE	**B**
BH25	29	9.65	A	105	64	0.590	93	0.07	1.32	0.09 (✓)	9.4	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.09** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.02** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **4.22** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

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Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH25	32	13.15	D	70	105	0.044	105	0.004	1.40	0.006 (✓)	14	MUDSTONE	**B**
BH25	32	13.15	A	105	85	0.130	107	0.01	1.41	0.02 (✓)	14	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.02** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **2.89** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH25	34	15.85	D	65	105	0.204	105	0.02	1.40	0.03 (✓)	9.2	MUDSTONE	**B**
BH25	34	15.85	A	105	90	0.176	110	0.01	1.42	0.02 (✓)	9.2	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.02** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.03** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.24** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

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Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH25	36	18.70	D	76	106	0.148	106	0.01	1.40	0.02 (✓)	10	MUDSTONE	**B**
BH25	36	18.70	A	106	107	0.214	120	0.01	1.48	0.02 (✓)	10	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.02** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.02** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.19** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH26	28	11.70	D	65	105	2.766	105	0.25	1.40	0.35 (✓)	15	SANDSTONE	**B**
BH26	28	11.70	A	105	54	1.246	85	0.17	1.27	0.22 (✓)	15	SANDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.22** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.35** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.6** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH26	30	13.00	D	60	106	2.504	106	0.22	1.40	0.31 (✓)	9.9	SANDSTONE	**B**
BH26	30	13.00	A	106	74	3.774	100	0.38	1.37	0.52 (✓)	9.9	SANDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.52** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.31** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.65** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH26	34	16.30	D	67	105	0.246	105	0.02	1.40	0.03 (✓)	9.7	MUDSTONE	**B**
BH26	34	16.30	A	105	57	0.116	87	0.02	1.29	0.02 (✓)	9.7	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.02** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.03** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.59** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH26	35	17.05	D	78	106	0.126	106	0.01	1.40	0.02 (✓)	10	MUDSTONE	**B**
BH26	35	17.05	A	106	65	0.152	94	0.02	1.33	0.02 (✓)	10	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.02** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.02** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.46** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH26	37	19.50	D	74	105	0.060	105	0.005	1.40	0.008 (✓)	18	MUDSTONE	**B**
BH26	37	19.50	A	105	101	0.266	116	0.02	1.46	0.03 (✓)	18	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.03** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.01** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **3.79** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

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Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH27	10	4.65	A	55	104	0.192	85	0.03	1.27	0.03 (✓)	5.9	MUDSTONE	**B**
BH27	10	4.65	A	34	104	0.262	67	0.06	1.14	0.07 (✓)	5.9	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.05** MN/m^2
Unable to calculate $I_a(50)$ Strength Anisotropy Index from this dataset.
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

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Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH27	11	5.90	D	53	106	0.126	106	0.01	1.40	0.02 (✓)	11	MUDSTONE	**B**
BH27	11	5.90	A	106	56	0.558	87	0.07	1.28	0.09 (✓)	11	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.09** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.02** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **6.02** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

Type of Test column:, A = Axial, D = Diametral, I = Irregular, B = Block, L = Parallel, P = Perpendicular, [NS] denotes Non-standard Test.
Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

Compiled By		Date	Contract Ref:
Daria Ignaczak	**DARIA IGNACZAK**	**23.03.23**	**765514**
Contract: **EMG Phase 2**			

DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH27	14	6.40	D	48	103	0.246	103	0.02	1.38	0.03 (✓)	6.9	MUDSTONE	**B**
BH27	14	6.40	A	103	51	0.321	82	0.05	1.25	0.06 (✓)	6.9	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.06** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.03** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.87** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

Type of Test column:, A = Axial, D = Diametral, I = Irregular, B = Block, L = Parallel, P = Perpendicular, [NS] denotes Non-standard Test.
Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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Daria Ignaczak	**DARIA IGNACZAK**	**23.03.23**	**765514**
Contract: **EMG Phase 2**			

DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH27	21	12.90	A+P	104	82	0.090	104	0.01	1.39	0.01 (✓)	12	MUDSTONE	**B**
BH27	21	12.90	I	36	60	0.042	52	0.02	1.02	0.02	12	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.01** MN/m^2
$I_s(50)$ Mean Irregular tests = **0.02** MN/m^2
Unable to calculate $I_a(50)$ Strength Anisotropy Index from this dataset.
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

Type of Test column:, A = Axial, D = Diametral, I = Irregular, B = Block, L = Parallel, P = Perpendicular, [NS] denotes Non-standard Test.
Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH27	25	15.65	I	35	24	0.096	33	0.09	0.83	0.07	13	MUDSTONE	**B**
BH27	25	15.65	I	29	22	0.124	29	0.15	0.78	0.12	13	MUDSTONE	**B**

Results

$I_s(50)$ Mean Irregular tests = **0.1** MN/m^2
Unable to calculate $I_a(50)$ Strength Anisotropy Index from this dataset.
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

Type of Test column:, A = Axial, D = Diametral, I = Irregular, B = Block, L = Parallel, P = Perpendicular, [NS] denotes Non-standard Test.
Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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Contract: **EMG Phase 2**			

DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH27	30	20.40	D+L	60	106	0.422	106	0.04	1.40	0.05 (✓)	14	MUDSTONE	**B**
BH27	30	20.40	A+P	106	92	0.528	111	0.04	1.43	0.06 (✓)	14	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.06** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.05** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.16** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

Type of Test column:, A = Axial, D = Diametral, I = Irregular, B = Block, L = Parallel, P = Perpendicular, [NS] denotes Non-standard Test.
Point Load Index column: (✓) = included in mean calculations, (χ) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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Contract: **EMG Phase 2**			

DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Water Content (%)	Rock Type	Lab location
BH27	35	27.50	D	60	107	3.330	107	0.29	1.41	0.41 (✓)	10	MUDSTONE	**B**
BH27	35	27.50	A	107	37	1.280	71	0.25	1.17	0.30 (✓)	10	MUDSTONE	**B**

Results

$I_s(50)$ Mean Axial tests = **0.3** MN/m^2
$I_s(50)$ Mean Diametral tests = **0.41** MN/m^2
$I_a(50)$ Strength Anisotropy Index = **1.38** (calculated from highest and lowest diametral and axial $I_s(50)$ ratio)
Note:Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

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Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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Compiled By		Date	Contract Ref:
Daria Ignaczak	**DARIA IGNACZAK**	**23.03.23**	**765514**
Contract: **EMG Phase 2**			

UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-19
Testing in accordance with ISRM 1974-2006

Borehole: **BH01** Sample Ref: **39** Sample Type: **C** Depth (m) : **28.61**

Bulk Density (Mg/m^3): **2.28** Dry Density (Mg/m^3): **2.00** Moisture Content (%): **14**
Length (mm): **188.24** Diameter (mm): **100.93** Length/Diameter Ratio: **1.87**
Test Duration (mins:secs): **13:04** Stress Rate (MPa/s): **0.0125** Load at Failure (kN): **1.6**
UCS (MPa): **0.2** Failure Type: **Multiple fracture**

Note: **Axis of loading parallel to core axis**
Description: **Reddish brown MUDSTONE**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.
Non-standard notes: **Length/diameter ratio <2:1**

Front view (pre-test)

Rear view (pre-test)

Front view (post-test)

Rear view (post-test)

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

Compiled By		Date
D. Richards	**DAISY RICHARDS**	**16/03/23**

Contract	Job No
EMG Phase 2	**765514**

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UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-19
Testing in accordance with ISRM 1974-2006

Borehole: **BH05** Sample Ref: **52** Sample Type: **C** Depth (m) : **23.00**

Bulk Density (Mg/m^3): **2.33** Dry Density (Mg/m^3): **2.13** Moisture Content (%): **9.7**
Length (mm): **209.56** Diameter (mm): **105.97** Length/Diameter Ratio: **1.98**
Test Duration (mins:secs): **03:58** Stress Rate (MPa/s): **0.0227** Load at Failure (kN): **59.0**
UCS (MPa): **6.7** Failure Type: **Multiple fracture**

Note: **Axis of loading parallel to core axis**
Description: **Grey SILTSTONE**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.
Non-standard notes: **Length/diameter ratio <2:1**

Front view (pre-test)

Rear view (pre-test)

Front view (post-test)

Rear view (post-test)

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

STRUCTURAL SOILS
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Bristol
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Compiled By		Date
D. Richards	**DAISY RICHARDS**	**16/03/23**

Contract	Job No
EMG Phase 2	**765514**

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UNIAXIAL COMPRESSIVE STRENGTH

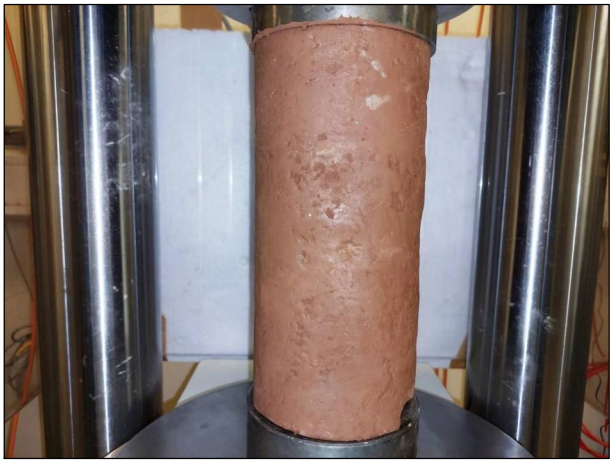
Preparation in accordance with ASTM D4543-19
Testing in accordance with ISRM 1974-2006

Borehole: **BH06** Sample Ref: **64** Sample Type: **C** Depth (m) : **30.10**

Bulk Density (Mg/m^3): **2.22** Dry Density (Mg/m^3): **1.95** Moisture Content (%): **14**
Length (mm): **211.59** Diameter (mm): **102.09** Length/Diameter Ratio: **2.07**
Test Duration (mins:secs): **0:49** Stress Rate (MPa/s): **0.0061** Load at Failure (kN): **2.4**
UCS (MPa): **0.3** Failure Type: **Vertical splitting**

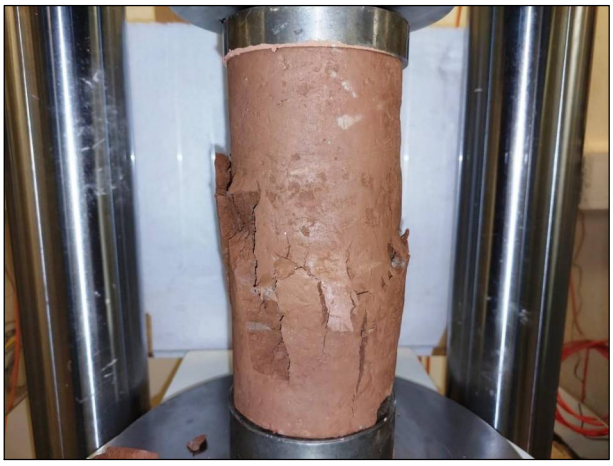
Note: **Axis of loading parallel to core axis**
Description: **Reddish brown MUDSTONE**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Front view (pre-test)



Rear view (pre-test)

Front view (post-test)



Rear view (post-test)

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

STRUCTURAL SOILS 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By	Date
	DAISY RICHARDS	16/03/23
	Contract: **EMG Phase 2**	Job No: **765514**

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UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-19
Testing in accordance with ISRM 1974-2006

Borehole: **BH08** Sample Ref: **46** Sample Type: **C** Depth (m) : **22.70**

Bulk Density (Mg/m^3): **2.47** Dry Density (Mg/m^3): **2.33** Moisture Content (%): **6.1**
Length (mm): **211.82** Diameter (mm): **105.37** Length/Diameter Ratio: **2.01**
Test Duration (mins:secs): **09:19** Stress Rate (MPa/s): **0.0115** Load at Failure (kN): **64.8**
UCS (MPa): **7.4** Failure Type: **Vertical splitting**

Note: **Axis of loading parallel to core axis**
Description: **Reddish brown mottled grey SILTSTONE**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Front view (pre-test)

Rear view (pre-test)

Front view (post-test)

Rear view (post-test)

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

STRUCTURAL SOILS
1a Princess Street
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Compiled By		Date
Francesca Bennett	FRANCESCA BENNETT	16/03/23
Contract: **EMG Phase 2**	Job No: **765514**	

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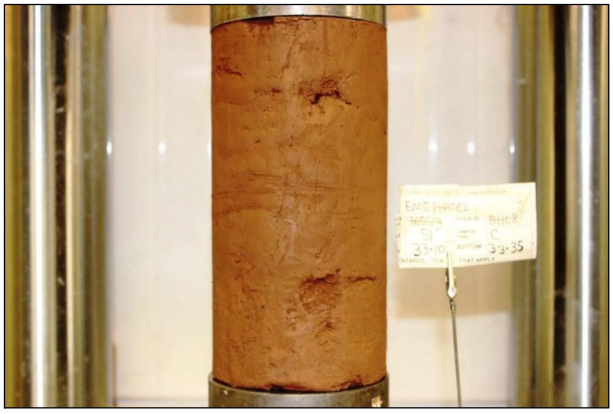
UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-19
Testing in accordance with ISRM 1974-2006

Borehole: **BH08** Sample Ref: **51** Sample Type: **C** Depth (m) : **33.10**

Bulk Density (Mg/m^3): **2.23** Dry Density (Mg/m^3): **1.94** Moisture Content (%): **15**
Length (mm): **205.26** Diameter (mm): **104.74** Length/Diameter Ratio: **1.96**
Test Duration (mins:secs): **05:08** Stress Rate (MPa/s): **0.0035** Load at Failure (kN): **2.7**
UCS (MPa): **0.3** Failure Type: **Vertical splitting**

Note: **Axis of loading parallel to core axis**
Description: **Reddish brown MUDSTONE**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.
Non-standard notes: **Length : Diameter ratio < 2:1**



Front view (pre-test)

Rear view (pre-test)

Front view (post-test)

Rear view (post-test)

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

STRUCTURAL SOILS
1a Princess Street
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Compiled By		Date
	DAISY RICHARDS	16/03/23

Contract	Job No
EMG Phase 2	765514

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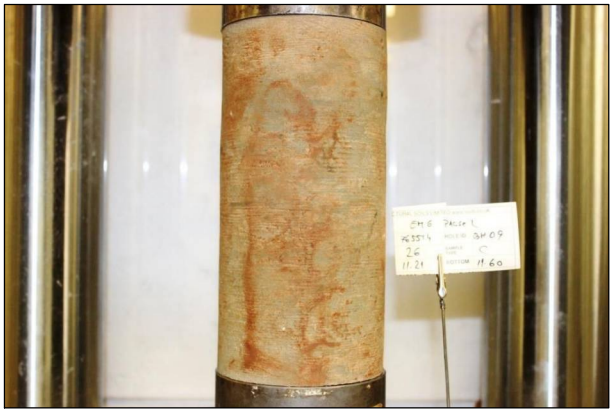
UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-19
Testing in accordance with ISRM 1974-2006

Borehole: **BH09** Sample Ref: **44** Sample Type: **C** Depth (m) : **11.21**

Bulk Density (Mg/m^3): **2.45** Dry Density (Mg/m^3): **2.29** Moisture Content (%): **6.8**
Length (mm): **215.64** Diameter (mm): **105.72** Length/Diameter Ratio: **2.04**
Test Duration (mins:secs): **09:36** Stress Rate (MPa/s): **0.0911** Load at Failure (kN): **263.8**
UCS (MPa): **30.1** Failure Type: **Multiple fracture**

Note: **Axis of loading parallel to core axis**
Description: **Grey SILTSTONE**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.



Front view (pre-test)

Rear view (pre-test)

Front view (post-test)

Rear view (post-test)

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

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Compiled By		Date
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Contract: EMG Phase 2	Job No: 765514	

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UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-19
Testing in accordance with ISRM 1974-2006

Borehole: **BH09** Sample Ref: **51** Sample Type: **C** Depth (m) : **19.96**

Bulk Density (Mg/m^3): **2.25** Dry Density (Mg/m^3): **2.01** Moisture Content (%): **12**
Length (mm): **217.22** Diameter (mm): **105.88** Length/Diameter Ratio: **2.05**
Test Duration (mins:secs): **02:35** Stress Rate (MPa/s): **0.0114** Load at Failure (kN): **4.1**
UCS (MPa): **0.5** Failure Type: **Multiple fracture**

Note: **Axis of loading parallel to core axis**
Description: **Reddish brown mottled grey MUDSTONE**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Front view (pre-test)

Rear view (pre-test)

Front view (post-test)

Rear view (post-test)

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

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Compiled By		Date
D. Richards	**DAISY RICHARDS**	**16/03/23**

Contract	Job No
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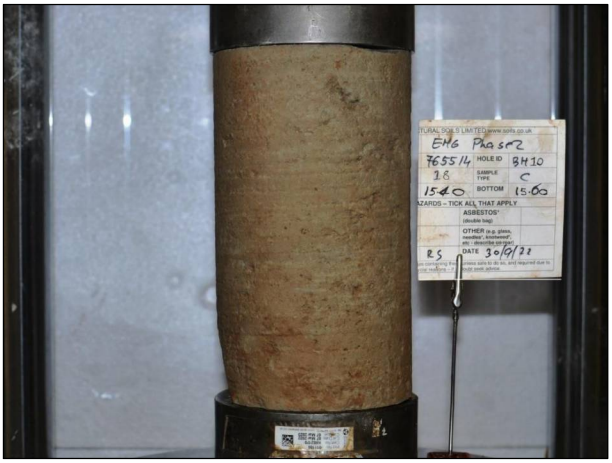
UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-19
Testing in accordance with ISRM 1974-2006

Borehole: **BH10** Sample Ref: **18** Sample Type: **C** Depth (m) : **15.40**

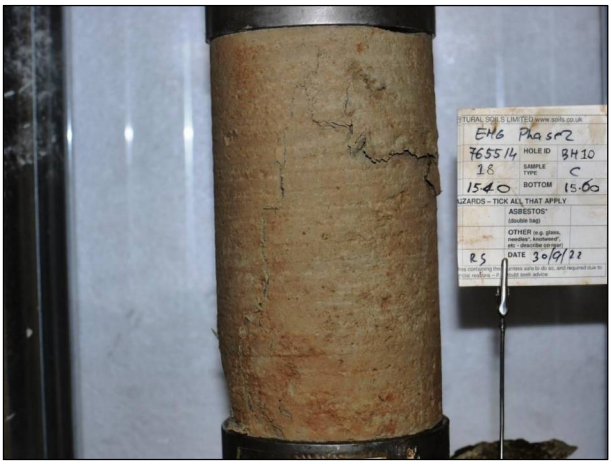
Bulk Density (Mg/m^3): **2.35** Dry Density (Mg/m^3): **2.11** Moisture Content (%): **11**
Length (mm): **183.66** Diameter (mm): **104.00** Length/Diameter Ratio: **1.77**
Test Duration (mins:secs): **05:44** Stress Rate (MPa/s): **0.0235** Load at Failure (kN): **51.7**
UCS (MPa): **6.1** Failure Type: **Multiple fracture**

Note: **Axis of loading parallel to core axis**
Description: **Brownish grey SILTSTONE**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.
Non-standard notes: **Length/diameter ratio <2:1**



Front view (pre-test)

Rear view (pre-test)



Front view (post-test)

Rear view (post-test)

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

Compiled By		Date
D. Richards	**DAISY RICHARDS**	**16/03/23**
Contract: **EMG Phase 2**	Job No: **765514**	

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UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-19
Testing in accordance with ISRM 1974-2006

Borehole: **BH10** Sample Ref: **19** Sample Type: **C** Depth (m) : **16.27**

Bulk Density (Mg/m^3): **2.45** Dry Density (Mg/m^3): **2.29** Moisture Content (%): **7.1**
Length (mm): **211.30** Diameter (mm): **105.81** Length/Diameter Ratio: **2.00**
Test Duration (mins:secs): **21:35** Stress Rate (MPa/s): **0.0569** Load at Failure (kN): **508.3**
UCS (MPa): **57.8** Failure Type: **Multiple fracture**

Note: **Axis of loading parallel to core axis**
Description: **Grey SANDSTONE**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Front view (pre-test)

Rear view (pre-test)

Front view (post-test)

Rear view (post-test)

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

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Compiled By		Date
D. Richards	**DAISY RICHARDS**	**16/03/23**
Contract: **EMG Phase 2**	Job No: **765514**	

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UNIAXIAL COMPRESSIVE STRENGTH

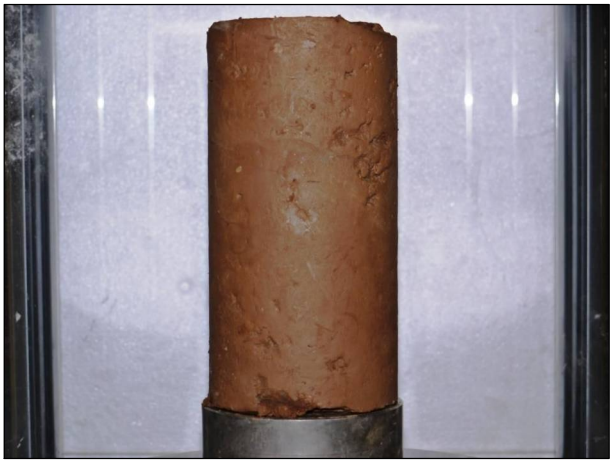
Preparation in accordance with ASTM D4543-19
Testing in accordance with ISRM 1974-2006

Borehole: **BH12** Sample Ref: **57** Sample Type: **C** Depth (m) : **20.50**

Bulk Density (Mg/m^3): **2.34** Dry Density (Mg/m^3): **2.05** Moisture Content (%): **14**
Length (mm): **204.20** Diameter (mm): **100.02** Length/Diameter Ratio: **2.04**
Test Duration (mins:secs): **01:36** Stress Rate (MPa/s): **0.0127** Load at Failure (kN): **1.8**
UCS (MPa): **0.2** Failure Type: **Multiple fracture**

Note: **Axis of loading parallel to core axis**
Description: **Reddish brown MUDSTONE**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Front view (pre-test)



Rear view (pre-test)

Front view (post-test)

Rear view (post-test)

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

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D. Richards	**DAISY RICHARDS**	**16/03/23**
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UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-19
Testing in accordance with ISRM 1974-2006

Borehole: **BH13** Sample Ref: **46** Sample Type: **C** Depth (m) : **24.82**

Bulk Density (Mg/m^3): **2.29** Dry Density (Mg/m^3): **2.04** Moisture Content (%): **12**
Length (mm): **209.53** Diameter (mm): **105.05** Length/Diameter Ratio: **1.99**
Test Duration (mins:secs): **05:38** Stress Rate (MPa/s): **0.0231** Load at Failure (kN): **55.7**
UCS (MPa): **6.4** Failure Type: **Vertical splitting**

Note: **Axis of loading parallel to core axis**
Description: **Reddish brown MUDSTONE**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.
Non-standard notes: **Length/diameter ratio <2:1**

Front view (pre-test)

Rear view (pre-test)

Front view (post-test)

Rear view (post-test)

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

STRUCTURAL SOILS
1a Princess Street
Bedminster
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Compiled By		Date
D. Richards	**DAISY RICHARDS**	**16/03/23**

Contract	Job No
EMG Phase 2	**765514**

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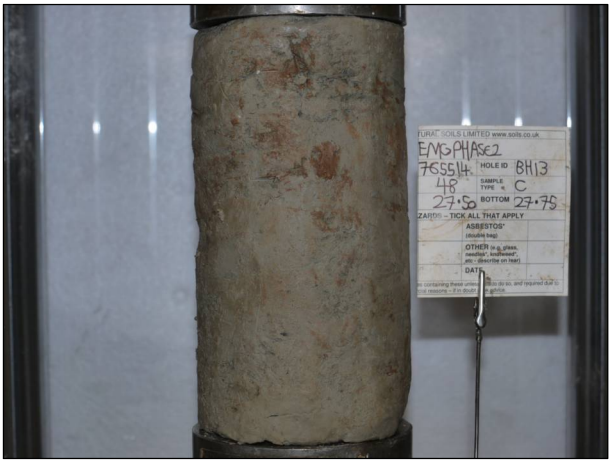
UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-19
Testing in accordance with ISRM 1974-2006

Borehole: **BH13** Sample Ref: **48** Sample Type: **C** Depth (m) : **27.50**

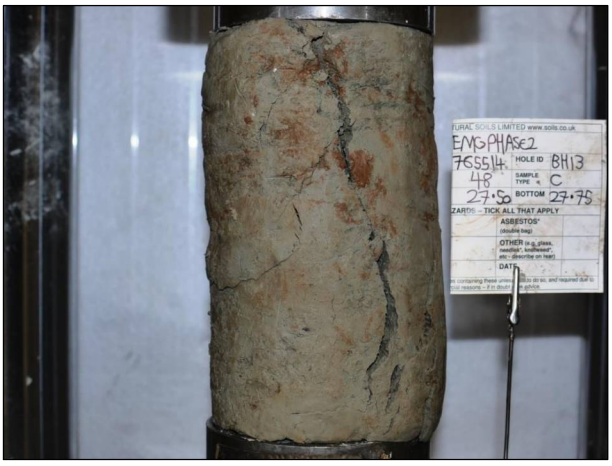
Bulk Density (Mg/m^3): **2.20** Dry Density (Mg/m^3): **1.82** Moisture Content (%): **21**
Length (mm): **197.67** Diameter (mm): **102.42** Length/Diameter Ratio: **1.93**
Test Duration (mins:secs): **06:40** Stress Rate (MPa/s): **0.0121** Load at Failure (kN): **6.4**
UCS (MPa): **0.8** Failure Type: **Vertical splitting**

Note: **Axis of loading parallel to core axis**
Description: **Grey mottled reddish brown MUDSTONE**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.
Non-standard notes: **Length/diameter ratio <2:1**



Front view (pre-test)

Rear view (pre-test)



Front view (post-test)

Rear view (post-test)

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

Compiled By		Date
D. Richards	**DAISY RICHARDS**	**16/03/23**

Contract	Job No
EMG Phase 2	**765514**

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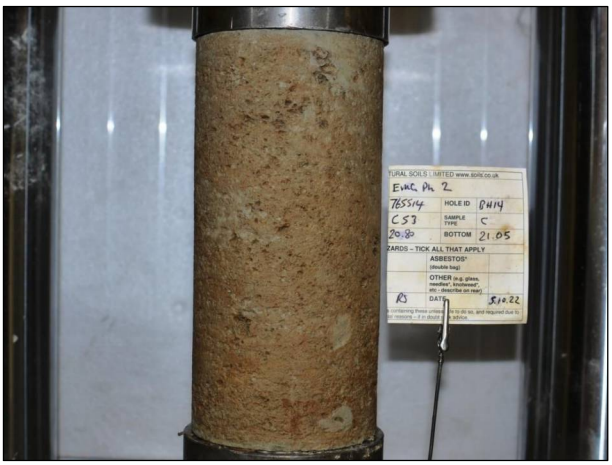
UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-19
Testing in accordance with ISRM 1974-2006

Borehole: **BH14** Sample Ref: **53** Sample Type: **C** Depth (m) : **20.80**

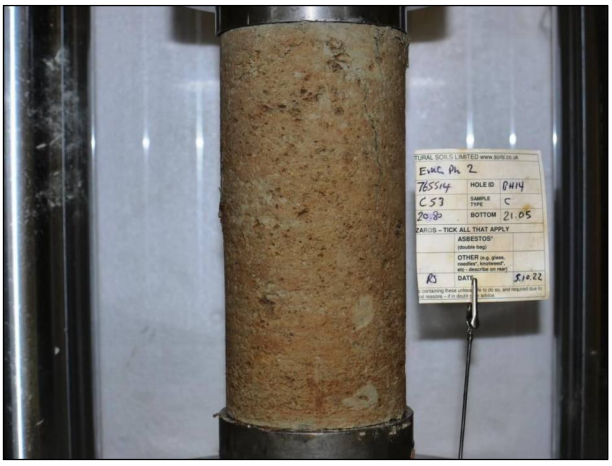
Bulk Density (Mg/m^3): **2.26** Dry Density (Mg/m^3): **1.98** Moisture Content (%): **14**
Length (mm): **211.85** Diameter (mm): **100.88** Length/Diameter Ratio: **2.10**
Test Duration (mins:secs): **04:41** Stress Rate (MPa/s): **0.0250** Load at Failure (kN): **48.5**
UCS (MPa): **6.1** Failure Type: **Vertical splitting**

Note: **Axis of loading parallel to core axis**
Description: **Grey SILTSTONE**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.



Front view (pre-test)

Rear view (pre-test)



Front view (post-test)

Rear view (post-test)

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

STRUCTURAL SOILS
1a Princess Street
Bedminster
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Compiled By		Date
Francesca Bennett	**FRANCESCA BENNETT**	**16/03/23**

Contract	Job No
EMG Phase 2	**765514**

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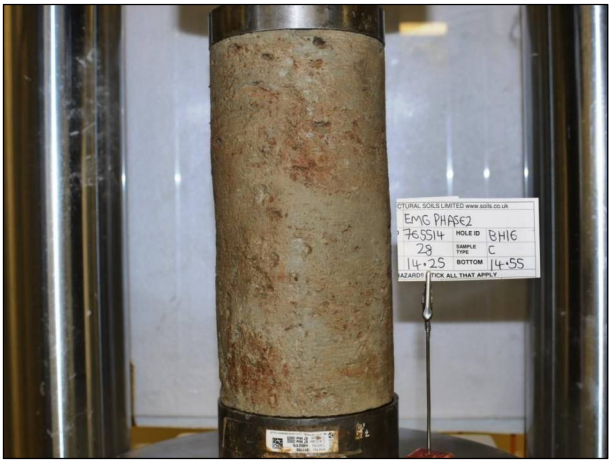
UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-19
Testing in accordance with ISRM 1974-2006

Borehole: **BH16** Sample Ref: **28** Sample Type: **C** Depth (m) : **14.25**

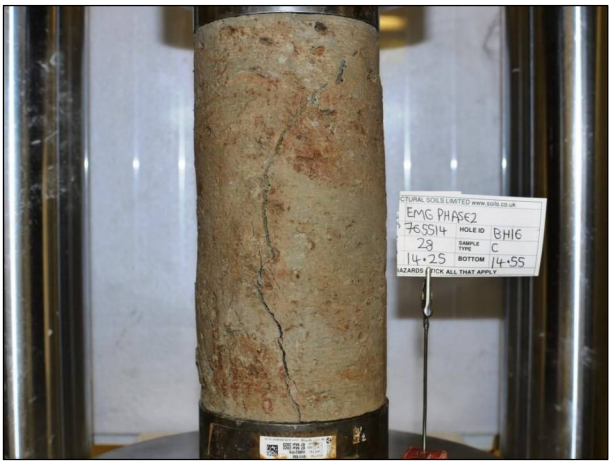
Bulk Density (Mg/m^3): **2.30** Dry Density (Mg/m^3): **2.07** Moisture Content (%): **11**
Length (mm): **210.77** Diameter (mm): **105.25** Length/Diameter Ratio: **2.00**
Test Duration (mins:secs): **07:20** Stress Rate (MPa/s): **0.0230** Load at Failure (kN): **29.2**
UCS (MPa): **3.4** Failure Type: **Vertical splitting**

Note: **Axis of loading parallel to core axis**
Description: **Grey SILTSTONE**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.



Front view (pre-test)

Rear view (pre-test)



Front view (post-test)

Rear view (post-test)

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

STRUCTURAL SOILS
1a Princess Street
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Compiled By		Date
Francesca Bennett	FRANCESCA BENNETT	16/03/23
Contract: **EMG Phase 2**	Job No: **765514**	

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UNIAXIAL COMPRESSIVE STRENGTH

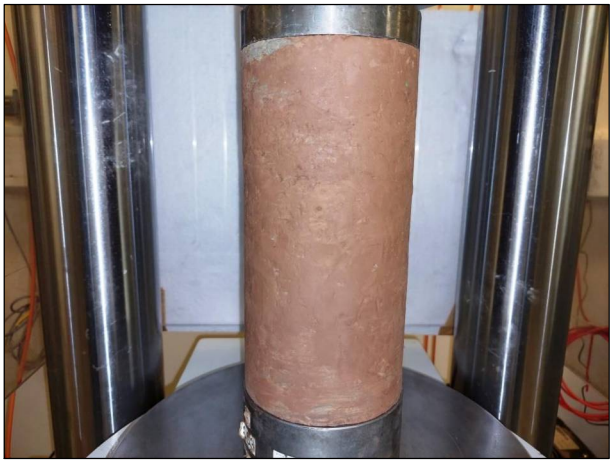
Preparation in accordance with ASTM D4543-19
Testing in accordance with ISRM 1974-2006

Borehole: **BH20** Sample Ref: **39** Sample Type: **C** Depth (m) : **21.60**

Bulk Density (Mg/m^3): **2.38** Dry Density (Mg/m^3): **2.18** Moisture Content (%): **9.3**
Length (mm): **213.29** Diameter (mm): **105.91** Length/Diameter Ratio: **2.01**
Test Duration (mins:secs): **05:15** Stress Rate (MPa/s): **0.0227** Load at Failure (kN): **48.2**
UCS (MPa): **5.5** Failure Type: **Vertical splitting**

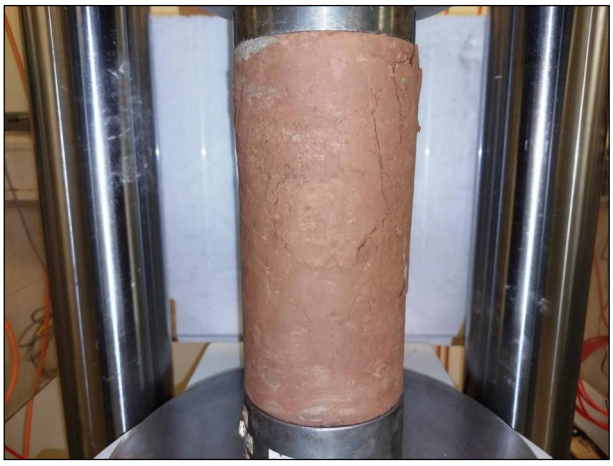
Note: **Axis of loading parallel to core axis**
Description: **Reddish brown mottled grey MUDSTONE**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Front view (pre-test)



Rear view (pre-test)

Front view (post-test)



Rear view (post-test)

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

STRUCTURAL SOILS
1a Princess Street
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Compiled By		Date
D. Richards	DAISY RICHARDS	16/03/23
Contract: EMG Phase 2		Job No: 765514

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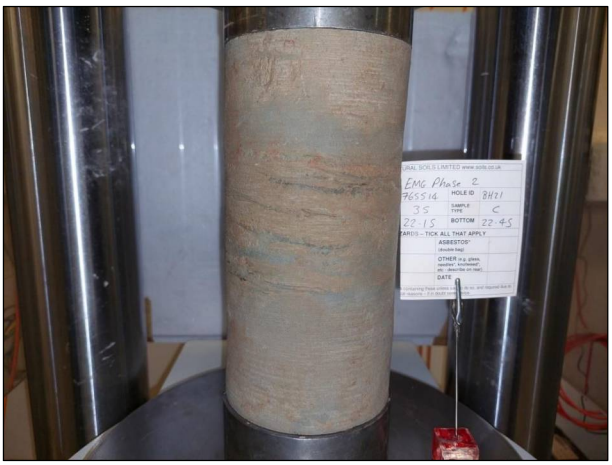
UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-19
Testing in accordance with ISRM 1974-2006

Borehole: **BH21** Sample Ref: **35** Sample Type: **C** Depth (m) : **22.15**

Bulk Density (Mg/m^3): **2.35** Dry Density (Mg/m^3): **2.16** Moisture Content (%): **8.8**
Length (mm): **209.32** Diameter (mm): **106.23** Length/Diameter Ratio: **1.97**
Test Duration (mins:secs): **04:50** Stress Rate (MPa/s): **0.0564** Load at Failure (kN): **92.7**
UCS (MPa): **10.5** Failure Type: **Vertical splitting**

Note: **Axis of loading parallel to core axis**
Description: **Grey SILTSTONE**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.
Non-standard notes: **Length/diameter ratio <2:1**



Front view (pre-test)

Rear view (pre-test)

Front view (post-test)

Rear view (post-test)

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

STRUCTURAL SOILS
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Compiled By		Date
D. Richards	**DAISY RICHARDS**	**16/03/23**
Contract: **EMG Phase 2**	Job No: **765514**	

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UNIAXIAL COMPRESSIVE STRENGTH

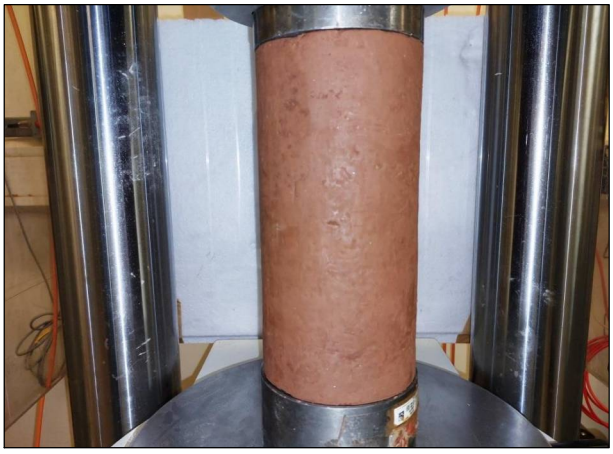
Preparation in accordance with ASTM D4543-19
Testing in accordance with ISRM 1974-2006

Borehole: **BH21** Sample Ref: **40** Sample Type: **C** Depth (m) : **29.00**

Bulk Density (Mg/m^3): **2.33** Dry Density (Mg/m^3): **2.08** Moisture Content (%): **12**
Length (mm): **212.46** Diameter (mm): **105.33** Length/Diameter Ratio: **2.02**
Test Duration (mins:secs): **01:20** Stress Rate (MPa/s): **0.0057** Load at Failure (kN): **3.7**
UCS (MPa): **0.4** Failure Type: **Multiple fracture**

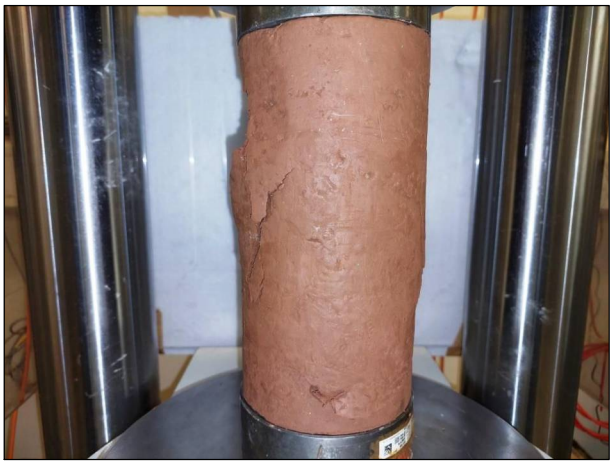
Note: **Axis of loading parallel to core axis**
Description: **Reddish brown MUDSTONE**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Front view (pre-test)



Rear view (pre-test)

Front view (post-test)



Rear view (post-test)

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

STRUCTURAL SOILS
1a Princess Street
Bedminster
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Compiled By		Date
D. Richards	DAISY RICHARDS	16/03/23
Contract: EMG Phase 2		Job No: 765514

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UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-19
Testing in accordance with ISRM 1974-2006

Borehole: **BH24** Sample Ref: **34** Sample Type: **C** Depth (m) : **16.81**

Bulk Density (Mg/m^3): **2.40** Dry Density (Mg/m^3): **2.18** Moisture Content (%): **10**
Length (mm): **211.33** Diameter (mm): **104.95** Length/Diameter Ratio: **2.01**
Test Duration (mins:secs): **03:46** Stress Rate (MPa/s): **0.0231** Load at Failure (kN): **1.4**
UCS (MPa): **0.2** Failure Type: **Multiple fracture**

Note: **Axis of loading parallel to core axis**
Description: **Reddish brown MUDSTONE**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Front view (pre-test)

Rear view (pre-test)

Front view (post-test)

Rear view (post-test)

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

Compiled By		Date
Francesca Bennett	FRANCESCA BENNETT	16/03/23

Contract	Job No
EMG Phase 2	765514

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | GrfcText L - UCS STRESS CONTROL - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Web: www.soils.co.uk, Email: ask@soils.co.uk. | 16/03/23 - 12:43 | AF3 |

UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-19
Testing in accordance with ISRM 1974-2006

Borehole: **BH24** Sample Ref: **36** Sample Type: **C** Depth (m) : **19.30**

Bulk Density (Mg/m^3): **2.37** Dry Density (Mg/m^3): **2.12** Moisture Content (%): **12**
Length (mm): **190.39** Diameter (mm): **104.38** Length/Diameter Ratio: **1.82**
Test Duration (mins:secs): **02:34** Stress Rate (MPa/s): **0.0234** Load at Failure (kN): **3.3**
UCS (MPa): **0.4** Failure Type: **Multiple fracture**

Note: **Axis of loading parallel to core axis**
Description: **Reddish brown MUDSTONE**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.
Non-standard notes: **Length/diameter ratio <2:1**

Front view (pre-test)

Rear view (pre-test)

Front view (post-test)

Rear view (post-test)

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

Compiled By		Date
D. Richards	**DAISY RICHARDS**	**16/03/23**

Contract	Job No
EMG Phase 2	**765514**

AGS

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | GrfcText L - UCS STRESS CONTROL - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Web: www.soils.co.uk, Email: ask@soils.co.uk. | 16/03/23 - 12:43 | AF3 |

UNIAXIAL COMPRESSIVE STRENGTH

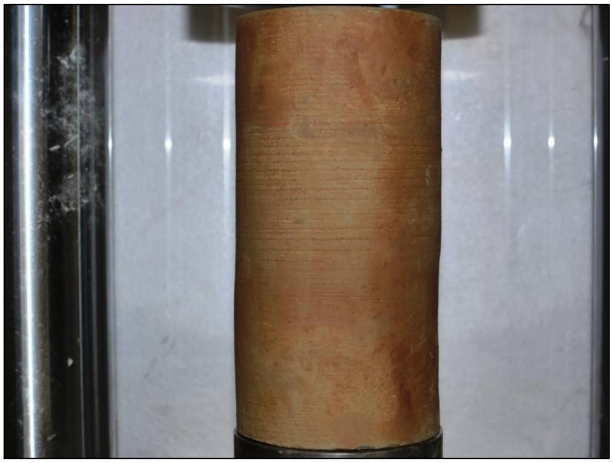
Preparation in accordance with ASTM D4543-19
Testing in accordance with ISRM 1974-2006

Borehole: **BH25** Sample Ref: **31** Sample Type: **C** Depth (m) : **11.60**

Bulk Density (Mg/m^3): **2.41** Dry Density (Mg/m^3): **2.22** Moisture Content (%): **8.7**
Length (mm): **212.47** Diameter (mm): **105.71** Length/Diameter Ratio: **2.01**
Test Duration (mins:secs): **14:52** Stress Rate (MPa/s): **0.0285** Load at Failure (kN): **261.2**
UCS (MPa): **29.8** Failure Type: **Multiple fracture**

Note: **Axis of loading parallel to core axis**
Description: **Grey SILTSTONE**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Front view (pre-test)



Rear view (pre-test)

Front view (post-test)

Rear view (post-test)

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

Compiled By		Date
Francesca Bennett	**FRANCESCA BENNETT**	**16/03/23**

Contract	Job No
EMG Phase 2	**765514**

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | GrfcText L - UCS STRESS CONTROL - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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UNIAXIAL COMPRESSIVE STRENGTH

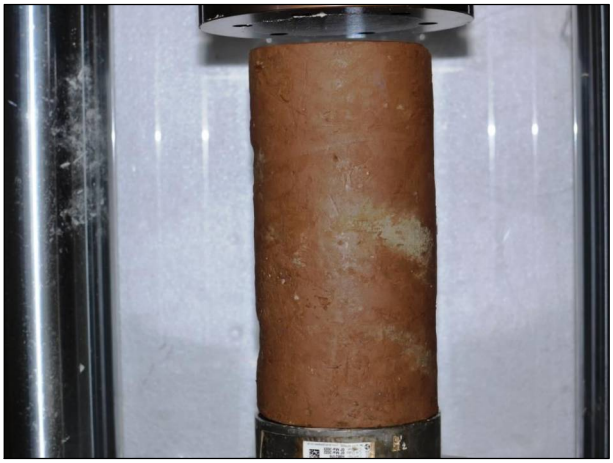
Preparation in accordance with ASTM D4543-19
Testing in accordance with ISRM 1974-2006

Borehole: **BH26** Sample Ref: **31** Sample Type: **C** Depth (m) : **13.75**

Bulk Density (Mg/m^3): **2.34** Dry Density (Mg/m^3): **2.07** Moisture Content (%): **13**
Length (mm): **212.10** Diameter (mm): **104.84** Length/Diameter Ratio: **2.02**
Test Duration (mins:secs): **03:26** Stress Rate (MPa/s): **0.0232** Load at Failure (kN): **2.1**
UCS (MPa): **0.2** Failure Type: **Multiple fracture**

Note: **Axis of loading parallel to core axis**
Description: **Reddish brown MUDSTONE**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Front view (pre-test)



Rear view (pre-test)

Front view (post-test)

Rear view (post-test)

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

Compiled By		Date
Francesca Bennett	FRANCESCA BENNETT	16/03/23
Contract: **EMG Phase 2**	Job No: **765514**	

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | GrfcText L - UCS STRESS CONTROL - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Web: www.soils.co.uk, Email: ask@soils.co.uk. | 16/03/23 - 12:43 | AF3 |

UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-19
Testing in accordance with ISRM 1974-2006

Borehole: **BH27** Sample Ref: **15** Sample Type: **C** Depth (m) : **8.60**

Bulk Density (Mg/m^3): **2.42** Dry Density (Mg/m^3): **2.24** Moisture Content (%): **7.8**
Length (mm): **207.19** Diameter (mm): **106.31** Length/Diameter Ratio: **1.95**
Test Duration (mins:secs): **07:12** Stress Rate (MPa/s): **0.0225** Load at Failure (kN): **88.8**
UCS (MPa): **10.0** Failure Type: **Vertical splitting**

Note: **Axis of loading parallel to core axis**
Description: **Reddish brown MUDSTONE**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.
Non-standard notes: **Length/diameter ratio <2:1**

Front view (pre-test)

Rear view (pre-test)

Front view (post-test)

Rear view (post-test)

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

Compiled By		Date
Daria Jagnaczak	DARIA IGNACZAK	23/03/23

Contract	Job No
EMG Phase 2	765514

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | GrfcText L - UCS STRESS CONTROL - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-19
Testing in accordance with ISRM 1974-2006

Borehole: **BH27** Sample Ref: **31** Sample Type: **C** Depth (m) : **21.85**

Bulk Density (Mg/m^3): **2.48** Dry Density (Mg/m^3): **2.30** Moisture Content (%): **7.9**
Length (mm): **215.38** Diameter (mm): **105.74** Length/Diameter Ratio: **2.04**
Test Duration (mins:secs): **10:30** Stress Rate (MPa/s): **0.0342** Load at Failure (kN): **214.3**
UCS (MPa): **24.4** Failure Type: **Vertical splitting**

Note: **Axis of loading parallel to core axis**
Description: **Reddish brown MUDSTONE**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **PASS**. Flatness: **PASS**. Perpendicularity: **PASS**.

Front view (pre-test)

Rear view (pre-test)

Front view (post-test)

Rear view (post-test)

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

Compiled By		Date
Daria Ignaczak	DARIA IGNACZAK	23/03/23
Contract: **EMG Phase 2**	Job No: **765514**	

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | GrfcText L - UCS STRESS CONTROL - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
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DEFORMABILITY OF ROCK IN UNIAXIAL COMPRESSION

Preparation in accordance with ASTM D4543-19
Testing in accordance with ISRM 1974-2006

Borehole: **BH10** Sample Ref: **21** Sample Type: **C** Depth (m): **17.84**

Bulk Density (Mg/m^3): **2.30** Dry Density (Mg/m^3): **2.03** Moisture Content (%): **13**
Length (mm): **209.86** Diameter (mm): **105.62** Length/Diameter Ratio: **1.99**
Test Duration (mins:secs): **01:20** Stress Rate (MPa/s): **0.0114** Load at Failure (kN): **3.8**
UCS (MPa): **0.4** Failure Type: **Multiple fracture**

Note: **Axis of loading parallel to core axis**
Description: **Reddish brown MUDSTONE**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.
Non-standard notes: **Length/diameter ratio <2:1**

Front view (pre-test)

Rear view (pre-test)

Front view (post-test)

Rear view (post-test)

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

Compiled By		Date
D. Richards	DAISY RICHARDS	16/03/23
Contract: **EMG Phase 2**	Job No: **765514**	

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | GrfcText L - UCS WITH DEFORMATION - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01.
Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Web: www.soils.co.uk, Email: ask@soils.co.uk. | 16/03/23 - 12:57 | AF3 |

STRUCTURAL SOILS
1A Princess Street
Bristol BS3 4AG

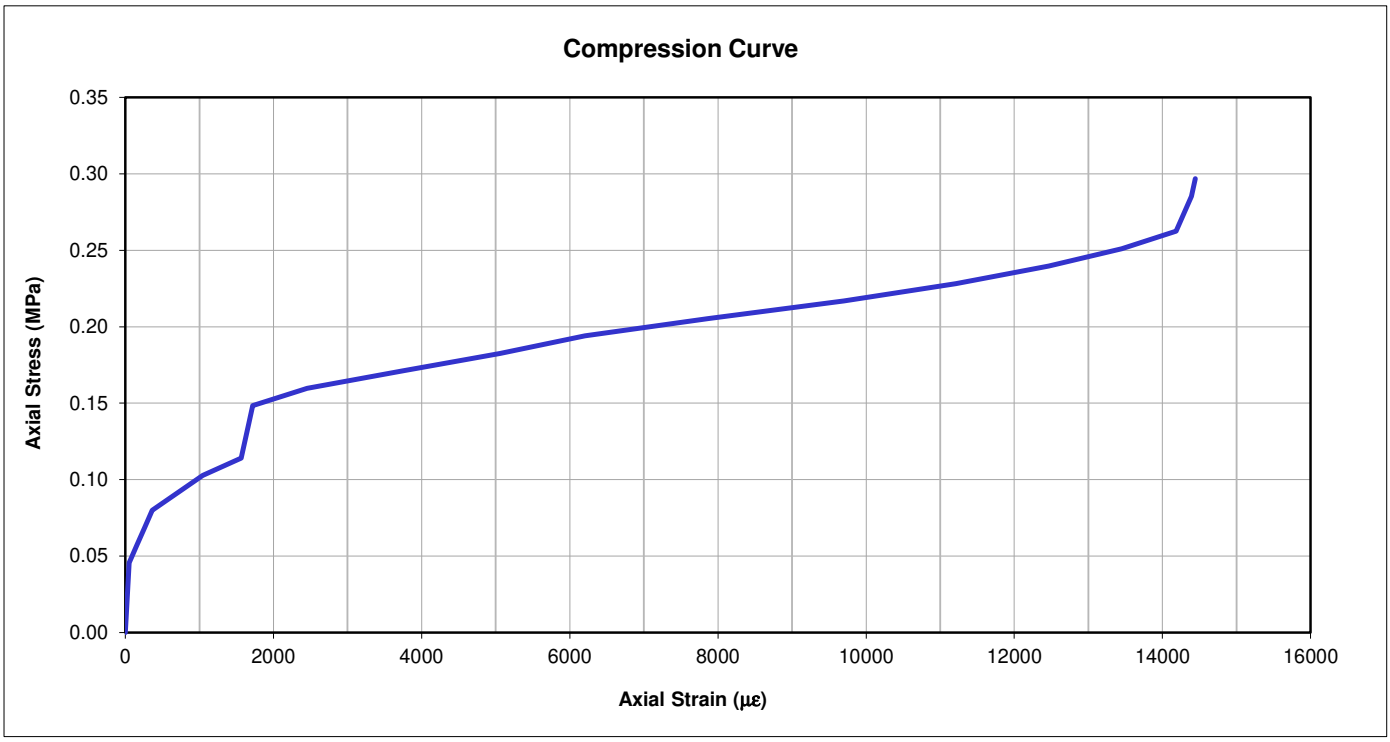
Test Date 03/02/2023

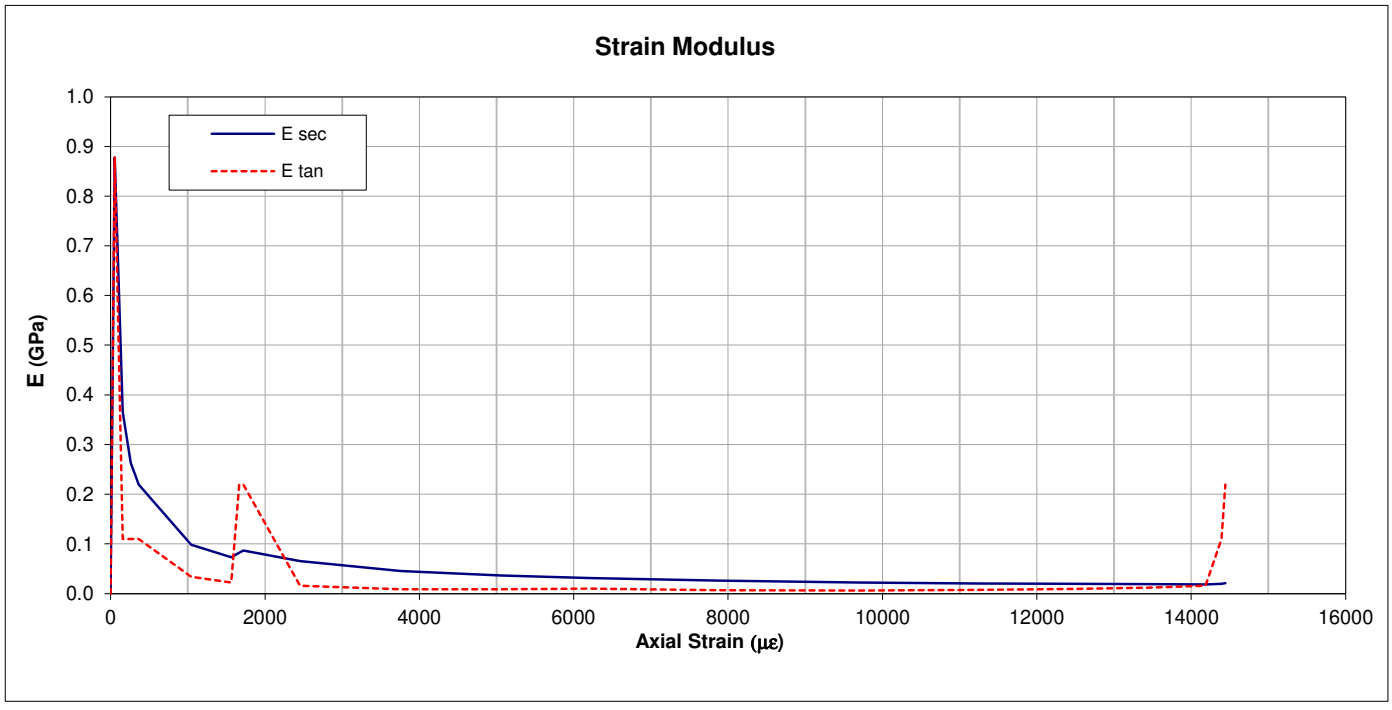
UNIAXIAL COMPRESSION TEST with DEFORMATION

In accordance with ISRM 1974-2006

Job No	765514	Cross section area	87.62 cm^2
Site	EMG Phase 2	Height	209.86 mm
BH No	BH10	Max logged strength	0.30 MPa
Specimen Depth	17.84 - 18.28m	E_{tan} (*)	0.22 GPa
Sample Type/No.	C21	E_{sec} (^)	0.09 GPa
(*) Calculated for axial σ =	0.15 MPa		
(^) Calculated for axial σ =	0.15 MPa		

NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen





STRUCTURAL SOILS
1A Princess Street
Bristol BS3 4AG

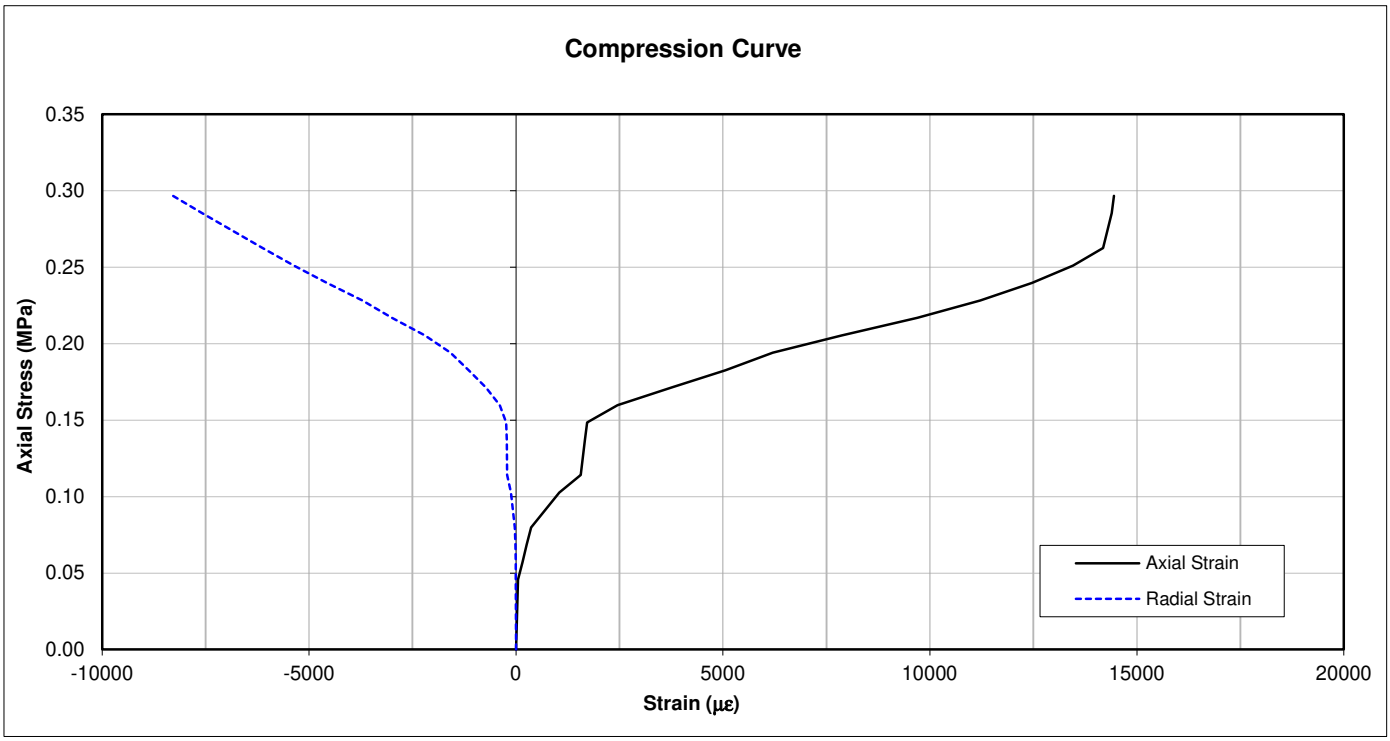
Test Date 03/02/2023

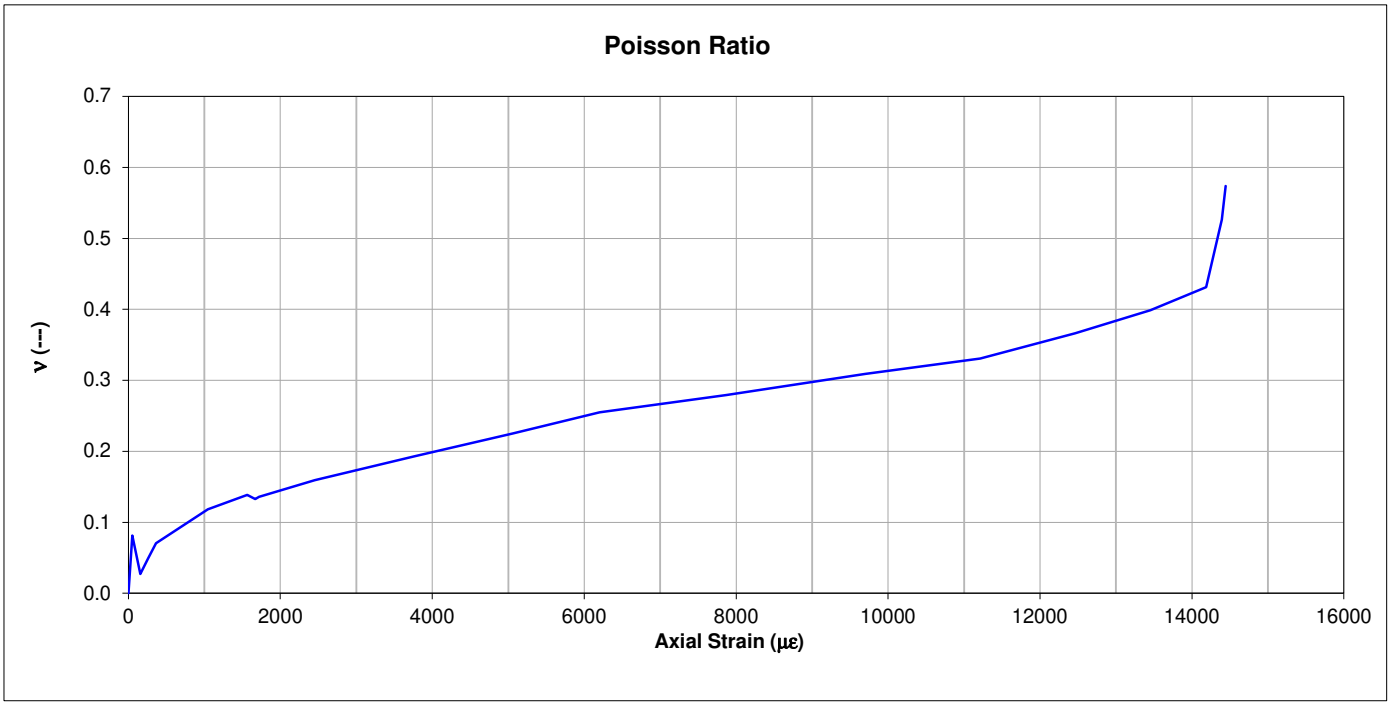
UNIAXIAL COMPRESSION TEST with DEFORMATION

In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No	765514	Cross section area	87.62 cm^2
Site	EMG Phase 2	Height	209.86 mm
BH No	BH10	Max logged strength	0.30 MPa
Specimen Depth	17.84 - 18.28m	Poisson at failure	0.574
Sample Type/No.	C21	Poisson (*)	0.136
(*) Calculated for axial σ =	0.15 MPa		

NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen





TEST REPORT

SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **BH13**

Sample Ref: **38**

Sample Type: **C**

Depth (m): **13.10**

Sample Description: **Reddish brown MUDSTONE**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

First Cycle

Slake Durability (%): **48.3**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Sand and silt**

Second Cycle

Slake Durability (%): **15.4**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Sand and silt**

STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

Compiled By		Date
D. Richards	**DAISY RICHARDS**	**16/03/23**
Contract: **EMG Phase 2**	Job No: **765514**	

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | GrfcText L - SLAKE DURABILITY - A4P | 765514_EAST_MIDLAND_AIRPORT.GPJ - v10_01
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envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 22/11580
Issue Number: 1 **Date:** 30 November, 2022

Client:
Structural Soils Limited (Castleford)
The Potteries
Pottery Street
Castleford
West Yorkshire
UK
WF10 1NJ

Project Manager: Jessica Robertson/Luke Fisher
Project Name: East Midland Airport
Project Ref: 765514
Order No: N/A
Date Samples Received: 23/11/22
Date Instructions Received: 24/11/22
Date Analysis Completed: 30/11/22

Approved by:

Richard Wong
Client Manager

mCERTS THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME
UKAS TESTING 1247

Envirolab Job Number: 22/11580

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/11580/1	22/11580/2	22/11580/3	22/11580/4	22/11580/5	22/11580/6	22/11580/7	Units	Limit of Detection	Method ref
Client Sample No	4	6	13	26	20	7	16			
Client Sample ID	CP11	CP10	TP11	BH08	BH07	TP08	BH02			
Depth to Top	0.70	1.00	3.30	6.50	3.50	1.50	3.70			
Depth To Bottom										
Date Sampled										
Sample Type	Soil - D	Soil - D	Soil - D	Soil - D	Soil - D	Soil - D	Soil - D			
Sample Matrix Code	6A	6AE	6A	6A	6A	6AE	6A			
% Stones >10mm$_A$	<0.1	3.1	14.8	4.5	<0.1	6.5	2.4	% w/w	0.1	A-T-044
pH BRE$_D$$^{M\#}$	8.92	8.94	9.20	8.76	8.98	8.63	9.21	pH	0.01	A-T-031s
Sulphate BRE (water sol 2:1)$_D$$^{M\#}$	13	25	14	356	20	<10	11	mg/l	10	A-T-026s
Sulphate BRE (acid sol)$_D$$^{M\#}$	0.03	0.03	0.03	0.70	0.05	0.05	<0.02	% w/w	0.02	A-T-028s
Sulphur BRE (total)$_D$	0.02	0.02	0.02	0.42	0.03	0.03	<0.01	% w/w	0.01	A-T-024s

Envirolab Job Number: 22/11580

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/11580/8	22/11580/9	22/11580/10	22/11580/11	22/11580/12	22/11580/13	22/11580/14	Units	Limit of Detection	Method ref
Client Sample No	3	18	5	9	3	14	10			
Client Sample ID	BH04	BH05	BH01	CP02	BH21	TP27	TP24			
Depth to Top	0.80	4.70	1.10	2.60	0.40	2.60	1.20			
Depth To Bottom	1.10									
Date Sampled				07-Sep-22						
Sample Type	Soil - D	Solid	Soil - D	Soil - D	Soil - D	Soil - D	Soil - D			
Sample Matrix Code	6A	7	5A	5A	6AE	6A	4A			
% Stones >10mm$_A$	<0.1	10.3	<0.1	<0.1	<0.1	<0.1	<0.1	% w/w	0.1	A-T-044
pH BRE$_D$$^{M\#}$	8.86	8.97	9.15	9.16	8.56	9.20	9.18	pH	0.01	A-T-031s
Sulphate BRE (water sol 2:1)$_D$$^{M\#}$	72	11	<10	<10	<10	11	<10	mg/l	10	A-T-026s
Sulphate BRE (acid sol)$_D$$^{M\#}$	0.05	0.04	0.03	0.03	0.03	0.03	0.03	% w/w	0.02	A-T-028s
Sulphur BRE (total)$_D$	0.03	0.03	0.01	0.01	0.02	0.02	0.01	% w/w	0.01	A-T-024s

Envirolab Job Number: 22/11580

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/11580/15	22/11580/16	22/11580/17					Units	Limit of Detection	Method ref
Client Sample No	7	10	7							
Client Sample ID	BH18	TP26	TP23							
Depth to Top	0.40	1.60	0.90							
Depth To Bottom	0.80									
Date Sampled										
Sample Type	Soil - D	Soil - D	Soil - D							
Sample Matrix Code	6A	4A	5A							
% Stones >10mm$_A$	1.3	<0.1	<0.1					% w/w	0.1	A-T-044
pH BRE$_D$$^{M\#}$	8.69	9.10	8.08					pH	0.01	A-T-031s
Sulphate BRE (water sol 2:1)$_D$$^{M\#}$	11	27	11					mg/l	10	A-T-026s
Sulphate BRE (acid sol)$_D$$^{M\#}$	<0.02	0.03	0.03					% w/w	0.02	A-T-028s
Sulphur BRE (total)$_D$	<0.01	0.02	0.01					% w/w	0.01	A-T-024s

REPORT NOTES

General

This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,
E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve
Subscript "^" indicates analysis has dependant options against results. Testing dependant on results appear in the comments area of your sample receipt.
EPH CWG results have humics mathematically subtracted through instrument calculation
TPH results "with Cleanup" indicates results cleaned up with Silica during extraction

EPH CWG GCxGC ID from TPH CWG

Where we have identified humic substances in any ID's from TPH CWG with Clean Up please note that the concentration of these humic substances is not included in the quantified results and are included in the ID for information.

Please contact us if you need any further information.

v2

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Castleford), The Potteries, Pottery Street, Castleford, West Yorkshire, UK, WF10 1NJ

Project: East Midland Airport

Clients Project No: 765514

Project No: 22/11580

Date Received: 24/11/2022 (am)

Cool Box Temperatures (°C): 13.4, 13.0

Lab Sample ID	22/11580/1	22/11580/2	22/11580/3	22/11580/4	22/11580/5	22/11580/6	22/11580/7	22/11580/8	22/11580/9	22/11580/10	22/11580/11	22/11580/12
Client Sample No	4	6	13	26	20	7	16	3	18	5	9	3
Client Sample ID/Depth	CP11 0.70m	CP10 1.00m	TP11 3.30m	BH08 6.50m	BH07 3.50m	TP08 1.50m	BH02 3.70m	BH04 0.80-1.10m	BH05 4.70m	BH01 1.10m	BP02 2.60m	BH21 0.40m
Date Sampled											07/09/22	
Deviation Code												
E (no date)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓
F											✓	

Lab Sample ID	22/11580/13	22/11580/14	22/11580/15	22/11580/16	22/11580/17
Client Sample No	14	10	7	10	7
Client Sample ID/Depth	TP27 2.60m	TP24 1.20m	BH18 0.40-0.80m	TP26 1.60m	TP23 0.90m
Date Sampled					
Deviation Code					
E (no date)	✓	✓	✓	✓	✓
F					

Key

E (no date) *No sampling date provided (all results affected if not provided)*

F *Maximum holding time exceeded between sampling date and analysis for analytes listed below*

HOLDING TIME EXCEEDANCES

Lab Sample ID	22/11580/11
Client Sample No	9
Client Sample ID/Depth	BP02 2.60m
Date Sampled	07/09/22
Sulphate BRE (water sol 2:1)	✓
Sulphate BRE (acid sol)	✓

If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3, ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	22/11580/1	22/11580/2	22/11580/3	22/11580/4	22/11580/5	22/11580/6	22/11580/7	22/11580/8	22/11580/9	22/11580/10	22/11580/11	22/11580/12
Client Sample No	4	6	13	26	20	7	16	3	18	5	9	3
Client Sample ID/Depth	CP11 0.70m	CP10 1.00m	TP11 3.30m	BH08 6.50m	BH07 3.50m	TP08 1.50m	BH02 3.70m	BH04 0.80-1.10m	BH05 4.70m	BH01 1.10m	BP02 2.60m	BH21 0.40m
Date Sampled											07/09/22	
A-T-024s	30/11/2022	30/11/2022	30/11/2022	30/11/2022	30/11/2022	30/11/2022	30/11/2022	30/11/2022	30/11/2022	30/11/2022	30/11/2022	30/11/2022
A-T-026s	29/11/2022	29/11/2022	29/11/2022	29/11/2022	29/11/2022	29/11/2022	29/11/2022	29/11/2022	29/11/2022	29/11/2022	29/11/2022	29/11/2022
A-T-028s	30/11/2022	30/11/2022	30/11/2022	30/11/2022	30/11/2022	30/11/2022	30/11/2022	30/11/2022	30/11/2022	30/11/2022	30/11/2022	30/11/2022
A-T-031s	29/11/2022	29/11/2022	29/11/2022	29/11/2022	29/11/2022	29/11/2022	29/11/2022	29/11/2022	29/11/2022	29/11/2022	29/11/2022	29/11/2022
A-T-044	28/11/2022	28/11/2022	28/11/2022	28/11/2022	28/11/2022	28/11/2022	28/11/2022	28/11/2022	28/11/2022	28/11/2022	28/11/2022	28/11/2022

Lab Sample ID	22/11580/13	22/11580/14	22/11580/15	22/11580/16	22/11580/17
Client Sample No	14	10	7	10	7
Client Sample ID/Depth	TP27 2.60m	TP24 1.20m	BH18 0.40-0.80m	TP26 1.60m	TP23 0.90m
Date Sampled					
A-T-024s	30/11/2022	30/11/2022	30/11/2022	30/11/2022	30/11/2022
A-T-026s	29/11/2022	29/11/2022	29/11/2022	29/11/2022	29/11/2022
A-T-028s	30/11/2022	30/11/2022	30/11/2022	30/11/2022	30/11/2022
A-T-031s	29/11/2022	29/11/2022	29/11/2022	29/11/2022	29/11/2022
A-T-044	28/11/2022	28/11/2022	28/11/2022	28/11/2022	28/11/2022

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 22/11581
Issue Number: 1 **Date:** 30 November, 2022

Client:
Structural Soils Limited (Castleford)
The Potteries
Pottery Street
Castleford
West Yorkshire
UK
WF10 1NJ

Project Manager: Jessica Robertson/Luke Fisher
Project Name: East Midland Airport
Project Ref: 765514-3
Order No: N/A
Date Samples Received: 23/11/22
Date Instructions Received: 24/11/22
Date Analysis Completed: 29/11/22

Approved by:

Richard Wong
Client Manager

mCERTS THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME
UKAS TESTING 1247

Envirolab Job Number: 22/11581

Client Project Name: East Midland Airport

Client Project Ref: 765514-3

Lab Sample ID	22/11581/1	22/11581/2	22/11581/3	22/11581/4	22/11581/5	22/11581/6	22/11581/7	Units	Limit of Detection	Method ref
Client Sample No	11	17	7	45	41	4	4			
Client Sample ID	CP02	CP02	CP03	CP04	CP08	TP08	TP25			
Depth to Top	3.00	5.00	1.00	13.50	10.50	0.50	0.60			
Depth To Bottom	3.40	5.30								
Date Sampled	07-Sep-22	07-Sep-22								
Sample Type	Soil - D	Soil - D	Soil - D	Soil - D	Soil - D	Soil - D	Soil - D			
Sample Matrix Code	6A	5A	5AE	6A	4A	4A	4AE			
% Stones >10mm$_{A}$	<0.1	<0.1	9.7	<0.1	<0.1	21.2	<0.1	% w/w	0.1	A-T-044
Organic Matter$_{D}^{M\#}$	1.4	1.1	0.6	1.5	0.9	6.7	1.1	% w/w	0.1	A-T-032 OM

Envirolab Job Number: 22/11581

Client Project Name: East Midland Airport

Client Project Ref: 765514-3

Lab Sample ID	22/11581/8	22/11581/9	22/11581/10	22/11581/11	22/11581/12	22/11581/13	22/11581/14	Units	Limit of Detection	Method ref
Client Sample No	16	4	15	11	27	7	8			
Client Sample ID	CP26	TP22	BH18	TP36	BH09	TP12	TP17			
Depth to Top	2.60	0.40	1.70	1.30	4.50	1.10	0.80			
Depth To Bottom	3.00				5.00					
Date Sampled										
Sample Type	Soil - D	Soil - D	Soil - D	Soil - D	Soil - D	Soil - D	Soil - D			
Sample Matrix Code	6A	5A	6A	6A	6A	6A	6A			
% Stones >10mm$_{A}$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	% w/w	0.1	A-T-044
Organic Matter$_{D}^{M\#}$	0.8	0.8	0.7	1.6	0.7	0.4	0.6	% w/w	0.1	A-T-032 OM

Envirolab Job Number: 22/11581

Client Project Name: East Midland Airport

Client Project Ref: 765514-3

Lab Sample ID	**22/11581/15**							**Units**	**Limit of Detection**	**Method ref**
Client Sample No	**23**									
Client Sample ID	**BH13**									
Depth to Top	**5.70**									
Depth To Bottom										
Date Sampled										
Sample Type	**Soil - D**									
Sample Matrix Code	**6A**									
% Stones >10mm$_A$	**6.7**							**% w/w**	**0.1**	**A-T-044**
Organic Matter$_D^{M\#}$	**2.3**							**% w/w**	**0.1**	**A-T-032 OM**

REPORT NOTES

General

This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,
E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve
Subscript "^" indicates analysis has dependant options against results. Testing dependant on results appear in the comments area of your sample receipt.
EPH CWG results have humics mathematically subtracted through instrument calculation
TPH results "with Cleanup" indicates results cleaned up with Silica during extraction

EPH CWG GCxGC ID from TPH CWG

Where we have identified humic substances in any ID's from TPH CWG with Clean Up please note that the concentration of these humic substances is not included in the quantified results and are included in the ID for information.

Please contact us if you need any further information.

v2

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Castleford), The Potteries, Pottery Street, Castleford, West Yorkshire, UK, WF10 1NJ

Project: East Midland Airport

Clients Project No: 765514-3

Project No: 22/11581

Date Received: 24/11/2022 (am)

Cool Box Temperatures (°C): 13.4, 13.0

Lab Sample ID	22/11581/1	22/11581/2	22/11581/3	22/11581/4	22/11581/5	22/11581/6	22/11581/7	22/11581/8	22/11581/9	22/11581/10	22/11581/11	22/11581/12
Client Sample No	11	17	7	45	41	4	4	16	4	15	11	27
Client Sample ID/Depth	CP02 3.00-3.40m	CP02 5.00-5.30m	CP03 1.00m	CP04 13.50m	CP08 10.50m	TP08 0.50m	TP25 0.60m	CP26 2.60-3.00m	TP22 0.40m	BH18 1.70m	TP36 1.30m	BH09 4.50-5.00m
Date Sampled	07/09/22	07/09/22										
Deviation Code												
E (no date)			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
F	✓	✓										

Lab Sample ID	22/11581/13	22/11581/14	22/11581/15
Client Sample No	7	8	23
Client Sample ID/Depth	TP12 1.10m	TP17 0.80m	BH13 5.70m
Date Sampled			
Deviation Code			
E (no date)	✓	✓	✓
F			

Key

E (no date) *No sampling date provided (all results affected if not provided)*

F *Maximum holding time exceeded between sampling date and analysis for analytes listed below*

HOLDING TIME EXCEEDANCES

Lab Sample ID	22/11581/1	22/11581/2
Client Sample No	11	17
Client Sample ID/Depth	CP02 3.00-3.40m	CP02 5.00-5.30m
Date Sampled	07/09/22	07/09/22
Organic Matter	✓	✓

If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3, ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	22/11581/1	22/11581/2	22/11581/3	22/11581/4	22/11581/5	22/11581/6	22/11581/7	22/11581/8	22/11581/9	22/11581/10	22/11581/11	22/11581/12
Client Sample No	11	17	7	45	41	4	4	16	4	15	11	27
Client Sample ID/Depth	CP02 3.00-3.40m	CP02 5.00-5.30m	CP03 1.00m	CP04 13.50m	CP08 10.50m	TP08 0.50m	TP25 0.60m	CP26 2.60-3.00m	TP22 0.40m	BH18 1.70m	TP36 1.30m	BH09 4.50-5.00m
Date Sampled	07/09/22	07/09/22										
A-T-032 OM	29/11/2022	29/11/2022	29/11/2022	29/11/2022	29/11/2022	29/11/2022	29/11/2022	29/11/2022	29/11/2022	29/11/2022	29/11/2022	29/11/2022
A-T-044	28/11/2022	28/11/2022	28/11/2022	28/11/2022	28/11/2022	28/11/2022	28/11/2022	28/11/2022	28/11/2022	28/11/2022	28/11/2022	28/11/2022

Lab Sample ID	22/11581/13	22/11581/14	22/11581/15
Client Sample No	7	8	23
Client Sample ID/Depth	TP12 1.10m	TP17 0.80m	BH13 5.70m
Date Sampled			
A-T-032 OM	29/11/2022	29/11/2022	29/11/2022
A-T-044	28/11/2022	28/11/2022	28/11/2022

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT
SUPPLEMENT TO TEST REPORT 22/11889/1

Amendments: Request for project/sample information change

Envirolab Job Number: 22/11889
Issue Number: 2 **Date:** 12 January, 2023

Client:
Structural Soils Limited (Castleford Lab)
The Potteries
Pottery Street
Castleford
West Yorkshire
UK
WF10 1NJ

Project Manager: Jessica Robertson/Luke Fisher; Laura Schramm
Project Name: East Midlands Airport
Project Ref: 765514
Order No: N/A
Date Samples Received: 02/12/22
Date Instructions Received: 05/12/22
Date Analysis Completed: 07/12/22

Approved by:

Richard Wong
Client Manager

mCERTS THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME
UKAS TESTING 1247

Envirolab Job Number: 22/11889

Client Project Name: East Midlands Airport

Client Project Ref: 765514

Lab Sample ID	22/11889/1	22/11889/2	22/11889/3	22/11889/4				Units	Limit of Detection	Method ref
Client Sample No	9	6	18	26C						
Client Sample ID	CP04	BH04	BH24	BH21						
Depth to Top	1.80	1.20	2.50	9.00						
Depth To Bottom		1.65		9.27						
Date Sampled										
Sample Type	Soil - D	Soil - D	Soil - D	Soil - D						
Sample Matrix Code	6A	6A	5A	6A						
% Stones >10mm$_A$	<0.1	<0.1	<0.1	<0.1				% w/w	0.1	A-T-044
pH BRE$_D$$^{M\#}$	8.54	8.73	7.83	8.67				pH	0.01	A-T-031s
Sulphate BRE (water sol 2:1)$_D$$^{M\#}$	24	130	<10	11				mg/l	10	A-T-026s
Sulphate BRE (acid sol)$_D$$^{M\#}$	0.04	0.08	0.04	0.04				% w/w	0.02	A-T-028s
Sulphur BRE (total)$_D$	0.02	0.04	0.01	0.02				% w/w	0.01	A-T-024s

REPORT NOTES

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Soil chemical analysis:

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TPH analysis of water by method A-T-007:

Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:

Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:

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A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,
E = contains roots/twigs.

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v2

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Castleford Lab), The Potteries, Pottery Street, Castleford, West Yorkshire, UK, WF10 1NJ

Project: East Midlands Airport

Clients Project No: 765514

Project No: 22/11889

Date Received: 05/12/2022 (am)

Cool Box Temperatures (°C): 9.9

Lab Sample ID	22/11889/1	22/11889/2	22/11889/3	22/11889/4
Client Sample No	9	6	18	26C
Client Sample ID/Depth	CP04 1.80m	BH04 1.20-1.65m	BH24 2.50m	BH21 9.00-9.27m
Date Sampled				
Deviation Code				
E (no date)	✓	✓	✓	✓

Key
E (no date) *No sampling date provided (all results affected if not provided)*

Note: If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3 (for water samples 5 ± 3°C), ISO 18400-105:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	22/11889/1	22/11889/2	22/11889/3	22/11889/4
Client Sample No	9	6	18	26C
Client Sample ID/Depth	CP04 1.80m	BH04 1.20-1.65m	BH24 2.50m	BH21 9.00-9.27m
Date Sampled				
A-T-024s	07/12/2022	07/12/2022	07/12/2022	07/12/2022
A-T-026s	07/12/2022	07/12/2022	07/12/2022	07/12/2022
A-T-028s	07/12/2022	07/12/2022	07/12/2022	07/12/2022
A-T-031s	07/12/2022	07/12/2022	07/12/2022	07/12/2022
A-T-044	07/12/2022	07/12/2022	07/12/2022	07/12/2022

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 22/12067
Issue Number: 1 **Date:** 13 December, 2022

Client:
Structural Soils Limited (Castleford Lab)
The Potteries
Pottery Street
Castleford
West Yorkshire
UK
WF10 1NJ

Project Manager: Jessica Robertson/Luke Fisher; Laura Schramm
Project Name: East Midlands Airport
Project Ref: 765514
Order No: N/A
Date Samples Received: 08/12/22
Date Instructions Received: 09/12/22
Date Analysis Completed: 13/12/22

Approved by:

Richard Wong
Client Manager

Envirolab Job Number: 22/12067

Client Project Name: East Midlands Airport

Client Project Ref: 765514

Lab Sample ID	22/12067/1	22/12067/2	22/12067/3	22/12067/4	22/12067/5	22/12067/6	22/12067/7	Units	Limit of Detection	Method ref
Client Sample No	10	2	21	7	26	2	35			
Client Sample ID	CP09	TP16	BH19	TP28	BH08	TP36	BH12			
Depth to Top	0.80	0.20	6.20	1.10	6.50	0.80	11.70			
Depth To Bottom										
Date Sampled										
Sample Type	Soil - D	Soil - D	Soil - D	Soil - D	Soil - D	Soil - D	Soil - D			
Sample Matrix Code	6AE	4AE	6A	5A	5A	6A	6A			
% Stones >10mm$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	% w/w	0.1	A-T-044
pH BRE$_D^{M\#}$	7.71	7.28	8.52	8.49	8.62	7.92	8.34	pH	0.01	A-T-031s
Sulphate BRE (water sol 2:1)$_D^{M\#}$	<10	<10	10	10	12	<10	54	mg/l	10	A-T-026s
Sulphate BRE (acid sol)$_D^{M\#}$	<0.02	0.04	0.06	0.04	0.08	0.04	0.09	% w/w	0.02	A-T-028s
Sulphur BRE (total)$_D$	<0.01	0.02	0.02	0.02	0.03	0.02	0.03	% w/w	0.01	A-T-024s
Organic Matter$_D^{M\#}$	-	-	-	-	3.8	-	-	% w/w	0.1	A-T-032 OM

Envirolab Job Number: 22/12067

Client Project Name: East Midlands Airport

Client Project Ref: 765514

Lab Sample ID	22/12067/8	22/12067/9	22/12067/10	22/12067/11	22/12067/12	22/12067/13	22/12067/14	Units	Limit of Detection	Method ref
Client Sample No	33	9	15	14	12	20	3			
Client Sample ID	BH26	CP12	CP09	CP26	CP05	BH16	BH13			
Depth to Top	15.30	2.75	4.75	1.80	3.75	4.95	0.50			
Depth To Bottom		2.75			3.75					
Date Sampled										
Sample Type	Soil - D	Soil - D	Soil - D	Soil - D	Soil - D	Soil - D	Soil - D			
Sample Matrix Code	4A	5A	4A	5A	5A	4A	4AE			
% Stones >10mm$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	% w/w	0.1	A-T-044
pH BRE$_D^{M\#}$	8.17	-	-	-	-	-	-	pH	0.01	A-T-031s
Sulphate BRE (water sol 2:1)$_D^{M\#}$	<10	-	-	-	-	-	-	mg/l	10	A-T-026s
Sulphate BRE (acid sol)$_D^{M\#}$	0.04	-	-	-	-	-	-	% w/w	0.02	A-T-028s
Sulphur BRE (total)$_D$	0.01	-	-	-	-	-	-	% w/w	0.01	A-T-024s
Organic Matter$_D^{M\#}$	-	0.2	1.4	0.9	3.4	2.0	0.5	% w/w	0.1	A-T-032 OM

Envirolab Job Number: 22/12067

Client Project Name: East Midlands Airport

Client Project Ref: 765514

Lab Sample ID	22/12067/15							Units	Limit of Detection	Method ref
Client Sample No	7									
Client Sample ID	CP07									
Depth to Top	2.30									
Depth To Bottom										
Date Sampled										
Sample Type	Soil - D									
Sample Matrix Code	6A									
% Stones >10mm$_A$	<0.1							% w/w	0.1	A-T-044
Organic Matter$_D^{M\#}$	0.8							% w/w	0.1	A-T-032 OM

REPORT NOTES

General

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The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,
E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve
Subscript "^" indicates analysis has dependant options against results. Testing dependant on results appear in the comments area of your sample receipt.
EPH CWG results have humics mathematically subtracted through instrument calculation
TPH results "with Cleanup" indicates results cleaned up with Silica during extraction

EPH CWG GCxGC ID from TPH CWG

Where we have identified humic substances in any ID's from TPH CWG with Clean Up please note that the concentration of these humic substances is not included in the quantified results and are included in the ID for information.

Please contact us if you need any further information.

v2

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Castleford Lab), The Potteries, Pottery Street, Castleford, West Yorkshire, UK, WF10 1NJ

Project: East Midlands Airport

Clients Project No: 765514

Project No: 22/12067

Date Received: 09/12/2022 (am)

Cool Box Temperatures (°C): 6.0

Lab Sample ID	22/12067/1	22/12067/2	22/12067/3	22/12067/4	22/12067/5	22/12067/6	22/12067/7	22/12067/8	22/12067/9	22/12067/10	22/12067/11	22/12067/12
Client Sample No	10	2	21	7	26	2	35	33	9	15	14	12
Client Sample ID/Depth	CP09 0.80m	TP16 0.20m	BH19 6.20m	TP28 1.10m	BH08 6.50m	TP36 0.80m	BH12 11.70m	BH26 15.30m	CP12 2.75-2.75m	CP09 4.75m	CP26 1.80m	CP05 3.75-3.75m
Date Sampled												
Deviation Code												
E (no date)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Lab Sample ID	22/12067/13	22/12067/14	22/12067/15
Client Sample No	20	3	7
Client Sample ID/Depth	BH16 4.95m	BH13 0.50m	CP07 2.30m
Date Sampled			
Deviation Code			
E (no date)	✓	✓	✓

Key
E (no date) *No sampling date provided (all results affected if not provided)*

If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3, ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	22/12067/1	22/12067/2	22/12067/3	22/12067/4	22/12067/5	22/12067/6	22/12067/7	22/12067/8	22/12067/9	22/12067/10	22/12067/11	22/12067/12
Client Sample No	10	2	21	7	26	2	35	33	9	15	14	12
Client Sample ID/Depth	CP09 0.80m	TP16 0.20m	BH19 6.20m	TP28 1.10m	BH08 6.50m	TP36 0.80m	BH12 11.70m	BH26 15.30m	CP12 2.75-2.75m	CP09 4.75m	CP26 1.80m	CP05 3.75-3.75m
Date Sampled												
A-T-024s	13/12/2022	13/12/2022	13/12/2022	13/12/2022	13/12/2022	13/12/2022	13/12/2022	13/12/2022				
A-T-026s	13/12/2022	13/12/2022	13/12/2022	13/12/2022	13/12/2022	13/12/2022	13/12/2022	13/12/2022				
A-T-028s	13/12/2022	13/12/2022	13/12/2022	13/12/2022	13/12/2022	13/12/2022	13/12/2022	13/12/2022				
A-T-031s	13/12/2022	13/12/2022	13/12/2022	13/12/2022	13/12/2022	13/12/2022	13/12/2022	13/12/2022				
A-T-032 OM					13/12/2022				13/12/2022	13/12/2022	13/12/2022	13/12/2022
A-T-044	13/12/2022	13/12/2022	13/12/2022	13/12/2022	13/12/2022	13/12/2022	13/12/2022	13/12/2022	13/12/2022	13/12/2022	13/12/2022	13/12/2022

Lab Sample ID	22/12067/13	22/12067/14	22/12067/15
Client Sample No	20	3	7
Client Sample ID/Depth	BH16 4.95m	BH13 0.50m	CP07 2.30m
Date Sampled			
A-T-024s			
A-T-026s			
A-T-028s			
A-T-031s			
A-T-032 OM	13/12/2022	13/12/2022	13/12/2022
A-T-044	13/12/2022	13/12/2022	13/12/2022

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

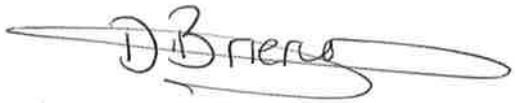
FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 22/12222
Issue Number: 1 **Date:** 15 December, 2022

Client:
Structural Soils Limited (Castleford)
The Potteries
Pottery Street
Castleford
West Yorkshire
UK
WF10 1NJ

Project Manager: Jessica Robertson
Project Name: EMG
Project Ref: 765514-3
Order No: N/A
Date Samples Received: 12/12/22
Date Instructions Received: 13/12/22
Date Analysis Completed: 15/12/22

Approved by:



Danielle Brierley
Deputy Client Services Supervisor

Envirolab Job Number: 22/12222

Client Project Name: EMG

Client Project Ref: 765514-3

Lab Sample ID	22/12222/1	22/12222/2	22/12222/3					Units	Limit of Detection	Method ref
Client Sample No	9	6	23							
Client Sample ID	BH12	BH17	BH07							
Depth to Top	1.70	1.70	4.50							
Depth To Bottom										
Date Sampled			21-Sep-22							
Sample Type	Soil - D	Soil - D	Soil - D							
Sample Matrix Code	6A	6AE	6A							
% Stones >10mm$_A$	2.3	2.9	5.1					% w/w	0.1	A-T-044
Organic Matter$_D^{M\#}$	0.9	0.9	1.7					% w/w	0.1	A-T-032 OM

REPORT NOTES

General

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The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,
E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve
Subscript "^" indicates analysis has dependant options against results. Testing dependant on results appear in the comments area of your sample receipt.
EPH CWG results have humics mathematically subtracted through instrument calculation
TPH results "with Cleanup" indicates results cleaned up with Silica during extraction

EPH CWG GCxGC ID from TPH CWG

Where we have identified humic substances in any ID's from TPH CWG with Clean Up please note that the concentration of these humic substances is not included in the quantified results and are included in the ID for information.

Please contact us if you need any further information.

v2

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Castleford), The Potteries, Pottery Street, Castleford, West Yorkshire, UK, WF10 1NJ

Project: EMG

Clients Project No: 765514-3

Project No: 22/12222

Date Received: 13/12/2022 (am)

Cool Box Temperatures (°C): 7.6

Lab Sample ID	22/12222/1	22/12222/2	22/12222/3
Client Sample No	9	6	23
Client Sample ID/Depth	BH12 1.70m	BH17 1.70m	BH07 4.50m
Date Sampled			21/09/22
Deviation Code			
E (no date)	✓	✓	
F			✓

Key

E (no date) *No sampling date provided (all results affected if not provided)*

F *Maximum holding time exceeded between sampling date and analysis for analytes listed below*

HOLDING TIME EXCEEDANCES

Lab Sample ID	22/12222/3
Client Sample No	23
Client Sample ID/Depth	BH07 4.50m
Date Sampled	21/09/22
Organic Matter	✓

If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3, ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	22/12222/1	22/12222/2	22/12222/3
Client Sample No	9	6	23
Client Sample ID/Depth	BH12 1.70m	BH17 1.70m	BH07 4.50m
Date Sampled			21/09/22
A-T-032 OM	15/12/2022	15/12/2022	15/12/2022
A-T-044	15/12/2022	15/12/2022	15/12/2022

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 23/02595
Issue Number: 1 **Date:** 22 March, 2023

Client:
Structural Soils Limited (Castleford Lab)
The Potteries
Pottery Street
Castleford
West Yorkshire
UK
WF10 1NJ

Project Manager: Jessica Robertson/Luke Fisher; Laura Schramm
Project Name: EAST MIDLANDS AIRPORT
Project Ref: 765514
Order No: N/A
Date Samples Received: 17/03/23
Date Instructions Received: 20/03/23
Date Analysis Completed: 22/03/23

Approved by:

Richard Wong
Client Manager

Envirolab Job Number: 23/02595

Client Project Name: EAST MIDLANDS AIRPORT

Client Project Ref: 765514

Lab Sample ID	23/02595/1	23/02595/2						Units	Limit of Detection	Method ref
Client Sample No	17	6								
Client Sample ID	CP21	BH10								
Depth to Top	4.80	0.90								
Depth To Bottom										
Date Sampled										
Sample Type	Soil - D	Soil - D								
Sample Matrix Code	6A	4AE								
% Stones >10mm$_A$	0.4	<0.1						% w/w	0.1	A-T-044
pH BRE$_D$$^{M\#}$	8.14	6.80						pH	0.01	A-T-031s
Sulphate BRE (water sol 2:1)$_D$$^{M\#}$	493	<10						mg/l	10	A-T-026s
Sulphate BRE (acid sol)$_D$$^{M\#}$	0.20	0.04						% w/w	0.02	A-T-028s
Sulphur BRE (total)$_D$	0.59	0.03						% w/w	0.01	A-T-024s

REPORT NOTES

General

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Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
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The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,
E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve
Subscript "^" indicates analysis has dependant options against results. Testing dependant on results appear in the comments area of your sample receipt.
EPH CWG results have humics mathematically subtracted through instrument calculation
TPH results "with Cleanup" indicates results cleaned up with Silica during extraction

EPH CWG GCxGC ID from TPH CWG

Where we have identified humic substances in any ID's from TPH CWG with Clean Up please note that the concentration of these humic substances is not included in the quantified results and are included in the ID for information.

Please contact us if you need any further information.

v2

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Castleford Lab), The Potteries, Pottery Street, Castleford, West Yorkshire, UK, WF10 1NJ

Project: EAST MIDLANDS AIRPORT

Clients Project No: 765514

Project No: 23/02595

Date Received: 20/03/2023 (am)

Cool Box Temperatures (°C): 11.6

Lab Sample ID	23/02595/1	23/02595/2
Client Sample No	17	6
Client Sample ID/Depth	CP21 4.80m	BH10 0.90m
Date Sampled		
Deviation Code		
E (no date)	✓	✓

Key
E (no date) *No sampling date provided (all results affected if not provided)*

If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3, ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	23/02595/1	23/02595/2
Client Sample No	17	6
Client Sample ID/Depth	CP21 4.80m	BH10 0.90m
Date Sampled		
A-T-024s	21/03/2023	21/03/2023
A-T-026s	22/03/2023	22/03/2023
A-T-028s	22/03/2023	22/03/2023
A-T-031s	22/03/2023	22/03/2023
A-T-044	21/03/2023	21/03/2023

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

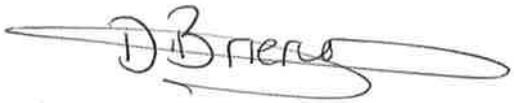
FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 22/12200
Issue Number: 1 **Date:** 15 December, 2022

Client:
Structural Soils Limited (Castleford)
The Potteries
Pottery Street
Castleford
West Yorkshire
UK
WF10 1NJ

Project Manager: Jessica Robertson/Luke Fisher
Project Name: EMG
Project Ref: 765514-1
Order No: N/A
Date Samples Received: 12/12/22
Date Instructions Received: 13/12/22
Date Analysis Completed: 15/12/22

Approved by:



Danielle Brierley
Deputy Client Services Supervisor

mCERTS THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME
UKAS TESTING 1247

Envirolab Job Number: 22/12200

Client Project Name: EMG

Client Project Ref: 765514-1

Lab Sample ID	22/12200/1	22/12200/2	22/12200/3	22/12200/4	22/12200/5	22/12200/6	22/12200/7	Units	Limit of Detection	Method ref
Client Sample No	3	13	6	16	5	6	20			
Client Sample ID	CP20	CP27	CP24	CP22	BH15	BH11	BH20			
Depth to Top	0.50	2.00	1.00	4.50	1.20	1.10	3.70			
Depth To Bottom										
Date Sampled	03-Oct-22	15-Sep-22	26-Sep-22	04-Oct-22						
Sample Type	Soil - D	Soil - D	Soil - D	Soil - D	Soil - D	Soil - D	Soil - D			
Sample Matrix Code	6	6A	6A	6A	6A	6A	6A			
% Stones >10mm$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	% w/w	0.1	A-T-044
pH BRE$_D^{M\#}$	8.30	7.90	8.67	8.76	8.64	8.32	8.82	pH	0.01	A-T-031s
Sulphate BRE (water sol 2:1)$_D^{M\#}$	<10	39	<10	11	<10	<10	14	mg/l	10	A-T-026s
Sulphate BRE (acid sol)$_D^{M\#}$	0.03	0.05	0.03	0.08	0.04	<0.04	0.03	% w/w	0.02	A-T-028s
Sulphur BRE (total)$_D$	0.01	0.02	0.01	0.02	0.02	<0.01	0.02	% w/w	0.01	A-T-024s

Envirolab Job Number: 22/12200

Client Project Name: EMG

Client Project Ref: 765514-1

Lab Sample ID	22/12200/8	22/12200/9	22/12200/10					Units	Limit of Detection	Method ref
Client Sample No	11	23	20							
Client Sample ID	TP14	BH22	BH14							
Depth to Top	3.00	7.35	4.70							
Depth To Bottom										
Date Sampled	29-Sep-22									
Sample Type	Soil - D	Soil - D	Soil - D							
Sample Matrix Code	6A	6A	5A							
% Stones >10mm$_A$	2.9	19.2	<0.1					% w/w	0.1	A-T-044
pH BRE$_D$$^{M\#}$	8.83	8.80	8.80					pH	0.01	A-T-031s
Sulphate BRE (water sol 2:1)$_D$$^{M\#}$	<10	<10	<10					mg/l	10	A-T-026s
Sulphate BRE (acid sol)$_D$$^{M\#}$	0.04	0.04	0.04					% w/w	0.02	A-T-028s
Sulphur BRE (total)$_D$	<0.01	0.02	0.02					% w/w	0.01	A-T-024s

REPORT NOTES

General

This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

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Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,
E = contains roots/twigs.

Key:
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EPH CWG results have humics mathematically subtracted through instrument calculation
TPH results "with Cleanup" indicates results cleaned up with Silica during extraction

EPH CWG GCxGC ID from TPH CWG

Where we have identified humic substances in any ID's from TPH CWG with Clean Up please note that the concentration of these humic substances is not included in the quantified results and are included in the ID for information.

Please contact us if you need any further information.

v2

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Castleford), The Potteries, Pottery Street, Castleford, West Yorkshire, UK, WF10 1NJ

Project: EMG

Clients Project No: 765514-1

Project No: 22/12200

Date Received: 13/12/2022 (am)

Cool Box Temperatures (°C): 7.6

Lab Sample ID	22/12200/1	22/12200/2	22/12200/3	22/12200/4	22/12200/5	22/12200/6	22/12200/7	22/12200/8	22/12200/9	22/12200/10
Client Sample No	3	13	6	16	5	6	20	11	23	20
Client Sample ID/Depth	CP20 0.50m	CP27 2.00m	CP24 1.00m	CP22 4.50m	BH15 1.20m	BH11 1.10m	BH20 3.70m	TP14 3.00m	BH22 7.35m	BH14 4.70m
Date Sampled	03/10/22	15/09/22	26/09/22	04/10/22				29/09/22		
Deviation Code										
E (no date)					✓	✓	✓		✓	✓
F	✓	✓	✓	✓				✓		

Key

E (no date) *No sampling date provided (all results affected if not provided)*

F *Maximum holding time exceeded between sampling date and analysis for analytes listed below*

HOLDING TIME EXCEEDANCES

Lab Sample ID	22/12200/1	22/12200/2	22/12200/3	22/12200/4	22/12200/8
Client Sample No	3	13	6	16	11
Client Sample ID/Depth	CP20 0.50m	CP27 2.00m	CP24 1.00m	CP22 4.50m	TP14 3.00m
Date Sampled	03/10/22	15/09/22	26/09/22	04/10/22	29/09/22
Sulphate BRE (water sol 2:1)	✓	✓	✓	✓	✓
Sulphate BRE (acid sol)	✓	✓	✓	✓	✓

If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3, ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	22/12200/1	22/12200/2	22/12200/3	22/12200/4	22/12200/5	22/12200/6	22/12200/7	22/12200/8	22/12200/9	22/12200/10
Client Sample No	3	13	6	16	5	6	20	11	23	20
Client Sample ID/Depth	CP20 0.50m	CP27 2.00m	CP24 1.00m	CP22 4.50m	BH15 1.20m	BH11 1.10m	BH20 3.70m	TP14 3.00m	BH22 7.35m	BH14 4.70m
Date Sampled	03/10/22	15/09/22	26/09/22	04/10/22				29/09/22		
A-T-024s	15/12/2022	15/12/2022	15/12/2022	15/12/2022	15/12/2022	15/12/2022	15/12/2022	15/12/2022	15/12/2022	15/12/2022
A-T-026s	15/12/2022	15/12/2022	15/12/2022	15/12/2022	15/12/2022	15/12/2022	15/12/2022	15/12/2022	15/12/2022	15/12/2022
A-T-028s	15/12/2022	15/12/2022	15/12/2022	15/12/2022	15/12/2022	15/12/2022	15/12/2022	15/12/2022	15/12/2022	15/12/2022
A-T-031s	15/12/2022	15/12/2022	15/12/2022	15/12/2022	15/12/2022	15/12/2022	15/12/2022	15/12/2022	15/12/2022	15/12/2022
A-T-044	15/12/2022	15/12/2022	15/12/2022	15/12/2022	15/12/2022	15/12/2022	15/12/2022	15/12/2022	15/12/2022	15/12/2022

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

APPENDIX E - GEOENVIRONMENTAL TESTING

(i) Laboratory Test Results

(ii) Laboratory UKAS Accreditation Certificate

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 22/08923
Issue Number: 1 **Date:** 27 September, 2022

Client:
Structural Soils Limited (Castleford Lab)
The Potteries
Pottery Street
Castleford
West Yorkshire
UK
WF10 1NJ

Project Manager: Alex Jones/Tim Morris; Laura Schramm
Project Name: East Midland Airport
Project Ref: 765514
Order No: N/A
Date Samples Received: 12/09/22
Date Instructions Received: 12/09/22
Date Analysis Completed: 27/09/22

Approved by:

Richard Wong
Client Manager

mCERTS THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME
UKAS TESTING 1247

Envirolab Job Number: 22/08923

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/08923/2	22/08923/4	22/08923/5	22/08923/7	22/08923/10	22/08923/13		Units	Limit of Detection	Method ref
Client Sample No	102	102	101	101	3	3				
Client Sample ID	BH01	BH02	BH03	BH05	CP08	CP02				
Depth to Top	1.00	1.00	0.50	0.1	0.50	1.00				
Depth To Bottom										
Date Sampled	05-Sep-22	06-Sep-22	07-Sep-22	08-Sep-22	06-Sep-22	07-Sep-22				
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES				
Sample Matrix Code	6AE	6AE	5A	4AE		5AE				
% Moisture at <40C$_A$	13.7	15.8	10.4	8.8	5.7	8.8		% w/w	0.1	A-T-044
% Stones >10mm$_A$	<0.1	<0.1	4.2	15.0	<0.1	<0.1		% w/w	0.1	A-T-044
pH$_D$$^{M\#}$	7.83	7.70	7.63	6.10	8.70	9.17		pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D$$^{M\#}$	0.01	0.01	<0.01	<0.01	<0.01	<0.01		g/l	0.01	A-T-026s
Organic Matter$_D$$^{M\#}$	1.4	0.7	1.1	2.3	0.7	1.0		% w/w	0.1	A-T-032 OM
Arsenic$_D$$^{M\#}$	<1	3	2	6	9	<1		mg/kg	1	A-T-024s
Cadmium$_D$$^{M\#}$	0.8	1.0	0.8	0.9	1.8	1.0		mg/kg	0.5	A-T-024s
Copper$_D$$^{M\#}$	12	12	10	15	18	9		mg/kg	1	A-T-024s
Chromium$_D$$^{M\#}$	56	67	35	21	28	52		mg/kg	1	A-T-024s
Lead$_D$$^{M\#}$	10	7	11	20	14	3		mg/kg	1	A-T-024s
Mercury$_D$	<0.17	<0.17	<0.17	<0.17	0.45	0.39		mg/kg	0.17	A-T-024s
Nickel$_D$$^{M\#}$	46	57	29	16	27	48		mg/kg	1	A-T-024s
Selenium$_D$$^{M\#}$	<1	<1	<1	<1	3	<1		mg/kg	1	A-T-024s
Zinc$_D$$^{M\#}$	67	68	57	55	52	64		mg/kg	5	A-T-024s

Envirolab Job Number: 22/08923

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/08923/2	22/08923/4	22/08923/5	22/08923/7	22/08923/10	22/08923/13		Units	Limit of Detection	Method ref
Client Sample No	102	102	101	101	3	3				
Client Sample ID	BH01	BH02	BH03	BH05	CP08	CP02				
Depth to Top	1.00	1.00	0.50	0.1	0.50	1.00				
Depth To Bottom										
Date Sampled	05-Sep-22	06-Sep-22	07-Sep-22	08-Sep-22	06-Sep-22	07-Sep-22				
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES				
Sample Matrix Code	6AE	6AE	5A	4AE		5AE				
PAH-16MS										
Acenaphthene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04		mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04		mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07		mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06		mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04		mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08		mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07		mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08		mg/kg	0.01	A-T-019s

Envirolab Job Number: 22/08923

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/08923/2	22/08923/4	22/08923/5	22/08923/7	22/08923/10	22/08923/13		Units	Limit of Detection	Method ref
Client Sample No	102	102	101	101	3	3				
Client Sample ID	BH01	BH02	BH03	BH05	CP08	CP02				
Depth to Top	1.00	1.00	0.50	0.1	0.50	1.00				
Depth To Bottom										
Date Sampled	05-Sep-22	06-Sep-22	07-Sep-22	08-Sep-22	06-Sep-22	07-Sep-22				
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES				
Sample Matrix Code	6AE	6AE	5A	4AE		5AE				
SVOC										
4-Bromophenyl phenyl ether$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
Hexachlorobenzene$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
Diethyl phthalate$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
Dimethyl phthalate$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
Dibenzofuran$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
Carbazole$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
Butylbenzyl phthalate$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
Bis(2-ethylhexyl)phthalate$_A$	<500	-	-	-	-	-		µg/kg	500	A-T-052s
Bis(2-chloroethoxy)methane$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
Bis(2-chloroethyl)ether$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
4-Nitrophenol$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
3+4-Methylphenol$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
4-Chloro-3-methylphenol$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
2-Nitrophenol$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
2-Methylphenol$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
1,2,4-Trichlorobenzene$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
2-Chlorophenol$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
2,6-Dinitrotoluene$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
2,4-Dinitrotoluene$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
2,4-Dimethylphenol$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
2,4-Dichlorophenol$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
2,4,6-Trichlorophenol$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
2,4,5-Trichlorophenol$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
1,4-Dichlorobenzene$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
1,3-Dichlorobenzene$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
1,2-Dichlorobenzene$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
2-Chloronaphthalene$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
2-Methylnaphthalene$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
Acenaphthylene$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
Acenaphthene$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
Anthracene$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
Benzo(a)anthracene$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s

Lab Sample ID	22/08923/2	22/08923/4	22/08923/5	22/08923/7	22/08923/10	22/08923/13		Units	Limit of Detection	Method ref
Client Sample No	102	102	101	101	3	3				
Client Sample ID	BH01	BH02	BH03	BH05	CP08	CP02				
Depth to Top	1.00	1.00	0.50	0.1	0.50	1.00				
Depth To Bottom										
Date Sampled	05-Sep-22	06-Sep-22	07-Sep-22	08-Sep-22	06-Sep-22	07-Sep-22				
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES				
Sample Matrix Code	6AE	6AE	5A	4AE		5AE				
Benzo(b)fluoranthene$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
Benzo(k)fluoranthene$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
Benzo(a)pyrene$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
Benzo(ghi)perylene$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
Chrysene$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
Fluoranthene$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
Fluorene$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
Indeno(1,2,3-cd)pyrene$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
Phenanthrene$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
Pyrene$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
Naphthalene$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
Dibenzo(ah)anthracene$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
Bis(2-chloroisopropyl)ether$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
Phenol$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
Pentachlorophenol$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
n-Nitroso-n-dipropylamine$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
n-Dioctylphthalate$_A$	<500	-	-	-	-	-		µg/kg	500	A-T-052s
n-Dibutylphthalate$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
Nitrobenzene$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
Isophorone$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
Hexachloroethane$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
Hexachlorocyclopentadiene$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
Hexachlorobutadiene$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
Perylene$_A$	<100	-	-	-	-	-		µg/kg	100	A-T-052s
TPH Banded 1 with ID										
>C6-C8$_A^{M\#}$	-	-	<5	<5	<5	<5		mg/kg	5	A-T-007s
>C8-C10$_A^{M\#}$	-	-	<1	<1	<1	<1		mg/kg	1	A-T-007s
>C10-C12$_A^{M\#}$	-	-	<1	<1	<1	<1		mg/kg	1	A-T-007s
>C12-C16$_A^{M\#}$	-	-	<2	<2	<2	<2		mg/kg	2	A-T-007s
>C16-C21$_A^{M\#}$	-	-	<2	<2	<2	<2		mg/kg	2	A-T-007s
>C21-C40$_A^{M\#}$	-	-	6	8	<5	<5		mg/kg	5	A-T-007s
TPH ID Interpretation$_A$	-	-	C16-C40 hydrocarbons with	C16-C40 hydrocarbons with	Concentration too low to identify	Concentration too low to identify				A-T-007s

Envirolab Job Number: 22/08923

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/08923/2	22/08923/4	22/08923/5	22/08923/7	22/08923/10	22/08923/13		Units	Limit of Detection	Method ref
Client Sample No	102	102	101	101	3	3				
Client Sample ID	BH01	BH02	BH03	BH05	CP08	CP02				
Depth to Top	1.00	1.00	0.50	0.1	0.50	1.00				
Depth To Bottom										
Date Sampled	05-Sep-22	06-Sep-22	07-Sep-22	08-Sep-22	06-Sep-22	07-Sep-22				
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES				
Sample Matrix Code	6AE	6AE	5A	4AE		5AE				
			unknown profile	unknown profile						
Total TPH Banded 1 with ID_A	-	-	6	8	<5	<5		mg/kg	5	A-T-007s

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Lab Sample ID	22/08923/2	22/08923/4	22/08923/5	22/08923/7	22/08923/10	22/08923/13		Units	Limit of Detection	Method ref
Client Sample No	102	102	101	101	3	3				
Client Sample ID	BH01	BH02	BH03	BH05	CP08	CP02				
Depth to Top	1.00	1.00	0.50	0.1	0.50	1.00				
Depth To Bottom										
Date Sampled	05-Sep-22	06-Sep-22	07-Sep-22	08-Sep-22	06-Sep-22	07-Sep-22				
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES				
Sample Matrix Code	6AE	6AE	5A	4AE		5AE				
VOC										
Dichlorodifluoromethane$_{A}$	<1	-	-	-	-	-		µg/kg	1	A-T-006s
Chloromethane$_{A}$	<10	-	-	-	-	-		µg/kg	10	A-T-006s
Vinyl Chloride (Chloroethene)$_{A}^{\#}$	<1	-	-	-	-	-		µg/kg	1	A-T-006s
Bromomethane$_{A}^{\#}$	<1	-	-	-	-	-		µg/kg	1	A-T-006s
Chloroethane$_{A}^{\#}$	<1	-	-	-	-	-		µg/kg	1	A-T-006s
Trichlorofluoromethane$_{A}^{\#}$	<1	-	-	-	-	-		µg/kg	1	A-T-006s
1,1-Dichloroethene$_{A}^{\#}$	<1	-	-	-	-	-		µg/kg	1	A-T-006s
Carbon Disulphide$_{A}^{\#}$	<1	-	-	-	-	-		µg/kg	1	A-T-006s
Dichloromethane$_{A}$	<5	-	-	-	-	-		µg/kg	5	A-T-006s
trans 1,2-Dichloroethene$_{A}^{\#}$	<1	-	-	-	-	-		µg/kg	1	A-T-006s
1,1-Dichloroethane$_{A}^{\#}$	<1	-	-	-	-	-		µg/kg	1	A-T-006s
cis 1,2-Dichloroethene$_{A}^{\#}$	<1	-	-	-	-	-		µg/kg	1	A-T-006s
2,2-Dichloropropane$_{A}^{\#}$	<1	-	-	-	-	-		µg/kg	1	A-T-006s
Bromochloromethane$_{A}^{\#}$	<5	-	-	-	-	-		µg/kg	5	A-T-006s
Chloroform$_{A}^{\#}$	<1	-	-	-	-	-		µg/kg	1	A-T-006s
1,1,1-Trichloroethane$_{A}^{\#}$	<1	-	-	-	-	-		µg/kg	1	A-T-006s
1,1-Dichloropropene$_{A}^{\#}$	<1	-	-	-	-	-		µg/kg	1	A-T-006s
Carbon Tetrachloride$_{A}^{\#}$	<1	-	-	-	-	-		µg/kg	1	A-T-006s
1,2-Dichloroethane$_{A}^{\#}$	<2	-	-	-	-	-		µg/kg	2	A-T-006s
Benzene$_{A}^{\#}$	<1	-	-	-	-	-		µg/kg	1	A-T-006s
Trichloroethene$_{A}^{\#}$	<1	-	-	-	-	-		µg/kg	1	A-T-006s
1,2-Dichloropropane$_{A}^{\#}$	<1	-	-	-	-	-		µg/kg	1	A-T-006s
Dibromomethane$_{A}^{\#}$	<1	-	-	-	-	-		µg/kg	1	A-T-006s
Bromodichloromethane$_{A}^{\#}$	<10	-	-	-	-	-		µg/kg	10	A-T-006s
cis 1,3-Dichloropropene$_{A}^{\#}$	<1	-	-	-	-	-		µg/kg	1	A-T-006s
Toluene$_{A}^{\#}$	<1	-	-	-	-	-		µg/kg	1	A-T-006s
trans 1,3-Dichloropropene$_{A}^{\#}$	<1	-	-	-	-	-		µg/kg	1	A-T-006s
1,1,2-Trichloroethane$_{A}^{\#}$	<1	-	-	-	-	-		µg/kg	1	A-T-006s
1,3-Dichloropropane$_{A}^{\#}$	<1	-	-	-	-	-		µg/kg	1	A-T-006s
Tetrachloroethene$_{A}^{\#}$	<1	-	-	-	-	-		µg/kg	1	A-T-006s
Dibromochloromethane$_{A}^{\#}$	<3	-	-	-	-	-		µg/kg	3	A-T-006s
1,2-Dibromoethane$_{A}^{\#}$	<1	-	-	-	-	-		µg/kg	1	A-T-006s

Envirolab Job Number: 22/08923

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/08923/2	22/08923/4	22/08923/5	22/08923/7	22/08923/10	22/08923/13		Units	Limit of Detection	Method ref
Client Sample No	102	102	101	101	3	3				
Client Sample ID	BH01	BH02	BH03	BH05	CP08	CP02				
Depth to Top	1.00	1.00	0.50	0.1	0.50	1.00				
Depth To Bottom										
Date Sampled	05-Sep-22	06-Sep-22	07-Sep-22	08-Sep-22	06-Sep-22	07-Sep-22				
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES				
Sample Matrix Code	6AE	6AE	5A	4AE		5AE				
Chlorobenzene$_{A}^{\#}$	<1	-	-	-	-	-		µg/kg	1	A-T-006s
1,1,1,2-Tetrachloroethane$_{A}$	<1	-	-	-	-	-		µg/kg	1	A-T-006s
Ethylbenzene$_{A}^{\#}$	<1	-	-	-	-	-		µg/kg	1	A-T-006s
m & p Xylene$_{A}^{\#}$	<1	-	-	-	-	-		µg/kg	1	A-T-006s
o-Xylene$_{A}^{\#}$	<1	-	-	-	-	-		µg/kg	1	A-T-006s
Styrene$_{A}^{\#}$	<1	-	-	-	-	-		µg/kg	1	A-T-006s
Bromoform$_{A}^{\#}$	<1	-	-	-	-	-		µg/kg	1	A-T-006s
Isopropylbenzene$_{A}^{\#}$	<1	-	-	-	-	-		µg/kg	1	A-T-006s
1,1,2,2-Tetrachloroethane$_{A}$	<1	-	-	-	-	-		µg/kg	1	A-T-006s
1,2,3-Trichloropropane$_{A}^{\#}$	<1	-	-	-	-	-		µg/kg	1	A-T-006s
Bromobenzene$_{A}^{\#}$	<1	-	-	-	-	-		µg/kg	1	A-T-006s
n-Propylbenzene$_{A}^{\#}$	<1	-	-	-	-	-		µg/kg	1	A-T-006s
2-Chlorotoluene$_{A}^{\#}$	<1	-	-	-	-	-		µg/kg	1	A-T-006s
1,3,5-Trimethylbenzene$_{A}^{\#}$	<1	-	-	-	-	-		µg/kg	1	A-T-006s
4-Chlorotoluene$_{A}^{\#}$	<1	-	-	-	-	-		µg/kg	1	A-T-006s
tert-Butylbenzene$_{A}^{\#}$	<2	-	-	-	-	-		µg/kg	2	A-T-006s
1,2,4-Trimethylbenzene$_{A}^{\#}$	<1	-	-	-	-	-		µg/kg	1	A-T-006s
sec-Butylbenzene$_{A}^{\#}$	<1	-	-	-	-	-		µg/kg	1	A-T-006s
4-Isopropyltoluene$_{A}^{\#}$	<1	-	-	-	-	-		µg/kg	1	A-T-006s
1,3-Dichlorobenzene$_{A}$	<1	-	-	-	-	-		µg/kg	1	A-T-006s
1,4-Dichlorobenzene$_{A}^{\#}$	<1	-	-	-	-	-		µg/kg	1	A-T-006s
n-Butylbenzene$_{A}^{\#}$	<1	-	-	-	-	-		µg/kg	1	A-T-006s
1,2-Dichlorobenzene$_{A}^{\#}$	<1	-	-	-	-	-		µg/kg	1	A-T-006s
1,2-Dibromo-3-chloropropane (DCBP)$_{A}$	<2	-	-	-	-	-		µg/kg	2	A-T-006s
1,2,4-Trichlorobenzene$_{A}$	<3	-	-	-	-	-		µg/kg	3	A-T-006s
Hexachlorobutadiene$_{A}^{\#}$	<1	-	-	-	-	-		µg/kg	1	A-T-006s
1,2,3-Trichlorobenzene$_{A}$	<3	-	-	-	-	-		µg/kg	3	A-T-006s

Envirolab Job Number: 22/08923

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/08923/2	22/08923/4	22/08923/5	22/08923/7	22/08923/10	22/08923/13		Units	Limit of Detection	Method ref
Client Sample No	102	102	101	101	3	3				
Client Sample ID	BH01	BH02	BH03	BH05	CP08	CP02				
Depth to Top	1.00	1.00	0.50	0.1	0.50	1.00				
Depth To Bottom										
Date Sampled	05-Sep-22	06-Sep-22	07-Sep-22	08-Sep-22	06-Sep-22	07-Sep-22				
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES				
Sample Matrix Code	6AE	6AE	5A	4AE		5AE				
TPH CWG with Clean Up										
Ali >C5-C6$_A^{\#}$	<0.01	<0.01	-	-	-	-		mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01	<0.01	-	-	-	-		mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	<1	<1	-	-	-	-		mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	<1	<1	-	-	-	-		mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	<1	<1	-	-	-	-		mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	<1	<1	-	-	-	-		mg/kg	1	A-T-055s
Ali >C21-C35$_A^{M\#}$	<1	<1	-	-	-	-		mg/kg	1	A-T-055s
Total Aliphatics$_A$	<1	<1	-	-	-	-		mg/kg	1	Calc-As Recd
Aro >C5-C7$_A^{\#}$	<0.01	<0.01	-	-	-	-		mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01	<0.01	-	-	-	-		mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	<1	<1	-	-	-	-		mg/kg	1	A-T-055s
Aro >C10-C12$_A$	<1	<1	-	-	-	-		mg/kg	1	A-T-055s
Aro >C12-C16$_A$	<1	<1	-	-	-	-		mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	<1	<1	-	-	-	-		mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	<1	<1	-	-	-	-		mg/kg	1	A-T-055s
Total Aromatics$_A$	<1	<1	-	-	-	-		mg/kg	1	Calc-As Recd
TPH (Ali & Aro >C5-C35)$_A$	<1	<1	-	-	-	-		mg/kg	1	Calc-As Recd
BTEX - Benzene$_A^{\#}$	<0.01	<0.01	-	-	-	-		mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01	<0.01	-	-	-	-		mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01	<0.01	-	-	-	-		mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01	<0.01	-	-	-	-		mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01	<0.01	-	-	-	-		mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	<0.01	<0.01	-	-	-	-		mg/kg	0.01	A-T-022s

REPORT NOTES

General

This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,
E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve
Subscript "^" indicates analysis has dependant options against results. Testing dependant on results appear in the comments area of your sample receipt.
EPH CWG results have humics mathematically subtracted through instrument calculation
TPH results "with Cleanup" indicates results cleaned up with Silica during extraction

EPH CWG GCxGC ID from TPH CWG

Where we have identified humic substances in any ID's from TPH CWG with Clean Up please note that the concentration of these humic substances is not included in the quantified results and are included in the ID for information.

Please contact us if you need any further information.

v2

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Castleford Lab), The Potteries, Pottery Street, Castleford, West Yorkshire, UK, WF10 1NJ

Project: East Midland Airport

Clients Project No: 765514

Project No: 22/08923

Date Received: 12/09/2022 (pm)

Cool Box Temperatures (°C): 15.4, 15.2

Lab Sample ID	22/08923/10
Client Sample No	3
Client Sample ID/Depth	CP08 0.50m
Date Sampled	06/09/22
Deviation Code	
F	✓

Key

F *Maximum holding time exceeded between sampling date and analysis for analytes listed below*

HOLDING TIME EXCEEDANCES

Lab Sample ID	22/08923/10
Client Sample No	3
Client Sample ID/Depth	CP08 0.50m
Date Sampled	06/09/22
PAH-16MS	✓
TPH Banded 1 with ID	✓

If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3, ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	22/08923/2	22/08923/4	22/08923/5	22/08923/7	22/08923/10	22/08923/13
Client Sample No	102	102	101	101	3	3
Client Sample ID/Depth	BH01 1.00m	BH02 1.00m	BH03 0.50m	BH05 0.1m	CP08 0.50m	CP02 1.00m
Date Sampled	05/09/22	06/09/22	07/09/22	08/09/22	06/09/22	07/09/22
A-T-006s	15/09/2022					
A-T-007s			22/09/2022	22/09/2022	22/09/2022	22/09/2022
A-T-019s	15/09/2022	15/09/2022	26/09/2022	26/09/2022	26/09/2022	26/09/2022
A-T-022s	20/09/2022	20/09/2022				
A-T-024s	21/09/2022	21/09/2022	26/09/2022	26/09/2022	26/09/2022	26/09/2022
A-T-026s	21/09/2022	21/09/2022	23/09/2022	23/09/2022	23/09/2022	23/09/2022
A-T-031s	21/09/2022	21/09/2022	26/09/2022	26/09/2022	26/09/2022	26/09/2022
A-T-032 OM	23/09/2022	23/09/2022	27/09/2022	27/09/2022	27/09/2022	27/09/2022
A-T-044	20/09/2022	20/09/2022	22/09/2022	22/09/2022	23/09/2022	22/09/2022
A-T-052s	26/09/2022					
A-T-055s	20/09/2022	20/09/2022				
Calc-As Recd	20/09/2022	20/09/2022				

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

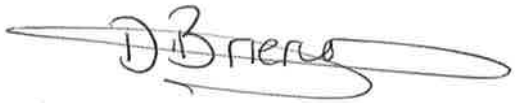
FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 22/09109
Issue Number: 1 **Date:** 28 September, 2022

Client:
Structural Soils Limited (Castleford)
The Potteries
Pottery Street
Castleford
West Yorkshire
UK
WF10 1NJ

Project Manager: Alex Jones
Project Name: East Midland Asirport
Project Ref: 765514
Order No: N/A
Date Samples Received: 16/09/22
Date Instructions Received: 16/09/22
Date Analysis Completed: 28/09/22

Approved by:



Danielle Brierley
Deputy Client Services Supervisor

Envirolab Job Number: 22/09109

Client Project Name: East Midland Asirport

Client Project Ref: 765514

Lab Sample ID	22/09109/3	22/09109/4	22/09109/11	22/09109/13	22/09109/16	22/09109/24	22/09109/25	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH21	BH22	BH24	BH04	BH23	BH27	CP04			
Depth to Top	1.00	0.50	2.00	2.00	0.6	0.40	0.50			
Depth To Bottom										
Date Sampled	13-Sep-22	13-Sep-22	13-Sep-22	12-Sep-22	12-Sep-22	12-Sep-22	12-Sep-22			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Sample Matrix Code	5A	5A	4A	6AE	6AE	4AE	5A			
% Moisture at <40C$_A$	13.5	10.1	10.9	19.4	11.6	12.0	9.9	% w/w	0.1	A-T-044
% Stones >10mm$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	% w/w	0.1	A-T-044
pH$_D$$^{M\#}$	8.72	8.07	8.89	8.76	8.16	8.41	7.29	pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D$$^{M\#}$	0.01	<0.01	<0.01	0.03	<0.01	0.01	<0.01	g/l	0.01	A-T-026s
Organic Matter$_D$$^{M\#}$	0.8	1.1	0.4	0.6	1.5	2.3	2.1	% w/w	0.1	A-T-032 OM
Arsenic$_D$$^{M\#}$	<1	<1	2	<1	2	<1	5	mg/kg	1	A-T-024s
Cadmium$_D$$^{M\#}$	1.3	1.3	1.2	1.3	1.1	1.3	0.9	mg/kg	0.5	A-T-024s
Copper$_D$$^{M\#}$	13	15	10	12	12	10	15	mg/kg	1	A-T-024s
Chromium$_D$$^{M\#}$	55	51	57	60	47	54	25	mg/kg	1	A-T-024s
Lead$_D$$^{M\#}$	6	14	4	6	16	7	20	mg/kg	1	A-T-024s
Mercury$_D$	<0.17	<0.17	0.62	0.37	<0.17	0.62	<0.17	mg/kg	0.17	A-T-024s
Nickel$_D$$^{M\#}$	48	39	45	49	39	42	18	mg/kg	1	A-T-024s
Selenium$_D$$^{M\#}$	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-024s
Zinc$_D$$^{M\#}$	68	80	75	72	69	77	49	mg/kg	5	A-T-024s

Envirolab Job Number: 22/09109

Client Project Name: East Midland Asirport

Client Project Ref: 765514

Lab Sample ID	22/09109/3	22/09109/4	22/09109/11	22/09109/13	22/09109/16	22/09109/24	22/09109/25	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH21	BH22	BH24	BH04	BH23	BH27	CP04			
Depth to Top	1.00	0.50	2.00	2.00	0.6	0.40	0.50			
Depth To Bottom										
Date Sampled	13-Sep-22	13-Sep-22	13-Sep-22	12-Sep-22	12-Sep-22	12-Sep-22	12-Sep-22			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Sample Matrix Code	5A	5A	4A	6AE	6AE	4AE	5A			
PAH-16MS										
Acenaphthene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	mg/kg	0.01	A-T-019s

Envirolab Job Number: 22/09109

Client Project Name: East Midland Asirport

Client Project Ref: 765514

Lab Sample ID	22/09109/3	22/09109/4	22/09109/11	22/09109/13	22/09109/16	22/09109/24	22/09109/25	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH21	BH22	BH24	BH04	BH23	BH27	CP04			
Depth to Top	1.00	0.50	2.00	2.00	0.6	0.40	0.50			
Depth To Bottom										
Date Sampled	13-Sep-22	13-Sep-22	13-Sep-22	12-Sep-22	12-Sep-22	12-Sep-22	12-Sep-22			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Sample Matrix Code	5A	5A	4A	6AE	6AE	4AE	5A			
TPH CWG with Clean Up										
Ali >C5-C6$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Ali >C21-C35$_A^{M\#}$	<1	3	<1	<1	2	2	2	mg/kg	1	A-T-055s
Total Aliphatics$_A$	<1	3	<1	<1	2	2	2	mg/kg	1	Calc-As Recd
Aro >C5-C7$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Aro >C10-C12$_A$	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Aro >C12-C16$_A$	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	<1	1	<1	<1	1	<1	<1	mg/kg	1	A-T-055s
Total Aromatics$_A$	<1	1	<1	<1	1	<1	<1	mg/kg	1	Calc-As Recd
TPH (Ali & Aro >C5-C35)$_A$	<1	4	<1	<1	3	2	2	mg/kg	1	Calc-As Recd
BTEX - Benzene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s

REPORT NOTES

General

This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,
E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve
Subscript "^" indicates analysis has dependant options against results. Testing dependant on results appear in the comments area of your sample receipt.
EPH CWG results have humics mathematically subtracted through instrument calculation
TPH results "with Cleanup" indicates results cleaned up with Silica during extraction

EPH CWG GCxGC ID from TPH CWG

Where we have identified humic substances in any ID's from TPH CWG with Clean Up please note that the concentration of these humic substances is not included in the quantified results and are included in the ID for information.

Please contact us if you need any further information.

v2

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Castleford), The Potteries, Pottery Street, Castleford, West Yorkshire, UK, WF10 1NJ

Project: East Midland Asirport

Clients Project No: 765514

Project No: 22/09109

Date Received: 16/09/2022 (am)

Cool Box Temperatures (°C): 17.0, 17.0, 17.2, 18.2

NO DEVIATIONS IDENTIFIED

If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3, ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	22/09109/3	22/09109/4	22/09109/11	22/09109/13	22/09109/16	22/09109/24	22/09109/25
Client Sample No							
Client Sample ID/Depth	BH21 1.00m	BH22 0.50m	BH24 2.00m	BH04 2.00m	BH23 0.6m	BH27 0.40m	CP04 0.50m
Date Sampled	13/09/22	13/09/22	13/09/22	12/09/22	12/09/22	12/09/22	12/09/22
A-T-019s	21/09/2022	21/09/2022	21/09/2022	23/09/2022	23/09/2022	23/09/2022	23/09/2022
A-T-022s	22/09/2022	22/09/2022	22/09/2022	26/09/2022	26/09/2022	26/09/2022	26/09/2022
A-T-024s	23/09/2022	23/09/2022	23/09/2022	23/09/2022	23/09/2022	23/09/2022	23/09/2022
A-T-026s	22/09/2022	22/09/2022	22/09/2022	22/09/2022	22/09/2022	22/09/2022	22/09/2022
A-T-031s	26/09/2022	26/09/2022	26/09/2022	26/09/2022	26/09/2022	26/09/2022	26/09/2022
A-T-032 OM	28/09/2022	28/09/2022	28/09/2022	28/09/2022	28/09/2022	28/09/2022	28/09/2022
A-T-044	21/09/2022	21/09/2022	21/09/2022	21/09/2022	21/09/2022	21/09/2022	21/09/2022
A-T-055s	22/09/2022	22/09/2022	22/09/2022	26/09/2022	26/09/2022	26/09/2022	26/09/2022
Calc-As Recd	22/09/2022	22/09/2022	22/09/2022	26/09/2022	26/09/2022	26/09/2022	26/09/2022

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT
SUPPLEMENT TO TEST REPORT 22/09109/1

Amendments: Request for Additional Analysis

Envirolab Job Number: 22/09109
Issue Number: 2 **Date:** 12 October, 2022

Client:
Structural Soils Limited (Castleford)
The Potteries
Pottery Street
Castleford
West Yorkshire
UK
WF10 1NJ

Project Manager: Alex Jones
Project Name: East Midland Asirport
Project Ref: 765514
Order No: N/A
Date Samples Received: 16/09/22
Date Instructions Received: 16/09/22
Date Analysis Completed: 11/10/22

Approved by:

Richard Wong
Client Manager

mCERTS THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME
UKAS TESTING 1247

Envirolab Job Number: 22/09109

Client Project Name: East Midland Asirport

Client Project Ref: 765514

Lab Sample ID	22/09109/3	22/09109/4	22/09109/11	22/09109/13	22/09109/16	22/09109/20	22/09109/24	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH21	BH22	BH24	BH04	BH23	BH25	BH27			
Depth to Top	1.00	0.50	2.00	2.00	0.6	0.50	0.40			
Depth To Bottom										
Date Sampled	13-Sep-22	13-Sep-22	13-Sep-22	12-Sep-22	12-Sep-22	13-Sep-22	12-Sep-22			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Sample Matrix Code	5A	5A	4A	6AE	6AE	5A	4AE			
% Moisture at <40C$_A$	13.5	10.1	10.9	19.4	11.6	10.3	12.0	% w/w	0.1	A-T-044
% Stones >10mm$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	% w/w	0.1	A-T-044
pH$_D$$^{M\#}$	8.72	8.07	8.89	8.76	8.16	8.10	8.41	pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D$$^{M\#}$	0.01	<0.01	<0.01	0.03	<0.01	<0.01	0.01	g/l	0.01	A-T-026s
Organic Matter$_D$$^{M\#}$	0.8	1.1	0.4	0.6	1.5	1.7	2.3	% w/w	0.1	A-T-032 OM
Arsenic$_D$$^{M\#}$	<1	<1	2	<1	2	3	<1	mg/kg	1	A-T-024s
Cadmium$_D$$^{M\#}$	1.3	1.3	1.2	1.3	1.1	0.7	1.3	mg/kg	0.5	A-T-024s
Copper$_D$$^{M\#}$	13	15	10	12	12	11	10	mg/kg	1	A-T-024s
Chromium$_D$$^{M\#}$	55	51	57	60	47	36	54	mg/kg	1	A-T-024s
Lead$_D$$^{M\#}$	6	14	4	6	16	15	7	mg/kg	1	A-T-024s
Mercury$_D$	<0.17	<0.17	0.62	0.37	<0.17	<0.17	0.62	mg/kg	0.17	A-T-024s
Nickel$_D$$^{M\#}$	48	39	45	49	39	34	42	mg/kg	1	A-T-024s
Selenium$_D$$^{M\#}$	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-024s
Zinc$_D$$^{M\#}$	68	80	75	72	69	58	77	mg/kg	5	A-T-024s

Envirolab Job Number: 22/09109

Client Project Name: East Midland Asirport

Client Project Ref: 765514

Lab Sample ID	22/09109/3	22/09109/4	22/09109/11	22/09109/13	22/09109/16	22/09109/20	22/09109/24	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH21	BH22	BH24	BH04	BH23	BH25	BH27			
Depth to Top	1.00	0.50	2.00	2.00	0.6	0.50	0.40			
Depth To Bottom										
Date Sampled	13-Sep-22	13-Sep-22	13-Sep-22	12-Sep-22	12-Sep-22	13-Sep-22	12-Sep-22			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Sample Matrix Code	5A	5A	4A	6AE	6AE	5A	4AE			
PAH-16MS										
Acenaphthene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	mg/kg	0.01	A-T-019s

Envirolab Job Number: 22/09109

Client Project Name: East Midland Asirport

Client Project Ref: 765514

Lab Sample ID	22/09109/3	22/09109/4	22/09109/11	22/09109/13	22/09109/16	22/09109/20	22/09109/24	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH21	BH22	BH24	BH04	BH23	BH25	BH27			
Depth to Top	1.00	0.50	2.00	2.00	0.6	0.50	0.40			
Depth To Bottom										
Date Sampled	13-Sep-22	13-Sep-22	13-Sep-22	12-Sep-22	12-Sep-22	13-Sep-22	12-Sep-22			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Sample Matrix Code	5A	5A	4A	6AE	6AE	5A	4AE			
TPH CWG with Clean Up										
Ali >C5-C6$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Ali >C21-C35$_A^{M\#}$	<1	3	<1	<1	2	<1	2	mg/kg	1	A-T-055s
Total Aliphatics$_A$	<1	3	<1	<1	2	<1	2	mg/kg	1	Calc-As Recd
Aro >C5-C7$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Aro >C10-C12$_A$	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Aro >C12-C16$_A$	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	<1	1	<1	<1	1	<1	<1	mg/kg	1	A-T-055s
Total Aromatics$_A$	<1	1	<1	<1	1	<1	<1	mg/kg	1	Calc-As Recd
TPH (Ali & Aro >C5-C35)$_A$	<1	4	<1	<1	3	<1	2	mg/kg	1	Calc-As Recd
BTEX - Benzene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s

Envirolab Job Number: 22/09109

Client Project Name: East Midland Asirport

Client Project Ref: 765514

Lab Sample ID	22/09109/25							Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	CP04									
Depth to Top	0.50									
Depth To Bottom										
Date Sampled	12-Sep-22									
Sample Type	Soil									
Sample Matrix Code	5A									
% Moisture at <40C$_A$	9.9							% w/w	0.1	A-T-044
% Stones >10mm$_A$	<0.1							% w/w	0.1	A-T-044
pH$_D$$^{M\#}$	7.29							pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D$$^{M\#}$	<0.01							g/l	0.01	A-T-026s
Organic Matter$_D$$^{M\#}$	2.1							% w/w	0.1	A-T-032 OM
Arsenic$_D$$^{M\#}$	5							mg/kg	1	A-T-024s
Cadmium$_D$$^{M\#}$	0.9							mg/kg	0.5	A-T-024s
Copper$_D$$^{M\#}$	15							mg/kg	1	A-T-024s
Chromium$_D$$^{M\#}$	25							mg/kg	1	A-T-024s
Lead$_D$$^{M\#}$	20							mg/kg	1	A-T-024s
Mercury$_D$	<0.17							mg/kg	0.17	A-T-024s
Nickel$_D$$^{M\#}$	18							mg/kg	1	A-T-024s
Selenium$_D$$^{M\#}$	<1							mg/kg	1	A-T-024s
Zinc$_D$$^{M\#}$	49							mg/kg	5	A-T-024s

Envirolab Job Number: 22/09109

Client Project Name: East Midland Asirport

Client Project Ref: 765514

Lab Sample ID	22/09109/25							Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	CP04									
Depth to Top	0.50									
Depth To Bottom										
Date Sampled	12-Sep-22									
Sample Type	Soil									
Sample Matrix Code	5A									
PAH-16MS										
Acenaphthene$_A^{M\#}$	<0.01							mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01							mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	<0.02							mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.04							mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	<0.04							mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	<0.05							mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.05							mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07							mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	<0.06							mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04							mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	<0.08							mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	<0.01							mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	<0.03							mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	<0.03							mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	<0.03							mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	<0.07							mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	<0.08							mg/kg	0.01	A-T-019s

Envirolab Job Number: 22/09109

Client Project Name: East Midland Asirport

Client Project Ref: 765514

Lab Sample ID	22/09109/25							Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	CP04									
Depth to Top	0.50									
Depth To Bottom										
Date Sampled	12-Sep-22									
Sample Type	Soil									
Sample Matrix Code	5A									
TPH CWG with Clean Up										
Ali >C5-C6$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	<1							mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	<1							mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	<1							mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	<1							mg/kg	1	A-T-055s
Ali >C21-C35$_A^{M\#}$	2							mg/kg	1	A-T-055s
Total Aliphatics$_A$	2							mg/kg	1	Calc-As Recd
Aro >C5-C7$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	<1							mg/kg	1	A-T-055s
Aro >C10-C12$_A$	<1							mg/kg	1	A-T-055s
Aro >C12-C16$_A$	<1							mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	<1							mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	<1							mg/kg	1	A-T-055s
Total Aromatics$_A$	<1							mg/kg	1	Calc-As Recd
TPH (Ali & Aro >C5-C35)$_A$	2							mg/kg	1	Calc-As Recd
BTEX - Benzene$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s

REPORT NOTES

General

This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:

All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:

Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:

Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:

Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:

1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.

Secondary Matrix Codes:

A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,
E = contains roots/twigs.

Key:

IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve
Subscript "^" indicates analysis has dependant options against results. Testing dependant on results appear in the comments area of your sample receipt.
EPH CWG results have humics mathematically subtracted through instrument calculation
TPH results "with Cleanup" indicates results cleaned up with Silica during extraction

EPH CWG GCxGC ID from TPH CWG

Where we have identified humic substances in any ID's from TPH CWG with Clean Up please note that the concentration of these humic substances is not included in the quantified results and are included in the ID for information.

Please contact us if you need any further information.

v2

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Castleford), The Potteries, Pottery Street, Castleford, West Yorkshire, UK, WF10 1NJ

Project: East Midland Asirport

Clients Project No: 765514

Project No: 22/09109

Date Received: 16/09/2022 (am)

Cool Box Temperatures (°C): 17.0, 17.0, 17.2, 18.2

Lab Sample ID	22/09109/20
Client Sample No	
Client Sample ID/Depth	BH25 0.50m
Date Sampled	13/09/22
Deviation Code	
F	✓

Key
F *Maximum holding time exceeded between sampling date and analysis for analytes listed below*

HOLDING TIME EXCEEDANCES

Lab Sample ID	22/09109/20
Client Sample No	
Client Sample ID/Depth	BH25 0.50m
Date Sampled	13/09/22
PAH-16MS	✓
VPHCWG	✓

Note: If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3 (for water samples 5 ± 3°C), ISO 18400-105:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	22/09109/3	22/09109/4	22/09109/11	22/09109/13	22/09109/16	22/09109/20	22/09109/24	22/09109/25
Client Sample No								
Client Sample ID/Depth	BH21 1.00m	BH22 0.50m	BH24 2.00m	BH04 2.00m	BH23 0.6m	BH25 0.50m	BH27 0.40m	CP04 0.50m
Date Sampled	13/09/22	13/09/22	13/09/22	12/09/22	12/09/22	13/09/22	12/09/22	12/09/22
A-T-019s	21/09/2022	21/09/2022	21/09/2022	23/09/2022	23/09/2022	06/10/2022	23/09/2022	23/09/2022
A-T-022s	22/09/2022	22/09/2022	22/09/2022	26/09/2022	26/09/2022	05/10/2022	26/09/2022	26/09/2022
A-T-024s	23/09/2022	23/09/2022	23/09/2022	23/09/2022	23/09/2022	10/10/2022	23/09/2022	23/09/2022
A-T-026s	22/09/2022	22/09/2022	22/09/2022	22/09/2022	22/09/2022	10/10/2022	22/09/2022	22/09/2022
A-T-031s	26/09/2022	26/09/2022	26/09/2022	26/09/2022	26/09/2022	11/10/2022	26/09/2022	26/09/2022
A-T-032 OM	28/09/2022	28/09/2022	28/09/2022	28/09/2022	28/09/2022	10/10/2022	28/09/2022	28/09/2022
A-T-044	21/09/2022	21/09/2022	21/09/2022	21/09/2022	21/09/2022	04/10/2022	21/09/2022	21/09/2022
A-T-055s	22/09/2022	22/09/2022	22/09/2022	26/09/2022	26/09/2022	07/10/2022	26/09/2022	26/09/2022
Calc-As Recd	22/09/2022	22/09/2022	22/09/2022	26/09/2022	26/09/2022	07/10/2022	26/09/2022	26/09/2022

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

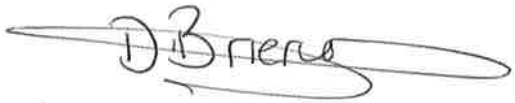
FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 22/09127
Issue Number: 1 **Date:** 27 September, 2022

Client:
Structural Soils Limited (Castleford)
The Potteries
Pottery Street
Castleford
West Yorkshire
UK
WF10 1NJ

Project Manager: Alex Jones
Project Name: East Midland Airport
Project Ref: 765514
Order No: N/A
Date Samples Received: 16/09/22
Date Instructions Received: 16/09/22
Date Analysis Completed: 27/09/22

Approved by:



Danielle Brierley
Deputy Client Services Supervisor

Envirolab Job Number: 22/09127

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09127/2	22/09127/12						Units	Limit of Detection	Method ref
Client Sample No	2	03								
Client Sample ID	CP01	BH26								
Depth to Top	0.50	1.00								
Depth To Bottom										
Date Sampled	05-Sep-22	12-Sep-22								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	6AE	6A								
% Moisture at <40C$_A$	12.9	13.1						% w/w	0.1	A-T-044
% Stones >10mm$_A$	<0.1	<0.1						% w/w	0.1	A-T-044
pH$_D$$^{M\#}$	7.68	8.21						pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D$$^{M\#}$	<0.01	0.03						g/l	0.01	A-T-026s
Organic Matter$_D$$^{M\#}$	1.2	1.2						% w/w	0.1	A-T-032 OM
Arsenic$_D$$^{M\#}$	2	3						mg/kg	1	A-T-024s
Cadmium$_D$$^{M\#}$	1.3	1.0						mg/kg	0.5	A-T-024s
Copper$_D$$^{M\#}$	20	12						mg/kg	1	A-T-024s
Chromium$_D$$^{M\#}$	42	45						mg/kg	1	A-T-024s
Lead$_D$$^{M\#}$	11	13						mg/kg	1	A-T-024s
Mercury$_D$	<0.17	<0.17						mg/kg	0.17	A-T-024s
Nickel$_D$$^{M\#}$	57	46						mg/kg	1	A-T-024s
Selenium$_D$$^{M\#}$	<1	<1						mg/kg	1	A-T-024s
Zinc$_D$$^{M\#}$	76	75						mg/kg	5	A-T-024s

Envirolab Job Number: 22/09127

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09127/2	22/09127/12						Units	Limit of Detection	Method ref
Client Sample No	2	03								
Client Sample ID	CP01	BH26								
Depth to Top	0.50	1.00								
Depth To Bottom										
Date Sampled	05-Sep-22	12-Sep-22								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	6AE	6A								
PAH-16MS										
Acenaphthene$_A^{M\#}$	<0.01	<0.01						mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01	<0.01						mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	<0.02	<0.02						mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.04	<0.04						mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	<0.04	<0.04						mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	<0.05	<0.05						mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.05	<0.05						mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07	<0.07						mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	<0.06	<0.06						mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04	<0.04						mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	<0.08	<0.08						mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	<0.01	<0.01						mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	<0.03	<0.03						mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	<0.03	<0.03						mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	<0.03	<0.03						mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	<0.07	<0.07						mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	<0.08	<0.08						mg/kg	0.01	A-T-019s

Envirolab Job Number: 22/09127

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09127/2	22/09127/12						Units	Limit of Detection	Method ref
Client Sample No	2	03								
Client Sample ID	CP01	BH26								
Depth to Top	0.50	1.00								
Depth To Bottom										
Date Sampled	05-Sep-22	12-Sep-22								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	6AE	6A								
TPH CWG with Clean Up										
Ali >C5-C6$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	<1	<1						mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Ali >C21-C35$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Total Aliphatics$_A$	<1	<1						mg/kg	1	Calc-As Recd
Aro >C5-C7$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	<1	<1						mg/kg	1	A-T-055s
Aro >C10-C12$_A$	<1	<1						mg/kg	1	A-T-055s
Aro >C12-C16$_A$	<1	<1						mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Total Aromatics$_A$	<1	<1						mg/kg	1	Calc-As Recd
TPH (Ali & Aro >C5-C35)$_A$	<1	<1						mg/kg	1	Calc-As Recd
BTEX - Benzene$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s

REPORT NOTES

General

This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,
E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve
Subscript "^" indicates analysis has dependant options against results. Testing dependant on results appear in the comments area of your sample receipt.
EPH CWG results have humics mathematically subtracted through instrument calculation
TPH results "with Cleanup" indicates results cleaned up with Silica during extraction

EPH CWG GCxGC ID from TPH CWG

Where we have identified humic substances in any ID's from TPH CWG with Clean Up please note that the concentration of these humic substances is not included in the quantified results and are included in the ID for information.

Please contact us if you need any further information.

v2

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Castleford), The Potteries, Pottery Street, Castleford, West Yorkshire, UK, WF10 1NJ

Project: East Midland Airport

Clients Project No: 765514

Project No: 22/09127

Date Received: 16/09/2022 (am)

Cool Box Temperatures (°C): 20.3, 18.2, 20.3

Lab Sample ID	22/09127/2
Client Sample No	2
Client Sample ID/Depth	CP01 0.50m
Date Sampled	05/09/22
Deviation Code	
F	✓

Key
F *Maximum holding time exceeded between sampling date and analysis for analytes listed below*

HOLDING TIME EXCEEDANCES

Lab Sample ID	22/09127/2
Client Sample No	2
Client Sample ID/Depth	CP01 0.50m
Date Sampled	05/09/22
PAH-16MS	✓
VPHCWG	✓

If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3, ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	22/09127/2	22/09127/12
Client Sample No	2	03
Client Sample ID/Depth	CP01 0.50m	BH26 1.00m
Date Sampled	05/09/22	12/09/22
A-T-019s	27/09/2022	27/09/2022
A-T-022s	21/09/2022	21/09/2022
A-T-024s	22/09/2022	22/09/2022
A-T-026s	22/09/2022	22/09/2022
A-T-031s	23/09/2022	23/09/2022
A-T-032 OM	27/09/2022	27/09/2022
A-T-044	21/09/2022	21/09/2022
A-T-055s	23/09/2022	23/09/2022
Calc-As Recd	23/09/2022	23/09/2022

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT
SUPPLEMENT TO TEST REPORT 22/09127/1

Amendments: Request for Additional Analysis

Envirolab Job Number: 22/09127
Issue Number: 2 **Date:** 07 October, 2022

Client:
Structural Soils Limited (Castleford)
The Potteries
Pottery Street
Castleford
West Yorkshire
UK
WF10 1NJ

Project Manager: Alex Jones
Project Name: East Midland Airport
Project Ref: 765514
Order No: N/A
Date Samples Received: 16/09/22
Date Instructions Received: 16/09/22
Date Analysis Completed: 07/10/22

Approved by:

Danielle Brierley
Deputy Client Services Supervisor

Envirolab Job Number: 22/09127

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09127/2	22/09127/12	22/09127/19					Units	Limit of Detection	Method ref
Client Sample No	2	03								
Client Sample ID	CP01	BH26	CP28							
Depth to Top	0.50	1.00	1.00							
Depth To Bottom										
Date Sampled	05-Sep-22	12-Sep-22	05-Sep-22							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	6AE	6A	5A							
% Moisture at <40C$_A$	12.9	13.1	10.7					% w/w	0.1	A-T-044
% Stones >10mm$_A$	<0.1	<0.1	<0.1					% w/w	0.1	A-T-044
pH$_D$$^{M\#}$	7.68	8.21	7.56					pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D$$^{M\#}$	<0.01	0.03	0.02					g/l	0.01	A-T-026s
Organic Matter$_D$$^{M\#}$	1.2	1.2	1.4					% w/w	0.1	A-T-032 OM
Arsenic$_D$$^{M\#}$	2	3	3					mg/kg	1	A-T-024s
Cadmium$_D$$^{M\#}$	1.3	1.0	<0.5					mg/kg	0.5	A-T-024s
Copper$_D$$^{M\#}$	20	12	11					mg/kg	1	A-T-024s
Chromium$_D$$^{M\#}$	42	45	38					mg/kg	1	A-T-024s
Lead$_D$$^{M\#}$	11	13	11					mg/kg	1	A-T-024s
Mercury$_D$	<0.17	<0.17	<0.17					mg/kg	0.17	A-T-024s
Nickel$_D$$^{M\#}$	57	46	33					mg/kg	1	A-T-024s
Selenium$_D$$^{M\#}$	<1	<1	<1					mg/kg	1	A-T-024s
Zinc$_D$$^{M\#}$	76	75	58					mg/kg	5	A-T-024s

Envirolab Job Number: 22/09127

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09127/2	22/09127/12	22/09127/19					Units	Limit of Detection	Method ref
Client Sample No	2	03								
Client Sample ID	CP01	BH26	CP28							
Depth to Top	0.50	1.00	1.00							
Depth To Bottom										
Date Sampled	05-Sep-22	12-Sep-22	05-Sep-22							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	6AE	6A	5A							
PAH-16MS										
Acenaphthene$_{A}^{M\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-019s
Acenaphthylene$_{A}^{M\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-019s
Anthracene$_{A}^{M\#}$	<0.02	<0.02	<0.02					mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_{A}^{M\#}$	<0.04	<0.04	<0.04					mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_{A}^{M\#}$	<0.04	<0.04	<0.04					mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_{A}^{M\#}$	<0.05	<0.05	<0.05					mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_{A}^{M\#}$	<0.05	<0.05	<0.05					mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_{A}^{M\#}$	<0.07	<0.07	<0.07					mg/kg	0.07	A-T-019s
Chrysene$_{A}^{M\#}$	<0.06	<0.06	<0.06					mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_{A}^{M\#}$	<0.04	<0.04	<0.04					mg/kg	0.04	A-T-019s
Fluoranthene$_{A}^{M\#}$	<0.08	<0.08	<0.08					mg/kg	0.08	A-T-019s
Fluorene$_{A}^{M\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_{A}^{M\#}$	<0.03	<0.03	<0.03					mg/kg	0.03	A-T-019s
Naphthalene $_{A}^{M\#}$	<0.03	<0.03	<0.03					mg/kg	0.03	A-T-019s
Phenanthrene$_{A}^{M\#}$	<0.03	<0.03	<0.03					mg/kg	0.03	A-T-019s
Pyrene$_{A}^{M\#}$	<0.07	<0.07	<0.07					mg/kg	0.07	A-T-019s
Total PAH-16MS$_{A}^{M\#}$	<0.08	<0.08	<0.08					mg/kg	0.01	A-T-019s

Envirolab Job Number: 22/09127

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09127/2	22/09127/12	22/09127/19					Units	Limit of Detection	Method ref
Client Sample No	2	03								
Client Sample ID	CP01	BH26	CP28							
Depth to Top	0.50	1.00	1.00							
Depth To Bottom										
Date Sampled	05-Sep-22	12-Sep-22	05-Sep-22							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	6AE	6A	5A							
SVOC excluding PAH-16										
4-Bromophenyl phenyl ether$_A$	-	-	<100					µg/kg	100	A-T-052s
Hexachlorobenzene$_A$	-	-	<100					µg/kg	100	A-T-052s
Diethyl phthalate$_A$	-	-	<100					µg/kg	100	A-T-052s
Dimethyl phthalate$_A$	-	-	<100					µg/kg	100	A-T-052s
Dibenzofuran$_A$	-	-	<100					µg/kg	100	A-T-052s
Carbazole$_A$	-	-	<100					µg/kg	100	A-T-052s
Butylbenzyl phthalate$_A$	-	-	<100					µg/kg	100	A-T-052s
Bis(2-ethylhexyl)phthalate$_A$	-	-	<500					µg/kg	500	A-T-052s
Bis(2-chloroethoxy)methane$_A$	-	-	<100					µg/kg	100	A-T-052s
Bis(2-chloroethyl)ether$_A$	-	-	<100					µg/kg	100	A-T-052s
4-Nitrophenol$_A$	-	-	<100					µg/kg	100	A-T-052s
3+4-Methylphenol$_A$	-	-	<100					µg/kg	100	A-T-052s
4-Chloro-3-methylphenol$_A$	-	-	<100					µg/kg	100	A-T-052s
2-Nitrophenol$_A$	-	-	<100					µg/kg	100	A-T-052s
2-Methylphenol$_A$	-	-	<100					µg/kg	100	A-T-052s
1,2,4-Trichlorobenzene$_A$	-	-	<100					µg/kg	100	A-T-052s
2-Chlorophenol$_A$	-	-	<100					µg/kg	100	A-T-052s
2,6-Dinitrotoluene$_A$	-	-	<100					µg/kg	100	A-T-052s
2,4-Dinitrotoluene$_A$	-	-	<100					µg/kg	100	A-T-052s
2,4-Dimethylphenol$_A$	-	-	<100					µg/kg	100	A-T-052s
2,4-Dichlorophenol$_A$	-	-	<100					µg/kg	100	A-T-052s
2,4,6-Trichlorophenol$_A$	-	-	<100					µg/kg	100	A-T-052s
2,4,5-Trichlorophenol$_A$	-	-	<100					µg/kg	100	A-T-052s
1,4-Dichlorobenzene$_A$	-	-	<100					µg/kg	100	A-T-052s
1,3-Dichlorobenzene$_A$	-	-	<100					µg/kg	100	A-T-052s
1,2-Dichlorobenzene$_A$	-	-	<100					µg/kg	100	A-T-052s
2-Chloronaphthalene$_A$	-	-	<100					µg/kg	100	A-T-052s
2-Methylnaphthalene$_A$	-	-	<100					µg/kg	100	A-T-052s
Bis(2-chloroisopropyl)ether$_A$	-	-	<100					µg/kg	100	A-T-052s
Phenol$_A$	-	-	<100					µg/kg	100	A-T-052s
Pentachlorophenol$_A$	-	-	<100					µg/kg	100	A-T-052s
n-Nitroso-n-dipropylamine$_A$	-	-	<100					µg/kg	100	A-T-052s

Envirolab Job Number: 22/09127

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09127/2	22/09127/12	22/09127/19					Units	Limit of Detection	Method ref
Client Sample No	2	03								
Client Sample ID	CP01	BH26	CP28							
Depth to Top	0.50	1.00	1.00							
Depth To Bottom										
Date Sampled	05-Sep-22	12-Sep-22	05-Sep-22							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	6AE	6A	5A							
n-Dioctylphthalate$_A$	-	-	<500					µg/kg	500	A-T-052s
n-Dibutylphthalate$_A$	-	-	<100					µg/kg	100	A-T-052s
Nitrobenzene$_A$	-	-	<100					µg/kg	100	A-T-052s
Isophorone$_A$	-	-	<100					µg/kg	100	A-T-052s
Hexachloroethane$_A$	-	-	<100					µg/kg	100	A-T-052s
Hexachlorocyclopentadiene$_A$	-	-	<100					µg/kg	100	A-T-052s
Hexachlorobutadiene$_A$	-	-	<100					µg/kg	100	A-T-052s
Perylene$_A$	-	-	<100					µg/kg	100	A-T-052s

Envirolab Job Number: 22/09127

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09127/2	22/09127/12	22/09127/19					Units	Limit of Detection	Method ref
Client Sample No	2	03								
Client Sample ID	CP01	BH26	CP28							
Depth to Top	0.50	1.00	1.00							
Depth To Bottom										
Date Sampled	05-Sep-22	12-Sep-22	05-Sep-22							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	6AE	6A	5A							
VOC										
Dichlorodifluoromethane$_{A}$	-	-	<1					µg/kg	1	A-T-006s
Chloromethane$_{A}$	-	-	<10					µg/kg	10	A-T-006s
Vinyl Chloride (Chloroethene)$_{A}^{\#}$	-	-	<1					µg/kg	1	A-T-006s
Bromomethane$_{A}^{\#}$	-	-	<1					µg/kg	1	A-T-006s
Chloroethane$_{A}^{\#}$	-	-	<1					µg/kg	1	A-T-006s
Trichlorofluoromethane$_{A}^{\#}$	-	-	<1					µg/kg	1	A-T-006s
1,1-Dichloroethene$_{A}^{\#}$	-	-	<1					µg/kg	1	A-T-006s
Carbon Disulphide$_{A}^{\#}$	-	-	<1					µg/kg	1	A-T-006s
Dichloromethane$_{A}$	-	-	<5					µg/kg	5	A-T-006s
trans 1,2-Dichloroethene$_{A}^{\#}$	-	-	<1					µg/kg	1	A-T-006s
1,1-Dichloroethane$_{A}^{\#}$	-	-	<1					µg/kg	1	A-T-006s
cis 1,2-Dichloroethene$_{A}^{\#}$	-	-	<1					µg/kg	1	A-T-006s
2,2-Dichloropropane$_{A}^{\#}$	-	-	<1					µg/kg	1	A-T-006s
Bromochloromethane$_{A}^{\#}$	-	-	<5					µg/kg	5	A-T-006s
Chloroform$_{A}^{\#}$	-	-	<1					µg/kg	1	A-T-006s
1,1,1-Trichloroethane$_{A}^{\#}$	-	-	<1					µg/kg	1	A-T-006s
1,1-Dichloropropene$_{A}^{\#}$	-	-	<1					µg/kg	1	A-T-006s
Carbon Tetrachloride$_{A}^{\#}$	-	-	<1					µg/kg	1	A-T-006s
1,2-Dichloroethane$_{A}^{\#}$	-	-	<2					µg/kg	2	A-T-006s
Benzene$_{A}^{\#}$	-	-	<1					µg/kg	1	A-T-006s
Trichloroethene$_{A}^{\#}$	-	-	<1					µg/kg	1	A-T-006s
1,2-Dichloropropane$_{A}^{\#}$	-	-	<1					µg/kg	1	A-T-006s
Dibromomethane$_{A}^{\#}$	-	-	<1					µg/kg	1	A-T-006s
Bromodichloromethane$_{A}^{\#}$	-	-	<10					µg/kg	10	A-T-006s
cis 1,3-Dichloropropene$_{A}^{\#}$	-	-	<1					µg/kg	1	A-T-006s
Toluene$_{A}^{\#}$	-	-	<1					µg/kg	1	A-T-006s
trans 1,3-Dichloropropene$_{A}^{\#}$	-	-	<1					µg/kg	1	A-T-006s
1,1,2-Trichloroethane$_{A}^{\#}$	-	-	<1					µg/kg	1	A-T-006s
1,3-Dichloropropane$_{A}^{\#}$	-	-	<1					µg/kg	1	A-T-006s
Tetrachloroethene$_{A}^{\#}$	-	-	<1					µg/kg	1	A-T-006s
Dibromochloromethane$_{A}^{\#}$	-	-	<3					µg/kg	3	A-T-006s
1,2-Dibromoethane$_{A}^{\#}$	-	-	<1					µg/kg	1	A-T-006s

Lab Sample ID	22/09127/2	22/09127/12	22/09127/19					Units	Limit of Detection	Method ref
Client Sample No	2	03								
Client Sample ID	CP01	BH26	CP28							
Depth to Top	0.50	1.00	1.00							
Depth To Bottom										
Date Sampled	05-Sep-22	12-Sep-22	05-Sep-22							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	6AE	6A	5A							
Chlorobenzene$_{A}^{\#}$	-	-	<1					µg/kg	1	A-T-006s
1,1,1,2-Tetrachloroethane$_{A}$	-	-	<1					µg/kg	1	A-T-006s
Ethylbenzene$_{A}^{\#}$	-	-	<1					µg/kg	1	A-T-006s
m & p Xylene$_{A}^{\#}$	-	-	<1					µg/kg	1	A-T-006s
o-Xylene$_{A}^{\#}$	-	-	<1					µg/kg	1	A-T-006s
Styrene$_{A}^{\#}$	-	-	<1					µg/kg	1	A-T-006s
Bromoform$_{A}^{\#}$	-	-	<1					µg/kg	1	A-T-006s
Isopropylbenzene$_{A}^{\#}$	-	-	<1					µg/kg	1	A-T-006s
1,1,2,2-Tetrachloroethane$_{A}$	-	-	<1					µg/kg	1	A-T-006s
1,2,3-Trichloropropane$_{A}^{\#}$	-	-	<1					µg/kg	1	A-T-006s
Bromobenzene$_{A}^{\#}$	-	-	<1					µg/kg	1	A-T-006s
n-Propylbenzene$_{A}^{\#}$	-	-	<1					µg/kg	1	A-T-006s
2-Chlorotoluene$_{A}^{\#}$	-	-	<1					µg/kg	1	A-T-006s
1,3,5-Trimethylbenzene$_{A}^{\#}$	-	-	<1					µg/kg	1	A-T-006s
4-Chlorotoluene$_{A}^{\#}$	-	-	<1					µg/kg	1	A-T-006s
tert-Butylbenzene$_{A}^{\#}$	-	-	<2					µg/kg	2	A-T-006s
1,2,4-Trimethylbenzene$_{A}^{\#}$	-	-	<1					µg/kg	1	A-T-006s
sec-Butylbenzene$_{A}^{\#}$	-	-	<1					µg/kg	1	A-T-006s
4-Isopropyltoluene$_{A}^{\#}$	-	-	<1					µg/kg	1	A-T-006s
1,3-Dichlorobenzene$_{A}$	-	-	<1					µg/kg	1	A-T-006s
1,4-Dichlorobenzene$_{A}^{\#}$	-	-	<1					µg/kg	1	A-T-006s
n-Butylbenzene$_{A}^{\#}$	-	-	<1					µg/kg	1	A-T-006s
1,2-Dichlorobenzene$_{A}^{\#}$	-	-	<1					µg/kg	1	A-T-006s
1,2-Dibromo-3-chloropropane (DCBP)$_{A}$	-	-	<2					µg/kg	2	A-T-006s
1,2,4-Trichlorobenzene$_{A}$	-	-	<3					µg/kg	3	A-T-006s
Hexachlorobutadiene$_{A}^{\#}$	-	-	<1					µg/kg	1	A-T-006s
1,2,3-Trichlorobenzene$_{A}$	-	-	<3					µg/kg	3	A-T-006s

Envirolab Job Number: 22/09127

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09127/2	22/09127/12	22/09127/19					Units	Limit of Detection	Method ref
Client Sample No	2	03								
Client Sample ID	CP01	BH26	CP28							
Depth to Top	0.50	1.00	1.00							
Depth To Bottom										
Date Sampled	05-Sep-22	12-Sep-22	05-Sep-22							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	6AE	6A	5A							
TPH CWG with Clean Up										
Ali >C5-C6$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	<1	<1	<1					mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	<1	<1	<1					mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	<1	<1	<1					mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	<1	<1	<1					mg/kg	1	A-T-055s
Ali >C21-C35$_A^{M\#}$	<1	<1	<1					mg/kg	1	A-T-055s
Total Aliphatics$_A$	<1	<1	<1					mg/kg	1	Calc-As Recd
Aro >C5-C7$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	<1	<1	<1					mg/kg	1	A-T-055s
Aro >C10-C12$_A$	<1	<1	<1					mg/kg	1	A-T-055s
Aro >C12-C16$_A$	<1	<1	<1					mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	<1	<1	<1					mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	<1	<1	<1					mg/kg	1	A-T-055s
Total Aromatics$_A$	<1	<1	<1					mg/kg	1	Calc-As Recd
TPH (Ali & Aro >C5-C35)$_A$	<1	<1	<1					mg/kg	1	Calc-As Recd
BTEX - Benzene$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s

REPORT NOTES

General

This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:

All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:

Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:

Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:

Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:

1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.

Secondary Matrix Codes:

A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,
E = contains roots/twigs.

Key:

IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve
Subscript "^" indicates analysis has dependant options against results. Testing dependant on results appear in the comments area of your sample receipt.
EPH CWG results have humics mathematically subtracted through instrument calculation
TPH results "with Cleanup" indicates results cleaned up with Silica during extraction

EPH CWG GCxGC ID from TPH CWG

Where we have identified humic substances in any ID's from TPH CWG with Clean Up please note that the concentration of these humic substances is not included in the quantified results and are included in the ID for information.

Please contact us if you need any further information.

v2

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Castleford), The Potteries, Pottery Street, Castleford, West Yorkshire, UK, WF10 1NJ

Project: East Midland Airport

Clients Project No: 765514

Project No: 22/09127

Date Received: 16/09/2022 (am)

Cool Box Temperatures (°C): 20.3, 18.2, 20.3

Lab Sample ID	22/09127/2	22/09127/19
Client Sample No	2	
Client Sample ID/Depth	CP01 0.50m	CP28 1.00m
Date Sampled	05/09/22	05/09/22
Deviation Code		
F	✓	✓

Key
F *Maximum holding time exceeded between sampling date and analysis for analytes listed below*

HOLDING TIME EXCEEDANCES

Lab Sample ID	22/09127/2	22/09127/19
Client Sample No	2	
Client Sample ID/Depth	CP01 0.50m	CP28 1.00m
Date Sampled	05/09/22	05/09/22
PAH-16MS	✓	✓
VPHCWG	✓	✓
Organic Matter		✓
Sulphate (water sol 2:1)		✓
VOC		✓
SVOC excluding PAH-16		✓

Note: If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3 (for water samples 5 ± 3°C), ISO 18400-105:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	22/09127/2	22/09127/12	22/09127/19
Client Sample No	2	03	
Client Sample ID/Depth	CP01 0.50m	BH26 1.00m	CP28 1.00m
Date Sampled	05/09/22	12/09/22	05/09/22
A-T-006s			04/10/2022
A-T-019s	27/09/2022	27/09/2022	05/10/2022
A-T-022s	21/09/2022	21/09/2022	06/10/2022
A-T-024s	22/09/2022	22/09/2022	06/10/2022
A-T-026s	22/09/2022	22/09/2022	06/10/2022
A-T-031s	23/09/2022	23/09/2022	06/10/2022
A-T-032 OM	27/09/2022	27/09/2022	07/10/2022
A-T-044	21/09/2022	21/09/2022	04/10/2022
A-T-052s			05/10/2022
A-T-055s	23/09/2022	23/09/2022	04/10/2022
Calc-As Recd	23/09/2022	23/09/2022	06/10/2022

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

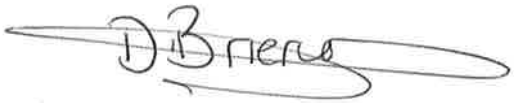
FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 22/09221
Issue Number: 1 **Date:** 04 October, 2022

Client:
Structural Soils Limited (Castleford)
The Potteries
Pottery Street
Castleford
West Yorkshire
UK
WF10 1NJ

Project Manager: Alex Jones
Project Name: East Midland Airport
Project Ref: 765514
Order No: N/A
Date Samples Received: 16/09/22
Date Instructions Received: 21/09/22
Date Analysis Completed: 04/10/22

Approved by:



Danielle Brierley
Deputy Client Services Supervisor

Envirolab Job Number: 22/09221

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09221/5	22/09221/6	22/09221/9					Units	Limit of Detection	Method ref
Client Sample No	18	23	8							
Client Sample ID	CP27	CP27	BH18							
Depth to Top	3.00	4.00	0.50							
Depth To Bottom										
Date Sampled	16-Sep-22	16-Sep-22	14-Sep-22							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	5A	5A	4AE							
% Moisture at <40C$_A$	13.7	18.3	8.2					% w/w	0.1	A-T-044
% Stones >10mm$_A$	<0.1	<0.1	<0.1					% w/w	0.1	A-T-044
pH$_D$$^{M\#}$	9.18	8.92	7.53					pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D$$^{M\#}$	0.02	0.02	<0.01					g/l	0.01	A-T-026s
Organic Matter$_D$$^{M\#}$	0.5	3.1	0.9					% w/w	0.1	A-T-032 OM
Arsenic$_D$$^{M\#}$	<1	<1	<1					mg/kg	1	A-T-024s
Cadmium$_D$$^{M\#}$	0.6	0.5	0.6					mg/kg	0.5	A-T-024s
Copper$_D$$^{M\#}$	8	7	9					mg/kg	1	A-T-024s
Chromium$_D$$^{M\#}$	34	34	23					mg/kg	1	A-T-024s
Lead$_D$$^{M\#}$	6	5	12					mg/kg	1	A-T-024s
Mercury$_D$	0.46	0.52	<0.17					mg/kg	0.17	A-T-024s
Nickel$_D$$^{M\#}$	29	29	19					mg/kg	1	A-T-024s
Selenium$_D$$^{M\#}$	<1	2	<1					mg/kg	1	A-T-024s
Zinc$_D$$^{M\#}$	55	55	43					mg/kg	5	A-T-024s

Envirolab Job Number: 22/09221

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09221/5	22/09221/6	22/09221/9					Units	Limit of Detection	Method ref
Client Sample No	18	23	8							
Client Sample ID	CP27	CP27	BH18							
Depth to Top	3.00	4.00	0.50							
Depth To Bottom										
Date Sampled	16-Sep-22	16-Sep-22	14-Sep-22							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	5A	5A	4AE							
Asbestos in Soil (inc. matrix)										
Asbestos in soil$_{D}^{\#}$	NAD	-	-							A-T-045
Asbestos Matrix (visual)$_{D}$	-	-	-							A-T-045
Asbestos Matrix (microscope)$_{D}$	-	-	-							A-T-045
Asbestos ACM - Suitable for Water Absorption Test?$_{D}$	N/A	-	-							A-T-045

Envirolab Job Number: 22/09221

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09221/5	22/09221/6	22/09221/9					Units	Limit of Detection	Method ref
Client Sample No	18	23	8							
Client Sample ID	CP27	CP27	BH18							
Depth to Top	3.00	4.00	0.50							
Depth To Bottom										
Date Sampled	16-Sep-22	16-Sep-22	14-Sep-22							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	5A	5A	4AE							
PAH-16MS										
Acenaphthene$_A^{M\#}$	0.03	1.48	<0.01					mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01	0.05	<0.01					mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	<0.02	0.31	<0.02					mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.04	0.10	<0.04					mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	<0.04	<0.04	<0.04					mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	<0.05	0.06	<0.05					mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.05	<0.05	<0.05					mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07	<0.07	<0.07					mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	<0.06	0.11	<0.06					mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04	<0.04	<0.04					mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	<0.08	0.88	<0.08					mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	<0.01	0.44	<0.01					mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	<0.03	<0.03	<0.03					mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	<0.03	0.27	<0.03					mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	0.03	0.94	<0.03					mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	<0.07	0.56	<0.07					mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	<0.08	5.20	<0.08					mg/kg	0.01	A-T-019s

Envirolab Job Number: 22/09221

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09221/5	22/09221/6	22/09221/9					Units	Limit of Detection	Method ref
Client Sample No	18	23	8							
Client Sample ID	CP27	CP27	BH18							
Depth to Top	3.00	4.00	0.50							
Depth To Bottom										
Date Sampled	16-Sep-22	16-Sep-22	14-Sep-22							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	5A	5A	4AE							
SVOC excluding PAH-16										
4-Bromophenyl phenyl ether$_A$	<1000	<100	-					µg/kg	100	A-T-052s
Hexachlorobenzene$_A$	<1000	<100	-					µg/kg	100	A-T-052s
Diethyl phthalate$_A$	<1000	<100	-					µg/kg	100	A-T-052s
Dimethyl phthalate$_A$	<1000	<100	-					µg/kg	100	A-T-052s
Dibenzofuran$_A$	<1000	529	-					µg/kg	100	A-T-052s
Carbazole$_A$	<1000	<100	-					µg/kg	100	A-T-052s
Butylbenzyl phthalate$_A$	<1000	<100	-					µg/kg	100	A-T-052s
Bis(2-ethylhexyl)phthalate$_A$	<5000	<500	-					µg/kg	500	A-T-052s
Bis(2-chloroethoxy)methane$_A$	<1000	<100	-					µg/kg	100	A-T-052s
Bis(2-chloroethyl)ether$_A$	<1000	<100	-					µg/kg	100	A-T-052s
4-Nitrophenol$_A$	<1000	<100	-					µg/kg	100	A-T-052s
3+4-Methylphenol$_A$	<1000	<100	-					µg/kg	100	A-T-052s
4-Chloro-3-methylphenol$_A$	<1000	<100	-					µg/kg	100	A-T-052s
2-Nitrophenol$_A$	<1000	<100	-					µg/kg	100	A-T-052s
2-Methylphenol$_A$	<1000	<100	-					µg/kg	100	A-T-052s
1,2,4-Trichlorobenzene$_A$	<1000	<100	-					µg/kg	100	A-T-052s
2-Chlorophenol$_A$	<1000	<100	-					µg/kg	100	A-T-052s
2,6-Dinitrotoluene$_A$	<1000	<100	-					µg/kg	100	A-T-052s
2,4-Dinitrotoluene$_A$	<1000	<100	-					µg/kg	100	A-T-052s
2,4-Dimethylphenol$_A$	<1000	<100	-					µg/kg	100	A-T-052s
2,4-Dichlorophenol$_A$	<1000	<100	-					µg/kg	100	A-T-052s
2,4,6-Trichlorophenol$_A$	<1000	<100	-					µg/kg	100	A-T-052s
2,4,5-Trichlorophenol$_A$	<1000	<100	-					µg/kg	100	A-T-052s
1,4-Dichlorobenzene$_A$	<1000	<100	-					µg/kg	100	A-T-052s
1,3-Dichlorobenzene$_A$	<1000	<100	-					µg/kg	100	A-T-052s
1,2-Dichlorobenzene$_A$	<1000	<100	-					µg/kg	100	A-T-052s
2-Chloronaphthalene$_A$	<1000	<100	-					µg/kg	100	A-T-052s
2-Methylnaphthalene$_A$	<1000	132	-					µg/kg	100	A-T-052s
Bis(2-chloroisopropyl)ether$_A$	<1000	<100	-					µg/kg	100	A-T-052s
Phenol$_A$	<1000	<100	-					µg/kg	100	A-T-052s
Pentachlorophenol$_A$	<1000	<100	-					µg/kg	100	A-T-052s
n-Nitroso-n-dipropylamine$_A$	<1000	<100	-					µg/kg	100	A-T-052s

Envirolab Job Number: 22/09221 **Client Project Name: East Midland Airport**

Client Project Ref: 765514

Lab Sample ID	22/09221/5	22/09221/6	22/09221/9					Units	Limit of Detection	Method ref
Client Sample No	18	23	8							
Client Sample ID	CP27	CP27	BH18							
Depth to Top	3.00	4.00	0.50							
Depth To Bottom										
Date Sampled	16-Sep-22	16-Sep-22	14-Sep-22							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	5A	5A	4AE							
n-Dioctylphthalate$_A$	<5000	<500	-					µg/kg	500	A-T-052s
n-Dibutylphthalate$_A$	<1000	286	-					µg/kg	100	A-T-052s
Nitrobenzene$_A$	<1000	<100	-					µg/kg	100	A-T-052s
Isophorone$_A$	<1000	<100	-					µg/kg	100	A-T-052s
Hexachloroethane$_A$	<1000	<100	-					µg/kg	100	A-T-052s
Hexachlorocyclopentadiene$_A$	<1000	<100	-					µg/kg	100	A-T-052s
Hexachlorobutadiene$_A$	<1000	<100	-					µg/kg	100	A-T-052s
Perylene$_A$	<1000	<100	-					µg/kg	100	A-T-052s

Envirolab Job Number: 22/09221

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09221/5	22/09221/6	22/09221/9					Units	Limit of Detection	Method ref
Client Sample No	18	23	8							
Client Sample ID	CP27	CP27	BH18							
Depth to Top	3.00	4.00	0.50							
Depth To Bottom										
Date Sampled	16-Sep-22	16-Sep-22	14-Sep-22							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	5A	5A	4AE							
VOC										
Dichlorodifluoromethane$_{A}$	<1	<1	-					µg/kg	1	A-T-006s
Chloromethane$_{A}$	<10	<10	-					µg/kg	10	A-T-006s
Vinyl Chloride (Chloroethene)$_{A}^{\#}$	<1	<1	-					µg/kg	1	A-T-006s
Bromomethane$_{A}^{\#}$	<1	<1	-					µg/kg	1	A-T-006s
Chloroethane$_{A}^{\#}$	<1	<1	-					µg/kg	1	A-T-006s
Trichlorofluoromethane$_{A}^{\#}$	<1	<1	-					µg/kg	1	A-T-006s
1,1-Dichloroethene$_{A}^{\#}$	<1	<1	-					µg/kg	1	A-T-006s
Carbon Disulphide$_{A}^{\#}$	<1	<1	-					µg/kg	1	A-T-006s
Dichloromethane$_{A}$	<5	<5	-					µg/kg	5	A-T-006s
trans 1,2-Dichloroethene$_{A}^{\#}$	<1	<1	-					µg/kg	1	A-T-006s
1,1-Dichloroethane$_{A}^{\#}$	<1	<1	-					µg/kg	1	A-T-006s
cis 1,2-Dichloroethene$_{A}^{\#}$	<1	<1	-					µg/kg	1	A-T-006s
2,2-Dichloropropane$_{A}^{\#}$	<1	<1	-					µg/kg	1	A-T-006s
Bromochloromethane$_{A}^{\#}$	<5	<5	-					µg/kg	5	A-T-006s
Chloroform$_{A}^{\#}$	<1	<1	-					µg/kg	1	A-T-006s
1,1,1-Trichloroethane$_{A}^{\#}$	<1	<1	-					µg/kg	1	A-T-006s
1,1-Dichloropropene$_{A}^{\#}$	<1	<1	-					µg/kg	1	A-T-006s
Carbon Tetrachloride$_{A}^{\#}$	<1	<1	-					µg/kg	1	A-T-006s
1,2-Dichloroethane$_{A}^{\#}$	<2	<2	-					µg/kg	2	A-T-006s
Benzene$_{A}^{\#}$	<1	<1	-					µg/kg	1	A-T-006s
Trichloroethene$_{A}^{\#}$	<1	<1	-					µg/kg	1	A-T-006s
1,2-Dichloropropane$_{A}^{\#}$	<1	<1	-					µg/kg	1	A-T-006s
Dibromomethane$_{A}^{\#}$	<1	<1	-					µg/kg	1	A-T-006s
Bromodichloromethane$_{A}^{\#}$	<10	<10	-					µg/kg	10	A-T-006s
cis 1,3-Dichloropropene$_{A}^{\#}$	<1	<1	-					µg/kg	1	A-T-006s
Toluene$_{A}^{\#}$	<1	<1	-					µg/kg	1	A-T-006s
trans 1,3-Dichloropropene$_{A}^{\#}$	<1	<1	-					µg/kg	1	A-T-006s
1,1,2-Trichloroethane$_{A}^{\#}$	<1	<1	-					µg/kg	1	A-T-006s
1,3-Dichloropropane$_{A}^{\#}$	<1	<1	-					µg/kg	1	A-T-006s
Tetrachloroethene$_{A}^{\#}$	<1	<1	-					µg/kg	1	A-T-006s
Dibromochloromethane$_{A}^{\#}$	<3	<3	-					µg/kg	3	A-T-006s
1,2-Dibromoethane$_{A}^{\#}$	<1	<1	-					µg/kg	1	A-T-006s

Envirolab Job Number: 22/09221 **Client Project Name: East Midland Airport**

Client Project Ref: 765514

Lab Sample ID	22/09221/5	22/09221/6	22/09221/9					Units	Limit of Detection	Method ref
Client Sample No	18	23	8							
Client Sample ID	CP27	CP27	BH18							
Depth to Top	3.00	4.00	0.50							
Depth To Bottom										
Date Sampled	16-Sep-22	16-Sep-22	14-Sep-22							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	5A	5A	4AE							
Chlorobenzene$_{A}^{\#}$	<1	<1	-					µg/kg	1	A-T-006s
1,1,1,2-Tetrachloroethane$_{A}$	<1	<1	-					µg/kg	1	A-T-006s
Ethylbenzene$_{A}^{\#}$	<1	<1	-					µg/kg	1	A-T-006s
m & p Xylene$_{A}^{\#}$	<1	<1	-					µg/kg	1	A-T-006s
o-Xylene$_{A}^{\#}$	<1	<1	-					µg/kg	1	A-T-006s
Styrene$_{A}^{\#}$	<1	<1	-					µg/kg	1	A-T-006s
Bromoform$_{A}^{\#}$	<1	<1	-					µg/kg	1	A-T-006s
Isopropylbenzene$_{A}^{\#}$	<1	<1	-					µg/kg	1	A-T-006s
1,1,2,2-Tetrachloroethane$_{A}$	<1	<1	-					µg/kg	1	A-T-006s
1,2,3-Trichloropropane$_{A}^{\#}$	<1	<1	-					µg/kg	1	A-T-006s
Bromobenzene$_{A}^{\#}$	<1	<1	-					µg/kg	1	A-T-006s
n-Propylbenzene$_{A}^{\#}$	<1	<1	-					µg/kg	1	A-T-006s
2-Chlorotoluene$_{A}^{\#}$	<1	<1	-					µg/kg	1	A-T-006s
1,3,5-Trimethylbenzene$_{A}^{\#}$	<1	6	-					µg/kg	1	A-T-006s
4-Chlorotoluene$_{A}^{\#}$	<1	<1	-					µg/kg	1	A-T-006s
tert-Butylbenzene$_{A}^{\#}$	<2	<2	-					µg/kg	2	A-T-006s
1,2,4-Trimethylbenzene$_{A}^{\#}$	<1	1	-					µg/kg	1	A-T-006s
sec-Butylbenzene$_{A}^{\#}$	<1	<1	-					µg/kg	1	A-T-006s
4-Isopropyltoluene$_{A}^{\#}$	<1	<1	-					µg/kg	1	A-T-006s
1,3-Dichlorobenzene$_{A}$	<1	<1	-					µg/kg	1	A-T-006s
1,4-Dichlorobenzene$_{A}^{\#}$	<1	<1	-					µg/kg	1	A-T-006s
n-Butylbenzene$_{A}^{\#}$	<1	<1	-					µg/kg	1	A-T-006s
1,2-Dichlorobenzene$_{A}^{\#}$	<1	<1	-					µg/kg	1	A-T-006s
1,2-Dibromo-3-chloropropane (DCBP)$_{A}$	<2	<2	-					µg/kg	2	A-T-006s
1,2,4-Trichlorobenzene$_{A}$	<3	<3	-					µg/kg	3	A-T-006s
Hexachlorobutadiene$_{A}^{\#}$	<1	<1	-					µg/kg	1	A-T-006s
1,2,3-Trichlorobenzene$_{A}$	<3	<3	-					µg/kg	3	A-T-006s

Envirolab Job Number: 22/09221

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09221/5	22/09221/6	22/09221/9					Units	Limit of Detection	Method ref
Client Sample No	18	23	8							
Client Sample ID	CP27	CP27	BH18							
Depth to Top	3.00	4.00	0.50							
Depth To Bottom										
Date Sampled	16-Sep-22	16-Sep-22	14-Sep-22							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	5A	5A	4AE							
TPH CWG with Clean Up										
Ali >C5-C6$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	<1	<1	<1					mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	<1	1	<1					mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	<1	2	<1					mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	<1	1	<1					mg/kg	1	A-T-055s
Ali >C21-C35$_A^{M\#}$	<1	2	2					mg/kg	1	A-T-055s
Total Aliphatics$_A$	<1	7	2					mg/kg	1	Calc-As Recd
Aro >C5-C7$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	<1	2	<1					mg/kg	1	A-T-055s
Aro >C10-C12$_A$	<1	7	<1					mg/kg	1	A-T-055s
Aro >C12-C16$_A$	<1	40	<1					mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	<1	37	<1					mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	<1	17	<1					mg/kg	1	A-T-055s
Total Aromatics$_A$	<1	104	<1					mg/kg	1	Calc-As Recd
TPH (Ali & Aro >C5-C35)$_A$	<1	111	2					mg/kg	1	Calc-As Recd
BTEX - Benzene$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s

REPORT NOTES

General

This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,
E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve
Subscript "^" indicates analysis has dependant options against results. Testing dependant on results appear in the comments area of your sample receipt.
EPH CWG results have humics mathematically subtracted through instrument calculation
TPH results "with Cleanup" indicates results cleaned up with Silica during extraction

EPH CWG GCxGC ID from TPH CWG

Where we have identified humic substances in any ID's from TPH CWG with Clean Up please note that the concentration of these humic substances is not included in the quantified results and are included in the ID for information.

Please contact us if you need any further information.

v2

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Castleford), The Potteries, Pottery Street, Castleford, West Yorkshire, UK, WF10 1NJ

Project: East Midland Airport

Clients Project No: 765514

Project No: 22/09221

Date Received: 21/09/2022 (am)

Cool Box Temperatures (°C): 15.2, 16.2, 16.0

NO DEVIATIONS IDENTIFIED

If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3, ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	22/09221/5	22/09221/6	22/09221/9
Client Sample No	18	23	8
Client Sample ID/Depth	CP27 3.00m	CP27 4.00m	BH18 0.50m
Date Sampled	16/09/22	16/09/22	14/09/22
A-T-006s	26/09/2022	26/09/2022	
A-T-019s	26/09/2022	26/09/2022	30/09/2022
A-T-022s	26/09/2022	26/09/2022	29/09/2022
A-T-024s	29/09/2022	29/09/2022	03/10/2022
A-T-026s	28/09/2022	28/09/2022	30/09/2022
A-T-031s	29/09/2022	29/09/2022	30/09/2022
A-T-032 OM	29/09/2022	29/09/2022	30/09/2022
A-T-044	04/10/2022	04/10/2022	04/10/2022
A-T-045	22/09/2022		
A-T-052s	03/10/2022	28/09/2022	
A-T-055s	26/09/2022	26/09/2022	29/09/2022
Calc-As Recd	26/09/2022	26/09/2022	29/09/2022

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

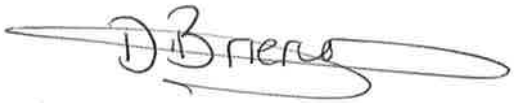
FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 22/09274
Issue Number: 1 **Date:** 04 October, 2022

Client:
Structural Soils Limited (Castleford)
The Potteries
Pottery Street
Castleford
West Yorkshire
UK
WF10 1NJ

Project Manager: Alex Jones
Project Name: East Midland Airport
Project Ref: 765514
Order No: N/A
Date Samples Received: 20/09/22
Date Instructions Received: 22/09/22
Date Analysis Completed: 04/10/22

Approved by:



Danielle Brierley
Deputy Client Services Supervisor

Envirolab Job Number: 22/09274

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09274/1	22/09274/2	22/09274/3	22/09274/4	22/09274/5	22/09274/6		Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH17	BH19	BH20	BH16	CP26	BH09				
Depth to Top	1.00	1.00	0.10	0.70	0.10	0.50				
Depth To Bottom										
Date Sampled	16-Sep-22	16-Sep-22	16-Sep-22	16-Sep-22	16-Sep-22	16-Sep-22				
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES				
Sample Matrix Code	6AE	6A	4AE	5A	4AE	6A				
% Moisture at <40C$_A$	14.1	17.4	9.7	10.2	13.7	12.4		% w/w	0.1	A-T-044
% Stones >10mm$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		% w/w	0.1	A-T-044
pH$_D$$^{M\#}$	8.07	8.41	6.47	7.64	6.98	8.18		pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D$$^{M\#}$	0.01	0.02	0.02	0.06	0.03	0.02		g/l	0.01	A-T-026s
Organic Matter$_D$$^{M\#}$	0.9	0.8	2.3	0.9	4.8	1.0		% w/w	0.1	A-T-032 OM
Arsenic$_D$$^{M\#}$	8	<1	2	<1	<1	<1		mg/kg	1	A-T-024s
Cadmium$_D$$^{M\#}$	1.2	1.0	0.7	0.8	0.9	1.0		mg/kg	0.5	A-T-024s
Copper$_D$$^{M\#}$	19	10	15	11	16	27		mg/kg	1	A-T-024s
Chromium$_D$$^{M\#}$	43	70	23	25	46	37		mg/kg	1	A-T-024s
Lead$_D$$^{M\#}$	14	5	26	12	28	15		mg/kg	1	A-T-024s
Mercury$_D$	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17		mg/kg	0.17	A-T-024s
Nickel$_D$$^{M\#}$	42	60	18	22	39	32		mg/kg	1	A-T-024s
Selenium$_D$$^{M\#}$	1	2	<1	<1	1	<1		mg/kg	1	A-T-024s
Zinc$_D$$^{M\#}$	73	78	59	49	83	68		mg/kg	5	A-T-024s

Envirolab Job Number: 22/09274

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09274/1	22/09274/2	22/09274/3	22/09274/4	22/09274/5	22/09274/6		Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH17	BH19	BH20	BH16	CP26	BH09				
Depth to Top	1.00	1.00	0.10	0.70	0.10	0.50				
Depth To Bottom										
Date Sampled	16-Sep-22	16-Sep-22	16-Sep-22	16-Sep-22	16-Sep-22	16-Sep-22				
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES				
Sample Matrix Code	6AE	6A	4AE	5A	4AE	6A				
PAH-16MS										
Acenaphthene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04		mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04		mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07		mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06		mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04		mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08		mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07		mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08		mg/kg	0.01	A-T-019s

Envirolab Job Number: 22/09274

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09274/1	22/09274/2	22/09274/3	22/09274/4	22/09274/5	22/09274/6		Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH17	BH19	BH20	BH16	CP26	BH09				
Depth to Top	1.00	1.00	0.10	0.70	0.10	0.50				
Depth To Bottom										
Date Sampled	16-Sep-22	16-Sep-22	16-Sep-22	16-Sep-22	16-Sep-22	16-Sep-22				
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES				
Sample Matrix Code	6AE	6A	4AE	5A	4AE	6A				
TPH CWG with Clean Up										
Ali >C5-C6$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	<1	<1	<1	<1	<1	<1		mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	<1	<1	<1	<1	<1	<1		mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	<1	<1	<1	<1	<1	<1		mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	<1	<1	<1	<1	<1	<1		mg/kg	1	A-T-055s
Ali >C21-C35$_A^{M\#}$	2	<1	10	1	5	<1		mg/kg	1	A-T-055s
Total Aliphatics$_A$	2	<1	10	1	5	<1		mg/kg	1	Calc-As Recd
Aro >C5-C7$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	<1	<1	2	<1	<1	<1		mg/kg	1	A-T-055s
Aro >C10-C12$_A$	<1	<1	<1	<1	<1	<1		mg/kg	1	A-T-055s
Aro >C12-C16$_A$	<1	<1	1	<1	<1	<1		mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	<1	<1	2	<1	<1	<1		mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	<1	<1	6	<1	1	<1		mg/kg	1	A-T-055s
Total Aromatics$_A$	<1	<1	11	<1	1	<1		mg/kg	1	Calc-As Recd
TPH (Ali & Aro >C5-C35)$_A$	2	<1	21	1	6	<1		mg/kg	1	Calc-As Recd
BTEX - Benzene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s

REPORT NOTES

General

This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,
E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve
Subscript "^" indicates analysis has dependant options against results. Testing dependant on results appear in the comments area of your sample receipt.
EPH CWG results have humics mathematically subtracted through instrument calculation
TPH results "with Cleanup" indicates results cleaned up with Silica during extraction

EPH CWG GCxGC ID from TPH CWG

Where we have identified humic substances in any ID's from TPH CWG with Clean Up please note that the concentration of these humic substances is not included in the quantified results and are included in the ID for information.

Please contact us if you need any further information.

v2

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Castleford), The Potteries, Pottery Street, Castleford, West Yorkshire, UK, WF10 1NJ

Project: East Midland Airport

Clients Project No: 765514

Project No: 22/09274

Date Received: 22/09/2022 (am)

Cool Box Temperatures (°C): 11.9 - 13.9

NO DEVIATIONS IDENTIFIED

If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3, ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	22/09274/1	22/09274/2	22/09274/3	22/09274/4	22/09274/5	22/09274/6
Client Sample No						
Client Sample ID/Depth	BH17 1.00m	BH19 1.00m	BH20 0.10m	BH16 0.70m	CP26 0.10m	BH09 0.50m
Date Sampled	16/09/22	16/09/22	16/09/22	16/09/22	16/09/22	16/09/22
A-T-019s	29/09/2022	29/09/2022	29/09/2022	29/09/2022	29/09/2022	29/09/2022
A-T-022s	27/09/2022	27/09/2022	27/09/2022	27/09/2022	27/09/2022	27/09/2022
A-T-024s	03/10/2022	03/10/2022	03/10/2022	03/10/2022	03/10/2022	03/10/2022
A-T-026s	30/09/2022	30/09/2022	30/09/2022	30/09/2022	30/09/2022	30/09/2022
A-T-031s	30/09/2022	30/09/2022	30/09/2022	30/09/2022	30/09/2022	30/09/2022
A-T-032 OM	30/09/2022	30/09/2022	30/09/2022	30/09/2022	30/09/2022	30/09/2022
A-T-044	04/10/2022	04/10/2022	04/10/2022	04/10/2022	04/10/2022	04/10/2022
A-T-055s	26/09/2022	26/09/2022	26/09/2022	26/09/2022	26/09/2022	26/09/2022
Calc-As Recd	27/09/2022	27/09/2022	27/09/2022	27/09/2022	27/09/2022	27/09/2022

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

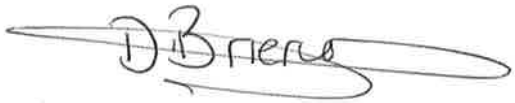
FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 22/09662
Issue Number: 1 **Date:** 14 October, 2022

Client:
Structural Soils Limited (Bristol)
The Old School
Stillhouse Lane
Bedminster
Bristol
UK
BS3 4EB

Project Manager: Alex Jones
Project Name: East Midland Airport
Project Ref: 765514
Order No: N/A
Date Samples Received: 26/09/22
Date Instructions Received: 03/10/22
Date Analysis Completed: 14/10/22

Approved by:



Danielle Brierley
Deputy Client Services Supervisor

Envirolab Job Number: 22/09662

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09662/1	22/09662/2	22/09662/3	22/09662/4				Units	Limit of Detection	Method ref
Client Sample No	1	1	10	7						
Client Sample ID	TP36	TP32	TP35	TP34						
Depth to Top	0.45	0.20	1.75	1.30						
Depth To Bottom										
Date Sampled	23-Sep-22	23-Sep-22	23-Sep-22	23-Sep-22						
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES						
Sample Matrix Code	5AE	5AE	5A	5A						
% Moisture at <40C$_A$	13.7	10.9	20.7	14.0				% w/w	0.1	A-T-044
% Stones >10mm$_A$	<0.1	<0.1	<0.1	<0.1				% w/w	0.1	A-T-044
pH$_D$$^{M\#}$	8.69	7.73	8.34	8.61				pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D$$^{M\#}$	0.03	<0.01	0.02	<0.01				g/l	0.01	A-T-026s
Organic Matter$_D$$^{M\#}$	0.8	2.7	0.5	2.6				% w/w	0.1	A-T-032 OM
Arsenic$_D$$^{M\#}$	<1	<1	<1	<1				mg/kg	1	A-T-024s
Cadmium$_D$$^{M\#}$	0.7	<0.5	0.5	<0.5				mg/kg	0.5	A-T-024s
Copper$_D$$^{M\#}$	10	13	10	7				mg/kg	1	A-T-024s
Chromium$_D$$^{M\#}$	57	41	57	48				mg/kg	1	A-T-024s
Lead$_D$$^{M\#}$	6	19	4	4				mg/kg	1	A-T-024s
Mercury$_D$	<0.17	<0.17	<0.17	0.69				mg/kg	0.17	A-T-024s
Nickel$_D$$^{M\#}$	51	33	46	45				mg/kg	1	A-T-024s
Selenium$_D$$^{M\#}$	<1	<1	<1	<1				mg/kg	1	A-T-024s
Zinc$_D$$^{M\#}$	74	69	88	72				mg/kg	5	A-T-024s

Envirolab Job Number: 22/09662

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09662/1	22/09662/2	22/09662/3	22/09662/4				Units	Limit of Detection	Method ref
Client Sample No	1	1	10	7						
Client Sample ID	TP36	TP32	TP35	TP34						
Depth to Top	0.45	0.20	1.75	1.30						
Depth To Bottom										
Date Sampled	23-Sep-22	23-Sep-22	23-Sep-22	23-Sep-22						
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES						
Sample Matrix Code	5AE	5AE	5A	5A						
PAH-16MS										
Acenaphthene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	<0.02	<0.02	<0.02	<0.02				mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.04	<0.04	<0.04	<0.04				mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	<0.04	<0.04	<0.04	<0.04				mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	<0.05	<0.05	<0.05	<0.05				mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.05	<0.05	<0.05	<0.05				mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07	<0.07	<0.07	<0.07				mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	<0.06	<0.06	<0.06	<0.06				mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04	<0.04	<0.04	<0.04				mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	<0.08	<0.08	<0.08	<0.08				mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	<0.03	<0.03	<0.03	<0.03				mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	<0.03	<0.03	<0.03	<0.03				mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	<0.03	<0.03	<0.03	<0.03				mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	<0.07	<0.07	<0.07	<0.07				mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	<0.08	<0.08	<0.08	<0.08				mg/kg	0.01	A-T-019s

Envirolab Job Number: 22/09662

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09662/1	22/09662/2	22/09662/3	22/09662/4				Units	Limit of Detection	Method ref
Client Sample No	1	1	10	7						
Client Sample ID	TP36	TP32	TP35	TP34						
Depth to Top	0.45	0.20	1.75	1.30						
Depth To Bottom										
Date Sampled	23-Sep-22	23-Sep-22	23-Sep-22	23-Sep-22						
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES						
Sample Matrix Code	5AE	5AE	5A	5A						
SVOC excluding PAH-16										
4-Bromophenyl phenyl ether$_A$	<100	-	-	-				µg/kg	100	A-T-052s
Hexachlorobenzene$_A$	<100	-	-	-				µg/kg	100	A-T-052s
Diethyl phthalate$_A$	<100	-	-	-				µg/kg	100	A-T-052s
Dimethyl phthalate$_A$	<100	-	-	-				µg/kg	100	A-T-052s
Dibenzofuran$_A$	<100	-	-	-				µg/kg	100	A-T-052s
Carbazole$_A$	<100	-	-	-				µg/kg	100	A-T-052s
Butylbenzyl phthalate$_A$	<100	-	-	-				µg/kg	100	A-T-052s
Bis(2-ethylhexyl)phthalate$_A$	<500	-	-	-				µg/kg	500	A-T-052s
Bis(2-chloroethoxy)methane$_A$	<100	-	-	-				µg/kg	100	A-T-052s
Bis(2-chloroethyl)ether$_A$	<100	-	-	-				µg/kg	100	A-T-052s
4-Nitrophenol$_A$	<100	-	-	-				µg/kg	100	A-T-052s
3+4-Methylphenol$_A$	<100	-	-	-				µg/kg	100	A-T-052s
4-Chloro-3-methylphenol$_A$	<100	-	-	-				µg/kg	100	A-T-052s
2-Nitrophenol$_A$	<100	-	-	-				µg/kg	100	A-T-052s
2-Methylphenol$_A$	<100	-	-	-				µg/kg	100	A-T-052s
1,2,4-Trichlorobenzene$_A$	<100	-	-	-				µg/kg	100	A-T-052s
2-Chlorophenol$_A$	<100	-	-	-				µg/kg	100	A-T-052s
2,6-Dinitrotoluene$_A$	<100	-	-	-				µg/kg	100	A-T-052s
2,4-Dinitrotoluene$_A$	<100	-	-	-				µg/kg	100	A-T-052s
2,4-Dimethylphenol$_A$	<100	-	-	-				µg/kg	100	A-T-052s
2,4-Dichlorophenol$_A$	<100	-	-	-				µg/kg	100	A-T-052s
2,4,6-Trichlorophenol$_A$	<100	-	-	-				µg/kg	100	A-T-052s
2,4,5-Trichlorophenol$_A$	<100	-	-	-				µg/kg	100	A-T-052s
1,4-Dichlorobenzene$_A$	<100	-	-	-				µg/kg	100	A-T-052s
1,3-Dichlorobenzene$_A$	<100	-	-	-				µg/kg	100	A-T-052s
1,2-Dichlorobenzene$_A$	<100	-	-	-				µg/kg	100	A-T-052s
2-Chloronaphthalene$_A$	<100	-	-	-				µg/kg	100	A-T-052s
2-Methylnaphthalene$_A$	<100	-	-	-				µg/kg	100	A-T-052s
Bis(2-chloroisopropyl)ether$_A$	<100	-	-	-				µg/kg	100	A-T-052s
Phenol$_A$	<100	-	-	-				µg/kg	100	A-T-052s
Pentachlorophenol$_A$	<100	-	-	-				µg/kg	100	A-T-052s
n-Nitroso-n-dipropylamine$_A$	<100	-	-	-				µg/kg	100	A-T-052s

Envirolab Job Number: 22/09662

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09662/1	22/09662/2	22/09662/3	22/09662/4				Units	Limit of Detection	Method ref
Client Sample No	1	1	10	7						
Client Sample ID	TP36	TP32	TP35	TP34						
Depth to Top	0.45	0.20	1.75	1.30						
Depth To Bottom										
Date Sampled	23-Sep-22	23-Sep-22	23-Sep-22	23-Sep-22						
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES						
Sample Matrix Code	5AE	5AE	5A	5A						
n-Dioctylphthalate$_A$	<500	-	-	-				µg/kg	500	A-T-052s
n-Dibutylphthalate$_A$	<100	-	-	-				µg/kg	100	A-T-052s
Nitrobenzene$_A$	<100	-	-	-				µg/kg	100	A-T-052s
Isophorone$_A$	<100	-	-	-				µg/kg	100	A-T-052s
Hexachloroethane$_A$	<100	-	-	-				µg/kg	100	A-T-052s
Hexachlorocyclopentadiene$_A$	<100	-	-	-				µg/kg	100	A-T-052s
Hexachlorobutadiene$_A$	<100	-	-	-				µg/kg	100	A-T-052s
Perylene$_A$	<100	-	-	-				µg/kg	100	A-T-052s

Envirolab Job Number: 22/09662

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09662/1	22/09662/2	22/09662/3	22/09662/4				Units	Limit of Detection	Method ref
Client Sample No	1	1	10	7						
Client Sample ID	TP36	TP32	TP35	TP34						
Depth to Top	0.45	0.20	1.75	1.30						
Depth To Bottom										
Date Sampled	23-Sep-22	23-Sep-22	23-Sep-22	23-Sep-22						
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES						
Sample Matrix Code	5AE	5AE	5A	5A						
VOC										
Dichlorodifluoromethane$_{A}$	<1	-	-	-				µg/kg	1	A-T-006s
Chloromethane$_{A}$	<10	-	-	-				µg/kg	10	A-T-006s
Vinyl Chloride (Chloroethene)$_{A}^{\#}$	<1	-	-	-				µg/kg	1	A-T-006s
Bromomethane$_{A}^{\#}$	<1	-	-	-				µg/kg	1	A-T-006s
Chloroethane$_{A}^{\#}$	<1	-	-	-				µg/kg	1	A-T-006s
Trichlorofluoromethane$_{A}^{\#}$	<1	-	-	-				µg/kg	1	A-T-006s
1,1-Dichloroethene$_{A}^{\#}$	<1	-	-	-				µg/kg	1	A-T-006s
Carbon Disulphide$_{A}^{\#}$	<1	-	-	-				µg/kg	1	A-T-006s
Dichloromethane$_{A}$	<5	-	-	-				µg/kg	5	A-T-006s
trans 1,2-Dichloroethene$_{A}^{\#}$	<1	-	-	-				µg/kg	1	A-T-006s
1,1-Dichloroethane$_{A}^{\#}$	<1	-	-	-				µg/kg	1	A-T-006s
cis 1,2-Dichloroethene$_{A}^{\#}$	<1	-	-	-				µg/kg	1	A-T-006s
2,2-Dichloropropane$_{A}^{\#}$	<1	-	-	-				µg/kg	1	A-T-006s
Bromochloromethane$_{A}^{\#}$	<5	-	-	-				µg/kg	5	A-T-006s
Chloroform$_{A}^{\#}$	<1	-	-	-				µg/kg	1	A-T-006s
1,1,1-Trichloroethane$_{A}^{\#}$	<1	-	-	-				µg/kg	1	A-T-006s
1,1-Dichloropropene$_{A}^{\#}$	<1	-	-	-				µg/kg	1	A-T-006s
Carbon Tetrachloride$_{A}^{\#}$	<1	-	-	-				µg/kg	1	A-T-006s
1,2-Dichloroethane$_{A}^{\#}$	<2	-	-	-				µg/kg	2	A-T-006s
Benzene$_{A}^{\#}$	<1	-	-	-				µg/kg	1	A-T-006s
Trichloroethene$_{A}^{\#}$	<1	-	-	-				µg/kg	1	A-T-006s
1,2-Dichloropropane$_{A}^{\#}$	<1	-	-	-				µg/kg	1	A-T-006s
Dibromomethane$_{A}^{\#}$	<1	-	-	-				µg/kg	1	A-T-006s
Bromodichloromethane$_{A}^{\#}$	<10	-	-	-				µg/kg	10	A-T-006s
cis 1,3-Dichloropropene$_{A}^{\#}$	<1	-	-	-				µg/kg	1	A-T-006s
Toluene$_{A}^{\#}$	<1	-	-	-				µg/kg	1	A-T-006s
trans 1,3-Dichloropropene$_{A}^{\#}$	<1	-	-	-				µg/kg	1	A-T-006s
1,1,2-Trichloroethane$_{A}^{\#}$	<1	-	-	-				µg/kg	1	A-T-006s
1,3-Dichloropropane$_{A}^{\#}$	<1	-	-	-				µg/kg	1	A-T-006s
Tetrachloroethene$_{A}^{\#}$	<1	-	-	-				µg/kg	1	A-T-006s
Dibromochloromethane$_{A}^{\#}$	<3	-	-	-				µg/kg	3	A-T-006s
1,2-Dibromoethane$_{A}^{\#}$	<1	-	-	-				µg/kg	1	A-T-006s

Envirolab Job Number: 22/09662 **Client Project Name: East Midland Airport**

Client Project Ref: 765514

Lab Sample ID	22/09662/1	22/09662/2	22/09662/3	22/09662/4				Units	Limit of Detection	Method ref
Client Sample No	1	1	10	7						
Client Sample ID	TP36	TP32	TP35	TP34						
Depth to Top	0.45	0.20	1.75	1.30						
Depth To Bottom										
Date Sampled	23-Sep-22	23-Sep-22	23-Sep-22	23-Sep-22						
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES						
Sample Matrix Code	5AE	5AE	5A	5A						
Chlorobenzene$_{A}^{\#}$	<1	-	-	-				µg/kg	1	A-T-006s
1,1,1,2-Tetrachloroethane$_{A}$	<1	-	-	-				µg/kg	1	A-T-006s
Ethylbenzene$_{A}^{\#}$	<1	-	-	-				µg/kg	1	A-T-006s
m & p Xylene$_{A}^{\#}$	<1	-	-	-				µg/kg	1	A-T-006s
o-Xylene$_{A}^{\#}$	<1	-	-	-				µg/kg	1	A-T-006s
Styrene$_{A}^{\#}$	<1	-	-	-				µg/kg	1	A-T-006s
Bromoform$_{A}^{\#}$	<1	-	-	-				µg/kg	1	A-T-006s
Isopropylbenzene$_{A}^{\#}$	<1	-	-	-				µg/kg	1	A-T-006s
1,1,2,2-Tetrachloroethane$_{A}$	<1	-	-	-				µg/kg	1	A-T-006s
1,2,3-Trichloropropane$_{A}^{\#}$	<1	-	-	-				µg/kg	1	A-T-006s
Bromobenzene$_{A}^{\#}$	<1	-	-	-				µg/kg	1	A-T-006s
n-Propylbenzene$_{A}^{\#}$	<1	-	-	-				µg/kg	1	A-T-006s
2-Chlorotoluene$_{A}^{\#}$	<1	-	-	-				µg/kg	1	A-T-006s
1,3,5-Trimethylbenzene$_{A}^{\#}$	<1	-	-	-				µg/kg	1	A-T-006s
4-Chlorotoluene$_{A}^{\#}$	<1	-	-	-				µg/kg	1	A-T-006s
tert-Butylbenzene$_{A}^{\#}$	<2	-	-	-				µg/kg	2	A-T-006s
1,2,4-Trimethylbenzene$_{A}^{\#}$	<1	-	-	-				µg/kg	1	A-T-006s
sec-Butylbenzene$_{A}^{\#}$	<1	-	-	-				µg/kg	1	A-T-006s
4-Isopropyltoluene$_{A}^{\#}$	<1	-	-	-				µg/kg	1	A-T-006s
1,3-Dichlorobenzene$_{A}$	<1	-	-	-				µg/kg	1	A-T-006s
1,4-Dichlorobenzene$_{A}^{\#}$	<1	-	-	-				µg/kg	1	A-T-006s
n-Butylbenzene$_{A}^{\#}$	<1	-	-	-				µg/kg	1	A-T-006s
1,2-Dichlorobenzene$_{A}^{\#}$	<1	-	-	-				µg/kg	1	A-T-006s
1,2-Dibromo-3-chloropropane (DCBP)$_{A}$	<2	-	-	-				µg/kg	2	A-T-006s
1,2,4-Trichlorobenzene$_{A}$	<3	-	-	-				µg/kg	3	A-T-006s
Hexachlorobutadiene$_{A}^{\#}$	<1	-	-	-				µg/kg	1	A-T-006s
1,2,3-Trichlorobenzene$_{A}$	<3	-	-	-				µg/kg	3	A-T-006s

Envirolab Job Number: 22/09662

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09662/1	22/09662/2	22/09662/3	22/09662/4				Units	Limit of Detection	Method ref
Client Sample No	1	1	10	7						
Client Sample ID	TP36	TP32	TP35	TP34						
Depth to Top	0.45	0.20	1.75	1.30						
Depth To Bottom										
Date Sampled	23-Sep-22	23-Sep-22	23-Sep-22	23-Sep-22						
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES						
Sample Matrix Code	5AE	5AE	5A	5A						
TPH CWG with Clean Up										
Ali >C5-C6$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	<1	<1	<1	<1				mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	<1	<1	<1	<1				mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	<1	<1	<1	<1				mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	<1	<1	<1	<1				mg/kg	1	A-T-055s
Ali >C21-C35$_A^{M\#}$	<1	8	<1	<1				mg/kg	1	A-T-055s
Total Aliphatics$_A$	<1	8	<1	<1				mg/kg	1	Calc-As Recd
Aro >C5-C7$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	<1	1	<1	<1				mg/kg	1	A-T-055s
Aro >C10-C12$_A$	<1	<1	<1	<1				mg/kg	1	A-T-055s
Aro >C12-C16$_A$	<1	<1	<1	<1				mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	<1	<1	<1	<1				mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	<1	2	<1	<1				mg/kg	1	A-T-055s
Total Aromatics$_A$	<1	3	<1	<1				mg/kg	1	Calc-As Recd
TPH (Ali & Aro >C5-C35)$_A$	<1	11	<1	<1				mg/kg	1	Calc-As Recd
BTEX - Benzene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s

REPORT NOTES

General

This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,
E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve
Subscript "^" indicates analysis has dependant options against results. Testing dependant on results appear in the comments area of your sample receipt.
EPH CWG results have humics mathematically subtracted through instrument calculation
TPH results "with Cleanup" indicates results cleaned up with Silica during extraction

EPH CWG GCxGC ID from TPH CWG

Where we have identified humic substances in any ID's from TPH CWG with Clean Up please note that the concentration of these humic substances is not included in the quantified results and are included in the ID for information.

Please contact us if you need any further information.

v2

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Bristol), The Old School , Stillhouse Lane, Bedminster, Bristol, UK, BS3 4EB

Project: East Midland Airport

Clients Project No: 765514

Project No: 22/09662

Date Received: 03/10/2022 (am)

Cool Box Temperatures (°C): 16.8

NO DEVIATIONS IDENTIFIED

If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3, ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	22/09662/1	22/09662/2	22/09662/3	22/09662/4
Client Sample No	1	1	10	7
Client Sample ID/Depth	TP36 0.45m	TP32 0.20m	TP35 1.75m	TP34 1.30m
Date Sampled	23/09/22	23/09/22	23/09/22	23/09/22
A-T-006s	06/10/2022			
A-T-019s	10/10/2022	10/10/2022	10/10/2022	10/10/2022
A-T-022s	10/10/2022	10/10/2022	10/10/2022	10/10/2022
A-T-024s	12/10/2022	12/10/2022	12/10/2022	12/10/2022
A-T-026s	12/10/2022	12/10/2022	12/10/2022	12/10/2022
A-T-031s	14/10/2022	14/10/2022	14/10/2022	14/10/2022
A-T-032 OM	13/10/2022	13/10/2022	13/10/2022	13/10/2022
A-T-044	11/10/2022	11/10/2022	11/10/2022	11/10/2022
A-T-052s	07/10/2022			
A-T-055s	07/10/2022	07/10/2022	07/10/2022	07/10/2022
Calc-As Recd	10/10/2022	10/10/2022	10/10/2022	10/10/2022

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 22/09665
Issue Number: 1 **Date:** 18 October, 2022

Client:
Structural Soils Limited (Castleford)
The Potteries
Pottery Street
Castleford
West Yorkshire
UK
WF10 1NJ

Project Manager: Alex Jones
Project Name: East Midland Airport
Project Ref: 765514
Order No: N/A
Date Samples Received: 26/09/22
Date Instructions Received: 04/10/22
Date Analysis Completed: 18/10/22

Approved by:

Richard Wong
Client Manager

mCERTS THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME
UKAS TESTING 1247

Envirolab Job Number: 22/09665

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09665/1							Units	Limit of Detection	Method ref
Client Sample No	26									
Client Sample ID	BH14									
Depth to Top	6.00									
Depth To Bottom										
Date Sampled	26-Sep-22									
Sample Type	Soil - ES									
Sample Matrix Code	5A									
% Moisture at <40C$_A$	16.2							% w/w	0.1	A-T-044
% Stones >10mm$_A$	<0.1							% w/w	0.1	A-T-044
pH$_D^{M\#}$	8.36							pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D^{M\#}$	0.04							g/l	0.01	A-T-026s
Organic Matter$_D^{M\#}$	1.4							% w/w	0.1	A-T-032 OM
Arsenic$_D^{M\#}$	<1							mg/kg	1	A-T-024s
Cadmium$_D^{M\#}$	0.8							mg/kg	0.5	A-T-024s
Copper$_D^{M\#}$	9							mg/kg	1	A-T-024s
Chromium$_D^{M\#}$	46							mg/kg	1	A-T-024s
Lead$_D^{M\#}$	3							mg/kg	1	A-T-024s
Mercury$_D$	0.75							mg/kg	0.17	A-T-024s
Nickel$_D^{M\#}$	43							mg/kg	1	A-T-024s
Selenium$_D^{M\#}$	<1							mg/kg	1	A-T-024s
Zinc$_D^{M\#}$	64							mg/kg	5	A-T-024s

Envirolab Job Number: 22/09665

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09665/1							Units	Limit of Detection	Method ref
Client Sample No	26									
Client Sample ID	BH14									
Depth to Top	6.00									
Depth To Bottom										
Date Sampled	26-Sep-22									
Sample Type	Soil - ES									
Sample Matrix Code	5A									
PAH-16MS										
Acenaphthene$_{A}^{M\#}$	<0.01							mg/kg	0.01	A-T-019s
Acenaphthylene$_{A}^{M\#}$	<0.01							mg/kg	0.01	A-T-019s
Anthracene$_{A}^{M\#}$	<0.02							mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_{A}^{M\#}$	<0.04							mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_{A}^{M\#}$	<0.04							mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_{A}^{M\#}$	<0.05							mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_{A}^{M\#}$	<0.05							mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_{A}^{M\#}$	<0.07							mg/kg	0.07	A-T-019s
Chrysene$_{A}^{M\#}$	<0.06							mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_{A}^{M\#}$	<0.04							mg/kg	0.04	A-T-019s
Fluoranthene$_{A}^{M\#}$	<0.08							mg/kg	0.08	A-T-019s
Fluorene$_{A}^{M\#}$	<0.01							mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_{A}^{M\#}$	<0.03							mg/kg	0.03	A-T-019s
Naphthalene $_{A}^{M\#}$	<0.03							mg/kg	0.03	A-T-019s
Phenanthrene$_{A}^{M\#}$	<0.03							mg/kg	0.03	A-T-019s
Pyrene$_{A}^{M\#}$	<0.07							mg/kg	0.07	A-T-019s
Total PAH-16MS$_{A}^{M\#}$	<0.08							mg/kg	0.01	A-T-019s

Envirolab Job Number: 22/09665

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09665/1							Units	Limit of Detection	Method ref
Client Sample No	26									
Client Sample ID	BH14									
Depth to Top	6.00									
Depth To Bottom										
Date Sampled	26-Sep-22									
Sample Type	Soil - ES									
Sample Matrix Code	5A									
TPH CWG with Clean Up										
Ali >C5-C6$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	<1							mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	<1							mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	<1							mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	<1							mg/kg	1	A-T-055s
Ali >C21-C35$_A^{M\#}$	<1							mg/kg	1	A-T-055s
Total Aliphatics$_A$	<1							mg/kg	1	Calc-As Recd
Aro >C5-C7$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	<1							mg/kg	1	A-T-055s
Aro >C10-C12$_A$	<1							mg/kg	1	A-T-055s
Aro >C12-C16$_A$	<1							mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	<1							mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	<1							mg/kg	1	A-T-055s
Total Aromatics$_A$	<1							mg/kg	1	Calc-As Recd
TPH (Ali & Aro >C5-C35)$_A$	<1							mg/kg	1	Calc-As Recd
BTEX - Benzene$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s

REPORT NOTES

General

This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:

All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:

Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:

Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:

Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:

1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.

Secondary Matrix Codes:

A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,
E = contains roots/twigs.

Key:

IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve
Subscript "^" indicates analysis has dependant options against results. Testing dependant on results appear in the comments area of your sample receipt.
EPH CWG results have humics mathematically subtracted through instrument calculation
TPH results "with Cleanup" indicates results cleaned up with Silica during extraction

EPH CWG GCxGC ID from TPH CWG

Where we have identified humic substances in any ID's from TPH CWG with Clean Up please note that the concentration of these humic substances is not included in the quantified results and are included in the ID for information.

Please contact us if you need any further information.

v2

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client:	Structural Soils Limited (Castleford), The Potteries, Pottery Street, Castleford, West Yorkshire, UK, WF10 1NJ	**Project No:**	22/09665
		Date Received:	04/10/2022 (am)
Project:	East Midland Airport	**Cool Box Temperatures (°C):**	10.8,10.4,10.3,10.2,10.7

Clients Project No: 765514

NO DEVIATIONS IDENTIFIED with respect to sampling dates or containers received.

Note: If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3 (for water samples 5 ± 3°C), ISO 18400-105:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	22/09665/1
Client Sample No	26
Client Sample ID/Depth	BH14 6.00m
Date Sampled	26/09/22
A-T-019s	07/10/2022
A-T-022s	10/10/2022
A-T-024s	13/10/2022
A-T-026s	14/10/2022
A-T-031s	18/10/2022
A-T-032 OM	13/10/2022
A-T-044	18/10/2022
A-T-055s	07/10/2022
Calc-As Recd	10/10/2022

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 22/09666
Issue Number: 1 **Date:** 18 October, 2022

Client:
Structural Soils Limited (Castleford)
The Potteries
Pottery Street
Castleford
West Yorkshire
UK
WF10 1NJ

Project Manager: Alex Jones
Project Name: East Midland Airport
Project Ref: 765514
Order No: N/A
Date Samples Received: 23/09/22
Date Instructions Received: 04/10/22
Date Analysis Completed: 18/10/22

Approved by:

Richard Wong
Client Manager

Envirolab Job Number: 22/09666

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09666/1	22/09666/2						Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH08	CP23								
Depth to Top	5.00	2.00								
Depth To Bottom										
Date Sampled	26-Sep-22	26-Sep-22								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	6A	6A								
% Moisture at <40C$_A$	15.2	15.7						% w/w	0.1	A-T-044
% Stones >10mm$_A$	<0.1	<0.1						% w/w	0.1	A-T-044
pH$_D$$^{M\#}$	8.38	8.44						pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D$$^{M\#}$	0.04	0.04						g/l	0.01	A-T-026s
Organic Matter$_D$$^{M\#}$	0.3	0.7						% w/w	0.1	A-T-032 OM
Arsenic$_D$$^{M\#}$	<1	<1						mg/kg	1	A-T-024s
Cadmium$_D$$^{M\#}$	0.8	0.8						mg/kg	0.5	A-T-024s
Copper$_D$$^{M\#}$	10	10						mg/kg	1	A-T-024s
Chromium$_D$$^{M\#}$	48	49						mg/kg	1	A-T-024s
Lead$_D$$^{M\#}$	3	3						mg/kg	1	A-T-024s
Mercury$_D$	0.71	0.89						mg/kg	0.17	A-T-024s
Nickel$_D$$^{M\#}$	44	43						mg/kg	1	A-T-024s
Selenium$_D$$^{M\#}$	<1	<1						mg/kg	1	A-T-024s
Zinc$_D$$^{M\#}$	66	64						mg/kg	5	A-T-024s

Envirolab Job Number: 22/09666

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09666/1	22/09666/2						Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH08	CP23								
Depth to Top	5.00	2.00								
Depth To Bottom										
Date Sampled	26-Sep-22	26-Sep-22								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	6A	6A								
PAH-16MS										
Acenaphthene$_A^{M\#}$	<0.01	<0.01						mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01	<0.01						mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	<0.02	<0.02						mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.04	<0.04						mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	<0.04	<0.04						mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	<0.05	<0.05						mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.05	<0.05						mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07	<0.07						mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	<0.06	<0.06						mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04	<0.04						mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	<0.08	<0.08						mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	<0.01	<0.01						mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	<0.03	<0.03						mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	<0.03	<0.03						mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	<0.03	<0.03						mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	<0.07	<0.07						mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	<0.08	<0.08						mg/kg	0.01	A-T-019s

Envirolab Job Number: 22/09666

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09666/1	22/09666/2						Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH08	CP23								
Depth to Top	5.00	2.00								
Depth To Bottom										
Date Sampled	26-Sep-22	26-Sep-22								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	6A	6A								
TPH CWG with Clean Up										
Ali >C5-C6$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	<1	<1						mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Ali >C21-C35$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Total Aliphatics$_A$	<1	<1						mg/kg	1	Calc-As Recd
Aro >C5-C7$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	<1	<1						mg/kg	1	A-T-055s
Aro >C10-C12$_A$	<1	<1						mg/kg	1	A-T-055s
Aro >C12-C16$_A$	<1	<1						mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Total Aromatics$_A$	<1	<1						mg/kg	1	Calc-As Recd
TPH (Ali & Aro >C5-C35)$_A$	<1	<1						mg/kg	1	Calc-As Recd
BTEX - Benzene$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s

REPORT NOTES

General

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The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:

All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:

Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:

Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:

Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:

1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.

Secondary Matrix Codes:

A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,
E = contains roots/twigs.

Key:

IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve
Subscript "^" indicates analysis has dependant options against results. Testing dependant on results appear in the comments area of your sample receipt.
EPH CWG results have humics mathematically subtracted through instrument calculation
TPH results "with Cleanup" indicates results cleaned up with Silica during extraction

EPH CWG GCxGC ID from TPH CWG

Where we have identified humic substances in any ID's from TPH CWG with Clean Up please note that the concentration of these humic substances is not included in the quantified results and are included in the ID for information.

Please contact us if you need any further information.

v2

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Castleford), The Potteries, Pottery Street, Castleford, West Yorkshire, UK, WF10 1NJ

Project: East Midland Airport

Clients Project No: 765514

Project No: 22/09666

Date Received: 04/10/2022 (am)

Cool Box Temperatures (°C): 10.2,10.4

NO DEVIATIONS IDENTIFIED with respect to sampling dates or containers received.

Note: If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3 (for water samples 5 ± 3°C), ISO 18400-105:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	22/09666/1	22/09666/2
Client Sample No		
Client Sample ID/Depth	BH08 5.00m	CP23 2.00m
Date Sampled	26/09/22	26/09/22
A-T-019s	10/10/2022	10/10/2022
A-T-022s	10/10/2022	10/10/2022
A-T-024s	13/10/2022	13/10/2022
A-T-026s	13/10/2022	13/10/2022
A-T-031s	18/10/2022	18/10/2022
A-T-032 OM	17/10/2022	17/10/2022
A-T-044	07/10/2022	07/10/2022
A-T-055s	07/10/2022	07/10/2022
Calc-As Recd	10/10/2022	10/10/2022

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 22/09768
Issue Number: 1 **Date:** 21 October, 2022

Client:
Structural Soils Limited (Castleford)
The Potteries
Pottery Street
Castleford
West Yorkshire
UK
WF10 1NJ

Project Manager: Alex Jones
Project Name: East Midland Airport
Project Ref: 765514
Order No: N/A
Date Samples Received: 30/09/22
Date Instructions Received: 05/10/22
Date Analysis Completed: 21/10/22

Approved by:

Richard Wong
Client Manager

mCERTS THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME
UKAS TESTING 1247

Envirolab Job Number: 22/09768

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09768/1	22/09768/2	22/09768/3	22/09768/4	22/09768/5	22/09768/6	22/09768/7	Units	Limit of Detection	Method ref
Client Sample No	2	3	7	6	3	35	1			
Client Sample ID	CP09	CP10	TP14	TP15	TP16	BH13	TP19			
Depth to Top	0.50	0.90	0.80	1.50	0.40	10.00	0.15			
Depth To Bottom										
Date Sampled	29-Sep-22	29-Sep-22	29-Sep-22	29-Sep-22	29-Sep-22	29-Sep-22	29-Sep-22			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	5AE	5AE	5AE	5A	4AE	5A	5E			
% Moisture at <40C$_A$	12.1	11.0	9.7	13.7	9.5	11.1	8.8	% w/w	0.1	A-T-044
% Stones >10mm$_A$	<0.1	0.9	<0.1	2.7	<0.1	0.2	<0.1	% w/w	0.1	A-T-044
pH$_D$$^{M\#}$	9.68	8.56	8.72	8.75	8.05	8.51	7.30	pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D$$^{M\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	g/l	0.01	A-T-026s
Organic Matter$_D$$^{M\#}$	0.6	0.6	0.3	1.3	2.2	1.1	2.4	% w/w	0.1	A-T-032 OM
Arsenic$_D$$^{M\#}$	<1	27	<1	4	<1	<1	6	mg/kg	1	A-T-024s
Cadmium$_D$$^{M\#}$	0.8	1.0	0.7	<0.5	0.6	0.7	0.7	mg/kg	0.5	A-T-024s
Copper$_D$$^{M\#}$	12	24	9	15	10	7	14	mg/kg	1	A-T-024s
Chromium$_D$$^{M\#}$	54	37	49	29	31	44	28	mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-040s
Chromium (trivalent)	54	37	49	29	31	44	28	mg/kg	1	Calc
Lead$_D$$^{M\#}$	10	13	3	5	23	4	24	mg/kg	1	A-T-024s
Mercury$_D$	<0.17	1.09	1.97	0.97	<0.17	1.35	<0.17	mg/kg	0.17	A-T-024s
Nickel$_D$$^{M\#}$	48	33	41	24	26	38	24	mg/kg	1	A-T-024s
Selenium$_D$$^{M\#}$	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-024s
Zinc$_D$$^{M\#}$	72	67	59	55	58	57	62	mg/kg	5	A-T-024s

Envirolab Job Number: 22/09768

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09768/1	22/09768/2	22/09768/3	22/09768/4	22/09768/5	22/09768/6	22/09768/7	Units	Limit of Detection	Method ref
Client Sample No	2	3	7	6	3	35	1			
Client Sample ID	CP09	CP10	TP14	TP15	TP16	BH13	TP19			
Depth to Top	0.50	0.90	0.80	1.50	0.40	10.00	0.15			
Depth To Bottom										
Date Sampled	29-Sep-22	29-Sep-22	29-Sep-22	29-Sep-22	29-Sep-22	29-Sep-22	29-Sep-22			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	5AE	5AE	5AE	5A	4AE	5A	5E			
PAH-16MS										
Acenaphthene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.05	mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	mg/kg	0.01	A-T-019s

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Client Project Name: East Midland Airport

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Lab Sample ID	22/09768/1	22/09768/2	22/09768/3	22/09768/4	22/09768/5	22/09768/6	22/09768/7	Units	Limit of Detection	Method ref
Client Sample No	2	3	7	6	3	35	1			
Client Sample ID	CP09	CP10	TP14	TP15	TP16	BH13	TP19			
Depth to Top	0.50	0.90	0.80	1.50	0.40	10.00	0.15			
Depth To Bottom										
Date Sampled	29-Sep-22	29-Sep-22	29-Sep-22	29-Sep-22	29-Sep-22	29-Sep-22	29-Sep-22			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	5AE	5AE	5AE	5A	4AE	5A	5E			
SVOC excluding PAH-16										
4-Bromophenyl phenyl ether$_A$	-	<100	-	-	-	-	-	µg/kg	100	A-T-052s
Hexachlorobenzene$_A$	-	<100	-	-	-	-	-	µg/kg	100	A-T-052s
Diethyl phthalate$_A$	-	<100	-	-	-	-	-	µg/kg	100	A-T-052s
Dimethyl phthalate$_A$	-	<100	-	-	-	-	-	µg/kg	100	A-T-052s
Dibenzofuran$_A$	-	<100	-	-	-	-	-	µg/kg	100	A-T-052s
Carbazole$_A$	-	<100	-	-	-	-	-	µg/kg	100	A-T-052s
Butylbenzyl phthalate$_A$	-	<100	-	-	-	-	-	µg/kg	100	A-T-052s
Bis(2-ethylhexyl)phthalate$_A$	-	<500	-	-	-	-	-	µg/kg	500	A-T-052s
Bis(2-chloroethoxy)methane$_A$	-	<100	-	-	-	-	-	µg/kg	100	A-T-052s
Bis(2-chloroethyl)ether$_A$	-	<100	-	-	-	-	-	µg/kg	100	A-T-052s
4-Nitrophenol$_A$	-	<100	-	-	-	-	-	µg/kg	100	A-T-052s
3+4-Methylphenol$_A$	-	<100	-	-	-	-	-	µg/kg	100	A-T-052s
4-Chloro-3-methylphenol$_A$	-	<100	-	-	-	-	-	µg/kg	100	A-T-052s
2-Nitrophenol$_A$	-	<100	-	-	-	-	-	µg/kg	100	A-T-052s
2-Methylphenol$_A$	-	<100	-	-	-	-	-	µg/kg	100	A-T-052s
1,2,4-Trichlorobenzene$_A$	-	<100	-	-	-	-	-	µg/kg	100	A-T-052s
2-Chlorophenol$_A$	-	<100	-	-	-	-	-	µg/kg	100	A-T-052s
2,6-Dinitrotoluene$_A$	-	<100	-	-	-	-	-	µg/kg	100	A-T-052s
2,4-Dinitrotoluene$_A$	-	<100	-	-	-	-	-	µg/kg	100	A-T-052s
2,4-Dimethylphenol$_A$	-	<100	-	-	-	-	-	µg/kg	100	A-T-052s
2,4-Dichlorophenol$_A$	-	<100	-	-	-	-	-	µg/kg	100	A-T-052s
2,4,6-Trichlorophenol$_A$	-	<100	-	-	-	-	-	µg/kg	100	A-T-052s
2,4,5-Trichlorophenol$_A$	-	<100	-	-	-	-	-	µg/kg	100	A-T-052s
1,4-Dichlorobenzene$_A$	-	<100	-	-	-	-	-	µg/kg	100	A-T-052s
1,3-Dichlorobenzene$_A$	-	<100	-	-	-	-	-	µg/kg	100	A-T-052s
1,2-Dichlorobenzene$_A$	-	<100	-	-	-	-	-	µg/kg	100	A-T-052s
2-Chloronaphthalene$_A$	-	<100	-	-	-	-	-	µg/kg	100	A-T-052s
2-Methylnaphthalene$_A$	-	<100	-	-	-	-	-	µg/kg	100	A-T-052s
Bis(2-chloroisopropyl)ether$_A$	-	<100	-	-	-	-	-	µg/kg	100	A-T-052s
Phenol$_A$	-	<100	-	-	-	-	-	µg/kg	100	A-T-052s
Pentachlorophenol$_A$	-	<100	-	-	-	-	-	µg/kg	100	A-T-052s
n-Nitroso-n-dipropylamine$_A$	-	<100	-	-	-	-	-	µg/kg	100	A-T-052s

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Lab Sample ID	22/09768/1	22/09768/2	22/09768/3	22/09768/4	22/09768/5	22/09768/6	22/09768/7	Units	Limit of Detection	Method ref
Client Sample No	2	3	7	6	3	35	1			
Client Sample ID	CP09	CP10	TP14	TP15	TP16	BH13	TP19			
Depth to Top	0.50	0.90	0.80	1.50	0.40	10.00	0.15			
Depth To Bottom										
Date Sampled	29-Sep-22	29-Sep-22	29-Sep-22	29-Sep-22	29-Sep-22	29-Sep-22	29-Sep-22			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	5AE	5AE	5AE	5A	4AE	5A	5E			
n-Dioctylphthalate$_A$	-	<500	-	-	-	-	-	µg/kg	500	A-T-052s
n-Dibutylphthalate$_A$	-	<100	-	-	-	-	-	µg/kg	100	A-T-052s
Nitrobenzene$_A$	-	<100	-	-	-	-	-	µg/kg	100	A-T-052s
Isophorone$_A$	-	<100	-	-	-	-	-	µg/kg	100	A-T-052s
Hexachloroethane$_A$	-	<100	-	-	-	-	-	µg/kg	100	A-T-052s
Hexachlorocyclopentadiene$_A$	-	<100	-	-	-	-	-	µg/kg	100	A-T-052s
Hexachlorobutadiene$_A$	-	<100	-	-	-	-	-	µg/kg	100	A-T-052s
Perylene$_A$	-	<100	-	-	-	-	-	µg/kg	100	A-T-052s

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Client Project Ref: 765514

Lab Sample ID	22/09768/1	22/09768/2	22/09768/3	22/09768/4	22/09768/5	22/09768/6	22/09768/7	Units	Limit of Detection	Method ref
Client Sample No	2	3	7	6	3	35	1			
Client Sample ID	CP09	CP10	TP14	TP15	TP16	BH13	TP19			
Depth to Top	0.50	0.90	0.80	1.50	0.40	10.00	0.15			
Depth To Bottom										
Date Sampled	29-Sep-22	29-Sep-22	29-Sep-22	29-Sep-22	29-Sep-22	29-Sep-22	29-Sep-22			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	5AE	5AE	5AE	5A	4AE	5A	5E			
VOC										
Dichlorodifluoromethane$_{A}$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
Chloromethane$_{A}$	-	<10	-	-	-	-	-	µg/kg	10	A-T-006s
Vinyl Chloride (Chloroethene)$_{A}^{\#}$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
Bromomethane$_{A}^{\#}$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
Chloroethane$_{A}^{\#}$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
Trichlorofluoromethane$_{A}^{\#}$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
1,1-Dichloroethene$_{A}^{\#}$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
Carbon Disulphide$_{A}^{\#}$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
Dichloromethane$_{A}$	-	<5	-	-	-	-	-	µg/kg	5	A-T-006s
trans 1,2-Dichloroethene$_{A}^{\#}$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
1,1-Dichloroethane$_{A}^{\#}$	-	*<1*	-	-	-	-	-	µg/kg	1	A-T-006s
cis 1,2-Dichloroethene$_{A}^{\#}$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
2,2-Dichloropropane$_{A}^{\#}$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
Bromochloromethane$_{A}^{\#}$	-	<5	-	-	-	-	-	µg/kg	5	A-T-006s
Chloroform$_{A}^{\#}$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
1,1,1-Trichloroethane$_{A}^{\#}$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
1,1-Dichloropropene$_{A}^{\#}$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
Carbon Tetrachloride$_{A}^{\#}$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
1,2-Dichloroethane$_{A}^{\#}$	-	<2	-	-	-	-	-	µg/kg	2	A-T-006s
Benzene$_{A}^{\#}$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
Trichloroethene$_{A}^{\#}$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
1,2-Dichloropropane$_{A}^{\#}$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
Dibromomethane$_{A}^{\#}$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
Bromodichloromethane$_{A}^{\#}$	-	<10	-	-	-	-	-	µg/kg	10	A-T-006s
cis 1,3-Dichloropropene$_{A}^{\#}$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
Toluene$_{A}^{\#}$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
trans 1,3-Dichloropropene$_{A}^{\#}$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
1,1,2-Trichloroethane$_{A}^{\#}$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
1,3-Dichloropropane$_{A}^{\#}$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
Tetrachloroethene$_{A}^{\#}$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
Dibromochloromethane$_{A}^{\#}$	-	<3	-	-	-	-	-	µg/kg	3	A-T-006s
1,2-Dibromoethane$_{A}^{\#}$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s

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Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09768/1	22/09768/2	22/09768/3	22/09768/4	22/09768/5	22/09768/6	22/09768/7	Units	Limit of Detection	Method ref
Client Sample No	2	3	7	6	3	35	1			
Client Sample ID	CP09	CP10	TP14	TP15	TP16	BH13	TP19			
Depth to Top	0.50	0.90	0.80	1.50	0.40	10.00	0.15			
Depth To Bottom										
Date Sampled	29-Sep-22	29-Sep-22	29-Sep-22	29-Sep-22	29-Sep-22	29-Sep-22	29-Sep-22			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	5AE	5AE	5AE	5A	4AE	5A	5E			
Chlorobenzene$_{A}^{\#}$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
1,1,1,2-Tetrachloroethane$_{A}$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
Ethylbenzene$_{A}^{\#}$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
m & p Xylene$_{A}^{\#}$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
o-Xylene$_{A}^{\#}$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
Styrene$_{A}^{\#}$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
Bromoform$_{A}^{\#}$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
Isopropylbenzene$_{A}^{\#}$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
1,1,2,2-Tetrachloroethane$_{A}$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
1,2,3-Trichloropropane$_{A}^{\#}$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
Bromobenzene$_{A}^{\#}$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
n-Propylbenzene$_{A}^{\#}$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
2-Chlorotoluene$_{A}^{\#}$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
1,3,5-Trimethylbenzene$_{A}^{\#}$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
4-Chlorotoluene$_{A}^{\#}$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
tert-Butylbenzene$_{A}^{\#}$	-	<2	-	-	-	-	-	µg/kg	2	A-T-006s
1,2,4-Trimethylbenzene$_{A}^{\#}$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
sec-Butylbenzene$_{A}^{\#}$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
4-Isopropyltoluene$_{A}^{\#}$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
1,3-Dichlorobenzene$_{A}$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
1,4-Dichlorobenzene$_{A}^{\#}$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
n-Butylbenzene$_{A}^{\#}$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
1,2-Dichlorobenzene$_{A}^{\#}$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
1,2-Dibromo-3-chloropropane (DCBP)$_{A}$	-	<2	-	-	-	-	-	µg/kg	2	A-T-006s
1,2,4-Trichlorobenzene$_{A}$	-	<3	-	-	-	-	-	µg/kg	3	A-T-006s
Hexachlorobutadiene$_{A}^{\#}$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
1,2,3-Trichlorobenzene$_{A}$	-	<3	-	-	-	-	-	µg/kg	3	A-T-006s

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Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09768/1	22/09768/2	22/09768/3	22/09768/4	22/09768/5	22/09768/6	22/09768/7	Units	Limit of Detection	Method ref
Client Sample No	2	3	7	6	3	35	1			
Client Sample ID	CP09	CP10	TP14	TP15	TP16	BH13	TP19			
Depth to Top	0.50	0.90	0.80	1.50	0.40	10.00	0.15			
Depth To Bottom										
Date Sampled	29-Sep-22	29-Sep-22	29-Sep-22	29-Sep-22	29-Sep-22	29-Sep-22	29-Sep-22			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	5AE	5AE	5AE	5A	4AE	5A	5E			
TPH CWG with Clean Up										
Ali >C5-C6$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Ali >C21-C35$_A^{M\#}$	<1	<1	<1	<1	6	2	15	mg/kg	1	A-T-055s
Total Aliphatics$_A$	<1	<1	<1	<1	6	2	15	mg/kg	1	Calc-As Recd
Aro >C5-C7$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	<2	<2	<2	<2	<2	<2	<2	mg/kg	1	A-T-055s
Aro >C10-C12$_A$	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Aro >C12-C16$_A$	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	<1	<1	<1	<1	<1	<1	2	mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	<1	<1	<1	<1	1	<1	4	mg/kg	1	A-T-055s
Total Aromatics$_A$	<2	<2	<2	<2	<2	<2	7	mg/kg	1	Calc-As Recd
TPH (Ali & Aro >C5-C35)$_A$	<2	<2	<2	<2	7	2	22	mg/kg	1	Calc-As Recd
BTEX - Benzene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s

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Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09768/8	22/09768/9	22/09768/10	22/09768/11	22/09768/12			Units	Limit of Detection	Method ref
Client Sample No	9	3	3	1	2					
Client Sample ID	TP18	TP17	CP11	TP26	CP07					
Depth to Top	1.70	0.50	1.00	0.20	0.40					
Depth To Bottom										
Date Sampled	29-Sep-22	29-Sep-22	30-Sep-22	30-Sep-22	30-Sep-22					
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES					
Sample Matrix Code	5A	4AE	5AE	5AE	5A					
% Moisture at <40C$_A$	12.7	6.6	9.2	9.8	14.8			% w/w	0.1	A-T-044
% Stones >10mm$_A$	8.0	21.9	<0.1	<0.1	<0.1			% w/w	0.1	A-T-044
pH$_D$$^{M\#}$	8.34	7.81	8.36	7.80	8.41			pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D$$^{M\#}$	<0.01	<0.01	<0.01	<0.01	<0.01			g/l	0.01	A-T-026s
Organic Matter$_D$$^{M\#}$	1.1	0.6	1.0	3.2	0.9			% w/w	0.1	A-T-032 OM
Arsenic$_D$$^{M\#}$	7	2	<1	1	<1			mg/kg	1	A-T-024s
Cadmium$_D$$^{M\#}$	0.7	0.5	<0.5	0.8	0.8			mg/kg	0.5	A-T-024s
Copper$_D$$^{M\#}$	14	12	9	17	20			mg/kg	1	A-T-024s
Chromium$_D$$^{M\#}$	44	21	32	38	34			mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	<1	<1	<1	<1	<1			mg/kg	1	A-T-040s
Chromium (trivalent)	44	21	32	38	34			mg/kg	1	Calc
Lead$_D$$^{M\#}$	9	10	7	26	14			mg/kg	1	A-T-024s
Mercury$_D$	<0.17	<0.17	0.33	<0.17	0.94			mg/kg	0.17	A-T-024s
Nickel$_D$$^{M\#}$	43	17	26	34	31			mg/kg	1	A-T-024s
Selenium$_D$$^{M\#}$	<1	<1	<1	<1	<1			mg/kg	1	A-T-024s
Zinc$_D$$^{M\#}$	62	45	52	72	54			mg/kg	5	A-T-024s

Envirolab Job Number: 22/09768

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09768/8	22/09768/9	22/09768/10	22/09768/11	22/09768/12			Units	Limit of Detection	Method ref
Client Sample No	9	3	3	1	2					
Client Sample ID	TP18	TP17	CP11	TP26	CP07					
Depth to Top	1.70	0.50	1.00	0.20	0.40					
Depth To Bottom										
Date Sampled	29-Sep-22	29-Sep-22	30-Sep-22	30-Sep-22	30-Sep-22					
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES					
Sample Matrix Code	5A	4AE	5AE	5AE	5A					
PAH-16MS										
Acenaphthene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01	<0.01			mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01	<0.01			mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	<0.02	<0.02	<0.02	<0.02	<0.02			mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.04	<0.04	<0.04	<0.04	<0.04			mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	<0.04	<0.04	<0.04	<0.04	<0.04			mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	<0.05	<0.05	<0.05	<0.05	<0.05			mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.05	<0.05	<0.05	<0.05	<0.05			mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07	<0.07	<0.07	<0.07	<0.07			mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	<0.06	<0.06	<0.06	<0.06	<0.06			mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04	<0.04	<0.04	<0.04	<0.04			mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	<0.08	<0.08	<0.08	<0.08	<0.08			mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01	<0.01			mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	<0.03	<0.03	<0.03	<0.03	<0.03			mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	<0.03	<0.03	<0.03	<0.03	<0.03			mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	<0.03	<0.03	<0.03	<0.03	<0.03			mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	<0.07	<0.07	<0.07	<0.07	<0.07			mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	<0.08	<0.08	<0.08	<0.08	<0.08			mg/kg	0.01	A-T-019s

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Client Sample No	9	3	3	1	2					
Client Sample ID	TP18	TP17	CP11	TP26	CP07					
Depth to Top	1.70	0.50	1.00	0.20	0.40					
Depth To Bottom										
Date Sampled	29-Sep-22	29-Sep-22	30-Sep-22	30-Sep-22	30-Sep-22					
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES					
Sample Matrix Code	5A	4AE	5AE	5AE	5A					
SVOC excluding PAH-16										
4-Bromophenyl phenyl ether$_A$	<100	-	-	-	-			µg/kg	100	A-T-052s
Hexachlorobenzene$_A$	<100	-	-	-	-			µg/kg	100	A-T-052s
Diethyl phthalate$_A$	<100	-	-	-	-			µg/kg	100	A-T-052s
Dimethyl phthalate$_A$	<100	-	-	-	-			µg/kg	100	A-T-052s
Dibenzofuran$_A$	<100	-	-	-	-			µg/kg	100	A-T-052s
Carbazole$_A$	<100	-	-	-	-			µg/kg	100	A-T-052s
Butylbenzyl phthalate$_A$	<100	-	-	-	-			µg/kg	100	A-T-052s
Bis(2-ethylhexyl)phthalate$_A$	<500	-	-	-	-			µg/kg	500	A-T-052s
Bis(2-chloroethoxy)methane$_A$	<100	-	-	-	-			µg/kg	100	A-T-052s
Bis(2-chloroethyl)ether$_A$	<100	-	-	-	-			µg/kg	100	A-T-052s
4-Nitrophenol$_A$	<100	-	-	-	-			µg/kg	100	A-T-052s
3+4-Methylphenol$_A$	<100	-	-	-	-			µg/kg	100	A-T-052s
4-Chloro-3-methylphenol$_A$	<100	-	-	-	-			µg/kg	100	A-T-052s
2-Nitrophenol$_A$	<100	-	-	-	-			µg/kg	100	A-T-052s
2-Methylphenol$_A$	<100	-	-	-	-			µg/kg	100	A-T-052s
1,2,4-Trichlorobenzene$_A$	<100	-	-	-	-			µg/kg	100	A-T-052s
2-Chlorophenol$_A$	<100	-	-	-	-			µg/kg	100	A-T-052s
2,6-Dinitrotoluene$_A$	<100	-	-	-	-			µg/kg	100	A-T-052s
2,4-Dinitrotoluene$_A$	<100	-	-	-	-			µg/kg	100	A-T-052s
2,4-Dimethylphenol$_A$	<100	-	-	-	-			µg/kg	100	A-T-052s
2,4-Dichlorophenol$_A$	<100	-	-	-	-			µg/kg	100	A-T-052s
2,4,6-Trichlorophenol$_A$	<100	-	-	-	-			µg/kg	100	A-T-052s
2,4,5-Trichlorophenol$_A$	<100	-	-	-	-			µg/kg	100	A-T-052s
1,4-Dichlorobenzene$_A$	<100	-	-	-	-			µg/kg	100	A-T-052s
1,3-Dichlorobenzene$_A$	<100	-	-	-	-			µg/kg	100	A-T-052s
1,2-Dichlorobenzene$_A$	<100	-	-	-	-			µg/kg	100	A-T-052s
2-Chloronaphthalene$_A$	<100	-	-	-	-			µg/kg	100	A-T-052s
2-Methylnaphthalene$_A$	<100	-	-	-	-			µg/kg	100	A-T-052s
Bis(2-chloroisopropyl)ether$_A$	<100	-	-	-	-			µg/kg	100	A-T-052s
Phenol$_A$	<100	-	-	-	-			µg/kg	100	A-T-052s
Pentachlorophenol$_A$	<100	-	-	-	-			µg/kg	100	A-T-052s
n-Nitroso-n-dipropylamine$_A$	<100	-	-	-	-			µg/kg	100	A-T-052s

Envirolab Job Number: 22/09768

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Client Project Ref: 765514

Lab Sample ID	22/09768/8	22/09768/9	22/09768/10	22/09768/11	22/09768/12			Units	Limit of Detection	Method ref
Client Sample No	9	3	3	1	2					
Client Sample ID	TP18	TP17	CP11	TP26	CP07					
Depth to Top	1.70	0.50	1.00	0.20	0.40					
Depth To Bottom										
Date Sampled	29-Sep-22	29-Sep-22	30-Sep-22	30-Sep-22	30-Sep-22					
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES					
Sample Matrix Code	5A	4AE	5AE	5AE	5A					
n-Dioctylphthalate$_A$	<500	-	-	-	-			µg/kg	500	A-T-052s
n-Dibutylphthalate$_A$	<100	-	-	-	-			µg/kg	100	A-T-052s
Nitrobenzene$_A$	<100	-	-	-	-			µg/kg	100	A-T-052s
Isophorone$_A$	<100	-	-	-	-			µg/kg	100	A-T-052s
Hexachloroethane$_A$	<100	-	-	-	-			µg/kg	100	A-T-052s
Hexachlorocyclopentadiene$_A$	<100	-	-	-	-			µg/kg	100	A-T-052s
Hexachlorobutadiene$_A$	<100	-	-	-	-			µg/kg	100	A-T-052s
Perylene$_A$	<100	-	-	-	-			µg/kg	100	A-T-052s

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Lab Sample ID	22/09768/8	22/09768/9	22/09768/10	22/09768/11	22/09768/12			Units	Limit of Detection	Method ref
Client Sample No	9	3	3	1	2					
Client Sample ID	TP18	TP17	CP11	TP26	CP07					
Depth to Top	1.70	0.50	1.00	0.20	0.40					
Depth To Bottom										
Date Sampled	29-Sep-22	29-Sep-22	30-Sep-22	30-Sep-22	30-Sep-22					
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES					
Sample Matrix Code	5A	4AE	5AE	5AE	5A					
VOC										
Dichlorodifluoromethane$_{A}$	<1	-	-	-	-			µg/kg	1	A-T-006s
Chloromethane$_{A}$	<10	-	-	-	-			µg/kg	10	A-T-006s
Vinyl Chloride (Chloroethene)$_{A}^{\#}$	<1	-	-	-	-			µg/kg	1	A-T-006s
Bromomethane$_{A}^{\#}$	<1	-	-	-	-			µg/kg	1	A-T-006s
Chloroethane$_{A}^{\#}$	<1	-	-	-	-			µg/kg	1	A-T-006s
Trichlorofluoromethane$_{A}^{\#}$	<1	-	-	-	-			µg/kg	1	A-T-006s
1,1-Dichloroethene$_{A}^{\#}$	<1	-	-	-	-			µg/kg	1	A-T-006s
Carbon Disulphide$_{A}^{\#}$	<1	-	-	-	-			µg/kg	1	A-T-006s
Dichloromethane$_{A}$	<5	-	-	-	-			µg/kg	5	A-T-006s
trans 1,2-Dichloroethene$_{A}^{\#}$	<1	-	-	-	-			µg/kg	1	A-T-006s
1,1-Dichloroethane$_{A}^{\#}$	*<1*	-	-	-	-			µg/kg	1	A-T-006s
cis 1,2-Dichloroethene$_{A}^{\#}$	<1	-	-	-	-			µg/kg	1	A-T-006s
2,2-Dichloropropane$_{A}^{\#}$	<1	-	-	-	-			µg/kg	1	A-T-006s
Bromochloromethane$_{A}^{\#}$	<5	-	-	-	-			µg/kg	5	A-T-006s
Chloroform$_{A}^{\#}$	<1	-	-	-	-			µg/kg	1	A-T-006s
1,1,1-Trichloroethane$_{A}^{\#}$	<1	-	-	-	-			µg/kg	1	A-T-006s
1,1-Dichloropropene$_{A}^{\#}$	<1	-	-	-	-			µg/kg	1	A-T-006s
Carbon Tetrachloride$_{A}^{\#}$	<1	-	-	-	-			µg/kg	1	A-T-006s
1,2-Dichloroethane$_{A}^{\#}$	<2	-	-	-	-			µg/kg	2	A-T-006s
Benzene$_{A}^{\#}$	<1	-	-	-	-			µg/kg	1	A-T-006s
Trichloroethene$_{A}^{\#}$	<1	-	-	-	-			µg/kg	1	A-T-006s
1,2-Dichloropropane$_{A}^{\#}$	<1	-	-	-	-			µg/kg	1	A-T-006s
Dibromomethane$_{A}^{\#}$	<1	-	-	-	-			µg/kg	1	A-T-006s
Bromodichloromethane$_{A}^{\#}$	<10	-	-	-	-			µg/kg	10	A-T-006s
cis 1,3-Dichloropropene$_{A}^{\#}$	<1	-	-	-	-			µg/kg	1	A-T-006s
Toluene$_{A}^{\#}$	<1	-	-	-	-			µg/kg	1	A-T-006s
trans 1,3-Dichloropropene$_{A}^{\#}$	<1	-	-	-	-			µg/kg	1	A-T-006s
1,1,2-Trichloroethane$_{A}^{\#}$	<1	-	-	-	-			µg/kg	1	A-T-006s
1,3-Dichloropropane$_{A}^{\#}$	<1	-	-	-	-			µg/kg	1	A-T-006s
Tetrachloroethene$_{A}^{\#}$	<1	-	-	-	-			µg/kg	1	A-T-006s
Dibromochloromethane$_{A}^{\#}$	<3	-	-	-	-			µg/kg	3	A-T-006s
1,2-Dibromoethane$_{A}^{\#}$	<1	-	-	-	-			µg/kg	1	A-T-006s

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Client Project Ref: 765514

Lab Sample ID	22/09768/8	22/09768/9	22/09768/10	22/09768/11	22/09768/12			Units	Limit of Detection	Method ref
Client Sample No	9	3	3	1	2					
Client Sample ID	TP18	TP17	CP11	TP26	CP07					
Depth to Top	1.70	0.50	1.00	0.20	0.40					
Depth To Bottom										
Date Sampled	29-Sep-22	29-Sep-22	30-Sep-22	30-Sep-22	30-Sep-22					
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES					
Sample Matrix Code	5A	4AE	5AE	5AE	5A					
Chlorobenzene$_{A}^{\#}$	<1	-	-	-	-			µg/kg	1	A-T-006s
1,1,1,2-Tetrachloroethane$_{A}$	<1	-	-	-	-			µg/kg	1	A-T-006s
Ethylbenzene$_{A}^{\#}$	<1	-	-	-	-			µg/kg	1	A-T-006s
m & p Xylene$_{A}^{\#}$	<1	-	-	-	-			µg/kg	1	A-T-006s
o-Xylene$_{A}^{\#}$	<1	-	-	-	-			µg/kg	1	A-T-006s
Styrene$_{A}^{\#}$	<1	-	-	-	-			µg/kg	1	A-T-006s
Bromoform$_{A}^{\#}$	<1	-	-	-	-			µg/kg	1	A-T-006s
Isopropylbenzene$_{A}^{\#}$	<1	-	-	-	-			µg/kg	1	A-T-006s
1,1,2,2-Tetrachloroethane$_{A}$	<1	-	-	-	-			µg/kg	1	A-T-006s
1,2,3-Trichloropropane$_{A}^{\#}$	<1	-	-	-	-			µg/kg	1	A-T-006s
Bromobenzene$_{A}^{\#}$	<1	-	-	-	-			µg/kg	1	A-T-006s
n-Propylbenzene$_{A}^{\#}$	<1	-	-	-	-			µg/kg	1	A-T-006s
2-Chlorotoluene$_{A}^{\#}$	<1	-	-	-	-			µg/kg	1	A-T-006s
1,3,5-Trimethylbenzene$_{A}^{\#}$	<1	-	-	-	-			µg/kg	1	A-T-006s
4-Chlorotoluene$_{A}^{\#}$	<1	-	-	-	-			µg/kg	1	A-T-006s
tert-Butylbenzene$_{A}^{\#}$	<2	-	-	-	-			µg/kg	2	A-T-006s
1,2,4-Trimethylbenzene$_{A}^{\#}$	<1	-	-	-	-			µg/kg	1	A-T-006s
sec-Butylbenzene$_{A}^{\#}$	<1	-	-	-	-			µg/kg	1	A-T-006s
4-Isopropyltoluene$_{A}^{\#}$	<1	-	-	-	-			µg/kg	1	A-T-006s
1,3-Dichlorobenzene$_{A}$	<1	-	-	-	-			µg/kg	1	A-T-006s
1,4-Dichlorobenzene$_{A}^{\#}$	<1	-	-	-	-			µg/kg	1	A-T-006s
n-Butylbenzene$_{A}^{\#}$	<1	-	-	-	-			µg/kg	1	A-T-006s
1,2-Dichlorobenzene$_{A}^{\#}$	<1	-	-	-	-			µg/kg	1	A-T-006s
1,2-Dibromo-3-chloropropane (DCBP)$_{A}$	<2	-	-	-	-			µg/kg	2	A-T-006s
1,2,4-Trichlorobenzene$_{A}$	<3	-	-	-	-			µg/kg	3	A-T-006s
Hexachlorobutadiene$_{A}^{\#}$	<1	-	-	-	-			µg/kg	1	A-T-006s
1,2,3-Trichlorobenzene$_{A}$	<3	-	-	-	-			µg/kg	3	A-T-006s

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Client Sample No	9	3	3	1	2					
Client Sample ID	TP18	TP17	CP11	TP26	CP07					
Depth to Top	1.70	0.50	1.00	0.20	0.40					
Depth To Bottom										
Date Sampled	29-Sep-22	29-Sep-22	30-Sep-22	30-Sep-22	30-Sep-22					
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES					
Sample Matrix Code	5A	4AE	5AE	5AE	5A					
TPH CWG with Clean Up										
Ali >C5-C6$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01			mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01			mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	<1	<1	<1	<1	<1			mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	<1	<1	<1	<1	<1			mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	<1	<1	<1	<1	<1			mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	<1	<1	<1	<1	<1			mg/kg	1	A-T-055s
Ali >C21-C35$_A^{M\#}$	<1	<1	7	8	1			mg/kg	1	A-T-055s
Total Aliphatics$_A$	<1	<1	7	8	1			mg/kg	1	Calc-As Recd
Aro >C5-C7$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01			mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01			mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	<2	<2	<2	<2	<2			mg/kg	1	A-T-055s
Aro >C10-C12$_A$	<1	<1	<1	<1	<1			mg/kg	1	A-T-055s
Aro >C12-C16$_A$	<1	<1	<1	<1	<1			mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	<1	<1	<1	<1	<1			mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	<1	<1	1	2	<1			mg/kg	1	A-T-055s
Total Aromatics$_A$	<2	<2	<2	2	<2			mg/kg	1	Calc-As Recd
TPH (Ali & Aro >C5-C35)$_A$	<2	<2	8	10	<2			mg/kg	1	Calc-As Recd
BTEX - Benzene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01			mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01			mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01			mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01			mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01			mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01			mg/kg	0.01	A-T-022s

REPORT NOTES

General

This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,
E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve
Subscript "^" indicates analysis has dependant options against results. Testing dependant on results appear in the comments area of your sample receipt.
EPH CWG results have humics mathematically subtracted through instrument calculation
TPH results "with Cleanup" indicates results cleaned up with Silica during extraction

EPH CWG GCxGC ID from TPH CWG

Where we have identified humic substances in any ID's from TPH CWG with Clean Up please note that the concentration of these humic substances is not included in the quantified results and are included in the ID for information.

Please contact us if you need any further information.

v2

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Castleford), The Potteries, Pottery Street, Castleford, West Yorkshire, UK, WF10 1NJ

Project: East Midland Airport

Clients Project No: 765514

Project No: 22/09768

Date Received: 05/10/2022 (pm)

Cool Box Temperatures (°C): 10.2 - 11.4

NO DEVIATIONS IDENTIFIED

If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3, ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	22/09768/1	22/09768/2	22/09768/3	22/09768/4	22/09768/5	22/09768/6	22/09768/7	22/09768/8	22/09768/9	22/09768/10	22/09768/11	22/09768/12
Client Sample No	2	3	7	6	3	35	1	9	3	3	1	2
Client Sample ID/Depth	CP09 0.50m	CP10 0.90m	TP14 0.80m	TP15 1.50m	TP16 0.40m	BH13 10.00m	TP19 0.15m	TP18 1.70m	TP17 0.50m	CP11 1.00m	TP26 0.20m	CP07 0.40m
Date Sampled	29/09/22	29/09/22	29/09/22	29/09/22	29/09/22	29/09/22	29/09/22	29/09/22	29/09/22	30/09/22	30/09/22	30/09/22
A-T-006s		12/10/2022						12/10/2022				
A-T-019s	12/10/2022	12/10/2022	12/10/2022	12/10/2022	12/10/2022	12/10/2022	12/10/2022	12/10/2022	12/10/2022	12/10/2022	12/10/2022	12/10/2022
A-T-022s	12/10/2022	12/10/2022	12/10/2022	12/10/2022	12/10/2022	12/10/2022	12/10/2022	12/10/2022	12/10/2022	12/10/2022	12/10/2022	12/10/2022
A-T-024s	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022
A-T-026s	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022
A-T-031s	21/10/2022	21/10/2022	21/10/2022	21/10/2022	21/10/2022	21/10/2022	21/10/2022	21/10/2022	21/10/2022	21/10/2022	21/10/2022	21/10/2022
A-T-032 OM	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022
A-T-040s	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022
A-T-044	11/10/2022	11/10/2022	11/10/2022	11/10/2022	11/10/2022	11/10/2022	11/10/2022	11/10/2022	11/10/2022	11/10/2022	11/10/2022	11/10/2022
A-T-052s		13/10/2022						13/10/2022				
A-T-055s	10/10/2022	10/10/2022	10/10/2022	10/10/2022	10/10/2022	10/10/2022	10/10/2022	10/10/2022	10/10/2022	10/10/2022	10/10/2022	10/10/2022
Calc	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022
Calc-As Recd	12/10/2022	12/10/2022	12/10/2022	12/10/2022	12/10/2022	12/10/2022	12/10/2022	12/10/2022	12/10/2022	12/10/2022	12/10/2022	12/10/2022

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 22/09928
Issue Number: 1 **Date:** 25 October, 2022

Client:
Structural Soils Limited (Castleford)
The Potteries
Pottery Street
Castleford
West Yorkshire
UK
WF10 1NJ

Project Manager: Alex Jones
Project Name: East Midland Airport
Project Ref: 765514
Order No: N/A
Date Samples Received: 04/10/22
Date Instructions Received: 10/10/22
Date Analysis Completed: 25/10/22

Approved by:

Richard Wong
Client Manager

mCERTS THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME
UKAS TESTING 1247

Envirolab Job Number: 22/09928

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09928/1	22/09928/2	22/09928/3	22/09928/4	22/09928/5	22/09928/6	22/09928/7	Units	Limit of Detection	Method ref
Client Sample No	1	6	7	6	6	2	4			
Client Sample ID	CP21	TP23	TP13	TP22	TP24	CP22	CP13			
Depth to Top	0.10	0.90	1.50	1.30	0.60	0.50	2.40			
Depth To Bottom										
Date Sampled	03-Oct-22	05-Oct-22	05-Oct-22	05-Oct-22	05-Oct-22	05-Oct-22	05-Oct-22			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	6AE	4A	5A	6AE	4A	5A	3			
% Moisture at <40C$_A$	10.2	15.1	12.5	14.4	9.5	11.9	20.5	% w/w	0.1	A-T-044
% Stones >10mm$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	% w/w	0.1	A-T-044
pH$_D$$^{M\#}$	7.98	8.62	7.99	8.26	8.60	8.52	8.50	pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D$$^{M\#}$	<0.01	0.02	0.01	0.04	<0.01	0.02	0.02	g/l	0.01	A-T-026s
Organic Matter$_D$$^{M\#}$	5.3	0.9	0.2	0.4	2.2	1.1	0.7	% w/w	0.1	A-T-032 OM
Arsenic$_D$$^{M\#}$	6	5	6	8	<1	3	7	mg/kg	1	A-T-024s
Cadmium$_D$$^{M\#}$	1.0	1.0	0.7	1.1	0.6	0.9	0.9	mg/kg	0.5	A-T-024s
Copper$_D$$^{M\#}$	18	11	18	21	10	11	25	mg/kg	1	A-T-024s
Chromium$_D$$^{M\#}$	43	64	31	51	46	61	31	mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-040s
Chromium (trivalent)	43	64	31	51	46	61	31	mg/kg	1	Calc
Lead$_D$$^{M\#}$	59	5	9	11	5	5	12	mg/kg	1	A-T-024s
Mercury$_D$	<0.17	<0.17	<0.17	<0.17	0.20	<0.17	0.69	mg/kg	0.17	A-T-024s
Nickel$_D$$^{M\#}$	38	60	22	48	41	53	28	mg/kg	1	A-T-024s
Selenium$_D$$^{M\#}$	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-024s
Zinc$_D$$^{M\#}$	90	84	52	71	68	74	65	mg/kg	5	A-T-024s

Envirolab Job Number: 22/09928

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09928/1	22/09928/2	22/09928/3	22/09928/4	22/09928/5	22/09928/6	22/09928/7	Units	Limit of Detection	Method ref
Client Sample No	1	6	7	6	6	2	4			
Client Sample ID	CP21	TP23	TP13	TP22	TP24	CP22	CP13			
Depth to Top	0.10	0.90	1.50	1.30	0.60	0.50	2.40			
Depth To Bottom										
Date Sampled	03-Oct-22	05-Oct-22	05-Oct-22	05-Oct-22	05-Oct-22	05-Oct-22	05-Oct-22			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	6AE	4A	5A	6AE	4A	5A	3			
PAH-16MS										
Acenaphthene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	0.06	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	0.07	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	0.16	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	mg/kg	0.01	A-T-019s

Envirolab Job Number: 22/09928

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09928/1	22/09928/2	22/09928/3	22/09928/4	22/09928/5	22/09928/6	22/09928/7	Units	Limit of Detection	Method ref
Client Sample No	1	6	7	6	6	2	4			
Client Sample ID	CP21	TP23	TP13	TP22	TP24	CP22	CP13			
Depth to Top	0.10	0.90	1.50	1.30	0.60	0.50	2.40			
Depth To Bottom										
Date Sampled	03-Oct-22	05-Oct-22	05-Oct-22	05-Oct-22	05-Oct-22	05-Oct-22	05-Oct-22			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	6AE	4A	5A	6AE	4A	5A	3			
SVOC excluding PAH-16										
4-Bromophenyl phenyl ether$_A$	<100	-	-	-	-	-	-	µg/kg	100	A-T-052s
Hexachlorobenzene$_A$	<100	-	-	-	-	-	-	µg/kg	100	A-T-052s
Diethyl phthalate$_A$	<100	-	-	-	-	-	-	µg/kg	100	A-T-052s
Dimethyl phthalate$_A$	<100	-	-	-	-	-	-	µg/kg	100	A-T-052s
Dibenzofuran$_A$	<100	-	-	-	-	-	-	µg/kg	100	A-T-052s
Carbazole$_A$	<100	-	-	-	-	-	-	µg/kg	100	A-T-052s
Butylbenzyl phthalate$_A$	<100	-	-	-	-	-	-	µg/kg	100	A-T-052s
Bis(2-ethylhexyl)phthalate$_A$	<500	-	-	-	-	-	-	µg/kg	500	A-T-052s
Bis(2-chloroethoxy)methane$_A$	<100	-	-	-	-	-	-	µg/kg	100	A-T-052s
Bis(2-chloroethyl)ether$_A$	<100	-	-	-	-	-	-	µg/kg	100	A-T-052s
4-Nitrophenol$_A$	<100	-	-	-	-	-	-	µg/kg	100	A-T-052s
3+4-Methylphenol$_A$	<100	-	-	-	-	-	-	µg/kg	100	A-T-052s
4-Chloro-3-methylphenol$_A$	<100	-	-	-	-	-	-	µg/kg	100	A-T-052s
2-Nitrophenol$_A$	<100	-	-	-	-	-	-	µg/kg	100	A-T-052s
2-Methylphenol$_A$	<100	-	-	-	-	-	-	µg/kg	100	A-T-052s
1,2,4-Trichlorobenzene$_A$	<100	-	-	-	-	-	-	µg/kg	100	A-T-052s
2-Chlorophenol$_A$	<100	-	-	-	-	-	-	µg/kg	100	A-T-052s
2,6-Dinitrotoluene$_A$	<100	-	-	-	-	-	-	µg/kg	100	A-T-052s
2,4-Dinitrotoluene$_A$	<100	-	-	-	-	-	-	µg/kg	100	A-T-052s
2,4-Dimethylphenol$_A$	<100	-	-	-	-	-	-	µg/kg	100	A-T-052s
2,4-Dichlorophenol$_A$	<100	-	-	-	-	-	-	µg/kg	100	A-T-052s
2,4,6-Trichlorophenol$_A$	<100	-	-	-	-	-	-	µg/kg	100	A-T-052s
2,4,5-Trichlorophenol$_A$	<100	-	-	-	-	-	-	µg/kg	100	A-T-052s
1,4-Dichlorobenzene$_A$	<100	-	-	-	-	-	-	µg/kg	100	A-T-052s
1,3-Dichlorobenzene$_A$	<100	-	-	-	-	-	-	µg/kg	100	A-T-052s
1,2-Dichlorobenzene$_A$	<100	-	-	-	-	-	-	µg/kg	100	A-T-052s
2-Chloronaphthalene$_A$	<100	-	-	-	-	-	-	µg/kg	100	A-T-052s
2-Methylnaphthalene$_A$	<100	-	-	-	-	-	-	µg/kg	100	A-T-052s
Bis(2-chloroisopropyl)ether$_A$	<100	-	-	-	-	-	-	µg/kg	100	A-T-052s
Phenol$_A$	<100	-	-	-	-	-	-	µg/kg	100	A-T-052s
Pentachlorophenol$_A$	<100	-	-	-	-	-	-	µg/kg	100	A-T-052s
n-Nitroso-n-dipropylamine$_A$	<100	-	-	-	-	-	-	µg/kg	100	A-T-052s

Envirolab Job Number: 22/09928

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09928/1	22/09928/2	22/09928/3	22/09928/4	22/09928/5	22/09928/6	22/09928/7	Units	Limit of Detection	Method ref
Client Sample No	1	6	7	6	6	2	4			
Client Sample ID	CP21	TP23	TP13	TP22	TP24	CP22	CP13			
Depth to Top	0.10	0.90	1.50	1.30	0.60	0.50	2.40			
Depth To Bottom										
Date Sampled	03-Oct-22	05-Oct-22	05-Oct-22	05-Oct-22	05-Oct-22	05-Oct-22	05-Oct-22			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	6AE	4A	5A	6AE	4A	5A	3			
n-Dioctylphthalate$_A$	<500	-	-	-	-	-	-	µg/kg	500	A-T-052s
n-Dibutylphthalate$_A$	<100	-	-	-	-	-	-	µg/kg	100	A-T-052s
Nitrobenzene$_A$	<100	-	-	-	-	-	-	µg/kg	100	A-T-052s
Isophorone$_A$	<100	-	-	-	-	-	-	µg/kg	100	A-T-052s
Hexachloroethane$_A$	<100	-	-	-	-	-	-	µg/kg	100	A-T-052s
Hexachlorocyclopentadiene$_A$	<100	-	-	-	-	-	-	µg/kg	100	A-T-052s
Hexachlorobutadiene$_A$	<100	-	-	-	-	-	-	µg/kg	100	A-T-052s
Perylene$_A$	<100	-	-	-	-	-	-	µg/kg	100	A-T-052s

Envirolab Job Number: 22/09928

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09928/1	22/09928/2	22/09928/3	22/09928/4	22/09928/5	22/09928/6	22/09928/7	Units	Limit of Detection	Method ref
Client Sample No	1	6	7	6	6	2	4			
Client Sample ID	CP21	TP23	TP13	TP22	TP24	CP22	CP13			
Depth to Top	0.10	0.90	1.50	1.30	0.60	0.50	2.40			
Depth To Bottom										
Date Sampled	03-Oct-22	05-Oct-22	05-Oct-22	05-Oct-22	05-Oct-22	05-Oct-22	05-Oct-22			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	6AE	4A	5A	6AE	4A	5A	3			
VOC										
Dichlorodifluoromethane$_{A}$	<1	-	-	-	-	-	-	µg/kg	1	A-T-006s
Chloromethane$_{A}$	<10	-	-	-	-	-	-	µg/kg	10	A-T-006s
Vinyl Chloride (Chloroethene)$_{A}^{\#}$	<1	-	-	-	-	-	-	µg/kg	1	A-T-006s
Bromomethane$_{A}^{\#}$	<1	-	-	-	-	-	-	µg/kg	1	A-T-006s
Chloroethane$_{A}^{\#}$	<1	-	-	-	-	-	-	µg/kg	1	A-T-006s
Trichlorofluoromethane$_{A}^{\#}$	<1	-	-	-	-	-	-	µg/kg	1	A-T-006s
1,1-Dichloroethene$_{A}^{\#}$	<1	-	-	-	-	-	-	µg/kg	1	A-T-006s
Carbon Disulphide$_{A}^{\#}$	<1	-	-	-	-	-	-	µg/kg	1	A-T-006s
Dichloromethane$_{A}$	<5	-	-	-	-	-	-	µg/kg	5	A-T-006s
trans 1,2-Dichloroethene$_{A}^{\#}$	<1	-	-	-	-	-	-	µg/kg	1	A-T-006s
1,1-Dichloroethane$_{A}^{\#}$	<1	-	-	-	-	-	-	µg/kg	1	A-T-006s
cis 1,2-Dichloroethene$_{A}^{\#}$	<1	-	-	-	-	-	-	µg/kg	1	A-T-006s
2,2-Dichloropropane$_{A}^{\#}$	<1	-	-	-	-	-	-	µg/kg	1	A-T-006s
Bromochloromethane$_{A}^{\#}$	<5	-	-	-	-	-	-	µg/kg	5	A-T-006s
Chloroform$_{A}^{\#}$	<1	-	-	-	-	-	-	µg/kg	1	A-T-006s
1,1,1-Trichloroethane$_{A}^{\#}$	<1	-	-	-	-	-	-	µg/kg	1	A-T-006s
1,1-Dichloropropene$_{A}^{\#}$	<1	-	-	-	-	-	-	µg/kg	1	A-T-006s
Carbon Tetrachloride$_{A}^{\#}$	<1	-	-	-	-	-	-	µg/kg	1	A-T-006s
1,2-Dichloroethane$_{A}^{\#}$	<2	-	-	-	-	-	-	µg/kg	2	A-T-006s
Benzene$_{A}^{\#}$	<1	-	-	-	-	-	-	µg/kg	1	A-T-006s
Trichloroethene$_{A}^{\#}$	<1	-	-	-	-	-	-	µg/kg	1	A-T-006s
1,2-Dichloropropane$_{A}^{\#}$	<1	-	-	-	-	-	-	µg/kg	1	A-T-006s
Dibromomethane$_{A}^{\#}$	<1	-	-	-	-	-	-	µg/kg	1	A-T-006s
Bromodichloromethane$_{A}^{\#}$	<10	-	-	-	-	-	-	µg/kg	10	A-T-006s
cis 1,3-Dichloropropene$_{A}^{\#}$	<1	-	-	-	-	-	-	µg/kg	1	A-T-006s
Toluene$_{A}^{\#}$	<1	-	-	-	-	-	-	µg/kg	1	A-T-006s
trans 1,3-Dichloropropene$_{A}^{\#}$	<1	-	-	-	-	-	-	µg/kg	1	A-T-006s
1,1,2-Trichloroethane$_{A}^{\#}$	<1	-	-	-	-	-	-	µg/kg	1	A-T-006s
1,3-Dichloropropane$_{A}^{\#}$	<1	-	-	-	-	-	-	µg/kg	1	A-T-006s
Tetrachloroethene$_{A}^{\#}$	<1	-	-	-	-	-	-	µg/kg	1	A-T-006s
Dibromochloromethane$_{A}^{\#}$	<3	-	-	-	-	-	-	µg/kg	3	A-T-006s
1,2-Dibromoethane$_{A}^{\#}$	<1	-	-	-	-	-	-	µg/kg	1	A-T-006s

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Lab Sample ID	22/09928/1	22/09928/2	22/09928/3	22/09928/4	22/09928/5	22/09928/6	22/09928/7	Units	Limit of Detection	Method ref
Client Sample No	1	6	7	6	6	2	4			
Client Sample ID	CP21	TP23	TP13	TP22	TP24	CP22	CP13			
Depth to Top	0.10	0.90	1.50	1.30	0.60	0.50	2.40			
Depth To Bottom										
Date Sampled	03-Oct-22	05-Oct-22	05-Oct-22	05-Oct-22	05-Oct-22	05-Oct-22	05-Oct-22			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	6AE	4A	5A	6AE	4A	5A	3			
Chlorobenzene$_{A}^{\#}$	<1	-	-	-	-	-	-	µg/kg	1	A-T-006s
1,1,1,2-Tetrachloroethane$_{A}$	<1	-	-	-	-	-	-	µg/kg	1	A-T-006s
Ethylbenzene$_{A}^{\#}$	<1	-	-	-	-	-	-	µg/kg	1	A-T-006s
m & p Xylene$_{A}^{\#}$	<1	-	-	-	-	-	-	µg/kg	1	A-T-006s
o-Xylene$_{A}^{\#}$	<1	-	-	-	-	-	-	µg/kg	1	A-T-006s
Styrene$_{A}^{\#}$	<1	-	-	-	-	-	-	µg/kg	1	A-T-006s
Bromoform$_{A}^{\#}$	<1	-	-	-	-	-	-	µg/kg	1	A-T-006s
Isopropylbenzene$_{A}^{\#}$	<1	-	-	-	-	-	-	µg/kg	1	A-T-006s
1,1,2,2-Tetrachloroethane$_{A}$	<1	-	-	-	-	-	-	µg/kg	1	A-T-006s
1,2,3-Trichloropropane$_{A}^{\#}$	<1	-	-	-	-	-	-	µg/kg	1	A-T-006s
Bromobenzene$_{A}^{\#}$	<1	-	-	-	-	-	-	µg/kg	1	A-T-006s
n-Propylbenzene$_{A}^{\#}$	<1	-	-	-	-	-	-	µg/kg	1	A-T-006s
2-Chlorotoluene$_{A}^{\#}$	<1	-	-	-	-	-	-	µg/kg	1	A-T-006s
1,3,5-Trimethylbenzene$_{A}^{\#}$	<1	-	-	-	-	-	-	µg/kg	1	A-T-006s
4-Chlorotoluene$_{A}^{\#}$	<1	-	-	-	-	-	-	µg/kg	1	A-T-006s
tert-Butylbenzene$_{A}^{\#}$	<2	-	-	-	-	-	-	µg/kg	2	A-T-006s
1,2,4-Trimethylbenzene$_{A}^{\#}$	<1	-	-	-	-	-	-	µg/kg	1	A-T-006s
sec-Butylbenzene$_{A}^{\#}$	<1	-	-	-	-	-	-	µg/kg	1	A-T-006s
4-Isopropyltoluene$_{A}^{\#}$	<1	-	-	-	-	-	-	µg/kg	1	A-T-006s
1,3-Dichlorobenzene$_{A}$	<1	-	-	-	-	-	-	µg/kg	1	A-T-006s
1,4-Dichlorobenzene$_{A}^{\#}$	<1	-	-	-	-	-	-	µg/kg	1	A-T-006s
n-Butylbenzene$_{A}^{\#}$	<1	-	-	-	-	-	-	µg/kg	1	A-T-006s
1,2-Dichlorobenzene$_{A}^{\#}$	<1	-	-	-	-	-	-	µg/kg	1	A-T-006s
1,2-Dibromo-3-chloropropane (DCBP)$_{A}$	<2	-	-	-	-	-	-	µg/kg	2	A-T-006s
1,2,4-Trichlorobenzene$_{A}$	<3	-	-	-	-	-	-	µg/kg	3	A-T-006s
Hexachlorobutadiene$_{A}^{\#}$	<1	-	-	-	-	-	-	µg/kg	1	A-T-006s
1,2,3-Trichlorobenzene$_{A}$	<3	-	-	-	-	-	-	µg/kg	3	A-T-006s

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Lab Sample ID	22/09928/1	22/09928/2	22/09928/3	22/09928/4	22/09928/5	22/09928/6	22/09928/7	Units	Limit of Detection	Method ref
Client Sample No	1	6	7	6	6	2	4			
Client Sample ID	CP21	TP23	TP13	TP22	TP24	CP22	CP13			
Depth to Top	0.10	0.90	1.50	1.30	0.60	0.50	2.40			
Depth To Bottom										
Date Sampled	03-Oct-22	05-Oct-22	05-Oct-22	05-Oct-22	05-Oct-22	05-Oct-22	05-Oct-22			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	6AE	4A	5A	6AE	4A	5A	3			
TPH CWG with Clean Up										
Ali >C5-C6$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Ali >C21-C35$_A^{M\#}$	10	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Total Aliphatics$_A$	10	<1	<1	<1	<1	<1	<1	mg/kg	1	Calc-As Recd
Aro >C5-C7$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	<2	<2	<2	<2	<2	<2	<2	mg/kg	1	A-T-055s
Aro >C10-C12$_A$	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Aro >C12-C16$_A$	1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	3	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Total Aromatics$_A$	4	<2	<2	<2	<2	<2	<2	mg/kg	1	Calc-As Recd
TPH (Ali & Aro >C5-C35)$_A$	14	<2	<2	<2	<2	<2	<2	mg/kg	1	Calc-As Recd
BTEX - Benzene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s

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Lab Sample ID	22/09928/8	22/09928/9	22/09928/10	22/09928/11	22/09928/12	22/09928/13	22/09928/14	Units	Limit of Detection	Method ref
Client Sample No	1	2	1	3	3	1	6			
Client Sample ID	CP12	CP18	TP10	TP08	CP14	TP09	TP11			
Depth to Top	0.01	0.50	0.20	0.50	0.50	0.20	1.20			
Depth To Bottom										
Date Sampled	05-Oct-22	04-Oct-22	04-Oct-22	04-Oct-22	04-Oct-22	04-Oct-22	04-Oct-22			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4AE	6AE	4ABE	4AE	6AE	4AE	6AE			
% Moisture at <40C$_A$	14.6	10.1	11.0	12.5	12.7	9.7	14.2	% w/w	0.1	A-T-044
% Stones >10mm$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	% w/w	0.1	A-T-044
pH$_D$$^{M\#}$	7.52	8.45	6.86	8.44	7.25	6.74	8.15	pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D$$^{M\#}$	0.06	0.02	<0.01	0.06	0.01	<0.01	<0.01	g/l	0.01	A-T-026s
Organic Matter$_D$$^{M\#}$	6.1	2.3	2.5	3.2	0.7	2.7	0.4	% w/w	0.1	A-T-032 OM
Arsenic$_D$$^{M\#}$	9	<1	8	3	10	8	14	mg/kg	1	A-T-024s
Cadmium$_D$$^{M\#}$	1.0	0.8	1.0	1.0	1.2	1.1	1.2	mg/kg	0.5	A-T-024s
Copper$_D$$^{M\#}$	24	16	18	21	21	22	25	mg/kg	1	A-T-024s
Chromium$_D$$^{M\#}$	24	51	29	40	46	37	38	mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-040s
Chromium (trivalent)	24	51	29	40	46	37	38	mg/kg	1	Calc
Lead$_D$$^{M\#}$	35	12	43	40	11	136	16	mg/kg	1	A-T-024s
Mercury$_D$	<0.17	0.44	<0.17	0.34	<0.17	<0.17	<0.17	mg/kg	0.17	A-T-024s
Nickel$_D$$^{M\#}$	22	46	24	32	39	28	47	mg/kg	1	A-T-024s
Selenium$_D$$^{M\#}$	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-024s
Zinc$_D$$^{M\#}$	92	70	68	132	72	86	75	mg/kg	5	A-T-024s

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Lab Sample ID	22/09928/8	22/09928/9	22/09928/10	22/09928/11	22/09928/12	22/09928/13	22/09928/14	Units	Limit of Detection	Method ref
Client Sample No	1	2	1	3	3	1	6			
Client Sample ID	CP12	CP18	TP10	TP08	CP14	TP09	TP11			
Depth to Top	0.01	0.50	0.20	0.50	0.50	0.20	1.20			
Depth To Bottom										
Date Sampled	05-Oct-22	04-Oct-22	04-Oct-22	04-Oct-22	04-Oct-22	04-Oct-22	04-Oct-22			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4AE	6AE	4ABE	4AE	6AE	4AE	6AE			
Asbestos in Soil (inc. matrix)										
Asbestos in soil$_{D}^{\#}$	-	-	-	NAD	-	-	-			A-T-045
Asbestos Matrix (visual)$_{D}$	-	-	-	-	-	-	-			A-T-045
Asbestos Matrix (microscope)$_{D}$	-	-	-	-	-	-	-			A-T-045
Asbestos ACM - Suitable for Water Absorption Test?$_{D}$	-	-	-	N/A	-	-	-			A-T-045

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Lab Sample ID	22/09928/8	22/09928/9	22/09928/10	22/09928/11	22/09928/12	22/09928/13	22/09928/14	Units	Limit of Detection	Method ref
Client Sample No	1	2	1	3	3	1	6			
Client Sample ID	CP12	CP18	TP10	TP08	CP14	TP09	TP11			
Depth to Top	0.01	0.50	0.20	0.50	0.50	0.20	1.20			
Depth To Bottom										
Date Sampled	05-Oct-22	04-Oct-22	04-Oct-22	04-Oct-22	04-Oct-22	04-Oct-22	04-Oct-22			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4AE	6AE	4ABE	4AE	6AE	4AE	6AE			
PAH-16MS										
Acenaphthene$_A^{M\#}$	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	<0.02	<0.02	<0.02	0.06	<0.02	<0.02	<0.02	mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.04	<0.04	<0.04	0.48	<0.04	<0.04	<0.04	mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	<0.04	<0.04	<0.04	0.55	<0.04	<0.04	<0.04	mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	<0.05	<0.05	<0.05	0.62	<0.05	<0.05	<0.05	mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.05	<0.05	<0.05	0.31	<0.05	<0.05	<0.05	mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07	<0.07	<0.07	0.24	<0.07	<0.07	<0.07	mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	<0.06	<0.06	<0.06	0.51	<0.06	<0.06	<0.06	mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04	<0.04	<0.04	0.06	<0.04	<0.04	<0.04	mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	<0.08	<0.08	<0.08	0.88	<0.08	<0.08	<0.08	mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	<0.03	<0.03	<0.03	0.35	<0.03	<0.03	<0.03	mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	<0.03	<0.03	<0.03	0.26	<0.03	<0.03	<0.03	mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	<0.07	<0.07	<0.07	0.86	<0.07	<0.07	<0.07	mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	<0.08	<0.08	<0.08	5.22	<0.08	<0.08	<0.08	mg/kg	0.01	A-T-019s

Lab Sample ID	22/09928/8	22/09928/9	22/09928/10	22/09928/11	22/09928/12	22/09928/13	22/09928/14	Units	Limit of Detection	Method ref
Client Sample No	1	2	1	3	3	1	6			
Client Sample ID	CP12	CP18	TP10	TP08	CP14	TP09	TP11			
Depth to Top	0.01	0.50	0.20	0.50	0.50	0.20	1.20			
Depth To Bottom										
Date Sampled	05-Oct-22	04-Oct-22	04-Oct-22	04-Oct-22	04-Oct-22	04-Oct-22	04-Oct-22			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4AE	6AE	4ABE	4AE	6AE	4AE	6AE			
SVOC excluding PAH-16										
4-Bromophenyl phenyl ether$_A$	<100	-	-	<100	-	-	-	µg/kg	100	A-T-052s
Hexachlorobenzene$_A$	<100	-	-	<100	-	-	-	µg/kg	100	A-T-052s
Diethyl phthalate$_A$	<100	-	-	<100	-	-	-	µg/kg	100	A-T-052s
Dimethyl phthalate$_A$	<100	-	-	<100	-	-	-	µg/kg	100	A-T-052s
Dibenzofuran$_A$	<100	-	-	<100	-	-	-	µg/kg	100	A-T-052s
Carbazole$_A$	<100	-	-	<100	-	-	-	µg/kg	100	A-T-052s
Butylbenzyl phthalate$_A$	<100	-	-	<100	-	-	-	µg/kg	100	A-T-052s
Bis(2-ethylhexyl)phthalate$_A$	<500	-	-	<500	-	-	-	µg/kg	500	A-T-052s
Bis(2-chloroethoxy)methane$_A$	<100	-	-	<100	-	-	-	µg/kg	100	A-T-052s
Bis(2-chloroethyl)ether$_A$	<100	-	-	<100	-	-	-	µg/kg	100	A-T-052s
4-Nitrophenol$_A$	<100	-	-	<100	-	-	-	µg/kg	100	A-T-052s
3+4-Methylphenol$_A$	<100	-	-	<100	-	-	-	µg/kg	100	A-T-052s
4-Chloro-3-methylphenol$_A$	<100	-	-	<100	-	-	-	µg/kg	100	A-T-052s
2-Nitrophenol$_A$	<100	-	-	<100	-	-	-	µg/kg	100	A-T-052s
2-Methylphenol$_A$	<100	-	-	<100	-	-	-	µg/kg	100	A-T-052s
1,2,4-Trichlorobenzene$_A$	<100	-	-	<100	-	-	-	µg/kg	100	A-T-052s
2-Chlorophenol$_A$	<100	-	-	<100	-	-	-	µg/kg	100	A-T-052s
2,6-Dinitrotoluene$_A$	<100	-	-	<100	-	-	-	µg/kg	100	A-T-052s
2,4-Dinitrotoluene$_A$	<100	-	-	<100	-	-	-	µg/kg	100	A-T-052s
2,4-Dimethylphenol$_A$	<100	-	-	<100	-	-	-	µg/kg	100	A-T-052s
2,4-Dichlorophenol$_A$	<100	-	-	<100	-	-	-	µg/kg	100	A-T-052s
2,4,6-Trichlorophenol$_A$	<100	-	-	<100	-	-	-	µg/kg	100	A-T-052s
2,4,5-Trichlorophenol$_A$	<100	-	-	<100	-	-	-	µg/kg	100	A-T-052s
1,4-Dichlorobenzene$_A$	<100	-	-	<100	-	-	-	µg/kg	100	A-T-052s
1,3-Dichlorobenzene$_A$	<100	-	-	<100	-	-	-	µg/kg	100	A-T-052s
1,2-Dichlorobenzene$_A$	<100	-	-	<100	-	-	-	µg/kg	100	A-T-052s
2-Chloronaphthalene$_A$	<100	-	-	<100	-	-	-	µg/kg	100	A-T-052s
2-Methylnaphthalene$_A$	<100	-	-	<100	-	-	-	µg/kg	100	A-T-052s
Bis(2-chloroisopropyl)ether$_A$	<100	-	-	<100	-	-	-	µg/kg	100	A-T-052s
Phenol$_A$	<100	-	-	<100	-	-	-	µg/kg	100	A-T-052s
Pentachlorophenol$_A$	<100	-	-	<100	-	-	-	µg/kg	100	A-T-052s
n-Nitroso-n-dipropylamine$_A$	<100	-	-	<100	-	-	-	µg/kg	100	A-T-052s

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Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09928/8	22/09928/9	22/09928/10	22/09928/11	22/09928/12	22/09928/13	22/09928/14	Units	Limit of Detection	Method ref
Client Sample No	1	2	1	3	3	1	6			
Client Sample ID	CP12	CP18	TP10	TP08	CP14	TP09	TP11			
Depth to Top	0.01	0.50	0.20	0.50	0.50	0.20	1.20			
Depth To Bottom										
Date Sampled	05-Oct-22	04-Oct-22	04-Oct-22	04-Oct-22	04-Oct-22	04-Oct-22	04-Oct-22			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4AE	6AE	4ABE	4AE	6AE	4AE	6AE			
n-Dioctylphthalate$_A$	<500	-	-	<500	-	-	-	µg/kg	500	A-T-052s
n-Dibutylphthalate$_A$	<100	-	-	<100	-	-	-	µg/kg	100	A-T-052s
Nitrobenzene$_A$	<100	-	-	<100	-	-	-	µg/kg	100	A-T-052s
Isophorone$_A$	<100	-	-	<100	-	-	-	µg/kg	100	A-T-052s
Hexachloroethane$_A$	<100	-	-	<100	-	-	-	µg/kg	100	A-T-052s
Hexachlorocyclopentadiene$_A$	<100	-	-	<100	-	-	-	µg/kg	100	A-T-052s
Hexachlorobutadiene$_A$	<100	-	-	<100	-	-	-	µg/kg	100	A-T-052s
Perylene$_A$	<100	-	-	<100	-	-	-	µg/kg	100	A-T-052s

Envirolab Job Number: 22/09928

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09928/8	22/09928/9	22/09928/10	22/09928/11	22/09928/12	22/09928/13	22/09928/14	Units	Limit of Detection	Method ref
Client Sample No	1	2	1	3	3	1	6			
Client Sample ID	CP12	CP18	TP10	TP08	CP14	TP09	TP11			
Depth to Top	0.01	0.50	0.20	0.50	0.50	0.20	1.20			
Depth To Bottom										
Date Sampled	05-Oct-22	04-Oct-22	04-Oct-22	04-Oct-22	04-Oct-22	04-Oct-22	04-Oct-22			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4AE	6AE	4ABE	4AE	6AE	4AE	6AE			
VOC										
Dichlorodifluoromethane$_{A}$	<1	-	-	<1	-	-	-	µg/kg	1	A-T-006s
Chloromethane$_{A}$	<10	-	-	<10	-	-	-	µg/kg	10	A-T-006s
Vinyl Chloride (Chloroethene)$_{A}^{\#}$	<1	-	-	<1	-	-	-	µg/kg	1	A-T-006s
Bromomethane$_{A}^{\#}$	<1	-	-	<1	-	-	-	µg/kg	1	A-T-006s
Chloroethane$_{A}^{\#}$	<1	-	-	<1	-	-	-	µg/kg	1	A-T-006s
Trichlorofluoromethane$_{A}^{\#}$	<1	-	-	<1	-	-	-	µg/kg	1	A-T-006s
1,1-Dichloroethene$_{A}^{\#}$	<1	-	-	<1	-	-	-	µg/kg	1	A-T-006s
Carbon Disulphide$_{A}^{\#}$	<1	-	-	<1	-	-	-	µg/kg	1	A-T-006s
Dichloromethane$_{A}$	<5	-	-	<5	-	-	-	µg/kg	5	A-T-006s
trans 1,2-Dichloroethene$_{A}^{\#}$	<1	-	-	<1	-	-	-	µg/kg	1	A-T-006s
1,1-Dichloroethane$_{A}^{\#}$	<1	-	-	<1	-	-	-	µg/kg	1	A-T-006s
cis 1,2-Dichloroethene$_{A}^{\#}$	<1	-	-	<1	-	-	-	µg/kg	1	A-T-006s
2,2-Dichloropropane$_{A}^{\#}$	<1	-	-	<1	-	-	-	µg/kg	1	A-T-006s
Bromochloromethane$_{A}^{\#}$	<5	-	-	<5	-	-	-	µg/kg	5	A-T-006s
Chloroform$_{A}^{\#}$	<1	-	-	<1	-	-	-	µg/kg	1	A-T-006s
1,1,1-Trichloroethane$_{A}^{\#}$	<1	-	-	<1	-	-	-	µg/kg	1	A-T-006s
1,1-Dichloropropene$_{A}^{\#}$	<1	-	-	<1	-	-	-	µg/kg	1	A-T-006s
Carbon Tetrachloride$_{A}^{\#}$	<1	-	-	<1	-	-	-	µg/kg	1	A-T-006s
1,2-Dichloroethane$_{A}^{\#}$	<2	-	-	<2	-	-	-	µg/kg	2	A-T-006s
Benzene$_{A}^{\#}$	<1	-	-	<1	-	-	-	µg/kg	1	A-T-006s
Trichloroethene$_{A}^{\#}$	<1	-	-	<1	-	-	-	µg/kg	1	A-T-006s
1,2-Dichloropropane$_{A}^{\#}$	<1	-	-	<1	-	-	-	µg/kg	1	A-T-006s
Dibromomethane$_{A}^{\#}$	<1	-	-	<1	-	-	-	µg/kg	1	A-T-006s
Bromodichloromethane$_{A}^{\#}$	<10	-	-	<10	-	-	-	µg/kg	10	A-T-006s
cis 1,3-Dichloropropene$_{A}^{\#}$	<1	-	-	<1	-	-	-	µg/kg	1	A-T-006s
Toluene$_{A}^{\#}$	<1	-	-	<1	-	-	-	µg/kg	1	A-T-006s
trans 1,3-Dichloropropene$_{A}^{\#}$	<1	-	-	<1	-	-	-	µg/kg	1	A-T-006s
1,1,2-Trichloroethane$_{A}^{\#}$	<1	-	-	<1	-	-	-	µg/kg	1	A-T-006s
1,3-Dichloropropane$_{A}^{\#}$	<1	-	-	<1	-	-	-	µg/kg	1	A-T-006s
Tetrachloroethene$_{A}^{\#}$	<1	-	-	<1	-	-	-	µg/kg	1	A-T-006s
Dibromochloromethane$_{A}^{\#}$	<3	-	-	<3	-	-	-	µg/kg	3	A-T-006s
1,2-Dibromoethane$_{A}^{\#}$	<1	-	-	<1	-	-	-	µg/kg	1	A-T-006s

Envirolab Job Number: 22/09928

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09928/8	22/09928/9	22/09928/10	22/09928/11	22/09928/12	22/09928/13	22/09928/14	Units	Limit of Detection	Method ref
Client Sample No	1	2	1	3	3	1	6			
Client Sample ID	CP12	CP18	TP10	TP08	CP14	TP09	TP11			
Depth to Top	0.01	0.50	0.20	0.50	0.50	0.20	1.20			
Depth To Bottom										
Date Sampled	05-Oct-22	04-Oct-22	04-Oct-22	04-Oct-22	04-Oct-22	04-Oct-22	04-Oct-22			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4AE	6AE	4ABE	4AE	6AE	4AE	6AE			
Chlorobenzene$_{A}^{\#}$	<1	-	-	<1	-	-	-	µg/kg	1	A-T-006s
1,1,1,2-Tetrachloroethane$_{A}$	<1	-	-	<1	-	-	-	µg/kg	1	A-T-006s
Ethylbenzene$_{A}^{\#}$	<1	-	-	<1	-	-	-	µg/kg	1	A-T-006s
m & p Xylene$_{A}^{\#}$	<1	-	-	<1	-	-	-	µg/kg	1	A-T-006s
o-Xylene$_{A}^{\#}$	<1	-	-	<1	-	-	-	µg/kg	1	A-T-006s
Styrene$_{A}^{\#}$	<1	-	-	<1	-	-	-	µg/kg	1	A-T-006s
Bromoform$_{A}^{\#}$	<1	-	-	<1	-	-	-	µg/kg	1	A-T-006s
Isopropylbenzene$_{A}^{\#}$	<1	-	-	<1	-	-	-	µg/kg	1	A-T-006s
1,1,2,2-Tetrachloroethane$_{A}$	<1	-	-	<1	-	-	-	µg/kg	1	A-T-006s
1,2,3-Trichloropropane$_{A}^{\#}$	<1	-	-	<1	-	-	-	µg/kg	1	A-T-006s
Bromobenzene$_{A}^{\#}$	<1	-	-	<1	-	-	-	µg/kg	1	A-T-006s
n-Propylbenzene$_{A}^{\#}$	<1	-	-	<1	-	-	-	µg/kg	1	A-T-006s
2-Chlorotoluene$_{A}^{\#}$	<1	-	-	<1	-	-	-	µg/kg	1	A-T-006s
1,3,5-Trimethylbenzene$_{A}^{\#}$	<1	-	-	<1	-	-	-	µg/kg	1	A-T-006s
4-Chlorotoluene$_{A}^{\#}$	<1	-	-	<1	-	-	-	µg/kg	1	A-T-006s
tert-Butylbenzene$_{A}^{\#}$	<2	-	-	<2	-	-	-	µg/kg	2	A-T-006s
1,2,4-Trimethylbenzene$_{A}^{\#}$	<1	-	-	<1	-	-	-	µg/kg	1	A-T-006s
sec-Butylbenzene$_{A}^{\#}$	<1	-	-	<1	-	-	-	µg/kg	1	A-T-006s
4-Isopropyltoluene$_{A}^{\#}$	<1	-	-	<1	-	-	-	µg/kg	1	A-T-006s
1,3-Dichlorobenzene$_{A}$	<1	-	-	<1	-	-	-	µg/kg	1	A-T-006s
1,4-Dichlorobenzene$_{A}^{\#}$	<1	-	-	<1	-	-	-	µg/kg	1	A-T-006s
n-Butylbenzene$_{A}^{\#}$	<1	-	-	<1	-	-	-	µg/kg	1	A-T-006s
1,2-Dichlorobenzene$_{A}^{\#}$	<1	-	-	<1	-	-	-	µg/kg	1	A-T-006s
1,2-Dibromo-3-chloropropane (DCBP)$_{A}$	<2	-	-	<2	-	-	-	µg/kg	2	A-T-006s
1,2,4-Trichlorobenzene$_{A}$	<3	-	-	<3	-	-	-	µg/kg	3	A-T-006s
Hexachlorobutadiene$_{A}^{\#}$	<1	-	-	<1	-	-	-	µg/kg	1	A-T-006s
1,2,3-Trichlorobenzene$_{A}$	<3	-	-	<3	-	-	-	µg/kg	3	A-T-006s

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Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09928/8	22/09928/9	22/09928/10	22/09928/11	22/09928/12	22/09928/13	22/09928/14	Units	Limit of Detection	Method ref
Client Sample No	1	2	1	3	3	1	6			
Client Sample ID	CP12	CP18	TP10	TP08	CP14	TP09	TP11			
Depth to Top	0.01	0.50	0.20	0.50	0.50	0.20	1.20			
Depth To Bottom										
Date Sampled	05-Oct-22	04-Oct-22	04-Oct-22	04-Oct-22	04-Oct-22	04-Oct-22	04-Oct-22			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4AE	6AE	4ABE	4AE	6AE	4AE	6AE			
TPH CWG with Clean Up										
Ali >C5-C6$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	2	<1	<1	2	<1	<1	<1	mg/kg	1	A-T-055s
Ali >C21-C35$_A^{M\#}$	18	<1	8	31	<1	7	<1	mg/kg	1	A-T-055s
Total Aliphatics$_A$	20	<1	8	33	<1	7	<1	mg/kg	1	Calc-As Recd
Aro >C5-C7$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	<2	<2	<2	<2	<2	<2	<2	mg/kg	1	A-T-055s
Aro >C10-C12$_A$	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Aro >C12-C16$_A$	1	<1	<1	2	<1	<1	<1	mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	2	<1	1	25	<1	<1	<1	mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	8	<1	4	189	<1	2	<1	mg/kg	1	A-T-055s
Total Aromatics$_A$	12	<2	6	216	<2	2	<2	mg/kg	1	Calc-As Recd
TPH (Ali & Aro >C5-C35)$_A$	32	<2	13	249	<2	9	<2	mg/kg	1	Calc-As Recd
BTEX - Benzene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s

Envirolab Job Number: 22/09928

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09928/15	22/09928/16						Units	Limit of Detection	Method ref
Client Sample No	6	6								
Client Sample ID	TP12	TP06								
Depth to Top	1.10	0.80								
Depth To Bottom										
Date Sampled	04-Oct-22	04-Oct-22								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	6A	4A								
% Moisture at <40C$_A$	12.6	10.5						% w/w	0.1	A-T-044
% Stones >10mm$_A$	<0.1	<0.1						% w/w	0.1	A-T-044
pH$_D^{M\#}$	8.50	8.41						pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D^{M\#}$	0.03	0.02						g/l	0.01	A-T-026s
Organic Matter$_D^{M\#}$	0.5	0.4						% w/w	0.1	A-T-032 OM
Arsenic$_D^{M\#}$	8	6						mg/kg	1	A-T-024s
Cadmium$_D^{M\#}$	0.9	0.6						mg/kg	0.5	A-T-024s
Copper$_D^{M\#}$	19	19						mg/kg	1	A-T-024s
Chromium$_D^{M\#}$	31	24						mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	<1	<1						mg/kg	1	A-T-040s
Chromium (trivalent)	31	24						mg/kg	1	Calc
Lead$_D^{M\#}$	10	11						mg/kg	1	A-T-024s
Mercury$_D$	1.01	<0.17						mg/kg	0.17	A-T-024s
Nickel$_D^{M\#}$	32	26						mg/kg	1	A-T-024s
Selenium$_D^{M\#}$	<1	<1						mg/kg	1	A-T-024s
Zinc$_D^{M\#}$	57	54						mg/kg	5	A-T-024s

Envirolab Job Number: 22/09928

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09928/15	22/09928/16						Units	Limit of Detection	Method ref
Client Sample No	6	6								
Client Sample ID	TP12	TP06								
Depth to Top	1.10	0.80								
Depth To Bottom										
Date Sampled	04-Oct-22	04-Oct-22								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	6A	4A								
PAH-16MS										
Acenaphthene$_A^{M\#}$	<0.01	<0.01						mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01	<0.01						mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	<0.02	<0.02						mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.04	<0.04						mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	<0.04	<0.04						mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	<0.05	<0.05						mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.05	<0.05						mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07	<0.07						mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	<0.06	<0.06						mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04	<0.04						mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	<0.08	<0.08						mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	<0.01	<0.01						mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	<0.03	<0.03						mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	<0.03	<0.03						mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	<0.03	<0.03						mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	<0.07	<0.07						mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	<0.08	<0.08						mg/kg	0.01	A-T-019s

Envirolab Job Number: 22/09928

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09928/15	22/09928/16						Units	Limit of Detection	Method ref
Client Sample No	6	6								
Client Sample ID	TP12	TP06								
Depth to Top	1.10	0.80								
Depth To Bottom										
Date Sampled	04-Oct-22	04-Oct-22								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	6A	4A								
TPH CWG with Clean Up										
Ali >C5-C6$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	<1	<1						mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Ali >C21-C35$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Total Aliphatics$_A$	<1	<1						mg/kg	1	Calc-As Recd
Aro >C5-C7$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	<2	<2						mg/kg	1	A-T-055s
Aro >C10-C12$_A$	<1	<1						mg/kg	1	A-T-055s
Aro >C12-C16$_A$	<1	<1						mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Total Aromatics$_A$	<2	<2						mg/kg	1	Calc-As Recd
TPH (Ali & Aro >C5-C35)$_A$	<2	<2						mg/kg	1	Calc-As Recd
BTEX - Benzene$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s

REPORT NOTES

General

This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,
E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
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Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve
Subscript "^" indicates analysis has dependant options against results. Testing dependant on results appear in the comments area of your sample receipt.
EPH CWG results have humics mathematically subtracted through instrument calculation
TPH results "with Cleanup" indicates results cleaned up with Silica during extraction

EPH CWG GCxGC ID from TPH CWG

Where we have identified humic substances in any ID's from TPH CWG with Clean Up please note that the concentration of these humic substances is not included in the quantified results and are included in the ID for information.

Please contact us if you need any further information.

v2

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Castleford), The Potteries, Pottery Street, Castleford, West Yorkshire, UK, WF10 1NJ

Project: East Midland Airport

Clients Project No: 765514

Project No: 22/09928

Date Received: 10/10/2022 (am)

Cool Box Temperatures (°C): 8.3,8.1,8.8,8.9

NO DEVIATIONS IDENTIFIED

If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3, ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	22/09928/1	22/09928/2	22/09928/3	22/09928/4	22/09928/5	22/09928/6	22/09928/7	22/09928/8	22/09928/9	22/09928/10	22/09928/11	22/09928/12
Client Sample No	1	6	7	6	6	2	4	1	2	1	3	3
Client Sample ID/Depth	CP21 0.10m	TP23 0.90m	TP13 1.50m	TP22 1.30m	TP24 0.60m	CP22 0.50m	CP13 2.40m	CP12 0.01m	CP18 0.50m	TP10 0.20m	TP08 0.50m	CP14 0.50m
Date Sampled	03/10/22	05/10/22	05/10/22	05/10/22	05/10/22	05/10/22	05/10/22	05/10/22	04/10/22	04/10/22	04/10/22	04/10/22
A-T-006s	13/10/2022							13/10/2022			13/10/2022	
A-T-019s	14/10/2022	14/10/2022	14/10/2022	14/10/2022	14/10/2022	14/10/2022	14/10/2022	14/10/2022	14/10/2022	14/10/2022	14/10/2022	14/10/2022
A-T-022s	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022
A-T-024s	19/10/2022	19/10/2022	19/10/2022	19/10/2022	19/10/2022	19/10/2022	19/10/2022	19/10/2022	19/10/2022	19/10/2022	19/10/2022	19/10/2022
A-T-026s	20/10/2022	20/10/2022	20/10/2022	20/10/2022	20/10/2022	20/10/2022	20/10/2022	20/10/2022	20/10/2022	20/10/2022	20/10/2022	20/10/2022
A-T-031s	24/10/2022	24/10/2022	24/10/2022	25/10/2022	25/10/2022	25/10/2022	25/10/2022	25/10/2022	25/10/2022	25/10/2022	25/10/2022	25/10/2022
A-T-032 OM	21/10/2022	21/10/2022	21/10/2022	21/10/2022	21/10/2022	21/10/2022	21/10/2022	21/10/2022	21/10/2022	21/10/2022	21/10/2022	21/10/2022
A-T-040s	20/10/2022	20/10/2022	20/10/2022	20/10/2022	20/10/2022	20/10/2022	20/10/2022	20/10/2022	20/10/2022	20/10/2022	20/10/2022	20/10/2022
A-T-044	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022
A-T-045											12/10/2022	
A-T-052s	14/10/2022							14/10/2022			14/10/2022	
A-T-055s	17/10/2022	17/10/2022	17/10/2022	17/10/2022	17/10/2022	17/10/2022	17/10/2022	17/10/2022	17/10/2022	17/10/2022	17/10/2022	17/10/2022
Calc	20/10/2022	20/10/2022	20/10/2022	20/10/2022	20/10/2022	20/10/2022	20/10/2022	20/10/2022	20/10/2022	20/10/2022	20/10/2022	20/10/2022
Calc-As Recd	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022

Lab Sample ID	22/09928/13	22/09928/14	22/09928/15	22/09928/16
Client Sample No	1	6	6	6
Client Sample ID/Depth	TP09 0.20m	TP11 1.20m	TP12 1.10m	TP06 0.80m
Date Sampled	04/10/22	04/10/22	04/10/22	04/10/22
A-T-006s				
A-T-019s	14/10/2022	14/10/2022	14/10/2022	14/10/2022
A-T-022s	18/10/2022	18/10/2022	18/10/2022	18/10/2022
A-T-024s	19/10/2022	19/10/2022	19/10/2022	19/10/2022
A-T-026s	20/10/2022	20/10/2022	20/10/2022	20/10/2022
A-T-031s	25/10/2022	25/10/2022	25/10/2022	25/10/2022
A-T-032 OM	21/10/2022	21/10/2022	21/10/2022	21/10/2022
A-T-040s	20/10/2022	20/10/2022	20/10/2022	20/10/2022
A-T-044	18/10/2022	18/10/2022	18/10/2022	18/10/2022
A-T-045				
A-T-052s				
A-T-055s	17/10/2022	17/10/2022	17/10/2022	17/10/2022
Calc	20/10/2022	20/10/2022	20/10/2022	20/10/2022
Calc-As Recd	18/10/2022	18/10/2022	18/10/2022	18/10/2022

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

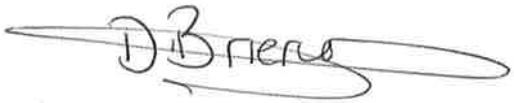
FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 22/09935
Issue Number: 1 **Date:** 21 October, 2022

Client:
Structural Soils Limited (Castleford)
The Potteries
Pottery Street
Castleford
West Yorkshire
UK
WF10 1NJ

Project Manager: Alex Jones
Project Name: East Midland Airport
Project Ref: 765514
Order No: N/A
Date Samples Received: 07/10/22
Date Instructions Received: 11/10/22
Date Analysis Completed: 21/10/22

Approved by:



Danielle Brierley
Deputy Client Services Supervisor

Envirolab Job Number: 22/09935

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09935/2	22/09935/3	22/09935/4					Units	Limit of Detection	Method ref
Client Sample No	1	3	9							
Client Sample ID	TP21	TP28	TP31							
Depth to Top	0.15	0.50	2.90							
Depth To Bottom										
Date Sampled	06-Oct-22	06-Oct-22	06-Oct-22							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	6AE	6AE	4A							
% Moisture at <40C$_A$	17.1	12.6	11.7					% w/w	0.1	A-T-044
% Stones >10mm$_A$	<0.1	<0.1	<0.1					% w/w	0.1	A-T-044
pH$_D^{M\#}$	7.86	8.27	8.16					pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D^{M\#}$	<0.01	0.03	0.03					g/l	0.01	A-T-026s
Organic Matter$_D^{M\#}$	4.3	0.7	1.4					% w/w	0.1	A-T-032 OM
Arsenic$_D^{M\#}$	<1	<1	3					mg/kg	1	A-T-024s
Cadmium$_D^{M\#}$	0.7	0.8	0.8					mg/kg	0.5	A-T-024s
Copper$_D^{M\#}$	15	10	12					mg/kg	1	A-T-024s
Chromium$_D^{M\#}$	46	59	56					mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	<1	<1	<1					mg/kg	1	A-T-040s
Chromium (trivalent)	46	59	56					mg/kg	1	Calc
Lead$_D^{M\#}$	21	6	7					mg/kg	1	A-T-024s
Mercury$_D$	<0.17	<0.17	0.48					mg/kg	0.17	A-T-024s
Nickel$_D^{M\#}$	37	54	51					mg/kg	1	A-T-024s
Selenium$_D^{M\#}$	<1	<1	<1					mg/kg	1	A-T-024s
Zinc$_D^{M\#}$	78	79	81					mg/kg	5	A-T-024s

Envirolab Job Number: 22/09935

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09935/2	22/09935/3	22/09935/4					Units	Limit of Detection	Method ref
Client Sample No	1	3	9							
Client Sample ID	TP21	TP28	TP31							
Depth to Top	0.15	0.50	2.90							
Depth To Bottom										
Date Sampled	06-Oct-22	06-Oct-22	06-Oct-22							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	6AE	6AE	4A							
PAH-16MS										
Acenaphthene$_{A}^{M\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-019s
Acenaphthylene$_{A}^{M\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-019s
Anthracene$_{A}^{M\#}$	<0.02	<0.02	<0.02					mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_{A}^{M\#}$	<0.04	<0.04	<0.04					mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_{A}^{M\#}$	<0.04	<0.04	<0.04					mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_{A}^{M\#}$	<0.05	<0.05	<0.05					mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_{A}^{M\#}$	<0.05	<0.05	<0.05					mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_{A}^{M\#}$	<0.07	<0.07	<0.07					mg/kg	0.07	A-T-019s
Chrysene$_{A}^{M\#}$	<0.06	<0.06	<0.06					mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_{A}^{M\#}$	<0.04	<0.04	<0.04					mg/kg	0.04	A-T-019s
Fluoranthene$_{A}^{M\#}$	<0.08	<0.08	<0.08					mg/kg	0.08	A-T-019s
Fluorene$_{A}^{M\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_{A}^{M\#}$	<0.03	<0.03	<0.03					mg/kg	0.03	A-T-019s
Naphthalene $_{A}^{M\#}$	<0.03	<0.03	<0.03					mg/kg	0.03	A-T-019s
Phenanthrene$_{A}^{M\#}$	<0.03	<0.03	<0.03					mg/kg	0.03	A-T-019s
Pyrene$_{A}^{M\#}$	<0.07	<0.07	<0.07					mg/kg	0.07	A-T-019s
Total PAH-16MS$_{A}^{M\#}$	<0.08	<0.08	<0.08					mg/kg	0.01	A-T-019s

Envirolab Job Number: 22/09935

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/09935/2	22/09935/3	22/09935/4					Units	Limit of Detection	Method ref
Client Sample No	1	3	9							
Client Sample ID	TP21	TP28	TP31							
Depth to Top	0.15	0.50	2.90							
Depth To Bottom										
Date Sampled	06-Oct-22	06-Oct-22	06-Oct-22							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	6AE	6AE	4A							
TPH CWG with Clean Up										
Ali >C5-C6$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	<1	<1	<1					mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	<1	<1	<1					mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	<1	<1	<1					mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	<1	<1	<1					mg/kg	1	A-T-055s
Ali >C21-C35$_A^{M\#}$	6	3	<1					mg/kg	1	A-T-055s
Total Aliphatics$_A$	6	3	<1					mg/kg	1	Calc-As Recd
Aro >C5-C7$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	<1	<1	<1					mg/kg	1	A-T-055s
Aro >C10-C12$_A$	<1	<1	<1					mg/kg	1	A-T-055s
Aro >C12-C16$_A$	<1	<1	<1					mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	1	<1	<1					mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	2	<1	<1					mg/kg	1	A-T-055s
Total Aromatics$_A$	4	<1	<1					mg/kg	1	Calc-As Recd
TPH (Ali & Aro >C5-C35)$_A$	10	3	<1					mg/kg	1	Calc-As Recd
BTEX - Benzene$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s

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The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,
E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve
Subscript "^" indicates analysis has dependant options against results. Testing dependant on results appear in the comments area of your sample receipt.
EPH CWG results have humics mathematically subtracted through instrument calculation
TPH results "with Cleanup" indicates results cleaned up with Silica during extraction

EPH CWG GCxGC ID from TPH CWG

Where we have identified humic substances in any ID's from TPH CWG with Clean Up please note that the concentration of these humic substances is not included in the quantified results and are included in the ID for information.

Please contact us if you need any further information.

v2

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Castleford), The Potteries, Pottery Street, Castleford, West Yorkshire, UK, WF10 1NJ

Project: East Midland Airport

Clients Project No: 765514

Project No: 22/09935

Date Received: 11/10/2022 (am)

Cool Box Temperatures (°C): 10.9,10.8,10.2

NO DEVIATIONS IDENTIFIED

If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3, ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	22/09935/2	22/09935/3	22/09935/4
Client Sample No	1	3	9
Client Sample ID/Depth	TP21 0.15m	TP28 0.50m	TP31 2.90m
Date Sampled	06/10/22	06/10/22	06/10/22
A-T-019s	17/10/2022	17/10/2022	17/10/2022
A-T-022s	17/10/2022	17/10/2022	17/10/2022
A-T-024s	18/10/2022	18/10/2022	18/10/2022
A-T-026s	18/10/2022	18/10/2022	18/10/2022
A-T-031s	21/10/2022	21/10/2022	21/10/2022
A-T-032 OM	19/10/2022	19/10/2022	19/10/2022
A-T-040s	18/10/2022	18/10/2022	18/10/2022
A-T-044	14/10/2022	14/10/2022	14/10/2022
A-T-055s	17/10/2022	17/10/2022	17/10/2022
Calc	18/10/2022	18/10/2022	18/10/2022
Calc-As Recd	17/10/2022	17/10/2022	17/10/2022

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

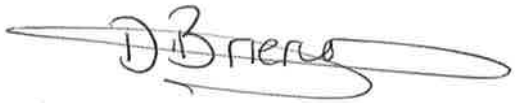
FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 22/11826
Issue Number: 1 **Date:** 14 December, 2022

Client:
Structural Soils Limited (Castleford)
The Potteries
Pottery Street
Castleford
West Yorkshire
UK
WF10 1NJ

Project Manager: Alex Jones/Tim Clifford
Project Name: East Midland Airport
Project Ref: 765514
Order No: N/A
Date Samples Received: 22/09/22
Date Instructions Received: 01/12/22
Date Analysis Completed: 14/12/22

Approved by:



Danielle Brierley
Deputy Client Services Supervisor

Envirolab Job Number: 22/11826

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/11826/1	22/11826/2	22/11826/3	22/11826/4	22/11826/5	22/11826/6		Units	Limit of Detection	Method ref
Client Sample No	26	24	9	6	12	6				
Client Sample ID	BH14	BH22	CP25	BH07	TP33	TP37				
Depth to Top	6.00	4.50	1.00	4.00	2.90	1.10				
Depth To Bottom										
Date Sampled	21-Sep-22	21-Sep-22	21-Sep-22	21-Sep-22	21-Sep-22	21-Sep-22				
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES				
Sample Matrix Code	6AE	6A	6A	4AE	6A	6AE				
% Moisture at <40C$_A$	9.4	10.4	15.4	9.1	15.4	13.2		% w/w	0.1	A-T-044
% Stones >10mm$_A$	36.2	<0.1	<0.1	<0.1	<0.1	<0.1		% w/w	0.1	A-T-044
pH$_D$$^{M\#}$	8.54	8.72	8.69	7.31	8.66	7.58		pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D$$^{M\#}$	<0.01	0.01	0.01	<0.01	<0.01	<0.01		g/l	0.01	A-T-026s
Organic Matter$_D$$^{M\#}$	0.4	1.6	0.3	0.9	<0.1	0.7		% w/w	0.1	A-T-032 OM
Arsenic$_D$$^{M\#}$	8	<1	<1	<1	<1	<1		mg/kg	1	A-T-024s
Cadmium$_D$$^{M\#}$	0.5	0.7	0.7	0.6	0.6	0.7		mg/kg	0.5	A-T-024s
Copper$_D$$^{M\#}$	11	10	8	11	10	10		mg/kg	1	A-T-024s
Chromium$_D$$^{M\#}$	13	53	52	35	72	54		mg/kg	1	A-T-024s
Lead$_D$$^{M\#}$	5	4	4	14	2	5		mg/kg	1	A-T-024s
Mercury$_D$	0.59	0.42	0.29	<0.17	<0.17	<0.17		mg/kg	0.17	A-T-024s
Nickel$_D$$^{M\#}$	13	49	46	31	59	42		mg/kg	1	A-T-024s
Selenium$_D$$^{M\#}$	<1	<1	<1	<1	3	<1		mg/kg	1	A-T-024s
Zinc$_D$$^{M\#}$	36	74	70	51	86	75		mg/kg	5	A-T-024s

Envirolab Job Number: 22/11826

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/11826/1	22/11826/2	22/11826/3	22/11826/4	22/11826/5	22/11826/6		Units	Limit of Detection	Method ref
Client Sample No	26	24	9	6	12	6				
Client Sample ID	BH14	BH22	CP25	BH07	TP33	TP37				
Depth to Top	6.00	4.50	1.00	4.00	2.90	1.10				
Depth To Bottom										
Date Sampled	21-Sep-22	21-Sep-22	21-Sep-22	21-Sep-22	21-Sep-22	21-Sep-22				
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES				
Sample Matrix Code	6AE	6A	6A	4AE	6A	6AE				
PAH-16MS										
Acenaphthene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04		mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04		mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07		mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06		mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04		mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08		mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07		mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08		mg/kg	0.01	A-T-019s

Envirolab Job Number: 22/11826

Client Project Name: East Midland Airport

Client Project Ref: 765514

Lab Sample ID	22/11826/1	22/11826/2	22/11826/3	22/11826/4	22/11826/5	22/11826/6		Units	Limit of Detection	Method ref
Client Sample No	26	24	9	6	12	6				
Client Sample ID	BH14	BH22	CP25	BH07	TP33	TP37				
Depth to Top	6.00	4.50	1.00	4.00	2.90	1.10				
Depth To Bottom										
Date Sampled	21-Sep-22	21-Sep-22	21-Sep-22	21-Sep-22	21-Sep-22	21-Sep-22				
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES				
Sample Matrix Code	6AE	6A	6A	4AE	6A	6AE				
TPH CWG with Clean Up										
Ali >C5-C6$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	<1	<1	<1	<1	<1	<1		mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	<1	<1	<1	<1	<1	<1		mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	<1	<1	<1	<1	<1	<1		mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	<1	<1	<1	<1	<1	<1		mg/kg	1	A-T-055s
Ali >C21-C35$_A^{M\#}$	2	<1	<1	25	<1	1		mg/kg	1	A-T-055s
Total Aliphatics$_A$	2	<1	<1	25	<1	1		mg/kg	1	Calc-As Recd
Aro >C5-C7$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	<1	<1	<1	<1	<1	<1		mg/kg	1	A-T-055s
Aro >C10-C12$_A$	<1	<1	<1	<1	<1	<1		mg/kg	1	A-T-055s
Aro >C12-C16$_A$	<1	<1	<1	<1	<1	<1		mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	<1	<1	<1	<1	1	<1		mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	<1	<1	<1	23	<1	<1		mg/kg	1	A-T-055s
Total Aromatics$_A$	<1	<1	<1	23	1	<1		mg/kg	1	Calc-As Recd
TPH (Ali & Aro >C5-C35)$_A$	2	<1	<1	48	1	1		mg/kg	1	Calc-As Recd
BTEX - Benzene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s

REPORT NOTES

General

This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,
E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve
Subscript "^" indicates analysis has dependant options against results. Testing dependant on results appear in the comments area of your sample receipt.
EPH CWG results have humics mathematically subtracted through instrument calculation
TPH results "with Cleanup" indicates results cleaned up with Silica during extraction

EPH CWG GCxGC ID from TPH CWG

Where we have identified humic substances in any ID's from TPH CWG with Clean Up please note that the concentration of these humic substances is not included in the quantified results and are included in the ID for information.

Please contact us if you need any further information.

v2

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Castleford), The Potteries, Pottery Street, Castleford, West Yorkshire, UK, WF10 1NJ

Project: East Midland Airport

Clients Project No: 765514

Project No: 22/11826

Date Received: 01/12/2022 (pm)

Cool Box Temperatures (°C): 13.6

Lab Sample ID	22/11826/1	22/11826/2	22/11826/3	22/11826/4	22/11826/5	22/11826/6
Client Sample No	26	24	9	6	12	6
Client Sample ID/Depth	BH14 6.00m	BH22 4.50m	CP25 1.00m	BH07 4.00m	TP33 2.90m	TP37 1.10m
Date Sampled	21/09/22	21/09/22	21/09/22	21/09/22	21/09/22	21/09/22
Deviation Code						
F	✓	✓	✓	✓	✓	✓

Key
F *Maximum holding time exceeded between sampling date and analysis for analytes listed below*

HOLDING TIME EXCEEDANCES

Lab Sample ID	22/11826/1	22/11826/2	22/11826/3	22/11826/4	22/11826/5	22/11826/6
Client Sample No	26	24	9	6	12	6
Client Sample ID/Depth	BH14 6.00m	BH22 4.50m	CP25 1.00m	BH07 4.00m	TP33 2.90m	TP37 1.10m
Date Sampled	21/09/22	21/09/22	21/09/22	21/09/22	21/09/22	21/09/22
PAH-16MS	✓	✓	✓	✓	✓	✓
Organic Matter	✓	✓	✓	✓	✓	✓
Sulphate (water sol 2:1)	✓	✓	✓	✓	✓	✓
EPHCWG	✓	✓	✓	✓	✓	✓
VPHCWG	✓	✓	✓	✓	✓	✓

If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3, ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	22/11826/1	22/11826/2	22/11826/3	22/11826/4	22/11826/5	22/11826/6
Client Sample No	26	24	9	6	12	6
Client Sample ID/Depth	BH14 6.00m	BH22 4.50m	CP25 1.00m	BH07 4.00m	TP33 2.90m	TP37 1.10m
Date Sampled	21/09/22	21/09/22	21/09/22	21/09/22	21/09/22	21/09/22
A-T-019s	08/12/2022	08/12/2022	08/12/2022	08/12/2022	08/12/2022	08/12/2022
A-T-022s	06/12/2022	06/12/2022	06/12/2022	06/12/2022	06/12/2022	06/12/2022
A-T-024s	07/12/2022	07/12/2022	07/12/2022	07/12/2022	07/12/2022	07/12/2022
A-T-026s	07/12/2022	07/12/2022	07/12/2022	07/12/2022	07/12/2022	07/12/2022
A-T-031s	14/12/2022	14/12/2022	14/12/2022	14/12/2022	14/12/2022	14/12/2022
A-T-032 OM	07/12/2022	07/12/2022	07/12/2022	07/12/2022	07/12/2022	07/12/2022
A-T-044	12/12/2022	12/12/2022	12/12/2022	12/12/2022	12/12/2022	12/12/2022
A-T-055s	07/12/2022	07/12/2022	07/12/2022	07/12/2022	07/12/2022	07/12/2022
Calc-As Recd	07/12/2022	07/12/2022	07/12/2022	07/12/2022	07/12/2022	07/12/2022

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 22/11895
Issue Number: 1 **Date:** 16 December, 2022

Client:
Structural Soils Limited (Castleford)
The Potteries
Pottery Street
Castleford
West Yorkshire
UK
WF10 1NJ

Project Manager: Alex Jones
Project Name: East Midlands Airport
Project Ref: 765514
Order No: N/A
Date Samples Received: 27/09/22
Date Instructions Received: 05/12/22
Date Analysis Completed: 16/12/22

Approved by:

Gemma Berrisford
Client Manager

Envirolab Job Number: 22/11895

Client Project Name: East Midlands Airport

Client Project Ref: 765514

Lab Sample ID	22/11895/1	22/11895/2	22/11895/3	22/11895/4				Units	Limit of Detection	Method ref
Client Sample No	7	10	3	1						
Client Sample ID	TP29	TP27	BH12	CP24						
Depth to Top	1.40	1.60	1.00	0.10						
Depth To Bottom										
Date Sampled	27-Sep-22	27-Sep-22	27-Sep-22	27-Sep-22						
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES						
Sample Matrix Code	6A	6A	6A	6AE						
% Moisture at <40C$_A$	13.1	14.5	15.8	12.1				% w/w	0.1	A-T-044
% Stones >10mm$_A$	<0.1	<0.1	<0.1	<0.1				% w/w	0.1	A-T-044
pH$_D$$^{M\#}$	8.24	8.17	7.95	7.96				pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D$$^{M\#}$	<0.01	<0.01	<0.01	<0.01				g/l	0.01	A-T-026s
Organic Matter$_D$$^{M\#}$	2.1	2.1	1.0	3.2				% w/w	0.1	A-T-032 OM
Arsenic$_D$$^{M\#}$	<1	<1	<1	<1				mg/kg	1	A-T-024s
Cadmium$_D$$^{M\#}$	0.5	<0.5	0.5	0.6				mg/kg	0.5	A-T-024s
Copper$_D$$^{M\#}$	9	9	20	13				mg/kg	1	A-T-024s
Chromium$_D$$^{M\#}$	39	54	34	55				mg/kg	1	A-T-024s
Lead$_D$$^{M\#}$	6	6	11	16				mg/kg	1	A-T-024s
Mercury$_D$	0.41	<0.17	0.67	<0.17				mg/kg	0.17	A-T-024s
Nickel$_D$$^{M\#}$	37	47	27	43				mg/kg	1	A-T-024s
Selenium$_D$$^{M\#}$	<1	<1	<1	<1				mg/kg	1	A-T-024s
Zinc$_D$$^{M\#}$	56	63	45	72				mg/kg	5	A-T-024s

Envirolab Job Number: 22/11895

Client Project Name: East Midlands Airport

Client Project Ref: 765514

Lab Sample ID	22/11895/1	22/11895/2	22/11895/3	22/11895/4				Units	Limit of Detection	Method ref
Client Sample No	7	10	3	1						
Client Sample ID	TP29	TP27	BH12	CP24						
Depth to Top	1.40	1.60	1.00	0.10						
Depth To Bottom										
Date Sampled	27-Sep-22	27-Sep-22	27-Sep-22	27-Sep-22						
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES						
Sample Matrix Code	6A	6A	6A	6AE						
PAH-16MS										
Acenaphthene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	<0.02	<0.02	<0.02	<0.02				mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.04	<0.04	<0.04	<0.04				mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	<0.04	<0.04	<0.04	<0.04				mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	<0.05	<0.05	<0.05	<0.05				mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.05	<0.05	<0.05	<0.05				mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07	<0.07	<0.07	<0.07				mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	<0.06	<0.06	<0.06	<0.06				mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04	<0.04	<0.04	<0.04				mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	<0.08	<0.08	<0.08	<0.08				mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	<0.03	<0.03	<0.03	<0.03				mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	<0.03	<0.03	<0.03	<0.03				mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	<0.03	<0.03	<0.03	<0.03				mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	<0.07	<0.07	<0.07	<0.07				mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	<0.08	<0.08	<0.08	<0.08				mg/kg	0.01	A-T-019s

Envirolab Job Number: 22/11895

Client Project Name: East Midlands Airport

Client Project Ref: 765514

Lab Sample ID	22/11895/1	22/11895/2	22/11895/3	22/11895/4				Units	Limit of Detection	Method ref
Client Sample No	7	10	3	1						
Client Sample ID	TP29	TP27	BH12	CP24						
Depth to Top	1.40	1.60	1.00	0.10						
Depth To Bottom										
Date Sampled	27-Sep-22	27-Sep-22	27-Sep-22	27-Sep-22						
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES						
Sample Matrix Code	6A	6A	6A	6AE						
TPH CWG with Clean Up										
Ali >C5-C6$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	<1	<1	<1	<1				mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	<1	<1	<1	<1				mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	<1	<1	<1	<1				mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	<1	<1	<1	<1				mg/kg	1	A-T-055s
Ali >C21-C35$_A^{M\#}$	<1	<1	<1	3				mg/kg	1	A-T-055s
Total Aliphatics$_A$	<1	<1	<1	3				mg/kg	1	Calc-As Recd
Aro >C5-C7$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	<1	<1	<1	<1				mg/kg	1	A-T-055s
Aro >C10-C12$_A$	<1	<1	<1	<1				mg/kg	1	A-T-055s
Aro >C12-C16$_A$	<1	<1	<1	<1				mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	<1	<1	<1	<1				mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	<1	<1	<1	1				mg/kg	1	A-T-055s
Total Aromatics$_A$	<1	<1	<1	1				mg/kg	1	Calc-As Recd
TPH (Ali & Aro >C5-C35)$_A$	<1	<1	<1	5				mg/kg	1	Calc-As Recd
BTEX - Benzene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s

REPORT NOTES

General

This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,
E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve
Subscript "^" indicates analysis has dependant options against results. Testing dependant on results appear in the comments area of your sample receipt.
EPH CWG results have humics mathematically subtracted through instrument calculation
TPH results "with Cleanup" indicates results cleaned up with Silica during extraction

EPH CWG GCxGC ID from TPH CWG

Where we have identified humic substances in any ID's from TPH CWG with Clean Up please note that the concentration of these humic substances is not included in the quantified results and are included in the ID for information.

Please contact us if you need any further information.

v2

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Castleford), The Potteries, Pottery Street, Castleford, West Yorkshire, UK, WF10 1NJ

Project: East Midlands Airport

Clients Project No: 765514

Project No: 22/11895

Date Received: 05/12/2022 (am)

Cool Box Temperatures (°C): 5.4

Lab Sample ID	22/11895/1	22/11895/2	22/11895/3	22/11895/4
Client Sample No	7	10	3	1
Client Sample ID/Depth	TP29 1.40m	TP27 1.60m	BH12 1.00m	CP24 0.10m
Date Sampled	27/09/22	27/09/22	27/09/22	27/09/22
Deviation Code				
F	✓	✓	✓	✓

Key
F *Maximum holding time exceeded between sampling date and analysis for analytes listed below*

HOLDING TIME EXCEEDANCES

Lab Sample ID	22/11895/1	22/11895/2	22/11895/3	22/11895/4
Client Sample No	7	10	3	1
Client Sample ID/Depth	TP29 1.40m	TP27 1.60m	BH12 1.00m	CP24 0.10m
Date Sampled	27/09/22	27/09/22	27/09/22	27/09/22
PAH-16MS	✓	✓	✓	✓
Organic Matter	✓	✓	✓	✓
Sulphate (water sol 2:1)	✓	✓	✓	✓
EPHCWG	✓	✓	✓	✓
VPHCWG	✓	✓	✓	✓

If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3, ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	22/11895/1	22/11895/2	22/11895/3	22/11895/4
Client Sample No	7	10	3	1
Client Sample ID/Depth	TP29 1.40m	TP27 1.60m	BH12 1.00m	CP24 0.10m
Date Sampled	27/09/22	27/09/22	27/09/22	27/09/22
A-T-019s	09/12/2022	09/12/2022	09/12/2022	09/12/2022
A-T-022s	08/12/2022	08/12/2022	08/12/2022	08/12/2022
A-T-024s	13/12/2022	13/12/2022	13/12/2022	13/12/2022
A-T-026s	13/12/2022	13/12/2022	13/12/2022	13/12/2022
A-T-031s	13/12/2022	13/12/2022	13/12/2022	13/12/2022
A-T-032 OM	13/12/2022	13/12/2022	13/12/2022	13/12/2022
A-T-044	16/12/2022	16/12/2022	16/12/2022	16/12/2022
A-T-055s	08/12/2022	08/12/2022	08/12/2022	08/12/2022
Calc-As Recd	08/12/2022	08/12/2022	08/12/2022	08/12/2022

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 22/10897
Issue Number: 1 **Date:** 18 November, 2022

Client:
Structural Soils Limited (Castleford)
The Potteries
Pottery Street
Castleford
West Yorkshire
UK
WF10 1NJ

Project Manager: Tim Clifford
Project Name: EMG Phase 2
Project Ref: 765514
Order No: N/A
Date Samples Received: 04/11/22
Date Instructions Received: 04/11/22
Date Analysis Completed: 18/11/22

Approved by:

Richard Wong
Client Manager

UKAS TESTING
1247

Envirolab Job Number: 22/10897

Client Project Name: EMG Phase 2

Client Project Ref: 765514

Lab Sample ID	22/10897/1	22/10897/2	22/10897/3	22/10897/4	22/10897/5	22/10897/6	22/10897/7	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	CP06	CP10	CP27	BH02	BH05	BH06	BH09 (D)			
Depth to Top	8.07	5.45	2.51	9.03	5.97	19.00	15.00			
Depth To Bottom										
Date Sampled	02-Nov-22	02-Nov-22	02-Nov-22	02-Nov-22	02-Nov-22	02-Nov-22	02-Nov-22			
Sample Type	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW			
Sample Matrix Code	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
pH (w)$_A$#	7.25	7.26	7.32	7.45	7.91	7.30	7.35	pH	0.01	A-T-031w
Sulphate (w)$_A$#	216	237	59	75	77	194	66	mg/l	1	A-T-026w
Cyanide (total) (w)$_A$#	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	mg/l	0.005	A-T-042wTCN
Phenols - Total by HPLC (w)$_A$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/l	0.01	A-T-050w
Arsenic (dissolved)$_A$#	<1	<1	<1	<1	<1	2	<1	µg/l	1	A-T-025w
Boron (dissolved)$_A$#	36	41	45	23	40	29	43	µg/l	10	A-T-025w
Cadmium (dissolved)$_A$#	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	µg/l	0.2	A-T-025w
Copper (dissolved)$_A$	7	10	9	4	17	5	6	µg/l	4	A-T-025w
Chromium (dissolved)$_A$#	8	11	10	14	9	5	<1	µg/l	1	A-T-025w
Chromium (total)$_A$	9	11	11	11	8	7	11	µg/l	1	A-T-025w
Chromium (hexavalent) (w)$_A$	<0.02	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	mg/l	0.01	A-T-040w
Chromium (trivalent) (w)	<0.02	0.01	0.01	0.01	<0.02	<0.02	<0.02	mg/l	0.01	Calc
Lead (dissolved)$_A$#	<1	<1	2	<1	2	<1	<1	µg/l	1	A-T-025w
Mercury (dissolved)$_A$#	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-025w
Nickel (dissolved)$_A$#	<2	2	<2	<2	12	<2	<2	µg/l	2	A-T-025w
Selenium (dissolved)$_A$#	<1	<1	16	<1	<1	<1	<1	µg/l	1	A-T-025w
Zinc (dissolved)$_A$#	3	16	23	17	30	15	8	µg/l	2	A-T-025w
OCP+OPP Combined Pest Suite (incl. Atrazine+Simazine) (w)										
Dichlobenil (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Tecnazene (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Trifluralin (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
alpha-Hexachlorocyclohexane (HCH) (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Hexachlorobenzene (HCB) (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Simazine (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Atrazine (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
beta-Hexachlorocyclohexane (HCH) (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Quintozene (PCNB) (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Triallate (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
delta-Hexachlorocyclohexane (HCH) (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Chlorothalonil (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Heptachlor (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Aldrin (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w

Envirolab Job Number: 22/10897 **Client Project Name: EMG Phase 2**

Client Project Ref: 765514

Lab Sample ID	22/10897/1	22/10897/2	22/10897/3	22/10897/4	22/10897/5	22/10897/6	22/10897/7	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	CP06	CP10	CP27	BH02	BH05	BH06	BH09 (D)			
Depth to Top	8.07	5.45	2.51	9.03	5.97	19.00	15.00			
Depth To Bottom										
Date Sampled	02-Nov-22	02-Nov-22	02-Nov-22	02-Nov-22	02-Nov-22	02-Nov-22	02-Nov-22			
Sample Type	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW			
Sample Matrix Code	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Triadimefon (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Telodrin (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Isodrin (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Pendimethalin (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Heptachlor epoxide (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
trans-Chlordane (Gamma) (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
o,p-DDE (2,4) (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Endosulphan I (Alpha) (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
cis-Chlordane (Alpha) (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
p,p-DDE (4,4) (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Dieldrin (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
o,p-DDD (2,4) (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Endrin (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Endosulphan II (Beta) (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
p,p-DDD (4,4) (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
o,p-DDT (2,4) (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Endrin Aldehyde (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Endosulphan Sulphate (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
p,p-DDT (4,4) (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
o,p-Methoxychlor (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Endrin Ketone (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
p,p-Methoxychlor (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Permethrin I (cis) (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Permethrin II (trans) (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Dichlorvos (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Mevinphos (w)$_A$	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	µg/l	0.5	A-T-056w
Demeton-S (w)$_A$	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	µg/l	0.5	A-T-056w
Phorate (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Dimethoate (w)$_A$	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	µg/l	0.5	A-T-056w
Demeton-O (w)$_A$	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	µg/l	0.5	A-T-056w
Propetamphos (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Diazinon (Dimpylate) (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Disulfoton (w)$_A$	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	µg/l	0.5	A-T-056w
Chlorpyrifos-methyl (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w

Envirolab Job Number: 22/10897

Client Project Name: EMG Phase 2

Client Project Ref: 765514

Lab Sample ID	22/10897/1	22/10897/2	22/10897/3	22/10897/4	22/10897/5	22/10897/6	22/10897/7	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	CP06	CP10	CP27	BH02	BH05	BH06	BH09 (D)			
Depth to Top	8.07	5.45	2.51	9.03	5.97	19.00	15.00			
Depth To Bottom										
Date Sampled	02-Nov-22	02-Nov-22	02-Nov-22	02-Nov-22	02-Nov-22	02-Nov-22	02-Nov-22			
Sample Type	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW			
Sample Matrix Code	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Methyl Parathion (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Pirimiphos-methyl (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Fenitrothion (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Malathion (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Chlorpyrifos (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Fenthion (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Parathion (Ethyl Parathion) (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Trichloronate (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Chlorfenvinphos (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Fensulphothion (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Prothiofos (Tokuthion) (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Ethion (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Triazophos (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Carbophenothion (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Phosalone (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Azinphos-methyl (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Azinphos-ethyl (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Coumaphos (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
gamma-Hexachlorocyclohexane (HCH / Lindane) (w)$_A$	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w

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Client Project Name: EMG Phase 2

Client Project Ref: 765514

Lab Sample ID	22/10897/1	22/10897/2	22/10897/3	22/10897/4	22/10897/5	22/10897/6	22/10897/7	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	CP06	CP10	CP27	BH02	BH05	BH06	BH09 (D)			
Depth to Top	8.07	5.45	2.51	9.03	5.97	19.00	15.00			
Depth To Bottom										
Date Sampled	02-Nov-22	02-Nov-22	02-Nov-22	02-Nov-22	02-Nov-22	02-Nov-22	02-Nov-22			
Sample Type	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW			
Sample Matrix Code	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
PAH 16MS (w)										
Acenaphthene (w)$_A^{\#}$	0.01	<0.01	0.05	<0.01	<0.01	<0.01	<0.01	µg/l	0.01	A-T-019w
Acenaphthylene (w)$_A^{\#}$	0.15	<0.01	0.05	<0.01	<0.01	0.13	0.04	µg/l	0.01	A-T-019w
Anthracene (w)$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	µg/l	0.01	A-T-019w
Benzo(a)anthracene (w)$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	µg/l	0.01	A-T-019w
Benzo(a)pyrene (w)$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	µg/l	0.01	A-T-019w
Benzo(b)fluoranthene (w)$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	µg/l	0.01	A-T-019w
Benzo(ghi)perylene (w)$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	µg/l	0.01	A-T-019w
Benzo(k)fluoranthene (w)$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	µg/l	0.01	A-T-019w
Chrysene (w)$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	µg/l	0.01	A-T-019w
Dibenzo(ah)anthracene (w)$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	µg/l	0.01	A-T-019w
Fluoranthene (w)$_A^{\#}$	<0.01	<0.01	0.03	<0.01	<0.01	<0.01	<0.01	µg/l	0.01	A-T-019w
Fluorene (w)$_A^{\#}$	0.01	<0.01	0.03	<0.01	<0.01	0.01	<0.01	µg/l	0.01	A-T-019w
Indeno(123-cd)pyrene (w)$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	µg/l	0.01	A-T-019w
Naphthalene (w)$_A^{\#}$	1.14	0.02	<0.01	<0.01	0.05	0.95	0.14	µg/l	0.01	A-T-019w
Phenanthrene (w)$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	µg/l	0.01	A-T-019w
Pyrene (w)$_A^{\#}$	<0.01	<0.01	0.13	<0.01	<0.01	<0.01	<0.01	µg/l	0.01	A-T-019w
Total PAH 16MS (w)$_A^{\#}$	1.31	0.02	0.29	<0.01	0.05	1.09	0.18	µg/l	0.01	A-T-019w

Envirolab Job Number: 22/10897

Client Project Name: EMG Phase 2

Client Project Ref: 765514

Lab Sample ID	22/10897/1	22/10897/2	22/10897/3	22/10897/4	22/10897/5	22/10897/6	22/10897/7	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	CP06	CP10	CP27	BH02	BH05	BH06	BH09 (D)			
Depth to Top	8.07	5.45	2.51	9.03	5.97	19.00	15.00			
Depth To Bottom										
Date Sampled	02-Nov-22	02-Nov-22	02-Nov-22	02-Nov-22	02-Nov-22	02-Nov-22	02-Nov-22			
Sample Type	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW			
Sample Matrix Code	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Speciated PCB-WHO12 (w)										
PCB BZ 81 (w)$_A$	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	µg/l	0.001	A-T-004w
PCB BZ 105 (w)$_A$	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	µg/l	0.001	A-T-004w
PCB BZ 114 (w)$_A$	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	µg/l	0.001	A-T-004w
PCB BZ 118 (w)$_A$$^{\#}$	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	µg/l	0.002	A-T-004w
PCB BZ 123 (w)$_A$	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	µg/l	0.001	A-T-004w
PCB BZ 126 (w)$_A$	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	µg/l	0.001	A-T-004w
PCB BZ 156 (w)$_A$	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	µg/l	0.001	A-T-004w
PCB BZ 157 (w)$_A$	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	µg/l	0.001	A-T-004w
PCB BZ 167 (w)$_A$	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	µg/l	0.001	A-T-004w
PCB BZ 169 (w)$_A$	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	µg/l	0.001	A-T-004w
PCB BZ 189 (w)$_A$	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	µg/l	0.001	A-T-004w
PCB BZ 77 (w)$_A$	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	µg/l	0.001	A-T-004w
Total Speciated PCB-WHO12 (w)$_A$	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	µg/l	0.001	A-T-004w

Envirolab Job Number: 22/10897 **Client Project Name: EMG Phase 2**

Client Project Ref: 765514

Lab Sample ID	22/10897/1	22/10897/2	22/10897/3	22/10897/4	22/10897/5	22/10897/6	22/10897/7	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	CP06	CP10	CP27	BH02	BH05	BH06	BH09 (D)			
Depth to Top	8.07	5.45	2.51	9.03	5.97	19.00	15.00			
Depth To Bottom										
Date Sampled	02-Nov-22	02-Nov-22	02-Nov-22	02-Nov-22	02-Nov-22	02-Nov-22	02-Nov-22			
Sample Type	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW			
Sample Matrix Code	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
VOC (w)										
Dichlorodifluoromethane$_A$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
Chloromethane$_A$	<10	<10	<10	<10	<10	<10	<10	µg/l	10	A-T-006w
Vinyl Chloride$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
Bromomethane$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
Chloroethane$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
Trichlorofluoromethane$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
trans 1,2-Dichloroethene$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
Dichloromethane$_A$	<5	<5	<5	<5	<5	<5	<5	µg/l	5	A-T-006w
Carbon Disulphide$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
1,1-Dichloroethene$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
1,1-Dichloroethane$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
cis 1,2-Dichloroethene$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
Bromochloromethane$_A^{\#}$	<5	<5	<5	<5	<5	<5	<5	µg/l	5	A-T-006w
Chloroform$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
2,2-Dichloropropane$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
1,2-Dichloroethane$_A^{\#}$	<2	<2	<2	<2	<2	<2	<2	µg/l	2	A-T-006w
1,1,1-Trichloroethane$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
1,1-Dichloropropene$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
Benzene$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
Carbon Tetrachloride$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
Dibromomethane$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
1,2-Dichloropropane$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
Bromodichloromethane$_A^{\#}$	<10	<10	<10	<10	<10	<10	<10	µg/l	10	A-T-006w
Trichloroethene$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
cis 1,3-Dichloropropene$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
trans 1,3-Dichloropropene$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
1,1,2-Trichloroethane$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
Toluene$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
1,3-Dichloropropane$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
Dibromochloromethane$_A^{\#}$	<3	<3	<3	<3	<3	<3	<3	µg/l	3	A-T-006w
1,2-Dibromoethane$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
Tetrachloroethene$_A$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w

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Client Project Name: EMG Phase 2

Client Project Ref: 765514

Lab Sample ID	22/10897/1	22/10897/2	22/10897/3	22/10897/4	22/10897/5	22/10897/6	22/10897/7	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	CP06	CP10	CP27	BH02	BH05	BH06	BH09 (D)			
Depth to Top	8.07	5.45	2.51	9.03	5.97	19.00	15.00			
Depth To Bottom										
Date Sampled	02-Nov-22	02-Nov-22	02-Nov-22	02-Nov-22	02-Nov-22	02-Nov-22	02-Nov-22			
Sample Type	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW			
Sample Matrix Code	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
1,1,1,2-Tetrachloroethane$_A$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
Chlorobenzene$_A^\#$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
Ethylbenzene$_A^\#$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
m & p Xylene$_A^\#$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
Bromoform$_A^\#$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
Styrene$_A^\#$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
1,1,2,2-Tetrachloroethane$_A$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
o-Xylene$_A^\#$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
1,2,3-Trichloropropane$_A^\#$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
Isopropylbenzene$_A^\#$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
Bromobenzene$_A^\#$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
2-Chlorotoluene$_A^\#$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
n-propylbenzene$_A^\#$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
4-Chlorotoluene$_A^\#$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
1,2,4-Trimethylbenzene$_A^\#$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
4-Isopropyltoluene$_A^\#$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
1,3,5-Trimethylbenzene$_A^\#$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
1,2-Dichlorobenzene$_A^\#$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
1,4-Dichlorobenzene$_A^\#$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
sec-Butylbenzene$_A^\#$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
tert-Butylbenzene$_A^\#$	<2	<2	<2	<2	<2	<2	<2	µg/l	2	A-T-006w
1,3-Dichlorobenzene$_A^\#$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
n-butylbenzene$_A^\#$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
1,2-Dibromo-3-chloropropane$_A^\#$	<2	<2	<2	<2	<2	<2	<2	µg/l	2	A-T-006w
1,2,4-Trichlorobenzene$_A^\#$	<3	<3	<3	<3	<3	<3	<3	µg/l	3	A-T-006w
1,2,3-Trichlorobenzene$_A^\#$	<3	<3	<3	<3	<3	<3	<3	µg/l	3	A-T-006w
Hexachlorobutadiene$_A^\#$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w

Envirolab Job Number: 22/10897

Client Project Name: EMG Phase 2

Client Project Ref: 765514

Lab Sample ID	22/10897/1	22/10897/2	22/10897/3	22/10897/4	22/10897/5	22/10897/6	22/10897/7	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	CP06	CP10	CP27	BH02	BH05	BH06	BH09 (D)			
Depth to Top	8.07	5.45	2.51	9.03	5.97	19.00	15.00			
Depth To Bottom										
Date Sampled	02-Nov-22	02-Nov-22	02-Nov-22	02-Nov-22	02-Nov-22	02-Nov-22	02-Nov-22			
Sample Type	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW			
Sample Matrix Code	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
TPH CWG (w) with Clean Up										
Ali >C5-C6 (w)$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-022w
Ali >C6-C8 (w)$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-022w
Ali >C8-C10 (w)$_A^{\#}$	<5	<5	<5	<5	<5	<5	<5	µg/l	5	A-T-055w
Ali >C10-C12 (w)$_A^{\#}$	<5	<5	<5	<5	<5	<5	<5	µg/l	5	A-T-055w
Ali >C12-C16 (w)$_A^{\#}$	<5	<5	<5	<5	<5	<5	<5	µg/l	5	A-T-055w
Ali >C16-C21 (w)$_A^{\#}$	<5	<5	<5	<5	<5	<5	<5	µg/l	5	A-T-055w
Ali >C21-C35 (w)$_A^{\#}$	<5	<5	<5	<5	<5	<5	<5	µg/l	5	A-T-055w
Total Aliphatics (w)$_A^{\#}$	<5	<5	<5	<5	<5	<5	<5	µg/l	5	Calc-As Recd
Aro >C5-C7 (w)$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-022w
Aro >C7-C8 (w)$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-022w
Aro >C8-C10 (w)$_A$	<5	<5	<5	<5	<5	<5	<5	µg/l	5	A-T-055w
Aro >C10-C12 (w)$_A^{\#}$	<5	<5	<5	<5	<5	<5	<5	µg/l	5	A-T-055w
Aro >C12-C16 (w)$_A^{\#}$	<5	<5	22	<5	<5	<5	<5	µg/l	5	A-T-055w
Aro >C16-C21 (w)$_A^{\#}$	<5	<5	22	<5	<5	<5	<5	µg/l	5	A-T-055w
Aro >C21-C35 (w)$_A$	<10	<10	<10	<10	<10	<10	<10	µg/l	10	A-T-055w
Total Aromatics (w)$_A$	<10	<10	44	<10	<10	<10	<10	µg/l	10	Calc-As Recd
TPH (Ali & Aro >C5-C35) (w)$_A$	<10	<10	44	<10	<10	<10	<10	µg/l	10	Calc-As Recd
BTEX - Benzene (w)$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-022w
BTEX - Toluene (w)$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-022w
BTEX - Ethyl Benzene (w)$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-022w
BTEX - m & p Xylene (w)$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-022w
BTEX - o Xylene (w)$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-022w
MTBE (w)$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-022w

Lab Sample ID	22/10897/8	22/10897/9	22/10897/10	22/10897/11	22/10897/12	22/10897/13	22/10897/14	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH17	BH18	BH24	BH25	BH04 (D)	BH10	BH13			
Depth to Top	2.86	7.18	4.56	5.05	11.90	16.42	12.42			
Depth To Bottom										
Date Sampled	03-Nov-22	03-Nov-22	03-Nov-22	03-Nov-22	02-Nov-22	02-Nov-22	03-Nov-22			
Sample Type	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW			
Sample Matrix Code	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
pH (w)$_A^{\#}$	7.63	7.48	7.33	7.45	7.45	7.20	7.36	pH	0.01	A-T-031w
Sulphate (w)$_A^{\#}$	132	53	151	1340	24	53	74	mg/l	1	A-T-026w
Cyanide (total) (w)$_A^{\#}$	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	mg/l	0.005	A-T-042wTCN
Phenols - Total by HPLC (w)$_A$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/l	0.01	A-T-050w
Arsenic (dissolved)$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-025w
Boron (dissolved)$_A^{\#}$	50	41	34	127	33	43	30	µg/l	10	A-T-025w
Cadmium (dissolved)$_A^{\#}$	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	µg/l	0.2	A-T-025w
Copper (dissolved)$_A$	12	10	<4	<4	5	6	12	µg/l	4	A-T-025w
Chromium (dissolved)$_A^{\#}$	13	8	<1	<1	9	11	11	µg/l	1	A-T-025w
Chromium (total)$_A$	12	8	2	3	11	11	10	µg/l	1	A-T-025w
Chromium (hexavalent) (w)$_A$	<0.02	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	mg/l	0.01	A-T-040w
Chromium (trivalent) (w)	<0.02	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	mg/l	0.01	Calc
Lead (dissolved)$_A^{\#}$	2	2	<1	<1	<1	<1	<1	µg/l	1	A-T-025w
Mercury (dissolved)$_A^{\#}$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-025w
Nickel (dissolved)$_A^{\#}$	2	<2	<2	3	<2	3	<2	µg/l	2	A-T-025w
Selenium (dissolved)$_A^{\#}$	3	<1	2	<1	<1	<1	<1	µg/l	1	A-T-025w
Zinc (dissolved)$_A^{\#}$	15	18	5	7	4	4	3	µg/l	2	A-T-025w
OCP+OPP Combined Pest Suite (incl. Atrazine+Simazine) (w)										
Dichlobenil (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Tecnazene (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Trifluralin (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
alpha-Hexachlorocyclohexane (HCH) (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Hexachlorobenzene (HCB) (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Simazine (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Atrazine (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
beta-Hexachlorocyclohexane (HCH) (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Quintozene (PCNB) (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Triallate (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
delta-Hexachlorocyclohexane (HCH) (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Chlorothalonil (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Heptachlor (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Aldrin (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w

Lab Sample ID	22/10897/8	22/10897/9	22/10897/10	22/10897/11	22/10897/12	22/10897/13	22/10897/14	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH17	BH18	BH24	BH25	BH04 (D)	BH10	BH13			
Depth to Top	2.86	7.18	4.56	5.05	11.90	16.42	12.42			
Depth To Bottom										
Date Sampled	03-Nov-22	03-Nov-22	03-Nov-22	03-Nov-22	02-Nov-22	02-Nov-22	03-Nov-22			
Sample Type	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW			
Sample Matrix Code	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Triadimefon (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Telodrin (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Isodrin (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Pendimethalin (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Heptachlor epoxide (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
trans-Chlordane (Gamma) (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
o,p-DDE (2,4) (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Endosulphan I (Alpha) (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
cis-Chlordane (Alpha) (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
p,p-DDE (4,4) (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Dieldrin (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
o,p-DDD (2,4) (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Endrin (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Endosulphan II (Beta) (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
p,p-DDD (4,4) (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
o,p-DDT (2,4) (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Endrin Aldehyde (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Endosulphan Sulphate (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
p,p-DDT (4,4) (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
o,p-Methoxychlor (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Endrin Ketone (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
p,p-Methoxychlor (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Permethrin I (cis) (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Permethrin II (trans) (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Dichlorvos (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Mevinphos (w)$_A$	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	µg/l	0.5	A-T-056w
Demeton-S (w)$_A$	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	µg/l	0.5	A-T-056w
Phorate (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Dimethoate (w)$_A$	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	µg/l	0.5	A-T-056w
Demeton-O (w)$_A$	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	µg/l	0.5	A-T-056w
Propetamphos (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Diazinon (Dimpylate) (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Disulfoton (w)$_A$	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	µg/l	0.5	A-T-056w
Chlorpyrifos-methyl (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w

Envirolab Job Number: 22/10897

Client Project Name: EMG Phase 2

Client Project Ref: 765514

Lab Sample ID	22/10897/8	22/10897/9	22/10897/10	22/10897/11	22/10897/12	22/10897/13	22/10897/14	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH17	BH18	BH24	BH25	BH04 (D)	BH10	BH13			
Depth to Top	2.86	7.18	4.56	5.05	11.90	16.42	12.42			
Depth To Bottom										
Date Sampled	03-Nov-22	03-Nov-22	03-Nov-22	03-Nov-22	02-Nov-22	02-Nov-22	03-Nov-22			
Sample Type	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW			
Sample Matrix Code	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Methyl Parathion (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Pirimiphos-methyl (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Fenitrothion (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Malathion (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Chlorpyrifos (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Fenthion (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Parathion (Ethyl Parathion) (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Trichloronate (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Chlorfenvinphos (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Fensulphothion (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Prothiofos (Tokuthion) (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Ethion (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Triazophos (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Carbophenothion (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Phosalone (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Azinphos-methyl (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Azinphos-ethyl (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
Coumaphos (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w
gamma-Hexachlorocyclohexane (HCH / Lindane) (w)$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	µg/l	0.1	A-T-056w

Envirolab Job Number: 22/10897

Client Project Name: EMG Phase 2

Client Project Ref: 765514

Lab Sample ID	22/10897/8	22/10897/9	22/10897/10	22/10897/11	22/10897/12	22/10897/13	22/10897/14	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH17	BH18	BH24	BH25	BH04 (D)	BH10	BH13			
Depth to Top	2.86	7.18	4.56	5.05	11.90	16.42	12.42			
Depth To Bottom										
Date Sampled	03-Nov-22	03-Nov-22	03-Nov-22	03-Nov-22	02-Nov-22	02-Nov-22	03-Nov-22			
Sample Type	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW			
Sample Matrix Code	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
PAH 16MS (w)										
Acenaphthene (w)$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	µg/l	0.01	A-T-019w
Acenaphthylene (w)$_A^{\#}$	<0.01	<0.01	<0.01	0.04	<0.01	<0.01	<0.01	µg/l	0.01	A-T-019w
Anthracene (w)$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	µg/l	0.01	A-T-019w
Benzo(a)anthracene (w)$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	µg/l	0.01	A-T-019w
Benzo(a)pyrene (w)$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	µg/l	0.01	A-T-019w
Benzo(b)fluoranthene (w)$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	µg/l	0.01	A-T-019w
Benzo(ghi)perylene (w)$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	µg/l	0.01	A-T-019w
Benzo(k)fluoranthene (w)$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	µg/l	0.01	A-T-019w
Chrysene (w)$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	µg/l	0.01	A-T-019w
Dibenzo(ah)anthracene (w)$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	µg/l	0.01	A-T-019w
Fluoranthene (w)$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	µg/l	0.01	A-T-019w
Fluorene (w)$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	µg/l	0.01	A-T-019w
Indeno(123-cd)pyrene (w)$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	µg/l	0.01	A-T-019w
Naphthalene (w)$_A^{\#}$	<0.01	<0.01	0.03	0.24	<0.01	<0.01	<0.01	µg/l	0.01	A-T-019w
Phenanthrene (w)$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	µg/l	0.01	A-T-019w
Pyrene (w)$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	µg/l	0.01	A-T-019w
Total PAH 16MS (w)$_A^{\#}$	<0.01	<0.01	0.03	0.28	<0.01	<0.01	<0.01	µg/l	0.01	A-T-019w

Envirolab Job Number: 22/10897

Client Project Name: EMG Phase 2

Client Project Ref: 765514

Lab Sample ID	22/10897/8	22/10897/9	22/10897/10	22/10897/11	22/10897/12	22/10897/13	22/10897/14	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH17	BH18	BH24	BH25	BH04 (D)	BH10	BH13			
Depth to Top	2.86	7.18	4.56	5.05	11.90	16.42	12.42			
Depth To Bottom										
Date Sampled	03-Nov-22	03-Nov-22	03-Nov-22	03-Nov-22	02-Nov-22	02-Nov-22	03-Nov-22			
Sample Type	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW			
Sample Matrix Code	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Speciated PCB-WHO12 (w)										
PCB BZ 81 (w)$_A$	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	µg/l	0.001	A-T-004w
PCB BZ 105 (w)$_A$	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	µg/l	0.001	A-T-004w
PCB BZ 114 (w)$_A$	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	µg/l	0.001	A-T-004w
PCB BZ 118 (w)$_A$$^{\#}$	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	µg/l	0.002	A-T-004w
PCB BZ 123 (w)$_A$	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	µg/l	0.001	A-T-004w
PCB BZ 126 (w)$_A$	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	µg/l	0.001	A-T-004w
PCB BZ 156 (w)$_A$	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	µg/l	0.001	A-T-004w
PCB BZ 157 (w)$_A$	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	µg/l	0.001	A-T-004w
PCB BZ 167 (w)$_A$	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	µg/l	0.001	A-T-004w
PCB BZ 169 (w)$_A$	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	µg/l	0.001	A-T-004w
PCB BZ 189 (w)$_A$	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	µg/l	0.001	A-T-004w
PCB BZ 77 (w)$_A$	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	µg/l	0.001	A-T-004w
Total Speciated PCB-WHO12 (w)$_A$	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	µg/l	0.001	A-T-004w

Envirolab Job Number: 22/10897

Client Project Name: EMG Phase 2

Client Project Ref: 765514

Lab Sample ID	22/10897/8	22/10897/9	22/10897/10	22/10897/11	22/10897/12	22/10897/13	22/10897/14	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH17	BH18	BH24	BH25	BH04 (D)	BH10	BH13			
Depth to Top	2.86	7.18	4.56	5.05	11.90	16.42	12.42			
Depth To Bottom										
Date Sampled	03-Nov-22	03-Nov-22	03-Nov-22	03-Nov-22	02-Nov-22	02-Nov-22	03-Nov-22			
Sample Type	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW			
Sample Matrix Code	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
VOC (w)										
Dichlorodifluoromethane$_A$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
Chloromethane$_A$	<10	<10	<10	<10	<10	<10	<10	µg/l	10	A-T-006w
Vinyl Chloride$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
Bromomethane$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
Chloroethane$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
Trichlorofluoromethane$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
trans 1,2-Dichloroethene$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
Dichloromethane$_A$	<5	<5	<5	<5	<5	<5	<5	µg/l	5	A-T-006w
Carbon Disulphide$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
1,1-Dichloroethene$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
1,1-Dichloroethane$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
cis 1,2-Dichloroethene$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
Bromochloromethane$_A^{\#}$	<5	<5	<5	<5	<5	<5	<5	µg/l	5	A-T-006w
Chloroform$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
2,2-Dichloropropane$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
1,2-Dichloroethane$_A^{\#}$	<2	<2	<2	<2	<2	<2	<2	µg/l	2	A-T-006w
1,1,1-Trichloroethane$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
1,1-Dichloropropene$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
Benzene$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
Carbon Tetrachloride$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
Dibromomethane$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
1,2-Dichloropropane$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
Bromodichloromethane$_A^{\#}$	<10	<10	<10	<10	<10	<10	<10	µg/l	10	A-T-006w
Trichloroethene$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
cis 1,3-Dichloropropene$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
trans 1,3-Dichloropropene$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
1,1,2-Trichloroethane$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
Toluene$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
1,3-Dichloropropane$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
Dibromochloromethane$_A^{\#}$	<3	<3	<3	<3	<3	<3	<3	µg/l	3	A-T-006w
1,2-Dibromoethane$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
Tetrachloroethene$_A$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w

Envirolab Job Number: 22/10897

Client Project Name: EMG Phase 2

Client Project Ref: 765514

Lab Sample ID	22/10897/8	22/10897/9	22/10897/10	22/10897/11	22/10897/12	22/10897/13	22/10897/14	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH17	BH18	BH24	BH25	BH04 (D)	BH10	BH13			
Depth to Top	2.86	7.18	4.56	5.05	11.90	16.42	12.42			
Depth To Bottom										
Date Sampled	03-Nov-22	03-Nov-22	03-Nov-22	03-Nov-22	02-Nov-22	02-Nov-22	03-Nov-22			
Sample Type	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW			
Sample Matrix Code	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
1,1,1,2-Tetrachloroethane$_A$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
Chlorobenzene$_A^\#$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
Ethylbenzene$_A^\#$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
m & p Xylene$_A^\#$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
Bromoform$_A^\#$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
Styrene$_A^\#$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
1,1,2,2-Tetrachloroethane$_A$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
o-Xylene$_A^\#$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
1,2,3-Trichloropropane$_A^\#$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
Isopropylbenzene$_A^\#$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
Bromobenzene$_A^\#$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
2-Chlorotoluene$_A^\#$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
n-propylbenzene$_A^\#$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
4-Chlorotoluene$_A^\#$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
1,2,4-Trimethylbenzene$_A^\#$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
4-Isopropyltoluene$_A^\#$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
1,3,5-Trimethylbenzene$_A^\#$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
1,2-Dichlorobenzene$_A^\#$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
1,4-Dichlorobenzene$_A^\#$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
sec-Butylbenzene$_A^\#$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
tert-Butylbenzene$_A^\#$	<2	<2	<2	<2	<2	<2	<2	µg/l	2	A-T-006w
1,3-Dichlorobenzene$_A^\#$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
n-butylbenzene$_A^\#$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w
1,2-Dibromo-3-chloropropane$_A^\#$	<2	<2	<2	<2	<2	<2	<2	µg/l	2	A-T-006w
1,2,4-Trichlorobenzene$_A^\#$	<3	<3	<3	<3	<3	<3	<3	µg/l	3	A-T-006w
1,2,3-Trichlorobenzene$_A^\#$	<3	<3	<3	<3	<3	<3	<3	µg/l	3	A-T-006w
Hexachlorobutadiene$_A^\#$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-006w

Envirolab Job Number: 22/10897

Client Project Name: EMG Phase 2

Client Project Ref: 765514

Lab Sample ID	22/10897/8	22/10897/9	22/10897/10	22/10897/11	22/10897/12	22/10897/13	22/10897/14	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH17	BH18	BH24	BH25	BH04 (D)	BH10	BH13			
Depth to Top	2.86	7.18	4.56	5.05	11.90	16.42	12.42			
Depth To Bottom										
Date Sampled	03-Nov-22	03-Nov-22	03-Nov-22	03-Nov-22	02-Nov-22	02-Nov-22	03-Nov-22			
Sample Type	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW			
Sample Matrix Code	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
TPH CWG (w) with Clean Up										
Ali >C5-C6 (w)$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-022w
Ali >C6-C8 (w)$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-022w
Ali >C8-C10 (w)$_A^{\#}$	<5	<5	<5	<5	<5	<5	<5	µg/l	5	A-T-055w
Ali >C10-C12 (w)$_A^{\#}$	<5	<5	<5	<5	<5	<5	<5	µg/l	5	A-T-055w
Ali >C12-C16 (w)$_A^{\#}$	<5	<5	<5	<5	<5	<5	<5	µg/l	5	A-T-055w
Ali >C16-C21 (w)$_A^{\#}$	<5	<5	<5	<5	<5	<5	<5	µg/l	5	A-T-055w
Ali >C21-C35 (w)$_A^{\#}$	<5	<5	<5	<5	<5	<5	<5	µg/l	5	A-T-055w
Total Aliphatics (w)$_A^{\#}$	<5	<5	<5	<5	<5	<5	<5	µg/l	5	Calc-As Recd
Aro >C5-C7 (w)$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-022w
Aro >C7-C8 (w)$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-022w
Aro >C8-C10 (w)$_A$	<5	<5	<5	<5	<5	<5	<5	µg/l	5	A-T-055w
Aro >C10-C12 (w)$_A^{\#}$	<5	<5	<5	<5	<5	<5	<5	µg/l	5	A-T-055w
Aro >C12-C16 (w)$_A^{\#}$	<5	<5	7	<5	<5	16	<5	µg/l	5	A-T-055w
Aro >C16-C21 (w)$_A^{\#}$	<5	<5	<5	<5	<5	6	<5	µg/l	5	A-T-055w
Aro >C21-C35 (w)$_A$	<10	<10	<10	<10	<10	<10	<10	µg/l	10	A-T-055w
Total Aromatics (w)$_A$	<10	<10	<10	<10	<10	22	<10	µg/l	10	Calc-As Recd
TPH (Ali & Aro >C5-C35) (w)$_A$	<10	<10	<10	<10	<10	22	<10	µg/l	10	Calc-As Recd
BTEX - Benzene (w)$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-022w
BTEX - Toluene (w)$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-022w
BTEX - Ethyl Benzene (w)$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-022w
BTEX - m & p Xylene (w)$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-022w
BTEX - o Xylene (w)$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-022w
MTBE (w)$_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-022w

Lab Sample ID	22/10897/15	22/10897/16	22/10897/17					Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH21	SW2	SW3							
Depth to Top	10.44									
Depth To Bottom										
Date Sampled	03-Nov-22	03-Nov-22	03-Nov-22							
Sample Type	Water - EW	Water - EW	Water - EW							
Sample Matrix Code	N/A	N/A	N/A							
pH (w)$_{A}^{\#}$	7.58	7.95	7.84					pH	0.01	A-T-031w
Sulphate (w)$_{A}^{\#}$	196	74	76					mg/l	1	A-T-026w
Cyanide (total) (w)$_{A}^{\#}$	<0.005	<0.005	<0.005					mg/l	0.005	A-T-042wTCN
Phenols - Total by HPLC (w)$_{A}$	<0.01	<0.01	<0.01					mg/l	0.01	A-T-050w
Arsenic (dissolved)$_{A}^{\#}$	<1	1	1					µg/l	1	A-T-025w
Boron (dissolved)$_{A}^{\#}$	30	71	63					µg/l	10	A-T-025w
Cadmium (dissolved)$_{A}^{\#}$	<0.2	<0.2	<0.2					µg/l	0.2	A-T-025w
Copper (dissolved)$_{A}$	6	6	5					µg/l	4	A-T-025w
Chromium (dissolved)$_{A}^{\#}$	<1	<1	<1					µg/l	1	A-T-025w
Chromium (total)$_{A}$	24	5	3					µg/l	1	A-T-025w
Chromium (hexavalent) (w)$_{A}$	<0.01	<0.02	<0.02					mg/l	0.01	A-T-040w
Chromium (trivalent) (w)	<0.01	<0.02	<0.02					mg/l	0.01	Calc
Lead (dissolved)$_{A}^{\#}$	<1	<1	<1					µg/l	1	A-T-025w
Mercury (dissolved)$_{A}^{\#}$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-025w
Nickel (dissolved)$_{A}^{\#}$	<2	<2	<2					µg/l	2	A-T-025w
Selenium (dissolved)$_{A}^{\#}$	<1	<1	<1					µg/l	1	A-T-025w
Zinc (dissolved)$_{A}^{\#}$	5	14	14					µg/l	2	A-T-025w
OCP+OPP Combined Pest Suite (incl. Atrazine+Simazine) (w)										
Dichlobenil (w)$_{A}$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
Tecnazene (w)$_{A}$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
Trifluralin (w)$_{A}$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
alpha-Hexachlorocyclohexane (HCH) (w)$_{A}$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
Hexachlorobenzene (HCB) (w)$_{A}$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
Simazine (w)$_{A}$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
Atrazine (w)$_{A}$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
beta-Hexachlorocyclohexane (HCH) (w)$_{A}$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
Quintozene (PCNB) (w)$_{A}$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
Triallate (w)$_{A}$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
delta-Hexachlorocyclohexane (HCH) (w)$_{A}$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
Chlorothalonil (w)$_{A}$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
Heptachlor (w)$_{A}$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
Aldrin (w)$_{A}$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w

Lab Sample ID	22/10897/15	22/10897/16	22/10897/17					Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH21	SW2	SW3							
Depth to Top	10.44									
Depth To Bottom										
Date Sampled	03-Nov-22	03-Nov-22	03-Nov-22							
Sample Type	Water - EW	Water - EW	Water - EW							
Sample Matrix Code	N/A	N/A	N/A							
Triadimefon (w)$_A$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
Telodrin (w)$_A$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
Isodrin (w)$_A$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
Pendimethalin (w)$_A$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
Heptachlor epoxide (w)$_A$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
trans-Chlordane (Gamma) (w)$_A$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
o,p-DDE (2,4) (w)$_A$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
Endosulphan I (Alpha) (w)$_A$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
cis-Chlordane (Alpha) (w)$_A$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
p,p-DDE (4,4) (w)$_A$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
Dieldrin (w)$_A$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
o,p-DDD (2,4) (w)$_A$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
Endrin (w)$_A$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
Endosulphan II (Beta) (w)$_A$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
p,p-DDD (4,4) (w)$_A$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
o,p-DDT (2,4) (w)$_A$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
Endrin Aldehyde (w)$_A$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
Endosulphan Sulphate (w)$_A$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
p,p-DDT (4,4) (w)$_A$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
o,p-Methoxychlor (w)$_A$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
Endrin Ketone (w)$_A$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
p,p-Methoxychlor (w)$_A$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
Permethrin I (cis) (w)$_A$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
Permethrin II (trans) (w)$_A$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
Dichlorvos (w)$_A$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
Mevinphos (w)$_A$	<0.5	<0.5	<0.5					µg/l	0.5	A-T-056w
Demeton-S (w)$_A$	<0.5	<0.5	<0.5					µg/l	0.5	A-T-056w
Phorate (w)$_A$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
Dimethoate (w)$_A$	<0.5	<0.5	<0.5					µg/l	0.5	A-T-056w
Demeton-O (w)$_A$	<0.5	<0.5	<0.5					µg/l	0.5	A-T-056w
Propetamphos (w)$_A$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
Diazinon (Dimpylate) (w)$_A$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
Disulfoton (w)$_A$	<0.5	<0.5	<0.5					µg/l	0.5	A-T-056w
Chlorpyrifos-methyl (w)$_A$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w

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Lab Sample ID	22/10897/15	22/10897/16	22/10897/17					Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH21	SW2	SW3							
Depth to Top	10.44									
Depth To Bottom										
Date Sampled	03-Nov-22	03-Nov-22	03-Nov-22							
Sample Type	Water - EW	Water - EW	Water - EW							
Sample Matrix Code	N/A	N/A	N/A							
Methyl Parathion (w)$_A$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
Pirimiphos-methyl (w)$_A$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
Fenitrothion (w)$_A$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
Malathion (w)$_A$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
Chlorpyrifos (w)$_A$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
Fenthion (w)$_A$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
Parathion (Ethyl Parathion) (w)$_A$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
Trichloronate (w)$_A$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
Chlorfenvinphos (w)$_A$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
Fensulphothion (w)$_A$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
Prothiofos (Tokuthion) (w)$_A$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
Ethion (w)$_A$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
Triazophos (w)$_A$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
Carbophenothion (w)$_A$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
Phosalone (w)$_A$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
Azinphos-methyl (w)$_A$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
Azinphos-ethyl (w)$_A$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
Coumaphos (w)$_A$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w
gamma-Hexachlorocyclohexane (HCH / Lindane) (w)$_A$	<0.1	<0.1	<0.1					µg/l	0.1	A-T-056w

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Lab Sample ID	22/10897/15	22/10897/16	22/10897/17					Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH21	SW2	SW3							
Depth to Top	10.44									
Depth To Bottom										
Date Sampled	03-Nov-22	03-Nov-22	03-Nov-22							
Sample Type	Water - EW	Water - EW	Water - EW							
Sample Matrix Code	N/A	N/A	N/A							
PAH 16MS (w)										
Acenaphthene (w)$_A^{\#}$	<0.01	<0.01	<0.01					µg/l	0.01	A-T-019w
Acenaphthylene (w)$_A^{\#}$	0.05	<0.01	0.02					µg/l	0.01	A-T-019w
Anthracene (w)$_A^{\#}$	<0.01	<0.01	<0.01					µg/l	0.01	A-T-019w
Benzo(a)anthracene (w)$_A^{\#}$	<0.01	<0.01	<0.01					µg/l	0.01	A-T-019w
Benzo(a)pyrene (w)$_A^{\#}$	<0.01	<0.01	<0.01					µg/l	0.01	A-T-019w
Benzo(b)fluoranthene (w)$_A^{\#}$	<0.01	<0.01	<0.01					µg/l	0.01	A-T-019w
Benzo(ghi)perylene (w)$_A^{\#}$	<0.01	<0.01	<0.01					µg/l	0.01	A-T-019w
Benzo(k)fluoranthene (w)$_A^{\#}$	<0.01	<0.01	<0.01					µg/l	0.01	A-T-019w
Chrysene (w)$_A^{\#}$	<0.01	<0.01	<0.01					µg/l	0.01	A-T-019w
Dibenzo(ah)anthracene (w)$_A^{\#}$	<0.01	<0.01	<0.01					µg/l	0.01	A-T-019w
Fluoranthene (w)$_A^{\#}$	<0.01	<0.01	<0.01					µg/l	0.01	A-T-019w
Fluorene (w)$_A^{\#}$	<0.01	<0.01	<0.01					µg/l	0.01	A-T-019w
Indeno(123-cd)pyrene (w)$_A^{\#}$	<0.01	<0.01	<0.01					µg/l	0.01	A-T-019w
Naphthalene (w)$_A^{\#}$	0.23	<0.01	0.18					µg/l	0.01	A-T-019w
Phenanthrene (w)$_A^{\#}$	<0.01	<0.01	<0.01					µg/l	0.01	A-T-019w
Pyrene (w)$_A^{\#}$	<0.01	<0.01	<0.01					µg/l	0.01	A-T-019w
Total PAH 16MS (w)$_A^{\#}$	0.28	<0.01	0.20					µg/l	0.01	A-T-019w

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Lab Sample ID	22/10897/15	22/10897/16	22/10897/17					Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH21	SW2	SW3							
Depth to Top	10.44									
Depth To Bottom										
Date Sampled	03-Nov-22	03-Nov-22	03-Nov-22							
Sample Type	Water - EW	Water - EW	Water - EW							
Sample Matrix Code	N/A	N/A	N/A							
Speciated PCB-WHO12 (w)										
PCB BZ 81 (w)$_A$	<0.001	<0.001	<0.001					µg/l	0.001	A-T-004w
PCB BZ 105 (w)$_A$	<0.001	<0.001	<0.001					µg/l	0.001	A-T-004w
PCB BZ 114 (w)$_A$	<0.001	<0.001	<0.001					µg/l	0.001	A-T-004w
PCB BZ 118 (w)$_A^{\#}$	<0.002	<0.002	<0.002					µg/l	0.002	A-T-004w
PCB BZ 123 (w)$_A$	<0.001	<0.001	<0.001					µg/l	0.001	A-T-004w
PCB BZ 126 (w)$_A$	<0.001	<0.001	<0.001					µg/l	0.001	A-T-004w
PCB BZ 156 (w)$_A$	<0.001	<0.001	<0.001					µg/l	0.001	A-T-004w
PCB BZ 157 (w)$_A$	<0.001	<0.001	<0.001					µg/l	0.001	A-T-004w
PCB BZ 167 (w)$_A$	<0.001	<0.001	<0.001					µg/l	0.001	A-T-004w
PCB BZ 169 (w)$_A$	<0.001	<0.001	<0.001					µg/l	0.001	A-T-004w
PCB BZ 189 (w)$_A$	<0.001	<0.001	<0.001					µg/l	0.001	A-T-004w
PCB BZ 77 (w)$_A$	<0.001	<0.001	<0.001					µg/l	0.001	A-T-004w
Total Speciated PCB-WHO12 (w)$_A$	<0.002	<0.002	<0.002					µg/l	0.001	A-T-004w

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Lab Sample ID	22/10897/15	22/10897/16	22/10897/17					Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH21	SW2	SW3							
Depth to Top	10.44									
Depth To Bottom										
Date Sampled	03-Nov-22	03-Nov-22	03-Nov-22							
Sample Type	Water - EW	Water - EW	Water - EW							
Sample Matrix Code	N/A	N/A	N/A							
VOC (w)										
Dichlorodifluoromethane$_A$	<1	<1	<1					µg/l	1	A-T-006w
Chloromethane$_A$	<10	<10	<10					µg/l	10	A-T-006w
Vinyl Chloride$_A^{\#}$	<1	<1	<1					µg/l	1	A-T-006w
Bromomethane$_A^{\#}$	<1	<1	<1					µg/l	1	A-T-006w
Chloroethane$_A^{\#}$	<1	<1	<1					µg/l	1	A-T-006w
Trichlorofluoromethane$_A^{\#}$	<1	<1	<1					µg/l	1	A-T-006w
trans 1,2-Dichloroethene$_A^{\#}$	<1	<1	<1					µg/l	1	A-T-006w
Dichloromethane$_A$	<5	<5	<5					µg/l	5	A-T-006w
Carbon Disulphide$_A^{\#}$	<1	<1	<1					µg/l	1	A-T-006w
1,1-Dichloroethene$_A^{\#}$	<1	<1	<1					µg/l	1	A-T-006w
1,1-Dichloroethane$_A^{\#}$	<1	<1	<1					µg/l	1	A-T-006w
cis 1,2-Dichloroethene$_A^{\#}$	<1	<1	<1					µg/l	1	A-T-006w
Bromochloromethane$_A^{\#}$	<5	<5	<5					µg/l	5	A-T-006w
Chloroform$_A^{\#}$	<1	<1	<1					µg/l	1	A-T-006w
2,2-Dichloropropane$_A^{\#}$	<1	<1	<1					µg/l	1	A-T-006w
1,2-Dichloroethane$_A^{\#}$	<2	<2	<2					µg/l	2	A-T-006w
1,1,1-Trichloroethane$_A^{\#}$	<1	<1	<1					µg/l	1	A-T-006w
1,1-Dichloropropene$_A^{\#}$	<1	<1	<1					µg/l	1	A-T-006w
Benzene$_A^{\#}$	<1	<1	<1					µg/l	1	A-T-006w
Carbon Tetrachloride$_A^{\#}$	<1	<1	<1					µg/l	1	A-T-006w
Dibromomethane$_A^{\#}$	<1	<1	<1					µg/l	1	A-T-006w
1,2-Dichloropropane$_A^{\#}$	<1	<1	<1					µg/l	1	A-T-006w
Bromodichloromethane$_A^{\#}$	<10	<10	<10					µg/l	10	A-T-006w
Trichloroethene$_A^{\#}$	<1	<1	<1					µg/l	1	A-T-006w
cis 1,3-Dichloropropene$_A^{\#}$	<1	<1	<1					µg/l	1	A-T-006w
trans 1,3-Dichloropropene$_A^{\#}$	<1	<1	<1					µg/l	1	A-T-006w
1,1,2-Trichloroethane$_A^{\#}$	<1	<1	<1					µg/l	1	A-T-006w
Toluene$_A^{\#}$	<1	<1	<1					µg/l	1	A-T-006w
1,3-Dichloropropane$_A^{\#}$	<1	<1	<1					µg/l	1	A-T-006w
Dibromochloromethane$_A^{\#}$	<3	<3	<3					µg/l	3	A-T-006w
1,2-Dibromoethane$_A^{\#}$	<1	<1	<1					µg/l	1	A-T-006w
Tetrachloroethene$_A$	<1	<1	<1					µg/l	1	A-T-006w

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Lab Sample ID	22/10897/15	22/10897/16	22/10897/17					Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH21	SW2	SW3							
Depth to Top	10.44									
Depth To Bottom										
Date Sampled	03-Nov-22	03-Nov-22	03-Nov-22							
Sample Type	Water - EW	Water - EW	Water - EW							
Sample Matrix Code	N/A	N/A	N/A							
1,1,1,2-Tetrachloroethane$_A$	<1	<1	<1					µg/l	1	A-T-006w
Chlorobenzene$_A^\#$	<1	<1	<1					µg/l	1	A-T-006w
Ethylbenzene$_A^\#$	<1	<1	<1					µg/l	1	A-T-006w
m & p Xylene$_A^\#$	<1	<1	<1					µg/l	1	A-T-006w
Bromoform$_A^\#$	<1	<1	<1					µg/l	1	A-T-006w
Styrene$_A^\#$	<1	<1	<1					µg/l	1	A-T-006w
1,1,2,2-Tetrachloroethane$_A$	<1	<1	<1					µg/l	1	A-T-006w
o-Xylene$_A^\#$	<1	<1	<1					µg/l	1	A-T-006w
1,2,3-Trichloropropane$_A^\#$	<1	<1	<1					µg/l	1	A-T-006w
Isopropylbenzene$_A^\#$	<1	<1	<1					µg/l	1	A-T-006w
Bromobenzene$_A^\#$	<1	<1	<1					µg/l	1	A-T-006w
2-Chlorotoluene$_A^\#$	<1	<1	<1					µg/l	1	A-T-006w
n-propylbenzene$_A^\#$	<1	<1	<1					µg/l	1	A-T-006w
4-Chlorotoluene$_A^\#$	<1	<1	<1					µg/l	1	A-T-006w
1,2,4-Trimethylbenzene$_A^\#$	<1	<1	<1					µg/l	1	A-T-006w
4-Isopropyltoluene$_A^\#$	<1	<1	<1					µg/l	1	A-T-006w
1,3,5-Trimethylbenzene$_A^\#$	<1	<1	<1					µg/l	1	A-T-006w
1,2-Dichlorobenzene$_A^\#$	<1	<1	<1					µg/l	1	A-T-006w
1,4-Dichlorobenzene$_A^\#$	<1	<1	<1					µg/l	1	A-T-006w
sec-Butylbenzene$_A^\#$	<1	<1	<1					µg/l	1	A-T-006w
tert-Butylbenzene$_A^\#$	<2	<2	<2					µg/l	2	A-T-006w
1,3-Dichlorobenzene$_A^\#$	<1	<1	<1					µg/l	1	A-T-006w
n-butylbenzene$_A^\#$	<1	<1	<1					µg/l	1	A-T-006w
1,2-Dibromo-3-chloropropane$_A^\#$	<2	<2	<2					µg/l	2	A-T-006w
1,2,4-Trichlorobenzene$_A^\#$	<3	<3	<3					µg/l	3	A-T-006w
1,2,3-Trichlorobenzene$_A^\#$	<3	<3	<3					µg/l	3	A-T-006w
Hexachlorobutadiene$_A^\#$	<1	<1	<1					µg/l	1	A-T-006w

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Client Project Name: EMG Phase 2

Client Project Ref: 765514

Lab Sample ID	22/10897/15	22/10897/16	22/10897/17					Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH21	SW2	SW3							
Depth to Top	10.44									
Depth To Bottom										
Date Sampled	03-Nov-22	03-Nov-22	03-Nov-22							
Sample Type	Water - EW	Water - EW	Water - EW							
Sample Matrix Code	N/A	N/A	N/A							
TPH CWG (w) with Clean Up										
Ali >C5-C6 (w)$_A^{\#}$	<1	<1	<1					µg/l	1	A-T-022w
Ali >C6-C8 (w)$_A^{\#}$	<1	<1	<1					µg/l	1	A-T-022w
Ali >C8-C10 (w)$_A^{\#}$	<5	<5	<5					µg/l	5	A-T-055w
Ali >C10-C12 (w)$_A^{\#}$	<5	<5	<5					µg/l	5	A-T-055w
Ali >C12-C16 (w)$_A^{\#}$	<5	<5	<5					µg/l	5	A-T-055w
Ali >C16-C21 (w)$_A^{\#}$	<5	<5	<5					µg/l	5	A-T-055w
Ali >C21-C35 (w)$_A^{\#}$	<5	<5	<5					µg/l	5	A-T-055w
Total Aliphatics (w)$_A^{\#}$	<5	<5	<5					µg/l	5	Calc-As Recd
Aro >C5-C7 (w)$_A^{\#}$	<1	<1	<1					µg/l	1	A-T-022w
Aro >C7-C8 (w)$_A^{\#}$	<1	<1	<1					µg/l	1	A-T-022w
Aro >C8-C10 (w)$_A$	<5	<5	<5					µg/l	5	A-T-055w
Aro >C10-C12 (w)$_A^{\#}$	<5	<5	<5					µg/l	5	A-T-055w
Aro >C12-C16 (w)$_A^{\#}$	<5	<5	<5					µg/l	5	A-T-055w
Aro >C16-C21 (w)$_A^{\#}$	<5	<5	<5					µg/l	5	A-T-055w
Aro >C21-C35 (w)$_A$	<10	<10	<10					µg/l	10	A-T-055w
Total Aromatics (w)$_A$	<10	<10	<10					µg/l	10	Calc-As Recd
TPH (Ali & Aro >C5-C35) (w)$_A$	<10	<10	<10					µg/l	10	Calc-As Recd
BTEX - Benzene (w)$_A^{\#}$	<1	<1	<1					µg/l	1	A-T-022w
BTEX - Toluene (w)$_A^{\#}$	<1	<1	<1					µg/l	1	A-T-022w
BTEX - Ethyl Benzene (w)$_A^{\#}$	<1	<1	<1					µg/l	1	A-T-022w
BTEX - m & p Xylene (w)$_A^{\#}$	<1	<1	<1					µg/l	1	A-T-022w
BTEX - o Xylene (w)$_A^{\#}$	<1	<1	<1					µg/l	1	A-T-022w
MTBE (w)$_A^{\#}$	<1	<1	<1					µg/l	1	A-T-022w

REPORT NOTES

General

This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,
E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve
Subscript "^" indicates analysis has dependant options against results. Testing dependant on results appear in the comments area of your sample receipt.
EPH CWG results have humics mathematically subtracted through instrument calculation
TPH results "with Cleanup" indicates results cleaned up with Silica during extraction

EPH CWG GCxGC ID from TPH CWG

Where we have identified humic substances in any ID's from TPH CWG with Clean Up please note that the concentration of these humic substances is not included in the quantified results and are included in the ID for information.

Please contact us if you need any further information.

v2

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Castleford), The Potteries, Pottery Street, Castleford, West Yorkshire, UK, WF10 1NJ

Project: EMG Phase 2

Clients Project No: 765514

Project No: 22/10897

Date Received: 04/11/2022 (am)

Cool Box Temperatures (°C): 6.8-9.4

NO DEVIATIONS IDENTIFIED

If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3, ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	22/10897/1	22/10897/2	22/10897/3	22/10897/4	22/10897/5	22/10897/6	22/10897/7	22/10897/8	22/10897/9	22/10897/10	22/10897/11	22/10897/12
Client Sample No												
Client Sample ID/Depth	CP06 8.07m	CP10 5.45m	CP27 2.51m	BH02 9.03m	BH05 5.97m	BH06 19.00m	BH09 (D) 15.00m	BH17 2.86m	BH18 7.18m	BH24 4.56m	BH25 5.05m	BH04 (D) 11.90m
Date Sampled	02/11/22	02/11/22	02/11/22	02/11/22	02/11/22	02/11/22	02/11/22	03/11/22	03/11/22	03/11/22	03/11/22	02/11/22
A-T-004w	11/11/2022	11/11/2022	11/11/2022		11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022
A-T-006w	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022
A-T-019w	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022
A-T-022w	15/11/2022	15/11/2022	15/11/2022	15/11/2022	15/11/2022	15/11/2022	15/11/2022	15/11/2022	15/11/2022	15/11/2022	15/11/2022	15/11/2022
A-T-025w	17/11/2022	17/11/2022	17/11/2022	17/11/2022	17/11/2022	17/11/2022	17/11/2022	17/11/2022	17/11/2022	17/11/2022	17/11/2022	17/11/2022
A-T-026w	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022
A-T-031w	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022
A-T-040w	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022
A-T-042wTCN	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022
A-T-050w	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022
A-T-055w	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022
A-T-056w	15/11/2022	15/11/2022	15/11/2022		15/11/2022	15/11/2022	15/11/2022	15/11/2022	15/11/2022	15/11/2022	18/11/2022	18/11/2022
Calc	17/11/2022	17/11/2022	17/11/2022	17/11/2022	17/11/2022	17/11/2022	17/11/2022	17/11/2022	17/11/2022	17/11/2022	17/11/2022	17/11/2022
Calc-As Recd	15/11/2022	15/11/2022	15/11/2022	15/11/2022	15/11/2022	15/11/2022	15/11/2022	15/11/2022	15/11/2022	15/11/2022	15/11/2022	15/11/2022

Lab Sample ID	22/10897/13	22/10897/14	22/10897/15	22/10897/16	22/10897/17
Client Sample No					
Client Sample ID/Depth	BH10 16.42m	BH13 12.42m	BH21 10.44m	SW2	SW3
Date Sampled	02/11/22	03/11/22	03/11/22	03/11/22	03/11/22
A-T-004w	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022
A-T-006w	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022
A-T-019w	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022
A-T-022w	15/11/2022	15/11/2022	15/11/2022	15/11/2022	15/11/2022
A-T-025w	17/11/2022	17/11/2022	17/11/2022	17/11/2022	17/11/2022
A-T-026w	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022
A-T-031w	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022
A-T-040w	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022
A-T-042wTCN	10/11/2022	10/11/2022	10/11/2022	10/11/2022	10/11/2022
A-T-050w	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022
A-T-055w	11/11/2022	11/11/2022	11/11/2022	11/11/2022	11/11/2022
A-T-056w	18/11/2022	18/11/2022	18/11/2022	18/11/2022	18/11/2022
Calc	17/11/2022	17/11/2022	17/11/2022	17/11/2022	17/11/2022
Calc-As Recd	15/11/2022	15/11/2022	15/11/2022	15/11/2022	15/11/2022

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

APPENDIX F - MONITORING RECORDS

(i) Gas/Groundwater Monitoring Results

IN-SITU GAS MONITORING RESULTS

	Start Date	End Date	Pressures Previous	Pressures During	Pressures Start	Pressures End	Equipment Used & Remarks
Round 1	13/10/2022	14/10/2022	-	-	1009	1015	Weather: Dry and Bright | Ground: Dry | Wind: None | Air Temp: 14°C | Summary: Gas
Round 2	26/10/2022	27/10/2022	-	Rising	1003	1014	Weather: Overcast | Ground: Wet | Wind: Light | Air Temp: 15°C | Summary: Gas and water
Round 3	02/11/2022	03/11/2022	-	-	-	-	Weather: Overcast | Ground: Wet | Wind: Strong | Summary: Water

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
BH01	1	50	1	7.00	---	1.00 to 7.00	13/10/2022 09:00:00	1006	1010	$-0.9_{(I)}$	-	-	-	-	-	-	-	-
BH01	1	50	1	---	---	1.00 to 7.00	30 secs	1009	1010	$-0.4_{(SS)}$	-	-	-	-	-	-	-	-
BH01	1	50	1 (2)	7.00	---	1.00 to 7.00	13/10/2022 09:01:00	-	-	-	-	0.2	0.0	20.1	0.0	0.3	1	0
BH01	1	50	1 (2)	---	---	1.00 to 7.00	15 secs	-	-	-	-	0.2	0.0	19.6	0.0	0.4	1	0
BH01	1	50	1 (2)	---	---	1.00 to 7.00	60 secs	-	-	-	-	0.3	0.0	19.5	0.0	0.3	3	0
BH01	1	50	1 (2)	---	---	1.00 to 7.00	90 secs	-	-	-	-	0.3	0.0	19.5	0.0	0.3	1	0
BH01	1	50	1 (2)	---	---	1.00 to 7.00	120 secs	-	-	-	-	0.3	0.0	19.5	0.0	0.3	3	0
BH01	1	50	1 (2)	---	---	1.00 to 7.00	180 secs	-	-	-	-	0.3	0.0	19.5	0.0	0.3	3	0
BH01	1	50	1 (3)	7.00	6.80	1.00 to 7.00	13/10/2022 09:05:00	-	-	-	5.73	-	-	-	-	-	-	-
BH02	1	50	1	20.00	---	4.00 to 20.00	13/10/2022 09:00:00	1007	1008	$-0.4_{(I)}$	-	-	-	-	-	-	-	-
BH02	1	50	1	---	---	4.00 to 20.00	30 secs	1008	1008	$-0.3_{(SS)}$	-	-	-	-	-	-	-	-
BH02	1	50	1 (2)	20.00	---	4.00 to 20.00	13/10/2022 09:01:00	-	-	-	-	0.0	0.0	20.0	0.0	0.4	5	0
BH02	1	50	1 (2)	---	---	4.00 to 20.00	15 secs	-	-	-	-	0.0	0.0	18.4	0.0	0.4	5	0
BH02	1	50	1 (2)	---	---	4.00 to 20.00	60 secs	-	-	-	-	0.1	0.0	17.4	0.0	0.5	5	0
BH02	1	50	1 (2)	---	---	4.00 to 20.00	90 secs	-	-	-	-	0.2	0.0	16.7	0.0	0.6	3	0
BH02	1	50	1 (2)	---	---	4.00 to 20.00	120 secs	-	-	-	-	0.2	0.0	16.4	0.0	0.6	3	0
BH02	1	50	1 (2)	---	---	4.00 to 20.00	180 secs	-	-	-	-	0.2	0.0	19.4	0.0	0.6	3	0

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

STRUCTURAL SOILS
The Potteries
Pottery Street
Castleford
W. Yorkshire WF10 1NJ

Compiled By	Date	Checked By	Date	Contract Ref:
	05/05/2023		05/05/2023	765514

Contract: **EMG Phase 2**

AGS

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
BH02	1	50	1 (3)	20.00	19.80	4.00 to 20.00	13/10/2022 09:05:00	-	-	-	7.72	-	-	-	-	-	-	-
BH02	1	50	2	20.00	---	4.00 to 20.00	26/10/2022 10:45:00	986	1000	-2.8$_{(I)}$	-	-	-	-	-	-	-	-
BH02	1	50	2	---	---	4.00 to 20.00	30 secs	991	1000	-2.2$_{(SS)}$	-	-	-	-	-	-	-	-
BH02	1	50	2 (2)	20.00	---	4.00 to 20.00	26/10/2022 10:45:45	-	-	-	-	0.2	0.0	15.6	0.0	0.4	6	0
BH02	1	50	2 (2)	---	---	4.00 to 20.00	30 secs	-	-	-	-	0.2	0.0	14.3	0.0	0.4	3	0
BH02	1	50	2 (2)	---	---	4.00 to 20.00	60 secs	-	-	-	-	0.2	0.0	14.0	0.0	0.3	1	0
BH02	1	50	2 (2)	---	---	4.00 to 20.00	90 secs	-	-	-	-	0.2	0.0	13.9	0.0	0.3	0	0
BH02	1	50	2 (2)	---	---	4.00 to 20.00	120 secs	-	-	-	-	0.2	0.0	13.9	0.0	0.2	0	0
BH02	1	50	2 (2)	---	---	4.00 to 20.00	180 secs	-	-	-	-	0.2	0.0	13.9	0.0	0.1	3	0
BH02	1	50	2 (2)	---	---	4.00 to 20.00	240 secs	-	-	-	-	0.2	0.0	13.9	0.0	0.0	3	0
BH02	1	50	2 (3)	20.00	19.78	4.00 to 20.00	26/10/2022 10:50:00	-	-	-	7.80	-	-	-	-	-	-	-
BH02	1	50	3	20.00	---	4.00 to 20.00	14/11/2022 12:09:37	997	997	-	-	-	-	-	-	-	-	-
BH02	1	50	3	---	---	4.00 to 20.00	5 secs	-	-	-	-	-	-	-	-	-	-	-
BH02	1	50	3 (2)	20.00	---	4.00 to 20.00	14/11/2022 12:10:20	-	-	-	-	0.3	0.0	21.4	0.0	-	0	0
BH02	1	50	3 (2)	---	---	4.00 to 20.00	15 secs	-	-	-	-	0.7	0.0	17.6	0.0	-	0	0
BH02	1	50	3 (2)	---	---	4.00 to 20.00	31 secs	-	-	-	-	0.7	0.0	16.6	0.0	-	0	0
BH02	1	50	3 (2)	---	---	4.00 to 20.00	61 secs	-	-	-	-	0.7	0.0	16.4	0.0	-	0	0
BH02	1	50	3 (2)	---	---	4.00 to 20.00	91 secs	-	-	-	-	0.7	0.0	16.4	0.0	-	0	0
BH02	1	50	3 (2)	---	---	4.00 to 20.00	121 secs	-	-	-	-	0.8	0.0	16.3	0.0	-	0	0
BH02	1	50	3 (2)	---	---	4.00 to 20.00	181 secs	-	-	-	-	0.8	0.0	16.0	0.0	-	0	0
BH02	1	50	3 (2)	---	---	4.00 to 20.00	241 secs	-	-	-	-	0.9	0.0	15.6	0.0	-	0	0
BH02	1	50	3 (2)	---	---	4.00 to 20.00	302 secs	-	-	-	-	0.8	0.0	15.3	0.0	-	0	0
BH02	1	50	3 (3)	20.00	19.81	4.00 to 20.00	14/11/2022 12:17:50	-	-	-	7.92	-	-	-	-	0.5	-	-
BH04	1	50	1	30.00	---	6.00 to 30.30	14/10/2022 09:00:00	1007	1002	1.1$_{(I)}$	-	-	-	-	-	-	-	-

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

STRUCTURAL SOILS
The Potteries
Pottery Street
Castleford
W. Yorkshire WF10 1NJ

Compiled By	Date	Checked By	Date	Contract Ref:
	05/05/2023		05/05/2023	765514

Contract: **EMG Phase 2**

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
BH04	1	50	1	---	---	6.00 to 30.30	30 secs	1005	1002	$0.8_{(SS)}$	-	-	-	-	-	-	-	-
BH04	1	50	1 (2)	30.00	---	6.00 to 30.30	14/10/2022 09:01:00	-	-	-	-	0.7	0.0	16.6	0.0	0.5	6	0
BH04	1	50	1 (2)	---	---	6.00 to 30.30	30 secs	-	-	-	-	1.2	0.0	15.7	0.0	0.7	10	0
BH04	1	50	1 (2)	---	---	6.00 to 30.30	60 secs	-	-	-	-	1.6	0.0	13.9	0.0	1.0	3	0
BH04	1	50	1 (2)	---	---	6.00 to 30.30	90 secs	-	-	-	-	1.8	0.0	13.1	0.0	1.2	10	0
BH04	1	50	1 (2)	---	---	6.00 to 30.30	120 secs	-	-	-	-	1.8	0.0	12.9	0.0	1.2	8	0
BH04	1	50	1 (2)	---	---	6.00 to 30.30	180 secs	-	-	-	-	1.8	0.0	12.9	0.0	1.2	8	0
BH04	1	50	1 (3)	30.00	29.45	6.00 to 30.30	14/10/2022 09:05:00	-	-	-	10.70	-	-	-	-	-	-	-
BH04	1	50	2	30.00	---	6.00 to 30.30	26/10/2022 11:05:00	987	1001	$-2.8_{(I)}$	-	-	-	-	-	-	-	-
BH04	1	50	2	---	---	6.00 to 30.30	30 secs	990	1001	$-2.4_{(SS)}$	-	-	-	-	-	-	-	-
BH04	1	50	2 (2)	30.00	---	6.00 to 30.30	26/10/2022 11:05:45	-	-	-	-	1.7	0.0	16.0	0.0	0.5	5	0
BH04	1	50	2 (2)	---	---	6.00 to 30.30	30 secs	-	-	-	-	1.7	0.0	15.9	0.0	0.3	5	0
BH04	1	50	2 (2)	---	---	6.00 to 30.30	60 secs	-	-	-	-	1.8	0.0	15.8	0.0	0.2	0	0
BH04	1	50	2 (2)	---	---	6.00 to 30.30	90 secs	-	-	-	-	1.8	0.0	15.8	0.0	0.1	0	0
BH04	1	50	2 (2)	---	---	6.00 to 30.30	120 secs	-	-	-	-	1.8	0.0	15.7	0.0	0.1	0	0
BH04	1	50	2 (2)	---	---	6.00 to 30.30	180 secs	-	-	-	-	1.9	0.0	15.5	0.0	0.0	0	0
BH04	1	50	2 (2)	---	---	6.00 to 30.30	240 secs	-	-	-	-	1.9	0.0	15.3	0.0	0.0	1	0
BH04	1	50	2 (2)	---	---	6.00 to 30.30	300 secs	-	-	-	-	2.0	0.0	15.0	0.0	0.0	1	0
BH04	1	50	2 (2)	---	---	6.00 to 30.30	360 secs	-	-	-	-	2.0	0.0	14.9	0.0	0.0	5	0
BH04	1	50	2 (2)	---	---	6.00 to 30.30	420 secs	-	-	-	-	2.0	0.0	15.0	0.0	0.0	0	0
BH04	1	50	2 (3)	30.00	2.40	6.00 to 30.30	26/10/2022 11:13:00	-	-	-	2.32	-	-	-	-	-	-	-
BH04	1	50	3	30.00	---	6.00 to 30.30	14/11/2022 11:23:17	1021	998	$4.1_{(I)}$	-	-	-	-	-	-	-	-
BH04	1	50	3	---	---	6.00 to 30.30	4 secs	-	-	$8.1_{(SS)}$	-	-	-	-	-	-	-	-
BH04	1	50	3 (2)	30.00	---	6.00 to 30.30	14/11/2022 11:24:07	-	-	-	-	0.1	0.0	21.7	0.0	-	0	0
BH04	1	50	3 (2)	---	---	6.00 to 30.30	16 secs	-	-	-	-	2.4	0.0	7.8	0.0	-	1	0

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

STRUCTURAL SOILS
The Potteries
Pottery Street
Castleford
W. Yorkshire WF10 1NJ

Compiled By	Date	Checked By	Date	Contract Ref:
	05/05/2023		05/05/2023	765514

Contract: **EMG Phase 2**

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
BH04	1	50	3 (2)	---	---	6.00 to 30.30	31 secs	-	-	-	-	2.4	0.0	5.0	0.0	-	0	0
BH04	1	50	3 (2)	---	---	6.00 to 30.30	62 secs	-	-	-	-	2.4	0.0	4.7	0.0	-	0	0
BH04	1	50	3 (2)	---	---	6.00 to 30.30	92 secs	-	-	-	-	2.4	0.0	4.7	0.0	-	0	0
BH04	1	50	3 (2)	---	---	6.00 to 30.30	122 secs	-	-	-	-	2.4	0.0	4.6	0.0	-	0	0
BH04	1	50	3 (2)	---	---	6.00 to 30.30	182 secs	-	-	-	-	2.5	0.0	4.5	0.0	-	0	0
BH04	1	50	3 (2)	---	---	6.00 to 30.30	242 secs	-	-	-	-	2.5	0.0	4.4	0.0	-	0	0
BH04	1	50	3 (2)	---	---	6.00 to 30.30	303 secs	-	-	-	-	2.5	0.0	4.3	0.0	-	0	0
BH04	1	50	3 (3)	30.00	28.92	6.00 to 30.30	14/11/2022 11:33:14	-	-	-	10.88	-	-	-	-	0.8	-	-
BH04	2	50	1	2.50	---	1.00 to 2.50	14/10/2022 10:00:00	996	1002	$-1.5_{(I)}$	-	-	-	-	-	-	-	-
BH04	2	50	1	---	---	1.00 to 2.50	30 secs	996	1002	$-1.0_{(SS)}$	-	-	-	-	-	-	-	-
BH04	2	50	1 (2)	2.50	---	1.00 to 2.50	14/10/2022 10:01:00	-	-	-	-	1.0	0.0	17.9	0.0	0.2	5	0
BH04	2	50	1 (2)	---	---	1.00 to 2.50	15 secs	-	-	-	-	1.1	0.0	17.4	0.0	0.1	10	0
BH04	2	50	1 (2)	---	---	1.00 to 2.50	30 secs	-	-	-	-	1.1	0.0	17.3	0.0	0.0	5	0
BH04	2	50	1 (2)	---	---	1.00 to 2.50	60 secs	-	-	-	-	1.1	0.0	17.3	0.0	0.0	0	0
BH04	2	50	1 (2)	---	---	1.00 to 2.50	90 secs	-	-	-	-	1.1	0.0	17.3	0.0	0.0	0	0
BH04	2	50	1 (2)	---	---	1.00 to 2.50	120 secs	-	-	-	-	1.1	0.0	17.3	0.0	0.0	0	0
BH04	2	50	1 (3)	2.50	2.40	1.00 to 2.50	14/10/2022 10:05:00	-	-	-	DRY	-	-	-	-	-	-	-
BH04	2	50	3	2.50	2.49	1.00 to 2.50	14/11/2022 11:35:57	-	-	-	2.08	-	-	-	-	-	-	-
BH05	1	50	1	7.00	---	5.00 to 7.00	14/10/2022 09:00:00	995	1001	$-1.5_{(I)}$	-	-	-	-	-	-	-	-
BH05	1	50	1	---	---	5.00 to 7.00	60 secs	996	1001	$-1.2_{(SS)}$	-	-	-	-	-	-	-	-
BH05	1	50	1 (2)	7.00	---	5.00 to 7.00	14/10/2022 09:05:00	-	-	-	-	0.2	0.0	18.5	0.0	-	5	0
BH05	1	50	1 (2)	---	---	5.00 to 7.00	30 secs	-	-	-	-	0.2	0.0	17.0	0.0	-	5	0
BH05	1	50	1 (2)	---	---	5.00 to 7.00	60 secs	-	-	-	-	0.2	0.0	16.9	0.0	-	5	0
BH05	1	50	1 (2)	---	---	5.00 to 7.00	90 secs	-	-	-	-	0.2	0.0	16.9	0.0	-	5	0

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
BH05	1	50	1 (2)	---	---	5.00 to 7.00	120 secs	-	-	-	-	0.2	0.0	16.9	0.0	-	5	0
BH05	1	50	1 (2)	---	---	5.00 to 7.00	180 secs	-	-	-	-	0.2	0.0	16.9	0.0	-	5	0
BH05	1	50	1 (3)	7.00	7.10	5.00 to 7.00	14/10/2022 09:10:00	-	-	-	4.92	-	-	-	-	-	-	-
BH06	1	50	1	30.80	---	18.00 to 30.80	14/10/2022 09:00:00	997	1001	-1.0$_{(I)}$	-	-	-	-	-	-	-	-
BH06	1	50	1	---	---	18.00 to 30.80	60 secs	997	1001	-0.7$_{(SS)}$	-	-	-	-	-	-	-	-
BH06	1	50	1 (2)	30.80	---	18.00 to 30.80	14/10/2022 09:05:00	-	-	-	-	0.0	0.0	19.6	0.0	1.0	6	0
BH06	1	50	1 (2)	---	---	18.00 to 30.80	30 secs	-	-	-	-	0.0	0.0	19.4	0.0	1.1	8	0
BH06	1	50	1 (2)	---	---	18.00 to 30.80	60 secs	-	-	-	-	0.0	0.0	19.3	0.0	1.1	10	0
BH06	1	50	1 (2)	---	---	18.00 to 30.80	90 secs	-	-	-	-	0.0	0.0	19.3	0.0	1.1	8	0
BH06	1	50	1 (2)	---	---	18.00 to 30.80	120 secs	-	-	-	-	0.0	0.0	19.3	0.0	0.9	10	0
BH06	1	50	1 (3)	30.80	30.75	18.00 to 30.80	14/10/2022 09:10:00	-	-	-	6.81	-	-	-	-	-	-	-
BH09	1	50	1	18.00	---	14.00 to 18.00	14/10/2022 09:00:00	998	1002	-1.0$_{(I)}$	-	-	-	-	-	-	-	-
BH09	1	50	1	---	---	14.00 to 18.00	60 secs	1000	1002	-0.7$_{(SS)}$	-	-	-	-	-	-	-	-
BH09	1	50	1 (2)	18.00	---	14.00 to 18.00	14/10/2022 09:05:00	-	-	-	-	0.0	0.0	20.0	0.0	0.7	5	0
BH09	1	50	1 (2)	---	---	14.00 to 18.00	30 secs	-	-	-	-	0.0	0.0	19.7	0.0	1.0	3	0
BH09	1	50	1 (2)	---	---	14.00 to 18.00	60 secs	-	-	-	-	0.0	0.0	19.6	0.0	1.0	8	0
BH09	1	50	1 (2)	---	---	14.00 to 18.00	90 secs	-	-	-	-	0.1	0.0	19.6	0.0	1.0	8	0
BH09	1	50	1 (2)	---	---	14.00 to 18.00	120 secs	-	-	-	-	0.1	0.0	19.6	0.0	1.0	6	0
BH09	1	50	1 (2)	---	---	14.00 to 18.00	180 secs	-	-	-	-	0.1	0.0	19.6	0.0	1.0	8	0
BH09	1	50	1 (3)	18.00	17.48	14.00 to 18.00	14/10/2022 09:10:00	-	-	-	3.68	-	-	-	-	-	-	-
BH10	1	50	1	20.20	---	3.00 to 20.20	14/10/2022 09:00:00	998	1003	-1.2$_{(I)}$	-	-	-	-	-	-	-	-
BH10	1	50	1	---	---	3.00 to 20.20	60 secs	999	1003	-0.9$_{(SS)}$	-	-	-	-	-	-	-	-

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STRUCTURAL SOILS
The Potteries
Pottery Street
Castleford
W. Yorkshire WF10 1NJ

Compiled By	Date	Checked By	Date	Contract Ref:
	05/05/2023		05/05/2023	765514

Contract: **EMG Phase 2**

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
BH10	1	50	1 (2)	20.20	---	3.00 to 20.20	14/10/2022 09:05:00	-	-	-	-	0.6	0.0	18.7	0.0	0.7	1	0
BH10	1	50	1 (2)	---	---	3.00 to 20.20	15 secs	-	-	-	-	0.6	0.0	18.4	0.0	0.7	1	0
BH10	1	50	1 (2)	---	---	3.00 to 20.20	30 secs	-	-	-	-	0.6	0.0	18.3	0.0	0.7	3	0
BH10	1	50	1 (2)	---	---	3.00 to 20.20	60 secs	-	-	-	-	0.6	0.0	18.2	0.0	0.7	1	0
BH10	1	50	1 (2)	---	---	3.00 to 20.20	90 secs	-	-	-	-	0.6	0.0	18.2	0.0	0.6	1	0
BH10	1	50	1 (2)	---	---	3.00 to 20.20	120 secs	-	-	-	-	0.6	0.0	18.2	0.0	0.6	1	0
BH10	1	50	1 (3)	20.20	19.50	3.00 to 20.20	14/10/2022 09:10:00	-	-	-	15.22	-	-	-	-	-	-	-
BH10	1	50	2	20.20	---	3.00 to 20.20	27/10/2022 14:30:00	998	1013	$-3.0_{(I)}$	-	-	-	-	-	-	-	-
BH10	1	50	2	---	---	3.00 to 20.20	30 secs	1007	1013	$-1.5_{(SS)}$	-	-	-	-	-	-	-	-
BH10	1	50	2 (2)	20.20	---	3.00 to 20.20	27/10/2022 14:30:45	-	-	-	-	0.8	0.0	18.0	0.0	0.8	3	0
BH10	1	50	2 (2)	---	---	3.00 to 20.20	30 secs	-	-	-	-	0.8	0.0	17.4	0.0	1.0	1	0
BH10	1	50	2 (2)	---	---	3.00 to 20.20	60 secs	-	-	-	-	0.8	0.0	17.4	0.0	0.9	3	0
BH10	1	50	2 (2)	---	---	3.00 to 20.20	90 secs	-	-	-	-	0.8	0.0	17.4	0.0	0.8	3	0
BH10	1	50	2 (2)	---	---	3.00 to 20.20	120 secs	-	-	-	-	0.8	0.0	17.3	0.0	0.7	3	0
BH10	1	50	2 (2)	---	---	3.00 to 20.20	180 secs	-	-	-	-	0.8	0.0	17.3	0.0	0.6	3	0
BH10	1	50	2 (3)	20.20	19.39	3.00 to 20.20	27/10/2022 14:34:00	-	-	-	15.15	-	-	-	-	-	-	-
BH10	1	50	3	20.20	---	3.00 to 20.20	14/11/2022 10:12:30	-	-	$0.0_{(I)}$	-	-	-	-	-	-	-	-
BH10	1	50	3	---	---	3.00 to 20.20	5 secs	999	999	$0.0_{(SS)}$	-	-	-	-	-	-	-	-
BH10	1	50	3 (2)	20.20	---	3.00 to 20.20	14/11/2022 10:13:23	-	-	-	-	0.1	0.0	21.2	0.0	-	0	0
BH10	1	50	3 (2)	---	---	3.00 to 20.20	14 secs	-	-	-	-	0.1	0.0	21.2	0.0	-	0	0
BH10	1	50	3 (2)	---	---	3.00 to 20.20	30 secs	-	-	-	-	0.1	0.0	21.2	0.0	-	0	0
BH10	1	50	3 (2)	---	---	3.00 to 20.20	61 secs	-	-	-	-	0.1	0.0	21.1	0.0	-	0	0
BH10	1	50	3 (2)	---	---	3.00 to 20.20	91 secs	-	-	-	-	0.2	0.0	21.1	0.0	-	0	0
BH10	1	50	3 (2)	---	---	3.00 to 20.20	121 secs	-	-	-	-	0.2	0.0	21.1	0.0	-	0	0
BH10	1	50	3 (2)	---	---	3.00 to 20.20	182 secs	-	-	-	-	0.2	0.0	21.2	0.0	-	0	0

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
BH10	1	50	3 (2)	---	---	3.00 to 20.20	242 secs	-	-	-	-	0.2	0.0	21.2	0.0	-	0	0
BH10	1	50	3 (2)	---	---	3.00 to 20.20	303 secs	-	-	-	-	0.2	0.0	21.2	0.0	-	0	0
BH10	1	50	3 (3)	20.20	19.13	3.00 to 20.20	14/11/2022 10:21:09	-	-	-	15.32	-	-	-	-	0.2	-	-
BH11	1	50	1	31.00	---	13.00 to 31.00	14/10/2022 09:00:00	999	1003	$-1.0_{(I)}$	-	-	-	-	-	-	-	-
BH11	1	50	1	---	---	13.00 to 31.00	60 secs	999	1003	$-1.0_{(SS)}$	-	-	-	-	-	-	-	-
BH11	1	50	1 (2)	31.00	---	13.00 to 31.00	14/10/2022 09:05:00	-	-	-	-	0.0	0.0	20.3	0.0	0.3	1	0
BH11	1	50	1 (2)	---	---	13.00 to 31.00	15 secs	-	-	-	-	0.0	-	20.1	-	0.6	3	0
BH11	1	50	1 (2)	---	---	13.00 to 31.00	30 secs	-	-	-	-	0.0	-	20.0	-	0.9	3	0
BH11	1	50	1 (2)	---	---	13.00 to 31.00	60 secs	-	-	-	-	0.0	-	20.0	-	1.0	3	0
BH11	1	50	1 (2)	---	---	13.00 to 31.00	90 secs	-	-	-	-	0.0	-	20.0	-	1.1	1	0
BH11	1	50	1 (2)	---	---	13.00 to 31.00	120 secs	-	-	-	-	0.0	-	20.0	-	1.1	1	0
BH11	1	50	1 (3)	31.00	30.50	13.00 to 31.00	14/10/2022 09:10:00	-	-	-	8.71	-	-	-	-	-	-	-
BH12	1	50	1	30.80	---	16.00 to 30.80	13/10/2022 09:00:00	1009	1011	$-0.6_{(I)}$	-	-	-	-	-	-	-	-
BH12	1	50	1	---	---	16.00 to 30.80	60 secs	1010	1011	$-0.5_{(SS)}$	-	-	-	-	-	-	-	-
BH12	1	50	1 (2)	30.80	---	16.00 to 30.80	13/10/2022 09:05:00	-	-	-	-	0.0	0.0	20.6	0.0	0.9	3	0
BH12	1	50	1 (2)	---	---	16.00 to 30.80	30 secs	-	-	-	-	0.0	0.0	20.3	0.0	0.9	3	0
BH12	1	50	1 (2)	---	---	16.00 to 30.80	60 secs	-	-	-	-	0.0	0.0	20.1	0.0	1.0	3	0
BH12	1	50	1 (2)	---	---	16.00 to 30.80	90 secs	-	-	-	-	0.0	0.0	20.1	0.0	1.0	5	0
BH12	1	50	1 (2)	---	---	16.00 to 30.80	120 secs	-	-	-	-	0.0	0.0	20.0	0.0	1.1	5	0
BH12	1	50	1 (2)	---	---	16.00 to 30.80	180 secs	-	-	-	-	0.0	0.0	20.0	0.0	1.1	5	0
BH12	1	50	1 (3)	30.80	31.30	16.00 to 30.80	13/10/2022 09:10:00	-	-	-	6.75	-	-	-	-	-	-	-
BH13	1	50	1	30.00	---	8.00 to 30.00	13/10/2022 09:00:00	1012	1012	$0.0_{(I)}$	-	-	-	-	-	-	-	-

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

STRUCTURAL SOILS
The Potteries
Pottery Street
Castleford
W. Yorkshire WF10 1NJ

Compiled By	Date	Checked By	Date	Contract Ref:
	05/05/2023		05/05/2023	765514

Contract: **EMG Phase 2**

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
BH13	1	50	1	---	---	8.00 to 30.00	60 secs	1011	1012	-0.4$_{(SS)}$	-	-	-	-	-	-	-	-
BH13	1	50	1 (2)	30.00	---	8.00 to 30.00	13/10/2022 09:05:00	-	-	-	-	0.6	0.0	17.2	0.0	1.8	8	0
BH13	1	50	1 (2)	---	---	8.00 to 30.00	15 secs	-	-	-	-	0.6	0.0	17.0	0.0	2.0	8	0
BH13	1	50	1 (2)	---	---	8.00 to 30.00	30 secs	-	-	-	-	0.7	0.0	16.3	0.0	2.4	10	0
BH13	1	50	1 (2)	---	---	8.00 to 30.00	60 secs	-	-	-	-	0.8	0.0	16.3	0.0	2.5	12	0
BH13	1	50	1 (2)	---	---	8.00 to 30.00	90 secs	-	-	-	-	0.8	0.0	15.8	0.0	2.5	13	0
BH13	1	50	1 (2)	---	---	8.00 to 30.00	120 secs	-	-	-	-	0.8	0.0	15.8	0.0	2.4	13	0
BH13	1	50	1 (3)	30.00	29.55	8.00 to 30.00	13/10/2022 09:10:00	-	-	-	11.20	-	-	-	-	-	-	-
BH13	1	50	2	30.00	---	8.00 to 30.00	27/10/2022 13:45:00	1015	1015	0.0$_{(I)}$	-	-	-	-	-	-	-	-
BH13	1	50	2	---	---	8.00 to 30.00	30 secs	1025	1015	-2.1$_{(SS)}$	-	-	-	-	-	-	-	-
BH13	1	50	2 (2)	30.00	---	8.00 to 30.00	27/10/2022 13:45:45	-	-	-	-	1.2	0.0	14.3	0.0	2.3	8	0
BH13	1	50	2 (2)	---	---	8.00 to 30.00	30 secs	-	-	-	-	1.3	0.0	13.0	0.0	2.9	15	0
BH13	1	50	2 (2)	---	---	8.00 to 30.00	60 secs	-	-	-	-	1.3	0.0	13.1	0.0	3.0	20	0
BH13	1	50	2 (2)	---	---	8.00 to 30.00	90 secs	-	-	-	-	1.3	0.0	13.1	0.0	3.1	22	0
BH13	1	50	2 (2)	---	---	8.00 to 30.00	120 secs	-	-	-	-	1.3	0.0	12.9	0.0	3.0	22	0
BH13	1	50	2 (2)	---	---	8.00 to 30.00	180 secs	-	-	-	-	1.3	0.0	13.0	0.0	2.9	22	0
BH13	1	50	2 (2)	---	---	8.00 to 30.00	240 secs	-	-	-	-	1.3	0.0	13.0	0.0	2.9	20	0
BH13	1	50	2 (2)	---	---	8.00 to 30.00	300 secs	-	-	-	-	1.3	0.0	13.0	0.0	2.9	20	0
BH13	1	50	2 (3)	30.00	29.10	8.00 to 30.00	27/10/2022 13:51:00	-	-	-	11.10	-	-	-	-	-	-	-
BH13	1	50	3	30.00	---	8.00 to 30.00	11/11/2022 10:49:01	-	-	0.0$_{(I)}$	-	-	-	-	-	-	-	-
BH13	1	50	3	---	---	8.00 to 30.00	5 secs	1012	1012	0.0$_{(SS)}$	-	-	-	-	-	-	-	-
BH13	1	50	3 (2)	30.00	---	8.00 to 30.00	11/11/2022 10:49:44	-	-	-	-	0.1	0.0	21.3	0.0	-	0	0
BH13	1	50	3 (2)	---	---	8.00 to 30.00	16 secs	-	-	-	-	0.1	0.0	21.3	0.0	-	0	0
BH13	1	50	3 (2)	---	---	8.00 to 30.00	31 secs	-	-	-	-	0.1	0.0	21.3	0.0	-	0	0
BH13	1	50	3 (2)	---	---	8.00 to 30.00	61 secs	-	-	-	-	0.1	0.0	21.2	0.0	-	0	0

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STRUCTURAL SOILS
The Potteries
Pottery Street
Castleford
W. Yorkshire WF10 1NJ

Compiled By	Date	Checked By	Date	Contract Ref:
	05/05/2023		05/05/2023	765514

Contract: **EMG Phase 2**

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
BH13	1	50	3 (2)	---	---	8.00 to 30.00	91 secs	-	-	-	-	0.1	0.0	21.2	0.0	-	0	0
BH13	1	50	3 (2)	---	---	8.00 to 30.00	122 secs	-	-	-	-	0.1	0.0	21.3	0.0	-	0	0
BH13	1	50	3 (2)	---	---	8.00 to 30.00	183 secs	-	-	-	-	0.1	0.0	21.3	0.0	-	0	0
BH13	1	50	3 (2)	---	---	8.00 to 30.00	243 secs	-	-	-	-	0.1	0.0	21.3	0.0	-	0	0
BH13	1	50	3 (2)	---	---	8.00 to 30.00	303 secs	-	-	-	-	0.1	0.0	21.3	0.0	-	0	0
BH13	1	50	3 (3)	30.00	29.22	8.00 to 30.00	11/11/2022 10:57:59	-	-	-	11.82	-	-	-	-	1.3	-	-
BH14	1	50	1	11.50	---	1.00 to 11.50	13/10/2022 09:00:00	1007	1011	$-0.9_{(I)}$	-	-	-	-	-	-	-	-
BH14	1	50	1	---	---	1.00 to 11.50	60 secs	1009	1011	$-0.5_{(SS)}$	-	-	-	-	-	-	-	-
BH14	1	50	1 (2)	11.50	---	1.00 to 11.50	13/10/2022 09:05:00	-	-	-	-	0.5	0.0	20.5	0.0	0.6	3	0
BH14	1	50	1 (2)	---	---	1.00 to 11.50	30 secs	-	-	-	-	0.5	0.0	20.2	0.0	0.4	3	0
BH14	1	50	1 (2)	---	---	1.00 to 11.50	60 secs	-	-	-	-	0.6	0.0	20.0	0.0	0.4	3	0
BH14	1	50	1 (2)	---	---	1.00 to 11.50	90 secs	-	-	-	-	0.6	0.0	20.0	0.0	0.4	1	0
BH14	1	50	1 (2)	---	---	1.00 to 11.50	120 secs	-	-	-	-	0.6	0.0	20.0	0.0	0.4	1	0
BH14	1	50	1 (2)	---	---	1.00 to 11.50	180 secs	-	-	-	-	0.6	0.0	20.0	0.0	0.3	1	0
BH14	1	50	1 (3)	11.50	11.55	1.00 to 11.50	13/10/2022 09:10:00	-	-	-	8.61	-	-	-	-	-	-	-
BH16	1	50	1	20.00	---	2.00 to 20.00	13/10/2022 09:00:00	1007	1012	$-1.3_{(I)}$	-	-	-	-	-	-	-	-
BH16	1	50	1	---	---	2.00 to 20.00	60 secs	1008	1012	$-1.0_{(SS)}$	-	-	-	-	-	-	-	-
BH16	1	50	1 (2)	20.00	---	2.00 to 20.00	13/10/2022 09:05:00	-	-	-	-	0.5	0.0	19.8	0.0	1.2	3	0
BH16	1	50	1 (2)	---	---	2.00 to 20.00	15 secs	-	-	-	-	0.5	0.0	19.1	0.0	1.4	5	0
BH16	1	50	1 (2)	---	---	2.00 to 20.00	30 secs	-	-	-	-	0.6	0.0	18.7	0.0	1.5	5	0
BH16	1	50	1 (2)	---	---	2.00 to 20.00	60 secs	-	-	-	-	0.7	0.0	18.6	0.0	1.6	1	0
BH16	1	50	1 (2)	---	---	2.00 to 20.00	90 secs	-	-	-	-	0.7	0.0	18.4	0.0	1.7	1	0
BH16	1	50	1 (2)	---	---	2.00 to 20.00	120 secs	-	-	-	-	0.7	0.0	18.4	0.0	1.6	1	0

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
BH16	1	50	1 (3)	20.00	19.53	2.00 to 20.00	13/10/2022 09:10:00	-	-	-	4.55	-	-	-	-	-	-	-
BH17	1	50	1	4.50	---	1.00 to 4.50	13/10/2022 09:00:00	1011	1012	-0.5$_{(I)}$	-	-	-	-	-	-	-	-
BH17	1	50	1	---	---	1.00 to 4.50	60 secs	1010	1012	-0.7$_{(SS)}$	-	-	-	-	-	-	-	-
BH17	1	50	1 (2)	4.50	---	1.00 to 4.50	13/10/2022 09:05:00	-	-	-	-	0.0	0.0	19.0	0.0	1.7	0	0
BH17	1	50	1 (2)	---	---	1.00 to 4.50	15 secs	-	-	-	-	0.1	0.0	18.1	0.0	1.7	0	0
BH17	1	50	1 (2)	---	---	1.00 to 4.50	30 secs	-	-	-	-	0.0	0.0	18.0	0.0	1.7	0	0
BH17	1	50	1 (2)	---	---	1.00 to 4.50	60 secs	-	-	-	-	0.1	0.0	18.1	0.0	1.5	0	0
BH17	1	50	1 (2)	---	---	1.00 to 4.50	90 secs	-	-	-	-	0.0	0.0	18.2	0.0	1.4	0	0
BH17	1	50	1 (2)	---	---	1.00 to 4.50	120 secs	-	-	-	-	0.0	0.0	18.2	0.0	1.4	0	0
BH17	1	50	1 (3)	4.50	6.50	1.00 to 4.50	13/10/2022 09:10:00	-	-	-	1.71	-	-	-	-	-	-	-
BH17	1	50	2	4.50	---	1.00 to 4.50	27/10/2022 11:15:00	1008	1008	-0.3$_{(I)}$	-	-	-	-	-	-	-	-
BH17	1	50	2	---	---	1.00 to 4.50	30 secs	996	1008	-2.6$_{(SS)}$	-	-	-	-	-	-	-	-
BH17	1	50	2 (2)	4.50	---	1.00 to 4.50	27/10/2022 11:15:45	-	-	-	-	0.2	0.0	17.2	0.0	1.4	3	0
BH17	1	50	2 (2)	---	---	1.00 to 4.50	30 secs	-	-	-	-	0.3	0.0	16.3	0.0	1.5	3	0
BH17	1	50	2 (2)	---	---	1.00 to 4.50	60 secs	-	-	-	-	0.3	0.0	16.1	0.0	1.4	3	0
BH17	1	50	2 (2)	---	---	1.00 to 4.50	90 secs	-	-	-	-	0.3	0.0	15.9	0.0	1.2	3	0
BH17	1	50	2 (2)	---	---	1.00 to 4.50	120 secs	-	-	-	-	0.3	0.0	16.0	0.0	1.1	5	0
BH17	1	50	2 (2)	---	---	1.00 to 4.50	180 secs	-	-	-	-	0.3	0.0	15.9	0.0	0.8	5	0
BH17	1	50	2 (2)	---	---	1.00 to 4.50	240 secs	-	-	-	-	0.3	0.0	15.9	0.0	0.8	5	0
BH17	1	50	2 (3)	4.50	6.40	1.00 to 4.50	27/10/2022 11:20:00	-	-	-	1.67	-	-	-	-	-	-	-
BH17	1	50	3	4.50	---	1.00 to 4.50	11/11/2022 11:06:44	1014	1014	0.0$_{(I)}$	-	-	-	-	-	-	-	-
BH17	1	50	3	---	---	1.00 to 4.50	5 secs	-	-	0.0$_{(SS)}$	-	-	-	-	-	-	-	-
BH17	1	50	3 (2)	4.50	---	1.00 to 4.50	11/11/2022 11:07:30	-	-	-	-	0.1	0.0	21.4	0.0	-	0	0
BH17	1	50	3 (2)	---	---	1.00 to 4.50	15 secs	-	-	-	-	0.1	0.0	21.4	0.0	-	0	0

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IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
BH17	1	50	3 (2)	---	---	1.00 to 4.50	30 secs	-	-	-	-	0.1	0.0	21.4	0.0	-	0	0
BH17	1	50	3 (2)	---	---	1.00 to 4.50	60 secs	-	-	-	-	0.1	0.0	21.4	0.0	-	0	0
BH17	1	50	3 (2)	---	---	1.00 to 4.50	91 secs	-	-	-	-	0.1	0.0	21.4	0.0	-	0	0
BH17	1	50	3 (2)	---	---	1.00 to 4.50	121 secs	-	-	-	-	0.1	0.0	21.4	0.0	-	0	0
BH17	1	50	3 (2)	---	---	1.00 to 4.50	181 secs	-	-	-	-	0.1	0.0	21.4	0.0	-	0	0
BH17	1	50	3 (2)	---	---	1.00 to 4.50	242 secs	-	-	-	-	0.1	0.0	21.4	0.0	-	0	0
BH17	1	50	3 (2)	---	---	1.00 to 4.50	301 secs	-	-	-	-	0.1	0.0	21.4	0.0	-	0	0
BH17	1	50	3 (3)	4.50	6.43	1.00 to 4.50	11/11/2022 11:15:24	-	-	-	1.72	-	-	-	-	0.5	-	-
BH18	1	50	1	16.00	---	4.50 to 16.00	13/10/2022 09:00:00	1008	1010	$-0.6_{(I)}$	-	-	-	-	-	-	-	-
BH18	1	50	1	---	---	4.50 to 16.00	60 secs	1009	1010	$-0.5_{(SS)}$	-	-	-	-	-	-	-	-
BH18	1	50	1 (2)	16.00	---	4.50 to 16.00	13/10/2022 09:05:00	-	-	-	-	0.4	0.0	19.3	0.0	1.4	1	0
BH18	1	50	1 (2)	---	---	4.50 to 16.00	30 secs	-	-	-	-	0.5	0.0	18.8	0.0	2.0	1	0
BH18	1	50	1 (2)	---	---	4.50 to 16.00	60 secs	-	-	-	-	0.6	0.0	18.5	0.0	2.3	1	0
BH18	1	50	1 (2)	---	---	4.50 to 16.00	90 secs	-	-	-	-	0.6	0.0	18.3	0.0	2.5	1	0
BH18	1	50	1 (2)	---	---	4.50 to 16.00	120 secs	-	-	-	-	0.6	0.0	18.2	0.0	2.7	5	0
BH18	1	50	1 (2)	---	---	4.50 to 16.00	180 secs	-	-	-	-	0.7	0.0	18.1	0.0	2.8	5	0
BH18	1	50	1 (2)	---	---	4.50 to 16.00	240 secs	-	-	-	-	0.7	0.0	18.1	0.0	2.8	5	0
BH18	1	50	1 (3)	16.00	20.01	4.50 to 16.00	13/10/2022 09:10:00	-	-	-	5.84	-	-	-	-	-	-	-
BH18	1	50	2	16.00	---	4.50 to 16.00	27/10/2022 11:35:00	1002	1010	$1.8_{(I)}$	-	-	-	-	-	-	-	-
BH18	1	50	2	---	---	4.50 to 16.00	30 secs	1008	1010	$-2.2_{(SS)}$	-	-	-	-	-	-	-	-
BH18	1	50	2 (2)	16.00	---	4.50 to 16.00	27/10/2022 11:35:45	-	-	-	-	1.2	0.0	17.2	0.0	2.3	5	0
BH18	1	50	2 (2)	---	---	4.50 to 16.00	30 secs	-	-	-	-	1.3	0.0	16.2	0.0	2.6	6	0
BH18	1	50	2 (2)	---	---	4.50 to 16.00	60 secs	-	-	-	-	1.3	0.0	16.0	0.0	2.8	8	0
BH18	1	50	2 (2)	---	---	4.50 to 16.00	90 secs	-	-	-	-	1.3	0.0	15.9	0.0	2.9	6	0

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
BH18	1	50	2 (2)	---	---	4.50 to 16.00	120 secs	-	-	-	-	1.3	0.0	15.9	0.0	3.0	6	0
BH18	1	50	2 (2)	---	---	4.50 to 16.00	180 secs	-	-	-	-	1.3	0.0	15.9	0.0	3.0	6	0
BH18	1	50	2 (2)	---	---	4.50 to 16.00	240 secs	-	-	-	-	1.3	0.0	15.9	0.0	3.0	6	0
BH18	1	50	2 (3)	16.00	19.96	4.50 to 16.00	27/10/2022 11:40:00	-	-	-	5.85	-	-	-	-	-	-	-
BH18	1	50	3	16.00	---	4.50 to 16.00	11/11/2022 11:31:45	1014	1014	$0.0_{(I)}$	-	-	-	-	-	-	-	-
BH18	1	50	3	---	---	4.50 to 16.00	5 secs	-	-	$0.1_{(SS)}$	-	-	-	-	-	-	-	-
BH18	1	50	3 (2)	16.00	---	4.50 to 16.00	11/11/2022 11:32:36	-	-	-	-	0.1	0.0	21.4	0.0	-	0	0
BH18	1	50	3 (2)	---	---	4.50 to 16.00	16 secs	-	-	-	-	0.1	0.0	21.4	0.0	-	0	0
BH18	1	50	3 (2)	---	---	4.50 to 16.00	32 secs	-	-	-	-	0.1	0.0	21.3	0.0	-	0	0
BH18	1	50	3 (2)	---	---	4.50 to 16.00	62 secs	-	-	-	-	0.1	0.0	21.3	0.0	-	0	0
BH18	1	50	3 (2)	---	---	4.50 to 16.00	93 secs	-	-	-	-	0.1	0.0	21.4	0.0	-	0	0
BH18	1	50	3 (2)	---	---	4.50 to 16.00	123 secs	-	-	-	-	0.1	0.0	21.4	0.0	-	0	0
BH18	1	50	3 (2)	---	---	4.50 to 16.00	183 secs	-	-	-	-	0.1	0.0	21.4	0.0	-	0	0
BH18	1	50	3 (2)	---	---	4.50 to 16.00	243 secs	-	-	-	-	0.1	0.0	21.4	0.0	-	0	0
BH18	1	50	3 (2)	---	---	4.50 to 16.00	303 secs	-	-	-	-	0.1	0.0	21.5	0.0	-	0	0
BH18	1	50	3 (3)	16.00	5.00	4.50 to 16.00	11/11/2022 11:40:26	-	-	-	2.05	-	-	-	-	1.5	-	-
BH21	1	50	1	30.00	---	5.00 to 30.00	13/10/2022 09:00:00	1012	1012	$0.0_{(I)}$	-	-	-	-	-	-	-	-
BH21	1	50	1	---	---	5.00 to 30.00	60 secs	1012	1012	$0.0_{(SS)}$	-	-	-	-	-	-	-	-
BH21	1	50	1 (2)	30.00	---	5.00 to 30.00	13/10/2022 09:05:00	-	-	-	-	0.7	0.0	20.0	0.0	1.1	0	0
BH21	1	50	1 (2)	---	---	5.00 to 30.00	30 secs	-	-	-	-	0.9	0.0	17.2	0.0	2.1	3	0
BH21	1	50	1 (2)	---	---	5.00 to 30.00	60 secs	-	-	-	-	0.9	0.0	17.1	0.0	2.3	3	0
BH21	1	50	1 (2)	---	---	5.00 to 30.00	90 secs	-	-	-	-	1.0	0.0	16.9	0.0	2.4	3	0
BH21	1	50	1 (2)	---	---	5.00 to 30.00	120 secs	-	-	-	-	1.0	0.0	16.9	0.0	2.4	3	0
BH21	1	50	1 (2)	---	---	5.00 to 30.00	180 secs	-	-	-	-	1.0	0.0	16.9	0.0	2.6	3	0

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
BH21	1	50	1 (2)	---	---	5.00 to 30.00	240 secs	-	-	-	-	1.0	0.0	16.7	0.0	2.8	5	0
BH21	1	50	1 (2)	---	---	5.00 to 30.00	300 secs	-	-	-	-	1.1	0.0	16.7	0.0	2.9	5	0
BH21	1	50	1 (2)	---	---	5.00 to 30.00	360 secs	-	-	-	-	1.1	0.0	16.6	0.0	2.9	5	0
BH21	1	50	1 (2)	---	---	5.00 to 30.00	420 secs	-	-	-	-	1.1	0.0	16.6	0.0	2.8	5	0
BH21	1	50	1 (2)	---	---	5.00 to 30.00	480 secs	-	-	-	-	0.9	0.0	16.7	0.0	2.5	5	0
BH21	1	50	1 (2)	---	---	5.00 to 30.00	540 secs	-	-	-	-	0.8	0.0	16.9	0.0	2.3	5	0
BH21	1	50	1 (2)	---	---	5.00 to 30.00	600 secs	-	-	-	-	0.8	0.0	16.9	0.0	2.3	5	0
BH21	1	50	1 (3)	30.00	29.90	5.00 to 30.00	13/10/2022 09:17:00	-	-	-	9.34	-	-	-	-	-	-	-
BH21	1	50	2	30.00	---	5.00 to 30.00	27/10/2022 11:55:00	1002	1015	$-2.7_{(I)}$	-	-	-	-	-	-	-	-
BH21	1	50	2	---	---	5.00 to 30.00	30 secs	1003	1015	$-2.5_{(SS)}$	-	-	-	-	-	-	-	-
BH21	1	50	2 (2)	30.00	---	5.00 to 30.00	27/10/2022 11:55:45	-	-	-	-	0.5	0.0	19.3	0.0	0.4	1	0
BH21	1	50	2 (2)	---	---	5.00 to 30.00	30 secs	-	-	-	-	0.5	0.0	18.6	0.0	0.4	1	0
BH21	1	50	2 (2)	---	---	5.00 to 30.00	60 secs	-	-	-	-	0.6	0.0	18.2	0.0	0.4	3	0
BH21	1	50	2 (2)	---	---	5.00 to 30.00	90 secs	-	-	-	-	0.7	0.0	18.0	0.0	0.5	3	0
BH21	1	50	2 (2)	---	---	5.00 to 30.00	120 secs	-	-	-	-	0.7	0.0	17.9	0.0	0.5	3	0
BH21	1	50	2 (2)	---	---	5.00 to 30.00	180 secs	-	-	-	-	0.7	0.0	17.9	0.0	0.5	3	0
BH21	1	50	2 (3)	30.00	29.29	5.00 to 30.00	27/10/2022 11:59:00	-	-	-	9.45	-	-	-	-	-	-	-
BH21	1	50	3	30.00	---	5.00 to 30.00	11/11/2022 09:25:13	-	-	$0.0_{(I)}$	-	-	-	-	-	-	-	-
BH21	1	50	3	---	---	5.00 to 30.00	5 secs	1013	1013	$-0.1_{(SS)}$	-	-	-	-	-	-	-	-
BH21	1	50	3 (2)	30.00	---	5.00 to 30.00	11/11/2022 09:26:01	-	-	-	-	0.2	0.0	21.1	0.0	-	0	0
BH21	1	50	3 (2)	---	---	5.00 to 30.00	15 secs	-	-	-	-	0.4	0.0	20.2	0.0	-	0	0
BH21	1	50	3 (2)	---	---	5.00 to 30.00	30 secs	-	-	-	-	0.4	0.0	19.8	0.0	-	0	0
BH21	1	50	3 (2)	---	---	5.00 to 30.00	60 secs	-	-	-	-	0.5	0.0	19.8	0.0	-	0	0
BH21	1	50	3 (2)	---	---	5.00 to 30.00	90 secs	-	-	-	-	0.5	0.0	19.4	0.0	-	0	0
BH21	1	50	3 (2)	---	---	5.00 to 30.00	120 secs	-	-	-	-	0.6	0.0	19.3	0.0	-	1	0

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
BH21	1	50	3 (2)	---	---	5.00 to 30.00	180 secs	-	-	-	-	0.6	0.0	19.3	0.0	-	0	0
BH21	1	50	3 (2)	---	---	5.00 to 30.00	241 secs	-	-	-	-	0.6	0.0	19.3	0.0	-	0	0
BH21	1	50	3 (2)	---	---	5.00 to 30.00	301 secs	-	-	-	-	0.6	0.0	19.3	0.0	-	0	0
BH21	1	50	3 (3)	30.00	29.41	5.00 to 30.00	11/11/2022 09:34:45	-	-	-	9.51	-	-	-	-	0.5	-	-
BH23	1	50	1	8.00	---	1.00 to 8.00	13/10/2022 09:00:00	1007	1010	-0.8$_{(I)}$	-	-	-	-	-	-	-	-
BH23	1	50	1	---	---	1.00 to 8.00	60 secs	1008	1010	-0.7$_{(SS)}$	-	-	-	-	-	-	-	-
BH23	1	50	1 (2)	8.00	---	1.00 to 8.00	13/10/2022 09:05:00	-	-	-	-	0.6	0.0	19.3	0.0	0.0	1	0
BH23	1	50	1 (2)	---	---	1.00 to 8.00	15 secs	-	-	-	-	0.6	0.0	19.1	0.0	0.0	1	0
BH23	1	50	1 (2)	---	---	1.00 to 8.00	30 secs	-	-	-	-	0.6	0.0	19.0	0.0	0.0	1	0
BH23	1	50	1 (2)	---	---	1.00 to 8.00	60 secs	-	-	-	-	0.7	0.0	18.9	0.0	0.0	1	0
BH23	1	50	1 (2)	---	---	1.00 to 8.00	90 secs	-	-	-	-	0.7	0.0	18.9	0.0	0.0	1	0
BH23	1	50	1 (2)	---	---	1.00 to 8.00	120 secs	-	-	-	-	0.7	0.0	18.9	0.0	0.0	1	0
BH23	1	50	1 (3)	8.00	7.82	1.00 to 8.00	13/10/2022 09:10:00	-	-	-	6.20	-	-	-	-	-	-	-
BH23	1	50	2	8.00	---	1.00 to 8.00	27/10/2022 12:40:00	999	1014	-3.0$_{(I)}$	-	-	-	-	-	-	-	-
BH23	1	50	2	---	---	1.00 to 8.00	30 secs	1002	1014	-2.7$_{(SS)}$	-	-	-	-	-	-	-	-
BH23	1	50	2 (2)	8.00	---	1.00 to 8.00	27/10/2022 12:40:45	-	-	-	-	0.7	0.0	19.3	0.0	0.4	3	0
BH23	1	50	2 (2)	---	---	1.00 to 8.00	30 secs	-	-	-	-	0.8	0.0	18.3	0.0	0.4	3	0
BH23	1	50	2 (2)	---	---	1.00 to 8.00	60 secs	-	-	-	-	0.8	0.0	18.3	0.0	0.4	3	0
BH23	1	50	2 (2)	---	---	1.00 to 8.00	90 secs	-	-	-	-	0.8	0.0	18.3	0.0	0.3	3	0
BH23	1	50	2 (2)	---	---	1.00 to 8.00	120 secs	-	-	-	-	0.8	0.0	18.3	0.0	0.3	3	0
BH23	1	50	2 (2)	---	---	1.00 to 8.00	180 secs	-	-	-	-	0.8	0.0	18.3	0.0	0.1	1	0
BH23	1	50	2 (2)	---	---	1.00 to 8.00	240 secs	-	-	-	-	0.8	0.0	18.3	0.0	0.1	1	0
BH23	1	50	2 (3)	8.00	7.79	1.00 to 8.00	27/10/2022 12:45:00	-	-	-	6.25	-	-	-	-	-	-	-
BH23	1	50	3	8.00	---	1.00 to 8.00	11/11/2022 09:43:15	-	-	0.0$_{(I)}$	-	-	-	-	-	-	-	-

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
BH23	1	50	3	---	---	1.00 to 8.00	5 secs	1014	1014	$0.0_{(SS)}$	-	-	-	-	-	-	-	-
BH23	1	50	3 (2)	8.00	---	1.00 to 8.00	11/11/2022 09:44:00	-	-	-	-	0.2	0.0	21.2	0.0	-	0	0
BH23	1	50	3 (2)	---	---	1.00 to 8.00	15 secs	-	-	-	-	0.7	0.0	19.6	0.0	-	0	0
BH23	1	50	3 (2)	---	---	1.00 to 8.00	31 secs	-	-	-	-	0.7	0.0	19.0	0.0	-	0	0
BH23	1	50	3 (2)	---	---	1.00 to 8.00	61 secs	-	-	-	-	0.6	0.0	19.3	0.0	-	0	0
BH23	1	50	3 (2)	---	---	1.00 to 8.00	91 secs	-	-	-	-	0.6	0.0	19.4	0.0	-	0	0
BH23	1	50	3 (2)	---	---	1.00 to 8.00	121 secs	-	-	-	-	0.6	0.0	19.4	0.0	-	0	0
BH23	1	50	3 (2)	---	---	1.00 to 8.00	181 secs	-	-	-	-	0.5	0.0	19.5	0.0	-	0	0
BH23	1	50	3 (2)	---	---	1.00 to 8.00	243 secs	-	-	-	-	0.6	0.0	19.5	0.0	-	0	0
BH23	1	50	3 (2)	---	---	1.00 to 8.00	302 secs	-	-	-	-	0.6	0.0	19.3	0.0	-	0	0
BH23	1	50	3 (3)	8.00	7.93	1.00 to 8.00	11/11/2022 09:53:36	-	-	-	6.40	-	-	-	-	0.0	-	-
BH24	1	50	1	5.00	---	1.00 to 5.00	13/10/2022 09:00:00	1006	1014	$-1.7_{(I)}$	-	-	-	-	-	-	-	-
BH24	1	50	1	---	---	1.00 to 5.00	60 secs	1011	1014	$-0.8_{(SS)}$	-	-	-	-	-	-	-	-
BH24	1	50	1 (2)	5.00	---	1.00 to 5.00	13/10/2022 09:05:00	-	-	-	-	0.6	0.0	19.5	0.0	0.1	1	0
BH24	1	50	1 (2)	---	---	1.00 to 5.00	15 secs	-	-	-	-	0.6	0.0	19.2	0.0	0.2	1	0
BH24	1	50	1 (2)	---	---	1.00 to 5.00	30 secs	-	-	-	-	0.6	0.0	19.1	0.0	0.1	1	0
BH24	1	50	1 (2)	---	---	1.00 to 5.00	60 secs	-	-	-	-	0.6	0.0	19.1	0.0	0.1	1	0
BH24	1	50	1 (2)	---	---	1.00 to 5.00	90 secs	-	-	-	-	0.6	0.0	19.1	0.0	0.0	1	0
BH24	1	50	1 (2)	---	---	1.00 to 5.00	120 secs	-	-	-	-	0.6	0.0	19.1	0.0	0.0	1	0
BH24	1	50	1 (3)	5.00	4.95	1.00 to 5.00	13/10/2022 09:10:00	-	-	-	3.19	-	-	-	-	-	-	-
BH25	1	50	1	20.00	---	4.00 to 20.00	13/10/2022 09:00:00	1007	1012	$-1.2_{(I)}$	-	-	-	-	-	-	-	-
BH25	1	50	1	---	---	4.00 to 20.00	60 secs	1007	1012	$-1.1_{(SS)}$	-	-	-	-	-	-	-	-
BH25	1	50	1 (2)	20.00	---	4.00 to 20.00	13/10/2022 09:05:00	-	-	-	-	0.3	0.0	20.5	0.0	0.3	0	0

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
BH25	1	50	1 (2)	---	---	4.00 to 20.00	30 secs	-	-	-	-	0.0	0.0	20.2	0.0	1.7	5	0
BH25	1	50	1 (2)	---	---	4.00 to 20.00	60 secs	-	-	-	-	0.0	0.0	20.1	0.0	1.5	3	0
BH25	1	50	1 (2)	---	---	4.00 to 20.00	90 secs	-	-	-	-	0.0	0.0	20.1	0.0	1.2	1	0
BH25	1	50	1 (2)	---	---	4.00 to 20.00	120 secs	-	-	-	-	0.0	0.0	20.1	0.0	1.1	3	0
BH25	1	50	1 (2)	---	---	4.00 to 20.00	180 secs	-	-	-	-	0.0	0.0	20.1	0.0	0.9	3	0
BH25	1	50	1 (2)	---	---	4.00 to 20.00	240 secs	-	-	-	-	0.0	0.0	20.1	0.0	0.9	3	0
BH25	1	50	1 (2)	---	---	4.00 to 20.00	300 secs	-	-	-	-	0.0	0.0	20.1	0.0	0.9	3	0
BH25	1	50	1 (3)	20.00	20.03	4.00 to 20.00	13/10/2022 09:12:00	-	-	-	3.93	-	-	-	-	-	-	-
BH27	1	50	1	4.00	---	1.00 to 4.00	13/10/2022 09:00:00	1005	1010	$-1.2_{(I)}$	-	-	-	-	-	-	-	-
BH27	1	50	1	---	---	1.00 to 4.00	60 secs	1006	1010	$-1.1_{(SS)}$	-	-	-	-	-	-	-	-
BH27	1	50	1 (2)	4.00	---	1.00 to 4.00	13/10/2022 09:05:00	-	-	-	-	0.8	0.0	19.1	0.0	0.0	3	0
BH27	1	50	1 (2)	---	---	1.00 to 4.00	30 secs	-	-	-	-	0.8	0.0	18.3	0.0	0.0	1	0
BH27	1	50	1 (2)	---	---	1.00 to 4.00	60 secs	-	-	-	-	0.8	0.0	18.3	0.0	0.0	1	0
BH27	1	50	1 (2)	---	---	1.00 to 4.00	90 secs	-	-	-	-	0.8	0.0	18.2	0.0	0.0	1	0
BH27	1	50	1 (2)	---	---	1.00 to 4.00	120 secs	-	-	-	-	0.8	0.0	18.1	0.0	0.0	1	0
BH27	1	50	1 (2)	---	---	1.00 to 4.00	180 secs	-	-	-	-	0.8	0.0	18.1	0.0	0.0	1	0
BH27	1	50	1 (3)	4.00	3.85	1.00 to 4.00	13/10/2022 09:10:00	-	-	-	3.04	-	-	-	-	-	-	-
CP01	1	50	1	7.50	---	1.00 to 7.81	13/10/2022 09:00:00	1004	1009	$-1.3_{(I)}$	-	-	-	-	-	-	-	-
CP01	1	50	1	---	---	1.00 to 7.81	30 secs	1005	1009	$-1.0_{(SS)}$	-	-	-	-	-	-	-	-
CP01	1	50	1 (2)	7.50	---	1.00 to 7.81	13/10/2022 09:01:00	-	-	-	-	0.3	0.0	4.5	0.0	0.8	0	0
CP01	1	50	1 (2)	---	---	1.00 to 7.81	30 secs	-	-	-	-	0.4	0.0	19.9	0.0	0.8	3	0
CP01	1	50	1 (2)	---	---	1.00 to 7.81	60 secs	-	-	-	-	0.4	0.0	19.8	0.0	0.8	0	0
CP01	1	50	1 (2)	---	---	1.00 to 7.81	90 secs	-	-	-	-	0.5	0.0	19.7	0.0	0.8	0	0

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
CP01	1	50	1 (2)	---	---	1.00 to 7.81	120 secs	-	-	-	-	0.4	0.0	19.7	0.0	0.7	0	0
CP01	1	50	1 (2)	---	---	1.00 to 7.81	180 secs	-	-	-	-	0.4	0.0	19.7	0.0	0.6	0	0
CP01	1	50	1 (3)	7.50	7.41	1.00 to 7.81	13/10/2022 09:05:00	-	-	-	7.11	-	-	-	-	-	-	-
CP01	1	50	2	7.50	---	1.00 to 7.81	26/10/2022 10:20:00	989	1003	$-2.8_{(I)}$	-	-	-	-	-	-	-	-
CP01	1	50	2	---	---	1.00 to 7.81	30 secs	989	1003	$-2.8_{(SS)}$	-	-	-	-	-	-	-	-
CP01	1	50	2 (2)	7.50	---	1.00 to 7.81	26/10/2022 10:21:00	-	-	-	-	0.6	0.0	18.4	0.0	0.2	3	0
CP01	1	50	2 (2)	---	---	1.00 to 7.81	60 secs	-	-	-	-	0.6	0.0	17.9	0.0	0.0	0	0
CP01	1	50	2 (2)	---	---	1.00 to 7.81	90 secs	-	-	-	-	0.6	0.0	17.9	0.0	0.0	0	0
CP01	1	50	2 (2)	---	---	1.00 to 7.81	120 secs	-	-	-	-	0.7	0.0	17.8	0.0	0.0	0	0
CP01	1	50	2 (2)	---	---	1.00 to 7.81	180 secs	-	-	-	-	0.7	0.0	17.8	0.0	0.0	0	0
CP01	1	50	2 (2)	---	---	1.00 to 7.81	240 secs	-	-	-	-	0.7	0.0	17.8	0.0	0.0	0	0
CP01	1	50	2 (3)	7.50	7.40	1.00 to 7.81	26/10/2022 10:25:00	-	-	-	7.20	-	-	-	-	-	-	-
CP01	1	50	3	7.50	---	1.00 to 7.81	14/11/2022 11:52:54	997	997	-	-	-	-	-	-	-	-	-
CP01	1	50	3	---	---	1.00 to 7.81	5 secs	-	-	-	-	-	-	-	-	-	-	-
CP01	1	50	3 (2)	7.50	---	1.00 to 7.81	14/11/2022 11:53:40	-	-	-	-	0.1	0.0	21.6	0.0	-	0	0
CP01	1	50	3 (2)	---	---	1.00 to 7.81	15 secs	-	-	-	-	0.9	0.0	20.7	0.0	-	0	0
CP01	1	50	3 (2)	---	---	1.00 to 7.81	30 secs	-	-	-	-	0.9	0.0	20.4	0.0	-	0	0
CP01	1	50	3 (2)	---	---	1.00 to 7.81	60 secs	-	-	-	-	0.9	0.0	20.3	0.0	-	0	0
CP01	1	50	3 (2)	---	---	1.00 to 7.81	90 secs	-	-	-	-	1.0	0.0	20.3	0.0	-	0	0
CP01	1	50	3 (2)	---	---	1.00 to 7.81	121 secs	-	-	-	-	1.0	0.0	20.3	0.0	-	0	0
CP01	1	50	3 (2)	---	---	1.00 to 7.81	182 secs	-	-	-	-	1.0	0.0	20.2	0.0	-	0	0
CP01	1	50	3 (2)	---	---	1.00 to 7.81	242 secs	-	-	-	-	1.1	0.0	20.1	0.0	-	0	0
CP01	1	50	3 (2)	---	---	1.00 to 7.81	302 secs	-	-	-	-	1.1	0.0	20.0	0.0	-	0	0
CP01	1	50	3 (3)	7.50	7.48	1.00 to 7.81	14/11/2022 12:00:56	-	-	-	7.34	-	-	-	-	0.0	-	-

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
CP06	1	50	1	11.00	---	1.00 to 11.26	14/10/2022 09:00:00	996	1002	$-1.5_{(I)}$	-	-	-	-	-	-	-	-
CP06	1	50	1	---	---	1.00 to 11.26	30 secs	998	1002	$-1.0_{(SS)}$	-	-	-	-	-	-	-	-
CP06	1	50	1 (2)	11.00	---	1.00 to 11.26	14/10/2022 09:01:00	-	-	-	-	0.0	0.0	19.0	0.0	0.0	6	0
CP06	1	50	1 (2)	---	---	1.00 to 11.26	60 secs	-	-	-	-	0.1	0.0	18.3	0.0	0.0	3	0
CP06	1	50	1 (2)	---	---	1.00 to 11.26	90 secs	-	-	-	-	0.1	0.0	18.3	0.0	0.0	3	0
CP06	1	50	1 (2)	---	---	1.00 to 11.26	120 secs	-	-	-	-	0.1	0.0	18.1	0.0	0.0	0	0
CP06	1	50	1 (2)	---	---	1.00 to 11.26	180 secs	-	-	-	-	0.1	0.0	18.1	0.0	0.0	3	0
CP06	1	50	1 (3)	11.00	10.98	1.00 to 11.26	14/10/2022 09:04:00	-	-	-	6.87	-	-	-	-	-	-	-
CP06	1	50	2	11.00	---	1.00 to 11.26	26/10/2022 11:20:00	985	1001	$-3.0_{(I)}$	-	-	-	-	-	-	-	-
CP06	1	50	2	---	---	1.00 to 11.26	30 secs	990	1001	$-2.5_{(SS)}$	-	-	-	-	-	-	-	-
CP06	1	50	2 (2)	11.00	---	1.00 to 11.26	26/10/2022 11:20:45	-	-	-	-	0.3	0.0	16.1	0.0	0.6	6	0
CP06	1	50	2 (2)	---	---	1.00 to 11.26	30 secs	-	-	-	-	0.3	0.0	16.0	0.0	0.6	3	0
CP06	1	50	2 (2)	---	---	1.00 to 11.26	60 secs	-	-	-	-	0.3	0.0	15.9	0.0	0.5	3	0
CP06	1	50	2 (2)	---	---	1.00 to 11.26	90 secs	-	-	-	-	0.3	0.0	15.9	0.0	0.5	1	0
CP06	1	50	2 (2)	---	---	1.00 to 11.26	120 secs	-	-	-	-	0.3	0.0	15.9	0.0	0.4	1	0
CP06	1	50	2 (2)	---	---	1.00 to 11.26	180 secs	-	-	-	-	0.3	0.0	15.9	0.0	0.2	3	0
CP06	1	50	2 (2)	---	---	1.00 to 11.26	240 secs	-	-	-	-	0.3	0.0	15.8	0.0	0.1	3	0
CP06	1	50	2 (2)	---	---	1.00 to 11.26	300 secs	-	-	-	-	0.3	0.0	15.8	0.0	0.0	3	0
CP06	1	50	2 (3)	11.00	10.88	1.00 to 11.26	26/10/2022 11:26:00	-	-	-	6.92	-	-	-	-	-	-	-
CP06	1	50	3	11.00	---	1.00 to 11.26	14/11/2022 10:52:40	999	999	$0.0_{(I)}$	-	-	-	-	-	-	-	-
CP06	1	50	3	---	---	1.00 to 11.26	5 secs	-	-	$0.0_{(SS)}$	-	-	-	-	-	-	-	-
CP06	1	50	3 (2)	11.00	---	1.00 to 11.26	14/11/2022 10:53:23	-	-	-	-	0.1	0.0	21.4	0.0	-	0	0
CP06	1	50	3 (2)	---	---	1.00 to 11.26	15 secs	-	-	-	-	0.6	0.0	16.9	0.0	-	0	0
CP06	1	50	3 (2)	---	---	1.00 to 11.26	31 secs	-	-	-	-	0.6	0.0	15.7	0.0	-	0	0
CP06	1	50	3 (2)	---	---	1.00 to 11.26	61 secs	-	-	-	-	0.6	0.0	15.6	0.0	-	0	0

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STRUCTURAL SOILS
The Potteries
Pottery Street
Castleford
W. Yorkshire WF10 1NJ

Compiled By	Date	Checked By	Date	Contract Ref:
	05/05/2023		05/05/2023	765514

Contract: **EMG Phase 2**

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
CP06	1	50	3 (2)	---	---	1.00 to 11.26	92 secs	-	-	-	-	0.6	0.0	15.6	0.0	-	0	0
CP06	1	50	3 (2)	---	---	1.00 to 11.26	121 secs	-	-	-	-	0.6	0.0	15.6	0.0	-	0	0
CP06	1	50	3 (2)	---	---	1.00 to 11.26	181 secs	-	-	-	-	0.6	0.0	15.6	0.0	-	0	0
CP06	1	50	3 (2)	---	---	1.00 to 11.26	241 secs	-	-	-	-	0.6	0.0	15.6	0.0	-	0	0
CP06	1	50	3 (2)	---	---	1.00 to 11.26	301 secs	-	-	-	-	0.6	0.0	15.6	0.0	-	0	0
CP06	1	50	3 (3)	11.00	11.02	1.00 to 11.26	14/11/2022 11:01:39	-	-	-	7.06	-	-	-	-	0.3	-	-
CP10	1	50	1	8.50	---	1.00 to 8.60	14/10/2022 09:00:00	998	1003	$-1.1_{(I)}$	-	-	-	-	-	-	-	-
CP10	1	50	1	---	---	1.00 to 8.60	30 secs	999	1003	$-0.7_{(SS)}$	-	-	-	-	-	-	-	-
CP10	1	50	1 (2)	8.50	---	1.00 to 8.60	14/10/2022 09:00:45	-	-	-	-	0.8	0.0	17.9	0.0	0.5	0	0
CP10	1	50	1 (2)	---	---	1.00 to 8.60	30 secs	-	-	-	-	0.8	0.0	17.2	0.0	0.5	0	0
CP10	1	50	1 (2)	---	---	1.00 to 8.60	60 secs	-	-	-	-	0.8	0.0	17.1	0.0	0.5	1	0
CP10	1	50	1 (2)	---	---	1.00 to 8.60	90 secs	-	-	-	-	0.8	0.0	17.0	0.0	0.5	3	0
CP10	1	50	1 (2)	---	---	1.00 to 8.60	120 secs	-	-	-	-	0.8	0.0	16.9	0.0	0.5	1	0
CP10	1	50	1 (2)	---	---	1.00 to 8.60	180 secs	-	-	-	-	0.8	0.0	16.9	0.0	0.5	1	0
CP10	1	50	1 (3)	8.50	8.58	1.00 to 8.60	14/10/2022 09:04:00	-	-	-	4.32	-	-	-	-	-	-	-
CP10	1	50	2	8.50	---	1.00 to 8.60	27/10/2022 15:00:00	1004	1014	$-2.2_{(I)}$	-	-	-	-	-	-	-	-
CP10	1	50	2	---	---	1.00 to 8.60	30 secs	1004	1014	$-2.4_{(SS)}$	-	-	-	-	-	-	-	-
CP10	1	50	2 (2)	8.50	---	1.00 to 8.60	27/10/2022 15:00:45	-	-	-	-	0.8	0.0	17.9	0.0	0.7	1	0
CP10	1	50	2 (2)	---	---	1.00 to 8.60	30 secs	-	-	-	-	0.8	0.0	17.0	0.0	0.9	3	0
CP10	1	50	2 (2)	---	---	1.00 to 8.60	60 secs	-	-	-	-	0.8	0.0	16.8	0.0	1.0	5	0
CP10	1	50	2 (2)	---	---	1.00 to 8.60	90 secs	-	-	-	-	0.8	0.0	16.7	0.0	1.0	5	0
CP10	1	50	2 (2)	---	---	1.00 to 8.60	120 secs	-	-	-	-	0.9	0.0	16.7	0.0	1.0	5	0
CP10	1	50	2 (2)	---	---	1.00 to 8.60	180 secs	-	-	-	-	0.9	0.0	16.7	0.0	0.9	3	0
CP10	1	50	2 (2)	---	---	1.00 to 8.60	240 secs	-	-	-	-	0.9	0.0	16.7	0.0	0.8	1	0

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
CP10	1	50	2 (3)	8.50	8.53	1.00 to 8.60	27/10/2022 15:05:00	-	-	-	4.27	-	-	-	-	-	-	-
CP10	1	50	3	8.50	---	1.00 to 8.60	14/11/2022 10:30:27	1000	1000	$0.0_{(I)}$	-	-	-	-	-	-	-	-
CP10	1	50	3	---	---	1.00 to 8.60	5 secs	-	-	$0.0_{(SS)}$	-	-	-	-	-	-	-	-
CP10	1	50	3 (2)	8.50	---	1.00 to 8.60	14/11/2022 10:31:12	-	-	-	-	0.1	0.0	21.5	0.0	-	0	0
CP10	1	50	3 (2)	---	---	1.00 to 8.60	16 secs	-	-	-	-	0.1	0.0	21.5	0.0	-	0	0
CP10	1	50	3 (2)	---	---	1.00 to 8.60	30 secs	-	-	-	-	0.2	0.0	21.2	0.0	-	0	0
CP10	1	50	3 (2)	---	---	1.00 to 8.60	60 secs	-	-	-	-	0.2	0.0	21.1	0.0	-	0	0
CP10	1	50	3 (2)	---	---	1.00 to 8.60	90 secs	-	-	-	-	0.2	0.0	21.1	0.0	-	0	0
CP10	1	50	3 (2)	---	---	1.00 to 8.60	121 secs	-	-	-	-	0.2	0.0	21.1	0.0	-	0	0
CP10	1	50	3 (2)	---	---	1.00 to 8.60	181 secs	-	-	-	-	0.2	0.0	21.1	0.0	-	0	0
CP10	1	50	3 (2)	---	---	1.00 to 8.60	241 secs	-	-	-	-	0.2	0.0	21.1	0.0	-	0	0
CP10	1	50	3 (2)	---	---	1.00 to 8.60	301 secs	-	-	-	-	0.2	0.0	21.1	0.0	-	0	0
CP10	1	50	3 (3)	8.50	8.63	1.00 to 8.60	14/11/2022 10:39:53	-	-	-	4.27	-	-	-	-	0.3	-	-
CP11	1	50	1	6.20	---	1.00 to 6.20	14/10/2022 09:00:00	997	1003	$-1.5_{(I)}$	-	-	-	-	-	-	-	-
CP11	1	50	1	---	---	1.00 to 6.20	30 secs	998	1003	$-1.1_{(SS)}$	-	-	-	-	-	-	-	-
CP11	1	50	1 (2)	6.20	---	1.00 to 6.20	14/10/2022 09:00:45	-	-	-	-	-	-	-	-	-	-	-
CP11	1	50	1 (2)	---	---	1.00 to 6.20	30 secs	-	-	-	-	-	-	-	-	-	-	-
CP11	1	50	1 (2)	---	---	1.00 to 6.20	60 secs	-	-	-	-	-	-	-	-	-	-	-
CP11	1	50	1 (2)	---	---	1.00 to 6.20	90 secs	-	-	-	-	-	-	-	-	-	-	-
CP11	1	50	1 (2)	---	---	1.00 to 6.20	120 secs	-	-	-	-	-	-	-	-	-	-	-
CP11	1	50	1 (2)	---	---	1.00 to 6.20	180 secs	-	-	-	-	-	-	-	-	-	-	-
CP11	1	50	1 (3)	6.20	2.65	1.00 to 6.20	14/10/2022 09:04:00	-	-	-	2.27	-	-	-	-	-	-	-
CP16	1	50	1	9.00	---	5.75 to 9.10	13/10/2022 09:00:00	1009	1012	$-0.7_{(I)}$	-	-	-	-	-	-	-	-

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
CP16	1	50	1	---	---	5.75 to 9.10	30 secs	1010	1012	$-0.4_{(SS)}$	-	-	-	-	-	-	-	-
CP16	1	50	1 (2)	9.00	---	5.75 to 9.10	13/10/2022 09:00:45	-	-	-	-	0.0	0.0	19.7	0.0	1.3	3	0
CP16	1	50	1 (2)	---	---	5.75 to 9.10	30 secs	-	-	-	-	0.0	0.0	19.0	0.0	1.5	8	0
CP16	1	50	1 (2)	---	---	5.75 to 9.10	60 secs	-	-	-	-	0.0	0.0	18.6	0.0	1.6	10	0
CP16	1	50	1 (2)	---	---	5.75 to 9.10	90 secs	-	-	-	-	0.1	0.0	18.3	0.0	1.8	12	0
CP16	1	50	1 (2)	---	---	5.75 to 9.10	120 secs	-	-	-	-	0.1	0.0	18.0	0.0	1.9	17	0
CP16	1	50	1 (2)	---	---	5.75 to 9.10	180 secs	-	-	-	-	0.1	0.0	17.9	0.0	1.8	20	0
CP16	1	50	1 (2)	---	---	5.75 to 9.10	240 secs	-	-	-	-	0.1	0.0	17.0	0.0	1.7	22	0
CP16	1	50	1 (3)	9.00	8.88	5.75 to 9.10	13/10/2022 09:05:00	-	-	-	3.85	-	-	-	-	-	-	-
CP17	1	50	1	17.00	---	14.00 to 17.21	13/10/2022 09:00:00	1006	1010	$-1.0_{(I)}$	-	-	-	-	-	-	-	-
CP17	1	50	1	---	---	14.00 to 17.21	30 secs	1006	1010	$-0.8_{(SS)}$	-	-	-	-	-	-	-	-
CP17	1	50	1 (2)	17.00	---	14.00 to 17.21	13/10/2022 09:00:45	-	-	-	-	0.5	0.0	19.5	0.0	0.9	12	0
CP17	1	50	1 (2)	---	---	14.00 to 17.21	30 secs	-	-	-	-	0.7	0.0	18.3	0.0	0.9	27	1
CP17	1	50	1 (2)	---	---	14.00 to 17.21	60 secs	-	-	-	-	0.8	0.0	17.4	0.0	0.9	42	1
CP17	1	50	1 (2)	---	---	14.00 to 17.21	90 secs	-	-	-	-	0.9	0.0	17.0	0.0	0.9	51	0
CP17	1	50	1 (2)	---	---	14.00 to 17.21	120 secs	-	-	-	-	0.9	0.0	17.0	0.0	0.9	58	1
CP17	1	50	1 (2)	---	---	14.00 to 17.21	180 secs	-	-	-	-	0.9	0.0	16.9	0.0	0.9	65	2
CP17	1	50	1 (2)	---	---	14.00 to 17.21	240 secs	-	-	-	-	0.9	0.0	16.9	0.0	0.9	65	2
CP17	1	50	1 (3)	17.00	16.49	14.00 to 17.21	13/10/2022 09:05:00	-	-	-	7.20	-	-	-	-	-	-	-
CP21	1	50	1	5.00	---	1.00 to 5.38	13/10/2022 09:00:00	1008	1014	$-1.4_{(I)}$	-	-	-	-	-	-	-	-
CP21	1	50	1	---	---	1.00 to 5.38	30 secs	1009	1014	$-1.1_{(SS)}$	-	-	-	-	-	-	-	-
CP21	1	50	1 (2)	5.00	---	1.00 to 5.38	13/10/2022 09:00:45	-	-	-	-	0.6	0.0	19.9	0.0	0.5	6	0
CP21	1	50	1 (2)	---	---	1.00 to 5.38	30 secs	-	-	-	-	0.8	0.0	19.5	0.0	0.5	1	0

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
CP21	1	50	1 (2)	---	---	1.00 to 5.38	60 secs	-	-	-	-	0.8	0.0	19.4	0.0	0.5	1	0
CP21	1	50	1 (2)	---	---	1.00 to 5.38	90 secs	-	-	-	-	0.8	0.0	19.3	0.0	0.5	1	0
CP21	1	50	1 (2)	---	---	1.00 to 5.38	120 secs	-	-	-	-	0.9	0.0	19.3	0.0	0.5	0	0
CP21	1	50	1 (2)	---	---	1.00 to 5.38	180 secs	-	-	-	-	0.9	0.0	19.3	0.0	0.4	0	0
CP21	1	50	1 (2)	---	---	1.00 to 5.38	240 secs	-	-	-	-	0.9	0.0	19.3	0.0	0.3	0	0
CP21	1	50	1 (2)	---	---	1.00 to 5.38	300 secs	-	-	-	-	0.9	0.0	19.3	0.0	0.3	0	0
CP21	1	50	1 (2)	---	---	1.00 to 5.38	360 secs	-	-	-	-	0.9	0.0	19.3	0.0	0.3	0	0
CP21	1	50	1 (3)	5.00	4.80	1.00 to 5.38	13/10/2022 09:07:00	-	-	-	DRY	-	-	-	-	-	-	-
CP21	1	50	2	5.00	---	1.00 to 5.38	27/10/2022 12:15:00	1004	1015	-2.5$_{(I)}$	-	-	-	-	-	-	-	-
CP21	1	50	2	---	---	1.00 to 5.38	30 secs	1005	1015	-2.4$_{(SS)}$	-	-	-	-	-	-	-	-
CP21	1	50	2 (2)	5.00	---	1.00 to 5.38	27/10/2022 12:15:45	-	-	-	-	0.9	0.0	19.4	0.0	0.8	0	0
CP21	1	50	2 (2)	---	---	1.00 to 5.38	30 secs	-	-	-	-	0.9	0.0	18.7	0.0	0.8	1	0
CP21	1	50	2 (2)	---	---	1.00 to 5.38	60 secs	-	-	-	-	0.9	0.0	18.6	0.0	0.8	1	0
CP21	1	50	2 (2)	---	---	1.00 to 5.38	90 secs	-	-	-	-	0.9	0.0	18.5	0.0	0.8	1	0
CP21	1	50	2 (2)	---	---	1.00 to 5.38	120 secs	-	-	-	-	1.0	0.0	18.5	0.0	0.7	3	0
CP21	1	50	2 (2)	---	---	1.00 to 5.38	180 secs	-	-	-	-	1.0	0.0	18.5	0.0	0.6	1	0
CP21	1	50	2 (2)	---	---	1.00 to 5.38	240 secs	-	-	-	-	1.0	0.0	18.5	0.0	0.6	1	0
CP21	1	50	2 (3)	5.00	4.81	1.00 to 5.38	27/10/2022 12:20:00	-	-	-	DRY	-	-	-	-	-	-	-
CP21	1	50	3	5.00	---	1.00 to 5.38	11/11/2022 08:47:30	-	-	0.0$_{(I)}$	-	-	-	-	-	-	-	-
CP21	1	50	3	---	---	1.00 to 5.38	5 secs	1014	1014	0.0$_{(SS)}$	-	-	-	-	-	-	-	-
CP21	1	50	3 (2)	5.00	---	1.00 to 5.38	11/11/2022 08:48:22	-	-	-	-	0.1	0.0	20.8	0.0	-	0	0
CP21	1	50	3 (2)	---	---	1.00 to 5.38	14 secs	-	-	-	-	0.5	0.0	20.6	0.0	-	0	0
CP21	1	50	3 (2)	---	---	1.00 to 5.38	30 secs	-	-	-	-	0.5	0.0	20.2	0.0	-	0	0
CP21	1	50	3 (2)	---	---	1.00 to 5.38	60 secs	-	-	-	-	0.5	0.0	20.2	0.0	-	0	0
CP21	1	50	3 (2)	---	---	1.00 to 5.38	91 secs	-	-	-	-	0.5	0.0	20.2	0.0	-	0	0

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
CP21	1	50	3 (2)	---	---	1.00 to 5.38	121 secs	-	-	-	-	0.5	0.0	20.2	0.0	-	0	0
CP21	1	50	3 (2)	---	---	1.00 to 5.38	182 secs	-	-	-	-	0.5	0.0	20.2	0.0	-	0	0
CP21	1	50	3 (2)	---	---	1.00 to 5.38	242 secs	-	-	-	-	0.5	0.0	20.2	0.0	-	0	0
CP21	1	50	3 (2)	---	---	1.00 to 5.38	302 secs	-	-	-	-	0.5	0.0	20.2	0.0	-	0	0
CP21	1	50	3 (3)	5.00	4.90	1.00 to 5.38	11/11/2022 09:14:52	-	-	-	4.90	-	-	-	-	0.3	-	-
CP27	1	50	1	3.00	---	1.00 to 3.00	13/10/2022 09:00:00	1007	1015	-1.8$_{(I)}$	-	-	-	-	-	-	-	-
CP27	1	50	1	---	---	1.00 to 3.00	30 secs	1009	1015	1.4$_{(SS)}$	-	-	-	-	-	-	-	-
CP27	1	50	1 (2)	3.00	---	1.00 to 3.00	13/10/2022 09:01:00	-	-	-	-	0.3	0.0	20.2	0.0	0.2	3	0
CP27	1	50	1 (2)	---	---	1.00 to 3.00	30 secs	-	-	-	-	0.3	0.0	19.8	0.0	0.3	3	0
CP27	1	50	1 (2)	---	---	1.00 to 3.00	60 secs	-	-	-	-	0.3	0.0	19.8	0.0	0.4	3	0
CP27	1	50	1 (2)	---	---	1.00 to 3.00	90 secs	-	-	-	-	0.3	0.0	19.7	0.0	0.4	3	0
CP27	1	50	1 (2)	---	---	1.00 to 3.00	120 secs	-	-	-	-	0.3	0.0	19.7	0.0	0.3	1	0
CP27	1	50	1 (2)	---	---	1.00 to 3.00	180 secs	-	-	-	-	0.3	0.0	19.7	0.0	0.2	1	0
CP27	1	50	1 (2)	---	---	1.00 to 3.00	240 secs	-	-	-	-	0.3	0.0	19.7	0.0	0.1	1	0
CP27	1	50	1 (2)	---	---	1.00 to 3.00	300 secs	-	-	-	-	0.3	0.0	19.7	0.0	0.0	1	0
CP27	1	50	1 (3)	3.00	3.13	1.00 to 3.00	13/10/2022 09:07:00	-	-	-	1.40	-	-	-	-	-	-	-
CP27	1	50	2	3.00	---	1.00 to 3.00	27/10/2022 13:00:00	1010	1019	-1.9$_{(I)}$	-	-	-	-	-	-	-	-
CP27	1	50	2	---	---	1.00 to 3.00	30 secs	1010	1019	-2.0$_{(SS)}$	-	-	-	-	-	-	-	-
CP27	1	50	2 (2)	3.00	---	1.00 to 3.00	27/10/2022 13:00:45	-	-	-	-	0.3	0.0	19.8	0.0	0.8	1	0
CP27	1	50	2 (2)	---	---	1.00 to 3.00	30 secs	-	-	-	-	0.4	0.0	19.3	0.0	1.0	1	0
CP27	1	50	2 (2)	---	---	1.00 to 3.00	60 secs	-	-	-	-	0.4	0.0	19.2	0.0	1.1	3	0
CP27	1	50	2 (2)	---	---	1.00 to 3.00	90 secs	-	-	-	-	0.4	0.0	19.2	0.0	1.1	3	0
CP27	1	50	2 (2)	---	---	1.00 to 3.00	120 secs	-	-	-	-	0.4	0.0	19.2	0.0	1.1	3	0
CP27	1	50	2 (2)	---	---	1.00 to 3.00	180 secs	-	-	-	-	0.3	0.0	19.4	0.0	0.8	3	0

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
CP27	1	50	2 (2)	---	---	1.00 to 3.00	240 secs	-	-	-	-	0.2	0.0	19.9	0.0	0.3	3	0
CP27	1	50	2 (2)	---	---	1.00 to 3.00	300 secs	-	-	-	-	0.1	0.0	19.9	0.0	0.1	3	0
CP27	1	50	2 (2)	---	---	1.00 to 3.00	360 secs	-	-	-	-	0.1	0.0	20.0	0.0	0.0	3	0
CP27	1	50	2 (3)	3.00	3.15	1.00 to 3.00	27/10/2022 13:07:00	-	-	-	1.25	-	-	-	-	-	-	-
CP27	1	50	3	3.00	---	1.00 to 3.00	11/11/2022 10:02:31	1016	1016	$0.0_{(I)}$	-	-	-	-	-	-	-	-
CP27	1	50	3	---	---	1.00 to 3.00	5 secs	-	-	$0.0_{(SS)}$	-	-	-	-	-	-	-	-
CP27	1	50	3 (2)	3.00	---	1.00 to 3.00	11/11/2022 10:03:22	-	-	-	-	0.2	0.0	21.3	0.0	-	0	0
CP27	1	50	3 (2)	---	---	1.00 to 3.00	15 secs	-	-	-	-	0.2	0.0	21.2	0.0	-	0	0
CP27	1	50	3 (2)	---	---	1.00 to 3.00	30 secs	-	-	-	-	0.2	0.0	20.9	0.0	-	0	0
CP27	1	50	3 (2)	---	---	1.00 to 3.00	61 secs	-	-	-	-	0.2	0.0	20.9	0.0	-	0	0
CP27	1	50	3 (2)	---	---	1.00 to 3.00	91 secs	-	-	-	-	0.2	0.0	20.8	0.0	-	0	0
CP27	1	50	3 (2)	---	---	1.00 to 3.00	121 secs	-	-	-	-	0.2	0.0	20.9	0.0	-	0	0
CP27	1	50	3 (2)	---	---	1.00 to 3.00	181 secs	-	-	-	-	0.3	0.0	20.8	0.0	-	0	0
CP27	1	50	3 (2)	---	---	1.00 to 3.00	241 secs	-	-	-	-	0.3	0.0	20.7	0.0	-	0	0
CP27	1	50	3 (2)	---	---	1.00 to 3.00	301 secs	-	-	-	-	0.3	0.0	20.8	0.0	-	0	0
CP27	1	50	3 (3)	3.00	3.25	1.00 to 3.00	11/11/2022 10:12:31	-	-	-	1.40	-	-	-	-	0.3	-	-
CP28	1	50	1	4.60	---	1.00 to 5.00	13/10/2022 09:00:00	1003	1009	$-1.4_{(I)}$	-	-	-	-	-	-	-	-
CP28	1	50	1	---	---	1.00 to 5.00	30 secs	1004	1009	$-1.3_{(SS)}$	-	-	-	-	-	-	-	-
CP28	1	50	1 (2)	4.60	---	1.00 to 5.00	13/10/2022 09:00:45	-	-	-	-	0.8	0.0	20.3	0.0	0.0	0	0
CP28	1	50	1 (2)	---	---	1.00 to 5.00	30 secs	-	-	-	-	0.9	0.0	19.9	0.0	0.0	0	0
CP28	1	50	1 (2)	---	---	1.00 to 5.00	60 secs	-	-	-	-	0.9	0.0	19.6	0.0	0.0	3	0
CP28	1	50	1 (2)	---	---	1.00 to 5.00	90 secs	-	-	-	-	0.9	0.0	19.5	0.0	0.0	3	0
CP28	1	50	1 (2)	---	---	1.00 to 5.00	120 secs	-	-	-	-	0.9	0.0	19.5	0.0	0.0	3	0
CP28	1	50	1 (2)	---	---	1.00 to 5.00	180 secs	-	-	-	-	0.9	0.0	19.5	0.0	0.0	3	0

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

STRUCTURAL SOILS
The Potteries
Pottery Street
Castleford
W. Yorkshire WF10 1NJ

Compiled By	Date	Checked By	Date	Contract Ref:
	05/05/2023		05/05/2023	765514

Contract: **EMG Phase 2**

AGS

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
CP28	1	50	1 (3)	4.60	4.50	1.00 to 5.00	13/10/2022 09:04:00	-	-	-	DRY	-	-	-	-	-	-	-
CP28	1	50	2	4.60	---	1.00 to 5.00	27/10/2022 13:20:00	1005	1017	-2.6$_{(I)}$	-	-	-	-	-	-	-	-
CP28	1	50	2	---	---	1.00 to 5.00	30 secs	1006	1017	-2.5$_{(SS)}$	-	-	-	-	-	-	-	-
CP28	1	50	2 (2)	4.60	---	1.00 to 5.00	27/10/2022 13:20:45	-	-	-	-	0.9	0.0	19.6	0.0	0.4	3	0
CP28	1	50	2 (2)	---	---	1.00 to 5.00	30 secs	-	-	-	-	0.9	0.0	19.2	0.0	0.5	3	0
CP28	1	50	2 (2)	---	---	1.00 to 5.00	60 secs	-	-	-	-	0.9	0.0	19.0	0.0	0.4	2	0
CP28	1	50	2 (2)	---	---	1.00 to 5.00	90 secs	-	-	-	-	0.9	0.0	19.0	0.0	0.3	3	0
CP28	1	50	2 (2)	---	---	1.00 to 5.00	120 secs	-	-	-	-	1.0	0.0	19.0	0.0	0.2	3	0
CP28	1	50	2 (2)	---	---	1.00 to 5.00	180 secs	-	-	-	-	1.0	0.0	19.0	0.0	0.1	3	0
CP28	1	50	2 (2)	---	---	1.00 to 5.00	240 secs	-	-	-	-	1.0	0.0	19.0	0.0	0.0	3	0
CP28	1	50	2 (3)	4.60	4.47	1.00 to 5.00	27/10/2022 13:25:00	-	-	-	DRY	-	-	-	-	-	-	-
CP28	1	50	3	4.60	---	1.00 to 5.00	11/11/2022 10:25:47	1015	1015	0.0$_{(I)}$	-	-	-	-	-	-	-	-
CP28	1	50	3	---	---	1.00 to 5.00	5 secs	-	-	0.0$_{(SS)}$	-	-	-	-	-	-	-	-
CP28	1	50	3 (2)	4.60	---	1.00 to 5.00	11/11/2022 10:26:32	-	-	-	-	0.1	0.0	21.3	0.0	-	0	0
CP28	1	50	3 (2)	---	---	1.00 to 5.00	15 secs	-	-	-	-	0.1	0.0	21.3	0.0	-	0	0
CP28	1	50	3 (2)	---	---	1.00 to 5.00	31 secs	-	-	-	-	0.1	0.0	21.3	0.0	-	0	0
CP28	1	50	3 (2)	---	---	1.00 to 5.00	60 secs	-	-	-	-	0.2	0.0	21.2	0.0	-	0	0
CP28	1	50	3 (2)	---	---	1.00 to 5.00	90 secs	-	-	-	-	0.2	0.0	21.2	0.0	-	0	0
CP28	1	50	3 (2)	---	---	1.00 to 5.00	120 secs	-	-	-	-	0.2	0.0	21.2	0.0	-	0	0
CP28	1	50	3 (2)	---	---	1.00 to 5.00	181 secs	-	-	-	-	0.2	0.0	21.2	0.0	-	0	0
CP28	1	50	3 (2)	---	---	1.00 to 5.00	241 secs	-	-	-	-	0.2	0.0	21.2	0.0	-	0	0
CP28	1	50	3 (2)	---	---	1.00 to 5.00	301 secs	-	-	-	-	0.2	0.0	21.3	0.0	-	0	0
CP28	1	50	3 (3)	4.60	3.81	1.00 to 5.00	11/11/2022 10:34:06	-	-	-	3.81	-	-	-	-	0.0	-	-

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

STRUCTURAL SOILS
The Potteries
Pottery Street
Castleford
W. Yorkshire WF10 1NJ

Compiled By	Date	Checked By	Date	Contract Ref:
	05/05/2023		05/05/2023	765514

Contract: **EMG Phase 2**

Page: **25** of **25**

IN-SITU WATER MONITORING RESULTS

	Start Date	End Date	Weather	Ground Conditions	Wind Conditions	Air Temperature (°C)	Equipment Used & Remarks
Round 1	13/10/2022	14/10/2022	Dry and Bright	Dry	None	14	
Round 2	26/10/2022	27/10/2022	Overcast	Wet	Light	15	
Round 3	02/11/2022	03/11/2022	Overcast	Wet	Strong	-	
Round 4	09/11/2022	14/11/2022	-	-	-	-	

Exploratory Position ID	Pipe Ref	Pipe Diameter (mm)	Monitoring Round / Test Number	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring	Water Depth (mbgl)	pH	ORP (mV)	Conduc-tivity (uS/cm)	Temp-erature (°C)	Dissolved Oxygen (mg/l)	Remarks
BH01	1	50	2 / 1	7.00	6.87	1.00 to 7.00	26/10/2022 16:41	5.79	---	---	---	---	---	
BH01	1	50	4 / 1	7.00	6.81	1.00 to 7.00	09/11/2022 10:07	5.83	---	---	---	---	---	
BH02	1	50	3 / 1	20.00	19.98	4.00 to 20.00	02/11/2022 10:02	8.03	---	---	---	---	---	
BH02	1	50	3 / 1	---		---	02/11/2022 10:10	8.03	7.58	125	1039	11.1	5.7	
BH02	1	50	3 / 1	---		---	02/11/2022 10:13	8.03	7.32	125	0	11.2	3.2	
BH02	1	50	3 / 1	---		---	02/11/2022 10:16	8.03	7.29	129	1037	11.3	3.0	
BH02	1	50	3 / 1	---		---	02/11/2022 10:19	8.03	7.26	129	1037	11.3	3.0	
BH02	1	50	3 / 1	---		---	02/11/2022 10:22	8.03	7.26	129	1036	11.4	3.0	
BH04	1	50	3 / 1	30.00	29.01	6.00 to 30.30	02/11/2022 11:30	10.91	---	---	---	---	---	
BH04	1	50	3 / 1	---		---	02/11/2022 11:37	10.91	7.43	128	879	12.3	5.7	
BH04	1	50	3 / 1	---		---	02/11/2022 11:40	10.91	7.18	131	869	11.2	0.3	
BH04	1	50	3 / 1	---		---	02/11/2022 11:43	10.91	7.15	129	689	11.1	0.2	
BH04	1	50	3 / 1	---		---	02/11/2022 11:46	10.91	7.14	126	874	11.1	0.2	
BH04	1	50	3 / 1	---		---	02/11/2022 11:49	10.91	7.14	124	869	11.2	0.2	
BH04	1	50	3 / 1	---		---	02/11/2022 11:52	10.91	7.14	122	869	11.1	0.3	

Key: NDA denotes 'no data available'.

IN-SITU WATER MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe Diameter (mm)	Monitoring Round / Test Number	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring	Water Depth (mbgl)	pH	ORP (mV)	Conduc-tivity (uS/cm)	Temp-erature (°C)	Dissolved Oxygen (mg/l)	Remarks
BH05	1	50	2 / 1	7.00	7.24	5.00 to 7.00	26/10/2022 16:57	4.99	---	---	---	---	---	
BH05	1	50	3 / 1	7.00	7.25	5.00 to 7.00	02/11/2022 12:10	4.98	---	---	---	---	---	
BH05	1	50	3 / 1	---		---	02/11/2022 12:13	4.98	7.77	1139	720	12.4	3.1	
BH05	1	50	3 / 1	---		---	02/11/2022 12:16	4.98	7.78	141	721	12.4	2.6	
BH05	1	50	3 / 1	---		---	02/11/2022 12:19	4.98	7.77	142	720	12.4	2.2	
BH05	1	50	3 / 1	---		---	02/11/2022 12:22	4.98	7.77	141	719	12.4	2.1	
BH05	1	50	4 / 1	7.00	7.13	5.00 to 7.00	09/11/2022 12:45	4.84	---	---	---	---	---	
BH06	1	50	3 / 1	30.80	31.09	18.00 to 30.80	02/11/2022 11:30	7.08	---	---	---	---	---	
BH06	1	50	3 / 1	30.80	31.09	18.00 to 30.80	02/11/2022 12:01	7.08	6.85	-16	908	13.1	7.2	
BH06	1	50	3 / 1	---		---	02/11/2022 12:04	7.08	6.99	-59	922	12.3	2.8	
BH06	1	50	3 / 1	---		---	02/11/2022 12:07	7.08	7.00	-63	910	12.2	1.4	
BH06	1	50	3 / 1	---		---	02/11/2022 12:10	7.08	6.99	-63	918	12.1	0.7	
BH06	1	50	3 / 1	---		---	02/11/2022 12:13	7.08	6.99	-63	1312	12.1	0.4	
BH06	1	50	3 / 1	---		---	02/11/2022 12:16	7.08	7.00	-63	906	12.1	0.1	
BH06	1	50	3 / 1	---		---	02/11/2022 12:19	7.08	6.99	-63	899	12.1	0.0	
BH06	1	50	3 / 1	---		---	02/11/2022 12:22	7.08	6.99	-63	902	12.1	0.0	
BH06	1	50	4 / 1	30.80	30.72	18.00 to 30.80	09/11/2022 12:50	6.85	---	---	---	---	---	
BH09	1	50	1 / 1	18.00	12.30	14.00 to 18.00	14/10/2022 09:00	2.75	---	---	---	---	---	
BH09	1	50	2 / 1	18.00	17.60	14.00 to 18.00	26/10/2022 17:22	3.52	---	---	---	---	---	
BH09	1	50	3 / 1	18.00	17.69	14.00 to 18.00	02/11/2022 15:40	3.44	---	---	---	---	---	
BH09	1	50	3 / 1	---		---	02/11/2022 15:46	3.44	6.50	18	918	13.0	4.3	
BH09	1	50	3 / 1	---		---	02/11/2022 15:49	3.44	6.74	15	785	12.5	2.0	
BH09	1	50	3 / 1	---		---	02/11/2022 15:52	3.44	6.79	14	779	12.4	0.8	

Key: NDA denotes 'no data available'.

IN-SITU WATER MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe Diameter (mm)	Monitoring Round / Test Number	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring	Water Depth (mbgl)	pH	ORP (mV)	Conduc-tivity (uS/cm)	Temp-erature (°C)	Dissolved Oxygen (mg/l)	Remarks
BH09	1	50	3 / 1	---		---	02/11/2022 15:55	3.44	6.80	13	773	12.5	0.3	
BH09	1	50	3 / 1	---		---	02/11/2022 15:58	3.44	6.83	11	757	12.4	0.0	
BH09	1	50	3 / 1	---		---	02/11/2022 16:01	3.44	6.83	11	760	12.5	0.0	
BH09	1	50	3 / 1	---		---	02/11/2022 16:04	3.44	6.83	10	753	12.4	0.0	
BH09	1	50	4 / 1	18.00	17.50	14.00 to 18.00	09/11/2022 13:15	6.52	---	---	---	---	---	
BH09	2	19	4 / 2	12.50	12.33	7.00 to 12.50	09/11/2022 13:20	3.11	---	---	---	---	---	
BH10	1	50	3 / 1	20.20	19.31	3.00 to 20.20	02/11/2022 14:44	15.43	---	---	---	---	---	
BH10	1	50	3 / 1	---		---	02/11/2022 14:49	15.43	7.31	146	1102	11.5	0.5	
BH10	1	50	3 / 1	---		---	02/11/2022 14:52	15.43	7.07	152	1102	11.5	0.5	
BH11	1	50	2 / 1	31.00	6.98	13.00 to 31.00	26/10/2022 17:55	2.16	---	---	---	---	---	
BH11	1	50	4 / 1	31.00	30.45	13.00 to 31.00	09/11/2022 13:30	8.68	---	---	---	---	---	
BH12	1	50	2 / 1	30.80	31.00	16.00 to 30.80	26/10/2022 17:00	6.97	---	---	---	---	---	
BH12	1	50	4 / 1	30.80	30.60	16.00 to 30.80	09/11/2022 11:30	6.97	---	---	---	---	---	
BH13	1	50	3 / 1	30.00	29.33	8.00 to 30.00	03/11/2022 08:22	11.42	---	---	---	---	---	
BH13	1	50	3 / 1	---		---	03/11/2022 08:25	11.42	7.87	145	1014	10.5	7.3	
BH13	1	50	3 / 1	---		---	03/11/2022 08:28	11.42	7.27	157	1013	10.6	5.7	
BH13	1	50	3 / 1	---		---	03/11/2022 08:31	11.42	7.21	159	1015	10.7	5.6	
BH13	1	50	3 / 1	---		---	03/11/2022 08:34	11.42	7.15	163	1013	10.7	5.5	
BH13	1	50	3 / 1	---		---	03/11/2022 08:37	11.42	7.18	162	1010	10.6	5.4	
BH14	1	50	2 / 1	11.50	11.68	1.00 to 11.50	26/10/2022 15:04	8.75	---	---	---	---	---	

Key: NDA denotes 'no data available'.

IN-SITU WATER MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe Diameter (mm)	Monitoring Round / Test Number	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring	Water Depth (mbgl)	pH	ORP (mV)	Conduc-tivity (uS/cm)	Temp-erature (°C)	Dissolved Oxygen (mg/l)	Remarks
BH14	1	50	4 / 1	11.50	11.59	1.00 to 11.50	09/11/2022 10:20	8.79	---	---	---	---	---	
BH16	1	50	2 / 1	20.00	19.63	2.00 to 20.00	26/10/2022 15:18	4.48	---	---	---	---	---	
BH16	1	50	4 / 1	20.00	19.53	2.00 to 20.00	09/11/2022 10:30	4.42	---	---	---	---	---	
BH17	1	50	3 / 1	4.50	6.63	1.00 to 4.50	03/11/2022 10:24	1.87	---	---	---	---	---	
BH17	1	50	3 / 1	---		---	03/11/2022 10:28	1.87	7.44	144	1030	11.3	5.1	
BH17	1	50	3 / 1	---		---	03/11/2022 10:31	1.87	7.41	147	1030	11.8	0.8	
BH17	1	50	3 / 1	---		---	03/11/2022 10:34	1.87	7.40	145	1028	11.9	0.6	
BH17	1	50	3 / 1	---		---	03/11/2022 10:37	1.87	7.40	143	1034	12.0	0.5	
BH17	1	50	3 / 1	---		---	03/11/2022 10:40	1.87	7.40	141	1031	12.2	0.4	
BH18	1	50	3 / 1	16.00	20.22	4.50 to 16.00	03/11/2022 09:07	6.18	---	---	---	---	---	
BH18	1	50	3 / 1	---		---	03/11/2022 09:13	6.18	7.33	162	948	10.8	2.8	
BH18	1	50	3 / 1	---		---	03/11/2022 09:16	6.18	7.28	163	942	11.0	1.7	
BH18	1	50	3 / 1	---		---	03/11/2022 09:19	6.18	7.26	162	938	11.0	1.5	
BH18	1	50	3 / 1	---		---	03/11/2022 09:22	6.18	7.26	160	936	11.1	1.9	
BH18	1	50	3 / 1	---		---	03/11/2022 09:25	6.18	7.25	159	936	11.1	1.4	
BH18	1	50	3 / 1	---		---	03/11/2022 09:28	6.18	7.25	157	933	11.1	1.3	
BH18	1	50	3 / 1	---		---	03/11/2022 09:31	6.18	7.25	155	933	11.1	1.1	
BH21	1	50	3 / 1	30.00	29.30	5.00 to 30.00	03/11/2022 08:10	9.44	---	---	---	---	---	
BH21	1	50	3 / 1	---		---	03/11/2022 08:37	9.44	7.01	-43	1121	11.1	8.1	
BH21	1	50	3 / 1	---		---	03/11/2022 08:40	9.44	7.05	-99	1130	11.4	7.4	
BH21	1	50	3 / 1	---		---	03/11/2022 08:43	9.44	6.85	-54	1131	11.6	6.7	

Key: NDA denotes 'no data available'.

IN-SITU WATER MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe Diameter (mm)	Monitoring Round / Test Number	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring	Water Depth (mbgl)	pH	ORP (mV)	Conduc-tivity (uS/cm)	Temp-erature (°C)	Dissolved Oxygen (mg/l)	Remarks
BH21	1	50	3 / 1	---		---	03/11/2022 08:46	9.44	6.90	-45	1132	11.7	5.9	
BH21	1	50	3 / 1	---		---	03/11/2022 08:49	9.44	6.89	-40	1123	11.6	5.5	
BH21	1	50	3 / 1	---		---	03/11/2022 08:52	9.44	6.88	-35	1131	11.6	5.2	
BH21	1	50	3 / 1	---		---	03/11/2022 08:55	9.44	6.87	-29	1132	11.6	4.9	
BH21	1	50	3 / 1	---		---	03/11/2022 08:58	9.44	6.86	-24	1139	11.6	4.6	
BH21	1	50	3 / 1	---		---	03/11/2022 09:01	9.44	6.85	-20	1150	11.5	4.6	
BH21	1	50	3 / 1	---		---	03/11/2022 09:04	9.44	6.84	-15	1141	11.5	4.7	
BH24	1	50	2 / 1	5.00	5.05	1.00 to 5.00	26/10/2022 16:06	3.35	---	---	---	---	---	
BH24	1	50	3 / 1	5.00	5.25	1.00 to 5.00	03/11/2022 12:10	3.66	---	---	---	---	---	
BH24	1	50	3 / 1	---		---	03/11/2022 12:22	3.66	7.04	-3	1059	14.6	6.2	
BH24	1	50	3 / 1	---		---	03/11/2022 12:25	3.66	6.99	-42	1079	14.4	3.7	
BH24	1	50	3 / 1	---		---	03/11/2022 12:28	3.66	6.98	-47	1071	14.6	1.4	
BH24	1	50	3 / 1	---		---	03/11/2022 12:31	3.66	6.98	-49	1065	14.9	0.7	
BH24	1	50	3 / 1	---		---	03/11/2022 12:34	3.66	6.98	-50	1066	15.1	0.7	
BH24	1	50	3 / 1	---		---	03/11/2022 12:37	3.66	6.98	-49	1060	15.1	0.7	
BH24	1	50	4 / 1	5.00	4.97	1.00 to 5.00	09/11/2022 10:50	3.58	---	---	---	---	---	
BH25	1	50	2 / 1	20.00	20.02	4.00 to 20.00	26/10/2022 16:10	3.89	---	---	---	---	---	
BH25	1	50	3 / 1	20.00	20.09	4.00 to 20.00	02/11/2022 10:50	4.05	---	---	---	---	---	
BH25	1	50	3 / 1	---		---	02/11/2022 10:55	4.05	7.01	-53	1372	11.0	8.9	
BH25	1	50	3 / 1	---		---	02/11/2022 10:58	4.05	6.91	-43	1460	11.9	6.7	
BH25	1	50	3 / 1	---		---	02/11/2022 11:01	4.05	6.90	-37	1487	12.3	3.7	
BH25	1	50	3 / 1	---		---	02/11/2022 11:04	4.05	6.88	-24	1489	12.5	1.5	
BH25	1	50	3 / 1	---		---	02/11/2022 11:07	4.05	6.89	-34	1492	12.6	0.7	

Key: NDA denotes 'no data available'.

IN-SITU WATER MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe Diameter (mm)	Monitoring Round / Test Number	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring	Water Depth (mbgl)	pH	ORP (mV)	Conduc-tivity (uS/cm)	Temp-erature (°C)	Dissolved Oxygen (mg/l)	Remarks
BH25	1	50	3 / 1	---		---	02/11/2022 11:10	4.05	6.91	-34	1509	12.6	0.4	
BH25	1	50	3 / 1	---		---	02/11/2022 11:13	4.05	6.90	-33	1499	12.6	0.2	
BH25	1	50	3 / 1	---		---	02/11/2022 11:16	4.05	6.90	-33	1491	12.7	0.0	
BH25	1	50	3 / 1	---		---	02/11/2022 11:19	4.05	6.91	-33	1495	12.7	0.0	
BH25	1	50	4 / 1	20.00	19.87	4.00 to 20.00	09/11/2022 10:55	4.20	---	---	---	---	---	
BH27	1	50	2 / 1	4.00	3.94	1.00 to 4.00	26/10/2022 15:33	2.90	---	---	---	---	---	
BH27	1	50	4 / 1	4.00	3.83	1.00 to 4.00	09/11/2022 10:40	2.57	---	---	---	---	---	
CP01	1	50	3 / 1	7.50	7.74	1.00 to 7.81	02/11/2022 09:55	7.52	---	---	---	---	---	
CP06	1	50	3 / 1	11.00	11.09	1.00 to 11.26	02/11/2022 14:30	7.07	---	---	---	---	---	
CP06	1	50	3 / 1	---		---	02/11/2022 14:39	7.07	6.85	-3	1061	13.3	7.3	
CP06	1	50	3 / 1	---		---	02/11/2022 14:42	7.07	6.87	-8	1068	13.1	3.4	
CP06	1	50	3 / 1	---		---	02/11/2022 14:45	7.07	6.88	-8	1080	13.1	1.7	
CP06	1	50	3 / 1	---		---	02/11/2022 14:48	7.07	6.86	-7	1081	13.1	1.1	
CP06	1	50	3 / 1	---		---	02/11/2022 14:51	7.07	6.86	-6	1098	13.1	0.9	
CP06	1	50	3 / 1	---		---	02/11/2022 14:54	7.07	6.86	-6	1107	13.1	0.8	
CP06	1	50	3 / 1	---		---	02/11/2022 14:57	7.07	6.85	-4	1088	13.1	0.7	
CP10	1	50	3 / 1	8.50	8.81	1.00 to 8.60	02/11/2022 15:56	4.46	---	---	---	---	---	
CP10	1	50	3 / 1	---		---	02/11/2022 16:01	4.46	7.29	149	1064	12.3	2.3	
CP10	1	50	3 / 1	---		---	02/11/2022 16:04	4.46	7.17	150	1066	12.2	0.7	
CP10	1	50	3 / 1	---		---	02/11/2022 16:07	4.46	7.14	149	1067	12.1	0.5	
CP10	1	50	3 / 1	---		---	02/11/2022 16:10	4.46	7.13	146	1066	12.1	0.4	

Key: NDA denotes 'no data available'.

IN-SITU WATER MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe Diameter (mm)	Monitoring Round / Test Number	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring	Water Depth (mbgl)	pH	ORP (mV)	Conduc-tivity (uS/cm)	Temp-erature (°C)	Dissolved Oxygen (mg/l)	Remarks
CP10	1	50	3 / 1	---		---	02/11/2022 16:13	4.46	7.12	144	1066	12.0	0.4	
CP11	1	50	3 / 1	6.20	6.65	1.00 to 6.20	09/11/2022 13:45	2.03	---	---	---	---	---	
CP16	1	50	3 / 1	9.00	8.85	5.75 to 9.10	09/11/2022 11:25	3.88	---	---	---	---	---	
CP17	1	50	2 / 1	17.00	16.36	14.00 to 17.21	26/10/2022 14:00	6.38	---	---	---	---	---	
CP17	1	50	3 / 1	17.00	16.50	14.00 to 17.21	09/11/2022 11:35	7.86	---	---	---	---	---	
CP27	1	50	3 / 1	3.00	3.44	1.00 to 3.00	03/11/2022 12:10	1.51	---	---	---	---	---	
CP27	1	50	3 / 1	---		---	03/11/2022 12:13	1.51	7.58	140	990	13.2	4.3	
CP27	1	50	3 / 1	---		---	03/11/2022 12:16	1.51	7.31	143	990	13.4	1.1	
CP27	1	50	3 / 1	---		---	03/11/2022 12:19	1.51	7.28	143	990	13.5	0.9	
CP27	1	50	3 / 1	---		---	03/11/2022 12:22	1.51	7.26	141	991	13.5	0.8	
CP27	1	50	3 / 1	---		---	03/11/2022 12:25	1.51	7.25	139	991	13.5	0.8	
SW1	1	NDA	3 / 1	NDA	0.00	NDA to NDA	02/11/2022 13:10	0.00	---	---	---	---	---	
SW2	1	NDA	3 / 1	NDA	0.00	NDA to NDA	02/11/2022 13:45	0.00	7.88	131	1085	13.9	8.3	
SW3	1	NDA	3 / 1	NDA	0.00	NDA to NDA	02/11/2022 13:30	0.00	---	---	---	---	---	
SW3	1	NDA	3 / 1	---		---	02/11/2022 13:45	0.00	6.86	-23	914	14.4	7.8	

Key: NDA denotes 'no data available'.

STRUCTURAL SOILS
The Potteries
Pottery Street
Castleford
W. Yorkshire WF10 1NJ

Compiled By	Date	Checked By	Date	Contract Ref:
	05/05/2023		05/05/23	765514

Contract: **EMG Phase 2**

AGS

APPENDIX G - CALIBRATION CERTIFICATES

(i) SPT Calibration Records

(ii) Hand Vane Calibration Records

(iii) Gas Analyser Calibration Records

(iv) Photo ionisation Detector (PID) Calibration Records

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:	AR1862
Test Date:	01/04/2022
Report Date:	01/04/2022
File Name:	AR1862.spt
Test Operator:	CM

Instrumented Rod Data

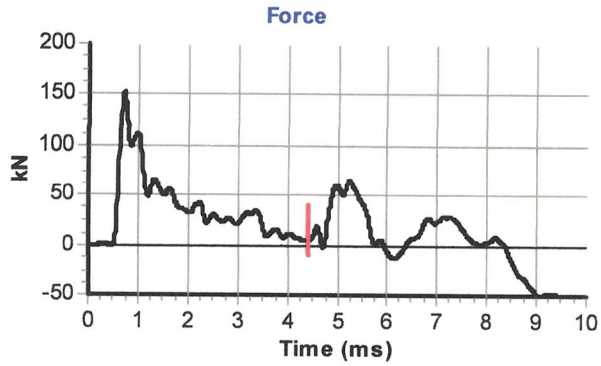
Diameter d_r (mm):	54
Wall Thickness t_r (mm):	6.0
Assumed Modulus E_a (GPa):	200
Accelerometer No.1:	7080
Accelerometer No.2:	11609

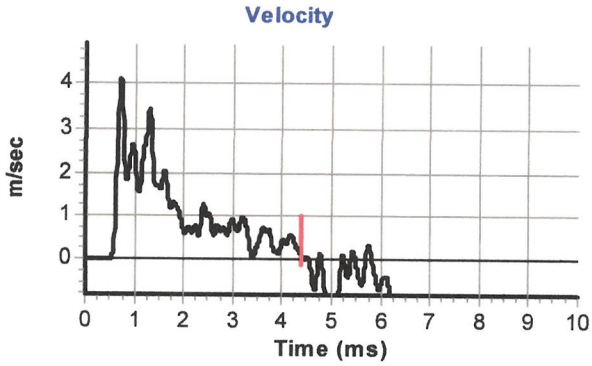
SPT Hammer Information

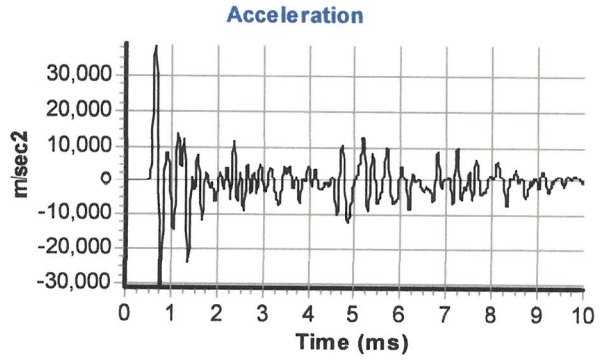
Hammer Mass m (kg):	63.5
Falling Height h (mm):	760
SPT String Length L (m):	10.0

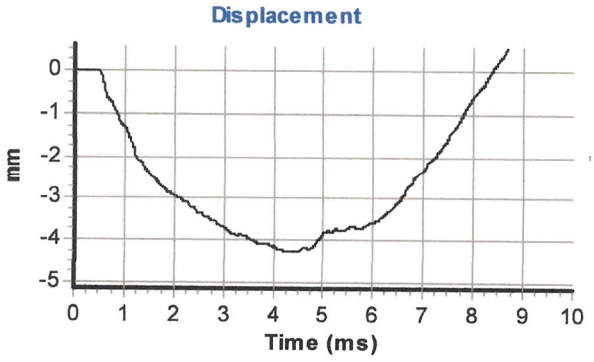
Comments / Location

STRUCTURAL SOILS LTD/79769









Calculations

Area of Rod A (mm2):	905
Theoretical Energy E_{theor} (J):	473
Measured Energy E_{meas} (J):	307

Energy Ratio E_r (%): **65**

Signed: C.McCLUSKEY

Title: FITTER

The recommended calibration interval is 12 months

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Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

Dynamic Sampling Uk Ltd
Unit 8 Victory Park
Victory Road
Derby
DE24 8ZF

Hammer Ref:	AR3293
Test Date:	09/09/2022
Report Date:	12/09/2022
File Name:	AR3293.spt
Test Operator:	B.HUNTER

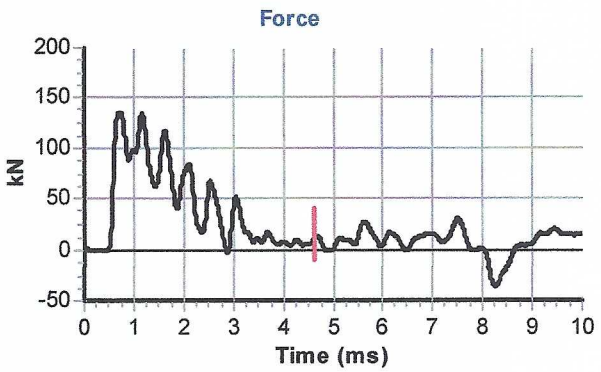
Instrumented Rod Data

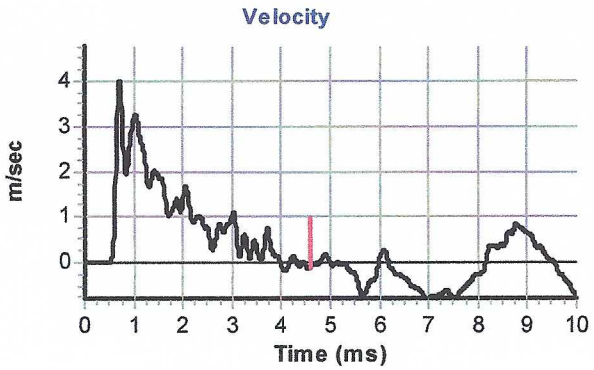
Diameter d_r (mm):	54
Wall Thickness t_r (mm):	6.5
Assumed Modulus E_a (GPa):	208
Accelerometer No.1:	62901
Accelerometer No.2:	62902

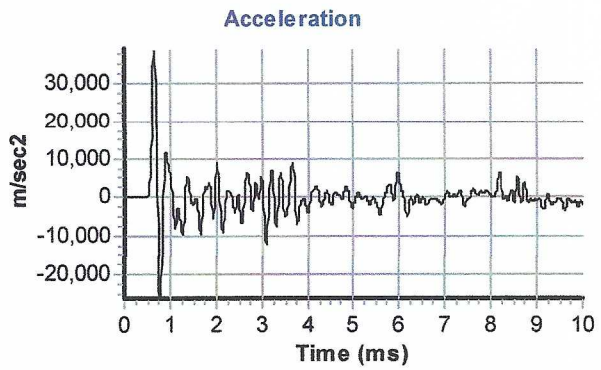
Hammer Information

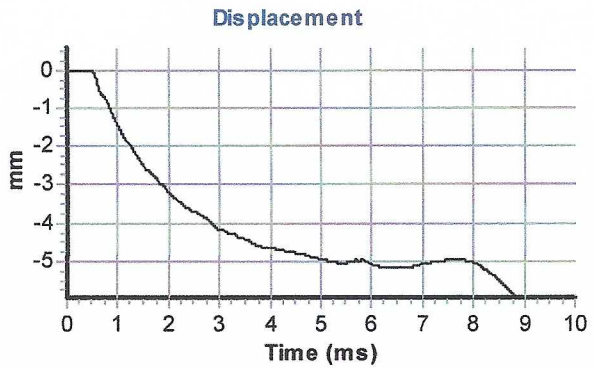
Hammer Mass m (kg):	63.5
Falling Height h (mm):	760
String Length L (m):	10.0

Comments / Location









Calculations

Area of Rod A (mm2):	970
Theoretical Energy E_{theor} (J):	473
Measured Energy E_{meas} (J):	347

Energy Ratio E_r (%): **73**

Signed: B.Hunter

Title: Operations Manager

The recommended calibration interval is 12 months

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SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

JB Site Investigations Ltd
Ramparts Business Park
Berwick upon Tweed
TD15 1TB
Tel: 01289 304646

SPT Hammer Ref:	JB05
Test Date:	25/08/2022
Report Date:	
File Name:	JB05.spt
Test Operator:	SP

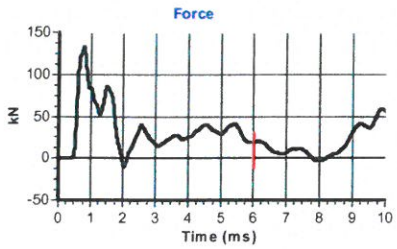
Instrumented Rod Data

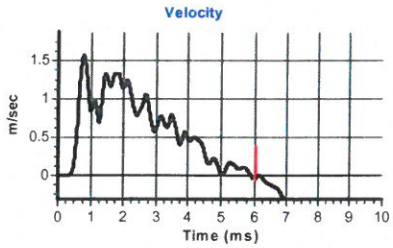
Diameter d_r (mm):	54
Wall Thickness t_r (mm):	6.1
Assumed Modulus E_a (GPa):	208
Accelerometer No.1:	6178
Accelerometer No.2:	5843

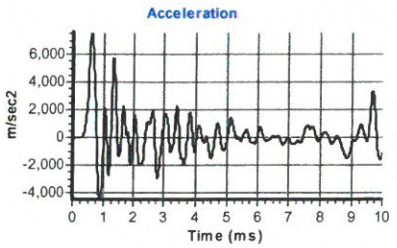
SPT Hammer Information

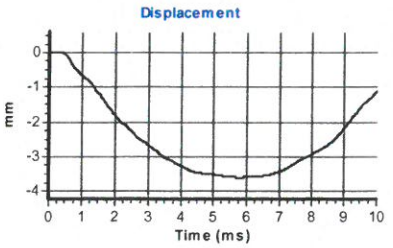
Hammer Mass m (kg):	63.5
Falling Height h (mm):	760
SPT String Length L (m):	13.0

Comments / Location









Calculations

Area of Rod A (mm2):	918
Theoretical Energy E_{theor} (J):	473
Measured Energy E_{meas} (J):	321

Energy Ratio E_r (%): **68**

Signed: Neil Redfern

Title: Operations Director

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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:	AR3104
Test Date:	25/04/2022
Report Date:	25/04/2022
File Name:	AR3104.spt
Test Operator:	JL

Instrumented Rod Data

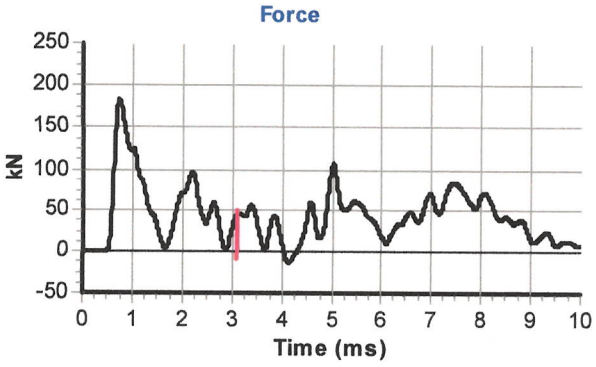
Diameter d_r (mm):	54
Wall Thickness t_r (mm):	6.5
Assumed Modulus E_a (GPa):	208
Accelerometer No.1:	72572
Accelerometer No.2:	72757

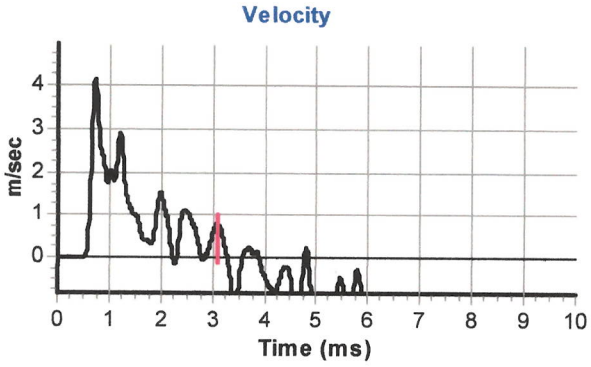
SPT Hammer Information

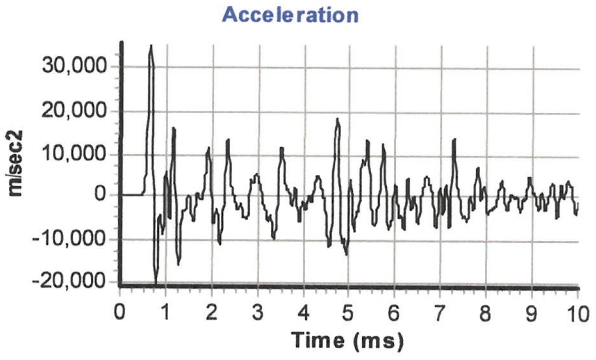
Hammer Mass m (kg):	63.5
Falling Height h (mm):	760
SPT String Length L (m):	10.0

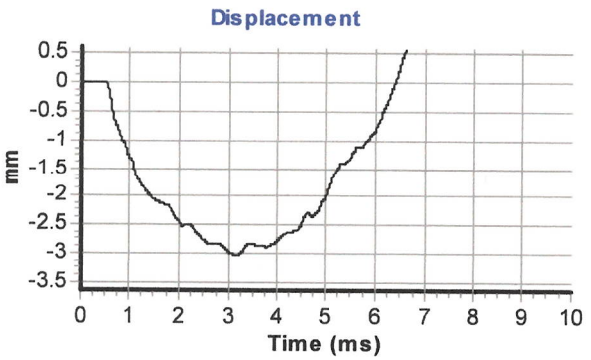
Comments / Location

STRUCTURAL SOILS









Calculations

Area of Rod A (mm2):	970
Theoretical Energy E_{theor} (J):	473
Measured Energy E_{meas} (J):	303

Energy Ratio E_r (%): **64**

Signed: J.LOCK

Title: FITTER

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Allied Exploration & Geotechnics Ltd.

Unit 25 Stella Gill Industrial Estate
Pelton Fell
Chester-le-Street
DH2 2RG

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

SPT Hammer Ref:	DS5-1-22
Test Date:	10/01/2022
Report Date:	10/01/2022
File Name:	DS5-1-22.spt
Test Operator:	BP

Instrumented Rod Data

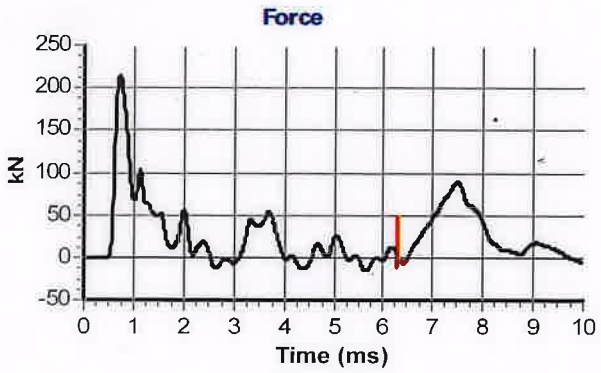
Diameter d_r (mm):	67
Wall Thickness t_r (mm):	8.6
Assumed Modulus E_a (GPa):	208
Accelerometer No.1:	65939
Accelerometer No.2:	66286

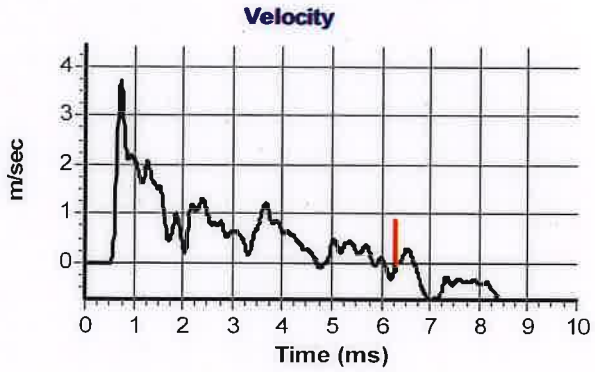
SPT Hammer Information

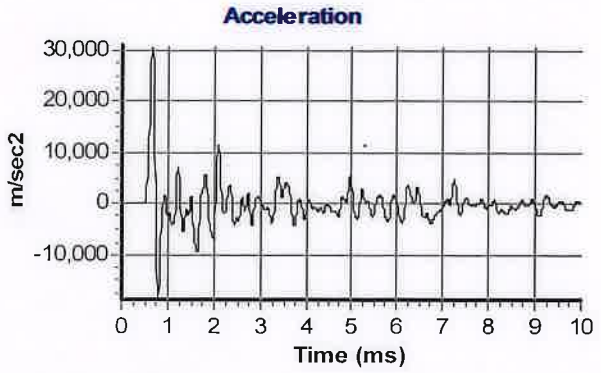
Hammer Mass m (kg):	63.5
Falling Height h (mm):	760
SPT String Length L (m):	14.1

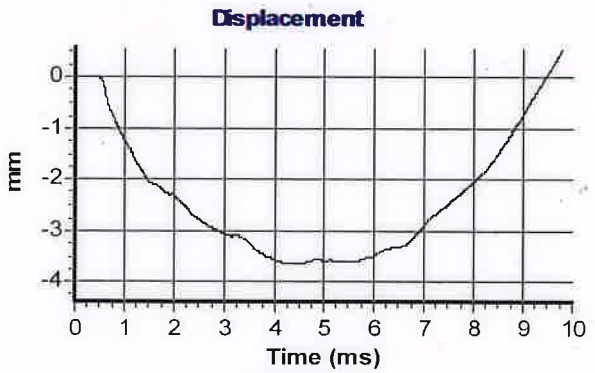
Comments / Location

Mass and Drop supplied by client









Calculations

Area of Rod A (mm2):	1578
Theoretical Energy E_{theor} (J):	473
Measured Energy E_{meas} (J):	288

Energy Ratio E_r (%): **61**

B Proctor

Signed: Brian Proctor

Title: Senior Technician

The recommended calibration interval is 12 months

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Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

Dynamic Sampling Uk Ltd
Unit 8 Victory Park
Victory Road
Derby
DE24 8ZF

Hammer Ref:	LS01
Test Date:	06/05/2022
Report Date:	06/05/2022
File Name:	LS01.spt
Test Operator:	B.HUNTER

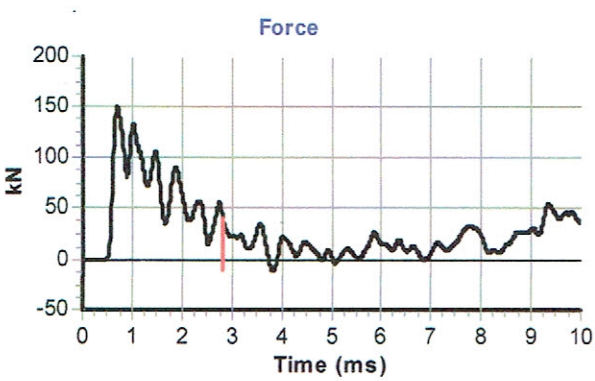
Instrumented Rod Data

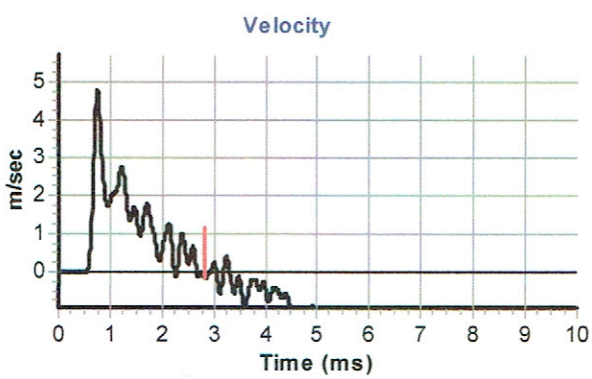
Diameter d_r (mm):	54
Wall Thickness t_r (mm):	6.5
Assumed Modulus E_a (GPa):	208
Accelerometer No.1:	62901
Accelerometer No.2:	62902

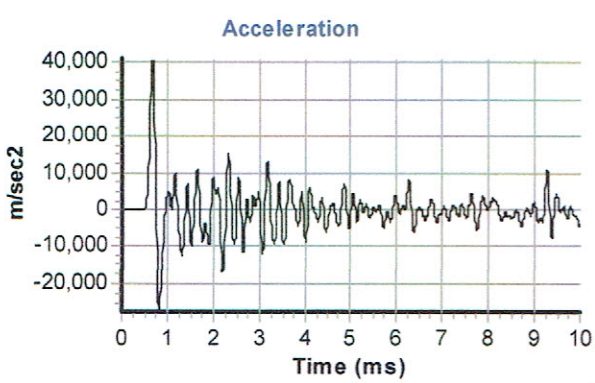
Hammer Information

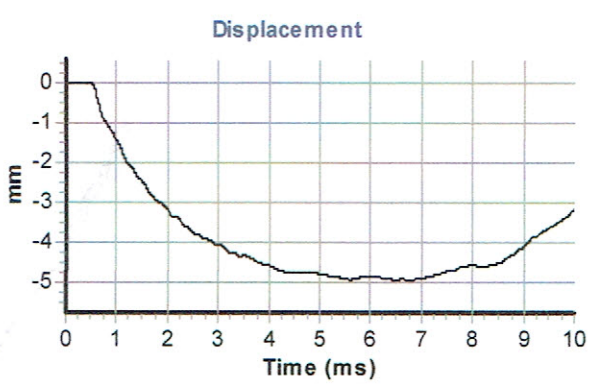
Hammer Mass m (kg):	63.5
Falling Height h (mm):	760
String Length L (m):	10.0

Comments / Location









Calculations

Area of Rod A (mm2):	970
Theoretical Energy E_{theor} (J):	473
Measured Energy E_{meas} (J):	303

Energy Ratio E_r (%): **64**

Signed: B.Hunter

Title: Operations Manager

The recommended calibration interval is 12 months

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SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

Scott Pincher
JB Site Investigations
DC103/9
Windmill Way West
Ramparts Business Park

SPT Hammer Ref:	AR3469
Test Date:	04/08/2022
Report Date:	04/08/2022
File Name:	AR3469.spt
Test Operator:	SP

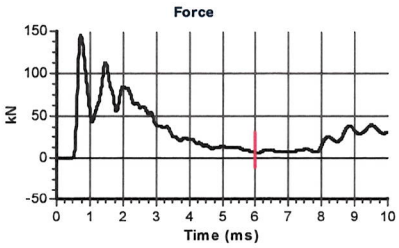
Instrumented Rod Data

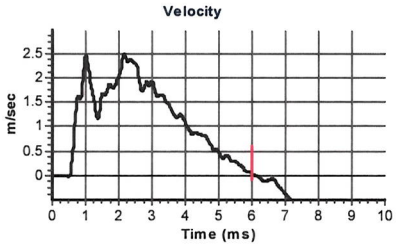
Diameter d_r (mm):	54
Wall Thickness t_r (mm):	6.1
Rod Length l_r (m):	1.0
Assumed Modulus E_a (GPa):	208
Accelerometer No.1:	6178
Accelerometer No.2:	5843

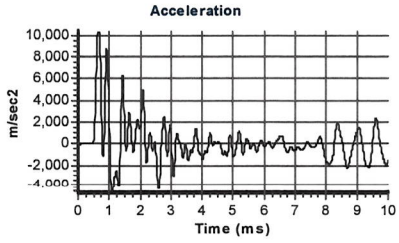
SPT Hammer Information

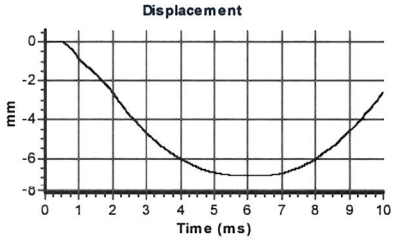
Hammer Mass m (kg):	63.5
Falling Height h (mm):	760
SPT String Length L (m):	13.5

Comments / Location









Calculations

Area of Rod A (mm2):	918
Theoretical Energy E_{theor} (J):	473
Measured Energy E_{meas} (J):	397

Energy Ratio E_r (%): **84**

Signed: S. PINCHER

Title: Director

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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:	AR3830
Test Date:	19/11/2021
Report Date:	19/11/2021
File Name:	AR3830.spt
Test Operator:	JL

Instrumented Rod Data

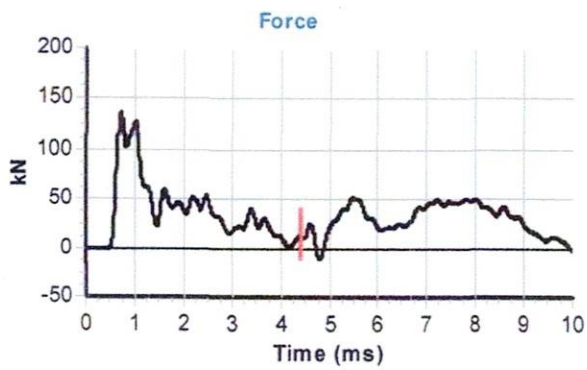
Diameter d_r (mm):	54
Wall Thickness t_r (mm):	6.0
Assumed Modulus E_a (GPa):	200
Accelerometer No.1:	7080
Accelerometer No.2:	11609

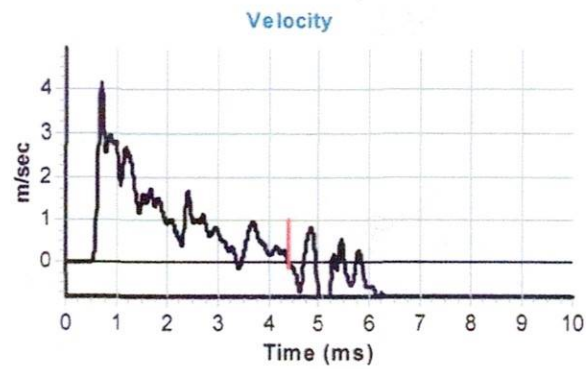
SPT Hammer Information

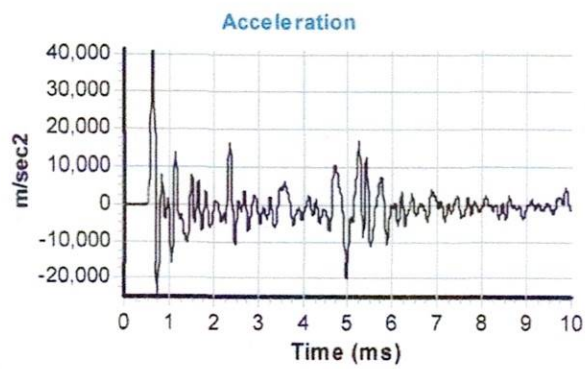
Hammer Mass m (kg):	63.5
Falling Height h (mm):	760
SPT String Length L (m):	10.0

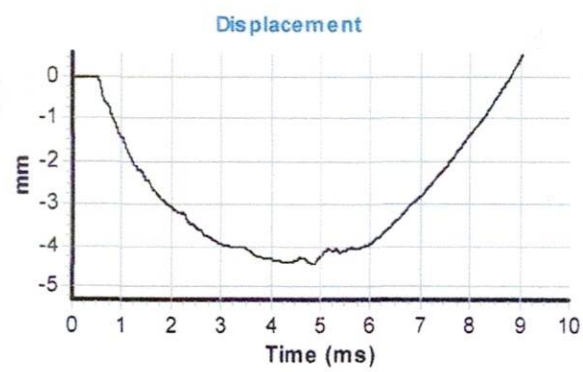
Comments / Location

STRUCTURAL SOILS LTD - 78193









Calculations

Area of Rod A (mm2):	905
Theoretical Energy E_{theor} (J):	473
Measured Energy E_{meas} (J):	315

Energy Ratio E_r (%): **67**

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

JB Site Investigation
Ramparts Business Park
Berwick upon Tweed
TD15 1TB
Tel: 01289 304646

SPT Hammer Ref:	JB14
Test Date:	16/06/2022
Report Date:	14/07/2022
File Name:	JB14.spt
Test Operator:	JB

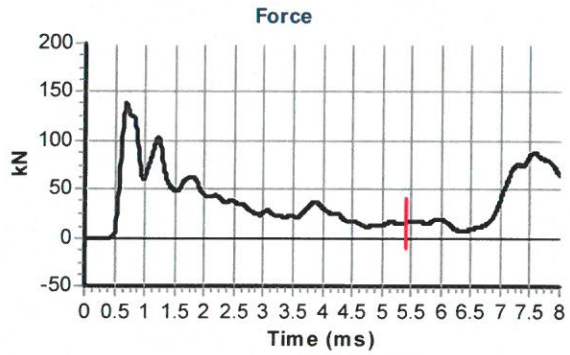
Instrumented Rod Data

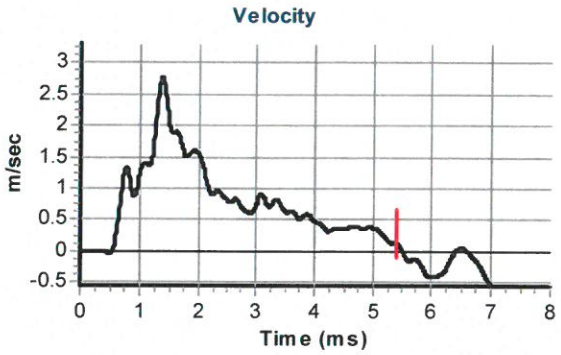
Diameter d_r (mm):	54
Wall Thickness t_r (mm):	6.1
Assumed Modulus E_a (GPa):	208
Accelerometer No.1:	6178
Accelerometer No.2:	5843

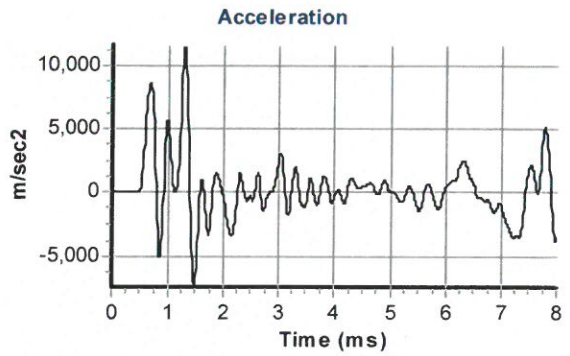
SPT Hammer Information

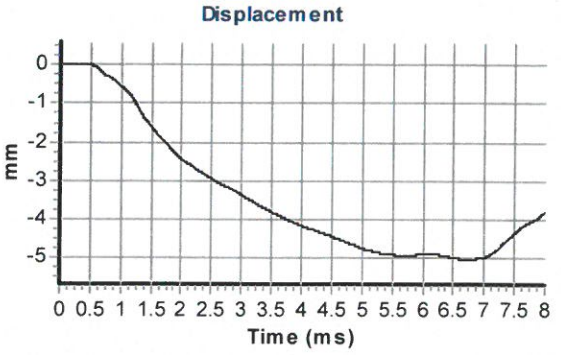
Hammer Mass m (kg):	63.3
Falling Height h (mm):	760
SPT String Length L (m):	11.0

Comments / Location









Calculations

Area of Rod A (mm2):	918
Theoretical Energy E_{theor} (J):	473
Measured Energy E_{meas} (J):	300

Energy Ratio E_r (%): **63**

Signed:

Title:

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Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

Dynamic Sampling Uk Ltd
Unit 8 Victory Park
Victory Road
Derby
DE24 8ZF

Hammer Ref:	AR3784
Test Date:	09/09/2022
Report Date:	12/09/2022
File Name:	AR3784.spt
Test Operator:	B.HUNTER

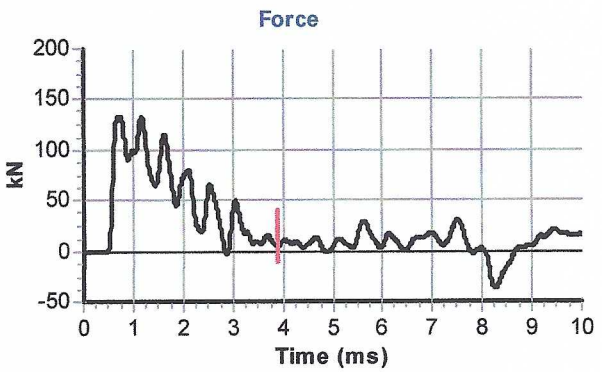
Instrumented Rod Data

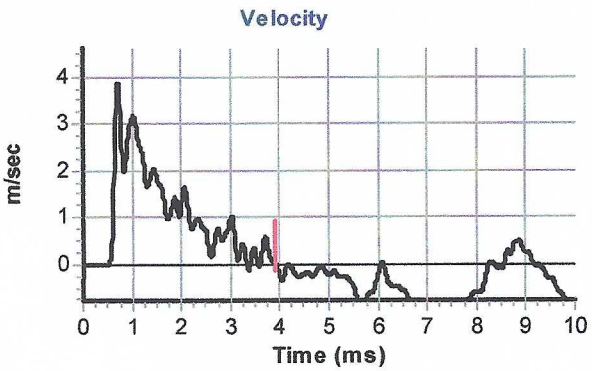
Diameter d_r (mm):	54
Wall Thickness t_r (mm):	6.5
Assumed Modulus E_a (GPa):	208
Accelerometer No.1:	62901
Accelerometer No.2:	62902

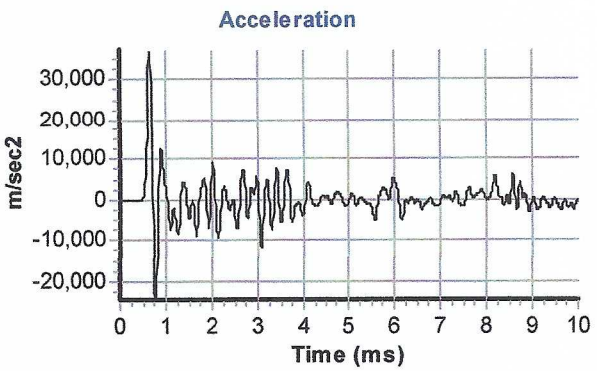
Hammer Information

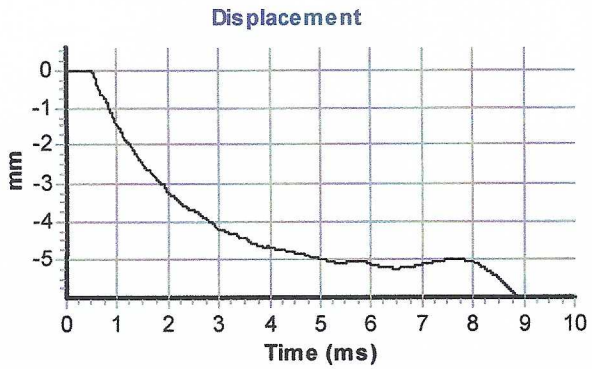
Hammer Mass m (kg):	63.5
Falling Height h (mm):	760
String Length L (m):	10.0

Comments / Location









Calculations

Area of Rod A (mm2):	970
Theoretical Energy E_{theor} (J):	473
Measured Energy E_{meas} (J):	337

Energy Ratio E_r (%): **71**

Signed: B.Hunter

Title: Operations Manager

The recommended calibration interval is 12 months

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CERTIFICATE OF CALIBRATION

ISSUED BY: LAMBDA CALIBRATION LTD

DATE OF ISSUE: 31-May-22 CERTIFICATE No: 717655

Lambda CALIBRATION LTD

11-13 Chorley Central Business Park
Stump Lane
Chorley
PR6 0BL
Tel: 0845 241 1533

APPROVED SIGNATORY

W.Pope A.Scurr P.Davies M.Darbyshire K.Quigley

Customer: Structural Soils Ltd, Castleford, WF10 1NJ

Item No: 003293 (1418)

Manufacturer: Impact

Description: Hand Held Shear Vane

Date of Cal: 31-May-22

Basis & Method: The unit under test (UUT) was calibrated by comparison with a digital torque analyser according to the methodology outlined in BS EN ISO 6789: 2003, at approximately 20%, 60% & 95% of its full scale deflection.
Shear strength was then calculated in accordance with BS 1377: 1990 and is reported in the table at the foot of this certificate.

Equipment Used: LTQA-03, LMB-2A-23

Temperature & RH: Start: 20 degC Finish: 20 degC RH: <90%

Axis of Torque: Vertical Axis of Tool Handle: Vertical

Visual Examination: Stop pin found to be bent

Adjustments: None

Measured Vane Sizes (mm):

Vane 1 (H)	51.4	Vane 1 (D)	33.0	Large Vane
Vane 2 (H)	29.1	Vane 2 (D)	19.0	Small Vane

Actual Torque generated by the UUT:

Scale Setting	Torque Analyser Readings (Nm)					Mean Torque N·m	U (+/-) N·m	*k*
28.00	0.951	0.958	0.951	0.949	0.949	0.952	0.01	2.00
84.00	2.633	2.621	2.620	2.621	2.655	2.630	0.05	2.18
134.00	5.082	5.080	5.078	5.048	4.922	5.042	0.20	2.65

Calculated Shear Strength Values:

Scale Setting	Mean Torque (N·m)		Vane 1 Shear Strength (kPa)	Vane 1 Conv Factor for BS 1377	Vane 2 Shear Strength (kPa)	Vane 2 Conv Factor for BS 1377
28.00	0.952		8.9	0.32	47.4	1.69
84.00	2.630		24.6	0.29	130.9	1.56
134.00	5.042		47.2	0.35	250.9	1.87

1 kPa = 1kN/m² = 0.101972 tonne/m² (1 tonne/m² = 9.80665 kPa)

The reported expanded uncertainty for torque U, is based on a standard uncertainty multiplied by a coverage factor *k*, providing a level of confidence of approximately 95%.

This certificate provides traceability of measurement to recognised national standards, and to the units of measurement realised at the National Physical Laboratory or other recognised national standards laboratories. This certificate may not be reproduced other than in full, without the prior written approval of the issuing laboratory.

TEST DATE AND CONDITIONS		
Date	09/06/2022	
Atmospheric Pressure	996	mB
Ambient Temperature	19.7	°C
Environics Serial No.	5089	

GAS DATA LTD
Unit 4, Fairfield Court
Seven Stars Estate
Wheler Rd
Coventry
CV3 4LJ
Tel 02476303311 Fax 02476307711

GAS DATA
LISTEN · ANALYSE · INFORM

GFM430 Final Inspection & Calibration Check Certificate

Customer	Structural Soils Ltd
Certificate Number	123259
Order Number	330734

Serial Number	10131
Software Version	G430-00.0024/0013

Recalibration DUE Date
09/06/23

Instrument Checks					
Keyboard	✓		Display Contrast	✓	
Pump Flow In	500	*Accept > 200 cc/min*	Pump Flow @ -200mB	300	*Accept > 200 cc/min*
Clock Set / Running	✓		Labels Fitted	✓	

Gas Checks						
Sensor	CH_4		CO_2		O_2	
	Instrument Gas Readings %	True Gas Value %	Instrument Gas Readings %	True Gas Value %	Instrument Gas Readings %	True Gas Value %
	59.8 *Accept ±3.0*	*60*	39.8 *Accept ±3.0*	*40*	20.9 *Accept ±0.5*	*20.9*
	5.0 *Accept ±0.3*	*5*	5.0 *Accept ±0.3*	*5*	6.0 *Accept ±0.3*	*6*
Zero Reading 100% N2	0.0 *Accept ±0.0*	*0*	0.0 *Accept ±0.0*	*0*	0.0 *Accept ±0.1*	*0*

Optional Gas Checks						
Applied Gas & Range		Concentration Tested @ (ppm)	Instrument Readings *(ppm)*			
			Zero Reading		Instrument Gas Reading	
Toxic Gas	Range *(ppm)*					
H2S	2000	*1500*	0	*Accept ±0.0*	1502	*Accept ±5.0*
CO	2000	*1000*	0	*Accept ±0.0*	1000	*Accept ±5.0*

Cross Gas Effects									
Applied Gas *(ppm)*		Instrument Readings *(ppm)*							
Toxic Gas	Concentration	Toxic 1:	H2S	Toxic 2:	CO	Toxic 3:			
H2S	*1500*	1502		0					
CO	*1000*	38		1000					

Pressure Checks						
Atmospheric Pressure [AP] *(mB)*				Static Pressure [SP] *(mB)*		
Current Atmospheric Pressure *(mB)*	Instrument Atmospheric Pressure Reading *(mB)*			Applied Pressure *(mB)*	Instrument Pressure *(mB)*	
All Ports	*Open Ports*	996	*Accept ±2.0*	*0.0mB*	N/A	*Accept ±0.0*
AP Port (Internal)	*+800 mB*	800	*Accept ±5.0*	*+50mB*	*N/A*	*Accept ±2.0*
AP Port (Internal)	*+1200mb*	1200	*Accept ±5.0*	*-100mB*	*N/A*	*Accept ±2.0*

Flow Checks					
Borehole Flow			Differential Pressure		
Applied Reading *(l/h)*	Instrument Reading *(l/h)*		Applied Pressure *(Pa)*	Instrument Reading *(Pa)*	
-30	-28.8	*Accept ±3.0*	-277	-265	*Accept ±50*
-3	-3.0	*Accept ±1.0*	-14	-14	*Accept ±6.0*
0	0.0	*Accept ±0.0*	0	0	*Accept ±0.5*
3	2.9	*Accept ±0.5*	14	13	*Accept ±3.0*
30	28.8	*Accept ±3.0*	289	279	*Accept ±50*
60	58.1	*Accept ±6.0*	859	851	*Accept ±130*
90	87.4	*Accept ±9.0*	1699	1690	*Accept ±250*

Temperature Checks		
Calibration Temperature Applied Temperature °C	Instrument Temperature Reading °C	
-10	-10.0	*Accept ±2.0*
0	0.0	*Accept ±1.0*
30	30.0	*Accept ±1.0*
60	60.0	*Accept ±1.0*
100	100.0	*Accept ±1.0*

Technician:	Date Tested:
Jack Rutland	*10/06/2022*

The instrument identified by the serial number stated above has been tested by Gas Data personnel for calibration accuracy on the date and under the ambient conditions stated. Gas Data Ltd internal BS EN ISO9001:2015, BS EN ISO14001:2015, BS EN ISO45001:2018 compliant workshop procedures were followed to apply known calibration test gases, gas flow rates, pressures and temperatures of the values stated. The results displayed on the instrument at each stage are recorded above.

Gas Data Ltd is certified to BS EN ISO9001:2015, BS EN ISO14001:2015, BS EN ISO45001:2018.

TEST DATE AND CONDITIONS		
Date	9.6.22	
Atmospheric Pressure	996	mB
Ambient Temperature	19.7	°C
Environics Serial No.	5089	

GAS DATA LTD
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Fairfield Court
Seven Stars Estate
Coventry
CV3 4LJ
UK
+44 (0)24 7630 3311

GAS DATA
LISTEN · ANALYSE · INFORM

GFM430 -1 OUTWARD INSPECTION & QUALITY CHECK SHEET

INSTRUMENT DETAILS			
SO Number	Instrument Type	Instrument Serial Number + SW Version	Job Number(s)
330734	GFM430	10131 G430 - 24/13	123259

Calibration Technician ..... **Date** 9.6.22

Inspection Technician ..... **Date** 10.6.22

INSTRUMENT CHECKS			Pass (P), Fail (F) or not applicable (NA)	INSTRUMENT PACKING LIST		Tick if included
Function Tests	Dust Caps Fitted		P	Instrument		✓
	Keyboard Test (All Keys)		P	Leather Case		X
	Backlight		P	Instrument Strap		✓
	Clock Set / Running		P	AC Battery Charger (UK)		✓
	Comms Test		P	AC Battery Charger (EURO)		X
	Pump Flow Test (In & Out)		P	AC Battery Charger (US)		X
	Overall Leak Test (30mB)		n/a	AC Battery Charger (AUS)		X
	Battery Charge Test		P	Hard Carry Case		✓
	Service Date set to?		9.6.23	Gas Sample Tube – *(new issue)*		✓
Channel Test	Data Logging Enabled?		P	Flow Sample Tube – *(new issue)*		✓
	Verify CH4/LEL		P	Spares Pot		X
	Verify CO2		P	Allen Key		X
	Verify O2		P	Temperature Probe		X
	Verify LEL		P	Vane Anemometer		X
	Verify 1st Option Gas	H2S	P	USB Cable		X
	Verify 2nd Option Gas	CO	P	USB Memory stick		X
	Verify 3rd Option Gas		N/A	SiteMan Software	Ver 4.15	✓
	Verify 4th Option Gas		N/A	Internal Filter Pack	Qty	X
	Verify Atmospheric pressure		P	External Filter Pack	Qty	X
	Verify static pressure		N/A	Field Guide		X
	Verify differential pressure		P	Operation Manual (hard copy)		X
	Verify flow		P	Extra Items: Sample Tube		
	Verify temperature probe input		P			
	Verify vane anemometer input		P			
DataBase Checks	Jobcard(s) completed and signed		P			
	Jobcard(s) booked off database		P			
	Calibration certificate completed		P			
	Complete & print QI record		n/a	Comments:		
Label Checks	No. of Calibration label fitted	GDC	11469			
	Warranty label fitted		P			
H2S Range	H2S Range from Sales Order		2000 ppm			
	H2S Range from Cal Cert		2000 ppm			
	Over-range value correct?		P			

CERTIFICATION OF CALIBRATION

4533

Date Of Calibration: 06-Oct-2022

Certificate Number: G503220_2/31356

Issued by: QED Environmental Systems Ltd.

Customer: **Structural Soils Limited**
Spring Lodge 172 Chester Road Helsby
Frodsham Cheshire WA6 0AR UNITED KINGDOM

Description: Gas Analyser

Model: GA5000

Serial Number: G503220

UKAS Accredited results:

Results after adjustment :

Methane (CH_4)		
Certified Gas (%)	Instrument Reading (%)	Uncertainty (%)
5.0	4.9	0.072
15.0	14.9	0.13
60.0	59.7	0.42

Carbon Dioxide (CO_2)		
Certified Gas (%)	Instrument Reading (%)	Uncertainty (%)
5.0	4.9	0.074
15.0	14.9	0.13
40.0	40.0	0.29

Oxygen (O_2)		
Certified Gas (%)	Instrument Reading (%)	Uncertainty (%)
21.2	21.3	0.25

The inwards assessment was carried out 08-Aug-2022.
The maximum adjustment is larger than the specification limit.
Inwards assessment data is available if requested.

All concentrations are molar.

CH_4, CO_2 readings recorded at : 31.6 °C ± 2.5 °C

O2 readings recorded at : 22.8 °C ± 2.5 °C

Barometric Pressure : 1015 mbar ± 4 mbar

Method of Test : The analyser is calibrated in a temperature controlled chamber using a series of reference gases, in compliance with procedure LP004.

Instrument has passed calibration as the measurement result is within the specification limit. The specification limit takes into account the measurement uncertainty.
The results relate only to the item calibrated

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

Calibration Instance:114 IGC Instance:114

www.qedenv.com +44 (0) 333 800 0088 sales@qedenv.co.uk
QED Environmental Systems Ltd. Cyan Park - Unit 3, Jimmy Hill Way, Coventry, CV2 4QP, UNITED KINGDOM
Registered in England and Wales 1898734

CERTIFICATION OF CALIBRATION

4533

Date Of Calibration: 06-Oct-2022

Certificate Number: G503220_2/31356

Issued by: QED Environmental Systems Ltd.

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

Calibrations marked 'Non-UKAS Accredited results' on this certificate have been included for completeness.

Non-UKAS accredited results after adjustment:

Barometer (mbar)	
Reference	**Instrument Reading**
1015	1015

Additional Gas Cells		
Gas	**Certified Gas (ppm)**	**Instrument Reading (ppm)**
CO	499	499
H_2S	52.6	53

Date of Issue : 06-Oct-2022 **Approved by Signatory**

Keeley Knight

Laboratory Inspection

End of Certificate

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

Calibration Instance:114 IGC Instance:114

www.qedenv.com +44 (0) 333 800 0088 sales@qedenv.co.uk

QED Environmental Systems Ltd. Cyan Park - Unit 3, Jimmy Hill Way, Coventry, CV2 4QP, UNITED KINGDOM

Registered in England and Wales 1898734

Instrument Service Report

Unit Type: GA5000	Part Number:	Date:	Next Service Due:	Customer Name:
Serial Number: G503220	GA5KB0B0-101	06-Oct-2022	06-Apr-2023	Structural Soils Limited

Actions/Investigation Description	Result	Comments
Serial Number Check	Yes	
Battery Requires Replacing	No	
Internal Flow Calibrated	Yes	
Full Automatic Calibration	Pass	
Serial Comms Test (USB)	Pass	
Service history of instrument reviewed	Yes	
Inwards gas check data reviewed	Yes	
Instrument turns on	Pass	
Backlight operates correctly	Yes	
External visual inspection performed	Pass	
Internal visual inspection performed	Pass	
All screws tightened to correct torque	Yes	
All connectors are secure	Pass	
Check diagnostic channels	Pass	
Case compression test	Pass	
Impact and stability test	Pass	
Pressure transducer test(s) as per user operation	Pass	

Instrument Service Report

Unit Type: GA5000	Part Number:	Date:	Next Service Due:	Customer Name:
Serial Number: G503220	GA5KB0B0-101	06-Oct-2022	06-Apr-2023	Structural Soils Limited

Actions/Investigation Description	Result	Comments
Final visual inspection on instrument	Pass	
Case assembly closed and screws tightened to correct torque	Yes	
PTFE filters replaced	Yes	
Pump flow greater than 550 ml/min	Pass	
Automated instrument pressure system test (leak test)	Pass	
Pump vacuum greater than -400 mb and flow fails	Pass	
GPS function test	NA	
Temperature probe tested	Pass	
Anemometer tested	Pass	
Chemical gas sensors calibrated – refer to Calibration Certificate	Pass	
Check main PCB and sensor PCB have the latest software	Yes	
Transducers calibrated	Pass	
As Received Chemical Cell Gas Assessment Performed (CAL16)	Yes	
As Received Gas Assessment Performed (CAL01 or CAL02)	Yes	
Chemical sensor(s) replacement over 2yrs UK and 21mths overseas.	Yes	
O2 sensor replacement over 3yrs UK, 33mths overseas	Pass	

Instrument Service Report

Unit Type: GA5000	Part Number:	Date:	Next Service Due:	Customer Name:
Serial Number: G503220	GA5KB0B0-101	06-Oct-2022	06-Apr-2023	Structural Soils Limited

Actions/Investigation Description	Result	Comments
Verification of Instrument		

Customer Comments

Returned for full service and calibration
Check O2 cell

General Comments/Feedback

This instrument was tested against known certified gas values and the user calibration was seen to be worse than the factory calibration for the following channels: CO2 . Common reasons for this are an out of date or poor user calibration. Regular user calibrations carried out in accordance with our operating manual will help to optimise performance. For further information on user calibration please visit the FAQ section of our website.
Thank you for returning your gas analyser to the QED Service Centre for full service and calibration. We are pleased to inform you that the analyser was received and fully assessed by one of our experienced Service Engineers.

The O2 electrochemical sensor has been replaced due to it being over 3 years old in accordance with the manufacturer's recommendations, and also as a proactive measure based on our experience of the typical lifetime of this type of sensor.

Our extensive service was carried out, and any necessary components replaced. The analyser has successfully passed all of our rigorous testing and quality checks and has been calibrated using our bespoke, state of the art calibration facility.

For further information about how to get the best use from your instrument please visit our YouTube channel http://www.youtube.com/GeotechTV and on our Website http://www.qedenv.com

If you require any further assistance with your instrument please email our Technical Support Team at technical@qedenv.co.uk or call us on +44 (0) 333 800 0088 (Monday to Thursday 08.30 - 17.00 & Friday 08.30 - 15.30) UK time zone.

Service Details:		Service Engineer:	Calibration Engineer:	Approved By:	Signature:
Service Scheme	√	Nick Sidgwick	Andy Townsend	Keeley Knight	KK
Standard Service					

Life-saving solutions

Instrument House
91-92 Shrivenham Hundred Business Park
Watchfield
Oxfordshire
SN6 8TY
Fax: 01793 784466
service@shawcity.co.uk

SERVICE / INSPECTION SHEET

JOB NUMBER: 74666
INSTRUMENT: Phocheck Tiger

SERIAL NUMBER: T-115108
DATE RECEIVED: 20/09/2022

FIRMWARE: V8.14
UPGRADED TO: V9.04

CUSTOMER: Structural Soils Ltd

ITEMS RECEIVED	Received	RTN?
Instrument	YES	
Rubber Boot	YES	
Battery Charger		
Charging Cradle		
Operation Manual		
Quick Start Guide		
Spares Kit		
Comms Cable		
Probe FLEXI		
Peli Case	YES	
Tubing		
Regulator		
Software (Memory Stick)		
PLASTIC CASE		
silver case		
	SIGNED:	

TESTS	Pre Service	Post Service
Charger Test		OK
Battery charge Test		OK
Lamp Test		OK
Air Flow Test ≥ 220ml/min		260ml/min
Block Flow Test ≤ 15ml/min		3ml/min
Moisture Sensitivity = 0.0ppm		0.0ppm
Switch Test		OK
Sensor Test		OK
Alarm Test		OK
PC Comms Test		OK
Datalog Test		OK
Display Test		OK
Physical Inspection		OK
PAT Test		OK
Firmware Upgrade		OK
Software Upgrade (usb)		N/A
Function Test		OK
Run time	138:26	138:51

Comments:
Firmware upgraded to current version V9.04 from V8.14
Sensor stack and seal, PTFE filter and inlet/outlet seals replaced as per annual service
Lamp replaced as per biennial scheduled service
Pneumatics contaminated, replaced
Instrument calibrated and bump tested
Power supply PAT tested - passed

TECHNICIAN: Jacob Jackson JJackson. DATE: 03/10/2022

Life-saving solutions

CERTIFICATE OF CALIBRATION

Phocheck Tiger

CALIBRATION CERTIFICATE NO: 74666

ISSUED BY: SHAWCITY LIMITED
DATE: 03/10/2022

APPROVED SIGNATORY:

NAME: Jacob Jackson

CUSTOMER: Structural Soils Ltd
INSTRUMENT: PhoCheck Tiger
SERIAL NUMBER: T-115108

CALIBRATION METHOD: CM03
AMBIENT CONDITIONS: 20°C ± 2°C and 50% (± 20%) RH

Prior to calibration the instrument was allowed to stabilise in the laboratory for at least 30 minutes.
The instrument was calibrated by exposing the sensor to known values of gas concentrations.
All gases were sampled through the complete probe and in line filter, where applicable.
The reference value is that generated by the certified source and the indicated value is that measured by the instrument.

CALIBRATION RESULTS

GAS	LOT No	REF. VALUE	INDICATED VALUE
Isobutylene	WO366634-1	100 ppm	100 ppm
Isobutylene	WO364996-1	1000 ppm	1000 ppm

COMMENTS:
The reported uncertainty is based on a standard uncertainty multiplied by a coverage factor of *k* =2.
This provides a level of confidence of uncertainty of approximately 95%.
The uncertainty of measurement is ±2 %
The results indicate that the instrument conforms to the applicable parts of the published specification.

Tel: 01793 780622
www.shawcity.co.uk
Instrument House, 91-92 Shrivenham Hundred Business Park
Watchfield, Oxfordshire, SN6 8TY
Fax: 01793 784466
service@shawcity.co.uk

PARTS REQUIRED FOR JOB NUMBER: 74666

DESCRIPTION	PART NO.	QTY	Serial No.	LOC
10.6 Lamp	LA4TM600	1	166339	S4H B1
11.7 Lamp	LA4SM700			S4D B1
Lamp Stack	A-846267	1		S4H B3
PTFE Filter Disk	A-861632	1		S4H B2
Probe O-Ring	5/OV-02			S4H B4
Sensor seal	A-861214	1		S4H B1
Probe	880207			S4E B1
Probe Kit	A-880210			S4H B4
Filter Clamp (black)	880201			S4E B1
Probe Seal	880202			S4E B5
Filter Clamp (clear)	861219			S4H B6
Pump	A-861298			S4F B2
Manifold	861213			S4E B6
Outlet Barbs	5/JHS-03			S4E B6
Nozzle O-Ring	5/OV-04			S4H B2
Probe pipe	A-861286a			S4G B5
Tubing Inv Cone	5/JO-01			S4D B1
Inlet Outlet Seal	861215	2		S4H B5
Display	1/OM-05			S4E B3
Battery Charging Cradle/Dock	A-861220			S4F B2
Charger Lead	1/VS-22			S4F B3
Fuse FU100/101/103/105/106	1/FB-10			S4G B3
FU1 fuse	1/FB-12			S3A B1
Standard Top Housing	A-861551			service
LT Top Housing	A-880218			
Charging Dock Magnet	2/AP-08			S4C B2
Bottom Housing	861203-2			S4F B4
Pneumatics Kit	A-861509	1		S4F B3
Tiger Battery	A-861240			S4G B1
Sensor PCB	A-861103			S4E B5
Orange stack for Tiger LT	A-846496			S4C B1
PAT Test	PAT 1	1		
Mainboard Assembly	A-861120			

APPENDIX C

ENVIRONMENTAL TESTING RESULTS WITH GENERIC ASSESSMENT CRITERIA THRESHOLDS

Envirolab Job Number: 22208109
Client: Structural Soils Limited (Castleford)
Client Project Name: East Midland Airport
Client Project Ref.: 765311

Envirolab Job Number: 22208109
Client: Structural Soils Limited (Castleford)
Client Project Name: East Midland Airport
Client Project Ref.: 765311

| Lab Sample ID | | | | | | 22205109001 | 22205109002 | 22205109003 | 22205109004 | 22205109005 | 22205109006 | 22205109007 | 22205109008 | 22205109009 | 22205109010 | 22205109011 | 22205109012 | 22205109013 | 22205109014 | 22205109015 | 22205109016 | 22205109017 | 22205109018 | 22205109019 | 22205109020 |

Envirolab Job Number: 22/10897
Client: Structural Soils Limited (Castleford)
Client Project Name: EMG Phase 2
Client Project Ref: 765514

	Lab Sample ID				22/10897/1	22/10897/2	22/10897/3	22/10897/4	22/10897/5	22/10897/6	22/10897/7	22/10897/8	22/10897/9	22/10897/10	22/10897/11	22/10897/12	22/10897/13	22/10897/14	22/10897/15	22/10897/16	22/10897/17
	Client Sample No																				
	Client Sample ID				CP06	CP10	CP27	BH02	BH05	BH06	BH09 (D)	BH17	BH18	BH24	BH25	BH04 (D)	BH10	BH13	BH21	SW2	SW3
	Depth to Top				8.07	5.45	2.51	9.03	5.97	19.00	15.00	2.86	7.18	4.56	5.05	11.90	16.42	12.42	10.44		
	Depth to Bottom																				
	Date Sampled				02-Nov-22	02-Nov-22	02-Nov-22	02-Nov-22	02-Nov-22	02-Nov-22	02-Nov-22	03-Nov-22	03-Nov-22	03-Nov-22	03-Nov-22	02-Nov-22	02-Nov-22	03-Nov-22	03-Nov-22	03-Nov-22	03-Nov-22
	Sample Type				Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW
	Sample Matrix Code	Units	Limit of Detection	Method	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
598	pH (w)	pH	0.01	A-T-031w	7.25	7.26	7.32	7.45	7.91	7.3	7.35	7.63	7.48	7.33	7.45	7.45	7.2	7.36	7.58	7.95	7.84
667	Sulphate (w)	mg/l	1	A-T-026w	216	237	59	75	77	194	66	132	53	151	1340	24	53	74	196	74	76
577	Cyanide (total) (w)	mg/l	0.005	A-T-042wTCN	50	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
416	Phenols - Total by HPLC (w)	mg/l	0.01	A-T-050w		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
673	Arsenic (dissolved)	µg/l	1	A-T-025w	10	<1	<1	<1	<1	<1	2	<1	<1	<1	<1	<1	<1	<1	<1	1	1
671	Boron (dissolved)	µg/l	10	A-T-025w	1000	36	41	45	23	40	29	43	50	41	34	127	33	43	30	71	63
676	Cadmium (dissolved)	µg/l	0.2	A-T-025w	5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
678	Copper (dissolved)	µg/l	4	A-T-025w	2000	7	10	9	4	17	5	6	12	10	<4	<4	5	6	12	6	6	5
679	Chromium (dissolved)	µg/l	1	A-T-025w		8	11	10	14	9	5	<1	13	8	<1	<1	9	11	11	<1	<1	<1
522	Chromium (total)	µg/l	1	A-T-025w	50	9	11	11	11	8	7	11	12	8	2	3	11	11	10	24	5	3
495	Chromium (hexavalent) (w)	mg/l	0.01	A-T-040w		<0.02	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02
1174	Chromium (trivalent) (w)	mg/l	0.01	Calc		<0.02	0.01	0.01	0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02
681	Lead (dissolved)	µg/l	1	A-T-025w	25	<1	<1	2	<1	2	<1	<1	2	2	<1	<1	<1	<1	<1	<1	<1	<1
683	Mercury (dissolved)	µg/l	0.1	A-T-025w	1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
685	Nickel (dissolved)	µg/l	2	A-T-025w	20	<2	2	<2	<2	12	<2	<2	2	<2	<2	3	<2	3	<2	<2	<2	<2
686	Selenium (dissolved)	µg/l	1	A-T-025w	10	<1	<1	16	<1	<1	<1	<1	3	<1	2	<1	<1	<1	<1	<1	<1	<1
689	Zinc (dissolved)	µg/l	2	A-T-025w	3000	3	16	23	17	30	15	8	15	18	5	7	4	4	3	5	14	14
	OCP+OPP Combined Pest Suite (incl. Atrazine+Simazine) (w)																				
5444	Dichlobenil (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5446	Tecnazene (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5448	Trifluralin (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5449	alpha-Hexachlorocyclohexane (HCH) (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5452	Hexachlorobenzene (HCB) (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5454	Simazine (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5456	Atrazine (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5458	beta-Hexachlorocyclohexane (HCH) (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5460	Quintozene (PCNB) (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5468	Triallate (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5466	delta-Hexachlorocyclohexane (HCH) (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5464	Chlorothalonil (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5470	Heptachlor (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5472	Aldrin (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5474	Triadimefon (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5476	Telodrin (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5478	Isodrin (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5480	Pendimethalin (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5482	Heptachlor epoxide (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5484	trans-Chlordane (Gamma) (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5486	o,p-DDE (2,4) (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5488	Endosulphan I (Alpha) (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5490	cis-Chlordane (Alpha) (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5492	p,p-DDE (4,4) (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5494	Dieldrin (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5578	o,p-DDD (2,4) (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5496	Endrin (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5498	Endosulphan II (Beta) (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5500	p,p-DDD (4,4) (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5502	o,p-DDT (2,4) (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5504	Endrin Aldehyde (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5506	Endosulphan Sulphate (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5508	p,p-DDT (4,4) (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5510	o,p-Methoxychlor (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5512	Endrin Ketone (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5514	p,p-Methoxychlor (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5516	Permethrin I (cis) (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5518	Permethrin II (trans) (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5520	Dichlorvos (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5522	Mevinphos (w)	µg/l	0.5	A-T-056w		<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
5524	Demeton-S (w)	µg/l	0.5	A-T-056w		<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
5526	Phorate (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5528	Dimethoate (w)	µg/l	0.5	A-T-056w		<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
5530	Demeton-O (w)	µg/l	0.5	A-T-056w		<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
5532	Propetamphos (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5534	Diazinon (Dimpylate) (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5536	Disulfoton (w)	µg/l	0.5	A-T-056w		<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
5540	Chlorpyrifos-methyl (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5542	Methyl Parathion (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5544	Pirimiphos-methyl (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5546	Fenitrothion (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5548	Malathion (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5550	Chlorpyrifos (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5552	Fenthion (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5554	Parathion (Ethyl Parathion) (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5556	Trichloronate (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5558	Chlorfenvinphos (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5560	Fensulphothion (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5580	Prothiofos (Tokuthion) (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5562	Ethion (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Envirolab Job Number: 22/10897
Client: Structural Soils Limited (Castleford)
Client Project Name: EMG Phase 2
Client Project Ref: 765514

	Lab Sample ID	Units	Limit of Detection	Method	Generic Assessment Criteria - commercial	22/10897/1	22/10897/2	22/10897/3	22/10897/4	22/10897/5	22/10897/6	22/10897/7	22/10897/8	22/10897/9	22/10897/10	22/10897/11	22/10897/12	22/10897/13	22/10897/14	22/10897/15	22/10897/16	22/10897/17
	Client Sample No																					
	Client Sample ID					CP06	CP10	CP27	BH02	BH05	BH06	BH09 (D)	BH17	BH18	BH24	BH25	BH04 (D)	BH10	BH13	BH21	SW2	SW3
	Depth to Top					8.07	5.45	2.51	9.03	5.97	19.00	15.00	2.86	7.18	4.56	5.05	11.90	16.42	12.42	10.44		
	Depth to Bottom																					
	Date Sampled					02-Nov-22	02-Nov-22	02-Nov-22	02-Nov-22	02-Nov-22	02-Nov-22	02-Nov-22	03-Nov-22	03-Nov-22	03-Nov-22	03-Nov-22	02-Nov-22	02-Nov-22	03-Nov-22	03-Nov-22	03-Nov-22	03-Nov-22
	Sample Type					Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW
	Sample Matrix Code					N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5564	Triazophos (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5568	Carbophenothion (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5570	Phosalone (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5572	Azinphos-methyl (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5574	Azinphos-ethyl (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5576	Coumaphos (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
5462	gamma-Hexachlorocyclohexane (HCH / Lindane) (w)	µg/l	0.1	A-T-056w		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	PAH 16MS (w)																					
225	Acenaphthene (w)	µg/l	0.01	A-T-019w	0.1	0.01	<0.01	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
227	Acenaphthylene (w)	µg/l	0.01	A-T-019w	0.1	0.15	<0.01	0.05	<0.01	<0.01	0.13	0.04	<0.01	<0.01	<0.01	0.04	<0.01	<0.01	<0.01	0.05	<0.01	0.02
229	Anthracene (w)	µg/l	0.01	A-T-019w	0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
231	Benzo(a)anthracene (w)	µg/l	0.01	A-T-019w	0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
233	Benzo(a)pyrene (w)	µg/l	0.01	A-T-019w	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
235	Benzo(b)fluoranthene (w)	µg/l	0.01	A-T-019w		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
237	Benzo(ghi)perylene (w)	µg/l	0.01	A-T-019w	0.1 (sum)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
821	Benzo(k)fluoranthene (w)	µg/l	0.01	A-T-019w		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
238	Chrysene (w)	µg/l	0.01	A-T-019w	0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
240	Dibenzo(ah)anthracene (w)	µg/l	0.01	A-T-019w	0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
242	Fluoranthene (w)	µg/l	0.01	A-T-019w	0.1	<0.01	<0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
244	Fluorene (w)	µg/l	0.01	A-T-019w	0.1	0.01	<0.01	0.03	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01
246	Indeno(123-cd)pyrene (w)	µg/l	0.01	A-T-019w	0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
248	Naphthalene (w)	µg/l	0.01	A-T-019w	0.1	1.14	0.02	<0.01	<0.01	0.05	0.95	0.14	<0.01	<0.01	0.03	0.24	<0.01	<0.01	<0.01	0.23	<0.01	0.18
250	Phenanthrene (w)	µg/l	0.01	A-T-019w	0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
252	Pyrene (w)	µg/l	0.01	A-T-019w	0.1	<0.01	<0.01	0.13	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
GS45	Total PAH 16MS (w)	µg/l	0.01	A-T-019w	0.1	1.31	0.02	0.29	<0.01	0.05	1.09	0.18	<0.01	<0.01	0.03	0.28	<0.01	<0.01	<0.01	0.28	<0.01	0.2
	Speciated PCB-WHO12 (w)																					
383	PCB BZ 81 (w)	µg/l	0.001	A-T-004w		<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.000	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
385	PCB BZ 105 (w)	µg/l	0.001	A-T-004w		<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
387	PCB BZ 114 (w)	µg/l	0.001	A-T-004w		<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
374	PCB BZ 118 (w)	µg/l	0.002	A-T-004w		<0.002	<0.002	<0.002		<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
389	PCB BZ 123 (w)	µg/l	0.001	A-T-004w		<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
391	PCB BZ 126 (w)	µg/l	0.001	A-T-004w		<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
393	PCB BZ 156 (w)	µg/l	0.001	A-T-004w		<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
395	PCB BZ 157 (w)	µg/l	0.001	A-T-004w		<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
397	PCB BZ 167 (w)	µg/l	0.001	A-T-004w		<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
399	PCB BZ 169 (w)	µg/l	0.001	A-T-004w		<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
401	PCB BZ 189 (w)	µg/l	0.001	A-T-004w		<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
381	PCB BZ 77 (w)	µg/l	0.001	A-T-004w		<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
GS105	Total Speciated PCB-WHO12 (w)	µg/l	0.001	A-T-004w		<0.002	<0.002	<0.002		<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
	VOC (w)																					
1027	Dichlorodifluoromethane	µg/l	1	A-T-006w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1030	Chloromethane	µg/l	10	A-T-006w		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
1032	Vinyl Chloride	µg/l	1	A-T-006w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1034	Bromomethane	µg/l	1	A-T-006w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1036	Chloroethane	µg/l	1	A-T-006w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1038	Trichlorofluoromethane	µg/l	1	A-T-006w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1040	trans 1,2-Dichloroethene	µg/l	1	A-T-006w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1042	Dichloromethane	µg/l	5	A-T-006w		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
1044	Carbon Disulphide	µg/l	1	A-T-006w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1046	1,1-Dichloroethene	µg/l	1	A-T-006w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1048	1,1-Dichloroethane	µg/l	1	A-T-006w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1052	cis 1,2-Dichloroethene	µg/l	1	A-T-006w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1054	Bromochloromethane	µg/l	5	A-T-006w		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
1056	Chloroform	µg/l	1	A-T-006w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1058	2,2-Dichloropropane	µg/l	1	A-T-006w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1060	1,2-Dichloroethane	µg/l	2	A-T-006w		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
1062	1,1,1-Trichloroethane	µg/l	1	A-T-006w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1064	1,1-Dichloropropene	µg/l	1	A-T-006w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1070	Benzene	µg/l	1	A-T-006w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1072	Carbon Tetrachloride	µg/l	1	A-T-006w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1074	Dibromomethane	µg/l	1	A-T-006w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1076	1,2-Dichloropropane	µg/l	1	A-T-006w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1078	Bromodichloromethane	µg/l	10	A-T-006w		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
1080	Trichloroethene	µg/l	1	A-T-006w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1082	cis 1,3-Dichloropropene	µg/l	1	A-T-006w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1084	trans 1,3-Dichloropropene	µg/l	1	A-T-006w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1086	1,1,2-Trichloroethane	µg/l	1	A-T-006w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1088	Toluene	µg/l	1	A-T-006w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1090	1,3-Dichloropropane	µg/l	1	A-T-006w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1092	Dibromochloromethane	µg/l	3	A-T-006w		<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
1094	1,2-Dibromoethane	µg/l	1	A-T-006w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1096	Tetrachloroethene	µg/l	1	A-T-006w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1098	1,1,1,2-Tetrachloroethane	µg/l	1	A-T-006w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1100	Chlorobenzene	µg/l	1	A-T-006w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1102	Ethylbenzene	µg/l	1	A-T-006w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1104	m & p Xylene	µg/l	1	A-T-006w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1106	Bromoform	µg/l	1	A-T-006w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1108	Styrene	µg/l	1	A-T-006w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1

Envirolab Job Number: 22/10897
Client: Structural Soils Limited (Castleford)
Client Project Name: EMG Phase 2
Client Project Ref: 765514

	Lab Sample ID	Units	Limit of Detection	Method	Generic Assessment Criteria - commercial	22/10897/1	22/10897/2	22/10897/3	22/10897/4	22/10897/5	22/10897/6	22/10897/7	22/10897/8	22/10897/9	22/10897/10	22/10897/11	22/10897/12	22/10897/13	22/10897/14	22/10897/15	22/10897/16	22/10897/17
	Client Sample No																					
	Client Sample ID					CP06	CP10	CP27	BH02	BH05	BH06	BH09 (D)	BH17	BH18	BH24	BH25	BH04 (D)	BH10	BH13	BH21	SW2	SW3
	Depth to Top					8.07	5.45	2.51	9.03	5.97	19.00	15.00	2.86	7.18	4.56	5.05	11.90	16.42	12.42	10.44		
	Depth to Bottom																					
	Date Sampled					02-Nov-22	02-Nov-22	02-Nov-22	02-Nov-22	02-Nov-22	02-Nov-22	02-Nov-22	03-Nov-22	03-Nov-22	03-Nov-22	03-Nov-22	02-Nov-22	02-Nov-22	03-Nov-22	03-Nov-22	03-Nov-22	03-Nov-22
	Sample Type					Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW
	Sample Matrix Code					N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1110	1,1,2,2-Tetrachloroethane	µg/l	1	A-T-006w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1112	o-Xylene	µg/l	1	A-T-006w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1114	1,2,3-Trichloropropane	µg/l	1	A-T-006w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1116	Isopropylbenzene	µg/l	1	A-T-006w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1118	Bromobenzene	µg/l	1	A-T-006w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1120	2-Chlorotoluene	µg/l	1	A-T-006w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1122	n-propylbenzene	µg/l	1	A-T-006w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1124	4-Chlorotoluene	µg/l	1	A-T-006w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1126	1,2,4-Trimethylbenzene	µg/l	1	A-T-006w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1128	4-Isopropyltoluene	µg/l	1	A-T-006w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1130	1,3,5-Trimethylbenzene	µg/l	1	A-T-006w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1132	1,2-Dichlorobenzene	µg/l	1	A-T-006w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1134	1,4-Dichlorobenzene	µg/l	1	A-T-006w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1136	sec-Butylbenzene	µg/l	1	A-T-006w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1138	tert-Butylbenzene	µg/l	2	A-T-006w		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
1140	1,3-Dichlorobenzene	µg/l	1	A-T-006w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1142	n-butylbenzene	µg/l	1	A-T-006w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1144	1,2-Dibromo-3-chloropropane	µg/l	2	A-T-006w		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
1153	1,2,4-Trichlorobenzene	µg/l	3	A-T-006w		<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
1146	1,2,3-Trichlorobenzene	µg/l	3	A-T-006w		<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
1151	Hexachlorobutadiene	µg/l	1	A-T-006w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	TPH CWG (w) with Clean Up																					
299	Ali >C5-C6 (w)	µg/l	1	A-T-022w	300	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
301	Ali >C6-C8 (w)	µg/l	1	A-T-022w	300	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
4896	Ali >C8-C10 (w)	µg/l	5	A-T-055w	300	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
4864	Ali >C10-C12 (w)	µg/l	5	A-T-055w	300	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
4887	Ali >C12-C16 (w)	µg/l	5	A-T-055w	300	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
4888	Ali >C16-C21 (w)	µg/l	5	A-T-055w		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
4891	Ali >C21-C35 (w)	µg/l	5	A-T-055w		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
4972	Total Aliphatics (w)	µg/l	5	Calc-As Recd		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
305	Aro >C5-C7 (w)	µg/l	1	A-T-022w	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
307	Aro >C7-C8 (w)	µg/l	1	A-T-022w	700	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
4907	Aro >C8-C10 (w)	µg/l	5	A-T-055w	300	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
4897	Aro >C10-C12 (w)	µg/l	5	A-T-055w	100	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
4898	Aro >C12-C16 (w)	µg/l	5	A-T-055w	100	<5	<5	22	<5	<5	<5	<5	<5	<5	7	<5	<5	16	<5	<5	<5	<5
4899	Aro >C16-C21 (w)	µg/l	5	A-T-055w	90	<5	<5	22	<5	<5	<5	<5	<5	<5	<5	<5	<5	6	<5	<5	<5	<5
4901	Aro >C21-C35 (w)	µg/l	10	A-T-055w	90	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
4971	Total Aromatics (w)	µg/l	10	Calc-As Recd		<10	<10	44	<10	<10	<10	<10	<10	<10	<10	<10	<10	22	<10	<10	<10	<10
4973	TPH (Ali & Aro >C5-C35) (w)	µg/l	10	Calc-As Recd		<10	<10	44	<10	<10	<10	<10	<10	<10	<10	<10	<10	22	<10	<10	<10	<10
287	BTEX - Benzene (w)	µg/l	1	A-T-022w	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
289	BTEX - Toluene (w)	µg/l	1	A-T-022w	700	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
291	BTEX - Ethyl Benzene (w)	µg/l	1	A-T-022w	300	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
295	BTEX - m & p Xylene (w)	µg/l	1	A-T-022w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
293	BTEX - o Xylene (w)	µg/l	1	A-T-022w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
297	MTBE (w)	µg/l	1	A-T-022w		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1

APPENDIX D

GROUND GAS ASSESSMENT

Borehole No.	Date	Gas Concentrations					Max Flow Rate, l/hr	PID, ppm	CO_2 GSV, l/hr	CH4 GSV*, l/hr	Water Level (m bgl)	Ground Conditions
		Min O_2, %	Max CO_2, %**	Max CH4,%	Max H2S, ppm	Max CO, ppm						
BH01	13/10/2022	19.5	0.3	0.1	0.1	3	-0.4	0.4	-0.0012	-0.0004	5.73	GM
BH02	13/10/2022	16.4	0.2	0.1	0.1	5	-0.3	0.6	-0.0006	-0.0003	7.72	GM
	26/10/2022	13.9	0.2	0.1	0.1	0	-2.2	0.4	-0.0044	-0.0022	7.8	
	14/11/2022	15.3	0.9	0.1	0.1	0	-	0.5	-	-	7.92	
BH04 (s)	14/10/2022	17.3	1.1	0.1	0.1	10	-1	0.1	-0.011	-0.001	Dry	WGM
	26/10/2022	14.9	2	0.1	0.1	5	-2.4	0.3	-0.048	-0.0024	2.32	
	14/11/2022	-	-	-	-	-	-	-	-	-	2.08	
BH04 (d)	14/10/2022	12.9	1.8	0.1	0.1	10	0.8	1.2	0.0144	0.0008	10.7	GM
	14/11/2022	4.3	2.5	0.1	0.1	0	8.1	0.8	0.2025	0.0081	10.88	
BH05	*14/10/2022*	*16.9*	*0.2*	*0.1*	*0.1*	*5*	*-1.2*	-	-	-	4.92	GFC/GFG
BH06	*14/10/2022*	*19.3*	*0.1*	*0.1*	*0.1*	*10*	*-0.7*	*1.1*	-	-	3.08	WGM/GM
BH09	*14/10/2022*	*19.6*	*0.1*	*0.1*	*0.1*	*8*	*-0.7*	*1*	-	-	3.68	WGM/GM
BH10	14/10/2022	18.2	0.6	0.1	0.1	3	-0.9	0.7	-0.0054	-0.0009	15.22	WGM/GM
	27/10/2022	17.3	0.8	0.1	0.1	3	-1.5	1	-0.012	-0.0015	15.15	
	14/11/2022	21.1	0.2	0.1	0.1	0	0.1	-	0.0002	0.0001	15.32	
BH11	14/10/2022	20	0.1	0.1	0.1	3	-1	1.1	-0.001	-0.001	8.71	GFG/GM
BH12	*13/10/2022*	*20*	*0*	*0.1*	*0.1*	*5*	*-0.5*	*1.1*	-	-	6.75	WGM/GM
BH13	13/10/2022	15.8	0.8	0.1	0.1	13	-0.4	2.5	-0.0032	-0.0004	11.2	WGM/GM
	27/10/2022	12.9	1.3	0.1	0.1	22	-2.1	3.1	-0.0273	-0.0021	11.1	
	11/11/2022	21.2	0.1	0.1	0.1	0	0.1	1.3	0.0001	0.0001	11.82	
BH14	13/10/2022	20	0.6	0.1	0.1	3	-0.5	0.4	-0.003	-0.0005	8.61	OM/GFC/WGM
BH16	13/10/2022	18.4	0.7	0.1	0.1	5	-1	1.7	-0.007	-0.001	4.55	WGM/GM

Borehole No.	Date	Gas Concentrations					Max Flow Rate, l/hr	PID, ppm	CO_2 GSV, l/hr	CH4 GSV*, l/hr	Water Level (m bgl)	Ground Conditions
		Min O_2, %	Max CO_2, %**	Max CH4,%	Max H2S, ppm	Max CO, ppm						
BH17	13/10/2022	18.1	0.1	0.1	0.1	0	-0.7	1.5	-0.0007	-0.0007	1.71	GFC/GFG/WGM
	27/10/2022	15.9	0.3	0.1	0.1	5	-2.6	1.5	-0.0078	-0.0026	1.67	
	11/11/2022	21.4	0.1	0.1	0.1	0	0.1	0.5	0.0001	0.0001	1.72	
BH18	13/10/2022	18.1	0.7	0.1	0.1	5	-0.5	1.1	-0.0035	-0.0005	5.84	GFC/WGM/GM
	27/10/2022	15.9	1.3	0.1	0.1	8	-2.2	3	-0.0286	-0.0022	5.85	
	11/11/2022	*21.3*	*0.1*	*0.1*	*0.1*	*0*	*0.1*	*1.5*	-	-	2.05	
BH21	13/10/2022	16.6	1.1	0.1	0.1	5	0.1	2.9	0.0011	0.0001	9.34	GM
	27/10/2022	17.9	0.7	0.1	0.1	3	-2.5	0.5	-0.0175	-0.0025	9.45	
	11/11/2022	19.3	0.6	0.1	0.1	1	-0.1	0.5	-0.0006	-0.0001	9.51	
BH23	13/10/2022	18.9	0.7	0.1	0.1	1	-0.7	0	-0.0049	-0.0007	6.2	WGM/GM
	27/10/2022	18.3	0.8	0.1	0.1	3	-2.7	0.4	-0.0216	-0.0027	6.25	
	11/11/2022	19	0.7	0.1	0.1	0	0.1	0	0.0007	0.0001	6.4	
BH24	13/10/2022	19.1	0.6	0.1	0.1	1	-0.8	0.2	-0.0048	-0.0008	3.19	WGM/GM
BH25	13/10/2022	20.1	0.1	0.1	0.1	5	-1.1	1.7	-0.0011	-0.0011	3.93	WGM/GM
BH27	13/10/2022	18.1	0.8	0.1	0.1	1	-1.1	0	-0.0088	-0.0011	3.04	WGM
CP01	13/10/2022	19.7	0.5	0.1	0.1	3	-1	0.8	-0.005	-0.001	7.11	WGM
	26/10/2022	17.8	0.7	0.1	0.1	0	-2.8	0	-0.0196	-0.0028	7.2	
	14/11/2022	20	1.1	0.1	0.1	0	0.1	0	0.0011	0.0001	7.34	
CP06	14/10/2022	18.1	0.1	0.1	0.1	3	-1	0	-0.001	-0.001	6.87	WGM
	26/10/2022	15.8	0.3	0.1	0.1	3	-2.5	0.6	-0.0075	-0.0025	6.92	
	14/11/2022	15.6	0.6	0.1	0.1	0	0.1	0.3	0.0006	0.0001	7.06	

Borehole No.	Date	Gas Concentrations					Max Flow Rate, l/hr	PID, ppm	CO_2 GSV, l/hr	CH4 GSV*, l/hr	Water Level (m bgl)	Ground Conditions
		Min O_2, %	Max CO_2, %**	Max CH4,%	Max H2S, ppm	Max CO, ppm						
CP10	14/10/2022	16.9	0.8	0.1	0.1	3	-0.7	0.5	-0.0056	-0.0007	4.32	OM/GFC/ GFG
	27/10/2022	16.7	0.9	0.1	0.1	5	-2.4	1	-0.0216	-0.0024	4.27	
	14/11/2022	21.1	0.2	0.1	0.1	0	0.1	0.3	0.0002	0.0001	4.27	
CP11	14/10/2022	-	-	-	-	-	-1.1	-	-	-	2.27	WGM
CP16	*13/10/2022*	*17*	*0.1*	0.1	0.1	*22*	*-0.4*	*1.9*	-	-	3.85	GFC
CP17	*13/10/2022*	*16.9*	*0.9*	*0.1*	*2*	*65*	*-0.8*	*0.9*	-	-	7.2	GFG
	13/10/2022	19.3	0.9	0.1	0.1	1	-1.1	0.5	-0.0099	-0.0011	Dry	
	27/10/2022	18.5	1	0.1	0.1	3	-2.4	0.8	-0.024	-0.0024	Dry	
CP21	11/11/2022	20.2	0.5	0.1	0.1	0	0.1	0.3	0.0005	0.0001	4.9	WGM
	13/10/2022	19.7	0.3	0.1	0.1	3	1.4	0.4	0.0042	0.0014	1.4	
	27/10/2022	19.2	0.4	0.1	0.1	0	-2	1.1	-0.008	-0.002	1.25	
CP27	11/11/2022	20.7	0.3	0.1	0.1	0	0.1	0.3	0.0003	0.0001	1.4	MG
	13/10/2022	19.5	0.9	0.1	0.1	3	-1.3	0	-0.0117	-0.0013	Dry	
	27/10/2022	19	1	0.1	0.1	3	-2.5	0.5	-0.025	-0.0025	Dry	
CP28	11/11/2022	21.2	0.2	0.1	0.1	0	0.1	0	0.0002	0.0001	3.81	WGM

Italics indicate where groundwater was sat within the non-perforated section of pipe therefore rendering the readings invalid. Therefore, GSVs have not been calculated in these instances.

APPENDIX E

PRINCIPLES OF ENVIRONMENTAL RISK ASSESSMENT

Risk Classification Matrix

		Consequence			
		Severe (Sv)	Medium (Md)	Mild (Mi)	Minor (Mr)
Probability	High (Hi)	Very high risk	High Risk	Moderate Risk	Moderate/low risk
	Likely (Li)	High risk	Moderate risk	Moderate/low risk	Low risk
	Low likelihood (Lw)	Moderate risk	Moderate/low risk	Low risk	Very low risk
	Unlikely (Ul)	Moderate/low risk	Low risk	Very low risk	Very low risk

After CIRIA Report C552, Contaminated Land Risk Assessment A Guide to Good Practice, 2001

Classification of Consequence

Classification	Definition	Examples
Severe	Short-term (acute) risk to human health likely to result in "significant harm" as defined by the Environment Protection Act 1990, Part IIA. Short-term risk of pollution (note: Water Resources Act contains no scope for considering significance of pollution) of sensitive water resource. Catastrophic damage to buildings/property. A short-term risk to a particular ecosystem or organisation forming part of such ecosystem (note: the definitions of ecological systems within the Draft Circular on Contaminated Land, DETR, 2000).	High concentrations of cyanide on the surface of an informal recreation area. Major spillage of contaminants from site into controlled water. Explosion, causing building collapse (can also equate to a short-term human health risk if buildings are occupied).
Medium	Chronic damage to Human Health ("significant harm" as defined in DETR, 2000). Pollution of sensitive water resources (note: Water Resources Act contains no scope for considering significance of pollution). A significant change in a particular ecosystem or organism forming part of such ecosystem, (note: the definitions of ecological systems within Draft Circular on Contaminated Land, DETR, 2000).	Concentration of a contaminant from site exceeds the generic or site-specific assessment criteria. Leaching of contaminants from a site to a major or minor aquifer. Death of a species within a designated nature reserve. Lesser toxic and asphyxiate effects of carbon dioxide
Mild	Pollution of non-sensitive water resources. Significant damage to crops, buildings, structures and services ("significant harm" as defined in the Draft Circular on Contaminated Land, DETR, 2000). Damage to sensitive buildings/structures/services or the environment.	Pollution of non-classified groundwater. Damage to building rendering it unsafe to occupy (e.g. foundation damage resulting in instability).
Minor	Harm, although not necessarily significant harm, which may result in a financial loss or expenditure to resolve. Non-permanent health effects to human health (easily prevented by means such as personal protective clothing, etc). Easily repairable effects of damage to buildings, structures and services.	The presence of contaminants at such concentrations that protective equipment is required during site works. The loss of plants in a landscaping scheme. Discoloration of concrete.

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