



**Prestwich Village
Prestwich
Manchester
M25 1AY**

Ground Investigation

The Prestwich Regeneration LLP

September 2024

J23254
Rev 1





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Rev No	Status	Revision Details	Date	Approved for Issue
0	Final		23 January 2024	
1	Final	Addition of Vinci comments	25 September 2024	

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This report is intended as a Ground Investigation Report (GIR) as defined in BS EN1997-2, unless specifically noted otherwise. The report is not a Geotechnical Design Report (GDR) as defined in EN1997-2 and recommendations made within this report are for guidance only.

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Executive summary

This executive summary contains an overview of the key findings and conclusions. No reliance should be placed on any part of the executive summary until the whole of the report has been read. Other sections of the report may contain information that puts into context the findings that are summarised in the executive summary.

Brief

This report describes the findings of a site investigation carried out by Geotechnical and Environmental Associates Limited (GEA) on behalf of The Prestwich Regeneration LLP, with respect to demolishing the existing buildings and structures on site and undertaking a phased residential and commercial redevelopment comprising low and high rise buildings. The purpose of the investigation has been to determine the ground conditions, to provide an indication of the presence of contamination and to provide information to assist with the design of foundations. A desk study has previously been undertaken by GEA (report ref J23254, Rev 3, dated 16 January 2024) and is referred to in this report where appropriate.

Site history

The previous desk study indicated that at the time of the earliest map studied, dated 1848, the northern half of the site was occupied by a section of a large field and by the next available map dated 1891, a cricket ground had been established within this part of the site. Between 1909 and 1952, this part of the site was gradually developed with small buildings of unknown use increasing in number over time and by 1952, it is noted as being a corporation yard. The site remained relatively unchanged until some time prior to 1983, by which point the corporation yard had been converted into the existing car park. For the southern and western parts of the site, the map dated 1848 shows a section to have contained what are understood to have been terraced residential properties located along roads named Longfield and Clayton Street, which ran approximately east-west and northeast-southwest respectively. The site remained relatively unchanged until some time between 1968 and 1974, when all of the residential properties and roads located within this area apart from Fairfax Road and Poppythorn Lane had been replaced by the Longfield Shopping Centre and Health Centre as well as the car park in the southeast. This area of the site has remained relatively unchanged. The site was surrounded to the north, northwest and east by open fields and to the south and west by the town of Prestwich in 1848. Approximately 30 m to the east, a river flowing towards the east was present and approximately 30 m to the west, the Chester and Bury New Road was present running approximately northwest-southeast. By 1891, active railway lines are shown on an embankment along the eastern boundary of the site. To the southeast of the site, Prestwich railway station and associated rail yard had been constructed. By 1977, the railway yard to the south of Prestwich railway station had been replaced by a builders yard and residential properties, and by 1992, the railway station and lines were converted into the Metrolink station and tram lines.

Ground conditions

The investigation encountered the expected ground conditions in that made ground was found to be underlain by Hummocky Glacial Deposits, with Alluvium locally encountered directly below the made ground within the northern part of the site. The made ground within the pedestrianised areas of Longfield Shopping Centre comprised granite paving slabs above fibre-reinforced concrete and asphalt over subbase over silty sand, gravelly sandy silty clay and very sandy silty gravel with fragments of brick and sandstone and extended to depths of between 0.38 m and 1.45 m (92.04 m OD and 93.13 m OD). Within the car parks and service areas, the made ground comprised asphalt surfacing over black very sandy silty gravel, brown sandy gravelly silty clay and dark grey gravelly silty sand with fragments to cobble size of brick, concrete, ash, plastic, clinker and

sandstone. The made ground extended across the majority of the site to depths of between 0.40 m and 1.60 m (92.46 m OD and 94.10 m OD), however locally extended to a depth of 3.00 m (93.47 m OD). The Alluvium comprised very soft dark grey and brown pseudo-fibrous peat over very soft grey slightly gravelly clay to a depth of 2.50 m (92.80 m OD). Hummocky Glacial Deposits initially comprised interbedded very loose to medium dense silty sand and very soft becoming firm sandy silt and sandy gravelly silty clay to depths of between 1.90 m and 4.90 m (89.25 m OD and 93.85 m OD), below which interbedded medium dense silty sand and firm sandy gravelly silty clay extended to depths of between 4.30 m and 9.90 m (87.07 m OD and 89.95 m OD). Beneath the interbedded Hummocky Glacial Deposits, stiff sandy gravelly silty clay extended to depths of between 9.80 m and 15.30 m (79.96 m OD and 85.25 m OD) below which dense and very dense gravelly sand extended to the maximum depth of the investigation, of 20.43 m (73.05 m OD).

Perched groundwater was encountered within the made ground at depths of 0.28 m and 1.00 m (93.47 m OD and 95.44 m OD). Groundwater was encountered within the Hummocky Glacial Deposits at depths of between 2.00 m and 18.70 m (77.55 m OD and 92.30 m OD).

Recommendations

Shallow spread foundations bypassing the made ground and soft natural ground and bearing on the firm cohesive and medium dense granular Hummocky Glacial Deposits may be designed to apply a net allowable bearing pressure of 125 kN/m² and 175 kN/m² respectively. Where spread foundations bearing on natural soils are not feasible, ground improvement could be undertaken through the installation of vibro stone columns and spread foundations applying a pressure of 150 kN/m² onto treated ground should be appropriate. For heavier structures, piled foundations will be required, with both bored and driven piles deemed feasible. Preliminary calculations suggest a 250 mm square driven pre-cast concrete pile is likely to have a working load capacity of 600 kN, whilst a 350 mm square pile should be able to support a safe working load of 975 kN. For CFA bored piles, preliminary calculations suggest a 450 mm diameter pile is likely to have a working load capacity of 1000 kN whilst a 600 mm diameter pile should be able to support a safe working load of 1550 kN.

Shallow soakaways are not considered to be viable and a CBR value of 'less than 2 %' will be applicable for the preliminary design of pavements formed within made ground.

Contamination testing showed the presence of asbestos in the made ground at Borehole No 08A and elevated concentrations within the made ground of sulphide within the northern and central car parks, total petroleum hydrocarbons at Borehole Nos 01, 06, 07, 09 and 17 and total PAH within the northern, central and western parts of the site, more specifically benzo(b)fluoranthene, dibenz(a,h)anthracene and benzo(a)pyrene. Elevated concentrations of total petroleum hydrocarbons, total PAH, more specifically benzo(a)pyrene, benzo(b)fluoranthene, anthracene, fluoranthene, indeno(1,2,3-cd)pyrene were encountered within the groundwater in northern car park. Limited remedial measures will be required in respect of soil contamination and clean soil should be utilised where areas of soft landscaping are to be present on site. Further testing should be carried out in the northern car park in order to establish the extent of the total PAH contamination and Alluvium encountered within this area.



Part 1: Investigation Report

This section of the report details the objectives of the investigation, the work that has been carried out to meet these objectives and the results of the investigation. Interpretation of the findings is presented in Part 2.

1.0 Introduction

Geotechnical and Environmental Associates Limited (GEA) has been commissioned by The Prestwich Regeneration LLP, to carry out a ground investigation at Prestwich Village, Prestwich, Manchester, M25 1AY.

A desk study has previously been conducted by GEA (report ref J23254, Rev 3, dated 16 January 2024) and is referred to in this report where appropriate.

1.1 Proposed Development

It is understood that it is proposed to redevelop the site for mixed uses and the redevelopment is described in the planning application as follows:

“Hybrid application comprising: Full planning application proposing demolition of existing buildings and structures and the erection of a phased mixed use development including a Community Hub comprising flexible uses including library, offices medical or health services (Use Classes F1 (a-f), F2(b), E(c), E(e), E(g), a retail building (Use Classes E(a), E(b) and Sui Generis), a new Market Hall (Use Classes E(a), E(b) and Sui Generis), a Commercial Building comprising flexible uses including retail, offices, gymnasium (Use Classes E(a), E(b), E(c), E(d), E(g), a Travel Hub comprising car parking and cycle parking (Sui Generis), a public square and public realm and associated landscaping, car parking provision, cycle storage and other associated works; and part Outline planning application (with all matters reserved) proposing a phased residential led mixed use development comprising residential (Use Class C3), flexible commercial, business, service, local community and learning uses (Use Classes E, F and Sui Generis), engineering works to Rectory Lane, new public realm, associated landscaping, car parking provision, cycle storage and other associated works”.

This report is specific to the proposed development and the advice herein should be reviewed if the development proposals are amended.





1.2 Purpose of Work

The principal technical objectives of the work carried out were as follows:

- ✚ to develop the information gained from the Phase 1 desk study;
- ✚ to determine the ground conditions and their engineering properties;
- ✚ to use the above information to provide recommendations for shallow and deep foundations;
- ✚ to provide an indication of the degree of soil contamination present; and
- ✚ to assess the risk that any such contamination may pose to the proposed development, its users or the wider environment.

1.3 Scope of Work

In order to meet the above objectives, and in the light of the previous GEA desk study, an intrusive ground investigation was carried out which comprised, in summary, the following activities:

- ✚ six boreholes advanced to a maximum depth of 20.43 m by cable percussive techniques;
- ✚ a total of ten open-drive boreholes advanced to a maximum depth of 5.45 m;
- ✚ manual excavation of three trial pits to a maximum depth of 1.70 m;
- ✚ the lifting of nine decorative paving slabs to assess the feasibility of the lifting and re-use of slabs present on site;
- ✚ standard penetration tests (SPTs) carried out at regular intervals within the boreholes to provide quantitative data on the strength of the soils;
- ✚ falling head soakage tests undertaken in four of the open-drive boreholes;

- ✚ the installation of six groundwater monitoring standpipes, and two monitoring visits;
- ✚ testing of selected soil samples for contamination and geotechnical purposes; and
- ✚ provision of a report presenting and interpreting the above data, together with our advice and recommendations with respect to the proposed development.

This report includes a contaminated land assessment which has been undertaken by a suitably qualified and competent professional in accordance with the methodology presented by the Environment Agency in their Land contamination risk assessment (LCRM)¹ published 19 April 2021. This involves identifying, making decisions on, and taking appropriate action to deal with, land contamination in a way that is consistent with government policies and legislation within the United Kingdom. Risk management is divided into three stages; Risk Assessment, Options Appraisal and Remediation, and each stage comprises three tiers. The Risk Assessment stage includes preliminary risk assessment (PRA), generic quantitative risk assessment (GQRA) and detailed quantitative risk assessment (DQRA) and this report includes the PRA and GQRA.

The exploratory methods adopted in this investigation have been selected on the basis of the constraints of the site including but not limited to access and space limitations, together with any budgetary or timing constraints. Where it has not been possible to reasonably use an EC7 compliant investigation technique a practical alternative has been adopted to obtain indicative soil parameters and any interpretation is based upon engineering experience, local precedent where applicable and relevant published information.

¹ <https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm>



2.0 The Site

2.1 Site Description

The site is located in the town of Prestwich, approximately 40 m west of Prestwich railway station and is occupied by buildings and car parks associated with Longfield Shopping Centre. The site is bounded directly to the northeast by active Metrolink lines running approximately northwest-southeast, which are on a 2 m to 3 m high embankment separated from the site by a chain-link fence. To the east, the site is bounded by Prestwich Metrolink stop and its car park and to the southeast by three-storey residential buildings surrounded by areas of soft landscaping and sporadic mature trees.

Rectory Lane runs along the southern boundary of the site, with St Mary's C of E Primary School to the south of the road. The site is bounded to the west and southwest by commercial properties including public houses and a supermarket, which front onto the A58, Bury New Road, which is situated further to the west.

To the northwest of the site, residential properties and a church are present, and to the north, a series of allotments are separated from the site by a small area of hardstanding and Highfield Place, a road which runs parallel with Fairfax Road. Three medium-rise mixed use buildings containing small areas of soft landscaping are present directly to the northwest of the centre of the site.

The site is irregularly shaped and covers an area of approximately 2.5 hectares. Due to its size, the site is considered in three parts as shown opposite. The site may be additionally located by National Grid Reference 381270, 404150.

2.1.1 Longfield Shopping Centre

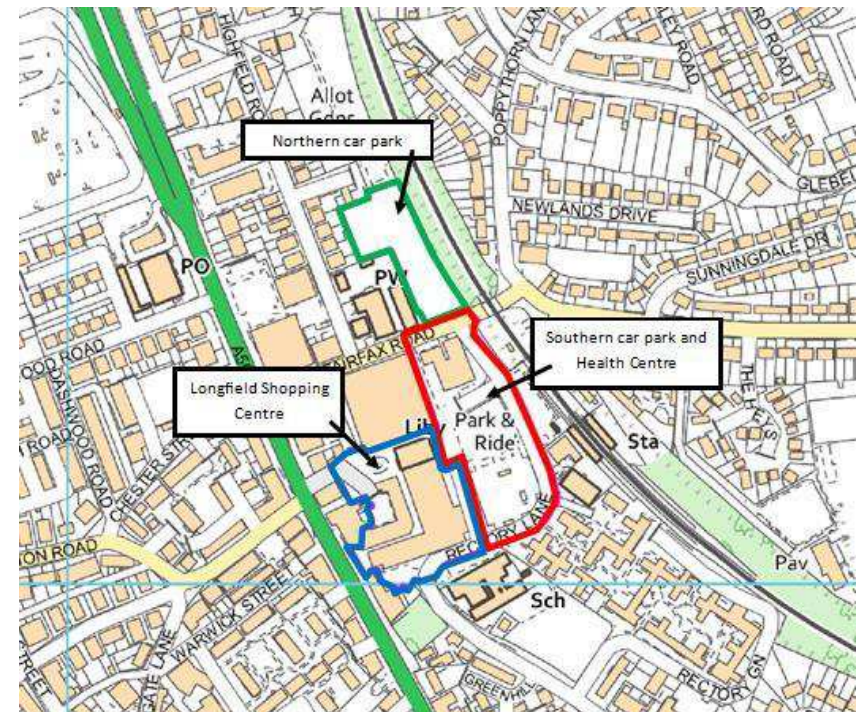
The shopping centre occupies the southwestern part of the site and consists of various single storey to three-storey brick buildings containing a series of existing shops and retail units, with the buildings separated by pedestrianised areas. A substantial water fountain surrounded by an area of decorative paving is located to the north of these buildings. A small, cobbled road named Poppythorn Lane connects a car park located in the centre of the shopping centre to the A58 trunk road to the west, and appears to be a service road to the commercial units. This road connects to Rectory Lane in the east of the site

2.1.3 Southern Car Park and Prestwich Health Centre

The southeastern and central parts of the site are occupied by large, roughly rectangular-shaped surface asphalt car parks and the Prestwich Health Centre, which consists of single storey and two-storey brick buildings. Both areas are accessed from the east by Rectory Lane, which wraps around the southern and eastern edges of the site and both locations are separated by an access road leading to a car park associated with the Health Centre. Areas of soft landscaping and mature trees surround Prestwich Health Centre and further trees are located along the access road. This part of the site is separated from another large, open car park to the north by Fairfax Road, which runs roughly east-west.

2.1.3 Northern Car Park

The northernmost part of the site is occupied by a second large, roughly rectangular-shaped surface asphalt car park and is accessed from Fairfax Road to the south. Mature trees are present along the western and northern edges of the car park, and the car park is separated from the buildings to the west by a brick wall approximately 2 m in height.





2.2 Desk Study Findings

The previous desk study indicates that at the time of the earliest map studied, dated 1848, the northern half of the site was occupied by a section of a large field and by the next available map dated 1891, a cricket ground had been established within this part of the site. Between 1909 and 1952, this part of the site was gradually developed with small buildings of unknown use increasing in number over time and by 1952, it is noted as being a corporation yard. The site remained relatively unchanged until some time prior to 1983, by which point the corporation yard had been converted into the existing car park.

For the southern and western parts of the site, the map dated 1848, shows a section to have contained what are understood to have been terraced residential properties located along roads named Longfield and Clayton Street, which ran approximately east-west and northeast-southwest respectively. The next available map, dated 1891, shows further residential properties had been constructed directly to the south and north of the existing properties. The site remained relatively unchanged until some time between 1968 and 1974, when all of the residential properties and roads located within this area apart from Fairfax Road and Poppythorn Lane had been replaced by the Longfield Shopping Centre and Health Centre as well as the car park in the southeast. This area of the site has remained relatively unchanged.

The site was surrounded to the north, northwest and east by open fields and to the south and west by the town of Prestwich in 1848. Approximately 30 m to the east, a river flowing towards the east was present and approximately 30 m to the west, the Chester and Bury New Road was present running approximately northwest-southeast. By 1891, active railway lines are shown on an embankment along the eastern boundary of the site. By 1977, the railway yard to the south of Prestwich railway station had been replaced by a builders yard and residential properties, and by 1992, the railway station and lines were converted into the Metrolink station and tram lines.

A single historic landfill within 1 km of the site, Drinkwater Park landfill, was located approximately 908 m to the southwest and having accepted inert, household, industrial, commercial and special waste as well as liquid sludge and stopped accepting waste in 1984 and is located approximately 30 m down gradient of the site such that the it is deemed not likely to have impacted the site. No recorded waste management facilities, waste transfer, waste treatment or disposal sites were present within 1 km of the site.

Two areas of potentially infilled land (non-water) were located approximately 304 m to the north and 428 m to the east of site. Both involved unknown filled ground that were thought

to be gravel pits infilled in the late 19th century. Furthermore, a total of 11 areas of potentially infilled water were located within 500 m of the site, with the closest located approximately 28 m east, 143 m north and 156 m northwest and is believed to be related to the river infilled prior to 1891. There were three contemporary trade directory entries listed on site and a further four within 100 m of the site. Each of the seven trade directories are listed as inactive.

Information on Urban Soil Chemistry provided by the BGS indicates that background concentrations for arsenic, cadmium and lead on site were likely to range between 15 mg/kg and 25mg/kg, 30mg/kg and 45 mg/kg and 200 mg/kg and 300 mg/kg respectively. Therefore, relatively high concentrations of these metals may be encountered within any near surface soils present on the site will need to be taken into account in any subsequent risk assessment.

Reference to records compiled by the Health Protection Agency (formerly the National Radiological Protection Board) indicates that the site falls within an area where 1 % to 3 % of homes are affected by radon emissions and therefore radon protective measures should not be necessary.

2.3 Detailed UXO Risk Assessment

A Detailed UXO Risk Assessment was completed by 1st Line Defence (report ref DA16882a-00, dated 13th October 2023), and the report is included in Section 3 of the Appendix. The risk assessment was carried out in accordance with the guidelines provided by CIRIA², which states that the likelihood of encountering and detonating UXO below a site should be assessed along with establishing the consequences that may arise..

The report indicates that, during World War II (WWII), the site was within Prestwich Municipal Borough which according to official Home Office bombing statistics sustained an overall very low density of bombing, with an average of 6.6 items of ordnance per 1,000 acres, with the closest incident recorded 600m north-east of the site. As such, the risk from UXO contamination is not thought to be above the 'background risk' for this area of the UK, and the site has been assessed as low risk, meaning no further action is recommended.

2 CIRIA C681 (2009) *Unexploded ordnance (UXO) A guide for the construction industry*



2.4 Coal Authority Mining Report

The Coal Authority Consultants Mining Report for the site, included in Section 4 of the Appendix notes that two historic underground mines were present beneath the site. Mining was undertaken at depths of 296 m and 476 m and ceased between 1970 and 1971. There are no records of probable unrecorded shallow workings or mine entries within 100 m. There are no recorded coal outcrops on site or opencast mines within 500 m.

There are no recorded mine gas or mine water treatment within 500 m, but the report notes two claims of coal mining subsidence within 50 m and required that further research should be undertaken in the form of review of a Coal Authority Subsidence Claim. The reports obtained from the Coal Authority revealed that investigations into the Subsidence Claims were conducted during March and September 1995. The claims were withdrawn and rejected respectively. On this basis, there was not considered to be a risk to the proposed development from coal mining activity.

2.5 Geology

The British Geological Survey (BGS) map of the area, obtained from Envirocheck in Figure 4 below, indicated that the site is directly underlain by Glaciofluvial Deposits in the northern part of the site and Hummocky Glacial Deposits in the central and southern parts. These materials were indicated to both comprise sand and gravels. Beneath the superficial deposits the Pennine Upper Coal Measures Formation were present, specifically the Worsley Delf Rock, which were expected beneath the majority of the site except the southernmost corner.

A search of the BGS borehole database had not identified any records of historic boreholes drilled on site, but four are located 120 m to 150 m to the south. The boreholes encountered made ground to depths of between 0.35 m and 3.00 m (91.27 m OD and 96.77 m OD) underlain by Hummocky Glacial Deposits comprising silty clay and sand with fragments of coal were encountered to the maximum depth investigated of 11.50 m (85.80 m OD).

2.6 Hydrology and Hydrogeology

The Hummocky Glacial Deposits, Glaciofluvial Deposits and Pennine Upper Coal Measures Formation are classified by the Environment Agency as Secondary 'A' Aquifers, which refers to permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers.

The aforementioned BGS boreholes encountered groundwater strikes locally within the Hummocky Glacial Deposits at depths of between 3.25 m and 4.20 m, standing at depths of between 3.00 m and 3.20 m and a seepage of 9.50 m. However, groundwater was not encountered within each borehole, suggesting that the groundwater table may not be continuous. The site is not located within a Groundwater Source Protection Zone and is located within an area with limited potential for groundwater flooding to occur.

The nearest surface water feature is Prestwich Bank, located 450 m to the south, although a water feature in the form of a water fountain was present in the western corner of the site.

The site is almost entirely covered by areas of concrete and tarmac hardstanding and buildings, with a small number of areas of soft landscaping in the north and central parts of the site. Infiltration of rainwater is generally restricted to surface water drains, such that the majority of surface runoff drains into the drainage system currently on site. The proposed development will result in no significant change in the amount of hard coverage and therefore will cause no change in the amount of runoff or volume of water received into the existing sewer system. There should not, therefore, be any requirement for any mitigation measures.

2.7 Preliminary Risk Assessment

Part IIA of the Environmental Protection Act 1990, which was inserted into that Act by Section 57 of the Environment Act 1995, provides the main regulatory regime for the identification and remediation of contaminated land. The determination of contaminated sites is based on a "suitable for use" approach which involves managing the risks posed by contaminated land by making risk-based decisions. This risk assessment is carried out on the basis of a source-pathway-receptor approach.

2.7.1 Source

The desk study indicated that the majority of the site does not have a contaminative history, but the former railway yard in the southeastern corner is a potential source of contamination including oil and fuel, coolants, solvents and asbestos. Elsewhere on site, the presence of asbestos is likely, as a number of properties on the site were constructed during the period when the use of asbestos was at its peak in the 1930s and early 1960s. Areas of infilled land located within close proximity of the site could be a source of ground gas. It was not known specifically when these elements of land were infilled, but it is noted that this could be over 100 years ago, such that it is highly unlikely that ground gas was being generated.



2.6.2 Receptor

The proposed development includes a residential end use and therefore residents will be relatively high sensitivity receptors. As the site is directly underlain by a Secondary 'A' Aquifer, groundwater and adjacent sites are considered to be a moderately sensitive receptors. Buried services are likely to come into contact with any contaminants in the soils through which they pass and site workers are potential receptors during construction or maintenance works.

2.7.3 Pathway

As the southeastern of the site formed part of a larger railway yard for nearly 70 years within the 19th and 20th Century, it is likely the sensitive aquifers beneath the site have been exposed to potential contamination already. The proposed development was expected to result in ground coverage remaining relatively unchanged, so there was unlikely to be any significant increase in the volume of water entering the ground. New surface water drainage systems will mean that the risk to surface waters can be controlled. Buried services may be exposed to any contaminants present within the soil through direct contact and site workers will come into contact with the soils during construction works.

Within the site, end users will be isolated from direct contact with any contaminants present within the made ground by the presence of the buildings and the extent of the hardstanding, however any soft landscaping will present a potential exposure pathway. Furthermore, as there was not considered a significant source, there was not considered to be a significant potential for hazardous soil gas to be present on or migrating towards the site

2.7.4 Preliminary Risk Appraisal

On the basis of the above it was considered that there was a MODERATE / LOW risk of there being a significant contaminant linkage at this site that could result in a requirement for remediation work.

3.0 Exploratory Work

In order to meet the objectives described in Section 1.2, six boreholes were advanced to a maximum depth of 20.43 m (73.05m OD) using a cable percussion rig. Additionally, ten open-drive boreholes were extended to depths of between 0.70 m and 5.45 m (88.50 m OD and 95.00 m OD) and three hand dug trial pits were extended to depths of between 1.40 m and 1.70 m (91.84 m OD and 92.19 m OD). Furthermore, nine slabs surrounding Borehole No 17 were lifted to assess the feasibility of their removal and re-use as part of the redevelopment, with the process supervised by a representative from Civic Engineers. The works were conducted under a licence provided by Bury Council.

An additional cable percussion borehole, open-drive borehole and trial pit were originally proposed to be undertaken within the area surrounding the Prestwich Health Centre located on the site. However concerns were raised by representatives from the NHS relating to the noise and disruption caused by the drilling and these were postponed during the works. It was suggested that these works would have to be undertaken during a weekend when the health centre is not operational, but at the time of issuing this report, these works have not been undertaken. The affected investigation positions are Borehole Nos 03 and 10 and Trial Pit No 01

Six groundwater monitoring standpipes have been installed to depths of between 2.00 m and 15.00 m (88.46 m OD and 94.47 m OD) within the cable percussion boreholes to facilitate groundwater monitoring, which has been carried out on two occasions, approximately two and four weeks after installation.

During boring, disturbed and undisturbed samples were obtained from the boreholes for subsequent laboratory examination and testing. Standard Penetration Tests (SPTs) were carried out at regular intervals to provide additional quantitative data on the strength of soils encountered. A selection of the samples recovered from the boreholes was submitted to a soil mechanics laboratory for a programme of geotechnical testing and an analytical laboratory for a programme of contamination testing.

All of the above work was carried out under the supervision of a geotechnical engineer from GEA. The borehole and trial pit records are appended, together with a site plan indicating the exploratory positions. The Ordnance Datum (OD) levels on the borehole and trial pit records have been provided by Chroma Consulting labelled on a drawing detailing existing levels (46382_T_UG, dated 17 August 2023).



3.1 Sampling Strategy

The trial pit and borehole locations were agreed with the consulting engineers, Civic Engineers, prior to the commencement of the siteworks.

A total of 15 samples of the made ground and three sample of Hummocky Glacial Deposits have been tested for the presence of contamination. The analytical suite of testing was selected to identify a range of typical industrial contaminants for the purposes of general coverage. The analytical suite for the soil included a range of metals, speciation of total petroleum hydrocarbons (TPH), polycyclic aromatic hydrocarbons (PAH), total cyanide and monohydric phenols. The analyses were carried out at an MCERTs accredited laboratory with the majority of the testing suite accredited to MCERTS standards. A summary of the MCERTs accreditation and test methods are included with the attached results and further details are available upon request.

4.0 Ground Conditions

The investigation has generally confirmed the expected ground conditions in that, beneath a significant thickness of made ground, Hummocky Glacial Deposits were encountered. An area of Alluvium was encountered within the northern part of the site.

4.1 Made Ground

4.1.1 Longfield Shopping Centre

Granite paving slabs formed the surface of the locations within the pedestrianised areas of Longfield Shopping Centre, and extended to a depth of 0.05 m (93.19 m OD and 93.84 m OD). Beneath the paving slabs, a base course was encountered that comprised light reddish brown fibre-reinforced concrete to depths of 0.10 m to 0.15 m (92.80 m OD and 93.79 m OD) over dark grey asphalt to depths of 0.24 m and 0.26 m (92.71 m OD and 93.65 m OD). A subbase was encountered beneath the base course that comprised grey, yellowish brown and greyish brown very gravelly silty sand and very sandy silty gravel with fragments of brick, concrete, ash, clinker and sandstone, and extended to depths of between 0.38 m and 0.60 m (92.54 m OD and 93.44 m OD). Within the subbase of Trial Pit No 4, a granite kerbstone was encountered at a depth of 0.30 m (92.94 m OD).

Directly beneath the subbase, the made ground comprised orange-brown silty sand, dark grey gravelly sandy silty clay and dark grey and dark brown very sandy silty gravel with fragments of brick and sandstone and extended to depths of between 0.38 m and 1.45m (92.04 m OD and 93.13 m OD).

During the excavation of the positions within the pedestrianised areas, a number of underground services were encountered and are outlined in the table below:

Trial Pit No	Type of Service	Depth to top of service (m) [Level (m OD)]
3	200 mm diameter sewer pipe	1.15 [92.74]
4 North	Possible gas main	0.70 [92.54]
4 North	200 mm diameter sewer pipe	0.85 [92.39]

Apart from the fragments of extraneous material, no visual evidence of contamination was observed within the made ground within this area during the fieldwork.



4.1.2 Car Parks and Service Areas

Stone mastic asphalt (SMA) and hot rolled asphalt (HRA) with 10 mm green chippings formed the surface of the car parks and service areas and extended to depths of between 0.05 m and 0.12 m (93.36 m OD and 95.58 m OD). Beneath this wearing course, a subbase was encountered which comprised dark grey and light grey very sandy silty gravel with fragments of brick, concrete, asphalt and sandstone, and extended to depths of between 0.28 m and 1.00 m (93.36 m OD and 95.58 m OD). Within Borehole No 01, cobbles of black asphalt were encountered directly beneath the wearing course at depth of 0.05 m (96.42 m OD).

Borehole No 08 and 08A encountered a flat, concrete obstruction at depths of 0.72 m and 0.70 m (94.98 m OD and 95.00 m OD) respectively, and were therefore terminated within these deposits.

Directly beneath the subbase, the made ground comprised black very sandy silty very gravel, brown slightly sandy slightly gravelly silty clay and dark grey very gravelly silty sand with fragments to cobble size of brick, concrete, ash, plastic, clinker and sandstone and extended to the depths across the majority of the site of between 0.40 m and 1.60 m (92.46 m OD and 94.10 m OD), however within Borehole No 01, the made ground extended to a depth of 3.00 m (93.47 m OD).

The cobbles of asphalt encountered in Borehole No 01 were sprayed with PAK spray and were observed to contain coal tar. Furthermore, a hydrocarbon odour was noted in Borehole No 01 at depths between 1.00 m and 3.00 m (93.47 m OD and 95.47 m OD), with the odour decreasing with depth. With this being the case, a single sample of the potentially contaminated made ground has been analysed for speciated TPH and the results are detailed within Section 4.6.

4.2 Alluvium

Beneath the made ground within Borehole No 02, Alluvium was encountered and comprised very soft dark grey and brown pseudo-fibrous peat over very soft grey slightly gravelly clay with rare pockets of brown peat to a depth of 2.50 m (92.80 m OD).

Atterberg testing has indicated a liquid limit of 305 %, plasticity limit of 182 %, a plasticity index of 123 % and a natural moisture content of 241 %.

4.3 Hummocky Glacial Deposits

These deposits were encountered beneath the made ground and, as anticipated, were found to be highly variable in composition. They may, however, be considered in three layers.

4.3.1 Interbedded Granular and Cohesive Deposits

Beneath the Alluvium, where present, or elsewhere beneath the made ground, the Hummocky Glacial Deposits initially consisted of widely spaced interbeds of granular and cohesive deposits. Initially the granular deposits comprised very loose to medium dense silty predominantly fine and medium sand and the cohesive deposits comprised very soft becoming firm sandy silt and slightly sandy slightly gravelly silty clay. These interbedded deposits extended to depths of between 1.90 m and 4.90 m (89.25 m OD and 93.85 m OD).

Beneath these deposits, very widely to extremely widely interbedded deposits were encountered, which comprised medium dense silty predominantly fine and medium sand and firm slightly sandy slightly gravelly silty clay. These interbedded deposits extended to depths of between 4.30 m and 9.90 m (87.07 m OD and 89.95 m OD).

No granular interbeds were encountered within Borehole No 06 and the cohesive deposits consisted of very soft becoming soft slightly gravelly sandy silty clay to a depth of 5.30 m (88.16 m OD).

Atterberg testing of the cohesive soils has indicated liquid limits of between 23% and 37%, plasticity limits of 14% and 23% and plasticity indexes of between 5 % and 18 %, indicating a low volume change potential. The results of the results of quick undrained triaxial compression tests indicate the clay to be of very low to medium strength.

Within Borehole No 01, a slight hydrocarbon odour was noted within the granular deposits at depths between 3.00 m and 5.30 m (91.17 m OD and 93.47 m OD) and therefore, a single sample of this material has been analysed for speciated TPH. Although no further visual or olfactory evidence of contamination was observed during the fieldwork, two samples of Hummocky Glacial Deposits from this borehole have also been analysed for a range of contaminants as a precautionary measure and for use in preliminary waste classification; the results are detailed within Section 4.6.



4.3.2 Stiff Cohesive Deposits

Beneath the interbedded Hummocky Glacial Deposits, this material comprised stiff slightly sandy slightly gravelly silty clay with occasional lenses of silty sand to depths of between 9.80 m and 15.30 m (79.96 m OD and 85.25 m OD).

Atterberg testing of these deposits has indicated liquid limits of 30% and 31%, a plasticity limit of 15 % and plasticity indexes of 15% and 16%, indicating a low volume change potential. The results of undrained triaxial compression tests indicate the clay to be of medium to high strength, locally low strength.

4.3.3 Dense and Very Dense Granular Deposits

This material, which was encountered within all of the deep cable percussion boreholes, comprised dense and very dense gravelly locally very gravelly predominantly fine to medium sand to the maximum depth of the investigation, of 20.43 m (73.05 m OD). Deposits with SPT N60 values in excess of 50 were encountered at depths of between 15.50 m and 17.00 m (77.26 m OD and 79.67 m OD) and extended to the base of the boreholes.

4.4 Groundwater

Perched groundwater was encountered within the made ground at depths of 0.28 m and 1.00 m (93.47 m OD and 95.44 m OD).

Groundwater was encountered within the Hummocky Glacial Deposits, with groundwater measured at depths of between 2.00 m and 18.70 m (77.55 m OD and 92.30 m OD).

Standpipes were installed within the cable percussion boreholes at varying depths and the measurements of the two monitoring visits are presented in the table below.

Borehole No	Response Zone (m)	Date	Depth to water (m) [Level (m OD)]
1	1.00 to 2.00	05/12/2023	DRY at 2.22 [n/a]
		14/12/2023	2.09 [94.38]
2	7.00 to 10.00	05/12/2023	4.01 [91.29]
		14/12/2023	3.02 [92.28]

Borehole No	Response Zone (m)	Date	Depth to water (m) [Level (m OD)]
4	2.00 to 5.00	05/12/2023	DRY at 4.44 [n/a]
		14/12/2023	DRY at 4.44 [n/a]
5	1.00 to 10.00	05/12/2023	3.35 [91.70]
		14/12/2023	3.08 [91.97]
6	11.00 to 15.00	05/12/2023	DRY at 14.13 [n/a]
		14/12/2023	13.48 [79.98]
7	1.00 to 2.00	05/12/2023	1.83 [92.06]
		14/12/2023	1.58 [92.31]

4.5 Soil Contamination

4.5.1 Made Ground

The table below sets out the values measured within the 15 samples analysed; all concentrations are in mg/kg unless otherwise stated.

Determinant	Maximum	Minimum	Number of samples below detection limit
pH	10.0	6.9	-
Arsenic	22	2.0	None
Cadmium	0.8	<0.10	Six
Chromium (Hexavalent)	<1.0	<1.0	All
Lead	240	6.4	None
Mercury	0.28	<0.05	Six
Selenium	<0.50	<0.50	All
Copper	99	8.6	None



Determinant	Maximum	Minimum	Number of samples below detection limit
Nickel	22	5.2	None
Zinc	140	28	None
Total Cyanide	0.90	<0.10	Eight
Total Phenols	2.8	<0.30	Thirteen
Total PAH	500	<0.10	Two
Sulphide	71	<10	Four
Benzo(a)pyrene	33	<0.03	Four
Naphthalene	13	<0.03	Four
EPH (C8-C40)	21000	<10	Four
Total Organic Carbon %	4.9	<0.10	One

In addition, 17 samples of the made ground have been screened for the presence of asbestos and the results are shown in the table below.

BH/TP ref	Sample depth (m)	Asbestos detected	Quantification; total asbestos in sample (%)	Potentially respirable fibres (fibres/g)
BH01	0.50	None	-	-
BH01	2.00	None	-	-
BH01	4.00	None	-	-
BH01	5.30	None	-	-
BH02	1.10	None	-	-
BH04	0.30	None	-	-
BH06	0.30	None	-	-
BH07	0.50	None	-	-
BH08A	0.50	Chrysotile – Fibre bundles	<0.001%	-
BH09	1.00	None	-	-
BH11	0.50	None	-	-

BH/TP ref	Sample depth (m)	Asbestos detected	Quantification; total asbestos in sample (%)	Potentially respirable fibres (fibres/g)
BH13	1.50	None	-	-
BH14	0.50	None	-	-
BH15	1.40	None	-	-
BH17	0.40	None	-	-
TP03	0.80	None	-	-
TP04	0.70	None	-	-

4.5.2 Hummocky Glacial Deposits

The table below sets out the values measured within the three samples of Hummocky Glacial Deposits analysed; all concentrations are in mg/kg unless otherwise stated. A slight hydrocarbon odour was detected within the sample tested in Borehole No 01 at a depth of 4.00 m.

Determinant	BH01 4.00 m	BH01 5.30 m	TP02 0.50 m
pH	8.4	7.6	8.2
Arsenic	3.2	5.4	6.3
Cadmium	0.10	0.20	<0.10
Chromium (Hexavalent)	7.6	15	<1.0
Lead	5.3	10	6.5
Mercury	<0.05	<0.05	<0.05
Selenium	<0.50	<0.50	<0.50
Copper	11	24	11
Nickel	9.2	28	7.8
Zinc	30	71	24
Total Cyanide	<0.10	<0.10	<0.10
Total Phenols	<0.30	<0.30	<0.30
Total PAH	13	0.91	<0.10



Determinant	BH01 4.00 m	BH01 5.30 m	TP02 0.50 m
Sulphide	32	39	51
Benzo(a)pyrene	0.59	<0.03	<0.03
Naphthalene	0.32	0.04	<0.03
EPH (C8-C40)	110	36	340
Total Organic Carbon %	0.6	1.0	<0.10

4.5.3 Generic Quantitative Risk Assessment

The use of a risk-based approach has been adopted to provide an initial screening of the test results to assess the need for subsequent site-specific risk assessments. Contaminants of concern are those that have values in excess of generic human health risk-based guideline values, which are either the CLEA³ Soil Guideline Values where available, the Suitable 4 Use Values⁴ (S4UL) produced by LQM/CIEH calculated using the CLEA UK Version 1.07⁵ software, or the DEFRA Category 4 Screening values⁶, assuming a residential end use without plant uptake. The key generic assumptions for this end use are as follows:

- ✎ that groundwater will not be a critical risk receptor;
- ✎ that the critical receptor for human health will be young female children aged less than six years old;
- ✎ that the exposure duration will be six years;
- ✎ that the critical exposure pathways will be indoor dust ingestion, skin contact with indoor dust, and inhalation of indoor and outdoor dust and vapours; and
- ✎ that the building type equates to a two-storey small terraced house.

It is considered that these assumptions are acceptable for this generic assessment of this site. The tables of generic screening values derived by GEA and an explanation of how each value has been derived are included in the Appendix.

Where contaminant concentrations are measured at concentrations below the generic screening value it is considered that they pose an acceptable level of risk and thus further consideration of these contaminant concentrations is not required. However, where concentrations are measured in excess of these generic screening values there is considered to be a potential that they could pose an unacceptable risk and thus further action will be required which could include;

- ✎ additional testing to zone the extent of the contaminated material and thus reduce the uncertainty with regard to its potential risk;
- ✎ site specific risk assessment to refine the assessment criteria and allow an assessment to be made as to whether the concentration present would pose an unacceptable risk at this site; or
- ✎ soil remediation or risk management to mitigate the risk posed by the contaminant to a degree that it poses an acceptable risk.

On the basis of the above, the presence of asbestos and elevated concentrations of sulphide, total petroleum hydrocarbons and total PAH; more specifically benzo(b)fluoranthene, dibenz(a,h)anthracene and benzo(a)pyrene were present within the made ground. The significance of the results is discussed in Part 2 of this report.

4.6 Soil Vapour Monitoring

As a hydrocarbon odour was detected during the drilling of Borehole No 01, the standpipe was subject to monitoring with a PID at two separate occasions. The results are summarised below.

Date	Concentration (ppm)
05/12/2023	0.10
14/12/2023	0.30

³ Updated Technical Background to the CLEA Model (Science Report SC050021/SR3) Jan 2009 and Soil Guideline Value reports for specific contaminants; all DEFRA and Environment Agency.

⁴ The LQM/CIEH S4ULs for Human Health Risk Assessment S4UL3065 November 2014

⁵ Contaminated Land Exposure Assessment (CL|EA) Software Version 1.071 Environment Agency 2015

⁶ CL:AIRE (2013) *Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination* Final Project Report SP1010 and DEFRA (2014) *Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination* Policy Companion Document SP1010



4.7 Groundwater Contamination

A single round of groundwater sampling has been undertaken and samples subsequently tested for the presence of contamination. The full results are included in appendix b. The results indicate elevated concentrations of total petroleum hydrocarbons and total PAH; more specifically benzo(a)pyrene, benzo(b)fluoranthene, anthracene, fluoranthene, indeno(1,2,3-cd)pyrene within Borehole No 02.

Further sampling using low-flow techniques and additional testing is currently being undertaken, however as the made ground and Alluvium are to be removed as part of the redevelopment of the site, it is likely the source of elevated concentrations of total TPH and total PAHs will be removed.

4.8 Soakaway Drainage

Falling head soakage testing was carried out within the four open-drive boreholes at varying depths across the site. The full results are included in the appendix and are summarised below.

Borehole No	Infiltration Rate (m/s)			Comments
	Fill 1	Fill 2	Fill3	
BH09	1.2×10^{-5}	-	-	Insufficient rate to volume ratio for three fills
BH11	4.6×10^{-6}	-	-	Insufficient rate to volume ratio for three fills.
BH16	2.1×10^{-6}	1.9×10^{-6}	-	Borehole collapsed during second fill.
BH17	9.0×10^{-6}	3.6×10^{-6}	-	Insufficient rate to volume ratio for three fills

The amount of water remaining in each of the boreholes tested was greater than 25 % of the starting test level after 90 minutes, meaning the tests would be terminated, however additional fills were undertaken in Borehole Nos 16 and 17 to provide further information.



Part 2: Design Basis Report

This section of the report provides an interpretation of the findings detailed in Part 1, in the form of a ground model, and then provides advice and recommendations with respect to the proposed development.

5.0 Ground Model

It is understood that it is proposed to demolish the existing buildings and structures on site and to subsequently undertake a phased residential and commercial development comprising low and high rise buildings.

The desk study research has indicated that the majority of the site does not have a contaminative history, but the former presence of a railway yard in the southeastern corner between 1891 and some time prior to 1974 is a potential source of contamination.

On the basis of the fieldwork, the ground conditions at this site can be characterised as follows:

-  below a moderate thickness of made ground, Hummocky Glacial Deposits are present, which extend to the maximum depth of the investigation, of 20.43 m (73.05 m OD), with Alluvium encountered locally in the northern part of the site;
-  the made ground within the pedestrianised areas of Longfield Shopping Centre comprises silty sand, gravelly sandy silty clay and sandy silty gravel with fragments of brick and sandstone and extends to depths of between 0.38 m and 1.45 m (92.04 m OD and 93.13 m OD). Within the car parks and service areas, the made ground comprises sandy silty gravel, sandy gravelly silty clay and gravelly silty sand with fragments and cobbles of extraneous material and extends to the depths across the majority of the site of between 0.40 m and 1.60 m (92.46 m OD and 94.10 m OD), however locally extends to a depth of 3.00 m (93.47 m OD) in the northern part of the site;
-  the Alluvium located locally within the northern part of the site comprises very soft dark grey and brown pseudo-fibrous peat over very soft grey slightly gravelly clay with rare pockets of brown peat to a depth of 2.50 m (92.80 m OD);
-  beneath the Alluvium, where present, or else beneath the made ground, Hummocky Glacial Deposits initially comprises interbedded very loose becoming medium dense silty sand and very soft becoming firm sandy silt and sandy gravelly silty clay to depths

of between 4.30 m and 9.90 m (87.07 m OD and 89.95 m OD). Beneath the interbedded Hummocky Glacial Deposits, stiff sandy gravelly silty clay extends to depths of between 9.80 m and 15.30 m (79.96 m OD and 85.25 m OD) below which dense and very dense gravelly sand extends to the maximum depth of the investigation, of 20.43 m (73.05 m OD);

-  perched water is present within the made ground within Boreholes No 01 and 08 at depths of 0.28 m and 1.00 m (93.47 m OD and 95.44 m OD) and groundwater is present within the Hummocky Glacial Deposits at depths of between 2.00 m and 18.70 m (77.55 m OD and 92.30 m OD); and
-  contamination testing has revealed the presence of asbestos in the made ground at Borehole No 08A and elevated concentrations within the made ground of sulphide within the northern and central car parks, total petroleum hydrocarbons and total PAH with the northern, central and western parts of the site, more specifically benzo(b)fluoranthene, dibenz(a,h)anthracene and benzo(a)pyrene. Elevated concentrations of total petroleum hydrocarbons, total PAH, more specifically benzo(a)pyrene, benzo(b)fluoranthene, anthracene, fluoranthene, indeno(1,2,3-cd)pyrene are present within the northern car park.



6.0 Advice & Recommendations

The proposed redevelopment of the site is at a relatively early stage such that proposed building loads have not yet been provided. However, with the redevelopment understood to comprise low rise and high rise buildings, foundation options could include shallow spread foundations bearing on natural soils or on made ground subjected to ground improvement or piled foundations. A combination of all three is likely to present the most cost-effective project solution.

6.1 Spread Foundations

As detailed in Section 4, a moderate thickness of made ground is present across the site, generally extending to depths of between 0.38 m and 1.60 m (92.46 m OD and 94.10 m OD), however made ground extended a depth of 3.00 m (93.47 m OD) in the northernmost part of the site. Moderate width pad or strip foundations bypassing the made ground may be designed to bear within the firm cohesive Hummocky Glacial Deposits to apply a net allowable bearing pressure of 125 kN/m² and medium dense granular Hummocky Glacial Deposits to apply a net allowable bearing pressure of 175 kN/m².

Within the northern part of the site, where a greater thickness of made ground was encountered, along with a moderate thickness of very soft Alluvium to a depth of 2.50 m (92.80 m OD), shallow spread foundations are unlikely to be feasible. Additional investigation is recommended in this area to determine the extent of the deeper made ground and Alluvium if the use of spread foundations is to be considered further. Furthermore, soft cohesive Hummocky Glacial Deposits were encountered within Borehole No 07 with the southwestern part of the site meaning shallow spread foundation may not be feasible within this area.

6.2 Ground Improvement

The largely granular nature of the made ground indicates that it may be feasible to increase its load bearing capacity through ground improvement using a technique such as vibro-stone columns, although the presence of shallow perched water will need to be considered. The made ground was found to be very loose and specialist contractors should be consulted with regard to their particular treatment technique in these soils. Following such treatment, spread foundations may typically designed to apply a pressure onto treated ground of 150 kN/m² whilst ground floor slabs may typically apply a load intensity of 50 kN/m².

Prior to detailed consideration of any ground improvement technique, it would be prudent to undertake additional targeted ground investigation as the deeper ground may be relatively localised and the area to be treated relatively small.

6.3 Piled Foundations

Where the thickness of the made ground, soft Alluvium and very loose Hummocky Glacial Deposits means that spread foundations are not feasible or the loads are too high for ground improvement, then recourse to piled foundations will be required.

6.3.1 Driven Piles

Piles of this nature could be formed of reinforced precast concrete or steel tubes and driven to bear upon or within the very dense silty sand. Such piles would result in no spoil being generated making their use more cost-effective in this instance. Each pile is effectively tested as it is driven and piles up to 15 m could be brought to site in single lengths.

The following tables set out parameters for a driven precast concrete pile located in the centre of the site onto the very dense granular Hummocky Glacial Deposits.

Stratum	Depths m	kN/m ²
Ultimate Skin Friction		
Made Ground	GL to 0.80	Ignore
Medium dense granular Hummocky Glacial Deposits	0.80 to 2.00	65
Firm cohesive Hummocky Glacial Deposits	2.00 to 4.30	35
Stiff cohesive Hummocky Glacial Deposits	4.30 to 14.10	45
Very dense granular Hummocky Glacial Deposits	Below 14.10	110
Ultimate End Bearing		
Very dense granular Hummocky Glacial Deposits	Below 14.10	8000



BS EN 1997-1:2004; Eurocode 7: Geotechnical Design Part 1 (Eurocode 7) provides factors to be applied to the ultimate skin friction and ultimate end bearing capacity in calculating pile resistance ($R_{d,GEO}$). For driven piles, in the absence of either working load tests or combined working load tests and preliminary pile tests, a model factor of 1.3 should be combined with a factor of 1.5 to be applied to the skin friction, and with a factor of 1.7 to be applied to the end bearing. On the basis of the above, and using the values outlined in the previous table, a driven pile bearing within the very dense granular Hummocky Glacial Deposits shows the estimated pile resistance for 250 mm and 350 mm square piles to be 600 kN and 975 kN respectively.

The above example is not intended to constitute any form of recommendation with regard to pile size or type, but merely serve to illustrate the use of the above coefficients. Prospective contractors should be consulted to determine how they intend to control and monitor the pile installation with regard to their experience in similar ground conditions. The contractors should be provided with all of the exploratory data.

6.3.2 Bored Piles

Conventional rotary open-bored or continuous flight auger (CFA) piles bearing in the very dense granular Hummocky Glacial Deposits are considered to provide a suitable foundation solution. The choice between the two techniques will be largely dependent on the installation levels and the choice of piling rig. In a rotary open-bored pile, the depth and thickness of significant layers of granular soils within the Hummocky Glacial Deposits together with the variable groundwater levels within the granular material means that temporary casing will be difficult to install and recover after concreting. Bentonite suspension, or similar such support fluid, will be therefore needed to support the bore during drilling. Such bored piles are however unlikely to prove economical for a development of this size and nature.

The use of a continuous flight auger (CFA) technique would avoid the need for temporary casing and / or bentonite to deal with granular soils and groundwater ingress and potential instability in the fill. Furthermore, the depth of 15.00 m for the very dense silty sand is well within the 25 m depth range of a medium sized CFA piling rig.

BS EN 1997-1:2004; Eurocode 7: Geotechnical Design Part 1 (Eurocode 7) provides factors For CFA bored piles, in the absence of either working load tests or combined working load tests and preliminary pile tests, a model factor of 1.4 should be combined with a factor of 1.6 to be applied to the skin friction, and with a factor of 2.0 to be applied to the end bearing.

On the basis of the above, and using the values outlined in the previous table, a CFA bored pile bearing within the very dense granular Hummocky Glacial Deposits shows the estimated pile resistance for 450 mm and 600 mm diameter piles to be 1000 kN and 1550 kN respectively.

6.4 Surface Water Drainage

The soakage testing has measured poor rates of infiltration within the Hummocky Glacial Deposits. Testing undertaken at depths of between 1.20 m and 3.00 m, has measured rates of between 1.2×10^{-5} m/s and 1.9×10^{-6} m/s. Furthermore, due to the highly varied nature of the Hummocky Glacial Deposits, it is possible that water would drain into pockets of granular material surrounded by impermeable cohesive material, meaning the water is not draining away, causing the infiltration rate to further decrease once the granular pockets have become saturated. Provision should therefore be made for attenuation on site and controlled discharge into the main drainage system.

6.5 Shallow Excavations

On the basis of the trial pit and borehole findings, it is considered that it will be generally unfeasible to form relatively shallow excavations terminating within the made ground and shallow Hummocky Glacial Deposits without the requirement for lateral support.

Significant inflows of groundwater into shallow excavations are not generally anticipated, although seepages may be encountered from perched water tables within the made ground, although such inflows should be suitably controlled by sump pumping.

If deeper excavations are considered or if excavations are to remain open for prolonged periods it is recommended that provision be made for battered side slopes or lateral support. Where personnel are required to enter excavations, a risk assessment should be carried out and temporary lateral support or battering of the excavation sides considered in order to comply with normal safety requirements.

6.6 Ground Floor Slab

The made ground is not considered a suitable bearing material for ground bearing floor slabs without treatment. However, if ground improvement is adopted for the site, it should be possible to adopt a ground bearing floor slab bearing directly on the improved made ground.



If piled foundations are to be adopted for the proposed structure, a suspended floor slab should be assumed.

6.7 Pavement Design

Remoulded California Bearing Ratio testing of both the granular and cohesive shallow Hummocky Glacial Deposits in their current condition would support a low CBR value. Assuming that it will be screened and recompacted during the reprofiling of the site, a higher CBR value, perhaps 5 %, may be achievable. However, in areas without such treatment pavements should be designed for a CBR value of 'less than 2 %'

6.8 Effect of Sulphates

Chemical analyses of the made ground have revealed relatively low concentrations of soluble sulphate and pHs which range near neutral to near alkaline. The majority of the made ground has a Class DS-1, which shows that an ACEC Class of AC-1s is required for static water conditions and AC-1 is required for mobile water conditions. A single sample of made ground within the northernmost part of the site has revealed slightly higher concentrations of soluble sulphate, meaning it has a Class of DS-2, and therefore an ACEC Class of AC-1s is required for static water conditions and AC-2 is required for mobile water conditions. This material is likely to be removed as part of any remedial measures undertaken on site.

Fifteen samples of the Hummocky Glacial Deposits and a single sample of Alluvium all fall within Class DS-1 showing that an ACEC class of AC-1 for mobile water conditions and AC-1s for static water conditions would be appropriate for the site. The guidelines contained in the digest should be followed in the design of foundation concrete.

The guidelines contained in the digest should be followed in the design of foundation concrete.

6.9 Contamination Risk Assessment

The desk study findings indicated that the majority of the site does not have a contaminative history, but the former presence of a railway yard in the southeastern corner between 1891 and some time prior to 1974 was a potential source of contamination. The results of the chemical analyses of the made ground has indicated the presence of asbestos in one sample and locally elevated concentrations of sulphide, total petroleum

hydrocarbons and total PAH; more specifically benzo(b)fluoranthene, dibenz(a,h)anthracene and benzo(a)pyrene as shown in the map extract below.





The asbestos observed in the laboratory was microscopic in nature and therefore not identifiable to the naked eye. Quantification test results have revealed that the concentrations were less than the detectable limit of 0.001% in the sample. If further fragments of asbestos are observed during the site preparation it is recommended that hand picking by a specialist should be undertaken and in any case such excavation and crushing of material for re-use should be subject to damping down with water spray.

The elevated concentrations of sulphide, is likely to derive from ash and clinker rich material or fragments within the made ground but not all of the samples containing this material recorded elevated concentrations. Elevated concentrations of total PAH are likely to derive from coal tar material within the made ground, with cobbles of coal tar rich material found within Borehole No 01 directly beneath the asphalt wearing course. The elevated concentrations of total petroleum hydrocarbons are thought to derive from hydrocarbon-related spills from vehicles within the car parks.

Within Borehole No 01, although PID testing measured minimal readings and concentrations of total PAH and total petroleum hydrocarbons did not exceed soil guidance values, the values are relatively high. It is therefore recommended that further testing within this area to investigate this contamination.

As areas of soft landscaping are to be present on site, clean soil will be required these areas. although additional targeted sampling and testing in these areas where elevated contaminants were found might allow this requirement to be reviewed.

On the basis of the above and the hard coverage of the site, it is not considered likely that the redevelopment of the site will pose a risk to groundwater. In addition, surface water run-off may be controlled through attenuation and disposal to the main drainage system.

The groundwater monitoring has indicated elevated total petroleum hydrocarbons and total PAH; more specifically benzo(a)pyrene, benzo(b)fluoranthene, anthracene, fluoranthene, indeno(1,2,3-cd)pyrene contamination. Further sampling with low-disturbance techniques and focused speciated testing should be undertaken to establish whether the contaminant concentrations will require additional consideration.

Limited remedial measures are therefore considered to be required in respect of the redevelopment, but consideration will need to be given to site workers as discussed below.

6.9.1 Site Workers

On the basis of the investigation and testing there should be no significant risk to groundworkers working with the soils, but even the smallest levels of asbestos can pose a risk to human health so any future workers should be briefed on the possible risks. However, in any case, the method of site working should be in accordance with guidelines set out by HSE and CIRIA and the requirements of the Local Authority Environmental Health Officer.

6.10 Waste Disposal

Under the Waste Framework Directive, waste is classified as being either Hazardous or Non-Hazardous and landfills receiving waste are classified as accepting hazardous or non-hazardous wastes or the non-hazardous sub-category of inert waste in accordance with the Waste Directive. Waste classification is a staged process and this investigation represents the preliminary sampling exercise of that process. Once the extent and location of the waste that is to be removed has been defined, further sampling and testing may be necessary. The results from this ground investigation should be used to help define the sampling plan for such further testing, which could include WAC leaching tests where the totals analysis indicates the soil to be a hazardous waste or inert waste from a contaminated site. It should however be noted that the Environment Agency guidance WM3⁷ states that landfill WAC analysis, specifically leaching test results, must not be used for waste classification purposes.

Any spoil arising from excavations or landscaping works, which is not to be re-used in accordance with the CL:AIRE⁸ guidance, will need to be disposed of to a licensed tip. Waste going to landfill is subject to landfill tax at either the standard rate of £102.10 per tonne (about £190.00 per m³) or at the lower rate of £3.25 per tonne (roughly £6.00 per m³). However, the classifications for tax purposes and disposal purposes differ and currently all made ground and topsoil is taxable at the 'standard' rate and only naturally occurring soil and stones, which are accurately described as such in terms of the 2011 Order, would qualify for the 'lower rate' of landfill tax.

Based on the technical guidance provided by the EA it is considered likely that the soils encountered during this ground investigation, as represented by the chemical analyses carried out, would be generally classified as follows.

7 Environment Agency 2015. *Guidance on the classification and assessment of waste*. Technical Guidance WM3 First Edition

8 CL:AIRE March 2011. *The Definition of Waste: Development Industry Code of Practice* Version 2



Soil Type	Waste Classification (Waste Code)	WAC Testing Required Prior to Landfill Disposal?	Current applicable rate of Landfill Tax
Made Ground	Hazardous – Coal Tar and TPH Borehole No 01, 04, 06 and 07 (17 05 03)	Yes	£102.10/tonne (Standard rate)
Made Ground	Non-hazardous (17 05 04)	Should not be required but confirm with receiving landfill	£102.10/tonne (Standard rate)
Hummocky Glacial Deposits	Inert non-hazardous (17 05 04)	No	£3.25 / tonne (Reduced rate for uncontaminated naturally occurring rocks and soils)

Under the requirements of the Waste Directive all waste needs to be pre-treated prior to disposal. The pre-treatment process must be physical, thermal, chemical or biological, including sorting. It must change the characteristics of the waste in order to reduce its volume, hazardous nature, facilitate handling or enhance recovery. The waste producer can carry out the treatment but they will need to provide documentation to prove that this has been carried out. Alternatively, the treatment can be carried out by an approved contractor. The Environment Agency has issued a position paper⁹ which states that in certain circumstances, segregation at source may be considered as pre-treatment and thus excavated material may not have to be treated prior to landfilling if the soils can be segregated onsite prior to excavation by sufficiently characterising the soils insitu prior to excavation.

The above opinion with regard to the classification of the excavated soils is provided for guidance only and should be confirmed by the receiving landfill once the soils to be discarded have been identified. The local waste regulation department of the Environment Agency (EA) should be contacted to obtain details of tips that are licensed to accept the soil represented by the test results. The tips will be able to provide costs for disposing of this material but may require further testing.

7.0 Outstanding Risks & Issues

This section of the report aims to highlight areas where further work is required as a result of limitations on the scope of this investigation, or where issues have been identified by this investigation that warrant further consideration. The scope of risks and issues discussed in this section is by no means exhaustive, but covers the main areas where additional work may be required.

7.1 Site-Specific Risks

Monitoring of the standpipes should be continued to determine equilibrium groundwater levels and to establish any seasonal fluctuations. In addition, further groundwater sampling and testing using low-disturbance and speciated testing should be undertaken to establish the extent and greater detail in respect of the measured PAH and hydrocarbon contamination.

Further investigation is recommended in the form of additional boreholes in the northern car park undertaken in a large scale grid to confirm the extent of the deeper made ground, the PAH and petroleum hydrocarbon contamination and detailed ground conditions on site. This will provide information on possible remedial measures such as localised source removal. Furthermore, due to the variable nature of the shallow interbedded Hummocky Glacial Deposits, further investigation should be undertaken where shallow spread foundations are to be considered to establish more information on allowable bearing capacity.

This investigation has identified the presence of contamination on site and a requirement for a separate remediation proposals report will need to be prepared to comply with planning requirements. The remediation will need to be supervised and verified by a geoenvironmental engineer and a completion or validation report will also probably be required to support the planning application.

9 Environment Agency 23 Oct 2007 *Regulatory Position Statement Treating non-hazardous waste for landfill - Enforcing the new requirement*



7.2 General Risks

The ground is a heterogeneous natural material and variations will inevitably arise between the locations at which it is investigated. This report provides an assessment of the general ground conditions based on the discrete points at which the ground was sampled, but there may be ground conditions (including soil, rock, gas and groundwater) elsewhere on site that have not been revealed by this investigation and therefore could not have been taken into account in this report. The ground conditions should be subject to review as the development proceeds to ensure that any variations from the Ground Model are properly assessed by a suitably qualified person.

The comments made regarding groundwater are based on observations made during the period the work has been carried out. Conditions may vary as a result of seasonal or other effects.

Where any conclusions and recommendations contained in this report have been based upon information provided by others, it has been assumed that all relevant information has been provided by those parties and that such information is accurate. Any such information has not been independently verified by GEA, unless otherwise stated in the report. GEA accepts no liability for any inaccurate conclusions, assumptions or actions taken resulting from any inaccurate information supplied to GEA from others.



Appendix

a. Field Work

Site Plan
Borehole Records
Open-drive Photographs
Trial Pit Records
Trial Pit Photographs
Falling Head Soakage Test Results

b. Lab Testing

Geotechnical Test Results
SPT & Depth Graph
Chemical Test Results
Generic Risk Based Screening Values
Generic Risk Based Groundwater Screening Values



appendix a

Field Work

Site Plan
Borehole Records
Open-drive Photographs
Trial Pit Records
Trial Pit Photographs
Falling Head Soakage Test Results



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Site Plan - Northern Car Park

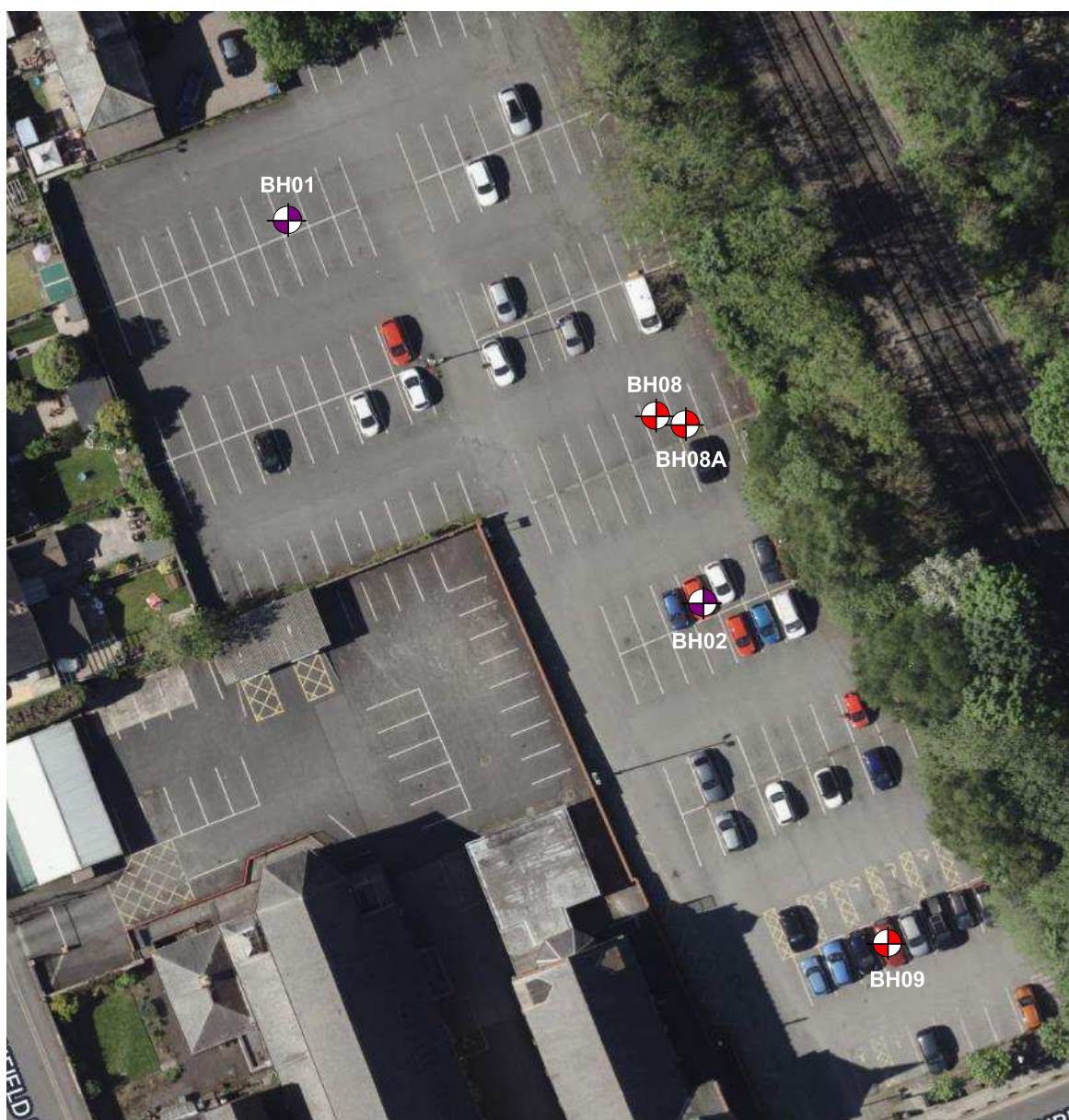
Site Prestwich Village, Prestwich, Manchester, M25 1AY

Client The Prestwich Regeneration LLP

Engineer Civic Engineers

Job Number
J23254

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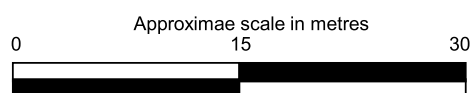
Cable Percussion Borehole Location



Open-drive Borehole Location



Trial Pit Location





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Site Plan - Southern Car Park

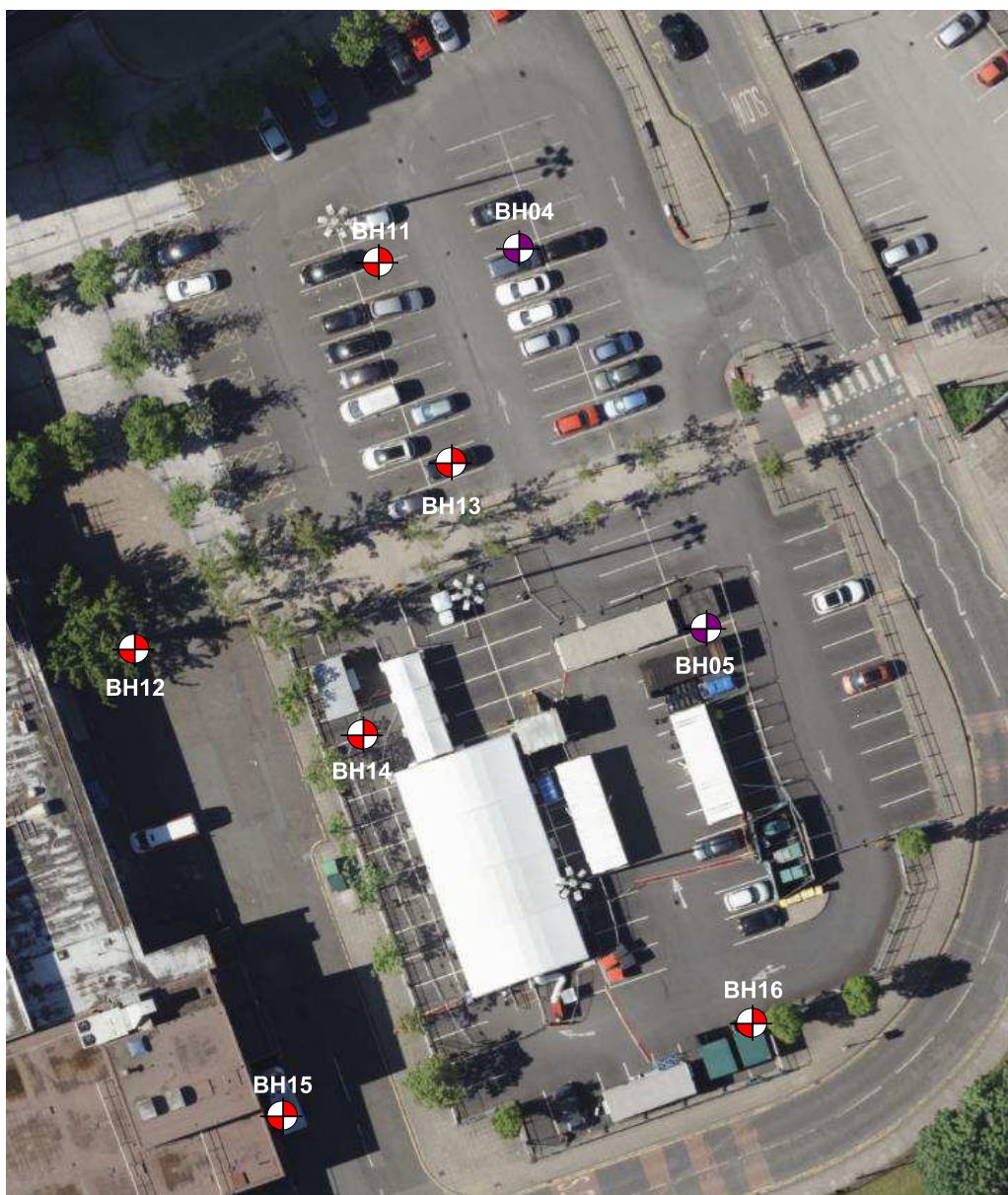
Site Prestwich Village, Prestwich, Manchester, M25 1AY

Client The Prestwich Regeneration LLP

Engineer Civic Engineers

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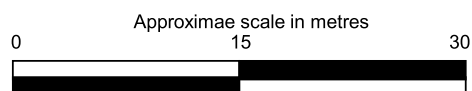
Cable Percussion Borehole Location



Open-drive Borehole Location



Trial Pit Location





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Site Plan - Longfield Shopping Centre

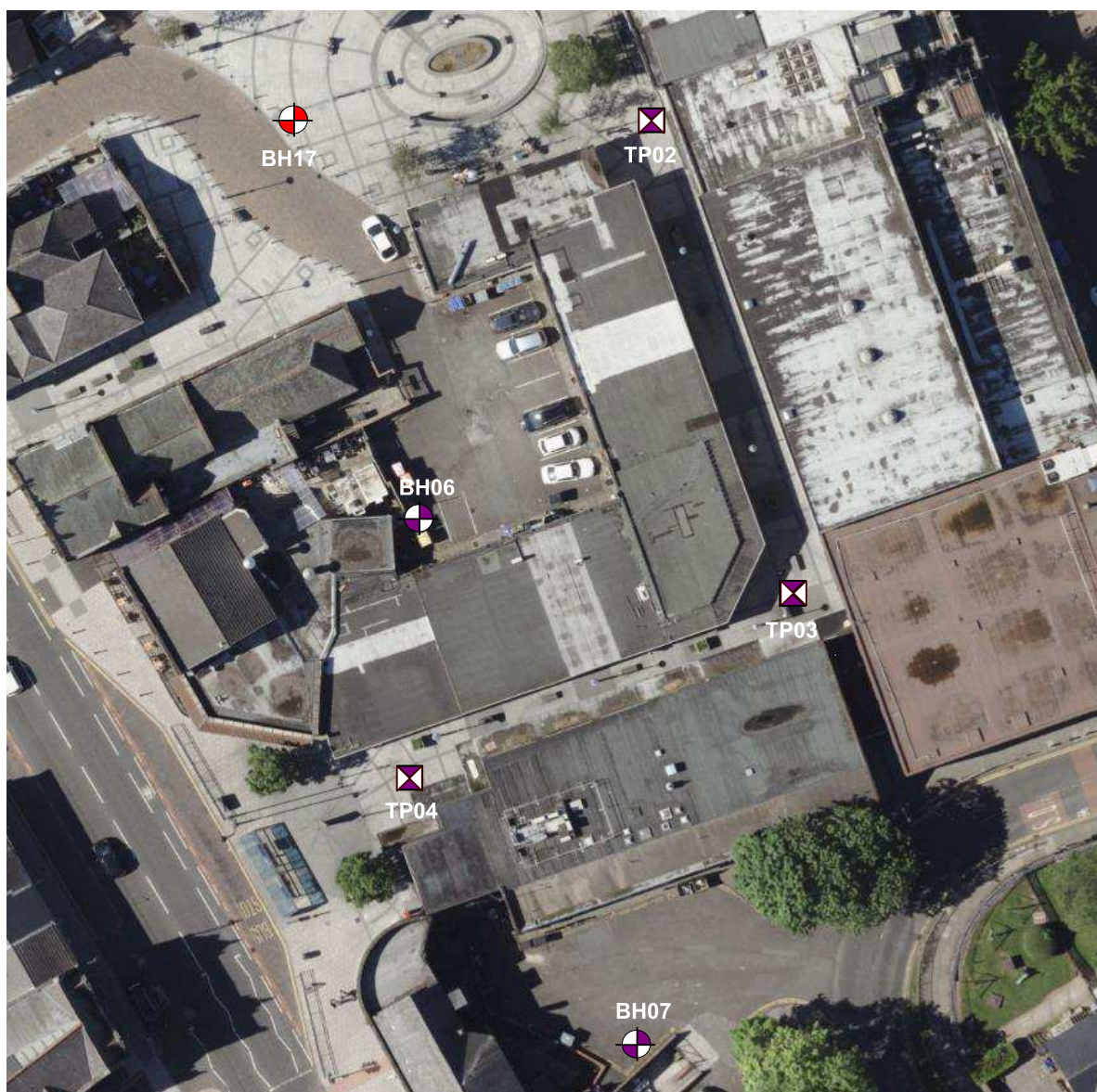
Site Prestwich Village, Prestwich, Manchester, M25 1AY

Client The Prestwich Regeneration LLP

Engineer Civic Engineers

Job Number
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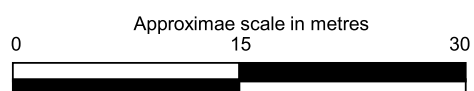
Cable Percussion Borehole Location



Open-drive Borehole Location



Trial Pit Location





Project Prestwich Village, Prestwich, Manchester, M25 1AY				BOREHOLE No BH01	
Job No J23254	Date 07-11-23 08-11-23	Ground Level (m TBM) 96.47	Co-Ordinates () E 381,236.0 N 404,290.0		
Client The Prestwich Regeneration LLP		Engineer Civic Engineers		Sheet 1 of 3	

SAMPLES & TESTS			Water	STRATA				Instrument / Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION	
0.20-1.00 0.50	B1 ES2	2,3/3,2,2,2 N60 = 11		96.42		0.05	MADE GROUND: (Black 10 mm asphalt).	
						(0.95)	MADE GROUND: (Black very sandy silty angular gravel with fragments of asphalt and brick).	
				95.47		1.00	0.05 - 0.20 large cobbles of coal tar asphalt.	
						(1.00)	MADE GROUND: (No recovery - large cobbles and boulders pushed with rig and strong hydrocarbon odour).	
2.00-2.50 2.00	B4 ES3	1,2/2,1,2,3 N60 = 9		94.47		2.00	MADE GROUND: (Grey very silty sand with fragments of sandstone and asphalt and a hydrocarbon odour).	
						(1.00)		
				93.47		3.00		
		3,4/5,5,6,7 N60 = 27					Medium dense grey very silty predominantly fine to medium SAND with frequent lenses of brown slightly gravelly slightly sandy silty clay and a slight hydrocarbon odour.	
4.00-5.00 4.00	B6 ES5	2,3/4,4,4,6 N60 = 21				(2.30)		
5.30-5.80 5.30	D8 ES7	2,2/3,3,3,3 N60 = 14		91.17		5.30	Firm to stiff medium strength greyish brown slightly gravelly slightly sandy silty CLAY with frequent lenses of brown sand. Gravel is angular to subrounded of sandstone.	
6.50-6.95	U9	40 blows				(2.80)		
8.00-9.00	B10	3,4/6,7,6,7 N60 = 30		88.37		8.10	Medium dense to dense grey very silty predominantly fine to medium SAND with frequent lenses of brown slightly gravelly slightly sandy silty clay.	
						(1.30)		
9.50-10.00 9.50-9.95	D12 U11	80 blows		87.07		9.40	Stiff high strength greyish brown slightly gravelly slightly sandy silty CLAY with frequent lenses of brown sand. Gravel is angular to subrounded of sandstone.	

Boring Progress and Water Observations						GENERAL REMARKS
Depth	Date	Time	Casing Depth	Casing Dia. mm	Water Depth	
						1. Position scanned with CAT and Genny prior to excavation. 2. Inspection pit hand dug to a depth of 1.20 m. 3. Groundwater encountered at depths of 1.00 m and 8.10 m, rising to 0.80 m and 7.90 m after 20 minutes respectively. 4. Borehole terminated at a depth of 20.36 m. 5. 50 mm diameter standpipe installed to a depth of 2.00 m. Response zone from 1.00 m to 2.00 m.

All dimensions in metres Scale 1:62.5	Method/ Plant Used Cable Percussive - Dando 2000	Logged By LMontgomery
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Project Prestwich Village, Prestwich, Manchester, M25 1AY				BOREHOLE No BH01	
Job No J23254	Date 07-11-23 08-11-23	Ground Level (m TBM) 96.47	Co-Ordinates () E 381,236.0 N 404,290.0		
Client The Prestwich Regeneration LLP		Engineer Civic Engineers		Sheet 2 of 3	

SAMPLES & TESTS			Water	STRATA				Instrument / Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION	
12.50-12.95	U13	3,4/5,5,6,6 N60 = 26				(4.30)	Stiff high strength greyish brown slightly gravelly slightly sandy silty CLAY with frequent lenses of brown sand. Gravel is angular to subrounded of sandstone.(continued)	
13.00-13.50	D14	80 blows		82.77		13.70		
15.00-16.00	B15	5,8/9,8,10,10 N60 = 43				(3.10)	Dense becoming very dense brown slightly gravelly predominantly coarse SAND. Gravel is subangular fine to medium of sandstone.	
16.80-18.50	B16	7,9/10,11,11,12 N60 = 51		79.67		16.80		
		7,10/10,12,12,14 N60 = 56				(3.56)	Very dense greyish brown gravelly predominantly coarse SAND. Gravel is subangular fine to medium of sandstone and coal.	
		10,12/13,14,15,8 N = 50/255 mm						

Boring Progress and Water Observations						GENERAL REMARKS
Depth	Date	Time	Casing Depth	Casing Dia. mm	Water Depth	
						1. Position scanned with CAT and Genny prior to excavation. 2. Inspection pit hand dug to a depth of 1.20 m. 3. Groundwater encountered at depths of 1.00 m and 8.10 m, rising to 0.80 m and 7.90 m after 20 minutes respectively. 4. Borehole terminated at a depth of 20.36 m. 5. 50 mm diameter standpipe installed to a depth of 2.00 m. Response zone from 1.00 m to 2.00 m.

All dimensions in metres Scale 1:62.5	Method/ Plant Used Cable Percussive - Dando 2000	Logged By LMontgomery
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Project Prestwich Village, Prestwich, Manchester, M25 1AY				BOREHOLE No BH01
Job No J23254	Date 07-11-23 08-11-23	Ground Level (m TBM) 96.47	Co-Ordinates () E 381,236.0 N 404,290.0	
Client The Prestwich Regeneration LLP		Engineer Civic Engineers		Sheet 3 of 3

SAMPLES & TESTS			Water	STRATA			Instrument / Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	
		11,12/16,17,17 N = 50/205 mm		76.11		20.36	

Boring Progress and Water Observations						GENERAL REMARKS
Depth	Date	Time	Depth	Casing Dia. mm	Water Depth	
						1. Position scanned with CAT and Genny prior to excavation. 2. Inspection pit hand dug to a depth of 1.20 m. 3. Groundwater encountered at depths of 1.00 m and 8.10 m, rising to 0.80 m and 7.90 m after 20 minutes respectively. 4. Borehole terminated at a depth of 20.36 m. 5. 50 mm diameter standpipe installed to a depth of 2.00 m. Response zone from 1.00 m to 2.00 m.

Report ID: CABLE PERCUSSION || Project: J23254 - PRESTWICH.GPJ || Library: GEA LIBRARY.GLB || Date: 23 January 2024



Project Prestwich Village, Prestwich, Manchester, M25 1AY				BOREHOLE No BH02	
Job No J23254	Date 09-11-23 10-11-23	Ground Level (m TBM) 95.30	Co-Ordinates () E 381,272.0 N 404,254.0		
Client The Prestwich Regeneration LLP		Engineer Civic Engineers		Sheet 1 of 3	

SAMPLES & TESTS			Water	STRATA			Instrument / Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	
1.10 1.20-1.70	ES1 D2	1,0/0,0,0,1 N60 = 1		95.25		0.05	MADE GROUND: (Black 10 mm asphalt).
				95.00		0.30	MADE GROUND: (Black very sandy silty angular gravel with fragments of asphalt and brick).
				94.85		0.45	MADE GROUND: (Black very sandy silty angular gravel with fragments of asphalt and brick).
				94.50		0.80	MADE GROUND: (Grey concrete with brick fragments).
				94.10		1.20	MADE GROUND: (Black very sandy silty angular gravel with fragments of asphalt and brick).
2.00-2.50	D3	0,0/0,0,0,0 N60 = 0				(0.80)	MADE GROUND: (Very soft dark grey slightly gravelly slightly sandy clay with fragments of brick, ash and sandstone).
				93.30		2.00	Very soft dark grey and brown mottled pseudofibrous PEAT.
2.50-3.00	B4	2,4/3,4,5,4 N60 = 19				(0.50) 2.50	Very soft grey slightly gravelly CLAY with rare pockets of brown peat. Gravel is angular fine of sandstone.
							Medium dense grey becoming greyish brown very silty predominantly fine to medium SAND.
4.00-5.00	D5	2,3/4,4,5,5 N60 = 21		91.20		4.10	Firm becoming stiff to very stiff greyish brown sandy silty CLAY with frequent lenses of brown sand.
						(3.10)	
6.50-7.00 6.50-6.95	D7 U6	45 blows		88.10		7.20	Medium dense greyish brown very silty predominantly fine to medium SAND with frequent lenses of greyish brown slightly sandy silty clay.
8.00-8.50	B8	3,4/4,5,6,6 N60 = 25				(2.70)	
				85.40		9.90	

Boring Progress and Water Observations						GENERAL REMARKS
Depth	Date	Time	Casing Depth	Casing Dia. mm	Water Depth	
						1. Position scanned with CAT and Genny prior to excavation. 2. Inspection pit hand dug to a depth of 1.20 m. 3. Groundwater encountered at depths of 3.00 m and 7.20 m, rising to 2.90 m and 6.90 m after 20 minutes respectively. 4. Borehole terminated at a depth of 20.39 m. 5. 50 mm diameter standpipe installed to a depth of 10.00 m. Response zone from 7.00 m to 10.00 m.

All dimensions in metres Scale 1:62.5	Method/ Plant Used Cable Percussive - Dando 2000	Logged By LMontgomery
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Project Prestwich Village, Prestwich, Manchester, M25 1AY				BOREHOLE No BH02
Job No J23254	Date 09-11-23 10-11-23	Ground Level (m TBM) 95.30	Co-Ordinates () E 381,272.0 N 404,254.0	
Client The Prestwich Regeneration LLP		Engineer Civic Engineers		Sheet 2 of 3

SAMPLES & TESTS			Water	STRATA				Instrument / Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION	
11.00-11.45	U9	50 blows					Stiff medium strength brownish grey sandy silty CLAY with frequent lenses of brown sand.(continued)	
11.50-12.00	D10							
		3,5/5,6,7,7 N60 = 29				(5.40)		
14.00-14.45	U11	65 blows						
		5,7/8,8,10,10 N60 = 42		80.00		15.30		
17.00-19.00	B12	7,10/10,12,12,13 N60 = 55					Dense becoming very dense brown locally yellowish brown silty predominantly fine to medium SAND.	
		8,10/11,13,12,13 N60 = 57				(5.09)		

Boring Progress and Water Observations						GENERAL REMARKS
Depth	Date	Time	Casing Depth	Casing Dia. mm	Water Depth	
						1. Position scanned with CAT and Genny prior to excavation. 2. Inspection pit hand dug to a depth of 1.20 m. 3. Groundwater encountered at depths of 3.00 m and 7.20 m, rising to 2.90 m and 6.90 m after 20 minutes respectively. 4. Borehole terminated at a depth of 20.39 m. 5. 50 mm diameter standpipe installed to a depth of 10.00 m. Response zone from 7.00 m to 10.00 m.

All dimensions in metres Scale 1:62.5	Method/ Plant Used Cable Percussive - Dando 2000	Logged By LMontgomery
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Project Prestwich Village, Prestwich, Manchester, M25 1AY				BOREHOLE No BH02
Job No J23254	Date 09-11-23 10-11-23	Ground Level (m TBM) 95.30	Co-Ordinates () E 381,272.0 N 404,254.0	
Client The Prestwich Regeneration LLP		Engineer Civic Engineers		Sheet 3 of 3

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Boring Progress and Water Observations						GENERAL REMARKS
Depth	Date	Time	Depth	Casing Dia. mm	Water Depth	
						1. Position scanned with CAT and Genny prior to excavation. 2. Inspection pit hand dug to a depth of 1.20 m. 3. Groundwater encountered at depths of 3.00 m and 7.20 m, rising to 2.90 m and 6.90 m after 20 minutes respectively. 4. Borehole terminated at a depth of 20.39 m. 5. 50 mm diameter standpipe installed to a depth of 10.00 m. Response zone from 7.00 m to 10.00 m.



Project Prestwich Village, Prestwich, Manchester, M25 1AY				BOREHOLE No BH04
Job No J23254	Date 13-11-23 13-11-23	Ground Level (m TBM) 94.25	Co-Ordinates () E 381,332.0 N 404,120.0	
Client The Prestwich Regeneration LLP		Engineer Civic Engineers		Sheet 1 of 3

SAMPLES & TESTS			Water	STRATA				Instrument / Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION	
0.30	ES1			94.20		0.05	MADE GROUND: (Black 10 mm asphalt).	
				93.95		0.30	MADE GROUND: (Black very sandy silty angular gravel with fragments of asphalt and brick).	
				93.80		0.45		
				93.45		0.80	MADE GROUND: (Grey concrete with brick fragments).	
1.20-1.70	B	3,4/4,3,3,4 N60 = 16				(1.20)	MADE GROUND: (Black very sandy silty angular gravel with fragments of asphalt and brick). Medium dense greyish brown very silty predominantly fine to medium SAND.	
2.00-2.50	D	2,2/2,2,2,3 N60 = 11		92.25		2.00	Firm greyish brown sandy silty CLAY with frequent lenses of brown sand.	
		3,4/4,2,2,3 N60 = 13				(2.30)		
4.00-4.50	D	2,2/4,5,4,3 N60 = 19		89.95		4.30	Stiff low to high strength greyish brown slightly gravelly sandy silty CLAY with frequent lenses of brown sand. Gravel is subangular to subrounded of mudstone and sandstone.	
5.00-5.45	U	75 blows						
		3,4/5,4,4,5 N60 = 21						
8.00-8.45	U	80 blows				(9.80)		
9.50-10.00	D	4,4/5,5,5,6 N60 = 25						

Boring Progress and Water Observations						GENERAL REMARKS
Depth	Date	Time	Casing Depth	Casing Dia. mm	Water Depth	
						1. Position scanned with CAT and Genny prior to excavation. 2. Inspection pit hand dug to a depth of 1.20 m. 3. Groundwater encountered at depth of 18.70 m, remaining at the same depth after 20 minutes. 4. Borehole terminated at a depth of 20.37 m. 5. 50 mm diameter standpipe installed to a depth of 5.00 m. Response zone from 2.00 m to 5.00 m.

All dimensions in metres Scale 1:62.5	Method/ Plant Used Cable Percussive - Dando 2000	Logged By LMontgomery
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Project Prestwich Village, Prestwich, Manchester, M25 1AY				BOREHOLE No BH04	
Job No J23254	Date 13-11-23 13-11-23	Ground Level (m TBM) 94.25	Co-Ordinates () E 381,332.0 N 404,120.0		
Client The Prestwich Regeneration LLP		Engineer Civic Engineers		Sheet 2 of 3	

SAMPLES & TESTS			Water	STRATA				Instrument / Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION	
11.00-11.45	U	82 blows 5,5/6,5,6,7 N60 = 28 8,7/7,9,10,11 N60 = 43		80.15		14.10	Stiff low to high strength greyish brown slightly gravelly sandy silty CLAY with frequent lenses of brown sand. Gravel is subangular to subrounded of mudstone and sandstone.(continued)	
15.50-16.00	B	9,8/9,10,11,13 N60 = 50 10,11/13,15,18,4 N = 50/270 mm 12,12/10,15,20,5 N = 50/255 mm				(6.27)	Dense becoming very dense brown locally yellowish brown silty predominantly fine to medium SAND.	

Boring Progress and Water Observations						GENERAL REMARKS
Depth	Date	Time	Casing Depth	Casing Dia. mm	Water Depth	
						1. Position scanned with CAT and Genny prior to excavation. 2. Inspection pit hand dug to a depth of 1.20 m. 3. Groundwater encountered at depth of 18.70 m, remaining at the same depth after 20 minutes. 4. Borehole terminated at a depth of 20.37 m. 5. 50 mm diameter standpipe installed to a depth of 5.00 m. Response zone from 2.00 m to 5.00 m.

All dimensions in metres Scale 1:62.5	Method/ Plant Used Cable Percussive - Dando 2000	Logged By LMontgomery
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Project Prestwich Village, Prestwich, Manchester, M25 1AY				BOREHOLE No BH04
Job No J23254	Date 13-11-23 13-11-23	Ground Level (m TBM) 94.25	Co-Ordinates () E 381,332.0 N 404,120.0	
Client The Prestwich Regeneration LLP		Engineer Civic Engineers		Sheet 3 of 3

SAMPLES & TESTS			Water	STRATA			Instrument / Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	
		18,7/18,19,13 N = 50/210 mm		73.88		20.37	

Boring Progress and Water Observations						GENERAL REMARKS
Depth	Date	Time	Depth	Casing Dia. mm	Water Depth	
						1. Position scanned with CAT and Genny prior to excavation. 2. Inspection pit hand dug to a depth of 1.20 m. 3. Groundwater encountered at depth of 18.70 m, remaining at the same depth after 20 minutes. 4. Borehole terminated at a depth of 20.37 m. 5. 50 mm diameter standpipe installed to a depth of 5.00 m. Response zone from 2.00 m to 5.00 m.



Project Prestwich Village, Prestwich, Manchester, M25 1AY				BOREHOLE No BH05	
Job No J23254	Date 15-11-23 16-11-23	Ground Level (m TBM) 95.05	Co-Ordinates () E 381,348.0 N 404,091.0		
Client The Prestwich Regeneration LLP		Engineer Civic Engineers		Sheet 1 of 3	

SAMPLES & TESTS			Water	STRATA				Instrument / Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION	
0.50	ES1			95.00		0.05	MADE GROUND: (Black 10 mm asphalt).	
				94.75		0.30	MADE GROUND: (Black very sandy silty angular gravel with fragments of asphalt and brick).	
				94.60		0.45	MADE GROUND: (Black very sandy silty angular gravel with fragments of asphalt and brick).	
				94.20		0.85	MADE GROUND: (Grey concrete with brick fragments).	
1.20-1.70	D2	2,3/4,3,4,4 N60 = 18				(1.35)	MADE GROUND: (Black very sandy silty angular gravel with fragments of asphalt and brick).	
							Medium dense greyish brown very silty predominantly fine to medium SAND.	
				92.85		2.20	Stiff greyish brown sandy silty CLAY with frequent lenses of brown sand.	
						(2.20)		
7.00-7.50	D3	3,2/3,4,5,4 N60 = 19						
8.00-8.45	U4	3,2/3,3,4,5 N60 = 18						
9.80-10.20	B5	3,3/5,4,5,5 N60 = 22						
		5,4/4,6,5,5 N60 = 23						
		4,3/4,5,5,7 N60 = 25						
		5,5/4,6,5,6 N60 = 25						
				87.55		7.50	Stiff greyish brown sandy silty CLAY with frequent lenses of brown sand.	
						(2.30)		
				85.25		9.80		

Boring Progress and Water Observations						GENERAL REMARKS
Depth	Date	Time	Casing Depth	Casing Dia. mm	Water Depth	
						1. Position scanned with CAT and Genny prior to excavation. 2. Inspection pit hand dug to a depth of 1.20 m. 3. Grounwater encountered at depth of 8.85 m, remaining at the same depth after 20 minutes. 4. Borehole terminated at a depth of 20.34 m. 5. 50 mm diameter standpipe installed to a depth of 10.00 m. Response zone from 1.00 m to 10.00 m.

All dimensions in metres Scale 1:62.5	Method/ Plant Used Cable Percussive - Dando 2000	Logged By LMontgomery
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Project Prestwich Village, Prestwich, Manchester, M25 1AY				BOREHOLE No BH05
Job No J23254	Date 15-11-23 16-11-23	Ground Level (m TBM) 95.05	Co-Ordinates () E 381,348.0 N 404,091.0	
Client The Prestwich Regeneration LLP		Engineer Civic Engineers		Sheet 2 of 3

[illegible]

Boring Progress and Water Observations						GENERAL REMARKS
Depth	Date	Time	Depth	Casing Dia. mm	Water Depth	
						1. Position scanned with CAT and Genny prior to excavation. 2. Inspection pit hand dug to a depth of 1.20 m. 3. Grounwater encountered at depth of 8.85 m, remaining at the same depth after 20 minutes. 4. Borehole terminated at a depth of 20.34 m. 5. 50 mm diameter standpipe installed to a depth of 10.00 m. Response zone from 1.00 m to 10.00 m.



Project Prestwich Village, Prestwich, Manchester, M25 1AY				BOREHOLE No BH05
Job No J23254	Date 15-11-23 16-11-23	Ground Level (m TBM) 95.05	Co-Ordinates () E 381,348.0 N 404,091.0	
Client The Prestwich Regeneration LLP		Engineer Civic Engineers		Sheet 3 of 3

SAMPLES & TESTS			Water	STRATA			Instrument / Backfill	
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)		DESCRIPTION
		18,7/15,18,17 N = 50/190 mm		74.71	  	20.34	Medium dense becoming very dense brown locally yellowish brown silty predominantly fine to medium SAND.(continued)	

Boring Progress and Water Observations						GENERAL REMARKS
Depth	Date	Time	Depth	Casing Dia. mm	Water Depth	
						1. Position scanned with CAT and Genny prior to excavation. 2. Inspection pit hand dug to a depth of 1.20 m. 3. Grounwater encountered at depth of 8.85 m, remaining at the same depth after 20 minutes. 4. Borehole terminated at a depth of 20.34 m. 5. 50 mm diameter standpipe installed to a depth of 10.00 m. Response zone from 1.00 m to 10.00 m.

Report ID: CABLE PERCUSSION || Project: J23254 - PRESTWICH.GPJ || Library: GEA LIBRARY.GLB || Date: 23 January 2024



Project Prestwich Village, Prestwich, Manchester, M25 1AY				BOREHOLE No BH06
Job No J23254	Date 01-11-23 03-11-23	Ground Level (m TBM) 93.46	Co-Ordinates () E 381,239.0 N 404,051.0	
Client The Prestwich Regeneration LLP		Engineer Civic Engineers		Sheet 1 of 3

SAMPLES & TESTS			Water	STRATA				Instrument / Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION	
0.20-0.50 0.30	B1 ES2			93.36		0.10	MADE GROUND: (Black hot rolled asphalt with green chippings). MADE GROUND: (Black very gravelly silty sand with fragments of asphalt, concrete and ash). MADE GROUND: (Grey and brown mottled very gravelly silty sand with fragments and cobbles of brick, concrete and ash). Very soft to soft dark brown slightly sandy slightly gravelly silty CLAY. Gravel is subangular to subrounded predominantly fine to medium of sandstone and coal. 2.00 - 2.50 occasional pockets of stiff brown sandy clay.	
				93.06		0.40		
				92.46		(0.60) 1.00		
1.20-1.70	D3	1,0/1,1,0,1 N60 = 4 1,2/1,1,1,0 N60 = 4				(2.50)		
3.00-3.45	U4	25 blows		89.96		3.50	Soft dark brownish grey slightly gravelly sandy silty CLAY. Gravel is subangular to subrounded predominantly fine to medium of sandstone.	
3.50-4.00	D5	2,2/1,2,2,1 N60 = 7				(1.80)		
5.30-6.50	D6	3,3/4,5,5,6 N60 = 23		88.16		5.30	Stiff dark brownish grey slightly gravelly sandy silty CLAY. Gravel is subangular to subrounded predominantly fine to medium of sandstone.	
6.50-6.95	U7	62 blows				(2.80)		
		3,4/5,4,5,6 N60 = 23		85.36		8.10	Stiff dark brownish grey slightly gravelly sandy silty CLAY. Gravel is subangular to subrounded predominantly fine to medium of sandstone.	
		5,5/4,5,6,5 N60 = 23						

Boring Progress and Water Observations						GENERAL REMARKS
Depth	Date	Time	Casing Depth	Casing Dia. mm	Water Depth	
						1. Position scanned with CAT and Genny prior to excavation. 2. Inspection pit hand dug to a depth of 1.20 m. 3. Groundwater not encountered. 4. Borehole terminated at a depth of 20.41 m. 5. 50 mm diameter standpipe installed to a depth of 15.00 m. Response zone from 11.00 m to 15.00 m.

All dimensions in metres Scale 1:62.5	Method/ Plant Used Cable Percussive - Dando 2000	Logged By LMontgomery
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Project Prestwich Village, Prestwich, Manchester, M25 1AY				BOREHOLE No BH06	
Job No J23254	Date 01-11-23 03-11-23	Ground Level (m TBM) 93.46	Co-Ordinates () E 381,239.0 N 404,051.0		
Client The Prestwich Regeneration LLP		Engineer Civic Engineers		Sheet 2 of 3	

SAMPLES & TESTS			Water	STRATA				Instrument / Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION	
10.00-10.50	D8						Stiff dark brownish grey slightly gravelly sandy silty CLAY. Gravel is subangular to subrounded predominantly fine to medium of sandstone.(continued)	
11.00-11.45	U9	78 blows				(5.40)		
		5,6/6,7,5,7 N60 = 29						
13.50-14.00	B10	6,7/7,8,7,9 N60 = 36		79.96		13.50	Dense greyish brown very gravelly silty SAND. Gravel is subangular to subrounded of sandstone.	
		8,9/8,7,9,10 N60 = 40				(2.70)		
16.20-17.30	B11	8,8/10,11,11,13 N = 45/255 mm		77.26		16.20	Very dense brown slightly gravelly silty SAND. Gravel is subangular to subrounded of sandstone.	
		9,10/10,12,11,12 N60 = 53				(4.21)		

Boring Progress and Water Observations						GENERAL REMARKS
Depth	Date	Time	Casing Depth	Casing Dia. mm	Water Depth	
						1. Position scanned with CAT and Genny prior to excavation. 2. Inspection pit hand dug to a depth of 1.20 m. 3. Groundwater not encountered. 4. Borehole terminated at a depth of 20.41 m. 5. 50 mm diameter standpipe installed to a depth of 15.00 m. Response zone from 11.00 m to 15.00 m.

All dimensions in metres Scale 1:62.5	Method/ Plant Used Cable Percussive - Dando 2000	Logged By LMontgomery
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Project Prestwich Village, Prestwich, Manchester, M25 1AY				BOREHOLE No BH06
Job No J23254	Date 01-11-23 03-11-23	Ground Level (m TBM) 93.46	Co-Ordinates () E 381,239.0 N 404,051.0	
Client The Prestwich Regeneration LLP		Engineer Civic Engineers		Sheet 3 of 3

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Boring Progress and Water Observations						GENERAL REMARKS
Depth	Date	Time	Depth	Casing Dia. mm	Water Depth	
						1. Position scanned with CAT and Genny prior to excavation. 2. Inspection pit hand dug to a depth of 1.20 m. 3. Groundwater not encountered. 4. Borehole terminated at a depth of 20.41 m. 5. 50 mm diameter standpipe installed to a depth of 15.00 m. Response zone from 11.00 m to 15.00 m.



Project Prestwich Village, Prestwich, Manchester, M25 1AY				BOREHOLE No BH07
Job No J23254	Date 06-11-23 07-11-23	Ground Level (m TBM) 93.89	Co-Ordinates () E 381,258.0 N 404,001.0	
Client The Prestwich Regeneration LLP		Engineer Civic Engineers		Sheet 1 of 3

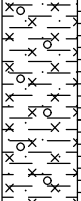
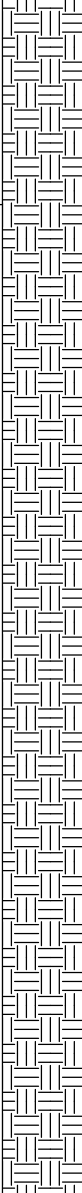
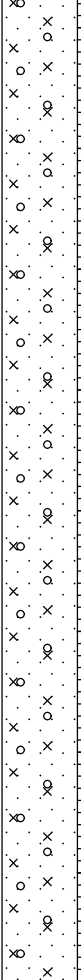
SAMPLES & TESTS			Water	STRATA				Instrument / Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION	
0.50	ES1			93.83		0.06	MADE GROUND: (Black hot rolled asphalt with green chippings).	
				93.19		(0.64) 0.70	MADE GROUND: (Black very sandy silty gravel with fragments of asphalt, brick, concrete and ash. 0.50 - 0.70 low cobble content. Cobbles are angular of brick.	
1.20-1.70	D2	1,1/2,1,1,2 N60 = 7				(1.40)	Loose brown very silty predominantly fine to medium SAND.	
2.00-2.50	D3	1,2/1,2,2,2 N60 = 8		91.79		2.10	Soft to firm low strength greyish brown slightly sandy silty CLAY. Sand is predominantly fine to medium.	
3.00-3.45	U4	30 blows				(2.90)		
4.00-4.45	U5	30 blows					Firm very low strength greyish brown slightly gravelly sandy silty CLAY with occasional lenses of brown fine to medium sand. Gravel is subangular to subrounded predominantly fine to medium of sandstone.	
5.00-5.50	D6	1,2/2,2,2,3 N60 = 11		88.89		5.00		
6.50-7.00	D8	40 blows				(2.80)	Stiff greyish brown slightly gravelly slightly sandy silty CLAY. Gravel is subangular to subrounded predominantly fine to medium of sandstone.	
6.50-6.95	U7			86.09		7.80		
		3,4/4,4,5,5 N60 = 21						
		4,5/6,6,7,7 N60 = 30				(3.90)		

Boring Progress and Water Observations						GENERAL REMARKS
Depth	Date	Time	Casing Depth	Casing Dia. mm	Water Depth	
						1. Position scanned with CAT and Genny prior to excavation. 2. Inspection pit hand dug to a depth of 1.20 m. 3. Groundwater not encountered. 4. Borehole terminated at a depth of 20.43 m. 5. 50 mm diameter standpipe installed to a depth of 2.00 m. Response zone from 1.00 m to 2.00 m.

All dimensions in metres Scale 1:62.5	Method/ Plant Used Cable Percussive - Dando 2000	Logged By LMontgomery
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Project Prestwich Village, Prestwich, Manchester, M25 1AY				BOREHOLE No BH07
Job No J23254	Date 06-11-23 07-11-23	Ground Level (m TBM) 93.89	Co-Ordinates () E 381,258.0 N 404,001.0	
Client The Prestwich Regeneration LLP		Engineer Civic Engineers		Sheet 2 of 3

SAMPLES & TESTS			Water	STRATA			Instrument / Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	
11.00-11.50 11.00-11.45	D10 U9	50 blows	82.19		11.70	Stiff greyish brown slightly gravelly slightly sandy silty CLAY. Gravel is subangular to subrounded predominantly fine to medium of sandstone.(continued) 10.70 - 11.70 frequent sand lenses.	
12.50-13.50	B11	5,7/8,8,10,9 N60 = 41 6,7/7,8,8,9 N60 = 37 7,9/10,11,12,12 N60 = 53 8,8/11,13,14,12 N = 50/285 mm 10,11/12,13,13,12 N = 50/285 mm			(8.73)	Dense becoming very dense brown slightly gravelly silty SAND with rare lenses of brown sandy clay. Gravel is subangular to subrounded of sandstone.	

Boring Progress and Water Observations						GENERAL REMARKS
Depth	Date	Time	Depth	Casing Dia. mm	Water Depth	
						1. Position scanned with CAT and Genny prior to excavation. 2. Inspection pit hand dug to a depth of 1.20 m. 3. Groundwater not encountered. 4. Borehole terminated at a depth of 20.43 m. 5. 50 mm diameter standpipe installed to a depth of 2.00 m. Response zone from 1.00 m to 2.00 m.



Project Prestwich Village, Prestwich, Manchester, M25 1AY				BOREHOLE No BH07
Job No J23254	Date 06-11-23 07-11-23	Ground Level (m TBM) 93.89	Co-Ordinates () E 381,258.0 N 404,001.0	
Client The Prestwich Regeneration LLP		Engineer Civic Engineers		Sheet 3 of 3

SAMPLES & TESTS			Water	STRATA			Instrument / Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	
		9,11/11,14,15,10 N = 50/275 mm		73.46		20.43	

Boring Progress and Water Observations						GENERAL REMARKS
Depth	Date	Time	Depth	Casing Dia. mm	Water Depth	
						1. Position scanned with CAT and Genny prior to excavation. 2. Inspection pit hand dug to a depth of 1.20 m. 3. Groundwater not encountered. 4. Borehole terminated at a depth of 20.43 m. 5. 50 mm diameter standpipe installed to a depth of 2.00 m. Response zone from 1.00 m to 2.00 m.

Report ID: CABLE PERCUSSION || Project: J23254 - PRESTWICH.GPJ || Library: GEA LIBRARY.GLB || Date: 23 January 2024



Project Prestwich Village, Prestwich, Manchester, M25 1AY				BOREHOLE No BH08	
Job No J23254	Date 17-11-23 17-11-23	Ground Level (m TBM) 95.70	Co-Ordinates () E 381,272.0 N 404,272.0		
Client The Prestwich Regeneration LLP		Engineer Civic Engineers		Sheet 1 of 1	

SAMPLES & TESTS			Water	STRATA				Instrument / Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION	
				95.58		0.12	MADE GROUND: (Black 10 mm asphalt).	
				95.50		0.20	MADE GROUND: (Black asphalt).	
				95.44		0.26	MADE GROUND: (Black 10 mm asphalt).	
				94.99		0.71	MADE GROUND: (Dark grey and black mottled very sandy angular gravel with fragments of ash, clinker, plastic, asphalt and brick).	
				94.98		0.72		

Boring Progress and Water Observations						GENERAL REMARKS
Depth	Date	Time	Casing Depth	Casing Dia. mm	Water Depth	
						1. Position scanned with CAT and Genny prior to excavation. 2. Inspection pit hand dug to a depth of 0.72 m. 3. Groundwater seepage at a depth of 0.26 m. 4. Borehole refused at a depth of 0.72 m on flat concrete. 5. Borehole backfilled with arisings upon completion. 6. Borehole moved 2.00 m southeast.

All dimensions in metres Scale 1:62.5	Method/ Plant Used Open-drive Sampler - Dando Terrier	Logged By LMontgomery
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Project Prestwich Village, Prestwich, Manchester, M25 1AY				BOREHOLE No BH08A	
Job No J23254	Date 17-11-23 17-11-23	Ground Level (m TBM) 95.70	Co-Ordinates () E 381,273.0 N 404,272.0		
Client The Prestwich Regeneration LLP		Engineer Civic Engineers		Sheet 1 of 1	

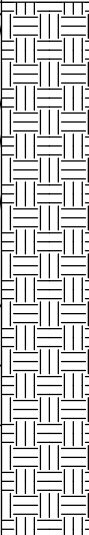
SAMPLES & TESTS			Water	STRATA				Instrument / Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION	
0.50	ES1			95.60		0.10	MADE GROUND: (Black 10 mm asphalt).	
				95.51		0.19	MADE GROUND: (Black asphalt).	
				95.44		0.26	MADE GROUND: (Black 10 mm asphalt).	
				95.01		0.69	MADE GROUND: (Dark grey and black mottled very sandy angular gravel with fragments of ash, clinker, plastic, asphalt and brick).	
				95.00		0.70		
						MADE GROUND: (Grey concrete).		

Boring Progress and Water Observations						GENERAL REMARKS
Depth	Date	Time	Casing Depth	Casing Dia. mm	Water Depth	
						1. Position scanned with CAT and Genny prior to excavation. 2. Inspection pit hand dug to a depth of 0.70 m. 3. Groundwater not encountered. 4. Borehole refused at a depth of 0.70 m on flat concrete. 5. Borehole backfilled with arisings upon completion.

All dimensions in metres Scale 1:62.5	Method/ Plant Used Open-drive Sampler - Dando Terrier	Logged By LMontgomery
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Project Prestwich Village, Prestwich, Manchester, M25 1AY				BOREHOLE No BH09	
Job No J23254	Date 17-11-23 17-11-23	Ground Level (m TBM) 94.35	Co-Ordinates () E 381,290.0 N 404,223.0		
Client The Prestwich Regeneration LLP		Engineer Civic Engineers		Sheet 1 of 1	

SAMPLES & TESTS			Water	STRATA				Instrument / Backfill		
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION			
1.00 1.20-1.50 1.60-2.00 2.50-3.00	ES1 D2	1,1/1,0,1,1 N60 = 4		94.26		0.09	MADE GROUND: (Black 10 mm asphalt).			
				94.16		0.19	MADE GROUND: (Dark grey very sandy silty angular gravel with fragments and cobbles of asphalt and yellowish brown sandstone).			
	D3	1,0/0,0,0,0 N60 = 0		93.55		0.80	MADE GROUND: (Dark grey and black mottled very sandy angular gravel with fragments of ash, clinker, plastic, asphalt and brick).			
				93.25		1.10	MADE GROUND: (Dark grey and black mottled very sandy angular gravel with fragments of ash, clinker, plastic, asphalt and brick).			
	D4	1,1/2,2,3,2 N60 = 11		92.75		(0.50)	MADE GROUND: (Grey gravelly very clayey sand with fragments of brick and ash).			
				91.85		2.50	(0.90)		Very loose to loose grey silty SAND with occasional lenses of brown slightly organic clay with occasional pockets of brown peat and plant matter.	
									91.35	3.00
				91.35		(0.50)	Greyish brown slightly gravelly slightly sandy silty CLAY. Gravel is angular to subrounded of sandstone and coal.			
							90.85		3.50	Medium dense brownish grey silty fine to medium SAND.
				89.90		(0.95)	Medium dense brownish grey silty fine to medium SAND with occasional lenses of greyish brown sandy clay.			

Boring Progress and Water Observations						GENERAL REMARKS
Depth	Date	Time	Casing Depth	Casing Dia. mm	Water Depth	
						1. Position scanned with CAT and Genny prior to excavation. 2. Inspection pit hand dug to a depth of 1.20 m. 3. Groundwater encountered at depth of 3.40 m, remaining at the same depth after 20 minutes. 4. Borehole terminated at a depth of 4.45 m due to collapsing material. 5. Borehole backfilled with arisings upon completion.

All dimensions in metres Scale 1:62.5	Method/ Plant Used Open-drive Sampler - Dando Terrier	Logged By LMontgomery
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Project Prestwich Village, Prestwich, Manchester, M25 1AY				BOREHOLE No BH11
Job No J23254	Date 16-11-23 16-11-23	Ground Level (m TBM) 94.15	Co-Ordinates () E 381,322.0 N 404,120.0	
Client The Prestwich Regeneration LLP		Engineer Civic Engineers		Sheet 1 of 1

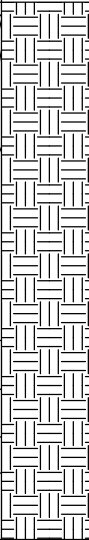
SAMPLES & TESTS			Water	STRATA				Instrument / Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION	
0.50	ES1			94.05		0.10	MADE GROUND: (Black 10 mm asphalt).	
				93.87		0.28	MADE GROUND: (Dark grey very sandy silty angular gravel with fragments of asphalt and sandstone).	
				93.69		0.46	MADE GROUND: (Light grey very sandy silty angular gravel with fragments of sandstone).	
				93.60		0.55	MADE GROUND: (Greyish brown gravelly very clayey sand with fragments and cobbles of brick, ash, clinker and concrete).	
1.00-1.20	D2	3,4/4,5,5,6 N60 = 23		92.95		1.20	MADE GROUND: (Greyish brown gravelly very clayey sand with fragments and cobbles of brick, ash, clinker and concrete).	
1.50-1.80	D3			92.35		1.80	Orange-brown silty predominantly fine to medium SAND.	
2.50-2.80	D4	2,1/2,2,2,2 N60 = 9				(0.60)	Medium dense light brown silty predominantly fine to medium SAND.	
						(1.10)	Loose brown mottled orange-brown silty predominantly fine to medium SAND with frequent lenses of greyish brown sandy clay.	
				91.25		2.90	2.80 - 2.90 brownish grey locally mottled orange-brown sandy silt.	
				90.70		3.45	Very loose orange-brown silty predominantly fine to medium SAND.	
		2,1/0,0,0,0 N60 = 0						

Boring Progress and Water Observations						GENERAL REMARKS
Depth	Date	Time	Casing Depth	Casing Dia. mm	Water Depth	
						1. Position scanned with CAT and Genny prior to excavation. 2. Inspection pit hand dug to a depth of 1.20 m. 3. Groundwater encountered at depth of 2.30 m, remaining at the same depth after 20 minutes. 4. Borehole terminated at a depth of 3.45 m due to water ingress and collapsing material. 5. Borehole backfilled with arisings upon completion.

All dimensions in metres Scale 1:62.5	Method/ Plant Used Open-drive Sampler - Dando Terrier	Logged By LMontgomery
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Project Prestwich Village, Prestwich, Manchester, M25 1AY				BOREHOLE No BH12	
Job No J23254	Date 15-11-23 15-11-23	Ground Level (m TBM) 94.27	Co-Ordinates () E 381,299.0 N 404,086.0		
Client The Prestwich Regeneration LLP		Engineer Civic Engineers		Sheet 1 of 1	

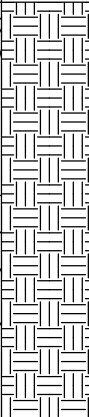
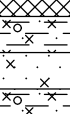
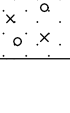
SAMPLES & TESTS			Water	STRATA			Instrument / Backfill		
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)		DESCRIPTION	
1.00-1.20	D1	1,2/3,5,5,6 N60 = 22		94.17		0.10	MADE GROUND: (Black 10 mm asphalt).		
				94.12		0.15	MADE GROUND: (Dark grey very sandy silty angular gravel with fragments of sandstone).		
				93.87		0.40	MADE GROUND: (Light grey very sandy silty angular gravel with fragments of sandstone).		
1.80-2.00	D2	2,3/2,3,2,2 N60 = 11		93.07		1.20	Orange-brown very clayey predominantly fine to medium SAND.		
						(1.60)	Medium dense orange-brown very silty predominantly fine to medium SAND with occasional thin beds of brown very sandy silt.		
									
2.80-3.00	D3	1,1/1,1,0,0 N60 = 2		91.47		2.80	Brown clayey SILT.		
				91.07		3.20	2.80 - 2.85 orange-brown.		
				90.67		3.60	Brown sandy clayey SILT. Sand is fine to medium.		
				90.37		3.90	Brown clayey SILT.		
						(0.55)	Loose greyish brown becoming orange-brown very silty SAND.		
		1,2/2,2,2,2 N60 = 9		89.82		4.45			

Boring Progress and Water Observations						GENERAL REMARKS
Depth	Date	Time	Casing Depth	Casing Dia. mm	Water Depth	
						1. Position scanned with CAT and Genny prior to excavation. 2. Inspection pit hand dug to a depth of 1.20 m. 3. Groundwater encountered at depth of 2.00 m, remaining at the same depth after 20 minutes. 4. Borehole terminated at a depth of 4.45 m due to water ingress and collapsing material. 5. Borehole backfilled with arisings upon completion.

All dimensions in metres Scale 1:62.5	Method/ Plant Used Open-drive Sampler - Dando Terrier	Logged By LMontgomery
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Project Prestwich Village, Prestwich, Manchester, M25 1AY				BOREHOLE No BH13	
Job No J23254	Date 16-11-23 16-11-23	Ground Level (m TBM) 94.40	Co-Ordinates () E 381,327.0 N 404,104.0		
Client The Prestwich Regeneration LLP		Engineer Civic Engineers		Sheet 1 of 1	

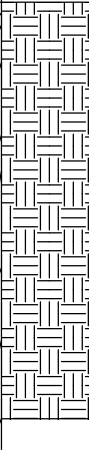
SAMPLES & TESTS			Water	STRATA			Instrument / Backfill	
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)		DESCRIPTION
1.50 1.60-1.90	ES1 D2	4,4/4,4,3,4 N60 = 18		94.27		0.13	MADE GROUND: (Black 10 mm asphalt).	
				94.18		0.22	MADE GROUND: (Dark grey asphalt).	
				94.01		0.39	MADE GROUND: (Light grey very sandy silty angular gravel with fragments of sandstone).	
						(1.21)	MADE GROUND: (Brown slightly sandy slightly gravelly silty clay with fragments and cobbles of brick, ash, clinker and sandstone).	
2.70-3.00	D3	2,1/1,2,1,2 N60 = 7		92.80		1.60	Brown slightly sandy slightly gravelly silty CLAY. Gravel is subangular fine to medium of sandstone.	
				92.50		1.90	Loose orange-brown silty predominantly fine to medium SAND.	
				92.20		2.20	Brown slightly sandy slightly gravelly silty CLAY. Gravel is subangular fine to medium of sandstone.	
				91.75		2.65	Loose orange-brown speckled black slightly gravelly silty predominantly fine to medium SAND. Gravel is angular of organic matter.	
						(0.80)		
		1,2/2,1,2,1 N60 = 7		90.95		3.45		

Boring Progress and Water Observations						GENERAL REMARKS
Depth	Date	Time	Casing Depth	Casing Dia. mm	Water Depth	
						1. Position scanned with CAT and Genny prior to excavation. 2. Inspection pit hand dug to a depth of 1.20 m. 3. Groundwater encountered at depth of 2.00 m, remaining at the same depth after 20 minutes. 4. Borehole terminated at a depth of 3.45 m due to water ingress and collapsing material. 5. Borehole backfilled with arisings upon completion.

All dimensions in metres Scale 1:62.5	Method/ Plant Used Open-drive Sampler - Dando Terrier	Logged By LMontgomery
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Project Prestwich Village, Prestwich, Manchester, M25 1AY				BOREHOLE No BH14
Job No J23254	Date 16-11-23 16-11-23	Ground Level (m TBM) 94.84	Co-Ordinates () E 381,320.0 N 404,079.0	
Client The Prestwich Regeneration LLP		Engineer Civic Engineers	Sheet 1 of 1	

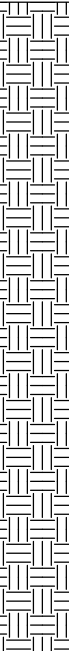
SAMPLES & TESTS			Water	STRATA				Instrument / Backfill		
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION			
0.60	ES1	1,2/2,2,3,3 N60 = 12		94.75		0.09	MADE GROUND: (Black 10 mm asphalt).			
				94.65		0.19	MADE GROUND: (Dark grey asphalt).			
				94.34		0.50	MADE GROUND: (Light grey very sandy silty angular gravel with fragments of sandstone).			
1.20-1.40	D2			2,3/2,3,4,4 N60 = 15	93.74		(0.60)		MADE GROUND: (Very soft dark greyish brown slightly sandy slightly gravelly silty clay with fragments and cobbles of brick, ash, clinker and sandstone).	
1.50-2.00	D3				93.44		1.40		Firm grey slightly sandy slightly gravelly clayey SILT with rare relict rootlets. Sand is fine. Gravel is subangular fine of mudstone.	
2.20-2.60	D4			92.64		(0.80)	Firm grey slightly sandy slightly gravelly clayey SILT with rare relict rootlets. Sand is fine. Gravel is subangular fine of mudstone.			
							92.64		2.20	Firm grey slightly sandy clayey SILT with rare lenses of grey fine to medium sand. Sand is fine to medium.
2.80	ES5			1,2/3,2,3,5 N60 = 15		92.04			(0.60)	Brown slightly sandy slightly gravelly silty CLAY. Gravel is subangular fine to medium of sandstone.
						91.39			(0.65)	2.60 - 2.80 becoming orange-brown with occasional organic matter.
										91.39

Boring Progress and Water Observations						GENERAL REMARKS
Depth	Date	Time	Casing Depth	Casing Dia. mm	Water Depth	
						1. Position scanned with CAT and Genny prior to excavation. 2. Inspection pit hand dug to a depth of 1.20 m. 3. Groundwater encountered at depth of 2.50 m, remaining at the same depth after 20 minutes. 4. Borehole terminated at a depth of 3.45 m due to water ingress and collapsing material. 5. Borehole backfilled with arisings upon completion.

All dimensions in metres Scale 1:62.5	Method/ Plant Used Open-drive Sampler - Dando Terrier	Logged By LMontgomery
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Project Prestwich Village, Prestwich, Manchester, M25 1AY				BOREHOLE No BH15
Job No J23254	Date 15-11-23 15-11-23	Ground Level (m TBM) 94.94	Co-Ordinates () E 381,313.0 N 404,048.0	
Client The Prestwich Regeneration LLP		Engineer Civic Engineers		Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA			Instrument / Backfill	
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)		DESCRIPTION
1.40 1.50-2.00 2.50-3.00 3.50-4.00 4.50-4.90	ES1 D2	3,4/5,5,6,6 N60 = 26		94.84		0.10	MADE GROUND: (Black 10 mm asphalt with green chippings).	
				94.74		0.20		
	94.60			0.34	MADE GROUND: (Dark grey very sandy silty angular gravel with fragments of sandstone).			
	(1.16)			MADE GROUND: (Light grey very sandy silty angular gravel with fragments of sandstone).				
	93.44			1.50	MADE GROUND: (Light greyish brown very sandy silty angular gravel with fragments and cobbles of brick, and ash).			
					(1.80)	0.34 - 0.60 fragments of made ground not present.		
	91.64					3.30	Medium dense orange-brown silty predominantly fine to medium SAND.	
				90.04		(1.60)	Soft brown sandy clayey SILT. Sand is fine to medium.	
	89.49					4.90	Firm to stiff orange-brown and brown mottled silty CLAY.	
				(0.55)	5.45			

Boring Progress and Water Observations						GENERAL REMARKS
Depth	Date	Time	Depth	Casing Dia. mm	Water Depth	
						1. Position scanned with CAT and Genny prior to excavation. 2. Inspection pit hand dug to a depth of 1.20 m. 3. Groundwater encountered at depth of 3.50 m, remaining at the same depth after 20 minutes. 4. Borehole terminated at a depth of 5.45 m. 5. Borehole backfilled with arisings upon completion.

All dimensions in metres Scale 1:62.5	Method/ Plant Used Open-drive Sampler - Dando Terrier	Logged By LMontgomery
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Project Prestwich Village, Prestwich, Manchester, M25 1AY				BOREHOLE No BH16
Job No J23254	Date 17-11-23 17-11-23	Ground Level (m TBM) 95.75	Co-Ordinates () E 381,352.0 N 404,052.0	
Client The Prestwich Regeneration LLP		Engineer Civic Engineers		Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA			Instrument / Backfill	
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)		DESCRIPTION
0.90-1.10	D1	1,1/2,1,2,3 N60 = 9		95.65		0.10	MADE GROUND: (Black 10 mm asphalt).	
				95.55		0.20	MADE GROUND: (Dark grey asphalt).	
				95.42	x	0.33	MADE GROUND: (Light grey very sandy silty angular gravel with fragments of sandstone).	
				95.30	x x	0.45		
				95.00		0.75		
1.20-1.80	D2	3,3/4,4,6,9 N60 = 27		94.55		1.20	MADE GROUND: (Grey locally mottled dark grey sandy angular gravel with fragments and cobbles of brick, ash and clinker).	
2.50-2.90	D3			x x x	(0.70)	Orange-brown locally mottled dark brown silty predominantly fine to medium SAND.		
				93.85	x x x	1.90	Light brown speckled black very gravelly silty SAND. Gravel is angular of coal.	
				x x x x	(1.30)	Orange-brown silty predominantly fine to medium SAND.		
				x x x x		Stiff brown mottled black sandy SILT with occasional lenses of sandy clay.		
3.50-4.00	D4	4,4/6,7,10,10 N60 = 39		92.55	x x x	3.20	Medium dense to dense brown mottled orange-brown very silty SAND.	
			x x x x	(1.25)				
		8,8/7,6,5,8 N60 = 30		91.30	x x x x	4.45		

Boring Progress and Water Observations						GENERAL REMARKS
Depth	Date	Time	Casing Depth	Casing Dia. mm	Water Depth	
						1. Position scanned with CAT and Genny prior to excavation. 2. Inspection pit hand dug to a depth of 1.20 m. 3. Groundwater not encountered. 4. Borehole terminated at a depth of 4.45 m due to collapsing material. 5. Borehole backfilled with arisings upon completion.

All dimensions in metres Scale 1:62.5	Method/ Plant Used Open-drive Sampler - Dando Terrier	Logged By LMontgomery
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Project Prestwich Village, Prestwich, Manchester, M25 1AY				BOREHOLE No BH17	
Job No J23254	Date 16-11-23 16-11-23	Ground Level (m TBM) 92.95	Co-Ordinates () E 381,223.0 N 404,093.0		
Client The Prestwich Regeneration LLP		Engineer Civic Engineers		Sheet 1 of 1	

SAMPLES & TESTS			Water	STRATA				Instrument / Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION	
0.40	ES1	2,2/2,3,2,3 N60 = 12		92.90		0.05	MADE GROUND: (Grey granite slab).	
				92.80		0.15	MADE GROUND: (Reddish brown concrete).	
				92.71		0.24	MADE GROUND: (Dark grey asphalt).	
				92.54		(0.58)	MADE GROUND: (Greyish brown very sandy angular gravel with fragments and cobbles of brick, concrete, ash and clinker).	
				92.01		0.94	MADE GROUND: (Greyish brown very sandy angular gravel with fragments and cobbles of brick, concrete, ash and clinker).	
2.00-2.50	D2	1,2/3,3,3,3 N60 = 14		91.35		1.60	Medium dense orange-brown very clayey SAND.	
						(1.60)	Orange-brown and brown mottled sandy CLAY. Sand is fine to medium.	
						(1.60)	Orange-brown locally mottled dark grey very silty predominantly fine to medium SAND with rare lenses of brown silt.	
3.70-4.00	D3	1,1/0,1,1,1 N60 = 4		89.75		3.20	2.90 - 3.20 orange-brown silt.	
				89.25		(0.50) 3.70	Soft greyish brown slightly sandy clayey SILT. Sand is fine to medium.	
						(0.75)	Stiff dark greyish brown slightly sandy clayey SILT with occasional lenses of brown silt. Sand is fine to medium.	
				88.50		4.45	Stiff dark greyish brown slightly sandy clayey SILT with occasional lenses of brown silt. Sand is fine to medium.	

Boring Progress and Water Observations						GENERAL REMARKS
Depth	Date	Time	Casing Depth	Casing Dia. mm	Water Depth	
						1. Position scanned with CAT and Genny prior to excavation. 2. Inspection pit hand dug to a depth of 1.20 m. 3. Groundwater not encountered. 4. Borehole terminated at a depth of 4.45 m due to collapsing material. 5. Borehole backfilled with arisings upon completion.

All dimensions in metres Scale 1:62.5	Method/ Plant Used Open-drive Sampler - Dando Terrier	Logged By LMontgomery
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BH09 - 1.20 m to 2.00 m



BH09 - 2.00 m to 3.00 m





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BH09 - 3.00 m to 4.00 m





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BH11 - 1.20 m to 2.00 m



BH11 - 2.00 m to 3.00 m





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BH12 - 1.20 m to 2.00 m



BH12 - 2.00 m to 3.00 m





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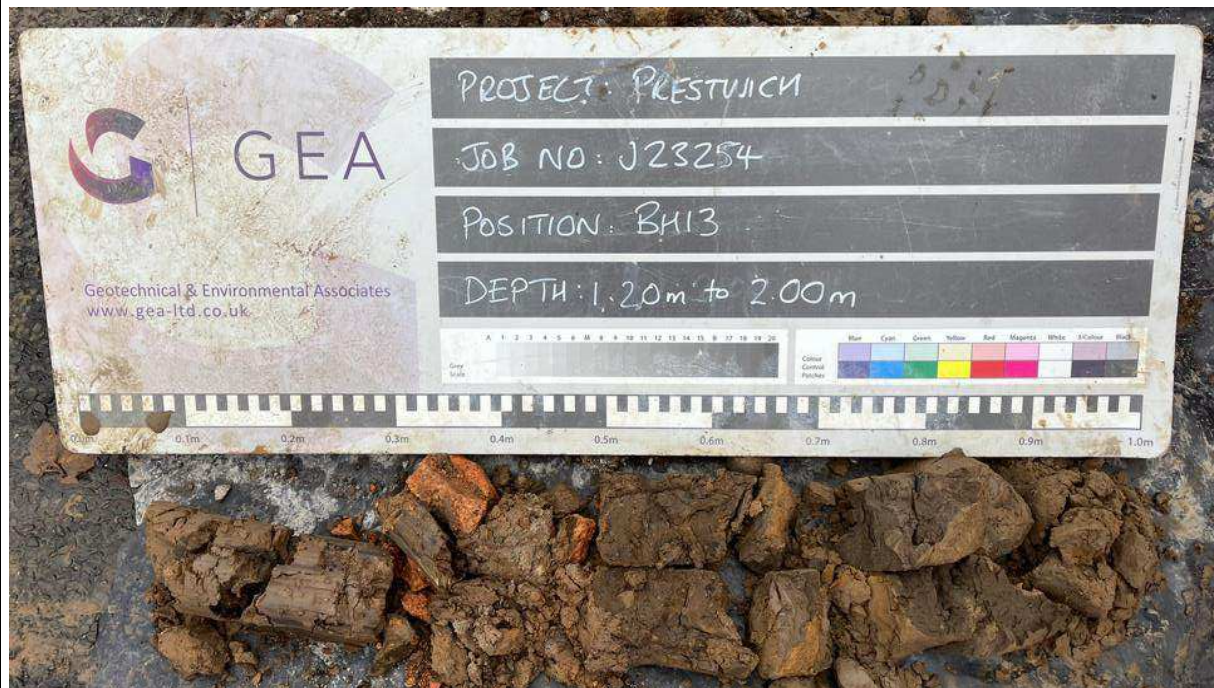
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BH13 - 1.20 m to 2.00 m



BH13 - 2.00 m to 3.00 m





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BH14 - 1.20 m to 2.00 m



BH14 - 2.00 m to 3.00 m





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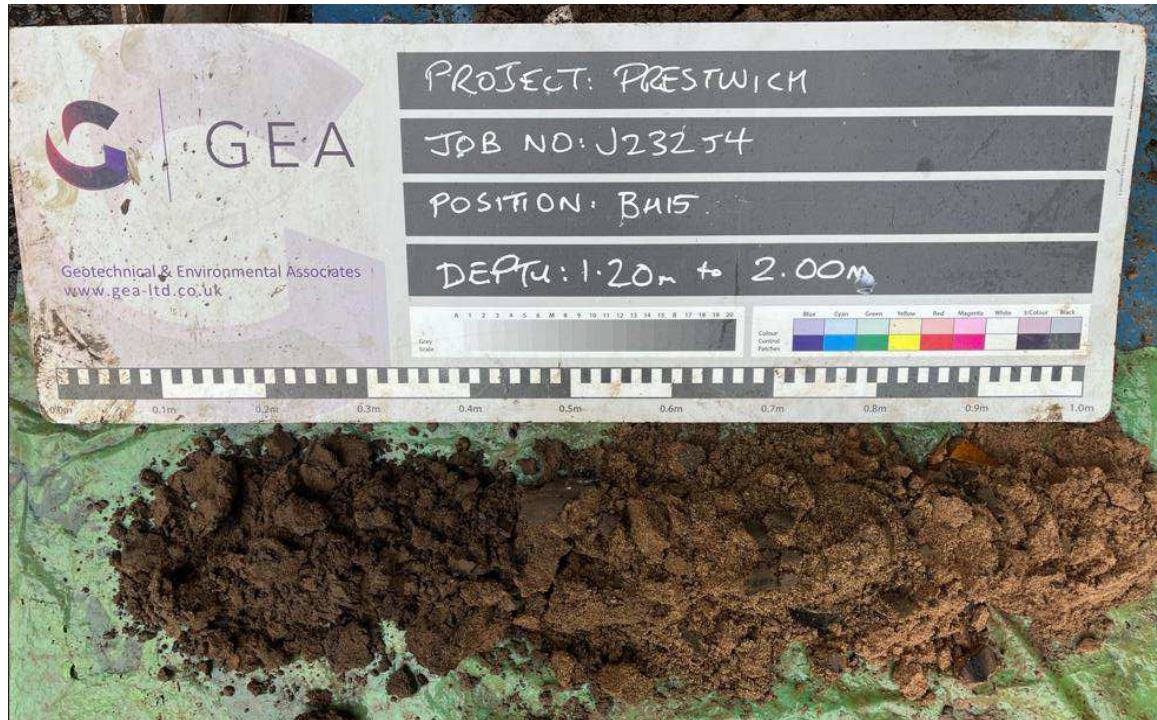
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Client The Prestwich Regeneration LLP

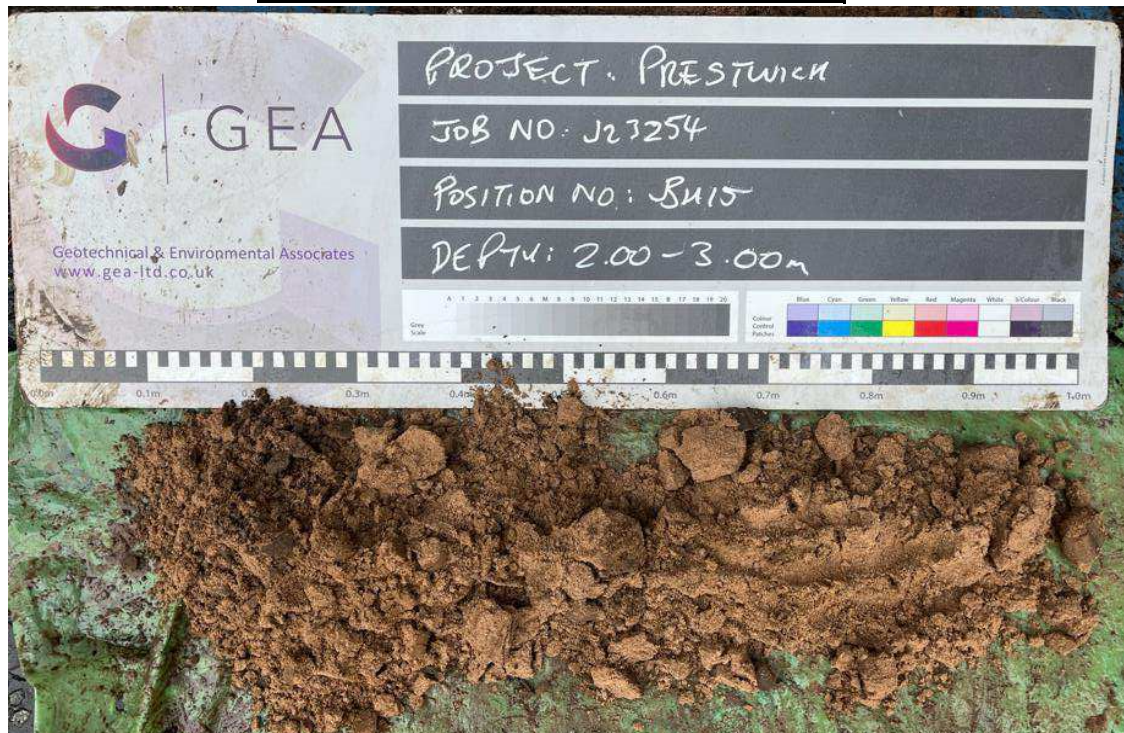
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BH15 - 1.20 m to 2.00 m



BH15 - 2.00 m to 3.00 m





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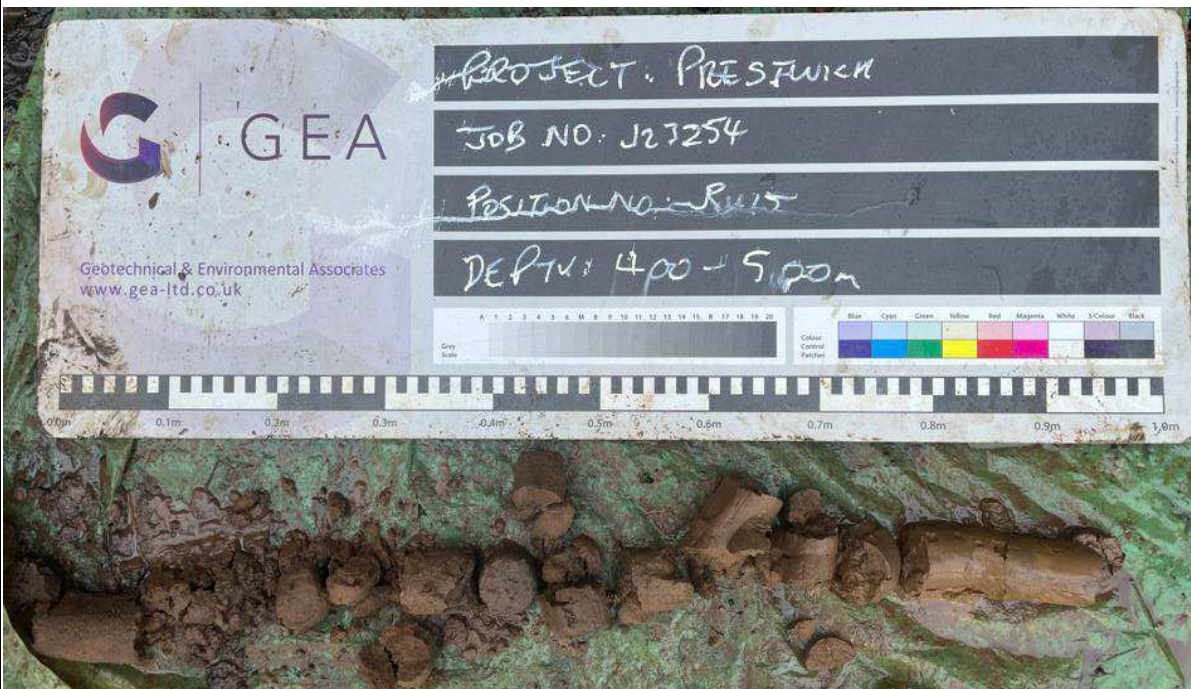
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BH15 - 3.00 m to 4.00 m



BH15 - 4.00 m to 5.00 m





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BH16 - 1.20 m to 2.00 m



BH16 - 2.00 m to 3.00 m





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BH16 - 3.00 m to 4.00 m





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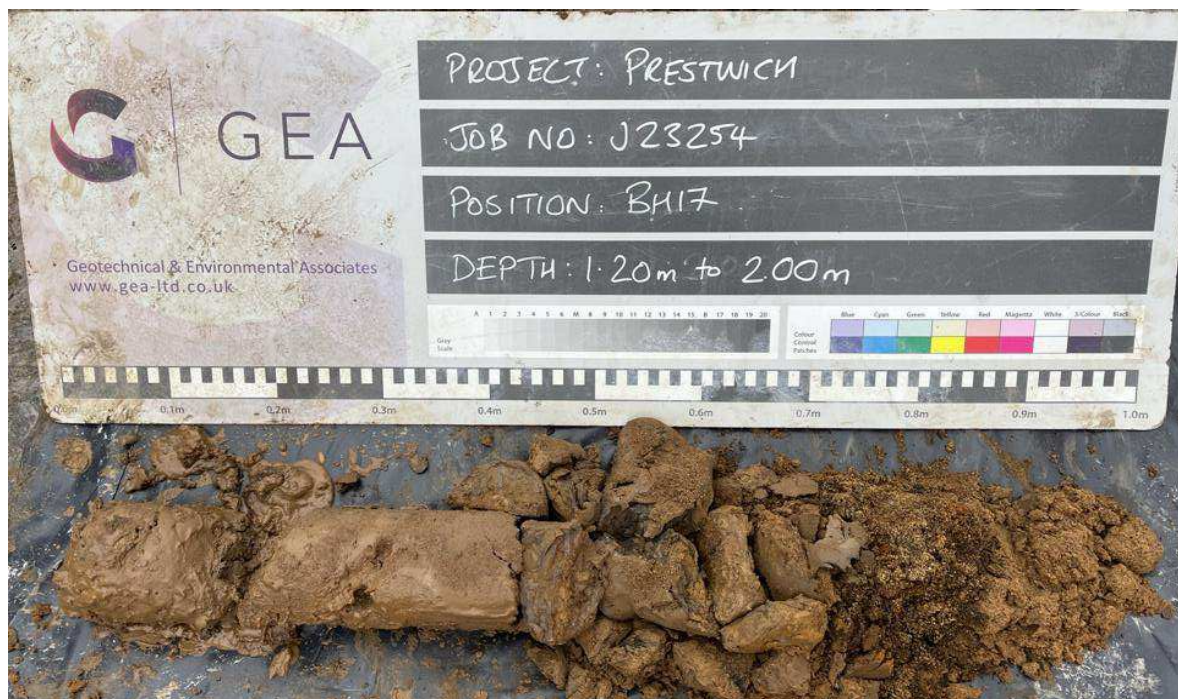
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BH17 - 1.20 m to 2.00 m



BH17 - 2.00 m to 3.00 m





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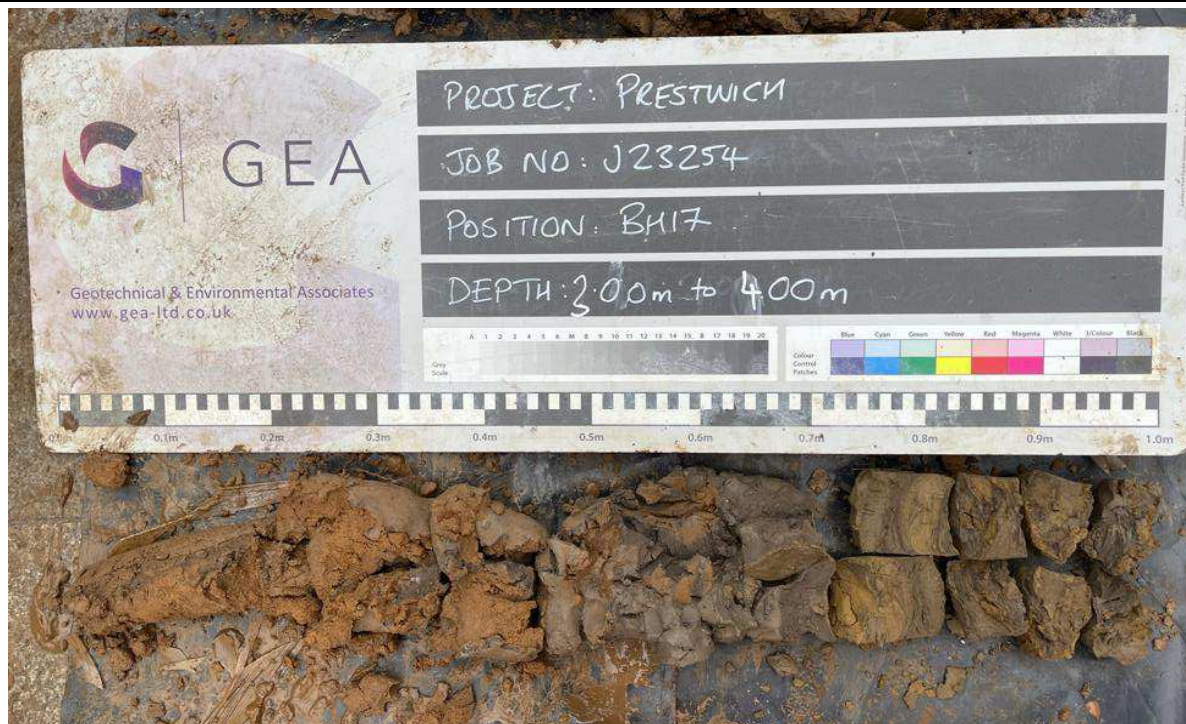
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BH17 - 3.00 m to 4.00 m





Project Prestwich Village, Prestwich, Manchester, M25 1AY					TRIAL PIT No TP02				
Job No J23254		Date 15-11-23 15-11-23		Ground Level (m OD) 93.51				Co-Ordinates () E 381,262.0 N 404,090.0	
Client The Prestwich Regeneration LLP				Engineer Civic Engineers			Sheet 1 of 1		
SAMPLES & TESTS				Water	STRATA				
Depth	No	Type	Results		DESCRIPTION	Reduced Level	Depth (Thickness)	Legend	
0.50	1	ES			MADE GROUND: (Grey granite slab).	93.46	0.05		
					MADE GROUND: (Reddish brown concrete).	93.39	0.12		
					MADE GROUND: (Dark grey asphalt).	93.25	0.26		
					MADE GROUND: (Grey very gravelly silty sand with fragments of brick, concrete and sandstone).	93.13	0.38		
1.00	2	D			Orange-brown silty predominantly fine to medium SAND.	92.11	1.40		
GENERAL REMARKS									
1. Position scanned with CAT and Genny prior to excavation. 2. Groundwater not encountered. 3. Trial pit terminated at a depth of 1.40 m. 4. Borehole backfilled with arisings and slab reinstated upon completion.									
All dimensions in metres Scale 1:62.5				Method/ Plant Used Hand dug Pit - Hand tools and Breaker				Logged By LMontgomery	



Project Prestwich Village, Prestwich, Manchester, M25 1AY				TRIAL PIT No TP03	
Job No J23254	Date 15-11-23 15-11-23	Ground Level (m OD) 93.89	Co-Ordinates () E 381,273.0 N 404,044.0		
Client The Prestwich Regeneration LLP		Engineer Civic Engineers		Sheet 1 of 1	

SAMPLES & TESTS				Water	STRATA			
Depth	No	Type	Results		DESCRIPTION	Reduced Level	Depth (Thickness)	Legend
0.80	1	ES			MADE GROUND: (Grey granite slab).	93.84	0.05	
					MADE GROUND: (Reddish brown concrete).	93.79	0.10	
					MADE GROUND: (Dark grey asphalt).	93.65	0.24	
					MADE GROUND: (Greyish brown very sandy silty angular gravel with fragments and cobbles of brick, concrete and sandstone).	93.44	0.45	
1.50-1.70	2	D			MADE GROUND: (Orange-brown silty predominantly fine to medium sand with frequent lenses of dark grey sandy clay).	92.44	1.45	
					1.15 - 1.35 200 mm diameter sewer pipe running northwest-southeast.	92.19	1.70	
					Orange-brown silty predominantly fine to medium SAND.			

GENERAL REMARKS

1. Position scanned with CAT and Genny prior to excavation.
2. Groundwater not encountered.
3. 200 mm diameter sewer drainpipe encountered at a depth of 1.15 m.
4. Trial pit terminated at a depth of 1.70 m.
5. Borehole backfilled with arisings and slab reinstated upon completion.

All dimensions in metres
Scale 1:62.5

Method/
Plant Used Hand dug Pit - Hand tools and Breaker

Logged By
LMontgomery



Project Prestwich Village, Prestwich, Manchester, M25 1AY				TRIAL PIT No TP04 North
Job No J23254	Date 15-11-23 15-11-23	Ground Level (m OD) 93.24	Co-Ordinates () E 381,238.0 N 404,028.0	
Client The Prestwich Regeneration LLP		Engineer Civic Engineers		Sheet 1 of 1

SAMPLES & TESTS				Water	STRATA			
Depth	No	Type	Results		DESCRIPTION	Reduced Level	Depth (Thick-ness)	Legend
					MADE GROUND: (Grey granite slab).	93.19	0.05	
					MADE GROUND: (Reddish brown concrete).	93.14	0.10	
					MADE GROUND: (Dark grey asphalt).	92.98	0.26	
					MADE GROUND: (Dark grey and dark brown mottled very sandy silty angular gravel with fragments of brick, concrete and sandstone).	92.39	0.85	
					0.70 possible gas main running northwest-southeast.			
					200 mm diameter sewer pipe running northwest-southeast.			

GENERAL REMARKS

1. Position scanned with CAT and Genny prior to excavation.
2. Groundwater not encountered.
3. Possible gas main encountered at a depth of 0.70 m.
4. 200 mm diameter sewer drainpipe encountered at a depth of 0.85 m.
5. Trial pit terminated at a depth of 0.85 m.
6. Borehole backfilled with arisings and slab reinstated upon completion.

All dimensions in metres Scale 1:62.5	Method/ Plant Used Hand dug Pit - Hand tools and Breaker	Logged By LMontgomery
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Project Prestwich Village, Prestwich, Manchester, M25 1AY				TRIAL PIT No TP04 South	
Job No J23254	Date 15-11-23 15-11-23	Ground Level (m OD) 93.24	Co-Ordinates () E 381,238.0 N 404,028.0		
Client The Prestwich Regeneration LLP		Engineer Civic Engineers		Sheet 1 of 1	

SAMPLES & TESTS				Water	STRATA			
Depth	No	Type	Results		DESCRIPTION	Reduced Level	Depth (Thickness)	Legend
0.70	1	ES			MADE GROUND: (Grey granite slab).	93.19	0.05	
					MADE GROUND: (Reddish brown concrete).	93.14	0.10	
					MADE GROUND: (Dark grey asphalt).	92.98	0.26	
					MADE GROUND: (Yellowish grey very sandy angular gravel with fragments of sandstone).	92.94	0.30	
1.30-1.40	2	D			MADE GROUND: (Yellowish grey very sandy angular gravel with fragments of sandstone).	92.76	0.48	
					MADE GROUND: (Grey granite kerbstone).	92.64	0.60	
					MADE GROUND: (Yellowish grey very sandy angular gravel with fragments of sandstone).	92.51	0.73	
					MADE GROUND: (Dark grey slightly gravelly sandy silty clay with fragments of brick).	92.04	1.20	
					MADE GROUND: (Dark grey and light brown mottled slightly gravelly sandy silty clay with fragments of brick).	91.84	1.40	
					Orange-brown and light brown mottled sandy silty CLAY.			

GENERAL REMARKS

1. Position scanned with CAT and Genny prior to excavation.
2. Groundwater not encountered.
3. Trial pit terminated at a depth of 1.40 m.
5. Borehole backfilled with arisings and slab reinstated upon completion.

All dimensions in metres
Scale 1:62.5

Method/
Plant Used Hand dug Pit - Hand tools and Breaker

Logged By
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Trial Pit Photographs

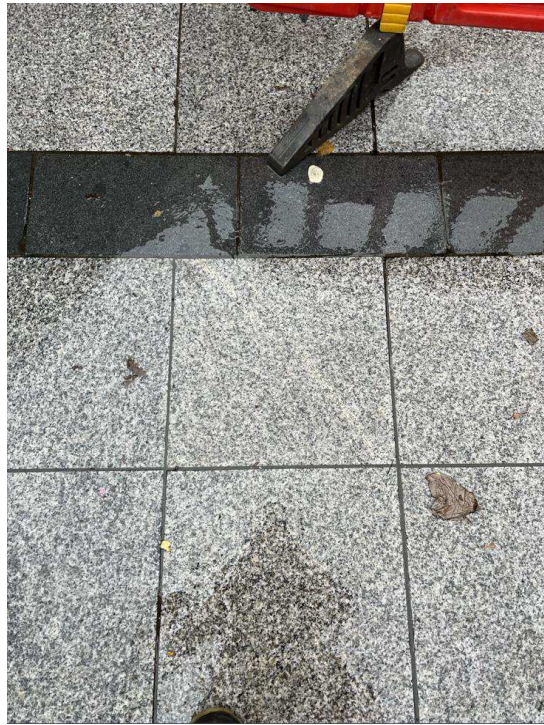
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TP02 - Prior to excavation



TP02 - Excavated to 1.40 m, looking south





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Trial Pit Photographs

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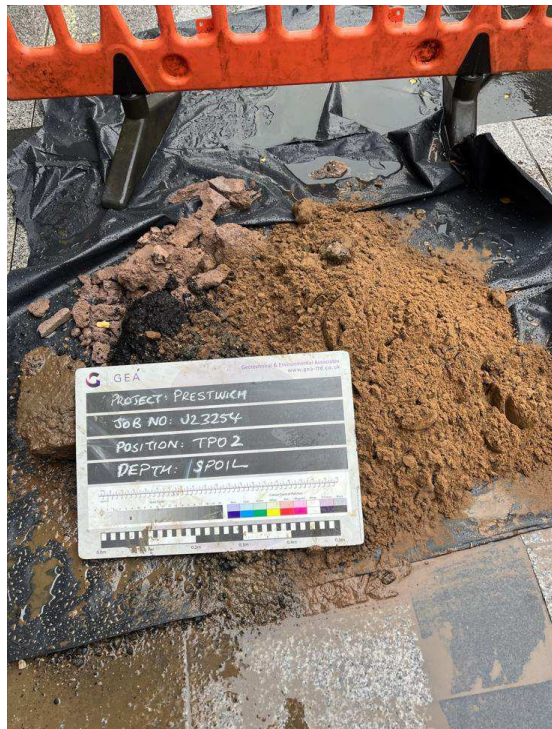
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TP02 - Excavated to 1.40 m, looking west



TP02 - Excavated to 1.40 m, looking south





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Trial Pit Photographs

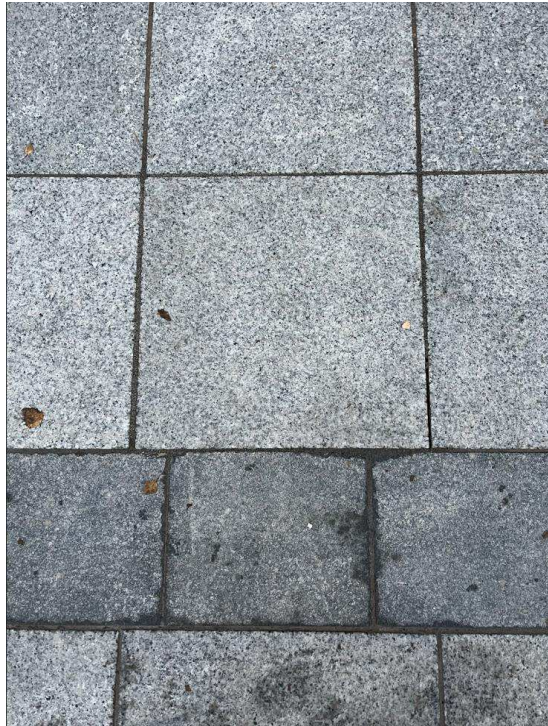
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TP02 - Reinstated





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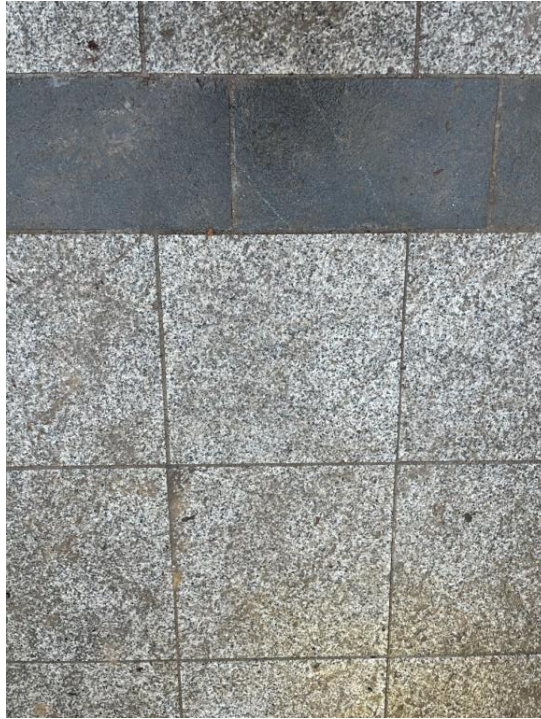
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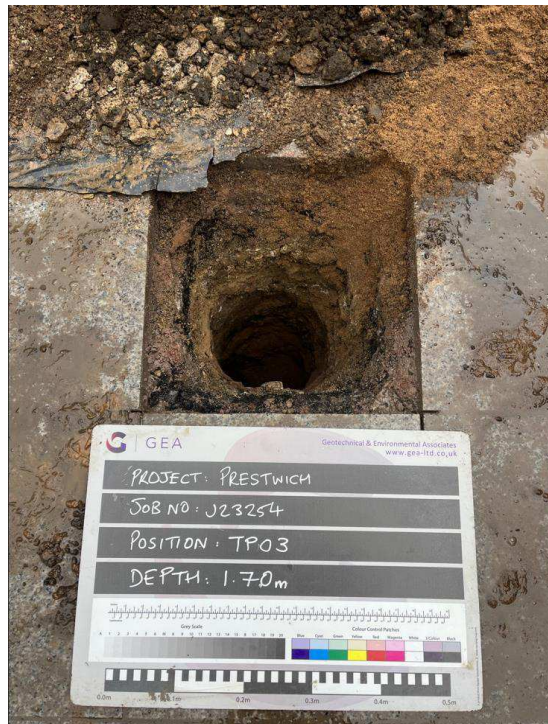
Engineer Civic Engineers

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TP03 - Prior to excavation



TP03 - Excavated to 1.70 m, looking south





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Trial Pit Photographs

Site Prestwich Village, Prestwich, Manchester, M25 1AY

Client The Prestwich Regeneration LLP

Engineer Civic Engineers

Job Number
J23254

Sheet
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TP03 - Excavated to 1.70 m, looking east



TP03 - Drainage pipe at 1.15 m





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Engineer Civic Engineers

Job Number
J23254

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TP03 - Spoil



TP03 - Reinstated





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Job Number
J23254

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TP04 - Prior to excavation



TP03 - Excavated to 1.70 m, looking south





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Engineer Civic Engineers

Job Number
J23254

Sheet
8/ 10



TP04 - Excavated to 1.40 m, looking northeast



TP04 - Possible gas main and drainage pipe





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J23254

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TP04 - Granite kerb



TP04 - Spoil





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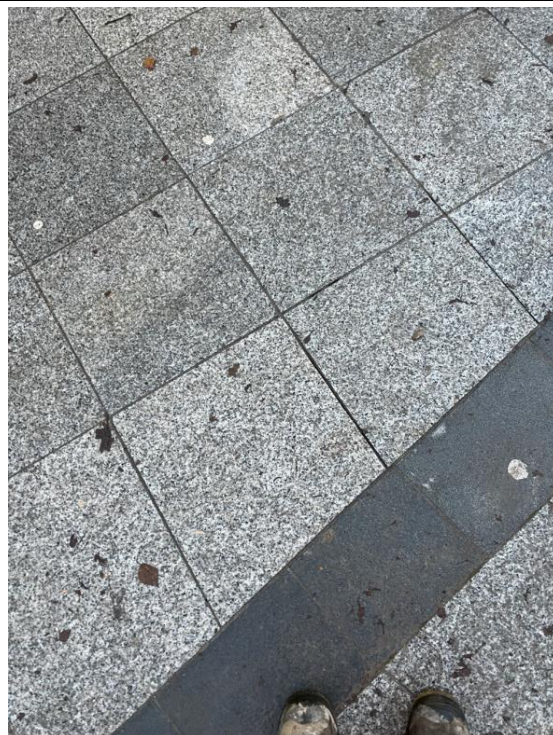
Engineer Civic Engineers

Job Number
J23254

Sheet
10/ 10



TP04 - Spoil



TP04 - Reinstated





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Falling Head Test Results

Site Prestwich Village, Prestwich, Manchester, M25 1AY

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Engineer Civic Engineers

Job Number
J23254

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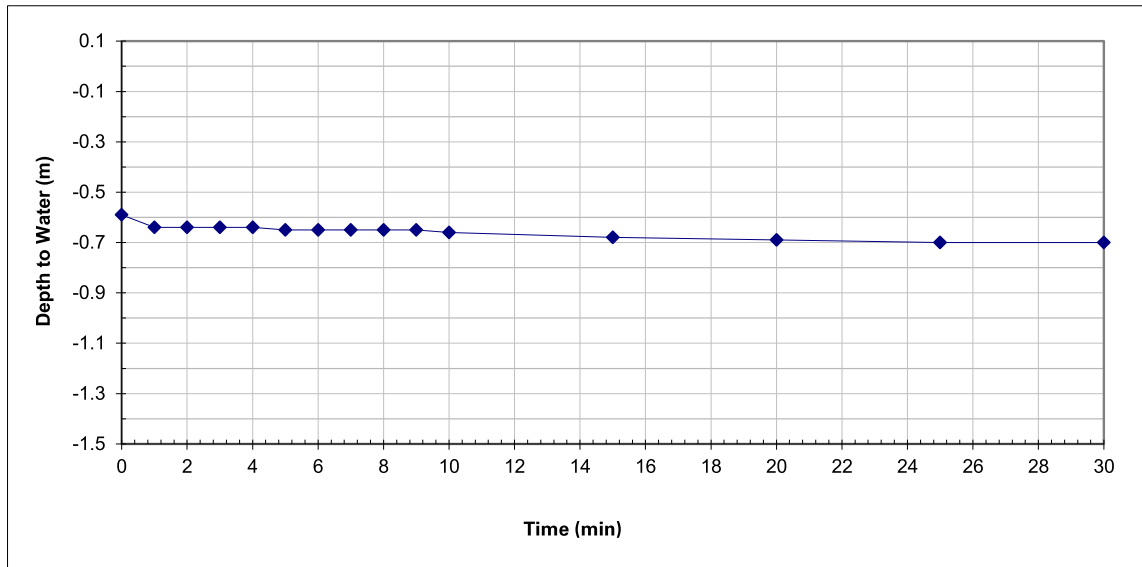
Borehole No. BH09

Soakage Test No. 1

Length (m) 0.4

Width (m) 0.4

Depth (m) 1.5



Design Soakage Rate

1.2E-05

m/s

(based on linear portion of graph as shown)

1.00

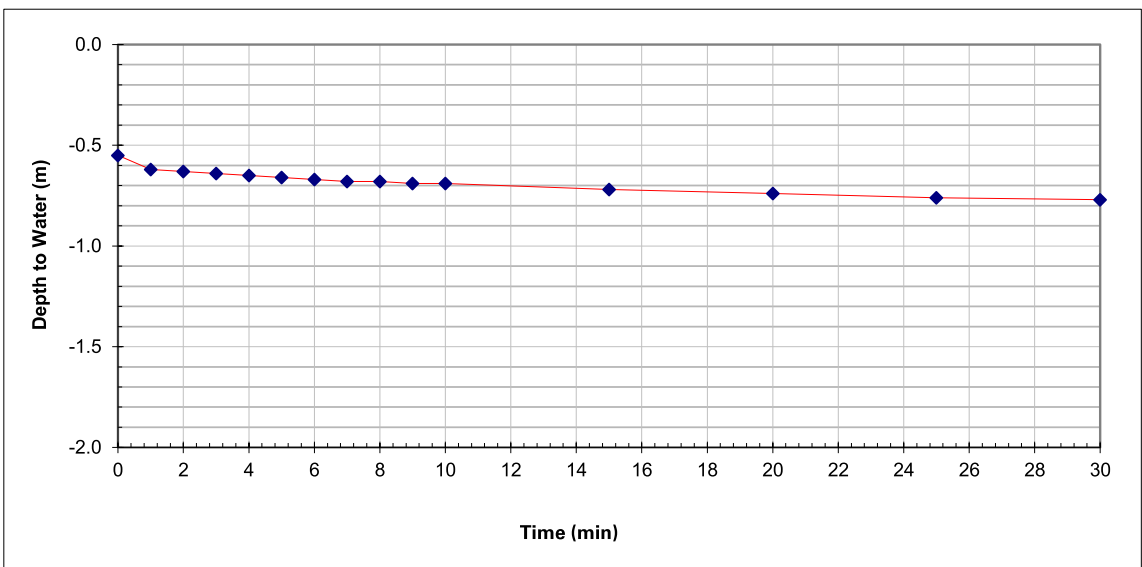
m/day

Borehole No. BH11

Soakage Test No. 1

Radius (m) 0.05

Depth (m) 2



Design Soakage Rate

4.6E-06

m/s

(based on linear portion of graph as shown)

0.39

m/day



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Falling Head Test Results

Site Prestwich Village, Prestwich, Manchester, M25 1AY

Client The Prestwich Regeneration LLP

Engineer Civic Engineers

Job Number
J23254

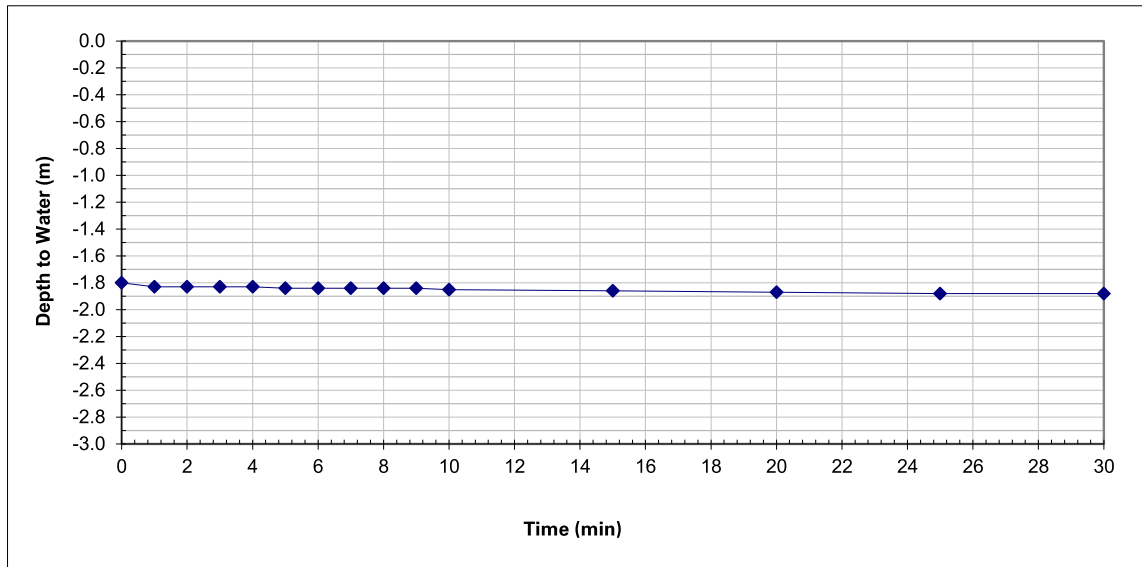
Sheet
2 / 3

Borehole No. BH16

Soakage Test No. 1

Radius (m) 0.05

Depth (m) 3



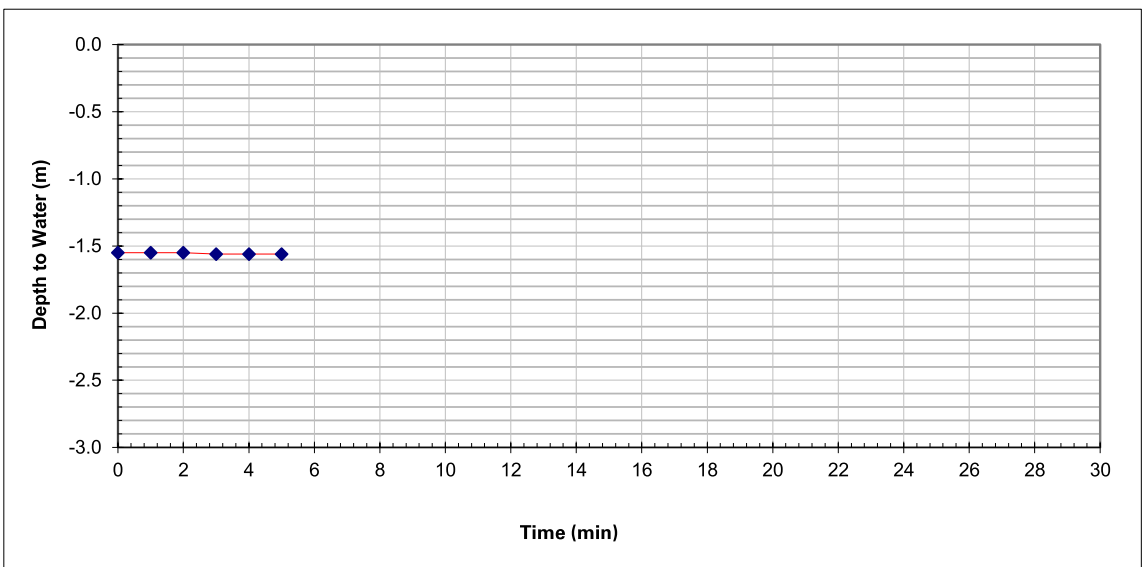
Design Soakage Rate 2.1E-06 m/s (based on linear portion of graph as shown)
0.18 m/day

Borehole No. BH16

Soakage Test No. 2

Radius (m) 0.05

Depth (m) 3



Design Soakage Rate 1.9E-06 m/s (based on linear portion of graph as shown)
0.16 m/day



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Falling Head Test Results

Site Prestwich Village, Prestwich, Manchester, M25 1AY

Client The Prestwich Regeneration LLP

Engineer Civic Engineers

Job Number
J23254

Sheet
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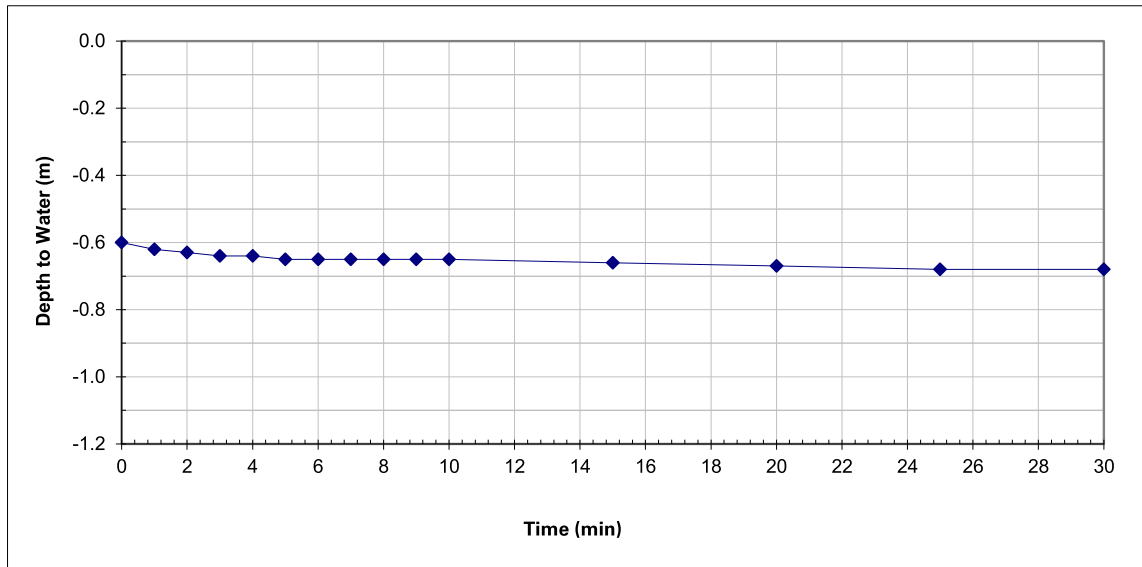
Borehole No. BH17

Soakage Test No. 1

Length (m) 0.4

Width (m) 0.4

Depth (m) 1.2



Design Soakage Rate 9.0E-06 m/s (based on linear portion of graph as shown)
0.78 m/day

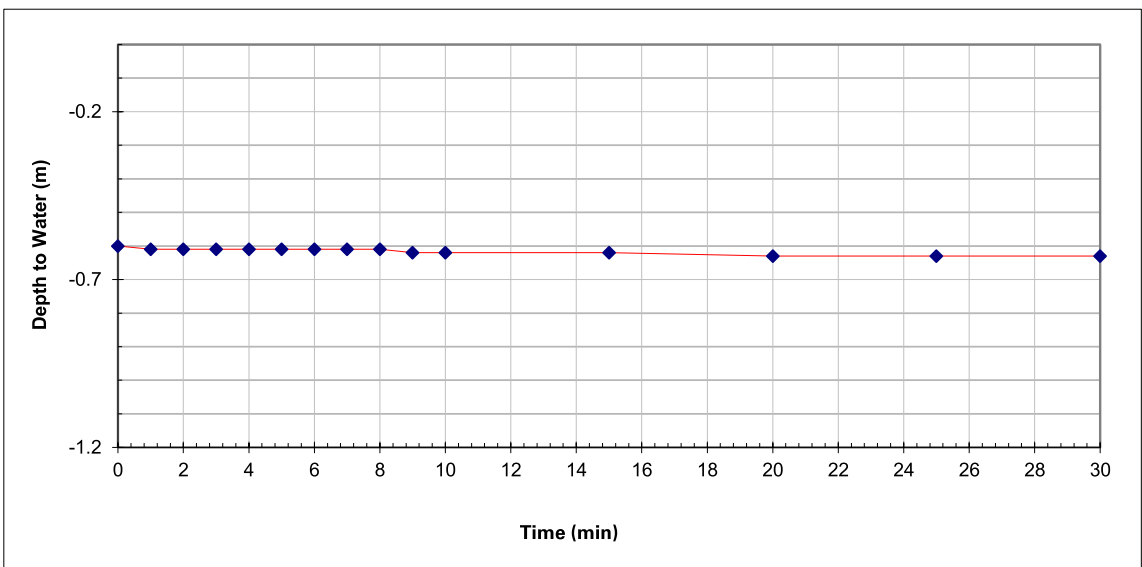
Borehole No. BH17

Soakage Test No. 2

Length (m) 0.4

Width (m) 0.4

Depth (m) 1.2



Design Soakage Rate 3.6E-06 m/s (based on linear portion of graph as shown)
0.31 m/day



appendix b

Lab Testing

Geotechnical Test Results
SPT & Depth Graph
Chemical Test Results
Generic Risk Based Screening Values
Generic Risk Based Groundwater Screening Values

		Summary of Natural Moisture Content, Liquid Limit and Plastic Limit Results									
Job No. 34467		Project Name Prestwich Village, Prestwich						Programme			
								Samples received	21/11/2023		
								Schedule received	23/11/2023		
Project No. J23254		Client GEA						Project started	24/11/2023		
								Testing Started	21/12/2023		
Hole No.	Sample				Soil Description	NMC %	Passing 425µm %	LL %	PL %	PI %	Remarks
	Ref	Top m	Base m	Type							
BH01	-	5.30	-	B	Dark brown slightly gravelly fine sandy silty CLAY (gravel is fm and sub-angular to rounded)	17	91	27	14	13	
BH01	-	6.50	-	U	Medium strength dark brown sandy silty CLAY with rare decomposed shell fragments	21					
BH01	-	9.50	-	B	Dark greyish brown fine sandy silty CLAY with rare fine angular to sub-angular gravel	16	98	30	15	15	
BH01	-	12.50	-	U	High strength dark brown sandy silty CLAY	19					
BH02	-	1.20	-	B	Dark grey slightly gravelly PEAT (gravel is fm and sub-angular to rounded)	241	95	305	182	123	
BH02	-	6.50	-	B	Dark greyish brown slightly sandy silty CLAY with rare fm sub-angular gravel	20					
BH02	-	14.00	-	U	Medium strength dark brown slightly fine sandy silty CLAY	20					
BH04	-	4.00	-	B	Brown and brownish grey slightly sandy silty CLAY with rare fm sub-angular gravel	18					
BH04	-	5.00	-	U	High strength dark greyish brown sandy silty CLAY with occasional fm mudstone fragments	16					
BH04	-	8.00	-	U	Low strength brown slightly fine sandy silty CLAY	18					
BH04	-	11.00	-	U	High strength dark brown sandy silty CLAY	17					
BH05	-	1.20	-	B	Dark brown sandy silty CLAY with rare fine sub-angular gravel	19					
 Test Methods: BS1377: Part 2: 1990: Natural Moisture Content : clause 3.2 Atterberg Limits: clause 4.3 and 5.0 <i>These results only apply to the items tested</i> NOTE: The report shall not be reproduced except in full without authority of the laboratory					Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford Herts WD18 9RU Tel: 01923 711 288 Email: James@k4soils.com					Checked and Approved Initials J.P Date: 05/01/2024	
2519					Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)					MSF-5-R1(b)	

					Summary of Natural Moisture Content, Liquid Limit and Plastic Limit Results							
Job No. 34467		Project Name Prestwich Village, Prestwich						Programme				
Project No. J23254		Client GEA						Samples received		21/11/2023		
								Schedule received		23/11/2023		
								Project started		24/11/2023		
								Testing Started		21/12/2023		
Hole No.	Sample				Soil Description	NMC %	Passing 425µm %	LL %	PL %	PI %	Remarks	
	Ref	Top m	Base m	Type								
BH05	-	7.00	-	B	Dark greyish brown fine sandy silty CLAY	19	100	31	15	16		
BH06	-	1.20	-	B	Brown slightly gravelly sandy silty CLAY (gravel is fmc and angular to sub-angular)	20	94	27	16	11		
BH07	-	3.00	-	U	Low strength dark brown slightly gravelly sandy silty CLAY (gravel is fm and sub-angular)	17						
BH07	-	4.00	-	U	Low strength dark brown slightly fine sandy silty CLAY with rare fm mudstone fragments	21						
BH07	-	6.50	-	U	Very low strength dark brown slightly fine sandy silty CLAY with occasional fm mudstone fragments	15						
BH07	-	11.00	-	B	Dark greyish brown fine sandy silty CLAY	18	100	26	14	12		
BH09	-	1.20	-	D	Grey slightly gravelly sandy silty CLAY (gravel is fm and sub-angular to rounded)	43	90	33	15	18		
BH09	-	2.50	-	D	Dark greyish brown slightly sandy silty CLAY with rare fine sub-angular gravel	16						
BH11	-	2.50	-	D	Brown silty fm SAND	25						
BH12	-	2.80	-	D	Dark greyish brown fine sandy silty CLAY with rare fine sub-angular gravel	24	99	37	23	14		
BH13	-	1.60	-	D	Greyish brown and brown slightly sandy silty CLAY with rare fine sub-angular gravel	15						
BH14	-	1.20	-	D	Grey slightly gravelly fine sandy silty CLAY (gravel is fm and sub-angular to rounded)	16	88	23	15	8		
 Test Methods: BS1377: Part 2: 1990: Natural Moisture Content : clause 3.2 Atterberg Limits: clause 4.3 and 5.0 <i>These results only apply to the items tested</i> NOTE: The report shall not be reproduced except in full without authority of the laboratory					Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford Herts WD18 9RU Tel: 01923 711 288 Email: James@k4soils.com						Checked and Approved Initials J.P Date: 05/01/2024	
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					Summary of Natural Moisture Content, Liquid Limit and Plastic Limit Results								
Job No. 34467		Project Name Prestwich Village, Prestwich					Programme Samples received 21/11/2023 Schedule received 23/11/2023 Project started 24/11/2023 Testing Started 21/12/2023						
Project No. J23254		Client GEA											
Hole No.	Sample				Soil Description	NMC %	Passing 425µm %	LL %	PL %	PI %	Remarks		
	Ref	Top m	Base m	Type									
BH14	-	1.50	-	D	Brownish grey fine sandy silty CLAY	22							
BH15	-	4.50	-	D	Brown slightly gravelly sandy silty CLAY (gravel is fm and sub-angular to rounded)	25	95	25	16	9			
BH16	-	2.50	-	D	Dark brown very sandy silty CLAY	19	100	26	21	5			
					Test Methods: BS1377: Part 2: 1990: Natural Moisture Content : clause 3.2 Atterberg Limits: clause 4.3 and 5.0 <i>These results only apply to the items tested</i> NOTE: The report shall not be reproduced except in full without authority of the laboratory				Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford Herts WD18 9RU Tel: 01923 711 288 Email: James@k4soils.com			Checked and Approved Initials J.P Date: 05/01/2024	
2519					Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)				MSF-5-R1(b)				



LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX

Job No. 34467

Borehole/Pit No. BH01

Site Name Prestwich Village, Prestwich

Sample No. -

Project No. J23254 Client GEA

Depth Top m 5.30

Soil Description Dark brown slightly gravelly fine sandy silty CLAY (gravel is fm and sub-angular to rounded)

Depth Base m -

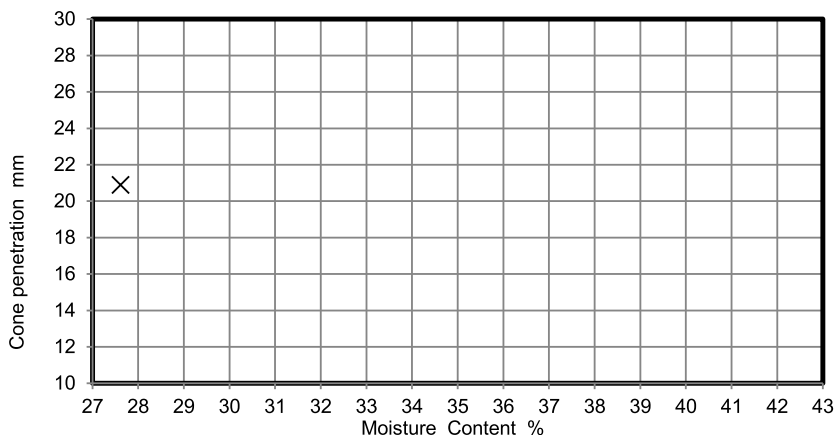
Sample Type B

Samples received 21/11/2023

Schedules received 23/11/2023

Project Started 24/11/2023

Date Tested 03/01/2024

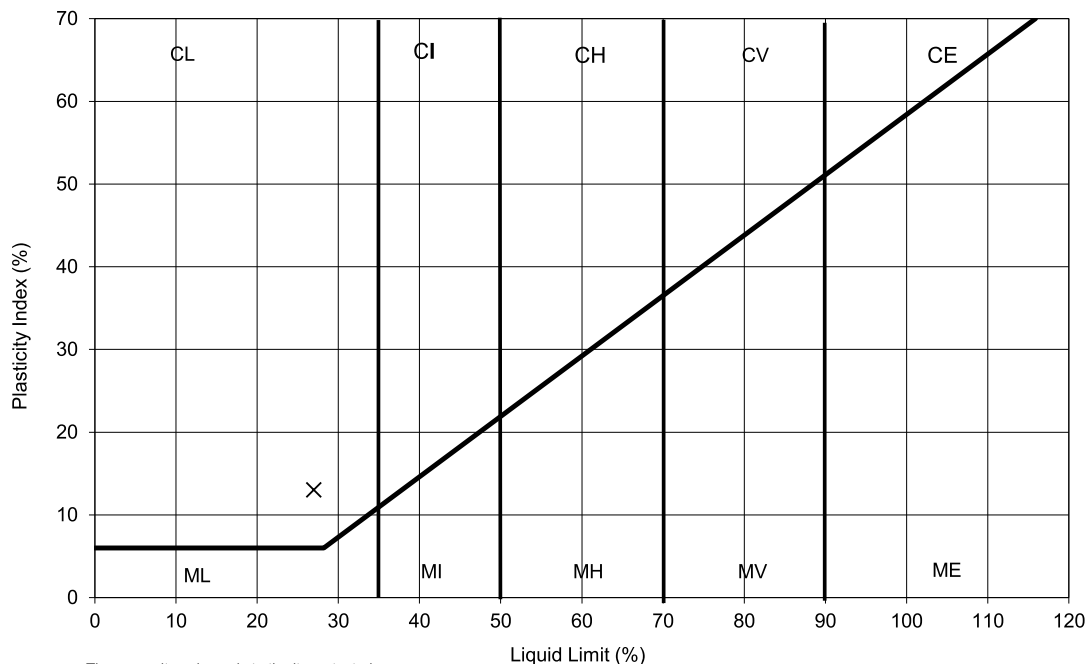


NATURAL MOISTURE CONTENT	17	%
% PASSING 425µm SIEVE	91	%
LIQUID LIMIT	27	%
PLASTIC LIMIT	14	%
PLASTICITY INDEX	13	%

Remarks

Factors corresponding to the cone penetration and moisture content range in Table 1 (BS1377:1990 ; Part 2)

PLASTICITY INDEX



These results only apply to the items tested

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TEST METHOD

BS1377: Part 2 :Clause 4.4 : 1990 Determination of the liquid limit by the cone penetrometer method

BS1377: Part 2 :Clause 5.0 : 1990: Determination of the plastic limit and plasticity index

BS1377: Part 2 :Clause 3.2 : 1990:Determination of the moisture content by the oven drying

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

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Checked and Approved

Initials: J.P

Date: 05/01/2024

2519

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

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LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX

Job No. 34467

Borehole/Pit No. BH01

Site Name Prestwich Village, Prestwich

Sample No. -

Project No. J23254 Client GEA

Depth Top m 9.50

Soil Description Dark greyish brown fine sandy silty CLAY with rare fine angular to sub-angular gravel

Depth Base m -

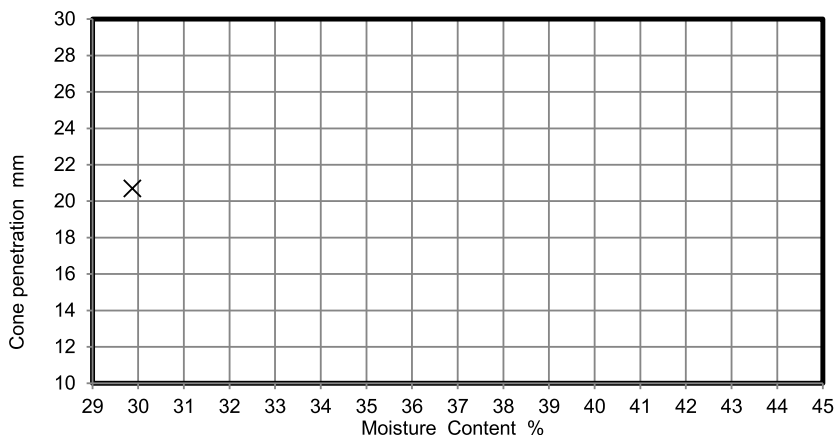
Sample Type B

Samples received 21/11/2023

Schedules received 23/11/2023

Project Started 24/11/2023

Date Tested 21/12/2023

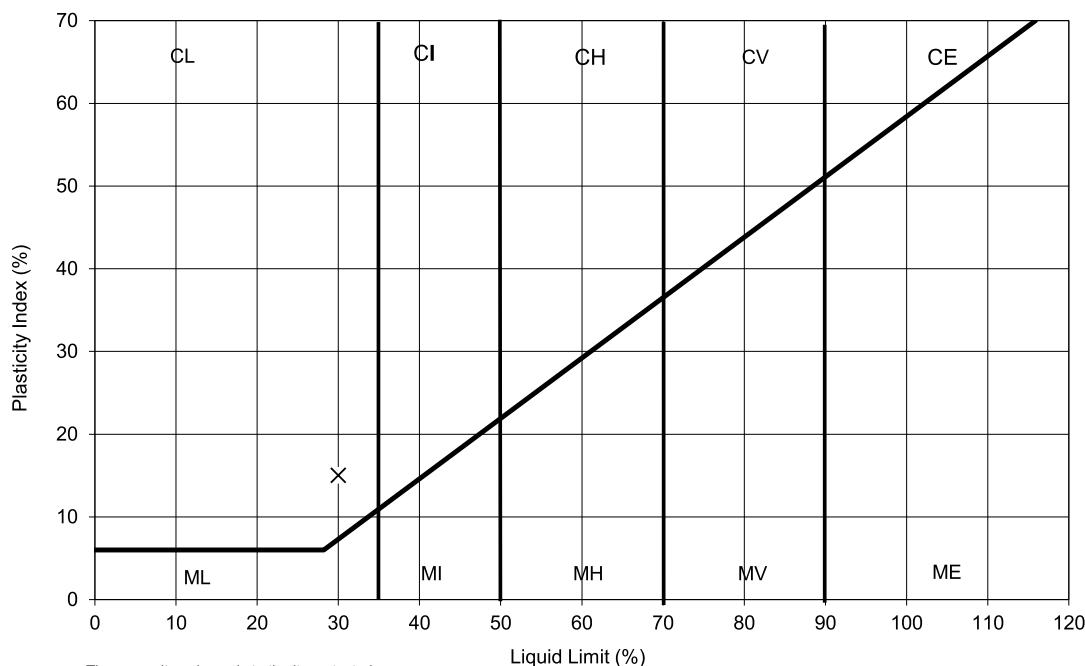


NATURAL MOISTURE CONTENT	16	%
% PASSING 425µm SIEVE	98	%
LIQUID LIMIT	30	%
PLASTIC LIMIT	15	%
PLASTICITY INDEX	15	%

Remarks

Factors corresponding to the cone penetration and moisture content range in Table 1 (BS1377:1990 ; Part 2)

PLASTICITY INDEX



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TEST METHOD

BS1377: Part 2 :Clause 4.4 : 1990 Determination of the liquid limit by the cone penetrometer method

BS1377: Part 2 :Clause 5.0 : 1990: Determination of the plastic limit and plasticity index

BS1377: Part 2 :Clause 3.2 : 1990:Determination of the moisture content by the oven drying

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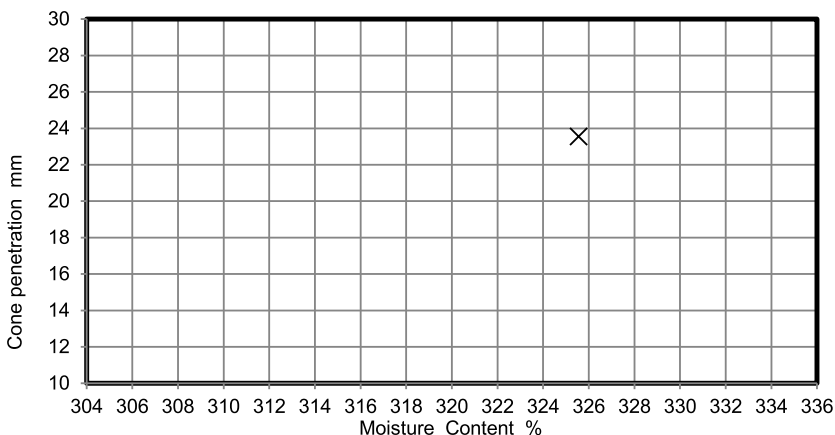
LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX

Job No.	34467
Borehole/Pit No.	BH02
Sample No.	-
Depth Top m	1.20
Depth Base m	-
Sample Type	B
Samples received	21/11/2023
Schedules received	23/11/2023
Project Started	24/11/2023
Date Tested	03/01/2024

Site Name Prestwich Village, Prestwich

Project No. J23254 Client GEA

Soil Description Dark grey slightly gravelly PEAT (gravel is fm and sub-angular to rounded)

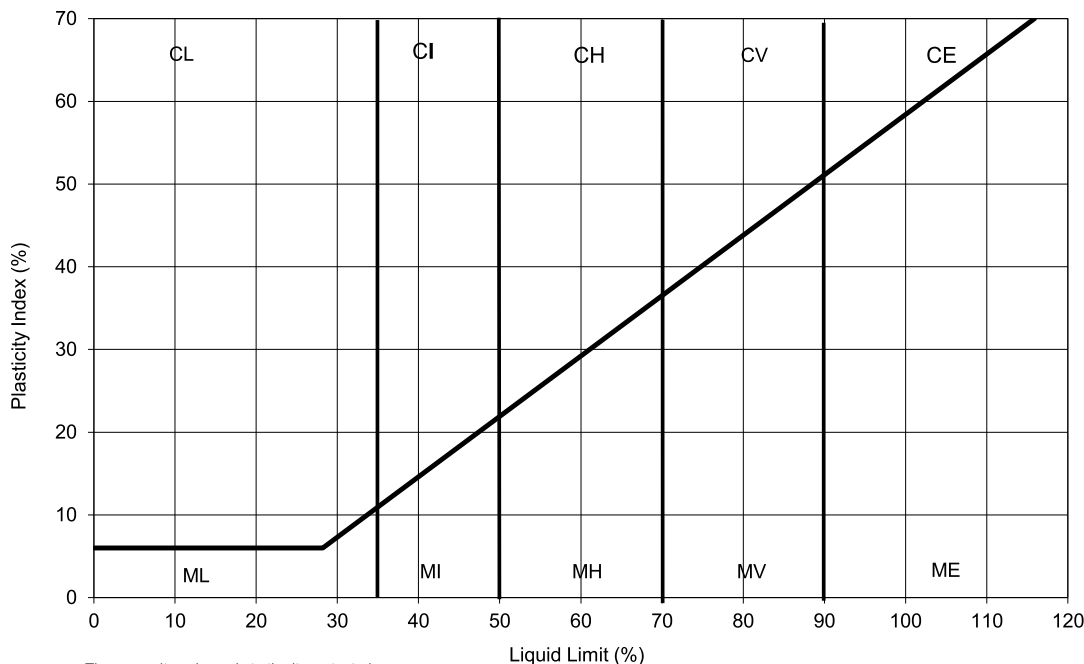


NATURAL MOISTURE CONTENT	241	%
% PASSING 425µm SIEVE	95	%
LIQUID LIMIT	305	%
PLASTIC LIMIT	182	%
PLASTICITY INDEX	123	%

Remarks

Factors corresponding to the cone penetration and moisture content range in Table 1 (BS1377:1990 ; Part 2)

PLASTICITY INDEX



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TEST METHOD

BS1377: Part 2 :Clause 4.4 : 1990 Determination of the liquid limit by the cone penetrometer method
BS1377: Part 2 :Clause 5.0 : 1990: Determination of the plastic limit and plasticity index
BS1377: Part 2 :Clause 3.2 : 1990:Determination of the moisture content by the oven drying

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Checked and Approved

Initials: J.P
Date: 05/01/2024

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LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX

Job No. 34467

Borehole/Pit No. BH05

Site Name Prestwich Village, Prestwich

Sample No. -

Project No. J23254 Client GEA

Depth Top m 7.00

Soil Description Dark greyish brown fine sandy silty CLAY

Depth Base m -

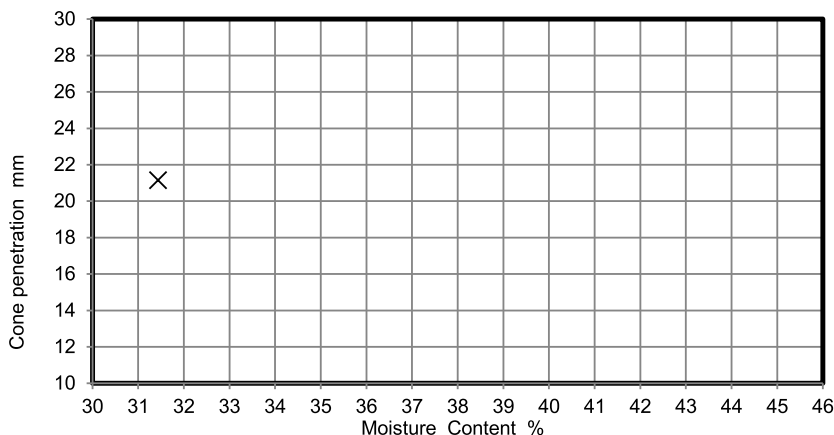
Sample Type B

Samples received 21/11/2023

Schedules received 23/11/2023

Project Started 24/11/2023

Date Tested 21/12/2023

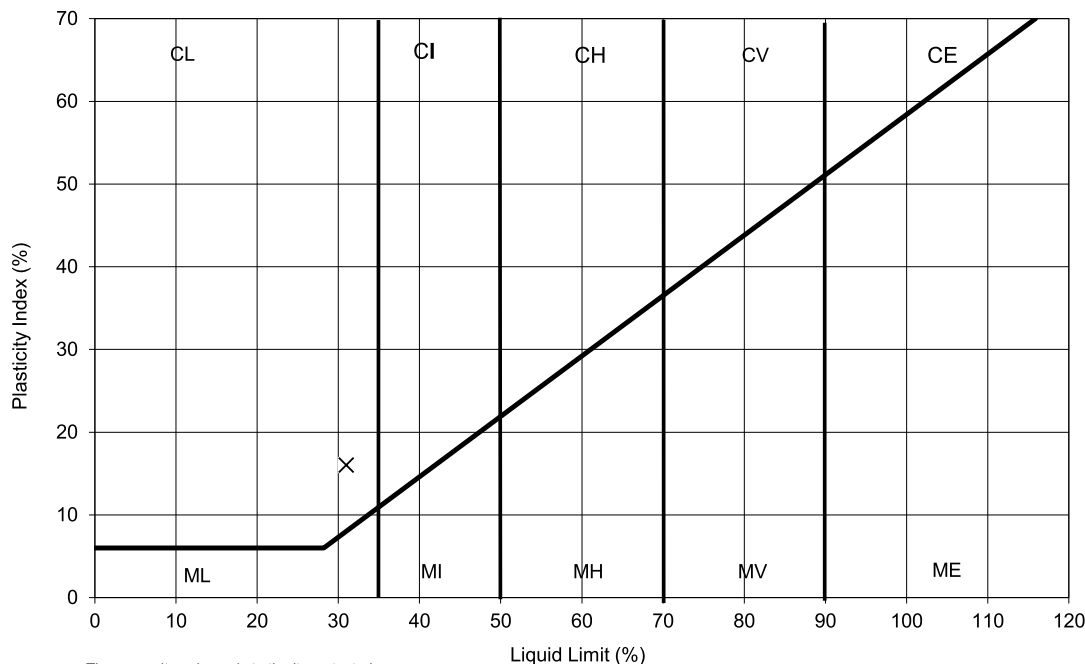


NATURAL MOISTURE CONTENT	19	%
% PASSING 425µm SIEVE	100	%
LIQUID LIMIT	31	%
PLASTIC LIMIT	15	%
PLASTICITY INDEX	16	%

Remarks

Factors corresponding to the cone penetration and moisture content range in Table 1 (BS1377:1990 ; Part 2)

PLASTICITY INDEX



These results only apply to the items tested

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TEST METHOD

BS1377: Part 2 :Clause 4.4 : 1990 Determination of the liquid limit by the cone penetrometer method

BS1377: Part 2 :Clause 5.0 : 1990: Determination of the plastic limit and plasticity index

BS1377: Part 2 :Clause 3.2 : 1990:Determination of the moisture content by the oven drying

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Checked and Approved

Initials: J.P

Date: 05/01/2024

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LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX

Job No. 34467

Borehole/Pit No. BH06

Site Name Prestwich Village, Prestwich

Sample No. -

Project No. J23254 Client GEA

Depth Top m 1.20

Soil Description Brown slightly gravelly sandy silty CLAY (gravel is fmc and angular to sub-angular)

Depth Base m -

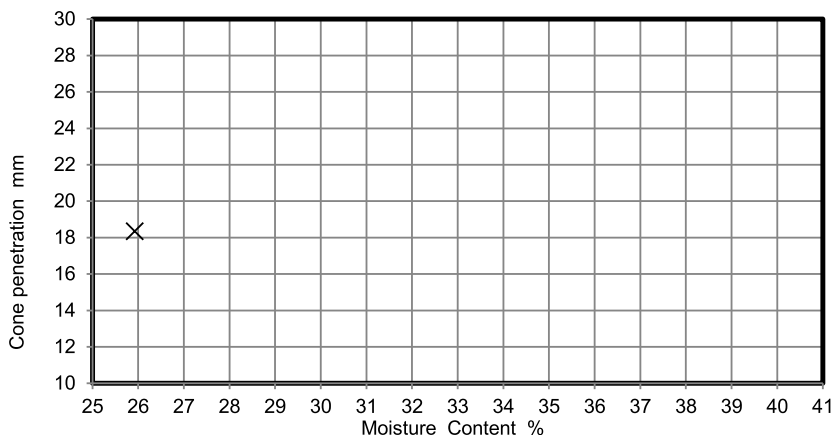
Sample Type B

Samples received 21/11/2023

Schedules received 23/11/2023

Project Started 24/11/2023

Date Tested 20/12/2023

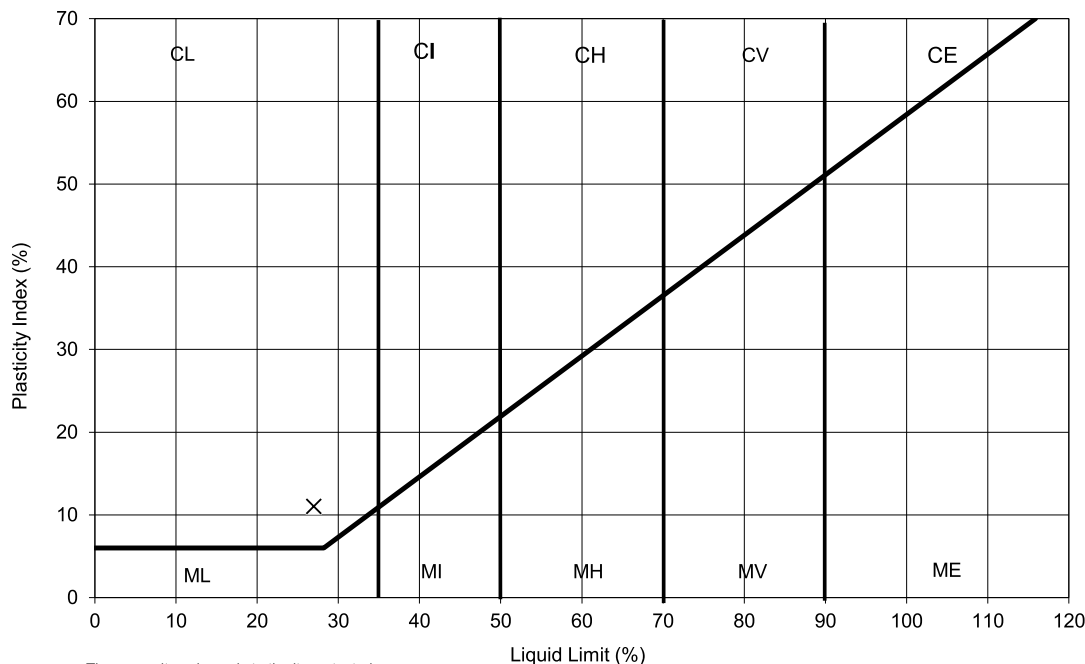


NATURAL MOISTURE CONTENT	20	%
% PASSING 425µm SIEVE	94	%
LIQUID LIMIT	27	%
PLASTIC LIMIT	16	%
PLASTICITY INDEX	11	%

Remarks

Factors corresponding to the cone penetration and moisture content range in Table 1 (BS1377:1990 ; Part 2)

PLASTICITY INDEX



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TEST METHOD

BS1377: Part 2 :Clause 4.4 : 1990 Determination of the liquid limit by the cone penetrometer method

BS1377: Part 2 :Clause 5.0 : 1990: Determination of the plastic limit and plasticity index

BS1377: Part 2 :Clause 3.2 : 1990:Determination of the moisture content by the oven drying

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Checked and Approved

Initials: J.P

Date: 05/01/2024

2519

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LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX

Job No. 34467

Borehole/Pit No. BH07

Site Name Prestwich Village, Prestwich

Sample No. -

Project No. J23254 Client GEA

Depth Top m 11.00

Soil Description Dark greyish brown fine sandy silty CLAY

Depth Base m -

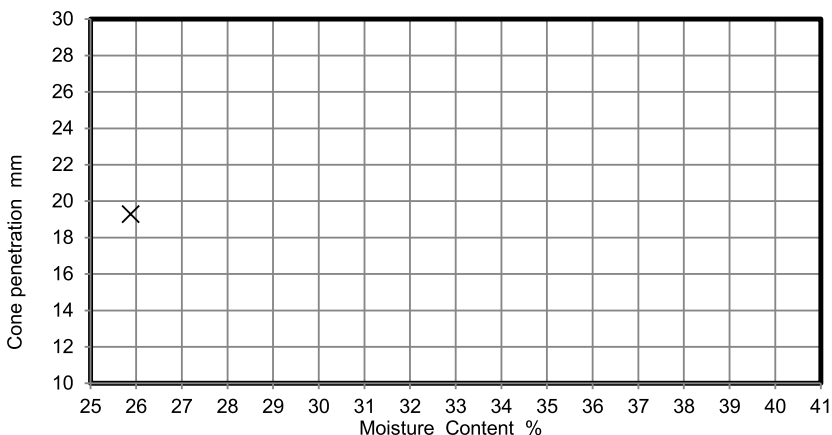
Sample Type B

Samples received 21/11/2023

Schedules received 23/11/2023

Project Started 24/11/2023

Date Tested 21/12/2023

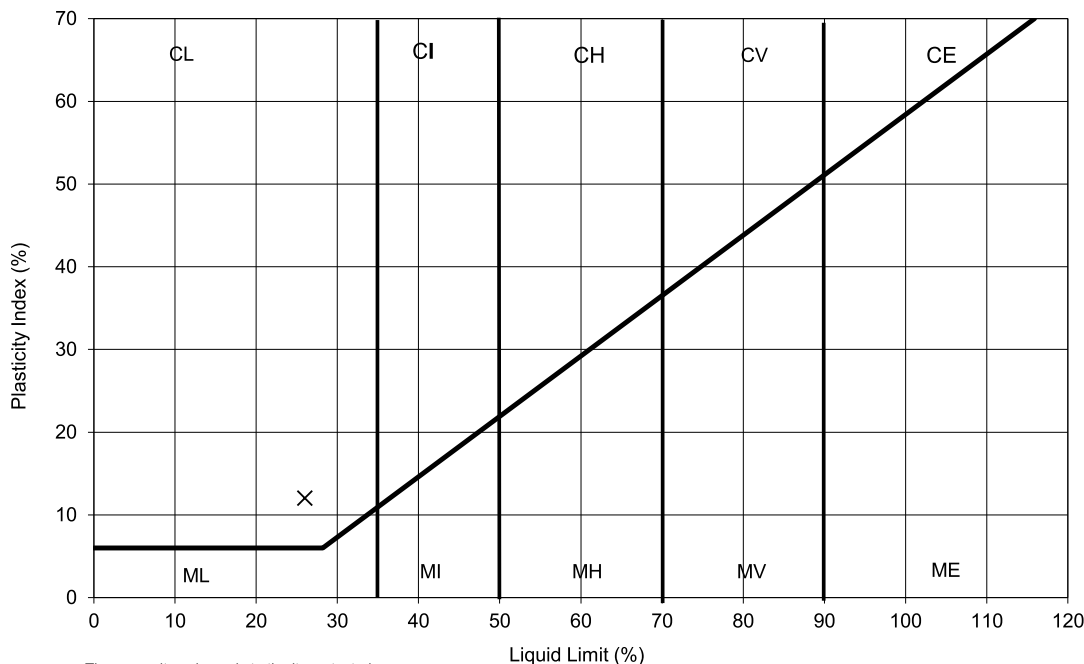


NATURAL MOISTURE CONTENT	18	%
% PASSING 425µm SIEVE	100	%
LIQUID LIMIT	26	%
PLASTIC LIMIT	14	%
PLASTICITY INDEX	12	%

Remarks

Factors corresponding to the cone penetration and moisture content range in Table 1 (BS1377:1990 ; Part 2)

PLASTICITY INDEX



These results only apply to the items tested

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TEST METHOD

BS1377: Part 2 :Clause 4.4 : 1990 Determination of the liquid limit by the cone penetrometer method

BS1377: Part 2 :Clause 5.0 : 1990: Determination of the plastic limit and plasticity index

BS1377: Part 2 :Clause 3.2 : 1990:Determination of the moisture content by the oven drying

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Checked and Approved

Initials: J.P

Date: 05/01/2024

2519

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

MSF-5 R2



LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX

Job No. 34467

Borehole/Pit No. BH09

Site Name Prestwich Village, Prestwich

Sample No. -

Project No. J23254 Client GEA

Depth Top m 1.20

Soil Description Grey slightly gravelly sandy silty CLAY (gravel is fm and sub-angular to rounded)

Depth Base m -

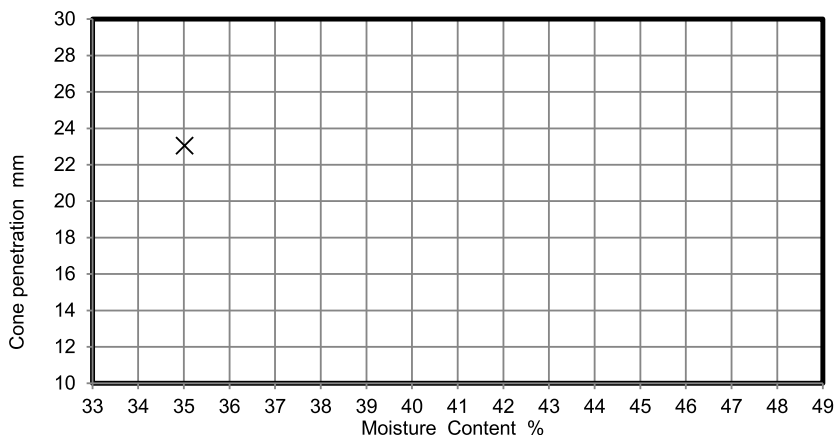
Sample Type D

Samples received 21/11/2023

Schedules received 23/11/2023

Project Started 24/11/2023

Date Tested 03/01/2024

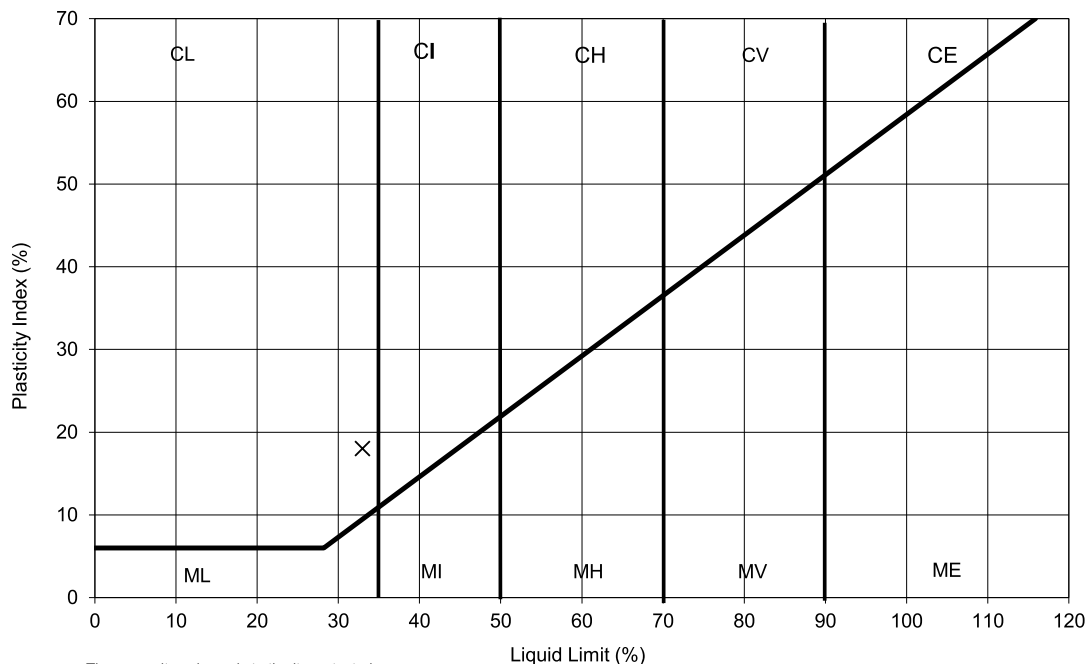


NATURAL MOISTURE CONTENT	43	%
% PASSING 425µm SIEVE	90	%
LIQUID LIMIT	33	%
PLASTIC LIMIT	15	%
PLASTICITY INDEX	18	%

Remarks

Factors corresponding to the cone penetration and moisture content range in Table 1 (BS1377:1990 ; Part 2)

PLASTICITY INDEX



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TEST METHOD

BS1377: Part 2 :Clause 4.4 : 1990 Determination of the liquid limit by the cone penetrometer method

BS1377: Part 2 :Clause 5.0 : 1990: Determination of the plastic limit and plasticity index

BS1377: Part 2 :Clause 3.2 : 1990:Determination of the moisture content by the oven drying

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

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Checked and Approved

Initials: J.P

Date: 05/01/2024

2519

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

MSF-5 R2



LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX

Job No. 34467

Borehole/Pit No. BH12

Site Name Prestwich Village, Prestwich

Sample No. -

Project No. J23254 Client GEA

Depth Top m 2.80

Soil Description

Dark greyish brown fine sandy silty CLAY with rare fine sub-angular gravel

Depth Base m -

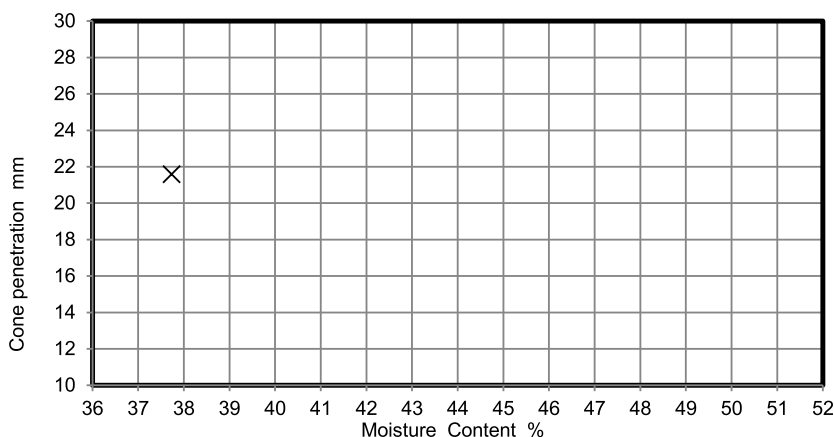
Sample Type D

Samples received 21/11/2023

Schedules received 23/11/2023

Project Started 24/11/2023

Date Tested 21/12/2023



NATURAL MOISTURE CONTENT

24 %

% PASSING 425µm SIEVE

99 %

LIQUID LIMIT

37 %

PLASTIC LIMIT

23 %

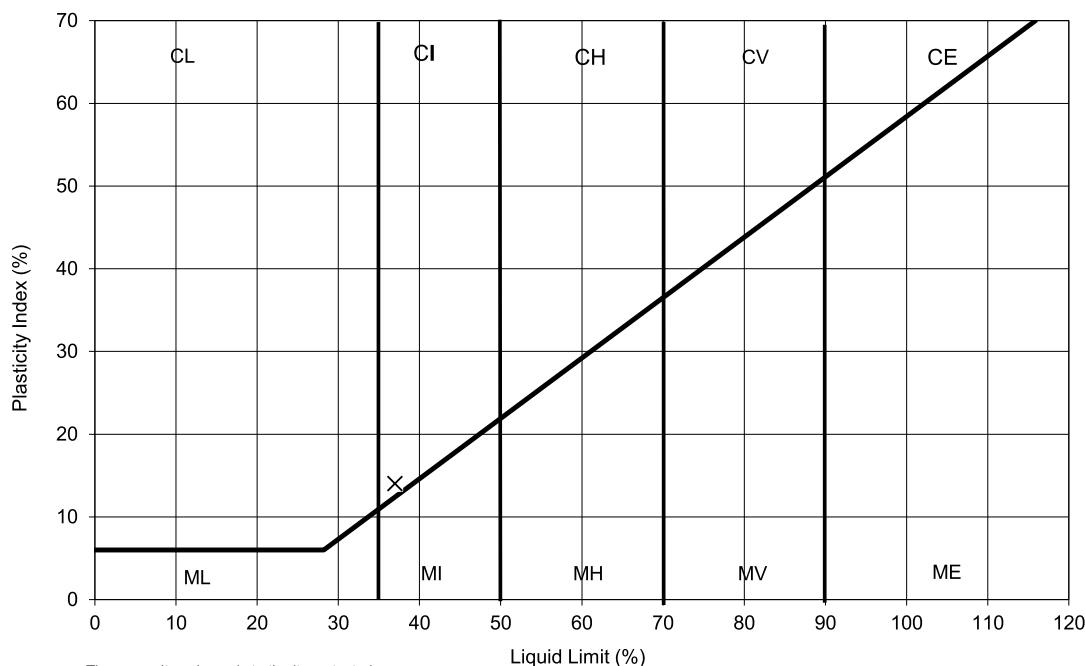
PLASTICITY INDEX

14 %

Remarks

Factors corresponding to the cone penetration and moisture content range in Table 1 (BS1377:1990 ; Part 2)

PLASTICITY INDEX



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TEST METHOD

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BS1377: Part 2 :Clause 5.0 : 1990: Determination of the plastic limit and plasticity index

BS1377: Part 2 :Clause 3.2 : 1990:Determination of the moisture content by the oven drying

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MSF-5 R2



LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX

Job No. 34467

Borehole/Pit No. BH14

Site Name Prestwich Village, Prestwich

Sample No. -

Project No. J23254 Client GEA

Depth Top m 1.20

Soil Description Grey slightly gravelly fine sandy silty CLAY (gravel is fm and sub-angular to rounded)

Depth Base m -

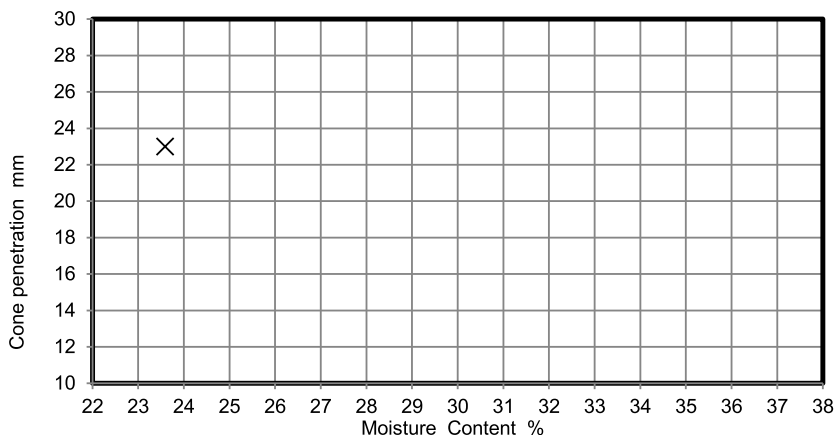
Sample Type D

Samples received 21/11/2023

Schedules received 23/11/2023

Project Started 24/11/2023

Date Tested 03/01/2024

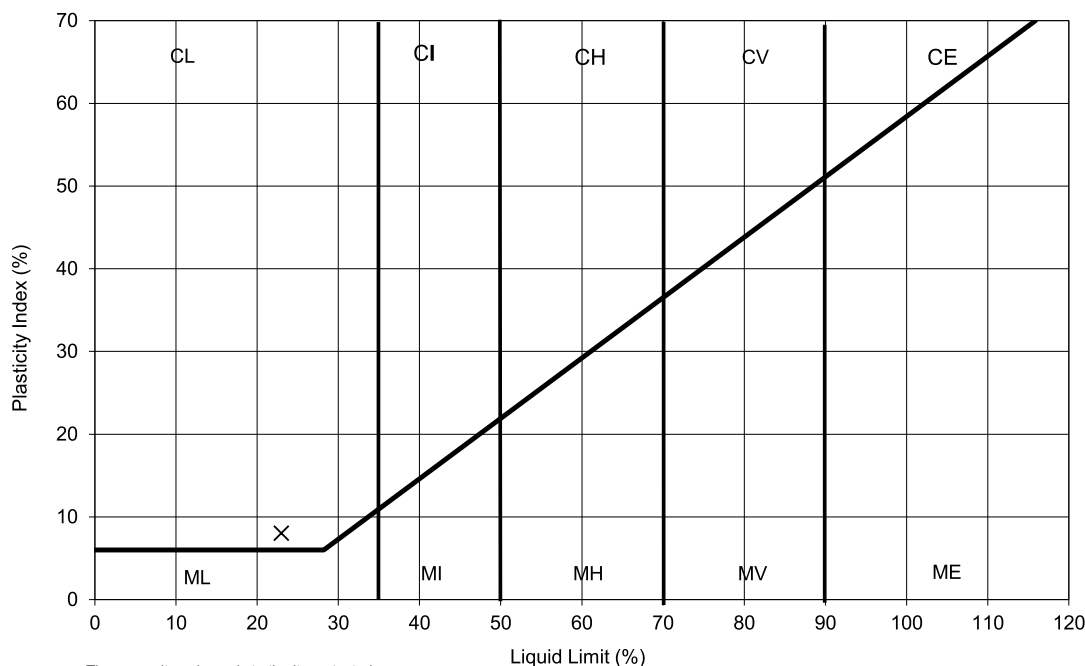


NATURAL MOISTURE CONTENT	16	%
% PASSING 425µm SIEVE	88	%
LIQUID LIMIT	23	%
PLASTIC LIMIT	15	%
PLASTICITY INDEX	8	%

Remarks

Factors corresponding to the cone penetration and moisture content range in Table 1 (BS1377:1990 ; Part 2)

PLASTICITY INDEX



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TEST METHOD

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BS1377: Part 2 :Clause 5.0 : 1990: Determination of the plastic limit and plasticity index

BS1377: Part 2 :Clause 3.2 : 1990:Determination of the moisture content by the oven drying

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MSF-5 R2



LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX

Job No. 34467

Borehole/Pit No. BH15

Site Name Prestwich Village, Prestwich

Sample No. -

Project No. J23254 Client GEA

Depth Top m 4.50

Soil Description Brown slightly gravelly sandy silty CLAY (gravel is fm and sub-angular to rounded)

Depth Base m -

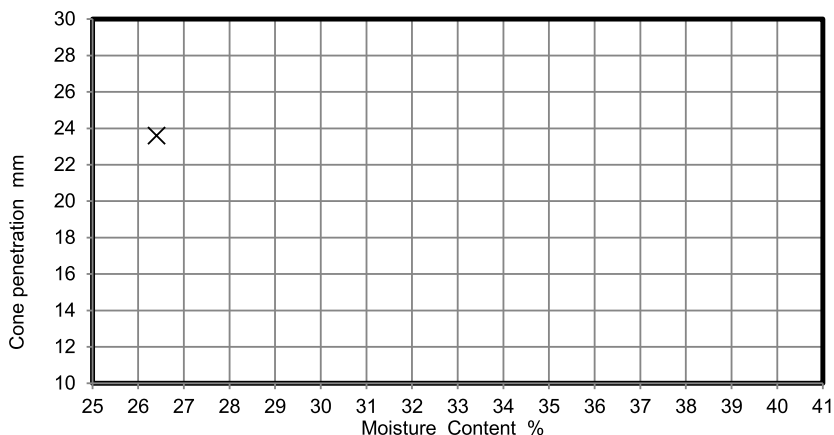
Sample Type D

Samples received 21/11/2023

Schedules received 23/11/2023

Project Started 24/11/2023

Date Tested 03/01/2024

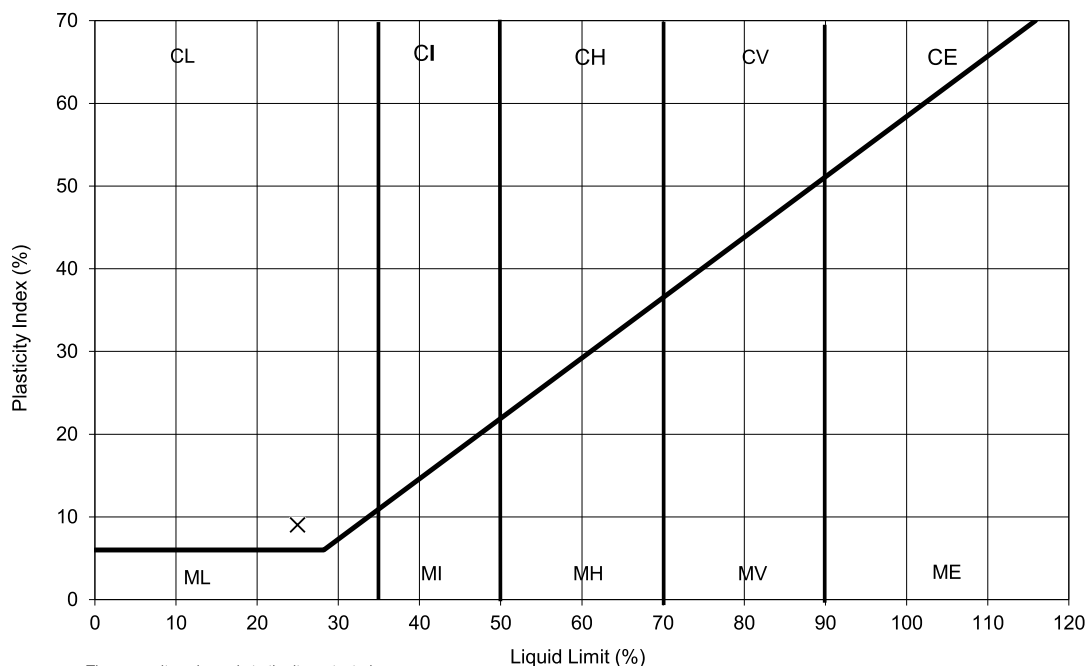


NATURAL MOISTURE CONTENT	25	%
% PASSING 425µm SIEVE	95	%
LIQUID LIMIT	25	%
PLASTIC LIMIT	16	%
PLASTICITY INDEX	9	%

Remarks

Factors corresponding to the cone penetration and moisture content range in Table 1 (BS1377:1990 ; Part 2)

PLASTICITY INDEX



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TEST METHOD

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BS1377: Part 2 :Clause 5.0 : 1990: Determination of the plastic limit and plasticity index

BS1377: Part 2 :Clause 3.2 : 1990:Determination of the moisture content by the oven drying

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

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MSF-5 R2



LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX

Job No. 34467

Borehole/Pit No. BH16

Site Name Prestwich Village, Prestwich

Sample No. -

Project No. J23254 Client GEA

Depth Top m 2.50

Soil Description Dark brown very sandy silty CLAY

Depth Base m -

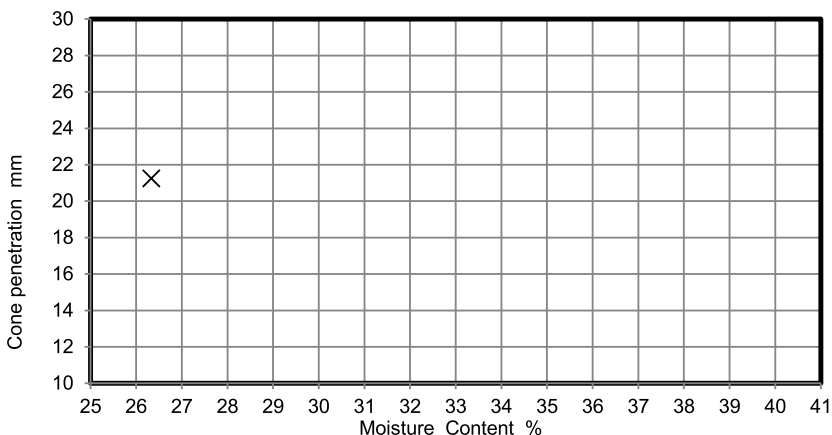
Sample Type D

Samples received 21/11/2023

Schedules received 23/11/2023

Project Started 24/11/2023

Date Tested 03/01/2024

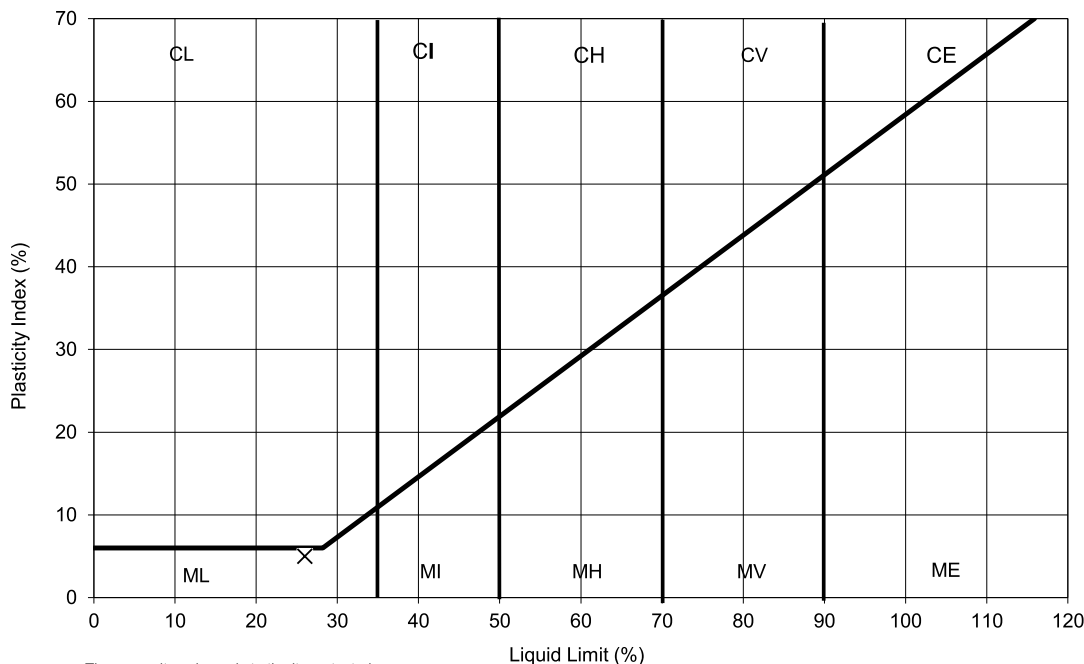


NATURAL MOISTURE CONTENT	19	%
% PASSING 425µm SIEVE	100	%
LIQUID LIMIT	26	%
PLASTIC LIMIT	21	%
PLASTICITY INDEX	5	%

Remarks

Factors corresponding to the cone penetration and moisture content range in Table 1 (BS1377:1990 ; Part 2)

PLASTICITY INDEX



These results only apply to the items tested

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TEST METHOD

BS1377: Part 2 :Clause 4.4 : 1990 Determination of the liquid limit by the cone penetrometer method

BS1377: Part 2 :Clause 5.0 : 1990: Determination of the plastic limit and plasticity index

BS1377: Part 2 :Clause 3.2 : 1990:Determination of the moisture content by the oven drying

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

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Checked and Approved

Initials: J.P

Date: 05/01/2024

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

MSF-5 R2

	PARTICLE SIZE DISTRIBUTION			Job Ref	34467
				Borehole/Pit No.	BH01
Site Name	Prestwich Village, Prestwich			Sample No.	-
Project No.	J23254	Client	GEA	Depth Top	2.00 m
Soil Description	Dark grey slightly gravelly silty sandy CLAY (gravel is fm and sub-angular to sub-rounded)			Depth Base	- m
				Sample Type	B
				Samples received	21/11/2023
				Schedules received	23/11/2023
Test Method	BS1377:Part 2: 1990, clause 9.0			Project started	24/11/2023
These results only apply to the items tested				Date tested	20/12/2023

CLAY

SILT

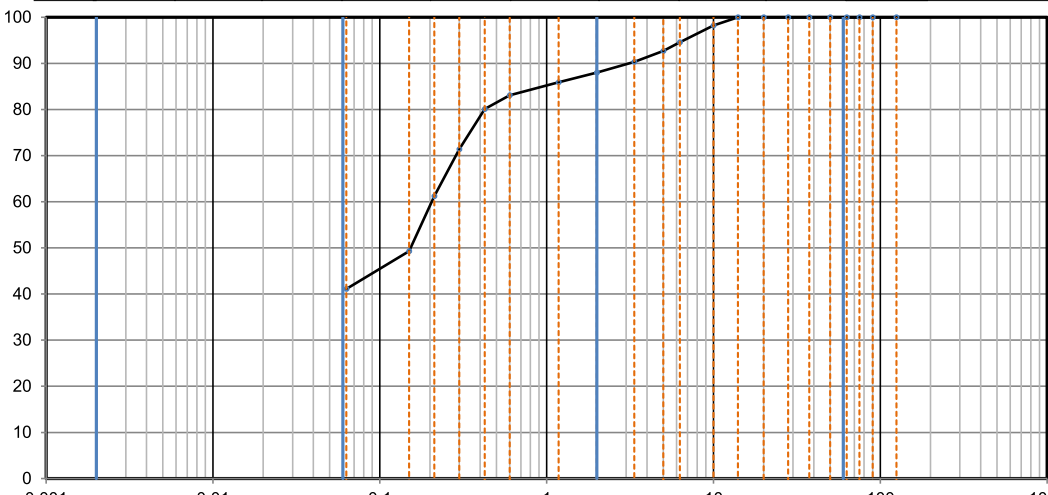
SAND

GRAVEL

COBBLES

BOULDERS

Percentage Passing %



Particle Size mm

Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	98		
6.3	95		
5	93		
3.35	90		
2	88		
1.18	86		
0.6	83		
0.425	80		
0.3	71		
0.212	61		
0.15	49		
0.063	41		

Sample Proportions		% dry mass
Very coarse		0.00
Gravel		12.02
Sand		46.87
Fines <0.063mm		41.11

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

Remarks
Preparation and testing in accordance with BS1377 unless noted below

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	Tel: 01923 711288		
2519	Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)		MSF-5-R3

	PARTICLE SIZE DISTRIBUTION			Job Ref	34467
				Borehole/Pit No.	BH01
Site Name	Prestwich Village, Prestwich			Sample No.	-
Project No.	J23254	Client	GEA	Depth Top	16.80 m
Soil Description	Dark grey silty clayey gravelly SAND (gravel is fm and sub-angular to rounded)			Depth Base	- m
				Sample Type	B
				Samples received	21/11/2023
				Schedules received	23/11/2023
Test Method	BS1377:Part 2: 1990, clause 9.0			Project started	24/11/2023
These results only apply to the items tested				Date tested	20/12/2023

CLAY

SILT

SAND

GRAVEL

COBBLES

BOULDERS

Percentage Passing %

100

90

80

70

60

50

40

30

20

10

0

0.001

0.01

0.1

1

10

100

1000

Particle Size mm

Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	99		
10	98		
6.3	95		
5	94		
3.35	92		
2	90		
1.18	84		
0.6	57		
0.425	41		
0.3	32		
0.212	27		
0.15	20		
0.063	16		

Sample Proportions		% dry mass
Very coarse		0.00
Gravel		10.32
Sand		74.23
Fines <0.063mm		15.46

Grading Analysis	
D100	mm
D60	mm 0.647
D30	mm 0.269
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks

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	Email: james@k4soils.com		Date: 05/01/2024
	Tel: 01923 711288		
2519	Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)		MSF-5-R3

	PARTICLE SIZE DISTRIBUTION			Job Ref	34467
				Borehole/Pit No.	BH02
Site Name	Prestwich Village, Prestwich			Sample No.	-
Project No.	J23254	Client	GEA	Depth Top	8.00 m
Soil Description	Dark grey slightly gravelly silty sandy CLAY (gravel is fm and sub-angular to sub-rounded)			Depth Base	- m
				Sample Type	B
				Samples received	21/11/2023
				Schedules received	23/11/2023
Test Method	BS1377:Part 2: 1990, clause 9.0			Project started	24/11/2023
These results only apply to the items tested				Date tested	20/12/2023

CLAY

SILT

SAND

GRAVEL

COBBLES

BOULDERS

Percentage Passing %

100

90

80

70

60

50

40

30

20

10

0

0.001

0.01

0.1

1

10

100

1000

Particle Size mm

Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	99		
10	98		
6.3	97		
5	97		
3.35	96		
2	95		
1.18	95		
0.6	93		
0.425	91		
0.3	83		
0.212	65		
0.15	49		
0.063	41		

Sample Proportions		% dry mass
Very coarse		0.00
Gravel		4.84
Sand		54.10
Fines <0.063mm		41.06

Grading Analysis		
D100	mm	
D60	mm	0.192
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks
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2519	Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)		MSF-5-R3

	PARTICLE SIZE DISTRIBUTION			Job Ref	34467
				Borehole/Pit No.	BH05
Site Name	Prestwich Village, Prestwich			Sample No.	-
Project No.	J23254	Client	GEA	Depth Top	9.80 m
Soil Description	Dark grey slightly clayey silty SAND with rare fine sub-angular to sub-rounded gravel			Depth Base	- m
				Sample Type	B
				Samples received	21/11/2023
				Schedules received	23/11/2023
Test Method	BS1377:Part 2: 1990, clause 9.0			Project started	24/11/2023
These results only apply to the items tested				Date tested	20/12/2023

CLAY

SILT

SAND

GRAVEL

COBBLES

BOULDERS

Percentage Passing %

100

90

80

70

60

50

40

30

20

10

0

0.001

0.01

0.1

1

10

100

1000

Particle Size mm

Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	98		
0.3	93		
0.212	73		
0.15	40		
0.063	22		

Sample Proportions		% dry mass
Very coarse		0.00
Gravel		0.13
Sand		77.44
Fines <0.063mm		22.44

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

Remarks
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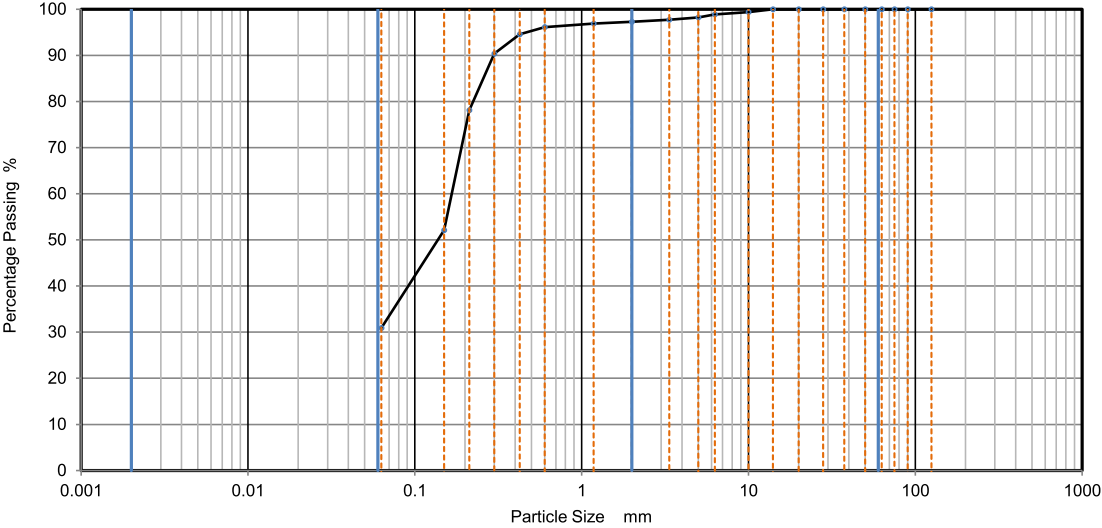
Date: 05/01/2024

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

MSF-5-R3

	PARTICLE SIZE DISTRIBUTION			Job Ref	34467
				Borehole/Pit No.	BH06
Site Name	Prestwich Village, Prestwich			Sample No.	-
Project No.	J23254	Client	GEA	Depth Top	20.00 m
Soil Description	Dark brownish grey slightly clayey slightly gravelly silty SAND (gravel is fm and sub-angular to sub-rounded)			Depth Base	- m
				Sample Type	B
				Samples received	21/11/2023
				Schedules received	23/11/2023
Test Method	BS1377:Part 2: 1990, clause 9.0			Project started	24/11/2023
These results only apply to the items tested				Date tested	20/12/2023

CLAY	SILT		SAND			GRAVEL			COBBLES	BOULDERS
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	99		
6.3	99		
5	98		
3.35	98		
2	97		
1.18	97		
0.6	96		
0.425	95		
0.3	90		
0.212	78		
0.15	52		
0.063	31		

Sample Proportions		% dry mass
Very coarse		0.00
Gravel		2.75
Sand		66.31
Fines <0.063mm		30.94

Grading Analysis		
D100	mm	
D60	mm	0.167
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks
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	PARTICLE SIZE DISTRIBUTION			Job Ref	34467
				Borehole/Pit No.	BH07
Site Name	Prestwich Village, Prestwich			Sample No.	-
Project No.	J23254	Client	GEA	Depth Top	12.50 m
Soil Description	Dark brownish grey slightly gravelly SAND with numerous sandy silty clay pockets (gravel is fm and sub-angular to sub-rounded)			Depth Base	- m
				Sample Type	B
				Samples received	21/11/2023
				Schedules received	23/11/2023
Test Method	BS1377:Part 2: 1990, clause 9.0			Project started	24/11/2023
These results only apply to the items tested				Date tested	20/12/2023

CLAY

SILT

SAND

GRAVEL

COBBLES

BOULDERS

Percentage Passing %

Particle Size mm

Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	99		
6.3	99		
5	99		
3.35	99		
2	98		
1.18	97		
0.6	95		
0.425	89		
0.3	70		
0.212	41		
0.15	27		
0.063	19		

Sample Proportions		% dry mass
Very coarse		0.00
Gravel		2.14
Sand		79.31
Fines <0.063mm		18.55

Grading Analysis		
D100	mm	
D60	mm	0.266
D30	mm	0.161
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks
Preparation and testing in accordance with BS1377 unless noted below



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Initials: J.P

Date: 05/01/2024

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

MSF-5-R3

	PARTICLE SIZE DISTRIBUTION			Job Ref	34467
				Borehole/Pit No.	BH09
Site Name	Prestwich Village, Prestwich			Sample No.	-
Project No.	J23254	Client	GEA	Depth Top	1.60 m
Soil Description	Dark grey gravelly SAND with occasional silty clay pockets (gravel is fm and sub-angular to sub-rounded)			Depth Base	- m
				Sample Type	D
				Samples received	21/11/2023
				Schedules received	23/11/2023
Test Method	BS1377:Part 2: 1990, clause 9.0			Project started	24/11/2023
These results only apply to the items tested				Date tested	20/12/2023

CLAY

SILT

SAND

GRAVEL

COBBLES

BOULDERS

Percentage Passing %

100

90

80

70

60

50

40

30

20

10

0

0.001

0.01

0.1

1

10

100

1000

Particle Size mm

Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	99		
6.3	99		
5	97		
3.35	97		
2	95		
1.18	94		
0.6	90		
0.425	84		
0.3	68		
0.212	44		
0.15	23		
0.063	15		

Sample Proportions		% dry mass
Very coarse		0.00
Gravel		4.55
Sand		80.44
Fines <0.063mm		15.01

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

Remarks

Preparation and testing in accordance with BS1377 unless noted below

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Tel: 01923 711288

Checked and Approved

Initials: J.P

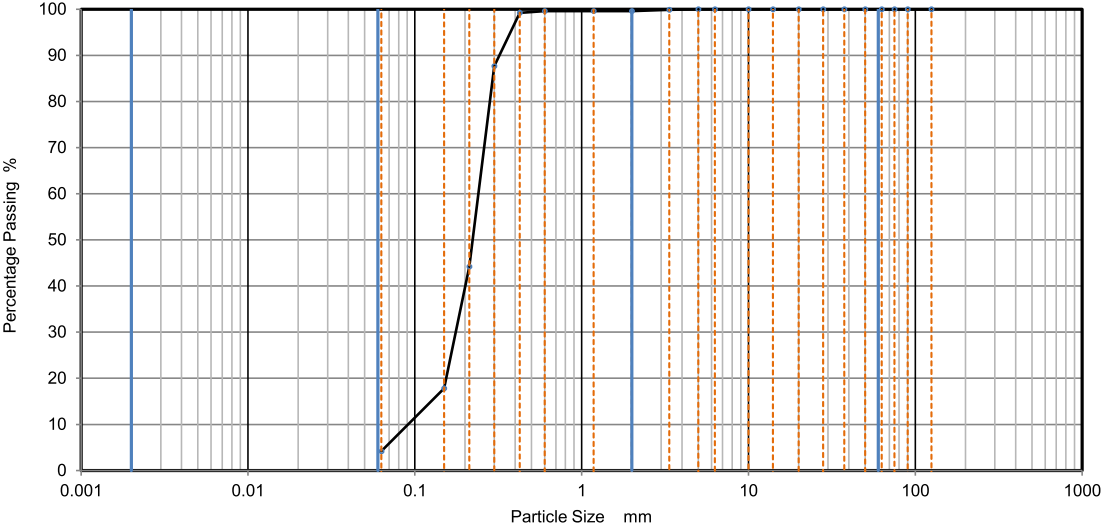
Date: 05/01/2024

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

MSF-5-R3

	PARTICLE SIZE DISTRIBUTION			Job Ref	34467
				Borehole/Pit No.	BH11
Site Name	Prestwich Village, Prestwich			Sample No.	-
Project No.	J23254	Client	GEA	Depth Top	1.00 m
Soil Description	Orangish brown slightly silty SAND with rare fine gravel			Depth Base	- m
				Sample Type	D
				Samples received	21/11/2023
				Schedules received	23/11/2023
Test Method	BS1377:Part 2: 1990, clause 9.0			Project started	24/11/2023
These results only apply to the items tested				Date tested	20/12/2023

CLAY	SILT		SAND			GRAVEL			COBBLES	BOULDERS
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	99		
0.3	88		
0.212	44		
0.15	18		
0.063	4		

Sample Proportions		% dry mass
Very coarse		0.00
Gravel		0.35
Sand		95.48
Fines <0.063mm		4.16

Grading Analysis		
D100	mm	
D60	mm	0.241
D30	mm	0.176
D10	mm	0.0915
Uniformity Coefficient		2.6
Curvature Coefficient		1.4

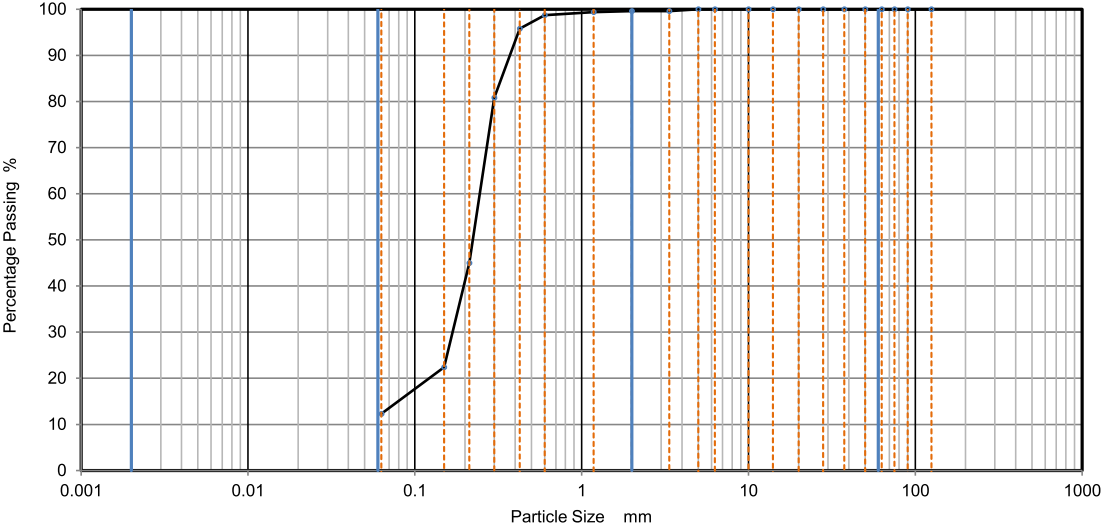
Remarks
Preparation and testing in accordance with BS1377 unless noted below

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	Unit 8, Olds Close, Watford, Herts, WD18 9RU		
	Email: james@k4soils.com		
	Tel: 01923 711288		
2519	Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)		MSF-5-R3

	PARTICLE SIZE DISTRIBUTION			Job Ref	34467
				Borehole/Pit No.	BH17
Site Name	Prestwich Village, Prestwich			Sample No.	-
Project No.	J23254	Client	GEA	Depth Top	2.00 m
Soil Description	Brown slightly clayey silty SAND with rare fine gravel			Depth Base	- m
				Sample Type	D
				Samples received	21/11/2023
				Schedules received	23/11/2023
Test Method	BS1377:Part 2: 1990, clause 9.0			Project started	24/11/2023
These results only apply to the items tested				Date tested	20/12/2023

CLAY	SILT		SAND			GRAVEL			COBBLES	BOULDERS
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	99		
0.425	96		
0.3	81		
0.212	45		
0.15	22		
0.063	12		

Sample Proportions		% dry mass
Very coarse		0.00
Gravel		0.45
Sand		87.22
Fines <0.063mm		12.33

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

Remarks
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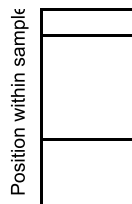
	K4 Soils Laboratory		Checked and Approved
	Unit 8, Olds Close, Watford, Herts, WD18 9RU		Initials: J.P
	Email: james@k4soils.com		Date: 05/01/2024
	Tel: 01923 711288		
2519	Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)		MSF-5-R3

		Sulphate Content (Gravimetric Method) for 2:1 Soil: Water Extract and pH Value - Summary of Results Tested in accordance with BS1377 : Part 3 : 2018, Clause 7.6 & Clause 12								
		Job No. 34467						Project Name Prestwich Village, Prestwich		Programme Samples received 21/11/2023 Schedule received 23/11/2023
Project No. J23254		Client GEA						Project started 24/11/2023 Testing Started 21/12/2023		
Hole No.	Ref	Sample			Soil description	Dry Mass passing 2mm %	SO4 Content mg/l	pH	Remarks	
		Top m	Base m	Type						
BH01	-	4.00	-	B	Greyish brown fine sandy silty CLAY	100	320	7.2		
BH02	-	2.50	-	B	Dark grey sandy silty CLAY	100	450	7.2		
BH04	-	4.00	-	B	Brown and brownish grey slightly sandy silty CLAY with rare fm sub-angular gravel	96	280	7.1		
BH05	-	9.80	-	B	Dark grey slightly clayey silty SAND with rare fine sub-angular to sub-rounded gravel	100	240	7.1		
BH06	-	5.30	-	B	Brown slightly sandy silty CLAY	100	300	7.1		
BH06	-	20.00	-	B	Dark brownish grey slightly clayey slightly gravelly silty SAND (gravel is fm and sub-angular to sub-rounded)	97	160	7.1		
BH07	-	12.50	-	B	Dark brownish grey slightly gravelly SAND with numerous sandy silty clay pockets (gravel is fm and sub-angular to sub-rounded)	98	200	7.1		
BH12	-	1.80	-	D	Reddish brown clayey SAND	100	170	7.1		
BH14	-	2.20	-	D	Reddish brown clayey SAND	100	220	7.2		
BH16	-	0.90	-	D	Reddish brown silty SAND with dark grey nodules	98	180	7.1		
BH17	-	3.70	-	D	Greyish brown fine sandy silty CLAY/clayey SAND	100	260	7.1		
		Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford Herts WD18 9RU Tel: 01923 711 288 Email: James@k4soils.com These results only apply to the items tested NOTE: The report shall not be reproduced except in full without authority of the laboratory							Checked and Approved Initials J.P. Date: 05/01/2024	
		2519							Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)	
MSF-5-R29										

		Sulphate Content (Gravimetric Method) for 2:1 Soil: Water Extract and pH Value - Summary of Results Tested in accordance with BS1377 : Part 3 : 2018, Clause 7.6 & Clause 12							
Job No. 34467		Project Name Prestwich Village, Prestwich						Programme Samples received 21/11/2023 Schedule received 23/11/2023	
Project No. J23254		Client GEA						Project started 24/11/2023 Testing Started 21/12/2023	
Hole No.	Sample				Soil description	Dry Mass passing 2mm %	SO4 Content mg/l	pH	Remarks
	Ref	Top m	Base m	Type					
TP03	-	1.50	-	D	Reddish brown SAND	100	190	7.2	
		Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford Herts WD18 9RU Tel: 01923 711 288 Email: James@k4soils.com These results only apply to the items tested NOTE: The report shall not be reproduced except in full without authority of the laboratory							Checked and Approved Initials J.P. Date: 05/01/2024
2519		Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)							MSF-5-R29

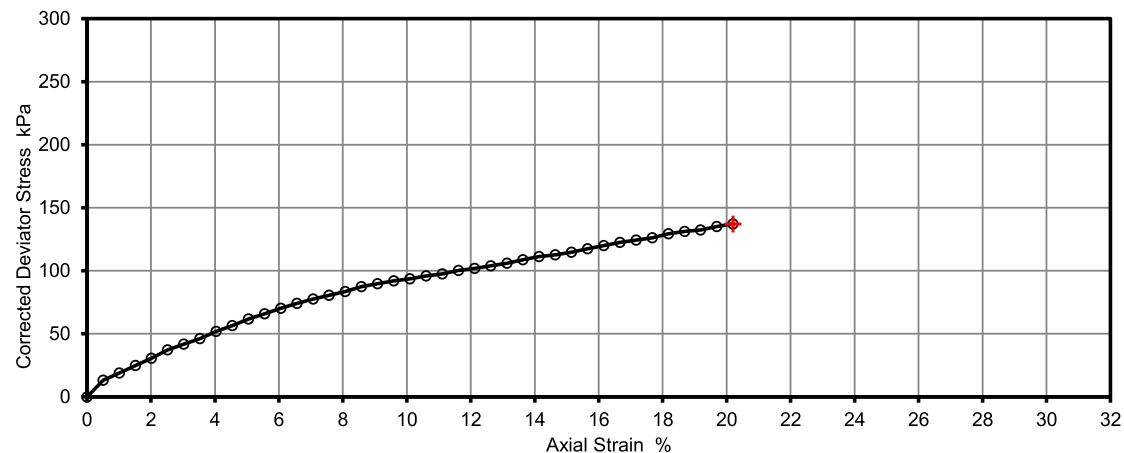
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen			Job Ref	34467
				Borehole/Pit No.	BH01
Site Name	Prestwich Village, Prestwich			Sample No.	-
Project No.	J23254	Client	GEA	Depth Top	6.50 m
Soil Description	Medium strength dark brown sandy silty CLAY with rare decomposed shell fragments			Depth Base	- m
				Sample Type	U
				Samples received	21/11/2023
				Schedules received	23/11/2023
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen			Date of test	18/12/2023

Remarks

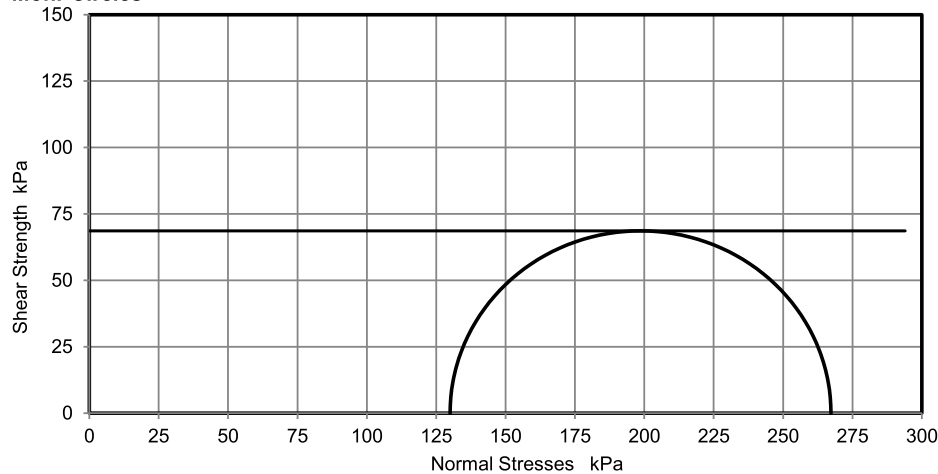


Test Number	1
Length	198.0 mm
Diameter	102.0 mm
Bulk Density	2.09 Mg/m3
Moisture Content	21 %
Dry Density	1.73 Mg/m3
Rate of Strain	2.0 %/min
Cell Pressure	130 kPa
Axial Strain	20 %
Deviator Stress, ($\sigma_1 - \sigma_3$)f	137 kPa
Undrained Shear Strength, cu	69 kPa $\frac{1}{2}(\sigma_1 - \sigma_3)$ f
Mode of Failure	Compound

Deviator Stress v Axial Strain



Mohr Circles



Deviator stress corrected for area change and membrane effects

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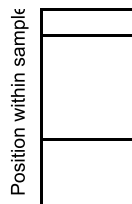
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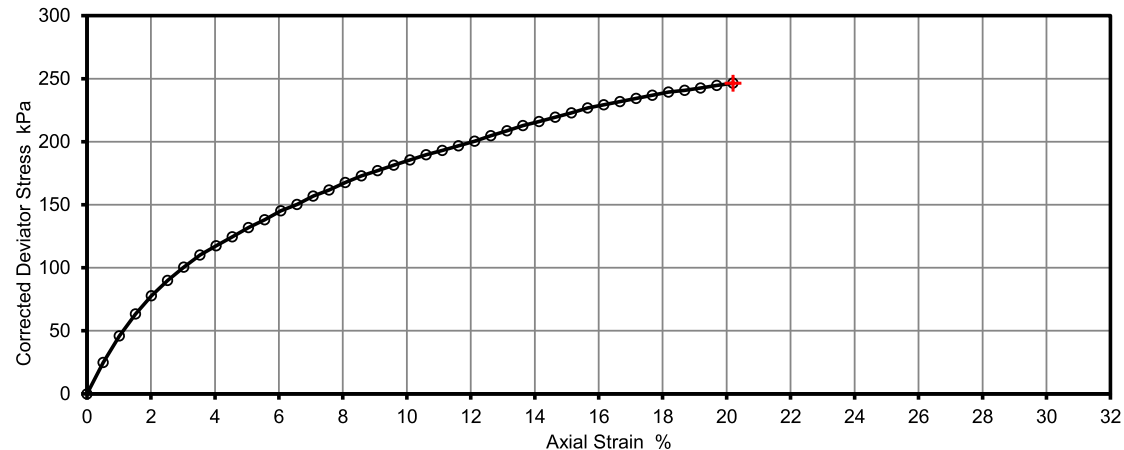
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen			Job Ref	34467
				Borehole/Pit No.	BH01
Site Name	Prestwich Village, Prestwich			Sample No.	-
Project No.	J23254	Client	GEA	Depth Top	12.50 m
Soil Description	High strength dark brown sandy silty CLAY			Depth Base	- m
				Sample Type	U
				Samples received	21/11/2023
				Schedules received	23/11/2023
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen			Date of test	18/12/2023

Remarks

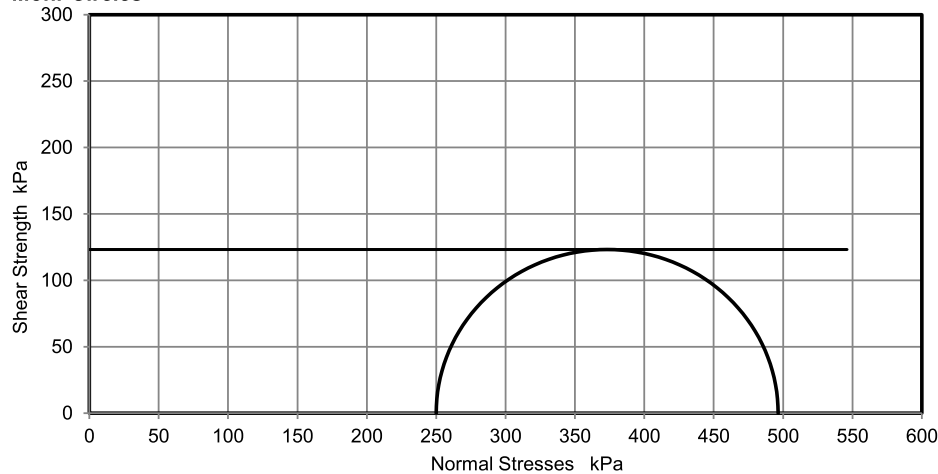


Test Number	1
Length	198.0 mm
Diameter	102.0 mm
Bulk Density	2.11 Mg/m3
Moisture Content	19 %
Dry Density	1.78 Mg/m3
Rate of Strain	2.0 %/min
Cell Pressure	250 kPa
Axial Strain	20 %
Deviator Stress, ($\sigma_1 - \sigma_3$)f	246 kPa
Undrained Shear Strength, cu	123 kPa $\frac{1}{2}(\sigma_1 - \sigma_3)$ f
Mode of Failure	Plastic

Deviator Stress v Axial Strain



Mohr Circles



Deviator stress corrected for area change and membrane effects

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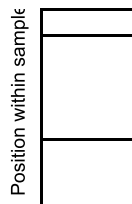
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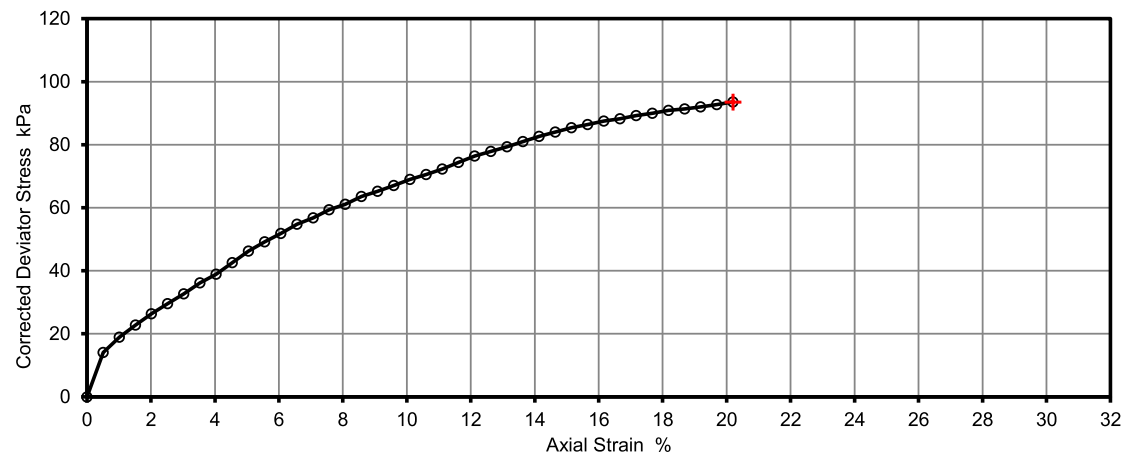
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen			Job Ref	34467
				Borehole/Pit No.	BH02
Site Name	Prestwich Village, Prestwich			Sample No.	-
Project No.	J23254	Client	GEA	Depth Top	14.00 m
Soil Description	Medium strength dark brown slightly fine sandy silty CLAY			Depth Base	- m
				Sample Type	U
				Samples received	21/11/2023
				Schedules received	23/11/2023
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen			Date of test	18/12/2023

Remarks

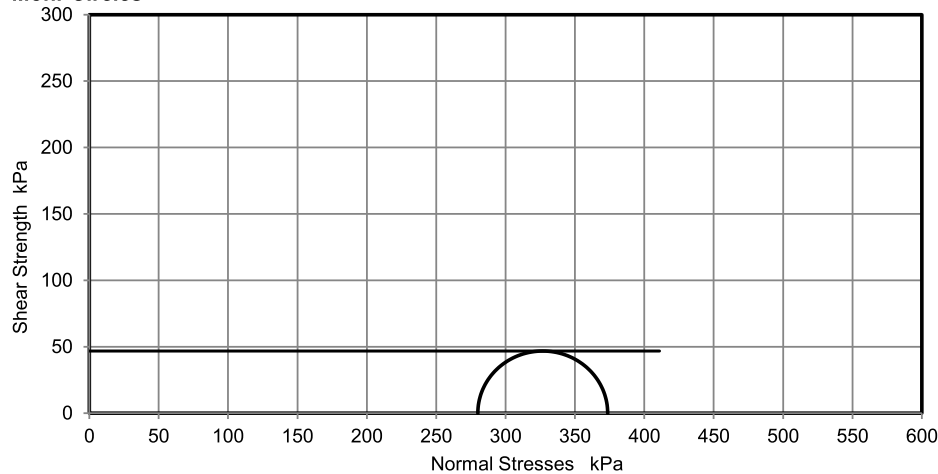


Test Number	1
Length	198.0 mm
Diameter	102.0 mm
Bulk Density	2.05 Mg/m3
Moisture Content	20 %
Dry Density	1.71 Mg/m3
Rate of Strain	2.0 %/min
Cell Pressure	280 kPa
Axial Strain	20 %
Deviator Stress, ($\sigma_1 - \sigma_3$)f	94 kPa
Undrained Shear Strength, cu	47 kPa $\frac{1}{2}(\sigma_1 - \sigma_3)$ f
Mode of Failure	Compound

Deviator Stress v Axial Strain



Mohr Circles



Deviator stress corrected for area change and membrane effects

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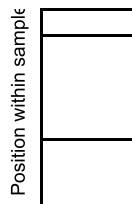
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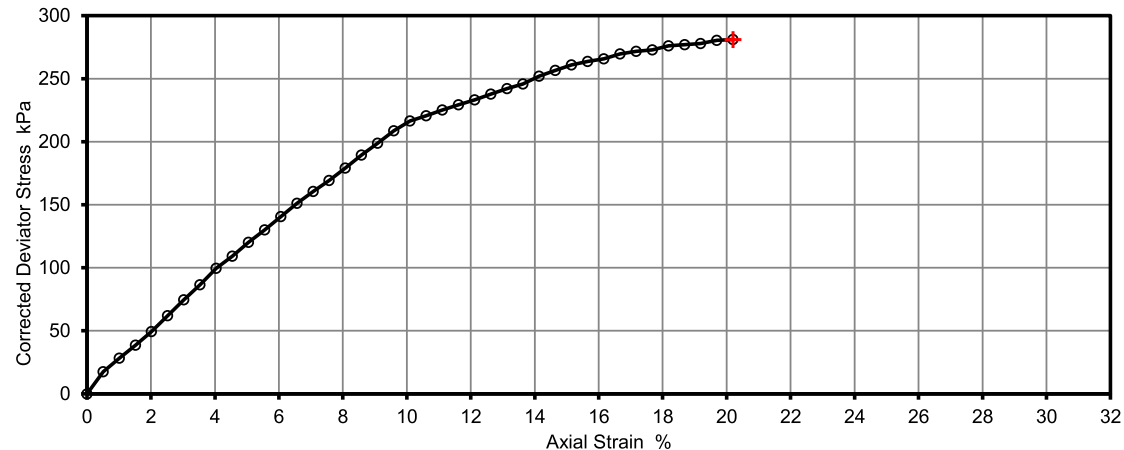
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen			Job Ref	34467
				Borehole/Pit No.	BH04
Site Name	Prestwich Village, Prestwich			Sample No.	-
Project No.	J23254	Client	GEA	Depth Top	5.00 m
Soil Description	High strength dark greyish brown sandy silty CLAY with occasional fm mudstone fragments			Depth Base	- m
				Sample Type	U
				Samples received	21/11/2023
				Schedules received	23/11/2023
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen			Date of test	18/12/2023

Remarks

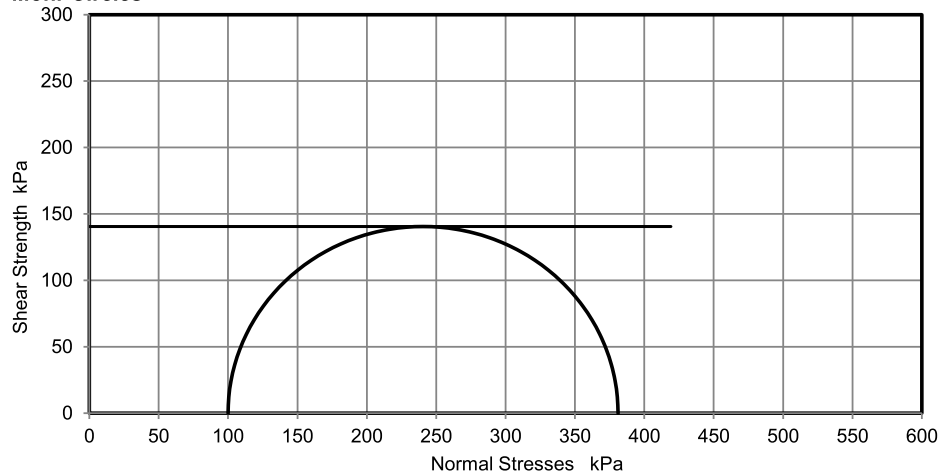


Test Number	1
Length	198.0 mm
Diameter	102.0 mm
Bulk Density	2.18 Mg/m3
Moisture Content	16 %
Dry Density	1.87 Mg/m3
Rate of Strain	2.0 %/min
Cell Pressure	100 kPa
Axial Strain	20 %
Deviator Stress, ($\sigma_1 - \sigma_3$)f	281 kPa
Undrained Shear Strength, cu	141 kPa $\frac{1}{2}(\sigma_1 - \sigma_3)$ f
Mode of Failure	Plastic

Deviator Stress v Axial Strain



Mohr Circles



Deviator stress corrected for area change and membrane effects

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	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen			Job Ref	34467
				Borehole/Pit No.	BH04
Site Name	Prestwich Village, Prestwich			Sample No.	-
Project No.	J23254	Client	GEA	Depth Top	8.00 m
Soil Description	Low strength brown slightly fine sandy silty CLAY			Depth Base	- m
				Sample Type	U
				Samples received	21/11/2023
				Schedules received	23/11/2023
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen			Date of test	18/12/2023

Remarks

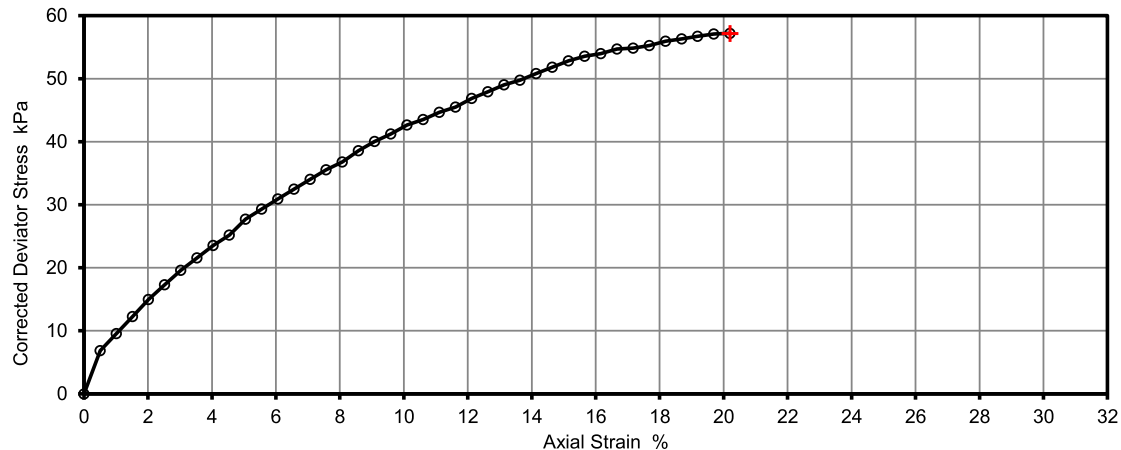


Position within sample

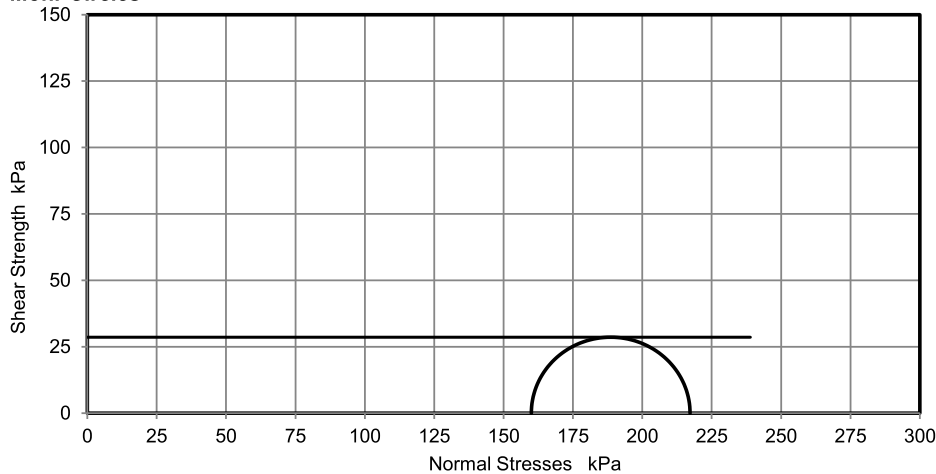


Test Number	1
Length	198.0 mm
Diameter	102.0 mm
Bulk Density	2.10 Mg/m3
Moisture Content	18 %
Dry Density	1.78 Mg/m3
Rate of Strain	2.0 %/min
Cell Pressure	160 kPa
Axial Strain	20 %
Deviator Stress, ($\sigma_1 - \sigma_3$)f	57 kPa
Undrained Shear Strength, cu	29 kPa $\frac{1}{2}(\sigma_1 - \sigma_3)$ f
Mode of Failure	Plastic

Deviator Stress v Axial Strain



Mohr Circles



Deviator stress corrected for area change and membrane effects

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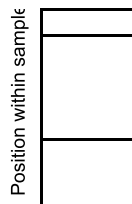
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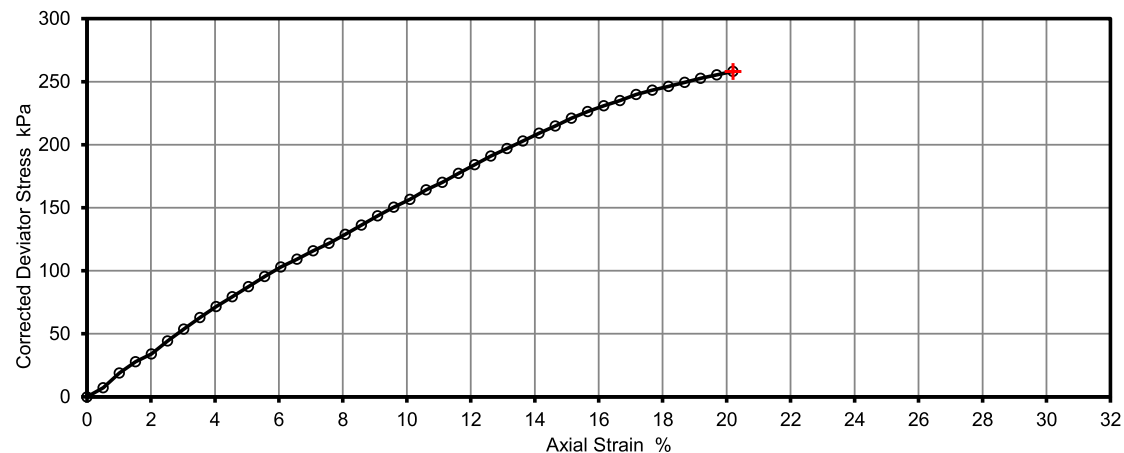
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen			Job Ref	34467
				Borehole/Pit No.	BH04
Site Name	Prestwich Village, Prestwich			Sample No.	-
Project No.	J23254	Client	GEA	Depth Top	11.00 m
Soil Description	High strength dark brown sandy silty CLAY			Depth Base	- m
				Sample Type	U
				Samples received	21/11/2023
				Schedules received	23/11/2023
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen			Date of test	18/12/2023

Remarks

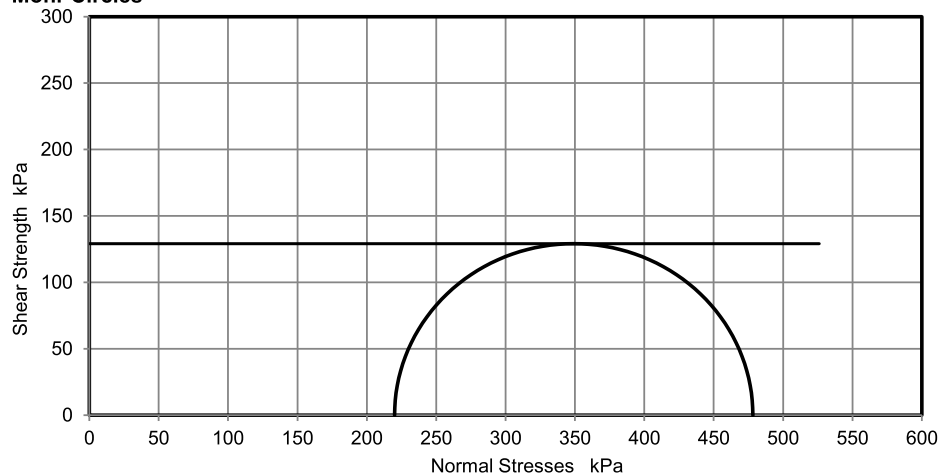


Test Number	1
Length	198.0 mm
Diameter	102.0 mm
Bulk Density	2.09 Mg/m3
Moisture Content	17 %
Dry Density	1.78 Mg/m3
Rate of Strain	2.0 %/min
Cell Pressure	220 kPa
Axial Strain	20 %
Deviator Stress, ($\sigma_1 - \sigma_3$)f	258 kPa
Undrained Shear Strength, cu	129 kPa $\frac{1}{2}(\sigma_1 - \sigma_3)$ f
Mode of Failure	Plastic

Deviator Stress v Axial Strain



Mohr Circles



Deviator stress corrected for area change and membrane effects

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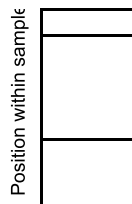
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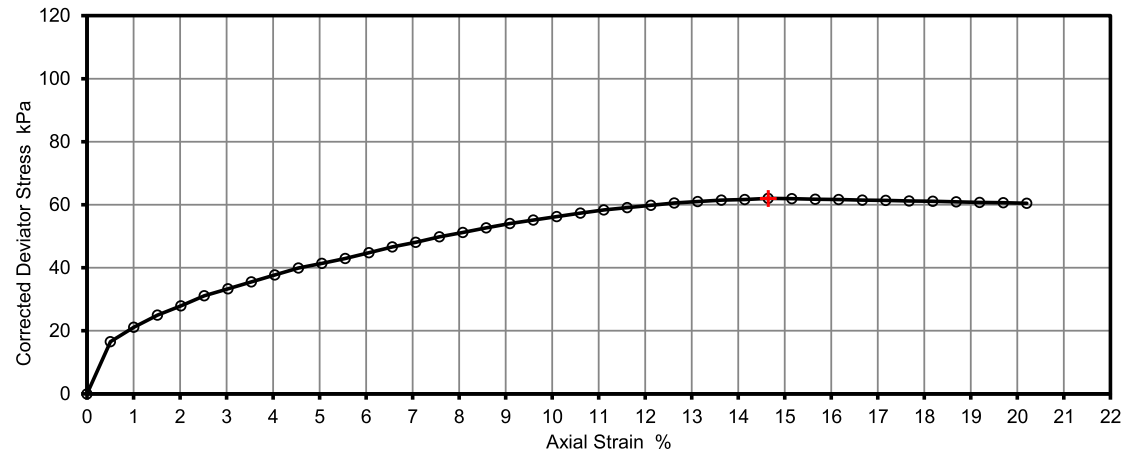
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen			Job Ref	34467
				Borehole/Pit No.	BH07
Site Name	Prestwich Village, Prestwich			Sample No.	-
Project No.	J23254	Client	GEA	Depth Top	3.00 m
Soil Description	Low strength dark brown slightly gravelly sandy silty CLAY (gravel is fm and sub-angular)			Depth Base	- m
				Sample Type	U
				Samples received	21/11/2023
				Schedules received	23/11/2023
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen			Date of test	18/12/2023

Remarks

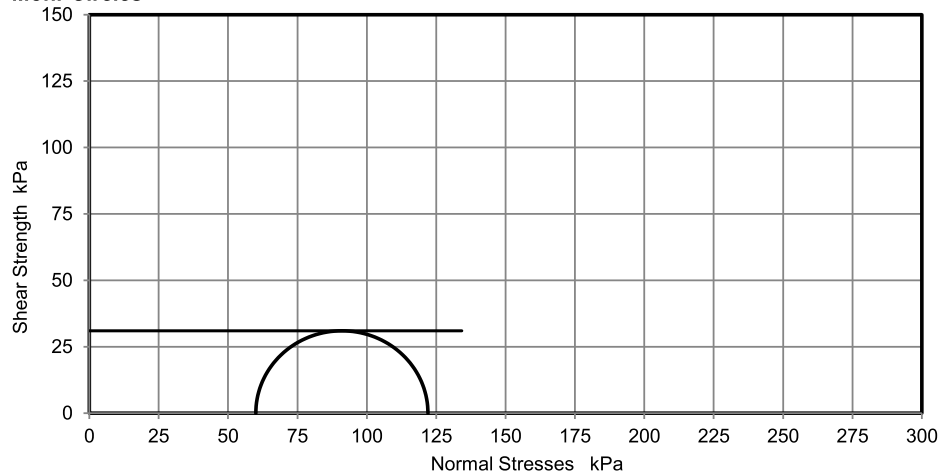


Test Number	1
Length	198.0 mm
Diameter	102.0 mm
Bulk Density	2.16 Mg/m3
Moisture Content	17 %
Dry Density	1.84 Mg/m3
Rate of Strain	2.0 %/min
Cell Pressure	60 kPa
Axial Strain	15 %
Deviator Stress, ($\sigma_1 - \sigma_3$) f	62 kPa
Undrained Shear Strength, cu	31 kPa $\frac{1}{2}(\sigma_1 - \sigma_3)$ f
Mode of Failure	Compound

Deviator Stress v Axial Strain



Mohr Circles



Deviator stress corrected for area change and membrane effects

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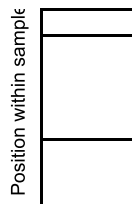
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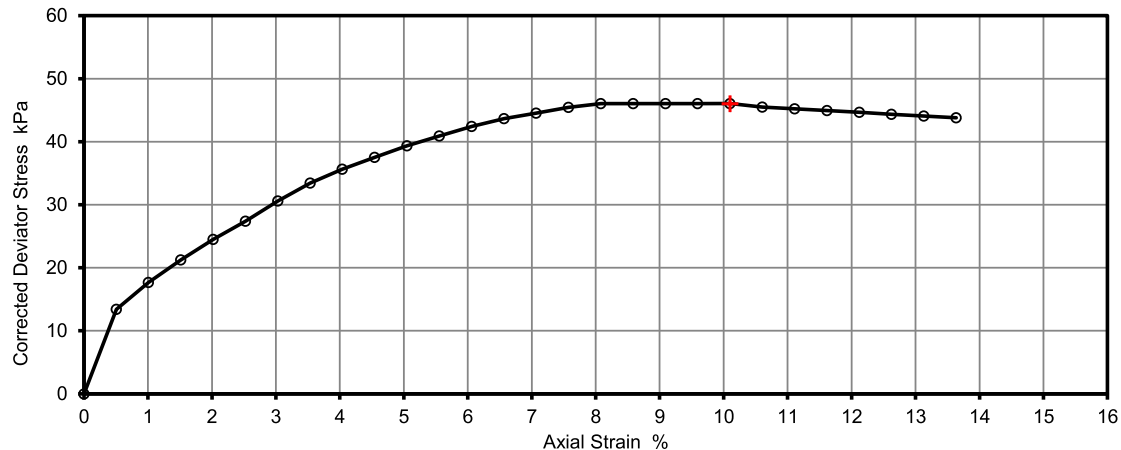
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen			Job Ref	34467
				Borehole/Pit No.	BH07
Site Name	Prestwich Village, Prestwich			Sample No.	-
Project No.	J23254	Client	GEA	Depth Top	4.00 m
Soil Description	Low strength dark brown slightly fine sandy silty CLAY with rare fm mudstone fragments			Depth Base	- m
				Sample Type	U
				Samples received	21/11/2023
				Schedules received	23/11/2023
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen			Date of test	18/12/2023

Remarks

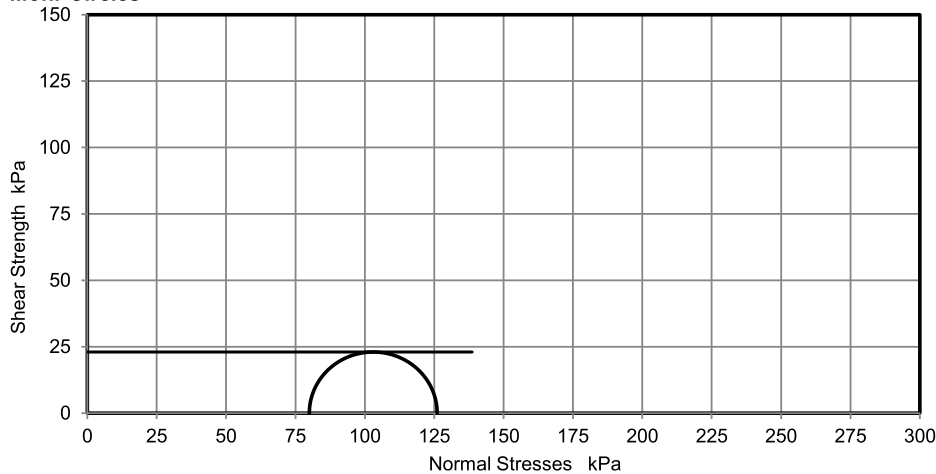


Test Number	1
Length	198.0 mm
Diameter	102.0 mm
Bulk Density	1.97 Mg/m3
Moisture Content	21 %
Dry Density	1.63 Mg/m3
Rate of Strain	2.0 %/min
Cell Pressure	80 kPa
Axial Strain	10 %
Deviator Stress, ($\sigma_1 - \sigma_3$)f	46 kPa
Undrained Shear Strength, cu	23 kPa $\frac{1}{2}(\sigma_1 - \sigma_3)$ f
Mode of Failure	Compound

Deviator Stress v Axial Strain



Mohr Circles



Deviator stress corrected for area change and membrane effects

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



Test Report by **K4 SOILS LABORATORY**
Unit 8 Olds Close Olds Approach
Watford Herts WD18 9RU
Tel: 01923 711 288 Email: James@k4soils.com

Checked and Approved
Initials: J.P
Date 05/01/2024

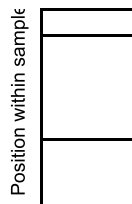
2519

These results only apply to the items tested. The report shall not be reproduced except in full without authority of the laboratory
Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

MSF-5 R7

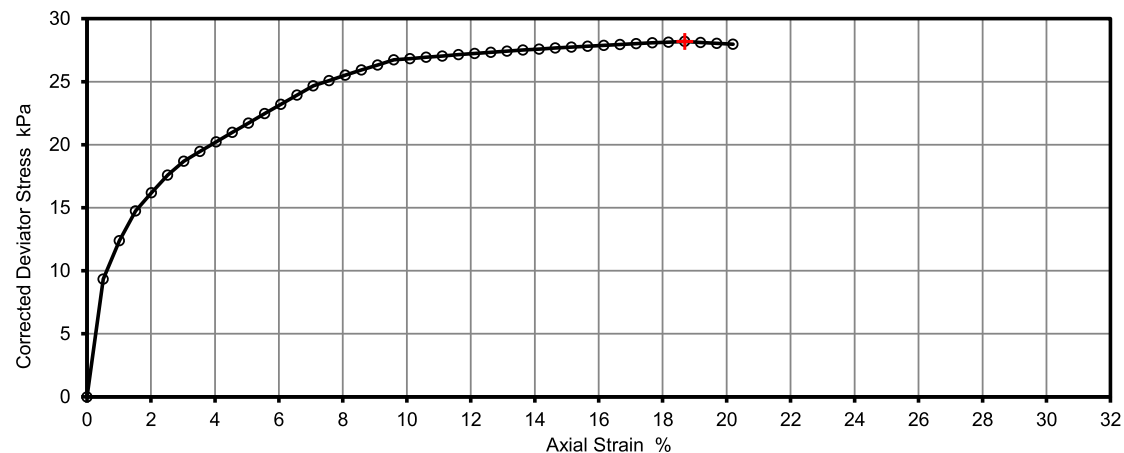
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen			Job Ref	34467
				Borehole/Pit No.	BH07
Site Name	Prestwich Village, Prestwich			Sample No.	-
Project No.	J23254	Client	GEA	Depth Top	6.50 m
Soil Description	Very low strength dark brown slightly fine sandy silty CLAY with occasional fm mudstone fragments			Depth Base	- m
				Sample Type	U
				Samples received	21/11/2023
				Schedules received	23/11/2023
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen			Date of test	18/12/2023

Remarks

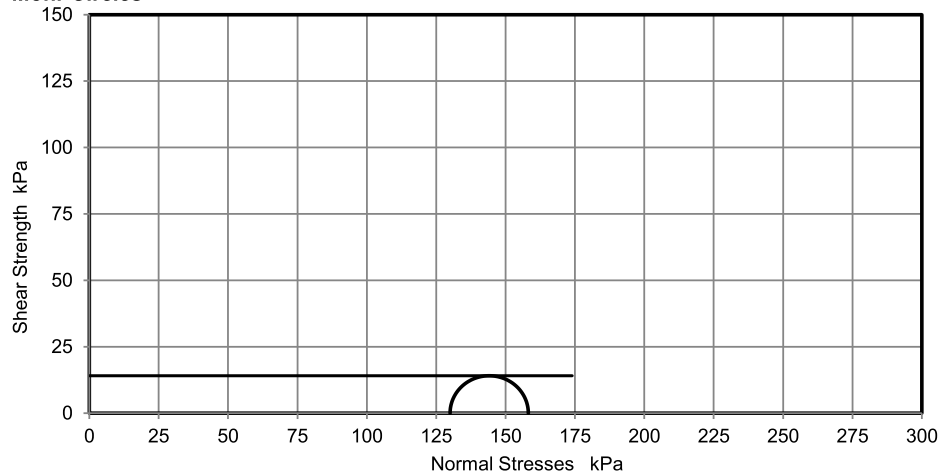


Test Number	1
Length	198.0 mm
Diameter	102.0 mm
Bulk Density	2.17 Mg/m3
Moisture Content	15 %
Dry Density	1.88 Mg/m3
Rate of Strain	2.0 %/min
Cell Pressure	130 kPa
Axial Strain	19 %
Deviator Stress, ($\sigma_1 - \sigma_3$)f	28 kPa
Undrained Shear Strength, cu	14 kPa $\frac{1}{2}(\sigma_1 - \sigma_3)$ f
Mode of Failure	Plastic

Deviator Stress v Axial Strain



Mohr Circles



Deviator stress corrected for area change and membrane effects

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



Test Report by **K4 SOILS LABORATORY**
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Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

MSF-5 R7

		Unconsolidated Undrained Triaxial Compression tests without measurement of pore pressure Summary of Results															
		Tests carried out in accordance with BS1377:Part 7 : 1990 clause 8 or 9 as appropriate to test															
Job No.		Project Name										Programme					
34467		Prestwich Village, Prestwich										Samples received		21/11/2023			
Project No.		Client										Schedule received		23/11/2023			
J23254		GEA										Project started		24/11/2023			
												Testing Started		18/12/2023			
Hole No.	Sample				Soil Description	Test Type	Density		w	Length	Diameter	σ_3	At failure				Remarks
	Ref	Top	Base	Type			bulk	dry					Axial strain	$\sigma_1 - \sigma_3$	CU	Mode	
		m	m				Mg/m ³		%	mm	mm	kPa	%	kPa	kPa		
BH01	-	6.50	-	U	Medium strength dark brown sandy silty CLAY with rare decomposed shell fragments	UU	2.09	1.73	21	198	102	130	20	137	69	C	
BH01	-	12.50	-	U	High strength dark brown sandy silty CLAY	UU	2.11	1.78	19	198	102	250	20	246	123	P	
BH02	-	14.00	-	U	Medium strength dark brown slightly fine sandy silty CLAY	UU	2.05	1.71	20	198	102	280	20	94	47	C	
BH04	-	5.00	-	U	High strength dark greyish brown sandy silty CLAY with occasional fm mudstone fragments	UU	2.18	1.87	16	198	102	100	20	281	141	P	
BH04	-	8.00	-	U	Low strength brown slightly fine sandy silty CLAY	UU	2.10	1.78	18	198	102	160	20	57	29	P	
BH04	-	11.00	-	U	High strength dark brown sandy silty CLAY	UU	2.09	1.78	17	198	102	220	20	258	129	P	
BH07	-	3.00	-	U	Low strength dark brown slightly gravelly sandy silty CLAY (gravel is fm and sub-angular)	UU	2.16	1.84	17	198	102	60	15	62	31	C	
BH07	-	4.00	-	U	Low strength dark brown slightly fine sandy silty CLAY with rare fm mudstone fragments	UU	1.97	1.63	21	198	102	80	10	46	23	C	
BH07	-	6.50	-	U	Very low strength dark brown slightly fine sandy silty CLAY with occasional fm mudstone fragments	UU	2.17	1.88	16	198	102	130	19	28	14	P	

Legend
 UU - single stage test (single and multiple specimens)
 UUM - Multistage test on a single specimen
 suffix R - remoulded or recompacted

σ_3 Cell pressure
 $\sigma_1 - \sigma_3$ Maximum corrected deviator stress
 cu Undrained shear strength, $\frac{1}{2}(\sigma_1 - \sigma_3)$

Mode of failure ;
 B - Brittle
 P - Plastic
 C - Compound

	Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford Herts WD18 9RU Tel: 01923 711 288 Email: james@k4soils.com Email: james@k4soils.com		Checked and Approved Initials: J.P Date: 05/01/2024
	These results only apply to the items tested. The report shall not be reproduced except in full without authority of the laboratory		
	2519	Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)	MSF-5-R7b



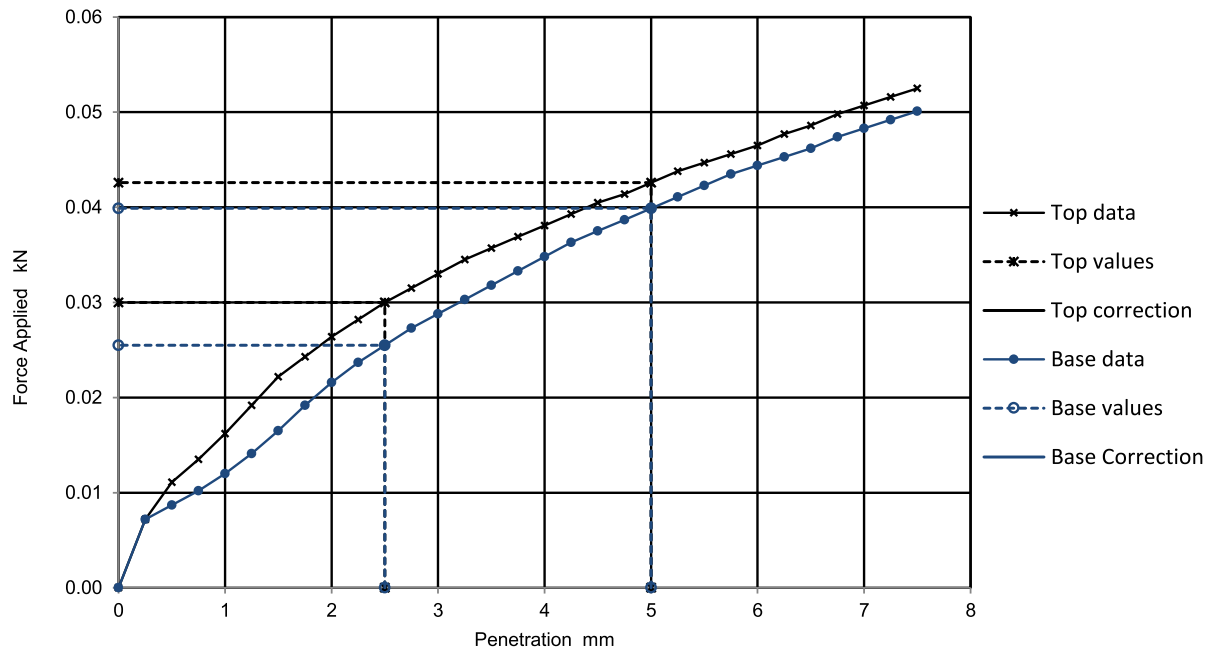
California Bearing Ratio (CBR)

Job Ref	34467		
	Borehole/Pit No.		
Site Name		Prestwich Village, Prestwich	
Project No.		J23254	Client
Soil Description		Brown slightly gravelly sandy silty CLAY (gravel is fmc and angular to sub-angular)	
Test Method		BS1377 : Part 4 : 1990, clause 7	
Sample No.		-	
Depth Top		1.20	m
Depth Base		-	m
Sample Type		B	
Samples received		21/11/2023	
Schedules received		23/11/2023	
Project Started		24/11/2023	
Date Tested		18/12/2023	

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	- days
		Time to surface	- days
		Amount of swell recorded	- mm
Material retained on 20mm sieve removed		4.2	%
Initial Specimen details	Bulk density	2.01	Mg/m3
	Dry density	1.65	Mg/m3
	Moisture content	22	%
Surcharge applied		6	kg
		4	kPa

Force v Penetration Plots



Results

TOP
BASE

Curve correction applied	CBR Values, %			
	2.5mm	5mm	Highest	Average
No	0.23	0.21	0.23	0.21
No	0.19	0.20	0.20	

Moisture Content
%
22
23

Remarks

1



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

Tel: 01923 711 288
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Checked and Approved

Initials: J.P
Date: 05/01/2024

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

MSF-5-R16



California Bearing Ratio (CBR)

	California Bearing Ratio (CBR)			Job Ref	34467
				Borehole/Pit No.	BH07
Site Name	Prestwich Village, Prestwich			Sample No.	-
Project No.	J23254	Client	GEA	Depth Top	1.20 m
Soil Description	Brown clayey gravelly SAND (gravel is fmc and angular to sub-angular)			Depth Base	- m
				Sample Type	B
				Samples received	21/11/2023
				Schedules received	23/11/2023
Test Method	BS1377 : Part 4 : 1990, clause 7			Project Started	24/11/2023
				Date Tested	18/12/2023

Specimen Preparation

Condition REMOULDED

Details Recompacted with specified standard effort using 2.5kg rammer

Soaking details

Not soaked

Period of soaking - days

Time to surface - days

Amount of swell recorded - mm

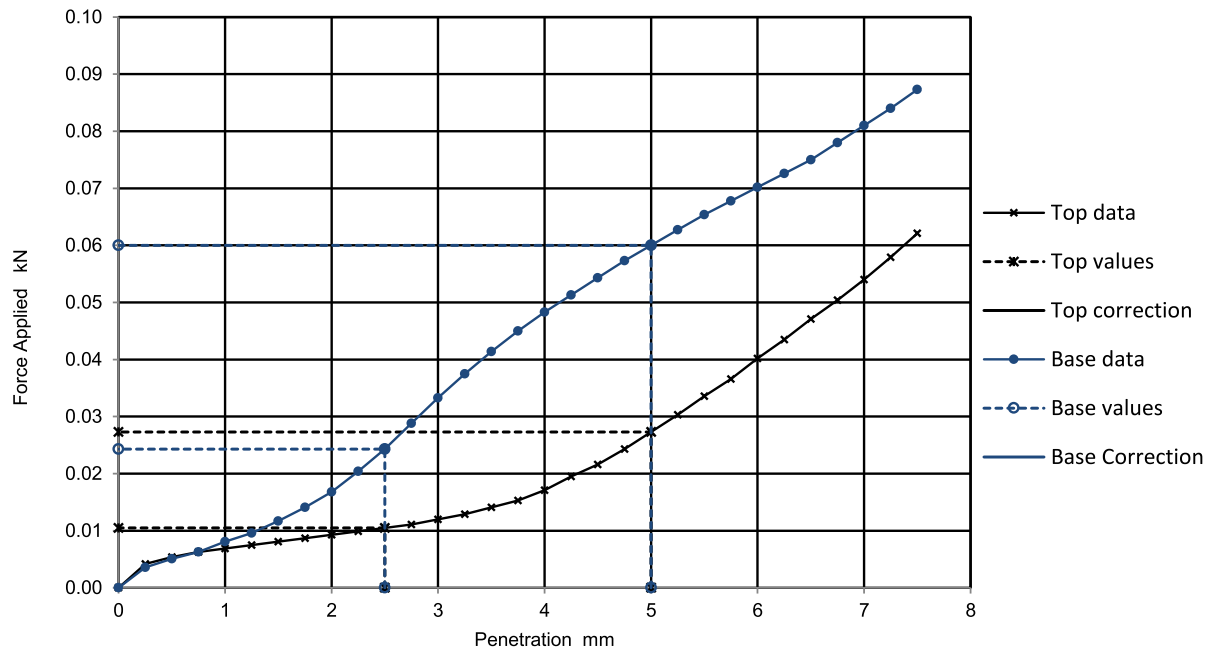
Material retained on 20mm sieve removed 1.9 %

Initial Specimen details

Bulk density	1.99	Mg/m3
Dry density	1.69	Mg/m3
Moisture content	18	%

Surcharge applied 6 kg
4 kPa

Force v Penetration Plots



Results

TOP
BASE

Curve correction applied	CBR Values, %			
	2.5mm	5mm	Highest	Average
No	0.08	0.14	0.14	N/A
No	0.18	0.30	0.30	

Moisture Content %
19
18

Remarks

1



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

Tel: 01923 711 288
Email: James@k4soils.com

Checked and Approved

Initials: J.P

Date: 05/01/2024

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

MSF-5-R16



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info@elab-uk.co.uk

THE ENVIRONMENTAL LABORATORY LTD

Analytical Report Number: 23-51691

Issue: 1

Date of Issue: 04/01/2024

Contact: James Phaure

Customer Details: K4 Soils Laboratory Ltd
Unit 8
Watford
Hertfordshire WD18 9RU

Quotation No: Q22-03477

Order No: 34467

Customer Reference: 34467

Date Received: 21/12/2023

Date Approved: 04/01/2024

Details: Prestwich Village, Prestwich

Approved by:

Tim Reeve, Technical Coordinator

Any comments, opinions or interpretations expressed herein are outside the scope of UKAS accreditation (Accreditation Number 2683)

This report may only be reproduced in full



Sample Summary

Report No.: 23-51691, issue number 1

Elab No.	Client's Ref.	Date Sampled	Date Scheduled	Description	Deviations
349078	BH02 1.20	Not Provided	21/12/2023	Silty loam	a



Results Summary

Report No.: 23-51691, issue number 1

ELAB Reference	349078
Customer Reference	
Sample ID	
Sample Type	BULK
Sample Location	BH02
Sample Depth (m)	1.20
Sampling Date	Not Provided

Determinand	Codes	Units	LOD	
Soil sample preparation parameters				
Moisture Content	N	%	0.1	70.9
Material removed	N	%	0.1	30.6
Description of Inert material removed	N		0	Stones
Miscellaneous				
Soil Organic Matter	U	%	0.1	22



Method Summary

Report No.: 23-51691, issue number 1

Parameter	Codes	Analysis Undertaken On	Date Tested	Method Number	Technique
Soil					
Soil organic matter	U	Air dried sample	03/01/2024	BS1377:P3	Titrimetry

Report Information

Report No.: 23-51691, issue number 1

Key

U	hold UKAS accreditation
M	hold MCERTS and UKAS accreditation
N	do not currently hold UKAS accreditation
^	MCERTS accreditation not applicable for sample matrix
*	UKAS accreditation not applicable for sample matrix
S	Subcontracted to approved laboratory UKAS Accredited for the test
SM	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
NS	Subcontracted to approved laboratory. UKAS accreditation is not applicable.
I/S	Insufficient Sample
U/S	Unsuitable sample
n/t	Not tested
<	means "less than"
>	means "greater than"
LOD	LOD refers to limit of detection, except in the case of pH soils and pH waters where it means limit of discrimination. Soil sample results are expressed on an air dried basis (dried at < 30°C), and are uncorrected for inert material removed. ELAB are unable to provide an interpretation or opinion on the content of this report. The results relate only to the sample received. PCB congener results may include any coeluting PCBs Uncertainty of measurement for the determinands tested are available upon request Unless otherwise stated, sample information has been provided by the client. This may affect the validity of the results.

Deviation Codes

a	No date of sampling supplied
b	No time of sampling supplied (Waters Only)
c	Sample not received in appropriate containers
d	Sample not received in cooled condition
e	The container has been incorrectly filled
f	Sample age exceeds stability time (sampling to receipt)
g	Sample age exceeds stability time (sampling to analysis)

Where a sample has a deviation code, the applicable test result may be invalid.

Sample Retention and Disposal

All soil samples will be retained for a period of one month

All water samples will be retained for 7 days following the date of the test report

Charges may apply to extended sample storage

TPH Classification - HWOL Acronym System

HS	Headspace analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
2D	GC-GC - Double coil gas chromatography
#1	EH_Total but with humics mathematically subtracted
#2	EH_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry



GEA

www.gea-ltd.co.uk

Geotechnical and Environmental Associates

SPT / Depth Graph

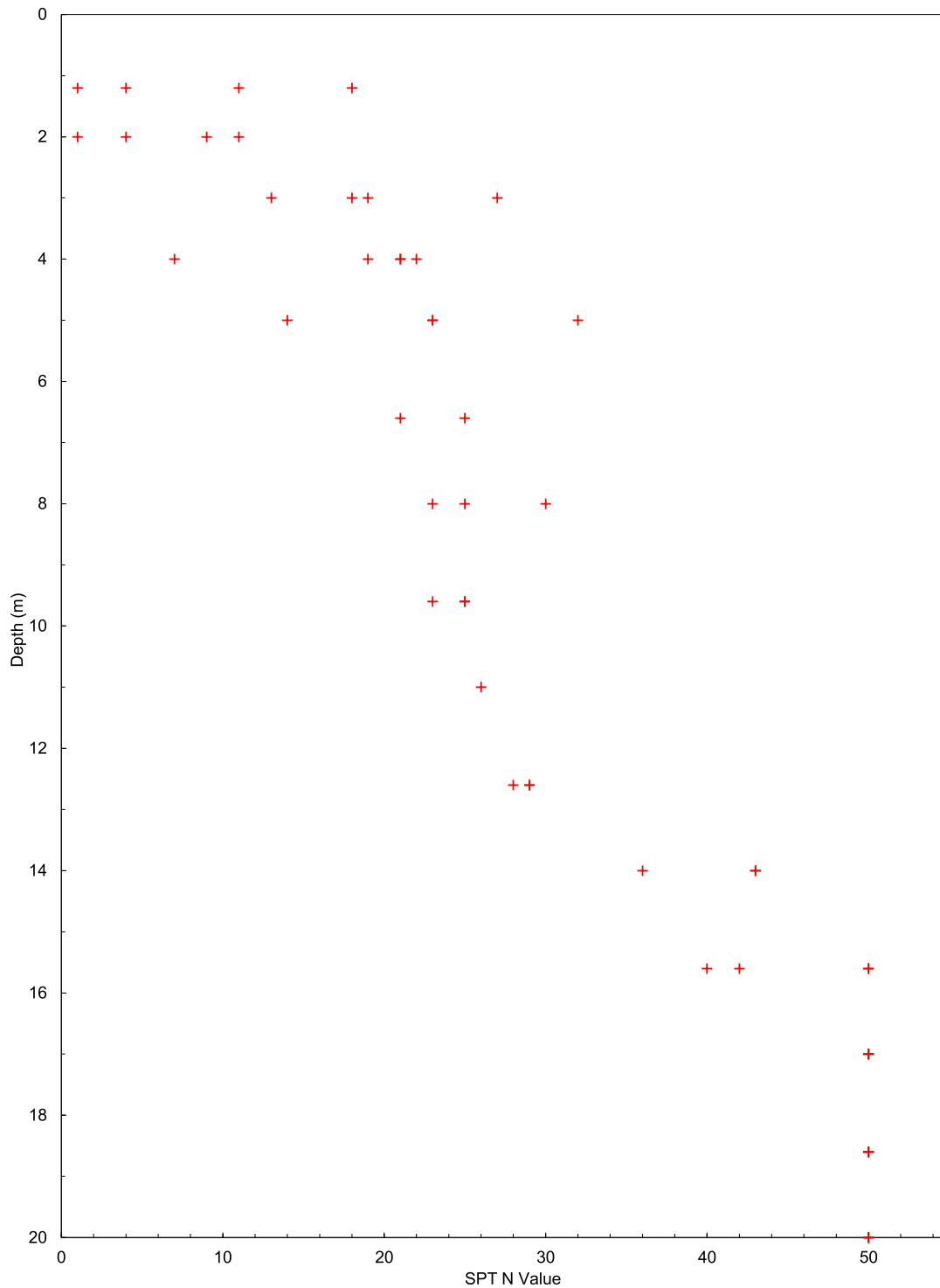
Site Prestwich Village, Prestwich, Manchester, M25 1AY

Client The Prestwich Regeneration LLP

Engineer Civic Engineers

Job Number
J23254

Sheet
1 / 1





Certificate of Analysis

Certificate Number 23-26658

Issued: 28-Nov-23

Client Geotechnical & Environmental Associates
Unit 1
Church Farm
Gotham Road
Nottingham
NG11 0DE

Our Reference 23-26658

Client Reference J23254

Order No J23254 PO6

Contract Title Prestwich Village

Description 5 Soil samples.

Date Received 13-Nov-23

Date Started 13-Nov-23

Date Completed 28-Nov-23

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved P



Kirk Bridgewood
General Manager



Summary of Chemical Analysis

Matrix Descriptions

Our Ref 23-26658

Client Ref J23254

Contract Title Prestwich Village

Sample ID	Depth	Lab No	Completed	Matrix Description
BH1	0.5	2261425	28/11/2023	Brown very gravelly, sandy CLAY
BH1	2	2261426	28/11/2023	Brown gravelly, sandy CLAY
BH2	1.1	2261427	28/11/2023	Brown sandy CLAY
BH6	0.3	2261428	28/11/2023	Brown gravelly, clayey SAND
BH7	0.5	2261429	28/11/2023	Brown gravelly, sandy CLAY

Summary of Chemical Analysis

Soil Samples

Our Ref 23-26658

Client Ref J23254

Contract Title Prestwich Village

Lab No	2261425	2261426	2261427	2261428	2261429
Sample ID	BH1	BH1	BH2	BH6	BH7
Depth	0.50	2.00	1.10	0.30	0.50
Other ID					
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date	09/11/2023	09/11/2023	09/11/2023	02/11/2023	06/11/2023
Sampling Time	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units					
Preparation								
Stones Removed	DETS 1003*	0	%	0.0	0.0	0.0	0.0	0.0
Moisture Content 30°C	DETS 1004*	0.1	%	14	17	19	3.0	9.3
Metals								
Arsenic	DETS 2301#	0.2	mg/kg	12	7.3	22	2.0	4.2
Cadmium	DETS 2301#	0.1	mg/kg	0.3	0.1	0.1	0.5	0.8
Chromium	DETS 2301#	0.15	mg/kg	13	14	17	4.3	6.5
Chromium, Hexavalent	DETS 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETS 2301#	0.2	mg/kg	40	30	25	8.6	13
Lead	DETS 2301#	0.3	mg/kg	61	29	23	28	17
Mercury	DETS 2325#	0.05	mg/kg	0.28	0.10	0.17	0.07	< 0.05
Nickel	DETS 2301#	1	mg/kg	22	13	17	9.6	8.7
Selenium	DETS 2301#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Zinc	DETS 2301#	1	mg/kg	140	80	79	27	120
Inorganics								
pH	DETS 2008#		pH	7.5	8.8	8.3	10.0	8.3
Cyanide, Total	DETS 2130#	0.1	mg/kg	0.7	0.4	0.1	< 0.1	< 0.1
Total Organic Carbon	DETS 2002	0.1	%	4.8	3.7	1.7	4.9	3.2
Chloride Aqueous Extract (2:1)	DETS 2055	1	mg/l	98	27	200	11	25
Sulphate Aqueous Extract as SO ₄ (2:1)	DETS 2076#	10	mg/l	210	680	100	60	160
Sulphide	DETS 2024*	10	mg/kg	< 10	36	< 10	40	< 10
Sulphate as SO ₄ , Total	DETS 2321#	0.01	%	0.08	0.17	0.04	0.05	0.08
Petroleum Hydrocarbons								
Aliphatic C5-C6	DETS 3321*	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01
Aliphatic C6-C8	DETS 3321*	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01
Aliphatic C8-C10	DETS 3321*	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01
Aliphatic C10-C12	DETS 3072#	1.5	mg/kg	3.9	< 1.5		1.9	< 1.5
Aliphatic C12-C16	DETS 3072#	1.2	mg/kg	17	< 1.2		13	2.4
Aliphatic C16-C21	DETS 3072#	1.5	mg/kg	36	< 1.5		100	30
Aliphatic C21-C35	DETS 3072#	3.4	mg/kg	430	< 3.4		1200	360
Aliphatic C5-C35	DETS 3072*	10	mg/kg	480	< 10		1300	390
Aromatic C5-C7	DETS 3321*	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01
Aromatic C7-C8	DETS 3321*	0.01	mg/kg	< 0.01	< 0.01		< 0.01	< 0.01
Aromatic C8-C10	DETS 3321*	0.01	mg/kg	< 0.01	0.02		< 0.01	< 0.01
Aromatic C10-C12	DETS 3072#	0.9	mg/kg	3.7	< 0.9		9.2	7.8
Aromatic C12-C16	DETS 3072#	0.5	mg/kg	97	< 0.5		53	11
Aromatic C16-C21	DETS 3072#	0.6	mg/kg	230	< 0.6		500	69
Aromatic C21-C35	DETS 3072#	1.4	mg/kg	850	12		3100	790
Aromatic C5-C35	DETS 3072*	10	mg/kg	1200	12		3700	880
TPH Ali/Aro Total C5-C35	DETS 3072*	10	mg/kg	1700	12		5000	1300
VPH (C8-C10)	DETS 3321*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
EPH (C10-C12)	DETS 3311	10	mg/kg	120	< 10	< 10	< 10	< 10

Summary of Chemical Analysis

Soil Samples

Our Ref 23-26658

Client Ref J23254

Contract Title Prestwich Village

Lab No	2261425	2261426	2261427	2261428	2261429
Sample ID	BH1	BH1	BH2	BH6	BH7
Depth	0.50	2.00	1.10	0.30	0.50
Other ID					
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date	09/11/2023	09/11/2023	09/11/2023	02/11/2023	06/11/2023
Sampling Time	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units					
EPH (C12-C16)	DETSC 3311	10	mg/kg	1100	78	< 10	81	18
EPH (C16-C21)	DETSC 3311	10	mg/kg	4800	310	< 10	940	160
EPH (C21-C35)	DETSC 3311	10	mg/kg	13000	700	< 10	11000	3200
TPH (C8-C40)	DETSC 3311*	10	mg/kg	21000	1300	< 10	14000	4300
PAHs								
Naphthalene	DETSC 3303#	0.03	mg/kg	13	2.0	0.05	0.52	0.07
Acenaphthylene	DETSC 3303#	0.03	mg/kg	0.25	0.04	< 0.03	0.26	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	27	3.5	0.04	8.3	0.06
Fluorene	DETSC 3303	0.03	mg/kg	22	2.9	0.04	6.1	0.04
Phenanthrene	DETSC 3303#	0.03	mg/kg	110	12	0.20	50	0.35
Anthracene	DETSC 3303	0.03	mg/kg	32	3.5	0.05	16	0.10
Fluoranthene	DETSC 3303#	0.03	mg/kg	92	8.8	0.16	74	0.81
Pyrene	DETSC 3303#	0.03	mg/kg	76	7.8	0.13	61	0.92
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	29	2.5	0.05	31	0.40
Chrysene	DETSC 3303	0.03	mg/kg	24	2.2	0.04	24	0.28
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	24	2.3	0.04	38	1.0
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	8.7	0.62	< 0.03	13	0.32
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	21	1.7	< 0.03	33	0.97
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	6.8	0.46	< 0.03	0.62	0.38
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	2.1	0.15	< 0.03	1.3	0.09
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	8.3	0.57	< 0.03	20	0.59
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	500	51	0.80	380	6.4
Phenols								
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	2.8	1.7	< 0.3	< 0.3	< 0.3

Summary of Asbestos Analysis Soil Samples

Our Ref 23-26658

Client Ref J23254

Contract Title Prestwich Village

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
2261425	BH1 0.50	SOIL	NAD	none	Ben Rose
2261426	BH1 2.00	SOIL	NAD	none	Ben Rose
2261427	BH2 1.10	SOIL	NAD	none	Ben Rose
2261428	BH6 0.30	SOIL	NAD	none	Ben Rose
2261429	BH7 0.50	SOIL	NAD	none	Ben Rose

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 23-26658
 Client Ref J23254
 Contract Prestwich Village

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
2261425	BH1 0.50 SOIL	09/11/23	GJ 250ml, PT 1L		BTEX / C5-C10
2261426	BH1 2.00 SOIL	09/11/23	GJ 250ml, PT 1L		BTEX / C5-C10
2261427	BH2 1.10 SOIL	09/11/23	GJ 250ml, PT 1L		BTEX / C5-C10
2261428	BH6 0.30 SOIL	02/11/23	GJ 250ml, PT 1L	pH + Conductivity (7 days)	BTEX / C5-C10
2261429	BH7 0.50 SOIL	06/11/23	GJ 250ml, PT 1L		BTEX / C5-C10

Key: G-Glass P-Plastic J-Jar T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 2002	Organic matter	%	0.1	Air Dried	No	Yes	Yes
DETSC 2003	Loss on ignition	%	0.01	Air Dried	No	Yes	Yes
DETSC 2008	pH	pH Units	1	Air Dried	No	Yes	Yes
DETSC 2076	Sulphate Aqueous Extract as SO ₄	mg/l	10	Air Dried	No	Yes	Yes
DETSC 2084	Total Organic Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2119	Ammoniacal Nitrogen as N	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide free	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide total	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Phenol - Monohydric	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC 2130	Thiocyanate	mg/kg	0.6	Air Dried	No	Yes	Yes
DETSC 2301	Arsenic	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC 2301	Barium	mg/kg	1.5	Air Dried	No	Yes	Yes
DETSC 2301	Beryllium	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC 2301	Cadmium Available	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2301	Cadmium	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2301	Cobalt	mg/kg	0.7	Air Dried	No	Yes	Yes
DETSC 2301	Chromium	mg/kg	0.15	Air Dried	No	Yes	Yes
DETSC 2301	Copper	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC 2301	Manganese	mg/kg	20	Air Dried	No	Yes	Yes
DETSC 2301	Molybdenum	mg/kg	0.4	Air Dried	No	Yes	Yes
DETSC 2301	Nickel	mg/kg	1	Air Dried	No	Yes	Yes
DETSC 2301	Lead	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC 2301	Selenium	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC 2301	Zinc	mg/kg	1	Air Dried	No	Yes	Yes
DETSC 2311	Boron (water soluble)	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC 2321	Total Sulphate as SO ₄	%	0.01	Air Dried	No	Yes	Yes
DETSC 2325	Mercury	mg/kg	0.05	Air Dried	No	Yes	Yes
DETSC 3049	Sulphur (free)	mg/kg	0.75	As Received	No	Yes	Yes
DETSC 3072	Ali/Aro C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	1.2	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	0.9	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	0.5	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	0.6	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETSC 3303	Acenaphthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Acenaphthylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(b)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(k)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(g,h,i)perylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Dibenzo(a,h)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 3303	Indeno(1,2,3-c,d)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Naphthalene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Phenanthrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3311	C10-C24 Diesel Range Organics (DRO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	C24-C40 Lube Oil Range Organics (LORO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	EPH (C10-C40)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3321	Benzene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	Ethylbenzene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	Toluene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	m+p Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	o Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 28 + PCB 31	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 52	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 101	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 118	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 153	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 138	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 180	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB Total	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3521	Ali/Aro C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C10-C12	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C12-C16	mg/kg	1.2	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C16-C21	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3521	Aromatic C10-C12	mg/kg	0.9	As Received	No	Yes	Yes
DETSC 3521	Aromatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3521	Aromatic C12-C16	mg/kg	0.5	As Received	No	Yes	Yes
DETSC 3521	Aromatic C16-C21	mg/kg	0.6	As Received	No	Yes	Yes
DETSC 3521	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes

Method details are shown only for those determinands listed in Annex A of the MCERTS standard. Anything not included on this list falls outside the scope of MCERTS. No Recovery Factors are used in the determination of results. Results reported assume 100% recovery. Full method statements are available on request.

End of Report



Certificate of Analysis

Certificate Number 23-27646

Issued: 13-Dec-23

Client Geotechnical & Environmental Associates
Unit 1
Church Farm
Gotham Road
Nottingham
NG11 0DE

Our Reference 23-27646

Client Reference J23254

Order No J23254

Contract Title Prestwich Village

Description 11 Soil samples.

Date Received 23-Nov-23

Date Started 23-Nov-23

Date Completed 13-Dec-23

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By



Kirk Bridgewood
General Manager



Summary of Chemical Analysis

Matrix Descriptions

Our Ref 23-27646

Client Ref J23254

Contract Title Prestwich Village

Sample ID	Depth	Lab No	Completed	Matrix Description
BH4	0.3	2267196	13/12/2023	Dark brown very gravelly, sandy CLAY
BH08A	0.5	2267197	13/12/2023	Dark brown very gravelly, sandy CLAY
BH09	1	2267198	13/12/2023	Dark brown very gravelly, sandy CLAY
BH11	0.5	2267199	13/12/2023	Dark brown very sandy, gravelly CLAY
BH13	1.5	2267200	13/12/2023	Dark brown very sandy, gravelly CLAY
BH14	0.6	2267201	13/12/2023	Brown gravelly, sandy CLAY
BH15	1.4	2267202	13/12/2023	Brown very gravelly, sandy CLAY
BH17	0.4	2267203	13/12/2023	Brown very gravelly, sandy CLAY
TP02	0.5	2267204	13/12/2023	Brown very sandy, gravelly and CLAY
TP03	0.8	2267205	13/12/2023	Brown brown sandy, gravelly CLAY
TP04	0.7	2267206	13/12/2023	Brown very gravelly, sandy CLAY

Summary of Chemical Analysis

Soil Samples

Our Ref 23-27646

Client Ref J23254

Contract Title Prestwich Village

Lab No	2267196	2267197	2267198	2267199	2267200	2267201	2267202
Sample ID	BH4	BH08A	BH09	BH11	BH13	BH14	BH15
Depth	0.30	0.50	1.00	0.50	1.50	0.60	1.40
Other ID							
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date	13/11/2023	17/11/2023	17/11/2023	16/11/2023	16/11/2023	16/11/2023	15/11/2023
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units							
Preparation										
Stones Removed	DETSC 1003*	0	%	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Moisture Content 30°C	DETSC 1004*	0.1	%	8.5	9.9	18	5.6	13	20	11
Metals										
Arsenic	DETSC 2301#	0.2	mg/kg	2.5	9.4	16	4.1	6.7	12	5.8
Cadmium	DETSC 2301#	0.1	mg/kg	0.2	0.8	0.1	0.1	< 0.1	< 0.1	< 0.1
Chromium	DETSC 2301#	0.15	mg/kg	5.9	14	11	5.3	14	7.8	7.4
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	10	60	99	10	21	25	14
Lead	DETSC 2301#	0.3	mg/kg	6.4	110	240	21	17	51	11
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	0.07	0.13	< 0.05	< 0.05	0.13	< 0.05
Nickel	DETSC 2301#	1	mg/kg	11	22	27	5.2	14	7.7	10
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Zinc	DETSC 2301#	1	mg/kg	22	130	100	25	83	31	37
Inorganics										
pH	DETSC 2008#		pH	9.0	9.8	7.5	8.4	7.4	7.6	8.0
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.2	0.9	< 0.1	< 0.1	< 0.1	0.3	< 0.1
Total Organic Carbon	DETSC 2002	0.1	%	3.2	1.4	< 0.1	0.5	0.8	1.2	0.7
Chloride Aqueous Extract (2:1)	DETSC 2055	1	mg/l	45	37	6.8	15	9.8	48	7.7
Sulphate Aqueous Extract as SO ₄ (2:1)	DETSC 2076#	10	mg/l	38	110	75	26	90	31	32
Sulphide	DETSC 2024*	10	mg/kg	71	51	59	< 10	16	28	20
Sulphate as SO ₄ , Total	DETSC 2321#	0.01	%	0.03	0.09	0.05	0.03	0.04	0.04	0.02
Petroleum Hydrocarbons										
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01		0.09				
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	0.46		0.13				
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	0.11		0.24				
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5		< 1.5				
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	2.8		< 1.2				
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	38		< 1.5				
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	560		65				
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	600		66				
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01				
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01				
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01		< 0.01				
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9		< 0.9				
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	12		2.4				
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	140		17				
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	1100		270				
Aromatic C5-C35	DETSC 3072*	10	mg/kg	1300		290				
TPH Ali/Aro Total C5-C35	DETSC 3072*	10	mg/kg	1900		360				
VPH (C8-C10)	DETSC 3321*	0.1	mg/kg	0.1	0.3	0.2	0.2	< 0.1	0.2	0.3
EPH (C10-C12)	DETSC 3311	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Summary of Chemical Analysis

Soil Samples

Our Ref 23-27646

Client Ref J23254

Contract Title Prestwich Village

Lab No	2267196	2267197	2267198	2267199	2267200	2267201	2267202
Sample ID	BH4	BH08A	BH09	BH11	BH13	BH14	BH15
Depth	0.30	0.50	1.00	0.50	1.50	0.60	1.40
Other ID							
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date	13/11/2023	17/11/2023	17/11/2023	16/11/2023	16/11/2023	16/11/2023	15/11/2023
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units							
EPH (C12-C16)	DETSC 3311	10	mg/kg	15	< 10	15	< 10	< 10	< 10	< 10
EPH (C16-C21)	DETSC 3311	10	mg/kg	150	< 10	51	< 10	< 10	< 10	< 10
EPH (C21-C35)	DETSC 3311	10	mg/kg	2500	13	710	130	< 10	< 10	< 10
TPH (C8-C40)	DETSC 3311*	10	mg/kg	3400	19	1000	180	< 10	< 10	< 10
PAHs										
Naphthalene	DETSC 3303#	0.03	mg/kg	0.46	0.09	0.08	< 0.03	< 0.03	< 0.03	< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg	0.05	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	1.9	0.09	0.04	< 0.03	< 0.03	< 0.03	< 0.03
Fluorene	DETSC 3303	0.03	mg/kg	2.1	0.10	0.03	< 0.03	< 0.03	< 0.03	< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	16	0.49	0.24	0.05	< 0.03	< 0.03	< 0.03
Anthracene	DETSC 3303	0.03	mg/kg	5.3	0.18	0.07	< 0.03	< 0.03	< 0.03	< 0.03
Fluoranthene	DETSC 3303#	0.03	mg/kg	20	0.87	0.57	0.10	< 0.03	0.03	0.05
Pyrene	DETSC 3303#	0.03	mg/kg	17	0.77	0.60	0.10	< 0.03	0.03	0.05
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	8.2	0.33	0.27	0.05	< 0.03	< 0.03	< 0.03
Chrysene	DETSC 3303	0.03	mg/kg	8.0	0.30	0.35	0.07	< 0.03	< 0.03	< 0.03
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	9.7	0.36	0.47	0.09	< 0.03	< 0.03	< 0.03
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	3.8	0.11	0.14	< 0.03	< 0.03	< 0.03	< 0.03
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	8.9	0.24	0.33	0.06	< 0.03	< 0.03	< 0.03
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	4.0	0.10	0.16	< 0.03	< 0.03	< 0.03	< 0.03
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	1.0	< 0.03	0.04	< 0.03	< 0.03	< 0.03	< 0.03
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	4.8	0.12	0.25	0.04	< 0.03	< 0.03	< 0.03
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	110	4.1	3.6	0.56	< 0.10	< 0.10	0.11
Phenols										
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	0.9	< 0.3	< 0.3	< 0.3	0.3	< 0.3

Summary of Chemical Analysis

Soil Samples

Our Ref 23-27646

Client Ref J23254

Contract Title Prestwich Village

Lab No	2267203	2267204	2267205	2267206
Sample ID	BH17	TP02	TP03	TP04
Depth	0.40	0.50	0.80	0.70
Other ID				
Sample Type	SOIL	SOIL	SOIL	SOIL
Sampling Date	16/11/2023	15/11/2023	15/11/2023	15/11/2023
Sampling Time	n/s	n/s	n/s	n/s

Test	Method	LOD	Units				
Preparation							
Stones Removed	DETSC 1003*	0	%	0.0	0.0	0.0	0.0
Moisture Content 30°C	DETSC 1004*	0.1	%	12	7.1	13	11
Metals							
Arsenic	DETSC 2301#	0.2	mg/kg	6.3	3.8	13	13
Cadmium	DETSC 2301#	0.1	mg/kg	< 0.1	< 0.1	< 0.1	0.2
Chromium	DETSC 2301#	0.15	mg/kg	16	6.4	10	17
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	17	11	35	35
Lead	DETSC 2301#	0.3	mg/kg	11	6.5	99	99
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	< 0.05	0.26	0.15
Nickel	DETSC 2301#	1	mg/kg	14	7.8	12	16
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Zinc	DETSC 2301#	1	mg/kg	39	24	39	56
Inorganics							
pH	DETSC 2008#		pH	8.2	9.1	6.9	9.2
Cyanide, Total	DETSC 2130#	0.1	mg/kg	< 0.1	< 0.1	0.3	< 0.1
Total Organic Carbon	DETSC 2002	0.1	%	1.2	0.3	0.3	0.9
Chloride Aqueous Extract (2:1)	DETSC 2055	1	mg/l	23	20	19	15
Sulphate Aqueous Extract as SO ₄ (2:1)	DETSC 2076#	10	mg/l	34	53	48	94
Sulphide	DETSC 2024*	10	mg/kg	55	51	20	51
Sulphate as SO ₄ , Total	DETSC 2321#	0.01	%	0.03	0.02	0.04	0.08
Petroleum Hydrocarbons							
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	0.08			
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	0.26			
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	0.11			
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5			
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	12			
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	42			
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	140			
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	200			
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01			
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01			
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01			
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	2.5			
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	18			
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	66			
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	360			
Aromatic C5-C35	DETSC 3072*	10	mg/kg	440			
TPH Ali/Aro Total C5-C35	DETSC 3072*	10	mg/kg	640			
VPH (C8-C10)	DETSC 3321*	0.1	mg/kg	< 0.1	< 0.1	0.1	< 0.1
EPH (C10-C12)	DETSC 3311	10	mg/kg	< 10	< 10	< 10	< 10

Summary of Chemical Analysis

Soil Samples

Our Ref 23-27646

Client Ref J23254

Contract Title Prestwich Village

Lab No	2267203	2267204	2267205	2267206
Sample ID	BH17	TP02	TP03	TP04
Depth	0.40	0.50	0.80	0.70
Other ID				
Sample Type	SOIL	SOIL	SOIL	SOIL
Sampling Date	16/11/2023	15/11/2023	15/11/2023	15/11/2023
Sampling Time	n/s	n/s	n/s	n/s

Test	Method	LOD	Units				
EPH (C12-C16)	DETSC 3311	10	mg/kg	25	< 10	< 10	< 10
EPH (C16-C21)	DETSC 3311	10	mg/kg	120	< 10	17	37
EPH (C21-C35)	DETSC 3311	10	mg/kg	640	230	36	120
TPH (C8-C40)	DETSC 3311*	10	mg/kg	1000	340	55	180
PAHs							
Naphthalene	DETSC 3303#	0.03	mg/kg	0.06	< 0.03	0.04	0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg	0.31	< 0.03	< 0.03	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	0.08	< 0.03	0.05	0.07
Fluorene	DETSC 3303	0.03	mg/kg	0.24	< 0.03	< 0.03	0.04
Phenanthrene	DETSC 3303#	0.03	mg/kg	1.5	< 0.03	0.50	0.67
Anthracene	DETSC 3303	0.03	mg/kg	0.56	< 0.03	0.10	0.14
Fluoranthene	DETSC 3303#	0.03	mg/kg	2.5	< 0.03	0.98	1.5
Pyrene	DETSC 3303#	0.03	mg/kg	2.1	< 0.03	0.93	1.4
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	0.99	< 0.03	0.32	0.54
Chrysene	DETSC 3303	0.03	mg/kg	1.0	< 0.03	0.36	0.54
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	1.4	< 0.03	0.37	0.67
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	0.43	< 0.03	0.11	0.22
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	1.3	< 0.03	0.24	0.51
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	0.57	< 0.03	0.09	0.19
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	0.14	< 0.03	< 0.03	0.05
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	0.74	< 0.03	0.10	0.22
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	14	< 0.10	4.2	6.8
Phenols							
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3

Summary of Asbestos Analysis Soil Samples

Our Ref 23-27646

Client Ref J23254

Contract Title Prestwich Village

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
2267196	BH4 0.30	SOIL	NAD	none	Ben Rose
2267197	BH08A 0.50	SOIL	Chrysotile	Chrysotile present as fibre bundles	Ben Rose
2267198	BH09 1.00	SOIL	NAD	none	Ben Rose
2267199	BH11 0.50	SOIL	NAD	none	Ben Rose
2267200	BH13 1.50	SOIL	NAD	none	Ben Rose
2267201	BH14 0.60	SOIL	NAD	none	Ben Rose
2267202	BH15 1.40	SOIL	NAD	none	Ben Rose
2267203	BH17 0.40	SOIL	NAD	none	Ben Rose
2267205	TP03 0.80	SOIL	NAD	none	Ben Rose
2267206	TP04 0.70	SOIL	NAD	none	Ben Rose

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * -not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 23-27646
Client Ref J23254
Contract Prestwich Village

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
2267196	BH4 0.30 SOIL	13/11/23	GJ 250ml, PT 1L	pH + Conductivity (7 days)	BTEX / C5-C10
2267197	BH08A 0.50 SOIL	17/11/23	GJ 250ml, PT 1L		BTEX / C5-C10
2267198	BH09 1.00 SOIL	17/11/23	GJ 250ml, PT 1L		BTEX / C5-C10
2267199	BH11 0.50 SOIL	16/11/23	GJ 250ml, PT 1L		BTEX / C5-C10
2267200	BH13 1.50 SOIL	16/11/23	GJ 250ml, PT 1L		BTEX / C5-C10
2267201	BH14 0.60 SOIL	16/11/23	GJ 250ml, PT 1L		BTEX / C5-C10
2267202	BH15 1.40 SOIL	15/11/23	GJ 250ml, PT 1L	pH + Conductivity (7 days)	BTEX / C5-C10
2267203	BH17 0.40 SOIL	16/11/23	GJ 250ml, PT 1L		BTEX / C5-C10
2267204	TP02 0.50 SOIL	15/11/23	GJ 250ml, PT 1L	pH + Conductivity (7 days)	BTEX / C5-C10
2267205	TP03 0.80 SOIL	15/11/23	GJ 250ml, PT 1L	pH + Conductivity (7 days)	BTEX / C5-C10
2267206	TP04 0.70 SOIL	15/11/23	GJ 250ml, PT 1L	pH + Conductivity (7 days)	BTEX / C5-C10

Key: G-Glass P-Plastic J-Jar T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 2002	Organic matter	%	0.1	Air Dried	No	Yes	Yes
DETSC 2003	Loss on ignition	%	0.01	Air Dried	No	Yes	Yes
DETSC 2008	pH	pH Units	1	Air Dried	No	Yes	Yes
DETSC 2076	Sulphate Aqueous Extract as SO ₄	mg/l	10	Air Dried	No	Yes	Yes
DETSC 2084	Total Organic Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2119	Ammoniacal Nitrogen as N	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide free	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide total	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Phenol - Monohydric	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC 2130	Thiocyanate	mg/kg	0.6	Air Dried	No	Yes	Yes
DETSC 2301	Arsenic	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC 2301	Barium	mg/kg	1.5	Air Dried	No	Yes	Yes
DETSC 2301	Beryllium	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC 2301	Cadmium Available	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2301	Cadmium	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2301	Cobalt	mg/kg	0.7	Air Dried	No	Yes	Yes
DETSC 2301	Chromium	mg/kg	0.15	Air Dried	No	Yes	Yes
DETSC 2301	Copper	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC 2301	Manganese	mg/kg	20	Air Dried	No	Yes	Yes
DETSC 2301	Molybdenum	mg/kg	0.4	Air Dried	No	Yes	Yes
DETSC 2301	Nickel	mg/kg	1	Air Dried	No	Yes	Yes
DETSC 2301	Lead	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC 2301	Selenium	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC 2301	Zinc	mg/kg	1	Air Dried	No	Yes	Yes
DETSC 2311	Boron (water soluble)	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC 2321	Total Sulphate as SO ₄	%	0.01	Air Dried	No	Yes	Yes
DETSC 2325	Mercury	mg/kg	0.05	Air Dried	No	Yes	Yes
DETSC 3049	Sulphur (free)	mg/kg	0.75	As Received	No	Yes	Yes
DETSC 3072	Ali/Aro C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	1.2	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	0.9	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	0.5	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	0.6	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETSC 3303	Acenaphthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Acenaphthylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(b)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(k)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(g,h,i)perylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Dibenzo(a,h)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 3303	Indeno(1,2,3-c,d)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Naphthalene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Phenanthrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3311	C10-C24 Diesel Range Organics (DRO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	C24-C40 Lube Oil Range Organics (LORO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	EPH (C10-C40)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3321	Benzene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	Ethylbenzene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	Toluene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	m+p Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	o Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 28 + PCB 31	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 52	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 101	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 118	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 153	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 138	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 180	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB Total	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3521	Ali/Aro C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C10-C12	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C12-C16	mg/kg	1.2	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C16-C21	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3521	Aromatic C10-C12	mg/kg	0.9	As Received	No	Yes	Yes
DETSC 3521	Aromatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3521	Aromatic C12-C16	mg/kg	0.5	As Received	No	Yes	Yes
DETSC 3521	Aromatic C16-C21	mg/kg	0.6	As Received	No	Yes	Yes
DETSC 3521	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes

Method details are shown only for those determinands listed in Annex A of the MCERTS standard. Anything not included on this list falls outside the scope of MCERTS. No Recovery Factors are used in the determination of results. Results reported assume 100% recovery. Full method statements are available on request.

End of Report



Certificate of Analysis

Certificate Number 23-28512

Issued: 19-Dec-23

Client Geotechnical & Environmental Associates
Unit 1
Church Farm
Gotham Road
Nottingham
NG11 0DE

Our Reference 23-28512

Client Reference J23254

Order No J23254

Contract Title Prestwich Village

Description 2 Soil samples.

Date Received 04-Dec-23

Date Started 04-Dec-23

Date Completed 19-Dec-23

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By



Kirk Bridgewood
General Manager



Summary of Chemical Analysis

Matrix Descriptions

Our Ref 23-28512

Client Ref J23254

Contract Title Prestwich Village

Sample ID	Depth	Lab No	Completed	Matrix Description
BH1	4	2271784	19/12/2023	Dark brown slightly gravelly, sandy CLAY
BH1	5.3	2271785	19/12/2023	Dark brown slightly gravelly, sandy CLAY

Summary of Chemical Analysis

Soil Samples

Our Ref 23-28512

Client Ref J23254

Contract Title Prestwich Village

Lab No	2271784	2271785
Sample ID	BH1	BH1
Depth	4.00	5.30
Other ID		
Sample Type	SOIL	SOIL
Sampling Date	n/s	n/s
Sampling Time	n/s	n/s

Test	Method	LOD	Units		
Preparation					
Stones Removed	DETSC 1003*	0	%	0.0	0.0
Moisture Content 30°C	DETSC 1004*	0.1	%	15	20
Metals					
Arsenic	DETSC 2301#	0.2	mg/kg	3.2	5.4
Cadmium	DETSC 2301#	0.1	mg/kg	0.1	0.2
Chromium	DETSC 2301#	0.15	mg/kg	7.5	21
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	11	24
Lead	DETSC 2301#	0.3	mg/kg	5.3	10
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	< 0.05
Nickel	DETSC 2301#	1	mg/kg	9.2	28
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	0.6
Zinc	DETSC 2301#	1	mg/kg	30	71
Inorganics					
pH	DETSC 2008#		pH	8.4	7.6
Cyanide, Total	DETSC 2130#	0.1	mg/kg	< 0.1	< 0.1
Total Organic Carbon	DETSC 2002	0.1	%	0.6	1.0
Chloride Aqueous Extract (2:1)	DETSC 2055	1	mg/l	23	< 10.00
Sulphate Aqueous Extract as SO ₄ (2:1)	DETSC 2076#	10	mg/l	31	38
Sulphide	DETSC 2024*	10	mg/kg	32	39
Sulphate as SO ₄ , Total	DETSC 2321#	0.01	%	0.02	0.02
Petroleum Hydrocarbons					
VPH (C8-C10)	DETSC 3321*	0.1	mg/kg	0.2	< 0.1
EPH (C10-C12)	DETSC 3311	10	mg/kg	< 10	< 10
EPH (C12-C16)	DETSC 3311	10	mg/kg	< 10	< 10
EPH (C16-C21)	DETSC 3311	10	mg/kg	36	15
EPH (C21-C35)	DETSC 3311	10	mg/kg	57	17
TPH (C8-C40)	DETSC 3311*	10	mg/kg	110	36
PAHs					
Naphthalene	DETSC 3303#	0.03	mg/kg	0.32	0.04
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	0.59	0.05
Fluorene	DETSC 3303	0.03	mg/kg	0.50	0.04
Phenanthrene	DETSC 3303#	0.03	mg/kg	2.5	0.19
Anthracene	DETSC 3303	0.03	mg/kg	0.88	0.06
Fluoranthene	DETSC 3303#	0.03	mg/kg	2.5	0.19
Pyrene	DETSC 3303#	0.03	mg/kg	2.4	0.18
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	0.79	0.07
Chrysene	DETSC 3303	0.03	mg/kg	0.69	0.05
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	0.66	0.05
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	0.25	< 0.03
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	0.59	0.03

Summary of Chemical Analysis

Soil Samples

Our Ref 23-28512

Client Ref J23254

Contract Title Prestwich Village

Lab No	2271784	2271785
Sample ID	BH1	BH1
Depth	4.00	5.30
Other ID		
Sample Type	SOIL	SOIL
Sampling Date	n/s	n/s
Sampling Time	n/s	n/s

Test	Method	LOD	Units		
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	0.20	< 0.03
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	0.05	< 0.03
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	0.25	< 0.03
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	13	0.91
Phenols					
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3

Summary of Asbestos Analysis Soil Samples

Our Ref 23-28512

Client Ref J23254

Contract Title Prestwich Village

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
2271784	BH1 4.00	SOIL	NAD	none	Shannon Hope
2271785	BH1 5.30	SOIL	NAD	none	Shannon Hope

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 23-28512
 Client Ref J23254
 Contract Prestwich Village

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
2271784	BH1 4.00 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (30 days), BTEX / C5-C10 (14 days), Chromium, Hexavalent (365 days), Mercury (28 days), Total Sulphate ICP (30 days), Metals ICP (182 days), Metals ICP Prep (182 days), Kone Cr6 (30 days), Naphthalene (14 days), Organic Matter (Manual) (28 days), PAH MS (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (14 days), EPH/TPH (14 days)	BTEX / C5-C10, Naphthalene, PAH MS, EPH/TPH
2271785	BH1 5.30 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (30 days), BTEX / C5-C10 (14 days), Chromium, Hexavalent (365 days), Mercury (28 days), Total Sulphate ICP (30 days), Metals ICP (182 days), Metals ICP Prep (182 days), Kone Cr6 (30 days), Naphthalene (14 days), Organic Matter (Manual) (28 days), PAH MS (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (14 days), EPH/TPH (14 days)	BTEX / C5-C10, Naphthalene, PAH MS, EPH/TPH

Key: P-Plastic T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 2002	Organic matter	%	0.1	Air Dried	No	Yes	Yes
DETSC 2003	Loss on ignition	%	0.01	Air Dried	No	Yes	Yes
DETSC 2008	pH	pH Units	1	Air Dried	No	Yes	Yes
DETSC 2076	Sulphate Aqueous Extract as SO ₄	mg/l	10	Air Dried	No	Yes	Yes
DETSC 2084	Total Organic Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2119	Ammoniacal Nitrogen as N	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide free	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide total	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Phenol - Monohydric	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC 2130	Thiocyanate	mg/kg	0.6	Air Dried	No	Yes	Yes
DETSC 2301	Arsenic	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC 2301	Barium	mg/kg	1.5	Air Dried	No	Yes	Yes
DETSC 2301	Beryllium	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC 2301	Cadmium Available	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2301	Cadmium	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2301	Cobalt	mg/kg	0.7	Air Dried	No	Yes	Yes
DETSC 2301	Chromium	mg/kg	0.15	Air Dried	No	Yes	Yes
DETSC 2301	Copper	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC 2301	Manganese	mg/kg	20	Air Dried	No	Yes	Yes
DETSC 2301	Molybdenum	mg/kg	0.4	Air Dried	No	Yes	Yes
DETSC 2301	Nickel	mg/kg	1	Air Dried	No	Yes	Yes
DETSC 2301	Lead	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC 2301	Selenium	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC 2301	Zinc	mg/kg	1	Air Dried	No	Yes	Yes
DETSC 2311	Boron (water soluble)	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC 2321	Total Sulphate as SO ₄	%	0.01	Air Dried	No	Yes	Yes
DETSC 2325	Mercury	mg/kg	0.05	Air Dried	No	Yes	Yes
DETSC 3049	Sulphur (free)	mg/kg	0.75	As Received	No	Yes	Yes
DETSC 3072	Ali/Aro C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	1.2	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	0.9	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	0.5	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	0.6	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETSC 3303	Acenaphthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Acenaphthylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(b)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(k)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(g,h,i)perylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Dibenzo(a,h)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 3303	Indeno(1,2,3-c,d)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Naphthalene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Phenanthrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3311	C10-C24 Diesel Range Organics (DRO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	C24-C40 Lube Oil Range Organics (LORO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	EPH (C10-C40)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3321	Benzene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	Ethylbenzene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	Toluene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	m+p Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	o Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 28 + PCB 31	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 52	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 101	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 118	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 153	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 138	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 180	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB Total	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3521	Ali/Aro C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C10-C12	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C12-C16	mg/kg	1.2	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C16-C21	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3521	Aromatic C10-C12	mg/kg	0.9	As Received	No	Yes	Yes
DETSC 3521	Aromatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3521	Aromatic C12-C16	mg/kg	0.5	As Received	No	Yes	Yes
DETSC 3521	Aromatic C16-C21	mg/kg	0.6	As Received	No	Yes	Yes
DETSC 3521	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes

Method details are shown only for those determinands listed in Annex A of the MCERTS standard. Anything not included on this list falls outside the scope of MCERTS. No Recovery Factors are used in the determination of results. Results reported assume 100% recovery. Full method statements are available on request.

End of Report



Certificate of Analysis

Certificate Number 23-28740

Issued: 29-Dec-23

Client Geotechnical & Environmental Associates
Unit 1
Church Farm
Gotham Road
Nottingham
NG11 0DE

Our Reference 23-28740

Client Reference J213254

Order No J213254

Contract Title Prestwick Village, Prestwick

Description 2 Water samples.

Date Received 07-Dec-23

Date Started 07-Dec-23

Date Completed 29-Dec-23

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Kirk Bridgewood
General Manager



Summary of Chemical Analysis

Water Samples

Our Ref 23-28740

Client Ref J213254

Contract Title Prestwick Village, Prestwick

Lab No	2273038	2273039
Sample ID	BH02	BH05
Depth	4.01	3.35
Other ID		
Sample Type	WATER	WATER
Sampling Date	05/12/2023	05/12/2023
Sampling Time	n/s	n/s

Test	Method	LOD	Units		
Metals					
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	1.5	0.47
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	< 0.03	0.06
Chromium, Dissolved	DETSC 2306	0.25	ug/l	< 0.25	0.48
Chromium, Hexavalent	DETSC 2203	0.007	mg/l	< 0.007	< 0.007
Lead, Dissolved	DETSC 2306	0.09	ug/l	< 0.09	0.10
Mercury, Dissolved	DETSC 2306	0.01	ug/l	< 0.01	< 0.01
Nickel, Dissolved	DETSC 2306	0.5	ug/l	4.0	5.8
Inorganics					
Conductivity	DETSC 2009	1	uS/cm	541	694
pH	DETSC 2008		pH	6.7	6.7
Ammoniacal Nitrogen as N	DETSC 2207	0.015	mg/l	0.16	0.065
Chloride	DETSC 2055	0.1	mg/l	21	93
Nitrate as NO3	DETSC 2055	0.1	mg/l	0.31	0.45
Sulphate as SO4	DETSC 2055	0.1	mg/l	72	20
Sulphide	DETSC 2208	10	ug/l	< 10	< 10
Total Organic Carbon	DETSC 2085	1	mg/l	2.6	10
Petroleum Hydrocarbons					
EPH (C10-C40)	DETSC 3311	10	ug/l	440	< 30.0
PAHs					
Naphthalene	DETSC 3304	0.05	ug/l	0.31	< 0.50
Acenaphthylene	DETSC 3304	0.01	ug/l	0.07	< 0.10
Acenaphthene	DETSC 3304	0.01	ug/l	0.21	< 0.10
Fluorene	DETSC 3304	0.01	ug/l	0.17	< 0.10
Phenanthrene	DETSC 3304	0.01	ug/l	4.4	0.29
Anthracene	DETSC 3304	0.01	ug/l	0.39	< 0.10
Fluoranthene	DETSC 3304	0.01	ug/l	5.9	0.21
Pyrene	DETSC 3304	0.01	ug/l	3.4	0.20
Benzo(a)anthracene	DETSC 3304*	0.01	ug/l	1.1	< 0.10
Chrysene	DETSC 3304	0.01	ug/l	4.4	< 0.10
Benzo(b)fluoranthene	DETSC 3304	0.01	ug/l	4.8	< 0.10
Benzo(k)fluoranthene	DETSC 3304	0.01	ug/l	0.69	< 0.10
Benzo(a)pyrene	DETSC 3304	0.01	ug/l	5.1	< 0.10
Indeno(1,2,3-c,d)pyrene	DETSC 3304	0.01	ug/l	4.0	< 0.10
Dibenzo(a,h)anthracene	DETSC 3304	0.01	ug/l	0.27	< 0.10
Benzo(g,h,i)perylene	DETSC 3304	0.01	ug/l	4.2	< 0.10
PAH Total	DETSC 3304	0.2	ug/l	39	< 2.00
Phenols					
Total Phenol	DETSC 3451*	0.5	ug/l	< 0.50	< 0.50

Information in Support of the Analytical Results

Our Ref 23-28740

Client Ref J213254

Contract Prestwick Village, Prestwick

Containers Received & Deviating Samples

Lab No	Sample ID	Date		Containers Received	Holding time exceeded for tests	Inappropriate container for tests
		Sampled				
2273038	BH02 4.01 WATER	05/12/23		GB 1L, GV x2	pH/Cond (1 days)	
2273039	BH05 3.35 WATER	05/12/23		GB 1L, GV x2	pH/Cond (1 days)	

Key: G-Glass B-Bottle V-Vial

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

End of Report



Certificate of Analysis

Certificate Number 23-29425

Issued: 19-Dec-23

Client Geotechnical & Environmental Associates
Unit 1
Church Farm
Gotham Road
Nottingham
NG11 0DE

Our Reference 23-29425

Client Reference J23254

Order No J23254

Contract Title Prestwich Village

Description One Soil sample.

Date Received 23-Nov-23

Date Started 14-Dec-23

Date Completed 19-Dec-23

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Kirk Bridgewood
General Manager



2139

Summary of Asbestos Analysis Samples

Our Ref 23-29425

Client Ref J23254

Contract Title Prestwich Village

Lab No	Sample ID	Sample Location	Material Type	Result	Comment*	Analyst
Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * -not included in laboratory scope of accreditation.						

Summary of Asbestos Quantification Analysis

Soil Samples

Our Ref 23-29425

Client Ref J23254

Contract Title Prestwich Village

Lab No	06	2276806
Sample ID		BH08A
Depth		0.50
Other ID		
Sample Type		
Sampling Date		17/11/2023
Sampling Time		

Test	Method	Units		
Total Mass% Asbestos (a+b+c)	DETSC 1102	Mass %		< 0.001
Gravimetric Quantification (a)	DETSC 1102	Mass %		na
Detailed Gravimetric Quantification (b)	DETSC 1102	Mass %		<0.001
Quantification by PCOM (c)	DETSC 1102	Mass %		na
Potentially Respirable Fibres (d)	DETSC 1102	Fibres/g		na
Breakdown of Gravimetric Analysis (a)				
Mass of Sample		g		1038.68
ACMs present*		type		
Mass of ACM in sample		g		
% ACM by mass		%		
% asbestos in ACM		%		
% asbestos in sample		%		
Breakdown of Detailed Gravimetric Analysis (b)				
% Amphibole bundles in sample		Mass %		na
% Chrysotile bundles in sample		Mass %		<0.001
Breakdown of PCOM Analysis (c)				
% Amphibole fibres in sample		Mass %		na
% Chrysotile fibres in sample		Mass %		na
Breakdown of Potentially Respirable Fibre Analysis (d)				
Amphibole fibres		Fibres/g		na
Chrysotile fibres		Fibres/g		na

* Denotes test or material description outside of UKAS accreditation.
 % asbestos in Asbestos Containing Materials (ACMs) is determined by
 by reference to HSG 264.
 Recommended sample size for quantification is approximately 1kg
 # denotes deviating sample

Information in Support of the Analytical Results

Our Ref 23-29425
Client Ref J23254
Contract Prestwich Village

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	holding time	inappropriate
				exceeded for	container for
				tests	tests
2276806	BH08A 0.50 SOIL	17/11/23	GJ 250ml, PT 1L		

Key: G-Glass P-Plastic J-Jar T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-
Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

End of Report

		Geotechnical & Environmental Associates www.gea-ltd.co.uk		Generic Risk-Based Soil Screening Values	
Site	Prestwich Village, Prestwich, Manchester, M25 1AY				Job Number J23254
Client	The Prestwich Regeneration LLP				Sheet 1 / 2
Engineer	Civic Engineers				
Proposed End Use Residential without plant uptake					
Soil Organic Matter content % 6.0					
Contaminant			Screening Value mg/kg	Data Source	
Metals					
Arsenic	40	C4SL			
Cadmium	149	C4SL			
Chromium (III)	910	S4UL			
Chromium (VI)	21	C4SL			
Copper	7,100	S4UL			
Lead	310	C4SL			
Elemental Mercury	1.2	S4UL			
Inorganic Mercury	56	S4UL			
Nickel	180	S4UL			
Selenium	595	SGV			
Zinc	40,000	S4UL			
Anions					
Soluble Sulphate	500 mg/l	Structures			
Sulphide	50	Structures			
Chloride	400	Structures			
Others					
Organic Carbon (%)	6	Methanogenic potential			
Total Cyanide	140	WRAS			
Total Mono Phenols	520	SGV			
PAH					
Naphthalene	13.10	S4UL			
Acenaphthylene	6,000	S4UL			
Acenaphthene	6,000	S4UL			
Fluorene	4,500	S4UL			
Phenanthrene	1,500	S4UL			
Anthracene	37,000	S4UL			
Fluoranthene	1,600	S4UL			
Pyrene	3,800	S4UL			
Benzo(a)anthracene	15.0	S4UL			
Chrysene	32	S4UL			
Benzo(b)fluoranthene	4.0	S4UL			
Benzo(k)fluoranthene	110.0	S4UL			
Benzo(a)pyrene	5.30	C4SL			
Indeno(1 2 3 cd)pyrene	46.0	S4UL			
Dibenz(a h)anthracene	0.32	S4UL			
Benzo (g h i)perylene	360	S4UL			
Total PAH Screen	75.7	B(a)P / 0.15			
Notes					
Concentrations measured below these screening values may be considered to represent 'uncontaminated conditions' which pose a 'LOW' risk to human health. Concentrations measured in excess of these values indicate a potential risk which require further, site specific risk assessment.					
C4SL - Defra Category 4 Screening value based on Low Level of Toxicological Risk					
SGV - Soil Guideline Value, derived from the CLEA model and published by Environment Agency 2009 - where not superseded by C4SL					
S4UL - LQM/CIEH Suitable for use Level (2015) based on 'minimal' level of risk					
Calc1 - sum of thresholds for Ali & Aro fractions - assuming a 35% Aro:65% Ali ratio as is commonly encountered in the soil					
Calc2 - sum of nearest available carbon range specified including BTEX for PRO fraction					
Total PAH based on B(a)P / 0.15 - GEA experience indicates that Benzo(a) pyrene rarely exceeds 15% of the total PAH concentration					

Contaminant		Screening Value mg/kg	Data Source
Hydrocarbons			
Banded TPH (8-10)		415	Calc1
Banded TPH (10-12)		1846	Calc1
Banded TPH (12-16)		3846	Calc1
Banded TPH (16-21)		2923	Calc1
Banded TPH (21-35)		2923	Calc1
Benzene		3.3	C4SL
Toluene		610	SGV
Ethyl Benzene		350	SGV
Xylene		230	SGV
Aliphatic C5-C6		160	S4UL
Aliphatic C6-C8		530	S4UL
Aliphatic C8-C10		150	S4UL
Aliphatic C10-C12		770	S4UL
Aliphatic C12-C16		4400	S4UL
Aliphatic C16-C35		110,000	S4UL
Aromatic C6-C7		See Benzene	S4UL
Aromatic C7-C8		See Toluene	S4UL
Aromatic C8-C10		270	S4UL
Aromatic C10-C12		1200	S4UL
Aromatic C12-C16		2500	S4UL
Aromatic C16-C21		1900	S4UL
Aromatic C21-C35		1900	S4UL
PRO (C ₅ –C ₁₀)		1723	Calc2
DRO (C ₁₂ –C ₂₈)		118,800	Calc2
Lube Oil (C ₂₈ –C ₄₄)		111,900	Calc2
TPH		500	Trigger to consider speciated testing
Chlorinated Solvents			
1,1,1 trichloroethane (TCA)		40	S4UL
tetrachloroethane (PCA)		8.2	S4UL
tetrachloroethene (PCE)		1.6	C4SL
trichloroethene (TCE)		0.045	C4SL
1,2-dichloroethane (DCA)		0.41	C4SL
vinyl chloride (Chloroethene)		0.029	C4SL
tetrachloromethane (Carbon tetra		0.13	S4UL
trichloromethane (Chloroform)		4.2	S4UL



GEA

Geotechnical & Environmental Associates

www.gea-ltd.co.uk

**Generic Risk-Based Soil
Screening Values**

Site Prestwich Village, Prestwich, Manchester, M25 1AY

Client The Prestwich Regeneration LLP

Engineer Civic Engineers

Job Number
J23254

Sheet
2 / 2

Proposed End Use **Residential without plant uptake**

The key generic assumptions for this end use are as follows;

- ☐ that groundwater will not be a critical risk receptor;
- ☐ that the critical receptor for human health will be a young female aged 0 to 6 years old;
- ☐ that the exposure duration will be six years;
- ☐ that the building type equates to a terraced house.
- ☐ that the critical exposure pathways will be direct soil and indoor dust ingestion, skin contact with soils and dust, and inhalation of dust and vapours;

Where contaminant concentrations are measured at concentrations below the generic screening value it is considered that they pose an acceptable level of risk and thus further consideration of these contaminant concentrations is not required. However, where concentrations are measured in excess of the generic screening value there is considered to be a potential that they could pose an unacceptable risk and thus further action will be required which could include:

- ☐ additional testing to zone the extent of the contaminated material and thus reduce the uncertainty with regard to its potential risk;
- ☐ site specific risk assessment to refine the assessment criteria and allow an assessment to be made as to whether the concentration present would pose an unacceptable risk at this site; or
- ☐ soil remediation or risk management to mitigate the risk posed by the contaminant to a degree that it poses an acceptable risk.



GEA

Widbury Barn
Widbury Hill
Ware
Herts SG12 7QE**Tier 1 Groundwater
Screening Values****Site** Prestwich Village, Prestwich, Manchester, M25 1AY**Client** The Prestwich Regeneration LLP**Engineer** Civic Engineers**Job Number**
J23254**Sheet**
1 / 1

Contaminant	Screening Value µg/l	Rationale
Metals		
Arsenic	50	EQS
Boron	1,000	DWS
Cadmium	5	DWS
Chromium	50	DWS
Copper	60	EQS
Iron	200	DWS
Lead	10	DWS
Mercury	1	DWS
Nickel	20	DWS/EQS
Zinc	75	EQS
Anions		
Ammonium (NH ₄)	500	DWS
Bromate (BrO ₃)	10	DWS
Chloride	250,000	DWS
Fluoride	1,500	DWS
Nitrate	50,000	DWS
Sulphate	250,000	DWS
Hydrocarbons		
Benzene	10	CL:AIRE
Toluene	75	CL:AIRE
Ethyl Benzene	300	CL:AIRE
Xylene	30	CL:AIRE
Aliphatic C5-C6	15,000	CL:AIRE
Aliphatic C6-C8	5,400	Solubility limit
Aliphatic C8-C10	300	CL:AIRE
Aliphatic C10-C12	34	Solubility Limit
Aliphatic C12-C16	0.8	Solubility Limit
Aliphatic C16-C21	0.0013	Solubility Limit
Aliphatic C21-C35	0.0013	Solubility Limit
Aromatic C6-C7	10	See Benzene
Aromatic C7-C8	75	See Toluene
Aromatic C8-C10	500	CL:AIRE
Aromatic C10-C12	90	CL:AIRE
Aromatic C12-C16	90	CL:AIRE
Aromatic C16-C21	90	CL:AIRE
Aromatic C21-C35	90	CL:AIRE

Contaminant	Guideline Value µg/l	Data Source
Others		
Cyanide	50	DWS
Total Mono Phenols	10	EQS
Pentachlorophenol	0.4	EQS
Organochlorine pesticides	0.03	DWS
Other Pesticides	0.075	DWS
Total pesticides	0.5	DWS
Tributyltin	0.0015	EQS
pH	<6.5, >9.5	DWS
Electrical conductivity (µS/cm)	2,500	DWS
PAH		
Naphthalene	2.40	EQS
Anthracene	0.10	EQS
Fluoranthene	0.10	EQS
Benzo(b)fluoranthene	0.08	EQS
Benzo(g,h,i)perylene	0.002	Sum of both EQS
Indeno(1,2,3-cd)pyrene		
Benzo(a) pyrene	0.01	DWS
Total PAH	0.1	DWS
Chlorinated Solvents		
Trichloromethane (chloroform)	2.5	EQS
Tetrachloromethane (CCl ₄)	3	DWS
vinyl chloride (Chloroethene)	0.5	DWS
Cis 1,2-dichloroethene (DCE)	10	GEA
trichloroethene (TCE)	10	DWS/EQS
tetrachloroethene (PCE)	10	DWS/EQS
1,2-dichloroethane (DCA)	3	DWS
1,1,1 trichloroethane (TCA)	100	EQS
1,1,2 trichloroethane (TCA)	400	EQS

Notes

Concentrations measured above these screening values may indicate groundwater contamination and thus require further, site specific risk assessment.

DWS - Based on United Kingdom Drinking Water Standard - Drinking Water Inspectorate & Health Protection Agency, 2009

EQS - Generally based around Environmental Quality Standards for the longterm mean in Freshwater -Environment Agency, Dec 2011

WHO - Based on World Health Organisation, Guidelines for Drinking-water Quality, 2010

CL:AIRE - Based on recommendation in Petroleum Hydrocarbons in Groundwater 2017 using largely WHO data

GEA - estimation based on EQS for similar compounds

Solubility Limit - screening value set at the published solubility limit where other published threshold values exceed this concentration



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