

**GROUND INVESTIGATION
AT MACHAM STREET
HUDDERSFIELD**

**FOR
MADNI JAMIA MASJID**

**REPORT NO. NE3146C
NOVEMBER 2012**

**ENGINEER: AMANAH STUDIO
178 HEADFIELD ROAD
DEWSBURY
WF12 9JH**

**SUB SURFACE NORTH EAST LIMITED
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GROUND INVESTIGATION AT MACHAM STREET, HUDDERSFIELD**CLIENT: MADNI JAMIA MASJID****ENGINEER: AMANAH STUDIO**

1. INTRODUCTION

This report has been prepared in accordance with a letter of instruction, dated 26th June 2012, from the Client.

The brief was set out in our estimate, ref. E4493/b dated 15th June 2012, with amendments as the investigation proceeded and includes:

- Two cable percussive boreholes
- Five trial pits
- Geotechnical laboratory testing
- Chemical contamination analysis
- Installation of standpipes followed by groundwater and ground gas monitoring
- Provision of an interpretative report on the above.

It should be noted that we have previously issued a Walkover Survey and Desk Study Report for this site, ref. NE3146 dated August 2012, which should be read in conjunction with this report.

1.1 Site Location and Description

The site is located to the rear of 178 to 186 Lockwood Road, bound to the south by properties fronting onto Mount Pleasant and the north by a Mosque on Macham Street, as indicated on Figures 1 and 2. The approximate National Grid Reference of the centre of the site is SE138155.

The site is a generally flat car park with some garage lock ups, and the bases of many demolished garage lock ups.

1.2 Proposed Development and Purpose of the Investigation

We understand that it is proposed to develop the site with a new mosque and associated parking.

The purpose of the investigation was to obtain an indication of the ground conditions, at the positions of the exploratory holes, to assess the likelihood of a general pattern of strata being present below the site and to establish the load bearing characteristics of the strata deriving if possible an assessment of the suitability of appropriate founding techniques.

In addition, a preliminary contamination assessment was required in order to determine necessary precautions and/or remedial measures required for the proposed development and to ascertain the need for any further sampling and analysis.

Ground gas monitoring and assessment was also required to determine necessary precautions and/or remedial measures.

2. INVESTIGATION

2.1 Investigation Details

Two 150mm diameter boreholes were put down by cable percussive boring techniques at the positions determined and set out by the Clients Engineer, as shown on Figure 2. The boreholes were put down to depths of between 4.70 and 4.0 metres. The samples taken were logged in accordance with BS. EN. 14688 and 14689: 2002-2004 and the resulting Borehole Records are appended.

Five trial pits were taken out by a mechanical excavator at the positions determined and set out by the Clients Engineer, as shown on Figure 2. The trial pits were excavated to depths of between 0.90 and 3.0 metres, representative samples were taken and the materials were logged in accordance with BS. EN. 14688 and 14689: 2002-2004. The resulting Trial Pit Records are appended.

The trial pits were backfilled with arisings on completion with only nominal compaction being given by the excavator and it is therefore likely that loose or soft pockets will still remain.

2.2 Sub Surface Detail

Details of the strata encountered in the ground investigation are given on the appended exploratory hole records. The exploratory holes found made ground overlying natural drift then bedrock. The depths of strata found was as follows:

TABLE 1 STRATA

Expl. Hole No.	Depth of Made Ground (m)	Depth of CLAY (m)	Depth of SAND/ GRAVEL (m)	Depth of PEAT (m)	Depth of SANDSTONE (m)	Depth of Hole (m)
BH1	2.30	3.50	4.30	2.30	4.70	4.70
BH2	1.40	3.00	3.80		4.00	4.00
TP1	0.30	1.80			2.10	2.10
TP2	0.60	1.10	2.10		2.30	2.30
TP3	0.20	2.10	3.00			3.00
TP4	0.40	2.10	3.00			3.00
TP5	0.40	0.90				0.90

BH = Borehole, TP = Trial Pit

A general summary of the strata found is as follows:

2.2.1 Made Ground

Made ground is described as a dark brown sand sized ash, topsoil and fine gravel sized clinker, occasionally with gravel of concrete. TP1 encountered a concrete garage base initially and BH1 encountered deeper made ground described as very gravelly sandy silty clay.

2.2.2 Drift Deposits

Drift deposits were encountered in all exploratory holes and comprised a very soft to firm clay overlying a granular sand and gravel layer in BH1, BH2, TP2 and TP4. Peat was encountered underlying the soft clay in TP3

2.2.3 Bedrock

Sandstone bedrock was encountered in BH1, 2 and TP1 and 2 and was recovered as a weak to very weak medium grained sandstone.

2.2.4 Groundwater

A summary of groundwater entries and levels are tabulated below:

TABLE 2 GROUNDWATER

Expl. Hole No.	Water Entry Depth (m)	Rate of Inflow	Depth Sealed (m)	Depth of Standing Water Level (m)
BH1	3.50	Medium	4.20	3.30* 2.70 2.98 3.10
BH2	3.00	Slow	3.50	2.90* 2.45 2.92 3.00
TP1	NR	NR	NR	NR
TP2	2.10	V slow	NS	NR
TP3	2.30	Fast	NS	NR
TP4	3.00	V Slow	NS	NR
TP5	NR	NR	NR	NR

* after 20 minutes,
NS = Not Sealed
NR = Not Recorded

groundwater levels and rates of inflow may be subject to seasonal variations.

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3. SAMPLING, TESTING AND MONITORING

3.1 Sampling

One 100mm diameter undisturbed sample was taken in cohesive strata, for testing in the laboratory.

Small disturbed and bulk disturbed samples were obtained for the strata encountered and were subjected to careful examination and hand penetrometer / hand shear vane tests, where appropriate.

The samples will be retained for a period of one month after the issue of this report, for reference purposes, and then disposed of unless otherwise instructed.

3.2 Field Testing

Thirteen hand shear vane were undertaken in the trial pits and the results are given on the appended trial pit records.

Nine Standard Penetration Tests (SPTs) were performed in the boreholes, the results of which are recorded on the appended standard penetration test results sheet with 'N' values and indicative states of compaction and consistency, where appropriate, given on the borehole records.

On completion of TP1 soakaway tests were undertaken. Water was added to the pits from a bowser and water levels were subsequently monitored over a period of 80 and 100 mins. Details of the pits and the results of the soakaway tests are appended.

3.3 Installations and Monitoring

On completion of BH1 and BH2 hdpe standpipes were installed to depths of 4.50 and 4.00 metres respectively. The standpipes are slotted from 1.0 metres depth, have an internal diameter of 50mm and have removable quick release gas valves to enable both ground gas and groundwater monitoring and sampling to be undertaken. Details of the installations are given on the borehole records.

Monitoring of the standpipes for ground gas and groundwater has been undertaken on six scheduled occasions to date using portable equipment. A GMI Landsurveyor II was used for monitoring methane, carbon dioxide, oxygen and atmospheric pressure with a separate monitor for gas flow. The results of the monitoring are given on the appended ground gas and groundwater monitoring results sheet.

3.4 Laboratory Testing

The following laboratory tests were carried out in accordance with BS.1377: 1990, where applicable, and the results are appended.

- Moisture content, plastic limit and liquid limit tests
- Quick undrained triaxial tests
- Particle size distribution by wet sieve analysis
- California bearing ratio tests on samples remoulded at natural moisture content
- Soluble sulphate content and pH value tests

Contamination analyses have been performed on five soil samples to determine: pH and concentrations of sulphate, sulphide, cyanide, arsenic, boron (soluble), cadmium, chromium, hexavalent chromium, copper, lead, mercury, nickel, selenium, zinc, speciated total petroleum hydrocarbons (TPHs), the speciated polynuclear aromatic hydrocarbons (PAHs) suite, the benzene/ ethylbenzene/ toluene/ xylene (BTEX) suite and phenols. In addition, two soil samples were subjected to the Total Petroleum Hydrocarbon Criteria Working Group (TPH CWG) suite of analysis. In addition asbestos testing has been carried out on four soil samples.

A single leachate sample has been prepared in accordance with the Environment Agency protocol and contamination analyses have been performed to determine: pH and concentrations of sulphate, sulphide, cyanide, arsenic, boron (soluble), cadmium, chromium, hexavalent chromium, copper, lead, mercury, nickel, selenium, zinc, speciated total petroleum hydrocarbons (TPHs), the speciated polynuclear aromatic hydrocarbons (PAHs) suite, the benzene/ ethylbenzene/ toluene/ xylene (BTEX) suite and phenols.

The results of the above analyses are appended.

4. APPRAISAL AND RECOMMENDATIONS

4.1 Comments on the Profile

At the outset it should be appreciated that only a small proportion of the area to be developed has been sampled and consequently the recommendations made and opinions expressed in this report can only be applied to such conditions as were encountered in the exploratory holes. Whilst the exploratory holes indicate a general type of strata over the area they should not be interpolated or extrapolated to represent the ground conditions in adjacent areas.

Due to the nature of Made Ground localised variations in thickness and composition should be anticipated and hence interpolation or extrapolation from the exploratory holes to adjoining areas should not be undertaken.

Details of the findings of the investigation are given on the appended exploratory hole records and a summary of the ground conditions is given in Section 2.2.

4.2 Foundations

At the outset it should be noted that a coal mining risk assessment was recommended in our desk study report number NE3146, dated August 2012. Any recommendations and advice provided below is based on the assumption that the mining risk is negligible. We would therefore recommend that the risk assessment is carried out immediately as if a risk is indicated, then the foundation recommendations provided below will have to be revised.

We understand that it is proposed to construct a new Mosque with associated parking. However, at the time of writing this report no specific details regarding the building layout and design loadings were available and consequently the recommendations given are in general terms only.

The ground investigation found made ground overlying variable drift deposits then sandstone bedrock.

We would not recommend founding in the Made Ground in its present condition because of its inherent variability in consistency and compaction, and in parts the nature of its constituents.

Atterberg limit tests on the cohesive natural soils indicate clay and silt of intermediate to high plasticity which are considered to have a low to medium susceptibility to shrinkage and swelling with varying moisture content. Consequently we recommend that any shallow foundations are placed at a minimum depth of 0.90 metres below finished ground level to avoid the zone which is subject to seasonal moisture content variation and frost action. If buildings are to be constructed adjacent to existing trees, trees are to be removed and/or trees are to be planted then the guidelines given in the National House Building Council (NHBC) Standards Chapter 4.2, 'Building near Trees', should be followed for soils of medium shrinkage and swelling potential.

Given the variable nature of the overlying drift strata encountered, high water table and the anecdotal evidence of the presence of an old river bed, we would recommend piling to rockhead to ensure a safe foundation solution.

With regard to the choice of pile type, consideration could be given to driven piles, continuous flight auger (CFA) piles or cast in-situ bored piles with the driven pile option probably being the most economical. However, in considering piles driven to a pre-determined set in the more competent strata at depth, it is essential to ensure that any vibrations set up during the driving process are not transmitted to adjacent/ nearby buildings, structures or services. This is because adjacent/ nearby buildings, structures or services could well be founded at shallow depth and already be in a highly stressed state and susceptible to structural damage as a direct result of such induced vibration. Consequently, we recommend that any Specialist Piling Contractor tendering in respect of driven piles should be asked to confirm that the process to be adopted will not affect or cause damage to adjacent/ nearby buildings, structures or services. If such confirmation cannot be given then we would recommend using either CFA or cast in-situ bored piles.

Care must be taken to space the piles in any group to ensure the adequate utilisation of skin friction where this has been assumed in the calculation of the load bearing capacity of an individual pile. Checks must also be undertaken to confirm that the underlying ground supporting the pile group is not overstressed.

In determining the final pile design it should be noted that up to 2.30 metres of the pile is in made ground and soft strata and due regard should be paid to the lack of lateral restraint over this length in cases where significant lateral forces are to be catered for.

For this particular site, given the potential infilled river bed, variable depth to rockhead, high water table and overlying soft strata, we would recommend that any piling only considers end bearing as follows:

Preliminary Pile Design based on end bearing in sandstone strata

Bored Cast In-situ or CFA Pile Factor of Safety 3.0 (end)
Dia. = 300mm, Cross Section Area = 0.07m^2

Ignore overlying strata

Sandstone rock

Allowable End Bearing

= 2000 kN/m^2

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Allowable End Bearing Load = 140 kN

Total Allowable Working Load = 140 kN

Given the variable depth to rockhead and the potential presence of an infilled river channel, we would recommend that the piles are socketed by at least three pile diameters below rockhead level and the length of adjacent piles should be carefully checked to ensure that piles are not founded on a steeply sloping rock interface or on rock ledges.

In order to use the full load carrying capacity attributable to end bearing for bored cast in-situ piles either base ramming should be carried out or settled debris should be removed.

4.3 Floor Slab Construction

With regard to the design and construction of normal ground bearing floor slabs, it must be noted at the outset, that due to the thickness of Made Ground, unless appropriate measures are taken there will be a risk of significant total and differential settlements, the extent of which will be a matter of chance rather than being assessable by calculation.

To obviate any significant damaging settlements we would recommend using a suspended floor slab with intermediate support designed on the same basis as the main foundations where the spans are too large for economical single suspended slab design.

4.4 Excavations and Groundwater

In our opinion, there should be no particular difficulties in excavating the strata indicated in the exploratory holes utilising an appropriate and suitably sized mechanical excavator.

The pit sides were found to have variable stability during the relatively short period that they were left open and unsupported.

It is recommended that all excavations to greater than 1.20 metres depth, or for shallower excavations where groundwater is encountered above this level, are closely supported, especially where man entry is required. Alternatively, where space permits, the excavations might be battered back to an appropriate angle.

Groundwater inflows were recorded in the majority of the exploratory holes.

Should groundwater seepages occur and water accumulate in the excavation it should be able to be removed by pumping from a filtered sump.

It should be noted that groundwater inflows and levels are likely to be subject to seasonal variations.

The results of the soakaway testing carried out in TP1 are appended

4.5 Buried Concrete

For the design of buried concrete the recommendations given in Building Research Establishment (BRE) Special Digest 1 (September 2005 revision), "Concrete in Aggressive Ground", should be followed.

Determination of pH on the soil samples gave values in the range of 5.7 to 7.5 (acidic / near neutral).

Soluble sulphate concentrations were also determined for soil samples and the results ranged from <0.01 to 0.05 g/l.

The results indicate that the Design Sulphate Class for the site should be DS-2.

Our knowledge of the site and ground conditions indicates that the site is "brownfield" with potentially mobile groundwater.

Consequently, in accordance with the Design Sulphate Class for the site together with the site and groundwater conditions an Aggressive Chemical Environment for Concrete (ACEC) classification of AC-3z should be used as detailed on the appended extract.

4.6 Roads, Hardstandings and Car Parks

Laboratory California Bearing Ratio (CBR) tests have been undertaken on samples of soil recompacted at their natural moisture content and the results of the tests are appended. A summary of the laboratory CBR test results is as follows:

TABLE 4 CBR RESULTS

Expl. Hole No.	Depth (m)	Dry Density (Mg/m ³)	Moisture Content (%)	CBR Value (%)	Sample
BH2	0.20	1.69	20	2.1	MADE GROUND: dark grey gravelly sandy clay, gravel sized fragments are fine to medium stone, brick and concrete
TP1	0.40	1.62	22	3.1	Dark yellowish brown orangey and dark grey mottled sandy CLAY
TP2	0.45	1.70	19	2.8	Light grey, grey and brown mottled sandy CLAY
TP5	0.55	1.24	37	1.65	MADE GROUND: dark grey organic slightly gravelly sandy clay, gravel sized fragments are fine ash and clinker

It should be noted that the above values are moisture dependent and it is possible that the CBR values would reduce with increased moisture content; this being particularly so for cohesive strata.

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Given the above it would be advisable to design on a CBR value of 1.65% for the where they are found at formation level. If there is to be a delay before construction, to prevent water softening, loosening and disturbance, the formation strata should not be exposed.

4.7 Geology and Mining

In the preparation of this report no consideration has been given to the presence of any geological weaknesses in the solid strata or to the effects of any mining or mineral extraction. We have previously recommended that a coal mining risk assessment be carried out and we would reiterate the requirement.

4.8 Chemical Contamination Considerations

It should be noted that a Walkover Survey and Desk Study Report including a Conceptual Ground Model, ref. NE3146 and dated August 2012, has previously been undertaken. This investigation has been undertaken to provide a preliminary risk assessment on the level of contamination present in accordance with the Conceptual Ground Model. Based upon the findings of this investigation additional sampling, analysis and assessment may be required.

4.8.1 Assessment (Soil)

In order to provide a preliminary assessment of the presence of contamination five soil samples have been analysed for a suite of determinants and the results are appended.

The Department for Environment, Food and Rural Affairs (DEFRA) and the Environment Agency (EA) withdrew the soil guideline values (SGVs) and replaced the old CLR 10 document covering derivation of soil guideline values in 2008. This had the effect that any values derived using the old CLR 10 assumptions and parameters was also no longer valid. In response Atkins updated their soil screening values (SSVs). DEFRA and EA published new soil guideline values (SGVs) for mercury, selenium, benzene, toluene, ethylbenzene and xylene on 31 March 2009, arsenic and nickel on 12 May 2009 and cadmium and phenols in June 2009. In July 2009 a substantial number of Generic Assessment Criteria (GACs) were published by Land Quality Management (LQM), in conjunction with the Chartered Institute of Environmental Health, which supplement the SGVs and effectively supersede many, but not all, SSVs. Contaminated Land: Applications in Real Environments (CL:AIRE) guideline values were also published in December 2009 to supplement the above. The guideline values (SGVs, GACs, CL:AIRE and SSVs) vary dependant upon the land use; allotment and residential use being the most sensitive and commercial/ industrial use being the least sensitive.

For the purposes of assessment, as the proposed development is a Mosque and car parking, contamination analyses have been compared with the guideline values for a standard land use of commercial and industrial.

The contamination analysis determined no elevated levels of contaminants when compared with the guideline values for a standard land use of commercial/ industrial. Guideline values for the assessment can be supplied directly to the Regulator, if requested.

Asbestos testing has shown no detectable levels.

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In addition to the above, an assessment of risk to personnel who will come into contact with on-site materials throughout the site has been undertaken.

4.8.2 Assessment (Leachate)

To assess the leachability of contaminants and the consequent pollution potential of the on-site material to “controlled waters” one sample of Made Ground has been processed in accordance with the Environment Agency’s protocol, the leachate analysed for a suite of determinants in accordance with the Conceptual Ground Model and the results are appended.

None of the determinands tested for were found to be elevated when compared with the Environment Agency’s Environmental Quality Standards (EA EQS) and/ or the United Kingdom Drinking Water Standards (UK DWS).

4.8.3 Conclusions and Recommendations

Section 78a(2) of the Environmental Protection Act: 1990, defines CONTAMINATED LAND for the purposes of Part IIA as:

“any land which appears to the LOCAL AUTHORITY in whose area it is situated to be in such a condition, by reason of substances in, on or under the land, that:

- (a) SIGNIFICANT HARM is being caused or there is a SIGNIFICANT POSSIBILITY of such harm being caused; or
- (b) POLLUTION OF CONTROLLED WATERS is being, or is likely to be, caused”

Before a LOCAL AUTHORITY can make the judgement that land appears to be CONTAMINATED LAND on the basis that SIGNIFICANT HARM is being caused, or that there is a SIGNIFICANT POSSIBILITY of such harm being caused, the LOCAL AUTHORITY must identify a SIGNIFICANT POLLUTANT LINKAGE. This means that each of the following has to be identified:

- (a) a CONTAMINANT;
- (b) a relevant RECEPTOR (defined as living organisms, ecological systems, controlled waters or property); and
- (c) a PATHWAY by means of which either:
 - (i) the CONTAMINANT is causing SIGNIFICANT HARM to that RECEPTOR, or
 - (ii) there is a SIGNIFICANT POSSIBILITY of such harm being caused by that CONTAMINANT to that RECEPTOR

It should be noted that the above words in capitals have a legal definition within the legislation.

Without a clear identification of all three elements of the pollutant linkage, land cannot be identified as contaminated under the regime.

Planning Policy Statement 23 Annex 2 – Development on Land Affected by Contamination, adopts the principles of the pollutant linkage to determine if land is affected by contaminants. The general principles detailed above apply to this assessment.

Our preliminary assessment, based on a limited number of soil samples only, indicates that there are no contaminants requiring remediation and/or precautions to be taken for the proposed development.

Should it be necessary to remove on-site materials from the site, classification of the waste should be undertaken before submitting analysis to appropriate waste carriers and/ or waste disposal site operators to determine the most appropriate tip to use and the associated costs.

SGVs, GACs, CL:AIRE and SSVs assume long term contact with contamination and assess chronic health risk. The risk of short term acute exposure to site personnel is dealt with in the remit of the Health and Safety Executive under the Health and Safety at Work Act: 1974 and Regulations made under the Act, including the Control of Substances Hazardous to Health (COSHH) Regulations. The levels of contamination and risk to site personnel should be considered under the Construction Design and Management (CDM) Regulations at the planning stage and in the development of the designers and contractors Health and Safety Plans and Method Statements. The risk of contact with on-site soils should be minimised and site personnel involved in earthworks and excavations should wear gloves, overalls, and boots and smoking should be prohibited.

Earthworks undertaken during dry weather might generate dust and in this instance dust should be damped down and dust masks made available to site operatives. In addition stockpiled materials should be sheeted over to prevent excessive airborne dust being formed.

4.8.4 Risk Assessment for Water Pipes

It should be noted that at the time of the assessment no details were available regarding where the site will be connected the water supply network or the proposed depth and route of water supply pipes within the site.

4.9 Ground Gas Considerations

Ground gas monitoring has been undertaken on six scheduled occasions to date and the results of the monitoring visits are appended.

Ground gases: methane, carbon dioxide and oxygen and flow rate have been monitored and the ranges of ground gases and flow rate during the monitoring period are as follows:

TABLE 5 GROUND GAS CONCENTRATIONS AND FLOW RATE

Methane (% vol. In air)	Carbon Dioxide (% vol. in air)	Oxygen (% vol. in air)	Gas Flow Rate (litres/ hour)
0.0-0.6	0.0-1.9	20.9-16.4	0.1

It can be seen from the monitoring that no gas flow or elevated levels of methane or carbon dioxide have been detected.

Methane gas when present between 5% volume in air (Lower Explosive Limit - L.E.L) and 15% volume in air (Upper Explosive Limit - U.E.L) is potentially explosive and inflammable whilst carbon dioxide in conjunction with depleted oxygen is an asphyxiant. Both methane and carbon dioxide are a by-product of the anaerobic and aerobic decomposition of biodegradable materials.

The levels of gas have been assessed in accordance with British Standard 8485, "Code of practice for the characterisation and remediation from ground gas in affected developments", published in October 2007 (BS.8485:2007).

The characteristic hazardous gas flow rate (Q_{hgs}) is calculated by dividing the maximum gas (methane or carbon dioxide) concentration by 100 and multiplying by the maximum flow rate in litres per hour (minimum 0.1 l/hr for Sub Surface monitoring equipment). For this site $Q_{\text{hgs}} = [1.9/ 100] \times 0.1 = 0.0019 \text{ l/hr}$

BS.8485:2007, Table 1, indicates that the site falls into Characteristic Situation 1 CS1.

BS.8485:2007, Table 2, indicates that for a CS1 and the type of development proposed a score of zero gives no protection and remedial measures required.

4.10 General

In the preparation of this report no consideration has been given to

- the possible effects of any mineral extraction, including coal, and geological faulting in the solid strata beneath the site as this was outside our brief.

It should be noted that we have made recommendations for further investigation in the desk study report NE3146 and in section 4.7 to address the coal mining risk.

We recommend that consultation should be undertaken with Local Authority Environmental Health Officer and the Local Authority Building Control Officer prior to development

We would be happy to undertake the above or alternatively the Client should undertake such consultations before proceeding.

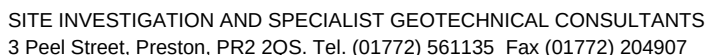
We trust that this report fulfils your present requirements but if you have any queries or we can be of further assistance please contact the undersigned or Mr David Simpson at our Ossett office.

SUB SURFACE NORTH EAST LIMITED
REPORT No. NE3146B
NOVEMBER 2012

O. J. Stevens B.Sc.(Hons.), M.Sc., C.Eng, C.Phys, C.Sci, C.Geol., MInstP, F.G.S., Eur.Geol., MRICS.
Director
For and on behalf of
Sub Surface Consultants Limited.

INSITU TEST RESULTS

 SUB SURFACE SITE INVESTIGATION, GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907					Standard Penetration Test Results							
Site : MACHAM STREET, HUDDERSFIELD, WEST YORKSHIRE Client : AMANAH STUDIO Engineer: MADNI JAMIA MASJID												Job Number NE3146
												Sheet 1 / 1
Borehole Number	Base of Borehole (m)	End of Seating Drive (m)	End of Test Drive (m)	Test Type	Seating Blows per 75mm		Blows for each 75mm penetration				Result	Comments
					1	2	1	2	3	4		
BH1	1.00	1.15	1.45	SPT	1	1	0	1	1	1	N=3	
BH1	3.00	3.15	3.30	SPT	10	15	29	39			68/150mm	
BH1	4.00	4.08	4.20	CPT	25		35	42			25*/75mm 77/125mm	
BH1	4.50	4.58	4.69	SPT	25		42	52			25*/75mm 94/115mm	
BH2	1.00	1.15	1.45	SPT	1	2	1	1	1	1	N=4	
BH2	2.00	2.15	2.45	SPT	2	3	5	6	6	7	N=24	
BH2	3.00	3.15	3.45	SPT	6	8	9	8	10	10	N=37	
BH2	3.60	3.68	3.75	SPT	25		61				25*/75mm 61/75mm	
BH2	3.80	3.88	4.00	SPT	25		39	58			25*/75mm 97/125mm	



Job Number
NE3146C

Engineer: AMANAH STUDIO

Sheet:
1 of 1

[illegible]

Remarks: Elevated levels of methane and carbon dioxide and depleted levels of oxygen are shown in ***bold/italics***.



SUB SURFACE

SITE INVESTIGATION AND SPECIALIST GEOTECHNICAL CONSULTANTS
3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907

In-Situ Test Results

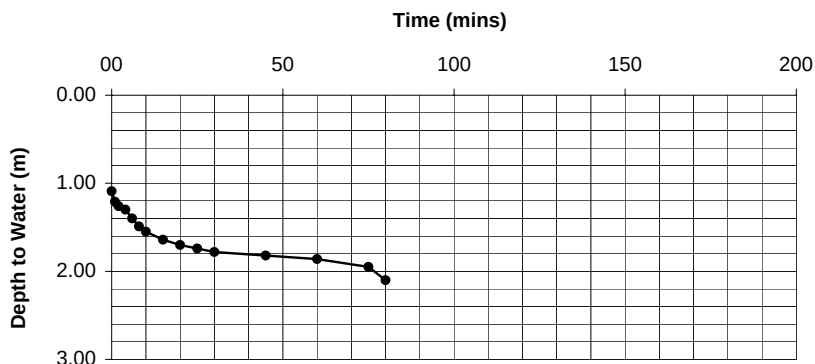
Site: MACHAM STREET, HUDDERSFIELD
Client: MADNI JAMIA MASJID
Engineer: AMANAH STUDIO

Job Number
NE3146A
Sheet:
1/2

Soakaway Test

Trial Pit No: **TP1**

TEST NO: 1
DATE: 19/07/2012



Length of pit: L = 2.30 m
Width of pit: W = 0.60 m
Depth of pit: D = 2.10 m
Base area of pit: A = 1.38 m²

100% effective depth D100 = 1.09 m
75% effective depth D75 = 1.34 m
50% effective depth D50 = 1.60 m
25% effective depth D25 = 1.85 m

time to D75 T75 = 300 sec
time to D25 T25 = 3360 sec

time from D75 to D25 t_{p75-25} = 3060 sec
(T25 - T75)

volume between D75 & D25 V_{p75-25} = 0.70 m³
(A x (D25 - D75))

surface area to D50 inc. base a_{p50} = 4.31 m²
((2x(D-D50)x(W+L)) + A)

Time (min)	Depth (m)
00	1.09
01	1.21
02	1.26
04	1.30
06	1.40
08	1.49
10	1.55
15	1.64
20	1.70
25	1.74
30	1.78
45	1.82
60	1.86
75	1.95
80	2.10

SOIL INFILTRATION RATE

$$f = \frac{V_{p75-25}}{a_{p50} \times t_{p75-25}}$$

$$f = 5.29E-05 \text{ m/sec}$$

Test Strata:
(see Trial Pit)

Remarks:

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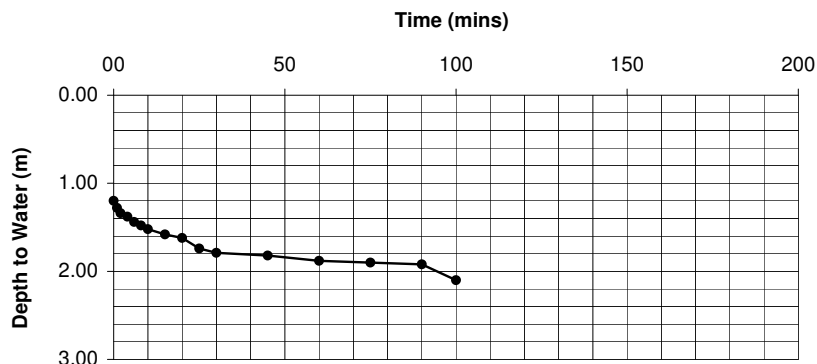
In-Situ Test Results

Site: MACHAM STREET, HUDDERSFIELD
Client: MADNI JAMIA MASJID
Engineer: AMANAH STUDIO

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Soakaway Test**Trial Pit No: TP1**

TEST NO: 2
DATE: 19/07/2012



Length of pit: L = 2.30 m
Width of pit: W = 0.60 m
Depth of pit: D = 2.10 m
Base area of pit: A = 1.38 m²

100% effective depth D100 = 1.20 m
75% effective depth D75 = 1.43 m
50% effective depth D50 = 1.65 m
25% effective depth D25 = 1.88 m

time to D75 T75 = 290 sec
time to D25 T25 = 3600 sec

time from D75 to D25 $t_{p75-25} = 3310$ sec
(T25 - T75)
volume between D75 & D25 $V_{p75-25} = 0.62$ m³
(A x (D25 - D75))
surface area to D50 inc. base $a_{p50} = 3.99$ m²
((2x(D-D50)x(W+L)) + A)

Time (min)	Depth (m)
00	1.20
01	1.28
02	1.34
04	1.38
06	1.44
08	1.48
10	1.52
15	1.58
20	1.62
25	1.74
30	1.79
45	1.82
60	1.88
75	1.90
90	1.92
100	2.10

SOIL INFILTRATION RATE

$$f = \frac{V_{p75-25}}{a_{p50} \times t_{p75-25}}$$

$$f = 4.70E-05 \text{ m/sec}$$

Test Strata:
(see Trial Pit)

Remarks:

LABORATORY TEST RESULTS

Site : MACHAM STREET, HUDDERSFIELD, WEST YORKSHIRE

Client : AMANAH STUDIO

Engineer: MADNI JAMIA MASJID

Job Number
NE3146

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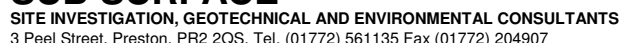
DETERMINATION OF DENSITY, MOISTURE CONTENT AND UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole/ Trial Pit	Depth (m)	Sample	Moisture Content %	Bulk Density (Mg/m³)	Dry Density (Mg/m³)	Cell Pressure (kN/m²)	Deviator Stress (kN/m²)	Apparent Cohesion (kN/m²)	Angle of Shearing Resistance (degrees)	Description
BH1	2.00	U	17	1.96	1.68	50 100 150	47 0 0	24	0	MADE GROUND: firm dark brown, dark grey and orangish brown slightly sandy silty clay.

Method of Preparation : BS 1377:PART 1:1990:7.4.2 Moisture content 1990: Preparation of undisturbed samples for testing BS 1377:PART 2:1990:7.2

Method of Test : BS 1377:PART 2:1990:3 Determination of moisture content 1990:7 Determination of density BS 1377:PART 7:1990:8 Undrained shear strength
1990:9 Multistage loading

Remarks :



Site : MACHAM STREET, HUDDERSFIELD, WEST YORKSHIRE Client : MADNI JAMIA MASJID Engineer : AMANAH STUDIO	Job Number NE3146A
	Sheet 1 / 1

Borehole/ Trial Pit	Depth (m)	Sample	Natural Moisture Content %	Sample Passing 425µm Sieve		Liquid Limit %	Plastic Limit %	Plasticity Index %	Liquidity Index	Group Symbol	Description
				Percentage %	Moisture Content %						
BH1	1.00	D	55	61	90	55	32	23	2.52	MH	MADE GROUND: dark brown very gravelly sandy clayey silt
BH1	2.00	U	17	54	31	29	18	11	1.18	CL	MADE GROUND: dark brown, dark grey and orangish brown slightly sandy silty clay
TP1	0.80	D	24	80	30	38	19	19	0.58	CI	Brown and grey mottled silty CLAY
TP3	0.90	D	53	65	82	55	31	24	2.13	MH	Grey clayey SILT
TP3	1.70	D	27	77	35	37	22	15	0.87	CI	Grey silty CLAY with peat traces

Remarks :



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Laboratory Test Results

Site : MACHAM STREET, HUDDERSFIELD, WEST YORKSHIRE

Client : MADNI JAMIA MASJID

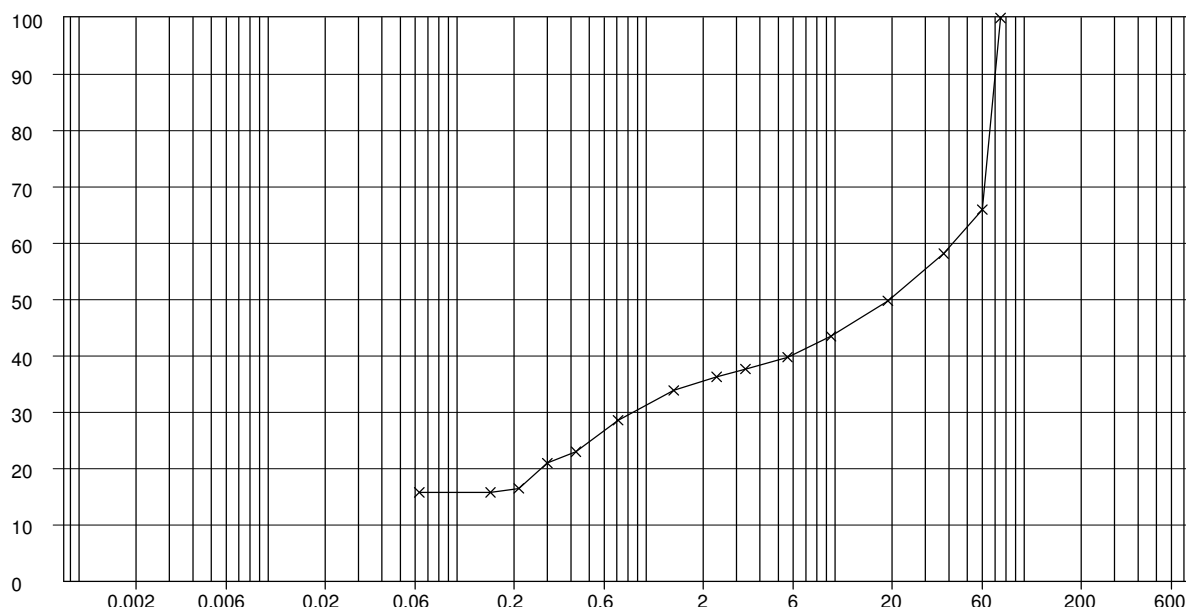
Engineer : AMANAH STUDIO

Job Number
NE3146A

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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Trial Pit	Depth (m)	Sample	Description
TP3	2.50	B	Brown silty SAND and subrounded GRAVEL with some cobbles. Gravel and cobbles are predominantly sandstone



Sieve / Particle Size	% Passing
75 mm	100.0
60 mm	66.0
37.5 mm	58.2
19 mm	49.8
9.5 mm	43.5
5.6 mm	39.8
3.35 mm	37.7
2.36 mm	36.3
1.4 mm	33.9
710 μm	28.6
425 μm	23.0
300 μm	21.0
212 μm	16.5
150 μm	15.8
63 μm	15.8

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

Grading Analysis	
D85	68.0 mm
D60	41.8 mm
D10	<63.0 μm
Uniformity Coefficient	-

Particle Proportions	
Cobbles + Boulders	34.0%
Gravel	30.5%
Sand	19.7%
Silt	-
Clay	-

Method of Preparation : BS 1377:PART 1:1990:7.3 Initial preparation 1990:7.4.5 Particle size tests

Method of Test : BS 1377:PART 2:1990:9 Determination of particle size distribution

Remarks :



Site : MACHAM STREET, HUDDERSFIELD, WEST YORKSHIRE

Client : AMANAH STUDIO

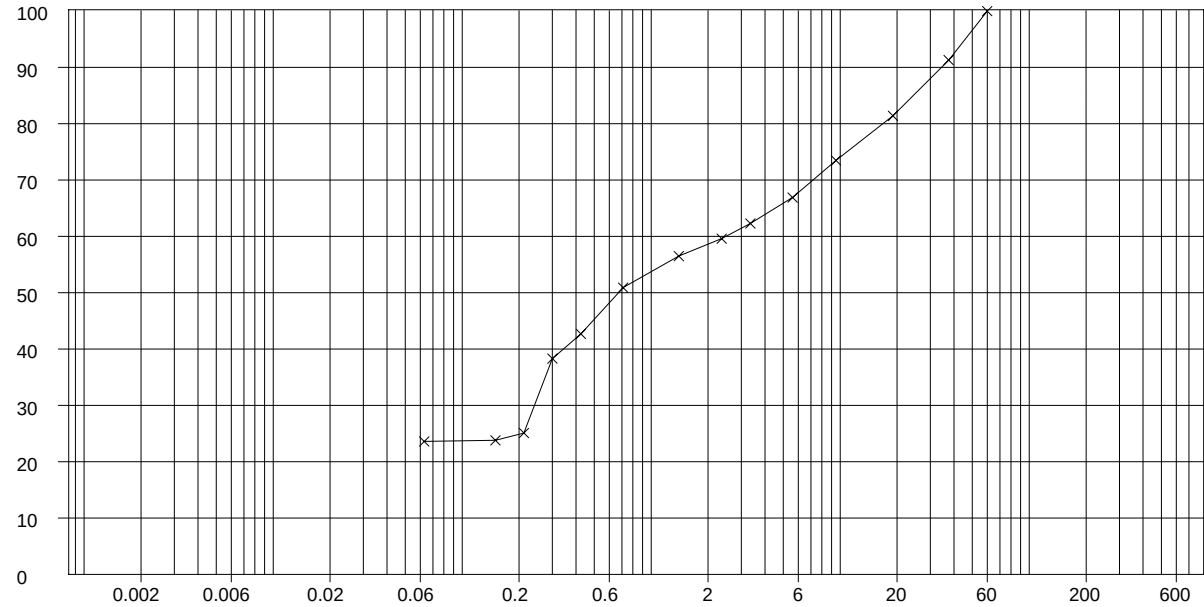
Engineer: MADNI JAMIA MASJID

Job Number
NE3146

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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Trial Pit	Depth (m)	Sample	Description
BH1	3.30 - 3.50	B	Dark brown very gravelly very sandy silty CLAY. Gravel is subangular to subrounded fine to coarse sandstone and quartz.



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

Grading Analysis	
D85	24.3 mm
D60	2.5 mm
D10	<63.0 µm
Uniformity Coefficient	-

Particle Proportions	
Cobbles + Boulders	-
Gravel	41.4%
Sand	35.0%
Silt	-
Clay	-

Method of Preparation : BS 1377:PART 1:1990:7.3 Initial preparation 1990:7.4.5 Particle size tests

Method of Test : BS 1377:PART 2:1990:9 Determination of particle size distribution

Remarks :



Site : MACHAM STREET, HUDDERSFIELD, WEST YORKSHIRE

Client : AMANAH STUDIO

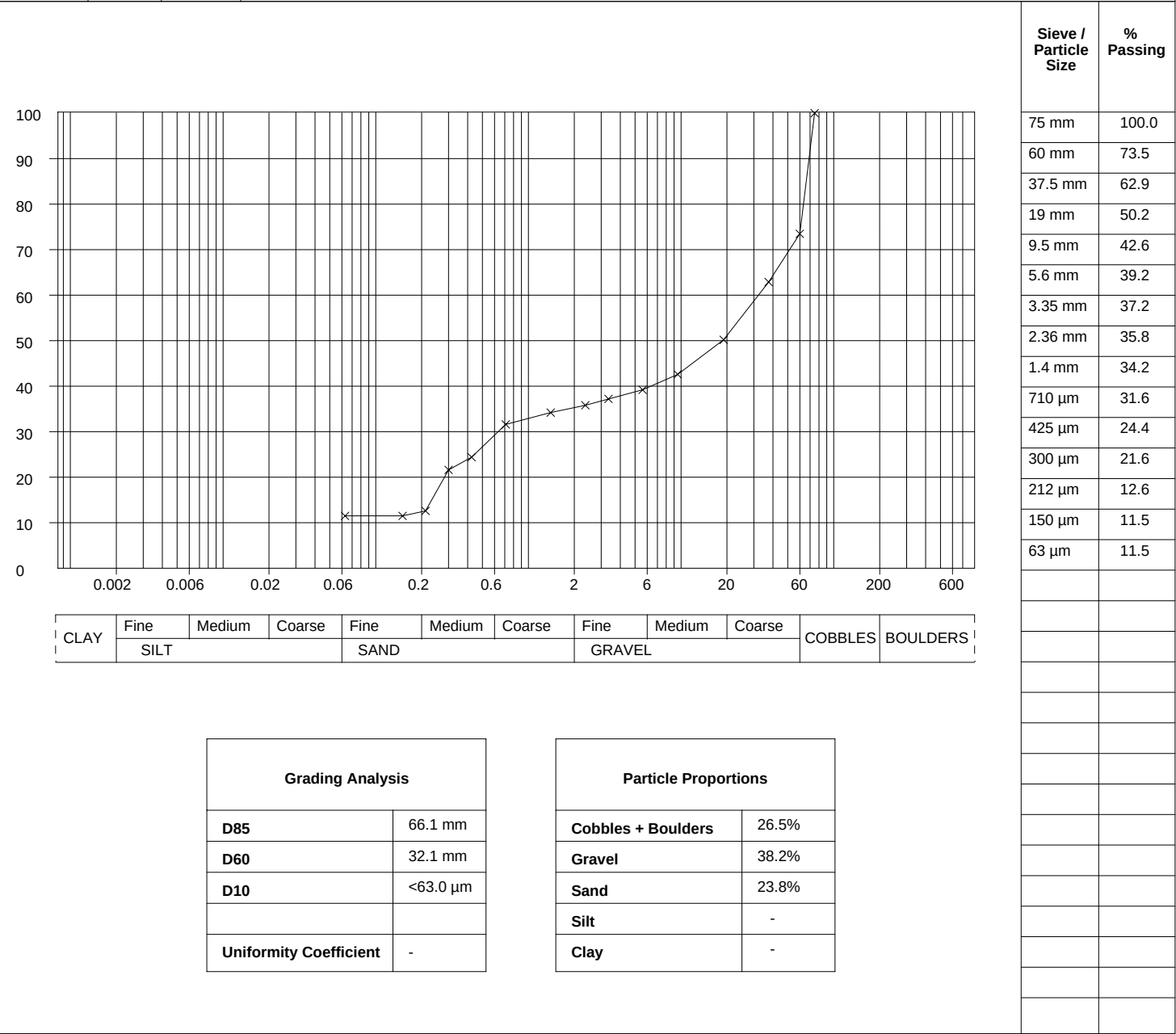
Engineer : MADNI JAMIA MASJID

Job Number
NE3146

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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Trial Pit	Depth (m)	Sample	Description
BH1	3.50 - 4.00	B	Brown clayey fine to coarse SAND and subangular to subrounded fine to coarse sandstone GRAVEL.



Method of Preparation : BS 1377:PART 1:1990:7.3 Initial preparation 1990:7.4.5 Particle size tests

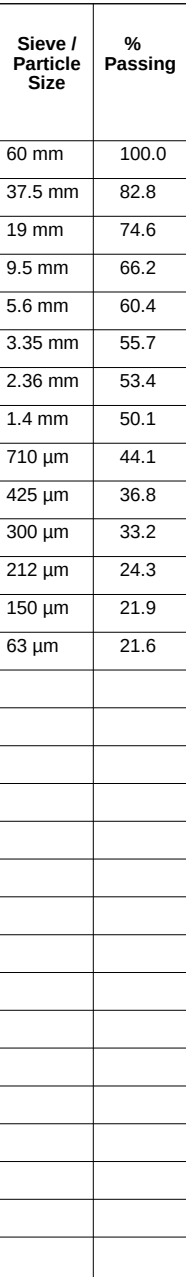
Method of Test : BS 1377:PART 2:1990:9 Determination of particle size distribution

Remarks :



Site : MACHAM STREET, HUDDERSFIELD, WEST YORKSHIRE Client : AMANAH STUDIO Engineer: MADNI JAMIA MASJID	Job Number NE3146
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Borehole / Trial Pit	Depth (m)	Sample	Description
BH2	2.50 - 3.00	B	Dark brown very gravelly very sandy silty CLAY. Gravel is subangular to subrounded fine to coarse sandstone and quartz.



Grading Analysis	
D85	39.8 mm
D60	5.4 mm
D10	<63.0 μ m
Uniformity Coefficient	-

Particle Proportions	
Cobbles + Boulders	-
Gravel	47.6%
Sand	30.8%
Silt	-
Clay	-

Remarks :



Site : MACHAM STREET, HUDDERSFIELD, WEST YORKSHIRE

Client : AMANAH STUDIO

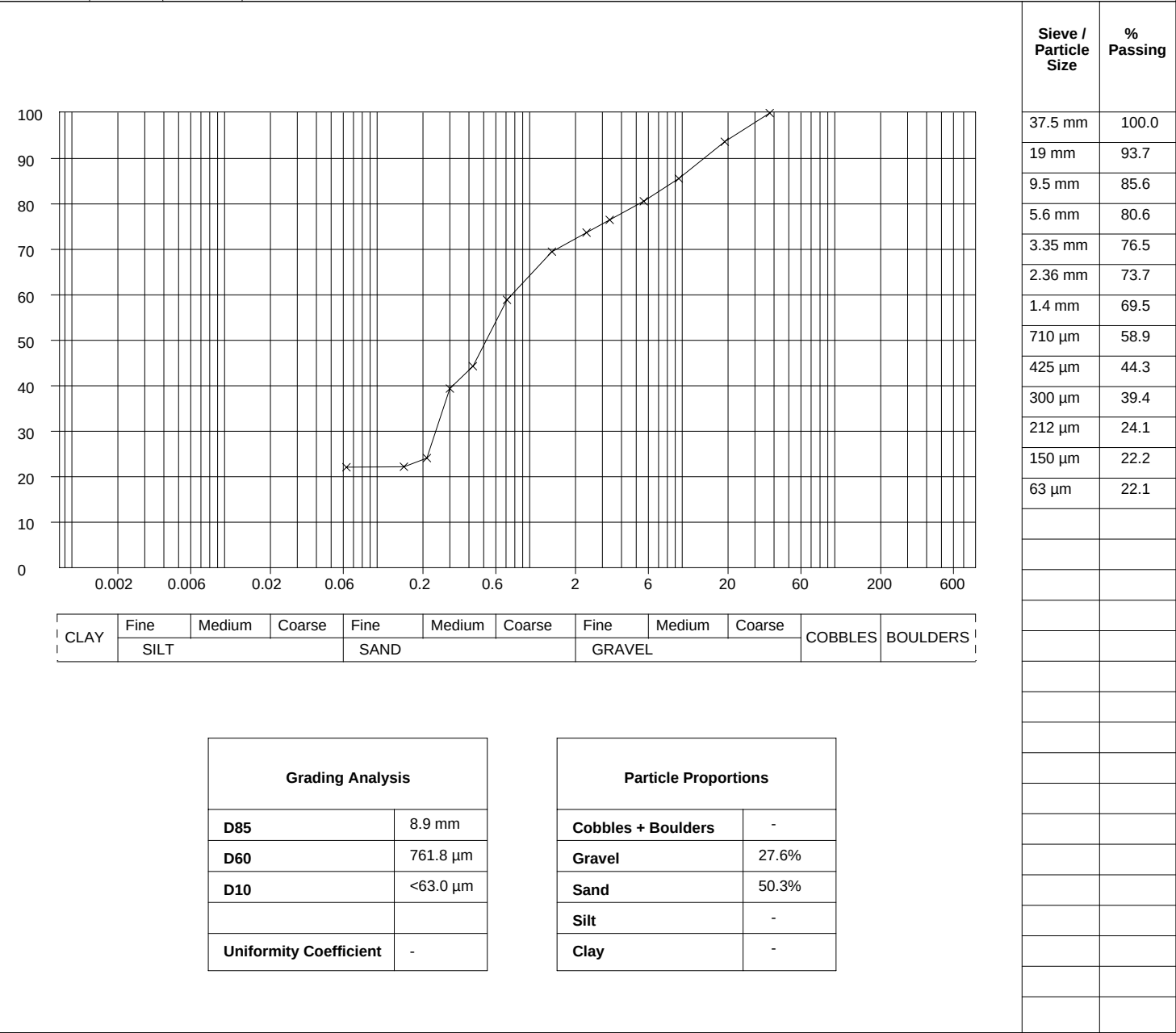
Engineer: MADNI JAMIA MASJID

Job Number
NE3146

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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Trial Pit	Depth (m)	Sample	Description
BH2	3.60 - 3.75	B	Brown clayey fine to coarse SAND and subangular to subrounded fine to coarse sandstone GRAVEL.



Method of Preparation : BS 1377:PART 1:1990:7.3 Initial preparation 1990:7.4.5 Particle size tests

Method of Test : BS 1377:PART 2:1990:9 Determination of particle size distribution

Remarks :

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Laboratory Test Results

Site: MACHAM STREET, HUDDERSFIELD, WEST YORKSHIRE

Client: MADNI JAMIA MASJID

Engineer: AMANAH STUDIO

Job Number

NE3146A

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CALIFORNIA BEARING RATIO

Position: BH 2

Sample No: 579

Depth: 0.20 m

Description:

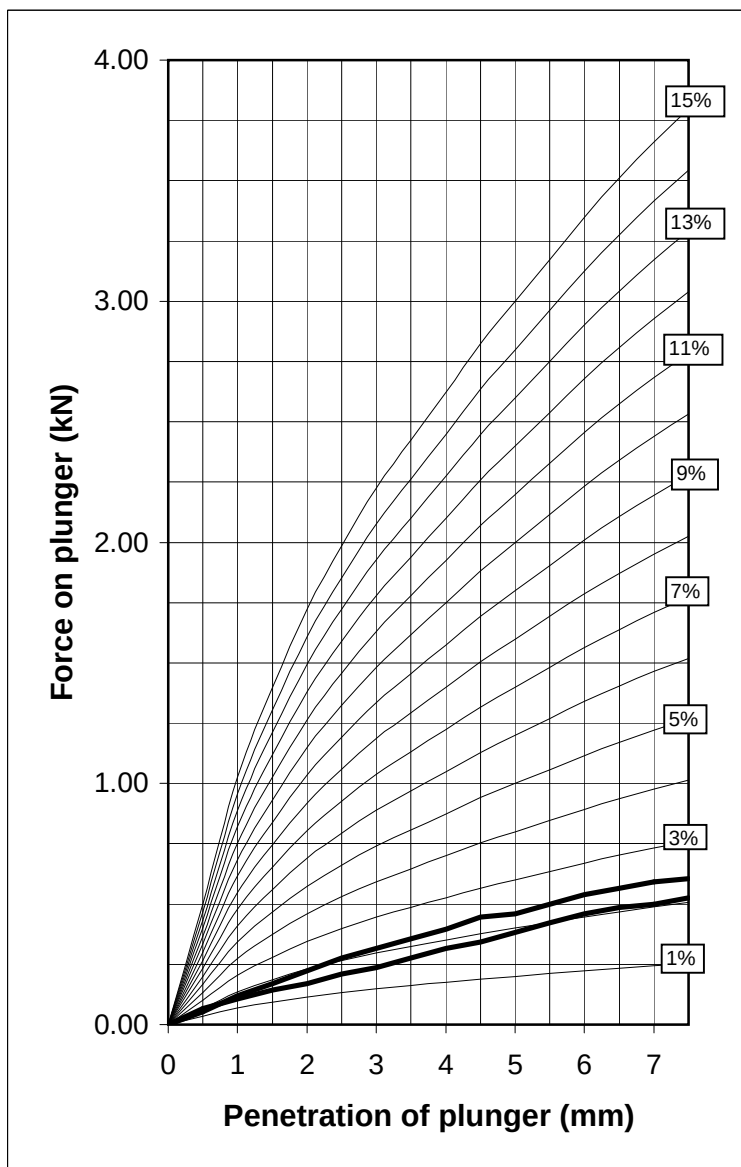
MADE GROUND: dark grey gravelly sandy clay. Gravel sized fragments are fine to medium stone, brick and concrete.

Preparation of sample: 4.5 Kg Rammer Method

Penetration of Plunger mm	Force on Plunger			
	Top	kN Top	Bottom	kN Bottom
0.0	0.0	0.00	0.0	0.00
0.5	2.5	0.07	2.0	0.05
1.0	4.0	0.11	4.5	0.12
1.5	5.5	0.14	6.5	0.17
2.0	6.5	0.17	8.5	0.22
2.5	8.0	0.21	10.5	0.28
3.0	9.0	0.24	12.0	0.32
3.5	10.5	0.28	13.5	0.36
4.0	12.0	0.32	15.0	0.39
4.5	13.0	0.34	17.0	0.45
5.0	14.5	0.38	17.5	0.46
5.5	16.0	0.42	19.0	0.50
6.0	17.5	0.46	20.5	0.54
6.5	18.5	0.49	21.5	0.57
7.0	19.0	0.50	22.5	0.59
7.5	20.0	0.53	23.0	0.60

	CBR % Value at:	
	2.5mm	5.0mm
Top	1.6%	1.9%
Bottom	2.1%	2.3%

Passing 20mm Sieve = **90 %**
 Moisture Content = **20 %**
 Bulk Density = **2.03 Mg/m³**
 Dry Density = **1.69 Mg/m³**



Comments:

Operator

Checked

Approved

SJG



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Client: MADNI JAMIA MASJID

Engineer: AMANAH STUDIO

Job Number

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CALIFORNIA BEARING RATIO

Position: TP1

Sample No: 201

Depth: 0.40 m

Description:

Dark yellowish brown, orangey and dark grey mottled sandy CLAY.

Preparation of sample: 4.5 Kg Rammer Method

Penetration of Plunger mm	Force on Plunger			
	Top	kN Top	Bottom	kN Bottom
0.0	0.0	0.00	0.0	0.00
0.5	6.5	0.17	5.0	0.13
1.0	8.5	0.22	7.5	0.20
1.5	11.0	0.29	10.5	0.28
2.0	13.5	0.36	12.5	0.33
2.5	15.5	0.41	15.0	0.39
3.0	17.5	0.46	17.0	0.45
3.5	19.5	0.51	18.5	0.49
4.0	21.5	0.57	20.0	0.53
4.5	23.0	0.60	21.5	0.57
5.0	24.0	0.63	22.5	0.59
5.5	25.0	0.66	23.5	0.62
6.0	25.5	0.67	24.5	0.64
6.5	27.0	0.71	25.5	0.67
7.0	28.0	0.74	27.0	0.71
7.5	29.0	0.76	28.0	0.74

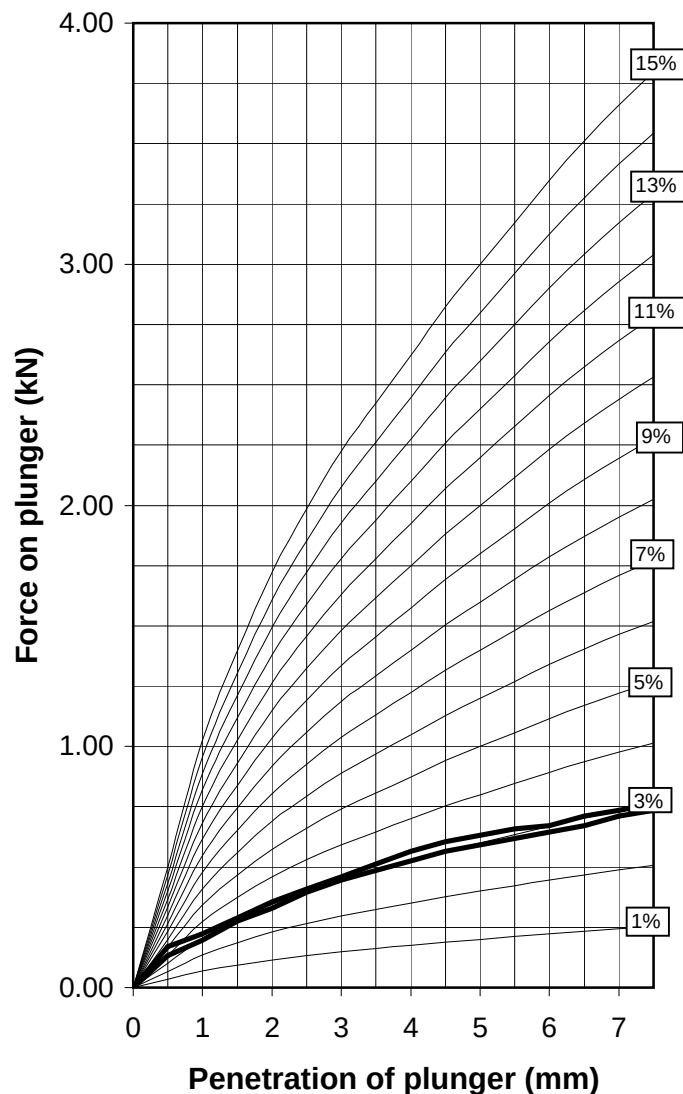
	CBR % Value at:	
	2.5mm	5.0mm
Top	3.1%	3.2%
Bottom	3.0%	3.0%

Passing 20mm Sieve = 100 %

Moisture Content = 22 %

Bulk Density = 1.98 Mg/m³

Dry Density = 1.62 Mg/m³



Comments:

Operator

Checked

Approved

SJG

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Laboratory Test Results

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Client: MADNI JAMIA MASJID

Engineer: AMANAH STUDIO

Job Number

NE3146A

Sheet:

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CALIFORNIA BEARING RATIO

Position: TP2

Sample No: 206

Depth: 0.45 m

Description:

Light grey, grey and brown mottled sandy CLAY.

Preparation of sample: 4.5 Kg Rammer Method

Penetration of Plunger mm	Force on Plunger			
	Top	kN Top	Bottom	kN Bottom
0.0	0.0	0.00	0.0	0.00
0.5	4.5	0.12	4.0	0.11
1.0	7.0	0.18	6.5	0.17
1.5	9.0	0.24	8.0	0.21
2.0	11.0	0.29	10.5	0.28
2.5	13.5	0.36	12.5	0.33
3.0	15.0	0.39	14.5	0.38
3.5	18.0	0.47	16.0	0.42
4.0	19.5	0.51	17.5	0.46
4.5	21.0	0.55	18.5	0.49
5.0	22.5	0.59	19.5	0.51
5.5	23.5	0.62	20.0	0.53
6.0	24.5	0.64	21.5	0.57
6.5	25.5	0.67	22.5	0.59
7.0	26.0	0.68	23.0	0.60
7.5	26.5	0.70	24.0	0.63

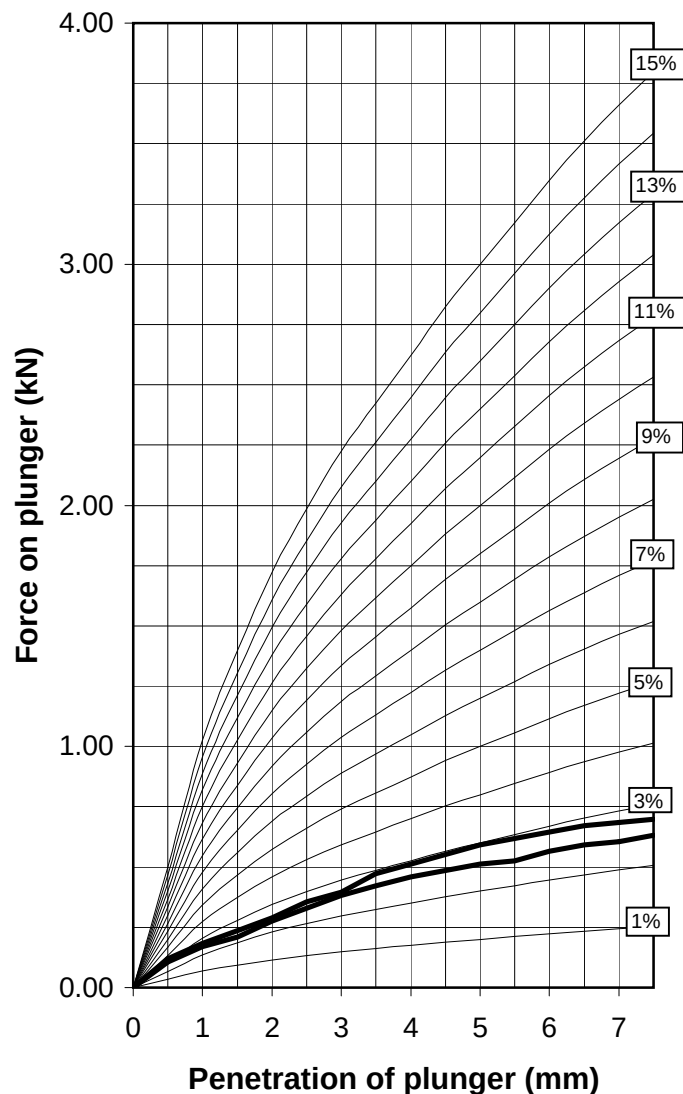
	CBR % Value at:	
	2.5mm	5.0mm
Top	2.7%	3.0%
Bottom	2.5%	2.6%

Passing 20mm Sieve = **100 %**

Moisture Content = **19 %**

Bulk Density = **2.03 Mg/m³**

Dry Density = **1.70 Mg/m³**



Comments:

Operator

Checked

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Laboratory Test Results

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Client: MADNI JAMIA MASJID

Engineer: AMANAH STUDIO

Job Number

NE3146A

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CALIFORNIA BEARING RATIO

Position: TP5

Sample No: 229

Depth: 0.55 m

Description:

MADE GROUND: dark grey organic slightly gravelly sandy clay. Gravel sized fragments are fine ash and clinker.

Preparation of sample: 4.5 Kg Rammer Method

Penetration of Plunger mm	Force on Plunger			
	Top	kN Top	Bottom	kN Bottom
0.0	0.0	0.00	0.0	0.00
0.5	2.5	0.07	2.5	0.07
1.0	4.0	0.11	4.5	0.12
1.5	6.0	0.16	5.5	0.14
2.0	7.0	0.18	6.5	0.17
2.5	8.5	0.22	8.0	0.21
3.0	9.5	0.25	9.0	0.24
3.5	10.5	0.28	9.0	0.24
4.0	12.0	0.32	9.5	0.25
4.5	13.0	0.34	10.0	0.26
5.0	13.5	0.36	10.5	0.28
5.5	14.0	0.37	11.0	0.29
6.0	14.5	0.38	11.0	0.29
6.5	15.0	0.39	11.5	0.30
7.0	15.5	0.41	12.0	0.32
7.5	16.0	0.42	12.5	0.33

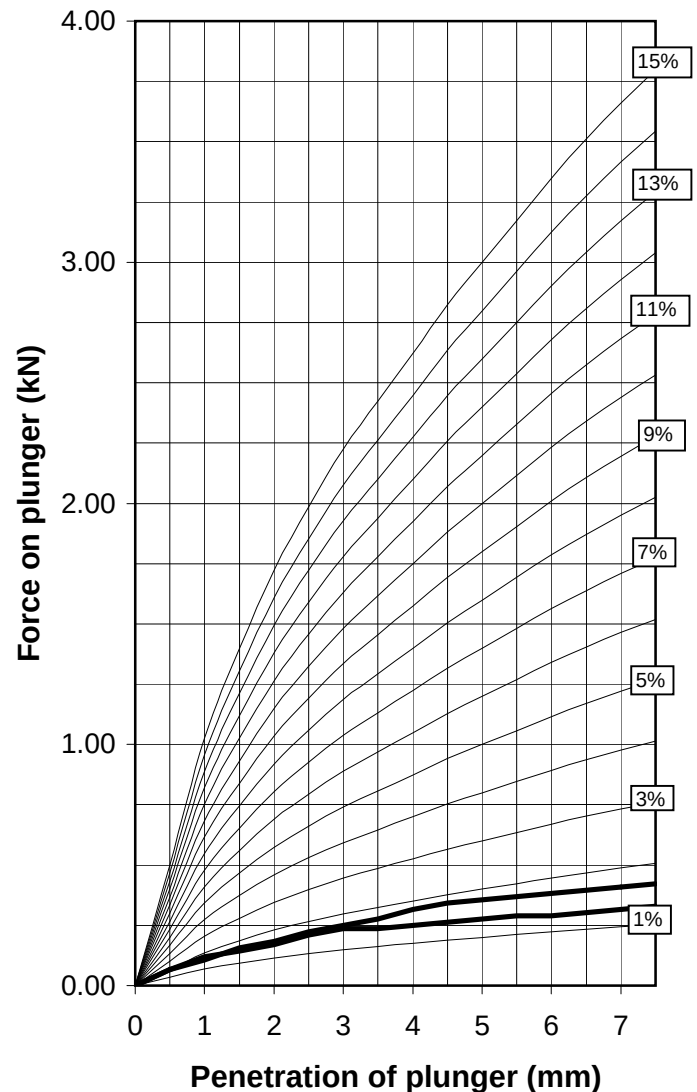
	CBR % Value at:	
	2.5mm	5.0mm
Top	1.7%	1.8%
Bottom	1.6%	1.4%

Passing 20mm Sieve = **100 %**

Moisture Content = **37 %**

Bulk Density = **1.69 Mg/m³**

Dry Density = **1.24 Mg/m³**



Comments:

Operator

Checked

Approved

SJG

Site : MACHAM STREET, HUDDERSFIELD, WEST YORKSHIRE

Client : AMANAH STUDIO

Engineer: MADNI JAMIA MASJID

Job Number
NE3146

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DETERMINATION OF THE pH VALUE AND THE SULPHATE CONTENT OF SOIL AND GROUNDWATER

Borehole/ Trial Pit	Depth (m)	Sample	Concentration of Soluble Sulphate			Percentage of sample passing 2mm Sieve %	pH	Classification	Description
			Soil		Groundwater g /l				
			Total SO4 %	SO4 in 2:1 water:soil g /l					
BH1	0.60	B		0.03			7.0	DS-1	MADE GROUND: dark brown ashy fine to coarse sand and angular to subangular fine to coarse gravel sized fragments of stone, clinker and brick.
BH1	2.00	B		0.02			5.7	DS-1	MADE GROUND: firm dark brown, dark grey and orangish brown slightly sandy silty clay.
BH2	1.00	B		0.01			7.5	DS-1	MADE GROUND: dark brown and occasional brown slightly gravelly slightly sandy silty clay. Gravel sized fragments are angular to subangular fine to coarse stone and brick.
BH2	3.60	B		0.05			7.0	DS-1	Brown clayey fine to coarse SAND and subangular to subrounded fine to coarse sandstone GRAVEL.

Method of Preparation : BS 1377:PART 1:1990:7.5 Preparation of soil for chemical tests BS 1377:PART 3:1990:5.2, 5.3, 5.4 & 9.4

Method of Test : BS 1377:PART 3:1990:5 Determination of the sulphate content of soil and ground water BS 1377:PART 3:1990:9 Determination of the pH value.

Remarks	: Classification relates to Design Sulphate Class of BRE Special Digest 1 (2005)
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BRE Special Digest 1

AGGRESSIVE CHEMICAL ENVIRONMENT FOR CONCRETE (ACEC) SITE CLASSIFICATION

Table C1 Aggressive Chemical Environment for Concrete (ACEC) classification for natural ground locations^a

Sulfate		Groundwater				ACEC Class for location
Design Sulfate Class for Location	2:1 water/soil extract ^b	Groundwater	Total potential sulfate ^c	Static water	Mobile water	
1	2 (SO ₄ mg/l)	3 (SO ₄ mg/l)	4 (SO ₄ %)	5 (pH)	6 (pH)	
DS-1	<500	<400	<0.24	≥2.5	>5.5d 2.5 - 5.5	AC-1s AC-1d AC-2z
DS-2	500 - 1500	400 - 1400	0.24 - 0.6	>3.5 2.5-3.5	>5.5 2.5 - 5.5	AC-1s AC-2z AC-2s AC-3z
DS-3	1600-3000	1500-3000	0.7 - 1.2	>3.5 2.5 - 3.5	>5.5 2.5 - 5.5	AC-2s AC-3 AC-3s AC-4
DS-4	3100 - 6000	3100 - 6000	1.3 - 2.4	>3.5 2.5 - 3.5	>5.5 2.5 - 5.5	AC-3s AC-4 AC-4s AC-5
DS-5	>6000	>6000	>2.4	>3.5 2.5 - 3.5	≥2.5	AC-4s AC-5

Notes

- a Applies to locations on sites that comprise either undisturbed ground that is in its natural state (ie not brownfield - Table C2) or clean fill derived from such ground
- b The limits of Design Sulfate Classes based on 2:1 water/soil extracts have been lowered relative to previous Digests (Box C7).
- c Applies only to locations where concrete will be exposed to sulfate ions (SO₄) which may result from the oxidation of sulfides (eg pyrite) following ground disturbance (Appendix A1 and Box C8).
- d For flowing water that is potentially aggressive to concrete owing to high purity or an aggressive carbon dioxide level greater than 15mg/l (Section C2.2.3), increase the ACEC Class to AC-2z.

Explanation of suffix symbols to ACEC Class

- Suffix 's' indicates that the water has been classified as static
- Concrete placed in ACEC Classes that included the suffix 'z' primarily have to resist acid conditions and may be made with any of the cements or combinations listed in Table D2 on page 42.

Table C1 Aggressive Chemical Environment for Concrete (ACEC) classification for brownfield locations^a

Sulfate						Groundwater		ACEC Class for location
Design Sulfate Class for Location	2:1 water/soil extract ^b		Groundwater		Total potential sulfate ^c	Static water	Mobile water	
1	2 (SO ₄ mg/l)	3 (Mg mg/l)	4 (SO ₄ mg/l)	5 (Mg mg/l)	6 (SO ₄ %)	7 (pH) ^d	8 (pH) ^d	9
DS-1	<500		<400		<0.24	≥2.5	>6.5 ^d 5.5 - 6.5 4.5 - 5.5 2.5 - 4.5	AC-1s AC-1 AC-2z AC-3z AC-4z
DS-2	500 - 1500		400 - 1400		0.24 - 0.6	>5.5 2.5 - 5.5	>6.5 5.5 - 6.5 4.5 - 5.5 2.5 - 5.5	AC-1s AC-2 AC-2s AC-3z AC-4z AC-5z
DS-3	1600 - 3000		1500 - 3000		0.7 - 1.2	>5.5 2.5 - 5.5	>6.5 5.5 - 6.5 2.5 - 5.5	AC-2s AC-3 AC-3s AC-4 AC-5
DS-4	3100 - 6000	≤1200	3100 - 6000	≤1000	1.3 - 2.4	>5.5 2.5 - 5.5	>6.5 2.5 - 6.5	AC-3s AC-4 AC-4s AC-5
DS-4m	3100 - 6000	>1200 ^e	3100 - 6000	>1000 ^e	1.3 - 2.4	>5.5 2.5 - 5.5	>6.5 2.5 - 6.5	AC-3s AC-4m AC-4ms AC-5m
DS-5	>6000	≤1200	>6000	≤1000	>2.4	>5.5 2.5 - 5.5	≤1000	AC-4s AC-5
DS-5m	>6000	>1200 ^e	>6000	>1000 ^e	>2.4	>5.5 2.5 - 5.5	≥2.5	AC-4ms AC-5m

Notes

- a Brownfield sites are those sites, or parts of sites, that might contain chemical residues produced by or associated with industrial production (Section C5.1.3).
- b The limits of Design Sulfate Classes based on 2:1 water/soil extracts have been lowered relative to previous Digests (Box C7).
- c Applies only to locations where concrete will be exposed to sulfate ions (SO₄) which may result from the oxidation of sulfides (eg pyrite) following ground disturbance (Appendix A1 and Box C8).
- d An additional account is taken of hydrochloric and nitric acids by adjustment to sulfate content (Section C5.1.3).
- e The limit on water-soluble magnesium does not apply to brackish groundwater (chloride content between 12 000mg/l and 17000 mg/l). This allows 'm' to be omitted from the relevant ACEC Classification. Seawater (chloride content about 18 000 mg/l) and stronger brines are not covered by this table.

Explanation of suffix symbols to ACEC Class

- Suffix 's' indicates that the water has been classified as static.
- Concrete placed in ACEC Classes that included the suffix 'z' primarily have to resist acid conditions and may be made with any of the cements or combinations listed in Table D2 on page 42.
- Suffix 'm' relates to the higher levels of magnesium in Design Sulfate Classes 4 and 5.

CHEMICAL CONTAMINATION ANALYSIS RESULTS

Sub Surface Laboratories
3 Peel Street
Preston
Lancashire
PR2 2QS

FAO Simon Gabbatt
10 August 2012

Dear Simon Gabbatt

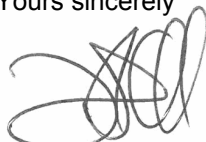
Test Report Number **210464**
Your Project Reference **NE3146A - Macham Street, Huddersfield**

Please find enclosed the results of analysis for the samples received 2 August 2012.

All soil samples will be retained for a period of one month and all water samples will be retained for 7 days following the date of the test report. Should you require an extended retention period then please detail your requirements in an email to customerservices@chemtest.co.uk. Please be aware that charges may be applicable for extended sample storage.

If you require any further assistance, please do not hesitate to contact the Customer Services team.

Yours sincerely



Darrell Hall, Director



Notes to accompany report:

- The sign < means 'less than'
- Tests marked 'U' hold UKAS accreditation
- Tests marked 'M' hold MCertS (and UKAS) accreditation
- Tests marked 'N' do not currently hold UKAS accreditation
- Tests marked 'S' were subcontracted to an approved laboratory
- n/e means 'not evaluated'
- i/s means 'insufficient sample'
- u/s means 'unsuitable sample'
- Comments or interpretations are beyond the scope of UKAS accreditation
- The results relate only to the items tested
- All results are expressed on a dry weight basis
- The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, phenols
- For all other tests the samples were dried at < 37°C prior to analysis
- Uncertainties of measurement for the determinands tested are available upon request
- None of the test results included in this report have been recovery corrected

Sub Surface Laboratories
3 Peel Street
Preston
Lancashire
PR2 2QS

FAO Simon Gabbatt

LABORATORY TEST REPORT

Results of analysis of 12 samples
received 2 August 2012

NE3146A - Macham Street, Huddersfield



Report Date
10 August 2012

Login Batch No

Chemtest LIMS ID

Sample ID

Sample No

Sampling Date

Depth

Matrix

SOP↓	Determinand↓	CAS No↓	Units↓	*	
1010	pH	PH		U	7.3
1300	Cyanide (total)	57125	mg l ⁻¹	U	< 0.05
1325	Sulfide	18496258	mg l ⁻¹	U	<0.050
1220	Sulfate	14808798	mg l ⁻¹	U	8.9
1450	Arsenic	7440382	µg l ⁻¹	U	<1.0
	Boron	7440428	µg l ⁻¹	U	<20
	Cadmium	7440439	µg l ⁻¹	U	0.08
	Chromium	7440473	µg l ⁻¹	U	2.8
	Copper	7440508	µg l ⁻¹	U	2.3
	Mercury	7439976	µg l ⁻¹	U	<0.5
	Nickel	7440020	µg l ⁻¹	U	2.4
	Lead	7439921	µg l ⁻¹	U	<1.0
	Selenium	7782492	µg l ⁻¹	U	<1.0
	Zinc	7440666	µg l ⁻¹	U	11
1490	Chromium (hexavalent)	18540299	µg l ⁻¹	U	<20 ¹
1673	TPH >C6-C10		µg l ⁻¹	U	<0.10 ¹
	TPH >C10-C21		µg l ⁻¹	U	<0.10 ¹
	TPH >C21-C40		µg l ⁻¹	U	<0.10 ¹
	TPH (Aqueous Phase)		µg l ⁻¹	U	<10 ¹
1700	Naphthalene	91203	µg l ⁻¹	U	<0.1
	Acenaphthylene	208968	µg l ⁻¹	U	<0.1
	Acenaphthene	83329	µg l ⁻¹	U	<0.1

¹The stability time for this analyte has been exceeded - these results may be compromised and will not be accredited (UKAS/MCerts)

All tests undertaken between 02/08/2012 and 10/08/2012

* Accreditation status

This report should be interpreted in conjunction with the notes on the accompanying cover page.

Column page 1

Report page 1 of 5

LIMS sample ID range AH59061 to AH59072

LABORATORY TEST REPORT

Results of analysis of 12 samples
received 2 August 2012

NE3146A - Macham Street, Huddersfield

Report Date
10 August 2012

					210464
					AH59072
					TP3
					212
					19/7/2012
					0.40m
					LEACHATE
1700	Fluorene	86737	µg l ⁻¹	U	<0.1
	Phenanthrene	85018	µg l ⁻¹	U	<0.1
	Anthracene	120127	µg l ⁻¹	U	<0.1
	Fluoranthene	206440	µg l ⁻¹	U	<0.1
	Pyrene	129000	µg l ⁻¹	U	<0.1
	Benzo[a]anthracene	56553	µg l ⁻¹	U	<0.1
	Chrysene	218019	µg l ⁻¹	U	<0.1
	Benzo[b]fluoranthene	205992	µg l ⁻¹	U	<0.1
	Benzo[k]fluoranthene	207089	µg l ⁻¹	U	<0.1
	Benzo[a]pyrene	50328	µg l ⁻¹	U	<0.1
	Dibenzo[a,h]anthracene	53703	µg l ⁻¹	U	<0.1
	Indeno[1,2,3-cd]pyrene	193395	µg l ⁻¹	U	<0.1
	Benzo[g,h,i]perylene	191242	µg l ⁻¹	U	<0.1
	Total (of 16) PAHs		µg l ⁻¹	U	<2
1760	Methyl tert-butylether	1634044	µg l ⁻¹	N	<1.0 ¹
	Benzene	71432	µg l ⁻¹	U	<1.0 ¹
	Toluene	108883	µg l ⁻¹	U	<1.0 ¹
	Ethylbenzene	100414	µg l ⁻¹	U	<1.0 ¹
	m- & p-Xylene	1330207	µg l ⁻¹	U	<1.0 ¹
1920	o-Xylene	95476	µg l ⁻¹	U	<1.0 ¹
	Phenols (total)		mg l ⁻¹	N	< 0.03

¹The stability time for this analyte has been exceeded - these results may be compromised and will not be accredited (UKAS/MCerts)

Sub Surface Laboratories
3 Peel Street
Preston
Lancashire
PR2 2QS

FAO Simon Gabbatt

LABORATORY TEST REPORT

Results of analysis of 12 samples
received 2 August 2012

NE3146A - Macham Street, Huddersfield



Report Date
10 August 2012

Login Batch No

Chemtest LIMS ID

Sample ID

Sample No

Sampling Date

Depth

Matrix

SOP↓ Determinand↓

CAS No↓

Units↓

*

					210464					
					AH59061	AH59062	AH59063	AH59064	AH59065	AH59066
					BH1	BH1	BH1	BH2	BH2	BH2
					567	568	571	579	580	585
					19/7/2012	19/7/2012	19/7/2012	19/7/2012	19/7/2012	19/7/2012
					0.10m	0.60m	2.00m	0.20m	1.00m	3.60m
					SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
2010	pH			M		7.0	5.7		7.5	7.0
2300	Cyanide (total)	57125	mg kg ⁻¹	M						
2325	Sulfide (Easily Liberatable)	18496258	mg kg ⁻¹	M						
2120	Boron (hot water soluble)	7440428	mg kg ⁻¹	M						
	Sulfate (2:1 water soluble) as SO ₄	14808798	g l ⁻¹	M		0.03	0.02		<0.01	0.05
2490	Chromium (hexavalent)	18540299	mg kg ⁻¹	N						
2430	Sulfate (total) as SO ₄	14808798	%	M						
2450	Arsenic	7440382	mg kg ⁻¹	M						
	Cadmium	7440439	mg kg ⁻¹	M						
	Chromium	7440473	mg kg ⁻¹	M						
	Copper	7440508	mg kg ⁻¹	M						
	Mercury	7439976	mg kg ⁻¹	M						
	Nickel	7440020	mg kg ⁻¹	M						
	Lead	7439921	mg kg ⁻¹	M						
	Selenium	7782492	mg kg ⁻¹	M						
	Zinc	7440666	mg kg ⁻¹	M						
2670	TPH >C6-C10		mg kg ⁻¹	N						
	TPH >C10-C21		mg kg ⁻¹	N						
	TPH >C21-C40		mg kg ⁻¹	N						
	Total Petroleum Hydrocarbons		mg kg ⁻¹	M						
2675	TPH aliphatic >C5-C6		mg kg ⁻¹	N	< 0.1 ¹			< 0.1 ¹		
	TPH aliphatic >C6-C8		mg kg ⁻¹	N	< 0.1 ¹			< 0.1 ¹		

¹The stability time for this analyte has been exceeded - these results may be compromised and will not be accredited (UKAS/MCerts)

All tests undertaken between 02/08/2012 and 10/08/2012

* Accreditation status

This report should be interpreted in conjunction with the notes on the accompanying cover page.

Column page 1

Report page 3 of 5

LIMS sample ID range AH59061 to AH59072

Sub Surface Laboratories
3 Peel Street
Preston
Lancashire
PR2 2QS

FAO Simon Gabbatt

LABORATORY TEST REPORT

Results of analysis of 12 samples
received 2 August 2012

NE3146A - Macham Street, Huddersfield



Report Date
10 August 2012

Login Batch No				210464				
Chemtest LIMS ID				AH59067	AH59068	AH59069	AH59070	AH59071
Sample ID				TP1	TP2	TP3	TP4	TP5
Sample No				200	205	212	219	226
Sampling Date				19/7/2012	19/7/2012	19/7/2012	19/7/2012	19/7/2012
Depth				0.10m	0.20m	0.40m	0.20m	0.10m
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL
SOP↓	Determinand↓	CAS No↓	Units↓					
2010	pH		M	7.2	8.0	7.0	8.0	7.6
2300	Cyanide (total)	57125	mg kg ⁻¹	M	<0.50	<0.50	<0.50	<0.50
2325	Sulfide (Easily Liberatable)	18496258	mg kg ⁻¹	M	0.83	0.55	0.73	1.6
2120	Boron (hot water soluble)	7440428	mg kg ⁻¹	M	0.6	0.6	<0.4	0.9
	Sulfate (2:1 water soluble) as SO4	14808798	g l ⁻¹	M				
2490	Chromium (hexavalent)	18540299	mg kg ⁻¹	N	<0.5	<0.5	<0.5	<0.5
2430	Sulfate (total) as SO4	14808798	%	M	0.26	0.08	0.02	0.08
2450	Arsenic	7440382	mg kg ⁻¹	M	4.1	33	24	11
	Cadmium	7440439	mg kg ⁻¹	M	<0.10	<0.10	0.55	<0.10
	Chromium	7440473	mg kg ⁻¹	M	21	18	22	18
	Copper	7440508	mg kg ⁻¹	M	10	120	58	6.8
	Mercury	7439976	mg kg ⁻¹	M	<0.10	<0.10	1.4	<0.10
	Nickel	7440020	mg kg ⁻¹	M	<5.0	6.8	<5.0	<5.0
	Lead	7439921	mg kg ⁻¹	M	36	44	180	35
	Selenium	7782492	mg kg ⁻¹	M	0.40	0.26	0.59	0.29
	Zinc	7440666	mg kg ⁻¹	M	19	<10	55	<10
2670	TPH >C6-C10		mg kg ⁻¹	N	< 1 ¹	< 1 ¹	< 1 ¹	< 1 ¹
	TPH >C10-C21		mg kg ⁻¹	N	250 ¹	280 ¹	2.4 ¹	8.2 ¹
	TPH >C21-C40		mg kg ⁻¹	N	250 ¹	1400 ¹	2.1 ¹	< 1 ¹
	Total Petroleum Hydrocarbons		mg kg ⁻¹	M	510 ¹	1600 ¹	< 10 ¹	< 10 ¹
2675	TPH aliphatic >C5-C6		mg kg ⁻¹	N				
	TPH aliphatic >C6-C8		mg kg ⁻¹	N				

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* Accreditation status

This report should be interpreted in conjunction with the notes on the accompanying cover page.

Column page 2

Report page 3 of 5

LIMS sample ID range AH59061 to AH59072

Sub Surface Laboratories
3 Peel Street
Preston
Lancashire
PR2 2QS

FAO Simon Gabbatt

LABORATORY TEST REPORT

Results of analysis of 12 samples
received 2 August 2012

NE3146A - Macham Street, Huddersfield



Report Date
10 August 2012

				210464					
				AH59061	AH59062	AH59063	AH59064	AH59065	AH59066
				BH1	BH1	BH1	BH2	BH2	BH2
				567	568	571	579	580	585
				19/7/2012	19/7/2012	19/7/2012	19/7/2012	19/7/2012	19/7/2012
				0.10m	0.60m	2.00m	0.20m	1.00m	3.60m
				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
2675	TPH aliphatic >C8-C10		mg kg ⁻¹	N	< 0.1 ¹		< 0.1 ¹		
	TPH aliphatic >C10-C12		mg kg ⁻¹	M	< 1 ¹		< 1 ¹		
	TPH aliphatic >C12-C16		mg kg ⁻¹	M	< 1 ¹		< 1 ¹		
	TPH aliphatic >C16-C21		mg kg ⁻¹	M	< 1 ¹		< 1 ¹		
	TPH aliphatic >C21-C35		mg kg ⁻¹	M	< 1 ¹		26 ¹		
	TPH aliphatic >C35-C44		mg kg ⁻¹	N	< 1 ¹		< 1 ¹		
	TPH aromatic >C5-C7		mg kg ⁻¹	N	< 0.1 ¹		< 0.1 ¹		
	TPH aromatic >C7-C8		mg kg ⁻¹	N	< 0.1 ¹		< 0.1 ¹		
	TPH aromatic >C8-C10		mg kg ⁻¹	N	< 0.1 ¹		< 0.1 ¹		
	TPH aromatic >C10-C12		mg kg ⁻¹	M	< 1 ¹		< 1 ¹		
	TPH aromatic >C12-C16		mg kg ⁻¹	M	< 1 ¹		1.3 ¹		
	TPH aromatic >C16-C21		mg kg ⁻¹	M	4.2 ¹		6.2 ¹		
	TPH aromatic >C21-C35		mg kg ⁻¹	M	10 ¹		11 ¹		
	TPH aromatic >C35-C44		mg kg ⁻¹	N	< 1 ¹		< 1 ¹		
	Total Petroleum Hydrocarbons		mg kg ⁻¹	N	15 ¹		45 ¹		
2700	Naphthalene	91203	mg kg ⁻¹	M					
	Acenaphthylene	208968	mg kg ⁻¹	M					
	Acenaphthene	83329	mg kg ⁻¹	M					
	Fluorene	86737	mg kg ⁻¹	M					
	Phenanthrene	85018	mg kg ⁻¹	M					
	Anthracene	120127	mg kg ⁻¹	M					
	Fluoranthene	206440	mg kg ⁻¹	M					
	Pyrene	129000	mg kg ⁻¹	M					
	Benzo[a]anthracene	56553	mg kg ⁻¹	M					

¹The stability time for this analyte has been exceeded - these results may be compromised and will not be accredited (UKAS/MCerts)

All tests undertaken between 02/08/2012 and 10/08/2012

* Accreditation status

This report should be interpreted in conjunction with the notes on the accompanying cover page.

Column page 1

Report page 4 of 5

LIMS sample ID range AH59061 to AH59072

LABORATORY TEST REPORT

Results of analysis of 12 samples
received 2 August 2012

NE3146A - Macham Street, Huddersfield

Report Date
10 August 2012

					210464				
					AH59067	AH59068	AH59069	AH59070	AH59071
					TP1	TP2	TP3	TP4	TP5
					200	205	212	219	226
					19/7/2012	19/7/2012	19/7/2012	19/7/2012	19/7/2012
					0.10m	0.20m	0.40m	0.20m	0.10m
					SOIL	SOIL	SOIL	SOIL	SOIL
2675	TPH aliphatic >C8-C10		mg kg ⁻¹	N					
	TPH aliphatic >C10-C12		mg kg ⁻¹	M					
	TPH aliphatic >C12-C16		mg kg ⁻¹	M					
	TPH aliphatic >C16-C21		mg kg ⁻¹	M					
	TPH aliphatic >C21-C35		mg kg ⁻¹	M					
	TPH aliphatic >C35-C44		mg kg ⁻¹	N					
	TPH aromatic >C5-C7		mg kg ⁻¹	N					
	TPH aromatic >C7-C8		mg kg ⁻¹	N					
	TPH aromatic >C8-C10		mg kg ⁻¹	N					
	TPH aromatic >C10-C12		mg kg ⁻¹	M					
	TPH aromatic >C12-C16		mg kg ⁻¹	M					
	TPH aromatic >C16-C21		mg kg ⁻¹	M					
	TPH aromatic >C21-C35		mg kg ⁻¹	M					
	TPH aromatic >C35-C44		mg kg ⁻¹	N					
	Total Petroleum Hydrocarbons		mg kg ⁻¹	N					
2700	Naphthalene	91203	mg kg ⁻¹	M	1.6	0.19	< 0.1	< 0.1	0.56
	Acenaphthylene	208968	mg kg ⁻¹	M	0.64	1.2	< 0.1	< 0.1	1.3
	Acenaphthene	83329	mg kg ⁻¹	M	2.5	0.42	< 0.1	< 0.1	1.1
	Fluorene	86737	mg kg ⁻¹	M	2.1	0.36	< 0.1	< 0.1	0.98
	Phenanthrene	85018	mg kg ⁻¹	M	14	11	0.22	0.78	15
	Anthracene	120127	mg kg ⁻¹	M	3.7	4.6	< 0.1	0.78	3.7
	Fluoranthene	206440	mg kg ⁻¹	M	16	36	0.49	1.1	25
	Pyrene	129000	mg kg ⁻¹	M	13	33	0.4	1.2	20
	Benzo[a]anthracene	56553	mg kg ⁻¹	M	7.5	24	0.31	< 0.1	10

*The stability time for this analyte has been exceeded - these results may be compromised and will not be accredited (UKAS/MCerts)

Sub Surface Laboratories
3 Peel Street
Preston
Lancashire
PR2 2QS

FAO Simon Gabbatt

LABORATORY TEST REPORT

Results of analysis of 12 samples
received 2 August 2012

NE3146A - Macham Street, Huddersfield



Report Date
10 August 2012

					210464					
					AH59061	AH59062	AH59063	AH59064	AH59065	AH59066
					BH1	BH1	BH1	BH2	BH2	BH2
					567	568	571	579	580	585
					19/7/2012	19/7/2012	19/7/2012	19/7/2012	19/7/2012	19/7/2012
					0.10m	0.60m	2.00m	0.20m	1.00m	3.60m
					SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
2700	Chrysene	218019	mg kg ⁻¹	M						
	Benzo[b]fluoranthene	205992	mg kg ⁻¹	M						
	Benzo[k]fluoranthene	207089	mg kg ⁻¹	M						
	Benzo[a]pyrene	50328	mg kg ⁻¹	M						
	Dibenzo[a,h]anthracene	53703	mg kg ⁻¹	M						
	Indeno[1,2,3-cd]pyrene	193395	mg kg ⁻¹	M						
	Benzo[g,h,i]perylene	191242	mg kg ⁻¹	M						
	Total (of 16) PAHs		mg kg ⁻¹	M						
2760	Methyl tert-butyl ether	1634044	µg kg ⁻¹	N						
	Benzene	71432	µg kg ⁻¹	M						
	Toluene	108883	µg kg ⁻¹	M						
	Ethylbenzene	100414	µg kg ⁻¹	M						
	m- & p-Xylene	1330207	µg kg ⁻¹	U						
	o-Xylene	95476	µg kg ⁻¹	U						
2920	Phenols (total)		mg kg ⁻¹	N						

¹The stability time for this analyte has been exceeded - these results may be compromised and will not be accredited (UKAS/MCerts)

All tests undertaken between 02/08/2012 and 10/08/2012

* Accreditation status

This report should be interpreted in conjunction with the notes on the accompanying cover page.

Column page 1

Report page 5 of 5

LIMS sample ID range AH59061 to AH59072

LABORATORY TEST REPORT

Results of analysis of 12 samples
received 2 August 2012

NE3146A - Macham Street, Huddersfield

Report Date
10 August 2012

					210464				
					AH59067	AH59068	AH59069	AH59070	AH59071
					TP1	TP2	TP3	TP4	TP5
					200	205	212	219	226
					19/7/2012	19/7/2012	19/7/2012	19/7/2012	19/7/2012
					0.10m	0.20m	0.40m	0.20m	0.10m
					SOIL	SOIL	SOIL	SOIL	SOIL
2700	Chrysene	218019	mg kg ⁻¹	M	8.9	26	0.32	0.53	12
	Benzo[b]fluoranthene	205992	mg kg ⁻¹	M	5.8	27	0.47	0.42	10
	Benzo[k]fluoranthene	207089	mg kg ⁻¹	M	0.36	18	0.27	0.2	5.4
	Benzo[a]pyrene	50328	mg kg ⁻¹	M	6.7	32	0.14	0.49	11
	Dibenzo[a,h]anthracene	53703	mg kg ⁻¹	M	1.1	5.4	0.11	< 0.1	2.1
	Indeno[1,2,3-cd]pyrene	193395	mg kg ⁻¹	M	4.1	22	0.19	0.22	7.6
	Benzo[g,h,i]perylene	191242	mg kg ⁻¹	M	4.2	17	0.17	0.23	7.6
	Total (of 16) PAHs		mg kg ⁻¹	M	92	260	3.1	6	130
2760	Methyl tert-butyl ether	1634044	µg kg ⁻¹	N	< 1 ¹	< 1 ¹	< 1 ¹	< 1 ¹	< 1 ¹
	Benzene	71432	µg kg ⁻¹	M	< 1.0 ¹	< 1.0 ¹	< 1.0 ¹	< 1.0 ¹	< 1.0 ¹
	Toluene	108883	µg kg ⁻¹	M	< 1.0 ¹	< 1.0 ¹	< 1.0 ¹	< 1.0 ¹	< 1.0 ¹
	Ethylbenzene	100414	µg kg ⁻¹	M	< 1.0 ¹	< 1.0 ¹	< 1.0 ¹	< 1.0 ¹	< 1.0 ¹
	m- & p-Xylene	1330207	µg kg ⁻¹	U	< 1.0 ¹	< 1.0 ¹	< 1.0 ¹	< 1.0 ¹	< 1.0 ¹
	o-Xylene	95476	µg kg ⁻¹	U	< 1.0 ¹	< 1.0 ¹	< 1.0 ¹	< 1.0 ¹	< 1.0 ¹
2920	Phenols (total)		mg kg ⁻¹	N	<0.3	<0.3	<0.3	<0.3	<0.3

¹The stability time for this analyte has been exceeded - these results may be compromised and will not be accredited (UKAS/MCerts)

Sub Surface Laboratories
3 Peel Street
Preston
Lancashire
PR2 2QS

FAO Simon Gabbatt
13 August 2012

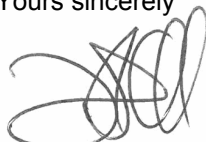
Dear Simon Gabbatt

Test Report Number **210464**
Your Project Reference **NE3146A - Macham Street, Huddersfield**

Please find enclosed the results of analysis for the samples received 2 August 2012.

If you require any further assistance, please do not hesitate to contact the Customer Services team.

Yours sincerely



Darrell Hall, Director



Notes to accompany report:

- *The in-house procedure is employed to identify materials and fibres in soils*
- *The sample is examined by stereo-binocular and polarised light microscopy*
- *Sample size is reduced by coning and quartering to obtain a representative sub-sample if necessary*
- *The bulk identification is in accordance with the requirements of the analyst guide (HSG 248)*
- *Samples associated with asbestos are retained for six months*
- *The results relate only to the items tested as supplied by the client*
- *Comments or interpretations are beyond the scope of UKAS accreditation*



Sub Surface Laboratories
3 Peel Street
Preston
Lancashire
PR2 2QS

FAO Simon Gabbatt

LABORATORY TEST REPORT

Asbestos in Soils



Results of analysis of 4 samples
received 2 August 2012
NE3146A - Macham Street, Huddersfield

Report Date
13 August 2012

Login Batch No: 210464

Qualitative Results

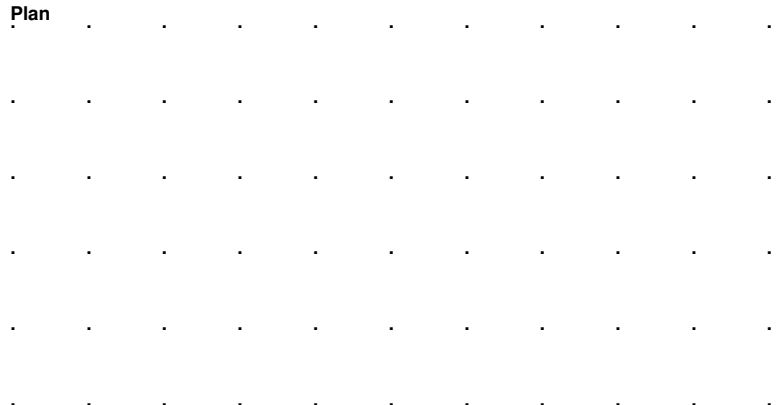
Chemtest ID	Sample ID	Sample Desc	Depth (m)	SOP 2190	
				ACM Type	Asbestos Identification
AH59064	579	BH2	0.20	-	No Asbestos Detected
AH59069	212	TP3	0.40	-	No Asbestos Detected
AH59070	219	TP4	0.20	-	No Asbestos Detected
AH59071	226	TP5	0.10	-	No Asbestos Detected

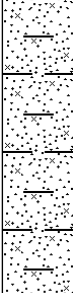
The detection limit for this method is 0.001%

Signed

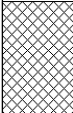
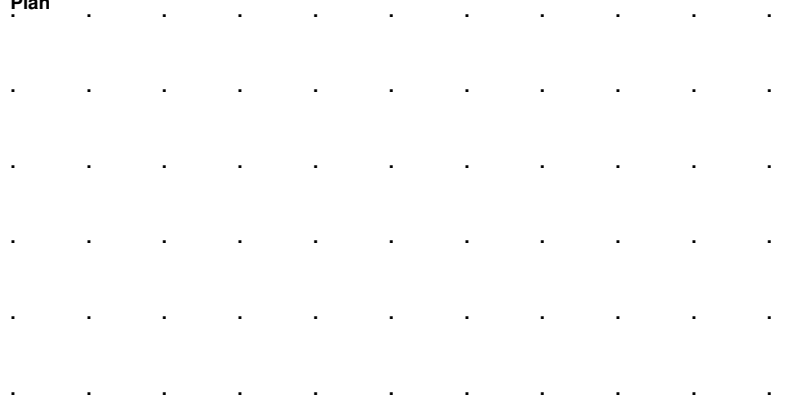
Steve McGrath
Asbestos Analyst

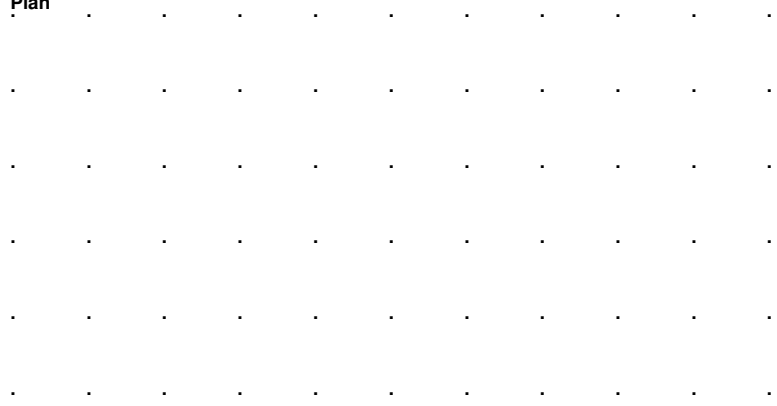
TRIAL PIT RECORD SHEETS

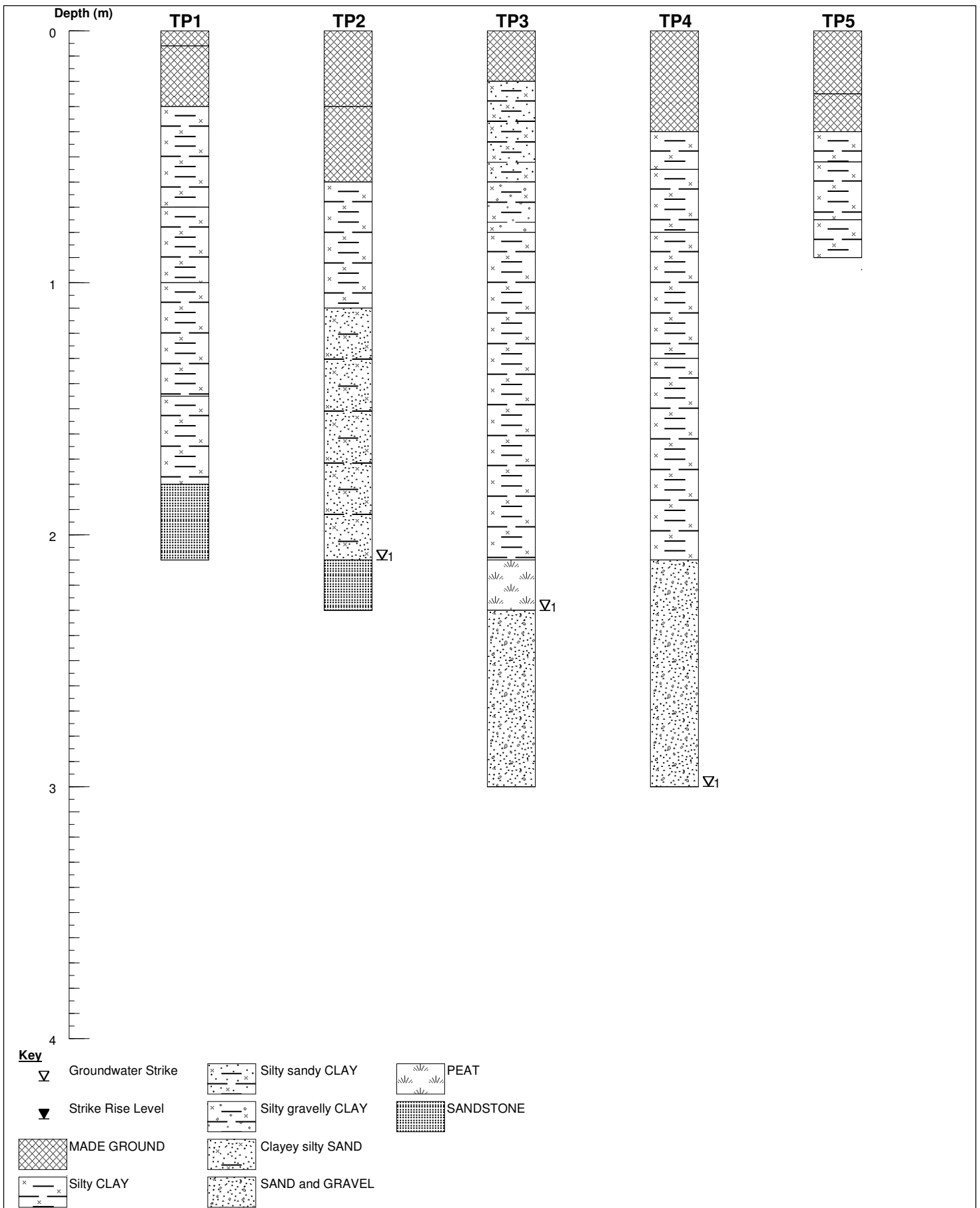
 SUB SURFACE SITE INVESTIGATION, GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907						Site MACHAM STREET, HUDDERSFIELD, WEST YORKSHIRE		Trial Pit Number TP1	
Excavation Method MECHANICAL EXCAVATOR		Dimensions 0.6m x 2.3m		Ground Level (mOD)		Client MADNI JAMIA MASJID		Job Number NE3146A	
		Location AS PLAN		Dates 19/07/2012		Engineer AMANAH STUDIO		Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	
0.10	D				0.06 (0.24)	MADE GROUND: concrete (old garage base)			
0.40	B		HV@0.50m, c=60kPa		0.30 (0.40)	MADE GROUND: dark grey sand, topsoil and slight sand sized ash and fine gravel sized clinker			
						Firm orange brown and brown silty CLAY			
						at 0.50m: medium strength			
0.80	D		HV@0.85m, c=46kPa		0.70 (0.30)	Firm brown and grey mottled silty CLAY			
						at 0.85m: medium strength			
1.10	D		HV@1.20m, c=24kPa		1.00 (0.45)	Soft grey silty CLAY with old roots			
						at 1.20m: low strength			
1.50	B				1.45 (0.35)	Firm brown silty CLAY with lithorelicts of thinly bedded sandstone			
						Brown weak thinly bedded medium grained SANDSTONE. Sandstone recovered as long tabular blocks with clay infilled joints			
			19/07/2012		2.10	below 2.00m: becoming discoloured			
						Complete at 2.10m			
Plan 						Remarks No groundwater entries encountered. Partial collapse of pit sides. HV = Hand Shear Vane test. Pit long axis orientated north west to south east.			
						Scale (approx) 1:25	Logged By DS/DK	Figure No. NE3146A.TP1	

 SUB SURFACE SITE INVESTIGATION, GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907						Site MACHAM STREET, HUDDERSFIELD, WEST YORKSHIRE		Trial Pit Number TP2	
Excavation Method MECHANICAL EXCAVATOR		Dimensions 0.6m x 2.3m		Ground Level (mOD)		Client MADNI JAMIA MASJID		Job Number NE3146A	
		Location AS PLAN		Dates 19/07/2012		Engineer AMANAH STUDIO		Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	
0.20	D				(0.30)	MADE GROUND: dark brown topsoil and sand sized ash and fine gravel sized clinker, brown sand and occasional cobble sized brick and concrete fragments			
0.45	B		HV@0.50m, c=70kPa		0.30 (0.30)	Firm brown and light brown silty CLAY with some roots			
0.70	D				0.60 (0.50)	at 0.50m: medium strength Firm brown silty CLAY			
1.20	D		HV@1.10m, c=72kPa		1.10 (1.00)	at 1.00m: medium strength Grey clayey silty SAND. Roots observed to 2.0m			
2.00	D				2.10				
2.10	B		Slight seepage(1) at 2.10m. 19/07/2012		(0.20)	Weak brown thinly bedded medium grained discoloured SANDSTONE. Some partial clay infilled joints and bedded		∇1	
					2.30	Complete at 2.30m			
Plan .						Remarks Slight groundwater seepage at 2.10m. Partial collapse of pit sides in granular stratum. HV = Hand Shear Vane test. Pit long axis orientated north west to south east.			
						Scale (approx) 1:25	Logged By DS/DK	Figure No. NE3146A.TP2	

 SUB SURFACE SITE INVESTIGATION, GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907						Site MACHAM STREET, HUDDERSFIELD, WEST YORKSHIRE		Trial Pit Number TP3	
Excavation Method MECHANICAL EXCAVATOR		Dimensions 0.6m x 2.6m		Ground Level (mOD)		Client MADNI JAMIA MASJID		Job Number NE3146A	
		Location AS PLAN		Dates 19/07/2012		Engineer AMANAH STUDIO		Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	
0.10	D				(0.20)	MADE GROUND: topsoil and slight sand sized ash			
0.40	B		HV@0.50m, c=55kPa		0.20	Firm brown silty CLAY with brown silty sand bands			
0.70	D		HV@0.70m, c=38kPa		(0.40)	at 0.50m: medium strength			
0.90	D				0.60	Soft to firm dark brown slightly gravelly silty CLAY			
					(0.20)	at 0.70m: low strength			
					0.80	Very soft grey silty CLAY with peat traces at 1.50m			
									
1.40	D		HV@1.20m, c=16kPa			at 1.20m: very low strength			
1.70	D				(1.30)	at 1.60m: very low strength			
									
2.20	D		Fast inflow(1) at 2.30m.		2.10	Dark brown amorphous PEAT with soft grey silty clay lenses			
					(0.20)				
2.50	B				2.30	Brown coarse to medium grained silty SAND and subrounded coarse GRAVEL with some cobbles. Gravel and cobbles are predominantly sandstone			
					(0.70)				
			19/07/2012		3.00	Complete at 3.00m			
Plan .						Remarks Fast groundwater inflow at 2.30m. Continual collapse of pit sides prevented further progress. HV = Hand Shear Vane test. Pit long axis orientated north west to south east.			
						Scale (approx) 1:25	Logged By DS/DK	Figure No. NE3146A.TP3	

 SUB SURFACE SITE INVESTIGATION, GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907						Site MACHAM STREET, HUDDERSFIELD, WEST YORKSHIRE		Trial Pit Number TP4
Excavation Method MECHANICAL EXCAVATOR		Dimensions 0.6m x 2.6m		Ground Level (mOD)		Client MADNI JAMIA MASJID		Job Number NE3146A
		Location AS PLAN		Dates 19/07/2012		Engineer AMANAH STUDIO		Sheet 1/1
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.20	D				(0.40)	MADE GROUND: topsoil and slight sand sized ash. Breeze block wall observed in side of pit to 0.6m		
0.45	D				0.40 (0.15)	Friable orange brown silty CLAY		
0.60	B		HV@0.70m, c=55kPa		0.55 (0.25)	Firm dark grey silty CLAYat 0.70m: medium strength		
0.95	D				0.80 (0.50)	Soft and very soft light grey silty CLAYat 1.20m: low and very low strength		
1.50	D		HV@1.20m, c=24kPa HV@1.50m, c=38kPa		1.30 (0.80)	Soft locally firm brown and grey silty CLAYat 1.50m: low and medium strength		
2.20	B				2.10 (0.90)	Grey and dark brown coarse to medium grained SAND and subrounded to rounded coarse GRAVEL with clayey bands and low cobble content. Gravel and cobble predominantly sandstone		
2.90	D		Seepage(1) at 3.00m. 19/07/2012		3.00	Complete at 3.00m		▽1
Plan 						Remarks Groundwater seepage at 3.00m. Partial collapse of pit sides below 2.10m. HV = Hand Shear Vane test. Pit long axis orientated north west to south east.		
						Scale (approx) 1:25	Logged By DS/DK	Figure No. NE3146A.TP4

 SUB SURFACE SITE INVESTIGATION, GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907					Site MACHAM STREET, HUDDERSFIELD, WEST YORKSHIRE		Trial Pit Number TP5		
Excavation Method MECHANICAL EXCAVATOR		Dimensions 0.6m x 1.1m		Ground Level (mOD)		Client MADNI JAMIA MASJID		Job Number NE3146A	
		Location AS PLAN		Dates 19/07/2012		Engineer AMANAH STUDIO		Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	
0.10	D				(0.25)	MADE GROUND: dark brown sand sized ash, topsoil, fine gravel sized clinker and gravel			
0.30	D				0.25 (0.15)	MADE GROUND: topsoil			
0.45	D				0.40 (0.12)	Friable brown silty CLAY			
0.55	B		HV@0.60m, c=40kPa		0.52 (0.23)	Firm grey and dark brown silty CLAYat 0.60m: medium strength			
0.85	D		HV@0.80m, c=30Pa 19/07/2012		0.75 (0.15) 0.90	Soft grey silty CLAY with some rootsat 0.80m: low strengthat 0.90m: hole stopped due to proximity of garage and access road			
						Complete at 0.90m			
Plan 						Remarks No groundwater entries encountered. Pit sides remained generally vertical. HV = Hand Shear Vane test. Pit long axis orientated north west to south east.			
						Scale (approx) 1:25	Logged By DS/DK	Figure No. NE3146A.TP5	



SUB SURFACE

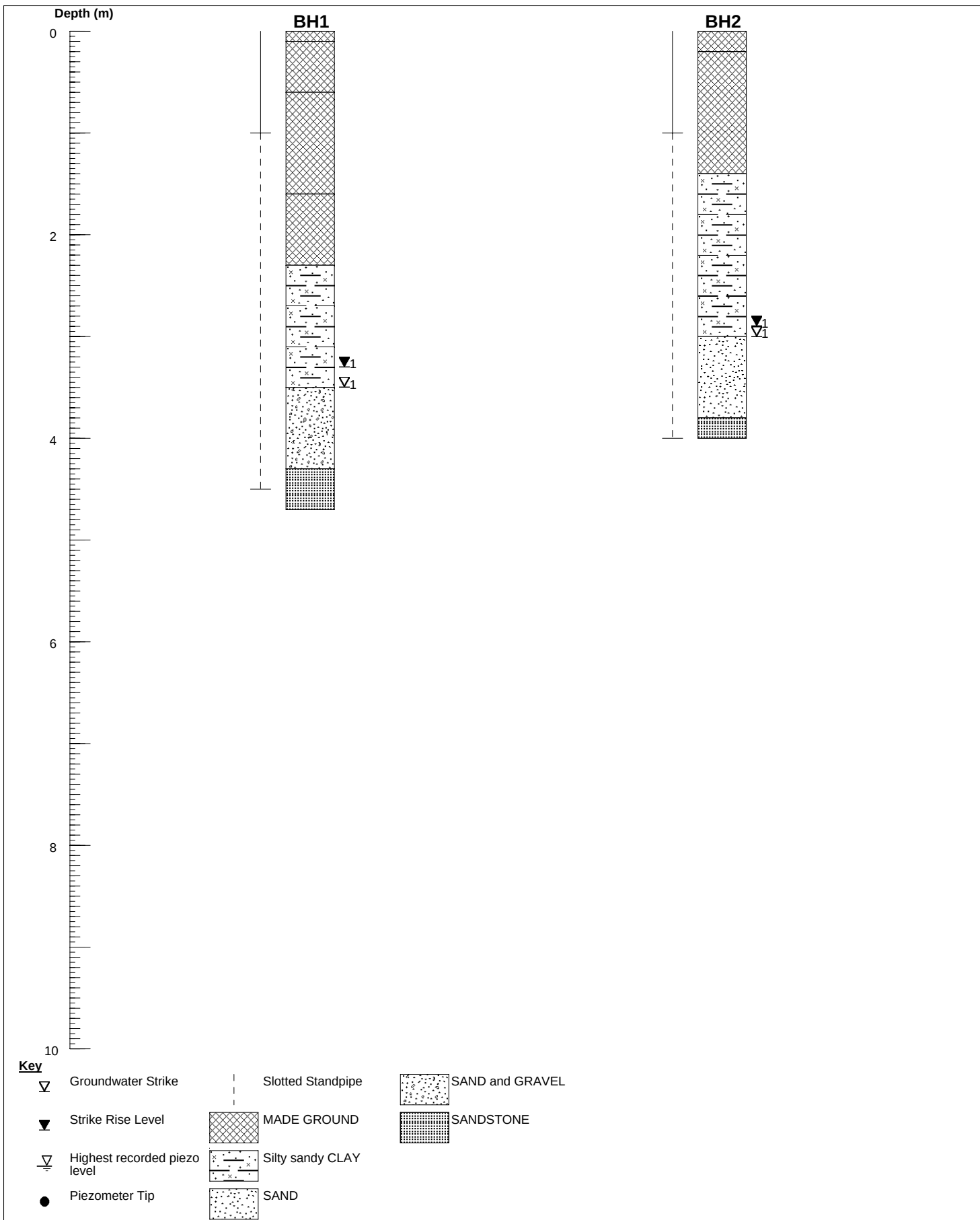
SITE INVESTIGATION, GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907

Site		Nominal Section			
MACHAM STREET, HUDDERSFIELD, WEST YORKSHIRE		Date Drawn 27/09/2012	Date Checked	Sheet 1/1	Job Number NE3146A
Client MADNI JAMIA MASJID		Drawn By	Checked By	Scale 1:20[V]	Figure No. NE3146A.1

BOREHOLE RECORD SHEETS

 SUB SURFACE SITE INVESTIGATION, GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907							Site MACHAM STREET, HUDDERSFIELD, WEST YORKSHIRE		Borehole Number BH1	
Boring Method LIGHT CABLE PERCUSSIVE		Casing Diameter 150mm to 4.20m			Ground Level (mOD)		Client AMANAH STUDIO		Job Number NE3146	
		Location AS PLAN			Dates 19/07/2012		Engineer MADNI JAMIA MASJID		Sheet 1/1	
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.10-0.60	B					0.10 (0.50)	MADE GROUND: gravel sized fragments of limestone (driller's description).			
0.60-1.00	B					0.60	MADE GROUND: dark brown ashy fine to coarse sand and angular to subangular fine to coarse gravel sized fragments of stone, clinker and brick.			
1.00-1.45 1.00-1.45	SPT N=3 D			1,1/0,1,1,1		(1.00)	MADE GROUND: very soft very loose dark brown very gravelly sandy silty clay. Gravel sized fragments are angular to subangular fine to coarse stone.			
1.60-2.00	B					1.60 (0.70)	MADE GROUND: firm dark brown, dark grey and orangish brown slightly sandy silty clay.			
2.00-2.45	U c=24kPa					2.30	 at 2.00m : low strength			
2.45-2.60 2.60-3.00	D B					(1.20)	Firm very dense high strength dark brown very gravelly very sandy silty CLAY. Gravel is subangular to subrounded fine to coarse sandstone and quartz.			
3.00-3.30 3.00-3.30 3.30-3.50	SPT 68/150 D B			10,15/29,39						
3.50-4.00	B			Water Strike(1) at 3.50m, rose to 3.30m in 20 mins, sealed at 4.20m. 25/35,42		3.50 (0.80)	Very dense brown clayey fine to coarse SAND and subangular to subrounded fine to coarse sandstone GRAVEL.			
4.00-4.20 4.00-4.50	CPT 25*/75 77/125 D					4.30 (0.40)	Very weak light grey highly weathered medium to coarse grained SANDSTONE.			
4.50-4.69 4.50-4.69	SPT 25*/75 94/115 D			25/42,52 19/07/2012:DRY		4.70	Complete at 4.70m			
Remarks Hand dug inspection pit from GL to 1.00m to check for services - 1hr Chiselling from 4.00m to 4.50m - 1hr On completion backfilled with arisings and installed a 50mm dia gas monitoring standpipe with a gas valve and gravel surround to 4.50m, a Bentontie seal from 1.00m to 0.20m and a concreted in lockable steel protective cover from 0.20m to GL.								Scale (approx)	Logged By	
								1:50	NM/SJ	
								Figure No. NE3146.BH1		

S SS SUB SURFACE SITE INVESTIGATION, GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907						Site MACHAM STREET, HUDDERSFIELD, WEST YORKSHIRE		Borehole Number BH2		
Boring Method LIGHT CABLE PERCUSSIVE		Casing Diameter 150mm to 3.60m		Ground Level (mOD)		Client AMANAH STUDIO		Job Number NE3146		
		Location AS PLAN		Dates 19/07/2012		Engineer MADNI JAMIA MASJID		Sheet 1/1		
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.20-1.00	B					0.20	MADE GROUND: grass and topsoil (driller's description).			
1.00-1.45 1.00-1.45	SPT N=4 B			1,2/1,1,1,1		(1.20)	MADE GROUND: very soft very loose dark brown and occasional brown slightly gravelly slightly sandy silty clay. Gravel sized fragments are angular to subangular fine to coarse stone and brick.			
1.50-2.00	B					1.40	Firm high strength dark brown gravelly sandy silty CLAY. Gravel is subangular to subrounded fine to coarse sandstone and quartz.			
2.00-2.45 2.00-2.45	SPT N=24 D			2,3/5,6,6,7		(1.60)				
2.50-3.00	B									
3.00-3.45	D			Water Strike(1) at 3.00m, rose to 2.90m in 20 mins, sealed at 3.50m. 6,8/9,8,10,10 25/61		3.00	Dense brown clayey fine to coarse SAND and subangular to subrounded fine to coarse sandstone GRAVEL.			
3.00-3.45 3.60-3.75	SPT N=37 SPT 25*/75 61/75					(0.80)				
3.60-3.75 3.80-4.00	B SPT 25*/75 97/125			25/39,58 19/07/2012		3.80 (0.20) 4.00	Very weak light brown and light grey highly weathered medium to coarse grained SANDSTONE			
3.80-4.00	D						Complete at 4.00m			
Remarks Hand dug inspection pit from GL to 1.00m to check for services - 1hr Chiselling from 3.50m to 3.80m - 30mins On completion backfilled with arisings and installed a 50mm dia gas monitoring standpipe with a gas valve and gravel surround to 4.00m, a Bentonite seal from 1.00m to 0.20m and a concreted in lockable steel protective cover from 0.20m to GL.								Scale (approx) 1:50	Logged By NM/SJ	Figure No. NE3146.BH2



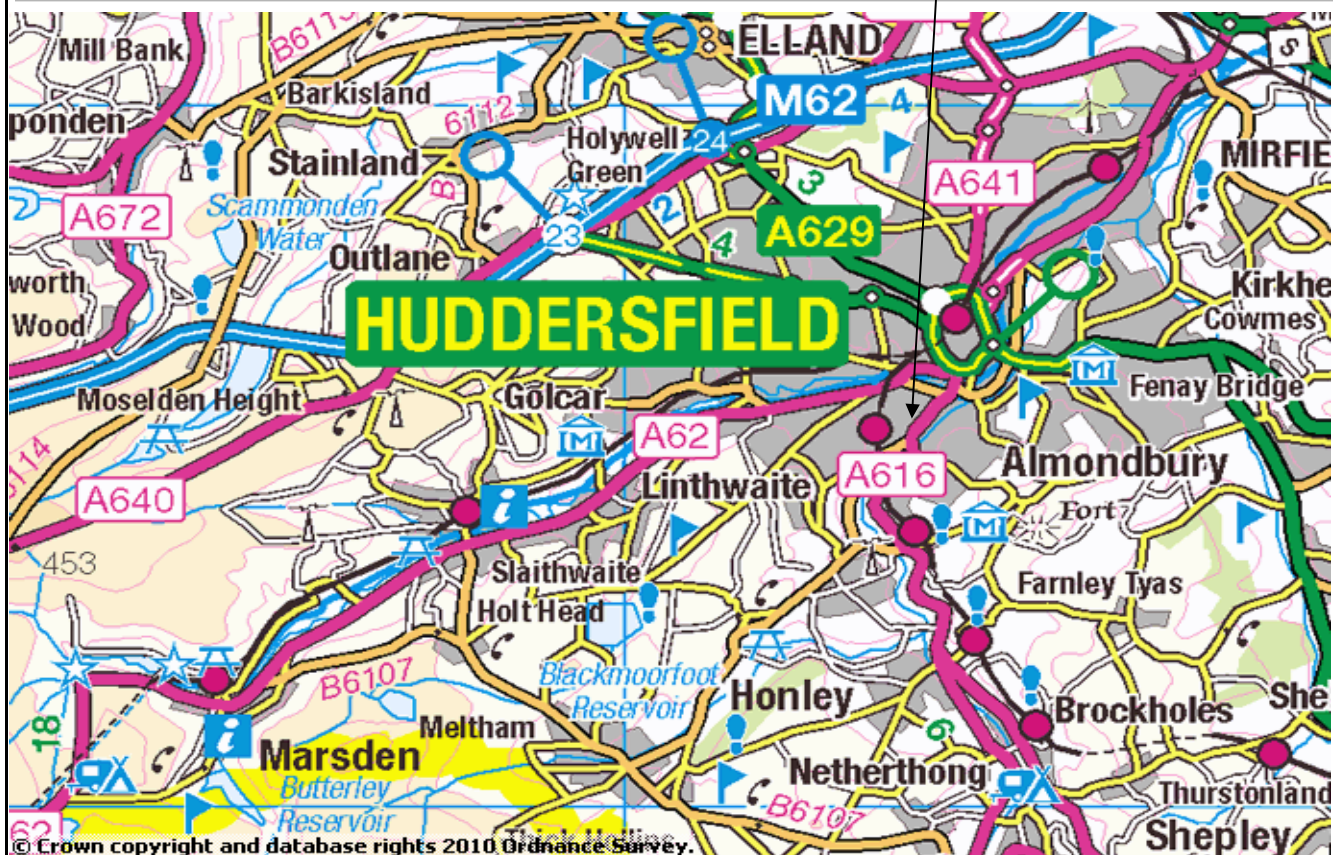
SUB SURFACE

SITE INVESTIGATION, GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907

Nominal Section

Site MACHAM STREET, HUDDERSFIELD, WEST YORKSHIRE	Date Drawn 27/09/2012	Date Checked	Sheet 1/1	Job Number NE3146
Client AMANAH STUDIO	Drawn By	Checked By	Scale 1:50[V]	Figure No. NE3146.1

FIGURES



 SUB SURFACE SITE INVESTIGATION AND SPECIALIST GEOTECHNICAL CONSULTANTS 3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907	General Site Location SE138155			
Site MACHAM STREET, HUDDERSFIELD	Date Drawn 20-Sep-12	Date Checked	Orientation 	Job No. NE3146A
Client MADNI JAMIA MASJID	Drawn By OJS	Checked By	Scale -	Figure No. 1



SUB SURFACE

SITE INVESTIGATION AND SPECIALIST GEOTECHNICAL CONSULTANTS
3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907

Indicative Exploratory Hole Location Plan

Site
MACHAM STREET, HUDDERSFIELD

Date Drawn
20-Sep-12

Date Checked

Orientation



Job No.
NE3146A

Client
MADNI JAMIA MASJID

Drawn By
OJS

Checked By

Scale
NTS

Figure No.
2