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GROUND INVESTIGATION REPORT

**FOR
GRANGE SCHOOL,
MATTHEWS LANE,
LEVENSHULME,
MANCHESTER,
M12 4GR**

**PREPARED FOR
PROSPERE LEARNING TRUST**

**REPORT NO. 8032B
DECEMBER 2024**

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CONTENTS

1. INTRODUCTION	1.1 Site Location and Description
	1.2 Proposed Development and Purpose of the Ground Investigation
2. INVESTIGATION	2.1 Investigation Details
	2.2 Sub Surface Detail
3. SAMPLING, TESTING AND MONITORING	3.1 Sampling
	3.2 Field Testing
	3.3 Installations and Monitoring
	3.4 Laboratory Testing
4. APPRAISAL AND RECOMMENDATIONS	4.1 Comments on the Profile
	4.2 Foundations
	4.3 Floor Slab Construction
	4.4 Excavations and Groundwater
	4.5 Buried Concrete
	4.6 Contamination Considerations
	4.7 Ground Gas Considerations
	4.8 General
APPENDICES	Insitu Test results
	Laboratory Test results
	Contamination Analysis results
	Mini Borehole Record sheets
	Hand Dug Trial Pit Record sheets
	Concrete Core Record Sheets
	Photographs
	Figures

**GROUND INVESTIGATION FOR GRANGE SCHOOL, MATTHEWS LANE,
LEVENSHULME, MANCHESTER, M12 4GR**

CLIENT: PROSPERE LEARNING TRUST

ENGINEER: FREDERICK G. MARKLAND ASSOCIATES LIMITED

1. INTRODUCTION

This report has been prepared in accordance with an email, dated 27th August 2024, from the Client.

The brief was set out in our estimate, ref. E7268C and dated 21st August 2024, with amendments as the investigation proceeded and includes:

- 5 No. mini boreholes
- 2 No. dynamic cone penetration tests
- 2 No. hand excavated trial pits
- In-situ testing
- Geotechnical laboratory testing
- 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 Phase I Desk Study Report for this site, ref. 8032 and dated September 2024, which should be read in conjunction with this Phase II Ground Investigation Report.

1.1 Site Location and Description

The site is located at Grange School, Matthews Lane, Levenshulme, Manchester, M12 4GR, as indicated on Figure 1. The approximate National Grid Reference of the centre of the site is 388108, 394936.

As shown on Figure 2, the about 0.18 hectare rectangular shaped site is bounded to the north by a playground, to the west by the main school building, to the south partially by a car park and partially by the southern end of the sports hall, and to the east by Mount Road. The site is currently occupied by the northern end of the sports hall and part of a playground.

1.2 Proposed Development and Purpose of the Ground Investigation

We understand that it is proposed to construct a single storey extension and a mezzanine floor in the existing sports hall, as shown on Figure 3.

The purpose of the investigation was to determine 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 contamination analysis and 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.

In addition an investigation was required to determine the compressive strength of the existing concrete foundation of the sports hall.

2. INVESTIGATION

2.1 Investigation Details

Two mini boreholes were put down to depths of 3.44 and 3.45 metres using an LSMR Rig fitted with windowless sample tubes of 86mm to 76mm diameter, inside the existing sports hall at the positions determined and set out by the Client's Engineer, as shown on Figure 4. The samples were subsequently logged in accordance with BS.5930:2015+A1:2020 and the resulting Mini Borehole Records are appended. On completion the mini boreholes were backfilled with gravel and the floor reinstated.

A further three mini boreholes were put down to depths of between 3.41 and 3.42 metres using a Dart Mini Sampling Rig fitted with windowless sample tubes of 76mm to 64mm diameter at the positions determined and set out by Sub Surface North West Limited, as shown on Figure 4. The samples were subsequently logged in accordance with BS.5930:2015+A1:2020 and the resulting Mini Borehole Records are appended. On completion ground gas and groundwater monitoring standpipes were installed to 3.00 metres depth.

Two hand dug trial pits were taken out at the positions determined and set out by Sub Surface North West Limited, as shown on Figure 4. The hand dug trial pits were excavated to depths of between 1.15 and 1.20 metres. Samples were taken for logging, in accordance with BS.5930:2015+A1:2020, and testing. Dimensions of the foundations were recorded by an Engineer from Sub Surface North West Limited. The resulting Hand Dug Trial Pit Records are appended. On completion the hand dug trial pits were backfilled with arisings.

2.2 Sub Surface Detail

Details of the strata encountered in the ground investigation are given on the appended Mini Borehole Records and Hand Dug Trial Pit Records. The exploratory holes found Made Ground to depths of between 0.90 and 1.70 metres, overlying generally brown and occasionally grey mottled slightly gravelly slightly sandy clays which were initially soft to firm low to medium strength becoming firm medium strength below around 2.40 to 2.50 metres, stiff high strength below around 2.60 to 2.75 metres, and very stiff very high strength below around 2.85 to 3.15 metres depth.

The depths of strata found were as follows:

TABLE 1 STRATA

Expl. Hole No.	Depth of Concrete (m)	Depth of Macadam (m)	Depth of Made Ground (m)	Depth of Cohesive Deposits (m)	Depth of Hole (m)
M1	0.27	-	1.50	>3.44	3.44
M2	0.31	-	1.70	>3.45	3.45
M3	-	-	1.50	>3.41	3.41
M4	-	0.10	1.65	>3.42	3.42
M5	-	-	1.65	>3.41	3.41
HD1	-	0.08	0.90	>1.15	1.15
HD2	-	0.13	1.14	>1.20	1.20

M = Mini Borehole, HD = Hand Dug Trial Pit.

A general summary of the strata found is as follows:

2.2.1 Made Ground

In the sports hall a laminate wood flooring was observed to 0.03 metres depth. Then concrete (reinforced) was cored to depths of 0.27 and 0.31 metres depth in M1 and M2 respectively and details are given on the appended Concrete Core Record Sheets. Underlying the concrete, Made Ground generally comprised of brown very sandy silty fine to coarse gravel sized fragments of sandstone, concrete and occasional brick (hardcore) to a depth of 1.20 metres, overlying soft dark brownish grey ashy slightly gravelly slightly sandy silty clay to depths of 1.50 and 1.70 metres depth respectively.

Bituminous macadam tarmac surfacing was observed in M4, HD1 and HD2 adjacent to the sports hall to depths of between 0.08 and 0.13 metres, generally overlying light greyish brown sandy silty clayey fine to coarse gravel sized fragments of limestone, sandstone, concrete and wood to depths of 0.60, 0.90, and 1.14 metres respectively. Underlying this in M4, Made Ground comprised of soft to firm brown, dark brown and occasionally grey and yellowish brown mottled ashy slightly gravelly slightly sandy clay to 1.65 metres.

In M3 taken out in the planted area west of the sports hall, Made Ground comprised of brownish grey silty clayey fine to coarse sand and fine to coarse gravel sized fragments of sandstone and concrete with some pockets of organic matter to 0.10 metres, overlying dark brown sandy silty slightly clayey fine to coarse gravel sized fragments of sandstone and concrete with occasional cobble sized fragments of sandstone to 1.20 metres, overlying soft to firm dark greyish brown ashy slightly gravelly slightly sandy very silty clay to 1.50 metres depth.

In M5 taken out adjacent to the east of the large school building, Made Ground comprised of flagstone to 0.05 metres, overlying sand to 0.10 metres depth, overlying light brown sandy silty fine to coarse gravel sized fragments of limestone (hardcore) to 0.50 metres, overlying soft friable brownish grey ashy slightly gravelly slightly sandy clay to 1.65 metres depth.

2.2.2 Drift Deposits

Underlying the Made Ground natural cohesive deposits generally comprised of soft to firm low to medium strength brown and occasionally grey mottled slightly gravelly slightly sandy clay which generally became firm medium strength below around 2.40 to 2.50 metres, stiff high strength below around 2.60 to 2.75 metres, and very stiff very high strength below around 2.85 to 3.15 metres depth.

In M4 and M5 a layer of soft low strength greyish brown clayey silt was observed between 1.65 and 2.00 metres depth.

2.2.3 Groundwater

A groundwater inflow was encountered in HD1 at 0.80 metres. No groundwater was encountered in the remainder of the exploratory holes although it should be noted that they were only left open for a short period of time and groundwater levels and rates of inflow may be subject to seasonal and/ or climatic variations.

Monitoring of standpipes installed in M3, M4 and M5 to a depth of 3.00 metres, found groundwater to be at 0.67 to 1.04, 1.76 to 1.89, and 1.10 to 1.74 metres depth respectively. In addition, the first ground gas monitoring visit undertaken on 9th September 2024 found all standpipes to be dry.

3. SAMPLING, TESTING AND MONITORING

3.1 Sampling

Continuous core, 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

Fifteen Standard Penetration Tests (SPTs) were performed in the mini boreholes, the results of which are recorded on the appended Standard Penetration Test Results Sheet with 'N' values and indicative relative density and shear strength, where appropriate, given on the Mini Borehole Records.

Two insitu Dynamic Cone Penetration (DCP) tests were carried out at the positions shown on Figure 4 and the results are appended.

3.3 Installations and Monitoring

On completion of M3, M4 and M5 hdpe standpipes were installed to a depth of 3.00 metres. The standpipes are slotted from 1.00 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 Mini Borehole Records.

Monitoring of the standpipes for ground gas and groundwater has been undertaken on 6 of 6 scheduled occasions using portable equipment. A Gas Data GFM 435 was used for monitoring methane, carbon dioxide, oxygen, gas flows and atmospheric pressure. 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
- 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, molybdenum, nickel, selenium, zinc, speciated total petroleum hydrocarbons (TPHs), the speciated polynuclear aromatic hydrocarbons (PAHs) suite, the benzene/ ethylbenzene/ toluene/ xylene (BTEX) suite and phenols.

On four of the soil samples concentrations of speciated total petroleum hydrocarbons (TPHs) were determined whilst on the remaining one soil sample speciated aliphatic and aromatic TPHs (from the TPH Criteria Working Group suite) were determined.

In addition five soil samples were subjected to an asbestos screen.

The results of the above analyses are appended.

Two unconfined compressive strength (UCS) tests have been undertaken on selected samples of the nominal 290mm diameter concrete cores in accordance with the International Society for Rock Mechanics (ISRM) methods: 1981, and the results 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 investigated 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.

The exploratory holes indicate a nature and degree of similarity to the extent that we consider them likely to be representative of the natural ground conditions. However, no guarantee can be given.

The internet based British Geological Survey (BGS) Viewer indicates that the site is underlain by Devensian Till composed of Diamicton (poorly sorted gravelly sandy silty clay). Given the above there is an indication that the geological formation will be similar beneath the site and the immediate surrounding area and hence some continuity might be assumed, but not guaranteed.

Due to the site having been previously developed, and 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 only be undertaken with caution.

Details of the findings of the investigation are given on the appended Mini Borehole Records and Hand Dug Trial Pit Records and a summary of the ground conditions is given in Section 2.2.

4.2 Foundations

We understand that it is proposed to construct a single storey extension and a mezzanine floor in the existing sports hall. However, at the time of writing this report no specific details regarding the proposed foundations and design loadings were available and consequently the recommendations given are in general terms only.

The ground investigation found Made Ground to depths of between 0.90 and 1.70 metres, overlying generally brown and occasionally grey mottled slightly gravelly slightly sandy clays which were initially soft to firm low to medium strength becoming firm medium strength below around 2.40 to 2.50 metres, stiff high strength below around 2.60 to 2.75 metres, and very stiff very high strength below around 2.85 to 3.15 metres depth.

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.

Providing there is sufficient load bearing capability we recommend that the proposed single storey extension is founded on strip footings for wall loads and pad foundations for column loads in the natural medium to high strength cohesive strata.

Atterberg limit tests on the cohesive strata indicate clays and silts of low to intermediate plasticity which are considered to have a low to medium susceptibility to shrinkage and swelling with varying moisture content. Given the above foundations should be taken down to a minimum 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 clays and silts of medium shrinkage and swelling potential.

It should be noted that across the site the natural strata is at a depth at or in excess of 0.90 metres and in these areas foundations should be taken down to a minimum 0.10 metres below the base of the Made Ground unless the NHBC guidelines indicate a greater depth.

In view of the depth of foundations required it is anticipated that trench fill will be used to bring levels back up to the surface. Largely dependent upon the cost of disposal of arisings, we anticipate that trench fill would normally be economically viable providing foundation depths do not exceed about 2.50 to 3.00 metres.

Taking the results of the field tests we have determined the safe bearing capacity of the natural strata, as follows:

TABLE 2 SAFE BEARING CAPACITY

Expl Hole No.	Depth (m)	SPT 'N' Value	Shear Strength (kN/m ²)	Safe Bearing Pressure (kN/m ²)		Recommended Minimum Foundation Depth (m)
				Strip Footing	Square Pad	
M1	1.50	4\$	16	30	35	1.75
	1.75	-	72#	135	160	
	1.85	-	90#	170*	205*	
	2.15	21	84	160*	190*	
	2.70	-	79#	150	180	
	2.85	-	>130#	245	295	
	3.15	50/290mm	>200	380	455	
M2	1.85	-	44#	80*	100*	2.75
	2.15	5	20	35	45	
	2.75	-	>130#	245	295	
	3.15	50/295mm	>200	380	455	
M3	1.50	6\$	24	45	55	2.50
	1.75	-	42#	80*	95*	
	2.15	9	36	65	80	
	2.40	16\$	64	120	145	
	2.85	-	120#	225	270	
	3.15	50/255mm	>200	380	455	
M4	1.80	-	47#	85*	105*	2.40
	2.15	9	36	65	80	
	2.40	12\$	48	90	105	
	2.75	-	>130#	245	295	
	3.15	50/265mm	>200	380	455	
M5	1.80	-	32#	60*	70*	2.50
	2.15	7	28	50	60	
	2.70	-	120#	225	270	
	2.85	-	183#	345	415	
	3.15	50/255mm	>200	380	455	

\$ Partial SPT 'N' Value used

* Consideration must be given to weaker underlying strata which might be overstressed if loading is not reduced.

Shear strength determined by hand penetrometer/ shear vane test.

Appreciable variations in safe bearing capacity are indicated in Table 2 and as a consequence of this, and the need to utilise a generally applicable safe bearing pressure to enable designs to be reasonably formulated, we recommend that values of 80 kN/m² for strip footings and 95 kN/m² for square pads should not be exceeded for the recommended minimum foundation depth given.

All formation levels should be carefully inspected by an experienced and qualified engineer to confirm the appropriateness of the design figures used with any soft, loose, or rubble zones removed and replaced with lean mix concrete. The formation should then be blinded with lean mix concrete as soon as possible after exposure, if there is to be a delay before construction, to prevent water softening or disturbance.

It should be noted that the safe bearing pressures given for the cohesive strata do not take into consideration settlement. Settlement is dependent upon loading intensity, the width of the foundation and the coefficient of volume compressibility (Mv) of the compressible strata. When details of the foundations are formulated we recommend that total and differential settlements are assessed to ensure that they are within acceptable limits.

In view of the depth of Made Ground and depth to the first suitable founding stratum shallow foundations in natural ground may not be feasible and therefore, if the foundation depths recommended are too deep for the proposed extension, we would recommend that piled foundations are considered with piles taken down into the very stiff very high strength clay strata.

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, services and/or slopes/ retaining walls as they may be detrimentally affected. Consequently, in respect of driven piles, we recommend that any tendering Specialist Piling Contractor confirm that vibrations will not detrimentally affect adjacent/ nearby buildings, structures, services and/or slopes/ retaining walls. If such confirmation cannot be given, as is likely then we would recommend using either CFA or cast in-situ bored piles.

There is a possibility that for piles installed through a significant thickness of Made Ground some continuing self-weight and consolidation settlement might take place and exert negative skin friction. Due allowance should be made for this in any pile design.

To formulate the most satisfactory and economic scheme we recommend that competitive tenders and designs from Specialist Piling Contractors should be sought using the exploratory hole information obtained or an additional cable percussive borehole taken out to provide design parameters for the strata at depth.

We recommend that a flexible joint is provided between the existing and proposed buildings to allow for differential movement.

Providing there is sufficient load bearing capacity we understand that the proposed mezzanine floor in the sport hall is intended to be supported on the existing concrete foundation. The existing foundation was investigated in trial pits HD1 and HD2 and details of this are given in the appended Hand Dug Trial Pit Records.

The brick wall was measured to depths of 0.62 and 0.57 metres in HD1 and HD2 respectively where a concrete footing was measured to extend out from the wall to 0.14 and 0.10 metres width and to depths of >1.15, and 1.11 metres respectively founding on a soft to firm clay.

The concrete has been tested and was found to have a compressive strength of 32.9 N/mm² in M1 and 38.6 N/mm² in M2.

The reinforced concrete floor of the sports hall is founded on 1.50 to 1.70 metres of Made Ground overlying soft to firm low to medium strength clay. Consequently, in our opinion, it is unlikely that the mezzanine floor can be satisfactorily supported on the existing floor and foundations and will need to be supported on an independent structure at the recommended minimum foundation depths given in Table 2. If a greater bearing capacity is required the foundations can be taken down to the stiff high strength clays where a safe bearing capacity of up to 170 kN/m² for strip footings and 205 kN/m² for pad footings can be used.

An appropriate movement joint will need to be provided between the proposed and the existing.

4.3 Floor Slab Construction

With regard to the design and construction of normal ground bearing floor slabs, it should be noted that due to the thickness of Made Ground 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

There should be no particular difficulties in excavating the strata indicated in the exploratory holes utilising an appropriate and suitably sized mechanical excavator. However, any tarmac or concrete will need to be broken out prior to excavation.

The trial pit sides were found to have variable stability during the relatively short period that they were left open and unsupported with instability found in HD1.

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.

A groundwater inflow was encountered in HD1 at 0.80 metres. No groundwater was encountered in the remainder of the exploratory holes although it should be noted that they were only left open for a short period of time and groundwater levels and rates of inflow may be subject to seasonal and/ or climatic variations.

Monitoring of standpipes installed in M3, M4 and M5 to a depth of 3.00 metres, found groundwater to be at 0.67 to 1.04, 1.76 to 1.89, and 1.10 to 1.74 metres depth respectively. In addition, the first ground gas monitoring visit undertaken on 9th September 2024 found all standpipes to be dry.

Should groundwater seepages occur and water accumulate in the excavation it should be able to be removed by pumping from a filtered sump. Care will need to be taken when reducing groundwater levels to ensure that adjoining/ nearby buildings, structures and services are not affected.

4.5 Buried Concrete

For the design of buried concrete the recommendations given in Building Research Establishment (BRE) Special Digest 1 (February 2017 revision), "Concrete in Aggressive Ground", should be followed.

Determination of pH on the soil samples gave values in the range of 7.0 to 9.1 (near neutral to alkaline).

Soluble sulphate concentrations were also determined for the soil samples and the results ranged from 0.01 to 0.07 g/l.

The results indicate that the Design Sulphate Class for the site should be DS-1.

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-1 should be used as detailed on the appended extract.

4.6 Contamination Considerations

We have previously undertaken a Phase I Report, ref. 8032 and dated September 2024 and this Phase II ground investigation has been undertaken to provide an initial contamination risk assessment in accordance with the Phase I Conceptual Ground Model. Based upon the findings of the above additional sampling, analysis and assessment may be required.

It should be appreciated that the suite of determinants analysed for consists of a range of contaminants identified in the Conceptual Ground Model. However, the absence of any other specific contaminants cannot be guaranteed.

4.6.1 Assessment (Soil)

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

Levels of the determinants have been compared against the most recently published guideline values. Contaminated Land: Applications in Real Environments (CL:AIRE) published guideline values in December 2009 to supplement previous guideline values. The Department for Environment, Food and Rural Affairs (DEFRA) published in March 2014 Category 4 Screening Levels (C4SLs) for arsenic, cadmium, lead, hexavalent chromium, benzo(a)pyrene and benzene. Land Quality Management Limited (LQM)/ Chartered Institute of Environmental Health (CIEH) then published Suitable for Use Levels (S4ULs) in November 2014, which largely superseded the previous guideline values. Updated S4ULs values for cadmium and phenols were published in July 2015 and for nickel in August 2015. The guideline values (S4ULs and occasionally C4SLs and CL:AIRE) are derived using the Environment Agency's CLEA Model and vary dependent upon the land use; allotment and residential use being the most sensitive and commercial/ industrial use being the least sensitive.

8032B – Grange School, Matthews Lane

For the purposes of assessment, as the proposed development is within a school, contamination analyses have been compared with the guideline values for a standard land use of residential without plant uptake (without homegrown produce).

When compared with published guideline values for a standard land use of residential without plant uptake (without homegrown produce) the contamination analysis determined elevated levels of a number of contaminants with varying distribution, as tabulated below:

TABLE 3 ASSESSMENT OF SOIL CONTAMINATION

Determinant	Expl. Hole No.	Depth (m)	Recorded Level (mg/kg)	Published Guideline Value (mg/kg)
arsenic	M3	1.20 – 2.00	48	40
	M5	0.50 – 1.20	48	40
dibenzo(ah)anthracene	M4	1.20 – 2.00	1.1	0.32

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Guideline values for the assessment can be supplied directly to the Regulator, if requested.

The levels of arsenic in two of the samples analysed are elevated against a land use of residential without plant uptake (without homegrown produce). However, as the development is within a school area where most of the ground surface is covered by hardstanding, we consider that it would be appropriate for non-volatile contaminants to also consider the published guideline values for public open space (residential), which for arsenic is 79 mg/kg. As the recorded level is below this we consider that the above elevations pose a negligible risk to the end users of the site and no remedial action is necessary.

The ratios of the Polynuclear Aromatic Hydrocarbons (PAHs): benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(123-cd)pyrene, dibenzo(ah)anthracene and benzo(ghi)perylene have been assessed in the tables appended to the contamination analysis results. The profile of the PAHs was found to match the ratio profile of the coal tar test material studied by Culp et al in 1998 allowing PAHs to be assessed against the C4SL for benzo(a)pyrene as a surrogate marker. The maximum determined benzo(a)pyrene level of 3.1 mg/kg is lower than the published C4SL for residential without plant uptake of 5.3 mg/kg and consequently, in our opinion, the level of PAHs, including dibenzo(ah)anthracene, are within acceptable limits.

An asbestos screen was undertaken on five soil samples and no asbestos was detected.

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.

4.6.2 Conclusions and Recommendations

Section 78a(2) of the Environmental Protection Act: 1990 as amended by the Contaminated Land (England) (Amendment) regulations 2012, and Section 86 of the Water Act 2003, 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) SIGNIFICANT 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 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.

The National Planning Policy Framework states that, “after remediation, as a minimum, land should not be capable of being determined as contaminated land under Part IIA of the Environmental Protection Act 1990”. Therefore, the general principles detailed above apply to this assessment.

Our assessment, based on five soil samples, indicates that there are no contaminants requiring remediation for the proposed development. However, precautions should be taken by site personnel involved in the development process.

S4ULs, C4SLs and CL:AIRE 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 the following precautions should be taken as a minimum requirement.

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.

Should it be necessary for groundwater to be pumped from on-site excavations the groundwater should be sampled and analysed and the groundwater analysis should be submitted to the appropriate waste water authority with a request for a discharge consent. Following receipt of a discharge consent groundwater is likely to be discharged to a sewer or to an off-site licensed discharge point.

4.7 Ground Gas Considerations

Ground gas monitoring has been undertaken on 6 of 6 scheduled occasions 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 4 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 to 21.2	0.2 to 13.6	0.0 to 19.5	<0.1 to -3.3

It can be seen from the monitoring that elevated levels of methane and carbon dioxide, and depleted levels of associated oxygen have been detected. In addition, gas flows have been detected in the final two monitoring visits.

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 design of protective measures for methane and carbon dioxide gasses for new buildings", published in June 2015 and updated in January 2019 (BS.8485:2015+A1:2019).

The characteristic hazardous gas flow rate (Q_{hg}) 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 $Q_{hg} = [21.2 / 100] \times 3.3 = 0.69$ l/hr

Based on the monitoring, BS.8485:2015+A1:2019, Table 2, indicates that the site falls into Characteristic Situation 2 (CS2).

BS.8485:2015+A1:2019, Table 4, indicates that for a CS2 and the type of development proposed a score of 3.5 gives the level of protection and remedial measures required.

BS.8485:2015+A1:2019 Tables 5, 6 and 7 indicate that a combination of the following protection and remedial measures should be considered to achieve the required score:

Table 5.1	precast suspended segmental sub-floor slab (block and beam). (Score 0.0)
Table 5.3	reinforced cast in-situ suspended floor slab with minimal penetrations. (Score 1.0)
Table 5.4	additionally reinforced cast in-situ suspended floor slab with minimal penetrations – slab of minimum 150mm thickness with reinforcement at the bottom and the top (Score 1.5)

Table 6.1	pressure relief pathway (low fines gravel blanket/ thin geocomposite blanket/ strips terminating in gravel trench external to the building) (Score 0.5)
Table 6.2	passive sub floor ventilation/ dispersal layer (clear void/ polystyrene void former/ geocomposite void former/ no fines gravel layer with gas drains/ no fines gravel layer) of very good performance. (Score 2.5)
Table 6.3	passive sub floor ventilation/ dispersal layer (clear void/ polystyrene void former/ geocomposite void former/ no fines gravel layer with gas drains/ no fines gravel layer) of good performance. (Score 1.5)

Table 7	gas resistant membrane meeting the following criteria: • sufficiently impervious to gases with a methane gas transmission rate of <40.0 ml/day/m²/atm (average) for sheets and joints (tested in accordance with BS.ISO.15105-1 manometric method). • sufficiently durable to remain serviceable for the anticipated life of the building and duration of gas emissions. • sufficiently strong to withstand in-service stresses due to say settlement if placed below a floor slab. • sufficiently strong to withstand the installation process and following trades (penetration from steel fibres in fibre reinforced concrete/ penetration from reinforcement ties/ tearing due to working above it or dropped tools) until covered. • after installation being capable of providing a complete barrier to the entry of the relevant gas. • verified in accordance with CIRIA C735 [N1]. (Score 2.0)
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In road, hardstanding and car park areas over-site concrete and/or bituminous macadam surfaces will prevent ground gas escaping naturally to the atmosphere. It would be advisable to provide vent pipes through which ground gases are able to escape. These vent pipes might be placed in adjoining landscaped areas or incorporated in lamp posts or other similar furniture.

All excavations of greater than 1.20 metres depth should be routinely checked for air quality prior to man entry and appropriate precautions taken.

Any manholes, inspection chambers or other void spaces formed beneath the sites ground surface are potential ground gas traps. Precautions, as per the excavations above, should be taken.

4.8 General

It should be noted that when developing a “brownfield site” a phased investigation should be undertaken in order that each phase informs the next. A typical phased investigation comprises the following:

- Phase I: desk study report
- Phase II: ground investigation with report
- Phase III: remediation statement report
- Phase IV: validation with report.

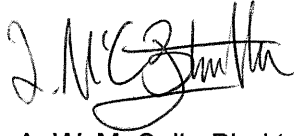
In the preparation of this report no consideration has been given to flora and fauna as this was outside our brief.

We recommend that consultation should be undertaken with, and the written approval obtained from, the Local Authority Environmental Health Officer and the Local Authority Building Control Officer prior to commencing development.

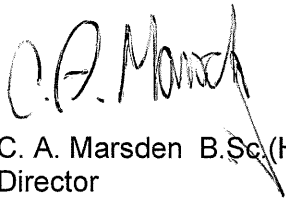
Following completion of the Phase II ground investigation and monitoring a Phase III remediation statement should be compiled and submitted to the Regulator for written approval prior to commencing development.

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 Marsden at our Preston office.

SUB SURFACE CONSULTANTS LIMITED
REPORT No. 8032B
DECEMBER 2024



L. A. W. McCall - Bhakta B.Sc.(Hons.)
Geotechnical Engineer
For and on behalf of
Sub Surface Consultants Limited



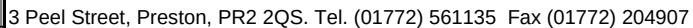
C. A. Marsden B.Sc.(Hons.), C.Eng., M.I.C.E.
Director
For and on behalf of
Sub Surface Consultants Limited.

INSITU TEST RESULTS

S S SUB SURFACE SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907							Standard Penetration Test Results						
Site : GRANGE SCHOOL, MATTHEWS LANE, LEVENSHULME, MANCHESTER, M12 4GR Client : PROSPERE LEARNING TRUST Engineer: FREDERICK G.MARKLAND ASSOCIATES LIMITED												Job Number 8032A	
												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			
M1	1.20	1.35	1.65	SPT	1	1	1	1	1	1	N=4		
M1	2.00	2.15	2.45	SPT	3	3	4	5	5	7	N=21		
M1	3.00	3.15	3.44	SPT	8	9	13	12	13	12	50/290mm		
M2	1.20	1.35	1.65	SPT	2	1	1	1	1	1	N=4		
M2	2.00	2.15	2.45	SPT	1	1	1	1	2	1	N=5		
M2	3.00	3.15	3.45	SPT	7	9	12	12	13	13	50/295mm		
M3	1.20	1.35	1.65	SPT	1	1	1	1	1	2	N=5		
M3	2.00	2.15	2.45	SPT	1	1	1	2	2	4	N=9		
M3	3.00	3.15	3.41	SPT	4	6	12	12	13	13	50/255mm		
M4	1.20	1.35	1.65	SPT	1	1	1	1	1	2	N=5		
M4	2.00	2.15	2.45	SPT	1	1	2	2	2	3	N=9		
M4	3.00	3.15	3.42	SPT	4	7	12	12	13	13	50/265mm		
M5	1.20	1.35	1.65	SPT	1	1	1	1	1	2	N=5		
M5	2.00	2.15	2.45	SPT	1	1	1	2	2	2	N=7		
M5	3.00	3.15	3.41	SPT	5	6	12	12	13	13	50/255mm		

SUB SURFACE SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907				Insitu Test Results																																																																																																																																																																																																																																																																					
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SUB SURFACE SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907				Insitu Test Results																																																																																																																																																																																																																																																																																																																																											
Site: GRANGE SCHOOL, MATTHEWS LANE, LEVENSHULME, MANCHESTER, M12 4GR Client: PROSPERE LEARNING TRUST Engineer: FREDERICK G. MARKLAND ASSOCIATES LIMITED					Job Number: 8032A Date: 27/08/24 Sheet: 2 / 2																																																																																																																																																																																																																																																																																																																																										
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<tr><td>6</td><td>1</td><td>5</td><td>486</td><td>8.00</td><td>31</td><td>2</td><td>57</td><td>863</td><td>6.50</td></tr> <tr><td>7</td><td>1</td><td>6</td><td>497</td><td>11.00</td><td>32</td><td>2</td><td>59</td><td>875</td><td>6.00</td></tr> <tr><td>8</td><td>2</td><td>8</td><td>516</td><td>9.50</td><td>33</td><td>2</td><td>61</td><td>887</td><td>6.00</td></tr> <tr><td>9</td><td>2</td><td>10</td><td>529</td><td>6.50</td><td>34</td><td>2</td><td>63</td><td>901</td><td>7.00</td></tr> <tr><td>10</td><td>2</td><td>12</td><td>542</td><td>6.50</td><td>35</td><td>2</td><td>65</td><td>918</td><td>8.50</td></tr> <tr><td>11</td><td>2</td><td>14</td><td>555</td><td>6.50</td><td>36</td><td>1</td><td>66</td><td>929</td><td>11.00</td></tr> <tr><td>12</td><td>2</td><td>16</td><td>573</td><td>9.00</td><td>37</td><td>1</td><td>67</td><td>942</td><td>13.00</td></tr> <tr><td>13</td><td>1</td><td>17</td><td>583</td><td>10.00</td><td>38</td><td>1</td><td>68</td><td>953</td><td>11.00</td></tr> <tr><td>14</td><td>3</td><td>20</td><td>595</td><td>4.00</td><td>39</td><td>1</td><td>69</td><td>966</td><td>13.00</td></tr> <tr><td>15</td><td>3</td><td>23</td><td>605</td><td>3.33</td><td>40</td><td>1</td><td>70</td><td>977</td><td>11.00</td></tr> <tr><td>16</td><td>2</td><td>25</td><td>620</td><td>7.50</td><td>41</td><td>1</td><td>71</td><td>990</td><td>13.00</td></tr> <tr><td>17</td><td>2</td><td>27</td><td>631</td><td>5.50</td><td>42</td><td>1</td><td>72</td><td>1000</td><td>10.00</td></tr> <tr><td>18</td><td>2</td><td>29</td><td>645</td><td>7.00</td><td>43</td><td>2</td><td>74</td><td>1018</td><td>9.00</td></tr> <tr><td>19</td><td>2</td><td>31</td><td>655</td><td>5.00</td><td>44</td><td>2</td><td>76</td><td>1055</td><td>18.50</td></tr> <tr><td>20</td><td>3</td><td>34</td><td>669</td><td>4.67</td><td>45</td><td>1</td><td>77</td><td>1083</td><td>28.00</td></tr> 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(mm/blow)	1	0	0	327	0.00	26	1	49	780	35.00	2	1	1	403	76.00	27	1	50	810	30.00	3	1	2	446	43.00	28	1	51	823	13.00	4	1	3	460	14.00	29	2	53	838	7.50	5	1	4	478	18.00	30	2	55	850	6.00	6	1	5	486	8.00	31	2	57	863	6.50	7	1	6	497	11.00	32	2	59	875	6.00	8	2	8	516	9.50	33	2	61	887	6.00	9	2	10	529	6.50	34	2	63	901	7.00	10	2	12	542	6.50	35	2	65	918	8.50	11	2	14	555	6.50	36	1	66	929	11.00	12	2	16	573	9.00	37	1	67	942	13.00	13	1	17	583	10.00	38	1	68	953	11.00	14	3	20	595	4.00	39	1	69	966	13.00	15	3	23	605	3.33	40	1	70	977	11.00	16	2	25	620	7.50	41	1	71	990	13.00	17	2	27	631	5.50	42	1	72	1000	10.00	18	2	29	645	7.00	43	2	74	1018	9.00	19	2	31	655	5.00	44	2	76	1055	18.50	20	3	34	669	4.67	45	1	77	1083	28.00	21	3	37	680	3.67	46	1	78	1115	32.00	22	3	40	692	4.00	47	1	79	1130	15.00	23	3	43	705	4.33	48	2	81	1142	6.00	24	4	47	725	5.00	49	3	84	1158	5.33	25	1	48	745	20.00	50	2	86	1170	6.00	51	2	88	1183	6.50						52	1	89	1196	13.00						53	1	90	1210	14.00						54	1	91	1225	15.00						55	1	92	1240	15.00						56	1	93	1255	15.00						57	1	94	1280	25.00					
No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)	No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/blow)																																																																																																																																																																																																																																																																																																																																						
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Sheet: 1 / 1

Engineer: **FREDERICK G. MARKLAND ASSOCIATES LIMITED**

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

LABORATORY TEST RESULTS

Job Number
8032A

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	Laboratory Description
				Percentage %	Moisture Content %						
M1	2.00	D	16	98	16	35	17	18	-0.04	CL/CI	Stiff brown and occasional grey mottled slightly gravelly CLAY. Gravel is subangular to subrounded fine to medium sandstone, coal, mudstone and quartz
M2	2.00	C	25	98	26	43	21	22	0.20	CI	Soft to firm brown and occasional grey mottled slightly gravelly CLAY. Gravel is subangular to subrounded fine to medium sandstone, coal and quartz
M3	3.00	D	15	99	15	35	19	16	-0.24	CL/CI	Very stiff very high strength brown and occasional grey mottled slightly gravelly slightly sandy CLAY. Gravel is subangular to subrounded fine to medium sandstone, mudstone, coal and quartz
M4	1.70	C	37	94	39	46	29	17	0.61	MI	Soft to firm greyish brown clayey SILT
M5	3.00	D	13	96	14	37	17	20	-0.18	CI	Very stiff very high strength brown and occasional grey mottled slightly gravelly slightly sandy CLAY. Gravel is subangular to subrounded fine to medium sandstone, coal, quartz and mudstone

Remarks :

S S SUB SURFACE SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907							Laboratory Test Results							
Site : GRANGE SCHOOL, MATTHEWS LANE, LEVENSHULME, MANCHESTER, M12 4GR Client : PROSPERE LEARNING TRUST Engineer: FREDERICK G.MARKLAND ASSOCIATES LIMITED													Job Number 8032A Sheet 1 / 1	
DETERMINATION OF pH, SULPHATE CONTENT AND TOTAL SULPHUR OF SOIL AND GROUNDWATER AND MAGNESIUM, CHLORIDE, AMMONIA AND NITRATE CONTENT														
Borehole/ Trial Pit	Depth (m)	Sample	Concentration of Sulphate			Total Sulphur %	Magnesium mg/l	Ammonium NH4 mg/l	Water Soluble Chloride mg/l	Water Soluble Nitrate mg/l	pH	Design Class	Laboratory Description	
			Soil		Ground Water g /l									
			Total S03 %	S04 in 2:1 water:soil g /l										
M1	1.35	C		0.07							7.0	DS-1	MADE GROUND: soft dark brownish grey ashy slightly gravelly slightly sandy silty clay. Gravel sized fragments are fine to medium clinker and stone (organic odour)	
M2	2.00	C		0.01							7.5	DS-1	Soft to firm brown and occasional grey mottled slightly gravelly CLAY. Gravel is subangular to subrounded fine to medium sandstone, coal and quartz	
M3	0.10	B		0.07							9.1	DS-1	MADE GROUND: dark brown sandy silty slightly clayey fine to coarse gravel sized fragments of sandstone and concrete with occasional cobble sized fragments of sandstone	
M3	3.00	D		0.03							8.5	DS-1	Very stiff very high strength brown and occasional grey mottled slightly gravelly slightly sandy CLAY. Gravel is subangular to subrounded fine to medium sandstone, mudstone, coal and quartz	
M4	1.20	C		0.02							7.1	DS-1	MADE GROUND: soft to firm brown, dark brown and occasional grey and yellowish brown mottled ashy slightly gravelly slightly sandy clay. Gravel sized fragments are fine to medium clinker, stone and brick (organic odour)	
M5	0.10	B		0.07							8.3	DS-1	MADE GROUND: light brown sandy silty fine to coarse gravel sized fragments of limestone (hardcore)	
M5	3.00	D		0.03							8.1	DS-1	Very stiff very high strength brown and occasional grey mottled slightly gravelly slightly sandy CLAY. Gravel is subangular to subrounded fine to medium sandstone, coal, quartz and mudstone	
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 : Lab in-house methods based on BS1377: Part 3 for contents of water sol sulphate, pH, chloride and magnesium. Lab in-house method based on MEWAM (EA, 2006) for total sulphur Remarks : Classification relates to Design Sulphate Class of BRE Special Digest 1 (2005)														

**SUB SURFACE**

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

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 Design Sulfate Class for location	2:1 water/soil extract ^b	Groundwater	Total potential sulfate ^c	Groundwater Static water	Mobile water	ACEC Class for location
1	2 (SO ₄ mg/l)	3 (SO ₄ mg/l)	4 (SO ₄ %)	5 (pH)	6 (pH)	7
DS-1	< 500	< 400	< 0.24	≥ 2.5	> 5.5 ^d 2.5–5.5	AC-1s AC-1 ^d 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-2 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 is 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 15 mg/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 include 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 C2 Aggressive Chemical Environment for Concrete (ACEC) classification for brownfield locations^a

Sulfate and magnesium						Groundwater		ACEC
Design Sulfate Class for location	2:1 water/soil extract ^b		Groundwater		Total potential sulfate ^c	Static water	Mobile water	Class for location
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 2.5–4.5	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 ^a	3100–6000	> 1000 ^a	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	≥ 2.5	AC-4s AC-5
DS-5m	> 6000	> 1200 ^a	> 6000	> 1000 ^a	> 2.4	> 5.5 2.5–5.5	≥ 2.5	AC-4ms AC-5m

Notes

- a** Brownfield locations 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 from 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 such as 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 12 000 mg/l and 17 000 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 include the suffix 'z' have primarily to resist acid conditions and may be made with any of the cements in Table D2 on page 42.
- Suffix 'm' relates to the higher levels of magnesium in Design Sulfate Classes 4 and 5.



Laboratory Report



Contract Number: 74556

Client Ref: **8032A**

Client PO: **8032A**

Date Received: **09-09-2024**

Date Completed: **10-09-2024**

Report Date: **10-09-2024**

Client: **Sub Surface Laboratories Limited**

This report has been checked and approved by:

Contract Title: **Grange School, Matthews Lane, Levenshulme**

For the attention of: **Simon Gabbatt**

B. Evans

Brendan Evans
Office Administrator

Description	Qty
Compressive Strength of cored specimens in concrete structures BS EN 12504-1 - * UKAS	2
Re-coring 50- 150 mm Barrel	2
Disposal of samples for job	1

Notes: Observations and Interpretations are outside the UKAS Accreditation

* - denotes test included in laboratory scope of accreditation

- denotes test carried out by approved contractor

@ - denotes non accredited tests

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 test report/certificate shall not be reproduced except in full, without the approval of GEO Site & Testing Services Ltd. Any opinions or interpretations stated - within this report/certificate are excluded from the laboratories UKAS accreditation.

Approved Signatories:

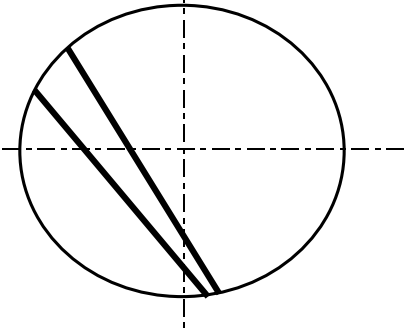
Brendan Evans (Office Administrator) - Darren Bourne (Quality Senior Technician) - Paul Evans (Director)

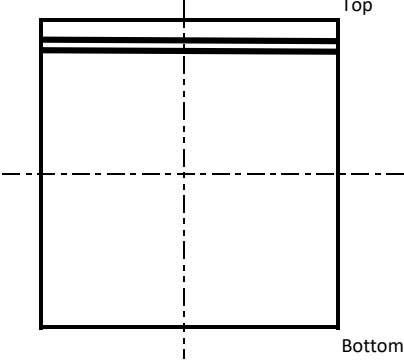
Richard John (Quality/Technical Manager) - Shaun Jones (Laboratory manager) - Shaun Thomas (Site Manager)

Wayne Honey (HR & HSE Manager)

Test Report: Testing concrete in structures. Cored specimens.
Taking, examining and testing in compression
BS EN 12504-1:2019

Client:	Sub Surface Laboratories Limited
Client Ref:	8032A
Contract Number:	74556
Project Name	Grange School, Matthews Lane, Levenshulme

Core Description	Concrete Core	
Sample Number	M1	
Maximum aggregate Size (mm)	27	
Direction of coring	Unknown	
Date cored	Unknown	
Date of Test	10/09/2024	
Method used for Preparation	Cutting	
Condition On Test	Surface Dry	
Core Density (kg/m ³)	2338	
Density Condition	As received	

Measurement Dimensions: BS EN 12390-1: 2021		<u>Vertical re-bar</u> From Centre (mm) n/a <u>Horizontal Rebar</u> From Top (mm) 17/22 From Centre (mm) 33/27 Re-bar Diameter (mm) 3_10
Size of sample Received in Lab (mm)	Diameter 94.0 Length 220.0	
Size of sample tested (mm)	Diameter 94.6 Length 95.7	
Length Diameter ratio of prepared specimen:	1.01	
Compression: BS EN 12390-3:2019		
Compressive Strength N/mm ²	32.9	
Appearance of concrete and Type of Fracture	Satisfactory	
Compaction of concrete, classification of void %	1.5	
Any Deviations from the standard Method of Testing ⁽¹⁾	n/a	

Remarks:

⁽¹⁾ All the testing was carried out in accordance with BS EN 12390-3: 2019 except as detailed

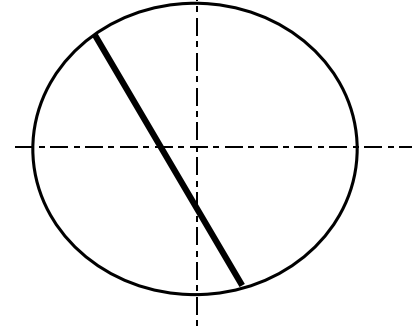
Technician Responsible
 Julian Jones



Test Report: Testing concrete in structures. Cored specimens.
Taking, examining and testing in compression
BS EN 12504-1:2019

Client:	Sub Surface Laboratories Limited
Client Ref:	8032A
Contract Number:	74556
Project Name	Grange School, Matthews Lane, Levenshulme

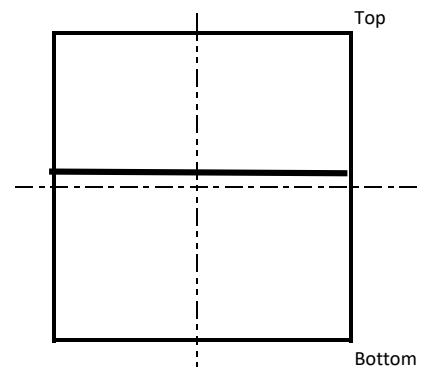
Core Description	Concrete Core
Sample Number	M2
Maximum aggregate Size (mm)	30
Direction of coring	Unknown
Date cored	Unknown
Date of Test	10/09/2024
Method used for Preparation	Cutting
Condition On Test	Surface Dry
Core Density (kg/m ³)	2249
Density Condition	As received



<u>Vertical re-bar</u>	
From Centre (mm)	n/a
<u>Horizontal Rebar</u>	
From Top (mm)	41
From Centre (mm)	7
Re-bar Diameter (mm)	10

Measurement Dimensions: BS EN 12390-1: 2021

Size of sample Received in Lab (mm)	Diameter	94.0
	Length	280.0
Size of sample tested (mm)	Diameter	94.4
	Length	96.0
Length Diameter ratio of prepared specimen:		1.02



Compression: BS EN 12390-3:2019

Compressive Strength	N/mm ²	38.6
Appearance of concrete and Type of Fracture	Satisfactory	
Compaction of concrete, classification of void %	1.5	
Any Deviations from the standard Method of Testing ⁽¹⁾	n/a	

Remarks:

⁽¹⁾ All the testing was carried out in accordance with BS EN 12390-3: 2019 except as detailed

Technician Responsible
Julian Jones



CONTAMINATION ANALYSIS RESULTS



Certificate of Analysis

Certificate Number 24-18907

Issued: 13-Sep-24

Client Sub Surface Laboratories Ltd
3 Peel Street
Preston
Lancashire
PR2 2QS

Our Reference 24-18907

Client Reference ~ 8032A

Order No ~ (not supplied)

Contract Title ~ GRANGE SCHOOL, MATTHEWS LANE, LEVENSHULME

Description 10 Soil samples.

Date Received 06-Sep-24

Date Started 06-Sep-24

Date Completed 13-Sep-24

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



Normec DETS Limited

Unit 2, Park Road Industrial Estate South, Consett, Co Durham, DH8 5PY

Symbol key at end of report Tel: 01207 582333 • email: info@dets.co.uk • www.dets.co.uk

Page 1 of 9

Summary of Chemical Analysis

Soil Samples

Our Ref 24-18907

Client Ref ~ 8032A

Contract Title ~ GRANGE SCHOOL, MATTHEWS LANE, LEVENSHULME

Lab No	2389323	2389324	2389325	2389326	2389327	2389328
Sample ID ~	M1	M2	M3	M3	M3	M4
Depth ~	1.35-2.00	2.00-3.00	0.10-1.20	1.20-2.00	3.00-3.45	0.10-0.60
Other ID ~	342	339	485	487	490	491
Sample Type ~	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date ~	27/08/2024	27/08/2024	27/08/2024	27/08/2024	27/08/2024	27/08/2024
Sampling Time ~	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units						
Preparation									
Moisture Content	DETSC 1004	0.1	%			14	18		5.8
Metals									
Arsenic	DETSC 2301#	0.2	mg/kg			7.3	48		19
Boron, Water Soluble (2.5:1)	DETSC 2311#	0.2	mg/kg			0.5	0.7		2.3
Cadmium	DETSC 2301#	0.1	mg/kg			0.3	0.3		0.2
Chromium	DETSC 2301#	0.15	mg/kg			14	38		20
Chromium, Hexavalent	DETSC 2204*	1	mg/kg			< 1.0	< 1.0		< 1.0
Copper	DETSC 2301#	0.2	mg/kg			35	200		77
Lead	DETSC 2301#	0.3	mg/kg			87	98		120
Mercury	DETSC 2325#	0.05	mg/kg			0.15	0.10		0.15
Molybdenum	DETSC 2301#	0.4	mg/kg			1.3	7.5		2.4
Nickel	DETSC 2301#	1	mg/kg			16	38		23
Selenium	DETSC 2301#	0.5	mg/kg			< 0.5	0.8		< 0.5
Zinc	DETSC 2301#	1	mg/kg			64	110		93
Inorganics									
pH	DETSC 2008#		pH	7.0	7.5	9.1	7.8	8.5	7.0
Cyanide, Total	DETSC 2130#	0.1	mg/kg			< 0.1	< 0.1		0.5
Organic matter	DETSC 2002#	0.1	%				3.2		
Sulphate Aqueous Extract as SO4 (2:1)	DETSC 2076#	10	mg/l	66	14	67		28	
Sulphide	DETSC 2024*	10	mg/kg			24	290		52
Sulphate as SO4, Total	DETSC 2321#	0.01	%			0.04	0.30		0.08
Petroleum Hydrocarbons									
Aliphatic C5-C6: HS_1D_AL	DETSC 3321*	0.01	mg/kg				< 0.01		
Aliphatic C6-C8: HS_1D_AL	DETSC 3321*	0.01	mg/kg				< 0.01		
Aliphatic C8-C10: HS_1D_AL	DETSC 3321*	0.01	mg/kg				< 0.01		
Aliphatic C10-C12: EH_CU_1D_AL	DETSC 3072#	1.5	mg/kg				< 1.5		
Aliphatic C12-C16: EH_CU_1D_AL	DETSC 3072#	1.2	mg/kg				< 1.2		
Aliphatic C16-C21: EH_CU_1D_AL	DETSC 3072#	1.5	mg/kg				< 1.5		
Aliphatic C21-C35: EH_CU_1D_AL	DETSC 3072#	3.4	mg/kg				< 3.4		
Aliphatic C35-C44: EH_CU_1D_AL	DETSC 3072*	3.4	mg/kg				< 3.4		
Aliphatic C10-C44: EH_CU_1D_AL	DETSC 3072*	10	mg/kg				< 10		
Aromatic C5-C7: HS_1D_AR	DETSC 3321*	0.01	mg/kg				< 0.01		
Aromatic C7-C8: HS_1D_AR	DETSC 3321*	0.01	mg/kg				< 0.01		
Aromatic C8-C10: HS_1D_AR	DETSC 3321*	0.01	mg/kg				< 0.01		
Aromatic C10-C12: EH_CU_1D_AR	DETSC 3072#	0.9	mg/kg				< 0.9		
Aromatic C12-C16: EH_CU_1D_AR	DETSC 3072#	0.5	mg/kg				< 0.5		
Aromatic C16-C21: EH_CU_1D_AR	DETSC 3072#	0.6	mg/kg				< 0.6		
Aromatic C21-C35: EH_CU_1D_AR	DETSC 3072#	1.4	mg/kg				< 1.4		
Aromatic C35-C44: EH_CU_1D_AR	DETSC 3072*	1.4	mg/kg				< 1.4		
Aromatic C10-C44: EH_CU_1D_AR	DETSC 3072*	10	mg/kg				< 10		
Ali/Aro C10-C44: EH_CU_1D_Total	DETSC 3072*	10	mg/kg				< 10		

Summary of Chemical Analysis

Soil Samples

Our Ref 24-18907

Client Ref ~ 8032A

Contract Title ~ GRANGE SCHOOL, MATTHEWS LANE, LEVENSHULME

Lab No	2389323	2389324	2389325	2389326	2389327	2389328
Sample ID ~	M1	M2	M3	M3	M3	M4
Depth ~	1.35-2.00	2.00-3.00	0.10-1.20	1.20-2.00	3.00-3.45	0.10-0.60
Other ID ~	342	339	485	487	490	491
Sample Type ~	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date ~	27/08/2024	27/08/2024	27/08/2024	27/08/2024	27/08/2024	27/08/2024
Sampling Time ~	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units						
C5-C10 Gasoline Range Organics (GRO): HS_1D_Total	DETSC 3321*	0.1	mg/kg			< 0.1			< 0.1
C10-C24 Diesel Range Organics (DRO): EH_1D_Total	DETSC 3311#	10	mg/kg			< 10			< 200.0
EPH (C10-C40): EH_1D_Total	DETSC 3311#	10	mg/kg			30			980
Benzene	DETSC 3321#	0.01	mg/kg			< 0.01	< 0.01		< 0.01
Ethylbenzene	DETSC 3321#	0.01	mg/kg			< 0.01	< 0.01		< 0.01
Toluene	DETSC 3321#	0.01	mg/kg			< 0.01	< 0.01		< 0.01
m+p Xylene	DETSC 3321#	0.01	mg/kg			< 0.01	< 0.01		< 0.01
o Xylene	DETSC 3321#	0.01	mg/kg			< 0.01	< 0.01		< 0.01
MTBE	DETSC 3321	0.01	mg/kg			< 0.01	< 0.01		< 0.01
C24-C40 Lube Oil Range Organics (LORO): EH_1D_Total	DETSC 3311#	10	mg/kg			25			860
PAHs									
Naphthalene	DETSC 3301	0.1	mg/kg			0.2	0.2		2.5
Acenaphthylene	DETSC 3301	0.1	mg/kg			0.1	0.1		< 2.0
Acenaphthene	DETSC 3301	0.1	mg/kg			< 0.1	0.1		< 2.0
Fluorene	DETSC 3301	0.1	mg/kg			0.1	0.2		< 2.0
Phenanthrene	DETSC 3301	0.1	mg/kg			0.4	0.4		5.3
Anthracene	DETSC 3301	0.1	mg/kg			< 0.1	< 0.1		< 2.0
Fluoranthene	DETSC 3301	0.1	mg/kg			1.2	1.3		7.8
Pyrene	DETSC 3301	0.1	mg/kg			0.4	0.7		< 2.0
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg			0.3	0.5		< 2.0
Chrysene	DETSC 3301	0.1	mg/kg			0.1	0.4		< 2.0
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg			< 0.1	0.3		< 2.0
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg			< 0.1	0.1		< 2.0
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg			< 0.1	0.2		< 2.0
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg			< 0.1	< 0.1		< 2.0
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg			< 0.1	< 0.1		< 2.0
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg			< 0.1	< 0.1		< 2.0
PAH 16 Total	DETSC 3301	1.6	mg/kg			2.8	4.6		16
Phenols									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg			< 0.3	0.3		0.6

Summary of Chemical Analysis

Soil Samples

Our Ref 24-18907

Client Ref ~ 8032A

Contract Title ~ GRANGE SCHOOL, MATTHEWS LANE, LEVENSHULM

Lab No	2389329	2389330	2389331	2389332
Sample ID ~	M4	M5	M5	M5
Depth ~	1.20-2.00	0.10-0.50	0.50-1.20	3.00-3.45
Other ID ~	469	498	499	504
Sample Type ~	SOIL	SOIL	SOIL	SOIL
Sampling Date ~	27/08/2024	27/08/2024	27/08/2024	27/08/2024
Sampling Time ~	n/s	n/s	n/s	n/s

Test	Method	LOD	Units				
Preparation							
Moisture Content	DETSC 1004	0.1	%	23		6.6	
Metals							
Arsenic	DETSC 2301#	0.2	mg/kg	5.7		48	
Boron, Water Soluble (2.5:1)	DETSC 2311#	0.2	mg/kg	< 0.2		0.8	
Cadmium	DETSC 2301#	0.1	mg/kg	< 0.1		< 0.1	
Chromium	DETSC 2301#	0.15	mg/kg	23		37	
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0		< 1.0	
Copper	DETSC 2301#	0.2	mg/kg	18		940	
Lead	DETSC 2301#	0.3	mg/kg	12		100	
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05		0.09	
Molybdenum	DETSC 2301#	0.4	mg/kg	< 0.4		5.7	
Nickel	DETSC 2301#	1	mg/kg	19		37	
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5		< 0.5	
Zinc	DETSC 2301#	1	mg/kg	45		120	
Inorganics							
pH	DETSC 2008#		pH	7.1	8.3	7.2	8.1
Cyanide, Total	DETSC 2130#	0.1	mg/kg	< 0.1		0.1	
Organic matter	DETSC 2002#	0.1	%				
Sulphate Aqueous Extract as SO4 (2:1)	DETSC 2076#	10	mg/l	18	67		29
Sulphide	DETSC 2024*	10	mg/kg	20		430	
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.02		0.29	
Petroleum Hydrocarbons							
Aliphatic C5-C6: HS_1D_AL	DETSC 3321*	0.01	mg/kg				
Aliphatic C6-C8: HS_1D_AL	DETSC 3321*	0.01	mg/kg				
Aliphatic C8-C10: HS_1D_AL	DETSC 3321*	0.01	mg/kg				
Aliphatic C10-C12: EH_CU_1D_AL	DETSC 3072#	1.5	mg/kg				
Aliphatic C12-C16: EH_CU_1D_AL	DETSC 3072#	1.2	mg/kg				
Aliphatic C16-C21: EH_CU_1D_AL	DETSC 3072#	1.5	mg/kg				
Aliphatic C21-C35: EH_CU_1D_AL	DETSC 3072#	3.4	mg/kg				
Aliphatic C35-C44: EH_CU_1D_AL	DETSC 3072*	3.4	mg/kg				
Aliphatic C10-C44: EH_CU_1D_AL	DETSC 3072*	10	mg/kg				
Aromatic C5-C7: HS_1D_AR	DETSC 3321*	0.01	mg/kg				
Aromatic C7-C8: HS_1D_AR	DETSC 3321*	0.01	mg/kg				
Aromatic C8-C10: HS_1D_AR	DETSC 3321*	0.01	mg/kg				
Aromatic C10-C12: EH_CU_1D_AR	DETSC 3072#	0.9	mg/kg				
Aromatic C12-C16: EH_CU_1D_AR	DETSC 3072#	0.5	mg/kg				
Aromatic C16-C21: EH_CU_1D_AR	DETSC 3072#	0.6	mg/kg				
Aromatic C21-C35: EH_CU_1D_AR	DETSC 3072#	1.4	mg/kg				
Aromatic C35-C44: EH_CU_1D_AR	DETSC 3072*	1.4	mg/kg				
Aromatic C10-C44: EH_CU_1D_AR	DETSC 3072*	10	mg/kg				
Ali/Aro C10-C44: EH_CU_1D_Total	DETSC 3072*	10	mg/kg				

Summary of Chemical Analysis

Soil Samples

Our Ref 24-18907

Client Ref ~ 8032A

Contract Title ~ GRANGE SCHOOL, MATTHEWS LANE, LEVENSHULM

Lab No	2389329	2389330	2389331	2389332
Sample ID ~	M4	M5	M5	M5
Depth ~	1.20-2.00	0.10-0.50	0.50-1.20	3.00-3.45
Other ID ~	469	498	499	504
Sample Type ~	SOIL	SOIL	SOIL	SOIL
Sampling Date ~	27/08/2024	27/08/2024	27/08/2024	27/08/2024
Sampling Time ~	n/s	n/s	n/s	n/s

Test	Method	LOD	Units				
C5-C10 Gasoline Range Organics (GRO): HS_1D_Total	DETSC 3321*	0.1	mg/kg	< 0.1		< 0.1	
C10-C24 Diesel Range Organics (DRO): EH_1D_Total	DETSC 3311#	10	mg/kg	65		< 10	
EPH (C10-C40): EH_1D_Total	DETSC 3311#	10	mg/kg	97		< 10	
Benzene	DETSC 3321#	0.01	mg/kg	< 0.01		< 0.01	
Ethylbenzene	DETSC 3321#	0.01	mg/kg	< 0.01		< 0.01	
Toluene	DETSC 3321#	0.01	mg/kg	< 0.01		< 0.01	
m+p Xylene	DETSC 3321#	0.01	mg/kg	< 0.01		< 0.01	
o Xylene	DETSC 3321#	0.01	mg/kg	< 0.01		< 0.01	
MTBE	DETSC 3321	0.01	mg/kg	< 0.01		< 0.01	
C24-C40 Lube Oil Range Organics (LORO): EH_1D_Total	DETSC 3311#	10	mg/kg	33		< 10	
PAHs							
Naphthalene	DETSC 3301	0.1	mg/kg	0.3		0.2	
Acenaphthylene	DETSC 3301	0.1	mg/kg	0.7		< 0.1	
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1		< 0.1	
Fluorene	DETSC 3301	0.1	mg/kg	0.9		< 0.1	
Phenanthrene	DETSC 3301	0.1	mg/kg	4.3		0.2	
Anthracene	DETSC 3301	0.1	mg/kg	1.1		< 0.1	
Fluoranthene	DETSC 3301	0.1	mg/kg	7.7		1.0	
Pyrene	DETSC 3301	0.1	mg/kg	7.2		0.4	
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	3.0		0.3	
Chrysene	DETSC 3301	0.1	mg/kg	3.5		0.2	
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	2.4		< 0.1	
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	1.5		< 0.1	
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	3.1		< 0.1	
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	1.3		< 0.1	
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	1.1		< 0.1	
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	1.7		< 0.1	
PAH 16 Total	DETSC 3301	1.6	mg/kg	40		2.2	
Phenols							
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3		< 0.3	

Summary of Asbestos Analysis Soil Samples

Our Ref 24-18907

Client Ref ~ 8032A

Contract Title ~ GRANGE SCHOOL, MATTHEWS LANE, LEVENSHULME

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
2389325	M3 485 0.10-1.20	SOIL	NAD	none	Michael Kay
2389326	M3 487 1.20-2.00	SOIL	NAD	none	Michael Kay
2389328	M4 491 0.10-0.60	SOIL	NAD	none	Michael Kay
2389329	M4 469 1.20-2.00	SOIL	NAD	none	Michael Kay
2389331	M5 499 0.50-1.20	SOIL	NAD	none	Michael Kay

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 24-18907
 Client Ref ~ 8032A
 Contract ~ GRANGE SCHOOL, MATTHEWS LANE, LEVENSHULME

Containers Received & Deviating Samples

Lab No	Sample ID ~	Date Sampled ~	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
2389323	M1 1.35-2.00 SOIL	27/08/24	PT 1L	pH + Conductivity (7 days)	
2389324	M2 2.00-3.00 SOIL	27/08/24	PT 1L	pH + Conductivity (7 days)	
2389325	M3 0.10-1.20 SOIL	27/08/24	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
2389326	M3 1.20-2.00 SOIL	27/08/24	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
2389327	M3 3.00-3.45 SOIL	27/08/24	PT 500ml	pH + Conductivity (7 days)	
2389328	M4 0.10-0.60 SOIL	27/08/24	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
2389329	M4 1.20-2.00 SOIL	27/08/24	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
2389330	M5 0.10-0.50 SOIL	27/08/24	PT 1L	pH + Conductivity (7 days)	
2389331	M5 0.50-1.20 SOIL	27/08/24	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
2389332	M5 3.00-3.45 SOIL	27/08/24	PT 500ml	pH + Conductivity (7 days)	

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

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

Information in Support of the Analytical Results

List of HWOL Acronyms and Operators

Acronym	Description
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
2D	GC-GC - Double coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative eg. EH+HS_Total or EH_CU+HS_Total

Det	Acronym
Aliphatic C5-C6	HS_1D_AL
Aliphatic C6-C8	HS_1D_AL
Aliphatic C8-C10	HS_1D_AL
Aliphatic C10-C12	EH_CU_1D_AL
Aliphatic C12-C16	EH_CU_1D_AL
Aliphatic C16-C21	EH_CU_1D_AL
Aliphatic C21-C35	EH_CU_1D_AL
Aliphatic C35-C44	EH_CU_1D_AL
Aliphatic C10-C44	EH_CU_1D_AL
Aromatic C5-C7	HS_1D_AR
Aromatic C7-C8	HS_1D_AR
Aromatic C8-C10	HS_1D_AR
Aromatic C10-C12	EH_CU_1D_AR
Aromatic C12-C16	EH_CU_1D_AR
Aromatic C16-C21	EH_CU_1D_AR
Aromatic C21-C35	EH_CU_1D_AR
Aromatic C35-C44	EH_CU_1D_AR
Aromatic C10-C44	EH_CU_1D_AR
Ali/Aro C10-C44	EH_CU_1D_Total
C5-C10 Gasoline Range Organics (GRO)	HS_1D_Total
C10-C24 Diesel Range Organics (DRO)	EH_1D_Total
EPH (C10-C40)	EH_1D_Total
C24-C40 Lube Oil Range Organics (LO)	EH_1D_Total

Key:

~ Sample details are provided by the client and can affect the validity of the results

* -not accredited.

-MCERTS (accreditation only applies if report carries the MCERTS logo).

\$ -subcontracted.

n/s -not supplied.

I/S -insufficient sample.

U/S -unsuitable sample.

t/f -to follow.

nd -not detected.

End of Report



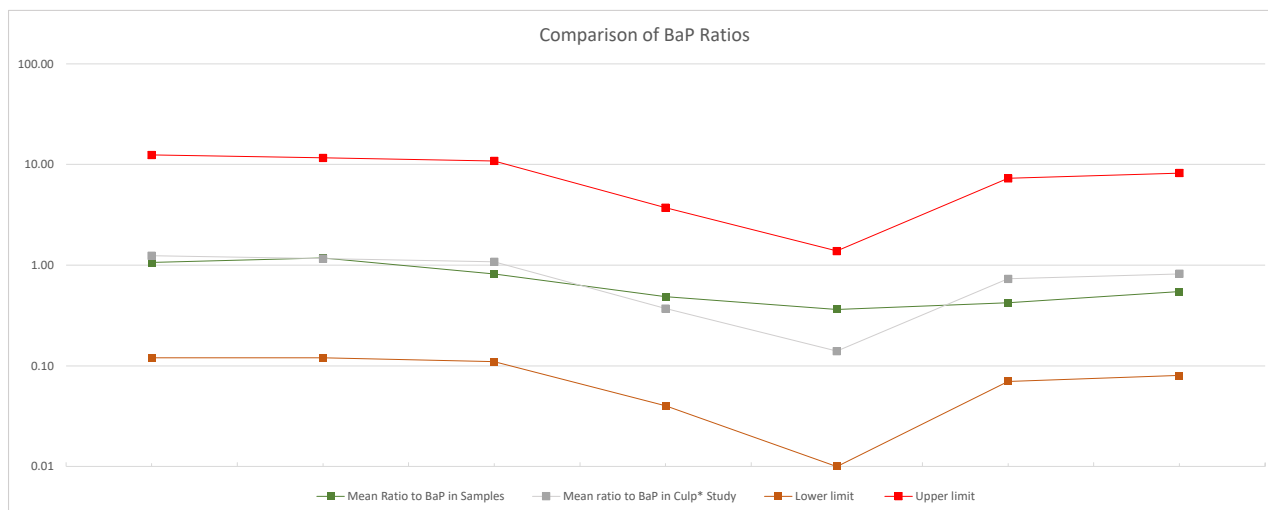
Site: GRANGE SCHOOL, MATTHEWS LANE, LEVENSHULME, MANCHESTER, M12 4GR

Client: PROSPERE LEARNING TRUST

Engineer: FREDERICK G. MARKLAND ASSOCIATES LIMITED

		Ratio to BaP							
		Benzo(a)pyrene	Benzo(e)anthracene	Chrysene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Dibenz(a,h)anthracene	Indeno(1,2,3-cd)pyrene	Benzo(ghi)perylene
Exp. Hole No./ Depth (m)	Units								
M3 / 1.20-2.00m	mg/kg	0.20	0.50	0.40	0.30	0.10	0.10	0.10	0.10
M4 / 1.20-2.00m	mg/kg	3.10	3.00	3.50	2.40	1.50	1.10	1.30	1.70
	mg/kg								
	mg/kg								
	mg/kg								
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	mg/kg								
Mean Concentrations	mg/kg	1.65	1.75	1.95	1.35	0.80	0.60	0.70	0.90

PAH	Units	Mean Concentrations in samples	Mean Ratio to BaP in Samples	Mean ratio to BaP in Culp* Study	Lower limit	Upper limit
Benzo(a)pyrene	mg/kg	1.65	1.00	–	–	–
Benzo[a]anthracene	mg/kg	1.75	1.06	1.24	0.12	12.43
Chrysene	mg/kg	1.95	1.18	1.16	0.12	11.61
Benzo[b]fluoranthene	mg/kg	1.35	0.82	1.08	0.11	10.85
Benzo[k]fluoranthene	mg/kg	0.80	0.48	0.37	0.04	3.72
Dibenz[ah]anthracene	mg/kg	0.60	0.36	0.14	0.01	1.38
Indeno[123-cd]pyrene	mg/kg	0.70	0.42	0.73	0.07	7.27
Benzo[ghi]perylene	mg/kg	0.90	0.55	0.82	0.08	8.22



Comments:

*CULP, S.J., GAYLOR, D.W., SHELDON, W.G. GOLDSTEIN, L.W., BELAND, F.A., 1998. A comparison of the tumors induced by coal tar and benzo(a)pyrene in a 2-year bioassay. Assessed in accordance with Development of Category 4 Screening Levels for assessment of land affected by contamination - SP1010 Appendix E

MINI BOREHOLE RECORD SHEETS

 SUB SURFACE SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907							Site GRANGE SCHOOL, MATTHEWS LANE, LEVENSHULME, MANCHESTER, M12 4GR		Borehole Number M1
Boring Method MINI PERCUSSIVE LSMR		Casing Diameter		Ground Level (mOD)		Client PROSPERE LEARNING TRUST		Job Number 8032A	
		Location AS PLAN		Dates 27/08/2024		Engineer FREDERICK G.MARKLAND ASSOCIATES LIMITED		Sheet 1/1	
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.27-0.60	B					0.03 (0.24) 0.27	MADE GROUND : Laminate Flooring. MADE GROUND : Reinforced Concrete on plastic membrane (See Concrete Core Log M1). MADE GROUND : brown very sandy silty fine to coarse gravel sized fragments of sandstone and occasional brick. (Hardcore).		
0.60-1.20	B					(0.93)			
1.20-2.00	C			1.20m to 2.00m - 100% Recovery 1,1/1,1,1,1		1.20	MADE GROUND : soft dark brownish grey ashy slightly gravelly slightly sandy silty clay. Gravel sized fragments are fine to medium clinker and stone (organic odour).		
1.20-1.65	SPT N=4					(0.30) 1.50	Firm medium strength becoming stiff high strength then very stiff very high strength brown and occasionally grey mottled slightly gravelly CLAY. Gravel is subangular to subrounded fine to medium sandstone, coal, mudstone and quartz. ...below 1.80m : stiff high strength.		
2.00-2.45	D			HV at 1.75m c=72kPa HV at 1.85m c=90kPa 2.00m to 3.00m - 80% Recovery 3,3/4,5,5,7		(1.94)			
2.00-3.00	C								
2.00-2.45	SPT N=21								
3.00-3.44	SPT 50/290			HV at 2.70m c=79kPa HV at 2.85m c=>130kPa 8,9/13,12,13,12			...below 3.15m : very stiff very high strength.		
3.00-3.44	D					3.44	Complete at 3.44m		
Remarks Hand dug inspection pit from GL to 1.20m to check for services. 86mm diameter to 2.00m, 76mm diameter to 3.00m. HV = Hand Shear Vane. On completion backfilled with gravel.							Scale (approx) 1:25	Logged By LMB/HB	Figure No. 8032A.M1

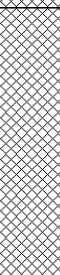
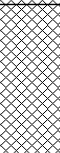


GRANGE SCHOOL, MATTHEWS LANE, LEVENSHULME,
MANCHESTER, M12 4GR

**Job
Number**
8032A

**Job
Number**
8032A

Sheet
1/1

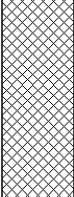
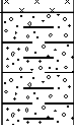
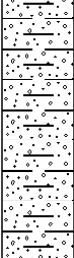
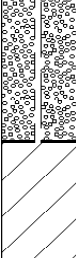
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.30-0.60	B					0.03	MADE GROUND : Laminate Flooring.		
						(0.28)	MADE GROUND : Reinforced Concrete on plastic membrane (See Concrete Core Log M2).		
						0.31	MADE GROUND : greyish brown very sandy silty fine to coarse gravel sized fragments of sandstone and concrete with occasional cobble sized fragments of concrete and sandstone. (Hardcore).		
0.60-1.20	B					(0.89)			
1.20-1.65	D			1.20m to 2.00m - 93% Recovery 2,1/1,1,1,1		1.20	MADE GROUND : soft dark brownish grey ashy slightly gravelly slightly sandy silty clay. Gravel sized fragments are fine to coarse clinker, brick, concrete and stone.		
1.20-2.00	C					(0.50)			
1.20-1.65	SPT N=4								
2.00-3.00	C			HV at 1.85m c=44kPa 2.00m to 3.00m - 85% Recovery 1,1/1,1,2,1		1.70	Soft to firm low to medium strength becoming stiff high strength then very stiff very high strength brown and occasionally grey mottled slightly gravelly CLAY. Gravel is subangular to subrounded fine to medium sandstone, coal and quartz. ...at 2.00m: low strength		
2.00-2.45	SPT N=5					(1.75)			
3.00-3.45	SPT 50/295			HV at 2.75m c=>130kPa 7,9/12,12,13,13			...below 2.75m : stiff high strength.		
							...below 3.15m : very stiff very high strength.		
				27/08/2024:DRY		3.45	Complete at 3.45m		

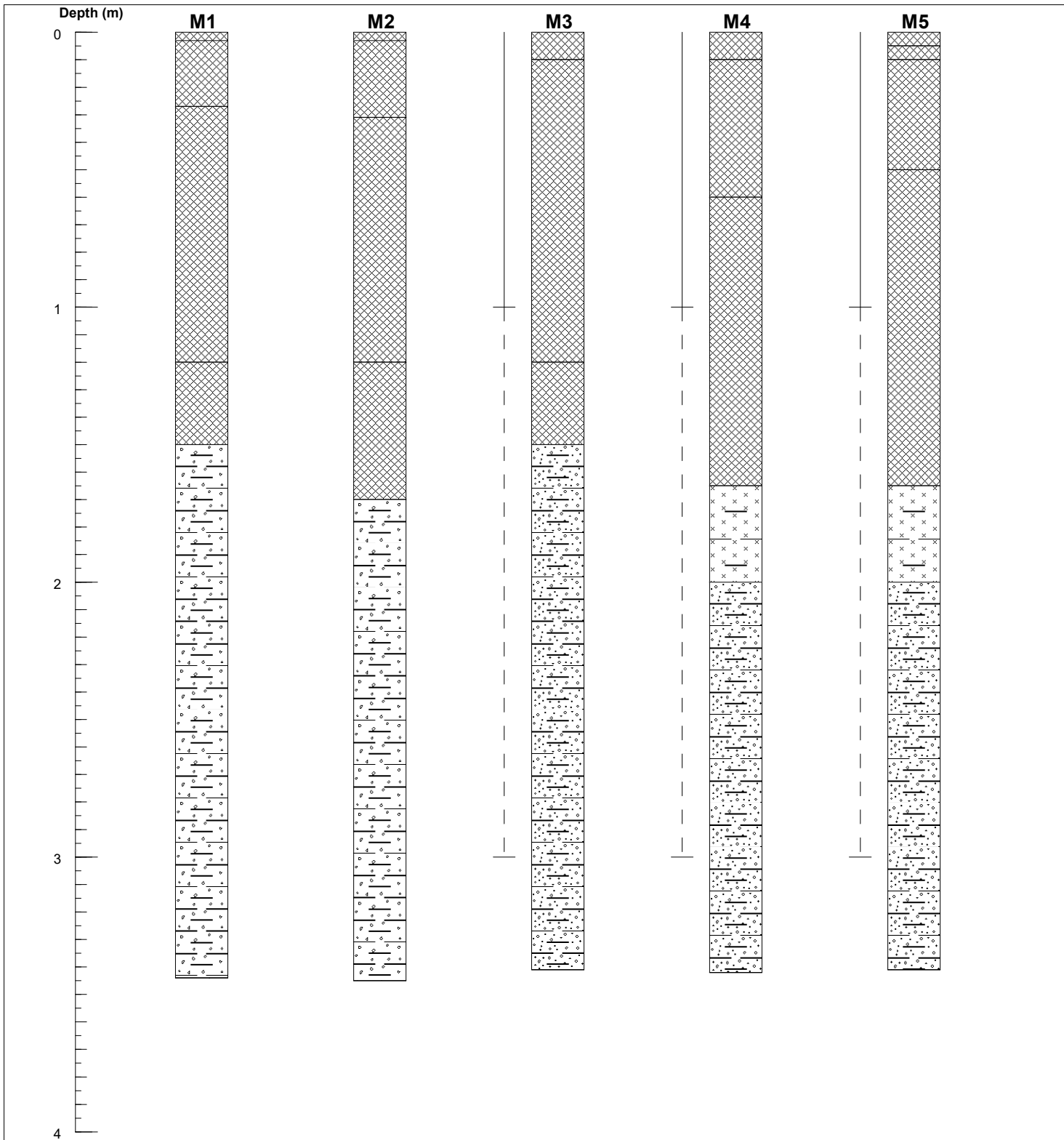
Remarks
Hand dug inspection pit from GL to 1.20m to check for services.
86mm diameter to 2.00m, 76mm diameter to 3.00m.
HV = Hand Shear Vane.
On completion backfilled with gravel.

Figure No.
8032A.M2

S S SUB SURFACE SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907					Site GRANGE SCHOOL, MATTHEWS LANE, LEVENSHULME, MANCHESTER, M12 4GR					Borehole Number M3	
Boring Method MINI PERCUSSIVE		Casing Diameter			Ground Level (mOD)		Client PROSPERE LEARNING TRUST			Job Number 8032A	
		Location AS PLAN			Dates 27/08/2024		Engineer FREDERICK G.MARKLAND ASSOCIATES LIMITED			Sheet 1/1	
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr	
0.00-0.10	B					(0.10)	MADE GROUND : brownish grey silty clayey fine to coarse sand and fine to coarse gravel sized fragments of sandstone and concrete with some pockets of organic matter.				
0.10-1.20	B					(1.10)	MADE GROUND : dark brown sandy silty slightly clayey fine to coarse gravel sized fragments of sandstone and concrete with occasional cobble sized fragments of sandstone.				
1.20-1.65	D			1.20m to 2.00m - 100% Recovery		1.20	MADE GROUND : soft to firm dark greyish brown ashy slightly gravelly slightly sandy very silty clay. Gravel sized fragments are fine to medium clinker and stone (organic odour).				
1.20-2.00	C			1,1/1,1,1,2		(0.30)					
1.20-1.65	SPT N=5					1.50	Soft to firm low to medium strength becoming firm medium strength, stiff high strength then very stiff very high strength brown and occasionally grey mottled slightly gravelly slightly sandy CLAY. Gravel is subangular to subrounded fine to medium sandstone, mudstone, coal and quartz. (strong organic odour to 2.00m).				
2.00-2.45	D			2.00m to 3.00m - 100% Recovery							
2.00-3.00	C			1,1/1,2,2,4		(1.91)	...below 2.40m : firm medium strength.				
2.00-2.45	SPT N=9						...below 2.60m : stiff high strength.				
3.00-3.41				HV at 1.75m c=42kPa							
3.00-3.41	SPT 50/255			2.00m to 3.00m - 100% Recovery							
3.00-3.41	D			1,1/1,2,2,4							
				HV at 2.85m c=120kPa							
				4,6/12,12,13,13			...below 3.15m : very stiff very high strength.				
				27/08/2024:DRY		3.41	Complete at 3.41m				
Remarks Hand dug inspection pit from GL to 1.20m to check for services. 76mm diameter to 3.00m. HV = Hand Shear Vane. On completion installed a 50mm diameter HDPE gas and groundwater monitoring standpipe with gravel surround to 3.00 metres, a Bentonite seal from 1.00 to 0.20 metres, and a concreted in lockable metal protective cover from 0.20m to GL.								Scale (approx) 1:25	Logged By LMB/HB	Figure No. 8032A.M3	

SUB SURFACE						Site		Borehole Number		
SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907						GRANGE SCHOOL, MATTHEWS LANE, LEVENSHULME, MANCHESTER, M12 4GR		M4		
Boring Method MINI PERCUSSIVE		Casing Diameter			Ground Level (mOD)		Client PROSPERE LEARNING TRUST		Job Number 8032A	
		Location AS PLAN			Dates 27/08/2024		Engineer FREDERICK G.MARKLAND ASSOCIATES LIMITED		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)	MADE GROUND : Bituminous Macadam			
						0.10	MADE GROUND : light brown sandy silty fine to coarse gravel sized fragments of limestone. (Hardcore).			
0.60-1.20	B					(0.50)				
0.60-1.20	B					0.60	MADE GROUND : soft to firm brown, dark brown and occasionally grey and yellowish brown mottled ashy slightly gravelly slightly sandy clay. Gravel sized fragments are fine to medium clinker, stone and brick (organic odour).			
1.20-1.65 1.20-2.00 1.20-1.65	D C SPT N=5			1.20m to 2.00m - 93% Recovery 1,1/1,1,1,2		(1.05)				
2.00-2.45 2.00-3.00 2.00-2.45	D C SPT N=9			HV at 1.80m c=47kPa 2.00m to 3.00m - 90% Recovery 1,1/2,2,2,3		1.65	Soft to firm low to medium strength greyish brown clayey SILT (organic odour).			
						(0.35)				
2.00-2.45 2.00-3.00 2.00-2.45	D C SPT N=9			HV at 1.80m c=47kPa 2.00m to 3.00m - 90% Recovery 1,1/2,2,2,3		2.00	Soft low strength becoming firm medium strength, stiff high strength then very stiff very high strength brown and occasionally grey mottled slightly gravelly slightly sandy CLAY. Gravel is subangular to subrounded fine to coarse sandstone, mudstone, coal, quartz and ironstone. ...below 2.40m : firm medium strength.			
3.00-3.42 3.00-3.42	SPT 50/265 D			4,7/12,12,13,13		(1.42)	...below 2.65m : stiff high strength.			
3.00-3.42 3.00-3.42	SPT 50/265 D			4,7/12,12,13,13			...below 3.15m : very stiff very high strength.			
				27/08/2024:DRY		3.42	Complete at 3.42m			
Remarks Hand dug inspection pit from GL to 1.20m to check for services. 76mm diameter to 2.00m, 64mm diameter to 3.00m. HV = Hand Shear Vane. On completion installed a 50mm diameter HDPE gas and groundwater monitoring standpipe with gravel surround to 3.00 metres, a Bentonite seal from 1.00 to 0.20 metres, and a concreted in lockable metal protective cover from 0.20m to GL.								Scale (approx)	Logged By	
								1:25	LMB/HB	
								Figure No. 8032A.M4		

S S SUB SURFACE SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907						Site GRANGE SCHOOL, MATTHEWS LANE, LEVENSHULME, MANCHESTER, M12 4GR				Borehole Number M5	
Boring Method MINI PERCUSSIVE		Casing Diameter			Ground Level (mOD)		Client PROSPERE LEARNING TRUST			Job Number 8032A	
		Location AS PLAN			Dates 27/08/2024		Engineer FREDERICK G.MARKLAND ASSOCIATES LIMITED			Sheet 1/1	
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr	
0.10-0.50	B					0.05	MADE GROUND : Flagstone.				
						0.10	MADE GROUND : Sand.				
0.50-1.20	B					(0.40)	MADE GROUND : light brown sandy silty fine to coarse gravel sized fragments of limestone. (Hardcore).				
						0.50	MADE GROUND : soft friable in places brownish grey ashy slightly gravelly slightly sandy clay. Gravel sized fragments are fine to coarse clinker and brick.				
1.20-1.65 1.20-2.00 1.20-1.65	D C SPT N=5			1.20m to 2.00m - 100% Recovery 1,1/1,1,1,2		(1.15)					
						1.65	Soft low strength greyish brown clayey SILT.				
2.00-2.45 2.00-3.00 2.00-2.45	D C SPT N=7			HV at 1.80m c=32kPa 2.00m to 3.00m - 70% Recovery 1,1/1,2,2,2		(0.35)					
						2.00	Soft low strength becoming firm medium strength, stiff high strength then very stiff very high strength brown and occasionally grey mottled slightly gravelly slightly sandy CLAY. Gravel is subangular to subrounded fine to medium sandstone, coal, quartz and mudstone.				
3.00-3.41 3.00-3.41	SPT 50/255 D			HP at 2.70m c=120kPa HP at 2.85m c=183kPa 5,6/12,12,13,13		(1.41)	...below 2.50m : firm medium strength. ...below 2.70m : stiff high strength. ...below 2.85m : very stiff very high strength.				
						3.41	Complete at 3.41m				
Remarks Hand dug inspection pit from GL to 1.20m to check for services. 76mm diameter to 2.00m, 64mm diameter to 3.00m. HV = Hand Shear Vane. HP = Hand Penetrometer. On completion installed a 50mm diameter HDPE gas and groundwater monitoring standpipe with gravel surround to 3.00 metres, a Bentonite seal from 1.00 to 0.20 metres, and a concreted in lockable metal protective cover from 0.20m to GL.								Scale (approx) 1:25	Logged By LMB/HB	Figure No. 8032A.M5	



	Groundwater Strike		Slotted Standpipe		Clayey SILT
	Strike Rise Level		MADE GROUND		
	Highest recorded piezo level		Gravelly CLAY		
	Piezometer Tip		Sandy gravelly CLAY		

S SUB SURFACE
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Nominal Section

Site GRANGE SCHOOL, MATTHEWS LANE, LEVENSHULME, MANCHESTER, M12 4GR	Date Drawn 22/10/2024	Date Checked	Sheet 1/1	Job Number 8032A
Client PROSPERE LEARNING TRUST	Drawn By	Checked By	Scale 1:20[V]	Figure No. 8032A

HAND DUG TRIAL PIT RECORD SHEETS

Depth (m)

Sample / Tests

Water Depth (m)

Field Records

Level (mOD)

Depth (m) (Thickness)

Description

Legend

Water

0.10-0.30

B

(0.08)
0.08

MADE GROUND : Bituminous Macadam

0.60-0.80

B

Water inflow(1) at 0.80m.

(0.82)

MADE GROUND : greyish brown sandy silty clayey fine to coarse gravel sized fragments of limestone, wood, sandstone and concrete.

▽1

1.00-1.10

D

27/08/2024:

0.90
(0.25)
1.15

Soft to firm grey slightly gravelly sandy CLAY. Gravel is angular to subangular fine to medium sandstone and coal.

Complete at 1.15m

0.00m

BRICK WALL

0.62m

CONCRETE

1.15m

0.00m MADE GROUND : Tarmac

0.08m

MADE GROUND : Gravel

0.90m

Soft to firm CLAY

1.15m

0.14m

Remarks

Pit sides unstable.
Groundwater inflow at 0.80m.
Hole stopped due to water entry, base of foundation unable to be proved.
On completion backfilled with arisings.

Scale (approx)

1:25

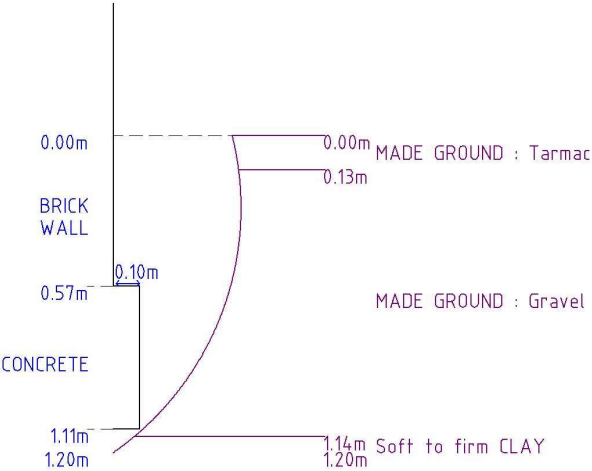
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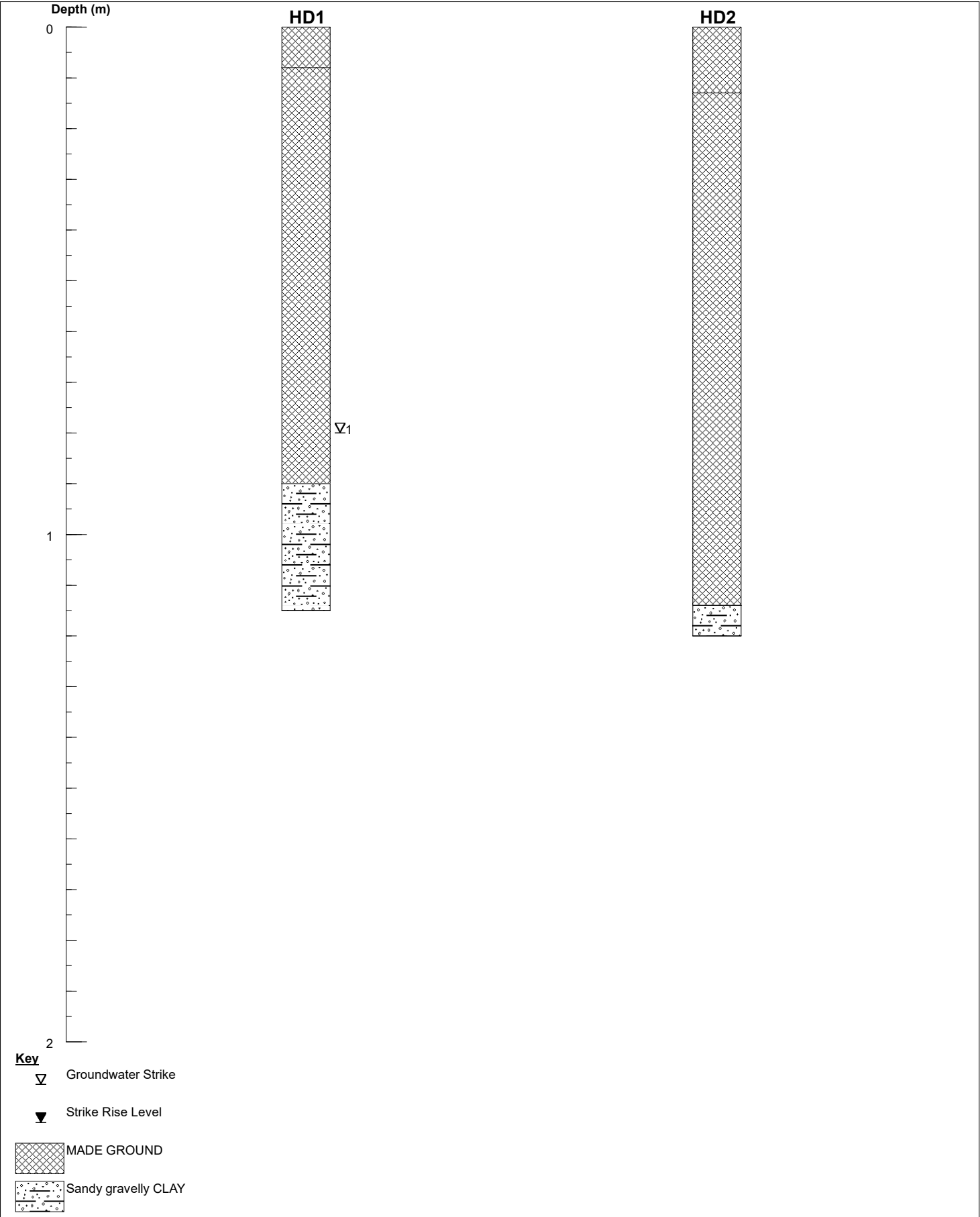
AJ/HB

Figure No.

8032A.HD1

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 SUB SURFACE SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907						Site GRANGE SCHOOL, MATTHEWS LANE, LEVENSHULME, MANCHESTER, M12 4GR		Trial Pit Number HD2
Excavation Method HAND EXCAVATED		Dimensions 0.48m x 0.45m		Ground Level (mOD)		Client PROSPERE LEARNING TRUST		Job Number 8032A
		Location AS PLAN		Dates 27/08/2024		Engineer FREDERICK G.MARKLAND ASSOCIATES LIMITED		Sheet 1/1
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.15-0.30	B				(0.13) 0.13	MADE GROUND : Bituminous Macadam		
					(1.01)	MADE GROUND : greyish brown sandy silty clayey fine to coarse gravel sized fragments of stone, concrete, sandstone and limestone.		
1.00-1.10	B							
1.15	D		27/08/2024:DRY		1.14 1.20	Soft to firm grey slightly gravelly sandy CLAY. Gravel is angular to subangular fine to medium sandstone and coal. Complete at 1.20m		
						Remarks Pit sides remained vertical and stable No groundwater encountered. On completion backfilled with arisings.		
						Scale (approx) 1:25	Logged By AJ/HB	Figure No. 8032A.HD2



 SUB SURFACE SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907		Nominal Section		
Site GRANGE SCHOOL, MATTHEWS LANE, LEVENSHULME, MANCHESTER, M12 4GR	Date Drawn 22/10/2024	Date Checked	Sheet 1/1	Job Number 8032A
Client PROSPERE LEARNING TRUST	Drawn By	Checked By	Scale 1:10[V]	Figure No. 8032A

CONCRETE CORE RECORD SHEETS



SUB SURFACE

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

Ground Investigation

Site: GRANGE SCHOOL, MATTHEWS LANE, LEVENSHULME, MANCHESTER, M12 4GR
Client: PROSPERE LEARNING TRUST
Engineer: FREDERICK G. MARKLAND ASSOCIATES LIMITED

Job Number

8032A

Sheet:

1/2

CONCRETE CORE DESCRIPTION

Location: M1

Core Dimensions:

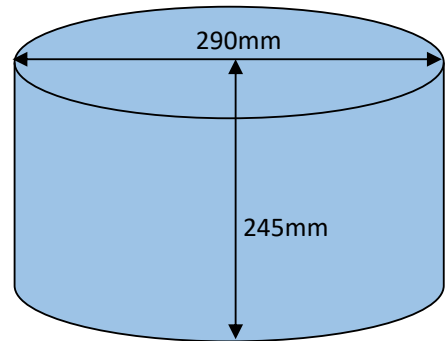
Diameter: 290 mm
Thickness of slab: 245 mm

Reinforcement:

Diameter of bars (mm):	Min: 4	Max: 10
Depth within slab (mm):	Min: 96	Max: 210

Visual Description:

0.000 - 0.008m : Resin Surfacing
0.008 - 0.245m : Light pinkish brown CONCRETE. 65-75% aggregate is angular to subrounded fine to medium limestone. <5% small to medium voids. 4mm reinforcement at 126mm, 133mm, 135mm, and 209mm depth. 7mm reinforcement at 96mm and 105mm depth. 10mm reinforcement at 122mm, 192mm, 202mm, and 210mm depth.



Upper Surface



Lower Surface



Side View



Side View

Remarks :



SUB SURFACE

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

Ground Investigation

Site: GRANGE SCHOOL, MATTHEWS LANE, LEVENSHULME, MANCHESTER, M12 4GR
Client: PROSPERE LEARNING TRUST
Engineer: FREDERICK G. MARKLAND ASSOCIATES LIMITED

Job Number

8032A

Sheet:

2/2

CONCRETE CORE DESCRIPTION

Location: M2

Core Dimensions:

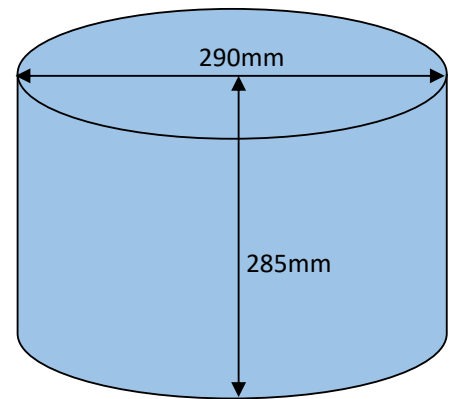
Diameter: 290 mm
Thickness of slab: 285 mm

Reinforcement:

Diameter of bars (mm): Min: 7 Max: 10
Depth within slab (mm): Min: 95 Max: 220

Visual Description:

0.000 - 0.008m : Resin Surfacing
0.008 - 0.285m : Light greyish brown CONCRETE. 65-75% aggregate is angular to subrounded fine to medium limestone. <5% small to large voids (largest 10mm). 7mm reinforcement at 95mm, 105mm, 155mm, 172mm, and 190mm depth. 10mm reinforcement at 100mm, 102mm, 105mm, 108mm, 124mm, 125mm, 185mm, 190mm, 210mm, 215mm and 220mm depth.



Upper Surface



Lower Surface



Side View



Side View

Remarks :

PHOTOGRAPHS

Site:

GRANGE SCHOOL, MATTHEWS LANE, LEVENSHULME, MANCHESTER, M12 4GR

Client:

PROSPERE LEARNING TRUST

Engineer:

FREDERICK G. MARKLAND ASSOCIATES LIMITED

Job Number:

8032A

Sheet:

1 / 3

Survey Date:

27/08/24

TRIAL PIT PHOTOGRAPHS

HD1



HD1



HD1



HD1



HD1



HD1



Site: GRANGE SCHOOL, MATTHEWS LANE, LEVENSHULME, MANCHESTER, M12 4GR
Client: PROSPERE LEARNING TRUST
Engineer: FREDERICK G. MARKLAND ASSOCIATES LIMITED

Job Number:
8032A
Sheet:
2 / 3
Survey Date:
27/08/24

TRIAL PIT PHOTOGRAPHS

HD1



HD1



HD1



HD1



HD1



HD1



Site: GRANGE SCHOOL, MATTHEWS LANE, LEVENSHULME, MANCHESTER, M12 4GR
Client: PROSPERE LEARNING TRUST
Engineer: FREDERICK G. MARKLAND ASSOCIATES LIMITED

Job Number:
8032A
Sheet:
3 / 3
Survey Date:
27/08/24

TRIAL PIT PHOTOGRAPHS

HD2



HD2



HD2



HD2



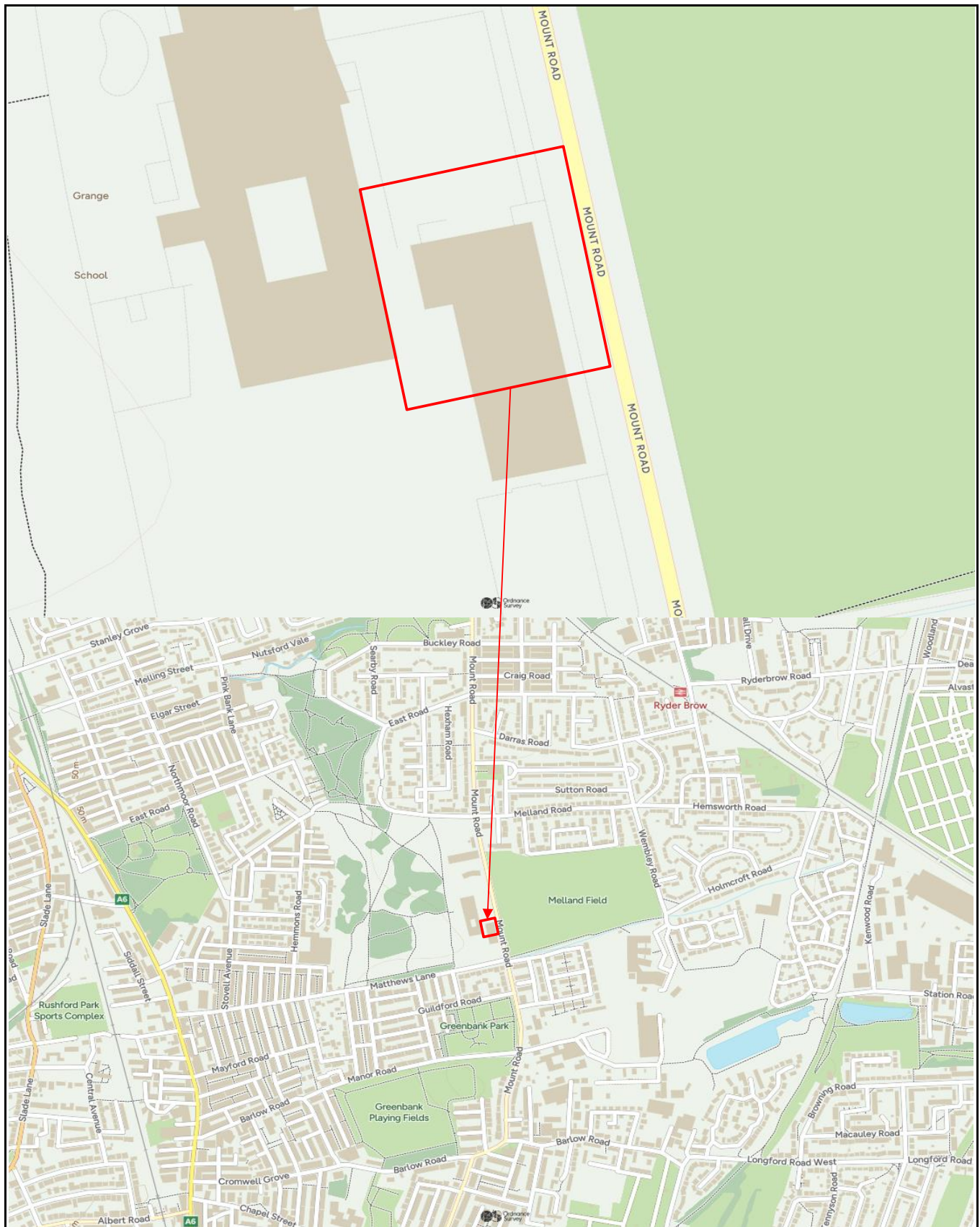
HD2



HD2



FIGURES

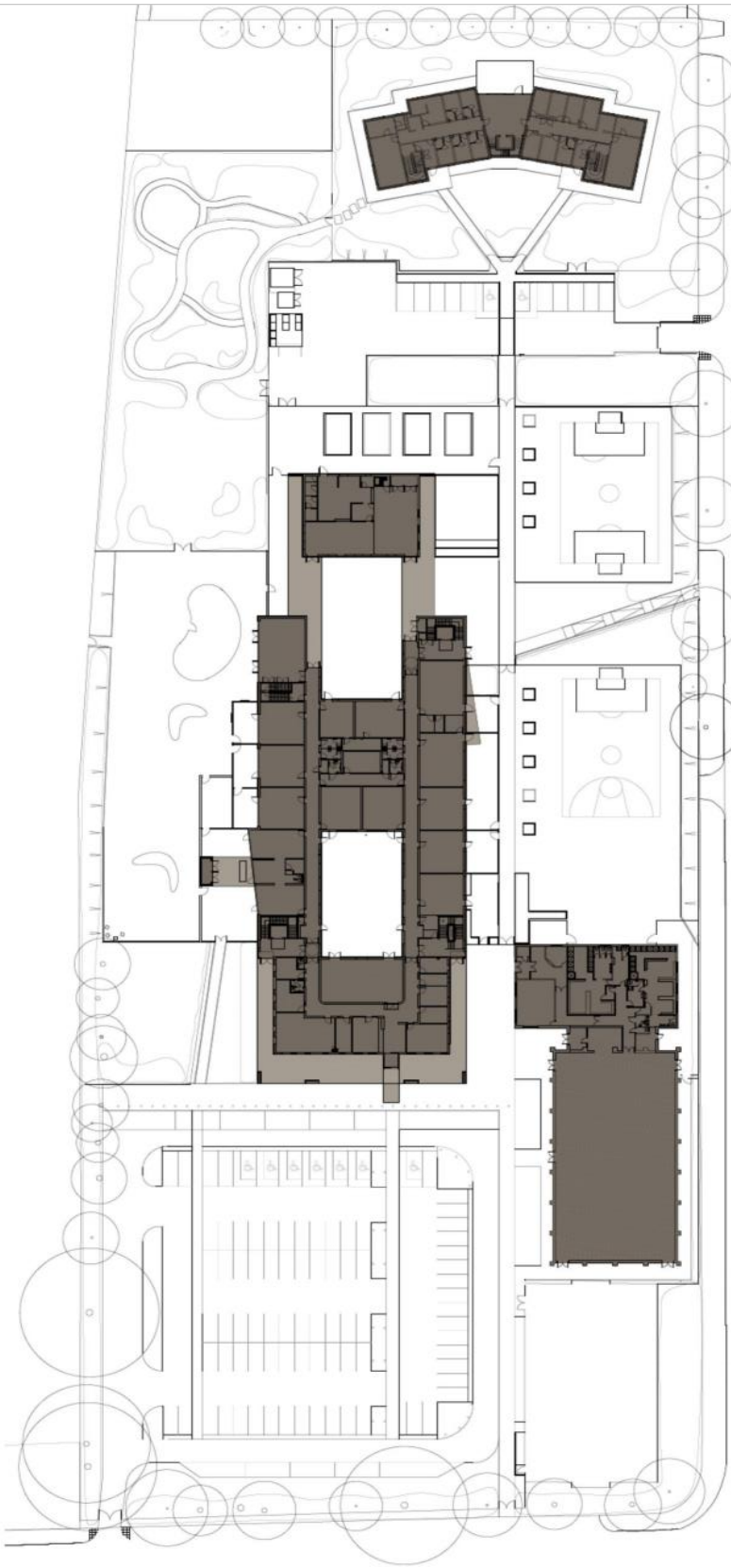


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 SUB SURFACE SITE INVESTIGATION AND SPECIALIST GEOTECHNICAL CONSULTANTS 3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907	General Site Location			
Site GRANGE SCHOOL, MATTHEWS LANE, LEVENSHULME, MANCHESTER, M12 4GR	Date Drawn 18-Oct-24	Date Checked	Orientation 	Job No. 8032A
Client PROSPERE LEARNING TRUST	Drawn By LMB	Checked By	Scale —	Figure No. 1

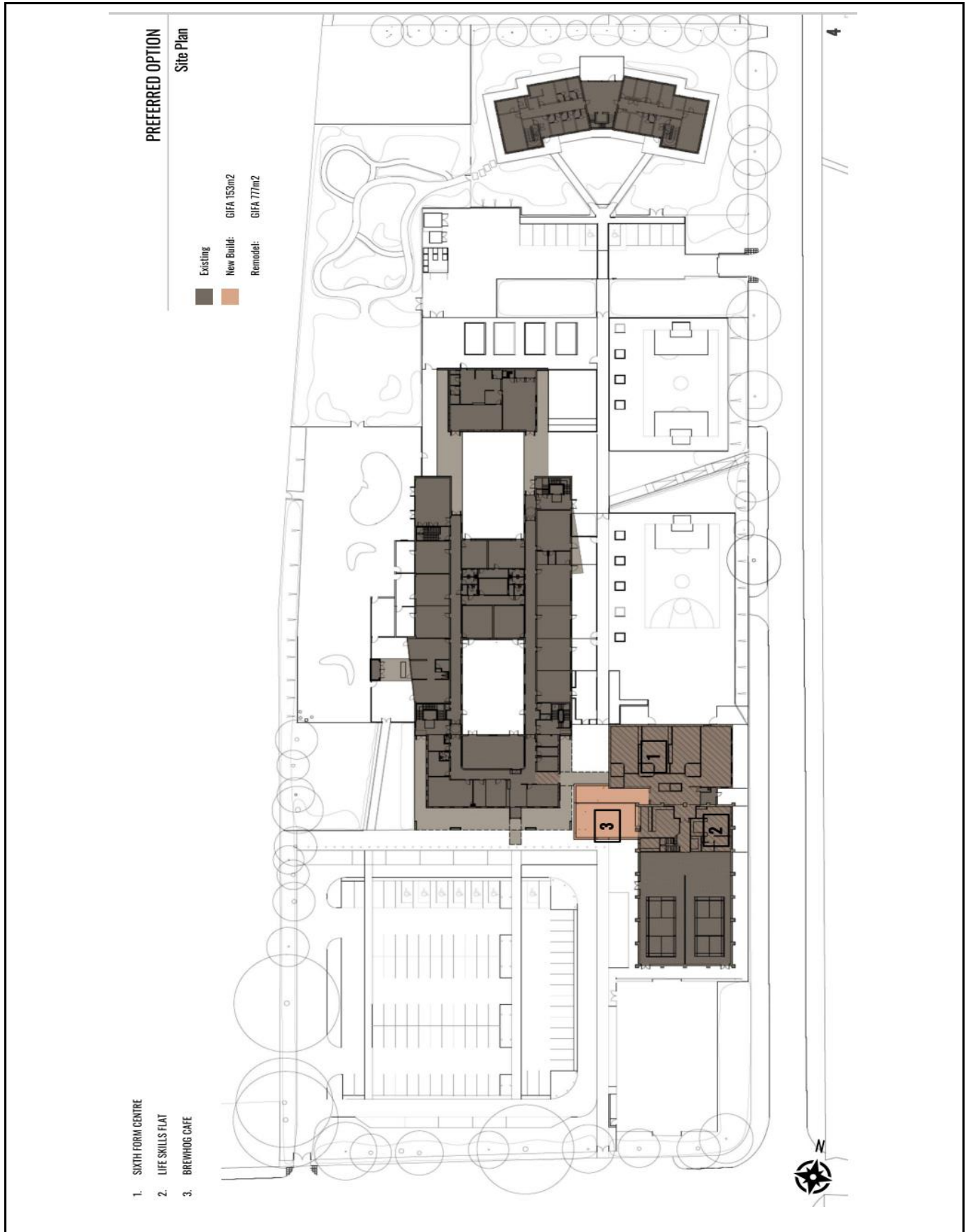
EXISTING SITE PLAN

TOILETS (not counting Sports Hall)
 Early Years: 2 existing, enough for 210 pupils
 Pupils: 21 existing, enough for 420 pupils
 Staff: 8 existing, enough for 175 staff



3

 SUB SURFACE SITE INVESTIGATION AND SPECIALIST GEOTECHNICAL CONSULTANTS 3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907	Site Location			
Site GRANGE SCHOOL, MATTHEWS LANE, LEVENSHULME, MANCHESTER, M12 4GR	Date Drawn 18-Oct-24	Date Checked	Orientation 	Job No. 8032A
Client PROSPERE LEARNING TRUST	Drawn By LMB	Checked By	Scale -	Figure No. 2

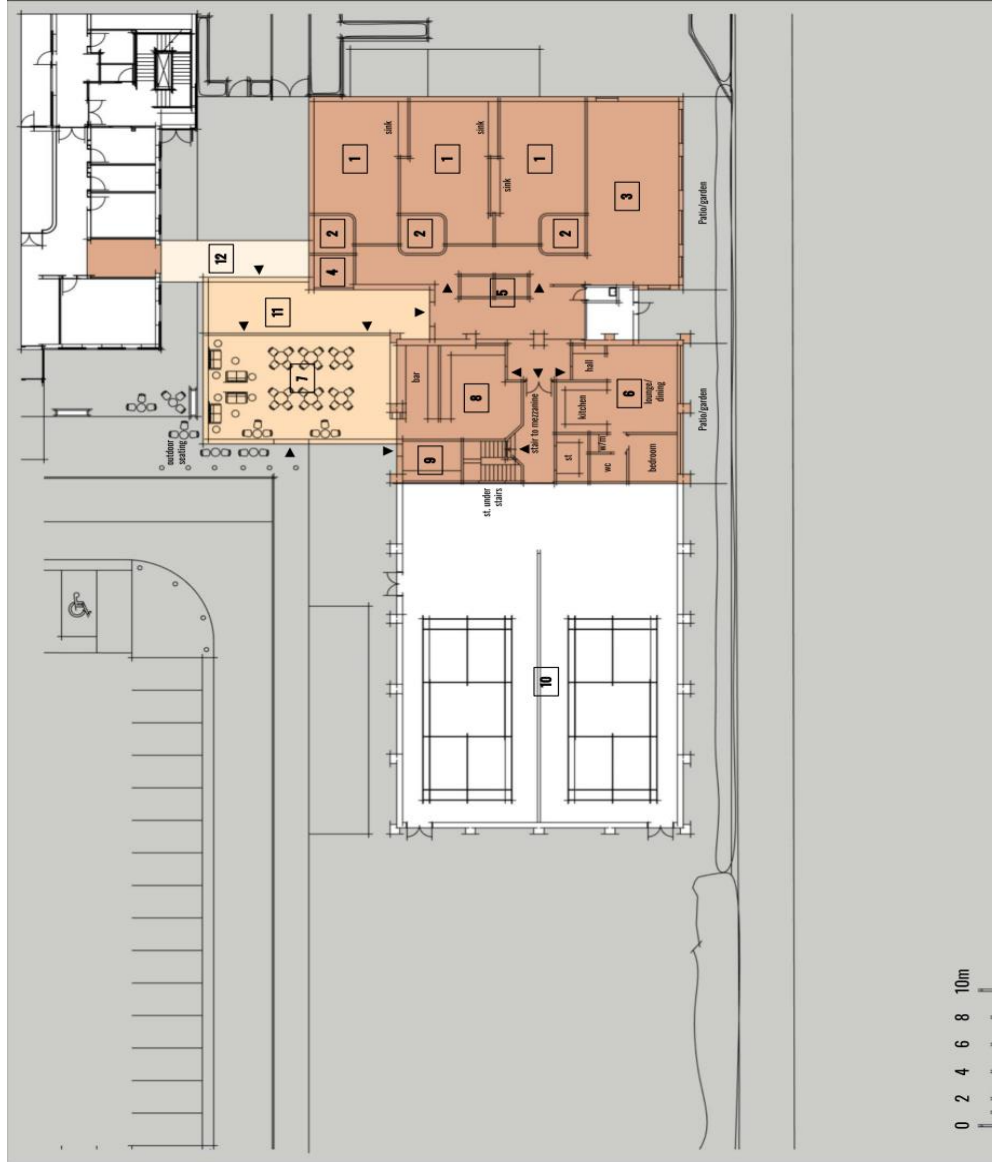


 SUB SURFACE SITE INVESTIGATION AND SPECIALIST GEOTECHNICAL CONSULTANTS 3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907	Proposed Development Plan			
Site GRANGE SCHOOL, MATTHEWS LANE, LEVENSHULME, MANCHESTER, M12 4GR	Date Drawn 18-Oct-24	Date Checked	Orientation 	Job No. 8032A
Client PROSPERE LEARNING TRUST	Drawn By LMB	Checked By	Scale —	Figure No. 3a

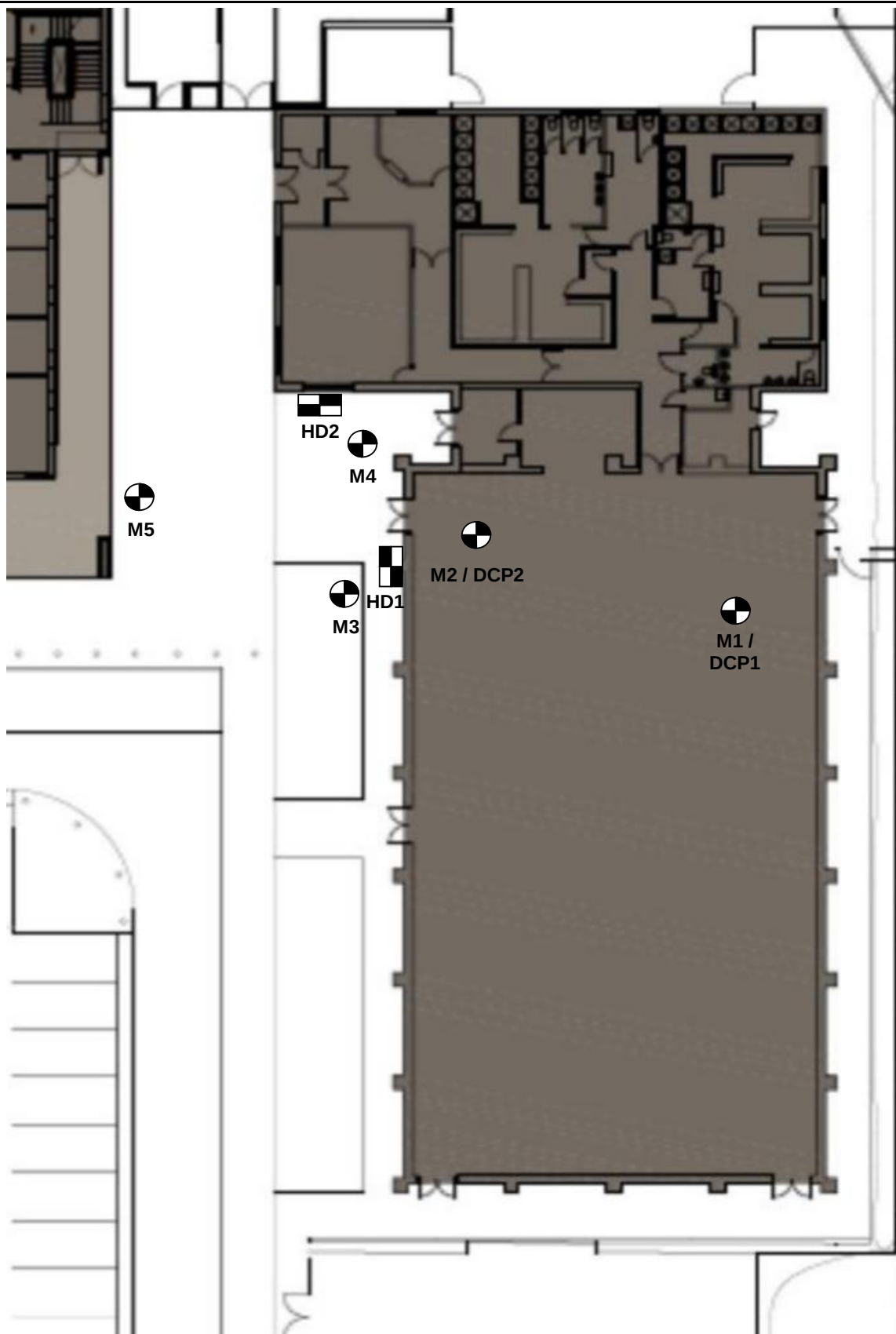
PREFERRED OPTION

Ground Floor Plan, Sixth Form, Brewing Café and Life Skills Flat

1. CLASSROOM: 55m²
2. BREAK OUT ROOM: 8m²
3. COMMON ROOM: 85m²
4. STAFF OFFICE/BASE: 6m²
5. WC: 2x AWC
6. FLAT: 80m²
7. CAFÉ: 98m²
8. KITCHEN/BAR: 52m²
9. MAINTENANCE OFFICE/WORKSHOP: 12m²
10. REDUCED SPORTS HALL AS EXISTING
11. CIRCULATION
12. CANOPY



 SUB SURFACE SITE INVESTIGATION AND SPECIALIST GEOTECHNICAL CONSULTANTS 3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907	Proposed Development Plan			
Site GRANGE SCHOOL, MATTHEWS LANE, LEVENSHULME, MANCHESTER, M12 4GR	Date Drawn 18-Oct-24	Date Checked	Orientation 	Job No. 8032A
Client PROSPERE LEARNING TRUST	Drawn By LMB	Checked By	Scale -	Figure No. 3b



 SUB SURFACE SITE INVESTIGATION AND SPECIALIST GEOTECHNICAL CONSULTANTS 3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907		Exploratory Hole Location Plan			
Site GRANGE SCHOOL, MATTHEWS LANE, LEVENSHULME, MANCHESTER, M12 4GR		Date Drawn 18-Oct-24	Date Checked	Orientation 	Job No. 8032A
Client PROSPERE LEARNING TRUST		Drawn By LMB	Checked By	Scale —	Figure No. 4