

Geo-Environmental Investigation & Assessment

For a site at

Manchester Communication Academy, Manchester

Undertaken for

Lancaster Maloney Martin Ltd

on behalf of

Greater Manchester Academy Trusts

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Executive Summary

Site Location	The site comprises sections of Manchester Communication Academy (MCA), located off Silchester Road in north Manchester, M40 8NT.
Development Proposals	The development comprise the construction of a new two-storey Science Teaching Block and a one to two-storey Year 7 Teaching Block.
Ground Conditions	<u>Science Block</u> Ground conditions generally comprised a surface horizon of grass overlying topsoil, or asphalt and a granular sub base. This was underlain by made ground to depths of between 2.40 and 3.50mbgl and in turn by cohesive glacial till to a depth of 13.10mbgl, where it was in turn underlain by mudstone and sandstone of the Pennine Coal Measures Strata to proven depths of 15.20mbgl. <u>Year 7 Block</u> Ground conditions generally comprised a surface horizon of asphalt overlying a granular sub base. This was underlain by made ground to depths of between 2.80 and 3.50m but locally in excess of 5.00mbgl. The made ground was underlain by glacial deposits to a depth of 16.40mbgl below which sandstone of the Chester Formation extended to a proven depth of 17.10mbgl.
Site Preparation and Earthworks	Construction near any retained trees and importantly within any RPA's should be undertaken with due regard to guidance provided in BS5837:2012 'Trees in relation to design, demolition and construction – recommendations'. Existing foundations, ground floor slabs and other buried concrete/brick obstructions associated with current and historic site structures will need to be broken out to suitable depths below formation levels where they are to impinge on the proposed buildings. Such materials removed as part of the clearance work, subject to appropriate screening and crushing, will be suitable for re-use as bulk fill beneath hard cover areas. Earthworks should be carried out in accordance with recommendations and guidance provided in BS6031:2009, Code of Practice for Earthworks. Granular made ground and natural deposits will be suitable for re-use as bulk fill beneath hard cover areas, subject to appropriate screening and crushing.
Slopes and Retaining Walls	The Year 7 Block occupies variable southern facing slopes which may require localised re-profiling to provide suitable formation levels or possibly new low retaining walls. Any reprofiling activities will need to ensure slope stability in both short and long-term situations, taking account of local ground and groundwater conditions. In this respect, slopes with angles of up to about 1 vertical in 3 horizontal (i.e. about 18 degrees) will be stable in both short and long term conditions. If/where required new retaining wall foundations would either need to be supported on foundations within the made ground, assuming a reduced bearing pressure of no more than 50kN/m², or would need to be supported by piles.
Foundations	Due to the ground conditions the most suitable foundation solution for both structures is considered to be piles, taken down through the Made Ground and into the underlying competent Glacial Till. Pile design should assume no side support (skin friction) for the pile sections surrounded by made ground or soft soils and may also need to be designed to withstand potentially negative skin friction effects from clay heave. Pile type, selection and design should to be undertaken in conjunction with a reputable, specialist piling contractor, ideally with experience of the local ground conditions. New floor slabs would be constructed as suspended for both proposed buildings.
New Pavements	New road pavement design should be based on a California Bearing Ratio (CBR) value of no more than 3% in untreated made ground and 5% in engineered fill and unsaturated natural granular strata.
Soakaways	Soakaways are not considered to be a feasible drainage option for the site.

Concrete Classification	The typical design sulphate (DS) class and "Aggressive Chemical Environment for Concrete" (ACEC) class for concrete at the site are DS-2 and AC-2 respectively.
Ground Contamination	In consideration of the chemical test results and proposed end use, it is concluded that made ground on the site contains very localised elevated concentrations of lead (1no sample) and PAHs (4no samples). However, these are considered to be primarily associated with the presence of deposits of ash and clinker, which typically are not a significant source of mobile contamination. In addition, asbestos in the form of amosite and chrysotile fibres were detected in 3no samples at concentrations of between <0.001% and 0.005%. Although not anticipated to be significant any new landscaped areas will need to be capped to remove the pollution linkage. This will normally comprise a 600mm clean cover. Notwithstanding the above, as there is a low possibility of asbestos fibres becoming airborne during site enabling works, groundworks would need to be undertaken under a watching brief by an asbestos specialist with any ACM so encountered being segregated for removal to landfill. Such operations should also incorporate specific control measures such as dust suppression, perimeter air monitoring and appropriate Personal Protective Equipment (PPE). The overall risk to Controlled Waters is therefore considered to be Low with no specific remedial measures encountered.
Ground Gas	It would be prudent to allow for ground gas protection measures within the proposed Year 7 Block to achieve the required score of 2.5 in accordance with Table 4 of BS8485:2019 as outlined within Section 8.0 of this report. No gas protection is required within the proposed Science Block.
Waste Soils	For preliminary guidance based on the current information, it is likely that topsoil would be classified as 'Non-hazardous' with natural soils classified as 'Inert' for landfill disposal. However, excavated soils which contain significant asbestos, lead or total organic carbon concentrations may classify as 'Hazardous' if disposed to landfill. In addition, for Inert and Hazardous waste disposal, allowance will need to be made for adequate Waste Acceptance Criteria (WAC) testing with appropriate consideration of the additional time and cost associated with this. It will be the responsibility of the waste producer to undertake further testing and classification of any waste soils for disposal to an appropriately licenced landfill in accordance with current guidelines and Duty of Care requirements.

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1.0 INTRODUCTION

Appointment

- 1.1 WML Consulting has been commissioned by Lancaster Maloney Martin Ltd on behalf of Greater Manchester Academy Trusts to undertake a Phase 2 intrusive site investigation and Geoenvironmental Assessment of a site at Manchester Communication Academy.

Proposed Development

- 1.2 It is understood that the project involves the construction of two teaching blocks within the wider Manchester Communication Academy (MCA) site, namely a two-storey Science Block to the east of the main MCA building, and a one and two-storey Year 7 Block on the site of the current sports and recreation pitches north-east of the main MCA campus.
- 1.3 The proposed site plan is presented on Lancaster Maloney Martin drawing 2303-04-F01, dated May 2023 in Appendix 01.

Objective

- 1.4 The objective of the ground investigation and assessment was to provide geotechnical recommendations for construction design purposes together with a geo-environmental risk assessment in terms of possible ground contamination.
- 1.5 To achieve the objective, the following tasks were undertaken:
- Design a Phase 2 Ground Investigation in accordance with the Environment Agency (2004) Land Contamination Risk Management (LCRM), April 2021.
 - Characterise the ground conditions in terms of geology, soil geotechnical parameters and ground contamination from information provided by the ground investigation.
 - Provide recommendations regarding suitable foundations, floor slabs and new pavement construction, together with any other geotechnical considerations that could affect possible future development.
 - Determine a ground conceptual model for the site so as to undertake a ground contamination Generic Quantitative Risk Assessment (GQRA).

Background

- 1.6 A Phase 1 Desk Study for the site area has been undertaken by WML, and is presented in the following report:
- WML, Phase 1 Desk Study and Preliminary Geoenvironmental Assessment, ref. 11258G-WML-00-XX-RP-G-0001, September 2023.
- 1.7 The Phase 1 Desk Study concluded that intrusive investigations were required in order to confirm the ground conditions beneath the proposed development site.

Scope

- 1.8 The ground investigation comprised the formation of ten window sample probeholes undertaken with reference to BS5930:2015 + A:2020 Code of Practice for Ground Investigation and BS10175:2011 together with A2:2017, "Investigation of Potentially Contaminated Sites - Code of Practice" except where superseded by EN ISO 22475-1 "Geotechnical Investigation and Assessment – Sampling by Drilling and Excavation and Groundwater Measurements".
- 1.9 Geotechnical soil testing was undertaken in general accordance with guidelines provided in BS1377:1990 – Parts 1-9, "Method of Test for Soils for Civil Engineering Purposes". Samples for chemical analysis were obtained and handled generally in accordance with the current guidelines (BS10175: 2011 and A2:2017).

2.0 SITE LOCATION AND DESCRIPTION

Site Location

- 2.1 The site comprises two distinct areas within Manchester Communication Academy (MCA), located off Silchester Road and Lathbury Road in north Manchester, M40 8NT and is centred on approximate Ordnance Survey National Grid Reference 385752E, 400722N.

Site Description

Science Block

- 2.2 The proposed Science Block is located within the western part of the wider MCA development. The area is bounded to the west and south by the main MCA building and asphalt hardstanding, to the east by an asphalt surfaced car park, and to the north by an area of maintained grass landscaping.
- 2.3 The site comprises an approximately square development footprint, currently within an area of asphalt hardstanding and grassed amenity land to the north-east of the main MCA building.
- 2.4 Two semi-mature trees are present in the northern area of the site.

Year 7 Block

- 2.5 The proposed Year 7 Block is located within in the northern part of the wider MCA development north of Lathbury Road.
- 2.6 The proposed Year 7 Block area is bounded to the north and west by residential properties, to the east by sports and recreation grounds forming part of the MCA development. To the south the area is bounded by low rise buildings used for equipment storage and administration with Lathbury Road beyond. The area immediately surrounding the development area comprises footpaths and sloping grassed embankments accommodating changes in elevation across the site.
- 2.7 The site comprises an L-shaped plot of land, currently occupied by an asphalt cycling 'pump track' and sports pitch surrounded by chain link fencing, in addition to an area of maintained grassland and an asphalt access track.
- 2.8 The area surrounding this comprises footpaths and sloping grassed embankments accommodating level platforms for the existing sports pitches. Two single storey buildings are located to the immediate south-east of the site, which are used for the storage of sports equipment.

Topography

- 2.9 The Science Block area slopes gently from approximately 65.39 metres Above Ordnance Datum (mAOD) in the west to approximately 63.75 mAOD in the east.
- 2.10 The Year 7 Block site slopes from approximately 66.27 mAOD in the north-east to approximately 64.33 mAOD. The asphalt sports and recreation areas within the Year 7 Block area are approximately level, and at the base of the grassed slopes.

3.0 SUMMARY OF ENVIRONMENTAL AND HISTORICAL SETTING

3.1 The following paragraphs summarise the most relevant findings of the Phase 1 desk study report.

Geology

3.2 The BGS plans indicate that the site is underlain by superficial Devensian Glacial Till deposits, comprising clay with occasional sand and silt horizons.

3.3 The superficial deposits are indicated to be underlain by Newton Heath Sandstone and Pennine Middle Coal Measures Formation (Science Block Area) and Chester Formation comprising sandstone (Year 7 Block area).

Radon

3.4 The site is not located within a Radon Affected Area as defined by the UK Health Security Agency where less than 1% of properties are above the Action Level of exposure. Therefore, radon protection measures are not necessary for new structures as described in publication BR211 by the Building Research Establishment.

Mining and Subsidence

3.5 The site is not situated within a Development High Risk area, and there are no records of past known or probable shallow coal mine workings beneath the site.

3.6 In consideration of the above, risks of subsidence from coal mining are considered to be Very Low.

Environmental Setting

3.7 The superficial deposits beneath the site are classified as a 'Secondary Undifferentiated' Aquifer. The bedrock underlying the Science Block is classified as a Secondary 'A' Aquifer, and the bedrock underlying the Year 7 Block is classified as a 'Principal' Aquifer.

3.8 There are no Environment Agency Source Protection Zones within 500m of the site, and no groundwater abstraction licenses are located within 500m.

3.9 Moston Brook is situated approximately 40-45m south-east of both development sites, and Moss Brook is situated approximately 174m south of the Science Block area.

3.10 Moston Brook landfill, located 202m north-east of the Year 7 Block development area, was licenced to receive inert, industrial, commercial, household, special wastes and liquid sludge between 1974 and 1977.

Site History

Science Block

3.11 The earliest map dated 1848 indicates the site to comprise undeveloped rural/agricultural land, with a possible small field pond in the centre of the site, a field boundary running approximately north-east to south-west across the central part, and an access track crossing the south-eastern corner. By 1891 the site had been developed with terraced residential housing either side of Anderton Street, which extended roughly east to west across the northern part. The site remained unchanged until 1975, at which time it was shown to have been cleared of structures. No further change is evident on subsequent mapping until 2023, when it was shown to form an undeveloped part of the MCA campus.

Year 7 Block

3.12 The earliest map dated 1848 indicates the site to comprise undeveloped rural/agricultural land with a pond located immediately to the north. By 1891, embankments were marked to the east and south of

the site, adjacent to Moston Brook. This suggests that infilling may have occurred at the site. By 1908, the site had been developed as allotments which remained until 1968, at which time the site was shown as undeveloped land.

- 3.13 By 1975 a footpath was shown extending through the site, which is inferred to have been redeveloped as grassed amenity land. No further changes are evident until 2023, when two small buildings – part of the current MCA sports facility - are shown immediately adjacent to the south-eastern boundary of the site.

Preliminary Contamination Risk Assessment

- 3.14 The approach at the Phase 1 Desk Study stage was precautionary until such time as uncertainties in the conceptual model could be verified by appropriate site investigation.
- 3.15 However, based on the site history and the proposed development scenario, potential pollution linkages were considered low or unlikely with associated preliminary risks being assessed as very low to low.
- 3.16 Such uncertainties relate mainly to the level of contamination as a result of the site's brownfield status and the potential for ACM to be present in and on the ground resulting from previous demolition.

4.0 SITE INVESTIGATION

Rationale

- 4.1 Intrusive investigations were undertaken primarily to provide geotechnical parameters for structural design purposes, but also to verify the preliminary site conceptual model and clarify the low environmental risk.
- 4.2 Window sample probeholes were undertaken to limit surface disruption and to obtain samples for chemical analysis and geotechnical testing. Due to the small diameter of the probing equipment, the depth of penetration achieved is dependent on favourable ground conditions. As such, ground penetration may be restricted in circumstances where the ground is particularly strong or contains relatively large obstructions such as cobbles and/or boulders.
- 4.3 Cable percussive boreholes were undertaken to inform the deeper ground conditions across the site areas in order to assist pile design where required.
- 4.4 The investigations include two distinct areas within the wider school site. The following table outlines the locations of the exploratory holes and which structures they targeted.

Location	Exploratory Holes
Science Block	WS01 – WS05 & BH01
Year 7 Block	WS06 – WS10 & BH02

- 4.5 The investigation locations were chosen so as not to impact on the presence of known/suspected services beneath the site and also maintain the use of the 'pump track' to the proposed Year 7 Block.
- 4.6 Monitoring standpipes were installed within selected probeholes for the measurement of ground gas and groundwater levels.
- 4.7 Chemical analysis of a general suite of contaminants was undertaken on selected samples of soil to confirm the contamination risk posed by the site.
- 4.8 In consideration of the thickness of made ground, and anticipating the removal of hardstanding, samples of made ground submitted for chemical analyses were taken from a range of depths generally between 0.30m to 1.90mbgl. This ensures that contamination associated with risks to human health can be assessed for any site end users (at ground level) and during the continued use of the school and construction workers during development (e.g. during surface earthworks and excavations anticipated up to 2.00mbgl in general).
- 4.9 The chemical analyses within Appendix 05 also include samples tested at depth in excess of 2.00mbgl which are for geotechnical purposes geotechnical analysis of soil samples was carried out in order to determine geotechnical design parameters.

Intrusive Works

- 4.10 Intrusive ground investigations were undertaken by SI Ground Investigation Limited on the 31st August and 1st September 2023. These comprised the formation of 10no window sample probeholes (5no in each area of investigation) to a maximum depth of 5.00 metres below ground level (mbgl).
- 4.11 Additional Ground investigations were undertaken by PB Drilling Ltd between the 8th and 10th April 2024. This comprised the formation of 2no cable percussive borehole to depths of between 15.20 and 17.10mbgl.

- 4.12 Photographs taken during the investigation are presented within Appendix 02 of this report. The exploratory hole records are presented in Appendix 03 of this report whilst the exploratory hole locations are shown on drawings SK01A and SK01B, presented in Appendix 01.

Monitoring Standpipes

- 4.13 Standpipes for groundwater and ground gas monitoring were installed within probeholes WS02, WS04, WS08 and WS09, as indicated on the exploratory hole logs presented in Appendix 03.

Geotechnical and Chemical Testing

- 4.14 In-situ geotechnical testing was undertaken at regular intervals during the formation of the window sampling probeholes in the form of Standard Penetration Tests (SPT's). The results for this testing are presented on the descriptive logs in Appendix 03.
- 4.15 Selected soil samples were collected and scheduled for the following geotechnical and geochemical parameters:
- Moisture Content.
 - Liquid Limit/Plastic Limit.
 - California Bearing Ratio (CBR's).
- 4.16 The results of geotechnical laboratory testing are presented in Appendix 04.
- 4.17 Chemical analysis was undertaken on selected soil samples for the following Contaminants of Concern (CoCs):
- Total Arsenic, Cadmium, Chromium VI, Copper, Lead, Mercury, Nickel, Selenium, Vanadium, Zinc.
 - Water Soluble Boron.
 - Total Cyanide, Phenols, Sulphur, Sulphate, Acid Soluble Sulphide.
 - Speciated USEPA Polyaromatic Hydrocarbons (PAH).
 - Total Petroleum Hydrocarbons (TPHCWG Aromatic/aliphatic split plus BTEX and MTBE).
 - Asbestos Screen and Identification (plus quantification where fibres were identified).
 - 2:1 water/soil sulphate extract, pH.
- 4.18 Leachability testing was undertaken on selected soil samples, for the following CoCs:
- Arsenic, Boron, Cadmium, Copper, Chromium VI, Lead, Mercury, Nickel, Selenium, Vanadium and Zinc.
 - Speciated USEPA Polyaromatic Hydrocarbons (PAH).
 - Total Cyanide, Phenols, Sulphur, Sulphate and pH.
- 4.19 The results of chemical analysis are presented in Appendix 05.
- ### **Groundwater and Ground Gas Monitoring**
- 4.20 Monitoring of standpipes for groundwater and ground gas levels has been undertaken on six occasions to date, on 13th and 22nd November 2023. The results are presented in Appendix 06, together with the calibration certificates for the gas analyser.

5.0 GROUND CONDITIONS

Stratigraphy Summary

Science Block

- 5.1 Ground conditions generally comprised a surface horizon of grass overlying topsoil, or asphalt and a granular sub base. This was underlain by made ground to depths of between 2.40 and 3.50mbgl and in turn by cohesive glacial till to a depth of 13.10mbgl, where it was in turn underlain by mudstone and sandstone of the Pennine Coal Measures Strata to proven depths of 15.20mbgl.

Year 7 Block

- 5.2 Ground conditions generally comprised a surface horizon of asphalt overlying a granular sub base. This was underlain by made ground to depths of between 2.80 and 3.50m but locally in excess of 5.00mbgl. The made ground was underlain by glacial deposits to a depth of 16.40mbgl below which sandstone of the Chester Formation extended to a proven depth of 17.10mbgl.

Science Block

Made Ground

- 5.3 A surface horizon of grass was encountered within the majority of holes, generally overlying topsoil of brown silty or gravelly sand to depths of between 0.20 and 0.45mbgl. Topsoil was absent in WS03, where made ground was encountered directly beneath the grass. WS04 and BH01 encountered a surface horizon asphalt to depths of 0.20mbgl, underlain by a sub base of grey sandy gravel.
- 5.4 The underlying made ground comprised brown slightly gravelly clay, including gravel sized fragments of brick, concrete and glass with localised ashy fragments, to depths ranging between 2.40 and 3.50mbgl.
- 5.5 A pocket of black to brown, sandy gravel of ash and clinker was encountered within WS01 from 1.80 to 2.30mbgl. The made ground within BH01 was also noted to have an ashy content.
- 5.6 SPT 'N' values recorded within the made ground ranged from 3 to 22 indicating its variable consistency.

Glacial Till

- 5.7 Glacial Till deposits were encountered beneath made ground from depths of between 2.50 and 3.50mbgl and extended to a maximum depth of 13.10mbgl in BH01.
- 5.8 These comprised firm to stiff greyish brown clay with occasional bands of silty sand.
- 5.9 A basal horizon of clayey sand and gravel was encountered in BH01 between 12.00 and 13.10mbgl.
- 5.10 SPT 'N' values within the cohesive glacial till deposits generally ranged from 15 to 37, indicating a stiff consistency. An 'N' value of 3 was recorded in WS01 at 4.00mbgl, indicating a localised very soft consistency in the strata directly underlying the made ground.

Year 7 Block

Made Ground

- 5.11 A surface horizon of asphalt was encountered within all holes to depths ranging from 0.10 to 0.20mbgl, overlying a sub base comprising yellowish brown sandy gravel to depths of between 0.30 and 0.60mbgl.
- 5.12 The underlying made ground generally comprised brown variably clayey gravelly sand, extending to depths of between 0.70 and 1.40mbgl. Gravel sized fragments were predominantly of brick.

- 5.13 Within WS06 a horizon of black sandy gravelly clay with gravel sized fragments of ash was recorded between 1.20 to 1.80mbgl.
- 5.14 These were in turn underlain by black very gravelly sand, with gravel sized fragments of ash, clinker and brick, extending to depths of between 2.80mbgl (WS10), 3.50mbgl (BH02) and in excess of 5.00mbgl (WS06 to WS09 inclusively).
- 5.15 SPT 'N' values within the made ground ranged from 0 to 12 indicating the locally poor but variable consistency of the made ground.

Glacial Deposits

- 5.16 Natural glacial deposits were encountered underlying the made ground in WS10 and BH02 and extended to a maximum depth of 16.40mbgl.
- 5.17 These comprised brown sandy silt from 2.80 to 3.40mbgl in turn by firm and stiff clay below 4.60mbgl.
- 5.18 SPT 'N' values within the glacial deposits ranged from 12 to 37 indicating a generally state of compaction.

Geotechnical Testing

- 5.19 Geotechnical testing data from samples collected during the intrusive investigations across the two site areas are provided in the following table:-

Test	Made Ground	Glacial Till
Natural Moisture Content	8 – 30%	13 – 22%
Liquid Limit	-	35 – 48%
Plasticity Index	-	21 – 25% (Modified to 19.7 – 23.3%)
Atterberg Classification	-	Intermediate Plasticity
CBR (Remoulded)	17.1 - 56.1%	-
Bulk Density	1.69 - 2.14 Mg/m ³	-
Dry Density	1.98 - 1.30 Mg/m ³	-

Visual/Olfactory Evidence of Contamination

- 5.20 A slight organic odour was noted within the natural silty sandy clay within WS03 (Science Block area) between 2.50 and 3.10mbgl. This was not considered to represent hydrocarbon contamination.
- 5.21 With the exception of the presence of ash and clinker within made ground, no other visual and/or olfactory evidence of significant ground contamination was identified within the exploratory holes during the investigation.

Groundwater

- 5.22 Perched groundwater was encountered during the formation of WS01 at 4.00mbgl, near the interface between the made ground and underlying glacial deposits, and at 3.00mbgl during the formation of WS08, within the granular made ground. No groundwater was observed during the formation of the remaining exploratory holes.

- 5.23 Longer term monitoring recorded standing groundwater at depths of between 0.92 and 4.72mbgl, with WS09 in the area of the proposed Year 7 Block in this area noted to be dry.
- 5.24 It is considered that this represents perched water within the made ground with true phreatic groundwater levels are within the solid strata below depths of 15.20 and 17.10mbgl.
- 5.25 It should be appreciated that the groundwater observations described above have been undertaken during a very short period of time. Significant variations in the long-term groundwater regime may occur at other times, particularly with prolonged, extreme weather conditions, and that no account can be taken of such in this report.

General

- 5.26 It should be appreciated that ground conditions may vary between and away from the exploratory hole positions, and that no account can be taken in this report of such variations.

6.0 GEOTECHNICAL APPRAISAL

Site Preparation

- 6.1 If where the small ancillary structures adjacent to the proposed Year 7 Building require removal, it is assumed that a pre-demolition asbestos survey will be undertaken with any Asbestos Containing Materials (ACM) so encountered being removed by an appropriately licensed contractor.
- 6.2 Although not anticipated any historical/existing foundations, ground floor slabs and other buried concrete/brick obstructions associated with current and former structures are envisaged although these are unlikely to be significant. Where encountered, these will need to be broken out to suitable depths below formation levels where they are to impinge on the proposed buildings.
- 6.3 Such materials removed as part of the clearance work, subject to appropriate screening and crushing, will be suitable for re-use as bulk fill beneath hard cover areas.
- 6.4 As part of the site clearance in the area of the proposed Science Block the removal of trees and other vegetation may be required, and it is assumed that this will be undertaken in consultation with an ecological specialist. Should any trees be retained, it is assumed that the current development configuration has been outlined in consideration of this and specifically Root Protection Areas (RPA) as would need to be determined by the landscape architect.
- 6.5 Notwithstanding this, construction near any retained trees and importantly within any RPA's should be undertaken with due regard to guidance provided in BS5837:2012 'Trees in relation to design, demolition and construction – recommendations'.
- 6.6 Existing foundations, ground floor slabs and other buried concrete/brick obstructions associated with current and historic structures may locally be present. Where encountered, these will need to be broken out to suitable depths below formation levels where they are to impinge on the proposed buildings. Such materials removed as part of the clearance work, subject to appropriate screening and crushing, will be suitable for re-use as bulk fill beneath hard cover areas.
- 6.7 The location of all statutory and private services will need to be established so that these do not impact on the proposed development layout.
- 6.8 It is anticipated that topsoil excavated will be surplus to requirements and will be removed from site under the required duty of care.

Earthworks

- 6.9 As the location of the proposed Science Block is generally level, no significant earthworks to provide development platforms are envisaged within this area.
- 6.10 However, in the area of the Year 7 Block the site currently slopes from approximately 66.27mAOD in the north-east to approximately 64.33mAOD in the south-west. The changes in elevation are accommodated by grassy slopes. From the preliminary information it is inferred that the new structures are located at the base of the existing slope.
- 6.11 Therefore, depending upon the final location and required Finish Floor Levels (FFL), it is anticipated that either a degree of earthworks will be required or more likely localised reprofiling where existing slopes and ground levels impact upon the proposed building footprint.
- 6.12 General granular made ground and excavated hardstanding will be suitable for re-use as bulk fill beneath hard cover areas, subject to appropriate screening and crushing.
- 6.13 However, any excavated cohesive soils should not be used beneath structural areas or hard external areas.

- 6.14 Organic soils such as topsoil would not be suitable for reuse and would need to be removed from site to a suitable waste repository or retained for use in new landscaped areas subject to confirmatory analyses.
- 6.15 Earthworks should be carried out in accordance with recommendations and guidance provided in BS6031:2009, Code of Practice for Earthworks.
- 6.16 It should be noted that the re-use of excavated soils on site should be undertaken in accordance with guidance provided in the CL:AIRE Definition of Waste, Development Industry Code of Practice, Version 2, 2011 so that the activity is removed from Environmental Permitting.
- 6.17 In this respect, surplus materials will cease to be waste where it can be demonstrated that there is a certainty to their use and that only the quantities necessary for that purpose are used. This will be demonstrated by incorporating such details, including those for any screening bunds and raised landscaping, into the development plan for approval in planning.

New Slopes and Retaining Walls

- 6.18 The Year 7 Block occupies variable southern facing slopes which may require localised re-profiling to provide suitable formation levels or possibly new low retaining walls.
- 6.19 Therefore, depending on the required finish levels consideration will need to be given to the short and long-term stability of the existing slopes. Any modified slopes created as the result of any required reprofiling activities will need to ensure their stability in both short and long-term situations, taking account of local ground and groundwater conditions. In this respect, slopes with angles of up to about 1 vertical in 3 horizontal (i.e. about 18 degrees) will be stable in both short and long term conditions.
- 6.20 Should steeper slopes be necessary, more detailed slope stability analysis is recommended to determine the stability in the long and short term.
- 6.21 Alternatively, there may also be a requirement for new localised retaining walls to accommodate the differences in elevation to any required slope modifications for the proposed Year 7 Block. In consideration of ground conditions new retaining wall foundations would either need to be supported on foundations within the made ground assuming a reduced bearing pressure of no more than 50kN/m² or would need to be supported by piles.

Foundations

- 6.22 Made ground and any soft / loose natural deposits should be considered unsuitable for the direct support of structural loads as they will be weak and compressible, leading to possibly unacceptable total and differential settlements.
- 6.23 However, within both development areas the thickness of made ground was recorded as extending to depths of between 2.60m and 5.00mbgl rendering the use of traditional foundations unsuitable.
- 6.24 Consideration has been given to the use of ground improvement techniques at the site. However, potential vibration effects on nearby properties close to the Science Block will likely render the use of ground treatment by 'vibro' techniques unsuitable in this area at least.
- 6.25 Therefore, the most suitable foundation solution for both structures is considered to be piles, taken down through the Made Ground and into the underlying competent Glacial Till or the solid bedrock encountered at depths of between 13.10m and 16.40mbgl. Pile design should assume no side support (skin friction) for the pile sections surrounded by made ground or soft soils and may also need to be designed to withstand potentially negative skin friction effects from clay heave. Pile type, selection and design should be undertaken in conjunction with a reputable, specialist piling contractor, ideally with experience of the local ground conditions.

- 6.26 For preliminary considerations, a pre-cast driven concrete pile would minimise waste soil arisings but potential noise and vibration effects may render this option unsuitable at the Science Block. Therefore, a bored pile solution might be the most appropriate solution in this area. However, it may be more economical to undertake the same solution for both structures.

Floor Slabs

- 6.27 In consideration of the thickness of made ground across the development areas it is anticipated that new floor slabs would be constructed as suspended for both proposed buildings.

Excavations and Groundwater

- 6.28 Excavations at the site will be feasible using conventional hydraulic plant. All excavations at the site and specifically requiring man-entry, will need adequate lateral support, or will need to be battering back to a safe angle to ensure their stability.
- 6.29 Conventional 'sump and pump' dewatering measures are anticipated to be adequate to keep excavations dry, however it cannot be discounted that groundwater exclusion measures such as interlocking sheet piles would be required to prevent excessive ingress of water due to the deep made ground.
- 6.30 Such support measures will also reduce the risk of conditions that could lead to loss of ground beneath any nearby adjacent structures or infrastructure.

External Pavements

- 6.31 In consideration of the near surface ground conditions, it is recommended that new road pavement design should be based on a California Bearing Ratio (CBR) value of no more than 3% in untreated made ground.
- 6.32 The CBR will need to be reviewed and confirmed by site inspection and possibly suitable in-situ testing at formation levels following any earthwork operations and prior to pavement construction.
- 6.33 Notwithstanding this, all formations should be proof-rolled prior to pavement construction, with any soft zones thus revealed being removed and replaced with appropriately graded and engineered granular fill. Similarly, any hard zones should be "grubbed out" to a depth of at least 600 mm below formation levels, again with any excavation thus created being in-filled with appropriately-graded and engineered granular fill.

Concrete Design

- 6.34 Design/mix of buried concrete should be undertaken in accordance with the "Aggressive Chemical Environment for Concrete" (ACEC) classification, of BRE Special Digest 1:2005 (Concrete in Aggressive Ground). With reference to the site history, it is deemed appropriate to classify the site as "Brownfield", with respect to BRE Special Digest, assuming mobile groundwater conditions.
- 6.35 Values of 2:1 water/soil extract for sulphate within the made ground soils ranged from <10 to 1360 mg/l with the average of the highest 20% being 999mg/l.
- 6.36 Values of pH in made ground ranged from 6.42 to 9.40 and values in natural soils ranged from 7.88 to 8.56, indicating near neutral to alkaline conditions.
- 6.37 On the basis of these results, the typical design sulphate (DS) class and "Aggressive Chemical Environment for Concrete" (ACEC) class for any new buried concrete required at the site are DS-2 and AC-2 respectively.

Drainage and Soakaways

- 6.38 In consideration of the presence of significant thicknesses of made ground on both development sites and the presence of primarily cohesive natural deposits beneath, soakaways are not considered to be feasible.

7.0 GENERIC QUANTITATIVE RISK ASSESSMENT (GQRA)

General

- 7.1 A review of the readily available information had concluded that the potential for exposure to ground contamination is unlikely to low leading to a low preliminary risk.
- 7.2 No visual or olfactory evidence of significant ground contamination was recorded during the intrusive investigations. Although an organic odour was noted from arisings in WS03, this is considered likely to be the result of natural breakdown of organic material rather than indicative of the presence of a source of petroleum hydrocarbons.
- 7.3 However, it has been considered prudent to undertake chemical analysis of the shallow soils to confirm the low human health risk status of the site.

Human Health

- 7.4 Selected samples have been analysed for a general suite of contaminants of concern and compared against Screening Levels (SL's) for human health to determine the significance of the measured concentrations in relation to the site conceptual model. Thus, a Generic Quantitative Risk Assessment has been undertaken in line with guidelines provided in the Environment Agencies Model Procedures for the Land Contamination Risk Management (LCRM), April 2021.
- 7.5 The criteria for a limited number of contaminants have been derived by DEFRA in their document entitled SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination, April 2014.
- 7.6 Within the document, Category 4 Screening Levels (C4SL's) are described as being more pragmatic than previous screening criteria and represent concentrations in soil that present an 'acceptable' level of risk within the context of Part 2A.
- 7.7 The National Planning Policy Framework states that 'after development, as a minimum, land should not be capable of being determined as contaminated land under Part 2A of the Environmental Protection Act 1990'. Therefore, by inference, the C4SL's are appropriate for use in the planning context.
- 7.8 Although the SP1010 document states that C4SL only apply for a 'sandy loam soil with 6% soil organic matter', it is generally accepted that assessment criteria for metals are not sensitive to changes in soil organic content (SOM). The C4SL's have therefore been adopted as assessment criteria in this report for the listed metals within the SP1010.
- 7.9 Subsequent to SP1010, LQM/CIEH have published a document entitled 'The LQM/CIEH S4ULs for Human Health Risk Assessment' 2015. In brief, the document provides updated assessment criteria which have been derived in accordance with UK legislation, national as well as EA policy and using a modified version of the CLEA software and available guidance. The new screening criteria, or Suitable 4 Use Levels (S4ULs), are intended to provide a complete and updated replacement to the previous LQM/CIEH GAC of 2009. As such they are considered appropriate for use in this assessment for other contaminants not covered by C4SL's and/or for organic contaminants assuming a worst-case Soil Organic Matter (SOM) of 1% as an initial conservative assessment.
- 7.10 For each contaminant, S4UL's and C4SL's have been calculated for six land use scenarios, namely:
- Residential with homegrown produce.
 - Residential without homegrown produce.
 - Allotments.
 - Commercial.
 - Public Open Space, near residential housing.
 - Public Parks, remote from residential housing.

7.11 In light of the proposed development, which has no significant landscaping proposed, the SLs for a 'public open space near residential housing', assuming a 2.5% SOM (based on SOM in soils recorded between 3.8 – 45.1%), are considered appropriate for the assessment.

7.12 A table of relevant SL's are provided in Appendix 07.

Controlled Waters

7.13 Generic criteria for the assessment of potential groundwater contamination have been derived from very conservative guidelines protective of drinking water and environmental quality, namely:

- UK Drinking Water Standards (DWS) as defined by The Water Supply (Water Quality) Regulations, 2016;
- UK Environmental Quality Standards (EQS) for Freshwater, based on the United Utilities Hardness based on the postcode (M40 8NT) of soft; 0 – 50mg/l CaCO₃.
- Petroleum Products in Drinking-water, Background document for development of WHO Guidelines for Drinking-water Quality, 2011.

7.14 A table of relevant SL's are provided in Appendix 07.

Soil Test Results

7.15 In total 12no soil samples (6no from the Science Block area and 6no from the Year 7 Block area) were analysed for a suite of typical Contaminants of Concern (CoC). The majority of test results record CoC's below the reference values with the following exceptions:

Contaminant	Number of Exceedances	SL (mg/kg)	Recorded Concentrations (mg/kg)	Samples (mbgl)
Science Block				
Benzo(a)pyrene	1	5.7	10.50	WS05 at 0.50
Benzo(b)fluoranthene	2	7.2	12.50 14.00	WS04 at 1.00 WS05 at 0.50
Dibenzo(ah)anthracene	3	0.31	0.45 0.88 1.00	WS01 at 1.90 WS04 at 1.00 WS05 at 0.50
Year 7 Block				
Lead	1	630	1240	WS10 at 1.00
Benzo(a)pyrene	1	5.7	7.13	
Benzo(b)fluoranthene	1	7.2	9.40	
Dibenzo(ah)anthracene	1	0.57	0.76	

7.16 Further assessment of the results has been undertaken in an attempt to clarify the site conceptual model and hence the human health risk that may be posed by the PAH compounds.

7.17 PAH's can be associated with a diverse range of contaminative sources including petrogenic (for example oil spills and coal storage), pyrolytic (ash, clinker, soot and atmospheric deposition of smoke, coal tars for example) and phytogenic (for example plant-derived peat). Due to the prevailing chemical processes, the profile of PAH mixtures generated at high temperatures (pyrolytic sources) differ from those formed at more moderate temperatures (petrogenic sources).

- 7.18 The concentration ratios of certain PAH congeners can be used to infer a possible source of PAH mixtures and, by plotting each sample in terms of varying ratios, it is possible to further characterise the PAH profiles and conjecture a possible source based on where the results cluster within the plot.
- 7.19 The 'PAH - Double Ratio Plots' for different congeners are presented in Appendix 05 and suggest urban background combustion/pyrolytic signatures, for example where organic materials such as wood and coal have been burned at high temperatures resulting in ash and soot and more locally clinker.
- 7.20 This would confirm to a degree the site observations, in that no visual or olfactory evidence of hydrocarbon contamination was identified with the investigation logs indicating the presence of ash, and clinker in the made ground in the majority of locations.
- 7.21 The elevated concentrations of PAH encountered are therefore attributed to these materials being entrained within the shallow soil matrix.
- 7.22 4no samples were submitted for TPH testing including aliphatic and aromatic split and BTEX (benzene, toluene, ethylbenzene and xylenes), with none of these determinands exceeding their respective SL's.
- 7.23 Screening for the presence of asbestos fibres was undertaken on 12no shallow made ground samples. Asbestos fibres were positively detected in 3no samples which were subsequently scheduled for quantification testing. The results are presented in the table below.

Location	Sample Depth (mbgl)	Description	Form	% weight/weight
WS02	0.20	Chrysotile	Loose fibres	<0.001%
WS04	1.00	Chrysotile	Loose fibres	0.005%
WS05	0.50	Amosite	Loose fibres	0.001%

Leachate Testing

- 7.24 In view of the sensitivity of the underlying bedrock aquifer beneath the area of the proposed Science Block, 5no samples of made ground, from across the two site areas, were submitted for leachate preparation and testing for a range of contaminants of concern.
- 7.25 The majority of results were below the assessment criteria when compared to stringent drinking water and environmental standards (EQS with a water hardness of 0-50 mg/l CaCO₃) with the following exceptions.

Contaminant	Ref Value ug/l			Exceedances in Groundwater ug/l			Sample (mbgl)
	EQS	UKDWS	WHO	EQS	UKDWS	WHO	
Copper	0.5	2000	-	8 4	-	-	WS02 0.20 WS07 0.60
**PAH	-	0.1	-	-	0.53	-	WS07 0.60

Notes

**The PAH reference values are based on the sum of four CoCs, namely benzo[b]fluoranthene, benzo[ghi]perylene, benzo[k]fluoranthene and indeno[1,2,3-cd]pyrene.

Discussion and Conclusions

Human Health

- 7.26 In consideration of the chemical test results and proposed end use, it is concluded that made ground on the site contains very localised elevated concentrations of lead (1no sample) and PAHs (4no samples). However, these are considered to be primarily associated with the presence of deposits of ash and clinker, which typically are not a significant source of mobile contamination. In addition, asbestos in the form of amosite and chrysotile fibres were detected in 3no samples at concentrations of between <0.001% and 0.005% weight/weight.
- 7.27 Where surfaced with buildings and hardstanding following site development there will be no mechanism for a direct contact pollution linkage with any of the identified contaminants, or for any asbestos fibres to become airborne. Therefore, the risk to end-users and the general public from the identified contamination will be negligible in such areas.
- 7.28 However, a direct contact pollution linkage will still exist in any new landscaped areas and it is recommended that made ground exposed at the surface in such areas is covered by clean sub-soil and topsoil thus removing the pollution linkage. This will normally comprise a 600mm clean cover, with a minimum 150mm thickness of topsoil and 450mm thickness of sub-soil, over the existing made ground. However, it is anticipated that the structures will be surrounded primarily by new hardstanding.
- 7.29 Notwithstanding the above, as there is a low possibility of asbestos fibres becoming airborne during site enabling and ground works, there is a perceived risk to construction workers and the general public of exposure, particularly during dry weather conditions.
- 7.30 Therefore, groundworks would need to be undertaken under a watching brief by an asbestos specialist with any ACM so encountered being segregated for removal to landfill. Such operations should also incorporate specific control measures such as dust suppression, perimeter air monitoring and appropriate Personal Protective Equipment (PPE).

Controlled Waters

- 7.31 No groundwater or surface water abstractions were identified within influencing distance of the site, and no records of groundwater Source Protection Zones were recorded within 500m of the site.
- 7.32 The underlying bedrock is classified as a Secondary 'A' Aquifer (Science Block) and Principal Aquifer (Year 7 Block).
- 7.33 However, the relatively low permeability of the predominantly cohesive intervening superficial Glacial Till deposits beneath the site will limit vertical and lateral migration of any undetected mobile contamination.
- 7.34 Following development, the site will include new structures and hardstanding with a positive drainage system. This will limit downward movement of surface water and therefore the potential for leachate generation will be reduced, thus reducing the potential for mobilisation of contaminants.
- 7.35 Although localised slight exceedances been identified from leachability testing, associated with copper and a single PAH, the exceedances are typically minor. Leachability data also represent a conservative assessment of the leachate generation potential of contaminated soils, and significant dilution and retardation of any mobile contamination generated by site soils would be anticipated before impact to any Controlled Waters receptor could occur.
- 7.36 The overall risk to Controlled Waters is therefore considered to be Low with no specific remedial measures encountered.

8.0 GROUND GAS RISK ASSESSMENT

Methodology

- 8.1 Current guidance for the assessment of risk associated with the presence of hazardous ground gases (principally methane and carbon dioxide) is provided in two key documents, namely:
- Code of practice for the Characterisation and remediation from Ground Gas in Affected Developments. British Standard Institution (BS 8485: 2015 & A1:2019); and
 - Assessing Risks posed by Hazardous Ground Gases to Buildings CIRIA (C665, 2007).
- 8.2 The assessment presented herein is primarily based on the BS8485 document.
- 8.3 Hazardous ground gas qualitative risk assessment is based on a conceptual model similar to that used for soil and groundwater contamination sources (i.e., source-pathway-receptor pollutant linkages). A semi-quantitative estimate of risk can be assessed based on knowledge of the conceptual model and a measure of hazardous gas concentration and gas flow at the site within monitoring standpipes.
- 8.4 Based on the measured flow rates and hazardous gas concentrations, individual "hazardous gas flow rates" (Q_{hg}) can be derived for each monitoring point, from which the "site characteristic hazardous gas flow rate" (Q_{hgs}), and then the "Characteristic Situation" (CS) can be determined.
- 8.5 BS8485 provides guidance on the level of gas protection requirements based upon the characteristic situation and the proposed development based on building type as outlined in Table 3.

Table 3 - Building Types

	Type A	Type B	Type C	Type D
Ownership	Private	Private or commercial/ Public, possible multiple	Commercial / Public	Commercial / Industrial
Control (Change of use)	None	Some but not all	Full	Full
Room Sizes	Small	Small/ medium	Small to Large	Large Industrial/ Retail Park

- 8.6 The proposed development is presumed to comprise the construction of a structure comprised of Type C buildings (small to large commercial/public buildings).

Ground Gas Conceptual Model

- 8.7 The property is in an area as defined by the UK Health Security Agency where less than 1% of properties are above the radon action level of exposure. Therefore, no radon protection measures are necessary for new structures as described in publication BR211 by the Building Research Establishment.
- 8.8 Ground investigations have confirmed that areas of made ground beneath the development areas locally exceed 5.00mbgl, such as in the case of the Year 7 Block area. However, this was not observed to include significant quantities of potentially putrescible materials such as would provide a significant source of gas generation. However, SOM values were recorded up to 45.1% (WS10).
- 8.9 No natural strata containing significant organic materials such, as peat, have been recorded within the exploratory holes.
- 8.10 The site is not underlain by shallow mine workings so risks from mine gases can be discounted.

- 8.11 Moston Brook landfill, located 202m north-east of the Year 7 Block development area, was licenced to receive inert, industrial, commercial, household, special wastes and liquid sludge between 1974 and 1977. However, given the age of infilling and distance this is considered unlikely to form a continuing source of significant ground gas migration to the site.
- 8.12 In consideration of the above, a low risk to the proposed development from ground gas has been determined. However, it has been considered prudent to undertake ground gas monitoring, primarily for methane and carbon dioxide.

Results and Recommendations

- 8.13 Six monitoring visits have been undertaken, between 13th and 22nd November 2023. The results of ground gas monitoring are presented within Appendix 06.

Science Block

- 8.14 The results did not record concentrations of methane above the instrument limit of detection (0.1% volume by volume (v/v)), with a maximum steady state carbon dioxide concentration of 5.4% v/v (5.4% v/v peak) but generally below 4.8% in all but a single visit.
- 8.15 No positive steady state gas flow rates were recorded at any of the monitoring wells a single peak flow of 25.7l/hr in WS04 is considered to represent the peak flow is considered to represent pumping conditions where the perched water is at or close to the unslotted section of the standpipe rather than being characteristic of the ground gas regime at the site.
- 8.16 On the basis of the monitoring data, the calculated Q_{hg} for the Science Block is 0.005l/hr (based on the highest detected carbon dioxide concentration and a lower bound flow of 0.1l/hr) which indicates the site would classify as Characteristic Situation (CS) 1 – Very Low Gas Risk' for which no specific gas protection measures are likely to be required. However, where carbon dioxide exceeds 5% an increase to CS2 should be considered.
- 8.17 It can be noted that the single elevated carbon dioxide concentrations within WS02 is considered to reflect respiration by soils microorganisms from the decomposition of the active Soil Organic Matter (SOM) rather than a significant active source.
- 8.18 Therefore, it is considered that specific gas protection measures are not required within the proposed new science block.

Year 7 Block

- 8.19 The results recorded concentrations of methane to range from below the instrument limit of detection (0.1% volume by volume (v/v)) to 1.8% (peak and steady states).
- 8.20 Concentrations of carbon dioxide generally ranged from 0.1% to 13.90% v/v (peak and steady state).
- 8.21 No positive steady state gas flow rates were recorded within the initial five monitoring visits. However, during the final visit a steady state flow of 0.4l/hr was recorded within WS09.
- 8.22 On the basis of the monitoring data, the calculated Q_{hg} for the Year 7 Block is 0.05l/hr (based on the highest detected carbon dioxide concentration and flow of 0.4l/hr) which indicates the site would classify as Characteristic Situation (CS) 1 – Very Low Gas Risk' for which no specific gas protection measures are likely to be required. However, as carbon dioxide exceeded 5% during the majority of monitoring visits an increase to CS2 should be considered.
- 8.23 Therefore, it would be prudent to allow for the following site-specific gas protection measures to be incorporated into the structure to achieve the required score of 2.5 in accordance with Table 4 in BS8485:2019.

- Passive sub-floor dispersal (minimum 150mm clear void) with cross ventilation to internal sleeper walls of very good performance which meets all criteria as set out in Appendix B of BS 8485:2015.
- To achieve 'very good performance' the minimum area of side ventilation should be 1500mm²/m run of wall on at least two opposite sides, assuming a structure of <15m average width.
- Sleeper walls should include cross vents totalling at least double the area of the side ventilation.
- Lapped and taped proprietary gas membrane, in the floor slab construction, installed in accordance with the manufacturer's instructions and to reasonable levels of workmanship in line with current good practice.

9.0 OTHER POTENTIAL DEVELOPMENT CONSIDERATIONS

Excavated Soils

- 9.1 Excavation works undertaken during the development are likely to produce waste soils for which appropriate waste management will be required. In line with current sustainability principals, any waste soils should firstly be considered for re-use where possible by incorporation into the development.
- 9.2 It should be noted that the chemical analysis results for disposal classification are assessed against different assessment criteria to those relating to contamination risk assessment. Soils that are deemed suitable for use in terms of risk to human health and the environment may not necessary be un-contaminated and could be classified as Non-Hazardous or even Hazardous for disposal purposes.
- 9.3 For preliminary guidance based on the current information, it is likely that topsoil, would be classified as 'Non-hazardous' with natural soils classified as 'Inert' for landfill disposal.
- 9.4 However, excavated soils which contain significant lead or total organic carbon concentrations may classify as 'Hazardous' if disposed to landfill.
- 9.5 In addition, for Inert and Hazardous waste disposal, allowance will need to be made for adequate Waste Acceptance Criteria (WAC) testing with appropriate consideration of the additional time and cost associated with this.
- 9.6 It will be the responsibility of the waste producer to undertake further testing and classification of any waste soils for disposal to an appropriately licenced landfill in accordance with current guidelines and Duty of Care requirements.

Imported Fill

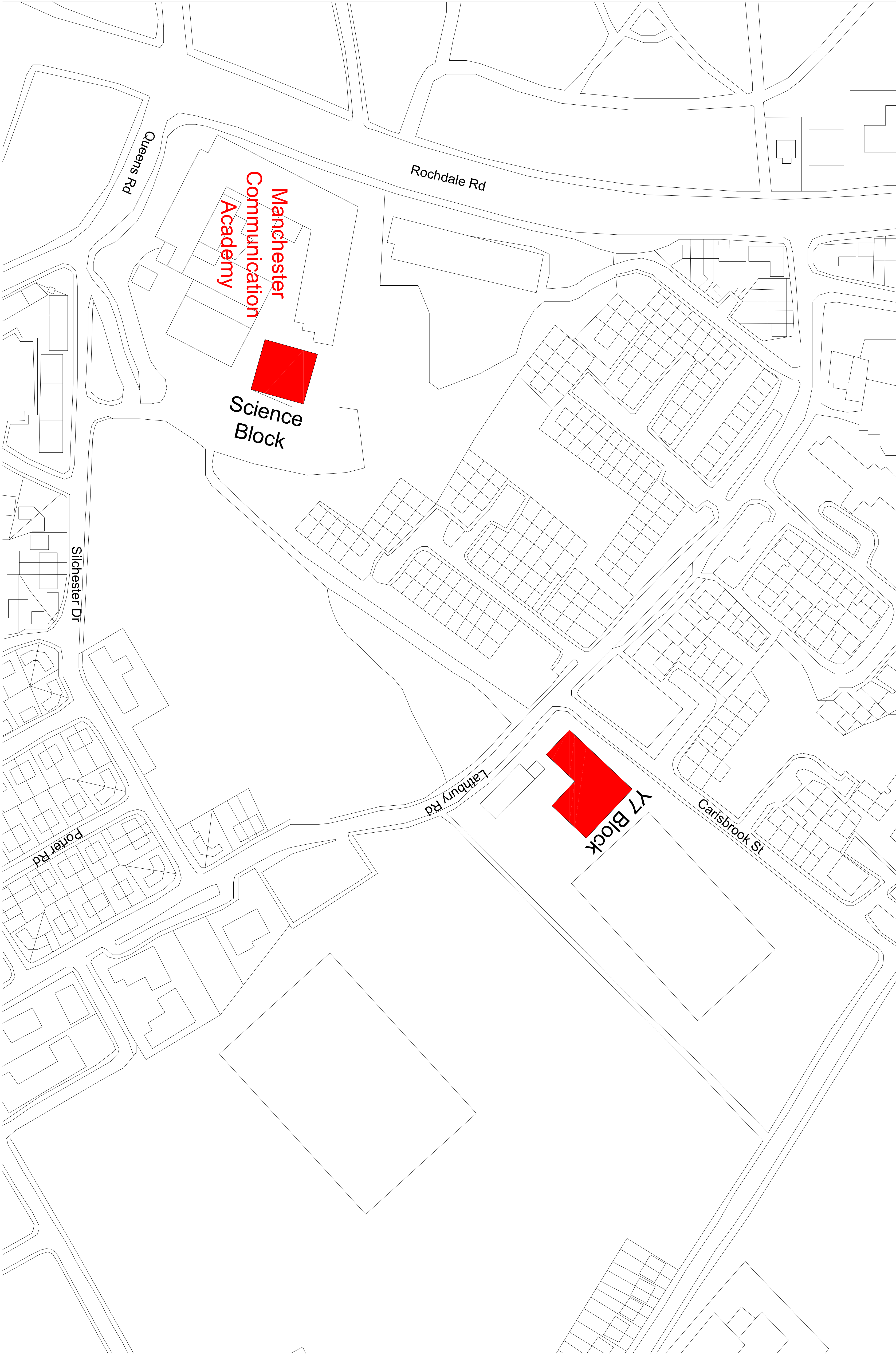
- 9.7 Imported fill will be subject to specific quality requirements and should be accompanied by appropriate certification to confirm its suitability. Allowance should also be made for testing imported fill materials prior to placement to ensure suitability.

Water Supply Pipes

- 9.8 The relevant water supply provider will need to be consulted with regards the selection of suitable water supply pipe materials for the development, should these be required. In light of the ground conditions encountered, the requirement for specific materials and measures to protect the water supply from ground contamination are not anticipated.

APPENDIX 01

Drawings



Rev	Date	Comments	By

STATUS

FEASIBILITY

Client

Manchester Communication Academy

Project Title

Expansion

Drawing Title

Site Plan

Scale	Drawn By	Date
1:100@A1	JM	26 May 2023
Job no.	Drawing no.	Revision no.
2203-04	F01	

Manchester
Communication
Academy

Science
Block

Y7 Block

Recreation Ground

Manchester Communication Primary Academy

Manchester Communication Academy

Electricity Distribution Site

The Hipp

ST EDMUND'S ROAD

ROCHDALE ROAD

68.0m

62.5m

Moston Brook

LATHBURY ROAD

KIRKLINTON DRIVE

CARSBROOK STREET

KELVINGTON DRIVE

CHEVINGTON DRIVE

PENERLY DRIVE

Shelter
Cycle Way

El Sub Sta

El Sub Sta

El Sub Sta

Posts

Stone

Shelter

Shelter

PORT

LATHBURY R

Blencarn Walk

Kenilworth Walk

Thornaby Walk

Oldstead Walk

Bloom Walk

Beecher Walk

Cherry's Walk

TCB

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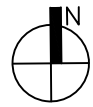
17

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 Window Sample Probehole Cable Percussive Borehole

Site Development Boundary
(approximate)



Status

FIRST ISSUE

Client

Lancaster Maloney Martin

Title	
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Exploratory Hole Location Plan - Science Block Area

WML Job No.
11258G

Drawn
TJS

Checked
SCS

Date	06-09-23
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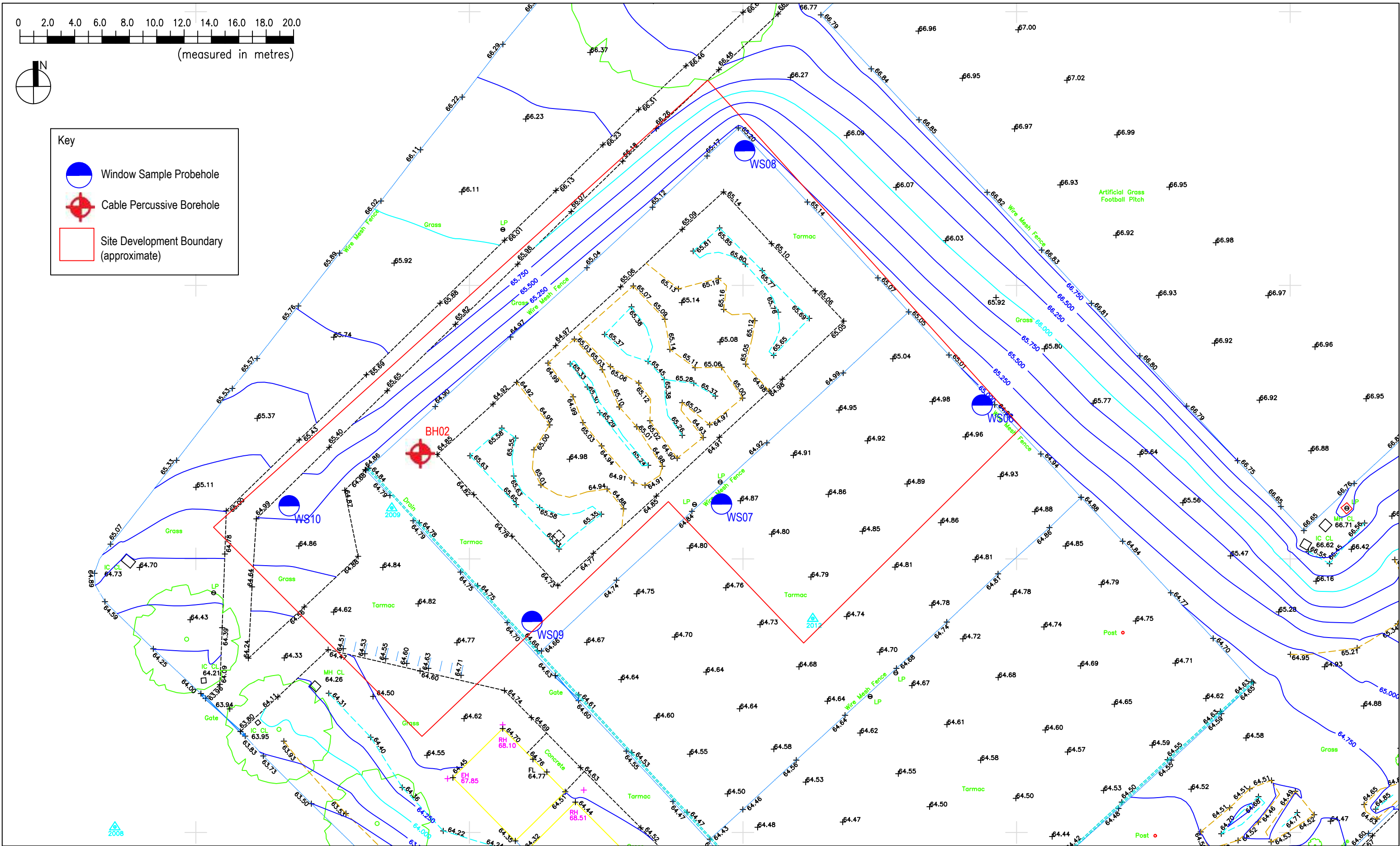
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Drawing No.

Project	Originator	Volume	Level	Type	Role	Number	Rev
11258G	WML	- XX	- XX	- DR	- S	- SK01A	A



					Project Manchester Communication Academy	Client Lancaster Maloney Martin					WMLCONSULTING Civil, Structural & Geotechnical Engineers Third Floor South Metropolitan House Station Road Cheadle Hulme SK8 7AZ Tel 0161 482 0600 Fax 0161 486 9210 e-mail info@wmlconsulting.com www.wmlconsulting.com													
					Status	Title Exploratory Hole Location Plan - Year 7 Block Area																		
0	INITIAL ISSUE.	07-09-23	TJS	SCS	FIRST ISSUE	WML Job No. 11258G					Drawn TJS		Checked SCS		Date 06-09-23		Scale 1:2500@A3		Drawing No.					
Rev.	Amendment	Date	By	Chkd		Project					Originator		Volume		Level		Type		Role		Number		Rev	
						11258G					WML		- XX		- XX		- DR		- S		- SK01B		A	

APPENDIX 02

Site Investigation Photographs



Photograph 1
WS01 inspection pit and hand pit arisings (from surface, right to left)



Photograph 2
WS01 drilling arisings (bottom to top, right to left)



Photograph 3
WS02 prior to drilling.



Photograph 4
WS02 following installation



Photograph 5
WS04 following installation.



Photograph 6
Drilling arisings from WS06.



Photograph 7
WS06 following reinstatement.



Photograph 8
WS07 following reinstatement.



Photograph 9
WS08 following installation.



Photograph 10
WS09 following installation.

APPENDIX 03

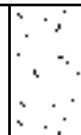
Exploratory Hole Records

		Project Title: Manchester Communication Academy				WS01	
		Project Number: 11258G		Client: Lancaster Maloney Martin			
		GL (mAOD):		N Coord: 0		E Coord: 0	
Date: 31/08/2023		Method: Window Sample		Driller: SI Ground Investigation Ltd		Logged By: TJS	

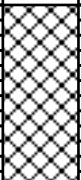
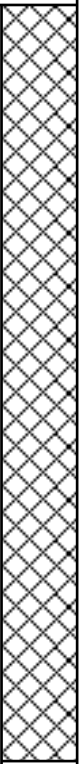
Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe
0.30 - 0.40	ES	N=13			0.45	Grass over brown silty sand with fine rootlets. (MADE GROUND)		
0.45 - 0.55	B				0.80	Greyish brown very gravelly sand. Gravel sized fragments are subangular to subrounded fine to coarse of concrete, brick and rare metal. (MADE GROUND)		
1.30 - 1.40	D				1.00	Brown silty sandy gravelly clay. Gravel sized fragments are subangular to subrounded fine to coarse of mixed lithologies including brick and concrete. (MADE GROUND)		
1.90 - 2.10	ES	N=13			1.80	Black mottled brown sandy gravel. Gravel sized fragments are subangular fine to medium of ash and clinker. (MADE GROUND)		
					2.00			
		N=3			2.30	Brown silty sandy very gravelly clay. Gravel sized fragments are fine to coarse of brick, glass and concrete. (MADE GROUND)		
					3.00			
3.60 - 3.80	D	N=3			3.50	Very soft dark brown becoming brown silty slightly sandy CLAY. (GLACIAL TILL)		
					4.00			
		N=29			4.20	Stiff greyish brown mottled black firm silty slightly sandy CLAY. (GLACIAL TILL)		
					5.00			
						End Of Borehole At 5.00 m		
					6.00			
					7.00			
					8.00			

KEY D - Disturbed Sample B - Bulk Sample U - Undisturbed W - Water Sample S - Standard Penetration Test C - Cone Penetration Test N - Penetration Test 'N' Value V - Hand Shear Vane kPa  - Groundwater Strike  - Groundwater Level 		REMARKS Scale: 1:50		Water Strikes						
				Date	Strike	Level	Minutes	Casing	Sealed	
				31/08/2023	4					Seepage
				Daily Log Of Depths			Chiselling			
Date	Casing	Water	From	To	Hours					

		Project Title: Manchester Communication Academy				WS02	
		Project Number: 11258G		Client: Lancaster Maloney Martin			
		GL (mAOD):		N Coord: 0		E Coord: 0	
Date: 31/08/2023		Method: Window Sample		Driller: SI Ground Investigation Ltd		Logged By: TJS	

Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe
0.20 - 0.40	ES	N=22			0.20	Grass over brown slightly clayey gravelly sand. (MADE GROUND)		
0.50 - 0.60	ES				1.00	Brown gravelly cobbly sand. Gravel and cobble sized fragments are subangular to subrounded of mixed lithologies including brick and concrete. (MADE GROUND)		
1.20 - 1.30	D				1.10			
1.50 - 1.60	ES				2.00			
		N=8			2.00	Brown sandy gravelly clay. Gravel sized fragments are of mixed lithologies including ash and brick. (MADE GROUND)		
		N=11			3.00			
3.50 - 3.70	ES				3.40			
		N=25			4.00	Stiff greyish brown gravelly CLAY. (GLACIAL TILL)		
4.30 - 4.40	ES				4.20			
		N=30			4.40	Medium dense brown silty fine SAND. (GLACIAL TILL)		
5.00 - 5.10	D				5.00	Stiff brown gravelly CLAY. (GLACIAL TILL)		
					5.00	End Of Borehole At 5.00 m		
					6.00			
					7.00			
					8.00			

KEY D - Disturbed Sample B - Bulk Sample U - Undisturbed W - Water Sample S - Standard Penetration Test C - Cone Penetration Test N - Penetration Test 'N' Value V - Hand Shear Vane kPa  - Groundwater Strike  - Groundwater Level 		REMARKS No Groundwater Encountered Scale: 1:50		Water Strikes																									
				<table border="1"> <thead> <tr> <th>Date</th> <th>Strike</th> <th>Level</th> <th>Minutes</th> <th>Casing</th> <th>Sealed</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>						Date	Strike	Level	Minutes	Casing	Sealed														
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Date	Casing	Water	From	To	Hours																								

		Project Title: Manchester Communication Academy				WS03																																						
		Project Number: 11258G		Client: Lancaster Maloney Martin																																								
		GL (mAOD):		N Coord: 0		E Coord: 0																																						
Date: 31/08/2023		Method: Window Sample		Driller:		Logged By: TJS																																						
Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe																																				
0.20 - 0.40	ES	N=12			1.00	Grass over brown sandy gravelly clay. Gravel sized fragments are fine to coarse of mixed lithologies including ash and brick. (MADE GROUND)																																						
1.20 - 1.30	D		1.20		Brown slightly gravelly clay. Gravel sized fragments are fine to coarse of mixed lithologies including brick and concrete. (MADE GROUND)																																							
1.50 - 1.70	ES		2.00																																									
		N=14		2.50																																								
3.00 - 3.20	D	N=15		3.00	Firm greyish brown silty sandy CLAY. Slight organic odour. (GLACIAL TILL)																																							
3.20 - 3.30	D		3.10	Medium dense brown very clayey silty SAND. (GLACIAL TILL)																																								
		N=22		4.00	Stiff greyish brown CLAY. Some lamination evident. (GLACIAL TILL)																																							
4.50 - 4.60	D	N=26		5.00	End Of Borehole At 5.00 m																																							
					6.00																																							
				7.00																																								
				8.00																																								
KEY D - Disturbed Sample B - Bulk Sample U - Undisturbed W - Water Sample S - Standard Penetration Test C - Cone Penetration Test N - Penetration Test 'N' Value V - Hand Shear Vane kPa  - Groundwater Strike  - Groundwater Level			REMARKS No Groundwater Encountered 			Water Strikes <table border="1"> <tr> <th>Date</th> <th>Strike</th> <th>Level</th> <th>Minutes</th> <th>Casing</th> <th>Sealed</th> </tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </table>			Date	Strike	Level	Minutes	Casing	Sealed																														
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Date	Casing	Water	From	To	Hours																																							
Date	Casing	Water	From	To	Hours																																							

		Project Title: Manchester Communication Academy				WS04	
		Project Number: 11258G		Client: Lancaster Maloney Martin			
		GL (mAOD):		N Coord: 0		E Coord: 0	
Date: 31/08/2023		Method:		Driller: SI Ground Investigation Ltd		Logged By: TJS	

Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe
0.25 - 0.35	ES D				0.20	Asphalt. (ASPHALT)		
0.40 - 0.60					0.50	Grey sandy gravel (sub base). (MADE GROUND)		
1.00 - 1.20	ES	N=7			1.00	Brown gravelly cobbly sand. Gravel and cobble sized fragments are subangular to subrounded of mixed lithologies including brick. (MADE GROUND)		
	ES	N=11			2.00			
2.50 - 2.60	ES	N=16			2.40	Stiff greyish brown CLAY. (GLACIAL TILL)		
	D	N=23			3.00			
	D	N=23			4.00			
5.00 - 5.10	D	N=23			5.00			
	D	N=23			5.45	End Of Borehole At 5.45 m		
	D	N=23			6.00			
	D	N=23			7.00			
	D	N=23			8.00			

KEY D - Disturbed Sample B - Bulk Sample U - Undisturbed W - Water Sample S - Standard Penetration Test C - Cone Penetration Test N - Penetration Test 'N' Value V - Hand Shear Vane kPa  - Groundwater Strike  - Groundwater Level			REMARKS No Groundwater Encountered  Scale: 1:50			Water Strikes																							
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Date	Casing	Water	From	To	Hours																								

		Project Title: Manchester Communication Academy				WS05	
		Project Number: 11258G		Client: Lancaster Maloney Martin			
		GL (mAOD):		N Coord: 0		E Coord: 0	
Date: 31/08/2023		Method: Window Sample		Driller:		Logged By: TJS	

Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe
0.15 - 0.30	ES				0.30	Grass over brown gravelly sand. Gravel sized fragments are fine to coarse of mixed lithologies. (MADE GROUND)		
0.50 - 0.60	ES				1.00			
1.50 - 1.60	ES	N=14			2.00	Dark brown mottled black sandy gravelly clay. Gravel sized fragments are subangular to subrounded of mixed lithologies including brick and ash. (MADE GROUND)		
		N=15			3.00			
		N=8			3.20			
3.50 - 3.60	D	N=16			4.00	Stiff greyish brown gravelly CLAY. (GLACIAL TILL)		
		N=22			5.00			
					5.45	End Of Borehole At 5.45 m		
					6.00			
					7.00			
					8.00			

KEY D - Disturbed Sample B - Bulk Sample U - Undisturbed W - Water Sample S - Standard Penetration Test C - Cone Penetration Test N - Penetration Test 'N' Value V - Hand Shear Vane kPa  - Groundwater Strike  - Groundwater Level		REMARKS No Groundwater Encountered  Scale: 1:50	Water Strikes					
			Date	Strike	Level	Minutes	Casing	Sealed
Daily Log Of Depths				Chiselling				
Date	Casing	Water	From	To	Hours			

		Project Title: Manchester Communication Academy				WS07	
		Project Number: 11258G		Client: Lancaster Maloney Martin			
		GL (mAOD):		N Coord: 0		E Coord: 0	
Date: 01/09/2023		Method: Window Sample		Driller: SI Ground Investigation Ltd		Logged By: TJS	

Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe
0.15 - 0.30	ES				0.10 0.30	Asphalt. (ASPHALT)		
0.60 - 0.70	ES					Yellowish brown sandy angular to subangular gravel (sub base). (MADE GROUND)		
1.20 - 1.40	D	N=11			1.00 1.40	Brown clayey gravelly sand. Gravel sized fragments are subangular to subrounded fine to coarse of mixed lithologies including brick. (MADE GROUND)		
2.50 - 2.60	ES	N=12			2.00	Black gravelly sand. Gravel sized fragments are subangular of mixed lithologies including ash and brick. (MADE GROUND)		
		N=3			3.00			
		N=2			4.00			
		N=2			5.00			
						End Of Borehole At 5.00 m		
					6.00			
					7.00			
					8.00			

KEY D - Disturbed Sample B - Bulk Sample U - Undisturbed W - Water Sample S - Standard Penetration Test C - Cone Penetration Test N - Penetration Test 'N' Value V - Hand Shear Vane kPa  - Groundwater Strike  - Groundwater Level		REMARKS No Groundwater Encountered  Scale: 1:50		Water Strikes																									
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Date	Casing	Water	From	To	Hours																								

		Project Title: Manchester Communication Academy				WS08	
		Project Number: 11258G		Client: Lancaster Maloney Martin			
		GL (mAOD):		N Coord: 0		E Coord: 0	
Date: 01/09/2023		Method: Tracked Excavator		Driller:		Logged By: TJS	

Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe
0.20 - 0.40	ES				0.15	Asphalt. (ASPHALT)		
1.00 - 1.20	D	N=0			0.60	Yellowish brown sandy angular to subangular gravel (sub base). (MADE GROUND)		
		N=2			1.00	Black gravelly sand. Gravel sized fragments are subangular fine to coarse of mixed lithologies including ash and clinker. (MADE GROUND)		
		N=2			2.00			
		N=0			3.00			
		N=2			4.00			
		N=3			5.00			
					6.00	End Of Borehole At 5.00 m		
					7.00			
					8.00			

KEY D - Disturbed Sample B - Bulk Sample U - Undisturbed W - Water Sample S - Standard Penetration Test C - Cone Penetration Test N - Penetration Test 'N' Value V - Hand Shear Vane kPa  - Groundwater Strike  - Groundwater Level		REMARKS  Scale: 1:50	Water Strikes <table border="1"> <thead> <tr> <th>Date</th> <th>Strike</th> <th>Level</th> <th>Minutes</th> <th>Casing</th> <th>Sealed</th> </tr> </thead> <tbody> <tr> <td>01/09/2023</td> <td>3</td> <td></td> <td></td> <td></td> <td>Moderate</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> Daily Log Of Depths <table border="1"> <thead> <tr> <th>Date</th> <th>Casing</th> <th>Water</th> <th>From</th> <th>To</th> <th>Hours</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Date	Strike	Level	Minutes	Casing	Sealed	01/09/2023	3				Moderate													Date	Casing	Water	From	To	Hours												
Date	Strike	Level	Minutes	Casing	Sealed																																								
01/09/2023	3				Moderate																																								
Date	Casing	Water	From	To	Hours																																								

WML CONSULTING			Project Title: Manchester Communication Academy			WS09					
			Project Number: 11258G		Client: Lancaster Maloney Martin				Sheet 1 Of 1		
			GL (mAOD):		N Coord: 0		E Coord: 0				
Date: 01/09/2023			Method: Window Sample		Driller: SI Ground Investigation Ltd		Logged By: TJS				
Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe			
0.25 - 0.40 0.40 - 0.60 0.50 - 0.60	ES ES B	N=0			0.15	Asphalt. (ASPHALT)					
					0.50	Yellowish brown sandy angular to subangular gravel (sub base). (MADE GROUND)					
					1.00	Black gravelly sand. Gravel sized fragments are subangular fine to coarse of mixed lithologies including ash and clinker. (MADE GROUND)					
2.00 - 2.20	ES		N=2			2.00					
		N=7			3.00						
		N=6			4.00						
		N=1			5.00						
						End Of Borehole At 5.00 m					
					6.00						
					7.00						
					8.00						
KEY D - Disturbed Sample B - Bulk Sample U - Undisturbed W - Water Sample S - Standard Penetration Test C - Cone Penetration Test N - Penetration Test 'N' Value V - Hand Shear Vane kPa ▽ - Groundwater Strike ▼ - Groundwater Level  Scale: 1:50			REMARKS No Groundwater Encountered			Water Strikes					
						Date	Strike	Level	Minutes	Casing	Sealed
						Daily Log Of Depths			Chiselling		
						Date	Casing	Water	From	To	Hours

		Project Title: Manchester Communication Academy				WS10																										
		Project Number: 11258G		Client: Lancaster Maloney Martin																												
		GL (mAOD):		N Coord: 0		E Coord: 0																										
Date: 01/09/2023		Method: Window Sample		Driller: SI Ground Investigation Ltd		Logged By: TJS																										
Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe																								
0.15 - 0.30	ES	N=5			0.70	Brown very gravelly sand. Gravel sized fragments are angular to subrounded fine to coarse of mixed lithologies including brick. (MADE GROUND)																										
1.00 - 1.20	ES				1.00	Black very gravelly sand. Gravel sized fragments are angular to subangular fine to coarse of ash, clinker and brick. (MADE GROUND)																										
					2.00																											
3.00 - 3.20	D	N=12			2.80	Brown clayey sandy SILT. (GLACIAL TILL)																										
					3.00																											
3.50 - 3.70	D	N=14				3.40	Greyish brown very clayey SILT with sand bands. (GLACIAL TILL)																									
					4.00																											
			N=17			5.00	End Of Borehole At 5.00 m																									
				6.00																												
				7.00																												
					8.00																											
KEY D - Disturbed Sample B - Bulk Sample U - Undisturbed W - Water Sample S - Standard Penetration Test C - Cone Penetration Test N - Penetration Test 'N' Value V - Hand Shear Vane kPa  - Groundwater Strike  - Groundwater Level			REMARKS No Groundwater Encountered 			Water Strikes <table border="1"> <tr> <th>Date</th> <th>Strike</th> <th>Level</th> <th>Minutes</th> <th>Casing</th> <th>Sealed</th> </tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </table>			Date	Strike	Level	Minutes	Casing	Sealed																		
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			Scale: 1:50			Daily Log Of Depths <table border="1"> <tr> <th>Date</th> <th>Casing</th> <th>Water</th> <th>From</th> <th>To</th> <th>Hours</th> </tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </table>			Date	Casing	Water	From	To	Hours																		
Date	Casing	Water	From	To	Hours																											

WML CONSULTING			Project Title: Manchester Communication Academy				BH01																																														
			Project Number: 11258G		Client: Lancaster Maloney Martin				Sheet 2 Of 2																																												
			GL (mAOD):		N Coord: 0		E Coord: 0																																														
Date: 08/04/2024-09/04/2024			Method: Cable Percussion		Driller: PB Drilling		Logged By: Driller																																														
Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe																																													
9.80	D	N=40			9.00	Firm to stiff, sandy, gravelly CLAY. (GLACIAL TILL)																																															
		pp 50/265mm			9.80	Stiff, very sandy, gravelly CLAY. (GLACIAL TILL)																																															
				10.00																																																	
12.00	D	pp 49/275mm			11.00																																																
					12.00																																																
13.10	D	pp 50/230mm			13.00	Dense, clayey SAND and GRAVEL. (GLACIAL DEPOSITS)																																															
					13.10																																																
14.60	D				14.00	Weathered MUDSTONE. (PENNINE MIDDLE COAL MEASURES FORMATION)																																															
					14.60																																																
15.00	D	pp 50/95mm pp 50/83mm			15.00	SANDSTONE. (PENNINE MIDDLE COAL MEASURES FORMATION)																																															
					15.20		Hard MUDSTONE. (PENNINE MIDDLE COAL MEASURES FORMATION)																																														
					16.00	End Of Borehole At 15.20 m																																															
KEY D - Disturbed Sample B - Bulk Sample U - Undisturbed W - Water Sample S - Standard Penetration Test C - Cone Penetration Test N - Penetration Test 'N' Value V - Hand Shear Vane kPa ▽ - Groundwater Strike ▼ - Groundwater Level AGS			REMARKS No Groundwater Encountered			Water Strikes <table><tr><th>Date</th><th>Strike</th><th>Level</th><th>Minutes</th><th>Casing</th><th>Sealed</th></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr></table> Daily Log Of Depths <table><tr><th>Date</th><th>Casing</th><th>Water</th><th>From</th><th>To</th><th>Hours</th></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>						Date	Strike	Level	Minutes	Casing	Sealed																			Date	Casing	Water	From	To	Hours												
						Date	Strike	Level	Minutes	Casing	Sealed																																										
						Date	Casing	Water	From	To	Hours																																										

WML CONSULTING			Project Title: Manchester Communication Academy				BH02				
			Project Number: 11258G		Client: Lancaster Maloney Martin					Sheet 1 Of 3	
			GL (mAOD):		N Coord: 0		E Coord: 0				
Date: 09/04/2024-10/04/2024			Method: Cable Percussion		Driller: PB Drilling		Logged By: Driller				
Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe			
0.20	D	N=9			0.20	Asphalt. (MADE GROUND)					
0.40	D				0.40	Stone sub-base. (MADE GROUND)					
					1.00	Ash, brick, clay fill. (MADE GROUND)					
					2.00						
		N=3			2.00						
					3.00						
		N=4			3.00						
3.50	D				3.50						
		N=10			4.00	Mottled grey brown CLAY. (GLACIAL TILL)					
4.60	D				4.60						
		N=24			5.00	Firm to stiff, sandy, gravelly CLAY. (GLACIAL TILL)					
					6.00						
		N=28			6.00						
					7.00						
		N=32			7.00						
					8.00						
					8.00						
						Borehole Continues					
KEY D - Disturbed Sample B - Bulk Sample U - Undisturbed W - Water Sample S - Standard Penetration Test C - Cone Penetration Test N - Penetration Test 'N' Value V - Hand Shear Vane kPa ▽ - Groundwater Strike ▼ - Groundwater Level AGS			REMARKS No Groundwater Encountered Scale: 1:50			Water Strikes					
						Date	Strike	Level	Minutes	Casing	Sealed
						Daily Log Of Depths			Chiselling		
						Date	Casing	Water	From	To	Hours

WML CONSULTING			Project Title: Manchester Communication Academy				BH02				
			Project Number: 11258G		Client: Lancaster Maloney Martin					Sheet 2 Of 3	
			GL (mAOD):		N Coord: 0		E Coord: 0				
Date: 09/04/2024-10/04/2024			Method: Cable Percussion		Driller: PB Drilling		Logged By: Driller				
Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe			
9.10	D	N=13			9.00 9.10	Firm to stiff, sandy, gravelly CLAY. (GLACIAL TILL)					
		N=18				Firm, gravelly CLAY. (GLACIAL TILL)					
	11.10	D				N=18			11.00 11.10	Firm to stiff, gravelly CLAY. (GLACIAL TILL)	
	12.00	D				N=34			12.00	Stiff, gravelly CLAY with sand lenses. (GLACIAL TILL)	
		N=37			13.00 14.00 15.00 16.00	Borehole Continues					
		N=35									
KEY D - Disturbed Sample B - Bulk Sample U - Undisturbed W - Water Sample S - Standard Penetration Test C - Cone Penetration Test N - Penetration Test 'N' Value V - Hand Shear Vane kPa ▽ - Groundwater Strike ▼ - Groundwater Level Scale: 1:50			REMARKS No Groundwater Encountered		Water Strikes						
					Date	Strike	Level	Minutes	Casing	Sealed	
					Daily Log Of Depths			Chiselling			
					Date	Casing	Water	From	To	Hours	

WML CONSULTING			Project Title: Manchester Communication Academy				BH02																																														
			Project Number: 11258G		Client: Lancaster Maloney Martin					Sheet 3 Of 3																																											
			GL (mAOD):		N Coord: 0		E Coord: 0																																														
Date: 09/04/2024-10/04/2024			Method: Cable Percussion		Driller: PB Drilling		Logged By: Driller																																														
Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe																																													
16.50	D	N=20			16.40	Stiff, gravelly CLAY with sand lenses. (GLACIAL TILL)																																															
17.00 17.10	D D	pp 50/20mm			17.00 17.10	SANDSTONE. (CHESTER FORMATION)																																															
17.40	D	pp 50/30mm				End Of Borehole At 17.10 m																																															
					18.00																																																
					19.00																																																
					20.00																																																
					21.00																																																
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KEY D - Disturbed Sample B - Bulk Sample U - Undisturbed W - Water Sample S - Standard Penetration Test C - Cone Penetration Test N - Penetration Test 'N' Value V - Hand Shear Vane kPa ▽ - Groundwater Strike ▼ - Groundwater Level			REMARKS No Groundwater Encountered Scale: 1:50			Water Strikes <table><tr><th>Date</th><th>Strike</th><th>Level</th><th>Minutes</th><th>Casing</th><th>Sealed</th></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr></table> Daily Log Of Depths Chiselling <table><tr><th>Date</th><th>Casing</th><th>Water</th><th>From</th><th>To</th><th>Hours</th></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>						Date	Strike	Level	Minutes	Casing	Sealed																			Date	Casing	Water	From	To	Hours												
						Date	Strike	Level	Minutes	Casing	Sealed																																										
						Date	Casing	Water	From	To	Hours																																										

APPENDIX 04

Geotechnical Testing Results



LABORATORY REPORT



Contract Number: PSL24/2971

Report Date: 10 May 2024
Client's Reference: 11258G
Client Name: WML Consultants
Third Floor South
Metropolitan House
Station Road
Cheadle Hulme
SK8 7AZ

For the attention of: Tom Booth

Contract Title: Manchester Communication Academy

Date Received: 26/4/2024
Date Commenced: 26/4/2024
Date Completed: 10/5/2024

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

A Watkins
(Managing Director)

R Berriman
(Associate Director)

S Royle
(Laboratory Manager)

L Knight
(Assistant Laboratory Manager)

S Eyre
(Senior Technician)


A Fry
(Section Manager)

5 – 7 Hexthorpe Road,
Hexthorpe,
Doncaster,
DN4 0AR
Tel: 01302 768098
Email: rberriman@prosoils.co.uk
awatkins@prosoils.co.uk

Page 1 of

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

[illegible]

Manchester Communication Academy

Contract No:

PSL24/2971

Client Ref:

11258G

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

[illegible]

SYMBOLS : NP : Non Plastic

*** : Liquid Limit and Plastic Limit Wet Sieved.**



Manchester Communication Academy

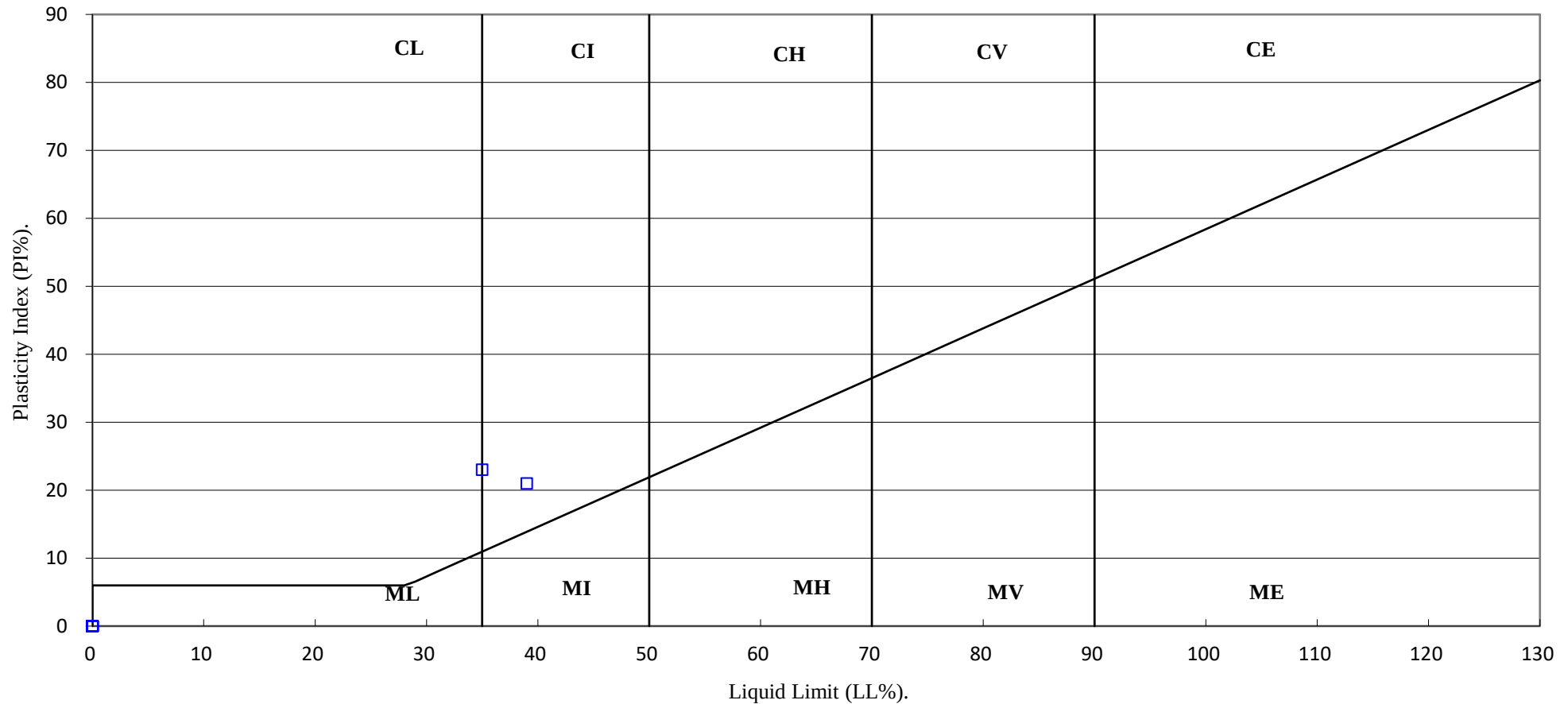
Contract No:

PSL24/2971

Client Ref:

11258G

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



Manchester Communication Academy

Contract No:

PSL24/2971

Client Ref:

11258G

Professional Soils Laboratory
5/7 Hexthorpe Road
Hexthorpe
Doncaster
DN4 0AR

Analytical Test Report: L24/03956/PSL - 24-44805

Your Project Reference: **PSL24/2971 Manchester Communication Academy**

Your Order Number: PSL24/2971 Samples Received / Instructed: 02/05/2024 / 02/05/2024

Report Issue Number: 1 Sample Tested: 02/05 to 14/05/2024

Samples Analysed: 2 soil samples Report issued: 14/05/2024

Signed



James Gane
Analytical Services Manager
CTS Group

Notes:

General

Please refer to Methodologies page for details pertaining to the analytical methods undertaken.

Samples will be retained for 14 days after issue of this report unless otherwise requested.

Moisture Content was determined in accordance with CTS method statement MS - CL - Sample Prep, oven dried at <30°C.

Moisture Content is reported as a percentage of the dry mass of soil, this calculation is in accordance with BS1377, Part 2, 1990, Clause 3.2

Where specification limits are included these are for guidance only. Where a measured value has been highlighted this is not implying acceptance or failure and certainty of measurement values have not been taken into account.

Uncertainty of measurement values are available on request.

Samples were supplied by customer, results apply to the samples as received.

Deviating Samples

On receipt samples are compared against our sample holding and handling protocols, where any deviations have been noted these are reported on our deviating sample page (if present)

Accreditation Key

UKAS = UKAS Accreditation, MCERTS = MCERTS Accreditation, u = Unaccredited, subUKAS - Subcontracted to a laboratory UKAS accredited for this test, subMCERTS - Subcontracted to a laboratory MCERTS accredited for this test

MCERTS Accreditation only covers the SAND, CLAY and LOAM matrices

Date of Issue: 13.05.2024

Issued by: J. Gane

Issue No: 4

Rev No: 9



7 - 11 Harding Street
Leicester
LE1 4DH

L24/03956/PSL - 24-44805

Project Reference - PSL24/2971 Manchester

Communication Academy

Analytical Test Results - Chemical Analysis

Lab Reference			361432	361433
Client Sample ID			-	-
Client Sample Location			BH01	BH02
Client Sample Type			D	D
Client Sample Number			-	-
Depth - Top (m)			12.00	9.10
Depth - Bottom (m)			12.00	9.10
Date of Sampling			-	-
Time of Sampling			-	-
Sample Matrix			Sand	Clay
Determinant	Units	Accreditation		
Water soluble sulphate (as SO ₄)	(mg/l)	u	14	68
pH Value	pH Units	MCERTS	8.9	8.5
Water Soluble Chloride	(mg/l)	u	4.6	9.7
Water Soluble Nitrate (As NO ₃)	(mg/l)	u	< 1.0	< 1.0
Water Soluble Magnesium	(mg/l)	u	9.3	20



7 - 11 Harding Street
Leicester
LE1 4DH

L24/03956/PSL - 24-44805

Project Reference - PSL24/2971 Manchester Communication Academy

Sample Descriptions

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Description	Moisture Content (%)	Stone Content (%)	Passing 2mm test sieve (%)
361432	-	BH01	D	-	Orangish brown gravelly sand	-	-	100
361433	-	BH02	D	-	Brown silty clay	-	-	100



7 - 11 Harding Street
Leicester
LE1 4DH

L24/03956/PSL - 24-44805

Project Reference - PSL24/2971 Manchester Communication Academy

Sample Comments

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Comments
361432	-	BH01	D	-	
361433	-	BH02	D	-	



7 - 11 Harding Street
Leicester
LE1 4DH

L24/03956/PSL - 24-44805

Project Reference - PSL24/2971 Manchester Communication Academy

Analysis Methodologies

Test Code	Test Name / Reference	Sample condition for analysis	Sample Preparation	Test Details
ANIONSS	MS - CL - Anions by Aquakem (2:1Extract)	Oven dried	Passing 2mm test sieve	Determination of Anions (inc Sulphate, chloride etc.) in soils by Aquakem. Analysis is based on a 2:1 water to soil extraction ratio
PHS	MS - CL - pH in Soils	As received	Passing 10mm test sieve	Determination of pH in soils using a pH probe (using a 1:3 soil to water extraction)
SAMPLEPREP	MS - CL - Sample Preparation	-	-	Preparation of samples (including determination of moisture content) to allow for subsequent analysis
1377MGICP	BS1377 WS Magnesium (ICP)	Oven dried	Passing 2mm test sieve	Water Soluble Magnesium testing of Soil in accordance with BS 1377 : Part 3 : 2018 + A1 : 2021 Clause 10.



7 - 11 Harding Street
Leicester
LE1 4DH

L24/03956/PSL - 24-44805

Project Reference - PSL24/2971 Manchester Communication Academy

Sample Deviations

Deviations are listed below against each sample and associated test method, where deviation(s) are noted it means data may not be representative of the sample at the time of sampling and it is possible that results provided may be compromised.

Observations on receipt

A - No date of sampling provided

C - Received in inappropriate container

H - Contains headspace

T - Temperature on receipt exceeds storage temperature

R - Sample(s) received with less than 96 hours for testing to commence/complete, any result formally classed as deviating will be marked with an X against the applicable test (i.e. RX)

Observations whilst in laboratory

X - Exceeds sampling to extraction or analysis timescales

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Test	Deviations
361432	-	BH01	D	-		A
361433	-	BH02	D	-		A



LABORATORY REPORT



Contract Number: PSL23/7672

Report Date: 28 September 2023

Client's Reference: 11258G

Client Name: WML Consultants

Third Floor South
Metropolitan House
Station Road
Cheadle Hulme
SK8 7AZ

For the attention of: Tom Sheen

Project Name: Manchester Communications Academy

Date Received: 11/9/2023

Date Commenced: 11/9/2023

Date Completed: 28/9/2023

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

A Watkins
(Director)

R Berriman
(Quality Manager)

S Royle
(Laboratory Manager)

L Knight
(Assistant Laboratory Manager)

S Eyre
(Senior Technician)


M Fennell
(Senior Technician)

5 – 7 Hexthorpe Road,
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Email: rberriman@prosoils.co.uk
awatkins@prosoils.co.uk

Page 1 of

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

[illegible]

Manchester Communication Academy

Contract No:

PSL23/7672

Client Ref:

11258G

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

[illegible]

SYMBOLS : NP : Non Plastic

*** : Liquid Limit and Plastic Limit Wet Sieved.**



Manchester Communication Academy

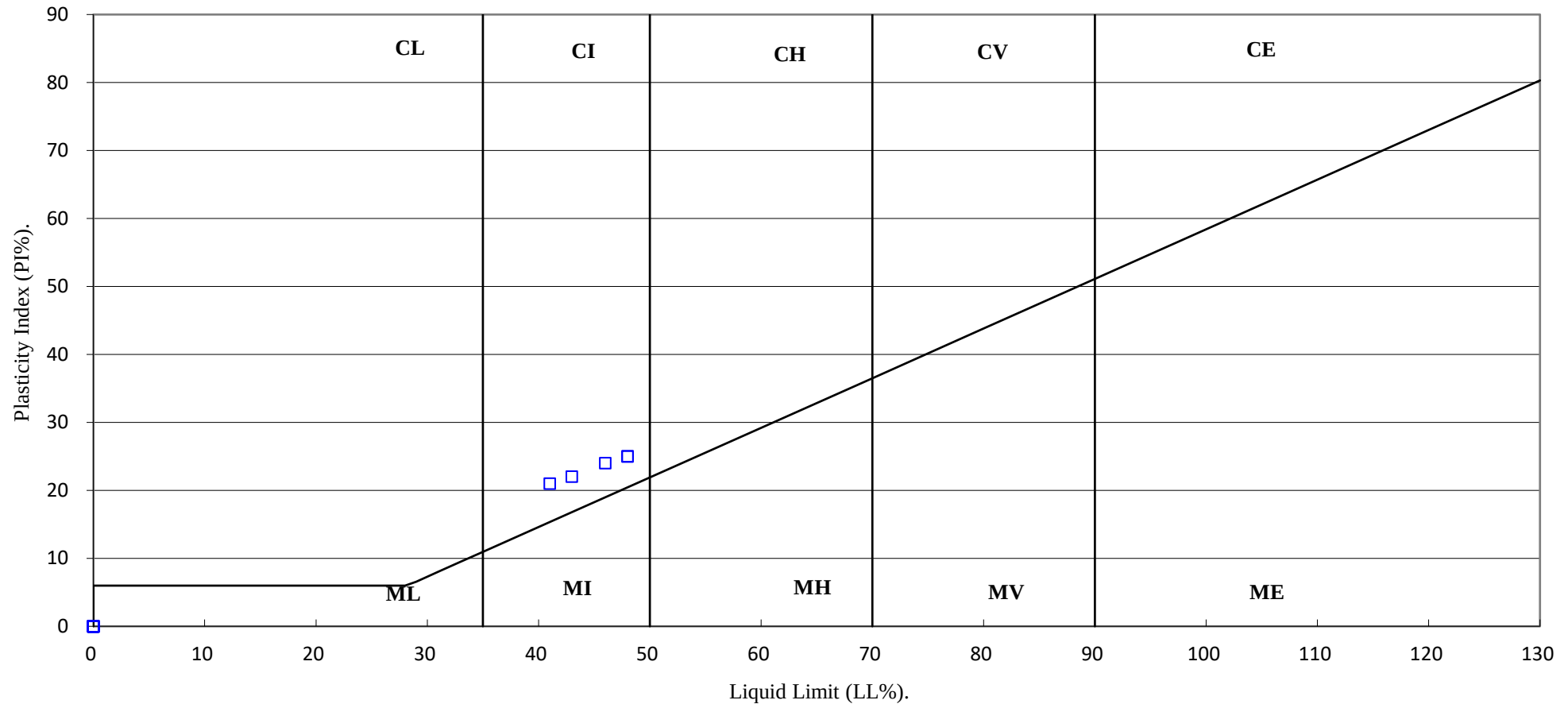
Contract No:

PSL23/7672

Client Ref:

11258G

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



Manchester Communication Academy

Contract No:

PSL23/7672

Client Ref:

11258G

CALIFORNIA BEARING RATIO TEST

Non compliance with BS 1377 : Part 4 : 1990

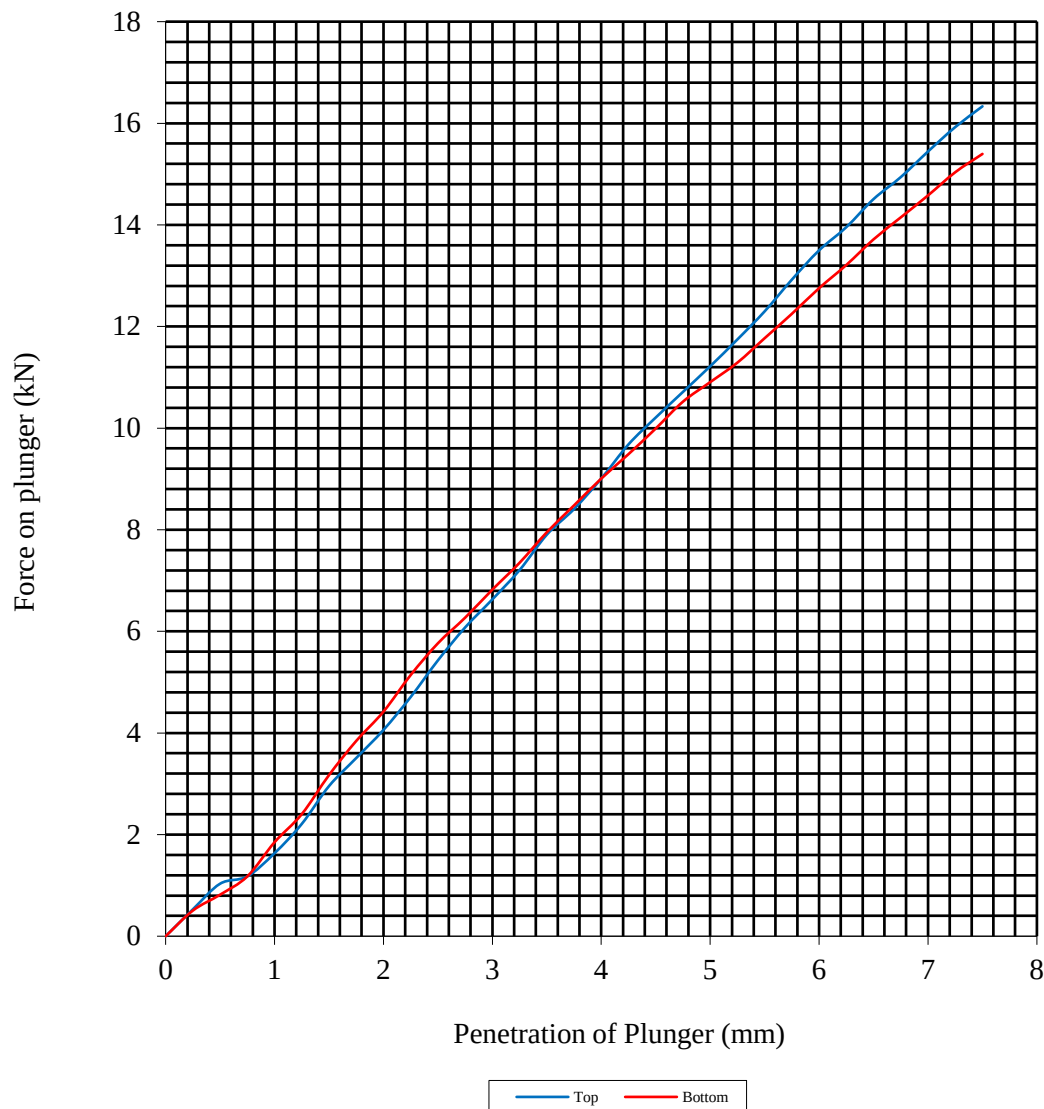
Hole Number: WS01

Top Depth (m): 0.45

Sample Number: 2

Base Depth (m): 0.55

Sample Type: B



Initial Sample Conditions		Sample Preparation		Final Moisture Content %		C.B.R. Value %	
Moisture Content:	8.0	Surcharge Kg:	4.2	Sample Top	8.0	Sample Top	56.1
Bulk Density Mg/m3:	2.14	Soaking Time hrs	0	Sample Bottom	8.0	Sample Bottom	54.5
Dry Density Mg/m3:	1.98	Swelling mm:	0	Remarks : See Summary of Soil Descriptions.			
Percentage retained on 20mm BS test sieve:		26.7					
Compaction Conditions		2.5kg					



Manchester Communication Academy

Contract No:
PSL23/7672
Client Ref:
11258G

CALIFORNIA BEARING RATIO TEST

BS 1377 : Part 4 : 1990

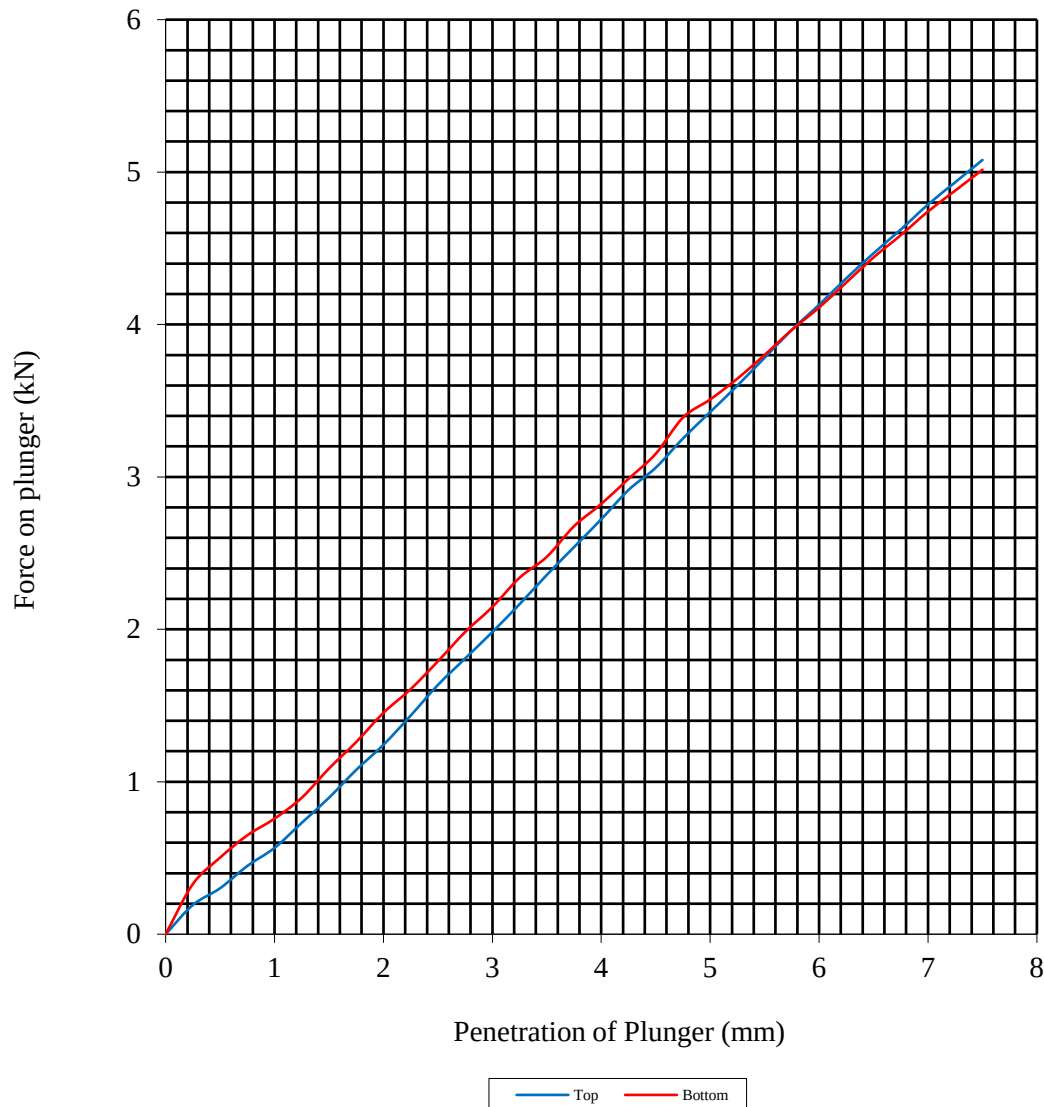
Hole Number: WS09

Top Depth (m): 0.50

Sample Number: 4

Base Depth (m): 0.60

Sample Type: B



Initial Sample Conditions		Sample Preparation		Final Moisture Content %		C.B.R. Value %	
Moisture Content:	30	Surcharge Kg:	4.2	Sample Top	30	Sample Top	17.1
Bulk Density Mg/m3:	1.69	Soaking Time hrs	0	Sample Bottom	30	Sample Bottom	17.5
Dry Density Mg/m3:	1.30	Swelling mm:	0	Remarks : See Summary of Soil Descriptions.			
Percentage retained on 20mm BS test sieve:		18.2					
Compaction Conditions		2.5kg					



Manchester Communication Academy

Contract No:
PSL23/7672
Client Ref:
11258G

APPENDIX 05

Chemical Testing Results

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 23/08942
Issue Number: 1

Date: 22 September, 2023

Client: WML Consulting Ltd
Third Floor South
Metropolitan House
Station Rd
Cheadle Hulme
Cheshire
SK8 7AZ

Project Manager: Thomas Sheen
Project Name: Manchester Communication Academy
Project Ref: 11258G
Order No: 11258G
Date Samples Received: 06/09/23
Date Instructions Received: 07/09/23
Date Analysis Completed: 22/09/23

Approved by:



Richard Wong
Client Manager

Envirolab Job Number: 23/08942

Client Project Name: Manchester Communication Academy

Client Project Ref: 11258G

Lab Sample ID	23/08942/1	23/08942/2	23/08942/3	23/08942/4	23/08942/5	23/08942/6	23/08942/7	Units	Limit of Detection	Method ref
Client Sample No	1	4	5	1	3	3	1			
Client Sample ID	WS01	WS01	WS01	WS02	WS02	WS03	WS04			
Depth to Top	0.30	1.90	3.60	0.20	1.50	1.50	0.40			
Depth To Bottom	0.40	2.10	3.80	0.40	1.60	1.70				
Date Sampled	31-Aug-23	31-Aug-23	31-Aug-23	31-Aug-23	31-Aug-23	31-Aug-23	31-Aug-23			
Sample Type	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES			
Sample Matrix Code	4AB	6B	3A	5ABE	3BA	3AE	7D			
% Stones >10mm _A	3.5	20.6	<0.1	<0.1	4.3	<0.1	<0.1	% w/w	0.1	A-T-044
pH _D ^{M#}	8.07	7.90	7.92	8.57	8.29	-	-	pH	0.01	A-T-031s
Sulphate (water sol 2:1) _D ^{M#}	<0.01	0.09	0.06	0.03	0.03	-	-	g/l	0.01	A-T-026s
Sulphate (acid soluble) _D ^{M#}	620	610	-	520	490	-	-	mg/kg	200	A-T-028s
Sulphur (total) _D	397	549	469	429	284	-	-	mg/kg	50	A-T-024s
Cyanide (total) _A ^{M#}	<1	2	-	<1	<1	-	-	mg/kg	1	A-T-042sTCN
Phenols - Total by HPLC _A	<0.2	<0.2	-	<0.2	<0.2	-	-	mg/kg	0.2	A-T-050s
Organic Matter _D ^{M#}	6.6	11.0	-	9.5	3.8	-	-	% w/w	0.1	A-T-032s
Arsenic _D ^{M#}	10	33	-	4	14	-	-	mg/kg	1	A-T-024s
Boron (water soluble) _D ^{M#}	<1.0	<1.0	-	<1.0	<1.0	-	-	mg/kg	1	A-T-027s
Cadmium _D ^{M#}	0.6	0.7	-	<0.5	0.8	-	-	mg/kg	0.5	A-T-024s
Copper _D ^{M#}	65	101	-	25	71	-	-	mg/kg	1	A-T-024s
Chromium (hexavalent) _D	<1	<1	-	<1	<1	-	-	mg/kg	1	A-T-040s
Lead _D ^{M#}	210	321	-	75	266	-	-	mg/kg	1	A-T-024s
Mercury _D	<0.17	0.82	-	1.46	0.84	-	-	mg/kg	0.17	A-T-024s
Nickel _D ^{M#}	17	30	-	13	28	-	-	mg/kg	1	A-T-024s
Selenium _D ^{M#}	<1	<1	-	<1	<1	-	-	mg/kg	1	A-T-024s
Vanadium _D ^{M#}	23	37	-	23	36	-	-	mg/kg	1	A-T-024s
Zinc _D ^{M#}	177	83	-	65	117	-	-	mg/kg	5	A-T-024s
Leachate Prep NRA (10:1) _A	-	-	-	*	-	*	-			A-T-001
pH (leachable) _A	-	-	-	8.42	-	7.97	-	pH	0.01	A-T-031w
Sulphate (leachable) _A	-	-	-	12.81	-	13.25	-	mg/l	1	A-T-026w
Cyanide (total) (leachable) _A	-	-	-	<0.005	-	<0.005	-	mg/l	0.005	A-T-042wTCN
Phenols (total by HPLC) (leachable) _A	-	-	-	0.01	-	0.01	-	mg/l	0.01	A-T-050w
Arsenic (leachable) _A	-	-	-	4	-	<1	-	µg/l	1	A-T-025w
Boron (leachable) _A	-	-	-	30	-	22	-	µg/l	10	A-T-025w
Cadmium (leachable) _A	-	-	-	<1	-	<1	-	µg/l	1	A-T-025w
Copper (leachable) _A	-	-	-	8	-	<4	-	µg/l	4	A-T-025w
Chromium (hexavalent) (leachable) _A	-	-	-	<0.05	-	<0.05	-	mg/l	0.05	A-T-040w
Lead (leachable) _A	-	-	-	22	-	<1	-	µg/l	1	A-T-025w
Mercury (leachable) _A	-	-	-	<0.1	-	<0.1	-	µg/l	0.1	A-T-025w
Nickel (leachable) _A	-	-	-	<2	-	<2	-	µg/l	2	A-T-025w
Selenium (leachable) _A	-	-	-	<1	-	<1	-	µg/l	1	A-T-025w

Envirolab Job Number: 23/08942

Client Project Name: Manchester Communication Academy

Client Project Ref: 11258G

Lab Sample ID	23/08942/1	23/08942/2	23/08942/3	23/08942/4	23/08942/5	23/08942/6	23/08942/7	Units	Limit of Detection	Method ref
Client Sample No	1	4	5	1	3	3	1			
Client Sample ID	WS01	WS01	WS01	WS02	WS02	WS03	WS04			
Depth to Top	0.30	1.90	3.60	0.20	1.50	1.50	0.40			
Depth To Bottom	0.40	2.10	3.80	0.40	1.60	1.70				
Date Sampled	31-Aug-23	31-Aug-23	31-Aug-23	31-Aug-23	31-Aug-23	31-Aug-23	31-Aug-23			
Sample Type	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES			
Sample Matrix Code	4AB	6B	3A	5ABE	3BA	3AE	7D			
Sulphur, Total (leachable) _A	-	-	-	5	-	5	-	mg/l	1	A-T-072w
Vanadium (leachable) _A	-	-	-	4	-	<1	-	µg/l	1	A-T-025w
Zinc (leachable) _A	-	-	-	9	-	<2	-	µg/l	2	A-T-025w

Envirolab Job Number: 23/08942

Client Project Name: Manchester Communication Academy

Client Project Ref: 11258G

Lab Sample ID	23/08942/1	23/08942/2	23/08942/3	23/08942/4	23/08942/5	23/08942/6	23/08942/7	Units	Limit of Detection	Method ref
Client Sample No	1	4	5	1	3	3	1			
Client Sample ID	WS01	WS01	WS01	WS02	WS02	WS03	WS04			
Depth to Top	0.30	1.90	3.60	0.20	1.50	1.50	0.40			
Depth To Bottom	0.40	2.10	3.80	0.40	1.60	1.70				
Date Sampled	31-Aug-23	31-Aug-23	31-Aug-23	31-Aug-23	31-Aug-23	31-Aug-23	31-Aug-23			
Sample Type	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES			
Sample Matrix Code	4AB	6B	3A	5ABE	3BA	3AE	7D			
Asbestos in Soil (inc. matrix)										
Asbestos in soil [#]	NAD	NAD	-	Chrysotile	NAD	-	-			A-T-045
Asbestos Matrix (visual) _o	-	-	-	-	-	-	-			A-T-045
Asbestos Matrix (microscope) _o	-	-	-	Loose Fibres	-	-	-			A-T-045
Asbestos ACM - Suitable for Water Absorption Test? _o	N/A	N/A	-	N/A	N/A	-	-			A-T-045
Asbestos in Soil Quantification % (Hand Picking & Weighing)										
Asbestos in soil % composition (hand picking and weighing) _o	-	-	-	<0.001	-	-	-	% w/w	0.001	A-T-054

Envirolab Job Number: 23/08942

Client Project Name: Manchester Communication Academy

Client Project Ref: 11258G

Lab Sample ID	23/08942/1	23/08942/2	23/08942/3	23/08942/4	23/08942/5	23/08942/6	23/08942/7	Units	Limit of Detection	Method ref
Client Sample No	1	4	5	1	3	3	1			
Client Sample ID	WS01	WS01	WS01	WS02	WS02	WS03	WS04			
Depth to Top	0.30	1.90	3.60	0.20	1.50	1.50	0.40			
Depth To Bottom	0.40	2.10	3.80	0.40	1.60	1.70				
Date Sampled	31-Aug-23	31-Aug-23	31-Aug-23	31-Aug-23	31-Aug-23	31-Aug-23	31-Aug-23			
Sample Type	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES			
Sample Matrix Code	4AB	6B	3A	5ABE	3BA	3AE	7D			
PAH-16MS										
Acenaphthene _A ^{M#}	0.55	3.55	-	0.65	0.10	-	-	mg/kg	0.01	A-T-019s
Acenaphthylene _A ^{M#}	0.09	0.25	-	0.06	0.01	-	-	mg/kg	0.01	A-T-019s
Anthracene _A ^{M#}	1.04	4.02	-	1.25	0.17	-	-	mg/kg	0.02	A-T-019s
Benzo(a)anthracene _A ^{M#}	2.91	7.43	-	4.93	0.44	-	-	mg/kg	0.04	A-T-019s
Benzo(a)pyrene _A ^{M#}	2.93	4.49	-	3.64	0.40	-	-	mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene _A ^{M#}	3.37	5.73	-	4.86	0.45	-	-	mg/kg	0.05	A-T-019s
Benzo(ghi)perylene _A ^{M#}	1.58	2.61	-	2.25	0.24	-	-	mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene _A ^{M#}	1.28	3.08	-	2.05	0.17	-	-	mg/kg	0.07	A-T-019s
Chrysene _A ^{M#}	3.41	6.44	-	4.84	0.54	-	-	mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene _A	0.28	0.45	-	<0.40	0.05	-	-	mg/kg	0.04	A-T-019s
Fluoranthene _A ^{M#}	7.26	17.2	-	9.50	0.97	-	-	mg/kg	0.08	A-T-019s
Fluorene _A ^{M#}	0.61	2.28	-	0.41	0.07	-	-	mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene _A ^{M#}	1.89	3.07	-	2.47	0.28	-	-	mg/kg	0.03	A-T-019s
Naphthalene _A ^{M#}	0.26	2.52	-	0.18	0.05	-	-	mg/kg	0.03	A-T-019s
Phenanthrene _A ^{M#}	5.59	13.5	-	4.35	0.81	-	-	mg/kg	0.03	A-T-019s
Pyrene _A ^{M#}	6.81	13.8	-	9.09	0.91	-	-	mg/kg	0.07	A-T-019s
Total PAH-16MS _A	39.9	90.4	-	50.5	5.66	-	-	mg/kg	0.01	A-T-019s

Envirolab Job Number: 23/08942

Client Project Name: Manchester Communication Academy

Client Project Ref: 11258G

Lab Sample ID	23/08942/1	23/08942/2	23/08942/3	23/08942/4	23/08942/5	23/08942/6	23/08942/7	Units	Limit of Detection	Method ref
Client Sample No	1	4	5	1	3	3	1			
Client Sample ID	WS01	WS01	WS01	WS02	WS02	WS03	WS04			
Depth to Top	0.30	1.90	3.60	0.20	1.50	1.50	0.40			
Depth To Bottom	0.40	2.10	3.80	0.40	1.60	1.70				
Date Sampled	31-Aug-23	31-Aug-23	31-Aug-23	31-Aug-23	31-Aug-23	31-Aug-23	31-Aug-23			
Sample Type	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES			
Sample Matrix Code	4AB	6B	3A	5ABE	3BA	3AE	7D			
PAH 16MS (leachable)										
Acenaphthene (leachable) _A	-	-	-	<0.02	-	<0.02	-	µg/l	0.02	A-T-019w
Acenaphthylene (leachable) _A	-	-	-	<0.02	-	<0.02	-	µg/l	0.02	A-T-019w
Anthracene (leachable) _A	-	-	-	<0.02	-	<0.02	-	µg/l	0.02	A-T-019w
Benzo(a)anthracene (leachable) _A	-	-	-	0.02	-	<0.02	-	µg/l	0.02	A-T-019w
Benzo(a)pyrene (leachable) _A	-	-	-	0.03	-	<0.02	-	µg/l	0.02	A-T-019w
Benzo(b)fluoranthene (leachable) _A	-	-	-	0.04	-	<0.02	-	µg/l	0.02	A-T-019w
Benzo(ghi)perylene (leachable) _A	-	-	-	0.02	-	<0.02	-	µg/l	0.02	A-T-019w
Benzo(k)fluoranthene (leachable) _A	-	-	-	<0.02	-	<0.02	-	µg/l	0.02	A-T-019w
Chrysene (leachable) _A	-	-	-	0.03	-	<0.02	-	µg/l	0.02	A-T-019w
Dibenzo(ah)anthracene (leachable) _A	-	-	-	0.03	-	<0.02	-	µg/l	0.02	A-T-019w
Fluoranthene (leachable) _A	-	-	-	0.04	-	<0.02	-	µg/l	0.02	A-T-019w
Fluorene (leachable) _A	-	-	-	<0.02	-	<0.02	-	µg/l	0.02	A-T-019w
Indeno(123-cd)pyrene (leachable) _A	-	-	-	<0.02	-	<0.02	-	µg/l	0.02	A-T-019w
Naphthalene (leachable) _A	-	-	-	0.08	-	0.03	-	µg/l	0.02	A-T-019w
Phenanthrene (leachable) _A	-	-	-	<0.02	-	<0.02	-	µg/l	0.02	A-T-019w
Pyrene (leachable) _A	-	-	-	0.04	-	<0.02	-	µg/l	0.02	A-T-019w
Total PAH 16MS (leachable) _A	-	-	-	0.33	-	0.03	-	µg/l	0.02	A-T-019w

Envirolab Job Number: 23/08942

Client Project Name: Manchester Communication Academy

Client Project Ref: 11258G

Lab Sample ID	23/08942/1	23/08942/2	23/08942/3	23/08942/4	23/08942/5	23/08942/6	23/08942/7	Units	Limit of Detection	Method ref
Client Sample No	1	4	5	1	3	3	1			
Client Sample ID	WS01	WS01	WS01	WS02	WS02	WS03	WS04			
Depth to Top	0.30	1.90	3.60	0.20	1.50	1.50	0.40			
Depth To Bottom	0.40	2.10	3.80	0.40	1.60	1.70				
Date Sampled	31-Aug-23	31-Aug-23	31-Aug-23	31-Aug-23	31-Aug-23	31-Aug-23	31-Aug-23			
Sample Type	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES			
Sample Matrix Code	4AB	6B	3A	5ABE	3BA	3AE	7D			
TPH CWG with Clean Up										
Ali >C5-C6 _A	-	<0.01	-	-	-	-	<0.01	mg/kg	0.01	A-T-022s
Ali >C6-C8 _A	-	<0.01	-	-	-	-	<0.01	mg/kg	0.01	A-T-022s
Ali >C8-C10 _A	-	<1	-	-	-	-	<10	mg/kg	1	A-T-055s
Ali >C10-C12 _A ^{M#}	-	<1	-	-	-	-	<10	mg/kg	1	A-T-055s
Ali >C12-C16 _A ^{M#}	-	5	-	-	-	-	<10	mg/kg	1	A-T-055s
Ali >C16-C21 _A ^{M#}	-	6	-	-	-	-	31	mg/kg	1	A-T-055s
Ali >C21-C35 _A ^{M#}	-	20	-	-	-	-	914	mg/kg	1	A-T-055s
Total Aliphatics _A	-	31	-	-	-	-	946	mg/kg	1	Calc-As Recd
Aro >C5-C7 _A [#]	-	<0.01	-	-	-	-	<0.01	mg/kg	0.01	A-T-022s
Aro >C7-C8 _A [#]	-	<0.01	-	-	-	-	<0.01	mg/kg	0.01	A-T-022s
Aro >C8-C10 _A	-	<2	-	-	-	-	<10	mg/kg	1	A-T-055s
Aro >C10-C12 _A	-	5	-	-	-	-	<10	mg/kg	1	A-T-055s
Aro >C12-C16 _A ^{M#}	-	34	-	-	-	-	13	mg/kg	1	A-T-055s
Aro >C16-C21 _A ^{M#}	-	117	-	-	-	-	43	mg/kg	1	A-T-055s
Aro >C21-C35 _A ^{M#}	-	282	-	-	-	-	203	mg/kg	1	A-T-055s
Total Aromatics _A	-	438	-	-	-	-	259	mg/kg	1	Calc-As Recd
TPH (Ali & Aro >C5-C35) _A	-	469	-	-	-	-	1210	mg/kg	1	Calc-As Recd
BTEX - Benzene _A [#]	-	<0.01	-	-	-	-	<0.01	mg/kg	0.01	A-T-022s
BTEX - Toluene _A [#]	-	<0.01	-	-	-	-	<0.01	mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene _A [#]	-	<0.01	-	-	-	-	<0.01	mg/kg	0.01	A-T-022s
BTEX - m & p Xylene _A [#]	-	<0.01	-	-	-	-	<0.01	mg/kg	0.01	A-T-022s
BTEX - o Xylene _A [#]	-	<0.01	-	-	-	-	<0.01	mg/kg	0.01	A-T-022s
MTBE _A [#]	-	<0.01	-	-	-	-	<0.01	mg/kg	0.01	A-T-022s

Envirolab Job Number: 23/08942

Client Project Name: Manchester Communication Academy

Client Project Ref: 11258G

Lab Sample ID	23/08942/8	23/08942/9	23/08942/11	23/08942/12	23/08942/13	23/08942/14	23/08942/15	Units	Limit of Detection	Method ref
Client Sample No	3	2	3	1	2	1	2			
Client Sample ID	WS04	WS05	WS06	WS07	WS07	WS08	WS08			
Depth to Top	1.00	0.50	1.40	0.15	0.60	0.20	1.00			
Depth To Bottom	1.20	0.60	1.60	0.30	0.70	0.40	1.20			
Date Sampled	31-Aug-23	01-Sep-23	01-Sep-23	01-Sep-23	01-Sep-23	01-Sep-23	01-Sep-23			
Sample Type	SOIL - ES	SOIL - ES	SOIL - ES	SOLID	SOIL - ES	SOIL - ES	SOIL - ES			
Sample Matrix Code	5AB	6A	6A	7	5A	7A	2A			
% Stones >10mm _A	<0.1	<0.1	14.6	<0.1	<0.1	<0.1	18.7	% w/w	0.1	A-T-044
pH _D ^{M#}	8.37	7.92	-	9.40 ^U	-	9.36	7.55	pH	0.01	A-T-031s
Sulphate (water sol 2:1) _D ^{M#}	0.61	0.21	-	<0.01 ^U	-	<0.01	0.06	g/l	0.01	A-T-026s
Sulphate (acid soluble) _D ^{M#}	1700	2100	-	240 ^U	-	260	1700	mg/kg	200	A-T-028s
Sulphur (total) _D	1270	982	-	741	-	86	3060	mg/kg	50	A-T-024s
Cyanide (total) _A ^{M#}	<1	<1	-	<1 ^U	-	<1	<1	mg/kg	1	A-T-042STCN
Phenols - Total by HPLC _A	<0.2	<0.2	-	<0.2	-	<0.2	<0.2	mg/kg	0.2	A-T-050s
Organic Matter _D ^{M#}	16.0	6.2	-	11.4 ^U	-	13.8	27.8	% w/w	0.1	A-T-032s
Arsenic _D ^{M#}	4	<1	-	17 ^U	-	<1	<1	mg/kg	1	A-T-024s
Boron (water soluble) _D ^{M#}	1.4	<1.0	-	<1.0 ^U	-	<1.0	<1.0	mg/kg	1	A-T-027s
Cadmium _D ^{M#}	<0.5	<0.5	-	0.7 ^U	-	1.9	2.4	mg/kg	0.5	A-T-024s
Copper _D ^{M#}	28	28	-	67 ^U	-	9	11	mg/kg	1	A-T-024s
Chromium (hexavalent) _D	<1	<1	-	<1	-	<1	<1	mg/kg	1	A-T-040s
Lead _D ^{M#}	51	14	-	487 ^U	-	26	31	mg/kg	1	A-T-024s
Mercury _D	1.18	<0.17	-	0.72	-	3.94	2.91	mg/kg	0.17	A-T-024s
Nickel _D ^{M#}	14	32	-	25 ^U	-	10	11	mg/kg	1	A-T-024s
Selenium _D ^{M#}	<1	<1	-	<1 ^U	-	<1	2	mg/kg	1	A-T-024s
Vanadium _D ^{M#}	20	18	-	32 ^U	-	7	7	mg/kg	1	A-T-024s
Zinc _D ^{M#}	59	93	-	257 ^U	-	57	64	mg/kg	5	A-T-024s
Leachate Prep NRA (10:1) _A	-	-	*	-	*	-	-			A-T-001
pH (leachable) _A	-	-	7.61	-	8.03	-	-	pH	0.01	A-T-031w
Sulphate (leachable) _A	-	-	213	-	12.43	-	-	mg/l	1	A-T-026w
Cyanide (total) (leachable) _A	-	-	0.007	-	<0.005	-	-	mg/l	0.005	A-T-042wTCN
Phenols (total by HPLC) (leachable) _A	-	-	<0.01	-	<0.01	-	-	mg/l	0.01	A-T-050w
Arsenic (leachable) _A	-	-	5	-	<1	-	-	µg/l	1	A-T-025w
Boron (leachable) _A	-	-	96	-	27	-	-	µg/l	10	A-T-025w
Cadmium (leachable) _A	-	-	<1	-	<1	-	-	µg/l	1	A-T-025w
Copper (leachable) _A	-	-	<4	-	4	-	-	µg/l	4	A-T-025w
Chromium (hexavalent) (leachable) _A	-	-	<0.05	-	<0.05	-	-	mg/l	0.05	A-T-040w
Lead (leachable) _A	-	-	1	-	<1	-	-	µg/l	1	A-T-025w
Mercury (leachable) _A	-	-	<0.1	-	<0.1	-	-	µg/l	0.1	A-T-025w
Nickel (leachable) _A	-	-	4	-	<2	-	-	µg/l	2	A-T-025w
Selenium (leachable) _A	-	-	1	-	<1	-	-	µg/l	1	A-T-025w

Envirolab Job Number: 23/08942

Client Project Name: Manchester Communication Academy

Client Project Ref: 11258G

Lab Sample ID	23/08942/8	23/08942/9	23/08942/11	23/08942/12	23/08942/13	23/08942/14	23/08942/15	Units	Limit of Detection	Method ref
Client Sample No	3	2	3	1	2	1	2			
Client Sample ID	WS04	WS05	WS06	WS07	WS07	WS08	WS08			
Depth to Top	1.00	0.50	1.40	0.15	0.60	0.20	1.00			
Depth To Bottom	1.20	0.60	1.60	0.30	0.70	0.40	1.20			
Date Sampled	31-Aug-23	01-Sep-23	01-Sep-23	01-Sep-23	01-Sep-23	01-Sep-23	01-Sep-23			
Sample Type	SOIL - ES	SOIL - ES	SOIL - ES	SOLID	SOIL - ES	SOIL - ES	SOIL - ES			
Sample Matrix Code	5AB	6A	6A	7	5A	7A	2A			
Sulphur, Total (leachable) _A	-	-	63	-	4	-	-	mg/l	1	A-T-072w
Vanadium (leachable) _A	-	-	<1	-	<1	-	-	µg/l	1	A-T-025w
Zinc (leachable) _A	-	-	20	-	3	-	-	µg/l	2	A-T-025w

Envirolab Job Number: 23/08942

Client Project Name: Manchester Communication Academy

Client Project Ref: 11258G

Lab Sample ID	23/08942/8	23/08942/9	23/08942/11	23/08942/12	23/08942/13	23/08942/14	23/08942/15	Units	Limit of Detection	Method ref
Client Sample No	3	2	3	1	2	1	2			
Client Sample ID	WS04	WS05	WS06	WS07	WS07	WS08	WS08			
Depth to Top	1.00	0.50	1.40	0.15	0.60	0.20	1.00			
Depth To Bottom	1.20	0.60	1.60	0.30	0.70	0.40	1.20			
Date Sampled	31-Aug-23	01-Sep-23	01-Sep-23	01-Sep-23	01-Sep-23	01-Sep-23	01-Sep-23			
Sample Type	SOIL - ES	SOIL - ES	SOIL - ES	SOLID	SOIL - ES	SOIL - ES	SOIL - ES			
Sample Matrix Code	5AB	6A	6A	7	5A	7A	2A			
Asbestos in Soil (inc. matrix)										
Asbestos in soil [#]	Chrysotile	Amosite	-	NAD ^U	-	NAD	NAD			A-T-045
Asbestos Matrix (visual) _o	-	-	-	-	-	-	-			A-T-045
Asbestos Matrix (microscope) _o	Loose Fibres	Loose Fibres	-	-	-	-	-			A-T-045
Asbestos ACM - Suitable for Water Absorption Test? _o	N/A	N/A	-	N/A	-	N/A	N/A			A-T-045
Asbestos in Soil Quantification % (Hand Picking & Weighing)										
Asbestos in soil % composition (hand picking and weighing) _o	0.005	0.001	-	-	-	-	-	% w/w	0.001	A-T-054

Envirolab Job Number: 23/08942

Client Project Name: Manchester Communication Academy

Client Project Ref: 11258G

Lab Sample ID	23/08942/8	23/08942/9	23/08942/11	23/08942/12	23/08942/13	23/08942/14	23/08942/15	Units	Limit of Detection	Method ref
Client Sample No	3	2	3	1	2	1	2			
Client Sample ID	WS04	WS05	WS06	WS07	WS07	WS08	WS08			
Depth to Top	1.00	0.50	1.40	0.15	0.60	0.20	1.00			
Depth To Bottom	1.20	0.60	1.60	0.30	0.70	0.40	1.20			
Date Sampled	31-Aug-23	01-Sep-23	01-Sep-23	01-Sep-23	01-Sep-23	01-Sep-23	01-Sep-23			
Sample Type	SOIL - ES	SOIL - ES	SOIL - ES	SOLID	SOIL - ES	SOIL - ES	SOIL - ES			
Sample Matrix Code	5AB	6A	6A	7	5A	7A	2A			
PAH-16MS										
Acenaphthene _A ^{M#}	7.22	6.83	-	<0.01 ^U	-	<0.01	0.04	mg/kg	0.01	A-T-019s
Acenaphthylene _A ^{M#}	0.15	0.22	-	<0.01 ^U	-	<0.01	0.03	mg/kg	0.01	A-T-019s
Anthracene _A ^{M#}	6.96	7.52	-	<0.02 ^U	-	<0.02	0.11	mg/kg	0.02	A-T-019s
Benzo(a)anthracene _A ^{M#}	14	16.1	-	<0.04 ^U	-	<0.04	0.38	mg/kg	0.04	A-T-019s
Benzo(a)pyrene _A ^{M#}	9.61	10.5	-	<0.04 ^U	-	<0.04	0.31	mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene _A ^{M#}	12.5	14	-	<0.05 ^U	-	<0.05	0.35	mg/kg	0.05	A-T-019s
Benzo(ghi)perylene _A ^{M#}	5.89	6.54	-	<0.05 ^U	-	<0.05	0.16	mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene _A ^{M#}	5.72	6.55	-	<0.07 ^U	-	<0.07	0.10	mg/kg	0.07	A-T-019s
Chrysene _A ^{M#}	13.7	16	-	<0.06 ^U	-	<0.06	0.49	mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene _A	0.88	1.00	-	<0.04	-	<0.04	<0.04	mg/kg	0.04	A-T-019s
Fluoranthene _A ^{M#}	30.8	34.8	-	<0.08 ^U	-	<0.08	0.71	mg/kg	0.08	A-T-019s
Fluorene _A ^{M#}	3.49	3.97	-	<0.01 ^U	-	<0.01	0.06	mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene _A ^{M#}	6.80	7.07	-	<0.03 ^U	-	<0.03	0.19	mg/kg	0.03	A-T-019s
Naphthalene _A ^{M#}	0.88	1.41	-	<0.03 ^U	-	<0.03	0.04	mg/kg	0.03	A-T-019s
Phenanthrene _A ^{M#}	23.1	24.8	-	<0.03 ^U	-	<0.03	0.46	mg/kg	0.03	A-T-019s
Pyrene _A ^{M#}	26.9	30.7	-	<0.07 ^U	-	<0.07	0.67	mg/kg	0.07	A-T-019s
Total PAH-16MS _A	169	188	-	<0.08 ^U	-	<0.08	4.10	mg/kg	0.01	A-T-019s

Envirolab Job Number: 23/08942

Client Project Name: Manchester Communication Academy

Client Project Ref: 11258G

Lab Sample ID	23/08942/8	23/08942/9	23/08942/11	23/08942/12	23/08942/13	23/08942/14	23/08942/15	Units	Limit of Detection	Method ref
Client Sample No	3	2	3	1	2	1	2			
Client Sample ID	WS04	WS05	WS06	WS07	WS07	WS08	WS08			
Depth to Top	1.00	0.50	1.40	0.15	0.60	0.20	1.00			
Depth To Bottom	1.20	0.60	1.60	0.30	0.70	0.40	1.20			
Date Sampled	31-Aug-23	01-Sep-23	01-Sep-23	01-Sep-23	01-Sep-23	01-Sep-23	01-Sep-23			
Sample Type	SOIL - ES	SOIL - ES	SOIL - ES	SOLID	SOIL - ES	SOIL - ES	SOIL - ES			
Sample Matrix Code	5AB	6A	6A	7	5A	7A	2A			
PAH 16MS (leachable)										
Acenaphthene (leachable) _A	-	-	10.90	-	0.03	-	-	µg/l	0.02	A-T-019w
Acenaphthylene (leachable) _A	-	-	1.07	-	<0.02	-	-	µg/l	0.02	A-T-019w
Anthracene (leachable) _A	-	-	0.36	-	0.03	-	-	µg/l	0.02	A-T-019w
Benzo(a)anthracene (leachable) _A	-	-	0.06	-	0.13	-	-	µg/l	0.02	A-T-019w
Benzo(a)pyrene (leachable) _A	-	-	0.03	-	0.17	-	-	µg/l	0.02	A-T-019w
Benzo(b)fluoranthene (leachable) _A	-	-	0.03	-	0.20	-	-	µg/l	0.02	A-T-019w
Benzo(ghi)perylene (leachable) _A	-	-	<0.02	-	0.12	-	-	µg/l	0.02	A-T-019w
Benzo(k)fluoranthene (leachable) _A	-	-	<0.02	-	0.08	-	-	µg/l	0.02	A-T-019w
Chrysene (leachable) _A	-	-	0.06	-	0.16	-	-	µg/l	0.02	A-T-019w
Dibenzo(ah)anthracene (leachable) _A	-	-	<0.02	-	0.03	-	-	µg/l	0.02	A-T-019w
Fluoranthene (leachable) _A	-	-	0.72	-	0.28	-	-	µg/l	0.02	A-T-019w
Fluorene (leachable) _A	-	-	4.14	-	<0.02	-	-	µg/l	0.02	A-T-019w
Indeno(123-cd)pyrene (leachable) _A	-	-	<0.02	-	0.13	-	-	µg/l	0.02	A-T-019w
Naphthalene (leachable) _A	-	-	1.64	-	0.06	-	-	µg/l	0.02	A-T-019w
Phenanthrene (leachable) _A	-	-	0.12	-	0.09	-	-	µg/l	0.02	A-T-019w
Pyrene (leachable) _A	-	-	0.52	-	0.31	-	-	µg/l	0.02	A-T-019w
Total PAH 16MS (leachable) _A	-	-	19.6	-	1.82	-	-	µg/l	0.02	A-T-019w

Envirolab Job Number: 23/08942

Client Project Name: Manchester Communication Academy

Client Project Ref: 11258G

Lab Sample ID	23/08942/16	23/08942/17	23/08942/18	23/08942/19	23/08942/20			Units	Limit of Detection	Method ref
Client Sample No	1	2	3	1	2					
Client Sample ID	WS09	WS09	WS09	WS10	WS10					
Depth to Top	0.25	0.40	2.00	0.15	1.00					
Depth To Bottom	0.40	0.60	2.20	0.30	1.20					
Date Sampled	01-Sep-23	01-Sep-23	01-Sep-23	01-Sep-23	01-Sep-23					
Sample Type	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES					
Sample Matrix Code	7A	7A	2AE	6A	6AB					
% Stones >10mm _A	13.7	28.1	<0.1	2.9	12.0			% w/w	0.1	A-T-044
pH _D ^{M#}	-	9.03	7.66	-	6.42			pH	0.01	A-T-031s
Sulphate (water sol 2:1) _D ^{M#}	-	<0.01	1.02	-	1.36			g/l	0.01	A-T-026s
Sulphate (acid soluble) _D ^{M#}	-	<200	4100	-	7200			mg/kg	200	A-T-028s
Sulphur (total) _D	-	2600	12100	-	10700			mg/kg	50	A-T-024s
Cyanide (total) _A ^{M#}	-	<1	<1	-	2			mg/kg	1	A-T-042sTCN
Phenols - Total by HPLC _A	-	<0.2	<0.2	-	<0.2			mg/kg	0.2	A-T-050s
Organic Matter _D ^{M#}	-	9.2	35.0	-	45.1			% w/w	0.1	A-T-032s
Arsenic _D ^{M#}	-	95	3	-	90			mg/kg	1	A-T-024s
Boron (water soluble) _D ^{M#}	-	<1.0	2.6	-	2.0			mg/kg	1	A-T-027s
Cadmium _D ^{M#}	-	1.4	3.2	-	1.8			mg/kg	0.5	A-T-024s
Copper _D ^{M#}	-	331	33	-	295			mg/kg	1	A-T-024s
Chromium (hexavalent) _D	-	<1	<1	-	<1			mg/kg	1	A-T-040s
Lead _D ^{M#}	-	545	49	-	1240			mg/kg	1	A-T-024s
Mercury _D	-	3.08	3.87	-	4.29			mg/kg	0.17	A-T-024s
Nickel _D ^{M#}	-	53	17	-	74			mg/kg	1	A-T-024s
Selenium _D ^{M#}	-	1	1	-	<1			mg/kg	1	A-T-024s
Vanadium _D ^{M#}	-	66	13	-	65			mg/kg	1	A-T-024s
Zinc _D ^{M#}	-	281	107	-	224			mg/kg	5	A-T-024s
Leachate Prep NRA (10:1) _A	-	-	-	*	-					A-T-001
pH (leachable) _A	-	-	-	7.98	-			pH	0.01	A-T-031w
Sulphate (leachable) _A	-	-	-	37.97	-			mg/l	1	A-T-026w
Cyanide (total) (leachable) _A	-	-	-	0.020	-			mg/l	0.005	A-T-042wTCN
Phenols (total by HPLC) (leachable) _A	-	-	-	<0.01	-			mg/l	0.01	A-T-050w
Arsenic (leachable) _A	-	-	-	3	-			µg/l	1	A-T-025w
Boron (leachable) _A	-	-	-	32	-			µg/l	10	A-T-025w
Cadmium (leachable) _A	-	-	-	<1	-			µg/l	1	A-T-025w
Copper (leachable) _A	-	-	-	<4	-			µg/l	4	A-T-025w
Chromium (hexavalent) (leachable) _A	-	-	-	<0.10	-			mg/l	0.05	A-T-040w
Lead (leachable) _A	-	-	-	<1	-			µg/l	1	A-T-025w
Mercury (leachable) _A	-	-	-	<0.1	-			µg/l	0.1	A-T-025w
Nickel (leachable) _A	-	-	-	<2	-			µg/l	2	A-T-025w
Selenium (leachable) _A	-	-	-	<1	-			µg/l	1	A-T-025w

Envirolab Job Number: 23/08942

Client Project Name: Manchester Communication Academy

Client Project Ref: 11258G

Lab Sample ID	23/08942/16	23/08942/17	23/08942/18	23/08942/19	23/08942/20			Units	Limit of Detection	Method ref
Client Sample No	1	2	3	1	2					
Client Sample ID	WS09	WS09	WS09	WS10	WS10					
Depth to Top	0.25	0.40	2.00	0.15	1.00					
Depth To Bottom	0.40	0.60	2.20	0.30	1.20					
Date Sampled	01-Sep-23	01-Sep-23	01-Sep-23	01-Sep-23	01-Sep-23					
Sample Type	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES					
Sample Matrix Code	7A	7A	2AE	6A	6AB					
Sulphur, Total (leachable) _A	-	-	-	13	-			mg/l	1	A-T-072w
Vanadium (leachable) _A	-	-	-	<1	-			µg/l	1	A-T-025w
Zinc (leachable) _A	-	-	-	2	-			µg/l	2	A-T-025w

Envirolab Job Number: 23/08942

Client Project Name: Manchester Communication Academy

Client Project Ref: 11258G

Lab Sample ID	23/08942/16	23/08942/17	23/08942/18	23/08942/19	23/08942/20			Units	Limit of Detection	Method ref
Client Sample No	1	2	3	1	2					
Client Sample ID	WS09	WS09	WS09	WS10	WS10					
Depth to Top	0.25	0.40	2.00	0.15	1.00					
Depth To Bottom	0.40	0.60	2.20	0.30	1.20					
Date Sampled	01-Sep-23	01-Sep-23	01-Sep-23	01-Sep-23	01-Sep-23					
Sample Type	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES					
Sample Matrix Code	7A	7A	2AE	6A	6AB					
Asbestos in Soil (inc. matrix)										
Asbestos in soil [#]	-	NAD	NAD	-	NAD					A-T-045
Asbestos Matrix (visual) _D	-	-	-	-	-					A-T-045
Asbestos Matrix (microscope) _D	-	-	-	-	-					A-T-045
Asbestos ACM - Suitable for Water Absorption Test? _D	-	N/A	N/A	-	N/A					A-T-045

Envirolab Job Number: 23/08942

Client Project Name: Manchester Communication Academy

Client Project Ref: 11258G

Lab Sample ID	23/08942/16	23/08942/17	23/08942/18	23/08942/19	23/08942/20			Units	Limit of Detection	Method ref
Client Sample No	1	2	3	1	2					
Client Sample ID	WS09	WS09	WS09	WS10	WS10					
Depth to Top	0.25	0.40	2.00	0.15	1.00					
Depth To Bottom	0.40	0.60	2.20	0.30	1.20					
Date Sampled	01-Sep-23	01-Sep-23	01-Sep-23	01-Sep-23	01-Sep-23					
Sample Type	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES					
Sample Matrix Code	7A	7A	2AE	6A	6AB					
PAH-16MS										
Acenaphthene _A ^{M#}	-	<0.01	0.21	-	1.45			mg/kg	0.01	A-T-019s
Acenaphthylene _A ^{M#}	-	<0.01	0.04	-	0.73			mg/kg	0.01	A-T-019s
Anthracene _A ^{M#}	-	<0.02	0.14	-	4.13			mg/kg	0.02	A-T-019s
Benzo(a)anthracene _A ^{M#}	-	0.05	0.44	-	10.5			mg/kg	0.04	A-T-019s
Benzo(a)pyrene _A ^{M#}	-	<0.40	0.34	-	7.13			mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene _A ^{M#}	-	<0.50	0.43	-	9.40			mg/kg	0.05	A-T-019s
Benzo(ghi)perylene _A ^{M#}	-	<0.50	0.20	-	4.14			mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene _A ^{M#}	-	<0.70	0.15	-	4.02			mg/kg	0.07	A-T-019s
Chrysene _A ^{M#}	-	<0.60	0.53	-	10.4			mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene _A	-	<0.40	0.05	-	0.76			mg/kg	0.04	A-T-019s
Fluoranthene _A ^{M#}	-	0.12	0.88	-	20.7			mg/kg	0.08	A-T-019s
Fluorene _A ^{M#}	-	<0.01	0.15	-	2.18			mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene _A ^{M#}	-	<0.30	0.20	-	4.38			mg/kg	0.03	A-T-019s
Naphthalene _A ^{M#}	-	<0.03	0.35	-	1.42			mg/kg	0.03	A-T-019s
Phenanthrene _A ^{M#}	-	0.05	0.86	-	16.8			mg/kg	0.03	A-T-019s
Pyrene _A ^{M#}	-	0.14	0.92	-	20.1			mg/kg	0.07	A-T-019s
Total PAH-16MS _A	-	<0.70	5.89	-	118			mg/kg	0.01	A-T-019s

Envirolab Job Number: 23/08942

Client Project Name: Manchester Communication Academy

Client Project Ref: 11258G

Lab Sample ID	23/08942/16	23/08942/17	23/08942/18	23/08942/19	23/08942/20			Units	Limit of Detection	Method ref
Client Sample No	1	2	3	1	2					
Client Sample ID	WS09	WS09	WS09	WS10	WS10					
Depth to Top	0.25	0.40	2.00	0.15	1.00					
Depth To Bottom	0.40	0.60	2.20	0.30	1.20					
Date Sampled	01-Sep-23	01-Sep-23	01-Sep-23	01-Sep-23	01-Sep-23					
Sample Type	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES					
Sample Matrix Code	7A	7A	2AE	6A	6AB					
PAH 16MS (leachable)										
Acenaphthene (leachable) _A	-	-	-	<0.02	-			µg/l	0.02	A-T-019w
Acenaphthylene (leachable) _A	-	-	-	<0.02	-			µg/l	0.02	A-T-019w
Anthracene (leachable) _A	-	-	-	<0.02	-			µg/l	0.02	A-T-019w
Benzo(a)anthracene (leachable) _A	-	-	-	<0.02	-			µg/l	0.02	A-T-019w
Benzo(a)pyrene (leachable) _A	-	-	-	<0.02	-			µg/l	0.02	A-T-019w
Benzo(b)fluoranthene (leachable) _A	-	-	-	<0.02	-			µg/l	0.02	A-T-019w
Benzo(ghi)perylene (leachable) _A	-	-	-	<0.02	-			µg/l	0.02	A-T-019w
Benzo(k)fluoranthene (leachable) _A	-	-	-	<0.02	-			µg/l	0.02	A-T-019w
Chrysene (leachable) _A	-	-	-	<0.02	-			µg/l	0.02	A-T-019w
Dibenzo(ah)anthracene (leachable) _A	-	-	-	<0.02	-			µg/l	0.02	A-T-019w
Fluoranthene (leachable) _A	-	-	-	<0.02	-			µg/l	0.02	A-T-019w
Fluorene (leachable) _A	-	-	-	<0.02	-			µg/l	0.02	A-T-019w
Indeno(123-cd)pyrene (leachable) _A	-	-	-	<0.02	-			µg/l	0.02	A-T-019w
Naphthalene (leachable) _A	-	-	-	0.07	-			µg/l	0.02	A-T-019w
Phenanthrene (leachable) _A	-	-	-	<0.02	-			µg/l	0.02	A-T-019w
Pyrene (leachable) _A	-	-	-	<0.02	-			µg/l	0.02	A-T-019w
Total PAH 16MS (leachable) _A	-	-	-	0.07	-			µg/l	0.02	A-T-019w

Envirolab Job Number: 23/08942

Client Project Name: Manchester Communication Academy

Client Project Ref: 11258G

Lab Sample ID	23/08942/16	23/08942/17	23/08942/18	23/08942/19	23/08942/20			Units	Limit of Detection	Method ref
Client Sample No	1	2	3	1	2					
Client Sample ID	WS09	WS09	WS09	WS10	WS10					
Depth to Top	0.25	0.40	2.00	0.15	1.00					
Depth To Bottom	0.40	0.60	2.20	0.30	1.20					
Date Sampled	01-Sep-23	01-Sep-23	01-Sep-23	01-Sep-23	01-Sep-23					
Sample Type	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES					
Sample Matrix Code	7A	7A	2AE	6A	6AB					
TPH CWG with Clean Up										
Ali >C5-C6 _A	<0.01	-	-	<0.01	-			mg/kg	0.01	A-T-022s
Ali >C6-C8 _A	<0.01	-	-	<0.01	-			mg/kg	0.01	A-T-022s
Ali >C8-C10 _A	<1	-	-	<1	-			mg/kg	1	A-T-055s
Ali >C10-C12 _A ^{M#}	<1	-	-	1	-			mg/kg	1	A-T-055s
Ali >C12-C16 _A ^{M#}	<1	-	-	6	-			mg/kg	1	A-T-055s
Ali >C16-C21 _A ^{M#}	<1	-	-	8	-			mg/kg	1	A-T-055s
Ali >C21-C35 _A ^{M#}	81	-	-	53	-			mg/kg	1	A-T-055s
Total Aliphatics _A	82	-	-	68	-			mg/kg	1	Calc-As Recd
Aro >C5-C7 _A [#]	<0.01	-	-	<0.01	-			mg/kg	0.01	A-T-022s
Aro >C7-C8 _A [#]	<0.01	-	-	<0.01	-			mg/kg	0.01	A-T-022s
Aro >C8-C10 _A	<2	-	-	<2	-			mg/kg	1	A-T-055s
Aro >C10-C12 _A	<1	-	-	3	-			mg/kg	1	A-T-055s
Aro >C12-C16 _A ^{M#}	<1	-	-	35	-			mg/kg	1	A-T-055s
Aro >C16-C21 _A ^{M#}	3	-	-	156	-			mg/kg	1	A-T-055s
Aro >C21-C35 _A ^{M#}	31	-	-	447	-			mg/kg	1	A-T-055s
Total Aromatics _A	34	-	-	641	-			mg/kg	1	Calc-As Recd
TPH (Ali & Aro >C5-C35) _A	116	-	-	709	-			mg/kg	1	Calc-As Recd
BTEX - Benzene _A [#]	<0.01	-	-	<0.01	-			mg/kg	0.01	A-T-022s
BTEX - Toluene _A [#]	<0.01	-	-	<0.01	-			mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene _A [#]	<0.01	-	-	<0.01	-			mg/kg	0.01	A-T-022s
BTEX - m & p Xylene _A [#]	<0.01	-	-	<0.01	-			mg/kg	0.01	A-T-022s
BTEX - o Xylene _A [#]	<0.01	-	-	<0.01	-			mg/kg	0.01	A-T-022s
MTBE _A [#]	<0.01	-	-	<0.01	-			mg/kg	0.01	A-T-022s

Report Notes

General

This report shall not be reproduced, except in full, without written approval from Envirolab.
 The results reported herein relate only to the material supplied to the laboratory.
 The residue of any samples contained within this report, and any received within the same delivery, will be disposed of **six weeks** after the initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of **six months** after the initial Asbestos testing is completed.
 Analytical results reflect the quality of the sample at the time of analysis only.
 Opinions and Interpretations expressed are outside our scope of accreditation.
 The client Sample No, Client Sample ID, Depth to top, Depth to Bottom and Date Sampled are all provided by the client.
 A deviating sample report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.

Key

Superscript "#"	Accredited to ISO 17025
Superscript "M"	Accredited to MCertS
Superscript "U"	Individual result not accredited
None of the above symbols	Analysis unaccredited
Subscript "A"	Analysis performed on as-received Sample
Subscript "D"	Analysis performed on the dried sample, crushed to pass 2mm sieve.
Subscript "A"	Analysis has dependant options against results. Details appear in the comments of your Sample receipt
IS	Insufficient Sample for analysis
US	Unsuitable Sample for analysis
NDP	No Determination Possible
NAD	No Asbestos Detected
N/A	Not applicable

Asbestos

Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
 Stones etc. are not removed from the sample prior to analysis
 Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing, and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Assigned Matrix Codes

1	SAND	6	CLAY/LOAM	A	Contains Stones
2	LOAM	7	OTHER	B	Contains Construction Rubble
3	CLAY	8	Asbestos Bulk (Only Asbestos ID accredited)	C	Contains visible hydrocarbons
4	LOAM/SAND	9	Incinerator Ash (some Metals accredited)	D	Contains glass / metal
5	SAND/CLAY			E	Contains roots / twigs

Note: 7,8,9 matrices are not covered by our ISO 17025 or MCertS accreditation, unless stated above.

Soil Chemical Analysis:

All results are reported as dry weight (<40°C).
 For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
 For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any "A" subscripts
 All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH by method A-T-007:

For waters, free and visible oils are excluded from the sample used for analysis, so the reported result represents the dissolved phase only.
 Results "with Clean up" indicates samples cleaned up with Silica during extraction.

EPH CWG (method A-T-055) from TPH CWG:

EPH CWG results have humics mathematically subtracted through instrument calculation.
 Where these humic substances have been identified in any IDs from "TPH CWG with clean up" please note that the concentration is **NOT** included in the quantified results but present in the ID for information.

Electrical Conductivity of water by method A-T-037:

Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the accreditation range and as such are unaccredited.

Please contact your client manager if you require any further information.

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: WML Consulting Ltd, Third Floor South, Metropolitan House, Station Rd,
Cheadle Hulme, Cheshire, SK8 7AZ

Project: Manchester Communication Academy

Clients Project No: 11258G

Project No: 23/08942

Date Received: 07/09/2023 (pm)

Cool Box Temperatures (°C): 20.8 & 21.7

NO DEVIATIONS IDENTIFIED

If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3, ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	23/08942/1	23/08942/2	23/08942/3	23/08942/4	23/08942/5	23/08942/6	23/08942/7	23/08942/8	23/08942/9	23/08942/11	23/08942/12	23/08942/13
Client Sample No	1	4	5	1	3	3	1	3	2	3	1	2
Client Sample ID/Depth	WS01 0.30-0.40m	WS01 1.90-2.10m	WS01 3.60-3.80m	WS02 0.20-0.40m	WS02 1.50-1.60m	WS03 1.50-1.70m	WS04 0.40m	WS04 1.00-1.20m	WS05 0.50-0.60m	WS06 1.40-1.60m	WS07 0.15-0.30m	WS07 0.60-0.70m
Date Sampled	31/08/23	31/08/23	31/08/23	31/08/23	31/08/23	31/08/23	31/08/23	31/08/23	01/09/23	01/09/23	01/09/23	01/09/23
A-T-019s	12/09/2023	21/09/2023		21/09/2023	12/09/2023			21/09/2023	21/09/2023		12/09/2023	
A-T-019w				19/09/2023		19/09/2023				19/09/2023		19/09/2023
A-T-022s		12/09/2023					12/09/2023					
A-T-024s	20/09/2023	20/09/2023	20/09/2023	20/09/2023	20/09/2023			20/09/2023	22/09/2023		20/09/2023	
A-T-025w				19/09/2023		19/09/2023				19/09/2023		19/09/2023
A-T-026s	18/09/2023	18/09/2023	18/09/2023	18/09/2023	18/09/2023			18/09/2023	18/09/2023		18/09/2023	
A-T-026w				22/09/2023		14/09/2023				22/09/2023		14/09/2023
A-T-027s	15/09/2023	15/09/2023		15/09/2023	15/09/2023			15/09/2023	15/09/2023		15/09/2023	
A-T-028s	15/09/2023	15/09/2023		15/09/2023	15/09/2023			15/09/2023	21/09/2023		15/09/2023	
A-T-031s	18/09/2023	18/09/2023	18/09/2023	18/09/2023	18/09/2023			18/09/2023	18/09/2023		18/09/2023	
A-T-031w				13/09/2023		13/09/2023				13/09/2023		13/09/2023
A-T-032s	15/09/2023	15/09/2023		18/09/2023	15/09/2023			18/09/2023	18/09/2023		15/09/2023	
A-T-040s	18/09/2023	18/09/2023		18/09/2023	18/09/2023			18/09/2023	18/09/2023		18/09/2023	
A-T-040w				14/09/2023		14/09/2023				14/09/2023		14/09/2023
A-T-042sTCN	12/09/2023	12/09/2023		12/09/2023	12/09/2023			12/09/2023	12/09/2023		12/09/2023	
A-T-042wTCN				14/09/2023		14/09/2023				14/09/2023		14/09/2023
A-T-044	18/09/2023	18/09/2023	18/09/2023	18/09/2023	18/09/2023	18/09/2023	18/09/2023	18/09/2023	18/09/2023	18/09/2023	18/09/2023	18/09/2023
A-T-045	13/09/2023	13/09/2023		13/09/2023	13/09/2023			13/09/2023	13/09/2023		13/09/2023	
A-T-050s	12/09/2023	12/09/2023		12/09/2023	12/09/2023			12/09/2023	12/09/2023		12/09/2023	
A-T-050w				15/09/2023		15/09/2023				15/09/2023		15/09/2023
A-T-054				19/09/2023				19/09/2023	19/09/2023			
A-T-055s		12/09/2023					12/09/2023					
A-T-072w				21/09/2023		21/09/2023				21/09/2023		21/09/2023
Calc-As Recd		12/09/2023					12/09/2023					

Lab Sample ID	23/08942/14	23/08942/15	23/08942/16	23/08942/17	23/08942/18	23/08942/19	23/08942/20
Client Sample No	1	2	1	2	3	1	2
Client Sample ID/Depth	WS08 0.20-0.40m	WS08 1.00-1.20m	WS09 0.25-0.40m	WS09 0.40-0.60m	WS09 2.00-2.20m	WS10 0.15-0.30m	WS10 1.00-1.20m
Date Sampled	01/09/23	01/09/23	01/09/23	01/09/23	01/09/23	01/09/23	01/09/23
A-T-019s	12/09/2023	12/09/2023		21/09/2023	12/09/2023		21/09/2023
A-T-019w						19/09/2023	
A-T-022s			12/09/2023			12/09/2023	
A-T-024s	20/09/2023	22/09/2023		20/09/2023	20/09/2023		20/09/2023
A-T-025w						19/09/2023	
A-T-026s	18/09/2023	18/09/2023		18/09/2023	18/09/2023		18/09/2023
A-T-026w						22/09/2023	
A-T-027s	15/09/2023	15/09/2023		15/09/2023	15/09/2023		15/09/2023
A-T-028s	15/09/2023	21/09/2023		15/09/2023	21/09/2023		15/09/2023
A-T-031s	18/09/2023	18/09/2023		18/09/2023	18/09/2023		18/09/2023
A-T-031w						13/09/2023	
A-T-032s	15/09/2023	15/09/2023		15/09/2023	15/09/2023		15/09/2023
A-T-040s	18/09/2023	18/09/2023		18/09/2023	18/09/2023		18/09/2023
A-T-040w						14/09/2023	
A-T-042sTCN	12/09/2023	12/09/2023		12/09/2023	12/09/2023		12/09/2023
A-T-042wTCN						14/09/2023	
A-T-044	18/09/2023	18/09/2023	18/09/2023	18/09/2023	18/09/2023	18/09/2023	18/09/2023
A-T-045	13/09/2023	13/09/2023		13/09/2023	13/09/2023		13/09/2023
A-T-050s	12/09/2023	12/09/2023		12/09/2023	12/09/2023		12/09/2023
A-T-050w						15/09/2023	
A-T-054							
A-T-055s			12/09/2023			12/09/2023	
A-T-072w						21/09/2023	
Calc-As Recd			12/09/2023			12/09/2023	

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 23/08971
Issue Number: 1

Date: 20 September, 2023

Client: WML Consulting Ltd
Third Floor South
Metropolitan House
Station Rd
Cheadle Hulme
Cheshire
SK8 7AZ

Project Manager: Thomas Sheen
Project Name: Manchester Communication Academy
Project Ref: 11258G
Order No: 11258G
Date Samples Received: 06/09/23
Date Instructions Received: 08/09/23
Date Analysis Completed: 20/09/23

Approved by:



Richard Wong
Client Manager

Envirolab Job Number: 23/08971

Client Project Name: Manchester Communication Academy

Client Project Ref: 11258G

Lab Sample ID	23/08971/1	23/08971/2						Units	Limit of Detection	Method ref
Client Sample No	5	4								
Client Sample ID	WS04	WS10								
Depth to Top	5.00	3.50								
Depth To Bottom	5.10	3.70								
Date Sampled	31-Aug-23	01-Sep-23								
Sample Type	SOIL - ES	SOIL - ES								
Sample Matrix Code	3A	3A								
% Stones >10mm _A	<0.1	<0.1						% w/w	0.1	A-T-044
pH _D ^{M#}	8.56	7.88						pH	0.01	A-T-031s
Sulphate (water sol 2:1) _D ^{M#}	0.05	0.09						g/l	0.01	A-T-026s
Sulphur (total) _D	149	127						mg/kg	50	A-T-024s

Report Notes

General

This report shall not be reproduced, except in full, without written approval from Envirolab.
 The results reported herein relate only to the material supplied to the laboratory.
 The residue of any samples contained within this report, and any received within the same delivery, will be disposed of **six weeks** after the initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of **six months** after the initial Asbestos testing is completed.
 Analytical results reflect the quality of the sample at the time of analysis only.
 Opinions and Interpretations expressed are outside our scope of accreditation.
 The client Sample No, Client Sample ID, Depth to top, Depth to Bottom and Date Sampled are all provided by the client.
 A deviating sample report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.

Key

Superscript "#"	Accredited to ISO 17025
Superscript "M"	Accredited to MCertS
Superscript "U"	Individual result not accredited
None of the above symbols	Analysis unaccredited
Subscript "A"	Analysis performed on as-received Sample
Subscript "D"	Analysis performed on the dried sample, crushed to pass 2mm sieve.
Subscript "A"	Analysis has dependant options against results. Details appear in the comments of your Sample receipt
IS	Insufficient Sample for analysis
US	Unsuitable Sample for analysis
NDP	No Determination Possible
NAD	No Asbestos Detected
N/A	Not applicable

Asbestos

Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
 Stones etc. are not removed from the sample prior to analysis
 Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing, and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Assigned Matrix Codes

1	SAND	6	CLAY/LOAM	A	Contains Stones
2	LOAM	7	OTHER	B	Contains Construction Rubble
3	CLAY	8	Asbestos Bulk (Only Asbestos ID accredited)	C	Contains visible hydrocarbons
4	LOAM/SAND	9	Incinerator Ash (some Metals accredited)	D	Contains glass / metal
5	SAND/CLAY			E	Contains roots / twigs

Note: 7,8,9 matrices are not covered by our ISO 17025 or MCertS accreditation, unless stated above.

Soil Chemical Analysis:

All results are reported as dry weight (<40°C).
 For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
 For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any "A" subscripts
 All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH by method A-T-007:

For waters, free and visible oils are excluded from the sample used for analysis, so the reported result represents the dissolved phase only.
 Results "with Clean up" indicates samples cleaned up with Silica during extraction.

EPH CWG (method A-T-055) from TPH CWG:

EPH CWG results have humics mathematically subtracted through instrument calculation.
 Where these humic substances have been identified in any IDs from "TPH CWG with clean up" please note that the concentration is **NOT** included in the quantified results but present in the ID for information.

Electrical Conductivity of water by method A-T-037:

Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the accreditation range and as such are unaccredited.

Please contact your client manager if you require any further information.

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: WML Consulting Ltd, Third Floor South, Metropolitan House, Station Rd,
Cheadle Hulme, Cheshire, SK8 7AZ

Project: Manchester Communication Academy

Clients Project No: 11258G

Project No: 23/08971

Date Received: 08/09/2023 (am)

Cool Box Temperatures (°C): 19.8

Lab Sample ID	23/08971/1	23/08971/2
Client Sample No	5	4
Client Sample ID/Depth	WS04 5.00-5.10m	WS10 3.50-3.70m
Date Sampled	31/08/23	01/09/23
Deviation Code		
D (no glass)	✓	✓

Key

D (no glass) Glass container not provided for extractable organics analysis

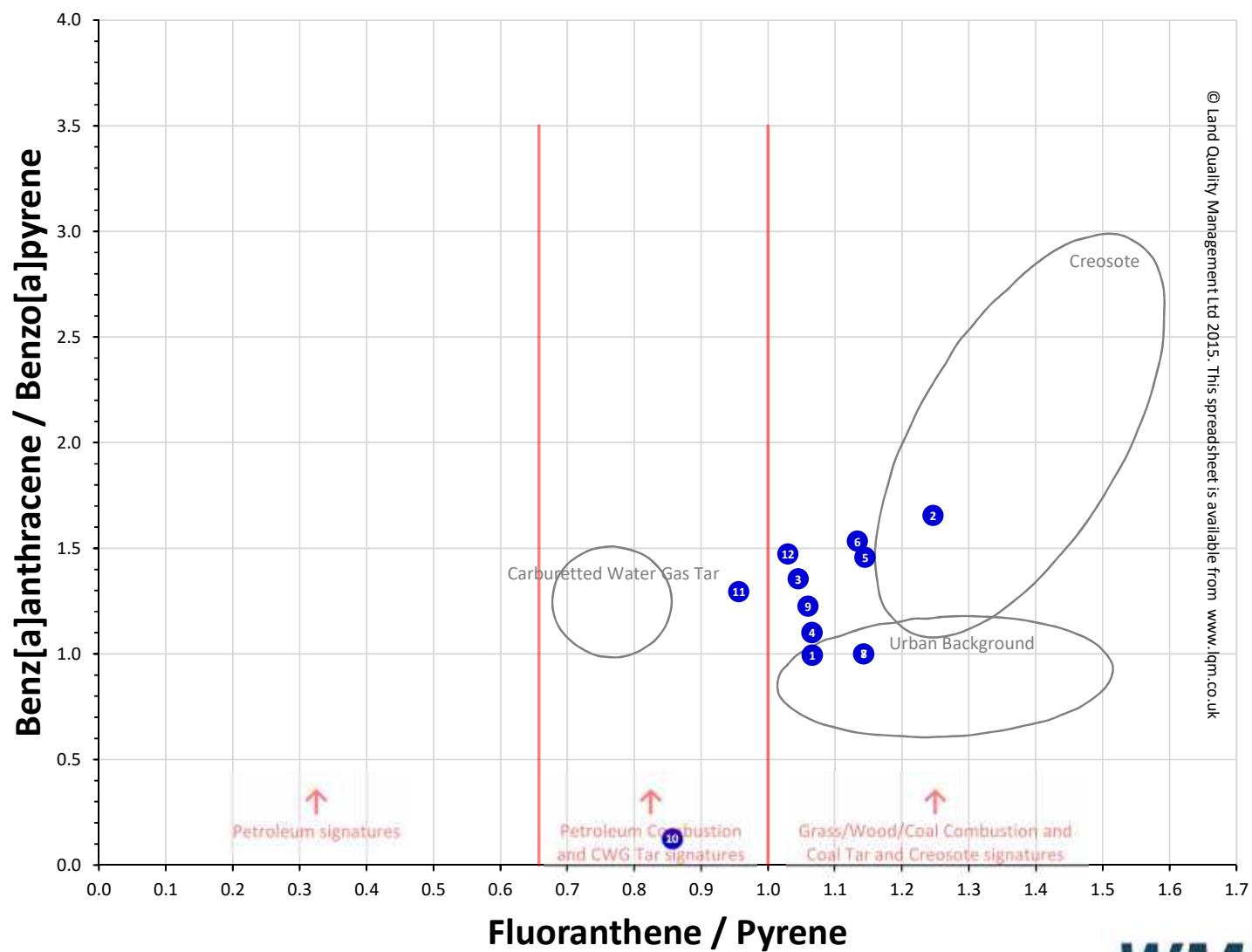
If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3, ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	23/08971/1	23/08971/2
Client Sample No	5	4
Client Sample ID/Depth	WS04 5.00-5.10m	WS10 3.50-3.70m
Date Sampled	31/08/23	01/09/23
A-T-024s	20/09/2023	20/09/2023
A-T-026s	18/09/2023	18/09/2023
A-T-031s	18/09/2023	20/09/2023
A-T-044	18/09/2023	18/09/2023

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report



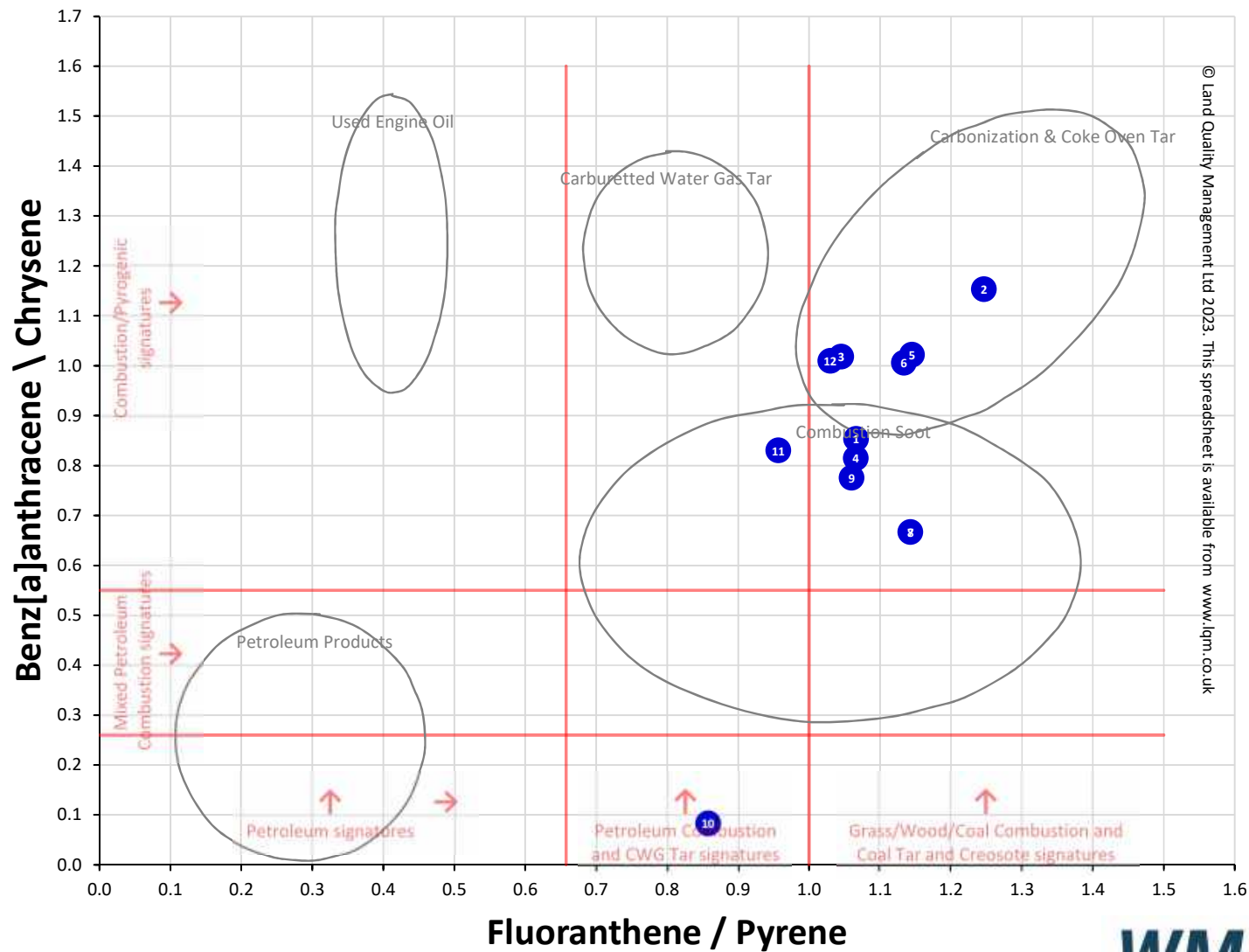
© Land Quality Management Ltd 2015. This spreadsheet is available from www.lqm.co.uk

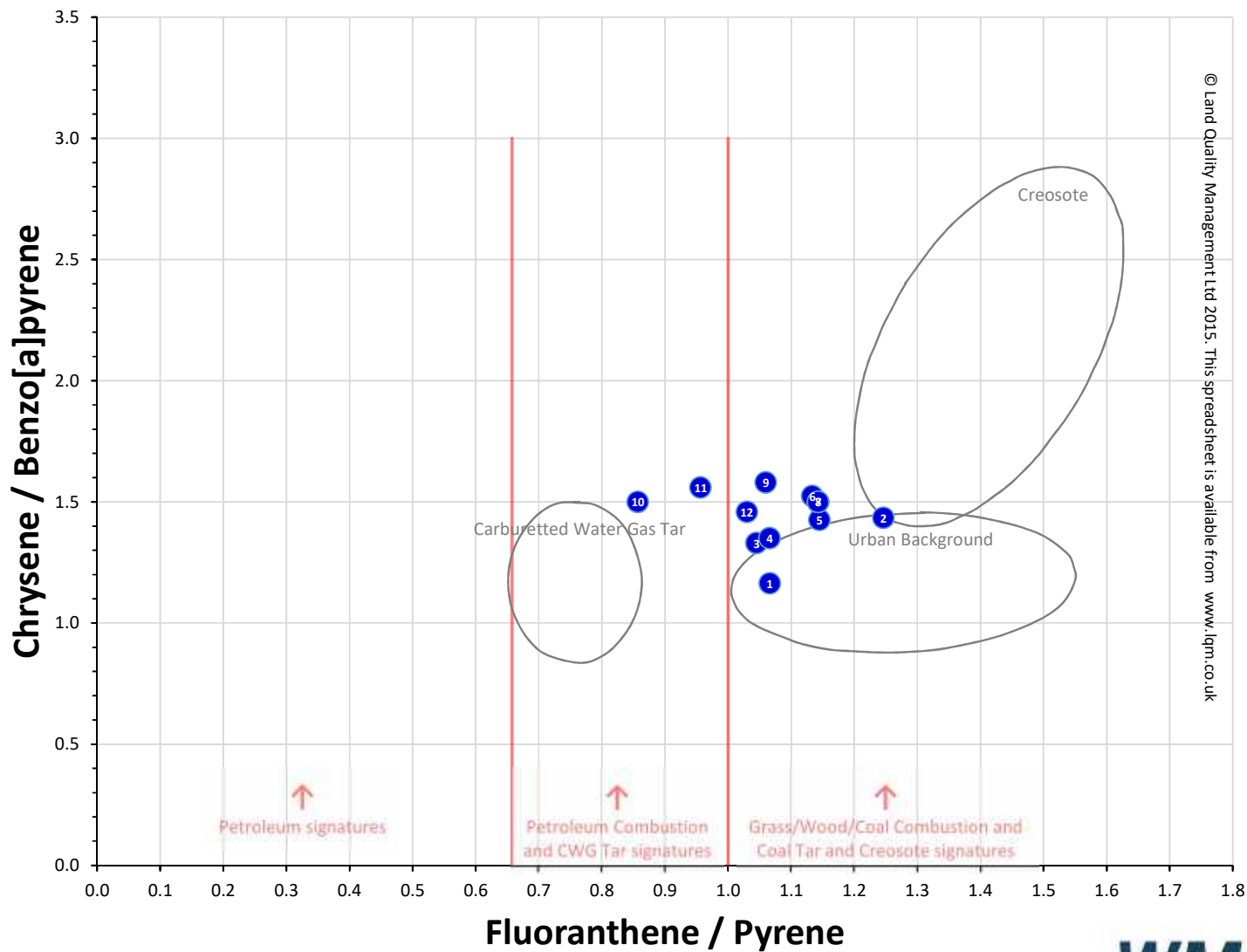
Key:

● Samples collected on site

Based on Figure 7 in Costa & Sauer (2005). The potential sources shown are indicative only.

WMLCONSULTING





Key:
● Samples collected on site

Based on Figure 8 in Costa & Sauer (2005). The potential sources shown are indicative only.

APPENDIX 06

Ground Gas Monitoring Data

Gas & Groundwater Monitoring Record Sheet



Project Name:- Manchester Communication Academy
Project No:- 11258G
Client:- Lancaster Maloney Martin

Date:- 13/09/2023
Start Time:- 11:00
End Time:- 13:30
Ground Conditions:- Dry
Weather Conditions:- Sunny, dry

Atmospheric Pressure
Start:- 1017
End:- 1016
Trend:- Falling

Instrument:- Gas Data GFM436

Operator:- T Sheen

Hole ID	Peak Flow l/hr	Steady Flow l/hr	DP	CH4			CO2			Min O2 %	Peak H2S ppm	Peak CO ppm	Hexane %	Water Level mbgl	Base of Hole mbgl
				Peak %	Steady %	Qhg l/hr	Peak %	Steady %	Qhg l/hr						
WS02	<0.1	<0.1	0	0.0	0.0	0.0000	2.0	1.9	0.0019	16.7	0	0	0.000	3.25	4.93
WS04	<0.1	<0.1	0	0.0	0.0	0.0000	0.0	0.0	0.0000	18.9	0	0	0.000	0.92	4.71
WS08	<0.1	<0.1	0	0.0	0.0	0.0000	14.1	13.9	0.0139	3.6	0	0	0.000	3.17	4.82
WS09	<0.1	<0.1	0	0.0	0.0	0.0000	0.1	0.1	0.0001	20.7	0	0	0.000	Dry	5.07

Additional Comments

Gas & Groundwater Monitoring Record Sheet



Project Name:- Manchester Communication Academy
Project No:- 11258G
Client:- Lancaster Maloney Martin

Date:- 27/09/2023
Start Time:- 12:00
End Time:- 13:30
Ground Conditions:- Dry
Weather Conditions:- Overcast, cool

Atmospheric Pressure
Start:- 1005
End:- 1003
Trend:- Falling

Instrument:- Gas Data GFM436

Operator:- T Sheen

Hole ID	Peak Flow l/hr	Steady Flow l/hr	DP	CH4			CO2			Min O2 %	Peak H2S ppm	Peak CO ppm	Hexane %	Water Level mbgl	Base of Hole mbgl
				Peak %	Steady %	Qhg l/hr	Peak %	Steady %	Qhg l/hr						
WS02	<0.1	<0.1	0	0.0	0.0	0.0000	2.0	1.9	0.0019	17.9	0	0	0.000	3.26	4.93
WS04	<0.1	<0.1	0	0.0	0.0	0.0000	0.0	0.0	0.0000	18.6	0	0	0.000	0.93	4.71
WS08	<0.1	<0.1	0	0.0	0.0	0.0000	13.2	13.2	0.0132	0.0	0	0	0.000	3.06	4.82
WS09	<0.1	<0.1	0	0.0	0.0	0.0000	12.6	1.0	0.0010	0.0	0	0	0.009	Dry	5.06

Additional Comments

Gas & Groundwater Monitoring Record Sheet



Project Name:- Manchester Communication Academy
Project No:- 11258G
Client:- Lancaster Maloney Martin

Date:- 11/10/2023
Start Time:- 11:40
End Time:- 13:00
Ground Conditions:- Wet
Weather Conditions:- Raining, cool

Atmospheric Pressure
Start:- 1003
End:- 1003
Trend:- Steady

Instrument:- Gas Data GFM436

Operator:- T Sheen

Hole ID	Peak Flow l/hr	Steady Flow l/hr	DP	CH4			CO2			Min O2 %	Peak H2S ppm	Peak CO ppm	Hexane %	Water Level mbgl	Base of Hole mbgl
				Peak %	Steady %	Qhg l/hr	Peak %	Steady %	Qhg l/hr						
WS02	<0.1	<0.1	0	0.0	0.0	0.0000	1.6	1.6	0.0016	18.3	0	0	0.000	3.17	4.90
WS04	<0.1	<0.1	0	0.0	0.0	0.0000	0.0	0.0	0.0000	17.9	0	0	0.000	0.86	4.72
WS08	<0.1	<0.1	0	0.0	0.0	0.0000	10.6	9.8	0.0098	7.7	0	0	0.000	3.05	4.80
WS09	<0.1	<0.1	0	0.0	0.0	0.0000	3.7	3.7	0.0037	3.0	0	0	0.000	4.72	5.07

Additional Comments

Gas & Groundwater Monitoring Record Sheet



Project Name:- Manchester Communication Academy
Project No:- 11258G
Client:- Lancaster Maloney Martin

Date:- 25/10/2023
Start Time:- 12:30
End Time:- 14:00
Ground Conditions:- Damp
Weather Conditions:- Sunny, cold

Atmospheric Pressure
Start:- 988
End:- 987
Trend:- Falling

Instrument:- Gas Data GFM436

Operator:- T Sheen

Hole ID	Peak Flow l/hr	Steady Flow l/hr	DP	CH4			CO2			Min O2 %	Peak H2S ppm	Peak CO ppm	Hexane %	Water Level mbgl	Base of Hole mbgl
				Peak %	Steady %	Qhg l/hr	Peak %	Steady %	Qhg l/hr						
WS02	<0.1	<0.1	0	0.0	0.0	0.0000	5.4	5.4	0.0054	4.2	0	0	0.004	2.72	4.89
WS04	<0.1	<0.1	0	0.0	0.0	0.0000	0.0	0.0	0.0000	19.4	0	0	0.005	0.86	4.71
WS08	<0.1	<0.1	0	0.0	0.0	0.0000	12.5	12.5	0.0125	0.1	0	0	0.015	3.02	4.79
WS09	<0.1	<0.1	0	1.8	1.8	0.0018	12.7	12.7	0.0127	0.0	0	0	0.148	Dry	5.06

Additional Comments

Gas & Groundwater Monitoring Record Sheet



Project Name:- Manchester Communication Academy
Project No:- 11258G
Client:- Lancaster Maloney Martin

Date:- 09/11/2023
Start Time:- 10:00
End Time:- 12:00
Ground Conditions:- Damp
Weather Conditions:- Cool, overcast

Atmospheric Pressure
Start:- 984
End:- 981
Trend:- Falling

Instrument:- Gas Data GFM436

Operator:- T Sheen

Hole ID	Peak Flow l/hr	Steady Flow l/hr	DP	CH4			CO2			Min O2 %	Peak H2S ppm	Peak CO ppm	Hexane %	Water Level mbgl	Base of Hole mbgl
				Peak %	Steady %	Qhg l/hr	Peak %	Steady %	Qhg l/hr						
WS02	<0.1	<0.1	0	0.0	0.0	0.0000	4.5	4.1	0.0041	2.4	0	0	0.000	2.63	4.89
WS04	25.7	<0.1	0	0.0	0.0	0.0000	0.0	0.0	0.0000	18.8	0	0	0.000	0.84	4.71
WS08	<0.1	<0.1	0	0.0	0.0	0.0000	12.4	12.4	0.0124	0.0	0	0	0.000	2.97	4.78
WS09	0.7	<0.1	3 / 0	1.7	1.7	0.0017	12.0	12.0	0.0120	0.0	0	0	0.000	Dry	5.07

Additional Comments

Gas & Groundwater Monitoring Record Sheet



Project Name:- Manchester Communication Academy
Project No:- 11258G
Client:- Lancaster Maloney Martin

Date:- 22/11/2023
Start Time:- 11:00
End Time:- 13:00
Ground Conditions:- Damp
Weather Conditions:- Overcast, cold

Atmospheric Pressure
Start:- 1016
End:- 1015
Trend:- Falling

Instrument:- Gas Data GFM436

Operator:- T Sheen

Hole ID	Peak Flow l/hr	Steady Flow l/hr	DP	CH4			CO2			Min O2 %	Peak H2S ppm	Peak CO ppm	Hexane %	Water Level mbgl	Base of Hole mbgl
				Peak %	Steady %	Qhg l/hr	Peak %	Steady %	Qhg l/hr						
WS02	<0.1	<0.1	0	0.0	0.0	0.0000	4.8	4.8	0.0048	0.7	0	0	0.000	2.68	4.89
WS04	<0.1	<0.1	0	0.0	0.0	0.0000	0.0	0.0	0.0000	19.4	0	0	0.000	0.88	4.71
WS08	<0.1	<0.1	0	0.0	0.0	0.0000	10.8	10.8	0.0108	0.0	0	0	0.000	2.97	4.77
WS09	2.6	0.4	8 / 0	0.2	0.2	0.0008	10.9	10.9	0.0436	0.0	0	0	0.045	Dry	5.06

Additional Comments

TEST DATE AND CONDITIONS			
Date		21/10/2022	
Atmospheric Pressure		980	mB
Ambient Temperature		22.1	°C
EnviroNics Serial No.		5089	

**GFM436 Final Inspection & Calibration
Check Certificate**

GAS DATA LTD

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Seven Stars Estate

Wheler Rd

Coventry

CV3 4LJ

Tel 02476303311



GAS DATA

TESTING - ANALYSIS - INFORMATION

Fax 02476307711

Customer	WML Consulting Ltd
Certificate Number	123587
Order Number	332396

Serial Number	12969
Software Version	G436-00.0027/0010

Recalibration DUE Date
21/10/23

Instrument Checks					
Keyboard	✓		Display Contrast	✓	
Pump Flow In	450	Accept > 200 cc/min	Pump Flow @ -200mB	300	Accept > 200 cc/min
Clock Set / Running	✓		Labels Fitted	✓	

Gas Checks						
Sensor	CH ₄		CO ₂		O ₂	
	Instrument Gas	True Gas Value %	Instrument Gas	True Gas Value %	Instrument Gas	True Gas Value %
	Readings %		Readings %		Readings %	
	59.7	60	40.0	40	20.9	20.9
	Accept ±3.0		Accept ±3.0		Accept ±0.5	
	5.0	5	5.0	5	6.0	6
	Accept ±0.3		Accept ±0.3		Accept ±0.3	
Zero Reading 100% N ₂	0.0	0	0.0	0	0.0	0
	Accept ±0.0		Accept ±0.0		Accept ±0.1	

Optional Gas Checks						
Applied Gas & Range		Concentration Tested @ (ppm)	Instrument Readings (ppm)			
Gas Type	Range (ppm)		Zero Reading		Instrument Gas Reading	
H ₂ S	5000	1500	0	Accept ±0.0	1500	Accept ±5.0
CO	2000	1000	0	Accept ±0.0	1000	Accept ±5.0
Hexane	2.0%	2.0%	0	Accept ±0.0	1.99	Accept ±10.0

Cross Gas Effects									
Applied Gas (ppm)		Instrument Readings (ppm)							
Gas Type	Concentration	Toxic 1:	H2S	Toxic 2:	CO	Toxic 3:	HEX		
H2S	1500	1500		0		0			
CO	1000	60		1000		0			
Hexane	2.0%	0		0		1.99			

Pressure Checks			
Atmospheric Pressure [AP] (mB)			
Current Atmospheric Pressure (mB)		Instrument Atmospheric Pressure Reading (mB)	
AP Open Ports		980	Accept ± 2.0
AP Port (Internal)	+800 mB	800	Accept ± 5.0
	+1200mb	1200	Accept ± 5.0

Flow Checks					
Borehole Flow			Differential Pressure		
Applied Reading (l/h)	Instrument Reading (l/h)		Applied Pressure (Pa)	Instrument Reading (Pa)	
-30	-30.0	Accept ± 3.0	-377	-377	Accept ± 50
-3	-3.0	Accept ± 1.0	-18	-18	Accept ± 6.0
0	0.0	Accept ± 0.0	0	0	Accept ± 0.5
3	3.0	Accept ± 0.5	17	17	Accept ± 3.0
30	30.0	Accept ± 3.0	376	376	Accept ± 50
60	59.6	Accept ± 6.0	1153	1142	Accept ± 130
90	90.0	Accept ± 9.0	2278	>>>>>	Accept ± 250

Temperature Checks		
Calibration Temperature	Instrument Temperature Reading $^{\circ}\text{C}$	
Applied Temperature $^{\circ}\text{C}$		
-10	-10.0	Accept ± 2.0
0	0.0	Accept ± 1.0
30	30.0	Accept ± 1.0
60	60.0	Accept ± 1.0
100	100.0	Accept ± 1.0

Technician:
Jack Rutland

Date Tested:
21/10/2022

The instrument identified by the serial number stated above has been tested by Gas Data personnel for calibration accuracy on the date and under the ambient conditions stated. Gas Data Ltd internal BS EN ISO9001:2015, BS EN ISO14001:2015, BS EN ISO45001:2018 compliant workshop procedures were followed to apply known calibration test gases, gas flow rates, pressures and temperatures of the values stated. The results displayed on the instrument at each stage are recorded above.

Gas Data Ltd is certified to BS EN ISO9001:2015, BS EN ISO14001:2015, BS EN ISO45001:2018.

TEST DATE AND CONDITIONS			
Date	25/10/2023		
Atmospheric Pressure	978	mB	
Ambient Temperature	21.1	°C	
Envionics Serial No.	5089		

**GFM436 Final Inspection & Calibration
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GAS DATA LTD

Unit D

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Fletchamstead Highway

Coventry

CV4 9XH

Tel 02476303311

Fax 02476307711



GAS DATA
TESTING • ANALYSIS • REPAIR

Customer	WML Consulting Ltd
Certificate Number	124639
Order Number	336065

Serial Number	12969
Software Version	G436-00.0027/0010

Recalibration DUE Date
25/10/24

Instrument Checks					
Keyboard	✓		Display Contrast	✓	
Pump Flow In	550	Accept > 200 cc/min	Pump Flow @ -200mB	350	Accept > 200 cc/min
Clock Set / Running	✓		Labels Fitted	✓	

Gas Checks						
Sensor	CH ₄		CO ₂		O ₂	
	Instrument Gas	True Gas Value %	Instrument Gas	True Gas Value %	Instrument Gas	True Gas Value %
	Readings %		Readings %		Readings %	
	60.0	60	40.0	40	20.9	20.9
	Accept ±3.0		Accept ±3.0		Accept ±0.5	
	5.0	5	5.1	5	6.0	6
	Accept ±0.3		Accept ±0.3		Accept ±0.3	
Zero Reading	0.0	0	0.0	0	0.0	0
100% N2	Accept ±0.0		Accept ±0.0		Accept ±0.1	

Optional Gas Checks						
Applied Gas & Range		Concentration Tested @ (ppm)	Instrument Readings (ppm)			
Gas Type	Range (ppm)		Zero Reading		Instrument Gas Reading	
H2S	5000	1500	0	Accept ±0.0	1500	Accept ±5.0%
CO	2000	1000	0	Accept ±0.0	1003	Accept ±5.0%
Hexane	2.0%	2.0%	0	Accept ±0.0	1.99	Accept ±10.0%

Cross Gas Effects									
Applied Gas (ppm)		Instrument Readings (ppm)							
Gas Type	Concentration	Toxic 1:	H2S	Toxic 2:	CO	Toxic 3:	HEX		
H2S	1500	1500		0		0			
CO	1000	100		1003		0			
Hexane	2.0%	0		0		1.99			

Pressure Checks			
Atmospheric Pressure [AP] (mB)			
Current Atmospheric Pressure (mB)		Instrument Atmospheric Pressure Reading (mB)	
AP Open Ports		978	Accept ± 2.0
AP Port (Internal)	+800 mB	800	Accept ± 5.0
	+1200 mB	1200	Accept ± 5.0

Flow Checks					
Borehole Flow			Differential Pressure		
Applied Reading (l/h)	Instrument Reading (l/h)		Applied Pressure (Pa)	Instrument Reading (Pa)	
-30	-30.0	Accept ± 3.0	-394	-396	Accept ± 50
-3	-2.8	Accept ± 1.0	-17	-16	Accept ± 6.0
0	0.0	Accept ± 0.0	0	0	Accept ± 0.5
3	3.0	Accept ± 0.5	16	16	Accept ± 3.0
30	30.2	Accept ± 3.0	383	385	Accept ± 50
60	60.4	Accept ± 6.0	1181	1197	Accept ± 130
90	90.9	Accept ± 9.0	2342	2408	Accept ± 250

Temperature Checks		
Calibration Temperature	Instrument Temperature Reading $^{\circ}\text{C}$	
Applied Temperature $^{\circ}\text{C}$		
-10	-10.0	Accept ± 2.0
0	0.0	Accept ± 1.0
30	30.0	Accept ± 1.0
60	60.0	Accept ± 1.0
100	100.0	Accept ± 1.0

Technician:
Jack Rutland

Date Tested:
25/10/2023

The instrument identified by the serial number stated above has been tested by Gas Data personnel for calibration accuracy on the date and under the ambient conditions stated. Gas Data Ltd internal BS EN ISO9001:2015, BS EN ISO14001:2015, BS EN ISO45001:2018 compliant workshop procedures were followed to apply known calibration test gases, gas flow rates, pressures and temperatures of the values stated. The results displayed on the instrument at each stage are recorded above.

Gas Data Ltd is certified to BS EN ISO9001:2015, BS EN ISO14001:2015, BS EN ISO45001:2018.

APPENDIX 07

Screening Levels

Screening Levels for Public Open Space (Residential) assuming a 2.5% SOM for Hydrocarbons.

Contaminant	Screening Levels for POS (Residential) (mg/kg)
Metals	
Arsenic	79
Boron	21,000
Cadmium	120
Chromium III	1,500
Chromium VI	23
Copper	12,000
Lead*	630
Mercury	16
Nickel	230
Selenium SGV	1,100
Vanadium	2,000
Zinc	81,000
Non Metals	
Phenol	440
Polyaromatic Hydrocarbons PAHs)	
Benz[a]anthracene	29
Benzo[a]pyrene	5.7
Benzo[b]fluoranthene	7.2
Benzo[ghi]perylene	640
Benzo[k]fluoranthene	190
Chrysene	57
Dibenz[ah]anthracene	0.57
Fluoranthene	3,100
Indeno[123-cd]pyrene	82
Naphthalene	4,900
Pyrene	7,400

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* Where not included in the S4UL's criteria for a limited number of contaminants, namely lead, have been derived by DEFRA in their document entitled SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination, April 2014.

Contaminant	Screening Levels for POS (Resi) End Use
Volatile Organic Compounds (VOCs)	
Benzene	72
Ethylbenzene	24,000
Toluene	56,000
Xylene	41,000
Total Petroleum Hydrocarbons (TPH)	
Aliphatic C5-6	570,000
Aliphatic C6-8	600,000
Aliphatic C8-10	13,000
Aliphatic C10-12	13,000
Aliphatic C12-16	13,000
Aliphatic C16-35	250,000
Aliphatic C35-44	250,000
Aromatic C5-7	56,000
Aromatic C7-8	56,000
Aromatic C8-10	5,000
Aromatic C10-12	5,000
Aromatic C12-16	5,100
Aromatic C16-21	3,800
Aromatic C21-35	3,800
Aromatic C35 - 44	3,800

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* Where not included in the S4UL's criteria for a limited number of contaminants, namely lead, have been derived by DEFRA in their document entitled SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination, April 2014.

The GAC's for the assessment of potential groundwater contamination have been derived from very conservative guidelines protective of drinking water and environmental quality, namely:

- UK Environmental Quality Standards (EQS) for Freshwater, 2000;
- Petroleum Products in Drinking-water, Background document for development of WHO Guidelines for Drinking-water Quality, 2011.

Table 1: Inorganic Tier 1 Water Environment Screening Criteria

Contaminant	Units	Hardness Banding (CaCO ₃ mg/l)	EQS /WFD (Freshwater)	UK DWS
Arsenic	µg/l	-	50	10
Ammonia	mg/l	-	0.2	0.5
Boron	µg/l	-	2000	1000
Cadmium	µg/l	-	5	5
Chromium	µg/l	0-50	2	50
		50-100	10	
		100-150	10	
		150-200	20	
		200-250	20	
Copper	µg/l	0-10	0.5	2000
		10-50	0.5	
		50-200	3	
		200-250	8	
		>250	12	
Cyanide (Free)	µg/l	-	1	-
Cyanide		-	-	50
Iron	µg/l	-	1000	200
Lead	µg/l	0-50	4	10
		50-150	10	
		150-250	20	
		>250	20	
Mercury	µg/l	-	1	1
Nickel	µg/l	0-50	8	20
		50-100	20	
		100-150	20	
		150-250	40	
		>250	40	
Selenium	µg/l	-	-	10
Sulphate (SO ₄)	mg/l	-	400	250
Zinc	µg/l	0-50	8	5000
		50-150	15	
		150-250	50	
		>250	50	
pH	-	-	6-9	-

Table 2: Organic Tier 1 Water Environment Screening Criteria

Contaminant	Units	UK DWS	WHO
PAHs - The sum of • Benzo(b)fluoranthene, • Benzo(ghi)perylene, • Benzo(k)fluoranthene, • indeno(1,2,3-c,d)pyrene)	µg/l	0.1	-
Phenol (total)	µg/l	0.5	-
MTBE	µg/l	-	15
Aliphatic C5-C6	µg/l	-	15,000
Aliphatic C6-C8	µg/l	-	15,000
Aliphatic C8-C10	µg/l	-	300
Aliphatic C10-C12	µg/l	-	300
Aliphatic C12-C16	µg/l	-	300
Aliphatic C16-21	µg/l	-	(300) *
Aliphatic C21-35	µg/l	-	(300)*
Aromatic C6-C7	µg/l	1 (benzene)	10 (benzene)
Aromatic C7-C8	µg/l	-	700 (toluene)
Aromatic C8-C10	µg/l	-	300 (ethylbenzene)
Aromatic C10-12	µg/l	-	100
Aromatic C12-C16	µg/l	-	100
Aromatic C16-C21	µg/l	-	90
Aromatic C21-C35	µg/l	-	90

Notes

The WHO Guideline Values for petroleum products in drinking water have been applied in the absence of current TPH water quality standards. However, for the aromatic TPH bandings of C6-C7, C7-C8 and C8-C10, the more conservative UK specific WQS for benzene, toluene and ethylbenzene have been used.

In the absence of specific WHO Guideline Values for the aliphatic ranges C16-C21 and C21-C35, the guideline values for the aliphatic C8-C10 through to C12-C16 ranges of 300µg/l have been used. This is however considered conservative due to the increased stability and lower volatility of the longer chain aliphatics.