

SRP Building
William Hulme's Grammar
School, Manchester
Ground Investigation
Report

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Ground Investigation Report

For

United Learning

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P01	22.08.2025	Preliminary (Gas monitoring and groundwater test results awaited)
P02	23.09.25	Final (Gas monitoring complete and groundwater test results included. Risk assessment and recommendations revised).

Executive Summary

This presents the salient points of the report and should not be referred to in isolation.

Instruction	In April 2025, United Learning commissioned Rodgers Leask Ltd (RLL) to undertake a ground investigation and prepare a Ground Investigation Report (GIR) for a site at William Hulme's Grammar School, Manchester.
Proposed Development	It is understood that the site is in use as a school and proposed development will consist of two new Multi-Use Games Areas (MUGAS) and a new Specially Resourced Provision (SRP) Building. Both will comprise hardstanding coverage.
Site Location and Description	The site is located on Spring Bridge Road, Manchester, M16 8PR and is approximately centred on National Grid Reference 383695E, 394286N. It is approximately 0.5Ha in size and has an irregular outline. The site comprises of school buildings and games pitches/sports fields.
History	The site was greenfield until the construction of the School in 1884, the site area was then recorded as playing fields. Further development of the school has occurred over the years to present day including the addition of further games areas.
Geology, Hydrogeology & Hydrology	The published geology shows the site to be underlain by: • Glacial Till • Wilmslow Sandstone Formation The underlying geology is classified as a Secondary Undifferentiated and Principal Aquifer respectively. There are no recorded water courses within 250m of the site. The underlying geology is classed as very low risk for ground stability hazards.
UXO	The site has been identified as a low risk of UXO following a Desk Based Assessment, however recommendations for briefings for any exploratory work are in place due to historic bombing records.
Scope of Works	An intrusive ground investigation was carried out in May 2025 and comprised of Windowless Sampling boreholes (10No.) and Dynamic Cone Penetration tests (9No.).
Ground Conditions Encountered	The ground conditions encountered were in general agreement with the published geology and generally comprised topsoil and/or made ground (associated with school development) overlying Glacial Till (soft-stiff sandy gravelly clay) which in turn overlay weathered Wilmslow Sandstone Formation (medium dense to dense/very dense sand). Borehole refusals were generally met at approximately 2m bgl.

Contamination Issues	Chemical contamination exceeding human health PAC has been identified at 3no. locations within topsoil and made ground. Contaminants comprised lead and PAH compounds. Asbestos was not identified within the 6 No. samples analysed. It is recommended that any spoil generated from the above strata is removed off site to a licenced disposal or recycling facility. The site is considered to pose a negligible risk to controlled waters and no remedial measures are considered warranted in this regard.
Ground Gas/Radon	No radon protection measures are required. Gas protection measures are required in the SRP building in accordance with a CS2 classification with a point score of 3.5 required. This can be achieved with incorporation of a gas resistant membrane and ventilated sub floor void.
Foundations and Floor Slabs	The Glacial Till (CLAY) and SAND of the weathered Wilmslow Sandstone Formation are considered suitable bearing strata for traditional strip/pad foundations, founded at a minimum depth of 900 mm below ground level. Foundations will need to be locally deepened until common SAND founding stratum is reached throughout the foundation footprint. A suspended floor slab is recommended.
Mining	The Site does not lie within a Coal Mining Reporting Area as defined by the Mining Remediation Authority. No other mining related records are present within 250m of the site.
Buried Concrete Classification	A Design Sulphate class of DS-1 and Aggressive Chemical Environment for Concrete of AC-1 is recommended for all strata within the site.
Waste Management	Initial chemical testing indicates that topsoil and any made ground may be classified as non-hazardous waste. Given the proposed development, it is not envisaged that excavated material can be reused within the site and as such will require off-site disposal. Additional testing of existing asphalt should be carried out to determine the presence of coal tar and thus suitability for reuse if required.
Recommendations for Further Works	The following further works are recommended: Review of groundwater test results. Infiltration testing to assess the feasibility of stormwater soakaway drainage design. WAC testing to confirm acceptability of disposal at landfill.

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1.0 Introduction

1.1. Terms of Reference

In April 2025, United Learning commissioned Rodgers Leask Ltd (RLL) to undertake a ground investigation and prepare a Ground Investigation Report (GIR) for a site at William Hulme's Grammar School, Manchester.

A Site Location Plan and Site Boundary Plan are included in **Appendix A**. The area included within the red line boundary is hereafter referred to as the 'Site'.

1.2. Proposed Development

It is understood that the site is in use as a school and proposed development will consist of two new Multi-Use Games Areas (MUGAS) and a new Specially Resourced Provision (SRP) Building.

1.3. Objectives and Scope of the Report

The objectives and scope of the investigation were defined within the following fee proposal:

- P22-639, William Hulme's Grammar School, Manchester – Revised Fee Proposal for Ground Investigation.

In general, in order to achieve the outlined objective, the scope of this study comprised:

- A review of existing geo-environmental data for the Site, including a review of historical maps and existing ground investigation data.
- An intrusive ground investigation in accordance with the fee proposal.
- Chemical and geotechnical testing.
- A generic quantitative risk assessment of the chemical status of the soils and groundwater in relation to the Conceptual Model.
- Assessment of ground gas related hazards and recommendations for any protection measures.
- Assessment of geotechnical ground conditions and recommendations for foundations, floor slabs, buried concrete, earthworks and any abnormal ground related construction issues.
- Provide preliminary recommendations with regards to pavement design.

1.4. Sources of Information

The following documents and data sources have been reviewed in preparation of this GIR and should be read in conjunction with this report:

- RLL Phase 1 Geo-Environmental Desk Study – SRP, William Hulme's Grammar School 22639-RLL-24-XX-RP-O-0001
- Previous Ground Investigation logs relating to Window Sample Boreholes undertaken for LK Consult in 2014 and Trial Pits undertaken by Murray Rix in 2015.

1.5. Limitations and Confidentiality

All conclusions and recommendations made within this report are based upon and limited to the factual information obtained as part of this investigation. No responsibility can be taken by RLL for information obtained by third parties, and it has been assumed that all third-party information provided is true and correct.

No liability can be accepted for conditions not revealed within the exploratory holes or pits undertaken by this investigation. The exploratory points cover only a small proportion of the total Site area. RLL has where necessary undertaken extrapolation between locations and no responsibility can be taken for different conditions which may occur between locations.

RLL has undertaken the work in accordance with our understanding of current best practice at the time of undertaking the report. Further assessment and revision of the report may be required should new information come to light or legislation/changes to best practice be introduced after the date of issue of the report.

RLL has prepared the report for the sole use and reliance of the Client. The report may not be used or relied upon by any unauthorised third party without the explicit written agreement of RLL.

The interpretive work undertaken within this report remains the intellectual property of RLL and must not be divulged to any commercial third party without prior written agreement of RLL.

At the time of writing, detailed information on the proposed structures, such as detailed layout, loadings and serviceability limits, was not available. Accordingly, where geotechnical design advice is provided it is for information only and should be reassessed by a competent specialist once the development layout and structural loadings are known.

2.0 Site Setting

2.1. Site Location and Description

The site is located on Spring Bridge Road, Manchester, M16 8PR and is approximately centred on National Grid Reference 383695E, 394286N.

The site has an irregular outline, covers an area of approximately 0.5 hectares (ha) and is relatively level. The site was accessed via Spring Bridge Road.

The site comprises three main areas:

- A roughly square area in the north, comprising two-thirds grass and one third gravel hardstanding. The grass area forms part of the existing school playing fields. The hardstanding area was utilised as a car park at the time of the site visit.
- A roughly square area in the central portion of the school covered by asphalt hardstanding associated with an existing MUGA (courts). Existing drainage was noted within the MUGA together with flood lighting. Telegraph poles were noted along the western edge of the MUGA.
- A rectangular area in the south, covered by grass, which forms part of the existing school playing fields.

2.2. Site Boundaries and Surrounding Area

The boundaries of the site comprise:

Northern Area

- Mature treeline and hedge line to the north.
- Greenfield to the east
- Greenfield to the south
- Car park comprising hardstanding to the west.

Central Area

- MUGA's to the north.
- Greenfield to the east.
- Existing resource provision building and cricket nets to the south.
- Service road and existing school buildings to the west.

Southern Area

- Cricket nets and greenfield to the north.
- Greenfield to the east.
- Greenfield to the south.
- Fencing and hardstanding to the west.

2.3. Site History

The RLL Desk Study (22639-RLL-24-XX-RP-O-0001) provides a comprehensive review of the site history based on a study of Historical Ordnance Survey maps. A summary is provided below.

2.3.1. On Site

The Site was historically greenfield from earliest mapping, until the construction of the Grammar School where the land use changed to playing fields in 1894. Whilst the historic OS maps do not indicate the addition of the MUGA's, they are known to be present in the central area, and a carpark / hardstanding area in the northern area.

2.3.2. Off Site

The surrounding area has predominantly comprised greenfield and agricultural land use until the 1930's, after which large scale residential expansion on all sides of the Site, took place. No heavy industry has been noted within the vicinity of the Site, but some industrial land use has been noted within 750m to the north and south of the Site. A railway line has been present within 500m to the south between 1905 and the 1980's.

2.4. UXO

Regional Unexploded Bomb Risk maps, obtained from Zetica, indicate the Site is in a moderate -risk area for unexploded ordnance (UXO). As such, a detailed UXO risk assessment was recommended and carried out by 1st Line Defence.

The Detailed UXO Risk Assessment indicated an overall low risk from German and anti-aircraft ordnance and a low risk for Allied unexploded ordnance. A recommendation was given for a UXO management plan to be put in place and for a site specific UXO awareness briefing to be undertaken for personnel conducting intrusive works.

2.5. Published Geology

Information pertaining to the underlying ground conditions at the Site has been obtained via the RL Desk Study,

The published geological information shows the Site to be underlain by:

- Glacial Till Formation – Diamicton (GTF)
- Wilmslow Sandstone Formation (WSF)

There is 1 No. fault indicated within the vicinity of the Site, orientated northwest to southeast. This crosses the southwestern corner of the site. However, this is considered unlikely to significantly impact the site and the proposed development.

2.6. Mining History

Information presented within the RL Desk Study indicates that there are no records relating to historical mining within 500m of the Site.

The Site does not lie in a Coal Mining Reporting Area, as defined by the Coal Authority.

2.7. Potential for Ground Stability Hazards

The following BGS classifications with regards to ground stability hazards:

- Shrinking or Swelling Clay Hazard: Very Low
- Landslide Ground Stability Hazard: Very Low
- Ground Dissolution Stability Hazard: Negligible
- Compressible Deposits Ground Stability Hazard: Negligible
- Collapsible Deposits Ground Stability Hazard: Very Low
- Running Sand Ground Stability Hazard: Very Low

2.8. Radon

The Site is not in a radon affected area, as less than 1% of properties are above the action level. Therefore, radon protective measures are not required in the construction of new dwellings or extensions.

2.9. Hydrogeology

Information presented in the RL Desk Study indicates that the underlying Glacial Till Formation is defined as a Secondary Undifferentiated Aquifer. The underlying Wilmslow Sandstone Formation is defined as a Principal Aquifer.

The Site is not located within a groundwater Source Protection Zone.

Information presented in RL Desk Study indicates that there 2 No. active groundwater abstraction licences within 2000m of the Site, the nearest is 1505m north.

2.10. Hydrology

There are no records of surface waters within 250m of the site.

The Site does not lie within a flood zone 2 or 3, the nearest flood zone is 6m northeast of the site. The risk of flooding from rivers and seas is N/A, the highest risk of surface water flooding is negligible.

There are no records of surface water abstractions with 2000m of the Site.

2.11. Landfills and Other Waste Sites

The RL Desk Study reports that there are no records of historical landfill within 500m of the site.

There is 1 no. records for waste exemptions 405m northwest relating to use of waste in construction.

There are no records of waste treatment or disposal sites within 500m of the site boundary.

There are 3 no. records of unknown filled ground for ponds located 76m to 235m from the site.

2.12. Previous Ground Investigation

A ground investigation was previously undertaken on the adjacent primary school area, which comprised window sample boreholes carried out by LK Consult in 2014 and Trial Pitting by Murray Rix in 2015. A full report of the investigation has not been provided to RLL; logs of the investigation were made available. The ground conditions encountered comprised an initial surface topsoil or tarmac overlying made ground, which in turn overlay natural Glacial Till or Wilmslow Sandstone Formation. The strata reported were consistent with the published geology.

The table below summarises the strata encountered in additional detail. The depths given are from ground level, as it was reported.

Strata Encountered	Mean depth to top of strata (m) [range, m]	Mean depth to base of strata (m) [range, m]	Mean thickness of strata (m) [range, m]
1: TOPSOIL Grass over topsoil encountered in all trial pits	From ground level	0.19 [0.15-0.20]	0.19 [0.15-0.20]
2: TARMAC Encountered in LK Consult Window Sample WS101 and WS102	From ground level	0.13 [0.12-0.13]	0.13 [0.12-0.13]
3: MADE GROUND Typically comprising dark brown/black sandy gravelly clay or clayey sandy gravel with building rubble, clinker and ash present. Encountered in all locations, as subbase.	0.11 [0.00-0.20]	1.17 [0.70-1.70]	1.08 [0.70-1.70] *base not determined in Murray Rix Trial Pits except TP4
4: GLACIAL TILL Typically comprising soft grey/orange/brown slightly sandy CLAY. Encountered in LK Consult window sample WS101, WS103-WS105	1.10 [1.10-1.70]	1.60 [1.10-2.20]	0.50 [0.30-0.80]
5. WILMSLOW SANDSTONE FORMATION Typically comprising brown SAND or red weathered SANDSTONE Encountered in LK Consult Window Samples WS101-WS104 and Murray Rix Trial Pit TP4	2.43 [1.10-2.20]	*base not determined. [depth of exploration 3.42]	*base not determined

3.0 Ground Investigation

3.1. Intrusive Works

An intrusive Site investigation utilising window sample boreholes (WS) and in-situ Dynamic Cone Penetration Tests (DCP) was carried out between the 29th and 30th May 2025. The ground investigation works were designed in general accordance with BS10175:2011+A2:2017 'Investigation of Potentially Contaminative Sites' whilst also taking into account the requirement for geotechnical information to inform foundation design. Further details of the ground investigation work, including rationale adopted given below.

Investigation Technique	No. Of Intrusive Points	Location Ref:	Final Depth Range (m)	Rationale
Window sample (WS) boreholes	2 No.	WS01 – WS02	3.0	Drilled to determine ground conditions beneath the northern MUGA.
	5 No.	WS03-WS07	2.0-3.0	Drilled to determine ground conditions beneath the SRP Building and install gas and groundwater monitoring ancillaries.
	3 No.	WS08-WS10	2.0-3.0	Drilled to determine ground conditions beneath the southern MUGA
Dynamic Cone Penetration Tests	3 No.	DCP01 – DCP03	0.90	Carried out to determine CBR values for pavement design beneath northern MUGA.
	3 No.	DCP04-DCP06		Carried out to determine CBR values for pavement design beneath SRP Building.
	3 No.	DCP07 – DCP09		Carried out to determine CBR values for pavement design beneath southern MUGA.

An exploratory hole location plan (ref 22639-RLL-24-XX-DR-O-0005) is presented in **Appendix B**.

The exploratory holes were logged in general accordance with BS 5930:2015+A1:2020 'Code of Practice for Site Investigations'. Copies of exploratory hole logs are included in **Appendix C**.

3.2. Site Constraints

No site constraints were defined that limited the proposed works during the investigation although borehole and DCP locations within the footprint of the SRP Building were positioned to ensure they did not encroach within the extents of the pitch outlines within the existing MUGA.

Works were also required to be undertaken during school holidays. This has impacted the delivery and timescales of the gas and groundwater monitoring regime.

3.3. Underground services

Prior to intrusive works, all exploratory holes were cleared of services by a specialist surveyor.

In addition, hand excavated service pits were excavated at each borehole location (to a depth of 1.2m) prior to commencing drilling.

3.4. Window Sample Boreholes

The ground investigation included 10 No. boreholes (WS01 to WS10). Gas and groundwater monitoring standpipes were installed into 3 No. boreholes (WS04-WS06) on completion and finished with a cast iron stop cock cover fitted flush with the existing surface. The remaining boreholes were backfilled with bentonite and reinstated at the ground surface to match the surrounding surface.

Standard penetration tests (SPTs) were undertaken at 1m intervals to assess relative density / shear strength of soils in general accordance with British Standard BS EN 22476-3 2005+A1:2011.

All boreholes refused in the Wilmslow Sandstone Formation (due to hard/dense consistency) at depths of between 2m and 3m bgl.

3.5. Dynamic Cone Penetration (DCP) Tests

A total of 9no. DCPs (DCP01-DCP09) were undertaken across the site to provide CBR correlations for pavement design. These were undertaken in general accordance with the Design Manual for Roads and Bridges CS229 Clause 6.33, Revision 0:2020.

The results of the tests are presented in **Appendix F** and discussed in Section 7.0.

3.6. Gas & Groundwater Monitoring

Gas and groundwater monitoring standpipes were installed into WS04-W06, with response zones extending to depths of between 0.5m and 1m bgl in order to target made ground and natural strata. Details of the installations are provided on the associated borehole logs.

A total of 4No. ground gas monitoring visits have been undertaken during July and August 2025 as part of the ground investigation works. Monitoring data is included in **Appendix D**.

3.7. Ground Conditions Encountered

The ground conditions encountered during the fieldwork were consistent with published geology and generally comprised:

- Initial grassed topsoil (in the south and north) and tarmac (in the central site extents) overlying
- Made ground (MG) comprising limestone subbase or gravelly clay associated with the development of the school overlying;
- Glacial Till comprising sandy gravelly CLAY overlying;
- Weathered Wilmslow Sandstone comprising SAND.

The table below describes the strata encountered in additional detail with each stratum also given a number reference. The depths given are from ground level, as it existed at the time of the investigation. Detailed descriptions are presented on the individual exploratory hole logs.

Strata Encountered	Mean depth to top of strata (m) [range, m]	Mean depth to base of strata (m) [range, m]	Mean thickness of strata (m) [range, m]
Stratum 1: TOPSOIL Encountered in WS02, WS08, WS09, WS10 Grass over dark brown loamy topsoil	From ground level	0.30 [0.30]	0.30 [0.30]
Stratum 2: TARMAC Encountered in WS03, WS04, WS05, WS06 and WS07	From ground level	0.10 [0.10]	0.10 [0.10]
Stratum 3: MADE GROUND – Gravel parking area in the north of site Encountered in WS01 only Comprising Yellowish brown to reddish brown sandy limestone and brick gravel.	From ground level	0.30 [Only one location]	0.30 [Only one location]

Strata Encountered	Mean depth to top of strata (m) [range, m]	Mean depth to base of strata (m) [range, m]	Mean thickness of strata (m) [range, m]
Stratum 4. MADE GROUND – Gravel subbase below the tarmac areas Encountered in WS03, WS04, WS05, WS06 and WS07 Typically comprising yellowish grey very sandy fine to coarse angular limestone gravel.	0.10 [0.10]	0.54 [0.40-0.70]	0.44 [0.30-0.60]
Stratum 5. MADE GROUND – Historic Made Ground below current school developments Encountered in WS01, WS02, WS03, WS04, WS06, WS07, WS08, WS09 & WS10 Typically comprising dark brown clayey gravelly sands or sandy gravelly clays with ceramic and brick fragments occasionally with glass and clinker present. Rare slag present.	0.41 [0.30-0.70]	0.88 [0.55-1.40]	0.47 [0.10-1.10]
Stratum 6: GLACIAL TILL (GT) Typically comprising greyish brown sandy gravelly CLAY Encountered in WS01, WS03, WS04, WS05, WS06, WS07, WS08, WS09 & WS10	0.71 [0.50-1.00]	1.39 [0.80-2.65]	0.68 [0.25-2.00]
Stratum 7. WILMSLOW SANDSTONE FORMATION (WSF) Typically comprising reddish brown SAND, occasionally silty. Encountered in all WS locations.	1.39 [0.80-2.65]	*base not determined. [depth of maximum exploration 3.00]	*base not determined [maximum thickness explored 1.60]

3.7.1. Visual and Olfactory Observations

No olfactory observations of hydrocarbons was noted during the investigation. Rare fragments of slag were observed in WS09 during drilling. Clinker was observed in made ground encountered in WS02, WS08, WS09 and WS10.

3.7.2. Perched Water/ Groundwater Encountered

Groundwater was encountered in 8 No. locations during the investigation, as summarised below:

Borehole	Ground water strike level (m) bgl	Strata Geology	Noted rising level (m) bgl [time after initial strike mins]
WS01	2.80	Sand (WSF)	No rise noted

Borehole	Ground water strike level (m) bgl	Strata Geology	Noted rising level (m) bgl [time after initial strike mins]
WS02	DRY	N/A	N/A
WS03	1.10	Clay (GT)	No rise noted
WS04	0.40	MG	No rise noted
WS05	0.50	Clay (GT)	0.40 [60]
WS06	0.50	MG	No rise noted
WS07	0.50	MG	0.30 [60]
WS08	1.50	Sand (WSF)	1.45 [60]
WS09	DRY	N/A	N/A
WS10	1.90	Sand (WSF)	No rise noted

The groundwater encountered within or above cohesive Glacial Till stratum is considered likely to be perched, with groundwater encountered within the granular Wilmslow Sandstone Formation, more likely to be reflective of the site groundwater table.

3.7.3. Obstructions

No ground obstructions were encountered during the intrusive works.

3.7.4. Groundwater Monitoring

4No. rounds of groundwater level monitoring have been undertaken between 31 July and 29th August 2025.

The groundwater levels are recorded in **Appendix D** together with the gas monitoring results as m bgl. Results indicate that where groundwater was recorded it was perched. The results are summarised below.

Borehole	Borehole Depth (m)	Average water level m bgl [range]	Average water level in mAOD [range]
WS04	1.98	1.95 [1.94-Dry]	29.90 [29.90-Dry]
WS05	1.96	1.39 [0.46 -Dry]	30.40 [31.40-Dry]
WS06	1.80	Dry	Dry

4.0 Chemical Testing

4.1. Sampling

Disturbed samples of the strata were taken during the intrusive work. Groundwater was sampled during the first borehole monitoring visit. All sampling was undertaken by an RLL Engineer. Samples were stored in cool boxes prior to be transported to an MCERTS accredited laboratory. A selection of these samples was tested for the presence of contaminants and for classification purposes.

4.2. Testing

Analysis of the samples was carried out at the independent laboratories of Eurofins Chemtest Ltd. A copy of the results is included in **Appendix E**.

Contamination testing was carried out for the suite of contaminants listed within the Conceptual Model.

4.2.1. Soils

11 No. soil samples were collected for contamination testing during the ground investigation as follows:

- 2 No. samples from Stratum 1 Topsoil
- 1 No. sample from Stratum 3 Made Ground gravel
- 6 No. samples from Stratum 5 Historic Made Ground
- 2 No. Samples from Stratum 6 Glacial Till natural strata.

Chemical testing was undertaken on a selection of samples as given below:

Sample Reference	Sample Depth (m)	Stratum	RL Standard Soils Suite*	RL TPH Risk Assessment Soils Suite**	Asbestos Screen
WS01- ES1	0.15-0.2	Stratum 3 (MG)	X		X
WS01 – ES2	0.4-0.5	Stratum 5 (MG)		X	X
WS02 – ES1	0.15-0.2	Stratum 1 (Topsoil)	X		X
WS04 – ES1	0.7-0.8	Stratum 4 (MG)		X	X
WS09 – ES1	0.15-0.2	Stratum 1 (Topsoil)	X		X
WS09 – ES2	0.5-0.6	Stratum 5 (MG)		X	X

* Heavy metals, polycyclic aromatic hydrocarbons (PAH), pH, soil organic matter (SOM), cyanide, pH, total organic carbon. ** Heavy metals, polycyclic aromatic hydrocarbons (PAH), Speciated petroleum hydrocarbon (TPH), pH, soil organic matter (SOM), cyanide, pH, total organic carbon.

4.2.2. Groundwater

1 No. groundwater sample was obtained from WS05 during the first monitoring visit. The remaining boreholes contained insufficient groundwater to obtain a water sample for testing.

4.3. Risks to Human Health

The soil samples collected were conservatively assessed against published Category 4 Screening Levels (C4SLs) for a residential without homegrown produce end use scenario deemed appropriate. This is considered appropriately conservative for the proposed construction of the MUGAs and the SRP Building, which will comprise hardstanding coverage with limited landscaping.

Exceedances were identified in 4 No. of the samples tested; the following table provides a summary of the exceedances recorded:

Location	Sample Ref	Depth (m)	Strata	Contaminants Exceeding GAC
WS01	ES1	0.15 – 0.20	Stratum 3 (MG)	Dibenz(a,h)Anthracene
	ES2	0.40 – 0.50	Stratum 5 (MG)	Lead, Benzo[b]fluoranthene, Benzo[a]pyrene, Dibenz(a,h)Anthracene
WS02	ES1	0.15 – 0.20	Stratum 1 (Topsoil)	Benzo[a]anthracene, Chrysene, Benzo[b]fluoranthene, Benzo[a]pyrene, Dibenz(a,h)Anthracene
WS09	ES1	0.15 – 0.20	Stratum 1 (Topsoil)	Benzo[b]fluoranthene, Benzo[a]pyrene, Dibenz(a,h)Anthracene

Asbestos was not identified in the 6 No. samples analysed.

4.4. Risks to Controlled Waters

4.4.1. Assessment Approach

At present, there are no UK specific guidelines for assessing the risk to Controlled Waters from Brownfield Sites. In the absence of such criteria, reference has been made to the following documents:

- Water Supply Regulations.

- Water Framework Directive.

The Water Supply Regulations provide concentrations for a range of chemical parameters which must not be exceeded as consumers' taps.

The Water Framework Directive provides Environmental Quality Standard (EQS) for a range of different substances, used to classify the grade or quality of surface waters.

EQS_{bioavailable} criteria have been developed for UK Specific Pollutants copper, zinc and manganese and EU priority substances lead and nickel.

A Metal Bioavailability Assessment Tool (M-BAT) has been developed by the Water Framework Directive United Kingdom Technical Advisory Group (WFD-UKTAG) to assess the potential risk from copper, zinc, nickel and manganese in the freshwater environment. The tool calculates the risk characterisation ratio (RCR) for each contaminant. Where the RCR is greater than 1 this indicates the bioavailable concentration is above the EQS and therefore at risk.

Lead is not included in the M-BAT tool as it is not a full bioavailability EQS. The EQS for lead is an EU standard under WFD. It takes into account the influence of dissolved organic carbon (DOC) on the toxicity of lead but, unlike the full bioavailable standards for zinc, copper, manganese and nickel which are included in M-BAT, it does not require the consideration of calcium or pH. A separate tool has therefore been developed for lead to enable the consideration of the influence of the DOC.

The UK DWS have been used as the assessment criteria for the Principal Aquifer although it should be appreciated this is very conservative. Given the absence of any surface water receptors within 250m of the site, an M-BAT assessment is not considered appropriate.

The above guidelines have been used as the target concentrations, above which remedial targets may need to be derived, in accordance with R & D Publication 20 'Methodology for the derivation of remedial targets for soil and groundwater to protect water resources'.

At present, target concentrations of some contaminants are below economically achievable reporting limits. Where concentrations are below the reporting limit but above the target concentration, these concentrations have been assessed to present a negligible risk to controlled waters and have not been included within the risk assessment.

4.4.2. Groundwater Testing and Assessment

Groundwater testing has been undertaken to assist in the assessment of risks to Controlled Waters, being the Principal Aquifer beneath the site although it should be appreciated that a continuous shallow groundwater table has not been encountered during the investigation and it was only possible to obtain 1no. groundwater sample from the respective borehole installations.

Nonetheless, a Tier 1 assessment has been carried out whereby the water results are considered to represent groundwater. Should any of the criteria be exceeded, it may be necessary to consider Tier 2, 3 or 4 risk assessments..

The sample tested did not contain any contaminants in excess of UK DWS values. On this basis, and given the absence of any gross contamination identified within the exploratory holes and subsequent laboratory testing, the risk to controlled waters is considered to be negligible.

4.5. Risks to Structures

Sulphate and pH test results obtained from a sample of Stratum 5 (MG), Stratum 6 (GT) and Stratum 7 (WSF) have been used to assess the Design Sulphate classification of these respective strata. In addition, 1no. sample of groundwater was analysed for sulphate content and pH.

The laboratory results were assessed in accordance with BRE Special Digest 1 2005: Concrete in Aggressive Ground. Due to the legacy of the Site, it has been designated as a brownfield site with mobile groundwater.

A summary of the water-soluble sulphate data is provided in the table below.

Summary of Water-Soluble Sulphate Data				
	Stratum 1 (MG)	Stratum 6 (GT)	Stratum 7 (WSF)	Groundwater
No. of Tests	1	1	1	1
pH	7.6	6.7	8	8.5
Water Soluble Sulphate (mg/l)	12	34	10	4.8
Characteristic Value (CV) of WSS in accordance with BRE SD1(mg/l)	12	34	10	4.8
Design Sulphate Class	DS-1	DS-1	DS-1	DS-1
ACEC Class	AC-1	AC-1	AC-1	AC-1

An assessment of potentially oxidisable sulphides (OS) has been made. None of the samples contained OS greater than 0.3% and thus it is considered none of the strata tested contain pyrite.

In accordance with BRE SD1 and based on the pH and sulphate testing, a Design Sulphate (DS) class of DS-1 and Aggressive Chemical Environment for Concrete (ACEC) class of AC-1 should be adopted for concrete in contact with respective stratum.

Should any fill be imported to facilitate development further assessment will be required on the imported material/s.

5.0 Ground Gas

5.1. Assessment Approach

A lines of evidence approach has been used to assessment the ground gas risk at the site in accordance with best practice utilising the following guidance:

- CIRIA C665
- CL:AIRE Research Bulletin 17
- British Standard B8485

In accordance with CIRIA C665 and based on the site conceptual model, the source generation potential for the site has been classified as low. The sensitivity of the proposed development has been classed as very low. A total of 4 No. monitoring visits over a 2-month period is therefore considered appropriate to assess the soil gas regime at the site. Further monitoring may be required, depending on the findings of the investigation.

5.2. Source of Soil Gas

Potential sources of soil gas have been limited to made ground encountered during the intrusive works which generally comprised dark brown clayey gravelly sands or sandy gravelly clays with ceramic and brick fragments occasionally with glass, clinker and rare slag present.

Potential off-site sources of ground gas were identified by the desk study in the form of infilled ground at 3no. locations, the closest of which was at about 80m from the site. No further details of the infill material is available and given the limited nature of these features RLL do not consider them to pose a significant source of gas generation.

5.3. Total Organic Carbon (TOC)

A preliminary assessment has been undertaken, based on a pragmatic lines of evidence approach, utilising TOC test results in accordance with guidance given in CL:AIRE Research Bulletin 17.

The following table summarises TOC test results obtained from stratum 5 and Stratum 6, which are considered likely to have the highest gas generating potential:

Summary of Total Organic Carbon Data		
	Stratum 5 (MG)	Stratum 6 (GT)
No. of Tests	4	2

Summary of Total Organic Carbon Data		
	Stratum 5 (MG)	Stratum 6 (GT)
Total Organic Carbon % Average [Range]	1.75 [0.99-2.40]	1.80 [1.50-2.10]

CL:AIRE RB17 states that the makeup of made ground can be a defining characteristic to assess a characteristic gas screening value from derived TOC. Where Made Ground contains high concentrations of TOC it is important to establish if the TOC rich components are likely to be degradable or not, in the case of Stratum 5 (MG) the material contained clinker, slag and ash which are likely to be rich in TOC, however unlikely to readily degrade producing high levels of gas. Another factor for consideration is the age of made ground, which is likely to have lower gas generation potential with age (typically older than 20 years).

5.4. Gas Monitoring Results

4No. rounds of ground gas monitoring have been completed between 31st July and 29th Aug 2025. Gas monitoring has been carried out using a Geotechnical Instruments GA2000 infra-red landfill gas analyser with integral flow measuring capability.

No detectable methane was encountered (<0.1%) and a maximum concentration of 18.5 % for carbon dioxide was recorded. The maximum initial gas flow rate recorded was 98.4 l/hr in one location on one occasion (this quickly dropped to 0 l/hr); the highest steady flow rate was 0 l/hr, which is considered a representative value.

The relatively high isolated initial high flow rate is considered to be attributable to a 'Piston effect' where a build up of pressure is caused by the ingress of perched groundwater compressing the confined air within monitoring pipework and not reflective of a build-up of pressure caused by the generation of ground gas.

Results of gas monitoring are presented in **Appendix D**. A summary of the gas monitoring is presented in the below.

Gas Monitoring Summary					
Hole ID	Barometric Pressure (mb)	Peak Methane (%)	Peak Carbon Dioxide (%)	Min Oxygen (%)	Steady Flow Rate (l/hr)
WS04	993-1021	<0.1	18.5	2.3	<0.3
WS05		<0.1	5.0	10.6	<0.3

Gas Monitoring Summary					
Hole ID	Barometric Pressure (mb)	Peak Methane (%)	Peak Carbon Dioxide (%)	Min Oxygen (%)	Steady Flow Rate (l/hr)
WS06		<0.1	17.3	12.5	<0.3

5.5. Gas Risk Assessment

GSVs were calculated for each monitoring borehole and are initially conservatively based on the peak methane and carbon dioxide readings and the steady flow rate encountered within each exploratory hole.

Hole ID	CH ₄ GSV	CO ₂ GSV	Borehole Characterisation
			BS 8485
WS04	0.0003	0.055	CS2
WS05	0.0003	0.015	CS2
WS06	0.0003	0.052	CS2

*0.1% CH₄ concentration used on any value less than 0.1%, based on the gas analyser margin of error.

**0.3 l/hr flow has been used on any value less than 0.3 l/hr, based on the gas analyser margin of error.

The calculated GSV would indicate a CS-1 classification. However, given that elevated CO₂ concentrations (>5%) have been throughout the monitoring period, a CS-2 classification is considered appropriate and in agreement with TOC concentrations recorded within the made ground, which appears to be the source of the CO₂.

In accordance with CIRIA C665 and British Standard BS8485:2015+A1:2019, and in conjunction with the findings of the intrusive investigation and results of the TOC tests, the site is therefore considered to fall under a CS-2 classification.

5.6. Gas Protection Measures

The proposed development building comprises a Speciality Resourced Provision unit (specialist classroom). The proposed building is considered to fall into a 'Class B' building category in accordance with BS8485:2015+A1:2019, which requires a point score of 3.5 for a CS2 gassing regime.

A point score of 3.5 could be achieved by utilising a gas resistant membrane (2 Points) and a ventilated sub floor void (1.5 points) in accordance with BS8485:2015+A1:2019.

6.0 Conceptual Site Model (CSM)

This section provides a qualitative assessment of the risks posed from potential on and off-site contamination sources identified from the information presented in the previous sections. The CSM considers the findings of the ground investigations that have been undertaken at the Site.

The assessment carried out applies a residential without plant uptake end-use scenario considered most applicable to the proposed school development plans. Should the end-use be altered, potential pathways and receptors should be re-assessed.

The CSM below has been developed based on the commonly adopted source-pathway-receptor model as recommended within the Land Contamination Risk Management (LCRM) guidance from the Environment Agency.

6.1. Potential Pollutant Linkages

6.1.1. Sources

The Site was previously occupied by agricultural fields with some development of the school from 1894 onwards. A variety of land uses have occurred in the environs of the site, however this has predominantly been limited to the development of the school.

Soil analysis as part of this ground investigation has identified elevated levels of Lead and PAHs contaminants based on a residential end use without plant uptake end use scenario.

No positive identification of asbestos has been detected in 6 No. samples tested.

No olfactory evidence of hydrocarbons was noted through any of the made ground encountered.

Groundwater testing and monitoring is scheduled for July and August 2025.

Potential contaminant sources are summarised in the table below:

Summary of Potential On Site Sources of Contamination		
Source	Site Area	Key Contaminants
Stratum 1 (Topsoil)	North and South MUGA areas	Benzo[a]anthracene, Chrysene, Benzo[b]fluoranthene,

Summary of Potential On Site Sources of Contamination		
Source	Site Area	Key Contaminants
		Benzo[a]pyrene, Dibenz(a,h)Anthracene
Stratum 3 (MG)	North MUGA area	Dibenz(a,h)Anthracene Carbon dioxide
Stratum 5 (MG)	North of site	Lead, Benzo[b]fluoranthene, Benzo[a]pyrene, Dibenz(a,h)Anthracene Carbon dioxide

6.1.2. Pathways and Receptors

Human Health

There is potential for exposure of site end-users to contaminants in soils via the following pathways, based on a residential without plant uptake end use (Environment Agency, SR3) considered appropriate to the proposed School building and MUGA development:

- Direct soil and dust ingestion via landscaped areas;
- Dermal contact with soil directly and indoor dust from any landscaped areas;
- Inhalation of dust.
- Ingestion of contaminated water via plastic pipes.

Contamination in soils may also present a risk to construction workers. As such, appropriate risk assessments and safety measures (PPE / hygiene rules) will need to be implemented in order to provide adequate protection.

Where risks to future site-users are identified, these can typically be mitigated by the placement of clean cover or construction of hardstanding where applicable to the proposed development.

Contamination at concentrations exceeding Preliminary Assessment Criteria (PAC) has been identified within Stratum 1 (Topsoil), Stratum 3 (MG) and Stratum 5 (MG) in the locality of both the proposed MUGA's. Stratum 5 (MG) is also present beneath the proposed SRP Building.

It is considered that the proposed MUGA's hardstanding construction and the building floor slab will block the pathway to end users from all the identified strata containing chemical concentrations above PAC. Depending on levels and

construction thicknesses, the affected materials may require removal from site which would also break the pollutant linkage.

Controlled Waters

The risk to controlled waters is considered to be very low and no further assessment or remedial measures are considered warranted in this regard. Furthermore the development is considered to achieve betterment with respect to risks to controlled waters. The following mitigating factors have been considered:

- No contaminant concentrations were detected above DWS screening values within groundwater tested beneath the site.
- The most sensitive receptor is considered to be the Principal Aquifer, associated with the Wilmslow Sandstone Formation. This is however overlain by relatively impermeable superficial Glacial Till, which is designated a Secondary Undifferentiated Aquifer, and which is considered to inhibit lateral flow of groundwater into the underlying Principal Aquifer.
- The new development will be designed to collect surface water from the SRP roof and MUGA hardstanding areas and direct water into either a positive outfall or soakaway pits (constructed within the Sandstone stratum). Thus reduce the infiltration of surface water through strata containing contaminants above PAC.
- There are no surface water features within 250m of the site.
- There are no surface water abstractions within 2000m of the site extents.
- There are 12 no. groundwater abstractions within 2000m of the site, the nearest being 1505m to the north.
- No significantly elevated concentrations of contaminants have been detected within the soils tested with the exception of PAH compounds within WS02 at 0.15-0.2m. It is likely that these materials will be removed from site as part of the construction of the northern MUGA.

Structures

In accordance with the recommendations given within BRE SD1 and based on the pH and sulphate testing, a Design Sulphate (DS) class of DS-1 and Aggressive Chemical Environment for Concrete (ACEC) class of AC-1 should be adopted for the Made Ground, Glacial Till and Wilmslow Sandstone Formation.

Radon protection measures are not required however soil gas protection measures commensurate with a CS-2 classification are recommended.

6.1.3. Proposed Mitigation

It is considered that the contamination risk associated with the Site is very low provided the following actions are undertaken:

- Additional imported materials to raise ground levels and any topsoil used in landscaped areas will need to be assessed for suitability and screened against agreed import criteria, which will form part of a site-specific Materials Management Plan (if required) taking into account risks to both human health and controlled waters;
- In accordance with the recommendations given within BRE SD1 and based on the pH and sulphate testing, a Design Sulphate (DS) class of DS-1 and Aggressive Chemical Environment for Concrete (ACEC) class of AC-1 should be adopted for the Made Ground, Glacial Till and Wilmslow Sandstone Formation
- For any new potable water supply pipework protective water mains may be required given the recorded presence of PAHs within tested soils. The requirement for protective water mains is subject to an application to the appropriate water authority.
- Gas protection measures are incorporated within the proposed SRP building comprising a gas resistant membrane (taped and sealed and continuous throughout the building footprint) and sub floor ventilated void installed in accordance with BS8485:2015+A1:2019.

7.0 Geotechnical and Geo-chemical Testing

7.1. Sampling and Testing

All geotechnical and geochemical testing of soils was undertaken by the nominated laboratory, Professional Soils Limited. The UKAS accreditation of the individual testing methods is shown on the laboratory test reports along with the test results, included in **Appendix F**.

The geotechnical testing undertaken is summarised in the following table;

Summary of Laboratory Geotechnical Testing Undertaken on Samples	
Test	Number of Samples Tested
Natural Moisture Content	3
Plasticity Index Analysis	3
Particle Size Distribution	3

7.2. Classification Testing

7.2.1. Natural Moisture Content and Plasticity Index Analysis

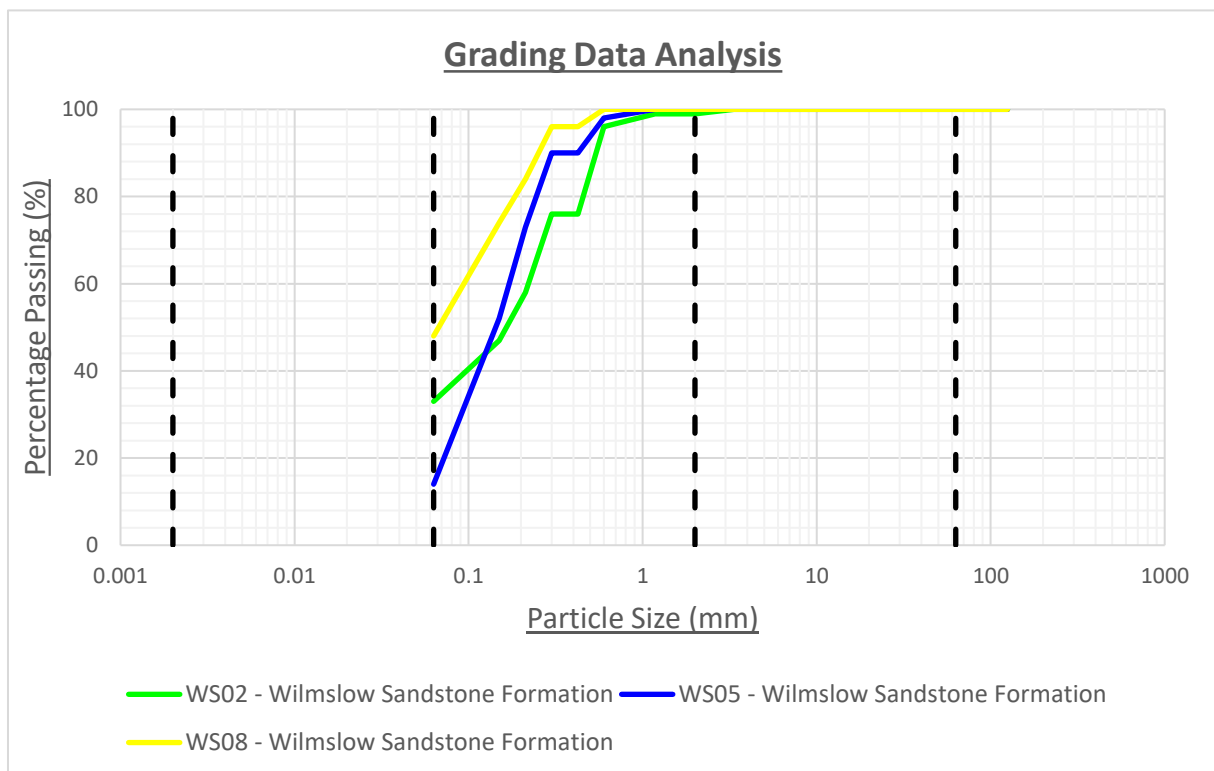
3 No. natural moisture content (NMC) and Atterberg limit tests were undertaken on samples of Glacial Till and Wilmslow Sandstone Formation. A summary of the results is presented below:

Sample	Depth (m)	Strata	Moisture Content (%)	Modified Plasticity Index (%) range	VCP
WS4 - D1	1.0 - 1.1	6 Glacial Till Formation	16.6	21	Medium
WS6 - D1	0.7 - 0.8		15.5	16	Low
WS4 - D2	1.4 - 1.5	7 Wilmslow Sandstone Formation	14.5	16	Low

7.2.2. Grading Analysis

Particle Size Distribution (PSD) tests were undertaken on 3 No. samples of the Wilmslow Sandstone Formation. The results are summarised below:

Proportions (%)	Very coarse (>63mm)	Gravel (>2mm)	Sand (>0.063mm)	Silt/Clay (<0.063mm)
Wilmslow Sandstone Formation (WS02, WS05, WS08)				
Minimum	0.0	0.0	52.0	14.0
Maximum	0.0	1.0	86.0	48.0
Mean	0.0	0.3	68.0	31.7



7.3. In-Situ Soil Strength Tests

7.3.1. Standard Penetration Tests

Standard Penetration Tests were undertaken generally at 1m intervals during drilling of the boreholes in accordance with the methodology outline in British Standard BS EN 22476-3 2005+A1:2011. Full details of the test results are contained on the individual borehole logs.

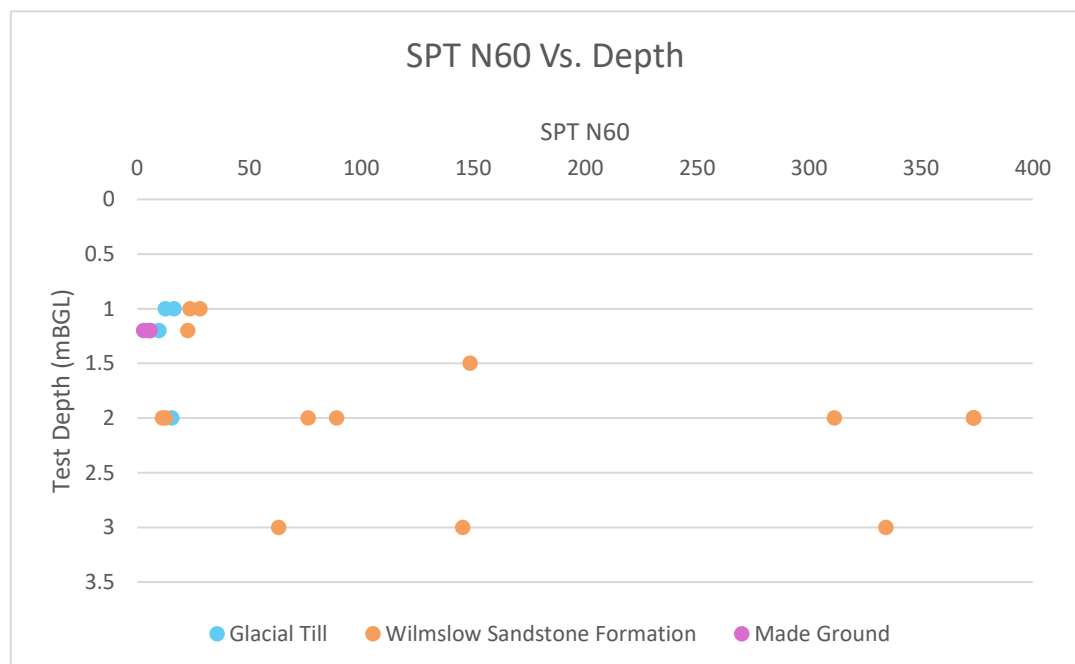
Additionally, where refusal has been met when undertaking SPTs (i.e. 50 blows have been recorded without completing the main drive), the field N value has been extrapolated to estimate the number of blows required to reach the full 300mm penetration. Whilst the current British Standard does not give any guidance for extrapolating SPT resistance from a short drive, such an

extrapolation is necessary as subsequent calculations which use the SPT N value are based upon the blow count for a full 300mm drive. Given this extrapolation, these results should be viewed with caution.

A summary of the results is presented below together with a recommended characteristic value (N) based on a statistical analysis using either a minimum value or the 50% fractile, depending on the data set. The N values have been corrected to N_{60} or $(N_1)_{60}$ values, in accordance with BS EN 22476-3:

Stratum	No. of tests	Minimum $N(1)_{60}$ Value	Maximum $N(1)_{60}$ Value	Mean $N(1)_{60}$ Value	Characteristic N Value
Made Ground - Historic	2	2.8	5.6	4.2	3.2
Glacial Till	6	4.8	16.4	10.7	8.3
Wilmslow Sandstone	15	11.2	373.5	159.1	84.6

A plot of SPT N_{60} values against depth (m bgl) is presented below:



The results indicate progressively increasing N_{60} values with depth in the Wilmslow Sandstone Formation although there is a large spread in results.

Refusal was met in all boreholes. The increase in SPT N_{60} values with depth is likely to be a function of the degree of weathering of the Wilmslow Sandstone Formation.

The N_{60} values recorded within the Glacial Till clays are consistent and have a characteristic value of $N_{60} = 13$.

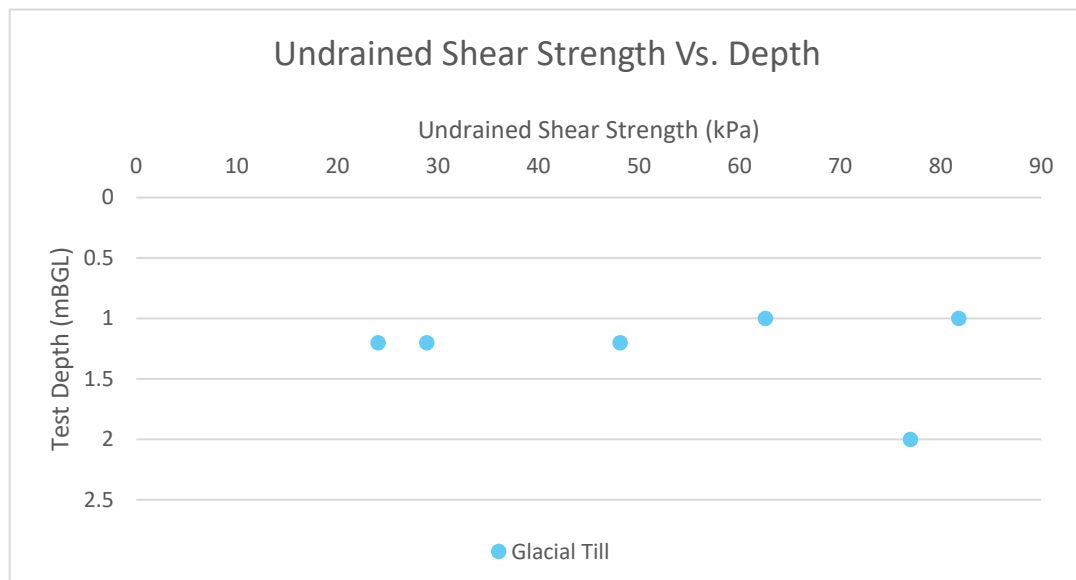
7.4. Undrained Shear Strength Profile

The undrained shear strength of the cohesive material encountered at depth beneath the Site has been determined by empirical correlation as described in CIRIA Report C143 (after Stroud and Butler, 1975):

$$c_u = N_{60} f_1 \text{ (kN/m}^2\text{)} \quad [1]$$

Where c_u is the undrained shear strength, N_{60} is the corrected SPT N value and f_1 is an empirical correlation factor based on the soil plasticity index. An f_1 index of 5 has been used.

A plot of undrained shear strength against depth below ground level is presented below using SPT data from the Glacial Clay Formation.



Due to the limited number of SPT's undertaken within cohesive strata (6 No. natural clay), extensive correlation using this method is not possible.

Undrained shear strength values have been calculated to range from 24.1 kPa to 81.8 kPa. It is expected that although the tests within the cohesive strata are limited this is a fairly representative value for the Glacial Clay.

7.5. Dynamic Cone Penetration Tests

Insitu Dynamic Sample Penetration Tests were carried out in 9 No. locations across the site to give nominal CBR values for the underlying strata layers.

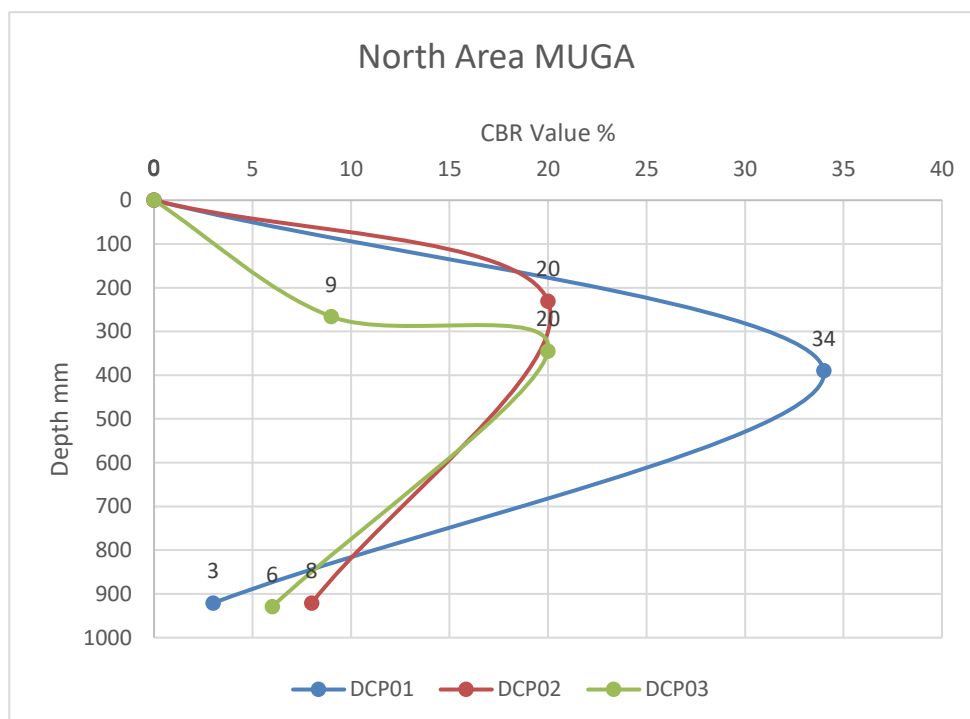
Tests were carried out by the independent testing company Hixtra Ltd. The Certificate of determinations are presented in **Appendix G**.

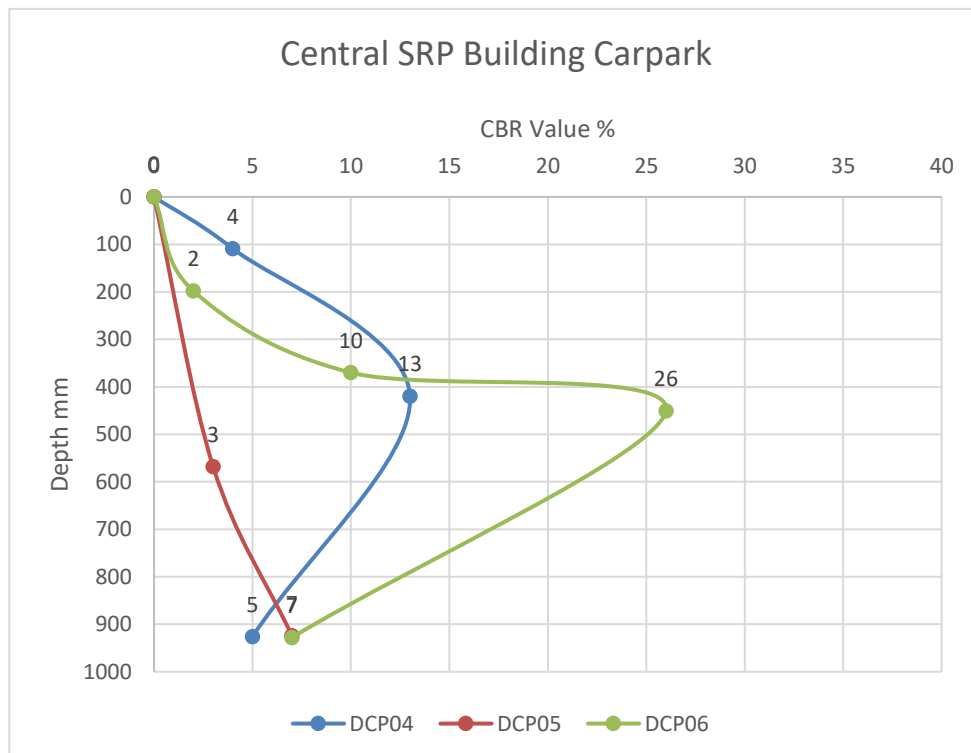
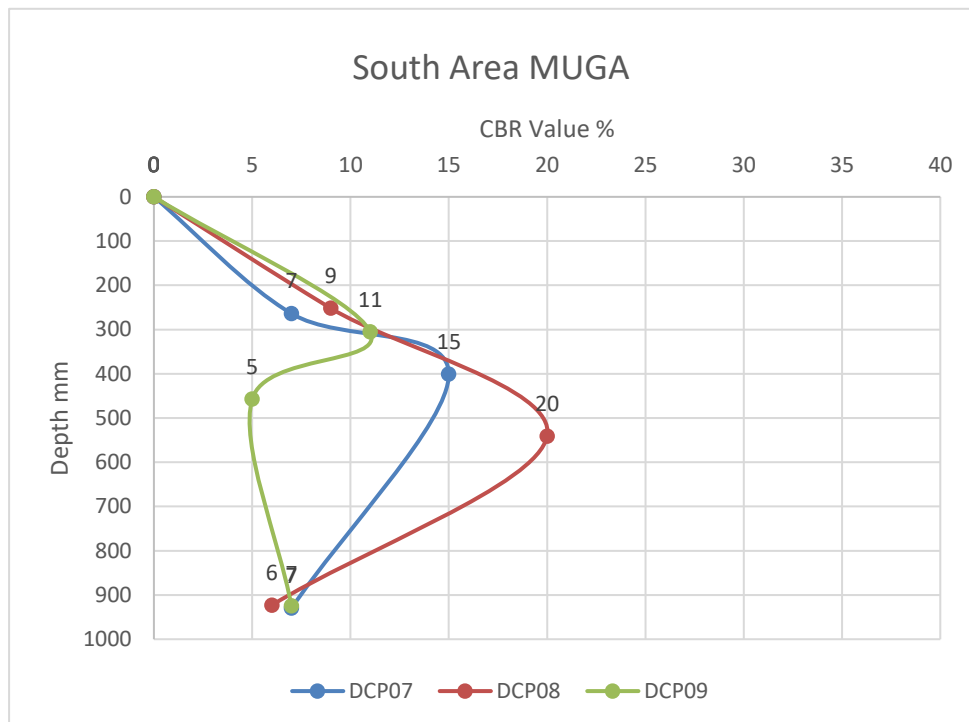
The table below provides a summary of the testing carried out:

Location	Stratum	Interpolated Layer Strata	Layer Thickness	Nominal CBR% Value
DCP01	5	MADE GROUND - Car park	390	34
	6	Glacial Till	531	3
DCP02	5	MADE GROUND - Car park	231	20
	6	Glacial Till	690	8
DCP03	1	Topsoil	266	9
	5	MADE GROUND - Historic	79	20
	5	MADE GROUND - Historic	584	6
DCP04	1	Topsoil	109	4
	4	MADE GROUND - subbase	311	13
	6	Glacial Till	506	5
DCP05	1	Topsoil	568	3
	4	MADE GROUND - subbase	356	7
DCP06	1	Topsoil	198	2
	4	MADE GROUND - subbase	172	10
	5	MADE GROUND - Historic	81	26
	6	Glacial Till	477	7
DCP07	1	Topsoil	264	7
	5	MADE GROUND - Historic	137	15
	6	Glacial Till	529	7

Location	Stratum	Interpolated Layer Strata	Layer Thickness	Nominal CBR% Value
DCP08	1	Topsoil	252	9
	5	MADE GROUND - Historic	289	20
	6	Glacial Till	382	6
DCP09	1	Topsoil	305	11
	5	MADE GROUND - Historic	152	5
	5	MADE GROUND - Historic	468	7

The following charts show the CBR value obtained in relation to depth for the proposed SRP car park and MUGA's:





7.6. Summary

A summary of recommended characteristic geotechnical soil parameters obtained from the aforementioned in-situ and laboratory testing, empirical

correlations and engineering judgement, are presented below, and are considered to represent a conservative estimate based upon the available data.

Stratum →	4 MG subbase	5 MG - Historic	6 CLAY	7 SAND
SPT N₆₀ / (N₁)₆₀ See profile	N/A	4.2 [2.8-5.6]	10.7 [4.8-16.4]	159.1 [11.2-373.5]
Moisture Content (%)	N/A	N/A	16.05 [15.5 – 16.6]	14.5
Modified Plasticity Index (%)	N/A	N/A	13.26 – 21.36	15.81
Particle Size Distribution Average %	N/A	N/A	N/A	Very Coarse – 0.0 Gravel – 0.3 Sand – 68.0 Silt/Clay – 31.7
Nominal CBR% from DCP Test	10 [7-13]	14 [5-26]	6 [5-7]	N/A

8.0 Geotechnical Assessment

8.1. Preliminary Foundation Recommendations

The following foundation recommendations are given for the proposed SRP Building only, taking into account the specific ground conditions within this area of the site. Should the location of the SRP building change, or new structures proposed elsewhere within the site, a re-assessment should be made.

The following discussion is presented as a guide to potential foundation types for the proposed development. Detailed foundation and floor slab design will be required to confirm suitable foundation types.

8.1.1. Foundations

The Glacial Till (stiff sandy gravelly CLAY) and SAND of the weathered Wilmslow Sandstone Formation are considered suitable bearing strata for traditional strip/pad foundations, founded at a minimum depth of 900 mm below ground level.

It is likely that both CLAY and SAND contrasting strata will be encountered at the minimum founding level within the SRP foundation footprint. When founding within contrasting strata there is a risk of unacceptable future differential settlement occurring. In this scenario it is recommended that foundations are locally deepened until common founding stratum (in this case SAND) is encountered throughout the foundation footprint. Based on the borehole logs, foundations are likely to be required to be deepened in places to up to ~1.5m depth below existing ground level in order to reach SAND stratum throughout. The base of foundations should be stepped in accordance with current building regulations.

No foundations should bear in soft or otherwise unsuitable material including Made Ground deposits.

A recommended allowable design bearing pressures (qd) for the cohesive Glacial Till and granular Wilmslow Sandstone Formation strata is 125kPa and is recommended based on guidelines contained within BS8004:2015+A1:2020, for foundations up to 1m wide. This should limit settlement to a maximum of 25mm, and assumes uniform loading with no eccentricity. Higher allowable bearing pressures may be possible following detailed design and settlement analysis. A minimum undrained shear strength of 75kPa will be required within the cohesive Glacial Till should foundations bear within this strata to achieve the above allowable bearing pressure.

Should foundations be deepened onto rock, an allowable design bearing pressure of 200kPa is recommended.

Foundation level should be a minimum of 900mm below existing ground level. Localised deepening may be required in some areas or depending due to tree influence. Foundations may also need to be deepened depending development levels.

Where founding in cohesive deposits detailed foundation design will be required to determine the required founding level in accordance with NHBC Guidelines Chapter 4.2 – Building Near Trees.

8.1.2. Shrinkage and Swelling Potential of Fine-Grained Soils

The results of Atterberg classification tests on fine-grained soils identified in near surface natural strata, indicate the strata to have Intermediate plasticity. The Glacial till has a low to medium volume change potential (VCP) and the Wilmslow Sandstone stratum has a Low VCP with respect to foundation design.

The Site comprises school buildings and playing fields, with several areas of mature and established trees and hedgerows (primarily along Site boundaries). There is therefore a potential for swelling and shrinkage of clay soils due to moisture content variation induced by trees either removed or remaining. Foundations and floor slabs should be designed to mitigate the risk of ground movement due to heave and shrinkage of soils.

A tree survey may be required for detailed foundation design. Foundations and floor slabs should be designed to accommodate potential strata volume change in accordance with current building regulations.

8.1.3. Alternative Foundations

At present, it is not anticipated that alternative foundations solutions such as piled foundations, rafts or vibro ground improvement will be required, unless site levels are proposed to be raised significantly or building loads will be significant.

8.1.4. Floor Slabs

A suspended floor slab with ventilated sub floor void is recommended as part of gas protection measures.

Should the building footprint lie within the influence of trees, an increased sub floor void will be required in accordance with current building regulations.

8.2. Subsurface Concrete

In accordance with the recommendations given within BRE SD1 and based on the pH and sulphate testing, a Design Sulphate (DS) class of DS-1 and Aggressive Chemical Environment for Concrete (ACEC) class of AC-1 should be adopted for concrete in contact with Made Ground, Glacial Till and Wilmslow Sandstone Formation.

8.3. Stability of Shallow Excavations and Groundwater

Trial pits have not been undertaken as part of the current site investigation works due to the active nature of the site. It is not therefore possible to comment on the stability of excavations. It may however be anticipated that excavations into the Wilmslow Sandstone Formation where groundwater is present may encounter instability.

Any excavation requiring man-entry should be battered back to a safe angle, supported by an appropriate proprietary trench support system or adequately shored to provide safe working conditions. Shoring to any excavation requiring man entry will be classified as Temporary Works and must be designed by a suitably qualified and experienced engineer. Any support system will require regular inspection as detailed in published guidelines to ensure the excavation support is adequate and appropriate for the ground conditions present. Any such excavation will be deemed a confined space.

It should be possible to progress excavations with conventional equipment. Shallow rock has been encountered at depths as shallow as 2.0m bgl, although it has been possible to progress boreholes with percussive techniques to depths of 3m, indicative of the very weak nature of the sandstones. Mechanical excavation is not considered likely to be problematic.

Significant issues with groundwater are not anticipated, and it is expected that water control in the form of pumping from sumps formed in the base of excavations will be sufficient to control water ingress.

8.4. Soakaways

Soakaways were not within the scope of the ground investigation works. The Glacial Till soils are considered unlikely to support the use of soakaway drainage as a stormwater drainage solution given the cohesive (low permeability) nature of the stratum. The underlying granular sand stratum associated with the Wilmslow Sandstone Formation is considered more likely to support soakaway pits. Infiltration testing should be undertaken to assess the use of soakaway drainage accordingly.

8.5. Earthworks

Details of earthworks and finished floor levels were not available at the time of the investigation. For any proposed earthworks, it is recommended that they are undertaken in a controlled manner using appropriate methods in accordance with an Engineer's Specification in order to minimise the settlement of hardstanding areas and services where any additional fill is placed.

Geotechnical testing (moisture content / maximum dry density relationship tests) of site soils should be undertaken to assess the suitability for use within earthworks.

Materials should be placed in layers and proof-rolled in accordance with an Engineer's Specification. Formation levels should be thoroughly proof-rolled prior to construction.

8.6. MUGGA Construction

Based on current site levels and proposed MUGA construction thickness (~600mm), a minimum CBR value of approximately 5% is anticipated at MUGGA formation level, associated with Stratum 5 – Historic Made Ground. Prior to the placement of construction thicknesses, the formation should be proof rolled and inspected by an Engineer. Any soft spots should be removed and replaced with suitable compacted material.

Any proposed fill material should be assessed for its geotechnical and chemical suitability prior to import. Unsuitable soils should not be imported. Material should be tested as it is placed to assess compliance with an earthworks specification compaction criteria. In situ CBR testing is recommended at formation level to assess compliance with required pavement design.

8.7. Waste Management

It is recommended that any spoil generated from strata 1, 3, and 5 during development be removed from the site, given the elevated concentrations of contaminants identified above respective PAC.

Spoil materials for off-site disposal to landfill, are likely to be classified as 'non-hazardous waste'. The chemical results should be forwarded to the proposed landfill site and the waste classification confirmed prior to disposing of any surplus soils. Alternatively, excess material could be sent to a soil treatment facility for recovery and re-use elsewhere.

It is currently unknown whether the asphalt hardstanding on the site contains coal tar. Coal tar testing is likely to be required if the material is removed from

Site, alternatively it may be possible to re-use the material as part of future sub-base (subject to further assessment and regulatory approval, or under a Regulatory Position Statement).

Where it is proposed to re-use site won materials or import fill materials to raise site levels, it is recommended that this is undertaken in accordance with a CL:AIRE approved Materials Management Plan (MMP) under the Definition of Waste: Code of Practice (DoWCoP)

9.0 Conclusions and Recommendations

The site is considered to present a low risk to human health. It is considered that the MUGA and SRP building construction will effectively act as a break layer to the made ground contamination identified and no new landscaping areas are understood to be proposed.

Gas protection measures are required in the SRP building in accordance with a CS2 classification.

The risk to controlled waters from the development is considered to be negligible with the development also achieving betterment in this regard.

There may be a requirement for adoption of protective water mains (should a supply be required) given the contamination encountered. The requirement for protective water mains is subject to an application to the appropriate water authority.

Traditional strip/pad foundations are considered appropriate for proposed SRP Building, subject to consideration of proposed vs existing levels and the influence of trees.

A ground bearing floor slab may be geotechnically viable, however a suspended floor slab will be required as part of gas protection measures.

In accordance with the recommendations given within BRE SD1 and based on the pH and sulphate testing, a Design Sulphate (DS) class of DS-1 and Aggressive Chemical Environment for Concrete (ACEC) class of AC-1 should be adopted for the existing ground conditions for buried concrete.

A CL:AIRE approved Materials Management Plan (MMP) may be required for the re-use of soils on site.

9.1. Recommended Further Works

The following further works are recommended:

- Review of groundwater testing results to confirm the low risk to controlled waters.
- Completion of the intended gas monitoring programme to assess the risk of ground gas and confirm the requirement for gas protection measures.
- Infiltration testing to assess the feasibility of soakaway design.
- An Earthworks Specification will be required for any proposed earthworks.

- A CL:AIRE approved Materials Management Plan (MMP) will be required in the event the re-use of site-won soils is proposed, or fill materials are imported from another site..

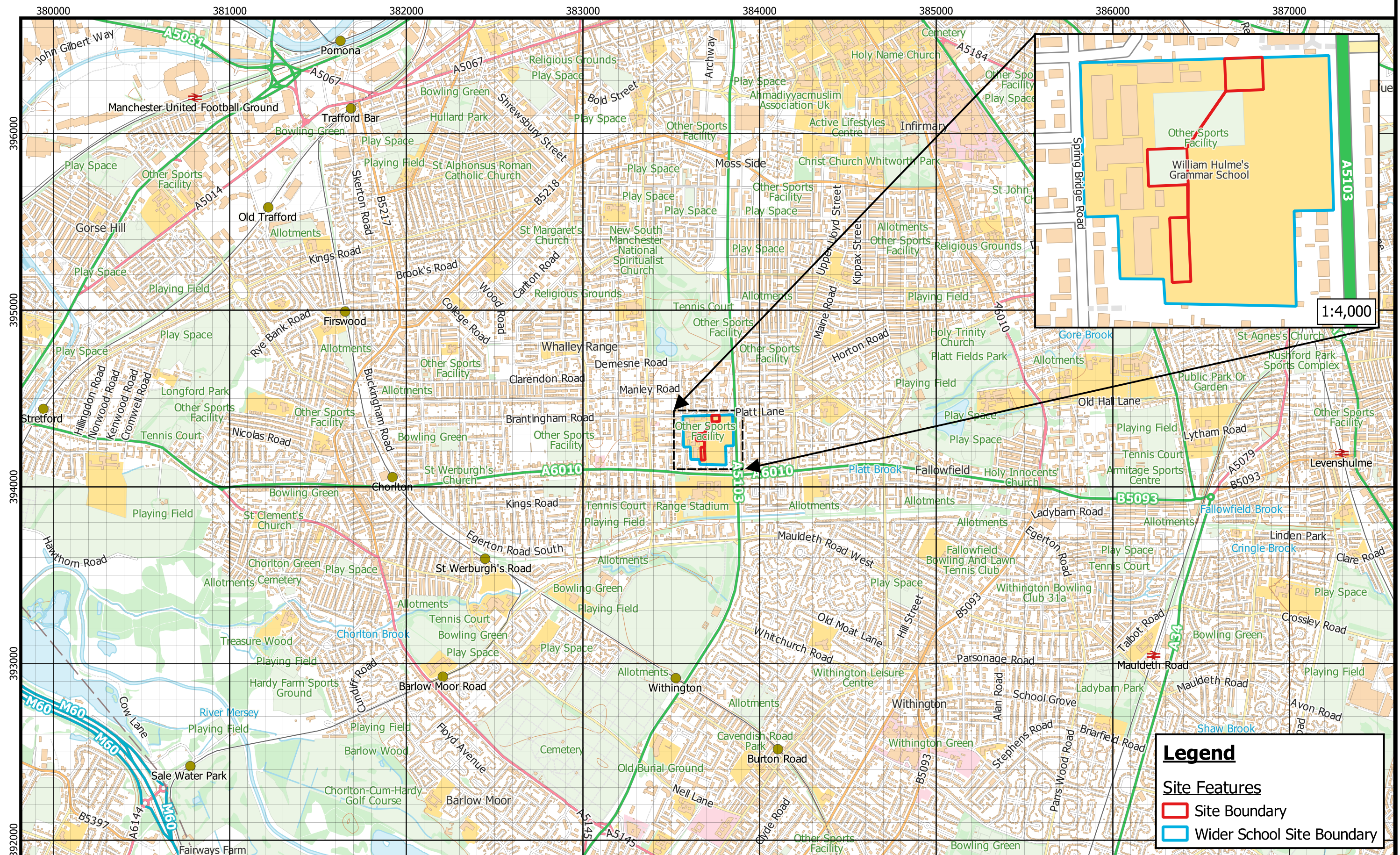
Approval to recommendations should be sought from regulatory bodies.

References

1. British Standard BS EN 1997-1: 2004. Eurocode 7: Geotechnical Design –Part 1: General Rules.
2. British Standard BS EN 1997-2: 2007. Eurocode 7: Geotechnical Design – Part 2: Ground Investigation and Testing.
3. UK National Annex to BS EN 1997-1: 2004. British Standards Institution.
4. British Standards Institution: BS 5930:2015+A1:2020 'Code of practice for ground investigations.' BSI 2015+A1:2020.
5. British Standards Institution. BS 10175:2011+A2:2017. Investigation of potentially contaminated sites – Code of practice.
6. British Standards Institute: BS 1377:2022 'Methods of test for soils for civil engineering purposes. Classification tests and determination of geotechnical properties.
7. British Standards Institute: BS 1377:2018 'Methods of test for soils for civil engineering purposes. Chemical and electrochemical tests.
8. British Standard BS EN 22476-2: 2005+A1:2011. Geotechnical Investigation and Testing – Field Testing – Part 3: Standard Penetration Test. British Standards Institution.
9. British Standards Institution BS8485:2015+A2:2019, Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings.
10. CIRIA , 2007, CIRIA C665: Assessing risks posed by hazardous ground gases to buildings.
11. Hoek, E., and Bray, J., 1974, Rock Slope Engineering Revised Third Edition, The Institution of Mining and Metallurgy, Taylor and Francis.
12. Spink, T.W. and Norbury, D.R., 1993. The engineering geological description of weak rocks and overconsolidated soils. *Proceedings 26th Regional Meeting of Engineering Group of Geological Society*, Leeds.
13. Nathanial et. al., (2009), The LQM/CIEH Generic Assessment Criteria for Human Health Risk Assessment (2nd edition), Land Quality Press, Nottingham
14. Wheale, G. et al, 2010, Guidance for the Selection of Water Supply Pipes to be Used in Brownfield Sites, UK Water Industry Research Ltd, report reference 10/WM03/21.

15. CIRIA, 2014, CIRIA C735: Good practice on the testing and verification of protection systems for buildings against hazardous ground gases.
16. BRE Special Digest 1, Concrete in Aggressive Ground 3rd Edition 2005 (including 2017 amendments), IHS BRE Press.
17. Parry, D and Chiverrell, C (eds) (2019), Abandoned Mine Workings Manual, C758D, CIRIA, London, UK (ISBN: 978-0-86017-765-4) www.ciria.org
18. Land Contamination Risk Management (LCRM) guidance from the Environment Agency 2021
<https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm>

Appendix A: Site Boundary and Location Plan



Project ID: P22-639

Project Title: SRP, William Hulme's Grammar School

Location: Manchester

Title: Site Location Plan

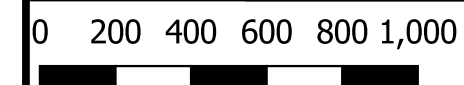
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Date: 14/06/24

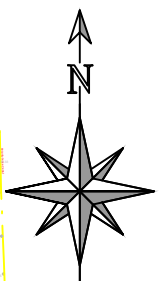
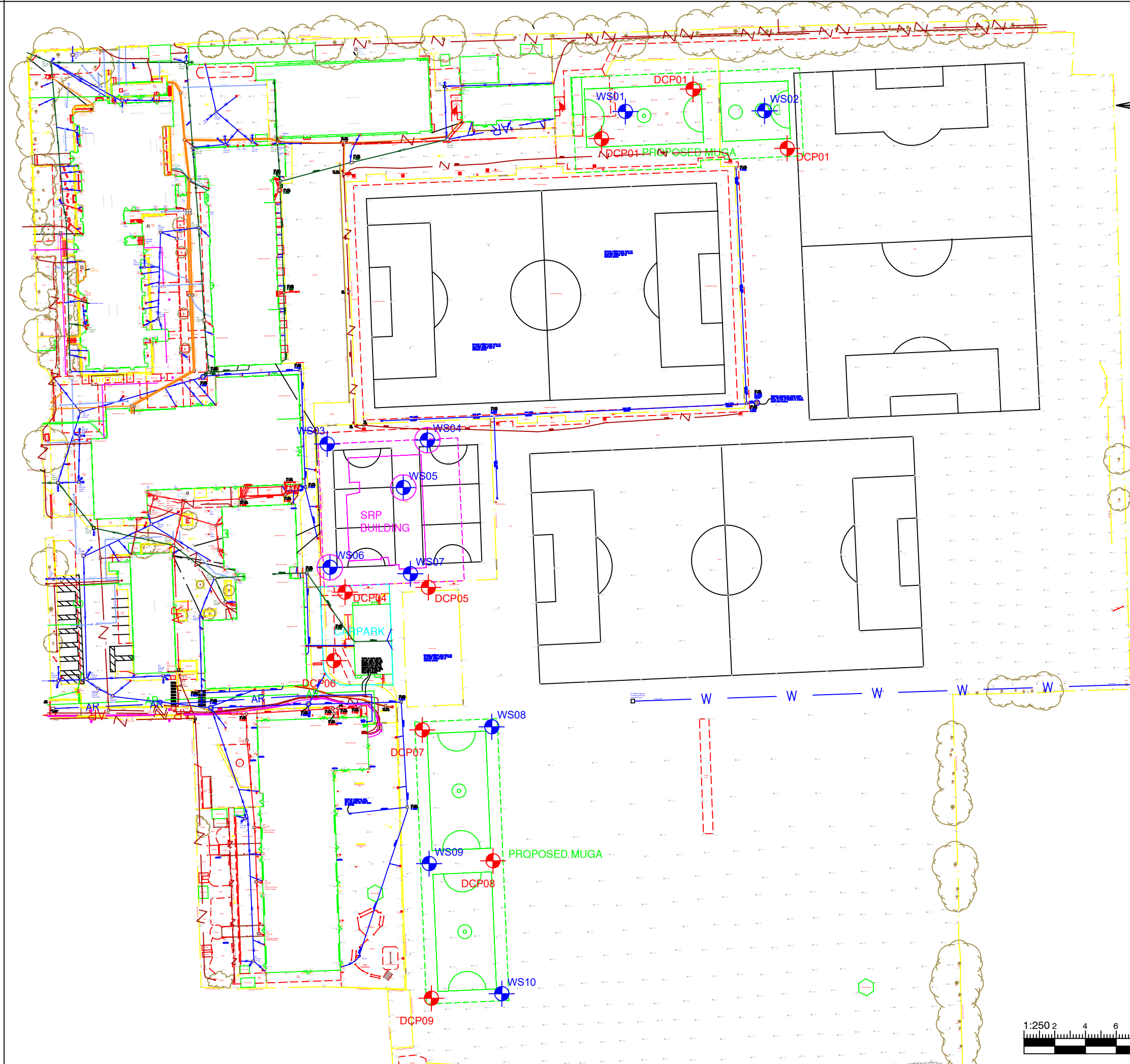
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A3



Appendix B: Exploratory Hole Location Plan



Scale Bar:

KEY

- Proposed SRP Building
- Proposed Carpark
- Proposed MUGA
- Proposed Window Sample Locations
- Proposed Installs
- Proposed DCP Locations

Health & Safety Information Key

- Used to provide design specific safety information that may not be obvious to a competent contractor but may be useful.
- Used to restrict/prevent a possible action, eg. stop construction traffic from entering an area.
- Used to warn of significant design hazards, adding recommendations
- Used to encourage a positive action, e.g. use of robust protection for inspection chambers

P01	08/05/2025	INITIAL	JRH	JBe
Rev	Date	Amendments	By	Chk



Client
UNITED LEARNING

Project
**SRP BUILDING
WILLIAM HULME GRAMMAR
SCHOOL, MANCHESTER**

Drawing Title
**PROPOSED EXPLORATORY
HOLE LOCATION PLAN**

Status

DRAFT

Scale	Drawn	Checked	Date
A3@ 1:1000	JRH	JBe	08/05/2025

Drawing No. 22639-RLL-25-XX-DR-O-0005 P01

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Appendix C: Exploratory Logs



Borehole Log

Borehole No.

WS01

Sheet 1 of 1

Project Name:

William Hulme's Grammar School, Manchester

Project No.

P22-639

Co-ords:

383721E - 394384N

Hole Type

WS

Location:

Manchester

Level:

Scale

1:20

Client:

United Learning

Dates:

30/05/2025

Logged By

JRH

Scale	Sample and In Situ Testing				Level (m)	Depth (m)	Stratum Description	Legend	Water Strikes	Well
	Depth (m)	Ref.	Type	Results						
1	0.15 - 0.20	ES1	ES			MADE GROUND Yellowish brown to reddish brown very sandy fine to coarse angular to sub-angular chert, limestone and brick fragments GRAVEL.				
	0.40 - 0.50	ES2	ES		0.30	MADE GROUND Dark brown very clayey very gravelly SAND. Gravel is fine to coarse angular to sub-angular tile, brick fragments, glass, chert. <u>White geotextile membrane</u>				
	0.70 - 0.90	B1	B		0.65	Dense greyish brown to reddish brown silty slightly gravelly medium SAND. Gravel is fine subrounded chert. (GLACIAL TILL).				
	1.20		SPT	N=6 (1,1/1,1,2,2)	1.00	Firm to stiff greyish brown slightly gravelly CLAY. Gravel is fine subangular to subrounded chert, mudstone and rare coal trace. (GLACIAL TILL).				
	1.50 - 1.60	D1	D							
2	2.00		SPT	N=16 (2,3/4,4,4,4)						
3	3.00		SPT	N=50 (10,10/50 for 115mm)		2.65	Reddish brown fine to medium SAND. (WILMSLOW SANDSTONE FORMATION).			
					3.00	End of Borehole at 3.000m				
4										

Remarks

1. Borehole terminated at 3.00m after SPT refusal. 2. Made Ground encountered to a depth of 0.65m. 3. Groundwater encountered at 2.80m. 4. Borehole backfilled with bentonite upon completion.





Borehole Log

Borehole No.

WS02

Sheet 1 of 1

Project Name:

William Hulme's Grammar School, Manchester

Project No.

P22-639

Co-ords:

383757E - 394384N

Hole Type

WS

Location:

Manchester

Level:

Client:

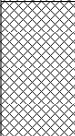
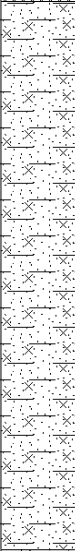
United Learning

Dates:

30/05/2025

Logged By

JRH

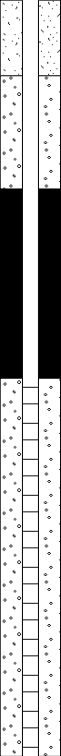
Scale	Sample and In Situ Testing				Level (m)	Depth (m)	Stratum Description	Legend	Water Strikes	Well
	Depth (m)	Ref.	Type	Results						
1	0.15 - 0.20	ES1	ES			0.30	Grass over dark brown loamy TOPSOIL			
						0.30	MADE GROUND Dark brown slightly clayey very gravelly SAND. Gravel is fine to medium angular to subangular tile, brick fragments, clinker, rare coal traces.			
	0.70 - 0.80	ES2	ES							
	1.20		SPT	N=2 (1,0/1,0,0,1)		1.40				
2	1.70 - 1.80	D1	D				Brown very clayey slightly silty fine to medium SAND. (WILMSLOW SANDSTONE FORMATION).			
	2.00		SPT	N=9 (2,2/3,3,1,2)						
	2.30 - 2.80	B1	B							
3	3.00		SPT	N=50 (10,10/50 for 50mm)		2.85	Dense reddish brown mottled grey medium SAND. (WILMSLOW SANDSTONE FORMATION).			
						3.00	End of Borehole at 3.000m			
4										

Remarks

1. Borehole terminated at 3.00m after SPT refusal. 2. Made Ground encountered to a depth of 1.40m. 3. Groundwater not encountered. 4. Borehole backfilled with bentonite upon completion.



					Borehole Log			Borehole No. WS03 Sheet 1 of 1			
Project Name:		William Hulme's Grammar School, Manchester			Project No. P22-639		Co-ords: 383643E - 394298N		Hole Type WS		
Location:		Manchester			Level:				Scale 1:20		
Client:		United Learning			Dates:		29/05/2025		Logged By JRH		
Scale	Sample and In Situ Testing				Level (m)	Depth (m)	Stratum Description	Legend	Water Strikes	Well	
	Depth (m)	Ref.	Type	Results							
1	0.30 - 0.40	ES1	ES	N=13 (2,2/2,3,3,5)		0.10	MACADAM Black hard top				
						0.10	MADE GROUND Sub-base. Dense yellowish grey very sandy fine to coarse subangular limestone GRAVEL				
	0.60 - 0.80	D1	D			0.60	MADE GROUND Dark greyish brown silty fine to medium SAND				
						0.80	Firm brown sandy slightly gravelly CLAY. Gravel is fine to medium subrounded chert. Rare fragments of coal. (GLACIAL TILL).				
	1.00		SPT			1.50	Reddish brown fine to medium SAND. (WILMSLOW SANDSTONE FORMATION).				
	1.50 - 2.00	B1	B			2.00	End of Borehole at 2.000m				
2	2.00		SPT	N=50 (9,13/50 for 60mm)							
3											
4											
Remarks											
1. Borehole terminated at 2.00m after SPT refusal. 2. Made Ground encountered to a depth of 0.80m. 3. Groundwater encountered at 1.10m. 4. Borehole backfilled with bentonite upon completion.											

					Borehole Log			Borehole No. WS04 Sheet 1 of 1			
Project Name: William Hulme's Grammar School, Manchester					Project No. P22-639		Co-ords: 383669E - 394299N		Hole Type WS		
Location: Manchester					Level:		Scale 1:20		Logged By JRH		
Client: United Learning					Dates: 29/05/2025						
Scale	Sample and In Situ Testing				Level (m)	Depth (m)	Stratum Description	Legend	Water Strikes	Well	
	Depth (m)	Ref.	Type	Results							
1						0.10	MACADAM Black hard top				
						0.10	MADE GROUND Sub-base. Dense yellowish grey very sandy fine to coarse subangular limestone GRAVEL				
	0.70 - 0.80	ES1	ES			0.70	MADE GROUND. Firm dark brown sandy CLAY. Rare fragments of coal.				
						0.80	<u>Black geotextile membrane</u>				
	0.90 - 1.00	ES2	ES				Firm brown slightly gravelly CLAY. Gravel is fine to medium subrounded chert. (GLACIAL TILL).				
	1.00 - 1.10	D1	D								
						1.10	Dense brown very clayey slightly gravelly medium SAND. Gravel is fine to medium subrounded chert. (WILMSLOW SANDSTONE FORMATION).				
	1.20		SPT	N=16 (2,2/2,4,4,6)							
2						1.40 - 1.50					
3						1.60 - 2.00	Dense Reddish brown to yellowish brown medium SAND. (WILMSLOW SANDSTONE FORMATION).				
4						2.00	End of Borehole at 2.000m				
Remarks											
1. Borehole terminated at 2.00m after SPT refusal. 2. Made Ground encountered to a depth of 0.80m. 3. Groundwater encountered at 0.40m. 4. Borehole installed with gas and groundwater monitoring ancillaries and capped with bentonite.											



Borehole Log

Borehole No.

WS05

Sheet 1 of 1

Project Name:

William Hulme's Grammar School, Manchester

Project No.

P22-639

Co-ords:

383663E - 394286N

Hole Type

WS

Location:

Manchester

Level:

Scale

1:20

Client:

United Learning

Dates:

29/05/2025

Logged By

JRH

Scale	Sample and In Situ Testing				Level (m)	Depth (m)	Stratum Description	Legend	Water Strikes	Well
	Depth (m)	Ref.	Type	Results						
1						0.10	MACADAM Black hard top <i>Black geotextile membrane</i> MADE GROUND Sub-base. Dense yellowish grey very sandy fine to coarse subangular limestone GRAVEL			
	0.60 - 0.70	ES1	ES			0.50	Stiff brown mottled orangish brown very sandy gravelly CLAY. Sand is fine to medium. Gravel is fine to medium subrounded various lithologies. (GLACIAL TILL).			
	0.90 - 1.00	D1	D			1.10	Reddish brown fine to medium SAND. (WILMSLOW SANDSTONE FORMATION).			
	1.00		SPT	N=17 (2,2/2,4,5,6)						
2	1.40 - 2.00	B1	B							
	2.00		SPT	N=50 (10,12/50 for 50mm)		2.00	End of Borehole at 2.000m			
3										
4										

Remarks

1. Borehole terminated at 2.00m after SPT refusal. 2. Made Ground encountered to a depth of 0.50m. 3. Groundwater encountered at 0.50m and rising to 0.40m after 60mins. 4. Borehole installed with gas and groundwater monitoring ancillaries and capped with bentonite.





Borehole Log

Borehole No.

WS06

Sheet 1 of 1

Project Name:

William Hulme's Grammar School, Manchester

Project No.

P22-639

Co-ords:

383644E - 394266N

Hole Type

WS

Location:

Manchester

Level:

Scale

1:20

Client:

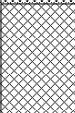
United Learning

Dates:

29/05/2025

Logged By

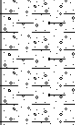
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Scale	Sample and In Situ Testing				Level (m)	Depth (m)	Stratum Description	Legend	Water Strikes	Well
	Depth (m)	Ref.	Type	Results						
1						0.10	MACADAM Black hard top			
						0.10	MADE GROUND Sub-base. Dense yellowish grey very sandy fine to coarse subangular limestone GRAVEL			
	0.40 - 0.50	ES1	ES			0.40	MADE GROUND Dark greyish brown silty fine to medium SAND			
	0.70 - 0.80	D1	D			0.55	Black geotextile membrane			
						0.80	Firm brown sandy slightly gravelly CLAY. Gravel is fine to medium subrounded chert. Rare fragments of coal. (GLACIAL TILL).			
2	1.00 - 2.00 1.00	B1	B SPT	N=19 (3,3/4,4,5,6)			Reddish brown fine to medium SAND. (WILMSLOW SANDSTONE FORMATION).			
	2.00		SPT	N=50 (10,13/50 for 50mm)		2.00	End of Borehole at 2.000m			
3										
4										

Remarks

1. Borehole terminated at 2.00m after SPT refusal. 2. Made Ground encountered to a depth of 0.50m. 3. Groundwater encountered at 0.50m. 4. Borehole installed with gas and groundwater monitoring ancillaries and capped with bentonite.



					Borehole Log			Borehole No. WS07 Sheet 1 of 1		
Project Name:		William Hulme's Grammar School, Manchester			Project No. P22-639		Co-ords: 383665E - 394264N		Hole Type WS	
Location:		Manchester					Level:		Scale 1:20	
Client:		United Learning					Dates: 29/05/2025		Logged By JRH	
Scale	Sample and In Situ Testing				Level (m)	Depth (m)	Stratum Description	Legend	Water Strikes	Well
	Depth (m)	Ref.	Type	Results						
1						0.10	MACADAM Black hard top			
						0.10	MADE GROUND Sub-base. Dense yellowish grey very sandy fine to coarse subangular limestone GRAVEL			
						0.50	MADE GROUND. Firm dark brown sandy CLAY.			
						0.60	<u>Black geotextile membrane</u>			
						0.60	Stiff brown mottled orangish brown very sandy gravelly CLAY. Sand is fine to medium. Gravel is fine to medium subrounded various lithologies. (GLACIAL TILL).			
						1.00	DRILLING DISTURBANCE - likely washed out reddish brown fine to medium SAND. (WILMSLOW SANDSTONE FORMATION).			
						1.50	Reddish brown fine to medium SAND. (WILMSLOW SANDSTONE FORMATION).			
						2.00	End of Borehole at 2.000m			
Remarks										
1. Borehole terminated at 2.00m after SPT refusal. 2. Made Ground encountered to a depth of 1.00m. 3. Groundwater encountered at 0.50m rising to 0.30m after 60mins. 4. Borehole backfilled with bentonite upon completion.										



Borehole Log

Borehole No.

WS08

Sheet 1 of 1

Project Name:

William Hulme's Grammar School, Manchester

Project No.

P22-639

Co-ords:

383686E - 394224N

Hole Type

WS

Location:

Manchester

Level:

Client:

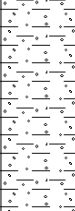
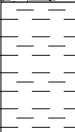
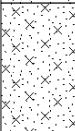
United Learning

Dates:

Scale

1:20

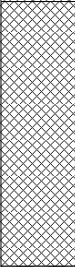
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Scale	Sample and In Situ Testing				Level (m)	Depth (m)	Stratum Description	Legend	Water Strikes	Well
	Depth (m)	Ref.	Type	Results						
1	0.40 - 0.50	ES1	ES			0.30	Grass over dark brown loamy TOPSOIL			
							MADE GROUND Dark brown slightly clayey very gravelly SAND. Gravel is fine to medium angular to subangular glass and clinker.			
	1.20 - 1.30	D1	D SPT			0.80	Firm orangish brown slightly gravelly CLAY. Gravel is fine to coarse subrounded chert. (GLACIAL TILL)			
	1.60 - 1.70	D2	D			1.40	Reddish brown mottled grey clayey SAND. (WILMSLOW SANDSTONE FORMATION).			
	2.00	B1	B			1.90	soft to stiff brownish grey CLAY. (WILMSLOW SANDSTONE FORMATION).			
	2.10 - 2.40					2.10	Orangish brown clayey fine to medium SAND. (WILMSLOW SANDSTONE FORMATION).			
					2.45	Reddish brown wet very silty SAND. (WILMSLOW SANDSTONE FORMATION).				
					2.80	Reddish brown very clayey fine to medium SAND. (WILMSLOW SANDSTONE FORMATION).				
3.00					3.00	Reddish brown fine to medium SAND. (WILMSLOW SANDSTONE FORMATION).				
						End of Borehole at 3.000m				
4										

Remarks

1. Borehole terminated at 3.00m after SPT refusal. 2. Made Ground encountered to a depth of 0.80m. 3. Groundwater encountered at 1.50m rising to 1.45m after 60mins. 4. Borehole backfilled with bentonite upon completion.



				Borehole Log			Borehole No. WS09 Sheet 1 of 1				
Project Name:		William Hulme's Grammar School, Manchester		Project No. P22-639		Co-ords:		383670E - 394188N		Hole Type WS	
Location:		Manchester				Level:				Scale 1:20	
Client:		United Learning				Dates:		30/05/2025		Logged By	
Scale	Sample and In Situ Testing				Level (m)	Depth (m)	Stratum Description	Legend	Water Strikes	Well	
	Depth (m)	Ref.	Type	Results							
1	0.15 - 0.20	ES1	ES	N=5 (0,0/1,1,1,2)		0.30	Grass over dark brown loamy TOPSOIL				
	0.50 - 0.60	ES2	ES			1.00	MADE GROUND Dark brown slightly clayey very gravelly SAND. Gravel is fine to medium angular to subangular glass, slag and clinker.				
						1.60	Firm orangish brown very sandy CLAY. (GLACIAL TILL).				
						2.00	Reddish brown fine to medium SAND. (WILMSLOW SANDSTONE FORMATION).				
	2	2.00	SPT			N=50 (9,10/50 for 210mm)	2.00	End of Borehole at 2.000m			
3											
4											
Remarks											
1. Borehole terminated at 2.00m after SPT refusal. 2. Made Ground encountered to a depth of 1.00m. 3. Groundwater not encountered. 4. Borehole backfilled with bentonite upon completion.											



Borehole Log

Borehole No.

WS10

Sheet 1 of 1

Project Name:

William Hulme's Grammar School, Manchester

Project No.

P22-639

Co-ords:

383689E - 394155N

Hole Type

WS

Location:

Manchester

Level:

Scale

1:20

Client:

United Learning

Dates:

30/05/2025

Logged By

JRH

Scale	Sample and In Situ Testing				Level (m)	Depth (m)	Stratum Description	Legend	Water Strikes	Well
	Depth (m)	Ref.	Type	Results						
1							Grass over dark brown loamy TOPSOIL			
	0.50 - 0.60	ES1	ES			0.30	MADE GROUND Dark brown slightly clayey very gravelly SAND. Gravel is fine to medium angular to subangular glass, stone, brick fragments, coal and clinker.			
	1.20		SPT	N=4 (1,2/1,1,1,1)		1.30	Greyish brown clayey medium SAND. (WILMSLOW SANDSTONE FORMATION).			
	1.60 - 1.70	D1	D			1.90	Reddish brown fine to medium SAND. (WILMSLOW SANDSTONE FORMATION).			
2	2.00		SPT	N=50 (7,10/50 for 245mm)		2.00	End of Borehole at 2.000m			
3										
4										

Remarks

1. Borehole terminated at 2.00m after SPT refusal. 2. Made Ground encountered to a depth of 1.30m. 3. Groundwater encountered at 1.90m. 4. Borehole backfilled with bentonite upon completion.



Appendix D: Gas Monitoring Data Sheets



Ground Gas Monitoring Form

Site Name:	William Hulme's Grammar	RLE Engineer:	Josh Rhodes-Hook
Job No.	P22-639	Date:	31/07/2025

Atmospheric Pressure:	1016 → 1013	Weather Conditions:	Overcast
State:	Falling	Temperature:	17°C

Time	BH Ref.	Steady Gas Flow Rate (l/hr)		Borehole Pressure (Pa)	Methane (% v/v)		Carbon Dioxide (% v/v)		Oxygen (% v/v)		CO (% ppm)		H2S (% ppm)		Depth of Borehole (m bgl)	Depth to Water (m bgl)	baro m	PID
		Initial	Steady		Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady				
Pre Purge																		
13:25	WS04	0	0	0	0	0	18.1	18.3	2.6	0	10	0	0	0	2.03	Dry	1013	0.0
13:10	WS05	0	0	0	0	0	0.4	0.3	16.1	15.7	10	0	0	0	2.00	1.20	1014	0.1
12:44	WS06	0	0	0	0	0	7.0	6.3	12.9	12.5	0	0	0	0	1.80	Dry	1016	0.0
Post Purge																		
13:40	WS05	0	0	0	0	0	0	0	18.5	18.7	0	0	0	0	2.00	1.79	1013	N/A

NOTES

Monitoring order is from **Left to Right** across this table (expect when using a PID, which should be used first).

Monitoring should be for **NO less than 3 minutes**, unless there have been fluctuations between initial and steady state recorded during the 3 minutes, or high concentrations of gases are initially recorded. Monitoring should then be up to 10 minutes or steady state.

Equipment used:	Infra Red Gas Analyser	GFM 436	Last calibrated:	23/09/2024
	MiniRAE Lite PID		Last calibrated:	23/07/2025
Visible signs of vegetation Stress:		-		
Other Comments/ Observations/Tests:		WS05 purged, WS04 and WS06 Dry, WS05 recharging slowly about 10mm per minute. WS07 reinstatement (no install) showed signs of damage from students digging out cold lay tarmac.		



Ground Gas Monitoring Form

Site Name:	William Hulme's Grammar	RLE Engineer:	Emily Rafferty and Oliver Neiland
Job No.	P22-639	Date:	07/08/2025

Atmospheric Pressure:	1009 → 1007	Weather Conditions:	Overcast
State:	Falling	Temperature:	20°C

Time	BH Ref.	Steady Gas Flow Rate (l/hr)		Borehole Pressure (Pa)	Methane (% v/v)		Carbon Dioxide (% v/v)		Oxygen (% v/v)		CO (% ppm)		H2S (% ppm)		Depth of Borehole (m bgl)	Depth to Water (m bgl)	baro m	PID
		Initial	Steady		Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady				
10:29	WS04	0	0	0	0	0	17.2	18.0	2.3	0.1	0	0	0	0	1.97	1.94	1009	N/A
10:45	WS05	98.4	0	1578	0	0	0.4	0.4	17.1	17.3	0	0	0	0	1.98	0.46	1008	N/A
11:10	WS06	0	0	0	0	0	4.4	1.2	15.0	16.8	0	0	0	0	1.8	DRY	1007	N/A

NOTES

Monitoring order is from **Left to Right** across this table (except when using a PID, which should be used first).

Monitoring should be for **NO less than 3 minutes**, unless there have been fluctuations between initial and steady state recorded during the 3 minutes, or high concentrations of gases are initially recorded. Monitoring should then be up to 10 minutes or steady state.

Equipment used:	Infra Red Gas Analyser	GFM 436	Last calibrated:	23/09/2024
	MiniRAE Lite PID		Last calibrated:	
Visible signs of vegetation Stress:		-		
Other Comments/ Observations/Tests:		WS05 Purged on previous visit, water level above base of plain pipe indicating high flow is likely a piston effect from compressed gas.		



Ground Gas Monitoring Form

Site Name:	William Hulme's Grammar	RLE Engineer:	Josh Rhodes-Hook
Job No.	P22-639	Date:	22/08/25

Atmospheric Pressure:	1021 - 1020	Weather Conditions:	Overcast
State:	Falling	Temperature:	17°C

Time	BH Ref.	Steady Gas Flow Rate (l/hr)		Borehole Pressure (Pa)	Methane (% v/v)		Carbon Dioxide (% v/v)		Oxygen (% v/v)		CO (% ppm)		H2S (% ppm)		Depth of Borehole (m bgl)	Depth to Water (m bgl)	baro m	PID
		Initial	Steady		Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady				
12:32	WS04	0	0	0	0	0	17.8	18.5	5.0	0.0	0	0	0	0	1.97	1.95	1020	N/A
12:25	WS05	0	0	0	0	0	0.5	0.5	18.1	18.0	0	0	0	0	1.95	Dry	1021	N/A
12:18	WS06	0	0	0	0	0	2.3	0.8	17.3	17.9	0	0	0	0	1.79	Dry	1021	N/A

NOTES

Monitoring order is from **Left to Right** across this table (expect when using a PID, which should be used first).

Monitoring should be for **NO less than 3 minutes**, unless there have been fluctuations between initial and steady state recorded during the 3 minutes, or high concentrations of gases are initially recorded. Monitoring should then be up to 10 minutes or steady state.

Equipment used:	Infra Red Gas Analyser	GFM 436	Last calibrated:	23/09/2024
	MiniRAE Lite PID		Last calibrated:	
Visible signs of vegetation Stress:		-		
Other Comments/ Observations/Tests:				



Ground Gas Monitoring Form

Site Name:	William Hulme's Grammar	RLE Engineer:	JH
Job No.	P22-639	Date:	29/08/2025

Atmospheric Pressure:	993 → 995	Weather Conditions:	Sunny
State:	Falling	Temperature:	21°C

Time	BH Ref.	Steady Gas Flow Rate (l/hr)		Borehole Pressure (Pa)	Methane (% v/v)		Carbon Dioxide (% v/v)		Oxygen (% v/v)		CO (% ppm)		H2S (% ppm)		Depth of Borehole (m bgl)	Depth to Water (m bgl)	baro m	PID
		Initial	Steady		Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady				
12:08	WS04	-3.8	-3.1	-14	0	0	17.3	18.3	5.0	0.0	0	0	0	0	1.96	1.94	993	N/A
12:17	WS05	0	0	0	0	0	5.0	2.4	10.6	11.8	0	0	0	0	1.96	DRY	995	N/A
12:23	WS06	0	0	0	0	0	5.3	4.1	14.3	14.6	0	0	0.001	0.005	1.8	DRY	995	N/A

NOTES

Monitoring order is from **Left to Right** across this table (expect when using a PID, which should be used first).

Monitoring should be for **NO less than 3 minutes**, unless there have been fluctuations between initial and steady state recorded during the 3 minutes, or high concentrations of gases are initially recorded. Monitoring should then be up to 10 minutes or steady state.

Equipment used:	Infra Red Gas Analyser	GFM 436	Last calibrated:	23/09/2024
	MiniRAE Lite PID		Last calibrated:	
Visible signs of vegetation Stress:		-		
Other Comments/ Observations/Tests:		WS05 Purged on previous visit, water level above base of plain pipe indicating high flow is likely a piston effect from compressed gas.		

Appendix E: Chemical Laboratory Results



Final Report

Report No.: 25-18513-1

Initial Date of Issue: 23-Jun-2025

Re-Issue Details:

Client *Rodgers Leask Environmental*

Client Address: *St James House
St Marys Wharf
Mansfield Road
Derby
DE1 3TQ*

Contact(s): *Joshua Rhodes-Hook*

Project *P22-639*

Quotation No.: *Q25-37516*

Date Received: 04-Jun-2025

Order No.: *RLL 25-02-83*

Date Instructed: 04-Jun-2025

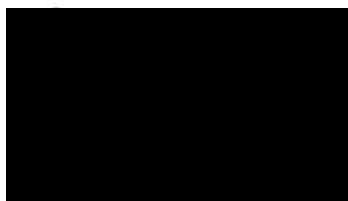
No. of Samples: *13*

Turnaround (Wkdays): *5*

Results Due: 10-Jun-2025

Date Approved: 23-Jun-2025

Approved By:



David Smith, Technical Director

For details about application of accreditation to specific matrix types, please refer to the Table at the back of this report

Results - Soil

Project: P22-639

Client: Rodgers Leask Environmental		Chemtest Job No.:				25-18513	25-18513	25-18513	25-18513	25-18513	25-18513	25-18513
Quotation No.: Q25-37516		Chemtest Sample ID.:				1982225	1982226	1982227	1982230	1982231	1982232	1982233
Order No.: RLL 25-02-83		Client Sample Ref.:				ES1	ES2	ES1	D1	ES1	ES2	ES1
		Client Sample ID.:				#93543702942 90001	#93543702942 90002	#86214772918 80001	#58550369566 70001	#65677374615 20001	#65677374615 20002	#66484622580 50001
		Client Reference:				WS01	WS01	WS02	WS03	WS04	WS04	WS05
		Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):				0.15	0.40	0.15	0.60	0.70	0.90	0.60
		Bottom Depth (m):				0.20	0.50	0.20	0.80	0.80	1.00	0.70
		Date Sampled:				30-May-2025	30-May-2025	30-May-2025	29-May-2025	29-May-2025	29-May-2025	29-May-2025
		Time Sampled:				9:34	9:34	11:04	14:00	11:42	11:50	13:07
		Asbestos Lab:				NEW-ASB	NEW-ASB	NEW-ASB		NEW-ASB		
Determinand	HWOL Code	Accred.	SOP	Units	LOD							
ACM Type		N	2192		N/A	-	-	-		-		
Asbestos Identification		U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected		No Asbestos Detected		
Moisture		N	2030	%	0.020	7.1	20	8.3	17	15	14	13
Soil Colour		N	2030		N/A	Brown		Brown	Brown	Brown	Brown	Brown
Other Material		N	2030		N/A	Stones and brick		Stones, Roots and brick	Stones	Stones, Roots and brick	Stones	Stones
Soil Texture		N	2030		N/A	Sand		Loam	Clay	Clay	Clay	Clay
pH at 20C		M	2010		4.0	9.2	7.7	7.6		7.3		
pH (2.5:1) at 20C		N	2010		4.0				7.6			
Boron (Hot Water Soluble)		M	2120	mg/kg	0.40	1.1	1.1	0.46		< 0.40		
Magnesium (Water Soluble)		M	2120	mg/kg	20				< 20			
Sulphate (2:1 Water Soluble) as SO4		M	2120	g/l	0.010	0.60	0.40	< 0.010	0.012	0.023		
Total Sulphur		U	2175	%	0.010	0.16	0.23	0.070	0.030	0.050		
Chloride (Water Soluble)		M	2220	g/l	0.010				< 0.010			
Nitrate (Water Soluble)		N	2220	g/l	0.010				< 0.010			
Cyanide (Complex)		M	2300	mg/kg	0.50		8.1			< 0.50		
Cyanide (Free)		M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50		< 0.50		
Cyanide (Total)		M	2300	mg/kg	0.50	< 0.50	8.1	1.0		< 0.50		
Thiocyanate		M	2300	mg/kg	5.0		< 5.0			< 5.0		
Sulphide (Easily Liberatable)		N	2325	mg/kg	0.50	3.3	3.4	3.5		3.0		
Ammonium (Extractable)		M	2425	mg/kg	0.50				22			
Sulphate (Total)		U	2430	%	0.010		0.10		0.012	< 0.010		
Sulphate (Acid Soluble)		U	2430	%	0.010	0.10		< 0.010				
Arsenic		M	2455	mg/kg	0.5	1.5	24	11		2.0		
Cadmium		M	2455	mg/kg	0.10	0.21	0.22	0.30		< 0.10		
Chromium		M	2455	mg/kg	0.5	5.1	10	8.6		2.1		
Copper		M	2455	mg/kg	0.50	8.1	68	50		8.4		
Mercury		M	2455	mg/kg	0.05	< 0.05	0.43	0.84		0.11		
Nickel		M	2455	mg/kg	0.50	7.1	18	13		4.6		
Lead		M	2455	mg/kg	0.50	22	940	180		26		
Selenium		M	2455	mg/kg	0.25	< 0.25	0.53	0.50		< 0.25		
Vanadium		U	2455	mg/kg	0.5		19			3.5		

Results - Soil

Project: P22-639

Client: Rodgers Leask Environmental		Chemtest Job No.:	25-18513	25-18513	25-18513	25-18513	25-18513	25-18513	25-18513
Quotation No.: Q25-37516		Chemtest Sample ID.:	1982225	1982226	1982227	1982230	1982231	1982232	1982233
Order No.: RLL 25-02-83		Client Sample Ref.:	ES1	ES2	ES1	D1	ES1	ES2	ES1
		Client Sample ID.:	#93543702942 90001	#93543702942 90002	#86214772918 80001	#58550369566 70001	#65677374615 20001	#65677374615 20002	#66484622580 50001
		Client Reference:	WS01	WS01	WS02	WS03	WS04	WS04	WS05
		Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):	0.15	0.40	0.15	0.60	0.70	0.90	0.60
		Bottom Depth (m):	0.20	0.50	0.20	0.80	0.80	1.00	0.70
		Date Sampled:	30-May-2025	30-May-2025	30-May-2025	29-May-2025	29-May-2025	29-May-2025	29-May-2025
		Time Sampled:	9:34	9:34	11:04	14:00	11:42	11:50	13:07
		Asbestos Lab:	NEW-ASB	NEW-ASB	NEW-ASB		NEW-ASB		
Determinand	HWOL Code	Accred.	SOP	Units	LOD				
Zinc		M	2455	mg/kg	0.50	23	150	78	14
Chromium (Hexavalent)		N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	
Aliphatic VPH >C5-C6	HS_2D_AL	U	2780	mg/kg	0.05		< 0.05		< 0.05
Aliphatic VPH >C6-C7	HS_2D_AL	U	2780	mg/kg	0.05		< 0.05		< 0.05
Aliphatic VPH >C7-C8	HS_2D_AL	U	2780	mg/kg	0.05		< 0.05		< 0.05
Aliphatic VPH >C6-C8 (Sum)	HS_2D_AL	N	2780	mg/kg	0.10		< 0.10		< 0.10
Aliphatic VPH >C8-C10	HS_2D_AL	U	2780	mg/kg	0.05		< 0.05		< 0.05
Total Aliphatic VPH >C5-C10	HS_2D_AL	U	2780	mg/kg	0.25		< 0.25		< 0.25
Aliphatic EPH >C10-C12 MC	EH_2D_AL_#1	M	2690	mg/kg	2.00		< 2.0		< 2.0
Aliphatic EPH >C12-C16 MC	EH_2D_AL_#1	M	2690	mg/kg	1.00		< 1.0		< 1.0
Aliphatic EPH >C16-C21 MC	EH_2D_AL_#1	M	2690	mg/kg	2.00		< 2.0		< 2.0
Aliphatic EPH >C21-C35 MC	EH_2D_AL_#1	M	2690	mg/kg	3.00		6.6		7.8
Aliphatic EPH >C35-C40 MC	EH_2D_AL_#1	N	2690	mg/kg	10.00		< 10		< 10
Total Aliphatic EPH >C10-C35 MC	EH_2D_AL_#1	M	2690	mg/kg	5.00		6.9		7.8
Total Aliphatic EPH >C10-C40 MC	EH_2D_AL_#1	N	2690	mg/kg	10.00		< 10		< 10
Aromatic VPH >C5-C7	HS_2D_AR	U	2780	mg/kg	0.05		< 0.05		< 0.05
Aromatic VPH >C7-C8	HS_2D_AR	U	2780	mg/kg	0.05		< 0.05		< 0.05
Aromatic VPH >C8-C10	HS_2D_AR	U	2780	mg/kg	0.05		< 0.05		< 0.05
Total Aromatic VPH >C5-C10	HS_2D_AR	U	2780	mg/kg	0.25		< 0.25		< 0.25
Aromatic EPH >C10-C12 MC	EH_2D_AR_#1	U	2690	mg/kg	1.00		< 1.0		< 1.0
Aromatic EPH >C12-C16 MC	EH_2D_AR_#1	U	2690	mg/kg	1.00		< 1.0		< 1.0
Aromatic EPH >C16-C21 MC	EH_2D_AR_#1	U	2690	mg/kg	2.00		40		7.4
Aromatic EPH >C21-C35 MC	EH_2D_AR_#1	U	2690	mg/kg	2.00		68		8.6
Aromatic EPH >C35-C40 MC	EH_2D_AR_#1	N	2690	mg/kg	1.00		1.4		4.5
Total Aromatic EPH >C10-C35 MC	EH_2D_AR_#1	U	2690	mg/kg	5.00		110		16
Total Aromatic EPH >C10-C40 MC	EH_2D_AR_#1	N	2690	mg/kg	10.00		110		20
Total VPH >C5-C10	HS_2D_Total	U	2780	mg/kg	0.50		< 0.50		< 0.50
Total EPH >C10-C35 MC	EH_2D_Total_#1	U	2690	mg/kg	10.00		120		24
Total EPH >C10-C40 MC	EH_2D_Total_#1	N	2690	mg/kg	10.00		120		28
Organic Matter		M	2625	%	0.40	9.5	7.6		
Total Organic Carbon		M	2625	%	0.20		1.4	2.4	2.1
Naphthalene		M	2700	mg/kg	0.10	0.26	5.4		
Acenaphthylene		M	2700	mg/kg	0.10	0.31	1.8		

Results - Soil

Project: P22-639

Client: Rodgers Leask Environmental		Chemtest Job No.:	25-18513	25-18513	25-18513	25-18513	25-18513	25-18513	25-18513
<i>Quotation No.: Q25-37516</i>		Chemtest Sample ID.:	1982225	1982226	1982227	1982230	1982231	1982232	1982233
<i>Order No.: RLL 25-02-83</i>		<i>Client Sample Ref.:</i>	ES1	ES2	ES1	D1	ES1	ES2	ES1
		<i>Client Sample ID.:</i>	#93543702942 90001	#93543702942 90002	#86214772918 80001	#58550369566 70001	#65677374615 20001	#65677374615 20002	#66484622580 50001
		<i>Client Reference:</i>	WS01	WS01	WS02	WS03	WS04	WS04	WS05
		<i>Sample Type:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		<i>Top Depth (m):</i>	0.15	0.40	0.15	0.60	0.70	0.90	0.60
		<i>Bottom Depth (m):</i>	0.20	0.50	0.20	0.80	0.80	1.00	0.70
		<i>Date Sampled:</i>	30-May-2025	30-May-2025	30-May-2025	29-May-2025	29-May-2025	29-May-2025	29-May-2025
		<i>Time Sampled:</i>	9:34	9:34	11:04	14:00	11:42	11:50	13:07
		<i>Asbestos Lab:</i>	NEW-ASB	NEW-ASB	NEW-ASB		NEW-ASB		
Determinand	HWOL Code	Accred.	SOP	Units	LOD				
Acenaphthene		M	2700	mg/kg	0.10	0.13			
Fluorene		M	2700	mg/kg	0.10	0.16			
Phenanthrene		M	2700	mg/kg	0.10	1.2			
Anthracene		M	2700	mg/kg	0.10	0.33			
Fluoranthene		M	2700	mg/kg	0.10	2.6			
Pyrene		M	2700	mg/kg	0.10	3.5			
Benzo[a]anthracene		M	2700	mg/kg	0.10	2.0			
Chrysene		M	2700	mg/kg	0.10	2.4			
Benzo[b]fluoranthene		M	2700	mg/kg	0.10	3.1			
Benzo[k]fluoranthene		M	2700	mg/kg	0.10	1.2			
Benzo[a]pyrene		M	2700	mg/kg	0.10	2.1			
Indeno(1,2,3-c,d)Pyrene		M	2700	mg/kg	0.10	1.5			
Dibenz(a,h)Anthracene		M	2700	mg/kg	0.10	0.61			
Benzo[g,h,i]perylene		M	2700	mg/kg	0.10	2.3			
Total Of 16 PAH's		M	2700	mg/kg	2.0	24			
Benzene		M	2760	mg/kg	0.0010		< 0.0010	< 0.0010	
Benzene		M	2760	µg/kg	1.0		< 1.0	< 1.0	
Toluene		M	2760	mg/kg	0.0010		< 0.0010	< 0.0010	
Toluene		M	2760	µg/kg	1.0		< 1.0	< 1.0	
Ethylbenzene		M	2760	mg/kg	0.0010		< 0.0010	< 0.0010	
Ethylbenzene		M	2760	µg/kg	1.0		< 1.0	< 1.0	
m & p-Xylene		M	2760	mg/kg	0.0010		< 0.0010	< 0.0010	
m & p-Xylene		M	2760	µg/kg	1.0		< 1.0	< 1.0	
o-Xylene		M	2760	mg/kg	0.0010		< 0.0010	< 0.0010	
o-Xylene		M	2760	µg/kg	1.0		< 1.0	< 1.0	
Methyl Tert-Butyl Ether		M	2760	mg/kg	0.0010		< 0.0010	< 0.0010	
Methyl Tert-Butyl Ether		M	2760	µg/kg	1.0		< 1.0	< 1.0	
Naphthalene		M	2800	mg/kg	0.10		1.6	0.42	
Acenaphthylene		N	2800	mg/kg	0.10		< 0.10	< 0.10	
Acenaphthene		M	2800	mg/kg	0.10		< 0.10	< 0.10	
Fluorene		M	2800	mg/kg	0.10		< 0.10	< 0.10	
Phenanthrene		M	2800	mg/kg	0.10		7.1	6.7	
Anthracene		M	2800	mg/kg	0.10		1.3	1.2	

Results - Soil

Project: P22-639

Client: Rodgers Leask Environmental		Chemtest Job No.:	25-18513	25-18513	25-18513	25-18513	25-18513	25-18513	25-18513
<i>Quotation No.: Q25-37516</i>		Chemtest Sample ID.:	1982225	1982226	1982227	1982230	1982231	1982232	1982233
<i>Order No.: RLL 25-02-83</i>		<i>Client Sample Ref.:</i>	ES1	ES2	ES1	D1	ES1	ES2	ES1
		<i>Client Sample ID.:</i>	#93543702942 90001	#93543702942 90002	#86214772918 80001	#58550369566 70001	#65677374615 20001	#65677374615 20002	#66484622580 50001
		<i>Client Reference:</i>	WS01	WS01	WS02	WS03	WS04	WS04	WS05
		<i>Sample Type:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		<i>Top Depth (m):</i>	0.15	0.40	0.15	0.60	0.70	0.90	0.60
		<i>Bottom Depth (m):</i>	0.20	0.50	0.20	0.80	0.80	1.00	0.70
		<i>Date Sampled:</i>	30-May-2025	30-May-2025	30-May-2025	29-May-2025	29-May-2025	29-May-2025	29-May-2025
		<i>Time Sampled:</i>	9:34	9:34	11:04	14:00	11:42	11:50	13:07
		<i>Asbestos Lab:</i>	NEW-ASB	NEW-ASB	NEW-ASB		NEW-ASB		
Determinand	HWOL Code	Accred.	SOP	Units	LOD				
Fluoranthene		M	2800	mg/kg	0.10		13	8.2	
Pyrene		M	2800	mg/kg	0.10		13	7.5	
Benzo[a]anthracene		M	2800	mg/kg	0.10		6.1	3.3	
Chrysene		M	2800	mg/kg	0.10		7.6	3.9	
Benzo[b]fluoranthene		M	2800	mg/kg	0.10		7.4	3.6	
Benzo[k]fluoranthene		M	2800	mg/kg	0.10		2.5	1.2	
Benzo[a]pyrene		M	2800	mg/kg	0.10		6.3	2.9	
Indeno(1,2,3-c,d)Pyrene		M	2800	mg/kg	0.10		3.3	1.7	
Dibenz(a,h)Anthracene		N	2800	mg/kg	0.10		0.88	< 0.10	
Benzo[g,h,i]perylene		M	2800	mg/kg	0.10		3.6	1.7	
Total Of 16 PAH's		N	2800	mg/kg	2.0		74	42	
Total Phenols		M	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	
Organic Matter BS1377		N	2930	%	0.10		5.1	2.5	

Results - Soil

Project: P22-639

Client: Rodgers Leask Environmental		Chemtest Job No.:				25-18513	25-18513	25-18513	25-18513	25-18513	25-18513
<i>Quotation No.: Q25-37516</i>		Chemtest Sample ID.:				1982234	1982235	1982236	1982237	1982239	1982240
<i>Order No.: RLL 25-02-83</i>		<i>Client Sample Ref.:</i>				<i>D1</i>	<i>ES1</i>	<i>B1</i>	<i>ES1</i>	<i>ES1</i>	<i>ES2</i>
		<i>Client Sample ID.:</i>				#66484622580 50002	#74566173095 70001	#74566173095 70003	#86474319363 40001	#07455785471 00001	#07455785471 00002
		<i>Client Reference:</i>				<i>WS05</i>	<i>WS06</i>	<i>WS06</i>	<i>WS07</i>	<i>WS09</i>	<i>WS09</i>
		<i>Sample Type:</i>				<i>SOIL</i>	<i>SOIL</i>	<i>SOIL</i>	<i>SOIL</i>	<i>SOIL</i>	<i>SOIL</i>
		<i>Top Depth (m):</i>				<i>0.90</i>	<i>0.40</i>	<i>1.00</i>	<i>0.50</i>	<i>0.15</i>	<i>0.50</i>
		<i>Bottom Depth (m):</i>				<i>1.00</i>	<i>0.50</i>	<i>2.00</i>	<i>0.60</i>	<i>0.20</i>	<i>0.60</i>
		<i>Date Sampled:</i>				<i>29-May-2025</i>	<i>29-May-2025</i>	<i>29-May-2025</i>	<i>29-May-2025</i>	<i>30-May-2025</i>	<i>30-May-2025</i>
		<i>Time Sampled:</i>				<i>13:07</i>	<i>13:39</i>	<i>13:40</i>	<i>12:32</i>	<i>13:20</i>	<i>13:21</i>
		<i>Asbestos Lab:</i>								NEW-ASB	NEW-ASB
Determinand	HWOL Code	Accred.	SOP	Units	LOD						
ACM Type		N	2192		N/A					-	-
Asbestos Identification		U	2192		N/A					No Asbestos Detected	No Asbestos Detected
Moisture		N	2030	%	0.020	14	34	6.5	14	11	18
Soil Colour		N	2030		N/A	Brown	Brown	Brown	Brown	Brown	Brown
Other Material		N	2030		N/A	Stones	Stones	Stones	Stones	Stones and Roots	Stones, Roots and Glass
Soil Texture		N	2030		N/A	Clay	Clay	Sand	Clay	Loam	Sand
pH at 20C		M	2010		4.0					7.3	7.0
pH (2.5:1) at 20C		N	2010		4.0	6.7		8.0			
Boron (Hot Water Soluble)		M	2120	mg/kg	0.40					< 0.40	0.40
Magnesium (Water Soluble)		M	2120	mg/kg	20	< 20		< 20			
Sulphate (2:1 Water Soluble) as SO4		M	2120	g/l	0.010	0.034		< 0.010		< 0.010	0.025
Total Sulphur		U	2175	%	0.010	0.020		0.020		0.080	0.46
Chloride (Water Soluble)		M	2220	g/l	0.010	< 0.010		< 0.010			
Nitrate (Water Soluble)		N	2220	g/l	0.010	< 0.010		< 0.010			
Cyanide (Complex)		M	2300	mg/kg	0.50						< 0.50
Cyanide (Free)		M	2300	mg/kg	0.50					< 0.50	< 0.50
Cyanide (Total)		M	2300	mg/kg	0.50					< 0.50	< 0.50
Thiocyanate		M	2300	mg/kg	5.0						< 5.0
Sulphide (Easily Liberatable)		N	2325	mg/kg	0.50					2.7	4.8
Ammonium (Extractable)		M	2425	mg/kg	0.50	2.2		1.2			
Sulphate (Total)		U	2430	%	0.010	< 0.010		< 0.010			0.17
Sulphate (Acid Soluble)		U	2430	%	0.010					0.020	
Arsenic		M	2455	mg/kg	0.5					9.1	37
Cadmium		M	2455	mg/kg	0.10					0.16	0.42
Chromium		M	2455	mg/kg	0.5					6.0	14
Copper		M	2455	mg/kg	0.50					42	820
Mercury		M	2455	mg/kg	0.05					0.13	< 0.05
Nickel		M	2455	mg/kg	0.50					9.8	41
Lead		M	2455	mg/kg	0.50					160	250
Selenium		M	2455	mg/kg	0.25					0.33	0.67
Vanadium		U	2455	mg/kg	0.5						24

Results - Soil

Project: P22-639

Client: Rodgers Leask Environmental		Chemtest Job No.:	25-18513	25-18513	25-18513	25-18513	25-18513	25-18513
<i>Quotation No.: Q25-37516</i>		Chemtest Sample ID.:	1982234	1982235	1982236	1982237	1982239	1982240
<i>Order No.: RLL 25-02-83</i>		<i>Client Sample Ref.:</i>	D1	ES1	B1	ES1	ES1	ES2
		<i>Client Sample ID.:</i>	#66484622580 50002	#74566173095 70001	#74566173095 70003	#86474319363 40001	#07455785471 00001	#07455785471 00002
		<i>Client Reference:</i>	WS05	WS06	WS06	WS07	WS09	WS09
		<i>Sample Type:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		<i>Top Depth (m):</i>	0.90	0.40	1.00	0.50	0.15	0.50
		<i>Bottom Depth (m):</i>	1.00	0.50	2.00	0.60	0.20	0.60
		<i>Date Sampled:</i>	29-May-2025	29-May-2025	29-May-2025	29-May-2025	30-May-2025	30-May-2025
		<i>Time Sampled:</i>	13:07	13:39	13:40	12:32	13:20	13:21
		<i>Asbestos Lab:</i>					NEW-ASB	NEW-ASB
Determinand	HWOL Code	Accred.	SOP	Units	LOD			
Zinc		M	2455	mg/kg	0.50		54	300
Chromium (Hexavalent)		N	2490	mg/kg	0.50		< 0.50	< 0.50
Aliphatic VPH >C5-C6	HS_2D_AL	U	2780	mg/kg	0.05			< 0.05
Aliphatic VPH >C6-C7	HS_2D_AL	U	2780	mg/kg	0.05			< 0.05
Aliphatic VPH >C7-C8	HS_2D_AL	U	2780	mg/kg	0.05			< 0.05
Aliphatic VPH >C6-C8 (Sum)	HS_2D_AL	N	2780	mg/kg	0.10			< 0.10
Aliphatic VPH >C8-C10	HS_2D_AL	U	2780	mg/kg	0.05			< 0.05
Total Aliphatic VPH >C5-C10	HS_2D_AL	U	2780	mg/kg	0.25			< 0.25
Aliphatic EPH >C10-C12 MC	EH_2D_AL_#1	M	2690	mg/kg	2.00			< 2.0
Aliphatic EPH >C12-C16 MC	EH_2D_AL_#1	M	2690	mg/kg	1.00			< 1.0
Aliphatic EPH >C16-C21 MC	EH_2D_AL_#1	M	2690	mg/kg	2.00			< 2.0
Aliphatic EPH >C21-C35 MC	EH_2D_AL_#1	M	2690	mg/kg	3.00			6.5
Aliphatic EPH >C35-C40 MC	EH_2D_AL_#1	N	2690	mg/kg	10.00			< 10
Total Aliphatic EPH >C10-C35 MC	EH_2D_AL_#1	M	2690	mg/kg	5.00			6.5
Total Aliphatic EPH >C10-C40 MC	EH_2D_AL_#1	N	2690	mg/kg	10.00			< 10
Aromatic VPH >C5-C7	HS_2D_AR	U	2780	mg/kg	0.05			< 0.05
Aromatic VPH >C7-C8	HS_2D_AR	U	2780	mg/kg	0.05			< 0.05
Aromatic VPH >C8-C10	HS_2D_AR	U	2780	mg/kg	0.05			< 0.05
Total Aromatic VPH >C5-C10	HS_2D_AR	U	2780	mg/kg	0.25			< 0.25
Aromatic EPH >C10-C12 MC	EH_2D_AR_#1	U	2690	mg/kg	1.00			< 1.0
Aromatic EPH >C12-C16 MC	EH_2D_AR_#1	U	2690	mg/kg	1.00			< 1.0
Aromatic EPH >C16-C21 MC	EH_2D_AR_#1	U	2690	mg/kg	2.00			6.3
Aromatic EPH >C21-C35 MC	EH_2D_AR_#1	U	2690	mg/kg	2.00			< 2.0
Aromatic EPH >C35-C40 MC	EH_2D_AR_#1	N	2690	mg/kg	1.00			1.6
Total Aromatic EPH >C10-C35 MC	EH_2D_AR_#1	U	2690	mg/kg	5.00			7.5
Total Aromatic EPH >C10-C40 MC	EH_2D_AR_#1	N	2690	mg/kg	10.00			< 10
Total VPH >C5-C10	HS_2D_Total	U	2780	mg/kg	0.50			< 0.50
Total EPH >C10-C35 MC	EH_2D_Total_#1	U	2690	mg/kg	10.00			14
Total EPH >C10-C40 MC	EH_2D_Total_#1	N	2690	mg/kg	10.00			16
Organic Matter		M	2625	%	0.40		8.6	
Total Organic Carbon		M	2625	%	0.20	0.99	2.2	
Naphthalene		M	2700	mg/kg	0.10		1.5	
Acenaphthylene		M	2700	mg/kg	0.10		0.35	

Results - Soil

Project: P22-639

Client: Rodgers Leask Environmental		Chemtest Job No.:				25-18513	25-18513	25-18513	25-18513	25-18513	25-18513
<i>Quotation No.: Q25-37516</i>		Chemtest Sample ID.:				1982234	1982235	1982236	1982237	1982239	1982240
<i>Order No.: RLL 25-02-83</i>		<i>Client Sample Ref.:</i>				D1	ES1	B1	ES1	ES1	ES2
		<i>Client Sample ID.:</i>				#66484622580 50002	#74566173095 70001	#74566173095 70003	#86474319363 40001	#07455785471 00001	#07455785471 00002
		<i>Client Reference:</i>				WS05	WS06	WS06	WS07	WS09	WS09
		<i>Sample Type:</i>				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		<i>Top Depth (m):</i>				0.90	0.40	1.00	0.50	0.15	0.50
		<i>Bottom Depth (m):</i>				1.00	0.50	2.00	0.60	0.20	0.60
		<i>Date Sampled:</i>				29-May-2025	29-May-2025	29-May-2025	29-May-2025	30-May-2025	30-May-2025
		<i>Time Sampled:</i>				13:07	13:39	13:40	12:32	13:20	13:21
		<i>Asbestos Lab:</i>								NEW-ASB	NEW-ASB
Determinand	HWOL Code	Accred.	SOP	Units	LOD						
Acenaphthene		M	2700	mg/kg	0.10					4.7	
Fluorene		M	2700	mg/kg	0.10					3.6	
Phenanthrene		M	2700	mg/kg	0.10					31	
Anthracene		M	2700	mg/kg	0.10					8.2	
Fluoranthene		M	2700	mg/kg	0.10					35	
Pyrene		M	2700	mg/kg	0.10					35	
Benzo[a]anthracene		M	2700	mg/kg	0.10					14	
Chrysene		M	2700	mg/kg	0.10					18	
Benzo[b]fluoranthene		M	2700	mg/kg	0.10					18	
Benzo[k]fluoranthene		M	2700	mg/kg	0.10					6.7	
Benzo[a]pyrene		M	2700	mg/kg	0.10					14	
Indeno(1,2,3-c,d)Pyrene		M	2700	mg/kg	0.10					7.6	
Dibenz(a,h)Anthracene		M	2700	mg/kg	0.10					2.2	
Benzo[g,h,i]perylene		M	2700	mg/kg	0.10					7.9	
Total Of 16 PAH's		M	2700	mg/kg	2.0					210	
Benzene		M	2760	mg/kg	0.0010						< 0.0010
Benzene		M	2760	µg/kg	1.0						< 1.0
Toluene		M	2760	mg/kg	0.0010						< 0.0010
Toluene		M	2760	µg/kg	1.0						< 1.0
Ethylbenzene		M	2760	mg/kg	0.0010						< 0.0010
Ethylbenzene		M	2760	µg/kg	1.0						< 1.0
m & p-Xylene		M	2760	mg/kg	0.0010						< 0.0010
m & p-Xylene		M	2760	µg/kg	1.0						< 1.0
o-Xylene		M	2760	mg/kg	0.0010						< 0.0010
o-Xylene		M	2760	µg/kg	1.0						< 1.0
Methyl Tert-Butyl Ether		M	2760	mg/kg	0.0010						< 0.0010
Methyl Tert-Butyl Ether		M	2760	µg/kg	1.0						< 1.0
Naphthalene		M	2800	mg/kg	0.10						0.79
Acenaphthylene		N	2800	mg/kg	0.10						< 0.10
Acenaphthene		M	2800	mg/kg	0.10						< 0.10
Fluorene		M	2800	mg/kg	0.10						< 0.10
Phenanthrene		M	2800	mg/kg	0.10						1.2
Anthracene		M	2800	mg/kg	0.10						0.26

Results - Soil

Project: P22-639

Client: Rodgers Leask Environmental		Chemtest Job No.:	25-18513	25-18513	25-18513	25-18513	25-18513	25-18513
<i>Quotation No.: Q25-37516</i>		Chemtest Sample ID.:	1982234	1982235	1982236	1982237	1982239	1982240
<i>Order No.: RLL 25-02-83</i>		<i>Client Sample Ref.:</i>	D1	ES1	B1	ES1	ES1	ES2
		<i>Client Sample ID.:</i>	#66484622580 50002	#74566173095 70001	#74566173095 70003	#86474319363 40001	#07455785471 00001	#07455785471 00002
		<i>Client Reference:</i>	WS05	WS06	WS06	WS07	WS09	WS09
		<i>Sample Type:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		<i>Top Depth (m):</i>	0.90	0.40	1.00	0.50	0.15	0.50
		<i>Bottom Depth (m):</i>	1.00	0.50	2.00	0.60	0.20	0.60
		<i>Date Sampled:</i>	29-May-2025	29-May-2025	29-May-2025	29-May-2025	30-May-2025	30-May-2025
		<i>Time Sampled:</i>	13:07	13:39	13:40	12:32	13:20	13:21
		<i>Asbestos Lab:</i>					NEW-ASB	NEW-ASB
Determinand	HWOL Code	Accred.	SOP	Units	LOD			
Fluoranthene		M	2800	mg/kg	0.10			2.2
Pyrene		M	2800	mg/kg	0.10			1.8
Benzo[a]anthracene		M	2800	mg/kg	0.10			0.85
Chrysene		M	2800	mg/kg	0.10			0.96
Benzo[b]fluoranthene		M	2800	mg/kg	0.10			1.1
Benzo[k]fluoranthene		M	2800	mg/kg	0.10			0.34
Benzo[a]pyrene		M	2800	mg/kg	0.10			0.84
Indeno(1,2,3-c,d)Pyrene		M	2800	mg/kg	0.10			< 0.10
Dibenz(a,h)Anthracene		N	2800	mg/kg	0.10			< 0.10
Benzo[g,h,i]perylene		M	2800	mg/kg	0.10			< 0.10
Total Of 16 PAH's		N	2800	mg/kg	2.0			10
Total Phenols		M	2920	mg/kg	0.10		< 0.10	< 0.10
Organic Matter BS1377		N	2930	%	0.10			6.3

Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
2010	pH Value of Soils	pH at 20°C	pH Meter	
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <30°C.	
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES	
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.	
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry	
2220	Water soluble Chloride in Soils	Chloride	Aqueous extraction and measurement by 'Aquakem 600' Discrete Analyser using ferric nitrate / mercuric thiocyanate.	
2300	Cyanides & Thiocyanate in Soils	Free (or easily liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.	
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N-dimethyl-p-phenylenediamine.	
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.	
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.	
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.	
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.	
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.	
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection	
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenzo[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)	
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.	
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8–C10 Aromatics: >C5–C7,>C7–C8,>C8–C10	Water extraction / Headspace GCxGC FID detection	

Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenzo[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS	
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.	
2930	Organic Matter	Organic Matter	Acid Dichromate digestion/Titration	

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Text example All items indicated in italic font represent customer-supplied information that may not be independently verified by the laboratory
This report shall not be reproduced except in full, and only with the prior approval of the laboratory.
Any comments or interpretations are outside the scope of UKAS accreditation.
The Laboratory is not accredited for any sampling activities and reported results relate to the samples 'as received' at the laboratory.
Uncertainty of measurement for the determinands tested are available upon request .
None of the results in this report have been recovery corrected.
All results are expressed on a dry weight basis.

The following tests were analysed on samples 'as received' and the results subsequently corrected to a dry weight basis EPH, VPH, TPH, BTEX, VOCs, SVOCs, PCBs, Phenols.
For all other tests the samples were dried at $\leq 30^{\circ}\text{C}$ prior to analysis.
All Asbestos testing is performed at the indicated laboratory .
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1.

NEW_ASB Eurofins Chemtest Limited, 11 Depot Road, Newmarket, CB8 0AL
DURHAM Eurofins Chemtest Limited, Unit A North Wing, Prospect Business Park, Crookhall Lane, Consett, Co Durham, DH8 7PW

Sample Deviation Codes

As a result of any of the below deviations applying, the test results may be unreliable

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - The required amount of sample for analysis was not received
- H - Appropriate cooling measures were not taken for sample transportation

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt.
All water samples will be retained for 14 days from the date of receipt.
Charges may apply to extended sample storage.

Report Information

Water Sample Category Key for Accreditation

DW - Drinking Water
GW - Ground Water
LE - Land Leachate
NA - Not Applicable
PL - Prepared Leachate
PW - Processed Water
RE - Recreational Water
SA - Saline Water
SW - Surface Water
TE - Treated Effluent
TS - Treated Sewage
UL - Unspecified Liquid

Clean Up Codes

NC - No Clean Up
MC - Mathematical Clean Up
FC - Florisil Clean Up

HWOL Acronym System

HS - Headspace analysis
EH - Extractable hydrocarbons – i.e. everything extracted by the solvent
CU - Clean-up – e.g. by Florisil, silica gel
1D - GC – Single coil gas chromatography
Total - Aliphatics & Aromatics
AL - Aliphatics only
AR - Aromatic only
2D - GC-GC – Double coil gas chromatography
#1 - EH_2D_Total but with humics mathematically subtracted
#2 - EH_2D_Total but with fatty acids mathematically subtracted
+ - Operator to indicate cumulative e.g. EH+EH_Total or EH_CU+HS_Total

Asbestos Tests LOD = LOQ

Limit of Detection = Limit of Quantification for asbestos results only

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com



Final Report

Report No.: 25-26417-1

Initial Date of Issue: 17-Sep-2025

Re-Issue Details:

Client *Rodgers Leask Environmental*

Client Address: *St James House
St Marys Wharf
Mansfield Road
Derby
DE1 3TQ*

Contact(s): *Emily Rafferty
Joshua Rhodes-Hook*

Project *P22-639 William Hume's Grammar
School*

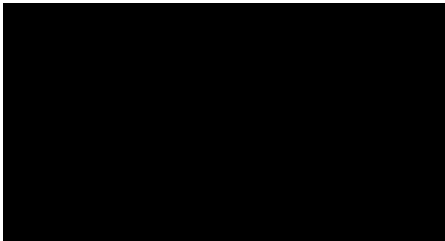
Quotation No.: Q25-37516 **Date Received:** 11-Aug-2025

Order No.: RLL 25-08-17 **Date Instructed:** 11-Aug-2025

No. of Samples: 1

Turnaround (Wkdays): 10 **Results Due:** 22-Aug-2025

Date Approved: 02-Sep-2025



David Smith, Technical Director

For details about application of accreditation to specific matrix types, please refer to the Table at the back of this report

Results - Water

Project: P22-639 William Hume's Grammar School

Client: Rodgers Leask Environmental		Chemtest Job No.:		25-26417	
Quotation No.: Q25-37516		Chemtest Sample ID.:		2012992	
		<i>Client Sample ID.:</i>		W1	
		<i>Client Reference:</i>		WS05	
		<i>Sample Type:</i>		WATER	
		<i>Sample Sub Type:</i>		Ground Water	
		<i>Date Sampled:</i>		07-Aug-2025	
Determinand	HWOL Code	Accred.	SOP	Units	LOD
pH at 20C		U	1010		4.0 8.5
Dissolved Oxygen		N	1150	mg O2/l	0.50 8.7
Ammoniacal Nitrogen		U	1220	mg/l	0.050 0.62
Nitrate as NO3		U	1220	mg/l	0.50 2.9
Sulphate		U	1220	mg/l	1.0 4.8
Cyanide (Total)		U	1300	mg/l	0.050 < 0.050
Cyanide (Free)		U	1300	mg/l	0.050 < 0.050
Thiocyanate		U	1300	mg/l	0.50 < 0.50
Sulphide		U	1325	mg/l	0.050 < 0.050
Calcium (Dissolved)		U	1455	mg/l	2.00 47
Total Hardness as CaCO3		U	1270	mg/l	15 120
Arsenic (Dissolved)		U	1455	µg/l	0.20 0.33
Boron (Dissolved)		U	1455	µg/l	10.0 17
Cadmium (Dissolved)		U	1455	µg/l	0.11 < 0.11
Chromium (Dissolved)		U	1455	µg/l	0.50 < 0.50
Copper (Dissolved)		U	1455	µg/l	0.50 1.8
Iron (Dissolved)		N	1455	µg/l	5.0 < 5.0
Mercury (Dissolved)		U	1455	µg/l	0.05 < 0.05
Manganese (Dissolved)		U	1455	µg/l	0.50 0.64
Nickel (Dissolved)		U	1455	µg/l	0.50 0.70
Lead (Dissolved)		U	1455	µg/l	0.50 0.79
Selenium (Dissolved)		U	1455	µg/l	0.50 < 0.50
Vanadium (Dissolved)		U	1455	µg/l	0.50 < 0.50
Zinc (Dissolved)		U	1455	µg/l	2.5 3.4
Chromium (Hexavalent)		U	1490	µg/l	20 < 20
Dissolved Organic Carbon		U	1610	mg/l	2.0 28
Total Organic Carbon		U	1610	mg/l	2.0 27
Aliphatic TPH >C5-C6	EH 2D AL #1	N	1780	µg/l	0.10 < 0.10
Aliphatic TPH >C6-C8	EH 2D AL #1	N	1780	µg/l	0.10 < 0.10
Aliphatic TPH >C8-C10	EH 2D AL #1	N	1780	µg/l	0.10 < 0.10
Aliphatic TPH >C10-C12	EH 2D AL #1	N	1680	µg/l	0.10 < 0.10
Aliphatic TPH >C12-C16	EH 2D AL #1	N	1680	µg/l	0.10 < 0.10
Aliphatic TPH >C16-C21	EH 2D AL #1	N	1680	µg/l	0.10 < 0.10
Aliphatic TPH >C21-C35	EH 2D AL #1	N	1680	µg/l	0.10 < 0.10
Aliphatic TPH >C35-C44	EH 2D AL #1	N	1680	µg/l	0.10 < 0.10
Total Aliphatic Hydrocarbons	EH 2D AL #1	N	1675	µg/l	5.0 < 5.0
Aromatic TPH >C5-C7	EH 2D AR #1	N	1780	µg/l	0.10 < 0.10
Aromatic TPH >C7-C8	EH 2D AR #1	N	1780	µg/l	0.10 < 0.10
Aromatic TPH >C8-C10	EH 2D AR #1	N	1780	µg/l	0.10 < 0.10
Aromatic TPH >C10-C12	EH 2D AR #1	N	1680	µg/l	0.10 < 0.10
Aromatic TPH >C12-C16	EH 2D AR #1	N	1680	µg/l	0.10 < 0.10

Results - Water

Project: P22-639 William Hume's Grammar School

Client: Rodgers Leask Environmental		Chemtest Job No.:				25-26417
Quotation No.: Q25-37516		Chemtest Sample ID.:				2012992
		Client Sample ID.:				W1
		Client Reference:				WS05
		Sample Type:				WATER
		Sample Sub Type:				Ground Water
		Date Sampled:				07-Aug-2025
Determinand	HWOL Code	Accred.	SOP	Units	LOD	
Aromatic TPH >C16-C21	EH 2D AR #1	N	1680	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	EH 2D AR #1	N	1680	µg/l	0.10	< 0.10
Aromatic TPH >C35-C44	EH 2D AR #1	N	1680	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	EH 2D AR #1	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	EH 2D Total #1	N	1675	µg/l	10	< 10
Naphthalene		U	1700	µg/l	0.10	< 0.10
Acenaphthylene		U	1700	µg/l	0.10	< 0.10
Acenaphthene		U	1700	µg/l	0.10	< 0.10
Fluorene		U	1700	µg/l	0.10	< 0.10
Phenanthrene		U	1700	µg/l	0.10	< 0.10
Anthracene		U	1700	µg/l	0.10	< 0.10
Fluoranthene		U	1700	µg/l	0.10	< 0.10
Pyrene		U	1700	µg/l	0.10	< 0.10
Benzo[a]anthracene		U	1700	µg/l	0.10	< 0.10
Chrysene		N	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene		U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene		U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene		U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene		U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene		U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene		U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's		N	1700	µg/l	2.0	< 2.0
Benzene		U	1760	µg/l	1.0	< 1.0
Toluene		U	1760	µg/l	1.0	< 1.0
Ethylbenzene		U	1760	µg/l	1.0	< 1.0
m & p-Xylene		U	1760	µg/l	1.0	< 1.0
o-Xylene		U	1760	µg/l	1.0	< 1.0
Methyl Tert-Butyl Ether		N	1760	µg/l	1.0	< 1.0
Total Phenols		U	1920	mg/l	0.030	< 0.030

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request. The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Chemtest Sample ID	Clients Sample Ref:	Clients Sample ID:	Clients Reference:	Sampled Date:	Deviation Code(s):	Containers Received:
2012992		W1	WS05	07-Aug-2025	B	Coloured Winchester 1000ml
2012992		W1	WS05	07-Aug-2025	B	EPA Vial 40ml
2012992		W1	WS05	07-Aug-2025	B	Plastic Bottle 1000ml

Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
1010	pH Value of Waters	pH at 20°C	pH Meter	RE PW TE TS PL DW GW
1150	Dissolved Oxygen	Dissolved Oxygen (DO)	Electrometric determination (on site preferred), using oxygen sensitive membrane electrode.	
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.	RE PW PL LE DW GW
1270	Total Hardness of Waters	Total hardness	Calculation applied to calcium and magnesium results, expressed as mg l-1 CaCO3 equivalent.	GW LE
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.	GW
1325	Sulphide in Waters	Sulphides	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using N,N-dimethyl-pphenylenediamine.	PL LE GW
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).	RE PW PL SW DW GW
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.	PL GW
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation	PL SW GW
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection	
1680	Extractable Petroleum Hydrocarbons	Aliphatics: >C5–C6, >C6–C8, >C8– C10*, >C10–C12*, >C12–C16*, >C16–C21*, >C21– C35*, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10*, >C10–C12*, >C12–C16*, >C16– C21*, >C21– C35*, >C35– C44	Dichloromethane extraction / GCxGC FID detection	
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene;	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)	PL GW
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.	PL GW
1780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10 Aromatics: >C5–C6, >C6–C8,>C8–C10	Water extraction / Headspace GCxGC FID detection	
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.	PL GW

Report Information

Key

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M	MCERTS and UKAS accredited
N	Unaccredited
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SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
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Uncertainty of measurement for the determinands tested are available upon request .

None of the results in this report have been recovery corrected.

All results are expressed on a dry weight basis.

The following tests were analysed on samples 'as received' and the results subsequently corrected to a dry weight basis EPH, VPH, TPH, BTEX, VOCs, SVOCs, PCBs, Phenols.

For all other tests the samples were dried at $\leq 30^{\circ}\text{C}$ prior to analysis.

All Asbestos testing is performed at the indicated laboratory .

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1.

NEW_ASB Eurofins Chemtest Limited, 11 Depot Road, Newmarket, CB8 0AL

DURHAM Eurofins Chemtest Limited, Unit A North Wing, Prospect Business Park, Crookhall Lane, Consett, Co Durham, DH8 7PW

Sample Deviation Codes

As a result of any of the below deviations applying, the test results may be unreliable

A - Date of sampling not supplied

B - Sample age exceeds stability time (sampling to extraction)

C - Sample not received in appropriate containers

D - Broken Container

E - The required amount of sample for analysis was not received

H - Appropriate cooling measures were not taken for sample transportation

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt.

All water samples will be retained for 14 days from the date of receipt.

Charges may apply to extended sample storage.

Report Information

Water Sample Category Key for Accreditation

DW - Drinking Water (Non-Regulatory)
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LE - Land Leachate
NA - Not Applicable
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SA - Saline Water
SW - Surface Water
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TS - Treated Sewage
UL - Unspecified Liquid

Clean Up Codes

NC - No Clean Up
MC - Mathematical Clean Up
FC - Florisil Clean Up

HWOL Acronym System

HS - Headspace analysis
EH - Extractable hydrocarbons – i.e. everything extracted by the solvent
CU - Clean-up – e.g. by Florisil, silica gel
1D - GC – Single coil gas chromatography
Total - Aliphatics & Aromatics
AL - Aliphatics only
AR - Aromatic only
2D - GC-GC – Double coil gas chromatography
#1 - EH_2D_Total but with humics mathematically subtracted
#2 - EH_2D_Total but with fatty acids mathematically subtracted
+ - Operator to indicate cumulative e.g. EH+EH_Total or EH_CU+HS_Total

Asbestos Tests LOD = LOQ

Limit of Detection = Limit of Quantification for asbestos results only

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Appendix F: Geotechnical Laboratory Results



LABORATORY REPORT



Contract Number: PSL25/4224

Report Date: 24 June 2025

Client's Reference: P22-639

Client Name: Rodgers Leask
St James House
St Mary's Wharf
Mansfield Road
Derby
DE1 3TQ

For the attention of: Josh Rhodes Hook

Contract Title: William Hulme's Grammar School, Manchester

Date Received: 6/6/2025

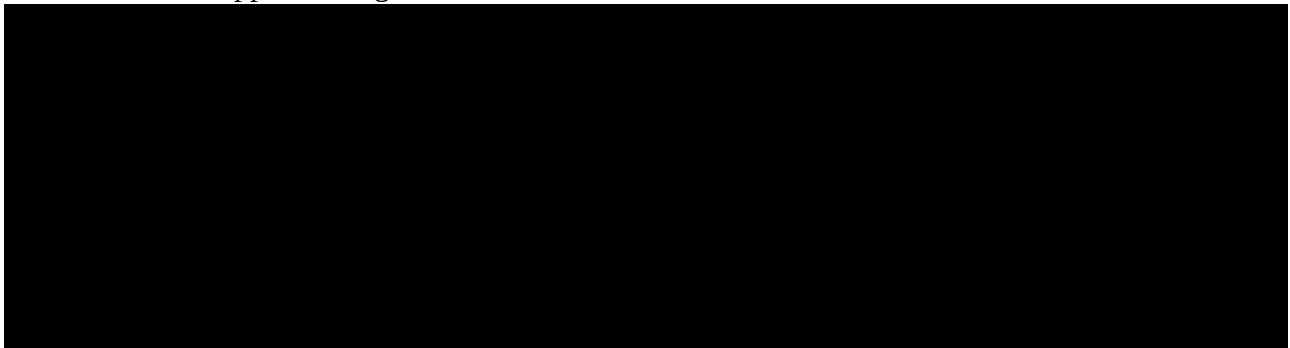
Date Commenced: 6/6/2025

Date Completed: 24/6/2025

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:



[illegible]

P22-639

SUMMARY OF SOIL CLASSIFICATION TESTS

BS 1377 - Part 2 : 2022 in accordance with BS EN ISO 17892 (as below)

[illegible]

Water Content - BS 1377 - Part 2 : 2022 : Clause 4 in accordance with BS EN ISO 17892 - 1 : 2014 + A1 : 2022

Linear Shrinkage - BS 1377 - Part 2 : 2022 : Clause 7

Particle Density (Gas Jar method) - BS 1377 - Part 2 : 2022 : Clause 9

Liquid, Plastic Limit & Plasticity Index - BS 1377 - Part 2 : 2022 : Clause 5 & 6 in accordance with BS EN ISO 17892 - 12 : 2018 + A2 : 2022

SYMBOLS : NP = Non Plastic



William Hulme's Grammar School, Manchester

Contract No:

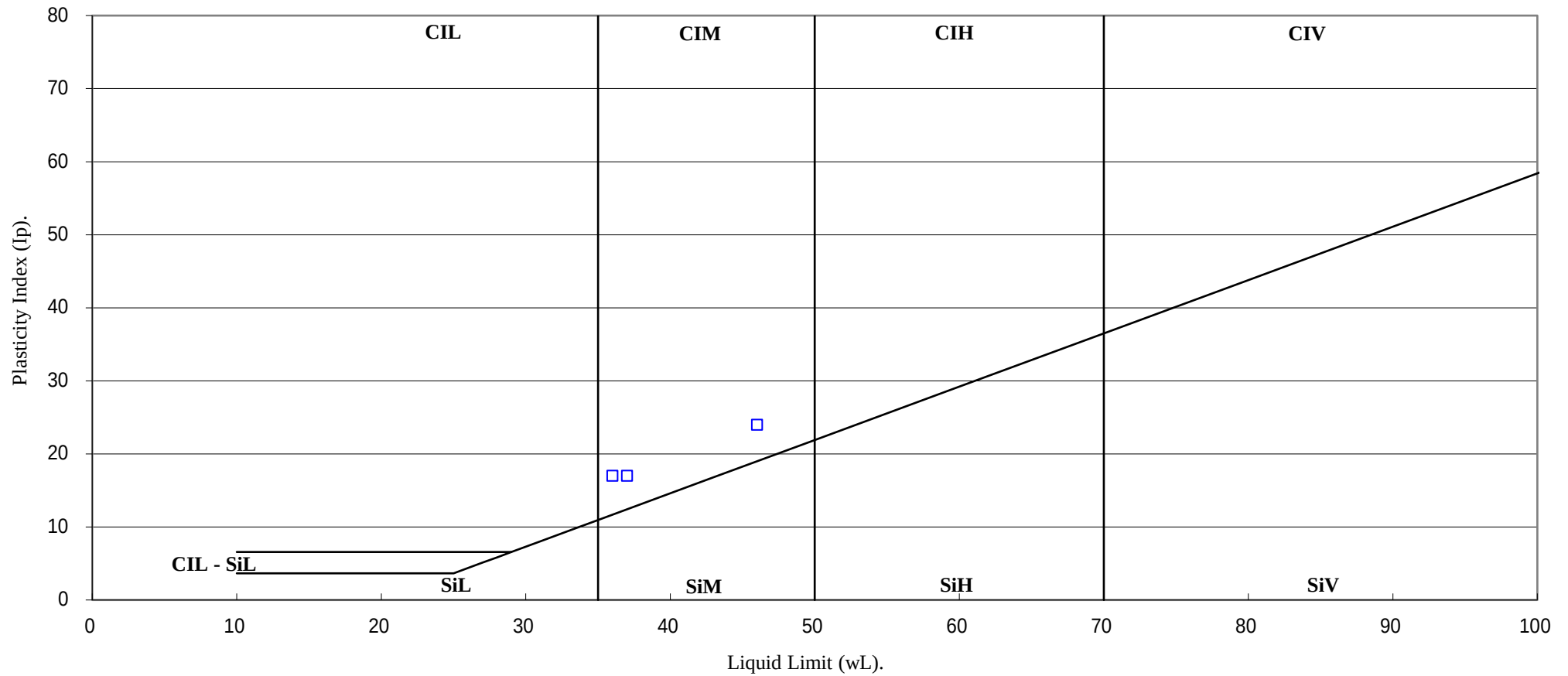
PSL25/4224

Client Ref:

P22-639

PLASTICITY CHART

BS EN ISO 14688-2:2017 Clause 4.4



William Hulme's Grammar School, Manchester

Contract No:

PSL25/4224

Client Ref:

P22-639

PARTICLE SIZE DISTRIBUTION TEST

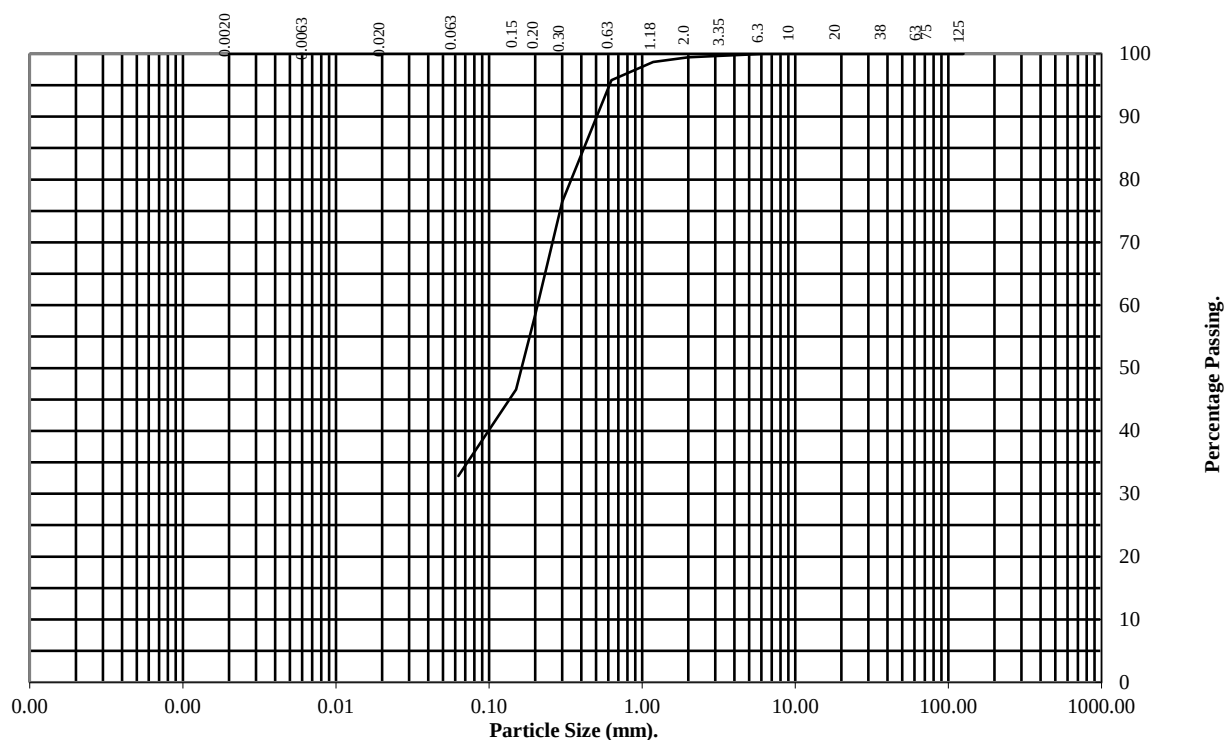
BS 1377 - Part 2 : 2022 : Clause 10 in accordance with BS EN ISO 17892 - 4 : 2016

Sieve Method, Clause 5.2

Hole Number: WS02 Top Depth (m): 2.30

Sample Number: 1 Base Depth (m): 2.80

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	99
1.18	99
0.63	96
0.3	76
0.2	58
0.15	47
0.063	33

Soil Fraction	Total Percentage
Cobbles	0
Gravel	1
Sand	66
Silt/Clay	33

Remarks:

See Summary of Soil Descriptions



William Hulme's Grammar School,
Manchester

Contract No:
PSL25/4224
Client Ref:
P22-639

PARTICLE SIZE DISTRIBUTION TEST

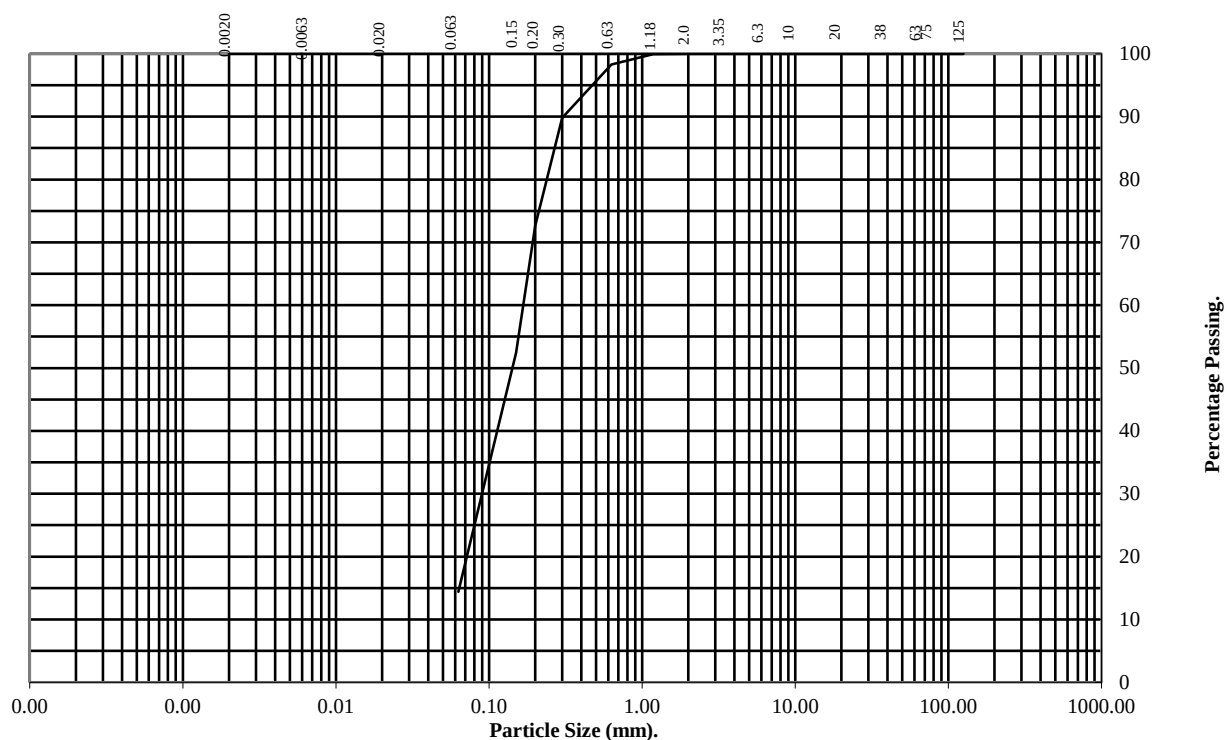
BS 1377 - Part 2 : 2022 : Clause 10 in accordance with BS EN ISO 17892 - 4 : 2016

Sieve Method, Clause 5.2

Hole Number: **WS05** Top Depth (m): **1.40**

Sample Number: **1** Base Depth (m): **2.00**

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	100
0.63	98
0.3	90
0.2	73
0.15	52
0.063	14

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	86
Silt/Clay	14

Remarks:

See Summary of Soil Descriptions



William Hulme's Grammar School,
Manchester

Contract No:
PSL25/4224
Client Ref:
P22-639

PARTICLE SIZE DISTRIBUTION TEST

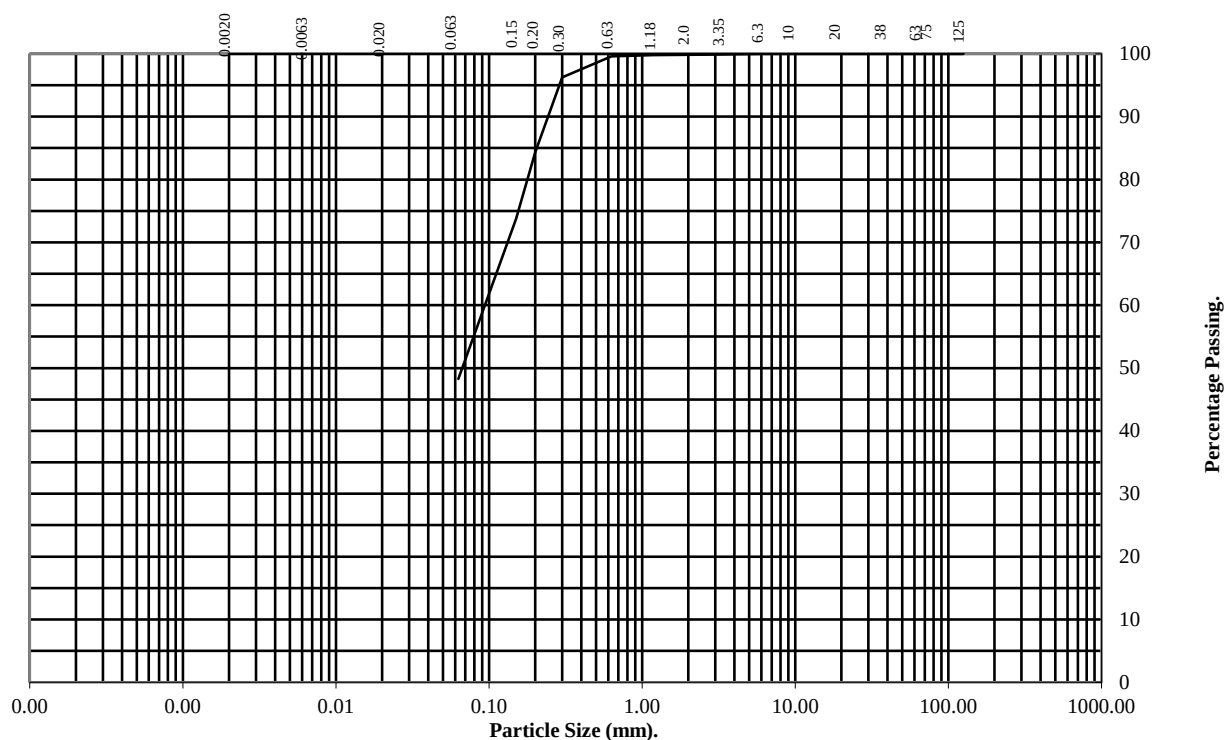
BS 1377 - Part 2 : 2022 : Clause 10 in accordance with BS EN ISO 17892 - 4 : 2016

Sieve Method, Clause 5.2

Hole Number: WS08 Top Depth (m): 2.10

Sample Number: 1 Base Depth (m): 2.40

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	100
0.63	100
0.3	96
0.2	84
0.15	74
0.063	48

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	52
Silt/Clay	48

Remarks:

See Summary of Soil Descriptions



William Hulme's Grammar School,
Manchester

Contract No:
PSL25/4224
Client Ref:
P22-639

Appendix G: Dynamic Cone Penetration Results



Certificate for the Determination of the Nominal CBR Value by the Dynamic Cone
Penetration Test

Design Manual for Roads and Bridges CS 229 Data for pavement assessment
Clause 6.33, Rev 0: 2020

Report No: 13826-1 DCP
Client: Rodgers Leask Ltd
Address: St James House
St. Mary's Wharf
Mansfield Road
Derby
DE1 3TQ

Report Date: 03/06/2025
Date of Test: 30/05/2025

Site: William Hulme Grammar School, Spring Bridge Road, Manchester, M16 8PR

Test Details

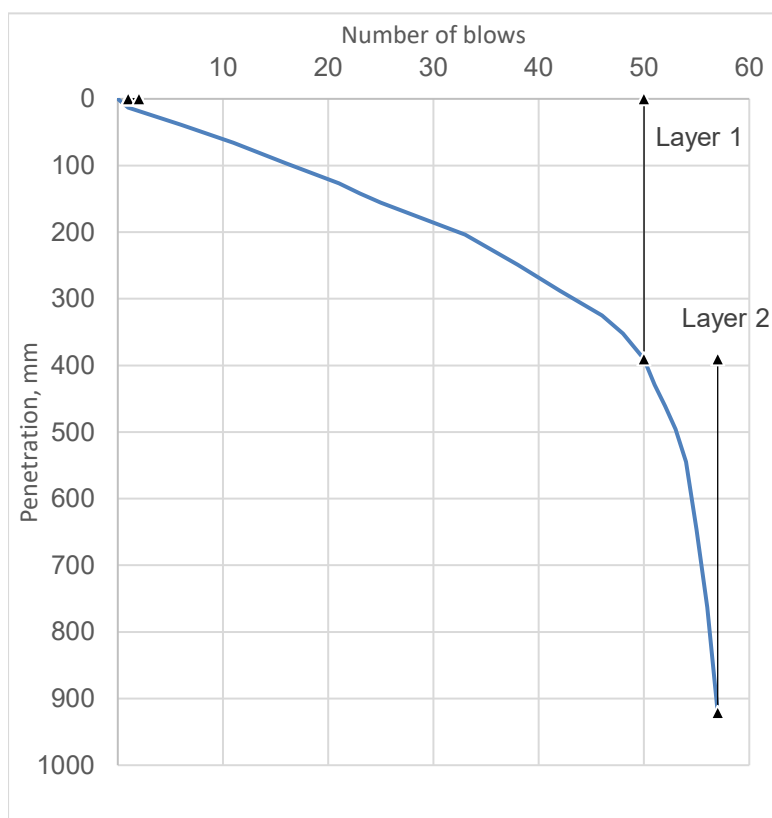
Test Location: DCP01
Material Surface: Crushed ROCK

Weather: Overcast
Layer/Level: Ground Level

Deviations: No deviations from the test method were employed.

The results apply only to the location tested and the material was tested in an 'as found' condition

Test Results



Layer 1 CBR Value, %:	34
Layer 1 Thickness, mm:	390
Layer 2 CBR Value, %:	3
Layer 2 Thickness, mm:	531

For and on Behalf of Hixtra Ltd





Certificate for the Determination of the Nominal CBR Value by the Dynamic Cone Penetration Test

Design Manual for Roads and Bridges CS 229 Data for pavement assessment
Clause 6.33, Rev 0: 2020

Report No: 13826-2 DCP
Client: Rodgers Leask Ltd
Address: St James House
St. Mary's Wharf
Mansfield Road
Derby
DE1 3TQ

Report Date: 03/06/2025
Date of Test: 30/05/2025

Site: William Hulme Grammar School, Spring Bridge Road, Manchester, M16 8PR

Test Details

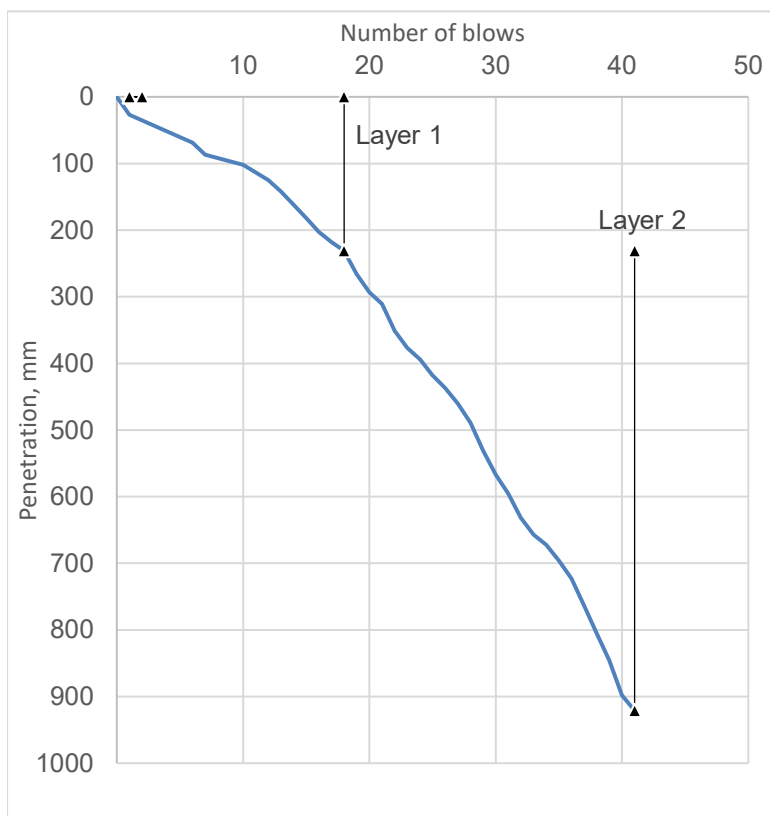
Test Location: DCP02
Material Surface: Crushed ROCK

Weather: Overcast
Layer/Level: Ground Level

Deviations: No deviations from the test method were employed.

The results apply only to the location tested and the material was tested in an 'as found' condition

Test Results



Layer 1 CBR Value, %:	20
Layer 1 Thickness, mm:	231

Layer 2 CBR Value, %:	8
Layer 2 Thickness, mm:	690

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Certificate for the Determination of the Nominal CBR Value by the Dynamic Cone Penetration Test

Design Manual for Roads and Bridges CS 229 Data for pavement assessment
Clause 6.33, Rev 0: 2020

Report No: 13826-3 DCP
Client: Rodgers Leask Ltd
Address: St James House
St. Mary's Wharf
Mansfield Road
Derby
DE1 3TQ

Report Date: 03/06/2025
Date of Test: 30/05/2025

Site: William Hulme Grammar School, Spring Bridge Road, Manchester, M16 8PR

Test Details

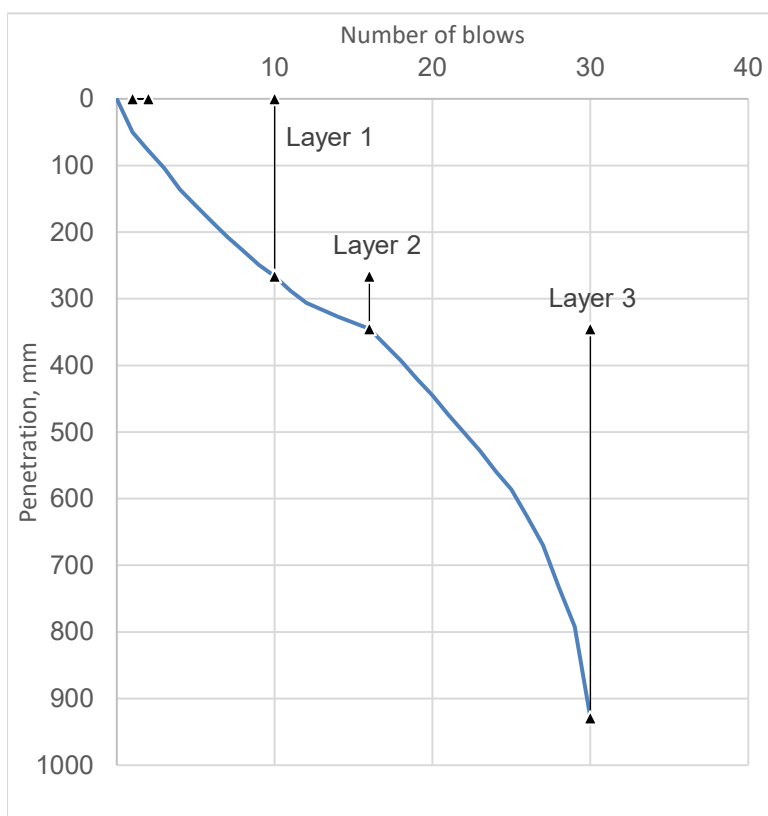
Test Location: DCP03
Material Surface: Top Soil

Weather: Sunny
Layer/Level: Ground Level

Deviations: No deviations from the test method were employed.

The results apply only to the location tested and the material was tested in an 'as found' condition

Test Results



Layer 1 CBR Value, %:	9
Layer 1 Thickness, mm:	266
Layer 2 CBR Value, %:	20
Layer 2 Thickness, mm:	79
Layer 3 CBR Value, %:	6
Layer 3 Thickness, mm:	584

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Design Manual for Roads and Bridges CS 229 Data for pavement assessment
Clause 6.33, Rev 0: 2020

Report No: 13826-4 DCP
Client: Rodgers Leask Ltd
Address: St James House
St. Mary's Wharf
Mansfield Road
Derby
DE1 3TQ

Report Date: 03/06/2025
Date of Test: 30/05/2025

Site: William Hulme Grammar School, Spring Bridge Road, Manchester, M16 8PR

Test Details

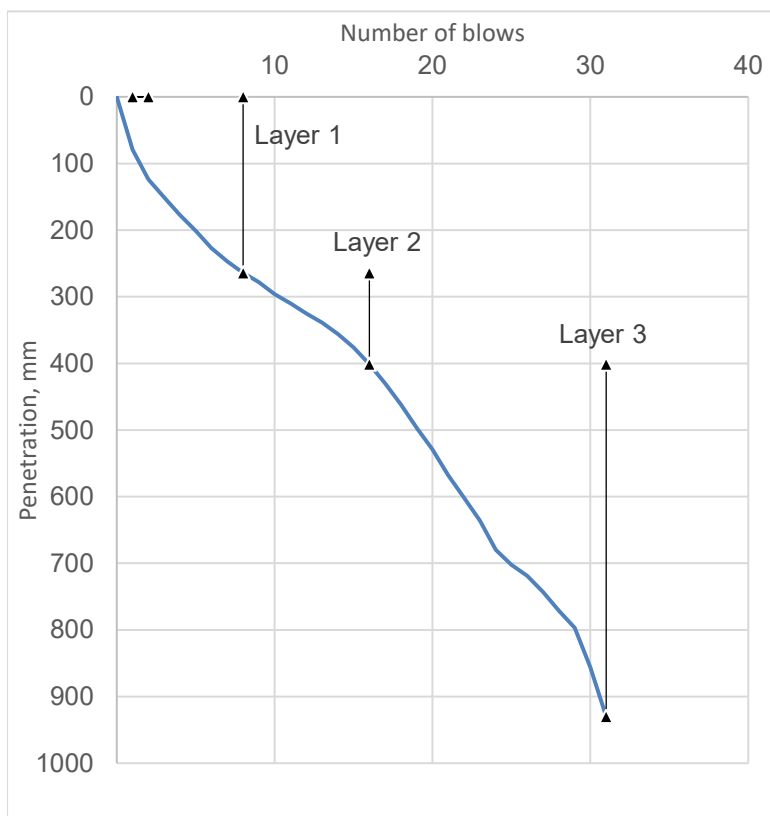
Test Location: DCP07
Material Surface: Top Soil

Weather: Sunny
Layer/Level: Ground Level

Deviations: No deviations from the test method were employed.

The results apply only to the location tested and the material was tested in an 'as found' condition

Test Results



Layer 1 CBR Value, %:	7
Layer 1 Thickness, mm:	264
Layer 2 CBR Value, %:	15
Layer 2 Thickness, mm:	137
Layer 3 CBR Value, %:	7
Layer 3 Thickness, mm:	529

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Design Manual for Roads and Bridges CS 229 Data for pavement assessment
Clause 6.33, Rev 0: 2020

Report No: 13826-5 DCP
Client: Rodgers Leask Ltd
Address: St James House
St. Mary's Wharf
Mansfield Road
Derby
DE1 3TQ

Report Date: 03/06/2025
Date of Test: 30/05/2025

Site: William Hulme Grammar School, Spring Bridge Road, Manchester, M16 8PR

Test Details

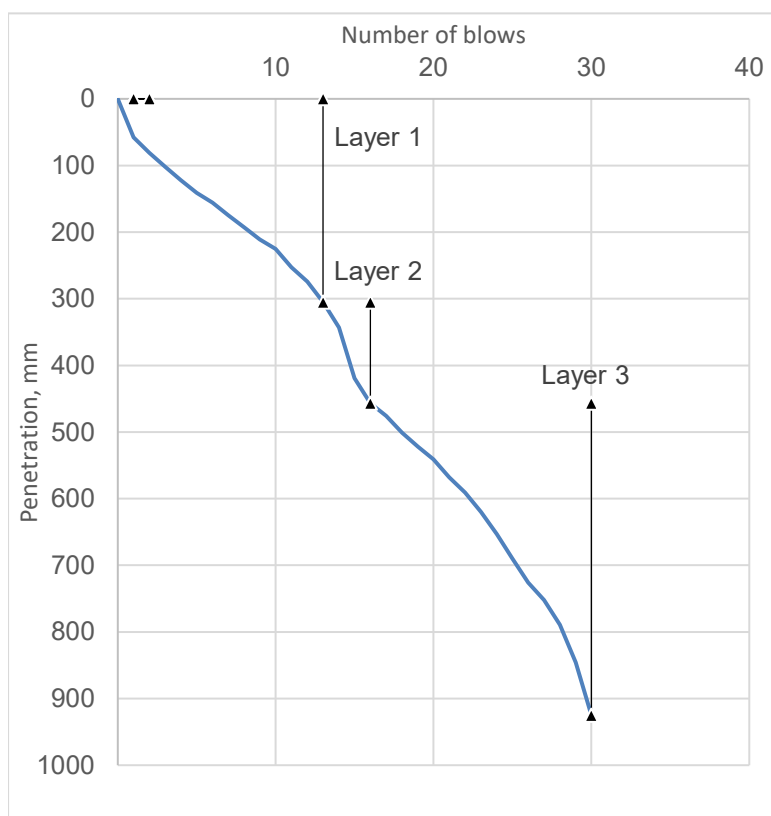
Test Location: DCP09
Material Surface: Topsoil

Weather: Sunny
Layer/Level: Ground Level

Deviations: No deviations from the test method were employed.

The results apply only to the location tested and the material was tested in an 'as found' condition

Test Results



Layer 1 CBR Value, %:	11
Layer 1 Thickness, mm:	305
Layer 2 CBR Value, %:	5
Layer 2 Thickness, mm:	152
Layer 3 CBR Value, %:	7
Layer 3 Thickness, mm:	468

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Design Manual for Roads and Bridges CS 229 Data for pavement assessment
Clause 6.33, Rev 0: 2020

Report No: 13826-6 DCP
Client: Rodgers Leask Ltd
Address: St James House
St. Mary's Wharf
Mansfield Road
Derby
DE1 3TQ

Report Date: 03/06/2025
Date of Test: 30/05/2025

Site: William Hulme Grammar School, Spring Bridge Road, Manchester, M16 8PR

Test Details

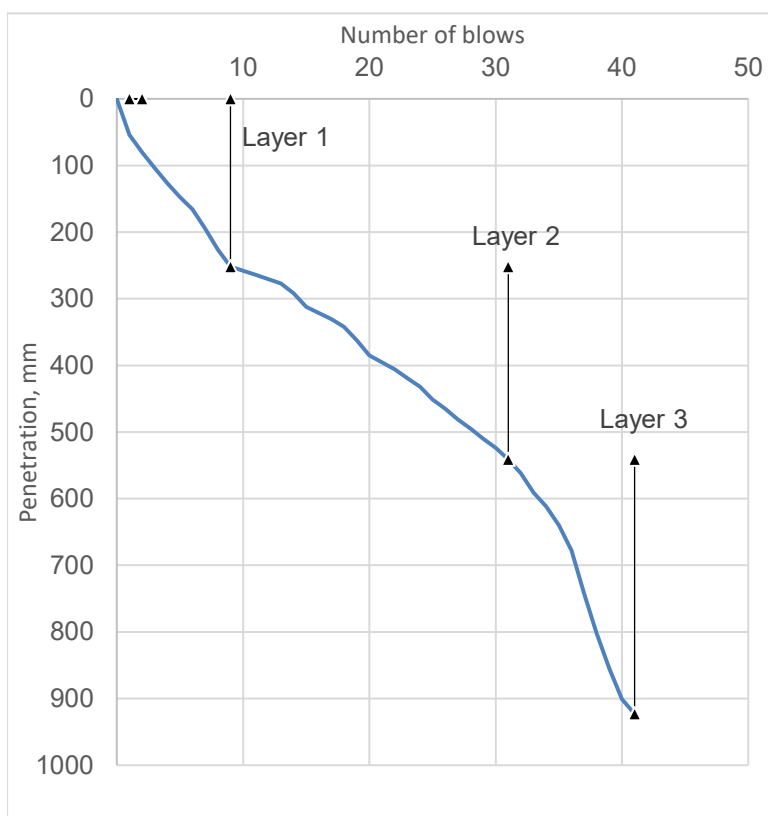
Test Location: DCP08
Material Surface: Topsoil

Weather: Sunny
Layer/Level: Ground Level

Deviations: No deviations from the test method were employed.

The results apply only to the location tested and the material was tested in an 'as found' condition

Test Results



Layer 1 CBR Value, %:	9
Layer 1 Thickness, mm:	252
Layer 2 CBR Value, %:	20
Layer 2 Thickness, mm:	289
Layer 3 CBR Value, %:	6
Layer 3 Thickness, mm:	382

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Design Manual for Roads and Bridges CS 229 Data for pavement assessment
Clause 6.33, Rev 0: 2020

Report No: 13826-7 DCP
Client: Rodgers Leask Ltd
Address: St James House
St. Mary's Wharf
Mansfield Road
Derby
DE1 3TQ

Report Date: 03/06/2025
Date of Test: 30/05/2025

Site: William Hulme Grammar School, Spring Bridge Road, Manchester, M16 8PR

Test Details

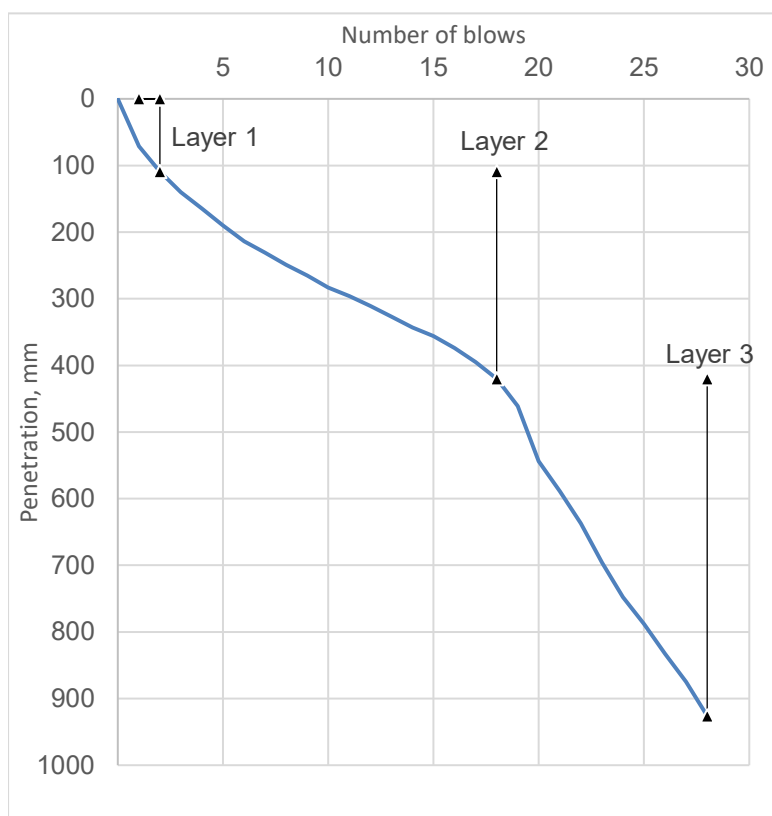
Test Location: DCP04
Material Surface: Topsoil

Weather: Sunny
Layer/Level: Ground Level

Deviations: No deviations from the test method were employed.

The results apply only to the location tested and the material was tested in an 'as found' condition

Test Results



Layer 1 CBR Value, %:	4
Layer 1 Thickness, mm:	109
Layer 2 CBR Value, %:	13
Layer 2 Thickness, mm:	311
Layer 3 CBR Value, %:	5
Layer 3 Thickness, mm:	506

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Design Manual for Roads and Bridges CS 229 Data for pavement assessment
Clause 6.33, Rev 0: 2020

Report No: 13826-8 DCP
Client: Rodgers Leask Ltd
Address: St James House
St. Mary's Wharf
Mansfield Road
Derby
DE1 3TQ

Report Date: 03/06/2025
Date of Test: 30/05/2025

Site: William Hulme Grammar School, Spring Bridge Road, Manchester, M16 8PR

Test Details

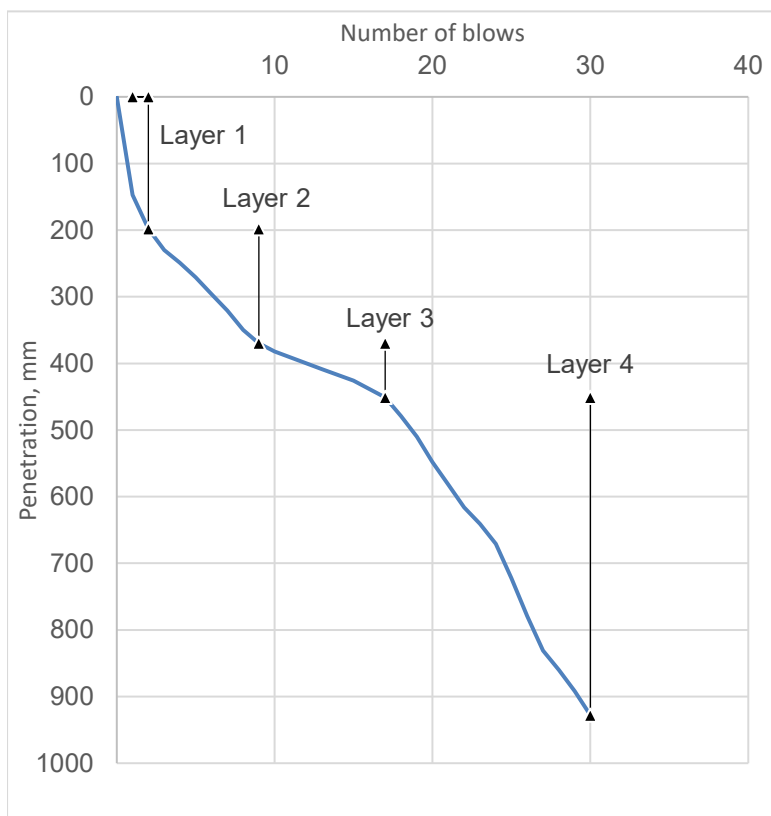
Test Location: DCP06
Material Surface: Topsoil

Weather: Sunny
Layer/Level: Ground Level

Deviations: No deviations from the test method were employed.

The results apply only to the location tested and the material was tested in an 'as found' condition

Test Results



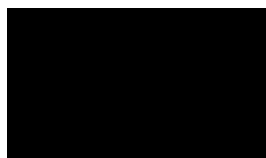
Layer 1 CBR Value, %:	2
Layer 1 Thickness, mm:	198

Layer 2 CBR Value, %:	10
Layer 2 Thickness, mm:	172

Layer 3 CBR Value, %:	26
Layer 3 Thickness, mm:	81

Layer 4 CBR Value, %:	7
Layer 4 Thickness, mm:	477

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Design Manual for Roads and Bridges CS 229 Data for pavement assessment
Clause 6.33, Rev 0: 2020

Report No: 13826-9 DCP
Client: Rodgers Leask Ltd
Address: St James House
St. Mary's Wharf
Mansfield Road
Derby
DE1 3TQ

Report Date: 03/06/2025
Date of Test: 30/05/2025

Site: William Hulme Grammar School, Spring Bridge Road, Manchester, M16 8PR

Test Details

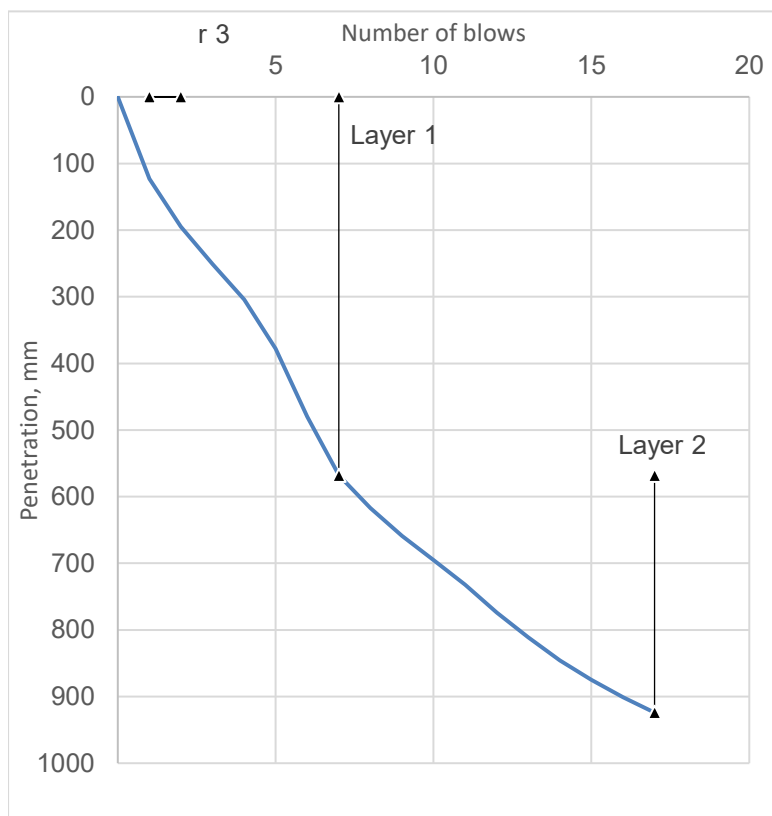
Test Location: DCP05
Material Surface: Topsoil

Weather: Sunny
Layer/Level: Ground Level

Deviations: No deviations from the test method were employed.

The results apply only to the location tested and the material was tested in an 'as found' condition

Test Results



Layer 1 CBR Value, %:	3
Layer 1 Thickness, mm:	568
Layer 2 CBR Value, %:	7
Layer 2 Thickness, mm:	356

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