



Cube Homes Limited

Chorlton High School

Supplementary Phase 2 Geo-environmental and Geotechnical
Site Investigation

11884-R01(00)

RSK GENERAL NOTES

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Title: Supplementary Phase 2 Geo-environmental and Geotechnical Site Investigation:
Chorlton High School, High Lane, Chorlton-Cum-Hardy M21 9FA

Client: Cube Homes Limited

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Where field investigations have been carried out, these have been restricted to a level of detail required to achieve the stated objectives of the work.

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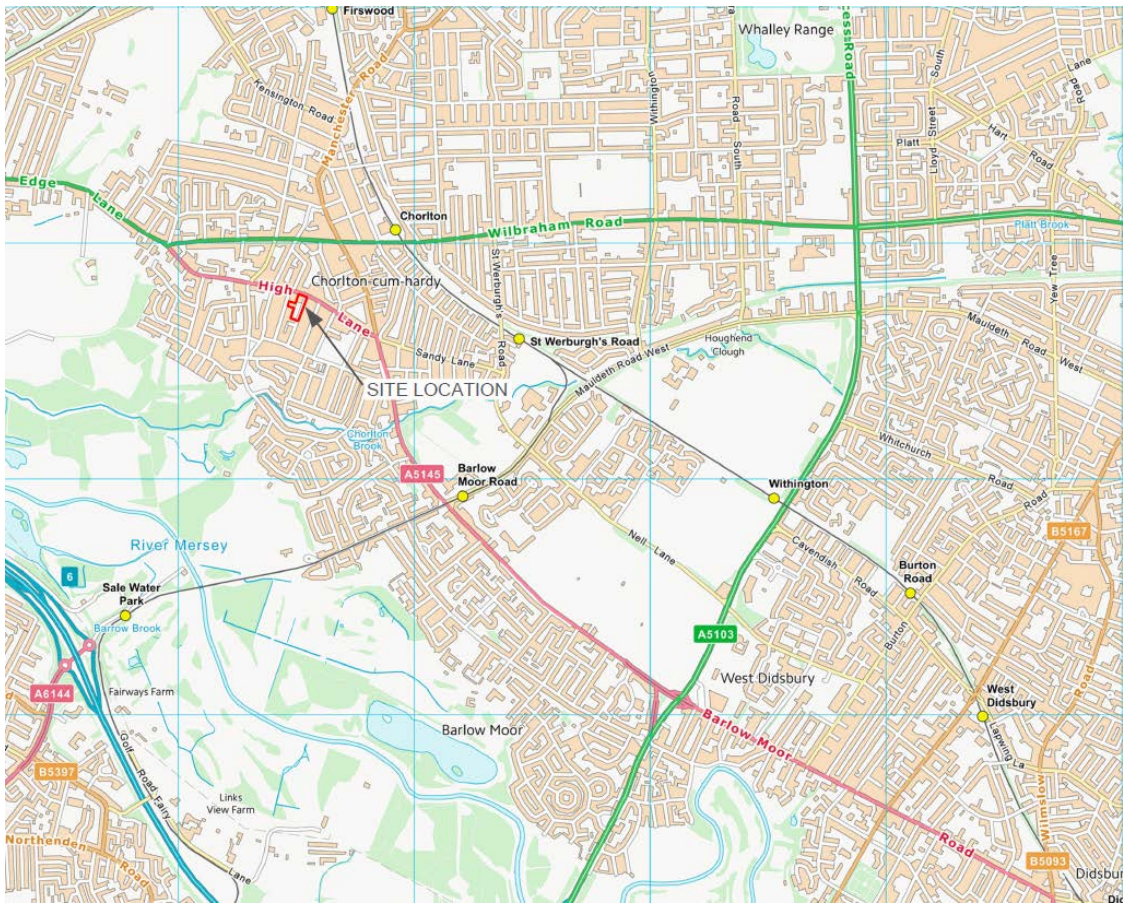
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1 EXECUTIVE SUMMARY

Commissioning and purpose of assessment	RSK Environment Limited (RSK) was commissioned by Cube Homes Limited to carry out a supplementary Phase 2 Geo-environmental and Geotechnical Site Investigation of the land at Chorlton High School, High Lane, Chorlton-Cum-Hardy, M21 9FA (grid reference 381509 393732). The overall aim of the project was to further assess land contamination issues raised by the local authority contaminated land team to support discharge of the relevant contaminated land condition and provide additional geotechnical design parameters.
DESK-BASED ASSESSMENT	
Site description and proposed development	The site currently comprises a discussed school building (located to the north and west of site) and a hardstanding playground area (to the south). The site occupies an area of 0.44 hectares and is being considered for development for residential use.
History of site and surrounding area	The site was formerly used for as an Islamic high school, and prior to that a convent school. Potential sources of contamination identified on-site comprise made ground relating to previous phases of development with no specific contaminative operations noted (e.g. industrial activity) during historical map review. No potentially contaminative current activities have been identified in the surrounding area.
Previous site investigation (SI) reports	Phase 1 Desk Study, Chorlton high school, Chorlton-Cum-Hardy, (Reference: 350536 R01_01) August 2023. Phase 2 Geo-environmental and geotechnical site investigation, Chorlton high school, Chorlton-Cum-Hardy, (Reference: 350536 R02_01) August 2023.
Initial conceptual site model (CSM) and preliminary risk assessment (PRA)	No potentially complete contaminant linkages were previously identified.
INTRUSIVE INVESTIGATION & ASSESSMENT	
SI scope	The scope of the supplementary SI was to further establish deeper ground conditions, infill as yet uninvestigated areas of the site during the previous work and delineate a previously reported exceedance hotspot at WS04 of lead and PAHs.
SI factual findings	The ground conditions at the site comprise made ground to a maximum depth of 1.50 m bgl, underlain by glaciofluvial sheet deposits (slightly gravelly sand to 4.00 m bgl, underlain by clay soils to between 9.00 m and 15.45 m bgl). Rest groundwater levels were recorded in the previous RSK investigation from 2.90 m bgl to 3.10 m bgl below ground level within the superficial deposits. Deeper groundwater within granular GFSD below a confining cohesive layer was encountered at 9.00 m bgl. Olfactory evidence of contamination was encountered during the previous RSK investigation within the made ground in WS04. No visual or olfactory evidence of contamination was identified during the supplementary investigation.

Refined conceptual site model and geo-environmental assessment	Based on the results of the site investigation and generic quantitative risk assessment (GQRA), there were exceedances of lead and PAHs in three samples of made ground within TP203, TP204 and WS04; all located within the centre of the rear playground. A single sample of made ground from TP203 identified asbestos at 0.10-0.40 m bgl with a quantification value of <0.001%.
Geotechnical assessment	Ground conditions comprised medium dense gravelly sand, over firm to stiff clay. It is considered that conventional spread foundations (strip or trench fill foundations) will be suitable for the proposed development based around an allowable bearing capacity of 100kN/m² (to be formed within natural granular soils). Breaking out of all relic floor slabs, foundations, footings, utilities and drainage runs will be required. Further consideration to be given to the abutment of current and new foundations with regards to potential settlement and overstressing of soils.
Recommendations including issues for further assessment	The following recommendations are made for of the site to address remaining uncertainties: • Completion of a Phase 3a Remediation Strategy • Contaminated soil removal around the identified hotspot of WS04, TP203 and TP204 in the centre of the rear playground. • Validation soil testing of remaining soils from sides and base of soil excavation area to assess that soils remaining in-situ are suitable for the proposed development. • Installation of a clean cover system in rear garden plots to include 600 mm of topsoil and subsoil. It is recommended that this supplementary SI report and the Remediation Strategy are submitted to the local authority for approval.
<i>The information given in this summary is necessarily incomplete and is provided for initial briefing purposes only. The summary must not be used as a substitute for the full text of the report.</i>	



Site Name	Chorlton High School	NGR	381509 393732
Site Address	High Lane, Chorlton-Cum-Hardy M21 9FA	Site area (ha.)	0.44

2 INTRODUCTION

2.1 Commissioning

RSK Environment Limited (RSK) was commissioned by Cube Homes Limited to carry out a Supplementary Phase 2 Geo-environmental and Geotechnical Site Investigation of the land at Chorlton High School High Lane, Chorlton-Cum-Hardy M21 9FA. The project was carried out to an agreed brief as set out in RSK's proposal (Ref. 11884 TL01 (00), dated 30 October 2023).

RSK's service constraints are shown in **Appendix A**.

The Site in question is being considered for development for residential use.

2.2 Project background

The Site is subject to planning consent 137994/FO/2023 with Manchester City Council (MCC) for the erection of 12 three storey dwellings; a pair of three storey semi-detached dwellings; a three storey building comprising 6 no. apartments; the retention and change of use of the existing mansion house together with the erection of a two storey side extension to form two (2) dwellings; creation of vehicular access points, associated landscaping, car parking and boundary treatment following the demolition of the other existing buildings and structures. Contaminated land related matters are subject to condition CLAND01.

In support of contaminated land condition discharge, RSK has produced the following desk-based and intrusive investigation reports; both of which have been submitted to MCC for review and comment:

- Phase 1 Desk Study, Chorlton high school, Chorlton-Cum-Hardy, (Reference: 350536 R01_01) August 2023.
- Phase 2 Geoenvironmental and geotechnical site investigation, Chorlton high school, Chorlton-Cum-Hardy, (Reference: 350536 R02_01) August 2023.

Pertinent information from these reports has been summarised in Section 4.0.

Following submission of the above reports, comments from the Contaminated Land Team at MCC were received via letter (reference 784791) on 3 October 2023. The letter stated:

The site investigation information that has been provided for this development is inadequate. In addition to the information provided, further information should be submitted which addresses the following issue:

- *The exploratory locations to date do not provide adequate site coverage and further site investigation is deemed necessary post demolition to confirm the ground conditions.*

The final risk assessment provided for this development is inadequate. Further SI will need to be undertaken post demolition to confirm the ground conditions. Consequently the data obtained from this investigation may require changes to be made to the current risk assessment. This Section will require submission of the

additional site investigation report and, if necessary, an updated final risk assessment for approval

RSK produced the following Scoping Document which outlined further intrusive investigation to provide wider site coverage, obtain more information on ground conditions and collect further soil samples pre-demolition. Additional exploratory hole locations would also allow delineation of the hotspot previously identified at WS04. It was stated that the additional intrusive investigation would be reported within a Site Investigation Report to include an updated risk assessment undertaken on all ground condition/chemical data.

- Manchester Islamic High School – Additional GI Scope and Rationale, (Reference: 11884_ESK100), 6 October 2023.

The scope and rationale of the supplementary site investigation was accepted by the Environmental Protection Officer at MCC, Laura Miller, in email dated 20th October 2023.

Pertinent correspondence with MCC are included in **Appendix D**.

2.3 Objectives

The objectives of the work are:

- to further investigate the site to provide adequate site coverage and an updated risk assessment in line with regulator commentary in support of discharge of the contaminated land condition; and
- to identify the need for remediation works to demonstrate that the site is suitable for its proposed use.

2.4 Scope of works

The scope of this assessment has been developed in accordance with relevant British Standards and authoritative technical guidance as referenced through the report. The assessment of the contamination status of the site is in line with the technical approach presented in Land Contamination Risk Management (LCRM) (Environment Agency, 2021a) and in general accordance with BS 10175: 2011 + A2 2017 (BSI, 2017). It is also compliant with relevant planning policy and guidance.

The scope of the intrusive investigation has been designed in line with the recommendations of BS5930:2015+A1:2020 Code of practice for ground investigations (BSI, 2020), which maintains compliance with BS EN 1997-1 and 1997-2 and their related standards. It has also been developed in general accordance with BS 10175: 2011 + A2 2017. Ground gas assessment has been undertaken in general accordance with BS8576: 2013 and BS 8485:2015+A1:2019.

A brief summary of relevant legislation and policy relating to land contamination is given in **Appendix C**.

The scope of works for the assessment has included the following:

- design and implementation of a supplementary intrusive investigation, in situ testing, soil sampling, laboratory geo-environmental and geotechnical testing of soil samples
- interpretation of data to develop a refined conceptual site model (CSM)

- generic quantitative risk assessment (GQRA) of relevant contaminant linkages
- interpretation of ground conditions and geotechnical data to provide preliminary recommendations with respect to foundations and infrastructure design
- preparation of this factual and/or interpretative report.

2.5 Limitations

This report is subject to the RSK service constraints given in **Appendix A** and limitations that may be described through this document.

3 SITE DETAILS

3.1 Site location

Site location details are presented in **Table 1** and a site location plan is provided on **Figure 1**.

Table 1 Site location details

Site name	Chorlton High School
Full site address and Post code	High Lane, Chorlton-Cum-Hardy M21 9FA
National Grid reference (centre of site)	381509 393732

3.2 Site description

The Site boundary and current site layout are shown on **Figure 2**. The Site covers an area of c. 0.44 hectares. It is currently occupied by an unoccupied high school building (to the north and west) and a tarmac playground area to the south.

The site is a rectangular parcel of land with a small square shaped section of land extending to the west of the main site. The disused school building is located in the north and stretches along the western boundary of the site, with a parking area further north and a playground to the south. The site is covered in hardstanding buildings. The surrounding area is a mixture of residential and commercial developments.

3.3 Surrounding land uses

The Site is located in Chorlton-Cum-Hardy, within a predominantly residential/ commercial setting. Immediate surrounding land uses are described in **Table 2**.

Table 2 Surrounding land uses

North	Residential housing
East	Residential housing
South	Residential housing, Commercial developments including cafes and public houses.
West	Residential housing

3.4 Development plans

The proposed layout of the site, at the time of preparing this report, is shown in **Appendix B**.

The proposed development is for the existing school buildings along the western site boundary to be demolished. Twelve town houses are to be erected along with four affordable dwellings. The school building to the north of the playground will remain as it is a 'Grade 2' building, and this will be renovated into apartments/flats.

No details of the proposed ground levels have been provided therefore for the purpose of this report it has been assumed that the current levels will remain unchanged.

4 SUMMARY OF PREVIOUS REPORTS

4.1 RSK Phase I Desk Study

4.1.1 Site history

The review of the site history undertaken as part of the Phase 1 Desk Study indicated that the land was undeveloped and covered with orchard trees, where in 1894 it became Carlton House. From 1907 the land use became a convent and orchard, before becoming the Convent High School building in 1951.

4.1.2 Site geology

The geology of the site is characterised by the succession recorded in **Table 3** Site geology.

Table 3 Site geology

Strata	Description	Estimated thickness (m)
Made ground	Hardstanding (tarmacadam and concrete) is present across most of the site and sub-base material is anticipated.	Unknown
Superficial deposits (Glaciofluvial sheet deposits)	Sand, sand and gravel, clay.	Unknown
Wilmslow Sandstone Formation	Sandstone.	>300

4.1.3 Hydrogeology

The site is underlain by a secondary A aquifer relating to the superficial deposits. The underlying bedrock is classified as a Principal aquifer.

4.1.4 Hydrology

No watercourses have been identified in the vicinity of site.

4.2 Initial conceptual site model

4.2.1 Potential soil, soil vapour and groundwater linkages

Table 4 Potential sources of soil and groundwater contamination

Potential sources	Contaminants of concern	Current or historical
On-site		

Potential sources	Contaminants of concern	Current or historical
Made ground	Unknown fill material underlying the current building and the playground. The material potentially includes brick, ash and clinker and containing toxic and phytotoxic metals, inorganics, polycyclic aromatic hydrocarbons (PAHs), asbestos	Current
Off-site		
None identified.		

4.2.2 Potential ground gas linkages

No significant potential sources of ground gas generation have been identified therefore this potential issue has not been taken forward.

4.2.3 Potentially complete pollutant linkages

There were no contaminant linkages with a potential risk of moderate to low or higher identified in the preliminary risk assessment.

4.3 RSK Phase 2 Site Investigation

4.3.1 Scopes of work

There were six boreholes drilled by windowless sampling methods to a maximum depth of 5.45 m below ground level (m bgl).

4.3.2 Ground conditions encountered

The exploratory holes revealed that the site is underlain by a variable thickness of made ground over superficial deposits. Bedrock was not encountered. This appears to confirm the stratigraphical succession described within the preliminary CSM.

Table 5 General succession of strata encountered

Stratum	Exploratory holes encountered	Depth to top of stratum m bgl	Proven thickness (m)
Made ground	All	0.00	0.35 to 1.00
Glaciofluvial Sheet deposits	All	0.35 to 1.00	4.45 to 5.00

Groundwater was encountered in exploratory holes at depths between 2.60 and 3.00 m bgl perched above the clay.

4.3.3 Geo-environmental Assessment

Localised contamination was encountered at one location (WS04), which is beneath the proposed development for plots 10-12. The GQRA concluded that there is unlikely to be a relevant contaminant linkage to human health, associated with this material. Overall, the site was considered suitable for the proposed end-use.

4.3.4 Geotechnical Assessment

Ground conditions comprised medium dense sand and gravel, over firm to stiff clay. It was considered that traditional spread foundations (strip or trench fill foundations) would be suitable for the proposed development.

Buried concrete classification should be classed as DS-1 and AC-1.

5 SUPPLEMENTARY SITE INVESTIGATION STRATEGY & METHODOLOGY

5.1 Introduction

RSK carried out a supplementary intrusive investigation between 20 November and 27 November 2023.

5.2 Objectives

The specific objectives of the investigation were as follows:

- to establish the ground conditions underlying the site including the extent and thickness of any made ground;
- to investigate the contamination hotspot previously identified at WS04 in the centre of the rear playground;
- to investigate the previously Uninvestigated area of the site in the west;
- to assess geotechnical properties of soils; and
- to carry out infiltration testing in selected trial pits to assist with drainage design.

5.3 Selection of investigation methods

The techniques adopted for the investigation were chosen with consideration of the objectives and site constraints, which are described below.

Cable percussion drilling was chosen based on the targeted drill depth, requirement for in-situ geotechnical data, the opportunity to collect both disturbed and undisturbed samples. This was supplemented by shallow window samples which offered greater spread of investigation locations across the site, particularly in the restricted access areas (internal classrooms and narrow walkways in west of site).

Mechanically excavated trial pitting were also carried out at a number of investigation locations to achieve greater visibility of the made ground and delineate the extent of the area previously found to have exceedances in metals (WS04). Two of the trial pits located to the north and south areas of site underwent soakaway testing.

Prior to conducting intrusive works, utility service plans were obtained and buried service clearance undertaken in line with RSK's health and safety procedures. Utility plans obtained during the previous round of intrusive investigation by RSK were considered suitable for use during the supplementary investigation as the client confirmed that no changes to buried services had taken place in the intervening time period.

5.4 Investigation strategy

The ground investigation was carried out using intrusive ground investigation techniques in general accordance with the recommendations of BS5930:2015+A1:2020, which maintains compliance with BS EN 1997-1 and 1997-2 and their related standards.

Whilst every attempt was made to record full details of the strata encountered in the boreholes, techniques of hole formation and sampling will inevitably lead to disturbance, mixing or loss of material in some soils.

The investigation strategy involved non-targeted boreholes (cable percussive and window sampler) and targeted trial pits. The investigation comprised an exploratory investigation, focussing on the whole area of site with soakaway testing to the north and south of site, specifically in areas identified by the clients drainage team where attenuation tanks may be suitable, and trial pits around the previously identified metals hotspot (WS04) .

Details of the supplementary investigation locations and rationale are presented in Table 6. Four machine excavated trial pits were dug to a maximum depth of 2.40 m bgl before being backfilled with arisings in reverse order. Three cable percussive boreholes were drilled to a maximum depth of 15.00 m bgl. Six window sample boreholes were drilled to a maximum depth of 5.45m bgl. An exploratory hole location plan is shown on **Figure 2**.

Table 6 **Supplementary Exploratory hole location rationale**

Investigation type	Number	Designation	Rationale
Boreholes by cable percussive methods	3	CP201 to 203.	To be formed using cable percussive boring technique to a provisional depth of 10.00 m Primary objective is to obtain deeper geotechnical data to inform foundation design. The spread of CP boreholes is to allow a robust cross-section of data across the site from north to south. Environmental samples for chemical analysis to be obtained from made ground and natural strata to assess soil quality from area of site not previously investigated. Standard Penetration Tests (SPTs) to be undertaken at 1.00 m intervals throughout profile of borehole. Boreholes to be backfilled with arisings upon completion
Boreholes by dynamic/windowless sampling methods	6	WS201 to WS206.	To be formed using a tracked diesel-powered window sampling rig to depths up to 4.00 -5.00 m to establish near surface ground conditions. Primary objective is to provide additional geotechnical and chemical data across the site, particularly in areas not previously investigated. Soil samples for chemical analysis to be obtained from made ground and natural strata to assess soil quality for re-use in future development or off-site disposal. Standard Penetration Tests (SPTs) to be undertaken at 1.00 m intervals throughout profile of borehole. Boreholes to be backfilled with arisings upon completion. All doors and windows to be left open with use of fume extraction during drilling of internal boreholes. WS203 and WS204 located in previously Uninvestigated classrooms.

Investigation type	Number	Designation	Rationale
			WS205 and WS206 located in previously Uninvestigated western portion of site.
Trial-pits excavated by mechanical excavator for soakaway testing	2	TP201 and TP202	To be formed using tracked excavator to depths up to 2.00 m bgl to allow infiltration testing. BRE compliant soakaway tests to be completed at depths circa 1.00 -2.00 m below ground level (exact locations dependant on future drainage design) Pits to be filled with gravel during soakaway test to restrict collapse. Soil samples for chemical analysis to be obtained from made ground and natural strata to assess soil quality. Pits to be back filled with arisings and left slightly mounded to allow future settlement upon completion.
Trial-pits excavated by mechanical excavator	2	TP203 & TP204	To be formed using tracked excavator to depths up to 4.00 m bgl. Objective of TP203 is to target the unknown square feature shown on the 1933 historic map. Objective of TP204 is to delineate the hotspot identified in WS04 during the previous round of Phase 2 investigation. Soil samples for chemical analysis to be obtained from made ground and natural strata to assess soil quality. Pits to be back filled with arisings and left slightly mounded to allow future settlement upon completion.

5.4.1 Implementation of supplementary investigation works.

The site investigation works were carried out in general accordance with the UK Specification for Ground Investigation (UKSGI), third edition (AGS, 2022).

The exploratory holes were logged by an engineer in general accordance with the recommendations of BS5930:2015+A1:2020 (which incorporates the requirements of BS EN ISO 14688-1, 14688-2 and 14689-1).

The soil sampling and analysis strategy was designed to characterise each encountered soil strata, permit an assessment of the potential contaminant linkages identified and investigate the geotechnical characteristics. In addition, samples were taken to allow for geo-environmental and geotechnical testing to be undertaken.

Soils collected for laboratory analysis were placed in a variety of containers appropriate to the anticipated testing suite required. They were dispatched to the laboratory in cool boxes under chain of custody documentation. Samples were stored in accordance with the RSK quality procedures to maintain sample integrity and preservation and to minimise the chance of cross contamination.

Selected samples were placed in polythene bags for headspace screening with a photo-ionisation detector (PID) fitted with a 10.6 eV bulb. The PID screening results are presented on the exploratory hole records.

5.5 Laboratory testing

Laboratory testing was undertaken at a UKAS accredited laboratory with ISO17025 and MCERTS accredited test methods were specified where applicable for contamination testing and as shown in the laboratory test certificates appended.

5.5.1 Chemical analysis of soil samples

The soil sampling strategy was designed to characterise made ground and/or natural strata typically within the upper 1.0m of the ground profile whilst also characterising deeper strata and the contamination hotspot previously identified at WS04.

The programme of chemical tests undertaken on soil samples obtained from the intrusive investigation is presented in **Table 7** with the laboratory testing results contained in **Appendix F**.

Table 7 Summary of chemical testing of soil samples

Stratum	Tests undertaken	No. of tests
Made Ground	Asbestos screening and ID	7
Made Ground, Glaciofluvial sheet deposits	Metals	10
Made Ground	Ph	12
Made Ground	PAH 16-MS	10
Made Ground	TPH CWG	1
Made Ground	Total Sulphur	6
Made Ground	WS Sulphate	6
Made Ground	SOM	6
Made Ground	Leachate prep BS 12456-1 (2:1)	1
Made Ground	Metals 10 (Leachable)	1
Made Ground	PAH 16MS (Leachable)	1

5.5.2 Geotechnical analysis of soils

Where appropriate disturbed, bulk and undisturbed soil samples were taken for geotechnical classification testing with the depth and nature of samples detailed within the exploratory hole records.

Where appropriate, testing was undertaken in accordance with BS 1377:1990 Method of Tests for Soils for Civil Engineering Purposes or, where superseded, by the relevant part of BS EN ISO 17892:2014 Geotechnical investigation and testing - Laboratory Testing of Soil. Tests carried out in order to classify the concrete class required on-site have been undertaken following the procedures within BRE SD1:2005.

The programme of geotechnical tests undertaken on samples obtained from the intrusive investigation is presented in **Table 8**. The results and UKAS accreditation of tests methods are shown in **Appendix G**.

Table 8 Summary of geotechnical testing undertaken

Strata	Tests undertaken	No. of tests
Glaciofluvial sheet deposits and Glacial Till	Moisture content %	9
Glacial Till	Liquid/ plastic limits	6
Glaciofluvial sheet deposits	Sieve analysis	3
Glaciofluvial sheet deposits	BRE short suite	4
Glacial Till	One-dimension (40,80,160)	1
Glacial Till	Quick undrained	3

5.5.3 Infiltration testing

Infiltration tests were carried out in trial pits, TP201 and TP202 to establish the infiltration rate of the glaciofluvial sheet deposits. The tests were carried out generally in accordance with the method described in BRE Digest 365 (BRE, 2016). This involved filling the pits with water from a tanker and recording the drop in water level with time as the water soaked into the ground.

Copies of the testing records are included in **Appendix H**.

6 SITE INVESTIGATION FACTUAL FINDINGS

The results of the supplementary intrusive investigation and subsequent geo-environmental and geotechnical laboratory analysis undertaken are detailed below. Where required, the information has been supplemented by data from the previous RSK Phase 2 investigation.

6.1 Ground conditions encountered

The descriptions of the strata encountered, notes regarding visual or olfactory evidence of contamination, list of samples taken, field observations of soil and groundwater, in-situ testing and details of monitoring well installations are included on the exploratory hole records presented in **Appendix E**.

The exploratory holes revealed that the site is underlain by a variable thickness of made ground over glaciofluvial sheet deposits (GFSD). This appears to confirm the stratigraphical succession described within the preliminary CSM and found during the previous site investigation.

For the purpose of discussion, the ground conditions encountered during the fieldworks are summarised in **Table 9** with the strata discussed in subsequent subsections.

Table 9 General succession of strata encountered.

Stratum	Exploratory holes encountered	Depth to top of stratum m bgl	Proven thickness (m)
Made ground	WS01 – WS06 WS201-206, CP201-203 & TP201-204	0.00	0.35 - 1.50
Glaciofluvial sheet deposits (granular)	WS01 – WS06 WS201-206, CP201-203 & TP201-204	0.40 – 1.50	1.10– 2.70
Glaciofluvial sheet deposits (cohesive)	WS01 – WS06 CP201 – CP203, WS201 – WS206	1.80 – 4.00	5.2 – 6.00 (base not proven)

6.1.1 Made ground

The made ground generally comprised a granular soil with a significant proportion of granular matrix and ranged in thickness from 0.35 to 1.50 m bgl. From the testing carried out it would appear that this layer has been engineered. Some areas of made ground had observed clinker.

6.1.2 Granular Glaciofluvial Sheet Deposits

This stratum was encountered below made ground in all locations at a depth of between 0.40 m to 1.50 m below ground level. The layer ranged in thickness between 1.10 and 2.70 m in thickness and was proven to a maximum depth of 4.00 m bgl. Depper instances of granular GFSD were encountered in cable percussive boreholes at depths of 9.00m to 12.50 m bgl in CP202 and 9.00 m to 10.26 m bgl (base unproven) in CP203.

The material was described generally as a gravelly fine to coarse SAND. Based on the site descriptions and in-situ tests carried out this layer can be described as a loose to medium dense, primarily medium dense.

A summary of the in-situ and laboratory test results recorded in the stratum are presented in **Table 10**.

Table 10 Summary of in-situ and laboratory test results for granular unit

Soil parameters	Min. Value	Max. Value	Reference
Moisture content (%)	8.1	16	Appendix G
Modified moisture content (%)	8	16	Appendix G
Volume change potential	Low	Low	Appendix G
SPT 'N' values	4	21	Appendix E
Consistency term from field description	Loose	Medium Dense	Appendix E

6.1.3 Cohesive Glaciofluvial Sheet Deposits (GFSD)

This stratum was encountered beneath the granular GFSD and comprised a layer of soft to firm becoming stiff with depth clay encountered at 1.80 m and 4.00 m and ranged in thickness between 5.20 m and 6.00 m to a maximum proven depth of 15.45 m bgl (base unproven).

A summary of the in-situ and laboratory test results recorded in the stratum are presented in **Table 11**.

Table 11 Summary of in-situ and laboratory test results for cohesive unit

Soil parameters	Min. Value	Max. Value	Reference
Moisture content (%)	7.5	22	Appendix G
Modified moisture content (%)	10	23	Appendix G
Liquid limit (%)	25	45	Appendix G
Plasticity limit (%)	15	22	Appendix G
Plasticity index (%)	10	23	Appendix G
Modified plasticity index (%)	10	23	Appendix G
Plasticity term	Low	Intermediate	Appendix G
Volume change potential	Low	Medium	Appendix G

Soil parameters	Min. Value	Max. Value	Reference
SPT 'N' values	13	45	Appendix E
Undrained shear strength measured by triaxial testing (kN/m ²)	49	74	Appendix G
Strength term from field description	Firm	Stiff	Appendix E
Strength term (inferred from Triaxial testing)	-	Medium Strength	Appendix G

6.1.4 Visual/olfactory evidence of soil contamination

Made ground contained clinker in WS203.

No visual evidence of asbestos was encountered.

PID tests in both the made ground and underlying natural strata gave readings of 0.00 ppm.

6.2 Groundwater

6.2.1 Groundwater encountered during intrusive works

Groundwater was encountered during the intrusive investigation works as detailed on the logs in **Appendix E**. Strikes were present in cable percussive boreholes CP202 and CP203 at a depth of 9.00 m bgl in both boreholes rising to 6.00 m and 8.00 m bgl respectively. Both water strikes were encountered at the base of cohesive GFSD upon entering granular GFSD, showing that groundwater is confined within deeper granular layers of the GFSD.

7 GEO-ENVIRONMENTAL ASSESSMENT

7.1 Refinement of initial CSM

The maximum thickness of made ground encountered during both phases of RSK intrusive investigation was 1.50 m.

During the first phase of RSK investigation, olfactory evidence of contamination of possible hydrocarbons was encountered in made ground at one location (WS04 at 0.30 m to 1.10 m depth), positioned in the centre of the site. This was not identified as a potential source area in the PRA. Exceedances of lead and PAHs were reported in shallow made ground above the GAC protective of residential with plant uptake end-use at WS04.

Visible and olfactory evidence of contamination was not encountered during the supplementary RSK investigation at TP203 and TP204 surrounding the area where a the previously noted contamination had been identified (WS04).

Groundwater was encountered at 9.00 m bgl within deeper granular GFSD layers confined by the overlying cohesive GFSD.

7.2 Linkages for assessment

As described in LCRM (Environment Agency, 2021a), there are two stages of quantitative risk assessment (QRA), Tier 2 generic (GQRA) and Tier 3 detailed (DQRA). The GQRA comprises the comparison of soil, groundwater, soil gas and/or ground gas results with generic assessment criteria (GAC) that are appropriate to the linkage being assessed. This comparison can be undertaken directly against the laboratory results or following statistical analysis depending upon the sampling procedure that was adopted. This assessment relates to LCRM Stage 1, Tier 2 generic quantitative risk assessment.

Following the refinement of the CSM, the potentially complete contaminant linkages that require further assessment and the methodology of assessment are presented in **Table 12**.

Table 12 Linkages for GQRA

Potentially relevant contaminant linkage	Assessment method
Human health and phytotoxic-related linkages	
H1. Oral, dermal and inhalation exposure with impacted soil, soil vapour and dust by future residents	Human health GAC in Appendix I for a proposed residential end use.
H2. Inhalation exposure of future residents to asbestos fibres	Qualitative assessment based on the asbestos minerals present, their form, concentration, location and the nature of the proposed development.

7.3 Methodology and assessment of human health and phytotoxic-related linkages

7.3.1 H1. Oral, dermal and inhalation exposure with impacted soil by future occupants/site users

In order to assess the soil results against the appropriate GAC, the soil results have been split into appropriate data sets relevant to the oral, dermal and inhalation linkage.

The datasets being considered in the assessment are:

- data set 1 Made Ground
- data set 2 Glaciofluvial Sheet Deposits

As an initial assessment of each dataset, all soil results in each dataset have been directly compared against the GAC for residential with home-grown produce end use.

7.3.1.1 Data set 1 – made ground

All made ground results from both phases of RSK investigation have been compared with the *residential with home grown produce* GAC. A soil organic matter (SOM) of 2.5% has been selected since laboratory results within the made ground range from 3 % and 21.9 %. The soil screening output spreadsheet is presented as **Appendix J**.

Assessment of the results indicates exceedances of the GAC for the contaminants shown in **Table 13**. These are highlighted in red on the screening output spreadsheet in **Appendix J**.

Table 13 Contaminant exceedances from laboratory results.

Determinand	No. of samples tested	GAC (mg/kg)	No of exceedances	Maximum concentration (mg/kg)	
				Value	Location/depth (m bgl)
Lead	9	200	2	251	WS04 0.50 – 0.80, TP203 0.1-0.40m
Benzo(a)anthracene	9	11	1	11.9	WS04 0.50-0.80m
Benzo(a)pyrene	9	5	2	9.84	TP204 0.2 – 0.50, WS04 0.5-0.80m
Benzo(b)fluoranthene	9	3.3	3	10.4	TP203 0.10-0.40 m, TP204 0.20 – 0.50, WS04 0.50-0.80 m

Determinand	No. of samples tested	GAC (mg/kg)	No of exceedances	Maximum concentration (mg/kg)	
				Value	Location/depth (m bgl)
Dibenzo(a)anthracene	9	0.28	3	1.03	TP203 0.10-0.40 m, TP204 0.20 – 0.50, WS04 0.50-0.80 m

7.3.1.2 Data set 1 – Superficial Deposits

All GFSD results have been compared with the *residential end use with home-grown produce* GAC. A soil organic matter (SOM) of 2.5 has been selected since laboratory results within the GFSD were 5.4 %. The soil screening output spreadsheet is presented as **Appendix J**.

Results indicate that all contaminants are below the relevant GAC therefore it is considered that a relevant contaminant linkage does not exist.

7.3.1.3 Summary

On the basis of the above assessment, it is considered that there are human health risks associated with the made ground soils located in the centre of the rear playground in the vicinity of WS04, TP203 and TP204 and, as such, soils cannot remain in-situ where they residential end-users may come into contact with them. Made ground soils in this area of the site will require remediation, likely via soil removal to remove the contamination hotspot and replacement with a clean cover system in rear gardens.

7.3.2 H2. Inhalation exposure of future occupants/site users to asbestos fibres

A total of 9 made ground samples from across the site were submitted for asbestos in soils analysis. The laboratory screening for asbestos identified detectable asbestos fibres within one sample of made ground at TP203 0.10 – 0.40m bgl. Chrysotile loose fibres were identified at a quantification level of <0.001%.

Asbestos impacted made ground should not remain in areas of soft landscaping/gardens and should be replaced with a clean cover layer. The pathway to residential end-users would be broken if located beneath buildings or roadways, however, given the elevated concentrations of other contaminants present at this location, it is likely the preferred option to remove this area of made ground, as such removing the contaminant source.

7.4 Uncertainties and implications in refined CSM and GQRA

In accordance with good practice, data gaps and uncertainties in the refined CSM have been identified at this stage. These are summarised in **Table 14** along with the likely implications.

Table 14 Data gaps and uncertainties

Data gap/ uncertainty	Details	Implications
The lateral extent of contamination present at TP203, TP204 and WS04 has not been fully established	The trial pits around WS04 contained exceedances lead and PAHs in both areas.	Validation soil sampling should be included in the remediation stage to prove that the extent of metal, PAH and asbestos contamination has been adequately removed from the centre of the rear playground and the remaining soils are suitable to be left in-situ.

8 GEOTECHNICAL ASSESSMENT

8.1 Proposed development

It is understood that the proposed development is to involve the construction of 12 residential town house properties, a number of flats and associated infrastructure. At this stage no specific information relating to building loads has been provided, however we have assumed the development will require typical strip/spread low rise private residential type foundations with associated loadings.

Ground conditions at the site comprise a relatively thin layer of granular made ground proven to a maximum depth of 1.50 m bgl, underlain by a layer of granular glaciofluvial sheet deposits comprising gravelly sand proven to a maximum depth of 4.00 m bgl, generally considered medium dense with SPT N-values ranging between 10 and 23. Granular GFSD was underlain by cohesive GFSD described as sandy slightly gravelly clay between depths of 1.80 m bgl and 15.45 m bgl with a maximum thickness of 6.00m bgl before a granular GFSD layer returned.

Following review of insitu strength and laboratory testing data of soils it is noted the shallow clay layer is of a low to intermediate plasticity (with PI values ranging between 10% and 23%). Undrained triaxial test results on x3 U100 samples indicate a shear strength (Cu) value between 49 and 74 kPa.

Review of SPT testing data indicates the upper gravelly sand layer has a mean N value of 14.7 with the deeper granular layer reporting an average N value of 35, these indicate granular deposits are of a medium dense range. SPT results from the clay layer have been used to correlate an approximate shear strength using the Terzaghi and Peck method of SPT N x 4 (based on the low to intermediate plasticity of the clay).

This indicates the shear strength of the clay layer is around medium to high strength (mean estimated Cu of 74kPa and an increase of strength with depth). It is also noted the values for Cu calculated from SPT values are broadly comparable with those noted in laboratory undrained shear strength testing, indicating assumed Cu values to be reasonably representative of the clay strength.

8.2 Foundations

8.2.1 Foundation options

Given the presence of competent natural soils at a relatively shallow depth it is considered that traditional spread footings will be suitable for the proposed development.

8.2.2 Spread foundations

The recommendations for the design and construction of spread foundations in relation to the ground conditions are set out in **Table 15**.

Table 15 Design and construction of spread foundations

Design/construction considerations	Design/construction recommendations
Founding stratum	Medium dense sand and gravel
Depth	Foundations should be taken to a minimum depth of 1.00 m (or to the base of made ground if encountered beneath 1.00 m bgl) below the final or existing ground level, whichever is lower. Where depths of made ground greater than 1.00 m are encountered, excavations should be continued to the underlying natural soils and returned back to the underside of the founding level using lean mix concrete. Regardless of depth, foundation should be taken at least 0.20 m into the underlying natural strata.
Special design considerations	
Shrinkable soils	No shrinkable soils present at shallow depth (within upper 3.00 m).
Variable founding soils	Owing to the significant lateral and vertical variability of the founding strata, consideration should be given to incorporating appropriate reinforcement into the strip foundations to minimise the risk of future differential foundation movements.
Presumed bearing capacity	Strip/trench fill foundations with a width of up to 1.00 m and constructed on the medium dense sand and gravel at a minimum depth of 1.00 m may be designed using a presumed bearing capacity of 100 kN/m ² .
Construction considerations	All foundation excavations should be inspected, and any made ground and soft, organic or otherwise unsuitable materials removed and replaced with mass concrete.

8.2.3 Floor slabs

The Site is generally underlain by more than 600 mm of existing made ground. National House-Building Council (NHBC) standards require that ground floor slabs should be suspended in areas where made ground is greater than 600 mm in thickness.

8.3 Excavations for foundations and services

Groundwater was encountered in some of the exploratory hole locations; though this was generally below a depth 2.50 m bgl. However, if encountered at shallower depth during excavations, provision should be made for dewatering of excavations.

Excavation should be possible using conventional site plant.

It is noted that demolition works will be required across part of the site, these works should include the breaking out of all relic floor slabs, foundations, footings, utilities and drainage runs. Excavations associated with this object clearance exercise should be backfilled with well-compacted granular material upon completion (with appropriate recording as to the location and extent of grubbing out works, and confirmatory CBR validation tests).

Where any proposed new foundations sit within close proximity to existing buildings to be retained as part of the development, the contractor should complete foundations exposure trial pits to confirm any potential clash. Where current and foundation lie in close proximity

to each other, further consideration of potential settlement and overstressing of soils may be required and specialist advice from RSK Geosciences should be sought.

8.4 Chemical attack on buried concrete

This assessment of the potential for chemical attack on buried concrete at the site is based on BRE Special Digest 1: Concrete in aggressive ground, which represents the most up-to-date guidance on this topic currently available in the UK.

The desk study and site reconnaissance indicate that, for the purposes of assessing the aggressive chemical environment of the site, the site should be considered as comprising natural ground unlikely to contain pyrite/ brownfield ground unlikely to contain pyrite.

The results of the laboratory analysis undertaken on samples of natural strata indicate 2:1 water/soil extract water soluble sulphate contents ranging from <10 mg/l to 49 mg/l, giving a characteristic value for water soluble sulphate of 43 mg/l; and pH value ranging from 7.04 to 7.7 giving a characteristic pH value of 7.04.

These results indicate that, in accordance with *BRE Special Digest 1: 2005 Concrete in aggressive ground* (BRE, 2005), the Design Sulphate Class for the site is DS-1. This assumes nominally mobile groundwater conditions and that no significantly disturbed clay comes into contact with concrete foundations or structures.

The corresponding ACEC classification for the site is AC-1, based on an assumption of mobile groundwater conditions, and a characteristic pH value of 7.04.

8.5 Infiltration drainage

The results of soakaway testing are summarised in **Table 16**.

Table 16 Infiltration test results

Trial pit	Geological unit	Test result (m/s)
SA01 (TP201)	Glaciofluvial Sand	2.46×10^{-4} , 1.70×10^{-4} , 1.30×10^{-4}
SA02 (TP202)	Glaciofluvial Sand	9.68×10^{-5} , 7.41×10^{-5} , 8.22×10^{-5}

Based upon the results of the soakaway tests presented above, the ground conditions appear suitable from a geotechnical viewpoint for the use of pit soakaways to discharge surface run-off water into the ground.

The EA should be contacted at the design stage in order to obtain a 'consent to discharge'. This may not be forthcoming where soakage will be into or just above the water table, particularly within groundwater protection zones. In addition, planning approval will have to be sought for their use.

9 CONCLUSIONS AND RECOMMENDATIONS

9.1 Geo-environmental assessment

The key findings of the geo-environmental assessment are as follows:

- Made ground was found to a maximum proven thickness of 1.50 m bgl.
- asbestos was found in one made ground sample from TP203 between the depths of 0.10 m and 0.40 m bgl as chrysotile fibres with a quantification value of <0.001%.
- Two samples of made ground located around the previously identified hotspot of WS04 were found to have exceedances of lead and PAHs. at similar concentrations to those previously identified.
- The made ground in the area of WS04, TP203 and TP204 is considered unsuitable to remain within the residential development. Soil removal is the likely preferred remediation technique and replacement with engineered fill beneath buildings/hardstanding or a clean cover system in areas of soft landscaping/gardens.

9.2 Geotechnical assessment

Ground conditions comprised medium dense gravelly sand, over firm to stiff clay. It is considered that conventional spread foundations (strip or trench fill foundations) will be suitable for the proposed development based around an allowable bearing capacity of 100kN/m² (to be formed within natural granular soils).

Buried concrete classification should be classed as DS-1 and AC-1.

Breaking out of all relic floor slabs, foundations, footings, utilities and drainage runs will be required.

Further consideration to be given to the abutment of current and new foundations with regards to potential settlement and overstressing of soils.

9.3 Recommendations

The following recommendations are made for of the site to address remaining uncertainties:

- Completion of a Phase 3a Remediation Strategy
- Contaminated soil removal around the identified hotspot of WS04, TP203 and TP204 in the centre of the rear playground.
- Validation soil testing of remaining soils from sides and base of soil excavation area to assess that soils remaining in-situ are suitable for the proposed development.
- Installation of a clean cover system in rear garden plots to include 600mm of topsoil and subsoil.
- Submission of this supplementary SI report and the Remediation Strategy to the local authority for approval.

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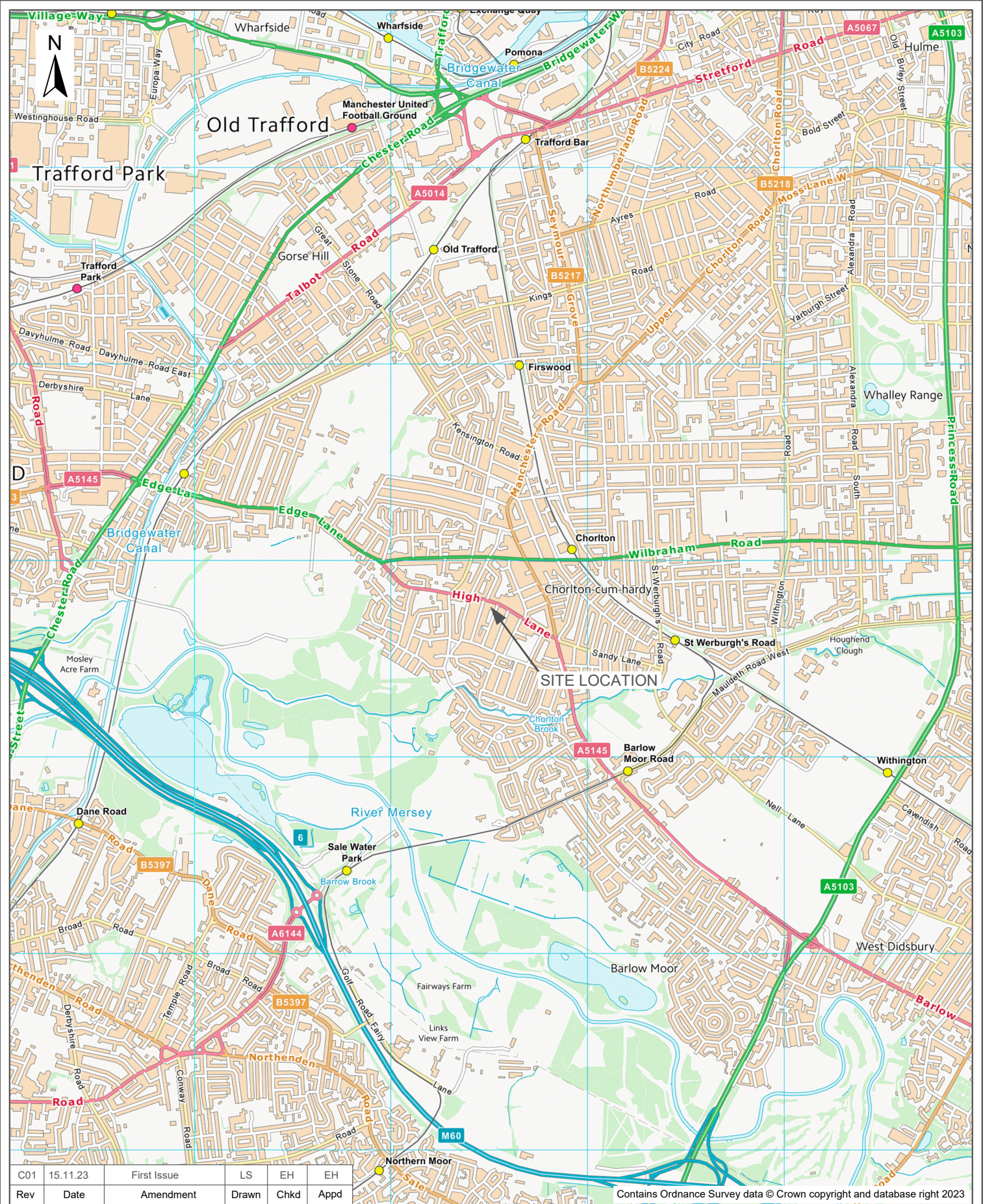
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FIGURES

Figure 1 SITE LOCATION PLAN



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GEOSCIENCES

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Client

Cube Homes Ltd

Project Name

Chorlton High School

Description

Site Location Plan

Dimension	Size	Scale	Geolocation	Project ID	Drawing no.	Rev	File name
m	A4	1:25,000	381509,393764	11884	11101	C01	11884-MA-111-SS-D-C-11101-C01

Figure 2 EXPLORATORY HOLE LOCATION PLAN



- LEGEND**
- Site boundary
 - Cable percussive borehole location
 - Window sample location
 - Trial pit location
 - Window sample location (RSK Site Investigation October 2022)

Notes:
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C01	16.11.23	First Issue	LS	EH	EH
Rev	Date	Amendment	Drawn	Chkd	Appd



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Client
Cube Homes Ltd

Project Name
Chorlton High School

Description
Exploratory Hole Location Plan

Project ID	Drawing no.	Revision
11884	22201	C01

File name
11884-MA-222-SS-D-C-22201-C01

Dimensions	Scale	Size
m	1:500	A3



APPENDICES

Appendix A

SERVICE CONSTRAINTS

1. This report and the site investigation carried out in connection with the report (together the "Services") were compiled and carried out by RSK Environment Limited (RSK) for Cube Homes Limited (the "Client") in accordance with the terms of a contract [RSK Environment Standard Terms and Conditions] between RSK and the Client, dated October 2023. The Services were performed by RSK with the reasonable skill and care ordinarily exercised by an environmental consultant at the time the Services were performed. Further, and in particular, the Services were performed by RSK taking into account the limits of the scope of works required by the client, the time scale involved and the resources, including financial and manpower resources, agreed between RSK and the Client.
2. Other than that, expressly contained in paragraph 1 above, RSK provides no other representation or warranty whether express or implied, in relation to the Services.
3. Unless otherwise agreed in writing, the Services were performed by RSK exclusively for the purposes of the Client. RSK is not aware of any interest of or reliance by any party other than the Client in or on the Services. Unless expressly provided in writing, RSK does not authorise, consent or condone any party other than the client relying upon the Services. Should this report or any part of this report, or otherwise details of the Services or any part of the Services be made known to any such party, and such party relies thereon that party does so wholly at its own and sole risk and RSK disclaims any liability to such parties. **Any such party would be well advised to seek independent advice from a competent environmental consultant and/or lawyer.**
4. It is RSK's understanding that this report is to be used for the purpose described in the introduction to the report. That purpose was a significant factor in determining the scope and level of the Services. Should the purpose for which the report is used, or the proposed use of the site change, this report may no longer be valid and any further use of or reliance upon the report in those circumstances by the client without RSK's review and advice shall be at the client's sole and own risk. Should RSK be requested to review the report after the date of this report, RSK shall be entitled to additional payment at the then existing rates or such other terms as agreed between RSK and the client.
5. The passage of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. The information and conclusions contained in this report should not be relied upon in the future without the written advice of RSK. In the absence of such written advice of RSK, reliance on the report in the future shall be at the Client's own and sole risk. Should RSK be requested to review the report in the future, RSK shall be entitled to additional payment at the then existing rate or such other terms as may be agreed between RSK and the client.
6. The observations and conclusions described in this report are based solely upon the Services which were provided pursuant to the agreement between the Client and RSK. RSK has not performed any observations, investigations, studies or testing not specifically set out or required by the contract between the client and RSK. RSK is not liable for the existence of any condition, the discovery of which would require performance of services not otherwise contained in the Services. For the avoidance of doubt, unless otherwise expressly referred to in the introduction to this report, RSK did not seek to evaluate the presence on or off site of asbestos, invasive plants, electromagnetic fields, lead paint, heavy metals, radon gas, persistent, bioaccumulative or toxic chemicals (including PFAS and related compounds) or other radioactive or hazardous materials, unless specifically identified in the Services.
7. The Services are based upon RSK's observations of existing physical conditions at the Site gained from a visual inspection of the site together with RSK's interpretation of information, including documentation, obtained from third parties and from the Client on the history and usage of the site,

unless specifically identified in the Services or accreditation system (such as UKAS ISO 17020:2012 clause 7.1.6):

- a. The Services were based on information and/or analysis provided by independent testing and information services or laboratories upon which RSK was reasonably entitled to rely.
- b. The Services were limited by the accuracy of the information, including documentation, reviewed by RSK and the observations possible at the time of the visual inspection.
- c. The Services did not attempt to independently verify the accuracy or completeness of information, documentation or materials received from the client or third parties, including laboratories and information services, during the performance of the Services.

RSK is not liable for any inaccurate information or conclusions, the discovery of which inaccuracies required the doing of any act including the gathering of any information which was not reasonably available to RSK and including the doing of any independent investigation of the information provided to RSK save as otherwise provided in the terms of the contract between the Client and RSK.

8. The intrusive environmental site investigation aspects of the Services are a limited sampling of the site at pre-determined locations based on the known historic / operational configuration of the site. The conclusions given in this report are based on information gathered at the specific test locations and can only be extrapolated to an undefined limited area around those locations. The extent of the limited area depends on the properties of the materials adjacent and local conditions, together with the position of any current structures and underground utilities and facilities, and natural and other activities on site. In addition, chemical analysis was carried out for a limited number of parameters (as stipulated in the scope between the client and RSK, based on an understanding of the available operational and historical information) and it should not be inferred that other chemical species are not present.
9. Any site drawing(s) provided in this report is (are) not meant to be an accurate base plan but is (are) used to present the general relative locations of features on, and surrounding, the site. Features (intrusive and sample locations etc) annotated on site plans are not drawn to scale but are centred over the approximate location. Such features should not be used for setting out and should be considered indicative only.
10. The comments given in this report and the opinions expressed are based on the ground conditions encountered during the site work and on the results of tests made in the field and in the laboratory. However, there may be conditions pertaining to the site that have not been disclosed by the investigation and therefore could not be taken into account. In particular, it should be noted that there may be areas of made ground not detected due to the limited nature of the investigation or the thickness and quality of made ground across the site may be variable. In addition, groundwater levels and ground gas concentrations and flows, may vary from those reported due to seasonal, or other, effects and the limitations stated in the data should be recognised.
11. Asbestos is often observed to be present in soils in discrete areas. Whilst asbestos-containing materials may have been locally encountered during the fieldworks or supporting laboratory analysis, the history of brownfield and demolition sites indicates that asbestos fibres may be present more widely in soils and aggregates, which could be encountered during more extensive ground works.
12. Unless stated otherwise, only preliminary geotechnical recommendations are presented in this report and these should be verified in a Geotechnical Design Report, once proposed construction and structural design proposals are confirmed.

Appendix B

DEVELOPMENT DRAWINGS

High Lane, Chorlton.

ACCOMMODATION SCHEDULE						
HOUSE NAME	STOREYS	DESCRIPTION	NO.	SQFT	SQM	TOTAL SQFT
TYPE E	2.5	4 BED (APPROX.) SEMI DETACHED	1	2744	254.9	2744
TYPE D	2.5	4 BED (APPROX.) SEMI DETACHED	1	2413	224.2	2413
TYPE A	3.5	4 BED TOWNHOUSE	12	1991	185	23892
TYPE B	2.5	4 BED TOWNHOUSE	2	1794	166.7	3588
TYPE C	2.5	2 BED APARTMENT	5	764	71	3820
TOTAL			22	32221	3028	32221
			22	PLOTS		
				SQFT		
				SQM		

Site Area - 1.08 Acres

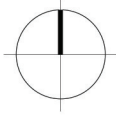
Copyright of this drawing belongs to MPSP, Planning & Design Ltd, and shall not be used or reproduced in any form without its express permission.

Only scale for Town and Country Planning Act 1987 services. For construction purposes, work to figures dimensions only. All dimensions to be checked with MPSP, and on site prior to the execution of any work.

The avoidance of doubt all dimensions are measured to wall structure and not the finishes unless otherwise stated.

Where any discrepancy is found to exist within or between drawings and/or documents it should be reported to the architect immediately.

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NOTE:
Layout to be read in conjunction with boundary treatment layout, boundary treatment details, materials layout and engineer's drawings.

- GENERAL**
- Denotes bin storage area.
 - Denotes cycle storage area.
 - Denotes proposed low level planters - Refer to landscape layout for details.
 - Denotes proposed post boxes.
 - Denotes PV panels subject to manufacturers details.
 - Denotes proposed fiber-reinforced concrete bollard with built-in light to detail.

- BOUNDARY TREATMENTS**
- Denotes 1.8m high horizontal double slatted screen fence with 0.3m trellis.
 - Denotes 2.1m high brick wall - To match development facings.
 - Denotes 1.1m high metal railings.
 - Denotes lockable gate.

- SURFACE FINISH**
- Denotes proposed granite flags 600 x 900.
 - Denotes proposed concrete flags 600 x 900.
 - Denotes private access driveways constructed in regular paving.
 - Denotes resin bound paving with stone edging.
 - Denotes proposed green roof.

- TREES / HEDGES**
- Denotes existing trees to be retained - Refer to AIA for details.
 - Denotes proposed tree planting - Refer to landscape layout for details.
 - Denotes proposed hedge planting - Refer to landscape layout for details.

P1	04.08.23	Types C residential. Shared driveway serving plots 13, 14, 15, 16, 17 - 22. Proposed 1.1m high metal railings subject to the findings of plot 07.	CW
Rev	Date	Revision	By
1		Client	

CUBE HOMES

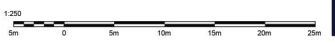
ILLUSTRATIVE LAYOUT

Project: Proposed Residential Development, High Lane, Chorlton.

Job No.	22114	Client	CW	Rev	P1
Date	MAY 2023	Stage	FOR PLANNING		

1:250 @ A1

mpsl planning & design



Appendix C

SUMMARY OF LEGISLATION AND POLICY RELATING TO LAND CONTAMINATION

Part IIA of the Environmental Protection Act 1990

Part IIA of the Environmental Protection Act 1990 (Part IIA) and its associated Contaminated Land Regulations 2000 (SI 2000/227), which came into force in England on 1 April 2000, formed the basis for the current regulatory framework and the statutory regime for the identification and remediation of contaminated land. Part IIA of the EPA 1990 defines contaminated land as 'any land which appears to the Local Authority in whose area it is situated to be in such a condition by reason of substances in, on or under the land, that significant harm is being caused, or that there is significant possibility of significant harm being caused, or that pollution of controlled waters is being or is likely to be caused'. Controlled waters are considered to include all groundwater, inland waters and estuaries.

In August 2006, the Contaminated Land (England) Regulations 2006 (SI 2006/1380) were implemented, which extended the statutory regime to include Part IIA of the EPA as originally introduced on 1 April 2000, together with changes intended chiefly to address land that is contaminated by virtue of radioactivity. These have been replaced subsequently by the Contaminated Land (England) (Amendment) Regulations 2012, which now exclude land that is contaminated by virtue of radioactivity.

The intention of Part IIA is to deal with contaminated land issues that are considered to cause significant harm on land that is not undergoing development (see Environmental Protection Act 1990: Part 2A Contaminated Land Statutory Guidance, April 2012). This document replaces Annex III of Defra Circular 01/2006, published in September 2006 (the remainder of this document is now obsolete).

Planning Policy

Land contamination is often addressed via the planning process during redevelopment of sites. This approach was documented in Planning Policy Statement: Planning and Pollution Control PPS23, which states that it remains the responsibility of the landowner and developer to identify land affected by contamination and carry out sufficient remediation to render the land suitable for use. PPS23 was withdrawn early in 2012 and has been replaced by much reduced guidance within the National Planning Policy Framework (NPPF), reference ISBN: 978-1-5286-1033-9, July 2021. For sites in Wales, reference should be made to Planning Policy Wales (Welsh Government. Edition 11, February 2021).

The new framework has limited guidance on contaminated land, as follows:

Chapter 11. Making effective use of land

- 117 Planning policies and decisions should promote an effective use of land in meeting the need for homes and other uses, while safeguarding and improving the environment and ensuring safe and healthy living conditions. Strategic policies should set out a clear strategy for accommodating objectively assessed needs, in a way that makes as much use as possible of previously-developed or 'brownfield' land.
- 118. Planning policies and decisions should:

c) give substantial weight to the value of using suitable brownfield land within settlements for homes and other identified needs, and support appropriate opportunities to remediate despoiled, degraded, derelict, contaminated or unstable land.

Chapter 15. Conserving and enhancing the natural environment

170. Planning policies and decisions should contribute to and enhance the natural and local environment by:

e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and

f) remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.

Ground conditions and pollution

178. Planning policies and decisions should ensure that:

a) a site is suitable for its proposed use taking account of ground conditions and any risks arising from land instability and contamination. This includes risks arising from natural hazards or former activities such as mining, and any proposals for mitigation including land remediation (as well as potential impacts on the natural environment arising from that remediation);

b) after remediation, as a minimum, land should not be capable of being determined as contaminated land under Part 2A of the Environmental Protection Act 1990; and

c) adequate site investigation information, prepared by a competent person, is available to inform these assessments.

179. Where a site is affected by contamination or land stability issues, responsibility for securing a safe development rests with the developer and/or landowner.

Water Resources Act (WRA)

The Water Resources Act 1991 (Amendment) (England and Wales) Regulations 2009 updated the Water Resources Act 1991, which introduced the offence of causing or knowingly permitting pollution of controlled waters. The Act provides the Environment Agency with powers to implement remediation necessary to protect controlled waters and recover all reasonable costs of doing so.

Water Framework Directive (WFD)

The Water Framework Directive 2000/60/EC is designed to:

- enhance the status and prevent further deterioration of aquatic ecosystems and associated wetlands that depend on the aquatic ecosystems
- promote the sustainable use of water
- reduce pollution of water, especially by 'priority' and 'priority hazardous' substances
- ensure progressive reduction of groundwater pollution.

The WFD requires a management plan for each river basin be developed every six years.

Groundwater Directive (GWD)

The 1980 Groundwater Directive 80/68/EEC and the 2006 Groundwater Daughter Directive 2006/118/EC of the WFD are the main European legislation in place to protect groundwater. The 1980 Directive is due to be repealed in December 2013. The European legislation has been transposed into national legislation by regulations and directions to the Environment Agency.

Priority Substances Directive (PSD)

The Priority Substances Directive 2008/105/EC is a 'Daughter' Directive of the WFD, which sets out a priority list of substances posing a threat to or via the aquatic environment. The PSD establishes environmental quality standards for priority substances, which have been set at concentrations that are safe for the aquatic environment and for human health. In addition, there is a further aim of reducing (or eliminating) pollution of surface water (rivers, lakes, estuaries and coastal waters) by pollutants on the list. The WFD requires that countries establish a list of dangerous substances that are being discharged and EQS for them. In England and Wales, this list is provided in the River Basin Districts Typology, Standards and Groundwater threshold values (Water Framework Directive) (England and Wales) Directions 2010. In order to achieve the objectives of the WFD, classification schemes are used to describe where the water environment is of good quality and where it may require improvement.

Environmental Permitting Regulations (EPR)

The Environmental Permitting (England and Wales) Regulations 2016 (as amended) provide a single regulatory framework that streamlines and integrates waste management licensing, pollution prevention and control, water discharge consenting, groundwater authorisations, and radioactive substances regulation. Schedule 22, paragraph 6 of EPR 2016 states: 'the regulator must, in exercising its relevant functions, take all necessary measures - (a) to prevent the input of any hazardous substance to groundwater; and (b) to limit the input of non-hazardous pollutants to groundwater so as to ensure that such inputs do not cause pollution of groundwater.'

Notes:

- 1. The above information is provided for background but does not constitute site-specific advice*
- 2. The above summary applies to England only. Variations exist within other countries of the United Kingdom*

Appendix D

LOCAL AUTHORITY CORRESPONDENCE

Emma Hobbs

From: Laura Miller <laura.miller@manchester.gov.uk>
Sent: 20 October 2023 09:28
To: Emma Hobbs
Cc: ailsa@njlconsulting.co.uk; Katie Dyson
Subject: Re: 137994/FO/2023 - Manchester Islamic High School For Girls, 55 High Lane, Manchester, M21 9FA - Additional Site Investigation [Filed 20 Oct 2023 09:29]

Categories: Filed by Mail Manager

CAUTION: This email originated from outside the Organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Good morning Emma,

I have read your email and the attached scoping document.

The proposals for additional SI seem reasonable to me given the contamination that was found in the initial investigation

Kind Regards

Laura

Laura Miller (MRes, MA, BSc(Hons))

Please note that due to working compressed hours Wednesdays are a non-working day for me, I will respond to your email when I return to the office

Environmental Protection Officer
Environmental Protection Section
Environmental Health
Neighbourhoods Directorate
Manchester City Council

email: laura.miller@manchester.gov.uk

website: www.manchester.gov.uk

Telephone: 0161 234 1742

Internal: 31742

We are now on Twitter, for latest news and updates follow us @EnvHealthMcr

Please consider the environment before printing an e-mail

From: Emma Hobbs <EHobbs@rsk.co.uk>
Sent: 17 October 2023 11:17
To: Laura Miller <laura.miller@manchester.gov.uk>
Cc: ailsa@njlconsulting.co.uk <ailsa@njlconsulting.co.uk>; Katie Dyson <Katie.Dyson@cubehomes.com>
Subject: 137994/FO/2023 - Manchester Islamic High School For Girls, 55 High Lane, Manchester, M21 9FA - Additional Site Investigation

Application No: 137994/FO/2023

Location: Manchester Islamic High School For Girls, 55 High Lane, Manchester, M21 9FA

Proposal: Erection of 12 no. three storey dwellinghouses; a pair of three storey semi-detached dwellinghouses; a three storey building comprising 6 no. apartments; the retention and change of use of the existing mansion house together with the erection of a two storey side extension to form 2 no. dwellinghouses; creation of vehicular access points, associated landscaping, car parking and boundary treatment following the demolition of the other existing buildings and structures.

Dear Laura,

We are supporting Cube Homes Ltd with the above planning application, particularly with regards to contaminated land related matters and the CLAND01 condition.

Following review of recent correspondence (letter reference 784791 dated 3rd October 2023), we have provided the attached Scoping Document in response to the following comments:

The site investigation information that has been provided for this development is inadequate. In addition to the information provided, further information should be submitted which addresses the following issue:

- The exploratory locations to date do not provide adequate site coverage and further site investigation is deemed necessary post demolition to confirm the ground conditions.

The final risk assessment provided for this development is inadequate. Further SI will need to be undertaken post demolition to confirm the ground conditions. Consequently the data obtained from this investigation may require changes to be made to the current risk assessment. This Section will require submission of the additional site investigation report and, if necessary, an updated final risk assessment for approval

The purpose of the Scoping Document is to outline further intrusive investigation at the above site to provide wider site coverage, obtain more information on ground conditions and collect further soil samples pre-demolition. The additional exploratory hole locations will also allow delineation of the hotspot identified at WS04. The Scoping Document includes details of the previous site investigation (for reference), some historic mapping data to add credence to our spread of additional exploratory hole locations, a new Investigation Location Plan and rationale table.

It should be noted that the additional intrusive investigation will be reported within a Site Investigation Report to include an updated risk assessment undertaken on all ground condition/chemical data. This will be subsequently followed up by a Remediation Strategy and supporting Verification Report.

We would appreciate your comments on the attached Scoping Document, particularly your feedback on the spread of exploratory holes and our rationale. We can then incorporate these amendments into our site investigation design.

We look forward to hearing from you.

Kind regards,

Emma Hobbs
BSc(hons) MSc CSci FGS

Principal Environmental Consultant



Fourways House, 57 Hilton Street, Manchester, M1 2EJ, UK

Switchboard: +44 (0)161 236 2757- Mobile: +44 (0)7990 004 381 · email: ehobbs@rsk.co.uk

Please note I work flexible hours Monday to Friday with my core hours being between 10am and 4pm.

Global provider of environmental consultancy, health and safety, and ground engineering services

<http://www.rskgroup.com>

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Registered number: 115530

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To	Head of Planning	FAO: Jennifer Connor
From	Head of Compliance, Enforcement and Community Safety	
Contact Officer:	Laura Miller	Our Ref: 784791
Date:	3 October 2023	Telephone: 0161 234 1742

Consultation on Planning Application

Application No: 137994/FO/2023

Description: Erection of 12 no. three storey dwellinghouses; a pair of three storey semi-detached dwellinghouses; a three storey building comprising 6 no. apartments; the retention and change of use of the existing mansion house together with the erection of a two storey side extension to form 2 no. dwellinghouses; creation of vehicular access points, associated landscaping, car parking and boundary treatment following the demolition of the other existing buildings and structures.

Location: Manchester Islamic High School For Girls, 55 High Lane, Manchester, M21 9FA

I write in response to your memorandum of the 11 September 2023 regarding the above application and to inform you that I have considered the application and recommend that the following conditions are attached to any approval.

DEMOLITION/CONSTRUCTION MANAGEMENT PLAN

Prior to the commencement of development, a demolition/construction management plan outlining working practices shall be submitted to and approved in writing by the City Council as Local Planning authority, which for the avoidance of doubt shall include as a minimum:

- Measures to control noise and vibration;
- Dust suppression measures;
- Compound locations where relevant;
- Details of an emergency contact telephone number;
- A community consultation plan; and
- Sheeting of construction vehicles.

The development shall only be carried out in accordance with the approved management plan.

Reason - To safeguard the amenities of nearby residents pursuant to policies SP1, EN19 and DM1 of the Manchester Core Strategy.

**The applicant should refer to our noise from building sites [webpage](#) for further information/guidance and also [IAQM/EPUK Construction Guidance](#) on controlling emissions.*

DEMOLITION/CONSTRUCTION HOURS

Construction/demolition works shall be confined to the following hours unless otherwise agreed in writing by the City Council as local planning authority:

- Monday - Friday: 7.30am - 6pm
- Saturday: 8.30am - 2pm
- Sunday / Bank holidays: No work

Reason - To safeguard the amenities of nearby residents pursuant to policies SP1, EN19 and DM1 of the Manchester Core Strategy.

LIGHT1

a) Before the use hereby approved commences external lighting shall be designed and installed in accordance with a scheme approved in writing by the City Council as local planning authority so as to control glare and overspill onto nearby residential properties.

b) Prior to occupation of the development a verification report shall be required to validate that the work undertaken throughout the development conforms to the recommendations and requirements in the approved light consultant's report. The report shall also undertake post completion testing to confirm that acceptable criteria have been met. Any instances of non-conformity with the recommendations in the report shall be detailed along with any measures required to ensure compliance with the criteria.

Reason - To safeguard the amenities of the occupiers of nearby properties.

NSE4(b)¹

a) Before the development commences a scheme for acoustically insulating the proposed residential accommodation against noise from High Lane and Acres Road shall be submitted to and approved in writing by the City Council as local planning authority. There may be other actual or potential sources of noise which require consideration on or near the site, including any local commercial/industrial premises such as the boxing club.

The potential for overheating shall also be assessed and the noise insulation scheme shall take this into account. The approved noise insulation and ventilation scheme shall be completed before any of the dwelling units are occupied.

Noise survey data shall include measurements taken during a rush-hour period and night time to determine the appropriate sound insulation measures necessary. The following noise criteria shall be required to be achieved when providing adequate ventilation as defined by Approved Document F of the Building Regulations (whole dwelling ventilation):

Bedrooms (night time - 23.00 - 07.00)	30 dB L_{Aeq} (individual noise events shall not exceed 45 dB $L_{Amax,F}$ by more than 15 times)
Living Rooms (daytime - 07.00 - 23.00)	35 dB L_{Aeq}
Gardens and terraces (daytime)	55 dB L_{Aeq}

Higher internal noise levels than those specified above may be allowed when higher rates of ventilation are required in relation to the overheating condition.

b) Prior to first occupation of the residential units, a verification report shall be required to validate that the work undertaken throughout the development conforms to the recommendations and requirements in the approved acoustic consultant's report. The report shall also undertake post completion testing to confirm that the internal noise criteria have been met. Any instances of non-conformity with the recommendations in the report shall be detailed along with any measures required to ensure compliance with the internal noise criteria.

Reason: To secure a reduction in noise from traffic or other sources in order to protect future residents from noise disturbance and to reduce the potential for overheating.

¹We have read the submitted acoustic report (RS Acoustic Engineering, August 2023) and agree with the general conclusions with regards to noise mitigation and overheating. They are still to confirm the final design and noise mitigation scheme, as such an addendum report will be required to satisfy part of this condition once the detailed design is known.

NSE6²

a) Externally mounted ancillary plant, equipment and servicing shall be selected and/or acoustically treated in accordance with a scheme designed so as to achieve a rating level of 5dB (L_{Aeq}) below the typical background (L_{A90}) level at the nearest noise sensitive location. Prior to commencement of the use hereby approved the scheme shall be submitted to and approved in writing by the City Council as local planning authority in order to secure a reduction in the level of noise emanating from the site. The scheme shall be implemented in full before the use commences or as otherwise agreed in writing by the City Council as local planning authority.

b) Prior to the operation of the scheme a verification report shall be submitted to and approved in writing by the City Council as local planning authority to validate that the work undertaken throughout the development conforms to the recommendations and requirements in the approved acoustic report. The report shall also undertake post completion testing to confirm that the noise criteria have been met. Any instances of non-conformity with the recommendations in the report shall be detailed along with any measures required to ensure compliance with the agreed noise criteria.

Reason - To minimise the impact of the development and to prevent a general increase in pre-existing background noise levels around the site.

²Noise from ASHPs and any other external plant

REF³

a) Before the development commences a scheme for the storage and disposal of refuse shall be submitted to and approved in writing by the City Council as local planning authority.

New developments shall have refuse storage space for segregated waste collection and recycling. Internal and external storage areas are required.

b) The details of the approved scheme shall be implemented as part of the development and shall remain in situ whilst the use or development is in operation.

Reason - In the interests of amenity and public health.

³It can be clearly seen that each house has been provided with the space to store four bins each. A bin store has been shown for the block of six apartments but no details have been given on the number/capacity of the bins to be provided in the bin store.

AIR QUALITY ⁴

a) Prior to commencement of the development, a scheme for electric vehicle charging, shall be submitted to and approved in writing by the City Council as local planning authority.

b) Prior to occupation of the development any agreed mitigation measures shall be implemented and verified as such in writing by the City Council as local planning authority and shall remain in situ whilst the use or development is in operation.

Reason: To secure a reduction in air pollution from traffic or other sources in order to protect existing and future residents from air pollution, pursuant to policies EN16, SP1 and DM1 of the Core Strategy.

⁴The submitted air quality assessment concludes that no specific mitigations measures are required other than good practice principles during construction, which should be included in the CMP. The developer should refer to **MCC's AQ Guidance Note** for EV charge point recommendations (recommended one charge point per property)

CLAND01⁵

a) Before the development hereby approved commences, a report (the Preliminary Risk Assessment) to identify and evaluate all potential sources and impacts of any ground contamination, groundwater contamination and/or ground gas relevant to the site shall be submitted to and approved in writing by the City Council as local planning authority. The Preliminary Risk Assessment shall conform to City Council's current guidance document (Planning Guidance in Relation to Ground Contamination).

In the event of the Preliminary Risk Assessment identifying risks which in the written opinion of the Local Planning Authority require further investigation, the development shall not commence until a scheme for the investigation of the site and the identification of remediation measures (the Site Investigation Proposal) has been submitted to and approved in writing by the City Council as local planning authority.

The measures for investigating the site identified in the Site Investigation Proposal shall be carried out before development commences and a report prepared outlining what measures, if any, are required to remediate the land (the Site Investigation Report and/or Remediation Strategy) which shall be submitted to and approved in writing by the City Council as local planning authority.

b) When the development commences, the development shall be carried out in accordance with the previously agreed Remediation Strategy and prior to occupation a Completion/Verification Report shall be submitted to and approved in writing by the City Council as local planning authority.

In the event that ground contamination, groundwater contamination and/or ground gas, not previously identified, are found to be present on the site at any time before the development in each phase is occupied, then development shall cease and/or the development shall not be occupied until, a report outlining what measures, if any, are required to remediate the land (the Revised Remediation Strategy) is submitted to and approved in writing by the City Council as local planning authority and the development shall be carried out in accordance with the Revised Remediation Strategy, which shall take precedence over any Remediation Strategy or earlier Revised Remediation Strategy.

Reason - To ensure that the presence of or the potential for any contaminated land and/or groundwater is detected and appropriate remedial action is taken in the interests of public safety, pursuant to [INSERT] of the Unitary Development Plan for the City of Manchester.

⁵See separate memo for detailed comments.

Information for Developers guidance documents can be downloaded using the following link:

http://www.manchester.gov.uk/info/500207/planning_and_regeneration/1962/additional_planning_guidance/3

Should you wish to discuss this matter further please contact Laura Miller

Fiona Sharkey
Head of Compliance, Enforcement and Community Safety



To	Head of Planning	FAO: Jennifer Connor
From	Strategic Lead Compliance & Enforcement	
Contact Officer	Laura Miller	Our Ref 784791
Date	3 October 2023	
Telephone	0161 234 1742	

Consultation on Planning Application

Application No: 137994/FO/2023
Location: Manchester Islamic High School For Girls, 55 High Lane, Manchester, M21 9FA
Proposal: Erection of 12 no. three storey dwellinghouses; a pair of three storey semi-detached dwellinghouses; a three storey building comprising 6 no. apartments; the retention and change of use of the existing mansion house together with the erection of a two storey side extension to form 2 no. dwellinghouses; creation of vehicular access points, associated landscaping, car parking and boundary treatment following the demolition of the other existing buildings and structures.

I write in response to your memo of 11 September 2023 regarding the above planning application. The Contaminated Land Section has received a copy of the following reports:

- Preliminary Risk Assessment – Manchester Islamic High School for Girls, RSK Geosciences, Reference: 350536-R01(01), August 2023.
- Phase 2 Geo-environmental Site Investigation – Manchester Islamic High School for Girls, RSK Geosciences, Reference: 350536-R02(01), August 2023.

The Contaminated Land Section has reviewed the above information in order to assess the following points:

1. The adequacy of the desk study information available for this site.
2. The adequacy of the site investigation.
3. The adequacy of the final risk assessment.
4. The acceptability of the proposed remediation strategy.
5. Whether the information submitted is sufficient to discharge the relevant contamination and/or gas condition from the planning approval.

The site is located at NGR 381509, 393764 and is 0.44 hectares in area. The site is currently occupied by an Islamic High School with associated car park, hard standing and playground. It is surrounded by predominantly residential properties and a boxing club. Previous land uses on and adjacent to the site have included an orchard, a convent, a high school and residential properties. The site does not lie within 250 metres of any known landfill sites or surface water courses and lies above the Wilmslow Sandstone principal aquifer.

1. The adequacy of the desk study information available for this site

A review of Preliminary Risk Assessment and site investigation proposals provided for the site can be summarised as follows:

The report includes a description of the site including its past historical uses. An appraisal of the site environmental setting is presented including its geology, hydrogeology and hydrological regime, mining activities, waste management issues, and identification of additional environmental sources, pathways and receptors. This information has been used to compile a clear site conceptual model, which identifies potential sources, pathways and receptors and likely pollution linkages.

The desk study information was found to be **adequate**.

2. The adequacy of the site investigation

A review of site investigation and risk assessments carried out at the site can be summarised as follows:

- Site investigation was undertaken in October 2022
- Six windowless sample boreholes to a maximum depth of 5m bgl.
- No gas monitoring wells due to no viable source.
- Soil samples tested for Metals, TPH CWG, PAH 16MS, Chromium (hexavalent and trivalent), SOM, asbestos screen and pH.
- Made ground was found in all the boreholes to depths between 0.35m bgl and 1m bgl.
- Made ground contained anthropogenic materials including brick, pottery and red shale.
- Granular deposits beneath the made ground and then clay.
- Groundwater was found between 2.6 and 3m bgl perched on top of the clay.
- Olfactory evidence of possible hydrocarbons in WS04 at 0.3m to 1.1m depth in the centre of the site.

The site investigation information that has been provided for this development is **inadequate**. In addition to the information provided, further information should be submitted which addresses the following issue:

- The exploratory locations to date do not provide adequate site coverage and further site investigation is deemed necessary post demolition to confirm the ground conditions.

3. The adequacy of the final risk assessment

Ground Assessment: The soil chemical results have been compared to GACs and C4SLs for a Residential with plant uptake end use. The following contaminants have been found to be elevated; Lead, Benzo(a)pyrene, Benzo(b)fluoranthene and Dibenzo(ah)anthracene (all in the made ground WS04). The site has been classified as Low risk due to the localised nature of the contamination. Remediation is required to delineate and remove this contamination.

Controlled Waters Assessment: Not undertaken due to low risks in the PRA

Ground Gas Assessment: Not undertaken due to low risks in the PRA

The final risk assessment provided for this development is **inadequate**. Further SI will need to be undertaken post demolition to confirm the ground conditions. Consequently the data obtained from this investigation may require changes to be made to the current risk assessment. This Section will require submission of the additional site investigation report and, if necessary, an updated final risk assessment for approval.

4. The acceptability of the proposed remediation strategy

The following measures are proposed so that the contamination identified on site no longer presents a risk:

- Contamination in WS04 to be delineated – further details are required as to how this will be undertaken and verified
- Watching brief will need to be undertaken for unexpected contamination
- Topsoil/subsoil will be required for garden areas, so a strategy is required as to depth of placement and how the soil will be validated as suitable for use.

The site investigation and final risk assessment for this development have identified levels of contamination that will require remediation prior to the site being suitable for its intended use. This Section requires submission of a remediation strategy for approval before the commencement of any remedial works on site.

5. Whether the information submitted is sufficient to discharge the relevant site investigation and/or gas condition of the planning approval

Before this Section can recommend discharge of conditions from this application, the following information needs to be submitted to the Council for approval:

- (i) Submission of a post demolition Site Investigation and Risk Assessment Report
- (ii) Submission of a Remediation Strategy
- (iii) After completion of site works, a verification report is required to validate that the work undertaken conforms to the remediation proposals received and agreed by this Section.

Information for Developers guidance documents can be downloaded using the following link:

http://www.manchester.gov.uk/info/500207/planning_and_regeneration/1962/additional_planning_guidance/3

Please do not hesitate to contact Laura Miller if you require any clarification of the above.

Fiona Sharkey
Strategic Lead Compliance & Enforcement

Appendix E

EXPLORATORY HOLE LOCATION PLAN

KEY TO EXPLORATORY HOLE LOGS - SUMMARY OF ABBREVIATIONS**SAMPLING***Sample type codes:*

B	=	Bulk disturbed sample.
D	=	Small disturbed sample.
ES	=	Soil sample for environmental testing.
U	=	Undisturbed driven tube sample - Number of blows indicated. % recovery reported.

Undisturbed sample detail codes:

U ₍₁₀₀₎	=	100mm diameter undisturbed sample.
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IN-SITU TESTING

SPT	=	Standard Penetration Test using split spoon sampler. (_(NR) indicates 'No Sample Recovery').
V	=	Field Vane Test. Peak value (c_u) & Residual value (c_r), given as shear strength in kPa.
PID	=	Photo Ionisation Detector Results, in ppm.

ADDITIONAL NOTES

1. All soil and rock descriptions and legends in general accordance with BS EN ISO 14688-1:2018, 14688-2:2018, 14689:2018, and BS5930:2015+A1:2020.
2. Material types divided by a broken line (- -) indicates an unclear boundary.
3. Fracture spacings (lf) quoted in the Description of Strata for specific strata or specific fracture sets are also quoted in mm, e.g. (25/80/230) referring to (Min/Avg/Max).
4. The data on any sheet within the report showing the AGS icon is available in the AGS format.

KEY TO EXPLORATORY HOLE LOGS - SUMMARY OF GRAPHIC SYMBOLS

WATER COLUMN SYMBOLS

	First water strike, second water strike etc.
	Standing water level following first strike, standing water level following second strike etc.
	Seepage.
	Standing water level recorded at documented date.

MATERIAL GRAPHIC LEGENDS

	CLAY		GRAVEL		Gravelly CLAY		Gravelly SAND
	MADE GROUND		SAND		Sandy GRAVEL		Gravelly sandy CLAY
	Sandy gravelly CLAY		Sandy gravelly silty CLAY		Silty SAND		

INSTRUMENTATION SYMBOLS

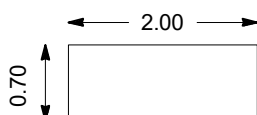
	Backfill
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TRIAL PIT LOG

Contract: Chorlton High School			Client: Cube Homes Ltd		Trial Pit: TP201
Contract Ref: 11884	Start: 27.11.23 End: 27.11.23	Ground Level: 28.07	National Grid Co-ordinate: E:381513.6 N:393777.6		Sheet: 1 of 1

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.20-0.30 0.20	1	ES PID	1xT+1xJ+1xV 0.0ppm			MADE GROUND: Tarmacadam. (MADE GROUND)	(0.35) 0.35	
						MADE GROUND: Dark brown slightly clayey fine to coarse SAND. (MADE GROUND)	(0.55) 0.90	
						Brown slightly gravelly fine to coarse SAND. Gravel is subangular fine sandstone. (GLACIOFLUVIAL SHEET DEPOSITS)	(1.25) 2.15	
2.15-2.15	1	B				Trial pit terminated at 2.15m bgl to allow soakaway tests.		

Plan (Not to Scale)



General Remarks

1. Borehole cleared of buried services by GPR, CAT and Genny.
2. Ease of excavation: easy.
3. Trial pit stable.
4. No groundwater encountered.
5. Trial pit filled with gravel and soakaway tests (3x) performed between 1.15m to 2.15m bgl.
6. Following tests, gravel removed and pit backfilled with arisings.

All dimensions in metres

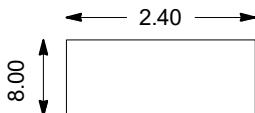
Scale: **1:25**Method
Used:**Machine dug**Plant
Used:**JCB-3CX**Logged
By:**OQuinn**Checked
By:**13**

TRIAL PIT LOG

Contract: Chorlton High School			Client: Cube Homes Ltd		Trial Pit: TP202
Contract Ref: 11884	Start: 27.11.23 End: 27.11.23	Ground Level: 28.27	National Grid Co-ordinate: E:381488.7 N:393688.6		Sheet: 1 of 1

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.20-0.40 0.30	1	ES PID	1xT+1xJ+1xV 0.0ppm			MADE GROUND: Tarmacadam. (MADE GROUND) MADE GROUND: Black GRAVEL of subangular fine to coarse asphalt and concrete. (MADE GROUND) MADE GROUND: Dark brown slightly clayey fine to coarse SAND. (MADE GROUND)	0.15 0.40 (0.70) 1.10	
2.10-2.20	2	B				Brown slightly gravelly fine to coarse SAND. Gravel is subangular to subrounded sandstone, siltstone and quartzite. (GLACIOFLUVIAL SHEET DEPOSITS)	(1.10) 2.20	
Trial pit terminated at 2.20m bgl to allow soakaway tests.								

Plan (Not to Scale)



General Remarks

1. Borehole cleared of buried services by GPR, CAT and Genny.
2. Ease of excavation: easy.
3. Trial pit stable.
4. No groundwater encountered.
5. Trial pit filled with gravel and soakaway tests (3x) performed between 1.15m to 2.15m bgl.
6. Following tests, gravel removed and pit backfilled with arisings.

All dimensions in metres

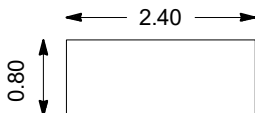
Scale: **1:25**Method
Used:**Machine dug**Plant
Used:**JCB-3CX**Logged
By:**OQuinn**Checked
By:**113**

TRIAL PIT LOG

Contract: Chorlton High School		Client: Cube Homes Ltd		Trial Pit: TP203
Contract Ref: 11884	Start: 27.11.23 End: 27.11.23	Ground Level: 27.98	National Grid Co-ordinate: E:381504.8 N:393723.8	Sheet: 1 of 1

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.10-0.40 0.20	1	ES PID	1xT+1xJ+1xV 0.0ppm			MADE GROUND: Tarmacadam. (MADE GROUND) MADE GROUND Dark brown gravelly fine to coarse SAND. Gravel is subangular to subrounded sandstone, brick and clinker. (MADE GROUND) MADE GROUND: Dark brown slightly clayey fine to coarse SAND. (MADE GROUND)	0.10 (0.30) 0.40 (0.50) 0.90	
1.10-1.30	2	ES	1xT+1xJ+1xV			Brown slightly gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse of sandstone, siltstone and quartzite. (GLACIOFLUVIAL SHEET DEPOSITS)	(1.50)	
2.20-2.40	1	B					2.40	
Trial pit terminated at 2.40m bgl to allow soakaway tests.								

Plan (Not to Scale)



General Remarks

1. Position cleared of buried services by GPR, CAT and Genny.
2. No groundwater encountered.
3. Ease of excavation: easy.
4. Trial pit stable.
5. Trial pit backfilled with arisings.

All dimensions in metres

Scale: **1:25**

Method Used:

Machine dug

Plant Used:

JCB-3CX

Logged By:

OQuinn

Checked By:

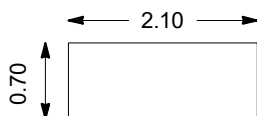
113

TRIAL PIT LOG

Contract: Chorlton High School			Client: Cube Homes Ltd		Trial Pit: TP204
Contract Ref: 11884	Start: 27.11.23 End: 27.11.23	Ground Level: 28.10	National Grid Co-ordinate: E:381508.3 N:393712.5		Sheet: 1 of 1

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.20-0.50	1	ES	1xT+1xJ+1xV			MADE GROUND: Tarmacadam. (MADE GROUND)	0.15	
0.40		PID	0.0ppm			MADE GROUND: Reddish brown sandy subangular to subrounded fine to coarse GRAVEL of sandstone, asphalt and brick . Sand is fine to coarse. (MADE GROUND)	0.35	
						MADE GROUND: Dark brown slightly clayey fine to coarse organic SAND. (MADE GROUND)	(0.45)	
0.90-1.20	2	ES	1xT+1xJ+1xV			Brown slightly gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone, siltstone and quartzite. (GLACIOFLUVIAL SHEET DEPOSITS)	0.80	
2.30-2.40	1	B					(1.60)	
							2.40	
Trial pit terminated at 2.40m bgl to allow soakaway.								

Plan (Not to Scale)



General Remarks

1. Pit cleared of services by GPR, CAT and Genny.
2. No Groundwater encountered.
3. Ease of excavation: easy.
4. Trial pit stable.
5. Trial pit backfilled with arisings.

All dimensions in metres

Scale: **1:25**

Method Used:

Machine dug

Plant Used:

JCB-3CX

Logged By:

OQuinn

Checked By:

13

WINDOW SAMPLE LOG

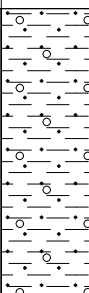
Contract: Chorlton High School			Client: Cube Homes Ltd		Window Sample: WS201
Contract Ref: 11884	Start: 24.11.23 End: 24.11.23	Ground Level: 27.77	National Grid Co-ordinate: E:381520.2 N:393740.6		Sheet: 1 of 2

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	0.10-0.50 0.20	1	ES PID	0.0ppm			MADE GROUND: Concrete flag. (MADE GROUND) MADE GROUND: Brown gravelly clayey fine to coarse SAND with medium cobble content. Gravel is angular fine to coarse of brick and concrete. Cobbles are angular of brick (up to 130mm). (MADE GROUND)	0.05 (0.65)	
	0.70-1.00 0.80	2	ES PID	0.0ppm			Medium dense light brown slightly gravelly fine to medium SAND. Gravel is angular to subangular fine to coarse of sandstone and quartzite. (GLACIOFLUVIAL SHEET DEPOSITS)	0.70 (0.80)	
	1.20-1.65	1	SPT	N=10				1.50	
	1.20 - 2.00 (115mm dia) 100% rec	1	D				Medium dense orangish brown very gravelly medium to coarse SAND. Gravel is angular to subrounded fine to coarse of siltstone, sandstone and shale. (GLACIOFLUVIAL SHEET DEPOSITS)	(0.30) 1.80	
	2.00-2.45	2	SPT	N=9			Firm brown slightly gravelly sandy CLAY. Sand is fine to medium. Gravel is angular to subrounded fine to medium of mudstone, sandstone, shale. (GLACIOFLUVIAL SHEET DEPOSITS)	(0.60) 2.40	
	2.00 - 3.00 (98mm dia) 80% rec						Firm to stiff brown slightly sandy slightly gravelly CLAY. Sand is fine. Gravel is angular to subrounded fine to coarse of siltstone, sandstone and quartzite. (GLACIOFLUVIAL SHEET DEPOSITS)		
	3.00-3.45	3	SPT	N=10					
	3.00 - 4.00 (85mm dia) 80% rec								
	4.00-4.45	4	SPT	N=12			... Becoming firm, sandy between 4.00 to 4.20m. ... Becoming less sandy, more silty from 4.20m.	(3.05)	
	4.00 - 5.00 (75mm dia) 80% rec								

Drilling Progress and Water Observations						General Remarks			
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)				
						1. Borehole cleared of buried services by GPR, CAT and Genny. 2. Hand dug pit to 1.20m bgl. 3. No groundwater encountered. 4. Borehole backfilled with arisings.			
						All dimensions in metres		Scale: 1:25	
Method Used: Inspection pit + Tracked window	Plant Used: Premier Compact 110		Drilled By: PB Drilling		Logged By: OQuinn	Checked By: AGS			

WINDOW SAMPLE LOG

Contract: Chorlton High School			Client: Cube Homes Ltd		Window Sample: WS201
Contract Ref: 11884	Start: 24.11.23 End: 24.11.23	Ground Level: 27.77	National Grid Co-ordinate: E:381520.2 N:393740.6		Sheet: 2 of 2

Progress		Samples / Tests			Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
4.00 - 5.00 (75mm dia) 80% rec ▼	4.50-4.70	2	D				Firm to stiff brown slightly sandy slightly gravelly CLAY . Sand is fine. Gravel is angular to subrounded fine to coarse of siltstone, sandstone and quartzite. (GLACIOFLUVIAL SHEET DEPOSITS) (stratum copied from 2.40m from previous sheet)		
	5.00-5.45	5 11	SPT	N=13				5.45	
							Borehole terminated at 5.45m bgl in line with specification.		

Drilling Progress and Water Observations						General Remarks
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)	

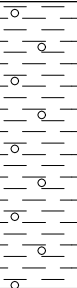
WINDOW SAMPLE LOG

Contract: Chorlton High School			Client: Cube Homes Ltd		Window Sample: WS202
Contract Ref: 11884	Start: 24.11.23 End: 24.11.23	Ground Level: 28.26	National Grid Co-ordinate: E:381510.1 N:393757.6		Sheet: 1 of 2

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
							MADE GROUND: Tarmacadam. (MADE GROUND)	0.10	
							MADE GROUND: Dark brown fine to coarse SAND and subangular to subrounded GRAVEL of sandstone, brick and asphalt. (MADE GROUND)	(0.40)	
	0.50-0.50	1	ES	1xT+1xJ+1xV			MADE GROUND: Dark brown gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone, asphalt and brick. (MADE GROUND)	0.50	
	1.00-1.00	2	ES	1xT+1xJ+1xV				(0.50)	
	1.20-1.65	1 11	SPT	N=9			Medium dense light brown slightly gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone and siltstone. (GLACIOFLUVIAL SHEET DEPOSITS)	1.00	
	1.80-1.80	1	D						
	2.00-2.45	2 11	SPT	N=11			Medium dense brown gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone, siltstone and quartzite. (GLACIOFLUVIAL SHEET DEPOSITS)	2.00	
	3.00-3.45	3 11	SPT	N=10			Medium dense brown fine to coarse SAND and subangular to subrounded fine to coarse GRAVEL of sandstone, siltstone and quartzite. (GLACIOFLUVIAL SHEET DEPOSITS)	(1.00)	
	3.80-3.80	2	D					3.00	
	4.00-4.45	4 11	SPT	N=9			Soft to firm brown slightly gravelly CLAY. Gravel is subangular to subrounded fine to medium of sandstone and siltstone. (GLACIOFLUVIAL SHEET DEPOSITS)	(0.70)	
								3.70	

Drilling Progress and Water Observations						General Remarks			
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)	1. Borehole cleared of buried services by GPS, CAT and Genny. 2. Hand dug pit to 1.20m bgl. 3. No groundwater encountered. 4. Borehole backfilled with arisings.			
Method Used: Inspection pit + Tracked window						All dimensions in metres Scale: 1:25			
Plant Used: Premier Compact 110		Drilled By: PB Drilling		Logged By: OQuinn		Checked By: AGS			

Contract:		Client:		Window Sample:
Chorlton High School		Cube Homes Ltd		WS202
Contract Ref:	Start: 24.11.23	Ground Level:	National Grid Co-ordinate:	Sheet:
11884	End: 24.11.23	28.26	E:381510.1 N:393757.6	2 of 2

Progress		Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run		Depth	No	Type	Results					
4.00 - 5.00 (85mm dia) 100% rec ▼		4.50		V	$c_u=60$			Soft to firm brown slightly gravelly CLAY. Gravel is subangular to subrounded fine to medium of sandstone and siltstone. (GLACIOFLUVIAL SHEET DEPOSITS) (stratum copied from 3.70m from previous sheet)	(1.75)	
		4.70		V	$c_u=84$					
		4.90		V	$c_u=84$					
		5.00-5.45	5 11	SPT	N=9					
								Borehole terminated at 5.0m bgl in line with specification.	5.45	

Drilling Progress and Water Observations						General Remarks			
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)				
Method Used: Inspection pit + Tracked window			Plant Used: Premier Compact 110			All dimensions in metres		Scale: 1:25	
						Drilled By: PB Drilling		Logged By: OQuinn	
						Checked By: [Signature]		AGS	

WINDOW SAMPLE LOG

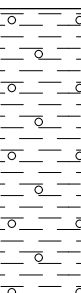
Contract: Chorlton High School			Client: Cube Homes Ltd		Window Sample: WS203
Contract Ref: 11884	Start: 24.11.23 End: 24.11.23	Ground Level: 28.09	National Grid Co-ordinate: E:381497.2 N:393745.0		Sheet: 1 of 2

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
							MADE GROUND: Lino flooring (MADE GROUND)	0.02	
							MADE GROUND: Rubber layer. (MADE GROUND)	0.05	
							MADE GROUND: Concrete unreinforced. (MADE GROUND)	0.25	
	0.60-0.60	1	ES	1xT+1xJ+1xV			MADE GROUND: Brown gravelly fine to medium SAND with high cobble content. Cobble is subangular red brick and sandstone (up to 200mm). Gravel is subangular to subrounded fine to coarse red brick, concrete and sandstone. (MADE GROUND)	(0.95)	
	1.20-1.65	1	SPT	N=4			MADE GROUND: Dark brown slightly gravelly organic fine to coarse SAND. Gravel is subangular to subrounded fine to coarse of sandstone and red brick. (MADE GROUND)	1.20	
	1.40-1.40	2	ES	1xT+1xJ+1xV				(0.30)	
	1.55-1.55	3	ES	1xT+1xJ+1xV			Loose to medium dense light brown fine to coarse SAND. (GLACIOFLUVIAL SHEET DEPOSITS)	1.50	
	2.00-2.45	2	SPT	N=23			... Increasingly gravelly. Gravels of subangular to subrounded fine to coarse sandstone, siltstone and quartzite.	(1.40)	
	2.20-2.20	1	D					2.90	
	3.00-3.45	3	SPT	N=9			Brown fine to coarse SAND subangular to subrounded fine to coarse GRAVEL of siltstone and sandstone. (GLACIOFLUVIAL SHEET DEPOSITS)	(0.50)	
	3.50		V	c _u =32			Soft to firm brown slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of sandstone and siltstone. (GLACIOFLUVIAL SHEET DEPOSITS)	3.40	
	3.70		V	c _u =36					
	3.80-3.80	2	D						
	3.90		V	c _u =36					
	4.00-4.45	4	SPT	N=9				(2.05)	

Drilling Progress and Water Observations						General Remarks			
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)	1. Borehole cleared of buried services by GPR, CAT and Genny. 2. Hand dug pit to 1.20m bgl. 3. No groundwater encountered. 4. Borehole backfilled with arisings.			
All dimensions in metres						Scale:	1:25		
Method Used:	Inspection pit + Tracked window		Plant Used:	Premier Compact 110		Drilled By:	PB Drilling	Logged By:	OQuinn
						Checked By:			AGS

WINDOW SAMPLE LOG

Contract: Chorlton High School			Client: Cube Homes Ltd		Window Sample: WS203
Contract Ref: 11884	Start: 24.11.23 End: 24.11.23	Ground Level: 28.09	National Grid Co-ordinate: E:381497.2 N:393745.0		Sheet: 2 of 2

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
4.00 - 5.00 (85mm dia) 30% rec ▼	5.00-5.45	5 11	SPT	N=8			Soft to firm brown slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of sandstone and siltstone. (GLACIOFLUVIAL SHEET DEPOSITS) (stratum copied from 3.40m from previous sheet)	5.45	
							Borehole terminated at 5.45m bgl in line with specification.		

Drilling Progress and Water Observations						General Remarks
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)	

WINDOW SAMPLE LOG

Contract: Chorlton High School			Client: Cube Homes Ltd		Window Sample: WS204
Contract Ref: 11884	Start: 24.11.23 End: 24.11.23	Ground Level: 28.11	National Grid Co-ordinate: E:381484.5 N:393702.6		Sheet: 1 of 2

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
							MADE GROUND: Concrete slab. (MADE GROUND)	0.20	
	0.40-0.40	1	ES	1xT+1xJ+1xV			MADE GROUND: Light grey sandy GRAVEL consisting of subangular fine to coarse concrete. Sand is fine to coarse. (MADE GROUND)	0.40	
	0.90-0.90	2	ES	1xT+1xJ+1xV			MADE GROUND: Dark brown slightly gravelly slightly clayey fine to coarse SAND. Gravel is subangular to subrounded fine to coarse concrete, red brick and sandstone. (MADE GROUND)	(0.40) 0.80	
	1.20-1.65 1.25-1.25	1 11	SPT ES	N=10 1xT+1xJ+1xV			MADE GROUND: Dark brown slightly gravelly fine to coarse SAND. Gravel is subangular to subrounded fine brick and sandstone. (MADE GROUND)	(0.40) 1.20	
	1.20 - 2.00 (128mm dia) 100% rec						Medium dense brown fine to coarse SAND. (GLACIOFLUVIAL SHEET DEPOSITS)	(1.45)	
	2.00-2.45	2 11	SPT	N=19				2.65	
	2.70-2.70	1	D				Medium dense brown gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse siltstone and sandstone. (GLACIOFLUVIAL SHEET DEPOSITS)	(1.05)	
	3.00-3.45	3 11	SPT	N=21				3.70	
	3.00 - 4.00 (98mm dia) 100% rec						Firm brown slightly gravelly CLAY. Gravel is fine to coarse subangular to subrounded siltstone. (GLACIOFLUVIAL SHEET DEPOSITS)		
	3.70 3.80 3.90 4.00-4.45		V V V SPT	c _u =38 c _u =38 c _u =30 N=13					
	4.00 - 5.00 (85mm dia) 20% rec	4 11							

Drilling Progress and Water Observations						General Remarks			
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)	1. Borehole cleared of buried services by GPR, CAT and Genny. 2. Hand dug pit to 1.20m bgl. 3. Groundwater not encountered. 4. Borehole backfilled with arisings.			
Method Used: Inspection pit + Tracked window						All dimensions in metres Scale: 1:25			
Plant Used: Premier Compact 110		Drilled By: PB Drilling		Logged By: OQuinn		Checked By: AGS			

Contract:		Client:		Window Sample:
Chorlton High School		Cube Homes Ltd		WS204
Contract Ref:	Start: 24.11.23	Ground Level:	National Grid Co-ordinate:	Sheet:
11884	End: 24.11.23	28.11	E:381484.5 N:393702.6	2 of 2

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
4.00 - 5.00 (85mm dia) 20% rec ▼	5.00-5.45	5 11	SPT	N=8			Firm brown slightly gravelly CLAY. Gravel is fine to coarse subangular to subrounded siltstone. (GLACIOFLUVIAL SHEET DEPOSITS) <i>(stratum copied from 3.70m from previous sheet)</i>	(1.75)	
							Borehole terminated at 5.45m bgl in line with specification.	5.45	

Drilling Progress and Water Observations						General Remarks			
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)				
Method Used: Inspection pit + Tracked window			Plant Used: Premier Compact 110			All dimensions in metres		Scale: 1:25	
						Drilled By: PB Drilling		Logged By: OQuinn	
						Checked By: E.H.		AGS	

WINDOW SAMPLE LOG

Contract: Chorlton High School			Client: Cube Homes Ltd		Window Sample: WS205
Contract Ref: 11884	Start: 24.11.23 End: 24.11.23	Ground Level: 27.56	National Grid Co-ordinate: E:381465.5 N:393749.7		Sheet: 1 of 2

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
							MADE GROUND: Concrete slab. (MADE GROUND)	0.05	
	0.20-0.70	1	ES PID	0.0ppm			MADE GROUND: Light brown medium to coarse SAND. (MADE GROUND)	0.20	
	0.30						MADE GROUND: Brown gravelly clayey fine to coarse SAND with medium cobble content. Gravel is angular fine to coarse of brick and concrete. Cobbles are angular of brick (up to 130mm). (MADE GROUND)	(0.55)	
	0.80-1.00	2	ES PID	0.0ppm			Medium dense light brown fine to medium SAND. (GLACIOFLUVIAL SHEET DEPOSITS)	0.75	
	0.80								
	1.00-1.20	1	D				... becoming gravelly from 1.00m. Gravel is subangular to subrounded fine to coarse of mudstone, quartzite.	(0.75)	
	1.20-1.65	1	SPT	N=14				1.50	
	1.20 - 2.00 (115mm dia) 100% rec						Medium dense brown very sandy slightly clayey angular to subrounded fine to coarse GRAVEL of mudstone, quartzite, siltstone, sandstone. Sand is fine to coarse. (GLACIOFLUVIAL SHEET DEPOSITS)	(0.60)	
	2.00-2.45	2	SPT	N=7				2.10	
	2.00 - 3.00 (115mm dia) 100% rec						Firm brown slightly sandy slightly gravelly CLAY. Sand is fine. Gravel is angular to subrounded fine to medium of siltstone, sandstone, quartzite and shale. (GLACIOFLUVIAL SHEET DEPOSITS)	(1.90)	
	3.00-3.45	3	SPT	N=14					
	3.00 - 4.00 (98mm dia) 60% rec							4.00	
	4.00-4.45	4	SPT	N=16			Firm to stiff brown slightly sandy slightly gravelly CLAY. Sand is fine. Gravel is angular to subrounded fine to coarse of siltstone, shale, quartzite and sandstone. (GLACIOFLUVIAL SHEET DEPOSITS)		
	4.00 - 5.00 (85mm dia) 90% rec								

Drilling Progress and Water Observations						General Remarks			
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)	1. Borehole cleared of buried services by GPR, CAT and Genny. 2. Hand dug pit to 1.20m bgl. 3. Groundwater not encountered. 4. Borehole backfilled with arisings.			
						All dimensions in metres			
						Scale: 1:25			
Method Used: Inspection pit + Tracked window	Plant Used: Premier Compact 110		Drilled By: PB Drilling	Logged By: OQuinn	Checked By: AGS				

Contract:		Client:		Window Sample:
Chorlton High School		Cube Homes Ltd		WS205
Contract Ref:	Start: 24.11.23	Ground Level:	National Grid Co-ordinate:	Sheet:
11884	End: 24.11.23	27.56	E:381465.5 N:393749.7	2 of 2

GINIT_LIBRARY_V10_01.GLB LibVersion: v8.07.001 PplVersion: v8.07 | Log WINDOW SAMPLE LOG - A4P | 11884. CHORLTON_HIGH_SCHOOL.GPI - v10.01.
RISK Environment Ltd, Fourways House, 57 Hilton Street, Piccadilly, Manchester, M1 2EJ. Tel: 0161 236 2757. Fax: 0161 236 7029. Web: www.rsk.co.uk | 22/2/23 - 10:39 | JS12 |

Drilling Progress and Water Observations						General Remarks			
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)				
Method Used: Inspection pit + Tracked window			Plant Used: Premier Compact 110			All dimensions in metres		Scale: 1:25	
						Drilled By: PB Drilling		Logged By: OQuinn	
						Checked By: [Signature]		AGS	

WINDOW SAMPLE LOG

Contract: Chorlton High School			Client: Cube Homes Ltd		Window Sample: WS206
Contract Ref: 11884	Start: 24.11.23 End: 24.11.23	Ground Level: 27.57	National Grid Co-ordinate: E:381475.6 N:393734.9		Sheet: 1 of 2

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	0.00-0.05	1	ES				MADE GROUND: Tarmacadam.	0.05	
	0.02		PID	0.0ppm			(MADE GROUND)		
	0.10-0.40	2	ES				MADE GROUND: Brown gravelly clayey fine to coarse SAND with medium cobble content. Gravel is angular fine to coarse of brick and concrete. Cobbles are angular of brick (up to 140mm).	(0.35)	
	0.20		PID	0.0ppm			(MADE GROUND)	0.40	
	0.50-0.80	3	ES				Loose to medium dense light brown slightly gravelly medium to coarse SAND. Gravel is angular to subangular fine to coarse of siltstone, sandstone and shale. (GLACIOFLUVIAL SHEET DEPOSITS)		
	0.60		PID	0.0ppm					
	1.20-1.65	1	SPT	N=12				(1.60)	
	1.20-1.70	1	D						
		11					... becoming mottled orange from 1.50m.		
	2.00-2.45	2	SPT	N=4			Medium dense brown very sandy slightly clayey angular to subrounded fine to coarse GRAVEL of quartzite and siltstone. (GLACIOFLUVIAL SHEET DEPOSITS)	2.00	
		11					Soft brown CLAY. (GLACIOFLUVIAL SHEET DEPOSITS)	2.25	
	2.00 - 3.00 (115mm dia) 90% rec							(0.55)	
	2.50-2.70	4	ES						
	2.60		PID	0.0ppm					
	2.70-3.00	2	D					2.80	
	3.00-3.45	3	SPT	N=12			Firm slightly sandy gravelly CLAY. Sand is fine. Gravel is angular to subrounded fine to coarse of siltstone and quartzite. (GLACIOFLUVIAL SHEET DEPOSITS)		
		11					... no recovery from 3.50 to 4.00m.	(1.70)	
	3.00 - 4.00 (98mm dia) 40% rec								
	4.00-4.45	4	SPT	N=14					
		11						4.50	
	4.00 - 5.00 (85mm dia) 70% rec								

Drilling Progress and Water Observations						General Remarks			
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)				
						1. Borehole cleared of buried services by GPR, CAT and Genny. 2. Hand dug pit to 1.20m bgl. 3. Groundwater not encountered. 4. Borehole backfilled with arisings.			
Method Used: Inspection pit + Tracked window						All dimensions in metres Scale: 1:25			
Plant Used: Premier Compact 110		Drilled By: PB Drilling		Logged By: OQuinn		Checked By: <i>[Signature]</i>		AGS	

WINDOW SAMPLE LOG

Contract: Chorlton High School			Client: Cube Homes Ltd		Window Sample: WS206
Contract Ref: 11884	Start: 24.11.23 End: 24.11.23	Ground Level: 27.57	National Grid Co-ordinate: E:381475.6 N:393734.9		Sheet: 2 of 2

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
4.00 - 5.00 (85mm dia) 70% rec ▼							Medium dense reddish brown fine to medium SAND. (GLACIOFLUVIAL SHEET DEPOSITS) ... no recovery from 4.70 to 5.00m.	(0.50)	
	5.00-5.45	5 11	SPT	N=15			Firm slightly sandy gravelly CLAY. Sand is fine. Gravel is angular to subrounded fine to coarse of siltstone and quartzite. (GLACIOFLUVIAL SHEET DEPOSITS)	(0.45)	
							Borehole terminated at 5.45m bgl in line with specification.	5.45	

Drilling Progress and Water Observations						General Remarks
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)	
						</

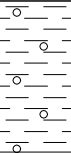
BOREHOLE LOG

Contract: Chorlton High School			Client: Cube Homes Ltd		Borehole: CP201
Contract Ref: 11884	Start: 20.11.23 End: 21.11.23	Ground Level: 28.17	National Grid Co-ordinate: E:381527.4 N:393770.8		Sheet: 1 of 2

Depth (m)	Samples & Testing			Backfill	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
	No	Type	Results					
0.20-0.20	1	ES	1xT+1xJ+1xV			MADE GROUND: Tarmacadam.	0.10	
0.30		PID	0.0ppm			(MADE GROUND)	0.25	
0.50-1.10	1	B				MADE GROUND: Yellow sandy coarse GRAVEL of MOT-TYPE1 subbase.	(0.85)	
0.70		PID	0.0ppm			(MADE GROUND)		
1.00-1.00	2	ES	1xT+1xJ+1xV			MADE GROUND: Brown slightly gravelly silty fine to coarse SAND. Gravel is angular fine brick and sandstone.	1.10	
1.20-1.65	1	SPT	N=13			(MADE GROUND)		
1.20-1.65	2	B				Medium dense light brown gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse of sandstone.		
1.40-1.40	3	ES	1xT+1xJ+1xV			(GLACIOFLUVIAL SHEET DEPOSITS)		
2.00-2.45	2	SPT	N=15					
2.00-2.45	3	B					(2.90)	
3.00-3.45	3	SPT	N=15			... Increasingly gravelly with depth from 3.00m bgl.		
4.00-4.45	4	SPT	N=13				4.00	
4.00-4.45	4	B				Firm becoming stiff brown slightly gravelly CLAY. Gravel is subrounded fine to medium of sandstone.		
						(GLACIOFLUVIAL SHEET DEPOSITS)		
5.00-5.45	5	SPT	N=17					
6.50-6.95	6	SPT	N=20				(6.00)	
8.00-8.45	7	SPT	N=15					
8.80-9.30	5	B						

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks		
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)			
20/11/23	16:00	4.00	4.00	200	Dry						
21/11/23	12:30	10.00	9.00	200	Dry						
									1. Borehole cleared and buried services by GPR, CAT and Genny. 2. Hand dug pit dug to 1.20m bgl. 3. Groundwater not encountered during drilling. 4. Borehole backfilled with arisings.		
									All dimensions in metres	Scale: 1:50	
Method Used:		Hand tools + Cable Percussion		Plant Used: Dando 2000		Drilled By: PB Drilling		Logged By: OQuinn		Checked By: 	

Contract:		Client:		Borehole:
Chorlton High School		Cube Homes Ltd		CP201
Contract Ref:	Start: 20.11.23	Ground Level:	National Grid Co-ordinate:	Sheet:
11884	End: 21.11.23	28.17	E:381527.4 N:393770.8	2 of 2

Depth (m)	Samples & Testing			Backfill	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
	No	Type	Results					
9.50-9.95	1	U ₍₁₀₀₎	100% recovery			Firm becoming stiff brown slightly gravelly CLAY. Gravel is subrounded fine to medium of sandstone. (GLACIOFLUVIAL SHEET DEPOSITS) (stratum copied from 4.00m from previous sheet)	10.00	
10.00-10.00	6	D				Borehole terminated at 10.00m bgl in line with specification.		

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)		

BOREHOLE LOG

Contract: Chorlton High School			Client: Cube Homes Ltd		Borehole: CP202
Contract Ref: 11884	Start: 21.11.23 End: 22.11.23	Ground Level: 28.01	National Grid Co-ordinate: E:381502.8 N:393731.1		Sheet: 1 of 2

Depth (m)	Samples & Testing			Backfill	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
	No	Type	Results					
0.25-1.00	1	B				MADE GROUND: Tarmacadam. (MADE GROUND)	0.10	
0.30-0.30	1	ES	1xT+1xJ+1xV			MADE GROUND: Yellow slightly sandy coarse GRAVEL of MOT-TYPE1 subbase.	0.25	
0.30		PID	0.0ppm			(MADE GROUND)	(0.75)	
0.70-0.70	2	ES	1xT+1xJ+1xV			MADE GROUND: Dark brown slightly gravelly fine to medium SAND. Gravel is fine to coarse sub angular to sub rounded brick, sandstone and clinker.	1.00	
1.00-1.20	2	B				(MADE GROUND)		
1.10-1.10	3	ES	1xT+1xJ+1xV			Medium dense brown slightly gravelly fine to medium SAND. Gravel is subangular to subrounded fine to coarse of sandstone.		
1.20-1.65	1	SPT	N=12			(GLACIOFLUVIAL SHEET DEPOSITS)		
1.30		PID	0.0ppm					
2.00-2.45	2	SPT	N=12				(2.50)	
2.00-2.45	3	B						
3.00-3.45	3	SPT	N=20				3.50	
3.50-4.00	4	B				Firm to stiff brown slightly gravelly CLAY. Gravel is subrounded fine to coarse of sandstone.		
3.60		PID	0.0ppm			(GLACIOFLUVIAL SHEET DEPOSITS)		
3.70		PID	0.0ppm					
4.00-4.45	1	U ₍₁₀₀₎	100% recovery					
4.50		V	c _u =56					
5.00-5.45	4	SPT	N=14					
5.20		V	c _u =58					
6.00-6.45	5	SPT	N=14			... Decreasingly gravelly with depth from 6.00m bgl.	(5.50)	
6.50		V	c _u =96					
7.50-7.95	5	B				... Fine sand lenses from 7.50m to 9.00m bgl.		
7.50-7.95	6	SPT	N=37					
							9.00	

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks		
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)			
21/11/23	16:00	5.45	5.00	200	Dry						
22/11/23	15:45	15.00	15.00	200	13.00						
									1. Borehole cleared of buried services by GPR,CAT and Genny. 2. Hand dug pit to 1.20m bgl. 3. Groundwater strike at 9.00m bgl rising to 6.00m bgl after 20 minutes. 4. Borehole backfilled with arisings.		
									All dimensions in metres	Scale: 1:50	
Method Used:		Hand tools + Cable Percussion		Plant Used: Dando 2000		Drilled By: PB Drilling		Logged By: OQuinn		Checked By: 	

BOREHOLE LOG

Contract: Chorlton High School			Client: Cube Homes Ltd		Borehole: CP202
Contract Ref: 11884	Start: 21.11.23 End: 22.11.23	Ground Level: 28.01	National Grid Co-ordinate: E:381502.8 N:393731.1		Sheet: 2 of 2

Depth (m)	Samples & Testing			Backfill	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
	No	Type	Results					
9.00-9.50 9.00-9.26	6 8	B SPT	13,12/25,25 for 55mm			Medium dense brown slightly gravelly fine to coarse SAND. Gravel is fine to coarse subangular to subrounded sandstone and siltstone. (GLACIOFLUVIAL SHEET DEPOSITS) ... Grond water.		
10.50-10.95	9	SPT	N=12				(3.50)	
12.00-12.45	10	SPT	N=13				12.50	
12.60-13.50	7	B				Stiff to very stiff brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to medium subangular to subrounded sandstone and siltstone. (GLACIOFLUVIAL SHEET DEPOSITS)		
13.50-13.95	11	SPT	N=40				(2.95)	
15.00-15.45	1	SPT	N=45				15.45	
Borehole terminated at 15.45m bgl in line with specification.								

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)		
									</	

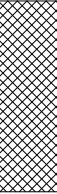
BOREHOLE LOG

Contract: Chorlton High School			Client: Cube Homes Ltd		Borehole: CP203
Contract Ref: 11884	Start: 23.11.23 End: 23.11.23	Ground Level: 28.33	National Grid Co-ordinate: E:381497.7 N:393687.3		Sheet: 1 of 2

Depth (m)	Samples & Testing			Backfill	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
	No	Type	Results					
0.10-0.40	1	B				MADE GROUND: Tarmacadam. (MADE GROUND)	0.10	
0.30		PID	0.0ppm				0.40	
0.40-1.20	2	B				MADE GROUND: Dark brown fine to coarse SAND and subangular to subrounded fine to coarse asphalt, sandstone and brick GRAVEL with medium cobble content of subangular brick (up to 150mm). (MADE GROUND)	(0.80)	
0.70		PID	0.0ppm					
0.90-0.90	1	ES	1xT+1xJ+1xV			MADE GROUND: Brown slightly gravelly fine to coarse SAND. Gravel is subangular to subrounded fine of sandstone and brick. (MADE GROUND)	1.20	
1.20-1.65	1	SPT	N=10					
1.20-1.20	2	ES	1xT+1xJ+1xV					
1.30-1.65	3	B				Medium dense slightly gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse of sandstone. (GLACIOFLUVIAL SHEET DEPOSITS)		
2.00-2.45	2	SPT	N=15				(2.60)	
3.00-3.45	3	SPT	N=21				3.80	
3.80-4.00	4	B				Firm to stiff brown slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of sandstone and siltstone. (GLACIOFLUVIAL SHEET DEPOSITS)		
4.00-4.45	4	SPT	N=15					
5.00-5.45	5	SPT	N=20					
6.00-6.45	1	U ₍₁₀₀₎	100% recovery				(5.20)	
6.00		V	c _u =32					
6.50		V	c _u =36					
7.00		V	c _u =48					
7.50-7.95	6	SPT	N=23					
8.00-9.00	5	B						
8.00		V	c _u =92					
8.50		V	c _u =96					
							9.00	

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	
23/11/23	14:00	10.00	10.00	200	8.00				1. Borehole cleared of buried services by GPR,CAT and Genny. 2. Hand dug pit to 1.20m bgl. 3. Groundwater strike at 9.00m bgl rising to 8.00m bgl after 20 minutes. 4. Borehole backfilled with arisings.
Method Used: Hand tools + Cable Percussion						Plant Used: Dando 2000			All dimensions in metres
Drilled By: ???						Logged By: OQuinn			Scale: 1:50
Checked By: AGS									

Contract:		Client:		Borehole:	
Chorlton High School		Cube Homes Ltd		CP203	
Contract Ref:		Start: 23.11.23		Ground Level:	
11884		End: 23.11.23		28.33	
				National Grid Co-ordinate:	
				E:381497.7 N:393687.3	
				Sheet:	
				2 of 2	

Depth (m)	Samples & Testing			Backfill	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
	No	Type	Results					
9.00-9.37	1	SPT	9,10/13,16,21 for 70mm			Very reddish brown slightly silty fine to coarse SAND. (GLACIOFLUVIAL SHEET DEPOSITS)	(1.26)	
9.00-9.45 9.00	6	B V	c _u =108					
10.00-10.26	2	SPT	5,10/22,28 for 70mm					
						Borehole terminated at 10.26m bgl in line with specification.	10.26	

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks		
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)			
									All dimensions in metres	Scale: 1:50	
Method Used:	Hand tools + Cable Percussion			Plant Used:	Dando 2000		Drilled By:	???	Logged By: OQuinn	Checked By:	

Appendix F

LABORATORY CERTIFICATES FOR SOIL ANALYSIS

FINAL ANALYTICAL TEST REPORT SUPPLEMENT TO TEST REPORT 23/11876/1

Amendments: Request for Additional Analysis

Envirolab Job Number: 23/11876
Issue Number: 2

Date: 14 December, 2023

Client: RSK Environment Ltd Manchester
Fourways House
57 Hilton Street
Manchester
Lancashire
UK
M1 2EJ

Project Manager: Emma Hobbs
Project Name: Chorlton High School
Project Ref: 11884
Order No: N/A
Date Samples Received: 27/11/23
Date Instructions Received: 30/11/23
Date Analysis Completed: 14/12/23

Approved by:

A handwritten signature in black ink, appearing to read "Richard Wong".

Richard Wong
Client Manager

Envirolab Job Number: 23/11876

Client Project Name: Chorlton High School

Client Project Ref: 11884

Lab Sample ID	23/11876/3	23/11876/6	23/11876/10	23/11876/11	23/11876/12	23/11876/13	23/11876/16	Units	Limit of Detection	Method ref
Client Sample No	3	1	1	2	1	2	1			
Client Sample ID	CP201	CP203	TP203	TP203	TP204	TP204	WS202			
Depth to Top	1.4	0.9	0.1	1.1	0.2	0.9	0.5			
Depth To Bottom			0.40	1.30	0.50	1.20				
Date Sampled	27-Nov-23	27-Nov-23	27-Nov-23	27-Nov-23	27-Nov-23	27-Nov-23	24-Nov-23			
Sample Type	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES			
Sample Matrix Code	1A	4A	4A	1A	4AB	1A	4A			
% Stones >10mm _A	<0.1	5.8	<0.1	<0.1	21.3	17.2	<0.1	% w/w	0.1	A-T-044
pH _D ^{M#}	7.22	6.04	7.40	6.33	7.51	-	6.81	pH	0.01	A-T-031s
Sulphate (water sol 2:1) _D ^{M#}	<0.01	0.04	-	<0.01	-	-	-	g/l	0.01	A-T-026s
Sulphur (total) _D	<50	171	-	<50	-	-	-	mg/kg	50	A-T-024s
Organic Matter _D ^{M#}	-	4.4	10.0	-	21.9	-	-	% w/w	0.1	A-T-032s
Arsenic _D ^{M#}	-	24	21	<1	13	<1	4	mg/kg	1	A-T-024s
Cadmium _D ^{M#}	-	0.6	0.9	<0.5	1.2	<0.5	<0.5	mg/kg	0.5	A-T-024s
Copper _D ^{M#}	-	73	60	5	55	4	19	mg/kg	1	A-T-024s
Chromium _D ^{M#}	-	9	15	4	23	4	7	mg/kg	1	A-T-024s
Lead _D ^{M#}	-	127	251	6	157	6	71	mg/kg	1	A-T-024s
Mercury _D	-	<0.17	1.28	<0.17	1.01	<0.17	<0.17	mg/kg	0.17	A-T-024s
Nickel _D ^{M#}	-	15	22	5	25	5	8	mg/kg	1	A-T-024s
Selenium _D ^{M#}	-	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-024s
Zinc _D ^{M#}	-	101	180	20	299	20	29	mg/kg	5	A-T-024s
Leachate Prep BS EN 12457-1 (2:1) (1 no) RE-PREP for additional testing _A	-	-	-	-	*	-	-			A-T-001
Arsenic (leachable) _A	-	-	-	-	4	-	-	µg/l	1	A-T-025w
Boron (leachable) _A	-	-	-	-	27	-	-	µg/l	10	A-T-025w
Cadmium (leachable) _A	-	-	-	-	<1	-	-	µg/l	1	A-T-025w
Copper (leachable) _A	-	-	-	-	5	-	-	µg/l	4	A-T-025w
Chromium (leachable) _A	-	-	-	-	8	-	-	µg/l	1	A-T-025w
Lead (leachable) _A	-	-	-	-	10	-	-	µg/l	1	A-T-025w
Mercury (leachable) _A	-	-	-	-	<0.1	-	-	µg/l	0.1	A-T-025w
Nickel (leachable) _A	-	-	-	-	<2	-	-	µg/l	2	A-T-025w
Selenium (leachable) _A	-	-	-	-	<1	-	-	µg/l	1	A-T-025w
Zinc (leachable) _A	-	-	-	-	17	-	-	µg/l	2	A-T-025w

Envirolab Job Number: 23/11876

Client Project Name: Chorlton High School

Client Project Ref: 11884

Lab Sample ID	23/11876/3	23/11876/6	23/11876/10	23/11876/11	23/11876/12	23/11876/13	23/11876/16	Units	Limit of Detection	Method ref
Client Sample No	3	1	1	2	1	2	1			
Client Sample ID	CP201	CP203	TP203	TP203	TP204	TP204	WS202			
Depth to Top	1.4	0.9	0.1	1.1	0.2	0.9	0.5			
Depth To Bottom			0.40	1.30	0.50	1.20				
Date Sampled	27-Nov-23	27-Nov-23	27-Nov-23	27-Nov-23	27-Nov-23	27-Nov-23	24-Nov-23			
Sample Type	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES			
Sample Matrix Code	1A	4A	4A	1A	4AB	1A	4A			
Asbestos in Soil (inc. matrix)										
Asbestos in soil [§]	-	NAD	Chrysotile & Amosite	-	NAD	-	NAD			A-T-045
Asbestos Matrix (visual) _o	-	-	-	-	-	-	-			A-T-045
Asbestos Matrix (microscope) _o	-	-	Loose Fibres	-	-	-	-			A-T-045
Asbestos ACM - Suitable for Water Absorption Test? _o	-	N/A	N/A	-	N/A	-	N/A			A-T-045
Asbestos in Soil Quantification % (Hand Picking & Weighing)										
Asbestos in soil % composition (hand picking and weighing) _o	-	-	<0.001	-	-	-	-	% w/w	0.001	A-T-054

Envirolab Job Number: 23/11876

Client Project Name: Chorlton High School

Client Project Ref: 11884

Lab Sample ID	23/11876/3	23/11876/6	23/11876/10	23/11876/11	23/11876/12	23/11876/13	23/11876/16	Units	Limit of Detection	Method ref
Client Sample No	3	1	1	2	1	2	1			
Client Sample ID	CP201	CP203	TP203	TP203	TP204	TP204	WS202			
Depth to Top	1.4	0.9	0.1	1.1	0.2	0.9	0.5			
Depth To Bottom			0.40	1.30	0.50	1.20				
Date Sampled	27-Nov-23	27-Nov-23	27-Nov-23	27-Nov-23	27-Nov-23	27-Nov-23	24-Nov-23			
Sample Type	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES			
Sample Matrix Code	1A	4A	4A	1A	4AB	1A	4A			
PAH-16MS										
Acenaphthene _A ^{M#}	-	0.06	0.09	<0.01	0.24	<0.01	<0.01	mg/kg	0.01	A-T-019s
Acenaphthylene _A ^{M#}	-	0.09	0.39	<0.01	0.25	<0.01	0.07	mg/kg	0.01	A-T-019s
Anthracene _A ^{M#}	-	0.30	0.51	<0.02	1.04	<0.02	0.10	mg/kg	0.02	A-T-019s
Benzo(a)anthracene _A ^{M#}	-	1.49	4.26	<0.04	7.67	<0.04	0.64	mg/kg	0.04	A-T-019s
Benzo(a)pyrene _A ^{M#}	-	1.28	4.78	<0.04	6.71	<0.04	0.47	mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene _A ^{M#}	-	1.57	6.21	<0.05	8.92	<0.05	0.61	mg/kg	0.05	A-T-019s
Benzo(ghi)perylene _A ^{M#}	-	0.78	3.13	<0.05	4.25	<0.05	0.27	mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene _A ^{M#}	-	0.54	2.20	<0.07	3.15	<0.07	0.22	mg/kg	0.07	A-T-019s
Chrysene _A ^{M#}	-	1.53	4.55	<0.06	7.20	<0.06	0.59	mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene _A	-	0.15	0.57	<0.04	0.87	<0.04	0.05	mg/kg	0.04	A-T-019s
Fluoranthene _A ^{M#}	-	2.93	7.85	<0.08	12.5	<0.08	1.23	mg/kg	0.08	A-T-019s
Fluorene _A ^{M#}	-	0.06	0.07	<0.01	0.17	<0.01	<0.01	mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene _A ^{M#}	-	0.88	3.66	<0.03	5.10	<0.03	0.31	mg/kg	0.03	A-T-019s
Naphthalene _A ^{M#}	-	<0.03	0.06	<0.03	0.05	<0.03	<0.03	mg/kg	0.03	A-T-019s
Phenanthrene _A ^{M#}	-	1.35	1.80	<0.03	4.28	<0.03	0.34	mg/kg	0.03	A-T-019s
Pyrene _A ^{M#}	-	2.82	7.62	<0.07	12.4	<0.07	1.06	mg/kg	0.07	A-T-019s
Total PAH-16MS _A	-	15.8	47.8	<0.08	74.8	<0.08	5.96	mg/kg	0.01	A-T-019s

Envirolab Job Number: 23/11876

Client Project Name: Chorlton High School

Client Project Ref: 11884

Lab Sample ID	23/11876/3	23/11876/6	23/11876/10	23/11876/11	23/11876/12	23/11876/13	23/11876/16	Units	Limit of Detection	Method ref
Client Sample No	3	1	1	2	1	2	1			
Client Sample ID	CP201	CP203	TP203	TP203	TP204	TP204	WS202			
Depth to Top	1.4	0.9	0.1	1.1	0.2	0.9	0.5			
Depth To Bottom			0.40	1.30	0.50	1.20				
Date Sampled	27-Nov-23	27-Nov-23	27-Nov-23	27-Nov-23	27-Nov-23	27-Nov-23	24-Nov-23			
Sample Type	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES			
Sample Matrix Code	1A	4A	4A	1A	4AB	1A	4A			
PAH 16MS (leachable)										
Acenaphthene (leachable) _A	-	-	-	-	<0.02	-	-	µg/l	0.02	A-T-019w
Acenaphthylene (leachable) _A	-	-	-	-	<0.02	-	-	µg/l	0.02	A-T-019w
Anthracene (leachable) _A	-	-	-	-	<0.02	-	-	µg/l	0.02	A-T-019w
Benzo(a)anthracene (leachable) _A	-	-	-	-	<0.02	-	-	µg/l	0.02	A-T-019w
Benzo(a)pyrene (leachable) _A	-	-	-	-	0.04	-	-	µg/l	0.02	A-T-019w
Benzo(b)fluoranthene (leachable) _A	-	-	-	-	0.05	-	-	µg/l	0.02	A-T-019w
Benzo(ghi)perylene (leachable) _A	-	-	-	-	0.06	-	-	µg/l	0.02	A-T-019w
Benzo(k)fluoranthene (leachable) _A	-	-	-	-	<0.02	-	-	µg/l	0.02	A-T-019w
Chrysene (leachable) _A	-	-	-	-	0.03	-	-	µg/l	0.02	A-T-019w
Dibenzo(ah)anthracene (leachable) _A	-	-	-	-	<0.02	-	-	µg/l	0.02	A-T-019w
Fluoranthene (leachable) _A	-	-	-	-	0.03	-	-	µg/l	0.02	A-T-019w
Fluorene (leachable) _A	-	-	-	-	<0.02	-	-	µg/l	0.02	A-T-019w
Indeno(123-cd)pyrene (leachable) _A	-	-	-	-	0.06	-	-	µg/l	0.02	A-T-019w
Naphthalene (leachable) _A	-	-	-	-	<0.02	-	-	µg/l	0.02	A-T-019w
Phenanthrene (leachable) _A	-	-	-	-	<0.02	-	-	µg/l	0.02	A-T-019w
Pyrene (leachable) _A	-	-	-	-	0.04	-	-	µg/l	0.02	A-T-019w
Total PAH 16MS (leachable) _A	-	-	-	-	0.31	-	-	µg/l	0.02	A-T-019w

Envirolab Job Number: 23/11876

Client Project Name: Chorlton High School

Client Project Ref: 11884

Lab Sample ID	23/11876/19	23/11876/21	23/11876/22	23/11876/24	23/11876/25	23/11876/26		Units	Limit of Detection	Method ref
Client Sample No	2	1	2	2	3	4				
Client Sample ID	WS203	WS205	WS205	WS206	WS206	WS206				
Depth to Top	1.4	0.2	0.8	0.1	0.5	2.5				
Depth To Bottom		0.70	1.00	0.40	0.80	2.7				
Date Sampled	24-Nov-23	24-Nov-23	24-Nov-23	24-Nov-23	24-Nov-23	24-Nov-23				
Sample Type	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES				
Sample Matrix Code	4A	4AB	1A	4AB	4A	3				
% Stones >10mm _A	1.0	6.0	3.8	9.3	4.2	<0.1		% w/w	0.1	A-T-044
pH _D ^{M#}	5.32	7.67	7.08	7.75	7.07	7.40		pH	0.01	A-T-031s
Sulphate (water sol 2:1) _D ^{M#}	0.23	-	<0.01	-	-	0.02		g/l	0.01	A-T-026s
Sulphur (total) _D	320	-	<50	-	-	597		mg/kg	50	A-T-024s
Organic Matter _D ^{M#}	5.4	3.0	-	7.3	-	-		% w/w	0.1	A-T-032s
Arsenic _D ^{M#}	8	12	-	20	22	-		mg/kg	1	A-T-024s
Cadmium _D ^{M#}	<0.5	<0.5	-	0.8	0.7	-		mg/kg	0.5	A-T-024s
Copper _D ^{M#}	24	33	-	248	30	-		mg/kg	1	A-T-024s
Chromium _D ^{M#}	12	12	-	19	12	-		mg/kg	1	A-T-024s
Lead _D ^{M#}	50	79	-	161	126	-		mg/kg	1	A-T-024s
Mercury _D	<0.17	0.36	-	1.25	2.24	-		mg/kg	0.17	A-T-024s
Nickel _D ^{M#}	12	11	-	24	13	-		mg/kg	1	A-T-024s
Selenium _D ^{M#}	<1	<1	-	<1	<1	-		mg/kg	1	A-T-024s
Zinc _D ^{M#}	28	39	-	183	73	-		mg/kg	5	A-T-024s

Envirolab Job Number: 23/11876

Client Project Name: Chorlton High School

Client Project Ref: 11884

Lab Sample ID	23/11876/19	23/11876/21	23/11876/22	23/11876/24	23/11876/25	23/11876/26		Units	Limit of Detection	Method ref
Client Sample No	2	1	2	2	3	4				
Client Sample ID	WS203	WS205	WS205	WS206	WS206	WS206				
Depth to Top	1.4	0.2	0.8	0.1	0.5	2.5				
Depth To Bottom		0.70	1.00	0.40	0.80	2.7				
Date Sampled	24-Nov-23	24-Nov-23	24-Nov-23	24-Nov-23	24-Nov-23	24-Nov-23				
Sample Type	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES				
Sample Matrix Code	4A	4AB	1A	4AB	4A	3				
Asbestos in Soil (inc. matrix)										
Asbestos in soil [#]	NAD	NAD	-	NAD	-	-				A-T-045
Asbestos Matrix (visual) ₀	-	-	-	-	-	-				A-T-045
Asbestos Matrix (microscope) ₀	-	-	-	-	-	-				A-T-045
Asbestos ACM - Suitable for Water Absorption Test? ₀	N/A	N/A	-	N/A	-	-				A-T-045

Envirolab Job Number: 23/11876

Client Project Name: Chorlton High School

Client Project Ref: 11884

Lab Sample ID	23/11876/19	23/11876/21	23/11876/22	23/11876/24	23/11876/25	23/11876/26		Units	Limit of Detection	Method ref
Client Sample No	2	1	2	2	3	4				
Client Sample ID	WS203	WS205	WS205	WS206	WS206	WS206				
Depth to Top	1.4	0.2	0.8	0.1	0.5	2.5				
Depth To Bottom		0.70	1.00	0.40	0.80	2.7				
Date Sampled	24-Nov-23	24-Nov-23	24-Nov-23	24-Nov-23	24-Nov-23	24-Nov-23				
Sample Type	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES				
Sample Matrix Code	4A	4AB	1A	4AB	4A	3				
PAH-16MS										
Acenaphthene _A ^{M#}	0.02	0.01	-	0.24	0.14	-		mg/kg	0.01	A-T-019s
Acenaphthylene _A ^{M#}	0.02	<0.01	-	0.02	<0.01	-		mg/kg	0.01	A-T-019s
Anthracene _A ^{M#}	0.10	0.04	-	0.69	0.27	-		mg/kg	0.02	A-T-019s
Benzo(a)anthracene _A ^{M#}	0.47	0.24	-	1.80	0.53	-		mg/kg	0.04	A-T-019s
Benzo(a)pyrene _A ^{M#}	0.36	0.23	-	1.69	0.36	-		mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene _A ^{M#}	0.51	0.29	-	2.07	0.47	-		mg/kg	0.05	A-T-019s
Benzo(ghi)perylene _A ^{M#}	0.24	0.17	-	0.98	0.21	-		mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene _A ^{M#}	0.18	0.10	-	0.72	0.18	-		mg/kg	0.07	A-T-019s
Chrysene _A ^{M#}	0.51	0.28	-	1.79	0.49	-		mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene _A	<0.04	<0.04	-	0.18	<0.04	-		mg/kg	0.04	A-T-019s
Fluoranthene _A ^{M#}	0.94	0.50	-	4.97	1.57	-		mg/kg	0.08	A-T-019s
Fluorene _A ^{M#}	0.02	<0.01	-	0.23	0.12	-		mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene _A ^{M#}	0.26	0.17	-	1.16	0.25	-		mg/kg	0.03	A-T-019s
Naphthalene _A ^{M#}	<0.03	<0.03	-	<0.03	<0.03	-		mg/kg	0.03	A-T-019s
Phenanthrene _A ^{M#}	0.49	0.23	-	3.18	1.32	-		mg/kg	0.03	A-T-019s
Pyrene _A ^{M#}	0.87	0.47	-	4.17	1.23	-		mg/kg	0.07	A-T-019s
Total PAH-16MS _A	4.99	2.73	-	23.9	7.14	-		mg/kg	0.01	A-T-019s

Envirolab Job Number: 23/11876

Client Project Name: Chorlton High School

Client Project Ref: 11884

Lab Sample ID	23/11876/19	23/11876/21	23/11876/22	23/11876/24	23/11876/25	23/11876/26		Units	Limit of Detection	Method ref
Client Sample No	2	1	2	2	3	4				
Client Sample ID	WS203	WS205	WS205	WS206	WS206	WS206				
Depth to Top	1.4	0.2	0.8	0.1	0.5	2.5				
Depth To Bottom		0.70	1.00	0.40	0.80	2.7				
Date Sampled	24-Nov-23	24-Nov-23	24-Nov-23	24-Nov-23	24-Nov-23	24-Nov-23				
Sample Type	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES				
Sample Matrix Code	4A	4AB	1A	4AB	4A	3				
TPH CWG with Clean Up										
Ali >C5-C6 _A	-	-	-	<0.01	-	-		mg/kg	0.01	A-T-022s
Ali >C6-C8 _A	-	-	-	<0.01	-	-		mg/kg	0.01	A-T-022s
Ali >C8-C10 _A	-	-	-	<1	-	-		mg/kg	1	A-T-055s
Ali >C10-C12 _A ^{M#}	-	-	-	<1	-	-		mg/kg	1	A-T-055s
Ali >C12-C16 _A ^{M#}	-	-	-	<1	-	-		mg/kg	1	A-T-055s
Ali >C16-C21 _A ^{M#}	-	-	-	1	-	-		mg/kg	1	A-T-055s
Ali >C21-C35 _A ^{M#}	-	-	-	17	-	-		mg/kg	1	A-T-055s
Total Aliphatics _A	-	-	-	18	-	-		mg/kg	1	Calc-As Recd
Aro >C5-C7 _A [#]	-	-	-	<0.01	-	-		mg/kg	0.01	A-T-022s
Aro >C7-C8 _A [#]	-	-	-	<0.01	-	-		mg/kg	0.01	A-T-022s
Aro >C8-C10 _A	-	-	-	<2	-	-		mg/kg	1	A-T-055s
Aro >C10-C12 _A	-	-	-	<1	-	-		mg/kg	1	A-T-055s
Aro >C12-C16 _A	-	-	-	5	-	-		mg/kg	1	A-T-055s
Aro >C16-C21 _A ^{M#}	-	-	-	39	-	-		mg/kg	1	A-T-055s
Aro >C21-C35 _A ^{M#}	-	-	-	103	-	-		mg/kg	1	A-T-055s
Total Aromatics _A	-	-	-	147	-	-		mg/kg	1	Calc-As Recd
TPH (Ali & Aro >C5-C35) _A	-	-	-	165	-	-		mg/kg	1	Calc-As Recd
BTEX - Benzene _A [#]	-	-	-	<0.01	-	-		mg/kg	0.01	A-T-022s
BTEX - Toluene _A [#]	-	-	-	<0.01	-	-		mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene _A [#]	-	-	-	<0.01	-	-		mg/kg	0.01	A-T-022s
BTEX - m & p Xylene _A [#]	-	-	-	<0.01	-	-		mg/kg	0.01	A-T-022s
BTEX - o Xylene _A [#]	-	-	-	<0.01	-	-		mg/kg	0.01	A-T-022s
MTBE _A [#]	-	-	-	<0.01	-	-		mg/kg	0.01	A-T-022s

Report Notes

General

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

Key

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

Asbestos

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

Assigned Matrix Codes

1	SAND	6	CLAY/LOAM	A	Contains Stones
2	LOAM	7	OTHER	B	Contains Construction Rubble
3	CLAY	8	Asbestos Bulk (Only Asbestos ID accredited)	C	Contains visible hydrocarbons
4	LOAM/SAND	9	Incinerator Ash (some Metals accredited)	D	Contains glass / metal
5	SAND/CLAY			E	Contains roots / twigs
Note: 7,8,9 matrices are not covered by our ISO 17025 or MCertS accreditation, unless stated above.					

Soil Chemical Analysis:

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

TPH by method A-T-007:

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

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

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

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

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

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

Envirolab Deviating Samples Report

Hattersley Science & Technology Park, Stockport Road, Hattersley, SK14 3QU

Tel. 0161 368 4921

email. ask@envlab.co.uk

Client: RSK Environment Ltd Manchester, Fourways House, 57 Hilton Street,
Manchester, Lancashire , UK, M1 2EJ

Project: Chorlton High School

Clients Project No: 11884

Project No: 23/11876

Date Received: 30/11/2023 (am)

Cool Box Temperatures (°C): 3.8, 3.5, 8.3

NO DEVIATIONS IDENTIFIED with respect to sampling dates or containers received.

Note: If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3 (for water samples $5 \pm 3^{\circ}\text{C}$), ISO 18400-105:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	23/11876/3	23/11876/6	23/11876/10	23/11876/11	23/11876/12	23/11876/13	23/11876/16	23/11876/19	23/11876/21	23/11876/22	23/11876/24	23/11876/25
Client Sample No	3	1	1	2	1	2	1	2	1	2	2	3
Client Sample ID/Depth	CP201 1.4m	CP203 0.9m	TP203 0.1-0.40m	TP203 1.1-1.30m	TP204 0.2-0.50m	TP204 0.9-1.20m	WS202 0.5m	WS203 1.4m	WS205 0.2-0.70m	WS205 0.8-1.00m	WS206 0.1-0.40m	WS206 0.5-0.80m
Date Sampled	27/11/23	27/11/23	27/11/23	27/11/23	27/11/23	27/11/23	24/11/23	24/11/23	24/11/23	24/11/23	24/11/23	24/11/23
A-T-019s												
A-T-019w												
A-T-022s												
A-T-024s												
A-T-025w												
A-T-026s												
A-T-031s												
A-T-032s												
A-T-044	04/12/2023	04/12/2023	04/12/2023	04/12/2023	04/12/2023	04/12/2023	04/12/2023	04/12/2023	04/12/2023	04/12/2023	04/12/2023	04/12/2023
A-T-045												
A-T-054												
A-T-055s												
Calc-As Recd												

Lab Sample ID	23/11876/26
Client Sample No	4
Client Sample ID/Depth	WS206 2.5-2.7m
Date Sampled	24/11/23
A-T-019s	
A-T-019w	
A-T-022s	
A-T-024s	
A-T-025w	
A-T-026s	
A-T-031s	
A-T-032s	
A-T-044	04/12/2023
A-T-045	
A-T-054	
A-T-055s	
Calc-As Recd	

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

End of Report

Appendix G
LABORATORY CERTIFICATES OF GEOTECHNICAL ANALYSIS



LABORATORY REPORT



Contract Number: PSL23/10134

Report Date: 14 December 2023

Client's Reference: 11884

Client Name: RSK Geosciences Manchester
Fourways House
57 Hilton Street
Manchester
M1 2EJ

For the attention of: Emma Hobbs

Contract Title: Chorlton High School

Date Received: 1/12/2023

Date Commenced: 1/12/2023

Date Completed: 14/12/2023

Notes: Opinions and Interpretations are outside the UKAS Accreditation

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

Checked and Approved Signatories:

A Watkins
(Director)

R Berriman
(Quality Manager)

S Royle
(Laboratory Manager)

L Knight
(Assistant Laboratory Manager)

S Eyre
(Senior Technician)


T Watkins
(Senior Technician)

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awatkins@prosoils.co.uk

Page 1 of

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
WS201	2	D	4.50	4.70	Brown slightly gravelly sandy CLAY.
WS203	3	D	3.80	-	Brown sandy CLAY.
WS206	2	D	2.70	3.00	Brown slightly gravelly very sandy CLAY.
CP201	4	B	2.00	2.45	Brown very sandy slightly silty GRAVEL with some cobbles.
CP201	3	B	4.00	4.45	Brown slightly gravelly very sandy CLAY.
CP201	11	U	9.50	9.95	Firm brown slightly gravelly sandy CLAY.
CP202	2	B	1.00	1.20	Brown gravelly slightly silty SAND.
CP202	7	U	4.00	4.45	Firm brown slightly gravelly slightly sandy silty CLAY.
CP202	11	B	7.50	7.95	Brown slightly gravelly very sandy CLAY.
CP203	3	B	1.20	1.65	Brown slightly gravelly slightly silty SAND.
CP203	9	U	6.00	6.45	Firm brown slightly gravelly sandy CLAY.



Chorlton High School

Contract No:

PSL23/10134

Client Ref:

11884

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

[illegible]

SYMBOLS : NP : Non Plastic

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



Chorlton High School

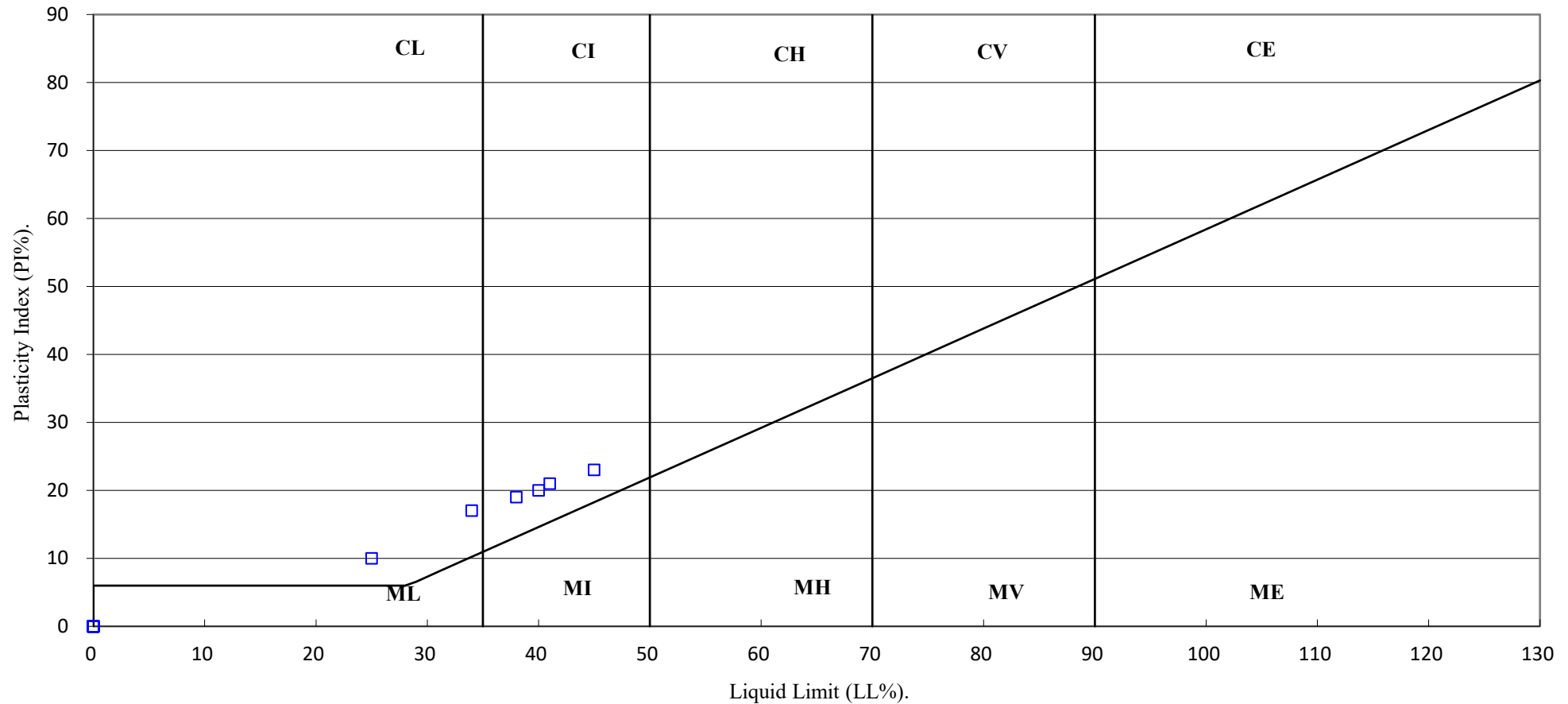
Contract No:

PSL23/10134

Client Ref:

11884

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



Chorlton High School

Contract No:

PSL23/10134

Client Ref:

11884

PARTICLE SIZE DISTRIBUTION TEST

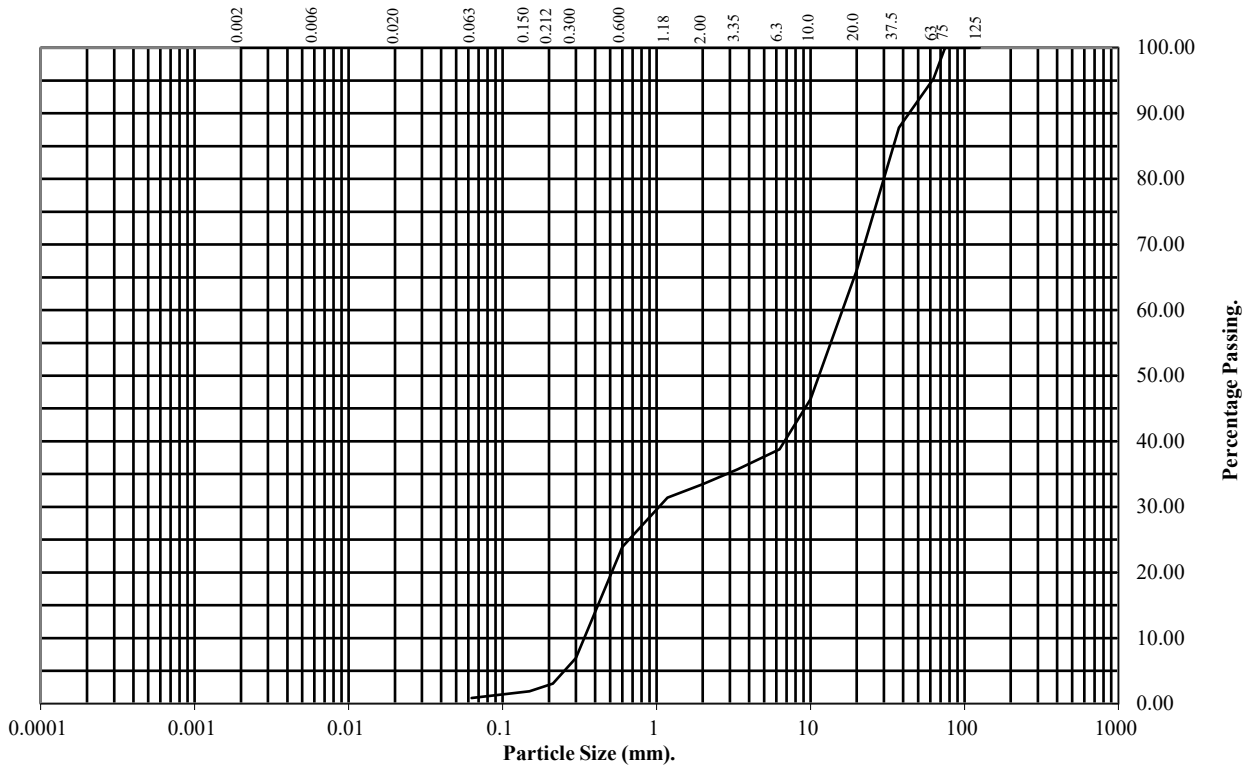
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: CP201 Top Depth (m): 2.00

Sample Number: 4 Base Depth(m): 2.45

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	95
37.5	88
20	66
10	46
6.3	39
3.35	36
2	33
1.18	31
0.6	24
0.3	7
0.212	3
0.15	2
0.063	1

Soil Fraction	Total Percentage
Cobbles	5
Gravel	62
Sand	32
Silt/Clay	1

Remarks:

See Summary of Soil Descriptions



Chorlton High School

Contract No:
PSL23/10134
Client Ref:
11884

PARTICLE SIZE DISTRIBUTION TEST

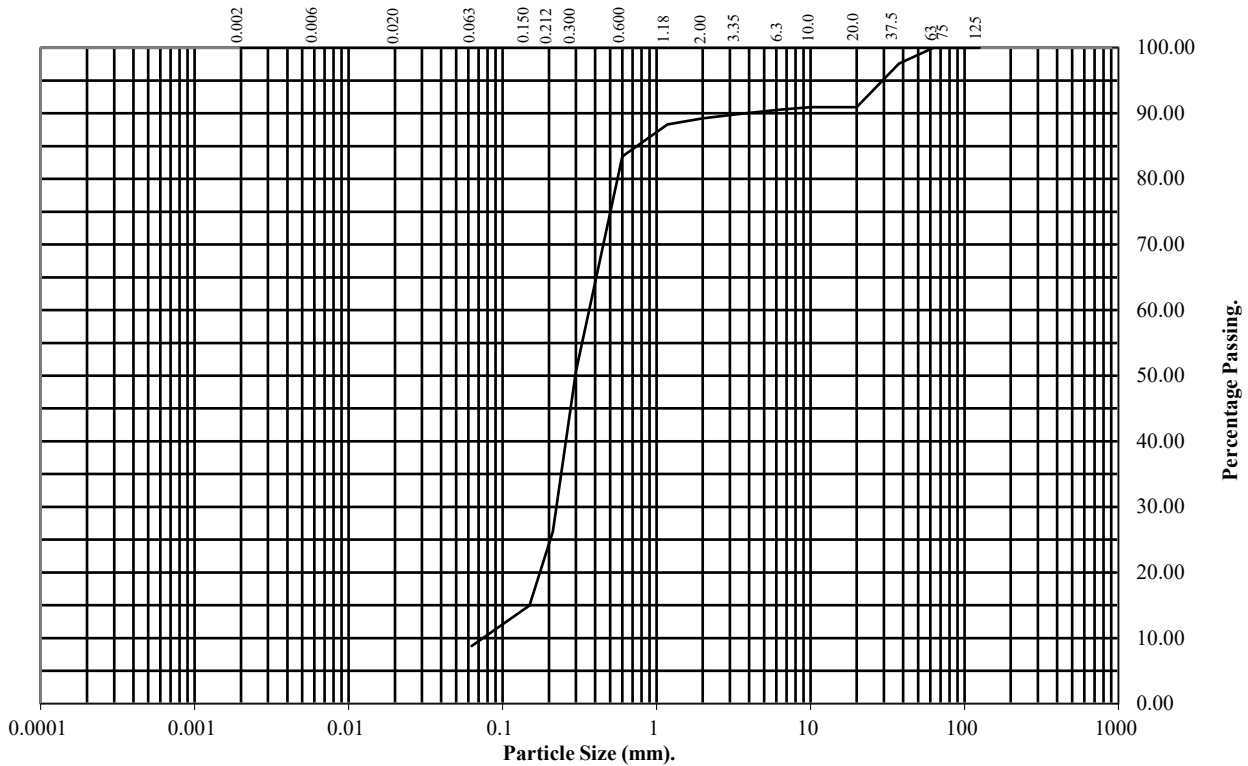
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: CP202 Top Depth (m): 1.00

Sample Number: 2 Base Depth(m): 1.20

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	98
20	91
10	91
6.3	91
3.35	90
2	89
1.18	88
0.6	83
0.3	51
0.212	26
0.15	15
0.063	9

Soil Fraction	Total Percentage
Cobbles	0
Gravel	11
Sand	80
Silt/Clay	9

Remarks:

See Summary of Soil Descriptions



Chorlton High School

Contract No:
PSL23/10134
Client Ref:
11884

PARTICLE SIZE DISTRIBUTION TEST

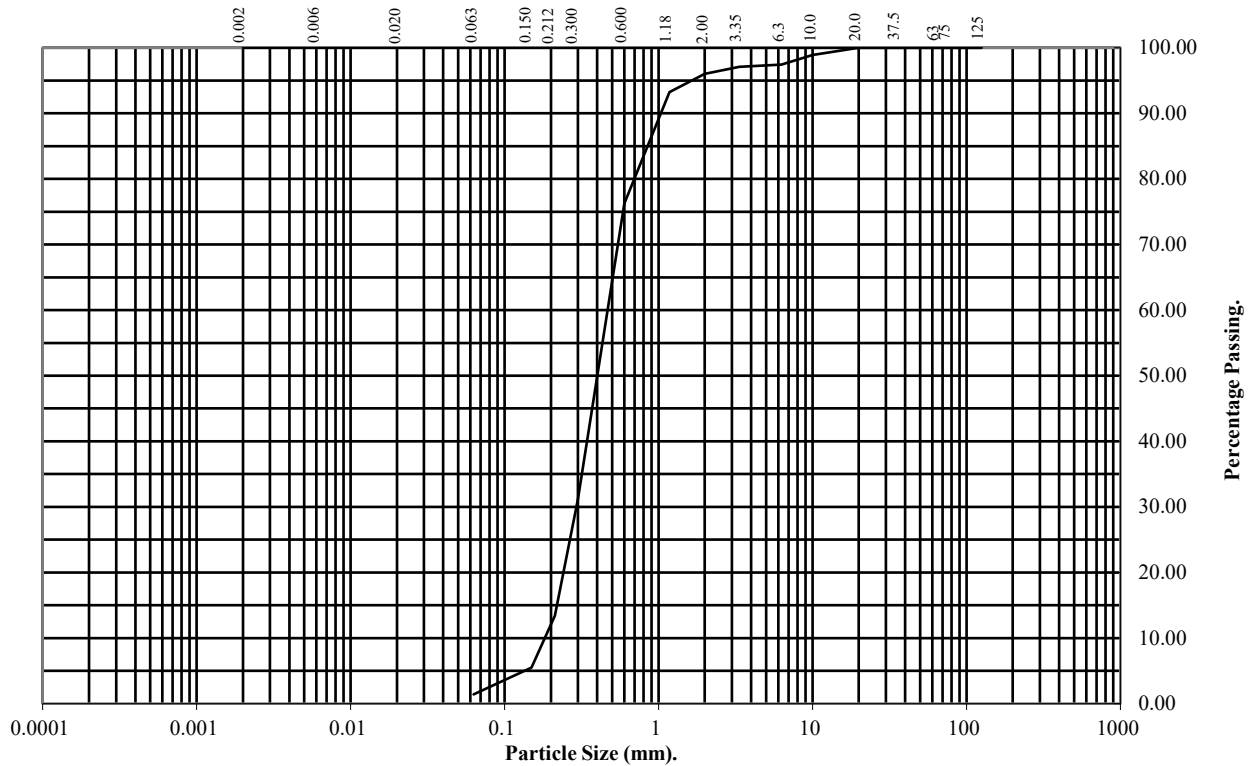
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: CP203 Top Depth (m): 1.20

Sample Number: 3 Base Depth(m): 1.65

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	99
6.3	97
3.35	97
2	96
1.18	93
0.6	76
0.3	31
0.212	13
0.15	6
0.063	1

Soil Fraction	Total Percentage
Cobbles	0
Gravel	4
Sand	95
Silt/Clay	1

Remarks:

See Summary of Soil Descriptions



Chorlton High School

Contract No:
PSL23/10134
Client Ref:
11884

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

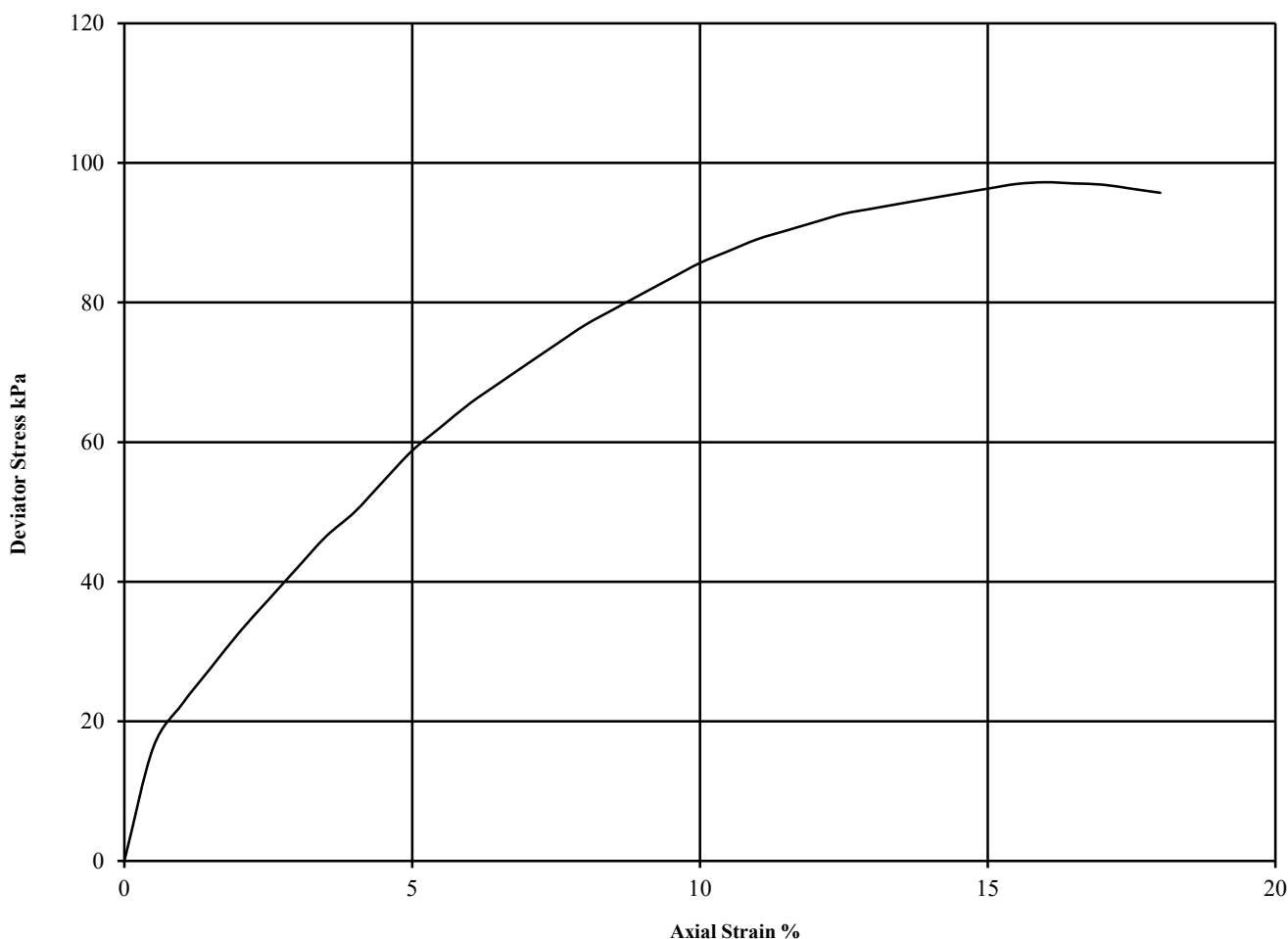
Hole Number: CP201

Top Depth (m): 9.50

Sample Number: 11

Base Depth (m): 9.95

Sample Type U



Diameter (mm):		102	Height (mm):		204	Test:	UU Single Stage		Remarks:
Specimen	Moisture Content (%)	Bulk Density (Mg/m ³)	Dry Density (Mg/m ³)	Cell Pressure (kPa)	Corr. Max. Deviator Stress (kPa)	Shear Strength Cu (kPa)	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.34 See summary of soil descriptions
				θ_3	$(\theta_1 - \theta_3)_f$	$\frac{1}{2}(\theta_1 - \theta_3)_f$			
1	25	2.05	1.64	160	97	49	16.0	Plastic	



Chorlton High School

Contract No:

PSL23/10134

Client Ref:

11884

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

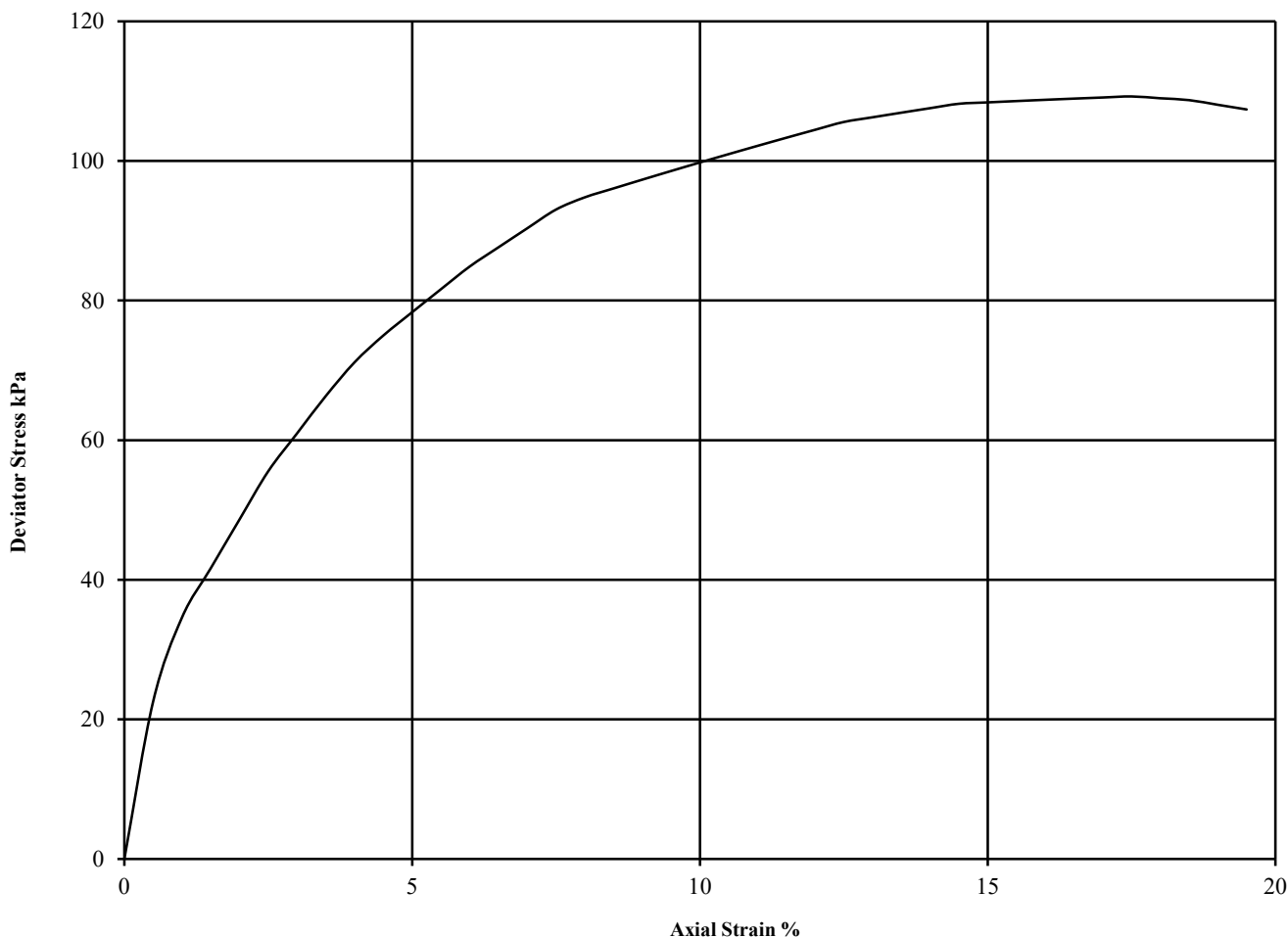
Hole Number: CP202

Top Depth (m): 4.00

Sample Number: 7

Base Depth (m): 4.45

Sample Type U



Diameter (mm):		102	Height (mm):		204	Test:	UU Single Stage		Remarks:
Specimen	Moisture Content (%)	Bulk Density (Mg/m ³)	Dry Density (Mg/m ³)	Cell Pressure (kPa)	Corr. Max. Deviator Stress (kPa)	Shear Strength Cu (kPa)	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.34 See summary of soil descriptions
				θ_3	$(\theta_1 - \theta_3)_f$	$\frac{1}{2}(\theta_1 - \theta_3)_f$			
1	15	2.22	1.93	80	109	55	17.5	Plastic	



Chorlton High School

Contract No:

PSL23/10134

Client Ref:

11884

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

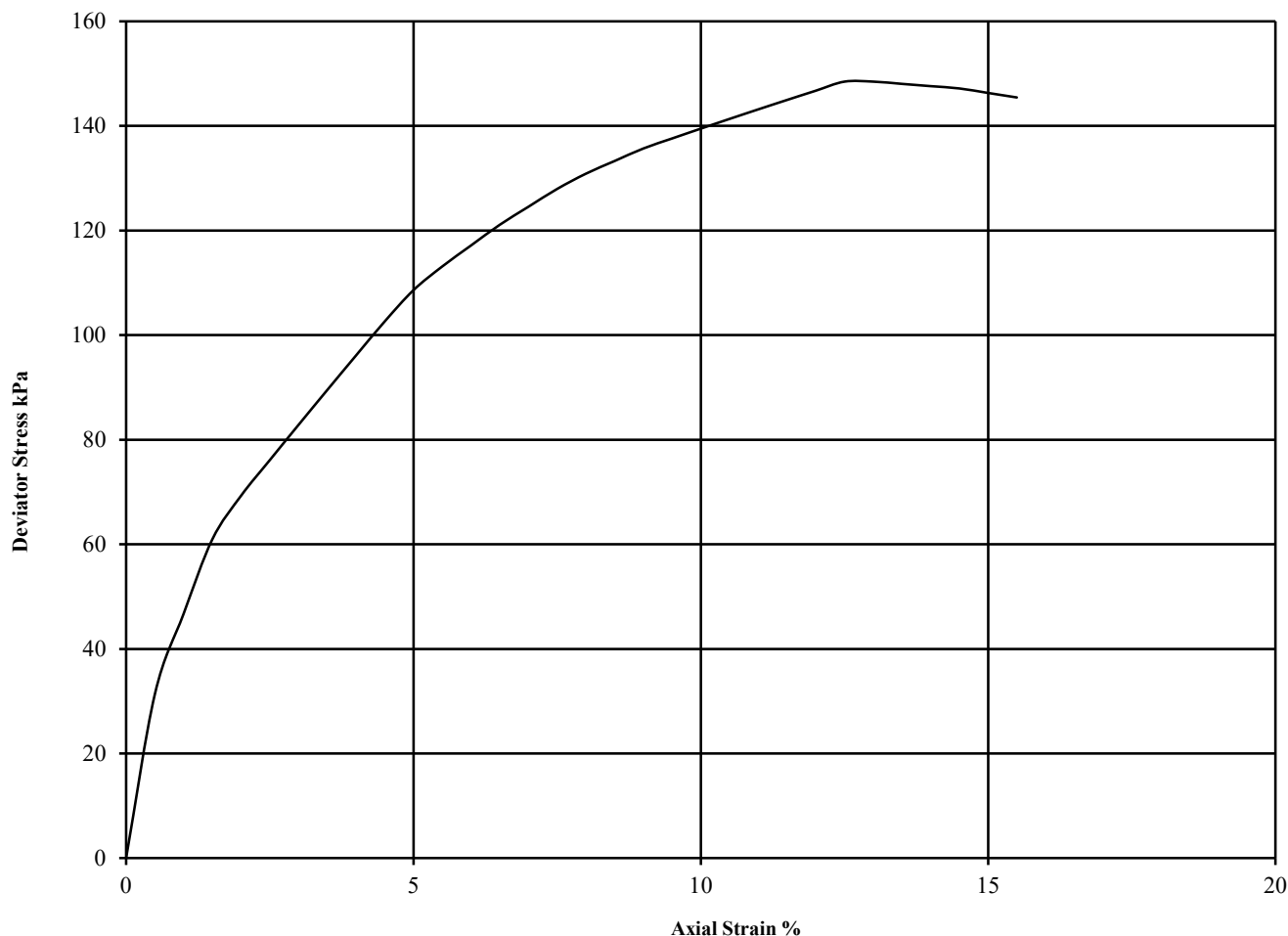
Hole Number: CP203

Top Depth (m): 6.00

Sample Number: 9

Base Depth (m): 6.45

Sample Type U



Diameter (mm):		102	Height (mm):		204	Test:	UU Single Stage		Remarks:
Specimen	Moisture Content (%)	Bulk Density (Mg/m ³)	Dry Density (Mg/m ³)	Cell Pressure (kPa)	Corr. Max. Deviator Stress (kPa)	Shear Strength Cu (kPa)	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.35 See summary of soil descriptions
				θ_3	$(\theta_1 - \theta_3)_f$	$\frac{1}{2}(\theta_1 - \theta_3)_f$			
1	22	2.13	1.75	120	148	74	13.0	Plastic	



Chorlton High School

Contract No:

PSL23/10134

Client Ref:

11884

ONE DIMENSIONAL CONSOLIDATION TEST

BS 1377: Part 5: 1990: Clause 3

Hole Number: CP202

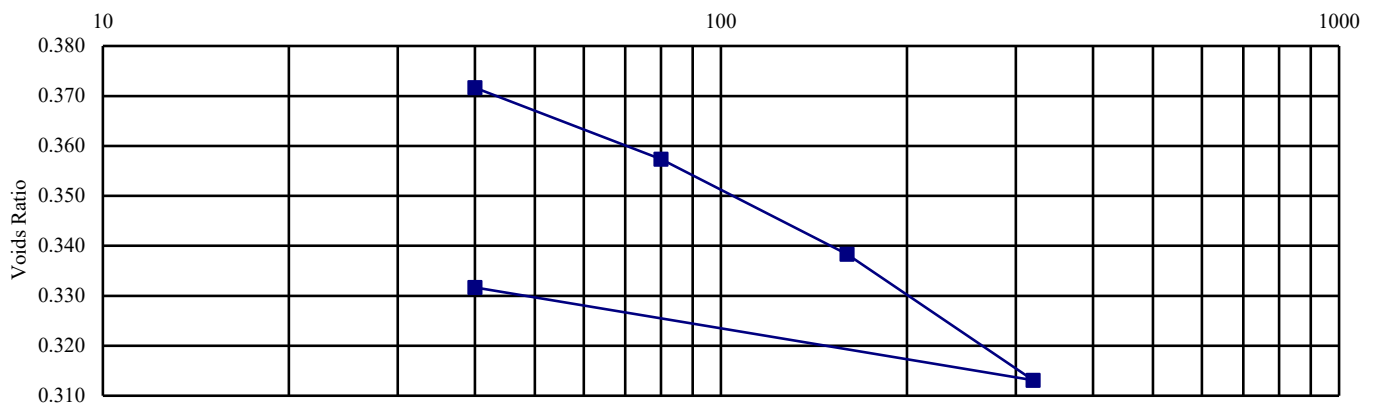
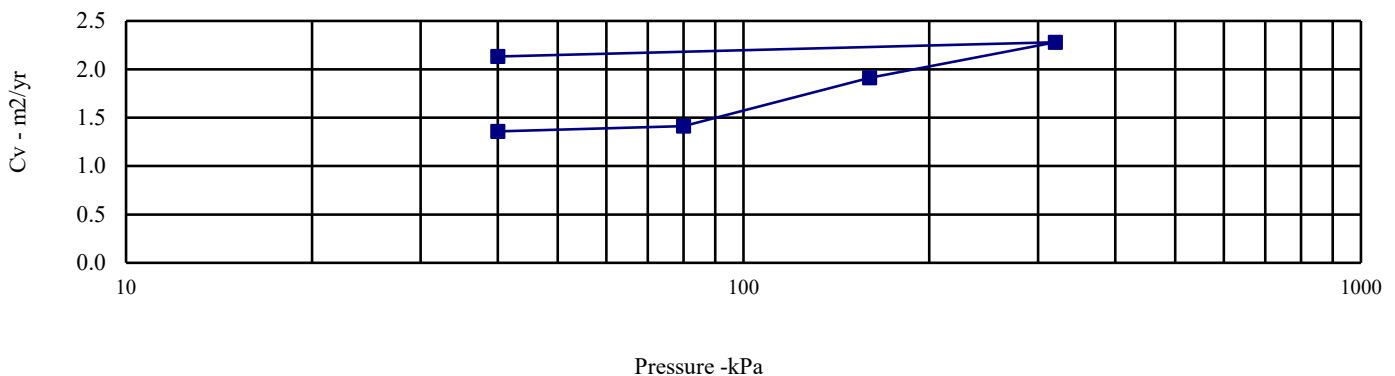
Top Depth (m): 4.00

Sample Number: 7

Base Depth (m) : 4.45

Sample Type: U

Initial Conditions		Pressure Range		Mv	Cv	Specimen location	
Moisture Content (%):	15	kPa		m2/MN	m2/yr	within tube:	Top
Bulk Density (Mg/m3):	2.19	0	40	0.327	1.359	Method used to	
Dry Density (Mg/m3):	1.91	40	80	0.261	1.412	determine CV:	T90
Voids Ratio:	0.390	80	160	0.175	1.912	Nominal temperature	
Degree of saturation:	101.8	160	320	0.118	2.280	during test 'C':	20
Height (mm):	20.016	320	40	0.050	2.133	Remarks:	
Diameter (mm)	75.008					See summary of soil descriptions	
Particle Density (Mg/m3):	2.65						
Assumed							



Chorlton High School

Contract No:
PSL23/10134
Client Ref:
11884



LABORATORY REPORT



Contract Number: PSL23/10134

Report Date: 14 December 2023

Client's Reference: 11884

Client Name: RSK Geosciences Manchester
Fourways House
57 Hilton Street
Manchester
M1 2EJ

For the attention of: Emma Hobbs

Contract Title: Chorlton High School

Date Received: 1/12/2023

Date Commenced: 1/12/2023

Date Completed: 14/12/2023

Notes: Opinions and Interpretations are outside the UKAS Accreditation

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Checked and Approved Signatories:

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(Director)

R Berriman
(Quality Manager)

S Royle
(Laboratory Manager)

L Knight
(Assistant Laboratory Manager)

S Eyre
(Senior Technician)


T Watkins
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awatkins@prosoils.co.uk

Page 1 of

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
WS201	2	D	4.50	4.70	Brown slightly gravelly sandy CLAY.
WS203	3	D	3.80	-	Brown sandy CLAY.
WS206	2	D	2.70	3.00	Brown slightly gravelly very sandy CLAY.
CP201	4	B	2.00	2.45	Brown very sandy slightly silty GRAVEL with some cobbles.
CP201	3	B	4.00	4.45	Brown slightly gravelly very sandy CLAY.
CP201	11	U	9.50	9.95	Firm brown slightly gravelly sandy CLAY.
CP202	2	B	1.00	1.20	Brown gravelly slightly silty SAND.
CP202	7	U	4.00	4.45	Firm brown slightly gravelly slightly sandy silty CLAY.
CP202	11	B	7.50	7.95	Brown slightly gravelly very sandy CLAY.
CP203	3	B	1.20	1.65	Brown slightly gravelly slightly silty SAND.
CP203	9	U	6.00	6.45	Firm brown slightly gravelly sandy CLAY.



Chorlton High School

Contract No:

PSL23/10134

Client Ref:

11884

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

[illegible]

SYMBOLS : NP : Non Plastic

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



Chorlton High School

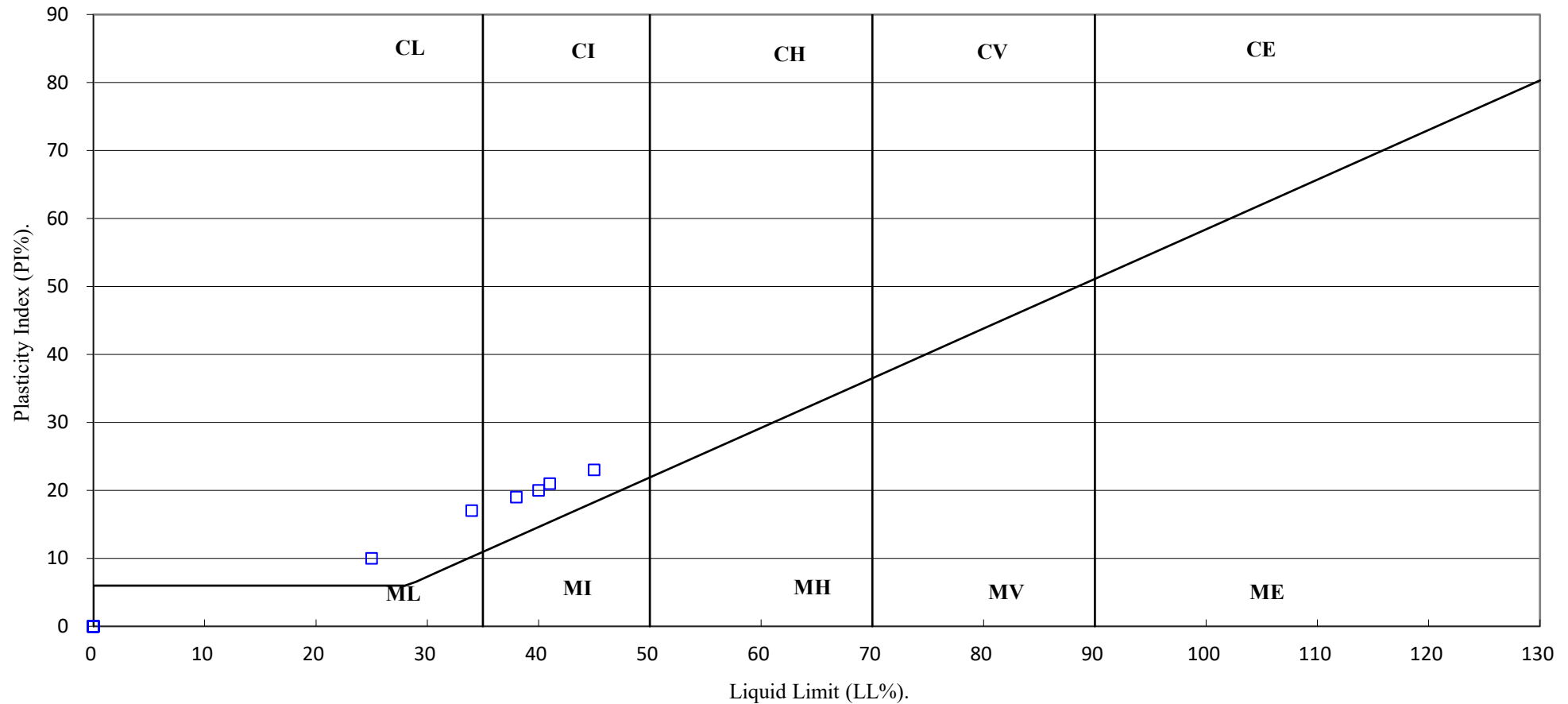
Contract No:

PSL23/10134

Client Ref:

11884

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



Chorlton High School

Contract No:

PSL23/10134

Client Ref:

11884

PARTICLE SIZE DISTRIBUTION TEST

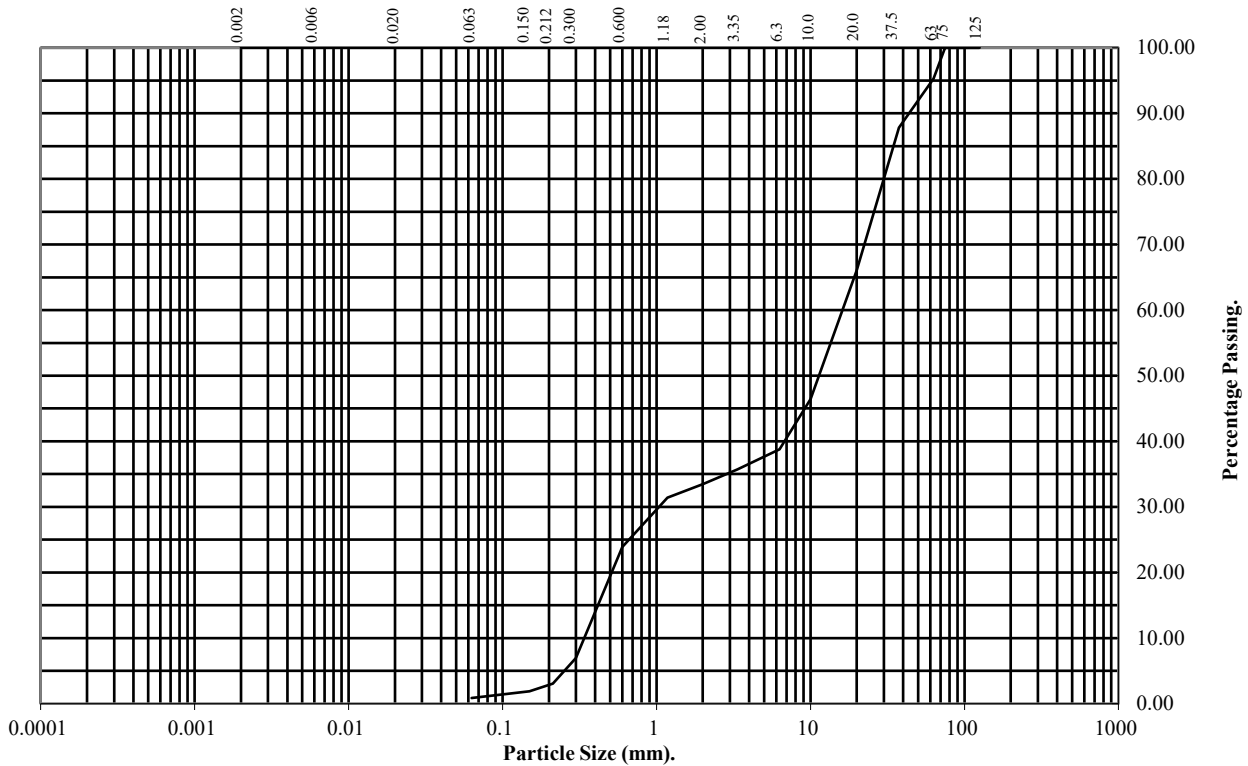
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: CP201 Top Depth (m): 2.00

Sample Number: 4 Base Depth(m): 2.45

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	95
37.5	88
20	66
10	46
6.3	39
3.35	36
2	33
1.18	31
0.6	24
0.3	7
0.212	3
0.15	2
0.063	1

Soil Fraction	Total Percentage
Cobbles	5
Gravel	62
Sand	32
Silt/Clay	1

Remarks:

See Summary of Soil Descriptions



Chorlton High School

Contract No:
PSL23/10134
Client Ref:
11884

PARTICLE SIZE DISTRIBUTION TEST

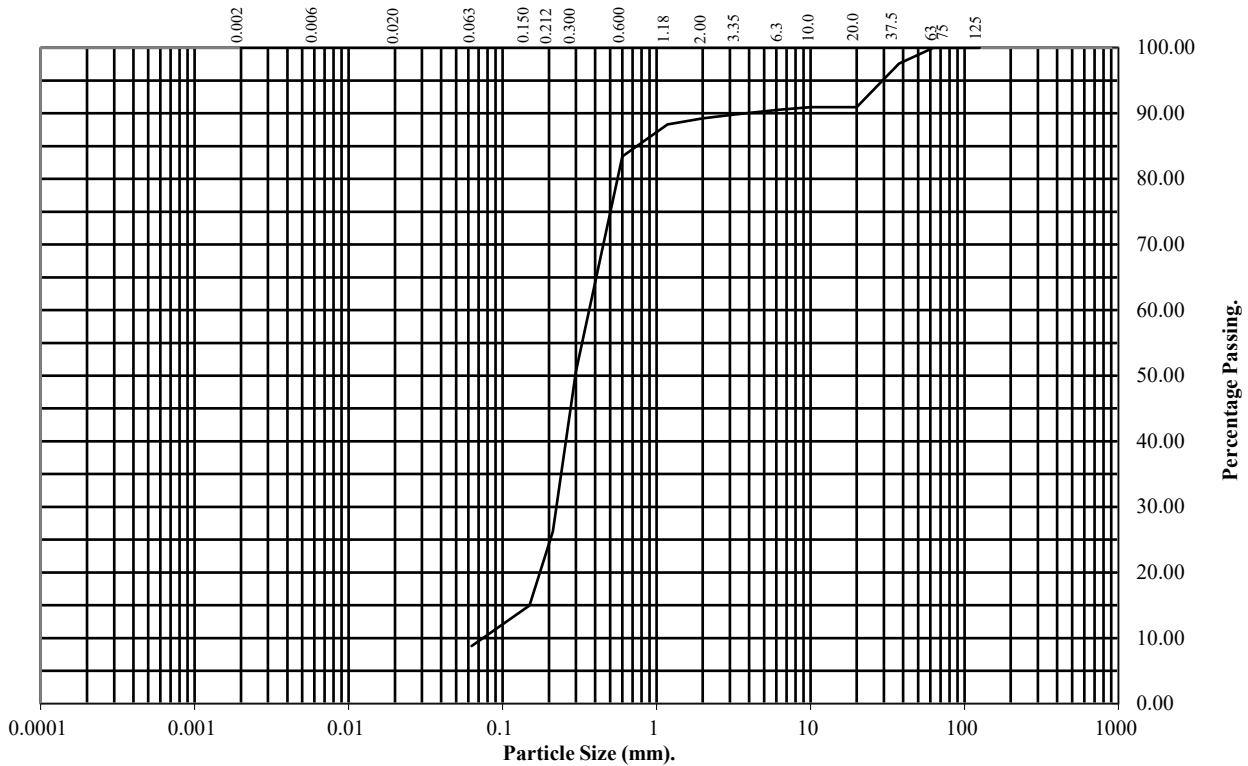
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: CP202 Top Depth (m): 1.00

Sample Number: 2 Base Depth(m): 1.20

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	98
20	91
10	91
6.3	91
3.35	90
2	89
1.18	88
0.6	83
0.3	51
0.212	26
0.15	15
0.063	9

Soil Fraction	Total Percentage
Cobbles	0
Gravel	11
Sand	80
Silt/Clay	9

Remarks:

See Summary of Soil Descriptions



Chorlton High School

Contract No:
PSL23/10134
Client Ref:
11884

PARTICLE SIZE DISTRIBUTION TEST

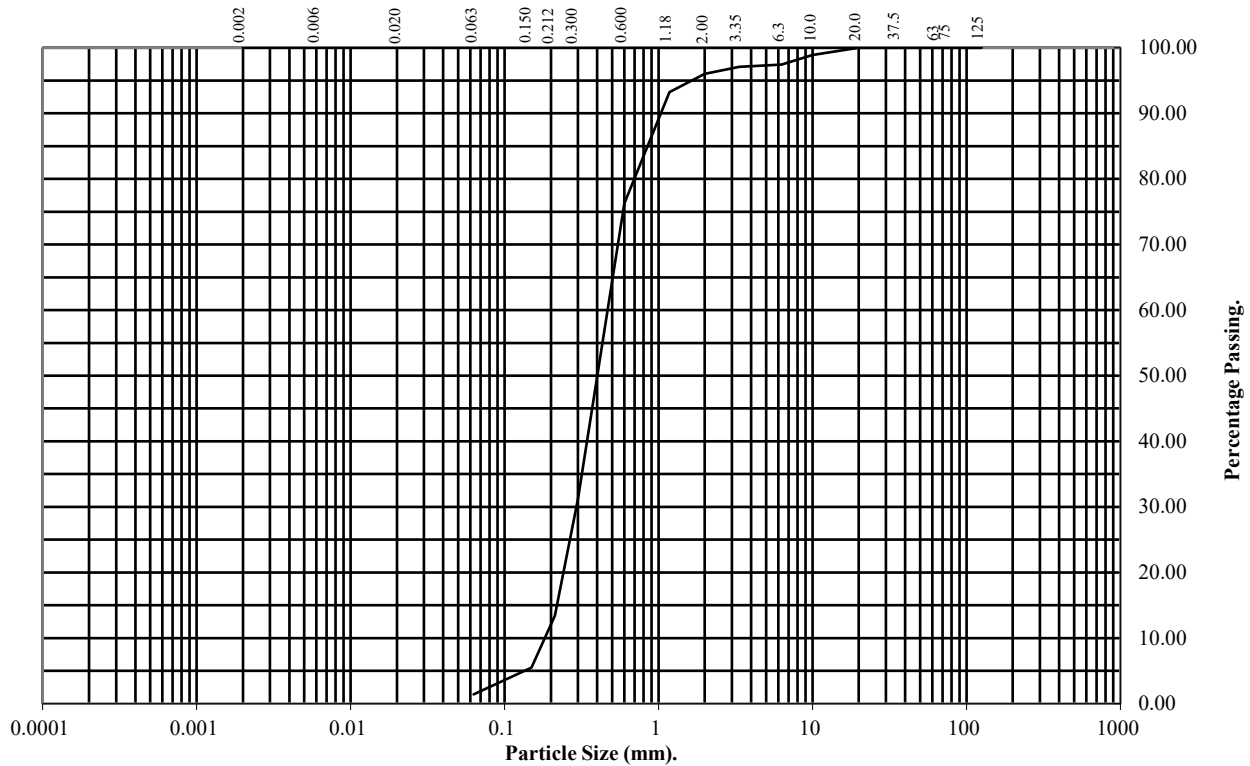
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: CP203 Top Depth (m): 1.20

Sample Number: 3 Base Depth(m): 1.65

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	99
6.3	97
3.35	97
2	96
1.18	93
0.6	76
0.3	31
0.212	13
0.15	6
0.063	1

Soil Fraction	Total Percentage
Cobbles	0
Gravel	4
Sand	95
Silt/Clay	1

Remarks:

See Summary of Soil Descriptions



Chorlton High School

Contract No:
PSL23/10134
Client Ref:
11884

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

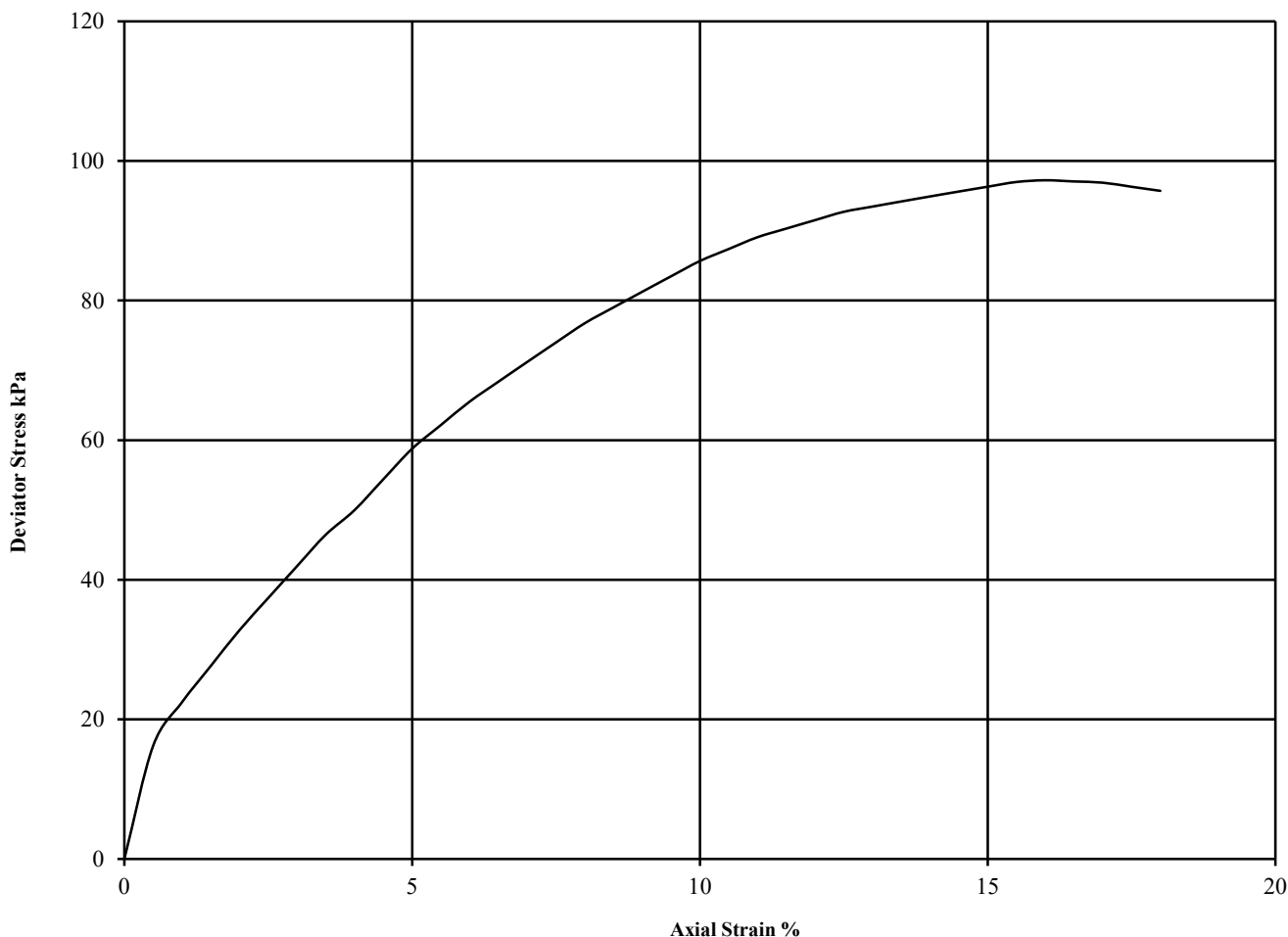
Hole Number: CP201

Top Depth (m): 9.50

Sample Number: 11

Base Depth (m): 9.95

Sample Type U



Diameter (mm):		102	Height (mm):		204	Test:	UU Single Stage		Remarks:
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa)	Corr. Max. Deviator Stress (kPa)	Shear Strength Cu (kPa)	Failure Strain (%)	Mode of Failure	Undisturbed Sample
									Sample taken from top of tube
									Rate of strain = 2 %/min
									Latex Membrane used 0.2 mm thick,
					θ_3	$(\theta_1-\theta_3)_f$	$^{1/2}(\theta_1-\theta_3)_f$		Correction applied 0.34
1	25	2.05	1.64	160	97	49	16.0	Plastic	See summary of soil descriptions



Chorlton High School

Contract No:

PSL23/10134

Client Ref:

11884

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

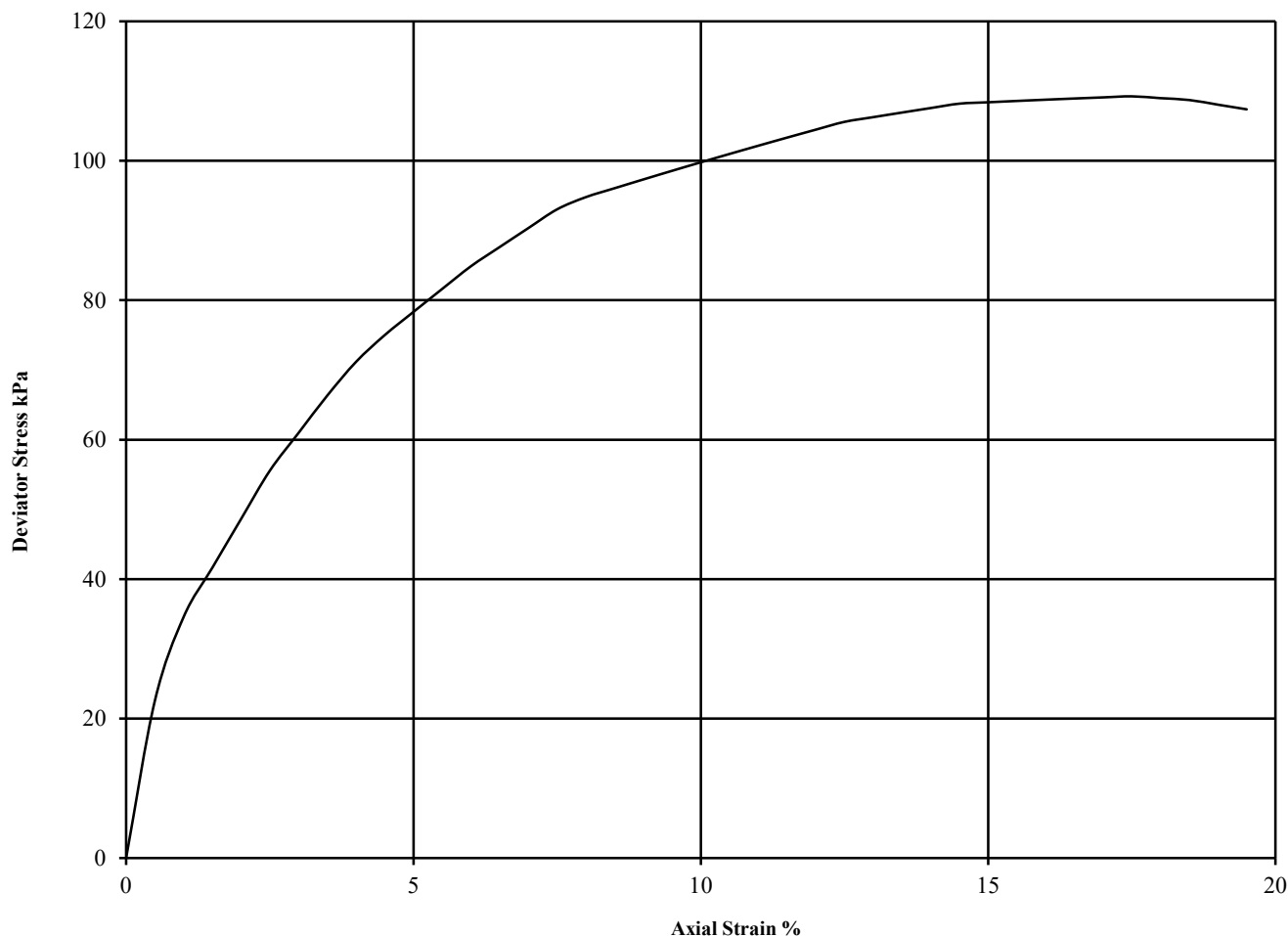
Hole Number: CP202

Top Depth (m): 4.00

Sample Number: 7

Base Depth (m): 4.45

Sample Type U



Diameter (mm):		102	Height (mm):		204	Test:	UU Single Stage		Remarks:
Specimen	Moisture Content (%)	Bulk Density (Mg/m ³)	Dry Density (Mg/m ³)	Cell Pressure (kPa)	Corr. Max. Deviator Stress (kPa)	Shear Strength Cu (kPa)	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.34 See summary of soil descriptions
				θ_3	$(\theta_1 - \theta_3)_f$	$\frac{1}{2}(\theta_1 - \theta_3)_f$			
1	15	2.22	1.93	80	109	55	17.5	Plastic	



Chorlton High School

Contract No:

PSL23/10134

Client Ref:

11884

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

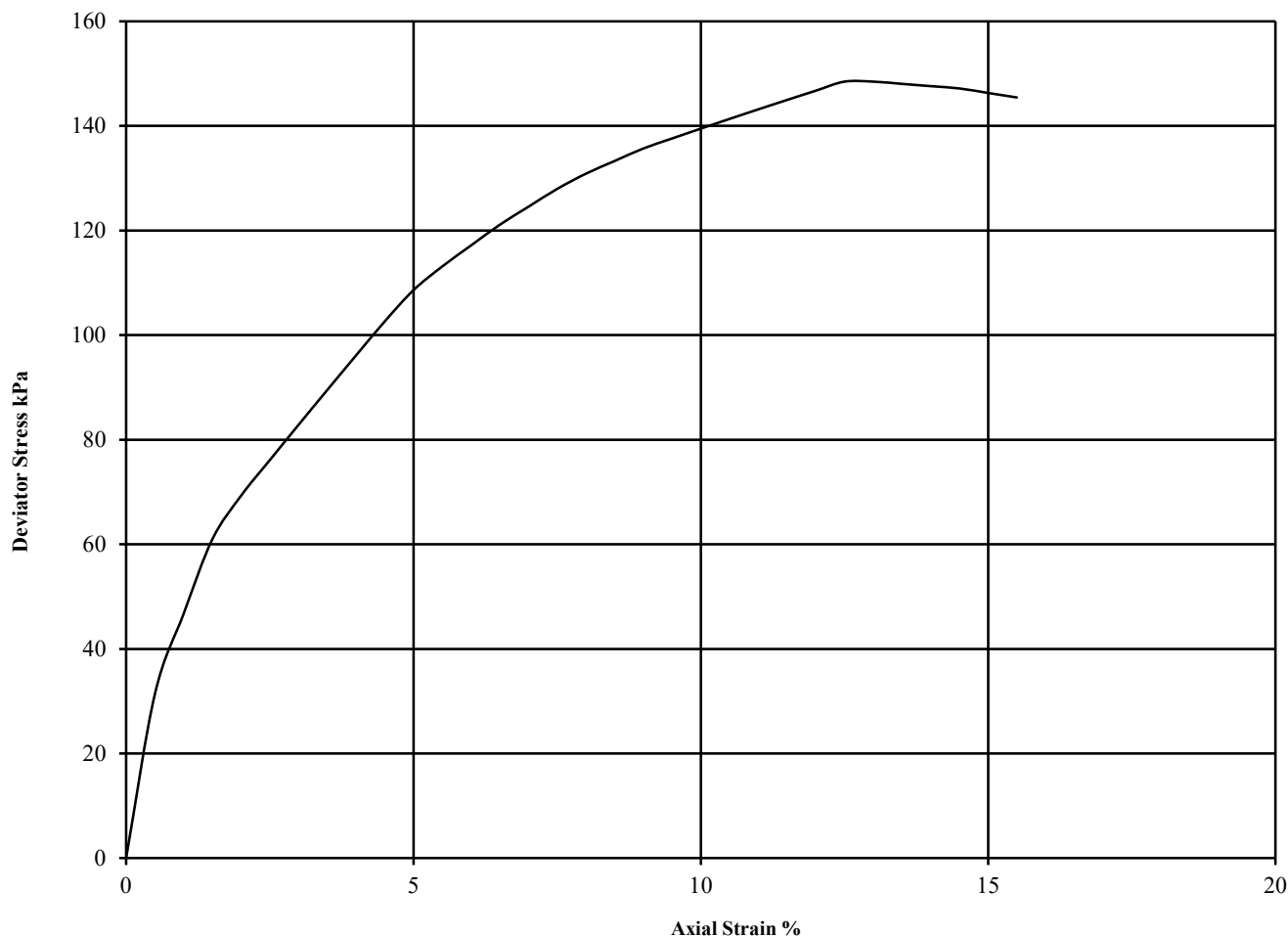
Hole Number: CP203

Top Depth (m): 6.00

Sample Number: 9

Base Depth (m): 6.45

Sample Type U



Diameter (mm):		102	Height (mm):		204	Test:	UU Single Stage		Remarks:
Specimen	Moisture Content (%)	Bulk Density (Mg/m ³)	Dry Density (Mg/m ³)	Cell Pressure (kPa)	Corr. Max. Deviator Stress (kPa)	Shear Strength Cu (kPa)	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.35 See summary of soil descriptions
				θ_3	$(\theta_1 - \theta_3)_f$	$\frac{1}{2}(\theta_1 - \theta_3)_f$			
1	22	2.13	1.75	120	148	74	13.0	Plastic	



Chorlton High School

Contract No:

PSL23/10134

Client Ref:

11884

ONE DIMENSIONAL CONSOLIDATION TEST

BS 1377: Part 5: 1990: Clause 3

Hole Number: CP202

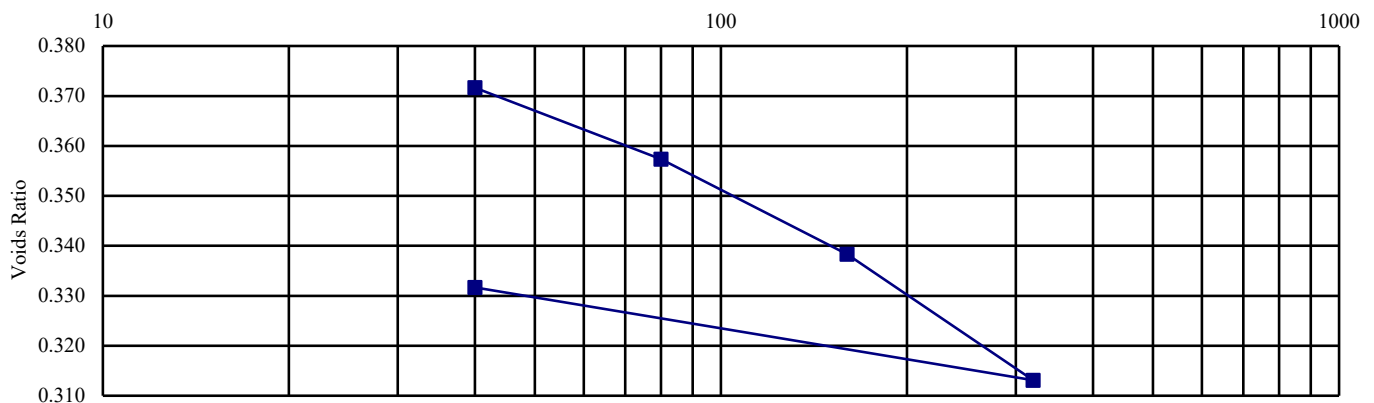
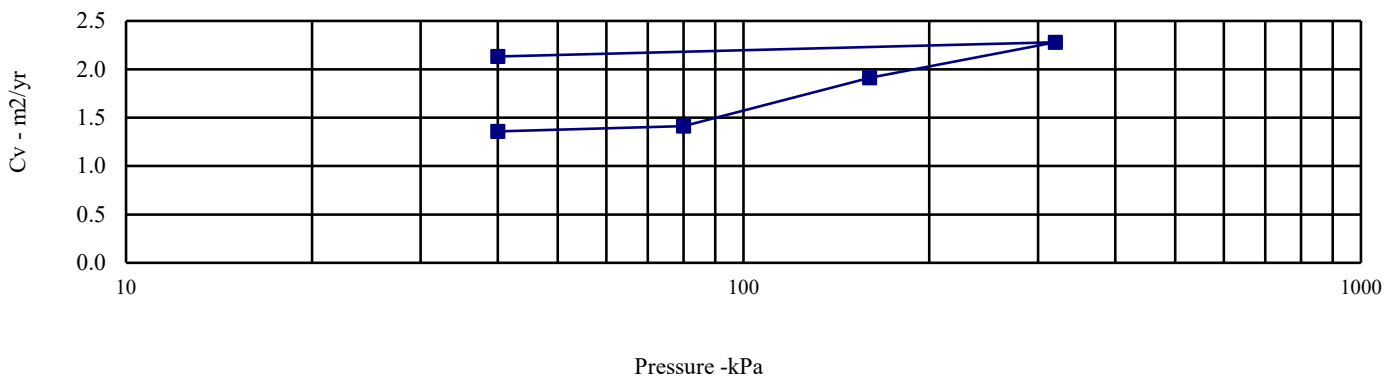
Top Depth (m): 4.00

Sample Number: 7

Base Depth (m) : 4.45

Sample Type: U

Initial Conditions		Pressure Range		Mv	Cv	Specimen location	
Moisture Content (%):	15	kPa		m2/MN	m2/yr	within tube:	Top
Bulk Density (Mg/m3):	2.19	0	40	0.327	1.359	Method used to	
Dry Density (Mg/m3):	1.91	40	80	0.261	1.412	determine CV:	T90
Voids Ratio:	0.390	80	160	0.175	1.912	Nominal temperature	
Degree of saturation:	101.8	160	320	0.118	2.280	during test 'C':	20
Height (mm):	20.016	320	40	0.050	2.133	Remarks:	
Diameter (mm)	75.008					See summary of soil descriptions	
Particle Density (Mg/m3):	2.65						
Assumed							



Chorlton High School

Contract No:
PSL23/10134
Client Ref:
11884



4161



7 - 11 Harding Street
Leicester
LE1 4DH

Professional Soils Laboratory

5/7 Hexthorpe Road
Hexthorpe
Doncaster
DN4 0AR

Analytical Test Report: L23/07715/PSL - 23-40005

Your Project Reference:	PSL23/10134 CHORLTON HIGH SCHOOL		
Your Order Number:	PSL23/10134	Samples Received / Instructed:	08/12/2023 / 08/12/2023
Report Issue Number:	1	Sample Tested:	08/12 to 15/12/2023
Samples Analysed:	4 soil samples	Report issued:	15/12/2023

Signed

James Gane
Analytical Services Manager
CTS Group

Notes:**General**

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

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

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

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

Stone Content was determined in accordance with CTS method statement MS - CL - Sample Prep and refers to the percentage of stones retained on a 10mm BS test sieve.

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

Uncertainty of measurement values are available on request.

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

Deviating Samples

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

Accreditation Key

UKAS = UKAS Accreditation, MCERTS = MCERTS Accreditation, u = Unaccredited

MCERTS Accreditation only covers the SAND, CLAY and LOAM matrices

Date of Issue: 30.10.2023

Issued by: J. Gane

Issue No: 4

Rev No: 5



7 - 11 Harding Street
Leicester
LE1 4DH

L23/07715/PSL - 23-40005

Project Reference - PSL23/10134 CHORLTON HIGH
SCHOOL

Analytical Test Results - Chemical Analysis

Lab Reference			331610	331611	331612	331613
Client Sample ID			-	-	-	-
Client Sample Location			WS206	CP203	TP201	TP203
Client Sample Type			D	B	B	B
Client Sample Number			1	6	1	1
Depth - Top (m)			1.20	3.80	2.15	2.20
Depth - Bottom (m)			1.70	4.00	2.15	2.40
Date of Sampling			-	-	-	-
Time of Sampling			-	-	-	-
Sample Matrix			Sand	Clay	Sand	Sand
Determinant	Units	Accreditation				
Water soluble sulphate (as SO ₄)	(mg/l)	u	< 10	60	49	20
pH Value	pH Units	MCERTS	7.6	7.7	7.5	7.4
Water Soluble Chloride	(mg/l)	u	0.6	6.8	44	2.0
Water Soluble Nitrate (As NO ₃)	(mg/l)	u	1.1	3.5	2.8	36
Water Soluble Magnesium	(mg/l)	u	1.5	2.8	1.5	1.5



L23/07715/PSL - 23-40005

Project Reference - PSL23/10134 CHORLTON HIGH SCHOOL

Sample Descriptions

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Description	Moisture Content (%)	Stone Content (%)	Passing 2mm test sieve (%)
331610	-	WS206	D	1	Greyish brown gravelly sand	12	36	90
331611	-	CP203	B	6	Brown silty clay	26	< 0.1	100
331612	-	TP201	B	1	Dark brown slightly gravelly sand	7.5	0.7	90
331613	-	TP203	B	1	Brown slightly gravelly sand	7.8	< 0.1	66



L23/07715/PSL - 23-40005

Project Reference - PSL23/10134 CHORLTON HIGH SCHOOL

Sample Comments

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Comments
331610	-	WS206	D	1	
331611	-	CP203	B	6	
331612	-	TP201	B	1	
331613	-	TP203	B	1	

L23/07715/PSL - 23-40005

Project Reference - PSL23/10134 CHORLTON HIGH SCHOOL

Analysis Methodologies

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



4161



7 - 11 Harding Street
Leicester
LE1 4DH

L23/07715/PSL - 23-40005

Project Reference - PSL23/10134 CHORLTON HIGH SCHOOL

Sample Deviations

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

Observations on receipt

A - No date of sampling provided

C - Received in inappropriate container

H - Contains headspace

T - Temperature on receipt exceeds storage temperature

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

Observations whilst in laboratory

X - Exceeds sampling to extraction or analysis timescales

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Test	Deviations
331610	-	WS206	D	1		A
331611	-	CP203	B	6		A
331612	-	TP201	B	1		A
331613	-	TP203	B	1		A

Appendix H

INFILTRATION TESTING RESULTS



STRUCTURAL SOILS LTD
INSITU TESTING REPORT



1774

Report No. 785518R.01(00)

Date 27-November-2023 Contract Chorlton High School

Client RSK Environment Ltd
Address Spring Lodge
172 Chester Road
Helsby
Cheshire WA6 0AR

For the Attention of Emma Hobbs

Order received	14-November-2023	Client Reference	11884
Testing Started	27-November-2023	Client Order No.	11884
Testing Completed	27-November-2023	Instruction Type	Written

Tests marked 'Not UKAS Accredited' in this report are not included in the UKAS Accreditation Schedule for our Laboratory.

UKAS Accredited Tests

Not UKAS Accredited Tests

* 2 no. Soakaway Testing to BRE Digest 365

The results represent the ground conditions at the specified locations and depths at the time of testing.

Please Note: Remaining samples will be retained for a period of one month from today and will then be disposed of .

Test were undertaken on samples 'as received' unless otherwise stated.

Opinions and interpretations expressed in this report are outside the scope of accreditation for this laboratory.

Results relate only to items tested

This report shall not be reproduced except in full without written permission of SSL Laboratories

Structural Soils Ltd, The Potteries, Pottery Street, Castleford, WF10 1NJ Tel.01977552255. e-mail matthew.doran@soils.co.uk

TESTING VERIFICATION CERTIFICATE

The test results included in this report are certified as:-

ISSUE STATUS: **FINAL**

In accordance with the Structural Soils Ltd Laboratory Quality Management System, results sheets and summaries of results issued by the laboratory are checked by an approved signatory. The integrity of the test data and results are ensured by control of the computer system employed by the laboratory as part of the Software Verification Program as detailed in the Laboratory Quality Manual.

This testing verification certificate covers all testing compiled on or before the following datetime: **27/11/2023 15:51:36**.

Testing reported after this date is not covered by this Verification Certificate.



Approved Signatory
Matthew Doran (Site Testing Manager (North))

(Head Office)
Bristol Laboratory
Unit 1A, Princess Street
Bedminster
Bristol
BS3 4AG

Castleford Laboratory
The Potteries, Pottery Street
Castleford
West Yorkshire
WF10 1NJ

Hemel Laboratory
18 Frogmore Road
Hemel Hempstead
Hertfordshire
HP3 9RT

Tonbridge Laboratory
Anerley Court, Half Moon Lane
Hildenborough
Tonbridge
TN11 9HU



**STRUCTURAL
SOILS LTD**

Contract:

Chorlton High School

Job No:

785518

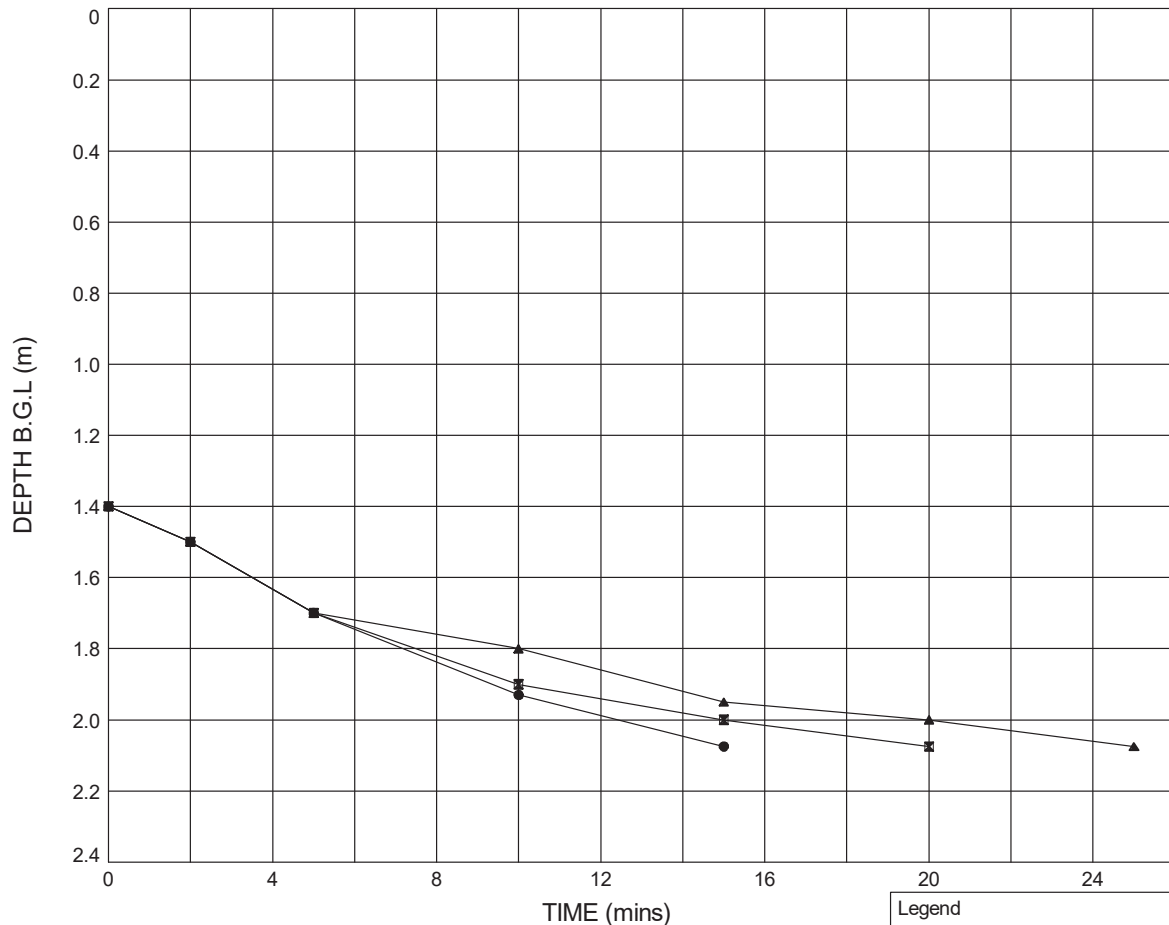


FULL SCALE SOAKAWAY TEST

In accordance with BRE Digest 365

Soakaway Test - Position ID : **SA01**

PLOT OF DEPTH OF WATER BELOW GROUND LEVEL AGAINST TIME

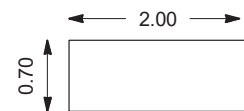


		Test 1	Test 2	Test 3	
Pit start depth:	=	2.30	2.30	2.30	m
Pit final depth:	=	2.30	2.30	2.30	m
Effective depth, D_e	=	0.90	0.90	0.90	m
Effective storage volume, V_{p75-25}	=	0.6300	0.6300	0.6300	m ³
Surface area, a_{s50}	=	3.8300	3.8300	3.8300	m ²
Time, t_{p75-25}	=	668.0	968.0	1268.0	secs
Infiltration rate, f	=	2.46×10^{-4}	1.70×10^{-4}	1.30×10^{-4}	m/s

Legend

- Test 1 (27.11.23)
- Test 2 (27.11.23)
- ▲ Test 3 (27.11.23)

Plan (Not to scale)



No Bearing Taken



STRUCTURAL SOILS
The Potteries
Pottery Street
Castleford
W. Yorkshire WF10 1NJ

Compiled By

Kflunacher

Date

27/11/23

Checked By

M. Daw

Date

27/11/23

Contract

Chorlton High School

Contract Ref:

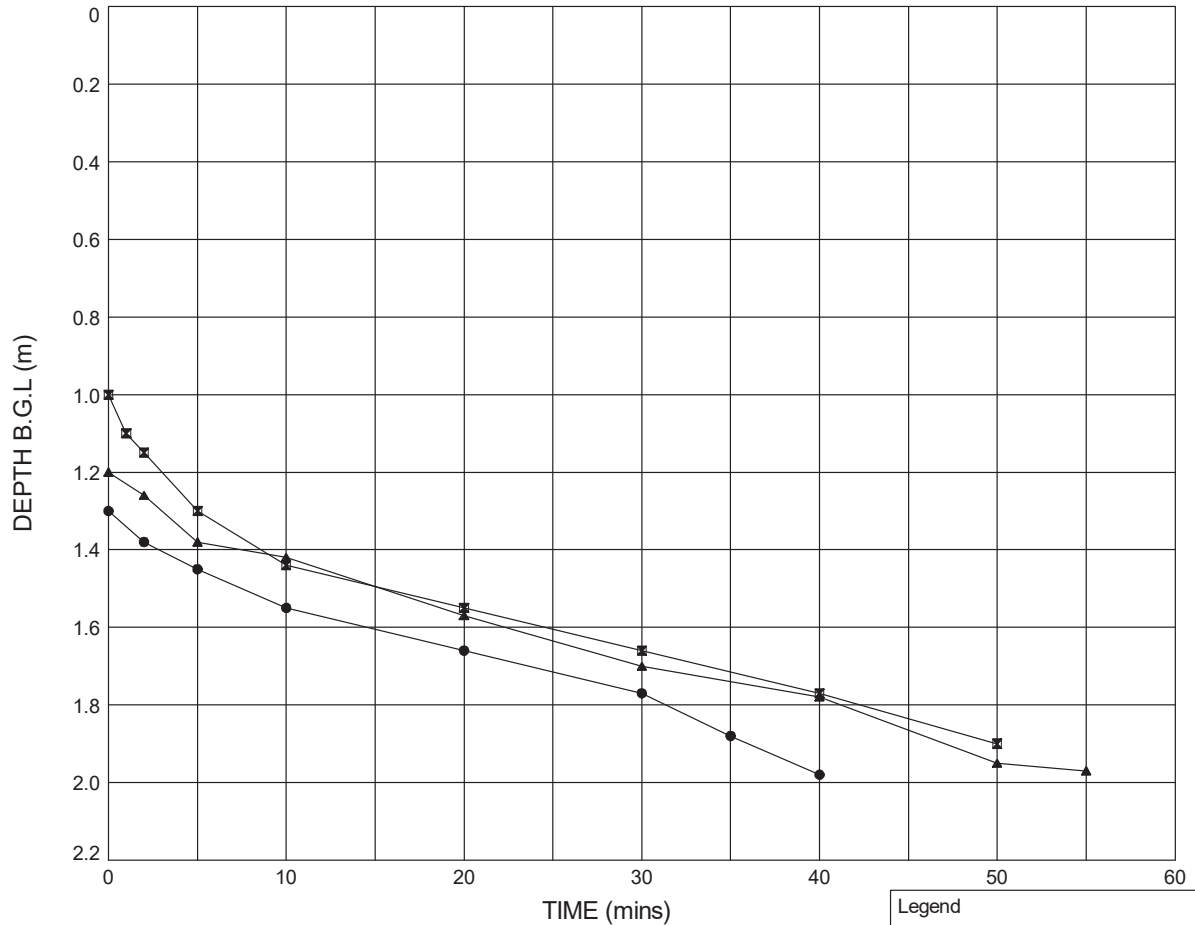
785518

FULL SCALE SOAKAWAY TEST

In accordance with BRE Digest 365

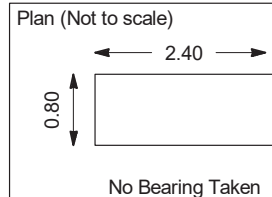
Soakaway Test - Position ID : **SA02**

PLOT OF DEPTH OF WATER BELOW GROUND LEVEL AGAINST TIME



	Test 1	Test 2	Test 3	
Pit start depth:	= 2.20	2.20	2.20	m
Pit final depth:	= 2.20	2.20	2.20	m
Effective depth, D_e	= 0.90	1.20	1.00	m
Effective storage volume, V_{p75-25}	= 0.8640	1.1520	0.9600	m ³
Surface area, a_{s50}	= 4.8000	5.7600	5.1200	m ²
Time, t_{p75-25}	= 1860.0	2700.0	2280.0	secs
Infiltration rate, f	= 9.68×10^{-5}	7.41×10^{-5}	8.22×10^{-5}	m/s

Legend	
●	Test 1 (27.11.23)
■	Test 2 (27.11.23)
▲	Test 3 (27.11.23)



STRUCTURAL SOILS
The Potteries
Pottery Street
Castleford
W. Yorkshire WF10 1NJ

Compiled By	Date	Checked By	Date
<i>K. Flunacher</i>	27/11/23	<i>M. Daw</i>	27/11/23
Contract		Contract Ref:	
Chorlton High School		785518	

Appendix I

GENERIC ASSESSMENT CRITERIA FOR HUMAN HEALTH

Generic assessment criteria for human health: residential scenario with home-grown produce

Background

RSK's generic assessment criteria (GAC) were initially prepared following the publication by the Environment Agency (EA) of soil guideline value (SGV) and toxicological (TOX) reports, and associated publications in 2009⁽¹⁾. RSK GAC were updated following the publication of GAC by LQM/CIEH in 2009⁽²⁾. RSK GAC are periodically revised when updated information on toxicological, land use or receptor parameters is published.

Updates to the RSK GAC

In 2014, the publication of Category 4 Screening Levels (C4SL)^(3,4), as part of the Defra-funded research project SP1010, included modifications to certain exposure assumptions documented within EA Science Report SC050221/SR3 (herein after referred to as SR3)⁽⁵⁾ used in the generation of SGVs.

C4SL were initially published for six substances (cadmium, arsenic, benzene, benzo(a)pyrene, chromium VI and lead) for a sandy loam soil type with 6% soil organic matter, based on a low level of toxicological concern (LLTC; see Section 2.3 of research project report SP1010⁽³⁾). Further C4SL were published in 2021 for vinyl chloride, tetrachloroethene (PCE) and trichloroethene (TCE). Where a C4SL has been published, the RSK GAC duplicates the C4SL using all input parameters within the SP1010 final project report⁽³⁾ and associated chemical specific reports⁽⁶⁾, and adopts them as GAC for these substances. Due to the use of decimal places rather than significant figures applied to the Contaminated Land Exposure Assessment (CLEA) tool outputs, the GAC presented may be marginally differently to the C4SL values, however any differences between the values are minimal and would not equate to an unacceptable risk.

For all other substances the C4SL exposure modifications, with the exception of the “top two” produce type approach taken in the C4SL, have been applied to the current RSK GAC. These include alterations to daily inhalation rates for residential and commercial scenarios, reducing soil adherence factors in children (age classes 1 to 12 only) for residential land use, reducing exposure frequency for dermal contact outdoors for residential land use, and updated produce type consumption rates (90th percentile) based on recent data from the National Diet and Nutrition Survey.

The RSK GAC have also been revised with updated toxicology published by LQM/CIEH in 2015⁽⁷⁾ or by the USEPA⁽¹⁴⁾, where a C4SL has not been published.

RSK GAC derivation for metals and organic compounds

Model selection

Soil assessment criteria (SAC) were calculated using the CLEA tool v1.071, supporting EA guidance^(5,8,9) and revised exposure scenarios published for the C4SL⁽³⁾. The SAC are also termed GAC.

Conceptual model

In accordance with SR3⁽⁵⁾, the residential with home-grown produce scenario considers risks to a female child between the ages of 0 and 6 years old as the highest risk scenario. In accordance with Box 3.1 of SR3⁽⁵⁾, the pathways considered for production of the SAC in the residential with home-grown produce scenario are

- direct soil and dust ingestion
- consumption of home-grown produce
- consumption of soil attached to home-grown produce
- dermal contact with soil and indoor dust
- inhalation of indoor and outdoor dust and vapours.

Figure 1 is a conceptual model illustrating these linkages.

In line with guidance in the EA SGV report for cadmium⁽¹⁾, the RSK GAC for cadmium has been derived based on estimates representative of lifetime exposure. Although young children are generally more likely to have higher exposures to soil contaminants, the renal toxicity of cadmium, and the derivation of the TDI_{oral} and TDI_{inh} , are based on considerations of the kidney burden accumulated over 50 years or so. It is therefore reasonable to consider exposure not just in childhood but averaged over a longer period.

With respect to volatilisation, the CLEA model assumes a simple linear partitioning of a chemical in the soil between the sorbed, dissolved and vapour phase⁽⁹⁾. The upper boundaries of this partitioning are represented by the maximum aqueous solubility and pure saturated vapour concentration of the chemical. The CLEA model estimates saturated soil concentrations where these limits are reached⁽⁹⁾. The CLEA software uses a traffic light system to identify when individual and/or combined assessment criteria exceed the lower of either the aqueous- or vapour-based soil saturation limits. Model output cells are flagged red where the saturated soil concentration has been exceeded and the contribution of the indoor and outdoor vapour pathway to total exposure is greater than 10%. In this case, further consideration of the following is required⁽⁹⁾:

- Free phase contamination may be present.
- Exposure from the vapour pathways will be over-predicted by the model, as in reality the vapour phase concentration will not increase at concentrations above saturation limits
- Where the vapour pathway contribution is greater than 90%, it is unlikely the relevant health criteria value (HCV) will be exceeded at soil concentrations at least a factor of ten higher than the relevant HCV.

Where the vapour pathway is the predominant pathway (contributes greater than 90% of exposure) or the only exposure route considered and the cell is highlighted red (SAC exceeds saturation limit), the risk based on the assumed conceptual model is likely to be negligible as the vapour risk is assumed to be tolerable at maximum possible soil concentrations. In such circumstances, the vapour pathway exposure should be considered based on the presence of free phase or non-aqueous phase liquid sources and the measured concentrations of volatile organic compounds (VOC) in the vapour phase. Screening could be considered based on setting the SAC as the modelled soil saturation limits. However, as stated within the CLEA handbook⁽⁹⁾, this is likely to not be practical in many cases because of the very low saturation limits and, in any case, is highly conservative.

It should also be noted that for mixtures of compounds, free phase may be present where soil (or groundwater) concentrations are well below saturation limits for individual compounds.

Where the vapour pathway is only one of the exposure pathways considered, an additional approach can then be utilised as detailed within Section 4.12 of the CLEA model handbook⁽⁹⁾, which explains how to calculate an effective assessment criterion manually.

SR3⁽⁵⁾ states that, as a general rule of thumb, it is recognised that estimating vapour phase concentrations from dissolved and sorbed phase contamination by petroleum hydrocarbons are at least a factor of ten higher than those likely to be measured on-site. RSK has therefore applied an empirical subsurface to indoor air correction factor of 10 into the CLEA model chemical database for all petroleum hydrocarbon fractions (including BTEX, trimethylbenzenes and the polycyclic aromatic hydrocarbons (PAH) naphthalene, acenaphthene and acenaphthylene) to reduce this conservatism.

Input selection

The most up-to-date published chemical and toxicological data was obtained from EA Report SC050021/SR7⁽¹⁰⁾, the EA TOX⁽¹⁾ reports, the C4SL SP1010 project report and associated appendices^(3,6), the 2015 LQM/CIEH report⁽⁷⁾ or the USEPA IRIS database⁽¹⁴⁾. Where a LLTC^(3,6) has been published for a substance, RSK has used these input parameters to derive the RSK GAC. Toxicological and specific chemical parameters for 1,2,4-trimethylbenzene, barium, methyl tertiary-butyl ether (MTBE), 1,1,2-trichloroethane, 1,1-dichloroethene, 1,2-dichloropropane, 2-chloronaphthalene, chloroethane, chloromethane, cis 1,2-dichloroethene, dichloromethane, hexachloroethane and trans 1,2-dichloroethene were obtained from the CL:AIRE Soil Generic Assessment Criteria report⁽¹¹⁾.

For TPH, aromatic hydrocarbons C₅–C₈ were not modelled, as this range comprises benzene (>EC5-EC7) and toluene (>EC7-EC8), which are modelled separately.

Physical parameters

For the residential with home-grown produce scenario, the CLEA default building is a small, two-storey terrace house with a concrete ground-bearing slab. The house is assumed to have a 100m² private garden consisting of lawn and flowerbeds, incorporating a 20m² plot for growing fruit and vegetables consumed by the residents. SR3⁽⁵⁾ notes this residential building type to be the most conservative in terms of potential for vapour intrusion. The building parameters used in the production of the RSK GACs are the default CLEA v1.06 inputs presented in Table 3.3 of SR3⁽³⁾, with a dust loading factor detailed in Section 9.3 of SR3⁽⁵⁾. The parameters for a sandy loam soil type were used in line with Table 4.4 of SR3⁽⁵⁾. This includes a value of 6% for the percentage of soil organic matter (SOM) within the soil. In RSK's experience, this is rather high for many sites. To avoid undertaking site-specific risk assessments for SOM, RSK has produced an additional set of GAC for SOM of 1% and 2.5% for all substances using the CLEA tool.

Summary of modifications to the default CLEA SR3⁽⁵⁾ input parameters for residential with home-grown produce land-use scenario

In summary, the RSK GAC were produced using the default input parameters for soil properties, the air dispersion model, building properties and the vapour model detailed in SR3⁽⁵⁾. Modifications to the default SR3⁽⁵⁾ exposure scenarios based on the C4SL exposure scenarios⁽³⁾ are presented in Tables 2 and 3 below.

The final selected GAC are presented by pathway in Table 4 and the combined GAC in Table 5.

Figure 1: Conceptual model for residential scenario with home-grown produce

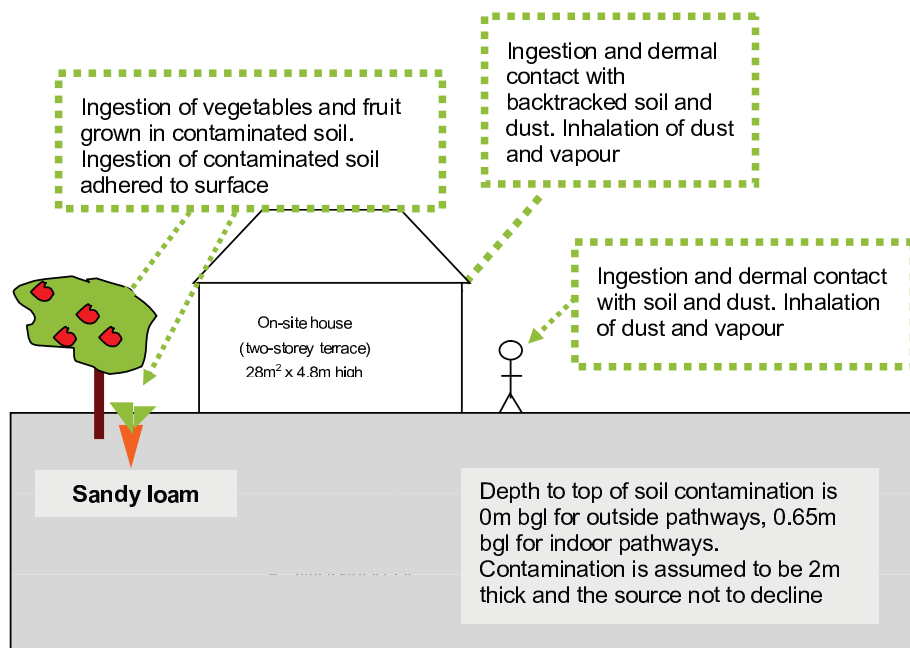


Table 1: Exposure assessment parameters for residential scenario with home-grown produce – inputs for CLEA model

Parameter	Value	Justification
Land use	Residential with homegrown produce	Chosen land use
Receptor	Female child age 1 to 6	Key generic assumption given in Box 3.1, SR3 ⁽⁵⁾
Building	Small terraced house	Key generic assumption given in Box 3.1, SR3. Small, two-storey terraced house chosen, as it is the most conservative residential building type in terms of protection from vapor intrusion (Section 3.4.6, SR3) ⁽⁵⁾
Soil type	Sandy Loam	Most common UK soil type (Section 4.3.1, from Table 3.1, SR3) ⁽⁵⁾
Start AC (age class)	1	Range of age classes corresponding to key generic assumption that the critical receptor is a young female child aged 0–6. From Box 3.1, SR3 ⁽⁵⁾
End AC (age class)	6	
SOM (%)	6	Representative of sandy loamy soil according to EA guidance note dated January 2009 entitled 'Changes We Have Made to the CLEA Framework Documents' ⁽¹³⁾
	1	To provide SAC for sites where SOM <6% as often observed by RSK
	2.5	
pH	7	Model default

Table 2: Residential with home-grown produce – modified home-grown produce data

Name	Consumption rate 90 th percentile (g FW kg ⁻¹ BW day ⁻¹) by age class						Dry weight conversion factor (g DW g ⁻¹ FW)	Home-grown fraction (average)	Home-grown fraction (high end)	Soil loading factor (g g ⁻¹ DW)	Preparation correction factor
	1	2	3	4	5	6					
Green vegetables	7.12	5.87	5.87	5.87	4.53	4.53	0.096	0.05	0.33	1.00E-03	2.00E-01
Root vegetables	10.7	2.83	2.83	2.83	2.14	2.14	0.103	0.06	0.4	1.00E-03	1.00E+00
Tuber vegetables	16	6.6	6.6	6.6	4.95	4.95	0.21	0.02	0.13	1.00E-03	1.00E+00
Herbaceous fruit	1.83	3.39	3.39	3.39	2.24	2.24	0.058	0.06	0.4	1.00E-03	6.00E-01
Shrub fruit	2.23	0.46	0.46	0.46	0.19	0.19	0.166	0.09	0.6	1.00E-03	6.00E-01
Tree fruit	3.82	10.3	10.3	10.3	5.16	5.16	0.157	0.04	0.27	1.00E-03	6.00E-01
Justification	Table 3.4, SP1010 ⁽³⁾						Table 6.3, SR3 ⁽⁵⁾	Table 4.19, SR3 ⁽⁵⁾		Table 6.3, SR3 ⁽⁵⁾	

Table 3: Residential with home-grown produce – modified and use and receptor data

Parameter	Unit	Age class					
		1	2	3	4	5	6
EF (soil and dust ingestion)	day yr ⁻¹	180	365	365	365	365	365
EF (consumption of home-grown produce)	day yr ⁻¹	180	365	365	365	365	365
EF (skin contact, indoor)	day yr ⁻¹	180	365	365	365	365	365
EF (skin contact, outdoor)	day yr ⁻¹	170	170	170	170	170	170
EF (inhalation of dust and vapour, indoor)	day yr ⁻¹	365	365	365	365	365	365
EF (inhalation of dust and vapour, outdoor)	day yr ⁻¹	365	365	365	365	365	365
Justification		Table 3.5, SP1010 ⁽³⁾ ; Table 3.1, SR3 ⁽⁵⁾					
Soil to skin adherence factor (outdoor)	mg cm ⁻² day ⁻¹	0.1	0.1	0.1	0.1	0.1	0.1
Justification		Table 3.5, SP1010 ⁽³⁾					
Inhalation rate	m ³ day ⁻¹	5.4	8.0	8.9/f	10.1	10.1	10.1
Justification		Mean value USEPA, 2011 ⁽¹²⁾ ; Table 3.2, SP1010 ⁽³⁾					
Notes: For cadmium , the exposure assessment for a residential land use is based on estimates representative of lifetime exposure AC1-18. This is because the TDI _{oral} and TDI _{inh} are based on considerations of the kidney burden accumulated over 50 years. It is therefore reasonable to consider exposure not just in childhood but averaged over a longer period. See the Environment Agency Science Report SC05002/ TOX 3 ⁽¹⁾ , Science Report SC050021/Cadmium SGV ⁽¹⁾ and the project report SP1010 ⁽³⁾ for more information.							

References

1. Environment Agency (2009), 'Science Reports SC050021 - SGV and TOX reports for: benzene, toluene, ethylbenzene, xylene, mercury, selenium, nickel, arsenic, cadmium, phenol, dioxins, furans and dioxin-like PCBs'; 'Supplementary information for the derivation of SGV for: benzene, toluene, ethylbenzene, xylene, mercury, selenium, nickel, arsenic, cadmium, phenol, dioxins, furans and dioxin-like PCBs', and 'Contaminants in soil: updated collation of toxicological data and intake values for humans: benzene, toluene, ethylbenzene, xylene, mercury, selenium, nickel, arsenic, cadmium, phenol, dioxins, furans and dioxin-like PCBs'. Available at: <https://www.gov.uk/government/publications/contaminants-in-soil-updated-collation-of-toxicological-data-and-intake-values-for-humans> and <https://www.gov.uk/government/publications/land-contamination-soil-guideline-values-sgvs> (accessed 4 February 2015)
2. Nathanial, C. P., McCaffrey, C., Ashmore, M., Cheng, Y., Gillet, A. G., Ogden, R. C. and Scott, D. (2009), *LQM/CIEH Generic Assessment Criteria for Human Health Risk Assessment*, second edition (Nottingham: Land Quality Press).
3. Contaminated Land: Applications in Real Environment (CL:AIRE) (2014). 'Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination', Revision 2, DEFRA research project SP1010.
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5. Environment Agency (2009), *Science Report – SC050021/SR3. Updated technical background to the CLEA model* (Bristol: Environment Agency).
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9. Environment Agency (2009), *Science Report – SC050021/SR4 CLEA Software (version 1.05) Handbook* (Bristol: Environment Agency).
10. Environment Agency (2008), *Science Report SC050021/SR7. Compilation of Data for Priority Organic Pollutants for Derivation of Soil Guideline Values* (Bristol: Environment Agency).
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12. USEPA (2011), *Exposure factors handbook*, EPA/600/R-090/052F (Washington, DC: Office of Research and Development).
13. Environment Agency (2009), 'Changes made to the CLEA framework documents after the three-month evaluation period in 2008', released January 2009.



14. USEPA (2010). Hydrogen cyanide and cyanide salts. Integrated Risk Information Systems (IRIS) Chemical Assessment Summary. September 2010. <https://www.epa.gov/iris> (accessed 9 December 2015)

GENERIC ASSESSMENT CRITERIA FOR HUMAN HEALTH - RESIDENTIAL WITH HOME-GROWN PRODUCE



Table 4
Human Health Generic Assessment Criteria by Pathway for Residential With Home-Grown Produce Scenario

Compound	Notes	SAC Appropriate to Pathway SOM 1% (mg/kg)			Soil Saturation Limit (mg/kg)	SAC Appropriate to Pathway SOM 2.5% (mg/kg)			Soil Saturation Limit (mg/kg)	SAC Appropriate to Pathway SOM 6% (mg/kg)			Soil Saturation Limit (mg/kg)
		Oral	Inhalation	Combined		Oral	Inhalation	Combined		Oral	Inhalation	Combined	
Metals													
Arsenic	(a,b)	3,71E+01	5,26E+02	NR	NR	3,71E+01	5,26E+02	NR	NR	3,71E+01	5,26E+02	NR	NR
Barium	(b)	1,34E+03	NR	NR	NR	1,34E+03	NR	NR	NR	1,34E+03	NR	NR	NR
Beryllium		1,13E+02	1,72E+00	NR	NR	1,13E+02	1,72E+00	NR	NR	1,13E+02	1,72E+00	NR	NR
Boron		3,00E+02	5,20E+06	NR	NR	3,00E+02	5,20E+06	NR	NR	3,00E+02	5,20E+06	NR	NR
Cadmium	(a)	2,30E+01	4,88E+02	2,21E+01	NR	2,30E+01	4,88E+02	2,21E+01	NR	2,30E+01	4,88E+02	2,21E+01	NR
Chromium (III) - trivalent	(c)	1,84E+04	9,07E+02	NR	NR	1,84E+04	9,07E+02	NR	NR	1,84E+04	9,07E+02	NR	NR
Chromium (VI) - hexavalent	(a,d)	5,85E+01	2,06E+01	NR	NR	5,85E+01	2,06E+01	NR	NR	5,85E+01	2,06E+01	NR	NR
Copper		2,72E+03	1,41E+04	2,47E+03	NR	2,72E+03	1,41E+04	2,47E+03	NR	2,72E+03	1,41E+04	2,47E+03	NR
Lead	(a)	2,01E+02	NR	NR	NR	2,01E+02	NR	NR	NR	2,01E+02	NR	NR	NR
Elemental Mercury (Hg ⁰)	(d)	NR	2,35E-01	NR	4,31E+00	NR	5,60E-01	NR	1,07E+01	NR	1,22E+00	NR	2,58E+01
Inorganic Mercury (Hg ²⁺)		3,95E+01	3,63E+03	3,91E+01	NR	3,95E+01	3,63E+03	3,91E+01	NR	3,95E+01	3,63E+03	3,91E+01	NR
Methyl Mercury (Hg ¹⁺)		1,26E+01	1,87E+01	7,52E+00	7,33E+01	1,26E+01	3,62E+01	9,34E+00	1,42E+02	1,26E+01	7,68E+01	1,08E+01	3,04E+02
Nickel	(d)	1,27E+02	1,81E+02	NR	NR	1,27E+02	1,81E+02	NR	NR	1,27E+02	1,81E+02	NR	NR
Selenium	(b)	2,58E+02	NR	NR	NR	2,58E+02	NR	NR	NR	2,58E+02	NR	NR	NR
Vanadium		4,13E+02	1,46E+03	NR	NR	4,13E+02	1,46E+03	NR	NR	4,13E+02	1,46E+03	NR	NR
Zinc	(b)	3,86E+03	3,63E+07	NR	NR	3,86E+03	3,63E+07	NR	NR	3,86E+03	3,63E+07	NR	NR
Cyanide (free)		1,37E+00	1,37E+04	1,37E+00	NR	1,37E+00	1,37E+04	1,37E+00	NR	1,37E+00	1,37E+04	1,37E+00	NR
Volatile Organic Compounds													
Benzene	(a)	2,62E-01	9,01E-01	2,03E-01	1,22E+03	5,39E-01	1,68E+00	4,08E-01	2,26E+03	1,16E+00	3,48E+00	8,72E-01	4,71E+03
Toluene		1,53E+02	9,08E+02	1,31E+02	8,69E+02	3,49E+02	2,00E+03	2,97E+02	1,92E+03	7,95E+02	4,55E+03	6,77E+02	4,36E+03
Ethylbenzene		1,10E+02	8,34E+01	4,74E+01	5,18E+02	2,61E+02	1,96E+02	1,12E+02	1,22E+03	6,00E+02	4,58E+02	2,60E+02	2,84E+03
Xylene - m		2,10E+02	8,25E+01	5,92E+01	6,25E+02	5,01E+02	1,95E+02	1,40E+02	1,47E+03	1,15E+03	4,56E+02	3,27E+02	3,46E+03
Xylene - o		1,92E+02	8,87E+01	6,07E+01	4,78E+02	4,56E+02	2,08E+02	1,43E+02	1,12E+03	1,05E+03	4,86E+02	3,32E+02	2,62E+03
Xylene - p		1,98E+02	7,93E+01	5,66E+01	5,76E+02	4,70E+02	1,86E+02	1,33E+02	1,35E+03	1,08E+03	4,36E+02	3,10E+02	3,17E+03
Total xylene		1,92E+02	7,93E+01	5,66E+01	6,25E+02	4,56E+02	1,86E+02	1,33E+02	1,47E+03	1,05E+03	4,36E+02	3,10E+02	3,46E+03
Methyl tertiary-Butyl ether (MTBE)		1,54E+02	1,04E+02	6,22E+01	2,04E+04	2,97E+02	1,69E+02	1,08E+02	3,31E+04	6,03E+02	3,21E+02	2,10E+02	6,27E+04
1,1,1,2-Tetrachloroethane		5,39E+00	1,54E+00	1,20E+00	2,60E+03	1,27E+01	3,56E+00	2,78E+00	6,02E+03	2,92E+01	8,29E+00	6,46E+00	1,40E+04
1,1,2,2-Tetrachloroethane		2,81E+00	3,92E+00	1,64E+00	2,67E+03	6,10E+00	8,04E+00	3,47E+00	5,46E+03	1,36E+01	1,76E+01	7,67E+00	1,20E+04
1,1,1-Trichloroethane		3,33E+02	9,01E+00	8,77E+00	1,43E+03	7,26E+02	1,84E+01	1,80E+01	2,92E+03	1,62E+03	4,04E+01	3,94E+01	6,39E+03
1,1,2-Trichloroethane		1,95E+00	1,25E+00	7,62E-01	4,03E+03	4,21E+00	2,55E+00	1,59E+00	8,21E+03	9,35E+00	5,59E+00	3,50E+00	1,80E+04
1,1-Dichloroethane		1,93E+01	3,29E-01	3,23E-01	2,23E+03	3,85E+01	5,82E-01	5,74E-01	3,94E+03	8,15E+01	1,17E+00	1,16E+00	7,94E+03
1,2-Dichloroethane		3,17E-02	9,20E-03	7,13E-03	3,41E+03	5,73E-02	1,33E-02	1,08E-02	4,91E+03	1,09E-01	2,28E-02	1,88E-02	8,43E+03
1,2,4-Trimethylbenzene		NR	1,76E+00	NR	4,74E+02	NR	4,26E+00	NR	1,16E+03	NR	9,72E+00	NR	2,76E+03
1,3,5-Trimethylbenzene	(e)	NR	NR	NR	2,30E+02	NR	NR	NR	5,52E+02	NR	NR	NR	1,30E+03
1,2-Dichloropropane		4,28E+00	3,40E-02	3,37E-02	1,19E+03	8,44E+00	6,00E-02	5,96E-02	2,11E+03	1,77E+01	1,21E-01	1,20E-01	4,24E+03
Carbon Tetrachloride (tetrachloromethane)		3,10E+00	2,58E-02	2,57E-02	1,52E+03	7,11E+00	5,65E-02	5,62E-02	3,32E+03	1,62E+01	1,28E-01	1,27E-01	7,54E+03
Chloroethane		NR	1,17E+01	NR	2,61E+03	NR	1,59E+01	NR	3,54E+03	NR	2,57E+01	NR	5,71E+03
Chloromethane		NR	1,17E-02	NR	1,91E+03	NR	1,38E-02	NR	2,28E+03	NR	1,85E-02	NR	2,99E+03
Cis 1,2 Dichloroethene		1,56E-01	NR	NR	3,94E+03	2,66E-01	NR	NR	6,61E+03	5,18E-01	NR	NR	1,29E+04
Dichloromethane		7,04E-01	3,05E+00	6,24E-01	7,27E+03	1,27E+00	4,06E+00	1,08E+00	9,68E+03	2,33E+00	6,42E+00	1,92E+00	1,53E+04
Trichloroethene (PCE)		1,33E+01	3,19E-01	3,11E-01	4,24E+02	3,11E+01	7,15E-01	6,99E-01	9,51E+02	7,12E+01	1,64E+00	1,68E+00	2,18E+03
Trans 1,2 Dichloroethene		6,45E+00	2,76E-01	NR	3,42E+03	1,29E+01	4,99E-01	NR	6,17E+03	2,74E+01	1,02E+00	NR	1,26E+04
Trichloroethene (TCE)		9,30E-03	3,61E-02	NR	1,54E+03	1,95E-02	7,57E-02	NR	3,22E+03	4,34E-02	1,68E-01	NR	7,14E+03
Vinyl Chloride (chloroethene)		1,13E-02	1,47E-02	6,38E-03	1,36E+03	2,09E-02	1,90E-02	9,97E-03	1,76E+03	3,88E-02	2,91E-02	1,66E-02	2,69E+03
Semi-Volatile Organic Compounds													
2-Chloronaphthalene		2,76E+02	5,39E+00	5,29E+00	1,14E+02	6,59E+02	1,33E+01	1,30E+01	2,80E+02	1,45E+03	3,17E+01	3,10E+01	6,69E+02

GENERIC ASSESSMENT CRITERIA FOR HUMAN HEALTH - RESIDENTIAL WITH HOME-GROWN PRODUCE



Table 4

Human Health Generic Assessment Criteria by Pathway for Residential With Home-Grown Produce Scenario

Compound	Notes	SAC Appropriate to Pathway SOM 1% (mg/kg)				SAC Appropriate to Pathway SOM 2.5% (mg/kg)				SAC Appropriate to Pathway SOM 6% (mg/kg)			
		Oral	Inhalation	Combined	Soil Saturation Limit (mg/kg)	Oral	Inhalation	Combined	Soil Saturation Limit (mg/kg)	Oral	Inhalation	Combined	Soil Saturation Limit (mg/kg)
Acenaphthene		2.27E+02	4.86E+04	2.26E+02	5.70E+01	5.41E+02	1.18E+05	5.38E+02	1.41E+02	1.18E+03	2.68E+05	1.17E+03	3.36E+02
Acenaphthylene		1.85E+02	4.59E+04	1.84E+02	8.61E+01	4.42E+02	1.11E+05	4.40E+02	2.12E+02	9.78E+02	2.53E+05	9.74E+02	5.06E+02
Anthracene		2.43E+03	1.53E+05	2.39E+03	1.17E+00	5.53E+03	3.77E+05	5.45E+03	2.91E+00	1.10E+04	8.76E+05	1.09E+04	6.96E+00
Benzo(a)anthracene		1.01E+01	2.47E+01	7.18E+00	1.71E+00	1.42E+01	4.37E+01	1.07E+01	4.28E+00	1.69E+01	6.26E+01	1.33E+01	1.03E+01
Benzo(a)pyrene	(a)	4.96E+00	3.51E+01	NR	9.11E-01	4.96E+00	3.77E+01	NR	2.28E+00	4.96E+00	3.89E+01	NR	5.46E+00
Benzo(b)fluoranthene		2.96E+00	1.93E+01	2.56E+00	1.22E+00	3.89E+00	2.13E+01	3.29E+00	3.04E+00	4.43E+00	2.22E+01	3.69E+00	7.29E+00
Benzo(g,h,i)perylene		3.77E+02	1.87E+03	3.14E+02	1.54E-02	4.09E+02	1.84E+03	3.38E+02	3.85E-02	4.23E+02	1.97E+03	3.48E+02	9.23E-02
Benzo(k)fluoranthene		8.92E+01	5.41E+02	7.66E+01	6.87E-01	1.10E+02	5.76E+02	9.22E+01	1.72E+00	1.21E+02	5.91E+02	1.00E+02	4.12E+00
Chrysene		1.66E+01	1.19E+02	1.46E+01	4.40E-01	2.54E+01	1.49E+02	2.17E+01	1.10E+00	3.19E+01	1.66E+02	2.67E+01	2.84E+00
Dibenzo(a,h)anthracene		2.90E-01	1.45E+00	2.41E-01	3.93E-03	3.43E-01	1.64E+00	2.84E-01	9.82E-03	3.69E-01	1.74E+00	3.04E-01	2.36E-02
Fluoranthene		2.87E+02	3.83E+04	2.85E+02	1.89E+01	5.63E+02	8.87E+04	5.60E+02	4.73E+01	9.00E+02	1.83E+05	8.96E+02	1.13E+02
Fluorene		1.77E+02	6.20E+03	1.72E+02	3.09E+01	4.19E+02	1.53E+04	4.07E+02	7.65E+01	8.98E+02	3.62E+04	8.77E+02	1.83E+02
Hexachloroethane		2.68E-01	NR	NR	8.17E+00	6.57E-01	NR	NR	2.01E+01	1.55E+00	NR	NR	4.81E+01
Indeno(1,2,3-cd)pyrene		3.09E+01	2.12E+02	2.70E+01	6.13E-02	4.22E+01	2.38E+02	3.59E+01	1.53E-01	4.92E+01	2.50E+02	4.11E+01	3.68E-01
Naphthalene		2.78E+01	2.33E+01	1.27E+01	7.64E+01	6.66E+01	5.58E+01	3.04E+01	1.83E+02	1.53E+02	1.31E+02	7.06E+01	4.32E+02
Phenanthrene		9.85E+01	7.17E+03	9.72E+01	3.60E+01	2.24E+02	1.76E+04	2.22E+02	8.96E+01	4.48E+02	4.07E+04	4.43E+02	2.14E+02
Pyrene		6.25E+02	8.79E+04	6.20E+02	2.20E+00	1.25E+03	2.04E+05	1.24E+03	5.49E+00	2.05E+03	4.23E+05	2.04E+03	1.32E+01
Phenol		1.60E+02	4.58E+02	1.20E+02	2.42E+04	2.96E+02	6.95E+02	2.09E+02	3.81E+04	5.86E+02	1.19E+03	3.93E+02	7.03E+04

Total Petroleum Hydrocarbons

Aliphatic hydrocarbons EC ₉ -EC ₈		4.99E+03	4.24E+01	4.23E+01	3.04E+02	1.13E+04	7.79E+01	7.78E+01	5.58E+02	2.50E+04	1.61E+02	1.60E+02	1.15E+03
Aliphatic hydrocarbons >EC ₉ -EC ₈		1.49E+04	1.04E+02	1.03E+02	1.44E+02	3.43E+04	2.31E+02	2.31E+02	3.22E+02	7.11E+04	5.29E+02	5.28E+02	7.36E+02
Aliphatic hydrocarbons >EC ₉ -EC ₁₀		1.61E+03	2.68E+01	2.67E+01	7.77E+01	2.91E+03	6.55E+01	6.51E+01	1.90E+02	4.26E+03	1.56E+02	1.54E+02	4.51E+02
Aliphatic hydrocarbons >EC ₁₀ -EC ₁₂		4.57E+03	1.33E+02	1.32E+02	4.75E+01	5.51E+03	3.31E+02	3.26E+02	1.18E+02	5.98E+03	7.93E+02	7.65E+02	2.83E+02
Aliphatic hydrocarbons >EC ₁₂ -EC ₁₆		6.27E+03	1.11E+03	1.06E+03	2.37E+01	6.34E+03	2.78E+03	2.41E+03	5.91E+01	6.36E+03	6.67E+03	4.34E+03	1.42E+02
Aliphatic hydrocarbons >EC ₁₆ -EC ₃₅	(b)	6.46E+04	NR	NR	8.48E+00	9.17E+04	NR	NR	2.12E+01	1.10E+05	NR	NR	5.09E+01
Aliphatic hydrocarbons >EC ₃₅ -EC ₄₄	(b)	6.46E+04	NR	NR	8.48E+00	9.17E+04	NR	NR	2.12E+01	1.10E+05	NR	NR	5.09E+01
Aromatic hydrocarbons >EC ₈ -EC ₁₀		5.76E+01	4.74E+01	3.45E+01	6.13E+02	1.38E+02	1.16E+02	8.38E+01	1.50E+03	3.07E+02	2.77E+02	1.94E+02	3.58E+02
Aromatic hydrocarbons >EC ₁₀ -EC ₁₂		8.29E+01	2.58E+02	7.52E+01	3.64E+02	1.96E+02	6.39E+02	1.79E+02	8.99E+02	4.25E+02	1.52E+03	3.91E+02	2.15E+03
Aromatic hydrocarbons >EC ₁₂ -EC ₁₆		1.47E+02	2.85E+03	1.45E+02	1.69E+02	3.36E+02	7.07E+03	3.32E+02	4.19E+02	6.81E+02	1.68E+04	6.74E+02	1.00E+03
Aromatic hydrocarbons >EC ₁₆ -EC ₂₁	(b)	2.63E+02	NR	NR	5.37E+01	5.45E+02	NR	NR	1.34E+02	9.34E+02	NR	NR	3.21E+02
Aromatic hydrocarbons >EC ₂₁ -EC ₃₅	(b)	1.09E+03	NR	NR	4.83E+00	1.47E+03	NR	NR	1.21E+01	1.70E+03	NR	NR	2.90E+01
Aromatic hydrocarbons >EC ₃₅ -EC ₄₄	(b)	1.09E+03	NR	NR	4.83E+00	1.47E+03	NR	NR	1.21E+01	1.70E+03	NR	NR	2.90E+01

Notes:

EC - equivalent carbon. SAC - soil assessment criteria.

The CLEA model output is colour coded depending upon whether the soil saturation limit has been exceeded.

	Calculated SAC exceeds soil saturation limit and may significantly affect the interpretation of any exceedances as the contribution of the indoor and outdoor vapour pathway to total exposure is >10%.
	Calculated SAC exceeds soil saturation limit but the exceedance will not affect the SAC significantly as the contribution of the indoor and outdoor vapour pathway to total exposure is <10%.
	Calculated SAC does not exceed the soil saturation limit.

The SAC for organic compounds are dependant upon soil organic matter (SOM) (%) content. To obtain SOM from total organic carbon (TOC) (%) divide by 0.58. 1% SOM is 0.58% TOC. DL Rowell Soil Science: Methods and Applications. Longmans, 1994.

SAC for TPH fractions, PAHs naphthalene, acenaphthene and acenaphthylene, BTEX and trimethylbenzene compounds were produced using an attenuation factor for the indoor air inhalation pathway of 10 to reduce conservatism associated with the vapour inhalation pathway (Section 10.1.1, SR3)

(a) SAC for arsenic, benzene, benzo(a)pyrene, cadmium, chromium VI and lead are derived using the CASL toxicology data.

(b) SAC for boron and selenium should not include the inhalation pathway as no expert group HCV has been derived; aliphatic and aromatic hydrocarbons >EC16 should not include inhalation pathway due to their non-volatile nature and inhalation exposure being minimal (oral, dermal and inhalation exposure is compared to the oral HCV); arsenic should only be based on oral contribution (rather than combined) owing to the relative small contribution from inhalation in accordance with the SGV report. The Oral SAC should be adopted for zinc and benzo(a)pyrene.

(c) SAC for CrIII should be based on the lower of the oral and inhalation SAC (see LQM/CIEH 2015 Section 6.8)

(d) SAC for elemental mercury, chromium VI and nickel should be based on the inhalation pathway only.

(e) SAC for 1,3,5-trimethylbenzene is not recorded owing to the lack of toxicological data, SAC for 1,2,4 trimethylbenzene may be used.

GENERIC ASSESSMENT CRITERIA FOR HUMAN HEALTH - RESIDENTIAL WITH HOME-GROWN PRODUCE



Table 5
Human Health Generic Assessment Criteria for Residential with home-grown produce

Compound	SAC for Soil SOM 1% (mg/kg)	SAC for Soil SOM 2.5% (mg/kg)	SAC for Soil SOM 6% (mg/kg)
Metals			
Arsenic	37	37	37
Barium	1,300	1,300	1,300
Beryllium	1.7	1.7	1.7
Boron	300	300	300
Cadmium	22	22	22
Chromium (III) - trivalent	910	910	910
Chromium (VI) - hexavalent	21	21	21
Copper	2,500	2,500	2,500
Lead	200	200	200
Elemental Mercury (Hg ⁰)	0.2	0.6	1.2
Inorganic Mercury (Hg ²⁺)	39	39	39
Methyl Mercury (Hg ⁴⁺)	10	10	10
Nickel	130	130	130
Selenium	258	258	258
Vanadium	410	410	410
Zinc	3,900	3,900	3,900
Cyanide (free)	1.4	1.4	1.4
Volatile Organic Compounds			
Benzene	0.20	0.41	0.87
Toluene	130	300	680
Ethylbenzene	50	110	260
Xylene - m	59	140	327
Xylene - o	61	143	332
Xylene - p	57	133	310
Total xylene	57	133	310
Methyl tertiary-Butyl ether (MTBE)	60	110	210
1,1,1,2-Tetrachloroethane	1.20	2.78	6.46
1,1,2,2-Tetrachloroethane	1.6	3.5	7.7
1,1,1-Trichloroethane	9	18	39
1,1,2-Trichloroethane	0.8	1.6	3.5
1,1-Dichloroethane	0.32	0.57	1.16
1,2-Dichloroethane	0.007	0.011	0.019
1,2,4-Trimethylbenzene	1.8	4.3	9.7
1,3,5-Trimethylbenzene	NR	NR	NR
1,2-Dichloropropane	0.034	0.060	0.120
Carbon Tetrachloride (tetrachloromethane)	0.026	0.056	0.127
Chloroethane	11.7	15.9	25.7
Chloromethane	0.012	0.014	0.019
Cis 1,2 Dichloroethene	0.16	0.27	0.52
Dichloromethane	0.62	1.08	1.92
Tetrachloroethene (PCE)	0.31	0.70	1.60
Trans 1,2 Dichloroethene	0.28	0.50	1.02
Trichloroethene (TCE)	0.009	0.020	0.043
Vinyl Chloride (chloroethene)	0.006	0.010	0.017
Semi-Volatile Organic Compounds			
2-Chloronaphthalene	5	13	31
Acenaphthene	230	540	1,170
Acenaphthylene	180	440	970
Anthracene	2,400	5,500	10,900
Benzo(a)anthracene	7	11	13
Benzo(a)pyrene	5	5	5
Benzo(b)fluoranthene	2.6	3.3	3.7
Benzo(g,h,i)perylene	310	340	350
Benzo(k)fluoranthene	77	92	100
Chrysene	15	22	27
Dibenzo(a,h)anthracene	0.24	0.28	0.30
Fluoranthene	290	560	900
Fluorene	170	410	880
Hexachloroethane	0.27	0.66	1.55
Indeno(1,2,3-cd)pyrene	13	30	71
Naphthalene	13	30	71
Phenanthrene	100	220	440
Pyrene	620	1,240	2,040
Phenol	120	210	390
Total Petroleum Hydrocarbons			
Aliphatic hydrocarbons EC ₅ -EC ₆	42	78	160
Aliphatic hydrocarbons >EC ₆ -EC ₈	100	230	530
Aliphatic hydrocarbons >EC ₈ -EC ₁₀	27	65	154
Aliphatic hydrocarbons >EC ₁₀ -EC ₁₂	130 (48)	330 (118)	760 (283)
Aliphatic hydrocarbons >EC ₁₂ -EC ₁₆	1,100 (24)	2,400 (59)	4,300 (142)
Aliphatic hydrocarbons >EC ₁₆ -EC ₃₅	65,000 (8)	92,000 (21)	110,000
Aliphatic hydrocarbons >EC ₃₅ -EC ₄₄	65,000 (8)	92,000 (21)	110,000
Aromatic hydrocarbons >EC ₇ -EC ₁₀	30	80	190
Aromatic hydrocarbons >EC ₁₀ -EC ₁₂	80	180	390
Aromatic hydrocarbons >EC ₁₂ -EC ₁₆	140	330	670
Aromatic hydrocarbons >EC ₁₆ -EC ₂₁	260	540	930
Aromatic hydrocarbons >EC ₂₁ -EC ₃₅	1,100	1,500	1,700
Aromatic hydrocarbons >EC ₃₅ -EC ₄₄	1,100	1,500	1,700
Minerals			
Asbestos	Stage 1 test – No asbestos detected with ID; Stage 2 test - <0.001% dry weight (exceedance of either equates to an exceedance of the GAC) ¹		
Notes: ¹ Generic assessment criteria not calculated owing to low volatility of substance and therefore no pathway, or an absence of toxicological data. NR - SAC for 1,3,5-trimethylbenzene is not recorded owing to the lack of toxicological data. SAC for 1,2,4 trimethylbenzene may be used EC - equivalent carbon. SAC - soil assessment criteria. ¹ LOD for weight of asbestos per unit weight of soil calculated on a dry weight basis using PLM, handpicking and gravimetry. The SAC for organic compounds are dependent on Soil Organic Matter (SOM) (%) content. To obtain SOM from total organic carbon (TOC) (%) divide by 0.58. 1% SOM is 0.58% TOC. DL Rowell Soil Science: Methods and Applications, Longmans, 1994. SAC for TPH fractions, PAHs naphthalene, acenaphthene and acenaphthylene, BTEX and trimethylbenzene compounds were produced using an attenuation factor for the indoor air inhalation pathway of 10 to reduce conservatism associated with the vapour inhalation pathway, section 10.1.1, SR3. (VALUE IN BRACKETS) RSK has adopted an approach for petroleum hydrocarbons in accordance with LQM/CIEH whereby the concentration modelled for each petroleum hydrocarbon fraction has been tabulated as the SAC with the corresponding solubility or vapour saturation limits given in brackets.			

Appendix J

GQRA DATA SCREENING TABLES - SOILS

Project name		Chorlton high school														Notes											
Project code		11884																									
Client name		Cube Homes LTD																									
Address		Chorlton High School																									
		High Lane																									
		Chorlton High School																									
		Manchester																									
NGR		M21 9FS																									
Land use		381509 393732																									
SOM		Residential with home-grown produce																									
GAC version		2.5%																									
		2021_00																									

Project code: 11884
Chorlton high school

Dataset: Natural

Land use: Residential with home-grown produce
SOM: 2.5%

										Lab sample ID	23/11876/3	23/11876/11	23/11876/13	22/10728/2	22/10728/4	23/11876/19	23/11876/22	23/11876/25	23/11876/26	
										Client sample ID	CP201	TP203	TP204	WS01	WS04	WS203	WS205	WS206	WS206	
										Depth to top	1.4	1.1	0.9	0.8	1	1.4	0.8	0.5	2.5	
										Depth to bottom		1.3	1.2	1.65	1.2		1	0.8	2.7	
										Date sampled	27/11/23	27/11/23	27/11/23	25/10/22	25/10/22	24/11/23	24/11/23	24/11/23	24/11/23	
Analyte	Unit	GAC	T1	Max	Min	Count	# Detects	# Non-detects												
Acenaphthene	mg/kg	540		0.14	<0.01	4	2	2		<0.01	<0.01					0.02		0.14		
Acenaphthylene	mg/kg	440		0.02	<0.01	4	1	3		<0.01	<0.01					0.02		<0.01		
Anthracene	mg/kg	5500		0.27	<0.02	4	2	2		<0.02	<0.02					0.1		0.27		
Benzo(a)anthracene	mg/kg	11		0.53	<0.04	4	2	2		<0.04	<0.04					0.47		0.53		
Benzo(a)pyrene	mg/kg	5		0.36	<0.04	4	2	2		<0.04	<0.04					0.36		0.36		
Benzo(b)fluoranthene	mg/kg	3.3		0.51	<0.05	4	2	2		<0.05	<0.05					0.51		0.47		
Benzo(ghi)perylene	mg/kg	340		0.24	<0.05	4	2	2		<0.05	<0.05					0.24		0.21		
Benzo(k)fluoranthene	mg/kg	92		0.18	<0.07	4	2	2		<0.07	<0.07					0.18		0.18		
Chrysene	mg/kg	22		0.51	<0.06	4	2	2		<0.06	<0.06					0.51		0.49		
Dibenzo(ah)anthracene	mg/kg	0.28		<0.04		4	0	4		<0.04	<0.04					<0.04		<0.04		
Fluoranthene	mg/kg	560		1.57	<0.08	4	2	2		<0.08	<0.08					0.94		1.57		
Fluorene	mg/kg	410		0.12	<0.01	4	2	2		<0.01	<0.01					0.02		0.12		
Indeno(123-cd)pyrene	mg/kg	36		0.26	<0.03	4	2	2		<0.03	<0.03					0.26		0.25		
Naphthalene	mg/kg	30			<0.03	4	0	4		<0.03	<0.03					<0.03		<0.03		
Phenanthrene	mg/kg	220		1.32	<0.03	4	2	2		<0.03	<0.03					0.49		1.32		
Pyrene	mg/kg	1240		1.23	<0.07	4	2	2		<0.07	<0.07					0.87		1.23		
Total PAH-16MS	mg/kg			7.14	<0.08	4	2	2		<0.08	<0.08					4.99		7.14		
Other analytes																				
% Stones >10mm	% w/w			17.2	<0.1	9	4	5	<0.1	<0.1		17.2	<0.1	<0.1		1	3.8	4.2	<0.1	
Leachate Prep BS EN 12457-1 (2:1) (1 no) RE-PREP for additional testing																				
Organic matter										% w/w			5.4	5.4	1	1	0			
pH	pH			7.4	5.32	6	6	0	7.22	6.33							5.32	7.08	7.07	7.4
pH BRE	pH			7.18	7.18	1	1	0					7.18							
Sulphate (water sol 2:1)										g/l			0.23	<0.01	5	2	3	<0.01	<0.01	0.02
Sulphur (total)										mg/kg			597	<50	5	2	3	<50	<50	597

Project code: 11884
Chorlton high school

Dataset: Made Ground

Land use: Residential with home-grown produce
SOM: 2.5%

[illegible]

Project name	Chorlton high school									
Project code	11884									
Client name	Cube Homes LTD									
Address	Chorlton High School High Lane Chorlton High School Manchester M21 9FS									
NGR	381509 393732									
Land use	Residential with home-grown produce									
SOM	2.5%									
GAC version	2021_00									

								Lab sample ID	23/11876/24	
								Client sample ID	WS206	
								Depth to top	0.1	
								Depth to bottom	0.4	
								Date sampled	24/11/23	
Analyte	Unit	GAC	T1	Max	Min	Count	# Detects	# Non-dete		
Metals and Inorganics										
Arsenic	mg/kg	37		24		4	9	9	0	20
Cadmium	mg/kg	22		1.2	<0.5		9	5	4	0.8
Chromium	mg/kg	910	21	23		7	9	9	0	19
Chromium (trivalent)	mg/kg	910		15		9	3	3	0	161
Chromium (hexavalent)	mg/kg	21			<1		3	0	3	
Copper	mg/kg	2500		248		19	9	9	0	248
Lead	mg/kg	200		251		60	9	9	0	161
Mercury	mg/kg	39	0.6	1.28	<0.17		9	6	3	1.25
Nickel	mg/kg	130		25		8	9	9	0	24
Selenium	mg/kg	258			<1		9	0	9	<1
Zinc	mg/kg	3900		299		29	9	9	0	183
Asbestos										
Asbestos in soil		Detect					9	1	8	NAD
Asbestos Matrix (microscope)		Detect					6	1	5	-
Petroleum Hydrocarbons										
Ali >C5-C6	mg/kg	78			<0.01		4	0	4	<0.01
Ali >C6-C8	mg/kg	230			<0.01		4	0	4	<0.01
Ali >C8-C10	mg/kg	65			<1		4	0	4	<1
Ali >C10-C12	mg/kg	330	118		<1		4	0	4	<1
Ali >C12-C16	mg/kg	2400	59		2	<1	4	1	3	<1
Ali >C16-C21	mg/kg				8	<1	4	2	2	1
Ali >C21-C35	mg/kg			78		6	4	4	0	17
Ali >C16-C35 calculated	mg/kg	92000	21	86		6	4	4	0	18
Total Aliphatics	mg/kg			88		6	4	4	0	18
Aro >C5-C7	mg/kg				<0.01		4	0	4	<0.01
Aro >C7-C8	mg/kg				<0.01		4	0	4	<0.01
Aro >C8-C10	mg/kg	80			<2		4	0	4	<2
Aro >C10-C12	mg/kg	180		2	<1		4	1	3	<1
Aro >C12-C16	mg/kg	330		84	<1		4	3	1	5
Aro >C16-C21	mg/kg	540		391		4	4	4	0	39
Aro >C21-C35	mg/kg	1500		778		9	4	4	0	103
Total Aromatics	mg/kg			1250		13	4	4	0	147
TPH (Ali & Aro)	mg/kg			1350		19	4	4	0	165
BTEX - Benzene	mg/kg	0.41			<0.01		4	0	4	<0.01
BTEX - Toluene	mg/kg	300			<0.01		4	0	4	<0.01
BTEX - Ethyl Benzene	mg/kg	110			<0.01		4	0	4	<0.01
BTEX - o Xylene	mg/kg	143			<0.01		4	0	4	<0.01
BTEX - m & p Xylene	mg/kg	133			<0.01		4	0	4	<0.01
Fuel oxygenates										
MTBE	mg/kg	110			<0.01		4	0	4	<0.01
Polycyclic aromatic hydrocarbons										

										Lab sample ID	23/11876/6	23/11876/10	23/11876/12	22/10728/1	22/10728/3	22/10728/5	22/10728/6	22/10728/7	23/11876/16	23/11876/21
										Client sample ID	CP203	TP203	TP204	WS01	WS04	WS05	WS05	WS06	WS202	WS205
										Depth to top	0.9	0.1	0.2	0.35	0.5	0.2	0.2	0.7	0.5	0.2
										Depth to bottom		0.4	0.5	0.8	0.8	0.5	0.5	1		0.7
										Date sampled	27/11/23	27/11/23	27/11/23	25/10/22	25/10/22	25/10/22	25/10/22	25/10/22	24/11/23	24/11/23
Analyte	Unit	GAC	T1	Max	Min	Count	# Detects	# Non-detects												
Acenaphthene	mg/kg	540		3.49	<0.01	9	8	1	0.06	0.09	0.24	0.26	3.49		0.04			<0.01		0.01
Acenaphthylene	mg/kg	440		0.68	<0.01	9	8	1	0.09	0.39	0.25	0.03	0.68		0.08			0.07	<0.01	
Anthracene	mg/kg	5500		7.04	0.04	9	9	0	0.3	0.51	1.04	0.57	7.04		0.19			0.1	0.04	
Benzo(a)anthracene	mg/kg	11		11.9	0.24	9	9	0	1.49	4.26	7.67	0.66	11.9		1.18			0.64	0.24	
Benzo(a)pyrene	mg/kg	5		9.84	0.23	9	9	0	1.28	4.78	6.71	0.55	9.84		1.58			0.47	0.23	
Benzo(b)fluoranthene	mg/kg	3.3		10.4	0.29	9	9	0	1.57	6.21	8.92	0.54	10.4		1.71			0.61	0.29	
Benzo(ghi)perylene	mg/kg	340		4.25	0.17	9	9	0	0.78	3.13	4.25	0.22	3.93		0.94			0.27	0.17	
Benzo(k)fluoranthene	mg/kg	92		4.16	0.1	9	9	0	0.54	2.2	3.15	0.22	4.16		0.65			0.22	0.1	
Chrysene	mg/kg	22		10.8	0.28	9	9	0	1.53	4.55	7.2	0.68	10.8		1.31			0.59	0.28	
Dibenzo(ah)anthracene	mg/kg	0.28		1.03	<0.04	9	8	1	0.15	0.57	0.87	0.06	1.03		0.18			0.05	<0.04	
Fluoranthene	mg/kg	560		29.6	0.5	9	9	0	2.93	7.85	12.5	1.88	29.6		2.31			1.23	0.5	
Fluorene	mg/kg	410		4.12	<0.01	9	7	2	0.06	0.07	0.17	0.29	4.12		0.02			<0.01	<0.01	
Indeno(123-cd)pyrene	mg/kg	36		5.1	0.17	9	9	0	0.88	3.66	5.1	0.24	4.84		0.99			0.31	0.17	
Naphthalene	mg/kg	30		0.29	<0.03	9	4	5	<0.03		0.06	0.05	0.29	0.22	<0.03			<0.03	<0.03	
Phenanthrene	mg/kg	220		33.4	0.23	9	9	0	1.35	1.8	4.28	2.34	33.4		0.64			0.34	0.23	
Pyrene	mg/kg	1240		24.4	0.47	9	9	0	2.82	7.62	12.4	1.65	24.4		2.29			1.06	0.47	
Total PAH-16MS	mg/kg			160	2.73	9	9	0	15.8	47.8	74.8	10.5	160		14.1			5.96	2.73	
Other analytes																				
% Stones >10mm	% w/w			21.3	<0.1	11	6	5	5.8	<0.1	21.3	15.8	<0.1	<0.1	<0.1	<0.1	3.1	<0.1		6
Leachate Prep BS EN 12457-1 (2:1) (1 no) RE-PREP for additional testing						0	0	0												
Organic matter	% w/w			21.9	3	8	8	0	4.4	10	21.9	3.2	7.4		3.2					3
pH	pH			7.75	6.04	9	9	0	6.04	7.4	7.51	7.48	7.35		7.16			6.81	7.67	
pH BRE	pH			7.49	7.04	3	3	0				7.35	7.04				7.49			
Sulphate (water sol 2:1)	g/l			0.04	0.04	1	1	0	0.04											
Sulphur (total)	mg/kg			171	171	1	1	0	171											

Project code: 11884
Chorlton high school

Dataset: Made Ground

Land use: Residential with home-grown produce
SOM: 2.5%

										Lab sample ID	23/11876/24
										Client sample ID	WS206
										Depth to top	0.1
										Depth to bottom	0.4
										Date sampled	24/11/23
Analyte	Unit	GAC	T1	Max	Min	Count	# Detects	# Non-dete			
Acenaphthene	mg/kg		540		3.49	<0.01	9	8	1	0.24	
Acenaphthylene	mg/kg		440		0.68	<0.01	9	8	1	0.02	
Anthracene	mg/kg		5500		7.04	0.04	9	9	0	0.69	
Benzo(a)anthracene	mg/kg		11		11.9	0.24	9	9	0	1.8	
Benzo(a)pyrene	mg/kg		5		9.84	0.23	9	9	0	1.69	
Benzo(b)fluoranthene	mg/kg		3.3		10.4	0.29	9	9	0	2.07	
Benzo(ghi)perylene	mg/kg		340		4.25	0.17	9	9	0	0.98	
Benzo(k)fluoranthene	mg/kg		92		4.16	0.1	9	9	0	0.72	
Chrysene	mg/kg		22		10.8	0.28	9	9	0	1.79	
Dibenzo(ah)anthracene	mg/kg		0.28		1.03	<0.04	9	8	1	0.18	
Fluoranthene	mg/kg		560		29.6	0.5	9	9	0	4.97	
Fluorene	mg/kg		410		4.12	<0.01	9	7	2	0.23	
Indeno(123-cd)pyrene	mg/kg		36		5.1	0.17	9	9	0	1.16	
Naphthalene	mg/kg		30		0.29	<0.03	9	4	5	<0.03	
Phenanthrene	mg/kg		220		33.4	0.23	9	9	0	3.18	
Pyrene	mg/kg		1240		24.4	0.47	9	9	0	4.17	
Total PAH-16MS	mg/kg				160	2.73	9	9	0	23.9	
Other analytes											
% Stones >10mm	% w/w				21.3	<0.1	11	6	5	9.3	
Leachate Prep BS EN 12457-1 (2:1) (1 no) RE-PREP for additional testing							0	0	0		
Organic matter	% w/w				21.9	3	8	8	0	7.3	
pH					7.75	6.04	9	9	0	7.75	
pH BRE	pH				7.49	7.04	3	3	0		
Sulphate (water sol 2:1)	g/l				0.04	0.04	1	1	0		
Sulphur (total)	mg/kg				171	171	1	1	0		