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PLANNING AND BUILDING CONTROL
19 OCT 2015

Our Ref. C1112/EAJ/jt/Z0153

Your Ref.

28th August 2015

Julie Roscoe
Head of Planning
Building Control & Licensing
Manchester City Council
P.O. Box 532, Town Hall
Manchester
M60 2LA

Dear Sirs,

Re: 435 Barlow Moor Road, Chorlton, Manchester, M21 8AU

Further to the issue of Planning Application reference 105734/FO/2014/S1 and in response to Planning Condition 18, we would hereby issue two number reports to discharge the said condition. The first report reference A361/G/1 issue date 15th April 2014 is a Phase 1 Desk Study and Preliminary Geo Environmental Assessment. This report collates and reviews all available Geological and Environmental data for the site and its immediate environment. The results of this report enabled the design of a Phase 2 Ground Investigation in accordance with the Environment Agency (2004) Model Procedures for the Management of Land Contamination, CLR11. The second enclosed document is a copy of the said Phase 2 investigation which was produced in response to the findings of the Phase 1 Desk study.

A review of these reports concludes that they respond thoroughly to Section a of Condition 18, in particular it confirms that there are no specific remediation strategy is required. We confirm that should any ground contamination, groundwater contamination and/or ground gas, not previously identified be found onsite a suitable remediation strategy will be prepared and agreed with the Planning Authority.

Finally, we confirm that to finally discharge Section b of Condition 18 a Verification Report will be submitted for approval by the City Council on completion of the work.

We trust that the attached documentation allows you to confirm discharge of Section a of Condition 18.

Should you wish to discuss this further please do not hesitate to make contact with the undersigned.

Yours sincerely
SHEPHERD GILMOUR INFRATRUCTURE LTD.

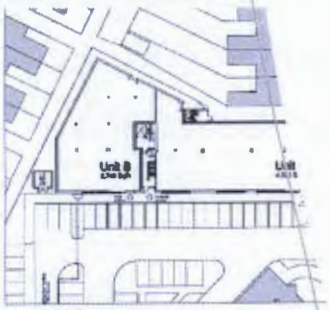
Emyr Jones

Emyr A. Jones

PLANNING AND
BUILDING CONTROL
19 OCT 2015











Earth Environmental
& Geotechnical

GeoEnvironmental Investigation

435 Barlow Moor Road

Chorlton

April 2015

On behalf of

Merepark

Earth Environmental & Geotechnical Ltd
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435 BARLOW MOOR ROAD

CHORLTON

Report Ref: A0361/14

April 2015

Prepared on Behalf of:

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DISTRIBUTION:

1 electronic copy Merepark Homes

435 BARLOW MOOR ROAD

CHORLTON

Report Reference: A0361/14

Version B.0

Date: April 2015

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Definition of Version Code:
D. Applied during initial drafting of the report before it has been reviewed.
C. Applied after the report has been reviewed but before it has been approved by the Project Manager.
B. Applied after the Project Manager has approved the report ready for issue to the client.
A. Applied to reports after external/internal review.

The version number starts at "0" and is raised by "1" at each re-type.

Written by:

James Myles
GeoEnvironmental Consultant

Approved by:

Adam Czarnecki
Managing Director

Earth Environmental & Geotechnical

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1.0 INTRODUCTION

1.1 Background

It is understood that Merepark Homes (the client) is proposing to construct a retail park and residential apartments at a site located at 435 Barlow Moor Road, Chorlton.

Planning permission (105734/FU/2014/SI) was recently granted for erection of a three-storey mixed use building comprising of three retail units of Class A retail space at ground floor, with 12no. two bedroom apartments on the two above floors.

Earth Environmental & Geotechnical Ltd has previously carried out a Phase I Geoenvironmental Desk Study and Preliminary Geoenvironmental Assessment in April 2014 for the site (Ref: A0361/G/1). The desk study report should be read in conjunction with this report.

1.2 Terms of Reference & Scope of Work

Earth Environmental and Geotechnical Ltd were commissioned by Merepark Homes to undertake a Phase II Site Investigation in accordance with a proposal (A0361/14) dated the 15th February 2015.

The objectives of the investigation were as follows:

- Assess the presence and likely extent of any potential environmental hazards (soil and groundwater contamination) associated within the areas of the site investigated.
- Provide a preliminary assessment of foundation design options.
- Assess the implications of any potential environmental risks, liabilities and development constraints associated with the site in relation to the future use of the site and in relation to off-site receptors.

1.3 Limitations of the Study

The report is written in the context of an agreed scope of work and budget and should not be used in a different context. New information, improved practices or changes in legislation may require a reinterpretation of the report in whole or in part. Earth Environmental and Geotechnical Ltd reserves the right to amend either conclusions or recommendations in light of any further information that may become available. The report is provided for the sole use by the client and is confidential to them.

Recommendations within this report are also based on exploratory records and examination of samples and, where applicable, laboratory tests. No liability can be accepted for conditions not revealed by the probeholes, particularly at intervening locations.

Whilst every effort is made to ensure accuracy of data supplied, all opinions expressed as to the spatial distribution of strata between sampling locations is for guidance only and no responsibility is accepted as to its accuracy.

2.0 SITE LOCATION & DESCRIPTION

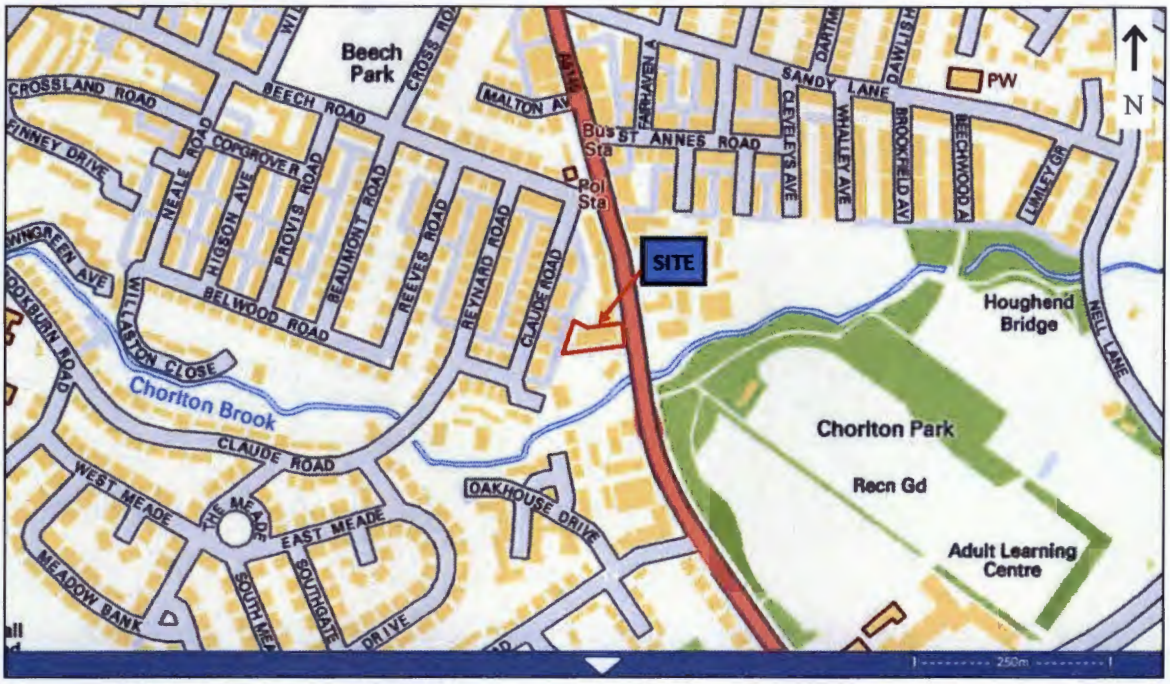
2.1 Site Location & Description

The site comprises an area of approximately 0.15 hectares, is almost rectangular in shape and includes an existing disused single storey brick clad commercial building (Blockbuster Video Store) with associated car parking area and hardstanding delivery and storage areas, adjacent to Barlow Moor Road (A5145) on the eastern site boundary, approximately 1.0km south of the Manchester suburb Chorlton-cum-Hardy.

The site is located at National Grid Reference Easting: 381886, Northing: 393278, postcode M21 8AU. The site is accessible from Barlow Moor Road.

A location plan is shown below as Figure 1.

Figure 1 Site Location Plan



At the time of the investigation, the site comprised a disused brick clad commercial building which is a former Blockbuster Video store occupying the majority of the site area, associated tarmac hardstanding car parking area to the south of the building and a hardstanding delivery and storage area to the western and northern sides of the building. Site ground levels are relatively flat, however the level gently rises to the north in the hardstanding area, west of the building. There are no significant trees or landscaping areas within the site area, however a small number of shrubs are located on the fringes of the western and northern site boundaries.

Land use coverage nearby to the site includes a large number of residential properties directly to the west and north, a KFC fast food outlet with associated car parking to the south and a row of commercial stores on either sides of Barlow Moor Road to the east and north

east. A large area of playing fields and rows of mature trees are located south east of the site across from the adjacent Barlow Moor Road.

2.2 Existing Information

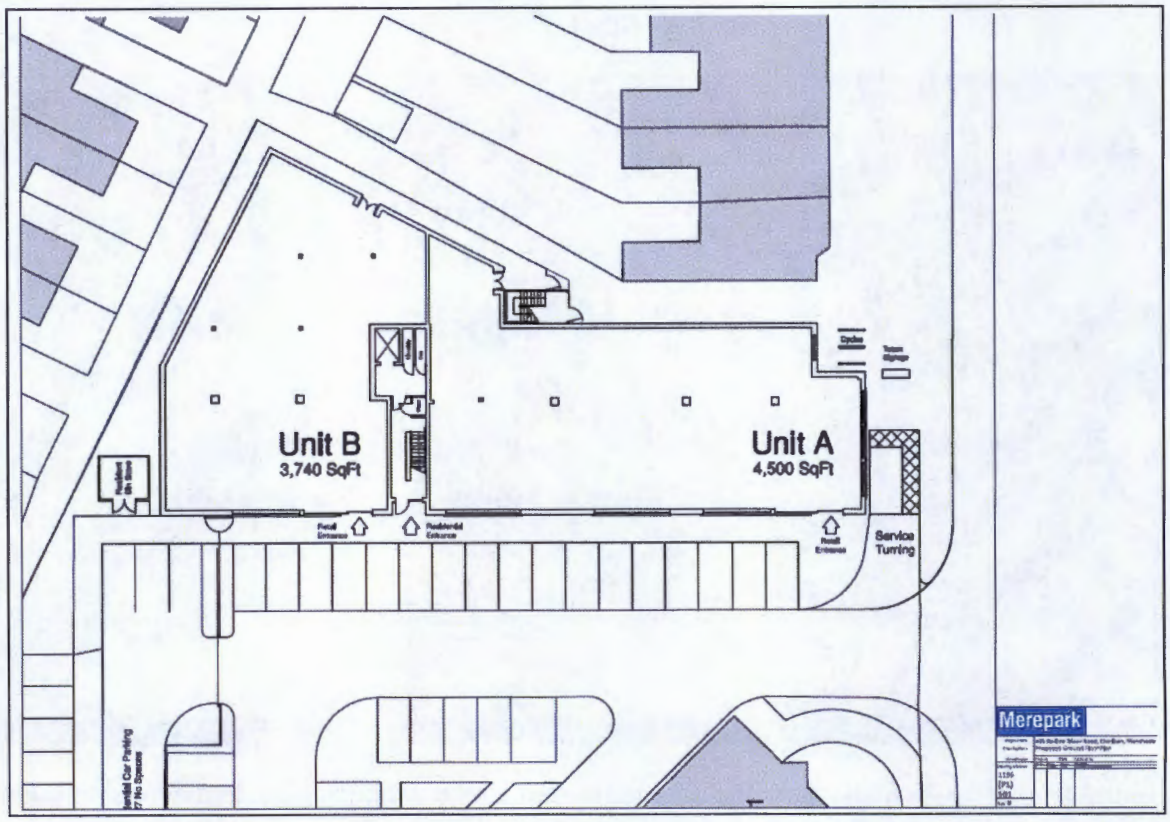
A Development Layout Plan was provided by the Client.

2.3 Proposed Development

It is understood that the Client is proposing to construct a new 8500ft^2 retail park at ground level and twelve apartments on levels 1 & 2.

Figure 2 below displays the Development Layout Plan provided by the client.

Figure 2 Development Layout Plan



3.0 SITE INVESTIGATION

3.1 Exploratory Fieldwork

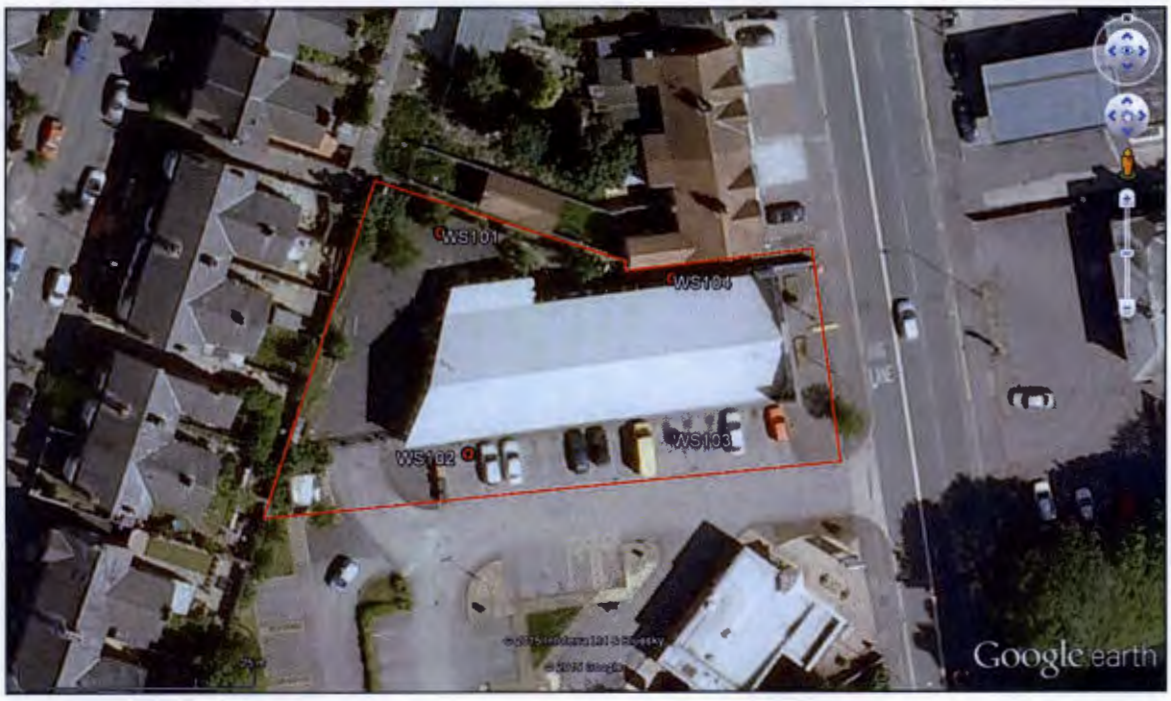
The ground investigation works comprised four probeholes (WS101 to WS104) drilled by a windowless sampling technique on the 26th February 2015. The exploratory hole positions were determined and set out by Earth Environmental and Geotechnical Ltd.

All site investigation work was supervised full time by a representative of Earth Environmental & Geotechnical Ltd, with logging of soils in accordance with BS5930+A2 2010 Code of Practice for Site Investigations.

Soil samples destined for chemical testing were sealed in 1 litre plastic containers and 250ml amber glass jars and stored in a cool box, with samples intended for geotechnical testing sealed in either 1 litre plastic containers or in undisturbed plastic cores. Groundwater samples, were recovered after purging of three well volumes and sealed in 1 litre glass containers and stored in a cool box. Details of the strata encountered and the samples taken are listed in the exploratory hole logs in Appendix I.

The sampling locations are illustrated in Figure 3 (below).

Figure 3 Sampling Location Plan



3.2 Summary of Site Investigation Observations

3.2.1 Ground Conditions

The exploratory holes revealed a sequence of tarmac hardstanding, underlain by made ground to between 0.50m and 1.00m depth. The made ground predominantly consisted of sandy gravel sized backfill type materials, with occasional sub-base gravel discovered. Up to cobble sized fragments of brick and sandstone were also noted.

Below the made ground in all exploratory positions a loose to medium dense sand and gravelly sand layer was encountered up to maximum depth of 2.10m between exploratory locations WS102 to WS104, while position WS101 encountered the layer until 3.70m depth.

A firm medium to high strength horizon of clay was encountered from 1.70m and 2.10m depth at positions WS102 to WS104 and extended until at least termination depths of 6.45m at each of these positions.

Exploratory position WS101 encountered interbedded layers of soft to firm clay and medium dense gravelly sand from 3.70m and 6.00m depth.

A summary of the thickness of made ground and ground conditions at each sampling location is provided in Table 3.2 below.

Table 3.2
Summary of Ground Conditions

Location	Tarmac Thickness (m)	Base of Made Ground (m bgl)	Base of Clay (m bgl)	Depth to Groundwater Strike (m bgl)	Hole Final Depth (m bgl)
WS101	0.15	0.80	5.10	1.20	6.00
WS102	0.10	0.50	6.45+	1.20	6.45
WS103	0.10	1.00	6.45+	1.20	6.45
WS104	0.10	0.80	6.45+	1.80	6.45

Notes for Table 3.2

\+ = indicates full thickness not determined

3.2.2 Observable Indications of Contamination

There was no visual or olfactory evidence of contamination at all locations.

3.2.3 Groundwater

Groundwater was noted at all of the sampling locations and ranged from 1.20m and 1.80m depth. The made ground was noted to be dry and friable.

3.2.4 Rockhead

Rockhead was not encountered at any location.

3.2.5 In-Situ Testing

In-situ standard penetration testing was undertaken (in accordance with BS1377 Part 9, 1990) within all probeholes at 1m centres. The results are shown on the exploratory hole logs in Appendix I.

3.3 Gas Monitoring

Ground gas monitoring surveying was carried out on one occasion on the 13th March 2015. Concentrations of methane, carbon dioxide and oxygen were measured using an infra-red gas analyser (GA2000) calibrated to a reference standard of methane (before and after each survey). A Gas Data GFM610 meter was used to assess ground gas flow from the monitoring installations.

Gas measurements were recorded for a minimum of 150 seconds at each location over which point the peak and steady concentrations of methane and carbon dioxide, together with the lowest concentration of oxygen recorded.

The ground gas monitoring results are included within Appendix II.

3.4 Laboratory Testing Programme

Based upon the former land uses, chemical testing was performed on five selected soil samples for a wide range of analytes including asbestos, metals, pH, sulphate and sulphide, cyanide, phenols, total organic carbon (TOC), speciated polycyclic aromatic hydrocarbons (PAH) and speciated petroleum hydrocarbons (TPH).

The chemical testing was conducted by Derwentside Environmental Testing Services a UKAS/MCERTS accredited laboratory based in Consett. Test certificates are included in Appendix III.

Geotechnical testing was undertaken on selected representative samples chosen by Earth Environmental Ltd by Murray Rix in accordance with UKAS procedures. Test certificates are included in Appendix IV.

4.0 CONTAMINATION ASSESSMENT

4.1 Soil Guidelines

The soil characteristics have been assessed with reference to DEFRA/Environment Agency Contaminated Land Exposure Assessment (CLEA) Soil Guideline Values (SGV) for generic site land uses, soils and exposure. Where Environment Agency generic guidance is absent, reference has been made to the Chartered Institute of Environmental Health (CIEH) S4ULs for human health risk assessment.

4.2 Tier I Human Health Soil Data Assessment

The soil chemical testing results are summarised in Table 4.2 (below), with Appendix V providing a list of assessment criteria and their derivation.

Residential end use assessment criteria have been used despite the absence of any formal garden areas and proposed apartments being above ground floor retail units.

Table 4.2
Assessment of Soil Chemical Data

Parameter	WS101	WS102	WS102	WS103	WS104	Assessment Criteria (mg/kg)
	0.30	0.20	0.40	0.50	0.50	
	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	
Arsenic	6.4	4.8	1.8	7.7	8.2	37
Boron	0.9	0.7	0.5	0.9	0.5	290
Barium	78	100	48	100	89	165
Beryllium	0.5	0.5	0.2	0.5	1.5	1.7
Cadmium	0.4	0.4	0.2	0.4	0.6	11
Chromium	13	14	8.6	15	15	910
Hexavalent Chromium	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	6
Copper	14	16	4.2	13	32	2400
Lead	50	88	6.1	93	57	200
Mercury	0.08	0.07	< 0.05	0.10	0.31	40
Nickel	10	15	6.9	12	22	180
Selenium	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	250
Vanadium	18	19	11	18	36	410
Zinc	48	37	19	31	40	3700
pH	8.1	9.1	8.6	8.3	8.5	N/A
Naphthalene	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	2.3
Fluorene	1.2	0.06	< 0.03	< 0.03	< 0.03	170
Benzo(a)pyrene	0.31	0.53	< 0.03	1.2	0.26	2.2
Phenol	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	280

Notes for Table 4.2

Concentrations in red above assessment criteria

Assessment criteria based upon a residential land use, sandy soil and 1% Soil Organic Matter

No elevated potential contaminants of concern were recorded based upon the long term protection of human health for a residential end use.

All speciated hydrocarbon ranges were below method detection limits.

Five soil samples were also screened for asbestos content which revealed two samples (at WS103 and WS104) containing bundles of chrysotile fibres.

Asbestos quantification was carried out on the two samples containing chrysotile fibres and revealed an asbestos quantification of <0.001% mass from the samples taken.

4.3 Groundwater Risk Assessment

Groundwater recovered from the monitoring standpipes was tested in order to assess the potential mobility of contaminants of concern. Monitoring pipes were purged (three well volumes) prior to collection of a sample.

The results from the groundwater testing have been compared to UK Drinking Water Standards and Environmental Quality Standards (for the protection of ecology in waters).

The results of the screening are shown in Table 4.3, below.

Table 4.3
Assessment of Groundwater Chemical Data

Parameter	WS101	WS102	Assessment Criteria (µg/l)	Source
	2.60m	1.20m		
Arsenic, Dissolved	1.0	0.78	10	UK DWS
Barium, Dissolved	59	78		
Beryllium, Dissolved	< 0.1	< 0.1		
Boron	150	120	1000	UK DWS
Cadmium, Dissolved	0.19	0.15	5.0	UK DWS
Chromium, Dissolved	3.6	5.3	50	UK DWS
Hexavalent Chromium	< 10	< 10		
Copper, Dissolved	2.8	1.8	2000	UK DWS
Lead, Dissolved	0.22	0.26	25	UK DWS
Mercury, Dissolved	< 0.01	< 0.01	1	UK DWS
Nickel, Dissolved	1.3	1.8	20	UK DWS
Selenium, Dissolved	5.1	2.6	10	UK DWS
Vanadium, Dissolved	0.8	0.7		
Zinc, Dissolved	27.7	1.91	5000	UK DWS
Benzo(a)pyrene	0.47	0.07	0.01	WHO
Cyanide			50	UK DWS
Fluorene	0.09	< 0.01		
Naphthalene	0.21	< 0.01	10	EQS Freshwater
pH	7.7	7.6		

Phenol	<100	<100	30	EQS Freshwater

Notes for Table 4.3

Concentrations in red above assessment criteria
UKDWS: United Kingdom Drinking Water Standards
WHO: World Health Organisation Standard
EQS Freshwater: Environment Agency Environmental Quality Standard for Freshwater
IS Insufficient sample

Both water samples had small exceedances of benzo(a)pyrene from the chemical testing results. Polycyclic aromatic hydrocarbons are commonly found in unfiltered water samples above a very conservative WHO standard. The concentrations are not considered to be significant or associated with any contamination.

No further concentrations were found to be above the assessment criteria.

4.4 Ground Gas Assessment

Only one gas monitoring visit has been conducted as the desk study highlighted an absence of any potential on-site or off-site sources of ground gases. The single monitoring visit was designed to measure water level and recover water samples rather than make an assessment of the ground gas regime.

Significant concentrations of methane and carbon-dioxide have not been encountered.

Corresponding flow rates are very low (at detection limit of 0.1litres/hour).

The ground gas monitoring results are presented in Appendix II.

4.5 Soil Disposal Assessment

Technical Guidance WM2: Hazardous Waste; Interpretation of the definition and classification of hazardous waste, Third Edition, August 2013, published by Environment Agency of England and Wales, SEPA, NIEA and Natural Resources Wales has been used to characterise soil materials.

HazWasteOnline™ a cloud-based application for the management, analysis and reporting of hazardous waste materials has been used to make the assessment.

All materials have been classified as non-hazardous.

Appendix VI provides a summary of the soil waste classification.

5.0 GEOTECHNICAL ASSESSMENT

5.1 Geotechnical Testing

Geotechnical testing has been undertaken as part of this investigation, all laboratory testing results are available within Appendix IV.

Table 5.1 (below) provides a summary of the geotechnical test data.

Table 5.1 Geotechnical Test Data

Location	Depth (m)	Classification	Undrained Shear Strength kN/m^2	Passing 425 micron (%)	Modified Plasticity Index	Volume Change Potential
WS102	2.50	Clay Intermediate Plasticity		97	25.0	Medium
WS104	4.50	Clay Intermediate Plasticity		98	22.0	Medium
WS103	2.50		68			
WS104	3.35		84			

The plasticity index results indicate clay of an intermediate plasticity with a high strength in accordance with EN ISO 14688-1. The soil is indicated to be of medium volume change potential in accordance with NHBC Chapter 4.2 Building Near Trees (2011).

The undrained shear strength of clay materials has also been assessed on site by use of hand penetrometer testing.

5.2 Foundation Design

Ground conditions across the site are reasonably uniform with a thin mantle of made ground underlain by a layer of loose to medium dense gravelly sand followed by competent glacial clay. The exception of this model is at the north-west area of the site which gives a varied ground profile of interbedded sand and clay below the made ground, possibly due to the elevation difference to the remaining areas of the site.

Table 5.2 (overleaf) provides a summary of proposed foundations at each exploratory point.

Table 5.2 Summary of Proposed Foundations

Location	Made Ground Thickness (m)	Founding Depth (m)	Founding Material	Type of Foundation
WS101	0.80	0.90	Sand	SS/PA
WS102	0.50	0.75	Sand	SS/PA
WS103	1.00	1.10	Sand	SS/PA
WS104	0.80	1.80	Clay	SS/PA

Notes for Table 5.2

SS Shallow Strip
PA Shallow pad foundation
TF MassTrench Fill
VCC Vibro concrete columns
VSC Vibro stone columns
P Piles

The definition of the use of either Trench Fill foundations or an alternative technique such as P/VCC/VSC is based on a depth of 2.0m, as this represents very approximately the cost effective limit for use of trench fill as opposed to the other techniques.

The minimum foundation depth should be 0.75m, to avoid the zone of seasonal movement and the effects of frost.

The allowable bearing capacity of the sand horizon is detailed below in Table 5.2a:

Table 5.2a
Allowable Bearing Capacity (Sand Horizon)

Depth (m)	Width (m)	Allowable Bearing Capacity (kN/m^2)
0.75	1.0 (pad)	150
1.50	1.0 (pad)	100
0.75	1.0 (1m wide strip)	150
1.50	1.0 (1m wide strip)	150

The above calculations are based upon a global Factor of Safety of 3.0 and a Characteristic N Value of 12.

5.3 Building Floor Slab

Ground bearing slabs are considered to be appropriate for the new development.

The formation should be proof rolled and inspected, and any soft or loose pockets over excavated and replaced with a suitable compacted granular fill.

5.4 Groundwater Control

Groundwater was encountered within the exploratory holes at a depth range of 1.2m to 1.8m. Provision should be made for pumping from sumps, with appropriate excavation support for all shallow excavations.

5.5 Roads and Car Parking

In-situ CBR testing should be performed at the formation level prior to construction. For preliminary design purposes a CBR value of 2.5% should be utilised.

Plate load bearing testing or Dynamic Cone Penetrometer testing, at the appropriate time, would confirm design criteria for highway design purposes.

5.6 Soakaways

Due to the ground conditions soakaways are considered to be feasible subject to additional infiltration testing.

5.7 Sub-Surface Concrete

The results of pH and soluble sulphate testing in soils is summarised below in Table 5.7.

Table 5.7
Summary of Sulphate Testing

Location	Depth (m)	Soluble Sulphate Concentration (g/l)	pH	Classification
WS102	2.5	0.06	7.7	DS-1
WS104	4.5	0.12	7.5	DS-1

Based upon the testing results sub-surface concrete should be designed as Design Sulphate Class DS- 1 and ACEC class AC-1, in accordance with BRE Special Digest 1.

5.8 Construction Activity and Inspection

It is recommended that allowance be made for the inspection of foundation materials, proof rolling of slab areas and road subgrade conditions during construction. All such inspections should be carried out by appropriately qualified and experienced geotechnical engineers.

The exposed formation should be quickly blinded with concrete to avoid softening during periods of inclement weather.

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

The site investigation has proved the presence of hardstanding and made ground overlying a granular horizon, followed by a competent clay horizon.

Comparison of chemical testing results with assessment criteria for the protection of long-term human health for a residential end use suggests that the soils do not pose a risk to end users.

Asbestos chrysotile fibres of quantities of <0.001% mass have been found within the made ground at WS103 and WS104 and are effectively below background concentrations.

Surplus materials have been determined to be acceptable as non-hazardous waste.

6.2 Recommendations

Ground conditions are suitable for the placement of shallow foundations. Foundations loadings will need to be transferred to a sand and competent clay horizon by either strip or pad foundations.

Subject to further waste acceptance criteria testing surplus materials may be classified as inert.

A shallow groundwater table has been found which implies that excavations for foundations may require sump pumping.

APPENDIX I

EXPLORATORY HOLE LOGS

APPENDIX II

GROUND GAS MONITORING RESULTS

APPENDIX III

SOIL AND WATER CHEMICAL TESTING RESULTS

APPENDIX IV
GEOTECHNICAL TESTING RESULTS

APPENDIX V

SOIL ASSESSMENT CRITERIA

Tier I Values for Residential Land Use (with plant uptake) Based on Sandy Loamy Soil

Arsenic	mg/kg	37	CIEH S4UL based on 6% SOM
Boron	mg/kg	290	CIEH S4UL based on 6% SOM
Barium	mg/kg	165	CLEA 1.06 modelling with 1% SOM
Beryllium	mg/kg	1.7	CIEH S4UL based on 6% SOM
Cadmium	mg/kg	11	CIEH S4UL based on 6% SOM
Chromium (III)	mg/kg	910	CIEH S4UL based on 6% SOM
Chromium (IV)	mg/kg	6	CIEH S4UL based on 6% SOM
Lead	mg/kg	200	Category 4 Screening level based on 6% SOM
Mercury (Inorganic)	mg/kg	40	CIEH S4UL based on 6% SOM
Selenium	mg/kg	250	CIEH S4UL based on 6% SOM
Nickel	mg/kg	180	CIEH S4UL based on 6% SOM
Copper	mg/kg	2400	CIEH S4UL based on 6% SOM
Toluene	mg/kg	130	CIEH S4UL based on 6% SOM
Benzene	mg/kg	0.087	CIEH S4UL based on 6% SOM.
Ethylbenzene	mg/kg	47	CIEH S4UL based on 6% SOM
Xylene	mg/kg	56	CIEH S4UL based on 6% SOM
Trichlorethene (TCE)	mg/kg	0.016	CIEH S4UL based on 6% SOM
Tetrachloroethene (PCE)	mg/kg	0.18	CIEH S4UL based on 6% SOM
Zinc	mg/kg	3700	CIEH S4UL based on 6% SOM
Cyanide - Free	mg/kg	41	Based on acute risk to 0-6yr old child, HPA
Phenols	mg/kg	280	CIEH S4UL based on 6% SOM
PCB	mg/kg	1.4	CLEA 1.06 modelling with 1% SOM
Benzo(a)pyrene	mg/kg	2.2	CIEH S4UL based on 6% SOM
Dibenzo(a,h)Anthracene	mg/kg	0.24	CIEH S4UL based on 6% SOM
Fluorene	mg/kg	170	CIEH S4UL based on 6% SOM

Naphthalene	mg/kg	2.3	CIEH S4UL based on 6% SOM
Vanadium	mg/kg	410	CIEH S4UL based on 6% SOM
TPH Ali C5-C6	mg/kg	42	CIEH S4UL based on 6% SOM
TPH Ali C6-C8	mg/kg	100	CIEH S4UL based on 6% SOM
TPH Ali C8-C10	mg/kg	27	CIEH S4UL based on 6% SOM
TPH Ali C10-C12	mg/kg	130	CIEH S4UL based on 6% SOM
TPH Ali C12-C16	mg/kg	1100	CIEH S4UL based on 6% SOM
TPH Ali C16-C35	mg/kg	65000	CIEH S4UL based on 6% SOM
TPH Ali C35-C44	mg/kg	65000	CIEH S4UL based on 6% SOM
TPH Aro C5-C7	mg/kg	70	CIEH S4UL based on 6% SOM
TPH Aro C7-C8	mg/kg	130	CIEH S4UL based on 6% SOM
TPH Aro C8-C10	mg/kg	34	CIEH S4UL based on 6% SOM
TPH Aro C10-C12	mg/kg	74	CIEH S4UL based on 6% SOM
TPH Aro C12-C16	mg/kg	140	CIEH S4UL based on 6% SOM
TPH Aro C16-C21	mg/kg	260	CIEH S4UL based on 6% SOM
TPH Aro C21-C35	mg/kg	1100	CIEH S4UL based on 6% SOM
TPH Aro C35-C44	mg/kg	1100	CIEH S4UL based on 6% SOM

APPENDIX VI

SOIL DISPOSAL WASTE ASSESSMENT

APPENDIX VII

REPORT LIMITATIONS

LIMITATIONS

This contract was completed by Earth Environmental & Geotechnical Ltd on the basis of a defined programme and scope of works and terms and conditions agreed with the client. This report was compiled with all reasonable skill, and care, bearing in mind the project objectives, the agreed scope of works, the prevailing site conditions, the budget and staff resources allocated to the project.

Other than that expressly contained in the above paragraph, Earth Environmental & Geotechnical Ltd provides no other representation or warranty whether express or implied, is made in relation to the services. Unless otherwise agreed this report has been prepared exclusively for the use and reliance of the client in accordance with generally accepted consulting practices and for the intended purposes as stated in the agreement under which this work was completed. This report may not be relied upon, or transferred to, by any other party without the written agreement of a Director of Earth Environmental & Geotechnical Ltd.

If a third party relies on this report, it does so wholly at its own and sole risk and Earth Environmental & Geotechnical Ltd disclaims any liability to such parties.

It is Earth Environmental & Geotechnical Ltd understanding that this report is to be used for the purpose described in the introduction to the report. That purpose was an important 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 will no longer be valid and any further use of, or reliance upon the report in those circumstances by the client without Earth Environmental & Geotechnical Ltd review and advice shall be at the client's sole and own risk.

The report was written in 2014 and should be read in light of any subsequent changes in legislation, statutory requirements and industry best practices. Ground conditions can also change over time and further investigations or assessment should be made if there is any significant delay in acting on the findings of this report. 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 Earth Environmental & Geotechnical Ltd. In the absence of such written advice of Earth Environmental & Geotechnical Ltd, reliance on the report in the future shall be at the client's own and sole risk. Should Earth Environmental & Geotechnical Ltd be requested to review the report in the future, Earth Environmental & Geotechnical Ltd shall be entitled to additional payment at the then existing rate or such other terms as may be agreed between Earth Environmental & Geotechnical Ltd and the client.

The observations and conclusions described in this report are based solely upon the services that were provided pursuant to the agreement between the client and Earth Environmental & Geotechnical Ltd. Earth Environmental & Geotechnical Ltd has not performed any observations, investigations, studies or testing not specifically set out or mentioned within this report.

Earth Environmental & Geotechnical Ltd 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, Earth Environmental & Geotechnical Ltd did not seek to evaluate the presence on or off the site of electromagnetic fields, lead paint, radon gas or other radioactive materials.

The services are based upon Earth Environmental & Geotechnical Ltd observations of existing physical conditions at the site gained from a walkover survey of the site together with Earth Environmental & Geotechnical Ltd interpretation of information including documentation, obtained from third parties and from the client on the history and usage of the site. The findings and recommendations contained in this report are based in part upon information provided by third parties, and whilst Earth Environmental & Geotechnical Ltd have no reason to doubt the accuracy and that it has been provided in full from those it was requested from, the items relied on have not been verified.

No responsibility can be accepted for errors within third party items presented in this report. Further Earth Environmental & Geotechnical Ltd was not authorised and 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. Earth Environmental & Geotechnical Ltd is not liable for any inaccurate information, misrepresentation of data 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 Earth Environmental & Geotechnical Ltd and including the doing of any independent investigation of the information provided to Earth Environmental & Geotechnical Ltd save as otherwise provided in the terms of the contract between the client and Earth Environmental & Geotechnical Ltd.

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. Ground conditions can also be variable and as investigation excavations only allow examination of the ground at discrete locations. The potential exists for ground conditions to be encountered which are different to those considered in this report. The extent of the limited area depends on the soil and groundwater conditions, together with the position of any current structures and underground 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 contract between the client and Earth Environmental & Geotechnical Ltd] based on an understanding of the available operational and historical information, and it should not be inferred that other chemical species are not present.

The groundwater conditions entered on the exploratory hole records are those observed at the time of investigation. The normal speed of investigation usually does not permit the recording of an equilibrium water level for any one water strike. Moreover, groundwater levels are subject to seasonal variation or changes in local drainage conditions and higher groundwater levels may occur at other times of the year than were recorded during this investigation.

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.

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PROBEHOLE LOG

Probehole No. WS101

Project Name: Barlow Moor Road
Location: Chorlton
Client: Merepark Homes

Project No. A0361-14
Coordinates: SJ 81870 93293
Level: -

Date: 26/02/2015
Logged By: JM
Approved By: AKC

Scale: 1:30
Hole Type: WS

Well	Water Strikes	Sample Depth (m)	Sample Type	Test Results	Hand Penetrometer Cu (kN/m²)	Depth (m)	Legend	Stratum Description
		0.30	ES			0.15		MADE GROUND: TARMAC SURFACE
						0.50		MADE GROUND: Loose brown grey red slightly silty sandy gravel. Gravel is fine to coarse angular and subangular of mixed lithologies including brick and sandstone.
						0.80		
	Groundwater strike at 1.20m bgl	1.00 - 1.45	SPT	N = 17 (2,3/3,4,4,6)				MADE GROUND: Loose brown slightly gravelly fine to coarse sand. Gravel is fine to medium angular and subangular of brick.
								Medium dense yellow brown fine to coarse SAND.
		2.00 - 2.45	SPT	N = 20 (2,4/5,5,5,5)				(From 2.20m: Becoming light brown grey gravelly fine to medium sand)
		3.00 - 3.45	SPT	N = 9 (1,1/1,2,2,4)				
					36	3.70		Soft to firm reddish brown slightly gravelly sandy CLAY. Gravel is fine to medium subrounded and subangular of sandstone and mudstone.
		4.00 - 4.45	SPT	N = 14 (2,1/3,3,4,4)	73	4.00		Medium dense light brown grey gravelly medium to coarse SAND. Gravel is fine to coarse rounded to subangular of sandstone and mudstone.
					122	4.60		Firm high strength reddish brown slightly gravelly slightly sandy CLAY. Gravel is fine to medium rounded to subangular of sandstone and mudstone.
					122			
		5.00 - 5.45	SPT	N = 14 (4,4/3,4,4,3)	122	5.10		Medium dense light brown grey slightly clayey gravelly SAND. Gravel is fine to coarse rounded to subangular of sandstone and mudstone.

Remarks
1. Hand Dug Pit to 1.20m bgl.
2. Probehole fitted with 50mm diameter plain pipe from ground level to 0.5m bgl, slotted pipe from 0.5m bgl to 6.0m bgl.
3. Casing: Used from ground level to 6.0m bgl.

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PROBEHOLE LOG

Probehole No. WS102

Project Name: Barlow Moor Road
Location: Chorlton
Client: Merepark Homes

Project No. A0361-14
Coordinates: SJ 81873 93269
Level: -

Date: 26/02/2015
Logged By: JM
Approved By: AKC

Scale: 1:30
Hole Type: WS

Well	Water Strikes	Sample Depth (m)	Sample Type	Test Results	Hand Penetrometer Cu (kN/m²)	Depth (m)	Legend	Stratum Description
		0.20	ES			0.10		MADE GROUND: TARMAC SURFACE
		0.40	ES			0.30		MADE GROUND: Loose light brown grey red gravelly sand with occasional cobbles. Gravel is fine to coarse angular to subrounded of mixed lithologies including brick and sandstone.
		1.00 - 1.45	SPT	N = 13 (3,4/3,3,4,3)		0.50		MADE GROUND: Medium dense light brown yellow sandy gravel. Gravel is fine to coarse angular and subangular of sandstone (SUB-BASE).
	Groundwater strike at 1.20m bgl							Medium dense light brown gravelly medium to coarse SAND. Gravel is fine to coarse angular to subrounded of sandstone, quartz and mudstone.
		2.00 - 2.45	SPT	N = 13 (2,1/3,3,3,4)		2.10		
					122			Firm medium to high strength grey brown slightly gravelly slightly sandy CLAY. Gravel is fine to coarse angular to subrounded of sandstone, quartz and mudstone.
		2.50	D		110			
					98			
					196			
		3.00 - 3.45	SPT	N = 13 (2,2/3,3,4,3)	171			
					98			
					220			
					134			
					122			
		4.00 - 4.45	SPT	N = 14 (3,3/3,3,4,4)	134			
					110			
					122			
					122			
					147			
		5.00 - 5.45	SPT	N = 15 (2,3/3,4,4,4)	122			
					49			
					49			
					110			
					122			
		6.00 - 6.45	SPT	N = 18				

Remarks
1. Hand Dug Pit to 1.20m bgl.
2. Probehole fitted with 50mm diameter plain pipe from ground level to 0.5m bgl, slotted pipe from 0.5m bgl to 6.0m bgl.
3. Casing: Used from ground level to 6.0m bgl.

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PROBEHOLE LOG

Probehole No. WS102

Project Name: Barlow Moor Road
Location: Chorlton
Client: Merepark Homes

Project No. A0361-14
Coordinates: SJ 81873 93269
Level: -

Date: 26/02/2015
Logged By: JM
Approved By: AKC

Scale: 1:30
Hole Type: WS

Well	Water Strikes	Sample Depth (m)	Sample Type	Test Results	Hand Penetrometer Cu (kN/m²)	Depth (m)	Legend	Stratum Description
								End of probehole at 6.45m bgl.

7
8
9
10
11
12

Remarks
1. Hand Dug Pit to 1.20m bgl.
2. Probehole fitted with 50mm diameter plain pipe from ground level to 0.5m bgl, slotted pipe from 0.5m bgl to 6.0m bgl.
3. Casing: Used from ground level to 6.0m bgl.

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PROBEHOLE LOG

Probehole No. WS103

Project Name: Barlow Moor Road
Location: Chorlton
Client: Merepark Homes

Project No. A0361-14
Coordinates: SJ 81895 93271
Level: -

Date: 26/02/2015
Logged By: JM
Approved By: AKC

Scale: 1:30
Hole Type: WS

Well	Water Strikes	Sample Depth (m)	Sample Type	Test Results	Hand Penetrometer Cu (kN/m²)	Depth (m)	Legend	Stratum Description
						0.10		MADE GROUND: TARMAC SURFACE
		0.50	ES					MADE GROUND: Loose brown grey red gravel. Gravel is fine to coarse angular to subrounded of mixed lithologies including brick, sandstone and mudstone.
	Groundwater strike at 1.20m bgl	1.00 - 1.45	SPT	N = 9 (2,2/3,2,3,1)		1.00		Loose to medium dense light brown gravelly medium to coarse SAND. Gravel is fine to coarse angular to subrounded of sandstone and quartz.
					98	1.70		Firm high strength grey brown slightly gravelly slightly sandy CLAY. Gravel is fine to coarse angular to subrounded of sandstone, quartz and flint..
		2.00 - 2.45	SPT	N = 8 (1,2/2,2,2,2)				
		2.50 - 2.80	U		122			
		3.00 - 3.45	SPT	N = 13 (2,2/3,3,4,3)				
					85			
					98			
					159			
					159			
		4.00 - 4.45	SPT	N = 12 (2,2/3,3,4,3)				
					110			
					122			
					110			
					122			
		5.00 - 5.45	SPT	N = 13 (3,3/2,3,4,4)				
					122			
					122			
					122			
					147			
		6.00 - 6.45	SPT	N = 16				

Remarks
1. Hand Dug Pit to 1.20m bgl.
2. Probehole fitted with 50mm diameter plain pipe from ground level to 0.5m bgl, slotted pipe from 0.5m bgl to 6.0m bgl.
3. Casing: Used from ground level to 6.0m bgl.

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PROBEHOLE LOG

Probehole No. WS103

Project Name: Barlow Moor Road
Location: Chorlton
Client: Merepark Homes

Project No. A0361-14
Coordinates: SJ 81895 93271
Level: -

Date: 26/02/2015
Logged By: JM
Approved By: AKC

Scale: 1:30
Hole Type: WS

Well	Water Strikes	Sample Depth (m)	Sample Type	Test Results	Hand Penetrometer Cu (kN/m²)	Depth (m)	Legend	Stratum Description
								End of probehole at 6.45m bgl.

7
8
9
10
11
12

Remarks
1. Hand Dug Pit to 1.20m bgl.
2. Probehole fitted with 50mm diameter plain pipe from ground level to 0.5m bgl, slotted pipe from 0.5m bgl to 6.0m bgl.
3. Casing: Used from ground level to 6.0m bgl.

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PROBEHOLE LOG

Probehole No. WS104

Project Name: Barlow Moor Road
Location: Chorlton
Client: Merepark Homes

Project No. A0361-14
Coordinates: SJ 81903 93294
Level: -

Date: 26/02/2015
Logged By: JM
Approved By: AKC

Scale: 1:30
Hole Type: WS

Well	Water Strikes	Sample Depth (m)	Sample Type	Test Results	Hand Penetrometer Cu (kN/m²)	Depth (m)	Legend	Stratum Description
						0.10		MADE GROUND: TARMAC SURFACE
		0.50	ES					MADE GROUND: Loose brown grey red gravel. Gravel is fine to coarse angular to subrounded of mixed lithologies including brick, sandstone and mudstone.
		1.00 - 1.45	SPT	N = 6 (1,1/2,1,1,2)		0.80		Loose light brown grey slightly clayey gravelly medium to coarse SAND. Gravel is fine to coarse angular to subrounded of sandstone and quartz.
	Groundwater strike at 1.80m bgl					1.80		Firm medium to high strength grey brown slightly gravelly slightly sandy CLAY. Gravel is fine to coarse angular to subrounded of sandstone, quartz and flint.
		2.00 - 2.45	SPT	N = 6 (1,2/1,2,1,2)	49			
					134			
					122			
					110			
					110			
		3.00 - 3.45	SPT	N = 8 (2,2/1,2,2,3)				
					183			
		3.35 - 3.75	U		110			
					73			
					110			
		4.00 - 4.45	SPT	N = 11 (2,2/2,3,3,3)				
					110			
		4.50	D		122			
					98			
					98			
		5.00 - 5.45	SPT	N = 13 (2,2/3,3,3,4)				
					147			
					147			
					98			
					110			
		6.00 - 6.45	SPT	N = 17				

Remarks
1. Hand Dug Pit to 1.20m bgl.
2. Probehole fitted with 50mm diameter plain pipe from ground level to 0.5m bgl, slotted pipe from 0.5m bgl to 6.0m bgl.
3. Casing: Used from ground level to 6.0m bgl.

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PROBEHOLE LOG

Probehole No. WS104

Project Name: Barlow Moor Road
Location: Chorlton
Client: Merepark Homes

Project No. A0361-14
Coordinates: SJ 81903 93294
Level: -

Date: 26/02/2015
Logged By: JM
Approved By: AKC

Scale: 1:30
Hole Type: WS

Well	Water Strikes	Sample Depth (m)	Sample Type	Test Results	Hand Penetrometer Cu (kN/m²)	Depth (m)	Legend	Stratum Description
								End of probehole at 6.45m bgl.

7
8
9
10
11
12

Remarks
1. Hand Dug Pit to 1.20m bgl.
2. Probehole fitted with 50mm diameter plain pipe from ground level to 0.5m bgl, slotted pipe from 0.5m bgl to 6.0m bgl.
3. Casing: Used from ground level to 6.0m bgl.

GAS MONITORING RECORD SHEET

JOB DETAILS

Site:	Barlow Moor Road, Chorlton	Job No:	A0361-14
Date:	13/03/2015	Engineer:	JM
Time:	16:00	Client	Merepark Homes

METEOROLOGICAL & SITE INFORMATION

State of ground:		Dry		Moist	X	Wet			
Wind:		Calm		Light	X	Moderate		Strong	
Cloud cover:		None		Slight	X	Cloudy		Overcast	
Precipitation:		None	X	Slight		Moderate		Heavy	
Barometric pressure (mb):	1026			Local pressure system*:		Rising		Air temperature (°C):	9

Well No.	Time (s)	Flow (l/hr)	dA (PA)	O_2 (% vol. in air)	CO_2 (% vol. in air)	CH_4 (% vol. in air)	PID (ppm)	Depth to GW (mbgl)	Comments
WS101	0	0.0		21.5	0.1	0.0		2.600	TD = 3.70m
	15	0.0		21.5	0.1	0.0			
	30	0.0		21.6	0.1	0.0			
	45	0.0		21.6	0.1	0.0			
	60	0.0		21.6	0.1	0.0			
	90	0.0		21.6	0.1	0.0			
	120	0.0		21.6	0.1	0.0			
	150	0.0		21.6	0.1	0.0			
	180								
	240								
	300								
WS102	0	0.0		21.0	0.1	0.0		1.220	TD = 4.52m
	15	0.0		21.0	0.1	0.0			
	30	0.0		21.3	0.2	0.0			
	45	0.0		21.3	0.1	0.0			
	60	0.0		21.4	0.1	0.0			
	90	0.0		21.4	0.1	0.0			
	120	0.0		21.4	0.1	0.0			
	150	0.0		21.4	0.1	0.0			
	180								
	240								
	300								
WS103	0								
	15								
	30								Unable to monitor probehole, obstruction blocking access.
	45								
	60								
	90								
	120								
	150								
	180								
	240								
	300								
WS104	0	0.0		21.6	0.1	0.0		1.640	TD = 5.85m
	15	0.0		21.6	0.1	0.0			
	30	0.0		21.2	0.5	0.0			
	45	0.0		21.2	0.5	0.0			
	60	0.0		21.0	0.5	0.0			
	90	0.0		21.0	0.5	0.0			
	120	0.0		21.0	0.5	0.0			
	150	0.0		21.0	0.5	0.0			
	180								
	240								
	300								

Notes: TOC = top of casing

The measurement of hydrogen sulphide and hydrocarbon free product is undertaken on a site specific basis, if deemed necessary.

** With reference to the Met Office rolling weather archive for Bingley weather station (nearest observation location to Ramsbottom)*

	Flow (l/hr)	dA (PA)	O2 (% vol. in air)	CO2 (% vol. in air)	CH4 (% vol. in air)
MIN	0.0	0.0	**21.0**	0.1	0.0
MAX	**0.0**	0.0	21.6	**0.5**	**0.0**
GSV				**0**	**0**

Derwentside Environmental Testing Services

Certificate of Analysis

Certificate Number 15-28656

13-Mar-15

Client Earth Environmental & Geotechnical Ltd
Ashbourne House
334 Wellington Road North
Stockport
Cheshire
SK4 5DA

Our Reference 15-28656

Client Reference A0361

Contract Title BARLOW MOOR ROAD MANCHESTER

Description 5 Soil samples.

Date Received 03-Mar-15

Date Started 03-Mar-15

Date Completed 13-Mar-15

Test Procedures Identified by prefix DETSn (details on request), Asbestos Analysis DETSC 1101.

Notes Opinions and interpretations are outside the scope of UKAS accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. Observations and interpretations are outside the scope of ISO 17025. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Rob Brown
Business Manager

UKAS TESTING
2139

Summary of Chemical Analysis
Soil Samples

Our Ref 15-28656
Client Ref A0361
Contract Title BARLOW MOOR ROAD MANCHESTER

			Lab No	776551	776552	776553	776554	776555
			Sample ID	WS101	WS102	WS102	WS103	WS104
			Depth	0.30	0.20	0.40	0.50	0.50
			Other ID					
			Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL
			Sampling Date	n/s	n/s	n/s	n/s	n/s
			Sampling Time	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**					
Preparation								
Moisture Content	DETSC 1004*	0.1	%	17	8.6	5.2	12	11
Metals								
Arsenic	DETSC 2301#	0.2	mg/kg	6.4	4.8	1.8	7.7	8.2
Barium	DETSC 2301#	1.5	mg/kg	78	100	48	100	89
Beryllium	DETSC 2301#	0.2	mg/kg	0.5	0.5	0.2	0.5	1.5
Boron (water soluble)	DETSC 2123#	0.2	mg/kg	0.9	0.7	0.5	0.9	0.5
Cadmium	DETSC 2301#	0.1	mg/kg	0.4	0.4	0.2	0.4	0.6
Chromium	DETSC 2301#	0.15	mg/kg	13	14	8.6	15	15
Hexavalent Chromium	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	14	16	4.2	13	32
Lead	DETSC 2301#	0.3	mg/kg	50	88	6.1	93	57
Mercury	DETSC 2325#	0.05	mg/kg	0.08	0.07	< 0.05	0.10	0.31
Nickel	DETSC 2301#	1	mg/kg	10	15	6.9	12	22
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Vanadium	DETSC 2301	0.8	mg/kg	18	19	11	18	36
Zinc	DETSC 2301#	1	mg/kg	48	37	19	31	40
Inorganics								
pH	DETSC 2008#			8.1	9.1	8.6	8.3	8.5
Cyanide total	DETSC 2130#	0.1	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1
Cyanide free	DETSC 2130#	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Cyanide complex	DETSC 2130*	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Organic matter	DETSC 2002#	0.1	%	1.8	1.7	1.1	1.0	2.5
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	41	28	15	25	14
Sulphide	DETSC 2024#	10	mg/kg	< 10	52	44	32	32
Total Sulphate as SO4	DETSC 2321#	0.01	%	0.04	0.04	0.02	0.03	0.04

Key: * -not accredited. # -MCERTS (accreditation only implied if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 15-28656
Client Ref A0361
Contract Title BARLOW MOOR ROAD MANCHESTER

				Lab No	776551	776552	776553	776554	776555
				Sample ID	WS101	WS102	WS102	WS103	WS104
				Depth	0.30	0.20	0.40	0.50	0.50
				Other ID					
				Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL
				Sampling Date	n/s	n/s	n/s	n/s	n/s
				Sampling Time	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Petroleum Hydrocarbons									
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10
TPH Ali/Aro	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10
EPH (C10-C40)	DETSC 3311#	10	mg/kg	560	430	700	140	380
PAHs									
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	0.96	0.11	< 0.03	< 0.03	0.04
Fluorene	DETSC 3303	0.03	mg/kg	1.2	0.06	< 0.03	< 0.03	< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	12	0.70	< 0.03	0.28	0.36
Anthracene	DETSC 3303	0.03	mg/kg	3.1	0.17	< 0.03	0.18	0.08
Fluoranthene	DETSC 3303#	0.03	mg/kg	6.4	1.2	< 0.03	1.8	0.69
Pyrene	DETSC 3303#	0.03	mg/kg	4.1	1.1	< 0.03	1.8	0.66
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	0.96	0.51	< 0.03	0.93	0.27
Chrysene	DETSC 3303	0.03	mg/kg	1.0	0.56	< 0.03	0.91	0.30
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	0.52	0.68	< 0.03	1.3	0.31
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	0.20	0.24	< 0.03	0.48	0.12
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	0.31	0.53	< 0.03	1.2	0.26
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	0.12	0.33	< 0.03	0.60	0.14
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	0.04	0.09	< 0.03	0.15	0.05
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	0.12	0.27	< 0.03	0.56	0.12
Total PAH - USEPA 16	DETSC 3303	0.1	mg/kg	31	6.5	< 0.10	10	3.4
Phenols									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3

Key: * -not accredited. # -MCERTS (accreditation only implied if report carries the MCERTS logo). n/s -not supplied.

Derwentside Environmental Testing Services

Summary of Asbestos Analysis
Soil Samples

Our Ref 15-28656
Client Ref A0361
Contract Title BARLOW MOOR ROAD MANCHESTER

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
776551	WS101 0.30	SOIL	NAD	none	Andrew Little
776552	WS102 0.20	SOIL	NAD	none	Andrew Little
776553	WS102 0.40	SOIL	NAD	none	Andrew Little
776554	WS103 0.50	SOIL	Chrysotile	Bundles of Chrysotile fibres present	Andrew Little
776555	WS104 0.50	SOIL	Chrysotile	Free Chrysotile fibres present	Andrew Little

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * -not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 15-28656
Client Ref A0361
Contract BARLOW MOOR ROAD MANCHESTER

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
776551	WS101 0.30 SOIL		GJ 250ml, PT 1L	Sample date not supplied	
776552	WS102 0.20 SOIL		GJ 250ml, PT 1L	Sample date not supplied	
776553	WS102 0.40 SOIL		GJ 250ml, PT 1L	Sample date not supplied	
776554	WS103 0.50 SOIL		GJ 250ml, PT 1L	Sample date not supplied	
776555	WS104 0.50 SOIL		GJ 250ml, PT 1L	Sample date not supplied	

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

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time and/or inappropriate containers are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Derwentside Environmental Testing Services

Certificate of Analysis

Certificate Number 15-30021

26-Mar-15

Client Earth Environmental & Geotechnical Ltd
Ashbourne House
334 Wellington Road North
Stockport
Cheshire
SK4 5DA

Our Reference 15-30021

Client Reference A0361/14

Contract Title Barlow Moor Road, Chorlton

Description One Water sample.

Date Received 17-Mar-15

Date Started 17-Mar-15

Date Completed 26-Mar-15

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the scope of UKAS accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. Observations and interpretations are outside the scope of ISO 17025. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Rob Brown
Business Manager

UKAS TESTING
2139

Summary of Chemical Analysis
Water Samples

Our Ref 15-30021
Client Ref A0361/14
Contract Title Barlow Moor Road, Chorlton

Lab No	784248
Sample ID	WS102
Depth	0.45
Other ID	
Sample Type	WATER
Sampling Date	13/03/15
Sampling Time	1500

Test	Method	LOD	Units	
Metals				
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	0.78
Barium, Dissolved	DETSC 2306	0.26	ug/l	78
Beryllium, Dissolved	DETSC 2306*	0.1	ug/l	< 0.1
Boron	DETSC 2123	100	ug/l	120
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	0.15
Chromium, Dissolved	DETSC 2306	0.25	ug/l	5.3
Hexavalent Chromium	DETSC 2203	10	ug/l	< 10
Copper, Dissolved	DETSC 2306	0.4	ug/l	1.8
Lead, Dissolved	DETSC 2306	0.09	ug/l	0.26
Mercury, Dissolved	DETSC 2306	0.01	ug/l	< 0.01
Nickel, Dissolved	DETSC 2306	0.5	ug/l	1.8
Selenium, Dissolved	DETSC 2306	0.25	ug/l	2.6
Vanadium, Dissolved	DETSC 2306	0.6	ug/l	0.7
Zinc, Dissolved	DETSC 2306	1.25	ug/l	1.91
Inorganics				
pH	DETSC 2008			7.6
Cyanide total	DETSC 2130	40	ug/l	< 40
Cyanide free	DETSC 2130	20	ug/l	< 20
Cyanide complex	DETSC 2130*	40	ug/l	< 40
Sulphate as SO4	DETSC 2055	0.1	mg/l	58
Sulphide	DETSC 2208	10	ug/l	13
Total Organic Carbon	DETSC 2085	1	mg/l	24
Petroleum Hydrocarbons				
Aliphatic C5-C6	DETSC 3322	0.1	ug/l	< 0.1
Aliphatic C6-C8	DETSC 3322	0.1	ug/l	< 0.1
Aliphatic C8-C10	DETSC 3322	0.1	ug/l	< 0.1
Aliphatic C10-C12	DETSC 3072*	1	ug/l	< 1.0
Aliphatic C12-C16	DETSC 3072*	1	ug/l	< 1.0
Aliphatic C16-C21	DETSC 3072*	1	ug/l	< 1.0
Aliphatic C21-C35	DETSC 3072*	1	ug/l	< 1.0
Aliphatic C5-C35	DETSC 3072*	10	ug/l	< 10
Aromatic C5-C7	DETSC 3322	0.1	ug/l	< 0.1
Aromatic C7-C8	DETSC 3322	0.1	ug/l	< 0.1
Aromatic C8-C10	DETSC 3322	0.1	ug/l	< 0.1
Aromatic C10-C12	DETSC 3072*	1	ug/l	< 1.0
Aromatic C12-C16	DETSC 3072*	1	ug/l	< 1.0
Aromatic C16-C21	DETSC 3072*	1	ug/l	< 1.0
Aromatic C21-C35	DETSC 3072*	1	ug/l	< 1.0
Aromatic C5-C35	DETSC 3072*	10	ug/l	< 10
TPH Ali/Aro	DETSC 3072*	10	ug/l	< 10
EPH (C10-C35)	DETSC 3311	10	ug/l	< 10

Key: * -not accredited.

Summary of Chemical Analysis
Water Samples

Our Ref 15-30021
Client Ref A0361/14
Contract Title Barlow Moor Road, Chorlton

Lab No	784248
Sample ID	WS102
Depth	0.45
Other ID	
Sample Type	WATER
Sampling Date	13/03/15
Sampling Time	1500

Test	Method	LOD	Units	
PAHs				
Naphthalene	DETSC 3304	0.01	ug/l	< 0.01
Acenaphthylene	DETSC 3304	0.01	ug/l	< 0.01
Acenaphthene	DETSC 3304	0.01	ug/l	< 0.01
Fluorene	DETSC 3304	0.01	ug/l	< 0.01
Phenanthrene	DETSC 3304	0.01	ug/l	0.038
Anthracene	DETSC 3304	0.01	ug/l	0.01
Fluoranthene	DETSC 3304	0.01	ug/l	0.13
Pyrene	DETSC 3304	0.01	ug/l	0.15
Benzo(a)anthracene	DETSC 3304	0.01	ug/l	0.07
Chrysene	DETSC 3304	0.01	ug/l	0.09
Benzo(b)fluoranthene	DETSC 3304	0.01	ug/l	0.11
Benzo(k)fluoranthene	DETSC 3304	0.01	ug/l	0.04
Benzo(a)pyrene	DETSC 3304	0.01	ug/l	0.07
Indeno(1,2,3-c,d)pyrene	DETSC 3304*	0.01	ug/l	0.17
Dibenzo(a,h)anthracene	DETSC 3304	0.01	ug/l	< 0.01
Benzo(g,h,i)perylene	DETSC 3304*	0.01	ug/l	0.21
PAH	DETSC 3304	0.04	ug/l	1.1
Phenols				
Phenol - Monohydric	DETSC 2130	100	ug/l	< 100

Key: * -not accredited.

Information in Support of the Analytical Results

Our Ref 15-30021
Client Ref A0361/14
Contract Barlow Moor Road, Chorlton

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
784248	WS102 0.45 WATER	13/03/15	GB 1L	Hexavalent Chromium (4 days)	

Key: G-Glass B-Bottle

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time and/or inappropriate containers are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-
Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Derwentside Environmental Testing Services

Certificate of Analysis

Certificate Number 15-30456

02-Apr-15

Client Earth Environmental & Geotechnical Ltd
Ashbourne House
334 Wellington Road North
Stockport
Cheshire
SK4 5DA

Our Reference 15-30456

Client Reference A0361/14

Contract Title Barlow Moor Road, Chorlton

Description One Water sample.

Date Received 23-Mar-15

Date Started 23-Mar-15

Date Completed 02-Apr-15

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the scope of UKAS accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. Observations and interpretations are outside the scope of ISO 17025. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Rob Brown
Business Manager

UKAS TESTING
2139

Summary of Chemical Analysis
Water Samples

Our Ref 15-30456
Client Ref A0361/14
Contract Title Barlow Moor Road, Chorlton

Lab No	786907
Sample ID	WS101
Depth	2.60
Other ID	
Sample Type	WATER
Sampling Date	19/03/15
Sampling Time	1225

Test	Method	LOD	Units	
Metals				
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	1.0
Barium, Dissolved	DETSC 2306	0.26	ug/l	59
Beryllium, Dissolved	DETSC 2306*	0.1	ug/l	< 0.1
Boron	DETSC 2123	100	ug/l	150
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	0.19
Chromium, Dissolved	DETSC 2306	0.25	ug/l	3.6
Hexavalent Chromium	DETSC 2203	10	ug/l	< 10
Copper, Dissolved	DETSC 2306	0.4	ug/l	2.8
Lead, Dissolved	DETSC 2306	0.09	ug/l	0.22
Mercury, Dissolved	DETSC 2306	0.01	ug/l	< 0.01
Nickel, Dissolved	DETSC 2306	0.5	ug/l	1.3
Selenium, Dissolved	DETSC 2306	0.25	ug/l	5.1
Vanadium, Dissolved	DETSC 2306	0.6	ug/l	0.8
Zinc, Dissolved	DETSC 2306	1.25	ug/l	27.7
Inorganics				
pH	DETSC 2008			7.7
Cyanide total	DETSC 2130	40	ug/l	< 40
Cyanide free	DETSC 2130	20	ug/l	< 20
Cyanide complex	DETSC 2130*	40	ug/l	< 40
Sulphate as SO4	DETSC 2055	0.1	mg/l	26
Sulphide	DETSC 2208	10	ug/l	< 10
Total Organic Carbon	DETSC 2033	2	mg/l	8.5
Petroleum Hydrocarbons				
Aliphatic C5-C6	DETSC 3322	0.1	ug/l	< 0.1
Aliphatic C6-C8	DETSC 3322	0.1	ug/l	< 0.1
Aliphatic C8-C10	DETSC 3322	0.1	ug/l	< 0.1
Aliphatic C10-C12	DETSC 3072*	1	ug/l	< 1.0
Aliphatic C12-C16	DETSC 3072*	1	ug/l	< 1.0
Aliphatic C16-C21	DETSC 3072*	1	ug/l	< 1.0
Aliphatic C21-C35	DETSC 3072*	1	ug/l	< 1.0
Aliphatic C5-C35	DETSC 3072*	10	ug/l	< 10
Aromatic C5-C7	DETSC 3322	0.1	ug/l	< 0.1
Aromatic C7-C8	DETSC 3322	0.1	ug/l	< 0.1
Aromatic C8-C10	DETSC 3322	0.1	ug/l	< 0.1
Aromatic C10-C12	DETSC 3072*	1	ug/l	< 1.0
Aromatic C12-C16	DETSC 3072*	1	ug/l	< 1.0
Aromatic C16-C21	DETSC 3072*	1	ug/l	< 1.0
Aromatic C21-C35	DETSC 3072*	1	ug/l	< 1.0
Aromatic C5-C35	DETSC 3072*	10	ug/l	< 10
TPH Ali/Aro	DETSC 3072*	10	ug/l	< 10
EPH (C10-C35)	DETSC 3311	10	ug/l	700

Key: * -not accredited.

Summary of Chemical Analysis
Water Samples

Our Ref 15-30456
Client Ref A0361/14
Contract Title Barlow Moor Road, Chorlton

Lab No	786907
Sample ID	WS101
Depth	2.60
Other ID	
Sample Type	WATER
Sampling Date	19/03/15
Sampling Time	1225

Test	Method	LOD	Units	
PAHs				
Naphthalene	DETSC 3304	0.01	ug/l	0.21
Acenaphthylene	DETSC 3304	0.01	ug/l	< 0.05
Acenaphthene	DETSC 3304	0.01	ug/l	0.07
Fluorene	DETSC 3304	0.01	ug/l	0.09
Phenanthrene	DETSC 3304	0.01	ug/l	0.52
Anthracene	DETSC 3304	0.01	ug/l	0.07
Fluoranthene	DETSC 3304	0.01	ug/l	0.40
Pyrene	DETSC 3304	0.01	ug/l	0.47
Benzo(a)anthracene	DETSC 3304	0.01	ug/l	0.17
Chrysene	DETSC 3304	0.01	ug/l	0.60
Benzo(b)fluoranthene	DETSC 3304	0.01	ug/l	0.61
Benzo(k)fluoranthene	DETSC 3304	0.01	ug/l	0.29
Benzo(a)pyrene	DETSC 3304	0.01	ug/l	0.47
Indeno(1,2,3-c,d)pyrene	DETSC 3304*	0.01	ug/l	0.78
Dibenzo(a,h)anthracene	DETSC 3304	0.01	ug/l	< 0.01
Benzo(g,h,i)perylene	DETSC 3304*	0.01	ug/l	1.3
PAH	DETSC 3304	0.04	ug/l	6.1
Phenols				
Phenol - Monohydric	DETSC 2130	100	ug/l	< 100

Key: * -not accredited.

Information in Support of the Analytical Results

Our Ref 15-30456
Client Ref A0361/14
Contract Barlow Moor Road, Chorlton

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
786907	WS101 2.60 WATER	19/03/15	GB 1L		

Key: G-Glass B-Bottle

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Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-
Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

MURRAY RIX

CONSULTANCY, SITE INVESTIGATION
CONSTRUCTION MATERIALS TESTING

TEST REPORT

Client	Earth Environmental & Geotechnical Ltd
Address	Ashbourne House 334 Wellington Road North Stockport Cheshire SK4 5DA
Contract	A0361 Barlow Moor Road
Job Number	MRN 2478/37
Date of Issue	24 March 2015
Page	**1 of 9**

Approved Signatories

S J Hutchings, A W Hutchings, A Richardson

Notes

1 All remaining samples and remnants from this contract will be disposed 28 days from the date of this report unless you notify us to the contrary.

2 Result certificates, in this report, not bearing a UKAS mark, are not included in our UKAS accreditation schedule.

3 Opinions and interpretations expressed herein are outside the scope of our UKAS accreditation

4 Certified that the samples have been examined and tested in accordance with the terms of the contract/order and unless otherwise stated conform to the standards/specifications quoted. This does not, however, guarantee the balance of the materials from which the tested samples have been taken to be of equal quality.

MURRAY RIX

33C Vauxhall Ind. Estate, Greg Street
Reddish, Stockport SK5 7BR
TEL 0161 475 0870 FAX 0161 475 0871

UKAS TESTING 1580

TEST CERTIFICATE

PARTICLE SIZE DISTRIBUTION

BS 1377: PART 2: Clause 9.2: 1990

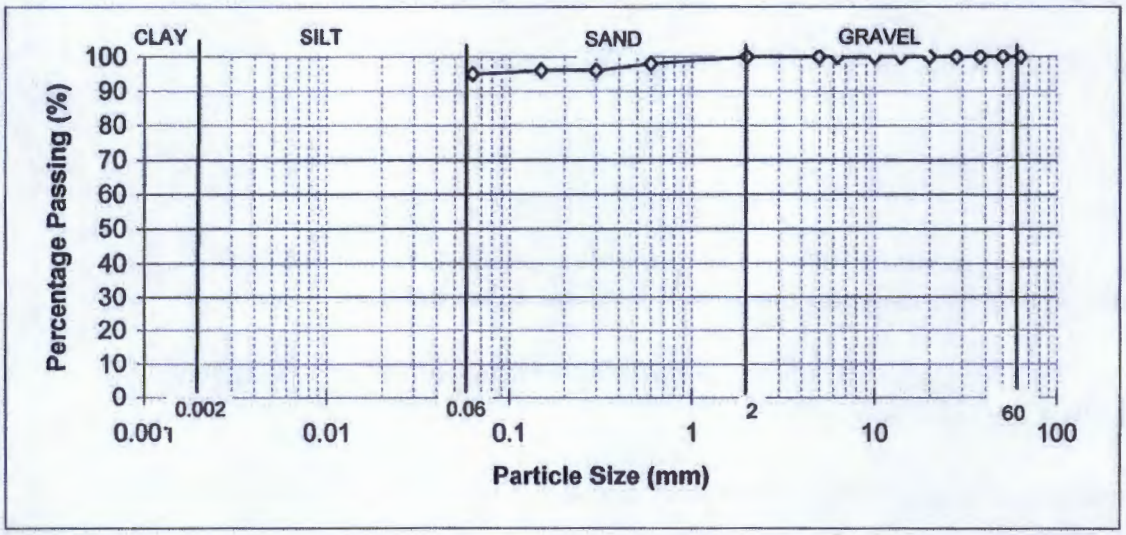
Determination of Moisture Content in accordance with BS 1377: PART 2: Clause 3: 1990 (Oven Dry)

CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A0361 Barlow Moor Road
JOB NUMBER	MRN 2478/36

SAMPLE LABEL	WS102 2.5m	DATE SAMPLED	Not Advised
LAB SAMPLE No	61027	DATE RECEIVED	02-Mar-15
DATE TESTED	06-Mar-15	SAMPLED BY	Client

MATERIAL	Stiff brown silty Clay
ADVISED SOURCE	Site Investigation Sample

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
63	100		6.3	100	
50	100		5	100	
37.5	100		2	100	
28	100		0.6	98	
20	100		0.3	96	
14	100		0.15	96	
10	100		0.063	95	



REMARKS

SIGNED

NAME S.J. Hutchings (Director) DATE 24-Mar-15

MURRAY RIX

33C Vauxhall Ind. Estate, Greg Street
Reddish, Stockport SK5 7BR
TEL 0161 475 0870 FAX 0161 475 0871

UKAS TESTING 1580

TEST CERTIFICATE

LIQUID AND PLASTIC LIMIT

BS 1377: PART 2: 1990 Clause 4.4 ONE POINT METHOD & Clause 5.3

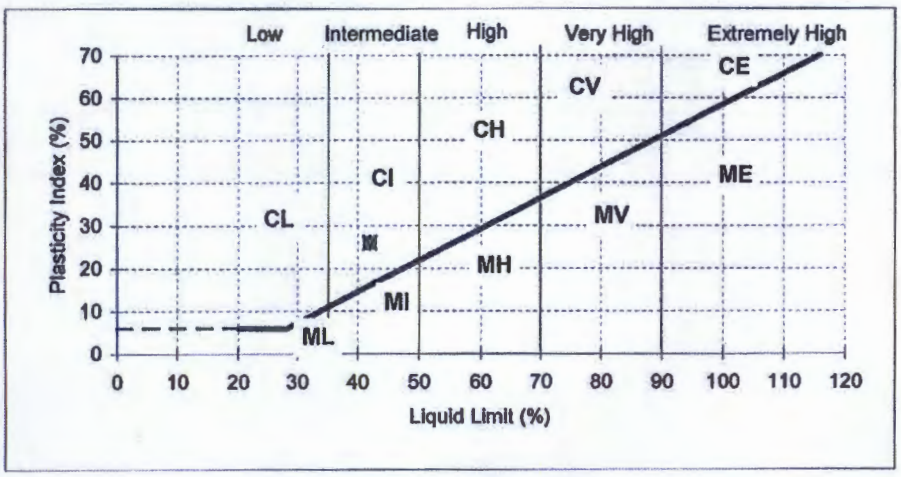
MOISTURE CONTENT METHOD BS 1377: PART 2: 1990 Clause 3.2

CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A0361 Barlow Moor Road, Manchester
JOB NUMBER	MRN 2478/37

SAMPLE LABEL	WS102 2.5m	DATE SAMPLED	Not Advised
SAMPLE No.	61027	DATE RECEIVED	02-Mar-15
DATE TESTED	06-Mar-15	SAMPLED BY	Client

MATERIAL	Stiff brown silty Clay
ADVISED SOURCE	Site Investigation Sample

Moisture Content (Natural) (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
19	42	16	26	97



REMARKS
Sample tested in natural condition

SIGNED

NAME S.J. Hutchings (Director) DATE 24-Mar-15

MURRAY RIX
33C VAUXHALL INDUSTRIAL ESTATE
GREG STREET, REDDISH, STOCKPORT SK5 7BR
TEL 0161 475 0870 FAX 0161 475 0871

TEST CERTIFICATE

SOLUBLE SULPHATE (2:1 EXTRACT) AND pH
BS 1377: PART 3: 1990

CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A0361 Barlow Moor Road, Manchester
JOB NUMBER	MRN 2478/37

SAMPLE LABEL	WS102 2.5m	DATE SAMPLED	Not Advised
LAB SAMPLE No	61027	DATE RECEIVED	2 March 2015
DATE TESTED	6 March 2015	SAMPLED BY	Client

ADVISED SOURCE	Site Investigation Sample
PRE TREATMENT	Air Dried

SOLUBLE SULPHATE (as SO4)	0.06	g/L
pH	7.7	

REMARKS

SIGNED

NAME S.J.Hutchings (Director) DATE 24 March 2015

MURRAY RIX

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UKAS TESTING 1580

TEST CERTIFICATE

PARTICLE SIZE DISTRIBUTION

BS 1377: PART 2: Clause 9.2: 1990

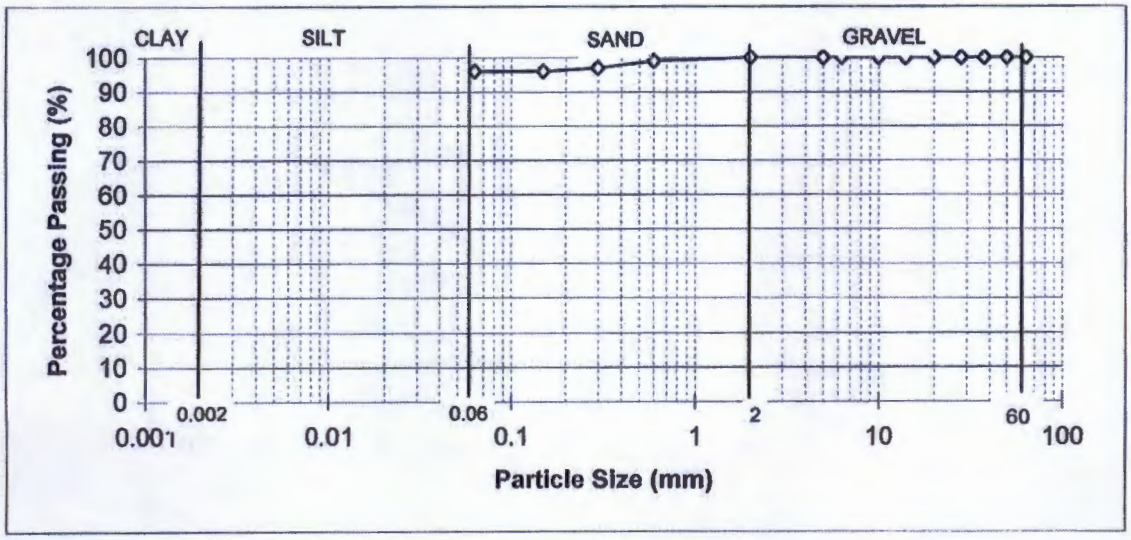
Determination of Moisture Content in accordance with BS 1377: PART 2: Clause 3: 1990 (Oven Dry)

CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A0361 Barlow Moor Road
JOB NUMBER	MRN 2478/36

SAMPLE LABEL	WS104 4.5m	DATE SAMPLED	Not Advised
LAB SAMPLE No	61028	DATE RECEIVED	02-Mar-15
DATE TESTED	06-Mar-15	SAMPLED BY	Client

MATERIAL	Stiff brown silty Clay
ADVISED SOURCE	Site Investigation Sample

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
63	100		6.3	100	
50	100		5	100	
37.5	100		2	100	
28	100		0.6	99	
20	100		0.3	97	
14	100		0.15	96	
10	100		0.063	96	



REMARKS

SIGNED

NAME S.J. Hutchings (Director) DATE 24-Mar-15

MURRAY RIX

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TEL 0161 475 0870 FAX 0161 475 0871

UKAS TESTING
1680

TEST CERTIFICATE

LIQUID AND PLASTIC LIMIT

BS 1377: PART 2: 1990 Clause 4.4 ONE POINT METHOD & Clause 5.3

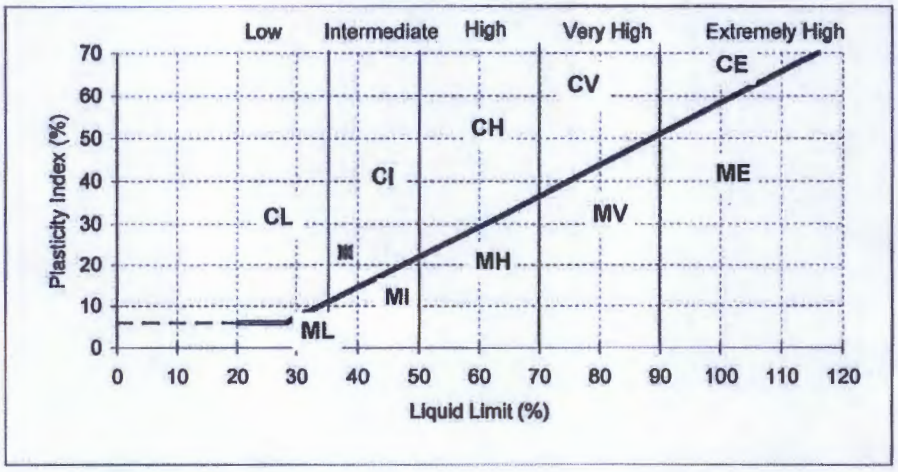
MOISTURE CONTENT METHOD BS 1377: PART 2: 1990 Clause 3.2

CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A0361 Barlow Moor Road, Manchester
JOB NUMBER	MRN 2478/37

SAMPLE LABEL	WS104 4.5m	DATE SAMPLED	Not Advised
SAMPLE No.	61028	DATE RECEIVED	02-Mar-15
DATE TESTED	06-Mar-15	SAMPLED BY	Client

MATERIAL	Stiff brown silty Clay
ADVISED SOURCE	Site Investigation Sample

Moisture Content (Natural) (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
18	38	15	23	98



REMARKS
Sample tested in natural condition

SIGNED

NAME S.J. Hutchings DATE 24-Mar-15
(Director)

MURRAY RIX
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GREG STREET, REDDISH, STOCKPORT SK5 7BR
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TEST CERTIFICATE

SOLUBLE SULPHATE (2:1 EXTRACT) AND pH
BS 1377: PART 3: 1990

CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A0361 Barlow Moor Road, Manchester
JOB NUMBER	MRN 2478/37

SAMPLE LABEL	WS104 4.5m	DATE SAMPLED	Not A
LAB SAMPLE No	61028	DATE RECEIVED	2 Mar
DATE TESTED	6 March 2015	SAMPLED BY	Client

ADVISED SOURCE	Site Investigation Sample
PRE TREATMENT	Air Dried

SOLUBLE SULPHATE (as SO4)	0.12
pH	7.5

REMARKS

SIGNED

NAME S.J.Hutchings (Director) DATE 24 March 2015

MURRAY RIX
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REDDISH, STOCKPORT SK5 7BR
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TEST CERTIFICATE

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION
BS 1377: PART 7: 1990:CLAUSE 9 MULTI STAGE

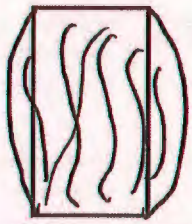
CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A0361 Barlow Moor Road
JOB NUMBER	MRN 2478/37

SAMPLE LABEL	WS103 2.5 – 2.8m	DATE SAMPLED	Not Advised
LAB SAMPLE No	61029	DATE RECEIVED	2 March 2015
DATE TESTED	10 March 2015	SAMPLED BY	Client

MATERIAL	Firm to stiff grey brown silty Clay
ADVISED SOURCE	Site Investigation Sample

SPECIMEN LENGTH	200	mm
SPECIMEN DIAMETER	102	mm
MOISTURE CONTENT OF SAMPLE	22	%
BULK DENSITY	2.01	Mg/m^3
DRY DENSITY	1.65	Mg/m^3
DEPTH OF TOP OF SPECIMEN	2.55	m
RATE OF STRAIN	2	%/min
RUBBER MEMBRANE THICKNESS	0.6	mm

SPECIMEN AT FAILURE



Measured Cell Pressure (kPa)	Strain at Failure (%)	Membrane Correction (kPa)	Corrected Max Deviator Stress (kPa)	Shear Stress Cu (kPa)
50	16	2.0	138.4	69
100	18	2.0	142.4	71
200	20	2.0	147.8	74

REMARKS

SIGNED

NAME S.J. Hutchings (Director)

DATE 24 March 2015

MURRAY RIX
33C VAUXHALL INDUSTRIAL ESTATE, GREG STREET
REDDISH, STOCKPORT SK5 7BR
TEL 0161 475 0870 FAX 161 475N 0871

TEST CERTIFICATE

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION
BS 1377: PART 7: 1990:CLAUSE 9 MULTI STAGE

CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A0361 Barlow Moor Road, Manchester
JOB NUMBER	MRN 2478/37

SAMPLE LABEL	WS104 3.35 – 3.75m	DATE SAMPLED	Not Advised
LAB SAMPLE No	61030	DATE RECEIVED	2 March 2015
DATE TESTED	10 March 2015	SAMPLED BY	Client

MATERIAL	Stiff grey brown silty Clay
ADVISED SOURCE	Site Investigation Sample

SPECIMEN LENGTH	200	mm
SPECIMEN DIAMETER	102	mm
MOISTURE CONTENT OF SAMPLE	18	%
BULK DENSITY	1.98	Mg/m^3
DRY DENSITY	1.68	Mg/m^3
DEPTH OF TOP OF SPECIMEN	3.4	m
RATE OF STRAIN	2	%/min
RUBBER MEMBRANE THICKNESS	0.6	mm

SPECIMEN AT FAILURE



Measured Cell Pressure (kPa)	Strain at Failure (%)	Membrane Correction (kPa)	Corrected Max Deviator Stress (kPa)	Shear Stress Cu (kPa)
75	16	2.0	174.6	87
150	18	2.0	179.4	90
300	20	2.0	181.7	91

REMARKS

SIGNED

NAME S.J. Hutchings (Director) DATE 24 March 2015

Waste Classification Report

9TZ3B-SJD4B-2TZ5V

Job name

Barlow Moor Road

Waste Stream

Default Contaminated Land

Comments

Project

Site

Classified by

Name:
Czarnecki, Adam
Date:
18/04/2015 12:22 UTC
Telephone:
0161 2824518

Company:
Earth Environmental & Geotechnical
Ashbourne House
334 Wellington Road North
Stockport
SK4 5DA

Report

Created by: Czarnecki, Adam
Created date: 18/04/2015 12:22 UTC

Job summary

#	Sample Name	Depth [m]	Classification Result	Hazardous properties	Page
1	WS101	0.3	Non Hazardous		2
2	WS102	0.2	Non Hazardous		5
3	WS102[1]	0.4	Non Hazardous		7
4	WS103	0.5	Non Hazardous		9
5	WS104	0.5	Non Hazardous		11

Appendices	Page
Appendix A: Classifier defined and non CLP determinands	14
Appendix B: Notes	15
Appendix C: Version	16

Classification of sample: WS101

Non Hazardous Waste
Classified as **17 05 04**
in the European Waste Catalogue

Sample details

Sample Name:
WS101
Sample Depth:
0.3 m
Moisture content: **17%**
(dry weight correction)

EWC Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Additional: Additional Risk Phrases "This is an additional risk phrase and such a risk phrases alone will not cause a waste to be hazardous."

Risk phrases hit:

R14 "Reacts violently with water"

Because of determinand:

Boron tribromide/trichloride/trifluoride (combined risk phrases): (compound conc.: 0.00103%)

R33 "Danger of cumulative effects"

Because of determinand:

Lead chromate: (compound conc.: 0.00667%)

Determinands (Moisture content: 17%, dry weight correction)

Acenaphthene: (Whole conc. entered as: 0.96 mg/kg or 0.0000821%)
Acenaphthylene: (Whole conc. entered as: <0.03 mg/kg or <0.00000256%) IGNORED Because: "<LOD"
Anthracene: (Whole conc. entered as: 3.1 mg/kg or 0.000265%)
Arsenic trioxide: (Cation conc. entered: 6.4 mg/kg, converted to compound conc.:7.222 mg/kg or 0.000722%)
Benzo[a]anthracene: (Whole conc. entered as: 0.96 mg/kg or 0.0000821%)
Benzo[a]pyrene; benzo[def]chrysene: (Whole conc. entered as: 0.31 mg/kg or 0.0000265%)
Benzo[b]fluoranthene: (Whole conc. entered as: 0.52 mg/kg or 0.0000444%)
Benzo[ghi]perylene: (Whole conc. entered as: 0.12 mg/kg or 0.0000103%)
Benzo[k]fluoranthene: (Whole conc. entered as: 0.2 mg/kg or 0.0000171%)
beryllium oxide: (Cation conc. entered: 0.5 mg/kg, converted to compound conc.:1.186 mg/kg or 0.000119%)
Boron tribromide/trichloride/trifluoride (combined risk phrases): (Cation conc. entered: 0.9 mg/kg, converted to compound conc.:10.331 mg/kg or 0.00103%)
Cadmium sulphide: (Cation conc. entered: 0.4 mg/kg, converted to compound conc.:0.439 mg/kg or 0.0000439%, Note 1 conc.: 0.0000342%)
Chromium(VI) oxide: (Cation conc. entered: <1 mg/kg, converted to compound conc.:<1.644 mg/kg or <0.000164%) IGNORED Because: "<LOD"
Chrysene: (Whole conc. entered as: 1 mg/kg or 0.0000855%)
Copper (I) oxide: (Cation conc. entered: 14 mg/kg, converted to compound conc.:13.472 mg/kg or 0.00135%)
Cyanides (with the exception of complex cyanides): (Whole conc. entered as: <0.1 mg/kg or <0.00000855%) IGNORED Because: "<LOD"
Dibenz[a,h]anthracene: (Whole conc. entered as: 0.04 mg/kg or 0.00000342%)
Fluoranthene: (Whole conc. entered as: 6.4 mg/kg or 0.000547%)
Fluorene: (Whole conc. entered as: 1.2 mg/kg or 0.000103%)
Indeno[123-cd]pyrene: (Whole conc. entered as: 0.12 mg/kg or 0.0000103%)

Lead chromate: (Cation conc. entered: 50 mg/kg, converted to compound conc.:66.659 mg/kg or 0.00667%, Note 1 conc.: 0.00427%)
Mercury dichloride: (Cation conc. entered: 0.08 mg/kg, converted to compound conc.:0.0925 mg/kg or 0.00000925%)
Naphthalene: (Whole conc. entered as: <0.03 mg/kg or <0.00000256%) IGNORED Because: "<LOD"
Nickel dihydroxide: (Cation conc. entered: 10 mg/kg, converted to compound conc.:13.5 mg/kg or 0.00135%)
pH: (Whole conc. entered as: 8.1 pH, converted to conc.:8.1 pH or 8.1 pH)
Phenanthrene: (Whole conc. entered as: 12 mg/kg or 0.00103%)
Phenol: (Whole conc. entered as: <0.3 mg/kg or <0.0000256%) IGNORED Because: "<LOD"
Pyrene: (Whole conc. entered as: 4.1 mg/kg or 0.00035%)
Selenium compounds (with the exception of cadmium sulphoselenide and sodium selenite): (Cation conc. entered: <0.5 mg/kg, converted to compound conc.:<0.641 mg/kg or <0.0000641%) IGNORED Because: "<LOD"
TPH (C6 to C40) Petroleum Group: (Whole conc. entered as: <10 mg/kg or <0.000855%) IGNORED Because: "<LOD"
Zinc chromate: (Cation conc. entered: 48 mg/kg, converted to compound conc.:113.811 mg/kg or 0.0114%)

Notes utilised in assessment

Additional Risk Phrase Comments , used on:

Test: "Additional on R14" for determinand: "Boron tribromide/trichloride/trifluoride (combined risk phrases)"
Test: "Additional on R33" for determinand: "Lead chromate"

C14.3: Step 4 , used on:

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Cadmium sulphide"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Fluorene"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Acenaphthene"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Anthracene"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Arsenic trioxide"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Benzo[a]anthracene"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Benzo[a]pyrene; benzo[def]chrysene"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Benzo[b]fluoranthene"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Benzo[ghi]perylene"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Benzo[k]fluoranthene"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Chrysene"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Copper (I) oxide"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Dibenz[a,h]anthracene"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Fluoranthene"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Lead chromate"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Mercury dichloride"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Nickel dihydroxide"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Phenanthrene"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Pyrene"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Zinc chromate"

Note 1 , used on:

Test: "H5 on R20, R21, R22, R65" for determinand: "Cadmium sulphide"
Test: "H6 on R23, R24, R25" for determinand: "Cadmium sulphide"
Test: "H7 on R45" for determinand: "Cadmium sulphide"
Test: "H10 on R60, R61" for determinand: "Lead chromate"
Test: "H10 on R62, R63" for determinand: "Cadmium sulphide"
Test: "H11 on R68" for determinand: "Cadmium sulphide"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Cadmium sulphide"

Determinand notes

Note 1 , used on:

determinand: "Cadmium sulphide"
determinand: "Lead chromate"

Note A , used on:

determinand: "Zinc chromate"

Note E , used on:

determinand: "Arsenic trioxide"
determinand: "beryllium oxide"
determinand: "Cadmium sulphide"
determinand: "Nickel dihydroxide"
determinand: "Zinc chromate"

Classification of sample: WS102

Non Hazardous Waste
Classified as **17 05 04**
in the European Waste Catalogue

Sample details

Sample Name:
WS102
Sample Depth:
0.2 m
Moisture content: **8.6%**
(dry weight correction)

EWC Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Additional: Additional Risk Phrases "This is an additional risk phrase and such a risk phrases alone will not cause a waste to be hazardous."

Risk phrases hit:

R14 "Reacts violently with water"

Because of determinand:

Boron tribromide/trichloride/trifluoride (combined risk phrases): (compound conc.: 0.000866%)

R33 "Danger of cumulative effects"

Because of determinand:

Lead chromate: (compound conc.: 0.0126%)

Determinands (Moisture content: 8.6%, dry weight correction)

Acenaphthene: (Whole conc. entered as: 0.11 mg/kg or 0.0000101%)
Acenaphthylene: (Whole conc. entered as: <0.03 mg/kg or <0.00000276%) IGNORED Because: "<LOD"
Anthracene: (Whole conc. entered as: 0.17 mg/kg or 0.0000157%)
Arsenic trioxide: (Cation conc. entered: 4.8 mg/kg, converted to compound conc.:5.836 mg/kg or 0.000584%)
Benzo[a]anthracene: (Whole conc. entered as: 0.51 mg/kg or 0.000047%)
Benzo[a]pyrene; benzo[def]chrysene: (Whole conc. entered as: 0.53 mg/kg or 0.0000488%)
Benzo[b]fluoranthene: (Whole conc. entered as: 0.68 mg/kg or 0.0000626%)
Benzo[ghi]perylene: (Whole conc. entered as: 0.33 mg/kg or 0.0000304%)
Benzo[k]fluoranthene: (Whole conc. entered as: 0.24 mg/kg or 0.0000221%)
beryllium oxide: (Cation conc. entered: 0.5 mg/kg, converted to compound conc.:1.278 mg/kg or 0.000128%)
Boron tribromide/trichloride/trifluoride (combined risk phrases): (Cation conc. entered: 0.7 mg/kg, converted to compound conc.:8.657 mg/kg or 0.000866%)
Cadmium sulphide: (Cation conc. entered: 0.4 mg/kg, converted to compound conc.:0.473 mg/kg or 0.0000473%, Note 1 conc.: 0.0000368%)
Chromium(VI) oxide: (Cation conc. entered: <1 mg/kg, converted to compound conc.:<1.771 mg/kg or <0.000177%) IGNORED Because: "<LOD"
Chrysene: (Whole conc. entered as: 0.56 mg/kg or 0.0000516%)
Copper (I) oxide: (Cation conc. entered: 16 mg/kg, converted to compound conc.:16.588 mg/kg or 0.00166%)
Cyanides (with the exception of complex cyanides): (Whole conc. entered as: <0.1 mg/kg or <0.00000921%) IGNORED Because: "<LOD"
Dibenz[a,h]anthracene: (Whole conc. entered as: 0.09 mg/kg or 0.00000829%)
Fluoranthene: (Whole conc. entered as: 1.2 mg/kg or 0.00011%)
Fluorene: (Whole conc. entered as: 0.06 mg/kg or 0.00000552%)
Indeno[123-cd]pyrene: (Whole conc. entered as: 0.27 mg/kg or 0.0000249%)

Lead chromate: (Cation conc. entered: 88 mg/kg, converted to compound conc.:126.394 mg/kg or 0.0126%, Note 1 conc.: 0.0081%)
Mercury dichloride: (Cation conc. entered: 0.07 mg/kg, converted to compound conc.:0.0872 mg/kg or 0.00000872%)
Naphthalene: (Whole conc. entered as: <0.03 mg/kg or <0.00000276%) IGNORED Because: "<LOD"
Nickel dihydroxide: (Cation conc. entered: 15 mg/kg, converted to compound conc.:21.816 mg/kg or 0.00218%)
pH: (Whole conc. entered as: 9.1 pH, converted to conc.:9.1 pH or 9.1 pH)
Phenanthrene: (Whole conc. entered as: 0.7 mg/kg or 0.0000645%)
Phenol: (Whole conc. entered as: <0.3 mg/kg or <0.0000276%) IGNORED Because: "<LOD"
Pyrene: (Whole conc. entered as: 1.1 mg/kg or 0.000101%)
Selenium compounds (with the exception of cadmium sulphoselenide and sodium selenite): (Cation conc. entered: <0.5 mg/kg, converted to compound conc.:<0.691 mg/kg or <0.0000691%) IGNORED Because: "<LOD"
TPH (C6 to C40) Petroleum Group: (Whole conc. entered as: <10 mg/kg or <0.000921%) IGNORED Because: "<LOD"
Zinc chromate: (Cation conc. entered: 37 mg/kg, converted to compound conc.:94.515 mg/kg or 0.00945%)

Notes utilised in assessment

Additional Risk Phrase Comments , used on:

Test: "Additional on R14" for determinand: "Boron tribromide/trichloride/trifluoride (combined risk phrases)"
Test: "Additional on R33" for determinand: "Lead chromate"

C14.3: Step 4 , used on:

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Cadmium sulphide"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Fluorene"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Acenaphthene"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Anthracene"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Arsenic trioxide"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Benzo[a]anthracene"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Benzo[a]pyrene; benzo[def]chrysene"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Benzo[b]fluoranthene"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Benzo[ghi]perylene"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Benzo[k]fluoranthene"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Chrysene"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Copper (I) oxide"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Dibenz[a,h]anthracene"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Fluoranthene"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Lead chromate"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Mercury dichloride"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Nickel dihydroxide"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Phenanthrene"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Pyrene"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Zinc chromate"

Determinand notes

Note 1 , used on:

determinand: "Cadmium sulphide"
determinand: "Lead chromate"

Note A , used on:

determinand: "Zinc chromate"

Note E , used on:

determinand: "Arsenic trioxide"
determinand: "beryllium oxide"
determinand: "Cadmium sulphide"
determinand: "Nickel dihydroxide"
determinand: "Zinc chromate"

Classification of sample: WS102[1]

Non Hazardous Waste
Classified as **17 05 04**
in the European Waste Catalogue

Sample details

Sample Name:
WS102[1]
Sample Depth:
0.4 m
Moisture content: **5.2%**
(dry weight correction)

EWC Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Additional: Additional Risk Phrases "This is an additional risk phrase and such a risk phrases alone will not cause a waste to be hazardous."

Risk phrases hit:

R14 "Reacts violently with water"

Because of determinand:

Boron tribromide/trichloride/trifluoride (combined risk phrases): (compound conc.: 0.000638%)

R33 "Danger of cumulative effects"

Because of determinand:

Lead chromate: (compound conc.: 0.000904%)

Determinands (Moisture content: 5.2%, dry weight correction)

Acenaphthene: (Whole conc. entered as: <0.03 mg/kg or <0.00000285%) IGNORED Because: "<LOD"
Acenaphthylene: (Whole conc. entered as: <0.03 mg/kg or <0.00000285%) IGNORED Because: "<LOD"
Anthracene: (Whole conc. entered as: <0.03 mg/kg or <0.00000285%) IGNORED Because: "<LOD"
Arsenic trioxide: (Cation conc. entered: 1.8 mg/kg, converted to compound conc.:2.259 mg/kg or 0.000226%)
Benzo[a]anthracene: (Whole conc. entered as: <0.03 mg/kg or <0.00000285%) IGNORED Because: "<LOD"
Benzo[a]pyrene; benzo[def]chrysene: (Whole conc. entered as: <0.03 mg/kg or <0.00000285%) IGNORED Because: "<LOD"
Benzo[b]fluoranthene: (Whole conc. entered as: <0.03 mg/kg or <0.00000285%) IGNORED Because: "<LOD"
Benzo[ghi]perylene: (Whole conc. entered as: <0.03 mg/kg or <0.00000285%) IGNORED Because: "<LOD"
Benzo[k]fluoranthene: (Whole conc. entered as: <0.03 mg/kg or <0.00000285%) IGNORED Because: "<LOD"
beryllium oxide: (Cation conc. entered: 0.2 mg/kg, converted to compound conc.:0.528 mg/kg or 0.0000528%)
Boron tribromide/trichloride/trifluoride (combined risk phrases): (Cation conc. entered: 0.5 mg/kg, converted to compound conc.:6.383 mg/kg or 0.000638%)
Cadmium sulphide: (Cation conc. entered: 0.2 mg/kg, converted to compound conc.:0.244 mg/kg or 0.0000244%, Note 1 conc.: 0.000019%)
Chromium(VI) oxide: (Cation conc. entered: <1 mg/kg, converted to compound conc.:<1.828 mg/kg or <0.000183%) IGNORED Because: "<LOD"
Chrysene: (Whole conc. entered as: <0.03 mg/kg or <0.00000285%) IGNORED Because: "<LOD"
Copper (I) oxide: (Cation conc. entered: 4.2 mg/kg, converted to compound conc.:4.495 mg/kg or 0.000449%)
Cyanides (with the exception of complex cyanides): (Whole conc. entered as: <0.1 mg/kg or <0.00000951%) IGNORED Because: "<LOD"
Dibenz[a,h]anthracene: (Whole conc. entered as: <0.03 mg/kg or <0.00000285%) IGNORED Because: "<LOD"
Fluoranthene: (Whole conc. entered as: <0.03 mg/kg or <0.00000285%) IGNORED Because: "<LOD"
Fluorene: (Whole conc. entered as: <0.03 mg/kg or <0.00000285%) IGNORED Because: "<LOD"

Indeno[123-cd]pyrene: (Whole conc. entered as: <0.03 mg/kg or <0.00000285%) IGNORED Because: "<LOD"
Lead chromate: (Cation conc. entered: 6.1 mg/kg, converted to compound conc.:9.045 mg/kg or 0.000904%, Note 1 conc.: 0.00058%)
Mercury dichloride: (Cation conc. entered: <0.05 mg/kg, converted to compound conc.:<0.0643 mg/kg or <0.00000643%) IGNORED Because: "<LOD"
Naphthalene: (Whole conc. entered as: <0.03 mg/kg or <0.00000285%) IGNORED Because: "<LOD"
Nickel dihydroxide: (Cation conc. entered: 6.9 mg/kg, converted to compound conc.:10.36 mg/kg or 0.00104%)
pH: (Whole conc. entered as: 8.6 pH, converted to conc.:8.6 pH or 8.6 pH)
Phenanthrene: (Whole conc. entered as: <0.03 mg/kg or <0.00000285%) IGNORED Because: "<LOD"
Phenol: (Whole conc. entered as: <0.3 mg/kg or <0.0000285%) IGNORED Because: "<LOD"
Pyrene: (Whole conc. entered as: <0.03 mg/kg or <0.00000285%) IGNORED Because: "<LOD"
Selenium compounds (with the exception of cadmium sulphoselenide and sodium selenite): (Cation conc. entered: <0.5 mg/kg, converted to compound conc.:<0.713 mg/kg or <0.0000713%) IGNORED Because: "<LOD"
TPH (C6 to C40) Petroleum Group: (Whole conc. entered as: <10 mg/kg or <0.000951%) IGNORED Because: "<LOD"
Zinc chromate: (Cation conc. entered: 19 mg/kg, converted to compound conc.:50.103 mg/kg or 0.00501%)

Notes utilised in assessment

Additional Risk Phrase Comments , used on:

Test: "Additional on R14" for determinand: "Boron tribromide/trichloride/trifluoride (combined risk phrases)"
Test: "Additional on R33" for determinand: "Lead chromate"

C14.3: Step 4 , used on:

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Cadmium sulphide"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Arsenic trioxide"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Copper (I) oxide"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Lead chromate"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Nickel dihydroxide"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Zinc chromate"

Note 1 , used on:

Test: "H5 on R20, R21, R22, R65" for determinand: "Cadmium sulphide"
Test: "H6 on R23, R24, R25" for determinand: "Cadmium sulphide"
Test: "H7 on R45" for determinand: "Cadmium sulphide"
Test: "H10 on R60, R61" for determinand: "Lead chromate"
Test: "H10 on R62, R63" for determinand: "Cadmium sulphide"
Test: "H11 on R68" for determinand: "Cadmium sulphide"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Cadmium sulphide"

Determinand notes

Note 1 , used on:

determinand: "Cadmium sulphide"
determinand: "Lead chromate"

Note A , used on:

determinand: "Zinc chromate"

Note E , used on:

determinand: "Arsenic trioxide"
determinand: "beryllium oxide"
determinand: "Cadmium sulphide"
determinand: "Nickel dihydroxide"
determinand: "Zinc chromate"

Classification of sample: WS103

Non Hazardous Waste
Classified as **17 05 04**
in the European Waste Catalogue

Sample details

Sample Name:
WS103
Sample Depth:
0.5 m
Moisture content: **12%**
(dry weight correction)

EWC Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Additional: Additional Risk Phrases "This is an additional risk phrase and such a risk phrases alone will not cause a waste to be hazardous."

Risk phrases hit:

R14 "Reacts violently with water"

Because of determinand:

Boron tribromide/trichloride/trifluoride (combined risk phrases): (compound conc.: 0.00108%)

R33 "Danger of cumulative effects"

Because of determinand:

Lead chromate: (compound conc.: 0.013%)

Determinands (Moisture content: 12%, dry weight correction)

Acenaphthene: (Whole conc. entered as: <0.03 mg/kg or <0.00000268%) IGNORED Because: "<LOD"
Acenaphthylene: (Whole conc. entered as: <0.03 mg/kg or <0.00000268%) IGNORED Because: "<LOD"
Anthracene: (Whole conc. entered as: 0.18 mg/kg or 0.0000161%)
Arsenic trioxide: (Cation conc. entered: 7.7 mg/kg, converted to compound conc.:9.077 mg/kg or 0.000908%)
Benzo[a]anthracene: (Whole conc. entered as: 0.93 mg/kg or 0.000083%)
Benzo[a]pyrene; benzo[def]chrysene: (Whole conc. entered as: 1.2 mg/kg or 0.000107%)
Benzo[b]fluoranthene: (Whole conc. entered as: 1.3 mg/kg or 0.000116%)
Benzo[ghi]perylene: (Whole conc. entered as: 0.6 mg/kg or 0.0000536%)
Benzo[k]fluoranthene: (Whole conc. entered as: 0.48 mg/kg or 0.0000429%)
beryllium oxide: (Cation conc. entered: 0.5 mg/kg, converted to compound conc.:1.239 mg/kg or 0.000124%)
Boron tribromide/trichloride/trifluoride (combined risk phrases): (Cation conc. entered: 0.9 mg/kg, converted to compound conc.:10.792 mg/kg or 0.00108%)
Cadmium sulphide: (Cation conc. entered: 0.4 mg/kg, converted to compound conc.:0.459 mg/kg or 0.0000459%, Note 1 conc.: 0.0000357%)
Chromium(VI) oxide: (Cation conc. entered: <1 mg/kg, converted to compound conc.:<1.717 mg/kg or <0.000172%) IGNORED Because: "<LOD"
Chrysene: (Whole conc. entered as: 0.91 mg/kg or 0.0000812%)
Copper (I) oxide: (Cation conc. entered: 13 mg/kg, converted to compound conc.:13.068 mg/kg or 0.00131%)
Cyanides (with the exception of complex cyanides): (Whole conc. entered as: <0.1 mg/kg or <0.00000893%) IGNORED Because: "<LOD"
Dibenz[a,h]anthracene: (Whole conc. entered as: 0.15 mg/kg or 0.0000134%)
Fluoranthene: (Whole conc. entered as: 1.8 mg/kg or 0.000161%)
Fluorene: (Whole conc. entered as: <0.03 mg/kg or <0.00000268%) IGNORED Because: "<LOD"
Indeno[123-cd]pyrene: (Whole conc. entered as: 0.56 mg/kg or 0.00005%)

Lead chromate: (Cation conc. entered: 93 mg/kg, converted to compound conc.:129.52 mg/kg or 0.013%, Note 1 conc.: 0.0083%)
Mercury dichloride: (Cation conc. entered: 0.1 mg/kg, converted to compound conc.:0.121 mg/kg or 0.0000121%)
Naphthalene: (Whole conc. entered as: <0.03 mg/kg or <0.00000268%) IGNORED Because: "<LOD"
Nickel dihydroxide: (Cation conc. entered: 12 mg/kg, converted to compound conc.:16.923 mg/kg or 0.00169%)
pH: (Whole conc. entered as: 8.3 pH, converted to conc.:8.3 pH or 8.3 pH)
Phenanthrene: (Whole conc. entered as: 0.28 mg/kg or 0.000025%)
Phenol: (Whole conc. entered as: <0.3 mg/kg or <0.0000268%) IGNORED Because: "<LOD"
Pyrene: (Whole conc. entered as: 1.8 mg/kg or 0.000161%)
Selenium compounds (with the exception of cadmium sulphoselenide and sodium selenite): (Cation conc. entered: <0.5 mg/kg, converted to compound conc.:<0.67 mg/kg or <0.000067%) IGNORED Because: "<LOD"
TPH (C6 to C40) Petroleum Group: (Whole conc. entered as: <10 mg/kg or <0.000893%) IGNORED Because: "<LOD"
Zinc chromate: (Cation conc. entered: 31 mg/kg, converted to compound conc.:76.784 mg/kg or 0.00768%)

Notes utilised in assessment

Additional Risk Phrase Comments , used on:

Test: "Additional on R14" for determinand: "Boron tribromide/trichloride/trifluoride (combined risk phrases)"
Test: "Additional on R33" for determinand: "Lead chromate"

C14.3: Step 4 , used on:

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Cadmium sulphide"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Anthracene"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Arsenic trioxide"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Benzo[a]anthracene"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Benzo[a]pyrene; benzo[def]chrysene"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Benzo[b]fluoranthene"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Benzo[ghi]perylene"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Benzo[k]fluoranthene"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Chrysene"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Copper (I) oxide"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Dibenz[a,h]anthracene"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Fluoranthene"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Lead chromate"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Mercury dichloride"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Nickel dihydroxide"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Phenanthrene"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Pyrene"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Zinc chromate"

Determinand notes

Note 1 , used on:

determinand: "Cadmium sulphide"
determinand: "Lead chromate"

Note A , used on:

determinand: "Zinc chromate"

Note E , used on:

determinand: "Arsenic trioxide"
determinand: "beryllium oxide"
determinand: "Cadmium sulphide"
determinand: "Nickel dihydroxide"
determinand: "Zinc chromate"

Classification of sample: WS104

Non Hazardous Waste
Classified as **17 05 04**
in the European Waste Catalogue

Sample details

Sample Name:
WS104
Sample Depth:
0.5 m
Moisture content: **11%**
(dry weight correction)

EWC Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Additional: Additional Risk Phrases "This is an additional risk phrase and such a risk phrases alone will not cause a waste to be hazardous."

Risk phrases hit:

R14 "Reacts violently with water"

Because of determinand:

Boron tribromide/trichloride/trifluoride (combined risk phrases): (compound conc.: 0.000605%)

R33 "Danger of cumulative effects"

Because of determinand:

Lead chromate: (compound conc.: 0.00801%)

Determinands (Moisture content: 11%, dry weight correction)

Acenaphthene: (Whole conc. entered as: 0.04 mg/kg or 0.0000036%)
Acenaphthylene: (Whole conc. entered as: <0.03 mg/kg or <0.0000027%) IGNORED Because: "<LOD"
Anthracene: (Whole conc. entered as: 0.08 mg/kg or 0.00000721%)
Arsenic trioxide: (Cation conc. entered: 8.2 mg/kg, converted to compound conc.:9.754 mg/kg or 0.000975%)
Benzo[a]anthracene: (Whole conc. entered as: 0.27 mg/kg or 0.0000243%)
Benzo[a]pyrene; benzo[def]chrysene: (Whole conc. entered as: 0.26 mg/kg or 0.0000234%)
Benzo[b]fluoranthene: (Whole conc. entered as: 0.31 mg/kg or 0.0000279%)
Benzo[ghi]perylene: (Whole conc. entered as: 0.14 mg/kg or 0.0000126%)
Benzo[k]fluoranthene: (Whole conc. entered as: 0.12 mg/kg or 0.0000108%)
beryllium oxide: (Cation conc. entered: 1.5 mg/kg, converted to compound conc.:3.75 mg/kg or 0.000375%)
Boron tribromide/trichloride/trifluoride (combined risk phrases): (Cation conc. entered: 0.5 mg/kg, converted to compound conc.:6.05 mg/kg or 0.000605%)
Cadmium sulphide: (Cation conc. entered: 0.6 mg/kg, converted to compound conc.:0.695 mg/kg or 0.0000695%, Note 1 conc.: 0.0000541%)
Chromium(VI) oxide: (Cation conc. entered: <1 mg/kg, converted to compound conc.:<1.733 mg/kg or <0.000173%) IGNORED Because: "<LOD"
Chrysene: (Whole conc. entered as: 0.3 mg/kg or 0.000027%)
Copper (I) oxide: (Cation conc. entered: 32 mg/kg, converted to compound conc.:32.458 mg/kg or 0.00325%)
Cyanides (with the exception of complex cyanides): (Whole conc. entered as: <0.1 mg/kg or <0.00000901%) IGNORED Because: "<LOD"
Dibenz[a,h]anthracene: (Whole conc. entered as: 0.05 mg/kg or 0.0000045%)
Fluoranthene: (Whole conc. entered as: 0.69 mg/kg or 0.0000622%)
Fluorene: (Whole conc. entered as: <0.03 mg/kg or <0.0000027%) IGNORED Because: "<LOD"
Indeno[123-cd]pyrene: (Whole conc. entered as: 0.12 mg/kg or 0.0000108%)

Lead chromate: (Cation conc. entered: 57 mg/kg, converted to compound conc.:80.099 mg/kg or 0.00801%, Note 1 conc.: 0.00514%)
Mercury dichloride: (Cation conc. entered: 0.31 mg/kg, converted to compound conc.:0.378 mg/kg or 0.0000378%)
Naphthalene: (Whole conc. entered as: <0.03 mg/kg or <0.0000027%) IGNORED Because: "<LOD"
Nickel dihydroxide: (Cation conc. entered: 22 mg/kg, converted to compound conc.:31.305 mg/kg or 0.00313%)
pH: (Whole conc. entered as: 8.5 pH, converted to conc.:8.5 pH or 8.5 pH)
Phenanthrene: (Whole conc. entered as: 0.36 mg/kg or 0.0000324%)
Phenol: (Whole conc. entered as: <0.3 mg/kg or <0.000027%) IGNORED Because: "<LOD"
Pyrene: (Whole conc. entered as: 0.66 mg/kg or 0.0000595%)
Selenium compounds (with the exception of cadmium sulphoselenide and sodium selenite): (Cation conc. entered: <0.5 mg/kg, converted to compound conc.:<0.676 mg/kg or <0.0000676%) IGNORED Because: "<LOD"
TPH (C6 to C40) Petroleum Group: (Whole conc. entered as: <10 mg/kg or <0.000901%) IGNORED Because: "<LOD"
Zinc chromate: (Cation conc. entered: 40 mg/kg, converted to compound conc.:99.969 mg/kg or 0.01%)

Notes utilised in assessment

Additional Risk Phrase Comments , used on:

Test: "Additional on R14" for determinand: "Boron tribromide/trichloride/trifluoride (combined risk phrases)"
Test: "Additional on R33" for determinand: "Lead chromate"

C14.3: Step 4 , used on:

Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Cadmium sulphide"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Acenaphthene"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Anthracene"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Arsenic trioxide"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Benzo[a]anthracene"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Benzo[a]pyrene; benzo[def]chrysene"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Benzo[b]fluoranthene"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Benzo[ghi]perylene"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Benzo[k]fluoranthene"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Chrysene"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Copper (I) oxide"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Dibenz[a,h]anthracene"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Fluoranthene"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Lead chromate"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Mercury dichloride"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Nickel dihydroxide"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Phenanthrene"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Pyrene"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Zinc chromate"

Note 1 , used on:

Test: "H5 on R20, R21, R22, R65" for determinand: "Cadmium sulphide"
Test: "H6 on R23, R24, R25" for determinand: "Cadmium sulphide"
Test: "H7 on R45" for determinand: "Cadmium sulphide"
Test: "H10 on R60, R61" for determinand: "Lead chromate"
Test: "H10 on R62, R63" for determinand: "Cadmium sulphide"
Test: "H11 on R68" for determinand: "Cadmium sulphide"
Test: "H14 on R50, R52, R53, R50/53, R51/53, R52/53" for determinand: "Cadmium sulphide"

Determinand notes

Note 1 , used on:

determinand: "Cadmium sulphide"
determinand: "Lead chromate"

Note A , used on:

determinand: "Zinc chromate"

Note E , used on:

determinand: "Arsenic trioxide"
determinand: "beryllium oxide"
determinand: "Cadmium sulphide"
determinand: "Nickel dihydroxide"
determinand: "Zinc chromate"

Appendix A: Classifier defined and non CLP determinands

Acenaphthene (CAS Number: 83-32-9)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory
Data source:
http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=133563&HarmOnly=no
Data source date: 16/07/2012
Risk Phrases: R36, R37, R38, N; R50/53, N; R51/53

Acenaphthylene (CAS Number: 208-96-8)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory
Data source:
http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=59285&HarmOnly=no
Data source date: 16/07/2012
Risk Phrases: R22, R26, R27, R36, R37, R38

Anthracene (CAS Number: 120-12-7)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory
Data source:
http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=101102&HarmOnly=no
Data source date: 08/03/2013
Risk Phrases: R36, R37, R38, R43, N; R50/53

Benzo[ghi]perylene (CAS Number: 191-24-2)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory
Data source:
http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=15793&HarmOnly=no
Data source date: 16/07/2012
Risk Phrases: N; R50/53

Boron tribromide/trichloride/trifluoride (combined risk phrases)

Comments: Combines the risk phrases and the average of the conversion factors for Boron tribromide, Boron trichloride and Boron trifluoride
Data source: N/A
Data source date: 10/01/2011
Risk Phrases: R14, T+; R26/28, C; R34, C; R35

Fluoranthene (CAS Number: 206-44-0)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory
Data source:
http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=56375&HarmOnly=no
Data source date: 16/07/2012
Risk Phrases: R20, R22, R36, N; R50/53

Fluorene (CAS Number: 86-73-7)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory
Data source:
http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=81845&HarmOnly=no
Data source date: 16/07/2012
Risk Phrases: N; R50/53, R53

Indeno[123-cd]pyrene (CAS Number: 193-39-5)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory
Data source:
http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=128806&HarmOnly=no
Data source date: 08/03/2013
Risk Phrases: R40

pH

Comments: Appendix C, C4.5
Data source: WM2 - Interpretation of the definition and classification of hazardous waste (Second Edition, version2.2), Environment Agency
Data source date: 30/05/2008
Risk Phrases: None.

Phenanthrene (CAS Number: 85-01-8)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory
Data source:
http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=109754&HarmOnly=no
Data source date: 16/07/2012
Risk Phrases: R22, R36, R37, R38, R40, R43, N; R50/53

Pyrene (CAS Number: 129-00-0)

Comments: Risk phrase data taken from European Chemicals Agency's Classification & Labelling Inventory
Data source:
http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=87484&HarmOnly=no
Data source date: 16/07/2012
Risk Phrases: R23, N; R50/53

TPH (C6 to C40) Petroleum Group

Comments: Risk phrase data given on page A41
Data source: WM2 3rd edition, 2013
Data source date: 01/08/2013
Risk Phrases: R10, R45, R46, R51/53, R63, R65

Appendix B: Notes

Additional Risk Phrase Comments

from section: Table 2.2 in the document: "WM2 - Hazardous Waste Technical Guidance"

"This is an additional risk phrase and such a risk phrase alone will not cause a waste to be hazardous."

C14.3: Step 4

from section: C14.3 in the document: "WM2 - Hazardous Waste Technical Guidance"

"identify whether any individual ecotoxic substance is present below a cut-off value shown in Table C14.1"

Note 1

from section: 1.1.3.2, Annex VI in the document: "CLP Regulations"

"The concentration stated or, in the absence of such concentrations, the generic concentrations of this Regulation (Table 3.1) or the generic concentrations of Directive 1999/45/EC (Table 3.2), are the percentages by weight of the metallic element calculated with reference to the total weight of the mixture."

Note A

from section: 1.1.3.1, Annex VI in the document: "CLP Regulations"

"Without prejudice to Article 17(2), the name of the substance must appear on the label in the form of one of the designations given in Part 3. In Part 3, use is sometimes made of a general description such as '... compounds' or '... salts'. In this case, the supplier is required to state on the label the correct name, due account being taken of section 1.1.1.4."

Note E

from section: 1.1.3.1, Annex VI in the document: "CLP Regulations"

"Substances with specific effects on human health (see Chapter 4 of Annex VI to Directive 67/548/EEC) that are classified as carcinogenic, mutagenic and/or toxic for reproduction in categories 1 or 2 are ascribed Note E if they are also classified as very toxic (T+), toxic (T) or harmful (Xn). For these substances, the risk phrases R20, R21, R22, R23, R24, R25, R26, R27, R28, R39, R68 (harmful), R48 and R65 and all combinations of these risk phrases shall be preceded by the word 'Also'."

Appendix C: Version

Classification utilises the following:

- WM2 - Hazardous Waste Technical Guidance - 3rd Edition (Aug 2013)
  Hazardous Waste: Interpretation of the definition and classification of hazardous waste (3rd Edition 2013)
- CLP Regulations - Regulation (EC) No 1272/2008 of 16 December 2008
  REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006
- 1st ATP - Regulation (EC) No 790/2009 of 10 August 2009
  COMMISSION REGULATION (EC) No 790/2009 of 10 August 2009 amending, for the purposes of its adaptation to technical and scientific progress, Regulation (EC) No 1272/2008 of the European Parliament and of the Council on classification, labelling and packaging of substances and mixtures
- 2nd ATP - Regulation (EC) No 286/2011 of 10 March 2011
  COMMISSION REGULATION (EU) No 286/2011 of 10 March 2011 amending, for the purposes of its adaptation to technical and scientific progress, Regulation (EC) No 1272/2008 of the European Parliament and of the Council on classification, labelling and packaging of substances and mixtures
- 3rd ATP - Regulation (EU) No 618/2012 of 10 July 2012
  COMMISSION REGULATION (EU) No 618/2012 of 10 July 2012 amending, for the purposes of its adaptation to technical and scientific progress, Regulation (EC) No 1272/2008 of the European Parliament and of the Council on classification, labelling and packaging of substances and mixtures
- 4th ATP - Regulation (EU) No 487/2013 of 8 May 2013
  COMMISSION REGULATION (EU) No 487/2013 of 8 May 2013 amending, for the purposes of its adaptation to technical and scientific progress, Regulation (EC) No 1272/2008 of the European Parliament and of the Council on classification, labelling and packaging of substances and mixtures
- Correction to 1st ATP - Regulation (EU) No 758/2013 of 7 August 2013
  COMMISSION REGULATION (EU) No 758/2013 of 7 August 2013 correcting Annex VI to Regulation (EC) No 1272/2008 of the European Parliament and of the Council on classification, labelling and packaging of substances and mixtures
- 5th ATP - Regulation (EU) No 944/2013 of 2 October 2013
  COMMISSION REGULATION (EU) No 944/2013 of 2 October 2013 amending, for the purposes of its adaptation to technical and scientific progress, Regulation (EC) No 1272/2008 of the European Parliament and of the Council on classification, labelling and packaging of substances and mixtures
- 6th ATP - Regulation (EU) No 605/2014 of 5 June 2014
  COMMISSION REGULATION (EU) No 605/2014 of 5 June 2014 amending, for the purposes of introducing hazard and precautionary statements in the Croatian language and its adaptation to technical and scientific progress, Regulation (EC) No 1272/2008 of the European Parliament and of the Council on classification, labelling and packaging of substances and mixtures

HazWasteOnline Engine: WM2 version 3 (Aug 2013)
HazWasteOnline Engine Version: 1.0.2745.5696 (10 Apr 2015)
HazWasteOnline Database: 1.0.2745.5696 (11 Apr 2015)











Earth Environmental
& Geotechnical

Phase 1 GeoEnvironmental

Desk Study

435 Barlow Moor Road

Chorlton

15th April 2014

On behalf of:

Merepark

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435 BARLOW MOOR ROAD

CHORLTON

Earth Environmental
& Geotechnical

PHASE 1 DESK STUDY

AND

PRELIMINARY GEOENVIRONMENTAL ASSESSMENT

FOR

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Report No. A0361/G/1

April 2014

Earth Environmental & Geotechnical

Report Title:	**435 Barlow Moor Road, Chorlton Phase 1 Desk Study and Preliminary GeoEnvironmental Assessment**
Report Reference:	**A0361/G/1**
Client:	**Merepark**
Issue Date:	**15th April 2014**
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Earth Environmental & Geotechnical

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1.0 INTRODUCTION

Appointment

1.1 Earth Environmental & Geotechnical was commissioned by Merepark (the client) to undertake a Phase I GeoEnvironmental Desk Study for a new development at 435 Barlow Moor Road, Chorlton.

Proposed Development

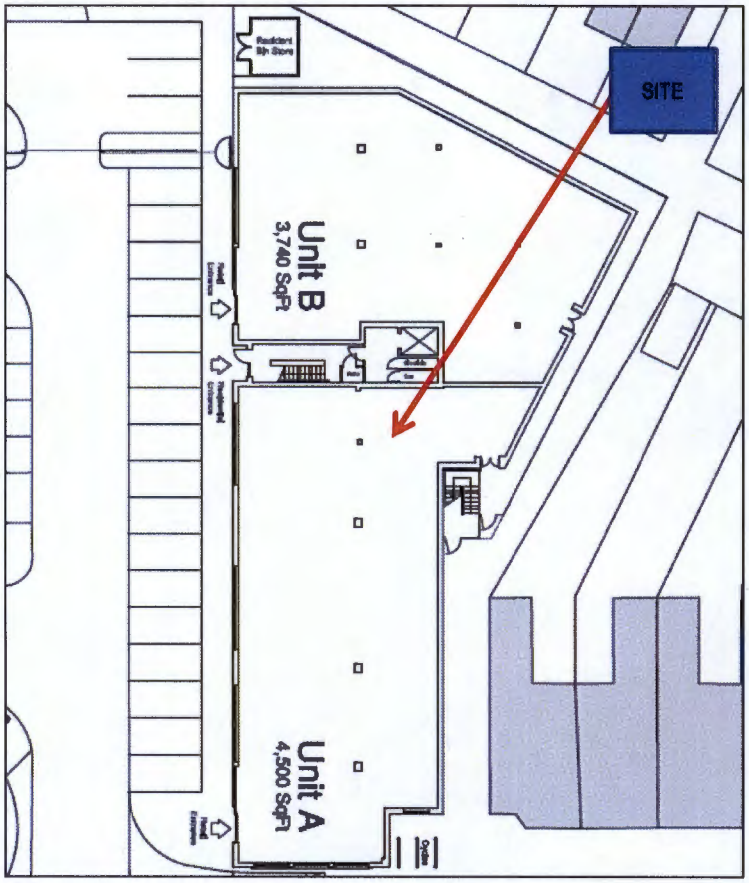
1.2 It is understood that the site had the benefit of planning permission, from Manchester City Council for the development, but this has since expired.

1.3 The project will consist of the construction of a new 8500ft² retail park at ground level and twelve apartments on levels 1 & 2.

1.4 Morrison's applied to Manchester City council for an alcohol Premises Licence on the 17th January 2014.

1.5 Figure 1 (below) shows the Development Layout Plan.

Figure 1 Development Layout Plan



Objective

1.6 The purpose of the Desk Study is to collate available geological and environmental data for the site (and its environment) in order to provide a preliminary geotechnical and geo-environmental appraisal, together with a site specific conceptual model. This enables a preliminary assessment of geo-environmental risks to be undertaken and also provides information for the design of a Phase 2 Ground Investigation in accordance with the Environment Agency (2004) Model Procedures for the Management of Land Contamination, CLR11.

Scope

1.7 The Phase I GeoEnvironmental Desk Study comprises of a site reconnaissance visit on the 15th April 2004 and a review of the following information sources;

- British Geological Survey (1:50,000 scale) Stockport Sheet 98 (Solid and Drift editions).
- British Geological survey online borehole records.
- Google Earth imagery.
- Local Authority Environmental records.
- Environment Agency online mapping data.
- Historical Ordnance Survey maps as provided by GroundSure.
- The site and surrounding areas environmental compliance history from data presented in the site specific GroundSure EnviroInsight Report

2.0 SITE LOCATION AND DESCRIPTION

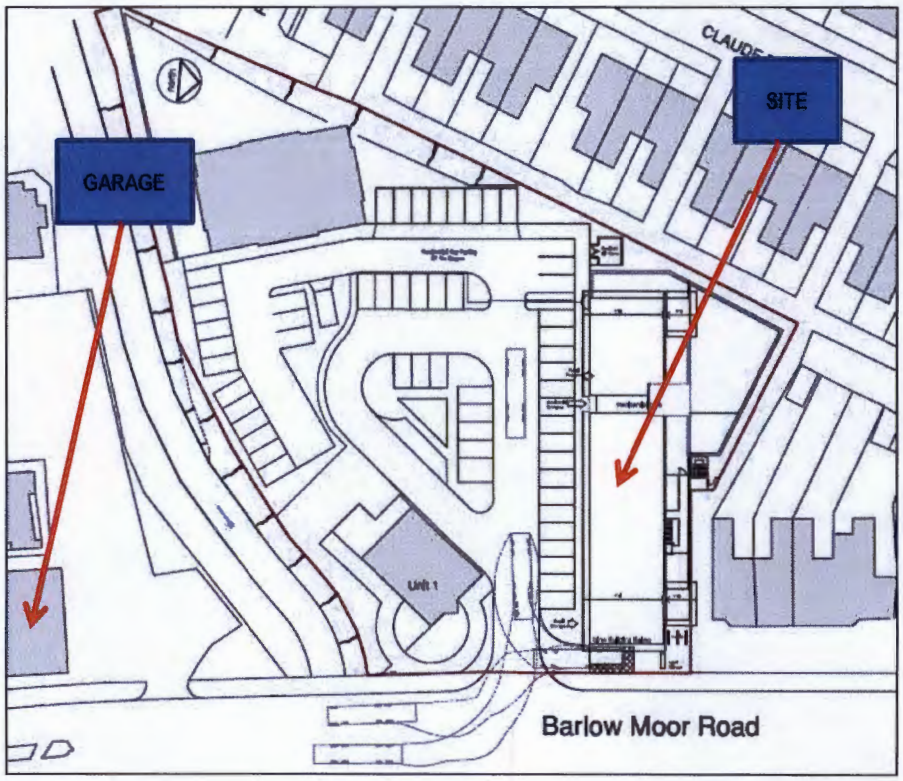
Site Location & Description

2.1 The site is located at Ordnance Survey National Grid Reference SJ81886 93280, postcode M21 2AU, approximately 8km north-west of Stockport town centre.

2.2 Access to the site is from an entrance along Barlow Moor Road. The application relates to a former Blockbuster Store which has recently closed. Morrison's wish to open this store as a local convenience store. The store is on the west side of Barlow Moor Road, which is within an area of mixed uses. There are a number of shops to the north of the store, a KFC drive through to the south and a Tesco Express and a garage on the opposite side of the road.

2.3 A location plan is shown below as Figure 2.

Figure 2 Site Location Plan



2.4 The total site occupies an area of approximately 0.16 hectares (source GroundSure report).

2.5 The site is generally flat lying but rises at the rear of the site in the former yard, adjacent to the bin compound.

Site Utility Services

2.6 A site service plan has been not provided by the client. The status of all services should be checked with the statutory providers prior to any development (including site investigation) commencing.

3.0 ENVIRONMENTAL SETTING

Geology and Mining

3.1 The geology of the site is covered by the British Geological Survey (BGS) Sheet 98 'Stockport' (1:50,000 scale Solid and Drift editions) and the site specific GroundSure GeoInsight report (Appendix 1).

3.2 The Groundsure GeoInsight report indicates that the site is not underlain by Artificial/Made Ground, although given the setting of the site it is anticipated to be present.

3.3 The GroundSure GeoInsight report and British Geological Survey map show that the majority of the site is underlain by Glacial Sand and Gravel of Devensian Age, with Devensian Till along the south-eastern boundary.

3.4 The Wilmslow Sandstone Formation underlies the Superficial materials across the whole site.

3.5 The British Geological Survey online map confirms the geology of the site and the presence of three borehole records within a 50m radius of the site boundary. The nearest, SJ89SW383, encountered a sequence of Made Ground to 2.5m, underlain by sand.

3.6 The nearest historical surface ground working feature to the site is an area of unspecified workings, 49m to the south, in 1923.

3.7 The GroundSure report indicates that the site is not within a coal mining area and therefore a Coal Authority Mining Report has not been obtained.

3.8 The Online Interactive Viewer developed by the Coal Authority shows the site to be outside of a Development High Risk Area.

Radon Potential

3.9 The property is not in a Radon Affected Area as defined by the Health Protection Agency as less than 1% of properties are above the Action Level of exposure.

3.10 No radon protection measures are necessary for new properties (or extension to existing ones) as described in publication BR211 by the Building Research Establishment.

Hydrogeology and Hydrology

3.11 The Glacial Sand and Gravel is classified by the Environment Agency as a Secondary A Aquifer i.e. "permeable layers capable of supporting water supplies at a local rather than strategic scale and in some cases forming an important source of base flow to rivers".

3.12 The Wilmslow Sandstone Formation is classified by the Environment Agency as a Principal Aquifer i.e. "geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale".

3.13 There are 5no. Groundwater Abstraction Licences located within 2km of the site, with the nearest located 1.2km south of the site which is used for spray irrigation supply purposes.

3.14 There are 2no. Surface Water Abstraction Licences within 2km of the site, with the nearest located 1.9km west of the site.

3.15 The site is not located within 500m of a Groundwater Source Protection Zone.

3.16 There is 1no. Detailed River Network record within 500m of the site boundary, Chorlton Brook, which is located 27m south of the site.

Landfill and Waste Management Activity

3.17 There are no recorded operational landfill sites within 1km of the site boundary.

3.18 There are no records for Environment Agency historic landfills within 250m of the site boundary.

3.19 There are no records for local authority landfill sites within 250m of the site boundary.

Industrial Land Use Information

3.20 There are 22no. recorded industrial sites within 250m of the subject site, the nearest a construction supplier 15m north and Barlow Moor Service Station 40m north east.

3.21 There are 2no. Petrol Fuel Sites located close to the site, with a closed Texaco Station 21m north east and active Shell Station 124m south.

3.22 Underground High Pressure Oil and Gas pipelines are not recorded within 500m of the site boundary.

Environmental Permits, Incidents and Registers

3.23 There are 2no. records of Part A/B Authorised processes within 500m of the site boundary, with the nearest Barlow Moor Service Station, 31m north east of the site.

3.24 There are no recorded radioactive substance licenses within 500m of the site boundary.

3.25 There are 6no. records of licensed discharge consents within 500m of the site boundary, the nearest 27m south of the site.

3.26 There is no record of a historical IPC authorisation within 500m of the site.

3.27 There are no recorded Environment Agency Pollution Incidents within 500m of the site boundary.

3.28 There are no sites within 500m of the site determined as contaminated land under Section 78R of the Environmental Protection Act 1990.

Environmentally Sensitive Sites

3.29 There are 4no. Designated Environmentally Sensitive sites recorded within 2km of the site.

3.30 The nearest Local Nature Reserve is located 0.5km west of the site.

3.31 It should be noted that an ecological assessment of the site falls outside the brief of this report and that an ecological specialist should be consulted in this regard. During the walkover survey invasive plants were not noted.

Archaeology

3.32 An archaeological assessment falls outside the brief of this report. Where considered necessary, advice should be sought from an archaeological specialist in this respect.

Potential Flood Risks

3.33 Detailed assessment of flood risk is outside the scope of this report. However, reference to Environment Agency records indicates that the site is located within a Zone 2 (1 in 1000 year storm) and close to a Zone 3 (1 in 100 year storm) floodplain.

3.34 Flood Defences are shown 22m and 30m south of the site, although the area does not benefit from their presence.

3.35 The site is indicated on British Geological Survey records to have a susceptibility to Superficial Deposit Flooding, based on the presence of the sand and gravels. The British Geological Survey confidence of the rating is deemed as "Low".

Local Authority Consultation

3.36 The local authority has not been consulted about the environmental status of the site.

Previous Site Investigations

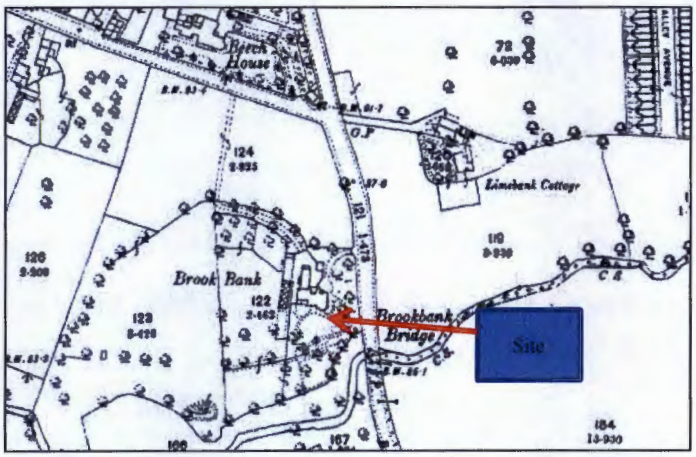
3.37 It is understood that no previous site investigation information is available for the site.

4.0 SITE HISTORY

4.1 The historical development of the site has been determined by reference to archive Ordnance Survey (OS) map extracts obtained from the GroundSure Report in Appendix 1.

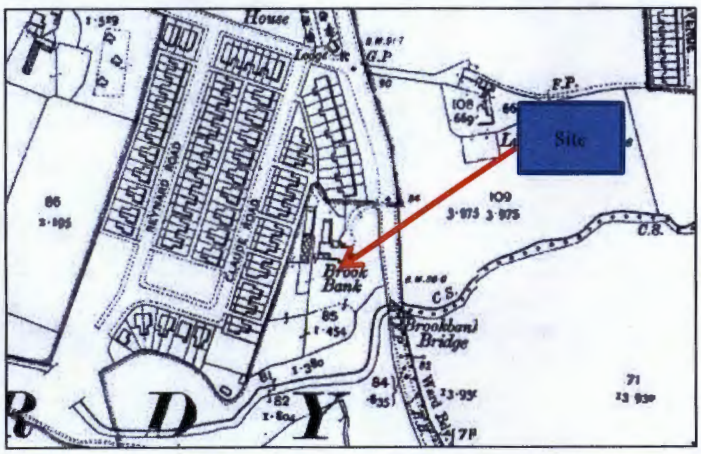
4.2 The earliest site record dates back to 1894 (Figure 3 below) and shows the site to be occupied by Brook Bank a large residential house.

Figure 3 Extract from 1894 OS Plan



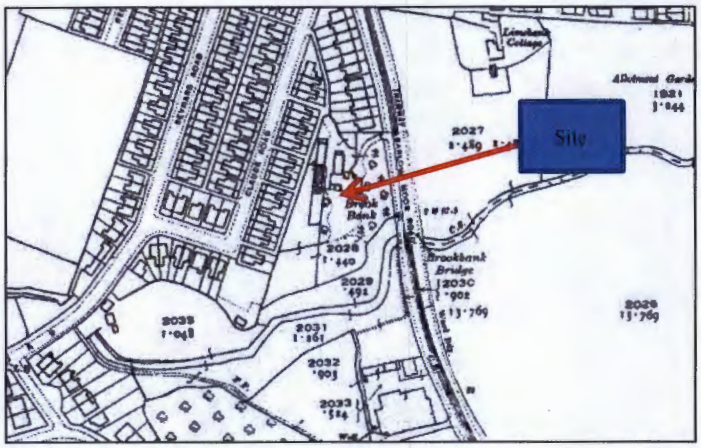
4.3 Figure 4 (below) shows a plan from 1907 detailing numerous new residential properties to the north west of the site.

Figure 4 Extract from 1907 OS Plan



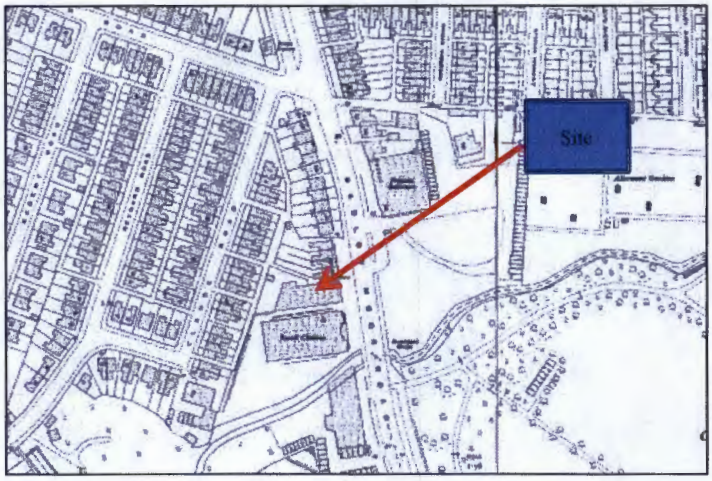
4.4 Figure 5 (below) shows a plan from 1922 detailing a tramway along Barlow Moor Road.

Figure 5 Extract from 1922 OS Plan



4.5 Figure 6 (below) shows a plan from 1955 the existing building on the site with a cinema to the south.

Figure 6 Extract from 1955 OS Plan



4.6 In summary the site has solely been used as a large residential property and for retail uses.

5.0 PRELIMINARY CONTAMINATION RISK ASSESSMENT

Introduction

5.1 The following paragraphs outline a Preliminary Risk Assessment (PRA) for the site as defined by DEFRA and the EA Model Procedures for the Management of Land Contamination, CLR11 (2004).

5.2 The table in Paragraph 5.4 provides a Preliminary Conceptual Model (PCM) which defines the site in terms of a potential pollution linkage, that is, whether a pathway exists between a contamination source and a sensitive environmental receptor (Source-Pathway-Receptor relationship).

5.3 The table considers whether a pollution linkage is potentially present or not and provides a preliminary qualitative assessment of risk based on the information currently available. Where a possible linkage is identified, it does not necessarily mean that a significant risk exists, but indicates that further information is required through appropriate site investigation to substantiate the conceptual model.

Preliminary Conceptual Model

5.4 The PCM/PRA is based on the planned development proposal that the site be prepared for a combination of residential properties and retail store at ground level.

Source	Pathway	Receptor	Linkage	Comment
The site has been used for retail purposes. The likelihood of significant ground contamination sources being present at the site is considered **LOW.**	Direct contact, ingestion of soil, dermal contact, dust exposure pathways.	Current Site Users	Possible	No significant sources of contamination are anticipated with site use being transient. Therefore the risk to current site users is considered **LOW.**
		Site End Users	Likely	Contamination is not anticipated. A **LOW** preliminary risk is therefore considered appropriate.
		Construction Workers	Possible	Construction workers could potentially be exposed to contaminated soils during earthworks and foundation construction. Any perceived contamination risks will however be mitigated by adopting good site working practices including appropriate Health and Safety measures during the works, thus providing a **LOW** preliminary risk.
		Adjacent land users	Unlikely	Contact via wind-blown dust/ debris, particularly during the development phase is possible. The current risk is considered **LOW** although this would increase during construction works. Appropriate dust control measures will therefore be required as part of good site working practices during construction.
The likelihood of significant soluble and/or liquid and therefore mobile contaminants occurring at the site due to its past use is considered low to medium.	Direct downward migration through leaching and/or mobile liquids.	Groundwater	Possible	No significant source of mobile contamination is envisaged at the site. The site is developed upon on Secondary A Aquifer underlain by a Principal Aquifer. The perceived risk to groundwater is considered **LOW.**

Source	Pathway	Receptor	Linkage	Comment
	Off-site migration in groundwater or surface water flow.	Surface water	Possible	No significant source of mobile contamination is envisaged at the site. The perceived risk to nearby surface waters is considered **LOW.**
		Groundwater / surface water abstractions	Unlikely	The site is not within an Environment Agency Zone 1 or Zone 2 Source Protection Zone and the nearest groundwater abstraction is a significant distance from the site. The risk to groundwater/surface water abstractions is therefore considered **LOW**.
		Adjacent Properties	Unlikely	Potentially significant mobile contamination source is present on an active and closed fuel retailing facility. Therefore the preliminary risk from adjacent properties is considered **MEDIUM**.
		Ecology	Unlikely	There are no ecologically sensitive sites within influencing distance of the subject site. The risk to ecology is therefore considered **LOW.**
The likelihood of significant volatile contaminants occurring at the site due to its past use is considered low.	Inhalation of harmful vapours (indoor and outdoor airspaces)	Current Site Users	Unlikely	No significant sources of volatile contaminants are envisaged. Therefore the current risk from inhalation of indoor/outdoor air is considered **LOW**
		Site End Users	Unlikely	Significant volatile contamination sources are not anticipated. The preliminary risk from inhalation of indoor vapours in the proposed building is therefore assessed as **LOW.**
		Construction Workers	Unlikely	In the unlikely event of construction workers coming into contact with possible volatile compounds, the exposure time will be relatively short. The risk to construction workers, assuming that appropriate health and safety measures will be adopted, is therefore considered **LOW.**
		Adjacent Properties	Unlikely	Significant concentrations of volatile contaminants are not envisaged. The potential risk to adjoining site users is therefore considered **LOW.**
The site is not within influencing distance of any recorded landfill. Due to the sites past uses there is little potential for a significant thickness of degradable materials with the potential to generate hazardous ground gas. The likelihood of shallow abandoned mine workings with the potential to release hazardous ground gases occurring beneath the site is considered **LOW.**	Emissions from the ground collecting in confined spaces and excavations	Construction/ services maintenance workers	Unlikely	A significant thickness of potentially degradable material on site is considered unlikely and should therefore not be sufficient to generate significant volumes of toxic and/or flammable/explosive gas. Assuming that appropriate health and safety measures will be adopted during construction, the preliminary risk is therefore considered **LOW**.
	Migration of gases on/off site and collecting in confined spaces on/off site.	Adjoining site users	Unlikely	A significant thickness of potentially degradable material on site is considered unlikely. Therefore the potential to generate significant volumes of toxic and/or flammable/explosive gas on site is low. The potential risk to adjoining site users from the site is therefore considered **LOW.**

Source	Pathway	Receptor	Linkage	Comment
		Current/future site users	Likely	The potential to generate significant quantities of toxic and/or flammable/explosive gas on site is medium. The perceived risk to site end users is therefore considered **LOW**.
Chemicals which could prove aggressive to construction materials may be present on site.	Direct contact	Construction concrete, plastic water pipes.	Likely	Any risks to construction materials identified after site investigation and assessment will be mitigated as part of the structural design. The perceived risk is therefore considered **LOW.**

Preliminary Risk Assessment

5.5 Under the proposed development scenario, most of the potential pollution linkages are considered unlikely with associated preliminary risks generally being generally assessed as low to medium. The close proximity of the site to an active and closed retail facility is the only noteworthy environmental consideration.

6.0 PRELIMINARY GEOTECHNICAL APPRAISAL

Site Preparation and Earthworks

6.1 Current development proposals comprise the construction of new residential dwellings on two levels on top of the existing retail store. As a result, the load bearing capacity of the existing foundations will need to be assessed in light of the additional loading from the new floors.

6.2 Where trees are to be removed, this should be undertaken in consultation with an ecological specialist.

Foundations and Floor Slabs

6.3 Underlying glacial sands and gravels, where present, are likely to be suitable for the direct support of structural loads. The depth, strength and distribution of materials will need to be confirmed by site investigation. Should cohesive materials be proven beneath the site, consideration will need to be given to the effects of any removed or retained trees on proposed foundations.

6.4 Foundation construction will need to take account of any services and, where they are in close proximity, may need to be taken down to beneath the lowest level of the service trench so that their structural integrity is maintained.

Soakaways

6.5 Soakaways should be feasible due to the permeable nature of the glacial sands and gravels.

Pavements

6.6 Any Made Ground encountered will need to be thoroughly inspected, with any unsuitable materials being removed. In this respect, pavements may need to be constructed with increased capping thickness to achieve a suitable California Bearing Ratio (CBR) for pavement design.

6.7 Notwithstanding this, the formation at any level should be proof-rolled prior to pavement construction, and any soft zones thus revealed, excavated and replaced with appropriately graded and engineered granular fill.

Excavations and Groundwater

6.8 Subject to site investigation, it is considered likely that a high water table will occur beneath parts of the site with conventional 'sump and pump' measures being adequate to keep excavations dry.

7.0 SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

General

7.1 It appears that the site has solely been used as a retail store. The likelihood of significant ground contamination, based on the land uses is considered to be low.

7.2 Potentially significant pollution linkages have been assessed in the preliminary conceptual model and the overall contamination risk is considered low.

7.3 The anticipated geology is such that conventional shallow spread foundations may be appropriate. This will need to be confirmed by site investigation.

7.4 At this preliminary stage, it is considered likely that soakaway drainage will be appropriate across the majority of the site.

Asbestos Survey

7.5 An Asbestos Survey will be required prior to demolition of any building structures.

Flood Risk Assessment

7.6 A Flood Risk Assessment will need to accompany any future planning application.

Site Investigation

7.7 As part of the site development of the site an environmental investigation should be conducted to assess any potential contaminated groundwater migration from adjacent fuel retailing facilities.

7.8 An appropriate investigation should also be undertaken to establish geotechnical parameters for the design of foundations, floor slabs and pavement construction.

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APPENDIX 1

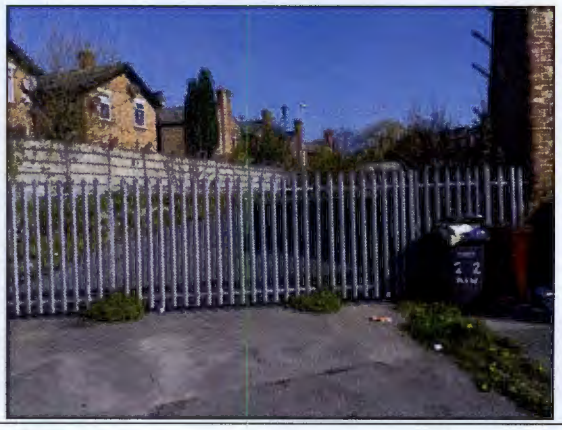
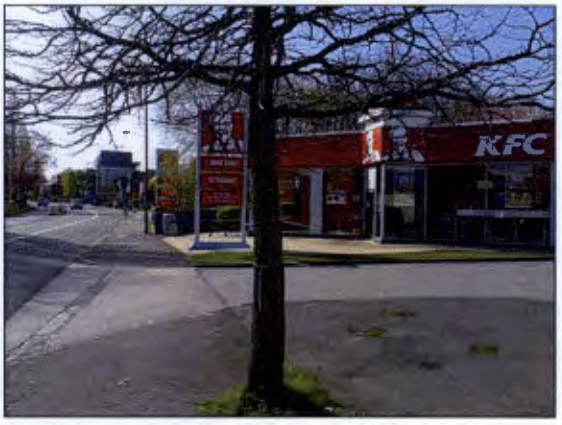
GROUNDSURE REPORTS

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APPENDIX 2

SITE PHOTOGRAPHS

Earth Environmental & Geotechnical

Earth Environmental & Geotechnical Ltd **Tel:** 0161 2824518 **Email:** info@earthenvironmental.co.uk **Web:** www.earthenvironmental.co.uk	**SITE PHOTOGRAPHS** Earth Environmental & Geotechnical
Job No. A0361/13	**Site:** 435 Barlow Moor Road, Chorlton
No.1 Side Elevation	**No. 2 Rear Yard Area**
	
Date: 15 April 2014	**Date:** 15 April 2014
No. 3 Looking South Along Barlow Moor Road	
	
Date: 15 April 2014	**Date:**

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APPENDIX 3

SITE WALKOVER NOTES

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WALK OVER SURVEY REPORT

Site: 435 Barlow Moor Road, Chorlton **Date:** 15 April 2014

Job No: A0361/14 **Undertaken By:** Adam Czarnecki

Purpose of Site Walkover:
1) Provide further information for the Desk Study Report;
2) Identify potential contamination sources, pathways and receptors;
3) Identify geotechnical features and potential geohazards;
4) Determine locations for exploratory boreholes.

Desk Study features checked during site visit	Feature and Information required	Present	Description / Comments
Site Setting	Description required for: Town/Country/Suburb Setting Industrial/Residential/Retail Usage Current Site use (if undertaking security and access to the site)		Site is located in a combined residential/commercial area with a fuel station to the south.
Evidence of Past Activities	Are there: Any relevant street names in area? Features or relics which indicate past history?	~~Yes~~/No Yes/~~No~~	Video rental facility
Geographic Setting	Description required for: Low lying flood plain/dry valley/rolling hills etc.		Flay lying with raised area at rear.
Topography	Description required for: Are there apparent differences between site and surrounding area? (If yes describe the presence of retaining walls, and slopes). Is there evidence of Made Ground / Fill on site?	~~Yes~~/No ~~Yes~~/No	See above
Ground Conditions	Is there any evidence of: Mining, Mine entries Subsidence Landslip/slope erosion Former investigation works	~~Yes~~/No ~~Yes~~/No ~~Yes~~/No	

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Desk Study features checked during site visit	Feature and Information required	Present	Description / Comments
Site Boundaries and Neighbours	Description required for: Type of boundary demarcation (if any) on each side of site, usage of adjacent land and name of industrial/commercial occupiers. Note any adjacent features such as water course and other potentially environmentally sensitive uses (residential, school, infirmary, SSI etc)		To the east there are shops. To the north is housing. To the south is KFC To the west is housing.
Vegetation	Is there any vegetation/trees on or close to side (if yes describe locations, type, maturity, etc) Is there any evidence of poor health / distress?	~~Yes~~/No ~~Yes~~/No	
Ground Surface	Are there areas of hardstanding and estimate the split between hard and soft cover. (If yes describe locations, types and conditions). Is the any evidence of any spillages or staining?	Yes/~~No~~ ~~Yes~~/No	Site is covered in hardstanding.
Site Drainage	Are there any drain covers / soakaways (if yes describe locations) Are there any outfalls/water courses on site (note the condition of water courses in open water courses. discolouration, odour, eutrophication, oily sheen, gas bubbling water, clear or cloudy) Where a watercourse runs alongside or crosses a site are there any differences in visible water quality upstream and downstream of the site?	Yes/~~No~~ ~~Yes~~/No ~~Yes~~/No	
Electrical Equipment	Are there any electricity sub stations on or adjacent to the site? Are there any electrical transformers, capacitors, pylons etc on site?	~~Yes~~/No	

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Desk Study features checked during site visit	Feature and Information required	Present	Description / Comments
Buildings	Description of Buildings, including age, state of repair, materials used in construction. Is there any evidence of asbestos construction materials eg roofing, insulation materials. Do any buildings have basements? Do any buildings have a boiler room (if yes, describe fuel type and storage arrangements)?	 ~~Yes~~/No ~~Yes~~/No ~~Yes~~/No	
Landfilling	Is there any evidence of gas protection measures (gas protection measures (gas membrane, gravel-filled trenches, venting pipes, etc)?	~~Yes~~/No	
Process Air Emissions	Pont Source: Are there any stacks / vents / cooling towers / abatement equipment? Fugitive Source: is there any stockpiled material / windblown dust / vapour process?	~~Yes~~/No ~~Yes~~/No	
Storage of fuels & Chemicals	Are there any drums / containers (if yes, describe quantity, full /empty, stored on hard standing / soft landscaping, bunding)? Are there any above ground fuel tanks (if yes, describe locations, volumes, how many, bunding, used / disused, condition?) Is there any evidence of underground fuel tanks (fuel pumps, covers, vent pipes, how many and how large, fill point, used / disused, and condition)?	~~Yes~~/No ~~Yes~~/No ~~Yes~~/No	
Accidents	In the event of a large spillage would runoff affect any vulnerable watercourse/culverts? Are emergency procedures / equipment in place?	~~Yes~~/No Yes/~~No~~/NA	
Waste	Are there any waste skips present on site? Are waste storage facilities adequate? Is there any litter/fly tipped material?	~~Yes~~/No N/A Yes/~~No~~	
Atmospheric	Are there any fumes, odours originating from site or affecting site from neighbouring sites?	~~Yes~~/No	

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Desk Study features checked during site visit	Feature and Information required	Present	Description / Comments
Access / Further Investigations	If a Phase 2 Investigation is likely to be required, describe any access problems including headroom where relevant, services, overhead cables, restricted access areas, confined spaces, trafficked areas, etc that are likely to affect investigation scope/techniques. Identify possible site office and storage locations. Identify possible water supply	Yes/~~No~~ N/A N/A	Service check carried out in proposed borehole locations. .
Site Environs	Are there any local features that could have a harmful influence eg landfill, industrial processes, railway land? Are there any sensitive water features/courses near to the site?	Yes/~~No~~ Yes/~~No~~	Fuel retailing facility to the south and closed facility opposite the site.
Local Knowledge / Anecdotal Evidence			
Site Dimensions	Describe shape of Site in plan and measure dimensions.		Rectangular shaped 0.16ha.

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APPENDIX 4

LIMITATIONS

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LIMITATIONS

This contract was completed by Earth Environmental & Geotechnical Ltd on the basis of a defined programme and scope of works and terms and conditions agreed with the client. This report was compiled with all reasonable skill, and care, bearing in mind the project objectives, the agreed scope of works, the prevailing site conditions, the budget and staff resources allocated to the project.

Other than that expressly contained in the above paragraph, Earth Environmental & Geotechnical Ltd provides no other representation or warranty whether express or implied, is made in relation to the services. Unless otherwise agreed this report has been prepared exclusively for the use and reliance of the client in accordance with generally accepted consulting practices and for the intended purposes as stated in the agreement under which this work was completed. This report may not be relied upon, or transferred to, by any other party without the written agreement of a Director of Earth Environmental & Geotechnical Ltd.

If a third party relies on this report, it does so wholly at its own and sole risk and Earth Environmental & Geotechnical Ltd disclaims any liability to such parties.

It is Earth Environmental & Geotechnical Ltd understanding that this report is to be used for the purpose described in the introduction to the report. That purpose was an important 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 will no longer be valid and any further use of, or reliance upon the report in those circumstances by the client without Earth Environmental & Geotechnical Ltd review and advice shall be at the client's sole and own risk.

The report was written in 2013 and should be read in light of any subsequent changes in legislation, statutory requirements and industry best practices. Ground conditions can also change over time and further investigations or assessment should be made if there is any significant delay in acting on the findings of this report. 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 Earth Environmental & Geotechnical Ltd. In the absence of such written advice of Earth Environmental & Geotechnical Ltd, reliance on the report in the future shall be at the client's own and sole risk. Should Earth Environmental & Geotechnical Ltd be requested to review the report in the future, Earth Environmental & Geotechnical Ltd shall be entitled to additional payment at the then existing rate or such other terms as may be agreed between Earth Environmental & Geotechnical Ltd and the client.

The observations and conclusions described in this report are based solely upon the services that were provided pursuant to the agreement between the client and Earth Environmental & Geotechnical Ltd. Earth Environmental & Geotechnical Ltd has not performed any observations, investigations, studies or testing not specifically set out or mentioned within this report.

Earth Environmental & Geotechnical Ltd 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, Earth Environmental & Geotechnical Ltd did not seek to evaluate the presence on or off the site of electromagnetic fields, lead paint, radon gas or other radioactive materials.

The services are based upon Earth Environmental & Geotechnical Ltd observations of existing physical conditions at the site gained from a walkover survey of the site together with Earth Environmental & Geotechnical Ltd interpretation of information including documentation, obtained from third parties and from the client on the history and usage of the site. The findings and recommendations contained in this report are based in part upon information provided by third parties, and whilst Earth Environmental & Geotechnical Ltd have no reason to doubt the accuracy and that it has been provided in full from those it was requested from, the items relied on have not been verified.

No responsibility can be accepted for errors within third party items presented in this report. Further Earth Environmental & Geotechnical Ltd was not authorised and 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. Earth Environmental & Geotechnical Ltd is not liable for any inaccurate information, misrepresentation of data 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 Earth Environmental & Geotechnical Ltd and including the doing of any independent investigation of the information provided to Earth Environmental & Geotechnical Ltd save as otherwise provided in the terms of the contract between the client and Earth Environmental & Geotechnical Ltd.

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. Ground conditions can also be variable and as investigation excavations only allow examination of the ground at discrete locations. The potential exists for ground conditions to be encountered which are different to those considered in this report. The extent of the limited area depends on the soil and groundwater conditions, together with the position of any current structures and underground 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 contract between the client and Earth Environmental & Geotechnical Ltd] based on an understanding of the available operational and historical information, and it should not be inferred that other chemical species are not present.

The groundwater conditions entered on the exploratory hole records are those observed at the time of investigation. The normal speed of investigation usually does not permit the recording of an equilibrium water level for any one water strike. Moreover, groundwater levels are subject to seasonal variation or changes in local drainage conditions and higher groundwater levels may occur at other times of the year than were recorded during this investigation.

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.