



Client:

Rainsough Property Ltd
Unit 22 Cariocca Business Park
2 Sawley Road
Manchester
M40 8BB

Architect/Consultant

Equilibrium Architects Ltd
435-437 Walmesley Road
Bury
BL9 5EU

Phase II Contaminated Land Risk Assessment

5 Rainsough Brow, Prestwich

Dec-20

Site Ref: 6029/RAA-CLRA v1.00

Unit 4
Sheffield Street
Heaton Norris
Stockport
Cheshire
SK4 1RU
Telephone : 0161 480 8885
e-mail : info@geoassist.co.uk

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Phase II Contaminated Land Risk Assessment

1. Introduction

This report is an account of a Phase II Contaminated Land Risk Assessment carried out by GeoAssist Limited at the request of Equilibrium Architects Ltd on behalf of the Client Rainsough Property Ltd for the proposed development at 5 Rainsough Brow, Prestwich.

The work was commissioned following acceptance of the quotation and an instruction to proceed issued by Equilibrium Architects Ltd on behalf of the Client Rainsough Property Ltd on 09th October 2020.

The purpose of this Phase II investigation is to provide information following the conclusions of the phase I report, dated Nov 2019, in order to ensure that the site:

- Is assessed in accordance with the methodology outlined in CLR11
- Satisfies the relevant requirements of the National Planning Policy Framework March 2012
- Is suitable for the intended proposed land use. In this case, as a Residential Development

The approximate grid reference for the centre of the site is 380790, 402260 and the total area of the site is approximately 2,200m². The area of the site scheduled for investigation is outlined with a solid red line on the site plan in Appendix A1. The positions of exploratory holes are also indicated on the plan. The proposed development plan is shown in appendix A2.

2. Description of the Site

The site is located at 5 Rainsough Brow, in Rainsough situated to the southwest of Prestwich Centre.

The site forms an irregular shape and the topography inclines to the north; however, the centre of the site has been predominantly levelled off.

At the time of the site visit a large house and detached garage were present, the land to the east of the property has been recently cleared of trees and vegetation to form a level Plateaux.

Woodland surrounds the entire site perimeter, beyond which there is a residential property to the west, Rainsough Brow is located to the south and North Manchester Jewish Cemetery to the north.

3. Review Of Previous Reports

There is no indication that previous subsurface ground investigations have been undertaken on this site. The issues to be covered in the present investigation are to provide information in respect of any potentially unacceptable geo-environmental risks arising from previous land uses both on site and in the immediate area, and the potential for any sources of contamination to impact both present and future receptors, including:

- Human
- Controlled waters via established pathways
- Property
- Adjoining land

4. Intrusive Investigation

4.1 Intrusive Investigation objectives

The objectives of the site investigation are to collect data to confirm whether or not the soils beneath the site in their current state pose a risk by reason of substances within or under the land that;

- Significant harm is being caused or there is significant possibility of such harm being caused; or
- Pollution of controlled waters is being, or is likely to be, caused.

Data to describe the following parameters has been collected at a suitable spatial resolution in accordance with BS10175, 2011:

- Soil Characteristics including type of material
- Chemical profile of the soil.

These data will be used to refine a conceptual site model and confirm the existence of any established pollutant linkages in accordance with Contaminated Land Report 11 Model Procedures for the Management of Land Contamination, 2004 as well as The Environment Agency Requirements for Land Contamination Reports, 2005.

4.2 Intrusive Investigation Strategy

The ground investigation was carried out in accordance with British Standard 5930: 2015 Code of Practice for Site Investigations and BS BS10175: 2011 Investigation of potentially contaminated sites where relevant.

All fieldwork was supervised by suitably qualified GeoAssist Limited Environmental Engineers.

The contamination testing was carried out in an independent UKAS accredited Laboratory.

4.3 Methods Used For Forming Exploratory Holes

The exploratory holes undertaken across the site as part of this investigation were established using windowless drive sample excavation methods and hand tool excavation. Information obtained from the Phase I Preliminary Contaminated Land Risk Assessment was used to inform a decision on the actual exploratory hole locations whilst taking account of positions that could be reasonably accessed with minimal preparation works using the drilling and excavation plant available. The location of services was also considered during the positioning of the

exploratory holes along with the position of any proposed soft landscaping areas where plans were available. A plan showing the locations of the exploratory holes established as part of the investigation forms Appendix A1 to this report.

4.4 Exploratory Hole Programme

Five exploratory holes referenced WS1 to WS5 were undertaken by GeoAssist using windowless sampling techniques at locations as shown on the site plan in Appendix A1 and in the area of proposed landscaping.

The details of the strata in the exploratory holes were recorded by a suitably qualified Professional Engineer. Upon completion of the fieldwork gas / groundwater monitoring installations were formed in exploratory holes WS1, WS3 and WS5 incorporating a length of plain pipe with a cement/bentonite surround, connected to a length of slotted pipe with a filter sock and pea gravel surround. The headworks comprised of a gas valve and steel or plastic cover set in concrete flush with the surrounding ground or raised in areas of undergrowth.

The remaining exploratory holes were backfilled in accordance with the specification in order to prevent the establishment of any potential pollutant pathways and the surface reinstated.

All intrusive work was carried out in accordance with:

- § British standard 5930: 1999 Code of Practice for Site Investigations
- § British Standard 10175: 2011 where applicable

The fieldwork was completed on the 16th of October in mixed weather conditions.

4.5 Field Sampling and Testing

A non-targeted borehole layout was selected as the most appropriate strategy for this site as guided by the Phase I report. Representative samples were taken of all the strata encountered in the exploratory holes. Once exposed samples to be subjected to chemical analysis were immediately placed into a suitable container and stored in a cool dark sample box prior to submission to the laboratory in order to prevent alteration of the composition of the samples. In all cases 500ml wide necked amber glass jars were used with a Teflon faced foamed polyethylene cap liner that offers excellent chemical resistance with the compressibility and sealing properties of polyethylene foam. These containers were filled with sample, sealed and delivered to the laboratory for testing. Samples for volatile compounds were placed into appropriate containers with a screw cap and pierceable septum as supplied by the testing laboratory specifically appropriate to the determinand. These containers were filled with sample, sealed and delivered to the laboratory for testing. Observations of groundwater conditions were recorded throughout the fieldwork operations. All other samples were stored in airtight containers and returned to the laboratory for examination and geotechnical testing where necessary.

A photo ionisation detector (PID) was used to indicate the likelihood of the presence of volatile organic compounds during the fieldwork and in the laboratory. The results are indicated on the Borehole logs only where readings in excess of 10ppm were monitored. Readings in excess of 50ppm indicate that samples are required to be tested for Volatile Organic Compounds. No samples were found to exceed 10ppm.

5. Laboratory Investigation

5.1 Contamination Testing

In total seven soil samples were collected and subjected to elements of the suite of chemical testing as outlined below. All tests were conducted by i2 Analytical under UKAS Testing No 4041. The results of all the chemical analysis tests are given in Appendix C1.

Table 5.1 Analytical Determinands

Soils	
Arsenic	Acenaphthene
Boron (water-soluble)	Acenaphthylene
Cadmium	Anthracene
Chromium	Benzo(a)Anthracene
Chromium VI	Benzo(a)Pyrene
Copper	Benzo(b/k)Fluoranthene
Cyanide(Total)	Benzo(ghi)Perylene
Cyanide(free)	Chrysene
Lead	Dibenzo(ah)Anthracene
Mercury	Fluoranthene
Nickel	Fluorene
pH	Indeno(123-cd)Pyrene
Phenols(Mono)	Naphthalene
Selenium	Phenanthrene
SO4(Total)	Pyrene
Sulphide	
Sulphur(Free)	Asbestos screen & ID
Thiocyanate	
Zinc	

6. Subsurface Stratigraphy

The subsoil profile obtained from the exploratory holes consists of two distinct types

- Brown sandy gravel overlying Clay with sand lenses and inclusions as noted in WS1, WS2 and WS5. The clays were found to extend to depths greater than 4.00m. A 0.90m layer of made ground was found to be overlying the natural strata in WS5.
- Clayey silty gravelly variable Made Ground containing brick fragments, cinders and ash and concrete. As noted in WS3 and WS4 to the northwest of the site. The made ground extends to a depth greater than 4.00m in WS3.

Further details of the subsurface stratigraphy can be found in the exploratory hole log sheets which form Appendix B1 to this report.

7. Groundwater

Seepage groundwater was encountered in the windowless sampled exploratory holes at depths between 0.90m and 2.00m during the course of the fieldwork. The groundwater conditions entered on the exploratory hole logs are those observed at the time of the investigation and the water level may not have reached equilibrium with the surrounding water level prior to the record being taken.

Groundwater levels associated with the ground gas monitoring up to December 2020 in the standpipes installed on this site indicate that over the monitoring period artesian ground water has been recorded as being present in WS5 to 0.10m above ground level. Ground water has not been recorded as present within the standpipes installed at WS1 and WS3 These standpipes extend to 4.00m depth below ground level.

Standing groundwater levels will be subject to seasonal variation or changes in local drainage conditions and could be higher at certain times of the year particularly after periods of heavy rainfall. Indications are that southern and eastern areas of the site are likely to have a perched higher groundwater flow. A low flow groundwater issue was noted to be present close to the entrance to the site.

8. Ground Gas

Ground gas monitoring is presently ongoing and a separate ground gas risk assessment report will be produced on completion. Readings to date indicate a minimum of Characteristic Situation 1 Gas Protection measures will be required.

The subsurface stratigraphy has proved that a significant depth of made ground exists to the north west of the site. However, no particularly putrescible materials were noted as being present in the made ground and consequently the made ground is not capable of generating ground gases at significant quantities such that the proposed development would be impacted. Gas monitoring readings to date substantiate the determination of a Characteristic Situation 1.

The requirements for Radon gas measures are discussed in the Preliminary Contaminated Land Risk Assessment Report.

9. Part IIA Legislation

Part IIA of the Environmental Protection Act 1990 (inserted by Section 57 of the Environment Act 1995) provides a new regime for the control of specific threats to health or the environment from existing land contamination. In accordance with the Act and the statutory guidance document on The Contaminated Land (England) Regulations 2000, the definition of contaminated land is intended to embody the concept of risk assessment. Within the meaning of the Act, land is only “contaminated land” where it appears to the regulatory authority, by reason of substances within or under the land that

- § Significant harm is being caused or there is significant possibility of such harm being caused; or
- § Pollution of controlled waters is being, or is likely to be, caused.

The guidance defines “risk” as the combination of

- § The probability, or frequency, of occurrence of a defined hazard (for example, exposure of a property to a substance with the potential to cause harm); and
- § The magnitude (including the seriousness) of the consequences.

For a risk of pollution or environmental harm to occur as a result of ground contamination, all of the following elements must be present:

- § A source, i.e. a substance that is capable of causing pollution or harm;
- § A receptor (or target). i.e. something which could be adversely affected by the contaminant; and
- § A pathway, i.e. a route by which the contaminant can reach the receptor.

If one of these elements is missing, there can be no significant risk. If all are present then the magnitude of the risk is a function of the magnitude and mobility of the source, the sensitivity of the receptor and the nature of the migration pathway.

9.1 Assessment Methodology

In order to assess the environmental risk posed by potential contaminants within the near surface soils considering the final levels of the scheme, GeoAssist Limited undertook an initial screen of the laboratory results using GeoAssist Limited Generic Assessment Criteria (GACs) and where applicable Category 4 Screening Levels or Suitable 4 Use Levels as given as part of Appendix C2.

The GeoAssist Limited GACs and Category 4 Screening levels (C4SLs and S4UL herein) are generated in consideration of the proposed end use of the site, in this case as Residential land. Contaminant concentrations below the GACs and or C4SLs levels are considered not to warrant further risk assessment. Concentrations of potential contaminants above the GACs and C4SLs levels require further consideration of the potential pollutant linkages. It should be noted that exceedance of the GACs and or C4SLs levels does not necessarily mean that the site requires remediation, although this is dependent on the nature, type and depth of the contaminant and further justification may be required.

9.2 Soils

For assessment of the soil analysis results with regard to potential human health risks, GeoAssist Limited GACs are

selected from the following sources which represent minimal risk to site users:

CLEA Soil Guideline Values (SGVs). These values have been developed by the Department of the Environment, Food and Rural Affairs (DEFRA) and the Environment Agency (EA) using the Contaminated Land Exposure Assessment (CLEA) Model, and are considered to be protective of human health (considered to be a potential receptor on site). To date, SGVs have been published for only a limited suite of contaminants, with SGVs derived for each contaminant for three different land use scenarios namely:

- § residential
- § allotments
- § commercial and industrial.

The proposed assessment of this site is as Residential land as this is considered to be the most appropriate land use scenario for the current and proposed situation on site.

Chartered Institute of Environmental Health Generic Assessment Criteria (LQM CIEH GAC) have been used where available and where CLEA SGVs have not yet been published.

Where CLEA or LQIM CIEH GAC values are not available, Atkins at Risk GAC values have been selected as appropriate all of which represent a minimal risk to receptors.

C4SLs have been used in conjunction with the above GAC and these represent a Low Level of Toxicological Concern (LLTC herein). LLTC represent an intake of low concern that remains suitably protective of health, and definitely does not approach an intake level that could be defined as Significant Possibility of Significant Harm.

The CLEA guidelines state that for each contaminant, apart from lead, the upper 95th percentile of the mean measured concentration should be calculated where appropriate and this value should be compared to the applicable screening value (defined here as the GeoAssist Limited GACs). For Lead impacts the geometric mean should be calculated and compared to the GAC or C4SL.

The CLEA model states that, 'the contamination is assumed to be at or within 1 m of the surface (CLR10 page 10 now withdrawn).' It is considered that at depths greater than 1m, the probability of human exposure via the direct contact pathways are significantly reduced, leaving inhalation of volatile compounds as the dominant pathway. Typically, volatile compounds only significantly affect the indoor inhalation pathway.

9.3 Subsoil Deposits

The contaminants that were identified above the GeoAssist Limited GACs, SGVs or C4SLs for a Residential end use from the GeoAssist Limited investigations are summarized below:

Table 9.3 Summary identified impacts.

Determinand	GAC (mg/kg) Residential HGP	No of tests	No of samples exceeding SGV/GAC/ C4SL	Max Value (mg/kg)	Treat as a Hotspot	US95 Value (Geometric Mean for Lead)	Further action required
Metals							
Lead	200		1	290	na	na	Yes
PAH Compounds							
Benz(a)Pyrene SM*	5		3	19	na	na	Yes

*Surrogate Marker

The analytical laboratory test results and analysis are presented in appendix C1 & C2 and have identified potential

risks to end users of the Site from elevated levels of anthropogenic contamination within the near surface made ground on the Site in the areas of WS3 and WS4.

The results confirm that asbestos fibres have been detected in WS4 sample C1 at 0.40m of the samples submitted to the analysis laboratory.

The results of all the chemical laboratory analytical tests form appendix C1 to this report and the analysis of the results forms appendix C2 to this report.

9.4 Discussion

The assessment of the chemical laboratory analytical tests has identified that the Made Ground soils on this site pose a Moderate Risk to end users from Contaminants of Concern when assessed in accordance with the current UK methodology. Consequently, the risk to end user receptors from ground contamination is classified as Moderate given a residential end use scenario. The profile of the land and the present site layout indicate that the made ground is likely to have been placed in order to achieve a level plateaux to facilitate construction and a rear garden of the dwelling house presently on site.

Construction Workers

The risk to construction workers and site users during the construction phase is assessed to be low provided that good working practice is maintained. Standard PPE & RPE precautions should be adopted at the site strip stage including the use of disposable coveralls, particulate masks and damping down to suppress airborne dust where conditions dictate.

Site Users

The risk to present site users is deemed to be low as a function of the hardstanding cover and lawns presently in place over the areas of impacted made ground.

The risk to future site users from elevated levels of contaminants with the made ground is deemed to be moderate and mitigation measures to cap or remove affected areas will be required in order to manage the risks to an acceptable level.

10. Conceptual Model

The updated conceptual model based on the information and test results presented in this report including contamination sources, pathways and receptors is presented below.

Table 10.0 Amended Conceptual Site Model based on information as presented within this report.

Potential Source /Hazard	Nature of Hazard (Risk Level to site given a Residential end use)	Contaminants Associated with Source	Potential Pathway	Potential Receptor
<i>Previous ON SITE Land uses:</i>				
1. Previous Land Use Residential Property/ Woodland Made Ground	Ground contamination Moderate Risk	Lead BaP ACM/AF	Dermal Contact Ingestion Inhalation	Site Users Construction workers
	Gas from in-filled ground Low Risk CS1 Gas Monitoring Ongoing	Low CO ₂	Vertical and Lateral Migration	Site Users Future Buildings & Services
	<i>Previous OFF SITE land uses within 250m as indicated by Historical Plans Including:</i>			
2. Refuse Heap/Tip	Ground contamination Moderate Risk	Lead BaP ACM/AF	Dermal Contact Ingestion Inhalation	Site Users Construction workers
	Gas from in-filled ground Low Risk CS1 Gas Monitoring Ongoing	Low CO ₂	None	Site Users Future Buildings & Services
3. Hollow (Infilled)	Ground contamination Low Risk	None	Dermal Contact Ingestion Inhalation	Site Users Construction workers
	Gas from in-filled ground Low Risk CS1 Gas Monitoring Ongoing	Low CO ₂	None	Site Users Future Buildings & Services
4. Coal Workings	Geotechnical Hazard Low Risk	None	Ground Collapse Subsidence	Humans (site users) Future Buildings & Services
	Ground contamination Low Risk	None	None	Site Users Services
	Mine Gas Low Risk	None	None	Humans (site users) Future Buildings & Services

11. Conclusions

Evidence presented elsewhere within this report indicates that the site presents a Moderate Risk to end user receptors in its present state and will only be regarded as fit for purpose from a ground contamination perspective following the implementation of an approved remedial action plan.

- § Elsewhere,
- § The controlled waters (groundwater) beneath the site are unlikely to become impacted by the passage of water through the soils on the site.
- § The site, in its present condition, does not represent a significant risk to the environment and is unlikely to become an environmental liability in the future.

11.1 Supplementary Recommendations

None.



Matthew Benson MSc. GMICE
Geotechnical/Environmental Engineer



Mark Richardson MSc CEng MICE
Technical Director

Field investigations have been restricted to a level of detail required to achieve the stated objectives of the work. Ground conditions are, and can be, variable and have only been tested at isolated locations across the site. Therefore, the potential exists for ground conditions to be encountered which are different to those considered in this report. Chemical analysis was conducted for a number of parameters based on an expert understanding of the historical and operational data available at the time and it should not be inferred or otherwise, that other chemical species are not present.

This report has been prepared by GeoAssist Limited with all reasonable professional skill, care and diligence within the terms of the contract with Rainsough Property Ltd. The report is confidential to Rainsough Property Ltd, their/the named persons, advisors and bankers, and GeoAssist Limited accepts no responsibility of whatever nature to third parties to whom this report may be divulged. GeoAssist Limited owns the copyright in this report. All rights are reserved and unauthorised use is prohibited. Rainsough Property Ltd may use the report for their/her/his own purposes.

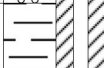
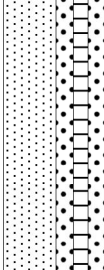
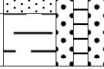
Appendix A

A1 Site Plan & Exploratory Hole Locations

Site Name	5 Rainsough Brow
Location	Prestwich
GeoAssist Ref	6029RAA
Client	Rainsough Property Ltd
	Unit 22 Cariocca Business Park 2 Sawley Road Manchester M40 8BB
Planning Consultant	
NGR (centre of site)	380790,402260
Production Date	Dec-20
Survey Method	
Surveyor	Others
Status	Final v1.00
Base Survey	OSGB36

Appendix B

B1 Exploratory Hole Logs

GeoAssist Limited		Exploratory Hole Record Sheet				Ref: WS1	
Consultant: Equilibrium Architects Ltd		Project: 5 Rainsough Brow Location: Prestwich				Sheet: 1	
Client: Rainsough Property Ltd		Equipment: Archway Dart Rig				Ground Level: 57.56 m.AOD Co-ordinates: Easting: 380797.9(m) Northing: 402290.2(m) Dates: 16/10/2020 to 16/10/2020	
Drilling Foreman: M Walton STRATUM DESCRIPTION Engineer/Geologist: M Benson		Depth (Thick) (m)	Reduced Level (m.AOD)	Strata Legend/ Standpipe Backfill	Samples/Tests Depth (m) from to		Blow Count N/(U)
							Field Records
0 Brown sandy GRAVEL		(0.50) 0.50	57.06		0.50	C1	16/10/2020: On completion of exploratory hole at 4.00m. Casing at 2.00m depth. Standing water level Nil. On withdrawal of casing exploratory hole gas/groundwater standpipe installed to 4.00m depth with response zone from 1.00m to 4.00m.
Brown with light grey gravelly sandy silty CLAY		(0.50) 1.00	56.56				
1 Brown gravelly sandy silty CLAY		(0.40) 1.40	56.16				
Brown with occasional dark grey silty fine to medium SAND		(2.20)					
2		3.60	53.96				
Brown gravelly sandy silty CLAY		(0.40) 4.00	53.56				
4 Exploratory Hole complete at 4.00m							
5							
6							
7							
8							
9							
10							
Remarks: The groundwater conditions entered on the exploratory hole logs are those observed at the time of the drilling operations and the water level may not have reached equilibrium with the surrounding water level prior to the record being taken. Standing groundwater levels will be subject to seasonal variation or changes in local drainage conditions and could be higher at certain times of the year particularly after periods of heavy rainfall.						Logged: M Benson Date: 19/10/2020 Checked: M Richardson Date: 20/10/2020 Site Ref: 6029/RAA Scale 1:50	

GeoAssist Limited Consultant: Equilibrium Architects Ltd Client: Rainsough Property Ltd	Exploratory Hole Record Sheet						Ref: WS2 Sheet: 1		
	Project: 5 Rainsough Brow Location: Prestwich						Ground Level: 57.66 m.AOD Co-ordinates: Easting: 380808.1(m) Northing: 402277.7(m) Dates: 16/10/2020 to 16/10/2020		
	Equipment: Archway Dart Rig								
Drilling Foreman: M Walton STRATUM DESCRIPTION Engineer/Geologist: M Benson		Depth (Thick) (m)	Reduced Level (mAOD)	Strata Legend/ Standpipe Backfill	Samples/Tests Depth (m) from to		Sample Type/No	Blow Count N/(U)	Field Records
0.40 Brown/grey SAND and GRAVEL		(0.40) 0.40	57.26		0.40	C1			16/10/2020: On completion of exploratory hole at 2.00m. Wet at 2.00m. On withdrawal of casing exploratory hole backfilled and reinstated. Wet at 2.00m depth
Brown with grey silty fine to medium SAND		0.70	56.96						
Brown very silty fine SAND		(1.00)							
1 Grey gravelly sandy silty CLAY with sand inclusions		1.70	55.96						
2 Exploratory Hole complete at 2.00m		2.00	55.66						
3									
4									
5									
6									
7									
8									
9									
10									

Remarks: The groundwater conditions entered on the exploratory hole logs are those observed at the time of the drilling operations and the water level may not have reached equilibrium with the surrounding water level prior to the record being taken. Standing groundwater levels will be subject to seasonal variation or changes in local drainage conditions and could be higher at certain times of the year particularly after periods of heavy rainfall.	Logged: M Benson Date: 19/10/2020 Checked: M Richardson Date: 20/10/2020 Site Ref: 6029/RAA Scale 1:50
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GeoAssist Limited		Exploratory Hole Record Sheet				Ref: WS3		
Consultant: Equilibrium Architects Ltd		Project: 5 Rainsough Brow				Sheet: 1		
Client: Rainsough Property Ltd		Location: Prestwich				Ground Level: 55.39 m.AOD		
		Equipment: Archway Dart Rig				Co-ordinates: Easting: 380761.6(m) Northing: 402268.4(m)		
						Dates: 16/10/2020 to 16/10/2020		
Drilling Foreman: M Walton		Depth (Thick) (m)	Reduced Level (mAOD)	Strata Legend/ Standpipe Backfill	Samples/Tests			Field Records
STRATUM DESCRIPTION					Depth (m)	Sample	Blow	
Engineer/Geologist: M Benson					from	to	Type/No	N/(U)
0 Dark brown sandy TOPSOIL		0.10	55.29					
Brown gravelly sandy silty clay with brick and concrete fragments - MADE GROUND.					0.50		C1	
1		(1.90)			0.90		C2	
2 Dark grey/brown sandy gravel with cinders, ash, brick and concrete fragments - MADE GROUND		2.00	53.39					
3		(2.00)						
4 Exploratory Hole complete at 4.00m		4.00	51.39					
5								
6								
7								
8								
9								
10								
Remarks: The groundwater conditions entered on the exploratory hole logs are those observed at the time of the drilling operations and the water level may not have reached equilibrium with the surrounding water level prior to the record being taken. Standing groundwater levels will be subject to seasonal variation or changes in local drainage conditions and could be higher at certain times of the year particularly after periods of heavy rainfall.							Logged: M Benson Date: 19/10/2020 Checked: M Richardson Date: 20/10/2020 Site Ref: 6029/RAA Scale 1:50	

16/10/2020: On completion of exploratory hole at 4.00m. Casing at 2.00m depth. Standing water level Nil. On withdrawal of casing exploratory hole gas/groundwater standpipe installed to 4.00m depth with response zone from 1.00m to 4.00m.

GeoAssist Limited		Exploratory Hole Record Sheet				Ref: WS4	
Consultant: Equilibrium Architects Ltd		Project: 5 Rainsough Brow Location: Prestwich				Sheet: 1	
Client: Rainsough Property Ltd		Equipment: Archway Dart Rig				Ground Level: 55.52 m.AOD Co-ordinates: Easting: 380766.2(m) Northing: 402275.2(m) Dates: 16/10/2020 to 16/10/2020	
Drilling Foreman: M Walton STRATUM DESCRIPTION Engineer/Geologist: M Benson		Depth (Thick) (m)	Reduced Level (mAOD)	Strata Legend/ Standpipe Backfill	Samples/Tests Depth (m) from to		Blow Count N/(U)
							Field Records
0 Brown sandy clay with numerous roots and rootlets - MADE GROUND		0.10	55.42				16/10/2020: On completion of exploratory hole at 4.00m. Casing at 2.00m depth. Standing water level Nil. On withdrawal of casing exploratory hole backfilled and reinstated.
Brown gravelly sandy silty clay with brick fragments - MADE GROUND		(0.90)			0.40	C1	
		1.00	54.52		0.90	C2	
1 Grey/brown sandy gravel with brick and concrete fragments - MADE GROUND		(0.60)					
		1.60	53.92				
Brown/grey gravelly sandy silty clay with brick and sandstone fragments - MADE GROUND		(0.40)	53.52				
		2.00					
2 Brown with dark grey clayey silty sand - MADE GROUND		(0.50)					
		2.50	53.02				
Brown slightly gravelly sandy silty clay - MADE GROUND		(0.40)	52.62				
		2.90					
3 Dark grey clayey sandy cinders and ash - MADE GROUND		3.00	52.52				
		(0.70)					
Brown grey clayey sand with gravel and brick fragments - MADE GROUND		3.70	51.82				
		4.00	51.52				
4 Exploratory Hole complete at 4.00m							
5							
6							
7							
8							
9							
10							
Remarks: The groundwater conditions entered on the exploratory hole logs are those observed at the time of the drilling operations and the water level may not have reached equilibrium with the surrounding water level prior to the record being taken. Standing groundwater levels will be subject to seasonal variation or changes in local drainage conditions and could be higher at certain times of the year particularly after periods of heavy rainfall.						Logged: M Benson Date: 19/10/2020 Checked: M Richardson Date: 20/10/2020 Site Ref: 6029/RAA Scale 1:50	

GeoAssist Limited		Exploratory Hole Record Sheet				Ref: WS5	
Consultant: Equilibrium Architects Ltd		Project: 5 Rainsough Brow Location: Prestwich				Sheet: 1	
Client: Rainsough Property Ltd		Equipment: Archway Dart Rig				Ground Level: 56.23 m.AOD Co-ordinates: Easting: 380800.9(m) Northing: 402255.6(m) Dates: 16/10/2020 to 16/10/2020	
Drilling Foreman: M Walton STRATUM DESCRIPTION Engineer/Geologist: M Benson		Depth (Thick) (m)	Reduced Level (m.AOD)	Strata Legend/ Standpipe Backfill	Samples/Tests Depth (m) from to		Field Records
					Sample Type/No	Blow Count N/(U)	
0 Vegetation over brown clayey TOPSOIL		0.10	56.13				
Dark brown/light brown gravelly sandy silty clay with brick and sandstone fragments and occasional rootlets - MADE GROUND		(0.90)			0.40	C1	
		1.00	55.23		0.90	C2	Wet at 0.90m depth
1 Orange/brown with grey slightly gravelly silty to very silty fine to medium SAND		(0.90)					Wet from 1.50m depth
		1.90	54.33				
2 Grey very silty CLAY		2.00	54.23				
Brown gravelly sandy silty CLAY		(1.00)					
		3.00	53.23				
3 Grey very silty CLAY		(1.00)					
		4.00	52.23				
4 Exploratory Hole complete at 4.00m							16/10/2020: On completion of exploratory hole at 4.00m. Casing at 3.00m depth. Standing water level at 2.00m depth. On withdrawal of casing exploratory hole gas/groundwater standpipe installed to 4.00m depth with response zone from 1.00m to 4.00m.
5							
6							
7							
8							
9							
10							

Remarks:		Logged: M Benson
The groundwater conditions entered on the exploratory hole logs are those observed at the time of the drilling operations and the water level may not have reached equilibrium with the surrounding water level prior to the record being taken.		Date: 19/10/2020
Standing groundwater levels will be subject to seasonal variation or changes in local drainage conditions and could be higher at certain times of the year particularly after periods of heavy rainfall.		Checked: M Richardson
		Date: 20/10/2020
		Site Ref: 6029/RAA
		Scale 1:50

Appendix C

- C1 I2 Chemical Test Results
- C2 Analysis of Results with Assessment Criteria



Matthew Benson
GeoAssist Ltd
Unit 4, Sheffield Street
Heaton Norris
Stockport
Cheshire
SK4 1RU

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

e: info@geoassist.co.uk

Analytical Report Number : 20-36568

Project / Site name:	Rainsough Brow, Prestwich	Samples received on:	20/10/2020
Your job number:	6029 RAA	Samples instructed on/ Analysis started on:	20/10/2020
Your order number:	2201018	Analysis completed by:	30/10/2020
Report Issue Number:	1	Report issued on:	30/10/2020
Samples Analysed:	8 soil samples		

Signed: *Karolina Marek*

Karolina Marek
PL Head of Reporting Team
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.



Analytical Report Number: 20-36568
Project / Site name: Rainsough Brow, Prestwich
Your Order No: 2201018

Lab Sample Number				1656712	1656713	1656714	1660652
Sample Reference				WS3-C1	WS4-C1	WS5-C1	WS1-C1
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	0.40	0.40	0.50
Date Sampled				19/10/2020	19/10/2020	19/10/2020	19/10/2020
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	13	15	16	12
Total mass of sample received	kg	0.001	NONE	0.5	0.5	0.5	0.3

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	Chrysotile, Amosite - Loose Fibres	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Detected	Not-detected	-

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8	8	6.1	5.5
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1
Thiocyanate as SCN	mg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
Total Sulphate as SO4	%	0.005	MCERTS	0.067	0.058	0.052	0.03
Sulphide	mg/kg	1	MCERTS	< 1.0	< 1.0	4	< 1.0
Total Sulphur	%	0.005	MCERTS	0.03	0.026	0.035	0.018
Organic Matter	%	0.1	MCERTS	3.9	2.9	3	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.48	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	1.1	0.47	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	0.69	0.35	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	8.3	4.9	0.28	< 0.05
Anthracene	mg/kg	0.05	MCERTS	1.2	1.6	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	9	13	0.51	< 0.05
Pyrene	mg/kg	0.05	MCERTS	8.2	11	0.47	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	5	7.1	0.35	< 0.05
Chrysene	mg/kg	0.05	MCERTS	3.5	5	0.25	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	4.6	7.5	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	1.9	3.1	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	3.9	6.6	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1.9	3.4	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.68	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	2.1	3.5	< 0.05	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	51.9	68.2	1.86	< 0.80
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Analytical Report Number: 20-36568

Project / Site name: Rainsough Brow, Prestwich

Your Order No: 2201018

Lab Sample Number					1656712	1656713	1656714	1660652
Sample Reference					WS3-C1	WS4-C1	WS5-C1	WS1-C1
Sample Number					None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)					0.50	0.40	0.40	0.50
Date Sampled					19/10/2020	19/10/2020	19/10/2020	19/10/2020
Time Taken					None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS		16	15	17	8.1
Barium (aqua regia extractable)	mg/kg	1	MCERTS		180	170	80	150
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS		0.78	0.73	0.78	1.1
Boron (water soluble)	mg/kg	0.2	MCERTS		0.5	0.5	0.4	0.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS		< 0.2	< 0.2	< 0.2	0.4
Chromium (hexavalent)	mg/kg	1.2	MCERTS		< 1.2	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS		17	16	15	22
Copper (aqua regia extractable)	mg/kg	1	MCERTS		61	58	40	23
Lead (aqua regia extractable)	mg/kg	1	MCERTS		290	160	87	18
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS		< 0.3	0.5	0.6	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS		17	17	17	30
Selenium (aqua regia extractable)	mg/kg	1	MCERTS		< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS		24	22	27	27
Zinc (aqua regia extractable)	mg/kg	1	MCERTS		150	160	64	86

U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number: 20-36568
Project / Site name: Rainsough Brow, Prestwich
Your Order No: 2201018

Lab Sample Number				1660653	1660654	1660655	1660656
Sample Reference				WS2-C1	WS3-C2	WS4-C2	WS5-C2
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	0.90	0.90	0.90
Date Sampled				19/10/2020	19/10/2020	19/10/2020	19/10/2020
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	17	12	11	15
Total mass of sample received	kg	0.001	NONE	0.3	0.3	0.3	0.3

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	-	-	-	-

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	5.4	8.4	8.5	6.6
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1
Thiocyanate as SCN	mg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
Total Sulphate as SO4	%	0.005	MCERTS	0.016	0.043	0.042	0.035
Sulphide	mg/kg	1	MCERTS	< 1.0	2.8	4.3	< 1.0
Total Sulphur	%	0.005	MCERTS	0.008	0.032	0.033	0.028
Organic Matter	%	0.1	MCERTS	-	-	-	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	1.4	0.26	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	0.34	0.3	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	4.8	0.91	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	4.4	0.66	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	32	10	0.23
Anthracene	mg/kg	0.05	MCERTS	< 0.05	10	2.8	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	36	21	0.35
Pyrene	mg/kg	0.05	MCERTS	< 0.05	27	18	0.33
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	18	13	0.26
Chrysene	mg/kg	0.05	MCERTS	< 0.05	15	8.8	0.24
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	19	16	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	6.9	5.1	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	19	13	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	7.6	6.2	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	2.3	1.5	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	8.9	7.4	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	213	125	1.41
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Analytical Report Number: 20-36568

Project / Site name: Rainsough Brow, Prestwich

Your Order No: 2201018

Lab Sample Number				1660653	1660654	1660655	1660656
Sample Reference				WS2-C1	WS3-C2	WS4-C2	WS5-C2
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	0.90	0.90	0.90
Date Sampled				19/10/2020	19/10/2020	19/10/2020	19/10/2020
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				
Heavy Metals / Metalloids							
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	4.4	15	15	15
Barium (aqua regia extractable)	mg/kg	1	MCERTS	29	190	200	72
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.22	0.9	0.84	0.57
Boron (water soluble)	mg/kg	0.2	MCERTS	< 0.2	0.6	0.5	0.5
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	0.6	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	5.1	18	22	15
Copper (aqua regia extractable)	mg/kg	1	MCERTS	9.2	50	64	34
Lead (aqua regia extractable)	mg/kg	1	MCERTS	4.4	140	120	70
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	5.8	19	33	15
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	7.4	27	29	25
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	27	160	140	47

U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number : 20-36568

Project / Site name: Rainsough Brow, Prestwich

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1656712	WS3-C1	None Supplied	0.5	Brown loam and clay with gravel and vegetation.
1656713	WS4-C1	None Supplied	0.4	Brown loam and clay with gravel.
1656714	WS5-C1	None Supplied	0.4	Brown loam and clay with gravel and vegetation.
1660652	WS1-C1	None Supplied	0.5	Brown clay and loam with gravel.
1660653	WS2-C1	None Supplied	0.4	Brown clay and sand with gravel.
1660654	WS3-C2	None Supplied	0.9	Brown clay and loam with gravel and vegetation.
1660655	WS4-C2	None Supplied	0.9	Brown clay and loam with gravel.
1660656	WS5-C2	None Supplied	0.9	Brown clay and loam with gravel and vegetation.



Analytical Report Number : 20-36568
Project / Site name: Rainsough Brow, Prestwich

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazine followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Thiocyanate in soil	Determination of thiocyanate in soil by extraction in water followed by acidification followed by addition of ferric nitrate followed by discrete analyser (spectrophotometer).	In-house method	L082-PL	D	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total Sulphate in soil as %	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Total Sulphur in soil as %	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In house method.	L038-PL	D	MCERTS



Analytical Report Number : 20-36568

Project / Site name: Rainsough Brow, Prestwich

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Soils Risk Assessment

Site Reference: 6029 RAA
 Project Site: 5 Rainsough Brow
 Project Location: Prestwich
 Client: Rainsough Property Ltd

Customer Sample Ref:	Residential	WS1-C1	WS2-C1	WS3-C1	WS3-C2	WS4-C1	WS4-C2	WS5-C1	WS5-C2
Sample Depth	C4SL / S4UL	0.50	0.40	0.50	0.90	0.40	0.90	0.40	0.90
Date sampled	SOM 1% GAC	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Determinand	LQM II	CL	SA	MG	MG	MG	MG	MG	MG
Arsenic	37	8.1	4.4	16	15	15	15	17	15
Boron (water-soluble)	290	0.3	0.2	0.5	0.6	0.5	0.5	0.4	0.5
Cadmium	22	0.4	0.2	0.2	0.6	0.2	0.2	0.2	0.2
Chromium*	910	22	5.1	17	18	16	22	15	15
Chromium VI	21	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Copper	2400	23	9.2	61	50	58	64	40	34
Cyanide(Total)	-	1	1	1	1	1	1	1	1
Cyanide(free)**	34	1	1	1	1	1	1	1	1
Lead	200	18	4.4	290	140	160	120	87	70
Mercury	1.2	0.3	0.3	0.3	0.3	0.5	0.3	0.6	0.3
Nickel	130	30	5.8	17	19	17	33	17	15
pH	-	5.5	5.4	8	8.4	8	8.5	6.1	6.6
Phenols(Mono)	1100	1	1	1	1	1	1	1	1
Selenium	250	1	1	1	1	1	1	1	1
SO4(Total)	-	0.03	0.016	0.067	0.043	0.058	0.042	0.052	0.035
Sulphide	-	1	1	1	2.8	1	4.3	4	1
Sulphur(Free)	-	0.018	0.008	0.03	0.032	0.026	0.033	0.035	0.028
Thiocyanate	-	5	5	5	5	5	5	5	5
Zinc	3700	86	27	150	160	160	140	64	47
Acenaphthene	1100	0.05	0.05	1.1	4.8	0.47	0.91	0.05	0.05
Acenaphthylene	920	0.05	0.05	0.05	0.34	0.05	0.3	0.05	0.05
Anthracene	11000	0.05	0.05	1.2	10	1.6	2.8	0.05	0.05
Benzo(a)Anthracene	-	0.05	0.05	5	18	7.1	13	0.35	0.26
Benzo(a)Pyrene SM	5	0.05	0.05	3.9	19	6.6	13	0.05	0.05
Benzo(b)Fluoranthene	-	0.05	0.05	4.6	19	7.5	16	0.05	0.05
Benzo(ghi)Perylene	-	0.05	0.05	2.1	8.9	3.5	7.4	0.05	0.05
Benzo(k)Fluoranthene	-	0.05	0.05	1.9	6.9	3.1	5.1	0.05	0.05
Chrysene	-	0.05	0.05	3.5	15	5	8.8	0.25	0.24
Dibenzo(ah)Anthracene	-	0.05	0.05	0.05	2.3	0.68	1.5	0.05	0.05
Fluoranthene	890	0.05	0.05	9	36	13	21	0.51	0.35
Fluorene	860	0.05	0.05	0.69	4.4	0.35	0.66	0.05	0.05
Indeno(123-cd)Pyrene	-	0.05	0.05	1.9	7.6	3.4	6.2	0.05	0.05
Naphthalene	13	0.05	0.05	0.48	1.4	0.05	0.26	0.05	0.05
Phenanthrene	440	0.05	0.05	8.3	32	4.9	10	0.28	0.23
Pyrene	2000	0.05	0.05	8.2	27	11	18	0.47	0.33
PAH(total)	500	0.8	0.8	51.9	213	68.2	125	1.86	1.41
Asbestos	Not-detected	-	-	Not-detected	-	Chrysotile, Amosite - Loose Fibres	-	Not-detected	-

All Units mg/kg unless otherwise stated Indicates Exceedance of Applicable Level

*Criteria Assumes Chromium III

**Criteria is derived considering acute effects on 1-2yo Female Receptor ingesting a single dose of 3g of soil

**Criteria is derived considering Total TPH (C10 to C35) is formed entirely of a 50:50 Aliphatic and Aromatic Split C8-C10 range

Basis of Assessment Criteria: EA 2005 WAC (Human Health Value) C4SL
 LQM S4UL Atrisk 06