



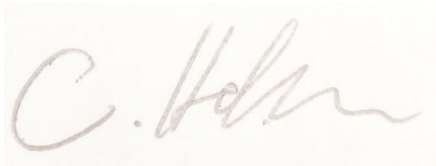
GROUNDTECH
CONSULTING

Job title: Oldham Road, Manchester

Report type: Concise Supplementary Geo-
Environmental Appraisal

Prepared for: ABGI Construction

Date: October 2020

Document Control Form	
PROJECT	OLDHAM ROAD,
REPORT NAME	CONCISE SUPPLEMENTARY GEO-ENVIRONMENTAL APPRAISAL
REPORT REFERENCE	GRO-19134-1834
STATUS	FINAL
ISSUE DATE	03 OCTOBER 2020
REVISION	
CLIENT	ABGI CONSTRUCTION LIMITED
CLIENT CONTACT	GREG BRINKWORTH
For and Behalf of Groundtech Consulting	
SIGNATURE	
AUTHOR	Callum Holden BSc (Hons)
SIGNATURE	
CHECKED	Richard Wyatt MEng (Hons) FGS
SIGNATURE	
REVIEWED	James Doyle BSc (Hons) CGeol FGS

Introduction

Further to your recent request, we have visited the above site to carry out supplementary Ground Investigation works in the area of the former Cheshire Cheese Public House. Please find below a concise Geo-Environmental Appraisal in accordance with the agreed scope of works.

Groundtech Consulting have carried out a previous Geo-Environmental Appraisal at the above site referenced 19134/1231, dated 24 January 2020. However, at the time of the investigation, the public house in the northern area was still in place and intrusive works were not possible in this area.

As a result, additional ground works were required beneath the basement area in order to confirm ground conditions. At the time of the supplementary site works, the public house had been demolished down to the basement floor slab level.

Site Works

Groundtech Consulting visited the site on 25th September 2020. Two trial pits (TP101 and TP102) were excavated through the slab of the former basement to depths of between 0.6m and 1.0m bgl using a tracked 360° excavator provided by the demolition contractor.

Representative disturbed and environmental soil samples were taken of all strata encountered.

The approximate positions of the holes are shown on the Trial Pit Location Plan *GRO-19134-P05* and logs are appended.

Ground Model

Made Ground

The concrete basement floor slab was encountered in both of the trial pits to 0.2m bgl.

Firm to stiff red brown clay with occasional gravel and cobbles of brick was present in TP102 from 0.2m to 0.7m bgl.

Natural Ground

The natural ground consisted of stiff red brown slightly silty Clay and was encountered to the base of each of the trial pits at a maximum depth of 1.0m bgl.

Bedrock

Bedrock was not encountered.

Groundwater

No groundwater was observed in either trial pit.

No visual or olfactory evidence of contamination was noted within the soils that were recovered.

Laboratory Testing

The following geo-environmental testing was scheduled to assess the risk from contamination on the site. The testing is based on observations made during the ground investigation.

Contaminants of Concern	Matrix	Number
<i>Arsenic, cadmium, chromium (total and hexavalent), copper, lead, mercury, nickel, selenium, zinc and pH.</i>	<i>Soil</i>	<i>2</i>
<i>Speciated PAHs</i>	<i>Soil</i>	<i>2</i>
<i>Asbestos Screen</i>	<i>Soil</i>	<i>2</i>
<i>TPH CWG</i>	<i>Soil</i>	<i>1</i>

The Geo-Environmental Laboratory Testing Results are appended at the rear of the document.

Additional geotechnical laboratory testing was not carried out as part of this supplementary investigation.

Geo-Environmental Testing Results

Samples of Made Ground and natural strata taken from beneath the former public house basement have been tested for a range of relevant Contaminants of Concern. In accordance with CLR11 (DEFRA & EA, 2004), a Generic Quantitative Risk Assessment (GQRA) has been undertaken to determine the significance of the concentrations as derived through Geo-Environmental analysis.

The GQRA process comprises the comparison of the actual concentrations measured on site with Generic Assessment Criteria (GACs) for the protection of human health.

The GACs used for the assessment of soil concentrations have been derived using the CLEA model. The GACs used and their ranking of importance are listed below:

- Soil Guideline Values (SGVs) which demonstrate minimal risk.
- LQM/CIEH S4ULs which use the same toxicological data as the SGVs but different exposure criteria.
- C4SLs which demonstrate low risk.

In deriving the GACs for use on Brownfield sites we have assumed a 1.0% Soil Organic Matter, unless the results indicate otherwise.

The proposed end-use for the site is a residential development comprising apartments. We have therefore undertaken the GQRA on the basis that the proposed development site falls under the Residential (without Plant Uptake) land-use scenario as defined in SR3 (EA, 2009b).

A summary of the Geo-Environmental Testing results is presented below and the GQRA Tier I Screening Values are appended:

Metals				
Contaminant of Concern	Range of Results (mg/kg unless stated)	Screening Value (mg/kg unless stated)	Number of Exceedances	Locations of Exceedances
<i>Arsenic</i>	<i>7.7 – 12.4</i>	<i>40</i>	<i>0</i>	<i>-</i>
<i>Cadmium</i>	<i><0.1</i>	<i>85</i>	<i>0</i>	<i>-</i>
<i>Chromium</i>	<i>46.5 – 48.8</i>	<i>910</i>	<i>0</i>	<i>-</i>
<i>Hexavalent Chromium</i>	<i><0.3</i>	<i>21</i>	<i>0</i>	<i>-</i>
<i>Copper</i>	<i>28 – 33</i>	<i>7100</i>	<i>0</i>	<i>-</i>
<i>Lead</i>	<i>11 – 30</i>	<i>310</i>	<i>0</i>	<i>-</i>
<i>Mercury</i>	<i><0.1</i>	<i>1.2</i>	<i>0</i>	<i>-</i>
<i>Nickel</i>	<i>39 – 40.7</i>	<i>180</i>	<i>0</i>	<i>-</i>
<i>Selenium</i>	<i><1</i>	<i>430</i>	<i>0</i>	<i>-</i>
<i>Zinc</i>	<i>70 – 79</i>	<i>40000</i>	<i>0</i>	<i>-</i>

Polycyclic Aromatic Hydrocarbons (PAHs)				
Contaminant of Concern	Range of Results (mg/kg unless stated)	Screening Value (mg/kg unless stated)	Number of Exceedances	Locations of Exceedances
<i>Naphthalene</i>	<0.04	2.3	0	-
<i>Acenaphthylene</i>	<0.03	2900	0	-
<i>Acenaphthene</i>	<0.05	3000	0	-
<i>Fluorene</i>	<0.04	2800	0	-
<i>Phenanthrene</i>	<0.03 – 0.35	1300	0	-
<i>Anthracene</i>	<0.04 – 0.11	31000	0	-
<i>Fluoranthene</i>	<0.03 – 0.52	1500	0	-
<i>Pyrene</i>	<0.03 – 0.43	3700	0	-
<i>Benzo(a)anthracene</i>	<0.06 – 0.23	11	0	-
<i>Chrysene</i>	<0.02 – 0.20	30	0	-
<i>Benzo(b)fluoranthene</i>	<0.05 – 0.20	3.9	0	-
<i>Benzo(k)fluoranthene</i>	<0.02 – 0.08	110	0	-
<i>Benzo(a)pyrene</i>	<0.04 – 0.14	3.2	0	-
<i>Indeno(123cd)pyrene</i>	<0.04 – 0.07	45	0	-
<i>Dibenzo(ah)anthracene</i>	<0.04	0.31	0	-
<i>Benzo(ghi)perylene</i>	<0.04 – 0.10	360	0	-
TPH CWG - Aliphatics				
Contaminant of Concern	Range of Results (mg/kg unless stated)	Screening Value (mg/kg unless stated)	Number of Exceedances	Locations of Exceedances
>C5-C6	<0.1	42	0	-
>C6-C8	<0.1	100	0	-
>C8-C10	<0.1	27	0	-
>C10-C12	<0.2	130	0	-
>C12-C16	<4	1100	0	-
>C16-C35	<7	65000	0	-
<i>Total aliphatics C5-35</i>	<19	-	-	-
TPH CWG - Aromatics				
>C5-EC7	<0.1	370	0	-
>EC7-EC8	<0.1	860	0	-
>EC8-EC10	<0.1	47	0	-
>EC10-EC12	<0.2	250	0	-
>EC12-EC16	<4	1800	0	-
>EC16-EC21	<7	1900	0	-
>EC21-EC35	<7	1900	0	-
<i>Total aromatics C5-35</i>	<19	-	-	-
<i>Total aliphatics and aromatics(C5-35)</i>	<38	-	-	-
<i>MTBE</i>	<0.005	49	0	-
<i>Benzene</i>	<0.005	0.38	0	-
<i>Toluene</i>	<0.005	880	0	-
<i>Ethylbenzene</i>	<0.005	83	0	-
<i>m/p-Xylene</i>	<0.005	82	0	-
<i>o-Xylene</i>	<0.005	88	0	-
Others				
<i>Organic Matter</i>		1.4 – 2.1%		

Asbestos Screen		
Position	Depth (m bgl)	Result
TP101	0.40	None Detected
TP102	0.40	None Detected

Tier 1 Generic Quantitative Risk Assessment

Ground Investigation works were carried out beneath the basement slab of the former public house as this area was previously inaccessible during the initial phase of intrusive works.

Limited Made Ground was present beneath the slab and consisted of clay with brick fragments.

The results of the Geo-Environmental testing on samples recovered from beneath the basement indicate that there are no elevated Contaminants of Concern. In addition, no asbestos was detected in the two samples that were screened.

Conclusions

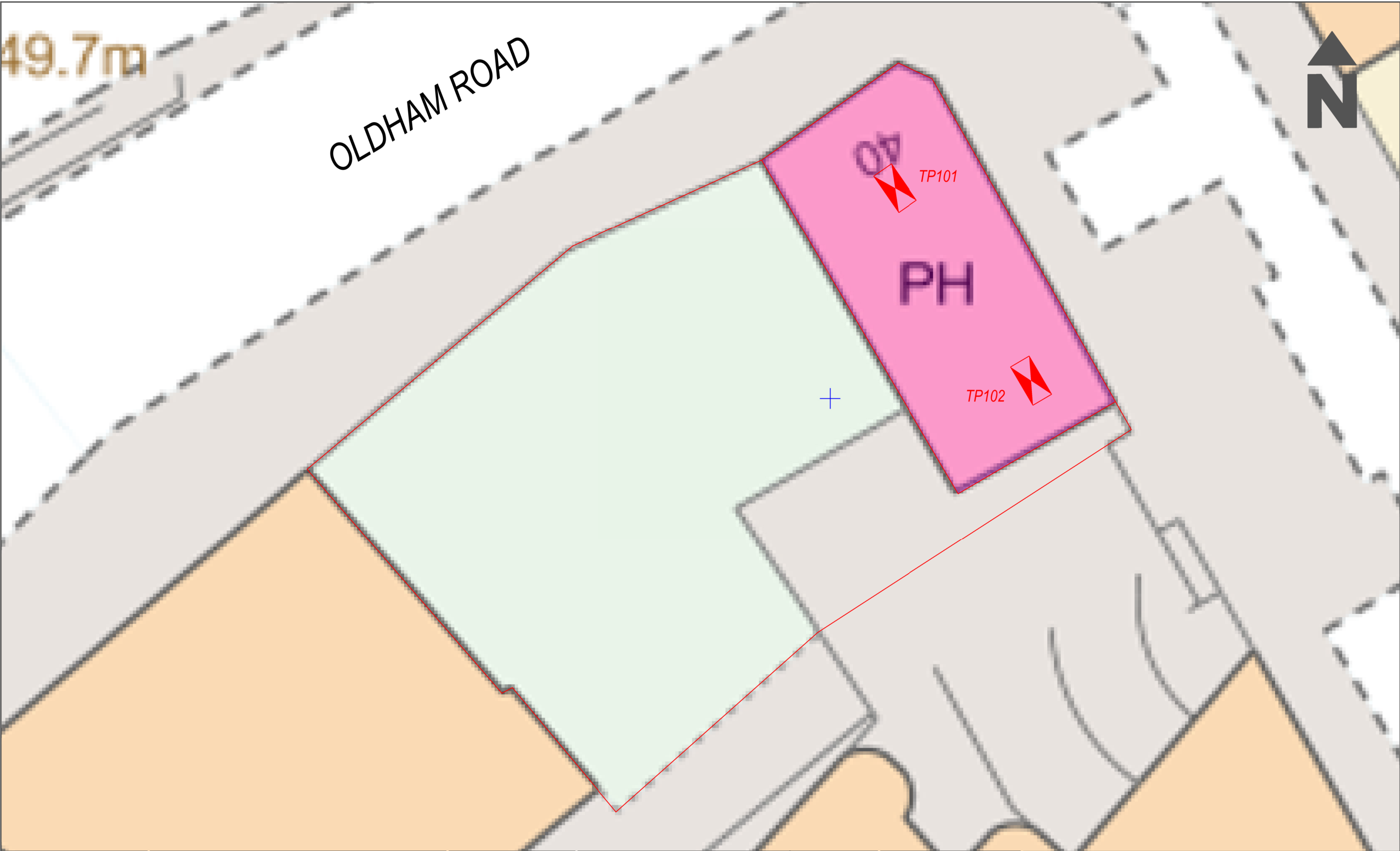
The additional Ground Investigation works carried out beneath the basement of the former public house have revealed that minimal Made Ground is present overlying natural stiff Clay. No visual or olfactory evidence of contamination was noted.

Testing of soil samples from beneath the basement has not identified any elevated Contaminants of Concern and no asbestos was detected. Therefore, the risk to human health is considered to be low and no specific remedial measures are required for the soils that are present beneath the former basement.

The recommendations for the proposed development that were made within the original Geo-Environmental Appraisal referenced 19134/1231 should still be adhered to.



PLANS



 GROUNDTECH CONSULTING	CLIENT	DATE				Status	Notes Approximate trial pit position Approximate extent of basement area of public house
	ABGI CONSTRUCTION LIMITED	OCTOBER 2020				Preliminary	
	PROJECT TITLE	SCALE				Draft	
	OLDHAM ROAD, MANCHESTER	NTS				Issued	
	PLAN TITLE	PLAN NUMBER				For Comment	
	TRIAL PIT LOCATION PLAN	GRO-19134-P05	Rev.	Details	Date	Approved	



SITE PHOTOGRAPHS



Photograph 1 – Basement area (TP101)



Photograph 2 - Basement area (TP102)



Photograph 3 – Natural soils exposed beneath basement in TP101



Photograph 4 - Natural soils exposed beneath basement in TP102



EXPLORATORY HOLE LOGS

Trial Pit Log

Trialpit No

TP102

Sheet 1 of 1

Project Name: **OLDHAM ROAD**

Project No.
19134

Co-ords: -
Level:

Date
25/09/2020

Location: **MANCHESTER**

Dimensions
(m):

Scale
1:25

Client: **ABGI CONSTRUCTION LIMITED**

Depth
1.00

Logged
RW

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				0.20			MADE GROUND: Concrete basement floor slab.	
	0.40	ES					MADE GROUND: Firm to stiff red brown clay with occasional gravel and cobbles of brick.	
				0.70			Stiff red brown CLAY.	
	0.90	D		1.00				
							End of pit at 1.00 m	1
								2
								3
								4
								5

Remarks: 1. Trial pit excavated through basement floor slab. 2. No groundwater encountered.

Stability:





GEO-ENVIRONMENTAL TESTING RESULTS

Groundtech Consulting Limited

PO Box 499

Manchester

M28 8EE



Attention :	Richard Wyatt
Date :	2nd October, 2020
Your reference :	19134
Our reference :	Test Report 20/13212 Batch 1
Location :	Oldham Road, Manchester
Date samples received :	26th September, 2020
Status :	Final report
Issue :	1

Four samples were received for analysis on 26th September, 2020 of which two were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied. □
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:



Bruce Leslie
Project Manager

Please include all sections of this report if it is reproduced

Element Materials Technology

Client Name: Groundtech Consulting Limited
Reference: 19134
Location: Oldham Road, Manchester
Contact: Richard Wyatt
EMT Job No: 20/13212

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-3	4-6									Please see attached notes for all abbreviations and acronyms		
Sample ID	TP101	TP102											
Depth	0.40	0.40											
COC No / misc													
Containers	J T	J T											
Sample Date	25/09/2020	25/09/2020											
Sample Type	Soil	Soil											
Batch Number	1	1											
Date of Receipt	26/09/2020	26/09/2020									LOD/LOR	Units	Method No.
Arsenic #	7.7	12.4									<0.5	mg/kg	TM30/PM15
Cadmium #	<0.1	<0.1									<0.1	mg/kg	TM30/PM15
Chromium #	46.5	48.8									<0.5	mg/kg	TM30/PM15
Copper #	28	33									<1	mg/kg	TM30/PM15
Lead #	11	30									<5	mg/kg	TM30/PM15
Mercury #	<0.1	<0.1									<0.1	mg/kg	TM30/PM15
Nickel #	39.0	40.7									<0.7	mg/kg	TM30/PM15
Selenium #	<1	<1									<1	mg/kg	TM30/PM15
Zinc #	70	79									<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	<0.04	<0.04									<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03									<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	<0.05									<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	<0.04									<0.04	mg/kg	TM4/PM8
Phenanthrene #	<0.03	0.35									<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	0.11									<0.04	mg/kg	TM4/PM8
Fluoranthene #	<0.03	0.52									<0.03	mg/kg	TM4/PM8
Pyrene #	<0.03	0.43									<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	<0.06	0.23									<0.06	mg/kg	TM4/PM8
Chrysene #	<0.02	0.20									<0.02	mg/kg	TM4/PM8
Benzo(b)fluoranthene #	<0.07	0.28									<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	<0.04	0.14									<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene	<0.04	0.07									<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	<0.04									<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	<0.04	0.10									<0.04	mg/kg	TM4/PM8
PAH 16 Total	<0.6	2.4									<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	<0.05	0.20									<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	<0.02	0.08									<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	100	103									<0	%	TM4/PM8
TPH CWG													
Aliphatics													
>C5-C6 #	-	<0.1									<0.1	mg/kg	TM36/PM12
>C6-C8 #	-	<0.1									<0.1	mg/kg	TM36/PM12
>C8-C10	-	<0.1									<0.1	mg/kg	TM36/PM12
>C10-C12 #	-	<0.2									<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 #	-	<4									<4	mg/kg	TM5/PM8/PM16
>C16-C21 #	-	<7									<7	mg/kg	TM5/PM8/PM16
>C21-C35 #	-	<7									<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-35	-	<19									<19	mg/kg	TM5/PM8/PM16/PM12/PM15

Element Materials Technology

Client Name: Groundtech Consulting Limited
Reference: 19134
Location: Oldham Road, Manchester
Contact: Richard Wyatt
EMT Job No: 20/13212

Report : Solid

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EMT Sample No.	1-3	4-6									Please see attached notes for all abbreviations and acronyms			
Sample ID	TP101	TP102												
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COC No / misc														
Containers	J T	J T												
Sample Date	25/09/2020	25/09/2020												
Sample Type	Soil	Soil												
Batch Number	1	1												
Date of Receipt	26/09/2020	26/09/2020								LOD/LOR	Units	Method No.		
TPH CWG														
Aromatics														
>C5-EC7 #	-	<0.1								<0.1	mg/kg	TM36/PM12		
>EC7-EC8 #	-	<0.1								<0.1	mg/kg	TM36/PM12		
>EC8-EC10 #	-	<0.1								<0.1	mg/kg	TM36/PM12		
>EC10-EC12 #	-	<0.2								<0.2	mg/kg	TM5/PM8/PM1		
>EC12-EC16 #	-	<4								<4	mg/kg	TM5/PM8/PM1		
>EC16-EC21 #	-	<7								<7	mg/kg	TM5/PM8/PM1		
>EC21-EC35 #	-	<7								<7	mg/kg	TM5/PM8/PM1		
Total aromatics C5-35 #	-	<19								<19	mg/kg	TM5/TM36/PM8/PM12/PM1		
Total aliphatics and aromatics(C5-35)	-	<38								<38	mg/kg	TM5/TM36/PM8/PM12/PM1		
MTBE #	-	<5								<5	ug/kg	TM36/PM12		
Benzene #	-	<5								<5	ug/kg	TM36/PM12		
Toluene #	-	<5								<5	ug/kg	TM36/PM12		
Ethylbenzene #	-	<5								<5	ug/kg	TM36/PM12		
m/p-Xylene #	-	<5								<5	ug/kg	TM36/PM12		
o-Xylene #	-	<5								<5	ug/kg	TM36/PM12		
Natural Moisture Content	18.5	19.9								<0.1	%	PM4/PM0		
Hexavalent Chromium #	<0.3	<0.3								<0.3	mg/kg	TM38/PM2		
Sulphate as SO4 (2:1 Ext) #	0.0756	0.2082								<0.0015	g/l	TM38/PM2		
Organic Matter	1.4	2.1								<0.2	%	TM21/PM2		
pH #	8.39	8.22								<0.01	pH units	TM73/PM1		

Matrix : Solid

4 of 10

Client Name: Groundtech Consulting Limited
Reference: 19134
Location: Oldham Road, Manchester
Contact: Richard Wyatt

Note:

Asbestos Screen analysis is carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Detailed Gravimetric Quantification and PCOM Fibre Analysis is carried out in accordance with our documented in-house methods PM042 and TM131 and HSG 248 using Stereo and Polarised Light Microscopy and Phase Contrast Optical Microscopy (PCOM). Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions, including ACM type and Asbestos level less than 0.1%, lie outside the scope of our UKAS accreditation.

Where the sample is not taken by a Element Materials Technology consultant, Element Materials Technology cannot be responsible for inaccurate or unrepresentative sampling.

[illegible]

Client Name: Groundtech Consulting Limited

Reference: 19134

Location: Oldham Road, Manchester

Contact: Richard Wyatt

[illegible]

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating. Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 20/13212

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overestimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

Please include all sections of this report if it is reproduced

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above calibration range, the result should be considered the minimum value. The actual result could be significantly higher, this result is not accredited.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

EMT Job No: 20/13212

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details	Yes		AR	Yes
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO ₂ generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.			AD	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE re	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes

EMT Job No: 20/13212

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE re	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993 (comparabl	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AD	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993 (comparabl	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248 First edition (2006)	PM42	Modified SCA Blue Book V.12 draft 2017 and WM3 1st Edition v1.1:2018. Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No

LIMITATIONS

Limitations

This contract was completed by Groundtech Consulting on the basis of a defined programme and scope of works and terms and conditions agreed with the client. This report was compiled with due skill and care, taking into consideration the project brief provided, project objectives, agreed scope of works, prevailing site conditions and budget allocation.

Other than that defined in the paragraph above, Groundtech Consulting provides no other accountability 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 industry 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 Groundtech Consulting. A third party who relies on this report, does so at their own and sole risk and no liability to such parties is provided by Groundtech Consulting.

It is the understanding of Groundtech Consulting that this report is to be used for the intended purpose as set out in the introduction. The purpose was instrumental in determining the scope and level of the services provided. Should the purpose of the report or the proposed end use of the site change, this report will no longer be directly applicable, and its validity readdressed. No reliance upon the report in the revised situation should be assumed by the client without the permission of Groundtech Consulting.

The report was written in 2020, later changes in legislation, statutory requirements and industry best practices have not been considered and this should be allowed for. Ground conditions can also change and should be investigated if there is any significant delay in acting on the findings of this report. The period 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 in this report should not be relied upon in the future without the written confirmation from Groundtech Consulting that it is safe to do so.

The observations and conclusions outlined in this report are based exclusively on the services that were provided as set out in the agreement between the client and Groundtech Consulting.

Groundtech Consulting are not liable for the existence of any condition, the discovery of which would require additional investigation outside the agreed scope of works or core competency. The services provided are based upon Groundtech Consulting observations of existing physical conditions at the site gained from site reconnaissance together with 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 Groundtech Consulting assume the information to be correct.

No responsibility can be accepted for errors for third party information presented in this report. Groundtech Consulting were not authorised 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. Groundtech Consulting are not liable for any inaccurate information, misrepresentation of data or conclusions, which may inform the scope of investigation undertaken by Groundtech Consulting and forms the contract with the client.

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 due to its heterogeneous properties and as investigation exploratory locations 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, particularly between exploratory holes. The extent of the limited area depends on the soil and groundwater conditions, together with other constraints such as the position of any existing structures and underground utilities. Geo-Environmental testing was carried out for a limited number of parameters [as stipulated in the contract] 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 groundwater level often has not had time to reach equilibrium and a monitoring period is required. Furthermore, 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 drawings provided in this report are not meant to be an accurate base plan, but are preliminary and used to present the general relative locations of features on, and surrounding, the site.

