

Summary Findings of Ground Contamination Tests

At

land Adjacent Steelworks Tavern, Gorton

Report Prepared by...

HDB Projects Ltd
Suite 124
Imperial House
Hornby St
Bury

20th January 2023

1. INTRODUCTION

The proposals comprise the erection of 1no 2 storey building with hardstanding ground to all areas externally

The property and land is currently designated for commercial use. The proposed use will remain for commercial use.

The client has undertaken an EnviroSearch survey of the property which had identified that the property is at no significant risk of contaminated land at or within the vicinity of the property.

Mini Soil Surveys were requested to visit the property and retrieve ground samples from 2 borehole locations.

2. SITE CONTEXT

2.1 Site Description

The site comprises a roughly rectangular shaped plot of land with the property located to the rear of the land.

2.2 Radon Gas

The site is reported to be within an area where less than 1% of properties are above the action level requiring radon gas protection measures to be installed in new buildings.

3. GROUND INVESTIGATION

3.1 Introduction

The ground investigation was requested for contamination tests only. Extracted borehole logs and laboratory test results from the site investigation works are attached.

The exploratory hole locations for the ground investigations are attached.

3.2 Exploratory Holes

3.2.1 Dynamic Sampler Boreholes

A total of 6 boreholes were drilled to depths of 3.0m below ground level. The boreholes were formed by a series of 1.0m long, open ended, hollow steel tubes of 35mm diameter. Each tube was extracted from the ground and the enclosed sample was recovered in its plastic liner.

3.3 Laboratory Testing

Chemical testing of selected samples, scheduled by Chemtech Environmental Testing, was undertaken by a laboratory with recognised (UKAS) accreditation for quality control.

4. GROUND CONDITIONS

The following section summarises the near surface ground conditions encountered during the investigation.

4.1.1 Surface Covering

Where encountered, the exploratory holes were excavated through a surface cover of topsoil of up to 100mm in thickness.

4.1.2 Made Ground

Made ground, generally comprising soft brown clay with fine gravel & topsoil deposits, varied in depth across the site between 1.0m and 1.3m in depth below ground level.

4.1.3 Natural Ground

Firm to stiff becoming stiff brown & grey mottled clays generally found to be present below the made ground. Boreholes were terminated at and shortly beyond 3.0m as requested by the structural engineer for the purpose of determining if any water table was present. None was found at the date of the drilling.

GROUND CONTAMINATION RISK ASSESSMENT

5.1 Introduction

The ground contamination risk assessment presented within this report takes into account the findings of the laboratory testing along with on-site observations in order to quantify risks to the land user.

5.2 Assessment Strategy

Due to the expected presence and varied depth of made ground soils across the site, the investigation comprised of a spread of sampling locations across the site to obtain the data on the underlying soils.

5.3 Analysis of Contamination Test Results

For the assessment of risk to human health a quantitative assessment of the laboratory test results has been undertaken by comparing soil contaminant concentrations against soil screening values (SSVs)

Site Investigation using the CLEA Model published by the Environment Agency and, where available, Category 4 Screening Levels (C4SL) as published within SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination – Policy Companion Document.

Information on the derivation of the SSVs, along with the chemical parameters used were obtained from various sources including guidance documents published by the Environment Agency as well as other statutory bodies.

The soil screening values used in this assessment have been calculated using the generic "Residential" land use as set out in Science Report SC050021/SR3, January 2009.

The critical receptor for the residential land use is considered to be a young child resident on site from birth to age 6. Exposure routes that are considered include the potential for direct ingestion of the soil, the outdoor and indoor ingestion of dust, the potential inhalation of dust and vapours, ingestion of site grown vegetables and ingestion of soil attached to vegetables.

5.4 Statistical Analysis

Statistical analysis of the concentrations of heavy metals and polycyclic aromatic hydrocarbon (PAH) compounds determined by laboratory testing of samples of the made ground has been undertaken in line with guidance set out in 'Comparing Soil Contamination Data with a Critical Concentration' report, published by the CIEH/CL:AIRE (May 2008).

The CIEH/CL:AIRE guidance provides a framework for assessing measured contaminant concentrations on a site against user defined critical concentrations – or indicators of risk.

5.5 Heavy Metal Contaminants

The analysis of the laboratory test results indicates that elevated levels of zinc were found to borehole 1 in the made ground soils at concentrations above the screening values for a residential land use, however specification of full hardstanding protection and no landscaping, we, therefore deem there is not considered to be a significant risk to end users of this part of the site in this regard.

5.6 Organic Contamination

Polycyclic Aromatic Hydrocarbon (PAH) Compounds

The analysis of the laboratory test results indicates within boreholes 1 & 2 none of the PAH compounds tested for were present at concentrations above the screening values for a residential land use and therefore there is not considered to be a significant risk to end users of this part of the site in this regard considering the hardstanding to be provided.

elevated levels of TPH to both boreholes

6.0 Quantitative Contamination Risk Assessment

Discussion of the ground contamination sources, pathways and receptors in the context of the proposed development and site setting is discussed below.

6.0.1 Commercial Development

6.0.1.1 Identified Sources

Sources of contamination that may pose a risk to end users of the commercial site have been identified by the assessment of the site:

Generally PH levels to borehole 1 & 2 located are above guideline levels if the area was to be landscaped. Likely due to storage of materials within the site.

7. REMEDIATION STRATEGY

remediation strategy is required for the site.

The planned continuous external hardstanding (beneath the building) will act as a source – receptor barrier, preventing any contact with the contaminated ground by the subsequent occupiers of the property and will prevent any intake via the following

pathways:

- Indoor ingestion / inhalation of soil dust.
- Contact / inhalation with indoor dust.
- Soil tracked indoors
- Dermal contact with contaminated soil.
- Outdoor ingestion of soil.
- Outdoor inhalation of dust.
- Surface water runoff with suspended soil.

There is to be the presence of a concrete hard standing area to the front of the unit which would act to sever any contaminant pathways and thereby further reduce the risk to the site users.

It will be necessary to remove some of the existing soil. In which case the material excavated from the site should be treated as waste and would have to be disposed of to a licensed waste management facility. Waste transfer notes should be retained for your records.

Tel: 0161 980 4937

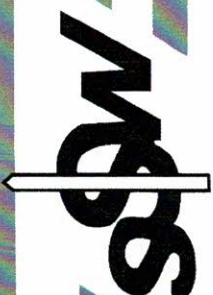
Fax: 0161 980 0055

Date Drilled: 09/12/2022

S P T @ 1.20M 2/3/2,3,3,3, S P T @ 1.80M 3/3/3,3,4,3, S P T @ 2.40M 4/3/4,3,4,4,
DISTURBED SAMPLES .030 - .250M/1.0 - 1.60M/
NO STANDING WATER ON COMPLETION OF BOREHOLE

S P T @ 1.20M 2/3/2.3,3,3, S P T @ 1.80M 3/3/3,3,4,3, S P T
DISTURBED SAMPLES .030 - .250M/1.0 - 1.60M/
NO STANDING WATER ON COMPLETION OF BOREHOLE

MINI • SOIL • SURVEYS



Minisoils Ltd Unit 30 Atlantic Business Centre Atlantic Street, Broadheath WA15 5NQ

Tel: 0161 980 4937

Job Number: MIN51261

Borehole No: 1 of 2

Fax: 0161 980 0055

Site: Site In Gorton

Crew: A

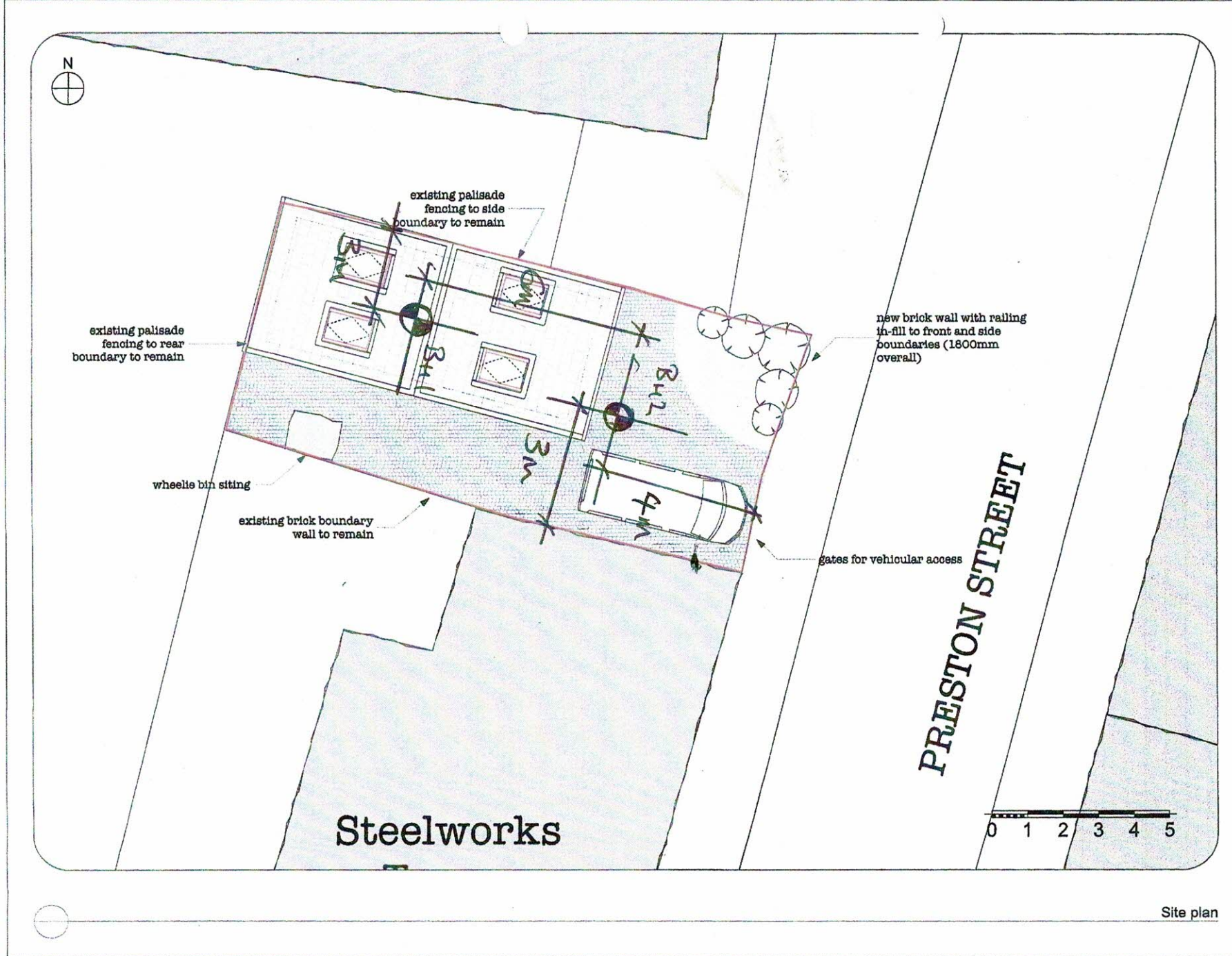
Date Drilled: 09/12/2022

Description	Depth	Leg	Test Type	Value
50MM Concrete overlying loose gravely topsoil with fragments of brick. MADE GROUND			0.05 DS	
			1.20 SPT	N=12
Firm to stiff becoming stiff brown and grey mottled CLAY.	1.30			
			1.70 SV	Cu=120kN/m2
			1.80 SPT	N=13
			2.30 SV	Cu=130kN/m2
			2.40 SPT	N=14
End of Hole	3.00			

S P T @ 1.20M 2/3/2,3,3,4, S P T @ 1.80M 3/3/3,3,3,4, S P T @ 2.40M 3/4/3,4,3,4,
 DISTURBED SAMPLES .050M - .300M/
 NO STANDING WATER ON COMPLETION OF BOREHOLE

Revision	Description	Date

Do not scale. All dimensions to be checked on site prior to fabrication of components or execution of works. This drawing, the design and information contained within are copyright of ebrdesigns.com ltd and must not be used or reproduced without express permission. ebrdesigns.com ltd shall not be liable if used or reproduced without authorisation.





ANALYTICAL TEST REPORT

Contract no: 117545

Contract name: Land ADJ to Steelworks Tavern, Gorton

Client reference: PSL23/0134

Clients name: Professional Soils Laboratory

Clients address: 5/7 Hexthorpe Road
Doncaster
DN4 0AR

Samples received: 10 January 2023

Analysis started: 10 January 2023

Analysis completed: 18 January 2023

Report issued: 18 January 2023

Key		
U	UKAS accredited test	
M	MCERTS & UKAS accredited test	
\$	Test carried out by an approved subcontractor	
I/S	Insufficient sample to carry out test	
N/S	Sample not suitable for testing	

Approved by:

Abbie Neasham-Bourn

Abbie Neasham-Bourn

Senior Reporting Administrator

Chemtech Environmental Limited

SOILS

Lab number			117545-1 BH1 0.50-3.00	117545-2 BH2 0.50-2.50
Sample id				
Depth (m)				
Date sampled				
Test	Method	Units		
Arsenic (total)	CE127 u	mg/kg As	12	8.4
Boron (water soluble)	CE063 u	mg/kg B	<0.5	<0.5
Cadmium (total)	CE127 u	mg/kg Cd	1.0	1.1
Chromium (total)	CE127 u	mg/kg Cr	19	28
Copper (total)	CE127 u	mg/kg Cu	132	89
Lead (total)	CE127 u	mg/kg Pb	164	151
Mercury (total)	CE127 u	mg/kg Hg	<0.5	<0.5
Nickel (total)	CE127 u	mg/kg Ni	16	66
Selenium (total)	CE127 u	mg/kg Se	0.6	0.6
Zinc (total)	CE127 u	mg/kg Zn	884	245
pH	CE004 u	units	8.3	8.4
Sulphate (2:1 water soluble)	CE061 u	mg/l SO ₄	124	148
Sulphate (total)	CE062 u	mg/kg SO ₄	1361	1284
Sulphur (total)	CE119	mg/kg S	635	747
Sulphide	CE016	mg/kg S ²⁻	<10	<10
Cyanide (free)	CE077	mg/kg CN	<1	<1
Cyanide (total)	CE077	mg/kg CN	<1	<1
Thiocyanate	CE145 u	mg/kg SCN	<1	6.3
Total Organic Carbon (TOC)	CE072	% w/w C	2.4	3.9
Estimate of OMC (calculated from TOC)	CE072	% w/w	4.2	6.8
PAH				
Naphthalene	CE087 u	mg/kg	0.14	0.05
Acenaphthylene	CE087 u	mg/kg	0.34	0.06
Acenaphthene	CE087 u	mg/kg	0.07	0.06
Fluorene	CE087 u	mg/kg	0.10	0.05
Phenanthrene	CE087 u	mg/kg	3.50	0.66
Anthracene	CE087 u	mg/kg	0.71	0.17
Fluoranthene	CE087 u	mg/kg	6.75	1.10
Pyrene	CE087 u	mg/kg	6.46	1.29
Benzo(a)anthracene	CE087 u	mg/kg	3.33	0.64
Chrysene	CE087 u	mg/kg	4.17	0.70
Benzo(b)fluoranthene	CE087 u	mg/kg	4.74	1.33
Benzo(k)fluoranthene	CE087 u	mg/kg	1.69	0.44
Benzo(a)pyrene	CE087 u	mg/kg	3.82	0.99
Indeno(1,2,3-cd)pyrene	CE087 u	mg/kg	2.53	0.84
Dibenz(ah)anthracene	CE087 u	mg/kg	0.59	0.20
Benzo(ghi)perylene	CE087 u	mg/kg	2.80	0.96
PAH (total of USEPA 16)	CE087	mg/kg	41.8	9.55
TPH				
VPH (>C5-C10)	CE067	mg/kg	<0.1	<0.1
DRO (>C10-C25)	CE033 u	mg/kg	257	804

Chemtech Environmental Limited

SOILS

Lab number			117545-1	117545-2
Sample id			BH1	BH2
Depth (m)			0.50-3.00	0.50-2.50
Date sampled			-	-
Test	Method	Units		
EPH (>C10-C40)	CE033 u	mg/kg	419	3808

ELEVATED TPH.

<100 for Landscaped
however to be fully UNDERSTANDING
DEEMED ACCEPTABLE.

Chemtech Environmental Limited

METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE127	Arsenic (total)	Aqua regia digest, ICP-MS	Dry	U	1	mg/kg As
CE063	Boron (water soluble)	Hot water extract, ICP-OES	Dry	U	0.5	mg/kg B
CE127	Cadmium (total)	Aqua regia digest, ICP-MS	Dry	U	0.2	mg/kg Cd
CE127	Chromium (total)	Aqua regia digest, ICP-MS	Dry	U	1	mg/kg Cr
CE127	Copper (total)	Aqua regia digest, ICP-MS	Dry	U	1	mg/kg Cu
CE127	Lead (total)	Aqua regia digest, ICP-MS	Dry	U	1	mg/kg Pb
CE127	Mercury (total)	Aqua regia digest, ICP-MS	Dry	U	0.5	mg/kg Hg
CE127	Nickel (total)	Aqua regia digest, ICP-MS	Dry	U	1	mg/kg Ni
CE127	Selenium (total)	Aqua regia digest, ICP-MS	Dry	U	0.3	mg/kg Se
CE127	Zinc (total)	Aqua regia digest, ICP-MS	Dry	U	5	mg/kg Zn
CE004	pH	Based on BS 1377, pH Meter	As received	U	-	units
CE061	Suphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry	U	10	mg/l SO ₄
CE062	Sulphate (total)	HCl extract, analysed by ICP-OES	Dry	U	100	mg/kg SO ₄
CE119	Suphur (total)	HCl extract, analysed by ICP-OES	Dry	U	100	mg/kg S
CE016	Sulphide	Distillation, Titration	Dry		10	mg/kg S ²⁻
CE077	Cyanide (free)	Extraction, Continuous Flow Colorimetry	As received		1	mg/kg CN
CE077	Cyanide (total)	Extraction, Continuous Flow Colorimetry	As received		1	mg/kg CN
CE145	Thiocyanate	Weak acid extraction, Colorimetry	Dry	U	1	mg/kg SCN
CE078	Phenols (total)	Extraction, Continuous Flow Colorimetry	As received		0.5	mg/kg PhOH
CE197	Total Organic Carbon (TOC)	Carbon Analyser	Dry		0.1	% w/w C
CE197	Estimate of OMC (calculated from TOC)	Calculation from Total Organic Carbon	Dry		0.1	% w/w
CE087	Naphthalene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Acenaphthylene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Acenaphthene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Fluorene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Phenanthrene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Fluoranthene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Pyrene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Benzo(a)anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Chrysene	Solvent extraction, GC-MS	As received	U	0.03	mg/kg
CE087	Benzo(b)fluoranthene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Benzo(k)fluoranthene	Solvent extraction, GC-MS	As received	U	0.03	mg/kg
CE087	Benzo(a)pyrene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Indeno(1,23cd)pyrene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Dibenz(ah)anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Benzo(ghi)perylene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	PAH (total of USEPA 16)	Solvent extraction, GC-MS	As received		0.34	mg/kg
CE067	VPH (>C5-C10)	Headspace GC-FID	As received		0.1	mg/kg
CE033	DRO (>C10-C25)	Solvent extraction, GC-FID	As received	U	10	mg/kg
CE033	EPH (>C10-C40)	Solvent extraction, GC-FID	As received	U	10	mg/kg

Chemtech Environmental Limited

ADDITIONAL INFORMATION

Notes

Opinions and interpretations expressed herein are outside the UKAS accreditation scope.

Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.

All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.

Methods, procedures and performance data are available on request.

Results reported herein relate only to the material supplied to the laboratory.

This report shall not be reproduced except in full, without prior written approval.

Samples will be disposed of 4 weeks from initial receipt unless otherwise instructed.

All results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.

Analytical results are inclusive of stones, where applicable.