

11th July 2022

Dear Sirs,

Re: Validation Report for 8 Roxburgh Street, Gorton

1. Introduction

This document presents the validation information for redevelopment of land associated with 8 Roxburgh Street in Gorton.

Site assessment reports (i.e. Phase 1 and Phase 2) reports and a Remediation strategy have been produced for this site. The information in these documents provide good coverage and characterisation of the site and it is recommended that they are read in conjunction with the information provided in this verification document, as the information presented within them provides the basis for the conceptual understanding of the site. The reports are:

- EnviroSolution, Phase 1 Environmental Site Assessment Report, 18th December 2019, CL101.
- Ensaf Consultants, Phase II Geo-environmental Assessment Report, September 2020.
- EnviroSolution Ltd, Remediation Strategy, June 2021

2. Ground Remediation works

The following ground remediation works have been completed at the:

- The Installation of a geotextile membrane beneath patio paving slabs.
- 600mm clean cover system in back gardens with a geotextile membrane to act as a barrier to prevent mixing between remaining Made Ground on site and clean imported material and a warning barrier for any future excavation works.
- Use of certified clean imported topsoil in above ground planters.

3. Validation Testing

Certified topsoil was purchased from R Drapper Ltd. Independent chemical testing of the topsoil was completed to ensure its suitability for use on site. EnviroSolution attended the supplier's site on the 22nd of May 2022 to obtain 3 no. representative soil samples from topsoil prior to importation to site. The soil appeared to be visually clean and there was no olfactory evidence of contamination. The samples were submitted to Eurofins Chemtest Ltd for testing for the following suite of analysis:

- Toxic 9 metals, VOCs, SVOCs and TPHCWG and asbestos.

A copy of the laboratory test certificate (22-20330-1) is enclosed.

t 0151 291 6451

e info@envirosolution.co.uk

Suite 53 | 3a Bridgewater St | Liverpool | L1 0AB

4. Assessment of the Soil Data

The laboratory test results have been compared to the Soil Quality Criteria (SQC) for the site as set out in the Validation Strategy. No exceedances of the SQC were identified.

5. Validation Photographs

Photographic evidence of the completed ground remediation works is provided below.

Geotextile membrane in location of patio areas



House 1 – 600mm cover system with geotextile membrane





House 2 - 600mm cover system with geotextile membrane



House 3 - 600mm cover system with geotextile membrane



House 4 - 600mm cover system with geotextile membrane



Yours sincerely

For EnviroSolution Limited

A handwritten signature in black ink, appearing to read 'Gemma Lucas'. The script is cursive and fluid, with the first name 'Gemma' written in a larger, more prominent hand than the surname 'Lucas'.

Gemma Lucas

Principal Consultant

Enc.



2183

Final Report

Report No.:	22-20330-1		
Initial Date of Issue:	07-Jun-2022		
Client	EnviroSolution		
Client Address:	Suite 53 3a Bridgewater Street Liverpool L1 0AB		
Contact(s):	Gemma Lucas		
Project	Roxburgh		
Quotation No.:		Date Received:	31-May-2022
Order No.:		Date Instructed:	31-May-2022
No. of Samples:	3		
Turnaround (Wkdays):	5	Results Due:	08-Jun-2022
Date Approved:	07-Jun-2022		
Approved By:			



Details: Stuart Henderson, Technical
Manager

Results - Soil

Project: Roxburgh

Client: EnviroSolution	Chemtest Job No.:				22-20330	22-20330	22-20330
Quotation No.:	Chemtest Sample ID.:				1439341	1439342	1439343
	Client Sample ID.:				S-1	S-2	S-3
	Sample Type:				SOIL	SOIL	SOIL
	Date Sampled:				27-May-2022	27-May-2022	27-May-2022
	Asbestos Lab:				DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD			
ACM Type	U	2192		N/A	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	23	21	19
pH	U	2010		4.0	8.1	8.1	8.2
Arsenic	U	2455	mg/kg	0.5	6.8	6.1	7.3
Cadmium	U	2455	mg/kg	0.10	0.17	0.14	0.19
Chromium	U	2455	mg/kg	0.5	9.4	8.9	11
Copper	U	2455	mg/kg	0.50	22	19	25
Mercury	U	2455	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Nickel	U	2455	mg/kg	0.50	6.7	6.0	7.6
Lead	U	2455	mg/kg	0.50	66	51	62
Selenium	U	2455	mg/kg	0.25	< 0.25	0.28	0.31
Zinc	U	2455	mg/kg	0.50	46	39	48
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	18	18	18
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	23	26	26
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	10	< 1.0	7.2
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	170	190	230
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	220	230	290
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	8.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	16	16	23
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	180	250	200
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	200	260	230
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	410	500	520
Dichlorodifluoromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20	< 20	< 20
Chloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0

Results - Soil

Project: Roxburgh

Client: EnviroSolution	Chemtest Job No.:				22-20330	22-20330	22-20330
Quotation No.:	Chemtest Sample ID.:				1439341	1439342	1439343
	Client Sample ID.:				S-1	S-2	S-3
	Sample Type:				SOIL	SOIL	SOIL
	Date Sampled:				27-May-2022	27-May-2022	27-May-2022
	Asbestos Lab:				DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD			
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	U	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	14
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	17
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10	< 10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	U	2760	µg/kg	10	< 10	< 10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	4.1
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	14
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	6.3
Styrene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50	< 50	< 50
N-Propylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0

Results - Soil

Project: Roxburgh

Client: EnviroSolution	Chemtest Job No.:				22-20330	22-20330	22-20330
Quotation No.:	Chemtest Sample ID.:				1439341	1439342	1439343
	Client Sample ID.:				S-1	S-2	S-3
	Sample Type:				SOIL	SOIL	SOIL
	Date Sampled:				27-May-2022	27-May-2022	27-May-2022
	Asbestos Lab:				DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD			
4-Isopropyltoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Phenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50

Results - Soil

Project: Roxburgh

Client: EnviroSolution	Chemtest Job No.:				22-20330	22-20330	22-20330
Quotation No.:	Chemtest Sample ID.:				1439341	1439342	1439343
	Client Sample ID.:				S-1	S-2	S-3
	Sample Type:				SOIL	SOIL	SOIL
	Date Sampled:				27-May-2022	27-May-2022	27-May-2022
	Asbestos Lab:				DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD			
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Fluorene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Phenanthrene	U	2790	mg/kg	0.50	1.6	1.3	1.6
Anthracene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Carbazole	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Fluoranthene	U	2790	mg/kg	0.50	3.0	3.1	3.7
Pyrene	U	2790	mg/kg	0.50	2.7	2.8	3.2
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	1.4	1.5	1.7
Chrysene	U	2790	mg/kg	0.50	1.5	1.5	1.9
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	1.9	2.0	2.3
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	0.74	0.73	0.81
Benzo[a]pyrene	U	2790	mg/kg	0.50	1.5	1.5	1.8
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	0.87	0.84	1.1
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	0.93	0.93	1.2

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.com