GroundSolve Ltd
Consulting Geotechnical Engineers

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Well House Barns,
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Flintshire, CH4 0DH
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REF: GSL3120LR01

FAO Liam Worthington
Castlemead Group Ltd
Abenbury House
17 Wilkinson Business Park
Clywedog Road South
LL13 9AE

3rd October 2024

Dear Liam,

RE: WYNSTAY TECHNOLOGY PARK – STOCKPILE TESTING

1.0 Introduction

GroundSolve Ltd (GSL) have been instructed by Castlemead Group Ltd to undertake chemical testing and an assessment of stockpile material present on site prior to reuse on site.

The objective of this investigation and sampling works was to ensure that the stockpile is suitable for reuse as part of a clean cover system as outlined in the remediation strategy undertaken by GSL, report ref: "3060R01-2 Ruabon Technology Park - Phase II".

2.0 Site Location & Description

Site name	Wynnstay Technology Park
Site address	Wynnstay Technology Park, Ruabon, Wrexham LL14 6EN
National Grid Reference (NGR)	329226 343570
Approximate Site area	2.07ha



Figure 1- Site Location Boundary

Current land use on the Site	The initial groundworks for the residential development has already started on site. The stockpile is approximately 12m x 4m x 1.5m, therefore approximately 70m^3 in volume.
Surrounding land uses	Two commercial sites border to the east (Oakland Egg Packing Plant) and south (Wrexham Mineral Cables). Residential properties are present to the west and an electricity substation is present to the north. The site is bordered by Llangollen Road to the north and Wynnstay Lane to the west.
Geology	Made Ground is present typically to 1.0m comprising colliery spoil – gravelly sand / sandy gravel including ash, clinker, coal brick, concrete. The superficial deposits present on site are shown to comprise Glacial Till overlying the solid geology of the Pennine Lower Coal Measures Formation and Pennine Middle Coal Measures Formation (Undifferentiated) - Mudstone, Siltstone and Sandstone. The superficial aquifer on site is classed as Secondary Undifferentiated of low groundwater vulnerability. The bedrock aquifer on site is classed as Secondary A of low groundwater vulnerability

3.0 Chemical Testing

In total 6 No. samples were taken for chemical testing from stockpiled material in general accordance with the BS5930:2015, BS10175:2011 and BS EN ISO 22475-1:2006. The location of the stockpile as well as testing locations can be found in DR-001 within **Appendix A,** and site photos presented in **Appendix B**. Samples were submitted to Chemtech who are UKAS accredited in accordance with ISO17025. The schedule of testing for samples is outlined within Table 3.1 below:

Table 3.1: Suites of Analysis for Environmental Soil Samples

Determinand	Number of Samples Tested
Metals	6
Speciated TPH (C5-C35)	6
Benzene, Toluene, Ethyl Benzene, Xylenes (BTEX);	6
Asbestos ID	6

4.0 Results of Chemical Testing

The results of the soil analyses are presented below, where they have been compared to suitable generic assessment criteria (GACs), in order to allow a generic quantitative risk assessment (GQRA) to be carried out for the site and the proposed development.

The Category 4 Screening Levels (C4SLs) published by DEFRA (2014) have been adopted in the first instance, which have been published for six substances to date. Where a C4SL is unavailable, the "Suitable 4 Use Levels" (S4ULs) published by LQM/CIEH (2015) have been adopted.

These criteria have been derived using the CLEA model for a range of standard end-use scenarios and a range of soil organic matter (SOM) contents. It should be noted that the C4SL values are derived on the basis of a "low level of toxicological concern", while the S4UL values are based on a "tolerable" or "minimal" level of risk. As such, the S4ULs describe a lower level of risk than the C4SLs and are equivalent to the former Soil Guideline Values (SGVs, published by the Environment Agency) and the previous editions of the LQM/CIEH GAC values.

The GQRA is based on a soil with a Soil Organic Matter of 1%, for a residential with homegrown produce end use.

A full summary of the chemical test results is presented in Appendix D.

Metals

The results of the metal analysis have recorded relatively low concentrations and there are no exceedances of the relative GACs.

PAHs

The majority of the PAH results were below the detection limit and the remaining PAHs were relatively low. None of the samples were recorded above the relative GACs.

Petroleum Hydrocarbons (PHC) & BTEX

All the samples were below or only slightly above the detection limit for speciated TPH and BTEX analysis. Therefore, none of the samples were recorded above the relative GACs.

Asbestos

Asbestos can be present in soil as fragments of bulk Asbestos Containing Materials (ACMs) (e.g., asbestos cement sheeting) and also as discrete asbestos fibres within the soil matrix. This investigation has carried out assessments to determine whether both bulk fragments of asbestos and discrete fibres are present in the soil at the site. The asbestos assessment commenced on site with inspection of the Made Ground by our site staff for the presence of bulk ACMs. During the fieldwork no suspected ACMs were identified.

Laboratory assessments were carried out in order to confirm the site assessment that ACMs were absent, and no asbestos was detected in any of the samples retrieved from site.

5.0 Conclusions

Based on the chemical results, the site won material present within the stockpile has been shown to be suitable for reuse.

We trust this is satisfactory, should you have any queries please do not hesitate to contact us.

Yours sincerely,

Alex Ridge
Graduate Geotechnical Engineer
BSc (Hons) FGS GMICE

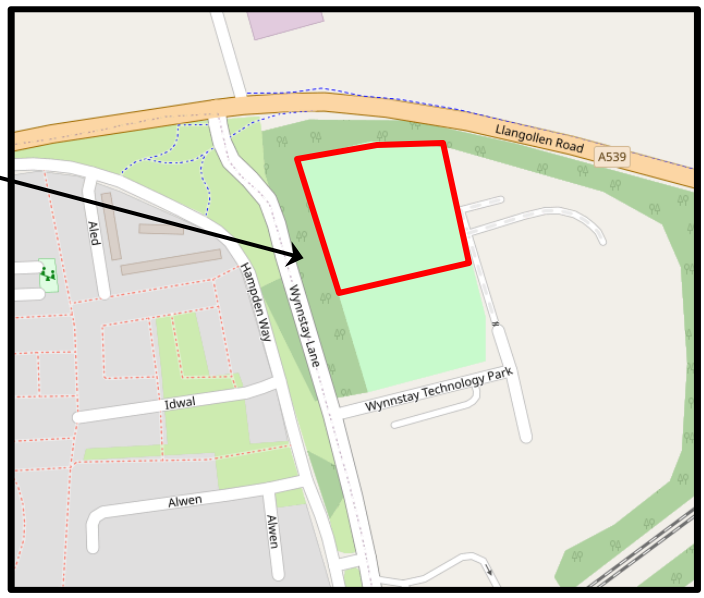
APPENDIX A – DRAWINGS

N



STOCKPILE

SITE LOCATION



NEAREST POSTCODE: LL14 6EN

SITE ENTRANCE. WHAT THREE WORDS ///

Not to Scale

Intrusive Location Plan – DR-001	Drawn: AR	Checked: JT	Authorised: SF	GroundSolve Ltd Unit 1, Well House Barns, Chester Rd, Bretton, Chester CH4 0DH
	Date: 03/10/2024	Date: 03/10/2024	Date: 03/10/2024	
Client: Castlemead Group LTD	**Project: 3120**			

GroundSolve Ltd
Consulting Geotechnical Engineers

APPENDIX B – SITE PHOTOS



Stockpile



Stockpile



Stockpile

APPENDIX C – RESULTS OF CHEMICAL TESTING

ANALYTICAL TEST REPORT

Report Number	24-02046, issue number 1
Contract name:	Wynstagg
Client reference:	3120
Clients name:	GroundSolve Ltd
Clients address:	GroundSolve Ltd Unit 1 Well House Barns Chester Road Bretton Flintshire CH4 0DH
Samples received:	24/09/2024
Analysis started:	25/09/2024
Analysis completed:	02/10/2024
Report issued:	02/10/2024

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
U/S	Sample not suitable for testing
NAD	No Asbestos Detected



Approved by: Sam Rogerson
Manager

Unit 6 Parkhead, Greencroft Industrial Park, Stanley, County Durham, DH9 7YB

Telephone: (01207) 528578, Email supportsquad@chemtech-env.co.uk

SAMPLE INFORMATION

MCERTS (Soils):

Soil descriptions are only intended to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions. MCERTS accreditation applies for sand, clay and loam/topsoil, or combinations of these whether these are derived from naturally occurring soils or from made ground, as long as these materials constitute the major part of the sample. Other materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Lab ref	Sample ID	Depth (m)	Sample description	Material removed	% Removed	% Moisture
14435	J1	-	Brown Loamy Sand with Gravel.	-	-	< 0.1
14436	J2	-	Brown Loamy Sand with Gravel.	-	-	< 0.1
14437	J3	-	Brown Loamy Clayey Sand with Gravel.	-	-	< 0.1
14438	J4	-	Brown Loamy Sand with Gravel.	-	-	< 0.1
14439	J5	-	Brown Loamy Sand with Gravel.	-	-	< 0.1
14440	J6	-	Brown Loamy Sand with Gravel.	-	-	< 0.1

DEVIATING SAMPLE INFORMATION

Comments

Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.
For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.
Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

Key

a	Sampling date not provided
b	Sampling time not provided (waters only)
c	Sample not received in appropriate containers
d	Storage Temperature
e	Headspace present in sample container
f	Sample exceeded sampling to reciept
g	Sample exceeded holding time(s)

Lab ref	Sample ID	Depth (m)	Deviating	Tests (Reason for deviation)
14435	J1	-	N	
14436	J2	-	N	
14437	J3	-	N	
14438	J4	-	N	
14439	J5	-	N	
14440	J6	-	N	

SOILS

Lab Number					14435	14436	14437	14438	14439
Client Reference					Soil	Soil	Soil	Soil	Soil
Sample ID					J1	J2	J3	J4	J5
Sample Location					0.10	0.10	0.10	0.10	0.10
Sampling Date					21/09/2024	21/09/2024	21/09/2024	21/09/2024	21/09/2024
Test	**Method**	**Accred**	**LoD**	**Units**					
Asbestos									
Asbestos Identification	SUBCON	SU	0	-	NAD	NAD	NAD	NAD	NAD
Soil sample preparation parameters									
Stones Content	CE001	N	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Metals									
Water Soluble Sulphate	CE061	M	0.01	g/l	0.1	0.1	0.0	0.1	0.1
Acid Soluble Sulphate (SO4)	CE062	M	0.01	%	0.45	0.56	0.49	0.53	0.35
Arsenic	CE264	U	1.8	mg/kg	14.9	12.4	23.8	12.7	12.3
Cadmium	CE264	M	1.6	mg/kg	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6
Chromium	CE264	U	2	mg/kg	19.5	15.1	20.3	17.0	15.2
Copper	CE264	M	1.6	mg/kg	23.4	23.5	22.0	29.5	21.4
Lead	CE264	U	2.3	mg/kg	28.4	21.7	31.2	28.0	22.5
Mercury	CE264	U	0.7	mg/kg	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7
Nickel	CE264	M	2.1	mg/kg	29.7	30.4	46.5	35.0	30.8
Selenium	CE264	U	3	mg/kg	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Zinc	CE264	M	4	mg/kg	53.5	39.1	58.4	44.6	47.4
Volatile Petroleum Hydrocarbons									
>C5-C6 Aliphatic (HS_1D_AL)	CE267	N	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
>C6-C8 Aliphatic (HS_1D_AL)	CE267	N	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
>C8-C10 Aliphatic (HS_1D_AL)	CE267	N	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
>C8-C10 Aromatic (HS_1D_AR)	CE267	N	0.01	mg/kg	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
>C6-C7 Aromatic (HS_1D_AR)	CE267	N	0.01	mg/kg	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
>C7-C8 Aromatic (HS_1D_AR)	CE267	N	0.01	mg/kg	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Colourimetric									
Total Monohydric Phenols	CE078	N	0.5	mg/kg	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total Cyanide	CE077	N	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Combustion									
Moisture Content	CE001	N	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Total Organic Carbon	CE197	N	0.1	%	4.91	4.97	2.89	6.22	6.68

SOILS

Soil Organic Matter	CE072	N	0.1	%	8.47	8.57	4.98	10.7	11.5
TPH Ali/Aro									
>C12-C16 Aliphatic (EH_2D_AL)	CE250	N	0.5	mg/kg	1.6	< 0.5	< 0.5	< 0.5	< 0.5
>C12-C16 Aromatic (EH_2D_AR)	CE250	N	1	mg/kg	3.9	< 1.0	< 1.0	< 1.0	< 1.0
>C16-C21 Aliphatic (EH_2D_AL)	CE250	N	0.7	mg/kg	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7
>C16-C21 Aromatic (EH_2D_AR)	CE250	N	2	mg/kg	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
>C21-C35 Aliphatic (EH_2D_AL)	CE250	N	4	mg/kg	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
>C21-C35 Aromatic (EH_2D_AR)	CE250	N	4.5	mg/kg	5.3	< 4.5	< 4.5	< 4.5	< 4.5
>C35-C40 Aliphatic (EH_2D_AL)	CE250	N	0.5	mg/kg	0.9	< 0.5	< 0.5	< 0.5	< 0.5
>C35-C40 Aromatic (EH_2D_AR)	CE250	N	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
>C10-C12 Aliphatic (EH_2D_AL)	CE250	N	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C10-C12 Aromatic (EH_2D_AR)	CE250	N	0.6	mg/kg	1.3	< 0.6	< 0.6	< 0.6	< 0.6
Polyaromatic hydrocarbons									
Naphthalene	CE087	M	0.016	mg/kg	0.020	< 0.016	< 0.016	0.021	0.027
Acenaphthylene	CE087	M	0.015	mg/kg	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015
Acenaphthene	CE087	M	0.013	mg/kg	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Fluorene	CE087	U	0.013	mg/kg	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Phenanthrene	CE087	M	0.014	mg/kg	0.132	0.017	< 0.014	0.084	0.076
Anthracene	CE087	U	0.017	mg/kg	< 0.017	< 0.017	< 0.017	< 0.017	< 0.017
Fluoranthene	CE087	M	0.017	mg/kg	< 0.017	< 0.017	< 0.017	0.028	0.021
Pyrene	CE087	M	0.016	mg/kg	< 0.016	< 0.016	< 0.016	0.023	0.017
Benzo(a)anthracene	CE087	U	0.012	mg/kg	< 0.012	< 0.012	< 0.012	0.018	0.015
Chrysene	CE087	M	0.028	mg/kg	< 0.028	< 0.028	< 0.028	< 0.028	< 0.028
Benzo(b)fluoranthene	CE087	M	0.02	mg/kg	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Benzo(k)fluoranthene	CE087	M	0.025	mg/kg	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Benzo(a)pyrene	CE087	U	0.019	mg/kg	< 0.019	< 0.019	< 0.019	< 0.019	< 0.019
Indeno(1,2,3-cd)pyrene	CE087	M	0.019	mg/kg	< 0.019	< 0.019	< 0.019	< 0.019	< 0.019
Dibenzo(a,h)anthracene	CE087	M	0.017	mg/kg	< 0.017	< 0.017	< 0.017	< 0.017	< 0.017
Benzo(g,h,i)perylene	CE087	M	0.019	mg/kg	< 0.019	< 0.019	< 0.019	0.025	< 0.019
Coronene	CE087	N	0.02	mg/kg	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Total PAH(17)	CE087	N	0.3	mg/kg	< 0.300	< 0.300	< 0.300	< 0.300	< 0.300
BTEX									
Benzene	CE192	U	0.01	mg/kg	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Toluene	CE192	U	0.01	mg/kg	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Ethylbenzene	CE192	U	0.01	mg/kg	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
MTBE	CE192	N	0.02	mg/kg	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Total BTEX	CE192	N	0.06	mg/kg	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060
m,p-Xylene	CE192	U	0.02	mg/kg	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
oXylenes	CE192	U	0.01	mg/kg	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Wet Chem									
pH	CE004	M	0.1	pH units	6.9	6.6	6.1	6.5	6.4
EPH									
Diesel Range Organics (>C10-C25) (EH_1D_	CE033	M	12	mg/kg	37	29	21	19	38
>C10-C40 Soil (EH_1D_Total)	CE033	M	19	mg/kg	73.3	58.1	43.2	37.8	75.1
Mineral Oil (>C10-C40 Total) (EH_CU_1D_To	CE162	N	19	mg/kg	33	27	24	< 19	60

SOILS

Lab Number					14440
Client Reference					Soil
Sample ID					J6
Sample Location					0.10
Sampling Date					21/09/2024
Test	**Method**	**Accred**	**LoD**	**Units**	
Asbestos					
Asbestos Identification	SUBCON	SU	0	-	NAD
Soil sample preparation parameters					
Stones Content	CE001	N	0.1	%	< 0.1
Metals					
Water Soluble Sulphate	CE061	M	0.01	g/l	0.1
Acid Soluble Sulphate (SO4)	CE062	M	0.01	%	0.24
Arsenic	CE264	U	1.8	mg/kg	11.1
Cadmium	CE264	M	1.6	mg/kg	< 1.6
Chromium	CE264	U	2	mg/kg	14.6
Copper	CE264	M	1.6	mg/kg	38.4
Lead	CE264	U	2.3	mg/kg	23.3
Mercury	CE264	U	0.7	mg/kg	< 0.7
Nickel	CE264	M	2.1	mg/kg	34.0
Selenium	CE264	U	3	mg/kg	< 3.0
Zinc	CE264	M	4	mg/kg	47.6
Volatile Petroleum Hydrocarbons					
>C5-C6 Aliphatic (HS_1D_AL)	CE267	N	0.1	mg/kg	< 0.10
>C6-C8 Aliphatic (HS_1D_AL)	CE267	N	0.1	mg/kg	< 0.10
>C8-C10 Aliphatic (HS_1D_AL)	CE267	N	0.1	mg/kg	< 0.10
>C8-C10 Aromatic (HS_1D_AR)	CE267	N	0.01	mg/kg	< 0.010
>C6-C7 Aromatic (HS_1D_AR)	CE267	N	0.01	mg/kg	< 0.010
>C7-C8 Aromatic (HS_1D_AR)	CE267	N	0.01	mg/kg	< 0.010
Colourimetric					
Total Monohydric Phenols	CE078	N	0.5	mg/kg	< 0.50
Total Cyanide	CE077	N	1	mg/kg	< 1.0
Combustion					
Moisture Content	CE001	N	0.1	%	< 0.1
Total Organic Carbon	CE197	N	0.1	%	7.82

SOILS

Soil Organic Matter	CE072	N	0.1	%	13.5
TPH Ali/Aro					
>C12-C16 Aliphatic (EH_2D_AL)	CE250	N	0.5	mg/kg	< 0.5
>C12-C16 Aromatic (EH_2D_AR)	CE250	N	1	mg/kg	< 1.0
>C16-C21 Aliphatic (EH_2D_AL)	CE250	N	0.7	mg/kg	< 0.7
>C16-C21 Aromatic (EH_2D_AR)	CE250	N	2	mg/kg	< 2.0
>C21-C35 Aliphatic (EH_2D_AL)	CE250	N	4	mg/kg	< 4.0
>C21-C35 Aromatic (EH_2D_AR)	CE250	N	4.5	mg/kg	< 4.5
>C35-C40 Aliphatic (EH_2D_AL)	CE250	N	0.5	mg/kg	< 0.5
>C35-C40 Aromatic (EH_2D_AR)	CE250	N	1.5	mg/kg	< 1.5
>C10-C12 Aliphatic (EH_2D_AL)	CE250	N	1	mg/kg	< 1.0
>C10-C12 Aromatic (EH_2D_AR)	CE250	N	0.6	mg/kg	< 0.6
Polyaromatic hydrocarbons					
Naphthalene	CE087	M	0.016	mg/kg	0.036
Acenaphthylene	CE087	M	0.015	mg/kg	< 0.015
Acenaphthene	CE087	M	0.013	mg/kg	< 0.013
Fluorene	CE087	U	0.013	mg/kg	< 0.013
Phenanthrene	CE087	M	0.014	mg/kg	0.130
Anthracene	CE087	U	0.017	mg/kg	0.021
Fluoranthene	CE087	M	0.017	mg/kg	0.053
Pyrene	CE087	M	0.016	mg/kg	0.046
Benzo(a)anthracene	CE087	U	0.012	mg/kg	0.027
Chrysene	CE087	M	0.028	mg/kg	< 0.028
Benzo(b)fluoranthene	CE087	M	0.02	mg/kg	< 0.020
Benzo(k)fluoranthene	CE087	M	0.025	mg/kg	< 0.025
Benzo(a)pyrene	CE087	U	0.019	mg/kg	< 0.019
Indeno(1,2,3-cd)pyrene	CE087	M	0.019	mg/kg	< 0.019
Dibenzo(a,h)anthracene	CE087	M	0.017	mg/kg	< 0.017
Benzo(g,h,i)perylene	CE087	M	0.019	mg/kg	0.020
Coronene	CE087	N	0.02	mg/kg	< 0.020
Total PAH(17)	CE087	N	0.3	mg/kg	0.334
BTEX					
Benzene	CE192	U	0.01	mg/kg	< 0.010
Toluene	CE192	U	0.01	mg/kg	< 0.010
Ethylbenzene	CE192	U	0.01	mg/kg	< 0.010
MTBE	CE192	N	0.02	mg/kg	< 0.020
Total BTEX	CE192	N	0.06	mg/kg	< 0.060
m,p-Xylene	CE192	U	0.02	mg/kg	< 0.020
oXylenes	CE192	U	0.01	mg/kg	< 0.010
Wet Chem					
pH	CE004	M	0.1	pH units	7.1
EPH					
Diesel Range Organics (>C10-C25) (EH_1D_	CE033	M	12	mg/kg	29
>C10-C40 Soil (EH_1D_Total)	CE033	M	19	mg/kg	68.5
Mineral Oil (>C10-C40 Total) (EH_CU_1D_To	CE162	N	19	mg/kg	29

METHOD DETAILS

METHOD	TESTNAME	METHOD SUMMARY	ANALYSIS BASIS
CE267	VPH in Soil	HS-GCFID	As submitted sample
SUBCON	Asbestos Solid	HSG248	Air Dried Sample
CE061	W. Sol Metals	ICPOES	Air dried sample
CE062	Acid Soluble Sulphate in Solids	Primacs	Air dried sample
CE264	Metals by ICP in Soil	ICPOES	Air dried sample
CE192	BTEX in solids	Analysis by HSGCFID	As submitted sample
CE033	EPH in Solids	Acetone:Hexane Extraction and GCFID	As submitted sample
CE250	GCXGC in Solids	DCM Extraction and GCxGC-FID	As submitted sample
CE087	PAH in Soil	DCM Extraction and GCMS	As submitted sample
CE078	Phenols in Solids	Continuous Flow Analyser	As submitted sample
CE077	Cyanides in Solids	Continuous Flow Analyser	As submitted sample
CE197	Primacs in Solids	Primacs	Air dried sample
CE162	Mineral Oil in Solids	Acetone:Hexane extract, Floriil clean up and GCFID	As submitted sample

REPORT INFORMATION

Report No.:24-02046, issue number 1

Key	
U	ISO17025 Accredited Result
M	ISO17025 and MCERTS Accredited Result
N	Do not currently hold accreditation
^	MCERTS accreditation not applicable for sample matrix
*	ISO17025 accreditation not applicable for sample matrix
S	Subcontracted
I/S	Insufficient Sample
U/S	Unsuitable sample
N/T	Not tested
<	Means "less than"
>	Means "greater than"

LOD refers to limit of detection, except in the case of pH soils and pH waters where it means limit of discrimination.

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

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

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

The results relate only to the sample received.

Unless otherwise stated, sample information has been provided by the client. This may affect the validity of the results.

Moisture Content Calculated on a Wet Weight basis

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

Sampling was undertaken by Chemtech Environmental Limited and is outside the UKAS accreditation scope.

Methods, procedures and performance data are available on request.

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

BTEX compounds are identified by retention time only and may include interference from co-eluting compounds.

For soils and solids, all results are reported on a dry basis. Samples dried at no more than 30°C in a drying

For soils and solids, analytical results are inclusive of stones, where applicable.

Sample Retention and Disposal

All soil samples will be retained for a period of 4 weeks from the point of receipt

All water samples will be retained for a period of 2 weeks from the point of Reporting

Charges may apply to extended sample storage

TPH Classification - HWOL Acronym System

HS	Headspace analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
2D	GC-GC - Double coil gas chromatography
#1	EH_Total but with humics mathematically subtracted
#2	EH_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry

APPENDIX D – CHEMICAL TESTING SUMMARY

Job No: 3120
Site Location: Wynstay Technology Park, Stockpile
Residential with gardens (1% SOM)

GroundSolve Ltd

Metals & Non-Metals	0.1 J1	0.1 J2	0.1 J3	0.1 J4	0.1 J5	0.1 J6	Min (mg/kg)	Max (mg/kg)	Average (mg/kg)	Count	Adopted Guideline (mg/kg)	Source	Exceedances
Arsenic	14.9	12.4	23.8	12.7	12.3	11.1	11.1	23.8	14.53	6	37	C4SL	0
Cadmium	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	<1.6	1.6	6	22	C4SL	0
Chromium	19.5	15.1	20.3	17	15.2	14.6	14.6	20.3	16.95	6	910	S4UL	0
Copper	23.4	23.5	22	29.5	21.4	38.4	21.4	38.4	26.37	6	2400	S4UL	0
Lead	28.4	21.7	31.2	28	22.5	23.3	21.7	31.2	25.85	6	200	C4SL	0
Mercury	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	<0.7	0.7	6	1.2	S4UL	0
Nickel	29.7	30.4	46.5	35	30.8	34	29.7	46.5	34.4	6	130	S4UL	0
Total Monohydric Phenols	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	<0.5	0.5	6	120	S4UL	0
Selenium	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	<3	3	6	250	S4UL	0
Zinc	53.5	39.1	58.4	44.6	47.4	47.6	39.1	58.4	48.43	6	3700	S4UL	0

Petroleum Hydrocarbons	0.1 J1	0.1 J2	0.1 J3	0.1 J4	0.1 J5	0.1 J6	Min (mg/kg)	Max (mg/kg)	Average (mg/kg)	Count	Adopted Guideline (mg/kg)	Source	Exceedances
Benzene	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	<0.01	0.01	6	0.87	C4SL	0
Toluene	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	<0.01	0.01	6	130	S4UL	0
Ethylbenzene	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	<0.01	0.01	6	47	S4UL	0
xylenes	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	<0.02	0.02	6	56	S4UL	0
>C5-C6 Aliphatic	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	<0.1	0.1	6	42	S4UL	0
>C6-C8 Aliphatic	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	<0.1	0.1	6	100	S4UL	0
>C8-C10 Aliphatic	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	<0.1	0.1	6	27	S4UL	0
>C10-C12 Aliphatic	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	1	6	130	S4UL	0
>C12-C16 Aliphatic	1.6	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	1.6	0.68	6	1100	S4UL	0
>C16-C35 Aliphatic	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	6	65000	S4UL	0
>C35-C40 Aliphatic	0.9	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	0.9	0.57	6	65000	S4UL	0
>C5-C7 Aromatic	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	6	70	S4UL	0
>C7-C8 Aromatic	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	6	130	S4UL	0
>C8-C10 Aromatic	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	-	6	34	S4UL	0
>C10-C12 Aromatic	1.3	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	1.3	0.72	6	74	S4UL	0
>C12-C16 Aromatic	3.9	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	3.9	1.48	6	140	S4UL	0
>C16-C21 Aromatic	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	<2	2	6	260	S4UL	0
>C21-C35 Aromatic	5.3	< 4.5	< 4.5	< 4.5	< 4.5	< 4.5	< 4.5	5.3	4.63	6	1100	S4UL	0
>C35-C40 Aromatic	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	<1.5	1.5	6	1100	S4UL	0

Polyaromatic Hydrocarbons (PAH	0.1 J1	0.1 J2	0.1 J3	0.1 J4	0.1 J5	0.1 J6	Min (mg/kg)	Max (mg/kg)	Average (mg/kg)	Count	Adopted Guideline (mg/kg)	Source	Exceedances
Acenaphthene	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	<0.013	0.01	6	210	S4UL	0
Acenaphthylene	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015	<0.015	0.02	6	170	S4UL	0
Anthracene	< 0.017	< 0.017	< 0.017	< 0.017	< 0.017	0.021	< 0.017	0.021	0.02	6	2400	S4UL	0
Benzo(a)anthracene	< 0.012	< 0.012	< 0.012	0.018	0.015	0.027	< 0.012	0.027	0.02	6	7.2	S4UL	0
Benzo(a)pyrene	< 0.019	< 0.019	< 0.019	< 0.019	< 0.019	< 0.019	< 0.019	<0.019	0.02	6	5	C4SL	0
Benzo(b)fluoranthene	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	<0.02	0.02	6	2.6	S4UL	0
Benzo[g,h,i]perylene	< 0.019	< 0.019	< 0.019	< 0.019	< 0.019	< 0.019	< 0.019	< 0.019	< 0.019	6	320	S4UL	0
Benzo(k)fluoranthene	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	<0.025	0.03	6	77	S4UL	0
Chrysene	< 0.028	< 0.028	< 0.028	< 0.028	< 0.028	< 0.028	< 0.028	<0.028	0.03	6	15	S4UL	0
Dibenzo(a,h)anthracene	< 0.017	< 0.017	< 0.017	< 0.017	< 0.017	< 0.017	< 0.017	<0.017	0.02	6	0.24	S4UL	0
Fluoranthene	< 0.017	< 0.017	< 0.017	0.028	0.021	0.053	< 0.017	0.053	0.03	6	280	S4UL	0
Fluorene	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	<0.013	0.01	6	170	S4UL	0
Indeno(1,2,3-cd)pyrene	< 0.019	< 0.019	< 0.019	< 0.019	< 0.019	< 0.019	< 0.019	<0.019	0.02	6	27	S4UL	0
Naphthalene	0.02	< 0.016	< 0.016	0.021	0.027	0.036	< 0.016	0.036	0.02	6	2.3	S4UL	0
Phenanthrene	0.132	0.017	< 0.014	0.084	0.076	0.13	< 0.014	0.132	0.08	6	95	S4UL	0
Pyrene	< 0.016	< 0.016	< 0.016	0.023	0.017	0.046	< 0.016	0.046	0.02	6	620	S4UL	0

Other Contaminants / Testing	0.1 J1	0.1 J2	0.1 J3	0.1 J4	0.1 J5	0.1 J6	Min (mg/kg)	Max (mg/kg)	Average (mg/kg)	Count	Adopted Guideline (mg/kg)	Source	Exceedances
Soil Organic Matter	8.47	8.57	4.98	10.7	11.5	13.5	4.98	13.5	9.62	6	-	-	-
pH	6.9	6.6	6.1	6.5	6.4	7.1	6.1	7.1	6.6	6	-	-	-
Total Cyanide	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	1	6	-	-	-
Water Soluble Sulphate	0.45	0.56	0.49	0.53	0.35	0.24	0.24	0.56	0.44	6	-	-	-