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CC GEOTECHNICAL LTD
Consulting Geoenvironmental and Geotechnical Engineers

JFW CONSTRUCTION LTD
35 Grove Street
New Ferry
Birkenhead
Wirral
CH62 5AX

20th December 2024

FAO: Terry Cottier

RE: SOIL CONTAMINATION ASSESSMENT FOR LVW WREXHAM (CCG-C-24-15116)

Dear Sir,

CC GEOTECHNICAL LTD (*CCG*) was commissioned by *JFW CONSTRUCTION LIMITED* to carry out a soil contamination assessment on 4nr soil samples taken from the above site. The soil samples and sampling location details were provided to *CCG* by *JFW CONSTRUCTION LIMITED.*

As instructed, *CCG* had the soils analysed for a broad range of contaminants including metals, non-metals, speciated PAHs, TPHCWG and asbestos at a UKAS / MCERTs laboratory. The analytical report (24-059172) is attached herewith.

Accordingly, an assessment of the soil analysis data was carried out in accordance with the guidance presented in CLR11 and in accordance with current guidance and legislation. The Human Health Risk Assessment was carried out in accordance with the methodology for assessing soil data based on the most conservative criteria applicable to "Residential with home grown produce" land use scenario, given that the end use was not known at the time of reporting.

The Human Health Risk Assessment was carried out by comparison of the soil contamination results with the widely accepted LQM/CIEH suitable 4 Use Level (S4UL) assessment criteria 2015 (under CCG licence S4UL3233), with the exception of Lead. Lead was assessed against its C4SL value published by Defra.

The assessment identified no exceedances, with all contaminants below their respective threshold values. Therefore, no potential risk to human health is indicated and the soils may be used in a residential context. The soil assessment worksheets are presented herewith. I trust all is clear. However, if you have any questions, please feel free to contact the undersigned.

Yours faithfully,

[redacted]

Daniel Kerfoot
Laboratory Manager

Att: Analytical report (24-159172): Assessment worksheets

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Analytical Report Number : 24-059172

Project / Site name:	LVW Wrexham	**Samples received on:**	12/12/2024
Your job number:	CCG-C-24-15116	**Samples instructed on/ Analysis started on:**	12/12/2024
Your order number:	CCG-PO-15116	**Analysis completed by:**	20/12/2024
Report Issue Number:	1	**Report issued on:**	20/12/2024
Samples Analysed:	4 soil samples		

Signed [redacted]

Rachel Chappell
Key Account Manager
For & on behalf of i2 Analytical Ltd.

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

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

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

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting
air	- once the analysis is complete

Excel copies of reports are only valid when accompanied by this PDF certificate.

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

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 24-059172
Project / Site name: LVW Wrexham
Your Order No: CCG-PO-15116

Lab Sample Number				406757	406758	406759	406760
Sample Reference				S1	S2	S3	S4
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				10/12/2024	10/12/2024	10/12/2024	10/12/2024
Time Taken				0900	0900	0900	0900
Analytical Parameter (Soil Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**				
Stone Content	%	0.1	NONE	45.4	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	9	19	11	8.6
Total mass of sample received	kg	0.1	NONE	0.7	0.7	0.8	0.6
Asbestos							
Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	MUA	MUA	MUA	KMC
General Inorganics							
pH (L099)	pH Units	N/A	MCERTS	8.1	7.9	8.2	7.9
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Total Sulphate as SO_4	%	0.005	MCERTS	0.093	0.075	0.064	0.057
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	770	150	26	33
Water Soluble SO_4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	385	77.3	13.1	16.5
Sulphide	mg/kg	1	MCERTS	34	8	< 1.0	< 1.0
Organic Matter (automated)	%	0.1	MCERTS	2.8	4.9	1.2	1.1
Speciated PAHs							
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.21	0.09	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.6	0.2	0.07	< 0.05
Pyrene	mg/kg	0.05	MCERTS	0.54	0.19	0.09	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.34	0.11	0.06	< 0.05
Chrysene	mg/kg	0.05	MCERTS	0.34	0.16	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.46	0.21	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.25	0.06	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.39	0.15	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.2	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.15	< 0.05	< 0.05	< 0.05
Total PAH							
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	3.49	1.18	< 0.80	< 0.80

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 24-059172
Project / Site name: LVW Wrexham
Your Order No: CCG-PO-15116

Lab Sample Number				406757	406758	406759	406760
Sample Reference				S1	S2	S3	S4
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				10/12/2024	10/12/2024	10/12/2024	10/12/2024
Time Taken				0900	0900	0900	0900
Analytical Parameter (Soil Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**				
Heavy Metals / Metalloids							
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	2.4	1.6	2	1.3
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	11	8	12	5.4
Boron (water soluble)	mg/kg	0.2	MCERTS	1.8	1.7	0.6	0.5
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	1	0.4	0.7	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	18	11	8.9	7.7
Copper (aqua regia extractable)	mg/kg	1	MCERTS	32	18	110	8.1
Lead (aqua regia extractable)	mg/kg	1	MCERTS	110	53	130	15
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	1.3	0.85	0.94	0.54
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	17	10	9.6	8.7
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	1.1	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	210	70	180	27
Petroleum Hydrocarbons							
TPHCWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
TPHCWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0
TPHCWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	15	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >EC35 - EC40 $_{EH_CU_1D_AL}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10
TPHCWG - Aliphatic >EC5 - EC40 $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	15	< 10	< 10	< 10
TPHCWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.02	MCERTS	< 0.020	< 0.020	< 0.020	< 0.020
TPHCWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
TPHCWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0
TPHCWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10
TPHCWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	15	< 10	< 10
TPHCWG - Aromatic >EC35 - EC40 $_{EH_CU_1D_AR}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10
TPHCWG - Aromatic >EC5 - EC40 $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	< 10	15	< 10	< 10
TPH Total >EC5 - EC40 $_{EH_CU+HS_1D_TOTAL}$	mg/kg	10	NONE	15	15	< 10	< 10
VOCs							
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0
p & m-Xylene	µg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number : 24-059172
Project / Site name: LVW Wrexham

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
406757	S1	None Supplied	None Supplied	Brown loam and sand with gravel and stones
406758	S2	None Supplied	None Supplied	Brown loam with vegetation
406759	S3	None Supplied	None Supplied	Brown loam and sand with gravel and vegetation
406760	S4	None Supplied	None Supplied	Brown loam and sand

Analytical Report Number : 24-059172
Project / Site name: LVW Wrexham

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI PrW)
Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in Soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques	In-house method based on HSG 248, 2021	A001B	D	ISO 17025
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode	In-house method	L010-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L038B	D	MCERTS
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES	In-house method based on Second Site Properties version 3	L038B	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES	In-house method	L038B	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Sulphate, water soluble, in soil (16hr extraction)	In-house method	L038B	D	MCERTS
Speciated PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
BTEX and/or Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS	In-house method based on USEPA 8260	L073B	W	MCERTS
Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS with carbon banding aliphatic and aromatic	In-house method	L076B/L088-PL	D/W	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry	In-house method	L080-PL	W	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099-PL	D	MCERTS

Analytical Report Number : 24-059172
Project / Site name: LVW Wrexham

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI PrW)
Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Quality control parameter failure associated with individual result applies to calculated sum of individuals.
The result for sum should be interpreted with caution

METALS DATA SUMMARY AND RISK ASSESSMENT SHEET

Job number: CCG-C-24-15116
Site name: LVW WREXHAM

Prepared by: DK
Authorised by: CB
Proposed land use: Residential with plant uptake
SOM % used: 1.0

= Threshold exceeded
= Below Limit of detection
n/t = Not tested

Contaminants			Metals							
			Cadmium	Chromium III	Chromium VI	Copper	Lead	Mercury (elemental)	Nickel	Zinc
Units			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Limit of Detection			0.5	5.0	0.8	5.0	5.0	0.5	5.0	5.0
Human Health Risk Assessment (GAC)			11	910	6	240	200	1.2	180	3700
Sample Location	Sample Depth (m)	Sample type								
S1	0	SOIL	1	18	< 1.8	32	110	< 0.3	17	210
S2	0	SOIL	0.4	11	< 1.8	18	53	< 0.3	10	70
S3	0	SOIL	0.7	8.9	< 1.8	110	130	< 0.3	9.6	180
S4	0	SOIL	< 0.2	7.7	< 1.8	8.1	15	< 0.3	8.7	27
Human Health Risk Assessment (GAC)			11	910	6	240	200	1.2	180	3700

SEMI-METALS, NON-METALS, INORGANICS AND OTHER DATA SUMMARY AND RISK ASSESSMENT SHEET

Job number: CCG-C-24-15116
Site name: LVW WREXHAM

Prepared by: DK
Authorised by: CB
Proposed land use: Residential with plant uptake
SOM % used: 1.0

= Threshold exceeded

= Below Limit of detection

n/t = Not tested

			Semi/non-metals			Inorganics			Other	
Contaminants			Arsenic	Boron	Selenium	Cyanide (free)	Sulphate (water soluble)	Sulphate (water soluble)	pH (units)	Soil Organic Matter %
Units			mg/kg	mg/kg	mg/kg	mg/kg	g/l	mg/l	units	units
Limit of Detection			1.0	0.5	1.0	1.0	0.02	20.0	0.1	0.1
Human Health Risk Assessment (GAC)			37	290	250	22	NA	NA	NA	NA
Sample Location	Sample Depth (m)	Sample type								
S1	0	SOIL	11	1.8	1.1	< 1.0	n/t	385	8.1	2.8
S2	0	SOIL	8	1.7	< 1.0	< 1.0	n/t	77.3	7.9	4.9
S3	0	SOIL	12	0.6	< 1.0	< 1.0	n/t	13.1	8.2	1.2
S4	0	SOIL	5.4	0.5	< 1.0	< 1.0	n/t	16.5	7.9	1.1
Human Health Risk Assessment (GAC)			37	290	250	22	NA	NA	NA	NA

SPECIATED PAH'S DATA SUMMARY AND RISK ASSESSMENT SHEET

Job number: CCG-C-24-15116
Site name: LVW WREXHAM

Prepared by: DK
Authorised by: CB
Proposed land use: Residential with plant uptake
SOM % used: 1.0

= Threshold exceeded
= Below Limit of detection
n/t = Not tested

			PAH's															
Contaminants			Acenapthene	Acenapthylene	Anthracene	Benz[a]anthracene	Benzo[a]pyrene	Benzo[b]flouranthene	Benzo[ghi]perylene	Benzo[k]flouranthene	Chrysene	Dibenzo[ah]anthracene	Flouranthene	Flourene	Indeno[123-cd]pyrene	Napthalene	Pheanthrene	Pyrene	Total PAH's
Units			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Limit of Detection			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.4
Human Health Risk Assessment (GAC)			210	170	2400	7.2	2.2	2.6	320	77	15	0.24	280	170	27	2.3	95	620	NA
Sample Location	Sample Depth (m)	Sample type																	
S1	0	SOIL	< 0.05	< 0.05	< 0.05	0.34	0.39	0.46	0.15	0.25	0.34	< 0.05	0.6	< 0.05	0.2	< 0.05	0.21	0.54	3.49
S2	0	SOIL	< 0.05	< 0.05	< 0.05	0.11	0.15	0.21	< 0.05	0.06	0.16	< 0.05	0.2	< 0.05	< 0.05	< 0.05	0.09	0.19	1.18
S3	0	SOIL	< 0.05	< 0.05	< 0.05	0.06	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.07	< 0.05	< 0.05	< 0.05	< 0.05	0.09	< 0.80
S4	0	SOIL	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.80
Human Health Risk Assessment (GAC)			210	170	2400	7.2	2.2	2.6	320	77	15	0.24	280	170	27	2.3	95	620	NA

SPECIATED TPH'S DATA SUMMARY AND RISK ASSESSMENT SHEET

Job number: CCG-C-24-15116
Site name: LVW WREXHAM

Prepared by: DK
Authorised by: CB
Proposed land use: Residential with plant uptake
SOM % used: 1.0

= Threshold exceeded
= Below Limit of detection
n/t = Not tested

			Speciated TPH's														
			Aromatics							Aliphatics							
Contaminants			EC5-7	EC7-8	EC8-10	EC10-12	EC12-16	EC16-21	EC21-35	EC35-44	EC5-6	EC6-8	EC8-10	EC10-12	EC12-16	EC16-35	EC35-44	TOTAL TPH'S
Units			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Limit of Detection			0.01	0.01	1.0	1.0	1.0	1.0	1.0	1.0	0.01	0.01	1.0	1.0	1.0	1.0	1.0	1.0
Human Health Risk Assessment (GAC)			70	130	34	74	140	260	1100	1100	42	100	27	130	1100	65000	65000	NA
Sample Location	Sample Depth (m)	Sample type																
S1	0	SOIL	< 0.010	< 0.010	< 0.020	< 1.0	< 2.0	< 10	< 10	< 10	< 0.010	< 0.010	< 0.010	< 1.0	< 2.0	n/t	< 10	15
S2	0	SOIL	< 0.010	< 0.010	< 0.020	< 1.0	< 2.0	< 10	15	< 10	< 0.010	< 0.010	< 0.010	< 1.0	< 2.0	n/t	< 10	15
S3	0	SOIL	< 0.010	< 0.010	< 0.020	< 1.0	< 2.0	< 10	< 10	< 10	< 0.010	< 0.010	< 0.010	< 1.0	< 2.0	n/t	< 10	< 10
S4	0	SOIL	< 0.010	< 0.010	< 0.020	< 1.0	< 2.0	< 10	< 10	< 10	< 0.010	< 0.010	< 0.010	< 1.0	< 2.0	n/t	< 10	< 10
Human Health Risk Assessment (GAC)			70	130	34	74	140	260	1100	1100	42	100	27	130	1100	65000	65000	NA

BTEX DATA SUMMARY AND RISK ASSESSMENT SHEET

Job number: CCG-C-24-15116
Site name: LVW WREXHAM

Prepared by: DK
Authorised by: CB
Proposed land use: Residential with plant uptake
SOM % used: 1.0

= Threshold exceeded

= Below Limit of detection

n/t = Not tested

			BTEX			
Contaminants			Benzene	Toluene	Ethylbenzene	Total Xylenes
Units			µg/kg	µg/kg	µg/kg	µg/kg
Limit of Detection			10	10	10	10
Human Health Risk Assessment (GAC)			0.33	610	350	NA
Sample Location	Sample Depth (m)	Sample type				
S1	0	SOIL	< 5.0	< 5.0	< 5.0	< 5.0
S2	0	SOIL	< 5.0	< 5.0	< 5.0	< 5.0
S3	0	SOIL	< 5.0	< 5.0	< 5.0	< 5.0
S4	0	SOIL	< 5.0	< 5.0	< 5.0	< 5.0
Human Health Risk Assessment (GAC)			0.33	610	350	NA

`Notes on Limitations
For
Geoenvironmental and Geotechnical Consultancy Services

General

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Phase I Environmental Audits / Desk Studies

The work undertaken to provide the basis of a Phase 1 Desk Study report comprises a study of available documented information from a variety of sources (including the client), together with (where appropriate) a brief walk over inspection of the site and meetings and discussions with relevant authorities and other interested parties. The opinions given in a Desk Study report have been dictated by finite data on which they are based and are relevant only to the purpose for which the report was commissioned. The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to site conditions. Should additional information become available which may affect the opinions expressed in the report, CC GEOTECHNICAL LTD reserves the right to review such information and to modify the opinions accordingly.

It should be noted that any risks identified in this report are perceived risks based on the information reviewed; actual risks can only be assessed following a physical investigation of the site.

Factual Ground Investigations

The investigation of the site has been carried out in accordance with the scope and specification instructed by the Client. No interpretations of the data generated by the investigation have been provided or implied. The exploratory holes undertaken in this commission, investigate only a small volume of the ground in relation to the size of the site, and can only provide a general indication of site conditions. Conditions may exist on the site which have not been detected by the works undertaken. Furthermore, the number of sampling points and the methods of sampling and testing do not preclude the existence of localised “hotspots” or more widespread contamination where concentrations may be significantly higher than those actually encountered.

Interpretative Phase II Environmental Audits

The investigation of the site has been carried out with the intention of providing sufficient information concerning the type and degree of contamination, and ground and groundwater conditions to allow a reasonable risk assessment to be made. The objectives of the investigation have been limited to establishing the risks associated to potential human targets, building materials, the environment (including adjacent land), and surface and groundwater.

The amount of exploratory work and chemical testing undertaken may have been restricted by factors including inter alia the Clients budget, the available timescale, access to all parts of the site, the existence of buried services etc., and where this is the case, a more comprehensive investigation may be required if the site is to be redeveloped, since a number of important engineering and environmental issues may need further assessment.

For those reasons, if costs have been included in relation to site remediation these must be considered as tentative only and must, in any event, be confirmed by a qualified quantity surveyor.

It must be borne in mind, that the exploratory holes undertaken, investigate only a small volume of the ground in relation to the size of the site, and can only provide a general indication of site conditions. The opinions provided and recommendations given in this report are based on the ground conditions apparent at the site of each of the exploratory holes. There may be ground conditions present on the site which have not been disclosed by this investigation, and which have therefore not been taken into account in this report. The number of sampling points and the methods of sampling and testing do not preclude the existence of localised “hotspots” or more widespread contamination where concentrations may be significantly higher than those actually encountered. The findings of the investigation are valid for the time of investigation and the passage of time may result in changes to the contamination status of the site, and a reassessment of the site may be required where significant time has elapsed.

Geoenvironmental Ground Investigations

The investigation of the site has been carried out within the constraints of Client budget, available timeframe, access to all parts of the site, the existence of buried services and a more comprehensive investigation may be required to provide sufficient information regarding the type and degree of contamination, geotechnical characteristics, and ground and groundwater conditions, to formulate a reasonable assessment of the environmental risks together with engineering and development implications.

If costs have been included in relation to the site remediation, these must be confirmed by a qualified quantity surveyor.

The exploratory holes undertaken, investigate only a small volume of the ground in relation to the size of the site, and can only provide a general indication of the site conditions. The opinions provided and recommendations given in this report are based on the ground conditions apparent at the site of each of the exploratory holes. There may be ground conditions present on the site which have not been disclosed by this investigation, and which have therefore not been taken into account in this report. The findings of the investigation are valid for the time of investigation and the passage of time may result in changes to the contamination status of the site, and a reassessment of the site may be required where significant time has elapsed.

The comments made on groundwater conditions are based on observations made at the time that site work was carried out. It should be noted that groundwater levels will vary owing to seasonal, tidal, weather, or other effects.

The risk assessment and opinions provided, inter alia, take into consideration currently available guidance relating to acceptable contamination concentrations and no liability can be accepted for the retrospective effects of any future changes or amendments to these values.