APPENDIX D

UXO BOREHOLE CLEARANCE REPORT



Unexploded Ordnance (UXO) Specialist
Borehole Support Report

Project Name	Wrexham solar Farm, Wales
Client	GeoCon Site Investigations Ltd
Site Address	Wrexham solar Farm, Wales
Report Reference	BH11819c-00
Date	28th February 2024
Author	OH
Final Check	LR

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Unexploded Ordnance (UXO) Specialist Borehole Support Report

Site: Wrexham solar Farm, Wales
Client: GeoCon Site Investigations Ltd

1. Introduction

1.1. Background

GeoCon Site Investigations Ltd commissioned 1st Line Defence to provide UXO Borehole Clearance at Wrexham solar Farm between the 20th and 22nd of February 2024.

A third party report was carried out which concluded that there is a medium risk from UXBs across the site. As a consequence, GeoCon Site Investigations Ltd appointed 1st Line Defence to provide risk mitigation services.

1.2. Site Location

The surrounding area is largely rural in nature, in addition to Wrexham Industrial Park located adjacent to the north-west of the site.

The site is approximately centred on the OS grid reference: SJ 38074 48386.

1.3. Aim

The aims of a UXO Specialist being present at Wrexham solar Farm were to:

1. Carry out UXO Awareness Briefings. The briefings included:
    - Nature of likely explosive ordnance on the site.
    - Basic ordnance recognition training.
    - What to do if a suspicious item is encountered.
2. Provide Borehole Support to planned site investigation works.

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2. UXO Borehole Support

2.1. Support Methodology

Prior to commencing drilling, the area around the proposed borehole location is scanned with hand-held Magnetrometry instrumentation to check for the presence of ferrous anomalies which have the potential to be UXO-related. These are lifetime calibrated, and tested before each hole. If a shallow anomaly is present it will be investigated, identified and cleared. If the location is heavily contaminated by ferrous material, an alternative location for the borehole may be found in consultation with the Client.

Once the UXO Supervisor/Specialist is satisfied that the surface is sufficiently clear of metal, to allow the bore-holing to commence, the drilling equipment begins operations and continues the safe depth advised by the UXO Supervisor/Specialist (usually 1m increments).

When the depth is reached the drilling equipment is removed from the location and a 'borehole mode' magnetometer sensor introduced into the hole. The UXO Supervisor/Specialist uses this equipment to survey the hole to a new depth and once clear, the rig returns and drills to this new safe depth.

It is necessary for the drillers to lower a plastic (non-ferrous) or steel casing down the hole if open holed. Once installed, ferrous steel casing is required to be withdrawn a minimum of 3.0m from the base of the hole. A survey is conducted and once the UXO Supervisor/Specialist provides clearance, the non-ferrous liner is withdrawn by the drillers and drilling resumes to the indicated safe depth.

This sequence of operations continues until a depth is reached at which the UXO Supervisor/Specialist is satisfied that there is no longer a threat from buried ordnance. At this point, drilling can continue at this location without UXO support.

This methodology will only provide clearance for specific site investigation locations and not for future intrusive works.

If an anomaly is located in the path of the drill, the UXO Supervisor/Specialist will advise that drilling is to cease, and will inform the Client accordingly. A decision will then have to be made whether to investigate and identify the source of the anomaly, or to leave it in situ and simply record its location. It may be necessary to sink a new borehole to complete the site investigation program.

2.2. Permit to Excavate and Service Clearance

The client carried out service clearance and issued Permits to Work.

2.3. Borehole Support

The UXO Borehole support was carried out between the 20th and 22nd February 2024. The following UXO Specialist was in attendance:

Personnel	
Date of Site Attendance	UXO Specialist
20th – 22nd February 2024	Rob McDonald

2.4. Variations

There were no variations to the works on site.

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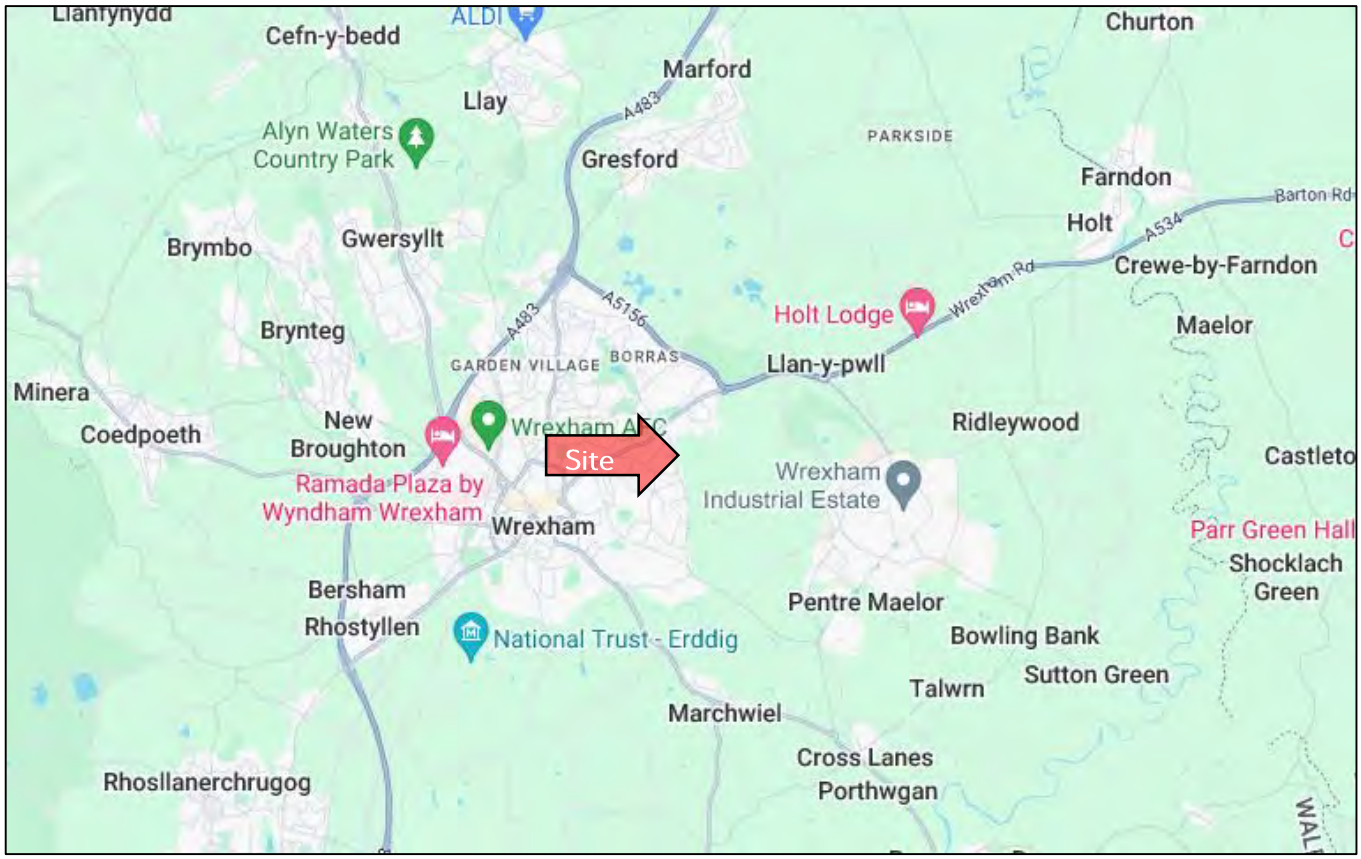
3. Summary of UXO Specialist Support

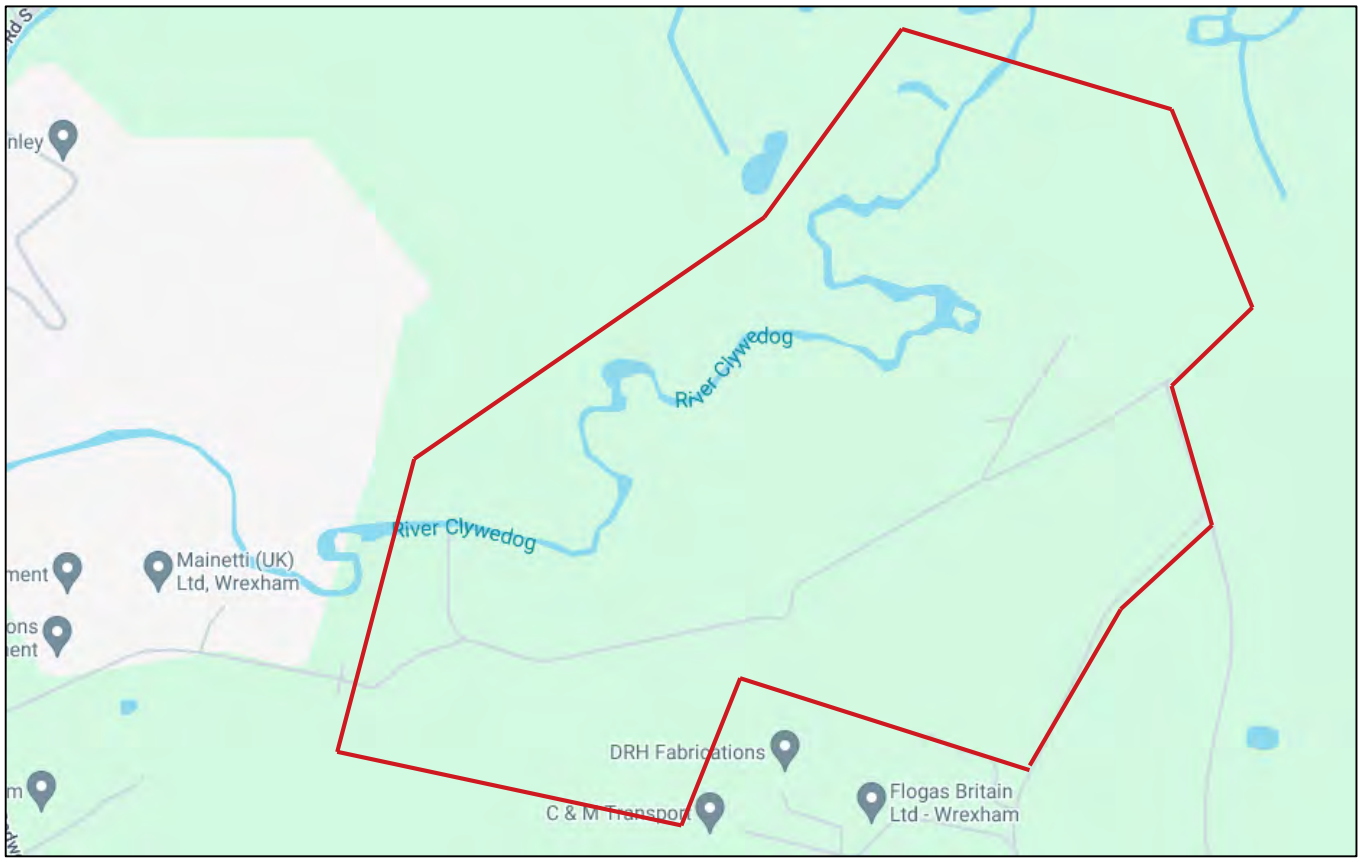
UXO Borehole Support operations at Wrexham Solar Farm between the 20th and 22nd February 2024 was supported/supervised by a 1st Line Defence UXO Supervisor. A total of 16 boreholes were surveyed.

No anomalies were detected or encountered on any of the exploratory locations, and the risk of encountering UXO is considered to have been reduced to as low as reasonably practicable.

28th February 2024

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Client: GeoCon Site Investigations Ltd

Approximate site boundary

N

Project: Wrexham solar Farm, Wales

Ref: BH11819c-00

Source: Google Maps

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Date	20-02-24	**Day**	Tuesday	**Serial**	001
Client	Geocon	**OPN**	11819c		
Site	Bedwell Road, Cross Lanes, Wrexham, LL13 0TS	**Site Area**	Bedwell Road, Cross Lanes, Wrexham, LL13 0TS		
Locator Type	Sensys	**Main Unit Serial No**	1LDFA223	**Probe Serial No**	1LDFA224
Cable Serial No	1LDFA239	**Drilling Method**	Cable Punctuation		

Borehole Reference	Test Depth	SPT Reading	Casing Material	Depth to which it is safe to proceed	Anomaly Detected (Y/N)	Mode & Sensitivity Settings	Strata	Comments	Total Time Taken (HR : MIN)
WS01	0	Nil	Nil	1	N	1-300	Top soil into medium clay	No inspection pit	1101
WS01	1	16	Nil	2	N	1-300	Medium clay into very dense clay with flint		1118
WS01	2	31	Nil	3	N	1-300	Rig struggling to get through	Clear of UXO due to ground strata	1120
WS02	0	Nil	Nil	1	N	1-300	Top soil into medium clay	No inspection pit	1209
WS02	1	18	Nil	2	N	1-300	Medium clay into very dense clay with flint		1219
WS02	2	41	Nil	3	N	1-300	Rig struggling to get through	Clear of UXO due to ground strata	1236

WS03	0	Nil	Nil	1	N	1-300	Top soil into medium clay	No inspection pit	1307
WS03	1	16	Nil	2	N	1-300	Medium clay into very dense clay with flint		1319
WS03	2	20	Nil	3	N	1-300	Rig struggling to get through	Clear of UXO due to ground strata	1340
WS04	0	Nil	Nil	1	N	1-300	Top soil into medium clay	No inspection pit	1350
WS04	1		Nil	2	N	1-300	Medium clay into very dense clay with flint		1406
WS04	2		Nil	3	N	1-300	Rig struggling to get through	Clear of UXO due to ground strata	1425

Carried out by 1LD UXO Specialist's Name	Robert McDonald	**UXO Specialist's Signature**	

Date	21-02-24	**Day**	Wednesday	**Serial**	002
Client	Geocon	**OPN**	11819c		
Site	Bedwell Road, Cross Lanes, Wrexham, LL13 0TS	**Site Area**	Bedwell Road, Cross Lanes, Wrexham, LL13 0TS		
Locator Type	Sensys	**Main Unit Serial No**	1LDFA223	**Probe Serial No**	1LDFA224
Cable Serial No	1LDFA239	**Drilling Method**	Cable Punctuation		

Borehole Reference	Test Depth	SPT Reading	Casing Material	Depth to which it is safe to proceed	Anomaly Detected (Y/N)	Mode & Sensitivity Settings	Strata	Comments	Total Time Taken (HR : MIN)
WS05	0	Nil	Nil	1	N	1-300	Top soil into medium clay	No inspection pit	0900
WS05	1	14	Nil	2	N	1-300	Medium clay into very dense clay with flint		0916
WS05	2	25	Nil	3	N	1-300	Rig struggling to get through	Clear of UXO due to ground strata	0930
WS06	0	Nil	Nil	1	N	1-300	Top soil into medium clay	No inspection pit	1030
WS06	1	18	Nil	2	N	1-300	Medium clay into very dense clay with flint		1041
WS06	2	32	Nil	3	N	1-300	Rig struggling to get through	Clear of UXO due to ground strata	1100

WS07	0	Nil	Nil	1	N	1-300	Top soil into medium clay	No inspection pit	1121
WS07	1	20	Nil	2	N	1-300	Medium clay into very dense clay with flint		1130
WS07	2	26	Nil	3	N	1-300	Rig struggling to get through	Clear of UXO due to ground strata	1150
WS08	0	Nil	Nil	1	N	1-300	Top soil into medium clay	No inspection pit	1350
WS08	1	16	Nil	2	N	1-300	Medium clay into very dense clay with flint		1417
WS08	2	21	Nil	3	N	1-300	Rig struggling to get through	Clear of UXO due to ground strata	1440
WS09	0	Nil	Nil	1	N	1-300	Top soil into medium clay	No inspection pit	1502
WS09	1	7	Nil	2	N	1-300	Medium clay into very dense clay with flint		1431
WS09	2	4	Nil	3	N	1-300	Rig struggling to get through	Clear of UXO due to ground strata	1445
WS10	0	Nil	Nil	1	N	1-300	Top soil into medium clay	No inspection pit	1500
WS10	1	8	Nil	2	N	1-300	Medium clay into very dense clay with flint		1517

WS10	2	11	Nil	3	N	1-300	Rig struggling to get through	Clear of UXO due to ground strata	1532

Carried out by 1LD UXO Specialist's Name	Robert McDonald	UXO Specialist's Signature	

Date	22-02-24	**Day**	Thursday	**Serial**	003
Client	Geocon	**OPN**	11819c		
Site	Bedwell Road, Cross Lanes, Wrexham, LL13 0TS	**Site Area**	Bedwell Road, Cross Lanes, Wrexham, LL13 0TS		
Locator Type	Sensys	**Main Unit Serial No**	1LDFA223	**Probe Serial No**	1LDFA224
Cable Serial No	1LDFA239	**Drilling Method**	Window sample		

Borehole Reference	Test Depth	SPT Reading	Casing Material	Depth to which it is safe to proceed	Anomaly Detected (Y/N)	Mode & Sensitivity Settings	Strata	Comments	Total Time Taken (HR : MIN)
WS11	0		Nil	1	N	1-300	Top soil into medium clay	No inspection pit	0830
WS11	1	16	Nil	2	N	1-300	Medium clay into very dense clay with flint		0901
WS11	2	18	Nil	3	N	1-300	Rig struggling to get through	Clear of UXO due to ground strata	0921

Carried out by 1LD UXO Specialist's Name	Robert McDonald	**UXO Specialist's Signature**	

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APPENDIX E

CHEMICAL LABORATORY TESTING RESULTS

Sample Deviation Report

GeoCon Site Investigations Ltd
Suite 2 Marple House
39 Stockport Road
Marple
Stockport
SK6 6BD

e: liam.daley@geoconsiteinvestigations.com

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7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 24-007176

Project / Site name:	Wrexham Solar Farm	Samples received on:	05/03/2024
Your job number:	GSI 2006	Samples instructed on/ Analysis started on:	05/03/2024
Your order number:	PO 24-0130	Analysis completed by:	13/03/2024
Report Issue Number:	1	Report issued on:	16/03/2024
Samples Analysed:	12 soil samples		

Signed:

Joanna Szwagrzak
Reporting Specialist
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

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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.

Sample Deviation Report

Analytical Report Number: 24-007176
Project / Site name: Wrexham Solar Farm
Your Order No: PO 24-0130

Lab Sample Number				136041	136046	136047	136048	136049
Sample Reference				WS18	WS13	WS14	WS15	WS08
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	0.20	0.60	0.60	0.40
Date Sampled				23/02/2024	22/02/2024	22/02/2024	22/02/2024	21/02/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	17	36	24	20	17
Total mass of sample received	kg	0.1	NONE	0.2	0.8	0.9	0.2	0.9
Asbestos								
Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	SPU	SPU	SPU	SPU	SPU
General Inorganics								
pH (L099)	pH Units	N/A	MCERTS	7.6	7.2	6.8	7.5	8.3
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	0.8	5.2	1.5	1.5	1.6
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	0.12	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	0.12	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.09	0.35	< 0.05	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	0.1	0.33	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.19	< 0.05	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	0.22	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	0.36	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	0.11	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.27	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.17	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.07	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	0.19	< 0.05	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80	2.38	< 0.80	< 0.80	< 0.80
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	8.2	8.3	9	7.4	9.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.3	3.6	1.8	2.1	0.5
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	27	13	20	14	25
Copper (aqua regia extractable)	mg/kg	1	MCERTS	14	25	19	16	43
Lead (aqua regia extractable)	mg/kg	1	MCERTS	210	1000	500	630	55
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	23	21	28	21	21
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	110	730	300	370	87

Sample Deviation Report

Analytical Report Number: 24-007176
Project / Site name: Wrexham Solar Farm
Your Order No: PO 24-0130

Lab Sample Number				136041	136046	136047	136048	136049
Sample Reference				WS18	WS13	WS14	WS15	WS08
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	0.20	0.60	0.60	0.40
Date Sampled				23/02/2024	22/02/2024	22/02/2024	22/02/2024	21/02/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Petroleum Hydrocarbons								
TPHCWG - Aliphatic >C5 - C6 HS_1D_AL	mg/kg	0.02	NONE	-	< 0.020	-	< 0.020	< 0.020
TPHCWG - Aliphatic >C6 - C8 HS_1D_AL	mg/kg	0.02	NONE	-	< 0.020	-	< 0.020	< 0.020
TPHCWG - Aliphatic >C8 - C10 HS_1D_AL	mg/kg	0.05	NONE	-	< 0.050	-	< 0.050	< 0.050
TPHCWG - Aliphatic >C10 - C12 EH_CU_1D_AL	mg/kg	1	MCERTS	-	< 1.0	-	< 1.0	< 1.0
TPHCWG - Aliphatic >C12 - C16 EH_CU_1D_AL	mg/kg	2	MCERTS	-	< 2.0	-	< 2.0	< 2.0
TPHCWG - Aliphatic >C16 - C21 EH_CU_1D_AL	mg/kg	8	MCERTS	-	< 8.0	-	< 8.0	< 8.0
TPHCWG - Aliphatic >C21 - C35 EH_CU_1D_AL	mg/kg	8	MCERTS	-	29	-	< 8.0	< 8.0
TPHCWG - Aliphatic >C5 - C35 EH_CU+HS_1D_AL	mg/kg	10	NONE	-	29	-	< 10	< 10
TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	NONE	-	< 0.010	-	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	NONE	-	< 0.010	-	< 0.010	< 0.010
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.05	NONE	-	< 0.050	-	< 0.050	< 0.050
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	-	< 1.0	-	< 1.0	< 1.0
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	-	< 2.0	-	< 2.0	< 2.0
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	-	< 10	-	< 10	< 10
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	-	28	-	< 10	< 10
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR	mg/kg	10	NONE	-	28	-	< 10	< 10
VOCs								
Chloromethane	µg/kg	5	ISO 17025	-	< 5.0 ##	-	< 5.0 ##	< 5.0 ##
Chloroethane	µg/kg	5	NONE	-	< 5.0	-	< 5.0	< 5.0
Bromomethane	µg/kg	5	ISO 17025	-	< 5.0	-	< 5.0	< 5.0
Vinyl Chloride	µg/kg	5	NONE	-	< 5.0	-	< 5.0	< 5.0
Trichlorofluoromethane	µg/kg	5	NONE	-	< 5.0	-	< 5.0	< 5.0
1,1-Dichloroethene	µg/kg	5	NONE	-	< 5.0	-	< 5.0	< 5.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	5	NONE	-	< 5.0 ##	-	< 5.0 ##	< 5.0 ##
Trans 1,2-dichloroethylene	µg/kg	5	NONE	-	< 5.0	-	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	-	< 5.0	-	< 5.0	< 5.0
1,1-Dichloroethane	µg/kg	5	ISO 17025	-	< 5.0	-	< 5.0	< 5.0
2,2-Dichloropropane	µg/kg	5	NONE	-	< 5.0	-	< 5.0	< 5.0
Chloroform	µg/kg	5	ISO 17025	-	< 5.0	-	< 5.0	< 5.0
1,1,1-Trichloroethane	µg/kg	5	ISO 17025	-	< 5.0	-	< 5.0	< 5.0
1,2-Dichloroethane	µg/kg	5	ISO 17025	-	< 5.0	-	< 5.0	< 5.0
1,1-Dichloropropene	µg/kg	5	ISO 17025	-	< 5.0	-	< 5.0	< 5.0
Cis-1,2-dichloroethene	µg/kg	5	ISO 17025	-	< 5.0	-	< 5.0	< 5.0
Benzene	µg/kg	5	MCERTS	-	< 5.0	-	< 5.0	< 5.0
Carbontetrachloride	µg/kg	5	NONE	-	< 5.0	-	< 5.0	< 5.0
1,2-Dichloropropane	µg/kg	5	ISO 17025	-	< 5.0	-	< 5.0	< 5.0
Trichloroethene	µg/kg	5	ISO 17025	-	< 5.0	-	< 5.0	< 5.0
Dibromomethane	µg/kg	5	ISO 17025	-	< 5.0	-	< 5.0	< 5.0
Bromodichloromethane	µg/kg	5	ISO 17025	-	< 5.0	-	< 5.0	< 5.0
Cis-1,3-dichloropropene	µg/kg	5	ISO 17025	-	< 5.0	-	< 5.0	< 5.0
Trans-1,3-dichloropropene	µg/kg	5	ISO 17025	-	< 5.0	-	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	-	< 5.0	-	< 5.0	< 5.0
1,1,2-Trichloroethane	µg/kg	5	ISO 17025	-	< 5.0	-	< 5.0	< 5.0
1,3-Dichloropropane	µg/kg	5	ISO 17025	-	< 5.0	-	< 5.0	< 5.0
Dibromochloromethane	µg/kg	5	ISO 17025	-	< 5.0	-	< 5.0	< 5.0
Tetrachloroethene	µg/kg	5	NONE	-	< 5.0	-	< 5.0	< 5.0
1,2-Dibromoethane	µg/kg	5	ISO 17025	-	< 5.0	-	< 5.0	< 5.0
Chlorobenzene	µg/kg	5	ISO 17025	-	< 5.0	-	< 5.0	< 5.0
1,1,1,2-Tetrachloroethane	µg/kg	5	ISO 17025	-	< 5.0	-	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	-	< 5.0	-	< 5.0	< 5.0

Sample Deviation Report

Analytical Report Number: 24-007176
Project / Site name: Wrexham Solar Farm
Your Order No: PO 24-0130

Lab Sample Number				136041	136046	136047	136048	136049
Sample Reference				WS18	WS13	WS14	WS15	WS08
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	0.20	0.60	0.60	0.40
Date Sampled				23/02/2024	22/02/2024	22/02/2024	22/02/2024	21/02/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
p & m-Xylene	µg/kg	5	MCERTS	-	< 5.0	-	< 5.0	< 5.0
Styrene	µg/kg	5	ISO 17025	-	< 5.0	-	< 5.0	< 5.0
Bromoform	µg/kg	5	NONE	-	< 5.0	-	< 5.0	< 5.0
o-Xylene	µg/kg	5	MCERTS	-	< 5.0	-	< 5.0	< 5.0
Isopropylbenzene	µg/kg	5	ISO 17025	-	< 5.0	-	< 5.0	< 5.0
1,1,2,2-Tetrachloroethane	µg/kg	5	NONE	-	< 5.0	-	< 5.0	< 5.0
Bromobenzene	µg/kg	5	NONE	-	< 5.0	-	< 5.0	< 5.0
n-Propylbenzene	µg/kg	5	ISO 17025	-	< 5.0	-	< 5.0	< 5.0
2-Chlorotoluene	µg/kg	5	ISO 17025	-	< 5.0	-	< 5.0	< 5.0
4-Chlorotoluene	µg/kg	5	ISO 17025	-	< 5.0	-	< 5.0	< 5.0
1,3,5-Trimethylbenzene	µg/kg	5	ISO 17025	-	< 5.0	-	< 5.0	< 5.0
tert-Butylbenzene	µg/kg	5	ISO 17025	-	< 5.0	-	< 5.0	< 5.0
1,2,4-Trimethylbenzene	µg/kg	5	ISO 17025	-	< 5.0	-	< 5.0	< 5.0
sec-Butylbenzene	µg/kg	5	ISO 17025	-	< 5.0	-	< 5.0	< 5.0
1,3-Dichlorobenzene	µg/kg	5	ISO 17025	-	< 5.0	-	< 5.0	< 5.0
p-Isopropyltoluene	µg/kg	5	ISO 17025	-	< 5.0	-	< 5.0	< 5.0
1,4-Dichlorobenzene	µg/kg	5	ISO 17025	-	< 5.0	-	< 5.0	< 5.0
1,2-Dichlorobenzene	µg/kg	5	ISO 17025	-	< 5.0	-	< 5.0	< 5.0
Butylbenzene	µg/kg	5	NONE	-	< 5.0	-	< 5.0	< 5.0
1,2-Dibromo-3-chloropropane	µg/kg	5	ISO 17025	-	< 5.0	-	< 5.0	< 5.0
1,2,4-Trichlorobenzene	µg/kg	5	ISO 17025	-	< 5.0	-	< 5.0	< 5.0
Hexachlorobutadiene	µg/kg	5	NONE	-	< 5.0	-	< 5.0	< 5.0
1,2,3-Trichlorobenzene	µg/kg	5	ISO 17025	-	< 5.0	-	< 5.0	< 5.0
SVOCs								
Aniline	mg/kg	0.1	NONE	-	< 0.1	-	< 0.1	< 0.1
Phenol	mg/kg	0.2	ISO 17025	-	< 0.2	-	< 0.2	< 0.2
2-Chlorophenol	mg/kg	0.1	MCERTS	-	< 0.1	-	< 0.1	< 0.1
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	< 0.2	-	< 0.2	< 0.2
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	< 0.2	-	< 0.2	< 0.2
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	< 0.1	-	< 0.1	< 0.1
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	< 0.2	-	< 0.2	< 0.2
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	< 0.1	-	< 0.1	< 0.1
2-Methylphenol	mg/kg	0.3	MCERTS	-	< 0.3	-	< 0.3	< 0.3
Hexachloroethane	mg/kg	0.05	ISO 17025	-	< 0.05	-	< 0.05	< 0.05
Nitrobenzene	mg/kg	0.3	MCERTS	-	< 0.3	-	< 0.3	< 0.3
4-Methylphenol	mg/kg	0.2	NONE	-	< 0.2	-	< 0.2	< 0.2
Isophorone	mg/kg	0.2	MCERTS	-	< 0.2	-	< 0.2	< 0.2
2-Nitrophenol	mg/kg	0.3	NONE	-	< 0.3	-	< 0.3	< 0.3
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	< 0.3	-	< 0.3	< 0.3
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	< 0.3	-	< 0.3	< 0.3
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	< 0.3	-	< 0.3	< 0.3
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	< 0.3	-	< 0.3	< 0.3
4-Chloroaniline	mg/kg	0.1	NONE	-	< 0.1	-	< 0.1	< 0.1
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	< 0.1	-	< 0.1	< 0.1
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	< 0.1	-	< 0.1	< 0.1
2,4,6-Trichlorophenol	mg/kg	0.1	NONE	-	< 0.1	-	< 0.1	< 0.1
2,4,5-Trichlorophenol	mg/kg	0.2	NONE	-	< 0.2	-	< 0.2	< 0.2
2-Methylnaphthalene	mg/kg	0.1	NONE	-	< 0.1	-	< 0.1	< 0.1
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	< 0.1	-	< 0.1	< 0.1
Dimethylphthalate	mg/kg	0.1	MCERTS	-	< 0.1	-	< 0.1	< 0.1
2,6-Dinitrotoluene	mg/kg	0.1	NONE	-	< 0.1	-	< 0.1	< 0.1
2,4-Dinitrotoluene	mg/kg	0.2	NONE	-	< 0.2	-	< 0.2	< 0.2

Sample Deviation Report

Analytical Report Number: 24-007176
Project / Site name: Wrexham Solar Farm
Your Order No: PO 24-0130

Lab Sample Number				136041	136046	136047	136048	136049
Sample Reference				WS18	WS13	WS14	WS15	WS08
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	0.20	0.60	0.60	0.40
Date Sampled				23/02/2024	22/02/2024	22/02/2024	22/02/2024	21/02/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Dibenzofuran	mg/kg	0.2	MCERTS	-	< 0.2	-	< 0.2	< 0.2
4-Chlorophenyl phenyl ether	mg/kg	0.3	MCERTS	-	< 0.3	-	< 0.3	< 0.3
Diethyl phthalate	mg/kg	0.2	MCERTS	-	< 0.2	-	< 0.2	< 0.2
4-Nitroaniline	mg/kg	0.2	NONE	-	< 0.2	-	< 0.2	< 0.2
Azobenzene	mg/kg	0.3	NONE	-	< 0.3	-	< 0.3	< 0.3
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	< 0.2	-	< 0.2	< 0.2
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	< 0.30	-	< 0.30	< 0.30
Carbazole	mg/kg	0.3	MCERTS	-	< 0.3	-	< 0.3	< 0.3
Dibutyl phthalate	mg/kg	0.2	NONE	-	< 0.2	-	< 0.2	< 0.2
Anthraquinone	mg/kg	0.3	NONE	-	< 0.3	-	< 0.3	< 0.3
Butyl benzyl phthalate	mg/kg	0.3	NONE	-	< 0.3	-	< 0.3	< 0.3
PCBs by GC-MS								
PCB Congener 28	mg/kg	0.001	MCERTS	-	< 0.001	-	< 0.001	< 0.001
PCB Congener 52	mg/kg	0.001	MCERTS	-	0.001	-	< 0.001	< 0.001
PCB Congener 101	mg/kg	0.001	MCERTS	-	0.002	-	< 0.001	< 0.001
PCB Congener 118	mg/kg	0.001	MCERTS	-	0.002	-	< 0.001	< 0.001
PCB Congener 138	mg/kg	0.001	MCERTS	-	0.003	-	< 0.001	< 0.001
PCB Congener 153	mg/kg	0.001	MCERTS	-	0.002	-	< 0.001	< 0.001
PCB Congener 180	mg/kg	0.001	MCERTS	-	< 0.001	-	< 0.001	< 0.001
Total PCBs	mg/kg	0.007	MCERTS	-	0.009	-	< 0.007	< 0.007

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

Sample Deviation Report

Analytical Report Number: 24-007176
Project / Site name: Wrexham Solar Farm
Your Order No: PO 24-0130

Lab Sample Number				136050	136051	136052	136053	136054
Sample Reference				WS10	WS11	WS02	WS03	WS04
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.60	0.20	0.60	0.40	0.40
Date Sampled				21/02/2024	22/02/2024	20/02/2024	20/02/2024	24/02/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	20	27	13	11	11
Total mass of sample received	kg	0.1	NONE	0.2	1.2	0.9	0.8	0.9
Asbestos								
Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	SPU	SPU	SPU	SPU	SPU
General Inorganics								
pH (L099)	pH Units	N/A	MCERTS	7.4	7.2	8.2	7.9	7.7
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	1.6	3.1	0.2	0.3	0.5
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.09	< 0.05	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	0.07	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80	< 0.80	< 0.80	< 0.80	< 0.80
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.6	11	6.2	6.3	11
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	1.5	1.4	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	21	29	18	20	39
Copper (aqua regia extractable)	mg/kg	1	MCERTS	18	27	16	7.1	25
Lead (aqua regia extractable)	mg/kg	1	MCERTS	520	610	24	19	24
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	25	25	16	15	43
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	270	320	39	42	71

Sample Deviation Report

Analytical Report Number: 24-007176
Project / Site name: Wrexham Solar Farm
Your Order No: PO 24-0130

Lab Sample Number				136050	136051	136052	136053	136054
Sample Reference				WS10	WS11	WS02	WS03	WS04
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.60	0.20	0.60	0.40	0.40
Date Sampled				21/02/2024	22/02/2024	20/02/2024	20/02/2024	24/02/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Petroleum Hydrocarbons								
TPHCWG - Aliphatic >C5 - C6 HS_1D_AL	mg/kg	0.02	NONE	< 0.020	< 0.020	-	< 0.020	< 0.020
TPHCWG - Aliphatic >C6 - C8 HS_1D_AL	mg/kg	0.02	NONE	< 0.020	< 0.020	-	< 0.020	< 0.020
TPHCWG - Aliphatic >C8 - C10 HS_1D_AL	mg/kg	0.05	NONE	< 0.050	< 0.050	-	< 0.050	< 0.050
TPHCWG - Aliphatic >C10 - C12 EH_CU_1D_AL	mg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
TPHCWG - Aliphatic >C12 - C16 EH_CU_1D_AL	mg/kg	2	MCERTS	< 2.0	< 2.0	-	< 2.0	< 2.0
TPHCWG - Aliphatic >C16 - C21 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	< 8.0	-	< 8.0	< 8.0
TPHCWG - Aliphatic >C21 - C35 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	< 8.0	-	< 8.0	< 8.0
TPHCWG - Aliphatic >C5 - C35 EH_CU+HS_1D_AL	mg/kg	10	NONE	< 10	< 10	-	< 10	< 10
TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	NONE	< 0.010	< 0.010	-	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	NONE	< 0.010	< 0.010	-	< 0.010	< 0.010
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.05	NONE	< 0.050	< 0.050	-	< 0.050	< 0.050
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	< 10	-	< 10	< 10
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR	mg/kg	10	NONE	< 10	< 10	-	< 10	< 10
VOCs								
Chloromethane	µg/kg	5	ISO 17025	< 5.0	< 5.0	-	< 5.0	< 5.0
Chloroethane	µg/kg	5	NONE	< 5.0	< 5.0	-	< 5.0	< 5.0
Bromomethane	µg/kg	5	ISO 17025	< 5.0	< 5.0	-	< 5.0	< 5.0
Vinyl Chloride	µg/kg	5	NONE	< 5.0	< 5.0	-	< 5.0	< 5.0
Trichlorofluoromethane	µg/kg	5	NONE	< 5.0	< 5.0	-	< 5.0	< 5.0
1,1-Dichloroethene	µg/kg	5	NONE	< 5.0	< 5.0	-	< 5.0	< 5.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	5	NONE	< 5.0 ##	< 5.0 ##	-	< 5.0 ##	< 5.0 ##
Trans 1,2-dichloroethylene	µg/kg	5	NONE	< 5.0	< 5.0	-	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	-	< 5.0	< 5.0
1,1-Dichloroethane	µg/kg	5	ISO 17025	< 5.0	< 5.0	-	< 5.0	< 5.0
2,2-Dichloropropane	µg/kg	5	NONE	< 5.0	< 5.0	-	< 5.0	< 5.0
Chloroform	µg/kg	5	ISO 17025	< 5.0	< 5.0	-	< 5.0	< 5.0
1,1,1-Trichloroethane	µg/kg	5	ISO 17025	< 5.0	< 5.0	-	< 5.0	< 5.0
1,2-Dichloroethane	µg/kg	5	ISO 17025	< 5.0	< 5.0	-	< 5.0	< 5.0
1,1-Dichloropropene	µg/kg	5	ISO 17025	< 5.0	< 5.0	-	< 5.0	< 5.0
Cis-1,2-dichloroethene	µg/kg	5	ISO 17025	< 5.0	< 5.0	-	< 5.0	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	-	< 5.0	< 5.0
Carbontetrachloride	µg/kg	5	NONE	< 5.0	< 5.0	-	< 5.0	< 5.0
1,2-Dichloropropane	µg/kg	5	ISO 17025	< 5.0	< 5.0	-	< 5.0	< 5.0
Trichloroethene	µg/kg	5	ISO 17025	< 5.0	< 5.0	-	< 5.0	< 5.0
Dibromomethane	µg/kg	5	ISO 17025	< 5.0	< 5.0	-	< 5.0	< 5.0
Bromodichloromethane	µg/kg	5	ISO 17025	< 5.0	< 5.0	-	< 5.0	< 5.0
Cis-1,3-dichloropropene	µg/kg	5	ISO 17025	< 5.0	< 5.0	-	< 5.0	< 5.0
Trans-1,3-dichloropropene	µg/kg	5	ISO 17025	< 5.0	< 5.0	-	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	-	< 5.0	< 5.0
1,1,2-Trichloroethane	µg/kg	5	ISO 17025	< 5.0	< 5.0	-	< 5.0	< 5.0
1,3-Dichloropropane	µg/kg	5	ISO 17025	< 5.0	< 5.0	-	< 5.0	< 5.0
Dibromochloromethane	µg/kg	5	ISO 17025	< 5.0	< 5.0	-	< 5.0	< 5.0
Tetrachloroethene	µg/kg	5	NONE	< 5.0	< 5.0	-	< 5.0	< 5.0
1,2-Dibromoethane	µg/kg	5	ISO 17025	< 5.0	< 5.0	-	< 5.0	< 5.0
Chlorobenzene	µg/kg	5	ISO 17025	< 5.0	< 5.0	-	< 5.0	< 5.0
1,1,1,2-Tetrachloroethane	µg/kg	5	ISO 17025	< 5.0	< 5.0	-	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	-	< 5.0	< 5.0

Sample Deviation Report

Analytical Report Number: 24-007176
Project / Site name: Wrexham Solar Farm
Your Order No: PO 24-0130

Lab Sample Number				136050	136051	136052	136053	136054
Sample Reference				WS10	WS11	WS02	WS03	WS04
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.60	0.20	0.60	0.40	0.40
Date Sampled				21/02/2024	22/02/2024	20/02/2024	20/02/2024	24/02/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
p & m-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	-	< 5.0	< 5.0
Styrene	µg/kg	5	ISO 17025	< 5.0	< 5.0	-	< 5.0	< 5.0
Bromoform	µg/kg	5	NONE	< 5.0	< 5.0	-	< 5.0	< 5.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	-	< 5.0	< 5.0
Isopropylbenzene	µg/kg	5	ISO 17025	< 5.0	< 5.0	-	< 5.0	< 5.0
1,1,2,2-Tetrachloroethane	µg/kg	5	NONE	< 5.0	< 5.0	-	< 5.0	< 5.0
Bromobenzene	µg/kg	5	NONE	< 5.0	< 5.0	-	< 5.0	< 5.0
n-Propylbenzene	µg/kg	5	ISO 17025	< 5.0	< 5.0	-	< 5.0	< 5.0
2-Chlorotoluene	µg/kg	5	ISO 17025	< 5.0	< 5.0	-	< 5.0	< 5.0
4-Chlorotoluene	µg/kg	5	ISO 17025	< 5.0	< 5.0	-	< 5.0	< 5.0
1,3,5-Trimethylbenzene	µg/kg	5	ISO 17025	< 5.0	< 5.0	-	< 5.0	< 5.0
tert-Butylbenzene	µg/kg	5	ISO 17025	< 5.0	< 5.0	-	< 5.0	< 5.0
1,2,4-Trimethylbenzene	µg/kg	5	ISO 17025	< 5.0	< 5.0	-	< 5.0	< 5.0
sec-Butylbenzene	µg/kg	5	ISO 17025	< 5.0	< 5.0	-	< 5.0	< 5.0
1,3-Dichlorobenzene	µg/kg	5	ISO 17025	< 5.0	< 5.0	-	< 5.0	< 5.0
p-Isopropyltoluene	µg/kg	5	ISO 17025	< 5.0	< 5.0	-	< 5.0	< 5.0
1,4-Dichlorobenzene	µg/kg	5	ISO 17025	< 5.0	< 5.0	-	< 5.0	< 5.0
1,2-Dichlorobenzene	µg/kg	5	ISO 17025	< 5.0	< 5.0	-	< 5.0	< 5.0
Butylbenzene	µg/kg	5	NONE	< 5.0	< 5.0	-	< 5.0	< 5.0
1,2-Dibromo-3-chloropropane	µg/kg	5	ISO 17025	< 5.0	< 5.0	-	< 5.0	< 5.0
1,2,4-Trichlorobenzene	µg/kg	5	ISO 17025	< 5.0	< 5.0	-	< 5.0	< 5.0
Hexachlorobutadiene	µg/kg	5	NONE	< 5.0	< 5.0	-	< 5.0	< 5.0
1,2,3-Trichlorobenzene	µg/kg	5	ISO 17025	< 5.0	< 5.0	-	< 5.0	< 5.0

SVOCs

Aniline	mg/kg	0.1	NONE	< 0.1	< 0.1	-	< 0.1	< 0.1
Phenol	mg/kg	0.2	ISO 17025	< 0.2	< 0.2	-	< 0.2	< 0.2
2-Chlorophenol	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	< 0.1	< 0.1
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	< 0.2	< 0.2
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	< 0.2	< 0.2
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	< 0.1	< 0.1
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	< 0.2	< 0.2
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	< 0.1	< 0.1
2-Methylphenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	< 0.3	< 0.3
Hexachloroethane	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	-	< 0.05	< 0.05
Nitrobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	< 0.3	< 0.3
4-Methylphenol	mg/kg	0.2	NONE	< 0.2	< 0.2	-	< 0.2	< 0.2
Isophorone	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	< 0.2	< 0.2
2-Nitrophenol	mg/kg	0.3	NONE	< 0.3	< 0.3	-	< 0.3	< 0.3
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	< 0.3	< 0.3
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	< 0.3	< 0.3
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	< 0.3	< 0.3
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	< 0.3	< 0.3
4-Chloroaniline	mg/kg	0.1	NONE	< 0.1	< 0.1	-	< 0.1	< 0.1
Hexachlorobutadiene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	< 0.1	< 0.1
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	< 0.1	< 0.1	-	< 0.1	< 0.1
2,4,6-Trichlorophenol	mg/kg	0.1	NONE	< 0.1	< 0.1	-	< 0.1	< 0.1
2,4,5-Trichlorophenol	mg/kg	0.2	NONE	< 0.2	< 0.2	-	< 0.2	< 0.2
2-Methylnaphthalene	mg/kg	0.1	NONE	< 0.1	< 0.1	-	< 0.1	< 0.1
2-Chloronaphthalene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	< 0.1	< 0.1
Dimethylphthalate	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	< 0.1	< 0.1
2,6-Dinitrotoluene	mg/kg	0.1	NONE	< 0.1	< 0.1	-	< 0.1	< 0.1
2,4-Dinitrotoluene	mg/kg	0.2	NONE	< 0.2	< 0.2	-	< 0.2	< 0.2

Sample Deviation Report

Analytical Report Number: 24-007176
Project / Site name: Wrexham Solar Farm
Your Order No: PO 24-0130

Lab Sample Number				136050	136051	136052	136053	136054
Sample Reference				WS10	WS11	WS02	WS03	WS04
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.60	0.20	0.60	0.40	0.40
Date Sampled				21/02/2024	22/02/2024	20/02/2024	20/02/2024	24/02/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Dibenzofuran	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	< 0.2	< 0.2
4-Chlorophenyl phenyl ether	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	< 0.3	< 0.3
Diethyl phthalate	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	< 0.2	< 0.2
4-Nitroaniline	mg/kg	0.2	NONE	< 0.2	< 0.2	-	< 0.2	< 0.2
Azobenzene	mg/kg	0.3	NONE	< 0.3	< 0.3	-	< 0.3	< 0.3
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	< 0.2	< 0.2
Hexachlorobenzene	mg/kg	0.3	MCERTS	< 0.30	< 0.30	-	< 0.30	< 0.30
Carbazole	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	< 0.3	< 0.3
Dibutyl phthalate	mg/kg	0.2	NONE	< 0.2	< 0.2	-	< 0.2	< 0.2
Anthraquinone	mg/kg	0.3	NONE	< 0.3	< 0.3	-	< 0.3	< 0.3
Butyl benzyl phthalate	mg/kg	0.3	NONE	< 0.3	< 0.3	-	< 0.3	< 0.3
PCBs by GC-MS								
PCB Congener 28	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	< 0.001	< 0.001
PCB Congener 52	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	< 0.001	< 0.001
PCB Congener 101	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	< 0.001	< 0.001
PCB Congener 118	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	< 0.001	< 0.001
PCB Congener 138	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	< 0.001	< 0.001
PCB Congener 153	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	< 0.001	< 0.001
PCB Congener 180	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	< 0.001	< 0.001
Total PCBs	mg/kg	0.007	MCERTS	< 0.007	< 0.007	-	< 0.007	< 0.007

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

Sample Deviation Report

Analytical Report Number: 24-007176
Project / Site name: Wrexham Solar Farm
Your Order No: PO 24-0130

Lab Sample Number				136055	136056
Sample Reference				WS05	WS06
Sample Number				None Supplied	None Supplied
Depth (m)				0.40	0.40
Date Sampled				21/02/2024	21/02/2024
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	21	14
Total mass of sample received	kg	0.1	NONE	0.8	0.9

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	KSZ	KSZ

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	7.5	7.6
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	1.1	0.4

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.1	< 0.05
Pyrene	mg/kg	0.05	MCERTS	0.09	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80	< 0.80

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	12	8.7
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	23	25
Copper (aqua regia extractable)	mg/kg	1	MCERTS	19	10
Lead (aqua regia extractable)	mg/kg	1	MCERTS	15	26
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	20	20
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	73	44

Sample Deviation Report

Analytical Report Number: 24-007176
Project / Site name: Wrexham Solar Farm
Your Order No: PO 24-0130

Lab Sample Number				136055	136056
Sample Reference				WS05	WS06
Sample Number				None Supplied	None Supplied
Depth (m)				0.40	0.40
Date Sampled				21/02/2024	21/02/2024
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Petroleum Hydrocarbons					
TPHCWG - Aliphatic >C5 - C6 HS_1D_AL	mg/kg	0.02	NONE	< 0.020	-
TPHCWG - Aliphatic >C6 - C8 HS_1D_AL	mg/kg	0.02	NONE	< 0.020	-
TPHCWG - Aliphatic >C8 - C10 HS_1D_AL	mg/kg	0.05	NONE	< 0.050	-
TPHCWG - Aliphatic >C10 - C12 EH_CU_1D_AL	mg/kg	1	MCERTS	< 1.0	-
TPHCWG - Aliphatic >C12 - C16 EH_CU_1D_AL	mg/kg	2	MCERTS	< 2.0	-
TPHCWG - Aliphatic >C16 - C21 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	-
TPHCWG - Aliphatic >C21 - C35 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	-
TPHCWG - Aliphatic >C5 - C35 EH_CU+HS_1D_AL	mg/kg	10	NONE	< 10	-
TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	NONE	< 0.010	-
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	NONE	< 0.010	-
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.05	NONE	< 0.050	-
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	< 1.0	-
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	< 2.0	-
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	< 10	-
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	< 10	-
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR	mg/kg	10	NONE	< 10	-
VOCs					
Chloromethane	µg/kg	5	ISO 17025	< 5.0	-
Chloroethane	µg/kg	5	NONE	< 5.0	-
Bromomethane	µg/kg	5	ISO 17025	< 5.0	-
Vinyl Chloride	µg/kg	5	NONE	< 5.0	-
Trichlorofluoromethane	µg/kg	5	NONE	< 5.0	-
1,1-Dichloroethene	µg/kg	5	NONE	< 5.0	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	5	NONE	< 5.0 ##	-
Trans 1,2-dichloroethylene	µg/kg	5	NONE	< 5.0	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	-
1,1-Dichloroethane	µg/kg	5	ISO 17025	< 5.0	-
2,2-Dichloropropane	µg/kg	5	NONE	< 5.0	-
Chloroform	µg/kg	5	ISO 17025	< 5.0	-
1,1,1-Trichloroethane	µg/kg	5	ISO 17025	< 5.0	-
1,2-Dichloroethane	µg/kg	5	ISO 17025	< 5.0	-
1,1-Dichloropropene	µg/kg	5	ISO 17025	< 5.0	-
Cis-1,2-dichloroethene	µg/kg	5	ISO 17025	< 5.0	-
Benzene	µg/kg	5	MCERTS	< 5.0	-
Carbontetrachloride	µg/kg	5	NONE	< 5.0	-
1,2-Dichloropropane	µg/kg	5	ISO 17025	< 5.0	-
Trichloroethene	µg/kg	5	ISO 17025	< 5.0	-
Dibromomethane	µg/kg	5	ISO 17025	< 5.0	-
Bromodichloromethane	µg/kg	5	ISO 17025	< 5.0	-
Cis-1,3-dichloropropene	µg/kg	5	ISO 17025	< 5.0	-
Trans-1,3-dichloropropene	µg/kg	5	ISO 17025	< 5.0	-
Toluene	µg/kg	5	MCERTS	< 5.0	-
1,1,2-Trichloroethane	µg/kg	5	ISO 17025	< 5.0	-
1,3-Dichloropropane	µg/kg	5	ISO 17025	< 5.0	-
Dibromochloromethane	µg/kg	5	ISO 17025	< 5.0	-
Tetrachloroethene	µg/kg	5	NONE	< 5.0	-
1,2-Dibromoethane	µg/kg	5	ISO 17025	< 5.0	-
Chlorobenzene	µg/kg	5	ISO 17025	< 5.0	-
1,1,1,2-Tetrachloroethane	µg/kg	5	ISO 17025	< 5.0	-
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	-

Sample Deviation Report

Analytical Report Number: 24-007176
Project / Site name: Wrexham Solar Farm
Your Order No: PO 24-0130

Lab Sample Number				136055	136056
Sample Reference				WS05	WS06
Sample Number				None Supplied	None Supplied
Depth (m)				0.40	0.40
Date Sampled				21/02/2024	21/02/2024
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
p & m-Xylene	µg/kg	5	MCERTS	< 5.0	-
Styrene	µg/kg	5	ISO 17025	< 5.0	-
Bromoform	µg/kg	5	NONE	< 5.0	-
o-Xylene	µg/kg	5	MCERTS	< 5.0	-
Isopropylbenzene	µg/kg	5	ISO 17025	< 5.0	-
1,1,2,2-Tetrachloroethane	µg/kg	5	NONE	< 5.0	-
Bromobenzene	µg/kg	5	NONE	< 5.0	-
n-Propylbenzene	µg/kg	5	ISO 17025	< 5.0	-
2-Chlorotoluene	µg/kg	5	ISO 17025	< 5.0	-
4-Chlorotoluene	µg/kg	5	ISO 17025	< 5.0	-
1,3,5-Trimethylbenzene	µg/kg	5	ISO 17025	< 5.0	-
tert-Butylbenzene	µg/kg	5	ISO 17025	< 5.0	-
1,2,4-Trimethylbenzene	µg/kg	5	ISO 17025	< 5.0	-
sec-Butylbenzene	µg/kg	5	ISO 17025	< 5.0	-
1,3-Dichlorobenzene	µg/kg	5	ISO 17025	< 5.0	-
p-Isopropyltoluene	µg/kg	5	ISO 17025	< 5.0	-
1,4-Dichlorobenzene	µg/kg	5	ISO 17025	< 5.0	-
1,2-Dichlorobenzene	µg/kg	5	ISO 17025	< 5.0	-
Butylbenzene	µg/kg	5	NONE	< 5.0	-
1,2-Dibromo-3-chloropropane	µg/kg	5	ISO 17025	< 5.0	-
1,2,4-Trichlorobenzene	µg/kg	5	ISO 17025	< 5.0	-
Hexachlorobutadiene	µg/kg	5	NONE	< 5.0	-
1,2,3-Trichlorobenzene	µg/kg	5	ISO 17025	< 5.0	-

SVOCs

Aniline	mg/kg	0.1	NONE	< 0.1	-
Phenol	mg/kg	0.2	ISO 17025	< 0.2	-
2-Chlorophenol	mg/kg	0.1	MCERTS	< 0.1	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	< 0.2	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	< 0.1	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	< 0.1	-
2-Methylphenol	mg/kg	0.3	MCERTS	< 0.3	-
Hexachloroethane	mg/kg	0.05	ISO 17025	< 0.05	-
Nitrobenzene	mg/kg	0.3	MCERTS	< 0.3	-
4-Methylphenol	mg/kg	0.2	NONE	< 0.2	-
Isophorone	mg/kg	0.2	MCERTS	< 0.2	-
2-Nitrophenol	mg/kg	0.3	NONE	< 0.3	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	< 0.3	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	< 0.3	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	< 0.3	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	< 0.3	-
4-Chloroaniline	mg/kg	0.1	NONE	< 0.1	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	< 0.1	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	< 0.1	-
2,4,6-Trichlorophenol	mg/kg	0.1	NONE	< 0.1	-
2,4,5-Trichlorophenol	mg/kg	0.2	NONE	< 0.2	-
2-Methylnaphthalene	mg/kg	0.1	NONE	< 0.1	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	< 0.1	-
Dimethylphthalate	mg/kg	0.1	MCERTS	< 0.1	-
2,6-Dinitrotoluene	mg/kg	0.1	NONE	< 0.1	-
2,4-Dinitrotoluene	mg/kg	0.2	NONE	< 0.2	-

Sample Deviation Report

Analytical Report Number: 24-007176
Project / Site name: Wrexham Solar Farm
Your Order No: PO 24-0130

Lab Sample Number				136055	136056
Sample Reference				WS05	WS06
Sample Number				None Supplied	None Supplied
Depth (m)				0.40	0.40
Date Sampled				21/02/2024	21/02/2024
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Dibenzofuran	mg/kg	0.2	MCERTS	< 0.2	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	MCERTS	< 0.3	-
Diethyl phthalate	mg/kg	0.2	MCERTS	< 0.2	-
4-Nitroaniline	mg/kg	0.2	NONE	< 0.2	-
Azobenzene	mg/kg	0.3	NONE	< 0.3	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	< 0.2	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	< 0.30	-
Carbazole	mg/kg	0.3	MCERTS	< 0.3	-
Dibutyl phthalate	mg/kg	0.2	NONE	< 0.2	-
Anthraquinone	mg/kg	0.3	NONE	< 0.3	-
Butyl benzyl phthalate	mg/kg	0.3	NONE	< 0.3	-

PCBs by GC-MS

PCB Congener 28	mg/kg	0.001	MCERTS	< 0.001	-
PCB Congener 52	mg/kg	0.001	MCERTS	< 0.001	-
PCB Congener 101	mg/kg	0.001	MCERTS	< 0.001	-
PCB Congener 118	mg/kg	0.001	MCERTS	< 0.001	-
PCB Congener 138	mg/kg	0.001	MCERTS	< 0.001	-
PCB Congener 153	mg/kg	0.001	MCERTS	< 0.001	-
PCB Congener 180	mg/kg	0.001	MCERTS	< 0.001	-

Total PCBs	mg/kg	0.007	MCERTS	< 0.007	-

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

Sample Deviation Report

Analytical Report Number : 24-007176
Project / Site name: Wrexham Solar Farm

* 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 *
136041	WS18	None Supplied	0.5	Brown clay with vegetation
136046	WS13	None Supplied	0.2	Brown clay and loam with vegetation
136047	WS14	None Supplied	0.6	Brown clay with vegetation
136048	WS15	None Supplied	0.6	Brown sand with vegetation
136049	WS08	None Supplied	0.4	Brown clay
136050	WS10	None Supplied	0.6	Brown sand with vegetation
136051	WS11	None Supplied	0.2	Brown clay and loam with vegetation
136052	WS02	None Supplied	0.6	Brown clay and sand
136053	WS03	None Supplied	0.4	Brown clay and sand
136054	WS04	None Supplied	0.4	Brown clay and sand
136055	WS05	None Supplied	0.4	Brown clay and sand
136056	WS06	None Supplied	0.4	Brown clay and sand with vegetation

Sample Deviation Report

Analytical Report Number : 24-007176
Project / Site name: Wrexham Solar Farm

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (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
Total organic carbon (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
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
PCB's By GC-MS in soil	Determination of PCB by extraction with hexane followed by GC-MS	In-house method based on USEPA 8082	L027B	D	MCERTS
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
Speciated EPA-16 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	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	W	MCERTS
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080	W	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080	W	MCERTS

Sample Deviation Report

Analytical Report Number : 24-007176
Project / Site name: Wrexham Solar Farm

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099	D	MCERTS

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.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

- Quality control parameter has a high recovery (outside of limit); however the associated result is below the reporting limit, other checks applied prior to reporting the data have been accepted. The result should be considered as being deviating and may be compromised

Sample Deviation Report

Analytical Report Number : 24-007176

Project / Site name: Wrexham Solar Farm

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis.Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
WS02	N/A	S	136052	c	Total cyanide in soil	L080	c
WS03	N/A	S	136053	c	BTEX and/or Volatile organic compounds in soil	L073B	c
WS03	N/A	S	136053	c	Total cyanide in soil	L080	c
WS04	N/A	S	136054	c	Total cyanide in soil	L080	c
WS05	N/A	S	136055	c	Total cyanide in soil	L080	c
WS06	N/A	S	136056	c	Total cyanide in soil	L080	c
WS08	N/A	S	136049	c	Total cyanide in soil	L080	c
WS10	N/A	S	136050	c	Total cyanide in soil	L080	c
WS11	N/A	S	136051	c	Total cyanide in soil	L080	c
WS13	N/A	S	136046	c	Total cyanide in soil	L080	c
WS14	N/A	S	136047	c	Total cyanide in soil	L080	c
WS15	N/A	S	136048	c	Total cyanide in soil	L080	c
WS18	N/A	S	136041	c	Total cyanide in soil	L080	c

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Analytical Report Number : 24-007179

Project / Site name:	Wrexham Solar Farm	Samples received on:	05/03/2024
Your job number:	GSI 2006	Samples instructed on/ Analysis started on:	05/03/2024
Your order number:	PO 24-0130	Analysis completed by:	13/03/2024
Report Issue Number:	1	Report issued on:	16/03/2024
Samples Analysed:	4 10:1 WAC samples		

Signed:

Joanna Szwagrzak
Reporting Specialist
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

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.

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Waste Acceptance Criteria Analytical Results

Report No:	24-007179						
					Client: GEOCON		
Location	Wrexham Solar Farm						
Lab Reference (Sample Number)	136057				Landfill Waste Acceptance Criteria Limits		
Sampling Date	22/02/2024				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	WS15						
Depth (m)	0.60						
Solid Waste Analysis							
TOC (%)**	1.5				3%	5%	6%
Loss on Ignition (%) **	3.5				--	--	10%
BTEX (µg/kg) **	< 5.0				6000	--	--
Sum of PCBs (mg/kg) **	< 0.007				1	--	--
Mineral Oil (mg/kg) EH_1D_CU_AL	< 10				500	--	--
Total PAH (WAC-17) (mg/kg)	< 0.85				100	--	--
pH (units)**	8.0				--	>6	--
Acid Neutralisation Capacity (mmol / kg)	1.1				--	To be evaluated	To be evaluated
Eluate Analysis (BS EN 12457 - 2 preparation utilising end over end leaching procedure)	10:1 mg/l			10:1 mg/kg	Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	< 0.00100			< 0.0100	0.5	2	25
Barium *	0.0198			0.198	20	100	300
Cadmium *	0.000394			0.00394	0.04	1	5
Chromium *	0.0022			0.022	0.5	10	70
Copper *	0.023			0.23	2	50	100
Mercury *	< 0.000500			< 0.00500	0.01	0.2	2
Molybdenum *	< 0.000400			< 0.00400	0.5	10	30
Nickel *	0.0036			0.036	0.4	10	40
Lead *	0.10			1.0	0.5	10	50
Antimony *	< 0.0017			< 0.017	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.041			0.41	4	50	200
Chloride *	0.44			4.4	800	15000	25000
Fluoride*	0.92			9.2	10	150	500
Sulphate *	1.2			12	1000	20000	50000
TDS*	17			170	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	18.8			188	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	1.5						
Dry Matter (%)	80						
Moisture (%)	20						

Results are expressed on a dry weight basis, after correction for moisture content where applicable.

*= UKAS accredited (liquid eluate analysis only)

Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation

** = MCERTS accredited

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3.
This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.

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Waste Acceptance Criteria Analytical Results

Report No:	24-007179						
					Client: GEOCON		
Location	Wrexham Solar Farm						
Lab Reference (Sample Number)	136058				Landfill Waste Acceptance Criteria Limits		
Sampling Date	22/02/2024				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	WS11						
Depth (m)	0.20						
Solid Waste Analysis							
TOC (%)**	3.1				3%	5%	6%
Loss on Ignition (%) **	6.6				--	--	10%
BTEX (µg/kg) **	< 5.0				6000	--	--
Sum of PCBs (mg/kg) **	< 0.007				1	--	--
Mineral Oil (mg/kg) EH_1D_CU_AL	< 10				500	--	--
Total PAH (WAC-17) (mg/kg)	< 0.85				100	--	--
pH (units)**	7.6				--	>6	--
Acid Neutralisation Capacity (mmol / kg)	0.42				--	To be evaluated	To be evaluated
Eluate Analysis (BS EN 12457 - 2 preparation utilising end over end leaching procedure)	10:1 mg/l			10:1 mg/kg	Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	0.00239			0.0239	0.5	2	25
Barium *	0.0155			0.155	20	100	300
Cadmium *	0.000395			0.00395	0.04	1	5
Chromium *	0.0019			0.019	0.5	10	70
Copper *	0.044			0.44	2	50	100
Mercury *	< 0.000500			< 0.00500	0.01	0.2	2
Molybdenum *	0.000533			0.00533	0.5	10	30
Nickel *	0.0030			0.030	0.4	10	40
Lead *	0.044			0.44	0.5	10	50
Antimony *	< 0.0017			< 0.017	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.020			0.20	4	50	200
Chloride *	0.92			9.2	800	15000	25000
Fluoride*	0.21			2.1	10	150	500
Sulphate *	3.2			32	1000	20000	50000
TDS*	28			280	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	23.1			231	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	1.2						
Dry Matter (%)	73						
Moisture (%)	27						

Results are expressed on a dry weight basis, after correction for moisture content where applicable. *= UKAS accredited (liquid eluate analysis only)

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Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3.
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Waste Acceptance Criteria Analytical Results

Report No:	24-007179						
					Client: GEOCON		
Location	Wrexham Solar Farm						
Lab Reference (Sample Number)	136059				Landfill Waste Acceptance Criteria Limits		
Sampling Date	24/02/2024				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	WS04						
Depth (m)	0.40						
Solid Waste Analysis							
TOC (%)**	0.5				3%	5%	6%
Loss on Ignition (%) **	2.7				--	--	10%
BTEX (µg/kg) **	< 5.0				6000	--	--
Sum of PCBs (mg/kg) **	< 0.007				1	--	--
Mineral Oil (mg/kg) EH_1D_CU_AL	< 10				500	--	--
Total PAH (WAC-17) (mg/kg)	< 0.85				100	--	--
pH (units)**	8.0				--	>6	--
Acid Neutralisation Capacity (mmol / kg)	2.3				--	To be evaluated	To be evaluated
Eluate Analysis (BS EN 12457 - 2 preparation utilising end over end leaching procedure)	10:1 mg/l			10:1 mg/kg	Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	0.00154			0.0154	0.5	2	25
Barium *	0.00221			0.0221	20	100	300
Cadmium *	< 0.000100			< 0.00100	0.04	1	5
Chromium *	< 0.00040			< 0.0040	0.5	10	70
Copper *	0.0020			0.020	2	50	100
Mercury *	< 0.000500			< 0.00500	0.01	0.2	2
Molybdenum *	< 0.000400			< 0.00400	0.5	10	30
Nickel *	< 0.00030			< 0.0030	0.4	10	40
Lead *	< 0.0010			< 0.010	0.5	10	50
Antimony *	< 0.0017			< 0.017	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.0026			0.026	4	50	200
Chloride *	15			150	800	15000	25000
Fluoride*	0.94			9.4	10	150	500
Sulphate *	3.4			34	1000	20000	50000
TDS*	22			220	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	21.2			212	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	0.9						
Dry Matter (%)	89						
Moisture (%)	11						

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Waste Acceptance Criteria Analytical Results

Report No:	24-007179						
					Client: GEOCON		
Location	Wrexham Solar Farm						
Lab Reference (Sample Number)	136060				Landfill Waste Acceptance Criteria Limits		
Sampling Date	21/02/2024				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	WS05						
Depth (m)	0.40						
Solid Waste Analysis							
TOC (%)**	1.1				3%	5%	6%
Loss on Ignition (%) **	2.7				--	--	10%
BTEX (µg/kg) **	< 5.0				6000	--	--
Sum of PCBs (mg/kg) **	< 0.007				1	--	--
Mineral Oil (mg/kg) EH_1D_CU_AL	12				500	--	--
Total PAH (WAC-17) (mg/kg)	< 0.85				100	--	--
pH (units)**	8.0				--	>6	--
Acid Neutralisation Capacity (mmol / kg)	3.6				--	To be evaluated	To be evaluated
Eluate Analysis (BS EN 12457 - 2 preparation utilising end over end leaching procedure)	10:1 mg/l			10:1 mg/kg	Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	< 0.00100			< 0.0100	0.5	2	25
Barium *	0.00657			0.0657	20	100	300
Cadmium *	< 0.000100			< 0.00100	0.04	1	5
Chromium *	< 0.00040			< 0.0040	0.5	10	70
Copper *	0.011			0.11	2	50	100
Mercury *	< 0.000500			< 0.00500	0.01	0.2	2
Molybdenum *	0.00122			0.0122	0.5	10	30
Nickel *	0.0016			0.016	0.4	10	40
Lead *	< 0.0010			< 0.010	0.5	10	50
Antimony *	< 0.0017			< 0.017	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.0092			0.092	4	50	200
Chloride *	45			450	800	15000	25000
Fluoride*	0.60			6.0	10	150	500
Sulphate *	1.2			12	1000	20000	50000
TDS*	45			450	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	22.7			227	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	0.8						
Dry Matter (%)	79						
Moisture (%)	21						

Results are expressed on a dry weight basis, after correction for moisture content where applicable. *= UKAS accredited (liquid eluate analysis only)

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Analytical Report Number : 24-007179
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* 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 *
136057	WS15	None Supplied	0.6	Brown sand with vegetation
136058	WS11	None Supplied	0.2	Brown clay and loam with vegetation
136059	WS04	None Supplied	0.4	Brown clay and sand
136060	WS05	None Supplied	0.4	Brown clay and sand

Analytical Report Number : 24-007179
Project / Site name: Wrexham Solar Farm

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
pH at 20°C in soil	Determination of pH in soil by addition of water followed by electrometric measurement	In-house method	L005B	W	MCERTS
Total organic carbon (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
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
PCB's By GC-MS in soil	Determination of PCB by extraction with hexane followed by GC-MS	In-house method based on USEPA 8082	L027B	D	MCERTS
Total dissolved solids 10:1 WAC	Determination of total dissolved solids in water by electrometric measurement	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L031B	W	ISO 17025
Fluoride 10:1 WAC	Determination of fluoride in leachate by 1:1ratio with a buffer solution followed by Ion Selective Electrode	In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination	L033B	W	ISO 17025
Dissolved organic carbon 10:1 WAC	Determination of dissolved organic carbon in leachate by TOC/DOC NDIR Analyser	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037B	W	NONE
Metals in leachate by ICP-OES	Determination of metals in leachate by acidification followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L039B	W	ISO 17025
Sample Preparation		In-house method	L043B	W	NONE
Acid neutralisation capacity of soil	Determination of acid neutralisation capacity by addition of acid or alkali followed by electronic probe	In-house method based on Guidance an Sampling and Testing of Wastes to Meet Landfill Waste Acceptance	L046B	W	NONE
Loss on ignition of soil @ 450°C	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	In-house method	L047	D	MCERTS
Speciated EPA-16 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 by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS	In-house method	L076B/L088	D/W	NONE
Monohydric phenols 10:1 WAC	Determination of phenols in leachate by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080	W	ISO 17025
Chloride 10:1 WAC	Determination of Chloride colorimetrically by discrete analyser	In-house based on MEWAM Method ISBN 0117516260	L082B	W	ISO 17025

Analytical Report Number : 24-007179
Project / Site name: Wrexham Solar Farm

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
WAC Leachate 10:1		In-house method	L043B	W	NONE

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.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

APPENDIX F

GEOTECHNICAL LABORATORY TESTING RESULTS

LABORATORY REPORT

Contract Number: PSL24/1902

Report Date: 22 March 2024

Client's Reference: GSI 2006

Client Name: Geocon Site Investigations Ltd
Geocon Suite, Arden House
Shipley Lane Industrial Estate
Hawk Green
Marple
SK6 7JW

For the attention of: Graham Boultbee/Liam Daley/Ian Walker/Matt Styles

Contract Title: Wrexham Solar Farm

Date Received: 14/3/2024
Date Commenced: 14/3/2024
Date Completed: 22/3/2024

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

A Watkins (Managing Director)
R Berriman (Associate Director)
S Royle (Laboratory Manager)

L Knight (Assistant Laboratory Manager)
S Eyre (Senior Technical Coordinator)
T Watkins (Senior Technician)

5 – 7 Hexthorpe Road,
Hexthorpe,
Doncaster,
DN4 0AR
Tel: 01302 768098
Email: rberriman@prosoils.co.uk
awatkins@prosoils.co.uk

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
WS02			1.00		Brown very gravelly very sandy CLAY.
WS03			1.90		Brown mottled grey sandy CLAY.
WS04			1.00		Brown mottled grey very sandy CLAY.
WS05			1.90		Brown mottled grey slightly gravelly sandy CLAY.
WS06			1.00		Brown sandy CLAY.
WS08			1.00		Brown sandy CLAY.
WS09			1.00		Brown sandy CLAY.
WS11			1.00		Brown slightly gravelly sandy CLAY.
WS13			1.90		Dark brown sandy CLAY.
WS14			1.00		Brown very sandy CLAY.
WS15			1.00		Brown very sandy CLAY.
WS18			1.00		Brown very sandy CLAY.

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

Wrexham Solar Farm

Contract No:
PSL24/1902
Client Ref:
GSI 2006

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
WS02			1.00		11			25	14	11	68	Low Plasticity CL
WS03			1.90		22			46	22	24	100	Intermediate Plasticity CI
WS04			1.00		15			23	14	9	96	Low Plasticity CL
WS05			1.90		32			39	19	20	98	Intermediate Plasticity CI
WS06			1.00		22			44	21	23	100	Intermediate Plasticity CI
WS08			1.00		20			43	21	22	100	Intermediate Plasticity CI
WS09			1.00		29			44	21	23	100	Intermediate Plasticity CI
WS11			1.00		20			35	18	17	98	Intermediate Plasticity CI
WS13			1.90		29			37	19	18	100	Intermediate Plasticity CI
WS14			1.00		26			31	17	14	100	Low Plasticity CL
WS15			1.00		24			29	17	12	100	Low Plasticity CL
WS18			1.00		23			25	14	11	99	Low Plasticity CL

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

Wrexham Solar Farm

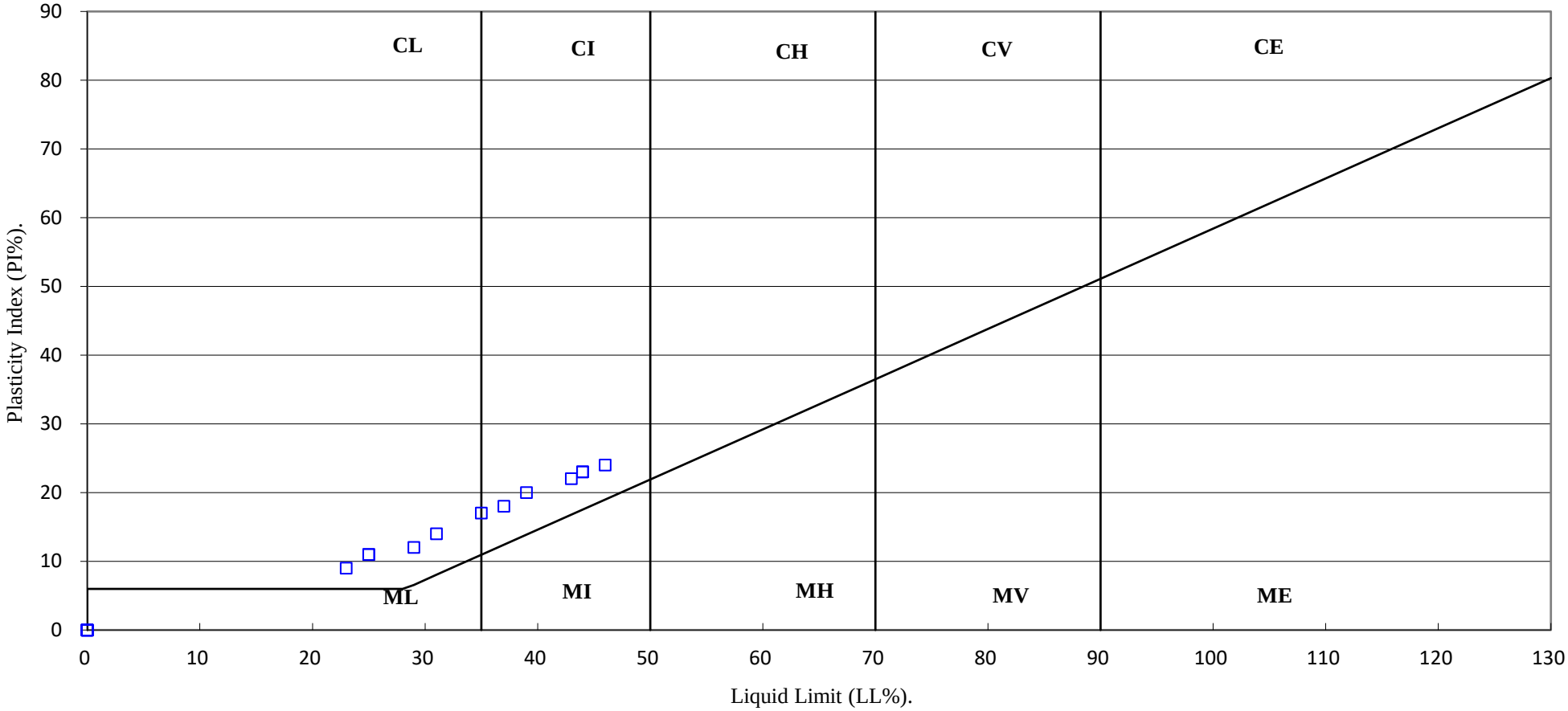
Contract No:

PSL24/1902

Client Ref:

GSI 2006

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**Wrexham Solar Farm**	**Contract No:**
		PSL24/1902
		Client Ref:
		GSI 2006

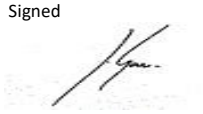
7 - 11 Harding Street
Leicester
LE1 4DH

Professional Soils Laboratory
5/7 Hexthorpe Road
Hexthorpe
Doncaster
DN4 0AR

Analytical Test Report: L24/02358/PSL - 24-42988

Your Project Reference:	**PSL24/1902 Wrexham Solar Farm**		
Your Order Number:	PSL24/1902	Samples Received / Instructed:	18/03/2024 / 18/03/2024
Report Issue Number:	1	Sample Tested:	18/03 to 22/03/2024
Samples Analysed:	12 soil samples	Report issued:	22/03/2024

Signed



James Gane
Analytical Services Manager
CTS Group

Notes:

General

Please refer to Methodologies page for details pertaining to the analytical methods undertaken.

Samples will be retained for 14 days after issue of this report unless otherwise requested.

Moisture Content was determined in accordance with CTS method statement MS - CL - Sample Prep, oven dried at <30˚C.

Moisture Content is reported as a percentage of the dry mass of soil, this calculation is in accordance with BS1377, Part 2, 1990, Clause 3.2

Where specification limits are included these are for guidance only. Where a measured value has been highlighted this is not implying acceptance or failure and certainty of measurement values have not been taken into account.

Uncertainty of measurement values are available on request.

Samples were supplied by customer, results apply to the samples as received.

Deviating Samples

On receipt samples are compared against our sample holding and handling protocols, where any deviations have been noted these are reported on our deviating sample page (if present)

Accreditation Key

UKAS = UKAS Accreditation, MCERTS = MCERTS Accreditation, u = Unaccredited, subUKAS - Subcontracted to a laboratory UKAS accredited for this test

MCERTS Accreditation only covers the SAND, CLAY and LOAM matrices

Date of Issue: 18.03.2024

Issued by: J. Gane

Issue No: 4

Rev No: 6

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L24/02358/PSL - 24-42988

Project Reference - PSL24/1902 Wrexham Solar Farm

Analytical Test Results - Chemical Analysis

Lab Reference			347442	347443	347444	347445	347446	347447
Client Sample ID			-	-	-	-	-	-
Client Sample Location			WS01	WS03	WS04	WS05	WS06	WS07
Client Sample Type			-	-	-	-	-	-
Client Sample Number			-	-	-	-	-	-
Depth - Top (m)			0.80	1.00	1.90	1.00	1.90	1.00
Depth - Bottom (m)			0.80	1.00	1.90	1.00	1.90	1.00
Date of Sampling			-	-	-	-	-	-
Time of Sampling			-	-	-	-	-	-
Sample Matrix			Clay	Clay	Clay	Clay	Clay	Clay
Determinant	**Units**	**Accreditation**						
Water soluble sulphate (as SO_4)	(mg/l)	u	19	38	31	64	56	55
Acid Soluble Sulphate	(%)	u	0.02	0.01	0.02	0.02	0.02	0.02
Total Sulphur	(%)	UKAS	0.01	< 0.01	0.01	0.01	0.01	0.01
pH Value	pH Units	MCERTS	8.4	8.5	8.4	8.4	8.5	8.3

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L24/02358/PSL - 24-42988

Project Reference - PSL24/1902 Wrexham Solar Farm

Analytical Test Results - Chemical Analysis

Lab Reference			347448	347449	347450	347451	347452	347453
Client Sample ID			-	-	-	-	-	-
Client Sample Location			WS08	WS10	WS12	WS13	WS14	WS17
Client Sample Type			-	-	-	-	-	-
Client Sample Number			-	-	-	-	-	-
Depth - Top (m)			1.90	1.00	1.00	1.00	1.90	1.00
Depth - Bottom (m)			1.90	1.00	1.00	1.00	1.90	1.00
Date of Sampling			-	-	-	-	-	-
Time of Sampling			-	-	-	-	-	-
Sample Matrix			Clay	Clay	Clay	Clay	Clay	Clay
Determinant	**Units**	**Accreditation**						
Water soluble sulphate (as SO_4)	(mg/l)	u	39	20	11	100	12	30
Acid Soluble Sulphate	(%)	u	0.02	0.03	0.02	0.04	< 0.01	0.04
Total Sulphur	(%)	UKAS	0.02	0.01	0.02	0.08	0.01	0.02
pH Value	pH Units	MCERTS	8.6	7.5	7.7	6.5	7.5	7.3

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L24/02358/PSL - 24-42988

Project Reference - PSL24/1902 Wrexham Solar Farm

Sample Descriptions

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Description	Moisture Content (%)	Stone Content (%)	Passing 2mm test sieve (%)
347442	-	WS01	-	-	Brown silty clay with rare organic matter	-	-	100
347443	-	WS03	-	-	Greyish brown slightly gravelly silty clay with rare organic matter	-	-	100
347444	-	WS04	-	-	Greyish brown silty clay with rare organic matter	-	-	100
347445	-	WS05	-	-	Brown silty clay with rare organic matter	-	-	100
347446	-	WS06	-	-	Greyish brown silty clay	-	-	100
347447	-	WS07	-	-	Greyish brown silty clay	-	-	100
347448	-	WS08	-	-	Brown silty clay with rare organic matter	-	-	100
347449	-	WS10	-	-	Brown silty clay with rare organic matter	-	-	100
347450	-	WS12	-	-	Brown slightly sandy silty clay	-	-	100
347451	-	WS13	-	-	Greyish brown slightly sandy silty clay	-	-	100
347452	-	WS14	-	-	Brown sandy silty clay	-	-	100
347453	-	WS17	-	-	Brown slightly sandy silty clay	-	-	100

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L24/02358/PSL - 24-42988

Project Reference - PSL24/1902 Wrexham Solar Farm

Sample Comments

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Comments
347442	-	WS01	-	-	
347443	-	WS03	-	-	
347444	-	WS04	-	-	
347445	-	WS05	-	-	
347446	-	WS06	-	-	
347447	-	WS07	-	-	
347448	-	WS08	-	-	
347449	-	WS10	-	-	
347450	-	WS12	-	-	
347451	-	WS13	-	-	
347452	-	WS14	-	-	
347453	-	WS17	-	-	

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Project Reference - PSL24/1902 Wrexham Solar Farm

Analysis Methodologies

Test Code	Test Name / Reference	Sample condition for analysis	Sample Preperation	Test Details
ANIONSS	MS - CL - Anions by Aquakem (2:1Extract)	Oven dried	Passing 2mm test sieve	Determination of Anions (inc Sulphate, chloride etc.) in soils by Aquakem. Analysis is based on a 2:1 water to soil extraction ratio
PHS	MS - CL - pH in Soils	As received	Passing 10mm test sieve	Determination of pH in soils using a pH probe (using a 1:3 soil to water extraction)
ASSO4S	MS - CL - Acid Soluble Sulphate	Oven Dried	Passing 2mm test sieve	Determination of total sulphate in soils by acid extraction followed by ICP analysis
SAMPLEPREP	MS - CL - Sample Preparation	-	-	Preparation of samples (including determination of moisture content) to allow for subsequent analysis
1377TS-ELT	BS1377 Total Sulphur Content by HTC	Oven dried	BS1377 : Part 1 : 2016	Total Sulphur Content testing of Soil in accordance with BS 1377 : Part 3 : 2018 + A1 : 2021 Clause 7.10 (using Eltra CS-800 Analyser)

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Project Reference - PSL24/1902 Wrexham Solar Farm

Sample Deviations

Deviations are listed below against each sample and associated test method, where deviation(s) are noted it means data may not be representative of the sample at the time of sampling and it is possible that results provided may be compromised.

Observations on receipt

A - No date of sampling provided
C - Received in inappropriate container
H - Contains headspace
T - Temperature on receipt exceeds storage temperature
R - Sample(s) received with less than 96 hours for testing to commence/complete, any result formally classed as deviating will be marked with an X against the applicable test (i.e. RX)

Observations whilst in laboratory

X - Exceeds sampling to extraction or analysis timescales

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Test	Deviations
347442	-	WS01	-	-		A
347443	-	WS03	-	-		A
347444	-	WS04	-	-		A
347445	-	WS05	-	-		A
347446	-	WS06	-	-		A
347447	-	WS07	-	-		A
347448	-	WS08	-	-		A
347449	-	WS10	-	-		A
347450	-	WS12	-	-		A
347451	-	WS13	-	-		A
347452	-	WS14	-	-		A
347453	-	WS17	-	-		A