Proposed Wrexham Solar Farm: Land Northeast of Maelor Works, Wrexham

Updated Controlled Waters Risk Assessment

For: Cefn Park Solar Ltd.

Date: March 2026

Report Ref: R3585-R01-v3

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PROPOSED WREXHAM SOLAR FARM: LAND NORTHEAST OF MAELOR WORKS, WREXHAM

UPDATED CONTROLLED WATERS RISK ASSESSMENT

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1 Introduction

1.1 General

1.1.1 Planning Permission (ref. P/2021/0676) was granted in 2022 by Wrexham County Borough Council (WCBC) for the construction of a proposed Solar Farm and Battery Storage Facility on land located to the Northeast of Maelor Works in Wrexham.

1.1.2 As part of the Consent, Conditions 7-9 which relate to Contaminated Land were placed, these are as follows:

Condition 7	No development shall commence until the following components of a scheme to deal with the risks associated with contamination at the site, has been submitted to and approved in writing by the Local Planning Authority
7.1	A preliminary risk assessment which has identified: • all previous uses • potential contaminants associated with those uses • a conceptual model of the site indicating sources, pathways and receptors • potentially unacceptable risks arising from contamination at the site
7.2	A site investigation scheme, based on (1) to provide information for a detailed assessment of the risk to all receptors that may be affected, including those off site.
7.3	The results of the site investigation and the detailed risk assessment referred to in (2) and, based on these, an options appraisal and remediation strategy giving full details of the remediation measures required and how they are to be undertaken.
7.4	A verification plan providing details of the data that will be collected in order to demonstrate that the works set out in the remediation strategy in (3) are complete and identifying any requirements for longer-term monitoring of pollutant linkages, maintenance and arrangements for contingency action. The remediation strategy and its relevant components shall be carried out in accordance with the approved details.
Condition 8	Prior to the operation of the development a verification report demonstrating completion of works set out in the approved remediation strategy and the effectiveness of the remediation shall be submitted to and approved in writing by the Local Planning Authority. The report shall include results of sampling and monitoring carried out in accordance with the approved verification plan to demonstrate that the site remediation criteria have been met. It shall also include a long-term monitoring and maintenance plan for longer-term monitoring of pollutant linkages, maintenance and arrangements for contingency action, as identified in the verification plan. The long-term monitoring and maintenance plan shall be carried out in accordance with the approved details.
Condition 9	If, during development, contamination not previously identified is found to be present at the site then no further development (unless otherwise agreed in writing with the Local Planning Authority) shall be carried out until a remediation strategy detailing how this unsuspected contamination shall be dealt with has been submitted to and approved in writing by the Local Planning Authority. The remediation strategy shall be carried out as approved.

1.1.3 These are considered as standard worded conditions relating to the phased assessment of contamination land as per Land Contamination Risk Management (LCRM)[1] guidance as well as a standard condition relating to unexpected contamination.

1.2 Reports and Regulatory Consultation

Phase I Desk Study

1.2.1 Upon Consent being granted, a Phase I Desk Study was produced by Geocon (ref. GSI 2006 MP PI Report V1) in **December 2023** to satisfy **Condition 7.1 (Preliminary Risk Assessment)** and which duly recommended a Phase II Site Investigation.

Phase II Site Investigation

1.2.2 A Phase II Site Investigation was then completed by Geocon (ref. GSI 2006 EW PII Report) in **April 2024** to satisfy **Condition 7.2 (Site Investigation).** Correspondence from WCBC's Contaminated Land Officer under application to discharge Condition 7 (ref. P/2024/1151) confirmed that the reports are sufficient to satisfy Condition 7 from a risk to human health perspective, but that Natural Resources Wales (NRW) are also being consulted regarding risks to controlled waters.

1.2.3 A response was received from NRW in **September 2024** following review of the Phase I and II Reports. The comments suggest approval of the Phase I (and therefore discharge of Condition 7.1). Commentary was made regarding the limited rationale presented as to why no groundwater sampling was undertaken, with NRW considering that assessment of groundwater quality should have been undertaken given they consider the Site to be of high sensitivity with regards to the underlying aquifers, location within a Source Protection Zone (SPZ) II and III and proximity to a surface watercourse.

1.2.4 Following this response, Geocon produced a Phase II Report Addendum letter in **February 2025** to satisfy the comments made by NRW. This was ultimately discounted by NRW in correspondence from **March 2025** who maintained that Condition 7 could not be recommended for discharge until a meaningful controlled waters risk assessment (CWRA) with sampling of surface and groundwater was undertaken.

Phase II Supplementary Site Investigation

1.2.5 Geocon then carried out a Supplementary Phase II Site Investigation (ref. GSI 2006 DE PII Report V1) in **August 2025** which included the sampling of groundwater and surface water. The Conceptual Site Model concluded a Very Low Risk to all identified receptors including controlled waters.

[1] Environment Agency. Land Contamination Risk Management (LCRM). Published 8 October 2020, updated 12 June 2025.

1.2.6 NRW provided a response (ref. CAS-286427-T0Y0) on this supplementary investigation in **September 2025** and again failed to recommend Discharge of Condition 7 on the basis that further information is still required.

Updated Phase II Supplementary Site Investigation

1.2.7 Geocon then updated this Supplementary Phase II Report into an 'Additional Phase II Site Investigation and Controlled Waters Risk Assessment' (ref. GSI 2006 IW P-II Report V2 ASI) in **November 2025**. NRW duly responded (ref. CAS-294351-P7Q8) in December 2025 confirming they were satisfied regarding their initial concern regarding munition residues being present. Due to the presence of elevated lead within sampled groundwater, however, further risk assessment was considered necessary by NRW with suggestions that any further assessment could include:

- Risks posed by piling works, access tracks, laying of underground cables etc.
- Their potential to mobilise higher levels of contaminants.
- Control measures to reduce and mitigate any impacts.
- The degree to which the most elevated lead concentrations (e.g. DS05, DS08 and DS09) are representative of 'point sources' for lead. The site characterisation data provided to date does not suggest that the concentrations are solely due to made ground, as made ground is only present in a few locations.
- Whether there is a need for certain areas of the proposed solar farm to be excluded from development (or areas that are already excluded such as around DS08) because of the presence of dissolved lead and potentially other metals/Polycyclic Aromatic Hydrocarbons (PAHs). We note that the land parcel to the northwest has no DS wells installed within it so the degree to which elevated dissolved lead concentrations exist in this area is not currently known.
- The degree to which a geophysical survey could identify any shallow buried point sources of lead across the development site (and the degree to which this could inform the above points).
- Monitoring of ground and surface waters in sensitive areas or close to specific higher risk work areas (including key trigger levels and actions to be taken if contaminants are shown to be mobilising).

Latest NRW Response

1.2.8 A final response was provided by Geocon in **January 2026** which presented information that piling and excavation operations as part of the solar farm development works would not result in the remobilisation of lead within the Site soils. NRW responded in **February 2026** to confirm this still does not provide sufficient detail in relation to the matters already raised and further suggested that a proportionate site investigation to assess the vertical soil profile of lead and relevant geochemical parameters is required. Advice on the minimum site investigation works they would expect were provided as follows:

- 3–5 targeted locations in total focused on:

  - The wells with highest dissolved lead (DS05, DS08, DS09)
  - Two locations hydraulically up-gradient (for contrast)
  - At least one location near the watercourse
- One borehole per location, sampled at:
  - ~0.5 m bgl (existing soil zone – control)
  - ~1.2–1.5 m bgl (upper fluctuation / trench interface)
  - ~1.8–2.2 m bgl (pile tip / redox transition)
- samples per borehole
- 9–15 soil samples total
- As a minimum, the assessment could consist of the following parameters:
  - Lead (total and leachable)
  - Iron, manganese
  - Sulphur/sulphate
  - pH
  - Organic carbon (or LOI)
  - Field pH, redox, dissolved oxygen
  - Dissolved Fe/Mn
  - Dissolved lead

1.3 Scope and Objectives of the Report

1.3.1 Cefn Park Solar now requires these outstanding matters regarding Condition 7 to be addressed as a matter of urgency as this is resulting in a significant delay in the commencement of construction works.

1.3.2 Smith Grant LLP (SGP) has been instructed to review the current response and to produce a revised Controlled Waters Risk Assessment to satisfy NRW with regards to the outstanding concerns which relate to lead only.

1.3.3 NRW requested further soil, groundwater, and surface water testing as detailed in 1.2.8 above. SGP carried out these intrusive works to satisfy NRW's requirements. The assessment methodology follows the framework described in the Environment Agency (EA) Land Contamination Risk Management (LCRM) and has been prepared with reference to the Planning Practice Guidance provided in relation to land affected by contamination.

1.3.4 To provide an evaluation of the ground conditions and the extent of any potential soil contamination present on site, the assessment methodology was carried out in accordance with BS5930:2015 +A1:2020 and BS 10175:2011 +A2:2017. This report contains a qualitative and quantitative contamination risk assessment regarding lead and the proposed development.

2 Existing Information

2.1 Development Proposals

2.1.1 Development proposals under the Planning Consent are for the construction of a Solar Farm and Battery Storage Facility across agricultural fields. The fields have been labelled as Field 1 (split into 1A, 1B and 1C) which relate to the eastern parcel and Field 2 which relates to the western parcel. The proposed development layout is appended to this report (ref. WR-EX-258-06-1 Rev N).

2.1.2 Solar arrays will occupy all the parcels whilst the Battery Storage Facility will be located in the north of Field 1C. The solar arrays will be constructed with piled foundations which will be constructed from stainless steel and will be driven to depths of 2.05m bgl.

2.1.3 A series of cable routes will also form part of the development, connecting to the solar arrays to the Battery Storage and ultimately to a transformer. The depth of trenching excavations associated with the cable routes will be to a maximum depth of 1.5m bgl.

2.2 Site History and Setting

2.2.1 Pertinent information provided within the Phase I Desk Study has been summarised within this section relating to controlled waters and potential lead contamination.

Site History

2.2.2 Earliest historical mapping (1879) shows the Site to be agricultural fields located to the immediate south of the River Clywedog until mapping from 1954 shows the Site to form part of the external extents of Wrexham Trading Estate with several buildings located in Fields 1B and 1C. These buildings remain to the present day.

2.2.3 Whilst not shown in OS mapping for reasons of national security, Wrexham Industrial Estate was formerly occupied by the Wrexham Royal Ordnance Factory (ROF) which was constructed from 1939 and became operational in 1941. GeoCon obtained a historical aerial image from 1945 which shows the location of the Site in the context of the ROF with the Site located on the external periphery (see Figure 2.1).

2.2.4 The ROF manufactured cordite, a composition of nitro-glycerine to make the product ‘flashless’. Operations at the ROF were limited and ceased in 1945, following which period the Site became utilised as the Wrexham Industrial Estate.

2.2.5 By 1961 a ‘Works’ had been constructed to the south, which was the offices for Wales Gas Board, later becoming British Gas.

2.2.6 A solar farm (Pickhill Solar Farm) has been constructed to the immediate south of Parcel 2 by 2023

Figure 2.1 Extract Historical Aerial Imagery from Geocon Phase I Report



Red circle shows approximate location of Site

Mapped Geology & Aquifer Designation

2.2.7 A summary of the British Geological Survey (BGS) mapped geology and aquifer designations for each geological unit is presented below:

Table 2.1 Summary of mapped geology deposits and aquifer designation

Field	Superficial Geology	Superficial Aquifer	Bedrock Geology	Bedrock Aquifer
Field 1A	Alluvium	Secondary A	Kinnerton Sandstone	Principal
Field 1B	Till	Secondary Undifferentiated		
	River Terrace Deposits	Secondary A		
Field 1C	Till	Secondary Undifferentiated		
Field 2	Alluvium	Secondary A		

Hydrology

2.2.8 The nearest surface watercourse to the Site is the River Clywedog, located adjacent to the northern boundary, the river flows in an easterly direction.

2.2.9 It is expected that groundwater within the Alluvial and River Terrace Deposits are likely to be in hydraulic continuity with the river. Hydraulic continuity between the groundwater within the horizons of sand and/or gravel of the Till is less likely to be in hydraulic continuity with the river will ultimately be dependent on the lateral extent of such granular horizons. It is also assumed that the superficial aquifer is also in hydraulic continuity within the underlying principal bedrock aquifer.

2.2.10 The Envirocheck Flood Maps shows that the northern extents of the site, closest to the watercourse have a low to medium risk of flooding from surface water.

Abstractions

2.2.11 The Site is located within the Outer Zone (Zone 2) of a Groundwater Source Protection Zone (SPZ).

2.2.12 According to the Envirocheck Report there are twelve licensed groundwater abstraction points within 1km of the Site, of which only one is located within 250m of the Site. This is at 234m to the northeast for the abstraction of groundwater by Calypso Soft Drinks Ltd. For food and drink process water. The abstraction is from a depth of 144m and hence is expected to be from the bedrock principal aquifer.

2.2.13 Geocon report that nearest public drinking water abstraction is located at 1,897m to the south.

2.3 Previous Site Investigations & Coverage

2.3.1 Several phases of Site Investigations have been undertaken by Geocon across the Site. To provide a thorough risk assessment these should be considered in totality rather than individually.

2.3.2 A summary of the number of site investigation entries within each phase of investigation, along with number of soil and groundwater samples has been tabulated below.

Table 2.2 Summary of number of site investigation entries and soil/water samples for lead analysis

No of Boreholes	No of Soil Samples (Lead)	No of GW Samples (Lead)	No of SW Samples (Lead)
Geocon - Phase II Site Investigation (April 2024)			
18 (WS01 – WS18)	12	-	-
Geocon – Supplementary Phase II Site Investigation (August 2025)			
9 (DS01 – DS09)	8	4	2
Geocon Additional Phase II Site Investigation and Controlled Waters Risk Assessment (November 2025)			
-	-	8	2
27	**20**	**12**	**4**

Bold figures confirm total numbers from all 3 rounds of site work

2.3.3 A total of 27 boreholes has been drilled across the Site to provide very good spatial coverage. All borehole locations have been overlaid on the proposed development layout plan and can be seen in Drawing D02.

2.3.4 In general, the spatial coverage achieved is as follows:

- Field 1A: 5 entries
- Field 1B: 6 entries
- Field 1C: 7 entries

- Field 2: 5 entries
- Access Road/Track: 4 entries

2.3.5 The Site investigations comprised a mix of targeted and non-targeted entries across the Site. Targeted entries (DS02, DS03, DS04, DS07 and DS08) were located close to the existing buildings where it is reasonable to assume that deposits of made ground may be present (although significantly deep deposits or other potential contaminant sources were not previously identified). All other entries were non-targeted and provide good spatial coverage across the development area of the Site where the solar array, trenches and access roads are proposed.

2.4 Soil Analysis: Lead

2.4.1 A total of 20 soil samples were collected and submitted for lead analysis. Geocon compared these concentrations to the Suitable For Use Levels (S4ULs) of commercial land use which is considered applicable based on the intended use of the Site.

2.4.2 It is important to acknowledge that the BGS Estimated Soil Chemistry Values for background concentrations of lead, as reported in the Envirocheck Report accompanying the Phase 1 Desk Study, is 100-200 mg/kg. Normal Background Concentrations (NBCs) have been published by The Natural Environment Research Council (NORA) in their 'Technical Guidance on Normal Levels of Contaminants in Welsh Soils'[2] report. According to Figure 3 – Lead Domain Map, the Site is anticipated to be located within the 'Principal Domain' where the NBC for lead is 230 mg/kg. In comparison, the NBC of lead in Urban soils in Wales is 890 mg/kg (Urban 1) to 1,300 mg/kg (Urban 2).

2.4.3 A summary of all the lead concentrations reported are tabulated below and are cross-referenced with sample depth and corresponding strata. Concentrations which exceed the NBC value of 230 mg/kg are highlighted below. Lead concentrations in soil are also presented within Drawing D02.

Table 2.3 Summary of lead in soil concentrations

Lab Ref	Sample	Depth (m bgl)	Strata	Lead Concentration (mg/kg)
Geocon - Phase II Site Investigation (April 2024)				
24-007176	WS02	0.6	sandy gravelly CLAY	24
	WS03	0.4	sandy gravelly CLAY	19
	WS04	0.4	sandy gravelly CLAY	24
	WS05	0.4	sandy gravelly CLAY	15
	WS06	0.4	sandy gravelly CLAY	26
	WS08	0.4	sandy gravelly CLAY	55
	WS10	**0.6**	**sandy gravelly CLAY**	**520**
	WS11	**0.2**	**TOPSOIL**	**610**
	WS13	**0.2**	**TOPSOIL**	**1,000**

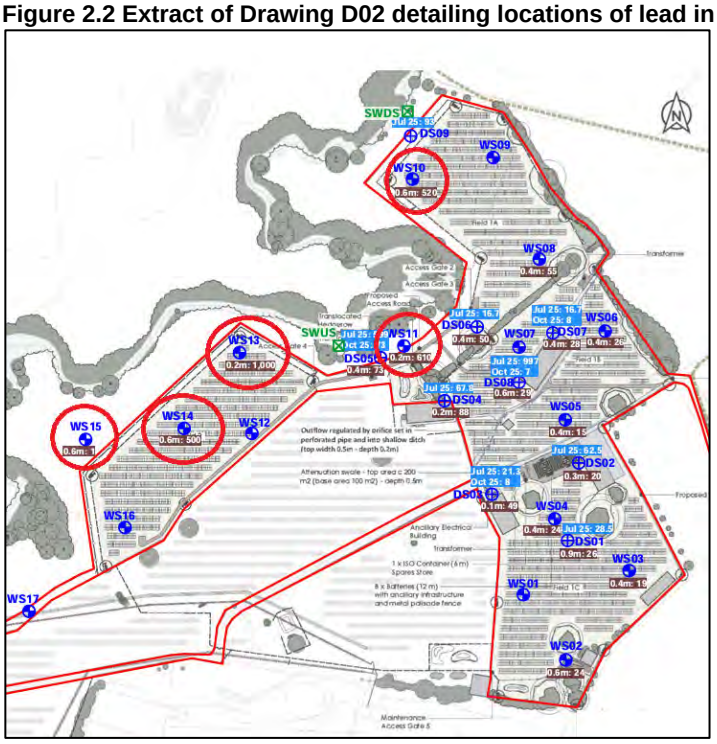
[2] BGS. Technical Guidance on Normal Levels of Contaminants in Welsh Soils: Lead (Pb). January 2013.

Lab Ref	Sample	Depth (m bgl)	Strata	Lead Concentration (mg/kg)
	WS14	**0.6**	**sandy gravelly CLAY**	**500**
	WS15	**0.6**	**sandy gravelly CLAY**	**630**
	WS18	0.5	sandy gravelly CLAY	210
Geocon – Supplementary Phase II Site Investigation (August 2025)				
25/07533	DS01	0.9	sandy gravelly CLAY	26
	DS02	0.3	fine to medium SAND	20
	DS03	0.1	MADE GROUND	49
	DS04	0.2	sandy gravelly CLAY	88
	DS05	0.4	sandy gravelly CLAY	73
	DS06	0.4	sandy gravelly CLAY	50
	DS07	0.4	sandy gravelly CLAY	28
	DS08	0.6	MADE GROUND	29

2.4.4 Five of the samples were above the NBC value of 230 mg/kg with concentrations ranging from 520-1,000 mg/kg. These elevated concentrations were present within both topsoil samples collected from 0.2m bgl and superficial deposits at 0.6m bgl.

2.4.5 To assess these elevated concentrations spatially across the Site, those locations where concentrations were above 230 mg/kg have been highlighted (red circle) on an extract of Drawing D02 below.

Figure 2.2 Extract of Drawing D02 detailing locations of lead in sampled soils reported >230 mg/kg



2.4.6 All locations where concentrations are above the NBC are in the north of the Site adjacent to the watercourse. No elevated concentrations were reported within the samples of made ground.

Potential Lead Sources

2.4.7 Geocon considered in their letter of January 2026 that elevated lead is likely to be from off-site sources (within the industrial estate to the north) with acceptance there may be localised point sources on Site which do not exceed the soil screening criteria for commercial end use.

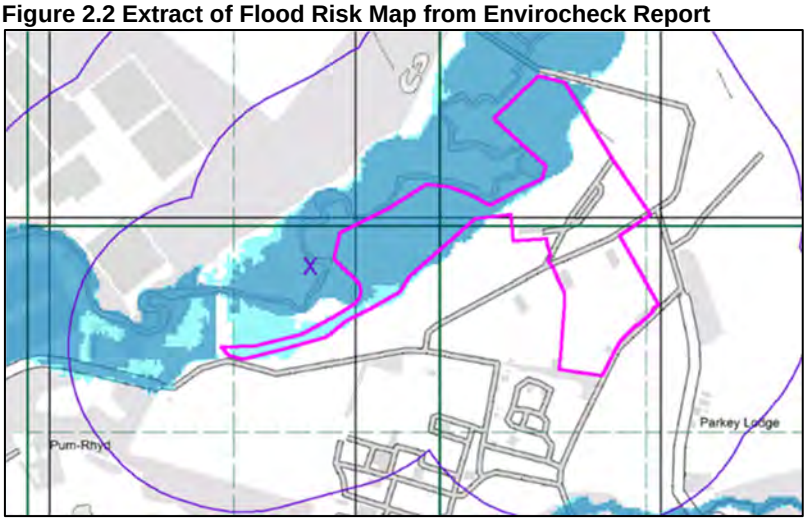
2.4.8 SGP disagree with this conclusion following a review of the dataset in the sections above and our experience on carrying out multiple site investigations on Wrexham Industrial Estate located to the north. Previous investigations by SGP on the industrial estate has not encountered elevated lead other than due to the presence of made ground soils.

2.4.9 No spoil heaps or similar sources where aeolian deposits could occur have been identified within the historical mapping. Similarly, if an off-site source of lead was present and aerial deposition onto site soils had occurred, it would not be expected that elevated concentrations would be present at depth (as has been recorded at 0.6m bgl).

2.4.10 All elevated concentrations are within entries immediately adjacent to the River Clywedog, a river which flows through the areas of Minera and Coedpoeth located to the west of Wrexham. Both areas have a long-standing history of lead mining and where significant spoil heaps and widespread soils containing significantly elevated lead are present.

2.4.11 It is therefore considered that the likely source of elevated lead in site soils is associated with deposition of lead rich sediments from upgradient sources that have been transported and likely deposited within the shallow soils adjacent to the watercourse during periods of flood over many centuries. There is no evidence to suggest point sources of lead nor elevated lead concentrations exist over the majority of the Site.

Figure 2.2 Extract of Flood Risk Map from Envirocheck Report



2.5 Groundwater Analysis: Lead

2.5.1 Geocon have collected 12 groundwater samples from 9 boreholes (DS01-DS09) and submitted for dissolved lead. Monitoring included two sampling rounds (July and October 2025) in boreholes DS03, DS05, DS07 and DS08. Boreholes were purged prior to sampling, and it was noted that recharge rate of the wells was slow. Sampling was conducted using a bailer.

2.5.2 Geocon refer to two screening values for lead, a drinking water standard of 10 µg/l and an Environmental Quality Standard of 20 µg/l. The drinking water standard is not considered applicable given the absence of any drinking water abstractions and so the EQS has been adopted. It is, however noted that guidance on Freshwater Priority Hazardous Substances, priority substances and other pollutant Environmental Quality Standards, refer to an EQS of 14 µg/l based on Maximum Allowable Concentrations (MAC) Environmental Quality Standards (EQS) and so this value has been adopted in this assessment. Concentrations which exceed the MAC-EQS are in bold below.

Table 2.3 Summary of lead in soil concentrations

Lab Ref	Sample	Lead Concentration (µg/l)
Geocon – Supplementary Phase II Site Investigation (August 2025)		
25-08015	DS03	8
	DS05	**73**
	DS07	8
	DS08	7
Geocon - Additional Phase II Site Investigation and Controlled Waters Risk Assessment (November 2025		
25/11858	DS01	**28.5**
	DS02	**62.5**
	DS03	**21.3**
	DS04	**67.8**
	DS05	**599**
	DS07	**16.7**
	DS08	**997**
	DS09	**93**

2.5.3 Elevated lead above the MAC-EQS within the groundwater was recorded within all monitored boreholes during the November round of monitoring.

2.5.4 There is a notable comparison between the chemical test results obtained from groundwater sampled during August (Summer) compared to those sampled in November (Autumn/Winter):

- DS03: 8 µg/l -> 21.3 µg/l
- DS05: 73 µg/l -> 599 µg/l
- DS07: 8 µg/l -> 16.7 µg/l
- DS08: 7 µg/l -> 977 µg/l

2.5.5 These results would suggest that the influence in which precipitation has on the lead concentrations within the groundwater, most likely a result of impact from the locality on groundwater rather than direct influence from the Site.

2.5.6 Existing guidance[3] states that "*lead in land is not very mobile and the rate of leaching into groundwater is typically very slow*". This would further suggest that the increase in lead concentrations in the groundwater during the winter months is unlikely to be associated with an increase in leaching rates of site soils, particularly as the extent of elevated lead in soils is limited to a relatively small area of the Site (adjacent to watercourse).

2.6 Surface Water Analysis: Lead

2.6.1 Geocon have conducted two rounds of surface water monitoring, completed concurrently with each round of groundwater sampling. Sampling was completed at upstream (US) and downstream (DS) locations along the River Clywedog. The locations of surface water sampling are shown in Drawing D02. It is noted that US is located adjacent to borehole DS05 whilst DS is located adjacent to DS09 which allows a useful comparison between groundwater and surface water concentrations at the same time.

2.6.2 A summary of the surface water lead concentrations is provided in the table below which includes for comparison the groundwater concentrations in DS05 and DS09 in italics.

Table 2.4 Summary of Surface Water Lead Concentrations

Lab Ref	Sample	Lead Concentration (µg/l)
Geocon – Supplementary Phase II Site Investigation (August 2025)		
25-08015	SW-US	1 µg/l *(DS05 - 73 µg/l)*
	SW-DS	1 µg/l *(DS09 – NA)*
Geocon - Additional Phase II Site Investigation and Controlled Waters Risk Assessment (November 2025)		
25/11858	SW-US	3.4 µg/l *(DS05 - 599 µg/l)*
	SW-DS	2.8 µg/l *(DS09 - 93 µg/l)*

2.6.3 Concentrations of dissolved lead in the surface water were greater in November rather than August; however, no exceedances of the EQS were reported. This is most likely to be natural seasonal variation, associated with great run-off / inputs from upstream of natural lead sources as previously mentioned.

2.6.4 The elevated concentrations within the shallow groundwater are much higher than that recorded within the watercourse. This is considered most likely to be a combination of limited migration of groundwater into the watercourse and/or natural dilution within the watercourse.

[3] UK Health Security Agency. Guidance – Lead: Toxicological Overview. Updated 31 October 2024.

3 SGP Investigation Methodology

3.1. Objectives and Rationale

3.1.1. NRW has requested that further information is required and as summarised in Section 1.2.8 of this report, provided a recommended scope of the additional information they feel would be required. Cefn Park Solar Ltd. have duly instructed SGP to undertake the suggested works.

3.2. General

3.2.1. SGP attended Site on 11.02.26 to oversee the drilling of five window sampler boreholes (WS1-WS5) to permit the inspection of ground conditions and collection of representative soil samples for chemical analysis. The window sampling logs are presented in Appendix A. Photographs from the site investigation works carried out by SGP are provided in Appendix B.

3.2.2. The boreholes were installed with groundwater monitoring standpipes and raised covers to allow SGP to collect additional groundwater samples. SGP returned to Site a week after the completion of drilling works (18.02.26) to undertake groundwater and surface water sampling.

3.2.3. The positions of the investigation entries on Site can be seen in D01 - ‘Site Investigation Location Plan’.

3.3. Methodology

Window Sampler Boreholes

3.3.1. The continuous tube sample boreholes, WS1 to WS5, were drilled using a tracked window sampler rig to the specified depths by NRW (maximum 3.0m bgl). Boreholes were advanced using a plastic lined steel tube sampling system, driven into the ground by a top drive percussive hammer. A near continuous 87mm-67mm diameter core sample of the materials were recovered for subsequent examination and sub-sampling.

3.3.2. Disturbed soil samples were collected from the topsoil and subsoil during the window sampler drilling works for chemical testing, as detailed in Tables 3.1 below.

3.4. Laboratory Analysis

3.4.1. Chemical laboratory testing of the soils was carried out by i2 Analytical Ltd which is accredited by UKAS, working where possible to MCERTS accreditation. Samples were stored in appropriate containers as advised by the laboratory, placed in chilled cool boxes (where necessary), and couriered to i2 during and upon completion of the works. Chain of custody documentation was completed and is retained by SGP. Samples were submitted both for solid and soil-leachate analysis.

3.4.2. Groundwater analysis was carried out by Element Deeside which retain ISO17025 accreditation for water analysis. Samples were stored in appropriate containers as advised by the laboratory, placed in chilled cool boxes, and delivered to Element upon completion of the works. Chain of custody documentation was completed and is retained by SGP.

3.4.3. Summaries of the locations, strata and scheduling for soil chemical testing are provided below:

Table 3.1. Summary of Soil Chemical Analysis

Strata	Description	Sample ref	Depth (m bgl)	Analytical suite
Topsoil	Dark brown slightly sandy clayey TOPSOIL with frequent rootlets	WS1-S1 WS2-S1 WS3-S1	0.5 0.5 0.5	Solid + Leachate Solid + Leachate Solid + Leachate
	Dark brown gravelly sandy clayey topsoil with frequent rootlets. Gravel is fine to coarse angular to subrounded	WS4-S1	0.5	Solid + Leachate
Subsoil	Firm becoming soft light brown/brown SANDY CLAY	WS1-S2 WS2-S2	1.2 1.2	Solid + Leachate Solid + Leachate
	Soft greyish brown/brown gravelly SANDY CLAY. Gravel is fine to coarse subrounded to subangular	WS2-S3 WS4-S2	2.2 1.5	Solid + Leachate Solid + Leachate
	Brown SANDY GRAVEL. Gravel is fine to coarse angular to subrounded	WS1-S3	2.0	Solid + Leachate
	Soft brown very sandy CLAY becoming stiff at 1.8m	WS3-S2 WS3-S3	1.2 2.1	Solid + Leachate Solid + Leachate
	Hard grey slight sandy CLAY	WS4-S3	2.2	Solid + Leachate
	Firm brown slight sandy CLAY becoming stiff at 1.7m	WS5-S1	0.5	Solid + Leachate
	Firm to soft slightly sandy slightly gravelly CLAY. Gravel is fine to medium angular to subrounded	WS5-S2 WS5-S3	1.2 2.2	Solid + Leachate Solid + Leachate

Solid = Lead, manganese, iron, total sulphate, total sulphur, pH
Leachate = dissolved lead, dissolved manganese, dissolved iron, pH, and Dissolved Organic Carbon (DOC)

3.4.2. The full soil chemical results are provided in Appendix C.

3.5. Groundwater & Surface Water Monitoring / Sampling

3.5.2. SGP attended site on 18.02.26, a week after drilling works to allow the boreholes to equalise with the surrounding ground before sampling. Bailers were used to purge the wells until dry and then left to recharge before groundwater samples were collected. A YSI water meter was used to record physio-chemical parameters from the purged water which are presented in Appendix D. No sheens or odours were reported during either the well purging or sampling exercises.

3.5.3. Sampled water was subject to on-site filtering, initially passing through a filter paper to remove large suspended particulate matter and then through a filter and syringe as part of the laboratory

requirements to filter samples for metal analysis before placing in a preservative bottle. This process follows that required of the laboratory to remove any suspended materials which can otherwise influence the analysis process and result in elevated concentrations which are not reflective of true water concentrations.

3.5.4. Two surface water samples were also collected concurrently with the groundwater samples. These were collected at Up (SWUS) and Downstream (SWDS) locations. Sampling locations are shown in Drawing D03. SWDS is consistent with the sampling location by Geocon, whereas SWUS as moved slightly upstream (now upstream of the proposed development area of the solar farm). Samples were collected using a metal bucket on a pole, approximately 2m from the riverbank and were subject to the same filtration process and discussed above.

3.6. Groundwater and Surface water analysis was carried out by Element Materials Technology (EMT), Deeside which is UKAS accredited for water analysis. Samples were stored in appropriate containers as advised by the laboratory, placed in chilled cool boxes, and delivered to EMT upon completion of the works. Samples were submitted for dissolved lead, dissolved manganese, dissolved iron, pH, and dissolved organic carbon (DOC) analysis. Chain of custody documentation was completed and is retained by SGP. A copy of the laboratory certificate (ref: 26-2601) is included in Appendix E.

3.7. Constraints

3.7.1. There were no constraints which limited the site investigation or sampling programme.

4. Investigation Observations and Results

4.1. Summary of Ground Conditions

4.1.1. The Site and laboratory test work revealed that the general succession of strata can be generally represented by a layer of topsoil overlying natural subsoils. This is consistent within the findings made by Geocon.

4.1.2. All depths provided in the following sections are from ground levels contemporaneous with the site investigation dates. Classifications are based on field descriptions.

Topsoil

4.1.3. Topsoil was encountered within all entries from ground level to a depth of 0.5m bgl. It was typically described as "*dark brown slightly sandy clayey TOPSOIL with frequent rootlets".*

Subsoil

2.1.1. The window sampling entries were terminated at 3.0m bgl as requested by NRW. Subsoil was described within all five entries comprised of the following soil types:

- **Sandy Clay** (WS1, WS2, and WS4): "*Soft to firm brown / light brown / greyish brown gravelly SANDY CLAY. Gravel is fine to coarse angular to rounded*". Present from depths of 0.3-0.5m bgl to 1.2-2.0m bgl.
- **Sandy Gravel** (WS1): "*Brown sandy gravel. Gravel is fine to coarse angular to rounded*". Present between a depth of 1.7-3.0m bgl.
- **Clay** (WS1, WS2, WS3, WS4, and WS5): "Soft to hard brown / grey silty very sandy CLAY". Present from depths between 0.4-2.5m to 1.7-3.0m bgl

4.2. Groundwater Conditions

4.2.1. Groundwater was encountered in all 5 entries as shown in Table 4.1 below:

Table 4.1 Summary of Groundwater encountered during drilling works

Borehole	Groundwater Depth
WS1	1.2
WS2	1.0
WS3	1.0
WS4	1.8
WS5	1.0

4.3. Contamination Indicators

4.3.1. No visual or olfactory evidence of contamination was observed.

4.4. Results of Soil Chemical Analysis

4.4.1. The complete soil analytical data is presented in Appendix C (i2 Laboratory ref: 26-007276). SGP have compared the lead results to the Normal Background Concentration (NBC) for lead, published by The Natural Environment Research Council (NORA) in their 'Technical Guidance on Normal Levels of Contaminants in Welsh Soils'[4] report. According to Figure 3 – Lead Domain Map, the Site is anticipated to be located within the 'Principal Domain' where the NBC for lead is 230 mg/kg.

4.4.2. SGP have also compared the results to the DEFRA published Category 4 Screening Level (C4SL) for lead to allow an initial screening for risk to human health in a commercial setting in accordance with LCRM. The results are summarised below:

Table 4.2 Summary of Solid Soil Chemical Analysis

Contaminant	Number of Samples	Range of Concentrations (mg/kg or indicated)	Soil Standard Adopted and Concentration (mg/kg or indicated)	Exceedances
Lead	15	**17-870**	**230 NBC**	**4 (WS1-S1, WS1-S2, WS2, S1, WS3-S1)**
			2,300 C4SL	None
Manganese	15	100-2,100	-	None
Iron	15	12,000-56,000	-	None
Total sulphate	15	87-480	-	None
Total sulphur	15	<50-330	-	None
pH	15	6.5-8.7	-	None

Notes to table:
NBC: Normal Background Concentrations
C4SL: Category 4 Screening Levels published by CL:AIRE (C4SLs); 'commercial land use' (1% SOM)

4.4.3. When compared to the NBC for lead, four exceedances were reported within three topsoil samples and one subsoil sample (WS1-S1, WS1-S2, WS2-S1, WS3-S1). The locations of these concentrations above the NBC are shown in Drawing D04 and confirm they are all located within entries adjacent to the watercourse. This provides further evidence of the earlier assumption that the presence of elevated lead is attributed to historical deposition of lead rich sediments from upgradient sources.

4.4.4. No exceedances were reported when compared to the C4SL for a commercial land use.

4.4.5. Soil samples were also submitted for leachate analysis and lead has been compared to the Maximum Allowable Concentrations (MAC) Environmental Quality Standards (EQS) which is consistent with the earlier assessment.

[4] BGS. Technical Guidance on Normal Levels of Contaminants in Welsh Soils: Lead (Pb). January 2013.

Table 4.3 Summary of Soil Leachate Chemical Analysis

Contaminant	Number of Samples	Range of Concentrations (µg/l or indicated)	Water Standard Adopted and Concentration (µg/l or indicated)	Exceedances
Dissolved lead	15	<1-13	14 MAC-EQS	None
Dissolved manganese	15	6.6-68	-	-
Dissolved iron	**15**	**76-1,500**	**1,000 EQS**	**2 (WS3-S1, WS5-S3)**
pH	15	6.7-8.2	-	-
DOC	15	4.7-7.2	-	-

Notes to table:
MAC: Maximum Allowable Concentration
EQS: Environmental Quality Standard

4.4.6. No exceedances of lead were reported.

4.4.7. Elevated dissolved iron was reported in two of the samples, however this is attributed to the chemistry of the natural soils. Furthermore, it is important to note that the leachate testing by the laboratory is a vigorous test with significant soil disturbance to generate the soil leachate for analysis. Such ground disturbance is not expected to occur as part of the development works of the Site.

4.5. Results of groundwater analysis

4.5.1. Groundwater analytical data is presented in Appendix E (Element Laboratory ref: 26-2601) and lead concentrations have been compared to the Maximum Allowable Concentrations (MAC) Environmental Quality Standards (EQS) as presented in Table 4.5 below:

Table 4.5 Summary of groundwater analysis

Contaminant	Number of Samples	Range of Concentrations (µg/l or indicated)	Standard Adopted and Concentration (µg/l or indicated)	Exceedances
Dissolved lead	5	<5-6	14 MAC-EQS	None
Dissolved manganese	5	11-843	-	-
Dissolved iron	5	9-132	1,000 EQS	None
pH	5	6.7-8.2	-	-
DOC	4*	4.7-7.2	-	-

Notes to table:
EQS: Environmental Quality Standard
* DOC analysis could not be undertaken on WS5 due to the suspended solid content of the sample

4.5.2. No exceedances have been reported in the groundwater samples.

4.6. Results of surface water analysis

4.6.1. Surface water analytical data is also presented in Appendix E (Element Laboratory ref: 26-2601) and lead concentrations have been compared to the Maximum Allowable Concentrations (MAC) Environmental Quality Standards (EQS). The results are presented below in Table 4.6.

Table 4.5 Summary of groundwater analysis

Contaminant	Number of Samples	Range of Concentrations (ug/l or indicated)	Standard Adopted and Concentration (ug/l or indicated)	Exceedances
Dissolved lead	2	<5-6	14 EQS	None
Dissolved manganese	2	11-843	-	-
Dissolved iron	2	9-132	1,000 EQS	None
pH	2	6.7-8.2	-	-
DOC	2	4.7-7.2	-	-

Notes to table:
EQS: Environmental Quality Standard

4.6.2. No exceedances have been reported in the groundwater samples.

5. Updated Controlled Waters Risk Assessment

5.1. Existing Pickhill Solar Farm

5.1.1. An existing solar farm (Pickhill) is located to the immediate south / west of the Site (south of Field 2 and west of Fields 1B and 1C) as shown in Drawing D01.

5.1.2. Planning was granted (P/2015/0287) by WCBC for the construction of the now completed Pickhill Solar Farm, a scheme which occupies a greater area than that covered within this report. As part of the Consent, similar requirements (Condition 13) relating to the assessment of contaminated land were placed.

5.1.3. SGP has obtained reporting made available on the WCBC planning portal which relates to a Phase II Site Investigation undertaken by The Magnificent Science Company on this site; however, a complete copy of the report could not be obtained due to the submission of files on the planning portal. The investigation across the Site consisted of the excavation of 30x trial-pits and collection and submission of 30x soil samples for chemical analysis. All samples were collected from 0.15m and are assumed to relate to topsoil.

5.1.4. Reported concentrations of lead within sampled shallow soils on the Pickhill Site ranged from 52-1,300 mg/kg. This is consistent with the range of lead concentrations reported within the previous and current investigation undertaken across the proposed Cefn Solar Farm Site.

5.1.5. NRW responded following a review of the Pickhill Phase II Site Investigation in March 2016 (ref. CAS-16868-W8S5) stating that the investigation/assessment does not address risks to controlled waters, nor were controlled waters mentioned within the report.

5.1.6. Further NRW correspondence in May 2016 (email to planning officer) confirms that they will accept the data and will not object to discharge of conditions but advised that the applicant and their consultants for future reference should be aware that site investigations should be designed from the outset to assess risks to all receptors and not just targeted towards human health.

5.1.7. This confirms that whilst similar lead concentrations in site soils were reported and no groundwater sampling nor consideration to controlled waters within the risk assessment were made, this was ultimately accepted by NRW and the Condition discharged.

5.1.8. The requirement to undertake several rounds of site investigation including further groundwater sampling and risk assessment on the Cefn Solar Site appears to be disproportionate to that required on the neighbouring Pickhill Solar Farm where it has been demonstrated that similar lead concentrations in soils have been reported.

5.2. Updated Risk Assessment: Sources

5.2.1. Sources of elevated lead have been attributed to natural deposition of lead rich sediments which are likely to have been transported and deposited by the River Clywedog from upstream sources, namely the areas of Minera and Coedpoeth. This area also coincides with the area of the Site which is in a flood zone.

5.2.2. The evidence which suggests this is based on highest lead concentrations (above NBC) reported within the previous investigation and SGP's investigation are all located in the north of the Site, adjacent to the watercourse. Also, elevated lead is present in these areas in both the topsoil and shallow superficial deposits (0.5m-1.5m bgl). An off-site source which may result in aeolian deposit would only expect to show elevated concentrations in surface soils.

5.2.3. As a comparison, where concentrations of elevated lead above NBCs have been reported, these still remain within the typical range of urban soils within Wales.

5.2.4. Concentrations of lead reported within SGP's investigation are within the typical ranges reported within the site investigation of the adjacent Pickhill Solar Farm where NRW ultimately accepted the site investigation report which did not consider risks to controlled waters.

5.2.5. The recent site investigation and monitoring works undertaken by SGP in 2026 has further demonstrated that:

- Soil concentrations of lead are typical to that previously reported both on Site and within the adjacent Pickhill Solar Farm. Concentrations above NBC are all located adjacent to the watercourse providing further evidence that the source of the lead is from historical deposition of a natural upstream source.

- Groundwater analysis with appropriate filtering to remove interference from suspended particulate matter has confirmed no exceedance of EQS for lead.

- Groundwater lead concentrations are lower (<5-6 µg/l) than those reported previously by Geocon (7-997µg/l) this is most likely associated with poor sampling practices such as not filtering the sample to remove interference from suspended particulate matter.

- Soil-Leachate testing did not report lead concentrations above EQS. This demonstrates that construction works are significantly unlikely to result in the remobilisation of lead within the soils into the groundwater. Particularly as the leachate test involves the vigorous disturbance of soils in solution and such significant mechanical disturbance is not expected during construction works.

5.3. Updated Risk Assessment: Receptor

5.3.1. The underlying Kinnerton Sandstone is a Principal Aquifer and is overlain by mixed superficial deposits of Till, River Terrace Deposits and Alluvium, the latter two deposits are designated as Secondary A aquifers. BGS borehole records for a nearby borehole (ref. SJ34NE41) located approximately 500m to the east reported bedrock from around 8.2m bgl. It is therefore reasonable to assume that there is around 8m of superficial deposit cover above bedrock across the Site.

5.3.2. The previous groundwater analysis across the Site reported lead concentrations above EQS values. However, SGP's groundwater sampling did not report any exceedances, and most samples were below the laboratory's limit of detection. This difference in results has been attributed to the fact that the previous consultant may not have appropriately filtered samples before analysis, thus resulting in interference by suspended particulate matter during analysis. The latest results demonstrate that elevated lead is not present within the groundwater in the underlying superficial deposits which are assumed to be in hydraulic continuity with both the underlying bedrock aquifers and river Clywedog.

5.3.3. Surface water concentrations of lead are below EQS at both up and downstream sampling locations. This demonstrates that whilst previously elevated groundwater concentrations were reported, they have not impacted the river. This also further suggests that the initial groundwater exceedances may have been attributed to influence of suspended matter during analysis rather than true groundwater concentrations.

5.3.4. Soil-leachate testing has demonstrated that significant disturbance of soils does not result in the leaching of lead into the water media at elevated concentrations. Site construction works which will be limited to the pushing of piles into the ground and excavation of shallow service trenches are considered to be less vigorous than the mechanical disturbance of soils during the leachate test.

5.4. Updated Risk Assessment: Pathway

5.4.1. Within the previous investigation it was demonstrated that groundwater chemistry within the underlying superficial aquifer showed elevated lead concentrations above EQS and that this is typical of the wider locality. However, SGP's investigation reported no elevated lead within the groundwater. In any case, transmission of shallow groundwater into the deeper bedrock aquifer and river Clywedog is expected which is part of both natural processes and the natural chemistry of the area.

5.4.2. Site construction will include excavations of trenches to depths of 1.5m to facilitate the installation of cable routes and piling of the solar array to depths of 2.05m bgl. These operations will be short-lived and completed over a period of around 4-weeks. Excavations will not extend down to the bedrock which is expected at around 8m bgl.

5.4.3. Neither trench excavations of piles are considered as viable migration pathways. Furthermore, guidance has demonstrated that lead in soils is not very mobile and leaching into the groundwater is very slow. Any excavation works are therefore not expected to result in enhanced leaching rates and are considered as no different to any excavation works within made ground soils which can frequently contain elevated concentrations of lead.

5.4.4. No viable pathway is therefore considered; hence no significant contaminant linkage is present.

5.5. Conclusion

5.5.1. It is concluded based on the totality of extensive site investigation data that the risks to controlled waters (surface water and groundwater) from the proposed development is **Very Low**.

5.5.2. It has been demonstrated that elevated lead concentrations within site soils are consistent with natural conditions associated with the locality and that baseline conditions are well established.

5.5.3. Recent groundwater analysis undertaken by SGP has demonstrated that no exceedance of the MAC-EQS for lead is present. Groundwater concentrations were reported lower than those previously reported by Geocon, this has been attributed to the fact that previous sampling may not have carried out the necessary filtering prior to analysis to remove suspended particulate matter and that this may have resulted in inflated groundwater concentrations.

5.5.4. Soil-Leachate testing has also demonstrated that lead within the soil is not leaching into water media when the soil is subject to significant mechanical agitation (leachate test). The proposed construction works are not expected to result in such agitation of the soils, and in any case will be short duration works.

5.5.5. Furthermore, it is important to acknowledge that a near identical scheme on the neighbouring land which also reported lead concentrations within soils and similar concentration ranges received approval from NRW without such extensive groundwater monitoring or risk assessment.

6. Recommendation

6.1. It is recommended that a copy of this report is submitted to NRW for review and approval as a matter of urgency given that commencement of the scheme cannot begin until Condition 7 has been satisfied.

6.2. Limitations

6.3.1. This report has been prepared by SGP for the sole and exclusive use of Cefn Park Solar Ltd. Reasonable skill, care and diligence has been exercised within the timescale and budget available, and in accordance with the technical requirements of the brief. Notwithstanding the efforts made by the professional team in undertaking the assessment and preparing this report, it is possible that other ground conditions and contamination as yet undetected may exist. Reliance on the findings of this report must therefore be limited accordingly. Such reliance must be based on the whole report and not on extracts which may lead to incomplete or incorrect conclusions when taken out of context. SGP reserves the right to alter its conclusions and recommendations in the light of new information being provided.

Drawings

0 m 50 m 100 m 150 m 200 m 250 m Scale Bar 1: 2500

N

Field 1A

Transformer

Access Gate 2

Access Gate 3

Proposed Access Road

Translocated Hedgerow

Transformer

Access Gate 4

Field 1B

Main Access Gate 1

A6E/12

Field 2

Outflow regulated by orifice set in perforated pipe and into shallow ditch (top width 0.5m - depth 0.2m)

Attenuation swale - top area c 200 m2 (base area 100 m2) - depth 0.5m

Ancillary Electrical Building

Transformer

1 x ISO Container (6 m) Spares Store

8 x Batteries (12 m) with ancillary infrastructure and metal palisade fence

Field 1C

Customer sub with associated enclosure

Ancillary Electrical Building

Gate

Maintenance Access Gate 5

33 kV line

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Key:

- Planning Application Boundary
- Soil Storage area
- Existing Building
- Cable route
- Shallow ditch
- Soil Bund
- Exising Hedgerow
- Proposed Planting
- Public Right of Way
- Deer fencing
- CCTV
- Attenuation Swale
- Battery store
- Proposed Access Road
- Existing site roads
- Palisade fence

rev:	date:	details:
N	15-12-21	Road, transformer, layout updated
M	13-05-21	Flood Panels areas added
L	03-02-21	Additional GRP added to entrance
K	02-02-21	RPZ updated, PV panels, pond and battery store updated.
J	28-01-21	Battery store and access + transform / ISO container relocated. Pond and cable route adjusted.
i	19-01-21	(JLB)Annotations removed, customer control updated.
H	16-12-20	(JLB)Tables changed to 2 x portrait arrangement
G	26-11-20	(JLB) Services removed, swales added & other updates
F	12-11-20	(JLB) Red line, cable & planting updated
E	12-11-20	(JLB) Red line, Road & Layout updated
D	19-10-20	(JLB) Red line and Eco enhancements added
C	12-10-20	(JLB) Road alignment adjusted
B	02-10-20	(JLB) Substation moved away from gas main
A	15-09-20	(JLB)Layout Amended

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client: Novus R S Ltd

project: Solar Park to the north of Maelor Gasworks

title: Design Layout

scale:	date:	drawn by :	checked by:	size:
1:2500	06/08/20	JLB		A3

Project ref :	dwg no:	rev:
258	WR-EX-258-06-1	N

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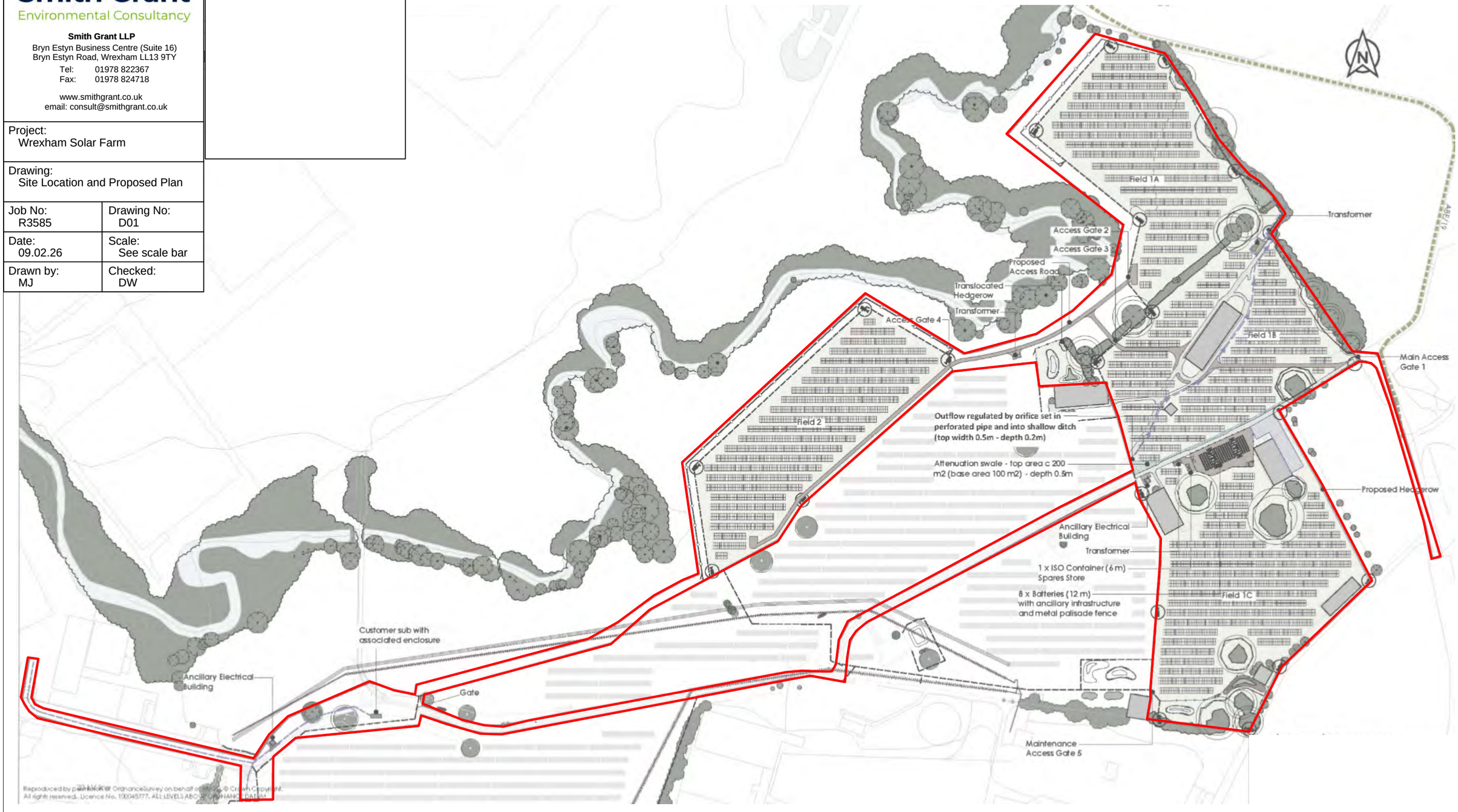
Project:
Wrexham Solar Farm

Drawing:
Site Location and Proposed Plan

Job No:	Drawing No:
R3585	D01
Date: 09.02.26	Scale: See scale bar
Drawn by: MJ	Checked: DW

Site boundary

0 100 200 300 400



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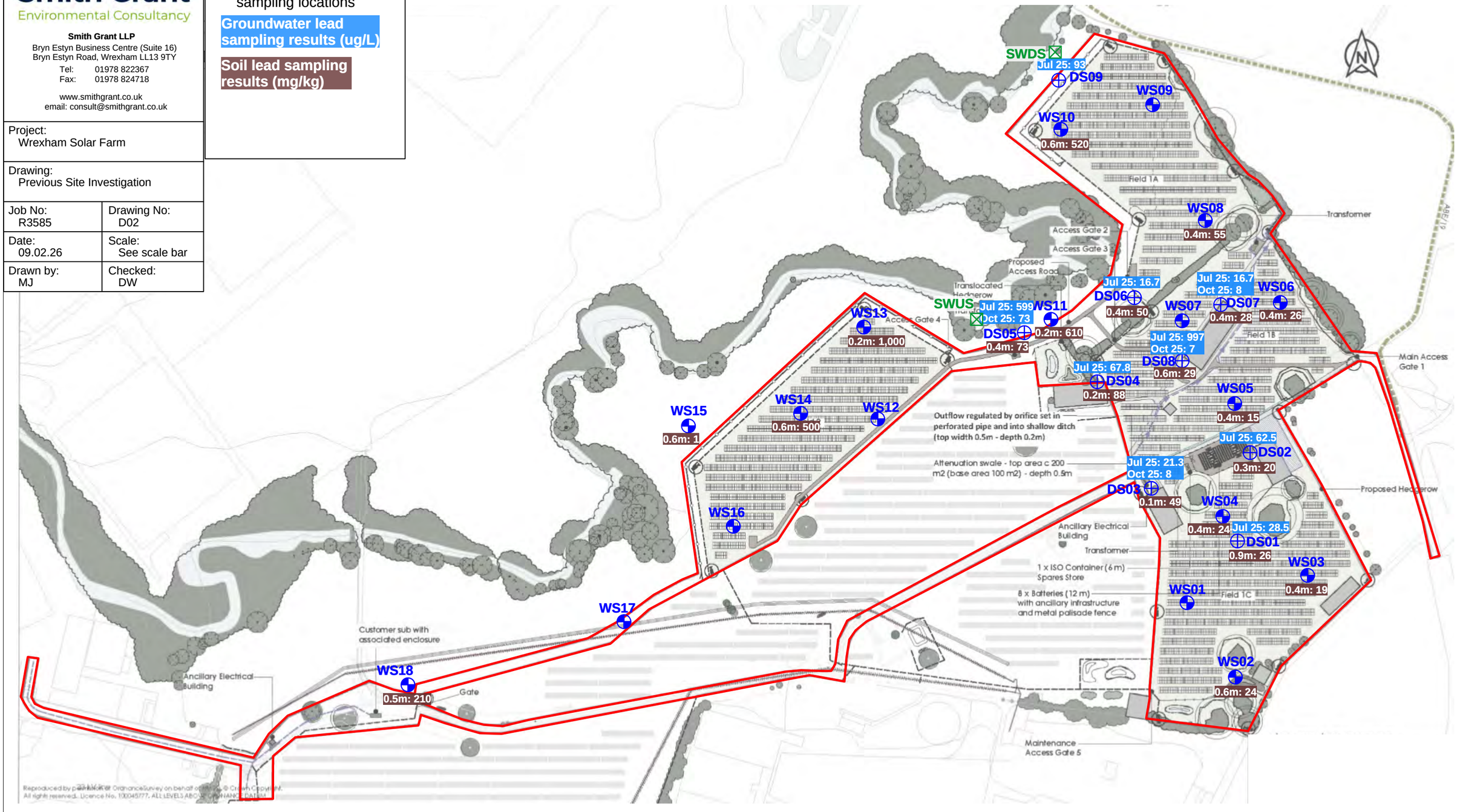
Project:
Wrexham Solar Farm

Drawing:
Previous Site Investigation

Job No:	Drawing No:
R3585	D02
Date: 09.02.26	Scale: See scale bar
Drawn by: MJ	Checked: DW

- Site boundary
- Geocon window sampling locations
- Geocon dynamic sampling locations
- Geocon surface water sampling locations
- **Groundwater lead sampling results (ug/L)**
- **Soil lead sampling results (mg/kg)**

0 100 200 300 400



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Project:
Wrexham Solar Farm

Drawing:
SGP Investigation Locations

Job No:	Drawing No:
R3585	D03
Date: 19.02.26	Scale: See scale bar
Drawn by: MJ	Checked: DW

- Site boundary
- SGP surface water sampling locations
- SGP borehole locations

0 100 200 300 400

SWDS
WS3
Field 1A
Transformer
Access Gate 2
Access Gate 3
Proposed Access Road
Translocated Hedgerow
Transformer
Access Gate 4
WS2
WS4
Field 1B
Main Access Gate 1
WS1
Field 2
Outflow regulated by orifice set in perforated pipe and into shallow ditch (top width 0.5m - depth 0.2m)
Attenuation swale - top area c 200 m2 (base area 100 m2) - depth 0.5m
SWUS
WS5
Proposed Hedgerow
Ancillary Electrical Building
Transformer
1 x ISO Container (6 m) Spares Store
8 x Batteries (12 m) with ancillary infrastructure and metal palisade fence
Field 1C
Customer sub with associated enclosure
Ancillary Electrical Building
Gate
Maintenance Access Gate 5
A525

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Project:
Wrexham Solar Farm

Drawing:
SGP Investigation Locations + Soil exceedances

Job No:	Drawing No:
R3585	D04
Date: 02.03.26	Scale: See scale bar
Drawn by: MJ	Checked: DW

- Site boundary
- SGP surface water sampling locations
- **SGP soil lead sampling exceedances**
- SGP borehole locations
- SGP soil lead exceedance locations

0 100 200 300 400

SWDS

WS3
0.5m = 550 mg/kg

Field 1A
Transformer
Access Gate 2
Access Gate 3
Proposed Access Road
Translocated Hedgerow
Transformer
Access Gate 4

WS2
0.5m = 270 mg/kg

WS4
Field 1B
Main Access Gate 1

WS1
0.5m = 870 mg/kg
1.5m = 290 mg/kg

Field 2

Outflow regulated by orifice set in perforated pipe and into shallow ditch (top width 0.5m - depth 0.2m)

Attenuation swale - top area c 200 m2 (base area 100 m2) - depth 0.5m

SWUS

WS5
Proposed Hedgerow
Ancillary Electrical Building
Transformer
1 x ISO Container (6 m) Spares Store
8 x Batteries (12 m) with ancillary infrastructure and metal palisade fence
Field 1C

Customer sub with associated enclosure
Ancillary Electrical Building
Gate
Maintenance Access Gate 5

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Appendix A

Borehole Logs

SHEET:	LOCATION:	PROJECT:	ENGINEER:	JOB NO.	WINDOW SAMPLE NO.
1 of 1	Wrexham	Wrexham Solar Farm	MJ	R3585	WS1
		EXCAVATED BY: Archway Dart Window Sampler Rig	CLIENT: Corylus Planning & Environmental Ltd	DATE: 11.02.26	

PHYSICAL TESTING	DEPTH (m)	SAMPLES/ TESTING	FIELD RECORDS	Installation	DEPTH (m)	DESCRIPTION OF STRATA	LEGEND
					0	Dark brown slightly sandy clayey TOPSOIL with frequent rootlets	
	0.5	WS1-S1		Plain	0.5	Soft brown SANDY CLAY	
	1.2	WS1-S2	No visual or olfactory contamination indicators observed		1.2	Soft brown silty very sandy CLAY	
					1.7	Brown sandy gravel. Gravel is fine to coarse angular to rounded.	
	2	WS1-S3		Slotted	2	No recovery	
					2.6	Brown sandy gravel. Gravel is fine to coarse angular to rounded.	
						Window sampling hole completed @ 3.0m	

GROUND WATER:

Groundwater encountered at 1.2m bgl

REMARKS:

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SCALE:	LOGGED BY:	FIGURE NO.
1:50	MJ	3

SHEET:	LOCATION:	PROJECT:	ENGINEER:	JOB NO.	WINDOW SAMPLE NO.
1 of 1	Wrexham	Wrexham Solar Farm	MJ	R3585	WS2
		EXCAVATED BY: Archway Dart Window Sampler Rig	CLIENT: Corylus Planning & Environmental Ltd	DATE: 11.02.26	

PHYSICAL TESTING	DEPTH (m)	SAMPLES/ TESTING	FIELD RECORDS	Installation	DEPTH (m)	DESCRIPTION OF STRATA	LEGEND
					0	Dark brown slightly sandy clayey TOPSOIL with frequent rootlets	
	0.5	WS2-S1		Plain	0.5	Soft brown SANDY CLAY	
					1	Firm becoming soft light brown SANDY CLAY	
	1.2	WS2-S2	No visual or olfactory contamination indicators observed		1.7	Soft light brown gravelly SANDY CLAY. Gravel is fine to coarse subrounded to subangular.	
				Slotted	1.9	Coarse sandstone cobble	
					1.95	Soft grey gravelly SANDY CLAY. Gravel is fine to medium subangular to subrounded	
					2		
					2.05	Coarse sandstone cobble	
	2.2	WS2-S3				Soft greyish brown gravelly SANDY CLAY. Gravel is fine to coarse angular to subrounded	
					2.3	Brown gravelly SAND. Gravel is fine to coarse subangular to subrounded	
					2.5	Very soft brown CLAY	

Smith Grant Environmental Consultancy

Smith Grant LLP
Bryn Estyn Business Centre (Suite 16)
Bryn Estyn Road,
Wrexham, LL13 9TY

Tel: 01978 822367

www.smithgrant.co.uk
email: consult@smithgrant.co.uk

GROUND WATER:

Groundwater encountered at 1.0m bgl

REMARKS:

SCALE:	LOGGED BY:	FIGURE NO.
1:50	MJ	3

SHEET:	LOCATION:	PROJECT:	ENGINEER:	JOB NO.	WINDOW SAMPLE NO.
1 of 1	Wrexham	Wrexham Solar Farm	MJ	R3585	WS3
		EXCAVATED BY: Archway Dart Window Sampler Rig	CLIENT: Corylus Planning & Environmental Ltd	DATE: 11.02.26	

PHYSICAL TESTING	DEPTH (m)	SAMPLES/ TESTING	FIELD RECORDS	Installation	DEPTH (m)	DESCRIPTION OF STRATA	LEGEND
					0	Dark brown slightly sandy clayey TOPSOIL with frequent rootlets	
	0.5	WS3-S1		Plain	0.5	Soft brown very sandy CLAY becoming stiff at 1.8m bgl	
	1.2	WS3-S2	No visual or olfactory contamination indicators observed	Slotted			
	2.1	WS3-S3			2.1	No recovery	
						Window sampling hole completed @ 3.0m	

GROUND WATER:

Groundwater encountered at 1.0m bgl

REMARKS:

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SCALE:	LOGGED BY:	FIGURE NO.
1:50	MJ	3

SHEET:	LOCATION:	PROJECT:	ENGINEER:	JOB NO.	WINDOW SAMPLE NO.
1 of 1	Wrexham	Wrexham Solar Farm	MJ	R3585	WS4
		EXCAVATED BY: Archway Dart Window Sampler Rig	CLIENT: Corylus Planning & Environmental Ltd	DATE: 11.02.26	

PHYSICAL TESTING	DEPTH (m)	SAMPLES/ TESTING	FIELD RECORDS	Installation	DEPTH (m)	DESCRIPTION OF STRATA	LEGEND
					0	Dark brown gravelly sandy clayey TOPSOIL with frequent rootlets. Gravel is fine to coarse angular to subrounded.	
	0.5	WS4-S1		Plain	0.3	Soft brown gravelly SANDY CLAY. Gravel is fine to coarse subangular to subrounded. Sand lense at 1.3m bgl	
	1.2	WS4-S2	No visual or olfactory contamination indicators observed				
				Slotted	1.95	Hard grey slightly sandy CLAY	
	2.2	WS4-S3					
						Window sampling hole completed @ 3.0m	

GROUND WATER:

Groundwater encountered at 1.8m bgl

REMARKS:

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SCALE:	LOGGED BY:	FIGURE NO.
1:50	MJ	3

SHEET:	LOCATION:	PROJECT:	ENGINEER:	JOB NO.	WINDOW SAMPLE NO.
1 of 1	Wrexham	Wrexham Solar Farm	MJ	R3585	WS5
		EXCAVATED BY: Archway Dart Window Sampler Rig	CLIENT: Corylus Planning & Environmental Ltd	DATE: 11.02.26	

PHYSICAL TESTING	DEPTH (m)	SAMPLES/ TESTING	FIELD RECORDS	Installation	DEPTH (m)	DESCRIPTION OF STRATA	LEGEND
					0	Dark brown slightly sandy clayey TOPSOIL with frequent rootlets	
	0.5	WS5-S1		Plain	0.4	Firm brown slightly sandy CLAY becoming very stiff at 1.7m bgl	
	1.2	WS5-S2	No visual or olfactory contamination indicators observed				
				Slotted	2	Firm to soft brown slightly sandy slightly gravelly CLAY. Gravel is fine to medium angular to subrounded.	
	2.2	WS5-S3					
						Window sampling hole completed @ 3.0m	

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GROUND WATER:

Groundwater encountered at 1.0m bgl

REMARKS:

SCALE:	LOGGED BY:	FIGURE NO.
1:50	MJ	3

Appendix B

Site Investigation Photographs

R3585 – Wrexham Solar Window Sampling Photolog	
1.  11.02.26 – WS1 Location	2.  11.02.26 – WS1 arisings
3.  11.02.26 – WS1 install	4.  11.02.26 – WS2 Location
5.  11.02.26 – WS2 0-1.0m arisings	6.  11.02.26 – WS2 1.0-3.0m arisings

7.



11.02.26 – WS2 install

8.



11.02.26 – WS3 Location

9.



11.02.26 – WS3 arisings

10.



11.02.26 – WS3 install

11.



11.02.26 – WS4 Location

12.



11.02.26 – WS4 arisings

13.



11.02.26 – WS5 location

14.



11.02.26 – WS5 Arisings

15.



11.02.26 – WS5 install

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Appendix C

Soil Laboratory Testing Certificates

Smith Grant LLP
Suite 16 - Bryn Estyn Business Centre
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t:

e: megan.jones@smithgrant.co.uk

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: info-i2analytical@normecgroup.com

Analytical Report Number : 26-007276

Project / Site name:	Wrexham Solar Farm	**Samples received on:**	13/02/2026
Your job number:	R3585	**Samples instructed on/ Analysis started on:**	13/02/2026
Your order number:		**Analysis completed by:**	25/02/2026
Report Issue Number:	1	**Report issued on:**	25/02/2026
Samples Analysed:	15 soil samples - 15 leachate samples		

Signed:

Anna Goc
PL Head of Reporting Team
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.

Retention period for records and reports is minimum 6 years from the date of issue of the final report.
Some records may be kept for longer according to other legal/best practice requirements.

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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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 26-007276
Project / Site name: Wrexham Solar Farm

Lab Sample Number				829636	829637	829638	829639	829640
Sample Reference				WS1-S1	WS1-S2	WS1-S3	WS2-S1	WS2-S2
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				0.50	1.20	2.00	0.50	1.20
Date Sampled				11/02/2026	11/02/2026	11/02/2026	11/02/2026	11/02/2026
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	36.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	24	16	16	17	14
Total mass of sample received	kg	0.1	NONE	0.6	0.8	1	0.9	0.7
General Inorganics								
pH (L099)	pH Units	N/A	MCERTS	7.5	7.7	8.6	6.5	7.9
Total Sulphate as SO_4	mg/kg	50	MCERTS	480	400	87	270	150
Total Sulphur	mg/kg	50	MCERTS	290	160	< 50	170	120
Heavy Metals / Metalloids								
Iron (aqua regia extractable)	mg/kg	40	MCERTS	32000	20000	12000	32000	37000
Lead (aqua regia extractable)	mg/kg	1	MCERTS	870	290	97	270	62
Manganese (aqua regia extractable)	mg/kg	1	MCERTS	1000	190	100	1200	590

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

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Analytical Report Number: 26-007276
Project / Site name: Wrexham Solar Farm

Lab Sample Number				829641	829642	829643	829644	829645
Sample Reference				WS2-S3	WS3-S1	WS3-S2	WS3-S3	WS4-S1
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				2.20	0.50	1.20	2.10	0.50
Date Sampled				11/02/2026	11/02/2026	11/02/2026	11/02/2026	11/02/2026
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status					
Stone Content	%	0.1	NONE	37.4	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	11	21	19	13	10
Total mass of sample received	kg	0.1	NONE	0.9	0.7	0.9	0.7	0.7
General Inorganics								
pH (L099)	pH Units	N/A	MCERTS	8.4	7.4	7.4	8.1	8.2
Total Sulphate as SO_4	mg/kg	50	MCERTS	150	470	370	130	89
Total Sulphur	mg/kg	50	MCERTS	69	330	150	77	< 50
Heavy Metals / Metalloids								
Iron (aqua regia extractable)	mg/kg	40	MCERTS	27000	42000	39000	30000	22000
Lead (aqua regia extractable)	mg/kg	1	MCERTS	30	550	97	44	24
Manganese (aqua regia extractable)	mg/kg	1	MCERTS	250	1300	2100	980	290

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

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Analytical Report Number: 26-007276
Project / Site name: Wrexham Solar Farm

Lab Sample Number				829646	829647	829648	829649	829650
Sample Reference				WS4-S2	WS4-S3	WS5-S1	WS5-S2	WS5-S3
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				1.20	2.20	0.50	1.20	2.20
Date Sampled				11/02/2026	11/02/2026	11/02/2026	11/02/2026	11/02/2026
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	13	13	19	15	15
Total mass of sample received	kg	0.1	NONE	0.6	0.7	0.7	0.7	0.6
General Inorganics								
pH (L099)	pH Units	N/A	MCERTS	8.6	8.7	7.9	8.5	8.5
Total Sulphate as SO_4	mg/kg	50	MCERTS	330	350	290	360	320
Total Sulphur	mg/kg	50	MCERTS	140	140	190	130	120
Heavy Metals / Metalloids								
Iron (aqua regia extractable)	mg/kg	40	MCERTS	46000	56000	31000	43000	40000
Lead (aqua regia extractable)	mg/kg	1	MCERTS	17	22	33	23	20
Manganese (aqua regia extractable)	mg/kg	1	MCERTS	820	740	550	590	1100

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

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Analytical Report Number: 26-007276
Project / Site name: Wrexham Solar Farm

Lab Sample Number				829636	829637	829638	829639	829640
Sample Reference				WS1-S1	WS1-S2	WS1-S3	WS2-S1	WS2-S2
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				0.50	1.20	2.00	0.50	1.20
Date Sampled				11/02/2026	11/02/2026	11/02/2026	11/02/2026	11/02/2026
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	Units	Test Limit of detection	Test Accreditation Status					
General Inorganics								
pH (automated)	pH Units	N/A	ISO 17025	7	6.7	7.6	7	7.2
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	7.2	5.3	6.3	6.7	6.4
Heavy Metals / Metalloids								
Iron (dissolved)	µg/l	4	ISO 17025	460	330	660	790	990
Lead (dissolved)	µg/l	1	ISO 17025	11	11	12	2.1	1.4
Manganese (dissolved)	µg/l	0.06	ISO 17025	6.6	15	47	11	12

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Analytical Report Number: 26-007276
Project / Site name: Wrexham Solar Farm

Lab Sample Number				829641	829642	829643	829644	829645
Sample Reference				WS2-S3	WS3-S1	WS3-S2	WS3-S3	WS4-S1
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				2.20	0.50	1.20	2.10	0.50
Date Sampled				11/02/2026	11/02/2026	11/02/2026	11/02/2026	11/02/2026
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	Units	Test Limit of detection	Test Accreditation Status					
General Inorganics								
pH (automated)	pH Units	N/A	ISO 17025	7.6	7.2	7.4	7.2	7.1
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	5.2	6.9	5.4	5.1	6
Heavy Metals / Metalloids								
Iron (dissolved)	µg/l	4	ISO 17025	76	1500	970	600	600
Lead (dissolved)	µg/l	1	ISO 17025	1.1	13	1.5	2.6	< 1.0
Manganese (dissolved)	µg/l	0.06	ISO 17025	30	45	27	26	11

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Analytical Report Number: 26-007276
Project / Site name: Wrexham Solar Farm

Lab Sample Number				829646	829647	829648	829649	829650
Sample Reference				WS4-S2	WS4-S3	WS5-S1	WS5-S2	WS5-S3
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				1.20	2.20	0.50	1.20	2.20
Date Sampled				11/02/2026	11/02/2026	11/02/2026	11/02/2026	11/02/2026
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	Units	Test Limit of detection	Test Accreditation Status					
General Inorganics								
pH (automated)	pH Units	N/A	ISO 17025	8	8.2	7.3	8.1	8.1
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	5.9	5.2	5.2	5.4	4.7
Heavy Metals / Metalloids								
Iron (dissolved)	µg/l	4	ISO 17025	520	350	980	530	1200
Lead (dissolved)	µg/l	1	ISO 17025	1	1.4	1.4	< 1.0	1.7
Manganese (dissolved)	µg/l	0.06	ISO 17025	42	50	16	53	68

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number : 26-007276
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 *
829636	WS1-S1	None Supplied	0.5	Brown loam and clay with concrete and vegetation
829637	WS1-S2	None Supplied	1.2	Brown loam and clay with gravel and vegetation
829638	WS1-S3	None Supplied	2	Brown sand with gravel and stones
829639	WS2-S1	None Supplied	0.5	Brown loam and clay with gravel and vegetation
829640	WS2-S2	None Supplied	1.2	Brown loam and clay with gravel and vegetation
829641	WS2-S3	None Supplied	2.2	Brown loam and clay with gravel and stones
829642	WS3-S1	None Supplied	0.5	Brown loam and clay with gravel and vegetation
829643	WS3-S2	None Supplied	1.2	Brown loam and clay with gravel
829644	WS3-S3	None Supplied	2.1	Brown loam and clay with gravel and vegetation
829645	WS4-S1	None Supplied	0.5	Brown loam and clay with gravel and vegetation
829646	WS4-S2	None Supplied	1.2	Brown loam and clay with gravel and vegetation
829647	WS4-S3	None Supplied	2.2	Brown loam and clay with gravel and vegetation
829648	WS5-S1	None Supplied	0.5	Brown loam and clay with gravel and vegetation
829649	WS5-S2	None Supplied	1.2	Brown loam and clay with gravel and vegetation
829650	WS5-S3	None Supplied	2.2	Brown loam and clay with gravel and vegetation

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Analytical Report Number : 26-007276
Project / Site name: Wrexham Solar Farm

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
Moisture Content (Wet Weight)	Moisture content (% wet weight), determined gravimetrically (up to 30°C)	In-house-procedure based on BS EN 12880:2000	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
Dissolved Organic Carbon in leachate	Determination of dissolved organic carbon in leachate by the measurement on a non-dispersive infrared analyser of carbon dioxide released by acidification	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037B	W	NONE
Cations in soil by ICP-OES	Determination of cations 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
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
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
Total Sulphur in soil	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES	In-house method	L038B	D	MCERTS
Metals by ICP-OES in leachate	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
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
pH at 20°C in leachate (automated)	Determination of pH in leachate by electrometric measurement	In-house method	L099-PL	W	ISO 17025
NRA Leachate 10:1		In-house method based on interim NRA guidance (1994)	L020B	W	NONE
Soil Descriptions	Textural classification	In-house method	L019B	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.

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

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The results included within the report are representative of the samples submitted for analysis.

Appendix D

Groundwater and Surface Water Monitoring Record

GROUNDWATER MONITORING LOG

Site name:	Wrexham Solar Farm		Job number:	R3585	Weather Conditions:	Dry	Ground Conditions:	wet underfoot
Time at:	start	9.30	Date:	18.02.26	Sampling Method:	~~waterra tubing~~ / bailer	Purge Method:	Full purge
	finish	4.00	Staff:	MJ / EB	Pump (if used):	~~Submersible / Peristatic~~	Date of Equipment Last Calibration:	17.02.26
Record code:	GW01							

Well No.	Time	GW depth (before purge)	GW depth (after purge)	Depth to base	Volume purged[1]	Floating Product	Sampled	Temp	DO	DO	SPC	pH	TDS	ORP(eH)	Description / Observations	Co-ordinates
	A/B	m bgl[2,3]	m bgl[2]	m bgl[2]	l	mm	(y/n)	^{o}C	%	mg l^{-1}	µs cm^{-1}	units		mV		
WS1	10:15/12:15	0.7	0.66	2.67	72	N	y	7.3	20.4	2.45	639	7.05	0.4155	-68.5		38052 / 48473
WS2	10:30/12:30	0.79	2.68	2.79	21	N	y	6.4	47.4	5.58	463.5	7.42	0.3013	-60.3		38251 / 48526
WS3	10:45/12:45	0.8	2.25	2.41	10	N	y	7	75.7	9.17	322.4	7.43	0.2095	-59.6		38278 / 48700
WS4	11:15/3:15	0.9	2.86	2.85	9	N	y	6.4	22.7	2.78	248.6	8.16	1.616	-77.1	Filtered through filter paper	38357 / 48513
WS5	11:30/3:30	0.71	2.84	2.93	10	N	y	6	13.9	1.72	787	7.49	0.511	-73.5	Filtered through filter paper	38395 / 48419
US	11:45					N	y	5.1	99..7	12.59	489.8	7.91	0.3182	-98.2		
DS	12:00					N	y	5.1	97.1	12.35	491.5	8.02	0.3194	-94.4		

Notes:

1 Where well volume (l) = 1000 x 3.142 x (well dimater in mm / 2000)^{2} x saturated depth

2 Amend to m toc (m below top of casing) as necessary

3 Record as 'dry' if no water present

4 Record sample description (odour / colouration of sample)

5 Note any other comments - state of casing, ground conditions, if different sampling method used etc

6 Time A/B where A is the time the borehole was purged and B is the time of sampling

Appendix E

Groundwater and Surface Water Laboratory Testing Certificate

Element Materials Technology
Unit 3 Deeside Point
Zone 3
Deeside Industrial Park
Deeside
CH5 2UA

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Smith Grant LLP
Suite 16 - Bryn Estyn Business Centre
Bryn Estyn Road
Wrexham
United Kingdom
LL13 9TY

Attention :	Meg Jones
Date :	24th February, 2026
Your reference :	R3585
Our reference :	Test Report 26/2601 Batch 1
Location :	Wrexham Solar Farm
Date samples received :	19th February, 2026
Status :	Final Report
Issue :	202602240958

Seven samples were received for analysis on 19th February, 2026 of which seven were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

The greenhouse gas emissions generated (in Carbon – Co2e) to obtain the results in this report are estimated as:

Scope 1&2 emissions - 3.548 kg of CO2

Scope 1&2&3 emissions - 8.384 kg of CO2

Authorised By:

Phil Sommerton BSc
Senior Technical Account Manager

Please include all sections of this report if it is reproduced

Element Materials Technology

Client Name: Smith Grant LLP
Reference: R3585
Location: Wrexham Solar Farm
Contact: Meg Jones
EMT Job No: 26/2601

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
$H=H_2SO_4$, Z=ZnAc, N=NaOH, $HN=HN0_3$

EMT Sample No.	1-2	3-4	5-6	7-8	9-10	11-12	13-14				LOD/LOR	Units	Method No.
Sample ID	US	DS	WS1	WS2	WS3	WS4	WS5						
Depth													
COC No / misc													
Containers	HN P	HN P	HN P	HN P	HN P	HN P	HN P						
Sample Date	18/02/2026	18/02/2026	18/02/2026	18/02/2026	18/02/2026	18/02/2026	18/02/2026						
Sample Type	Surface Water	Surface Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water						
Batch Number	1	1	1	1	1	1	1						
Date of Receipt	19/02/2026	19/02/2026	19/02/2026	19/02/2026	19/02/2026	19/02/2026	19/02/2026						
Total Dissolved Iron #	93	93	23	<20	26	132	113				<20	ug/l	TM30/PM14
Dissolved Lead #	<5	6	<5	<5	<5	<5	<5				<5	ug/l	TM30/PM14
Dissolved Manganese #	39	38	181	126	11	345	843				<2	ug/l	TM30/PM14
Dissolved Organic Carbon #	4	4	3	4	<2	24	NDP				<2	mg/l	TM60/PM0
pH #	8.16	8.12	7.40	7.81	7.89	8.26	7.13				<0.01	pH units	TM73/PM0

Please see attached notes for all abbreviations and acronyms

Client Name: Smith Grant LLP

Reference: R3585

Location: Wrexham Solar Farm

Contact: Meg Jones

Matrix : Liquid

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Method No.	NDP Reason
26/2601	1	WS5		13-14	TM60/PM0	Sample unsuitable for this test

Element Materials Technology

Notification of Deviating Samples

Client Name: Smith Grant LLP
Reference: R3585
Location: Wrexham Solar Farm
Contact: Meg Jones

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for job 26/2601						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating. Only analyses which are accredited are recorded as deviating if set criteria are not met.
It is a requirement under ISO 17025 that we inform clients if samples are deviating i.e. outside what is expected. A deviating sample indicates that the sample 'may' be compromised but not necessarily will be compromised. The result is still accredited and our analytical reports will still show accreditation on the relevant analytes.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 26/2601

SOILS and ASH

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. Asbestos samples are retained for 6 months.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C. Ash samples are dried at 35°C ±5°C.

Where Mineral Oil is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil is quoted, this refers to Total Aliphatics C10-C40.

STACK EMISSIONS

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation for Dioxins and Furans and Dioxin like PCBs has been performed on XAD-2 Resin, only samples which use this resin will be within our MCERTS scope.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a requirement of our Accreditation Body for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.
Laboratory records are kept for a period of no less than 6 years.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

Customer Provided Information

Sample ID and depth is information provided by the customer.

Age of Diesel

The age of release estimation is based on the nC17/pristane ratio only as prescribed by Christensen and Larsen (1993) and Kaplan, Galperin, Alimi et al., (1996).
Age estimation should be treated with caution as it can be influenced by site specific factors of which the laboratory are not aware.

Tentatively Identified Compounds (TICs)

Where Tentatively Identified Compounds (TICs) are reported, up to 10 Tentatively Identified Compounds will be listed where there is found to be a greater than 80% match with the NIST library. The reported concentration is determined semi-quantitively, with a matrix specific limit of detection. Note, other compounds may be present but are not reported.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above quantitative calibration range. The result should be considered the minimum value and is indicative only. The actual result could be significantly higher.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

EMT Job No: 26/2601

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma-Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM14	Preparation of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for Dissolved metals, and remain unfiltered for Total metals then acidified	Yes			
TM60	TC/TOC analysis of Waters by High Temperature Combustion followed by NDIR detection. Based on the following modified standard methods: USEPA 9060A (2002), APHA SMEWW 5310B:1999 22nd Edition, ASTM D 7573, and USEPA 415.1.	PM0	No preparation is required.	Yes			
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM0	No preparation is required.	Yes			

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