

SURFACE TRANSFORMS PLC

NEW FURNACE BUILDING, SURFACE TRANSFORMS, IMAGE BUSINESS PARK, KNOWSLEY INDUSTRIAL PARK, L33 7UF
PHASE 2 – INTRUSIVE INVESTIGATION AND GROUND GAS CONTAMINATION RISK ASSESSMENT

REPORT No. E1891.GGCI.R1
JANUARY 2026



Client : SURFACE TRANSFORMS PLC

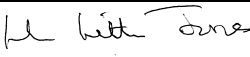
Project Title : NEW FURNACE BUILDING, SURFACE TRANSFORMS, IMAGE BUSINESS PARK,
KNOWSLEY INDUSTRIAL PARK, L33 7UF

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ASSESSMENT

Project No. E1891
Report No. E1891.GGCI.R1
Date. JANUARY 2026

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Distribution: SURFACE TRANSFORMS PLC

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1. INTRODUCTION.

1.1 Background and Terms of Reference

- 1.1.1 In October 2025 e-geo Solutions Ltd were commissioned by Surface Transforms plc to undertake a ground gas contamination investigation at the location of a proposed new Furnace Building at Surface Transforms, Image Business Park, Knowsley Industrial Park, Knowsley. The objective of the investigation was to determine the ground conditions at the site, and to assess the site with respect to potential chemical and ground gas contamination.
- 1.1.2 This report presents the findings of intrusive investigations with the chemical analysis of soil samples and monitoring of ground gasses.
- 1.1.3 The report has been prepared by e-geo Solutions Ltd for the sole use of the Client, for the purposes described and no extended duty of care applies to other parties. Any other party using this report for any purpose whatsoever do so at their own risk and any duty care to that party is specifically excluded.
- 1.1.4 The comments given, and opinions expressed, in this report are based on the information available at the time the report was compiled, however there may be additional information and data which becomes available at a later date which has an impact on the report content. Where data supplied by others has been used it has been assumed that the information is correct. No responsibility can be accepted by e-geo Solutions Ltd for inaccuracies within the data supplied by others.
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1.2 Report Contents

- 1.2.1 The report includes sections on:-
- Present site description, profile and setting.
 - The scope of the investigation, testing and analysis and its justification.
 - The geological and hydro-geological conditions encountered in boreholes.
 - Chemical analysis results and the results of gas monitoring and an assessment of contamination

2. SITE LOCATION, DESCRIPTION AND PROFILE.

2.1 Site Location

- 2.1.1 The proposed new Furnace Building area (the site) is located within the Surface Transforms Manufacturing Facility on the Image Business Park, Knowsley Industrial Estate. The location of the proposed new building is shown on Figure 1 and site boundaries on Figure 2. The site is surrounded on all sides by other buildings and infrastructure associated with the Surface Transforms industrial facility, and other industrial units. The overall site is centred at Grid Reference 343860, 398748.

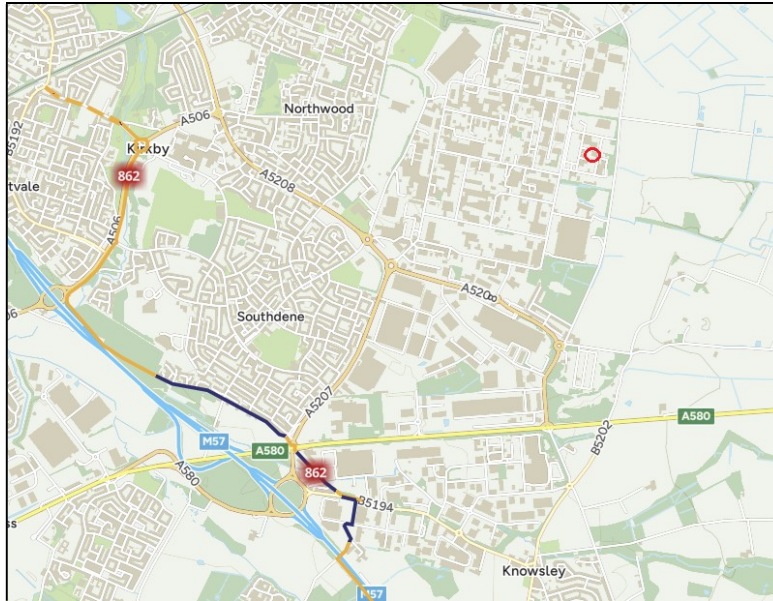


Figure 1 – Site Location

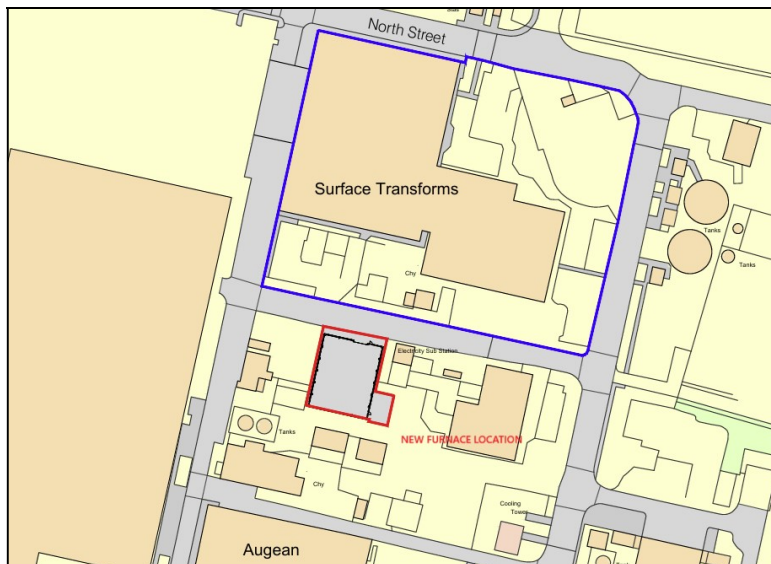


Figure 2 – New Furnace Extent (red)

2.2 Site Description and Topography

- 2.2.1 The site area comprises a rectangular area of ground comprising a solid concrete slab situated within the Surface Transforms manufacturing industrial unit. Presently the area is used for container

storage. The southern portion of the site area is unused with a gravel hardcore surface. To the north is an access road and concrete covered areas. To the south, east and west are buildings surrounded by sealed surfaces. The overall area is flat and level and at a similar elevation to the surrounding ground which comprises concrete and tarmac surfaced areas outside existing buildings and small areas of gravel hardcore. A recent aerial photograph as Figure 3..



Figure 3 -Aerial Photograph

2.3 Site Profile

- 2.3.1 A desk-based study of the site has been undertaken. Full details of the study are presented in a report titled : NEW FURNACE BUILDING, SURFACE TRANSFORMS, IMAGE BUSINESS PARK, KNOWSLEY INDUSTRIAL PARK, L33 7UF PHASE 1 DESK STUDY AND PRELIMINARY GROUND GAS CONTAMINATION RISK ASSESSMENT - Ref E1891.S1.P1.R1 (24/03/25).
- 2.3.2 The Phase 1 assessment concluded that the ground conditions below the development area and in surrounding land comprise granular made ground over natural sandy clay and boulder clay and will not generate ground gasses. However, in response to comments made by Knowsley Council intrusive investigations and gas monitoring was proposed.
- 2.3.3 The development will involve the construction of a solid concrete slab on an existing concrete slab which has no perforations. Adjacent drainage runs will be capped and if any gas was present there is no potential for migration and ingress to the building

3. GROUND INVESTIGATION WORKS.

3.1 Previous Investigations

3.1.1 There are no known previous investigations of the ground at the development site.

3.2 Scope of Work – Exploratory Holes

3.2.1 A ground contamination investigation was undertaken to provide information on the ground conditions at the site. The works were carried out by e-geo Solutions Ltd with the field work element undertaken on 17th October 2025. The investigation was designed, supervised and administered by e-geo Solutions Ltd and undertaken in accordance with BS5930 (1999) – code of Practice for Site Investigations (Amendment 1).

3.2.2 The main scope of work involved:

- The construction of 4 Nr shallow boreholes to 4.00m with continuous core sampling retained in plastic liners to collect ground samples.
- The examination of ground strata by a geo-environmental engineer and the careful description of soil types. Detailed descriptions of the ground strata are presented on the borehole records in Appendix 1.
- Installation of 2 Nr. gas/groundwater wells to depths of 4.00m bgl with slotted and plain 63mm diameter HDPE pipe.
- Collection of ground samples from near the ground surface for chemical analysis.

3.3 Scope of Work – Testing and Analysis

3.3.1 A total of 7 Nr. ground samples were collected from the shallow boreholes and submitted for chemical analysis at an accredited analytical laboratory. The analytical results are presented in Appendix 3. Samples were tested for:

Suite	Chemical Determinants	No. of Samples
Suite 1	pH, arsenic, cadmium, chromium (total and hexavalent), lead, mercury, selenium, copper, nickel, zinc, cyanide (total), sulphide, sulphur, sulphate. PAH (speciated)	4
Suite 2	pH, arsenic, cadmium, chromium (total and hexavalent), lead, mercury, selenium, copper, nickel, zinc	3
Suite 3	Soluble SO ₄	3
Suite 4	EPH CWG	4
Suite 5	Asbestos	4

3.4 Trial Hole Locations

3.4.1 Window sampler borehole locations are indicated on Figure 4 below.

3.3 Gas Monitoring

3.3.1 Gas monitoring standpipes were installed in the shallow boreholes to the following depths:

Borehole Number	Installation
WS1	3.50m slotted and 0.50m plain 63mm id HDPE
WS2	3.50m slotted and 0.50m plain 63mm id HDPE

3.3.2 Monitoring of the standpipes for methane (% volume), carbon dioxide (% volume), oxygen (% volume), and flow was undertaken on 22/10/25, 28/10/25, 17/11/25, 26/11/25, 02/12/25, and 15/12/25. Gas monitoring was undertaken with a GA2000 Serial number GA12439. Gas monitoring results are presented in Appendix 2.

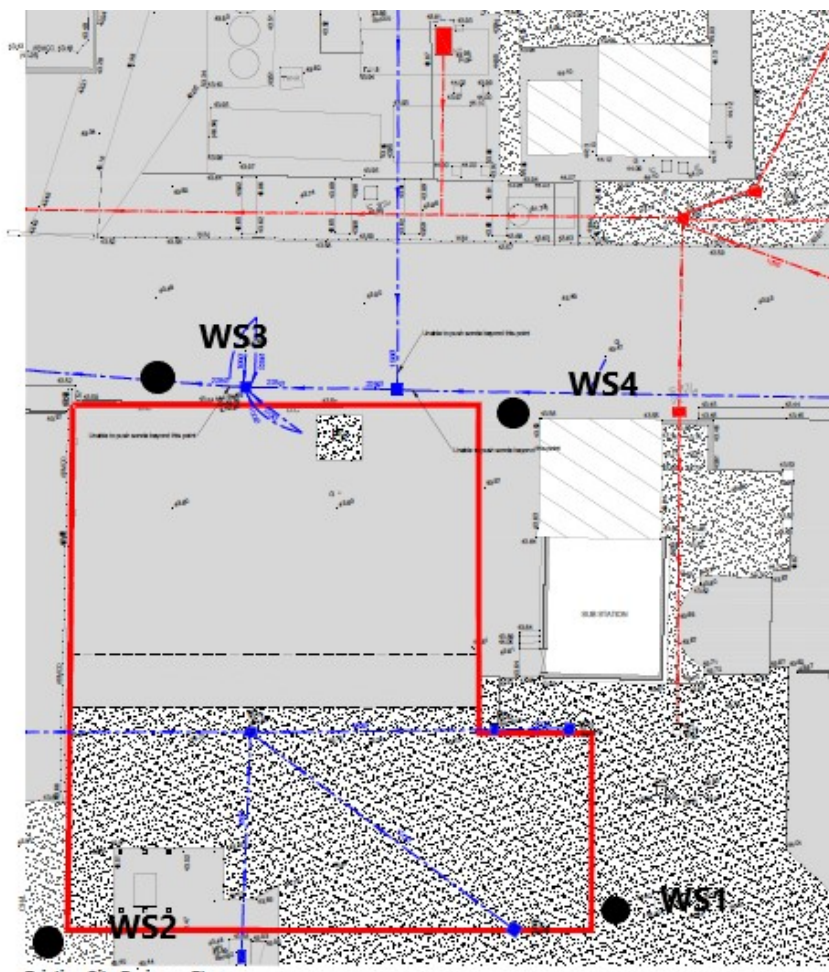


Figure 4 – Borehole Locations (WS1, WS2, WS3, WS4)

4. GROUND CONDITIONS AND GEOLOGY.

4.1 General

- 4.1.1 Details of the ground strata and depths are presented on the borehole records in Appendix 1. A summary of the findings is presented below.

4.2 Stratigraphy

- 4.2.1 The general strata and depths encountered during the investigation was:

Stratum	Description	Depth to base m range (average)
Made Ground	Made Ground - Soft light brown and medium brown sandy silty clay and dark brown clayey silt with rare sandstone gravel and cobbles.	1.00
CLAY	Firm dark brown and some grey slightly gravelly sandy silty CLAY	4.00+

4.3 Groundwater

- 4.3.1 No significant groundwater inflows were recorded in boreholes during construction.

4.4 Contamination Observations

- 4.4.1 During the examination of the ground strata no obvious indications of contamination were noted. There was some made-ground with demolition rubble at the ground surface but no indication of hydrocarbons, vapours or unusual odours.

5. CONTAMINATION ASSESSMENT

5.1 General

- 5.1.1 The results of the chemical analysis of soils samples are presented in Appendix 3. An assessment of the results of the analysis of samples has been undertaken to determine the presence and extent of any ground contamination. The assessment of contamination undertaken is a 'Tier 1 Generic Risk Assessment' which requires the comparison of contaminant concentrations to a set of generic Tier 1 Screening Values (TSV) risk-based screening concentrations.
- 5.1.2 Contaminant concentrations below the TSVs are considered not to warrant further risk assessment. It should be noted that exceeding the TSVs does not necessarily mean there is a risk, and the site should be remediated.

5.2 Soils Reference Values

- 5.2.1 TSVs for soil derived to be protective of human health are defined for standard end use situations in accordance with UK CLR framework. The values chosen are dependant on the site use or proposed development. The site is to be developed with a furnace building on an existing concrete slab. The TSVs selected to assess soils in relation to human health over the whole site are therefore 'commercial and industrial'.
- 5.2.2 The applicable TSVs for assessment of the analytical results are based on the following guideline criteria: CLEA 2009) Soil Guideline Values (SGVs) for 'commercial and industrial' end-use. (where available), LQM CIEH Generic Assessment Criteria – 2nd Edition 2009, Welsh Assembly Government C4SL.

5.3 Soils Analysis Assessment

- 5.3.1 The ground samples analysed were from the near surface layers of made ground to 0.80m depth and from the underlying CLAY to a depth of 4.00m.
- 5.3.2 Comparison of the analytical results for metals and non-metals using maximum concentrations as a means of assessment with the Tier 1 TSVs for 'commercial end use' indicates that the shallow ground strata and deeper CLAY do not contain any significant concentrations of contaminants above available respective concentrations.
- 5.3.3 Concentrations of cadmium and chromium were below the guideline concentrations or below detection limits.
- 5.3.4 Concentrations of arsenic were below the guideline concentration.
- 5.3.5 Concentrations of selenium and mercury were below the guideline concentrations.
- 5.3.6 Concentrations of copper, nickel, zinc were below the guideline concentrations.
- 5.3.7 Concentrations of lead were below the guideline concentrations.
- 5.3.8 No elevated concentrations of sulphate or sulphur were found in the ground.
- 5.3.9 Concentrations of total hydrocarbons and the fractions were below the guideline concentrations and generally below detection limits.
- 5.3.10 Concentrations of polyaromatic hydrocarbons and the speciated fractions were below the guideline concentrations
- 5.3.11 No elevated concentrations of soluble sulphate were detected.
- 5.3.12 A positive asbestos result was recorded in WS-0.50m with bundles of amosite fibres.

5.4 Ground Gas Assessment

- 5.4.1 The results of ground gas monitoring are presented in Appendix 2 and are summarised below. In the assessment of soil gasses reference has been made to the NHBC Guidance on Methane and Carbon Dioxide Report Edition No.04 (March 2007) and CIRIA Publication C659 Assessing Risks Posed by Hazardous Ground Gases To Buildings. The monitoring results have been compared to the standard trigger concentrations of 1% v/v for methane and 1.5% v/v for carbon dioxide.

Well	No. visits	max CH ₄ (%)	max CO ₂ (%)	max Flow (l/hr)	CH ₄ GSV (l/hr)	CO ₂ GSV (l/hr)	GSV
WS1	6	<0.1	1.0	<0.1	<0.01	<0.01	CS1
WS2	6	<0.1	0.5	<0.1	<0.01	<0.01	CS1
Site	6	<0.1	1.0	<0.1	<0.01	<0.01	CS1

- 5.4.2 No elevated concentrations of methane were recorded in any of the boreholes with all recorded concentrations on all occasions 0.0%.
- 5.4.3 Detectable concentrations of carbon dioxide, with very slightly depleted oxygen concentrations were detected but none of the concentrations exceeding 1.5%. The maximum concentration was 1.0% .
- 5.4.4 No gas flow was detected.
- 5.4.5 With reference to the CIRIA C665 guidance and NHBC Guidance and the 'Traffic Light' system of ground gas risk assessment the results have been screened using the method for low rise housing developments as a guide. With no methane concentration and maximum carbon dioxide of 1.0% and no flow the gas screening value GSV is zero for methane and carbon dioxide and the site is characterized as green based on the results of six monitoring visits.

6 DEVELOPMENT CONSIDERATIONS.

6.1 Ground Contamination

- 6.1.1 Comparison of the analytical results for metals and non-metals using maximum concentrations as a means of assessment with the Tier 1 TSVs for 'commercial end use' indicates that the shallow ground strata and deeper CLAY do not contain any significant concentrations of contaminants above available respective trigger concentrations.
- 6.1.2 A positive asbestos result was recorded in WS-0.50m with bundles of amosite fibres. All groundworks contractors should be made aware of the possible presence of asbestos and appropriate measures undertaken.
- 6.1.3 Based on six monitoring visits no hazardous ground gasses were found and gas protection measures are not required.

Appendix 1 - Window Sampler Borehole Records

WINDOW SAMPLE BOREHOLE RECORD

SITE: NEW FURNACE BUILDING, SURFACE TRANSFORMS, IMAGE BUSINESS PARK	BOREHOLE No:
PROJECT: NEW FURNACE BUILDING, SURFACE TRANSFORMS, IMAGE BUSINESS PARK	WS1
CLIENT: SURFACE TRANSFORMS LTD	Sheet 1 of 1
Dates : 17/10/2025	Project Ref: E1891
Elev (maOD) :	
Casing dia : 100mm	Logged By: HLJ
Engineer : e-geo Solutions Ltd	

Depth (m)	Sample/ Test	Field Record	Depth (m)	Strata Description	Casing Depth(m)	Water Depth(m)	
	0.5 ej			Made Ground - Soft light brown and medium brown sandy silty clay and dark brown clayey silt with rare sandstone gravel and cobbles.		Dry during boring	
	1.1 ej		1.00	Firm dark brown and some grey slightly gravelly sandy silty CLAY			
			4.00	Base of borehole			

Remarks
Gas monitoring installation 3.5m slotted and 0.50m plain HDPE Pipe

SITE: NEW FURNACE BUILDING, SURFACE TRANSFORMS, IMAGE BUSINESS PARK
PROJECT: NEW FURNACE BUILDING, SURFACE TRANSFORMS, IMAGE BUSINESS PARK
CLIENT: SURFACE TRANSFORMS LTD

WS2

Sheet 1 of 1

Dates :	17/10/2025
---------	------------

Project Ref: E1891

Elev (maOD) :

Casing dia : 100mm

Logged By: HLJ

Engineer : e-geo Solutions Ltd

Remarks	Gas monitoring installation 3.5m slotted and 0.50m plain HDPE Pipe
---------	--

SITE: NEW FURNACE BUILDING, SURFACE TRANSFORMS, IMAGE BUSINESS PARK

BOREHOLE No:

WS3

Sheet 1 of 1

Project Ref: E1891

Logged By: HLJ

Engineer : e-geo Solutions Ltd

Remarks

SITE: NEW FURNACE BUILDING, SURFACE TRANSFORMS, IMAGE BUSINESS PARK

BOREHOLE No:

WS4

Sheet 1 of 1

Project Ref: E1891

Logged By: HLJ

Casing dia : 100mm

Engineer : e-geo Solutions Ltd

[illegible]

Remarks

Appendix 2 - Gas Monitoring Results

Surface transforms

Monitoring Date	22/10/25,	
	WS1	WS2
CH4 by VOL %	0.0	0.0
CO2 by VOL %	0.0	0.5
O2 by VOL %	17.4	16.9
BAL	87.7	87.8
LEL CH4	0.0	0.0
PEAK CH4 by VOL %	0.0	0.0
PEAK CO2 by VOL %	0.0	0.5
MIN O2 by VOL %	17.4	16.6
BARO PRESSURE	999.0	999.0
FLOW l/hr	<0.0 1/hr	<0.0 1/hr

Surface transforms

Monitoring Date	28/10/2025	
	WS1	WS2
CH4 by VOL %	0.0	0.0
CO2 by VOL %	0.0	0.5
O2 by VOL %	17.6	16.8
BAL	88.6	87.7
LEL CH4	0.0	0.0
PEAK CH4 by VOL %	0.0	0.0
PEAK CO2 by VOL %	0.0	0.5
MIN O2 by VOL %	17.6	15.8
BARO PRESSURE	985.0	985.0
FLOW l/hr	<0.0 1/hr	<0.0 1/hr

Surface transforms

Monitoring Date	17/11/25,	
	WS1	WS2
CH4 by VOL %	0.0	0.0
CO2 by VOL %	0.0	1.0
O2 by VOL %	17.7	16.9
BAL	88.4	86.7
LEL CH4	0.0	0.0
PEAK CH4 by VOL %	0.0	0.0
PEAK CO2 by VOL %	0.0	1.0
MIN O2 by VOL %	17.7	16.2
BARO PRESSURE	1002.0	1002.0
FLOW l/hr	<0.0 1/hr	<0.0 1/hr

Surface transforms

Monitoring Date	26/11/2025	
	WS1	WS2
CH4 by VOL %	0.0	0.0
CO2 by VOL %	0.0	1.0
O2 by VOL %	17.4	16.8
BAL	87.9	88.4
LEL CH4	0.0	0.0
PEAK CH4 by VOL %	0.0	0.0
PEAK CO2 by VOL %	0.0	1.0
MIN O2 by VOL %	17.4	16.8
BARO PRESSURE	982.0	982.0
FLOW l/hr	<0.0 1/hr	<0.0 1/hr

Surface transforms

Monitoring Date	02/12/2025	
	WS1	WS2
CH4 by VOL %	0.0	0.0
CO2 by VOL %	0.0	0.5
O2 by VOL %	17.7	17.2
BAL	88.9	87.6
LEL CH4	0.0	0.0
PEAK CH4 by VOL %	0.0	0.0
PEAK CO2 by VOL %	0.0	0.5
MIN O2 by VOL %	17.7	17.2
BARO PRESSURE	1001.0	1001.0
FLOW l/hr	<0.0 1/hr	<0.0 1/hr

Surface transforms

Monitoring Date	15/12/2025	
	WS1	WS2
CH4 by VOL %	0.0	0.0
CO2 by VOL %	0.0	0.5
O2 by VOL %	17.9	17.1
BAL	88.8	88.6
LEL CH4	0.0	0.0
PEAK CH4 by VOL %	0.0	0.0
PEAK CO2 by VOL %	0.0	0.5
MIN O2 by VOL %	17.9	17.1
BARO PRESSURE	999.6	999.6
FLOW l/hr	<0.0 1/hr	<0.0 1/hr

Appendix 3 - Chemical Analysis Results

E-Geo Solutions
Glasgow House
High Street
St Asaph
Denbighshire
United Kingdom
LL17 0UN



4225



Attention : Huw Littler-Jones
Date : 7th November, 2025
Your reference : Surface T
Our reference : Test Report 25/17798 Batch 1
Location : -
Date samples received : 24th October, 2025
Status : Final Report
Issue : 202511070943

Seven samples were received for analysis on 24th October, 2025 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 - 19.186 kg of CO2

Scope 1&2&3 emissions - 45.342 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: E-Geo Solutions
Reference: Surface T
Location: -
Contact: Huw Littler-Jones
EMT Job No: 25/17798

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-3	4-6	7-9	10-12	13	14	15				Please see attached notes for all abbreviations and acronyms		
Sample ID	WS1	WS2	WS2	WS4	WS1	WS2	WS2						
Depth	0.50	0.50	0.80	0.30	1.10	1.20	2.80						
COC No / misc													
Containers	V J B	V J B	V J B	V J B	J	J	J						
Sample Date	22/10/2025	22/10/2025	22/10/2025	22/10/2025	22/10/2025	22/10/2025	22/10/2025						
Sample Type	Clay	Clayey Sand	Clayey Sand	Sandy Clay	Clay	Clay	Clay						
Batch Number	1	1	1	1	1	1	1						
Date of Receipt	24/10/2025	24/10/2025	24/10/2025	24/10/2025	24/10/2025	24/10/2025	24/10/2025				LOD/LOR	Units	Method No.
TPH CWG													
Aliphatics													
>C5-C6 ^{#M}	<0.1	<0.1	<0.1	<0.1	-	-	-				<0.1	mg/kg	TM36/PM12
>C6-C8 ^{#M}	<0.1	<0.1	<0.1	<0.1	-	-	-				<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1	<0.1	<0.1	<0.1	-	-	-				<0.1	mg/kg	TM36/PM12
>C10-C12 ^{#M}	<0.2	<0.2	<0.2	9.2	-	-	-				<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 ^{#M}	<4	<4	<4	71	-	-	-				<4	mg/kg	TM5/PM8/PM16
>C16-C21 ^{#M}	<7	<7	<7	83	-	-	-				<7	mg/kg	TM5/PM8/PM16
>C21-C35 ^{#M}	<7	<7	<7	149	-	-	-				<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-35	<19	<19	<19	312	-	-	-				<19	mg/kg	TM5/PM8/PM16
Aromatics													
>C5-EC7 [#]	<0.1	<0.1	<0.1	<0.1	-	-	-				<0.1	mg/kg	TM36/PM12
>EC7-EC8 [#]	<0.1	<0.1	<0.1	<0.1	-	-	-				<0.1	mg/kg	TM36/PM12
>EC8-EC10 ^{#M}	<0.1	<0.1	<0.1	<0.1	-	-	-				<0.1	mg/kg	TM36/PM12
>EC10-EC12 [#]	<0.2	<0.2	<0.2	1.5	-	-	-				<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 [#]	<4	<4	<4	18	-	-	-				<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 [#]	<7	<7	<7	40	-	-	-				<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 [#]	<7	<7	21	180	-	-	-				<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-35 [#]	<19	<19	21	240	-	-	-				<19	mg/kg	TM5/PM8/PM16
Total aliphatics and aromatics(C5-35)	<38	<38	<38	552	-	-	-				<38	mg/kg	TM5/PM8/PM16
MTBE [#]	<5	<5	<5	<5	-	-	-				<5	ug/kg	TM36/PM12
Benzene [#]	<5	<5	<5	<5	-	-	-				<5	ug/kg	TM36/PM12
Toluene [#]	<5	<5	<5	<5	-	-	-				<5	ug/kg	TM36/PM12
Ethylbenzene [#]	<5	<5	<5	<5	-	-	-				<5	ug/kg	TM36/PM12
m/p-Xylene [#]	<5	<5	<5	18	-	-	-				<5	ug/kg	TM36/PM12
o-Xylene [#]	<5	<5	<5	19	-	-	-				<5	ug/kg	TM36/PM12
Phenol ^{#M}	<0.01	<0.01	<0.01	<0.01	-	-	-				<0.01	mg/kg	TM26/PM21B
Natural Moisture Content	18.8	10.1	14.9	10.7	-	-	-				<0.1	%	PM4/PM0
Sulphate as SO4 (2:1 Ext) ^{#M}	-	-	-	-	0.0086	0.0108	0.0182				<0.0015	g/l	TM38/PM20
Total Cyanide ^{#M}	<0.5	<0.5	<0.5	<0.5	-	-	-				<0.5	mg/kg	TM89/PM45
Sulphide	<10	<10	<10	<10	-	-	-				<10	mg/kg	TM107/PM45
pH ^{#M}	7.29	8.15	6.23	10.91	8.10	8.01	6.65				<0.01	pH units	TM73/PM11
Sample Type	Clay	Clayey Sand	Clayey Sand	Sandy Clay	Clay	Clay	Clay					None	PM13/PM0
Sample Colour	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown					None	PM13/PM0
Other Items	Stones, roots	None	Stones	Stones	Stones	Stones	Stones					None	PM13/PM0

Note:

The LOQ of the Asbestos Quantification is 0.001% dry fibre of dry mass of sample.

Where the sample is not taken by a Element Materials Technology consultant, Element Materials Technology cannot be responsible for inaccurate or unrepresentative sampling.

QF-PM 3.1.15 v10

Client Name: E-Geo Solutions

Reference: Surface T

Location: -

Contact: Huw Littler-Jones

[illegible]

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.: 25/17798

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 overestimate 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-quantitatively, 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
AA	x5 Dilution

EMT Job No: 25/17798

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35 degrees Celsius or 105 degrees Celsius. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes	Yes	AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes	Yes	AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details	Yes		AR	Yes
PM13	A visual examination of the solid sample is carried out to ascertain sample make up, colour and any other inclusions. This is not a geotechnical description.	PM0	No preparation is required.			AR	No
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM21B	As Received samples are extracted in Methanol: Water (60:40) by reciprocal shaker.	Yes	Yes	AR	Yes

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Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	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	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 degrees Celsius. Samples containing asbestos are not dried and ground.			AD	Yes
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	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 degrees Celsius. Samples containing asbestos are not dried and ground.	Yes	Yes	AD	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes	Yes	AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) - All anions comparable to BS ISO 15923-1: 2013I	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes	Yes	AD	Yes
TM50	Acid soluble sulphate (Total Sulphate) analysed by ICP-OES	PM29	A hot hydrochloric acid digest is performed on a dried and ground sample, and the resulting liquor is analysed.	Yes	Yes	AD	Yes
TM65	Asbestos Bulk Identification method based on HSG 248 Second edition (2021)	PM42	Modified SCA Blue Book V.12 draft 2017 and WM3 1st Edition v1.1:2018. Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
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.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes	Yes	AR	No
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM32	Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio.	Yes	Yes	AD	Yes

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