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

P: +44 (0) 1244 833780
F: +44 (0) 1244 833781
W: www.element.com

[redacted]

Attention :	[redacted]
Date :	17th September, 2025
Your reference :	Angus Fire
Our reference :	Test Report 25/5810 Batch 1 25/7971 Batch 1 25/9275 Batch 1 25/9822 Batch 1
Location :	Angus Fire
Date samples received :	
Status :	Final report
Issue :	202509170809

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

Scope 1&2 emissions - 23.747 kg of CO2

Scope 1&2&3 emissions - 56.121 kg of CO2

[redacted]

Element Materials Technology Environmental UK Limited
Registered in England and Wales
Registered Office: 3rd Floor Davidson Building, 5 Southampton Street, London WC2E 7HA
Company Registration No: 11371415

Element Materials Technology

Client Name: [redacted]
Reference: Angus Fire
Location: Angus Fire
Contact: [redacted]

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 Job No.	25/5810	25/7971	25/7971	25/9275	25/9275	25/9822							
EMT Sample No.	3	13	15	1	3	1							
Sample ID	SYS-INFLUENT T11-08042025	SYS-INFLUENT T12A-15052025	SYS-INFLUENT T12B-15052025	SYS-INFLUENT T12C-03062025	SYS-INFLUENT T13-05062025	SYS-INFLUENT T14-09062025							
Depth											Please see attached notes for all abbreviations and acronyms		
COC No / misc													
Containers	PF	PF	PF	PF	PF	P							
Sample Date	08/04/2025	15/05/2025	15/05/2025	03/06/2025 16:14	05/06/2025	09/06/2025							
Sample Type	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid							
Batch Number	1	1	1	1	1	1							
Date of Receipt	10/04/2025	17/05/2025	17/05/2025	07/06/2025	07/06/2025	17/06/2025							
Chloride	19.2	26.9	29.9	-	-	-					<0.3	mg/l	TM38/PM0

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Depth													
COC No / misc													
Containers	PF	PF	PF	PF	PF	P							
Sample Date	08/04/2025	15/05/2025	15/05/2025	03/06/2025 16:14	05/06/2025	09/06/2025							
Sample Type	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid							
Batch Number	1	1	1	1	1	1					LOD/LOR	Units	Method No.
Date of Receipt	10/04/2025	17/05/2025	17/05/2025	07/06/2025	07/06/2025	17/06/2025							
PFAAS													
PFBA	0.52	0.59	0.62	0.31	0.76	0.55					<0.05	ug/l	TM135/PM121
PFPeA	1.54	2.02	2.10	0.99	1.60	1.71					<0.05	ug/l	TM135/PM121
PFHxA	2.26	2.54	2.40	1.78	4.75	3.01					<0.05	ug/l	TM135/PM121
PFHpA	0.63	0.94	0.94	0.48	1.51	1.05					<0.05	ug/l	TM135/PM121
PFOA	0.91	1.36	1.39	0.70	1.59	1.08					<0.05	ug/l	TM135/PM121
PFNA	0.14	0.18	0.19	0.09	0.24	0.16					<0.05	ug/l	TM135/PM121
PFDA	0.14	0.14	0.15	0.11	0.11	0.10					<0.05	ug/l	TM135/PM121
PFUnA	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05					<0.05	ug/l	TM135/PM121
PFDoA	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05					<0.05	ug/l	TM135/PM121
PFTrDA	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05					<0.05	ug/l	TM135/PM121
PFTeDA	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05					<0.05	ug/l	TM135/PM121
PFHxDA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					<0.1	ug/l	TM135/PM121
PFODA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					<0.1	ug/l	TM135/PM121
PFBS	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05					<0.05	ug/l	TM135/PM121
PFPeS	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05					<0.05	ug/l	TM135/PM121
PFHxS	0.32	0.56	0.64	0.17	0.26	0.27					<0.05	ug/l	TM135/PM121
PFHpS	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05					<0.05	ug/l	TM135/PM121
PFOS (Linear)	2.51	2.99	3.58	1.88	2.15	-					<0.05	ug/l	TM135/PM121
PFOS (Branched)	0.54	0.78	0.95	0.51	0.55	-					<0.05	ug/l	TM135/PM121
PFOS (Total)	3.05	3.77	4.53	2.39	2.70	2.76					<0.05	ug/l	TM135/PM121
PFNS	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05					<0.05	ug/l	TM135/PM121
PFDS	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05					<0.05	ug/l	TM135/PM121
PFUnDS	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05					<0.05	ug/l	TM135/PM121
PFDoDS	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05					<0.05	ug/l	TM135/PM121
PFTrDS	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05					<0.05	ug/l	TM135/PM121
HFPO-DA (Gen X)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05					<0.05	ug/l	TM135/PM121
HFPO-TA	<1	<1	<1	<1	<1	<1					<1	ug/l	TM135/PM121
DONA	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05					<0.05	ug/l	TM135/PM121
PFMOPrA	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05					<0.05	ug/l	TM135/PM121
NFDHA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					<0.1	ug/l	TM135/PM121
PFMOBA	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05					<0.05	ug/l	TM135/PM121
PFECHS	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05					<0.05	ug/l	TM135/PM121
3:3 FTCA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					<0.1	ug/l	TM135/PM121
5:3 FTCA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5					<0.5	ug/l	TM135/PM121
7:3 FTCA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					<0.1	ug/l	TM135/PM121
PFEESA	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05					<0.05	ug/l	TM135/PM121
9Cl-PF3ONS	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05					<0.05	ug/l	TM135/PM121
11Cl-PF3OUdS	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05					<0.05	ug/l	TM135/PM121
4:2 FTS	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2					<0.2	ug/l	TM135/PM121
6:2 FTS	13.4	18.8	19.3	14.3	20.4	15.9					<0.2	ug/l	TM135/PM121
8:2 FTS	3.8	4.4	4.9	6.4	8.1	4.5					<0.2	ug/l	TM135/PM121
FBSA	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05					<0.05	ug/l	TM135/PM121

FHxSA	0.19	0.37	0.37	0.14	0.21	0.25					<0.05	ug/l	TM135/PM121

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Depth											Please see attached notes for all abbreviations and acronyms		
COC No / misc													
Containers	PF	PF	PF	PF	PF	P							
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Sample Type	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid							
Batch Number	1	1	1	1	1	1							
Date of Receipt	10/04/2025	17/05/2025	17/05/2025	07/06/2025	07/06/2025	17/06/2025							
PFAAS Continued											LOD/LOR	Units	Method No.
FOSA	<1	<1	<1	<1	<1	<1					<1	ug/l	TM135/PM121
N-MeFOSA	<1	<1	<1	<1	<1	<1					<1	ug/l	TM135/PM121
N-EtFOSA	<1	<1	<1	<1	<1	<1					<1	ug/l	TM135/PM121
Me-FOSE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					<0.1	ug/l	TM135/PM121
Et-FOSE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					<0.1	ug/l	TM135/PM121
N-MeFOSAA	<1	<1	<1	<1	<1	<1					<1	ug/l	TM135/PM121
N-EtFOSAA	<1	<1	<1	<1	<1	<1					<1	ug/l	TM135/PM121
8:2diPAP	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2					<0.2	ug/l	TM135/PM121
FOUEA	<1	<1	<1	<1	<1	<1					<1	ug/l	TM135/PM121
6:2 FTAB (Capstone B)	-	-	-	29	37	34					<1	ug/l	TM135/PM121
6:2 FTAB (Capstone B)	35	54	60	-	-	-					<4	ug/l	TM135/PM121

Client Name: [redacted]
Reference: Angus Fire
Location: Angus Fire
Contact: [redacted]

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for jobs 25/5810,25/7971,25/9275,25/9822						

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.: 25/5810 25/7971 25/9275 25/9822

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

HWOL ACRONYMS AND OPERATORS USED

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

EMT Job No: 25/5810 25/7971 25/9275 25/9822

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
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	
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
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil.	PM24	Preparation of Soil and Marine Sediment Samples for Total Organic Carbon.			AD	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: 2013l	PM0	No preparation is required.				
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
TM135	Analysis of PFAS compounds in Water and Soil by LC-MS/MS	PM120	Methanol/NH4OH Extraction for PFAS Analysis by LC-MS - As received solid samples are extracted in Methanol: Ammonium Hydroxide solution by Sonication and End over End shaker.			AR	Yes
TM135	Analysis of PFAS compounds in Water and Soil by LC-MS/MS	PM121	Preparation of PFAS liquid samples - As received samples are centrifuged and the supernatant is used for PFAS analysis.				
TM135	Analysis of PFAS compounds in Water and Soil by LC-MS/MS	PM122	SPE Preparation of Water Samples for PFAS analysis by LC-MS/MS				
TM135	Analysis of PFAS compounds in Water and Soil by LC-MS/MS	PM122	SPE Preparation of Water Samples for PFAS analysis by LC-MS/MS	Yes			
TM221	PFAS TOPs Soils analysis Modified Version of the "Persistence of Perfluoroalkyl Acid Precursors in AFFF-Impacted Groundwater and Soil" Houtz, Higgins, Field and Sedlak Environmental, Science & Technology Publications 2012 & 2013	PM153	PFAS Top Assay sample preparation as outlined by the references within our analytical method TM221			AR	Yes