

The Executors of JS Greenwood
Estate Office,
Stone Hall Farm,
Haywards Heath Road,
Balcombe,
West Sussex,
RH17 6QN

Mr and Mrs R Ohlson,
Westhill Place,
Balcombe,
Haywards Heath,
RH17 6QY

Ecologia Ref: 24.148.1
Client Ref: Balcombe Estate

12th August 2024

Dear The Executors of JS Greenwood and Richard Ohlson,

**Remediation and Validation Works at Balcombe Estate (No.1 and No.2
Townhouse Cottages) Ardingly, Haywards Heath, West Sussex, RH17 6UR.**

1. Introduction

Ecologia have undertaken remediation works at No.1 and No.2 Townhouse Cottages, Ardingly, Haywards Heath, West Sussex, RH17 6UR, following an incident involving the loss of heating oil in 2021.

Ecologia undertook a Phase 1 survey in March 2021 to identify potential risks to Human Health, Controlled Waters (Surface Water Ditch), Third Party Land, Site Drainage (Septic Tank) and Building Structure, involving emergency excavation and removal of free product. The findings are detailed within a letter report reference EES 21.090.1, dated 12th April 2021^(Ref 1).

Subsequent internal investigation was undertaken by Ecologia in August 2021 where trial pitting and brick dust sampling were undertaken. The findings of which are detailed within a letter report reference EES 21.090.2, dated 16th August 2021^(Ref 2).

Based on the findings of the site investigation works, Ecologia assessed the following potential risks to identified receptors:

- 'Low' risk to groundwater;
- 'Low' risk to surface water;
- 'Moderate' risk to drainage;
- 'Low/Moderate' risk to third party land;
- 'High' risk to building structure; and
- 'Low/Moderate' risk to occupiers of the dwelling.

Based on the identified risks to receptors, Ecologia recommended undertaking removal of grossly contaminated soils and the replacement of highly impacted brickwork. Given the properties were unoccupied and due for demolition, no further work took place.

Demolition of the properties was undertaken in July 2024, following this, Ecologia attended site on the 22nd and 30th July respectively, to undertake an additional site investigation to delineate any residual contamination previously inaccessible (due to the properties) and undertake suitable remediation (via excavation of impacted soils - being undertaken via the client's sub-contractor) of any known contamination ahead of sale of the estate.



This letter report details the works carried out and provides recommendations for further work, if required. A photographic report is presented within Appendix I.

2. Remedial Works

Enabling Works

Prior to the commencement of the works, the necessary Health & Safety documentation was prepared, and arrangements were made with the client. Rabbit Group were appointed Principal Contractor, they undertook all service clearance on-site given they were responsible for all breaking ground activities.

Before excavation works began, visqueen membrane was placed for all impacted soil to be laid upon.

Excavation Works

The remedial excavation works occurred on the 22nd July 2024, however given the scale of the works a second visit on the 30th July 2024 was undertaken to continue the investigation works.

The impacted soils beneath the previously investigated TP1 and TP7 were excavated as one 'main' excavation up to a depth of 2.70m bgl (below ground level). The soils were stored on an impermeable visqueen membrane on-site ahead of waste disposal testing results to determine the most suitable route of licensed off-site disposal. The data has categorised the waste as non-hazardous in terms of disposal, laboratory reports can be found in Appendix II. However, the laboratory results and site information should be provided to the relevant waste disposal facility to review and confirm the categorisation.

On-site soil screening was undertaken, soils were placed into a sample bag for headspace analysis. A hand-held Photo Ionisation Detector (PID) was used for screening hydrocarbon vapours on-site. The PID can detect VOCs (volatile organic compounds) in concentrations of parts per million (ppm). The instrument was calibrated on-site using isobutylene gas, and the zero baseline was set away from the point of loss using a carbon filter.

Soils from the top 1.00m bgl was screened with a more stringent headspace allowance (<5ppm) given its proximity to potential future site users and infrastructure. Soils below 1.00m bgl were screeded against a more lenient headspace allowance (<20ppm) and it is advised that a hydrocarbon and gas protection membrane should be installed given the inclusion of a basement within the proposed future development.

The soils were tested at regular intervals both horizontally across the impacted area and vertically below ground level. The VOCs being detected were a good indicator of the level of impact within the soil, excavation continued in all directions, being guided by the PID readings until they were within the above-mentioned limits. Soil samples were then taken from the sides and base at different depths across the excavation for laboratory analysis.

Figures 1 and 2 within appendix III summarises the PID readings through both days of site investigation works. The excavation was broadly rectangular, therefore up to three (3No.) readings were taken across each of the longer sides (north and south) and base which are differentiated by being either to the east, centre or west of that face and up to two (2No.) readings were taken across each of the shorter sides (east and west) which are differentiated by being either to the north, centre or south of that face.



3. Laboratory Analytical Results

Soil Analysis

Ten (10No.) soil samples were recovered from the excavation and sent to a UKAS/MCERTS accredited laboratory and scheduled for analysis of the following parameters:

- Total Petroleum Hydrocarbons (TPH) with banding C₈-C₃₅.
- Benzene, Toluene, Ethylbenzene and Xylene (BTEX compounds).

The results are shown in the Tables 2 and 3, below and overleaf. A full set of laboratory certificates is included within Appendix II.

Table 2: Soil Analytical Data – TPH

TPH (mg/kg)						
Sample	Depth (m bgl)	C8 – C10	C10 – C12	C12 – C16	C16 – C21	C21 – C35
South Wall	0.00-1.00	<0.02	<2.00	<4.00	<10.00	<10.00
	1.00-2.00	<0.02	<2.00	<4.00	<10.00	<10.00
East Wall	0.00-1.00	<0.02	<2.00	<4.00	<10.00	<10.00
	1.00-2.00	<0.02	<2.00	<4.00	<10.00	<10.00
West Wall	0.00-1.00	<0.02	<2.00	<4.00	<10.00	<10.00
	1.00-2.00	<0.02	<2.00	<4.00	<10.00	<10.00
North Wall	0.00-1.00	<0.02	<2.00	<4.00	<10.00	<10.00
	1.00-2.00	<0.02	<2.00	<4.00	<10.00	<10.00
Base	0.00-1.00	<0.02	<2.00	<4.00	<10.00	<10.00
	1.00-2.00	<0.02	<2.00	<4.00	<10.00	<10.00

Table 3: Soil Analytical Data – BTEX

BTEX (µg/kg)						
Sample	Depth (m bgl)	Benzene	Toluene	Ethylbenzene	p&m-Xylene	o-Xylene
South Wall	0.00-1.00	<5.00	<5.00	<5.00	<5.00	<5.00
	1.00-2.00	<5.00	<5.00	<5.00	<5.00	<5.00
East Wall	0.00-1.00	<5.00	<5.00	<5.00	<5.00	<5.00
	1.00-2.00	<5.00	<5.00	<5.00	<5.00	<5.00
West Wall	0.00-1.00	<5.00	<5.00	<5.00	<5.00	<5.00
	1.00-2.00	<5.00	<5.00	<5.00	<5.00	<5.00
North Wall	0.00-1.00	<5.00	<5.00	<5.00	<5.00	<5.00



	1.00-2.00	<5.00	<5.00	<5.00	<5.00	<5.00
Base	0.00-1.00	<5.00	<5.00	<5.00	<5.00	<5.00
	1.00-2.00	<5.00	<5.00	<5.00	<5.00	<5.00

The laboratory results confirm that the TPH and BTEX concentrations were below the laboratory detection limit.

Overall, the analytical results, in line with the on-site testing, confirm that all of the known heating oil impacted soils were removed from the property.

Leachate Analysis

Five (5No.) soil samples were selected to be sent for leachate analysis to assess the risk to surface waters. The sample was sent to a UKAS/MCERTS accredited laboratory and scheduled for analysis of the following parameters:

- Leachate of TPH with Aliphatic/Aromatic Split.
- Leachate of BTEX Compounds.

The results are shown Tables 4 and 5, below and overleaf. A full set of laboratory certificates is included within Appendix II.

Table 4: Leachate Analytical Data – TPH

TPH CWG (ug/l)									
Sample	Depth (m bgl)		C ₅ – C ₆	C ₆ – C ₈	C ₈ – C ₁₀	C ₁₀ – C ₁₂	C ₁₂ – C ₁₆	C ₁₆ – C ₂₁	C ₂₁ – C ₃₅
South Wall	1.00-2.00	Ali	<1.00	<1.00	<1.00	<10.00	<10.00	<10.00	<10.00
		Aro	<1.00	<1.00	<1.00	<10.00	<10.00	<10.00	<10.00
East Wall	1.00-2.00	Ali	<1.00	<1.00	<1.00	<10.00	<10.00	<10.00	<10.00
		Aro	<1.00	<1.00	<1.00	<10.00	<10.00	<10.00	<10.00
West Wall	1.00-2.00	Ali	<1.00	<1.00	<1.00	<10.00	<10.00	<10.00	<10.00
		Aro	<1.00	<1.00	<1.00	<10.00	<10.00	<10.00	<10.00
North Wall	1.00-2.00	Ali	<1.00	<1.00	<1.00	<10.00	<10.00	<10.00	<10.00
		Aro	<1.00	<1.00	<1.00	<10.00	<10.00	<10.00	<10.00
Base	1.00-2.00	Ali	<1.00	<1.00	<1.00	<10.00	<10.00	<10.00	<10.00
		Aro	<1.00	<1.00	<1.00	<10.00	<10.00	<10.00	<10.00



Table 5: Leachate Analytical Data – BTEX

BTEX (µg/kg)						
Sample	Depth (m bgl)	Benzene	Toluene	Ethylbenzene	p&m-Xylene	o-Xylene
South Wall	1.00-2.00	<3.00	<3.00	<3.00	<3.00	<3.00
East Wall	1.00-2.00	<3.00	<3.00	<3.00	<3.00	<3.00
West Wall	1.00-2.00	<3.00	<3.00	<3.00	<3.00	<3.00
North Wall	1.00-2.00	<3.00	<3.00	<3.00	<3.00	<3.00
Base	1.00-2.00	<3.00	<3.00	<3.00	<3.00	<3.00

The laboratory data for TPH and BTEX compounds were below laboratory detection limits. This indicates a low leaching potential for any remaining residual contamination (although not anticipated).

4. Conclusions and Recommendations

A loss of kerosene heating oil was reported at No.1 and No.2 Townhouse Cottages, Ardingly, Haywards Heath, West Sussex, RH17 6UR in 2021. Several rounds of remediation works have been undertaken in order to mitigate the impact to identified receptors.

Following completion of the 2024 remedial works, the identified known heating oil contamination has been excavated from the point of loss. Subsequently, validation samples taken from the remaining soils in-situ show the results of all recovered samples were below the laboratory levels of detection.

It is assumed that excavated contaminated materials on site will be Non-Hazardous in regards to disposal but this will need to be confirmed by company disposing of the material.

Given the less stringent headspace allowance for soils below 1.00m bgl and the inclusion of a basement within the proposed future development, it is advised that a hydrocarbon and gas protection membrane should be installed (as is common practice).

We trust the report meets with your requirements, however, please do not hesitate to contact us if you require any further information.

Yours Sincerely,

For and on behalf of Ecologia

Prepared by:

Lois Ghost-Adderley
Project Manager

Checked and Authorised by:

Ryan Beagley



Associate Director

Enc: Appendix I: Photographic Report
Appendix II: Laboratory Analytical Results
Appendix III: PID Diagram Figures

References:

Ref 1: Ecologia Letter Report - Emergency Excavation Works at Balcombe Estate, 2 Town House Cottages, Ardingly, Haywards Heath, West Sussex, RH17 6UR. Ref: 21.090.1. Dated 12th April 2021.

Ref 2: Ecologia Letter Report – Site Investigation at Balcombe Estate (No.1 and No.2 Townhouse Cottages), Ardingly, Haywards Heath, West Sussex, RH17 6UR. Ref: 21.090.2. Dated 16th August 2021.



APPENDIX I

PHOTOGRAPHIC REPORT



Plate 1. Early stages of excavation works.



Plate 2. Early stages of excavation works.



Plate 3. Northern Wall of the Trial Pit.



Plate 4. Western Wall of the Trial Pit.



Plate 5. Low reading arisings backfilled into the trial pit.



APPENDIX II

LABORATORY ANALYTICAL RESULTS

Ecologia Environmental Solutions Ltd
Building 711/712
Kent Science Park
Sittingbourne
Kent

t: 01795 471611

e: t.howes@ecologia-environmental.com

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

t: 01923 225404

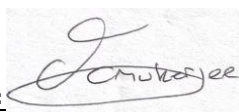
f: 01923 237404

e: reception@i2analytical.com

Analytical Report Number : 24-033691

Project / Site name:	Balcombe	Samples received on:	31/07/2024
Your job number:	24.148.1	Samples instructed on/ Analysis started on:	31/07/2024
Your order number:	86199	Analysis completed by:	07/08/2024
Report Issue Number:	1	Report issued on:	07/08/2024
Samples Analysed:	11 soil samples - 5 leachate samples		

Signed:



Tuhina Mukerjee
Senior Customer Service Advisor
For & on behalf of i2 Analytical Ltd.

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

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

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

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

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

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

Analytical Report Number: 24-033691
Project / Site name: Balcombe
Your Order No: 86199

Lab Sample Number				273389	273390	273391	273392	273393
Sample Reference				S-Wall No.1	S-Wall No.2	E-Wall No. 1	E-Wall No. 2	W-Wall No. 1
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00
Date Sampled				30/07/2024	30/07/2024	30/07/2024	30/07/2024	30/07/2024
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	17	17	16	17	15
Total mass of sample received	kg	0.1	NONE	1.2	1.3	0.8	0.7	0.8

Asbestos

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

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	-	-	-	-	-
Total Cyanide	mg/kg	1	MCERTS	-	-	-	-	-
Free Cyanide	mg/kg	1	MCERTS	-	-	-	-	-
Total Sulphate as SO ₄	mg/kg	50	MCERTS	-	-	-	-	-
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	-	-	-	-	-
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	-	-	-	-	-
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	-	-	-	-	-
Sulphide	mg/kg	1	MCERTS	-	-	-	-	-
Elemental Sulphur	mg/kg	5	MCERTS	-	-	-	-	-
Fraction Organic Carbon (FOC) Automated	N/A	0.001	MCERTS	-	-	-	-	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	-	-	-	-	-
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Speciated PAHs

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

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	-	-	-	-	-
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	-	-	-	-	-
Boron (water soluble)	mg/kg	0.2	MCERTS	-	-	-	-	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-	-	-	-	-
Chromium (hexavalent)	mg/kg	1.8	MCERTS	-	-	-	-	-

Analytical Report Number: 24-033691
Project / Site name: Balcombe
Your Order No: 86199

Lab Sample Number	273389	273390	273391	273392	273393
Sample Reference	S-Wall No.1	S-Wall No.2	E-Wall No. 1	E-Wall No. 2	W-Wall No. 1
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00
Date Sampled	30/07/2024	30/07/2024	30/07/2024	30/07/2024	30/07/2024
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-	-
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	-	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-	-

Petroleum Hydrocarbons

TPHCWG - Aliphatic >EC5 - EC6 HS_1D_AL	mg/kg	0.01	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >EC6 - EC8 HS_1D_AL	mg/kg	0.01	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >EC8 - EC10 HS_1D_AL	mg/kg	0.01	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >EC10 - EC12 EH_CU_1D_AL	mg/kg	1	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >EC12 - EC16 EH_CU_1D_AL	mg/kg	2	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >EC16 - EC21 EH_CU_1D_AL	mg/kg	8	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >EC21 - EC35 EH_CU_1D_AL	mg/kg	8	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >EC5 - EC35 EH_CU+HS_1D_AL	mg/kg	10	NONE	-	-	-	-	-

TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.02	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR	mg/kg	10	NONE	-	-	-	-	-

TPH (>EC8 - EC10) HS_1D_TOTAL	mg/kg	0.02	MCERTS	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
TPH (>EC10 - EC12) EH_CU_1D_TOTAL	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH (>EC12 - EC16) EH_CU_1D_TOTAL	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
TPH (>EC16 - EC21) EH_CU_1D_TOTAL	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH (>EC21 - EC35) EH_CU_1D_TOTAL	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10

TPH Total >EC5 - EC35 EH_CU+HS_1D_TOTAL	mg/kg	10	NONE	-	-	-	-	-
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VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
p & m-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

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

Analytical Report Number: 24-033691
Project / Site name: Balcombe
Your Order No: 86199

Lab Sample Number				273394	273395	273396	273397	273398
Sample Reference				W-Wall No. 2	N-Wall No. 1	N-Wall No. 2	Base No. 1	Base No. 2
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00
Date Sampled				30/07/2024	30/07/2024	30/07/2024	30/07/2024	30/07/2024
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	15	20	19	15	17
Total mass of sample received	kg	0.1	NONE	0.8	0.9	0.7	0.6	0.6

Asbestos

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

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	-	-	-	-	-
Total Cyanide	mg/kg	1	MCERTS	-	-	-	-	-
Free Cyanide	mg/kg	1	MCERTS	-	-	-	-	-
Total Sulphate as SO ₄	mg/kg	50	MCERTS	-	-	-	-	-
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	-	-	-	-	-
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	-	-	-	-	-
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	-	-	-	-	-
Sulphide	mg/kg	1	MCERTS	-	-	-	-	-
Elemental Sulphur	mg/kg	5	MCERTS	-	-	-	-	-
Fraction Organic Carbon (FOC) Automated	N/A	0.001	MCERTS	-	-	-	-	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	-	-	-	-	-
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Speciated PAHs

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

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	-	-	-	-	-
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	-	-	-	-	-
Boron (water soluble)	mg/kg	0.2	MCERTS	-	-	-	-	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-	-	-	-	-
Chromium (hexavalent)	mg/kg	1.8	MCERTS	-	-	-	-	-

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Lab Sample Number				273394	273395	273396	273397	273398
Sample Reference				W-Wall No. 2	N-Wall No. 1	N-Wall No. 2	Base No. 1	Base No. 2
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00
Date Sampled				30/07/2024	30/07/2024	30/07/2024	30/07/2024	30/07/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status					
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-	-	-	-	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-

Petroleum Hydrocarbons

TPHCWG - Aliphatic >EC5 - EC6 _{HS_1D_AL}	mg/kg	0.01	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >EC6 - EC8 _{HS_1D_AL}	mg/kg	0.01	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >EC8 - EC10 _{HS_1D_AL}	mg/kg	0.01	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >EC10 - EC12 _{EH_CU_1D_AL}	mg/kg	1	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >EC12 - EC16 _{EH_CU_1D_AL}	mg/kg	2	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >EC16 - EC21 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >EC21 - EC35 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >EC5 - EC35 _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	-	-	-	-	-

TPHCWG - Aromatic >EC5 - EC7 _{HS_1D_AR}	mg/kg	0.01	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC8 - EC10 _{HS_1D_AR}	mg/kg	0.02	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC10 - EC12 _{EH_CU_1D_AR}	mg/kg	1	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC12 - EC16 _{EH_CU_1D_AR}	mg/kg	2	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC16 - EC21 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC7 - EC8 _{HS_1D_AR}	mg/kg	0.01	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC5 - EC35 _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	-	-	-	-	-

TPH (>EC8 - EC10) _{HS_1D_TOTAL}	mg/kg	0.02	MCERTS	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
TPH (>EC10 - EC12) _{EH_CU_1D_TOTAL}	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH (>EC12 - EC16) _{EH_CU_1D_TOTAL}	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
TPH (>EC16 - EC21) _{EH_CU_1D_TOTAL}	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH (>EC21 - EC35) _{EH_CU_1D_TOTAL}	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10

TPH Total >EC5 - EC35 _{EH_CU+HS_1D_TOTAL}	mg/kg	10	NONE	-	-	-	-	-
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VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
p & m-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

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

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Lab Sample Number				273399
Sample Reference				WAC
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				30/07/2024
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status	
Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	16
Total mass of sample received	kg	0.1	NONE	0.7

Asbestos

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

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	6.8
Total Cyanide	mg/kg	1	MCERTS	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0
Total Sulphate as SO ₄	mg/kg	50	MCERTS	280
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	210
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.104
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	104
Sulphide	mg/kg	1	MCERTS	1.2
Elemental Sulphur	mg/kg	5	MCERTS	9.6
Fraction Organic Carbon (FOC) Automated	N/A	0.001	MCERTS	0.0035

Total Phenols

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

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

Total PAH

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

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	20
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.6
Boron (water soluble)	mg/kg	0.2	MCERTS	0.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8

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Lab Sample Number	273399			
Sample Reference	WAC			
Sample Number	None Supplied			
Depth (m)	None Supplied			
Date Sampled	30/07/2024			
Time Taken	None Supplied			
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status	
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	40
Copper (aqua regia extractable)	mg/kg	1	MCERTS	35
Lead (aqua regia extractable)	mg/kg	1	MCERTS	27
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	47
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	45
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	99

Petroleum Hydrocarbons

TPHCWG - Aliphatic >EC5 - EC6 _{HS_ID_AL}	mg/kg	0.01	MCERTS	< 0.010
TPHCWG - Aliphatic >EC6 - EC8 _{HS_ID_AL}	mg/kg	0.01	MCERTS	0.07
TPHCWG - Aliphatic >EC8 - EC10 _{HS_ID_AL}	mg/kg	0.01	MCERTS	3.4
TPHCWG - Aliphatic >EC10 - EC12 _{EH_CU_ID_AL}	mg/kg	1	MCERTS	5.8
TPHCWG - Aliphatic >EC12 - EC16 _{EH_CU_ID_AL}	mg/kg	2	MCERTS	36
TPHCWG - Aliphatic >EC16 - EC21 _{EH_CU_ID_AL}	mg/kg	8	MCERTS	22
TPHCWG - Aliphatic >EC21 - EC35 _{EH_CU_ID_AL}	mg/kg	8	MCERTS	39
TPHCWG - Aliphatic >EC5 - EC35 _{EH_CU+HS_ID_AL}	mg/kg	10	NONE	110

TPHCWG - Aromatic >EC5 - EC7 _{HS_ID_AR}	mg/kg	0.01	MCERTS	< 0.010
TPHCWG - Aromatic >EC8 - EC10 _{HS_ID_AR}	mg/kg	0.02	MCERTS	0.53
TPHCWG - Aromatic >EC10 - EC12 _{EH_CU_ID_AR}	mg/kg	1	MCERTS	< 1.0
TPHCWG - Aromatic >EC12 - EC16 _{EH_CU_ID_AR}	mg/kg	2	MCERTS	< 2.0
TPHCWG - Aromatic >EC16 - EC21 _{EH_CU_ID_AR}	mg/kg	10	MCERTS	< 10
TPHCWG - Aromatic >EC21 - EC35 _{EH_CU_ID_AR}	mg/kg	10	MCERTS	< 10
TPHCWG - Aromatic >EC7 - EC8 _{HS_ID_AR}	mg/kg	0.01	MCERTS	< 0.010
TPHCWG - Aromatic >EC5 - EC35 _{EH_CU+HS_ID_AR}	mg/kg	10	NONE	< 10

TPH (>EC8 - EC10) _{HS_ID_TOTAL}	mg/kg	0.02	MCERTS	-
TPH (>EC10 - EC12) _{EH_CU_ID_TOTAL}	mg/kg	2	MCERTS	-
TPH (>EC12 - EC16) _{EH_CU_ID_TOTAL}	mg/kg	4	MCERTS	-
TPH (>EC16 - EC21) _{EH_CU_ID_TOTAL}	mg/kg	10	MCERTS	-
TPH (>EC21 - EC35) _{EH_CU_ID_TOTAL}	mg/kg	10	MCERTS	-

TPH Total >EC5 - EC35 _{EH_CU+HS_ID_TOTAL}	mg/kg	10	NONE	110
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VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0
p & m-Xylene	µg/kg	5	MCERTS	170
o-Xylene	µg/kg	5	MCERTS	180

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

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Project / Site name: Balcombe

Your Order No: 86199

Lab Sample Number	273390	273392	273394	273396	273398
Sample Reference	S-Wall No.2	E-Wall No. 2	W-Wall No. 2	N-Wall No. 2	Base No. 2
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	1.00-2.00	1.00-2.00	1.00-2.00	1.00-2.00	1.00-2.00
Date Sampled	30/07/2024	30/07/2024	30/07/2024	30/07/2024	30/07/2024
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	Units	Test Limit of detection	Test Accreditation Status		

TPH - Aliphatic >EC5 - EC6 _{HS_ID_AL}	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH - Aliphatic >EC6 - EC8 _{HS_ID_AL}	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH - Aliphatic >EC8 - EC10 _{HS_ID_AL}	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH - Aliphatic >EC10 - EC12 _{EH_ID_AL_MS}	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH - Aliphatic >EC12 - EC16 _{EH_ID_AL_MS}	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH - Aliphatic >EC16 - EC21 _{EH_ID_AL_MS}	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH - Aliphatic >EC21 - EC35 _{EH_ID_AL_MS}	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH - Aliphatic >EC5 - EC35 _{HS+EH_ID_AL_MS}	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH - Aromatic >EC5 - EC7 _{HS_ID_AR}	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH - Aromatic >EC7 - EC8 _{HS_ID_AR}	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH - Aromatic >EC8 - EC10 _{EH_ID_AR_MS}	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH - Aromatic >EC10 - EC12 _{EH_ID_AR_MS}	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH - Aromatic >EC12 - EC16 _{EH_ID_AR_MS}	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH - Aromatic >EC16 - EC21 _{EH_ID_AR_MS}	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH - Aromatic >EC21 - EC35 _{EH_ID_AR_MS}	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH - Aromatic >EC5 - EC35 _{HS+EH_ID_AR_MS}	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
MTBE (Methyl Tertiary Butyl Ether)	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Benzene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Toluene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Ethylbenzene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
p & m-xylene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
o-xylene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0

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

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
273389	S-Wall No.1	None Supplied	0.00-1.00	Brown clay and sand with gravel
273390	S-Wall No.2	None Supplied	1.00-2.00	Brown clay and sand
273391	E-Wall No. 1	None Supplied	0.00-1.00	Brown clay and sand with gravel
273392	E-Wall No. 2	None Supplied	1.00-2.00	Brown clay and sand with gravel
273393	W-Wall No. 1	None Supplied	0.00-1.00	Brown clay and sand with gravel
273394	W-Wall No. 2	None Supplied	1.00-2.00	Brown clay and sand with gravel
273395	N-Wall No. 1	None Supplied	0.00-1.00	Brown clay and sand with gravel
273396	N-Wall No. 2	None Supplied	1.00-2.00	Brown clay and sand with gravel
273397	Base No. 1	None Supplied	0.00-1.00	Brown clay and loam with gravel and vegetation
273398	Base No. 2	None Supplied	1.00-2.00	Brown clay and loam with gravel and vegetation
273399	WAC	None Supplied	None Supplied	Brown clay and sand with gravel

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Project / Site name: Balcombe

Water matrix abbreviations:

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in Soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques	In-house method based on HSG 248, 2021	A001B	D	ISO 17025
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode	In-house method	L010	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Elemental sulphur in soil	Determination of elemental sulphur in soil by extraction in acetonitrile followed by HPLC	In-house method based on Secondsite Property Holdings Guidance for Assessing and Managing Potential	L021B	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
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES	In-house method based on Second Site Properties version 3	L038B	D	MCERTS
Total sulphate (as SO ₄ in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES	In-house method	L038B	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Sulphate, water soluble, in soil (16hr extraction)	In-house method	L038B	D	MCERTS
Speciated PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
TPH Chromatogram in soil	TPH Chromatogram in soil	In-house method	L064B	D	NONE
Total petroleum hydrocarbons with carbon banding by GC-MS/GC-MS HS in leachate	Determination of total petroleum hydrocarbons in leachate by GC-MS/GC-MS HS with carbon banding aliphatic and aromatic	In-house method	L070B/L088	W	NONE
TPH Chromatogram in leachate	TPH Chromatogram in leachate	In-house method	L070B	W	NONE
BTEX and/or Volatile organic compounds in leachate	Determination of volatile organic compounds in leachate by headspace GC-MS	In-house method based on USEPA 8260	L073B	W	NONE
BTEX and/or Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS	In-house method based on USEPA 8260	L073B	W	MCERTS

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Project / Site name: Balcombe

Water matrix abbreviations:

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS with carbon banding aliphatic and aromatic	In-house method	L076B/L088	D/W	MCERTS
Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS	In-house method	L076B/L088	D/W	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry	In-house method	L080	W	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080	W	MCERTS
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080	W	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080	W	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099	D	MCERTS
Fraction Organic Carbon FOC Automated	Determination of fraction of organic carbon in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate	In-house method	L009B	D	MCERTS

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30°C.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

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

Analytical Report Number : 24-033691

Project / Site name: Balcombe

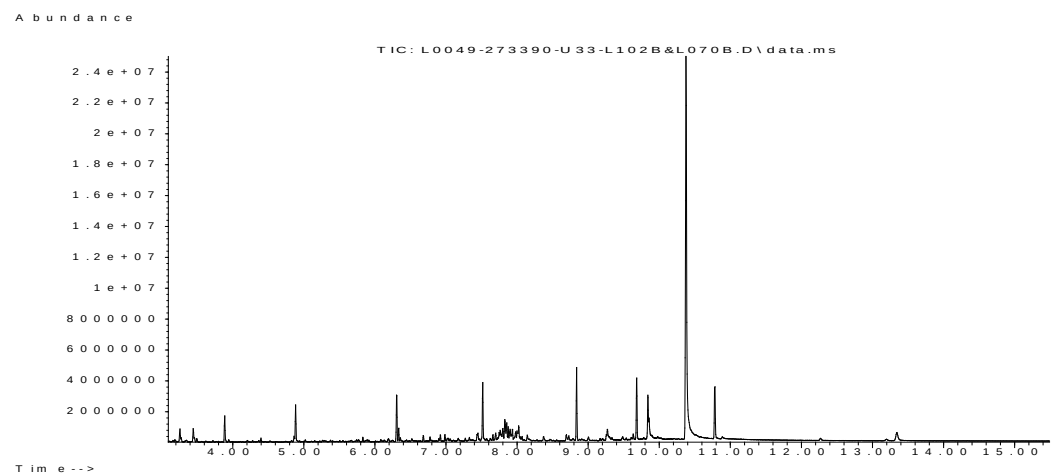
Water matrix abbreviations:

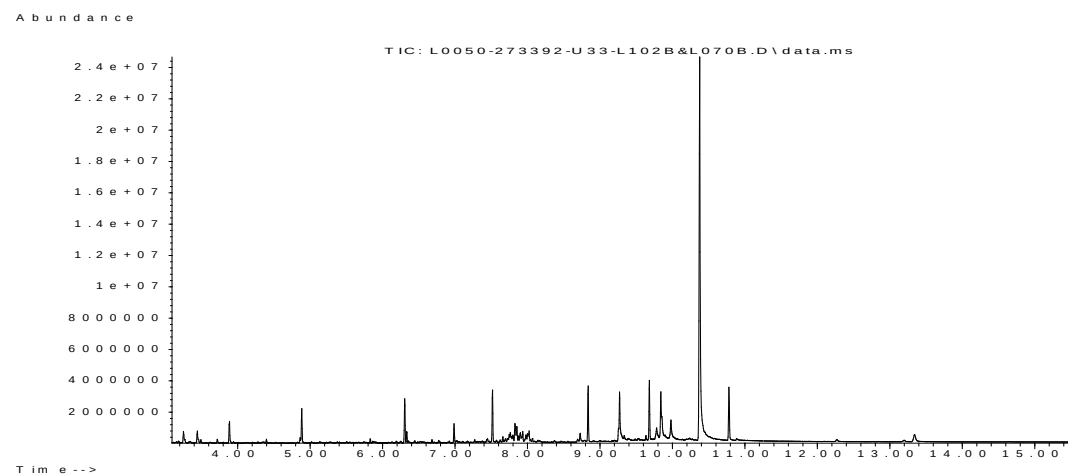
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

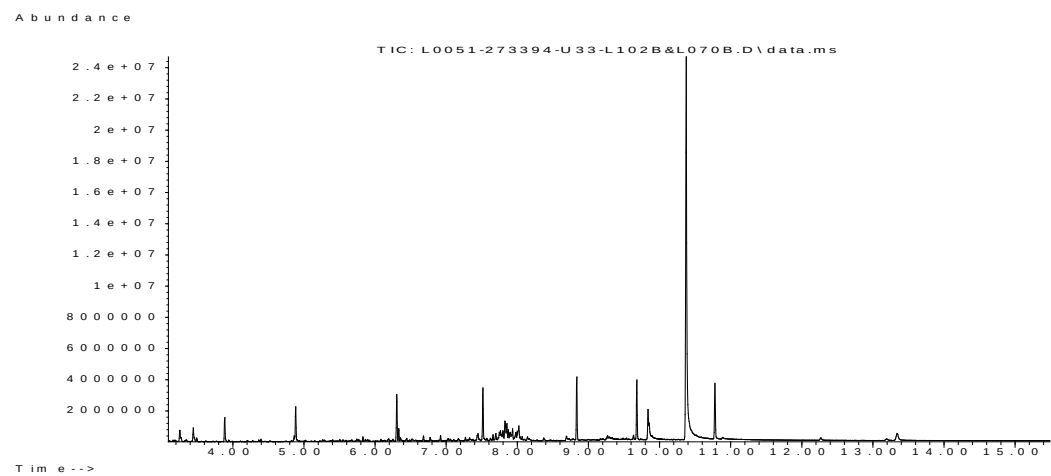
Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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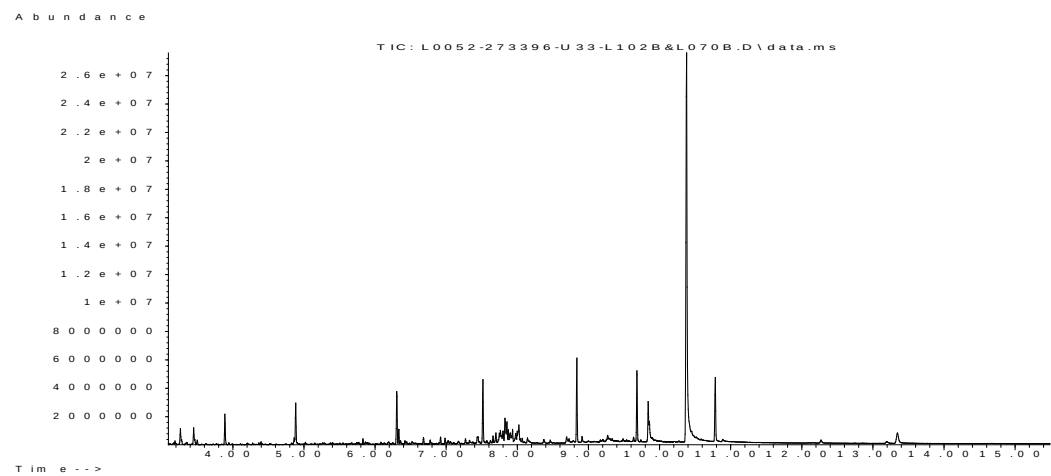
+ Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

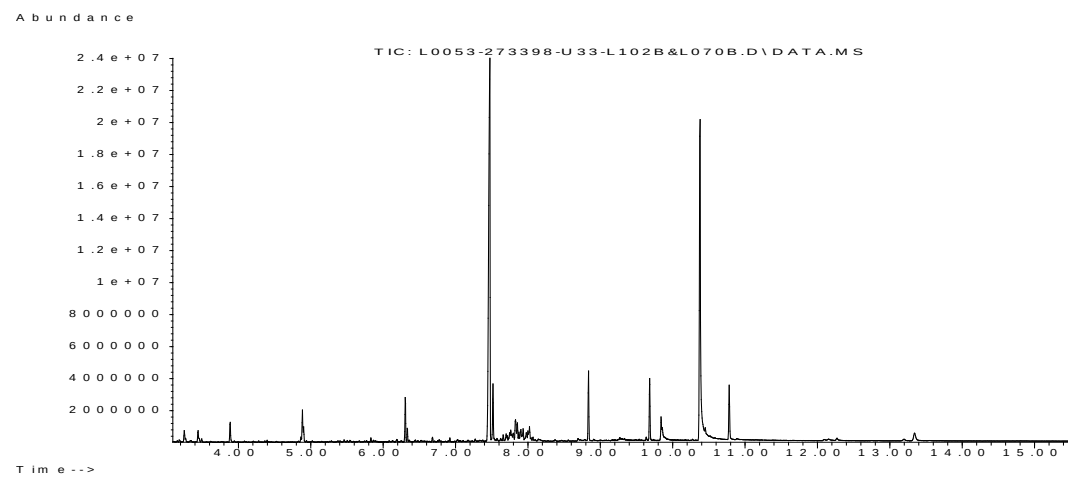
Quality control parameter failure associated with individual result applies to calculated sum of individuals.
The result for sum should be interpreted with caution

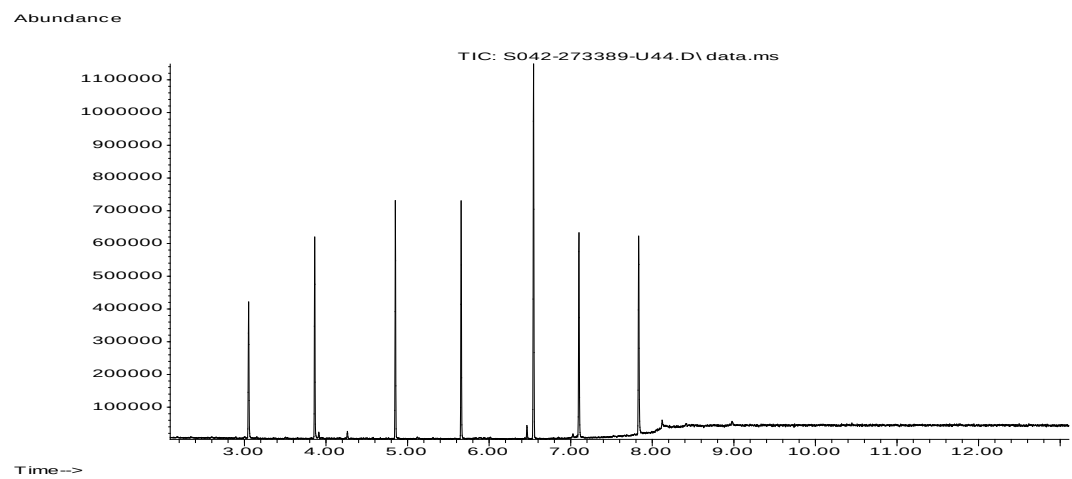


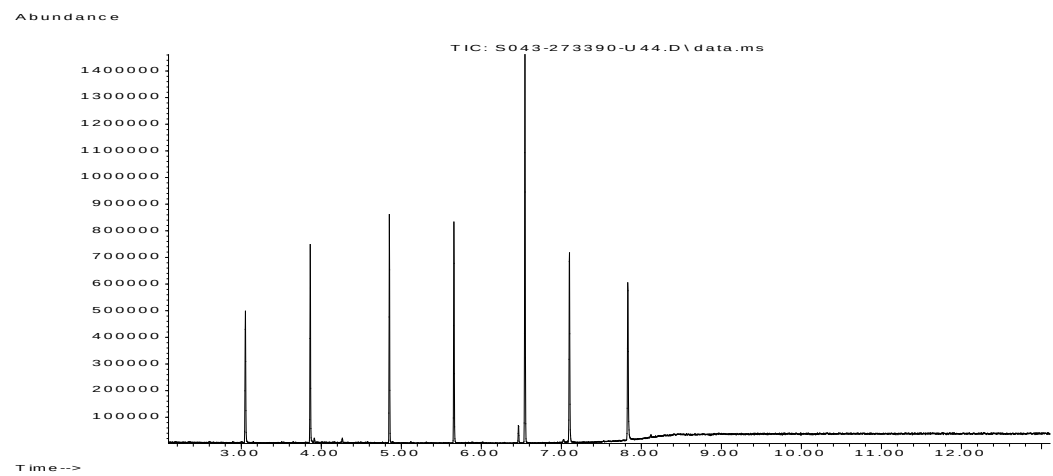


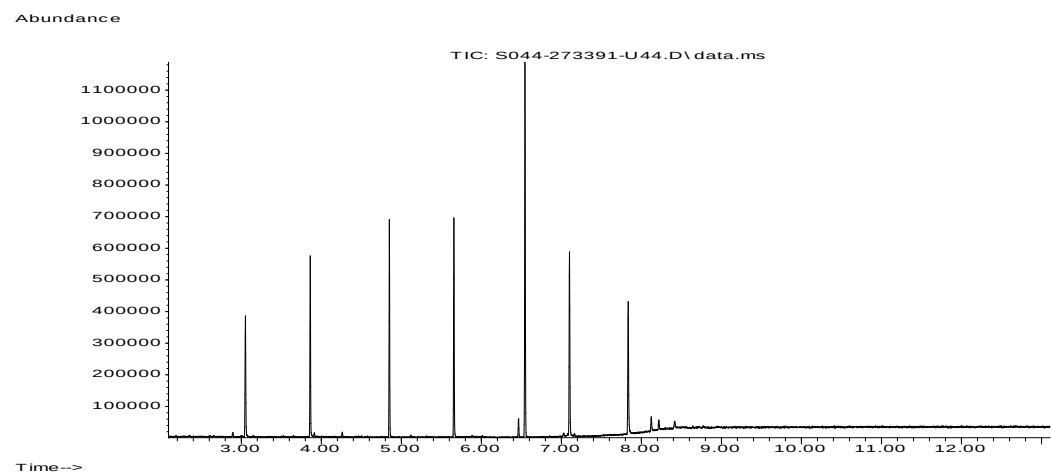


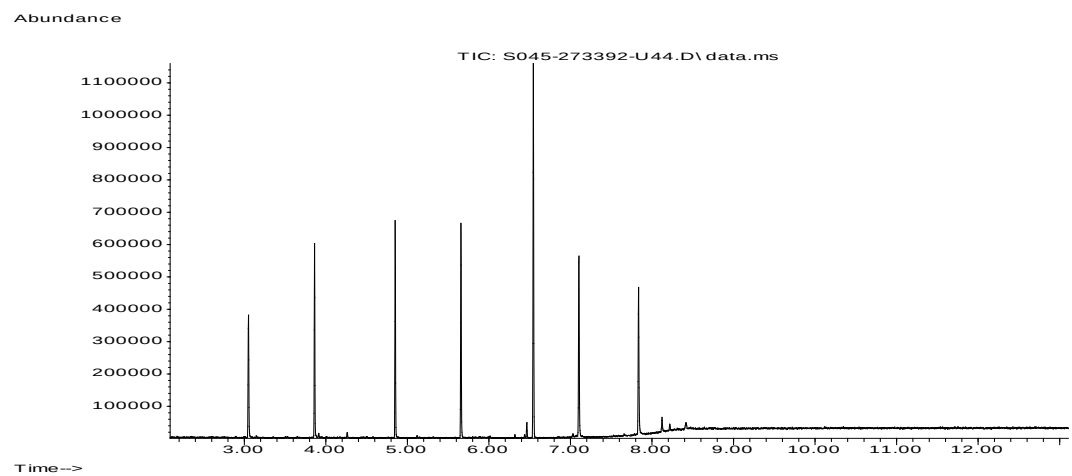


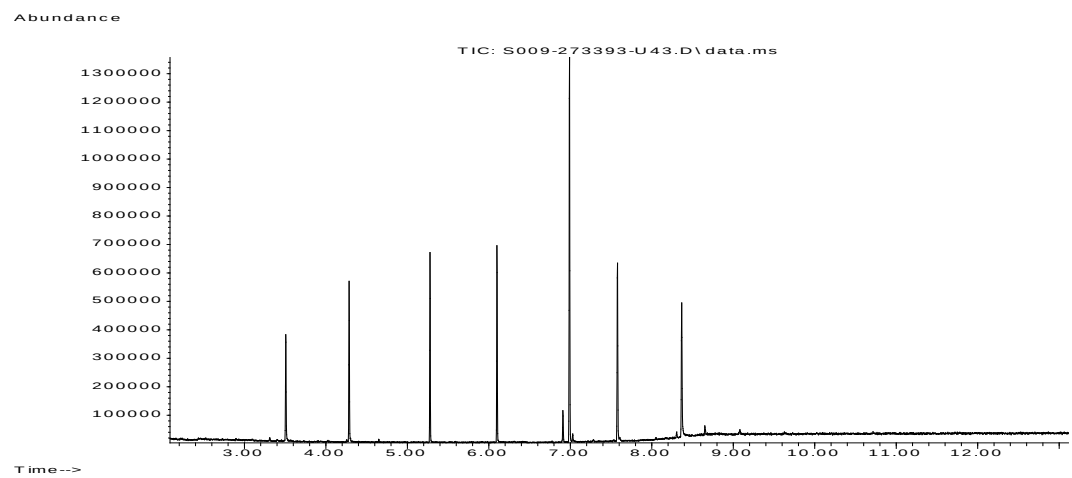


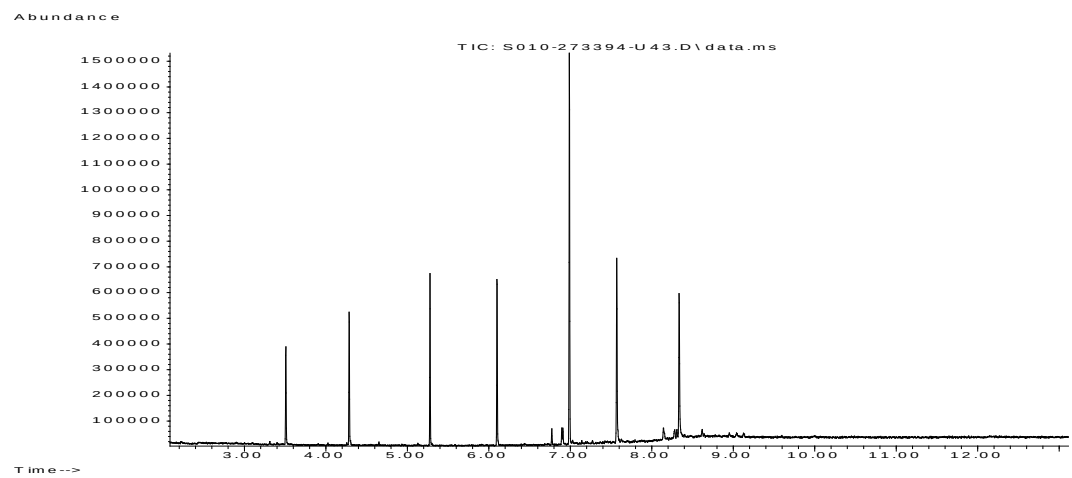


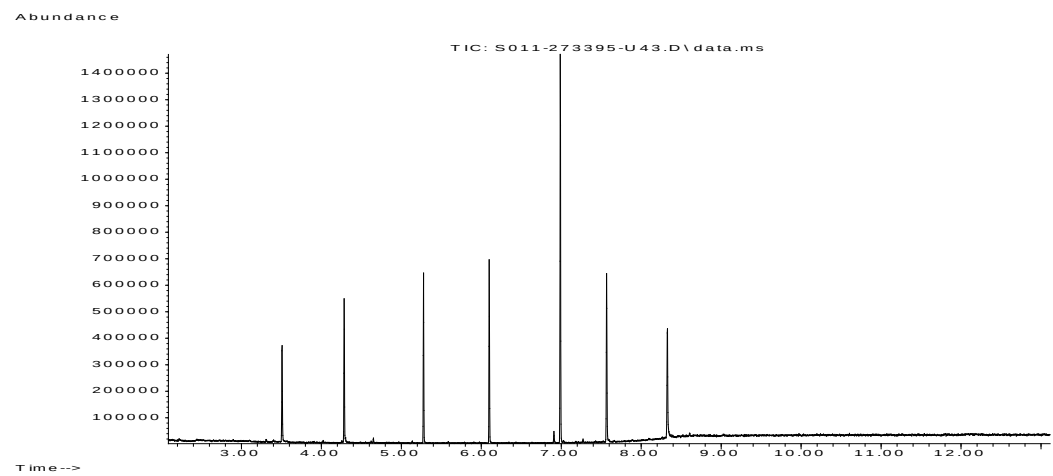


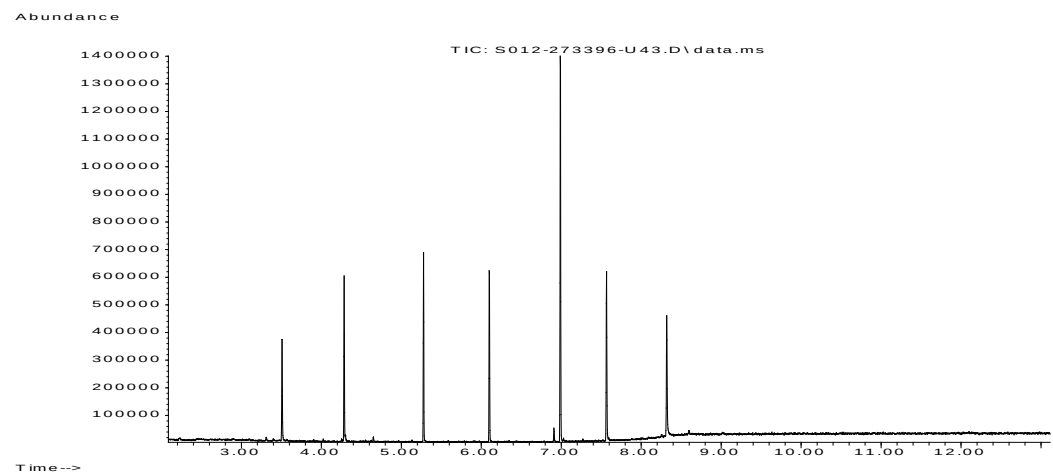


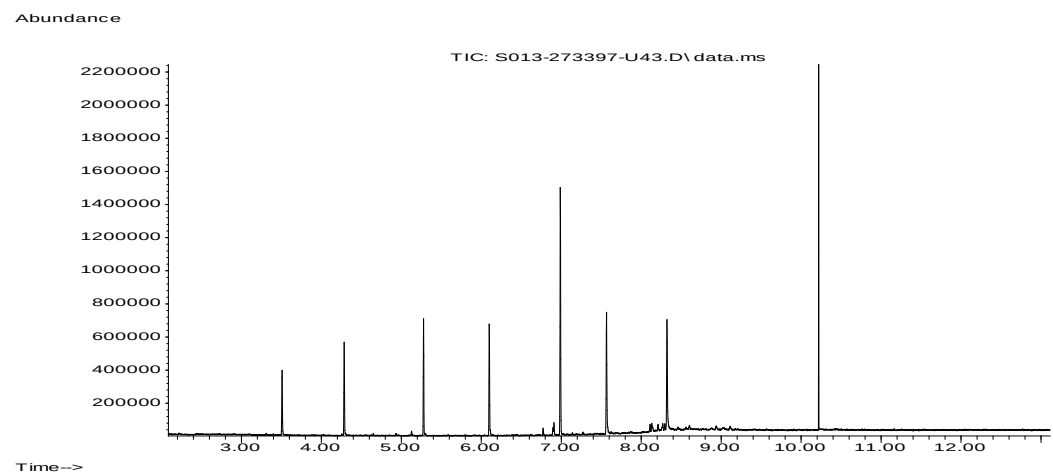


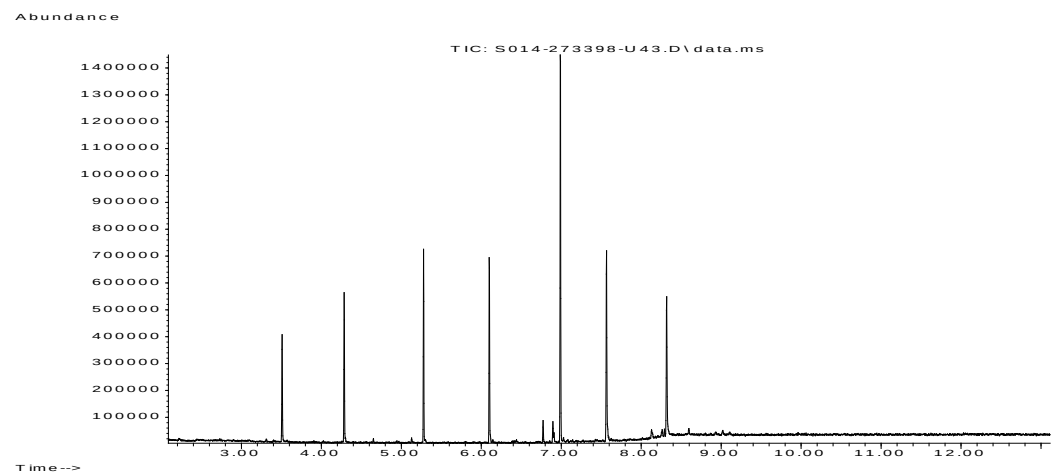


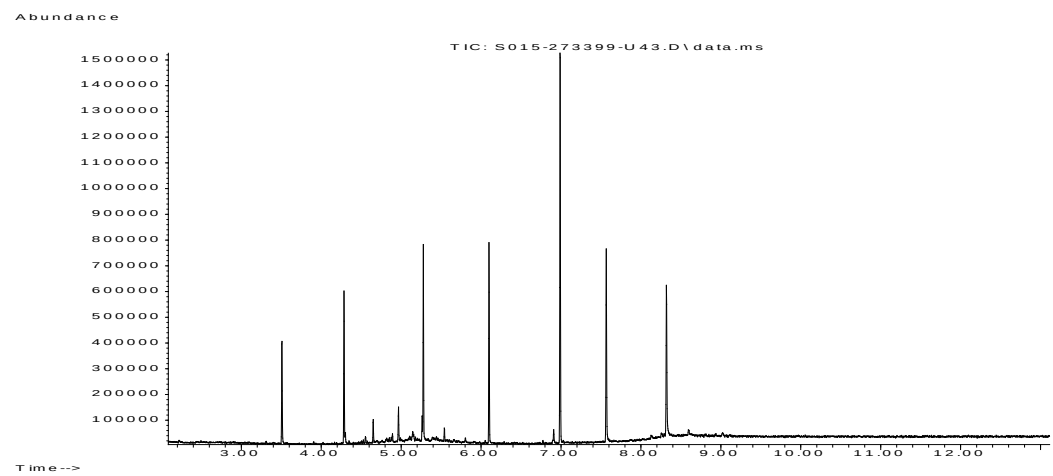












Ecologia Environmental Solutions Ltd
Building 711/712
Kent Science Park
Sittingbourne
Kent

t: 01795 471611

e: t.howes@ecologia-environmental.com

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

t: 01923 225404

f: 01923 237404

e: reception@i2analytical.com

Analytical Report Number : 24-033692

Project / Site name:	Balcombe	Samples received on:	31/07/2024
Your job number:	24.148.1	Samples instructed on/ Analysis started on:	31/07/2024
Your order number:	86199	Analysis completed by:	06/08/2024
Report Issue Number:	1	Report issued on:	06/08/2024
Samples Analysed:	1 soil sample - 1 leachate sample		


Signed:

Charlotte Andrew
Key Account Manager
For & on behalf of i2 Analytical Ltd.

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

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

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

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

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

Analytical Report Number: 24-033692
 Project / Site name: Balcombe
 Your Order No: 86199

Lab Sample Number				273400
Sample Reference				WAC
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				30/07/2024
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status	
Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	16
Total mass of sample received	kg	0.1	NONE	0.7

General Inorganics

pH (L005B)	pH Units	N/A	MCERTS	6.6
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	0.4
Loss on Ignition @ 450°C	%	0.2	MCERTS	4.8
Acid Neutralisation Capacity	mmol/kg	-9999	NONE	-3.2

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05
Coronene	mg/kg	0.05	NONE	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80
Total WAC-17 PAHs	mg/kg	0.85	NONE	< 0.85

Petroleum Hydrocarbons

Mineral Oil (EC10 - EC40) BH, CU, ID, AL	mg/kg	10	NONE	100
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VOCs

Benzene	µg/kg	5	MCERTS	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0
p & m-Xylene	µg/kg	5	MCERTS	230
o-Xylene	µg/kg	5	MCERTS	240

Total BTEX	µg/kg	5	MCERTS	480
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PCBs by GC-MS

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

Analytical Report Number: 24-033692
 Project / Site name: Balcombe
 Your Order No: 86199

Lab Sample Number				273400
Sample Reference				WAC
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				30/07/2024
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status	
PCB Congener 153	mg/kg	0.001	MCERTS	< 0.001
PCB Congener 180	mg/kg	0.001	MCERTS	< 0.001
Total PCBs	mg/kg	0.007	MCERTS	< 0.007

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



4041



Environmental Science

i2 Analytical

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

Telephone: 01923 225404
Fax: 01923 237404
email:reception@i2analytical.com

Waste Acceptance Criteria Analytical Results							
Report No:		24-033692					
					Client: ECOLOGIA		
Location		Balcombe			Landfill Waste Acceptance Criteria Limits		
Lab Reference (Sample Number)		273400					
Sampling Date		30/07/2024					
Sample ID		WAC					
Depth (m)					Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Solid Waste Analysis							
TOC (%)**		0.4			3%	5%	6%
Loss on Ignition (%) **		4.8			--	--	10%
BTEX (µg/kg) **		480			6000	--	--
Sum of PCBs (mg/kg) **		< 0.007			1	--	--
Mineral Oil (mg/kg) BH, ID, CU, AL		100			500	--	--
Total PAH (WAC-17) (mg/kg)		< 0.85			100	--	--
pH (units)**		6.6			--	>6	--
Acid Neutralisation Capacity (mmol / kg)		-3.2			--	To be evaluated	To be evaluated
Eluate Analysis		10:1		10:1	Limit values for compliance leaching test		
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)		mg/l			mg/kg		
					using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *		< 0.00100		< 0.0100	0.5	2	25
Barium *		0.00247		0.0247	20	100	300
Cadmium *		< 0.000100		< 0.00100	0.04	1	5
Chromium *		< 0.00040		< 0.0040	0.5	10	70
Copper *		0.0031		0.031	2	50	100
Mercury *		< 0.000500		< 0.00500	0.01	0.2	2
Molybdenum *		< 0.000400		< 0.00400	0.5	10	30
Nickel *		0.0017		0.017	0.4	10	40
Lead *		< 0.0010		< 0.010	0.5	10	50
Antimony *		< 0.0017		< 0.017	0.06	0.7	5
Selenium *		< 0.0040		< 0.040	0.1	0.5	7
Zinc *		0.0066		0.066	4	50	200
Chloride *		4.1		41	800	15000	25000
Fluoride*		0.12		1.2	10	150	500
Sulphate *		9.3		93	1000	20000	50000
TDS*		26		260	4000	60000	100000
Phenol Index (Monohydric Phenols) *		< 0.010		< 0.10	1	-	-
DOC		9.77		97.7	500	800	1000
Leach Test Information							
Stone Content (%)		< 0.1					
Sample Mass (kg)		0.7					
Dry Matter (%)		84					
Moisture (%)		16					
Results are expressed on a dry weight basis, after correction for moisture content where applicable.							
* = UKAS accredited (liquid eluate analysis only)							
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation							
** = MCERTS accredited							

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

Analytical Report Number : 24-033692

Project / Site name: Balcombe

* 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 *
273400	WAC	None Supplied	None Supplied	Brown clay and sand with gravel

Analytical Report Number : 24-033692

Project / Site name: Balcombe

Water matrix abbreviations:

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
pH at 20°C in soil	Determination of pH in soil by addition of water followed by electrometric measurement	In-house method	L005B	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
PCB's By GC-MS in soil	Determination of PCB by extraction with hexane followed by GC-MS	In-house method based on USEPA 8082	L027B	D	MCERTS
Total dissolved solids 10:1 WAC	Determination of total dissolved solids in water by electrometric measurement	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L031B	W	ISO 17025
Fluoride 10:1 WAC	Determination of fluoride in leachate by 1:1ratio with a buffer solution followed by Ion Selective Electrode	In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination	L033B	W	ISO 17025
Dissolved organic carbon 10:1 WAC	Determination of dissolved organic carbon in leachate by TOC/DOC NDIR Analyser	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037B	W	NONE
Metals in leachate by ICP-OES	Determination of metals in leachate by acidification followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L039B	W	ISO 17025
Sample Preparation		In-house method	L043B	W	NONE
Acid neutralisation capacity of soil	Determination of acid neutralisation capacity by addition of acid or alkali followed by electronic probe	In-house method based on Guidance an Sampling and Testing of Wastes to Meet Landfill Waste Acceptance	L046B	W	NONE
Loss on ignition of soil @ 450°C	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	In-house method	L047	D	MCERTS
Speciated PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
BTEX and/or Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS	In-house method based on USEPA 8260	L073B	W	MCERTS

Analytical Report Number : 24-033692
Project / Site name: Balcombe

Water matrix abbreviations:

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS	In-house method	L076B/L088	D/W	NONE
Monohydric phenols 10:1 WAC	Determination of phenols in leachate by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080	W	ISO 17025
Chloride 10:1 WAC	Determination of Chloride colorimetrically by discrete analyser	In-house based on MEWAM Method ISBN 0117516260	L082B	W	ISO 17025

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 30°C.

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.

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

Quality control parameter failure associated with individual result applies to calculated sum of individuals.

The result for sum should be interpreted with caution



APPENDIX III

PID DIAGRAM FIGURES

