

INTRUSIVE CONTAMINATED LAND INVESTIGATION

Old Oak Farm
Winchester Road
Fair Oak
Hampshire
SO50 7HD



November 2025

Contents

	Contact Information	3
	Company information	4
1	Introduction and scope of work	5
2	Methodology	7
3	On-site observations	9
4	Results from soil analyses	16
5	Interpretation	25
6	Summary of soil assessment	29
7	Review of conceptual site model	30
8	Summary and recommendations	32
9	Limitations	33
10	References and specified sources of information	34
	Appendix	
	Laboratory data	36
	Calibration certification	45

Contact information

Site address

Old Oak Farm
Winchester Road
Fair Oak
Hampshire
SO50 7HD

Contact: Louise Cutts
Telephone: 07940 033645
E-mail: louisecutts@wessexplanning.com

Report co-ordinator

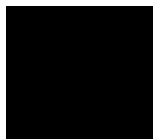
Apple Environmental Limited
Unit 3 Estevan Farm
Stoney Lane
Medstead
Alton
Hampshire
GU34 5EL

Contact: Laura Charman
Telephone: 01420 563377
E-mail: laura@appleenvironmental.co.uk

Report checking

Final check by:

Adrian Whittle



Company information



Unit 3 Estevan Farm, Stoney Lane, Medstead. Alton, GU34 5EL

Telephone: 01420 563377
e.mail: info@appleenvironmental.co.uk

www.appleenvironmental.co.uk

This report, and the information and advice which it contains, is provided by Apple Environmental Ltd solely for internal use and reliance by its Client in performance of Apple Environmental Ltd's duties and liabilities under its contract with the Client. Any advice, opinions, recommendations within this report should be read and relied upon only in the context of the report as a whole. The advice and opinions in this report are based upon the information made available to Apple Environmental Ltd at the date of this report and on current UK standards, codes, technology and construction practices as at the date of this report. Following final delivery of this report to the Client, Apple Environmental Ltd will have no further obligations or duty to advise the Client on any matters, including development affecting the information or advice provided in this report. This report has been prepared on behalf of Apple Environmental Ltd in their capacity as environmental consultants. The contents of this report do not, in any way, purport to include any manner of legal advice or opinion. The report is prepared in accordance with the terms and conditions of Apple Environmental Ltd's contract with the Client. Regard should be had to those terms and conditions when considering and/or placing any reliance upon this report. The client detailed on Page 3 of this report has licence to assign this report to one other party, however should that party themselves wish to release this report onto another party for that party's reliance, Apple Environmental Ltd may at its discretion agree to such release provided that:

- (a) Apple Environmental Ltd's agreement is obtained prior to such release, and;
- (b) By release of this report to the another party, that party does not acquire any rights, contractual or otherwise, whatsoever against Apple Environmental Ltd and;
- (c) Apple Environmental Ltd accordingly, assumes no duties, liabilities or obligations to that party, and;
- (d) Apple Environmental Ltd accepts no responsibility for any loss of damage incurred by the releasing party, or for any conflict of Apple Environmental Ltd's interests, rising out of the release of this report to another party.

1 Introduction and scope of work

Apple Environmental has been appointed to undertake an intrusive soil contamination investigation at Old Oak Farm, Fair Oak, in order to characterise the upper sub-surface of the site for the proposed construction of two self-build dwellings.

An environmental desk-study and preliminary risk assessment previously undertaken at the site by Apple Environmental (Report Ref. CL/3520/WP) had identified a potential land contamination concern, due principally to the understanding that the site occupied land that had been part of a former waste facility.

In view of the proposal to construct new dwellings on the site, the conceptual model within the aforementioned desk study had highlighted a perceived risk from the above source, with potentially significant pathway linkages that could enable contamination to reach receptors.

In considering this, the contaminants deemed to be potentially present included general inorganics, hydrocarbons (both petroleum and poly-aromatic), asbestos and possibly ground gases.

An intrusive investigation was subsequently recommended in order to determine the presence and extent of any such contamination, and to assess the overall risk more fully.

The principal aims of this investigation therefore have been to devise and implement an appropriate strategy such that it has been possible to:

- determine the nature of the sub-surface material on-site;
- determine the presence of unacceptable ground contamination in this area, its nature and extent;
- assess the degree to which the site itself could be contributing to the contamination of environmental media off-site;
- observe or presume contaminant-pathway-receptor relationships on site;
- assess the risk to future users of the site.

This type of assessment relies upon visual examination of the area and sub-surface material, as well as the laboratory analysis of material samples.

As such, the specific objectives are:

- to excavate trial pits at six separate locations across the site to a minimum depth of 1000mm;
- to characterise the nature of the sub-surface material at each of these locations;
- to collect at least 2 soil samples from each of the pits for laboratory analysis generally representing the direct and indirect contact zones;
- to analyse the soil for a wide range of contamination indicators;
- to ascertain the significance of all chemical or physical data obtained;
- to determine the risk to future users based upon residential usage; and
- to make appropriate recommendations in order to reduce and/or eliminate any risks, as identified.

It is noted that a site investigation had previously been undertaken on the western section of the site in November 2023 by Apple Environmental (Report Ref. CL/3520/WP) which had concluded that there was no unacceptable ground contamination, no evidence of interred waste and no significant ground gas presence in that area.

2 Methodology

As stated above, the overall aim of this investigation is to assess the sub-surface of the site in order to determine any risk that may be present as a result of ground contamination.

For this purpose, six trial pits were excavated across the site to a minimum depth of 1000mm, at the locations shown below in Figure 1, TP.01 - TP.06.

The plan also shows the positions of the gas wells installed during the aforementioned previous intrusive investigation in 2024, as BH.03, BH.05, BH.07 and BH.08.

Figure 1 Plan showing the location of the trial pits



■ Soil sampling locations

● Gas wells

The soil profile from each investigated location has been logged within Section 3 below, along with photographs showing the excavated arisings.

Soil samples were collected from each of the highlighted locations representing depths of 100 - 200mm and 500 - 600mm.

All of the samples were placed immediately into a sterilised container and transferred into refrigerated cold-boxes until removed for analysis.

Chemical analysis was undertaken for the following determinands:

- arsenic, boron, cadmium, chromium, copper, lead, mercury, nickel, selenium, zinc;
- sulphate, sulphide, chloride, cyanide, ammonia and asbestos;
- benzene, toluene, ethylbenzene and xylene (all isomers);
- polycyclic aromatic hydrocarbons (speciated), petroleum hydrocarbons (banded TPHCWG); and
- phenols and non-speciated VOCs*

* Photo-ionisation detection was undertaken in-situ on the removed soil material in order to detect vapours originating from any VOC residue (fuels/solvents etc.) that may be present in each excavated area. This was performed by means of an externally calibrated Tiger PID. Calibration certification has been appended to this report.

All chemical analyses were undertaken by a UKAS accredited laboratory. Laboratory certification has also been appended to this report.

As stated above, ground gas monitoring had previously been undertaken on the western section of the site in 2023 - 2024, which failed to detect any significant quantities of methane or carbon dioxide beneath the surface.

In view of this, and in view of the presence of dense London clay bedrock beneath the site there seemed little justification for further ground gas monitoring as part of this current investigation.

3 On-site observations

The only known historical use of the site has been as part of a refuse site which is believed to have been active between 1962 and 1972. It has most recently been in residential use.

The ground surface generally exists as compressed soil and hardcore (made-ground) to a maximum observed depth of 200mm.

It is understood from BGS data that the bedrock beneath the site is characterised by the London Clay Formation with no superficial deposits. This was noted within all trial pits during this current investigation, as well as within all boreholes drilled during the previous investigation in 2024.

The sub-surface material strata logs have been reproduced below in Tables 1 to 6 along with any detailed observations.

Photographs showing the removed material have been appended to each strata log (Photographs 1 to 6).

The intrusive investigation was undertaken on the 11th November 2025.

Table 1 Strata log - TP.01

Location ID	Depth (mm)	Notes
TP.01	0 - 140	Dark-brown/red made-ground comprising bricks and ash.
	140 - 240	Mid-brown sandy clay.
	240 - 470	Soft, sticky, orange/brown sandy clay.
	470 - 1050	Soft, mottled green and orange sandy clay.
Groundwater	-	Groundwater was not reached.

Photograph 1 Trial pit and removed soil material - Location TP.01



Table 2 Strata log - TP.02

Location ID	Depth (mm)	Notes
TP.02	0 - 200	Dark-brown made-ground comprising bricks, tiles and gravels (10-20mm diameter rounded).
	200 - 370	Mid-brown, firm sandy clay.
	370 - 1000	Firm, mottled green and orange sandy clay.
Groundwater	-	Groundwater was not reached.

Photograph 2 Trial pit and removed soil material - Location TP.02



Table 3 Strata log - TP.03

Location ID	Depth (mm)	Notes
TP.03	0 - 170	Dark-brown sandy made-ground comprising bricks, pottery and gravels (10-20mm diameter rounded).
	170 - 220	Dark-brown, clayey loam subsoil.
	220 - 320	Soft, sticky, orange sandy clay.
	320 - 1000	Firm, mottled green and orange sandy clay.
Groundwater	-	Groundwater was not reached.

Photograph 3 Trial pit and removed soil material - Location TP.03



Table 4 Strata log - TP.04

Location ID	Depth (mm)	Notes
TP.04	0 - 170	Dark-brown sandy made-ground comprising, brick, chalk fragments and gravels (10-20mm diameter rounded).
	170 - 340	Dark-brown, clayey loam subsoil.
	340 - 460	Soft, sticky, orange sandy clay.
	460 - 1100	Firm, mottled green and orange sandy clay.
Groundwater	-	Groundwater was not reached.

Photograph 4 Trial pit and removed soil material - Location TP.04



Table 5 Strata log - TP.05

Location ID	Depth (mm)	Notes
TP.05	0 - 180	Grey, sandy made-ground comprising Type-1 aggregate.
	180 - 380	Dark-brown, clayey loam subsoil with gravels (10-20mm diameter rounded).
	380 - 620	Soft, sticky, orange sandy clay.
	620 - 1070	Firm, mottled green and orange sandy clay.
Groundwater	-	Groundwater was not reached.

Photograph 5 Trial pit and removed soil material - Location TP.05



Table 6 Strata log - TP.06

Location ID	Depth (mm)	Notes
TP.06	0 - 200	Grey, sandy, gravelly made-ground comprising Type-1 aggregate.
	200 - 370	Dark-brown, clayey loam subsoil with gravels (10-20mm diameter rounded).
	370 - 460	Soft, sticky, moist, orange sandy clay.
	460 - 1000	Firm, mottled green and orange sandy clay.
Groundwater	-	Groundwater was not reached.

Photograph 6 Trial pit and removed soil material - Location TP.06



4 Results from soil analysis

The results from the soil analysis are displayed in Tables 7 to 12 below. Any determinand detected has been highlighted in bold type.

Table 7 Results for specified inorganics in soil - metals

Determinand (mg/kg)	TP.01		TP.02		TP.03	
	Depth 100-200mm	Depth 500-600mm	Depth 100-200mm	Depth 500-600mm	Depth 100-200mm	Depth 500-600mm
Arsenic	< 10	< 10	< 10	14	< 10	< 10
Boron	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Cadmium	0.3	0.6	0.4	0.8	0.3	0.5
Chromium	7.2	11	5.4	16	5.7	16
Hexavalent chromium	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	3.4	4.5	3.3	7.1	< 2.0	4.3
Lead	15	6.5	9.5	9.3	12	8.0
Mercury (total)	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Nickel	6.8	6.5	5.5	13	4.3	9.4
Selenium	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
Zinc	21	21	16	25	15	22

Table 7 (Cont.) Results for specified inorganics in soil - metals

Determinand (mg/kg)	TP.04		TP.05		TP.06	
	Depth 100-200mm	Depth 500-600mm	Depth 100-200mm	Depth 500-600mm	Depth 100-200mm	Depth 500-600mm
Arsenic	< 10	10	< 10	< 10	< 10	< 10
Boron	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Cadmium	0.4	0.5	0.3	0.3	0.4	0.7
Chromium	7.7	20	6.2	13	6.2	14
Hexavalent chromium	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	4.6	6.0	3.2	< 2.0	< 2.0	4.8
Lead	14	7.7	16	6.3	7.7	8.6
Mercury (total)	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Nickel	5.0	11	4.4	7.3	4.4	9.4
Selenium	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
Zinc	22	27	20	21	16	23

Table 8 Results for specified inorganics in soil - non-metals

Determinand (mg/kg)	TP.01		TP.02		TP.03	
	Depth 100-200mm	Depth 500-600mm	Depth 100-200mm	Depth 500-600mm	Depth 100-200mm	Depth 500-600mm
Cyanide (total)	<1	<1	<1	<1	<1	<1
Sulphate (total)	42	27	170	120	21	17
Sulphide	<15	<15	<15	<15	<15	<15
Chloride	8.2	2.4	4.9	6.0	2.9	3.1
Asbestos	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
Determinand (mg/kg)	TP.04		TP.05		TP.06	
	Depth 100-200mm	Depth 500-600mm	Depth 100-200mm	Depth 500-600mm	Depth 100-200mm	Depth 500-600mm
Cyanide (total)	<1	<1	<1	<1	<1	<1
Sulphate (total)	140	160	53	29	59	71
Sulphide	<15	<15	<15	<15	<15	<15
Chloride	5.6	7.7	9.6	4.6	9.1	6.9
Asbestos	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected

Table 9 Results for specified hydrocarbons in soil

Determinand (mg/kg)	TP.01		TP.02		TP.03	
	Depth 100-200mm	Depth 500-600mm	Depth 100-200mm	Depth 500-600mm	Depth 100-200mm	Depth 500-600mm
Benzene	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Toluene	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Ethylbenzene	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
p & m-Xylene	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
o-Xylene	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
MTBE	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Determinand (mg/kg)	TP.04		TP.05		TP.06	
	Depth 100-200mm	Depth 500-600mm	Depth 100-200mm	Depth 500-600mm	Depth 100-200mm	Depth 500-600mm
Benzene	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Toluene	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Ethylbenzene	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
p & m-Xylene	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
o-Xylene	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
MTBE	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

Table 10 Results for poly-aromatic hydrocarbons in soil

Determinand (mg/kg)	TP.01		TP.02		TP.03	
	Depth 100-200mm	Depth 500-600mm	Depth 100-200mm	Depth 500-600mm	Depth 100-200mm	Depth 500-600mm
Naphthalene	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Acenaphthylene	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Acenaphthene	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Fluorene	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Phenanthrene	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Anthracene	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Fluoranthene	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Pyrene	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Benzo(a)anthracene	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Chrysene	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Benzo(b)fluoranthene	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Benzo(k)fluoranthene	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Benzo(a)pyrene	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Indeno(123-cd)pyrene	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Dibenzo(ah)anthracene	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Benzo(ghi)perylene	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Coronene	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Total PAHs	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34

Table 10 (Cont.) Results for poly-aromatic hydrocarbons in soil

Determinand (mg/kg)	TP.04		TP.05		TP.06	
	Depth 100-200mm	Depth 500-600mm	Depth 100-200mm	Depth 500-600mm	Depth 100-200mm	Depth 500-600mm
Naphthalene	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Acenaphthylene	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Acenaphthene	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Fluorene	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Phenanthrene	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Anthracene	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Fluoranthene	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Pyrene	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Benzo(a)anthracene	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Chrysene	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Benzo(b)fluoranthene	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Benzo(k)fluoranthene	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Benzo(a)pyrene	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Indeno(123-cd)pyrene	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Dibenzo(ah)anthracene	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Benzo(ghi)perylene	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Coronene	< 0.02	0.03	< 0.02	< 0.02	< 0.02	< 0.02
Total PAHs	< 0.34	0.44	< 0.34	< 0.34	< 0.34	< 0.34

Table 11 Results for petroleum hydrocarbons in soil

Determinand (mg/kg)	TP.01		TP.02		TP.03	
	Depth 100-200mm	Depth 500-600mm	Depth 100-200mm	Depth 500-600mm	Depth 100-200mm	Depth 500-600mm
Aliphatic C5 - C6	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Aliphatic C6 - C8	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Aliphatic C8 - C10	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Aliphatic C10 - C12	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	3.6
Aliphatic C12 - C16	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	5.4
Aliphatic C16 - C21	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	12
Aliphatic C21 - C34	2.7	< 2.0	< 2.0	3.0	4.5	41
Aliphatic C35 - C40	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	12
Total Aliphatic (C5 - 40)	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Aromatic C5 - C7	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7 - C8	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8 - C10	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Aromatic C10 - C12	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic C12 - C16	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	2.6
Aromatic C16 - C21	2.9	3.1	3.1	3.1	2.9	3.5
Aromatic C21 - C35	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	11
Aromatic C35 - C40	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Aromatic (C5 - 35)	< 10	< 10	< 10	< 10	< 10	79
Total (C6 - 40)	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Table 11 (Cont.) Results for petroleum hydrocarbons in soil

Determinand (mg/kg)	TP.04		TP.05		TP.06	
	Depth 100-200mm	Depth 500-600mm	Depth 100-200mm	Depth 500-600mm	Depth 100-200mm	Depth 500-600mm
Aliphatic C5 - C6	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Aliphatic C6 - C8	0.08	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Aliphatic C8 - C10	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Aliphatic C10 - C12	1.7	1.5	1.3	< 1.0	< 1.0	< 1.0
Aliphatic C12 - C16	2.3	1.9	1.7	1.4	1.4	< 1.0
Aliphatic C16 - C21	6.5	5.4	4.8	3.7	4.7	< 1.0
Aliphatic C21 - C34	14	9.3	11	7.0	9.6	< 2.0
Aliphatic C35 - C40	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Aliphatic (C5 - 40)	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Aromatic C5 - C7	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7 - C8	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8 - C10	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Aromatic C10 - C12	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic C12 - C16	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic C16 - C21	2.8	2.9	2.7	2.7	2.8	3.6
Aromatic C21 - C35	2.5	< 2.0	3.8	< 2.0	3.4	< 2.0
Aromatic C35 - C40	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Aromatic (C5 - 35)	30	21	25	15	22	< 10
Total (C6 - 40)	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Table 12 Non-specified VOCs - measured by photo-ionisation detection in-situ

TP.01		TP.02		TP.03	
Depth 100-200mm	Depth 500-600mm	Depth 100-200mm	Depth 500-600mm	Depth 100-200mm	Depth 500-600mm
< 0.1 ppm	< 0.1 ppm	< 0.1 ppm	< 0.1 ppm	< 0.1 ppm	< 0.1 ppm
TP.04		TP.05		TP.06	
Depth 100-200mm	Depth 500-600mm	Depth 100-200mm	Depth 500-600mm	Depth 100-200mm	Depth 500-600mm
< 0.1 ppm	< 0.1 ppm	< 0.1 ppm	< 0.1 ppm	< 0.1 ppm	< 0.1 ppm

5 Interpretation

Tables 13 to 15 below show the soil guideline concentrations used as part of this assessment.

Where Environment Agency guideline values are unavailable, soil guideline concentrations derived using CLEA software packages and other published guidelines have been consulted. In all instances guideline values for residential end-use with home-grown produce have been considered.

For the purposes of this assessment therefore, the following guideline criteria have been referred to:

- Environment Agency Category 4 Screening Levels (2014);
- CIEH (LQM) GAC 3rd Edition (residential end-use);
- Atkins ATRISK SSVs (residential end-use with home-grown produce);
- GAC CLEA generated value for residential end-use with home-grown produce; and
- others, as available.

Note that for some guideline values a choice of soil organic matter (SOM) concentration is provided whereby different guideline concentrations exist for SOM values of between 1% and 6%.

In this instance the guideline value for 1% SOM was referred to. The mean organic content was determined as 0.5%; which approximates to 0.9% SOM.

Table 13 Soil guideline concentrations for inorganics referred to for this assessment

Determinand (mg/kg)	Guideline concentration for 1% SOM	Origin
Arsenic	37	Atkins ATRISK Category 4 Screening Level
Boron	290	LQM/CIEH S4ULs (CLEA 1.06) for residential with home-grown produce
Cadmium	22.1	Atkins ATRISK Category 4 Screening Level
Chromium	14300	Atkins ATRISK (CLEA 1.07) for residential with home-grown produce
Chromium VI	20.5	Atkins ATRISK Category 4 Screening Level
Copper	4730	Atkins ATRISK (CLEA 1.07) for residential with home-grown produce
Lead	200	Category 4 Screening Level ^(a)
Mercury (elemental)	0.0863	Atkins ATRISK (CLEA 1.07) for residential with home-grown produce
Mercury (inorganic Hg ²⁺)	180	Atkins ATRISK (CLEA 1.07) for residential with home-grown produce
Nickel	136	Atkins ATRISK (CLEA 1.07) for residential with home-grown produce
Selenium	375	Atkins ATRISK (CLEA 1.07) for residential with home-grown produce
Zinc	20000	Atkins ATRISK (CLEA 1.07) for residential with home-grown produce
Free Cyanide	34	Atkins ATRISK (CLEA 1.07) for residential with home-grown produce
Phenols (SOM 1%)	267	Atkins ATRISK (CLEA 1.07) for residential with home-grown produce
Benzene (SOM 1%)	0.137	Atkins ATRISK (C4SL) for residential with home-grown produce
Toluene (SOM 1%)	113	Atkins ATRISK (CLEA 1.07) for residential with home-grown produce
Ethylbenzene (SOM 1%)	50.7	Atkins ATRISK (CLEA 1.07) for residential with home-grown produce
o-Xylene (SOM 1%)	26.4	Atkins ATRISK (CLEA 1.07) for residential with home-grown produce
m-Xylene (SOM 1%)	25	Atkins ATRISK (CLEA 1.07) for residential with home-grown produce
p-Xylene (SOM 1%)	24	Atkins ATRISK (CLEA 1.07) for residential with home-grown produce

(a) Quoted for residential land-use 0-7 year-old child taking into account bioavailability, with exposure parameters as detailed in report SR3.

Table 14 Soil guideline concentrations for PAHs referred to for this assessment

Determinand (mg/kg)	Guideline concentration for 1% SOM	Origin
Naphthalene	2.3	LQM/CIEH S4ULs (CLEA 1.06) for residential with home-grown produce
Acenaphthylene	608	Atkins ATRISK (CLEA 1.07) for residential with home-grown produce
Acenaphthene	210	LQM/CIEH S4ULs (CLEA 1.06) for residential with home-grown produce
Fluorene	735	Atkins ATRISK (CLEA 1.07) for residential with home-grown produce
Phenanthrene	95	LQM/CIEH S4ULs (CLEA 1.06) for residential with home-grown produce
Anthracene	10200	Atkins ATRISK (CLEA 1.07) for residential with home-grown produce
Fluoranthene	983	Atkins ATRISK (CLEA 1.07) for residential with home-grown produce
Pyrene	668	Atkins ATRISK (CLEA 1.07) for residential with home-grown produce
Benzo(a)anthracene	7.2	LQM/CIEH S4ULs (CLEA 1.06) for residential with home-grown produce
Chrysene	15	LQM/CIEH S4ULs (CLEA 1.06) for residential with home-grown produce
Benzo(b)fluoranthene	2.6	LQM/CIEH S4ULs (CLEA 1.06) for residential with home-grown produce
Benzo(k)fluoranthene	77	LQM/CIEH S4ULs (CLEA 1.06) for residential with home-grown produce
Benzo(a)pyrene	2.2	LQM/CIEH S4ULs (CLEA 1.06) for residential with home-grown produce
Indeno(123-cd)pyrene	27	LQM/CIEH S4ULs (CLEA 1.06) for residential with home-grown produce
Dibenzo(ah)anthracene	0.24	LQM/CIEH S4ULs (CLEA 1.06) for residential with home-grown produce
Benzo(ghi)perylene	320	LQM/CIEH S4ULs (CLEA 1.06) for residential with home-grown produce

Table 15 Soil guideline concentrations for TPHs referred to for this assessment

Determinand (mg/kg)	Guideline concentration for 1% SOM	Origin
Aliphatic TPH C5-C6	42.7	Atkins ATRISK (CLEA 1.07) for residential with home-grown produce
Aliphatic TPH C6-C8	99.3	Atkins ATRISK (CLEA 1.07) for residential with home-grown produce
Aliphatic TPH C8-C10	13.9	Atkins ATRISK (CLEA 1.07) for residential with home-grown produce
Aliphatic TPH C10-C12	81.7	Atkins ATRISK (CLEA 1.07) for residential with home-grown produce
Aliphatic TPH C12-C16	385	Atkins ATRISK (CLEA 1.07) for residential with home-grown produce
Aliphatic TPH C16-C35	210000	Atkins ATRISK (CLEA 1.07) for residential with home-grown produce
Aliphatic TPH C35-C44	65000	LQM/CIEH S4ULs (CLEA 1.06) for residential with home-grown produce
Aromatic TPH C5-C7	0.137	Atkins ATRISK (CLEA 1.07) for residential with home-grown produce
Aromatic TPH C7-C8	113	Atkins ATRISK (CLEA 1.07) for residential with home-grown produce
Aromatic TPH C8-C10	20.5	Atkins ATRISK (CLEA 1.07) for residential with home-grown produce
Aromatic TPH C10-C12	70	Atkins ATRISK (CLEA 1.07) for residential with home-grown produce
Aromatic TPH C12-C16	165	Atkins ATRISK (CLEA 1.07) for residential with home-grown produce
Aromatic TPH C16-C21	319	Atkins ATRISK (CLEA 1.07) for residential with home-grown produce
Aromatic TPH C21-C35	1120	Atkins ATRISK (CLEA 1.07) for residential with home-grown produce
Aromatic TPH C5-C35	1100	LQM/CIEH S4ULs (CLEA 1.06) for residential with home-grown produce

6 Summary of soil assessment

As detailed above, 6 trial pits were excavated on the site to a minimum depth of 1000mm.

Two soil samples were collected from each pit for laboratory analysis, representing the direct and indirect contact zones.

In doing so, the results reproduced in Tables 7 to 12 above have shown that although there were a number of determinands present within the soil, none was present above corresponding referenced soil guideline criteria, when considered for residential development.

7 Review of conceptual model and risk assessment

Using the overall soil sampling results, along with the gas monitoring results and any observations made, the conceptual site model (CSM) from the Phase 1 desk study can now be reviewed and updated. In doing so any uncertainties highlighted within that report can now be readdressed and the corresponding risk reassessed.

In reviewing this conceptual model, Table 16 below highlights any perceived pollutant pathway linkages that may still be considered present.

It should be noted that the following re-assessment of the risk, has been made on the understanding that groundworks would be required for the construction of the new dwellings, in addition to which the proposal would include a soft landscaped recreational area.

It is further noted that this has been based entirely on the findings discussed within this report.

The risk matrix used for this purpose is reproduced below in Figure 2.

Figure 2 Risk assessment algorithm

Potential severity	Risk rating						Severity of hazard	Probability of hazard	Overall risk
	5	5	10	15	20	25	5 = Fatality	1 = Improbable	1 - 6 Low
	4	4	8	12	16	20	4 = Major	2 = Remote	8 - 12 Medium
	3	3	6	9	12	15	3 = Minor	3 = Possible	15 - 25 High
	2	2	4	6	8	10	2 = Negligible	4 = Probable	
	1	1	2	3	4	5	1 = None	5 = Certainty	
		1	2	3	4	5			
	Probability						Severity of hazard x probability = risk rating		

Table 16 Comments relating to perceived risk

Contaminants identified	Potential pathways	Perceived level of risk	Comments and reasoning
None detected	Ingestion of soil	4	In the absence of any identified chemical soil contamination beneath the surface, the corresponding risk to ingestion of soil is expected to be low.
	Dermal contact with soil	4	In the absence of any identified chemical soil contamination beneath the surface, the corresponding risk to dermal contact with soil is expected to be low.
	Inhalation of soil dust	4	In the absence of any identified chemical soil contamination beneath the surface, the corresponding risk to inhalation of soil is expected to be low.
	Inhalation or ignition of gases or vapours	5	Despite a trace concentration of methane and carbon dioxide being present beneath the western section of the site, the corresponding risk based on these findings is expected to be low.
	Contact with mains services and building fabric below ground	4	In the absence of any identified aggressive chemical soil contamination beneath the surface, the corresponding risk to underground services and building fabric is expected to be low.
	Contact with groundwater or other environmental media	4	In the absence of any chemical soil contamination across the site, the corresponding risk to groundwater resources and off-site media is expected to be low.

8 Summary and recommendations

8.1 Summary

It is proposed to construct two self-build dwellings on this site, for which a potential concern has arisen due to the understanding that the site had previously formed part of a refuse site.

The intrusive investigation reported herein has considered the underlying soil down to a minimum depth of 1000mm at six locations, the outcome of which was that there were no chemical determinands exceeding residential guideline criteria.

This report has followed on from a previous investigation undertaken in 2024 which focused on the land to the immediate west and south of this area. The finding from that investigation reached the same conclusion with regards to soil contamination, although also included ground gas monitoring over a three-month period. The finding from the latter was that there was no significant methane or carbon dioxide presence either.

On the basis of these results it has been concluded that the risk should be low for all identified receptors, including anyone occupying the proposed new dwellings, or anyone undertaking groundworks or other construction work on the site.

8.2 Recommendations

The findings from the soil analyses suggest that there should be no requirement to undertake any remedial action prior to constructing the proposed dwellings on this site.

Despite the previous intrusive investigation not detecting any significant ground gas presence on this site, it is still recommended that the dwellings should have some means of sub-floor ventilation as a precaution.

It is also recommended that an informal observation strategy is put in place during any groundworks that take place as part of the development. Should there be a suspicion that the soil on or beneath the site could be potentially contaminated by means of observation or odour, then work should stop immediately to allow the concern to be appropriately investigated, and the contaminated land officer at EBC notified accordingly.

9 Limitations

This work has been undertaken in accordance with Apple Environmental Limited's standard terms and conditions.

The findings represent the professional opinion of the report author. All work carried out is based upon Apple Environmental Limited's current professional knowledge and understanding. It is therefore stated that the conclusions of this report have been based upon information gathered from a number of sources and it can only be assumed that this information provided was accurate and correct.

Intrusive investigation undertaken as part of this work has been restricted to a level of detail required to achieve the stated objectives of this work. The results of any measurements taken may vary spatially or with time, and further confirmatory measurements may wish to be considered, as necessary.

There is always the possibility that other undetected contaminants exist, or, that detected contaminants may exist at a greater concentration than that specified in areas of the site that have not been intrusively investigated.

Finally it should be noted that the conclusion of this investigation is believed to be accurate at the time of the investigation, but may not necessarily be something that can be relied upon at any future date due to the fact that the site is currently in daily use.

10 References and specific sources of information

1. Investigation of potentially contaminated sites - code of practice (BSI 10175:2011+A2:2017)
2. Land Contamination Risk Management (LCRM) - Environment Agency (April 2021)
3. Using Soil Guideline Values - Environment Agency Science Report SC050021/SGV (March 2009)
4. The LQM/CIEH Generic Assessment Criteria for Human Health Risk Assessment CIEH 3rd Ed. - Land Quality Management Ltd. (2015)
5. Atkins ATRISK SSCs (July 2017)
6. CLEA Software (Version 1.05) Handbook - Environment Agency Science Report SC050021/SR4 (January 2014)
7. ICRL 59/83 Trigger Concentrations - Department of the Environment (1983)
8. Land Affected by Contamination - Planning Practice Guidance - The Department for Communities and Local Government (June 2014)
9. The National Planning Policy Framework (Revised) - Draft update February 2025
10. Model procedures for the management of contaminated land (CLR-11) - Environment Agency (September 2004)
11. Contaminated Land Risk Assessment: A Guide to Good Practice (C552) - CIRIA (2001)
12. SP1010 - Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination - CL:AIRE (September 2014)
13. British Geological Survey. Geology of Britain:
<http://mapapps.bgs.ac.uk/geologyofbritain/home.html?>

APPENDIX

Laboratory data

Calibration certification



Apple Environmental Limited
Unit 3 Estevan Farm
Stoney Lane
GU34 5EL

7 - 11 Harding Street
Leicester
LE1 4DH

Analytical Test Report: L25/12143/APL - 25-90644

Your Project Reference:	Old Oak Farm CL/3841/WP		
Your Order Number:	OLD OAK FARM CL/3841/WP	Samples Received / Instructed:	13/11/2025 / 13/11/2025
Report Issue Number:	1	Sample Tested:	13/11 to 26/11/2025
Samples Analysed:	12 sample(s)	Report issued:	26/11/2025

Signed



James Gane
Analytical Services Manager
CTS

Notes:

General

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

Samples will be retained for 14 days after issue of this report with the exception of the asbestos test portion which is held for 6 months unless otherwise requested.

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

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

Stone Content was determined in accordance with CTS method statement MS - CL - Sample Prep and refers to the percentage of stones retained on a 10mm BS test sieve.

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

Uncertainty of measurement values are available on request.

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

Asbestos

Please note: Where further analysis is required samples identified as containing asbestos are screened and tested on an as received basis. No correction is made for moisture content and other than the asbestos test(s) these results are not covered by our accreditation

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

Deviating Samples

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

Accreditation Key

This report shall not be reproduced except in full

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

MCERTS Accreditation only covers the SAND, CLAY and LOAM matrices

UKAS accreditation on waters only covers the Ground water and Surface water matrices

Date of Issue: 27.08.25

Issued by: J. Gane

Issue No: 4

Rev No: 27



4161



L25/12143/APL - 25-90644

Project Reference - Old Oak Farm CL/3841/WP

Analytical Test Results - Solid

Lab Reference			640078	640079	640080	640081	640082	640083	640084
Client Sample ID			-	-	-	-	-	-	-
Client Sample Location			TP.01/01/3481	TP.01/02/3481	TP.02/01/3481	TP.02/02/3481	TP.03/01/3481	TP.03/02/3481	TP.04/01/3481
Client Sample Type			Soil	Soil	Soil	Soil	Soil	Soil	Soil
Client Sample Number			-	-	-	-	-	-	-
Depth - Top (m)			-	-	-	-	-	-	-
Depth - Bottom (m)			-	-	-	-	-	-	-
Date of Sampling			11/11/2025	11/11/2025	11/11/2025	11/11/2025	11/11/2025	11/11/2025	11/11/2025
Time of Sampling			1000	1005	1015	1020	1025	1030	1035
Sample Matrix			Clay	Clay	Clay	Clay	Clay	Clay	Clay
Determinant	Units	Accreditation							
Arsenic	(mg/kg)	MCERTS	< 10	< 10	< 10	14	< 10	< 10	< 10
Boron (w/s)	(mg/kg)	u	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Cadmium	(mg/kg)	MCERTS	0.3	0.6	0.4	0.8	0.3	0.5	0.4
Chromium (Total)	(mg/kg)	UKAS	7.2	11	5.4	16	5.7	16	7.7
Copper	(mg/kg)	MCERTS	3.4	4.5	3.3	7.1	< 2.0	4.3	4.6
Iron	(mg/kg)	u	20000	41000	24000	44000	18000	44000	24000
Lead	(mg/kg)	MCERTS	15	6.5	9.5	9.3	12	8.0	14
Mercury	(mg/kg)	UKAS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Nickel	(mg/kg)	MCERTS	6.8	6.5	5.5	13	4.3	9.4	5.0
Selenium	(mg/kg)	u	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
Zinc	(mg/kg)	MCERTS	21	21	16	25	15	22	22
Cyanide (Total)	(mg/kg)	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chromium (Hexavalent)	u		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
pH	pH Units	MCERTS	7.6	4.7	5.9	5.7	6.5	6.6	6.6
Sulphate (Water soluble as SO ₄)	(mg/l)	u	42	27	170	120	21	17	140
Sulphide	(mg/kg)	u	< 15	< 15	< 15	< 15	< 15	< 15	< 15
Water Soluble Chloride	(mg/l)	u	8.2	2.4	4.9	6.0	2.9	3.1	5.6
Acenaphthene	(mg/kg)	MCERTS	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Acenaphthylene	(mg/kg)	UKAS	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Anthracene	(mg/kg)	UKAS	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Benzo (a) anthracene	(mg/kg)	MCERTS	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Benzo (a) pyrene	(mg/kg)	MCERTS	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Benzo (b) fluoranthene	(mg/kg)	MCERTS	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Benzo (g, h, i) perylene	(mg/kg)	MCERTS	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Benzo (k) fluoranthene	(mg/kg)	MCERTS	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Chrysene	(mg/kg)	MCERTS	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Dibenzo (a,h) anthracene	(mg/kg)	MCERTS	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Fluoranthene	(mg/kg)	MCERTS	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Fluorene	(mg/kg)	MCERTS	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Indeno (1, 2, 3,-cd) pyrene	(mg/kg)	MCERTS	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Naphthalene	(mg/kg)	MCERTS	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Phenanthrene	(mg/kg)	MCERTS	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Pyrene	(mg/kg)	MCERTS	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Total PAH (Sum of USEPA 16)	(mg/kg)	UKAS	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32
Coronene	(mg/kg)	u	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
PAH Content (PAH17)	(mg/kg)	u	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34
TOC	(%)	MCERTS	0.7	< 0.5	< 0.5	< 0.5	0.5	< 0.5	0.6
Asbestos	-	UKAS	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected

L25/12143/APL - 25-90644

Project Reference - Old Oak Farm CL/3841/WP

Analytical Test Results - Solid

Lab Reference			640085	640086	640087	640088	640089
Client Sample ID			-	-	-	-	-
Client Sample Location			TP.04/02/3481	TP.05/01/3481	TP.05/02/3481	TP.06/01/3481	TP.06/02/3481
Client Sample Type			Soil	Soil	Soil	Soil	Soil
Client Sample Number			-	-	-	-	-
Depth - Top (m)			-	-	-	-	-
Depth - Bottom (m)			-	-	-	-	-
Date of Sampling			11/11/2025	11/11/2025	11/11/2025	11/11/2025	11/11/2025
Time of Sampling			1040	1045	1050	1055	1100
Sample Matrix			Clay	Clay	Clay	Clay	Clay
Determinant	Units	Accreditation					
Arsenic	(mg/kg)	MCERTS	10	< 10	< 10	< 10	< 10
Boron (w/s)	(mg/kg)	u	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Cadmium	(mg/kg)	MCERTS	0.5	0.3	0.3	0.4	0.7
Chromium (Total)	(mg/kg)	UKAS	20	6.2	13	6.2	14
Copper	(mg/kg)	MCERTS	6.0	3.2	< 2.0	< 2.0	4.8
Iron	(mg/kg)	u	41000	18000	26000	27000	43000
Lead	(mg/kg)	MCERTS	7.7	16	6.3	7.7	8.6
Mercury	(mg/kg)	UKAS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Nickel	(mg/kg)	MCERTS	11	4.4	7.3	4.4	9.4
Selenium	(mg/kg)	u	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
Zinc	(mg/kg)	MCERTS	27	20	21	16	23
Cyanide (Total)	(mg/kg)	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chromium (Hexavalent)	(mg/kg)	u	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
pH	pH Units	MCERTS	6.8	7.0	7.2	7.3	7.1
Sulphate (Water soluble as SO ₄)	(mg/l)	u	160	53	29	59	71
Sulphide	(mg/kg)	u	< 15	< 15	< 15	< 15	< 15
Water Soluble Chloride	(mg/l)	u	7.8	9.6	4.6	9.1	6.9
Acenaphthene	(mg/kg)	MCERTS	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Acenaphthylene	(mg/kg)	UKAS	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Anthracene	(mg/kg)	UKAS	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Benzo (a) anthracene	(mg/kg)	MCERTS	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Benzo (a) pyrene	(mg/kg)	MCERTS	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Benzo (b) fluoranthene	(mg/kg)	MCERTS	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Benzo (g, h, i) perylene	(mg/kg)	MCERTS	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Benzo (k) fluoranthene	(mg/kg)	MCERTS	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Chrysene	(mg/kg)	MCERTS	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Dibenzo (a,h) anthracene	(mg/kg)	MCERTS	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Fluoranthene	(mg/kg)	MCERTS	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Fluorene	(mg/kg)	MCERTS	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Indeno (1, 2, 3,-cd) pyrene	(mg/kg)	MCERTS	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Naphthalene	(mg/kg)	MCERTS	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Phenanthrene	(mg/kg)	MCERTS	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Pyrene	(mg/kg)	MCERTS	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Total PAH (Sum of USEPA 16)	(mg/kg)	UKAS	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32
Coronene	(mg/kg)	u	0.03	< 0.02	< 0.02	< 0.02	< 0.02
PAH Content (PAH17)	(mg/kg)	u	0.44	< 0.34	< 0.34	< 0.34	< 0.34
TOC	(%)	MCERTS	< 0.5	1.0	< 0.5	< 0.5	< 0.5
Asbestos	-	UKAS	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected



4161



7 - 11 Harding Street
Leicester
LE1 4DH

L25/12143/APL - 25-90644

Project Reference - Old Oak Farm CL/3841/WP

Analytical Test Results - VPH / EPH

Lab Reference	640078	640079	640080	640081	640082	640083	640084
Client Sample ID	-	-	-	-	-	-	-
Client Sample Location	TP.01/01/3481	TP.01/02/3481	TP.02/01/3481	TP.02/02/3481	TP.03/01/3481	TP.03/02/3481	TP.04/01/3481
Client Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Client Sample Number	-	-	-	-	-	-	-
Depth - Top (m)	-	-	-	-	-	-	-
Depth - Bottom (m)	-	-	-	-	-	-	-
Date of Sampling	11/11/2025	11/11/2025	11/11/2025	11/11/2025	11/11/2025	11/11/2025	11/11/2025
Time of Sampling	1000	1005	1015	1020	1025	1030	1035
Sample Matrix	Clay	Clay	Clay	Clay	Clay	Clay	Clay
Determinant	Units	Accreditation					
Benzene	(mg/kg)	MCERTS	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Toluene	(mg/kg)	MCERTS	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Ethylbenzene	(mg/kg)	MCERTS	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
m&p Xylene	(mg/kg)	MCERTS	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
o-Xylene	(mg/kg)	MCERTS	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
MTBE	(mg/kg)	MCERTS	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >C ₅ to C ₆ [HS_MS_1D_AL]	(mg/kg)	MCERTS	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Aliphatic >C ₆ to C ₈ [HS_MS_1D_AL]	(mg/kg)	MCERTS	< 0.06	< 0.06	< 0.06	< 0.06	0.08
Aliphatic >C ₈ to C ₁₀ [HS_MS_1D_AL]	(mg/kg)	MCERTS	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Aliphatic >C ₁₀ to C ₁₂ [EH_2D_AL]	(mg/kg)	MCERTS	< 1.0	< 1.0	< 1.0	3.6	1.7
Aliphatic >C ₁₂ to C ₁₆ [EH_2D_AL]	(mg/kg)	MCERTS	< 1.0	< 1.0	< 1.0	5.4	2.3
Aliphatic >C ₁₆ to C ₂₁ [EH_2D_AL]	(mg/kg)	MCERTS	< 1.0	< 1.0	< 1.0	12	6.5
Aliphatic >C ₂₁ to C ₃₅ [EH_2D_AL]	(mg/kg)	MCERTS	2.7	< 2.0	< 2.0	4.5	14
Aliphatic >C ₃₅ to C ₄₄ [EH_2D_AL]	(mg/kg)	u	< 5.0	< 5.0	< 5.0	12	< 5.0
Aromatic >C ₅ to C ₇ [HS_MS_1D_AR]	(mg/kg)	MCERTS	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >C ₇ to C ₈ [HS_MS_1D_AR]	(mg/kg)	MCERTS	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >C ₈ to C ₁₀ [HS_MS_1D_AR]	(mg/kg)	MCERTS	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Aromatic >C ₁₀ to C ₁₂ [EH_2D_AR]	(mg/kg)	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic >C ₁₂ to C ₁₆ [EH_2D_AR]	(mg/kg)	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic >C ₁₆ to C ₂₁ [EH_2D_AR]	(mg/kg)	MCERTS	2.9	3.1	3.1	2.9	2.8
Aromatic >C ₂₁ to C ₃₅ [EH_2D_AR]	(mg/kg)	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	11
Aromatic >C ₃₅ to C ₄₄ [EH_2D_AR]	(mg/kg)	u	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total >C ₅ to C ₃₅ [EH_2D+HS_1D_Total]	(mg/kg)	MCERTS	< 10	< 10	< 10	< 10	79
							30

L25/12143/APL - 25-90644

Project Reference - Old Oak Farm CL/3841/WP

Analytical Test Results - VPH / EPH

Lab Reference		640085	640086	640087	640088	640089
Client Sample ID		-	-	-	-	-
Client Sample Location		TP.04/02/3481	TP.05/01/3481	TP.05/02/3481	TP.06/01/3481	TP.06/02/3481
Client Sample Type		Soil	Soil	Soil	Soil	Soil
Client Sample Number		-	-	-	-	-
Depth - Top (m)		-	-	-	-	-
Depth - Bottom (m)		-	-	-	-	-
Date of Sampling		11/11/2025	11/11/2025	11/11/2025	11/11/2025	11/11/2025
Time of Sampling		1040	1045	1050	1055	1100
Sample Matrix		Clay	Clay	Clay	Clay	Clay
Determinant	Units	Accreditation				
Benzene	(mg/kg)	MCERTS	< 0.01	< 0.01	< 0.01	< 0.01
Toluene	(mg/kg)	MCERTS	< 0.01	< 0.01	< 0.01	< 0.01
Ethylbenzene	(mg/kg)	MCERTS	< 0.01	< 0.01	< 0.01	< 0.01
m&p Xylene	(mg/kg)	MCERTS	< 0.02	< 0.02	< 0.02	< 0.02
o-Xylene	(mg/kg)	MCERTS	< 0.01	< 0.01	< 0.01	< 0.01
MTBE	(mg/kg)	MCERTS	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >C ₅ to C ₆ [HS_MS_1D_AL]	(mg/kg)	MCERTS	< 0.06	< 0.06	< 0.06	< 0.06
Aliphatic >C ₆ to C ₈ [HS_MS_1D_AL]	(mg/kg)	MCERTS	< 0.06	< 0.06	< 0.06	< 0.06
Aliphatic >C ₈ to C ₁₀ [HS_MS_1D_AL]	(mg/kg)	MCERTS	< 0.06	< 0.06	< 0.06	< 0.06
Aliphatic >C ₁₀ to C ₁₂ [EH_2D_AL]	(mg/kg)	MCERTS	1.5	1.3	< 1.0	< 1.0
Aliphatic >C ₁₂ to C ₁₆ [EH_2D_AL]	(mg/kg)	MCERTS	1.9	1.7	1.4	< 1.0
Aliphatic >C ₁₆ to C ₂₁ [EH_2D_AL]	(mg/kg)	MCERTS	5.4	4.8	3.7	< 1.0
Aliphatic >C ₂₁ to C ₃₅ [EH_2D_AL]	(mg/kg)	MCERTS	9.3	11	7.0	< 2.0
Aliphatic >C ₃₅ to C ₄₄ [EH_2D_AL]	(mg/kg)	u	< 5.0	< 5.0	< 5.0	< 5.0
Aromatic >C ₅ to C ₇ [HS_MS_1D_AR]	(mg/kg)	MCERTS	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >C ₇ to C ₈ [HS_MS_1D_AR]	(mg/kg)	MCERTS	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >C ₈ to C ₁₀ [HS_MS_1D_AR]	(mg/kg)	MCERTS	< 0.06	< 0.06	< 0.06	< 0.06
Aromatic >C ₁₀ to C ₁₂ [EH_2D_AR]	(mg/kg)	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic >C ₁₂ to C ₁₆ [EH_2D_AR]	(mg/kg)	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic >C ₁₆ to C ₂₁ [EH_2D_AR]	(mg/kg)	MCERTS	2.9	2.7	2.7	3.6
Aromatic >C ₂₁ to C ₃₅ [EH_2D_AR]	(mg/kg)	MCERTS	< 2.0	3.8	< 2.0	< 2.0
Aromatic >C ₃₅ to C ₄₄ [EH_2D_AR]	(mg/kg)	u	< 5.0	< 5.0	< 5.0	< 5.0
Total >C ₅ to C ₃₅ [EH_2D+HS_1D_Total]	(mg/kg)	MCERTS	21	25	15	< 10

L25/12143/APL - 25-90644

Project Reference - Old Oak Farm CL/3841/WP

Sample Descriptions

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Description	Moisture Content (%)	Stone Content (%)	Passing 2mm test sieve (%)
640078	-	TP.01/01/34 81	Soil	-	Greyish brown slightly sandy silty clay	23	< 0.1	100
640079	-	TP.01/02/34 81	Soil	-	Light brown slightly sandy silty clay	30	< 0.1	100
640080	-	TP.02/01/34 81	Soil	-	Greyish brown slightly sandy silty clay	24	< 0.1	100
640081	-	TP.02/02/34 81	Soil	-	Light brown slightly sandy silty clay	30	< 0.1	100
640082	-	TP.03/01/34 81	Soil	-	Greyish brown slightly sandy silty clay	24	< 0.1	100
640083	-	TP.03/02/34 81	Soil	-	Light brown slightly sandy silty clay	31	< 0.1	100
640084	-	TP.04/01/34 81	Soil	-	Greyish brown slightly gravelly slightly sandy silty clay	25	17	86
640085	-	TP.04/02/34 81	Soil	-	Light brown slightly gravelly slightly sandy silty clay	29	< 0.1	90
640086	-	TP.05/01/34 81	Soil	-	Greyish brown slightly sandy silty clay with rare rootlets	24	4.6	100
640087	-	TP.05/02/34 81	Soil	-	Greyish brown slightly sandy silty clay	20	< 0.1	100
640088	-	TP.06/01/34 81	Soil	-	Greyish brown slightly gravelly slightly sandy silty clay	23	< 0.1	87
640089	-	TP.06/02/34 81	Soil	-	Light brown slightly sandy silty clay	28	< 0.1	100

L25/12143/APL - 25-90644

Project Reference - Old Oak Farm CL/3841/WP

Sample Comments

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Comments
640078	-	TP.01/01/348 1	Soil	-	VPH/BTEX - Sample taken from container with head space.
640079	-	TP.01/02/348 1	Soil	-	VPH/BTEX - Sample taken from container with head space.
640080	-	TP.02/01/348 1	Soil	-	
640081	-	TP.02/02/348 1	Soil	-	
640082	-	TP.03/01/348 1	Soil	-	
640083	-	TP.03/02/348 1	Soil	-	
640084	-	TP.04/01/348 1	Soil	-	
640085	-	TP.04/02/348 1	Soil	-	
640086	-	TP.05/01/348 1	Soil	-	
640087	-	TP.05/02/348 1	Soil	-	
640088	-	TP.06/01/348 1	Soil	-	
640089	-	TP.06/02/348 1	Soil	-	



4161



L25/12143/APL - 25-90644

Project Reference - Old Oak Farm CL/3841/WP

Analysis Methodologies - Please refer to sample comments page (if present) for any changes to methods

Test Code	Test Name / Reference	Sample condition for analysis	Sample Preparation	Test Details
ANIONSS	MS - CL - Anions by Aquakem (2:1Extract)	Oven dried	Passing 2mm test sieve	Determination of Anions (inc Sulphate, chloride etc.) in soils by Aquakem. Analysis is based on a 2:1 water to soil extraction ratio
SKALARCNS	MS - CL - Cyanide by Skalar	As received	Passing 10mm test sieve	Determination of cyanide (total / free / complex) in soil using a Skalar segmented flow analyser
SKALARHCS	MS - CL - Hexavalent Chromium by Skalar	As received	Passing 10mm test sieve	Determination of hexavalent chromium in soil using Skalar segmented flow analyser
ICPMETS	MS - CL - ICP Metals	Air dried	Passing 10mm test sieve	Determination of metals in soils via ICP
PHS	MS - CL - pH in Soils	As received	Passing 10mm test sieve	Determination of pH in soils using a pH probe (using a 1:3 soil to water extraction)
PAHASRDS	MS - CL - PAH (As Received)	As received	Passing 10mm test sieve	Determination of Polyaromatic hydrocarbons in soil via GC-MS
SULPHIDES	MS - CL - Sulphide in Soils	Air Dried	Passing 10mm test sieve	Determination of sulphide in soil via titration
TOCS	MS - CL - TOC Eltra	Air Dried	Passing 10mm test sieve	Determination of Total Organic Carbon in soils
GCGCS	MS - CL - TPH & EPH by GCXGC	As received	Passing 10mm test sieve	Determination of TPH and EPH in soils via GCxGC-FID
CWGS	Calculation from VPH-S and EPH-S	As received	Passing 10mm test sieve	Determination of TPH CWG (Volatile Petroleum Hydrocarbons and Extractable Petroleum Hydrocarbons) in soils via Headspace-GC-MS and GC-GC-FID respectively
VPHS	MS - CL - VPH	As received	Passing 10mm test sieve	Determination of VPH in soils via Headspace-GC-MS
WSBORONS	MS - CL - WS Boron	Air dried	Passing 10mm test sieve	Determination of Water soluble Boron in soils via ICP
ASB	MS - AS - Asbestos	-	-	Fibre identification is in accordance with in house documented methods which are based on the procedure documented in the HSE Document HSG 248 "Asbestos: The analysts guide for sampling, analysis and clearance procedures"
SAMPLEPREP	MS - CL - Sample Preparation	-	-	Preparation of samples (including determination of moisture content) to allow for subsequent analysis

L25/12143/APL - 25-90644

Project Reference - Old Oak Farm CL/3841/WP

HWOL TPH Acronym Index

Acronym	Description
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 and Aromatics
AL	Aliphatics Only
AR	Aromatics Only
2D	GC-GC - Double Coil Gas Chromatography
#1	EH_Total but with humics mathmatically subtracted
#2	EH_Total but with fatty acids mathmatically subtracted
_	Operator - underscore to separate acronyms (except for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry



Life-saving solutions

CERTIFICATE OF CALIBRATION

Tiger Select

CALIBRATION CERTIFICATE NO: 83489

ISSUED BY: SHAWCITY LIMITED
DATE: 22/07/2025

APPROVED SIGNATORY:

NAME: Joe Herbert

CUSTOMER: Apple Environmental Ltd
INSTRUMENT: Tiger Select
SERIAL NUMBER: T-113211

CALIBRATION METHOD: CM03
AMBIENT CONDITIONS: 20°C ± 2°C and 50% (± 20%) RH

S500124-1

S500123-1

S500126-1

The instrument has been factory calibrated to documented procedures in accordance with ISO9001:2015 Quality Management System.
The instrument is calibrated following manufacturer guidance.
Measurement standards are derived from volumetric and time sources which have been calibrated at an accredited laboratory traceable to national or international standards.

CALIBRATION RESULTS

REF. VALUE
100 ppm Isobutylene
1000 ppm Isobutylene
5 ppm Benzene

INDICATED VALUE
100 ppm Isobutylene
1000 ppm Isobutylene
5 ppm Benzene

Prior to calibration, the instrument was allowed to stabilise in the laboratory for at least 30 minutes.
The instrument was calibrated by exposing the sensor to known values of gas concentrations.
All gases were sampled through the complete probe and in line filter, where applicable.
The reference value is that generated by the certified source and the indicated value is that measured by the instrument.
Gas mixture prepared using equipment traceable to N.P.L standards against suppliers' certificate No.
On the day of calibration, the instrument was working according to the manufacturer's original specifications.

COMMENTS:

The reported uncertainty is based on a standard uncertainty multiplied by a coverage factor of $k=2$.
This provides a level of confidence of uncertainty of approximately 95%.
The uncertainty of measurement is $\pm 2\%$
The results indicate that the instrument conforms to the applicable parts of the published specification.

HEALTH & SAFETY, OCCUPATIONAL HYGIENE AND ENVIRONMENTAL MONITORING INSTRUMENTS