CONTAMINATED LAND
INTRUSIVE INVESTIGATION

Peartree Farm
Pitton Road
Pitton
Salisbury
Wiltshire
SP5 1EG

apple environmental

May 2023

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1 Introduction and scope of work

Apple Environmental has been appointed to undertake an intrusive soil contamination investigation at Peartree Farm in Pitton, near Salisbury, in support of the proposed development of the site for residential use.

An environmental desk study and preliminary risk assessment previously undertaken by Apple Environmental for the site (Report Ref. CL/3383/PTF) had identified a potential land contamination concern, due principally to the general use of the site as a former farm.

Due to the proposal to change the site for residential use, the conceptual model within the aforementioned desk study had highlighted a perceived risk from the above sources, with potentially significant pathway linkages enabling contamination to reach receptors.

In considering this, the contaminants deemed to be potentially present included general inorganics within made-ground, 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 aims of this work 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 specified areas, along with 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; and
- assess the risk to future users of the site, as well as building structures and services.

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:

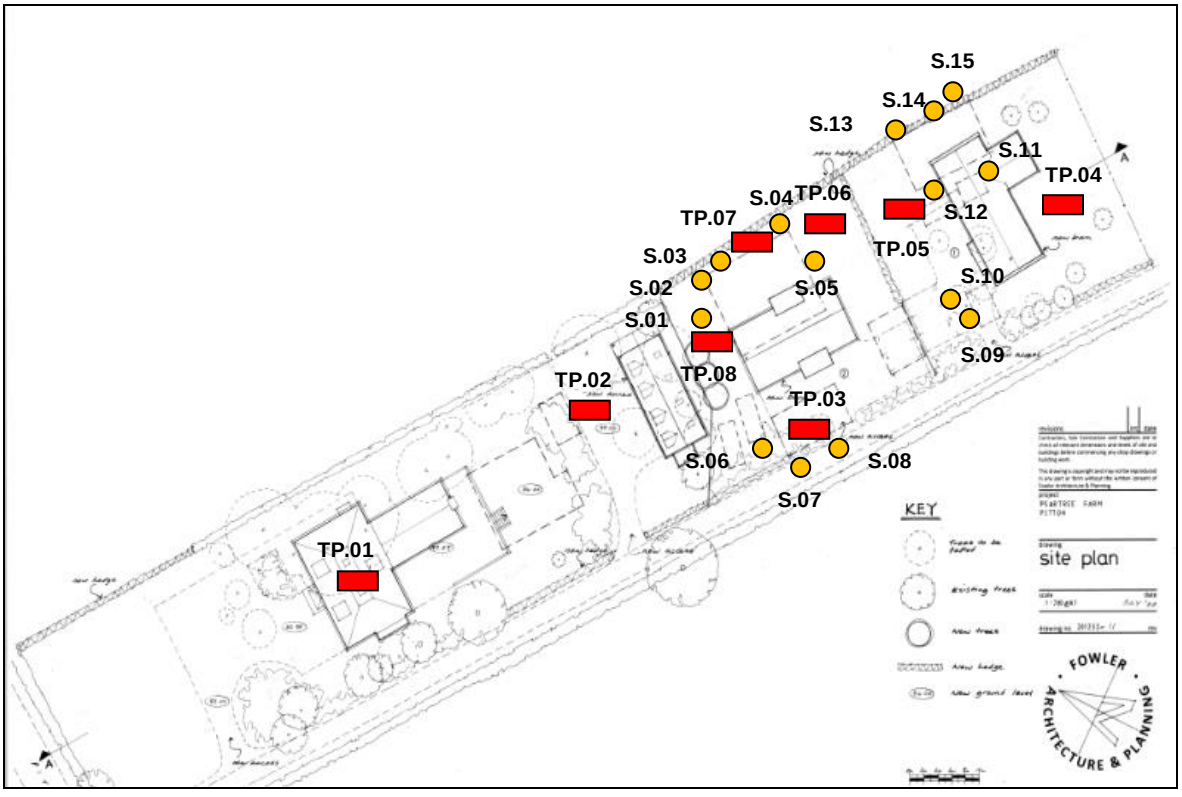
- to excavate 8 trial pits at the site to a minimum depth of 1000mm;
- to characterise the nature of the sub-surface material at each of these locations;
- to collect at least 2 soil samples from each of the pits for laboratory analysis representing the direct contact zone and the indirect contact zone;
- to collect additional soil samples from where there may be any other specific or noticeable contamination concern;
- to analyse the soil samples for a range of contamination indicators;
- to obtain soil samples from an additional fifteen surface/shallow boreholes around the perimeter of the barns for the determination of asbestos only;
- 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.

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, eight trial pits were excavated across the site to a minimum depth of 1000mm, at the locations shown below in Figure 1. In addition to this, surface/shallow sampling was undertaken for asbestos screening at fifteen locations; as also shown below.

Figure 1 Plan showing the approximate sampling locations



Soil sampling locations for full contamination suite

Soil sampling for asbestos screening only

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

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 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 Phocheck Tiger PID. Calibration certification has been appended to this report.

Samples S.01 to S.15 were obtained from a depth of 0 - 200mm, and underwent screening for asbestos only.

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

3 On-site observations

The site has been in use as a farm for at least the last 50 years.

The ground surface comprised large areas of soft landscaping, with some concrete and compressed soil cover within some of the barns; and a central concrete yard area.

It is understood from BGS data that the bedrock beneath the site is characterised by the Newhaven Chalk Formation, with no overlying superficial deposits. This was noted to be present at all sampled locations, although made-ground was clearly present in places, to a maximum observed depth of 970mm.

Groundwater was not detected in any of the sampled locations.

The sub-surface material strata logs have been reproduced below in Tables 1 to 8 along with any detailed observations.

Photographs showing the removed material have been appended to each strata log (Photographs 1 to 8).

Table 1 Strata log - Location **TP.01**

Location ID	Depth (mm)	Notes
TP.01	0 - 20	Grass.
	20 - 410	Mid-brown silty, clayey loam with roots and angular flints (10-20mm diameter).
	410 - 1000	White/light-brown, clayey chalk with large angular flints (30-70mm diameter).
Groundwater	-	Groundwater was not reached.

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





Table 2 Strata log - Location **TP.02**

Location ID	Depth (mm)	Notes
TP.02	0 - 20	Grass.
	20 - 510	Mid-brown clayey loam with rootlets.
	510 - 720	White/light-brown clayey chalk.
	720 - 1000	Friable clayey chalk with chalk lithorelicts.
Groundwater	-	Groundwater was not reached.

Photograph 2 Removed soil material - Location TP.02





Table 3 Strata log - Location **TP.03**

Location ID	Depth (mm)	Notes
TP.03	0 - 400	Light-brown, dry, silty, fine loam with rounded and angular flints (10-50mm diameter).
	400 - 850	Dark-brown, silty clay with large angular flints (40-80mm diameter).
	850 - 1000	White/light-brown clayey chalk with large angular flints (40-80mm diameter).
Groundwater	-	Groundwater was not reached.

Photograph 3 Removed soil material - Location TP.03





Table 4 Strata log - Location **TP.04**

Location ID	Depth (mm)	Notes
TP.04	0 - 10	Grass.
	10 - 140	Dark-brown, clayey subsoil with rootlets.
	140 - 1000	Light-brown clayey chalk with angular flints and chalk lithorelicts.
Groundwater	-	Groundwater was not reached.

Photograph 4 Removed soil material - Location TP.04





Table 5 Strata log - Location **TP.05**

Location ID	Depth (mm)	Notes
TP.05	0 - 20	Grass.
	20 - 150	Dark-brown clayey loam with made-ground comprising scalpings.
	150 - 670	Light-brown clayey topsoil with angular flints (20-50mm diameter).
	670 - 1000	White/light-brown, clayey chalk with large angular flints (30-80mm diameter) and chalk lithorelicts.
Groundwater	-	Groundwater was not reached.

Photograph 5 Removed soil material - Location TP.05





Table 6 Strata log - Location **TP.06**

Location ID	Depth (mm)	Notes
TP.06	0 - 10	Grass.
	10 - 370	Dark-brown clayey loam with small angular flints (5-15mm diameter).
	370 - 1000	White/light-brown clayey chalk with large angular flints (30-80mm diameter) and chalk lithorelicts.
Groundwater	-	Groundwater was not reached.

Photograph 6 Removed soil material - Location TP.06





Table 7 Strata log - Location **TP.07**

Location ID	Depth (mm)	Notes
TP.07	0 - 10	Grass.
	10 - 170	Dark-brown clayey loam with made-ground comprising scalpings.
	170 - 610	White/light-brown, clayey chalk.
	610 - 1000	White clayey chalk with angular flints (20-40mm diameter).
Groundwater	-	Groundwater was not reached.

Photograph 7 Removed soil material - Location TP.07



Table 8 Strata log - Location **TP.08**

Location ID	Depth (mm)	Notes
TP.08	0 - 10	Grass.
	10 - 970	Light-brown clayey loam with made-ground comprising bricks, decommissioned plastic pipework, roots and angular flints (20-40mm diameter).
	970 - 1100	White clayey chalk.
Groundwater	-	Groundwater was not reached.

Photograph 8 Removed soil material - Location TP.08





4 Results from soil analyses

The results from the soil analyses are displayed in Tables 9 to 15 below. Any determinand detected has been highlighted in **bold** type.

Table 9 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**	**6**	**8**	**7**	**9**	**7**
Boron	< 1	< 1	< 1	< 1	**1.3**	< 1
Cadmium	**1.5**	**0.9**	**1.4**	**1.5**	**1.7**	**1.4**
Chromium	**14**	**10**	**12**	**13**	**14**	**14**
Hexavalent chromium	< 2	< 2	< 2	< 2	< 2	< 2
Copper	**19**	**13**	**18**	**18**	**22**	**15**
Lead	**74**	**22**	**67**	**43**	**69**	**24**
Mercury (total)	< 1	< 1	< 1	< 1	< 1	< 1
Nickel	**15**	**11**	**12**	**14**	**15**	**15**
Selenium	< 2	< 2	< 2	< 2	< 2	< 2
Zinc	**89**	**43**	**132**	**73**	**116**	**82**

Table 9 (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	**6**	**5**	**8**	**5**	**7**	**5**
Boron	**1.2**	< 1	**1.1**	**1.1**	**1.6**	**1**
Cadmium	**1.3**	**0.9**	**1.3**	**1.5**	**1.4**	**1.3**
Chromium	**10**	**8**	**10**	**11**	**11**	**10**
Hexavalent chromium	< 2	< 2	< 2	< 2	< 2	< 2
Copper	**16**	**13**	**23**	**15**	**20**	**15**
Lead	**31**	**18**	**50**	**16**	**48**	**21**
Mercury (total)	< 1	< 1	< 1	< 1	< 1	< 1
Nickel	**10**	**9**	**12**	**12**	**12**	**11**
Selenium	< 2	< 2	< 2	< 2	< 2	< 2
Zinc	**67**	**44**	**80**	**64**	**87**	**58**

Table 9 (Cont.) Results for specified inorganics in soil - metals

Determinand (mg/kg)	TP.07		TP.08	
	Depth 100-200mm	Depth 500-600mm	Depth 100-200mm	Depth 500-600mm
Arsenic	**6**	**3**	**6**	**6**
Boron	< 1	< 1	**1.5**	< 1
Cadmium	**1**	**0.6**	**1.2**	**1.2**
Chromium	**7**	**5**	**10**	**12**
Hexavalent chromium	< 2	< 2	< 2	< 2
Copper	**29**	**12**	**16**	**15**
Lead	**73**	**13**	**30**	**41**
Mercury (total)	< 1	< 1	< 1	< 1
Nickel	**7**	**6**	**11**	**14**
Selenium	< 2	< 2	< 2	< 2
Zinc	**140**	**33**	**97**	**69**

Table 10 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)	**1285**	**718**	**1269**	**928**	**2352**	**1192**
Sulphide	< 5	< 5	< 5	< 5	< 5	< 5
Chloride	**11**	**6**	**7**	**8**	**343**	**103**
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)	**1304**	**928**	**1240**	**953**	**1397**	**1005**
Sulphide	< 5	< 5	< 5	< 5	< 5	< 5
Chloride	**17**	**11**	**27**	**9**	**9**	**10**
Asbestos	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected

Table 10 (Cont.) Results for specified inorganics in soil - non-metals

Determinand (mg/kg)	TP.07		TP.08	
	Depth 100-200mm	Depth 500-600mm	Depth 100-200mm	Depth 500-600mm
Cyanide (total)	< 1	< 1	< 1	< 1
Sulphate (total)	**749**	**537**	**885**	**817**
Sulphide	< 5	< 5	< 5	< 5
Chloride	**14**	**9**	**9**	**7**
Asbestos	Not detected	Not detected	Not detected	**Chrysotile**

Table 11 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
Phenols	<2	<2	<2	<2	<2	<2

Table 11 (Cont.) Results for specified 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
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
Phenols	<2	<2	<2	<2	<2	<2

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

Determinand (mg/kg)	TP.07		TP.08	
	Depth 100-200mm	Depth 500-600mm	Depth 100-200mm	Depth 500-600mm
Benzene	< 0.002	< 0.002	< 0.002	< 0.002
Toluene	< 0.005	< 0.005	< 0.005	< 0.005
Ethylbenzene	< 0.002	< 0.002	< 0.002	< 0.002
p & m-Xylene	< 0.002	< 0.002	< 0.002	< 0.002
o-Xylene	< 0.002	< 0.002	< 0.002	< 0.002
MTBE	< 0.005	< 0.005	< 0.005	< 0.005
Phenols	<2	<2	<2	<2

Table 12 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	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	< 0.1	< 0.1	< 0.1	< 0.1	**0.30**	< 0.1
Anthracene	< 0.1	< 0.1	< 0.1	< 0.1	**0.11**	< 0.1
Fluoranthene	< 0.1	< 0.1	< 0.1	< 0.1	**2.47**	< 0.1
Pyrene	< 0.1	< 0.1	< 0.1	< 0.1	**2.21**	< 0.1
Benzo(a)anthracene	< 0.1	< 0.1	< 0.1	< 0.1	**0.82**	< 0.1
Chrysene	< 0.1	< 0.1	< 0.1	< 0.1	**0.91**	< 0.1
Benzo(b)fluoranthene	< 0.1	< 0.1	< 0.1	< 0.1	**0.77**	< 0.1
Benzo(k)fluoranthene	< 0.1	< 0.1	< 0.1	< 0.1	**0.32**	< 0.1
Benzo(a)pyrene	< 0.1	< 0.1	< 0.1	< 0.1	**0.50**	< 0.1
Indeno(123-cd)pyrene	< 0.1	< 0.1	< 0.1	< 0.1	**0.38**	< 0.1
Dibenzo(ah)anthracene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	< 0.1	< 0.1	< 0.1	< 0.1	**0.29**	< 0.1
Coronene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Total PAHs	< 1.6	< 1.6	< 1.6	< 1.6	**9.1**	< 1.6

Table 12 (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	< 0.1	< 0.1	**0.53**	< 0.1	< 0.1	< 0.1
Acenaphthylene	< 0.1	< 0.1	**0.25**	< 0.1	< 0.1	< 0.1
Acenaphthene	< 0.1	< 0.1	**2.84**	< 0.1	< 0.1	< 0.1
Fluorene	< 0.1	< 0.1	**2.20**	< 0.1	< 0.1	< 0.1
Phenanthrene	< 0.1	< 0.1	**41.60**	< 0.1	< 0.1	< 0.1
Anthracene	< 0.1	< 0.1	**10.10**	< 0.1	< 0.1	< 0.1
Fluoranthene	< 0.1	< 0.1	**62.90**	< 0.1	0.16	< 0.1
Pyrene	< 0.1	< 0.1	**53.70**	< 0.1	0.16	< 0.1
Benzo(a)anthracene	< 0.1	< 0.1	**28.20**	< 0.1	< 0.1	< 0.1
Chrysene	< 0.1	< 0.1	**22.30**	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	< 0.1	< 0.1	**23.60**	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	< 0.1	< 0.1	**7.25**	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	< 0.1	< 0.1	**23**	< 0.1	**0.13**	< 0.1
Indeno(123-cd)pyrene	< 0.1	< 0.1	**9.89**	< 0.1	< 0.1	< 0.1
Dibenzo(ah)anthracene	< 0.1	< 0.1	**2.51**	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	< 0.1	< 0.1	**7.71**	< 0.1	< 0.1	< 0.1
Coronene	< 0.1	< 0.1	**3.04**	< 0.1	< 0.1	< 0.1
Total PAHs	< 1.6	< 1.6	**299**	< 1.6	**< 1.6**	< 1.6

Table 12 (Cont.) Results for poly-aromatic hydrocarbons in soil

Determinand (mg/kg)	TP.07		TP.08	
	Depth 100-200mm	Depth 500-600mm	Depth 100-200mm	Depth 500-600mm
Naphthalene	**0.28**	< 0.1	< 0.1	< 0.1
Acenaphthylene	**0.32**	< 0.1	< 0.1	< 0.1
Acenaphthene	**2.11**	< 0.1	< 0.1	< 0.1
Fluorene	**1.17**	< 0.1	< 0.1	< 0.1
Phenanthrene	**26.50**	**0.28**	< 0.1	< 0.1
Anthracene	**5.53**	**0.19**	< 0.1	< 0.1
Fluoranthene	**61.10**	**0.91**	< 0.1	< 0.1
Pyrene	**55.10**	**0.89**	< 0.1	< 0.1
Benzo(a)anthracene	**32.90**	**0.52**	< 0.1	< 0.1
Chrysene	**24.50**	**0.48**	< 0.1	< 0.1
Benzo(b)fluoranthene	**37.70**	**0.69**	< 0.1	< 0.1
Benzo(k)fluoranthene	**9.60**	**0.24**	< 0.1	< 0.1
Benzo(a)pyrene	**36.40**	**0.83**	< 0.1	< 0.1
Indeno(123-cd)pyrene	**9.68**	**0.53**	< 0.1	< 0.1
Dibenzo(ah)anthracene	**0.66**	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	**7.80**	**0.44**	< 0.1	< 0.1
Coronene	**3.58**	< 0.1	< 0.1	< 0.1
Total PAHs	**311**	**6**	< 1.6	< 1.6

Table 13 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	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6 - C8	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic C8 - C10	< 2	< 2	< 2	< 2	< 2	< 2
Aliphatic C10 - C12	< 2	< 2	< 2	< 2	< 2	< 2
Aliphatic C12 - C16	< 3	< 3	< 3	< 3	< 3	< 3
Aliphatic C16 - C21	< 3	< 3	< 3	< 3	**42**	< 3
Aliphatic C21 - C34	< 10	< 10	< 10	< 10	< 10	< 10
Aliphatic C35 - C40	< 10	< 10	< 10	< 10	< 10	< 10
Total Aliphatic (C5 - 34)	< 21	< 21	< 21	< 21	**85**	< 21
Aromatic C5 - C7	< 0.01	< 0.01	< 0.01	< 0.01	**0.03**	< 0.01
Aromatic C7 - C8	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic C8 - C10	< 2	< 2	< 2	< 2	< 2	< 2
Aromatic C10 - C12	< 2	< 2	< 2	< 2	< 2	< 2
Aromatic C12 - C16	< 2	< 2	< 2	< 2	< 2	< 2
Aromatic C16 - C21	< 3	< 3	<2	< 3	**22**	< 3
Aromatic C21 - C35	< 10	< 10	< 10	< 10	**42**	< 10
Aromatic C35 - C40	< 10	< 10	< 10	< 10	< 10	< 10
Total Aromatic (C5 -35)	< 21	< 21	< 21	< 21	**65**	< 21
Total (C6 - 40)	< 42	< 42	< 42	< 42	**150**	< 42

Table 13 (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	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6 - C8	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic C8 - C10	< 2	< 2	< 2	< 2	< 2	< 2
Aliphatic C10 - C12	< 2	< 2	< 2	< 2	< 2	< 2
Aliphatic C12 - C16	< 3	< 3	**10**	< 3	< 3	< 3
Aliphatic C16 - C21	< 3	< 3	**66**	< 3	< 3	< 3
Aliphatic C21 - C34	< 10	< 10	**88**	< 10	< 10	< 10
Aliphatic C35 - C40	< 10	< 10	< 10	< 10	< 10	< 10
Total Aliphatic (C5 - 34)	< 21	< 21	**165**	< 21	< 21	< 21
Aromatic C5 - C7	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7 - C8	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic C8 - C10	< 2	< 2	< 2	< 2	< 2	< 2
Aromatic C10 - C12	< 2	< 2	< 2	< 2	< 2	< 2
Aromatic C12 - C16	< 2	< 2	**20**	< 2	< 2	< 2
Aromatic C16 - C21	< 3	< 3	**228**	< 3	< 3	< 3
Aromatic C21 - C35	< 10	< 10	**291**	< 10	< 10	< 10
Aromatic C35 - C40	< 10	< 10	< 10	< 10	< 10	< 10
Total Aromatic (C5 -35)	< 21	< 21	**539**	< 21	< 21	< 21
Total (C6 - 40)	< 42	< 42	**703**	< 42	< 42	< 42

Table 13 (Cont.) Results for petroleum hydrocarbons in soil

Determinand (mg/kg)	TP.07		TP.08	
	Depth 100-200mm	Depth 500-600mm	Depth 100-200mm	Depth 500-600mm
Aliphatic C5 - C6	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6 - C8	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic C8 - C10	< 2	< 2	< 2	< 2
Aliphatic C10 - C12	< 2	< 2	< 2	< 2
Aliphatic C12 - C16	3	< 3	< 3	< 3
Aliphatic C16 - C21	**12**	< 3	< 3	< 3
Aliphatic C21 - C34	**41**	< 10	< 10	< 10
Aliphatic C35 - C40	< 10	< 10	< 10	< 10
Total Aliphatic (C5 - 34)	**56**	< 21	< 21	< 21
Aromatic C5 - C7	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7 - C8	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic C8 - C10	< 2	< 2	< 2	< 2
Aromatic C10 - C12	< 2	< 2	< 2	< 2
Aromatic C12 - C16	**33**	< 2	< 2	< 2
Aromatic C16 - C21	**292**	< 3	< 3	< 3
Aromatic C21 - C35	**557**	< 10	< 10	< 10
Aromatic C35 - C40	< 10	< 10	< 10	< 10
Total Aromatic (C5 -35)	**881**	< 21	< 21	< 21
Total (C6 - 40)	**937**	< 42	< 42	< 42

Table 14 Non-specified VOCs - measured by means of 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
TP.07		**TP.08**			
Depth 100-200mm	Depth 500-600mm	Depth 100-200mm	Depth 500-600mm		
<0.1 ppm	<0.1 ppm	<0.1 ppm	<0.1 ppm		

Table 15 Results from surface/shallow sampling

Determinand	S.01	S.02	S.03
	Depth 0-250mm	Depth 0-250mm	Depth 0-250mm
Asbestos screen	None detected	None detected	None detected
	S.04	**S.05**	**S.06**
	Depth 0-250mm	Depth 0-250mm	Depth 0-250mm
	None detected	None detected	None detected
	S.07	**S.08**	**S.09**
	Depth 0-250mm	Depth 0-250mm	Depth 0-250mm
	None detected	None detected	None detected
	S.10	**S.11**	**S.12**
	Depth 0-250mm	Depth 0-250mm	Depth 0-250mm
	None detected	**Chrysotile**	None detected
	S.13	**S.14**	**S.15**
	Depth 0-250mm	Depth 0-250mm	Depth 0-250mm
	Chrysotile	**Chrysotile**	None detected

5 Interpretation

Tables 16 to 18 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, as the mean organic content was determined as 4.1%; which approximates to 7.2% SOM.

Table 16 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
Sulphate	10000	ICRCL Action Value domestic gardens[(b)]
Sulphide	1000	ICRCL Action Value all uses[(b)]
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.

(b) This 'withdrawn' value has been quoted in the absence of any other available published guideline, as an indication of a potential concern.

Table 17 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 18 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 Results evaluation

As detailed above, eight trial pits were excavated on the site to a minimum depth of 1000mm; from each of which two soil samples were collected for laboratory analysis.

An additional fifteen soil samples were also collected from shallow locations, for asbestos screening only.

Through reference to Tables 9 to 15 above, it has been shown that there were a number of chemical determinands present; albeit the only contaminants appearing to exceed any corresponding referenced soil guideline criteria for residential development with home-grown produce were PAHs.

There were two areas of potential concern highlighted, which were around trial pits TP.05 and TP.07.

More specifically, residential guideline criteria was exceeded in both locations for benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene and dibenzo(ah)anthracene within the soil samples obtained from between 100 - 200mm below the surface. There was no corresponding concern in the samples obtained from a depth of 500 - 600mm.

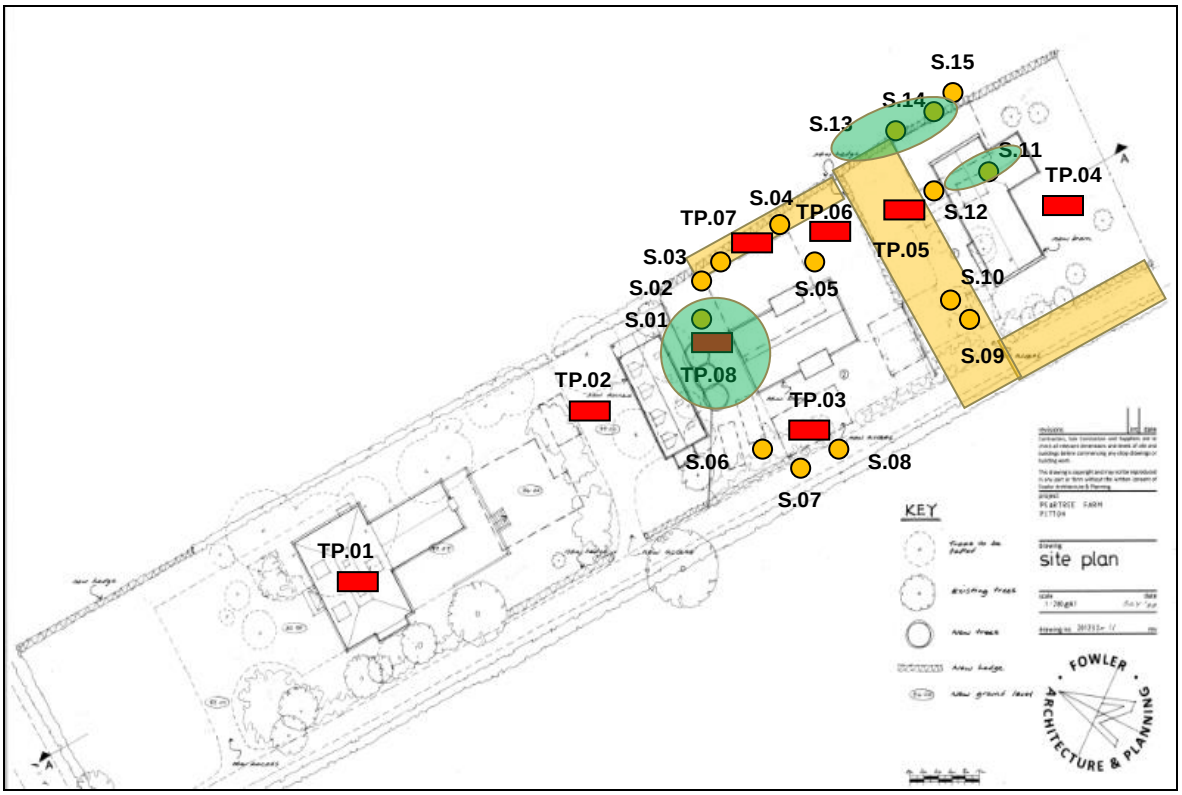
It is quite likely therefore that these elevated PAHs are associated with the made-ground evident in this location which extended to a maximum observed depth of around 170mm and comprised an old bitumen scalpings track.

In addition to this, bundles of chrysotile asbestos fibres were detected within the sample obtained from trial pit TP.08 at a depth of 500mm, as well as in the surface soil samples obtained from locations S11, S.13 and S.14.

The source of this asbestos residue within the surface sample locations (S.11, S.13 and S.14) is presumed to be associated with the existing asbestos roof; whereas the source of the asbestos residue within the deeper trial pit location is expected to be the made-ground here.

The possible extent of this identified contamination (based on these findings) has been indicated below in Figure 2, although it should be noted that the actual extent of contamination could be greater than that which has been indicated; and can not be confirmed without further intrusive investigation.

Figure 2 Plan showing the expected extent of contamination



PAH contamination

Asbestos contamination

7 Review of conceptual model and risk assessment

Using the sampling results and 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 19 below highlights any perceived pollutant pathway linkages that may be present.

It should be noted that the following re-assessment of risk, has been made on the basis that there will be soft landscaped recreational areas associated with the proposed dwellings, and groundworks for the installation of footings and new services etc.

The risk matrix used for this purpose is reproduced below in Figure 3.

Figure 3 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 19 Perceived risk to receptors

Contaminants identified	Potential pathways	Perceived level of risk	Comments and reasoning
Benzo(b)fluoranthene, chrysene, benzo(a)anthracene, benzo(a)pyrene, dibenzo(ah)anthracene and asbestos	Digestion of soil or soil-derived dust	12	The likelihood of ingesting soil during construction work, gardening or recreation is low. Ingestion is most likely to be limited to trace quantities through unwashed hands or ingesting airborne dusts etc. However as an elevated concentration of some PAHs has been identified in two localised areas of the site, the corresponding risk in those areas is deemed to be moderate-high.
	Dermal contact with soil or soil-derived dust	12	The potential for touching soil during construction work, gardening or recreation is high. It is also possible that the identified PAHs could exert a biological effect from absorption through the epidermis, or alternatively be transferred to the mouth. In either instance the extent of uptake is expected to be low, although as they have the potential to be harmful, the corresponding risk in these highlighted areas is deemed to be moderate-high.
	Inhalation of soil or soil-derived dust	15	Uptake from the inhalation of identified contaminants during the disturbance of soil is expected to be limited to trace quantities only. However, due to the presence of asbestos residue the corresponding risk must be deemed to be potentially high.

Table 19 (Cont.) Perceived risk to receptors

Contaminants identified	Potential pathways	Perceived level of risk	Comments and reasoning
Benzo(b)fluoranthene, chrysene, benzo(a)anthracene, benzo(a)pyrene, dibenzo(ah)anthracene and asbestos	Ingestion of vegetables	8	Considering the identified presence of elevated PAH concentrations in the soil in two areas, there is some potential for uptake by home-grown produce in these areas, thereby passing the contamination on to human receptors. Despite this, the uptake through ingestion is not expected to be great, although the risk must at least be considered low-moderate.
	Inhalation and/or ignition of gases and/or vapours	5	The concentration of the specified PAHs exceeding guideline criteria in these two areas is not expected to be great enough to generate significant vapours. Similarly the general organic carbon content of the soil is not deemed to be high enough to produce significant quantities of methane or carbon dioxide. The corresponding risk from either is therefore believed to be low.
	Contact with groundwater	4	Despite the presence of elevated concentrations of some PAHs in two identified locations it is not expected for these to be high enough to have had any significant impact on groundwater. The corresponding risk is therefore deemed to be low.
	Direct contact with buildings and services	8	PAHs can potentially present a risk to building fabric and underground services. If either of these are to be located in the areas where the PAH concentration is elevated then appropriate materials resistant to hydrocarbon attack may need to be considered. The corresponding risk in these areas is considered to be moderate.

8 Summary and recommendations

8.1 Summary

This report has aimed to determine whether or not there is any significant soil contamination beneath the surface of this former farm.

For this purpose, eight trial pits were excavated across the site, down to a minimum depth of 1000mm, allowing the subsurface to be both visually characterised, and analytically assessed for possible contamination.

Soil samples were obtained from two separate depths at each location, and analysed for the determinands highlighted in the conceptual site model (CSM).

In doing so, there were a number determinands detected, of which some specified PAHs exceeded their corresponding guideline criteria for residential development. In each instance these were detected in the upper soil horizon only, indicating the likelihood of shallow contamination only. Furthermore, these are expected to be associated with a shallow buried bitumen covered track. The suspected location of the track has been indicated above in Figure 2 as noted on the Ariel photograph taken in 2013 appended to the previous desk top study report.

In addition to this, chrysotile asbestos residue was detected within one trial pit and three shallow sampling locations. There former was present within made-ground which additionally contained hardcore (mainly bricks) which were presumed to be in place to protect former pipework. The asbestos residue detected at the shallow sampling locations is expected to be associated with the existing asbestos panelling on the adjacent building.

There were no other visual or olfactory concerns noted, and no groundwater presence at this sampled depth.

8.2 Recommendations

In view of this conclusion it would be necessary to undertake a programme of remediation in order to bring the risk down to an acceptable level.

On the presumption that the areas where contamination has been identified are to become areas of recreational soft landscaping, the corresponding pathway linkages would need to be addressed.

With specific regard to the PAH contamination, it is recommended that the extent of this is delineated by means of more detailed soil sampling within the vicinity of TP.05 and TP.07 along with the expected route of the track, with the expectation of determining how far this extends. This will therefore provide a greater understanding of how much of the site here will require remediation.

Once delineation sampling has been completed, the contaminated soil in these sections should be excavated to a depth of at least 300mm below the existing ground level, and removed for appropriate disposal or treatment. In view of the fact that PAHs are organic compounds, it is recommended that a bioremediation treatment option is explored.

Once this stage has been undertaken, soil samples should be obtained from the base and sides of any excavated areas, and analysed for the presence of PAHs. If the contamination is still present above guideline criteria at this depth then the areas should be excavated further to a maximum depth of 600mm. If PAHs are still present above guideline criteria at this depth then the excavations would need to be lined with an appropriate geotextile membrane to the base and sides, and protected at the base with at least 100mm of 'clean' crushed concrete, and then backfilled with 'clean' soil.

Conversely, if the PAH concentrations are no longer found to be present above guideline criteria then the excavated areas can be directly backfilled with 'clean' material.

Note that any soil brought onto the site for the purposes of backfilling these excavated areas (or for any other general landscaping) should arrive 'fit for purpose', and comply with the British Standard BS3882:2015; although this will still need to undergo independent confirmatory laboratory analyses to show that it is free from contamination.

With specific regard to the asbestos residue detected in sample locations S.11, S.13 and S.14, the soil here should be scraped back to a depth of 200mm, for appropriate off-site disposal, following which confirmatory sampling will also be undertaken in order to determine whether or not any asbestos residue remains.

If asbestos is still detected following the removal of this soil then the scrape-back depth should increase until such time that asbestos is no longer detected.

The findings from this further investigation should be presented in a revised site investigation report detailing any further remediation proposal; should it be deemed necessary.

Photographic evidence of all remedial work undertaken should be collated and presented to the planning authority in the form of a post-remediation validation report, along with any waste transfer documentation relating to the off-site disposal of soil, and any receipts or other documentation relating to the importation of 'clean' soil.

With regards to underground service runs, should these pass through the highlighted 'PAH contaminated' soil areas, then it would be necessary to ensure that all such materials used are resistant to hydrocarbon attack.

In addition to these proposed remedial works, it would be necessary to put an informal observation strategy in place during all ground-works that may take place as part of this redevelopment, whereupon care should be taken during the working of the site to investigate any soils, which are suspected by sight, odour or suspicion, to be contaminated.

In the event of any discovery of potentially contaminated soils or materials, the location, type and quantity should be recorded, and the contaminated land officer at Wiltshire Council notified immediately. Approval should be sought prior to continuing groundworks or implementing any mitigation.

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.

It is also pointed out that soil sampling, may only provide a general indication of contamination present. 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.

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. ICRCL 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) - July 2021

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?

APPENDICES

i Laboratory data
ii Calibration certification

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DETS Report No: 23-04948

Site Reference:	None Supplied
Project / Job Ref:	CL/3436/PTF
Order No:	None Supplied
Sample Receipt Date:	13/04/2023
Sample Scheduled Date:	13/04/2023
Report Issue Number:	1
Reporting Date:	25/04/2023

Authorised by:

Kevin Old
Operations Director

Dates of laboratory activities for each tested analyte are available upon request.

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4480

Soil Analysis Certificate						
DETS Report No: 23-04948	**Date Sampled**	11/04/23	11/04/23	11/04/23	11/04/23	11/04/23
Apple Environmental Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: None Supplied	**TP / BH No**	TP.01/01/3436	TP.01/02/3436	TP.02/01/3436	TP.02/02/3436	TP.03/01/3436
Project / Job Ref: CL/3436/PTF	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	**Depth (m)**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Reporting Date: 25/04/2023	**DETS Sample No**	646596	646597	646598	646599	646600

Determinand	**Unit**	**RL**	**Accreditation**					
Asbestos Screen (S)	N/a	N/a	**ISO17025**	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
Sample Matrix (S)	Material Type	N/a	NONE					
Asbestos Type (S)	PLM Result	N/a	**ISO17025**					
pH	pH Units	N/a	**MCERTS**	7.3	7.6	7.3	7.5	7.1
Total Cyanide	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Total Sulphate as SO_4	mg/kg	< 200	**MCERTS**	1285	718	1269	928	2352
Total Sulphate as SO_4	%	< 0.02	**MCERTS**	0.13	0.07	0.13	0.09	0.24
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	**MCERTS**	< 10	< 10	< 10	< 10	494
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	**MCERTS**	< 0.01	< 0.01	< 0.01	< 0.01	0.49
Sulphide	mg/kg	< 5	NONE	< 5	< 5	< 5	< 5	< 5
TOC (Total Organic Carbon)	%	< 0.1	**MCERTS**	4.4	1.8	4.2	2.9	4.1
W/S Chloride (2:1)	mg/kg	< 1	**MCERTS**	11	6	7	8	343
W/S Chloride (2:1)	mg/l	< 0.5	**MCERTS**	5.5	3.2	3.3	3.9	172
Arsenic (As)	mg/kg	< 2	**MCERTS**	10	6	8	7	9
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	1.3
Cadmium (Cd)	mg/kg	< 0.2	**MCERTS**	1.5	0.9	1.4	1.5	1.7
Chromium (Cr)	mg/kg	< 2	**MCERTS**	14	10	12	13	14
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Copper (Cu)	mg/kg	< 4	**MCERTS**	19	13	18	18	22
Lead (Pb)	mg/kg	< 3	**MCERTS**	74	22	67	43	69
Mercury (Hg)	mg/kg	< 1	**MCERTS**	< 1	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	**MCERTS**	15	11	12	14	15
Selenium (Se)	mg/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
Zinc (Zn)	mg/kg	< 3	**MCERTS**	89	43	132	73	116
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
TPH - Aliphatic >C35 - C40 : EH_CU_1D_AL	mg/kg	< 10	NONE	< 10	< 10	< 10	< 10	< 10
TPH - Aromatic >C35 - C40 : EH_CU_1D_AR	mg/kg	< 10	NONE	< 10	< 10	< 10	< 10	< 10
TPH - Aliphatic / Aromatic (C6 - C40) Total : HS_1D_MS+EH_CU_1D_Total	mg/kg	< 42	NONE	< 42	< 42	< 42	< 42	150

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
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Soil Analysis Certificate						
DETS Report No: 23-04948	**Date Sampled**	11/04/23	11/04/23	11/04/23	11/04/23	11/04/23
Apple Environmental Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: None Supplied	**TP / BH No**	TP.03/02/3436	TP.04/01/3436	TP.04/02/3436	TP.05/01/3436	TP.05/02/3436
Project / Job Ref: CL/3436/PTF	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	**Depth (m)**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Reporting Date: 25/04/2023	**DETS Sample No**	646601	646602	646603	646604	646605

Determinand	Unit	RL	Accreditation					
Asbestos Screen (S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
Sample Matrix (S)	Material Type	N/a	NONE					
Asbestos Type (S)	PLM Result	N/a	ISO17025					
pH	pH Units	N/a	MCERTS	7.7	7.5	7.8	7.5	7.7
Total Cyanide	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Total Sulphate as SO_4	mg/kg	< 200	MCERTS	1192	1304	928	1240	953
Total Sulphate as SO_4	%	< 0.02	MCERTS	0.12	0.13	0.09	0.12	0.10
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	MCERTS	126	21	< 10	16	< 10
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	MCERTS	0.13	0.02	< 0.01	0.02	< 0.01
Sulphide	mg/kg	< 5	NONE	< 5	< 5	< 5	< 5	< 5
TOC (Total Organic Carbon)	%	< 0.1	MCERTS	2.1	5.3	4	6.6	2.3
W/S Chloride (2:1)	mg/kg	< 1	MCERTS	103	17	11	27	9
W/S Chloride (2:1)	mg/l	< 0.5	MCERTS	51.5	8.3	5.3	13.4	4.3
Arsenic (As)	mg/kg	< 2	MCERTS	7	6	5	8	5
W/S Boron	mg/kg	< 1	NONE	< 1	1.2	< 1	1.1	1.1
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	1.4	1.3	0.9	1.3	1.5
Chromium (Cr)	mg/kg	< 2	MCERTS	14	10	8	10	11
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Copper (Cu)	mg/kg	< 4	MCERTS	15	16	13	23	15
Lead (Pb)	mg/kg	< 3	MCERTS	24	31	18	50	16
Mercury (Hg)	mg/kg	< 1	MCERTS	< 1	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	15	10	9	12	12
Selenium (Se)	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Zinc (Zn)	mg/kg	< 3	MCERTS	82	67	44	80	64
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	3.4	< 2	< 2	< 2
TPH - Aliphatic >C35 - C40 : EH_CU_1D_AL	mg/kg	< 10	NONE	< 10	< 10	< 10	< 10	< 10
TPH - Aromatic >C35 - C40 : EH_CU_1D_AR	mg/kg	< 10	NONE	< 10	< 10	< 10	< 10	< 10
TPH - Aliphatic / Aromatic (C6 - C40) Total : HS_1D_MS+EH_CU_1D_Total	mg/kg	< 42	NONE	< 42	< 42	< 42	703	< 42

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

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Soil Analysis Certificate						
DETS Report No: 23-04948	**Date Sampled**	11/04/23	11/04/23	11/04/23	11/04/23	11/04/23
Apple Environmental Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: None Supplied	**TP / BH No**	TP.06/01/3436	TP.06/02/3436	TP.07/01/3436	TP.07/02/3436	TP.08/01/3436
Project / Job Ref: CL/3436/PTF	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	**Depth (m)**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Reporting Date: 25/04/2023	**DETS Sample No**	646606	646607	646608	646609	646610

Determinand	Unit	RL	Accreditation					
Asbestos Screen (S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
Sample Matrix (S)	Material Type	N/a	NONE					
Asbestos Type (S)	PLM Result	N/a	ISO17025					
pH	pH Units	N/a	MCERTS	7.5	7.7	7.5	8.0	7.6
Total Cyanide	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Total Sulphate as SO_4	mg/kg	< 200	MCERTS	1397	1005	749	537	882
Total Sulphate as SO_4	%	< 0.02	MCERTS	0.14	0.10	0.07	0.05	0.09
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	MCERTS	< 10	< 10	13	< 10	< 10
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	MCERTS	< 0.01	< 0.01	0.01	< 0.01	< 0.01
Sulphide	mg/kg	< 5	NONE	< 5	< 5	< 5	< 5	< 5
TOC (Total Organic Carbon)	%	< 0.1	MCERTS	5.3	4.2	9.9	3.4	3.9
W/S Chloride (2:1)	mg/kg	< 1	MCERTS	9	10	14	9	9
W/S Chloride (2:1)	mg/l	< 0.5	MCERTS	4.5	4.9	6.8	4.5	4.6
Arsenic (As)	mg/kg	< 2	MCERTS	7	5	6	3	6
W/S Boron	mg/kg	< 1	NONE	1.6	1	< 1	< 1	1.5
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	1.4	1.3	1	0.6	1.2
Chromium (Cr)	mg/kg	< 2	MCERTS	11	10	7	5	10
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Copper (Cu)	mg/kg	< 4	MCERTS	20	15	29	12	16
Lead (Pb)	mg/kg	< 3	MCERTS	48	21	73	13	30
Mercury (Hg)	mg/kg	< 1	MCERTS	< 1	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	12	11	7	6	11
Selenium (Se)	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Zinc (Zn)	mg/kg	< 3	MCERTS	87	58	140	33	97
Total Phenols (monohydric)	mg/kg	< 2	NONE	3	< 2	< 2	< 2	< 2
TPH - Aliphatic >C35 - C40 : EH_CU_1D_AL	mg/kg	< 10	NONE	< 10	< 10	< 10	< 10	< 10
TPH - Aromatic >C35 - C40 : EH_CU_1D_AR	mg/kg	< 10	NONE	< 10	< 10	< 10	< 10	< 10
TPH - Aliphatic / Aromatic (C6 - C40) Total : HS_1D_MS+EH_CU_1D_Total	mg/kg	< 42	NONE	< 42	< 42	937	< 42	< 42

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

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4480

Soil Analysis Certificate						
DETS Report No: 23-04948	**Date Sampled**	11/04/23	11/04/23	11/04/23	11/04/23	11/04/23
Apple Environmental Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: None Supplied	**TP / BH No**	TP.08/02/3436	S.01/3436	S.02/3436	S.03/3436	S.04/3436
Project / Job Ref: CL/3436/PTF	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	**Depth (m)**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Reporting Date: 25/04/2023	**DETS Sample No**	646611	646612	646613	646614	646615

Determinand	Unit	RL	Accreditation					
Asbestos Screen (S)	N/a	N/a	ISO17025	Detected	Not Detected	Not Detected	Not Detected	Not Detected
Sample Matrix (S)	Material Type	N/a	NONE	Chrysotile present as fibre bundles				
Asbestos Type (S)	PLM Result	N/a	ISO17025	Chrysotile				
pH	pH Units	N/a	MCERTS	7.7				
Total Cyanide	mg/kg	< 1	NONE	< 1				
Total Sulphate as SO_4	mg/kg	< 200	MCERTS	817				
Total Sulphate as SO_4	%	< 0.02	MCERTS	0.08				
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	MCERTS	< 10				
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	MCERTS	< 0.01				
Sulphide	mg/kg	< 5	NONE	< 5				
TOC (Total Organic Carbon)	%	< 0.1	MCERTS	2.4				
W/S Chloride (2:1)	mg/kg	< 1	MCERTS	7				
W/S Chloride (2:1)	mg/l	< 0.5	MCERTS	3.6				
Arsenic (As)	mg/kg	< 2	MCERTS	6				
W/S Boron	mg/kg	< 1	NONE	< 1				
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	1.2				
Chromium (Cr)	mg/kg	< 2	MCERTS	12				
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2				
Copper (Cu)	mg/kg	< 4	MCERTS	15				
Lead (Pb)	mg/kg	< 3	MCERTS	41				
Mercury (Hg)	mg/kg	< 1	MCERTS	< 1				
Nickel (Ni)	mg/kg	< 3	MCERTS	14				
Selenium (Se)	mg/kg	< 2	MCERTS	< 2				
Zinc (Zn)	mg/kg	< 3	MCERTS	69				
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2				
TPH - Aliphatic >C35 - C40 : EH_CU_1D_AL	mg/kg	< 10	NONE	< 10				
TPH - Aromatic >C35 - C40 : EH_CU_1D_AR	mg/kg	< 10	NONE	< 10				
TPH - Aliphatic / Aromatic (C6 - C40) Total : HS_1D_MS+EH_CU_1D_Total	mg/kg	< 42	NONE	< 42				

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

DETS Ltd
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Soil Analysis Certificate						
DETS Report No: 23-04948	**Date Sampled**	11/04/23	11/04/23	11/04/23	11/04/23	11/04/23
Apple Environmental Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: None Supplied	**TP / BH No**	S.05/3436	S.06/3436	S.07/3436	S.08/3436	S.09/3436
Project / Job Ref: CL/3436/PTF	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	**Depth (m)**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Reporting Date: 25/04/2023	**DETS Sample No**	646616	646617	646618	646619	646620

Determinand	Unit	RL	Accreditation					
Asbestos Screen (S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
Sample Matrix (S)	Material Type	N/a	NONE					
Asbestos Type (S)	PLM Result	N/a	ISO17025					
pH	pH Units	N/a	MCERTS					
Total Cyanide	mg/kg	< 1	NONE					
Total Sulphate as SO_4	mg/kg	< 200	MCERTS					
Total Sulphate as SO_4	%	< 0.02	MCERTS					
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	MCERTS					
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	MCERTS					
Sulphide	mg/kg	< 5	NONE					
TOC (Total Organic Carbon)	%	< 0.1	MCERTS					
W/S Chloride (2:1)	mg/kg	< 1	MCERTS					
W/S Chloride (2:1)	mg/l	< 0.5	MCERTS					
Arsenic (As)	mg/kg	< 2	MCERTS					
W/S Boron	mg/kg	< 1	NONE					
Cadmium (Cd)	mg/kg	< 0.2	MCERTS					
Chromium (Cr)	mg/kg	< 2	MCERTS					
Chromium (hexavalent)	mg/kg	< 2	NONE					
Copper (Cu)	mg/kg	< 4	MCERTS					
Lead (Pb)	mg/kg	< 3	MCERTS					
Mercury (Hg)	mg/kg	< 1	MCERTS					
Nickel (Ni)	mg/kg	< 3	MCERTS					
Selenium (Se)	mg/kg	< 2	MCERTS					
Zinc (Zn)	mg/kg	< 3	MCERTS					
Total Phenols (monohydric)	mg/kg	< 2	NONE					
TPH - Aliphatic >C35 - C40 : EH_CU_1D_AL	mg/kg	< 10	NONE					
TPH - Aromatic >C35 - C40 : EH_CU_1D_AR	mg/kg	< 10	NONE					
TPH - Aliphatic / Aromatic (C6 - C40) Total : HS_1D_MS+EH_CU_1D_Total	mg/kg	< 42	NONE					

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

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Soil Analysis Certificate						
DETS Report No: 23-04948	**Date Sampled**	11/04/23	11/04/23	11/04/23	11/04/23	11/04/23
Apple Environmental Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: None Supplied	**TP / BH No**	S.10/3436	S.11/3436	S.12/3436	S.13/3436	S.14/3436
Project / Job Ref: CL/3436/PTF	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	**Depth (m)**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Reporting Date: 25/04/2023	**DETS Sample No**	646621	646622	646623	646624	646625

Determinand	Unit	RL	Accreditation					
Asbestos Screen (S)	N/a	N/a	ISO17025	Not Detected	Detected	Not Detected	Detected	Detected
Sample Matrix (S)	Material Type	N/a	NONE		Chrysotile present in bundles		Chrysotile present in bundles	Chrysotile present in bundles
Asbestos Type (S)	PLM Result	N/a	ISO17025		Chrysotile		Chrysotile	Chrysotile
pH	pH Units	N/a	MCERTS					
Total Cyanide	mg/kg	< 1	NONE					
Total Sulphate as SO_4	mg/kg	< 200	MCERTS					
Total Sulphate as SO_4	%	< 0.02	MCERTS					
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	MCERTS					
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	MCERTS					
Sulphide	mg/kg	< 5	NONE					
TOC (Total Organic Carbon)	%	< 0.1	MCERTS					
W/S Chloride (2:1)	mg/kg	< 1	MCERTS					
W/S Chloride (2:1)	mg/l	< 0.5	MCERTS					
Arsenic (As)	mg/kg	< 2	MCERTS					
W/S Boron	mg/kg	< 1	NONE					
Cadmium (Cd)	mg/kg	< 0.2	MCERTS					
Chromium (Cr)	mg/kg	< 2	MCERTS					
Chromium (hexavalent)	mg/kg	< 2	NONE					
Copper (Cu)	mg/kg	< 4	MCERTS					
Lead (Pb)	mg/kg	< 3	MCERTS					
Mercury (Hg)	mg/kg	< 1	MCERTS					
Nickel (Ni)	mg/kg	< 3	MCERTS					
Selenium (Se)	mg/kg	< 2	MCERTS					
Zinc (Zn)	mg/kg	< 3	MCERTS					
Total Phenols (monohydric)	mg/kg	< 2	NONE					
TPH - Aliphatic >C35 - C40 : EH_CU_1D_AL	mg/kg	< 10	NONE					
TPH - Aromatic >C35 - C40 : EH_CU_1D_AR	mg/kg	< 10	NONE					
TPH - Aliphatic / Aromatic (C6 - C40) Total : HS_1D_MS+EH_CU_1D_Total	mg/kg	< 42	NONE					

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

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Soil Analysis Certificate						
DETS Report No: 23-04948	**Date Sampled**	11/04/23				
Apple Environmental Ltd	**Time Sampled**	None Supplied				
Site Reference: None Supplied	**TP / BH No**	S.15/3436				
Project / Job Ref: CL/3436/PTF	**Additional Refs**	None Supplied				
Order No: None Supplied	**Depth (m)**	None Supplied				
Reporting Date: 25/04/2023	**DETS Sample No**	646626				

Determinand	**Unit**	**RL**	**Accreditation**					
Asbestos Screen (S)	N/a	N/a	**ISO17025**	Not Detected				
Sample Matrix (S)	Material Type	N/a	NONE					
Asbestos Type (S)	PLM Result	N/a	**ISO17025**					
pH	pH Units	N/a	**MCERTS**					
Total Cyanide	mg/kg	< 1	NONE					
Total Sulphate as SO_4	mg/kg	< 200	**MCERTS**					
Total Sulphate as SO_4	%	< 0.02	**MCERTS**					
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	**MCERTS**					
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	**MCERTS**					
Sulphide	mg/kg	< 5	NONE					
TOC (Total Organic Carbon)	%	< 0.1	**MCERTS**					
W/S Chloride (2:1)	mg/kg	< 1	**MCERTS**					
W/S Chloride (2:1)	mg/l	< 0.5	**MCERTS**					
Arsenic (As)	mg/kg	< 2	**MCERTS**					
W/S Boron	mg/kg	< 1	NONE					
Cadmium (Cd)	mg/kg	< 0.2	**MCERTS**					
Chromium (Cr)	mg/kg	< 2	**MCERTS**					
Chromium (hexavalent)	mg/kg	< 2	NONE					
Copper (Cu)	mg/kg	< 4	**MCERTS**					
Lead (Pb)	mg/kg	< 3	**MCERTS**					
Mercury (Hg)	mg/kg	< 1	**MCERTS**					
Nickel (Ni)	mg/kg	< 3	**MCERTS**					
Selenium (Se)	mg/kg	< 2	**MCERTS**					
Zinc (Zn)	mg/kg	< 3	**MCERTS**					
Total Phenols (monohydric)	mg/kg	< 2	NONE					
TPH - Aliphatic >C35 - C40 : EH_CU_1D_AL	mg/kg	< 10	NONE					
TPH - Aromatic >C35 - C40 : EH_CU_1D_AR	mg/kg	< 10	NONE					
TPH - Aliphatic / Aromatic (C6 - C40) Total : HS_1D_MS+EH_CU_1D_Total	mg/kg	< 42	NONE					

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

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Soil Analysis Certificate - Speciated PAHs						
DETS Report No: 23-04948	**Date Sampled**	11/04/23	11/04/23	11/04/23	11/04/23	11/04/23
Apple Environmental Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: None Supplied	**TP / BH No**	TP.01/01/3436	TP.01/02/3436	TP.02/01/3436	TP.02/02/3436	TP.03/01/3436
Project / Job Ref: CL/3436/PTF	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	**Depth (m)**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Reporting Date: 25/04/2023	**DETS Sample No**	646596	646597	646598	646599	646600

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	0.30
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	0.11
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	2.47
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	2.21
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	0.82
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	0.91
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	0.77
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	0.32
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	0.50
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	0.38
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	0.29
Coronene	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Total Oily Waste PAHs	mg/kg	< 1	MCERTS	< 1	< 1	< 1	< 1	3.7
Total Dutch 10 PAHs	mg/kg	< 1	MCERTS	< 1	< 1	< 1	< 1	6.1
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	< 1.6	< 1.6	< 1.6	9.1
Total WAC-17 PAHs	mg/kg	< 1.7	NONE	< 1.7	< 1.7	< 1.7	< 1.7	9.1

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Soil Analysis Certificate - Speciated PAHs						
DETS Report No: 23-04948	**Date Sampled**	11/04/23	11/04/23	11/04/23	11/04/23	11/04/23
Apple Environmental Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: None Supplied	**TP / BH No**	TP.03/02/3436	TP.04/01/3436	TP.04/02/3436	TP.05/01/3436	TP.05/02/3436
Project / Job Ref: CL/3436/PTF	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	**Depth (m)**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Reporting Date: 25/04/2023	**DETS Sample No**	646601	646602	646603	646604	646605

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.53	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.25	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	2.84	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	2.20	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	41.60	< 0.1
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	10.10	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	62.90	< 0.1
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	53.70	< 0.1
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	28.20	< 0.1
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	22.30	< 0.1
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	23.60	< 0.1
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	7.25	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	23	< 0.1
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	9.89	< 0.1
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	2.51	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	7.71	< 0.1
Coronene	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1	3.04	< 0.1
Total Oily Waste PAHs	mg/kg	< 1	MCERTS	< 1	< 1	< 1	117.0	< 1
Total Dutch 10 PAHs	mg/kg	< 1	MCERTS	< 1	< 1	< 1	214	< 1
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	< 1.6	< 1.6	299	< 1.6
Total WAC-17 PAHs	mg/kg	< 1.7	NONE	< 1.7	< 1.7	< 1.7	302	< 1.7

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Soil Analysis Certificate - Speciated PAHs							
DETS Report No: 23-04948	**Date Sampled**	11/04/23	11/04/23	11/04/23	11/04/23	11/04/23
Apple Environmental Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: None Supplied	**TP / BH No**	TP.06/01/3436	TP.06/02/3436	TP.07/01/3436	TP.07/02/3436	TP.08/01/3436
Project / Job Ref: CL/3436/PTF	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	**Depth (m)**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Reporting Date: 25/04/2023	**DETS Sample No**	646606	646607	646608	646609	646610

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.28	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.32	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	2.11	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	1.17	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	26.50	0.28	< 0.1
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	5.53	0.19	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	0.16	< 0.1	61.10	0.91	< 0.1
Pyrene	mg/kg	< 0.1	MCERTS	0.16	< 0.1	55.10	0.89	< 0.1
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	32.90	0.52	< 0.1
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	24.50	0.48	< 0.1
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	37.70	0.69	< 0.1
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	9.60	0.24	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	0.13	< 0.1	36.40	0.83	< 0.1
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	9.68	0.53	< 0.1
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.66	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	7.80	0.44	< 0.1
Coronene	mg/kg	< 0.1	NONE	< 0.1	< 0.1	3.58	< 0.1	< 0.1
Total Oily Waste PAHs	mg/kg	< 1	MCERTS	< 1	< 1	151.0	3.3	< 1
Total Dutch 10 PAHs	mg/kg	< 1	MCERTS	< 1	< 1	214	4.4	< 1
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	< 1.6	311	6	< 1.6
Total WAC-17 PAHs	mg/kg	< 1.7	NONE	< 1.7	< 1.7	315	6	< 1.7

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Soil Analysis Certificate - Speciated PAHs						
DETS Report No: 23-04948	**Date Sampled**	11/04/23				
Apple Environmental Ltd	**Time Sampled**	None Supplied				
Site Reference: None Supplied	**TP / BH No**	TP.08/02/3436				
Project / Job Ref: CL/3436/PTF	**Additional Refs**	None Supplied				
Order No: None Supplied	**Depth (m)**	None Supplied				
Reporting Date: 25/04/2023	**DETS Sample No**	646611				

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1				
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1				
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1				
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1				
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1				
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1				
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1				
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1				
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1				
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1				
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1				
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1				
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1				
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1				
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1				
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1				
Coronene	mg/kg	< 0.1	NONE	< 0.1				
Total Oily Waste PAHs	mg/kg	< 1	MCERTS	< 1				
Total Dutch 10 PAHs	mg/kg	< 1	MCERTS	< 1				
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6				
Total WAC-17 PAHs	mg/kg	< 1.7	NONE	< 1.7				

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Soil Analysis Certificate - TPH CWG Banded						
DETS Report No: 23-04948	**Date Sampled**	11/04/23	11/04/23	11/04/23	11/04/23	11/04/23
Apple Environmental Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: None Supplied	**TP / BH No**	TP.01/01/3436	TP.01/02/3436	TP.02/01/3436	TP.02/02/3436	TP.03/01/3436
Project / Job Ref: CL/3436/PTF	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	**Depth (m)**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Reporting Date: 25/04/2023	**DETS Sample No**	646596	646597	646598	646599	646600

Determinand	Unit	RL	Accreditation					
Aliphatic >C5 - C6 : HS_1D_MS_AL	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >C6 - C8 : HS_1D_MS_AL	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic >C8 - C10 : EH_CU_1D_AL	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C10 - C12 : EH_CU_1D_AL	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C12 - C16 : EH_CU_1D_AL	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C16 - C21 : EH_CU_1D_AL	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	42
Aliphatic >C21 - C34 : EH_CU_1D_AL	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	43
Aliphatic (C5 - C34) : HS_1D_MS+EH_CU_1D_AL	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	85
Aromatic >C5 - C7 : HS_1D_MS_AR	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >C7 - C8 : HS_1D_MS_AR	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic >C8 - C10 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C10 - C12 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C12 - C16 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C16 - C21 : EH_CU_1D_AR	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	22
Aromatic >C21 - C35 : EH_CU_1D_AR	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	42
Aromatic (C5 - C35) : HS_1D_MS+EH_CU_1D_AR	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	65
Total >C5 - C35 : HS_1D_MS+EH_CU_1D_Total	mg/kg	< 42	NONE	< 42	< 42	< 42	< 42	150

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Soil Analysis Certificate - TPH CWG Banded						
DETS Report No: 23-04948	**Date Sampled**	11/04/23	11/04/23	11/04/23	11/04/23	11/04/23
Apple Environmental Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: None Supplied	**TP / BH No**	TP.03/02/3436	TP.04/01/3436	TP.04/02/3436	TP.05/01/3436	TP.05/02/3436
Project / Job Ref: CL/3436/PTF	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	**Depth (m)**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Reporting Date: 25/04/2023	**DETS Sample No**	646601	646602	646603	646604	646605

Determinand	Unit	RL	Accreditation					
Aliphatic >C5 - C6 : HS_1D_MS_AL	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >C6 - C8 : HS_1D_MS_AL	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic >C8 - C10 : EH_CU_1D_AL	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C10 - C12 : EH_CU_1D_AL	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C12 - C16 : EH_CU_1D_AL	mg/kg	< 3	MCERTS	< 3	< 3	< 3	10	< 3
Aliphatic >C16 - C21 : EH_CU_1D_AL	mg/kg	< 3	MCERTS	< 3	< 3	< 3	66	< 3
Aliphatic >C21 - C34 : EH_CU_1D_AL	mg/kg	< 10	MCERTS	< 10	< 10	< 10	88	< 10
Aliphatic (C5 - C34) : HS_1D_MS+EH_CU_1D_AL	mg/kg	< 21	NONE	< 21	< 21	< 21	165	< 21
Aromatic >C5 - C7 : HS_1D_MS_AR	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >C7 - C8 : HS_1D_MS_AR	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic >C8 - C10 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C10 - C12 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C12 - C16 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2	< 2	< 2	20	< 2
Aromatic >C16 - C21 : EH_CU_1D_AR	mg/kg	< 3	MCERTS	< 3	< 3	< 3	228	< 3
Aromatic >C21 - C35 : EH_CU_1D_AR	mg/kg	< 10	MCERTS	< 10	< 10	< 10	291	< 10
Aromatic (C5 - C35) : HS_1D_MS+EH_CU_1D_AR	mg/kg	< 21	NONE	< 21	< 21	< 21	539	< 21
Total >C5 - C35 : HS_1D_MS+EH_CU_1D_Total	mg/kg	< 42	NONE	< 42	< 42	< 42	703	< 42

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Soil Analysis Certificate - TPH CWG Banded						
DETS Report No: 23-04948	**Date Sampled**	11/04/23	11/04/23	11/04/23	11/04/23	11/04/23
Apple Environmental Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: None Supplied	**TP / BH No**	TP.06/01/3436	TP.06/02/3436	TP.07/01/3436	TP.07/02/3436	TP.08/01/3436
Project / Job Ref: CL/3436/PTF	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	**Depth (m)**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Reporting Date: 25/04/2023	**DETS Sample No**	646606	646607	646608	646609	646610

Determinand	Unit	RL	Accreditation					
Aliphatic >C5 - C6 : HS_1D_MS_AL	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >C6 - C8 : HS_1D_MS_AL	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic >C8 - C10 : EH_CU_1D_AL	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C10 - C12 : EH_CU_1D_AL	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C12 - C16 : EH_CU_1D_AL	mg/kg	< 3	MCERTS	< 3	< 3	3	< 3	< 3
Aliphatic >C16 - C21 : EH_CU_1D_AL	mg/kg	< 3	MCERTS	< 3	< 3	12	< 3	< 3
Aliphatic >C21 - C34 : EH_CU_1D_AL	mg/kg	< 10	MCERTS	< 10	< 10	41	< 10	< 10
Aliphatic (C5 - C34) : HS_1D_MS+EH_CU_1D_AL	mg/kg	< 21	NONE	< 21	< 21	56	< 21	< 21
Aromatic >C5 - C7 : HS_1D_MS_AR	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >C7 - C8 : HS_1D_MS_AR	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic >C8 - C10 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C10 - C12 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C12 - C16 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2	< 2	33	< 2	< 2
Aromatic >C16 - C21 : EH_CU_1D_AR	mg/kg	< 3	MCERTS	< 3	< 3	292	5	< 3
Aromatic >C21 - C35 : EH_CU_1D_AR	mg/kg	< 10	MCERTS	< 10	< 10	557	< 10	< 10
Aromatic (C5 - C35) : HS_1D_MS+EH_CU_1D_AR	mg/kg	< 21	NONE	< 21	< 21	881	< 21	< 21
Total >C5 - C35 : HS_1D_MS+EH_CU_1D_Total	mg/kg	< 42	NONE	< 42	< 42	937	< 42	< 42

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Soil Analysis Certificate - TPH CWG Banded						
DETS Report No: 23-04948	**Date Sampled**	11/04/23				
Apple Environmental Ltd	**Time Sampled**	None Supplied				
Site Reference: None Supplied	**TP / BH No**	TP.08/02/3436				
Project / Job Ref: CL/3436/PTF	**Additional Refs**	None Supplied				
Order No: None Supplied	**Depth (m)**	None Supplied				
Reporting Date: 25/04/2023	**DETS Sample No**	646611				

Determinand	Unit	RL	Accreditation					
Aliphatic >C5 - C6 : HS_1D_MS_AL	mg/kg	< 0.01	NONE	< 0.01				
Aliphatic >C6 - C8 : HS_1D_MS_AL	mg/kg	< 0.05	NONE	< 0.05				
Aliphatic >C8 - C10 : EH_CU_1D_AL	mg/kg	< 2	MCERTS	< 2				
Aliphatic >C10 - C12 : EH_CU_1D_AL	mg/kg	< 2	MCERTS	< 2				
Aliphatic >C12 - C16 : EH_CU_1D_AL	mg/kg	< 3	MCERTS	< 3				
Aliphatic >C16 - C21 : EH_CU_1D_AL	mg/kg	< 3	MCERTS	< 3				
Aliphatic >C21 - C34 : EH_CU_1D_AL	mg/kg	< 10	MCERTS	< 10				
Aliphatic (C5 - C34) : HS_1D_MS+EH_CU_1D_AL	mg/kg	< 21	NONE	< 21				
Aromatic >C5 - C7 : HS_1D_MS_AR	mg/kg	< 0.01	NONE	< 0.01				
Aromatic >C7 - C8 : HS_1D_MS_AR	mg/kg	< 0.05	NONE	< 0.05				
Aromatic >C8 - C10 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2				
Aromatic >C10 - C12 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2				
Aromatic >C12 - C16 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2				
Aromatic >C16 - C21 : EH_CU_1D_AR	mg/kg	< 3	MCERTS	< 3				
Aromatic >C21 - C35 : EH_CU_1D_AR	mg/kg	< 10	MCERTS	< 10				
Aromatic (C5 - C35) : HS_1D_MS+EH_CU_1D_AR	mg/kg	< 21	NONE	< 21				
Total >C5 - C35 : HS_1D_MS+EH_CU_1D_Total	mg/kg	< 42	NONE	< 42				

DETS Ltd
Unit 1, Rose Lane Industrial Estate
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Tel : 01622 850410

Soil Analysis Certificate - BTEX / MTBE						
DETS Report No: 23-04948	**Date Sampled**	11/04/23	11/04/23	11/04/23	11/04/23	11/04/23
Apple Environmental Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: None Supplied	**TP / BH No**	TP.01/01/3436	TP.01/02/3436	TP.02/01/3436	TP.02/02/3436	TP.03/01/3436
Project / Job Ref: CL/3436/PTF	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	**Depth (m)**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Reporting Date: 25/04/2023	**DETS Sample No**	646596	646597	646598	646599	646600

Determinand	Unit	RL	Accreditation					
Benzene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Toluene : HS_1D_MS	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Ethylbenzene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
p & m-xylene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
o-xylene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
MTBE : HS_1D_MS	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5

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Soil Analysis Certificate - BTEX / MTBE						
DETS Report No: 23-04948	**Date Sampled**	11/04/23	11/04/23	11/04/23	11/04/23	11/04/23
Apple Environmental Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: None Supplied	**TP / BH No**	TP.03/02/3436	TP.04/01/3436	TP.04/02/3436	TP.05/01/3436	TP.05/02/3436
Project / Job Ref: CL/3436/PTF	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	**Depth (m)**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Reporting Date: 25/04/2023	**DETS Sample No**	646601	646602	646603	646604	646605

Determinand	Unit	RL	Accreditation					
Benzene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Toluene : HS_1D_MS	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Ethylbenzene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
p & m-xylene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
o-xylene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
MTBE : HS_1D_MS	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5

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Soil Analysis Certificate - BTEX / MTBE						
DETS Report No: 23-04948	**Date Sampled**	11/04/23	11/04/23	11/04/23	11/04/23	11/04/23
Apple Environmental Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: None Supplied	**TP / BH No**	TP.06/01/3436	TP.06/02/3436	TP.07/01/3436	TP.07/02/3436	TP.08/01/3436
Project / Job Ref: CL/3436/PTF	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	**Depth (m)**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Reporting Date: 25/04/2023	**DETS Sample No**	646606	646607	646608	646609	646610

Determinand	Unit	RL	Accreditation					
Benzene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Toluene : HS_1D_MS	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Ethylbenzene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
p & m-xylene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
o-xylene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
MTBE : HS_1D_MS	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5

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Soil Analysis Certificate - BTEX / MTBE						
DETS Report No: 23-04948	**Date Sampled**	11/04/23				
Apple Environmental Ltd	**Time Sampled**	None Supplied				
Site Reference: None Supplied	**TP / BH No**	TP.08/02/3436				
Project / Job Ref: CL/3436/PTF	**Additional Refs**	None Supplied				
Order No: None Supplied	**Depth (m)**	None Supplied				
Reporting Date: 25/04/2023	**DETS Sample No**	646611				

Determinand	Unit	RL	Accreditation					
Benzene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2				
Toluene : HS_1D_MS	ug/kg	< 5	MCERTS	< 5				
Ethylbenzene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2				
p & m-xylene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2				
o-xylene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2				
MTBE : HS_1D_MS	ug/kg	< 5	MCERTS	< 5				

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Soil Analysis Certificate - Sample Descriptions
DETS Report No: 23-04948
Apple Environmental Ltd
Site Reference: None Supplied
Project / Job Ref: CL/3436/PTF
Order No: None Supplied
Reporting Date: 25/04/2023

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
646596	TP.01/01/3436	None Supplied	None Supplied	23.5	Brown loamy sand with stones and vegetation
646597	TP.01/02/3436	None Supplied	None Supplied	17	Brown sandy clay with stones and chalk
646598	TP.02/01/3436	None Supplied	None Supplied	19.8	Brown sandy clay with stones and vegetation
646599	TP.02/02/3436	None Supplied	None Supplied	17	Brown sandy clay with stones
646600	TP.03/01/3436	None Supplied	None Supplied	6.8	Brown sandy clay with stones
646601	TP.03/02/3436	None Supplied	None Supplied	12.5	Brown sandy clay with stones
646602	TP.04/01/3436	None Supplied	None Supplied	25.1	Brown loamy sand with stones and vegetation
646603	TP.04/02/3436	None Supplied	None Supplied	20.3	Brown sandy clay with stones and chalk
646604	TP.05/01/3436	None Supplied	None Supplied	15.5	Brown loamy sand with stones and vegetation
646605	TP.05/02/3436	None Supplied	None Supplied	17.4	Brown sandy clay with stones
646606	TP.06/01/3436	None Supplied	None Supplied	25.5	Brown sandy clay with stones and vegetation
646607	TP.06/02/3436	None Supplied	None Supplied	18.1	Brown sandy clay with stones and chalk
646608	TP.07/01/3436	None Supplied	None Supplied	9.5	Black loamy sand with stones and concrete
646609	TP.07/02/3436	None Supplied	None Supplied	17.3	Brown sandy clay with stones and chalk
646610	TP.08/01/3436	None Supplied	None Supplied	22.8	Brown sandy clay with stones and vegetation
646611	TP.08/02/3436	None Supplied	None Supplied	21	Brown sandy clay with stones and chalk

Moisture content is part of procedure E003 & is not an accredited test
Insufficient Sample I/S
Unsuitable Sample U/S

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4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 23-04948
Apple Environmental Ltd
Site Reference: None Supplied
Project / Job Ref: CL/3436/PTF
Order No: None Supplied
Reporting Date: 25/04/2023

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	Fraction Organic Carbon (FOC)	Determination of TOC by combustion analyser.	E027
Soil	D	Organic Matter (SOM)	Determination of TOC by combustion analyser.	E027
Soil	D	TOC (Total Organic Carbon)	Determination of TOC by combustion analyser.	E027
Soil	AR	Exchangeable Ammonium	Determination of ammonium by discrete analyser.	E029
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received

DETS Ltd
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List of HWOL Acronyms and Operators
DETS Report No: 23-04948
Apple Environmental Ltd
Site Reference: None Supplied
Project / Job Ref: CL/3436/PTF
Order No: None Supplied
Reporting Date: 25/04/2023

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
2D	GC-GC - Double coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
#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 eg. EH+HS_Total or EH_CU+HS_Total

Det - Acronym
Benzene - HS_1D_MS
Ethylbenzene - HS_1D_MS
MTBE - HS_1D_MS
TPH CWG - Aliphatic >C10 - C12 - EH_CU_1D_AL
TPH CWG - Aliphatic >C12 - C16 - EH_CU_1D_AL
TPH CWG - Aliphatic >C16 - C21 - EH_CU_1D_AL
TPH CWG - Aliphatic >C21 - C34 - EH_CU_1D_AL
TPH CWG - Aliphatic >C35 - C40 - EH_CU_1D_AL
TPH CWG - Aliphatic >C5 - C6 - HS_1D_MS_AL
TPH CWG - Aliphatic >C6 - C8 - HS_1D_MS_AL
TPH CWG - Aliphatic >C8 - C10 - EH_CU_1D_AL
TPH CWG - Aliphatic C5 - C34 - HS_1D_MS+EH_CU_1D_AL
TPH CWG - Aromatic >C10 - C12 - EH_CU_1D_AR
TPH CWG - Aromatic >C12 - C16 - EH_CU_1D_AR
TPH CWG - Aromatic >C16 - C21 - EH_CU_1D_AR
TPH CWG - Aromatic >C21 - C35 - EH_CU_1D_AR
TPH CWG - Aromatic >C35 - C40 - EH_CU_1D_AR
TPH CWG - Aromatic >C5 - C35 - HS_1D_MS+EH_CU_1D_AR
TPH CWG - Aromatic >C5 - C7 - HS_1D_MS_AR
TPH CWG - Aromatic >C7 - C8 - HS_1D_MS_AR
TPH CWG - Aromatic >C8 - C10 - EH_CU_1D_AR
TPH CWG - Total >C5 - C35 - HS_1D_MS+EH_CU_1D_Total
TPH CWG - Total >C6 - C40 - HS_1D_MS+EH_CU_1D_Total
Toluene - HS_1D_MS
m & p-xylene - HS_1D_MS
o-Xylene - HS_1D_MS

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service@shawcity.co.uk

SERVICE / INSPECTION SHEET

JOB NUMBER: 74185
INSTRUMENT: Phocheck Tiger

SERIAL NUMBER: T-113211
DATE RECEIVED: 11/07/2022

FIRMWARE: V8.14
UPGRADED TO: V9.4

CUSTOMER: Apple Environmental Ltd

ITEMS RECEIVED	Received	RTN?
Instrument	YES	
Rubber Boot	YES	
Battery Charger	yes	
Charging Cradle	yes	
Operation Manual		
Quick Start Guide		
Spares Kit		
Comms Cable		
Probe FLEXI		
Peli Case	yes	
Tubing		
Regulator		
Software (Memory Stick)		
PLASTIC CASE		
silver case		
	SIGNED:	

TESTS	Pre Service	Post Service
Charger Test		ok
Battery charge Test		ok
Lamp Test		ok
Air Flow Test ≥ 220ml/min	232ml/min	238ml/min
Block Flow Test ≤ 15ml/min		7ml/min
Moisture Sensitivity = 0.0ppm		0.0ppm
Switch Test		ok
Sensor Test		ok
Alarm Test		ok
PC Comms Test		ok
Datalog Test		ok
Display Test		ok
Physical Inspection		ok
PAT Test		ok
Firmware Upgrade		ok
Software Upgrade (usb)		N/A
Function Test		ok
Run time	25:52	

Comments: No reported issues - In for annual service & calibration.
Flow as received:232ml/min.
Run time as received:25:52.
Upgraded firmware from V8.14 to V9.4.
Set real time clock.
Tested comms cable - OK.
Replaced stack, sensor seal, inlet/outlet seals and PTFE filter as per annual scheduled maintenance.
Replaced lamp as per biennial scheduled maintenance.
Flow:238ml/min.
Blocked flow rate:7ml/min.
Moisture sensitivity:0.0ppm
Instrument serviced, calibrated, bump tested and fully charged.

TECHNICIAN: Freya Whyte DATE: 21/07/2022

Life-saving solutions

CERTIFICATE OF CALIBRATION

Phocheck Tiger

CALIBRATION CERTIFICATE NO: 74185

ISSUED BY: SHAWCITY LIMITED
DATE: 21-Jul-22

APPROVED SIGNATORY: 

NAME: Freya Whyte

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

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

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.

CALIBRATION RESULTS

GAS	LOT No	REF. VALUE	INDICATED VALUE
Isobutylene	WO358840-1	100 ppm	100 ppm
Isobutylene	WO3224037-1	1000 ppm	1000 ppm
Benzene	WO358841-1	5ppm	5.1ppm

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 ±2 %
The results indicate that the instrument conforms to the applicable parts of the published specification.

HEALTH & SAFETY, OCCUPATIONAL HYGIENE AND ENVIRONMENTAL MONITORING INSTRUMENTS

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