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PROJECT No. RML 8370

VERIFICATION REPORT

AT
FRAYS COURT, 71-73 COWLEY ROAD,
UXBRIDGE, LONDON, UB8 2AE

ON BEHALF OF
DHOLAK ESTATES LIMITED

MAY 2023

DOCUMENT CONTROL

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APPENDICES

1.0 INTRODUCTION & SCOPE OF WORKS

1.1 This report has been prepared by Risk Management Limited (RML) on behalf of the client for the project, Messrs. Dholak Estates Limited, under cover of an e-mailed instruction to proceed dated 9th January 2023 received from Mr. Silvio Qorri, Development Management Assistant for Messrs. Westcombe Group.

1.2 The site under consideration is Frays Court, 71-73 Cowley Road, Uxbridge, London, UB8 2AE.

1.3 The approximate grid reference for the centre of the site is 505360E, 183570N.

1.4 Development at this site is now substantially complete and comprises the change of use of an existing building from office (Class B1a) to residential (Class C3) together with the associated alterations to car parking facilities and landscaping works. Details of the works are shown on the appended ground floor, lower ground floor and landscape plans.

1.5 This Verification Report has been commissioned to assist with the discharge of Condition 4 attached to planning reference 13010/APP/2020/1006 submitted to the London Borough of Hillingdon.

2.0 PREVIOUS REPORTS

2.1 RML were originally commissioned by Messrs. Dholak Estates Limited to carry out a Phase I, Non-Intrusive & Phase II, Intrusive Site Investigation. The findings of this work were presented in Report No. RML 7837, dated October 2021.

3.0 SITE DESCRIPTION

3.1 As part of the Phase I, non-intrusive site investigation, a walkover survey of the site and immediate surrounding area was carried out by RML on 20th September 2021. From observations made during the walkover survey the site was described as follows.

3.2 The site is an irregular shape in plan and covers an area of approximately 0.10 Ha. Across the boundaries the site is generally level, but within the site there are several different construction levels. Pedestrian access to the site is gained directly from the Cowley Road footway and vehicle access is gained from Cowley Road via a pavement crossover.

3.3 The site is currently occupied by Frays Court, a three-storey office building constructed in reinforced concrete and brickwork under a mansard style flat roof. There are landscaping areas to the site margins and below the offices is an undercroft parking area which is accessed via a ramp leading from the Cowley Road footway. Both the parking area and the ramp are surfaced with blacktop. On the north side of the building above the undercroft parking area is a flat roof extension constructed in steelwork and profiled steel sheeting.

3.4 The northern boundary to the current site is formed by a concrete retaining structure with a masonry brickwork wall above. Beyond the boundary there are residential properties with private gardens and some commercial premises.

3.5 The eastern boundary to the current site is formed by the back of footway to Cowley Road where it abuts a planting strip, the top edge of the vehicle access ramp and an area of paviours in front of the main doorway to the property. Beyond the boundary are the footway and roadway of Cowley Road and beyond that residential properties with private gardens and a school.

3.6 The southern boundary to the current site is undefined where it crosses a small, grassed area situated between the Frays River and the footway to Cowley Road. Beyond the grassed area is the Frays River, the footway and roadway of Cowley Road and beyond that commercial and residential properties. There is a mature tree in the landscaped strip on this boundary.

3.7 The western boundary to the current site is defined by the timber capping to a sheet piled wall directly alongside the Frays River. Beyond the boundary is the Frays River, a public riverside walkway and the private gardens and buildings of properties in Austin Waye.

3.8 The site lies in a mixed use area with residential and commercial properties, schools recreational and transport facilities and transport links in close proximity.

4.0 SITE INVESTIGATION WORKS

4.1 As part of the Phase II, intrusive site investigation, fieldwork was undertaken on the 20th August 2021, 22nd August 2021, and 7th October 2021 and comprised the following:

4.2 One light percussion borehole (BH4) was drilled at this site to a depth of 2.20m below existing basement car park slab level.

4.3 Upon completion of borehole BH4 a combined groundwater/gas monitoring standpipe was installed to a depth of 2.00m below existing slab level. The monitoring installation comprised a 1 metre length of plain 50mm diameter HDPE pipe followed by slotted geotextile wrapped HDPE pipe, capped at the base. A cement/bentonite seal was installed between 1.00m to ground level and the installation was finished with a gas valve on top of the pipe and a lockable stopcock cover concreted in flush with ground level.

4.4 In addition to the light percussion borehole noted above, three drive-in-sampler boreholes (BH1-BH3) were driven to depths of between 0.40m and 0.70m below existing ground level. Boreholes BH1 & BH3 were terminated at shallow depths due to 'hard driving' in the top of the underlying gravel strata. Borehole BH2 was terminated at shallow depth owing to a concrete obstruction.

4.5 One hand excavated trial pit TP1 was dug to a depth of 0.60m below existing ground level.

4.6 Following the initial site work, three return gas/groundwater monitoring visits were undertaken to the installation fitted within borehole BH4 on the 30th September 2021, and the 7th and 15th October 2021.

4.7 During each visit, the barometric pressure and the concentrations of Carbon Dioxide, Oxygen and Methane were recorded, together with gas flow measurements and the depth to groundwater.

4.8 During the monitoring process a fully calibrated PID was used to record the concentration of Total **V**olatile **O**rganic **C**ompounds (**VOC**) present in the borehole. The PID used was a MiniRae Lite incorporating a 10.6 eV gas-discharge lamp.

4.9 Borehole locations are shown on the appended Figure 4, Drawing No. RML 7837/1, Sketch Fieldwork Location Plan.

5.0 GROUND CONDITIONS

5.1 According to information published by the British Geological Survey (BGS) (1:50,000 Drift Edition, Sheet 255, Beaconsfield) the underlying strata at the site is either Alluvium or River Gravels (undifferentiated), which overlie London Clay of the Eocene Period.

5.2 Alluvium is a superficial deposits formed up to 2 million years ago in the Quaternary Period which comprises clay, silt, sand, and gravel. These sedimentary deposits are fluvial in origin. They are detrital, ranging from coarse- to fine-grained and form beds and lenses of deposits reflecting the channels, floodplains and levees of a river or estuary (if in a coastal setting).

5.3 The Taplow Gravel Member (River Terrace Deposits) generally comprise primarily gravels and sand sourced from varying materials within the rivers local catchment area. These Pleistocene deposits are widespread within the London Basin and occur typically as terraces on the valley sides. These terraces represent ancient floodplain deposits that have become isolated as the river has cut downwards to lower levels.

5.4 It is thought that the London Clay formation was deposited during a period of sea inundation in the area up to 200m in depth. The London Clay can be up to 150m thick beneath south Essex thinning across London to about 90m near Reading. The formation consists of mainly dark blue to brown and grey clay containing variable amounts of fine-grained sand and silt. London Clay generally weathers to an orange-brown colour with pockets of silty fine sand. The formation is particularly susceptible to swelling and shrinking when subjected to moisture content changes. In addition, gypsum (selenite) crystals and pyrite nodules are commonly found throughout the formation.

5.5 Details of the ground conditions encountered during the Phase II Intrusive Site Investigation can be summarised as follows:-

Boreholes BH1 – BH3

Depth From (m)	Depth To (m)	Description
0.00	0.05/0.10	Topsoil/Grass over Topsoil.
0.05/0.10	0.40/0.70	MADE GROUND.

Borehole BH4

Depth From (m)	Depth To (m)	Description
0.00	0.40	Concrete.
0.40	2.20+	Sandy GRAVEL.

5.6 Groundwater was not noted during boring. However, groundwater was noted during all three monitoring visits to the installation fitted within borehole BH4, between depths of 0.25m and 0.45m below existing slab level.

5.7 Roots were evident in boreholes BH1-BH3 up to a maximum depth of 0.70m below existing ground level in borehole BH1.

6.0 BASIC ENVIRONMENTAL SETTING

6.1 From reference to current Ordnance Survey mapping the nearest significant surface water feature to the site is Frays River, which is a semi-canalised branch of the River Colne that flows in southerly direction immediately alongside the western boundary of the site. Frays River leaves the River Colne at Denham Weir in Buckinghamshire and passes through Frays Farm Meadows, Uxbridge, Cowley and Yiewsley where it is joined by the River Pinn. It then re-joins the River Colne at Drayton Point in West Drayton. The River Colne then flows in a southerly direction and joins the River Thames near Staines at Penton Hook Lock.

6.2 The general hydraulic gradient for the catchment is assumed to be in a southerly direction towards the River Thames. The local hydraulic gradient is assumed to be in a westerly direction towards Frays River. Therefore, only potential sources of contamination to the east are considered likely to have any significant impact on the site.

6.3 The Bedrock Aquifer underlying the site is designated as 'Unproductive Strata'.

6.4 The Superficial Aquifer lies at the interface between areas designated as 'Principal Aquifer' and 'Secondary B Aquifer'.

6.5 Unproductive Strata is defined by the Environment Agency as being largely unable to provide usable water supplies and unlikely to have surface water and wetland ecosystems dependent on them.

6.6 The site does not lie within an Environment Agency Source Protection Zone.

6.7 Groundwater Vulnerability Map indicates that the site lies at the interface between areas of High Vulnerability 'Superficial Aquifer' and 'Principal Aquifer'.

6.8 The site lies within an Environment Agency Indicative Flood Zone 1, there is a medium risk of flooding from surface water in the eastern part of the site and potential for groundwater flooding at the site surface.

6.9 The site does not fall within any shaded sections of Annexe A of BRE Report 211 (2015) "Radon: guidance on protective measures for new dwellings". Therefore, No Radon Protective Measures will be necessary in the construction of new buildings at this location.

6.10 Historical mapping shows that from circa 1885 the site was occupied by several unnamed buildings until circa 1992 when the current buildings on the site are shown. From 1992 until the current date no further changes are shown.

6.11 The historical mapping also shows that in the surrounding area by circa 1885, Cowley Road is already laid out and some residential and commercial development has taken place including gravel extraction. Much of the area remains as open fields and to the east railway tracks are shown. Circa 1896 to 1914 more residential and commercial development has taken place and the route of a railway under construction is shown. Circa 1914 to 1934 more residential development has taken place and a large recreation ground has been established to the north-west. From circa 1934 to 1992 more residential and commercial development has taken place. Circa 1992 the railway tracks are no longer shown and more mainly residential development has taken place. From circa 1992 to the current date the surrounding area appears generally unchanged.

6.12 Geo-environmental findings have shown that there are no landfill sites, waste transfer or treatment facilities, waste management facilities, pollution prevention and control measures, hazardous substances, mining activities or ground stability hazards, sensitive land use, fuel stations, discharge consents or water abstractions that are considered likely to have a detrimental effect on the site. There are also no current or historical trade activities in the area surrounding the site considered likely to have any significant impact on the site.

6.13 There have been 13 pollution incidents to controlled waters within 250m of the site boundary. Two of these are considered to be significant incidents and some contamination testing has been undertaken to determine if there is a requirement for ground remediation. There are four areas of filled ground to the east and south, within 250m of the site boundary and some contamination testing and monitoring has been undertaken to determine if there is a requirement for gas protection measures or ground remediation.

7.0 CONCEPTUAL SITE MODEL AND POLLUTANT LINKAGES

7.1 The Phase II, Intrusive Site Investigation Report No. RML 7837, provided the following quantitative information based on the sampling, testing, and monitoring undertaken as part of the investigation works.

7.2 Four samples of MADE GROUND from boreholes BH1- BH3 and trial pit TP1 were selected for contamination testing. None of the samples tested had any determinands which exceeded the CLEA Soil Guideline Values (SGV) for ***Residential without consumption of home-grown fruit and vegetables*** usage.

7.3 The samples tested from borehole BH1, borehole BH2 and trial pit TP1 were found to contain Lead in concentrations exceeding the ATRISK Soil Screening Values (SSV) for ***Residential with consumption of home-grown fruit and vegetables*** usage. The samples tested from borehole BH2 and trial pit TP1 also contained some PAH in concentrations exceeding the ATRISK Soil Screening Values (SSV) for ***Residential with consumption of home-grown fruit and vegetables*** usage. Full details of the exceedances are as follows:

Borehole No.	**Depth**	**Determinands Exceeding *Residential without consumption of home-grown fruit and vegetables* Usage Criteria**
BH1	0.15-0.70m	Lead
BH2	0.15-0.40m	Lead, Chrysene, Benzo(k)fluoranthene, Benzo(g,h,i)perylene
TP1	0.00-0.60m	Lead and Chrysene

7.4 The same four samples of MADE GROUND noted in 7.2 were tested for the presence of asbestos.

7.5 Asbestos was identified in the sample from borehole BH2 at a depth of between 0.15-0.40m below existing ground level. The sample was found to contain Chrysotile (cement). Subsequent gravimetrical analysis found the total asbestos content to be 0.659%.

7.6 During the three return gas/groundwater monitoring visits to the installation fitted within borehole BH4, no methane was detected. Carbon Dioxide was detected at a maximum concentration of 0.2%. Oxygen concentrations ranged between 18.4% and 19.7%. No flow was recorded during the visits.

7.7 With reference to BS 8485:2015 Section 6 and Section 7:

From Clause 6.3.7.4 - The calculated Q_{hg} is adopted as the worst-case Gas Screening value (GSV) therefore the site characteristic GSV = 0.0002l/h

From Clause 6.4 - Table 2 the site characteristic situation (CS) is shown to fall under CS1 for the Gas Screening Value which has a **"very low"** hazard potential.

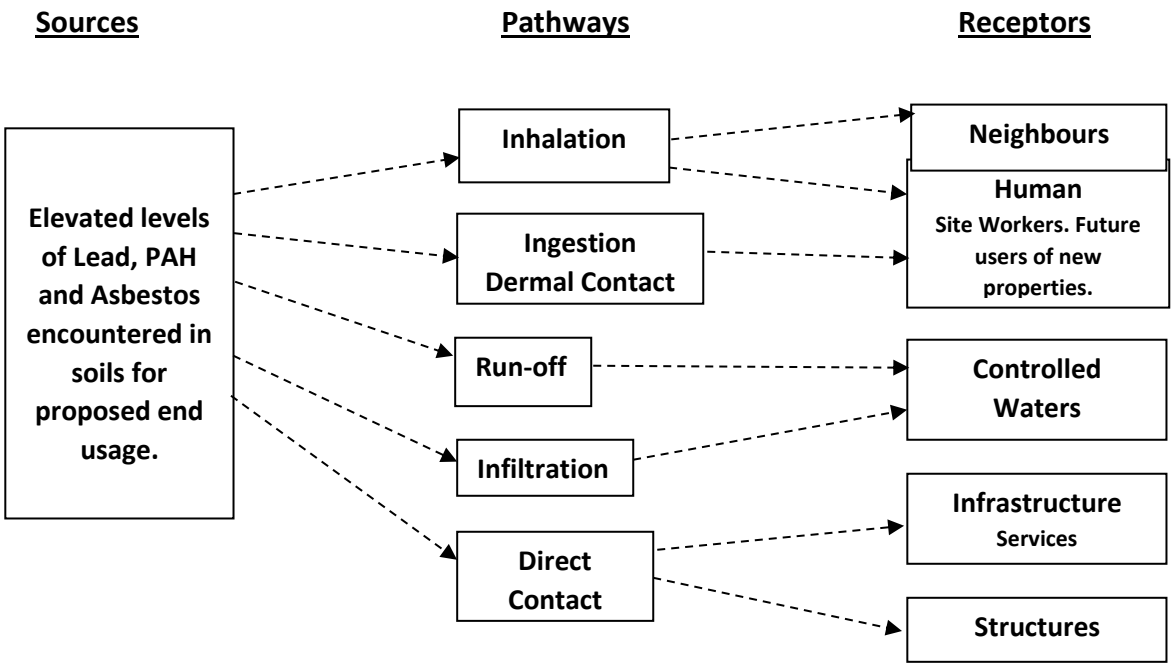
From Table 3 - The building is Type B – Private or commercial property with limited central building management of gas protection measures.

From Table 4 – The minimum gas protection score (points) required for this site is 0.

Therefore, no land borne gas remedial measures are required in buildings at this location.

7.8 Dynamic headspace analysis was undertaken on representative soil samples collected from boreholes BH1-BH4 and TP1. The VOC concentrations recorded were all below 10ppm and therefore it is considered that **no vapour protection measures are required in buildings at this location.**

7.9 Report No. RML 7837 included the following Conceptual Site Model (CSM)



7.10 Report No. RML 7837 also included a risk assessment for each linkage identified in the CSM as shown in Table 5 below.

Source	Pathway	Receptor	Severity	Likelihood	Risk	Proposed Mitigation/Control Measures
Elevated levels of Lead, some PAH and Asbestos, encountered in soils for proposed end usage	Dermal Contact	Construction Workers	Minor	Moderate	Low	Removal of MADE GROUND, to a minimum depth of 600mm below finished ground level. Installation of a separation membrane, and replacement with "clean" imported material or Topsoil, as necessary. Standard Health and Safety precautions be taken with regard to ground workers at this site and these should include PPE equipment such as gloves, overalls etc. and normal washing facilities available on-site.
		Site Users	Minor	Unlikely	Very low	
	Inhalation	Construction Workers	Minor	Moderate	Low	
		Site Users	Minor	Unlikely	Very Low	
		Neighbours	Minor	Low likelihood	Very Low	
	Ingestion	Construction Workers	Minor	Moderate	Low	
		Site Users	Minor	Unlikely	Very Low	
	Infiltration & Run-off	Controlled Waters.	Mild	Low	Low	Ensure no significant pathway is created between the site and the surface water feature. Manage the disposal of any groundwater encountered on site.
	Direct Contact	Infrastructure services	Minor	Unlikely	Very Low	Reference should be made to UKWIR Report No. 10/WM/03/21 "Guidance for the selection of Water Supply Pipes to be used in Brownfield Sites" (2010 and updated in 2011). Results of the contamination testing undertaken on the site should be provided to the water supplier.

Table 5 – Risk Assessment and Proposed Mitigation/Control Measures

8.0 REMEDIATION ASSESSMENT AND RECOMMENDATIONS

8.1 Report No. RML 7837 provided the following remediation proposals and recommendations.

8.2 No remedial measures would be required for MADE GROUND beneath the existing buildings or associated hardstanding on the site. The elevated level of Lead, some PAH and Asbestos encountered within the MADE GROUND would only be relevant to landscaped areas.

8.3 For any new planting areas or shared access landscaped areas, at ground level, we would recommend removal of MADE GROUND, to a minimum depth of 600mm, and replacement with some 300mm-400mm of "clean" imported material overlain by 200mm-300mm of "clean" Topsoil, as necessary.

8.4 Where the MADE GROUND is deeper than 600mm we would recommend that a separation membrane is installed at 600mm depth to prevent any upward movement of contaminants.

8.5 Further to any precautions regarding the presence of Lead, some PAH and Asbestos as noted above, we would recommend that standard Health and Safety precautions be taken with regard to ground workers at this site and these should include PPE equipment such as gloves, overalls etc. and normal washing facilities available on-site.

8.6 The presence of elevated levels of Lead, some PAH and Asbestos in the MADE GROUND should be noted by Groundworkers and included within the main contractors site method statements and risk assessments.

BURIED WATER SUPPLY PIPES

8.7 With regard to provision of new water supply pipes, reference should be made to UKWIR Report No. 10/WM/03/21 "Guidance for the selection of Water Supply Pipes to be used in Brownfield Sites" (2010 and updated in 2011). It is recommended that the results of the contamination testing undertaken on the site should be provided to the water supplier in order to ensure that the supply pipe provided complies with their requirements.

9.0 REMEDIATION AND VERIFICATION WORKS

9.1 In order to comply with the remediation proposals set out in Report No. RML 7837 and section 8.0 of this report. The following remediation and verification works were carried out.

REMEDIATION WORKS

9.2 Made ground was removed from the following soft landscaping areas at the site to allow clean cover material to be placed.

- The small landscaping area on the east side of the building immediately adjacent to the steel stairway leading to the front entrance door.
- The landscaping strip on the west side of the building alongside the River Fray.
- The landscaping area on the south-east side of the building alongside the ramp access.

9.3 In order to avoid any cross contamination of materials and dust nuisance the following measures were put in place during the remediation works:-

- Stockpiles of material were dampened as necessary during the works.
- Site entrances and crossovers to public roads and footpaths were cleaned to prevent contamination from soil or debris.

VERIFICATION WORKS

9.4 RML carried out a verification visit on Wednesday 22nd February 2023.

9.5 At the time of the visit, work on two of the landscaping areas was complete and work on the landscaping area alongside the ramp access was underway. A photographic record was made during the visit and the appended Plates 1 to 3 refer.

9.6 Samples of clean cover material were collected from three locations (S1 to S3). The sampling locations are indicated on the appended Figure 3, RML 8370/1 Sketch Fieldwork Location Plan.

9.7 The findings at each of the sampling locations are summarised below:-

Location S1

0.00m – 0.34m	Dark brown, loamy soil with stones and some bark chippings.

Location S2

0.00m – 0.05m	Bark Chippings.
0.05m – 0.40m	Dark brown loamy soil becoming light brown friable slightly sandy soil with stones.

Location S3

0.00m – 0.34m	Light brown sandy stoney soil with occasional rootlets

9.8 The following 3 samples were selected for testing:-

S1	-	0.00m-0.30m
S2	-	0.05m-0.35m
S3	-	0.00m-0.30m

9.9 All 3 samples discussed above were collected in appropriate containers provided by the testing house and placed in cool boxes. The cool boxes were collected by courier for transport to Messrs. ELAB of Ponswood Industrial Estate, St. Leonards on Sea, East Sussex, a UKAS and MCERTS accredited laboratory. The samples were then tested for a range of commonly occurring contaminants and indicators of contamination including asbestos identification.

9.10 Clean cover material was supplied by Springbridge Direct Ltd of Oxford Road, Denham, Middlesex, UB9 4DF. A report prepared by Messrs. Eurofins Chemtest Ltd Ref: 22-41703-2 to demonstrate compliance of the cover material with the British Standard for Multipurpose Grade soil (BS3882:2015) is appended.

TESTING PROTOCOL

9.11 Part IIA of the Environmental Protection Act 1990 contains the legislative framework for the regulation of contaminated land and this was implemented in the Contaminated Land (England) Regulations 2000. This legislation allows for the identification and remediation of land where contamination is causing unacceptable risks to human health or the wider environment. The approach adopted by the UK contaminated land policy is “suitable for use” which implies that the land should be suitable for its current use and made suitable for any known future use.

9.12 The three samples, as discussed in paragraphs 9.7 and 9.8 above, were tested for a range of commonly occurring contaminants and indicators of contamination, including those given by the Contaminated Land Exposure Assessment (CLEA).

9.13 It should be noted that the CLEA software has limited functionality and contains algorithms, which the EA has publicly expressed its intention to update. As a consequence of this, some of the screening values generated by the CLEA software may not adequately reflect specific site conditions and, in some instances, are unduly conservative. In addition, it should also be noted that the figures given in the appended table are based on a 6% soil organic matter content.

9.14 The DEFRA/EA model has been developed on the basis of many critical assumptions about possible exposure to soil contamination and the development of conceptual exposure models to describe different land uses as follows:

- *Residential with consumption of home-grown fruit and vegetables*
- *Residential without consumption of home-grown fruit and vegetables*
- *Allotments*
- *Commercial*

9.15 The Contaminated Land Exposure Assessment (CLEA) model was originally published in March 2002 as joint DEFRA/EA publications; Contaminated Land Research (CLR) Report CLR 10, with Reports CLR7, 8 and 9 as supporting documents, providing toxicity data and human tolerable daily intake (TDI) data to be used with this model. This model enabled the derivation of more site-specific values for contaminants present on a site, rather than the use of 'generic' values, which were previously used.

9.16 DEFRA/EA previously published a number of Soil Guideline Values (SGVs) for certain determinands, (common toxic metals), which were generic guideline criteria for assessing the risks to human health from chronic exposure to soil contamination for standard land-use functions. However, these were withdrawn in late 2008 and DEFRA/EA have now issued a new set of guidance documents. With regard to the Risk Management Limited standard suite of tests, currently SGV figures have only been issued for Arsenic, Cadmium, Mercury, Nickel, Phenols and Selenium.

9.17 In the absence of currently published SGV values for the remaining contaminants, Messrs. W. S. Atkins have derived ATRISK^{soil} Soil Screening Values (SSVs) which have been updated using CLEA v1.071 to incorporate changes to exposure assessment parameters, methodology, and land uses as set out in the Department for Environment, Food and Rural Affairs (Defra) Category 4 Screening Level (C4SL) Project Methodology Report.

9.18 Full details of how the SSVs have been derived and general notes as to their use are given on the ATRISK website and are available from Risk Management Limited upon request. A few of the PAH levels have not been updated and have been left as per the previous CLEA v1.04 derivation.

9.19 The SGV and SSV levels represent "intervention" levels above which the levels of contamination may pose an unacceptable risk to the health of site-users such that further investigation and/or remediation is required.

9.20 Total Petroleum Hydrocarbons are considered in accordance with the fractions proposed by The Environment Agency, drawing on the TPHCWG methodology. These are contained in Table 4.2 – Petroleum hydrocarbon fractions for use in UK human health risk assessment, based on Equivalent Carbon (EC) number, contained in Science Report P5-080/TR3, *The UK Approach for Evaluating Human Health Risks from Petroleum Hydrocarbons in Soils.*

9.21 Currently, there is no Soil Guideline Value (SGV) for asbestos, so operatives within the industry usually work to >0.1% for hazardous waste definition, and >0.001% for human health risk assessment. The 0.1% value is taken from a document produced by the Interdepartmental Committee for the Redevelopment of Contaminated Land (ICRCL), 1990, Guidance note 64/85 '*Asbestos on Contaminated Sites'*, (but this does not take into account the 2006 regulations) and the 0.001% value is based on research conducted at the Institute of Occupational Medicine (IOM), 1988, Addison et al *'The release of dispersed asbestos fibres from soils'.*

9.22 The proposed development is residential with some small areas of landscaping. Therefore, the results of the laboratory testing have been compared with the criteria for ***Residential without consumption of home-grown fruit and vegetables*** usage as listed in the following table. Any exceedances have been highlighted in the appended ELAB test reports.

Determinand (below)	Units	ATRISK Contaminated Land Screening Values (SSV) derived using CLEA v1.071 as set out in DEFRA Category 4 Screening Levels (C4SL) Methodology. 6% SOM Sandy Loam.			
		Residential with consumption of home-grown fruit and vegetables.	Residential without consumption of home-grown fruit and vegetables.	Allotments.	Commercial.
Aliphatic Hydrocarbons (mg/kg)	C5-C6	369	371	6110	29400
	C6-C8	1240	1240	18300	98200
	C8-C10	204	205	2390	14800
	C10-C12	1180	1190	8960	69500
	C12-C16	4130	2710	16300	139000
	C16-C35	210100	212000	477000	3620000
Aromatic Hydrocarbons (mg/kg)	C8-C10	232	332	73.9	20800
	C10-C12	468	1550	95.9	53800
	C12-C16	830	2710	176	65400
	C16-C21	1040	1930	321	28400
	C21-C35	1710	1930	1570	28400
TOTAL TPH					
Naphthalene	mg/kg	12.2	13.1	27.4	1050
Acenaphthylene	mg/kg	-	-	-	-
Acenaphthene	mg/kg	2760	6730	680	106000
Fluorene	mg/kg	2610	4860	796	72000
Phenanthrene	mg/kg	-	-	-	-
Anthracene	mg/kg	26200	37700	11300	544000
Fluoranthene	mg/kg	2980	5050	1010	72600
Pyrene	mg/kg	2120	3780	679	54400
Benz(a)anthracene	mg/kg	8.54	9.04	10.3	10.3
Chrysene	mg/kg	2.64	2.64	2.64	2.64
Benzo(b)fluoranthene	mg/kg	7.29	7.29	7.29	7.29
Benzo(k)fluoranthene	mg/kg	4.12	4.12	4.12	4.12
Benzo(a)pyrene	mg/kg	4.95	5.34	5.72	76.3
Indeno(123-cd)pyrene	mg/kg	9.75	10.3	16.6	144
Dibenz(ah)anthracene	mg/kg	1	1.03	2.57	14.4
Benzo(ghi)perylene	mg/kg	103	104	342	1450
TOTAL PAH					
Cyanide (Free)	mg/kg	34	34	34	373
pH	unit	-	-	-	-
Copper (Total)	mg/kg	4790	9060	1450	106000
Lead (Total)	mg/kg	200	313	79.1	2310
Zinc (Total)	mg/kg	20300	47000	5230	1100000
Chromium III	mg/kg	14300	16700	12600	208000
Chromium (Hexavalent)	mg/kg	20.5	20.5	171	49.1
		CLEA Soil Guideline Values (SGV)			
Benzene	mg/kg	0.33	0.998	0.07	95
Toluene	mg/kg	610	2710	120	4400
Ethylbenzene	mg/kg	350	843	90	2800
Xylenes	mg/kg	230	321	160	2600
Arsenic (Total)	mg/kg	32	35	43	640
Cadmium (Total)	mg/kg	10	83.6	1.8	230
Mercury (Total)	mg/kg	170	238	80	3600
Nickel (Total)	mg/kg	130	130	230	1800
Phenols (Total)	mg/kg	420	519	280	3200
Selenium (Total)	mg/kg	350	595	120	13000

ASSESSMENT OF RESULTS

9.23 Of the three samples tested, none were found to contain any determinands with concentrations that exceeded the CLEA Soil Guideline Values (SGV) for ***Residential without consumption of home-grown fruit and vegetables*** usage.

9.24 One of the samples (S3) was found to contain a determinand with a concentration that exceeded the ATRISK Soil Screening Values (SSV) for ***Residential without consumption of home-grown fruit and vegetables*** usage.

9.25 The determinand in exceedance of the acceptance criteria is shown in the following table:

Location	Determinand exceeding acceptance criteria	Test Result (mg/kg)	Acceptance Criteria (mg/kg)
S3	Lead	404	313

9.26 No asbestos was identified in any of the 3 samples tested.

9.27 The results of the Laboratory testing are shown in the appended ELAB Test report No. 23-46918-0.

10.0 ADDITIONAL REMEDIATION AND VERIFICATION WORKS

10.1 In order to address the exceedance in the Lead concentration found in sample S3, the following additional remediation and verification activities were undertaken.

ADDITIONAL REMEDIATION WORKS

10.2 The existing cover material in the following landscaping area was removed to a minimum depth of 300mm below existing ground level. The appended Plate 4 refers.

- The landscaping area on the south-east side of the building alongside the ramp access.

10.3 The landscaping area was then upfilled with new clean cover material to match the original finished ground level.

10.4 New clean cover material was supplied by Springbridge Direct Ltd of Oxford Road, Denham, Middlesex, UB9 4DF. A report prepared by Messrs. Eurofins Chemtest Ltd Ref: 22-41703-2 to demonstrate compliance of the cover material with the British Standard for Multipurpose Grade soil (BS3882:2015) is appended.

ADDITIONAL VERIFICATION ACTIVITIES

10.5 RML carried out a second verification visit on 15th March 2023. At the time of the second visit new clean cover material had been placed in the landscaping area alongside the ramp access. A photographic record was made during the visit and the appended Plate 4 refers.

10.6 One sample of the new clean cover material was collected from location S4. Location S4 is indicated on the appended Figure 3, RML 8370/1 Sketch Fieldwork Location Plan.

10.7 The findings at the sampling location are summarised below:-

Location S4

0.00m – 0.05m	Bark Chippings.
0.05m – 0.35m	Dark brown loamy sandy soil with some stones.

10.8 The following sample was selected for testing:-

S4 - 0.05m-0.35m

10.9 The sample discussed above was collected in appropriate containers provided by the testing house and placed in a cool box. The cool box was collected by courier for transport to Messrs. ELAB of Ponswood Industrial Estate, St. Leonards on Sea, East Sussex, a UKAS and MCERTS accredited laboratory. The sample was then tested for a range of commonly occurring contaminants and indicators of contamination including asbestos identification.

10.10 From the results of the additional verification testing sample S4 was found to contain no determinands with concentrations that exceeded the CLEA Soil Guideline Values (SGV) for ***Residential without consumption of home-grown fruit and vegetables*** usage.

10.11 From the results of the additional verification testing sample S4 was found to contain one determinand with a concentration that exceeded the ATRISK Soil Screening Values (SSV) for ***Residential without consumption of home-grown fruit and vegetables*** usage.

10.12 The determinand in exceedance of the acceptance criteria is shown in the following table:

Location	Determinand exceeding acceptance criteria	Test Result (mg/kg)	Acceptance Criteria (mg/kg)
S4	Chrysene	3.10	2.64

10.13 No asbestos was identified in sample S4.

10.14 The results of the Laboratory testing are shown in the appended ELAB Test report No. 23-47251-01.

11.0 CONCLUSIONS

11.1 The findings of the verification activities have shown that the clean cover material used in the following landscaping areas is suitable for its intended use.

- The small landscaping area on the east side of the building immediately adjacent to the steel stairway leading to the front entrance door.
- The landscaping strip on the west side of the building alongside the River Fray.

11.2 The findings of the verification activities have shown that the clean cover material to be used in the following landscaping area has a slightly elevated concentration of Chrysene.

- The landscaping area on the south-east side of the building alongside the ramp access.

This landscaping area can only be accessed by climbing over the hand railings alongside the access ramp and is not intended for, or suitable for communal use. Therefore given its relatively inaccessible position, the exceedances are not considered to present a significant risk to site users.

11.3 Based on this assessment of results, the clean cover material used in the landscaping areas at this development is considered to be suitable for the proposed end usage.

LIMITATIONS

The recommendations made and the opinions expressed in this report are based on trial pit records, examination of samples and the results of laboratory tests. The report is issued on the condition that Risk Management Limited will under no circumstances be liable for any loss arising directly or indirectly from ground conditions which have not been shown by the trial pits or tests carried out during the works.

No person other than the client to whom this report is addressed, shall rely on it in any respect and no duty of care shall be owed to any such third party.

* Proposed specimen shrub planting to receive short angular staking on half standards with expandable tree ties. Irrigation tubing to root system of specimens if required.

* Proposed hedge planting to be planted in a single row at 300mm centres

All Services to remain as existing.

All Levels to remain as existing.

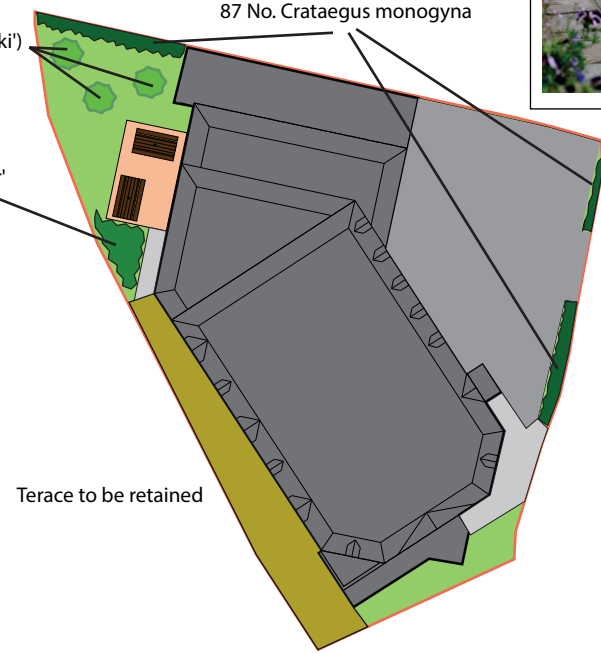
- All native species should be of local stock. Native trees and shrubs certified as British Native plant stock.
- All planting stock should comply with the Horticultural Trade Association National Plant Specification.
-All planting preperation, handling, planting and maintenance should be in accordance with CPSE Code for Handling and Establishing plants.
-All trees and shrubs to comply with BS 3936 Part 1 1992, plamnted to BS 4043:1989 and BS 4428:1989.
all works generally, to comply with the written Soft Landscape Specification.
-Imported topsoil shall be a minimum specification to current British Standard Multi-purpose grade from an approved source in accordance to the above specification.
-All existing/proposed hedge and native planting shall be mulched with 75mm of medium textured decorative grade natural pine bark.

Dark Grey Tithe Sandstone Flagstones
Mixed sizes

87 No. Crataegus monogyna

3 No. Dappled Willow (Salix integra 'Hakuro-nishiki')

2 No. Rhododendron (Dwarf) 'Blue Diamond'
1 No. Rhododendron (Dwarf) 'Scarlet Wonder'
3 No. Rhododendron (Dwarf) 'Winsome'



Terace to be retained

West mount living - wooden outdoor picnic table. 5ft

Trees	Height	Pot Size	Spec	Density	Number
Crataegus monogyna	60-80cm		Transplant :BR :Plant and maintain as hedge	0.3Ctr Double Staggered at 0.3m offset	87
Dappled Willow (Salix integra 'Hakuro-nishiki')	80-100cm	5L			3
Shrubs					
Rhododendron (Dwarf) 'Blue Diamond'	40-60cm	3L		2/m2	2
Rhododendron (Dwarf) 'Winsome'	40-60cm	3L		2/m2	3
Rhododendron (Dwarf) 'Scarlet Wonder'	40-60cm	3L		2/m2	1

KEY

Proposed grass areas to receive good quality amenity grass turf laid in line with good horticultural practices. Proposed grassland areas, to be seeded with Mead2 Acid Soil Wildflower seed mix and sown at 4g/m2.

Proposed native hedge planting to be planted in a single row 300mm apart and at 300mm centres in each row. To be maintained at 1m height.

Proposed tarmac

Paving type to be concrete block pavers in plain size (120x160mm, 160x160mm and 240x160mm.
Allow for 60mm depth.
Colour and finish: Light Grey
Bond pattern: Stretcher Bond

Larch Lap fencing

1.0m high Standard Vertical Bar Railings

Proposed Tree

Tree to be retained

Proposed Shrub/Fer/Bulb

Raj Blend Sandstone Paving Slabs
560 Series 3 Sizes 22mm Calibrated

No External Lighting

LANDSCAPE

PLAN

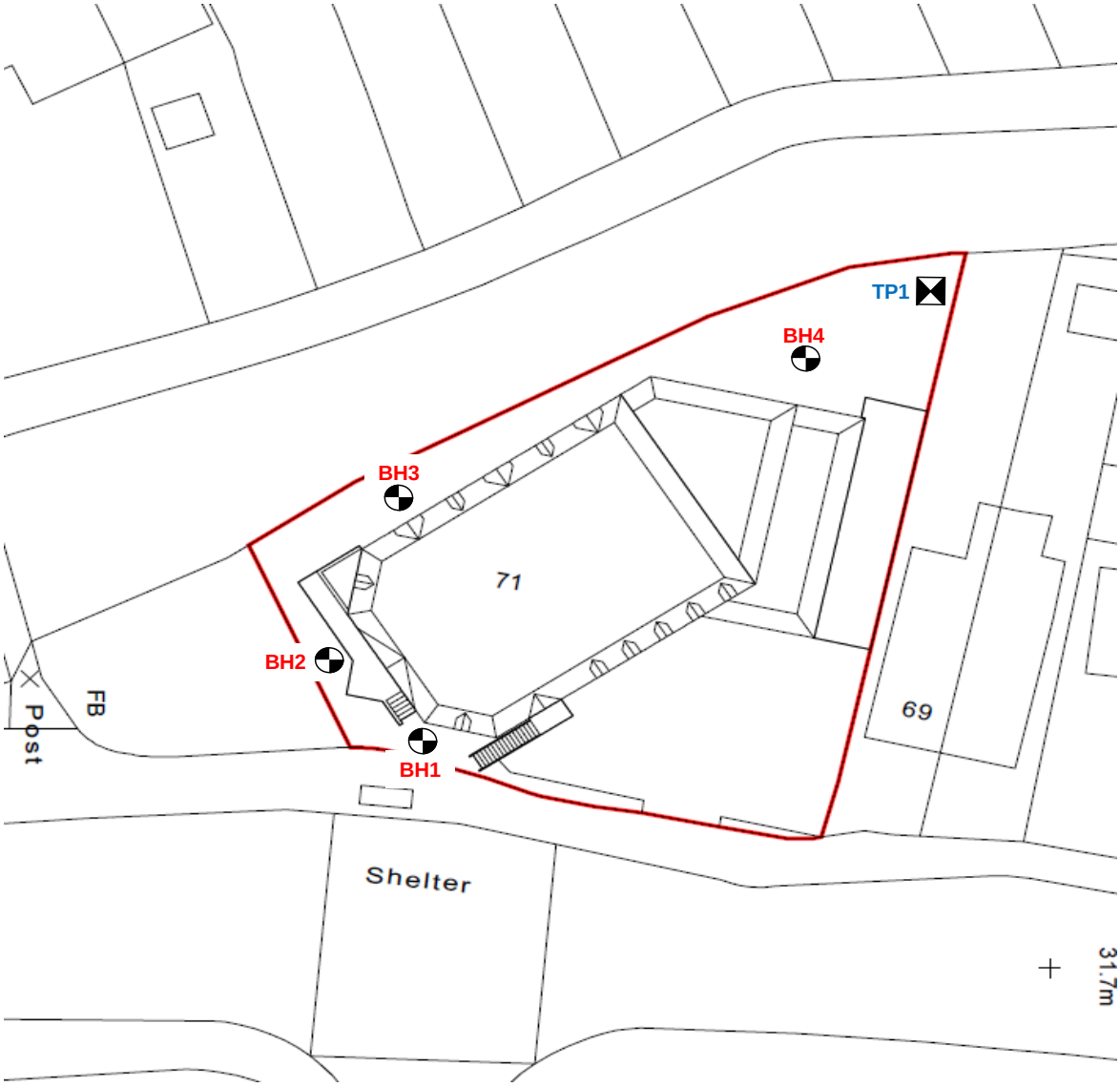
Scale
1:500

1 : 500 @ A3
0 10

KEY

Borehole Location

Trial Pit Location



Risk Management

Title : **SKETCH FIELDWORK LOCATION PLAN**

RISK MANAGEMENT LIMITED
Unit 10 Coopers Place, Combe Lane,
Godalming, Surrey GU8 5SZ
Tel : 01883 343572

Project Location : Frays Court, Cowley Road, Uxbridge, UB8 2AE

Report Date : October 2021

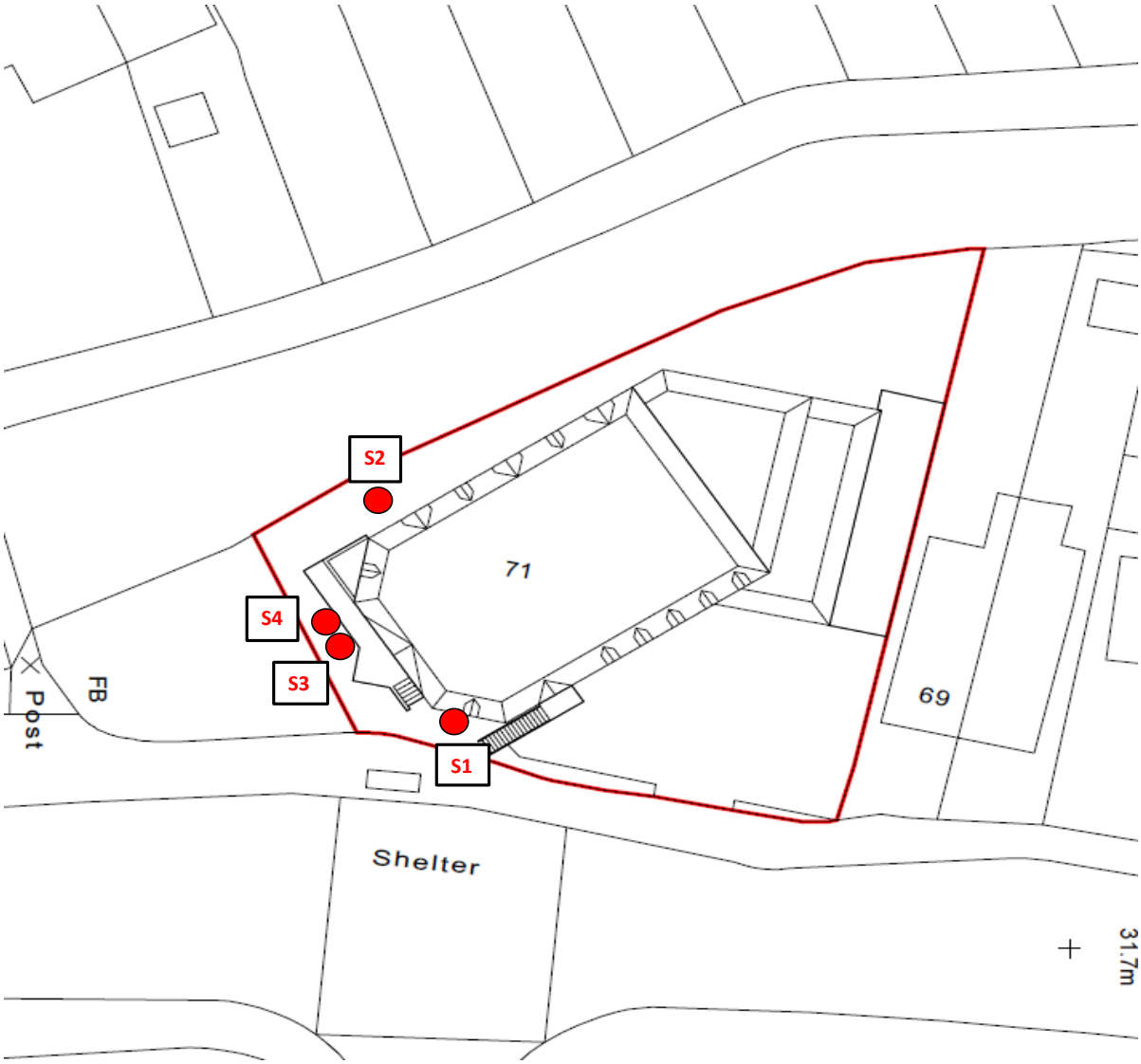
Scale : NTS

Drawn By : MSP

Drg. No. RML 7837 /1

KEY

Sampling Location

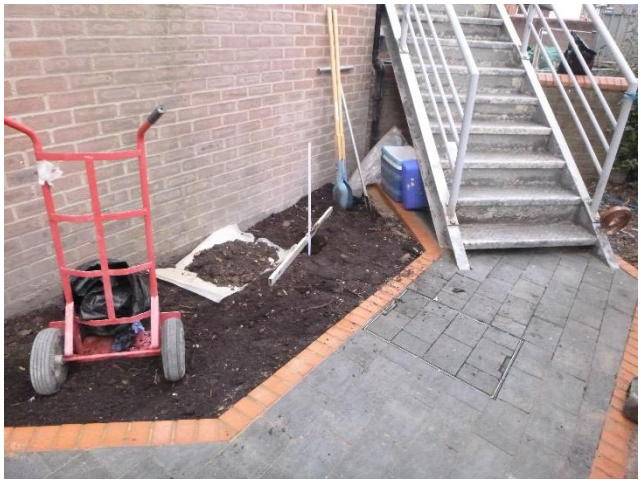


Risk Management

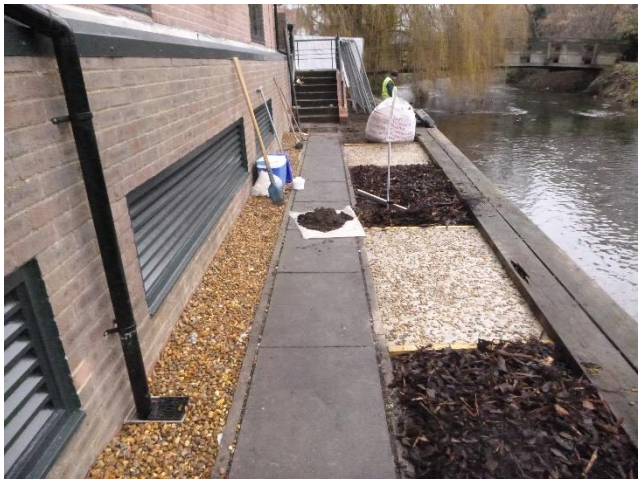
Title : **SKETCH FIELDWORK LOCATION PLAN**

RISK MANAGEMENT LIMITED
Unit 10 Coopers Place, Combe Lane, Godalming, Surrey GU8 5SZ
Tel : 01883 343572

Project Location :	Frays Court, 71-73 Cowley Road, Uxbridge, London, UB8 2AE
Report Date : May 2023	Scale : NTS
Drawn By : RP	Drg. No. RML 8370 /1



Risk Management	Title : **VERIFICATION PHOTOGRAPHS LOCATION S1**	Report Date : March 2023
RISK MANAGEMENT LIMITED Tel : 01883 343572	Project Name : Frays Court, 71-73 Cowley Road, Uxbridge, UB8 2AE	Plate **1** Job No : RML 8370



Risk Management	Title : **VERIFICATION PHOTOGRAPHS LOCATION S2**	Report Date : March 2023
RISK MANAGEMENT LIMITED Tel : 01883 343572	Project Name : Frays Court, 71-73 Cowley Road, Uxbridge, UB8 2AE	Plate **2** Job No : RML 8370

Risk Management	Title : **VERIFICATION PHOTOGRAPHS LOCATION S3**	Report Date : March 2023
RISK MANAGEMENT LIMITED Tel : 01883 343572	Project Name : Frays Court, 71-73 Cowley Road, Uxbridge, UB8 2AE	Plate **3** Job No : RML 8370

Risk Management	Title : **VERIFICATION PHOTOGRAPHS LOCATION S4**	Report Date : March 2023
RISK MANAGEMENT LIMITED Tel : 01883 343572	Project Name : Frays Court, 71-73 Cowley Road, Uxbridge, UB8 2AE	Plate **4** Job No : RML 8370

Unit A2
Windmill Road
Ponswood Industrial Estate
St Leonards on Sea
East Sussex
TN38 9BY
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info@elab-uk.co.uk

2683

THE ENVIRONMENTAL LABORATORY LTD

Analytical Report Number:	23-46918
Issue:	1
Date of Issue:	07/03/2023
Contact:	Malcolm Price
Customer Details:	Risk Management Ltd 10 Coopers Place Combe Lane Godalming SurrevGU8 5SZ
Quotation No:	Q22-03509
Order No:	RML 8370
Customer Reference:	General Quote
Date Received:	23/02/2023
Date Approved:	07/03/2023
Details:	Frays Court, 71-73 Cowley Road, Uxbridge, UB8 2AE
Approved by:	

Tim Reeve, Quality Officer

Any comments, opinions or interpretations expressed herein are outside the scope of UKAS accreditation (Accreditation Number 2683

Sample Summary

Report No.: 23-46918, issue number 1

Elab No.	Client's Ref.	Date Sampled	Date Scheduled	Description	Deviations
313436	S1 0.00 - 0.30	22/02/2023	23/02/2023	Sandy silty loam	
313437	S2 0.05 - 0.35	22/02/2023	23/02/2023	Sandy silty loam	
313438	S3 0.00 - 0.30	22/02/2023	23/02/2023	Sandy silty loam	

Results Summary

Report No.: 23-46918, issue number 1

			ELAB Reference	313436	313437
			Customer Reference		
			Sample ID		
			Sample Type	SOIL	SOIL
			Sample Location	S1	S2
			Sample Depth (m)	0.00 - 0.30	0.05 - 0.35
			Sampling Date	22/02/2023	22/02/2023
Determinand	**Codes**	**Units**	**LOD**		
Soil sample preparation parameters					
Moisture Content	N	%	0.1	32.7	33.2
Stones Content	N	%	0.1	6.2	5.7
Material removed	N	%	0.1	6.2	5.7
Description of Inert material removed	N		0	Stones/Wood	Stones/Wood
Metals					
Arsenic	M	mg/kg	0.5	11.5	12.1
Cadmium	M	mg/kg	0.2	0.8	0.7
Chromium	M	mg/kg	1	24.5	25.4
Copper	M	mg/kg	4	55.3	63.2
Lead	M	mg/kg	1	136	141
Mercury	M	mg/kg	0.1	0.3	0.5
Nickel	M	mg/kg	1	15.3	16.1
Selenium	M	mg/kg	1	< 1.0	< 1.0
Zinc	M	mg/kg	4.5	255	257
Inorganics					
Free Cyanide	N	mg/kg	1	< 1.0	< 1.0
Hexavalent Chromium	N	mg/kg	0.8	< 0.8	< 0.8
Total Cyanide	M	mg/kg	1	1.8	2.1
Miscellaneous					
pH	M	pH units	0.1	7.4	7.7
Soil Organic Matter	U	%	0.1	8.5	8.9
Phenols					
Phenol	M	mg/kg	1	< 1	< 1
M,P-Cresol	N	mg/kg	1	< 1	< 1
O-Cresol	N	mg/kg	1	< 1	< 1
3,4-Dimethylphenol	N	mg/kg	1	< 1	< 1
2,3-Dimethylphenol	M	mg/kg	1	< 1	< 1
2,3,5-trimethylphenol	M	mg/kg	1	< 1	< 1
Total Monohydric Phenols	N	mg/kg	5	< 5	< 5

Results Summary

Report No.: 23-46918, issue number 1

			ELAB Reference	313436	313437
			Customer Reference		
			Sample ID		
			Sample Type	SOIL	SOIL
			Sample Location	S1	S2
			Sample Depth (m)	0.00 - 0.30	0.05 - 0.35
			Sampling Date	22/02/2023	22/02/2023
Determinand	**Codes**	**Units**	**LOD**		
Polyaromatic hydrocarbons					
Naphthalene	SM	mg/kg	0.02	< 0.02	< 0.02
Acenaphthylene	SM	mg/kg	0.02	< 0.02	< 0.02
Acenaphthene	SM	mg/kg	0.02	< 0.02	< 0.02
Fluorene	S	mg/kg	0.02	< 0.02	< 0.02
Phenanthrene	SM	mg/kg	0.02	0.20	0.13
Anthracene	S	mg/kg	0.02	0.05	0.03
Fluoranthene	SM	mg/kg	0.02	0.48	0.40
Pyrene	SM	mg/kg	0.02	0.40	0.33
Benzo(a)anthracene	S	mg/kg	0.02	0.27	0.24
Chrysene	SM	mg/kg	0.02	0.20	0.21
Benzo(b)fluoranthene	SM	mg/kg	0.02	0.36	0.33
Benzo(k)fluoranthene	SM	mg/kg	0.03	0.14	0.12
Benzo(a)pyrene	S	mg/kg	0.02	0.28	0.27
Indeno(1,2,3-cd)pyrene	SM	mg/kg	0.02	0.22	0.22
Dibenzo(a,h)anthracene	SM	mg/kg	0.02	0.05	0.05
Benzo[g,h,i]perylene	SM	mg/kg	0.02	0.22	0.21
Total PAH(16)	NS	mg/kg	0.34	2.86	2.52
BTEX					
Benzene	M	ug/kg	10	< 10.0	< 10.0
Toluene	M	ug/kg	10	< 10.0	< 10.0
Ethylbenzene	M	ug/kg	10	< 10.0	< 10.0
Xylenes	M	ug/kg	10	< 10.0	< 10.0
MTBE	N	ug/kg	10	< 10.0	< 10.0

Results Summary

Report No.: 23-46918, issue number 1

ELAB Reference	313438
Customer Reference	
Sample ID	
Sample Type	SOIL
Sample Location	S3
Sample Depth (m)	0.00 - 0.30
Sampling Date	22/02/2023

Determinand	Codes	Units	LOD	
Soil sample preparation parameters				
Moisture Content	N	%	0.1	18.0
Stones Content	N	%	0.1	8.0
Material removed	N	%	0.1	8.0
Description of Inert material removed	N		0	Stones/Wood
Metals				
Arsenic	M	mg/kg	0.5	21.2
Cadmium	M	mg/kg	0.2	4.3
Chromium	M	mg/kg	1	49.4
Copper	M	mg/kg	4	137
Lead	M	mg/kg	1	404
Mercury	M	mg/kg	0.1	0.8
Nickel	M	mg/kg	1	38.5
Selenium	M	mg/kg	1	1.2
Zinc	M	mg/kg	4.5	617
Inorganics				
Free Cyanide	N	mg/kg	1	< 1.0
Hexavalent Chromium	N	mg/kg	0.8	< 0.8
Total Cyanide	M	mg/kg	1	1.0
Miscellaneous				
pH	M	pH units	0.1	8.6
Soil Organic Matter	U	%	0.1	7.1
Phenols				
Phenol	M	mg/kg	1	< 1
M,P-Cresol	N	mg/kg	1	< 1
O-Cresol	N	mg/kg	1	< 1
3,4-Dimethylphenol	N	mg/kg	1	< 1
2,3-Dimethylphenol	M	mg/kg	1	< 1
2,3,5-trimethylphenol	M	mg/kg	1	< 1
Total Monohydric Phenols	N	mg/kg	5	< 5

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Results Summary

Report No.: 23-46918, issue number 1

ELAB Reference	313438
Customer Reference	
Sample ID	
Sample Type	SOIL
Sample Location	S3
Sample Depth (m)	0.00 - 0.30
Sampling Date	22/02/2023

Determinand	Codes	Units	LOD	
Polyaromatic hydrocarbons				
Naphthalene	SM	mg/kg	0.02	0.07
Acenaphthylene	SM	mg/kg	0.02	0.13
Acenaphthene	SM	mg/kg	0.02	0.08
Fluorene	S	mg/kg	0.02	0.09
Phenanthrene	SM	mg/kg	0.02	1.33
Anthracene	S	mg/kg	0.02	0.39
Fluoranthene	SM	mg/kg	0.02	3.07
Pyrene	SM	mg/kg	0.02	2.65
Benzo(a)anthracene	S	mg/kg	0.02	1.75
Chrysene	SM	mg/kg	0.02	1.40
Benzo(b)fluoranthene	SM	mg/kg	0.02	2.28
Benzo(k)fluoranthene	SM	mg/kg	0.03	0.94
Benzo(a)pyrene	S	mg/kg	0.02	1.99
Indeno(1,2,3-cd)pyrene	SM	mg/kg	0.02	1.58
Dibenzo(a,h)anthracene	SM	mg/kg	0.02	0.32
Benzo[g,h,i]perylene	SM	mg/kg	0.02	1.41
Total PAH(16)	NS	mg/kg	0.34	19.5
BTEX				
Benzene	M	ug/kg	10	< 10.0
Toluene	M	ug/kg	10	< 10.0
Ethylbenzene	M	ug/kg	10	< 10.0
Xylenes	M	ug/kg	10	< 10.0
MTBE	N	ug/kg	10	< 10.0

Unit A2, Windmill Road, Ponswood Industrial Estate, St Leonards on Sea, East Sussex, TN38 9BY
Tel: +44 (0)1424 718618, Email: info@elab-uk.co.uk, Web: www.elab-uk.co.uk

Results Summary

Report No.: 23-46918, issue number 1

Asbestos Results

Analytical result only applies to the sample as submitted by the client. Any comments, opinions or interpretations (marked #)
in this report are outside UKAS accreditation (Accreditation No2683). They are subjective comments only which must be verified by the client.

Elab No	Depth (m)	Clients Reference	Description of Sample Matrix #	Asbestos Identification	Gravimetric Analysis Total (%)	Gravimetric Analysis by ACM Type (%)	Free Fibre Analysis (%)	Total Asbestos (%)
313436	0.00 - 0.30	S1	Brown Sandy Soil, Stones, Organic	No asbestos detected	n/t	n/t	n/t	n/t
313437	0.05 - 0.35	S2	Brown Sandy Soil, Stones, Organic	No asbestos detected	n/t	n/t	n/t	n/t
313438	0.00 - 0.30	S3	Brown Sandy Soil, Stones, Brick	No asbestos detected	n/t	n/t	n/t	n/t

Method Summary

Report No.: 23-46918, issue number 1

Parameter	Codes	Analysis Undertaken On	Date Tested	Method Number	Technique
Soil					
Free cyanide	N	As submitted sample	27/02/2023	107	Colorimetry
Hexavalent chromium	N	As submitted sample	27/02/2023	110	Colorimetry
pH	M	Air dried sample	01/03/2023	113	Electromeric
Phenols in solids	M	As submitted sample	27/02/2023	121	HPLC
Low range Aliphatic hydrocarbons soil	N	As submitted sample	28/02/2023	181	GC-MS
Low range Aromatic hydrocarbons soil	N	As submitted sample	28/02/2023	181	GC-MS
BTEX in solids	M	As submitted sample	28/02/2023	181A	GC-MS
Total cyanide	M	As submitted sample	27/02/2023	204	Colorimetry
Asbestos identification	U	Air dried sample	02/03/2023	281	Microscopy
Aqua regia extractable metals	M	Air dried sample	28/02/2023	300	ICPMS
Soil organic matter	U	Air dried sample	01/03/2023	BS1377:P3	Titrimetry

Tests marked N are not UKAS accredited

Report Information

Report No.: 23-46918, issue number 1

Key

U	hold UKAS accreditation
M	hold MCERTS and UKAS accreditation
N	do not currently hold UKAS accreditation
^	MCERTS accreditation not applicable for sample matrix
*	UKAS accreditation not applicable for sample matrix
S	Subcontracted to approved laboratory UKAS Accredited for the test
SM	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
NS	Subcontracted to approved laboratory. UKAS accreditation is not applicable.
I/S	Insufficient Sample
U/S	Unsuitable sample
n/t	Not tested
<	means "less than"
>	means "greater than"
LOD	LOD refers to limit of detection, except in the case of pH soils and pH waters where it means limit of discrimination.
	Soil sample results are expressed on an air dried basis (dried at < 30°C), and are uncorrected for inert material removed.
	ELAB are unable to provide an interpretation or opinion on the content of this report.
	The results relate only to the sample received.
	PCB congener results may include any coeluting PCBs
	Uncertainty of measurement for the determinands tested are available upon request
	Unless otherwise stated, sample information has been provided by the client. This may affect the validity of the results.

Deviation Codes

a	No date of sampling supplied
b	No time of sampling supplied (Waters Only)
c	Sample not received in appropriate containers
d	Sample not received in cooled condition
e	The container has been incorrectly filled
f	Sample age exceeds stability time (sampling to receipt)
g	Frays Court, 71-73 Cowley Road, Uxbridge, UB8 2AE

Where a sample has a deviation code, the applicable test result may be invalid.

Sample Retention and Disposal

All soil samples will be retained for a period of one month
All water samples will be retained for 7 days following the date of the test report
Charges may apply to extended sample storage

TPH Classification - HWOL Acronym System

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

Results Summary

Report No.: 23-47251, issue number 1

ELAB Reference	315200
Customer Reference	B1
Sample ID	
Sample Type	SOIL
Sample Location	S4
Sample Depth (m)	0.05 - 0.35
Sampling Date	15/03/2023

Determinand	Codes	Units	LOD	
Soil sample preparation parameters				
Moisture Content	N	%	0.1	16.5
Stones Content	N	%	0.1	36.7
Material removed	N	%	0.1	36.7
Description of Inert material removed	N		0	Twigs+Stone
Metals				
Arsenic	M	mg/kg	0.5	16.9
Cadmium	M	mg/kg	0.2	2.8
Chromium	M	mg/kg	1	30.2
Copper	M	mg/kg	4	85.6
Lead	M	mg/kg	1	289
Mercury	M	mg/kg	0.1	0.6
Nickel	M	mg/kg	1	22.6
Selenium	M	mg/kg	1	< 1.0
Zinc	M	mg/kg	4.5	413
Inorganics				
Free Cyanide	N	mg/kg	1	< 1.0
Hexavalent Chromium	N	mg/kg	0.8	< 0.8
Total Cyanide	M	mg/kg	1	< 1.0
Miscellaneous				
pH	M	pH units	0.1	7.7
Soil Organic Matter	U	%	0.1	5.7
Phenols				
Phenol	M	mg/kg	1	< 1
M,P-Cresol	N	mg/kg	1	< 1
O-Cresol	N	mg/kg	1	< 1
3,4-Dimethylphenol	N	mg/kg	1	< 1
2,3-Dimethylphenol	M	mg/kg	1	< 1
2,3,5-trimethylphenol	M	mg/kg	1	< 1
Total Monohydric Phenols	N	mg/kg	5	< 5
Polyaromatic hydrocarbons				
Naphthalene	N	mg/kg	0.1	0.2
Acenaphthylene	N	mg/kg	0.1	0.2
Acenaphthene	N	mg/kg	0.1	< 0.1
Fluorene	N	mg/kg	0.1	0.3
Phenanthrene	N	mg/kg	0.1	3.4
Anthracene	N	mg/kg	0.1	2.7
Fluoranthene	N	mg/kg	0.1	9.3
Pyrene	N	mg/kg	0.1	5.1
Benzo(a)anthracene	N	mg/kg	0.1	2.5
Chrysene	N	mg/kg	0.1	3.1
Benzo(b)fluoranthene	N	mg/kg	0.1	2.6
Benzo(k)fluoranthene	N	mg/kg	0.1	3.3
Benzo(a)pyrene	N	mg/kg	0.1	3.3
Indeno(1,2,3-cd)pyrene	N	mg/kg	0.1	2.1
Dibenzo(a,h)anthracene	N	mg/kg	0.1	0.5
Benzo[g,h,i]perylene	N	mg/kg	0.1	1.7
Total PAH(16)	N	mg/kg	0.4	40.3

Tests marked N are not UKAS accredited.

Results Summary

Report No.: 23-47251, issue number 1

ELAB Reference	315200
Customer Reference	B1
Sample ID	
Sample Type	SOIL
Sample Location	S4
Sample Depth (m)	0.05 - 0.35
Sampling Date	15/03/2023

Determinand	Codes	Units	LOD	
BTEX				
Benzene	M	ug/kg	10	< 10.0
Toluene	M	ug/kg	10	< 10.0
Ethylbenzene	M	ug/kg	10	< 10.0
Xylenes	M	ug/kg	10	< 10.0
MTBE	N	ug/kg	10	< 10.0
TPH CWG				
>C5-C6 Aliphatic (HS_1D_MS)	N	mg/kg	0.01	< 0.01
>C6-C8 Aliphatic (HS_1D_MS)	N	mg/kg	0.01	< 0.01
>C8-C10 Aliphatic (EH_CU_1D_AL)	N	mg/kg	1	1.4
>C10-C12 Aliphatic (EH_CU_1D_AL)	N	mg/kg	1	< 1.0
>C12-C16 Aliphatic (EH_CU_1D_AL)	N	mg/kg	1	< 1.0
>C16-C21 Aliphatic (EH_CU_1D_AL)	N	mg/kg	1	< 1.0
>C21-C35 Aliphatic (EH_CU_1D_AL)	N	mg/kg	1	6.1
>C35-C40 Aliphatic (EH_CU_1D_AL)	N	mg/kg	1	< 1.0
>C5-C7 Aromatic (HS_1D_MS)	N	mg/kg	0.01	< 0.01
>C7-C8 Aromatic (HS_1D_MS)	N	mg/kg	0.01	< 0.01
>C8-C10 Aromatic (EH_CU_1D_AR)	N	mg/kg	1	1.6
>C10-C12 Aromatic (EH_CU_1D_AR)	N	mg/kg	1	< 1.0
>C12-C16 Aromatic (EH_CU_1D_AR)	N	mg/kg	1	< 1.0
>C16-C21 Aromatic (EH_CU_1D_AR)	N	mg/kg	1	< 1.0
>C21-C35 Aromatic (EH_CU_1D_AR)	N	mg/kg	1	19.2
>C35-C40 Aromatic (EH_CU_1D_AR)	N	mg/kg	1	4.4

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Amended Report

Report No.:	22-41703-2		
Initial Date of Issue:	15-Nov-2022	**Date of Re-Issue:**	16-Nov-2022
Client	Springbridge Direct Ltd		
Client Address:	Oxford Road Denham Middlesex UB9 4DF		
Contact(s):	Ellissa Dunn Tom Hawkins		
Project	Springbridge Yard		
Quotation No.:	Q22-26866	**Date Received:**	01-Nov-2022
Order No.:	128114	**Date Instructed:**	01-Nov-2022
No. of Samples:	2		
Turnaround (Wkdays):	10	**Results Due:**	14-Nov-2022
Date Approved:	15-Nov-2022		

Approved By:

Details: Stuart Henderson, Technical Manager

Results - Soil

Project: Springbridge Yard

Client: Springbridge Direct Ltd			**Chemtest Job No.:**		22-41703
Quotation No.: Q22-26866			**Chemtest Sample ID.:**		1535848
Order No.: 128114			Client Sample Ref.:		Topsoil
			Client Sample ID.:		Top
			Sample Type:		SOIL
			Date Sampled:		27-Oct-2022
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected
Moisture	N	2030	%	0.020	13
Soil Colour	N	2040		N/A	Brown
Other Material	N	2040		N/A	Stones
Soil Texture	N	2040		N/A	Sand
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	3.6
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50
Arsenic	M	2455	mg/kg	0.5	7.1
Cadmium	M	2455	mg/kg	0.10	0.12
Chromium	M	2455	mg/kg	0.5	8.9
Copper	M	2455	mg/kg	0.50	13
Mercury	M	2455	mg/kg	0.05	< 0.05
Nickel	M	2455	mg/kg	0.50	5.2
Lead	M	2455	mg/kg	0.50	19
Selenium	M	2455	mg/kg	0.25	< 0.25
Zinc	M	2455	mg/kg	0.50	48
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C8-C10	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C10-C12	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C12-C16	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C16-C21	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C21-C35	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C8-C10	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C10-C12	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C12-C16	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C16-C21	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C21-C35	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10
Naphthalene	N	2700	mg/kg	0.010	< 0.010

Results - Soil

Project: Springbridge Yard

Client: Springbridge Direct Ltd			**Chemtest Job No.:**		22-41703
Quotation No.: Q22-26866			**Chemtest Sample ID.:**		1535848
Order No.: 128114			Client Sample Ref.:		Topsoil
			Client Sample ID.:		Top
			Sample Type:		SOIL
			Date Sampled:		27-Oct-2022
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Acenaphthylene	N	2700	mg/kg	0.010	< 0.010
Acenaphthene	N	2700	mg/kg	0.010	< 0.010
Fluorene	N	2700	mg/kg	0.010	< 0.010
Phenanthrene	N	2700	mg/kg	0.010	< 0.010
Anthracene	N	2700	mg/kg	0.010	< 0.010
Fluoranthene	N	2700	mg/kg	0.010	8.0
Pyrene	N	2700	mg/kg	0.010	1.0
Benzo[a]anthracene	N	2700	mg/kg	0.010	0.40
Chrysene	N	2700	mg/kg	0.010	0.87
Benzo[b]fluoranthene	N	2700	mg/kg	0.010	0.81
Benzo[k]fluoranthene	N	2700	mg/kg	0.010	0.96
Benzo[a]pyrene	N	2700	mg/kg	0.010	0.67
Indeno(1,2,3-c,d)Pyrene	N	2700	mg/kg	0.010	< 0.010
Dibenz(a,h)Anthracene	N	2700	mg/kg	0.010	< 0.010
Benzo[g,h,i]perylene	N	2700	mg/kg	0.010	< 0.010
Total Of 16 PAH's	N	2700	mg/kg	0.20	13
Benzene	M	2760	µg/kg	1.0	< 1.0
Toluene	M	2760	µg/kg	1.0	< 1.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0
Total Phenols	M	2920	mg/kg	0.10	0.33

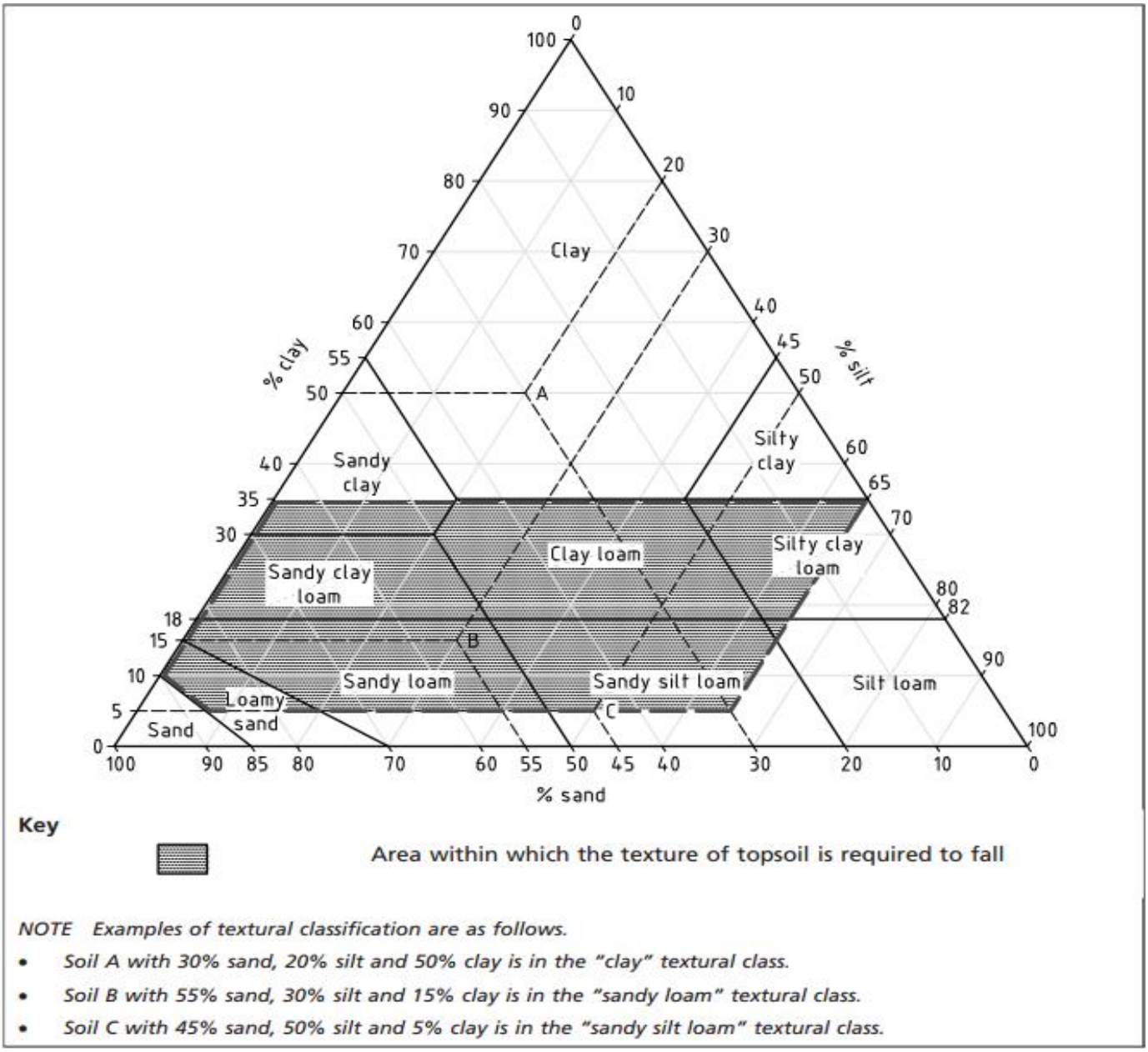
Results - Topsoil Report

BS3882:2015

Chemtest Job No.: 22-41703
Chemtest Sample ID.: 1535848
Client Sample Ref.: Topsoil
Sample Location:
Client Sample ID.: Top
Top Depth (m):
Bottom Depth (m):
Date Sampled: 27-Oct-2022
Time Sampled:

Parameter	Units	Multipurpose Range			Result	Compliant with Multipurpose Range? (Y/N)	Compliant with Specific Purpose Range? (Y/N)		
Texture							**Acid**	**Low F**	**Calc.**
Clay content	%				8.1				
Silt content	%				8.1				
Sand content	%				84				
Soil texture class		See Attached Chart			Loamy Sand	YES			
Mass Loss on Ignition									
Clay 5-20%		3.0-20			7.3	YES	YES	YES	YES
Clay 20-35%		5.0-20							
Stone Content	**% m/m**								
>2mm		0-30			22	YES			
>20mm		0-10			< 0.020	YES			
>50mm		0			< 0.020	YES			
Soil pH value		5.5-8.5			8.0	YES	NO	YES	YES
Carbonate (Calcareous only)	%				4.1				YES
Electrical Conductivity	µS/cm	If >3300 do ESP			3200	YES			
Available Nutrient Content									
Nitrogen %		>0.15			0.33	YES	YES		YES
Extractable phosphorus	mg/l	16-140			17	YES	YES	YES	YES
Extractable potassium	mg/l	121-1500			230	YES	YES		YES
Extractable magnesium	mg/l	51-600			58	YES	YES		YES
Carbon : Nitrogen Ratio		<20:1			13.1/1	YES	YES	YES	YES
Exchangeable sodium	**%**	<15			7.9				
Available Calcium	mg/l				580				
Available Sodium	mg/l				310				
Phytotoxic Contaminants (by soil pH)		**< 6.0**	**6.0-7.0**	**> 7.0**					
Zinc (Nitric Acid extract)	mg/kg	<200	<200	<300	33	YES			
Copper (Nitric Acid extract)	mg/kg	<100	<135	<200	10	YES			
Nickel (Nitric Acid extract)	mg/kg	<60	<75	<110	6.2	YES			
Visible Contaminants	**% mm**								
>2mm		<0.5			0.000	YES			
….. of which plastics		<0.25			0.000	YES			
….. man-made sharps		zero in 1kg			0.000	YES			

Topsoil:
Texture Classification Chart



Key

Area within which the texture of topsoil is required to fall

NOTE Examples of textural classification are as follows.

- *Soil A with 30% sand, 20% silt and 50% clay is in the "clay" textural class.*
- *Soil B with 55% sand, 30% silt and 15% clay is in the "sandy loam" textural class.*
- *Soil C with 45% sand, 50% silt and 5% clay is in the "sandy silt loam" textural class.*

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2020	Electrical Conductivity	Electrical conductivity (EC) of aqueous extract or calcium sulphate solution for topsoil	Measurement of the electrical resistance of a 2:1 water/soil extract.
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2115	Total Nitrogen in Soils	Nitrogen	Determination by elemental analyser
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2260	Carbonate	Carbonate	Titration
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2400	Cations	Cations	ICP-MS
2420	Phosphate	Phosphate	Spectrophotometry - Discrete analyser
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2620	LOI 440	LOI 440 Trommel Fines	Determination of the proportion by mass that is lost from a soil by ignition at 440°C.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.

Test Methods

SOP	Title	Parameters included	Method summary
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key	
U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com