# Meadow Environmental Consulting

**Phase II Environmental Assessment –**
**Generic Quantitative Risk Assessment**
**(LCRM Stage 1 Tier 2 Risk Assessment)**

Site: Elliotts Farm Barn, Harty Ferry Road, near Leysdown,
Isle of Sheppey, Kent ME12 4BG

Prepared for: Mr T Stylianou

Date: 17th August 2021

10 Millbrook Meadow~Singleton Village~ASHFORD~Kent~TN23 4XL
Tel: 07932 455367
Email: keithenvcon@outlook.com

CLIENT: Mr T Stylianou

SITE: Elliotts Farm Barn, Harty Ferry Road, near Leysdown, Isle of Sheppey, Kent ME12 4BG

PROJECT REFERENCE: 21-011

DATE: 17th August 2021

| Report: Land Contamination Risk Management Environmental Assessment – (LCRM Stage 1 Tier 2 Risk Assessment) | | | | |
|---|---|---|---|---|
| | Name | Position | Signature | Date |
| Prepared by | Keith Huxley | Head of Meadow Environmental Consulting |  | 17/08/2021 |
| | | | | |
| Revision: Final Report | | | | |

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# Executive Summary

Meadow Environmental Consulting was instructed by Mr T Stylianou to carry out a Phase II Environmental Assessment (LCRM (Land Contamination Risk Management) Stage 1 Tier 2 Risk Assessment including part Stage 2) of the site at:

**Elliotts Farm Barn, Harty Ferry Road, near Leysdown,**
**Isle of Sheppey, Kent ME12 4BG**

A planning application has been submitted to and approved by Swale Borough Council (reference 21/502180/FULL). Soiltec Laboratories Limited carried out a desk study of the site during June and July 2018 and the report of the findings was issued on the 4th July 2018. The desk study concluded that the site posed a very low to moderate environmental risk and that a phase II intrusive investigation of the site was required.

The site covers an area of approximately 0.10ha (1000$m^2$) and is accessed off the north side of an access track on Elliotts Farm, which is off the south side of Harty Ferry Road near Leysdown.

The site is currently occupied by a disused barn and its soft landscaped surrounds. It is proposed to dismantle the barn from its current location, rebuild it at another location on the site and convert the building to a one bedroom residential bungalow with off road parking and private gardens.

The nature of the soils encountered on site was made ground of soft or soft to firm brown silty clay with brick lumps/fragments and /or roof tile fragments and clay pipe fragments at some locations at each trial pit location that extended to depths ranging from 0.3m to 0.8m. Pieces of wood were also encountered at one location and chalk pellets at one other location.

The natural stratum encountered below the made ground was firm or firm to stiff brown (mottled grey or orangey brown at some locations) SILTY CLAY – The London Clay Formation.

There are no contaminants on the site within the soils analysed that are likely to impact human health on this proposed residential site and the risk to the end users on site, buildings, below ground services and controlled waters now and following the development is deemed to be very low. It is understood that barrier pipe is to be used for the new water main.

The building, when relocated will also have a suspended block and beam floor, a void and a suitable membrane installed.

The findings of this report indicate that the site represents a **very low environmental risk** and that no further investigation work or remediation is required on the site.

## 1. Introduction

Meadow Environmental Consulting was instructed by Mr T Stylianou to carry out an intrusive site investigation (LCRM (Land Contamination Risk Management) Stage 1 Tier 2 Risk Assessment including part Stage 2) at; Elliotts Farm Barn, Harty Ferry Road, near Leysdown, Isle of Sheppey, Kent ME12 4BG (grid reference at the site centre 602587 167288). The site is approximately 11 metres above ordnance datum (AOD) near the town of Leysdown, Kent.

The site covers an area of approximately 0.10ha (1000m$^2$) and is accessed off the north side of an access track on Elliotts Farm, which is off the south side of Harty Ferry Road near Leysdown. Leysdown town centre is approximately three miles (four miles by road) to the north/northeast.

The site is currently occupied by a disused barn and its soft landscaped surrounds. It is proposed to dismantle the barn from its current location, rebuild it at another location on the site and convert the building to a one bedroom residential bungalow with off road parking and private gardens.

Site plans showing the site location, existing layout, proposed layout and proposed elevations are shown in appendix 1, site plans (p1 and p2).

Soiltec Laboratories Limited carried out a desk study of the site during June and July 2018 and the report of the findings was issued on the 4$^{th}$ July 2018. At the time the desk study was carried out it was proposed to convert the barn at its current location. The site boundary was also different at the time of the desk study. A planning application has been submitted to and approved by Swale Borough Council for the revised development of the site i.e. the relocation and conversion of the barn within the revised site boundary (reference 21/502180/FULL).

The desk study concluded that the site posed a very low to moderate environmental risk and that a phase II intrusive investigation of the site was required.

Swale Borough Council has approved the desk study report and the recommendations for the phase II intrusive investigation therein and has conditioned the site investigation works on the granted planning application (condition 9a).

A summary of the desk study is outlined below.

## 2. Summary of the Desk Study

### 2.1 The Site, Surrounding Areas and History

The site is off the north side of an access track on Elliotts Farm and is located in an area of predominantly very low residential and agricultural use. The site covers an area of 0.10ha (1000m$^2$).

Immediately to the north of the site is a small open soft landscaped area with the private gardens of Elliotts Farm House beyond. The house is approximately 60m from the site. The junction of the farm access and Harty Ferry Road is approximately 120m to the northwest with farmland beyond. Two residential houses are beyond the farm access track approximately 90m to the northwest.

Immediately to the west of the site are a large agricultural barn and the access track to the farm, and another large barn on the opposite side of the access track with farmland beyond, which is approximately 80m from the site. Immediately to the west of the south area is a disused portacabin office.

Immediately to the south of the site are part of the soft landscaped surrounds and the farm access track, which is approximately 15m from the site with farmland beyond.

Immediately to the east of the site is farmland.

The site was developed with the barn that is to be relocated and converted as well as additional outbuildings since at least the mid 1860's. Some of the smaller outbuildings remained until the late 1800's and the larger outbuildings remained until at least the 1960's but were no longer on the site by 1980.

The immediate surrounding areas were developed with some of the outbuildings associated with Elliotts Farm since at least the mid 1860's. Most of the surrounding areas were farmland at this date that remains to date. Some of the outbuildings on the farm have changed over the years and the house to the north has been at the existing layout since at least 1980. A pond was just to the southwest of the site from at least the mid 1860's until it was infilled sometime between 1960 and 1980 and is now at the location of the access track and farmyard area.

2.2 Hydrology

There are no surface water features on the site although there are almost adjacent to the site and in the further environs. A surface water drainage ditch is approximately 8m to the south between the site boundary and access track.

2.3 Geology/ Hydrogeology

Based on the British Geological Survey information The London Clay Formation (clay and silt) is the bedrock geology on the site of very low to low permeability with no drift deposits.

The site overlies unproductive strata (non aquifer) and is not within a groundwater source protection zone (SPZ).

2.4 On-Site Contamination Impact

The investigations carried out for the desk study indicated that it is possible that the site has been impacted from its former uses.

There is a recorded pollution incident on the site that could have impacted the site (fire fighting run off from the adjacent barn fire in 2002 is recorded as being on site).

It is unlikely that landfill gases are impacting the site from on site sources (the infilled pond is now off site due to the site boundary layout change).

2.5 Off-Site Contamination Impact

The findings of the desk study indicated that contamination impact to the site from the immediate surrounding areas is unlikely apart from the adjacent barn fire. Anecdotal evidence from the farm owners suggests that the fire was extinguished using water and not fire fighting foam.

There are recorded pollution incidents near the site that could have impacted the site (adjacent barn fire as mentioned above).

It is possible that landfill gases are impacting the site from off site sources (infilled pond).

## 2.6 Conceptual Model

Using the Contaminated Land Exposure Assessment (CLEA) model and associated Environment Agency Land Contamination Risk Management guidance (LCRM) framework to assess sites, a Source – Pathway – Receptor approach is used.

Source – "a contaminant or pollutant that is in, on or under the land and that has the potential to cause harm or pollution"
Pathway – "route by which a receptor is or could be affected by a contaminant"
Receptor – "something that could be adversely affected by a contaminant, for example a person, controlled waters, an organism, an ecosystem, or Part 2A receptors such as buildings, crops or animals"

If any of the above elements are missing i.e. there is no pollution linkage, then it is considered that there is no significant risk associated with contamination. If there is a pollution linkage the potential risks to the identified receptors need to be assessed.

### 2.6.1 Source(s)

Using the CLR framework, the potential sources of contamination on this site from the outcome of the desk study as outlined above could be:
Heavy metals (made ground, uses of former buildings)
Polyaromatic hydrocarbons (made ground, uses of former buildings, fire residues)
Total petroleum hydrocarbons (made ground, uses of former buildings)
Asbestos (made ground, former buildings, materials on site)
Landfill gases (off site infilled pond)

### 2.6.2 Pathway(s)

It is intended to construct a residential bungalow with off road parking and private gardens.

The potential pathways for this site are:
Ingestion of soils
Ingestion of dusts, gases and vapours (indoors and outdoors)
Dermal contact with soils
Ingestion of contaminated vegetables and or soils attached to vegetables (if applicable)
Leachates via infiltration

### 2.6.3 Receptor(s)

The potential receptors and associated risks for this site are:
Construction staff – very low to moderate risk
Residents on site – very low to moderate risk
Residents and farm staff off site – very low risk (no apparent current impacted)
Converted relocated barn and below ground services – very low to low/moderate risk
Buildings off site (existing buildings appear to be not impacted) – very low risk
Groundwater (unproductive strata, non aquifer not SPZ) – very low risk from leachable contaminants via infiltration (very low to low permeability strata, no soakaways proposed)
Surface water (adjacent surface water drainage ditch) – very low to low risk via infiltration

## 3. Objectives

### 3.1 Soils

The scope of this intrusive investigation is to take samples of soils from different locations on the site i.e. in/adjacent to the existing barn, the location of the relocated barn, location of the former buildings, proposed off road parking area and private gardens.

Soil samples will be taken and the strata logged to assess the strata on the site.

The soils will be analysed for a general suite of determinands that should include heavy metals, polyaromatic hydrocarbons (PAH's), additional inorganic compounds (including cyanides), phenol, total petroleum hydrocarbons (TPH's $C_5$-$C_{35}$) fractions and BTEX compounds (benzene, toluene, ethylbenzene and xylenes) as well as MTBE (methyl tertiary butyl ether). BTEX and MTBE are found in petrol (BTEX to a lesser extent in diesel) and toluene and xylenes are also found in some paint thinners.

A soil sample from the location of the proposed garden area near to the adjacent surface water drainage ditch should also be analysed for leachable contaminants. The suite of tests carried out on the prepared soil leachate should be those outlined above as a minimum.

Surface/near surface soils should also be screened for the presence of asbestos fibres.

The only possible source of landfill gas impact is from the adjacent off site infilled pond that was infilled between 1960 and 1980. The potential for the material in the infilled pond to produce landfill gas will be assessed using BS8485:2015+A1:2019 (Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings), annex D (Characterisation without gas monitoring data). Soil samples will be taken from various depths from within the area of the infilled pond and analysed for total organic carbon TOC).

These contaminants were those that could be on the site following the desk study.

### 3.2 General

Following the intrusive investigation work the conceptual model can be revised as appropriate.

## 4. Methodology

### 4.1 Soil Sampling

The site covers an area of approximately 0.10ha (1000$m^2$). The existing and proposed site layout is shown on the site plan in appendix 1 (p3). The site investigation works will be carried out in accordance with BS10175:2011 (Investigation of potentially contaminated sites – Code of Practice).

It was decided by Meadow Environmental Consulting to take the soil samples for chemical analysis using mechanically excavated trial pits.

### 4.2 Chemical Analysis

The chemical analysis on the excavated soils is an analytical suite consisting of heavy metals, polyaromatic hydrocarbons (PAH's), additional inorganic compounds (including cyanides), phenol, total petroleum hydrocarbons, $C_5$-$C_{40}$ fractions, BTEX compounds (benzene, toluene, ethylbenzene, xylenes) and MTBE (methyl tertiary butyl ether).

A soil sample from the proposed garden area near to the adjacent surface water drainage ditch will be analysed for leachable contaminants. The suite of tests carried out on the prepared soil leachate is those outlined above. The leachates are prepared to NRA leaching test methodology.

Surface/near surface soils would also be analysed for the presence of asbestos fibres.

Samples from within the footprint of the infilled pond off site will be analysed for TOC (total organic carbon).

All chemical analysis will be carried out by a UKAS/MCERTS accredited testing laboratory.

The above analytical suites on the soils would cover the contaminants that could be on the site. However, if contaminants outside these suites of tests were suspected during the excavation of the samples, additional analysis would be carried out.

### 4.3 Potential Landfill Gas Impact

As mentioned in section 2.5 above, there is a potential for landfill gases to be impacting the site from the adjacent former pond that was infilled between 1960 and 1980.

The assessment will be carried out using BS8485:2015+A1:2019, annex D (Characterisation without gas monitoring data) i.e. a profile of the soils and made ground will be assessed and soil samples will be taken from within the area of the infilled pond and analysed for TOC. The results will then be assessed using table D1 in annex D of BS8485:2015+A1:2019.

If the outcome of this assessment dictates then landfill gas monitoring would be carried out as part of further investigation work. The ongoing monitoring for landfill gases, if required, is outside the scope of this investigation.

## 5. Work Carried Out

The site was attended on the 2nd August 2021 to excavate the trial pits to extract the soil samples for the chemical analysis as outlined above. At the time of the site attendance for the site investigation the site had been cleared of most of the trees that were on the site and most of the stored materials that was present when the desk study was carried out in 2018.

Photographs of the site and the sampling locations are shown in appendix 2.

5.1 Trial Pits

A total of eight trail pits (seven on site, one off site) were used for soil sampling. The trial pits were excavated using a 5t mechanical excavator.

The locations of the trial pits are shown on the site plan in appendix 1 (p3).

Tabulated below are the trial pit locations with the past uses, current uses and proposed uses.

| Trial Pit | Past Use/Current Use | Proposed Use |
|---|---|---|
| TP1 | Pond/Farmyard and access rack | Farmyard and access rack |
| TP2 | Soft landscaped area between farm buildings/soft landscaped area | Private garden |
| TP3 | Footprint of former building/soft landscaped area | Footprint of new dwelling (relocated barn) |
| TP4 | Footprint of former building/soft landscaped area | Private garden |
| TP5 | Soft landscaping, farmland/soft landscaped area | Private garden |
| TP6 | Soft landscaping, farmland/soft landscaped area | Private garden |
| TP7 | Footprint of former building/soft landscaped area | Access and parking |
| TP8 | Footprint of former building/soft landscaped area adjacent to the existing barn | Soft landscaping adjacent to parking area |

The strata encountered at each sampling location are found in the trial pit logs in appendix 3, which also shows the sample type taken for analysis, sample depths, an outline of the analysis carried out and identification references.

## 5.2 Sampling and Analysis

All logging and soil sub-sampling from the trial pits was carried out at on site where the samples were placed in the appropriate glass jars, vials or tubs and kept cool before being despatched to the UKAS/MCERTS accredited laboratories for the respective analysis.

The chemical analysis carried out on the samples taken from the trial pits on site was a general suite of determinands that includes heavy metals, polyaromatic hydrocarbons (PAH's), additional inorganic compounds (including cyanides), phenol, total petroleum hydrocarbons (TPH's), $C_5$-$C_{40}$ fractions, BTEX compounds and MTBE.

Shallow soil samples were taken from the on site trial pits and screened for asbestos fibres.

A soil sample at the location of the proposed garden areas near to the off site drainage ditch was analysed for leachable contaminants.

Soil samples from various depths within the footprint of the off site infilled pond were analysed for TOC.

The depth of the samples taken for chemical analysis and the associated analysis results can be seen in appendix 4, chemical analysis results and certificates.

## 5.3 Groundwater/Perched Water

No groundwater or perched water was encountered at the location of any of the on site trial pits to the depths excavated (1.3m max).

An ingress of water was encountered at a depth of 0.7m at the location of trail pit 1, which was excavated adjacent to the off site drainage ditch. The water rose to a depth 0.6m after five minutes and was stable at this level. The water was most likely ingress from the drainage ditch immediately adjacent to the trial pit. Heavy rainfall had been encountered in the area during the days immediately preceding the site investigation.

## 5.4 General

No contamination was observed or suspected during the excavation of the trial pits that required the need for chemical analysis in addition to the suites of analysis proposed.

## 6. Chemical Analysis Results

6.1 Chemical Analysis (soils)
All the chemical analysis results are shown in appendix 4, which also contains copies of the analysis certificates from the UKAS/MCERTS laboratory.

The nature of the soils encountered on site was made ground of soft or soft to firm brown silty clay with brick lumps/fragments and /or roof tile fragments and clay pipe fragments at some locations at each trial pit location that extended to depths ranging from 0.3m to 0.8m. Pieces of wood were also encountered at one location (TP8) and chalk pellets at one location (TP2).

The natural stratum encountered below the made ground was firm or firm to stiff brown (mottled grey or orangey brown at some locations) SILTY CLAY – The London Clay Formation.

6.1.1 Organic Content
The measured organic content (%) of the soils encountered is as follows:

The average organic content of the made ground tested – 3.0% (with a range of 1.2% to 5.3% of the seven samples tested).

The average organic content of the bedrock tested (London Clay) – 0.6% (with a range of 0.4% to 0.9% of the seven samples tested).

The organic content results are corrected for the stone content i.e. the value reported is for the soil including the stone, if applicable. The organic content was determined by combustion analyser.

6.2 Criteria for Assessment
The assessment of the chemical analysis results for the contaminants of concern (COC's) have been based on the published Land Quality Management (LQM)/Chartered Institute of Environmental Health (CIEH) suitable for use levels (S4UL's) using a soil organic matter level of 1.0%.

The S4UL values are based on a residential site with homegrown produce, a small terraced house, calculated using the contaminated land exposure assessment (CLEA) model and a sandy loam soil.

These parameters will give conservative SGV's.

However, if using the assessment criteria outlined the calculated levels are exceeded, a more detailed site specific assessment with further adjustments to the CLEA model may need to be carried out (Tier 3 risk assessment) e.g. change the soil type, organic content and building details (area, living space height, floor crack area).

6.2.1 Published Human Health LQM/CIEH S4UL's for residential use based on sandy loam soil with a 1% soil organic content.

**TPH fraction aliphatic and aromatic – S4UL (mg/kg)**

| TPH Fraction | Sandy Loam Organic Content 1.0% |
|---|---|
| AROMATIC | |
| $C_5$-$C_7$ | 70 |
| $C_7$-$C_8$ | 130 |
| $C_8$-$C_{10}$ | 34 |
| $C_{10}$-$C_{12}$ | 74 |
| $C_{12}$-$C_{16}$ | 140 |
| $C_{16}$-$C_{21}$ | 260 |
| $C_{21}$-$C_{35}$ | 1100 |
| ALIPHATIC | |
| $C_5$-$C_6$ | 42 |
| $C_6$-$C_8$ | 100 |
| $C_8$-$C_{10}$ | 24 |
| $C_{10}$-$C_{12}$ | 130 |
| $C_{12}$-$C_{16}$ | 1100 |
| $C_{16}$-$C_{35}$ | 65000 |
| | |

**BTEX Compounds – S4UL (mg/kg)**

| Compound | Sandy Loam Organic Content 1.0% |
|---|---|
| Benzene | 0.087 |
| Toluene | 130 |
| Ethylbenzene | 47 |
| o-Xylene | 60 |
| m-Xylene | 59 |
| p-Xylene | 56 |
| | |

**Sixteen most common PAH's – S4UL (mg/kg)**

| PAH | Sandy Loam Organic Content 1.0% |
|---|---|
| Naphthalene | 2.3 |
| Acenaphthylene | 170 |
| Acenaphthene | 210 |
| Fluorene | 170 |
| Phenanthrene | 95 |
| Anthracene | 2400 |
| Fluoranthene | 280 |
| Pyrene | 620 |
| Benz(a)anthracene | 7.2 |
| Chrysene | 15 |
| Benzo(b)fluoranthene | 2.6 |
| Benzo(k)fluoranthene | 77 |
| Benzo(a)pyrene | 2.2 |
| Indeno(123-cd)pyrene | 27 |
| Dibenz(ah)anthracene | 0.24 |
| Benzo(ghi)perylene | 320 |

**Metals – S4UL (mg/kg)**

Arsenic – 37mg/kg
Cadmium – 11mg/kg
Mercury – 1.2mg/kg (elemental), 40mg/kg (inorganic) and 11mg/kg (methyl)
Nickel – 180mg/kg
Selenium – 250mg/kg
Phenol – 280mg/kg (based on direct skin contact)
Lead – 200mg/kg (C4SL 2014)
Chromium – 6mg/kg (based on hexavalent chromium)
Chromium – 910mg/kg (based on trivalent chromium)

Copper – 2400mg/kg
Zinc – 3700mg/kg
Boron – 290mg/kg

Total cyanide – 353mg/kg (SNIFFER calculated based on a complex cyanide of 294mg/kg)
SNIFFER – Scotland and Northern Ireland Forum for Environmental Research

For Guidance Only (Plant Growth):
Copper – 200mg/kg (phytotoxic, pH>7, BS3882:2015 Topsoil Specification)
Nickel – 110mg/kg (phytotoxic, pH>7, BS3882:2015 Topsoil Specification)
Zinc – 300mg/kg (phytotoxic, pH>7, BS3882:2015 Topsoil Specification)
Boron – UK average 4.7mg/kg – 21 mg/kg UKSHS report N$^{o}$7 (EA 2007)

6.2.2 Summary of Results

| Compound | Residential with Homegrown Produce S4UL mg/kg | N° of Tests | Min | Max | N° Exceeding S4UL (HH/PG) |
|---|---|---|---|---|---|
| **METALS (zootoxic)** | | | | | |
| Arsenic | 37 | 14 | 7 | 13 | 0 |
| Cadmium | 11 | 14 | <0.2 | 0.3 | 0 |
| Chromium (III) | 910 | 14 | 16 | 33 | 0 |
| Chromium (VI) | 6 | 14 | <2 | <2 | 0 |
| Lead | 200 | 14 | 9 | 46 | 0 |
| Mercury | 11 (methyl) | 14 | <1 | <1 | 0 |
| Selenium | 250 | 14 | <3 | <3 | 0 |
| **METALS (zootoxic/phytotoxic)** | | | | | |
| Copper | 2400/200 | 14 | 9 | 35 | 0/0 |
| Nickel | 180/110 | 14 | 9 | 36 | 0/0 |
| Zinc | 3700/300 | 14 | 37 | 145 | 0/0 |
| Water soluble Boron | 290/21 | 14 | <1 | 1.7 | 0/0 |
| **ORGANICS** | | | | | |
| Phenol | 280 | 14 | <2 | <2 | 0 |
| Benzo(a)pyrene | 2.2 | 14 | <0.1 | 0.3 | 0 |
| Aromatic TPH $C_5$-$C_7$ | 70 | 14 | <0.01 | <0.01 | 0 |
| Aromatic TPH $C_7$-$C_8$ | 130 | 14 | <0.05 | <0.05 | 0 |
| Aromatic TPH $C_8$-$C_{10}$ | 34 | 14 | <2 | <2 | 0 |
| Aromatic TPH $C_{10}$-$C_{12}$ | 74 | 14 | <2 | <2 | 0 |
| Aromatic TPH $C_{12}$-$C_{16}$ | 140 | 14 | <2 | <2 | 0 |
| Aromatic TPH $C_{16}$-$C_{21}$ | 260 | 14 | <3 | <3 | 0 |
| Aromatic TPH $C_{21}$-$C_{35}$ | 1100 | 14 | <10 | <10 | 0 |
| Aliphatic TPH $C_5$-$C_6$ | 42 | 14 | <0.01 | <0.01 | 0 |
| Aliphatic TPH $C_6$-$C_8$ | 100 | 14 | <0.05 | <0.05 | 0 |
| Aliphatic TPH $C_8$-$C_{10}$ | 27 | 14 | <2 | <2 | 0 |
| Aliphatic TPH $C_{10}$-$C_{12}$ | 130 | 14 | <2 | <2 | 0 |
| Aliphatic TPH $C_{12}$-$C_{16}$ | 1100 | 14 | <3 | <3 | 0 |
| Aliphatic TPH $C_{16}$-$C_{35}$ | 65000 | 14 | <13 | <13 | 0 |

| ORGANICS cont | Residential with Homegrown Produce S4UL mg/kg | N° of Tests | Min | Max | N° Exceeding S4UL (HH) |
|---|---|---|---|---|---|
| Benzene | 0.087 | 14 | <0.002 | <0.002 | 0 |
| Toluene | 130 | 14 | <0.005 | <0.005 | 0 |
| Ethylbenzene | 47 | 14 | <0.002 | <0.002 | 0 |
| Xylenes | 56 (p) | 14 | <0.002 | <0.002 | 0 |

HH = Human Health
PG = Plant growth

6.2.3 Assessment of Risk

The assessment of the associated risk is based on the CIRIA (Construction Industry Research and Information Association) C552 methodology, contaminated land risk assessment, a guide to good practice (2001), tabulated below and overleaf.
(SH = Significant Harm, SPOSH = Significant Possibility of Significant Harm).

Classification of Consequence

| Classification | Definition |
|---|---|
| Severe | Concentration of contaminants is likely to (or is known from previous data to) exceed that indicative of unacceptable intake or contact. **Highly elevated** concentrations **likely** to result in 'significant harm' to human health as defined by the EPA 1990 Part 2A, if exposure occurs i.e. SH/SPOSH concentrations are high enough to cause acute (short term) effects.<br><br>Equivalent to an EA category 1 pollution incident including **persistent and/or extensive** effects on water quality (controlled waters); leading to a closure of a potable abstraction point; major impact on amenity value or major damage to agriculture or commerce.<br><br>**Major damage** to aquatic or other ecosystems, which is **likely** to result in a substantial adverse change in its functioning or harm to a species of special interest that endangers the long term maintenance of the population.<br><br>**Catastrophic** damage to buildings or property. |
| Medium | Concentration of contaminants is likely to (or is known from previous data to) exceed that indicative of unacceptable intake or contact. **Elevated** concentrations which could result in 'significant harm' to human health as defined by the EPA 1990 Part 2A, if exposure occurs i.e. greater than SH/SPOSH<br><br>Equivalent to an EA category 2 pollution incident including **a significant** effect on water quality (controlled waters); notification required to abstractors; reduction on amenity value or significant damage to agriculture or commerce.<br><br>**Significant damage** to aquatic or other ecosystems, which **may** result in a substantial adverse change in its functioning or harm to a species of special interest that **may** endanger the long term maintenance of the population.<br><br>**Significant** damage to buildings or property. |

Classification of Consequence (cont)

| Classification | Definition |
|---|---|
| Mild | Concentration of contaminants is likely to (or is known from previous data to) exceed that indicative of no harm but not unacceptable intake or contact. Exposure to human health **unlikely** to lead to 'significant harm' i.e. concentrations are greater than SGV/GAC but less than SH/SPOSH.<br><br>Equivalent to an EA category 3 pollution incident including **minimal or short term** effects on water quality (controlled waters); minor impact on amenity value, agriculture or commerce.<br><br>**Minor damage or short term damage** to aquatic or other ecosystems, which is **unlikely** to result in a substantial adverse change in its functioning or harm to a species of special interest that endangers the long term maintenance of the population.<br><br>**Minor** damage to buildings or property. |
| Minor | Concentration of contaminants is likely to (or is known from previous data to) be less than that indicative of no harm. No measurable effect on humans i.e. less than SGV/GAC.<br><br>Equivalent to an unsubstantial pollution incident with **no observed** effect on water quality (controlled waters); no reduction on amenity value or damage to agriculture or commerce.<br><br>**No observed effect** to aquatic or other ecosystems.<br><br>**Repairable effects of damage** to buildings or property. |

Classification of Probability

| Classification | Definition |
|---|---|
| High Likelihood | There is a pollution linkage and an event that appears **very likely** in the short term and **almost inevitable** in the long term, or there is evidence at the receptor of harm or pollution. |
| Likely | There is a pollution linkage and all the elements are present and in the right place, which means that it is **probable** that an event will occur.<br><br>Circumstances are such that an event is **not inevitable** but possible in the short term and likely over the long term. |
| Low Likelihood | There is a pollution linkage and circumstances are possible under which an event **could occur**.<br><br>However, it is **no means certain** that even over a longer period such event could take place, and it is less likely in the shorter term. |
| Unlikely | There is a pollution linkage but the circumstances are such that it is **improbable** that an event would occur even in the very long term. |

Matrix of Consequence against Probability to determine Risk Classification

| | **Consequence** | | | |
|---|---|---|---|---|
| **Probability** | Severe | Medium | Mild | Minor |
| High Likelihood | Very High Risk | High Risk | Moderate Risk | Low Risk |
| Likely | High Risk | Moderate Risk | Low Risk | Very Low Risk |
| Low Likelihood | Moderate Risk | Low Risk | Low Risk | Very Low Risk |
| Unlikely | Low Risk | Very Low Risk | Very Low Risk | Very Low Risk |

6.3 TPH Results

All the levels of TPH's found in the made ground analysed (speciated aliphatic and aromatic) are all significantly below published LQM/CIEH S4UL's for residential use as shown above and are therefore unlikely to impact human health. All of the levels determined are below the detection limit for the analytical procedure at <0.01mg/kg ($C_5$-$C_6$), <0.05mg/kg ($C_6$-$C_8$), <2mg/kg ($C_8$-$C_{12}$), <2/3mg/kg ($C_{12}$-$C_{16}$), <3mg/kg ($C_{16}$-$C_{21}$), and <10mg/kg for ($C_{21}$-$C_{35}$) fractions.

All of the TPH's (speciated combined aliphatic and aromatic $C_6$-$C_{40}$ fractions) found in the natural ground (London Clay) were below the detection limit for the analytical procedure at <0.05mg/kg ($C_6$-$C_8$), <1mg/kg ($C_8$-$C_{21}$) and <6mg/kg for ($C_{21}$-$C_{40}$) fractions.

The levels of the TPH's ($C_6$-$C_{40}$) found across the site are also below published LQM/CIEH S4UL's for residential use as shown above and are therefore unlikely to impact human health.

6.4 PAH Results

All the levels of PAH's found are all significantly below the published LQM/CIEH S4UL's for residential use as shown above and are therefore unlikely to impact human health. Most of the levels determined are below the detection limit for the analytical procedure at <0.1mg/kg.

Benzo(a)pyrene (BaP) and dibenz(ah)anthracene are considered as two of the more toxic commonly encountered PAH's.

The maximum BaP found was 0.3mg/kg (S4UL 2.2mg/kg) and all the dibenz(ah)anthracene results were <0.1mg/kg (S4UL 0.24mg/kg).

The maximum total PAH (total of all sixteen determined) was 2.9mg/kg (TP8, 0.3m-0.4m, made ground).

6.5 Heavy Metals, pH and Phenol

The chemical analysis results show that all of the determinands analysed in the soil samples taken are significantly below the published LQM/CIEH S4UL's for residential use as shown above, and are therefore unlikely to impact human health.

A slightly alkaline soil pH was determined ranging from 7.8 to 8.6. These levels are unlikely to impact human health, the new buildings or below ground services.

6.6 Asbestos Results

Seven near surface samples were analysed for asbestos (one from each on site trial pit location). The results show that no asbestos fibres were found in any of the samples tested indicating that asbestos has not impacted the site from the former uses, former buildings or other sources at the locations tested.

### 6.7 BTEX Compounds Results

All the levels of BTEX compounds found are all significantly below the published LQM/CIEH S4UL's for residential use as shown above and are therefore unlikely to impact human health or below ground services. All of the levels determined are below the detection limit for the analytical procedure at <0.001mg/kg to <0.005mg/kg.

### 6.8 Soil Leachate

One soil sample was analysed for potential leachable contaminants. The sample analysed was from the location of the proposed garden near to the off site surface water drainage ditch (TP6).

#### 6.8.1 Soil Leachate Assessment Criteria

The chemical analysis results from the prepared leachate were assessed against published drinking water inspectorate (DWI) threshold values, or former Environment Agency guidance values, or other published values as shown on the result sheets in appendix 4. The DWI threshold values are very conservative although the published values cover a wide range of common contaminants. Any exceedances will be further assessed using other published databases that may be more applicable e.g. river basin typology standards.

#### 6.8.2 Soil Leachate Results

The results show that all the determinands analysed are below the published threshold values indicating that these compounds are unlikely to leach from the below ground strata and impact controlled waters at the location tested.

## 7. The Potential for Landfill Gas Impact

7.1 Total Organic Carbon (TOC) Results

One trial pit (TP1) was excavated within the location of the off site infilled pond that was infilled between 1960 and 1980. The location of the trial pit is marked on the site plan in appendix 1 (p3). The trail pit excavated was with the third location attempted for the excavation. The first two locations were unable to proceed due to a concrete slab or slabs underlying the surface gravel. The excavation of the trial pit refused at 1.5m due to abundant large concrete lumps. The strata encountered are found on the trial pit logs in appendix 3.

The made ground of gravel/concrete rubble and large lumps/slabs with scattered silty clay extended to the final depth of the trial pit to the point at which it refused. Further breaking out and disruption to the farmyard and track that is in constant use could not be carried out. An assessment of the historic aerial photographs and maps shows that the pond area receded gradually pre 1960 from approximately 30m diameter to 20m diameter by drying out. It would be reasonable to assume that the pond was quite shallow and most likely no deeper than 2m and was infilled with concrete rubble and large concrete lumps/slabs to create the farmyard and access track. The material encountered at the location of trial pit 1 is most likely the same across the former pond area.

Samples were taken every 0.5m throughout the trial pit for TOC analysis. The results are shown in appendix 4, which also contains copies of the analysis certificates from the UKAS/MCERTS laboratory.

The TOC results ranged from 2.5% to 2.6% in the three samples of made ground.

It is estimated that the made ground/fill has a maximum depth of 2.0m and has been in situ for more than forty years.

All the TOC results are below the 6% threshold for ‘old made ground’ (made ground in situ >20years). The threshold of 6% is the level where gas monitoring would be required.

7.2 Assessment of Results

The assessment of the result is carried out using BS8485:2015+A1:2019, annex D (Characterisation without gas monitoring data) and assessed using table D1 in annex D of BS8485:2015+A1:2019. It must be understood that the figures in table D1 are empirical and are intended to be applied by taking into account all the available evidence from the various investigations carried out (desk study and intrusive investigations).

Using the TOC results determined and the depth found, using table D1 in annex D of BS8485:2015+A1:2019 a site characteristic situation of CS2* can be assumed.

*The TOC results are greater than 1.0% but less than 3%, the levels are comparable to the made ground found on the site (soil organic matter range from 1.2% to 5.3%). The depth of the pond is estimated not to exceed 2m and the natural ground (London Clay) has a very low to low permeability, and hence the likely impact of any landfill gas to the new dwelling from the infilled pond is likely to be very low. The building, when relocated will also have a suspended block and beam floor, a void and a suitable membrane installed by default.

Therefore the risk of impact of landfill gas to the new dwelling from the infilled pond is deemed to be very low and no additional gas protection measures are required to those which will be incorporated within the construction of the new building when relocated.

## 8. Revised Conceptual Model

8.1 General
The outcome of this investigation has enabled the initial conceptual model, which is outlined in section 2.6 above, to be revised.

8.2 Source(s)
The contaminants (sources of contamination) that have been found to be present on this site following this investigation are:
There are no elevated levels of contaminants on the site at levels that are at an unacceptable risk

8.3 Pathway(s)
The potential pathways for this site following this investigation are:
Ingestion of soils
Ingestion of dusts (indoors and outdoors)
Dermal contact with soils
Ingestion of contaminated vegetables and or soils attached to vegetables (if applicable)
Leachates via infiltration

8.4 Receptor(s)
The potential receptors and associated risks for this site following this investigation are:
Construction staff – very low risk
Residents on site – very low risk
Residents and farm staff off site – very low risk
Converted relocated barn and below ground services – very low risk
Buildings off site – very low risk
Groundwater (unproductive strata, non aquifer not SPZ) – very low risk from leachable contaminants via infiltration
Surface water (adjacent surface water drainage ditch) – very low risk via infiltration

A schematic diagram of the conceptual model for the site second edition dated 16/08/21 is shown in appendix 6, conceptual model.

## 9. Conclusions

9.1 Results and Recommendations

There are no contaminants on the site within the soils analysed that are likely to impact human health on this proposed residential site and the risk to the end users on site, buildings, below ground services and controlled waters now and following the development is deemed to be very low. It is understood that barrier pipe is to be used for the new water main.

The results of this investigation show that the site would not be deemed as contaminated land under Part 2A of the Environmental Protection Act 1990.

9.1.1 Remediation

No remediation of the site is required. There are no contaminants present at unacceptable levels within the soils analysed.

9.2 Notes

If during the development works any unforeseen contamination is encountered analysis must be carried out to identify the type and extent of the contamination.

If no unforeseen contamination is encountered during the development works a statement to this affect must be submitted to the local authority by the main contractor on completion of the development.

It would be prudent to keep photographic evidence of the construction of the block and beam base for the building and the installation of the membrane for submission to the local authority if required.

During the construction work exposed soils should be protected from any accidental leakage or spillages from stored oils or chemicals used in the construction work, if any, to prevent any potential impact to the site or controlled waters.

9.2.1 Excavated Soils

If excavated soils are produced as part of the construction work that are to be removed from the site to landfill, chemical analysis will be required to classify the 'waste' in conjunction with the EU Landfill Directive, which defines the criteria for the chemical analysis and classification of materials that are to be disposed to landfill.

Should soils need to be removed from the site to landfill, a European Landfill Directive Waste Acceptance Criteria (WAC) analysis will be required on the material to be disposed to be submitted to the proposed receiving tip before the soil is removed from the site.

9.2.2 Imported Soils

It must be noted that if any imported soil is to be used in the development works chemical analysis must be carried out to confirm that it is suitable for use on this site.

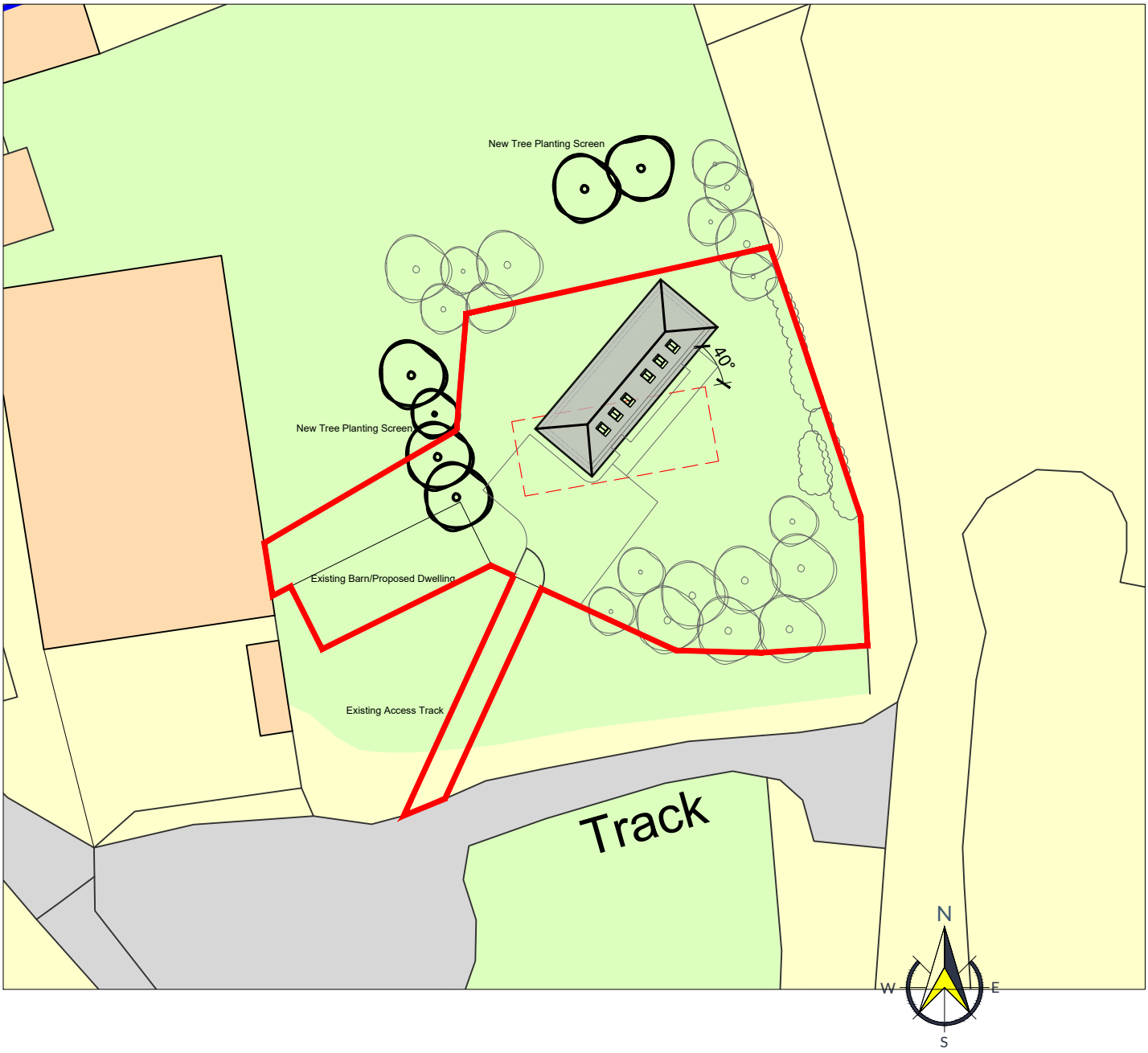
9.2.3 Local Authority Approval

A copy of this report should be forwarded to Swale Borough Council or other regulators/insurers if applicable for their consideration and approval prior to the commencement of any site works.

K.D.Huxley CSci CChem MRSC MIEnvSc RSoBRA
Date: 17/08/21

# APPENDIX 1

# SITE PLANS




1:1250

50 100m

-

MR & MRS STYLIANOU

PLANNING

Do not scale from this drawing. ALL RELEVANT DIMENSIONS AND LEVELS TO BE ASCERTAINED OR CHECKED AND VERIFIED ON SITE BEFORE SPECIFIC AREAS OF WORK ARE COMMENCED.
All errors or discrepancies must be reported to the designer or contract administrator immediately on discovery.


KENT DESIGN PARTNERSHIP
Grove Dairy Farm Business Centre,
Bobbing Hill, Sittingbourne, Kent ME9 8NY
Telephone : 01795 844162.
e-mail : mail@kdparchitects.co.uk
Web : www.kdparchitects.co.uk

EXISTING BARN CONVERSION, ELLIOTTS FARM, HARTY FERRY ROAD, HARTY, LEYSDOWN, KENT, ME12 4BG.

BLOCK PLAN

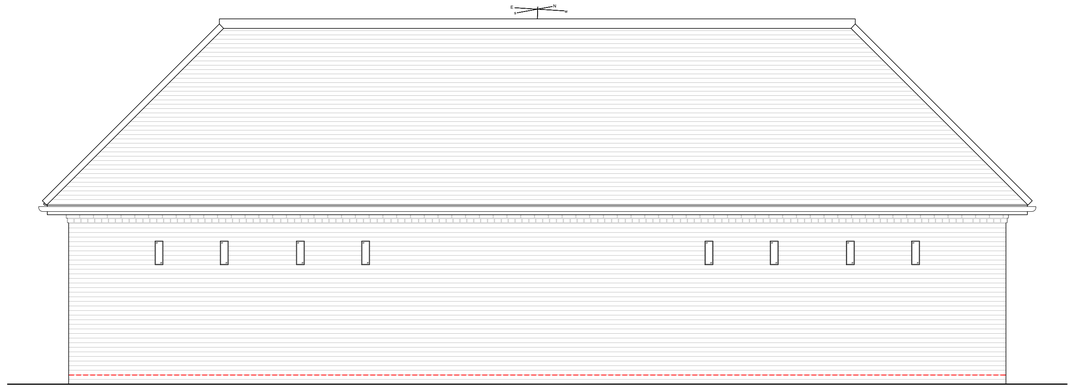
| Drawn By | Checked | Date | Scale | Size | Rev. |
|---|---|---|---|---|---|
| RJ | | 18.02.21 | 1:500 | A4 | - |

Drawing Number

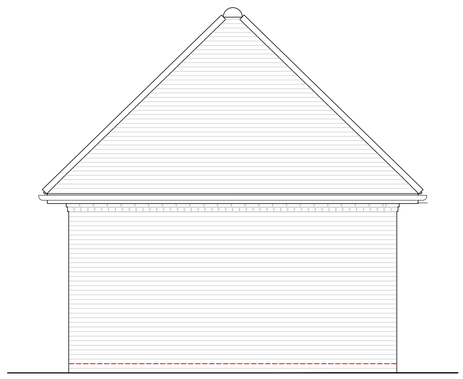
21.01-BP-01

1:50

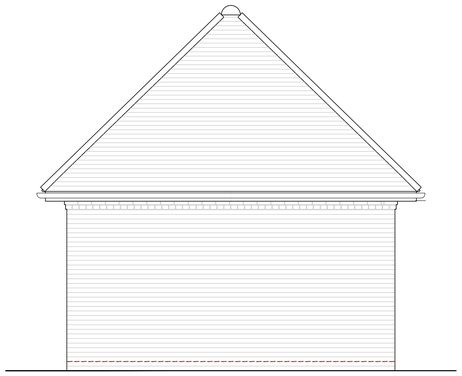
1 2 3 4m



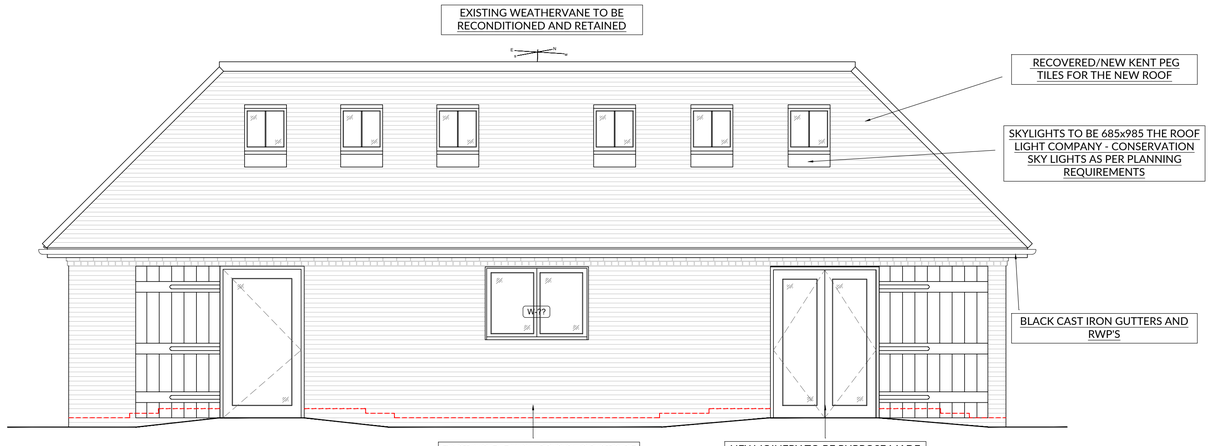
Rear/North West Elevation



Side/South West Elevation



Side/North East Elevation




Front/South East Elevation

-

PLANNING



# EXISTING BARN CONVERSION, ELLIOTTS FARM, HARTY FERRY ROAD, HARTY, LEYSDOWN, KENT, ME12 4BG.

MR & MRS STYLIANOU

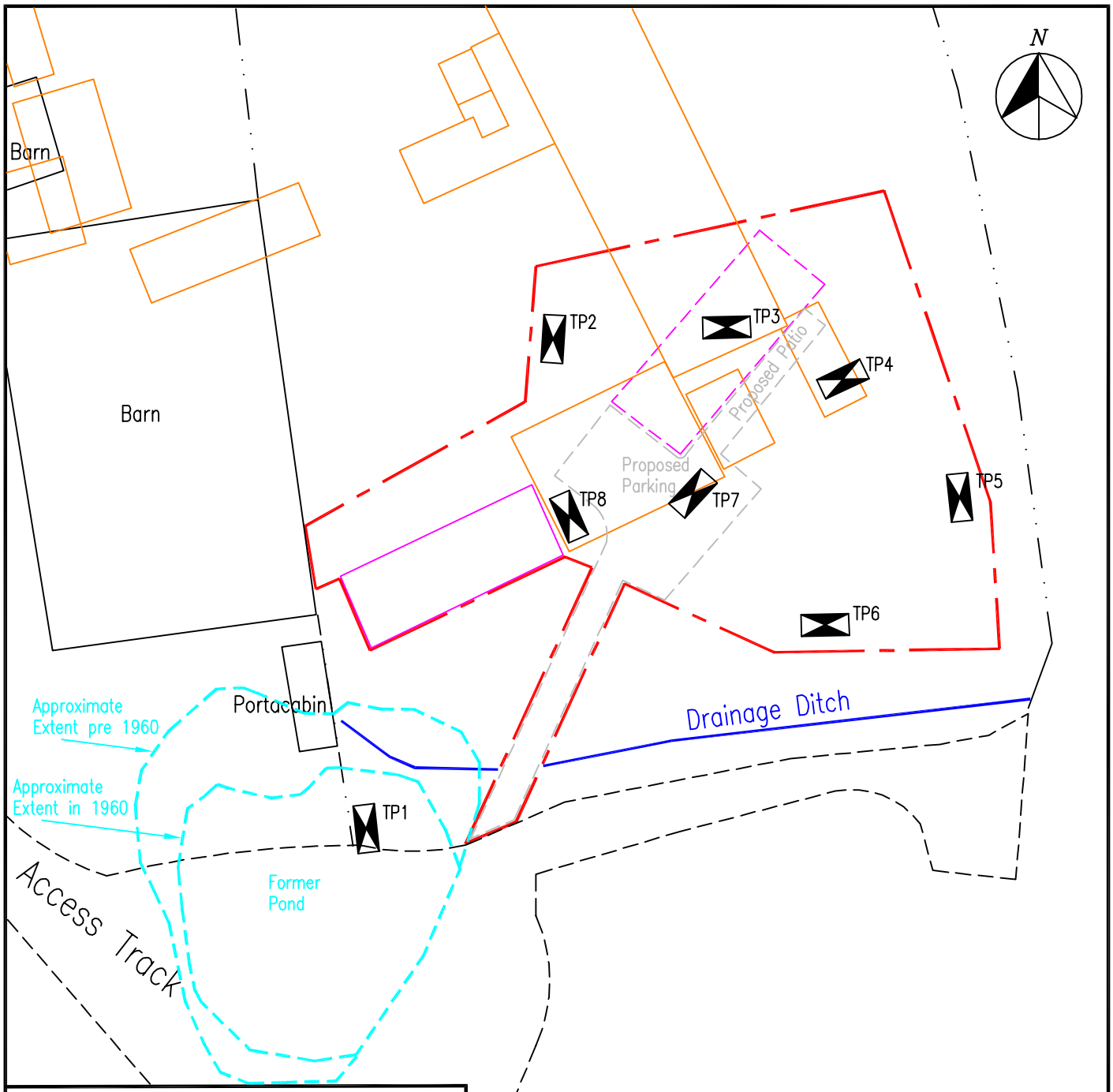
## PROPOSED BARN ELEVATIONS

| Drawn By | Checked By | Date | Scale | Size | Revision |
|---|---|---|---|---|---|
| RJ | ?? | 16.02.21 | 1:50 | A1 | - |

Drawing Number

21.01-PL-01

KENT DESIGN PARTNERSHIP
Grove Dairy Farm Business Centre,
Bobbing Hill, Sittingbourne, Kent ME9 8NY
Telephone : 01795 844162.
e-mail : mail@kdparchitects.co.uk
Web : www.kdparchitects.co.uk




Key:

- Existing Buildings
- Existing Building to be Relocated and Converted New Location Shown Dashed
- Former Buildings and Structures
- Proposed Access, Parking Paths and Patio

| | |
|---|---|
| Scale: NTS | |
| Drawn: KDH | |
| Site: Elliotts Farm Barn, Harty Ferry Rd, Leysdown ME12 | Report: 21-011/P2 |
| Title: Phase 2 Contamination Investigation (Intrusive) | Figure No: 1 |

# APPENDIX 2

# PHOTOGRAPHS

# TRIAL PIT 1


# TRIAL PIT 2

# TRIAL PIT 3

# TRIAL PIT 4

# TRIAL PIT 5


# TRIAL PIT 6

# TRIAL PIT 7

# TRIAL PIT 8

# APPENDIX 3

# TRIAL PIT LOGS

Meadow Environmental Consulting

# TRIAL PIT 1

**PROJECT NUMBER:** 21-011/P2
**PROJECT NAME:** Elliotts Farm Barn
**CLIENT:** Mr T Stylianou
**ADDRESS:** Elliotts Farm, Harty Ferry Rd ME12
**INVESTIGATION DATE:** 02/08/21

**EXCAVATED BY:** Client
**SUPERVISED BY:** MEC (KH)
**EXCAVATOR:** 5t

**COORDINATES:** 602564 167260
**SURFACE ELEVATION:** 11m AOD
**LOGGED BY:** KH

**COMMENTS**

| Depth (m) | Sample Type | Sample ID and Depth (m) | Analysis | Legend | Material Description | Additional Observations |
|---|---|---|---|---|---|---|
| 0.1 – 0.5 | D | ET1 (0.5m) | Total Organic Carbon (TOC) | | Surface nettles and weeds over soft brown silty clay with occasional brick and concrete lumps | |
| 0.5 – 1.5 | D<br>D | ET2 (1.0m)<br>ET3 (1.5m) | TOC | | Soft very gravelly silty clay with abundant large concrete lumps | Piece of metal at the side of the trial pit extending from beneath the adjacent concrete hard cover.<br><br>Water ingress at 0.7m - Rose to 0.6m after 5 minutes and stabilised at this level.<br><br>Trial pit terminated unable to proceed |
| 1.5 – 1.9 | | | | | | |

Meadow Environmental Consulting

# TRIAL PIT 2

**PROJECT NUMBER:** 21-011/P2
**PROJECT NAME:** Elliotts Farm Barn
**CLIENT:** Mr T Stylianou
**ADDRESS:** Elliotts Farm, Harty Ferry Rd ME12
**INVESTIGATION DATE:** 02/08/21

**EXCAVATED BY:** Client
**SUPERVISED BY:** MEC (KH)
**EXCAVATOR:** 5t

**COORDINATES:** 602573 167296
**SURFACE ELEVATION:** 11m AOD
**LOGGED BY:** KH

**COMMENTS**

| Depth (m) | Sample Type | Sample ID and Depth (m) | Analysis | Legend | Material Description | Additional Observations |
|---|---|---|---|---|---|---|
| 0.1 | D | EA1 (GL-0.1m) | Asbestos Screen | | Surface rough grass and weeds over soft brown silty clay with occasional brick, broken roof tiles and roots | |
| 0.2 | D | E1 (0.15m to 0.3m) | MEC Suite 1/2 - Heavy metals, sulphate, sulphide, cyanide, phenol, polyaromatic hydrocarbons, petroleum hydrocarbons on sample E1 | | Soft brown silty clay with occasional roots, fine roots and small chalk pellets and very occasional brick lumps | |
| 0.8 | D | E2 (0.8m to 0.9m) | MEC Suite 1/2 on sample E2 | | Firm brown/orangey brown mottled grey SILTY CLAY - London Clay | |
| 1.3 | | | | | | |

**Disclaimer** This bore log is intended for environmental not geotechnical purposes.

# TRIAL PIT 3

**PROJECT NUMBER:** 21-011/P2
**PROJECT NAME:** Elliotts Farm Barn
**CLIENT:** Mr T Stylianou
**ADDRESS:** Elliotts Farm, Harty Ferry Rd ME12
**INVESTIGATION DATE:** 02/08/21

**EXCAVATED BY:** Client
**SUPERVISED BY:** MEC (KH)
**EXCAVATOR:** 5t

**COORDINATES:** 602587 167294
**SURFACE ELEVATION:** 11m AOD
**LOGGED BY:** KH

**COMMENTS**

| Depth (m) | Sample Type | Sample ID and Depth (m) | Analysis | Legend | Material Description | Additional Observations |
|---|---|---|---|---|---|---|
| 0.1 | D | EA2 (GL-0.3m) | Asbestos Screen on sample EA2<br><br>MEC Suite 1/2 - Heavy metals, sulphate, sulphide, cyanide, phenol, polyaromatic hydrocarbons, petroleum hydrocarbons on sample E3 | | Surface rough grass and weeds over soft brown silty clay with occasional brick, broken roof tiles and roots | |
| 0.2 | D | E3 (0.5m to 0.6m) | | | | |
| 0.5 | D | E4 (0.9m to 1.0m) | MEC Suite 1/2 on sample E4 | | Firm brown SILTY CLAY with occasional fine roots - London Clay | |

**Disclaimer** This bore log is intended for environmental not geotechnical purposes.

Meadow Environmental Consulting

# TRIAL PIT 4

**PROJECT NUMBER:** 21-011/P2
**PROJECT NAME:** Elliotts Farm Barn
**CLIENT:** Mr T Stylianou
**ADDRESS:** Elliotts Farm, Harty Ferry Rd ME12
**INVESTIGATION DATE:** 02/08/21

**EXCAVATED BY:** Client
**SUPERVISED BY:** MEC (KH)
**EXCAVATOR:** 5t

**COORDINATES:** 602593 167288
**SURFACE ELEVATION:** 11m AOD
**LOGGED BY:** KH

**COMMENTS**

| Depth (m) | Sample Type | Sample ID and Depth (m) | Analysis | Legend | Material Description | Additional Observations |
|---|---|---|---|---|---|---|
| 0.1 | D | EA3 (GL-0.2m) | Asbestos Screen on sample EA3<br><br>MEC Suite 1/2 - Heavy metals, sulphate, sulphide, cyanide, phenol, polyaromatic hydrocarbons, petroleum hydrocarbons on sample E5 | | Surface rough grass and weeds over soft brown silty clay with occasional rounded stones, brick pieces, broken roof tile fragments and roots and very occasionally small shell fragments | |
| 0.2 | D | E5 (0.1m to 0.2m) | | | | |
| 0.6 | D | E6 (0.6m to 0.7m) | MEC Suite 1/2 on sample E6 | | Firm to stiff brown occasionally mottled orangey brown SILTY CLAY with occasional fine roots - London Clay | |

Meadow Environmental Consulting

# TRIAL PIT 5

**PROJECT NUMBER:** 21-011/P2
**PROJECT NAME:** Elliotts Farm Barn
**CLIENT:** Mr T Stylianou
**ADDRESS:** Elliotts Farm, Harty Ferry Rd ME12
**INVESTIGATION DATE:** 02/08/21

**EXCAVATED BY:** Client
**SUPERVISED BY:** MEC (KH)
**EXCAVATOR:** 5t

**COORDINATES:** 602604 167284
**SURFACE ELEVATION:** 11m AOD
**LOGGED BY:** KH

**COMMENTS**

| Depth (m) | Sample Type | Sample ID and Depth (m) | Analysis | Legend | Material Description | Additional Observations |
|---|---|---|---|---|---|---|
| 0.1 | D | EA4 (GL-0.1m) | Asbestos Screen on sample EA4<br><br>MEC Suite 1/2 - Heavy metals, sulphate, sulphide, cyanide, phenol, polyaromatic hydrocarbons, petroleum hydrocarbons on sample E7 | | Surface rough grass and weeds over soft brown silty clay with scattered fine roots and very occasional small brick fragments | |
| 0.2 | D | E7 (0.2m to 0.3m) | | | | |
| 0.3 | D | E8 (0.35m to 0.5m) | MEC Suite 1/2 on sample E8 | | Firm to stiff brown SILTY CLAY with occasional fine roots - London Clay | |
| 0.4 | | | | | | |
| 0.5 | | | | | | |
| 0.6 | | | | | | |
| 0.7 | | | | | | |
| 0.8 | | | | | | |
| 0.9 | | | | | | |
| 1 | | | | | | |
| 1.1 | | | | | | |
| 1.2 | | | | | | |
| 1.3 | | | | | | |
| 1.4 | | | | | | |
| 1.5 | | | | | | |
| 1.6 | | | | | | |
| 1.7 | | | | | | |
| 1.8 | | | | | | |
| 1.9 | | | | | | |

# TRIAL PIT 6

**PROJECT NUMBER:** 21-011/P2
**PROJECT NAME:** Elliotts Farm Barn
**CLIENT:** Mr T Stylianou
**ADDRESS:** Elliotts Farm, Harty Ferry Rd ME12
**INVESTIGATION DATE:** 02/08/21

**EXCAVATED BY:** Client
**SUPERVISED BY:** MEC (KH)
**EXCAVATOR:** 5t

**COORDINATES:** 602593 167274
**SURFACE ELEVATION:** 11m AOD
**LOGGED BY:** KH

**COMMENTS**

| Depth (m) | Sample Type | Sample ID and Depth (m) | Analysis | Legend | Material Description | Additional Observations |
|---|---|---|---|---|---|---|
| 0.1 | D | EA5 (GL-0.2m) | Asbestos Screen on sample EA5 | | Surface rough grass and weeds over soft to firm brown silty clay with occasional fine roots and very occasional brick fragments | |
| 0.2 | D | E9 (0.2m to 0.3m) | MEC Suite 1/2 - Heavy metals, sulphate, sulphide, cyanide, phenol, polyaromatic hydrocarbons, petroleum hydrocarbons on sample E9 | | | |
| 0.3 | D | E10 (0.4m to 0.5m) | MEC Suite 1/2 on sample E10 | | Firm brown SILTY CLAY with occasional fine roots - London Clay | |
| 0.4 | D | EL1 (0.9m to 1.0m) | MEC Suite 1/2 on the prepared soil leachate on sample EL1 | | | |
| 0.5 | | | | | | |
| 0.6 | | | | | | |
| 0.7 | | | | | | |
| 0.8 | | | | | | |
| 0.9 | | | | | | |
| 1 | | | | | | |
| 1.1 | | | | | | |
| 1.2 | | | | | | |
| 1.3 | | | | | | |
| 1.4 | | | | | | |
| 1.5 | | | | | | |
| 1.6 | | | | | | |
| 1.7 | | | | | | |
| 1.8 | | | | | | |
| 1.9 | | | | | | |

# TRIAL PIT 7

**PROJECT NUMBER:** 21-011/P2
**PROJECT NAME:** Elliotts Farm Barn
**CLIENT:** Mr T Stylianou
**ADDRESS:** Elliotts Farm, Harty Ferry Rd ME12
**INVESTIGATION DATE:** 02/08/21

**EXCAVATED BY:** Client
**SUPERVISED BY:** MEC (KH)
**EXCAVATOR:** 5t

**COORDINATES:** 602584 167285
**SURFACE ELEVATION:** 11m AOD
**LOGGED BY:** KH

**COMMENTS**

| Depth (m) | Sample Type | Sample ID and Depth (m) | Analysis | Legend | Material Description | Additional Observations |
|---|---|---|---|---|---|---|
| 0.1 | D | EA6 (GL-0.2m) | Asbestos Screen on sample EA6 | | Surface rough grass and weeds over soft brown silty clay with scattered fine roots | |
| 0.2 | D | E11 (0.25m to 0.35m) | MEC Suite 1/2 - Heavy metals, sulphate, sulphide, cyanide, phenol, polyaromatic hydrocarbons, petroleum hydrocarbons on sample E11 | | Soft to firm brown silty clay with occasional brick lumps, clay pipe fragments, roof tile fragments and very occasional charcoal fragments | |
| 0.7 | D | E12 (0.7m to 0.8m) | MEC Suite 1/2 on sample E12 | | Firm to stiff brown SILTY CLAY with occasional fine roots - London Clay | |

**Disclaimer** This bore log is intended for environmental not geotechnical purposes.

Meadow Environmental Consulting

# TRIAL PIT 8

**PROJECT NUMBER:** 21-011/P2
**PROJECT NAME:** Elliotts Farm Barn
**CLIENT:** Mr T Stylianou
**ADDRESS:** Elliotts Farm, Harty Ferry Rd ME12
**INVESTIGATION DATE:** 02/08/21

**EXCAVATED BY:** Client
**SUPERVISED BY:** MEC (KH)
**EXCAVATOR:** 5t

**COORDINATES:** 602576 167283
**SURFACE ELEVATION:** 11m AOD
**LOGGED BY:** KH

**COMMENTS**

| Depth (m) | Sample Type | Sample ID and Depth (m) | Analysis | Legend | Material Description | Additional Observations |
|---|---|---|---|---|---|---|
| 0.1 | D | EA7 (GL-0.2m) | Asbestos Screen on sample EA7<br><br>MEC Suite 1/2 - Heavy metals, sulphate, sulphide, cyanide, phenol, polyaromatic hydrocarbons, petroleum hydrocarbons on sample E13 | | Surface rough grass and weeds over soft brown silty clay with scattered gravel (angular and rounded stones) and brick lumps and very occasional pieces of wood and small charcoal fragments | |
| 0.2 | D | E13 (0.3m to 0.4m) | | | | |
| 0.3 | | | | | | |
| 0.4 | | | | | | |
| 0.5 | D | E14 (0.5m to 0.6m) | MEC Suite 1/2 on sample E14 | | Firm brown occasionally mottled grey SILTY CLAY - London Clay | |
| 0.6 | | | | | | |
| 0.7 | | | | | | |
| 0.8 | | | | | | |
| 0.9 | | | | | | |
| 1 | | | | | | |
| 1.1 | | | | | | |
| 1.2 | | | | | | |
| 1.3 | | | | | | |
| 1.4 | | | | | | |
| 1.5 | | | | | | |
| 1.6 | | | | | | |
| 1.7 | | | | | | |
| 1.8 | | | | | | |
| 1.9 | | | | | | |

# APPENDIX 4

# CHEMICAL ANALYSIS RESULTS and CERTIFICATES

# Meadow Environmental Consulting

CLIENT: Mr T Stylianou
SITE: Elliotts Farm Barn, Elliotts Farm, Harty Ferry Rd
DATE SAMPLED: 02/08/21
SAMPLE REF: 21-011
SAMPLED BY: MEC
TESTED BY: DETS (UKAS/MCERTS 4480)

REPORT REF: 21-011/P2
REPORT DATE: 10/08/21
SPEC: CLEA
Results expressed as mg/kg dry mass unless stated.
>SGV

| Sample ID | E1 | E2 | E3 | E4 | E5 | E6 | E7 | E8 |
|---|---|---|---|---|---|---|---|---|
| DETERMINAND | TP2 | TP2 | TP3 | TP3 | TP4 | TP4 | TP5 | TP5 |
| Depth (m) | 0.15-0.3 | 0.8-0.9 | 0.5-0.6 | 0.9-1.0 | 0.1-0.2 | 0.6-0.7 | 0.2-0.3 | 0.35-0.5 |
| Sample Type | MG | LC | MG | LC | MG | LC | MG | LC |
| TOTAL ARSENIC as As | 12 | 12 | 7 | 11 | 7 | 11 | 9 | 8 |
| TOTAL CADMIUM as Cd | <0.2 | <0.2 | <0.2 | <0.2 | 0.2 | <0.2 | <0.2 | <0.2 |
| TOTAL CHROMIUM as Cr | 29 | 28 | 24 | 33 | 16 | 31 | 22 | 24 |
| HEXAVALENT CHROMIUM as Cr | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| TOTAL LEAD as Pb | 26 | 12 | 13 | 11 | 37 | 10 | 24 | 9 |
| TOTAL MERCURY as Hg | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| TOTAL SELENIUM as Se | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 |
| TOTAL COPPER as Cu | 22 | 19 | 16 | 21 | 18 | 14 | 20 | 9 |
| TOTAL NICKEL as Ni | 23 | 36 | 12 | 36 | 11 | 12 | 13 | 9 |
| TOTAL ZINC as Zn | 102 | 57 | 45 | 63 | 141 | 52 | 65 | 37 |
| WATER SOLUBLE BORON as B | <1 | <1 | <1 | 1.2 | <1 | 1.2 | <1 | 1.3 |
| TOTAL SULPHATE as SO4 (%) | 0.08 | 0.09 | 0.06 | 0.12 | 0.08 | 0.06 | 0.05 | 0.05 |
| ELEMENTAL SULPHUR | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| SULPHIDE as S | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| TOTAL CYANIDE as CN | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| FREE CYANIDE as CN | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| THIOCYANATE as SCN | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 |
| PHENOLS | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| TOTAL POLYAROMATIC HYDROCARBONS | Speciated | Speciated | Speciated | Speciated | Speciated | Speciated | Speciated | Speciated |
| pH (2.5:1 Water Extract) | 8.0 | 8.1 | 8.3 | 8.2 | 8.1 | 8.3 | 8.1 | 8.6 |
| TOTAL PETROLUEM HYDROCARBONS | Speciated | Speciated | Speciated | Speciated | Speciated | Speciated | Speciated | Speciated |

MG = Made Ground, LC = London Clay



Checked By: K D Huxley

# Meadow Environmental Consulting

CLIENT: Mr T Stylianou
SITE: Elliotts Farm Barn, Elliotts Farm, Harty Ferry Rd
DATE SAMPLED: 02/08/21
SAMPLE REF: 21-011
SAMPLED BY: MEC
TESTED BY: DETS (UKAS/MCERTS 4480)

REPORT REF: 21-011/P2
REPORT DATE: 10/08/21
SPEC: CLEA
Results expressed as mg/kg dry mass unless stated.
>SGV

| Sample ID | E9 | E10 | E11 | E12 | E13 | E14 |
|---|---|---|---|---|---|---|
| DETERMINAND | TP6 | TP6 | TP7 | TP7 | TP8 | TP8 |
| Depth (m) | 0.2-0.3 | 0.4-0.5 | 0.25-0.35 | 0.7-0.8 | 0.3-0.4 | 0.5-0.6 |
| Sample Type | MG | LC | MG | LC | MG | LC |
| TOTAL ARSENIC as As | 10 | 11 | 9 | 13 | 12 | 11 |
| TOTAL CADMIUM as Cd | <0.2 | <0.2 | <0.2 | <0.2 | 0.3 | <0.2 |
| TOTAL CHROMIUM as Cr | 25 | 31 | 21 | 30 | 16 | 29 |
| HEXAVALENT CHROMIUM as Cr | <2 | <2 | <2 | <2 | <2 | <2 |
| TOTAL LEAD as Pb | 18 | 11 | 46 | 14 | 43 | 13 |
| TOTAL MERCURY as Hg | <1 | <1 | <1 | <1 | <1 | <1 |
| TOTAL SELENIUM as Se | <3 | <3 | <3 | <3 | <3 | <3 |
| TOTAL COPPER as Cu | 20 | 13 | 35 | 20 | 25 | 25 |
| TOTAL NICKEL as Ni | 14 | 13 | 13 | 34 | 10 | 29 |
| TOTAL ZINC as Zn | 99 | 57 | 126 | 66 | 145 | 66 |
| WATER SOLUBLE BORON as B | <1 | 1.7 | 1.1 | 1.2 | <1 | <1 |
| TOTAL SULPHATE as SO4 (%) | 0.06 | 0.04 | 0.06 | 0.06 | 0.26 | 0.05 |
| ELEMENTAL SULPHUR | <10 | <10 | <10 | <10 | <10 | <10 |
| SULPHIDE as S | <5 | <5 | <5 | <5 | <5 | <5 |
| TOTAL CYANIDE as CN | <2 | <2 | <2 | <2 | <2 | <2 |
| FREE CYANIDE as CN | <2 | <2 | <2 | <2 | <2 | <2 |
| THIOCYANATE as SCN | <3 | <3 | <3 | <3 | <3 | <3 |
| PHENOLS | <2 | <2 | <2 | <2 | <2 | <2 |
| TOTAL POLYAROMATIC HYDROCARBONS | Speciated | Speciated | Speciated | Speciated | Speciated | Speciated |
| pH (2.5:1 Water Extract) | 7.8 | 8.2 | 8.5 | 8.5 | 8.2 | 7.9 |
| TOTAL PETROLUEM HYDROCARBONS | Speciated | Speciated | Speciated | Speciated | Speciated | Speciated |

MG = Made Ground, LC = London Clay



Checked By: K D Huxley

# Meadow Environmental Consulting

## Speciated Polyaromatic Hydrocarbons

CLIENT: Mr T Stylianou
SITE: Elliotts Farm Barn, Elliotts Farm, Harty Ferry Rd
DATE SAMPLED: 02/08/21
SAMPLE REF: 21-011
SAMPLED BY: MEC
TESTED BY: DETS (UKAS/MCERTS 4480)

REPORT REF: 21-011/P2
REPORT DATE: 10/08/21
SPEC: CLEA

Results expressed as mg/kg dry mass unless stated.

**RESULTS**

| Sample ID | E1 | E2 | E3 | E4 | E5 | E6 | S4UL |
|---|---|---|---|---|---|---|---|
| Sample Location | TP2 | TP2 | TP3 | TP3 | TP4 | TP4 | SOC |
| Sample Depth | 0.15-0.3 | 0.8-0.9 | 0.5-0.6 | 0.9-1.0 | 0.1-0.2 | 0.6-0.7 | 1% |
| Sample Type | MG | LC | MG | LC | MG | LC | |
| Naphthalene | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 2.3 |
| Acenaphthylene | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 170 |
| Acenaphthene | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 210 |
| Fluorene | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 170 |
| Phenanthrene | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 95 |
| Anthracene | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 2400 |
| Fluoranthene | <0.1 | <0.1 | <0.1 | <0.1 | 0.2 | <0.1 | 280 |
| Pyrene | <0.1 | <0.1 | <0.1 | <0.1 | 0.2 | <0.1 | 620 |
| Benzo(a)anthracene | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 7.2 |
| Chrysene | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 15 |
| Benzo(b)fluoranthene | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 2.6 |
| Benzo(k)fluoranthene | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 77 |
| Benzo(a)pyrene | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 2.2 |
| Indeno(1,2,3-cd)pyrene | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 27 |
| Dibenzo(ah)anthracene | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.24 |
| Benzo(ghi)perylene | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 320 |
| Total PAH's | 0.0 | 0.0 | 0.0 | 0.0 | 0.4 | 0.0 | |

**COMMENTS**

See main report text
SOC = Soil Organic Content
Values in **RED** indicated that the respective SGV has been exceeded
MG = Made Ground
LC = London Clay

Keith Huxley CSci CChem MRSC MIEnvSc RSoBRA
Date: 10/08/21

# Meadow Environmental Consulting

## Speciated Polyaromatic Hydrocarbons

CLIENT: Mr T Stylianou
SITE: Elliotts Farm Barn, Elliotts Farm, Harty Ferry Rd
DATE SAMPLED: 02/08/21
SAMPLE REF: 21-011
SAMPLED BY: MEC
TESTED BY: DETS (UKAS/MCERTS 4480)

REPORT REF: 21-011/P2
REPORT DATE: 10/08/21
SPEC: CLEA

Results expressed as mg/kg dry mass unless stated.

**RESULTS**

| Sample ID | E7 | E8 | E9 | E10 | S4UL |
|---|---|---|---|---|---|
| Sample Location | TP5 | TP5 | TP6 | TP6 | SOC |
| Sample Depth | 0.2-0.3 | 0.35-0.5 | 0.2-0.3 | 0.4-0.5 | 1% |
| Sample Type | MG | LC | MG | LC | |
| Naphthalene | <0.1 | <0.1 | <0.1 | <0.1 | 2.3 |
| Acenaphthylene | <0.1 | <0.1 | <0.1 | <0.1 | 170 |
| Acenaphthene | <0.1 | <0.1 | <0.1 | <0.1 | 210 |
| Fluorene | <0.1 | <0.1 | <0.1 | <0.1 | 170 |
| Phenanthrene | <0.1 | <0.1 | <0.1 | <0.1 | 95 |
| Anthracene | <0.1 | <0.1 | <0.1 | <0.1 | 2400 |
| Fluoranthene | <0.1 | <0.1 | <0.1 | <0.1 | 280 |
| Pyrene | <0.1 | <0.1 | <0.1 | <0.1 | 620 |
| Benzo(a)anthracene | <0.1 | <0.1 | <0.1 | <0.1 | 7.2 |
| Chrysene | <0.1 | <0.1 | <0.1 | <0.1 | 15 |
| Benzo(b)fluoranthene | <0.1 | <0.1 | <0.1 | <0.1 | 2.6 |
| Benzo(k)fluoranthene | <0.1 | <0.1 | <0.1 | <0.1 | 77 |
| Benzo(a)pyrene | <0.1 | <0.1 | <0.1 | <0.1 | 2.2 |
| Indeno(1,2,3-cd)pyrene | <0.1 | <0.1 | <0.1 | <0.1 | 27 |
| Dibenzo(ah)anthracene | <0.1 | <0.1 | <0.1 | <0.1 | 0.24 |
| Benzo(ghi)perylene | <0.1 | <0.1 | <0.1 | <0.1 | 320 |
| Total PAH's | 0.0 | 0.0 | 0.0 | 0.0 | |

**COMMENTS**

See main report text
SOC = Soil Organic Content
Values in **RED** indicated that the respective SGV has been exceeded
MG = Made Ground
LC = London Clay

# Meadow Environmental Consulting

## Speciated Polyaromatic Hydrocarbons

CLIENT: Mr T Stylianou
SITE: Elliotts Farm Barn, Elliotts Farm, Harty Ferry Rd
DATE SAMPLED: 02/08/21
SAMPLE REF: 21-011
SAMPLED BY: MEC
TESTED BY: DETS (UKAS/MCERTS 4480)

REPORT REF: 21-011/P2
REPORT DATE: 10/08/21
SPEC: CLEA

Results expressed as mg/kg dry mass unless stated.

**RESULTS**

| Sample ID | E11 | E12 | E13 | E14 | S4UL |
|---|---|---|---|---|---|
| Sample Location | TP7 | TP7 | TP8 | TP8 | SOC |
| Sample Depth | 0.25-0.35 | 0.7-0.8 | 0.3-0.4 | 0.5-0.6 | 1% |
| Sample Type | MG | LC | MG | LC | |
| Naphthalene | <0.1 | <0.1 | <0.1 | <0.1 | 2.3 |
| Acenaphthylene | <0.1 | <0.1 | <0.1 | <0.1 | 170 |
| Acenaphthene | <0.1 | <0.1 | <0.1 | <0.1 | 210 |
| Fluorene | <0.1 | <0.1 | <0.1 | <0.1 | 170 |
| Phenanthrene | <0.1 | <0.1 | 0.2 | <0.1 | 95 |
| Anthracene | <0.1 | <0.1 | <0.1 | <0.1 | 2400 |
| Fluoranthene | <0.1 | <0.1 | 0.6 | <0.1 | 280 |
| Pyrene | <0.1 | <0.1 | 0.5 | <0.1 | 620 |
| Benzo(a)anthracene | <0.1 | <0.1 | 0.2 | <0.1 | 7.2 |
| Chrysene | <0.1 | <0.1 | 0.3 | <0.1 | 15 |
| Benzo(b)fluoranthene | <0.1 | <0.1 | 0.3 | <0.1 | 2.6 |
| Benzo(k)fluoranthene | <0.1 | <0.1 | 0.1 | <0.1 | 77 |
| Benzo(a)pyrene | <0.1 | <0.1 | 0.3 | <0.1 | 2.2 |
| Indeno(1,2,3-cd)pyrene | <0.1 | <0.1 | 0.2 | <0.1 | 27 |
| Dibenzo(ah)anthracene | <0.1 | <0.1 | <0.1 | <0.1 | 0.24 |
| Benzo(ghi)perylene | <0.1 | <0.1 | 0.2 | <0.1 | 320 |
| Total PAH's | 0.0 | 0.0 | 2.9 | 0.0 | |

**COMMENTS**

See main report text
SOC = Soil Organic Content
Values in **RED** indicated that the respective SGV has been exceeded
MG = Made Ground
LC = London Clay

# Meadow Environmental Consulting

## Total Petroleum Hydrocarbons (aliphatic/aromatic split) & BTEX

CLIENT: Mr T Stylianou
SITE: Elliotts Farm Barn, Elliotts Farm, Harty Ferry Rd
DATE SAMPLED: 02/08/21
SAMPLE REF: 21-011
SAMPLED BY: MEC
TESTED BY: DETS (UKAS/MCERTS 4480)

REPORT REF: 21-011/P2
REPORT DATE: 10/08/21
SPEC: CLEA
Results expressed as mg/kg dry mass

**RESULTS**

| Sample ID | E1 | E3 | E5 | E7 | E9 | S4UL |
|---|---|---|---|---|---|---|
| Sample Location | TP2 | TP3 | TP4 | TP5 | TP6 | SOC |
| Sample Depth (m) | 0.15-0.3 | 0.5-0.6 | 0.1-0.2 | 0.2-0.3 | 0.2-0.3 | 1% |
| Sample Type | MG | MG | MG | MG | MG | |
| **Aromatic** | | | | | | |
| $C_5$-$C_7$ | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 70 |
| $C_7$-$C_8$ | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 130 |
| $C_8$-$C_{10}$ | <2 | <2 | <2 | <2 | <2 | 34 |
| $C_{10}$-$C_{12}$ | <2 | <2 | <2 | <2 | <2 | 74 |
| $C_{12}$-$C_{16}$ | <2 | <2 | <2 | <2 | <2 | 140 |
| $C_{16}$-$C_{21}$ | <3 | <3 | <3 | <3 | <3 | 260 |
| $C_{21}$-$C_{35}$ | <10 | <10 | <10 | <10 | <10 | 1100 |
| Total Aromatic TPH | 0 | 0 | 0 | 0 | 0 | |
| **Aliphatic** | | | | | | |
| $C_5$-$C_6$ | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 42 |
| $C_6$-$C_8$ | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 100 |
| $C_8$-$C_{10}$ | <2 | <2 | <2 | <2 | <2 | 27 |
| $C_{10}$-$C_{12}$ | <2 | <2 | <2 | <2 | <2 | 130 |
| $C_{12}$-$C_{16}$ | <3 | <3 | <3 | <3 | <3 | 1100 |
| $C_{16}$-$C_{21}$ | <3 | <3 | <3 | <3 | <3 | 65000* |
| $C_{21}$-$C_{35}$ | <10 | <10 | <10 | <10 | <10 | |
| Total Aliphatic TPH | 0 | 0 | 0 | 0 | 0 | |
| **TOTAL TPH** | 0 | 0 | 0 | 0 | 0 | |
| | | | | | | |
| Benzene | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | 0.087 |
| Toluene | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | 130 |
| Ethylbenzene | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | 47 |
| Xylene (m&p) | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | 56 (p) |
| Xylene (o) | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | 60 |

**COMMENTS**

S4UL = Residential with homegrown produce
* = $C_{16}$-$C_{35}$
SOC = Soil Organic Content
Values in **RED** indicated that the respective SGV has been exceeded
MG = Made Ground
LC = London Clay

Keith Huxley CSci CChem MRSC MIEnvSc RSoBRA
Date: 10/08/21

# Meadow Environmental Consulting

## Total Petroleum Hydrocarbons (aliphatic/aromatic split) & BTEX

CLIENT: Mr T Stylianou
SITE: Elliotts Farm Barn, Elliotts Farm, Harty Ferry Rd
DATE SAMPLED: 02/08/21
SAMPLE REF: 21-011
SAMPLED BY: MEC
TESTED BY: DETS (UKAS/MCERTS 4480)

REPORT REF: 21-011/P2
REPORT DATE: 10/08/21
SPEC: CLEA
Results expressed as mg/kg dry mass

**RESULTS**

| Sample ID | E11 | E13 | S4UL |
|---|---|---|---|
| Sample Location | TP7 | TP8 | SOC |
| Sample Depth (m) | 0.25-0.35 | 0.3-0.4 | 1% |
| Sample Type | MG | MG | |
| **Aromatic** | | | |
| $C_5$-$C_7$ | <0.01 | <0.01 | 70 |
| $C_7$-$C_8$ | <0.05 | <0.05 | 130 |
| $C_8$-$C_{10}$ | <2 | <2 | 34 |
| $C_{10}$-$C_{12}$ | <2 | <2 | 74 |
| $C_{12}$-$C_{16}$ | <2 | <2 | 140 |
| $C_{16}$-$C_{21}$ | <3 | <3 | 260 |
| $C_{21}$-$C_{35}$ | <10 | <10 | 1100 |
| Total Aromatic TPH | 0 | 0 | |
| **Aliphatic** | | | |
| $C_5$-$C_6$ | <0.01 | <0.01 | 42 |
| $C_6$-$C_8$ | <0.05 | <0.05 | 100 |
| $C_8$-$C_{10}$ | <2 | <2 | 27 |
| $C_{10}$-$C_{12}$ | <2 | <2 | 130 |
| $C_{12}$-$C_{16}$ | <3 | <3 | 1100 |
| $C_{16}$-$C_{21}$ | <3 | <3 | 65000* |
| $C_{21}$-$C_{35}$ | <10 | <10 | |
| Total Aliphatic TPH | 0 | 0 | |
| **TOTAL TPH** | 0 | 0 | |
| | | | |
| Benzene | <0.002 | <0.002 | 0.087 |
| Toluene | <0.005 | <0.005 | 130 |
| Ethylbenzene | <0.002 | <0.002 | 47 |
| Xylene (m&p) | <0.002 | <0.002 | 56 (p) |
| Xylene (o) | <0.002 | <0.002 | 60 |

**COMMENTS**

S4UL = Residential with homegrown produce
* = $C_{16}$-$C_{35}$
SOC = Soil Organic Content
Values in **RED** indicated that the respective SGV has been exceeded
MG = Made Ground
LC = London Clay

Keith Huxley CSci CChem MRSC MIEnvSc RSoBRA
Date: 10/08/21

# Meadow Environmental Consulting

## Speciated Total Petroleum Hydrocarbons

CLIENT: Mr T Stylianou
SITE: Elliotts Farm Barn, Elliotts Farm, Harty Ferry Rd
DATE SAMPLED: 02/08/21
SAMPLE REF: 21-011
SAMPLED BY: MEC
TESTED BY: DETS (UKAS/MCERTS 4480)

REPORT REF: 21-011/P2
REPORT DATE: 10/08/21

SPEC: CLEA
Results expressed as mg/kg dry mass

**RESULTS**

| Sample ID | E2 | E4 | E6 | E8 | E10 | S4UL |
|---|---|---|---|---|---|---|
| Sample Location | TP2 | TP3 | TP4 | TP5 | TP6 | SOC |
| Sample Depth (m) | 0.8-0.9 | 0.9-1.0 | 0.6-0.7 | 0.35-0.5 | 0.4-0.5 | 1.0% |
| Sample Type | LC | LC | LC | LC | LC | |
| Hydrocarbon Fraction: | | | | | | |
| $C_6$-$C_8$ | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 100* |
| $C_8$-$C_{10}$ | <1 | <1 | <1 | <1 | <1 | 27* |
| $C_{10}$-$C_{12}$ | <1 | <1 | <1 | <1 | <1 | 74** |
| $C_{12}$-$C_{16}$ | <1 | <1 | <1 | <1 | <1 | 140** |
| $C_{16}$-$C_{21}$ | <1 | <1 | <1 | <1 | <1 | 260** |
| $C_{21}$-$C_{40}$ | <6 | <6 | <6 | <6 | <6 | 1100** |
| Total Petroleum Hydrocarbons (TPH) | 0 | 0 | 0 | 0 | 0 | |

**COMMENTS**

SOC = Soil Organic Content
Values in **RED** indicated that the respective SGV (S4UL) has been exceeded
Residential S4UL above are worse case values * = Aliphatic, ** = Aromatic
MG = Made Ground
LC = London Clay

# Meadow Environmental Consulting

## Speciated Total Petroleum Hydrocarbons

CLIENT: Mr T Stylianou
SITE: Elliotts Farm Barn, Elliotts Farm, Harty Ferry Rd
DATE SAMPLED: 02/08/21
SAMPLE REF: 21-011
SAMPLED BY: MEC
TESTED BY: DETS (UKAS/MCERTS 4480)

REPORT REF: 21-011/P2
REPORT DATE: 10/08/21

SPEC: CLEA
Results expressed as mg/kg dry mass

**RESULTS**

| Sample ID | E12 | E14 | S4UL |
|---|---|---|---|
| Sample Location | TP7 | TP8 | SOC |
| Sample Depth (m) | 0.7-0.8 | 0.5-0.6 | 1.0% |
| Sample Type | LC | LC | |
| Hydrocarbon Fraction: | | | |
| $C_6$-$C_8$ | <0.05 | <0.05 | 100* |
| $C_8$-$C_{10}$ | <1 | <1 | 27* |
| $C_{10}$-$C_{12}$ | <1 | <1 | 74** |
| $C_{12}$-$C_{16}$ | <1 | <1 | 140** |
| $C_{16}$-$C_{21}$ | <1 | <1 | 260** |
| $C_{21}$-$C_{40}$ | <6 | <6 | 1100** |
| Total Petroleum Hydrocarbons (TPH) | 0 | 0 | |

**COMMENTS**

SOC = Soil Organic Content
Values in **RED** indicated that the respective SGV (S4UL) has been exceeded
Residential S4UL above are worse case values * = Aliphatic, ** = Aromatic
MG = Made Ground
LC = London Clay

# Meadow Environmental Consulting

## ASBESTOS

CLIENT: Mr T Stylianou
SITE: Elliotts Farm Barn, Elliotts Farm, Harty Ferry Rd
DATE SAMPLED: 02/08/21
SAMPLE REF: 21-011
SAMPLED BY: MEC
TESTED BY: DETS (UKAS/MCERTS 4480)

REPORT REF: 21-011/P2
REPORT DATE: 10/08/21
SPEC: CLEA/HSE

**RESULTS**

| Sample ID | Location | Sample Type | Depth (m) | Asbestos Type |
|---|---|---|---|---|
| EA1 | TP2 | MG | GL-0.1 | NFD |
| EA2 | TP3 | MG | GL-0.3 | NFD |
| EA3 | TP4 | MG | GL-0.2 | NFD |
| EA4 | TP5 | MG | GL-0.1 | NFD |
| EA5 | TP6 | MG | GL-0.2 | NFD |
| EA6 | TP7 | MG | GL-0.2 | NFD |
| EA7 | TP8 | MG | GL-0.2 | NFD |

NFD=No Fibres Detected

**COMMENTS**

The samples have been examined to identify the presence of asbestiform minerals by polarising light microscopy and dispersion staining technique - determination of asbestos in bulk materials, asbestos in soils/sediments (fibre screening and identification)

MG = Made Ground

# Meadow Environmental Consulting

## CHEMICAL ANALYSIS

**Prepared Soil Leachate**

CLIENT: Mr T Stylianou
SITE: Elliotts Farm Barn, Elliotts Farm, Harty Ferry Rd
DATE SAMPLED: 02/08/21
SAMPLE REF: 21-011
SAMPLED BY: MEC
TESTED BY: DETS (UKAS/MCERTS 4480)

REPORT REF: 21-011/P2
REPORT DATE: 13/08/21
SPEC: CLEA/DWI/WHO

**RESULTS**

| Sample ID | EL1 | DWI |
|---|---|---|
| Sample Location | TP6 | Threshold |
| Sample Depth (m) | 0.9-1.0 | Value |
| Sample Type | Silty Clay (London Clay) | |
| pH | 8.0 | 5.5-9.5 |
| Arsenic as As | <5 | 10 |
| Cadmium as Cd | <0.4 | 5 |
| Chromium as Cr | <5 | 50 |
| Copper as Cu | <5 | 2000 |
| Lead as Pb | <5 | 10 |
| Mercury as Hg | <0.05 | 1 |
| Nickel as Ni | <5 | 20 |
| Selenium as Se | <5 | 10 |
| Zinc as Zn | <2 | (500) |
| Boron as B | 109 | 1000 |
| Total Cyanide as CN | <5 | 50 |
| Sulphate as $SO_4^{2-}$ mg/l | 14 | ***250*** |
| Sulphide as $S^{2-}$ mg/l | <0.1 | (150) |
| Phenol | <10 | >500* |
| PAH - Benzo(a)pyrene | <0.01 | 0.01 |
| Total PAH (total of listed 4) | <0.038 | 0.1 |
| Total PAH (total of 16) | 0.12 | |

**COMMENTS** # Indicates the result exceeds the threshold value
Values in (parenthesis) are the former EA guidance values that there is no current DWI (Drinking Water Inspectorate) value for.
Values in ***bold italic*** are non-mandatory indicator values, all other values are mandatory.
* Value for phenol is an estimation based on current oral tolerable daily intake value
4 Listed PAH's = Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(ghi)perylene and indeno[123-cd]pyrene
All results are expressed as ug/l unless stated.

# Meadow Environmental Consulting

## CHEMICAL ANALYSIS

**Prepared Soil Leachate**

CLIENT: Mr T Stylianou
SITE: Elliotts Farm Barn, Elliotts Farm, Harty Ferry Rd
DATE SAMPLED: 02/08/21
SAMPLE REF: 21-011
SAMPLED BY: MEC
TESTED BY: DETS (UKAS/MCERTS 4480)

REPORT REF: 21-011/P2
REPORT DATE: 13/08/21
SPEC: CLEA/DWI/WHO

**RESULTS**

| | | | |
|---|---|---|---|
| Sample ID | | EL1 | DWI |
| Sample Location | | TP6 | Threshold |
| Sample Depth (m) | | 0.9-1.0 | Value |
| Sample Type | | Silty Clay (London Clay) | |
| Petroleum Hydrocarbon Fraction: | | | |
| | $C_5$-$C_6$ mg/l | <0.01 | 0.01* (as benzene) |
| | $C_6$-$C_8$ mg/l | <0.01 | 0.7* (as toluene) |
| | $C_8$-$C_{10}$ mg/l | <0.01 | 0.35/1.05** |
| | $C_{10}$-$C_{12}$ mg/l | <0.01 | 0.35/1.05** |
| | $C_{12}$-$C_{16}$ mg/l | <0.01 | 0.35/1.05** |
| | $C_{16}$-$C_{21}$ mg/l | <0.01 | 7.0/1.4** |
| | $C_{21}$-$C_{35}$ mg/l | <0.01 | 7.0/1.4** |
| | Total Petroleum Hydrocarbons (TPH) | 0 | |
| | aliphatic/aromatic (single value indicates both fractions) | | |
| | Benzene | <1 | 10* (1.0 UK 2018) |
| | Toluene | <5 | 700* |
| | Ethylbenzene | <5 | 300* |
| | Xylene | <15 | 500* |
| | MTBE | <10 | 15 *** |

**COMMENTS** # Indicates the result exceeds the threshold value

DWI - Drinking Water Inspectorate

*WHO - World Health Organisation (2011)

** No WHO Specified Guideline Value. Value based on 10% of EPA RfD (2009) as per WHO Guidelines for Drinking Water Quality 2011

*** The value for MTBE is the odour threshold. There is no DWI threshold at present and experts indicate that the drinking water threshold is likely to be much higher.

All results are expressed as ug/l unless stated.

# Meadow Environmental Consulting

## TOTAL ORGANIC CARBON

CLIENT: Mr T Stylianou
SITE: Elliotts Farm Barn, Elliotts Farm, Harty Ferry Rd
DATE SAMPLED: 02/08/21
SAMPLE REF: 21-011
SAMPLED BY: MEC
TESTED BY: DETS (UKAS/MCERTS 4480)

REPORT REF: 21-011/P2
REPORT DATE: 13/08/21
SPEC: BS8485:2015+A1 2019 Annex D

**RESULTS**

| Sample ID | Location | Depth (m) | Soil Type | TOC (%) |
|---|---|---|---|---|
| ET1 | TP1 | 0.5 | MG | 2.6 |
| ET2 | TP1 | 1.0 | MG | 2.5 |
| ET3 | TP1 | 1.5 | MG | 2.6 |

**COMMENTS** TOC = Total Organic Carbon
MG = Made Ground

Keith Huxley CSci CChem MRSC MIEnvSc RSoBRA
Date: 13/08/21

Keith Huxley
Meadow Environmental Consulting
10 Millbrook Meadow
Singleton Village
Ashford
TN23 4XL

**Derwentside Environmental Testing Services Ltd**
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
**t:** 01622 850410

# DETS Report No: 21-09620

| | |
|---|---|
| **Site Reference:** | Elliots Farm Barn, Harty Ferry Road, Leysdown, Kent |
| **Project / Job Ref:** | 21-011/P2 |
| **Order No:** | 21-011/P2 |
| **Sample Receipt Date:** | 02/08/2021 |
| **Sample Scheduled Date:** | 03/08/2021 |
| **Report Issue Number:** | 2 |
| **Reporting Date:** | 10/08/2021 |

**Authorised by:**

Dave Ashworth
Technical Manager

Dates of laboratory activities for each tested analyte are available upon request.
This report supersedes 21-09620, issue no.1.

**DETS Ltd**
**Unit 1, Rose Lane Industrial Estate**
**Rose Lane**
**Lenham Heath**
**Maidstone**
**Kent ME17 2JN**
**Tel : 01622 850410**

| Soil Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| **DETS Report No: 21-09620** | **Date Sampled** | 02/08/21 | 02/08/21 | 02/08/21 | 02/08/21 | 02/08/21 |
| **Meadow Environmental Consulting** | **Time Sampled** | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Site Reference: Elliots Farm Barn, Harty Ferry Road, Leysdown, Kent** | **TP / BH No** | ET1 | ET2 | ET3 | EA1 | EA2 |
| **Project / Job Ref: 21-011/P2** | **Additional Refs** | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Order No: 21-011/P2** | **Depth (m)** | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Reporting Date: 10/08/2021** | **DETS Sample No** | 557731 | 557732 | 557733 | 557734 | 557735 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Asbestos Screen (S) | N/a | N/a | ISO17025 | | | | Not Detected | Not Detected |
| pH | pH Units | N/a | MCERTS | | | | | |
| Total Cyanide | mg/kg | < 2 | NONE | | | | | |
| Complex Cyanide | mg/kg | < 2 | NONE | | | | | |
| Free Cyanide | mg/kg | < 2 | NONE | | | | | |
| Thiocyanate as SCN | mg/kg | < 3 | NONE | | | | | |
| Total Sulphate as $SO_4$ | mg/kg | < 200 | MCERTS | | | | | |
| Total Sulphate as $SO_4$ | % | < 0.02 | MCERTS | | | | | |
| Elemental Sulphur | mg/kg | < 10 | NONE | | | | | |
| Sulphide | mg/kg | < 5 | NONE | | | | | |
| Organic Matter (SOM) | % | < 0.1 | NONE | | | | | |
| TOC (Total Organic Carbon) | % | < 0.1 | NONE | 2.6 | 2.5 | 2.6 | | |
| Arsenic (As) | mg/kg | < 2 | MCERTS | | | | | |
| W/S Boron | mg/kg | < 1 | NONE | | | | | |
| Cadmium (Cd) | mg/kg | < 0.2 | NONE | | | | | |
| 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 | | | | | |

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**
**Rose Lane**
**Lenham Heath**
**Maidstone**
**Kent ME17 2JN**
**Tel : 01622 850410**

| Soil Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| **DETS Report No: 21-09620** | **Date Sampled** | 02/08/21 | 02/08/21 | 02/08/21 | 02/08/21 | 02/08/21 |
| **Meadow Environmental Consulting** | **Time Sampled** | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Site Reference: Elliots Farm Barn, Harty Ferry Road, Leysdown, Kent** | **TP / BH No** | EA3 | EA4 | EA5 | EA6 | EA7 |
| **Project / Job Ref: 21-011/P2** | **Additional Refs** | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Order No: 21-011/P2** | **Depth (m)** | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Reporting Date: 10/08/2021** | **DETS Sample No** | 557736 | 557737 | 557738 | 557739 | 557740 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Asbestos Screen (S) | N/a | N/a | ISO17025 | Not Detected | Not Detected | Not Detected | Not Detected | Not Detected |
| pH | pH Units | N/a | MCERTS | | | | | |
| Total Cyanide | mg/kg | < 2 | NONE | | | | | |
| Complex Cyanide | mg/kg | < 2 | NONE | | | | | |
| Free Cyanide | mg/kg | < 2 | NONE | | | | | |
| Thiocyanate as SCN | mg/kg | < 3 | NONE | | | | | |
| Total Sulphate as $SO_4$ | mg/kg | < 200 | MCERTS | | | | | |
| Total Sulphate as $SO_4$ | % | < 0.02 | MCERTS | | | | | |
| Elemental Sulphur | mg/kg | < 10 | NONE | | | | | |
| Sulphide | mg/kg | < 5 | NONE | | | | | |
| Organic Matter (SOM) | % | < 0.1 | NONE | | | | | |
| TOC (Total Organic Carbon) | % | < 0.1 | NONE | | | | | |
| Arsenic (As) | mg/kg | < 2 | MCERTS | | | | | |
| W/S Boron | mg/kg | < 1 | NONE | | | | | |
| Cadmium (Cd) | mg/kg | < 0.2 | NONE | | | | | |
| 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 | | | | | |

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**
**Rose Lane**
**Lenham Heath**
**Maidstone**
**Kent ME17 2JN**
**Tel : 01622 850410**

| Soil Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| **DETS Report No: 21-09620** | **Date Sampled** | 02/08/21 | 02/08/21 | 02/08/21 | 02/08/21 | 02/08/21 |
| **Meadow Environmental Consulting** | **Time Sampled** | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Site Reference: Elliots Farm Barn, Harty Ferry Road, Leysdown, Kent** | **TP / BH No** | EL1 | E1 | E2 | E3 | E4 |
| **Project / Job Ref: 21-011/P2** | **Additional Refs** | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Order No: 21-011/P2** | **Depth (m)** | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Reporting Date: 10/08/2021** | **DETS Sample No** | 557741 | 557742 | 557743 | 557744 | 557745 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Asbestos Screen (S) | N/a | N/a | ISO17025 | | | | | |
| pH | pH Units | N/a | MCERTS | | 8.0 | 8.1 | 8.3 | 8.2 |
| Total Cyanide | mg/kg | < 2 | NONE | | < 2 | < 2 | < 2 | < 2 |
| Complex Cyanide | mg/kg | < 2 | NONE | | < 2 | < 2 | < 2 | < 2 |
| Free Cyanide | mg/kg | < 2 | NONE | | < 2 | < 2 | < 2 | < 2 |
| Thiocyanate as SCN | mg/kg | < 3 | NONE | | < 3 | < 3 | < 3 | < 3 |
| Total Sulphate as $SO_4$ | mg/kg | < 200 | MCERTS | | 831 | 926 | 573 | 1169 |
| Total Sulphate as $SO_4$ | % | < 0.02 | MCERTS | | 0.08 | 0.09 | 0.06 | 0.12 |
| Elemental Sulphur | mg/kg | < 10 | NONE | | < 10 | < 10 | < 10 | < 10 |
| Sulphide | mg/kg | < 5 | NONE | | < 5 | < 5 | < 5 | < 5 |
| Organic Matter (SOM) | % | < 0.1 | NONE | | 2 | 0.5 | 1.2 | 0.7 |
| TOC (Total Organic Carbon) | % | < 0.1 | NONE | | | | | |
| Arsenic (As) | mg/kg | < 2 | MCERTS | | 12 | 12 | 7 | 11 |
| W/S Boron | mg/kg | < 1 | NONE | | < 1 | < 1 | < 1 | 1.2 |
| Cadmium (Cd) | mg/kg | < 0.2 | NONE | | < 0.2 | < 0.2 | < 0.2 | < 0.2 |
| Chromium (Cr) | mg/kg | < 2 | MCERTS | | 29 | 28 | 24 | 33 |
| Chromium (hexavalent) | mg/kg | < 2 | NONE | | < 2 | < 2 | < 2 | < 2 |
| Copper (Cu) | mg/kg | < 4 | MCERTS | | 22 | 19 | 16 | 21 |
| Lead (Pb) | mg/kg | < 3 | MCERTS | | 26 | 12 | 13 | 11 |
| Mercury (Hg) | mg/kg | < 1 | MCERTS | | < 1 | < 1 | < 1 | < 1 |
| Nickel (Ni) | mg/kg | < 3 | MCERTS | | 23 | 36 | 12 | 36 |
| Selenium (Se) | mg/kg | < 2 | MCERTS | | < 3 | < 3 | < 3 | < 3 |
| Zinc (Zn) | mg/kg | < 3 | MCERTS | | 102 | 57 | 45 | 63 |
| Total Phenols (monohydric) | mg/kg | < 2 | NONE | | < 2 | < 2 | < 2 | < 2 |

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**
**Rose Lane**
**Lenham Heath**
**Maidstone**
**Kent ME17 2JN**
**Tel : 01622 850410**

| Soil Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| **DETS Report No: 21-09620** | **Date Sampled** | 02/08/21 | 02/08/21 | 02/08/21 | 02/08/21 | 02/08/21 |
| **Meadow Environmental Consulting** | **Time Sampled** | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Site Reference: Elliots Farm Barn, Harty Ferry Road, Leysdown, Kent** | **TP / BH No** | E5 | E6 | E7 | E8 | E9 |
| **Project / Job Ref: 21-011/P2** | **Additional Refs** | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Order No: 21-011/P2** | **Depth (m)** | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Reporting Date: 10/08/2021** | **DETS Sample No** | 557746 | 557747 | 557748 | 557749 | 557750 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Asbestos Screen (S) | N/a | N/a | ISO17025 | | | | | |
| pH | pH Units | N/a | MCERTS | 8.1 | 8.3 | 8.1 | 8.6 | 7.8 |
| Total Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | < 2 | < 2 | < 2 |
| Complex Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | < 2 | < 2 | < 2 |
| Free Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | < 2 | < 2 | < 2 |
| Thiocyanate as SCN | mg/kg | < 3 | NONE | < 3 | < 3 | < 3 | < 3 | < 3 |
| Total Sulphate as $SO_4$ | mg/kg | < 200 | MCERTS | 846 | 615 | 477 | 465 | 610 |
| Total Sulphate as $SO_4$ | % | < 0.02 | MCERTS | 0.08 | 0.06 | 0.05 | 0.05 | 0.06 |
| Elemental Sulphur | mg/kg | < 10 | NONE | < 10 | < 10 | < 10 | < 10 | < 10 |
| Sulphide | mg/kg | < 5 | NONE | < 5 | < 5 | < 5 | < 5 | < 5 |
| Organic Matter (SOM) | % | < 0.1 | NONE | 5.3 | 0.9 | 2.9 | 0.6 | 3.3 |
| TOC (Total Organic Carbon) | % | < 0.1 | NONE | | | | | |
| Arsenic (As) | mg/kg | < 2 | MCERTS | 7 | 11 | 9 | 8 | 10 |
| W/S Boron | mg/kg | < 1 | NONE | < 1 | 1.2 | < 1 | 1.3 | < 1 |
| Cadmium (Cd) | mg/kg | < 0.2 | NONE | 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 |
| Chromium (Cr) | mg/kg | < 2 | MCERTS | 16 | 31 | 22 | 24 | 25 |
| Chromium (hexavalent) | mg/kg | < 2 | NONE | < 2 | < 2 | < 2 | < 2 | < 2 |
| Copper (Cu) | mg/kg | < 4 | MCERTS | 18 | 14 | 20 | 9 | 20 |
| Lead (Pb) | mg/kg | < 3 | MCERTS | 37 | 10 | 24 | 9 | 18 |
| Mercury (Hg) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| Nickel (Ni) | mg/kg | < 3 | MCERTS | 11 | 12 | 13 | 9 | 14 |
| Selenium (Se) | mg/kg | < 2 | MCERTS | < 3 | < 3 | < 3 | < 3 | < 3 |
| Zinc (Zn) | mg/kg | < 3 | MCERTS | 141 | 52 | 65 | 37 | 99 |
| Total Phenols (monohydric) | mg/kg | < 2 | NONE | < 2 | < 2 | < 2 | < 2 | < 2 |

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**
**Rose Lane**
**Lenham Heath**
**Maidstone**
**Kent ME17 2JN**
**Tel : 01622 850410**

| Soil Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| **DETS Report No: 21-09620** | **Date Sampled** | 02/08/21 | 02/08/21 | 02/08/21 | 02/08/21 | 02/08/21 |
| **Meadow Environmental Consulting** | **Time Sampled** | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Site Reference: Elliots Farm Barn, Harty Ferry Road, Leysdown, Kent** | **TP / BH No** | E10 | E11 | E12 | E13 | E14 |
| **Project / Job Ref: 21-011/P2** | **Additional Refs** | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Order No: 21-011/P2** | **Depth (m)** | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Reporting Date: 10/08/2021** | **DETS Sample No** | 557751 | 557752 | 557753 | 557754 | 557755 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Asbestos Screen (S) | N/a | N/a | ISO17025 | | | | | |
| pH | pH Units | N/a | MCERTS | 8.2 | 8.5 | 8.5 | 8.2 | 7.9 |
| Total Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | < 2 | < 2 | < 2 |
| Complex Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | < 2 | < 2 | < 2 |
| Free Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | < 2 | < 2 | < 2 |
| Thiocyanate as SCN | mg/kg | < 3 | NONE | < 3 | < 3 | < 3 | < 3 | < 3 |
| Total Sulphate as $SO_4$ | mg/kg | < 200 | MCERTS | 449 | 619 | 565 | 2629 | 463 |
| Total Sulphate as $SO_4$ | % | < 0.02 | MCERTS | 0.04 | 0.06 | 0.06 | 0.26 | 0.05 |
| Elemental Sulphur | mg/kg | < 10 | NONE | < 10 | < 10 | < 10 | < 10 | < 10 |
| Sulphide | mg/kg | < 5 | NONE | < 5 | < 5 | < 5 | < 5 | < 5 |
| Organic Matter (SOM) | % | < 0.1 | NONE | 0.7 | 2.6 | 0.4 | 3.5 | 0.6 |
| TOC (Total Organic Carbon) | % | < 0.1 | NONE | | | | | |
| Arsenic (As) | mg/kg | < 2 | MCERTS | 11 | 9 | 13 | 12 | 11 |
| W/S Boron | mg/kg | < 1 | NONE | 1.7 | 1.1 | 1.2 | < 1 | < 1 |
| Cadmium (Cd) | mg/kg | < 0.2 | NONE | < 0.2 | < 0.2 | < 0.2 | 0.3 | < 0.2 |
| Chromium (Cr) | mg/kg | < 2 | MCERTS | 31 | 21 | 30 | 16 | 29 |
| Chromium (hexavalent) | mg/kg | < 2 | NONE | < 2 | < 2 | < 2 | < 2 | < 2 |
| Copper (Cu) | mg/kg | < 4 | MCERTS | 13 | 35 | 20 | 25 | 25 |
| Lead (Pb) | mg/kg | < 3 | MCERTS | 11 | 46 | 14 | 43 | 13 |
| Mercury (Hg) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| Nickel (Ni) | mg/kg | < 3 | MCERTS | 13 | 13 | 34 | 10 | 29 |
| Selenium (Se) | mg/kg | < 2 | MCERTS | < 3 | < 3 | < 3 | < 3 | < 3 |
| Zinc (Zn) | mg/kg | < 3 | MCERTS | 57 | 126 | 66 | 145 | 66 |
| Total Phenols (monohydric) | mg/kg | < 2 | NONE | < 2 | < 2 | < 2 | < 2 | < 2 |

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**
**Rose Lane**
**Lenham Heath**
**Maidstone**
**Kent ME17 2JN**
**Tel : 01622 850410**

| Soil Analysis Certificate - Speciated PAHs | | | | | | |
|---|---|---|---|---|---|---|
| **DETS Report No: 21-09620** | **Date Sampled** | 02/08/21 | 02/08/21 | 02/08/21 | 02/08/21 | 02/08/21 |
| **Meadow Environmental Consulting** | **Time Sampled** | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Site Reference: Elliots Farm Barn, Harty Ferry Road, Leysdown, Kent** | **TP / BH No** | E1 | E2 | E3 | E4 | E5 |
| **Project / Job Ref: 21-011/P2** | **Additional Refs** | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Order No: 21-011/P2** | **Depth (m)** | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Reporting Date: 10/08/2021** | **DETS Sample No** | 557742 | 557743 | 557744 | 557745 | 557746 |

| 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 | < 0.1 |
| Anthracene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Fluoranthene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | 0.20 |
| Pyrene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | 0.17 |
| Benzo(a)anthracene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Chrysene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Benzo(b)fluoranthene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Benzo(k)fluoranthene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Benzo(a)pyrene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Indeno(1,2,3-cd)pyrene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| 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 | < 0.1 |
| Total EPA-16 PAHs | mg/kg | < 1.6 | MCERTS | < 1.6 | < 1.6 | < 1.6 | < 1.6 | < 1.6 |

**DETS Ltd**
**Unit 1, Rose Lane Industrial Estate**
**Rose Lane**
**Lenham Heath**
**Maidstone**
**Kent ME17 2JN**
**Tel : 01622 850410**

| Soil Analysis Certificate - Speciated PAHs | | | | | | |
|---|---|---|---|---|---|---|
| **DETS Report No: 21-09620** | **Date Sampled** | 02/08/21 | 02/08/21 | 02/08/21 | 02/08/21 | 02/08/21 |
| **Meadow Environmental Consulting** | **Time Sampled** | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Site Reference: Elliots Farm Barn, Harty Ferry Road, Leysdown, Kent** | **TP / BH No** | E6 | E7 | E8 | E9 | E10 |
| **Project / Job Ref: 21-011/P2** | **Additional Refs** | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Order No: 21-011/P2** | **Depth (m)** | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Reporting Date: 10/08/2021** | **DETS Sample No** | 557747 | 557748 | 557749 | 557750 | 557751 |

| 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 | < 0.1 |
| Anthracene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Fluoranthene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Pyrene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Benzo(a)anthracene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Chrysene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Benzo(b)fluoranthene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Benzo(k)fluoranthene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Benzo(a)pyrene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Indeno(1,2,3-cd)pyrene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| 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 | < 0.1 |
| Total EPA-16 PAHs | mg/kg | < 1.6 | MCERTS | < 1.6 | < 1.6 | < 1.6 | < 1.6 | < 1.6 |

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Maidstone
Kent ME17 2JN
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| Soil Analysis Certificate - Speciated PAHs | | | | | | | |
|---|---|---|---|---|---|---|---|
| **DETS Report No: 21-09620** | **Date Sampled** | 02/08/21 | 02/08/21 | 02/08/21 | 02/08/21 | | |
| **Meadow Environmental Consulting** | **Time Sampled** | None Supplied | None Supplied | None Supplied | None Supplied | | |
| **Site Reference: Elliots Farm Barn, Harty Ferry Road, Leysdown, Kent** | **TP / BH No** | E11 | E12 | E13 | E14 | | |
| **Project / Job Ref: 21-011/P2** | **Additional Refs** | None Supplied | None Supplied | None Supplied | None Supplied | | |
| **Order No: 21-011/P2** | **Depth (m)** | None Supplied | None Supplied | None Supplied | None Supplied | | |
| **Reporting Date: 10/08/2021** | **DETS Sample No** | 557752 | 557753 | 557754 | 557755 | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Naphthalene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | |
| Acenaphthylene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | |
| Acenaphthene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | |
| Fluorene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | |
| Phenanthrene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | 0.19 | < 0.1 | |
| Anthracene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | |
| Fluoranthene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | 0.55 | < 0.1 | |
| Pyrene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | 0.49 | < 0.1 | |
| Benzo(a)anthracene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | 0.20 | < 0.1 | |
| Chrysene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | 0.28 | < 0.1 | |
| Benzo(b)fluoranthene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | 0.34 | < 0.1 | |
| Benzo(k)fluoranthene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | 0.13 | < 0.1 | |
| Benzo(a)pyrene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | 0.26 | < 0.1 | |
| Indeno(1,2,3-cd)pyrene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | 0.17 | < 0.1 | |
| Dibenz(a,h)anthracene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | |
| Benzo(ghi)perylene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | 0.20 | < 0.1 | |
| Total EPA-16 PAHs | mg/kg | < 1.6 | MCERTS | < 1.6 | < 1.6 | 2.8 | < 1.6 | |

DETS Ltd
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Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

| Soil Analysis Certificate - EPH Texas Banded | | | | | | | |
|---|---|---|---|---|---|---|---|
| **DETS Report No: 21-09620** | **Date Sampled** | 02/08/21 | 02/08/21 | 02/08/21 | 02/08/21 | 02/08/21 |
| **Meadow Environmental Consulting** | **Time Sampled** | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Site Reference: Elliots Farm Barn, Harty Ferry Road, Leysdown, Kent** | **TP / BH No** | E2 | E4 | E6 | E8 | E10 |
| **Project / Job Ref: 21-011/P2** | **Additional Refs** | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Order No: 21-011/P2** | **Depth (m)** | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Reporting Date: 10/08/2021** | **DETS Sample No** | 557743 | 557745 | 557747 | 557749 | 557751 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| EPH Texas (C6 - C8) | mg/kg | < 0.05 | NONE | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| EPH Texas (>C8 - C10) | mg/kg | < 1 | **MCERTS** | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C10 - C12) | mg/kg | < 1 | **MCERTS** | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C12 - C16) | mg/kg | < 1 | **MCERTS** | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C16 - C21) | mg/kg | < 1 | **MCERTS** | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C21 - C40) | mg/kg | < 6 | **MCERTS** | < 6 | < 6 | < 6 | < 6 | < 6 |
| EPH Texas (C6 - C40) | mg/kg | < 6 | NONE | < 6 | < 6 | < 6 | < 6 | < 6 |

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| Soil Analysis Certificate - EPH Texas Banded | | | | | | |
|---|---|---|---|---|---|---|
| **DETS Report No: 21-09620** | **Date Sampled** | 02/08/21 | 02/08/21 | | | |
| **Meadow Environmental Consulting** | **Time Sampled** | None Supplied | None Supplied | | | |
| **Site Reference: Elliots Farm Barn, Harty Ferry Road, Leysdown, Kent** | **TP / BH No** | E12 | E14 | | | |
| **Project / Job Ref: 21-011/P2** | **Additional Refs** | None Supplied | None Supplied | | | |
| **Order No: 21-011/P2** | **Depth (m)** | None Supplied | None Supplied | | | |
| **Reporting Date: 10/08/2021** | **DETS Sample No** | 557753 | 557755 | | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| EPH Texas (C6 - C8) | mg/kg | < 0.05 | NONE | < 0.05 | < 0.05 | | | |
| EPH Texas (>C8 - C10) | mg/kg | < 1 | **MCERTS** | < 1 | < 1 | | | |
| EPH Texas (>C10 - C12) | mg/kg | < 1 | **MCERTS** | < 1 | < 1 | | | |
| EPH Texas (>C12 - C16) | mg/kg | < 1 | **MCERTS** | < 1 | < 1 | | | |
| EPH Texas (>C16 - C21) | mg/kg | < 1 | **MCERTS** | < 1 | < 1 | | | |
| EPH Texas (>C21 - C40) | mg/kg | < 6 | **MCERTS** | < 6 | < 6 | | | |
| EPH Texas (C6 - C40) | mg/kg | < 6 | NONE | < 6 | < 6 | | | |

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| Soil Analysis Certificate - TPH CWG Banded | | | | | | |
|---|---|---|---|---|---|---|
| **DETS Report No: 21-09620** | **Date Sampled** | 02/08/21 | 02/08/21 | 02/08/21 | 02/08/21 | 02/08/21 |
| **Meadow Environmental Consulting** | **Time Sampled** | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Site Reference: Elliots Farm Barn, Harty Ferry Road, Leysdown, Kent** | **TP / BH No** | E1 | E3 | E5 | E7 | E9 |
| **Project / Job Ref: 21-011/P2** | **Additional Refs** | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Order No: 21-011/P2** | **Depth (m)** | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Reporting Date: 10/08/2021** | **DETS Sample No** | 557742 | 557744 | 557746 | 557748 | 557750 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Aliphatic >C5 - C6 | mg/kg | < 0.01 | NONE | < 0.01 | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Aliphatic >C6 - C8 | mg/kg | < 0.05 | NONE | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Aliphatic >C8 - C10 | mg/kg | < 2 | MCERTS | < 2 | < 2 | < 2 | < 2 | < 2 |
| Aliphatic >C10 - C12 | mg/kg | < 2 | MCERTS | < 2 | < 2 | < 2 | < 2 | < 2 |
| Aliphatic >C12 - C16 | mg/kg | < 3 | MCERTS | < 3 | < 3 | < 3 | < 3 | < 3 |
| Aliphatic >C16 - C21 | mg/kg | < 3 | MCERTS | < 3 | < 3 | < 3 | < 3 | < 3 |
| Aliphatic >C21 - C34 | mg/kg | < 10 | MCERTS | < 10 | < 10 | < 10 | < 10 | < 10 |
| Aliphatic (C5 - C34) | mg/kg | < 21 | NONE | < 21 | < 21 | < 21 | < 21 | < 21 |
| Aromatic >C5 - C7 | mg/kg | < 0.01 | NONE | < 0.01 | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Aromatic >C7 - C8 | mg/kg | < 0.05 | NONE | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Aromatic >C8 - C10 | mg/kg | < 2 | MCERTS | < 2 | < 2 | < 2 | < 2 | < 2 |
| Aromatic >C10 - C12 | mg/kg | < 2 | MCERTS | < 2 | < 2 | < 2 | < 2 | < 2 |
| Aromatic >C12 - C16 | mg/kg | < 2 | MCERTS | < 2 | < 2 | < 2 | < 2 | < 2 |
| Aromatic >C16 - C21 | mg/kg | < 3 | MCERTS | < 3 | < 3 | < 3 | < 3 | < 3 |
| Aromatic >C21 - C35 | mg/kg | < 10 | MCERTS | < 10 | < 10 | < 10 | < 10 | < 10 |
| Aromatic (C5 - C35) | mg/kg | < 21 | NONE | < 21 | < 21 | < 21 | < 21 | < 21 |
| Total >C5 - C35 | mg/kg | < 42 | NONE | < 42 | < 42 | < 42 | < 42 | < 42 |

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**Tel : 01622 850410**

| Soil Analysis Certificate - TPH CWG Banded | | | | | | |
|---|---|---|---|---|---|---|
| **DETS Report No: 21-09620** | **Date Sampled** | 02/08/21 | 02/08/21 | | | |
| **Meadow Environmental Consulting** | **Time Sampled** | None Supplied | None Supplied | | | |
| **Site Reference: Elliots Farm Barn, Harty Ferry Road, Leysdown, Kent** | **TP / BH No** | E11 | E13 | | | |
| **Project / Job Ref: 21-011/P2** | **Additional Refs** | None Supplied | None Supplied | | | |
| **Order No: 21-011/P2** | **Depth (m)** | None Supplied | None Supplied | | | |
| **Reporting Date: 10/08/2021** | **DETS Sample No** | 557752 | 557754 | | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Aliphatic >C5 - C6 | mg/kg | < 0.01 | NONE | < 0.01 | < 0.01 | | | |
| Aliphatic >C6 - C8 | mg/kg | < 0.05 | NONE | < 0.05 | < 0.05 | | | |
| Aliphatic >C8 - C10 | mg/kg | < 2 | MCERTS | < 2 | < 2 | | | |
| Aliphatic >C10 - C12 | mg/kg | < 2 | MCERTS | < 2 | < 2 | | | |
| Aliphatic >C12 - C16 | mg/kg | < 3 | MCERTS | < 3 | < 3 | | | |
| Aliphatic >C16 - C21 | mg/kg | < 3 | MCERTS | < 3 | < 3 | | | |
| Aliphatic >C21 - C34 | mg/kg | < 10 | MCERTS | < 10 | < 10 | | | |
| Aliphatic (C5 - C34) | mg/kg | < 21 | NONE | < 21 | < 21 | | | |
| Aromatic >C5 - C7 | mg/kg | < 0.01 | NONE | < 0.01 | < 0.01 | | | |
| Aromatic >C7 - C8 | mg/kg | < 0.05 | NONE | < 0.05 | < 0.05 | | | |
| Aromatic >C8 - C10 | mg/kg | < 2 | MCERTS | < 2 | < 2 | | | |
| Aromatic >C10 - C12 | mg/kg | < 2 | MCERTS | < 2 | < 2 | | | |
| Aromatic >C12 - C16 | mg/kg | < 2 | MCERTS | < 2 | < 2 | | | |
| Aromatic >C16 - C21 | mg/kg | < 3 | MCERTS | < 3 | < 3 | | | |
| Aromatic >C21 - C35 | mg/kg | < 10 | MCERTS | < 10 | < 10 | | | |
| Aromatic (C5 - C35) | mg/kg | < 21 | NONE | < 21 | < 21 | | | |
| Total >C5 - C35 | mg/kg | < 42 | NONE | < 42 | < 42 | | | |

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| Soil Analysis Certificate - BTEX / MTBE | | | | | | | |
|---|---|---|---|---|---|---|---|
| **DETS Report No: 21-09620** | **Date Sampled** | 02/08/21 | 02/08/21 | 02/08/21 | 02/08/21 | 02/08/21 |
| **Meadow Environmental Consulting** | **Time Sampled** | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Site Reference: Elliots Farm Barn, Harty Ferry Road, Leysdown, Kent** | **TP / BH No** | E1 | E3 | E5 | E7 | E9 |
| **Project / Job Ref: 21-011/P2** | **Additional Refs** | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Order No: 21-011/P2** | **Depth (m)** | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Reporting Date: 10/08/2021** | **DETS Sample No** | 557742 | 557744 | 557746 | 557748 | 557750 |

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

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| Soil Analysis Certificate - BTEX / MTBE | | | | | | | |
|---|---|---|---|---|---|---|---|
| **DETS Report No: 21-09620** | **Date Sampled** | 02/08/21 | 02/08/21 | | | |
| **Meadow Environmental Consulting** | **Time Sampled** | None Supplied | None Supplied | | | |
| **Site Reference: Elliots Farm Barn, Harty Ferry Road, Leysdown, Kent** | **TP / BH No** | E11 | E13 | | | |
| **Project / Job Ref: 21-011/P2** | **Additional Refs** | None Supplied | None Supplied | | | |
| **Order No: 21-011/P2** | **Depth (m)** | None Supplied | None Supplied | | | |
| **Reporting Date: 10/08/2021** | **DETS Sample No** | 557752 | 557754 | | | |

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

**DETS Ltd**
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**Lenham Heath**
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**Tel : 01622 850410**

UKAS TESTING
4480

| Leachate Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| **DETS Report No: 21-09620** | **Date Sampled** | 02/08/21 | | | | |
| **Meadow Environmental Consulting** | **Time Sampled** | None Supplied | | | | |
| **Site Reference: Elliots Farm Barn, Harty Ferry Road, Leysdown, Kent** | **TP / BH No** | EL1 | | | | |
| **Project / Job Ref: 21-011/P2** | **Additional Refs** | None Supplied | | | | |
| **Order No: 21-011/P2** | **Depth (m)** | None Supplied | | | | |
| **Reporting Date: 10/08/2021** | **DETS Sample No** | 557741 | | | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| pH | pH Units | N/a | ISO17025 | 8.0 | | | | |
| Total Cyanide | ug/l | < 5 | NONE | < 5 | | | | |
| Free Cyanide | ug/l | < 5 | NONE | < 5 | | | | |
| Thiocyanate as SCN | ug/l | < 10 | NONE | < 10 | | | | |
| Sulphate as $SO_4$ | mg/l | < 1 | ISO17025 | 14 | | | | |
| Sulphide | mg/l | < 0.1 | NONE | < 0.1 | | | | |
| Arsenic | ug/l | < 5 | ISO17025 | < 5 | | | | |
| Boron | ug/l | < 5 | ISO17025 | 109 | | | | |
| Cadmium | ug/l | < 0.4 | ISO17025 | < 0.4 | | | | |
| Chromium | ug/l | < 5 | ISO17025 | < 5 | | | | |
| Chromium (hexavalent) | ug/l | < 20 | NONE | < 20 | | | | |
| Copper | ug/l | < 5 | ISO17025 | < 5 | | | | |
| Lead | ug/l | < 5 | ISO17025 | < 5 | | | | |
| Mercury | ug/l | < 0.05 | ISO17025 | < 0.05 | | | | |
| Nickel | ug/l | < 5 | ISO17025 | < 5 | | | | |
| Selenium | ug/l | < 5 | ISO17025 | < 5 | | | | |
| Zinc | ug/l | < 2 | ISO17025 | < 2 | | | | |
| Total Phenols (monohydric) | ug/l | < 10 | NONE | < 10 | | | | |

Subcontracted analysis (S)

**DETS Ltd**
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**Tel : 01622 850410**

| **Leachate Analysis Certificate - Speciated PAH** | | | | | | |
|---|---|---|---|---|---|---|
| **DETS Report No: 21-09620** | **Date Sampled** | 02/08/21 | | | | |
| **Meadow Environmental Consulting** | **Time Sampled** | None Supplied | | | | |
| **Site Reference: Elliots Farm Barn, Harty Ferry Road, Leysdown, Kent** | **TP / BH No** | EL1 | | | | |
| **Project / Job Ref: 21-011/P2** | **Additional Refs** | None Supplied | | | | |
| **Order No: 21-011/P2** | **Depth (m)** | None Supplied | | | | |
| **Reporting Date: 10/08/2021** | **DETS Sample No** | 557741 | | | | |

| **Determinand** | **Unit** | **RL** | **Accreditation** | | | | |
|---|---|---|---|---|---|---|---|
| Naphthalene | ug/l | < 0.01 | NONE | < 0.01 | | | |
| Acenaphthylene | ug/l | < 0.01 | NONE | < 0.01 | | | |
| Acenaphthene | ug/l | < 0.01 | NONE | 0.02 | | | |
| Fluorene | ug/l | < 0.01 | NONE | < 0.01 | | | |
| Phenanthrene | ug/l | < 0.01 | NONE | 0.06 | | | |
| Anthracene | ug/l | < 0.01 | NONE | < 0.01 | | | |
| Fluoranthene | ug/l | < 0.01 | NONE | 0.02 | | | |
| Pyrene | ug/l | < 0.01 | NONE | 0.02 | | | |
| Benzo(a)anthracene | ug/l | < 0.01 | NONE | < 0.01 | | | |
| Chrysene | ug/l | < 0.01 | NONE | < 0.01 | | | |
| Benzo(b)fluoranthene | ug/l | < 0.01 | NONE | < 0.01 | | | |
| Benzo(k)fluoranthene | ug/l | < 0.01 | NONE | < 0.01 | | | |
| Benzo(a)pyrene | ug/l | < 0.01 | NONE | < 0.01 | | | |
| Indeno(1,2,3-cd)pyrene | ug/l | < 0.01 | NONE | < 0.01 | | | |
| Dibenz(a,h)anthracene | ug/l | < 0.01 | NONE | < 0.01 | | | |
| Benzo(ghi)perylene | ug/l | < 0.008 | NONE | < 0.008 | | | |
| Total EPA-16 PAHs | ug/l | < 0.01 | NONE | 0.12 | | | |

**DETS Ltd**
**Unit 1, Rose Lane Industrial Estate**
**Rose Lane**
**Lenham Heath**
**Maidstone**
**Kent ME17 2JN**
**Tel : 01622 850410**

| **Leachate Analysis Certificate - TPH CWG Banded** | | | | | | |
|---|---|---|---|---|---|---|
| **DETS Report No: 21-09620** | **Date Sampled** | 02/08/21 | | | | |
| **Meadow Environmental Consulting** | **Time Sampled** | None Supplied | | | | |
| **Site Reference: Elliots Farm Barn, Harty Ferry Road, Leysdown, Kent** | **TP / BH No** | EL1 | | | | |
| **Project / Job Ref: 21-011/P2** | **Additional Refs** | None Supplied | | | | |
| **Order No: 21-011/P2** | **Depth (m)** | None Supplied | | | | |
| **Reporting Date: 10/08/2021** | **DETS Sample No** | 557741 | | | | |

| **Determinand** | **Unit** | **RL** | **Accreditation** | | | | | |
|---|---|---|---|---|---|---|---|---|
| Aliphatic >C5 - C6 | ug/l | < 10 | NONE | < 10 | | | | |
| Aliphatic >C6 - C8 | ug/l | < 10 | NONE | < 10 | | | | |
| Aliphatic >C8 - C10 | ug/l | < 10 | NONE | < 10 | | | | |
| Aliphatic >C10 - C12 | ug/l | < 10 | NONE | < 10 | | | | |
| Aliphatic >C12 - C16 | ug/l | < 10 | NONE | < 10 | | | | |
| Aliphatic >C16 - C21 | ug/l | < 10 | NONE | < 10 | | | | |
| Aliphatic >C21 - C34 | ug/l | < 10 | NONE | < 10 | | | | |
| Aliphatic (C5 - C34) | ug/l | < 70 | NONE | < 70 | | | | |
| Aromatic >C5 - C7 | ug/l | < 10 | NONE | < 10 | | | | |
| Aromatic >C7 - C8 | ug/l | < 10 | NONE | < 10 | | | | |
| Aromatic >C8 - C10 | ug/l | < 10 | NONE | < 10 | | | | |
| Aromatic >C10 - C12 | ug/l | < 10 | NONE | < 10 | | | | |
| Aromatic >C12 - C16 | ug/l | < 10 | NONE | < 10 | | | | |
| Aromatic >C16 - C21 | ug/l | < 10 | NONE | < 10 | | | | |
| Aromatic >C21 - C35 | ug/l | < 10 | NONE | < 10 | | | | |
| Aromatic (C5 - C35) | ug/l | < 70 | NONE | < 70 | | | | |
| Total >C5 - C35 | ug/l | < 140 | NONE | < 140 | | | | |

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4480

| Leachate Analysis Certificate - BTEX / MTBE | | | | | | |
|---|---|---|---|---|---|---|
| **DETS Report No: 21-09620** | **Date Sampled** | 02/08/21 | | | | |
| **Meadow Environmental Consulting** | **Time Sampled** | None Supplied | | | | |
| **Site Reference: Elliots Farm Barn, Harty Ferry Road, Leysdown, Kent** | **TP / BH No** | EL1 | | | | |
| **Project / Job Ref: 21-011/P2** | **Additional Refs** | None Supplied | | | | |
| **Order No: 21-011/P2** | **Depth (m)** | None Supplied | | | | |
| **Reporting Date: 10/08/2021** | **DETS Sample No** | 557741 | | | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Benzene | ug/l | < 1 | ISO17025 | < 1 | | | | |
| Toluene | ug/l | < 5 | ISO17025 | < 5 | | | | |
| Ethylbenzene | ug/l | < 5 | ISO17025 | < 5 | | | | |
| p & m-xylene | ug/l | < 10 | ISO17025 | < 10 | | | | |
| o-xylene | ug/l | < 5 | ISO17025 | < 5 | | | | |
| MTBE | ug/l | < 10 | ISO17025 | < 10 | | | | |

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**Tel : 01622 850410**

| Soil Analysis Certificate - Sample Descriptions |
|---|
| DETS Report No: 21-09620 |
| Meadow Environmental Consulting |
| Site Reference: Elliots Farm Barn, Harty Ferry Road, Leysdown, Kent |
| Project / Job Ref: 21-011/P2 |
| Order No: 21-011/P2 |
| Reporting Date: 10/08/2021 |

| DETS Sample No | TP / BH No | Additional Refs | Depth (m) | Moisture Content (%) | Sample Matrix Description |
|---|---|---|---|---|---|
| 557731 | ET1 | None Supplied | None Supplied | 17.5 | Brown sandy clay with stones |
| 557732 | ET2 | None Supplied | None Supplied | 20.4 | Brown sandy clay with stones |
| 557733 | ET3 | None Supplied | None Supplied | 29.5 | Brown sandy clay with stones |
| 557742 | E1 | None Supplied | None Supplied | 18.2 | Brown clay |
| 557743 | E2 | None Supplied | None Supplied | 15.6 | Light brown clay |
| 557744 | E3 | None Supplied | None Supplied | 15.4 | Brown clay |
| 557745 | E4 | None Supplied | None Supplied | 17.9 | Light brown clay |
| 557746 | E5 | None Supplied | None Supplied | 17 | Brown sandy clay |
| 557747 | E6 | None Supplied | None Supplied | 17.7 | Brown sandy clay |
| 557748 | E7 | None Supplied | None Supplied | 13.6 | Brown sandy clay |
| 557749 | E8 | None Supplied | None Supplied | 14.8 | Light brown clay |
| 557750 | E9 | None Supplied | None Supplied | 17.4 | Brown sandy clay |
| 557751 | E10 | None Supplied | None Supplied | 14.2 | Brown sandy clay |
| 557752 | E11 | None Supplied | None Supplied | 12.2 | Brown sandy clay with brick |
| 557753 | E12 | None Supplied | None Supplied | 13.9 | Brown clay |
| 557754 | E13 | None Supplied | None Supplied | 13.8 | Brown sandy clay with stones |
| 557755 | E14 | None Supplied | None Supplied | 15 | Light brown clay |

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

DETS Ltd
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4480

| Soil Analysis Certificate - Methodology & Miscellaneous Information |
|---|
| DETS Report No: 21-09620 |
| Meadow Environmental Consulting |
| Site Reference: Elliots Farm Barn, Harty Ferry Road, Leysdown, Kent |
| Project / Job Ref: 21-011/P2 |
| Order No: 21-011/P2 |
| Reporting Date: 10/08/2021 |

| 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**
**Unit 1, Rose Lane Industrial Estate**
**Rose Lane**
**Lenham Heath**
**Maidstone**
**Kent ME17 2JN**
**Tel : 01622 850410**

UKAS TESTING
4480

| **Water Analysis Certificate - Methodology & Miscellaneous Information** |
|---|
| **DETS Report No: 21-09620** |
| **Meadow Environmental Consulting** |
| **Site Reference: Elliots Farm Barn, Harty Ferry Road, Leysdown, Kent** |
| **Project / Job Ref: 21-011/P2** |
| **Order No: 21-011/P2** |
| **Reporting Date: 10/08/2021** |

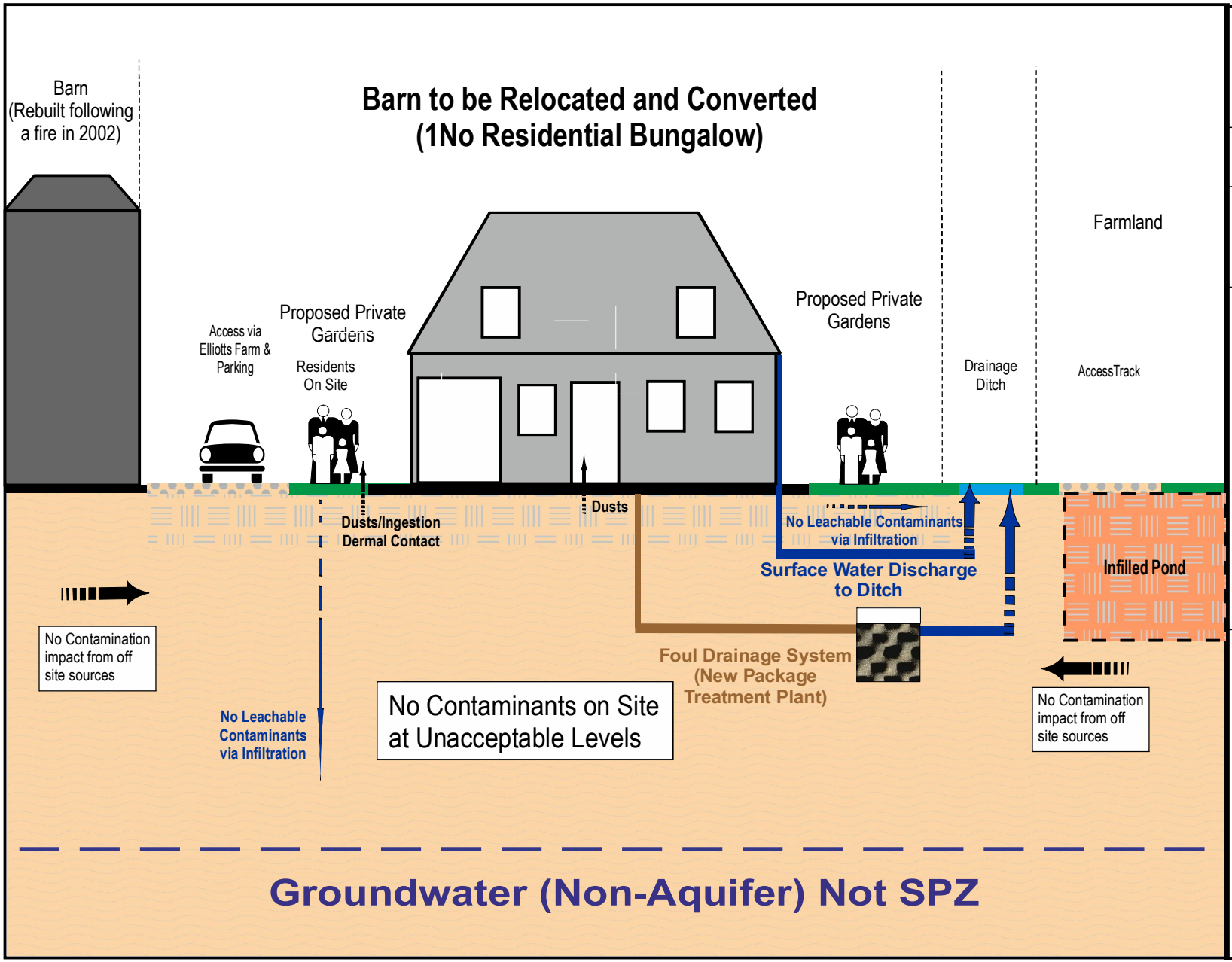
| Matrix | Analysed On | Determinand | Brief Method Description | Method No |
|---|---|---|---|---|
| Water | UF | Alkalinity | Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point | E103 |
| Water | F | Ammoniacal Nitrogen | Determination of ammoniacal nitrogen by discrete analyser. | E126 |
| Water | UF | BTEX | Determination of BTEX by headspace GC-MS | E101 |
| Water | F | Cations | Determination of cations by filtration followed by ICP-MS | E102 |
| Water | UF | Chemical Oxygen Demand (COD) | Determination using a COD reactor followed by colorimetry | E112 |
| Water | F | Chloride | Determination of chloride by filtration & analysed by ion chromatography | E109 |
| Water | F | Chromium - Hexavalent | Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by | E116 |
| Water | UF | Cyanide - Complex | Determination of complex cyanide by distillation followed by colorimetry | E115 |
| Water | UF | Cyanide - Free | Determination of free cyanide by distillation followed by colorimetry | E115 |
| Water | UF | Cyanide - Total | Determination of total cyanide by distillation followed by colorimetry | E115 |
| Water | UF | Cyclohexane Extractable Matter (CEM) | Gravimetrically determined through liquid:liquid extraction with cyclohexane | E111 |
| Water | F | Diesel Range Organics (C10 - C24) | Determination of liquid:liquid extraction with hexane followed by GC-FID | E104 |
| Water | F | Dissolved Organic Content (DOC) | Determination of DOC by filtration followed by low heat with persulphate addition followed by IR dete | E110 |
| Water | UF | Electrical Conductivity | Determination of electrical conductivity by electrometric measurement | E123 |
| Water | F | EPH (C10 – C40) | Determination of liquid:liquid extraction with hexane followed by GC-FID | E104 |
| Water | F | EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40) | Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS | E104 |
| Water | F | Fluoride | Determination of Fluoride by filtration & analysed by ion chromatography | E109 |
| Water | F | Hardness | Determination of Ca and Mg by ICP-MS followed by calculation | E102 |
| Leachate | F | Leachate Preparation - NRA | Based on National Rivers Authority leaching test 1994 | E301 |
| Leachate | F | Leachate Preparation - WAC | Based on BS EN 12457 Pt1, 2, 3 | E302 |
| Water | F | Metals | Determination of metals by filtration followed by ICP-MS | E102 |
| Water | F | Mineral Oil (C10 - C40) | Determination of liquid:liquid extraction with hexane followed by GI-FID | E104 |
| Water | F | Nitrate | Determination of nitrate by filtration & analysed by ion chromatography | E109 |
| Water | UF | Monohydric Phenol | Determination of phenols by distillation followed by colorimetry | E121 |
| Water | F | PAH - Speciated (EPA 16) | Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS | E105 |
| Water | F | PCB - 7 Congeners | Determination of PCB compounds by concentration through SPE cartridge, collection in dichlorometha | E108 |
| Water | UF | Petroleum Ether Extract (PEE) | Gravimetrically determined through liquid:liquid extraction with petroleum ether | E111 |
| Water | UF | pH | Determination of pH by electrometric measurement | E107 |
| Water | F | Phosphate | Determination of phosphate by filtration & analysed by ion chromatography | E109 |
| Water | UF | Redox Potential | Determination of redox potential by electrometric measurement | E113 |
| Water | F | Sulphate (as SO4) | Determination of sulphate by filtration & analysed by ion chromatography | E109 |
| Water | UF | Sulphide | Determination of sulphide by distillation followed by colorimetry | E118 |
| Water | F | SVOC | Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS | E106 |
| Water | UF | Toluene Extractable Matter (TEM) | Gravimetrically determined through liquid:liquid extraction with toluene | E111 |
| Water | UF | Total Organic Carbon (TOC) | Low heat with persulphate addition followed by IR detection | E110 |
| Water | F | 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 liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS | E104 |
| Water | F | 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 liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS | E104 |
| Water | UF | VOCs | Determination of volatile organic compounds by headspace GC-MS | E101 |
| Water | UF | VPH (C6-C8 & C8-C10) | Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID | E101 |

Key

**F Filtered**
**UF Unfiltered**

# APPENDIX 5

# CONCEPTUAL MODEL




**Meadow Environmental Consulting**

**CONCEPTUAL SITE MODEL**

**Second Edition Following The Site Investigation**

KEY :

- Made Ground
- London Clay (clay and silt)
- Hard Cover
- Hard Cover (gravel & concrete)

CLIENT : Mr T Stylianou

SITE : Elliotts Farm Barn
Elliotts Farm
Harty Ferry Road
LEYSDOWN
Isle of Sheppey
Kent ME12 4BG

Project Ref No : 21-011/P2

Date : 16/08/21

Scale : N.T.S.

Drawn : KDH