Gedney, Oliver

From: Gedney, David
Sent: 01 September 2020 10:55
To: _planningadvice
Subject: FW: H18-0247-20
Attachments: 20-01-01 Sutton Bridge Addendum 2 complete (1).pdf

Please scan – 6SUP (Analysis of Soil Samples)

From: G R MERCHANT <grmerchant.arch.cons@gmail.com>
Sent: 01 September 2020 09:34
To: Gedney, David <DGedney@sholland.gov.uk>
Subject: H18-0247-20

Mimecast Attachment Protection has deemed this file to be safe, but always exercise caution when opening files.

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Dear David,

Please see attached Analysis of soil samples to be added to this application.

Regards
Hannah

G R Merchant Ltd
01406 490800
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STUART GUY CONSULTING

Report number 20-01-01 addendum 2 **Date 31st August 2020**

Analysi of samples of soil from land adjacent to

41 Kenzie Drive, Sutton Bridge, Spalding, PE12 9SW

1. Background

1.1 Two residences are to be constructed on this site and the desk study concluded that no significant risk of contamination was present on the site. However, the Ordnance Survey map from 1938 showed a nursery on site and this raised a query by the land contamination officer for SHDC about the possibility of large scale heating being present on site with tanks that held heating oil. The SGC report of 27/04/2020 concluded that since the nursery seems to have moved over the years that it was not a permanent structure and may not have been heated by a significant sized system.

1.2 The land contamination officer required physical evidence that no significant contamination existed on the site that could present a risk of harm to the residents. Therefore, a site investigation to obtain samples of soil from each of the sites occurred on 16th August 2020. The site investigation was initially targeted at the rear gardens as the front was to be totally hard surfaced, but as the rear garden was to be raised, the soil in the front area was also sampled so that it can be assessed for use in the rear garden.

2. Site Investigation

2.1 The site had become overgrown since the first visit in April, so the top vegetation was stripped off to a depth of about 5 to 10 cm and piled on the street boundary (photo 1). Five shallow trial pits were excavated on the site (diagram 1) with soil from TP1 – TP4 being sampled and TP5 being a longer trial pit to confirm that the soil layers were consistent.

2.2 Trial Pit logs

TP1 Near to northeast boundary (photo 1)

Depth	Description of ground
0 - 200 mm	Light brown sandy topsoil with small stones
0.2 – 0.8 m	Darker brown, dry, compacted friable sandy silt
	Samples 0 – 0.2 m and 0.4 – 0.5 m

TP2 Near to northwest boundary (photo 2)

Depth	Description of ground
0 - 250 mm	Light brown sandy topsoil with small stones
0.25 – 0.6 m	Darker brown, dry, compacted friable sandy silt
	Sample 0 – 0.25 m

TP3 Near to southwest boundary (photo 3)

Depth	Description of ground
0 - 250 mm	Light brown sandy topsoil with small stones
0.25 – 0.55 m	Darker brown, dry, compacted friable sandy silt
	Samples 0 – 250 mm and 0.3 – 0.5 m

TP4 Near to southeast boundary (photo 4)

Depth	Description of ground
0 - 250 mm	Light brown sandy topsoil with small stones
0.25 – 0.5 m	Darker brown, dry, compacted friable sandy silt with medium and small size stones
	Sample 0 – 250mm

TP5 Near to southeast boundary (photo 5)

Depth	Description of ground
0 - 250 mm	Light brown sandy topsoil with small stones
0.25 – 0.5 m	Darker brown, dry, compacted friable sandy silt
	No sample

TP5 was an extended one to confirm that the lower soil layer was consistent with the other four trial pits, which it was.

2.3 The samples were placed into a cool box containing an ice pack for transport to the office. The cool box (with a new ice pack) was sent by carrier to The Environmental Laboratory Ltd where UKAS accreditation has been obtained for most of the species required

3. Analysis of Samples

3.1 The analyses, report number 20-29459 dated 27/08/2020, are appended to this report. The suite of analyses agreed with the land contamination officer was speciated total petroleum hydrocarbons (TPH), speciated polycyclic aromatic hydrocarbons (PAH), heavy metals and pH. This covers most of the contaminants expected from agricultural or horticultural activities.

3.2 Most of the concentrations of heavy metals are very low. Slightly elevated lead concentrations were reported in two soil samples (TP1, 0 – 200 mm, 250 mg/kg, TP4, 0 – 250 mm, 230 mg/kg).

3.3 All the soil samples reported pH values between 8.0 and 8.3.

3.4 Speciated PAH concentrations were all low except for one that reported 3.1 mg/kg of benzo(α)pyrene (TP2, 0 – 250 mm).

3.5 The speciated TPH concentrations were very low in all the samples, the highest total being 40 mg/kg.

4.0 Risk Assessment

4.1 Within the group of heavy metals, lead was the only one that was slightly elevated in two samples at around 240 mg/kg. Various soil guideline values have been issued over the years by the EA, but they have been withdrawn (700 mg/kg, then 450 mg/kg). A number of researchers have suggested that concentrations above 300 mg/kg should be considered for further assessment and this is near the 450 mg/kg issued by the EA. In this case, the values are below 250 mg/kg. Therefore, the risk of harm to the occupiers of the site from heavy metals in the soil is not significant and the risk is acceptable.

4.2 The pH readings are just on the alkaline side of neutral and would have no effect on skin or structures in the ground and is normal for most soils.

4.3 The speciated TPH concentrations are all very low and will present no significant risk of harm to the occupiers of the site or to the environment.

4.4 The speciated PAH concentrations were very low in all samples except for the top 250 mm in TP2 where a total of 30 mg/kg PAH was reported. The concentration of benzo(α)pyrene is 3.1 mg/kg and this is usually used to assess the risk of harm, providing there are no other species at very high concentrations. There has been many variations of the SGV for benzo(α)pyrene, one of them being the Category 4 Screening Level value of approximately 4 mg/kg.

4.5 The plots are to be raised about 1 m above the original ground level to mitigate flooding. The front area will be excavated to stabilise the hard standing and some of this soil could be used to increase the rear garden levels. There is a patio to the rear of each garden and this leaves a soft area of approximately 7½ m by about 8 m in each garden. This is a very small area that would not produce much in the way of food crops for edible use and it is most unlikely that all of the garden would be used for such purposes.

5. Summary

The topsoil and underlying sub soil is consistent over the whole site with no evidence for potentially contaminated fill having been placed on site. Slightly elevated lead (two samples) and benzo(α)pyrene (one sample) concentrations were reported, but they were within acceptable levels. The area covered by soil is very small, about 7.5 by 8 m and would not produce much food. Therefore, the risk of harm has been assessed as not significant and the risk is acceptable. No further investigation is necessary for this site.

Stuart Guy, BSc, PhD, C Chem, MRSC, C Eng, MIMMM

Diagram 1 Location of trial pits

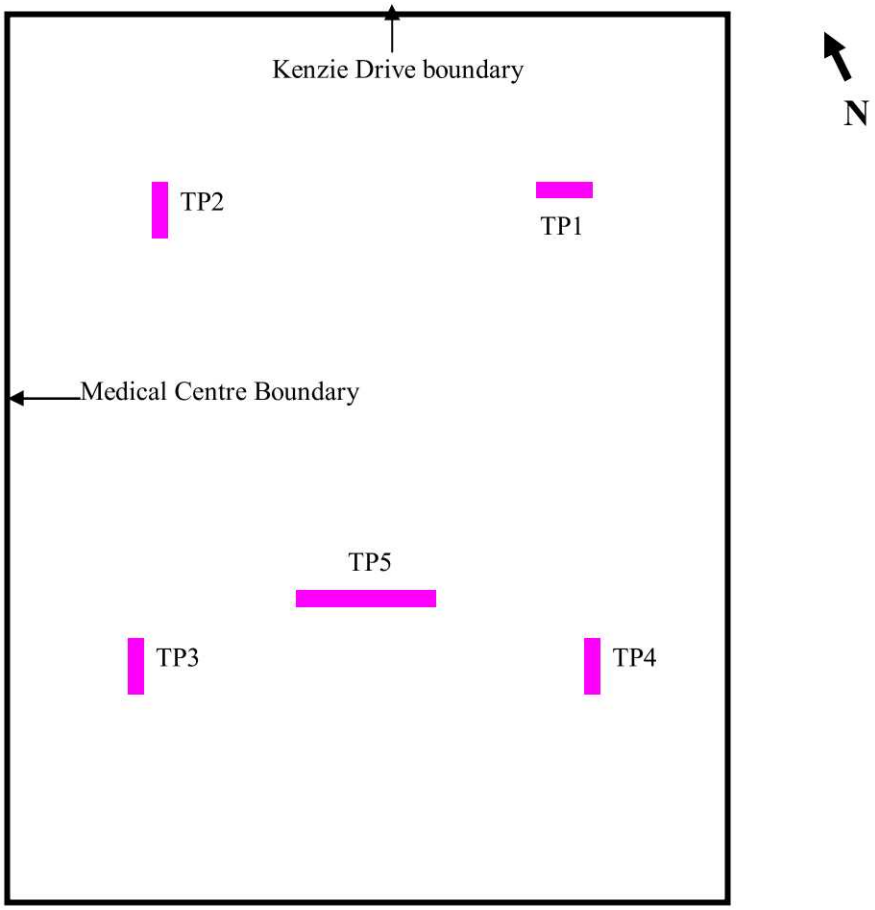


Photo 1 TP1 with vegetation/soil piled near street boundary after stripping site



Photo 2 TP2 Near to northwest corner



Photo 3 TP3 near to southwest corner



Photo 4 TP4 near to southeast corner



Photo 5 TP5 in middle of plot, not sampled

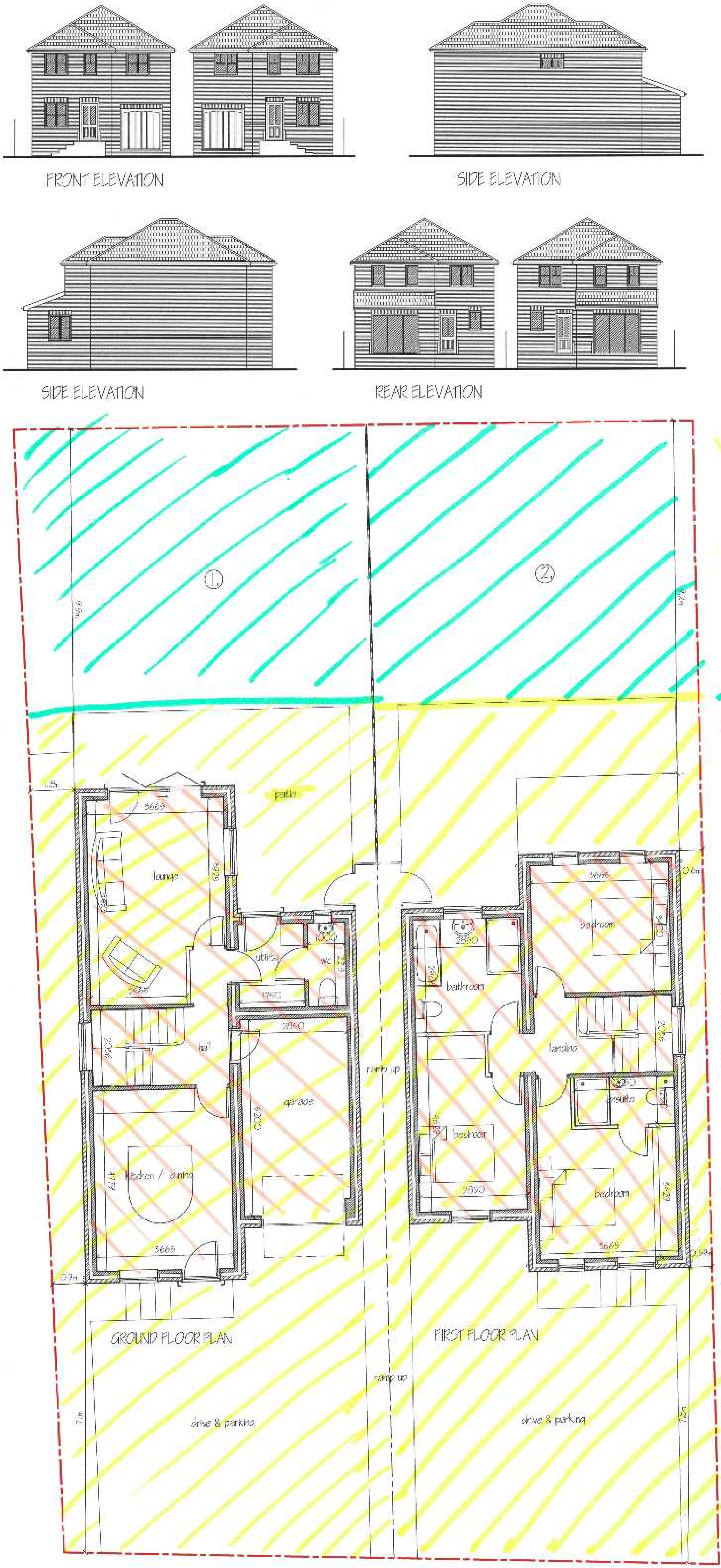


Photo 6 TP5 compacted sandy silt lower layer



Photo 7 TP1 compacted sandy silt lower layer





PATIO / DRIVE / PATHS / AREAS
HARDSTANDING.

OVERSITE 1 Metre above
existing ground

GARDEN AREA

C.	[illegible]	[illegible]
B.	[illegible]	[illegible]
A.	[illegible]	[illegible]
ref.	revision	date

G. R. MERCHANT LTD.
I.ENG AMICE FIWO

ARCHITECTURAL, STRUCTURAL AND LAND DRAINAGE CONSULTANTS

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Tel: 01406 490800
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Project
3 BEDROOM HOUSES & GARAGES -
OFF FENZE DRIVE,
SUTTON BRIDGE,
SPALDING, LINCS PE12 9SW.

Client
D. BROWN (BUILDING CONTRACTORS) LTD

Drawing
PLOTS 1 & 2 (X-HOUSES)
FLOOR PLANS & ELEVATIONS

Job Ref.	Drawing No.
5660-18.	02C
Date	**Drawn**
SEPTEMBER 2019	S.J.

Scales
1/50 & 1/100

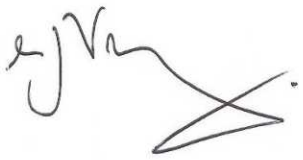
DO NOT SCALE FROM THIS DRAWING

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2683

THE ENVIRONMENTAL LABORATORY LTD

Analytical Report Number:	20-29459
Issue:	1
Date of Issue:	27/08/2020
Contact:	Stuart Guy
Customer Details:	Stuart Guy Consulting 5 Willow Heights Cradley Heath West MidlandsB64 7PL
Quotation No:	Q14-00070
Order No:	20-08-01
Customer Reference:	20-04-01
Date Received:	20/08/2020
Date Approved:	27/08/2020
Details:	Sutton Bridge
Approved by:	

Mike Varley, Technical Manager

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

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Sample Summary

Report No.: 20-29459, issue number 1

Elab No.	Client's Ref.	Date Sampled	Date Scheduled	Description	Deviations
211832	TP1 0.00 0.20	16/08/2020	20/08/2020	Silty loam	
211833	TP1 0.20 0.50	16/08/2020	20/08/2020	Silty loam	
211834	TP2 0.00 0.25	16/08/2020	20/08/2020	Silty loam	
211835	TP3 0.00 0.25	16/08/2020	20/08/2020	Silty loam	
211836	TP3 0.30 0.50	16/08/2020	20/08/2020	Silty loam	
211837	TP4 0.00 0.25	16/08/2020	20/08/2020	Silty loam	

Results Summary

Report No.: 20-29459, issue number 1

				ELAB Reference	211832	211833	211834	211835	211836	211837
				Customer Reference	0.00	0.20	0.00	0.00	0.30	0.00
				Sample ID						
				Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Sample Location	TP1	TP1	TP2	TP3	TP3	TP4
				Sample Depth (m)	0.20	0.50	0.25	0.25	0.50	0.25
				Sampling Date	16/08/2020	16/08/2020	16/08/2020	16/08/2020	16/08/2020	16/08/2020
Determinand	**Codes**	**Units**	**LOD**							
Soil sample preparation parameters										
Material removed	N	%	0.1		23.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Description of Inert material removed	N		0		Stones	None	None	None	None	None
Metals										
Arsenic	M	mg/kg	1		15.4	11.0	15.0	14.5	13.2	15.1
Cadmium	M	mg/kg	0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chromium	M	mg/kg	5		26.0	22.5	28.5	29.1	29.4	27.8
Copper	M	mg/kg	5		25.2	7.2	19.7	14.7	11.2	18.3
Lead	M	mg/kg	5		247	21.1	146	82.8	26.3	230
Mercury	M	mg/kg	0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Nickel	M	mg/kg	5		19.5	19.1	21.1	21.6	23.3	20.8
Selenium	M	mg/kg	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc	M	mg/kg	5		103	48.4	98.7	80.9	62.4	136
Inorganics										
Hexavalent Chromium	N	mg/kg	0.8		< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8
Miscellaneous										
pH	M	pH units	0.1		8.0	8.3	8.1	8.3	8.3	8.1
Polyaromatic hydrocarbons										
Naphthalene	M	mg/kg	0.1		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	M	mg/kg	0.1		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	M	mg/kg	0.1		< 0.1	< 0.1	0.1	< 0.1	< 0.1	< 0.1
Fluorene	M	mg/kg	0.1		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	M	mg/kg	0.1		0.1	< 0.1	1.4	0.4	< 0.1	0.2
Anthracene	M	mg/kg	0.1		< 0.1	< 0.1	0.5	< 0.1	< 0.1	< 0.1
Fluoranthene	M	mg/kg	0.1		0.5	< 0.1	4.3	0.7	< 0.1	0.6
Pyrene	M	mg/kg	0.1		0.4	< 0.1	3.8	0.6	< 0.1	0.5
Benzo(a)anthracene	M	mg/kg	0.1		0.3	< 0.1	2.8	0.3	< 0.1	0.3
Chrysene	M	mg/kg	0.1		0.3	< 0.1	2.6	0.4	< 0.1	0.3
Benzo(b)fluoranthene	M	mg/kg	0.1		0.3	< 0.1	3.0	0.3	< 0.1	0.1
Benzo(k)fluoranthene	M	mg/kg	0.1		0.3	< 0.1	2.7	0.3	< 0.1	0.2
Benzo(a)pyrene	M	mg/kg	0.1		0.3	< 0.1	3.1	0.3	< 0.1	0.3
Indeno(1,2,3-cd)pyrene	M	mg/kg	0.1		< 0.1	< 0.1	2.4	0.3	< 0.1	0.2
Dibenzo(a,h)anthracene	M	mg/kg	0.1		< 0.1	< 0.1	0.6	0.1	< 0.1	< 0.1
Benzo[g,h,i]perylene	M	mg/kg	0.1		< 0.1	< 0.1	2.1	0.2	< 0.1	0.2
Total PAH(16)	M	mg/kg	0.4		2.7	< 0.4	29.6	4.1	< 0.4	3.2

Tests marked N are not UKAS accredited.

Results Summary

Report No.: 20-29459, issue number 1

				ELAB Reference	211832	211833	211834	211835	211836	211837
				Customer Reference	0.00	0.20	0.00	0.00	0.30	0.00
				Sample ID						
				Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Sample Location	TP1	TP1	TP2	TP3	TP3	TP4
				Sample Depth (m)	0.20	0.50	0.25	0.25	0.50	0.25
				Sampling Date	16/08/2020	16/08/2020	16/08/2020	16/08/2020	16/08/2020	16/08/2020
Determinand	**Codes**	**Units**	**LOD**							
TPH CWG										
>C5-C6 Aliphatic	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
>C6-C8 Aliphatic	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
>C8-C10 Aliphatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C10-C12 Aliphatic	M	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C12-C16 Aliphatic	M	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C16-C21 Aliphatic	M	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C21-C35 Aliphatic	M	mg/kg	1	2.0	< 1.0	1.7	1.6	< 1.0	1.5
>C35-C40 Aliphatic	M	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total aliphatic hydrocarbons (>C5 - C40)	N	mg/kg	1	2.8	< 1.0	2.8	2.0	1.0	1.8
>C5-C7 Aromatic	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
>C7-C8 Aromatic	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
>C8-C10 Aromatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C10-C12 Aromatic	M	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C12-C16 Aromatic	M	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C16-C21 Aromatic	M	mg/kg	1	1.3	< 1.0	8.7	1.3	< 1.0	1.2
>C21-C35 Aromatic	M	mg/kg	1	13.2	< 1.0	26.3	6.9	< 1.0	5.5
>C35-C40 Aromatic	M	mg/kg	1	3.6	< 1.0	1.0	< 1.0	< 1.0	< 1.0
Total aromatic hydrocarbons (>C5 - C40)	N	mg/kg	1	18.5	< 1.0	36.8	9.5	< 1.0	7.9
Total petroleum hydrocarbons (>C5 - C40)	N	mg/kg	1	21.3	< 1.0	39.7	11.5	1.3	9.8

2683

Method Summary

Report No.: 20-29459, issue number 1

Parameter	Codes	Analysis Undertaken On	Date Tested	Method Number	Technique
Soil					
Hexavalent chromium	N	As submitted sample	24/08/2020	110	Colorimetry
pH	M	Air dried sample	25/08/2020	113	Electromeric
PAH (GC-FID)	M	As submitted sample	24/08/2020	133	GC-FID
Low range Aliphatic hydrocarbons soil	N	As submitted sample	24/08/2020	181	GC-MS
Low range Aromatic hydrocarbons soil	N	As submitted sample	24/08/2020	181	GC-MS
TPH CWG soil by gc-gc	M	As submitted sample	21/08/2020	271	
Aqua regia extractable metals	M	Air dried sample	24/08/2020	300	ICPMS

Tests marked N are not UKAS accredited

Report Information

Report No.: 20-29459, issue number 1

Key

U	hold UKAS accreditation
M	hold MCERTS and UKAS accreditation
N	do not currently hold UKAS accreditation
^	MCERTS accreditation not applicable for sample matrix
*	UKAS accreditation not applicable for sample matrix
S	Subcontracted to approved laboratory UKAS Accredited for the test
SM	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
NS	Subcontracted to approved laboratory. UKAS accreditation is not applicable.
I/S	Insufficient Sample
U/S	Unsuitable sample
n/t	Not tested
<	means "less than"
>	means "greater than"

Soil sample results are expressed on an air dried basis (dried at < 30°C), and are uncorrected for inert material removed.
ELAB are unable to provide an interpretation or opinion on the content of this report.
The results relate only to the sample received.
PCB congener results may include any coeluting PCBs
Uncertainty of measurement for the determinands tested are available upon request
Unless otherwise stated, sample information has been provided by the client. This may affect the validity of the results.

Deviation Codes

a	No date of sampling supplied
b	No time of sampling supplied (Waters Only)
c	Sample not received in appropriate containers
d	Sample not received in cooled condition
e	The container has been incorrectly filled
f	Sample age exceeds stability time (sampling to receipt)
g	Sample age exceeds stability time (sampling to analysis)

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

Sample Retention and Disposal

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