

MJH/J1611/02

10 November 2017

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For the attention of: Mr Cyril Ronaghan

Dear Sirs

Site at St. John's Road, Spalding

Introduction & Background

We have now received the results of the chemical contamination analyses undertaken on the samples recovered following the supplementary hydrocarbon remediation in the southern area of the above site, and have pleasure in reporting as follows.

A historic fuel line and strata with hydrocarbon contamination was encountered by GEDA in the southern area of the site. The most significantly impacted strata along the southern margin on the site was excavated by GEDA and samples confirming that area had been appropriately remediated were recovered by Emcus during a site visit on 10th October 2017. The details of that site visit, validation sampling and results are presented in the letter from Emcus Limited to GEDA, dated 25th October 2017.

Following the partial backfilling of that initial excavation (to ensure stability of the adjacent areas) and a site meeting with the Local Authority Environmental Health Officer, (26th October 2017), GEDA have undertaken supplementary excavation to the north of that remediated area to remove additional hydrocarbon impacted strata, for off-site disposal.

Validation

An experienced Geo-Environmental Engineer from Emcus attended site on 31st October 2017 to recover representative samples (S1 – S7) from the base and sides of the supplementary excavation, to confirm that the significantly hydrocarbon impacted strata had been removed. The approximate location of the supplementary excavation and the validation samples are indicated approximately on drawing J1611/06.

The samples recovered by the Geo-Environmental Engineer were placed into sealable plastic containers and glass jars, provided by the analytical laboratory for that purpose and placed immediately into a 'cool box'. The samples recovered from the excavation were subsequently submitted to the MCERTS and UKAS accredited laboratories of Chemtech Environmental for chemical analysis comprising Total Petroleum Hydrocarbons speciated in accordance with current UK guidelines (TPH-CWG).

The results of the chemical analyses undertaken on the 7 samples have generally revealed concentrations falling below the respective assessment criteria (LQM/CIEH Generic Assessment Criteria) for the proposed residential end use. However, samples S2, S3 and S4 from the north-eastern side of the excavation have revealed TPH concentrations within the C10 – C12 bandings, which marginally exceed the LQM/CIEH target concentrations. Sample S4 also revealed TPH concentrations within the C8 – C10 bandings, which marginally exceed the LQM/CIEH target concentration. In addition, sample S7 from the base of the excavation has revealed TPH concentrations within the C6 – C8 & C8 – C10 bandings, which marginally exceed the LQM/CIEH target concentrations. [For comparison, all of the samples from the southern area of the site have revealed concentrations falling well below the respective assessment criteria (LQM/CIEH Generic Assessment Criteria) for a commercial / industrial end use].



Summary

The results of the validation analyses confirm that the significantly impacted hydrocarbon strata has been excavated in the area of the supplementary remediation works by GEDA. However, strata with TPH concentrations which slightly exceed the LQM/CIEH assessment criteria for a residential end use remain in the southern area of the site.

It is considered that the slightly elevated hydrocarbon concentrations which remain at the bottom of the supplementary excavation will not pose a significant risk to the end users of the site, following reinstatement of ground level with clean inert strata. In addition, the hardcover of buildings, parking areas and pathways will generally provide a break in the contamination source to receptor pathway and prevent the remaining hydrocarbon concentrations at shallower depth around the margins of the excavation from posing a significant risk to end users in those areas.

However, the proposed site layout (Corporate Architecture Limited, drawing 4070/KPG/16/008, March 2016) indicates that the margins of the hotspot excavation will be present beneath the rear gardens of plots 21 to 27. In those rear gardens, it is recommended that the existing strata around the margins of the hotspot excavation is sufficiently excavated to allow a minimum 0.6m thick environmental capping of clean inert subsoil and topsoil to be placed. It is considered that environmental capping will prevent the slightly elevated concentrations of TPH which remain around the margins of the excavation from posing a significant risk to users in those areas.

It is considered that the slightly elevated TPH concentrations will not pose a significant risk to environmental receptors, (i.e. groundwater and surface water).

We recommend that the above geo-environmental assessment is discussed and agreed with the Local Authority Environmental Health Department, etc., prior to any irrevocable actions being taken.

We trust that the above and attached provides all the information you require and is acceptable to yourselves. Should you have any comments or queries, however, or wish to discuss any of the above, please do not hesitate to contact us.

Yours faithfully

For & on behalf of Emcus Limited



Marcus Hanford
Technical Director
mhanford@emcus.co.uk



Drawing Title	Hydrocarbon Excavation and Validation Sampling - 31st October 2017 (Also showing proposed development)		J1611/06	
			Scale at A4: NTS	
Project	St John's Road, Spalding		Drawn	Approved
			MJH	MJH
Client	GEDA Construction		Date	Date
			10/11/2017	10/11/2017



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ANALYTICAL TEST REPORT

Contract no: 68233
Contract name: St Johns Road, Spalding
Client reference: J1611V3
Clients name: Emcus
Clients address: 42 Mount Pleasant Drive
Belper
Derbyshire
DE56 2TH

Samples received: 02 November 2017

Analysis started: 02 November 2017

Analysis completed 09 November 2017

Report issued: 09 November 2017

Notes: Opinions and interpretations expressed herein are outside the UKAS accreditation scope.
Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.
Methods, procedures and performance data are available on request.
Results reported herein relate only to the material supplied to the laboratory.
This report shall not be reproduced except in full, without prior written approval.
Samples will be disposed of 6 weeks from initial receipt unless otherwise instructed.

Key: U UKAS accredited test
M MCERTS & UKAS accredited test
\$ Test carried out by an approved subcontractor
I/S Insufficient sample to carry out test
N/S Sample not suitable for testing

Approved by:

James Spittle
Customer Services Team Leader

Chemtech Environmental Limited

SOILS

Lab number			68233-1	68233-2	68233-3	68233-4	68233-5	68233-6
Sample id			S1	S2	S3	S4	S5	S6
Depth (m)			-	-	-	-	-	-
Date sampled			31/10/2017	31/10/2017	31/10/2017	31/10/2017	31/10/2017	31/10/2017
Test	Method	Units						
TPH								
VPH Aromatic (>EC5-EC7)	CE067	mg/kg	0.02	0.02	<0.01	<0.01	0.02	0.02
VPH Aromatic (>EC7-EC8)	CE067	mg/kg	0.09	0.40	0.16	<0.01	0.23	0.16
VPH Aromatic (>EC8-EC10)	CE067	mg/kg	2.80	5.39	8.92	8.50	0.82	1.40
EPH Aromatic (>EC10-EC12)	CE068	mg/kg	<1	<1	<1	<1	<1	<1
EPH Aromatic (>EC12-EC16)	CE068	mg/kg	<1	<1	<1	<1	<1	<1
EPH Aromatic (>EC16-EC21)	CE068	mg/kg	<1	<1	<1	<1	<1	<1
EPH Aromatic (>EC21-EC35)	CE068	mg/kg	<1	<1	<1	<1	<1	<1
EPH Aromatic (>EC35-EC44)	CE068	mg/kg	<1	<1	<1	<1	<1	<1
VPH Aliphatic (>C5-C6)	CE067	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
VPH Aliphatic (>C6-C8)	CE067	mg/kg	<0.1	<0.1	<0.1	6.5	0.2	<0.1
VPH Aliphatic (>C8-C10)	CE067	mg/kg	<0.1	0.1	0.2	110	0.8	<0.1
EPH Aliphatic (>C10-C12)	CE068	mg/kg	32	128	142	458	<4	<4
EPH Aliphatic (>C12-C16)	CE068	mg/kg	181	726	541	700	<4	<4
EPH Aliphatic (>C16-C35)	CE068	mg/kg	433	1184	782	314	38	<10
EPH Aliphatic (>C35-C44)	CE068	mg/kg	<10	<10	12	<10	<10	<10

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SOILS

Lab number			68233-7
Sample id			S7
Depth (m)			-
Date sampled			31/10/2017
Test	Method	Units	
TPH			
VPH Aromatic (>EC5-EC7)	CE067	mg/kg	<0.01
VPH Aromatic (>EC7-EC8)	CE067	mg/kg	<0.01
VPH Aromatic (>EC8-EC10)	CE067	mg/kg	12.4
EPH Aromatic (>EC10-EC12)	CE068	mg/kg	<1
EPH Aromatic (>EC12-EC16)	CE068	mg/kg	<1
EPH Aromatic (>EC16-EC21)	CE068	mg/kg	<1
EPH Aromatic (>EC21-EC35)	CE068	mg/kg	<1
EPH Aromatic (>EC35-EC44)	CE068	mg/kg	<1
VPH Aliphatic (>C5-C6)	CE067	mg/kg	3.4
VPH Aliphatic (>C6-C8)	CE067	mg/kg	109.9
VPH Aliphatic (>C8-C10)	CE067	mg/kg	394.7
EPH Aliphatic (>C10-C12)	CE068	mg/kg	91
EPH Aliphatic (>C12-C16)	CE068	mg/kg	128
EPH Aliphatic (>C16-C35)	CE068	mg/kg	259
EPH Aliphatic (>C35-C44)	CE068	mg/kg	16

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METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE067	VPH Aromatic (>EC5-EC7)	Headspace GC-FID	Wet		0.01	mg/kg
CE067	VPH Aromatic (>EC7-EC8)	Headspace GC-FID	Wet		0.01	mg/kg
CE067	VPH Aromatic (>EC8-EC10)	Headspace GC-FID	Wet		0.01	mg/kg
CE068	EPH Aromatic (>EC10-EC12)	Solvent extraction, GC-FID	Wet		1	mg/kg
CE068	EPH Aromatic (>EC12-EC16)	Solvent extraction, GC-FID	Wet		1	mg/kg
CE068	EPH Aromatic (>EC16-EC21)	Solvent extraction, GC-FID	Wet		1	mg/kg
CE068	EPH Aromatic (>EC21-EC35)	Solvent extraction, GC-FID	Wet		1	mg/kg
CE068	EPH Aromatic (>EC35-EC44)	Solvent extraction, GC-FID	Wet		1	mg/kg
CE067	VPH Aliphatic (>C5-C6)	Headspace GC-FID	Wet		0.1	mg/kg
CE067	VPH Aliphatic (>C6-C8)	Headspace GC-FID	Wet		0.1	mg/kg
CE067	VPH Aliphatic (>C8-C10)	Headspace GC-FID	Wet		0.1	mg/kg
CE068	EPH Aliphatic (>C10-C12)	Solvent extraction, GC-FID	Wet		4	mg/kg
CE068	EPH Aliphatic (>C12-C16)	Solvent extraction, GC-FID	Wet		4	mg/kg
CE068	EPH Aliphatic (>C16-C35)	Solvent extraction, GC-FID	Wet		4	mg/kg
CE068	EPH Aliphatic (>C35-C44)	Solvent extraction, GC-FID	Wet		10	mg/kg

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DEVIATING SAMPLE INFORMATION

Comments

Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.

For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.

Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

Key

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
IT	Sample not cooled
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
68233-1	S1	-	N	
68233-2	S2	-	N	
68233-3	S3	-	N	
68233-4	S4	-	N	
68233-5	S5	-	N	
68233-6	S6	-	N	
68233-7	S7	-	N	