



Mr Ian Ladds
Church Farm
Church Street
Northborough
Peterborough
PE6 9BN

Date 14/04/2016

**Subject: Groundwater Monitoring Former Petrol Filling Station, Broadway,
Crowland, Lincolnshire**

Dear Mr Ladds,

Further to your instructions in January 2016, I am pleased to provide a summary of the work EPS Ltd carried out to measure the concentration of any dissolved hydrocarbon contamination in water extracted from the groundwater boreholes located in residential properties located next door to your development site referenced above.

As per our discussions, EPS has carried out the following works:

- 1) Collected samples from on-site and off-site groundwater wells on 2nd February 2016
- 2) Collected samples from off-site groundwater monitoring wells on 30th March 2016

All groundwater sampling work was carried out following the low-flow groundwater sampling technique in accordance with EPS standard method statements which will be made available to you upon request.

Objectives

The purpose of this work was to establish if dissolved hydrocarbon contamination found in samples collected from the off-site monitoring wells in May 2015 were representative of steady state conditions, or if these measurements could have been the result of some localised groundworks carried out on your site shortly before.

Results & Conclusions

Results of the sampling found no evidence of dissolved hydrocarbons in groundwater samples above the minimum laboratory detection limits in any of the monitoring wells sampled during the two visits in 2016. I have attached copies of the laboratory reports for this work for your records.

It is known that hydrocarbon contamination is still present in the soil toward the northern end of your development site however, based upon these data and from previous modelling studies, it is our conclusion that these impacts to water quality are relatively static.

The results of the laboratory testing carried out on samples collected from the wells at adjacent properties in May 2015 was therefore most likely the result of disturbance of ground, which you reported on site shortly before the sampling took place.

Recommendations

Based on these findings, it would be sensible to monitor any excavation works that have to be carried out during the proposed redevelopment to make sure similar disturbances are kept to a minimum. It is understood that these wells are used rarely and for horticultural purposes however samples should be collected if further ground disturbance is expected as part of a watching brief so that neighbouring residents can be warned in advance of any potential impact and advised on the quality of the water in their wells during the development work.

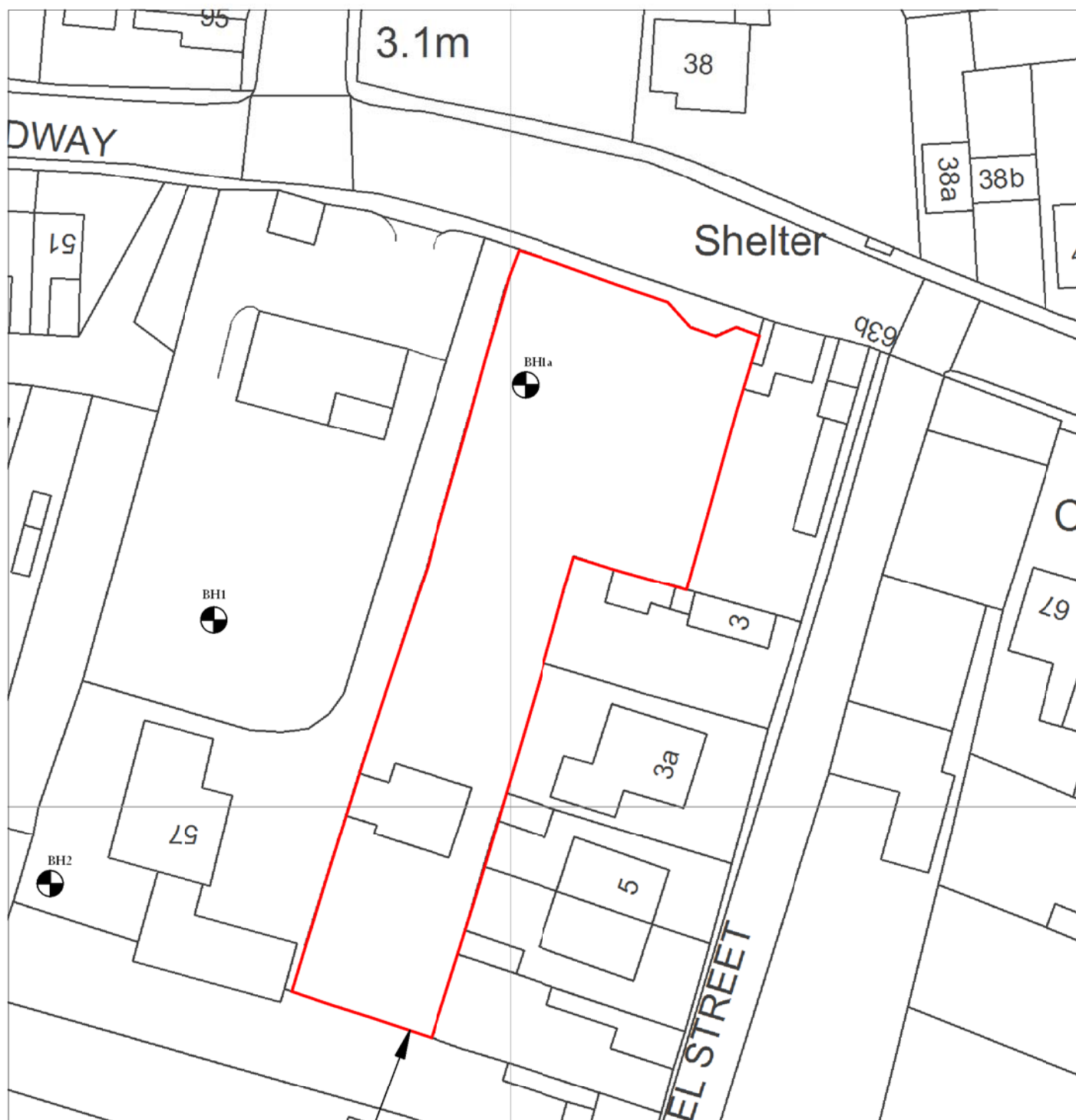
I trust this is clear however if you have any queries or would like to discuss anything in more detail please don't hesitate to contact me.

Yours sincerely,



Giles Lock
EPS Ltd

Incl.
Laboratory Reports
Plan Showing Monitoring Well Locations



Approximate Site Boundary

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Licence Number: 100054115



Title: Location of Off-Site Boreholes

Project: Former Broadway PFS, Crowland

Client: Mr Ian Ladds

Fig No: 1

Scale: NTS

Drawn By: GL **Approved By:** WE

Job No: UK14.1470

Dwg No: Ladds/Broadway/0416/01

Date: April 2016



Jones Environmental Laboratory

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Tel: +44 (0) 1244 833780
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Attention : Rory Griggs
Date : 15th February, 2016
Your reference : UK14.1470
Our reference : Test Report 16/4669
Location : Crowlands
Date samples received : 9th February, 2016
Status : Final report
Issue : 1

Five samples were received for analysis on 9th February, 2016 of which five were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

Bruce Leslie
Project Co-ordinator

Jones Environmental Laboratory

Client Name: EPS Ltd
Reference: UK14.1470
Location: Crowlands
Contact: Rory Griggs
JE Job No.: 16/4669

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
H=H₂SO₄, Z=ZnAc, N=NaOH, HN=HNO₃

J E Sample No.	1-3	4-6	7-9	10-12	13-15						Please see attached notes for all abbreviations and acronyms		
Sample ID	BH1	BH1a	BH2	House 55 Mains	House 57 Mains								
Depth													
COC No / misc													
Containers	V G	V G	V G	V G	V G								
Sample Date	05/02/2016	05/02/2016	05/02/2016	05/02/2016	05/02/2016								
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water								
Batch Number	1	1	1	1	1								
Date of Receipt	09/02/2016	09/02/2016	09/02/2016	09/02/2016	09/02/2016						LOD/LOR	Units	Method No.
TPH CWG													
Aliphatics													
>C5-C6 #	<5	<5	<5	<5	<5						<5	ug/l	TM36/PM12
>C6-C8 #	<5	<5	<5	<5	<5						<5	ug/l	TM36/PM12
>C8-C10 #	<5	<5	<5	<5	<5						<5	ug/l	TM36/PM12
>C10-C12 #	<5	<5	<5	<5	<5						<5	ug/l	TM5/PM30
>C12-C16 #	<10	<10	<10	<10	<10						<10	ug/l	TM5/PM30
>C16-C21 #	<10	<10	<10	<10	<10						<10	ug/l	TM5/PM30
>C21-C35 #	<10	<10	<10	<10	<10						<10	ug/l	TM5/PM30
Total aliphatics C5-35 #	<10	<10	<10	<10	<10						<10	ug/l	TM5/TM36/PM30
Aromatics													
>C5-EC7 #	<5	<5	<5	<5	<5						<5	ug/l	TM36/PM12
>EC7-EC8 #	<5	<5	<5	<5	<5						<5	ug/l	TM36/PM12
>EC8-EC10 #	<5	<5	<5	<5	<5						<5	ug/l	TM36/PM12
>EC10-EC12 #	<5	<5	<5	<5	<5						<5	ug/l	TM5/PM30
>EC12-EC16 #	<10	<10	<10	<10	<10						<10	ug/l	TM5/PM30
>EC16-EC21 #	<10	<10	<10	<10	<10						<10	ug/l	TM5/PM30
>EC21-EC35 #	<10	<10	<10	<10	<10						<10	ug/l	TM5/PM30
Total aromatics C5-35 #	<10	<10	<10	<10	<10						<10	ug/l	TM5/PM30
Total aliphatics and aromatics(C5-35) #	<10	<10	<10	<10	<10						<10	ug/l	TM5/TM36/PM30
MTBE #	<5	<5	<5	<5	<5						<5	ug/l	TM36/PM12
Benzene #	<5	<5	<5	<5	<5						<5	ug/l	TM36/PM12
Toluene #	<5	<5	<5	<5	<5						<5	ug/l	TM36/PM12
Ethylbenzene #	<5	<5	<5	<5	<5						<5	ug/l	TM36/PM12
m/p-Xylene #	<5	<5	<5	<5	<5						<5	ug/l	TM36/PM12
o-Xylene #	<5	<5	<5	<5	<5						<5	ug/l	TM36/PM12

Matrix : Liquid

[illegible]

[illegible]

4 of 7

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 16/4669

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 (UKAS) accreditation applies to surface water and groundwater and one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS) accredited - UK.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

JE Job No: 16/4669

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM5/TM36	TM005: Modified USEPA 8015B. Determination of solvent Extractable Petroleum Hydrocarbons (EPH) including column fractionation in the carbon range of C10-35 into aliphatic and aromatic fractions by GC-FID. TM036: Modified USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-10 by headspace GC-FID.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes			



Jones Environmental Laboratory

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7B Caxton House
Broad Street
Cambourne
Cambridgeshire
CB23 6JN

Tel: +44 (0) 1244 833780

Fax: +44 (0) 1244 833781



Attention :	Rory Griggs
Date :	6th April, 2016
Your reference :	UK14.1470
Our reference :	Test Report 16/6935 Batch 1
Location :	Crowlands
Date samples received :	31st March, 2016
Status :	Final report
Issue :	1

Two samples were received for analysis on 31st March, 2016 of which two were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

Bruce Leslie
Project Co-ordinator

Client Name: EPS Ltd
 Reference: UK14.1470
 Location: Crowlands
 Contact: Rory Griggs
 JE Job No.: 16/6935

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
 H=H₂SO₄, Z=ZnAc, N=NaOH, HN=HNO₃

J E Sample No.	1-3	4-6									Please see attached notes for all abbreviations and acronyms		
Sample ID	BH1	BH2											
Depth													
COC No / misc													
Containers	V G	V G											
Sample Date	30/03/2016	30/03/2016											
Sample Type	Ground Water	Ground Water											
Batch Number	1	1											
Date of Receipt	31/03/2016	31/03/2016									LOD/LOR	Units	Method No.
TPH CWG													
Aliphatics													
>C5-C6 #	<5	<5									<5	ug/l	TM36/PM12
>C6-C8 #	<5	<5									<5	ug/l	TM36/PM12
>C8-C10 #	<5	<5									<5	ug/l	TM36/PM12
>C10-C12 #	<5	<5									<5	ug/l	TM5/PM30
>C12-C16 #	<10	<10									<10	ug/l	TM5/PM30
>C16-C21 #	<10	<10									<10	ug/l	TM5/PM30
>C21-C35 #	<10	<10									<10	ug/l	TM5/PM30
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Matrix : Liquid

[illegible]

[illegible]

4 of 7

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JE Job No.: 16/6935

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SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
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ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

JE Job No: 16/6935

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM5/TM36	TM005: Modified USEPA 8015B. Determination of solvent Extractable Petroleum Hydrocarbons (EPH) including column fractionation in the carbon range of C10-35 into aliphatic and aromatic fractions by GC-FID. TM036: Modified USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-10 by headspace GC-FID.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes			