

Wrexham Post Office

Underground Fuel Storage Tank Removal

Project:	Wrexham Post Office		
Prepared by:	C Williams	Date:	10 July 2021
Approved by:	Alan Simpson	Checked by:	V Sin
Subject:	Removal of Underground Fuel Storage Tanks		

1 Introduction

Plans have been submitted to Wrexham Council for alterations to the existing Post Office at Regent Street in Wrexham. Planning permission has been granted but is subject to pre-commencement planning conditions relating to contamination present within the underlying ground. This Note addresses the removal of the decommissioned underground fuel storage tanks.

The site is being redeveloped with an extension to the existing main sorting office and removal of ancillary buildings; rural sorting office, car wash, maintenance building and fuelling point. The work is being undertaken by Key Property Solutions on behalf of Royal Mail.

The original fuel storage tanks at the site were taken out of use sometime around 2007 and were replaced by a self-contained above ground fuel tank located above the underground tanks. This above ground tank and its filling point were emptied and dismantled in May 2021. The two underground tanks have been excavated and removed.

2 Tank Removal

The tanks have been removed by removing the overlying concrete to expose the tanks, cutting the straps and lifting the tanks out. The basal concrete footing was then removed to allow inspection of the underlying soils.

Figure 2.1 shows the concrete surface with a thin layer of granular made ground beneath and the underlying natural soils. The tank was found to be completely set in concrete which is being broken out.

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Figure Error! No text of specified style in document..1: Tank Removal



Source: Key Property Solutions

Figure Error! No text of specified style in document..2: Removal of First Tank



Source: Key Property Solutions

On removal, the first tank was seen to be coated in bitumen, likely an anti-corrosion coating applied when the tank was installed.

Figure 3.2 shows groundwater within the excavation for the first tank. There were no odours reported and no sheens visible on the surface. There were no visual signs of any soil bound contamination noted during the excavation.

Figure Error! No text of specified style in document..3: Groundwater with Excavation



Source: Key Property Solutions

3 Soil Validation

3.1 Soil

Validation samples of the soil surrounding the tank have been obtained for laboratory testing.

Samples S1 to S3 were taken around the base of the excavation. The sample depth was 1.4m to 1.5m below ground level which is just above the groundwater level within the excavation.

Table 3.1 Laboratory Testing of Soil Samples

	Unit	GAC	S1	S2	S3
	Depth (m)		1.2	1.2	1.2
Aliphatic EC 5-6	mg/kg	3200	< 0.01	< 0.01	< 0.01
Aliphatic EC >6-8	mg/kg	7800	< 0.01	< 0.01	< 0.01
Aliphatic EC >8-10	mg/kg	2000	< 0.01	< 0.01	< 0.01
Aliphatic EC >10-12	mg/kg	9700	< 1.5	< 1.5	< 1.5
Aliphatic EC >12-16	mg/kg	59000	< 1.2	< 1.2	< 1.2
Aliphatic EC >16-35	mg/kg	1600000	< 4.9	17	<4.9
Aromatic EC 5-7	mg/kg	26000	< 0.01	< 0.01	< 0.01
Aromatic EC >7-8	mg/kg	56000	< 0.01	< 0.01	< 0.01
Aromatic EC >8-10	mg/kg	3500	< 0.01	< 0.01	< 0.01
Aromatic EC >10-12	mg/kg	16000	< 0.9	< 0.9	< 0.9
Aromatic EC >12-16	mg/kg	36000	< 0.5	< 0.5	< 0.5
Aromatic EC >16-21	mg/kg	28000	< 0.6	< 0.6	< 0.6
Aromatic EC >21-35	mg/kg	28000	< 1.4	< 1.4	< 1.4
Naphthalene	mg/kg	190	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	83000	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	84000	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	63000	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	22000	< 0.1	< 0.1	< 0.1
Anthracene	mg/kg	520000	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	23000	0.4	< 0.1	< 0.1
Pyrene	mg/kg	54000	0.6	< 0.1	< 0.1
Benzo(a)anthracene	mg/kg	170	0.3	< 0.1	< 0.1
Chrysene	mg/kg	350	0.4	< 0.1	< 0.1
Benzo(b)fluoranthene	mg/kg	44	1.1	< 0.1	< 0.1
Benzo(k)fluoranthene	mg/kg	1200	0.5	< 0.1	< 0.1
Benzo(a)pyrene	mg/kg	35	1.2	< 0.1	< 0.1
Indeno(1,2,3-c,d)pyrene	mg/kg	500	1.4	< 0.1	< 0.1
Dibenzo(a,h)anthracene	mg/kg	3.5	0.5	< 0.1	< 0.1
Benzo(g,h,i)perylene	mg/kg	3900	1.7	< 0.1	< 0.1

Source: Dunelm

None of the soil bound concentrations are present above thresholds protective of human health for a commercial end use. These generic thresholds are derived using the CLEA model¹ which includes vapour inhalation.

4 Discussion

The two underground fuel tanks have been removed and the underlying concrete bases broken out.

During the excavation no visual evidence of contamination was seen.

¹ Environment Agency Updated technical background to the CLEA model Science Report SCO50021/SR3

The tank bases were below the water table and on removal the excavation partially filled with groundwater. No visual or olfactory evidence of contamination was observed.

Validation soil samples of the excavation were tested for petroleum hydrocarbons and PAH compounds. The concentrations of these contaminants are low and do not indicate any residual source of diesel contamination is present.

5 Conclusions

The underground fuel tanks have been removed. There is no evidence of any residual contamination source remaining associated with these tanks.

A. Lab Results for Soil Samples



Certificate of Analysis

Certificate Number 21-11568

Issued: 04-Jun-21

Client Dunelm Geotechnical & Environmental Ltd
Chambers Business Centre
Chapel Road
Oldham
OL8 4QQ

Our Reference 21-11568

Client Reference M982

Order No NW8355M982RB

Contract Title Wrexham Delivery Office Below Ground Tanks

Description 3 Soil samples.

Date Received 02-Jun-21

Date Started 02-Jun-21

Date Completed 04-Jun-21

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Adam Fenwick
Contracts Manager





Summary of Chemical Analysis

Matrix Descriptions

Our Ref 21-11568

Client Ref M982

Contract Title Wrexham Delivery Office Below Ground Tanks

Sample ID	Depth	Lab No	Completed	Matrix Description
S1	1.2	1855705	04/06/2021	Brown sandy, gravelly CLAY
S2	1.2	1855706	04/06/2021	Brown sandy, gravelly CLAY
S3	1.2	1855707	04/06/2021	Brown sandy, gravelly CLAY

Summary of Chemical Analysis

Soil Samples

Our Ref 21-11568

Client Ref M982

Contract Title Wrexham Delivery Office Below Ground Tanks

Lab No	1855705	1855706	1855707
Sample ID	S1	S2	S3
Depth	1.20	1.20	1.20
Other ID			
Sample Type	ES	ES	ES
Sampling Date	28/05/2021	28/05/2021	28/05/2021
Sampling Time	n/s	n/s	n/s

Test	Method	LOD	Units			
Inorganics						
Organic matter	DETSC 2002#	0.1	%	0.5	0.9	6.1
Petroleum Hydrocarbons						
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	17	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	18	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10
TPH Ali/Aro Total C5-C35	DETSC 3072*	10	mg/kg	< 10	18	< 10
PAHs						
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	0.4	< 0.1	< 0.1
Pyrene	DETSC 3301	0.1	mg/kg	0.6	< 0.1	< 0.1
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	0.3	< 0.1	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg	0.4	< 0.1	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	1.1	< 0.1	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	0.5	< 0.1	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	1.2	< 0.1	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	1.4	< 0.1	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	0.5	< 0.1	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	1.7	< 0.1	< 0.1
PAH Total	DETSC 3301	1.6	mg/kg	8.4	< 1.6	< 1.6

Information in Support of the Analytical Results

Our Ref 21-11568
 Client Ref M982
 Contract Wrexham Delivery Office Below Ground Tanks

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1855705	S1 1.20 SOIL	28/05/21	GJ 250ml, GJ 60ml, PT 1L		
1855706	S2 1.20 SOIL	28/05/21	GJ 250ml, GJ 60ml, PT 1L		
1855707	S3 1.20 SOIL	28/05/21	GJ 250ml, GJ 60ml, PT 1L		

Key: G-Glass P-Plastic J-Jar T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 2002	Organic matter	%	0.1	Air Dried	No	Yes	Yes
DETSC 2003	Loss on ignition	%	0.01	Air Dried	No	Yes	Yes
DETSC 2008	pH	pH Units	1	Air Dried	No	Yes	Yes
DETSC 2024	Sulphide	mg/kg	10	Air Dried	No	Yes	Yes
DETSC 2076	Sulphate Aqueous Extract as SO ₄	mg/l	10	Air Dried	No	Yes	Yes
DETSC 2084	Total Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2084	Total Organic Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2119	Ammoniacal Nitrogen as N	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide free	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide total	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Phenol - Monohydric	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC 2130	Thiocyanate	mg/kg	0.6	Air Dried	No	Yes	Yes
DETSC 2321	Total Sulphate as SO ₄	%	0.01	Air Dried	No	Yes	Yes
DETSC 2325	Mercury	mg/kg	0.05	Air Dried	No	Yes	Yes
DETSC 3049	Sulphur (free)	mg/kg	0.75	Air Dried	No	Yes	Yes
DETSC2123	Boron (water soluble)	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Arsenic	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Barium	mg/kg	1.5	Air Dried	No	Yes	Yes
DETSC2301	Beryllium	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Cadmium Available	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC2301	Cadmium	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC2301	Cobalt	mg/kg	0.7	Air Dried	No	Yes	Yes
DETSC2301	Chromium	mg/kg	0.15	Air Dried	No	Yes	Yes
DETSC2301	Copper	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Manganese	mg/kg	20	Air Dried	No	Yes	Yes
DETSC2301	Molybdenum	mg/kg	0.4	Air Dried	No	Yes	Yes
DETSC2301	Nickel	mg/kg	1	Air Dried	No	Yes	Yes
DETSC2301	Lead	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC2301	Selenium	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC2301	Zinc	mg/kg	1	Air Dried	No	Yes	Yes
DETSC 3072	Ali/Aro C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	1.2	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	0.9	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	0.5	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	0.6	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETS 062	Benzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Ethylbenzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Toluene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	m+p Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	o Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3311	C10-C24 Diesel Range Organics (DRO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	C24-C40 Lube Oil Range Organics (LORO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	EPH (C10-C40)	mg/kg	10	As Received	No	Yes	Yes

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 3303	Acenaphthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Acenaphthylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(b)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(k)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(g,h,i)perylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Dibenzo(a,h)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Indeno(1,2,3-c,d)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Naphthalene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Phenanthrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3401	PCB 28 + PCB 31	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 52	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 101	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 118	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 153	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 138	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 180	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB Total	mg/kg	0.01	As Received	No	Yes	Yes

Method details are shown only for those determinands listed in Annex A of the MCERTS standard. Anything not included on this list falls outside the scope of MCERTS. No Recovery Factors are used in the determination of results. Results reported assume 100% recovery. Full method statements are available on request.

End of Report