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Cockfield
Bury St Edmunds
Suffolk
IP30 0LQ

Enc.
Sampling location plan
Contamination test reports

Your Ref: DC/23/04344
Date: 11/04/2024

My Ref: 105359
Tel No.: [REDACTED]
Email: [REDACTED]

Fuel tank validation, The Pine House, Stowlangtoft.

The objective of this letter is to confirm that two former underground fuel tanks have been removed and the surrounding soils analysed to confirm that no contamination has occurred.

It is proposed to demolish the former garage building and redevelop the site with two detached residential properties with garages including alterations for vehicular access.

This report should be read in conjunction with the following report:

- 1) Desk Study and Risk Assessment Pine House, Stowlangtoft, Bury St Edmunds, Suffolk report reference 104488 dated July 2023 by Norfolk Partnership Laboratory
- 2) Site Investigation including Quantitative Risk Assessment, Pine House, Stowlangtoft, Suffolk. Report reference 104909 dated December 2023 by Norfolk Partnership Laboratory

The site investigation report recommended concluded. It is thought that UST's are present on the site in the forecourt and possibly to the south of the building. It is not known if the tanks have been decommissioned. It is known however that the site was occupied by the Pine House Company from 2001, therefore no recent history of fuel delivery has occurred in the intervening years.

Sampling and testing from the assumed tank locations targeted by the GPR survey from the subsoils and Upper Chalk deposit has indicated that the site has not been impacted by hydrocarbons.

The following procedures should be adhered to during the removal of any below ground infrastructure.

The UST's, pipes and associated fittings should be removed by a suitably licensed contractor and disposed of to a suitably licensed facility. Care should be taken with regard to the fuel lines during removal of the tanks, ensuring that any fuel remaining within the supply lines is harvested.

Following the removal of the tanks and any visually or olfactorily impacted surrounding material, validation sampling should be undertaken from the sides and base of the excavation in accordance with BS:10175:2011+A2:2017 to ensure that all contaminated material has been removed. The quantity of testing may be reduced pending the findings upon excavation. This should confirm that no risk would then be present that would impact on controlled waters.

- a. The UST's will be excavated using a mechanical excavator. Inspection of the contents of the UST's will be undertaken, if possible, in-situ or when the tanks are removed and made safe. The client will then arrange for the removal of these tanks to a suitable licensed facility.
- b. The ground surrounding the UST's will then be assessed for visual and olfactory evidence of contamination. Any obviously contaminated material will then be excavated.
- c. The excavation will then be surveyed using a PID. If necessary, further material will be excavated to an extent where no contaminated soil remains. The client will remove this soil to a suitable licensed facility.
- d. The remaining excavation will then be sampled. Two samples will be taken from the base of this excavation and one from each side wall using the sampling pattern described in BS10175 Annex D. This sampling frequency may be reduced at the discretion of the Geoenvironmental Engineer when PID, olfactory and visible findings are all considered. Analytical testing will be undertaken on these samples.
- e. Testing will comprise, Speciated TPH CWG UK. The results will be assessed against Atkins Atrisk threshold values.
- f. Delivery tickets shall be provided for all potentially contaminated material leaving site and also for any inert material brought into the site for backfill purposes. These are to be included in the validation report.

If groundwater is encountered during these works, samples should be taken and analysed for Speciated TPH and VOC's.

Works undertaken

On 4th April 2024 under the supervision of Mr I Brown of Norfolk Partnership Laboratory the concrete surfacing above the UST area was removed. Two approximately 500 gallon tanks were seen present. The fuel lines were then disconnected and were found to be free from any fuel. The UST's were then opened to allow inspection. Both tanks were seen to be dry. The lids were then replaced and the UST's in turn removed from the excavation. The UST's were seen to be in good condition with no hydrocarbon odour noted and no staining was seen in the adjacent soils.

The area where the UST's were located was then excavated into a regular shape with excavated soils assessed with a PID. No volatile organic compounds were noted above the level of detection.

Sampling was then carried out with one sample taken from each side wall and two samples from the base directly beneath each tank location.

These samples were sent to Envirolab, Cheshire for analysis. Envirolab is a UKAS accredited laboratory, No.1247 and analysed for speciated total petroleum hydrocarbons.

Location	Depth (m)	Tests
V1	1.70	Speciated TPH to WGC UK
V2	1.70	Speciated TPH to WGC UK
V3	1.60	Speciated TPH to WGC UK
V4	1.40	Speciated TPH to WGC UK
V5	1.50	Speciated TPH to WGC UK
V6	1.55	Speciated TPH to WGC UK

All the sample results were found to be within the most stringent threshold values for residential land use and lower than the limits of detection. A copy of these test report can be found within this submission.

It was deemed that after considering the results of the testing and the PID readings the excavated soils could be replaced in the base of the excavation.

A selection photographs can be seen below showing the works undertaken



Excavation post tank removal



Excavation shaped



View of excavation



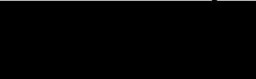
Two 500 gallon tanks removed

The ground penetrating radar survey undertaken during the site investigation showed a slight reading to the south of the site which may have been a UST. This area was broken out and inspected. No UST was present in this area.

At the time of writing this report the conveyance notes for the tanks was not available. This will be provided in the final validation report when published detailing the remaining remediation ie. The removal of a small area of Lead contamination recorded in WS13 and the validation of the garden areas.

It can be concluded that the tanks have been removed and no contamination is present within this area.

Yours sincerely

A black rectangular redaction box covering the signature of I Brown.

I Brown

Head of Laboratory Services



V5

V1

V6

V4

V2

V3

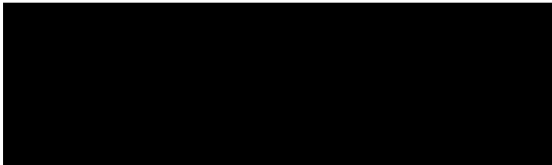
FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 24/03373
Issue Number: 1
Date: 10 April, 2024

Client: Norse Eastern Ltd t/a Norse Highways
280 Fifers Lane
Norwich
Norfolk
NR6 6EQ

Project Manager: * Civil lab/* Sharon Woods; Simon Holden, Josh Tho
Project Name: Pine Warehouse, Stowlangtoft Validation
Project Ref: 105359
Order No: PN05080447
Date Samples Received: 05/04/24
Date Instructions Received: 05/04/24
Date Analysis Completed: 10/04/24

Approved by:



Richard Wong
Client Manager



Envirolab Job Number: 24/03373

Client Project Name: Pine Warehouse, Stowlangtoft
Validation

Client Project Ref: 105359

Lab Sample ID	24/03373/1	24/03373/2	24/03373/3	24/03373/4	24/03373/5	24/03373/6				
Client Sample No	0416	0417	0418	0419	0420	0421				
Client Sample ID	V1	V2	V3	V4	V5	V6				
Depth to Top	1.7	1.7	1.6	1.4	1.5	1.55				
Depth To Bottom										
Date Sampled	04-Apr-24	04-Apr-24	04-Apr-24	04-Apr-24	04-Apr-24	04-Apr-24				
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID				
Sample Matrix Code	7	7	7	7	7	7				
% Stones >10mm _A	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		% w/w	0.1	A-T-044



EnviroLab Job Number: 24/03373

Client Project Name: Pine Warehouse, Stowlangtoft
Validation

Client Project Ref: 105359

Lab Sample ID	24/03373/1	24/03373/2	24/03373/3	24/03373/4	24/03373/5	24/03373/6			
Client Sample No	0416	0417	0418	0419	0420	0421			
Client Sample ID	V1	V2	V3	V4	V5	V6			
Depth to Top	1.7	1.7	1.6	1.4	1.5	1.55			
Depth To Bottom									
Date Sampled	04-Apr-24	04-Apr-24	04-Apr-24	04-Apr-24	04-Apr-24	04-Apr-24			
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID			
Sample Matrix Code	7	7	7	7	7	7			
TPH UKCWG with Clean Up									
Ali >C5-C6 _A	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
Ali >C6-C8 _A	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
Ali >C8-C10 _A	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Ali >C10-C12 _A ^{M#}	<1 ^U	<1 ^U	<1 ^U	<1 ^U	<1 ^U	<1 ^U	mg/kg	1	A-T-055s
Ali >C12-C16 _A ^{M#}	<1 ^U	<1 ^U	<1 ^U	<1 ^U	<1 ^U	<1 ^U	mg/kg	1	A-T-055s
Ali >C16-C21 _A ^{M#}	<1 ^U	<1 ^U	<1 ^U	<1 ^U	<1 ^U	<1 ^U	mg/kg	1	A-T-055s
Ali >C21-C35 _A ^{M#}	<1 ^U	<1 ^U	<1 ^U	<1 ^U	<1 ^U	<1 ^U	mg/kg	1	A-T-055s
Ali >C35-C44 _A	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Total Aliphatics _A	<1	<1	<1	<1	<1	<1	mg/kg	1	Calc-As Recd
Aro >C5-C7 _A [#]	<0.01 ^U	<0.01 ^U	<0.01 ^U	<0.01 ^U	<0.01 ^U	<0.01 ^U	mg/kg	0.01	A-T-022s
Aro >C7-C8 _A [#]	<0.01 ^U	<0.01 ^U	<0.01 ^U	<0.01 ^U	<0.01 ^U	<0.01 ^U	mg/kg	0.01	A-T-022s
Aro >C8-C10 _A	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Aro >C10-C12 _A	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Aro >C12-C16 _A	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Aro >C16-C21 _A ^{M#}	<1 ^U	<1 ^U	<1 ^U	<1 ^U	<1 ^U	<1 ^U	mg/kg	1	A-T-055s
Aro >C21-C35 _A ^{M#}	<1 ^U	<1 ^U	<1 ^U	<1 ^U	<1 ^U	<1 ^U	mg/kg	1	A-T-055s
Aro >C35-C44 _A	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Total Aromatics _A	<1	<1	<1	<1	<1	<1	mg/kg	1	Calc-As Recd
TPH (Ali & Aro >C5-C44) _A	<1	<1	<1	<1	<1	<1	mg/kg	1	Calc-As Recd
BTEX - Benzene _A [#]	<0.01 ^U	<0.01 ^U	<0.01 ^U	<0.01 ^U	<0.01 ^U	<0.01 ^U	mg/kg	0.01	A-T-022s
BTEX - Toluene _A [#]	<0.01 ^U	<0.01 ^U	<0.01 ^U	<0.01 ^U	<0.01 ^U	<0.01 ^U	mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene _A [#]	<0.01 ^U	<0.01 ^U	<0.01 ^U	<0.01 ^U	<0.01 ^U	<0.01 ^U	mg/kg	0.01	A-T-022s
BTEX - m & p Xylene _A [#]	<0.01 ^U	<0.01 ^U	<0.01 ^U	<0.01 ^U	<0.01 ^U	<0.01 ^U	mg/kg	0.01	A-T-022s
BTEX - o Xylene _A [#]	<0.01 ^U	<0.01 ^U	<0.01 ^U	<0.01 ^U	<0.01 ^U	<0.01 ^U	mg/kg	0.01	A-T-022s
MTBE _A [#]	<0.01 ^U	<0.01 ^U	<0.01 ^U	<0.01 ^U	<0.01 ^U	<0.01 ^U	mg/kg	0.01	A-T-022s

Report Notes

General

This report shall not be reproduced, except in full, without written approval from Envirolab.

The results reported herein relate only to the material supplied to the laboratory.

The residue of any samples contained within this report, and any received within the same delivery, will be disposed of **four weeks** after the initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of **six months** after the initial Asbestos testing is completed.

Analytical results reflect the quality of the sample at the time of analysis only.

Opinions and Interpretations expressed are outside our scope of accreditation.

The client Sample No, Client Sample ID, Depth to top, Depth to Bottom and Date Sampled are all provided by the client.

A deviating sample report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.

Key

Superscript "#"	Accredited to ISO 17025
Superscript "M"	Accredited to MCertS
Superscript "U"	Individual result not accredited
None of the above symbols	Analysis unaccredited
Subscript "A"	Analysis performed on as-received Sample
Subscript "D"	Analysis performed on the dried sample, crushed to pass 2mm sieve.
Subscript "^"	Analysis has dependant options against results. Details appear in the comments of your Sample receipt
IS	Insufficient Sample for analysis
US	Unsuitable Sample for analysis
NDP	No Determination Possible
NAD	No Asbestos Detected
N/A	Not applicable

Asbestos

Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.

Stones etc. are not removed from the sample prior to analysis

Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing, and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Assigned Matrix Codes

1	SAND	6	CLAY/LOAM	A	Contains Stones
2	LOAM	7	OTHER	B	Contains Construction Rubble
3	CLAY	8	Asbestos Bulk (Only Asbestos ID accredited)	C	Contains visible hydrocarbons
4	LOAM/SAND	9	Incinerator Ash (some Metals accredited)	D	Contains glass / metal
5	SAND/CLAY			E	Contains roots / twigs

Note: 7,8,9 matrices are not covered by our ISO 17025 or MCertS accreditation, unless stated above.

Soil Chemical Analysis:

All results are reported as dry weight (<40°C).

For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis.

This is reported as '% stones >10mm'.

For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any "A" subscripts

All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH by method A-T-007:

For waters, free and visible oils are excluded from the sample used for analysis, so the reported result represents the dissolved phase only.

Results "with Clean up" indicates samples cleaned up with Silica during extraction.

EPH CWG (method A-T-055) from TPH CWG:

EPH CWG results have humics mathematically subtracted through instrument calculation.

Where these humic substances have been identified in any IDs from "TPH CWG with clean up" please note that the concentration is **NOT** included in the quantified results but present in the ID for information.

Electrical Conductivity of water by method A-T-037:

Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the accreditation range and as such are unaccredited.

Please contact your client manager if you require any further information.

Envirolab Analysis Dates

Lab Sample ID	24/03373/1	24/03373/2	24/03373/3	24/03373/4	24/03373/5	24/03373/6
Client Sample No	0416	0417	0418	0419	0420	0421
Client Sample ID/Depth	V1 1.7m	V2 1.7m	V3 1.6m	V4 1.4m	V5 1.5m	V6 1.55m
Date Sampled	04/04/24	04/04/24	04/04/24	04/04/24	04/04/24	04/04/24
A-T-022s	10/04/2024	10/04/2024	10/04/2024	10/04/2024	10/04/2024	10/04/2024
A-T-044	10/04/2024	10/04/2024	10/04/2024	10/04/2024	10/04/2024	10/04/2024
A-T-055s	09/04/2024	09/04/2024	09/04/2024	09/04/2024	09/04/2024	09/04/2024
Calc-As Recd	10/04/2024	10/04/2024	10/04/2024	10/04/2024	10/04/2024	10/04/2024

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report