

24 September 2025

63 Macrae Road
Eden Office Park
Ham Green
Bristol
BS20 0DD

For the attention of Chris Jarman,

Re: Afan Way, Port Talbot

Dear Chris,

We have received the recent National Resource Wales (NRW) comments referenced *P2025/0574* and *P2025/0560*, dated 3rd September 2025 and Environmental Health Consultation response referenced *P2025/0560* dated 3rd September 2025.

Please see below our responses to each of the comments made by NRW and Environmental Health.

NRW Comments and Responses

1. We acknowledge further works in the form of excavation trenches have been undertaken in the area of the former petrol station, which appears to indicate that underground tanks are no longer present. We would recommend that you consult the local petroleum officer/Trading Standards regarding whether they hold information on the tanks that were present at the site, as fuel tanks were also present in other areas of the site too."

The petroleum officer was previously consulted by ESP as shown in the Quantum investigation report referenced G762/IR and dated April 2016. Details of the petroleum officer search are shown in this report, it can be seen that the tanks in the Petrol Filling Station (PFS) area were removed in 2006. As shown on Figure 5 in Appendix 1, the Underground Storage Tanks (USTs) in the remaining areas of site are all indicated to have been previously removed. The removal of the USTs in the main site area (Tank 1 and Tank 2) was previously undertaken under the supervision of a geo-environmental consultant. The validation samples recorded low levels of speciated petroleum hydrocarbons, the remaining risk will be dealt with during the enabling works and site turnover, a watching brief will be maintained in this area of site. The validation report of the removal is appended. The only other underground tank in the main section is the tar tank in the extreme northern end of site. This tar tank has been decommissioned and treated, removing the primary source of contamination, the structure may remain in-situ. If encountered during the enabling works, this structure will be removed under a watching brief, with any residual contamination being removed and validated, the Clay barrier will be reinstated during the removal of the structure. Any unidentified contamination encountered during the enabling works will be excavated and removed in accordance with the remediation specification and regulator liaison.

2. The supplementary ground investigation works letter report indicates that soil samples were collected for laboratory analysis, however, the laboratory certificates have not been included within the letter to enable us to review the results."

The results were not received when then previous letter was issued. These results are appended, confirming the findings of the previous investigations that residual hydrocarbon contamination is present locally at the top of the clay. The concentrations were generally low to middle ranged aromatic and aliphatic hydrocarbons and xylene, indicative of residual petrol source. The concentrations were recorded locally to TP202 at 1.4m begl however were predominantly below the laboratory limit of detection at 2.0m begl in the same pit. No perched groundwater was observed during the supplementary investigation. No impaction of the groundwater in the aquifer has previously been recorded, additional sampling has been undertaken as discussed below.

3. The most recent groundwater sampling undertaken at the site comprised one round of sampling from three wells located in the vicinity of the former filling station in April 2024. Prior to this, four different wells were sampled in November 2021. It is always recommended that more than one round of sampling is undertaken, in order to provide greater understanding of the conditions present and to account for potential laboratory or sample collection errors. It is noted that high concentrations of total petroleum hydrocarbons were recorded in the wells sampled in April 2024. It is also noted that polycyclic aromatic hydrocarbons were not included within the analytical suite. It is therefore considered that groundwater sampling should be undertaken across the site to establish the current conditions and enable a robust conceptual site model and risk assessment, as well as to capture spatial and temporal trends. It should be ensured that the laboratory limit of detection (LOD) used in the analytical suite is low enough to account for the environmental quality standard (EQS)."

CP01 to CP04 were spread across the wider site and previously tested, no elevated speciated hydrocarbons were recorded confirming no impaction of the aquifer. A wide coverage of site has been achieved in the Groundtech wells, including the vicinity of the former tar tank. Previous groundwater testing undertaken at the former tar tank in 2006 recorded no elevated concentrations of BTEX but slightly elevated heavy end speciated hydrocarbons. These elevated concentrations were due to a screening value of 10ug/l being adopted as a conservative value. Based on current closest screening value from WHO of 300µg/l for Aliphatic C12-16, no elevated concentrations were recorded except for a single elevated level of Aliphatic C21 to C35. This testing was undertaken twenty years ago, recent testing by Groundtech (2021) had recorded no elevated CoC in the vicinity of the tar tank as discussed above. The recent testing results supersede the previous results. Additional groundwater testing has been undertaken in the eastern section of the site at the position of the former PFS, the results will be reported on receipt.

PAHs were tested during the groundwater sampling rounds in the main site area and PFS area, all of the PAHs were recorded below the laboratory limit of detection during the initial sampling round. The PAH concentrations recorded in the second sampling round are indicated to be associated with the industrial nature of the surrounding area, including plate works, chemical works, railway and gas works all located within 100m of this section of the site. CoC associated with the PFS source include petrol ranged aliphatic and aromatic hydrocarbons, which are all present below the relevant screening values.

4. It is unclear if the groundwater flow direction at the site has been confirmed."

The groundwater flow is indicated to be south and is likely to be providing base flow to the River Afan, based on current and historic groundwater level data.

5. The generic quantitative risk assessment concludes that there is an impermeable clay layer beneath made ground which is preventing the migration of contaminants into the sand and gravel aquifer. However, it is noted from the Phase II Geo-Environmental Report that this clay was not encountered in all the exploratory hole locations. Therefore, we do not know if the clay layer is protective of the aquifer across the entirety of the site. We have not been presented with the exploratory hole logs associated with the previous ground investigations from 2016 or 2017. The recent response provided by Groundtech appears to pertain only to the area of the former filling station. Clay was recorded absent in WS03 and TP08, and a small thickness of

0.55m was recorded in WS101. The reports from previous investigations (Quantum and Arcadis) have not been provided for review.”

The reports from previous investigations are appended for review. The clay layer is absent in WS03 and TP08 however these are located outside the area of concern (PFS). As discussed above, current and historic groundwater testing has found no impactation of the groundwater at these locations even though the tar tank is constructed into the granular aquifer deposits. In WS101 the clay layer is 0.55m thick which is sufficient as discussed in the Piling Risk Assessment referenced GRO-21252-6009. In WS03, the alluvium layer between 1.0m and 1.9m bgl is likely to act as an aquitard based on the material being described as clayey silty sand. Evidence of clay is also present in TP08 between 1.5m and 2.8m bgl which has also acted as an aquitard, this is evident by the limited impacted recorded through groundwater testing undertaken in this area in 2021. Overall, the clay has generally been encountered across the site, some highly localised areas are present where the thickness of the clay reduces and some localised areas are present where the material is clayey silty granular soils which also appear to have acted as an aquitard.

6. There is reference to a tar tank in the Phase II Geo-Environmental Report (Groundtech Consulting, December 2021) and no further information has been provided with regards to this.”

The contents of the tar tank have been removed twenty years ago and as discussed in GRO-21252-3003, the contamination in this area is residual. Groundwater testing undertaken at CP01 in the area of the tar tank by Groundtech Consulting confirms no impactation of the underlying aquifer. As discussed in Point 3.0, historical groundwater testing recorded no elevated CoC based on current WHO groundwater screening values except for Aliphatic C21-C35, this was recorded in a single sample furthest away from the tank. The recent testing supersedes the previous results, it is likely that natural attenuation has taken place in the last twenty years reducing the concentrations as demonstrated by the recent groundwater testing results.

7. We note that a drawing showing the location and density of piles has not been provided. The depths that the piles will be driven to is also unknown.”

This information is to be provided by the chosen piling company.

8. The piling risk assessment references previous reports, however, not all of these reports have been submitted with the application, namely those by Quantum Geotechnical and Arcadis.”

The reports from previous investigations are appended for review.

9. It has been reported that the thickness of the impermeable aquitard ranges from a minimum of 0.9m to a maximum of 2.5m. We query whether this is accurate, as some exploratory locations do not record clay, and some locations record a smaller thickness. It is acknowledged that the locations of piles are not provided within the report, and also that not all exploratory hole logs from previous investigations have been provided for review. It is unclear whether this impacts the piling risk assessment.”

The reports from previous investigations are appended for review. The proposed Aldi store is located outside the main source zone area (PFS) and the localised areas where clay is not present beneath the Made Ground (WS03 and TP08), do not impact the piling risk assessment. As discussed in the points above, the clay layer is mostly present beneath the site and where not present locally, is replaced by clayey silty granular deposits which will still appear to have acted as an aquitard.

Environmental Health Comments and Responses

1. Since the Remediation Specification report was issued, two additional supplementary intrusive investigations have been completed. The applicant is now required to submit an amended strategy that reflects the findings of these most recent investigations."

The requirements listed in the Remedial Strategy remain unchanged following the recommendations of the further intrusive work. As listed in Section 7.0 of the Supplementary Appraisal (GRO-21315-5257), the findings were consistent with the previous work. A revised Remediation Specification can still be issued if required.

Please do not hesitate to contact the undersigned if you have any queries.

Yours Sincerely

For Groundtech Consulting Limited

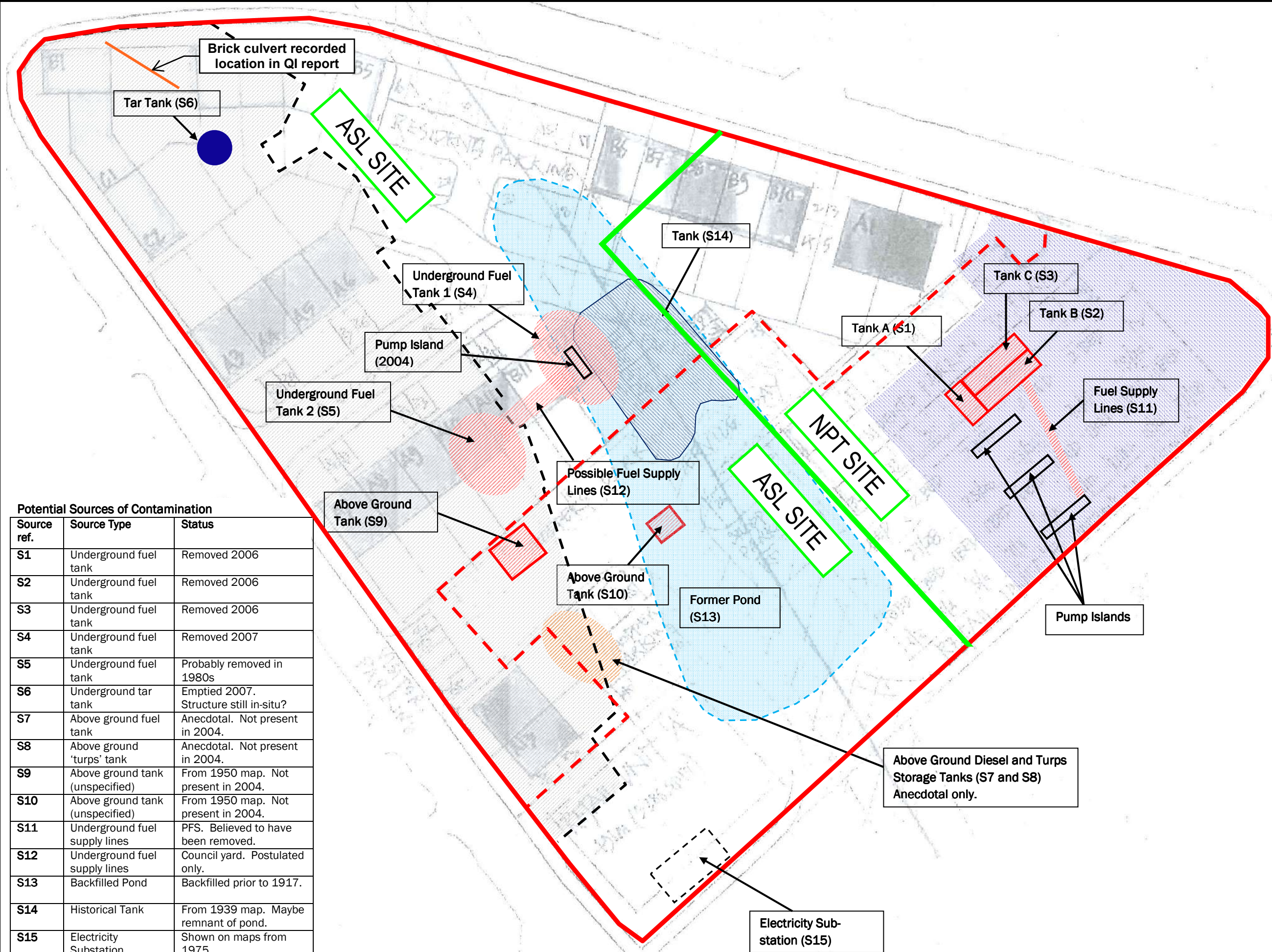


Luke Harrison
Principal Consulting Engineer
lh@groundtechconsulting.com

Enc. *ESP Potential sources of Contamination Plan*
 Supplementary Geo-Environmental Testing Results (July 2025)
 UST Removal Letter
 Tar Tank Investigation Letter
 Quantum Investigation Report
 Arcadis Investigation Report



APPENDIX 1 - Plans



Potential Sources of Contamination

Source ref.	Source Type	Status
S1	Underground fuel tank	Removed 2006
S2	Underground fuel tank	Removed 2006
S3	Underground fuel tank	Removed 2006
S4	Underground fuel tank	Removed 2007
S5	Underground fuel tank	Probably removed in 1980s
S6	Underground tar tank	Emptied 2007. Structure still in-situ?
S7	Above ground fuel tank	Anecdotal. Not present in 2004.
S8	Above ground 'turps' tank	Anecdotal. Not present in 2004.
S9	Above ground tank (unspecified)	From 1950 map. Not present in 2004.
S10	Above ground tank (unspecified)	From 1950 map. Not present in 2004.
S11	Underground fuel supply lines	PFS. Believed to have been removed.
S12	Underground fuel supply lines	Council yard. Postulated only.
S13	Backfilled Pond	Backfilled prior to 1917.
S14	Historical Tank	From 1939 map. Maybe remnant of pond.
S15	Electricity Substation	Shown on maps from 1975.
S16	General Made Ground	



Notes:

-  Former Petrol Filling Station (1991 - 2004)
-  Backfilled former pond (1899)
-  Former Tank Positions
-  Former Tin Plate Works (Main building)
-  Boundary between proposed Residential and Retail Zones (see Figure 2)

Base Layout after C2J Architects (Feb 2015)

PROJECT:
PROPOSED RETAIL AND RESIDENTIAL DEVELOPMENT
AFAN WAY, PORT TALBOT

Scale: 1:500 (approx. at A3)

FIGURE 5:
POTENTIAL SOURCES OF CONTAMINATION

EARTH SCIENCE PARTNERSHIP
33 Cardiff Road, Taffs Well,
Cardiff CF15 7RB Tel: 029 2081 3385
enquiries@earthsciencepartnership.com



APPENDIX 2 - Supplementary Testing Results (July 2025)

Groundtech Consulting Limited
PO Box 499
Manchester
United Kingdom
M28 8EE



Attention : Antonio Jimenez Bridge
Date : 21st July, 2025
Your reference : GRO-21252
Our reference : Test Report 25/11044 Batch 1
Location : Afan Way, PT
Date samples received : 5th July, 2025
Status : Final Report
Issue : 202507211633

Sixteen samples were received for analysis on 5th July, 2025 of which three 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.

The greenhouse gas emissions generated (in Carbon – Co2e) to obtain the results in this report are estimated as:

Scope 1&2 emissions - 10.57 kg of CO2

Scope 1&2&3 emissions - 24.981 kg of CO2

Authorised By:



Bruce Leslie
Project Manager

Please include all sections of this report if it is reproduced

Element Materials Technology

Client Name: Groundtech Consulting Limited
Reference: GRO-21252
Location: Afan Way, PT
Contact: Antonio Jimenez Bridge
EMT Job No: 25/11044

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	11-13	17-19	26-28								Please see attached notes for all abbreviations and acronyms		
Sample ID	TT201	TT202	TT202										
Depth	1.70	1.40	2.00										
COC No / misc													
Containers	V J T	V J T	V J T										
Sample Date	02/07/2025	02/07/2025	02/07/2025										
Sample Type	Soil	Soil	Soil										
Batch Number	1	1	1										
Date of Receipt	05/07/2025	05/07/2025	05/07/2025								LOD/LOR	Units	Method No.
Arsenic #	13.4	11.6	10.8								<0.5	mg/kg	TM30/PM15
Cadmium #	<0.3	<0.3	<0.3								<0.3	mg/kg	TM30/PM15
Chromium #	44.2	55.1	53.4								<0.5	mg/kg	TM30/PM15
Copper #	20	18	9								<1	mg/kg	TM30/PM15
Lead #	19	32	19								<5	mg/kg	TM30/PM15
Mercury #	<0.1	0.1	<0.1								<0.1	mg/kg	TM30/PM15
Nickel #	21.1	24.4	27.7								<0.7	mg/kg	TM30/PM15
Selenium #	<1	<1	<1								<1	mg/kg	TM30/PM15
Zinc #	75	149	102								<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	<0.04	1.02	<0.04								<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03	<0.03								<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	<0.05	<0.05								<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	0.11	<0.04								<0.04	mg/kg	TM4/PM8
Phenanthrene #	<0.03	0.16	<0.03								<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	<0.04	<0.04								<0.04	mg/kg	TM4/PM8
Fluoranthene #	<0.03	0.05	<0.03								<0.03	mg/kg	TM4/PM8
Pyrene #	<0.03	0.05	<0.03								<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	<0.06	<0.06	<0.06								<0.06	mg/kg	TM4/PM8
Chrysene #	<0.02	0.04	<0.02								<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	<0.07	<0.07	<0.07								<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	<0.04	<0.04	<0.04								<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	<0.04	<0.04	<0.04								<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	<0.04	<0.04								<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	<0.04	<0.04	<0.04								<0.04	mg/kg	TM4/PM8
PAH 16 Total	<0.6	1.4	<0.6								<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	<0.05	<0.05	<0.05								<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	<0.02	<0.02	<0.02								<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	106	110	107								<0	%	TM4/PM8
Methyl Tertiary Butyl Ether #	<2	<2	<2								<2	ug/kg	TM15/PM10
Benzene #	<3	25	13								<3	ug/kg	TM15/PM10
Toluene #	<3	30	<3								<3	ug/kg	TM15/PM10
Ethylbenzene #	5	6178	50								<3	ug/kg	TM15/PM10
m/p-Xylene #	<5	8304	13								<5	ug/kg	TM15/PM10
o-Xylene #	<3	210	<3								<3	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	71	60	79								<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	83	71	97								<0	%	TM15/PM10

Element Materials Technology

Client Name: Groundtech Consulting Limited
Reference: GRO-21252
Location: Afan Way, PT
Contact: Antonio Jimenez Bridge
EMT Job No: 25/11044

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	11-13	17-19	26-28								Please see attached notes for all abbreviations and acronyms		
Sample ID	TT201	TT202	TT202										
Depth	1.70	1.40	2.00										
COC No / misc													
Containers	V J T	V J T	V J T										
Sample Date	02/07/2025	02/07/2025	02/07/2025										
Sample Type	Soil	Soil	Soil										
Batch Number	1	1	1										
Date of Receipt	05/07/2025	05/07/2025	05/07/2025								LOD/LOR	Units	Method No.
TPH CWG													
Aliphatics													
>C5-C6 (HS_1D_AL) #	<0.1	>><0.1	<0.1								<0.1	mg/kg	TM36/PM12
>C6-C8 (HS_1D_AL) #	<0.1	>>45.7	0.7								<0.1	mg/kg	TM36/PM12
>C8-C10 (HS_1D_AL)	<0.1	>>138.2	0.6								<0.1	mg/kg	TM36/PM12
>C10-C12 (EH_CU_1D_AL) #	<0.2	106.0	<0.2								<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 (EH_CU_1D_AL) #	<4	131	<4								<4	mg/kg	TM5/PM8/PM16
>C16-C21 (EH_CU_1D_AL) #	<7	77	<7								<7	mg/kg	TM5/PM8/PM16
>C21-C35 (EH_CU_1D_AL) #	<7	34	<7								<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-35 (EH_CU+HS_1D_AL)	<19	532	<19								<19	mg/kg	TM5/PM8/PM16
Aromatics													
>C5-EC7 (HS_1D_AR) #	<0.1	>><0.1	<0.1								<0.1	mg/kg	TM36/PM12
>EC7-EC8 (HS_1D_AR) #	<0.1	>><0.1	<0.1								<0.1	mg/kg	TM36/PM12
>EC8-EC10 (HS_1D_AR) #	<0.1	>>17.0	<0.1								<0.1	mg/kg	TM36/PM12
>EC10-EC12 (EH_CU_1D_AR) #	0.7	73.1	6.2								<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 (EH_CU_1D_AR) #	<4	72	<4								<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 (EH_CU_1D_AR) #	<7	41	<7								<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 (EH_CU_1D_AR) #	<7	44	<7								<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-35 (EH_CU+HS_1D_AR) #	<19	247	<19								<19	mg/kg	TM5/PM8/PM16
Total aliphatics and aromatics(C5-35) (EH_CU+HS_1D_Total)	<38	779	<38								<38	mg/kg	TM5/PM8/PM16
Total Phenols HPLC	<0.15	0.22	<0.15								<0.15	mg/kg	TM26/PM21B
Natural Moisture Content	23.7	20.0	21.9								<0.1	%	PM4/PM0
Sulphate as SO4 (2:1 Ext) #	0.0131	0.1229	0.0901								<0.0015	g/l	TM38/PM20
Total Cyanide #	<0.5	<0.5	<0.5								<0.5	mg/kg	TM89/PM45
Organic Matter	3.8	3.1	1.4								<0.2	%	TM21/PM24
pH #	7.99	6.92	8.42								<0.01	pH units	TM73/PM11

Element Materials Technology

Client Name: Groundtech Consulting Limited
Reference: GRO-21252
Location: Afan Way, PT
Contact: Antonio Jimenez Bridge
EMT Job No: 25/11044

VOC Report : Solid

EMT Sample No.	11-13	17-19	26-28								Please see attached notes for all abbreviations and acronyms		
Sample ID	TT201	TT202	TT202										
Depth	1.70	1.40	2.00										
COC No / misc													
Containers	V J T	V J T	V J T										
Sample Date	02/07/2025	02/07/2025	02/07/2025										
Sample Type	Soil	Soil	Soil										
Batch Number	1	1	1								LOD/LOR	Units	Method No.
Date of Receipt	05/07/2025	05/07/2025	05/07/2025										
VOC MS													
Dichlorodifluoromethane	<2	<2	<2								<2	ug/kg	TM15/PM10
Methyl Tertiary Butyl Ether #	<2	<2	<2								<2	ug/kg	TM15/PM10
Chloromethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
Vinyl Chloride	<2	<2	<2								<2	ug/kg	TM15_A/PM10
Bromomethane	<1	<1	<1								<1	ug/kg	TM15/PM10
Chloroethane #	<2	<2	<2								<2	ug/kg	TM15/PM10
Trichlorofluoromethane #	<2	<2	<2								<2	ug/kg	TM15/PM10
1,1-Dichloroethene (1,1 DCE) #	<6	<6	<6								<6	ug/kg	TM15/PM10
Dichloromethane (DCM) #	10	<7	<7								<7	ug/kg	TM15/PM10
trans-1-2-Dichloroethene #	<3	<3	<3								<3	ug/kg	TM15/PM10
1,1-Dichloroethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
cis-1-2-Dichloroethene #	<3	<3	<3								<3	ug/kg	TM15/PM10
2,2-Dichloropropane	<4	<4	<4								<4	ug/kg	TM15/PM10
Bromochloromethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
Chloroform #	<3	<3	<3								<3	ug/kg	TM15/PM10
1,1,1-Trichloroethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
1,1-Dichloropropene #	<3	<3	<3								<3	ug/kg	TM15/PM10
Carbon tetrachloride #	<4	<4	<4								<4	ug/kg	TM15/PM10
1,2-Dichloroethane #	<4	<4	<4								<4	ug/kg	TM15/PM10
Benzene #	<3	25	13								<3	ug/kg	TM15/PM10
Trichloroethene (TCE) #	<3	<3	<3								<3	ug/kg	TM15/PM10
1,2-Dichloropropane #	<6	<6	<6								<6	ug/kg	TM15/PM10
Dibromomethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
Bromodichloromethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
cis-1-3-Dichloropropene	<4	<4	<4								<4	ug/kg	TM15/PM10
Toluene #	<3	30	<3								<3	ug/kg	TM15/PM10
trans-1-3-Dichloropropene	<3	<3	<3								<3	ug/kg	TM15/PM10
1,1,2-Trichloroethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
Tetrachloroethene (PCE) #	<3	<3	<3								<3	ug/kg	TM15/PM10
1,3-Dichloropropane #	<3	<3	<3								<3	ug/kg	TM15/PM10
Dibromochloromethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
1,2-Dibromoethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
Chlorobenzene #	<3	<3	<3								<3	ug/kg	TM15/PM10
1,1,1,2-Tetrachloroethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
Ethylbenzene #	5	6178	50								<3	ug/kg	TM15/PM10
m/p-Xylene #	<5	8304	13								<5	ug/kg	TM15/PM10
o-Xylene #	<3	210	<3								<3	ug/kg	TM15/PM10
Styrene	<3	7	<3								<3	ug/kg	TM15_A/PM10
Bromoform	<3	<3	<3								<3	ug/kg	TM15/PM10
Isopropylbenzene #	<3	2635	13								<3	ug/kg	TM15/PM10
1,1,2,2-Tetrachloroethane #	<3	<3	<3								<3	ug/kg	TM15/PM10
Bromobenzene	<2	<2	<2								<2	ug/kg	TM15/PM10
1,2,3-Trichloropropane #	<4	<4	<4								<4	ug/kg	TM15/PM10
Propylbenzene #	<4	7582	61								<4	ug/kg	TM15/PM10
2-Chlorotoluene	<3	<3	<3								<3	ug/kg	TM15/PM10
1,3,5-Trimethylbenzene #	<3	>>33233 ^{AA}	6								<3	ug/kg	TM15/PM10
4-Chlorotoluene	<3	<3	<3								<3	ug/kg	TM15/PM10
tert-Butylbenzene #	<5	359	<5								<5	ug/kg	TM15/PM10
1,2,4-Trimethylbenzene #	<6	>>75674 ^{AA}	27								<6	ug/kg	TM15/PM10
sec-Butylbenzene #	<4	1333	<4								<4	ug/kg	TM15/PM10
4-Isopropyltoluene	<4	694	<4								<4	ug/kg	TM15/PM10
1,3-Dichlorobenzene #	<4	<4	<4								<4	ug/kg	TM15/PM10
1,4-Dichlorobenzene #	<4	<4	<4								<4	ug/kg	TM15/PM10
n-Butylbenzene	<4	3102	10								<4	ug/kg	TM15/PM10
1,2-Dichlorobenzene #	<4	<4	<4								<4	ug/kg	TM15/PM10
1,2-Dibromo-3-chloropropane	<4	<4	<4								<4	ug/kg	TM15/PM10
1,2,4-Trichlorobenzene	<7	<7	<7								<7	ug/kg	TM15/PM10
Hexachlorobutadiene	<4	<4	<4								<4	ug/kg	TM15/PM10
Naphthalene	<27	5058	<27								<27	ug/kg	TM15/PM10
1,2,3-Trichlorobenzene	<7	<7	<7								<7	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	71	60	79								<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	83	71	97								<0	%	TM15/PM10

[illegible]

Matrix : Solid

6 of 13

Client Name: Groundtech Consulting Limited

Reference: GRO-21252

Location: Afan Way, PT

Contact: Antonio Jimenez Bridge

Matrix : Solid

[illegible]

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating. Only analyses which are accredited are recorded as deviating if set criteria are not met.

It is a requirement under ISO 17025 that we inform clients if samples are deviating i.e. outside what is expected. A deviating sample indicates that the sample 'may' be compromised but not necessarily will be compromised. The result is still accredited and our analytical reports will still show accreditation on the relevant analytes.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 25/11044

SOILS and ASH

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. Asbestos samples are retained for 6 months.

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. Limits of detection for analyses carried out on as received samples are not moisture content corrected. 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. Ash samples are dried at 35°C ±5°C.

Where Mineral Oil 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.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

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.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overestimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

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

ISO17025 accreditation applies to surface water and groundwater and usually 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 is quoted, this refers to Total Aliphatics C10-C40.

STACK EMISSIONS

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 for Dioxins and Furans and Dioxin like PCBs has been performed on XAD-2 Resin, only samples which use this resin will be within our MCERTS scope.

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

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

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.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

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 requirement of our Accreditation Body 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.

Laboratory records are kept for a period of no less than 6 years.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

Customer Provided Information

Sample ID and depth is information provided by the customer.

Age of Diesel

The age of release estimation is based on the nC17/pristane ratio only as prescribed by Christensen and Larsen (1993) and Kaplan, Galperin, Alimi et al., (1996).

Age estimation should be treated with caution as it can be influenced by site specific factors of which the laboratory are not aware.

Tentatively Identified Compounds (TICs)

Where Tentatively Identified Compounds (TICs) are reported, up to 10 Tentatively Identified Compounds will be listed where there is found to be a greater than 80% match with the NIST library. The reported concentration is determined semi-quantitatively, with a matrix specific limit of detection.

Note, other compounds may be present but are not reported.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
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.
>>	Results above quantitative calibration range. The result should be considered the minimum value and is indicative only. The actual result could be significantly higher.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
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
AA	x10 Dilution

HWOL ACRONYMS AND OPERATORS USED

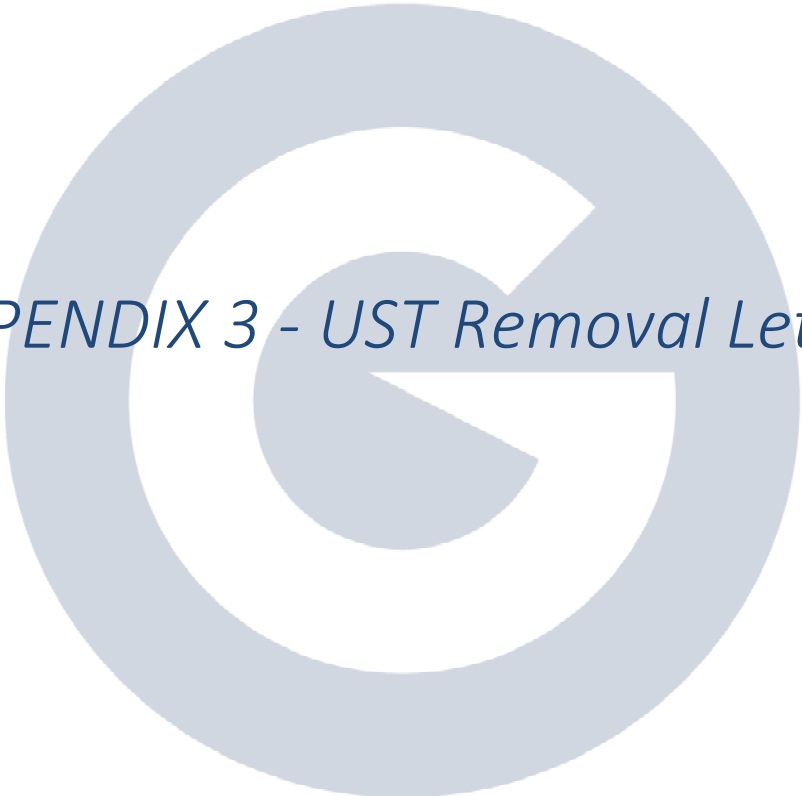
HS	Headspace Analysis.
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent.
CU	Clean-up - e.g. by florisil, silica gel.
1D	GC - Single coil gas chromatography.
Total	Aliphatics & Aromatics.
AL	Aliphatics only.
AR	Aromatics only.
2D	GC-GC - Double coil gas chromatography.
#1	EH_Total but with humics mathematically subtracted
#2	EU_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +).
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry.

EMT Job No: 25/11044

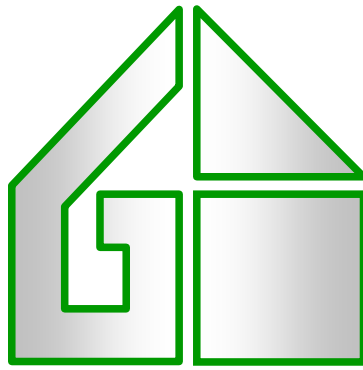
Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35 degrees Celsius or 105 degrees Celsius. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details	Yes		AR	Yes
TM15	Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM15	Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil.	PM24	Preparation of Soil and Marine Sediment Samples for Total Organic Carbon.			AD	Yes

EMT Job No: 25/11044

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM21B	As Received samples are extracted in Methanol: Water (60:40) by reciprocal shaker.			AR	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma-Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 degrees Celsius. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) - All anions comparable to BS ISO 15923-1: 2013	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AD	Yes
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM89	Modified USEPA method OIA-1667 (1999). Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM45	As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide, Sulphide and Thiocyanate analysis.	Yes		AR	Yes
TM15_A	Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds, Vinyl Chloride & Styrene by Headspace GC-MS.	PM10	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes



APPENDIX 3 - UST Removal Letter



Our Ref. p220.03.lt4.validation rpt.doc

21st November 2007

Mr. Mike Baroth
Dovey Estates Limited
Suffolk House
Trade Street
Cardiff CF10 5DT

By post & e-mail

Dear Mike

**AFAN WAY, PORT TALBOT
TANK EXCAVATION VALIDATION**

Following your recent instruction, we are pleased to provide our report on the validation undertaken following the removal of the underground fuel tank at the above site.

1.0 Background

As you are aware, Garage Consultancy Services identified two underground fuel tanks in the area of the fuel pumps in the central part of the former Council depot. Anecdotal evidence, obtained by ourselves, suggested that there also may have been an old underground fuel tank beneath the former building (now demolished) just to the south-west of the pumps.

In September 2007, Don Looney of DAL Contractors advised us that he had removed one large, steel tank (known as Tank 1 for the purposes of this report) from beneath the former fuel pumps. Following removal of the tank, he had backfilled the excavation. We were not present during the removal of Tank 1 by DAL Contractors; therefore, this excavation had not been validated at the time of excavation.

Our recommendations were that the excavation for Tank 1 be re-opened and an investigation of potential hydrocarbon contamination associated with the former tank undertaken in order to validate the works. In addition, we also recommended that further trenching be undertaken to locate, remove and validate the possible tank beneath the former building (known as Tank 2 for the purposes of this report).

2.0 Siteworks

Ground Investigation Limited (GIL) visited the site on 19th September 2007. M.E. Foley Contractors used a 25-tonne excavator to re-excavate the area of Tank 1. Two trial pits were excavated in this area (Tank 1 Pit 1 and Tank 1 Pit 2). The trial pit records are included in Enclosure A and their locations are indicated on Figure 1. The excavations exposed the reinforced concrete former surround to Tank 1 to a depth of 3.5m.

Following its previous removal Tank 1 was placed by DAL Contractors in the east of the site. The tank is of single-skin, steel construction, some 2.8m in diameter and 7.8m in length and was filled with foam. It had contained at least two compartments and had been cut in two. Further excavations were made in the area of the tank to identify the second tank referred to by Garage Consultancy Services; however, no further tanks were identified. Given the available information, we believe that the double compartments within the single tank may be the two tanks referred to by Garage Consultancy Services.

A visual inspection was made by Ground Investigation Limited of the available base and sides of the excavations, and a photo-ionisation detector (PID) was used to measure the levels of total volatile hydrocarbons present in 'head-space' of samples recovered of the excavated soils. No visual or olfactory evidence of hydrocarbon contamination was indicated within the excavations.

Further excavation was undertaken in the reported area of Tank 2. The trial pit record for this excavation (Tank 2 Pit 1) is included in Enclosure A and its location is indicated on Figure 1. Within the centre of this excavation, a brick-lined, sand-filled bund was constructed on a concrete slab from 2.2 to 3.4m depth below ground level. This structure was some 5m in length and 3m in width and is likely to have been an enclosure around the former underground fuel tank. The tank itself appears to have been removed previously, probably at the time of construction of the former building.

The sand within the enclosure was visibly 'clean' from 2.0 to 2.5m depth; however, slight hydrocarbon staining and discoloration was observed towards the base. No visual or olfactory evidence of hydrocarbon contamination was indicated within the underlying or surrounding Alluvial or Fluvio-glacial deposits. A photo-ionisation detector (PID) was used to measure the levels of total volatile hydrocarbons present in 'head-space' of all samples recovered of the excavation.

The following three soil samples collected from the area of the excavations were selected for validation testing:

- **Tank 1** (TES ID Number 0726659) taken from excavation Tank 1 Pit 2 at 3.0m depth, from the alluvial deposits adjacent to the base of the concrete tank surround. They comprised light grey mottled orange-brown, slightly sandy clay/silt. No hydrocarbon staining or odour was noted in the sample;
- **Tank 2** (TES ID Number 0726660) taken from below Tank 2 at 3.0m depth from within the Fluvio-glacial Gravels and comprised yellow-brown and red-brown, silty, fine to coarse sand and fine to coarse, rounded, sandstone gravel. No hydrocarbon staining or odour was noted in the sample; and
- **Tank 2** (TES ID Number 0726661) taken from the sand in the base of the enclosure at 2.7m depth and comprised grey-brown occasionally black, fine to medium sand with slight hydrocarbon staining and odour.

All soil samples taken for laboratory chemical analysis were collected in appropriate clean containers provided by the testing laboratory (i.e. amber glass containers with screw on air-tight caps for organic contaminants). Immediately after collection the samples were placed in sealed cool boxes where they remained during storage and transport to the laboratory.

Following completion of the sampling the two pits in the area of former Tank 1 were backfilled with excavated arisings. The excavation around former Tank 2 was left open and was secured with Herras fencing until the results of the validation testing were available.

3.0 Laboratory Testing

All three samples were analysed to determine the levels of petroleum hydrocarbons, including BTEX (benzene, toluene, ethyl-benzene and xylene) and MTBE (a component of unleaded petrol) compounds and concentrations of aliphatic and aromatic compounds within the following carbon band ranges:

- >C₈ to C₁₀;
- >C₁₀ to C₁₂;
- >C₁₂ to C₁₆;
- >C₁₆ to C₂₁; and
- >C₂₁ to C₃₅.

In addition the sample of sand from the base of the bund of Tank 2 (at 2.7m depth) was tested for a range of contaminants typically found on brownfield sites. The full results of the testing are presented in Enclosure B.

4.0 Assessment

As discussed above, the inspection of the excavations identified no significant visual evidence of hydrocarbon contamination remaining in the surrounding soils following the removal of the tanks, with only slight staining of the lower layers of sand around the former Tank 2. No detectable levels of volatile hydrocarbons were identified using the PID in the in-situ soils around the excavation or in the samples collected from the site.

Laboratory testing on the recovered samples indicated no evidence of BTEX compounds or MTBE in the recovered samples, and no aliphatic or aromatic petroleum hydrocarbons below C₁₂ were detected. However, the following hydrocarbons were identified:

- **Tank 1** - a trace of C₁₂₋₁₆ aromatic hydrocarbons was identified along with low concentrations of C₁₆₋₂₁ and C₂₁₋₃₅ aromatic hydrocarbons;
- **Tank 2** - C₁₆₋₂₁ and C₂₁₋₃₅ aromatic and aliphatic petroleum hydrocarbons were present in the sample of Fluvio-glacial Gravel from 3.0m depth.
- **Tank 2** - C₂₁₋₃₅ aromatic hydrocarbons were identified in the sand at a depth of 2.7m depth.

In order to assess human health risks associated within the identified hydrocarbons, Generic Assessment Criteria (GAC) have been generated by Ground Investigation Limited for commercial/industrial use using the BP-RISC software (adapted to UK exposure scenarios). The GAC and maximum recorded level for each carbon band range are as follows:

Carbon band range ¹	Aliphatic compounds		Aromatic compounds	
	GAC ²	Maximum recorded level (mg/kg)	GAC ²	Maximum recorded level (mg/kg)
C ₁₂ – C ₁₆	26,000	<4	10,000	5.33 (Tank 1, 2.0m)
C ₁₆ – C ₂₁	510,000 ³	138 (Tank 2, 3.0m)	7,700	33.6 (Tank 1, 2.0m)
C ₂₁ – C ₃₅	510,000 ³	286 (Tank 2, 3.0m)	7,700	98.5 (Tank 2, 3.0m)

Notes:

1. Only carbon band ranges where hydrocarbons identified by detection limits reported.
2. GAC – Generic Assessment Criteria, generated using BP RISC software. GAC assume 1% organic matter.
3. GAC for C₁₆ to C₃₅ hydrocarbons.

From the above, it can be seen that for all samples, the levels of the petroleum hydrocarbons are well below the respective GAC and, therefore, should not pose an unacceptable risk to human health. In addition, for Tank 2, 2.7m all other determinands analysed were well below their respective GAC and, therefore, should not pose an unacceptable risk to human health.

The analysis has indicated that petroleum hydrocarbons have impacted on the Fluvio-glacial Gravels in the area of the former Tank 2. However, the more mobile hydrocarbons (BTEX and C₈₋₁₆ compounds) were all below detection limits. The available information suggests that the underground tank (the likely source of the contamination) was removed prior to building in the area in the 1980s.

Using partition coefficients, a target concentration of 10µg/l and the minimum fraction organic content derived from the soil samples analysed, we have used the Environment Agency Remedial Targets worksheets to calculate Level 1 remedial targets (R_T) for the identified petroleum hydrocarbon fractions, as follows:

Compounds	Henrys Law Constant	K _{oc}	R _T (mg/kg)	Tank 1 (mg/kg)	Tank 2 (mg/kg)	Tank 3 (mg/kg)
C ₁₂₋₁₆ aromatic	5.3x10 ⁻²	5,012	8.0	5.33	<4	<4
C ₁₆₋₂₁ aromatic	1.3x10 ⁻²	15,849	25.4	33.6	25.3	<4
C ₁₆₋₂₁ aliphatic	4.9x10 ³	6.3x10 ⁸	1.0x10 ⁶	<4	138	<4
C ₂₁₋₃₅ aromatic	6.7x10 ⁻⁴	125,893	201	33.7	98.5	19.2
C ₂₁₋₃₅ aliphatic	4.9x10 ⁻⁴	6.3x10 ⁸	1.0x10 ⁶	<8.76	286	<8.76

Notes:

1. R_T - Remedial Targets calculated from EA worksheets using a Environment Agency defined target concentration of 10µg/l and a fraction organic carbon (foc) of 0.16% (lowest recorded in samples).
2. Henrys Law Constant and K_{oc} taken from TPH CWG Series Volume 3, 1997.
3. Yellow shading indicates exceedance of R_T.
4. For Tank 1, a revised RT calculated for C₁₆₋₂₁ aromatic compounds using the foc of 0.99% recorded for the sample is 157mg/kg, i.e. greater than the recorded concentration.

These calculated targets are generally above the recorded levels of hydrocarbons. The only failure was the concentration of C₁₆₋₂₁ aromatic compounds within the Tank 1 excavation (33.6mg/kg); however, this result only marginally exceeded the R_T of 25mg/kg. However, when the organic content from that sample is used to calculate the R_T, it rises to 157mg/kg. i.e. in excess of the recorded concentration.

Given the above, the petroleum hydrocarbons present are unlikely to pose a significant threat to the groundwater quality in the area and the River Afan.

5.0 Conclusions

The investigation has indicated low levels of petroleum hydrocarbon contamination, generally from the carbon band range C₂₁₋₃₅ in the area of the former underground fuel tanks. Tank 1 has recently been removed, but Tank 2 was probably removed in the 1980s. The recorded levels of soil contamination should not pose an unacceptable chronic risk to the health of users of the proposed development. The recorded concentrations of petroleum hydrocarbons are all below calculated remedial targets (when foc of the sample is taken in to account) and, hence, are unlikely to pose a significant threat to the groundwater quality in the area and the River Afan.

Given the above, we consider that no remedial works are warranted in the areas of the former tanks and development may proceed. However, should any pockets of soil displaying visually or olfactory evidence of petroleum hydrocarbons be identified away from the former underground tanks during development, they should be removed from the excavation pending further sampling and analysis.

We hope that the above and enclosed are clear and satisfy your requirements. However, should you have any queries, or require any further assistance, please do not hesitate to contact the writer or Jeremy Hucker.

Yours sincerely,

Jerome Daly

SENIOR GEOTECHNICAL ENGINEER

Enc.

Figure 1

Enclosure A

Enclosure B

Site Plan

Trial Pit Records

Geo-environmental Laboratory Test Results - Soils

cc. Roger North (letter and figures only by e-mail)

FIGURES

ENCLOSURE A

Trial Pit Records



TRIAL PIT RECORD

Hole ID

Tank1 Pit1

Sheet 1 of 1 (0.00m-5.00m)

All dimensions in metres

Scale 1:25

Site: Afan Way, Port Talbot

Method/Plant Used: Daewoo 255, 360, tracked 25t excavator

Client: Dovey Group of Companies

Start date: 19/09/07

End Date: 19/09/07

Logged By: JWD

Job No: Afan Way, Port Talbot

Easting:

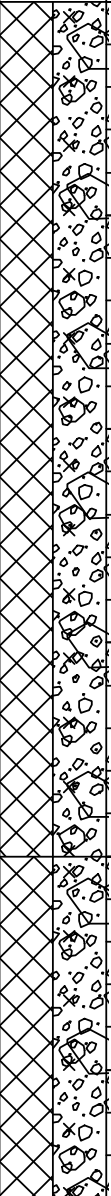
Nothing:

Elevation:

SAMPLES & IN-SITU TESTS

Water

STRATA

Depth	Type / No	Results / Remarks	ter	Legend	Depth R.L.	Description
2.50	D	PID=0.0ppm			(2.00)	Loose dark grey and red-brown slightly silty fine to coarse SAND and fine to coarse angular GRAVEL of brick and concrete fragments with many cobbles of brick and concrete with occasional wire and steel. MADE GROUND
					2.00	... Reinforced concrete surround to former fuel tank encountered from 1.3 to 2.8m depth, with a semi-curcular base.
					(0.80)	Loose dark grey slightly silty fine to coarse SAND and fine to coarse angular GRAVEL of ash brick brick and concrete fragments with many cobbles of brick sandstone and concrete some concrete boulders and occasional wire and timber. MADE GROUND
					2.80	Trial pit terminated at 2.80 m depth

Groundwater Observations

Strike Depth

Flow Rate Remarks

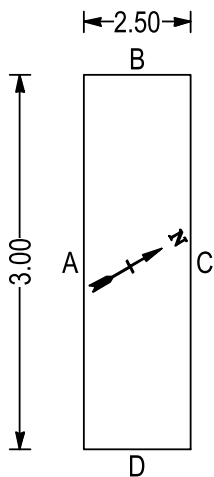
Not Struck

Shoring/Support: none

Side Stability: Some collapse of Made Ground

General Remarks

1. All dimensions are in metres unless stated, Coordinates approximate only and interpolated from recent OS maps.
2. All descriptions of consistency and relative density are based on field observations and results of in-situ tests where applicable.
3. PID readings taken of 'head space' of plastic tubs.
4. Pit excavated at location of former below ground fuel tank, excavation terminated at base of concrete surround to former tank.
5. Former tank removed previously by on-site Contractor comprised foam filled, single skin steel cylinder 7.8m long by 2.8m diameter.



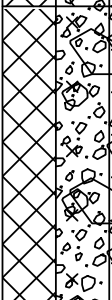
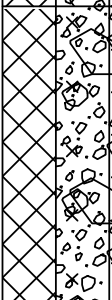
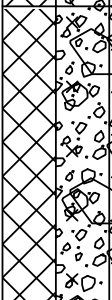
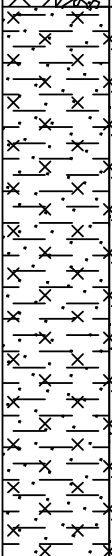


Hole ID

Tank1 Pit2

Sheet 1 of 1 (0.00m-5.00m)
All dimensions in metres
Scale 1:25

Site: Afan Way, Port Talbot	Method/Plant Used: Daewoo 255, 360 _o tracked 25t excavator		
Client: Dovey Group of Companies	Start date: 19/09/07	End Date: 19/09/07	Logged By: JWD
Job No: Afan Way, Port Talbot	Easting:	Northing:	Elevation:

SAMPLES & IN-SITU TESTS			Water	STRATA		
Depth	Type / No	Results / Remarks		Legend	Depth R.L.	Description
					(1.50)	Loose dark grey and red-brown slightly silty fine to coarse SAND and fine to coarse angular GRAVEL of brick and concrete fragments with many cobbles of brick and concrete with occasional wire and steel. MADE GROUND
					1.50	... Edge of reinforced concrete surround to former fuel tank exposed from 1.3 to 3.5m depth along north-eastern face of excavation.
					(0.70)	Loose dark grey slightly silty fine to coarse SAND and fine to coarse angular GRAVEL of ash brick brick and concrete fragments with many cobbles of brick sandstone and concrete some concrete boulders and occasional wire and timber. MADE GROUND
					2.20	
2.50	D	Made Ground PID=0.0ppm			(1.30)	Soft to firm light grey mottled orange-brown slightly sandy CLAY/SILT. No hydrocarbon staining or odour noted. ESTUARINE ALLUVIUM
3.00	D	Alluvium PID=0.0ppm			... Loose orange-brown and maroon-dark grey sandy fine to coarse angular GRAVEL of ash and slag encountered from 3.0 to 3.5m depth adjacent to former tank surround.	
3.20	D	Made Ground PID=0.0ppm			... No hydrocarbon staining noted on groundwater.	
					3.50	
						Trial pit terminated at 3.50 m depth

Groundwater Observations		Shoring/Support: none Side Stability: Some collapse of Made Ground	
Strike Depth	Flow Rate Remarks		
3.20			
General Remarks 1. All dimensions are in metres unless stated, Coordinates approximate only and interpolated from recent OS maps. 2. All descriptions of consistency and relative density are based on field observations and results of in-situ tests where applicable. 3. PID readings taken of 'head space' of plastic tubs. 4. Pit excavated adjacent to the location of former below ground fuel tank, excavation terminated at base of concrete surround to former tank. 5. No evidence of additional tanks in the area.			



TRIAL PIT RECORD

Hole ID

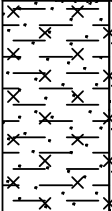
Tank2 Pit1

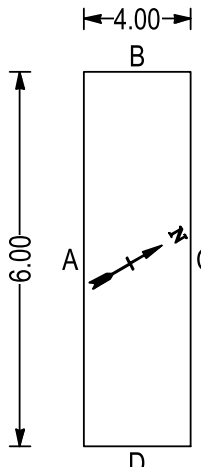
Sheet 1 of 1 (0.00m-5.00m)

All dimensions in metres

Scale 1:25

Site: Afan Way, Port Talbot		Method/Plant Used: Daewoo 255, 360, tracked 25t excavator		Sheet 1 of 1 (0.00m-5.00m)	
Client: Dovey Group of Companies		Start date: 19/09/07	End Date: 19/09/07	Logged By: JWD	
Job No: Afan Way, Port Talbot		Easting:	Northing:	Elevation:	
All dimensions in metres Scale 1:25					

SAMPLES & IN-SITU TESTS			Water	STRATA						
Depth	Type / No	Results / Remarks		Legend	Depth	Description				
					R.L.					
1.50	D	Made Ground PID=0.0ppm		(2.20)	Loose dark grey and red-brown slightly silty fine to coarse SAND and fine to coarse angular GRAVEL of ash clinker brick and concrete fragments with many cobbles and bounders of brick and concrete with occasional wire steel and plastic pipe. MADE GROUND					
					... Loose yellow-brown fine to medium SAND located in central area of excavation from 2.0 to 2.5m depth. No hydrocarbon odour or staining noted.					
					2.10	D	Made Ground-Sand PID=0.0ppm		(0.50)	Soft to firm light grey mottled orange-brown slightly sandy CLAY/SILT. No hydrocarbon staining or odour noted. ESTUARINE ALLUVIUM ... A brick lined sand filled bund to a former below ground fuel tank was encountered from 2.2 to 3.0m depth within the centre of the excavation. This structure was some 5m long by 3m wide and was constructed on a concrete slab from 3.0 to 3.4m depth.
					2.70					... Loose grey-brown occasionally black fine to medium SAND located within base of bund from 2.0 to 2.5m depth. Slight hydrocarbon odour and staining noted.
3.00	D	Fluvio-glacial Gravels PID=0.0ppm		(0.80)	Medium dense yellow-brown and red-brown silty fine to coarse SAND and fine to coarse rounded sandstone GRAVEL. No hydrocarbon staining or odour noted. FLUVIO-GLACIAL GRAVELS					
				3.50	Trial pit terminated at 3.50 m depth					

Groundwater Observations		Shoring/Support: none Side Stability: Some collapse of Made Ground	
Strike Depth	Flow Rate Remarks		
Not Struck			

General Remarks 1. All dimensions are in metres unless stated, Coordinates approximate only and interpolated from recent OS maps. 2. All descriptions of consistency and relative density are based on field observations and results of in-situ tests where applicable. 3. PID readings taken of 'head space' of plastic tubs. 4. Pit excavated at the location of former below ground fuel tank. 5. No fuel tank encountered in this area during the recent groundworks.	
--	--

ENCLOSURE B

Geo-environmental Laboratory Test Results Soil

TES Report No. EFS/074452 (Ver. 1)

Ground Investigation Ltd
Geotechnical &
Geoenvironmental Engineering
6 New Mill Court
Enterprise Park
Swansea
SA7 9FG

Site: Afon Way, Council Yard

The 3 samples described in this report were logged for analysis by TES Bretby on 21-Sep-2007.
The analysis was completed by: 12-Oct-2007

Tests where the accreditation is set to N or No, and any individual data items marked with a * are not UKAS accredited
Any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by TES Bretby Laboratories.

The following tables are contained in this report:

Table 1 Main Analysis Results (Pages 2 to 3)
Table of GRO Results (Page 4)
Table of PAH (MS-SIM) (80) Results (Page 5)
Table of TPH (Si) banding (std) (Page 6)
GC-FID Chromatograms (Pages 7 to 12)
Table of Report Notes (Page 13)

On behalf of
TES Bretby :
J Hannah


Project Co-ordinator

Date of Issue: 12-Oct-2007

Tests marked '^' have been subcontracted to another laboratory.

TES Bretby accepts no responsibility for any sampling not carried out by our personnel.

Gasoline Range Organics
(BTEX and Aliphatic Carbon Ranges)

Customer and Site Details: Ground Investigation Ltd: Afon Way, Council Yard
Job Number: S07_4452
Directory: 1005HSA.GC6
Method: Headspace GCFID

Matrix: Soil
Date Booked in: 21-Sep-07
Date extracted: 05-Oct-07
Date Analysed: 08-Oct-07

* Sample data with an asterisk are not UKAS accredited.

		Concentration, (mg/kg) - as wet weight					Aliphatics				
Sample ID	Client ID	Benzene	Toluene	Ethyl benzene	m/p-Xylene	o-Xylene	C5 - C6	>C6 - C7	>C7 - C8	>C8 - C10	Total GRO
* CL0726659	Tank 1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.2	<0.2	<0.2	<0.2	<0.2
* CL0726660	Tank 2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.2	<0.2	<0.2	<0.2	<0.2
* CL0726661	Tank 2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.2	<0.2	<0.2	<0.2	<0.2

Note: Benzene elutes between C6 and C7, toluene elutes between C7 and C8, ethyl benzene and the xylenes elute between C8 and C9.

Xylenes have been deducted from the C8-C10 band to give the aliphatic fraction, however aromatic compounds may still be contributing to this fraction.

Polycyclic Aromatic Hydrocarbons

GC/MS (SIM)

Customer and Site Details:	Ground Investigation Ltd: Afon Way, Council Yard		
Sample Details:	Tank 2	Job Number:	S07_4452
LIMS ID Number:	CL0726661	Date Booked in:	21-Sep-07
QC Batch Number:	2920	Date Extracted:	25-Sep-07
Quantitation File:	Initial Calibration	Date Analysed:	29-Sep-07
Directory:	0928ABN.GC8\	Matrix:	Soil
Dilution:	1.0	Ext Method:	Ultrasonic

UKAS accredited?: No

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	2.55	0.17	92
Acenaphthylene	208-96-8	4.00	0.32	79
Acenaphthene	83-32-9	4.19	4.62	91
Fluorene	86-73-7	4.78	5.16	93
Phenanthrene	85-01-8	6.02	16.22	95
Anthracene	120-12-7	6.09	4.81	94
Fluoranthene	206-44-0	7.75	20.38	88
Pyrene	129-00-0	8.07	15.27	91
Benzo[a]anthracene	56-55-3	9.95	10.46	91
Chrysene	218-01-9	10.00	10.90	96
Benzo[b]fluoranthene	205-99-2	11.52	14.01	98
Benzo[k]fluoranthene	207-08-9	11.56	5.05	97
Benzo[a]pyrene	50-32-8	11.95	9.49	97
Indeno[1,2,3-cd]pyrene	193-39-5	13.33	6.38	100
Dibenzo[a,h]anthracene	53-70-3	13.38	2.01	93
Benzo[g,h,i]perylene	191-24-2	13.61	5.22	93
Total (USEPA16) PAHs	-	-	130.47	-

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area	Surrogates	% Rec
1,4-Dichlorobenzene-d4	NA	Nitrobenzene-d5	N.D
Naphthalene-d8	67	2-Fluorobiphenyl	101
Acenaphthene-d10	68	Terphenyl-d14	108
Phenanthrene-d10	69		
Chrysene-d12	71		
Perylene-d12	72		

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.