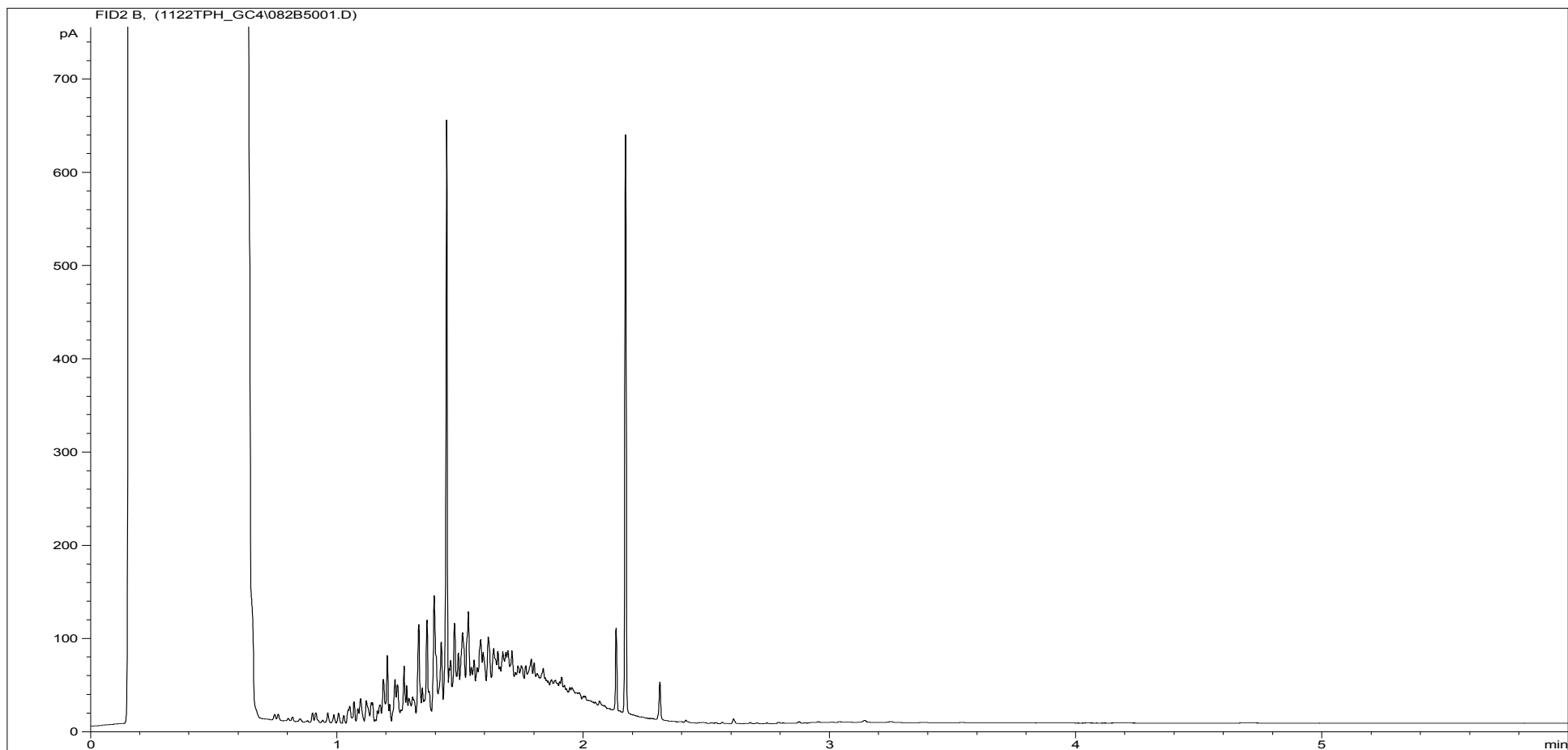
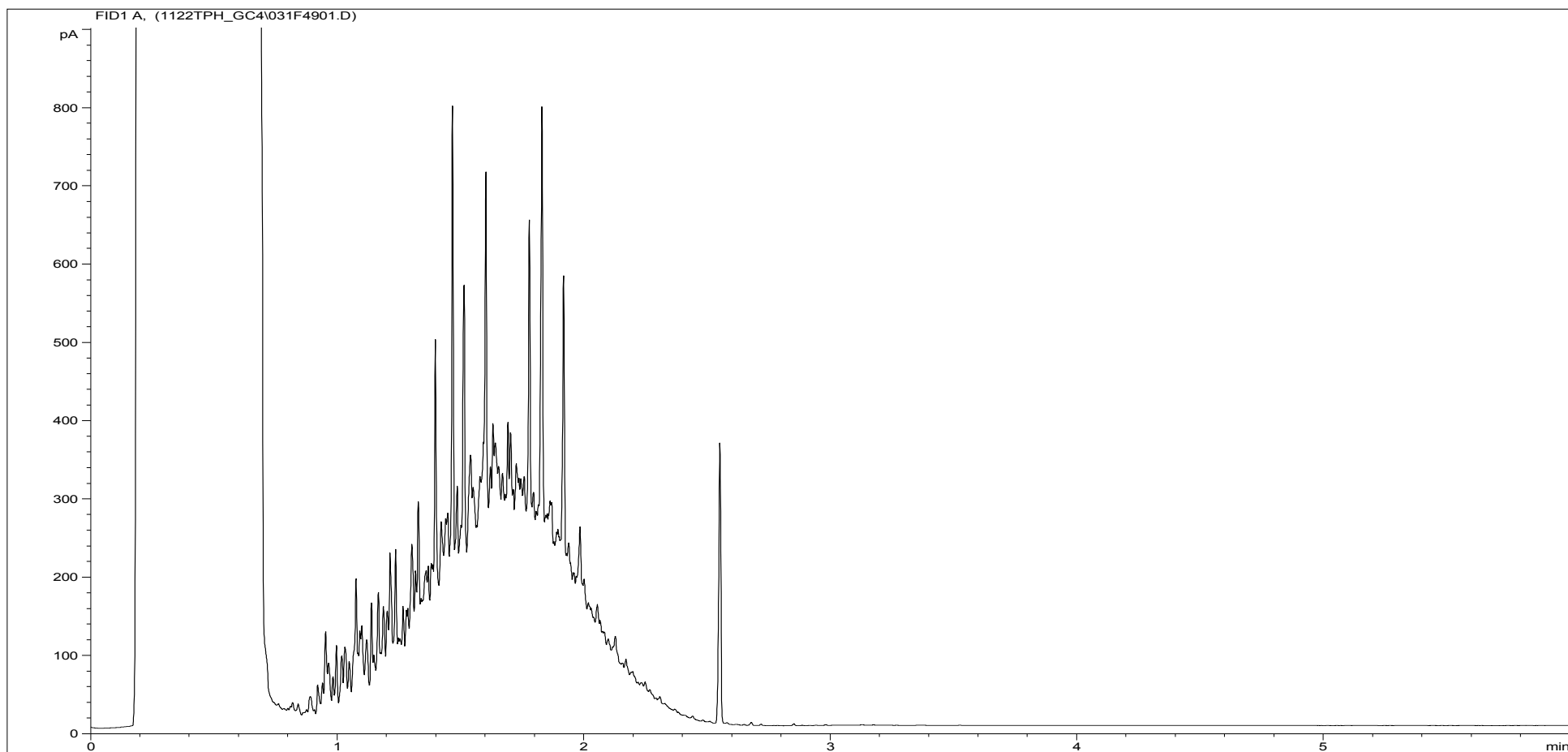


Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



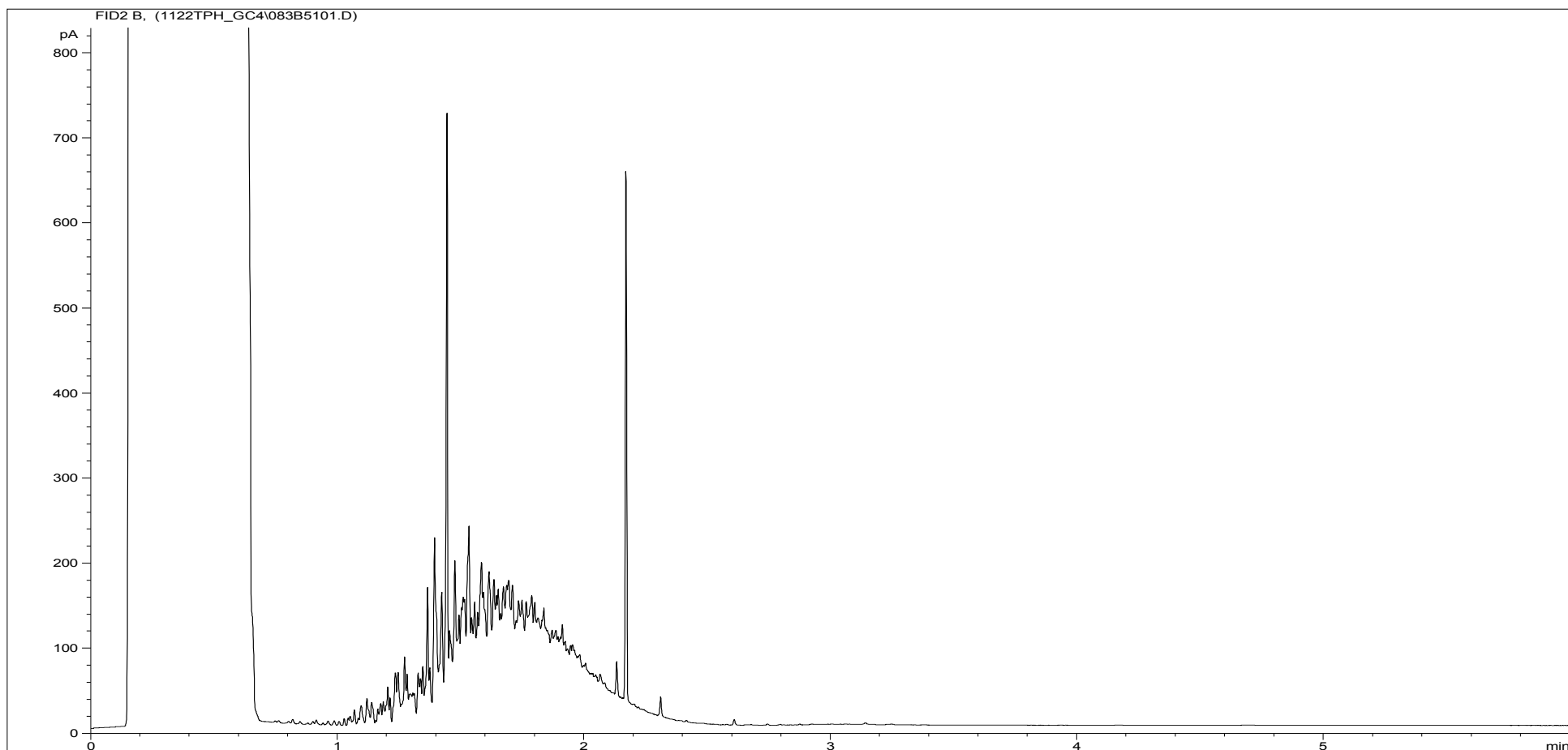
Sample ID:	CL0623545ARO	Job Number:	S06_4062
Multiplier:	10.08	Client:	Ground Investigation Ltd
Dilution:	1	Site:	Afan Way, Port Talbot
Acquisition Method:	MAX_RUNF.M	Client Sample Ref:	S4 2.2
Acquisition Date/Time:	22-Nov-06		
Datafile:	E:\GC\TES\DATA\Y2006\1122TPH_GC4\082B5001.D		

Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



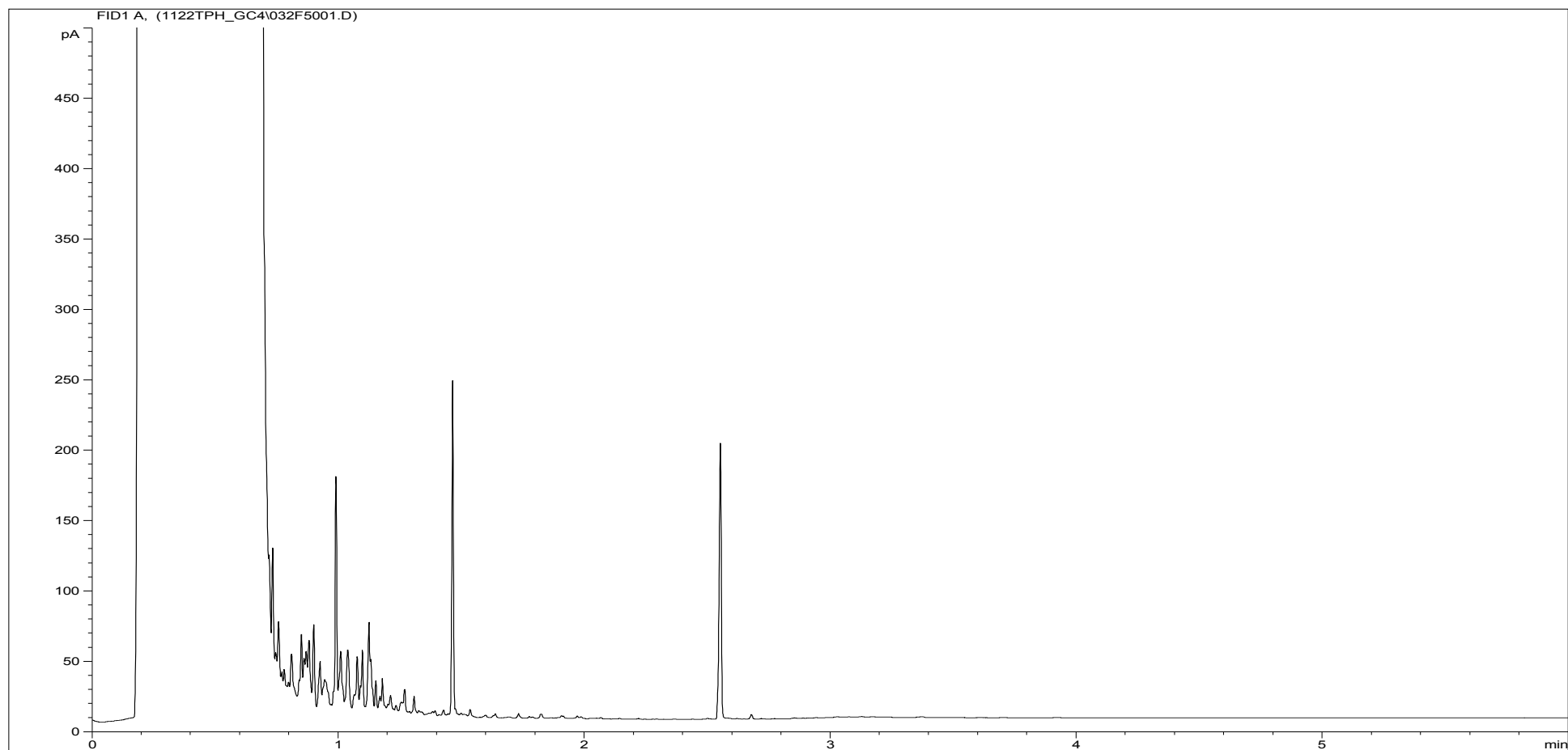
Sample ID:	CL0623546ALI	Job Number:	S06_4062
Multiplier:	13.68	Client:	Ground Investigation Ltd
Dilution:	1	Site:	Afan Way, Port Talbot
Acquisition Method:	MAX_RUNF.M	Client Sample Ref:	S6 2.2
Acquisition Date/Time:	22-Nov-06		
Datafile:	E:\GC\TES\DATA\Y2006\1122TPH_GC4\031F4901.D		

Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



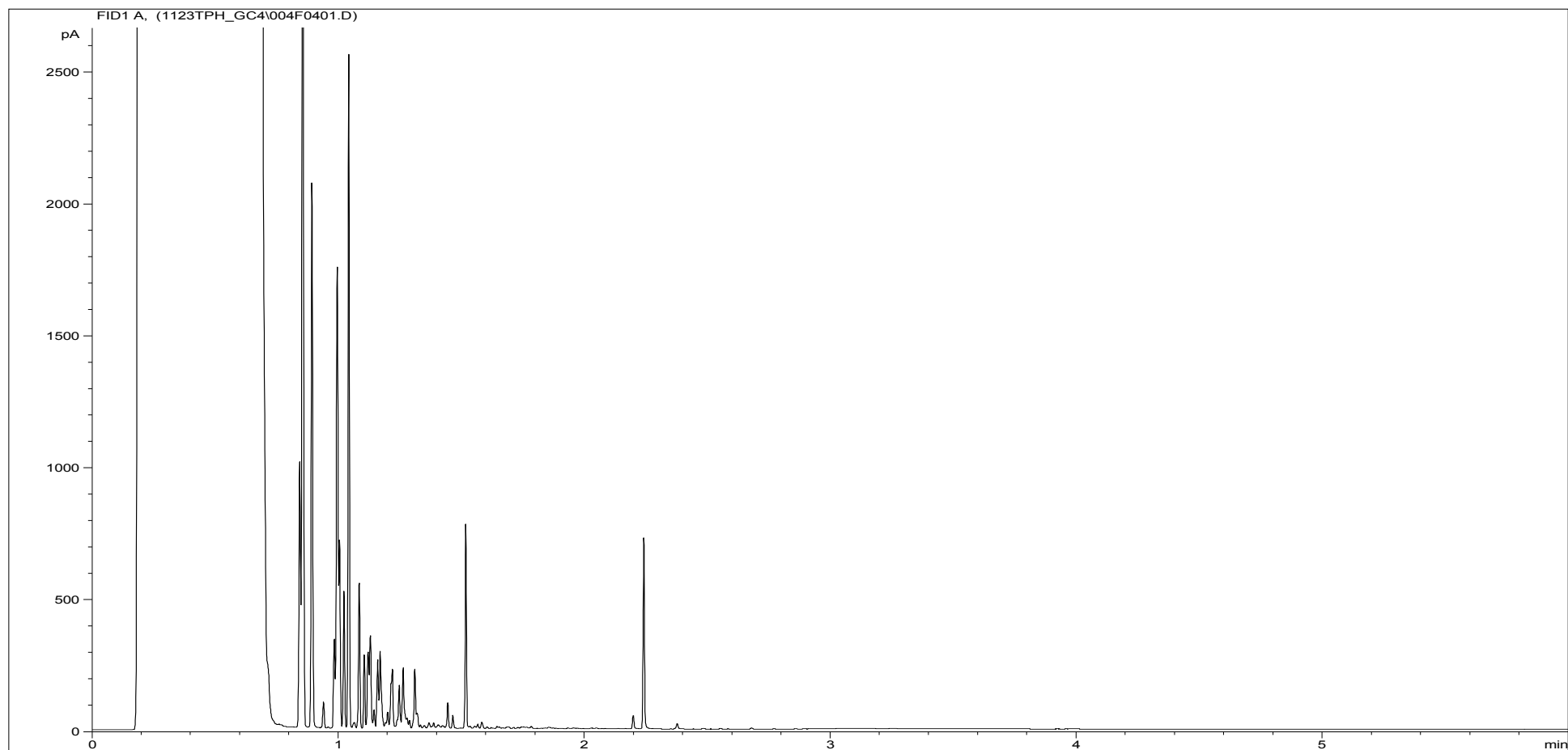
Sample ID:	CL0623546ARO	Job Number:	S06_4062
Multiplier:	9.52	Client:	Ground Investigation Ltd
Dilution:	1	Site:	Afan Way, Port Talbot
Acquisition Method:	MAX_RUNF.M	Client Sample Ref:	S6 2.2
Acquisition Date/Time:	22-Nov-06		
Datafile:	E:\GC\TES\DATA\Y2006\1122TPH_GC4\083B5101.D		

Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL0623547ALI	Job Number:	S06_4062
Multiplier:	13.32	Client:	Ground Investigation Ltd
Dilution:	1	Site:	Afan Way, Port Talbot
Acquisition Method:	MAX_RUNF.M	Client Sample Ref:	S7 2.3
Acquisition Date/Time:	22-Nov-06		
Datafile:	E:\GC\TES\DATA\Y2006\1122TPH_GC4\032F5001.D		

Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL0623547ARO	Job Number:	S06_4062
Multiplier:	9.52	Client:	Ground Investigation Ltd
Dilution:	1	Site:	Afan Way, Port Talbot
Acquisition Method:	MAX_RUNF.M	Client Sample Ref:	S7 2.3
Acquisition Date/Time:	23-Nov-06		
Datafile:	E:\GC\TES\DATA\Y2006\1123TPH_GC4\004F0401.D		

Report Notes

Soil/Solid analysis specific:

Results expressed as mg/kg on an air dried basis unless stated otherwise
S04 analysis not conducted in accordance with BS1377 unless otherwise stated
Water Soluble Sulphate on 2:1 water:soil extract
AR denotes analysis conducted on the As Received sample
BTEX analysis expressed as ug/kg As Received
Phenol HPLC results expressed as mg/kg As Received

Water analysis specific:

Results expressed as mg/l unless stated otherwise

Oil analysis specific:

Results expressed as mg/kg unless stated otherwise
S.G. expressed as g/cm³ @ 15°C

Filter analysis specific:

Results expressed as mg on filter unless stated otherwise

VOC analysis specific:

Explanatory notes for data flagging
U = undetected above reporting limit
J = concentration at instrument was below lowest calibration standard
E = concentration at instrument was above top calibration standard
B = compound was detected in method blank

Gas (Tedlar bag) analysis specific:

Results expressed as ug/l unless stated otherwise

Air (Carbon tube) analysis specific:

Results expressed as ug on tube unless stated otherwise

Asbestos analysis specific:

CH denotes Chrysotile
CR denotes Crocidolite
AM denotes Amosite
NADIS denotes No Asbestos Detected in Sample
NBFO denotes No Bulk fibres Observed
T Trace
L Low (2-15%)
M Medium (15-50%)
H High (>50%)

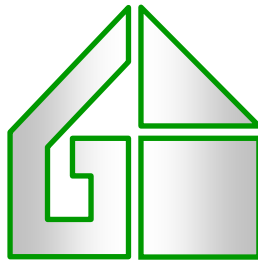
General notes:

^ this analysis was subcontracted to another laboratory
\$ Within laboratory tolerances
\$\$ unable to analyse due to nature of sample
¥ Results for guidance only, possible interference
& Blank corrected
I.S insufficient sample for analysis
Intf Unable to analyse due to interferences
N.D Not determined
N.R Not recorded
N.Det Not detected
Req Analysis Requested, see attached sheets for results
p Raised detection limit due to nature of sample
***** denotes the accreditation has been removed by the laboratory for this result only

END OF REPORT

APPENDIX F

Council Yard Tank Removal Validation Report (GIL, 2007a)



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,

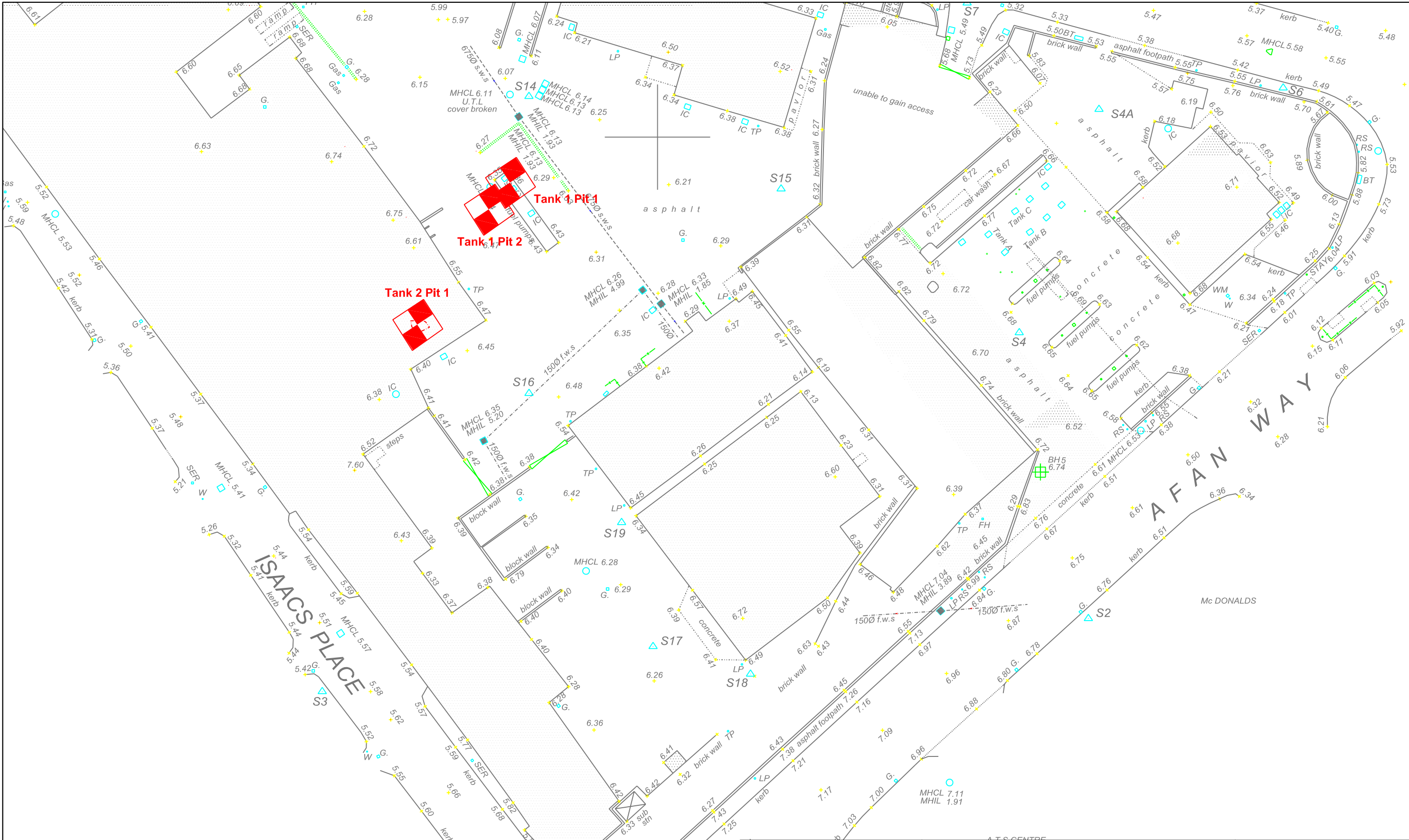
Jerome Daly

SENIOR GEOTECHNICAL ENGINEER

Enc.	Figure 1	Site Plan
	Enclosure A	Trial Pit Records
	Enclosure B	Geo-environmental Laboratory Test Results - Soils

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

FIGURES



Tank 1 Exploratory Hole Location



**Ground
Investigation
Limited**

TEL: (01792) 411013
FAX: (01792) 411014
E-MAIL: mail@ground-investigation.com

Site: Afan Way, Port Talbot

Client: Dovey Group

Project No: p220.04

Scale: as shown

Site National Grid Reference: 275966 189794

Drawing File Name: p220.04.lt4.fig1.dwg

FIGURE 1
SITE PLAN

ENCLOSURE A

Trial Pit Records

GROUND INVESTIGATION. 6 New Mill Court, Enterprise Park, Swansea, SA7 9FG. TEL: 01792 411013, FAX: 01792 411014, EMAIL: mail@ground-investigation.co.uk

TP 01 220.4, AFAN WAY, GRJ IW/6DT 07/11/07



Ground Investigation

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:	Northing:	Elevation:

SAMPLES & IN-SITU TESTS			Water	STRATA	
Depth	Type / No	Results / Remarks		Legend	Description
2.50	D	PID=0.0ppm			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-circular base.
				2.00	
2.50	D	PID=0.0ppm			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
				(0.80)	
				2.80	Trial pit terminated at 2.80 m depth

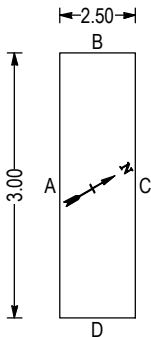
Groundwater Observations

Strike Depth	Flow Rate Remarks
Not Struck	

Shoring/Support: none
Side Stability: Some collapse of Made Ground

General Remarks

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



GROUND INVESTIGATION. 6 New Mill Court, Enterprise Park, Swansea, SA7 9FG. TEL: 01792 411013, FAX: 01792 411014, EMAIL: mail@ground-investigation.co.uk

TP 01 220.4.AFAN WAY.GRT IW.GDT 07/11/07



Ground Investigation

TRIAL PIT RECORD

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, 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	Description
					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.
				1.50	
					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
				(0.70)	
				2.20	
					Soft to firm light grey mottled orange-brown slightly sandy CLAY/SILT. No hydrocarbon staining or odour noted. ESTUARINE ALLUVIUM
2.50	D	Made Ground PID=0.0ppm		(1.30)	
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

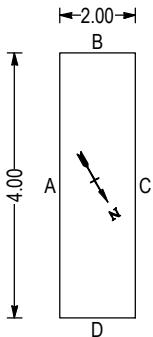
Groundwater Observations

Strike Depth	Flow Rate Remarks
3.20	

Shoring/Support: none
Side Stability: Some collapse of Made Ground

General Remarks

- All dimensions are in metres unless stated, Coordinates approximate only and interpolated from recent OS maps.
- All descriptions of consistency and relative density are based on field observations and results of in-situ tests where applicable.
- PID readings taken of 'head space' of plastic tubs.
- Pit excavated adjacent to the location of former below ground fuel tank, excavation terminated at base of concrete surround to former tank.
- No evidence of additional tanks in the area.



GROUND INVESTIGATION. 6 New Mill Court, Enterprise Park, Swansea, SA7 9FG. TEL: 01792 411013, FAX: 01792 411014, EMAIL: mail@ground-investigation.co.uk

TP 01 220.4.AFAN WAY.GRT IW.GBT 07/11/07



Ground Investigation			TRIAL PIT RECORD			Hole ID Tank2 Pit1		
Site: Afan Way, Port Talbot			Method/Plant Used: Daewoo 255, 360, tracked 25t excavator			Sheet 1 of 1 (0.00m-5.00m) All dimensions in metres Scale 1:25		
Client: Dovey Group of Companies			Start date: 19/09/07		End Date: 19/09/07			
Job No: Afan Way, Port Talbot			Easting:		Northing:			
					Logged By: JWD		Elevation:	
SAMPLES & IN-SITU TESTS				STRATA				
Depth	Type / No	Results / Remarks	Water	Legend	Depth R.L.	Description		
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		
2.10	D	Made Ground-Sand PID=0.0ppm			2.20	... 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.		
2.70	D	Made Ground-Sand PID=0.0ppm			2.70	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.		
3.00	D	Fluvio-glacial Gravels PID=0.0ppm			3.50	... 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. 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		
						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.

[illegible]

[illegible]

Gasoline Range Organics (BTX and Aliphatic Carbon Ranges)

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

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.

[illegible]

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
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	67
Acenaphthene-d10	68
Phenanthrene-d10	69
Chrysene-d12	71
Perylene-d12	72

Surrogates	% Rec
Nitrobenzene-d5	N.D
2-Fluorobiphenyl	101
Terphenyl-d14	108

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.

ALIPHATIC / AROMATIC FRACTION BY GC/FID

Customer and Site Details:

Ground Investigation Ltd : Afon Way, Council Yard

Job Number:

S07 4452

Separation:

Silica gel

QC Batch Number:

72951

Eluents:

Hexane, DCM

Directory:

E:\GC\TES\DATA\Y2007\0930TPH GC4\081B3701.D

Method:

Ultra Sonic

Matrix:

Soil

Date Booked in

21-Sep-07

Date Extracted

27-Sep-07

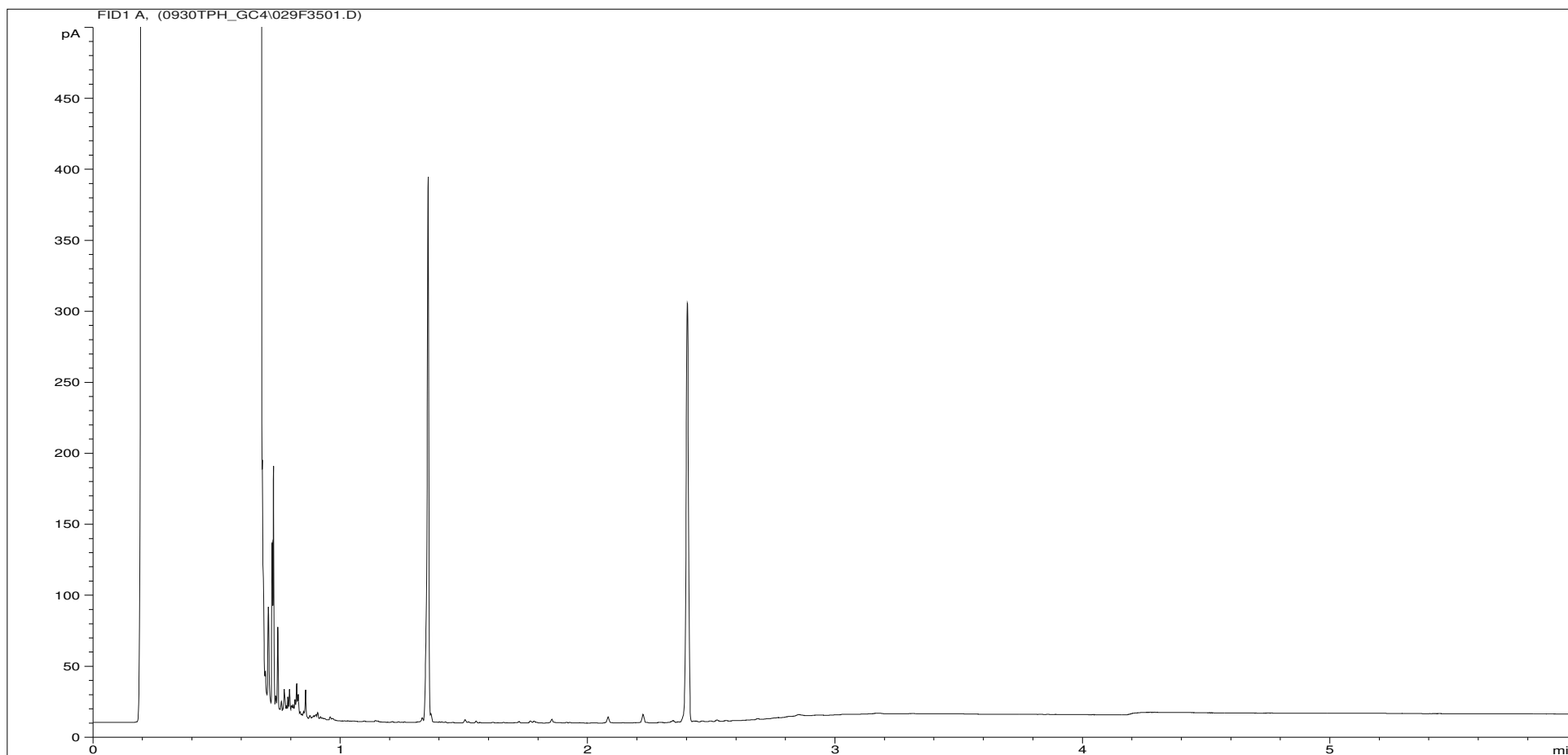
Date Analysed:

30-Sep-07

This sample data is not UKAS accredited.

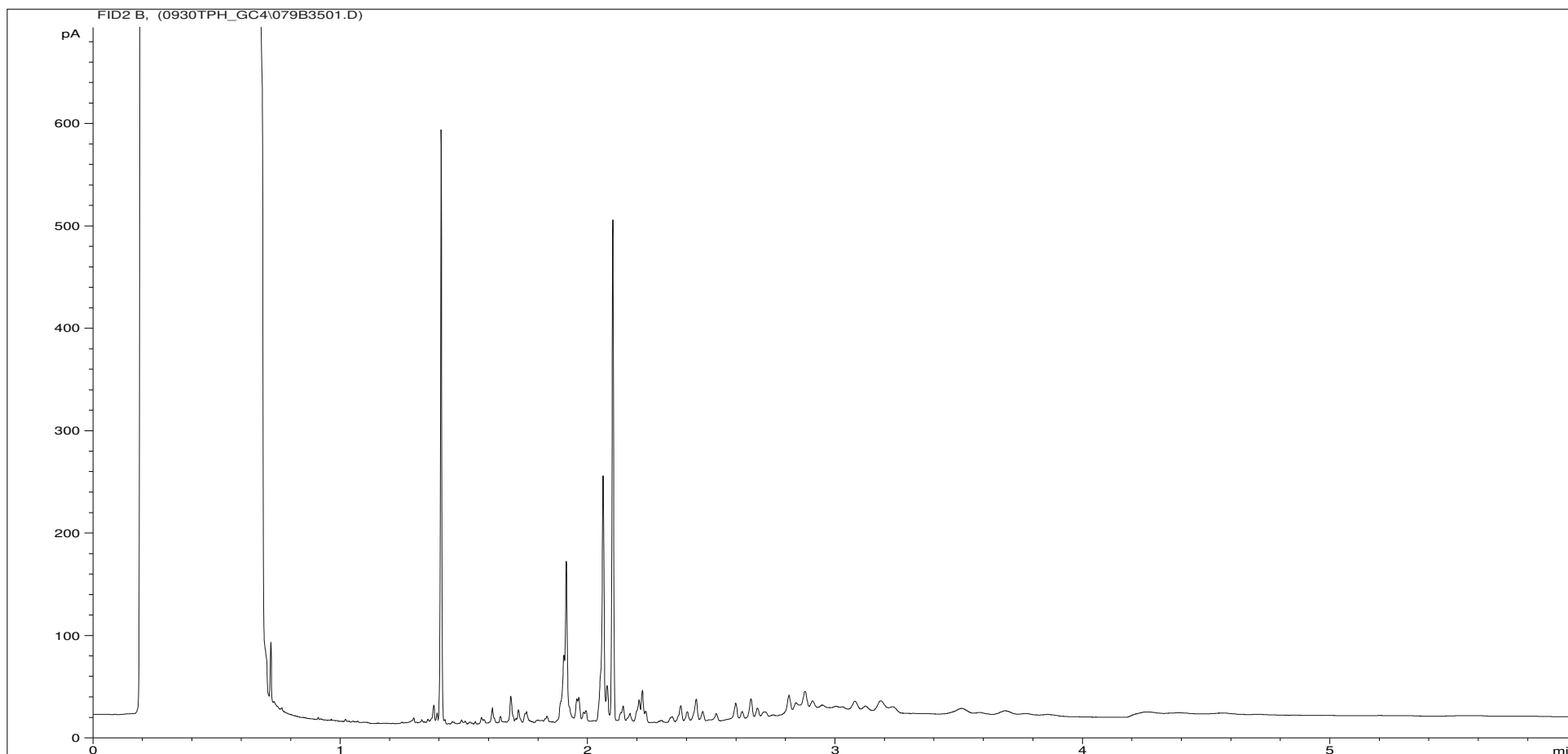
[illegible]

Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL0726659ALI	Job Number:	S07_4452
Multiplier:	12.92	Client:	Ground Investigation Ltd
Dilution:	1	Site:	Afon Way, Council Yard
Acquisition Method:	MACH_RUNF.M	Client Sample Ref:	Tank 1
Acquisition Date/Time:	30-Sep-07		
Datafile:	E:\GC\TES\DATA\Y2007\0930TPH_GC4\029F3501.D		

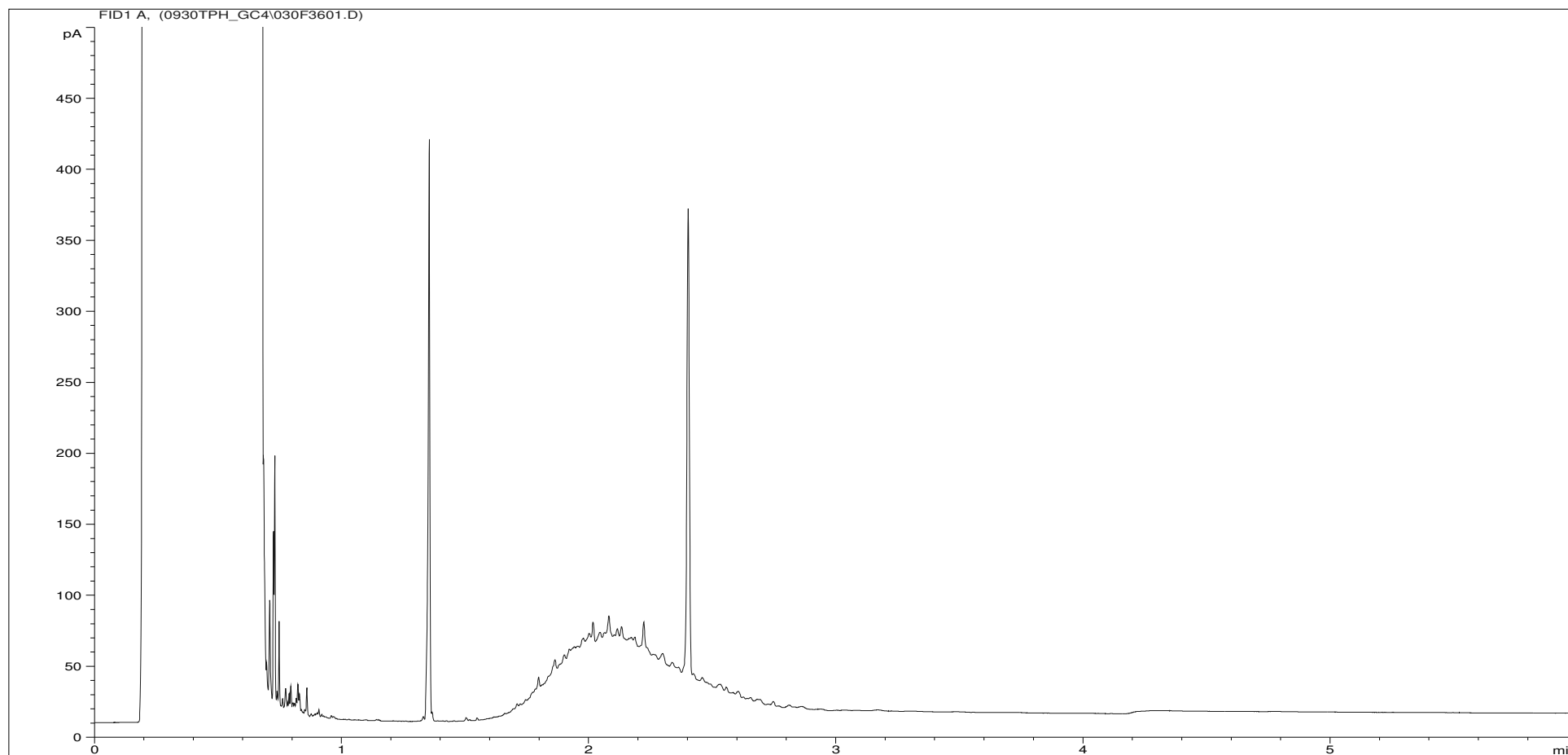
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID: CL0726659ARO
Multiplier: 9.86
Dilution: 1
Acquisition Method: MACH_RUNF.M
Acquisition Date/Time: 30-Sep-07
Datafile: E:\GC\TES\DATA\Y2007\0930TPH_GC4\079B3501.D

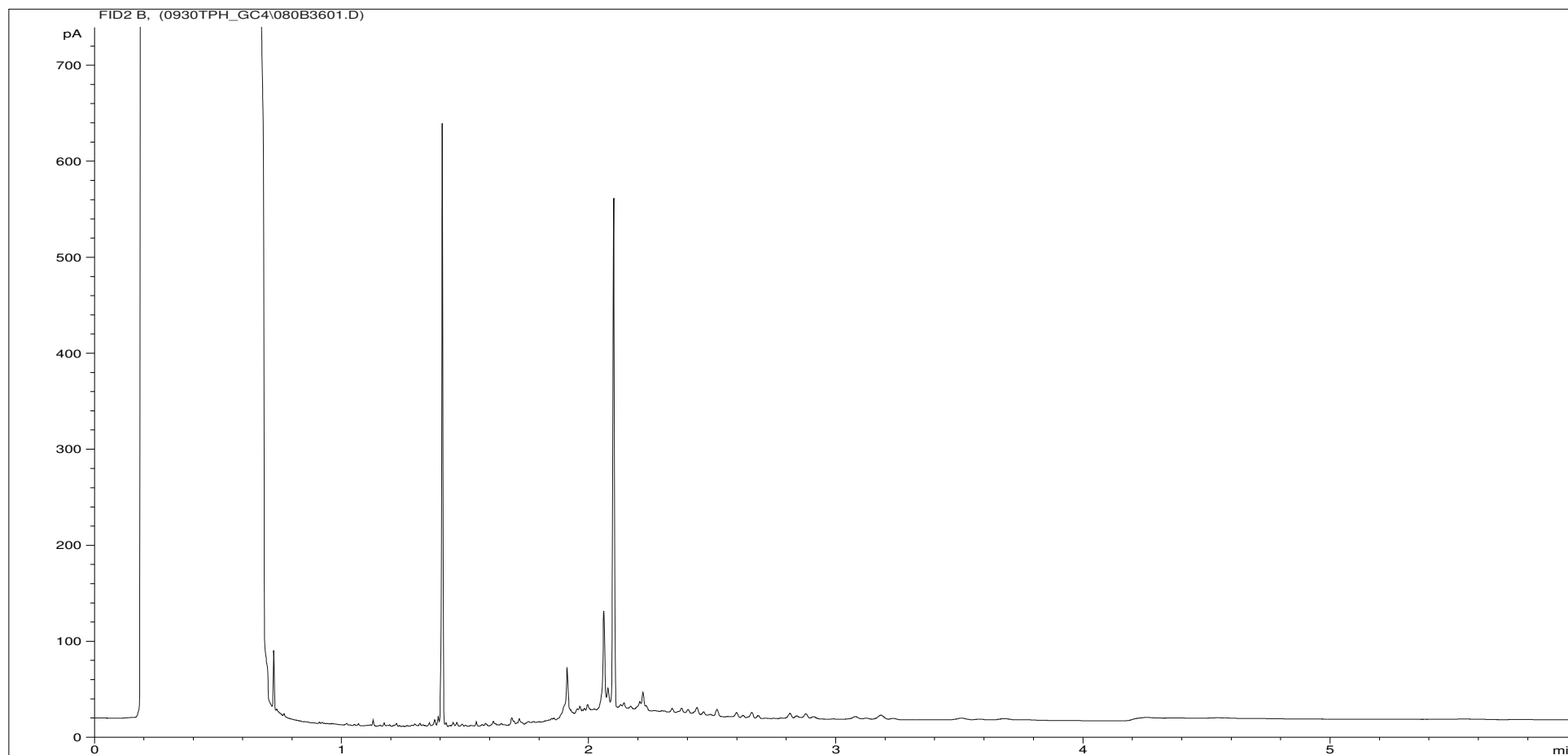
Job Number: S07_4452
Client: Ground Investigation Ltd
Site: Afon Way, Council Yard
Client Sample Ref: Tank 1

Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



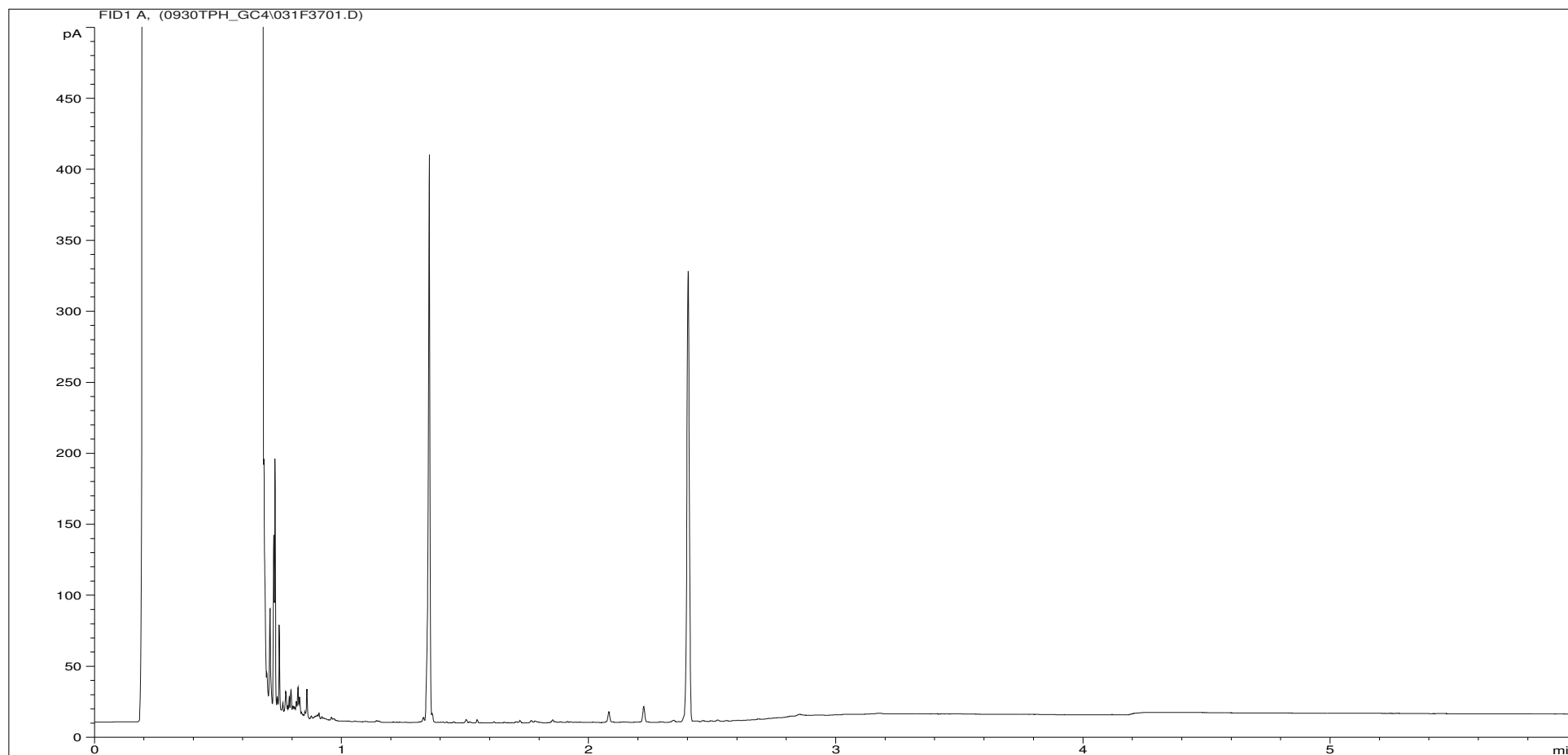
Sample ID:	CL0726660ALI	Job Number:	S07_4452
Multiplier:	12.58	Client:	Ground Investigation Ltd
Dilution:	1	Site:	Afon Way, Council Yard
Acquisition Method:	MACH_RUNF.M	Client Sample Ref:	Tank 2
Acquisition Date/Time:	30-Sep-07		
Datafile:	E:\GC\TES\DATA\Y2007\0930TPH_GC4\030F3601.D		

Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



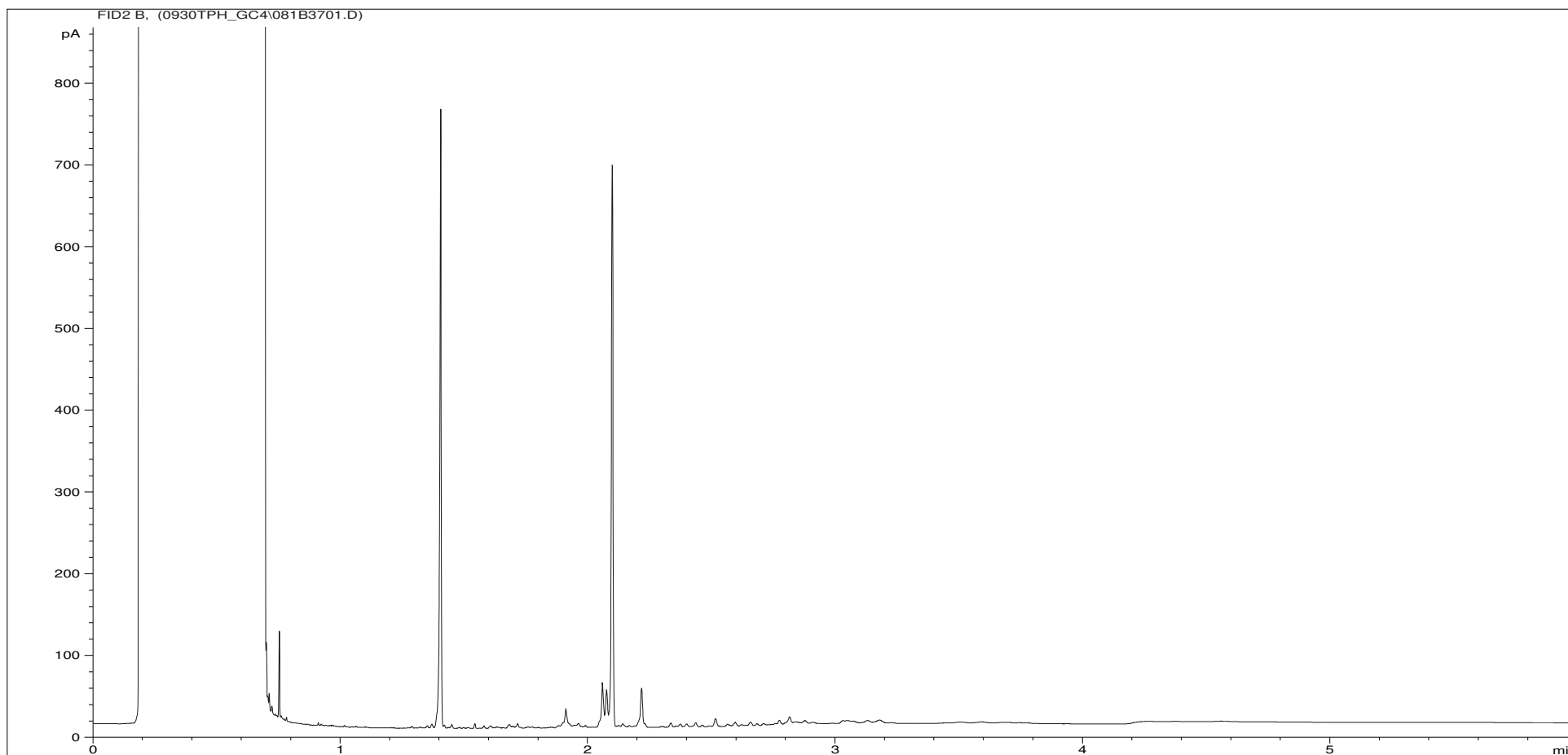
Sample ID:	CL0726660ARO	Job Number:	S07_4452
Multiplier:	9.52	Client:	Ground Investigation Ltd
Dilution:	1	Site:	Afon Way, Council Yard
Acquisition Method:	MACH_RUNF.M	Client Sample Ref:	Tank 2
Acquisition Date/Time:	30-Sep-07		
Datafile:	E:\GC\TES\DATA\Y2007\0930TPH_GC4\080B3601.D		

Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL0726661ALI	Job Number:	S07_4452
Multiplier:	13.26	Client:	Ground Investigation Ltd
Dilution:	1	Site:	Afon Way, Council Yard
Acquisition Method:	MACH_RUNF.M	Client Sample Ref:	Tank 2
Acquisition Date/Time:	30-Sep-07		
Datafile:	E:\GC\TES\DATA\Y2007\0930TPH_GC4\031F3701.D		

Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL0726661ARO	Job Number:	S07_4452
Multiplier:	9.86	Client:	Ground Investigation Ltd
Dilution:	1	Site:	Afon Way, Council Yard
Acquisition Method:	MACH_RUNF.M	Client Sample Ref:	Tank 2
Acquisition Date/Time:	30-Sep-07		
Datafile:	E:\GC\TES\DATA\Y2007\0930TPH_GC4\081B3701.D		

Report Notes

Soil/Solid analysis specific:

Results expressed as mg/kg on an air dried basis unless stated otherwise
S04 analysis not conducted in accordance with BS1377 unless otherwise stated
Water Soluble Sulphate on 2:1 water:soil extract
AR denotes analysis conducted on the As Received sample

Water analysis specific:

Results expressed as mg/l unless stated otherwise

Oil analysis specific:

Results expressed as mg/kg unless stated otherwise
S.G. expressed as g/cm³ @ 15°C

Filter analysis specific:

Results expressed as mg on filter unless stated otherwise

VOC analysis specific:

Explanatory notes for data flagging
U = undetected above reporting limit
J = concentration at instrument was below lowest calibration standard
E = concentration at instrument was above top calibration standard
B = compound was detected in method blank

Gas (Tedlar bag) analysis specific:

Results expressed as ug/l unless stated otherwise

Air (Carbon tube) analysis specific:

Results expressed as ug on tube unless stated otherwise

Asbestos analysis specific:

CH denotes Chrysotile
CR denotes Crocidolite
AM denotes Amosite
NADIS denotes No Asbestos Detected in Sample
NBFO denotes No Bulk fibres Observed

General notes:

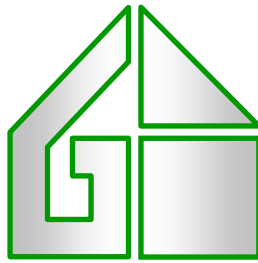
^ this analysis was subcontracted to another laboratory
\$ Within laboratory tolerances
\$\$ unable to analyse due to nature of sample
¥ Results for guidance only, possible interference
& Blank corrected
I.S insufficient sample for analysis
Intf Unable to analyse due to interferences
N.D Not determined
N.R Not recorded
N.Det Not detected
Req Analysis Requested, see attached sheets for results
p Raised detection limit due to nature of sample
***** denotes that all accreditation has been removed by the laboratory for this result.
‡ denotes that Mcerts accreditation has been removed by the laboratory for this result.
Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected.

If you require further details of the circumstances leading to the removal of the accreditation from any data item please do not hesitate to contact the laboratory

END OF REPORT

APPENDIX G1

**Council Yard Tar Tank
Investigation Report (GIL, 2007b)**



Our Ref. p220.05 lt3.report.doc

27 November 2007

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

By post & e-mail

Dear Mike

**AFAN WAY, PORT TALBOT
GEO-ENVIRONMENTAL ASSESSMENT OF OLD TAR TANK BENEATH UNIT D**

We are pleased to provide our final report on the investigation and assessment undertaken on the tar tank identified at the above site.

1.0 Background

We understand that, whilst undertaking site clearance on the morning of 25th August 2007, the Contractor on site (Mark Foley) identified a small hole of around 1m diameter that had opened up in the site surface in the northern area. Ground Investigation Limited were asked to visit the site on the morning of 28th August to inspect the hole.

At that time, the hole appeared to lie above an old tank or pit which contained a tar- or pitch-like substance. The base of the tank was estimated to be some 6.2m below the adjacent ground level, with around a 4m depth of a tar-like liquid within it. A sample of tar was collected for laboratory analysis at this time to allow an evaluation of the hydrocarbons present, and the results of the analysis are presented as Enclosure B.

The tank lies in the middle of the proposed footprint of Unit D of the development (see Figure 1).

Subsequently, the majority of the tar was pumped from the tank by a specialist contractor arranged by Mark Foley, and we understand it has been recycled. We have been advised that approximately 3,000 gallons (around 660 litres) of tar have been removed from the tank and, following pumping, the liquid levels within the tank returned to pre-pumping levels in a relatively short time period, suggesting ingress of the adjacent groundwater into the tank.

The full extent of the tank was then exposed by careful excavation of the surrounding and overlying soils. The exposed tank is shown on Plates 1 and 2, and was found to be brick-lined and approximately semi-circular in shape, some 3m in diameter. The northern side of the tank was covered by a mass concrete foundation. The tank was apparently full of water, with a thin, remnant layer of tar floating on the surface.

As part of our desk study appraisal (GIL, 2004), we found no records of such a tank being present on site and consider that it is likely to date from the days of the tin-plate works rather than the Council yard, i.e. more than 40 years ago. With a base at 6.2m below ground level, the tank appears to be founded within the Fluvio-glacial Gravels beneath the site, and below the groundwater level. This would explain the groundwater ingress into the tank following pumping of the tar from it. Therefore, as there is a hydraulic connection between the contents of the tank and the groundwater, it is possible that the tar could have contaminated the groundwater in the area.

Ground Investigation Limited visited site on 18th September 2007 to excavate pits around the tank and to identify any contamination in the adjacent soils and whether any further tanks were located in the immediate vicinity.

A series of excavations around the tank found the adjacent soils to be visually clean and uncontaminated.

2.0 Monitoring Wells

The original investigation of the site (GIL, 2004) had been undertaken whilst the Council yard had been operational. Due to access restrictions at that time, no groundwater monitoring wells had been installed in the area on the anticipated down-hydraulic gradient (southern) side of the tar tank. Therefore, in order to assess the impact that the tar tank may have had on the groundwater in the area, six monitoring wells were constructed on 20th and 21st September 2007 using rotary drilling techniques. The monitoring well positions are shown on Figure 1 and their records are presented in Enclosure C.

Five wells were installed on the anticipated down-hydraulic gradient (south) side of the tank, with one well (BH5) located to the north to allow the derivation of a hydraulic gradient in the area. All wells were constructed with the response zone within the Fluvio-glacial Gravels underlying fine-grained alluvial soils.

Samples of the groundwater within the wells were collected on 25th September 2007 and sent to the laboratory for analysis. During sampling, monitoring with an interface probe failed to identify any evidence of phase-separated product associated with the groundwater in any of the wells. The results of the laboratory analysis on the recovered samples of groundwater are presented in Enclosure D.

3.0 Assessment of Results

3.1 Contents of Tar Tank

The results of the analysis undertaken on a sample of the tar recovered from the tank prior to the majority being pumped are presented in Enclosure B. The results indicate the tank contents to have comprised higher carbon band petroleum hydrocarbons, predominantly from C₂₁ to C₃₅ (around 29%) with some C₁₆ to C₂₁ hydrocarbons (around 1%). The concentrations of BTEX compounds and PCBs were all below their detection limits. Concentrations of semi-volatile and volatile organic compounds were also below detection limits, although these detection limits were elevated due to the high proportion of petroleum hydrocarbons present.

The laboratory test results are consistent with the materials being a tar- or pitch-like substance. Although the precise origin of the tank is not known, the presence of the mass concrete foundation and the nature of the contents may indicate that it was a tank used for the preservation of timbers.

3.2 Groundwater Flow

The results of the monitoring of the wells on 25 September 2007 have been used to plot groundwater contours in the area of the tank, and these are presented on Figure 2. The contours relate to Ordnance Datum and are based on well elevations provided by Jchu Projects Services.

The contours show groundwater is apparently flowing towards the south/south-west with a hydraulic gradient of around 0.002 (i.e. similar to that determined for the site as a whole – see GIL, 2004). Groundwater flow is towards the River Afan which lies some 200m to the south.

3.3 Impact on Groundwater Quality

The results of the analysis undertaken on samples of groundwater recovered from the down-hydraulic gradient side of the tar tank are presented in Enclosure D.

The results have been compared to target concentrations for the River Afan on Table 2. Where available, the Environmental Quality Standards (EQS) have been adopted as target concentrations. However, no EQS values have been published for many of the petroleum hydrocarbons and, in these instances, the World Health Organisation guidelines or the Environment Agency stipulated guideline of 10µg/l have been adopted. Full details of the target concentrations adopted are presented on Table 2.

The analysis has indicated no detectable concentrations of BTEX compounds, PCBs or volatile/semi-volatile organic compounds within the groundwater in any of the wells. Petroleum hydrocarbons between C₈ and C₁₂ were also below detection limits in all wells. C₁₂₋₁₆ aromatic hydrocarbons were identified within the groundwater in DH2 (on the western site boundary) and between C₁₆₋₂₁ aromatic compounds were present in DH2, DH4 and DH6. C₁₆₋₂₁ aliphatic hydrocarbons were identified in DH6 on the south-western boundary, and aliphatic and aromatic hydrocarbons between C₂₁ and C₃₅ were identified in the groundwater in all wells.

Although aliphatic and aromatic petroleum hydrocarbons have been identified within the groundwater on the down-hydraulic gradient side of the tar tank, the concentrations of each carbon band are only marginally above the Environment Agency stipulated guideline value of 10µg/l, and generally between 10 and 20µg/l. The concentrations of C₂₁₋₃₅ aliphatic hydrocarbons were slightly more elevated in the wells (generally between 20 and 30µg/l). The C₂₁₋₃₅ aliphatic and aromatic hydrocarbons were significantly more elevated in DH6, located on the south-western boundary at the further point down-hydraulic gradient.

The organic compounds identified within the groundwater on the down-hydraulic gradient side of the tank are similar to those identified within the tar materials that formerly filled the tank, i.e. predominantly C₂₁ to C₃₅ petroleum hydrocarbons. However, generally the concentrations of these compounds were less than 50µg/l, and in excess of the aqueous solubility of the compounds. As the aqueous solubility was exceeded and no free phase product was identified in the wells, the compounds are likely to be present sorbed to fine-grained particles rather than dissolved within the groundwater. In addition, the wells closest to the tar tank indicated the lowest concentrations, with the only significant concentrations identified at the further point down-hydraulic gradient.

4.0 Conclusions and Recommendations

The investigation has indicated that the contents of old tar tank appear to have impacted on the groundwater down-hydraulic gradient of the tank. However, the concentrations of petroleum hydrocarbons present within the groundwater are generally low with the maximum concentrations recorded at the further point down-hydraulic gradient. Therefore, it is possible that the majority of the contamination plume passed through the site some time ago, with the remnant, low solubility and, hence, low mobility contaminants left.

However, the contaminant source (the contents of the tank) has now been substantially removed and, hence, the concentrations of the hydrocarbons identified in the groundwater should reduce with time as degradation processes take place.

We understand that the proposed Unit D is to be founded on vibro-stone columns. The foundation layout requires that a foundation is constructed in the area of the tar tank, and the proposals are for the structure to be infilled with stone, before being vibro-compacted. This stone infill could maintain the existing pathway for the migration of remnant contaminants from the tar tank to the groundwater. However, the majority of the tank contents have been removed and we recommend that the remnant

tar/pitch materials within the tar tank are also removed prior to development. This could be best achieved by skimming the remnant tar from the top of the water, but may require further pumping until the pumped water is clean. Provided that this is done, the contamination source would be wholly removed and we consider that the old tar tank would no longer pose an unacceptable threat to groundwater and, hence, to water quality within the River Afan.

We hope that the above and enclosed is clear and satisfies your present requirements. However, should you have any queries, or require any further assistance, please do not hesitate to contact me.

Yours sincerely

Jeremy Hucker

DIRECTOR

Encl.

Table 1- Laboratory Testing

Table 2 – Assessment of Groundwater Quality

Figure 1 – Monitoring Well Positions

Figure 2 – Groundwater Contours

Enclosure A – Limitations and Exceptions

Enclosure B – Laboratory Test Results - Tar Tank Contents

Enclosure C – Monitoring Well Records

Enclosure D - Laboratory Test Results – Groundwater

Plates

Reference: Ground Investigation Limited (GIL). November 2004. Afan Way, Port Talbot. Phase Two Geo-environmental Site Assessment Report. Report No. 220.01.

cc. Roger North.

**PROPOSED RETAIL DEVELOPMENT,
AFAN WAY, PORT TALBOT**

TABLE 1 – Schedule of Geo-environmental Laboratory Testing

Determinand	Tank Contents	Groundwater
Petroleum Hydrocarbons		
aliphatic and aromatic C ₈ and C ₃₅ (TPH CWG)	√	√
BTEX	√	√
MTBE		√
Other Organic Compounds		
Total phenols		√
Volatile organic compounds (VOCs)	√	√
Semi-volatile organic compounds (SVOCs)	√	√
PCBs (7 congeners)	√	√
Dissolved Oxygen		√

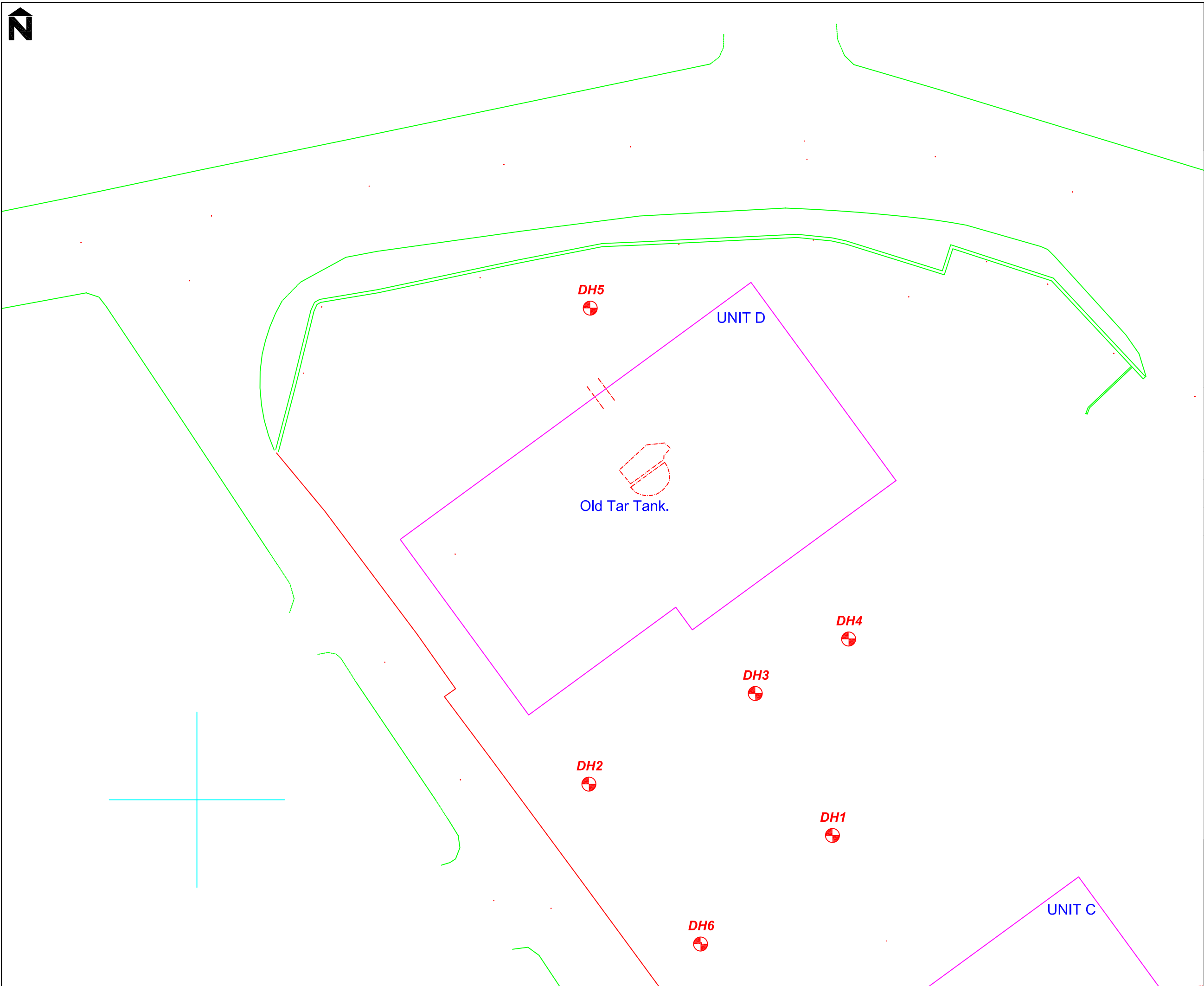
**PROPOSED RETAIL DEVELOPMENT,
AFAN WAY, PORT TALBOT**

**TABLE 2 – Assessment of Groundwater Quality
from contents of old Tar Tank**

Determinands	Units	Target Concentration (C _T)	Source of C _T (see notes below)	Sample Concentrations				
				DH1 3.07m	DH2 2.95m	DH3 2.87m	DH4 2.88m	DH6 2.92m
Aromatic hydrocarbons								
Benzene	ug/l	30	EQS	<5	<5	<5	<5	<5
Toluene	ug/l	50	EQS	<5	<5	<5	<5	<5
Ethylbenzene	ug/l	300	WHO ⁵	<5	<5	<5	<5	<5
Xylene	ug/l	30	EQS	<10	<10	<10	<10	<10
C8 – C10	ug/l	10	EA ³	<10	<10	<10	<10	<10
C10 – C12	ug/l	10	EA ³	<10	<10	<10	<10	<10
C12 – C16	ug/l	10	EA ³	<10	19.1	<10	<10	<10
C16 – C21	ug/l	10	EA ³	<10	12.8	<10	16.1	18.8
C21 – C35	ug/l	10	EA ³	13.3	16.6	10.1	21.7	183
Aliphatic hydrocarbons								
C5- C6	ug/l	10	EA ³	<100	<100	<100	<100	<100
C6 – C7	ug/l	10	EA ³	<100	<100	<100	<100	<100
C7 – C8	ug/l	10	EA ³	<100	<100	<100	<100	<100
C8 – C10	ug/l	10	EA ³	<10	<10	<10	<10	<10
C10 – C12	ug/l	10	EA ³	<10	<10	<10	<10	<10
C12 – C16	ug/l	10	EA ³	<10	<10	<10	<10	<10
C16 – C21	ug/l	10	EA ³	<10	<10	<10	<10	55.8
C21 – C35	ug/l	10	EA ³	24.4	52.3	28.9	29.7	1,160

Notes on Target Concentrations used:

- (1) EQS: Environmental Quality Standards for freshwaters.
- (2) WHO: World Health Organisation - in the absence of an EQS, the WHO guidelines for potable water have been used as the Target Concentration.
- (3) EA: there are currently no EQS for carbon banded petroleum hydrocarbons. The Environment Agency stipulated target concentration of 10ug/l has been adopted for this assessment.
- (4) PCBs, volatile and semi-volatile organic compounds below detection limits.
- (5) Yellow shading indicates samples in which contaminants exceed Target Concentration.
- (6) Sampling undertaken on 25 September 2007.
- (7) Full test results presented in Enclosure D.



GROUND INVESTIGATION

geotechnical & geo-environmental consultants



6 New Mill Court, Enterprise Park,
Swansea, SA7 9FG.
Tel: 01792 411013 **Fax:** 01792 411014
Email: mail@ground-investigation.com

CLIENT: Dovey Group

SITE:
**Proposed Retail Development,
Afan Way, Port Talbot**

PROJECT ID: p220.05

SCALE: 1:250@A3

FILE NAME: 220.05.FIG1

NOTES:

**DH1 - DH6 Monitoring Wells
installed Sept 2007**

FIGURE 1
**Monitoring Well
Positions**



GROUND INVESTIGATION geotechnical & geo-environmental consultants	
 6 New Mill Court, Enterprise Park, Swansea. SA7 9FG. Tel: 01792 411013 Fax: 01792 411014 Email: mail@ground-investigation.com	
CLIENT: Dovey Group	
SITE: Proposed Retail Development, Afan Way, Port Talbot	
PROJECT ID: p220.05	
SCALE: 1:250@A3	
FILE NAME: 220.05.FIG2	
NOTES: Groundwater Contours in metres OD.	
FIGURE 2 Groundwater Contours - Monitoring of 25th September 2007	

ENCLOSURE A

Limitations and Exceptions

Ground Investigation Limited

Limitations and Exceptions

1. The Client has requested that a geo-environmental assessment be performed in order to evaluate the potential impact of an old tar tank on groundwater quality.
2. The work was conducted and this report has been prepared for the sole internal use and reliance of the Client. This report shall not be relied upon or transferred to any other parties without the express written authorisation of Ground Investigation Limited. If an unauthorised third party comes into possession of this report the authors owe them no duty of care and skill.
3. The findings and opinions conveyed in this report are, in part, based on information obtained from third party sources as detailed within the text, and which Ground Investigation Limited believes are reliable. Nevertheless, Ground Investigation Limited cannot, and does not, guarantee the authenticity or reliability of the information it has relied upon.
4. This report presents the findings and opinions of experienced geo-environmental consultants. Ground Investigation Limited does not provide legal advice and the advice of lawyers may also be required.
5. The opinions presented in this report are based on the findings of a review and assessment of the information described in this report. It is possible that the research and investigations carried out by Ground Investigation Limited, while fully appropriate, has failed to indicate the existence of important information sources. Assuming such sources actually exist, their information could not have been considered in the formulation of the opinions expressed in this report.
6. The fieldworks were undertaken on the date(s) indicated within the text of this report. The Client is advised that the conditions observed by Ground Investigation Limited are subject to change and that not finding indicators of hazardous substances or conditions, does not mean that they do not exist at the site. Certain indicators of the presence of hazardous substances or conditions may have been latent at the time of the fieldworks and may subsequently have become observable.
7. The work carried out for the assessment can only investigate a small portion of the subsurface conditions. Certain strata or conditions may have been outside the limited portion of the subsurface investigated, latent at the time of the work or only partially intercepted by the works, and thus their full significance could not be appreciated. In this regard, groundwater levels are particularly susceptible to variation. Accordingly, it is possible that the investigation failed to identify the presence or significance of strata or conditions. Assuming such strata or conditions exist, their presence could not have been considered in the formulation of the report's findings and opinions.
8. Ground Investigation Limited believes that providing information about the limitations is essential to help the Client identify and therefore manage its risks. The risks can be mitigated, but not eliminated, through additional research/investigation. Ground Investigation Limited will, on request, advise the Client of additional research/investigation opportunities, their impact on risk and their cost.

ENCLOSURE B

Laboratory Test Results Tar Tank Contents

[illegible]

Gasoline Range Organics (BTX and Aliphatic Carbon Ranges)

Customer and Site Details: Ground Investigation Ltd: Afan Way, Port Talbot
Job Number: S07_4259
Directory: 0926HSA.GC6
Method: Headspace GCFID

Matrix:	Soil
Date Booked in:	12-Sep-07
Date extracted:	26-Sep-07
Date Analysed:	27-Sep-07

[illegible]

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.

Polychlorinated Biphenyls (congeners)

Customer and Site Details:	Ground Investigation Ltd: Afan Way, Port Talbot
Job Number:	S07_4259
QC Batch Number:	072910
Directory:	0924PCB.GC1
Method:	Dilute & Shoot

Matrix: Water
Date Booked in: 12-Sep-07
Date Extracted: 24-Sep-07
Date Analysed: 24-Sep-07

[illegible]

Semi-Volatile Organic Compounds

Customer and Site Details:	Ground Investigation Ltd: Afan Way, Port Talbot		
Sample Details:	Tar Sample	Date Booked in:	12-Sep-07
LIMS ID Number:	CL0725747	Date Extracted:	08-Oct-07
Job Number:	S07_4259	Date Analysed:	09-Oct-07

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Phenol	108-95-2	-	< 1995.200	-
bis(2-Chloroethyl)ether	111-44-4	-	< 498.800	-
2-Chlorophenol	95-57-8	-	< 1995.200	-
1,3-Dichlorobenzene	541-73-1	-	< 498.800	-
1,4-Dichlorobenzene	106-46-7	-	< 498.800	-
Benzyl alcohol	100-51-6	-	< 498.800	-
1,2-Dichlorobenzene	95-50-1	-	< 498.800	-
2-Methylphenol	95-48-7	-	< 498.800	-
bis(2-Chloroisopropyl)ether	108-60-1	-	< 498.800	-
Hexachloroethane	67-72-1	-	< 498.800	-
N-Nitroso-di-n-propylamine	621-64-7	-	< 498.800	-
3- & 4-Methylphenol	108-39-4/106-44-5	-	< 1995.200	-
Nitrobenzene	98-95-3	-	< 498.800	-
Isophorone	78-59-1	-	< 498.800	-
2-Nitrophenol	88-75-5	-	< 1995.200	-
2,4-Dimethylphenol	105-67-9	-	< 1995.200	-
Benzoic Acid	65-85-0 *	-	< 9976.000	-
bis(2-Chloroethoxy)methane	111-91-1	-	< 498.800	-
2,4-Dichlorophenol	120-83-2	-	< 1995.200	-
1,2,4-Trichlorobenzene	120-82-1	-	< 498.800	-
Naphthalene	91-20-3	-	< 199.500	-
4-Chlorophenol	106-48-9	-	< 1995.200	-
4-Chloroaniline	106-47-8 *	-	< 498.800	-
Hexachlorobutadiene	87-68-3	-	< 498.800	-
4-Chloro-3-methylphenol	59-50-7	-	< 498.800	-
2-Methylnaphthalene	91-57-6	-	< 199.500	-
1-Methylnaphthalene	90-12-0	-	< 199.500	-
Hexachlorocyclopentadiene	77-47-4 *	-	< 498.800	-
2,4,6-Trichlorophenol	88-06-2	-	< 1995.200	-
2,4,5-Trichlorophenol	95-95-4	-	< 1995.200	-
2-Chloronaphthalene	91-58-7	-	< 199.500	-
Biphenyl	92-52-4	-	< 199.500	-
Diphenyl ether	101-84-8	-	< 199.500	-
2-Nitroaniline	88-74-4	-	< 498.800	-
Acenaphthylene	208-96-8	-	< 199.500	-
Dimethylphthalate	131-11-3	-	< 498.800	-
2,6-Dinitrotoluene	606-20-2	-	< 498.800	-
Acenaphthene	83-32-9	-	< 199.500	-
3-Nitroaniline	99-09-2	-	< 498.800	-

Compounds marked with a * are reported not UKAS.
Concentrations are reported on a wet weight basis.

"M" denotes that % fit has been manually interpreted

Matrix:	Tar	QC Batch Number:	-
Ext Method:	Soxhlet	Multiplier:	199.52
Operator:	AB/AK	Dilution Factor:	997.6
Directory/Quant File:	1008ABN.MS4\ 1008CCC2.D	GPC (Y/N)	N

Target Compounds	CAS #	R.T.	Concentration mg/kg	% Fit
2,4-Dinitrophenol	51-28-5 *	-	< 997.600	-
Dibenzofuran	132-64-9	-	< 498.800	-
4-Nitrophenol	100-02-7	-	< 4988.000	-
2,4-Dinitrotoluene	121-14-2	-	< 498.800	-
Fluorene	86-73-7	-	< 199.500	-
Diethylphthalate	84-66-2	-	< 498.800	-
4-Chlorophenyl-phenylether	7005-72-3	-	< 498.800	-
4,6-Dinitro-2-methylphenol	534-52-1	-	< 4988.000	-
4-Nitroaniline	100-01-6	-	< 498.800	-
N-Nitrosodiphenylamine	86-30-6 *	-	< 498.800	-
4-Bromophenyl-phenylether	101-55-3	-	< 498.800	-
Hexachlorobenzene	118-74-1	-	< 498.800	-
Pentachlorophenol	87-86-5	-	< 4988.000	-
Phenanthrene	85-01-8	-	< 199.500	-
Anthracene	120-12-7	-	< 199.500	-
Di-n-butylphthalate	84-74-2	-	< 498.800	-
Fluoranthene	206-44-0	-	< 199.500	-
Pyrene	129-00-0	-	< 199.500	-
Butylbenzylphthalate	85-68-7	-	< 498.800	-
Benzo[a]anthracene	56-55-3	-	< 199.500	-
Chrysene	218-01-9	-	< 199.500	-
3,3'-Dichlorobenzidine	91-94-1	-	< 1995.200	-
bis(2-Ethylhexyl)phthalate	117-81-7	-	< 498.800	-
Di-n-octylphthalate	117-84-0	-	< 199.500	-
Benzo[b]fluoranthene	205-99-2	-	< 199.500	-
Benzo[k]fluoranthene	207-08-9	-	< 199.500	-
Benzo[a]pyrene	50-32-8	-	< 199.500	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 199.500	-
Dibenzo[a,h]anthracene	53-70-3	-	< 199.500	-
Benzo[g,h,i]perylene	191-24-2	-	< 199.500	-

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	65
Naphthalene-d8	74
Acenaphthene-d10	76
Phenanthrene-d10	75
Chrysene-d12	79
Perylene-d12	75

Surrogates	% Rec
2-Fluorophenol	D
Phenol-d5	D
Nitrobenzene-d5	D
2-Fluorobiphenyl	D
2,4,6-Tribromophenol	D
Terphenyl-d14	D

ALIPHATIC / AROMATIC FRACTION BY GC/FID

Customer and Site Details:

Ground Investigation Ltd : Afan Way, Port Talbot

Job Number:

S07 4259

Separation:

Silica gel

QC Batch Number:

NA

Eluents:

Hexane, DCM

Directory:

E:\GC\TES\DATA\Y2007\0923TPH GC3\033B9301.D

Matrix:

oil

Date Booked in

12-Sep-07

Date Extracted

21-Sep-07

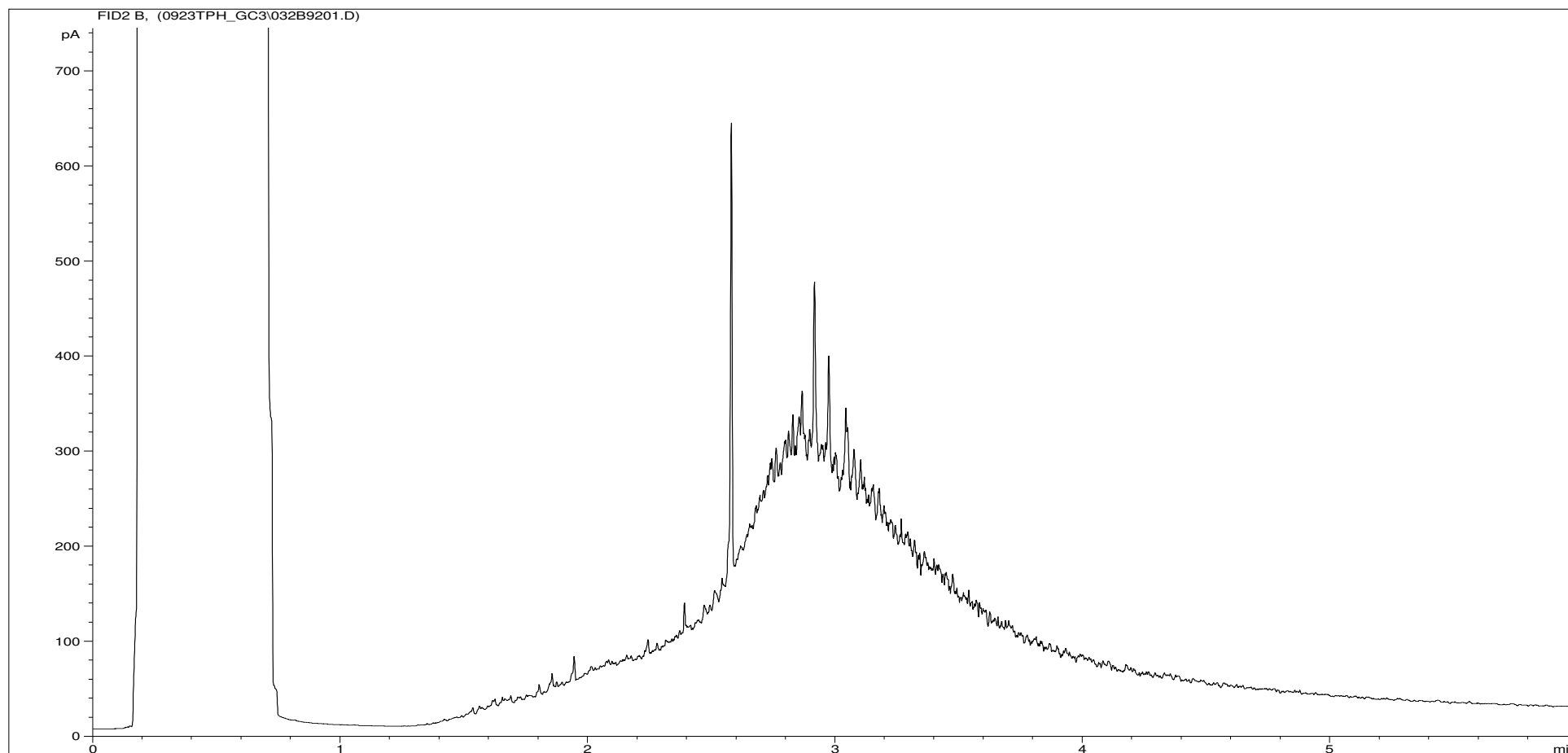
Date Analysed:

24-Sep-07

This sample data is not UKAS accredited.

[illegible]

Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID: CL0725747ALI

Multiplier: 780

Dilution: 1

Acquisition Method: MAX_RUNF.M

Acquisition Date/Time: 24-Sep-07

Datafile: E:\GC\TES\DATA\Y2007\0923TPH_GC3\032B9201.D

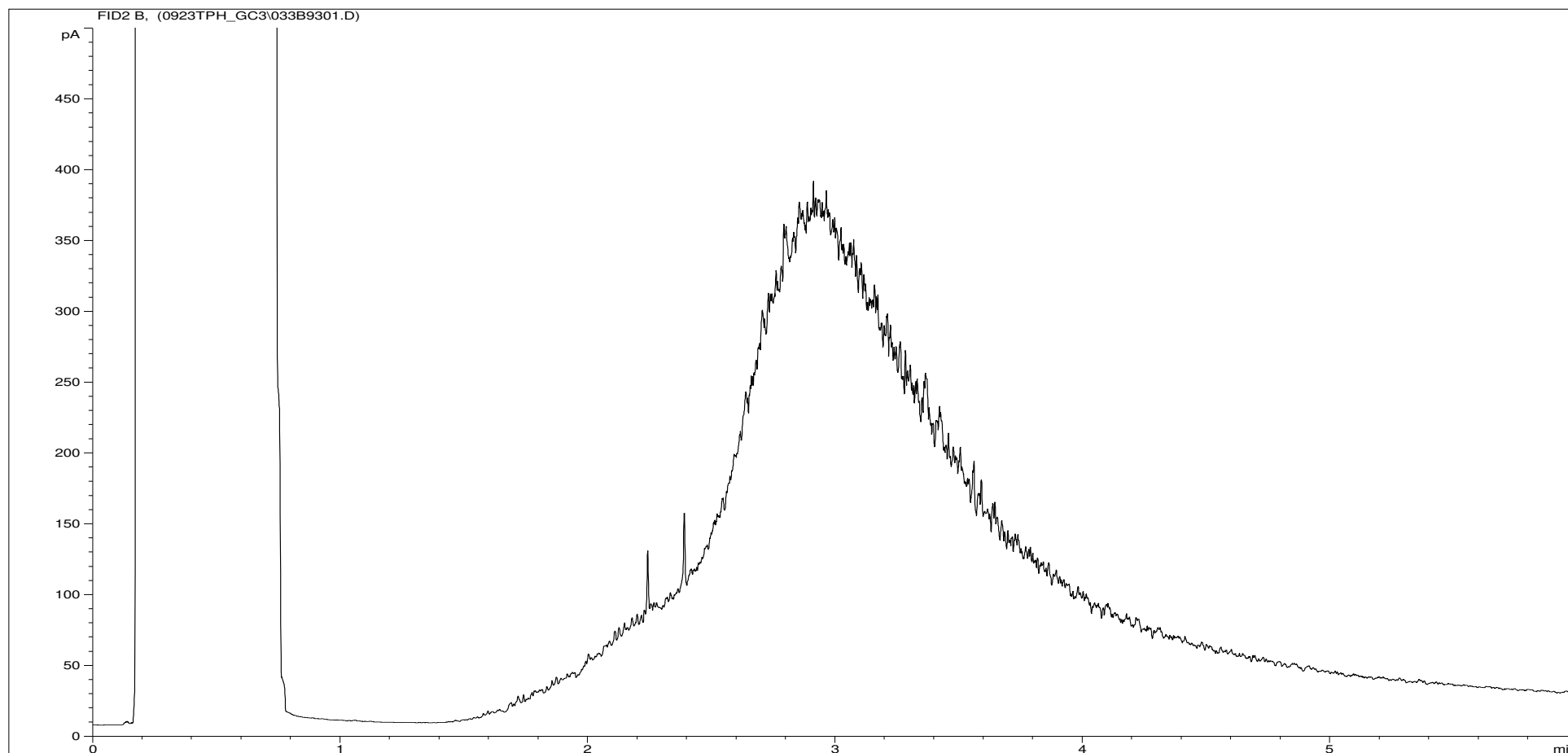
Job Number: S07_4259

Client: Ground Investigation Ltd

Site: Afan Way, Port Talbot

Client Sample Ref: Tar Sample

Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL0725747ARO	Job Number:	S07_4259
Multiplier:	600	Client:	Ground Investigation Ltd
Dilution:	1	Site:	Afan Way, Port Talbot
Acquisition Method:	MAX_RUNF.M	Client Sample Ref:	Tar Sample
Acquisition Date/Time:	24-Sep-07		
Datafile:	E:\GC\TES\DATA\Y2007\0923TPH_GC3\033B9301.D		

Volatile Organic Compounds by PTGCMS

Customer and Site Details: Ground Investigation Ltd: Afan Way, Port Talbot
Sample Details: Tar Sample
LIMS ID Number: CL0725747
Job Number: S07_4259

Directory/Quant file: 0918VOC.MS3 Initial Calibration
Date Booked in: 12-Sep-07
Date Analysed: 19-Sep-07
Operator: MJ/AP

Matrix: Soil
Method: Purge & trap
Multiplier: 2000
Position: 43

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit
Dichlorodifluoromethane	75-71-8	-	< 2000	-
Chloromethane	74-87-3	-	< 2000	-
Vinyl Chloride	75-01-4 *	-	< 2000	-
Bromomethane	74-83-9 *	-	< 10000	-
Chloroethane	75-00-3	-	< 10000	-
Trichlorofluoromethane	75-69-4	-	< 2000	-
1,1-Dichloroethene	75-35-4	-	< 2000	-
trans 1,2-Dichloroethene	156-60-5	-	< 2000	-
1,1-Dichloroethane	75-34-3	-	< 2000	-
2,2-Dichloropropane	594-20-7	-	< 2000	-
cis 1,2-Dichloroethene	156-59-2	-	< 2000	-
Bromochloromethane	74-97-5	-	< 2000	-
Chloroform	67-66-3	-	< 2000	-
1,1,1-Trichloroethane	71-55-6	-	< 2000	-
Carbon Tetrachloride	56-23-5	-	< 2000	-
1,1-Dichloropropene	563-58-6	-	< 2000	-
Benzene	71-43-2	-	< 2000	-
1,2-Dichloroethane	107-06-2	-	< 2000	-
Trichloroethene	79-01-6	-	< 2000	-
1,2-Dichloropropane	78-87-5	-	< 2000	-
Dibromomethane	74-95-3	-	< 2000	-
Bromodichloromethane	75-27-4	-	< 2000	-
cis 1,3-Dichloropropene	10061-01-5 *	-	< 2000	-
Toluene	108-88-3	-	< 2000	-
trans 1,3-Dichloropropene	10061-02-6 *	-	< 2000	-
1,1,2-Trichloroethane	79-00-5	-	< 2000	-
Tetrachloroethene	127-18-4	-	< 10000	-
1,3-Dichloropropane	142-28-9	-	< 2000	-
Dibromochloromethane	124-48-1	-	< 2000	-
1,2-Dibromoethane	106-93-4	-	< 2000	-
Chlorobenzene	108-90-7	-	< 2000	-
Ethylbenzene	100-41-4	-	< 2000	-
1,1,1,2-Tetrachloroethane	630-20-6	-	< 2000	-
m and p-Xylene	108-38-3/106-42-3	-	< 2000	-
o-Xylene	95-47-6	-	< 2000	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/kg	% Fit
Styrene	100-42-5	-	< 2000	-
Bromoform	75-25-2	-	< 2000	-
iso-Propylbenzene	98-82-8	-	< 2000	-
1,1,2,2-Tetrachloroethane	79-34-5	-	< 2000	-
Propylbenzene	103-65-1	-	< 2000	-
Bromobenzene	108-86-1	-	< 2000	-
1,2,3-Trichloropropane	96-18-4	-	< 2000	-
2-Chlorotoluene	95-49-8	-	< 2000	-
1,3,5-Trimethylbenzene	108-67-8	-	< 2000	-
4-Chlorotoluene	106-43-4	-	< 2000	-
tert-Butylbenzene	98-06-6	-	< 2000	-
1,2,4-Trimethylbenzene	95-63-6	-	< 2000	-
sec-Butylbenzene	135-98-8	-	< 2000	-
p-Isopropyltoluene	99-87-6	-	< 2000	-
1,3-Dichlorobenzene	541-73-1	-	< 2000	-
1,4-Dichlorobenzene	106-46-7	-	< 2000	-
n-Butylbenzene	104-51-8	-	< 2000	-
1,2-Dichlorobenzene	95-50-1	-	< 2000	-
1,2-Dibromo-3-chloropropane	96-12-8 *	-	< 10000	-
1,2,4-Trichlorobenzene	120-82-1	-	< 10000	-
Hexachlorobutadiene	87-68-3 *	-	< 10000	-
Naphthalene	91-20-3 *	-	< 10000	-
1,2,3-Trichlorobenzene	87-61-6	-	< 10000	-

Concentrations are reported on a wet weight basis
Compounds marked * are not UKAS accredited.

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.00	73	Dibromofluoromethane	117
1,4-Difluorobenzene	3.27	80	Toluene-d8	99
Chlorobenzene-d5	4.26	79	Bromofluorobenzene	89
1,4-Dichlorobenzene-d4	5.03	69		

Report Notes

Soil/Solid analysis specific:

Results expressed as mg/kg on an air dried basis unless stated otherwise
S04 analysis not conducted in accordance with BS1377 unless otherwise stated
Water Soluble Sulphate on 2:1 water:soil extract
AR denotes analysis conducted on the As Received sample

Water analysis specific:

Results expressed as mg/l unless stated otherwise

Oil analysis specific:

Results expressed as mg/kg unless stated otherwise
S.G. expressed as g/cm³ @ 15°C

Filter analysis specific:

Results expressed as mg on filter unless stated otherwise

VOC analysis specific:

Explanatory notes for data flagging
U = undetected above reporting limit
J = concentration at instrument was below lowest calibration standard
E = concentration at instrument was above top calibration standard
B = compound was detected in method blank

Gas (Tedlar bag) analysis specific:

Results expressed as ug/l unless stated otherwise

Air (Carbon tube) analysis specific:

Results expressed as ug on tube unless stated otherwise

Asbestos analysis specific:

CH denotes Chrysotile
CR denotes Crocidolite
AM denotes Amosite
NADIS denotes No Asbestos Detected in Sample
NBFO denotes No Bulk fibres Observed

General notes:

^ this analysis was subcontracted to another laboratory
\$ Within laboratory tolerances
\$\$ unable to analyse due to nature of sample
¥ Results for guidance only, possible interference
& Blank corrected
I.S insufficient sample for analysis
Intf Unable to analyse due to interferences
N.D Not determined
N.R Not recorded
N.Det Not detected
Req Analysis Requested, see attached sheets for results
p Raised detection limit due to nature of sample
***** denotes that all accreditation has been removed by the laboratory for this result.
‡ denotes that Mcerts accreditation has been removed by the laboratory for this result.
Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected.

If you require further details of the circumstances leading to the removal of the accreditation from any data item please do not hesitate to contact the laboratory

END OF REPORT

ENCLOSURE C

Monitoring Well Records

GROUND INVESTIGATION
TEL : FAX : EMAIL :



Ground Investigation

Rotary Open-Hole Borehole Record

Site: Afan Way, Port Talbot

Client: Dovey Group of Companies

Job No: Afan Way, Port Talbot

Method/Plant Used: Baretta T41

Start date: 20/09/07

Easting:

End Date: 20/09/07

Logged By: JWD

Northing:

Elevation:

Hole ID
DH1

Sheet 1 of 1 (0.00m-10.00m)

All dimensions in metres

Scale 1:50

SAMPLES & IN-SITU TESTS

Depth

Type / No

Result / Remark

Water

STRATA

Legend

Depth (thick.)

Description



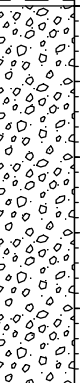
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Ash fill.
MADE GROUND

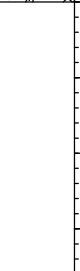


2.00

CLAY
ESTUARINE ALLUVIUM

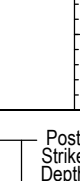


(3.00)

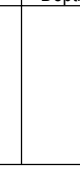


5.00

SAND and GRAVEL
FLUVIO-GLACIAL GRAVELS



(2.50)



7.50

Backfill & Inst



Boring Progress and Water Observations

Water Strikes

Post Strike Depth

Elapsed Minutes

Depth Sealed

Hole Diameter

Casing Diameter

Date

Time

Hole Depth

Casing Depth

Water Depth

Strike Depth

Flow Rate

Post Strike Depth

Elapsed Minutes

Depth Sealed

Depth

Diameter (mm)

Depth

Diameter (mm)

General Remarks

1. All dimensions are in metres unless stated, Coordinates approximate only and interpolated from recent OS maps.

2. All descriptions based on drillers observations of drilling returns.

3. Arisings described as 'wet' from 5.0m depth.

4. **Installation:** 50mm diam. plain pipe from GL to 4.5m depth with bentonite seal and flush cover, 50mm slotted pipe with pea gravel surround from 4.5 to 7.5m.

RO 01 220.4.AFAN WAY.GPJ IW/GDT 28/11/07

GROUND INVESTIGATION

TEL : FAX : EMAIL :

Ground Investigation

Site: Afan Way, Port Talbot

Client: Dovey Group of Companies

Job No: Afan Way, Port Talbot

Method/Plant Used: Baretta T41

Start date: 20/09/07

Easting:

End Date: 20/09/07

Logged By: JWD

Northing:

Elevation:

Hole ID

DH2

Sheet 1 of 1 (0.00m-10.00m)

All dimensions in metres

Scale 1:50

SAMPLES & IN-SITU TESTS

Depth

Type / No

Result / Remark

Water

STRATA

Legend

Depth (thick.)

Description

Backfill & Inst

(2.00)

Ash fill.
MADE GROUND

2.00

(3.00)

CLAY
ESTUARINE ALLUVIUM

5.00

(2.50)

SAND and GRAVEL
FLUVIO-GLACIAL GRAVELS

7.50

Boring Progress and Water Observations

Water Strikes

Hole Diameter

Casing Diameter

Date

Time

Hole Depth

Casing Depth

Water Depth

Strike Depth

Flow Rate

Post Strike Depth

Elapsed Minutes

Depth Sealed

Depth

Diameter (mm)

Depth

Diameter (mm)

General Remarks

1. All dimensions are in metres unless stated, Coordinates approximate only and interpolated from recent OS maps.

2. All descriptions based on drillers observations of drilling returns.

3. No groundwater observations noted.

4. **Installation:** 50mm diam. plain pipe from GL to 4.5m depth with bentonite seal and flush cover, 50mm slotted pipe with pea gravel surround from 4.5 to 7.5m.

RO 01 220.4.AFAN WAY.GPJ IW/GDT 28/11/07

GROUND INVESTIGATION

TEL : FAX : EMAIL :

Ground Investigation

Site: Afan Way, Port Talbot

Client: Dovey Group of Companies

Job No: Afan Way, Port Talbot

Method/Plant Used: Baretta T41

Start date: 20/09/07

Easting:

End Date: 20/09/07

Logged By: JWD

Northing:

Elevation:

Hole ID

DH3

Sheet 1 of 1 (0.00m-10.00m)

All dimensions in metres

Scale 1:50

SAMPLES & IN-SITU TESTS

Depth

Type / No

Result / Remark

Water

STRATA

Legend

Depth (thick.)

Description

(2.00)

2.00

Ash fill.
MADE GROUND

(2.80)

4.80

CLAY
ESTUARINE ALLUVIUM

(2.70)

7.50

SAND and GRAVEL
FLUVIO-GLACIAL GRAVELS

Backfill & Inst

Boring Progress and Water Observations

Water Strikes

Post Strike Depth

Elapsed Minutes

Depth Sealed

Hole Diameter

Casing Diameter

Date

Time

Hole Depth

Casing Depth

Water Depth

Strike Depth

Flow Rate

Depth Sealed

Depth

Diameter (mm)

Depth

Diameter (mm)

7.50

115

7.50

115

General Remarks

1. All dimensions are in metres unless stated, Coordinates approximate only and interpolated from recent OS maps.

2. All descriptions based on drillers observations of drilling returns.

3. No groundwater observations noted.

4. Installation: 50mm diam. plain pipe from GL to 4.5m depth with bentonite seal and flush cover, 50mm slotted pipe with pea gravel surround from 4.5 to 7.5m.

GROUND INVESTIGATION
TEL : FAX : EMAIL :



Ground Investigation

Rotary Open-Hole Borehole Record

Site: Afan Way, Port Talbot

Client: Dovey Group of Companies

Job No: Afan Way, Port Talbot

Method/Plant Used: Baretta T41

Start date: 21/09/07

Easting:

End Date: 21/09/07

Logged By: JWD

Northing:

Elevation:

Hole ID
DH4

Sheet 1 of 1 (0.00m-10.00m)
All dimensions in metres
Scale 1:50

SAMPLES & IN-SITU TESTS

Depth

Type / No

Result / Remark

Water

STRATA

Legend

Depth (thick.)

Description

(2.00)

2.00

Ash fill.
MADE GROUND

(2.80)

4.80

CLAY
ESTUARINE ALLUVIUM

(2.70)

7.50

SAND and GRAVEL
FLUVIO-GLACIAL GRAVELS

Backfill & Inst

Boring Progress and Water Observations

Water Strikes

Hole Diameter

Casing Diameter

Date

Time

Hole Depth

Casing Depth

Water Depth

Strike Depth

Flow Rate

Post Strike Depth

Elapsed Minutes

Depth Sealed

Depth

Diameter (mm)

Depth

Diameter (mm)

General Remarks

1. All dimensions are in metres unless stated, Coordinates approximate only and interpolated from recent OS maps.

2. All descriptions based on drillers observations of drilling returns.

3. No groundwater observations noted.

4. **Installation:** 50mm diam. plain pipe from GL to 4.5m depth with bentonite seal and flush cover, 50mm slotted pipe with pea gravel surround from 4.5 to 7.5m.

RO 01 220.4.AFAN WAY.GPJ IW/GDT 28/11/07

GROUND INVESTIGATION

TEL: FAX: EMAIL:

Ground Investigation

Rotary Open-Hole Borehole Record

Hole ID

DH5

Sheet 1 of 1 (0.00m-10.00m)

All dimensions in metres

Scale 1:50

Site: Afan Way, Port Talbot

Client: Dovey Group of Companies

Job No: Afan Way, Port Talbot

Method/Plant Used: Baretta T41

Start date: 21/09/07

Easting:

End Date: 21/09/07

Logged By: JWD

Northing:

Elevation:

SAMPLES & IN-SITU TESTS

Depth

Type / No

Result / Remark

Water

STRATA

Legend

Depth (thick.)

Description

(2.00)

2.00

CLAY

ESTUARINE ALLUVIUM

(2.50)

4.50

SAND and GRAVEL

FLUVIO-GLACIAL GRAVELS

(3.00)

7.50

Backfill & Inst

Boring Progress and Water Observations

Water Strikes

Hole Diameter

Casing Diameter

Date

Time

Hole Depth

Casing Depth

Water Depth

Strike Depth

Flow Rate

Post Strike Depth

Elapsed Minutes

Depth Sealed

Depth

Diameter (mm)

Depth

Diameter (mm)

7.50

115

7.50

115

General Remarks

1. All dimensions are in metres unless stated, Coordinates approximate only and interpolated from recent OS maps.

2. All descriptions based on drillers observations of drilling returns.

3. No groundwater observations noted.

4. Installation: 50mm diam. plain pipe from GL to 4.5m depth with bentonite seal and flush cover, 50mm slotted pipe with pea gravel surround from 4.5 to 7.5m.



Ground Investigation

Rotary Open-Hole Borehole Record

Hole ID

DH6

Sheet 1 of 1 (0.00m-10.00m)

All dimensions in metres

Scale 1:50

Site:	Afan Way, Port Talbot
--------------	-----------------------

Client:	Dovey Group of Companies
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Job No: Afan Way, Port Talbot

Method/Plant Used: Baretta T41

Start date: 21/09/07

End Date: 21/09/07

Logged By: JWD

Easting

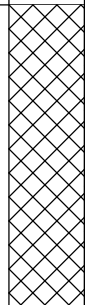
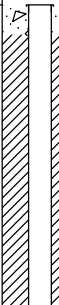
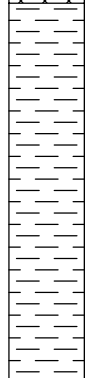
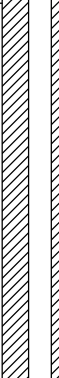
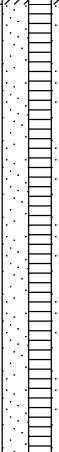
Northings:

Elevation:

SAMPLES & IN-SITU TESTS

STRATA

Backfill
& Inst

Depth	Type / No	Result / Remark	Legend	Depth (thick.)	Description	Backfill & Inst
				(2.00) 2.00	Ash fill. MADE GROUND	
				(2.50) 4.50	CLAY ESTUARINE ALLUVIUM	
				(3.00) 7.50	SAND and GRAVEL FLUVIO-GLACIAL GRAVELS	

Boring Progress and Water Observations	
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	Water Strikes
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	Hole Diameter
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Casing Diameter

[illegible]

General Remarks	

- General Remarks
1. All dimensions are in metres unless stated, Coordinates approximate only and interpolated from recent OS maps.
 2. All descriptions based on drillers observations of drilling returns.
 3. No groundwater observations noted.
 4. **Installation:** 50mm diam. plain pipe from GL to 4.5m depth with bentonite seal and flush cover, 50mm slotted pipe with pea gravel surround from 4.5 to 7.5m.