

Site	Pemberton Development Phase 2	Sample Type	SOIL
Sample ID:	TP229	Job:	QUAN/B3924
Other ID:	0 00m	Sample No:	642953
Your Ref:	7932	Your Order:	7932/10752
Received:	22/03/2005		
Description	Dark brown loam with many stones and occasional organic matter		

Method	Determination	Result	Units	Date of analysis	UoM %
30/30C	" Arsenic (Total)	15	mg/kg	04/04/2005	10.3/10.7
52	" Barium (Total)	160	mg/kg	04/04/2005	
52	" Beryllium (Total)	0.78	mg/kg	04/04/2005	11.84
6	" Boron (Soluble)	1.0	mg/kg	01/04/2005	
30	Cadmium (Total)	0.62	mg/kg	03/04/2005	
30	" Chromium (Total)	42	mg/kg	03/04/2005	
30	" Copper (Total)	90	mg/kg	03/04/2005	
30	" Lead (Total)	210	mg/kg	03/04/2005	13.10
30C	" Mercury (Total)	0.34	mg/kg	03/04/2005	13.28
30	" Nickel (Total)	21	mg/kg	03/04/2005	
30C	" Selenium (Total)	0.50	mg/kg	03/04/2005	14.41
52	" Vanadium (Total)	28	mg/kg	03/04/2005	16.78
30	" Zinc (Total)	320	mg/kg	04/04/2005	
14	Cyanide (Complex)	< 0.50	mg/kg	04/04/2005	11.13
14	Cyanide (Free)	< 0.50	mg/kg	07/04/2005	
14	Cyanide (Total)	< 0.50	mg/kg	07/04/2005	
45	" Sulphate (Total) as SO ₄	0.13	mg/kg	07/04/2005	
47	Sulphide as S	< 5.0	%	04/04/2005	27.93
39	pH	7.9	mg/kg	07/04/2005	
63	Nitrate as NO ₃ (2:1 Water	0.016	pH units	01/04/2005	
51	" Sulphur (Elemental)	< 100	g/l	06/04/2005	
70	Asbestos Identification	Non	mg/kg	04/04/2005	34.54
70	Description of Sample*	SOIL		07/04/2005	
Moisture	Moisture*	8.3		07/04/2005	
Stones	Stones %*	52	%	29/03/2005	
Comments			%	29/03/2005	

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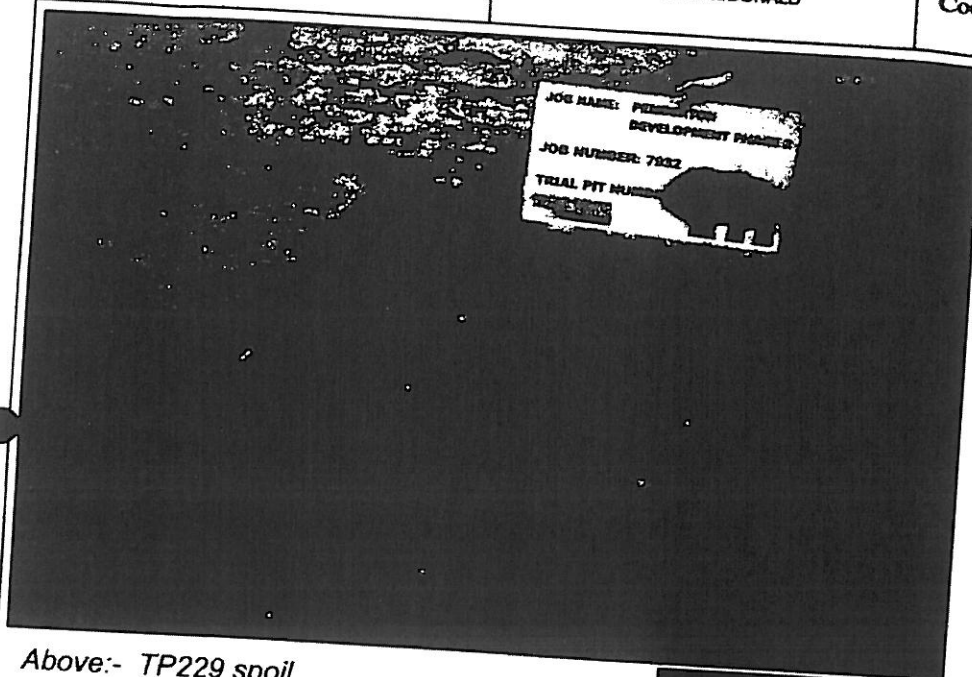
Contract : PEMBERTON DEVELOPMENT SECOND GROUND INVESTIGATION
Client : CARMARTHENSHIRE COUNTY COUNCIL

Trial Pit No.
TP229

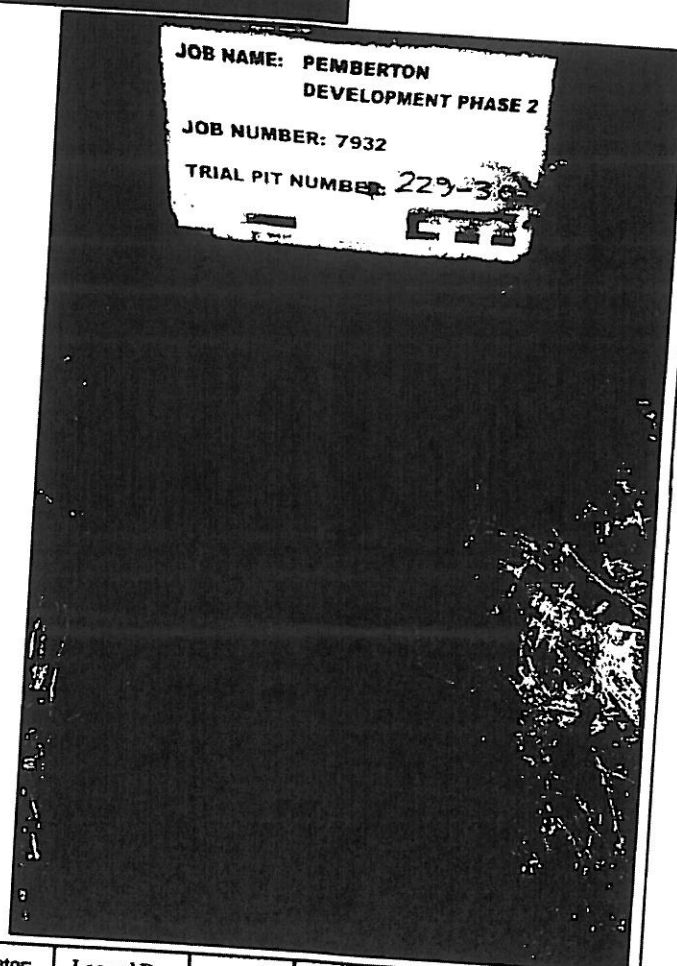
Dates : 15/03/05 - 15/03/05
Location : Llanelli

Job Number : 7932
Engineer : MOTT MACDONALD

Ground Level : 7.07 m A.O.D.
Level to Ordnance Datum
Coordinates: 252911.95 E
 199737.74 N
Co-ordinates to National Grid



Above:- TP229 spoil



*Right:-
 TP229 pit*



Byons House, Byons
 Llanelli, Carmarthenshire, SA14 9SU
 Tel: 01554 744880
 Fax: 01554 776130
 email: enquiries@quantum-gh.co.uk

Operator:
 NT

Logged By:
 KH

Sheet No.
 2 Of 2

Scale:
 1:27.64

All measurements in
 metres unless
 otherwise stated



Site	Pemberton Development Phase 2	Sample Type	SOIL
Sample ID:	TP230	Job:	QUAN/B3924
Other ID:	1.00m	Sample No:	642954
Your Ref:	7932	Your Order:	7932/10752
Received:	22/03/2005		
Description	Dark brown loam with many stones and occasional organic matter		

Method	Determination	Result	Units	Date of analysis	UoM %
	>> TPH SUITE <<				
317	" TPH by GC (>C6-C10)	< 50	mg/kg	22/03/2005	
317	" TPH by GC (>C10 - C20)	74	mg/kg	05/04/2005	
317	" TPH by GC (>C20-C40)	139	mg/kg	05/04/2005	
317	" TPH by GC (>C6 - C40)	213	mg/kg	05/04/2005	36.0
	>> PAH SUITE <<				
307	" naphthalene	0.99	mg/kg	22/03/2005	
307	" acenaphthylene	< 0.50	mg/kg	01/04/2005	
307	" acenaphthene	< 0.50	mg/kg	01/04/2005	
307	" fluorene	< 0.50	mg/kg	01/04/2005	
307	" phenanthrene	1.3	mg/kg	01/04/2005	
307	" anthracene	< 0.50	mg/kg	01/04/2005	14.44
307	" fluoranthene	1.5	mg/kg	01/04/2005	
307	" pyrene	1.1	mg/kg	01/04/2005	
307	" benzo(a)anthracene	0.73	mg/kg	01/04/2005	29.51
307	" chrysene	0.82	mg/kg	01/04/2005	
307	" benzo(b)fluoranthene	1.4	mg/kg	01/04/2005	
307	" benzo(k)fluoranthene	< 0.50	mg/kg	01/04/2005	
307	" benzo(a)pyrene	0.65	mg/kg	01/04/2005	
307	" dibenzo(ah)anthracene	< 0.50	mg/kg	01/04/2005	37.46
307	" benzo(ghi)perylene	0.50	mg/kg	01/04/2005	
307	" indeno(123cd)pyrene	0.63	mg/kg	01/04/2005	
307	" PAH (Total)	11	mg/kg	01/04/2005	
Moisture	Moisture*	9.7	%	01/04/2005	18.40
Stones	Stones %*	49	%	29/03/2005	
Comments				29/03/2005	

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Site	Pemberton Development Phase 2	Sample Type	SOIL
Sample ID:	TP230	Job:	QUAN/B3924
Other ID:	2.00m	Sample No:	642955
Your Ref:	7932	Your Order:	7932/10752
Received:	22/03/2005		
Description	Dark brown clay with many stones and occasional organic matter		

Method	Determination	Result	Units	Date of analysis	UoM %
30/30C	^u Arsenic (Total)	15	mg/kg	04/04/2005	10.3/10.7
52	^u Barium (Total)	210	mg/kg	04/04/2005	
52	^u Beryllium (Total)	0.73	mg/kg	04/04/2005	11.84
6	^u Boron (Soluble)	0.80	mg/kg	01/04/2005	
30	Cadmium (Total)	< 0.50	mg/kg	03/04/2005	
30	^u Chromium (Total)	21	mg/kg	03/04/2005	
30	^u Copper (Total)	73	mg/kg	03/04/2005	13.10
30	^u Lead (Total)	110	mg/kg	03/04/2005	13.28
30C	^u Mercury (Total)	0.36	mg/kg	03/04/2005	
30	^u Nickel (Total)	25	mg/kg	03/04/2005	14.41
30C	^u Selenium (Total)	0.63	mg/kg	03/04/2005	16.78
52	^u Vanadium (Total)	26	mg/kg	04/04/2005	
30	^u Zinc (Total)	180	mg/kg	04/04/2005	11.14
14	Cyanide (Complex)	< 0.50	mg/kg	07/04/2005	
14	Cyanide (Free)	< 0.50	mg/kg	07/04/2005	
14	Cyanide (Total)	< 0.50	mg/kg	07/04/2005	
45	^u Sulphate (Total) as SO ₄	0.16	%	04/04/2005	27.94
47	Sulphide as S	< 5.0	mg/kg	07/04/2005	
39	pH	7.9	pH units	01/04/2005	
63	Nitrate as NO ₃ (2:1 Water	0.0094	g/l	06/04/2005	
51	^u Sulphur (Elemental)	180	mg/kg	04/04/2005	34.54
70	Asbestos Identification	Non		07/04/2005	
70	Description of Sample*	SOIL		07/04/2005	
Moisture	Moisture*	12	%	29/03/2005	
Stones	Stones %*	49	%	29/03/2005	
Comments					

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		TP216	TP219	TP220	TP222	TP223	TP230	TP231	TP235
		22/03/2005	19/04/2006	22/04/2006	22/03/2006	22/03/2006	22/03/2005	22/03/2005	04/04/2005
tpb 6-10	mg/kg	273	<50	<50	<50	<50	<50	<50	<50
tpb 10-20	mg/kg	624	<50	<50	<50	<50	<50	<50	<50
tpb 20-40	mg/kg	898	<50	<50	100	129	74	58	<50
total	mg/kg		<50	<50	100	129	139	126	<50
BTEX			<50	<50	100	129	213	185	<100
benzene	mg/kg								
toluene	mg/kg								
ethylbenzene	mg/kg								<0.1
xylene	mg/kg								<0.1
pcb 28	mg/kg	<0.01							<0.1
pcb52	mg/kg	<0.01							<0.1
pcb101	mg/kg	<0.01						<0.01	<0.01
pcb118	mg/kg	<0.01						<0.01	<0.01
pcb153	mg/kg	0.012						<0.01	<0.01
pcb138	mg/kg	0.011						<0.01	<0.01
pcb180	mg/kg	0.02						<0.01	<0.01
pcb total	mg/kg	0.013						<0.01	<0.01
		<0.1						<0.01	<0.01
PAHs								<0.1	<0.01
naphthalene	mg/kg								
acenaphthylene	mg/kg						0.99	2.3	
acenaphthene	mg/kg						<0.5	<0.5	
fluorene	mg/kg						<0.5	0.52	
phenanthrene	mg/kg						<0.5	0.63	
anthracene	mg/kg						1.3	5	
fluoranthene	mg/kg						<0.5	2.8	
pyrene	mg/kg						1.5	7.4	
benzo(a)pyrene	mg/kg						1.1	4.4	
chrysene	mg/kg						0.73	2.6	
benzo(b)fluoranthene	mg/kg						0.82	1.8	
benzo(k)fluoranthene	mg/kg						1.4	4.7	
benzo(a)pyrene	mg/kg						<0.5	1	
dibenzo(ghi)perylene	mg/kg						0.65	2.4	
indeno(ah)anthracene	mg/kg						<0.5	<0.5	
benzo(ghi)perylene	mg/kg						0.5		
indeno(123cd)pyrene	mg/kg						0.63	1.5	
PAH total	mg/kg						11	1.6	
								39	

Table 2
Mott MacDonald Soil Analytical Results - PAH and TPH

URS
FINAL

Pemberton Development
on behalf of Costain Ltd

45160654 / FR621
16/08/2006

Contract : PEMBERTON DEVELOPMENT SECOND GROUND INVESTIGATION
Client : CARMARTHENSHIRE COUNTY COUNCIL

Trial Pit No.
TP230

Dates : 15/03/05 - 15/03/05

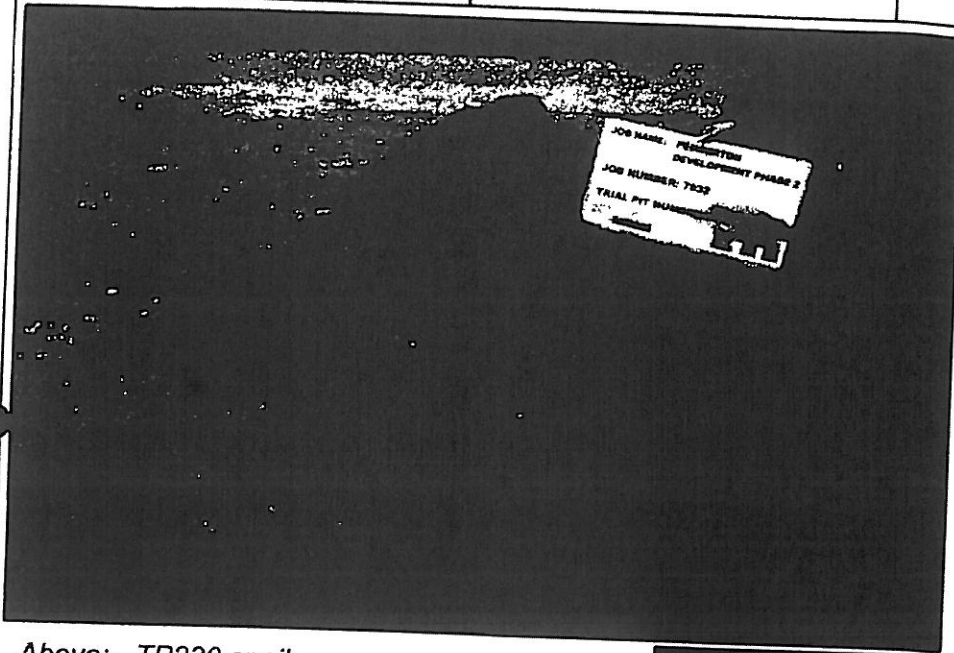
Location : Llanelli

Job Number : 7932

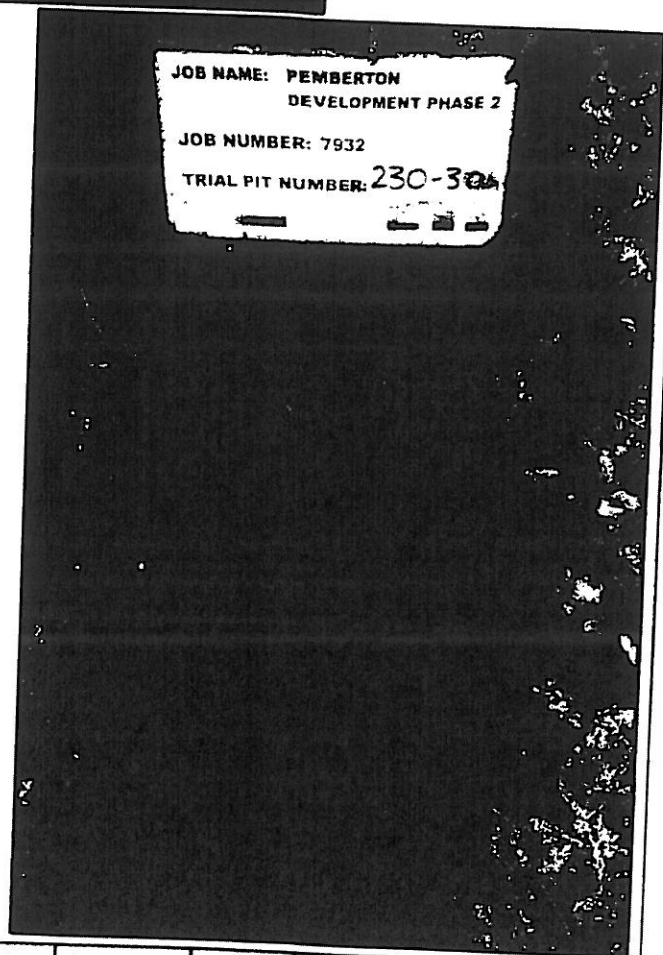
Engineer : MOTT MACDONALD

Ground Level : 7.17 m A.O.D.
Level to Ordnance Datum

Coordinates: 252695.47 E
199697.53 N
Co-ordinates to National Grid



Above:- TP230 spoil



Right:-
TP230 pit



Bynes House, Bynes
Llanelli, Carmarthenshire, SA14 9SU
Tel: 01554 744330
Fax: 01554 776130
email: enquiries@quantum-gb.co.uk

Operator:
NT

Logged By:
KH

Sheet No.
2 Of 2

Scale:
1:27.64

All measurements in
metres unless
otherwise stated



Site	Pemberton Development Phase 2	Sample Type	SOIL
Sample ID:	TP230A	Job:	QUAN/B3924
Other ID:	2.00m	Sample No:	642959
Your Ref:	7932	Your Order:	7932/10752
Received:	22/03/2005		
Description	Dark brown loam with many stones and occasional organic matter		

Method	Determination	Result	Units	Date of analysis	UoM %
30/30C	^M Arsenic (Total)	20	mg/kg	04/04/2005	10.3/10.7
Comments					

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1510



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Site	Pemberton Development Phase 2	Sample Type	SOIL
Sample ID:	TP230A	Job:	QUAN/B3924
Other ID:	2 00m	Sample No:	642959
Your Ref:	7932	Your Order:	7932/10752
Received:	22/03/2005		
Description	Dark brown loam with many stones and occasional organic matter		

Method	Determination	Result	Units	Date of analysis	UoM %
52	^M Barium (Total)	270	mg/kg	04/04/2005	
52	^M Beryllium (Total)	0.67	mg/kg	04/04/2005	11.84
6	^M Boron (Soluble)	2.2	mg/kg	01/04/2005	
30	Cadmium (Total)	0.55	mg/kg	03/04/2005	
30	^M Chromium (Total)	29	mg/kg	03/04/2005	
30	^M Copper (Total)	95	mg/kg	03/04/2005	13.10
30	^M Lead (Total)	230	mg/kg	03/04/2005	13.28
30C	^M Mercury (Total)	0.34	mg/kg	03/04/2005	
30	^M Nickel (Total)	20	mg/kg	03/04/2005	14.41
30C	^M Selenium (Total)	0.51	mg/kg	03/04/2005	16.78
52	^M Vanadium (Total)	26	mg/kg	04/04/2005	
30	^M Zinc (Total)	390	mg/kg	04/04/2005	11.14
14	Cyanide (Complex)	< 0.50	mg/kg	07/04/2005	
14	Cyanide (Free)	< 0.50	mg/kg	07/04/2005	
14	Cyanide (Total)	< 0.50	mg/kg	07/04/2005	
45	^M Sulphate (Total) as SO ₄	0.32	%	04/04/2005	27.94
47	Sulphide as S	< 5.0	mg/kg	07/04/2005	
39	pH	8.8	pH units	01/04/2005	
63	Nitrate as NO ₃ (2:1 Water	< 0.0020	g/l	06/04/2005	
317	^M TPH (Total)	211	mg/kg	05/04/2005	30.0
51	^M Sulphur (Elemental)	410	mg/kg	04/04/2005	34.54
70	Asbestos Identification	Non		07/04/2005	
70	Description of Sample*	SOIL		07/04/2005	
Moisture	Moisture*	10	%	29/03/2005	
Stones	Stones %*	47	%	29/03/2005	
Comments					

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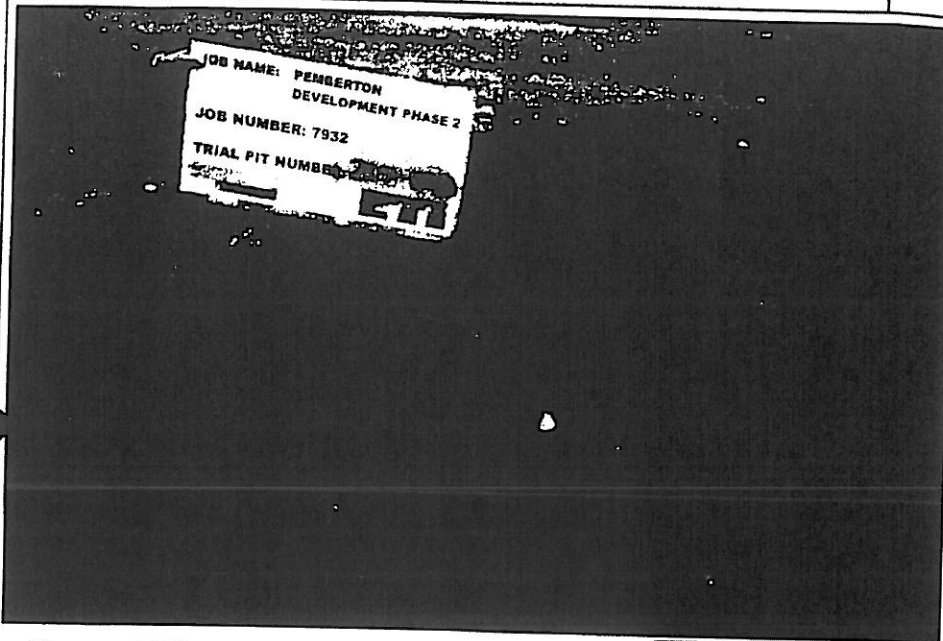
Contract : PEMBERTON DEVELOPMENT SECOND GROUND INVESTIGATION
Client : CARMARTHENSHIRE COUNTY COUNCIL

Trial Pit No.
TP230A

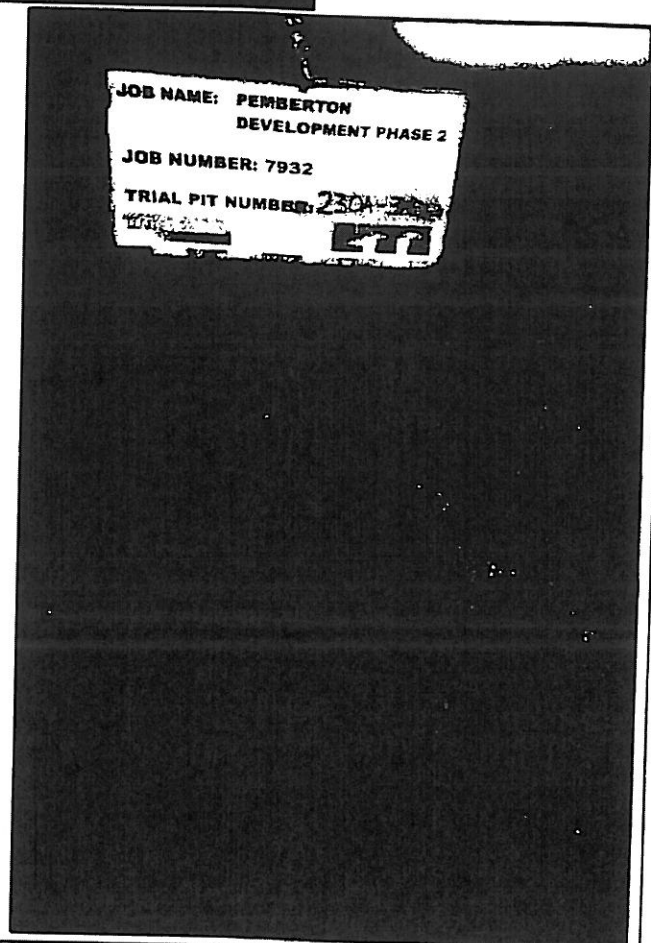
Dates : 15/03/05 - 15/03/05
Location : Llanelli

Job Number : 7932
Engineer : MOTT MACDONALD

Ground Level : 7.46 m A.O.D.
Level to Ordnance Datum
Coordinates: 252674.08 E
 199737.06 N
Co-ordinates to National Grid



Above:- TP230A spoil



*Right:-
 TP230A pit*



Byons House, Byons
 Llanelli, Carmarthenshire, SA14 9SU
 Tel: 01554 744870
 Fax: 01554 776150
 email: enquiries@quantum-gb.co.uk

Operator:
 NT

Logged By:
 KH

Sheet No.
 2 Of 2

Scale:
 1:27.64

All measurements in
 metres unless
 otherwise stated



Site	Pemberton Development Phase 2	Sample Type	SOIL
Sample ID:	TP231	Job:	QUAN/B3924
Other ID:	1.00m	Sample No:	642956
Your Ref:	7932	Your Order:	7932/10752
Received:	22/03/2005		
Description	Dark brown loam with many stones and occasional organic matter		

Method	Determination	Result	Units	Date of analysis	UoM %
10A	ANC/BNC at pH4*	0.05	mol/kg	31/03/2005	
10A	ANC/BNC at pH7*	0.00	mol/kg	31/03/2005	
337	Loss on Ignition	11	%	01/04/2005	
36	Total Organic Carbon	32000	mg/kg	06/04/2005	
39	pH	7.7	pH units	01/04/2005	
317	^M TPH by GC (>C6-C10)	< 50	mg/kg	05/04/2005	
317	^M TPH by GC (>C10 - C20)	58	mg/kg	05/04/2005	
317	^M TPH by GC (>C20-C40)	126	mg/kg	05/04/2005	
317	^M TPH by GC (>C6 - C40)	185	mg/kg	05/04/2005	
336	^M benzene	< 0.10	mg/kg	01/04/2005	30.0
336	^M toluene	< 0.10	mg/kg	01/04/2005	
336	^M ethylbenzene	< 0.10	mg/kg	01/04/2005	
336	^M xylene	< 0.10	mg/kg	01/04/2005	
	>> PAH SUITE <<	.		22/03/2005	
307	^M naphthalene	2.3	mg/kg	01/04/2005	
307	^M acenaphthylene	< 0.50	mg/kg	01/04/2005	
307	^M acenaphthene	0.52	mg/kg	01/04/2005	
307	^M fluorene	0.63	mg/kg	01/04/2005	
307	^M phenanthrene	5.0	mg/kg	01/04/2005	14.44
307	^M anthracene	2.8	mg/kg	01/04/2005	
307	^M fluoranthene	7.4	mg/kg	01/04/2005	
307	^M pyrene	4.4	mg/kg	01/04/2005	29.51
307	^M benzo(a)anthracene	2.6	mg/kg	01/04/2005	
307	^M chrysene	1.8	mg/kg	01/04/2005	
307	^M benzo(b)fluoranthene	4.7	mg/kg	01/04/2005	
307	^M benzo(k)fluoranthene	1.0	mg/kg	01/04/2005	
307	^M benzo(a)pyrene	2.4	mg/kg	01/04/2005	37.46
307	^M dibenzo(ah)anthracene	< 0.50	mg/kg	01/04/2005	
307	^M benzo(ghi)perylene	1.5	mg/kg	01/04/2005	
307	^M indeno(123cd)pyrene	1.6	mg/kg	01/04/2005	
307	^M PAH (Total)	39	mg/kg	01/04/2005	18.40
PCB7S	^M PCB #28	< 0.010	mg/kg	31/03/2005	
PCB7S	^M PCB #52	< 0.010	mg/kg	31/03/2005	
PCB7S	^M PCB #101	< 0.010	mg/kg	31/03/2005	

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Page 30 of 40

Site	Pemberton Development Phase 2	Sample Type	SOIL
Sample ID:	TP231	Job:	QUAN/B3924
Other ID:	1.00m	Sample No:	642956
Your Ref:	7932	Your Order:	7932/10752
Received:	22/03/2005		
Description	Dark brown loam with many stones and occasional organic matter		

Method	Determination	Result	Units	Date of analysis	UoM %
PCB7S	" PCB #118	< 0.010	mg/kg	31/03/2005	
PCB7S	" PCB #153	< 0.010	mg/kg	31/03/2005	
PCB7S	" PCB #138	< 0.010	mg/kg	31/03/2005	
PCB7S	" PCB #180	< 0.010	mg/kg	31/03/2005	
PCB7S	" PCB 7 Total	< 0.10	mg/kg	31/03/2005	
Moisture	Moisture*	11	%	29/03/2005	
Stones	Stones %*	61	%	29/03/2005	
Comments					

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Site	Pemberton Development Phase 2	Sample Type	SOIL
Sample ID:	TP231	Job:	QUAN/B3924
Other ID:	2.00m	Sample No:	642957
Your Ref:	7932	Your Order:	7932/10752
Received:	22/03/2005		
Description	Dark brown loam with many stones and occasional organic matter		

Method	Determination	Result	Units	Date of analysis	UoM %
30/30C	^M Arsenic (Total)	25	mg/kg	04/04/2005	10.3/10.7
52	^M Barium (Total)	210	mg/kg	04/04/2005	
52	^M Beryllium (Total)	1.1	mg/kg	04/04/2005	11.84
6	^M Boron (Soluble)	1.5	mg/kg	01/04/2005	
30	Cadmium (Total)	< 0.50	mg/kg	03/04/2005	
30	^M Chromium (Total)	29	mg/kg	03/04/2005	
30	^M Copper (Total)	210	mg/kg	03/04/2005	13.10
30	^M Lead (Total)	130	mg/kg	03/04/2005	13.28
30C	^M Mercury (Total)	0.35	mg/kg	03/04/2005	
30	^M Nickel (Total)	39	mg/kg	03/04/2005	14.41
30C	^M Selenium (Total)	0.78	mg/kg	03/04/2005	16.78
52	^M Vanadium (Total)	38	mg/kg	04/04/2005	
30	^M Zinc (Total)	220	mg/kg	04/04/2005	11.14
14	Cyanide (Complex)	< 0.50	mg/kg	07/04/2005	
14	Cyanide (Free)	< 0.50	mg/kg	07/04/2005	
14	Cyanide (Total)	< 0.50	mg/kg	07/04/2005	
45	^M Sulphate (Total) as SO ₄	0.25	%	04/04/2005	27.94
47	Sulphide as S	< 5.0	mg/kg	07/04/2005	
39	pH	7.8	pH units	01/04/2005	
63	Nitrate as NO ₃ (2:1 Water	< 0.0020	g/l	06/04/2005	
51	^M Sulphur (Elemental)	400	mg/kg	04/04/2005	34.54
70	Asbestos Identification	Non		06/04/2005	
70	Description of Sample*	SOIL		06/04/2005	
Moisture	Moisture*	12	%	29/03/2005	
Stones	Stones %*	50	%	29/03/2005	
Comments					

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Severn Trent Laboratories Limited.
Registered in England & Wales. Registration No. 2148934 Registered Office: 2297 Coventry Road, Birmingham B26 3PU



		TP223 2:1	TP223 8:1	TP222 2:1	TP222 8:1	TP231 2:1	TP231 8:1	TP216	TP220	TP220 8:1	TP235 2:1	TP235 8:1
Antimony	mg/l	0.0058	0.0069	0.0056	0.0058	0.0064	0.0055	0.003	2	<0.001	0	0
Arsenic	mg/l	<0.001	<0.001		<0.001	0.0046	0.0055	0.0015	0.0037	0.005	0.0082	0.002
Barium	mg/l	0.07	0.2	0.09	0.17	0.06	0.03	0.06	0.04	<0.01		
Cadmium	mg/l	<0.0005							<0.0005	<0.0005	0.07	0.02
Chromium	mg/l	<0.002	0.003	0.002	0.002				<0.002	<0.002		
Copper	mg/l	0.01	<0.01			0.02		0.01	<0.01			
Lead	mg/l	0.001	0.001	<0.001	0.002			0.001	<0.001	<0.01	0.01	
Mercury	mg/l	<0.00002	<0.0002	<0.0002					<0.0002	0.0006	0.003	
Molybdenum	mg/l	0.01	<0.01	<0.01					<0.01	0.01		
Nickel	mg/l	<0.002	<0.002	0.006	0.003	0.003			<0.002	<0.0002	0.03	0.05
Selenium	mg/l	<0.0003	<0.0003	<0.0003	0.0003		26		<0.0005	0.0029		
Zinc	mg/l	0.03	0.002	0.13	0.04	0.02	0.01	0.01	0.01	<0.01	0.0007	
Phenol index	mg/l	<0.1	<0.1	<0.1					<0.1	<0.1	0.03	
Sulphate as SO4	mg/l	56	<24	65		190	48		150	<20		
Moisture@ 105 C	%	26	N/S	30	N/S	18	N/S	35	26	N/S	31	N/S
Chloride	mg/l	5.6	<2.0	3.1	3.3	5.5			3.9	<2.0	2.1	
Dissolved solids	mg/l	260	160	330	180	350	220	130	260	46	170	46
EC	us/cm	350	260	440	290	540	310	180	400	97	260	10
Fluoride	mg/l	0.29	0.28	<0.2	0.21	0.27	0.29	0.31	0.35	0.37	0.55	0.37
TOC filt	mg/l	3.4	2.1	13	<1	6.8	3.4	4.1	6	2.5	4.1	
pH	pH units	8.1	8.1	8.3	8.1	7.8	8	7.8	7.3	7.2	8	7.9

Table 4
Mott MacDonald Leactale Data

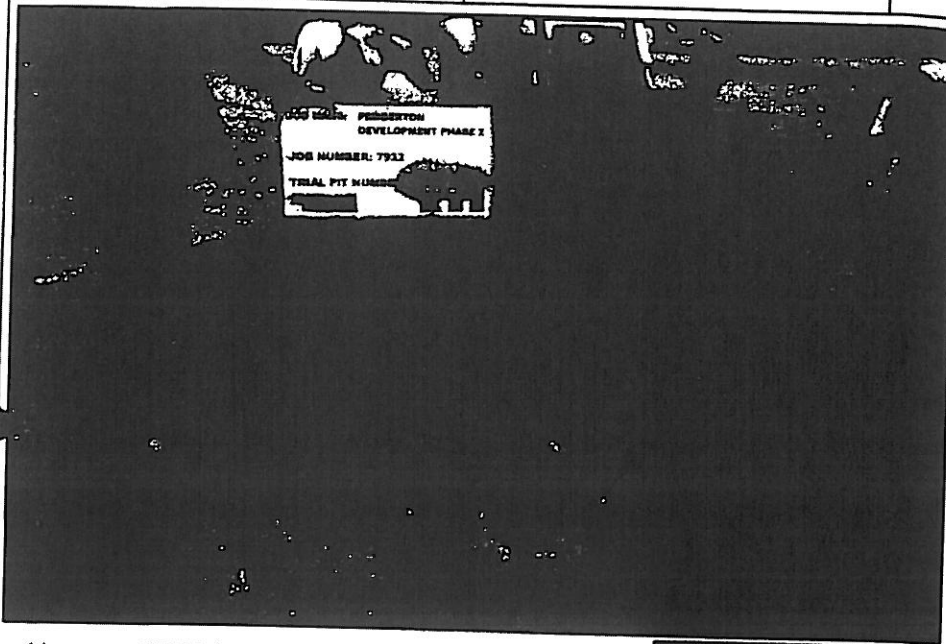
Contract : PEMBERTON DEVELOPMENT SECOND GROUND INVESTIGATION
Client : CARMARTHENSHIRE COUNTY COUNCIL

Trial Pit No.
TP231

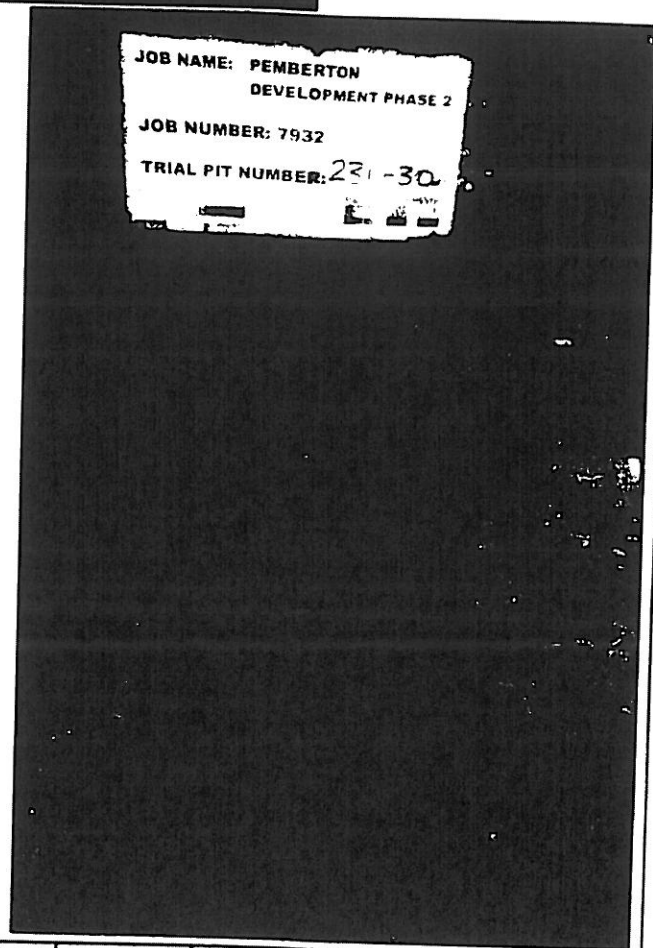
Dates : 15/03/05 - 15/03/05
Location : Llanelli

Job Number : 7932
Engineer : MOTT MACDONALD

Ground Level : 6.80 m A.O.D.
Level to Ordnance Datum
Coordinates: 252799.49 E
199690.35 N
Co-ordinates to National Grid



Above:- TP231 spoil



Right:-
TP231 pit



Byson House, Byson
Llanelli, Carmarthenshire, SA14 9SU
Tel: 01354 744890
Fax: 01354 776130
email: enquiries@quantum-gb.co.uk

Operator:
NT

Logged By:
KH

Sheet No.
2 Of 2

Scale:
1:27.64

All measurements in
metres unless
otherwise stated



Site	Pemberton Development Phase 2	Sample Type	SOIL
Sample ID:	TP232	Job:	QUAN/B5065
Other ID:	0 10m	Sample No:	657699
Your Ref:	7932	Your Order:	7932/10752
Received:	22/04/2005		
Description	Dark brown/beige/grey/red loam with some gravel and occasional organic matter/housebrick		

Method	Determination	Result	Units	Date of analysis	UoM %
30/30C	" Arsenic (Total)	17	mg/kg	17/04/2005	10.3/10
52	" Barium (Total)	140	mg/kg	17/04/2005	
52	" Beryllium (Total)	0.30	mg/kg	17/04/2005	11.84
6	" Boron (Soluble)	1.3	mg/kg	19/04/2005	
30	Cadmium (Total)	< 0.50	mg/kg	17/04/2005	
30	" Chromium (Total)	24	mg/kg	17/04/2005	
30	" Copper (Total)	70	mg/kg	17/04/2005	13.10
30	" Lead (Total)	100	mg/kg	17/04/2005	13.28
30C	" Mercury (Total)	< 0.20	mg/kg	19/04/2005	
30	" Nickel (Total)	20	mg/kg	17/04/2005	14.14
30C	" Selenium (Total)	0.41	mg/kg	16/04/2005	16.78
52	" Vanadium (Total)	23	mg/kg	17/04/2005	
30	" Zinc (Total)	220	mg/kg	17/04/2005	11.14
14	Cyanide (Complex)	< 0.50	mg/kg	18/04/2005	
14	Cyanide (Free)	< 0.50	mg/kg	18/04/2005	
14	Cyanide (Total)	< 0.50	mg/kg	18/04/2005	
45	" Sulphate (Total) as SO ₄	0.12	%	14/04/2005	27.94
47	Sulphide as S	< 5.0	mg/kg	18/04/2005	
39	pH	7.9	pH units	11/04/2005	
63	Nitrate as NO ₃ (2:1 Water	0.070	g/l	12/04/2005	
317	" TPH (Total)	328	mg/kg	20/04/2005	30.0
51	" Sulphur (Elemental)	< 100	mg/kg	13/04/2005	34.54
70	Asbestos Identification	Non		21/04/2005	
70	Description of Sample*	SOIL		21/04/2005	
Moisture	Moisture*	16	%	10/04/2005	
Stones	Stones %*	19	%	10/04/2005	
Comments					

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Severn Trent Laboratories Limited.
Registered in England & Wales Registration No 2148934 Registered Office 2297 Coventry Road, Birmingham B26 3PU



Contract : PEMBERTON DEVELOPMENT SECOND GROUND INVESTIGATION
Client : CARMARTHENSHIRE COUNTY COUNCIL

Trial Pit No.
TP232

Dates : 15/03/05 - 15/03/05

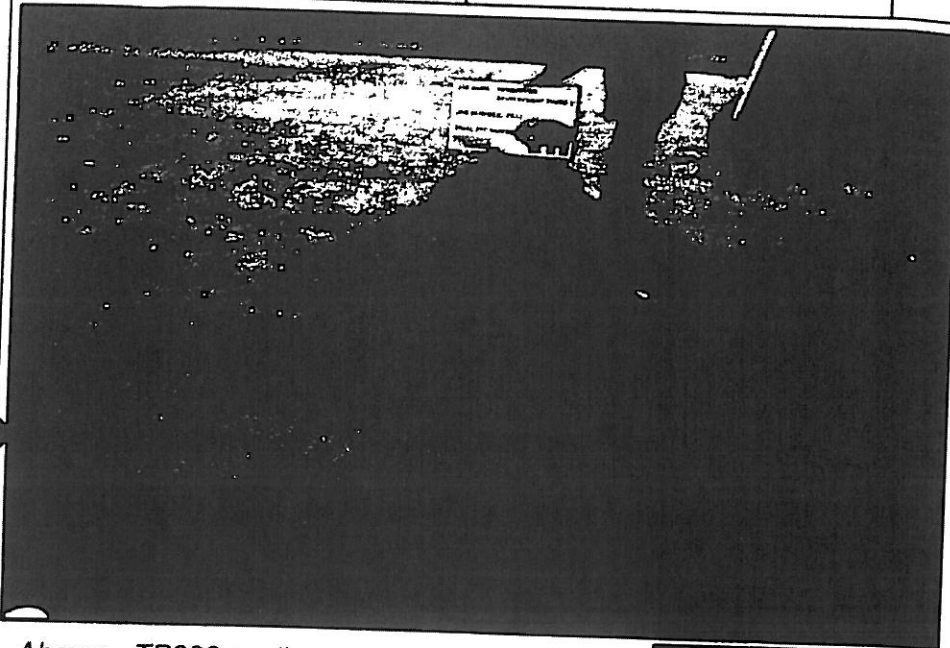
Location : Llanelli

Job Number : 7932

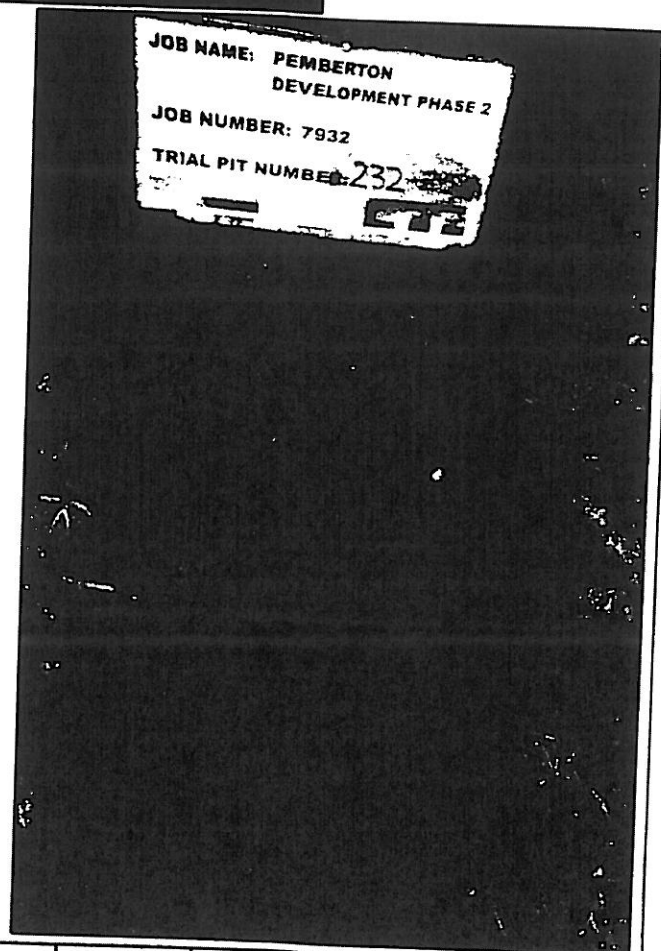
Engineer : MOTT MACDONALD

Ground Level : 7.00 m A.O.D.
Level to Ordnance Datum

Coordinates: 252870.19 E
199881.28 N
Co-ordinates to National Grid



Above:- TP232 spoil



*Right:-
 TP232 pit*



Byson House, Byson
 Llanelli, Carmarthenshire, SA14 9SU
 Tel: 01554 744880
 Fax: 01554 776150
 email: enquiries@quantum-gh.co.uk

Operator:
 NT

Logged By:
 KH

Sheet No.
 2 Of 2

Scale:
 1:27.64

All measurements in
 metres unless
 otherwise stated



QUANTUM (GREAT BRITAIN) LTD LAND GAS AND GROUNDWATER MONITORING RESULTS

Project Name: PEMBERTON DEVELOPMENT SECOND GI
Instruments Used: GA 2000 INFRARED GAS ANALYSER
Monitoring Engineer: KH

Project No.: 7932

Date Sampled: 18/08/2005



Location No.	Installation Level	CH ₄ %	CO ₂ %	O ₂ %	VOC ppm	H ₂ S ppm	Atmos Pressure m bar	Flow l/hr	Air Temp °C	BH Water Temp °C	LNAPL Depth m	Water Depth m	Water Level MOD	DNAPL Depth m	Base Depth m	Water Eh Value	Water pH Value	Remarks
BH201	13.07	0.0	1.0	18.8			1019	1.6				2.54	10.53					50mm gas monitoring standpipe 10mm piezometer
BH202	14.68											1.87	12.81					50mm gas monitoring standpipe 10mm piezometer
BH203	15.82											2.22	13.70					50mm gas monitoring standpipe 10mm piezometer
BH204	9.51	0.0	3.6	17.2			1019	1.2				DRY	DRY					50mm gas monitoring standpipe 50mm gas monitoring standpipe
BH205	9.91	0.0	0.2	20.7			1020	1.4				1.89	8.02					50mm gas monitoring standpipe 50mm gas monitoring standpipe
BH206	7.28	0.0	0.0	21.1			1019	1.4				3.87	3.41					50mm gas monitoring standpipe 50mm gas monitoring standpipe
BH207	9.25	0.0	0.0	21.1			1019	1.2				2.92	6.33					50mm gas monitoring standpipe 10mm piezometer
BH208	7.48											2.20	5.26					50mm gas monitoring standpipe 10mm piezometer
BH209	7.03	0.0	0.0	21.0			1019	1.3				2.48	4.55					50mm gas monitoring standpipe 50mm gas monitoring standpipe
BH210	7.85	0.0	0.0	21.1			1019	1.7				2.92	4.83					50mm gas monitoring standpipe 50mm gas monitoring standpipe
BH211	6.91	0.0	6.3	9.0			1020	1.7				2.44	4.47					50mm gas monitoring standpipe 10mm piezometer
BH212A	7.88											2.88	5.02					50mm gas monitoring standpipe
BH213	7.72	6.4	5.2	1.9			1020	1.7				1.80	5.92					50mm gas monitoring standpipe

Background Gas Levels

	CH ₄ %	CO ₂ %	O ₂ %	VOC ppm	Atmos mbar
Before Monitoring	0.0	0.0	20.1		1019
After Monitoring	0.0	0.0	20.1		1020

Calibration
External Calibration Details (available upon request)
Internal Calibration Details (available upon request)

QUANTUM (GREAT BRITAIN) LTD LAND GAS AND GROUNDWATER MONITORING RESULTS



Project Name: PEMBERTON DEVELOPMENT SECOND G.I
Instruments Used: GA 2000 INFRA-RED GAS ANALYSER
Monitoring Engineer: KH

Project No.: 7932

Date Sampled: 14/06/2005

Location No.	Installation Level mOD	CH ₄ %	CO ₂ %	O ₂ %	VOC ppm	H ₂ S ppm	Atmos Pressure m bar	Flow l/hr	Air Temp °C	BH Water Temp °C	LNAPL Depth m	Water Depth m	Water Level mOD	DNAPL Depth m	Base Depth m	Water Eh Value	Water pH Value	Remarks
BH201	13.07	0.0	0.7	18.6			1007	1.2				2.61	10.46					50mm gas monitoring standpipe
BH202	14.68											1.77	12.91					19mm piezometer
BH203	15.92											2.48	13.44					19mm piezometer
BH204	8.51	0.0	4.1	15.1			1007	1.3				2.96	6.55					50mm gas monitoring standpipe
BH205	9.91	0.0	0.3	18.4			1007	1.4				2.70	7.21					50mm gas monitoring standpipe
BH206	7.28	0.0	0.0	19.7			1007	1.1				3.88	3.40					50mm gas monitoring standpipe
BH207	9.25	0.0	0.0	19.7			1007	1.2				DRY	DRY					50mm gas monitoring standpipe
BH208	7.46											2.30	5.16					19mm piezometer
BH209	7.03	0.0	0.2	19.6			1007	1.4				1.85	5.18					50mm gas monitoring standpipe
BH210	7.86	0.0	0.0	19.6			1008	1.4				2.91	4.94					50mm gas monitoring standpipe
BH211	6.91	0.0	12.2	1.7			1008	1.5				2.40	4.51					50mm gas monitoring standpipe
BH212A	7.88											2.83	5.05					19mm piezometer
BH213	7.72	4.7	5.6	0.8			1008	1.3				1.77	5.95					50mm gas monitoring standpipe

Background Gas Levels

	CH ₄ %	CO ₂ %	O ₂ %	VOC ppm	Atmos mbar
Before Monitoring	0.0	0.0	19.7		1007
After Monitoring	0.0	0.0	19.7		1008

Calibration
External Calibration Details (available upon request)
Internal Calibration Details (available upon request)

QUANTUM (GREAT BRITAIN) LTD LAND GAS AND GROUNDWATER MONITORING RESULTS



Project Name: PEMBERTON DEVELOPMENT SECOND G.J
Instruments Used: GA 2000 INFRA-RED GAS ANALYSER
Monitoring Engineer: KH

Project No.: 7932

Date Sampled: 19/07/2005

Location No.	Installation Level mOD	CH ₄ %	CO ₂ %	O ₂ %	VOC ppm	H ₂ S ppm	Atmos Pressure m bar	Flow l/hr	Air Temp °C	BH Water Temp °C	LNAPL Depth m	Water Depth m	Water Level mOD	DNAPL Depth m	Base Depth m	Water Eh Value	Water pH Value	Remarks
BH201	13.07	0.0	2.2	18.4			1011	1.2				2.71	10.36					50mm gas monitoring standpipe
BH202	14.68	0.0	2.3	17.4			1011	1.3				2.15	12.53					19mm piezometer
BH203	15.92	0.0	0.5	19.8			1012	1.4				2.43	13.49					19mm piezometer
BH204	9.51	0.0	0.0	20.2			1012	1.3				2.73	7.18					50mm gas monitoring standpipe
BH205	9.91	0.0	0.0	20.2			1011	1.4				3.86	3.42					50mm gas monitoring standpipe
BH206	7.28	0.0	0.0	18.2			1012	1.3				2.38	5.10					50mm gas monitoring standpipe
BH207	9.25	0.0	1.7	20.0			1012	1.1				2.01	5.02					19mm piezometer
BH208	7.46	0.0	0.0	1.8			1011	1.3				3.03	4.82					50mm gas monitoring standpipe
BH209	7.03	0.0	12.4	0.3			1011	1.3				2.40	4.51					50mm gas monitoring standpipe
BH210	7.85	0.0	8.8				1011	1.3				2.77	4.91					19mm piezometer
BH211	6.91	0.0					1011	1.3				2.01	5.71					50mm gas monitoring standpipe
BH212A	7.68	5.1					1011	1.3										
BH213	7.72																	

Background Gas Levels

	CH ₄ %	CO ₂ %	O ₂ %	VOC ppm	Atmos mbar
Before Monitoring	0.0	0.0	20.2	1012	1011
After Monitoring	0.0	0.0	20.2	1012	1011

Calibration
External Calibration Details (available upon request)
Internal Calibration Details (available upon request)

QUANTUM (GREAT BRITAIN) LTD LAND GAS AND GROUNDWATER MONITORING RESULTS



Project Name: PEMBERTON DEVELOPMENT SECOND G.I
Instruments Used: GA 2000 INFRA-RED GAS ANALYSER
Monitoring Engineer: KH

Project No.: 7932

Date Sampled: 30/05/2005

Location No.	Installation Level mOD	CH ₄ %	CO ₂ %	O ₂ %	VOC ppm	H ₂ S ppm	Atmos Pressure m bar	Flow l/hr	Air Temp °C	BH Water Temp °C	LNAPL Depth m	Water Depth m	Water Level mOD	DNAPL Depth m	Base Depth m	Water Eh Value	Water pH Value	Remarks
BH201	13.07	0.0	0.2	20.9			1018	0.9				3.00	10.07					50mm gas monitoring standpipe
BH202	14.88											2.17	12.51					19mm piezometer
BH203	15.92											2.60	13.32					19mm piezometer
BH204	9.51	0.0	5.9	14.7			1018	1.2				DRY	DRY					50mm gas monitoring standpipe
BH205	9.91	0.0	0.0	21.0			1017	1.0				2.76	7.15					50mm gas monitoring standpipe
BH206	7.26	0.0	0.0	21.1			1016	1.1				3.88	3.40					50mm gas monitoring standpipe
BH207	9.25	0.0	0.0	20.9			1017	1.3				DRY	DRY					50mm gas monitoring standpipe
BH208	7.46											2.49	4.97					19mm piezometer
BH209	7.03	0.0	0.3	20.8			1018	1.1				2.13	4.90					50mm gas monitoring standpipe
BH210	7.85	0.0	0.0	20.9			1017	1.0				3.07	4.78					50mm gas monitoring standpipe
BH211	6.91	0.0	10.7	7.3			1017	1.3				2.40	4.51					50mm gas monitoring standpipe
BH212A	7.68											2.81	4.87					19mm piezometer
BH213	7.72	9.0	7.3	0.7			1018	1.4				1.82	5.90					50mm gas monitoring standpipe

Background Gas Levels

	CH ₄ %	CO ₂ %	O ₂ %	VOC ppm	Atmos mbar
Before Monitoring	0.0	0.0	21.0		1018
After Monitoring	0.0	0.0	21.0		1017

Calibration
External Calibration Details (available upon request)
Internal Calibration Details (available upon request)