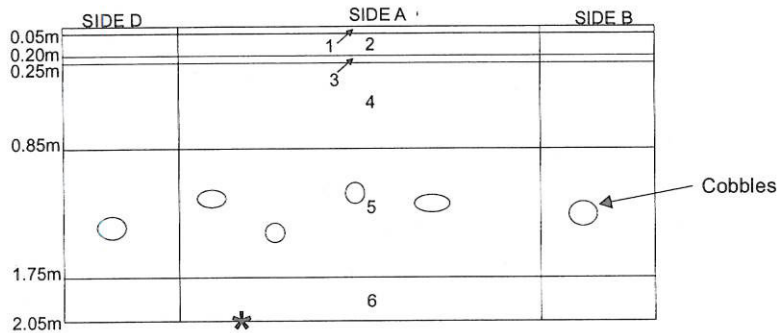
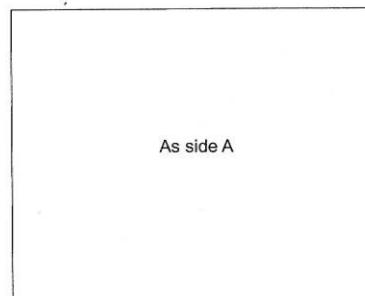


TRIAL PIT NUMBER: MSTP222
 GROUND ELEVATION: -
 DATE OF EXCAVATION: 8/6/98
 WATER LEVEL: DRY
 LOGGED BY: RF
 APPROVED BY:

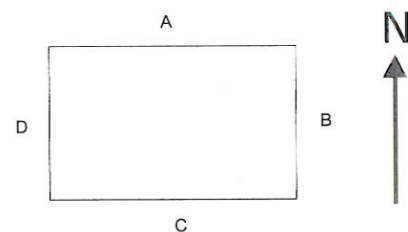
SIDE ELEVATIONS



SIDE C



PLAN



0 1 2m
 Vertical Scale

Key:

- * Soil Sample location
- WA Water Sample
- HS Headspace Analysis
- Water Ingress

STRATA DESCRIPTIONS	COMMENTS	SAMPLES
1. Silty sandy CLAY with frequent gravel (MADE GROUND) 2. Orange-brown medium SAND (MADE GROUND) 3. Black tarry coarse FLY ASH (MADE GROUND) 4. Firm orange-brown CLAY 5. Firm brown friable CLAY with some cobbles 6. Blue-grey and orange-brown CLAY with some sandstone gravel Trial pit terminated at 2.05 mbgl on refusal	a. No odour or staining	<u>PID RESULTS</u> 0.5m - 8 ppm 1.0m - 7.5 ppm 1.5m - 7.8 ppm 2.0m - 32.7 ppm <u>SOIL SAMPLES</u> MSTP222-2.0m

Job Title: SOIL & GROUNDWATER INVESTIGATION

Location: LLANDARCY REFINERY

Client: BP LLANDARCY

Job No: 39991-001-401

DRAFT



DAMES & MOORE

BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: NSMW025 (PIT)		PAGE 1 of 1	
	NUMBER	TYPE					DRILLING DATES: 04/11/03		DRILLING METHODS : JCB	
							DRILLER : JCB		BOREHOLE DIAMETER : -	
							LOGGED BY : SS		SCREEN TYPE & DIAM: -	
							CHECKED BY : SG		SCREEN SLOT SIZE: -	
DESCRIPTION		COMMENTS	S,V							
	NSMW025 - 0.3m (S,L,P)		*6.1		0.0	Soft, dark brown, sandy silt with rootlets. (Topsoil)	Damp. NVO	0,0		
					0.5	Soft, yellow-brown, slightly sandy silt with occasional cobbles, some rootlets and rare ash (MADE GROUND)	NVO	0,0		
					1.0	Soft, golden brown, clayey SILT with rare rounded cobbles.	NVO	0,0		
	NSMW025 - 1.3m (S,L)		*6.4		1.5	Becoming loose, light grey-brown, slightly silty, fine to medium SAND with frequent rounded cobbles.	NVO	0,0		
					2.0	Becoming loose, grey, silty, fine SAND with frequent, stiff, grey, silty clay patches.	Dry-damp. NVO	0,0		
	NSMW025 - 1.5m (ARUP)		*5.9		2.5	Decreasing silty sand with increasing clay patches.	Damp. NVO	0,0		
					3.0	Stiff, grey, slightly silty CLAY.	Dry-damp. NVO	0,0		
					3.5		Damp. NVO	0,0		
						4.0	Trial pit terminated at 3.7m due to refusal.			
						4.5				
						5.0				

LOCATION / NOTES:		LEGEND		BOREHOLE LOG	
NVO = No visual or olfactory evidence of contamination S,V = Contamination Observations S - Odour score (0-5) V - Visual score (0-5)		 Disturbed Sample  Undisturbed Sample  Headspace Analysis  Down Borehole Analysis  Groundwater Table  Perched Water Table		Job Title: BP Llandarcy Whole Site Investigation Location: BP Llandarcy Refinery Client: BP/WDA	
				App'd:	Date: November 2003
				Drawn : SS	Ref:
				Scale: As scale	Job No: 39991-044-785
				Drg. Size: A4	BOREHOLE LOG

BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: NSMW013A (PIT)		PAGE 1 of 1	
	NUMBER	TYPE					DRILLING DATES: 04/11/03		DRILLING METHODS: JCB	
							DRILLER: JCB		BOREHOLE DIAMETER: -	
							LOGGED BY: SS		SCREEN TYPE & DIAM: -	
							CHECKED BY: SG		SCREEN SLOT SIZE: -	
							DESCRIPTION	COMMENTS	S,V	
				0.0			Loose, red-grey, silty, fine sand with frequent angular cobbles and small sandstone boulders. (MADE GROUND)	Grey staining and hydrocarbon odour	2,2	
				0.5				Wet. Grey/black staining and hydrocarbon odour.	3,3	
				1.0			Trial pit terminated at 0.8m due to refusal.			
				1.5						
				2.0						
				2.5						
				3.0						
				3.5						
				4.0						
				4.5						
				5.0						

LOCATION / NOTES: NVO = No visual or olfactory evidence of contamination S,V = Contamination Observations S - Odour score (0-5) V - Visual score (0-5)	LEGEND  Disturbed Sample  Undisturbed Sample  Headspace Analysis  Down Borehole Analysis  Groundwater Table  Perched Water Table	BOREHOLE LOG Job Title: BP Llandarcy Whole Site Investigation Location: BP Llandarcy Refinery Client: BP/WDA  App'd: _____ Date: November 2003 Drawn: SS Ref: _____ Scale: As scale Job No: 39991-044-785 Drg. Size: A4 BOREHOLE LOG
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BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: NSMW013		PAGE 1 of 3	
	NUMBER	TYPE					DRILLING DATES: 10/12/2003		DRILLING METHODS: Beretta - Various	
							DRILLER: APEX - Richard		BOREHOLE DIAMETER: 100-115mm	
							LOGGED BY: OG		SCREEN TYPE & DIAM: 50mm HDPE	
		CHECKED BY: SG		SCREEN SLOT SIZE: 1mm						
							DESCRIPTION	COMMENTS	S,V	
							Grey SILT with fine to medium sand and occasional sandstone clasts.	Air hammer and casing		
							Grey fine to medium SANDSTONE chippings, probable bedrock.	Dry		
								Slightly damp		

LOCATION / NOTES:	LEGEND	BOREHOLE LOG	
NVO = No visual or olfactory evidence of contamination S,V = Contamination Observations S - Odour score (0-5) V - Visual score (0-5)	Disturbed Sample Undisturbed Sample Headspace Analysis Down Borehole Analysis Groundwater Table Perched Water Table	Job Title: BP Llandarcy Whole Site Investigation Location: BP Llandarcy Refinery Client: BP/WDA 	
		App'd:	Date: December 2003
		Drawn: HM	Ref:
		Scale: As scale	Job No: 39991-044-785
		Drg. Size: A4	BOREHOLE LOG

BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: NSMW013		PAGE 2 of 3	
	NUMBER	TYPE					DRILLING DATES: 10/12/2003		DRILLING METHODS : Beretta - Various	
							DRILLER : APEX - Richard		BOREHOLE DIAMETER : 100-115mm	
							LOGGED BY : OG		SCREEN TYPE & DIAM: 50mm HDPE	
							CHECKED BY : SG		SCREEN SLOT SIZE: 1mm	
								COMMENTS	S,V	
				5.5				Dry		
				6.0						
				6.5						
				7.0						
				7.5						
				8.0						
				8.5						
				9.0						
				9.5						
				10.0						

LOCATION / NOTES: NVO = No visual or olfactory evidence of contamination S,V = Contamination Observations S - Odour score (0-5) V - Visual score (0-5)	LEGEND  Disturbed Sample  Undisturbed Sample  Headspace Analysis  Down Borehole Analysis  Groundwater Table  Perched Water Table	BOREHOLE LOG Job Title: BP Llandarcy Whole Site Investigation Location: BP Llandarcy Refinery Client: BP/WDA  <table border="1"> <tr> <td>App'd:</td> <td>Date: December 2003</td> </tr> <tr> <td>Drawn : HM</td> <td>Ref:</td> </tr> <tr> <td>Scale: As scale</td> <td>Job No: 39991-044-785</td> </tr> <tr> <td>Drg. Size: A4</td> <td>BOREHOLE LOG</td> </tr> </table>	App'd:	Date: December 2003	Drawn : HM	Ref:	Scale: As scale	Job No: 39991-044-785	Drg. Size: A4	BOREHOLE LOG
App'd:	Date: December 2003									
Drawn : HM	Ref:									
Scale: As scale	Job No: 39991-044-785									
Drg. Size: A4	BOREHOLE LOG									

BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: NSMW013		PAGE 3 of 3		
	NUMBER	TYPE					DRILLING DATES: 10/12/2003		DRILLING METHODS: Beretta - Various		
							DRILLER: APEX - Richard		BOREHOLE DIAMETER: 100-115mm		
							LOGGED BY: OG		SCREEN TYPE & DIAM: 50mm HDPE		
							CHECKED BY: SG		SCREEN SLOT SIZE: 1mm		
									COMMENTS	S,V	
				10.5							
				11.0							
				11.5			Borehole terminated at 11.5m		Dry		
				12.0							
				12.5							
				13.0							
				13.5							
				14.0							
				14.5							
				15.0							
LOCATION / NOTES: NVO = No visual or olfactory evidence of contamination S,V = Contamination Observations S - Odour score (0-5) V - Visual score (0-5)						LEGEND  Disturbed Sample  Undisturbed Sample  Headspace Analysis  Down Borehole Analysis  Groundwater Table  Perched Water Table		BOREHOLE LOG Job Title: BP Llandarcy Whole Site Investigation Location: BP Llandarcy Refinery Client: BP/WDA 			
								App'd:	Date: December 2003		
								Drawn: HM	Ref:		
								Scale: As scale	Job No: 39991-044-785		
								Drg. Size: A4	BOREHOLE LOG		

BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY			
	NUMBER	TYPE					BOREHOLE NUMBER: NSMW013 (PIT)		PAGE 1 of 1
							DRILLING DATES: 04/11/03		DRILLING METHODS : JCB
							DRILLER : JCB		BOREHOLE DIAMETER : -
							LOGGED BY : SS		SCREEN TYPE & DIAM: -
							CHECKED BY : SG		SCREEN SLOT SIZE: -
							DESCRIPTION	COMMENTS	S,V
	NSMW013 - 0.3m (S,L,2xP)	*	*485	 	0.0		Loose, black grey, silty, fine sand with frequent angular cobbles of sandstone. (MADE GROUND) Trial pit terminated at 0.8m due to refusal.	Wet. Stained red and black with distinct hydrocarbon odour. Water seepage at 0.2m (surface water?)	3,3
			0.5						
			1.0						
			1.5						
			2.0						
			2.5						
			3.0						
			3.5						
4.0									
4.5									
5.0									

LOCATION / NOTES:

NVO = No visual or olfactory evidence of contamination
S,V = Contamination Observations
 S - Odour score (0-5)
 V - Visual score (0-5)

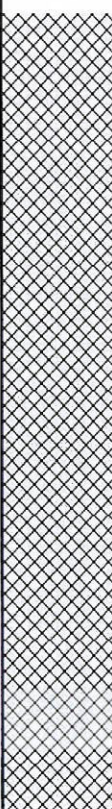
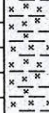
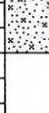
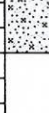
LEGEND

Disturbed Sample
 Undisturbed Sample
 Headspace Analysis
 Down Borehole Analysis
 Groundwater Table
 Perched Water Table

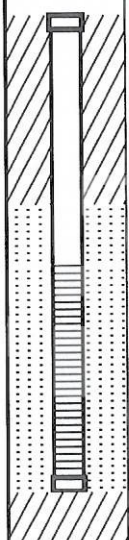
BOREHOLE LOG

Job Title: BP Llandarcy Whole Site Investigation
Location: BP Llandarcy Refinery
Client: BP/WDA

App'd:	Date: November 2003
Drawn: SS	Ref:
Scale: As scale	Job No: 39991-044-785
Drg. Size: A4	BOREHOLE LOG

BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: NSMW002 (PIT)		PAGE 1 of 1	
	NUMBER	TYPE					DRILLING DATES: 30/10/03		DRILLING METHODS : JCB	
							DRILLER : JCB		BOREHOLE DIAMETER : -	
							LOGGED BY : EM		SCREEN TYPE & DIAM: -	
							CHECKED BY : SG		SCREEN SLOT SIZE: -	
						DESCRIPTION		COMMENTS	S,V	
	NSMW002 - 0.4m (P)		*6.9		0.0		Gravel of brick fragments and concrete. (MADE GROUND)			
					0.5		Loose grey brown, silty, medium sand with gravel, cobbles and frequent boulders. (MADE GROUND)		Damp with black staining	2,2
					1.0		Becoming slightly clayey from 0.75m.		Wet	3,2
	NSMW002 - 1.0m (S,L)		*13.4		1.0		Loose to medium dense grey brown, silty, clayey SAND with gravel, cobbles and frequent boulders.		Pipe at 1.0m. Wet	3,2
					1.5				With black staining.	
					2.0					
					2.5		Loose grey silty medium SAND with frequent subangular gravel, cobbles and boulders.		Damp	3,2
					3.0				Damp	3,2
	NSMW002 - 3.2m (S,L)		*261		3.0					
					3.5		Trial pit terminated at 3.2m due to refusal.			
					4.0					
					4.5					
					5.0					

LOCATION / NOTES:		LEGEND		BOREHOLE LOG	
NVO = No visual or olfactory evidence of contamination		 Disturbed Sample		Job Title: BP Llandarcy Whole Site Investigation	
S,V = Contamination Observations		 Undisturbed Sample		Location: BP Llandarcy Refinery	
S - Odour score (0-5)		 Headspace Analysis		Client: BP/WDA	
V - Visual score (0-5)		 Down Borehole Analysis			
		 Groundwater Table		App'd:	Date: November 2003
		 Perched Water Table		Drawn: CM	Ref:
				Scale: As scale	Job No: 39991-044-785
				Drg. Size: A4	BOREHOLE LOG

BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: RFSW038		PAGE 1 of 1	
	NUMBER	TYPE					DRILLING DATES: 25/10/2000		DRILLING METHODS: Window Sampling	
							DRILLER: Geotechnical		BOREHOLE DIAMETER: 78mm	
							LOGGED BY: JG		SCREEN TYPE & DIAM: 40mm HDPE	
							CHECKED BY:		SCREEN SLOT SIZE: 1mm	
					0.0	MADE GROUND Black, moist, loose ash & clinker			0.0	
			*0.0		0.5	CLAY Soft, dark brown, moist, slightly sandy clay.	NVO		0.5	
					1.0		NVO		1.0	
			22.0 *3.7		1.5	CLAY Medium plasticity, very soft, very gravelly clay	Wet. Hydrocarbon odour		1.5	
					2.0	Refusal at 2.1m			2.0	
					2.5	End of Borehole			2.5	
					3.0				3.0	
					3.5				3.5	
					4.0				4.0	
					4.5				4.5	
					5.0				5.0	

LOCATION / NOTES:	LEGEND	BOREHOLE LOG	
NVO = No visual or olfactory evidence	Disturbed Sample Undisturbed Sample Headspace Analysis Down Borehole Analysis Groundwater Table Perched Water Table	Job Title: Sentinel Wells Location: BP Llandarcy Refinery Client: BP Oil UK URS App'd: _____ Date: Sept 2002 Drawn: AR _____ Ref: _____ Scale: _____ Job No: 39991-016 Drg. Size: _____ BOREHOLE LOG	