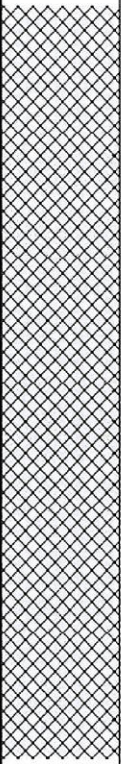


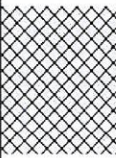
[illegible]

BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: WSTP040		PAGE 1 of 1	
	NUMBER	TYPE					DRILLING DATES: 3/11/2003		DRILLING METHODS: JCB	
							DRILLER: JCB - Paul		BOREHOLE DIAMETER: -	
							LOGGED BY: OG		SCREEN TYPE & DIAM: -	
							CHECKED BY: SG		SCREEN SLOT SIZE: -	
						DESCRIPTION	COMMENTS	S,V		
	WSTP040		*1.0		0.0	Concrete hardstanding. (MADE GROUND)	Damp.			
	0.5-0.6m (ARUP)				0.5	Loose, orange fine to medium SAND with occasional subrounded to rounded cobbles, rare subangular to subrounded boulders and rootlets.		0,0		
	WSTP040 - 1.1m (S,L,2xP) DIPA (S,L)		*778		1.0	Loose, grey, silty SAND with abundant subangular to subrounded gravel and occasional subangular to subrounded cobbles.	Damp, hydrocarbon odour.	3,3		
	WSTP040 - 1.5m (S,L)		*1220		1.5	With rare cobbles and coarse gravel from 1.5m.	Damp, strong hydrocarbon odour,	4,3		
					2.0			4,3		
			*648		2.5	With occasional subrounded boulders from 2.4m.	Steady water ingress from South end of pit.	4,3		
				3.0	Frequent angular sandstone cobbles and rare boulders (weathered bedrock) from 2.7m.					
			*617		3.0	Trial pit terminated at 3.0m due to refusal.	Wet	3,3		
					3.5					
					4.0					
					4.5					
					5.0					

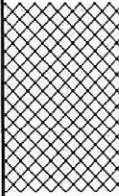
LOCATION / NOTES:	LEGEND	BOREHOLE LOG	
NVO = No visual or olfactory evidence of contamination S,V = Contamination Observations S - Odour score (0-5) V - Visual score (0-5)	 Disturbed Sample  Undisturbed Sample  Headspace Analysis  Down Borehole Analysis  Groundwater Table  Perched Water Table	BOREHOLE LOG Job Title: BP Llandarcy Whole Site Investigation Location: BP Llandarcy Refinery Client: BP/WDA	
			App'd: _____ Date: January 2004 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: WSTP097		PAGE 1 of 1	
	NUMBER	TYPE					DRILLING DATES: 4/11/03		DRILLING METHODS: JCB	
							DRILLER: JCB		BOREHOLE DIAMETER: -	
							LOGGED BY: SS		SCREEN TYPE & DIAM: -	
							CHECKED BY: SG		SCREEN SLOT SIZE: -	
	WSTP097 - 0.5m (S,L)		*10.5 *183		0.0 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0		DESCRIPTION		COMMENTS	S,V
							Reinforced concrete hardstanding.		Patchy grey/black staining hydrocarbon / chemical odour Rapid water ingress at 0.4m, with sheen and apparent black coloration	2,3 2,4
							Loose, yellow brown, fine to medium sand with some wood fragments. (MADE GROUND)			
							Trial pit terminated at 0.8m due to collapse.			

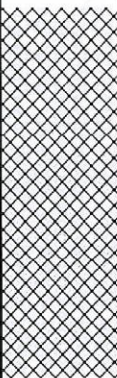
LOCATION / NOTES:	LEGEND	BOREHOLE LOG		
NVO = No visual or olfactory evidence of contamination S,V = Contamination Observations S - Odour score (0-5) V - Visual score (0-5)	 Disturbed Sample  Undisturbed Sample  Headspace Analysis  Down Borehole Analysis  Groundwater Table  Perched Water Table	Job Title: 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: WSTP103		PAGE 1 of 1	
	NUMBER	TYPE					DRILLING DATES: 5/11/03		DRILLING METHODS: JCB	
							DRILLER: JCB		BOREHOLE DIAMETER: -	
							LOGGED BY: JW		SCREEN TYPE & DIAM: -	
							CHECKED BY: SG		SCREEN SLOT SIZE: -	
	WSTP103 - 0.5m (S,L)		*103	0.0		DESCRIPTION		COMMENTS	S,V	
				Concrete hardstanding. (MADE GROUND)		Slight hydrocarbon odour, black staining, damp	1,2			
				Loose, slightly silty fine to coarse sand with frequent fine to coarse angular gravel. (MADE GROUND)						
				Concrete. (MADE GROUND)						
						Trial pit terminated at 0.6m due to refusal at concrete.				
						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  <table border="1"> <tr> <td>App'd:</td> <td>Date: December 2003</td> </tr> <tr> <td>Drawn: JW</td> <td>Ref:</td> </tr> <tr> <td>Scale: As Scale</td> <td>Job No: 39991-044-785</td> </tr> <tr> <td>Dwg. Size: A4</td> <td>BOREHOLE LOG</td> </tr> </table>	App'd:	Date: December 2003	Drawn: JW	Ref:	Scale: As Scale	Job No: 39991-044-785	Dwg. Size: A4	BOREHOLE LOG
App'd:	Date: December 2003									
Drawn: JW	Ref:									
Scale: As Scale	Job No: 39991-044-785									
Dwg. Size: A4	BOREHOLE LOG									

BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: WSTP123		PAGE 1 of 1	
	NUMBER	TYPE					DRILLING DATES: 7/11/03		DRILLING METHODS: JCB	
							DRILLER: JCB		BOREHOLE DIAMETER: -	
							LOGGED BY: CM		SCREEN TYPE & DIAM: -	
							CHECKED BY: SG		SCREEN SLOT SIZE: -	
WSTP123 - 0.6m (S,L,2xP)		*202	DESCRIPTION		COMMENTS	S,V				
			Concrete hardstanding. (MADE GROUND)		Wet	4,4				
			Loose black fine to coarse sandy angular to subrounded fine to coarse GRAVEL of sandstone.							
			Trial pit terminated at 0.75m due to refusal on bedrock.							
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: CM _____ Ref: _____ Scale: As scale _____ Job No: 39991-044-785 Drg. Size: A4 _____ BOREHOLE LOG						

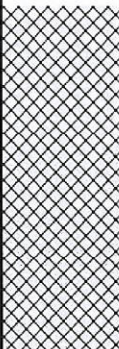
BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: WSTP147		PAGE 1 of 1						
	NUMBER	TYPE					DRILLING DATES: 19/11/03		DRILLING METHODS : JCB						
							DRILLER : JCB		BOREHOLE DIAMETER : -						
							LOGGED BY : HM		SCREEN TYPE & DIAM: -						
							CHECKED BY : SG		SCREEN SLOT SIZE: -						
DESCRIPTION		COMMENTS	S,V												
	WSTP147 - 0.8m (S,L,2xP)		*0.4	0.0	Concrete hardstanding. (MADE GROUND)	NVO, dry -damp.	0,0								
			0.5	Loose, red-orange fine to coarse brick sand and fine to coarse gravel with brick and some concrete. (MADE GROUND)	NVO, dry -damp.	0,0									
			1.0	Sand becoming orange	NVO, dry -damp.	0,0									
			1.5	Sides begin to collapse. NVO, dry -damp.	0,0										
	WSTP147 - 2.7m (S,L)		*0.5	2.0	Loose, dark brown sections of slightly silty sand from 2.7m. Trial pit terminated at 2.8m due to collapse.	NVO, dry -damp.	0,0								
			2.5		Silty sections stained grey with moderate hydrocarbon odour.	3,4									
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  <table><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: WSTP153		PAGE 1 of 1	
	NUMBER	TYPE					DRILLING DATES: 05/11/03		DRILLING METHODS: JCB	
							DRILLER: JCB		BOREHOLE DIAMETER: -	
							LOGGED BY: EM		SCREEN TYPE & DIAM: -	
							CHECKED BY: SG		SCREEN SLOT SIZE: -	
							DESCRIPTION	COMMENTS	S,V	
					0.0		Concrete hardstanding. (MADE GROUND)			
					0.5		Loose brown medium to coarse fill sand with frequent fine to coarse gravels, subangular cobbles and boulders, and brick fragments. (MADE GROUND)	Damp. Severed pipe with silty hydrocarbon stained fill at 0.3m.	1,1	
			*3.6				Loose, stained grey black medium to coarse sand with frequent fine to coarse gravels, subangular cobbles and boulders. (MADE GROUND)	Damp.	3,3	
	WSTP 153 - 1.0m (S,L)		*57.3		1.0		With abundant tabular cobbles and boulders.	Moist to wet. Seepage of water at base with free product.	3,5	
	WSTP 153 - 1.4m (S,L)		*176		1.5		Trial pit terminated at 1.5m due to refusal.	Wet.	3,5	
					2.0					
					2.5					
					3.0					
					3.5					
					4.0					
					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: EM	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: WSTP157		PAGE 1 of 1	
	NUMBER	TYPE					DRILLING DATES: 7/11/03		DRILLING METHODS: JCB	
							DRILLER: JCB		BOREHOLE DIAMETER: -	
							LOGGED BY: CM		SCREEN TYPE & DIAM: -	
							CHECKED BY: SG		SCREEN SLOT SIZE: -	
						DESCRIPTION		COMMENTS	S,V	
	WSTP157 - 0.6m (2xP)		*2.6		0.0		Reinforced concrete and clinker gravel. (MADE GROUND)	Dry	0,0	
	WSTP157 - 0.8m (S,L)				0.5					
					1.0		Loose light brown fine to medium sand. (MADE GROUND)	Dry	0,0	
					1.5		Becoming brown with frequent bricks from 1.25m.			
	WSTP157 - 1.7m (S,L)		*3.5		2.0		Trial pit terminated at 1.7m due to refusal.	Dry	0,0	
					2.5					
					3.0					
					3.5					
					4.0					
					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: 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: WSTP296		PAGE 1 of 1	
	NUMBER	TYPE					DRILLING DATES: 05/11/03		DRILLING METHODS : JCB	
							DRILLER : JCB		BOREHOLE DIAMETER : -	
							LOGGED BY : EM		SCREEN TYPE & DIAM: -	
							CHECKED BY : SG		SCREEN SLOT SIZE: -	
DESCRIPTION		COMMENTS	S,V							
	WSTP296 - 0.25m (S,L)		*1.1		0.0		Gravels, grasses and tarmac. (MADE GROUND)			
					0.5		Loose dark brown fine silty SAND with abundant fine to coarse gravels, frequent subangular cobbles and boulders.	Damp.	1,0 2,3	
	WSTP296 - 1.0m (S,L)		*176		1.0		Loose dark grey brown silty clayey SAND with frequent fine to coarse gravels, cobbles and boulders.	Moist. Moderate hydrocarbon odour.	3,3	
					1.5		Becoming darker in colour with an increase in proportion of tabular cobbles and boulders.	Stained grey to black.		
			*974		1.5		Trial pit terminated at 1.4m due to refusal.	Moist. Moderate hydrocarbon odour. Seepage of water with sheen and free product at 1.4m.	3,3	

BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: WSTP297		PAGE 1 of 1	
	NUMBER	TYPE					DRILLING DATES: 5/11/03		DRILLING METHODS: JCB	
							DRILLER: JCB		BOREHOLE DIAMETER: -	
							LOGGED BY: SS		SCREEN TYPE & DIAM: -	
							CHECKED BY: SG		SCREEN SLOT SIZE: -	
	WSTP297 - 0.5m (S,L) WSTP297 - 0.7m (S,L)		*32.7 *41.0		0.0		DESCRIPTION		COMMENTS	S,V
					0.5		Concrete hardstanding. (MADE GROUND)		Wet from surface water. Grey staining with hydrocarbon odour. Rapid water ingress through sand, brown product streaks on water surface.	3,3 3,5
							Loose, grey-brown gravelly, fine to medium sand with occasional brick and sandstone fragments. (MADE GROUND)			
					1.0		Trial pit terminated at 0.9m 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

Dwg. Size: A4

BOREHOLE LOG



BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: WSTP298		PAGE 1 of 1	
	NUMBER	TYPE					DRILLING DATES: 6/11/03		DRILLING METHODS: JCB	
							DRILLER: JCB		BOREHOLE DIAMETER: -	
							LOGGED BY: JW		SCREEN TYPE & DIAM: -	
							CHECKED BY: SG		SCREEN SLOT SIZE: -	
						DESCRIPTION	COMMENTS	S,V		
					0.0	Concrete hardstanding. (MADE GROUND)				
	WSTP298 - 0.5m (S,L)		*1.4		0.5	Loose brown fine to medium SAND with occasional fine to coarse sub rounded gravel.	Faint hydrocarbon odour and discoloration.	1,1		
	WSTP298 - 0.9m (S,L)		*1.9		1.0	Moderately well cemented fine grained SANDSTONE.	Faint hydrocarbon odour and discoloration.	1,2		
					1.5	Trial pit terminated at 1.3m due to refusal on bedrock.	NVO.	0,0		
					2.0					
					2.5					
					3.0					
					3.5					
					4.0					
					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: January 2004 Drawn: JW Ref: _____ Scale: As Shown Job No: 39991-044-785 Drg. Size: A4 BOREHOLE LOG

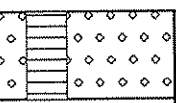
BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: MSMW56a		PAGE 1 of 1	
	NUMBER	TYPE					START DATE: 12/06/98		DRILLING METHOD: Cable percussion	
							FINISH DATE: 12/06/98		BOREHOLE DIAMETER: 200mm	
							DRILLER: CP3		SCREEN TYPE & DIAMETER: UPVC 50mm	
							LOGGED BY: ED APPR'D BY:		SCREEN SLOT SIZE: 0.5mm	
						DESCRIPTION	COMMENTS			
						0	Sandy brown clayey GRAVEL with ash and rubble (MADE GROUND)	No odour or staining	0	
						1.0			1.0	
						2.0	Borehole terminated at 1.6 mbgl		2.0	
						3.0			3.0	
						4.0			4.0	
						5.0			5.0	
						6.0			6.0	
						7.0			7.0	
						8.0			8.0	
						9.0			9.0	
						10			10	

LOCATION / NOTES: 1. All measurements in m below ground level (mbgl) 2. Borehole backfilled on completion - no well installed		LEGEND Disturbed Sample Undisturbed Sample * Headspace Analysis † Down Borehole Analysis ▼ Groundwater Table ▽ Perched Water Table	BOREHOLE LOG Job Title SOIL & GROUNDWATER INVESTIGATION Location LLANDARCY REFINERY Client BP LLANDARCY App'd DRAFT Ref. MC/CR/BRs Date JUL 98 Job No. 39991-001-401 DAMES & MOORE GROUP
--	--	--	--

BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: MSMW55		PAGE 1 of 1	
	NUMBER	TYPE					START DATE: 18/06/98	DRILLING METHOD: Rotary	FINISH DATE: 18/06/98	BOREHOLE DIAMETER: 165/115mm
							DESCRIPTION	COMMENTS		
							REINFORCED CONCRETE (MADE GROUND)	Strong hydro-carbon / sulphurous odour	0	
							Coarse grained black ASH with some sand, light-grey gravel and silt (MADE GROUND)			
							grading to silty sand and gravel with dome boulders			
							ROCKHEAD: Light grey to grey coarse grained SANDSTONE (BEDROCK)	Very productive		
							Borehole terminated at 5.5 mbgl			

LOCATION / NOTES:	LEGEND	BOREHOLE LOG	
1. All measurements in m below ground level (mbgl)	Disturbed Sample Undisturbed Sample Headspace Analysis Down Borehole Analysis Groundwater Table Perched Water Table	Job Title	SOIL & GROUNDWATER INVESTIGATION
		Location	LLANDARCY REFINERY
		Client	BP LLANDARCY
		App'd	DRAFT
		Ref.	MC/CR/BRS
		Date	JUL 98
		Job No.	39991-001-401
		DAMES & MOORE GROUP	

BOREHOLE CONSTRUCTION	FRACTURE INDEX	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: MSMW56s&d		PAGE 1 of 3
					START DATE: 15/06/98		DRILLING METHOD: Rotary/Continuous Core
					FINISH DATE: 15/06/98		BOREHOLE DIAMETER: 120mm
					DRILLER: R2		SCREEN TYPE & DIAMETER: UPVC 50mm
					LOGGED BY: MC/SG APPR'D BY:		SCREEN SLOT SIZE: 0.5mm
					DESCRIPTION	COMMENTS	
					Sandy brown clayey GRAVEL with ash and rubble (MADE GROUND)		0
					Light grey-blue sandstone BOULDERS with sandy brown clay		1.0
							2.0
							3.0
							4.0
							5.0
							6.0
							7.0
							8.0
							9.0
					ROCKHEAD: Light grey-blue medium grained SANDSTONE, thinly bedded with a slight pinkish discolouration. Strong with joints / cross bedding planes sub-horizontal very to extremely narrow with iron staining and medium to very rough	9-10m TCR-80% SCR - 80% RQD - 62%	10
FI 25							
LOCATION / NOTES:					LEGEND		
1. All measurements in m below ground level (mbgl)					✕ Disturbed Sample ■ Undisturbed Sample * Headspace Analysis † Down Borehole Analysis ▼ Groundwater Table ▽ Perched Water Table		
					BOREHOLE LOG		
					Job Title SOIL & GROUNDWATER INVESTIGATION		
					Location LLANDARCY REFINERY		
					Client BP LLANDARCY		
					App'd DRAFT		
					Ref. MC/CR/BR5		
					Date JUL 98		
					Job No. 39991-001-401		
					 DAMES & MOORE		

BOREHOLE CONSTRUCTION	FRACTURE INDEX	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: MSMW56s&d		PAGE 3 of 3	
					START DATE: 15/06/98		DRILLING METHOD: Rotary/Continuous Core	
					FINISH DATE: 15/06/98		BOREHOLE DIAMETER: 120mm	
					DRILLER: R2		SCREEN TYPE & DIAMETER: UPVC 50mm	
					LOGGED BY: MC/SG APPR'D BY:		SCREEN SLOT SIZE: 0.5mm	
					DESCRIPTION	COMMENTS		
					Vertical fracture at 20.3-20.5m	20.3 - 20.6m TCR - 100% SCR - 100% RQD - 100%	20	
					Borehole terminated at 20.6mbgl			
					22		22	
					23		23	
					24		24	
					25		25	
					26		26	
					27		27	
					28		28	
					29		29	
					30		30	
LOCATION / NOTES:					LEGEND		BOREHOLE LOG	
1. All measurements in m below ground level (mbgl)					☒ Disturbed Sample ☐ Undisturbed Sample ☐ Headspace Analysis ☐ Down Borehole Analysis ☐ Groundwater Table ☐ Perched Water Table		Job Title	
							SOIL & GROUNDWATER INVESTIGATION	
							Location	
							LLANDARCY REFINERY	
							Client	
BP LLANDARCY								
App'd		DRAFT						
Ref. MC/CR/BR5		 DAMES & MOORE GROUP						
Date JUL 98								
Job No. 39991-001-401								

BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: MSMW187		PAGE 1 of 1	
	NUMBER	TYPE					START DATE: 18/3/99		DRILLING METHOD: ROTARY AIR FLUSH	
							FINISH DATE: 18/3/99		BOREHOLE DIAMETER: 150/115 mm	
							DRILLER: R1		SCREEN TYPE & DIAMETER: 50 mm ID UPVC	
				LOGGED BY: DB APPR'D BY:		SCREEN SLOT SIZE: 1 mm				
							DESCRIPTION	COMMENTS		
							0	Loose dark brown silty GRAVEL with brick fragments and angular and rounded cobbles (MADE GROUND)	No odour	0
							1.0			1.0
							2.0			2.0
							3.0			3.0
							4.0	ROCKHEAD: Hard light grey crystalline SANDSTONE (BEDROCK)	No odour	4.0
							5.0			5.0
							5.3		Damp at 5.3m	
							6.0	Hard brown SANDSTONE with some silt	No odour	6.0
							7.0			7.0
							8.0		Slight hydrocarbon odour	8.0
							9.0			9.0
							10.0			10.0

LOCATION / NOTES:	LEGEND	BOREHOLE LOG	
1. All measurements in m below ground level (mbgl)	Disturbed Sample Undisturbed Sample Headspace Analysis Down Borehole Analysis Groundwater Table Perched Water Table	Job Title	SOIL & GROUNDWATER INVESTIGATION
		Location	LLANDARCY REFINERY
		Client	BP LLANDARCY LTD
		App'd	DRAFT
		Ref.	CR/MC/BRS
		Date	MAY 99
		Job No.	39991-004-401
		DAMES & MOORE GROUP	

BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: MSMW198		PAGE 1 of 2		
	NUMBER	TYPE					START DATE: 16/3/99		DRILLING METHOD: ROTARY AIR FLUSH		
							FINISH DATE: 16/3/99		BOREHOLE DIAMETER: 165/115 mm		
							DRILLER: R1		SCREEN TYPE & DIAMETER: 50 mm ID UPVC		
				LOGGED BY: DB APPR'D BY:		SCREEN SLOT SIZE: 0.5 mm					
						DESCRIPTION		COMMENTS			
						Loose brown GRAVEL with some silt (MADE GROUND)		No odour		0	
						Loose dark brown-black SAND with gravel and some silt (MADE GROUND)		Moderate hydrocarbon odour		3.0	
						becoming siltier				6.0	
						ROCKHEAD: Hard light grey-grey crystalline SANDSTONE		Slight-moderate hydrocarbon odour		7.0	
								Slight hydrocarbon odour		9.0	
										10	

LOCATION / NOTES:	LEGEND	BOREHOLE LOG	
1. All measurements in m below ground level (mbgl)	Disturbed Sample Undisturbed Sample Headspace Analysis Down Borehole Analysis Groundwater Table Perched Water Table	Job Title SOIL & GROUNDWATER INVESTIGATION	
		Location LLANDARCY REFINERY	
		Client BP LLANDARCY LTD	
		App'd	DRAFT
		Ref.	CR/MC/BR5
		Date	MAY 99
		Job No.	39991-004-401
		DAMES & MOORE	

BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: MSMW199		PAGE 1 of 2	
							START DATE: 16/3/99		DRILLING METHOD: ROTARY AIR FLUSH	
	FINISH DATE: 17/3/99						BOREHOLE DIAMETER: 165/115 mm			
	DRILLER: R2						SCREEN TYPE & DIAMETER: 50 mm ID UPVC			
	LOGGED BY: DB APPR'D BY:						SCREEN SLOT SIZE: 0.5 mm			
							DESCRIPTION	COMMENTS		
					0		Loose brown GRAVEL with some silt and sand (MADE GROUND)	No odour	0	
					1.0				1.0	
					2.0				2.0	
					3.0		becoming siltier	No odour	3.0	
					4.0				4.0	
					5.0		Hard grey crystalline sandstone BOULDER (MADE GROUND)	No odour	5.0	
					6.0		Loose dark grey silty GRAVEL (MADE GROUND)	Damp Moderate hydrocarbon odour	6.0	
					7.0		Void at 6.0m		7.0	
					8.0		Loose brown silty GRAVEL (MADE GROUND)		8.0	
					9.0			Damp Moderate hydrocarbon	9.0	
					10				10	

<u>LOCATION / NOTES:</u> - All measurements in m below ground level (mbgl) - Located adjacent to substation	<u>LEGEND</u> Disturbed Sample Undisturbed Sample Headspace Analysis Down Borehole Analysis Groundwater Table Perched Water Table	BOREHOLE LOG <table style="width: 100%;"> <tr> <td colspan="2">Job Title</td> <td colspan="2">SOIL & GROUNDWATER INVESTIGATION</td> </tr> <tr> <td colspan="2">Location</td> <td colspan="2">LLANDARCY REFINERY</td> </tr> <tr> <td colspan="2">Client</td> <td colspan="2">BP LLANDARCY LTD</td> </tr> <tr> <td>App'd</td> <td colspan="3">DRAFT</td> </tr> <tr> <td>Ref.</td> <td colspan="3">CR/MC/BR5</td> </tr> <tr> <td>Date</td> <td colspan="3">MAY 99</td> </tr> <tr> <td colspan="4">Job No. 39991-004-401</td> </tr> </table>	Job Title		SOIL & GROUNDWATER INVESTIGATION		Location		LLANDARCY REFINERY		Client		BP LLANDARCY LTD		App'd	DRAFT			Ref.	CR/MC/BR5			Date	MAY 99			Job No. 39991-004-401			
Job Title		SOIL & GROUNDWATER INVESTIGATION																												
Location		LLANDARCY REFINERY																												
Client		BP LLANDARCY LTD																												
App'd	DRAFT																													
Ref.	CR/MC/BR5																													
Date	MAY 99																													
Job No. 39991-004-401																														

TRIAL PIT NUMBER: MSTP140
 GROUND ELEVATION: -
 DATE OF EXCAVATION: 4/6/98
 WATER LEVEL: DRY
 LOGGED BY: RC
 APPROVED BY:

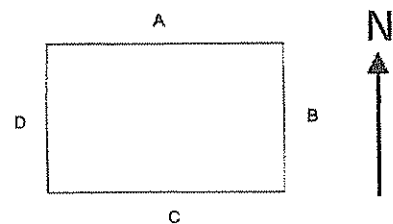
SIDE ELEVATIONS



SIDE C

As side A

PLAN



Key:

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

STRATA DESCRIPTIONS	COMMENTS	SAMPLES
1. Coarse angular limestone GRAVEL (MADE GROUND) 2. Loose light brown GRAVEL with building rubble (MADE GROUND) 3. CONCRETE boulders (MADE GROUND) 4. Red BRICK (MADE GROUND) 5. Weathered BEDROCK fragments Trial pit terminated at 0.5 mbgl		<u>PID RESULTS</u> 0.5m - 1.4 ppm <u>SOIL SAMPLES</u> MSTP140-0.5m

Job Title: SOIL & GROUNDWATER INVESTIGATION

Location: LLANDARCY REFINERY

Client: BP LLANDARCY

Job No: 39991-001-401

DRAFT



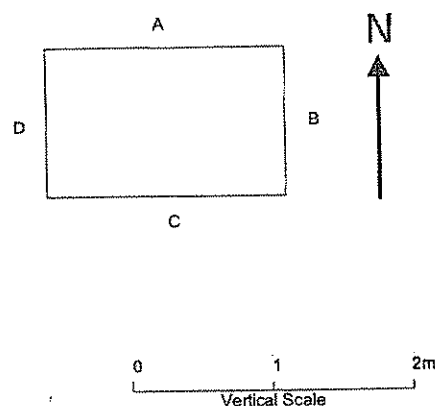
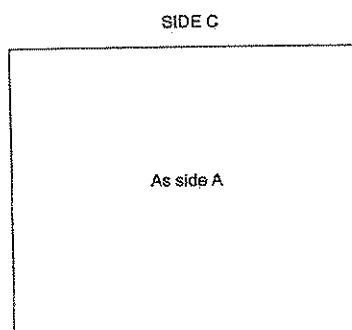
DAMES & MOORE

TRIAL PIT NUMBER: MSTP134
 GROUND ELEVATION: -
 DATE OF EXCAVATION: 24/6/98
 WATER LEVEL: DRY
 LOGGED BY: RF
 APPROVED BY:

SIDE ELEVATIONS

	SIDE D	SIDE A	SIDE B
0.2m		1	
0.6m		2 *	
1.00m		3	

PLAN



Key:

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

STRATA DESCRIPTIONS	COMMENTS	SAMPLES
1. Large, loose, pale grey, ashy CHIPPINGS 2. Brown, loose clay, occasional gravels (MADE GROUND) 3. Dark brown, loose clay, coarser gravels, cobbles at 1.0mbgl (MADE GROUND) Trial pit terminated on refusal at 1.0mbgl due to coarse gravel Trial pit terminated at 1.05 mbgl	a. Strong black hydrocarbon staining on surface b. No hydrocarbon odour or staining evident at 1.0m c. Window sampled due to access restrictions	<u>PID RESULTS</u> 0.5m - 0 ppm 1.0m - 0 ppm <u>SOIL SAMPLES</u>

Job Title: SOIL & GROUNDWATER INVESTIGATION

Location: LLANDARCY REFINERY

Client: BP LLANDARCY

Job No: 39991-001-401

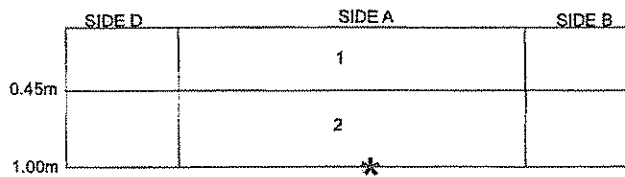
DRAFT



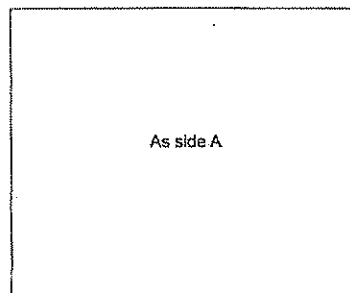
DAMES & MOORE

TRIAL PIT NUMBER: MSTP127
 GROUND ELEVATION: -
 DATE OF EXCAVATION: 24/6/98
 WATER LEVEL: SURFACE
 LOGGED BY: RF
 APPROVED BY:

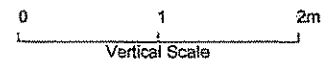
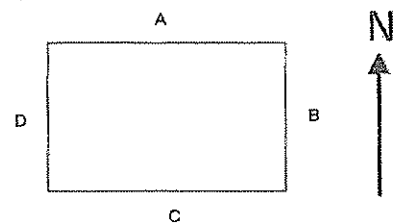
SIDE ELEVATIONS



SIDE C



PLAN



Key:

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

STRATA DESCRIPTIONS	COMMENTS	SAMPLES
1. Medium GRAVEL, in damp brown clay matrix 2. Shelly, medium grained sand, beige with white and buff coloured, shell fragments (MADE GROUND) Trial pit terminated on refusal at 1.0mbgl due to sandstone	a. Saturated b. Saturated c. Window sampled due to access restrictions	<u>PID RESULTS</u> 0.5m - 0 ppm 1.0m - 0 ppm <u>SOIL SAMPLES</u> MSTP127-1.0m

Job Title: **SOIL & GROUNDWATER INVESTIGATION**

Location: **LLANDARCY REFINERY**

Client: **BP LLANDARCY**

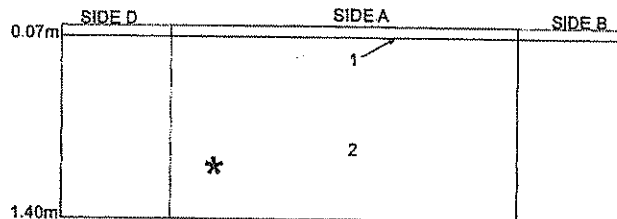
Job No: **39991-001-401** **DRAFT**



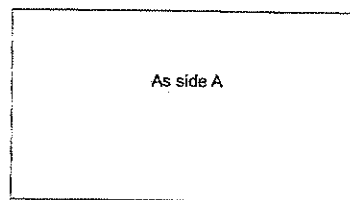
DAMES & MOORE

TRIAL PIT NUMBER: MSTP119
 GROUND ELEVATION: -
 DATE OF EXCAVATION: 3/6/98
 WATER LEVEL: DRY
 LOGGED BY: RC
 APPROVED BY:

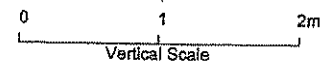
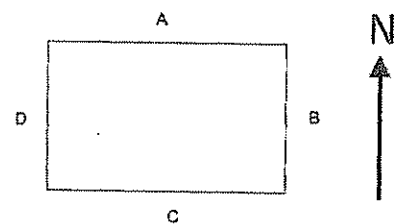
SIDE ELEVATIONS



SIDE C



PLAN



Key:

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

STRATA DESCRIPTIONS	COMMENTS	SAMPLES
1. Compacted GRAVEL with large cobbles (MADE GROUND) 2. Large sub-angular cobbles of CONCRETE and weathered bedrock fragments (MADE GROUND) Some slightly clayey lenses at 0.8m Trial pit terminated at 1.4 mbgl on refusal	a. Black staining and odour at 1.0m and 1.4m b. Hard to excavate by 1.2m	<u>PID RESULTS</u> 0.5m - 0.7 ppm 1.0m - 8.4 ppm 1.4m - 7.0 ppm <u>SOIL SAMPLES</u> MSTP119-1.0m

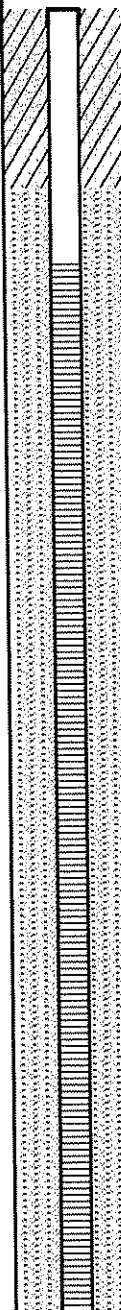
Job Title: **SOIL & GROUNDWATER INVESTIGATION**
 Location: **LLANDARCY REFINERY**
 Client: **BP LLANDARCY**
 Job No: **39991-001-401** **DRAFT**



DAMES & MOORE

BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: WSMW034		PAGE 1 of 1	
	NUMBER	TYPE					DRILLING DATES: 7/1/2004		DRILLING METHODS: Beretta -Various	
							DRILLER: APEX - Richard		BOREHOLE DIAMETER: 100-115mm	
							LOGGED BY: CM		SCREEN TYPE & DIAM: 50mm HDPE	
							CHECKED BY: SG		SCREEN SLOT SIZE: 1mm	
						DESCRIPTION	COMMENTS	S,V		
						Compact brown, fine sandy SILT	Dry	0,0		
						Moderately weak grey SANDSTONE. Closely to medium spaced discontinuities, subhorizontal, planar, rough with black discolouration.	Dry	0,0		
							Dry	0,0		
							Dry-damp	0,0		
							Damp	0,0		
								Damp	0,0	
								Wet	0,0	
								Wet	0,0	
								Wet	0,0	
								Wet	0,0	
						Dark grey from 4.0m to 4.3m.				
						Borehole terminate at 4.7m				

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: February 2004 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: WSMW054		PAGE 1 of 2		
	NUMBER	TYPE					DRILLING DATES: 27/11/2003		DRILLING METHODS : Rotary		
							DRILLER : APEX - RB		BOREHOLE DIAMETER : 100-115mm		
							LOGGED BY : JW		SCREEN TYPE & DIAM: 50mm HDPE		
							CHECKED BY : SG		SCREEN SLOT SIZE: 1mm		
DESCRIPTION								COMMENTS	S,V		
					0.0		Concrete. (MADE GROUND)				
					0.5		Hard, grey, fine to medium SANDSTONE.		Slight, light hydrocarbon odour throughout. Dry.	1,0	
					1.0						
					1.5				Dry.	1,0	
					2.0						
					2.5					1,0	
					3.0				Dry.		
					3.5					1,0	
					4.0				Dry.		
					4.5					1,0	
					5.0						
	LOCATION / NOTES:										
	LEGEND										
	BOREHOLE LOG										

BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: WSMW054		PAGE 2 of 2	
	NUMBER	TYPE					DRILLING DATES: 27/11/2003		DRILLING METHODS: Rotary	
							DRILLER: APEX - RB		BOREHOLE DIAMETER: 100-115mm	
							LOGGED BY: JW		SCREEN TYPE & DIAM: 50mm HDPE	
							CHECKED BY: SG		SCREEN SLOT SIZE: 1mm	
								COMMENTS	S,V	
					5.5				1,0	
					6.0					
					6.5				1,0	
					7.0					
					7.5				1,0	
					8.0		Borehole terminated at 8.0m.			
					8.5					
					9.0					
					9.5					
					10.0					

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: February 2004
		Drawn: SS	Ref:
		Scale: As scale	Job No: 39991-044-785
		Dwg. Size: A4	BOREHOLE LOG

BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: WSMW056		PAGE 1 of 3	
	NUMBER	TYPE					DRILLING DATES: 7/1/2004		DRILLING METHODS : ODEX	
							DRILLER : APEX - Richard		BOREHOLE DIAMETER : 100-115mm	
							LOGGED BY : CM		SCREEN TYPE & DIAM: 50mm HDPE	
							CHECKED BY : SG		SCREEN SLOT SIZE: 1mm	
DESCRIPTION								COMMENTS	S,V	
					0.0	Soft to firm, brown slightly fine sandy gravelly SILT. Gravel is angular to subrounded fine to coarse of sandstone.	Dry	0,0		
					0.5					
					1.0					
					1.5	Well cemented moderately weak to moderately strong brown and grey SANDSTONE.	Dry	0,0		
					2.0					
					2.5					
					3.0	becoming light brown from 2.9m	Dry	0,0		
					3.5					
					4.0					
					4.5		Dry	0,0		
					5.0	Becoming strong light grey from 4.9m	Dry	0,0		

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

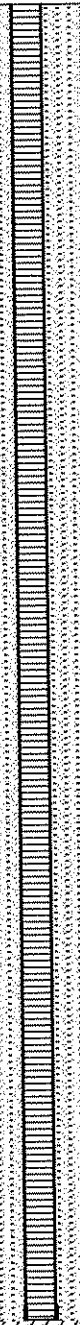
BOREHOLE LOG

Job Title: BP Llandarcy Whole Site Investigation

Location: BP Llandarcy Refinery

Client: BP/WDA

App'd:	Date: February 2004
Drawn : CM	Ref:
Scale: As scale	Job No: 39991-044-785
Dwg. Size: A4	BOREHOLE LOG

BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: WSMW056		PAGE 2 of 3	
	NUMBER	TYPE					DRILLING DATES: 7/1/2004		DRILLING METHODS: ODEX	
							DRILLER: APEX - Richard		BOREHOLE DIAMETER: 100-115mm	
							LOGGED BY: CM		SCREEN TYPE & DIAM: 50mm HDPE	
							CHECKED BY: SG		SCREEN SLOT SIZE: 1mm	
							COMMENTS	S,V		
										
5.5 6.0 6.5 7.0 7.5 8.0 8.5 9.0 9.5 10.0										
Becoming grey from 7.4m							Dry	0,0		
Becoming less well cemented from 8.4m							Dry	0,0		
Becomig light grey from 9.2m							Dry	0,0		
							Dry	0,0		

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: BPWDA	 <table border="1"> <tr> <td>App'd:</td> <td>Date: February 2004</td> </tr> <tr> <td>Drawn: CM</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: February 2004	Drawn: CM	Ref:	Scale: As scale	Job No: 39991-044-785	Drg. Size: A4	BOREHOLE LOG
App'd:	Date: February 2004										
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: WSMW056		PAGE 3 of 3	
	NUMBER	TYPE					DRILLING DATES: 7/1/2004		DRILLING METHODS : ODEX	
							DRILLER : APEX - Richard		BOREHOLE DIAMETER : 100-115mm	
							LOGGED BY : CM		SCREEN TYPE & DIAM: 50mm HDPE	
							CHECKED BY : SG		SCREEN SLOT SIZE: 1mm	
								COMMENTS	S,V	
					10.5					
					11.0					
					11.5			Dry	0,0	
					12.0					
					12.5					
					13.0			Dry	0,0	
					13.5					
					14.0	Borehole terminated at 13.8m				
					14.5					
					15.0					

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/WD A	
			App'd: _____ Date: February 2004 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: WSMW057		PAGE 1 of 2		
	NUMBER	TYPE					DRILLING DATES: 27/11/2003		DRILLING METHODS : Rotary/ODEX		
							DRILLER : Apex - Reece		BOREHOLE DIAMETER : 100-115mm		
							LOGGED BY : JW		SCREEN TYPE & DIAM: 50mm HDPE		
							CHECKED BY : SG		SCREEN SLOT SIZE: 1mm		
						DESCRIPTION	COMMENTS	S,V			
						Concrete hardstanding (MADE GROUND)	Top 2m cased off				
						Medium dense, brown, silty SAND with fine to coarse, subrounded to subangular gravel.	NVO throughout	0,0			
						Grey, fine to medium SANDSTONE					
						Grey, fine to medium SANDSTONE		0,0			
						Grey-brown, interbedded very fine SANDSTONE and MUDSTONE.		0,0			
						Grey, fine SANDSTONE.		0,0			
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 : 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: WSMW057		PAGE 2 of 2	
	NUMBER	TYPE					DRILLING DATES: 27/11/2003		DRILLING METHODS: Rotary/ODEX	
							DRILLER: Apex - Reece		BOREHOLE DIAMETER: 100-115mm	
							LOGGED BY: JW		SCREEN TYPE & DIAM: 50mm HDPE	
							CHECKED BY: SG		SCREEN SLOT SIZE: 1mm	
								COMMENTS	S,V	
					5.5					
					6.0			Dry	0,0	
					6.5					
					7.0				0,0	
					7.5					
					8.0		Borehole terminated at 8.0m			
					8.5					
					9.0					
					9.5					
					10.0					

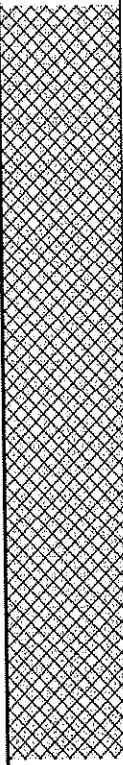
LOCATION / NOTES:	LEGEND	BOREHOLE LOG	
NVO = No visual or olfactory evidence of contamination	Disturbed Sample	Job Title: BP Llandarcy Whole Site Investigation	
S,V = Contamination Observations	Undisturbed Sample	Location: BP Llandarcy Refinery	
S - Odour score (0-5)	Headspace Analysis	Client: BPWDA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

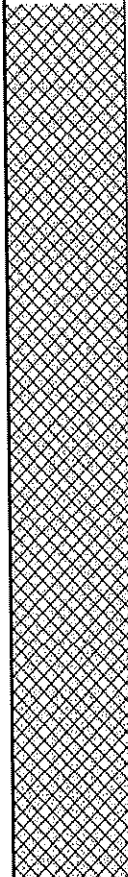
BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: WSMW069		PAGE 1 of 1	
	NUMBER	TYPE					DRILLING DATES: 7/1/2004		DRILLING METHODS : Odex + RAF	
							DRILLER : APEX-Richard		BOREHOLE DIAMETER : 100-115mm	
							LOGGED BY : CM		SCREEN TYPE & DIAM. 50mm HDPE	
							CHECKED BY : SG		SCREEN SLOT SIZE: 1mm	
							DESCRIPTION	COMMENTS	S,V	
					0.0		Tarmac hardstanding. (MADE GROUND)	Dry	0,0	
					0.5		Dense red brown slightly fine sandy angular to subrounded fine to coarse gravel, concrete and sandstone. (MADE GROUND)			
					1.0		Becoming brown, silty sandy angular to subrounded fine to coarse gravel, concrete and sandstone. (MADE GROUND)	Dry	0,0	
					1.5		Black with occasional slag from 1.6m.			
					2.0			Damp	0,0	
				2.5			Brown, fine to medium weathered SANDSTONE.	Water strike at 2.5m with sheen.		
				3.0				Slight odour	0,0	
				3.5				Wet		
				4.0						
				4.5			Borehole terminated at 4.5m.	Wet		
				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: BPAWDA	
			App'd: _____ Date: February 2004 Drawn : CM Ref: _____ Scale: As scale Job No: 39991-044-785 Drg. Size: A4 BOREHOLE LOG

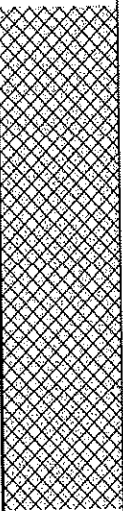
BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: WSMW079		PAGE 1 of 1	
	NUMBER	TYPE					DRILLING DATES: 28/11/2003		DRILLING METHODS: Rotary ODEX	
							DRILLER: APEX-RB		BOREHOLE DIAMETER: 100-115mm	
							LOGGED BY: JW		SCREEN TYPE & DIAM: 50mm HDPE	
							CHECKED BY: SG		SCREEN SLOT SIZE: 1mm	
DESCRIPTION							COMMENTS	S,V		
					0.0	Concrete hardstanding. (MADE GROUND)				
					0.5	Loose, brown, medium to coarse sand with frequent subrounded to rounded gravel. (MADE GROUND)	Dry-damp Slight discolouration with slight, light hydrocarbon odour	2,1		
					1.0					
					1.5					
					2.0	Strong, grey, fine to medium SANDSTONE.	Moderate, light hydrocarbon odour with rare black staining	3,1		
				2.5						
				3.0			Damp-wet. Moderate, light hydrocarbon odour	3,0		
				3.5						
				4.0						
				4.5						
				5.0			Damp Damp-wet. Moderate, light hydrocarbon odour.	3,0		
				5.5						
				6.0		Borehole terminated at 6.0m.				
				6.5						

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: BPWDA	
V - Visual score (0-5)	Down Borehole Analysis		App'd: _____
	Groundwater Table		Drawn: SS
	Perched Water Table		Date: February 2004
			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: WSTP118		PAGE 1 of 1	
	NUMBER	TYPE					DRILLING DATES: 12/11/03		DRILLING METHODS: JCB	
							DRILLER: JCB		BOREHOLE DIAMETER: -	
							LOGGED BY: JW		SCREEN TYPE & DIAM: -	
							CHECKED BY: SG		SCREEN SLOT SIZE: -	
							DESCRIPTION	COMMENTS	S,V	
	WSTP118-0.5m (S,L,2xP)		*1.5	0.0	Tarmac. (MADE GROUND)	NVO.	0,0			
			*1.3	0.5	Loose purple brown black ashy sand with occasional brick and abundant fine to coarse angular gravel and cobbles. (MADE GROUND)	Slight odour and discoloration.	1,1			
			*1.6	1.0	Loose light brown slightly sandy silt with fine to coarse sub angular gravel. (MADE GROUND)	NVO.	0,0			
			*0.9	1.5	Firm orange to brown fine sandy SILT with gravel.	Slight light hydrocarbon odour to base.	1,0			
			*6.3	2.0	With cobbles and boulders from 1.3m.					
	WSTP118-3.0m (S,L)		*1.7	2.5	Cobbles and boulders becoming frequent from 1.95m.					
				3.0	Loose light brown silty fine SAND with some medium to coarse sub rounded gravel, cobbles and boulders.					
				3.5	Trial pit terminated at 3.0m due to refusal.					
				4.0						
				4.5						
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/WDPA 		
						App'd:	Date: December 2003			
						Drawn: JW	Ref:			
						Scale: As Shown	Job No: 39991-044-785			
						Drg. Size: A4	BOREHOLE LOG			

BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: WSTP119		PAGE 1 of 1	
	NUMBER	TYPE					DRILLING DATES: 13/11/2003		DRILLING METHODS: JCB	
							DRILLER: JCB		BOREHOLE DIAMETER: -	
							LOGGED BY: OG		SCREEN TYPE & DIAM: -	
							CHECKED BY: SG		SCREEN SLOT SIZE: -	
							DESCRIPTION	COMMENTS	S,V	
	WSTP119-0.6m (S,L)		*3.5	0.0		Reinforced concrete hardstanding. (MADE GROUND)	Dry			
			*2.1	0.5		Loose dark red/burgundy silty fine to coarse sand with red ash and angular gravel to cobbles of sandstone and occasional brick fragments. (MADE GROUND)	Damp	0,0		
			*13	1.0			Damp	0,0		
			*40	1.5		Becoming grey from 1.6m.	Wet. Water ingress at 1.6m with sheen and possible free product.	3,4		
			*23	2.0			Wet	3,4		
	*20.4	2.5		Very dark grey staining and heavy hydrocarbon odour.	3,4					
WSTP119-3.5m (S,L)		*27	3.5		Trial pit terminated at 3.5m due to refusal.		3,4			
						4.0				
						4.5				
						5.0				

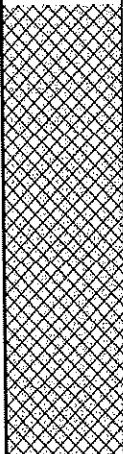
LOCATION / NOTES:	LEGEND	BOREHOLE LOG	
NVO = No visual or olfactory evidence of contamination S,V = Contamination Observations S - Odour score (0-5) V - Visual score (0-5)	 Disturbed Sample  Undisturbed Sample  Headspace Analysis  Down Borehole Analysis  Groundwater Table  Perched Water Table	Job Title: BP Llandarcy Whole Site Investigation Location: BP Llandarcy Refinery Client: BP/WDA 	
		App'd:	Date: February 2004
		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: WSTP120		PAGE 1 of 1	
	NUMBER	TYPE					DRILLING DATES: 10/11/03		DRILLING METHODS: JCB	
							DRILLER: JCB		BOREHOLE DIAMETER: -	
							LOGGED BY: SS		SCREEN TYPE & DIAM: -	
							CHECKED BY: SG		SCREEN SLOT SIZE: -	
							DESCRIPTION	COMMENTS	S,V	
	WSTP120 - 0.4m (S,L,P)		*116		0.0		Loose gravel of slag and clinker over fine, sandstone gravel bed. (MADE GROUND)	Damp. NVO.	0,0	
					0.3		Black, asphalt. (MADE GROUND)	Water ingress at 0.3m. Hydrocarbon odour and sheen on water.	3,3	
	WSTP120 - 0.7m (S,L)		*20.2		0.5			Loose, red, fine gravel and sand-sized ash and slag/clinker with coarse gravel and cobbles of sandstone. (MADE GROUND)	Grey staining with slight-moderate hydrocarbon odour.	2,2
					1.0			Loose, grey, gravelly, silty SAND with frequent cobbles.		
					1.5					
			*19.5		2.0			Dry-damp. Slight hydrocarbon odour and grey staining.	2,1	
								Dry-damp. No staining, slight hydrocarbon odour.	1,0	
					2.5		Trial pit terminated at 2.0m due to refusal at bedrock.			
					3.0					
					3.5					
					4.0					
					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: WSTP168		PAGE 1 of 1	
	NUMBER	TYPE					DRILLING DATES: 3/11/03		DRILLING METHODS: JCB	
							DRILLER: JCB		BOREHOLE DIAMETER: -	
							LOGGED BY: EM		SCREEN TYPE & DIAM: -	
							CHECKED BY: SG		SCREEN SLOT SIZE: -	
						DESCRIPTION	COMMENTS	S,V		
	WSTP168 - 0.5m (P)		*33.2		0.0	Concrete and gravel (MADE GROUND)	Surface water			
					0.5	Loose light brown sand with fine to coarse gravels, tabular subangular cobbles and boulders and bricks. (MADE GROUND)	Damp	0,0		
						Loose grey, black, medium gravel with fine to coarse sand, cobbles and boulders, and bricks. (MADE GROUND)	Water inflow at base with sheen at 0.4m	3,3		
						Becoming coarse gravel with frequent cobbles and boulders and brick fragments from 1.0m.	Damp, black staining			
						Becoming cobbles and boulders from 1.25m	Water in base to 0.5m from multiple levels.	3,3		
	WSTP168 - 1.0m (S,L,P)		*31.4		1.0	Becoming coarse gravel with frequent cobbles and boulders and brick fragments from 1.0m.		3,3		
					1.5	Becoming cobbles and boulders from 1.25m		3,3		
					1.5	Trial pit terminated at 1.3m due to refusal.				
					2.0					
					2.5					
					3.0					
					3.5					
					4.0					
					4.5					
					5.0					

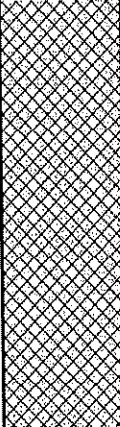
LOCATION / NOTES:	LEGEND	BOREHOLE LOG	
NVO = No visual or olfactory evidence of contamination	Disturbed Sample Undisturbed Sample Headspace Analysis Down Borehole Analysis Groundwater Table Perched Water Table	Job Title: BP Llandarcy Whole Site Investigation Location: BP Llandarcy Refinery Client: BPWDA	
			App'd: _____ Date: November 2003 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: WSTP169		PAGE 1 of 1	
	NUMBER	TYPE					DRILLING DATES: 4/12/03		DRILLING METHODS : JCB	
							DRILLER : JCB - John		BOREHOLE DIAMETER : -	
							LOGGED BY : J.G		SCREEN TYPE & DIAM: -	
							CHECKED BY : SG		SCREEN SLOT SIZE: -	
							DESCRIPTION	COMMENTS	S,V	
	WSTP169 0.5m (S,L,2xP)		*16.5		0.0		Soft, light brown clayey silt with large patches of grey to brown and smaller patches of black material with higher clay content. (MADE GROUND)			
					0.5		Medium dense, light brown clayey silt with gravel to large cobbles, including brick and rubble. (MADE GROUND)	Grey staining with occasional black patches	2, 3	
					1.0		With increasing rubble from 1.2m.	Black staining stopped.	2, 3	
					1.5			Dry. Sides collapsing from 1.5m	2, 3	
	WSTP169 1.8m (S,L)		*156		2.0		Trial pit terminated at 1.8m due to collapse			
					2.5					
					3.0					
					3.5					
					4.0					
					4.5					
					5.0					

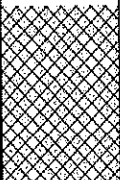
LOCATION / NOTES:	LEGEND	BOREHOLE LOG	
NVO = No visual or olfactory evidence of contamination S,V = Contamination Observations S - Odour score (0-5) V - Visual score (0-5)	 Disturbed Sample  Undisturbed Sample  Headspace Analysis  Down Borehole Analysis  Groundwater Table  Perched Water Table	Job Title: BP Llandarcy Whole Site Investigation Location: BP Llandarcy Refinery Client: BPWDA	
			App'd: _____ Drawn : JG Scale: As scale Drg. Size: A4
			Date: January 2004 Ref: _____ Job No: 39991-044-785 BOREHOLE LOG

BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: WSTP174		PAGE 1 of 1	
	NUMBER	TYPE					DRILLING DATES: 4/11/2003		DRILLING METHODS: JCB	
							DRILLER: JCB		BOREHOLE DIAMETER: -	
							LOGGED BY: OG		SCREEN TYPE & DIAM: -	
							CHECKED BY: SG		SCREEN SLOT SIZE: -	
							DESCRIPTION	COMMENTS	S,V	
	WSTP174 - 0.45m (S,L,2xP)		*2.6		0.0	Concrete over;	Damp	1,0		
					0.5	Loose dark brown silty sand with abundant subrounded gravel, cobbles and rare boulders, brick fragments, concrete and cobbles to boulders of clinker. (MADE GROUND)				
					1.0	Soft dark brown silty CLAY with occasional subrounded gravel to cobbles.	Water ingress at 1.0m.	3,2		
					1.5	Soft light brown, mottled light brown grey, silty CLAY with occasional rootlets.				
					2.0	Becoming mottled light brown to yellow and light to dark grey with occasional subangular to subrounded cobbles.	Wet. Slight sheen.	3,3		
					2.5					
					3.0					
					3.5	With abundant angular gravel to boulders from 3.5m.	Wet. Strong hydrocarbon odour.	4,3		
					4.0	Trial pit terminated at 3.9m due to refusal.				
					4.5					
5.0										
WSTP174 - 3.9m (S,L)		*440								

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/WDPA 	
		App'd: Drawn: CM Scale: As scale Drg. Size: A4	Date: 18/02/2004 Ref: Job No: 39991-044-785 BOREHOLE LOG

BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: WSTP175		PAGE 1 of 1	
	NUMBER	TYPE					DRILLING DATES: 11/11/03		DRILLING METHODS: JCB	
							DRILLER: JCB		BOREHOLE DIAMETER: -	
							LOGGED BY: JW		SCREEN TYPE & DIAM: -	
							CHECKED BY: SG		SCREEN SLOT SIZE: -	
DESCRIPTION							COMMENTS	S,V		
	WSTP175 - 0.3m (S,L)		*2.2		0.0	Loose brown silty fine to medium sand with abundant fine to coarse angular gravel, brick, wire and rare rootlets. (MADE GROUND)	NVO.	0,0		
					0.5	Stiff grey brown clayey fine sandy SILT with some fine to coarse sub-angular gravel.	Moderate light hydrocarbon odour and discoloration and occasional black staining. Damp.	3,3		
					1.0	Medium grained SANDSTONE.				
	WSTP175 - 1.5m (S,L)		*740		1.5		Moderate odour and staining.	3,2		
					2.0	Trial pit terminated at 1.7m due to refusal.				
					2.5					
					3.0					
					3.5					
					4.0					
					4.5					
					5.0					

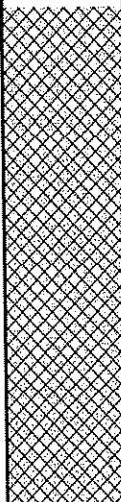
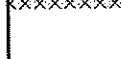
LOCATION / NOTES:	LEGEND	BOREHOLE LOG	
NVO = No visual or olfactory evidence of contamination	 Disturbed Sample	Job Title: BP Llandarcy Whole Site Investigation	
S,V = Contamination Observations	 Undisturbed Sample	Location: BP Llandarcy Refinery	
S - Odour score (0-5)	 Headspace Analysis	Client: BP/WDA	
V - Visual score (0-5)	 Down Borehole Analysis		App'd: _____ Date: January 2004
	 Groundwater Table	Drawn: JW	Ref: _____
	 Perched Water Table	Scale: As Shown	Job No: 39991-044-785
		Drg. Size: A4	BOREHOLE LOG

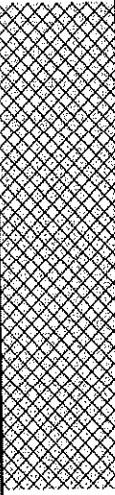
BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: WSTP 299		PAGE 1 of 1	
	NUMBER	TYPE					DRILLING DATES: 10/11/03		DRILLING METHODS: JCB	
							DRILLER: JCB - Lee		BOREHOLE DIAMETER: -	
							LOGGED BY: EM		SCREEN TYPE & DIAM: -	
							CHECKED BY: SG		SCREEN SLOT SIZE: -	
DESCRIPTION		COMMENTS	S,V							
 WSTP299 - 0.4m (S,L)  WSTP 299 - 0.5m (S,L)	 *38.9	0.0	Gravels and brick fragments. (MADE GROUND).	Damp. Damp. Moderate heavy hydrocarbon odour. Free product at 0.3m Wet. Heavy hydrocarbon odour. Wet.	1,1 3,3 3,5 1,1					
		0.5	Loose, light brown, coarse sand with fine to coarse gravels, infrequent subangular cobbles and boulders. (MADE GROUND)							
		1.0	Moderately loose, stained black, silty fine sand with fine to coarse gravels, rare cobbles and boulders. (MADE GROUND)							
		1.5	Loose, stained black, silty coarse gravel with small cobbles. (MADE GROUND)							
		1.5	Loose, dark brown silty fine sand with fine to coarse gravels, cobbles, tabular boulders and brick fragments. (MADE GROUND)							
Trial pit terminated at 0.7m due to refusal on bedrock.										
2.0										
2.5										
3.0										
3.5										
4.0										
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: BPWDA									
			<table border="1"> <tr> <td>App'd:</td> <td>Date: November 2003</td> </tr> <tr> <td>Drawn: EM</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: November 2003	Drawn: EM	Ref:	Scale: As Scale	Job No: 39991-044-785	Drg. Size: A4	BOREHOLE LOG
App'd:	Date: November 2003										
Drawn: EM	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: WSTP058		PAGE 1 of 1	
	NUMBER	TYPE					DRILLING DATES: 4/11/2003		DRILLING METHODS: JCB	
							DRILLER: JCB		BOREHOLE DIAMETER: -	
							LOGGED BY: OG		SCREEN TYPE & DIAM: -	
							CHECKED BY: SG		SCREEN SLOT SIZE: -	
							DESCRIPTION	COMMENTS	S,V	
					0.0		Reinforced concrete. (MADE GROUND)		0,0	
	WSTP058 - 0.5-06m (ARUP)		*6.4		0.5		Loose, mottled light brown, red, grey silty coarse sand with brick gravel and fragments, and cobble size concrete fragments. (MADE GROUND) With gravel to small boulder size clinker and metal.		0,0	
	WSTP058 - 1.0m (S,L)		*55.8		1.0		Loose, dark grey silty sand with frequent fine to medium gravel size brick fragments, occasional subrounded sub angular cobbles and clinker; and rare clinker boulders. (MADE GROUND)	Damp - dry.	1,1	
	WSTP058 - 1.5m (S,L)		*210		1.5		With mottled black to dark grey areas, and rare clinker.	Water seepage on west face.	4,3	
			*192		2.0		Loose, dark grey to black angular silty GRAVEL and COBBLES with occasional small boulders. (Weathered sandstone)	Damp.	4,3	
			*168		2.5				4,3	
					3.0		Trial pit terminated at 2.7m due to refusal on bedrock.			
					3.5					
					4.0					
					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: January 2004 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: WSTP059		PAGE 1 of 1	
	NUMBER	TYPE					DRILLING DATES: 3/12/03		DRILLING METHODS : JCB	
							DRILLER : JCB - JOHN		BOREHOLE DIAMETER : -	
							LOGGED BY : J.G		SCREEN TYPE & DIAM: -	
							CHECKED BY : SG		SCREEN SLOT SIZE: -	
DESCRIPTION							COMMENTS	S,V		
	WSTP059 - 0.5m (S,L)		*9		*40	0.0	Reinforced concrete hardstanding.(MADE GROUND)	All loose and dry.	0, 1	
						0.1	Loose, grey, medium gravel.(MADE GROUND)			
						0.5	West side; loose, light brown to yellow sand with concrete fragments (bedding sand) East side; loose red silty coarse sand with frequent coarse gravel and cobbles.(MADE GROUND)			
						1.0				
						1.5	Clayey silty fine SAND with gravel and large cobbles, all grey when fresh.			
	WSTP059 - 2.0m (S,L)		*157		*66	2.0	Trial pit terminated at 2.0m due to refusal.	Free product floating on surface.	3, 5	
						2.5				
						3.0				
						3.5				
						4.0				
						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: BPWDA 		
						App'd: _____ Date: January 2004 Drawn : JG _____ 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: WSTP060		PAGE 1 of 1	
	NUMBER	TYPE					DRILLING DATES: 3/11/2003		DRILLING METHODS: JCB	
							DRILLER: JCB - Paul		BOREHOLE DIAMETER: -	
							LOGGED BY: OG		SCREEN TYPE & DIAM: -	
							CHECKED BY: SG		SCREEN SLOT SIZE: -	
							DESCRIPTION	COMMENTS	S,V	
	WSTP060 - 1.0m (S,L)		*0.7		0.0		Reinforced concrete hardstand. (MADE GROUND)	Damp	2,3	
							Loose, mottled dark brown and orange (60:40) slightly sandy silt with subrounded gravel and occasional subangular cobbles, small brick fragments and rare clinker. (MADE GROUND)		1,1	
								Damp	0,0	
							Loose, light brown silty sand with abundant subangular to subrounded gravel, abundant cobbles, concrete boulders, brick and pipe fragments.(MADE GROUND)	Deep, dark grey staining	2,2	
							Becoming grey with frequent subangular cobbles and occasional small boulders.	Damp	2,2	
	WSTP060 - 1.9m (S,L)		*18.7		1.5					
			*46.1		2.0		Trial pit terminated at 1.9m due to refusal.			
					2.5					
					3.0					
					3.5					
					4.0					
					4.5					
					5.0					

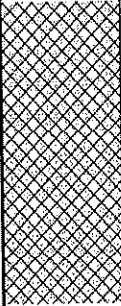
LOCATION / NOTES:	LEGEND	BOREHOLE LOG	
NVO = No visual or olfactory evidence of contamination S,V = Contamination Observations S - Odour score (0-5) V - Visual score (0-5)	 Disturbed Sample  Undisturbed Sample  Headspace Analysis  Down Borehole Analysis  Groundwater Table  Perched Water Table	Job Title: BP Llandarcy Whole Site Investigation Location: BP Llandarcy Refinery Client: BP/WDA 	
		App'd:	Date: January 2004
		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: WSTP062		PAGE 1 of 1	
	NUMBER	TYPE					DRILLING DATES: 3/11/2003		DRILLING METHODS: JCB	
							DRILLER: JCB - Paul		BOREHOLE DIAMETER: -	
							LOGGED BY: OG		SCREEN TYPE & DIAM: -	
							CHECKED BY: SG		SCREEN SLOT SIZE: -	
							DESCRIPTION	COMMENTS	S,V	
	WSTP062 - 0.55m (2xP)		*3.0				Concrete hardstanding (MADE GROUND)	Damp - wet. NVO	0,0	
							Loose, red brown silty sand with gravel, angular cobbles and concrete blocks. (MADE GROUND)		0,0	
							Medium dense, mottled dark grey black, medium to coarse SAND with abundant coarse gravel, cobbles and occasional subangular to subrounded boulders.		Steady water ingress at 0.6m	
									Saturated Water level rising.	
									Water level dropping. No headspace as pit underwater.	
	WSTP062 - 1.0m (S,L)		*710					Saturated	4,2	
									4,2	
							Trial pit terminated at 3.2m due to collapse.	Saturated	4,2	

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: January 2004
		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: WSTP063		PAGE 1 of 1	
	NUMBER	TYPE					DRILLING DATES: 13/11/2003		DRILLING METHODS: JCB	
							DRILLER: JCB		BOREHOLE DIAMETER: -	
							LOGGED BY: OG		SCREEN TYPE & DIAM: -	
							CHECKED BY: SG		SCREEN SLOT SIZE: -	
							DESCRIPTION	COMMENTS	S,V	
	WSTP063 - 0.5m (S,L,2XP)		*5.5	0.0		Concrete hardstanding. (MADE GROUND)	Dry-damp	0,0		
			*1.7	0.5		Loose, light to dark grey silty fine to medium sand with angular gravel and cobbles and occasional to frequent wood, pipe fragments and plastic sheet. (MADE GROUND)				
			*2.7	1.0		Becoming dark brown to grey with some angular boulders.				
			*16.4	1.5						
			*4.5	2.0		Soft, dark grey to brown, locally black, silty CLAY with occasional rounded cobbles.				
	WSTP063 - 3.2m (S,L)		*34	2.5			Damp. Patches of black staining.	1,3		
			*35	3.0		Becoming grey to black in colour.				
				3.5		Trial pit terminated at 3.15m due to refusal.				
				4.0						
				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: February 2004
		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: WSTP100		PAGE 1 of 1	
	NUMBER	TYPE					DRILLING DATES: 4/11/03		DRILLING METHODS: JCB	
							DRILLER: JCB		BOREHOLE DIAMETER: -	
							LOGGED BY: OG		SCREEN TYPE & DIAM: -	
							CHECKED BY: SG		SCREEN SLOT SIZE: -	
DESCRIPTION		COMMENTS	S,V							
	WSTP100 - 0.9m (S,L)		*1.1	0.0	Concrete hardstanding. (MADE GROUND)	Damp	0,0			
			*0.4	0.5	Mottled orange, yellow, dark grey and black, medium to coarse grained, fractured weathered SANDSTONE.		0,2			
			*1.0	1.0	Becoming silty from 1.0m.		0,2			
				1.5	Trial pit terminated at 1.2m due to refusal at bedrock.		0,2			
				2.0			Wet			
			2.5							
			3.0							
			3.5							
			4.0							
			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: February 2004 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: WSTP101		PAGE 1 of 1	
	NUMBER	TYPE					DRILLING DATES: 04/11/03		DRILLING METHODS : JCB	
							DRILLER : JCB		BOREHOLE DIAMETER : -	
							LOGGED BY : EM		SCREEN TYPE & DIAM: -	
							CHECKED BY : SG		SCREEN SLOT SIZE: -	
							DESCRIPTION	COMMENTS	S,V	
	WSTP101 - 0.4m (S,L,2xP)		*55.1		0.0		Coarse gravels, cobbles and boulders. (TOPSOIL)	Surface pooling of water		
					0.5		Loose, dark brown silty fine SAND with clay patches and frequent fine to coarse gravels, subangular cobbles and tabular boulders.	Wet	0,0	
					1.0		With increasing proportion of tabular cobbles and boulders from 1.0m.	Faint hydrocarbon odour	1,0	
					1.5		Trial pit terminated at 1.5m due to refusal on bedrock.		1,0	
	WSTP101 - 1.25m (S,L)		*2.3		2.0					
					2.5					
					3.0					
					3.5					
					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		App'd: _____	
	 Groundwater Table		Drawn : EM	Date: January 2004
	 Perched Water Table		Scale: As shown	Ref: _____
			Drg. Size: A4	Job No: 39991-044-785
			BOREHOLE LOG	

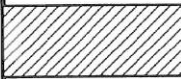
BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: MSMW55		PAGE 1 of 1				
	NUMBER	TYPE					START DATE: 18/06/98		DRILLING METHOD: Rotary				
							FINISH DATE: 18/06/98		BOREHOLE DIAMETER: 165/115mm				
							DRILLER: R2		SCREEN TYPE & DIAMETER: UPVC 50mm				
						LOGGED BY: MC		APPRD BY:		SCREEN SLOT SIZE: 0.5mm			
						DESCRIPTION		COMMENTS					
						0		REINFORCED CONCRETE (MADE GROUND)				0	
						1.0		Coarse grained black ASH with some sand, light-grey gravel and silt (MADE GROUND)				Strong hydro-carbon / sulphurous odour	
						2.0		grading to silty sand and gravel with dome boulders				moist - becoming increasingly wet to 3.5m	
						3.0							
						4.0		ROCKHEAD: Light grey to grey coarse grained SANDSTONE (BEDROCK)				4.0	
						5.0						5.0	
						6.0		Borehole terminated at 5.5 mbgl				6.0	
						7.0						7.0	
						8.0						8.0	
						9.0						9.0	
						10						10	

LOCATION / NOTES: 1. All measurements in m below ground level (mbgl)		LEGEND Disturbed Sample Undisturbed Sample Headspace Analysis Down Borehole Analysis Groundwater Table Perched Water Table		BOREHOLE LOG Job Title SOIL & GROUNDWATER INVESTIGATION Location LLANDARCY REFINERY Client BP LLANDARCY Appd DRAFT Ref. MC/CR/BRS Date JUL 98 Job No. 39991-001-401	
				DAMES & MOORE	

BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: MSMW60		PAGE 1 of 1	
	NUMBER	TYPE					START DATE: 10/06/98		DRILLING METHOD: Odex/Rotary	
							FINISH DATE: 10/06/98		BOREHOLE DIAMETER: 150/115mm	
							DRILLER: R3		SCREEN TYPE & DIAMETER: UPVC 50mm	
							LOGGED BY: MC APPD BY:		SCREEN SLOT SIZE: 0.5mm	

	0	X	REINFORCED CONCRETE (MADE GROUND)	Strong fuel odour Moist	0					
	0.6		Grey-brown sandy plastic CLAY							
	1.0		ROCKHEAD: Light brown-grey to dark grey SILTSTONE, heavily weathered grading to competent siltstone at 1 m	Switch to 115m hammer at 0.6m	1.0					
	2.0		becoming light brown to brown at 2.0m		2.0					
	2.5		Black SILTSTONE							
	2.8		Light grey medium to fine grained SANDSTONE	Water at 3.1m						
	3.0		becoming grey to dark grey in bands		3.0					
	4.0		Hard grey medium grained SANDSTONE		4.0					
	6.5		DARK GREY SILTSTONE		6.5					
	7.0		Hard grey medium grained SANDSTONE		7.0					
7.8		Borehole terminated at 7.8 mbgl			7.8					
8.0				8.0						
9.0				9.0						
10.0				10.0						

LOCATION / NOTES: 1. All measurements in m below ground level (mbgl) 2. Odex to 0.6 mbgl , Rotary to 7.8 mbgl	LEGEND Disturbed Sample Undisturbed Sample * Headspace Analysis † Down Borehole Analysis Groundwater Table Perched Water Table	BOREHOLE LOG Job Title SOIL & GROUNDWATER INVESTIGATION Location LLANDARCY REFINERY Client BP LLANDARCY Appd DRAFT Ref. MC/CR/BRs Date JUL 98 Job No. 39991-001-401 DAMES & MOORE GROUP
--	--	---

BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: MSMW147S		PAGE 1 of 1	
	NUMBER	TYPE					START DATE: 20/3/99		DRILLING METHOD: CABLE PERCUSSION	
							FINISH DATE: 20/3/99		BOREHOLE DIAMETER: 150 mm	
							DRILLER: CP1		SCREEN TYPE & DIAMETER: N/A	
LOGGED BY: DB APPR'D BY:						SCREEN SLOT SIZE: N/A				
						DESCRIPTION		COMMENTS		
						Loose dark grey angular COBBLES with gravel (MADE GROUND)		No odour		0
						Soft grey to dark grey silty CLAY (mottled orange-brown in places) with frequent gravel		Damp		
										1.0
										2.0
										3.0
										4.0
										5.0
										6.0
										7.0
										8.0
										9.0
										10

LOCATION / NOTES: 1. All measurements in m below ground level (mbgl)		LEGEND  Disturbed Sample  Undisturbed Sample  Headspace Analysis  Down Borehole Analysis  Groundwater Table  Perched Water Table	BOREHOLE LOG Job Title SOIL & GROUNDWATER INVESTIGATION Location LLANDARCY REFINERY Client BP LLANDARCY LTD App'd DRAFT Ref. CR/MC/BR5 Date MAY 99 Job No. 39991-004-401	 DAMES & MOORE GROUP
--	--	---	---	---

BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: MSMW147D		PAGE 1 of 2	
	NUMBER	TYPE					START DATE: 30/3/99	DRILLING METHOD: ROTARY AIR FLUSH	FINISH DATE: 30/3/99	BOREHOLE DIAMETER: 115 mm
							DESCRIPTION	COMMENTS		
					0		Coarse GRAVEL with COBBLES (MADE GROUND)			0
							CONCRETE (MADE GROUND)			
					1.0		ROCKHEAD - Consolidated light grey-blue SANDSTONE			1.0
					2.0					2.0
					3.0		Weak light brown SANDSTONE (BEDROCK)			3.0
							Consolidated light grey SANDSTONE			
					4.0		Weak light brown SANDSTONE			4.0
							Consolidated light grey SANDSTONE			
					5.0		Dark brown SHALE			5.0
							Light grey SANDSTONE			
					6.0					6.0
					7.0					7.0
					8.0					8.0
					9.0					9.0
					10					10

LOCATION / NOTES:	LEGEND	BOREHOLE LOG	
1. All measurements in m below ground level (mbgl)	Disturbed Sample	Job Title	SOIL & GROUNDWATER INVESTIGATION
2. Free product in hole at installation	Undisturbed Sample	Location	LLANDARCY REFINERY
3. Hole drilled dry and installed after water level stabilised	* Headspace Analysis	Client	BP LLANDARCY LTD
4. Rotary to 18m	† Down Borehole Analysis	App'd	DRAFT
	Groundwater Table	Ref.	CR/MC/BR5
	Perched Water Table	Date	MAY 99
		Job No.	39991-004-401
		DAMES & MOORE	

BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: MSMW147D		PAGE 2 of 2	
	NUMBER	TYPE					START DATE: 30/3/99	DRILLING METHOD: ROTARY AIR FLUSH	FINISH DATE: 30/3/99	BOREHOLE DIAMETER: 115 mm
							DESCRIPTION	COMMENTS		
					10		Light grey SANDSTONE (BEDROCK)			
					11					
					12					
					13					
					14					
					15					
					16					
					17					
					18		Borehole terminated at 18.0 mbgl			
					19					
					20					

LOCATION / NOTES:		LEGEND		BOREHOLE LOG	
1. All measurements in m below ground level (mbgl)		☒ Disturbed Sample		Job Title SOIL & GROUNDWATER INVESTIGATION	
2. Free product in hole at installation		■ Undisturbed Sample		Location LLANDARCY REFINERY	
3. Hole drilled dry and installed after water level stabilised		* Headspace Analysis		Client BP LLANDARCY LTD	
4. Rotary to 18m		† Down Borehole Analysis		App'd DRAFT	
		▽ Groundwater Table		Ref. CR/MC/BRS	
		▽ Perched Water Table		Date MAY 99	
				Job No. 39991-004-401	
				 DAMES & MOORE	

BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: MSMW198		PAGE 1 of 2	
	NUMBER	TYPE					START DATE: 16/3/99	DRILLING METHOD: ROTARY AIR FLUSH		
							FINISH DATE: 16/3/99		BOREHOLE DIAMETER: 165/115 mm	
							DRILLER: R1		SCREEN TYPE & DIAMETER: 50 mm ID UPVC	
							LOGGED BY: DB APPR'D BY:		SCREEN SLOT SIZE: 0.5 mm	
							DESCRIPTION		COMMENTS	
			*0.0		0		Loose brown GRAVEL with some silt (MADE GROUND)		No odour	0
					1.0					1.0
					2.0					2.0
					3.0		Loose dark brown-black SAND with gravel and some silt (MADE GROUND)		Moderate hydrocarbon odour	3.0
			*15.7		4.0					4.0
					5.0		becoming siltier			5.0
					6.0				Moderate hydrocarbon odour	6.0
					7.0		ROCKHEAD: Hard light grey-grey crystalline SANDSTONE		Slight-moderate hydrocarbon odour	7.0
					8.0					8.0
					9.0				Slight hydrocarbon odour	9.0
			0.0		10					10

LOCATION / NOTES:		LEGEND		BOREHOLE LOG	
1. All measurements in m below ground level (mbgl)		☒ Disturbed Sample ☐ Undisturbed Sample * Headspace Analysis † Down Borehole Analysis ▼ Groundwater Table ▼ Perched Water Table		Job Title SOIL & GROUNDWATER INVESTIGATION Location LLANDARCY REFINERY Client BP LLANDARCY LTD App'd DRAFT Ref. CR/MC/BRS Date MAY 99 Job No. 39991-004-401	
				 DAMES & MOORE GROUP	

BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: MSMW198		PAGE 2 of 2	
	NUMBER	TYPE					START DATE: 16/3/99	DRILLING METHOD: ROTARY AIR FLUSH		
							FINISH DATE: 16/3/99		BOREHOLE DIAMETER: 165/115 mm	
							DRILLER: R1		SCREEN TYPE & DIAMETER: 50 mm ID UPVC	
							LOGGED BY: DB APPR'D BY:		SCREEN SLOT SIZE: 0.5 mm	
							DESCRIPTION		COMMENTS	
					10		Hard light grey-grey crystalline SANDSTONE (BEDROCK)			10
					11		Borehole terminated at 10.5 mbgl			11
					12					12
					13					13
					14					14
					15					15
					16					16
					17					17
					18					18
					19					19
					20					20

LOCATION / NOTES: 1. All measurements in m below ground level (mbgl)		LEGEND  Disturbed Sample  Undisturbed Sample * Headspace Analysis † Down Borehole Analysis  Groundwater Table  Perched Water Table		BOREHOLE LOG Job Title SOIL & GROUNDWATER INVESTIGATION Location LLANDARCY REFINERY Client BP LLANDARCY LTD App'd DRAFT Ref. CR/MC/BRS Date MAY 99 Job No. 39991-004-401				 DAMES & MOORE	
--	--	---	--	---	--	--	--	--	--