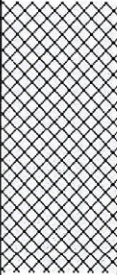


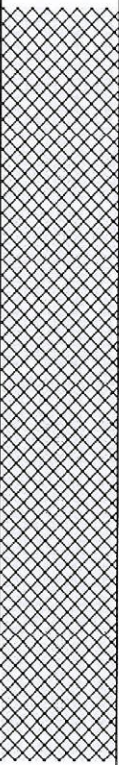
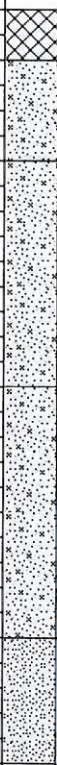
BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: WSTP112		PAGE 1 of 1	
	NUMBER	TYPE					DRILLING DATES: 18/11/03		DRILLING METHODS : JCB	
							DRILLER : JCB - Leighton		BOREHOLE DIAMETER : -	
							LOGGED BY : OG		SCREEN TYPE & DIAM: -	
							CHECKED BY : SG		SCREEN SLOT SIZE: -	
				DESCRIPTION		COMMENTS	S,V			
	WSTP112 - 0.45m (2XP,S,L)		*2.2	0.0	Loose, mottled brown to black, slightly silty, fine to coarse sand with frequent angular sandstone gravel to cobbles, occasional cobble size slag and frequent gravel size ashy material. (MADE GROUND)	Dry to Damp NVO, Electric cable bricks at 0.5m.	0,0			
			*10.5	0.5						
			*2.8	1.0	Becoming loose, silty fine to medium, clayey sand with frequent angular gravel and cobbles and occasional cobble to gravel size slag fragments. (MADE GROUND)		Damp	0,0		
				1.5	With frequent angular cobbles and small sandstone boulders from 1.3m.		Damp	0,0		
			*1.9	2.0	With occasional large slag cobbles and metal fragments from 1.9m.			0,0		
	WSTP112- 2.15m (S,L)			2.1	With whole bricks and patches of black silty clay from 2.1m.	Strong hydrocarbon odour within black clay				
			*8.2	2.5	Soft to firm, orange, very silty clay with occasional subangular to rounded gravel. (MADE GROUND)			3,0		
				3.0	Loose, light to dark grey, slightly silty, fine to coarse sand with frequent angular gravel to cobbles and frequent gravel size slag. (MADE GROUND)					
				3.5	Trial pit terminated at 2.7m.					
				4.0						
				4.5						
				5.0						

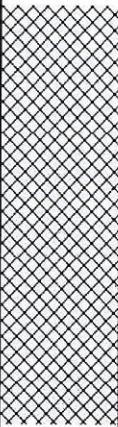
LOCATION / NOTES:		LEGEND		BOREHOLE LOG	
NVO = No visual or olfactory evidence of contamination S,V = Contamination Observations S - Odour score (0-5) V - Visual score (0-5)		Disturbed Sample Undisturbed Sample Headspace Analysis Down Borehole Analysis Groundwater Table Perched Water Table		Job Title: BP Llandarcy Whole Site Investigation Location: BP Llandarcy Refinery Client: BP/WDA	
				App'd:	Date: November 2003
				Drawn : OG	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: WSTP113		PAGE 1 of 1	
	NUMBER	TYPE					DRILLING DATES: 7/11/03		DRILLING METHODS : JCB	
							DRILLER : JCB		BOREHOLE DIAMETER : -	
							LOGGED BY : SS		SCREEN TYPE & DIAM: -	
							CHECKED BY : SG		SCREEN SLOT SIZE: -	
	WSTP113 - 0.4m (S,L,2xP)		*1.4		0.0		DESCRIPTION		COMMENTS	S,V
							Loose, dark brown, silty sand with frequent cobbles of sandstone and brick and several layers of concrete with reinforcing bar (MADE GROUND)		Dry-damp. NVO Cable at 0.45m	0,0
					0.5		Trial pit terminated at 1.1m due to refusal on concrete.			
					1.0					
					1.5					
					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 : 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: WSTP114		PAGE 1 of 1						
	NUMBER	TYPE					DRILLING DATES: 10/12/03		DRILLING METHODS : JCB						
							DRILLER : JCB		BOREHOLE DIAMETER : -						
							LOGGED BY : HM		SCREEN TYPE & DIAM: -						
							CHECKED BY : SG		SCREEN SLOT SIZE: -						
DESCRIPTION		COMMENTS	S,V												
	WSTP114 - 0.75m (S,L)		* <0.1	0.0	Loose, light brown silty sand with frequent rootlets and occasional fine to coarse gravel. (MADE GROUND)	NVO, damp.	0,0								
			* <0.1	0.5	Soft to firm, dark brown sandy silt with some fine to coarse gravel comprising of ash. (MADE GROUND)	NVO, damp.	0,0								
			* <0.1	1.0	Soft to firm orange brown SILT	NVO, damp.	0,0								
			* <0.1	1.5	Soft to firm, light brown sandy SILT with frequent fine to coarse gravel with frequent subrounded to subangular sandstone cobbles.	NVO, damp.	0,0								
			* <0.1	2.0	With abundant angular to subangular cobbles from 1.8m. Trial pit terminated at 2.0m at refusal on bedrock	NVO, 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: 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: WSTP115		PAGE 1 of 1		
	NUMBER	TYPE					DRILLING DATES: 10/12/03		DRILLING METHODS: JCB		
							DRILLER: JCB		BOREHOLE DIAMETER: -		
							LOGGED BY: HM		SCREEN TYPE & DIAM: -		
		CHECKED BY: SG		SCREEN SLOT SIZE: -							
	WSTP115 - 0.2m (2xP)				0.0		DESCRIPTION		COMMENTS	S,V	
							Soft, dark brown slightly sandy silt with much rootlets, slightly ashy. (MADE GROUND)	NVO, tar on surface.	0,0		
	WSTP115 - 0.5-0.6m (PSD)		*<0.1		0.5		Soft, orange brown slightly sandy SILT with occasional fine to coarse gravel, occasional subrounded to subangular cobbles.	Dry - damp, NVO.	0,0		
	WSTP115 - 0.9m (S,L)		*<0.1		1.0		Loose, light brown silty SAND with frequent fine to coarse gravel, occasional subrounded to subangular cobbles.	Dry - damp, NVO.	0,0		
			*1.5		1.5		With abundant fine to coarse gravel and frequent subangular to subrounded cobbles.	Dry - damp, NVO.	0,0		
			*1.6		2.0		Becoming less silty.	Dry - damp, NVO.	0,0		
	WSTP115 - 2.5m (S,L)		*1.8		2.5		Medium dense, light brown SAND with abundant fine to coarse gravel and abundant angular to subrounded sandstone cobbles.	Dry - damp, NVO.	0,0		
			*2.1		3.0		With occasional to frequent angular sandstone boulders at base.				
					3.5		Trial pit terminated at 3.0m due to refusal on bedrock.				
					4.0						
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 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: WSTP146		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: -								
	WSTP146 - 0.5m (S,L,P)		*2.7		0.0		DESCRIPTION		COMMENTS	S,V
					0.5		Loose, dark brown, sandy silt with abundant rootlets (MADE GROUND)	Damp. NVO		
					1.0		Loose, yellow brown, fine to medium sand with occasional rootlets and rare, coarse gravel. (MADE GROUND)	Damp. NVO	0,0	
					1.5		With some boulders of sandstone and brick wall fragments from 0.7m.	Damp. NVO	0,0	
	WSTP146 - 1.2m (S,L)		*3.9				With frequent subrounded, coarse gravel. (Reinforcing bar observed in pit walls from 0.8m).			
	WSTP146 - 1.7m (S,L)		*6.8				Trial pit terminated at 1.7m due to refusal on bedrock.	Damp. Slight, light hydrocarbon odour and faint grey staining	1,1	
					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

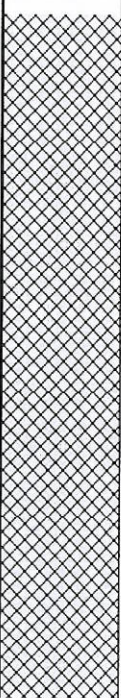
Client: BP/WDA



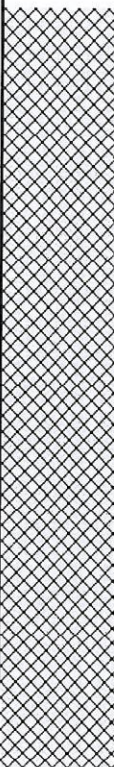
App'd:	Date: November 2003
Drawn : SS	Ref:
Scale: As scale	Job No: 39991-044-785
Org. Size: A4	BOREHOLE LOG

BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: WSTP148		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: -						
					0.0		DESCRIPTION		COMMENTS	S,V
							Concrete hardstanding (MADE GROUND)			
	WSTP148 0.5m (S,L)	☒	*18.4		0.5		Loose, light grey clayey silty fine angular GRAVEL with frequent small boulders.		Fast inflow from 3 directions (not S) strong hydrocarbon odour.	
	WSTP148 0.7m (P)	☒			1.0				Water present with black scum on surface. Ingression from this horizon only	
			*19.6		1.5		Firm to stiff, brown clayey SILT with frequent rounded to angular gravel, cobbles and small boulders.			
					2.0		Trial pit terminated at 2.0m.			
	WSTP148 2.0m (S,L)	☒	*241		2.5					
					3.0					
					3.5					
					4.0					
					4.5					
					5.0					

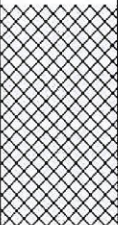
LOCATION / NOTES:	LEGEND	BOREHOLE LOG	
NVO = No visual or olfactory evidence of contamination S,V = Contamination Observations S - Odour score (0-5) V - Visual score (0-5)	 Disturbed Sample  Undisturbed Sample  Headspace Analysis  Down Borehole Analysis  Groundwater Table  Perched Water Table	Job Title: BP Llandarcy Whole Site Investigation Location: BP Llandarcy Refinery Client: BP/WDA	
			App'd: _____ Date: January 2004 Drawn: 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: WSTP149		PAGE 1 of 1	
	NUMBER	TYPE					DRILLING DATES: 7/11/03		DRILLING METHODS: JCB	
							DRILLER: JCB		BOREHOLE DIAMETER: -	
							LOGGED BY: SS		SCREEN TYPE & DIAM: -	
				CHECKED BY: SG		SCREEN SLOT SIZE: -				
	WSTP149 - 0.6m. (P)				0.0		DESCRIPTION		COMMENTS	S,V
	WSTP149 - 0.7m (S,L)		*1.9		0.5		Loose to medium dense, brown, very sandy silt with some rootlets and occasional angular to rounded cobbles with less than 5% ash/coal fragments. (MADE GROUND)	Dry-damp. Slight organic (non-hydrocarbon) odour	0,0	
					1.0		Increasing silt content from 0.9m.	Damp-wet. NVO	0,0	
					1.5		Colour change from brown to yellow-brown and increase in tabular cobbles content from 1.2m.			
					2.0		With frequent flaggy cobbles (weathered bedrock) from 2.0m	Dry-damp. NVO	0,0	
	WSTP149 - 2.3m (S,L)		*2.8		2.5					
					3.0		Terminated at 2.8m due to refusal on bedrock.			
					3.5					
					4.0					
					4.5					
					5.0					

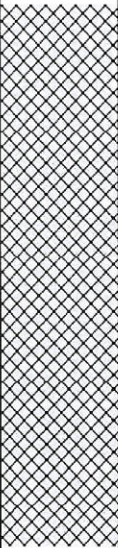
LOCATION / NOTES:	LEGEND	BOREHOLE LOG	
NVO = No visual or olfactory evidence of contamination S,V = Contamination Observations S - Odour score (0-5) V - Visual score (0-5)	 Disturbed Sample  Undisturbed Sample  Headspace Analysis  Down Borehole Analysis  Groundwater Table  Perched Water Table	Job Title: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

BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: WSTP150		PAGE 1 of 1		
	NUMBER	TYPE					DRILLING DATES: 7/11/03		DRILLING METHODS : JCB		
							DRILLER : JCB		BOREHOLE DIAMETER : -		
							LOGGED BY : SS		SCREEN TYPE & DIAM: -		
							CHECKED BY : SG		SCREEN SLOT SIZE: -		
							DESCRIPTION	COMMENTS	S,V		
	WSTP150 - 0.8m (S,L,P)		*1.0		0.0		Loose, dark brown, slightly sandy SILT with frequent cobbles and gravels of sandstone.	Dry-damp. NVO	0,0		
							0.5		Dry-damp. NVO	0,0	
							1.0			0,0	
							1.5		Becoming more sandy with less frequent cobble-sized material.	Damp. NVO	0,0
							2.0			Damp-wet. NVO	0,0
	WSTP150 - 2.6m (S,L)		*1.7	*1.9	2.5		With frequent, small angular cobbles of sandstone from 2.5m.	Damp-wet. NVO	0,0		
							3.0		Cobbles becoming larger from 2.8m	NVO	0,0
							3.5		Terminated at 3.1m due to refusal.		
							4.0				
							4.5				
					5.0						

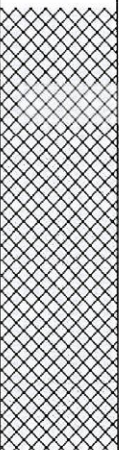
LOCATION / NOTES:		LEGEND		BOREHOLE LOG	
NVO = No visual or olfactory evidence of contamination S,V = Contamination Observations S - Odour score (0-5) V - Visual score (0-5)		 Disturbed Sample  Undisturbed Sample  Headspace Analysis  Down Borehole Analysis  Groundwater Table  Perched Water Table		Job Title: BP Llandarcy Whole Site Investigation Location: BP Llandarcy Refinery Client: BP/WDA	
				App'd:	Date: 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: WSTP155		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			
	WSTP155-0.4m (S,L)	☒	*1.3	0.0		Loose brown silty fine SAND with much fine to coarse subrounded and subangular gravel, cobbles and boulders of sandstone.	NVO	0,0		
				0.5		Well cemented fine to medium SANDSTONE.	NVO	0,0		
				1.0		Trial pit terminated at 0.9m due to refusal on bedrock.	NVO	0,0		
				1.5						
				2.0						
				2.5						
				3.0						
				3.5						
				4.0						
				4.5						
				5.0						

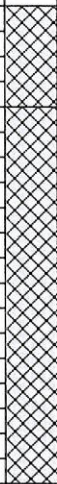
LOCATION / NOTES:	LEGEND	BOREHOLE LOG	
NVO = No visual or olfactory evidence of contamination S,V = Contamination Observations S - Odour score (0-5) V - Visual score (0-5)	 Disturbed Sample  Undisturbed Sample  Headspace Analysis  Down Borehole Analysis  Groundwater Table  Perched Water Table	Job Title: BP Llandarcy Whole Site Investigation Location: BP Llandarcy Refinery Client: BP/WDA	
			App'd: _____ Date: December 2003 Drawn: JW 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: WSTP167		PAGE 1 of 1	
	NUMBER	TYPE					DRILLING DATES: 7/11/2003		DRILLING METHODS: JCB	
							DRILLER: JCB		BOREHOLE DIAMETER: -	
							LOGGED BY: SS		SCREEN TYPE & DIAM: -	
							CHECKED BY: SG		SCREEN SLOT SIZE: -	
						DESCRIPTION	COMMENTS	S,V		
	WSTP167- 0.6m (S,L,P)		*1.3	*0.9	0.0	Loose dark brown sandy silt with abundant rootlets and organic material with occasional rounded cobbles. (MADE GROUND)	Damp Cable broken at 0.2m, pit rotated.	0,0		
					0.5	Loose yellow fine to medium bedding sand (around suspected pipe at 1.0m.) (MADE GROUND)	Damp-wet. NVO	0,0		
					1.0	Breezeblocks at base of pipe.	Damp. NVO	0,0		
					1.5	Loose dark brown silty fine SAND with occasional gravel and cobbles.	NVO	0,0		
					2.0	Becoming brown gravelly fine to medium sand from 1.8m.	Damp. NVO	0,0		
					2.2	Trial pit terminated at 2.2m 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: 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: 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		Black staining stopped.	2, 3		
					1.5	With increasing rubble from 1.2m.	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: BP/WDA 	
		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: WSTP179		PAGE 1 of 1	
	NUMBER	TYPE					DRILLING DATES: 6/11/03		DRILLING METHODS: JCB	
							DRILLER: JCB		BOREHOLE DIAMETER: -	
							LOGGED BY: CM		SCREEN TYPE & DIAM: -	
							CHECKED BY: SG		SCREEN SLOT SIZE: -	
							DESCRIPTION	COMMENTS	S,V	
	WSTP179 - 0.5m (S,L,2xP)		*0.1	0.0		Loose brown fine to medium sand. (MADE GROUND)				
			*0.2	0.5		Loose dark brown gravelly fine to medium sand with frequent cobbles and occasional boulders of concrete and abundant reinforcing wires. Gravel is angular to subrounded fine to coarse and comprises of concrete and sandstone. (MADE GROUND)	Dry, NVO	0,0		
			*0.2	1.0			Dry, NVO	0,0		
	WSTP179 - 1.9m (S,L)		*0.1	1.5		Damp, NVO	0,0			
				2.0		Terminated at 1.9m due to refusal on concrete.				
				2.5						
				3.0						
				3.5						
				4.0						
				4.5						
				5.0						

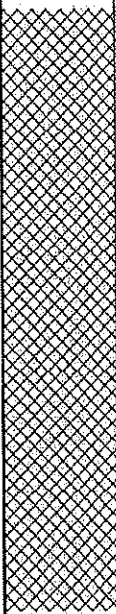
LOCATION / NOTES:	LEGEND	BOREHOLE LOG	
NVO = No visual or olfactory evidence of contamination S,V = Contamination Observations S - Odour score (0-5) V - Visual score (0-5)	 Disturbed Sample  Undisturbed Sample  Headspace Analysis  Down Borehole Analysis  Groundwater Table  Perched Water Table	Job Title: 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: WSTP306		PAGE 1 of 1	
	NUMBER	TYPE					DRILLING DATES: 9/12/03		DRILLING METHODS: JCB	
							DRILLER: JCB		BOREHOLE DIAMETER: -	
							LOGGED BY: HM		SCREEN TYPE & DIAM: -	
		CHECKED BY: SG		SCREEN SLOT SIZE: -						
						DESCRIPTION		COMMENTS	S,V	
	WSTP306 - 0.0m (P)				0.0		Potential asbestos containing material on surface over soft, dark brown slightly sandy silt with occasional fine to coarse gravel and subangular sandstone cobbles. (MADE GROUND)	Dry, NVO.	0,0	
	WSTP306 - 0.2m (P)				0.5			Dry - damp, NVO.	0,0	
	WSTP306 - 0.7m (S,L)		*0.3		1.0		Damp, NVO.	0,0		
			*0.8		1.5		Damp, NVO. Very loose, collapsing.	0,0		
			*0.7		2.0		Dry, NVO.	0,0		
	WSTP306 - 2.5m (S,L)		*1.3		2.5		Dry, NVO.	0,0		
			*1.0		3.0		Trial pit terminated at 2.7m due to refusal on bedrock.			
					3.5					
					4.0					
					4.5					
					5.0					

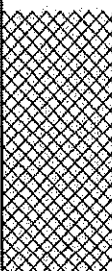
LOCATION / NOTES:	LEGEND	BOREHOLE LOG	
NVO = No visual or olfactory evidence of contamination S,V = Contamination Observations S - Odour score (0-5) V - Visual score (0-5)	Disturbed Sample Undisturbed Sample Headspace Analysis Down Borehole Analysis Groundwater Table Perched Water Table	Job Title: BP Llandarcy Whole Site Investigation Location: BP Llandarcy Refinery Client: BP/WDA	
			App'd: _____ Date: 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: WSMW019 (PIT)		PAGE 1 of 1	
	NUMBER	TYPE					DRILLING DATES: 19/12/03		DRILLING METHODS: JCB	
							DRILLER: JCB		BOREHOLE DIAMETER: -	
							LOGGED BY: JW		SCREEN TYPE & DIAM: -	
							CHECKED BY: SG		SCREEN SLOT SIZE: -	
							DESCRIPTION	COMMENTS	S,V	
	WSMW019-0.5m			0.0		Loose, brown, fine to coarse sand with frequent fine to coarse gravel, clinker, sandstone cobbles and rootlets (MADE GROUND)		NVO	0,0	
				0.5		Trial pit terminated at 0.5m due to refusal				
				1.0						
				1.5						
				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: January 2004
		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: WSMW020 (PIT)		PAGE 1 of 1	
	NUMBER	TYPE					DRILLING DATES: 8/12/03		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		Gravel with occasional coarse sand. (MADE GROUND)	NVO	0,0	
					0.5			Loose, brown fine to coarse sand with frequent fine to coarse angular gravel and occasional fine to whole brick gravel and fragments. (MADE GROUND)	Slight hydrocarbon odour and some black staining	1,3
								Concrete. (MADE GROUND)		
					1.0		Soft to firm, grey brown slightly clayey silty fine to medium SAND with occasional fine to coarse subangular and subrounded gravel, occasional round sandstone cobbles and tabular sandstone boulders.	strong hydrocarbon odour and moderate black staining and discoloration	4,3	
					2.0			Soft to firm, brown fine sandy SILT with frequent fine to coarse subrounded gravel, tabular sandstone cobbles and boulders.	Slight hydrocarbon odour and discoloration	1,1
				2.5		Trial pit terminated at 2.5m due to refusal.				
					3.0					
					3.5					
					4.0					
					4.5					
					5.0					

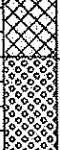
LOCATION / NOTES:	LEGEND	BOREHOLE LOG	
NVO = No visual or olfactory evidence of contamination S,V = Contamination Observations S - Odour score (0-5) V - Visual score (0-5)	 Disturbed Sample  Undisturbed Sample  Headspace Analysis  Down Borehole Analysis  Groundwater Table  Perched Water Table	Job Title: BP Llandarcy Whole Site Investigation Location: BP Llandarcy Refinery Client: BPWDA  App'd: _____ Date: 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: WSMW021(PIT)		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		
	WSMW021 - 0.56m (S,L)		*38.1		0.0	Gravel of clinker. (MADE GROUND)				
					0.5	Concrete. (MADE GROUND)	Copper earth strap			
					0.5	Loose, light brown, fine to medium sand with brick fragments. (MADE GROUND)	Damp	4.1		
	WSMW021 - 1.1m (S,L)		*51.0		1.0	Becoming darker brown in colour.	Rapid water ingress			
					1.0	Trial pit terminated at 1.1m 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  <table border="1"> <tr> <td>App'd:</td> <td>Date: November 2003</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>Dwg. Size: A4</td> <td>BOREHOLE LOG</td> </tr> </table>	App'd:	Date: November 2003	Drawn: CM	Ref:	Scale: As scale	Job No: 39991-044-785	Dwg. Size: A4	BOREHOLE LOG
App'd:	Date: November 2003									
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: WSMW023 (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	
	WSMW023 -		*9.4		0.0		Reinforced concrete. (MADE GROUND)	Wet. Some grey staining and hydrocarbon/chemical odour.	2,2	
	0.3m (S,L)									
	WSMW023 -									
	0.5m (S,L)		*102		0.5		Loose, yellow/golden brown, fine medium sand with brick fragments in top 0.2m. (MADE GROUND)	Heavy grey/black staining with hydrocarbon odour. Rapid water ingress with sheen and scum at 0.8m.	2,3	
					1.0		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  <table border="1"> <tr> <td>App'd:</td> <td>Date: November 2003</td> </tr> <tr> <td>Drawn: SS</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: November 2003	Drawn: SS	Ref:	Scale: As scale	Job No: 39991-044-785	Dwg. Size: A4	BOREHOLE LOG
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: WSMW051 (PIT)		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: -	
	WSMW051 - 1.0m (S,L,P)		*4.2		0.0		Reinforced concrete hardstanding. (MADE GROUND)	Faint hydrocarbon odour, faint grey staining.	1,1	
					0.5		Loose, brown, slightly silty, fine to medium sand with frequent tabular sandstone cobbles. (MADE GROUND)			
					1.0		Thin area of loose, yellow, fine to medium bedding sand in western end of pit.			
							Weathered sandstone COBBLES.			
							Trial pit terminated at 1.2m due to refusal.			
					1.5					
					2.0					
					2.5					
					3.0					
					3.5					
					4.0					
					4.5					
					5.0					

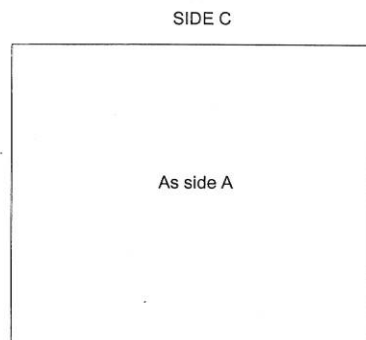
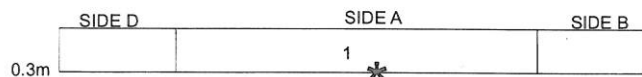
LOCATION / NOTES:	LEGEND	BOREHOLE LOG	
NVO = No visual or olfactory evidence of contamination S,V = Contamination Observations S - Odour score (0-5) V - Visual score (0-5)	 Disturbed Sample  Undisturbed Sample  Headspace Analysis  Down Borehole Analysis  Groundwater Table  Perched Water Table	Job Title: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

BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: WSMW082 (PIT)		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: -				
	WSMW082 - 0.3m (2XP)		*78.3		0.0		DESCRIPTION		COMMENTS	S,V
	WSMW082 - 0.5m (S,L)		*144		0.5		Loose, brown silty fine to coarse sand with frequent fine to coarse angular gravel comprising of brick. (MADE GROUND)	Slight hydrocarbon odour and slight to moderate black staining	1,2	
			*101		1.0		Loose brown silty fine to coarse SAND with frequent fine to coarse angular gravel, cobbles and boulders.	Moderate heavy odour with black product in sand at 0.5m	3,5	
			*24.4		1.5		Firm, brown to grey fine sandy SILT with frequent medium to coarse gravel, cobbles and sandstone boulders.	Dry		
			*36.7		2.0			Slight hydrocarbon odour and black staining	2,2	
			*24.8		2.5			As above	2,2	
	WSMW082 - 3.2m (S,L)				3.0			As above	2,2	
						3.5	Trial pit terminated 3.2m due to refusal.			
						4.0				
						4.5				
						5.0				

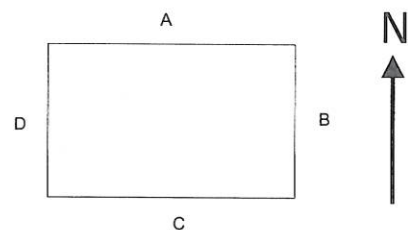
LOCATION / NOTES:	LEGEND	BOREHOLE LOG	
NVO = No visual or olfactory evidence of contamination.	 Disturbed Sample	Job Title: BP Llandarcy Whole Site Investigation	
S,V = Contamination Observations	 Undisturbed Sample	Location: BP Llandarcy Refinery	
S - Odour score (0-5)	 Headspace Analysis	Client: BP/WDA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

TRIAL PIT NUMBER: MSTP145
 GROUND ELEVATION: -
 DATE OF EXCAVATION: 11/6/98
 WATER LEVEL: DRY
 LOGGED BY: RF
 APPROVED BY:

SIDE ELEVATIONS



PLAN



0 1 2m
 Vertical Scale

Key:

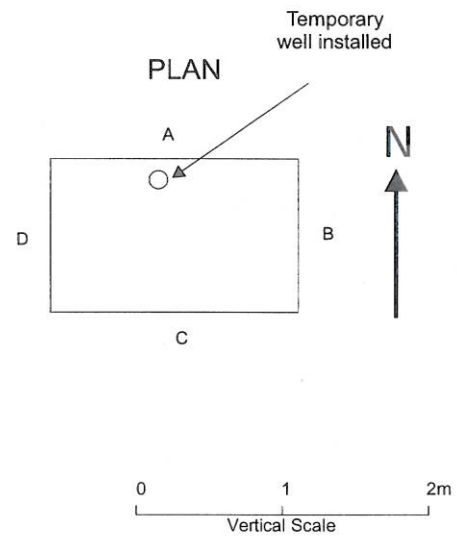
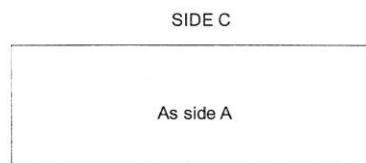
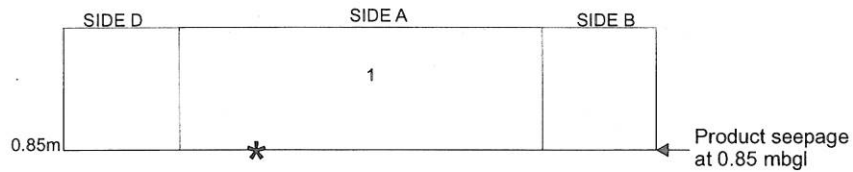
* Soil Sample location
 WA Water Sample
 HS Headspace Analysis
 ➡ Water Ingress

STRATA DESCRIPTIONS	COMMENTS	SAMPLES
1. Dark brown, silty clay matrix, very stony, metal, brick and wood fragments seen (MADE GROUND) Trial pit terminated on refusal at 0.3mbgl apparently due to sandstone bedrock	a. No hydrocarbon odour or staining evident	<u>PID RESULTS</u> 0.3m - 0 ppm <u>SOIL SAMPLES</u> MSTP145-0.3m

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

TRIAL PIT NUMBER: MSTP151
 GROUND ELEVATION: -
 DATE OF EXCAVATION: 4/6/98
 WATER LEVEL: 0.85 mbgl
 LOGGED BY: RF
 APPROVED BY:

SIDE ELEVATIONS



Key:

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

STRATA DESCRIPTIONS	COMMENTS	SAMPLES
1. Gravelly CLAY with coarse gravel at surface (MADE GROUND) Trial pit terminated at 0.85 mbgl on refusal	a. Wet b. Free product oozing into base of pit c. oily water at base of pit d. Temporary well installed	<u>PID RESULTS</u> 0.75m - 35.8 ppm <u>SOIL SAMPLES</u> MSTP151-0.75m

Job Title: SOIL & GROUNDWATER INVESTIGATION

Location: LLANDARCY REFINERY

Client: BP LLANDARCY

Job No: 39991-001-401

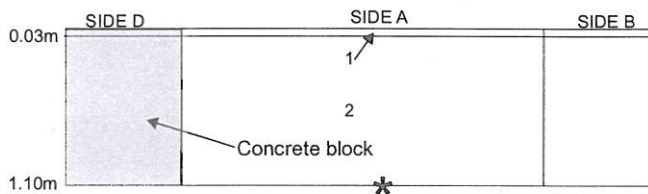
DRAFT



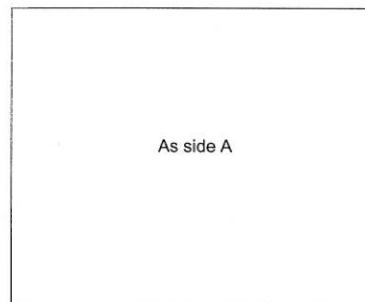
DAMES & MOORE

TRIAL PIT NUMBER: MSTP152
GROUND ELEVATION: -
DATE OF EXCAVATION: 04/6/98
WATER LEVEL: DRY
LOGGED BY: RC
APPROVED BY:

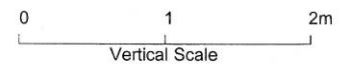
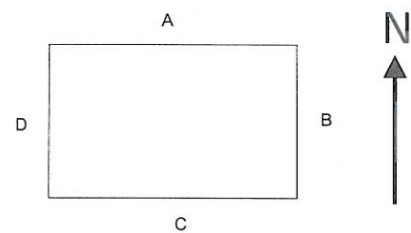
SIDE ELEVATIONS



SIDE C



PLAN



Key:

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

STRATA DESCRIPTIONS	COMMENTS	SAMPLES
1. Limestone CHIPPINGS 2. Loose, black sandy ashy fill, slightly gravelly including crushed concrete (MADE GROUND) at 0.5 mbgl becoming very sandy at 1.0 mbgl foundry slag and possible bitumen traces Trial pit terminated on refusal at 1.10m	a. at 1.0 mbgl, very slightly damp with strong hydrocarbon odour	<u>PID RESULTS</u> 0.5m - 9.1 ppm 1.0m - 11.7 ppm 1.1m - 20.6 ppm <u>SOIL SAMPLES</u> MSTP152-1.1m

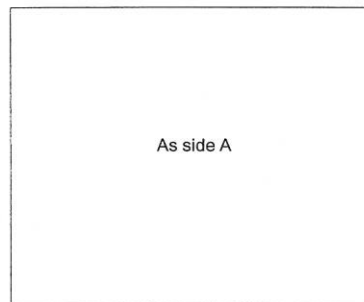
Job Title:	SOIL & GROUNDWATER INVESTIGATION	
Location:	LLANDARCY REFINERY	
Client:	BP LLANDARCY	
Job No:	39991-001-401	DRAFT
 DAMES & MOORE		

TRIAL PIT NUMBER: MSTP156
 GROUND ELEVATION: -
 DATE OF EXCAVATION: 04/6/98
 WATER LEVEL: DRY
 LOGGED BY: RC
 APPROVED BY:

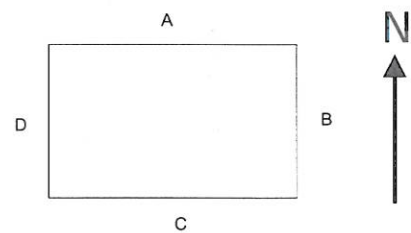
SIDE ELEVATIONS

SIDE D	SIDE A	SIDE B
0.15m	1	
	2	
0.7m	*	

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. Brown EARTH, rootlets 2. Hard, compact gravelly fill including concrete (MADE GROUND) Trial pit terminated on refusal at 0.7 mbgl	a. Very hard below 0.2 mbgl b. Possible hydrocarbon staining and odour	<u>PID RESULTS</u> 0.5m - 7.4 ppm 0.7m - 8.9 ppm <u>SOIL SAMPLES</u> MSTP156-0.7m

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: WSMW020		PAGE 1 of 1	
	NUMBER	TYPE					DRILLING DATES: 05/12/2003		DRILLING METHODS : Beretta - Various	
							DRILLER : APEX - Rhymal		BOREHOLE DIAMETER : 100-115mm	
							LOGGED BY : SS		SCREEN TYPE & DIAM: 50mm HDPE	
							CHECKED BY : SG		SCREEN SLOT SIZE: 1mm	
	SPT - 1.0m refusal		*9.0		0.0	Concrete hardstanding (MADE GROUND)	ODEX used to break concrete	3,3		
					0.5					
					1.0	Loose, flaggy cobbles. Poor returns.	Black staining, heavy hydrocarbon odour. Wet.			
					1.5					
					2.0		ODEX used to 2.4m, unable to percussively sample			
				2.5	Strong, grey fine to medium grained weathered SANDSTONE.	Coring used to verify bedrock				
					3.0					
					3.5					
					4.0			1,0		
					4.5		Slight hydrocarbon odour with no staining	1,0		
					5.0	Borehole terminated at 5.0m.				

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: 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: WSMW021		PAGE 1 of 2	
	NUMBER	TYPE					DRILLING DATES: 05/12/2003		DRILLING METHODS : Beretta - Various	
							DRILLER : APEX - Rhymal		BOREHOLE DIAMETER : 100-115mm	
							LOGGED BY : SS		SCREEN TYPE & DIAM: 50mm HDPE	
							CHECKED BY : SG		SCREEN SLOT SIZE: 1mm	
					0.0		DESCRIPTION		COMMENTS	S,V
					0.5		Concrete hardstanding. (MADE GROUND)		Dry. NVO	0,0
					1.0		Loose, sandy material. See Trial Pit log for details			
					1.5		Very strong, grey, fine-medium grained fractured SANDSTONE with rough planar sub-horizontal fractures and rare, rough planar sub-vertical fractures.			
					2.0				Slight hydrocarbon odour, possible black staining in fractures	1,2
									NVO	0,0
									Wet	0,0
									Wet	0,0
		</								

BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: WSMW021		PAGE 2 of 2		
	NUMBER	TYPE					DRILLING DATES: 05/12/2003		DRILLING METHODS: Beretta - Various		
							DRILLER: APEX - Rhymal		BOREHOLE DIAMETER: 100-115mm		
							LOGGED BY: SS		SCREEN TYPE & DIAM: 50mm HDPE		
							CHECKED BY: SG		SCREEN SLOT SIZE: 1mm		
					5.5	Borehole terminated at 5.5m.			COMMENTS	S,V	
					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: SS</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: SS	Ref:	Scale: As scale	Job No: 39991-044-785	Drg. Size: A4	BOREHOLE LOG
App'd:	Date: December 2003									
Drawn: SS	Ref:									
Scale: As scale	Job No: 39991-044-785									
Drg. Size: A4	BOREHOLE LOG									

Shallow Borehole Construction	Deep Borehole Construction	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: WSMW023		PAGE 1 of 1	
		NUMBER	TYPE					DRILLING DATES: 04/12/2003	DRILLING METHODS: Beretta - Various	DRILLER: APEX - Rhymal	BOREHOLE DIAMETER: 100-115mm
		WSMW023 - 0.8-0.9m (S,L)		*5.0		0.0		DESCRIPTION		COMMENTS	S,V
								Concrete hardstanding. (MADE GROUND)			
						0.5		Loose, brown/orange-brown, fine to medium SAND.			
								Becoming grey brown in colour.		Damp.	3,3
						1.0		Becoming dark grey in colour.			
				*789				Moderately weak, grey, fine grained SANDSTONE.		Wet, heavy hydrocarbon odour.	4,4
						1.5					
						2.0				Wet from 2.0m.	
						2.5				Saturated to base.	
						3.0					
						3.5					
						4.0					
						4.5					
						5.0					
						Borehole terminated at 5.0m					

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
		Org. Size: A4	BOREHOLE LOG

BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: WSMW051		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	
					0.0	Reinforced concrete. (MADE GROUND)			S,V	0,0
					0.5	Medium dense, grey to brown SAND with subangular to angular, sandstone gravel.		Slight, light hydrocarbon odour.		
					1.0	Grey, fine to medium grained SANDSTONE.		NVO.		0,0
					1.5					1,0
					2.0	Becoming brown to grey in colour.		Slight, light hydrocarbon odour and sheen on wet arisings.		1,2
				2.5						
					3.0	Becoming grey in colour.		Slight, light hydrocarbon odour with occasional black staining.		1,3
					3.5					
					4.0					1,3
					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: SS	Ref:
		Scale: As scale	Job No: 39991-044-785
		Drg. Size: A4	BOREHOLE LOG

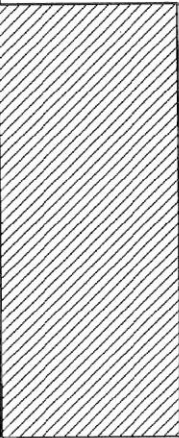
BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: WSMW051		PAGE 2 of 2	
	NUMBER	TYPE					DRILLING DATES: 27/11/2003		DRILLING METHODS: Rotary	
							DRILLER: APEX - RB		BOREHOLE DIAMETER: 100-115mm	
							LOGGED BY: JW		SCREEN TYPE & DIAM: 50mm HDPE	
							CHECKED BY: SG		SCREEN SLOT SIZE: 1mm	
					5.5				COMMENTS Strong odour, light hydrocarbon odour with occasional black staining.	S,V 2,3
					6.0		Borehole terminated at 6.0m			
					6.5					
					7.0					
					7.5					
					8.0					
					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: BPWDA 	
		App'd: _____ Drawn: SS Scale: As scale Drg. Size: A4	Date: February 2004 Ref: _____ Job No: 39991-044-785 BOREHOLE LOG

BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: MSMW146		PAGE 1 of 1	
	NUMBER	TYPE					START DATE: 10/3/99		DRILLING METHOD: ROTARY AIR FLUSH	
							FINISH DATE: 10/3/99		BOREHOLE DIAMETER: 165 mm	
							DRILLER: R1		SCREEN TYPE & DIAMETER: 50 mm ID UPVC	
				LOGGED BY: DB APPR'D BY:		SCREEN SLOT SIZE: 0.5 mm				
							DESCRIPTION		COMMENTS	
							Dark brown silty, sandy GRAVEL with brick fragments and rubble (MADE GROUND)		Slight odour	
							ROCKHEAD - Hard dark grey crystalline SANDSTONE (BEDROCK)		Strong hydrocarbon odour Water strike at	
							Borehole terminated at 5.0 mbgl			
LOCATION / NOTES: 1. All measurements in m below ground level (mbgl) 2. ODEX to 5m							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	

BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: MSMW148		PAGE 1 of 2	
	NUMBER	TYPE					START DATE: 10/3/99		DRILLING METHOD: ROTARY AIR FLUSH	
							FINISH DATE: 10/3/99		BOREHOLE DIAMETER: 115 mm	
						DRILLER: R1		SCREEN TYPE & DIAMETER: 50 mm ID UPVC		
						LOGGED BY: DB APPR'D BY:		SCREEN SLOT SIZE: 1 mm		
						DESCRIPTION	COMMENTS			
						CONCRETE (MADE GROUND)	No odour	0		
						Loose dark brown silty GRAVEL				
						ROCKHEAD - Hard light grey crystalline SANDSTONE (BEDROCK)				
							Slight hydrocarbon odour from 2m	2.0		
							Damp from 3.8m	4.0		
							Strong hydrocarbon odour at 3.8m	4.0		
								5.0		
								6.0		
						becoming dark grey from 5.5m		6.0		
								7.0		
								8.0		
								9.0		
								10		

LOCATION / NOTES: 1. All measurements in m below ground level (mbgl) 2. Well bore left overnight and installed on the 11/3/99 3. Free product noted at installation		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			
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BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: MSMW148		PAGE 2 of 2	
	NUMBER	TYPE					START DATE: 10/3/99		DRILLING METHOD: ROTARY AIR FLUSH	
							FINISH DATE: 10/3/99		BOREHOLE DIAMETER: 115 mm	
							DRILLER: R1		SCREEN TYPE & DIAMETER: 50 mm ID UPVC	
LOGGED BY: DB		APPR'D BY:		SCREEN SLOT SIZE: 1 mm						
						DESCRIPTION		COMMENTS		
						10 Hard light grey crystalline SANDSTONE (BEDROCK)		Strong hydrocarbon odour in water returns		10
						11				11
						12				12
						13 becoming dark grey		Damp		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 GROUP
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BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: MSMW54		PAGE 1 of 1				
	NUMBER	TYPE					START DATE: 11/06/98		DRILLING METHOD: Rotary				
							FINISH DATE: 11/06/98		BOREHOLE DIAMETER: 150/115mm				
						DRILLER: R3		SCREEN TYPE & DIAMETER: UPVC 50mm					
						LOGGED BY: RC		APPRD BY:		SCREEN SLOT SIZE: 0.5mm			
						DESCRIPTION		COMMENTS					
						0		Loose dark brown sandy GRAVEL with compacted gravel at surface (MADE GROUND)		Some black staining - slight hydrocarbon odour		0	
						1.0		some clayey lenses at 0.6m		Very damp at 1.8-2m		1.0	
						2.0		fragments of coarse grained grey sandstone at 1.5m		No odour or staining		2.0	
						3.0		ROCKHEAD: Hard grey-light brown medium to coarse grained SANDSTONE (BEDROCK)		Water strike at 3.2m		3.0	
						4.0				good drilling - quick advance from 3.5-6m		4.0	
						5.0				5.0			
						6.0		Borehole terminated at 6.0 mbgl		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 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	