



Photograph 11: Palisade fencing restricting access to the NSR.



Photograph 12: Former metal foot bridge spanning a spillway where the water originates from the NSR API separators.



Photograph 13: Exceedance flow sluice gate.



Photograph 14: Photo showing the north site fields sloping to the NSR in the north with the mature oak woodland at the base of the slope.



Photograph 15: Disturbed ground from wider site investigation works. Vegetation comprising very dense gauze down slope to the southern edge of the NSR.



Photograph 16: Historical evidence of ochreous surface breakouts.



Photograph 17: Operational concrete drainage channel taking water from NSR API separators.



Photograph 18: Operational concrete drainage channel taking water from NSR API separators.



Photograph 19: Ochreous discharge into the concrete drainage channel.



Photograph 20: SSR API separator ancillary building and machinery.



Photograph 21: Ochreous discharge into the concrete drainage channel from a thick concrete structure. Photo viewing towards the south west.



Photograph 22: Concrete structure adjacent to drainage channel.



Photograph 23: Base of the former biological filter which contains significant amounts of plastic objects used within the filtering process.



Photograph 24: Concrete channel looking towards the NSR API separators.

Appendix B – Historical Logs

BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: MSMW79s&d		PAGE 1 of 1		
	NUMBER	TYPE					START DATE: 12/06/98	DRILLING METHOD: Cable Percussion/Rotary			
							FINISH DATE: 12/06/98	BOREHOLE DIAMETER: 200/115mm			
							DRILLER: CP3/R1	SCREEN TYPE & DIAMETER: UPVC 50mm			
							LOGGED BY: ED	APPR'D BY:	SCREEN SLOT SIZE: 0.5mm		
							DESCRIPTION		COMMENTS		
						0	Soft sandy brown CLAY with rootlets and occasional gravel (MADE GROUND)		Black staining and mild hydrocarbon odour		
						1.0	Soft dark grey CLAY with gravel and sand (MADE GROUND)		Black staining - moderate hydrocarbon odour		
						2.0	Stiff grey CLAY with rubble (MADE GROUND)		Black staining - Moderate hydrocarbon odour		
						3.0	Rotary drilling from 3.1 mbgl				
						4.0	ROCKHEAD: Hard blue-grey fine to medium grained SANDSTONE (BEDROCK)				
						5.0					
						6.0					
						7.0					
						8.0					
						9.0					
						10	Borehole terminated at 10 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	
2. Cable Percussion to 3.1 mbgl, Rotary to 10 mbgl				App'd 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: MSMW81		PAGE 1 of 2		
	NUMBER	TYPE					START DATE: 26/06/98		DRILLING METHOD: Cable Percussion/Rotary		
							FINISH DATE: 29/06/98		BOREHOLE DIAMETER: 200/165/115mm		
						DRILLER: CP3/R2		SCREEN TYPE & DIAMETER: UPVC 50mm			
						LOGGED BY: ED		APPR'D BY:		SCREEN SLOT SIZE: 0.5mm	
						DESCRIPTION		COMMENTS			
						0	Loose brown sandy silty CLAY with rootlets (TOPSOIL)	No odour or staining	0		
						0.5	Firm silty brown CLAY with medium angular sandstone GRAVEL		0.5		
						1.0	Stiff silty brown CLAY with angular sandstone COBBLES with boulders		1.0		
						2.0	Rotary drilling from 2.1 mbgl		2.0		
						3.0	Firm to stiff light brown very gravelly CLAY with cobbles (BOULDER CLAY)		3.0		
						4.0	ROCKHEAD: Hard blue-grey medium grained SANDSTONE (BEDROCK)	No water encountered above bedrock	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. Cable Percussion to 2.1 mbgl, Rotary to 15.5 mbgl with odex to 4 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 App'd DRAFT Ref. MC/CR/BR5 Date JUL 98 Job No. 39991-001-401	 DAMES & MOORE GROUP
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BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: MSMW81		PAGE 2 of 2		
	NUMBER	TYPE					START DATE: 26/06/98	DRILLING METHOD: Cable Percussion/Rotary	FINISH DATE: 29/06/98	BOREHOLE DIAMETER: 200/165/115mm	DRILLER: CP3/R2
							DESCRIPTION	COMMENTS			
						10	Hard blue-grey medium grained SANDSTONE		10		
						11			11		
						12			12		
						13			13		
						14			14		
						15			15		
						16	Borehole terminated at 15.5 mbgl		16		
						17			17		
						18			18		
						19			19		
						20			20		

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	
2. Cable Percussion to 2.1 mbgl, Rotary to 15.5 mbgl with odex to 4 mbgl				 DAMES & MOORE	

BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: MSMW87d		PAGE 1 of 1	
	NUMBER	TYPE					START DATE: 26/06/98		DRILLING METHOD: Odex/Rotary	
							FINISH DATE: 26/06/98		BOREHOLE DIAMETER: 165/115mm	
							DRILLER: R1		SCREEN TYPE & DIAMETER: 50mm UPVC	
							LOGGED BY: MC APPR'D BY:		SCREEN SLOT SIZE: 0.5mm	
						DESCRIPTION	COMMENTS			
						Brown sandy CLAY with light brown silty lenses and sandstone gravel	No hydrocarbon odour or staining	0		
						Soft sandy grey CLAY with fine sandstone gravel	Mild hydrocarbon odour with some black staining	2.0		
						Coarse sandstone GRAVEL with cobbles		3.0		
						ROCKHEAD : Light grey to grey-blue medium grained SANDSTONE (BEDROCK) with occasional darker, silty bands	No hydrocarbon odour or staining	4.0		
							Water strike at 7.0 mbgl	7.0		
								10		
LOCATION / NOTES:						LEGEND		BOREHOLE LOG		
1. All measurements in m below ground level (mbgl)						☒ Disturbed Sample		Job Title SOIL & GROUNDWATER INVESTIGATION		
2. Odex to 4.2 mbgl, Rotary to 10 mbgl						■ Undisturbed Sample		Location LLANDARCY REFINERY		
						* Headspace Analysis		Client BP LLANDARCY		
						† Down Borehole Analysis		App'd DRAFT		
						⏴ Groundwater Table		Ref. MC/CR/BRS		
						⏴ Perched Water Table		Date JUL 98		
								Job No. 39991-001-401		
								DAMES & MOORE		

BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: MSMW87s		PAGE 1 of 1		
	NUMBER	TYPE					START DATE: 19/06/98		DRILLING METHOD: Cable Percussion		
							FINISH DATE: 19/06/98		BOREHOLE DIAMETER: 200mm		
						DRILLER: CP3		SCREEN TYPE & DIAMETER: 50mm UPVC			
						LOGGED BY: ED		APPR'D BY:		SCREEN SLOT SIZE: 0.5mm	
							DESCRIPTION	COMMENTS			
							Brown sandy CLAY with light brown silty lenses and sandstone gravel	No hydrocarbon odour or staining	0		
							Soft sandy grey CLAY with fine sandstone gravel	Mild hydrocarbon odour with some black staining	1.0		
							Coarse sandstone GRAVEL with cobbles		2.0		
							Borehole terminated at 2.8 mbgl on refusal		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 App'd DRAFT Ref. MC/CR/BRS Date JUL 98 Job No. 39991-001-401
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DAMES & MOORE
 GROUP

BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: MSMW88d		PAGE 1 of 1		
	NUMBER	TYPE					START DATE: 26/06/98		DRILLING METHOD: Odex/Rotary		
							FINISH DATE: 26/06/98		BOREHOLE DIAMETER: 165/115mm		
							DRILLER: R1		SCREEN TYPE & DIAMETER: 50mm UPVC		
						LOGGED BY: MC		APPR'D BY:		SCREEN SLOT SIZE: 0.5mm	
							DESCRIPTION	COMMENTS			
						0	Loose dark brown sandy CLAY with bricks (MADE GROUND)				
						0.5	Loose dark brown sandy CLAY with lenses of stiff grey clay (MADE GROUND)				
						1.0	Stiff grey silty CLAY intercalated with thin bands of light brown fine sand				
						2.0	Soft light brown-grey CLAY with sub-angular to sub-rounded medium sandstone gravel with some iron staining	Dry - no hydrocarbon odour			
						3.0	Stiff to soft light brown silty CLAY with occasional sub-angular to sub-rounded fine to medium sandstone gravel				
						4.0	Soft light brown CLAY with sandstone gravel				
						5.0		Moist			
						6.0					
						7.0	Dark grey-black coarse sandy sandstone GRAVEL (WEATHERED BEDROCK)				
						8.0	ROCKHEAD: Grey medium grained SANDSTONE (BEDROCK)				
8.5	becoming darker and slightly silty at 8m with coal seam from 8.2-8.4m										
						9.5	Borehole terminated at 9.5 mbgl				

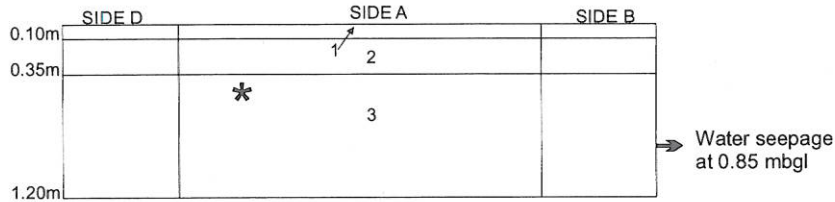
LOCATION / NOTES:		LEGEND		BOREHOLE LOG	
1. All measurements in m below ground level (mbgl)		Disturbed Sample Undisturbed Sample Headspace Analysis Down Borehole Analysis Groundwater Table Perched Water Table		Job Title SOIL & GROUNDWATER INVESTIGATION Location LLANDARCY REFINERY Client BP LLANDARCY App'd DRAFT Ref. MC/CR/BRS Date JUL 98 Job No. 39991-001-401	
2. Location moved 0.5 m due to presence of pipe and cables				DAMES & MOORE GROUP	
3. Odex to 7.2 mbgl, Rotary to 9.5 mbgl					

BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: MSMW88s		PAGE 1 of 1	
	NUMBER	TYPE					START DATE: 19/06/98		DRILLING METHOD: Cable Percussion	
							FINISH DATE: 19/06/98		BOREHOLE DIAMETER: 200mm	
						DRILLER: CP3		SCREEN TYPE & DIAMETER: 50mm UPVC		
						LOGGED BY: ED		APPR'D BY:		SCREEN SLOT SIZE: 0.5mm
						DESCRIPTION	COMMENTS			
						0	Loose dark brown sandy CLAY with bricks (MADE GROUND)	No hydrocarbon odour or staining	0	
						1.0	Loose dark brown sandy CLAY with lenses of stiff grey clay (MADE GROUND)		1.0	
						1.5	Stiff grey silty CLAY intercalated with thin bands of light brown fine sand	Mild hydrocarbon odour with some black staining	2.0	
						2.0			3.0	
						3.0			4.0	
						3.5	Soft light brown-grey CLAY with sub-angular to sub-rounded medium sandstone gravel with some iron staining			
						3.65	Stiff to soft light brown silty CLAY with occasional sub-angular to sub-rounded fine to medium sandstone gravel			
							Soft light brown CLAY with sandstone gravel			
							Borehole terminated at 3.65 mbgl on refusal			
						5.0			5.0	
						6.0			6.0	
						7.0			7.0	
						8.0			8.0	
						9.0			9.0	
						10			10	

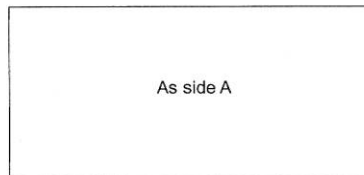
LOCATION / NOTES:		LEGEND		BOREHOLE LOG	
1. All measurements in m below ground level (mbgl)		Disturbed Sample		Job Title SOIL & GROUNDWATER INVESTIGATION	
2. Strong background hydrocarbon odour emanating from east bay lagoon		Undisturbed Sample		Location LLANDARCY REFINERY	
3. Surface water from leaking hydrant made water level identification difficult prior to completion		* Headspace Analysis		Client BP LLANDARCY	
		† Down Borehole Analysis		App'd DRAFT	
		Groundwater Table		Ref. MC/CR/BRS	
		Perched Water Table		Date JUL 98	
				Job No. 39991-001-401	
				DAMES & MOORE	

TRIAL PIT NUMBER: MSTP232
 GROUND ELEVATION: -
 DATE OF EXCAVATION: 9/6/98
 WATER LEVEL: 0.85 mbgl
 LOGGED BY: RF
 APPROVED BY:

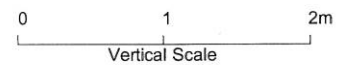
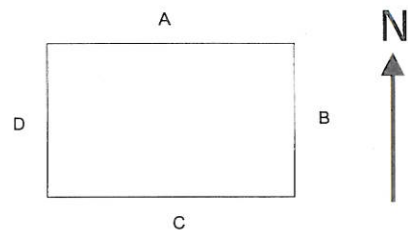
SIDE ELEVATIONS



SIDE C



PLAN



Key:

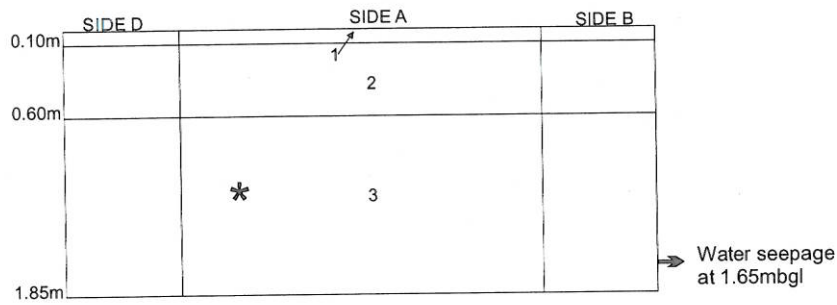
- * Soil Sample location
- WA Water Sample
- HS Headspace Analysis
- ⇒ Water Ingress

STRATA DESCRIPTIONS	COMMENTS	SAMPLES
1. Dark brown silty sandy CLAY (TOPSOIL) with rootlets, well established vegetation and tree roots at surface 2. Dark brown plastic CLAY 3. Black plastic CLAY Trial pit terminated at 1.20 mbgl	a. Oily to touch b. No oily film on water surface	<u>PID RESULTS</u> 0.5m - 188 ppm 1.0m - 169 ppm <u>SOIL SAMPLES</u>

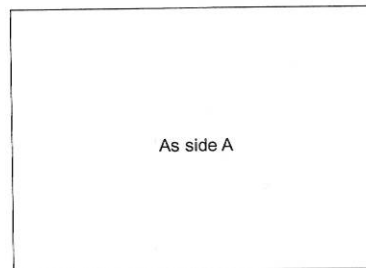
Job Title:	SOIL & GROUNDWATER INVESTIGATION	
Location:	LLANDARCY REFINERY	
Client:	BP LLANDARCY	
Job No:	39991-001-401	DRAFT
 DAMES & MOORE		

TRIAL PIT NUMBER: MSTP234
GROUND ELEVATION: -
DATE OF EXCAVATION: 9/6/98
WATER LEVEL: 1.65 mbgl
LOGGED BY: RF
APPROVED BY:

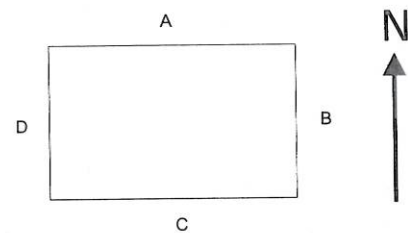
SIDE ELEVATIONS



SIDE C



PLAN



0 1 2m
Vertical Scale

Key:

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

STRATA DESCRIPTIONS	COMMENTS	SAMPLES
1. Brown silty sandy CLAY with rootlets (TOPSOIL) 2. Firm brown CLAY 3. Stiff bright orange-brown CLAY Trial pit terminated at 1.85 mbgl	a. No hydrocarbon odour or staining evident	<u>PID RESULTS</u> 0.5m - 0 ppm 1.0m - 0 ppm 1.5m - 0 ppm <u>SOIL SAMPLES</u> MSTP234-1.15m

Job Title: SOIL & GROUNDWATER INVESTIGATION

Location: LLANDARCY REFINERY

Client: BP LLANDARCY

Job No: 39991-001-401

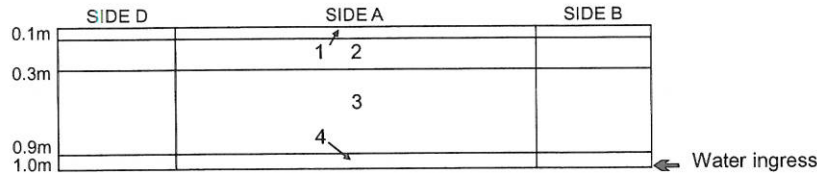
DRAFT



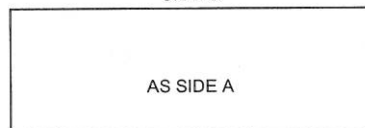
DAMES & MOORE

TRIAL PIT NUMBER: MSTP238
GROUND ELEVATION: -
DATE OF EXCAVATION: 22/02/99
WATER LEVEL: 1.0 m
LOGGED BY: DB
APPROVED BY:

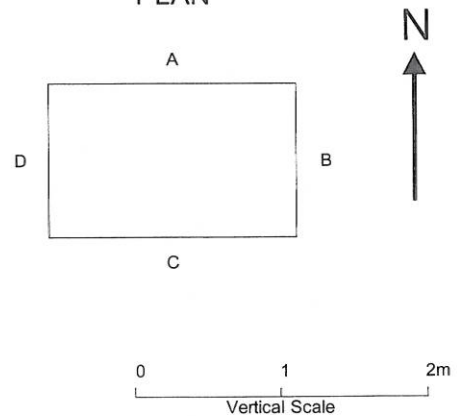
SIDE ELEVATIONS



SIDE C



PLAN

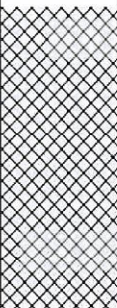


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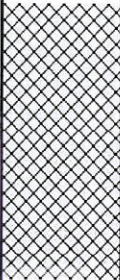
- BGL Below Ground Level
- Sample location
- SO Soil Sample
- WA Water Sample
- * Headspace Analysis (ND = Not Detected)
- Water Ingress

STRATA DESCRIPTIONS	COMMENTS	SAMPLES
1. Loose red brown slightly silty SAND with rootlets.	1 No odour	<u>PID Results</u> 0.2m - 0 ppm
2. Medium dense grey slightly silty SAND with frequent gravels to sub-angular boulders	2 Slight odour Excavation becomes difficult	0.5m - 0 ppm 1.0m - 133 ppm
3. Loose angular light grey BOULDERS, with some gravel).	3 No odour	<u>Soil Samples</u>
4. Loose angular, grey GRAVEL with some clay.	4 Strong H.C. odour.	MSTP238 - 1.0m
Trial Pit terminated at 1.0 mbgl on refusal		

Job Title: SOIL AND GROUNDWATER INVESTIGATION	
Location: BP LLANDARCY REFINERY	
Client: BP LLANDARCY LTD	
Job No: 39991-004-401	DRAFT
 DAMES & MOORE	

BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: NSMW011 (PIT)		PAGE 1 of 1	
	NUMBER	TYPE					DRILLING DATES: 29/10/03		DRILLING METHODS: JCB	
							DRILLER : JCB		BOREHOLE DIAMETER : -	
							LOGGED BY : CM		SCREEN TYPE & DIAM: -	
							CHECKED BY : SG		SCREEN SLOT SIZE: -	
						DESCRIPTION	COMMENTS	S,V		
	NSMW011 - 0.5m (P)		*5.7		0.0	Loose dark brown gravelly silty fine sand with occasional bricks. Gravel is angular to subrounded fine to coarse of sandstone. (MADE GROUND)	Damp			
					0.5	Loose brown silty fine SAND with frequent subangular to subrounded fine to coarse sandstone gravel and occasional cobbles.	Damp			
					1.0	becoming light brown				
	NSMW011 - 1.2M (S,L)		*294		1.0	Loose grey brown silty fine SAND with frequent subangular to subrounded fine to coarse sandstone gravel and occasional cobbles.	Damp			
					1.5	Trial pit terminated at 1.2m 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 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: NSMW011		PAGE 1 of 1	
	NUMBER	TYPE					DRILLING DATES: 21/11/2003		DRILLING METHODS : Percussive	
							DRILLER : Soil Mechanics		BOREHOLE DIAMETER : 100mm	
							LOGGED BY : SS		SCREEN TYPE & DIAM: 50mm HDPE	
							CHECKED BY : SG		SCREEN SLOT SIZE: 1mm	
			*1.4		0.0		DESCRIPTION		COMMENTS	S,V
			*73.0		0.5		Grass over: Soft, golden brown, slightly sandy SILT with trace subrounded gravel and frequent rootlets.		NVO. Damp-wet	0,0
					1.0		Becoming firm from 0.7m		Patchy grey staining, damp with slight hydrocarbon odour	1,2
					1.1		Borehole 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 				App'd: _____ Date: December 2003 Drawn: SS _____ Ref: _____ Scale: As scale _____ Job No: 39991-044-785 Drg. Size: A4 _____ BOREHOLE LOG	
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BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: NSMW011a		PAGE 1 of 2	
	NUMBER	TYPE					DRILLING DATES: 24/11/2003		DRILLING METHODS: Beretta - Various	
							DRILLER: APEX		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
					0.0		Loose, dark brown, sandy silt with occasional brick fragments. (MADE GROUND)	Grass at surface. Percussive drilling		
					0.5		Medium dense, brown, sandy SILT with occasional gravels and rootlets.	Damp. NVO		
					1.0		with grey and orange mottling from 0.8m	Grey mottling - natural. Air hammer used to advance hole		
					1.5		Grey, fine to medium SANDSTONE.	Dry		
					2.0			Dry. Slight hydrocarbon odour in air		
					2.5			Dry. NVO		
					3.0			Dry. NVO		
					3.5			Wet at 3.5m		
					4.0			Dry. NVO		
				4.5		Dry. NVO				
				5.0						

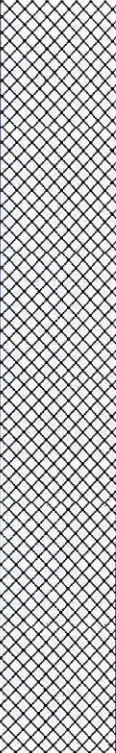
LOCATION / NOTES:	LEGEND	BOREHOLE LOG	
NVO = No visual or olfactory evidence of contamination S,V = Contamination Observations S - Odour score (0-5) V - Visual score (0-5)	Disturbed Sample Undisturbed Sample Headspace Analysis Down Borehole Analysis Groundwater Table Perched Water Table	Job Title: BP Llandarcy Whole Site Investigation Location: BP Llandarcy Refinery Client: BP/WDA	
			App'd: _____ Date: December 2003 Drawn: 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: NSMW011a		PAGE 2 of 2	
	NUMBER	TYPE					DRILLING DATES: 24/11/2003		DRILLING METHODS : Beretta - Various	
							DRILLER : APEX		BOREHOLE DIAMETER : 100-115mm	
							LOGGED BY : SS		SCREEN TYPE & DIAM: 50mm HDPE	
							CHECKED BY : SG		SCREEN SLOT SIZE: 1mm	
					5.5				COMMENTS	S.V
									Dry. NVO	
									Wet at 6.5m	
					7.5					
					8.0					
					8.5					
					9.0					
					9.5					
					10.0					
Borehole terminated at 10.0m										

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: December 2003
			[~] Groundwater Table	Drawn : SS	Ref:
			[≡] Perched Water Table	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: NSTP003		PAGE 1 of 1	
	NUMBER	TYPE					DRILLING DATES: 29/10/03		DRILLING METHODS: JCB	
							DRILLER: JCB		BOREHOLE DIAMETER: -	
							LOGGED BY: CM		SCREEN TYPE & DIAM: -	
							CHECKED BY: SG		SCREEN SLOT SIZE: -	
						DESCRIPTION	COMMENTS	S,V		
	NSTP003 - 0.3m (P)		*570		0.0	Loose light brown fine to medium sand. (MADE GROUND)				
					0.5	Loose black ash and gravel with white staining and frequent rootlets. (MADE GROUND)	Dry-damp	2,2		
			*750		1.0	Loose light brown gravelly silty fine SAND. Gravel is subangular to rounded fine to coarse of sandstone. Becoming grey brown with occasional cobbles from 0.6m. With frequent cobbles and boulders from 1.0m	Dry-damp	3,2		
	NSTP003 - 1.5m (S,L)		*735		1.5			2,2		
						Trial pit terminated at 1.6m 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: BP/WDA 	
		App'd:	Date: January 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: NSTP020		PAGE 1 of 1	
	NUMBER	TYPE					DRILLING DATES: 29/10/03		DRILLING METHODS: JCB	
							DRILLER: JCB		BOREHOLE DIAMETER: -	
							LOGGED BY: CM		SCREEN TYPE & DIAM: -	
							CHECKED BY: SG		SCREEN SLOT SIZE: -	
	NSTP020 - 1.7m (S,L)		*14.4		0.0		DESCRIPTION		COMMENTS	S,V
					0.0		Concrete hardstanding (MADE GROUND)		0,0	
					0.5		Loose light brown silty fine SAND with frequent subangular to rounded fine to coarse sandstone gravel and occasional cobbles.	Dry	0,0	
					1.0		Loose grey silty fine SAND with frequent subangular to rounded fine to coarse sandstone gravel and cobbles.		2,2	
					1.5		With frequent cobbles and boulders from 1.6m.		2,2	
			*332		2.0					
			*369		2.5					
			*340		3.0					
			*457		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: CM Ref: _____ Scale: As scale Job No: 399991-044-785 Drg. Size: A4 BOREHOLE LOG				

BOREHOLE CONSTRUCTION	SAMPLE		SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	BOREHOLE NUMBER: RFSW035		PAGE 1 of 1	
	NUMBER	TYPE					DRILLING DATES: 26/10/2000		DRILLING METHODS : Window Sampling	
							DRILLER : Geotechnical		BOREHOLE DIAMETER : 78mm	
							LOGGED BY : JG		SCREEN TYPE & DIAM: 50mm HDPE	
							CHECKED BY :		SCREEN SLOT SIZE: 1mm	
					0.0		DESCRIPTION	COMMENTS	0.0	
			*88.3		0.5	CLAY Soft to firm, grey CLAY with some fine sand.	NVO		0.5	
			*73.2		1.0		Moist. Hydrocarbon odour		1.0	
					1.5	SILTY SAND Dense, greyy fine silty SAND with some gravel.	Wet. NVO		1.5	
					2.0	End of Borehole			2.0	
					2.5				2.5	
					3.0				3.0	
					3.5				3.5	
					4.0				4.0	
					4.5				4.5	
					5.0				5.0	

LOCATION / NOTES: NVO = No visual or olfactory evidence	LEGEND Disturbed Sample Undisturbed Sample Headspace Analysis Down Borehole Analysis Groundwater Table Perched Water Table	BOREHOLE LOG	
		Job Title: Sentinel Wells Location: BP Llandarcy Refinery Client: BP Oil UK	
			App'd: _____ Date: 17/09/2002 Drawn : SS Ref: _____ Scale: As scale Job No: 39991-016 Drg. Size: A4 BOREHOLE LOG

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

LOCATION / NOTES:	LEGEND	BOREHOLE LOG									
NVO = No visual or olfactory evidence	Disturbed Sample Undisturbed Sample Headspace Analysis Down Borehole Analysis Groundwater Table Perched Water Table	Job Title: Sentinel Wells Location: BP Llandarcy Refinery Client: BP Oil UK <table border="1"> <tr> <td>App'd:</td> <td>Date: Sept 2002</td> </tr> <tr> <td>Drawn: AR</td> <td>Ref:</td> </tr> <tr> <td>Scale:</td> <td>Job No: 39991-016</td> </tr> <tr> <td>Drg. Size:</td> <td>BOREHOLE LOG</td> </tr> </table>		App'd:	Date: Sept 2002	Drawn: AR	Ref:	Scale:	Job No: 39991-016	Drg. Size:	BOREHOLE LOG
App'd:	Date: Sept 2002										
Drawn: AR	Ref:										
Scale:	Job No: 39991-016										
Drg. Size:	BOREHOLE LOG										

Appendix C – Historical Laboratory Analysis

VOCS BTEX

Contamination analysis results

[illegible]

VOCS BTEX

Contamination analysis results

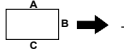
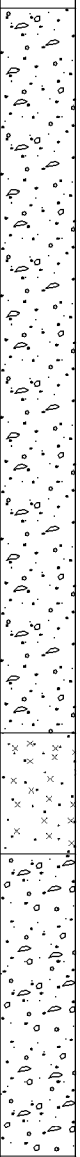
[illegible]

Asbestos

Location	Depth	Zone	Asbestos	Type
NSMW011	0.5	A	N	

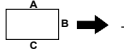
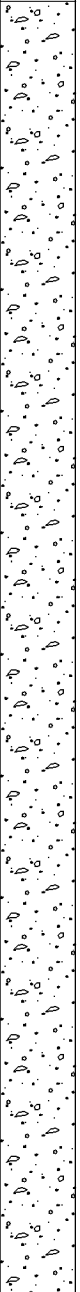
Appendix D – Recent Logs

Trial Pit Log

Logged AW Checked AP		Start 14/11/2014 End 14/11/2014	Equipment Methods and Remarks Komatsu PC210 Machine excavated trial pit from GL to 4.0m Terminated due to collapse.	Dimensions and Orientation Width 1.30 m Length 6.00 m 		Ground Level - Coordinates - Stational - Chainage -	
Samples and Tests			Strata				
Depth	Type	Notes	Description	Depth Level / Thickness	Legend	Borefill Instruments	
0.50	ES 1		1 (TOPSOIL) Brown silty, fine to coarse SAND with frequent roots. (VO = 0,0) 2 Brown slightly silty gravelly, fine to coarse SAND with occasional subangular to subrounded cobbles of sandstone. Gravel is subangular to subrounded, fine to coarse of sandstone. (VO = 0,0)	0.20			
1.50	ES 2			(2.40)			
2.50	ES 3		3 Grey sandy SILT. Sand is fine to medium. (VO = 0,0)	2.60 (0.40)			
3.50	ES 4		4 Brown slightly silty sandy subangular to subrounded, fine to coarse GRAVEL of sandstone with high cobble content. Cobbles are subangular to subrounded of sandstone. Sand is fine to coarse. (VO = 0,0)	3.00 (1.00)			
			EXPLORATORY HOLE ENDS AT 4.00 m	4.00			
Depth	Type	Notes					
Groundwater Entries No Structural or Strain Behaviour None observed (see Key Sheet)			Depth Related Remarks From to m		Stability Major collapse on side A. Shoring None Weather Dry, sunny		
Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.			Project Co-ordinator: Sitewide Trial Pitting Project Manager: Carried out for: Stodwen Developments Limited		Trial Pit SE Sheet 1 of 1		

Logged JC Checked AP	Start 29/10/2014 End 29/10/2014	Equipment Methods and Remarks Komatsu PC210 Machine excavated trial pit from GL to 0.60m Terminated due to services.	Dimensions and Orientation Width 1.90 m Length 2.90 m A B C ➔	Ground Level Coordinates National Grid Chainage		
Samples and Tests			Strata			
Depth	Type	Notes	Description	Depth Level/Thickness	Legend	Backfill Instruments
0.30	ES 1		1 (MADE GROUND) Orangish light brown silty locally silty gravelly, fine to coarse (predominantly fine to medium) SAND. Gravel is angular to subrounded, fine to coarse of sandstone. (VO = 0,0)	(0.60)		
			EXPLORATORY HOLE ENDS AT 0.60 m	0.60		
Depth	Type	Notes				
Groundwater Entries Soil Structure Soil Behaviour None observed (see Key Sheet)			Depth Related Remarks From to m	Stability Stable Shoring None Weather Cloudy		
Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:25 (c) ESG www.esg.co.uk 426.4820/01/2015 15:18:26 ESG			Project Coedarcy Sitewide Trial Pitting Project So Carried out for Stodwen Developments Limited	Trial Pit SE Sheet 1 of 1		

Trial Pit Log

Logged AW Checked AP		Start 14/11/2014 End 14/11/2014	Equipment Methods and Remarks Komatsu PC210 Machine excavated trial pit from GL to 4.7m Terminated on bedrock.	Dimensions and Orientation Width 1.30 m Length 6.00 m 	Ground Level - Coordinates - Stational Grid - Chainage -	
Samples and Tests			Strata			
Depth	Type	Notes	Description	Depth Level / Thickness	Legend	Backfill Instruments
0.50	ES 1		1 (TOPSOIL) Brown silty, fine to coarse SAND with frequent roots. (VO = 0,0)	(0.40)		
1.50	ES 2		2 Brown slightly silty gravelly, fine to coarse SAND with high cobble content. Gravel is subangular to subrounded, fine to coarse of sandstone. Cobbles are angular to subangular of sandstone. (VO = 0,0)	0.40		
2.50	ES 3			(4.30)		
3.50	ES 4					
			 4.70 m Bedrock EXPLORATORY HOLE ENDS AT 4.70 m	4.70		
Depth	Type	Notes				
Groundwater Entries No Structure Observed Strata Behaviour None observed (see Key Sheet)			Depth Related Remarks From to m	Stability Unstable Shoring None Weather Dry, sunny		
Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:25			Project Coedarcy Sitewide Trial Pitting Conducted by Carried out for Stodwen Developments Limited	Trial Pit SE Sheet 1 of 1		