

## Appendix 14.1 C: Site Information




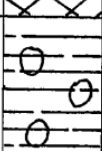


# Appendix C

## Site Information

### BOREHOLE RECORD

Contract No. 12553/89 Client M.T.M. LIMITED  
 Ground Level 5.750m Location TEESPORT DEVELOPMENT  
 BOREHOLE No. 1 Date MARCH 1990

Depth	Thick-ness	Legend	Description of Strata	Type of Sample	C kN/m <sup>2</sup>	M %	Ø	Density kg/m <sup>3</sup>	N
1.750	1.750		Made ground - slag, concrete, rubble and timber.	P 0.750					48
3.550	1.800		Made ground silty clay and sand	P 1.500					7
5.400	1.850		Made ground sand, ash, brick rubble and slag	P 4.500					8
6.500	1.100			P 5.000					9
			N.B. Pipe fitted for pollution monitoring.	U 6.000	161.8	24		2020	





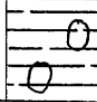
Water Struck at 0.800m Standing Water Level 2.900m

- Undisturbed Sample U
- Disturbed Sample O
- Penetration Test P
- Cohesion C
- Angle of Internal Friction Ø
- Moisture Content % M
- Standard Penetration Value N

**J. T. HYMAS (Site Investigation) LTD.**  
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### BOREHOLE RECORD

Contract No. 12553/89 Client M.T.M. LIMITED  
 Ground Level 4.600m Location TEESPORT DEVELOPMENT  
 BOREHOLE No. 2 Date MARCH 1990

Depth	Thick-ness	Legend	Description of Strata	Type of Sample	C kN/m <sup>2</sup>	M %	Ø	Density kg/m <sup>3</sup>	N
0.250	0.250		Made ground : soil						
1.150	0.900		Made ground : clay						
3.250	2.100		Made ground - silty clay and sand						
3.700	0.450		Made ground - sand shells and vegetation						
4.500	0.800		Red brown fissured boulder clay	U	4.000	107.3	23	2030	
			N.B. Pipe fitted for pollution monitoring.						




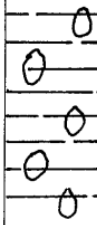
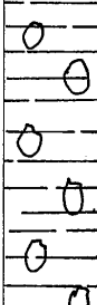

Water Struck at DRY Standing Water Level 1.480m

- Undisturbed Sample U
- Disturbed Sample O
- Penetration Test P
- Cohesion C
- Angle of Internal Friction Ø
- Moisture Content % M
- Standard Penetration Value N

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### BOREHOLE RECORD

Contract No. 12553/89 Client M.T.M. LIMITED  
 Ground Level 5.110m Location TEESPORT DEVELOPMENT  
 BOREHOLE No. 9 Date MARCH 1990

Depth	Thick-ness	Legend	Description of Strata	Type of Sample	C kN/m <sup>2</sup>	M %	ϕ	Density kg/m <sup>3</sup>	N
0.900	0.900		Made ground : slag, concrete clay and bricks	P 0.750					13
4.300	3.400		Made ground : silty sand and clay (wet)	P 1.50  U 3.000					0
5.200	0.900		Made ground : silty clay, sand, soil vegetation and shells (wet)	U 4.500					
7.100	1.900		Red brown fissured boulder clay	U 6.000	175.7	23		2020	
9.800	2.700		Brown fissured boulder clay	U 7.500  U 9.500	110.1	22		2080	
10.000	0.200		Laminated clay with sand partings						





Water Struck at 0.700m Standing Water Level 1.420m

- Undisturbed Sample U
- Disturbed Sample O
- Penetration Test P
- Cohesion C
- Angle of Internal Friction ϕ
- Moisture Content % M
- Standard Penetration Value N

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### BOREHOLE RECORD

Contract No. 12553/89 Client M.T.M. LIMITED  
 Ground Level 5.560m Location TEESPORT DEVELOPMENT  
 BOREHOLE No. 10 Date MARCH 1990

Depth	Thick-ness	Legend	Description of Strata	Type of Sample	C kN/m <sup>2</sup>	M %	Ø	Density kg/m <sup>3</sup>	N
0.950	0.950		Made ground : slag, concrete and brick fill	P 0.750					12
1.300	0.350		Made ground : silty sand and slag	P 1.500					2
3.500	2.200		Made ground : silty sandy clay	U 3.000	26.0	165		2050	
4.000	0.500		Made ground : silty slag, ash, soil and vegetation						
N.B Methane Gas struck below 3.500m vent pipe fitted.									
* Borehole abandoned									

Water Struck at 3.300m Standing Water Level 2.300m

Undisturbed Sample	U
Disturbed Sample	O
Penetration Test	P
Cohesion	C
Angle of Internal Friction	Ø
Moisture Content %	M
Standard Penetration Value	N

**J. T. HYMAS (Site Investigation) LTD.**  
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 CLEVELAND TS18 3NE  
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# Cementation soil mechanics department

BOREHOLE No.  
133

CONTRACT Teesport Refinery, Shell (U.K.) Ltd.

REPORT No. 4581/73/AJF

Client Shell U.K. Ltd.

Ground Level  
m. O. D

Site Address Teesport Refinery, Grangetown,  
Middlesbrough

Boring Commenced 19.10.73  
Boring Completed 22.10.73

Type and Dia. of Boring

Shell and Auger 200 mm. diameter





Water Strikes

Water Levels Recorded During Boring m

1. 1.80 (Medium)
- 2.
- 3.

Hole Depth	11.00	15.00				
Casing Depth	11.00	15.00				
Water Level	3.00*	4.10**				

Remarks \*Morning 22.10.73 \*\* End of boring  
Chiselling on slag fill for 2.5 hours from 0 to 1.8 m.  
Chiselling in marl for 6.5 hours from 11.0 to 15.0 m.

Description	Scale 20mm = 1m		Samples		Depth m	S.P.T. N
	Depth	Legend	Ref. No.	Type		
Made ground: slag, clay, ashes and gravel	1.80		7701	J	0.30	37
			7702	D	0.75	
			7703	J	1.30	
Black organic clayey silt	5.00		7704	D	2.25	9
			7705	J	2.50	
			7706	J	2.80	
			7707	D	3.75	
			7708	J	4.00	
			7709	J	4.30	
Brown-grey silty sand with some gravel and clay traces	7.75		7710	D	5.25	6
			7711	J	5.50	
			7712	J	5.80	
Stiff brown laminated silty clay			7713	D	6.75	20
			7714	J	7.00	
			7715	U	8.00- 8.45	
			7716	J	8.80	

SHEET No

**Cementation  
Ground Engineering**

soil mechanics department

BOREHOLE No.

133  
Construction Sheet No. 1

CONTRACT Teesport Refinery, Shell (U.K.) Ltd.

REPORT No  
4581/73/AJF

Description	Scale 20mm = 1 m		Samples		Depth m	S.P.T. N
	Depth	Log	Ref. No.	Type		
Stiff to very stiff red and grey marl with bands of rock marl becoming predominantly rock marl at 11.00 metres	9.00					
			7717	U	9.50 - 9.95	
			7718	J	10.50	
			7720	D	11.25	600+
			7721	J	11.80	
			7722	D	12.75	240+
			7723	J	13.50	
			7724	D	14.25	600+
			7725	J	14.50	
			7726	D	14.85	192+
			7727	J	15.00	
			7719	W	(1.80)	
		7728	W	(3.00)		

Code: U—Undisturbed Sample

D—Large Disturbed Sample

J—Jar Sample

W—Water Sample

SMD 622

SHEET No



# Cementation soil mechanics department

Ground Engineering

BOREHOLE No.

134

CONTRACT Teesport Refinery, Shell (U.K.) Ltd.

REPORT No. 4581/73/AJF

Client Shell U.K. Ltd.

Ground Level

m. O. D

Site Address Teesport Refinery, Grangetown, Middlesbrough

Boring Commenced 18.10.73  
Boring Completed 18.10.73

Type and Dia. of Boring

Shell and Auger 200 mm. diameter

Water Strikes

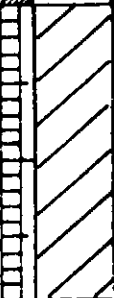
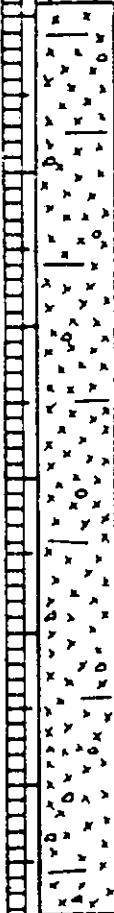
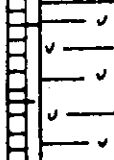
Water Levels Recorded During Boring m

1. 1.50 (Medium)
- 2.
- 3.

Hole Depth	15.00						
Casing Depth	15.00						
Water Level	7.00*						

Remarks \*End of boring

Chiselling in marl for 4 hours from 8.0 metres to 15.0 metres

Description	Scale 20mm=1m		Samples		Depth m	S.P.T.
	Depth	Legend	Ref. No.	Type		N
Made ground: ashes, slag, sand and gravel	1.90		7676	J	0.30	21
			7677	D	0.75	
			7678	J	1.30	
			7679	D	2.25	
			7680	J	2.50	
			7681	U	3.00- 3.45	
			7682	J	3.80	
			7683	U	4.50- 4.95	
			7684	J	5.30	
			7685	U	6.00- 6.45	
Very soft black organic clayey silt with occasional traces of gravel	7.85		7686	J	6.80	14
			7687	D	7.65	
			7688	U	8.00- 8.45	
			7689	J	8.80	
Stiff becoming hard red and grey marl with bands of rock marl becoming predominantly rock marl at 12.00 metres						45

Code: U—Undisturbed Sample

D—Large Disturbed Sample

J—Jar Sample

W—Water Sample

SMD 621

SHEET No

**Cementation  
Ground Engineering**

soil mechanics department

BOREHOLE No.

134

Continuation Sheet No. 1

CONTRACT Teesport Refinery, Shell (U.K.) Ltd.

REPORT No. 4581/73/AJP

Description	Scale 20mm 1m		Samples		Depth m	SPT N
	Depth	Length	Ref. No.	Type		
Stiff becoming hard red and grey marl with bands of rock marl becoming predominantly rock marl at 12.00 metres (Cont'd.)		✓	7690	U	9.50- 9.95	
		✓				
		✓	7691	J	10.30	
		✓				
		✓	7692	U	11.00-11.45	
		✓				
		✓	7693	J	11.80	
		✓	7694	D	12.25	76
		✓	7695	J	12.80	
		✓				
	✓	7696	D	13.75	144+	
	✓					
	✓	7697	J	14.80		
	15.00					
			7700	W	(1.50)	

Code: U—Undisturbed Sample

D—Large Disturbed Sample

J—Jar Sample

W—Water Sample

SMD 632

SHEET No.

# Cementation soil mechanics department

BOREHOLE No.  
135

CONTRACT Teesport Refinery, Shell (U.K.) Ltd.

REPORT No. 4581/73/AJP

Client Shell U.K. Ltd.

Ground Level  
m. O.D

Site Address Teesport Refinery, Grangetown,  
Middlesbrough

Boring Commenced 24.10.73  
Boring Completed 24.10.73

Type and Dia. of Boring



















Shell and Auger 200 mm. diameter

Water Strikes

Water Levels Recorded During Boring m

1. 1.30 (Medium)	Hole Depth	15.00					
2. 9.50 (Medium)	Casing Depth	15.00					
3.	Water Level	7.00*					

Remarks \*End of boring. First water strike sealed with casing at 7.20 m.  
Chiselling in marl for 6 hours from 9.0 to 15.0 m.

Description	Scale 20mm = 1m		Samples		Depth m	S.P.T. N
	Depth	Legend	Ref. No.	Type		
Made ground: slag, ashes and gravel			7755	J	0.30	29
			7756	D	0.75	
Soft black organic clayey silt with shell fragments	1.30		7757	J	1.20	4
			7758	D	1.55	
	2.00		7759	J	1.80	
			7760	U	2.00- 2.45	
Brown-grey becoming black slightly organic very silty sand with shell fragments			7761	J	2.80	6
			7762	U	3.50- 3.95	
			7763	J	4.30	
			7764	D	4.55	
			7765	J	4.80	
			7766	U	5.00- 5.45	
Firm grey-brown laminated silty clay			7767	J	5.80	6
			7768	U	6.50- 6.95	
	7.10		7769	U	7.20- 7.65	
			7770	J	7.80	
	8.70		7771	U	8.50- 8.95	
Stiff red and grey marl with bands of rock marl becoming predominantly rock marl at 9.5 m.						

Code: U—Undisturbed Sample    D—Large Disturbed Sample    J—Jar Sample    W—Water Sample

SMD 621

SHEET No

**Cementation  
Ground Engineering**

soil mechanics department

BOREHOLE No.  
135  
Continuation Sheet No. 1

CONTRACT Teeaport Refinery, Shell (U.K.) Ltd.

REPORT No. 4581/73/AJF

Description	Scale 20mm = 1m		Samples		Depth m	S P T N
	Depth	Layer	Ref. No.	Type		
Stiff red and grey marl with bands of rock marl becoming predominantly rock marl at 9.5 metres (Cont'd.)			7772	J	9.30	
			7773	D	9.75	600+
			7774	J	10.30	
			7775	D	11.25	240+
			7776	J	11.80	
			7777	D	12.75	320+
			7778	J	13.30	
			7779	D	14.25	320+
		7780	J	14.80		
	15.00	7781	D	14.90	240+	
		7782	J	15.00		
		7783	W	(1.30)		

Code: U—Undisturbed Sample      D—Large Disturbed Sample      J—Jar Sample      W—Water Sample

SMD 622

SHEET No

**Cementation  
Ground Engineering**

**soil mechanics department**

BOREHOLE No.  
136

CONTRACT Teesport Refinery, Shell (U.K.) Ltd.

REPORT No. 4581/73/AJF

Client Shell U.K. Ltd.

Ground Level  
m. O.D.

Site Address Teesport Refinery, Grangetown,  
Middlesbrough

Boring Commenced 16.10.73  
Boring Completed 17.10.73

Type and Dia. of Boring

Shell and Auger 200 mm. diameter

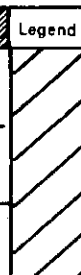


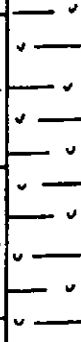
Water Strikes

1. 1.50 (Medium)
- 2.
- 3.

Water Levels Recorded During Boring m

Hole Depth	5.00	15.00				
Casing Depth	5.00	15.00				
Water Level	4.50*	4.00**				

Remarks \*Morning 17.10.73 \*\*End of boring  
Chiselling on slag boulders for 5.5 hours from 0 to 1.50 m.  
Chiselling in marl for 5 hours from 6 to 15.0 m.

Description	Scale 20mm = 1m		Samples		Depth m	S.P.T.
	Depth	Legend	Ref. No.	Type		N
Made ground: slag, slag boulders and ashes	1.50		7649	J	0.30	97
			7650	D	0.75	
			7651	J	1.30	
			7652	D	1.70	
Very soft to soft brown and grey becoming black organic clayey soil	4.80		7653	J	1.75	4
			7654	J	2.30	
			7655	U	3.00- 3.45	
			7656	J	3.80	
			7657	U	4.50- 4.95	
Firm black organic very silty sand with shells and shell fragments and organic traces	5.80		7659	J	5.30	36
			7660	D	6.25	
			7661	J	6.80	
			7662	U	7.50- 7.95	
Stiff to hard red and grey marl with bands of rock marl becoming predominantly rock marl at 15.00 metres and occasional bands of gypsum			7663	J	7.80	

SMD 621

SHEET No

**Cementation  
Ground Engineering**

soil mechanics department

BOREHOLE No.  
136  
Continuation Sheet No. 1

CONTRACT Teesport Refinery, Shell (U.K.) Ltd.

REPORT No. 4581/73/AJF

Description	Scale 20mm		Samples		Depth m	S.P.T. N
	Depth	1m	Ref. No.	Type		
Stiff to hard red and grey marl with bands of rock marl becoming predominantly rock marl at 13.00 metres and occasional bands of gypsum (Cont'd.)			7664	D	9.25	47
			7665	J	9.80	
			7666	U	11.00-11.45	
			7667	J	11.80	
			7668	U	12.50-12.95	
			7669	J	13.50	
			7670	D	14.25	91
			7671	J	14.70	
		15.00	7672	D	14.85	166+
			7673	J	15.00	
		7658	W	(1.50)		
		7674	W	(4.00)		

Code: U—Undisturbed Sample

D—Large Disturbed Sample

J—Jar Sample

W—Water Sample

# Cementation Ground Engineering

# soil mechanics department

BOREHOLE No.

137

CONTRACT Teesport Refinery, Shell (U.K.) Ltd.

REPORT No. 4581/73/SK

Client Shell U.K. Ltd.

Ground Level  
m. O. D

Site Address Teesport Refinery, Grangetown,  
Middlesbrough

Boring Commenced 23.10.73  
Boring Completed 23.10.73

Type and Dia. of Boring

Shell and Auger 200 mm. diameter





Water Strikes

- 1. 1.20 (Medium)
- 2. 10.00 (Medium)
- 3.

Water Levels Recorded During Boring m

Hole Depth	15.00					
Casing Depth	15.00					
Water Level	5.00*					

Remarks \*End of boring. First water strike sealed with casing at 6.0 m.  
Chiselling in marl for 6 hours from 9.3 to 15.0 m.

Description	Scale 20mm = 1m		Samples		Depth m	S.P.T. N
	Depth	Legend	Ref. No.	Type		
Made ground: ashes, slag and gravel	1.20		7729	J	0.50	27
			7730	D	0.75	
			7731	J	1.10	
			7732	D	1.50	
Soft black becoming brown organic clayey silt	3.00		7733	J	1.80	5
			7734	U	2.00- 2.45	
			7735	J	2.75	
			7736	U	3.00- 3.45	
Soft to firm red-brown becoming grey sandy silt with occasional shell fragments becoming silty fine sand	5.75		7737	J	3.80	
			7738	U	4.50- 4.95	
			7739	J	5.30	
			7740	U	6.00- 6.45	
Firm to stiff grey-brown laminated silty clay with yellow-silt laminations	8.50		7741	J	6.80	
			7742	U	7.50- 7.95	
			7743	J	8.30	
			7744	U	8.50- 8.95	

Code: U—Undisturbed Sample    D—Large Disturbed Sample    J—Jar Sample    W—Water Sample

SHEET No

**Cementation  
Ground Engineering**

soil mechanics department

BOREHOLE No  
137  
Continuation Sheet No. 1

CONTRACT Teesport Refinery, Shell (U.K.) Ltd.

REPORT No. 4581/73/AJF

Description	Scale 20mm = 1m		Samples		Depth m	S.P.T. N
	Depth	Legend	Ref. No.	Type		
Hard red and grey marl with bands of rock marl becoming predominantly rock marl at 9.80 metres		✓	7745	J	9.30	
		✓	7746	D	10.25	600+
		✓	7747	J	10.80	
		✓	7748	D	11.70	240+
		✓	7749	J	12.30	
		✓	7750	D	13.25	320+
		✓	7751	J	13.80	
		✓	7752	D	14.75	320+
		✓	7753	J	15.00	
				7754	W	(1.20)

Code: U—Undisturbed Sample

D—Large Disturbed Sample

J—Jar Sample

W—Water Sample



**Cementation  
Ground Engineering**

**soil mechanics department**

BOREHOLE No.  
138

CONTRACT Teesport Refinery, Shell (U.K.) Ltd.

REPORT No. 4581/73/AJF

Client Shell U.K. Ltd.

Ground Level  
m. O. D.

Site Address Teesport Refinery, Grange town,  
Middlesbrough

Boring Commenced 25.10.73  
Boring Completed 25.10.73




Type and Dia. of Boring  
Shell and Auger 200 mm. diameter

Water Strikes

Water Levels Recorded During Boring m

1. 2.00 (Seepage)	Hole Depth	15.00
2. 12.80 (Medium)	Casing Depth	15.00
3.	Water Level	4.00*

Remarks \*End of boring. Chiselling in slag for 3 hours from 0.5 to 1.2 m.  
First water strike sealed with casing at 8.20 m.

Description	Scale 20mm = 1m		Samples		Depth m	S.P.T. N
	Depth	Legend	Ref. No.	Type		
Made ground: slag, ashes, sand and gravel	1.20		7784	J	0.30	26
			7785	D	0.75	
			7786	J	1.10	
			7787	U	1.30- 1.75	
			7788	J	2.00	
			7789	U	2.50- 2.95	
			7790	J	3.30	
			7791	U	4.00- 4.45	
			7792	J	4.80	
			7793	U	5.50- 5.95	
Soft to very soft black organic silt with variable sand content, occasionally grey and occasionally laminated becoming silty fine sand	8.30		7794	D	6.25	8
			7795	J	6.50	
			7796	D	7.75	
			7797	J	8.00	
Firm grey-brown laminated very silty clay with pockets of yellow silt	8.30		7798	U	8.50- 8.95	13

**Cementation  
Ground Engineering**

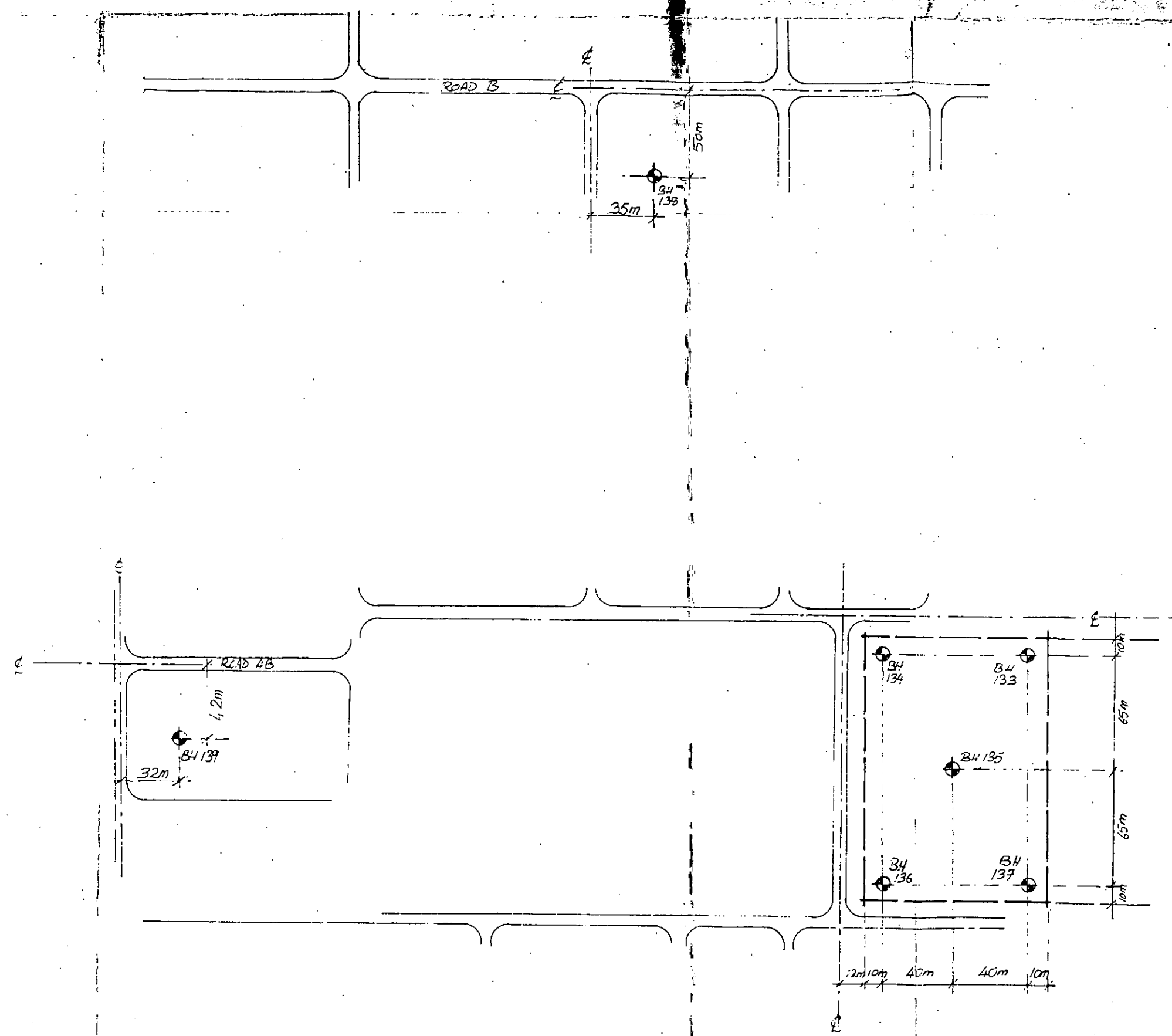
soil mechanics department

BOREHOLE No.  
138  
Continuation Sheet No. 1

CONTRACT Teesport Refinery, Shell (U.K.) Ltd.

REPORT No. 4581/73/AJF

Description	Scale 20mm 1m		Samples		Depth m	S.P.T. N
	Depth	1m	Ref. No.	Type		
Firm grey-brown laminated very silty clay with pockets of yellow silt (Cont'd.)			7799	J	9.30	
			7800	U	10.00-10.45	
	10.50		8201	J	10.40	
			8202	U	10.50-10.95	
Stiff becoming very stiff brown silty boulder clay			8203	J	11.30	
			8204	U	12.00-12.45	
	12.80		8205	J	12.50	
			8206	U	13.00-13.45	
Hard red marl with bands of rock marl and gypsum becoming predominantly rock marl at 13.50 metres			8207	J	13.70	
			8208	D	14.25	192+
			8209	J	14.60	
	15.00		8210	D	14.90	320+
			8211	J	15.00	
		8212	W	(12.80)		



**Cementation  
Ground Engineering**

soil mechanics department

SHELL (U.K.) LTD  
SITE PLAN SHOWING

TEESPORT REFINERY  
BOREHOLE POSITIONS

# Borehole Log



Exploration Associates

Samples and Tests		Strata			Ground Level	National Grid Coordinates	
Depth	Type & No.	Records	Date Casing	Time Water	Description	Depth, Level (Thickness)	Legend
0.25 - 0.80	B1	C 25 19.25 for 25mm/25 for 70mm	15/10/2001		MADE GROUND: Firm red brown slightly gravelly CLAY. Gravel is angular fine to coarse mudstone.	(0.85)	S
1.00 - 1.17	D2		1.00		MADE GROUND: Very dense grey silty fine to coarse SAND and angular to subrounded fine to coarse GRAVEL of slag. Cobbles noted.	0.85 +4.85 (0.75pen)	
1.00 - 1.50	B3		15/10/2001		EXPLORATORY HOLE ENDS AT 1.60 m.	1.60 +4.10	
Groundwater Groundwater not encountered.					Remarks Borehole terminated due to obstruction at 1.60m. Position moved 3m and designated BH1A. Chiselling on hard strata from 0.80m to 1.60m(3.5hrs). Hole backfill : 0.00m to 1.60m Groul (g).		
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 : 50			Project TEESPORT ESTATE DISTRIBUTION WAREHOUSE		Borehole <b>BH1</b> Sheet 1 of 1		
			Project no. 131109				
			Carried out for Tees and Hartlepool Port Authority Limited				

27/08/2002 15:18:20 ESGLog v2.11



# Borehole Log

Exploration Associates

Drilled by Logged by Checked by	PM DK CL	Equipment and Methods Cable Percussion 200 mm diameter from 0.00m to 1.60m.	Ground Level National Grid Coordinates	+ 5.70 m OD
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Samples and Tests				Strata		Depth, Level (Thickness)	Legend
Depth	Type & No.	Records	Date Casing	Time Water	Description		
			15/10/2001		MADE GROUND: Firm red brown slightly gravelly CLAY. Gravel is angular fine to coarse mudstone.	(0.85)	
			15/10/2001		MADE GROUND: Grey silty fine to coarse SAND and angular to subrounded fine to coarse GRAVEL of slag. Cobbles noted.	0.85 +4.85 (0.75pen)	
			15/10/2001		EXPLORATORY HOLE ENDS AT 1.60 m.	1.60 +4.10	

Groundwater Groundwater not encountered	Remarks Borehole terminated due to obstruction at 1.60m. Position relocated and designated BH1B Chiselling on hard strata from 0.80-1.30m(1.5 hrs) and from 1.30m to 1.60m(1hr). Hole backfill : 0.00m to 1.60m Grout (g).
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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 : 50	Project TEESPORT ESTATE DISTRIBUTION WAREHOUSE	Borehole <b>BH1A</b> Sheet 1 of 1
	Project no. 131108	
	Carried out for Tees and Hartlepool Port Authority Limited	

27/08/2002 15:20:59 ESGLog v2.11

# Borehole Log



Exploration Associates

Drilled by PJA Logged by DK Checked by CL	Equipment and Methods Cable Percussion 200 mm diameter from 0.00m to 13.00m.	Ground Level + 5.70 m OD National Grid Coordinates
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Samples and Tests				Strata		Depth, Level (Thickness)	Legend
Depth	Type & No.	Records	Date Casing	Time Water	Description		
			18/10/2001		MADE GROUND: Firm red brown slightly gravelly CLAY. Gravel is angular fine to coarse mudstone.	(0.65)	
1.50 - 2.00	B1				MADE GROUND: Grey silty fine to coarse SAND and angular to subrounded fine to coarse GRAVEL of slag. Cobbles noted.	0.65 +4.85 (0.75)	
					MADE GROUND: Dark grey coarse GRAVEL and COBBLES of slag.	1.60 +4.10 (0.80)	
					MADE GROUND: Dark grey SILT (drillers description).	2.40 +3.30 (0.70)	
2.95 3.00 3.00 - 3.45	WE ES2 D3	S.N=9 1,3,2,2,3,2	3.00	comp	MADE GROUND: Loose dark grey slightly silty sandy (ash) angular to subrounded fine to coarse GRAVEL size fragments of clinker and mudstone.	3.10 +2.60 (0.45)	
3.00 - 3.50	B4					3.55 +2.15	
3.65 - 4.00	B5				MADE GROUND: Medium dense dark grey slightly silty very sandy subangular to subrounded fine to coarse cobbly GRAVEL of clinker, concrete, slag and mudstone.	(1.25)	
4.50 - 4.95	D7	S.N=21 5,5,3,6,6,6	4.50	2.35		4.80 +0.90	
4.50 - 5.00	B8		18/10/2001		Grey and grey brown silty fine and medium SAND.	5.00 +0.70	
			19/10/2001				
5.50	D9						
6.00 - 6.45	D10	S.N=10 1,2,3,2,2,3	6.00	5.50			
6.00 - 6.50	B11						
7.00	D12						
7.50 - 7.56	D13	S.N=23 3,3,5,5,6,7	7.50	7.00	Very weak red MUDSTONE. Recovered as sandy clayey subangular to subrounded fine to coarse gravel with occasional grey discoloration. Very clayey at 7.50m. Sandy gravel at 8.50m. Gypsum nodules noted below 12.00m.	(8.00)	
7.50 - 8.00	B14						
8.50	D15						
9.00 - 9.45	D16	S.N=22 2,2,1,3,9,9	9.00	4.20			
9.00 - 9.50	B17						

Groundwater No. Struck Behaviour 1 3.50m Rising to 2.95m after 20 mins.	Remarks Chiselled on hard strata from 3.55-4.00m(1.5hrs), 12.00-12.50m(2hrs) and 12.50-13.00m(1.5hrs). Hole backfill: 0.00m to 0.50m Concrete (c), 0.50m to 3.00m Bentonite (b), 3.00m to 6.50m Bentonite (b), 6.50m to 13.00m Grout (g). Surface protection: Stop Cock Cover Standpipe installed, 50mm diameter, response zone from 3.00m to 5.50m.
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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 1:50	Project TEESPORT ESTATE DISTRIBUTION WAREHOUSE	Borehole BH1B Sheet 1 of 2
Project no. 131109	Carried out for Tees and Hartlepool Port Authority Limited	

27/09/2002 15:21:10 ESGLog V2.11

# Borehole Log



Exploration Associates

Drilled by PM Logged by DK Checked by CL		Equipment and Methods See sheet 1				Ground Level + 5.70 m.OD National Grid Coordinates	
Samples and Tests				Strata			
Depth	Type & No.	Records	Date Casing	Time Water	Description	Depth,Level (Thickness)	Legend
10.00	D18						
10.50 - 10.95	D19	S,N=36 5,7,10,7,7,12	10.50	4.50			
10.50 - 11.00	B20						
11.50	D21				As sheet 1	(8.00open)	
12.00 - 12.39	D22	S,39 1,2,9,25,25 for 10mm,-					
12.00 - 12.50	B23						
12.50 - 12.54	D24	S,25 25 for 35mm,/25 for 0mm	12.50	4.60			
12.50 - 13.00	B25		19/15/2001				
					EXPLORATORY HOLE ENDS AT 13.00 m.	13.00 -7.30	
Groundwater No. Struck Behaviour				Remarks			
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 : 50			Project TEESPORT ESTATE DISTRIBUTION WAREHOUSE Project no. 131109 Carried out for Tees and Hartlepool Port Authority Limited			Borehole <b>BH1B</b> Sheet 2 of 2	

27/08/2002 15:21:21 ESGL06 v2.11

# Borehole Log



Exploration Associates

Drilled by PM Logged by SP Checked by CL	<b>Equipment and Methods</b> Cable Percussion 200 mm diameter from 0.00m to 6.50m.	Ground Level + 5.70 m OD National Grid Coordinates
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Samples and Tests				Strata		Depth/Level (Thickness)	Legend
Depth	Type & No.	Records	Date Casing	Time Water	Description		
			29/10/2001 0.00	0.00	MADE GROUND: Firm red slightly sandy slightly gravelly CLAY. Gravel is angular to subrounded fine to coarse mudstone, concrete and metal reinforcements.	(0.90)	
1.50 - 2.50	B1				MADE GROUND: Firm friable brown slightly sandy slightly gravelly CLAY. Gravel is angular to subangular fine to coarse fragments of brick, concrete and coal. Rootlets noted.	0.90 +4.80 1.10 +4.80	
					MADE GROUND: COBBLES with much light grey silty fine to coarse sandy angular to subrounded fine to coarse gravel of slag and concrete.	(1.65)	
3.00 3.00 - 3.45	ES2 D3	S.N=6 1,2,2,1,2,3	3.00		MADE GROUND: Loose black sandy very gravelly SILT. Gravel is angular to subrounded fine to coarse slag and concrete. Occasional thin laminae of fine sand. Hydrocarbon odour noted.	(1.25)	
3.00 - 3.50 3.10 3.10	B4 EW8 EW8						
4.00 - 4.45	D5	S.N=21 3,6,5,7,3,6	4.00	1.20		4.00 +1.70	
4.00 - 4.50	B5						
			29/10/2001 4.50	2.50	Medium dense grey and black very silty sandy angular and subangular fine to coarse GRAVEL of clinker, mudstone and shells (Possible Made Ground).	(1.00)	
4.50	ES7		30/10/2001 4.50	2.00			
5.00	D9					5.00 +0.70	
5.25 - 5.43	D10	S.25 12,25/25 for 25mm	5.25	2.50			
5.25 - 5.75	B11				Very weak light grey MUDSTONE. Recovered as slightly sandy clayey subangular fine to coarse gravel. Sandy gravel below 6.00m.	(1.50pen)	
6.00	D12	S	6.00	2.90			
6.00 - 6.50	B13		30/10/2001 4.50	2.50			
					EXPLORATORY HOLE ENDS AT 6.50 m.	6.50 -0.80	

<b>Groundwater</b> No. Struck Behaviour 1 3.50m Rising to 3.10m after 20 mins.	<b>Remarks</b> Chiselling on obstruction from 4.00 to 4.50m 1.5hrs, 4.70 to 5.25m 1hr, 5.25 to 5.75m 1.5hrs and 6.00 to 6.50m 1.5hrs. Water was added to aid drilling from 3.50 to 4.00m and 4.50 to 6.00m. On completion borehole was backfilled with grout. Exploratory hole excavated to 2.80m by JCB, prior to boring to remove potential obstructions.
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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 : 50	Project Project no. 131108 Carried out for Tees and Hartlepool Port Authority Limited	TEESPORT ESTATE DISTRIBUTION WAREHOUSE Borehole <b>BH2</b> Sheet 1 of 1
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27/08/2002 15:21:32 ES3Log v2.11



# Borehole Log



Exploration Associates

Drilled by PM Logged by DK Checked by CL		Equipment and Methods Cable Percussion 200 mm diameter from 0.00m to 1.10m.				Ground Level + 5.69 m OD National Grid Coordinates	
Samples and Tests			Strata				
Depth	Type & No.	Records	Date Casing	Time Water	Description	Depth, Level (Thickness)	Legend
0.50	D1		16/10/2001		MADE GROUND: Firm red gravelly CLAY. Gravel is angular to sub angular fine to coarse mudstone and gypsum.	(0.80)	
0.80	D2		16/10/2001		MADE GROUND: Grey angular to sub angular fine to coarse GRAVEL size fragments of slag.	0.80 +4.89 (0.30pen)	
					EXPLORATORY HOLE ENDS AT 1.10m.	1.10 +4.59	
Groundwater Groundwater not encountered					Remarks Borehole terminated due to obstruction at 1.10m. Borehole relocated and designated BH3A. Cased on hard strata from 0.80m to 1.10m(1hr). Hole backfill : 0.00m to 1.10m Grout (g).		
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 : 50			Project Project no. Carried out for		TEESPORT ESTATE DISTRIBUTION WAREHOUSE 131109 Tees and Hartlepool Port Authority Limited		Borehole <b>BH3</b> Sheet 1 of 1

27/08/2002 15:21:41 ESGLLog V2.11

# Borehole Log



Exploration Associates

Drilled by Logged by Checked by		Equipment and Methods		Ground Level		
PM SP CL		Cable Percussion 200 mm diameter from 0.00m to 8.00m.		+ 5.69 m OD		
Samples and Tests				Strata		
Depth	Type & No.	Records	Date Casing Time Water	Description	Depth, Level (Thickness)	Legend
			30/10/2001	MADE GROUND: Firm red brown gravelly CLAY. Gravel is angular and subangular fine to coarse mudstone and gypsum.	(0.80)	
				MADE GROUND: Grey angular and sub angular fine to coarse GRAVEL of slag.	0.80 +4.89 (0.30)	
1.50 - 2.50	B			MADE GROUND: Brown clayey fine to coarse SAND and sub rounded fine to coarse GRAVEL of sandstone and slag. Cobbles and boulders of sandstone noted.	(1.20)	
2.70	ES			MADE GROUND: Black sandy SILT. Petrochemical sheen noted.	(0.70)	
3.00 3.00 - 3.45	ES	C,N=13 2,3,3,4,3,3	3.00 1.00		3.00 +2.69	
3.00 - 3.50	B					
4.00 - 4.45	ES	C,N=24 1,4,5,6,6,7	4.00 1.50	MADE GROUND: Medium dense grey silty very sandy angular to subangular fine to coarse GRAVEL of clinker and slag. Occasional shell fragments noted.	(2.20)	
4.00 - 4.50	B			From 4.00m to 4.50m: Slightly silty sandy gravel		
5.00 - 5.45	B	C,N=13 2,2,3,3,3,4	5.00 1.50		5.20 +0.49	
5.00 - 5.50	B			Stiff laminated brown slightly sandy CLAY.	(1.20)	
5.75	D					
6.00 - 6.45	U	41 blows	6.00 2.00			
6.45 - 6.50	D			Stiff red brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse sandstone, siltstone and coal.	6.40 -0.71 (0.50)	
6.90	D				6.90 -1.21	
7.00 - 7.15	D	S 25 16,25 for 50mm/25 for 20mm	7.00 3.10			
7.00 - 7.50	B			Very weak light grey MUDSTONE. Recovered as slightly sandy clayey subangular fine to coarse gravel.	(1.10pen)	
7.50 - 7.56	B	S 25 for 60mm,				
7.50 - 8.00	B		30/10/2001 7.50			
				EXPLORATORY HOLE ENDS AT 8.00 m.	8.00 -2.31	
Groundwater				Remarks		
No. Struck Behaviour				Chiselling hard strata from 7.10m to 7.50m (1hr) and from 7.50m to 8.00m (1hr). Water added to assist boring from 3.00m to 7.00m. Exploratory hole excavated to 2.40m using a JCB, prior to boring, to remove potential obstructions (Cobbles/boulders). Hole backfill: 0.00m to 8.00m Grout (g).		
1 3.00m Rising to 2.70m after 20 mins.						
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 1:50			Project TEESPORT ESTATE DISTRIBUTION WAREHOUSE		Borehole BH3A	
			Project no. 131109		Sheet 1 of 1	
			Carried out for Tees and Hartlepool Port Authority Limited			

27/08/2002 15:21:52 ESGL09 v2.11

# Borehole Log



Exploration Associates

Drilled by Logged by Checked by		Equipment and Methods Cable Percussion 200 mm diameter from 0.00m to 14.00m.			Ground Level National Grid Coordinates		
PM DK CL					+ 5.59 m OD		
Samples and Tests				Strata			
Depth	Type & No.	Records	Date Casing	Time Water	Description	Depth,Level (Thickness)	Legend
0.50	D1		16/10/2001		MADE GROUND: Firm red slightly gravelly CLAY. Gravel is subangular to rounded medium and coarse fragments of mudstone and gypsum.	(0.80)	
1.00	D2				MADE GROUND: Light grey angular and sub angular fine to coarse GRAVEL and COBBLE size fragments of slag.	0.80 +4.79 (0.50)	
1.30	D3					1.30 +4.29	
1.50 - 1.95	D4	S.N=2 1,1,1,1,1	1.50	dry	From 1.50m to 2.00m: Silty sandy slightly organic gravel with some cobbles		
1.50 - 2.00	B5						
2.00	ES6						
2.25	D7				MADE GROUND: Very loose/loose laminated black very sandy slightly gravelly SILT.	(1.95)	
2.50 - 2.95	D8	S.N=4 1,1,1,1,1	2.50	dry			
2.50 - 3.00	B9						
2.65	W14						
3.00	ES10						
3.25	D11					3.25 +2.34	
3.50 - 3.95	D12	C.N=11 1,2,3,3,3,2			MADE GROUND: Medium dense black slightly silty sandy angular and subangular fine to coarse GRAVEL of slag, brick and concrete with occasional cobbles.	(1.40)	
3.50 - 4.00	B13						
4.25	D15						
4.50 - 4.95	D16	S.N=16 3,2,3,3,4,6	4.50	1.00		4.65 +0.94	
4.50 - 5.00	B17				Medium dense brown mottled black slightly silty fine and medium SAND (Possible Made Ground).	(1.10)	
5.75	D18					5.75 -0.15	
6.00 - 6.45	D19	S.N=19 1,3,7,8,3,1	6.00	5.50			
6.00 - 6.50	B20						
7.00	D21						
7.50 - 7.95	D22	S.N=51 4,7,9,11,14,17	7.50	6.80	Very Weak red MUDSTONE. Recovered as clayey subangular and subrounded fine to coarse gravel. Below 13.50m: Nodules of gypsum noted.	(8.25)	
7.50 - 8.00	B23						
8.50	D24						
9.00 - 9.45	D25	S.N=50 3,5,7,11,11,21	9.00	4.30			
9.00 - 9.50	B26						
Groundwater					Remarks		
No. Struck Behaviour					Chiselled hard strata from 0.80m to 1.30m(2hr), 7.70m to 8.00m(0.50hr), 9.35m to 10.00m(1hr), 12.10m to 12.50m(0.50hr), 12.80m to 13.50m(1.5hr) and from 13.50m to 14.00m(1hr). Water added to assist boring from 3.25m to 5.50m. Hole backfill : 0.00m to 14.00m Grout (g).		
1 3.25m Rising to 2.85m after 20 mins.							
2 8.10m							
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 : 50			Project Project no. Carried out for		TEESPORT ESTATE DISTRIBUTION WAREHOUSE 131109 Tees and Hartlepool Port Authority Limited		
					Borehole BH4 Sheet 1 of 2		

27/09/2002 15:22:04 ESGLog v2.11



# Borehole Log

Exploration Associates

Drilled by PM Logged by CK Checked by CL	Equipment and Methods See sheet 1	Ground Level + 5.59 m OD National Grid Coordinates
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Samples and Tests				Strata						
Depth	Type & No.	Records	Date Casing	Time Water	Description	Depth, Level (Thickness)	Legend			
10.50 - 10.95	D28	S,N=52 4,4,7,14,14,17	17/10/2001 10.00	3.10	As sheet 1	(8.25 per)				
10.50 - 11.00	B29		10.00	4.30						
11.50	D30									
12.00 - 12.45	D31	S,N=65 8,10/15,15,15,20	12.00	5.10						
12.00 - 12.50	B32									
13.00	D33									
13.50 - 13.59	D34	S,25 25/25 for 10mm	13.50	7.50						
13.50 - 14.00	B35		17/10/2001 13.50	7.25						
								EXPLORATORY HOLE ENDS AT 14.00 m.	14.00 - 9.41	

Groundwater No. Struck Behaviour	Remarks
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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 : 50	Project TEESPORT ESTATE DISTRIBUTION WAREHOUSE Project no. 131109 Carried out for Tees and Hartlepool Port Authority Limited	Borehole <b>BH4</b> Sheet 2 of 2
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27/08/2002 15:22:15 E8GLog v2.11

# Borehole Log



Exploration Associates

Drilled by Logged by Checked by		Equipment and Methods		Ground Level			
PM SP CL		Cable Percussion 200 mm diameter from 0.00m to 7.50m.		+ 5.70 m OD			
				National Grid Coordinates			
Samples and Tests			Strata				
Depth	Type & No.	Records	Date Casing	Time Water	Description	Depth Level (Thickness)	Legend
			29/10/2001		MADE GROUND: Firm red brown gravelly CLAY. Gravel is angular to subangular fine to coarse fragments of mudstone.	(0.80)	
1.50 - 2.50	B				MADE GROUND: Brown slightly gravelly fine to coarse SAND. Gravel is subrounded fine to coarse slag and siltstone.	0.90 +4.90 0.90 +4.80 1.10 +4.60	
					MADE GROUND: Light grey angular and subangular fine to coarse GRAVEL and COBBLE of slag, brick and concrete.	(1.80)	
					MADE GROUND: Black and brown silty very sandy subangular and subrounded fine to coarse GRAVEL of slag. Some laminae of fine to medium sand.		
3.00 3.00 - 3.45 3.00 - 3.50	ES B	S.N=7 1,1,2,1,2,2	3.00	dry	MADE GROUND: Loose black very silty very gravelly fine to coarse SAND of ash. Gravel is angular fine to coarse clinker and slag.	3.00 +2.70 (0.50)	
3.80 4.00 - 4.45 4.00 - 4.50	W B	S.N=24 1,1,2,2,9,11	4.00	4.00	MADE GROUND: Dark grey slightly sandy slightly gravelly SILT. Gravel is angular to subangular fine to coarse clinker and mudstone.	(0.75) 4.25 +1.45	
4.50 5.00 - 5.45 5.00 - 5.50	ES B	S.N=31 4,9,7,6,8,10	5.00	1.00	MADE GROUND: Dense dark grey sandy angular to subangular fine to coarse GRAVEL clinker, slag, mudstone and shell. Cobbles and/or boulders noted.	(1.85)	
5.80 - 6.00 6.10 6.25 - 6.52 6.25 - 6.75	B D B	S,50 7,12,25,25 for 40mm	6.25	3.00	From 5.00m to 5.50m: Cobbles with much slightly silty slightly sandy fine to coarse gravel.	6.10 -0.40	
7.00 - 7.17	B	S,25 19,25,25 for 20mm	7.00	3.40	Very weak red brown MUDSTONE. Recovered as clayey slightly sandy subangular fine to coarse gravel.	(1.40per)	
			29/10/2001 7.00	3.40	EXPLORATORY HOLE ENDS AT 7.50 m.	7.50 -1.80	
Groundwater No. Struck Behaviour 1 4.00m Rosing to 3.80m after 20 mins.			Remarks Chiselled hard strata from 5.20m to 5.50m(1hr), 6.30m to 6.75m(1hr), 6.75m to 7.00m(0.50hr) and from 7.00m to 7.50m(1.5hr). Water added to assist boring from 4.90m to 6.00m. Exploratory hole excavated to 3.50m using a JCB, prior to boring, to remove potential obstructions(Cobbles/boulders). Hole backfill : 0.00m to 7.50m Grout (g).				
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 : 50			Project Project no. Carried out for		TEESPORT ESTATE DISTRIBUTION WAREHOUSE 131109 Tees and Hartlepool Port Authority Limited	Borehole <b>BH5</b> Sheet 1 of 1	

27/09/2002 15:22:28 ESGLog v2.11



# Borehole Log

Exploration Associates

Drilled by <b>PM</b> Logged by <b>DK/SP</b> Checked by <b>CL</b>	<b>Equipment and Methods</b> Cable Percussion 200 mm diameter from 0.00m to 7.00m.	Ground Level <b>+ 5.66 m OD</b> National Grid Coordinates
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Samples and Tests				Strata				
Depth	Type & No.	Records	Date Casing	Time Water	Description	Depth, Level (Thickness)	Legend	
			31/10/2001		MADE GROUND: Firm red gravelly CLAY. Gravel is angular and subangular fine to coarse mudstone, limestone and gypsum.	(0.50)	MADE GROUND: Loose becoming medium dense dark grey very silty very sandy angular to subrounded fine to coarse GRAVEL of dinker, brick, slag and glass.  From 4.00m to 4.50m: Slightly silty sandy fine to coarse GRAVEL with many cobbles	
4.00 4.00 - 4.45 4.00 - 4.50	ES B	C,N=12 2,3,3,3,4,2	4.00	4.00				
5.00 - 5.45 5.00 - 5.50	B	C,N=15 2,3,4,4,3,4	5.00	1.50		5.45 +0.51		
5.50 - 5.95	U	71 blows	5.50	2.00	Stiff brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse sandstone, siltstone and coal.	(1.10)		
5.95 - 6.00	D							
6.25 6.50 - 6.68 6.50 - 7.00	D B	S,50 10,13/50 for 30mm	6.50	2.00	Very weak red brown MUDSTONE. Recovered as clayey slightly sandy subangular fine to coarse gravel.	6.25 -0.69 (0.83pen)		
7.00 - 7.09		S,25 25,25 for 10mm	31/10/2001 6.50	2.00	EXPLORATORY HOLE ENDS AT 7.06m.	7.08 -1.42		

<b>Groundwater</b> No. Struck Behaviour 1 2.50m 2 4.00m Rising to 3.60m after 20 mins.	<b>Remarks</b> Chiselled hard strata from 2.00m to 2.45m(1.5hr), 6.25m to 6.50m(0.75hr) and 6.50m to 7.00m(1.5hr). Water added to assist boring from 4.00m to 7.00m. Exploratory hole excavated to 2.80m using a JCB, prior to boring, to remove potential obstructions(Cobbles/boulders). Hole backfill : 0.00m to 7.08m Grout (g).
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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 : 50	<b>Project</b> TEESPORT ESTATE DISTRIBUTION WAREHOUSE <b>Project no.</b> 131108 <b>Carried out for</b> Tees and Hartlepool Port Authority Limited	<b>Borehole</b> BH6 Sheet 1 of 1
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27/08/2002 15:22:39 ESLog V2.11

# Borehole Log



Exploration Associates

Drilled by Logged by Checked by		Equipment and Methods			Ground Level	
PM CL CL		Cable Percussion 200 mm diameter from 0.00m to 13.00m.			+ 5.63 m OD	
Samples and Tests				Strata		
Depth	Type & No.	Records	Date Casing Water	Description	Depth, Level (Thickness)	Legend
			24/10/2001	MADE GROUND: Firm red gravelly CLAY. Gravel is angular to subangular fine to coarse mudstone, concrete and gypsum/anhydrite.	(0.30) 0.30 +5.33	
1.50 - 2.50	B			MADE GROUND: Brown and black slightly clayey gravelly SAND of ash. Gravel is angular to subrounded fine to coarse slag, brick, clinker and glass with some cobbles of slag.	(2.60)	
2.76	W					
3.00	ES					
3.00 - 3.45	B	S.N=10 3,3,3,2,2	3.00		2.90 +2.73	
3.00 - 3.50	B					
4.00 - 4.45	B	S.N=9 1,2,2,3,2	4.00	MADE GROUND: Loose black and grey slightly silty sandy angular to subrounded fine to coarse GRAVEL of slag, sandstone and clinker with some cobbles.	(2.25)	
4.00 - 4.50	B		1.50			
4.50	ES					
5.00 - 5.45	B	S.N=12 1,3,2,3,3,4	5.00	Fine brown SAND(Driller's description).	5.15 +0.48 5.25 +0.38	
5.00 - 5.50	B					
6.00 - 6.45	B	S.N=16 2,4,4,4,3,5	6.00			
6.00 - 6.50	B		4.05			
7.00	D					
7.50 - 7.85	B	S.N=29 6,7,6,7,9,7	7.60	Very weak and weak red and grey MUDSTONE. Recovered as clayey angular fine to coarse gravel.	(6.25)	
7.50 - 8.00	B		7.00			
8.50	D					
9.00 - 9.45	B	S.N=28 3,4,5,6,6,7	9.00			
9.00 - 9.50	B		4.10			
Groundwater No. Struck Behaviour				Remarks Chiselled hard strata from 1.50m to 2.10m(1.5hr), 11.50m to 12.00m(1hr), 12.00m to 12.50m(1.5hr) and 12.50m to 13.00m(1.5hr). Water added to assist boring from 3.50m to 4.50m. Exploratory hole excavated to 3.55m using a JCB, prior to boring, to remove potential obstructions(Cobbles/boulders). Hole backfill : 0.00m to 13.00m Grout (g).		
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 : 50		Project Project no. Carried out for		TEESPORT ESTATE DISTRIBUTION WAREHOUSE 131108 Tees and Hartlepool Port Authority Limited		Borehole <b>BH7</b> Sheet 1 of 2

27/09/2002 15:22:51 ESQ1Log v2.11

# Borehole Log



Exploration Associates

Drilled by P.M. Logged by CL Checked by CL		Equipment and Methods See sheet 1				Ground Level + 5.63 m OD National Grid Coordinates	
Samples and Tests				Strata			
Depth	Type & No.	Records	Date Casing	Time Water	Description	Depth, Level (Thickness)	Legend
10.00	D						
10.50 - 10.95	B	S.N=30 3,5,7,9,9	10.50	4.50	As sheet 1	(6.25)	
10.50 - 11.00							
11.50	D					11.50 - 5.87	
12.00 - 12.38	B	S.65 10,13,15,25,25	12.00	4.90	Weak red MUDSTONE with bands and nodules of pink and white gypsum/anhydrite.	(1.50pen)	
12.00 - 12.50							
12.50 - 12.57			12.50	4.10			
		S.25 25 for 60mm/25 for 10mm	24/10/2001 12.50	4.10			
12.50 - 13.00	B				EXPLORATORY HOLE ENDS AT 13.00 m.	13.00 - 7.37	
Groundwater No. Struck Behaviour					Remarks		
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 1:50			Project Project no. 131108 Carried out for Tees and Hartlepool Port Authority Limited		TEESPORT ESTATE DISTRIBUTION WAREHOUSE Borehole <b>BH7</b> Sheet 2 of 2		

27/08/2002 15:22:59 ESGLog v2.11



# Borehole Log



Exploration Associates

Drilled by Logged by Checked by		Equipment and Methods		Ground Level			
PM DK/SP CL		Cable Percussion 200 mm diameter from 0.00m to 10.00m.		+ 5.70 m OD National Grid Coordinates			
Samples and Tests				Strata			
Depth	Type & No.	Records	Date Casing	Time Water	Description	Depth, Level (Thickness)	Legend
			28/10/2001 0.00	0.00	MADE GROUND: Firm red gravelly CLAY. Gravel is subangular to subrounded fine to coarse concrete, mudstone, gypsum and slag. Cobbles and/or boulders noted (< 80mm of concrete).	(1.10)	
1.50 - 2.50	B1					1.10 +4.60	
3.00 3.00 - 3.45 3.00 - 3.50	ES2 D3 B4	S.N=10 3,2,2,3,2,3				3.00 +2.70	
3.74	EW5						
4.00 - 4.45 4.00 - 4.50	D6 B7	S.N=18 1,2,4,5,5,4			MADE GROUND: Medium dense black, grey and brown silty angular to subrounded fine to coarse GRAVEL glass, brick, slag, clinker, tile and concrete. Cobbles noted.	(2.30)	
4.50	ES8						
5.00 - 5.45 5.00 - 5.50	D9 B10	S.N=16 1,3,4,4,3,5				5.30 +0.40	
6.00 - 6.45 6.00 - 6.50	D11 B12	S.N=14 3,3,2,4,4,4					
7.00	D13						
7.50 - 7.95 7.50 - 8.00	D14 B15	S.N=13 2,3,3,3,3,4			Very weak red brown MUDSTONE. Recovered as slightly silty sandy subangular and angular fine to coarse gravel. Fine to coarse gravel below 8.50m (slightly clayey at 9.00m).	(4.70open)	
8.50	D16						
9.00 - 9.43 9.00 - 9.50 9.50 - 9.80 9.50 - 10.00	D17 B18 D19 B20	S.69 8,14/19,25,25 for 50mm  S.25 25 for 50mm,					
			28/10/2001 10.00	3.60	EXPLORATORY HOLE ENDS AT 10.00 m.	10.00 -4.30	
Groundwater No. Struck Behaviour				Remarks			
1 3.90m Rising to 3.74m after 20 mins.				Chiselling on obstruction from 1.20 to 1.90m 1.5hrs, 9.30 to 9.50m 1hr and 9.50 to 10.00m 2hrs. Water was added to aid drilling from 3.90 to 5.50m. On completion borehole was backfilled with grout. Exploratory hole excavated to 3.45m by JCB, prior to boring, to remove potential obstructions.			
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 1:50		Project		TEESPORT ESTATE DISTRIBUTION WAREHOUSE		Borehole	
		Project no.		131108		BH8	
		Carried out for		Teess and Hartlepool Port Authority Limited		Sheet 1 of 1	

27/06/2002 15:23:08 ESGLLog v2.11

# Borehole Log



Exploration Associates

Drilled by Logged by Checked by		Equipment and Methods			Ground Level		
PM DK/SP CL		Cable Percussion 200 mm diameter from 0.00m to 7.00m.			+ 5.72 m CD		
Samples and Tests				Strata			
Depth	Type & No.	Records	Date Casing	Time Water	Description	Depth, Level (Thickness)	Legend
			31/10/2001 0.00	0.00	MADE GROUND: Firm friable red slightly sandy gravelly CLAY. Gravel is angular and subangular fine to coarse of brick, concrete and mudstone. Cobbles and/or boulders noted (concrete).	(0.40) 0.40 +5.32	
1.50 - 2.50	B1				MADE GROUND: Brown and black clayey very gravelly fine to coarse SAND of ash. Gravel is angular and subangular fine to coarse sandstone, siltstone, wood, concrete and wire. Occasional whole and half bricks.	(2.40)	
3.00 - 3.45	D2	C,N=20 1,3,4,4,6,6	3.00		From 3.00m to 3.50m: Cobbles with much silty sandy fine to coarse gravel	2.80 +2.92	
3.00 - 3.50	B3						
3.50	ES4						
3.65	EW5						
4.00 - 4.45	D6	S,N=18 3,3,3,4,6,5	4.00	wt	MADE GROUND: Medium dense dark grey slightly silty sandy angular and subangular fine to coarse GRAVEL of clinker, brick slag and concrete.	(2.40)	
4.00 - 4.50	B7						
5.00	ES8						
5.00 - 5.45	D9	C,N=15 3,3,3,4,4,4	5.00	1.90	Firm to stiff red brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse sandstone, siltstone and coal.	5.20 +0.52 (0.50)	
5.00 - 5.50	B10						
5.70	D11						
6.00 - 6.27	D12	S,50 10,15,25,25 for 40mm	6.00	4.50	Very weak light grey MUDSTONE. Recovered as slightly sandy clayey angular and subangular gravel.	5.70 +0.02	
6.00 - 6.50	B13						
6.50	D14	S 25 for 0mm, 25 for 0mm No Penetration	6.50	4.00	Sandy gravel below 6.50m.	(1.30pen)	
6.50 - 7.00	B15		31/10/2001 6.50	4.00	EXPLORATORY HOLE ENDS AT 7.00 m.	7.00 --1.28	
Groundwater No. Struck Behaviour					Remarks		
1 2.80m					Chiselling on obstruction from 6.00 to 6.50m 1hr and 6.50 to 7.00m 1.5hr.		
2 4.00m Rising to 3.68m after 20 mins.					Water was added to aid drilling from 4.00 to 6.00m.		
					On completion borehole was backfilled with grout.		
					Exploratory hole excavated to 2.90m using a JCB, prior to boring, to remove any potential obstructions.		
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 1:50			Project TEESPORT ESTATE DISTRIBUTION WAREHOUSE		Borehole BH9		
			Project no. 131108		Sheet 1 of 1		
			Carried out for Tees and Hartlepool Port Authority Limited				

27/08/2002 15:23:17 ESGLog v2.11

# Borehole Log



Exploration Associates

Drilled by PM Logged by JH Checked by CL		Equipment and Methods Cable Percussion 200 mm diameter from 0.06m to 15.00m.			Ground Level + 5.58 m OD National Grid Coordinates		
Samples and Tests				Strata			
Depth	Type & No.	Records	Date Casing	Time Water	Description	Depth, Level (Thickness)	Legend
			19/10/2001 0.00	0.00	MADE GROUND: Firm red slightly gravelly CLAY. Gravel is angular to subangular fine to coarse mudstone and gypsum.	(1.10)	c
1.50 - 2.00	B1					1.30 +4.48	
			19/10/2001 3.00		MADE GROUND: Medium dense grey slightly silty sandy angular to subrounded fine to coarse GRAVEL slag, clinker and brick. Very strong diesel/petrol odour.	(3.45)	d
2.75 3.00 3.00 - 3.45	EW6 EW2 D3	S.N=21 3,2,9,3,4,5	20/10/2001 3.50	3.00	dry		
3.00 - 3.50	B4						
4.60 4.60	D6 ES7						
4.50 - 4.95	D8	S.N=12 3,3,2,3,3,4	4.50	1.50		4.55 +1.01	
4.50 - 5.00	B9				MADE GROUND: Medium dense black and brown silty very gravelly fine to coarse SAND with occasional interlamination of black silt.. Gravel is angular to subrounded fine to coarse slag. Strong diesel/petrol odour.	(1.05)	e
5.60	D10					5.60 -0.04	b
5.00 - 6.45	D11	S.N=36 3,4,5,10,10,10	6.00	dry			
5.00 - 6.50	B12						
7.00	D13						
7.50 - 7.95	D14	S.N=24 2,3,5,4,6,7	7.50	4.90			
7.50 - 8.00	B15				Very weak red and grey MUDSTONE. Recovered as a firm gravelly clay. Below 8.50m : Clayey angular fine to coarse gravel.	(9.40)	f
8.50	D16						
9.00 - 9.45	D17	S.N=22 4,4,4,5,5,8	9.00	3.20			
9.00 - 9.50	B18						
Groundwater					Remarks		
No. Struck Behaviour					Chiselling on obstruction from 1.50 to 2.70m 2hrs, 13.50 to 14.00m 1.5hrs, 14.00 to 14.50m 1.5hrs and 14.50 to 15.00m 1.5hrs. Water was added to assist drilling from 3.00 to 4.50m.		
1 3.50m Rising to 2.75m after 20 mins.					Hole backfill : 0.00m to 0.50m Concrete (c), 0.50m to 2.00m Bentonite (b), 5.60m to 6.50m Bentonite (d), 6.50m to 15.00m Grout (g). Standpipe installed, 50mm diameter, response zone from 2.00m to 5.60m.		
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 : 50			Project TEESPORT ESTATE DISTRIBUTION WAREHOUSE		Borehole BH10 Sheet 1 of 2		
			Project no. 131108 Carried out for Tees and Hartlepool Port Authority Limited				

27/08/2002 15:18:51 ESG\log v2.11

# Borehole Log



Exploration Associates

Drilled by PM Logged by JH Checked by CL		Equipment and Methods See sheet 1			Ground Level + 5.58 m OD National Grid Coordinates		
Samples and Tests				Strata			
Depth	Type & No.	Records	Date Casing	Time Water	Description	Depth, Level (Thickness)	Legend
10.00	D19				As sheet 1	(9.40m)	
10.50 - 10.95	D20	S.N=43 3,5,9,10,10,14	10.50	3.90			
10.50 - 11.00	B21						
11.50	D22						
12.00 - 12.45	D23	S.N=42 2,6,7,9,11,15	12.00	5.10			
12.00 - 12.50	B24						
13.00	D25						
13.50 - 13.92	B26	S.81 7,10,16,15,25,25 for 40mm	13.50	4.70			
13.50 - 14.00	B27						
14.50 - 14.65	D28	S.25 14,25 for 50mm/25 for 20mm	14.50	3.80			
14.50 - 15.00	B29		20/10/2001 15.00	3.80	EXPLORATORY HOLE ENDS AT 15.00 m.	15.00 -9.44	
Groundwater No. Struck Behaviour				Remarks			
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 : 50				Project TEESPORT ESTATE DISTRIBUTION WAREHOUSE		Borehole <b>BH10</b> Sheet 2 of 2	
				Project no. 131108 Carried out for Tees and Hartlepool Port Authority Limited.			

27/05/2002 15:19:03 ESGLog v2.11

# Borehole Log



Exploration Associates

Drilled by Logged by Checked by	PM DKSP CL	Equipment and Methods Cable Percussion 200 mm diameter from 0.00m to 12.00m.	Ground Level National Grid Coordinates	+ 5.56 m OD
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Samples and Tests				Strata		Depth, Level (Thickness)	Legend
Depth	Type & No.	Records	Date Casing	Time Water	Description		
			27/10/2001 0.00	0.00	MADE GROUND: Firm red slightly gravelly CLAY. Gravel is angular to subrounded fine to coarse mudstone and gypsum.	(0.60)	
1.50 - 2.50	B1				MADE GROUND: Grey angular to subrounded fine to coarse GRAVEL of slag.	(1.80)	
					MADE GROUND: Black thinly to thickly laminated SILT. Occasional laminae of fine to medium sand.	(0.60)	
3.00 - 3.45	ES2 D3	S.N=19 3,4,9,3,3,4	3.00	dry			
3.00 - 3.50	B4						
3.75	EW7						
4.00 - 4.45	D5	S.N=21 1,2,5,5,5,5	4.00	wt	MADE GROUND: Medium dense dark grey silty fine to coarse SAND and angular and subangular fine to coarse GRAVEL of clinker, concrete, brick slag and mudstone. Occasional shell fragments noted.	(2.40)	
4.00 - 4.50	B6 ES8						
5.00 - 5.45	D9	S.N=16 6,8,3,5,4,4	5.00	2.10	Fine brown SAND some shells (drillers description).		
5.00 - 5.50	B10						
6.00 - 6.45	D11	S.N=21 3,5,6,5,5,4	6.00	3.00			
6.00 - 6.50	B12						
7.00	D13						
7.50 - 7.95	D14	S.N=29 4,6,7,7,8,7	7.50	3.10	Very weak red brown MUDSTONE. Recovered as slightly sandy clayey angular and subangular fine to coarse gravel. Fine to coarse gravel at 10.00m. Gypsum noted from 11.00m.	(6.55)	
7.50 - 8.00	B15						
8.50	D16						
9.00 - 9.45	D17	S.N=46 4,7,14,10,11,11	9.00	4.90			
9.00 - 9.50	B18						

Groundwater No. Struck Behaviour	Remarks
1 4.00m Rising to 3.75m after 20 mins.	Chiselling on obstruction from 1.50 to 2.20m 2hrs, 10.20 to 11.00m 1hr, 11.00 to 11.50m 1.5hrs and 11.50 to 12.00m 1.5hrs. Water was added to aid drilling from 4.00m. On completion borehole was backfilled with grout and arisings. Exploratory hole excavated to 3.00m using a JCB, prior to boring to remove any potential obstructions.

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 : 50	Project Project no. Carried out for	TEESPORT ESTATE DISTRIBUTION WAREHOUSE 131109 Tees and Hartlepool Port Authority Limited	Borehole BH11 Sheet 1 of 2
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27/08/2002 15:19:14 ESGL06 v2.11

# Borehole Log



Exploration Associates

Drilled by PM Logged by DK/SP Checked by CL	Equipment and Methods See sheet 1	Ground Level + 5.56 m CD National Grid Coordinates					
Samples and Tests			Strata				
Depth	Type & No.	Records	Date Casing	Time Water	Description	Depth, Level (Thickness)	Legend
10.00	D19						
10.50 - 10.85	D20	S, 84 7, 13, 14, 25, 25 for 45mm	10.50	4.30	As sheet 1	(6.55pen)	
10.50 - 11.00	B21						
11.50 - 11.56	D22	S 25 for 50mm, 25 for 15mm	11.50	3.40			
			27/10/2001 11.50	3.40			
11.50 - 12.00	B23				EXPLORATORY HOLE ENDS AT 12.00 m.	12.00 -6.44	
Groundwater No. Struck Behaviour					Remarks		
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 : 50					Project TEESPORT ESTATE DISTRIBUTION WAREHOUSE Project no. 131109 Carried out for Tees and Hartlepool Port Authority Limited		Borehole <b>BH11</b> Sheet 2 of 2

27/09/2002 15:19:24 ESGLog v2.11

# Borehole Log



Exploration Associates

Drilled by PM Logged by DK/SP Checked by CL	Equipment and Methods Cable Percussion 200 mm diameter from 0.00m to 13.00m.	Ground Level + 5.80 m OD National Grid Coordinates
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Samples and Tests				Strata			
Depth	Type & No.	Records	Date Casing	Time Water	Description	Depth, Level (Thickness)	Legend
			26/10/2001	0.00	MADE GROUND: Firm red slightly gravelly CLAY. Gravel is angular to subrounded fine to coarse mudstone and gypsum.	(1.00)	
1.50 - 2.50	B1				MADE GROUND: Firm thinly laminated red and brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse mudstone and brick with occasional bands of sand.	1.00 +4.80 (0.80)	
2.71	EW5				MADE GROUND: Medium dense black and brown slightly silty very sandy angular and subangular fine to coarse GRAVEL of brick, slag, concrete and clinker. Cobble size fragments of brick noted	1.80 +4.00	
3.00	ES2						
3.00 - 3.45	D3	S.N=10 3,2,3,3,2,2	3.00	1.00		(3.00)	
3.00 - 3.50	B4						
4.00	ES6						
4.00 - 4.45	D7	S.N=20 1,5,3,5,5,7	4.00	1.50			
4.00 - 4.50	B8				Brown slightly silty fine and medium SAND and subangular to subrounded fine to coarse GRAVEL of sandstone and mudstone. Frequent shell debris.		
4.80	D9					4.80 +1.00	
4.50	D10						
5.00 - 5.45	D11	S.N=26 2,5,8,10,3,4	5.00	2.00		4.90 +0.90	
5.00 - 5.50	B12						
6.00 - 6.45	D13	S.N=25 3,4,5,5,7,8	6.00	3.10			
6.00 - 6.50	B14						
7.00	D15				Very weak red brown MUDSTONE. Recovered as silty sandy angular and subangular fine to coarse gravel with occasional light grey discoloration.		
7.50 - 7.85	D16	S.N=37 3,6,7,10,10,10	7.50	3.00	Slightly sandy gravel with occasional silty bands below 8.50m. Gypsum noted below 12.00m.	(8.10)	
7.50 - 8.00	B17						
8.50	D18						
9.00 - 9.45	D19	S.N=32 4,5,7,7,8,10	9.00	4.10			
9.00 - 9.50	B20						

<b>Groundwater</b> No. Struck Behaviour 1 3.90m Rising to 2.71m after 20 mins.	<b>Remarks</b> Chiselling on obstruction from 12.30 to 12.50m 1hr and 12.50 to 13.00m 2hr. Water was added to aid drilling from 3.00 to 5.00m. On completion borehole was backfilled with grout and arisings. Exploratory hole excavated to 3.00m using a JCB, prior to boring, to remove potential obstructions.
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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 1:50	Project TEESPORT ESTATE DISTRIBUTION WAREHOUSE Project no. 131109 Carried out for Tees and Hartlepool Port Authority Limited	Borehole BH12 Sheet 1 of 2
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27/08/2002 15:19:38 ESG1.09 v2.11

# Borehole Log



Exploration Associates

Drilled by PM Logged by DK/SP Checked by CL		Equipment and Methods See sheet 1				Ground Level + 5.80 m OD National Grid Coordinates	
Samples and Tests			Strata				
Depth	Type & No.	Records	Date Casing	Time Water	Description	Depth, Level (Thickness)	Legend
10.00	D21						
10.50 - 10.95	D22	S.N=45	10.50	4.50			
10.50 - 11.00	B23	7,9/11,10,12,12					
11.50	D24				As sheet 1	(8.10pen)	
12.00 - 12.35	D25	S, 69	12.00	3.70			
12.00 - 12.50	B25	6,8/19,25,25 for 50mm					
12.50 - 12.57	D27	S	12.50	3.95			
		25 for 55mm, 25 for 15mm	26/10/2001	3.95			
12.50 - 13.00	B28		12.50		EXPLORATORY HOLE ENDS AT 13.00 m.	13.00 --7.20	
Groundwater No. Struck Behaviour					Remarks		
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 : 50					Project TEESPORT ESTATE DISTRIBUTION WAREHOUSE Project no. 131109 Carried out for Tees and Hartlepool Port Authority Limited		Borehole <b>BH12</b> Sheet 2 of 2

27/08/2002 15:19:45 ESGLog v2.11



# Borehole Log



Exploration Associates

Drilled by PM Logged by JH Checked by CL	Equipment and Methods Cable Percussion 230 mm diameter from 0.00m to 13.00m.	Ground Level + 5.70 m OD National Grid Coordinates
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Samples and Tests				Strata			
Depth	Type & No.	Records	Date Casing	Time Water	Description	Depth, Level (Thickness)	Legend
0.50	D1		17/10/2001 0.00	0.00	MADE GROUND: Firm red brown gravelly CLAY. Gravel is angular to subangular fine to coarse fragments of mudstone.	(0.50)	
0.80	D2				MADE GROUND: Loose red and grey slightly clayey angular fine to coarse GRAVEL of mudstone.	0.50 +5.20 (1.00)	
1.50 - 1.95	D3	S.N=10 3,2/4,3,1,2	1.50	dry		1.50 +4.20	
1.50 - 2.00	B4				MADE GROUND: Loose red brown silty very gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse slag.	(0.80)	
2.30	ES5					2.30 +3.40	
2.30	D6						
2.50 - 2.95	D7	S.N=2 1,2/1,1,-	2.50	dry			
2.50 - 3.00	B8				MADE GROUND: Very loose black indistinctly laminated very silty very gravelly fine to coarse slightly organic SAND. Gravel is subangular and subrounded fine to coarse slag. Strong hydrocarbon odour noted.	(1.40)	
3.05	W10						
3.50	ES9					3.70 +2.00	
4.00 - 4.45	D11	S.N=32 3,6/7,10,7,8	4.00	2.10	MADE GROUND: Black angular fine and medium GRAVEL of clinker, slag and brick. Strong diesel odour noted.	(1.00)	
4.00 - 4.50	B12						
4.70 - 5.15	D13	C.N=5 3,6/2,1,1,1	4.70	4.00		4.70 +1.00	
4.70 - 5.20	B14				MADE GROUND: Loose black and brown slightly gravelly fine and medium SAND. Gravel is angular to subangular fine slag and clinker.	(0.80)	
5.50	D15					5.50 +0.20	
6.00 - 6.45	D16	S.N=13 1,2/3,4,2,4	6.00	4.70			
6.00 - 6.50	B17						
			17/10/2001 6.50	5.10			
			18/10/2001 6.50	3.90			
7.00	D18						
7.50 - 7.95	D19	S.N=17 1,2/3,4,5,5	7.50	4.25			
7.50 - 8.00	B20				Very weak red and grey MUDSTONE. Recovered as stiff slightly gravelly clay.	(6.00)	
8.50	D21						
9.00 - 9.45	D22	S.N=50 1,3/11,9,14,16	9.00	3.50			
9.00 - 9.50	B23						

Groundwater No. Struck Behaviour 1 3.70m Rising to 3.05m after 20 mins.	Remarks Chiselling on obstruction 0.80 to 1.25m 1hr, 11.60 to 12.00m 1hr, 12.10 to 12.50 1hr and 12.50 to 13.00m 1hr. Water was added to assist drilling from 3.70 to 5.00m. On completion borehole was backfilled with grout and arisings.
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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 1:50	Project TEESPORT ESTATE DISTRIBUTION WAREHOUSE Project no. 131109 Carried out for Tees and Hartlepool Port Authority Limited	Borehole BH13 Sheet 1 of 2
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27/09/2002 15:19:57 ESGLog v2.11

# Borehole Log



Exploration Associates

Drilled by PM Logged by JH Checked by CL		Equipment and Methods See sheet 1			Ground Level + 5.70 m OD National Grid Coordinates		
Samples and Tests				Strata			
Depth	Type & No.	Records	Date Casing	Time Water	Description	Depth, Level (Thickness)	Legend
10.00	D24						
10.50 - 10.95	D25	S, N=27 10, 3, 9, 7, 4, 7	10.50	4.10	As sheet 1	(8.00)	
10.50 - 11.00	B26						
11.50	D27					11.50 - 5.80	
12.00 - 12.25	D28	S, 50 2, 2/25 for 20mm	12.00	5.40	Very weak red MUDSTONE with nodules/bands of gypsum/anhydrite. Recovered as angular fine to coarse gravel.	(1.00)	
12.00 - 12.50	B29						
12.50 - 12.62	D30	S, 25 19, 25 for 30mm/25 for 10mm	12.50	5.00	Weak red SILTSTONE. Recovered as gravel.	12.50 - 6.80 (0.50pen)	
			18/10/2001 13.00	5.00			
12.50 - 13.00	B31				EXPLORATORY HOLE ENDS AT 13.00 m.	13.00 - 7.30	
Groundwater No. Struck Behaviour				Remarks			
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 : 50				Project TEESPORT ESTATE DISTRIBUTION WAREHOUSE		Borehole BH13 Sheet 2 of 2	
				Project no. 131109 Carried out for Tees and Hartlepool Port Authority Limited			

27/08/2002 15:20:08 ESGLog v2.11

# Borehole Log



Exploration Associates

Drilled by PM Logged by JH Checked by CL		Equipment and Methods Cable Percussion 200 mm diameter from 0.00m to 13.00m.				Ground Level + 5.67 m OD National Grid Coordinates	
Samples and Tests				Strata			
Depth	Type & No.	Records	Date Casing	Time Water	Description	Depth, Level (Thickness)	Legend
			21/10/2001 0.00	0.00	MADE GROUND: Firm red slightly gravelly CLAY. Gravel is angular to subangular fine to coarse fragments of mudstone and gypsum.	(0.80)	
1.00 - 2.00	B1					0.80 +4.87	
			21/10/2001 3.00		MADE GROUND: Medium dense black silty very sandy GRAVEL. Gravel is angular to subangular fine to coarse slag, metal, concrete and sandstone. Sand is fine to coarse of ash.	(3.10)	
3.00 - 3.45	ES2 D3	S.N=11 1,2,2,3,2,4	23/10/2001 3.00				
3.00 - 3.50	B4						
4.00 - 4.45	D5	S.N=6 1,1/2,1,2,2	4.00	dry	MADE GROUND: Loose black slightly silty angular to subangular fine to coarse GRAVEL of slag, clinker and sandstone.	3.90 +1.77	
4.00 - 4.50	B6				Below 4.00m strong petrol/diesel odour.	(0.80)	
4.15	EW11						
4.50	ES7						
4.70	D8					4.70 +0.97	
5.00 - 5.45	D9	S.N=19 1,3/4,6,4,5	5.00	3.10	Medium dense black, grey and brown fine SAND some interlamination of black silt interbeds. Strong petrol/diesel odour.	(0.55)	
5.00 - 5.50	B10					5.25 +0.42	
6.00 - 6.45	D12	S.N=45 7,5,9,8,13,15	6.00				
6.00 - 6.50	B13						
7.00	D14						
7.50 - 7.95	D15	S.N=28 3,8,9,6,6,7	7.50	4.50	Very weak red MUDSTONE. Recovered as very stiff very gravelly clay.	(6.25)	
7.50 - 8.00	B16						
8.50	D17						
9.00 - 9.45	D18	S.N=50 5,10/11,11,13,15	9.00	3.90			
9.00 - 9.50	B19						
Groundwater No. Struck Behaviour 1 4.70m Rising to 4.15m after 20 mins.					Remarks Chiselling on obstruction from 0.50 to 1.00m 1.25hr, 1.75 to 2.20m 1.5hr, 2.50 to 3.00 1.5hr, 11.50 to 12.00m 1.25hr, 12.00 to 12.50m 1.5hr and 12.50 to 13.00m 1.5hr. On completion borehole was backfilled with grout and arisings.		
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 1:50		Project TEESPORT ESTATE DISTRIBUTION WAREHOUSE			Borehole BH14 Sheet 1 of 2		
		Project no. 131109 Carried out for Tees and Hartlepool Port Authority Limited					

27/09/2002 15:20:19 ESGLog v2.11

# Borehole Log



Exploration Associates

Drilled by PM Logged by JH Checked by CL		Equipment and Methods See sheet 1				Ground Level + 5.67 m OD National Grid Coordinates	
Samples and Tests				Strata			
Depth	Type & No.	Records	Date Casing	Time Water	Description	Depth, Level (Thickness)	Legend
10.00	D20				As sheet 1		
10.50 - 10.95	D21	S.N=32 3,5,6,8,9,10	10.50	4.30		(6.25)	
10.50 - 11.00	B22						
11.50	D23				Very weak red MUDSTONE with nodules of gypsum/anhydrite. Recovered as angular fine to coarse gravel.	11.50 --5.83	
12.00 - 12.24	D24	S.53 7,15,25,25 for 15mm	12.00	4.50		(1.50pen)	
12.00 - 12.50	B25						
12.50 - 12.57	D26	S.25 25 for 50mm/25 for 20mm	12.50	4.00			
			23/10/2001 13.00	4.00			
12.50 - 13.00	B27				EXPLORATORY HOLE ENDS AT 13.00m.	13.00 --7.33	
Groundwater No. Struck Behaviour					Remarks		
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 : 50					Project TEESPORT ESTATE DISTRIBUTION WAREHOUSE Project no. 131109 Carried out for Tees and Hartlepool Port Authority Limited		Borehole <b>BH14</b> Sheet 2 of 2

27/09/2002 15:20:30 ESGLog v2.11

# Borehole Log



Exploration Associates

Drilled by Logged by Checked by		Equipment and Methods Cable Percussion 200 mm diameter from 0.00m to 12.50m.			Ground Level + 5.89 m OD National Grid Coordinates		
Samples and Tests				Strata			
Depth	Type & No.	Records	Date Casing	Time Water	Description	Depth, Level (Thickness)	Legend
			25/10/2001 0.00	0.00	MADE GROUND: Firm red slightly gravelly CLAY. Gravel is angular to subrounded fine to coarse mudstone, gypsum and slag.	(0.70)	
1.50 - 2.50	B1					0.70 +4.99	
2.89	EW5				MADE GROUND: Black and grey silty very sandy (ash) GRAVEL. Gravel is angular to subrounded fine to coarse sandstone, brick and concrete.	(2.30)	
3.00 3.00 - 3.45 3.00 - 3.50	ES2 D3 B4	S.N=13 3,43,3,4,3	3.00			3.00 +2.69	
4.00 4.00 - 4.45 4.00 - 4.50	ES6 D7 B8	S.N=13 3,62,3,4,4	4.00	1.20	MADE GROUND: Medium dense black slightly silty sandy angular and subangular fine to coarse GRAVEL of slag, clinker and mudstone. Occasional cobbles of slag and sandstone. Strong diesel odour noted.	(2.25)	
5.25 5.50 - 5.95 5.50 - 6.00	D6 D10 B11	S.N=23 3,45,5,7,6	5.50	3.25		5.25 +0.44	
6.50	D12						
7.00 - 7.45 7.00 - 7.50	D13 B14	S.N=24 4,5,6,6,7	7.00	4.10	Very weak red brown MUDSTONE. Recovered as slightly clayey sandy subangular and angular fine to coarse gravel. Slightly silty sandy gravel below 7.00m. Slightly sandy gravel with silty bands below 8.00m. Gypsum noted below 11.50m.	(7.25)	
8.00	D15						
8.50 - 8.95 8.50 - 9.00	D16 B17	S.N=45 8,9,9,14,10,12	8.50	3.50			
9.50	D18						
Groundwater No. Struck Behaviour				Remarks			
1	3.00m	Rising to 2.89m after 20 mins.	Chiseling on obstruction from 11.00 to 11.50m 1.5hrs, 11.85 to 12.00m 1hr and 12.00 to 12.50m 1.5hrs. Water was added to aid drilling from 3.00 to 4.50m. On completion borehole was backfilled with grout and arisings. Exploratory hole excavated to 3.10m using a JCB, prior to boring, to remove potential obstructions.				
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 1:50			Project TEESPORT ESTATE DISTRIBUTION WAREHOUSE			Borehole BH15 Sheet 1 of 2	
			Project no. 131109				
			Carried out for Tees and Hartlepool Port Authority Limited				

27/08/2002 15:20:41 ESGLOG V2.11

# Borehole Log



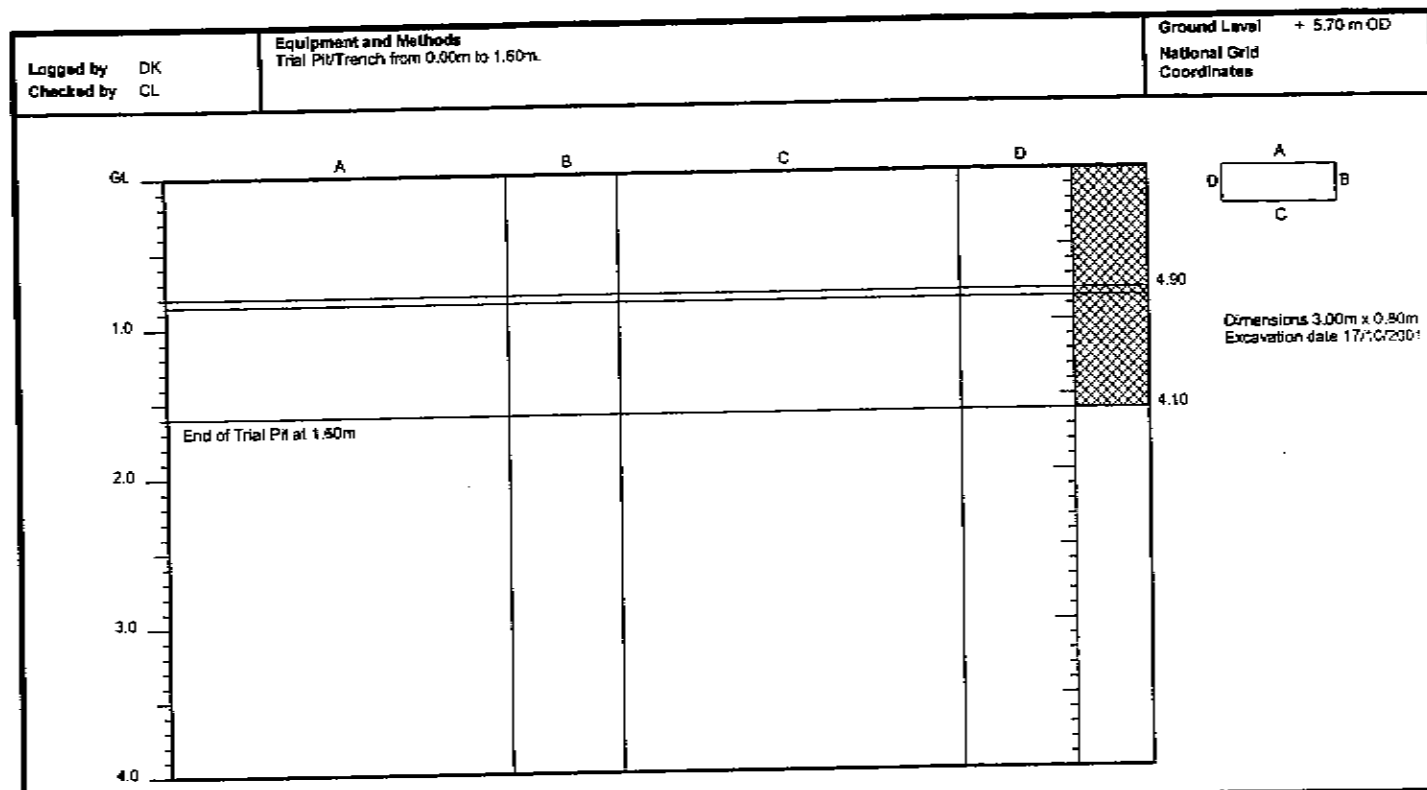
Exploration Associates

Drilled by PM Logged by DK/SP Checked by CL		Equipment and Methods See sheet 1			Ground Level + 5.69 m OD National Grid Coordinates				
Samples and Tests				Strata					
Depth	Type & No.	Records	Date Casing	Time Water	Description	Depth, Level (Thickness)	Legend		
10.00 - 10.45	D19	S, N=33 2, 6, 7, 8, 8, 10	10.00	4.50	As sheet 1          EXPLORATORY HOLE ENDS AT 12.50 m.	(7.25pen)			
10.00 - 10.50	B20								
11.00	D21								
11.50 - 11.73	D22	S, 50 9, 12/25 for 60mm, 25 for 20mm	11.50	3.50					
11.50 - 12.00	B23								
12.00	D24	S	12.00	3.20					
12.00 - 12.50	B25		25/10/2001 12.50	3.20					
Groundwater					Remarks				
No. Struck Behaviour									
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 1:50			Project TEESPORT ESTATE DISTRIBUTION WAREHOUSE Project no. 131108 Carried out for Tees and Hartlepool Port Authority Limited		Borehole <b>BH15</b> Sheet 2 of 2				

27/09/2002 15:20:51 ESGJlog v2.11



# Trial Pit Log

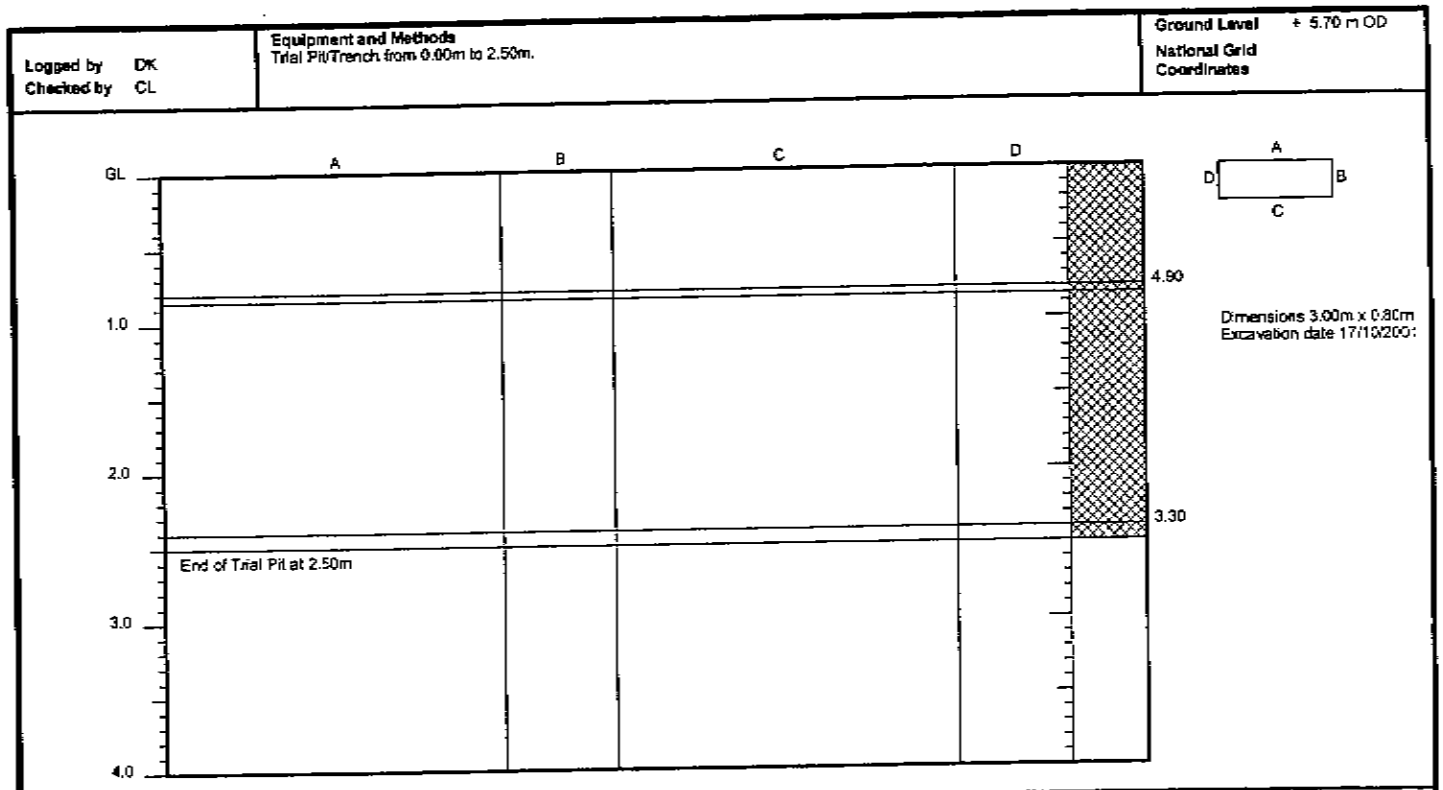


Samples and Tests			Strata		
Depth (m)	Type & No.	Records	Depth (m)	No.	Description
			0.00-0.80	1	MADE GROUND: Firm red slightly gravelly CLAY. Gravel is angular to subrounded fine to coarse mudstone and gypsum.
			0.80-0.85	2	MADE GROUND: Firm friable sandy slightly gravelly CLAY. Gravel is angular to subrounded fine to coarse siltstone, concrete and coal. Rootlets noted.
			0.85-1.60	3	MADE GROUND: Grey slightly clayey sandy angular to subrounded fine to coarse GRAVEL of slag. Occasional cobbles fragments of slag noted
Groundwater None encountered.				Remarks On completion the trial pit was backfilled to ground level with arslings. Stability : Stable, Shoring : None	
Notes : For explanation of symbols and abbreviations see key sheet. All depths in metres. Scale 1 : 50			Project TEESPORT ESTATE DISTRIBUTION WAREHOUSE		Trial Pit <b>TP1</b> Sheet 1 of 1
			Project no. 131108		
			Carried out for Tees and Hartlepool Port Authority Limited		

27/08/2002 15:24:06 ESGLLog V2.11



# Trial Pit Log



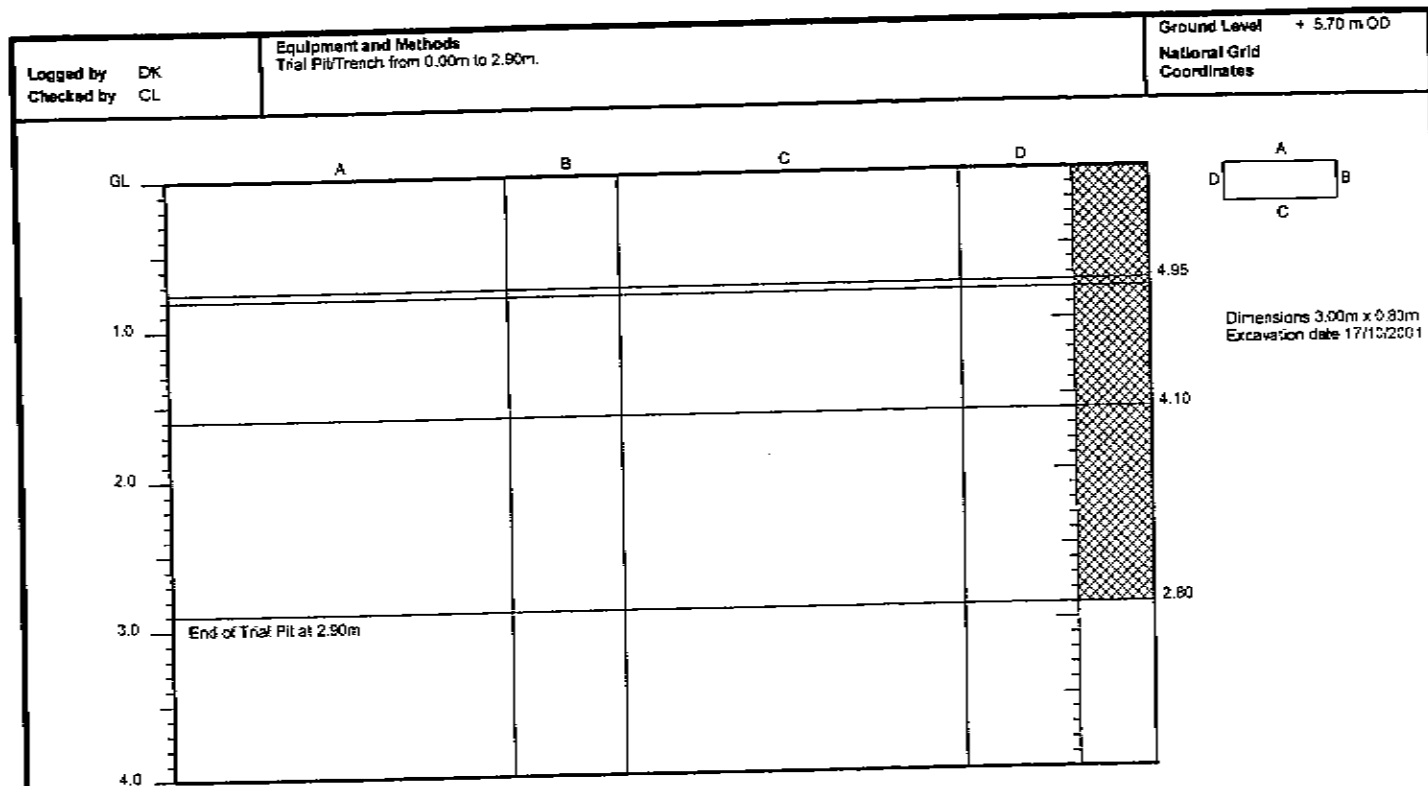
Samples and Tests			Strata		
Depth (m)	Type & No.	Records	Depth (m)	No.	Description
			0.00-0.80	1	MADE GROUND: Firm red slightly gravelly CLAY. Gravel is angular to subrounded fine to coarse of mudstone and gypsum.
			0.80-0.85	2	MADE GROUND: Firm friable brown sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse fragments of brick, concrete, and coal.
			0.85-2.40	3	MADE GROUND: Grey slightly clayey slightly sandy angular to subrounded fine to coarse GRAVEL of slag. Occasional cobbles of slag noted.
			2.40-2.50	4	MADE GROUND: Black slightly sandy SILT. [Petrochemical sheen noted]
<b>Groundwater</b> No groundwater encountered			<b>Remarks</b> On completion the Trial pit was backfilled with arisings to ground level.		
Notes : For explanation of symbols and abbreviations see key sheet. All depths in metres. Scale 1 : 50			<b>Project</b> TEESPORT ESTATE DISTRIBUTION WAREHOUSE <b>Project no.</b> 131109 <b>Carried out for</b> Tees and Hartlepool Port Authority Limited		<b>Trial Pit</b> <b>TP2</b> Sheet 1 of 1

27/08/2002 16:24:50 ESGLog v2.11





# Trial Pit Log



Samples and Tests			Strata		
Depth (m)	Type & No.	Records	Depth (m)	No.	Description
			0.00-0.75	1	MADE GROUND: Firm red slightly gravelly CLAY. Gravel is angular to subrounded fine to coarse mudstone, concrete and wire.
			0.75-0.80	2	MADE GROUND: Firm friable brown sandy slightly gravelly CLAY. Gravel is angular to subrounded fine to coarse brick, concrete, and sandstone.
			0.80-1.60	3	MADE GROUND: Brown fine to medium SAND.
			1.60-2.90	4	MADE GROUND: Black hiny laminated SILT. Some laminae of fine to medium sand.  Below 2.00m: Thinly to thickly laminated.

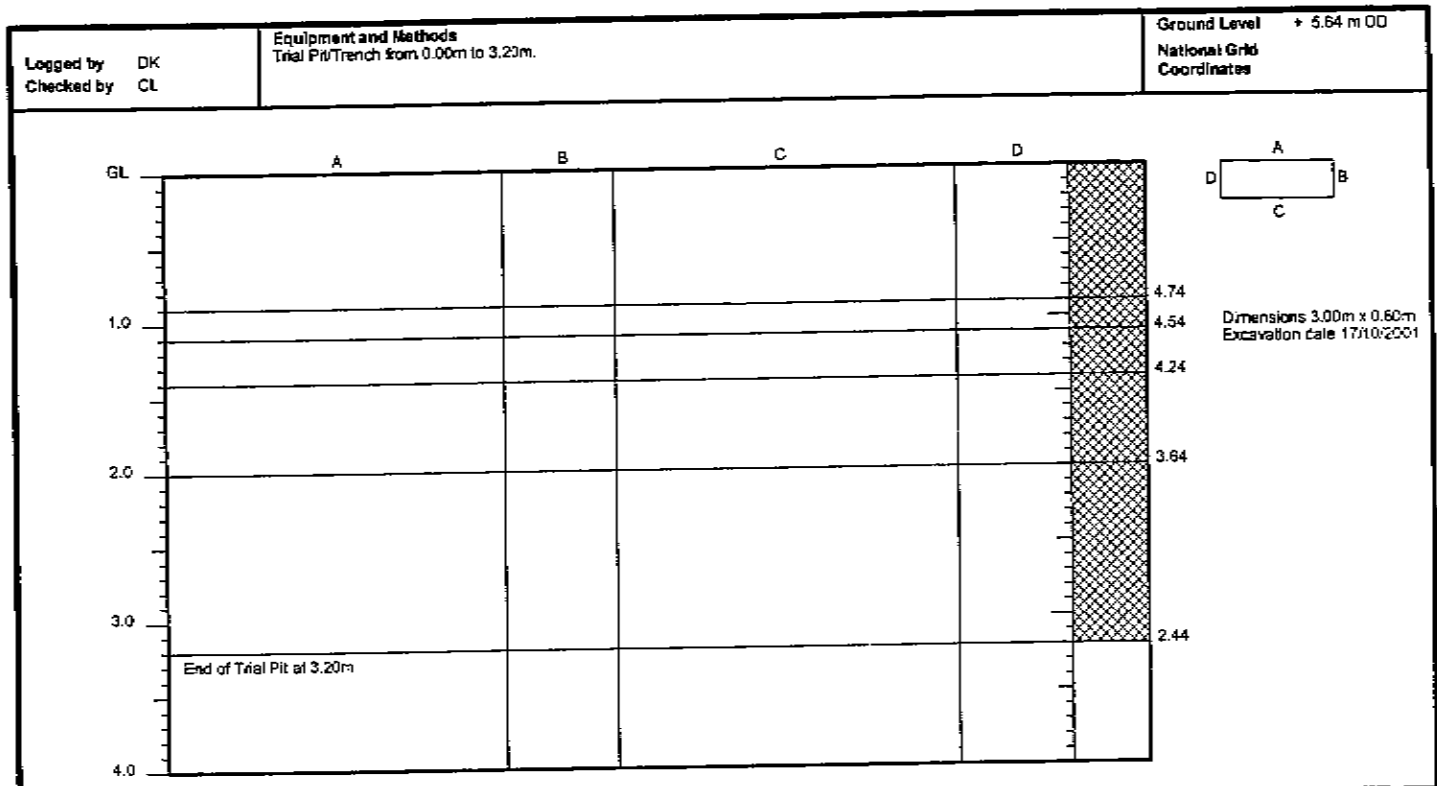
Groundwater None encountered.	<b>Remarks</b> On completion the trial pit was backfilled with arisings to ground level. Stability: Stable, Shoring: None
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27/08/2002 15:24:59 E5GLog v2.11

# Trial Pit Log



Exploration Associates



Samples and Tests			Strata		
Depth (m)	Type & No.	Records	Depth (m)	No.	Description
			0.00-0.90	1	MADE GROUND: Firm red slightly gravelly CLAY. Gravel is angular to subrounded fine to coarse mudstone and gypsum
			0.90-1.10	2	MADE GROUND: Grey angular to subrounded coarse GRAVEL of slag.
			1.10-1.40	3	MADE GROUND: Light grey slightly gravelly fine to medium SAND. Gravel is angular to subrounded fine to coarse fragments of concrete and mudstone.
			1.40-2.00	4	MADE GROUND: Black slightly sandy SILT. With occasional bands of thin laminations of fine to medium sand.
			2.00-3.20	5	MADE GROUND: Black organic very sandy SILT. Some decaying wood noted.

**Groundwater**  
3.20m seepage noted.

**Remarks**  
On completion the Trial pit was backfilled with arisings to ground level.  
Stability : Stable, Shoring : None

Notes : For explanation of symbols and abbreviations see key sheet. All depths in metres.  
Scale 1 : 50

**Project** TEESPORT ESTATE DISTRIBUTION WAREHOUSE  
**Project no.** 131109  
**Carried out for** Tees and Hartlepool Port Authority Limited

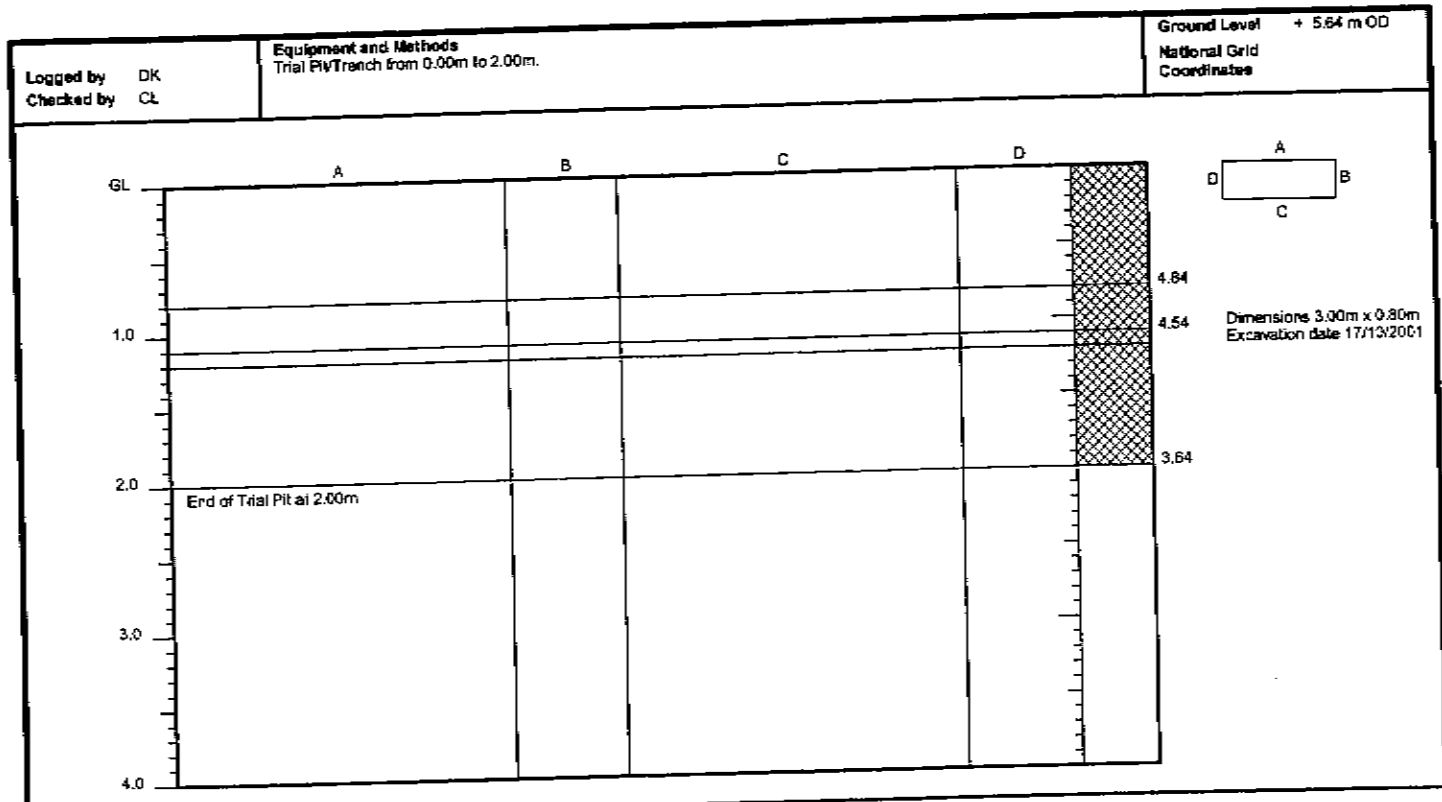
**Trial Pit**  
**TP4**  
 Sheet 1 of 1

27/08/2002 15:25:09 ESGLog v2.11



# Trial Pit Log

Exploration Associates



Samples and Tests			Strata		
Depth (m)	Type & No.	Records	Depth (m)	No.	Description
			0.00-0.80	1	MADE GROUND: Firm red slightly gravelly CLAY. Gravel is angular to subrounded fine to coarse mudstone.
			0.80-1.10	2	MADE GROUND: Grey angular to subangular fine to coarse GRAVEL size fragments of slag.
			1.10-1.20	3	MADE GROUND: Brown fine and medium SAND.
			1.20-2.00	4	MADE GROUND: Black thin to thickly laminated organic slightly sandy SILT. Some laminae of fine to medium sand.

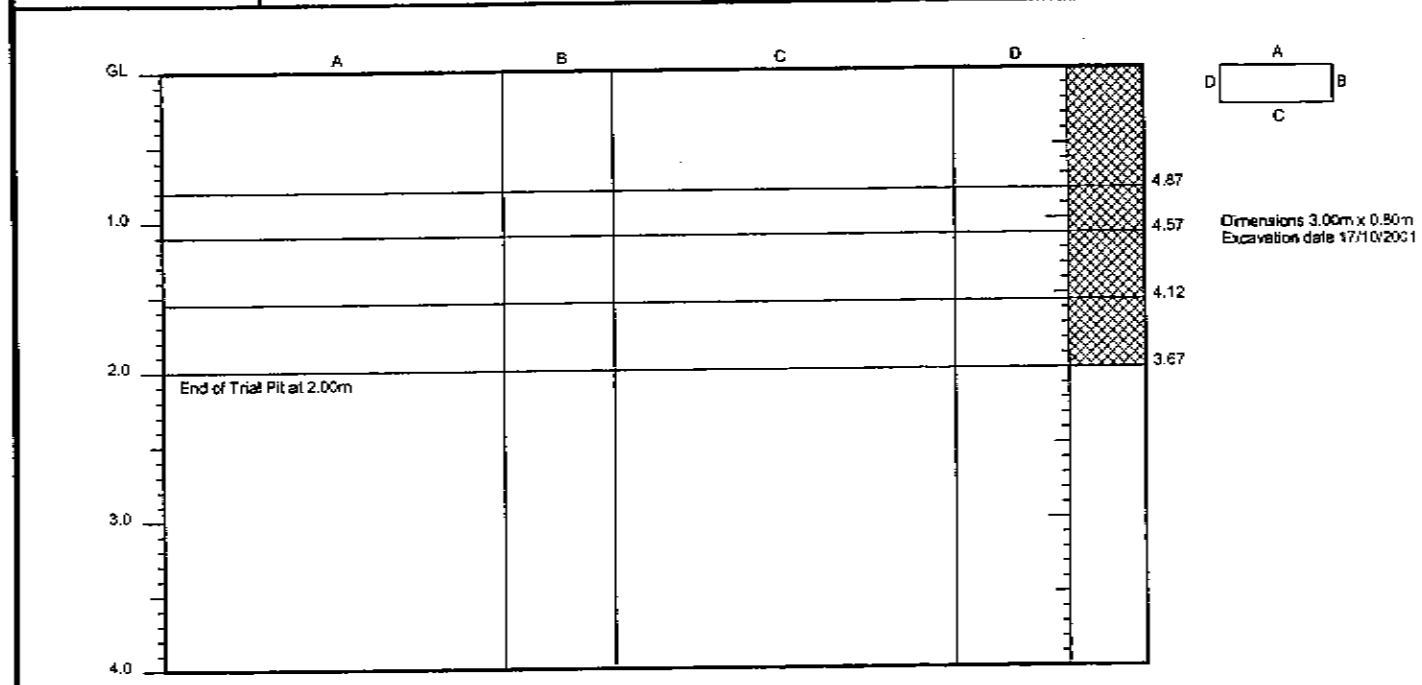
<b>Groundwater</b> No groundwater encountered	<b>Remarks</b> On completion the trial pit was backfilled with arisings to ground level.
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27/08/2002 15:26:18 ESGLog v2.11



# Trial Pit Log

Logged by DK Checked by CL	<b>Equipment and Methods</b> Trial Pit/Trench from 0.00m to 2.00m.	Ground Level + 5.67 m OD National Grid Coordinates
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Samples and Tests			Strata		
Depth (m)	Type & No.	Records	Depth (m)	No.	Description
			0.00-0.80	1	MADE GROUND: Firm red slightly gravelly CLAY. Gravel is angular to subangular fine to coarse mudstone.
			0.80-1.10	2	MADE GROUND: Light grey sandy angular to subrounded fine to coarse GRAVEL of slag.
			1.10-1.55	3	MADE GROUND: Brown slightly gravelly fine to medium SAND. Gravel is angular to subrounded fine to coarse fragments of brick, concrete, and slag.
			1.55-2.00	4	MADE GROUND: Thinly laminated black SILT. With some laminae of fine sand.

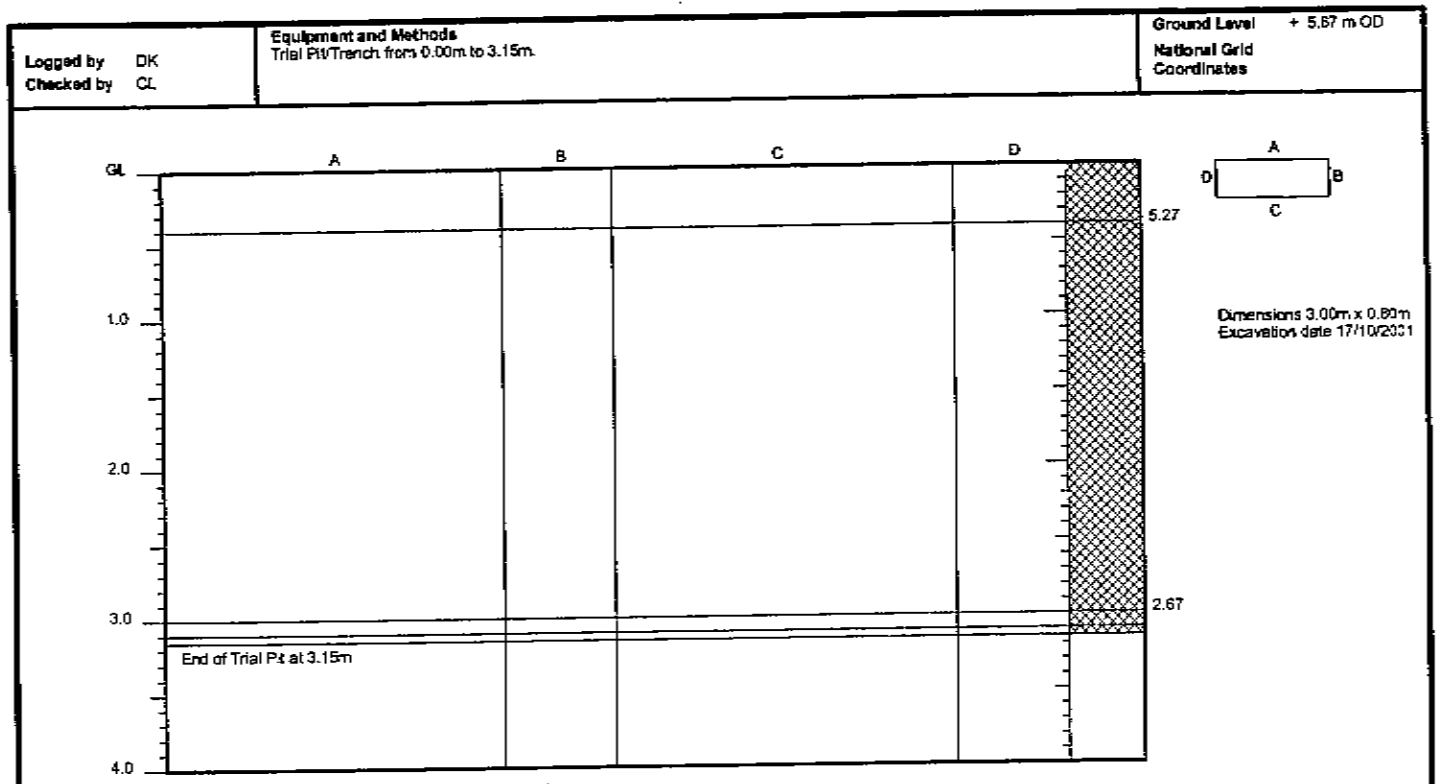
Groundwater No groundwater encountered	<b>Remarks</b> On completion the trial pit was backfilled with arisings to ground level.  Stability : Stable, Shoring : None
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Notes : For explanation of symbols and abbreviations see key sheet. All depths in metres.  Scale 1 : 50	<b>Project</b> TEESPORT ESTATE DISTRIBUTION WAREHOUSE <b>Project no.</b> 131109 <b>Carried out for</b> Tees and Hartlepool Port Authority Limited	<b>Trial Pit</b> <b>TP6</b> Sheet 1 of 1
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27/08/2002 15:25:28 E8GLog v2.11



# Trial Pit Log



Samples and Tests			Strata			
Depth (m)	Type & No.	Records	Depth (m)	No.	Description	
			0.00-0.40	1	MADE GROUND: Firm red slightly gravelly CLAY. Gravel is angular to subrounded fine to coarse mudstone.	
			0.40-3.00	2	MADE GROUND: Brown very clayey slightly gravelly SAND. Gravel is angular to subangular fine to coarse brick, concrete, slag, wire and coal. Some cobbles and boulders (500mmx 300mm) of concrete.	
			3.00-3.10	3	MADE GROUND: Black very clayey gravelly fine to medium SAND of ash. Gravel is angular to subangular fine to coarse clinker, slag and coal.	
			3.10-3.15	4	MADE GROUND: Black sandy angular to subangular fine to coarse GRAVEL size fragments of slag, concrete, sandstone and wire.	
Groundwater 3.00 strike			<b>Remarks</b> On completion the trial pit was backfilled with arisings to ground level. Stability : Stable, Shoring : None			
Notes : For explanation of symbols and abbreviations see key sheet. All depths in metres. Scale 1 : 50			<b>Project</b> TEESPORT ESTATE DISTRIBUTION WAREHOUSE <b>Project no.</b> 131109 <b>Carried out for</b> Tees and Hartlepool Port Authority Limited			<b>Trial Pit</b> <b>TP7</b> Sheet 1 of 1

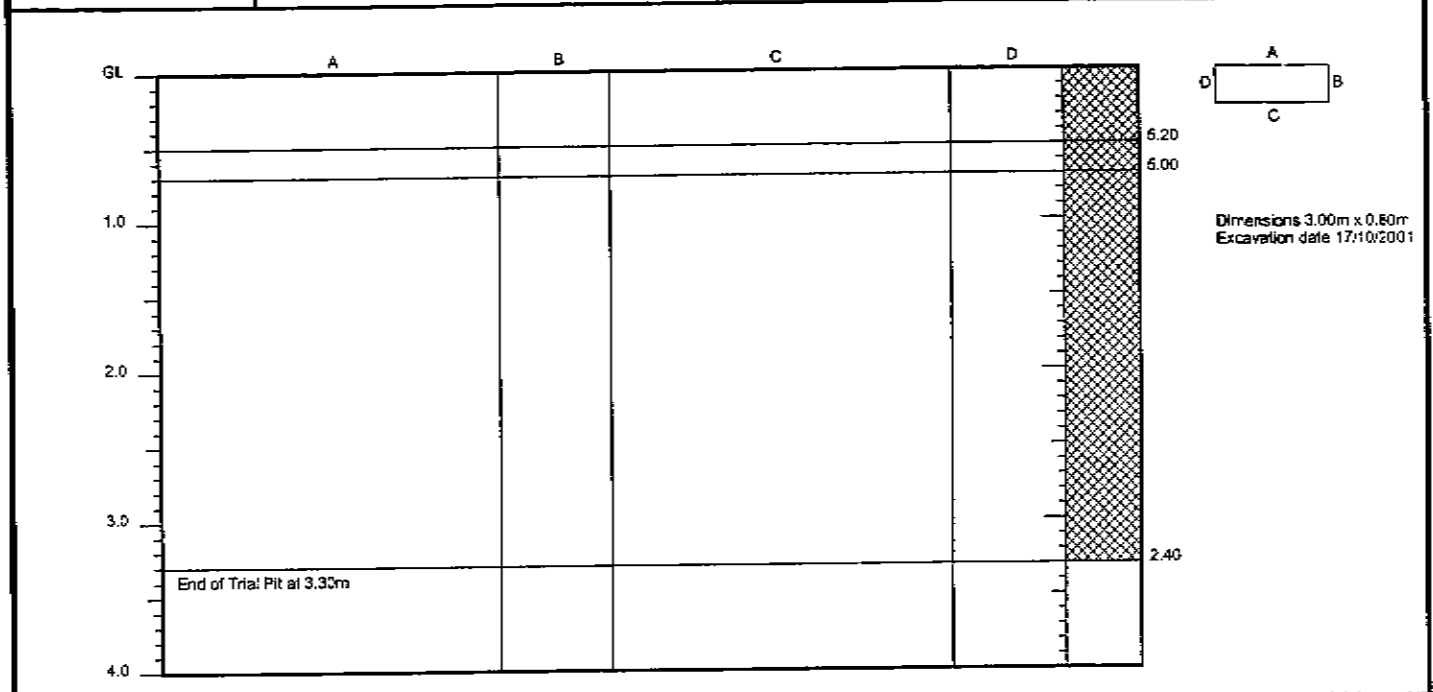
27/08/2002 15:25:37 ESGLog v2.11

# Trial Pit Log



Exploration Associates

Logged by DK Checked by CL	<b>Equipment and Methods</b> Trial Pit/Trench from 0.00m to 3.30m.	Ground Level + 5.70 m OD National Grid Coordinates
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Samples and Tests			Strata		
Depth (m)	Type & No.	Records	Depth (m)	No.	Description
			0.00-0.50	1	MADE GROUND: Firm red gravelly CLAY. Gravel is subangular to subrounded fine to coarse mudstone.
			0.50-0.70	2	MADE GROUND: Stiff grey and brown very gravelly CLAY. Gravel is angular to subrounded fine to coarse brick, concrete and wire.
			0.70-3.30	3	MADE GROUND: Brown very clayey gravelly fine to medium SAND of ash. Gravel is angular to subrounded fine to coarse brick and plastic. Occasional boulders of concrete.

<b>Groundwater</b> No groundwater encountered	<b>Remarks</b> On completion the trial pit was backfilled with arisings to ground level. Stability : Stable, Shoring : None
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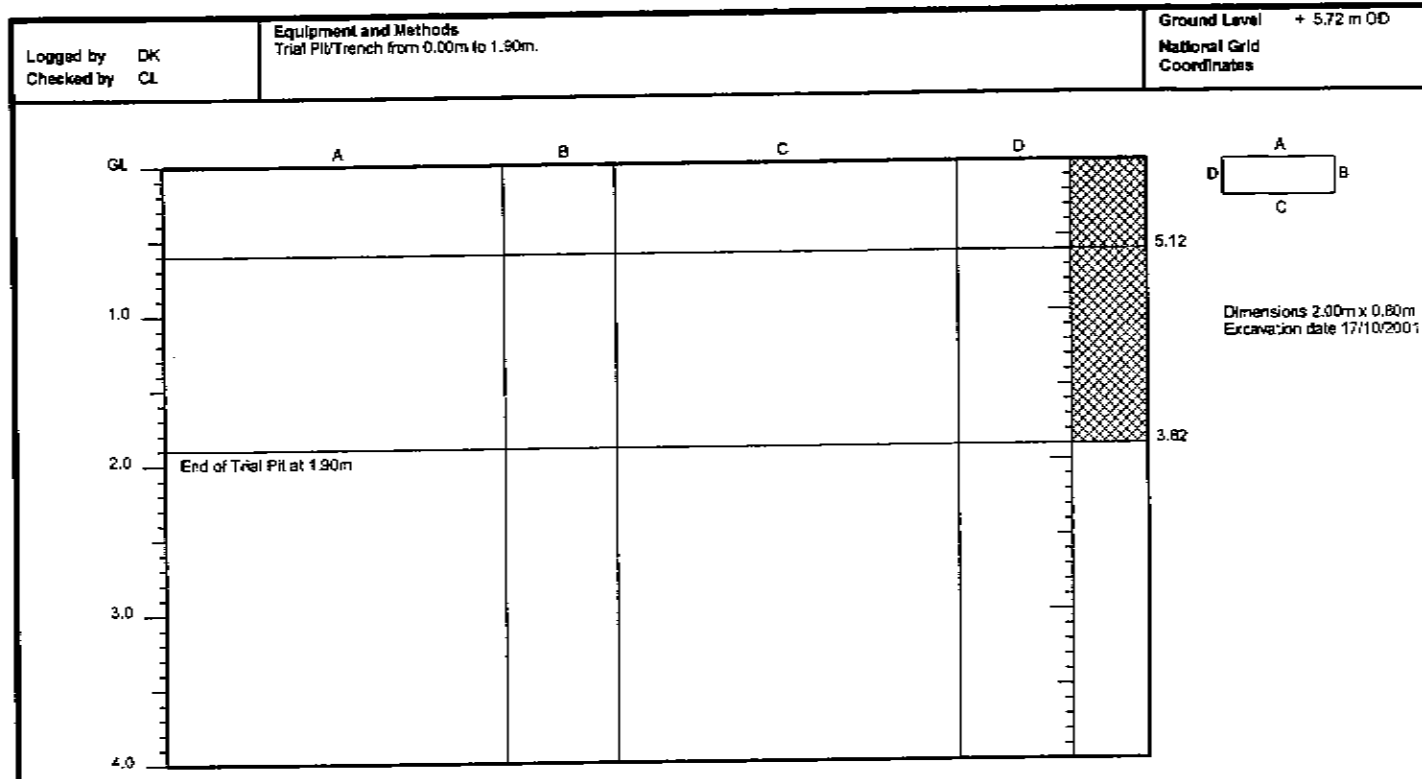
Notes : For explanation of symbols and abbreviations see key sheet. All depths in metres. Scale 1 : 50	<b>Project</b> TEESPORT ESTATE DISTRIBUTION WAREHOUSE <b>Project no.</b> 131106 <b>Carried out for</b> Tees and Hartlepool Port Authority Limited	<b>Trial Pit</b> <b>TP8</b> Sheet 1 of 1
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27/09/2002, 15:25:48, ESGL02 V2.11



# Trial Pit Log

Exploration Associates



Samples and Tests			Strata		
Depth (m)	Type & No.	Records	Depth (m)	No.	Description
			0.00-0.60	1	MADE GROUND: Firm red gravelly CLAY. Gravel is angular to subrounded fine to coarse mudstone and gypsum.
			0.60-1.90	2	MADE GROUND: Black very gravelly fine to coarse SAND of ash. Gravel is angular to subrounded fine to coarse concrete and brick. With many cobbles and boulders of concrete.

<b>Groundwater</b> No groundwater encountered	<b>Remarks</b> On completion the borehole was backfilled with arisings to ground level. Stability: Stable, Shoring: None
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Notes: For explanation of symbols and abbreviations see key sheet. All depths in metres.  Scale 1:50	<b>Project</b> TEESPORT ESTATE DISTRIBUTION WAREHOUSE <b>Project no.</b> 131103 <b>Carried out for</b> Tees and Hartlepool Port Authority Limited	<b>Trial Pit</b> <b>TP9</b> Sheet 1 of 1
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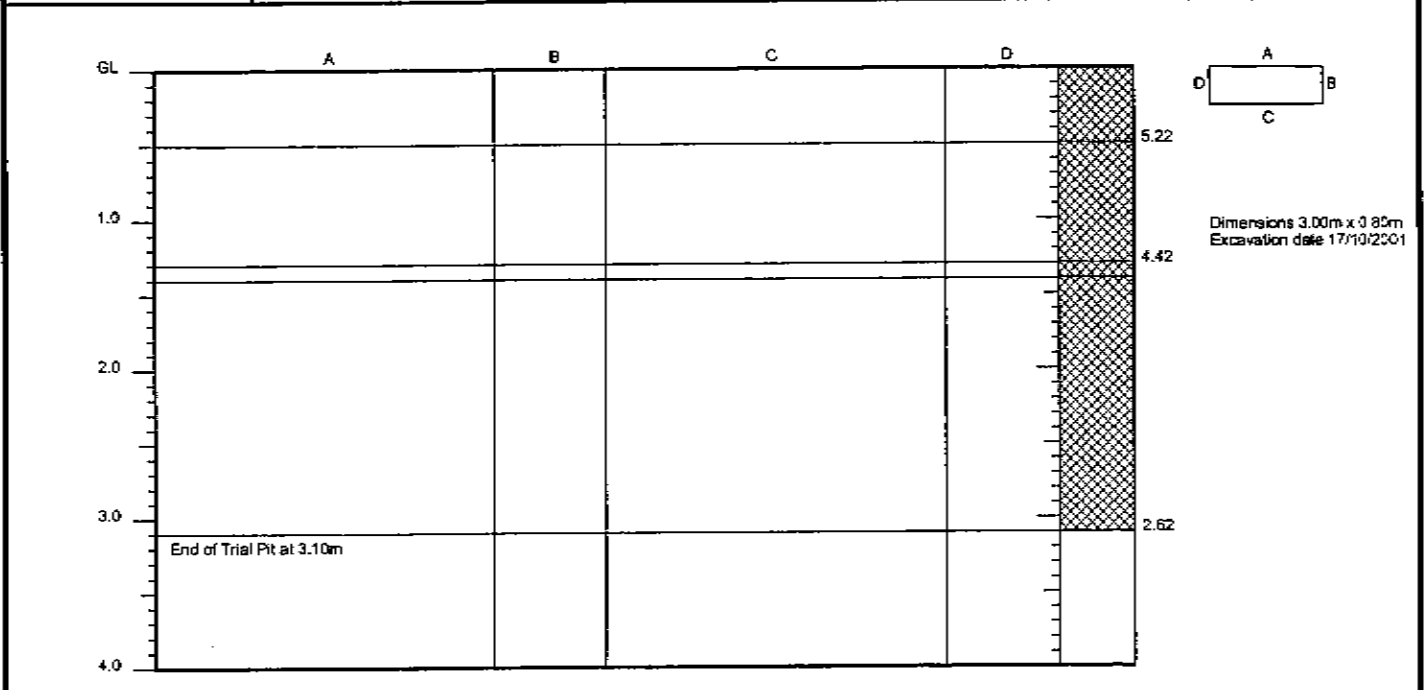
27/09/2002 15:26:55 ESGLog v2.1.1



# Trial Pit Log

Exploration Associates

Logged by DK Checked by CL	<b>Equipment and Methods</b> Trial Pit/Trench from 0.00m to 3.10m.	Ground Level + 5.72 m OD National Grid Coordinates
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Samples and Tests			Strata		
Depth (m)	Type & No.	Records	Depth (m)	No.	Description
			0.00-0.50	1	MADE GROUND: Firm red gravelly CLAY. Gravel is angular to subrounded fine to coarse of mudstone.
			0.50-1.30	2	MADE GROUND: Black very gravelly fine to coarse SAND of ash. Gravel is angular to subangular fine to coarse brick, concrete, slag and metal.
			1.30-1.40	3	MADE GROUND: Light grey sandy angular to subrounded fine to coarse GRAVEL of slag.
			1.40-3.10	4	MADE GROUND: Dark brown very gravelly SAND of ash. Gravel is angular to subrounded fine to coarse brick, concrete and metal.

Groundwater 3.10 Seepage	<b>Remarks</b> On completion the trial pit was backfilled with arisings to ground level. Stability : Stable, Shoring : None
-----------------------------	---

Notes : For explanation of symbols and abbreviations see key sheet. All depths in metres. Scale 1 : 50	<b>Project</b> TEESPORT ESTATE DISTRIBUTION WAREHOUSE Project no. 131108 Carried out for Tees and Hartlepool Port Authority Limited	<b>Trial Pit</b> TP10 Sheet 1 of 1
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27/09/2002 15:24:15 ESGLog v2.11

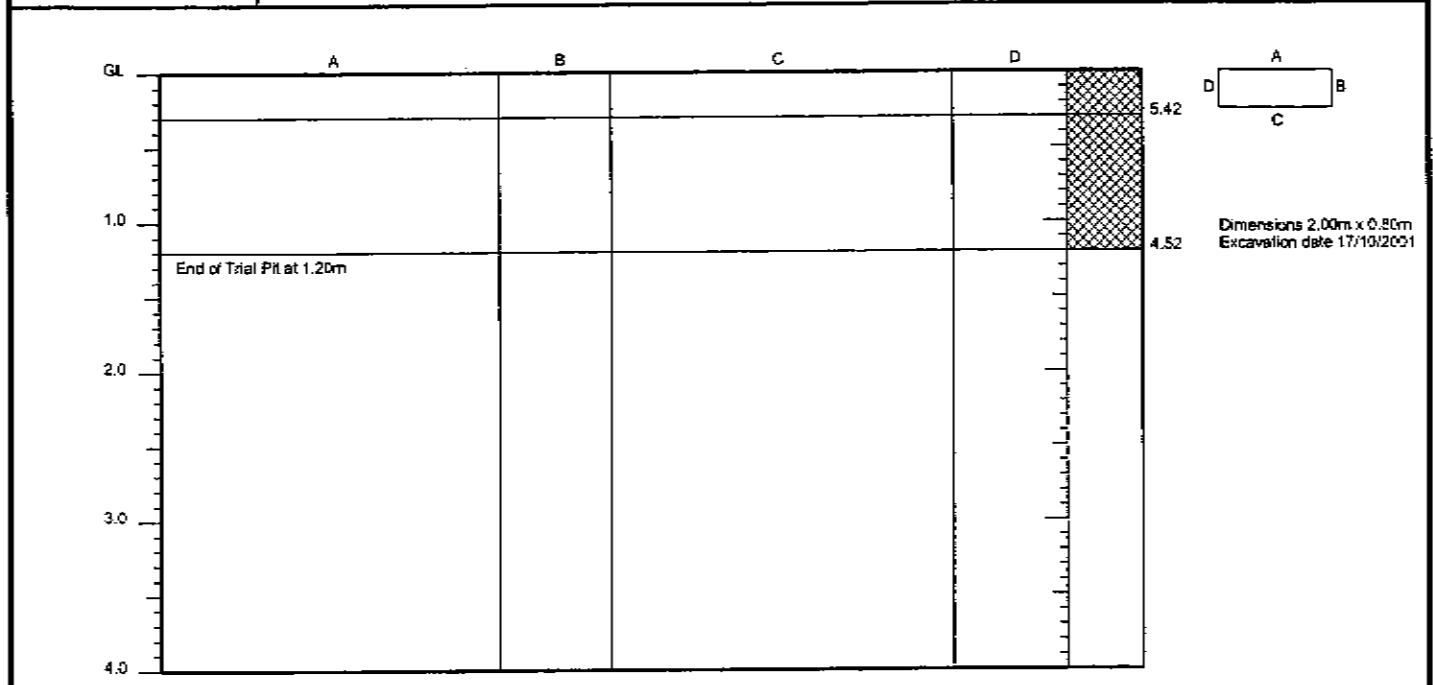


# Trial Pit Log



Exploration Associates

Logged by DK Checked by CL	<b>Equipment and Methods</b> Trial Pit/Trench from 0.00m to 1.20m.	<b>Ground Level</b> + 5.72 m OD <b>National Grid Coordinates</b>
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Samples and Tests			Strata		
Depth (m)	Type & No.	Records	Depth (m)	No.	Description
			0.00-0.30	1	MADE GROUND: Firm red gravelly CLAY. Gravel is angular to subangular fine to coarse mudstone.
			0.30-1.20	2	MADE GROUND: Soft and firm brown and black sandy (ash) gravelly CLAY. Gravel is angular to subangular fine to coarse metal, slag, concrete and brick. Cobbles and boulders of concrete noted.

<b>Groundwater</b> No groundwater encountered	<b>Remarks</b> On completion the trial pit was backfilled with arisings to ground level. Stability : Stable, Shoring : None
--	---

Notes : For explanation of symbols and abbreviations see key sheet. All depths in metres. Scale 1 : 50	Project <b>TEESPORT ESTATE DISTRIBUTION WAREHOUSE</b> Project no. <b>131109</b> Carried out for <b>Tees and Hartlepool Port Authority Limited</b>	Trial Pit <b>TP11</b> Sheet 1 of 1
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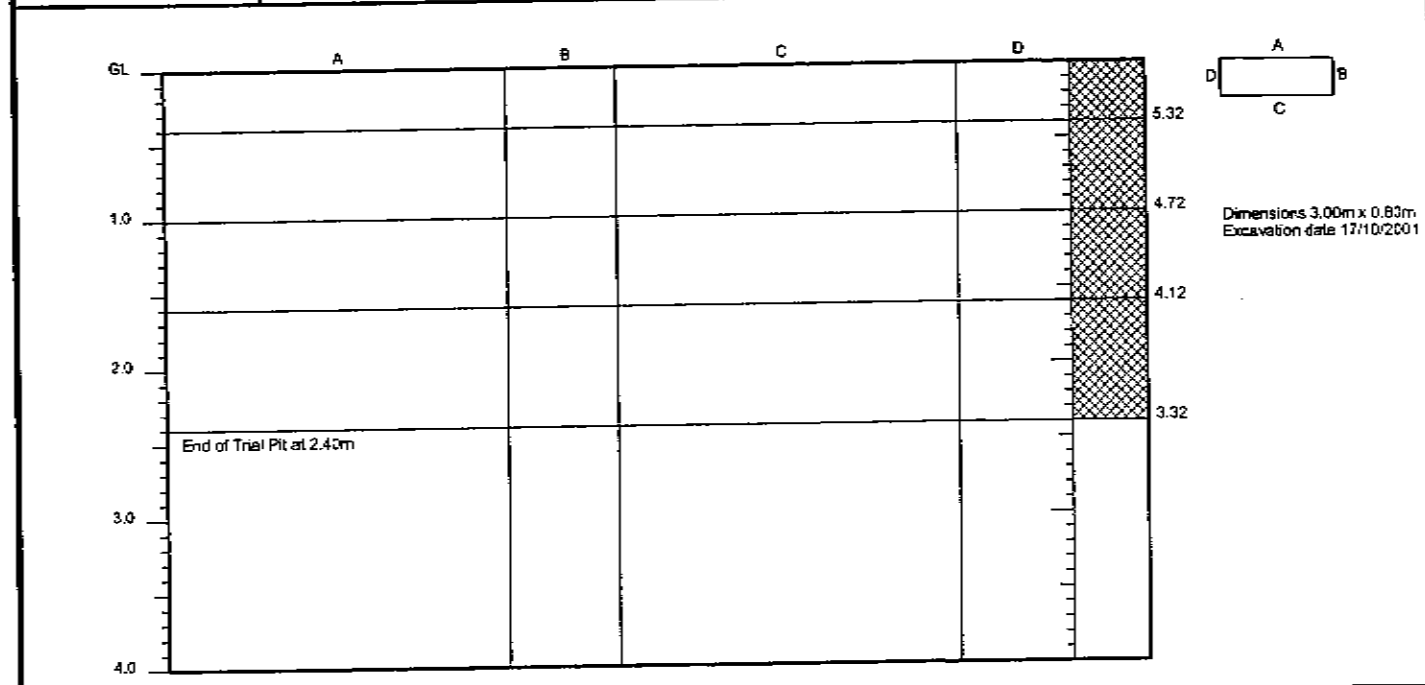
27/08/2002 15:24:23 ESGLog v2.11



# Trial Pit Log

Exploration Associates

Logged by DK Checked by CL	<b>Equipment and Methods</b> Trial Pit/Trench from 0.00m to 2.40m.	<b>Ground Level</b> + 5.72 m OD <b>National Grid Coordinates</b>
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Samples and Tests			Strata		
Depth (m)	Type & No.	Records	Depth (m)	No.	Description
			0.00-0.40	1	MADE GROUND: Firm red gravelly CLAY. Gravel is angular to subangular fine to coarse mudstone and gypsum.
			0.40-1.00	2	MADE GROUND: Brown and grey clayey very gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse brick, siltstone, concrete and wire. Some cobbles and boulders of concrete.
			1.00-1.60	3	MADE GROUND: Light grey sandy angular to subangular fine to coarse GRAVEL of slag.
			1.60-2.40	4	MADE GROUND: Thinly laminated black slightly sandy SILT. With some thin laminations of fine sand.

<b>Groundwater</b> None encountered	<b>Remarks</b> On completion the Trial pit was backfilled with arisings to ground level. Stability : Stable, Shoring : None
--	---

Notes : For explanation of symbols and abbreviations see key sheet. All depths in metres. Scale 1 : 50	<b>Project</b> TEESPORT ESTATE DISTRIBUTION WAREHOUSE <b>Project no.</b> 131109 <b>Carried out for</b> Tees and Hartlepool Port Authority Limited	<b>Trial Pit</b> <b>TP12</b> Sheet 1 of 1
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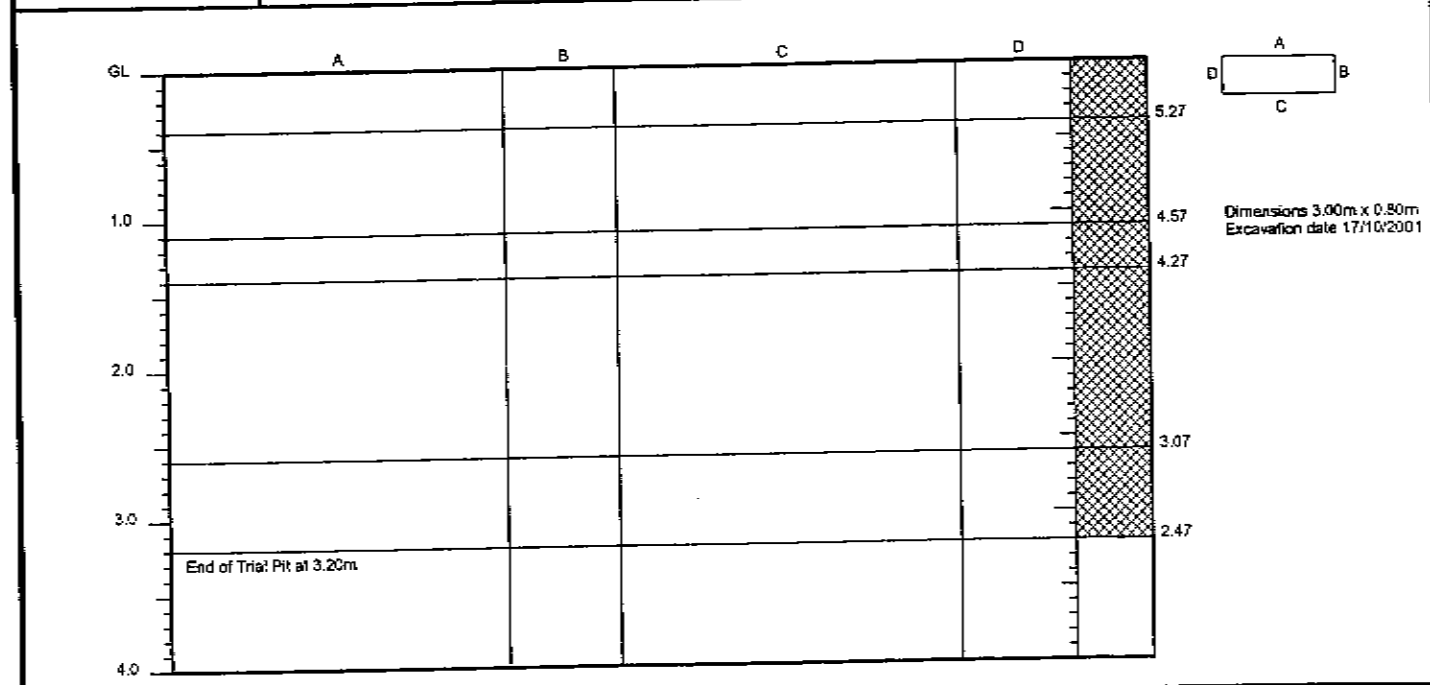
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# Trial Pit Log

Exploration Associates

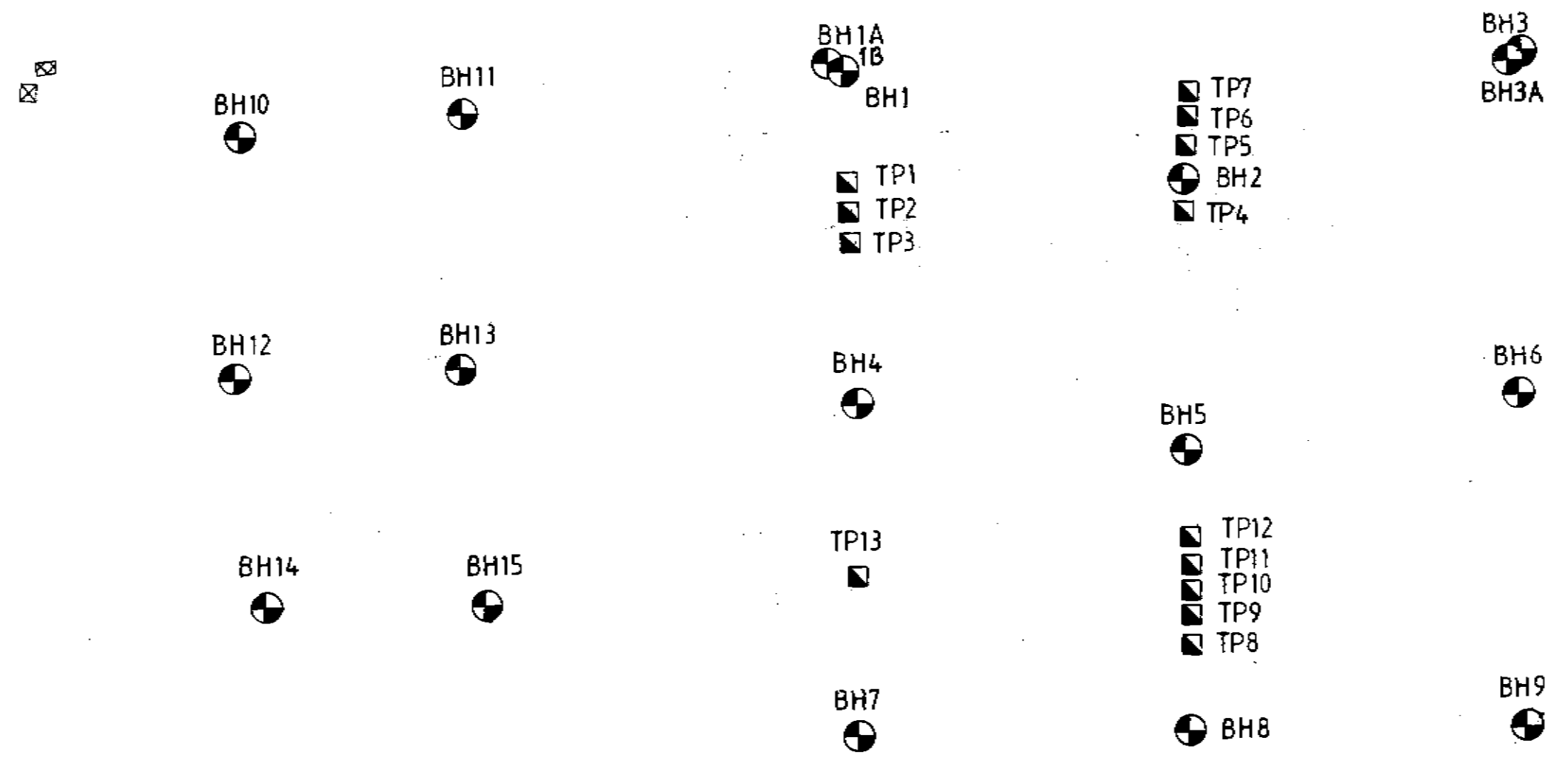
Logged by DK Checked by CL	<b>Equipment and Methods</b> Trial Pit/Trench from 0.00m to 3.20m.	Ground Level + 5.67 m OD National Grid Coordinates
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Samples and Tests			Strata		
Depth (m)	Type & No.	Records	Depth (m)	No.	Description
			0.00-0.40	1	MADE GROUND: Firm red gravelly CLAY. Gravel is angular to subrounded fine to coarse mudstone and gypsum.
			0.40-1.10	2	MADE GROUND: Firm brown sandy slightly gravelly CLAY. Gravel is angular to subrounded fine to coarse brick, concrete, siltstone, mudstone and slag.
			1.10-1.40	3	MADE GROUND: Grey sandy angular to subrounded fine to coarse GRAVEL of slag.
			1.40-2.60	4	MADE GROUND: Brown and black gravelly SAND of ash. Gravel is angular to subrounded fine to coarse slag, brick, coal and concrete.
			2.60-3.20	5	MADE GROUND: Black sandy (ash) angular to subangular fine to coarse GRAVEL of brick and slag.
Groundwater 2.60 Strike			Remarks On completion the trial pit was backfilled with arisings to ground level. Stability : Stable, Shoring : None		
Notes : For explanation of symbols and abbreviations see key sheet. All depths in metres. Scale 1 : 50			Project Project no. 131109 Carried out for Tees and Hartlepool Port Authority Limited		Trial Pit <b>TP13</b> Sheet 1 of 1

27/08/2002 15:24:40 ESGLLog v2.11

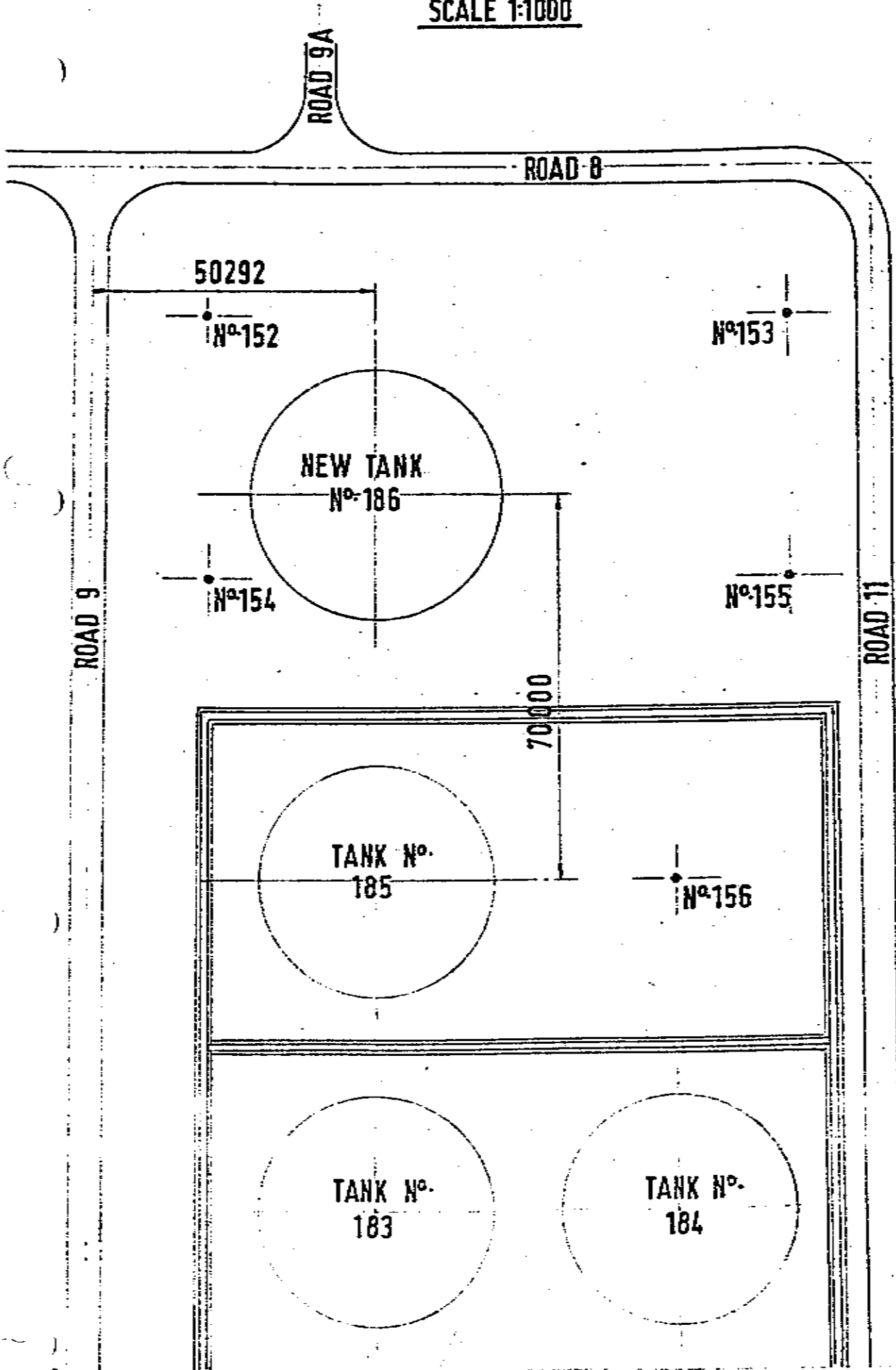
TEESPORT NORTH  
S/S



<b>Notes</b>  Denotes Borehole  Denotes Trial Pit	<b>Project Title</b> Teesport Distribution Warehouse	
	<b>Drawing Title</b> Exploratory Hole Location Plan	
 <b>Exploration Associates</b>	<b>Drawn By</b> MW	<b>Date</b> Mar 2002
	<b>Scale</b> 1:1000	<b>Drawing No</b> 131109/2


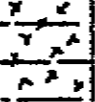

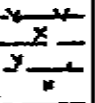
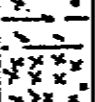
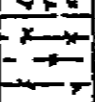




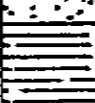
LOCATION PLAN OF BOREHOLES FOR TANK N°186

SCALE 1:1000



# BOREHOLE RECORD

Contract No. 893/79 Client Shell Oil Refinery  
 Ground Level ..... Location Tank Storage Area  
 BOREHOLE No. 152 Date July, 1979

Depth	Thick-ness	Legend	Description of Strata	Type of Sample	C kN/m <sup>2</sup>	M %	φ	Density kg/m <sup>3</sup>	N
0.750			Made up ground - hardcore and slag						
			Black silty clay with bands of silt	0.750 P					4
				1.500 P					5
	4.950			3.000 P					7
				4.500 P					7
5.700				6.000 P					13
	2.500		Coarse brown silty sand	7.500 P					15
8.200				8.400 U					
8.700	0.500		Brown laminated clay						
	1.600		Brown boulder clay	9.800 U					
10.300									

Water Struck at... Wat. from 11.200 m ..... Standing Water Level.....  
 Struck 5.700 m.







Undisturbed Sample  
 Disturbed Sample  
 Penetration Test  
 Cohesion  
 Angle of Internal Friction  
 Moisture Content %

U  
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φ  
M

**J. T. HYMAS (Site Investigation) LTD**  
 12 YARM ROAD, STOCKTON ON TEES  
 CLEVELAND TS18 3NE

# BOREHOLE RECORD

Contract No. 893/79 Client Shell Oil Refinery  
 Ground Level ..... Location Tank Storage Area  
 BOREHOLE No. 153 Date July, 1979

Depth	Thick-ness	Legend	Description of Strata	Type of Sample	C kN/m <sup>2</sup>	M %	φ	Density kg/m <sup>3</sup>	N
0.400			Topsoil						
			Black silty clay with bands of silt	0.700 P					4
				1.500 P					6
	4.600			3.000 P					7
				4.500 P					7
5.000									

Water Struck at Met from 0.600 m. Standing Water Level 1.200 m.


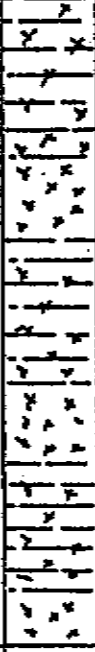
Undisturbed Sample  
 Disturbed Sample  
 Penetration Test  
 Cohesion  
 Angle of Internal Friction

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φ

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 CLEVELAND TS18 3NE

# BOREHOLE RECORD

Contract No. 893/79 ..... Client ..... Shell Oil Refinery  
 Ground Level ..... Location ..... Tank Storage Area  
 BOREHOLE No. 154 ..... Date ..... July, 1979

Depth	Thick-ness	Legend	Description of Strata	Type of Sample	C kN/m <sup>2</sup>	M %	ϕ	Density kg/m <sup>3</sup>	N
0.800	0.800		Made up ground - slag and clay						
5.000	4.200		Black silty clay with bands of silt						

Water Struck at... Wet. from 1.000 m ..... Standing Water Level .... 1.000 m .....

- Undisturbed Sample
- Disturbed Sample
- Penetration Test
- Cohesion
- Angle of Internal Friction
- Moisture Content %












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 CLEVELAND TS18 3NE



# BOREHOLE RECORD

Contract No. 893/79 Client Shell Oil Refinery  
 Ground Level ..... Location Tank Storage Area  
 BOREHOLE No. 155 Date July, 1979

Depth	Thick-ness	Legend	Description of Strata	Type of Sample	C kN/m <sup>2</sup>	M %	$\rho$	Density kg/m <sup>3</sup>	N
0.600	0.600		Topsoil and clay						
			Black silty clay with bands of silt	0.700 P					4
				1.500 P					5
				3.000 P					5
				4.500 P					6
				6.000 P					5
7.400	6.800								
7.800	0.400		Brown laminated clay						
8.300	0.500		Coarse brown sand						
9.100	0.800		Reddish brown boulder clay						
10.000	0.900		Grey weathered shale						

Water Struck at Wet from 1.000 m. Standing Water Level 1.000 m.

- Undisturbed Sample
- Disturbed Sample
- Penetration Test
- Cohesion
- Angle of Internal Friction

U  
O  
P  
C  
 $\phi$

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# BOREHOLE RECORD

Contract No. 893/79 Client Shell Oil Refinery  
 Ground Level ..... Location Tank Storage Area  
 BOREHOLE No. 156 Date July, 1979

Depth	Thick-ness	Legend	Description of Strata	Type of Sample	C kN/m <sup>2</sup>	M %	φ	Density kg/m <sup>3</sup>	N
0.100	0.100	X	Sand						
1.500	1.400	X	Red boulder clay (fill)	0.700 P					18
1.800	0.300	X	Slag (fill)	2.000 P					4
5.300	3.500	X	Black clayey silt	3.500 P  4.700 P					5  7

Water Struck at Wet from 1.800 m. Standing Water Level 1.500 m.














- Undisturbed Sample
- Disturbed Sample
- Penetration Test
- Cohesion
- Angle of Internal Friction
- Moisture Content %
- Standard Penetration Value

U  
O  
P  
C  
φ  
M  
N

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 Tel. 0642 67083

# BOREHOLE RECORD

Contract No. 1022/80 Client SHELL (U.K.) LIMITED  
 Ground Level 5.425 Location TANK NO.188 - TEESPORT REFINERY  
 BOREHOLE No. 157 Date JULY 1980

Depth	Thick-ness	Legend	Description of Strata	Type of Sample	C kN/m <sup>2</sup>	M %	Ø	Density kg/m <sup>3</sup>	N
0.450	0.450		Crushed slag (fill)						
1.200	0.750		Brown sand (fill)						
				1.200	(for 450mm penetration)				1
				1.950	(sands under weight of equipment)				
	3.750		Bands of black silt and reddish brown silty clay (fill)	P					
				3.450	(for 450mm penetration)				1
4.950				4.950					9
	1.300		Grey silty sand	P					
6.250									
	0.350		Yellow sand	P					19
6.600				6.450					
	1.350		Mottled fissured clay	U					
7.950				7.450					










Water Struck at 0.650 m Standing Water Level 0.750 m

Undisturbed Sample U  
 Disturbed Sample O  
 Penetration Test P  
 Cohesion C  
 Angle of Internal Friction Ø  
 Moisture Content % M  
 Standard Penetration Value N

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 CLEVELAND TS18 3NE  
 Tel. 0642 607083

# BOREHOLE RECORD

Contract No. 1022/80..... Client SHELL (U.K.) LIMITED.....  
 Ground Level 5.425..... Location TANK NO.187, TEESPORT REFINERY.....  
 BOREHOLE No. 158..... Date JULY 1980.....

Depth	Thick-ness	Legend	Description of Strata	Type of Sample	C kN/m <sup>2</sup>	M %	ϕ	Density kg/m <sup>3</sup>	N
0.450	0.450		Crushed slag (fill)	0.350 P					
1.050	0.600		Crushed slag and sand (fill)	1.050 P					1
2.750	1.700		Black silt (fill)	2.550 P					1
3.950	1.200		Wet red silty clay (fill)						
4.700	0.750		Black silt (fill)	4.050 P					2
7.650	2.950		Yellow sand with shells	5.550 P					18
				7.050 P					5
9.300	1.650		Reddish brown fissured clay	8.050 U					
9.550	0.250		Grey shale	9.050 U					

Water Struck at... 3.950 m..... Standing Water Level... 1.050 m.....

Undisturbed Sample  
 Disturbed Sample  
 Penetration Test  
 Cohesion  
 Angle of Internal Friction  
 Moisture Content %  
 Standard Penetration Value

U  
O  
P  
C  
ϕ  
M  
N

**J. T. HYMAS (Site Investigation) LTD.**

12 YARM ROAD, STOCKTON ON TEES

CLEVELAND TS18 3NE

Tel 0642 807022

TEES & HARTLEPOOL PORT AUTHORITY LTD

Jan. 93

CLEARANCE OF TEES PORT REFINERY SITE

by

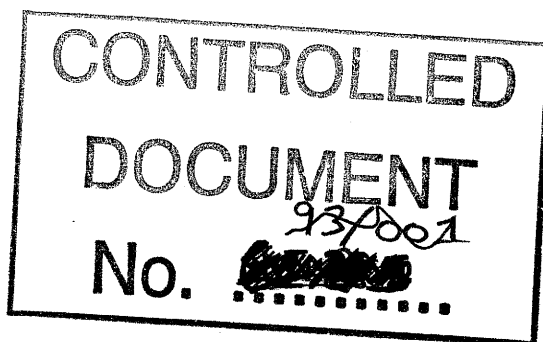
SHELL OIL UK LTD

in

1985 - 1987

**BOREHOLE LOGS  
&  
GROUNDWATER ANALYSES**

**Lackenby West & Main Refinery Sites**



Compiled in 1993 from records held in THPA Ltd Engineering Department

# TEES & HARTLEPOOL PORT AUTHORITY LTD

## CLEARANCE OF TEES PORT REFINERY SITE

### CONTENTS

BH's 1 - 29	October 1985		(Only 1-20 shown on plan)
BH's 30-72	July 1986		(Not shown on plan)
BH's 73-97	July 1986	(Rail Loading Area)	(Shown on plan)
BH's 1 - 21	Aug 1987	(Lackenby Area)	(Shown on plan)
BH's N1-N22	Nov 1987	(Tank Farm Area)	(Shown on plan)
BH's D1-D8	Dec 1987	(Rail Loading Area)	(Not shown on plan)
Location Plan Nr		92/395	

APPENDIX 1

DESCRIPTION OF GROUND WATER SAMPLES  
TAKEN AT WATER TABLE LEVEL WHILST DRILLING

BOREHOLE NO.	DEPTH BELOW GL OF SAMPLE	DESCRIPTION
1	4.5 m	95% water, 5% sediment
2	4.1 m	90% water, 10% sediment
3	3.2 m	Sample not representative
4	3.8 m	20% water, 80% sediment, thin surface layer of black oil
5	0.5 m	80% water, 20% sediment
6	0.5 m	90% water, 10% sediment
7	4.0 m	70% water, 30% sediment
8	2.5 m	90% water, 10% sediment
9	1.8 m	90% water, 10% sediment
10	3.0 m	95% water, 5% sediment
11	3.2 m	70% water, 30% sediment, thin surface layer of oil
12	3.0 m	95% water, 5% sediment
13	3.4 m	90% water, 10% mix of coagulated sediment and oil with strong smell of oxidised oil
14	2.0 m	90% water, 10% light hydrocarbon, strong hydrocarbon smell
15	2.0 m	90% water 10% mix of coagulated sediment and black oil
16		No sample - borehole abandoned
17		No sample
18	2.5 m	80% water, 20% sediment
19	2.5 m	20% water, 80% sediment with thin surface layer of oil
20	2.5 m	10% water, 90% sediment with smell of oil
21	3.4 m	40% water 60% sediment
22	2.9 m	30% water 70% sediment
23	3.9 m	50% water 50% sediment, thin surface layer of oil
24	3.9 m	80% water 20% sediment, smell of oil
25	3.9 m	50% water 50% sediment, trace of oil
26	3.9 m	80% water 20% sediment
27	4.2 m	30% water 70% sediment, surface layer of oil
28	3.9 m	30% water 70% sediment
29	4.1 m	80% water 20% sediment

APPENDIX 2

**PATTINSON & STEAD**  
ANALYTICAL & CONSULTING CHEMISTS

Sampling, Checkweighing, Assaying  
of Ores, Metals, Minerals, Fuels Etc



Telex:  
587432 Stead G.

WESTSIDE HOUSE  
MARTON  
MIDDLESBROUGH  
TS7 8BG  
ENGLAND

Tel: 0642 317034/5  
Grams: Stead, Middlesbrough

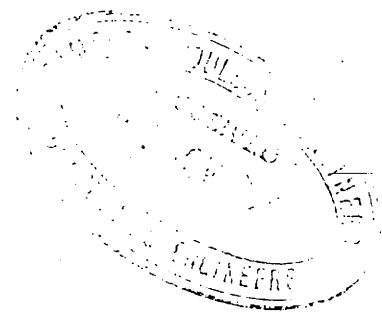
Also at Immingham

Your Ref: 3079/RLC/ DM. Our Ref: W.48.240/257.

30th October, 1985.

We certify that we have examined the undermentioned  
samples of Ground Water,  
and find the following results.  
Samples received October 17th 1985.

- Samples Marked: TK 110/Sub 17 Bore Hole 1. 12'  
TK 110/111 Borehole 2. 12'.  
TK 103 Borehole 3. 8'.  
TK 107 Borehole 4. Skim Sample 12'.  
TK 188 Borehole 5. 3'.  
TK 167/125 Borehole 6.  
Borehole 7. 4.00 m.  
Road 6. CD2. Borehole 8. 9'.  
TGU STORES. Borehole 9. 6'.  
SR UNIT. Borehole 10. 8'.  
TGU FAB SHOP. Borehole 11. 10'.  
Rail Waste Ground. Borehole 12. 6'.  
STORES COMPOUND. Borehole 13. SKIM SAMPLE. 9'.  
Borehole 14. High Water.  
Borehole 15. High Water.  
Borehole 18. 2.5 m.  
Borehole 19. High Water.  
Borehole 20. 2.5 m.



<u>BOREHOLE No.</u>	<u>Oil</u>	<u>Insoluble Solids</u>	<u>Water</u>	<u>REMARKS:</u>
1.	<0.3 %	0.3 %	>99.4 %	Faint odour resembling gas oil.
2.	Traces	0.5 %	99.5 %	Faint odour resembling gas oil. Sample not representative.
3.	<del>85 %</del>	<del>5 %</del>	<del>12 %</del>	<del>Mobile brown oil, possibly crude oil.</del>
4.	75 %	2 %	23 %	Mobile brown oil, possibly crude oil.
5.	<0.3 %	<0.1 %	>99.6 %	Faint odour of crude oil.

...../Contd.,



Samples of Ground Water.

<u>BOREHOLE No.</u>	<u>Oil</u>	<u>Insoluble Solids</u>	<u>Water</u>	<u>REMARKS:</u>
6.	80 %	1 %	19 %	Thin brown oil. Odour resembling gas oil.
7.	Nil	30 %	70 %	No odour of oil.
8.	2 %	0.3 %	97.7 %	Mobile brown oil, possibly crude oil.
9.	<0.3 %	0.4 %	>99.3 %	Faint odour of crude oil.
10.	5 %	1 %	94 %	Dark brown, odour of crude oil.
11.	0.5 %	1 %	98.5 %	Dark brown, odour of crude oil.
12.	0.5 %	1 %	98.5 %	Viscous brown oil, odour of crude oil.
13.	99 %	Nil	1 %	Dark brown mobile oil. Odour of crude oil.
14.	0.5 %	0.4 %	99.1 %	Thin brown oil. Odour resembling gas oil.
15.	<0.3 %	0.3 %	>99.4 %	Light brown, aromatic odour.
18.	Nil	10 %	90 %	No odour of oil.
19.	1 %	1.5 %	97.5 %	Thin brown oil, aromatic odour.
20.	Traces	70 %	30 %	Odour of gas oil.
	=====	=====	=====	

*J. Simpson & Partners*

# BOREHOLE RECORD

Contract No. 1691785 Client Shell U.K. Oil Ltd  
 Ground Level ..... Location Teesport Refinery  
 BOREHOLE No. 5 Date October 1985

Depth	Thick-ness	Legend	Description of Strata	Type of Sample	C kN/m <sup>2</sup>	M %	Ø	Density kg/m <sup>3</sup>	N
0.600	0.600	▣	Made up ground - compact slag	0.500 0					
	2.400	▣	Made up ground - soft, black, silty clay with fragmented slag	1.200 0					
3.000		▣		2.700 0					
	9.000	x	Soft black silty clay	4.000 0					
6.000		x		5.500 0					
			* standpipe inserted at 6.000m.						

Water Struck at ..... 0.600m. Standing Water Level ..... 0.500m.

- Undisturbed Sample
- Disturbed Sample
- Penetration Test
- Cohesion
- Angle of Internal Friction
- Moisture Content %
- Standard Penetration Value

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**J. T. HYMAS (Site Investigation) LTD.**

12 YARM ROAD, STOCKTON ON TEES

CLEVELAND TS18 3NE

Tel. 0642 607083

# BOREHOLE RECORD

Contract No. 1691/85 Client Shell U.K. Oil Ltd  
 Ground Level Location Teesport Refinery  
 BOREHOLE No. 6 Date October 1985

Depth	Thick-ness	Legend	Description of Strata	Type of Sample	C kN/m <sup>2</sup>	M %	Ø	Density kg/m <sup>3</sup>	N
0.600	0.600		Made up ground - compact slag	0.200 0					
1.100	0.500		Made up ground - slag and silty clay	0.900 0					
1.600	0.500		Made up ground - brown sandy boulder clay	1.400 0					
4.300	2.700		Made up ground - soft brown silty sandy clay	2.000 0 3.000 0 4.000 0					
7.000	2.700		Soft grey silty sandy grey	5.000 0 6.500 0					
10.000	3.000		Firm reddish brown laminated clay	7.500 0 7.800 0 8.800 0 9.800 0					
			* standpipe inserted at 6.000m.	0					

Water Struck at 0.500m. Standing Water Level 0.150m.


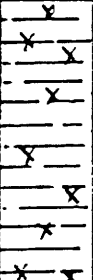

Undisturbed Sample  
 Disturbed Sample  
 Penetration Test  
 Cohesion  
 Angle of Internal Friction  
 Moisture Content %  
 Standard Penetration Value

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# BOREHOLE RECORD

Contract No. 1691/85 Client Shell U.K. Oil Ltd  
 Ground Level Location Teesport Refinery  
 BOREHOLE No. 8 Date October, 1985

Depth	Thick-ness	Legend	Description of Strata	Type of Sample	C kN/m <sup>2</sup>	M %	ϕ	Density kg/m <sup>3</sup>	N
				0.600 0					
2.500	2.500		Made up ground - compact slag	1.600 0					
5.100	2.600		Made up ground - stiff brown boulder clay	2.600 0					
7.000	1.900		Soft mottled silty clay	5.400 0					
10.000	3.000		Firm brown and grey laminated clay	6.400 0					
			* standpipe inserted at 6.000m.	7.400 0					
				8.400 0					
				9.500 0					

Water Struck at 2.500m. Standing Water Level 2.400m.

Undisturbed Sample  
 Disturbed Sample  
 Penetration Test  
 Cohesion  
 Angle of Internal Friction  
 Moisture Content %  
 Standard Penetration Value

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# BOREHOLE RECORD

Contract No. 1691/85 Client Shell U.K. Oil Ltd  
 Ground Level Location Teesport Refinery  
 BOREHOLE No. 9 Date October, 1985

Depth	Thick-ness	Legend	Description of Strata	Type of Sample	C kN/m <sup>2</sup>	M %	∅	Density kg/m <sup>3</sup>	N
1.800	1.800		Firmly compacted slag	0.500 0					
1.800				1.800 0					
2.600	2.600		Made up ground - black silty clay	2.800 0					
4.400				3.800 0					
6.000	1.600		Black very silty clay	4.800 0					
8.000	2.000		Grey silty sandy clay	6.800 0					
10.000	2.000		Dark brown boulder clay	8.500 0					
				9.500 0					

\* standpipe inserted at 6.000m.

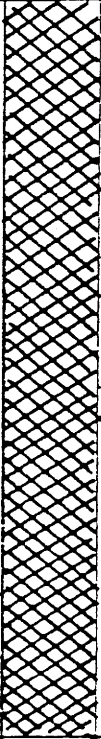
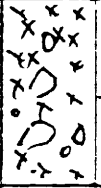
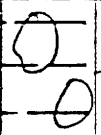
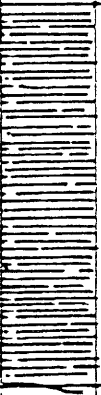
Water Struck at ..... Standing Water Level .....

- Undisturbed Sample U
- Disturbed Sample O
- Penetration Test P
- Cohesion C
- Angle of Internal Friction ∅
- Moisture Content % M
- Standard Penetration Value N

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# BOREHOLE RECORD

Contract No. 1691/85 Client Shell U.K. Oil Ltd  
 Ground Level Location Teesport Refinery  
 BOREHOLE No. 11 Date October 1985

Depth	Thick-ness	Legend	Description of Strata	Type of Sample	C kN/m <sup>2</sup>	M %	Ø	Density kg/m <sup>3</sup>	N
5.000	5.000		Made up ground - Firm to compact slag	0.700 0  2.000 0  3.000 0					
6.200	1.200		Silt with fragmented slag	5.200 0					
7.200	1.000		Reddish brown boulder clay	6.300 0					
10.000	2.800		Brown and grey laminated clay	7.300 0  8.300 0  9.500 0					
* standpipe inserted to 6.000m.									

Water Struck at 3.200m. Standing Water Level 3.100m.


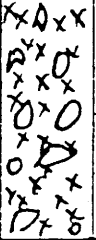
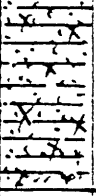
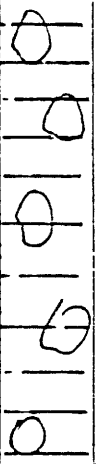
- Undisturbed Sample
- Disturbed Sample
- Penetration Test
- Cohesion
- Angle of Internal Friction
- Moisture Content %
- Standard Penetration Value

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# BOREHOLE RECORD

Contract No. 1691/85 Client Shell U.K. Oil Ltd  
 Ground Level Location Teesport Refinery  
 BOREHOLE No. 13 Date October 1985

Depth	Thick-ness	Legend	Description of Strata	Type of Sample	C kN/m <sup>2</sup>	M %	Ø	Density kg/m <sup>3</sup>	N
3.400	3.400		Made up ground - compact slag	0.500 0 1.500 0 2.500 0					
5.000	1.600		Black silt with fragmented slag	3.500 0 4.500 0					
6.400	1.400		Grey silty sandy clay	5.500 0					
10.000	3.600		Reddish brown boulder clay	6.500 0 7.500 0 9.000 0					
			* standpipe inserted at 6.000m						

Water Struck at 3.400m Standing Water Level 3.600m


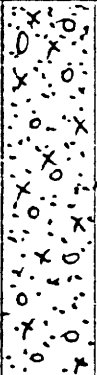
- Undisturbed Sample
- Disturbed Sample
- Penetration Test
- Cohesion
- Angle of Internal Friction
- Moisture Content %
- Standard Penetration Value

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# BOREHOLE RECORD

Contract No. 1691/85 Client Shell U.K. Oil Ltd  
 Ground Level ..... Location Teesport Refinery .....  
 BOREHOLE No. 14 Date October, 1985

Depth	Thick-ness	Legend	Description of Strata	Type of Sample	C kN/m <sup>2</sup>	M %	Ø	Density kg/m <sup>3</sup>	N
4.500	4.500		Made up ground - compact slag	0.700 0 1.800 0 2.800 0 3.800 0					
7.000	2.500		Grey sandy silty with gravel (boulder at 7.000m.)	4.800 0 5.700 0					
			* standpipe inserted at 6.000m.						

Water Struck at ..... 2.000m. Standing Water Level ..... 1.500m.

Undisturbed Sample  
 Disturbed Sample  
 Penetration Test  
 Cohesion  
 Angle of Internal Friction  
 Moisture Content %  
 Standard Penetration Value

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# BOREHOLE RECORD

Contract No. 1691/85 Client Shell U.K. Oil Limited  
 Ground Level ..... Location Teesport Refinery .....  
 BOREHOLE No. 15 Date October, 1985

Depth	Thick-ness	Legend	Description of Strata	Type of Sample	C kN/m <sup>2</sup>	M %	Ø	Density kg/m <sup>3</sup>	N
0.600	0.600		Made up ground - compact slag						
2.000	1.400		Made up ground - firm sand and slag	0.600 0 1.000 0 1.700 0					
4.350	2.350		Made up ground - silty clay with slag	2.500 0					
5.700	1.350		Brown boulder clay	4.400 0 5.000 0 5.700 0					
8.000	2.300		Red and green weathered marl	7.000 0					
			* standpipe inserted at 6.000m.						

Water Struck at 1.700m. Standing Water Level 1.500m.

- Undisturbed Sample U
- Disturbed Sample O
- Penetration Test P
- Cohesion C
- Angle of Internal Friction Ø
- Moisture Content % M
- Standard Penetration Value N

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MAIN PLUCE 3  
AREA

10

PROCESS AREA  
THERMAL GASOIL  
COMPLEX

LAB/MEDICAL  
CENTRE.

ROAD 4

WORKSHOP

W'SHOP

STORES

ADMINISTRATION

ADMIN

ACTORS  
EA.

S/S  
N°16

T.9003

RESTAURANT

S/S  
N°11

T.2902

T.2903

V6151

11

FLARE  
STACK

22

20

21

2

ROAD 2

ROAD 1

LOCO  
SHED.

CAR PARK

FIRE  
STN.

N°1

S/S  
N°9

15

RAIL LOADING

97

96

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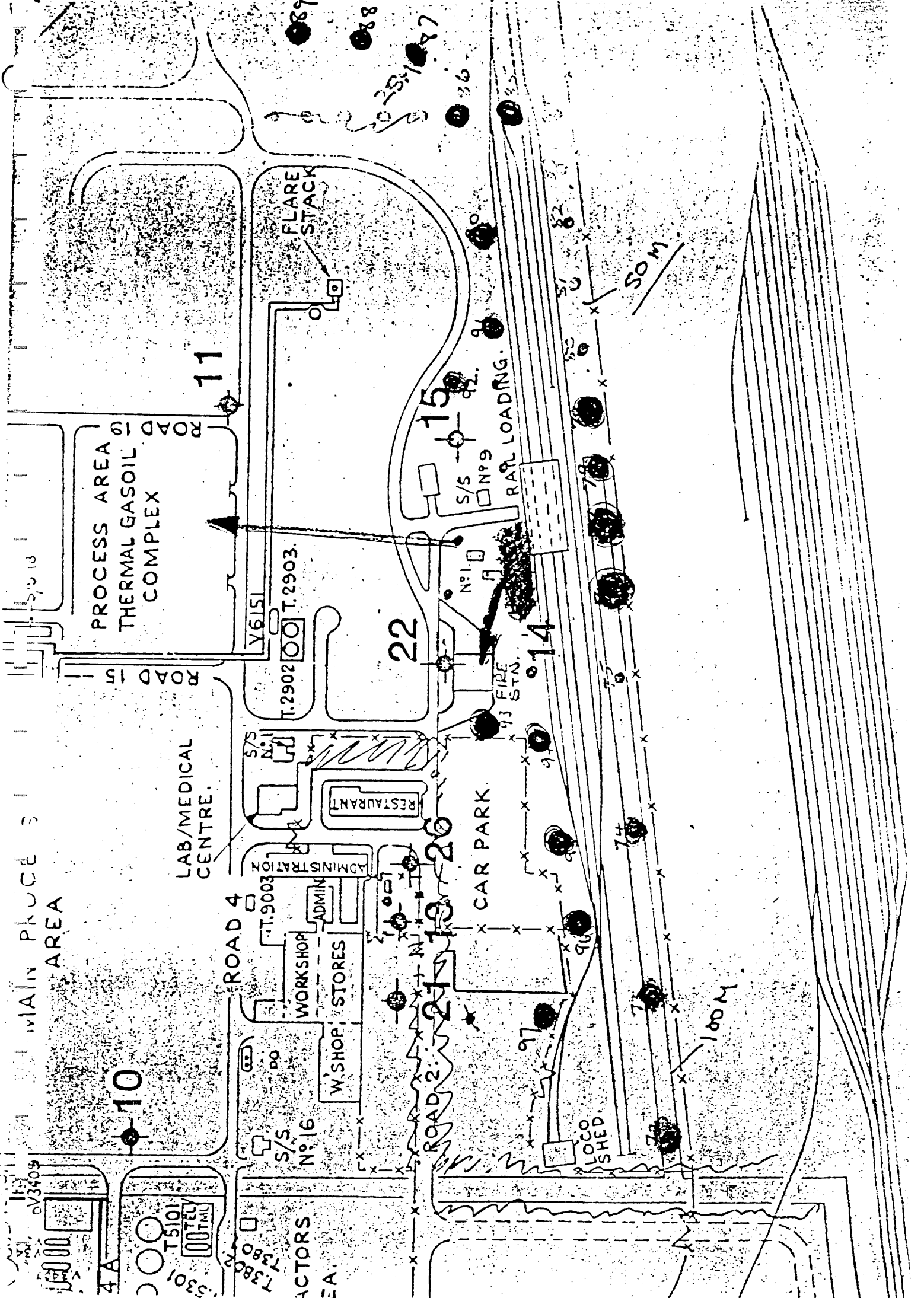
83

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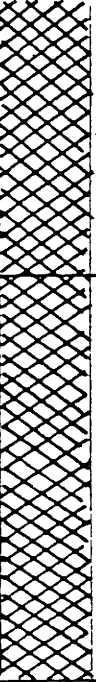
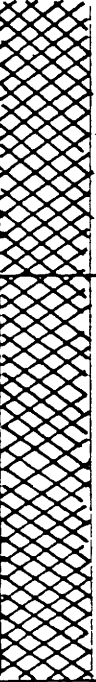
85

100M

50M



Contract No. 1847/86 Client Shell UK Ltd  
 Ground Level ..... Location Teesport Refinery  
 BOREHOLE No. 74 Date October, 1986

Depth	Thick-ness	Legend	Description of Strata	Type of Sample	C kN/m <sup>2</sup>	M %	Ø	Density kg/m <sup>3</sup>	N
1.400	1.400		Made up ground - slag, stone and brick	0.900 0					
3.500	2.100		Made up ground - slag, stone and brick (chemical contamination)	-1.500 0 -2.000 0 -2.500 0 -3.000 0					
			Water sample recovered standpipe inserted to 3.500m.						


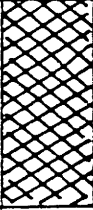
Water Struck at ..... 2.400m. Standing Water Level ..... 1.800m.

- Undisturbed Sample
- Disturbed Sample
- Penetration Test
- Coesion
- Angle of Internal Friction
- Moisture Content %
- Standard Penetration Value

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 CLEVELAND TS18 3NE  
 Tel. 0642 607083

Contract No. 1847/86 Client Shell UK Ltd  
 Ground Level ..... Location Teesport Refinery  
 BOREHOLE No. 75 Date October, 1986

Depth	Thick-ness	Legend	Description of Strata	Type of Sample	C kN/m <sup>2</sup>	M %	Ø	Density kg/m <sup>3</sup>	N
1.900	1.900		Made up ground - slag, stone and ash (chemical contamination)	-0.500 0 -1.000 0 -1.500 0					
3.000	1.100		Made up ground - slag, stone and sand (chemical contamination)	-2.000 0 -2.500 0					
			Water sample recovered, standpipe inserted to 3.000m.						

Water Struck at 1.700m. Standing Water Level 1.700m.

- Undisturbed Sample
- Disturbed Sample
- Penetration Test
- Coesion
- Angle of Internal Friction
- Moisture Content %
- Standard Penetration Value

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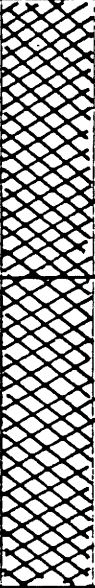
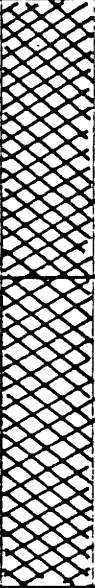
12 YARM ROAD, STOCKTON ON TEES

CLEVELAND TS18 3NE

Tel. 0642 607023

# BOREHOLE RECORD

Contract No. 1847/86 Client Shell UK Ltd  
 Ground Level ..... Location Teesport Refinery  
 BOREHOLE No. 76 Date October, 1986

Depth	Thick-ness	Legend	Description of Strata	Type of Sample	C kN/m <sup>2</sup>	M %	Ø	Density kg/m <sup>3</sup>	N
	1.400		Made up ground - slag (chemical contamination)	0.500					
1.400				1.000					
	1.600		Made up ground - slag (heavy chemical contamination)	1.500					
3.000				2.000					
				2.500					
			Water sample recovered, standpipe inserted to 3.000m.	0					

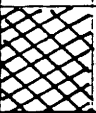
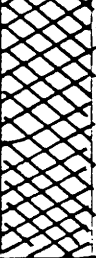
Water Struck at ..... 1.700m. Standing Water Level ..... 1.700m.

Undisturbed Sample  
 Disturbed Sample  
 Penetration Test  
 Conesion  
 Angle of Internal Friction  
 Moisture Content %  
 Standard Penetration Value

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Contract No. 1847/86 Client Shell UK Ltd  
 Ground Level ..... Location Teesport Refinery  
 BOREHOLE No. 77 Date October 1986

Depth	Thick-ness	Legend	Description of Strata	Type of Sample	C kN/m <sup>2</sup>	M %	ϕ	Density kg/m <sup>3</sup>	N
0.500	0.500		Made up ground - slag	0.500 0					
3.000	2.500		Made up ground - slag (heavy chemical contamination)	1.000 0 1.500 0 2.000 0 2.700 0					
			Brown liquid running in at 1.300m. Strong petrol shell : sample taken.  Water sample taken, standpipe inserted to 3.000m.						



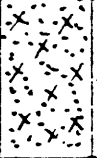
Water Struck at 1.600m. Standing Water Level 1.200m.

- Undisturbed Sample
- Disturbed Sample
- Penetration Test
- Conesion
- Angle of Internal Friction
- Moisture Content %
- Standard Penetration Value

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Contract No. 1847/86 Client Shell UK Ltd  
 Ground Level Location Teesport Refinery  
 BOREHOLE No. 78 Date October, 1986

Depth	Thick-ness	Legend	Description of Strata	Type of Sample	C kN/m <sup>2</sup>	M %	Ø	Density kg/m <sup>3</sup>	N
1.600	1.600		Made up ground - slag (slight chemical contamination)	0.500 0					
2.300	0.700		Made up ground - slag (heavy chemical contamination)	1.000 0					
3.000	0.700		Black sandy silty (chemical contamination)	1.500 0					
			Water sample recovered standpipe inserted to 3.000m.	2.000 0					
				2.500 0					

Water Struck at 1.600m. Standing Water Level 1.400m.

- Undisturbed Sample
- Disturbed Sample
- Penetration Test
- Coesion
- Angle of Internal Friction
- Moisture Content %
- Standard Penetration Value

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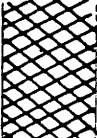
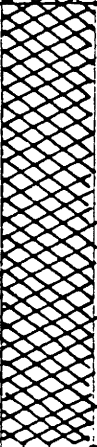
12 YARM ROAD, STOCKTON ON TEES

CLEVELAND TS18 3NE

Tel. 0642 607082

# BOREHOLE RECORD

Contract No. 1847/86 Client Shell UK Ltd  
 Ground Level ..... Location Teesport Refinery  
 BOREHOLE No. 79 Date October, 1986

Depth	Thick-ness	Legend	Description of Strata	Type of Sample	C kN/m <sup>2</sup>	M %	Ø	Density kg/m <sup>3</sup>	N
0.700	0.700		Made up ground -slag and stone	0.500 0					
3.000	2.300		Made up ground - slag and stone (chemical contamination)	1.500 0 2.500 0					
			Water sample recovered, standpipe inserted to 3.000m.						

Water Struck at 1.800m. Standing Water Level 1.800m.

- Undisturbed Sample
- Disturbed Sample
- Penetration Test
- Cohesion
- Angle of Internal Friction
- Moisture Content %
- Standard Penetration Value


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**J. T. HYMAS (Site Investigation) LTD.**  
 12 YARM ROAD, STOCKTON ON TEES  
 CLEVELAND TS18 3NE  
 Tel. 0642 607083



# BOREHOLE RECORD

Contract No. 1847/86 Client Shell UK Ltd  
 Ground Level ..... Location Teesport Refinery  
 BOREHOLE No. 80 Date October, 1986

Depth	Thick-ness	Legend	Description of Strata	Type of Sample	C kN/m <sup>2</sup>	M %	ϕ	Density kg/m <sup>3</sup>	N
1:200	1.200		Made up ground - solid slag	0.500 0  1.000 0					
			Borehole abandoned						

Water Struck at ..... Standing Water Level .....

- Undisturbed Sample
- Disturbed Sample
- Penetration Test
- Cohesion
- Angle of Internal Friction
- Moisture Content %
- Standard Penetration Value

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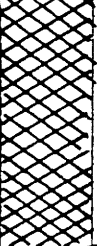

12 YARM ROAD, STOCKTON ON TEES

CLEVELAND TS18 3NE

Tel. 0642 607093



Contract No. 1847/86 Client Shell UK Ltd  
 Ground Level ..... Location Teesport Refinery  
 BOREHOLE No. 92 Date October, 1986

Depth	Thick-ness	Legend	Description of Strata	Type of Sample	C kN/m <sup>2</sup>	M %	φ	Density kg/m <sup>3</sup>	N
0.900	0.900		Made up ground - sand clay and slag	0.500 0					
2.200	1.300		Made up ground - sand, clay and slag (slight chemical contamination)	1.000 1.500 2.000 0					
3.500	1.300		Black silty (slight chemical contamination)	2.500 3.000 0					
			Water sample recovered standpipe inserted to 3.500m.						

Water Struck at 1.900m. Standing Water Level 1.500m.



- Undisturbed Sample
- Disturbed Sample
- Penetration Test
- Coesion
- Angle of Internal Friction
- Moisture Content %
- Standard Penetration Value

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# BOREHOLE RECORD

Contract No. 1847/86 Client Shell UK Ltd  
 Ground Level ..... Location Teesport Refinery  
 BOREHOLE No. 93 Date October, 1986

Depth	Thick-ness	Legend	Description of Strata	Type of Sample	C kN/m <sup>2</sup>	M %	Ø	Density kg/m <sup>3</sup>	N
1.900	1.900		Made up ground - sand, stone and slag	0.500 0 1.000 0 1.500 0					
3.000	1.100		Made up ground - sand and slag (heavy chemical contamination)	2.000 0 2.500 0 3.000 0					
			Water sample recovered standpipe inserted to 3.000m.						

Water Struck at ..... 1.800m ..... Standing Water Level ..... 1.750m .....

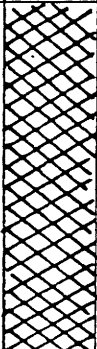
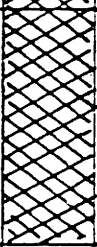
- Undisturbed Sample
- Disturbed Sample
- Penetration Test
- Coesion
- Angle of Internal Friction
- Moisture Content %
- Standard Penetration Value

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# BOREHOLE RECORD

Contract No. 1847/86 Client Shell UK Ltd  
 Ground Level ..... Location Teesport Refinery  
 BOREHOLE No. 94 Date October, 1986

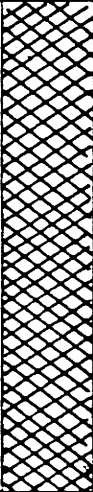

Depth	Thick-ness	Legend	Description of Strata	Type of Sample	C kN/m <sup>2</sup>	M %	Ø	Density kg/m <sup>3</sup>	N
1.800	1.800		Made up ground - sand, stone and slag	0.500 0 1.000 0 1.500 0					
3.000	1.200		Made up ground - sand, clay and stone (heavy chemical contamination)	2.000 0 2.500 0 3.000 0					
			Water sample recovered standpipe inserted to 3.000m.						

Water Struck at ..... 1.800m. .... Standing Water Level... 1.800m. ....

- Undisturbed Sample U
- Disturbed Sample O
- Penetration Test P
- Coesion C
- Angle of Internal Friction Ø
- Moisture Content % M
- Standard Penetration Value N

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Contract No. 1847/86 Client Shell UK Ltd  
 Ground Level Location Teesport Refinery  
 BOREHOLE No. 95 Date October, 1986

Depth	Thick-ness	Legend	Description of Strata	Type of Sample	C kN/m <sup>2</sup>	M %	Ø	Density kg/m <sup>3</sup>	N
2.500	2.500		Made up ground - slag	1.000 0					
3.500	1.000		Made up ground - slag (chemical contamination)	2.500 0 3.000 0					
			Water sample recovered standpipe inserted to 3.500m.						

Water Struck at 2.600m Standing Water Level 2.350m

- Undisturbed Sample
- Disturbed Sample
- Penetration Test
- Coesion
- Angle of Internal Friction
- Moisture Content %
- Standard Penetration Value

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Tel. 0642 607093

Contract No. 1847/86 Client Shell UK Ltd  
 Ground Level ..... Location Teesport Refinery  
 BOREHOLE No. 96 Date October, 1986

Depth	Thick-ness	Legend	Description of Strata	Type of Sample	C kN/m <sup>2</sup>	M %	∅	Density kg/m <sup>3</sup>	N
			Made up ground - slag	0.500					
	2.700			1.000					
2.700				2.700					
	0.500		Made up ground - slag (chemical contamination)	0					
3.200				3.000					
			Water sample recovered standpipe inserted to 3.200m.						

Water Struck at ..... Standing Water Level .....

- Undisturbed Sample
- Disturbed Sample
- Penetration Test
- Coesion
- Angle of Internal Friction
- Moisture Content %
- Standard Penetration Value

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