















 British Geological Survey NATURAL ENVIRONMENT RESEARCH COUNCIL						Site M1 WIDENING JCT 22-23 & JCT 25-28 - CONTRACT 1 PRELIMINARY GI			Borehole Number RC1188	
Machine: Flush : Core Dia: mm Method :		Casing Diameter 170mm cased to 2.00m		Ground Level (mOD) 143.55		Client Highways Agency		Job Number WAL050092		
		Location 445423.4 E 356251.1 N		Dates 19/07/2005- 20/07/2005		Project Contractor Fugro Engineering Services		Sheet 1/4		
Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00			0	0	Groundwater was not apparent during boring(1) at 0.00m.		(0.70)	Boulder CLAY (driller's description)		V1
	100	100	70	0		142.85	0.70	MUDSTONE (driller's description)		
					4.4/6.6.6.7 SPT N=25	142.05	(0.80)			
1.50-1.95			0	0		141.90	(0.15)	Soft to firm dark grey slightly sandy CLAY with many angular fine to coarse mudstone lithorelics. Between 1.60m and 1.65m; with much angular to subangular fine to coarse gravel of yellow siltstone.		
1.50										
1.65										
	100	100	87	0				Very weak to moderately weak thinly laminated to very thinly bedded, slightly sandy grey MUDSTONE. Fractures are subhorizontal and subvertical, generally closely to medium spaced with a trace of silt/clay infill, and rare orange brown iron staining.		
2.68-2.92					C1					
3.00-3.45					6,10/10,10,12,14 SPT N=46					
3.00								Between 3.10m and 3.20m; becoming moderately to highly weathered.		
3.50-4.50					C2			At 3.50m; with rootlet remains on fracture surface.		
	97	77	72	0						
4.50								At 5.00m; with rootlet remains on fracture surface.		
								Between 5.20 and 5.40m; firm dark grey slightly sandy clay with many subangular fine to coarse mudstone lithologies.		
	75	54	32	0			(8.35)	At 5.95m; 30-45 degree fracture, open, planar, smooth.		
								At 6.20m; 30-45 degree fracture, open, planar, smooth.		
								At 6.40m; 30-45 degree fracture, open, planar, smooth.		
7.20-7.50					C3			At 6.80m; 70 degree fracture, aperture 5mm infilled with fine sand and angular fine and medium mudstone gravel. Slight iron staining to fracture surface.		
7.50										
8.50-9.50			0	0	C4			Between 9.00m and 9.45m; 75 degrees to subvertical fracture, undulating, smooth and tight.		
								Between 9.70m and 10.00m; firm dark grey slightly sandy clay with many angular fine to coarse mudstone		
10.00										
Remarks								Scale (approx) 1:50	Logged By SMCH	
								Figure No.		





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Machine:			Casing Diameter			Ground Level (mOD)		Client		Job Number	
Flush :			170mm cased to 2.00m			143.55		Highways Agency		WAL050092	
Core Dia: mm			Location			Dates		Project Contractor		Sheet	
Method :			445423.4 E 356251.1 N			19/07/2005- 20/07/2005		Fugro Engineering Services		2/4	
Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	
10.10-10.50	67	45	38	0	C5	133.55	10.00 (0.50)	lithorelics. Moderately weak thinly laminated black COAL. Low density. Fractures are very closely to closely spaced, subhorizontal and subvertical, generally tight and planar.			
10.50			0	0		133.05	10.50 (1.00)	No recovery.			
11.50			0	0		132.05	11.50 (0.60)	Moderately weak thinly laminated to very thinly bedded dark grey MUDSTONE with occasional thin laminae of coal and fine to medium gravel sized coal remnants. Fractures are very closely to closely spaced, subhorizontal and subvertical, generally tight and planar. Partially weathered.			
12.50						131.45	12.10 (0.40)	Between 11.75m and 11.80m; 70 degree fracture, aperture 5mm infilled with very weak black sand and fine gravel sized coal fragments.			
13.05-13.40	100	82	72	0	C6	131.05	12.50	Very weak to weak indistinctly laminated dark grey gravelly MUDSTONE with occasional infilled burrows. Gravel is angular, coarse strong yellow brown claystone/siltstone. Fractures are indistinct.			
13.50							(2.35)	Strong thinly to thickly laminated and locally thinly cross laminated light and dark grey slightly sandy SILTSTONE. Fractures are medium to widely spaced, subvertical and subhorizontal, generally undulating and tight. Orange brown iron staining on fracture surfaces.			
13.90-14.20			0	0	C7			Between 13.00m and 13.25m; with occasional pockets up to 30mm of dark red brown ironstone.			
								Below 14.50m; dark grey fine laminations becoming thicker and more abundant.			
						128.70	14.85 (0.50)	Moderately weak thinly laminated to thinly bedded grey MUDSTONE, partially weathered. Fractures are subhorizontal to 20 degrees, closely to medium spaced, planar and infilled 1-3mm with soft grey clay and fine gravel of mudstone.			
15.50			0	0		128.20	15.35 (0.55)	Weak to moderately weak thinly laminated dark grey brown carboniferous MUDSTONE, partially weathered. Fractures are subhorizontal and subvertical, closely to medium spaced, planar and tight.			
15.90						127.65	15.90	Between 15.85m and 15.88m; thin band of thinly laminated weak black coal.			
15.95-16.20	100	90	77	0	C8			At 15.88m; subhorizontal fracture, planar, aperture 20mm infilled with soft grey clay.			
16.50					19/07/2005:			Strong very thinly to thickly laminated and locally thinly cross laminated light and dark grey slightly sandy SILTSTONE, medium to thickly interbedded with strong light grey fine sandstone, slightly weathered. Fractures are closely to medium spaced, subhorizontal to 20 degrees, undulating and rough. With orange brown iron staining on fracture surfaces. Sandstone contains occasional lenses up to 30m of brown carboniferous fine sand.			
16.50-16.92					19/07/2005: C9			At 17.15m; subhorizontal undulating fracture, open, rough, heavily iron stained. Ferrous material penetrating 5-10mm into rock above and below fracture surface.			
					19/07/2005: C10			At 17.30m; subhorizontal undulating fracture, open, rough, heavily iron stained. Ferrous material penetrating 5-10mm into rock above and below fracture surface.			
17.60-18.00			0	0				At 17.60m; subhorizontal undulating fracture, open, rough, heavily iron stained. Ferrous material penetrating 3-5mm into rock above and below fracture surface.			
18.50	98	82	78	0			(6.30)	Between 18.50m and 18.90m; 70 degree fracture aperture 10mm infilled with soft grey clay.			
19.50								Between 18.90m and 19.50m; subvertical undulating fracture, open to 1mm, rough, heavily iron stained.			
								At 19.20m; subhorizontal fracture infilled with fine sand and fine and medium siltstone gravel.			
Remarks											
Scale (approx) 1:50											
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Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
21.50			0	0						
22.00	100	83	58	0		121.35	22.20	Between 21.70m and 21.80m; very thin <1mm dark grey black undulating siltstone laminae becoming extremely closely spaced.		
22.50 22.60-22.95			0	0	C11			Weak to moderately weak thinly laminated (locally lenticular) mid grey MUDSTONE. Fresh fractures are closely to medium spaced, subhorizontal and subvertical, planar with occasional infill of sand and fine gravel size mudstone. Between 22.50m and 23.00m; with very closely spaced very thin undulating laminae 1-2mm (locally cross laminated) of light grey siltstone.		
23.50	100	62	52	0			(3.00)	Between 23.45m and 23.50m; thin band of strong light grey brown siltstone/ironstone. Between 23.70m and 23.75m; thin band of strong light grey brown siltstone/ironstone.		
25.50						118.35	25.20	Between 24.70m and 24.75m; thin band of strong light grey brown siltstone/ironstone.		
							(1.25)	Weak to moderately strong very thinly laminated black COAL. Fractures are subhorizontal to 20 degrees planar, smooth, open.		
27.85-28.05	100	84	64	0	C12	117.10	26.45	At 26.40m; thin 1mm laminae of grey yellow siltstone. Very weak to weak indistinctly laminated mid grey MUDSTONE with occasional thin laminae 2-3mm of dark grey black carboniferous mudstone and with occasional undulating lenses/bands up to 30mm of strong to very strong dark brown ironstone/siltstone.		
28.50							(5.05)	Between 28.20m and 28.50m; soft grey slightly sandy CLAY with some angular fine to coarse mudstone lithorelicts and occasional black fine coal fragments.		
								At 29.85m; thin (5mm) undulating coal. Between 29.95m and 30.00m; very strong ironstone		
Remarks								Scale (approx) 1:50	Logged By SMCH	
								Figure No.		



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Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	
								band. Between 30.10m and 30.20m; very weak thinly laminated black coal. Below 30.20m; with much carboniferous material.			
					20/07/2005:30.00m 20/07/2005:	112.05	31.50	Complete at 31.50m			
Remarks							Scale (approx) 1:50		Logged By SMCH		
							Figure No.				