Appendix 9

Borehole Logs (Capita Symonds)

H.B. Boring Company Ltd

Borehole references: BH1 to BH3

Drilled: 13 to 17 October 2005

H.B. BORING & COMPANY LTD.
SITE INVESTIGATION SPECIALISTS

Site	Borehole Number
Barrowford Road, Nelson. Lancashire	1

Boring Method	Diameter	Ground Level (mOD)	Client	Job Number
Cable Percussion	150mm Cased to 10.00m			C4206
	Location	**Dates**	**Engineer**	**Sheet**
	E N	13/10/05 - 14/10/05	Capita Symonds Structures	1/1

Depth m	Samples /Tests	Casing Depth m	Water Depth m	Field Records	Level (mOD)	Depth m (Thickness)	Description	Legend	Water	Inst
0.00-0.50	B					(0.30) 0.30	TOPSOIL			
0.50-1.00	B						Soft to soft/firm grey CLAY / SILT			
1.00-1.45	CPT N=2			1,2/1,0,1,0						
1.00-1.45	B									
2.00-2.45	CPT N=1			0,1/0,0,1,0						
2.00-2.45	B					(4.70)				
3.00-3.45	CPT N=3			1,2/1,1,0,1						
3.00-3.45	B									
4.00-4.45	CPT N=2			1,2/1,0,1,0						
4.00-4.45	B									
5.00-5.45	CPT N=1			Seepage(1) at 4.80m, sealed at 5.80m. 0,1/0,0,0,1		5.00			▽1	
5.00-5.45	B						Firm/stiff grey sandy CLAY with occasional fine sub-rounded gravel and cobbles			
6.50-6.95	CPT N=18			1,3/5,4,5,4						
6.50-6.95	B					(5.00)				
8.00-8.45	U			26 blows						
8.50-9.95	B									
8.50	D									
9.50-9.95	CPT N=42			4,8/7,9.14.12		10.00				

Remarks

Service pit to 1.00m
Chiselling from 7.70m to 8.10m for 0.50 hours. Chiselling from 9.20m to 9.60m for 0.50 hours.

Scale (approx)	Logged By
1:50	Eng

Figure No

C4206 1

See key sheet for symbols and abbreviations

H.B. BORING & COMPANY LTD.
SITE INVESTIGATION SPECIALISTS

Site: Barrowford Road, Nelson, Lancashire			Borehole Number: 2
Boring Method: Cable Percussion	Diameter: 150mm Cased to 7.00m	Ground Level (mOD):	Client:	Job Number: C4206
	Location: E N	Dates: 14/10/05 - 17/10/05	Engineer: Capita Symonds Structures	Sheet: 1/1

Depth m	Samples /Tests	Casing Depth m	Water Depth m	Field Records	Level (mOD)	Depth m (Thickness)	Description	Legend	Water	Inst
0.00-0.50	B					(0.40)	TOPSOIL			
0.50-1.00	B					0.40	Soft to soft/firm grey CLAY / SILT			
1.00-1.45	CPT N=2			1,1/1,0,1,0						
1.00-1.45	B									
2.00-2.45	U			11 blows						
2.50	D					(4.30)				
3.00-3.45	CPT N=3			1,2/0,1,1,1						
3.00-3.45	B									
4.00-4.45	CPT N=3			1,2/1,0,1,1						
4.00-4.45	B									
						4.70				
5.00-5.45	CPT N=8			1,2/2,1,2,3			Firm grey CLAY with fragments of broken mudstone			
5.00-5.45	B									
						(1.80)				
6.00-6.45	CPT N=8			1,1/2,3,2,1						
6.00-6.45	B									
						6.50				
6.60-7.05	CPT 43*/200			4,4/8,11,14,10			Very weak grey/black MUDSTONE			
6.60-7.05	D					(0.55)				
						7.05				
							Borehole completed at 7.05m			

Remarks: Service pit to 1.00m

Scale (approx): 1:50

Logged By: Eng

Figure No.: C4206.2

See key sheet for symbols and abbreviations

H.B. BORING & COMPANY LTD.
SITE INVESTIGATION SPECIALISTS

Site: Barrowford Road, Nelson, Lancashire			Borehole Number: 3
Boring Method: Cable Percussion	Diameter: 150mm Cased to 8.00m	Ground Level (mOD):	Client:
			Job Number: C4206
	Location: E N	Dates: 12/10/05 - 13/10/05	Engineer: Capita Symonds Structures
			Sheet: 1/1

Depth m	Samples /Tests	Casing Depth m	Water Depth m	Field Records	Level (mOD)	Depth m (Thickness)	Description	Legend	Water	Inst
0.00-0.50	B						TOPSOIL			
0.50-1.00	B					(0.80)				
						0.80	Soft/firm grey sandy gravelly CLAY			
1.20-1.65	CPT N=6			1,1/1,2,1,2						
1.20-1.65	B									
1.80	D									
2.00-2.45	CPT N=10			1,2/2,3,3,2						
2.00-2.45	B									
2.50	D									
3.00-3.45	CPT N=13			1,2/3,3,3,4		(4.10)				
3.00-3.45	B									
3.50	D									
4.00-4.45	U			48 blows					2	
									1	
4.80	D								1	
5.00-5.45	CPT N=22			3,4/4,5,6,7		4.90	Medium dense clayey fine to coarse angular mudstone GRAVEL			
5.00-5.45	B			Slow(1) at 4.90m, rose to 4.50m in 20 mins.						
5.70	D									
						(2.10)				
6.50-6.95	CPT N=25			4,5/5,6,7,7						
6.50-6.95	B									
7.00	D					7.00	Very weak grey clayey MUDSTONE			
						(0.80)				
7.80	D			Medium(2) at 7.80m, rose to 3.80m in 20 mins.		7.80			2	
8.00-8.42	CPT 50*/270			5,12/12,13,13,12		8.00	Hard SILISTONE (Drillers description)			
8.00-8.42	B						Borehole completed at 8.00m			

Remarks

Service pit to 1.20m
Chiselling from 3.80m to 4.00m for 1.00 hour. Chiselling from 7.80m to 8.00m for 1.00 hour.

Scale (approx)	Logged By
1:50	Eng

Figure No. C4206.3

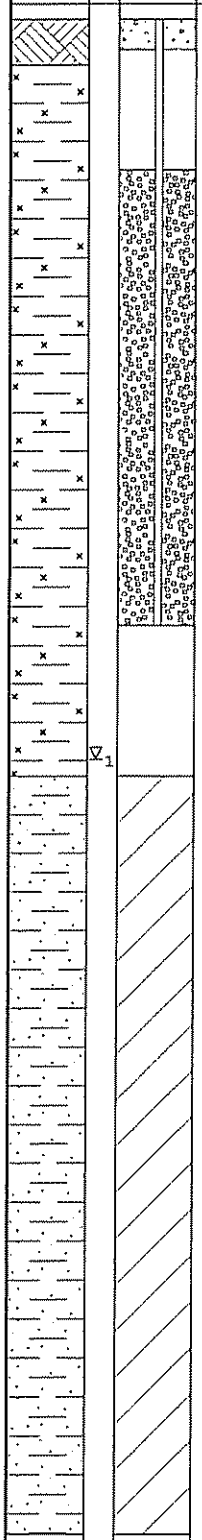
See key sheet for symbols and abbreviations

H.B. BORING & COMPANY LTD.
SITE INVESTIGATION SPECIALISTS

Site	Borehole Number
Barrowford Road, Nelson, Lancashire	1

Installation Type	Dimensions	Client	Job Number
Monitoring well	Internal Diameter of Tube [A] = 50 mm Diameter of Filter Zone = 150 mm		C4206

Location	Ground Level (mOD)	Engineer	Sheet
E N		Capita Symonds Structures	1/1



Depth (m)	Description
0.20	Concrete
	Bentonite Seal
1.00	
	Gravel Filter
4.00	
	Bentonite Seal
5.00	
	Bottom Fill
10.00	

Groundwater Strikes during Drilling

Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings 5 min	Readings 10 min	Readings 15 min	Readings 20 min	Depth Sealed (m)
13/10/05		4.80		Seepage					5.80

Groundwater Observations During Drilling

Date	Start of Shift Time	Start of Shift Depth Hole (m)	Start of Shift Casing Depth (m)	Start of Shift Water Depth (m)	Start of Shift Water Level (mOD)	End of Shift Time	End of Shift Depth Hole (m)	End of Shift Casing Depth (m)	End of Shift Water Depth (m)	End of Shift Water Level (mOD)

Instrument Groundwater Observations

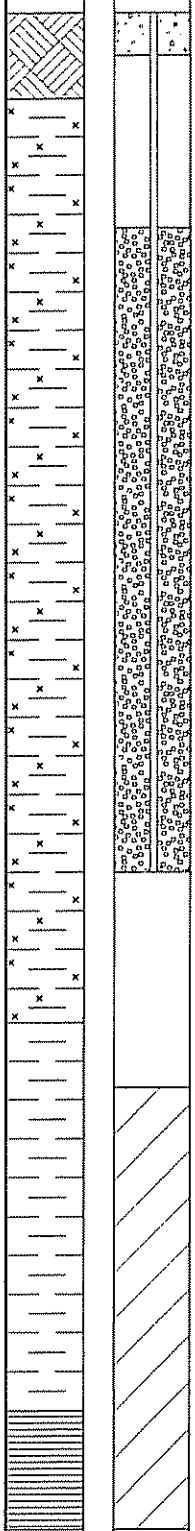
Inst [A] Type : Monitoring well

Date	Instrument [A] Time	Instrument [A] Depth (m)	Instrument [A] Level (mOD)	Remarks
14/10/05				Installed

Remarks

H.B. BORING & COMPANY LTD.
SITE INVESTIGATION SPECIALISTS

Site: Barrowford Road, Nelson, Lancashire		Borehole Number: 2
Installation Type: Monitoring well	Dimensions: Internal Diameter of Tube [A] = 50 mm; Diameter of Filter Zone = 150 mm	Client
		Job Number: C4206
	Location: E N / Ground Level (mOD)	Engineer: Capita Symonds Structures
		Sheet: 1/1



Depth (m)	Description
0.20	Concrete
	Bentonite Seal
1.00	
	Gravel Filter
4.00	
	Bentonite Seal
5.00	
	Bottom Fill
7.05	

Groundwater Strikes during Drilling

Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings 5 min	Readings 10 min	Readings 15 min	Readings 20 min	Depth Sealed (m)

Groundwater Observations During Drilling

Date	Start of Shift Time	Start of Shift Depth Hole (m)	Start of Shift Casing Depth (m)	Start of Shift Water Depth (m)	Start of Shift Water Level (mOD)	End of Shift Time	End of Shift Depth Hole (m)	End of Shift Casing Depth (m)	End of Shift Water Depth (m)	End of Shift Water Level (mOD)

Instrument Groundwater Observations

Inst [A] Type : Monitoring well

Date	Instrument [A] Time	Instrument [A] Depth (m)	Instrument [A] Level (mOD)	Remarks
17/10/05				Installed

Remarks

H.B. BORING & COMPANY LTD.
SITE INVESTIGATION SPECIALISTS

Site	Borehole Number
Barrowford Road. Nelson, Lancashire	3

Installation Type	Dimensions	Client	Job Number
Monitoring well	Internal Diameter of Tube [A] = 50 mm Diameter of Filter Zone = 150 mm		C4206

Location	Ground Level (mOD)	Engineer	Sheet
E N		Capita Symonds Structures	1/1

Legend	Water	Inst. [A]	Level (mOD)	Depth (m)	Description
				0.20	Concrete
					Bentonite Seal
				1.00	
					Gravel Filter
				8.00	

Groundwater Strikes during Drilling

Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings 5 min	Readings 10 min	Readings 15 min	Readings 20 min	Depth Sealed (m)
12/10/05		4.90		Slow	4.70	4.60	4.50	4.50	
13/10/05		7.80		Medium	5.00	4.20	3.90	3.80	

Groundwater Observations During Drilling

Date	Start of Shift Time	Start of Shift Depth Hole (m)	Start of Shift Casing Depth (m)	Start of Shift Water Depth (m)	Start of Shift Water Level (mOD)	End of Shift Time	End of Shift Depth Hole (m)	End of Shift Casing Depth (m)	End of Shift Water Depth (m)	End of Shift Water Level (mOD)

Instrument Groundwater Observations

Inst. [A] Type : Monitoring well

Date	Instrument [A] Time	Instrument [A] Depth (m)	Instrument [A] Level (mOD)	Remarks
13/10/05				Installed

Remarks

H.B. BORING & COMPANY LTD.
SITE INVESTIGATION SPECIALISTS

Standard Penetration Test Results

Site : Barrowford Road, Nelson, Lancashire

Client :

Engineer : Capita Symonds Structures

Job Number: C4206

Sheet: 1/1

Borehole Number	Base of Borehole (m)	End of Seating Drive (m)	End of Test Drive (m)	Test Type	Seating Blows per 75mm		Blows for each successive 75mm penetration				Result	Comments
					1	2	1	2	3	4		
1	1.000	1.150	1.450	CPT	1	2	1	0	1	0	N=2	
1	2.000	2.150	2.450	CPT	0	1	0	0	1	0	N=1	
1	3.000	3.150	3.450	CPT	1	2	1	1	0	1	N=3	
1	4.000	4.150	4.450	CPT	1	2	1	0	1	0	N=2	
1	5.000	5.150	5.450	CPT	0	1	0	0	0	1	N=1	
1	6.500	6.650	6.950	CPT	1	3	5	4	5	4	N=18	
1	9.500	9.650	9.950	CPT	4	8	7	9	14	12	N=42	
2	1.000	1.150	1.450	CPT	1	1	1	0	1	0	N=2	
2	3.000	3.150	3.450	CPT	1	2	0	1	1	1	N=3	
2	4.000	4.150	4.450	CPT	1	2	1	0	1	1	N=3	
2	5.000	5.150	5.450	CPT	1	2	2	1	2	3	N=8	
2	6.000	6.150	6.450	CPT	1	1	2	3	2	1	N=8	
2	6.600	6.850	7.050	CPT	4	4	8	11	14	10	43*/200mm	
3	1.200	1.350	1.650	CPT	1	1	1	2	1	2	N=6	
3	2.000	2.150	2.450	CPT	1	2	2	3	3	2	N=10	
3	3.000	3.150	3.450	CPT	1	2	3	3	3	4	N=13	
3	5.000	5.150	5.450	CPT	3	4	4	5	6	7	N=22	
3	6.500	6.650	6.950	CPT	4	5	5	6	7	7	N=25	
3	8.000	8.150	8.420	CPT	5	12	12	13	13	12	50*/270mm	
4	1.000	1.150	1.450	CPT	1	2	2	3	2	2	N=9	
4	2.000	2.150	2.450	CPT	1	4	5	4	6	4	N=19	
4	3.000	3.150	3.450	CPT	2	7	5	4	9	8	N=26	
4	5.000	5.150	5.450	CPT	2	5	4	6	5	6	N=21	
5	2.000	2.150	2.450	SPT	1	1	2	2	2	3	N=9	
5	4.000	4.150	4.450	SPT	1	1	2	2	3	4	N=11	
5	6.000	6.150	6.450	SPT	1	1	2	2	2	3	N=9	
5	9.000	9.150	9.450	SPT	1	2	3	3	3	4	N=13	
5	12.000	12.150	12.450	SPT	2	2	2	3	3	4	N=12	
6	2.000	2.150	2.450	SPT	1	1	2	2	2	2	N=8	
6	4.000	4.150	4.450	SPT	2	2	2	3	4	4	N=13	
6	6.000	6.150	6.450	SPT	1	1	2	2	3	4	N=11	
6	7.500	7.650	7.950	SPT	1	1	1	2	2	3	N=8	
6	10.500	10.650	10.950	SPT	1	2	2	3	3	4	N=12	