

BOREHOLE RECORD - Cable Percussion

Project	Wrexham FC : New Kop Stand - Ground Investigation	Engineer	Ramboll UK Limited	Project No.	PN224453
Client	Wrexham AFC	National Grid Coordinates	332843.9 E 350918.6 N	Borehole	BH102
				Ground Level	88.59 m OD

Sampling			Properties			Strata		Scale 1:50		
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w(%)	SPI N	Description	Depth	Legend	Level (m OD)	
10.00			PID=<0.1							
10.50	D									
11.00 - 11.40		10.70 (DRY)			S50/246mm	Below 11.00m, very dense.				
11.00 - 11.45	#									
11.00 - 11.45	B									
12.00	D			16		Stiff brown slightly sandy slightly gravelly CLAY. Gravel is angular to subrounded fine to coarse of siltstone and sandstone.	11.90		76.69	
12.50 - 12.95	UT100	12.20 (12.20)								
13.00	D					Brown mottled black silty fine to coarse SAND.	12.90		75.69	
13.50	D									
14.00 - 14.44		13.80 (12.10)			S50/288mm	Below 14.00m, very dense.				
14.00 - 14.45	B									
14.00 - 14.45	D									
15.00	D									
15.50 - 15.95		15.50 (10.30)			S24	Below 15.50m, medium dense. Sand is fine to medium.				
15.50 - 15.95	B									
15.50 - 15.95	D									
15.50 - 15.95	ES									
16.50	D									
17.00 - 17.45	#									
17.00 - 17.45	B									
18.00 - 18.45		16.90 (11.00)			S28					
18.00	D									
18.50 - 18.95		18.20 (12.20)			S36	Below 18.50m, dense. Occasional bands of firm to stiff clay.				
18.50	B									
18.50 - 18.95	D									
19.50	D					Stiff brown slightly gravelly sandy CLAY with occasional bands of sand. Gravel is angular to subrounded fine to coarse of siltstone and sandstone. Thinly laminated in places.	19.90		68.69	
20.00 - 20.34		19.90 (16.00)			S50/195mm					

Boring				Progress				Groundwater					
Depth	Hole Dia.	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed
				18.00	18.00	11.80	14/10/22	08:00					
				23.50	23.50	13.80	14/10/22	17:00					
				23.50	23.50	10.60	17/10/22	08:00					
				27.20	26.00	17.90	17/10/22	17:00					

Remarks 13.50m depth and reducing casing diameter to 150mm. A 50mm standpipe was installed to 15.90m with a geowrapped slotted section from 12.90m to 15.90m with a flush cover installed. Backfill details from base of hole: bentonite seal up to 15.90m, gravel filter up to 12.90m, bentonite seal up to 0.20m, concrete up to ground level.

AGS
symbols and abbreviations are explained on the accompanying key sheets.
All dimensions are in metres.

Logged in accordance with BS5930:2015 + A1:2020

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Figure Sheet 2 of 3
06/04/2023

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BOREHOLE RECORD - Cable Percussion

Project		Wrexham FC : New Kop Stand - Ground Investigation		Engineer		Ramboll UK Limited		Project No.		PN224453	
Client		Wrexham AFC		National Grid Coordinates		332843.9 E 350918.6 N		Borehole		BH102	
								Ground Level		88.59 m OD	

Sampling			Properties			Strata		Scale 1:50	
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w(%)	SPT N	Description	Depth	Legend	Level (m OD)
20.00 - 20.45	B					Below 20.00m, very stiff.			
20.00 - 20.45	D								
21.00	D			26					
21.50 - 21.95	UT100	20.80 (17.20)	251			Between 21.50-21.95m, UUT, cu = 251kPa.			
21.50 - 21.95									
22.00	D								
22.50	D								
23.00 - 23.43		22.50 (13.80)			S50/277mm				
23.00 - 23.45	B					Brown silty fine to coarse SAND.	23.30		65.29
23.00 - 23.45	D								
24.00	D					Brown silty fine to coarse SAND and angular to subrounded fine to coarse GRAVEL of siltstone and sandstone. Low to medium subangular to rounded cobble content of sandstone.	23.80		64.79
24.50 - 24.93		24.20 (11.10)			S50/282mm	Below 24.50m, very dense.			
24.50 - 24.95	B					Very dense brown slightly gravelly very silty fine to coarse SAND. Grading to slightly gravelly sandy silt.	24.70		63.89
25.50	D					Very stiff brown slightly sandy slightly gravelly CLAY with a low subrounded cobble content of siltstone and sandstone. Gravel is subangular to subrounded fine to coarse of siltstone and sandstone. Occasional bands of sand.	25.40		63.19
26.00 - 26.29		24.20 (11.10)			S50/138mm	Below 26.00m, many bands of brown fine to coarse sand.			
26.00 - 26.45	B								
27.00	D			11					
27.50 - 27.83		27.20 (9.10)			S50/178mm				
27.50 - 27.95	B								
28.50	D								
29.00 - 29.45	B								
29.00 - 29.45	UT100	28.00 (12.80)							
29.50 - 29.95	B								
29.50 - 29.95	UT100	28.00 (14.70)							
30.00	D			14		End of Borehole	30.00		58.59

Boring				Progress					Groundwater					
Depth	Hole Dia.	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
				27.20	26.00	9.10	18/10/22	08:00						
				30.00	28.00	14.70	18/10/22	17:00						

Remarks



Symbols and abbreviations are explained on the accompanying key sheets.
All dimensions are in metres.

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Sheet 3 of 3

06/04/2023

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BOREHOLE RECORD - Cable Percussion

Project	Wrexham FC : New Kop Stand - Ground Investigation	Engineer	Ramboll UK Limited	Project No.	PN224453
Client	Wrexham AFC	National Grid Coordinates	332874.1 E 350946.0 N	Borehole	BH104
				Ground Level	88.54 m OD

Sampling			Properties			Strata		Scale 1:50		
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w(%)	SPI N	Description	Depth	Legend	Level (m OD)	
0.00 - 0.50	B	(DRY)			S7	MADE GROUND: Dark greyish brown very sandy clayey angular to subrounded fine to coarse gravel of sandstone, concrete, clinker and brick fragments. Medium cobble content. Sand is of ash.	1.00		87.54	
0.20	ES									
0.50	ES									
0.50 - 1.20	B									
1.00	ES									
1.20 - 1.65	B	1.80 (DRY)			S11	MADE GROUND: Loose to medium dense yellowish grey and yellowish brown sandy clayey subangular to subrounded fine to coarse gravel of sandstone and occasional brick fragments. Medium cobble content.	2.80		85.74	
1.20 - 1.65	D									
1.80	D									
2.00 - 2.45										
2.00	ES									
2.00 - 2.45	B	3.00 (DRY)			S17	Medium dense becoming loose greyish brown very sandy clayey subangular to subrounded fine to coarse GRAVEL of sandstone. Medium cobble content.	4.30		84.24	
2.00 - 2.45	D									
2.80	D									
3.00 - 3.45										
3.00	ES									
3.00 - 3.45	B	4.00 (DRY)			S9	Loose greyish brown slightly silty gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse of sandstone and traces of coal.	5.20		83.34	
3.00 - 3.45	D									
3.80	D									
4.00 - 4.45										
4.00	ES									
4.00 - 4.45	B	4.80 (DRY)			S6	Loose yellowish brown fine to coarse SAND and subangular to subrounded fine to coarse GRAVEL of sandstone.	5.40		83.14	
4.00 - 4.45	D									
4.80	D									
5.00 - 5.45										
5.00	ES									
5.00 - 5.45	B	6.00 (DRY)			S50/57mm	Firm thinly laminated brown mottled reddish brown slightly sandy CLAY.	6.10		82.44	
5.00 - 5.45	D									
5.80	D									
6.00	ES									
6.00 - 6.45	UT89									
6.50	D	7.50 (6.10)			C23	Brown sandy slightly clayey subangular to subrounded fine to coarse GRAVEL of various lithologies. High cobble content of sandstone.	9.70		79.34	
7.00	D									
7.00	ES									
7.50 - 7.62										
7.50 - 7.95	B									
8.00	ES	9.00 (6.90)			C23	Below 9.00m, medium dense.	9.90		78.64	
8.50	D									
9.00 - 9.45										
9.00	ES									
9.00 - 9.45	B									
10.00	D					Brown very clayey fine to medium SAND. with traces of fine gravel.				
10.00	ES									

Boring				Progress				Groundwater			
Depth	Hole Dia.	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to in Mins
1.20	0.40	Inspection Pit	SL/JL	0.00			20/02/23	08:00			
5.80	0.20	Cable Percussion	SL/JL	9.50	9.50	7.50	20/02/23	17:00			
15.45	0.15	Cable Percussion	SL/JL	9.50	9.50	8.30	21/02/23	08:00			
				15.45	15.00	11.60	21/02/23	17:00			

Remarks Inspection pit hand excavated to 1.20m depth and no services were found. ES sample = 1 litre plastic tub, 2 x 258ml amber glass jars and 1 x 60ml VOC vial. Installed a 1m thick bentonite seal at 5.80m depth and reduced casing diameter to 150mm. Chiselling: 7.00-8.00m for 130 minutes. Water was added to assist boring between 6.50m and 15.00m. A 50mm standpipe was installed to 2.80m with a geowrapped slotted section from 1.00m to 2.80m with an up-standing cover installed. A 50mm standpipe was installed to 15.00m with a geowrapped slotted section from 12.00m to 15.00m with an up-standing cover installed. Backfill details from base of hole: gravel filter up to 12.00m, bentonite seal up to 2.80m, gravel filter up to 1.00m, bentonite seal up to 10.00m. Logged in accordance with BS5930:2015 + A1:2020

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Figure Sheet 1 of 2
06/04/2023

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BOREHOLE RECORD - Cable Percussion

Project		Wrexham FC : New Kop Stand - Ground Investigation		Engineer		Ramboll UK Limited		Project No.		PN224453	
Client		Wrexham AFC		National Grid Coordinates		332874.1 E 350946.0 N		Borehole		BH104	
								Ground Level		88.54 m OD	

Sampling			Properties			Strata		Scale 1:50			
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w(%)	SPI N	Description	Depth	Legend	Level (m OD)		
10.50 - 10.95		10.50 (10.30)			S43						
10.50 - 10.95	B					Dense orangish brown very sandy SILT.	10.60			77.94	
10.50 - 10.95	D					Grading to stiff brown sandy clay.	10.80			77.74	
11.00	ES					Dense orangish brown slightly silty fine to medium SAND.					
11.50	D						11.50			77.04	
						Medium dense orangish brown clayey fine to medium SAND with traces of fine gravel of coal.					
12.00 - 12.45		12.00 (10.50)			S28						
12.00	ES										
12.00 - 12.45	B										
12.00 - 12.45	D										
13.00	D										
13.00	ES										
13.50 - 13.95		13.50 (10.70)			S20*						
13.50 - 13.95	B										
13.50 - 13.95	D										
14.00	ES										
14.50	D										
15.00 - 15.45		15.00 (11.60)			S29						
15.00	ES										
15.00 - 15.45	D					End of Borehole	15.45			73.09	

Boring				Progress					Groundwater					
Depth	Hole Dia.	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

AGS 0.30m, concrete up to ground level.

Symbols and abbreviations are explained on the accompanying key sheets.
All dimensions are in metres.

Logged in accordance with BS5930:2015 + A1:2020

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Sheet 2 of 2

06/04/2023

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BOREHOLE RECORD - Cable Percussion

Project	Wrexham FC : New Kop Stand - Ground Investigation	Engineer	Ramboll UK Limited	Project No.	PN224453
Client	Wrexham AFC	National Grid Coordinates	332880.0 E 350909.0 N	Borehole	BH105
				Ground Level	88.54 m OD

Sampling		Properties				Strata	Scale 1:50		
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w(%)	SPI N	Description	Depth	Legend	Level (m OD)
0.00 - 0.50	B	(DRY)			S7	MADE GROUND: Dark brown very sandy clayey angular to subrounded fine to coarse gravel of various lithologies and brick fragments. High cobble content Sand is of ash.	0.50		88.04
0.20	ES								
0.50	ES								
0.50 - 1.20	B					MADE GROUND: Loose dark greyish brown very sandy clayey angular to subrounded fine to coarse gravel of various lithologies and brick fragments. Medium cobble content. Sand is of ash.			
1.00	ES								
1.20 - 1.65	B	1.70 (DRY)			S17		2.00		86.54
1.20 - 1.65	D								
1.80	D								
2.00 - 2.45	B					Medium dense to very dense greyish brown very sandy clayey angular to subrounded fine to coarse GRAVEL various lithologies. Medium cobble content.			
2.00 - 2.45	B								
2.80	D	3.00 (DRY)			S50/51mm				
3.00 - 3.15	B					Between 3.00-3.30m, cobble/boulder.			
3.00	ES								
3.00 - 3.45	B								
3.80	D								
4.00 - 4.45	B	4.00 (DRY)			S25		4.00		84.54
4.00 - 4.45	ES					Medium dense brownish grey very sandy clayey angular to subrounded fine to coarse GRAVEL of various lithologies. Low cobble content.			
4.00 - 4.45	B								
4.80	D								
5.00 - 5.45	B								
5.00	ES	4.70 (DRY)			C26				
5.00 - 5.45	B					Between 5.80-6.50m, cobble/boulder.			
6.00	D								
6.00	ES								
6.50 - 6.95	B								
6.50 - 6.95	B	6.20 (DRY)			C25				81.04
7.00	ES								
7.50	D					Firm to stiff greyish brown slightly sandy CLAY.			
8.00 - 8.45	B					Medium dense greyish brown very sandy clayey angular to subrounded fine to coarse GRAVEL of various lithologies. Low cobble content.			
8.00 - 8.45	ES								
8.00	B	7.70 (DRY)			C26		7.60		80.94
8.00 - 8.45	B								
9.00	D								
9.00	ES					Between 9.00-9.50m, cobble/boulder.			
9.50 - 9.95	B								
9.50 - 9.95	B	9.20 (DRY)			C21				78.83
9.50 - 9.95	ES					Firm to stiff reddish brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to medium of various lithologies.			
10.00	ES								

Boring				Progress				Groundwater					
Depth	Hole Dia.	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed
1.20	0.40	Inspection Pit	SL/JL	0.00			23/02/23	08:00					
7.00	0.20	Cable Percussion	SL/JL	4.00	4.00	DRY	23/02/23	17:00					
15.43	0.15	Cable Percussion	SL/JL	4.00	4.00	DRY	24/02/23	08:00					
				12.00	12.00	11.6	24/02/23	17:00					

Remarks	Inspection pit hand excavated to 1.20m depth and no services were found. ES sample = 1 litre plastic tub, 2 x 258ml amber glass jars and 1 x 60ml VOC vial. Chiselling: 3.00-3.30m for 40 minutes, 5.80-6.50m for 155 minutes, 9.00-9.50m for 80 minutes. Installed a 1m thick bentonite seal at 7.00m depth and reduced casing diameter to 150mm. Water was added to assist boring between 11.00m and 15.00m. A 50mm standpipe was installed to 2.00m with a geowrapped slotted section from 0.50m to 2.00m with an up-standing cover installed. A 50mm standpipe was installed to 15.00m with a geowrapped slotted section from 12.00m to 15.00m with an up-standing cover installed. Backfill details from base of hole: gravel filter up to 12.00m, bentonite seal up to 2.00m, gravel filter up to 0.50m, bentonite seal up to 10.00m. Logged in accordance with BS5930:2015 + A1:2020	Logged by JG Checked by IN Figure Sheet 1 of 2 06/04/2023
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BOREHOLE RECORD - Cable Percussion

Project		Wrexham FC : New Kop Stand - Ground Investigation		Engineer		Ramboll UK Limited		Project No.		PN224453	
Client		Wrexham AFC		National Grid Coordinates		332880.0 E 350909.0 N		Borehole		BH105	
								Ground Level		88.54 m OD	

Sampling			Properties			Strata		Scale 1:50		
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w(%)	SPI N	Description	Depth	Legend	Level (m OD)	
10.50	D									
11.00	ES						11.00			77.54
11.00 - 11.45	UT67	10.50 (DRY)				Greyish brown fine to medium SAND.				
11.50	D					Brown clayey fine to medium SAND.	11.30			77.24
12.00	D									
12.00	ES									
12.50 - 12.95		12.00 (6.20)			S34	Below 12.50m, dense.				
12.50 - 12.95	B									
12.50 - 12.95	D									
13.00	ES									
13.50	D									
14.00 - 14.43		13.70 (7.80)			S60/ 276mm	Below 14.00m, very dense.				
14.00 - 14.45	ES									
14.00 - 14.45	B									
14.00 - 14.45	D									
15.00 - 15.43		15.00 (8.30)			S50/ 282mm					
15.00	D									
15.00	ES									
15.01 - 15.43	D					End of Borehole	15.43			73.10

Boring				Progress				Groundwater						
Depth	Hole Dia.	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
				12.00	12.00	10.00	28/02/23	08:00						
				15.43	15.00	8.30	28/02/23	17:00						

Remarks

AGS

0.30m, concrete up to ground level.

Symbols and abbreviations are explained on the accompanying key sheets.
All dimensions are in metres.

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Sheet 2 of 2

06/04/2023

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Logged in accordance with BS5930:2015 + A1:2020

BOREHOLE RECORD - Cable Percussion

Project	Wrexham FC : New Kop Stand - Ground Investigation	Engineer	Ramboll UK Limited	Project No.	PN224453
Client	Wrexham AFC	National Grid Coordinates	332914.1 E 350958.2 N	Borehole	BH106
				Ground Level	88.58 m OD

Sampling			Properties			Strata		Scale 1:50		
Depth	Sample Type	Depth Cased (& to Water)	Strength kPa	w(%)	SPI N	Description	Depth	Legend	Level (m OD)	
0.00 - 0.50	B	(DRY)			S16	MADE GROUND: Black to dark greyish brown very sandy clayey angular to subrounded fine to coarse gravel of various lithologies and brick fragments. Low cobble content. Sand is of ash.	1.00		87.58	
0.20	ES									
0.50	ES									
0.50 - 1.20	B									
1.00	ES									
1.20 - 1.65	B	1.80 (DRY)			S39	MADE GROUND: Medium dense yellowish brown very sandy clayey angular to subrounded fine to coarse gravel of various lithologies and brick fragments.	2.70		85.88	
1.20 - 1.65	D									
1.80	D									
2.00 - 2.45	ES									
2.00 - 2.45	B									
2.00 - 2.45	D	3.00 (DRY)			S8	Below 2.00m, dense.	4.00		84.58	
2.80	D									
3.00 - 3.45	ES									
3.00 - 3.45	B									
3.00 - 3.45	D									
3.80	D	4.00 (DRY)			S28	Loose greyish brown very sandy clayey angular to subrounded fine to coarse GRAVEL of various lithologies including traces of coal.	5.80		82.78	
4.00 - 4.45	ES									
4.00 - 4.45	B									
4.00 - 4.45	D									
4.80	D									
5.00 - 5.45	ES	4.70 (DRY)			S18	Medium dense greyish brown very sandy clayey angular to subrounded fine to coarse GRAVEL of various lithologies. Low cobble content.	5.90		82.68	
5.00 - 5.45	B									
5.00 - 5.45	D									
6.00	ES									
6.00	D									
6.00 - 6.95	ES	6.20 (DRY)			S14	Firm greyish brown slightly sandy CLAY.	9.80		78.78	
6.50 - 6.95	B									
6.50 - 6.95	D									
7.00	ES									
7.50	D									
8.00 - 8.45	ES	7.70 (DRY)			S31	Below 8.00m, dense, medium cobble content.				
8.00 - 8.45	B									
8.00 - 8.45	D									
9.00	D									
9.00	ES									
9.50 - 9.95	B	9.20 (DRY)			S44	Dense greyish brown sandy slightly clayey angular to subrounded fine to coarse GRAVEL of various lithologies. Low to medium cobble content				
9.50 - 9.95	D									
9.50 - 9.95	ES									
10.00	B									
10.00	D									

Boring				Progress				Groundwater				
Depth	Hole Dia.	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins
1.20	0.40	Inspection Pit	SL/JL	0.00			21/02/23	08:00	15.20	14.50	11.20	20
10.00	0.20	Cable Percussion	SL/JL	4.00	4.00	DRY	21/02/23	17:00				
20.44	0.15	Cable Percussion	SL/JL	4.00	4.00	DRY	22/02/23	08:00				
				16.50	16.50	11.90	22/02/23	17:00				

Remarks Inspection pit hand excavated to 1.20m depth and no services were found. ES sample = 1 litre plastic tub, 2 x 258ml amber glass jars and 1 x 60ml VOC vial. Installed a 1m thick bentonite seal at 10.00m depth and reduced casing diameter to 150mm. Chiselling: 12.80-14.00m for 140 minutes. Water was added to assist boring between 9.90m and 20.00m. A 50mm standpipe was installed to 2.70m with a geowrapped slotted section from 1.00m to 2.70m with an up-standing cover installed. A 50mm standpipe was installed to 18.00m with a geowrapped slotted section from 15.00m to 18.00m with an up-standing cover installed. Backfill details from base of hole: gravel filter up to 15.00m, bentonite seal up to 2.70m, gravel filter up to 1.00m, bentonite seal up to 10.00m. Logged in accordance with BS5930:2015 + A1:2020

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Figure Sheet 1 of 3
06/04/2023

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Project	Wrexham FC : New Kop Stand - Ground Investigation	Engineer	Ramboll UK Limited	Project No.	PN224453
Client	Wrexham AFC	National Grid Coordinates	332914.1 E 350958.2 N	Borehole	BH106
				Ground Level	88.58 m OD

Sampling			Properties			Strata		Scale 1:50		
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w(%)	SPI N	Description	Depth	Legend	Level (m OD)	
10.50	D									
11.00 - 11.45		10.70 (10.60)			C35					
11.00	ES									
11.00 - 11.45	B									
12.00	D									
12.00	ES									
12.50 - 12.95		12.30 (12.10)			S39					
12.50 - 12.95	B					Very stiff occasionally thinly laminated reddish brown slightly sandy slightly gravelly CLAY. Gravel is subangular fine to coarse of various lithologies.	12.80		75.78	
13.00	ES									
13.50	D									
14.00	ES									
14.00 - 14.45	UT100	13.50 (13.30)				Between 14.00-14.45m, UUT, cu = 353kPa, extremely high strength.				
14.50	D									
15.00	D									
15.00	ES					Brown silty fine to coarse SAND.	15.20		73.38	
15.50 - 15.95		15.20 (11.60)			S21	Medium dense to dense brown clayey fine to medium SAND with traces of angular fine gravel of coal.	15.50		73.08	
15.50 - 15.95	B									
15.50 - 15.95	D									
16.00	ES									
16.50	D									
17.00 - 17.45		16.70 (10.70)			S39					
17.00	ES									
17.00 - 17.45	B									
17.00 - 17.45	D									
18.00	D									
18.00	ES									
18.50 - 18.95		18.20 (10.90)			S29					
18.50 - 18.95	B									
19.00	ES									
19.50	D									
20.00 - 20.44		19.70 (11.70)			S50/ 288mm					

Remarks  0.30m, concrete up to ground level.										Logged by  JG			
Symbols and abbreviations are explained on the accompanying key sheets. All dimensions are in metres.										Checked by  IN			
										Figure		Sheet 2 of 3	
												06/04/2023	
Logged in accordance with BS5930:2015 + A1:2020										 geotechnical and geoenvironmental specialists			

Remarks  0.30m, concrete up to ground level.

Symbols and abbreviations are explained on the accompanying key sheets.
All dimensions are in metres.

Logged in accordance with BS5930:2015 + A1:2020

Logged by JG
Checked by IN
Figure Sheet 2 of 3
06/04/2023

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BOREHOLE RECORD - Cable Percussion

Project		Wrexham FC : New Kop Stand - Ground Investigation		Engineer		Ramboll UK Limited		Project No.		PN224453	
Client		Wrexham AFC		National Grid Coordinates		332914.1 E 350958.2 N		Borehole		BH106	
								Ground Level		88.58 m OD	

Sampling			Properties			Strata			Scale 1:50		
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w(%)	SPT N	Description	Depth	Legend	Level (m OD)		
20.00	ES					Below 20.00m, very dense.					
20.00 - 20.44	D					End of Borehole	20.44		68.14		

Boring					Progress					Groundwater				
Depth	Hole Dia.	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks



Symbols and abbreviations are explained on the accompanying key sheets.
All dimensions are in metres.

Logged by

Checked by

Figure

JG

JN

Sheet 3 of 3

06/04/2023

Logged in accordance with BS5930:2015 + A1:2020



geotechnical and geoenvironmental specialists

FIELDWORK RESULTS - SPT Results Summary

Project Wrexham FC : New Kop Stand - Ground Investigation

Engineer Ramboll UK Limited

Project No. PN224453

Client Wrexham AFC

Hole	Depth (m bgl)	Level (m OD)	SPT Type	SWP (mm)	Seating Drive		Test Drive				SPT 'N' Value	Uncorrected SPT 'N' value				
					0 - 75 (mm)	75 - 150 (mm)	0 - 75 (mm)	75 - 150 (mm)	150 - 225 (mm)	225 - 300 (mm)		10	20	30	40	50
BH100	1.20	85.18	S		3	4	4	4	4	5	17					
BH100	2.00	84.38	S		3	4	5	5	6	9	25					
BH100	3.00	83.38	S		5	7	8	5	5	7	25					
BH100	4.00	82.38	S		5	6	7	5	10	12	34					
BH100	5.00	81.38	S		3	3	5	7	9	20	41					
BH100	6.50	79.88	S		6	10	6	5	6	4	21					
BH100	8.00	78.38	S		4	6	7	7	7	10	31					
BH100	9.50	76.88	S		6	7	6	10	13	21	50					
BH100	11.00	75.38	S		6	7	10	14	15	11	50					
BH100	12.50	73.88	S		4	6	6	8	8	13	35					
BH100	14.00	72.38	S		8	17	27	23			50/127					
BH100	15.50	70.88	S		3	5	7	9	10	13	39					
BH100	17.00	69.38	S		3	7	9	13	16	12	50/276					
BH100	18.50	67.88	S		5	10	14	15	21		50/220					
BH100	20.00	66.38	S		10	13	26	24			50/138					
BH100	21.50	64.88	S		5	8	10	13	14	13	50/292					
BH100	23.00	63.38	S		12	13	27	23			50/123					
BH100	24.50	61.88	S		3	7	10	14	17	9	50					
BH100	26.00	60.38	S		6	10	13	27	10		50/169					
BH100	27.50	58.88	S		9	11	14	20	16		50/198					
BH100	29.00	57.38	S		6	10	14	27	9		50/238					
BH100	30.00	56.38	S		9	13	29	21			50/118					

Hammer No.:	AR2636	Remarks
Energy Ratio, Er (%):	70	

-/- Blows/penetration (mm) after seating

S - SPT with split spoon sampler

*/- Total blows/penetration (mm)

C - SPT with cone

SWP Penetration under own weight (mm)

L - Split Spoon liner used

Printed: 09/03/2023



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FIELDWORK RESULTS - SPT Results Summary

Project Wrexham FC : New Kop Stand - Ground Investigation

Engineer Ramboll UK Limited

Project No. PN224453

Client Wrexham AFC

Hole	Depth (m bgl)	Level (m OD)	SPT Type	SWP (mm)	Seating Drive		Test Drive				SPT 'N' Value	Uncorrected SPT 'N' value				
					0 - 75 (mm)	75 - 150 (mm)	0 - 75 (mm)	75 - 150 (mm)	150 - 225 (mm)	225 - 300 (mm)		10	20	30	40	50
BH101	1.20	87.02	S		5	5	6	5	2	3	16					
BH101	2.00	86.22	S		2	3	4	3	3	7	17					
BH101	3.00	85.22	S		3	4	4	5	4	5	18					
BH101	4.00	84.22	S		2	3	4	3	3	4	14					
BH101	5.00	83.22	S		5	9	20	8	22		50/225					
BH101	6.50	81.72	S		1	1	1	1	2	6	10					
BH101	8.00	80.22	S		2	6	7	9	9	10	35					
BH101	9.50	78.72	S		2	3	5	7	7	9	28					
BH101	11.00	77.22	S		5	7	8	8	9	11	36					
BH101	12.50	75.72	S		5	7	10	13	16	11	50					
BH101	14.00	74.22	S		9	15	15	21	14		50/189					
BH101	15.00	73.22	S		5	8	13	13	16	8	50/252					
BH101	17.00	71.22	S		4	8	10	15	16	9	50/269					
BH101	18.50	69.72	S		6	10	14	15	21		50/225					
BH101	20.00	68.22	S		5	10	14	17	19		50/217					

Hammer No.:	AR2636	Remarks
Energy Ratio, Er (%):	70	

-/- Blows/penetration (mm) after seating

S - SPT with split spoon sampler

*/- Total blows/penetration (mm)

C - SPT with cone

SWP Penetration under own weight (mm)

L - Split Spoon liner used

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FIELDWORK RESULTS - SPT Results Summary

Project Wrexham FC : New Kop Stand - Ground Investigation

Engineer Ramboll UK Limited

Project No. PN224453

Client Wrexham AFC

Hole	Depth (m bgl)	Level (m OD)	SPT Type	SWP (mm)	Seating Drive		Test Drive				SPT 'N' Value	Uncorrected SPT 'N' value				
					0 - 75 (mm)	75 - 150 (mm)	0 - 75 (mm)	75 - 150 (mm)	150 - 225 (mm)	225 - 300 (mm)		10	20	30	40	50
BH102	1.20	87.39	S		1	2	2	1	2	2	7					
BH102	2.00	86.59	S		1	2	2	1	2	1	6					
BH102	3.00	85.59	S		1	3	9	4	5	7	25					
BH102	4.00	84.59	S		5	7	6	7	8	20	41					
BH102	5.00	83.59	S		6	9	11	20	19		50/217					
BH102	6.50	82.09	S		3	4	3	5	7	5	20					
BH102	8.00	80.59	S		2	3	3	5	7	10	25					
BH102	9.50	79.09	S		5	17	7	7	8	9	31					
BH102	11.00	77.59	S		3	7	11	14	18	7	50/246					
BH102	14.00	74.59	S		4	7	10	11	14	15	50/288					
BH102	15.50	73.09	S		1	1	3	5	7	9	24					
BH102	18.00	70.59	S		2	3	4	7	8	9	28					
BH102	18.50	70.09	S		2	4	5	9	10	12	36					
BH102	20.00	68.59	S		6	10	15	18	17		50/195					
BH102	23.00	65.59	S		5	7	10	14	16	10	50/277					
BH102	24.50	64.09	S		6	9	11	13	15	11	50/282					
BH102	26.00	62.59	S		11	14	22	28			50/138					
BH102	27.50	61.09	S		7	14	17	22	11		50/178					

Hammer No.:	AR2636	Remarks
Energy Ratio, Er (%):	70	

-/- Blows/penetration (mm) after seating

S - SPT with split spoon sampler

*/- Total blows/penetration (mm)

C - SPT with cone

SWP Penetration under own weight (mm)

L - Split Spoon liner used

Printed: 09/03/2023



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FIELDWORK RESULTS - SPT Results Summary

Project Wrexham FC : New Kop Stand - Ground Investigation

Engineer Ramboll UK Limited

Project No. PN224453

Client Wrexham AFC

Hole	Depth (m bgl)	Level (m OD)	SPT Type	SWP (mm)	Seating Drive		Test Drive				SPT 'N' Value	Uncorrected SPT 'N' value				
					0 - 75 (mm)	75 - 150 (mm)	0 - 75 (mm)	75 - 150 (mm)	150 - 225 (mm)	225 - 300 (mm)		10	20	30	40	50
BH104	1.20	87.34	S		2	1	2	2	1	2	7					
BH104	2.00	86.54	S		2	2	2	3	3	3	11					
BH104	3.00	85.54	S		2	3	4	4	4	5	17					
BH104	4.00	84.54	S		2	2	3	2	2	2	9					
BH104	5.00	83.54	S		2	2	2	1	1	2	6					
BH104	7.50	81.04	S		25		50				50/57					
BH104	9.00	79.54	C		3	4	5	5	6	7	23					
BH104	10.50	78.04	S		6	8	9	9	11	14	43					
BH104	12.00	76.54	S		1	2	3	6	8	11	28					
BH104	13.50	75.04	S		1	2	3	5	5	7	20					
BH104	15.00	73.54	S		1	3	5	6	8	10	29					
Hammer No.:			AR2636				Remarks									
Energy Ratio, Er (%):			62													

-/- Blows/penetration (mm) after seating

S - SPT with split spoon sampler

*/- Total blows/penetration (mm)

C - SPT with cone

SWP Penetration under own weight (mm)

L - Split Spoon liner used

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FIELDWORK RESULTS - SPT Results Summary

Project Wrexham FC : New Kop Stand - Ground Investigation

Engineer Ramboll UK Limited

Project No. PN224453

Client Wrexham AFC

Hole	Depth (m bgl)	Level (m OD)	SPT Type	SWP (mm)	Seating Drive		Test Drive				SPT 'N' Value	Uncorrected SPT 'N' value				
					0 - 75 (mm)	75 - 150 (mm)	0 - 75 (mm)	75 - 150 (mm)	150 - 225 (mm)	225 - 300 (mm)		10	20	30	40	50
BH105	1.20	87.34	S		1	1	2	2	1	2	7					
BH105	2.00	86.54	S		3	5	7	4	3	3	17					
BH105	3.00	85.54	S		9	16	50				50/51					
BH105	4.00	84.54	S		3	4	5	5	7	8	25					
BH105	5.00	83.54	C		2	3	4	7	7	8	26					
BH105	6.50	82.04	C		2	2	4	6	7	8	25					
BH105	8.00	80.54	C		9	9	7	8	5	6	26					
BH105	9.50	79.04	C		4	3	4	5	6	6	21					
BH105	12.50	76.04	S		3	3	5	7	7	15	34					
BH105	14.00	74.54	S		4	7	11	13	17	19	60/276					
BH105	15.00	73.54	S		5	7	9	11	14	16	50/282					

Hammer No.:	AR2636	Remarks
Energy Ratio, Er (%):	62	

-/- Blows/penetration (mm) after seating S - SPT with split spoon sampler
 -*/- Total blows/penetration (mm) C - SPT with cone
 SWP Penetration under own weight (mm) L - Split Spoon liner used

Printed: 09/03/2023



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FIELDWORK RESULTS - SPT Results Summary

Project Wrexham FC : New Kop Stand - Ground Investigation

Engineer Ramboll UK Limited

Project No. PN224453

Client Wrexham AFC

Hole	Depth (m bgl)	Level (m OD)	SPT Type	SWP (mm)	Seating Drive		Test Drive				SPT 'N' Value	Uncorrected SPT 'N' value				
					0 - 75 (mm)	75 - 150 (mm)	0 - 75 (mm)	75 - 150 (mm)	150 - 225 (mm)	225 - 300 (mm)		10	20	30	40	50
BH106	1.20	87.38	S		2	2	3	4	4	5	16					
BH106	2.00	86.58	S		3	8	7	9	11	12	39					
BH106	3.00	85.58	S		1	2	2	2	2	2	8					
BH106	4.00	84.58	S		3	4	5	7	7	9	28					
BH106	5.00	83.58	S		3	4	4	5	4	5	18					
BH106	6.50	82.08	S		1	3	4	4	3	3	14					
BH106	8.00	80.58	S		5	9	11	7	6	7	31					
BH106	9.50	79.08	S		6	7	7	8	14	15	44					
BH106	11.00	77.58	C		5	7	7	8	9	11	35					
BH106	12.50	76.08	S		4	6	9	9	11	10	39					
BH106	15.50	73.08	S		2	3	4	4	6	7	21					
BH106	17.00	71.58	S		5	6	8	8	11	12	39					
BH106	18.50	70.08	S		2	3	5	7	8	9	29					
BH106	20.00	68.58	S		6	8	9	12	14	15	50/288					

Hammer No.:	AR2636	Remarks
Energy Ratio, Er (%):	62	

-/- Blows/penetration (mm) after seating

S - SPT with split spoon sampler

-*/- Total blows/penetration (mm)

C - SPT with cone

SWP Penetration under own weight (mm)

L - Split Spoon liner used

Printed: 09/03/2023



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SPT Hammer Energy Test Report

in accordance with BS EN ISO 22476-3:2005

ARCHWAY ENGINEERING (UK) LTD
AINLEYS INDUSTRIAL ESTATE
ELLAND
WEST YORKSHIRE
HX5 9JP

SPT Hammer Ref: AR2636
Test Date: 07/01/2022
Report Date: 07/01/2022
File Name: AR2636.spt
Test Operator: JL

Instrumented Rod Data

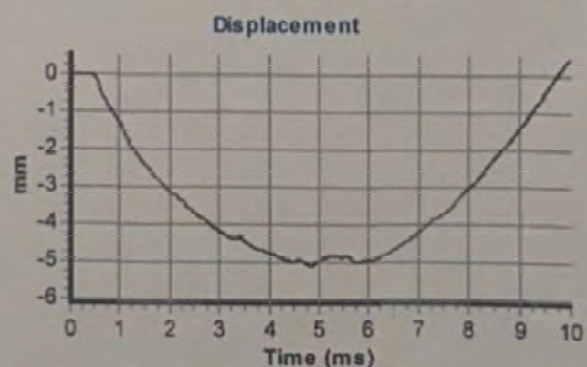
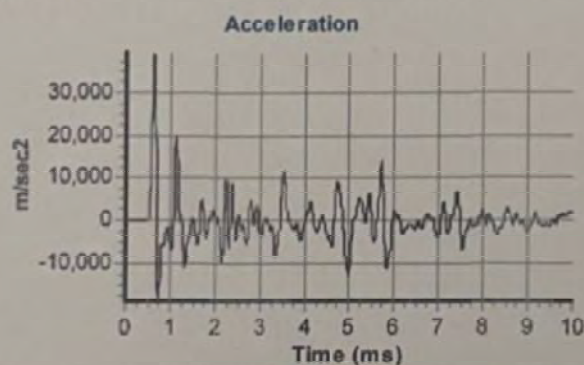
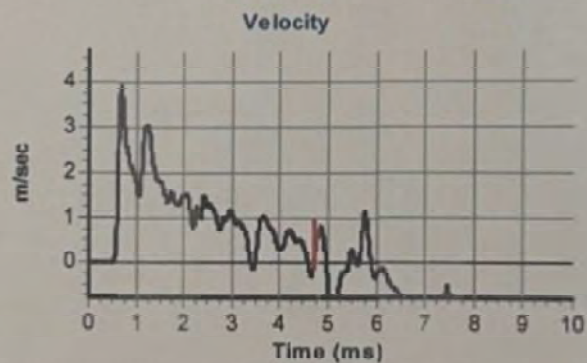
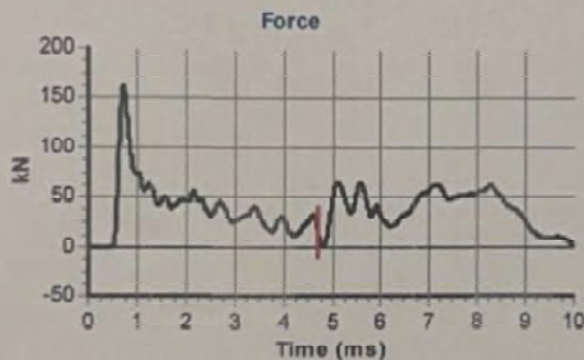
Diameter d_r (mm): 54
Wall Thickness t_r (mm): 6.0
Assumed Modulus E_a (GPa): 200
Accelerometer No.1: 7080
Accelerometer No.2: 11609

SPT Hammer Information

Hammer Mass m (kg): 63.5
Falling Height h (mm): 760
SPT String Length L (m): 10.0

Comments / Location

STEVE LOWRY DRILLING LTD - 78630



Calculations

Area of Rod A (mm²): 905
Theoretical Energy E_{theor} (J): 473
Measured Energy E_{meas} (J): 329

Energy Ratio E_r (%):

70

Signed: J. LOCK
Title: FITTER

The recommended calibration interval is 12 months

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

ARCHWAY ENGINEERING UK LTD
AINLEYS INDUSTRIAL ESTATE
ELLAND
WEST YORKSHIRE
HX5 9JP

SPT Hammer Ref: AR2636
Test Date: 06/01/2023
Report Date: 06/01/2023
File Name: AR2636.spt
Test Operator: JL

Instrumented Rod Data

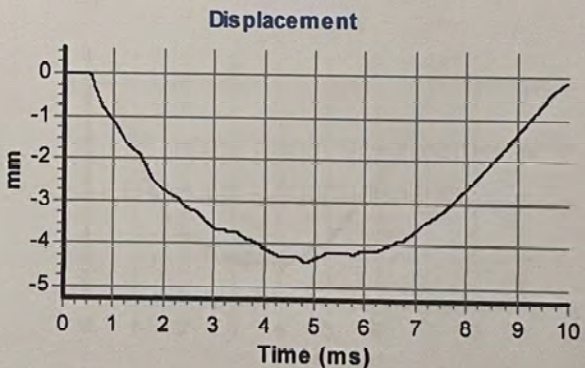
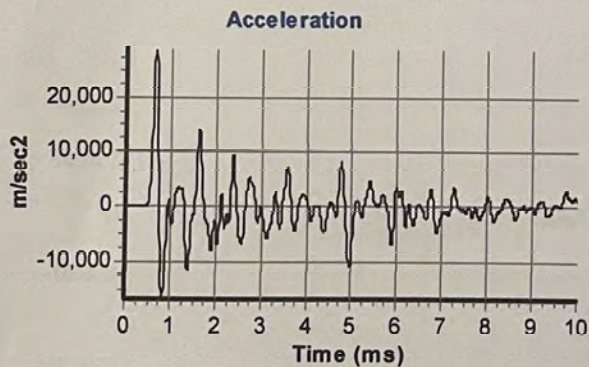
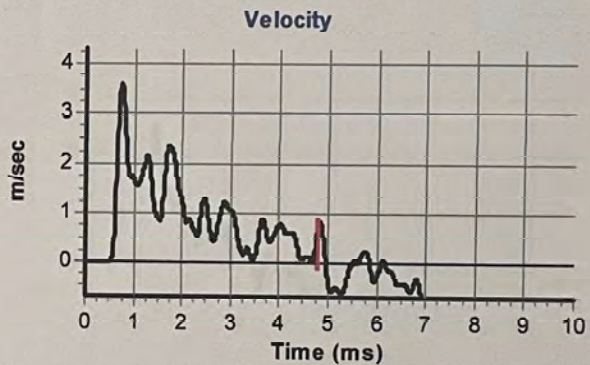
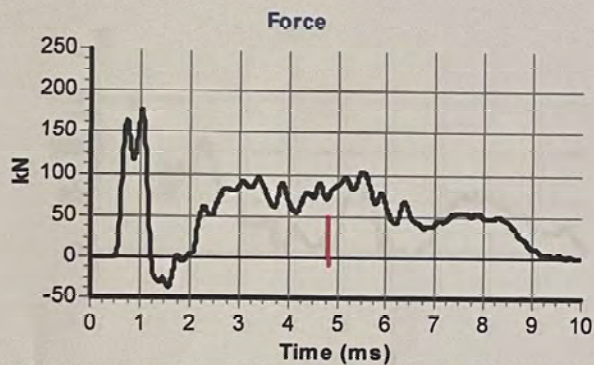
Diameter d_r (mm): 54
Wall Thickness t_r (mm): 6.5
Assumed Modulus E_a (GPa): 208
Accelerometer No.1: 72572
Accelerometer No.2: 72757

SPT Hammer Information

Hammer Mass m (kg): 63.5
Falling Height h (mm): 760
SPT String Length L (m): 10.0

Comments / Location

STEVE LOWERY DRILLING - 83222



Calculations

Area of Rod A (mm^2): 970
Theoretical Energy E_{theor} (J): 473
Measured Energy E_{meas} (J): 291

Energy Ratio E_r (%): **62**

Signed: J.LOCK
Title: FITTER

APPENDIX 6

**Rotary Open-hole Borehole Record,
SPT Results Summary Sheet and
SPT Hammer Energy Test Report**

DATA SHEET - Symbols and Abbreviations used on Records



Sample Types

B	Bulk disturbed sample
BLK	Block sample
C	Core sample
D	Small disturbed sample (tub/jar)
E	Environmental test sample
ES	Environmental soil sample
EW	Environmental water sample
G	Gas sample
L	Liner sample
LB	Large bulk disturbed sample
P	Piston sample (PF - failed P sample)
TW	Thin walled push in sample
U	Open Tube - 102mm diameter with blows to take sample. (UF - failed U sample)
UT	Thin wall open drive tube sampler - 102mm diameter with blows to take sample. (UTF - failed UT sample)
V	Vial sample
W	Water sample
#	Sample Not Recovered

Insitu Testing / Properties

CBRP	CBR using TRL probe
CHP	Constant Head Permeability Test
COND	Electrical conductivity
TC	Thermal Conductivity
TR	Thermal Resistivity
HV	Strength from Hand Vane
ICBR	CBR Test
IDEN	Density Test
IRES	Resistivity Test
MEX	CBR using Mexecon Probe Test
PKR	Packer Permeability Test
PLT	Plate Load Test
PP	Strength from Pocket Penetrometer
Temp	Temperature
VHP	Variable Head Permeability Test
VN	Strength from Insitu Vane
w%	Water content
(All other strengths from undrained triaxial testing)	
S	Standard Penetration Test (SPT)
C	SPT with cone
N	SPT Result
-/-	Blows/penetration (mm) after seating drive
-*/- (mm)	Total blows/penetration (mm)
()	Extrapolated value

Groundwater

Water Strike	
Depth Water Rose To	

Instrumentation

Seal

Filter

Seal

Strata

Made Ground Granular

Made Ground Cohesive

Topsoil

Cobbles and Boulders

Gravel

Sand

Silt

Clay

Peat

Note: Composite soil types shown by combined symbols

Chalk

Limestone

Sandstone

Coal

Strata, Continued

Mudstone

Siltstone

Metamorphic Rock

Fine Grained

Medium Grained

Coarse Grained

Igneous Rock

Fine Grained

Medium Grained

Coarse Grained

Backfill Materials

Arisings

Bentonite

Concrete

Sand

Grout

Gravel

Asphalt/Tarmacadam

Rotary Core

RQD Rock Quality Designation (% of intact core >100mm)

FRACTURE INDEX

Fractures/metre

NI Non-intact core

NR No core recovery

AZCL Assumed zone of core loss

BOREHOLE RECORD - Rotary open hole

Project

Wrexham FC : New Kop Stand - Ground Investigation

Client

Wrexham AFC

Engineer

Ramboll UK Limited

National Grid Coordinates

332878.6 E
350989.5 N

Project No.

PN224453

Borehole

BH103

Ground Level

87.94 m OD

Sampling/Testing		Drilling					Strata		Scale 1:50		
Sample / SPT Depth	SPT N / Type	Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	TCR/ SCR (%)	RQD (%)	FI	General	Detail	Depth	Legend	Level (m OD)
1.20 - 1.65	C13						**MADE GROUND: Strong grey concrete with 5mm steel reinforcing bar.		0.15		87.79
							**MADE GROUND: Reddish brown sandy clayey gravel of sandstone and brick fragments.		0.70		87.24
							**MADE GROUND: Strong grey concrete with 5mm steel reinforcing bar.		0.90		87.04
							Below 1.20m, medium dense.				
3.00 - 3.45	C23										
4.50 - 4.95	C25										
6.00 - 6.45	C41							Below 6.00m, dense.			
7.50 - 7.95	C47										
9.00 - 9.45	C36										

Boring				Progress					Groundwater					
Depth	Hole Dia.	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
0.15	0.30	Concrete Core	CDS	0.00			10/10/22	08:00						No strikes noted. May have been masked by water added.
0.70	0.30	Inspection Pit	PB/KS	0.70		DRY	10/10/22	17:00						
0.90	0.30	Concrete Core	CDS	0.70		DRY	11/10/22	08:00						
1.20	0.30	Inspection Pit	PB/KS	7.50	7.50	DRY	11/10/22	17:00						

Remarks

Concrete slabs cored using 300mm diameter concrete corer. Inspection pit hand excavated to 1.20m depth and no services were found. No geotechnical /environmental samples were taken on the instruction of the Engineer. Borehole advanced using Rotary Symmetrix Drilling. A 50mm standpipe was installed to 15.60 with a geowrapped slotted section from 13.50m to 15.60m with a flush cover installed. Backfill details from base of hole: bentonite seal up to 15.60m, gravel filter up to 13.50m, bentonite seal up to 0.20m, concrete up to ground level.

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PC

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JN

Figure

Sheet 1 of 3

07/03/2023

Geotechnical and geoenvironmental specialists

BOREHOLE RECORD - Rotary open hole

Project

Wrexham FC : New Kop Stand - Ground Investigation

Client

Wrexham AFC

Engineer

Ramboll UK Limited

National Grid Coordinates

332878.6 E
350989.5 N

Project No.

PN224453

Borehole

BH103

Ground Level

87.94 m OD

Sampling/Testing		Drilling					Strata		Scale 1:50			
Sample / SPT Depth	SPT N / Type	Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	TCR/ SCR (%)	RCSD (%)	H	General	Detail	Depth	Legend	Level (m OD)	
10.50 - 10.93	C50/280mm							Below 10.50m, very dense.				
12.00 - 12.45	C38							Below 12.00m, dense.				
							**Very stiff brown sandy gravelly CLAY.		12.30		75.64	
13.50 - 13.95	C42							**Light brown fine to coarse SAND.		13.30	74.64	
							**Brown fine to coarse SAND and GRAVEL of siltstone and sandstone.		14.10		73.74	
15.00 - 15.45	C46							Below 15.00m, dense.				
16.50 - 16.89	C50/235mm							Below 16.50m, very dense.				
18.00 - 18.43	C50/280mm							**Very stiff brown slightly clayey GRAVEL with some bands of fine to coarse sand.		18.20	69.71	
20.00 - 20.43	C51/285mm								20.00		67.94	

Boring				Progress				Groundwater						
Depth	Hole Dia.	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
20.00	0.15	Rotary Open Hole	PB/KS	7.50	7.50	DRY	12/10/22	08:00						
				16.50	16.50	12.50	12/10/22	17:00						
				16.50	16.50	9.40	13/10/22	08:00						
				20.00	20.00	12.50	13/10/22	17:00						

Remarks

AGS

Symbols and abbreviations are explained on the accompanying key sheets.
All dimensions are in metres.

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IN

Figure

Sheet 2 of 3
07/03/2023

GEOTECHNICS

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Logged in accordance with BS5930:2015 + A1:2020

BOREHOLE RECORD - Rotary open hole

Project	Wrexham FC : New Kop Stand - Ground Investigation
Client	Wrexham AFC

Engineer	Ramboll UK Limited
National Grid	332878.6 E
Coordinates	350989.5 N

Project No.	PN224453
Borehole	BH103
Ground Level	87.94 m OD

[illegible]

Remarks



Symbols and abbreviations are explained on the accompanying key sheets.
All dimensions are in metres.

Logged in accordance with BS5930:2015 + A1:2020

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Checked by	JN
Figure	Sheet 3 of 3
	07/03/2023

GEOTECHNICS
geotechnical and geoenvironmental specialists

FIELDWORK RESULTS - SPT Results Summary

Project Wrexham FC : New Kop Stand - Ground Investigation

Engineer Ramboll UK Limited

Project No. PN224453

Client Wrexham AFC

Hole	Depth (m bgl)	Level (m OD)	SPT Type	SWP (mm)	Seating Drive		Test Drive				SPT 'N' Value	Uncorrected SPT 'N' value				
					0 - 75 (mm)	75 - 150 (mm)	0 - 75 (mm)	75 - 150 (mm)	150 - 225 (mm)	225 - 300 (mm)		10	20	30	40	50
BH103	1.20	86.74	C		2	2	2	3	4	4	13					
BH103	3.00	84.94	C		3	4	5	5	6	7	23					
BH103	4.50	83.44	C		2	5	5	6	7	7	25					
BH103	6.00	81.94	C		4	6	8	10	11	12	41					
BH103	7.50	80.44	C		5	6	10	12	13	12	47					
BH103	9.00	78.94	C		4	6	8	9	9	10	36					
BH103	10.50	77.44	C		6	8	10	12	14	14	50/280					
BH103	12.00	75.94	C		5	7	9	11	10	8	38					
BH103	13.50	74.44	C		4	6	9	10	11	12	42					
BH103	15.00	72.94	C		3	8	10	12	11	13	46					
BH103	16.50	71.44	C		5	9	11	15	17	7	50/235					
BH103	18.00	69.94	C		7	8	10	13	15	12	50/280					
BH103	20.00	67.94	C		6	7	11	12	14	14	51/285					

Hammer No.:	AR522	Remarks
Energy Ratio, Er (%):	67	

-/- Blows/penetration (mm) after seating

S - SPT with split spoon sampler

*/- Total blows/penetration (mm)

C - SPT with cone

SWP Penetration under own weight (mm)

L - Split Spoon liner used

Printed: 11/11/2022



GEOTECHNICS
geotechnical and geoenvironmental specialists

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

ARCHWAY ENGINEERING UK LTD
AINLEYS INDUSTRIAL ESTATE
ELLAND
WEST YORKSHIRE
HX5 9JP

SPT Hammer Ref: AR522
Test Date: 08/09/2022
Report Date: 08/09/2022
File Name: AR522.spt
Test Operator: JL

Instrumented Rod Data

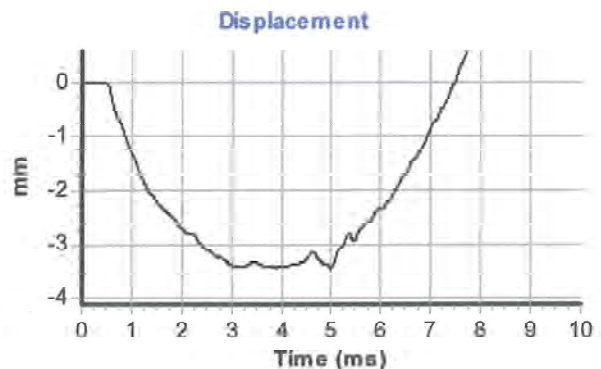
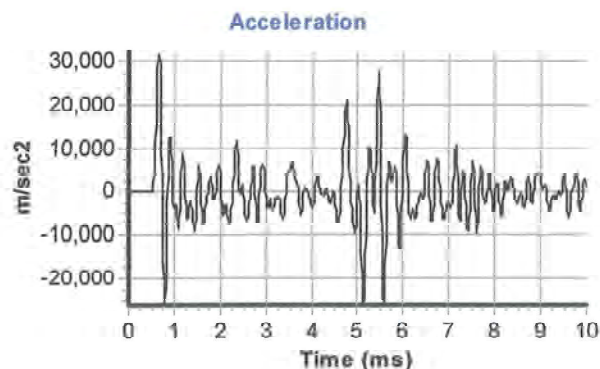
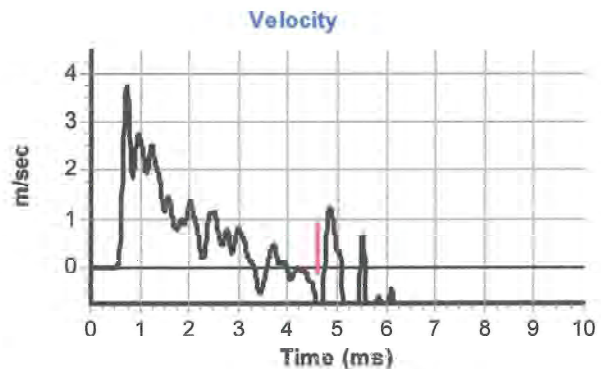
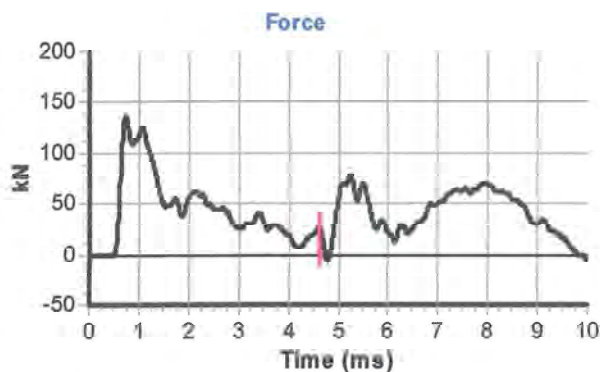
Diameter d_r (mm): 54
Wall Thickness t_r (mm): 6.5
Assumed Modulus E_a (GPa): 208
Accelerometer No.1: 72572
Accelerometer No.2: 72757

SPT Hammer Information

Hammer Mass m (kg): 63.5
Falling Height h (mm): 760
SPT String Length L (m): 10.0

Comments / Location

MACKLIN GEOTECH - 81825



Calculations

Area of Rod A (mm²): 970
Theoretical Energy E_{theor} (J): 473
Measured Energy E_{meas} (J): 319

Energy Ratio E_r (%): **67**

Signed: J.LOCK
Title: FITTER

APPENDIX 7

Monitoring Results

GROUND GAS & GROUNDWATER MONITORING RECORD SHEET

Project Name:	Wrexham FC : New Kop Stand - Ground Investigation	Project No:	PN224453	Date:	24/11/2022	Operative:	BT	Visit No: 2
Gas Analyser:	Gas Data GFM436	PID Meter:	RAE Systems MiniRAE					
								Sheet 1 of 1

Meteorological Conditions:

Wind:

Still

Cloud Cover:

Cloudy

Precipitation:

None

Ground Condition:

Dry

Atmospheric Pressure Trend:

[illegible]

APPENDIX 8

Laboratory Test Results - Geotechnical

Classification and Strength

Symbol	C - Clay (0 - containing organic matter) Plasticity	M - Silt L - Low I - Intermediate H - High V - Very High E - Extremely High
I_p	Plasticity Index	
%	% retained on 425 μ m sieve, shown under I_p value	
w_L	Liquid Limit	
w_p	Plastic Limit	
NP	Non-Plastic	
NAT	Sample tested in natural state	
w	Water Content	
ρ_d	Particle Density	
Test	Quick undrained triaxial tests	
	SS	Single stage - 102mm diameter.
	S3	Single stage - set of 3 38mm diameter.
	MS	Multistage - 102mm diameter.
	D	Drained Test
	HV	Hand Vane
	PP	Pocket Penetrometer (kg/cm ²)
	NST	Not suitable for test
γ_b	Bulk Density	
σ_3	Triaxial Cell Pressure	
$\sigma_1 - \sigma_3$	Deviator Stress	
##	Excessive Strain	
c_u	Undrained Cohesion	
c	Cohesion Intercept	
ϕ	Angle of Shearing Resistance	
Linear Shrink	Linear Shrinkage	
Stab add-	Stabiliser which is added	

Consolidation

m_v	Coefficient of Volume Compressibility
c_{v50}	Coefficient of Consolidation - Log t
c_{v90}	Coefficient of Consolidation - $\sqrt{t}$

Rock

UF	Unacceptable Failure
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Chemical Analysis

Acid Soluble	Total sulphate in specimen, expressed as SO ₃ %, value in brackets expressed as SO ₄ %
Water Soluble	Soluble sulphate in 2:1 water : soil extract, expressed as SO ₃ g/l, value in brackets expressed as SO ₄ g/l
In Water	Sulphate content of groundwater, expressed as SO ₃ g/l, value in brackets expressed as SO ₄ g/l
pH	pH value
Organic content	Organic content expressed as a percentage of dry weight
Chloride	Chloride Ion content expressed as a percentage of dry weight

MCV, Compaction, CBR

MCV	Moisture Condition Value at natural water content
MCC	Moisture Condition Calibration
CCV	Chalk Crushing Value

Compaction

Type	2.5	=	2.5 kg Rammer
	4.5	=	4.5 kg Rammer
	V	=	Vibrating Hammer
γ_b	Bulk Density		
γ_d	Dry Density		
CBR California Bearing Ratio			
Type	2.5	=	Test on Specimen Recompacted using 2.5 kg Rammer
	4.5	=	As above but using 4.5 kg Rammer
	V	=	As above but using Vibrating Hammer
	M	=	Test on open drive mould specimen cut in field
	S	=	Soaked Specimen

Top	CBR at top of mould
Bottom	CBR at bottom of mould
ND	None Detected

* In the Sample Description denotes a laboratory only description