



Geotechnical & Geoenvironmental Specialists

Sheet 1 of 1

Logged:
JRW

5

Remarks:	Groundwater not encountered. On completion, the trial pit was backfilled with materials arising.
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Geotechnical & Geoenvironmental Specialists

Sheet 1 of 1

28/03/2022

Logged:
JRW

5

Remarks:	Groundwater not encountered. On completion, trial pit backfilled with materials arising.
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Trial Pit Log

Trial Pit No:
TP03
 Sheet 1 of 1

Project Name: **NPTH Modular Orthopaedic Theatres**

Project No:
17166

Co-ords: 275451.48 - 190575.87
 Level: 8.38

Date:
05/04/2022

Location: Neath Port Talbot Hospital Baglan

Dimensions:
 Depth 1.47
 0.70
 1.90

Scale:
 1:25
 Logged:
 JRW

Client: RVW Consulting

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				0.50	7.88		Loose dark brown gravelly fine to coarse SAND with low cobble content. Gravel is angular and subangular fine to coarse slag and sandstone. (MADE GROUND)	
							Medium dense dark grey slightly silty sandy angular and subangular fine to coarse slag GRAVEL with low cobble and boulder content. With rare fragments of metal, glass and plastic sheeting. (MADE GROUND)	1
				1.47	6.91		End of Pit at 1.470m	2
								3
								4
								5

Stability: Trial pit remained stable and vertical.

Remarks: Groundwater not encountered. On completion, the trial pit was backfilled with materials arising and the surface reinstated.



Geotechnical & Geoenvironmental Specialists

Sheet 1 of 1

Logged:
JRW

Remarks: Groundwater not encountered. On completion trial pit backfilled with materials arising.



Geotechnical & Geoenvironmental Specialists

Sheet 1 of 1

Logged:
JRW

Remarks: Groundwater not encountered. On completion trial pit backfilled with materials arising.

ANNEX E
Soakaway Results

SOAKAWAY TEST



Site Name: Neath Port Talbot Hospital
Project Number: 17166
Date: 05/04/2022
Engineer: Jamil Khan

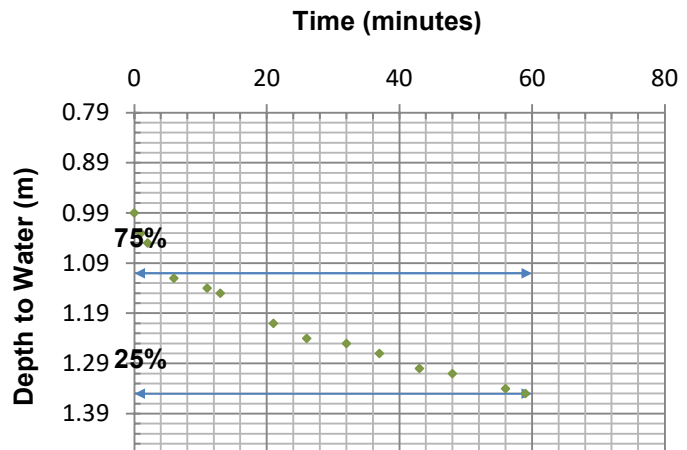
Trial Pit: TP03

TEST 1

Length 1.90 m
Width 0.70 m
Depth 1.47 m
Fill Level 0.99 m

V_{p75-25} 0.319 m³
 a_{p50} 2.578 m²
 t_{p75-25} 53 minutes

Soil Infiltration Rate, f 3.89E-05 ms⁻¹

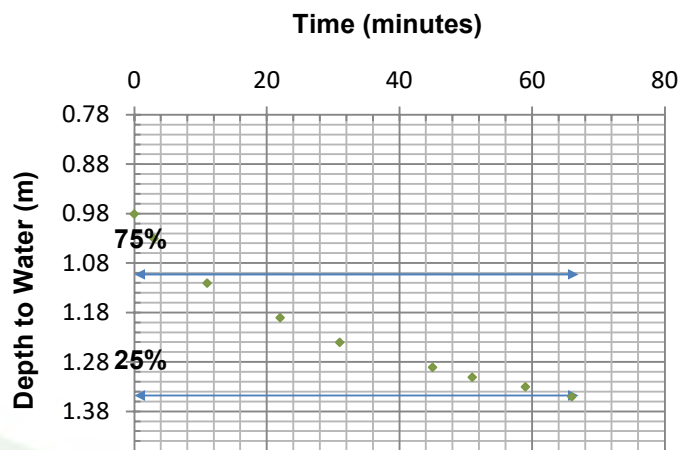


TEST 2

Length 1.90 m
Width 0.70 m
Depth 1.47 m
Fill Level 0.98 m

V_{p75-25} 0.326 m³
 a_{p50} 2.604 m²
 t_{p75-25} 56 minutes

Soil Infiltration Rate, f 3.72E-05 ms⁻¹

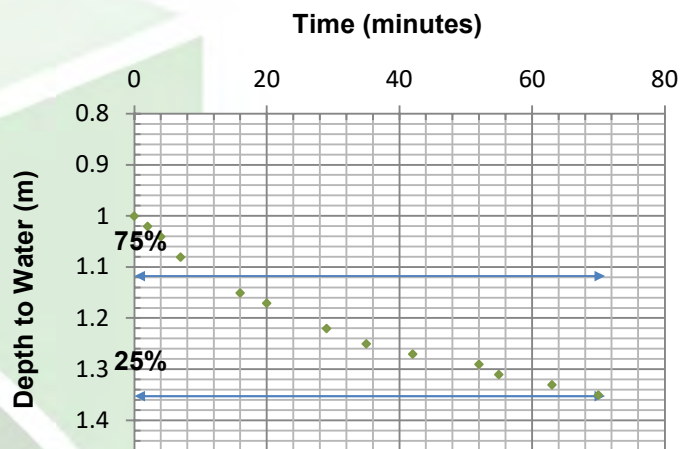


TEST 3

Length 1.90 m
Width 0.70 m
Depth 1.47 m
Fill Level 1.00 m

V_{p75-25} 0.313 m³
 a_{p50} 2.552 m²
 t_{p75-25} 58 minutes

Soil Infiltration Rate, f 3.52E-05 ms⁻¹



REMARKS:

Test carried out in accordance with BRE Digest 365 (2016)

ANNEX F
Shallow Borehole Logs



Tel: 02920 735354
info@terrafirmawales.co.uk
www.terrafirmawales.co.uk

Geotechnical & Geoenvironmental Specialists

Borehole Log

Borehole No.

CC01

Sheet 1 of 1

Project Name: NPTH Modular Orthopaedic Theatres

Project No:
17166

Co-ords: 275448E - 190529N

Hole Type
WS

Location: Neath Port Talbot Hospital Baglan

Level: 7.86m

Scale
1:50

Client: RVW Consulting

Dates: 29/03/2022 - 29/03/2022

Logged By
JM

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Well	Legend	Stratum Description	
	Depth (m)	Type	Results						
				0.20	7.66			MADE GROUND comprising strongly cemented grey CONCRETE composed of 70-80% angular fine and medium gravel sized aggregate with up to 5% rounded voids (up to 10mm). 0.074m 12mm diam reinforcement bar. 0.122m 12mm diam reinforcement bar. 0.132m 10mm diam reinforcement bar. 0.20m Black geotextile. End of Borehole at 0.200m	1
									2
									3
									4
									5
									6
									7
									8
									9
									10

Remarks: On completion surface reinstated.

Borehole Log

Borehole No.

WS01

Sheet 1 of 1

Project Name:	NPTH Modular Orthopaedic Theatres	Project No:	17166	Co-ords:	275427E - 190551N	Hole Type	WS
Location:	Neath Port Talbot Hospital Baglan	Level:	8.02m	Scale	1:50	Logged By	JRW
Client:	RVW Consulting	Dates:	31/03/2022 - 31/03/2022				

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Well	Legend	Stratum Description	
	Depth (m)	Type	Results						
	0.25			0.25	7.76			Loose brown slightly gravelly silty fine and medium SAND. Gravel is subangular and subrounded fine to coarse sandstone and slag. (MADE GROUND)	
	0.80	ES						Medium dense to dense greyish brown gravelly fine to coarse SAND. Gravel is angular and subangular fine to coarse slag. (MADE GROUND)	1
	1.00	SPT	N=41 (13,12/17,10,7,7)	1.20	6.82			Medium dense dark brownish grey slightly gravelly clayey SAND with rare ceramic, glass and plastic sheeting fragments. Gravel is angular to subrounded fine to coarse slag and sandstone. (MADE GROUND)	2
	2.00	SPT	N=26 (3,6/5,6,6,9)	3.00	5.01			End of Borehole at 3.000m	3
									4
									5
									6
									7
									8
									9
									10

Remarks: Groundwater not encountered. On completion a slotted standpipe (50mm) was installed to 3.00m. Granular response zone 3.00-0.80m, bentonite plug 0.80-0.10m, concrete and flush cover 0.10-0.00m.

Borehole Log

Borehole No.

WS02

Sheet 1 of 1

Project Name: NPTH Modular Orthopaedic Theatres

Project No:
17166

Co-ords: 275439E - 190539N

Hole Type
WS

Location: Neath Port Talbot Hospital Baglan

Level: 7.89m

Scale
1:50

Client: RVW Consulting

Dates: 29/03/2022 - 29/03/2022

Logged By
JM

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Well	Legend	Stratum Description	
	Depth (m)	Type	Results						
	0.18			0.18	7.71			MADE GROUND comprising strongly cemented grey CONCRETE composed of 70-80% angular fine and medium gravel sized aggregate with up to 5% rounded voids (up to 10mm). <u>0.074m 12mm diam reinforcement bar.</u> <u>0.132m 10mm diam reinforcement bar.</u> <u>0.18m Black geotextile.</u>	
	1.00	SPT	N=23 (5,9/6,5,6,6)	1.20	6.69			Medium dense dark grey gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse slag (MADE GROUND)	1
	2.00	SPT	N=42 (8,9/10,10,11,11)	1.80	6.09			Medium dense dark brown mottled orange and grey slightly gravelly clayey SAND. Gravel is angular to subrounded fine and medium sandstone and brick. (MADE GROUND)	2
	3.00	SPT	N=3 (1,0/1,1,1,0)	2.40	5.49			Dense dark grey slightly gravelly clayey SAND. Gravel is angular and subangular fine to coarse brick, slag and sandstone. (MADE GROUND)	3
	4.00	SPT	N=3 (1,0/1,1,0,1)	4.00	3.89			Very loose dark brown slightly gravelly fine and medium SAND. Gravel is angular and subangular fine to coarse sandstone and slag. (MADE GROUND)	4
								End of Borehole at 4.000m	5
									6
									7
									8
									9
									10

Remarks: Groundwater not encountered. On completion a slotted standpipe (50mm) was installed to 3.00m. Granular response zone 3.00-1.00m, bentonite plug 1.00-0.10m, concrete and flush cover 0.10-0.00m.

Borehole Log

Borehole No.

WS03

Sheet 1 of 1

Project Name: NPTH Modular Orthopaedic Theatres

Project No:
17166

Co-ords: 275458E - 190521N

Hole Type
WS

Location: Neath Port Talbot Hospital Baglan

Level: 7.74m

Scale
1:50

Client: RVW Consulting

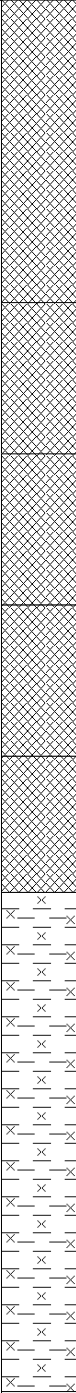
Dates: 29/03/2022 - 29/03/2022

Logged By
JM

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Well	Legend	Stratum Description	
	Depth (m)	Type	Results						
	0.50	ES						Grey mottled orange gravelly fine to coarse SAND. Gravel is angular and subangular fine to coarse slag and sandstone (MADE GROUND)	
	1.00	SPT	50 (6,9/50 for 185mm)	0.80	6.94			Dark grey slightly silty gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse of slag, brick and sandstone. (MADE GROUND).	1
				1.40	6.34			End of Borehole at 1.400m	
									2
									3
									4
									5
									6
									7
									8
									9
									10

Remarks: Groundwater not encountered. On completion a slotted standpipe (50mm) was installed to 1.40m. Granular response zone 1.40-0.40m, bentonite plug 0.40-0.10m, concrete and flush cover 0.10-0.00m.

ANNEX G
Deep Borehole Logs

 Tel: 02920 735354 info@terrafirmawales.co.uk www.terrafirmawales.co.uk Borehole Log Borehole No. BH01 Sheet 1 of 2										
Project Name: NPTH Modular Orthopaedic Theatres			Project No: 17166		Co-ords: 275424E - 190555N	Hole Type CP				
Location: Neath Port Talbot Hospital Baglan			Level: 8.15m		Scale 1:50					
Client: RVW Consulting			Dates: 22/03/2022 - 24/02/2022		Logged By JRW					
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Well	Legend	Stratum Description		
	Depth (m)	Type	Results							
	0.30 - 1.20 0.30 - 1.20	B ES						Grass over medium dense to dense brownish grey gravelly fine to coarse SAND with low cobble content. Gravel is angular and subangular fine to coarse slag, concrete and rare sandstone. (MADE GROUND)	1	
	1.20 - 1.65 1.20	B SPT	50 (25 for 78mm/50 for 155mm)							
	2.00 - 2.45 2.00	B SPT	N=25 (4,5,7,6,7)	2.00	6.15			Medium dense greyish brown slightly clayey gravelly fine to coarse SAND with low cobble content, Gravel is angular to subrounded fine to coarse sandstone and slag. With rare plastic sheeting and glass fragments. (MADE GROUND)	2	
	3.00 - 3.45 3.00	B SPT	N=25 (3,5/4,6,8,7)	3.00	5.15			Medium dense dark grey slightly gravelly fine and medium SAND with rare rubber fragments. Gravel is angular to rounded fine and medium sandstone and mudstone. (MADE GROUND)	3	
	4.00 - 4.45 4.00	B SPT	N=21 (3,4/5,5,5,6)	4.00	4.15			Medium dense dark grey locally reddish brown gravelly to very gravelly medium and coarse SAND with low cobble content. Gravel is angular fine to coarse slag and sandstone. With frequent plastic sheeting, fabric and glass fragments. (MADE GROUND)	4	
	5.00 - 5.45 5.00	B SPT	N=26 (4,6/6,8,5,7)	5.00	3.15			Medium dense dark grey sandy angular to subrounded fine to coarse slag and sandstone GRAVEL with frequent ceramic, clay pipe, metal and glass fragments. (MADE GROUND)	5	
				5.90	2.25			Very soft brownish grey silty CLAY.	6	
	6.50 - 6.95 6.50 - 6.95 6.50	B D SPT	N=7 (1,1/2,2,1,2)						7	
	8.00 - 8.45 8.00 - 8.45 8.00	B D SPT	N=4 (1,1/1,1,1,1)						8	
									9	
Chiseling	Depth Top (m)		Depth Base (m)		Duration (hh:mm)		Remarks			
	1.20		1.60		01:00					
	1.60		1.90		01:00					
Remarks: On completion borehole backfilled with materials arising.										

Borehole Log

Borehole No.

BH01

Sheet 2 of 2

Project Name:	NPTH Modular Orthopaedic Theatres
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Project No:	17166
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Co-ords: 275424E - 190555N

Hole Type
CP

Location: Neath Port Talbot Hospital Baglan

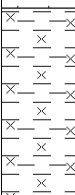
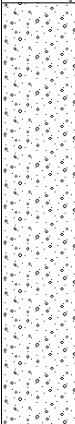
Level: 8.15m

Scale
1:50

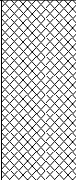
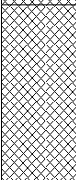
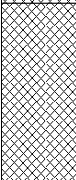
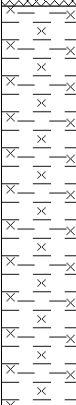
Client: RVW Consulting

Dates: 22/03/2022 - 24/02/2022

Logged By
JRW

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Well	Legend	Stratum Description	
	Depth (m)	Type	Results						
	9.50 - 9.95 9.50 - 9.95 9.50	B D SPT	N=8 (1,2/2,2,2,2)	9.30	-1.15			Very soft brownish grey silty CLAY. Soft dark brown fibrous PEAT.	10
	11.00 - 11.45 11.00 - 11.45 11.00	B D SPT	N=4 (1,1/1,1,1,1)	10.90	-2.75			Very soft grey silty CLAY.	11
	12.50 - 12.95 12.50	B SPT	56 (8,10/56 for 262mm)	12.20	-4.05			Dense to very dense light grey and brown sandy subrounded and rounded fine to coarse sandstone GRAVEL with medium cobble content.	12
	14.00 - 14.45 14.00	B SPT	50 (25 for 29mm/50 for 33mm)						14
	15.00	SPT	50 (25 for 0mm/50 for 0mm)	15.00	-6.85				15
									End of Borehole at 15.000m
								17	
								18	
Chiseling	Depth Top (m)		Depth Base (m)		Duration (hh:mm)		Remarks		
	14.50		14.80		01:00				

Remarks:	On completion borehole backfilled with materials arising.
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 Tel: 02920 735354 info@terrafirmawales.co.uk www.terrafirmawales.co.uk Borehole Log Borehole No. BH02 Sheet 1 of 2									
Project Name: NPTH Modular Orthopaedic Theatres			Project No: 17166		Co-ords: 275436E - 190547N	Hole Type CP			
Location: Neath Port Talbot Hospital Baglan				Level: 7.93m		Scale 1:50			
Client: RVW Consulting				Dates: 17/03/2022 - 21/03/2022		Logged By JRW			
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Well	Legend	Stratum Description	
	Depth (m)	Type	Results						
	0.30 - 1.20	B		1.20	6.73			Grass over brown sandy angular and subangular fine to coarse concrete, slag and sandstone GRAVEL with low cobble content. With rare timber fragments . (MADE GROUND)	1
	1.20 - 1.65 1.20 - 1.65 1.20	B ES SPT	50 (35 for 79mm/50 for 123mm)					Medium dense to dense greyish brown slightly silty gravelly fine to coarse SAND. Gravel is subangular fine to coarse slag. (MADE GROUND)	2
	2.00 - 2.45 2.00	B SPT	N=38 (4,7/9,8,10,11)	3.00	4.93			Medium dense dark grey slightly gravelly fine and medium SAND. Gravel is subrounded and rounded fine to coarse sandstone. (MADE GROUND)	3
	3.00 - 3.45 3.00	D SPT	N=11 (2,3/3,3,2,3)					4	
	4.00 - 4.45 4.00	B SPT	N=16 (3,4/3,5,4,4)	5.00	2.93			Medium dense dark grey sandy angular fine to coarse sandstone, slag and brick GRAVEL with low cobble content. With rare glass, ceramic, clay pipe and plastic fragments. (MADE GROUND)	5
	5.00 - 5.45 5.00	B SPT	N=30 (3,5/7,6,9,8)					6	
	6.50 - 6.95 6.50 - 6.95 6.50	B D SPT	N=8 (1,2/2,2,2,2)	6.50	1.43		Soft brownish grey silty CLAY.	7	
	8.00 - 8.45 8.00 - 8.45 8.00	B D SPT	N=7 (1,1/1,2,2,2)				8		
Chiseling	Depth Top (m)		Depth Base (m)		Duration (hh:mm)		Remarks		
	1.20		1.60		01:00				
	1.60		2.00		01:00				
Remarks: On completion borehole backfilled with materials arising.									

Borehole Log

Borehole No.

BH02

Sheet 2 of 2

Project Name: NPTH Modular Orthopaedic Theatres

Project No: 17166

Co-ords: 275436E - 190547N

Hole Type CP

Location: Neath Port Talbot Hospital Baglan

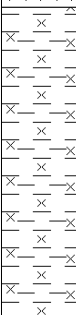
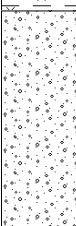
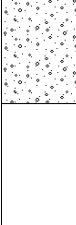
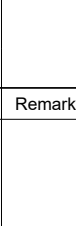
Level: 7.93m

Scale 1:50

Client: RVW Consulting

Dates: 17/03/2022 - 21/03/2022

Logged By JRW

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Well	Legend	Stratum Description	
	Depth (m)	Type	Results						
	9.50 - 9.95 9.50 - 9.95 9.50	B D SPT	N=9 (2,2/3,2,2,2)	9.50	-1.57			Soft brownish grey silty CLAY.	
								Soft to firm dark brown fibrous PEAT.	10
	11.00 11.00 - 11.45 11.00	B D SPT	N=7 (1,1/2,2,1,2)	11.00	-3.07			Soft dark grey slightly sandy silty CLAY.	11
									12
	12.50 - 12.95 12.50 - 12.95 12.50	B D SPT	N=5 (1,1/1,2,1,1)						13
	13.10	B		13.10	-5.17			Very dense brownish grey sandy subrounded and rounded fine to coarse sandstone GRAVEL with low cobble and boulder content.	14
	14.00 - 14.45 14.00	B SPT	50 (25 for 77mm/50 for 151mm)						15
				15.20	-7.27			End of Borehole at 15.200m	16
									17
									18

Remarks: On completion borehole backfilled with materials arising.

Borehole Log

Borehole No.

BH03

Sheet 1 of 2

Project Name: NPTH Modular Orthopaedic Theatres

Project No: 17166

Co-ords: 275454E - 190522N

Hole Type CP

Location: Neath Port Talbot Hospital Baglan

Level: 7.81m

Scale 1:50

Client: RVW Consulting

Dates: 14/03/2022 - 16/03/2022

Logged By JRW

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Well	Legend	Stratum Description	
	Depth (m)	Type	Results						
	0.00 - 0.30	B							
	0.30 - 1.00	B							
	0.30 - 1.00	ES							
	1.00 - 1.20	B							
	1.20 - 1.65	B							
	1.20	SPT	50 (25 for 40mm/50 for 23mm)						
	2.00 - 2.45	B							
	2.00	SPT	50 (25 for 81mm/50 for 83mm)						
	2.50	B		2.50	5.31				
	3.00 - 3.45	B							
	3.00	SPT	N=33 (4,6/8,8,9,8)	3.00	4.81				
	4.00 - 4.45	B							
	4.00	SPT	N=6 (1,1/1,2,2,1)	4.00	3.81				
				4.70	3.11				
	5.00 - 5.45	B							
	5.00	SPT	N=6 (1,1/2,1,1,2)	5.10	2.71				
	6.50 - 6.95	B							
	6.50 - 6.95	D							
	6.50	SPT	N=4 (1,1/1,1,1,1)						
	8.00 - 8.45	B							
	8.00 - 8.45	D							
	8.00	SPT	N=7 (1,2/2,1,2,2)	8.00	-0.19				
				9.20	-1.39				
Chiseling	Depth Top (m)		Depth Base (m)		Duration (hh:mm)		Remarks		
	1.20		1.45		01:00				
	1.50		1.70		01:00				
	1.70		2.00		01:00				

Remarks: On completion borehole backfilled with materials arising.

Borehole Log

Borehole No.

BH03

Sheet 2 of 2

Project Name:	NPTH Modular Orthopaedic Theatres	Project No:	17166	Co-ords:	275454E - 190522N	Hole Type	CP
Location:	Neath Port Talbot Hospital Baglan	Level:	7.81m	Scale	1:50	Logged By	JRW
Client:	RVW Consulting	Dates:	14/03/2022 - 16/03/2022				

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Well	Legend	Stratum Description	
	Depth (m)	Type	Results						
	9.50 - 9.95 9.50 - 9.95 9.50	B D SPT	N=4 (1,1/1,1,1,1)					Very soft dark grey silty CLAY.	10
	11.00 - 11.45 11.00 - 11.45 11.00	B D SPT	N=4 (1,1/1,1,1,1)						11
	12.50 - 12.95 12.50	B SPT	N=39 (4,6/8,9,11,11)	12.20	-4.39			Dense to very dense dark brownish grey subrounded and rounded fine to coarse sandstone GRAVEL with low cobble content.	12
	14.00 - 14.45 14.00	B SPT	50 (25 for 75mm/50 for 48mm)						13
	15.00	SPT	50 (25 for 0mm/50 for 3mm)	15.00	-7.19			End of Borehole at 15.000m	14
									15
									16
									17
									18

Chiseling	Depth Top (m)	Depth Base (m)	Duration (hh:mm)	Remarks

Remarks: On completion borehole backfilled with materials arising.

ANNEX H
Laboratory Soil Chemical Test Results



Final Report

Report No.: 22-12505-1
Initial Date of Issue: 08-Apr-2022
Client Terra Firma (Wales) Ltd
Client Address: 5 Deryn Court
Wharfedale Road
Pentwyn
Cardiff
CF23 7HA
Contact(s): james@terrafirmawales.co.uk
Project NPTH
Quotation No.:
Order No.: 17166/JRW
No. of Samples: 9
Turnaround (Wkdays): 5
Date Approved: 08-Apr-2022
Approved By:

Date Received: 04-Apr-2022

Date Instructed: 04-Apr-2022

Results Due: 08-Apr-2022

Details: Stuart Henderson, Technical
Manager

Results - Soil

Project: NPTH

Client: Terra Firma (Wales) Ltd	Chemtest Job No.:					22-12505	22-12505	22-12505	22-12505	22-12505	22-12505	22-12505	22-12505
Quotation No.:	Chemtest Sample ID.:					1404093	1404094	1404095	1404096	1404097	1404098	1404099	1404100
	Client Sample ID.:					1	2	3	4	5	6	7	8
	Sample Location:					BH03	BH03	BH01	BH01	BH02	BH02	WS03	WS02
	Sample Type:					SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):					0.3	2.50	0.3	6.5	1.2	3	0.5	1.0
	Bottom Depth (m):					1.0		1.2	6.95	1.65	3.45		
	Date Sampled:					01-Apr-2022	01-Apr-2022	01-Apr-2022	01-Apr-2022	01-Apr-2022	01-Apr-2022	01-Apr-2022	01-Apr-2022
	Time Sampled:					12:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00
	Asbestos Lab:					COVENTRY		COVENTRY		COVENTRY		COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD									
ACM Type	U	2192		N/A	Fibres/Clumps		-		-		-	-	-
Asbestos Identification	U	2192		N/A	Chrysotile		No Asbestos Detected		No Asbestos Detected		No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Asbestos by Gravimetry	U	2192	%	0.001	<0.001								
Total Asbestos	U	2192	%	0.001	<0.001								
Moisture	N	2030	%	0.020	9.5	7.5	17	30	12	10	8.5	8.8	6.4
Soil Colour	N	2040		N/A	Brown		Brown		Brown		Grey	Grey	Brown
Other Material	N	2040		N/A	Stones		Stones and Roots		Stones		Stones	Stones	Stones
Soil Texture	N	2040		N/A	Loam		Clay		Clay		Gravel	Gravel	Gravel
pH	M	2010		4.0	9.2	9.5	9.8	9.6	10.2	8.6	10.3	9.7	9.6
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	0.92		1.6		1.8		6.8	5.5	1.7
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010		0.36		0.34		0.46			0.16
Cyanide (Complex)	M	2300	mg/kg	0.50	< 0.50		< 0.50		< 0.50		< 0.50	< 0.50	0.70
Cyanide (Free)	M	2300	mg/kg	0.50	< 0.50		< 0.50		< 0.50		< 0.50	< 0.50	< 0.50
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50		< 0.50		< 0.50		< 0.50	< 0.50	0.90
Sulphate (Acid Soluble)	U	2430	%	0.010	0.26	0.29	0.19	0.39	0.80	0.12	0.37	0.27	0.15
Arsenic	M	2450	mg/kg	1.0	8.4		7.9		8.6		14	9.6	9.4
Beryllium	U	2450	mg/kg	1.0	< 1.0		< 1.0		< 1.0		1.1	3.0	1.7
Cadmium	M	2450	mg/kg	0.10	< 0.10		< 0.10		< 0.10		< 0.10	< 0.10	0.16
Chromium	M	2450	mg/kg	1.0	20		27		28		39	8.9	8.7
Mercury Low Level	M	2450	mg/kg	0.05	0.05		0.05		0.06		0.06	< 0.05	0.08
Manganese	M	2450	mg/kg	5.0	360		410		370		550	2300	1600
Molybdenum	M	2450	mg/kg	2.0	< 2.0		< 2.0		< 2.0		< 2.0	< 2.0	< 2.0
Antimony	N	2450	mg/kg	2.0	< 2.0		< 2.0		< 2.0		< 2.0	< 2.0	< 2.0
Copper	M	2450	mg/kg	0.50	20		17		20		27	22	22
Nickel	M	2450	mg/kg	0.50	24		27		29		39	7.2	7.1
Lead	M	2450	mg/kg	0.50	12		13		14		20	38	87
Selenium	M	2450	mg/kg	0.20	0.30		< 0.20		< 0.20		< 0.20	0.40	< 0.20
Zinc	M	2450	mg/kg	0.50	68		52		52		78	78	100
Chromium (Trivalent)	N	2490	mg/kg	1.0	20		27		28		39	8.9	8.7
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50		< 0.50		< 0.50		< 0.50	< 0.50	< 0.50
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0		< 1.0		< 1.0		< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0		< 1.0		< 1.0		< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0		< 1.0		< 1.0		< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0		< 1.0		< 1.0		< 1.0	< 1.0	< 1.0

Results - Soil

Project: NPTH

Client: Terra Firma (Wales) Ltd	Chemtest Job No.:		22-12505	22-12505	22-12505	22-12505	22-12505	22-12505	22-12505	22-12505	22-12505
Quotation No.:	Chemtest Sample ID.:		1404093	1404094	1404095	1404096	1404097	1404098	1404099	1404100	1404101
	Client Sample ID.:		1	2	3	4	5	6	7	8	9
	Sample Location:		BH03	BH03	BH01	BH01	BH02	BH02	WS03	WS02	WS01
	Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):		0.3	2.50	0.3	6.5	1.2	3	0.5	1.0	0.8
	Bottom Depth (m):		1.0		1.2	6.95	1.65	3.45			
	Date Sampled:		01-Apr-2022	01-Apr-2022	01-Apr-2022	01-Apr-2022	01-Apr-2022	01-Apr-2022	01-Apr-2022	01-Apr-2022	01-Apr-2022
	Time Sampled:		12:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00
	Asbestos Lab:		COVENTRY		COVENTRY		COVENTRY		COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD							
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0		< 5.0		< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0		< 5.0		< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10		< 10		< 10	< 10	< 10
Naphthalene	M	2700	mg/kg	0.10	< 0.10		< 0.10		< 0.10	< 0.10	0.18
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10		< 0.10		< 0.10	< 0.10	0.11
Acenaphthene	M	2700	mg/kg	0.10	< 0.10		< 0.10		< 0.10	< 0.10	0.63
Fluorene	M	2700	mg/kg	0.10	< 0.10		< 0.10		< 0.10	< 0.10	0.73
Phenanthrene	M	2700	mg/kg	0.10	< 0.10		1.4		< 0.10	< 0.10	3.4
Anthracene	M	2700	mg/kg	0.10	< 0.10		1.2		< 0.10	< 0.10	0.95
Fluoranthene	M	2700	mg/kg	0.10	0.76		1.6		< 0.10	< 0.10	3.9
Pyrene	M	2700	mg/kg	0.10	0.88		1.7		< 0.10	< 0.10	3.4
Benzo[a]anthracene	M	2700	mg/kg	0.10	< 0.10		2.1		< 0.10	< 0.10	2.4
Chrysene	M	2700	mg/kg	0.10	< 0.10		3.0		< 0.10	< 0.10	3.1
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10		2.4		< 0.10	< 0.10	2.8
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10		1.1		< 0.10	< 0.10	0.98
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10		1.9		< 0.10	< 0.10	2.1
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10		< 0.10		< 0.10	< 0.10	1.3
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10		< 0.10		< 0.10	< 0.10	0.65
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10		< 0.10		< 0.10	< 0.10	1.3
Total Of 16 PAH's	M	2700	mg/kg	2.0	< 2.0		16		< 2.0	< 2.0	28
Total Phenols	M	2920	mg/kg	0.10	< 0.10		< 0.10		< 0.10	< 0.10	< 0.10
Organic Matter BS1377	N	2930	%	0.10	1.4		2.4		0.80	0.80	1.4

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)

Test Methods

SOP	Title	Parameters included	Method summary
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
2930	Organic Matter	Organic Matter	Acid Dichromate digestion/Titration
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.com

ANNEX I
Geotechnical Test Results



Contract Number: 58882

Client Ref: **17166**

Report Date: **22-04-2022**

Client PO: **17166/JRW**

Client **Terrafirma Wales Ltd**
5 Deryn Court
Wharfedale Road
Pentwyn
Cardiff
CF23 7HB

Contract Title: **NPT Hospital**
For the attention of: **James Williams**

Date Received: **06-04-2022**

Date Completed: **22-04-2022**

Test Description	Qty
Samples Received	55
- @ Non Accredited Test	
Moisture Content	6
BS 1377:1990 - Part 2 : 3.2 - * UKAS	
PSD Wet Sieve method	2
BS 1377:1990 - Part 2 : 9.2 - * UKAS	
PSD: Sedimentation by pipette carried out with Wet Sieve (Wet Sieve must also be selected)	1
BS 1377:1990 - Part 2 : 9.4 - * UKAS	
Dry Den/MC (2.5kg Rammer Method 1 litre mould/CBR Mould)	3
BS 1377:1990 - Part 4 : 3.4 - * UKAS	
Disposal of samples for job	1

Notes: Observations and Interpretations are outside the UKAS Accreditation

* - denotes test included in laboratory scope of accreditation

- denotes test carried out by approved contractor

@ - denotes non accredited tests

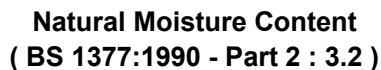
This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved Signatories:

Emma Sharp (Business Support Manager) - Paul Evans (Director) - Richard John (Quality/Technical Manager)

Shaun Jones (Laboratory manager) - Shaun Thomas (Site Manager) - Wayne Honey (Quality Assistant / Administrator / Health and Safety Coordinator)





Contract Number	58882	
Site Name	NPT Hospital	
Date Tested	15/04/2022	

[illegible]

Operators	Checked	22/04/2022	Richard John (Advanced Testing Manager)
Dean Smith	Approved	22/04/2022	Paul Evans (Quality/Technical Manager)





PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2

Contract Number 58882

Borehole/Pit No. BH01

Site Name NPT Hospital

Sample No.

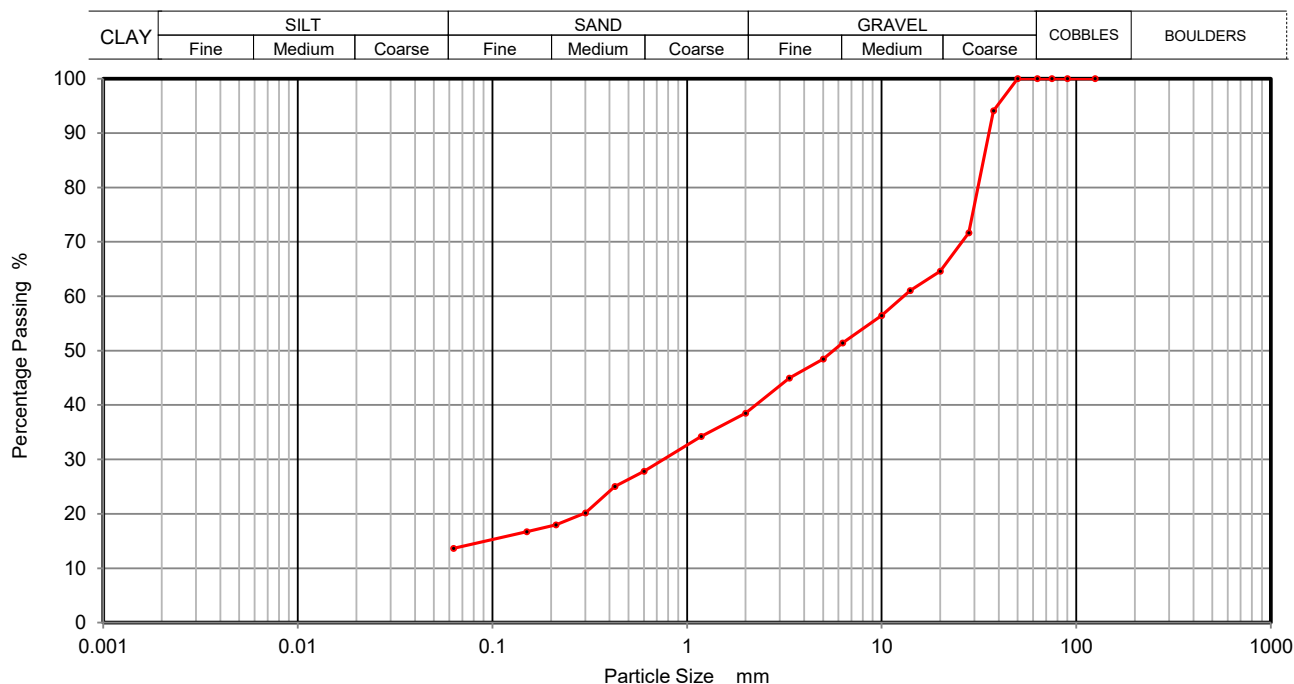
Soil Description Brown/ grey silty/ clayey fine to coarse sandy fine to coarse GRAVEL

Depth Top 1.20

Depth Base 1.65

Date Tested 15/04/2022

Sample Type B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	94		
28	72		
20	65		
14	61		
10	56		
6.3	51		
5	48		
3.35	45		
2	39		
1.18	34		
0.6	28		
0.425	25		
0.3	20		
0.212	18		
0.15	17		
0.063	14		

Sample Proportions	% dry mass
Cobbles	0
Gravel	61
Sand	25
Silt and Clay	14

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	21/04/2022	Richard John	
David	Approved	22/04/2022	Paul Evans	

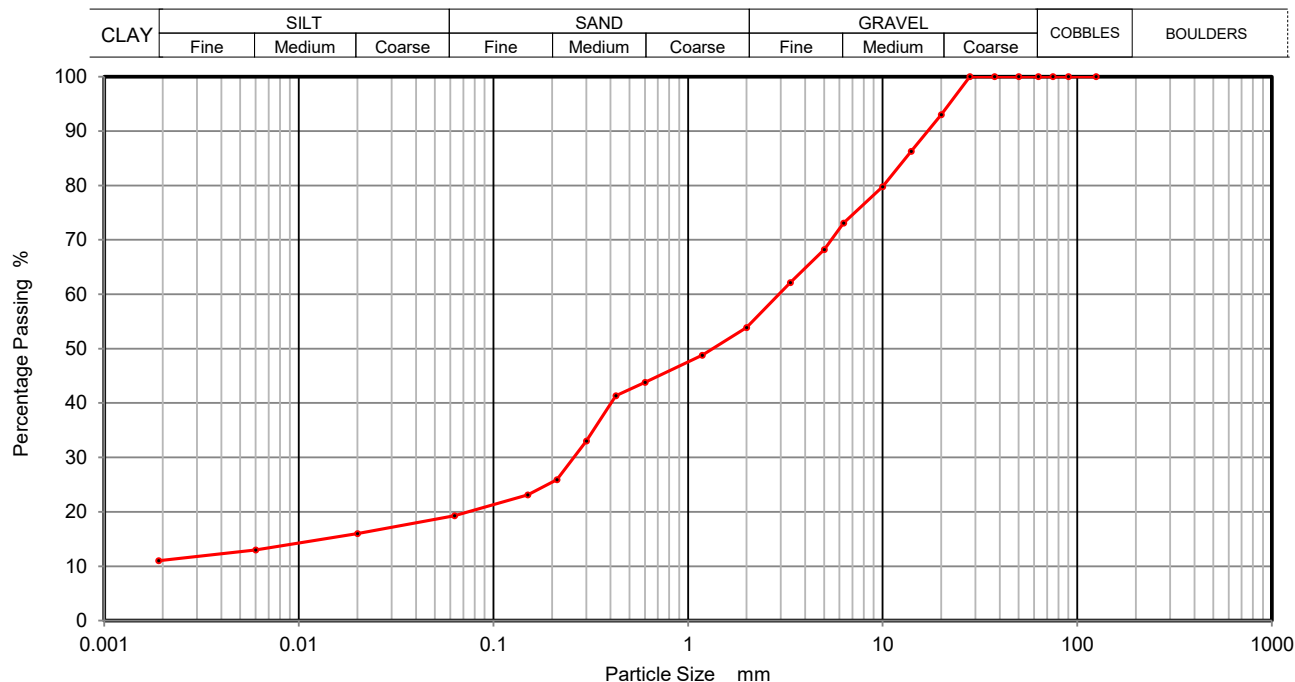


2788



PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Contract Number	58882
	Borehole/Pit No. BH03
Site Name	NPT Hospital
Soil Description	Grey/ brown slightly silty clayey fine to coarse sandy fine to coarse GRAVEL
	Depth Top 1.20
	Depth Base 1.65
Date Tested	15/04/2022
Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	16
90	100	0.0060	13
75	100	0.0020	11
63	100		
50	100		
37.5	100		
28	100		
20	93		
14	86		
10	80		
6.3	73		
5	68		
3.35	62		
2	54		
1.18	49		
0.6	44		
0.425	41		
0.3	33		
0.212	26		
0.15	23		
0.063	19		

Sample Proportions	% dry mass
Cobbles	0
Gravel	46
Sand	35
Silt	8
Clay	11

Remarks
 Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	21/04/2022	Richard John	
David	Approved	22/04/2022	Paul Evans	





**Dry Density / Moisture Content Relationship
BS 1377:Part 4:1990**

Contract Number 58882

Borehole / Pit No BH01

Project Location NPT Hospital

Sample No

Date Tested 14/04/2022

Depth Top 1.20

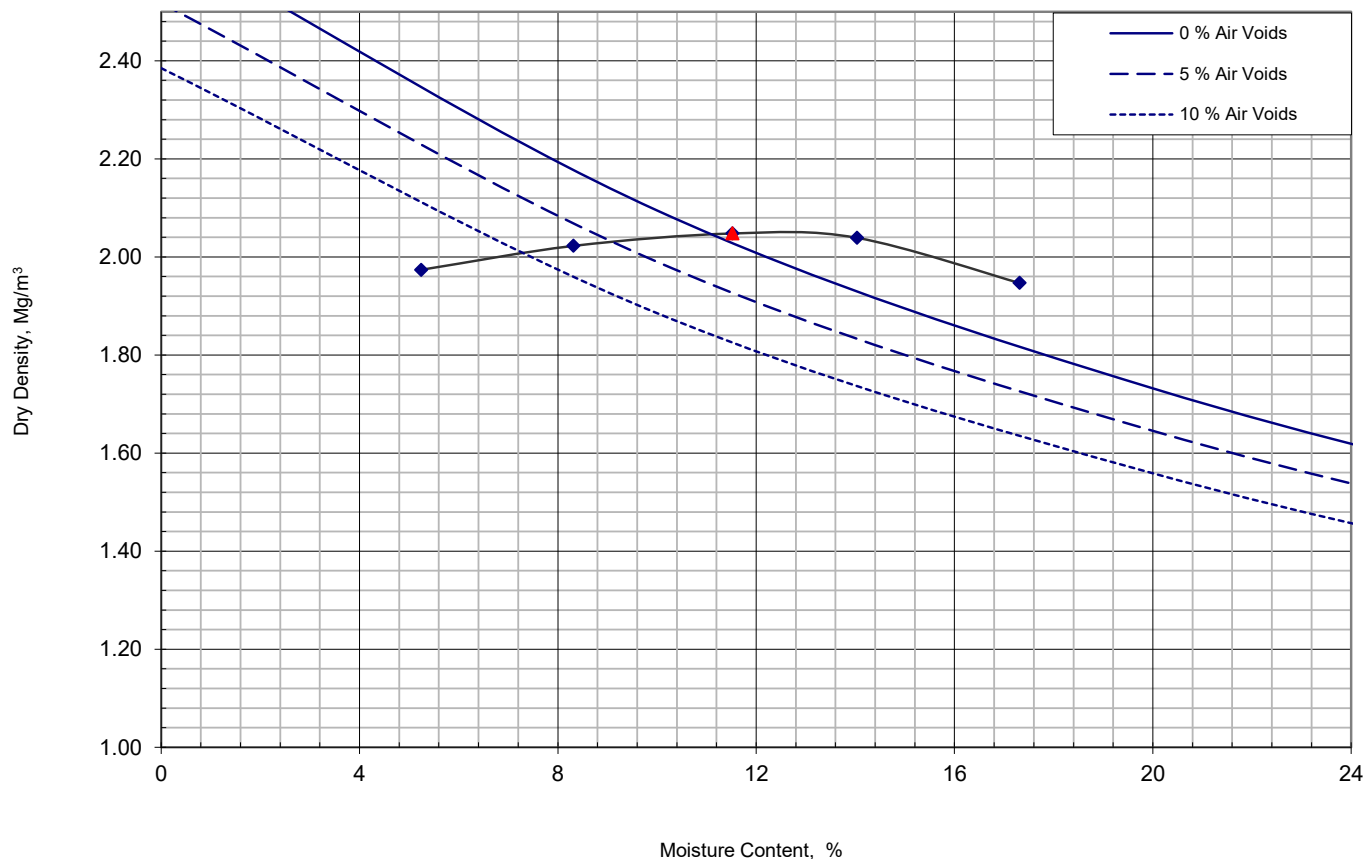
Compaction Method 2.5 Kg Rammer

Depth Base 1.65

Compaction Clause BS1377:Part 4:1990, Clause 3.3

Sample Type B

Sample Description Brown/ grey silty/ clayey fine to coarse sandy fine to coarse GRAVEL



Compaction Point	1	2	3	4	5						
Moisture Content	5.2	8.3	12	14	17						
Bulk Density	2.08	2.19	2.28	2.33	2.28						
Dry Density	1.97	2.02	2.05	2.04	1.95						

Initial Moisture Content	14	%
Maximum Dry Density	2.05	Mg/m3
Optimum Moisture Content	12	%
Particle Density	2.65 Assumed	Mg/m3
Material Retained 37.5mm	0	%
Material Retained 20mm	13	%

Operator Checked 21/04/2022 Richard John

Conor Approved 22/04/2022 Paul Evans

Richard John

Conor





**Dry Density / Moisture Content Relationship
BS 1377:Part 4:1990**

Contract Number

58882

Borehole / Pit No

BH02

Project Location

NPT Hospital

Sample No

Date Tested

14/04/2022

Depth Top

1.20

Compaction Method

2.5 Kg Rammer

Depth Base

1.65

Compaction Clause

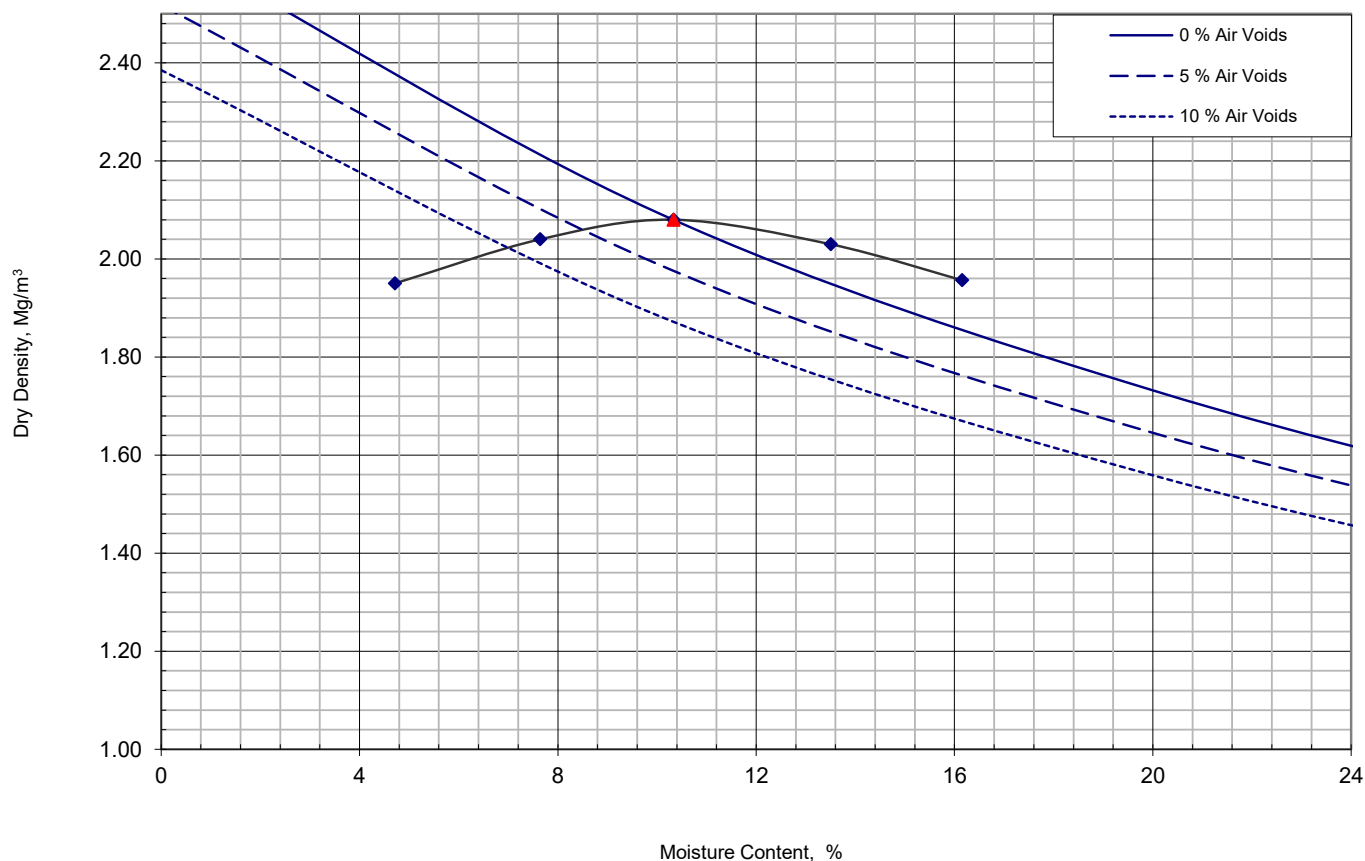
BS1377:Part 4:1990, Clause 3.3

Sample Type

B

Sample Description

Brown clayey silty fine to coarse GRAVEL



Compaction Point	1	2	3	4	5						
Moisture Content	4.7	7.6	10	14	16						
Bulk Density	2.04	2.20	2.29	2.30	2.27						
Dry Density	1.95	2.04	2.08	2.03	1.96						

Initial Moisture Content	16	%
Maximum Dry Density	2.08	Mg/m3
Optimum Moisture Content	10	%
Particle Density	2.65 Assumed	Mg/m3
Material Retained 37.5mm	0	%
Material Retained 20mm	30	%

Operator

Checked

21/04/2022

Richard John

Conor

Approved

22/04/2022

Paul Evans





**Dry Density / Moisture Content Relationship
BS 1377:Part 4:1990**

Contract Number

58882

Borehole / Pit No

BH03

Project Location

NPT Hospital

Sample No

Date Tested

14/04/2022

Depth Top

1.00

Compaction Method

2.5 Kg Rammer

Depth Base

1.20

Compaction Clause

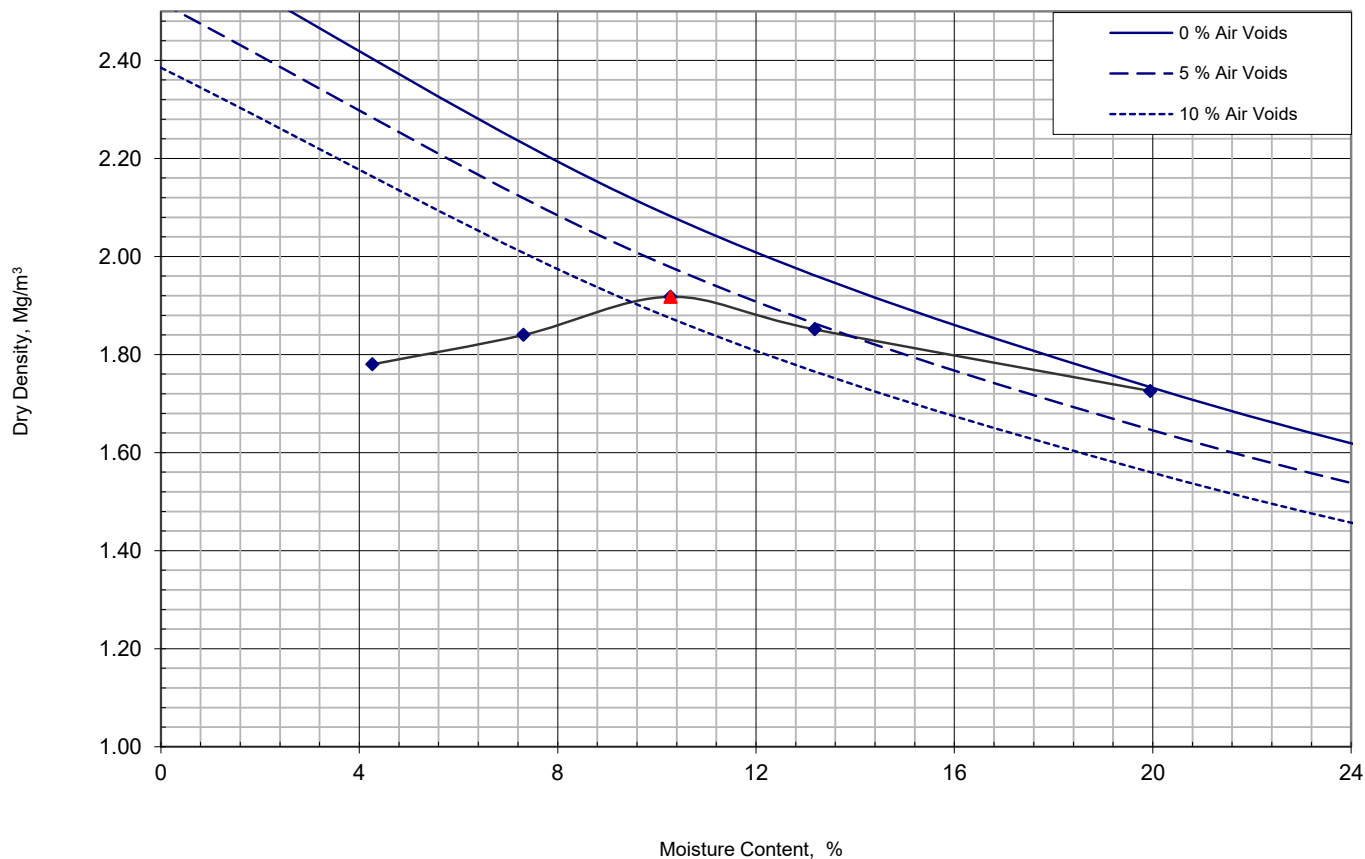
BS1377:Part 4:1990, Clause 3.3

Sample Type

B

Sample Description

Grey silty fine to coarse gravelly CLAY



Compaction Point	1	2	3	4	5						
Moisture Content	4.3	7.3	10	13	20						
Bulk Density	1.86	1.97	2.11	2.10	2.07						
Dry Density	1.78	1.84	1.92	1.85	1.73						

Initial Moisture Content	20	%
Maximum Dry Density	1.92	Mg/m3
Optimum Moisture Content	10	%
Particle Density	2.65 Assumed	Mg/m3
Material Retained 37.5mm	0	%
Material Retained 20mm	17	%

Operator

Checked

21/04/2022

Richard John

Conor

Approved

22/04/2022

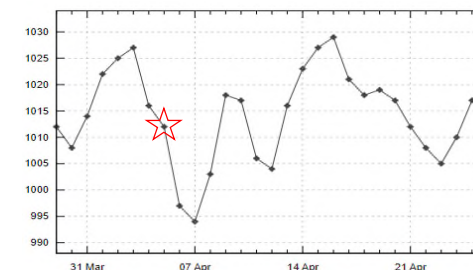
Paul Evans



ANNEX J
Ground Gas Monitoring Results

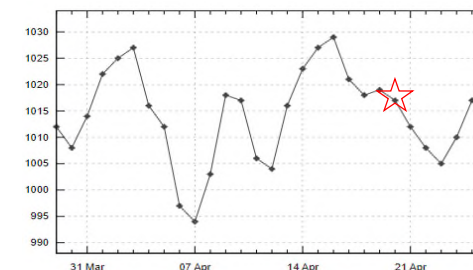
**terra
firma**
Geotechnical & Geoenvironmental Specialists

Equipment/Serial: GA5000/G506329

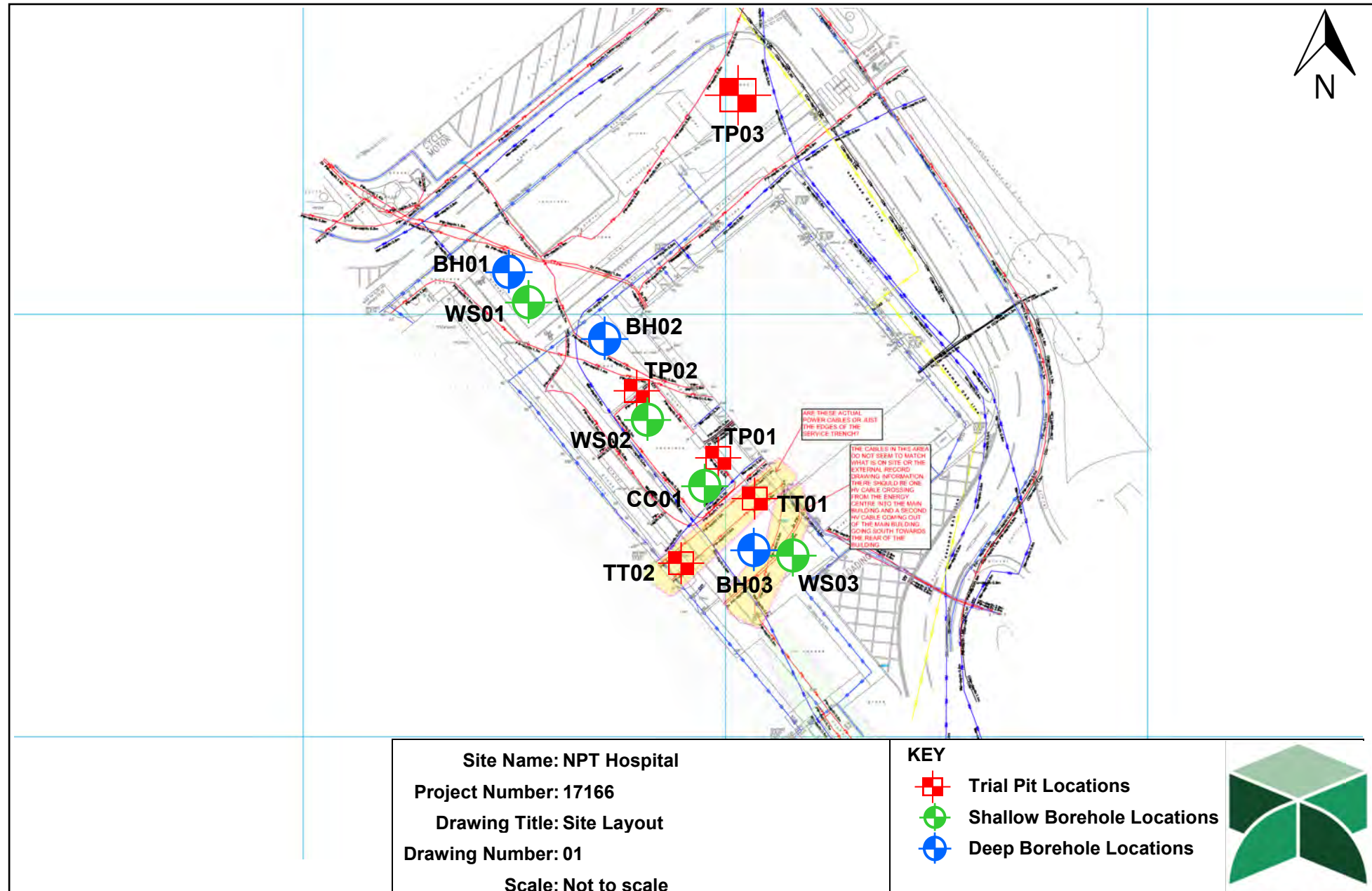
[illegible]

Geotechnical & Geoenvironmental Specialists

Equipment/Serial: GA5000/G506329

[illegible]

DRAWINGS





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