

# **A46 Newark Bypass**

**TR010065/APP/6.3**

## **6.3 Environmental Statement**

### **Appendix 9.2 Contaminated Land Risk Assessment**

#### **Part 3**

APFP Regulation 5(2)(a)

Planning Act 2008

Infrastructure Planning (Applications: Prescribed Forms and  
Procedure) Regulations 2009

Volume 6

April 2024

Infrastructure Planning

Planning Act 2008

**The Infrastructure Planning  
(Applications: Prescribed Forms  
and Procedure) Regulations 2009**

A46 Newark Bypass

Development Consent Order 202[x]

---

**ENVIRONMENTAL STATEMENT**

**APPENDIX 9.2 CONTAMINATED LAND RISK ASSESSMENT**

**PART 3**

---

<b>Regulation Number:</b>	Regulation 5(2)(a)
<b>Planning Inspectorate Scheme Reference</b>	TR010065
<b>Application Document Reference</b>	TR010065/APP/6.3
<b>Author:</b>	A46 Newark Bypass Project Team, National Highways

<b>Version</b>	<b>Date</b>	<b>Status of Version</b>
Rev 1	April 2024	DCO Application

## Contents

### Appendix D: Factual reports

# Appendix K: Soakaway Results



## SOIL INFILTRATION RATE TEST

Non-compliant to BRE Digest 365 (1991 with amendments in 2003, 2007, 2016) due to duration

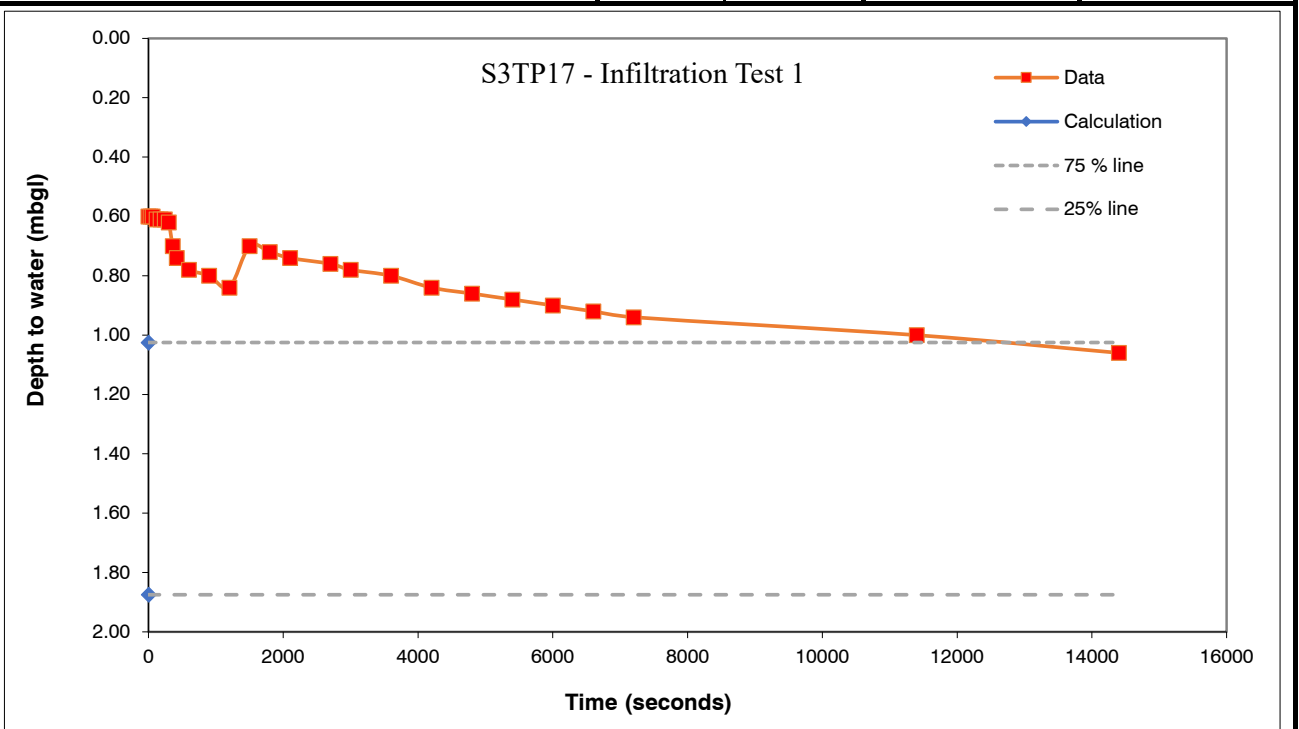
Date	25/01/2023	Pit ID:	S3TP17
Client:	Skanska	Job No:	221209
Job	A46	Time to fill pit:	20 mins
		Time at start of test:	11:00:00
Trial pit filled with gravel to prevent instability?:		N	

Pit Dimensions (m)	
Length	4.00
Width	0.60
Depth	2.30
Water level prior to test	0.60

	Depth of water (mbgl)	Time (s)
Start depth / time for calculations:	75%	1.03
End depth for time calculations:	25%	1.88
		12650
		NA

<b>Infilling 1</b>
<b>Soil Infiltration Rate (f)</b>
Test duration is non-compliant to BRE365

Elapsed Time		Depth recorded on dip meter (m bgl)	Depth of water from base (m)
Minutes	Seconds		
0	0	0.60	1.70
0.5	30	0.60	1.70
1	60	0.60	1.70
2	120	0.61	1.69
3	180	0.61	1.69
4	240	0.61	1.69
5	300	0.62	1.68
10	360	0.70	1.60
15	420	0.74	1.56
20	600	0.78	1.52
25	900	0.80	1.50
29	1200	0.84	1.46
30	1500	0.70	1.60
35	1800	0.72	1.58
40	2100	0.74	1.56
45	2700	0.76	1.54
50	3000	0.78	1.52
60	3600	0.80	1.50
70	4200	0.84	1.46
80	4800	0.86	1.44
90	5400	0.88	1.42
100	6000	0.90	1.40
110	6600	0.92	1.38
120	7200	0.94	1.36
190	11400	1.00	1.30
240	14400	1.06	1.24



Remarks: TP collapsed from 2.3m to 1.7m at start of test. Second collapse from 1.7m to 1.6m at 30 Minutes



### SOIL INFILTRATION RATE TEST

Non-compliant to BRE Digest 365 (1991 with amendments in 2003, 2007, 2016) due to duration

Date	26/01/2023	Pit ID:	S3TP17
Client: Skanska	Job No: 221209	Engineer	LA
Job A46	Time to fill pit: 30 mins	Time at start of test:	09:52:00
Trial pit filled with gravel to prevent instability?:		N	

Pit Dimensions (m)	
Length	3.60
Width	0.60
Depth	2.30
Water level prior to test	0.50

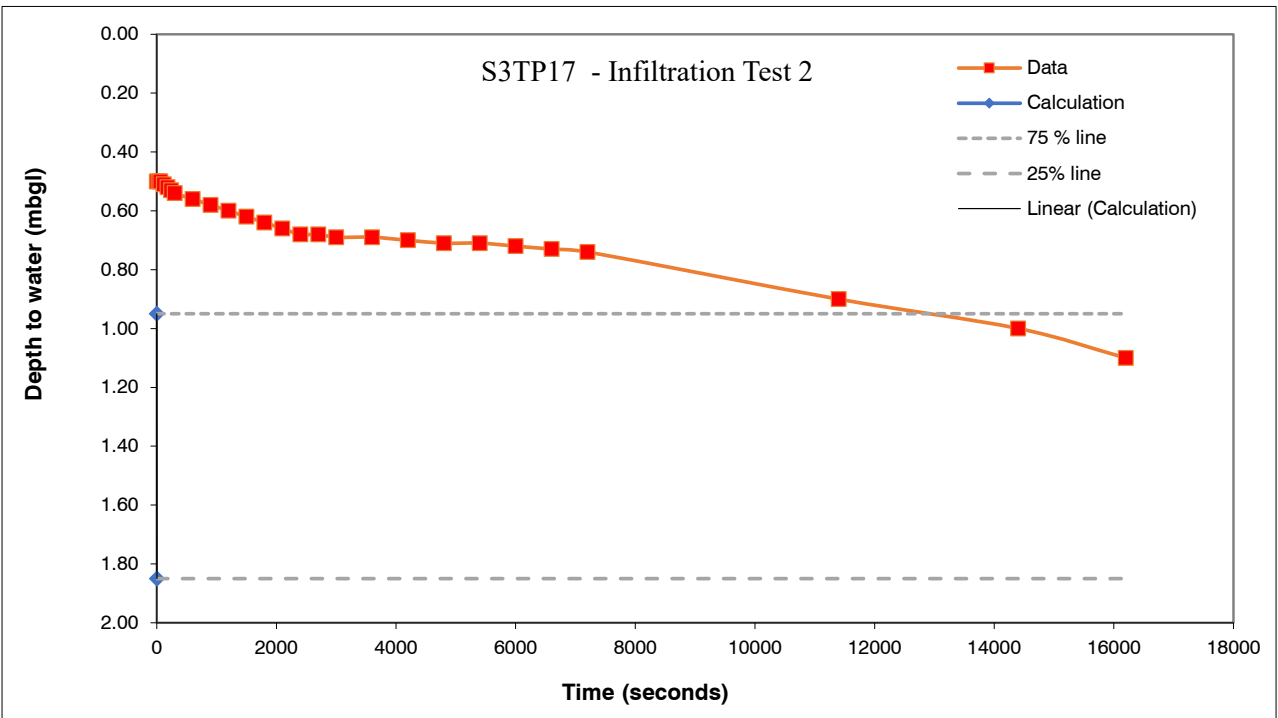
Elapsed Time		Depth recorded on dip meter (mbgl)	Depth of water from base (m)
Minutes	Seconds		
0	0	0.50	1.80
0.5	30	0.50	1.80
1	60	0.50	1.80
2	120	0.51	1.79
3	180	0.52	1.78
4	240	0.53	1.77
5	300	0.54	1.76
10	600	0.56	1.74
15	900	0.58	1.72
20	1200	0.60	1.70
25	1500	0.62	1.68
30	1800	0.64	1.66
35	2100	0.66	1.64
40	2400	0.68	1.62
45	2700	0.68	1.62
50	3000	0.69	1.61
60	3600	0.69	1.61
70	4200	0.70	1.60
80	4800	0.71	1.59
90	5400	0.71	1.59
100	6000	0.72	1.58
110	6600	0.73	1.57
120	7200	0.74	1.56
190	11400	0.90	1.40
240	14400	1.00	1.30
270	16200	1.10	1.20

	Depth of water (mbgl)	Time (s)
Start depth / time for calculations:	75%	0.95
End depth for time calculations:	25%	1.85
		12900
		NA

**Infilling 2**

**Soil Infiltration Rate (f)**

Test duration is non-compliant to BRE365



Remarks: TP collapsed from 2.3m to 1.6m at 60 minutes



## SOIL INFILTRATION RATE TEST

*Non-compliant to BRE Digest 365 (1991 with amendments in 2003, 2007, 2016) due to duration*

Date: 27/01/2023	Pit ID: S3TP17
Client: Skanska	Job No: 221209
Job: A46	Time to fill pit: 30 mins
Engineer: LA	
Time at start of test: 10:00	
Trial pit filled with gravel to prevent instability?: N	

Pit Dimensions (m)	
Length	3.80
Width	0.60
Depth	2.50
Water level prior to test	0.60

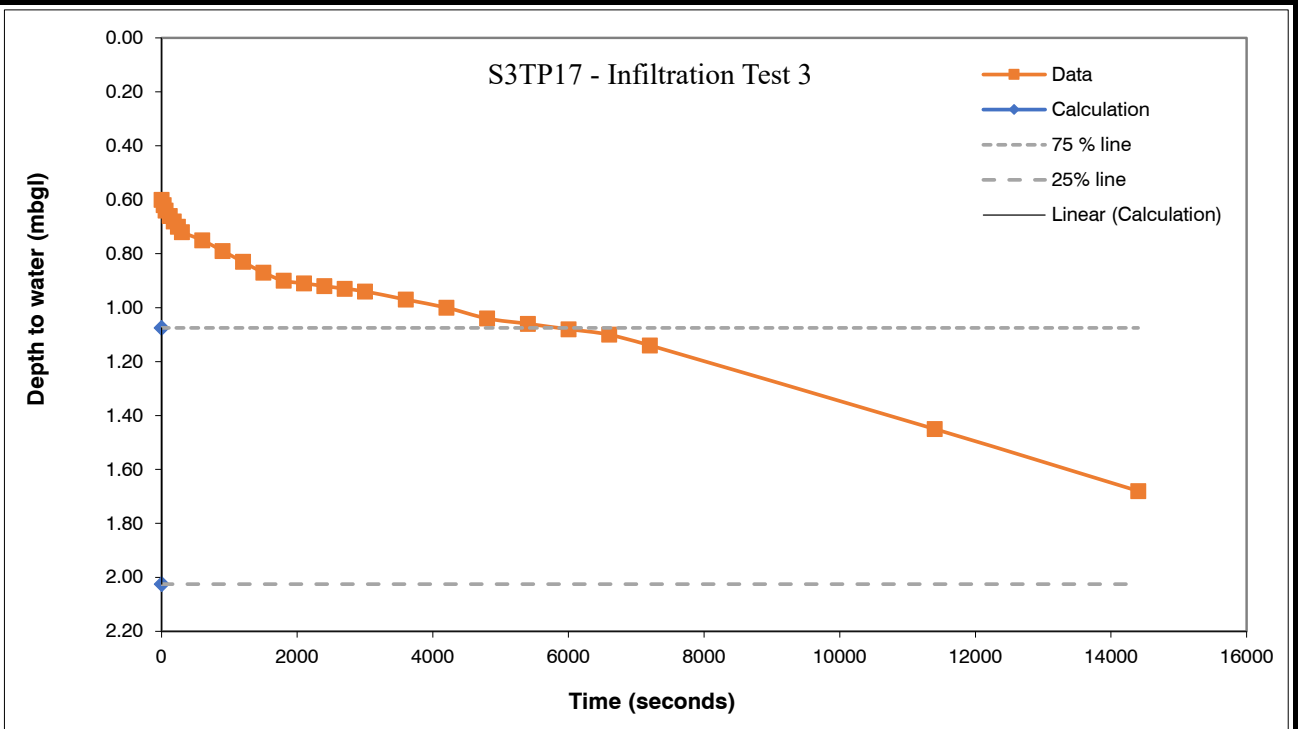
Elapsed Time		Depth recorded on dip meter (mbgl)	Depth of water from base (m)
Minutes	Seconds		
0	0	0.60	1.90
0.5	30	0.62	1.88
1	60	0.64	1.86
2	120	0.66	1.84
3	180	0.68	1.82
4	240	0.70	1.80
5	300	0.72	1.78
10	600	0.75	1.75
15	900	0.79	1.71
20	1200	0.83	1.67
25	1500	0.87	1.63
30	1800	0.90	1.60
35	2100	0.91	1.59
40	2400	0.92	1.58
45	2700	0.93	1.57
50	3000	0.94	1.56
60	3600	0.97	1.53
70	4200	1.00	1.50
80	4800	1.04	1.46
90	5400	1.06	1.44
100	6000	1.08	1.42
110	6600	1.10	1.40
120	7200	1.14	1.36
190	11400	1.45	1.05
240	14400	1.68	0.82

	Depth of water (mbgl)	Time (s)
Start depth / time for calculations:	75%	1.08
End depth for time calculations:	25%	2.03
		14400
		NA

**Infilling 3**

**Soil Infiltration Rate (f)**

Test duration is non-compliant to BRE365



Remarks : IP collapsed from 2.3m to 1.6m during fill. Second collapse at 60 Minutes no significant change in pit depth



## SOIL INFILTRATION RATE TEST

*In accordance with BRE Digest 365 (1991 with amendments in 2003, 2007, 2016)*

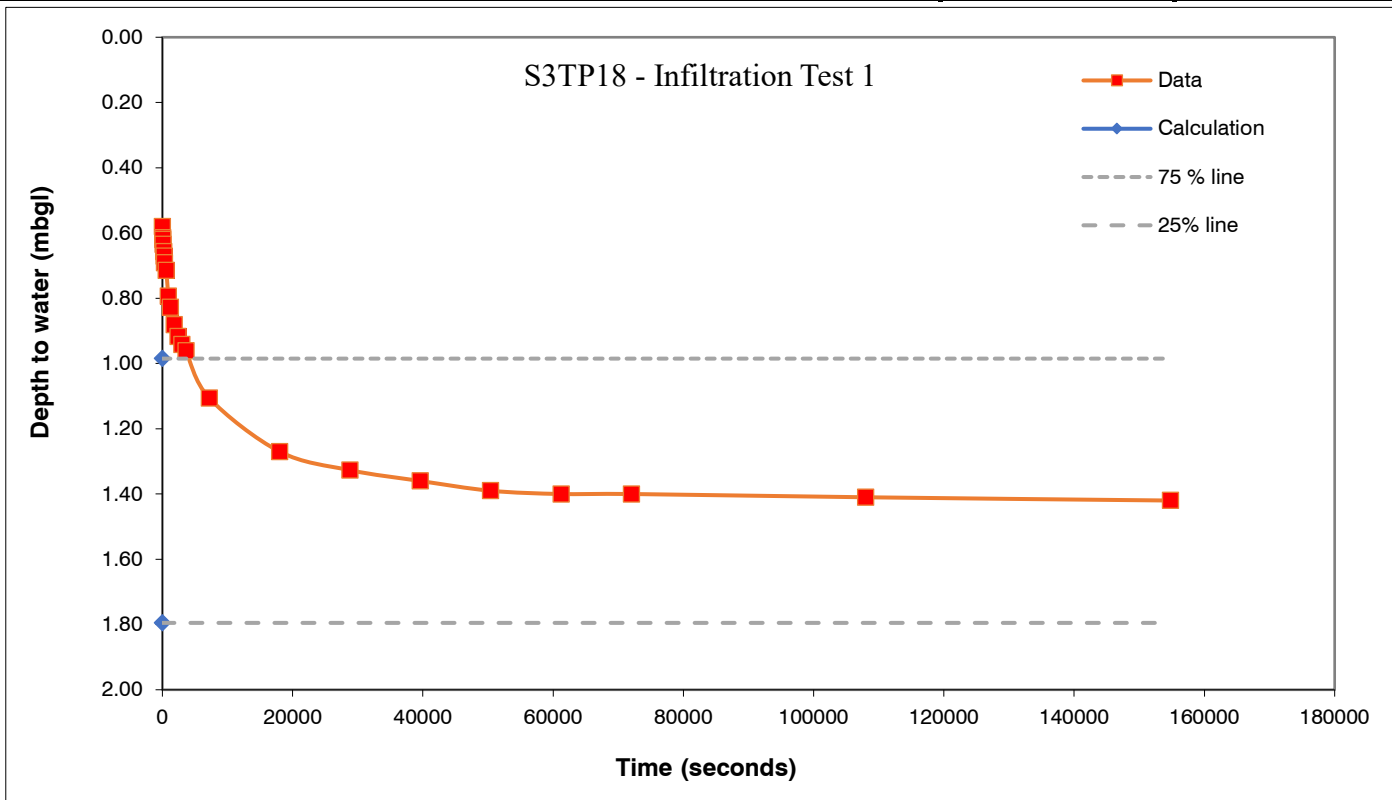
Date	06/02/2023	Pit ID:	S3TP18
Client: Skanska	Job No: G221209	Engineer	PO
Job A46 Newark	Time to fill pit: 00:15:11	Time at start of test	15:52:00
Trial pit filled with gravel to prevent instability?: YES		Gravel Void Ratio = 0.42	

Pit Dimensions (m)	
Length	3.60
Width	0.90
Depth	2.20
Water level prior to test	0.00

Elapsed Time		Depth recorded on dip meter (m bgl)	Depth of water from base (m)
Minutes	Seconds		
0	0	0.58	1.62
0.5	30	0.62	1.59
1	60	0.62	1.58
2	120	0.64	1.57
3	180	0.66	1.54
4	240	0.67	1.53
5	300	0.69	1.51
10	600	0.72	1.49
15	900	0.79	1.41
20	1200	0.83	1.37
30	1800	0.88	1.32
40	2400	0.92	1.28
50	3000	0.94	1.26
60	3600	0.96	1.24
120	7200	1.11	1.09
300	18000	1.27	0.93
480	28800	1.33	0.87
660	39600	1.36	0.84
840	50400	1.39	0.81
1020	61200	1.40	0.80
1200	72000	1.40	0.80
1800	108000	1.41	0.79
2580	154800	1.42	0.78

	Depth of water (mbgl)	Time (s)
Start depth / time for calculations:	75%	0.99     4196
End depth for time calculations:	25%	1.80     NA

<b>Infilling 1</b>
<b>Soil Infiltration Rate (f)</b>
<b>NA</b>



Remarks: Insufficient drain over 24hrs to infer (f).





## SOIL INFILTRATION RATE TEST

*In accordance with BRE Digest 365 (1991 with amendments in 2003, 2007 and 2016)*

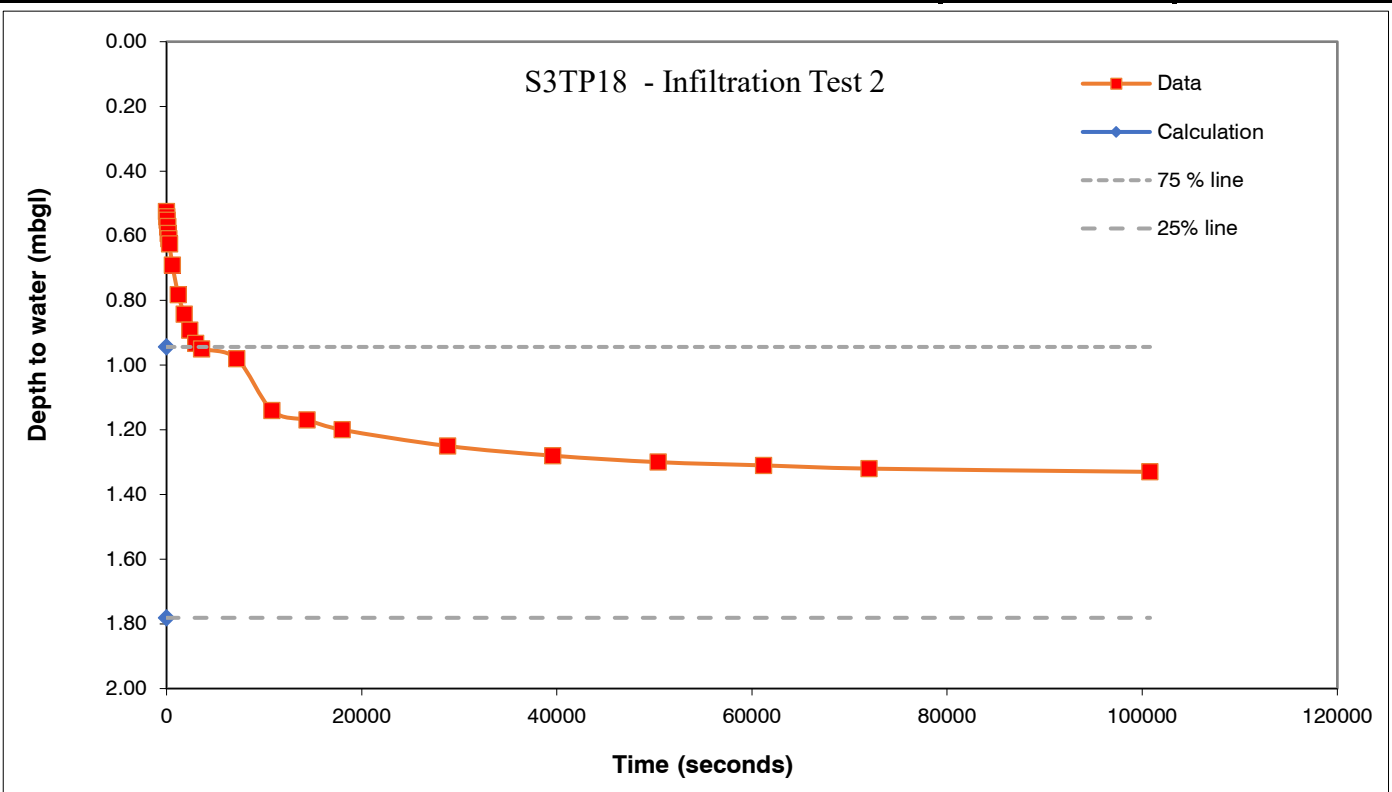
Date:	08/02/2023	Pit ID:	S3TP18
Client:	Skanska	Job No:	G221209
Job:	A46 Newark	Engineer:	PO
Time to fill pit:		00:05:54	Time at start of test 11:15:00
Trial pit filled with gravel to prevent instability?:		YES	Gravel Void Ratio = 0.42

Pit Dimensions (m)	
Length	3.60
Width	0.90
Depth	2.20
Water level prior to test	0.00

Elapsed Time		Depth recorded on dip meter (mbgl)	Depth of water from base (m)
Minutes	Seconds		
0	0	0.53	1.68
0.5	30	0.54	1.66
1	60	0.55	1.65
2	120	0.57	1.63
3	180	0.59	1.61
4	240	0.61	1.59
5	300	0.63	1.58
10	600	0.69	1.51
20	1200	0.78	1.42
30	1800	0.84	1.36
40	2400	0.89	1.31
50	3000	0.93	1.27
60	3600	0.95	1.25
120	7200	0.98	1.22
180	10800	1.14	1.06
240	14400	1.17	1.03
300	18000	1.20	1.00
480	28800	1.25	0.95
660	39600	1.28	0.92
840	50400	1.30	0.90
1020	61200	1.31	0.89
1200	72000	1.32	0.88
1680	100800	1.33	0.87

	Depth of water (mbgl)	Time (s)
Start depth / time for calculations:	75%	0.94
End depth for time calculations:	25%	1.78
		3379
		NA

<b>Infilling 2</b>
<b>Soil Infiltration Rate (f)</b>
<b>NA</b>



Remarks: Insufficient drain over 24hrs to infer (f).



## SOIL INFILTRATION RATE TEST

*In accordance with BRE Digest 365 (1991 with amendments in 2003, 2007 and 2016)*

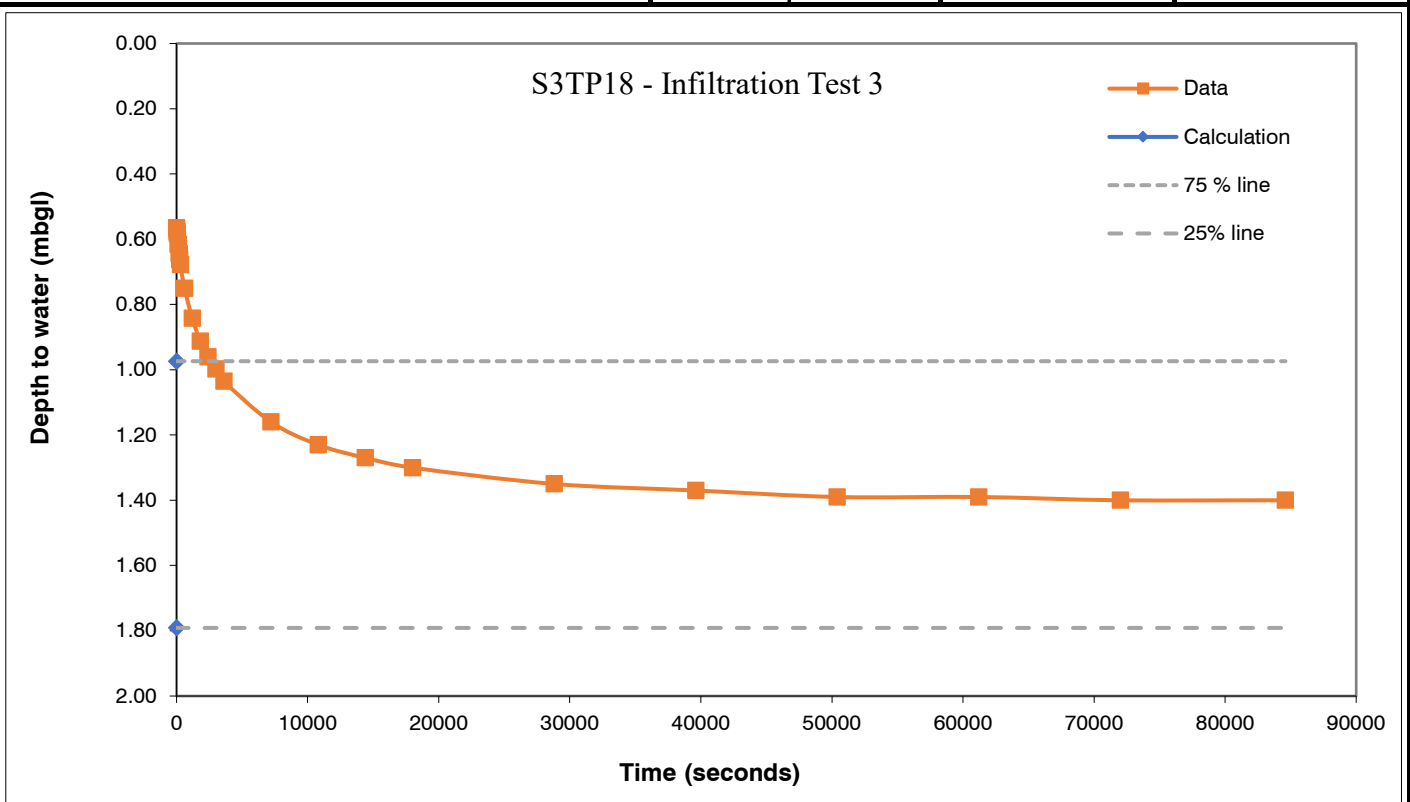
Date:	09/02/2023	Pit ID:	S3TP18
Client:	Skanska	Job No:	G221209
Job:	A46 Newark	Engineer:	PO
Time to fill pit:		00:06:42	Time at start of test 15:24:00
Trial pit filled with gravel to prevent instability?:		YES	Gravel Void Ratio = 0.42

Pit Dimensions (m)	
Length	3.60
Width	0.90
Depth	2.20
Water level prior to test	0.00

Elapsed Time		Depth recorded on dip meter (mbgl)	Depth of water from base (m)
Minutes	Seconds		
0	0	0.57	1.64
0.5	30	0.58	1.63
1	60	0.58	1.62
2	120	0.62	1.59
3	180	0.64	1.56
4	240	0.66	1.54
5	300	0.68	1.52
10	600	0.75	1.45
20	1200	0.84	1.36
30	1800	0.91	1.29
40	2400	0.96	1.24
50	3000	1.00	1.20
60	3600	1.04	1.17
120	7200	1.16	1.04
180	10800	1.23	0.97
240	14400	1.27	0.93
300	18000	1.30	0.90
480	28800	1.35	0.85
660	39600	1.37	0.83
840	50400	1.39	0.81
1020	61200	1.39	0.81
1200	72000	1.40	0.80
1410	84600	1.40	0.80

	Depth of water (mbgl)	Time (s)
Start depth / time for calculations:	75%	0.97    2617
End depth for time calculations:	25%	1.79    NA

<b>Infilling 3</b>
<b>Soil Infiltration Rate (f)</b>
<b>NA</b>



Remarks:            Insufficient drain over 24hrs to infer (f).



## SOIL INFILTRATION RATE TEST

*In accordance with BRE Digest 365 (1991 with amendments in 2003, 2007, 2016)*

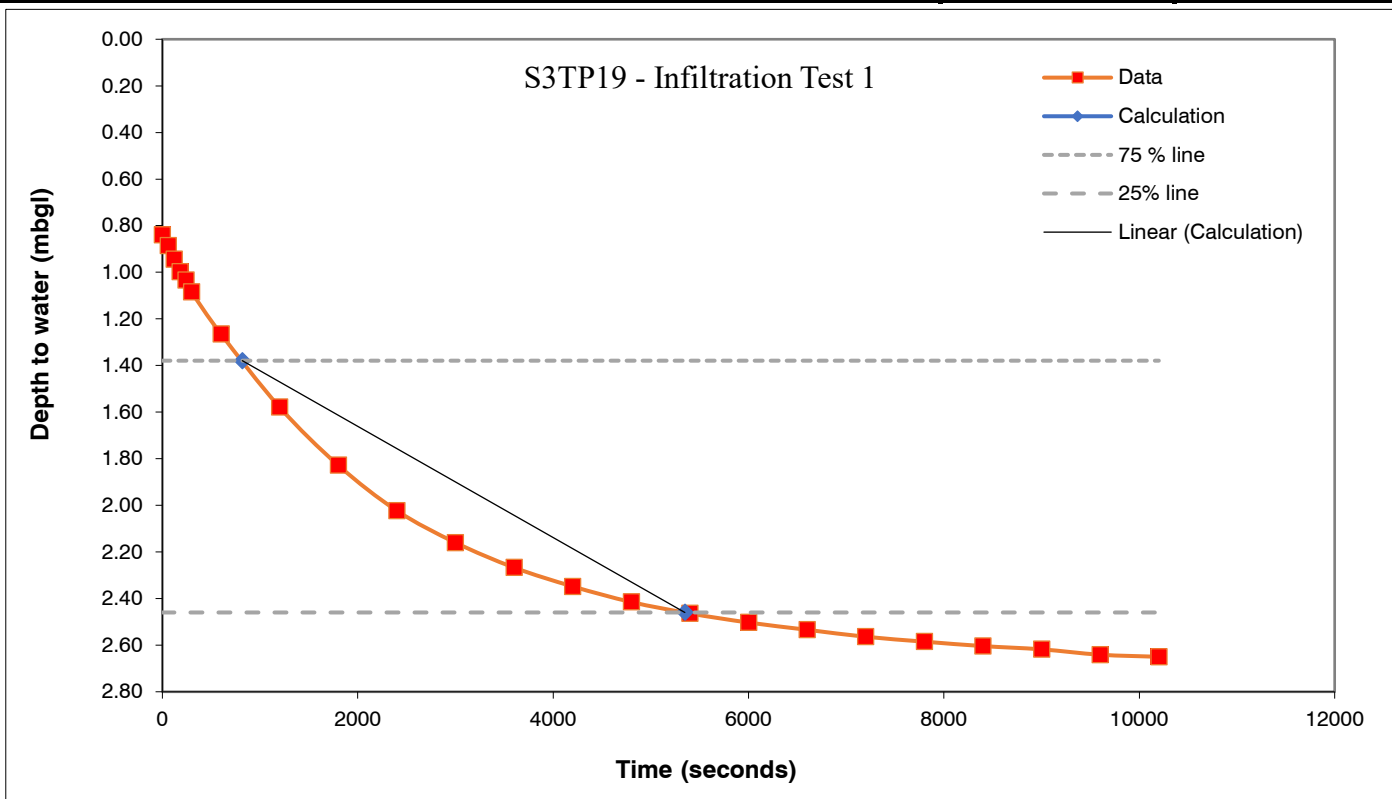
Date	06/02/2023	Pit ID:	S3TP19
Client: Skanska	Job No: G221209	Engineer	PO
Job A46 Newark	Time to fill pit: 00:29:36	Time at start of test	09:53:00
Trial pit filled with gravel to prevent instability?: YES		Gravel Void Ratio = 0.42	

Pit Dimensions (m)	
Length	3.80
Width	2.00
Depth	3.00
Water level prior to test	0.00

	Depth of water (mbgl)	Time (s)
Start depth / time for calculations:	75%	1.38      818
End depth for time calculations:	25%	2.46      5348

<b>Infilling 1</b>
<b>Soil Infiltration Rate (f)</b>
<b>3.78E-05</b>

Elapsed Time		Depth recorded on dip meter (m bgl)	Depth of water from base (m)
Minutes	Seconds		
0	0	0.84	2.16
1.0	60	0.89	2.12
2	120	0.94	2.06
3	180	1.00	2.00
4	240	1.03	1.97
5	300	1.09	1.92
10	600	1.27	1.74
20	1200	1.58	1.42
30	1800	1.83	1.17
40	2400	2.02	0.98
50	3000	2.16	0.84
60	3600	2.27	0.73
70	4200	2.35	0.65
80	4800	2.42	0.59
90	5400	2.46	0.54
100	6000	2.50	0.50
110	6600	2.53	0.47
120	7200	2.56	0.44
130	7800	2.59	0.42
140	8400	2.60	0.40
150	9000	2.62	0.38
160	9600	2.64	0.36
170	10200	2.65	0.35



Remarks:



## SOIL INFILTRATION RATE TEST

*In accordance with BRE Digest 365 (1991 with amendments in 2003, 2007 and 2016)*

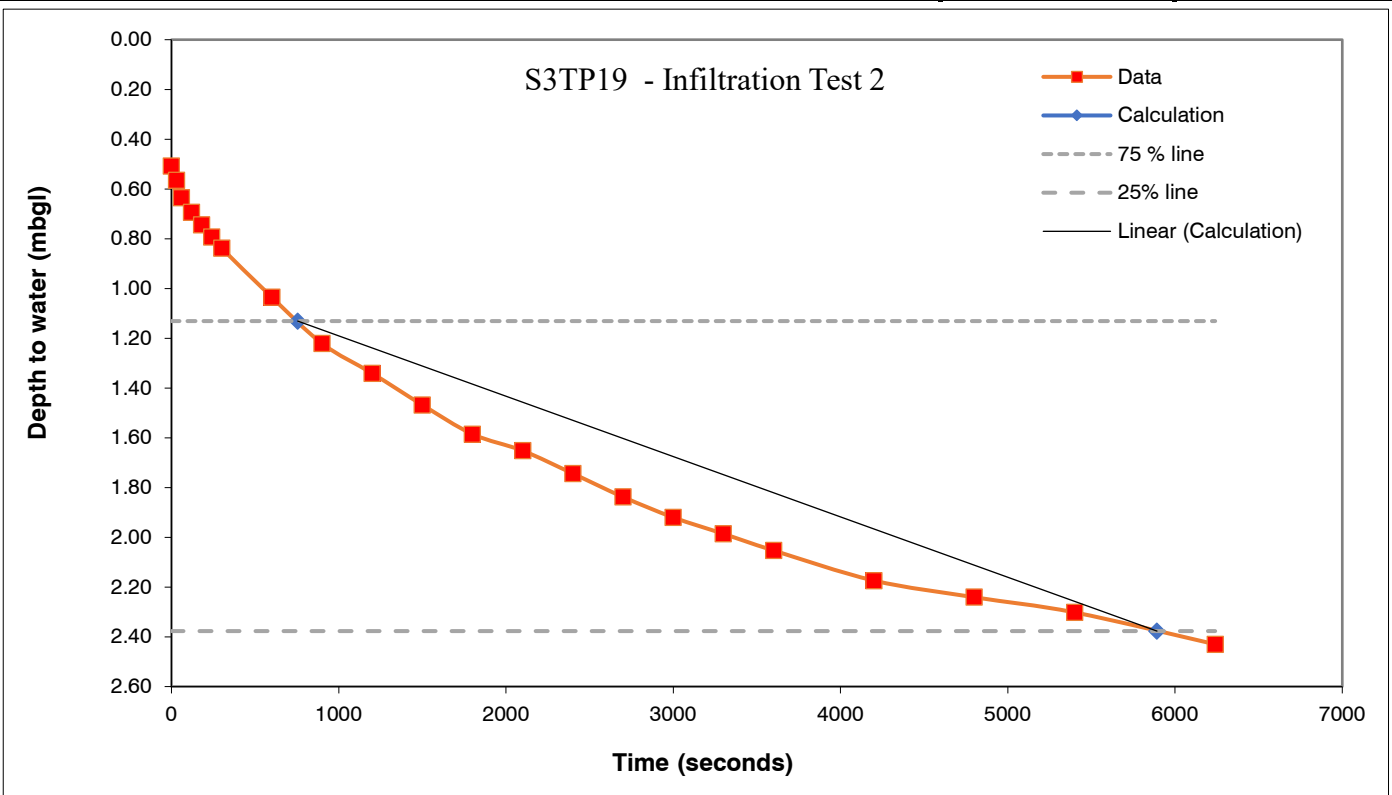
Date:	06/02/2023	Pit ID:	S3TP19
Client:	Skanska	Job No.:	G221209
Job:	A46 Newark	Engineer:	PO
		Time to fill pit:	00:31:22
		Time at start of test:	13:31:00
Trial pit filled with gravel to prevent instability?:		YES	Gravel Void Ratio = 0.42

Pit Dimensions (m)	
Length	3.80
Width	2.00
Depth	3.00
Water level prior to test	0.00

	Depth of water (mbgl)	Time (s)
Start depth / time for calculations:	75%	1.13
End depth for time calculations:	25%	2.38

<b>Infilling 2</b>
<b>Soil Infiltration Rate (f)</b>
<b>3.51E-05</b>

Elapsed Time		Depth recorded on dip meter (mbgl)	Depth of water from base (m)
Minutes	Seconds		
0	0	0.51	2.49
0.5	30	0.57	2.44
1	60	0.64	2.37
2	120	0.69	2.31
3	180	0.75	2.26
4	240	0.79	2.21
5	300	0.84	2.16
10	600	1.04	1.97
15	900	1.22	1.78
20	1200	1.34	1.66
25	1500	1.47	1.53
30	1800	1.59	1.41
35	2100	1.65	1.35
40	2400	1.74	1.26
45	2700	1.84	1.16
50	3000	1.92	1.08
55	3300	1.99	1.01
60	3600	2.05	0.95
70	4200	2.17	0.83
80	4800	2.24	0.76
90	5400	2.30	0.70
104	6240	2.43	0.57



Remarks:



## SOIL INFILTRATION RATE TEST

*In accordance with BRE Digest 365 (1991 with amendments in 2003, 2007 and 2016)*

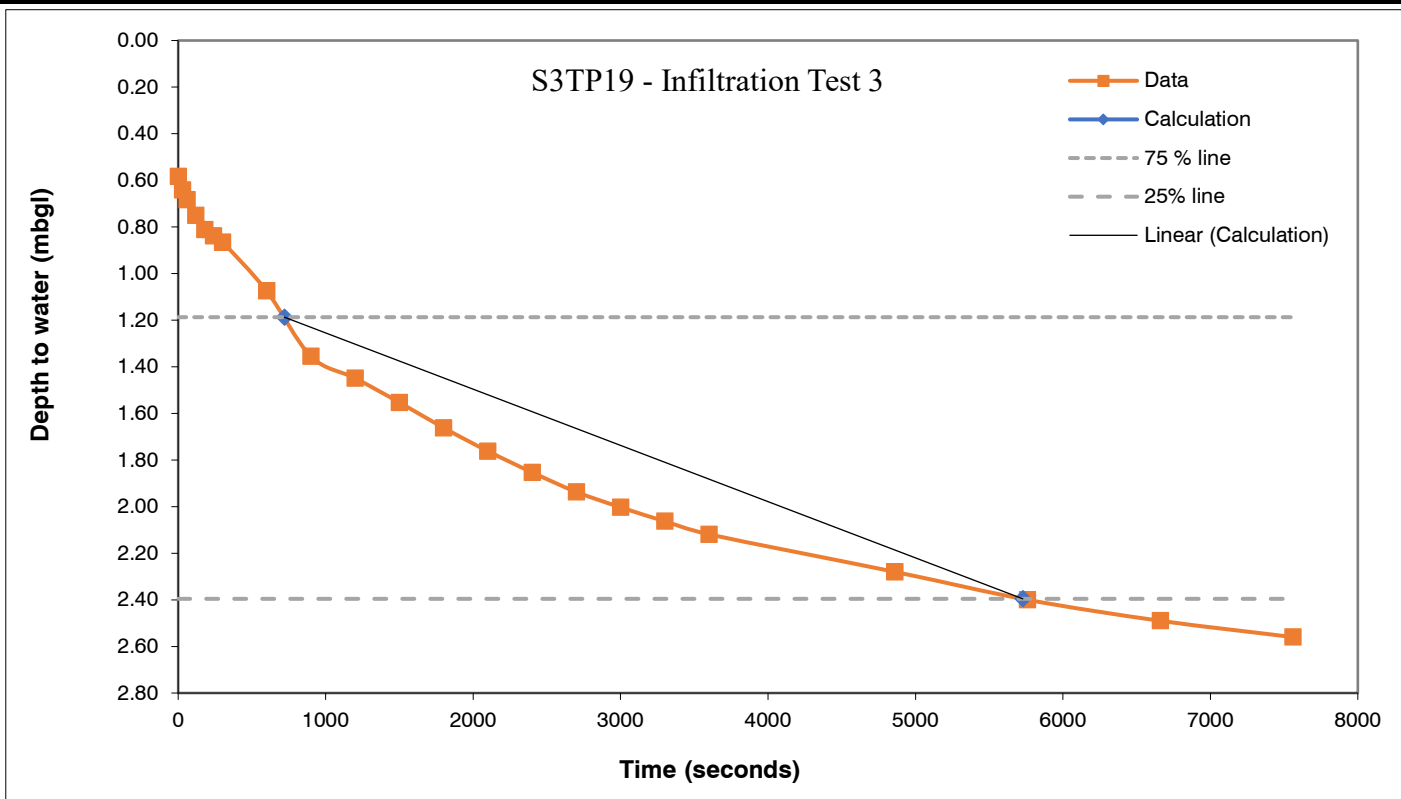
Date	07/02/2023	Pit ID:	S3TP19
Client:	Skanska	Job No:	G221209
Job	A46 Newark	Time to fill pit:	00:31:08
Trial pit filled with gravel to prevent instability?:		YES	Gravel Void Ratio = 0.42
Engineer		PO	
Time at start of test		09:39:00	

Pit Dimensions (m)	
Length	3.80
Width	2.00
Depth	3.00
Water level prior to test	0.00

Elapsed Time		Depth recorded on dip meter (mbgl)	Depth of water from base (m)
Minutes	Seconds		
0	0	0.58	2.42
1	30	0.64	2.36
1	60	0.68	2.32
2	120	0.75	2.25
3	180	0.81	2.19
4	240	0.84	2.16
5	300	0.87	2.14
10	600	1.08	1.93
15	900	1.36	1.65
20	1200	1.45	1.55
25	1500	1.55	1.45
30	1800	1.66	1.34
35	2100	1.76	1.24
40	2400	1.85	1.15
45	2700	1.94	1.06
50	3000	2.00	1.00
55	3300	2.06	0.94
60	3600	2.12	0.88
81	4860	2.28	0.72
96	5760	2.40	0.60
111	6660	2.49	0.51
126	7560	2.56	0.44

	Depth of water (mbgl)	Time (s)
Start depth / time for calculations:	75%	1.19      720
End depth for time calculations:	25%	2.40      5728

<b>Infilling 3</b>
<b>Soil Infiltration Rate (f)</b>
<b>3.56E-05</b>



Remarks:



## SOIL INFILTRATION RATE TEST

*Non-compliant to BRE Digest 365 (1991 with amendments in 2003, 2007, 2016) due to duration*

Date	18/01/2023	Pit ID:	S3TP21
Client: Skanska	Job No: 221209	Engineer	LA
Job A46	Time to fill pit: 22mins	Time at start of test: 11:24:00	
Trial pit filled with gravel to prevent instability?:		N	

Pit Dimensions (m)	
Length	2.90
Width	0.70
Depth	3.00
Water level prior to test	0.84

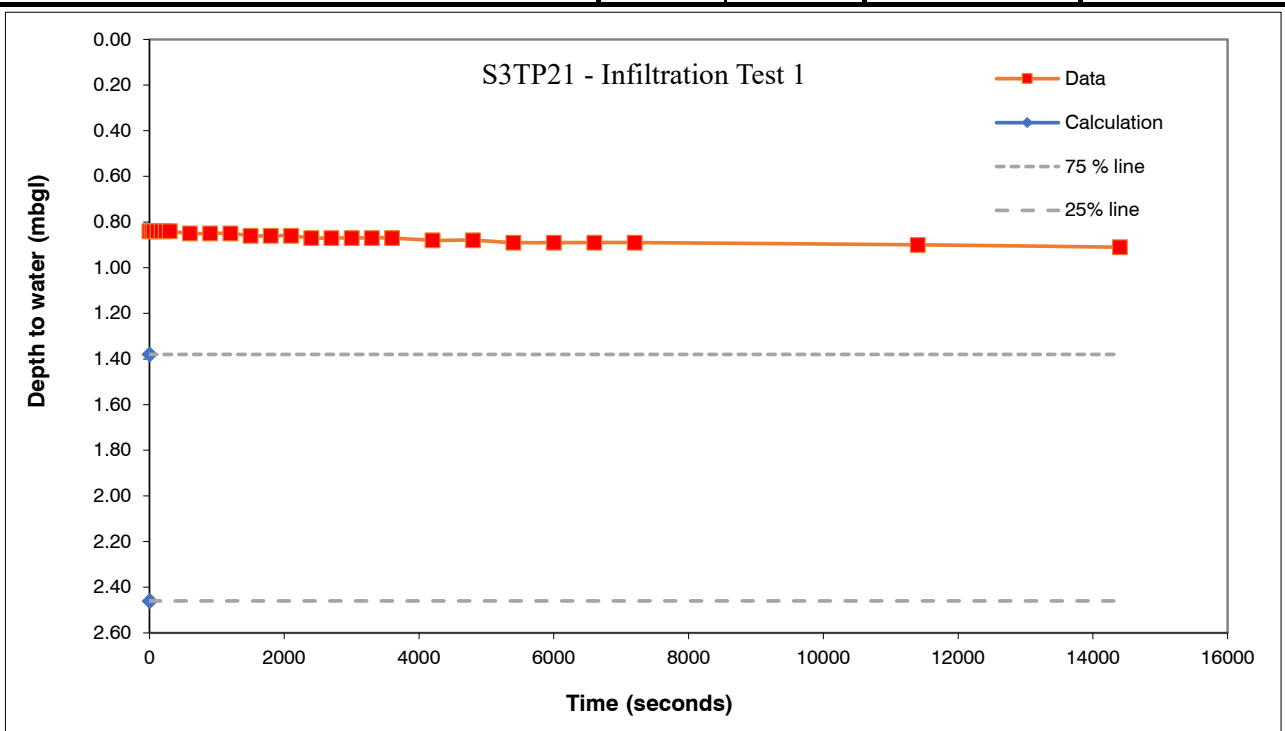
Elapsed Time		Depth recorded on dip meter (m bgl)	Depth of water from base (m)
Minutes	Seconds		
0	0	0.84	2.16
0.5	30	0.84	2.16
1	60	0.84	2.16
2	120	0.84	2.16
3	180	0.84	2.16
4	240	0.84	2.16
5	300	0.84	2.16
10	600	0.85	2.15
15	900	0.85	2.15
20	1200	0.85	2.15
25	1500	0.86	2.14
30	1800	0.86	2.14
35	2100	0.86	2.14
40	2400	0.87	2.13
45	2700	0.87	2.13
50	3000	0.87	2.13
55	3300	0.87	2.13
60	3600	0.87	2.13
70	4200	0.88	2.12
80	4800	0.88	2.12
90	5400	0.89	2.11
100	6000	0.89	2.11
110	6600	0.89	2.11
120	7200	0.89	2.11
190	11400	0.90	2.10
240	14400	0.91	2.09

	Depth of water (mbgl)	Time (s)	
Start depth / time for calculations:	75%	1.38	NA
End depth for time calculations:	25%	2.46	NA

**Infilling 1**

**Soil Infiltration Rate (f)**

Test duration is non-compliant to BRE365



Remarks:



## SOIL INFILTRATION RATE TEST

Non-compliant to BRE Digest 365 (1991 with amendments in 2003, 2007, 2016) due to duration

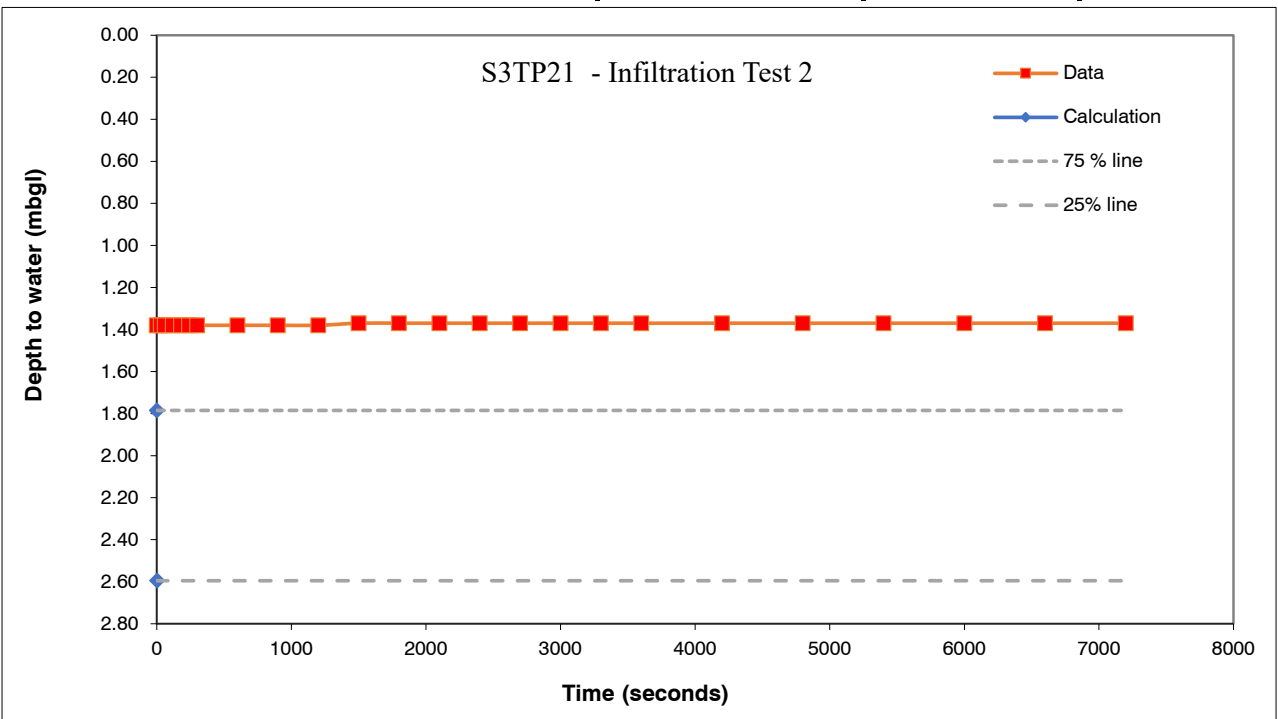
Date	19/01/2023	Pit ID:	S3TP21
Client: Skanska	Job No: 221209	Engineer	LA
Job A46	Time to fill pit: 40 mins	Time at start of test: 13:25:00	
Trial pit filled with gravel to prevent instability?:		N	

Pit Dimensions (m)	
Length	3.30
Width	0.60
Depth	3.00
Water level prior to test	1.38

	Depth of water (mbgl)	Time (s)
Start depth / time for calculations:	75%	1.79
End depth for time calculations:	25%	2.60

<b>Infilling 2</b>
<b>Soil Infiltration Rate (f)</b>
Test duration is non-compliant to BRE365

Elapsed Time		Depth recorded on dip meter (mbgl)	Depth of water from base (m)
Minutes	Seconds		
0	0	1.38	1.62
0.5	30	1.38	1.62
1	60	1.38	1.62
2	120	1.38	1.62
3	180	1.38	1.62
4	240	1.38	1.62
5	300	1.38	1.62
10	600	1.38	1.62
15	900	1.38	1.62
20	1200	1.38	1.62
25	1500	1.37	1.63
30	1800	1.37	1.63
35	2100	1.37	1.63
40	2400	1.37	1.63
45	2700	1.37	1.63
50	3000	1.37	1.63
55	3300	1.37	1.63
60	3600	1.37	1.63
70	4200	1.37	1.63
80	4800	1.37	1.63
90	5400	1.37	1.63
100	6000	1.37	1.63
110	6600	1.37	1.63
120	7200	1.37	1.63



Remarks:



## SOIL INFILTRATION RATE TEST

Non-compliant to BRE Digest 365 (1991 with amendments in 2003, 2007, 2016) due to duration

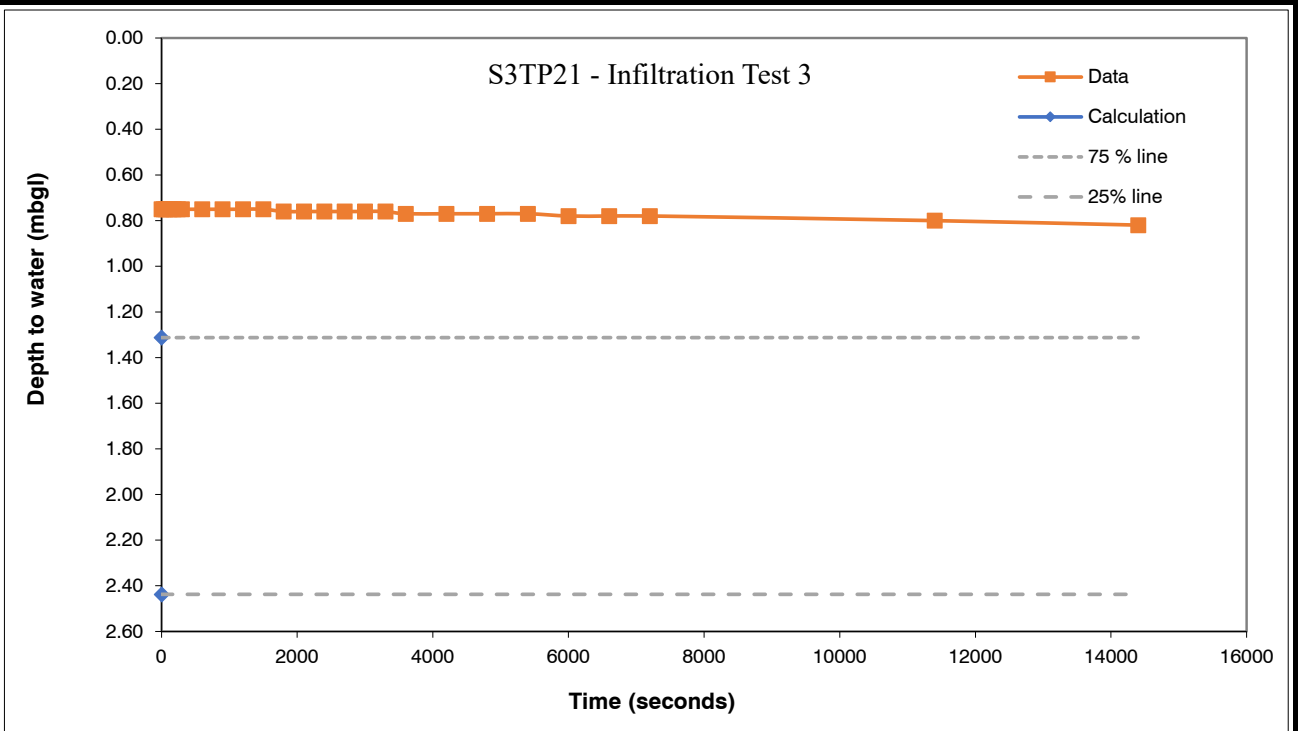
Date	24/01/2023	Pit ID:	S3TP21
Client:	Skanska	Job No:	221209
Job	A46	Time to fill pit:	36 mins
		Time at start of test:	09:50
Trial pit filled with gravel to prevent instability?:		N	

Pit Dimensions (m)	
Length	3.10
Width	0.60
Depth	3.00
Water level prior to test	0.75

	Depth of water (mbgl)	Time (s)	
Start depth / time for calculations:	75%	1.31	NA
End depth for time calculations:	25%	2.44	NA

<b>Infilling 3</b>
<b>Soil Infiltration Rate (f)</b>
Test duration is non-compliant to BRE365

Elapsed Time		Depth recorded on dip meter (mbgl)	Depth of water from base (m)
Minutes	Seconds		
0	0	0.75	2.25
0.5	30	0.75	2.25
1	60	0.75	2.25
2	120	0.75	2.25
3	180	0.75	2.25
4	240	0.75	2.25
5	300	0.75	2.25
10	600	0.75	2.25
15	900	0.75	2.25
20	1200	0.75	2.25
25	1500	0.75	2.25
30	1800	0.76	2.24
35	2100	0.76	2.24
40	2400	0.76	2.24
45	2700	0.76	2.24
50	3000	0.76	2.24
55	3300	0.76	2.24
60	3600	0.77	2.23
70	4200	0.77	2.23
80	4800	0.77	2.23
90	5400	0.77	2.23
100	6000	0.78	2.22
110	6600	0.78	2.22
120	7200	0.78	2.22
190	11400	0.80	2.20
240	14400	0.82	2.18



Remarks :





## SOIL INFILTRATION RATE TEST

*In accordance with BRE Digest 365 (1991 with amendments in 2003, 2007, 2016)*

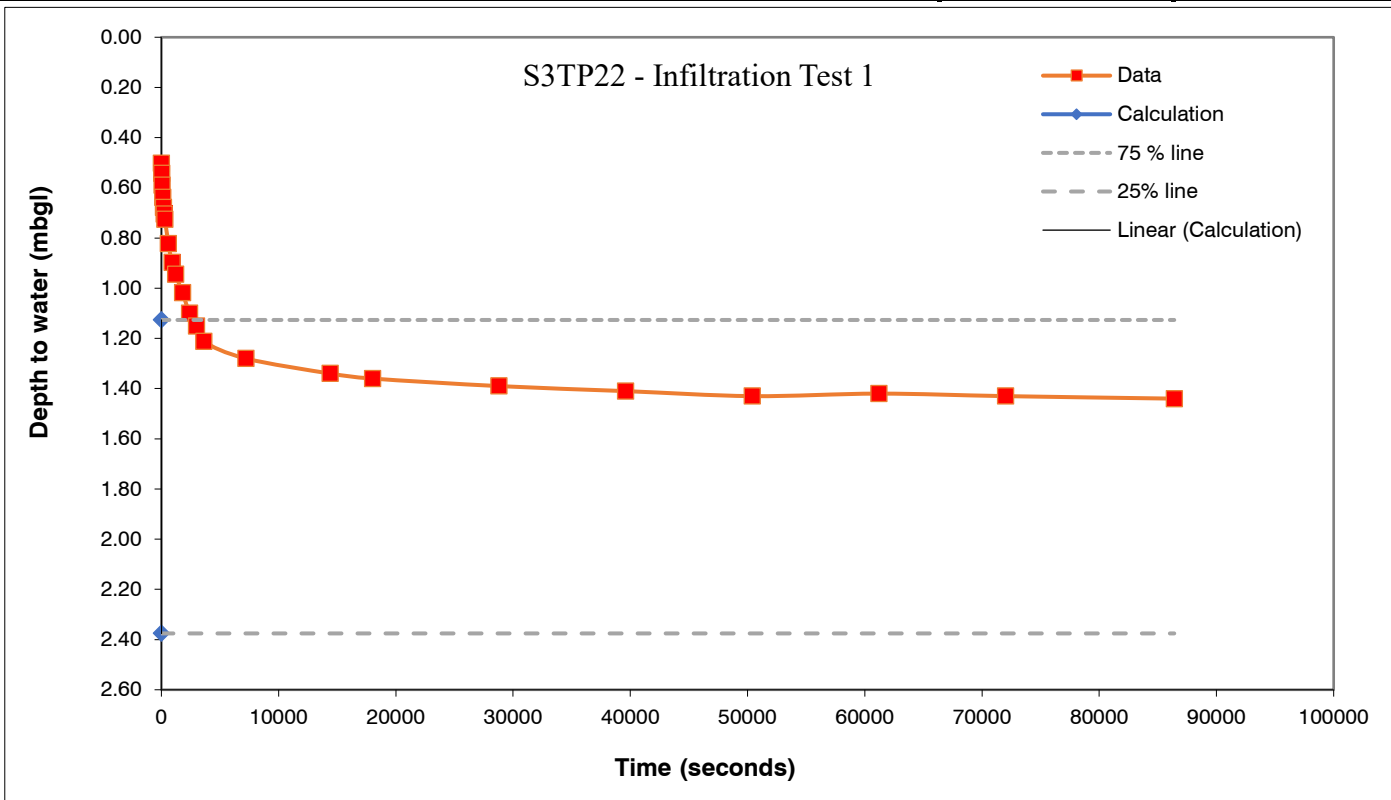
Date	07/02/2023	Pit ID:	S3TP22
Client: Skanska	Job No: G221209	Engineer	PO
Job A46 Newark	Time to fill pit: 00:16:07	Time at start of test	16:02:00
Trial pit filled with gravel to prevent instability?:		YES	Gravel Void Ratio = 0.42

Pit Dimensions (m)	
Length	3.00
Width	1.00
Depth	3.00
Water level prior to test	0.00

Elapsed Time		Depth recorded on dip meter (m bgl)	Depth of water from base (m)
Minutes	Seconds		
0	0	0.50	2.50
0.5	30	0.54	2.46
1	60	0.59	2.41
2	120	0.64	2.36
3	180	0.68	2.32
4	240	0.71	2.30
5	300	0.73	2.28
10	600	0.82	2.18
15	900	0.90	2.10
20	1200	0.95	2.06
30	1800	1.02	1.98
40	2400	1.10	1.90
50	3000	1.15	1.85
60	3600	1.21	1.79
120	7200	1.28	1.72
240	14400	1.34	1.66
300	18000	1.36	1.64
480	28800	1.39	1.61
660	39600	1.41	1.59
840	50400	1.43	1.57
1020	61200	1.42	1.58
1200	72000	1.43	1.57
1440	86400	1.44	1.56

	Depth of water (mbgl)	Time (s)
Start depth / time for calculations:	75%	1.13     2712
End depth for time calculations:	25%	2.38     NA

<b>Infilling 1</b>
<b>Soil Infiltration Rate (f)</b>
<b>NA</b>



Remarks:            Insufficient drain over 24hrs to infer (f).



## SOIL INFILTRATION RATE TEST

*In accordance with BRE Digest 365 (1991 with amendments in 2003, 2007 and 2016)*

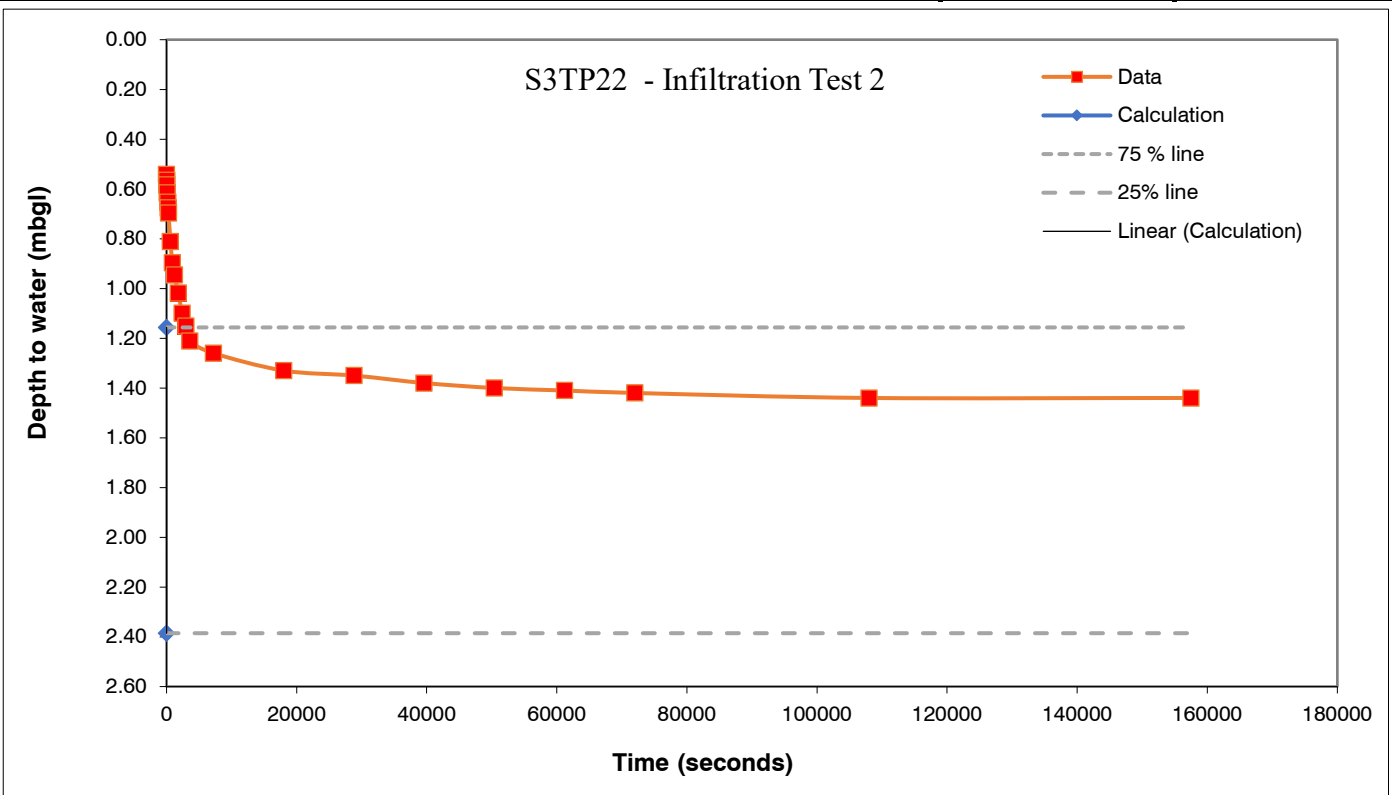
Date:	08/02/2023	Pit ID:	S2TP22
Client:	Skanska	Job No:	G221209
Job:	A46 Newark	Engineer:	PO
Time to fill pit:		00:09:11	Time at start of test 16:09:00
Trial pit filled with gravel to prevent instability?:		YES	Gravel Void Ratio = 0.42

Pit Dimensions (m)	
Length	3.00
Width	1.00
Depth	3.00
Water level prior to test	0.00

Elapsed Time		Depth recorded on dip meter (mbgl)	Depth of water from base (m)
Minutes	Seconds		
0	0	0.54	2.46
0.5	30	0.57	2.44
1	60	0.58	2.42
2	120	0.62	2.39
3	180	0.65	2.35
4	240	0.68	2.32
5	300	0.70	2.30
10	600	0.81	2.19
15	900	0.90	2.10
20	1200	0.95	2.06
30	1800	1.02	1.98
40	2400	1.10	1.90
50	3000	1.15	1.85
60	3600	1.21	1.79
120	7200	1.26	1.74
300	18000	1.33	1.67
480	28800	1.35	1.65
660	39600	1.38	1.62
840	50400	1.40	1.60
1020	61200	1.41	1.59
1200	72000	1.42	1.58
1800	108000	1.44	1.56
2625	157500	1.44	1.56

	Depth of water (mbgl)	Time (s)
Start depth / time for calculations:	75%	1.16
End depth for time calculations:	25%	2.39
		3054
		NA

<b>Infilling 2</b>
<b>Soil Infiltration Rate (f)</b>
<b>NA</b>



Remarks: Insufficient drain over 24hrs to infer (f).



## SOIL INFILTRATION RATE TEST

*In accordance with BRE Digest 365 (1991 with amendments in 2003, 2007 and 2016)*

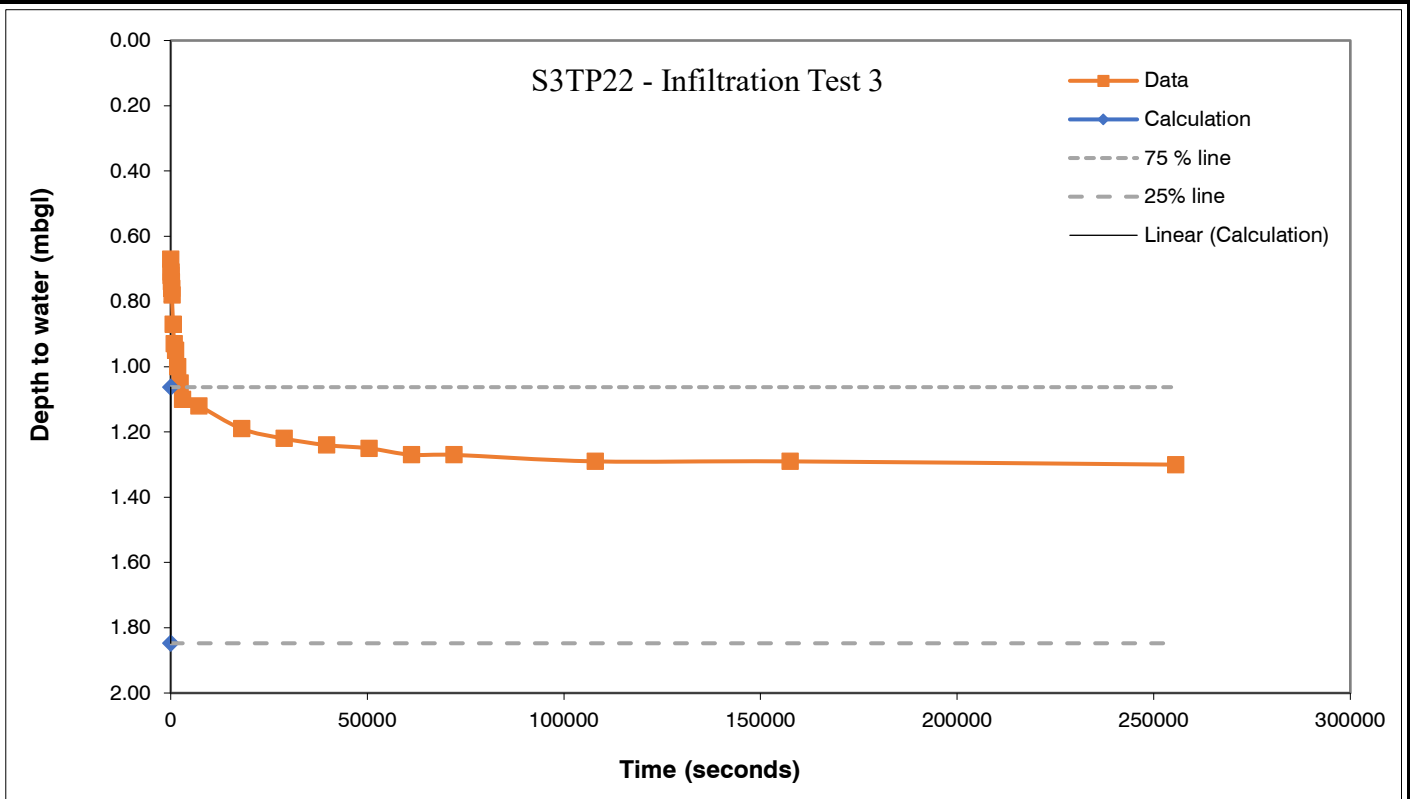
Date	10/02/2023	Pit ID:	S3TP22
Client: Skanska	Job No: G221209	Engineer	AH
Job A46 Newark	Time to fill pit: 00:30:00	Time at start of test	12:35:00
Trial pit filled with gravel to prevent instability?:		YES	Gravel Void Ratio = 0.42

Pit Dimensions (m)	
Length	3.00
Width	1.00
Depth	2.24
Water level prior to test	2.20

	Depth of water (mbgl)	Time (s)
Start depth / time for calculations:	75%	1.06     2550
End depth for time calculations:	25%	1.85     NA

<b>Infilling 3</b>
<b>Soil Infiltration Rate (f)</b>
<b>NA</b>

Elapsed Time		Depth recorded on dip meter (mbgl)	Depth of water from base (m)
Minutes	Seconds		
0	0	0.67	1.57
1	60	0.71	1.53
2	120	0.72	1.52
3	180	0.74	1.50
4	240	0.76	1.48
5	300	0.78	1.46
10	600	0.87	1.37
15	900	0.93	1.31
20	1200	0.95	1.29
30	1800	1.00	1.24
40	2400	1.05	1.19
50	3000	1.10	1.14
120	7200	1.12	1.12
300	18000	1.19	1.05
480	28800	1.22	1.02
660	39600	1.24	1.00
840	50400	1.25	0.99
1020	61200	1.27	0.97
1200	72000	1.27	0.97
1800	108000	1.29	0.95
2625	157500	1.29	0.95
4260	255600	1.30	0.94



Remarks:            Insufficient drain over 24hrs to infer (f).



## SOIL INFILTRATION RATE TEST

*In accordance with BRE Digest 365 (1991 with amendments in 2003, 2007, 2016)*

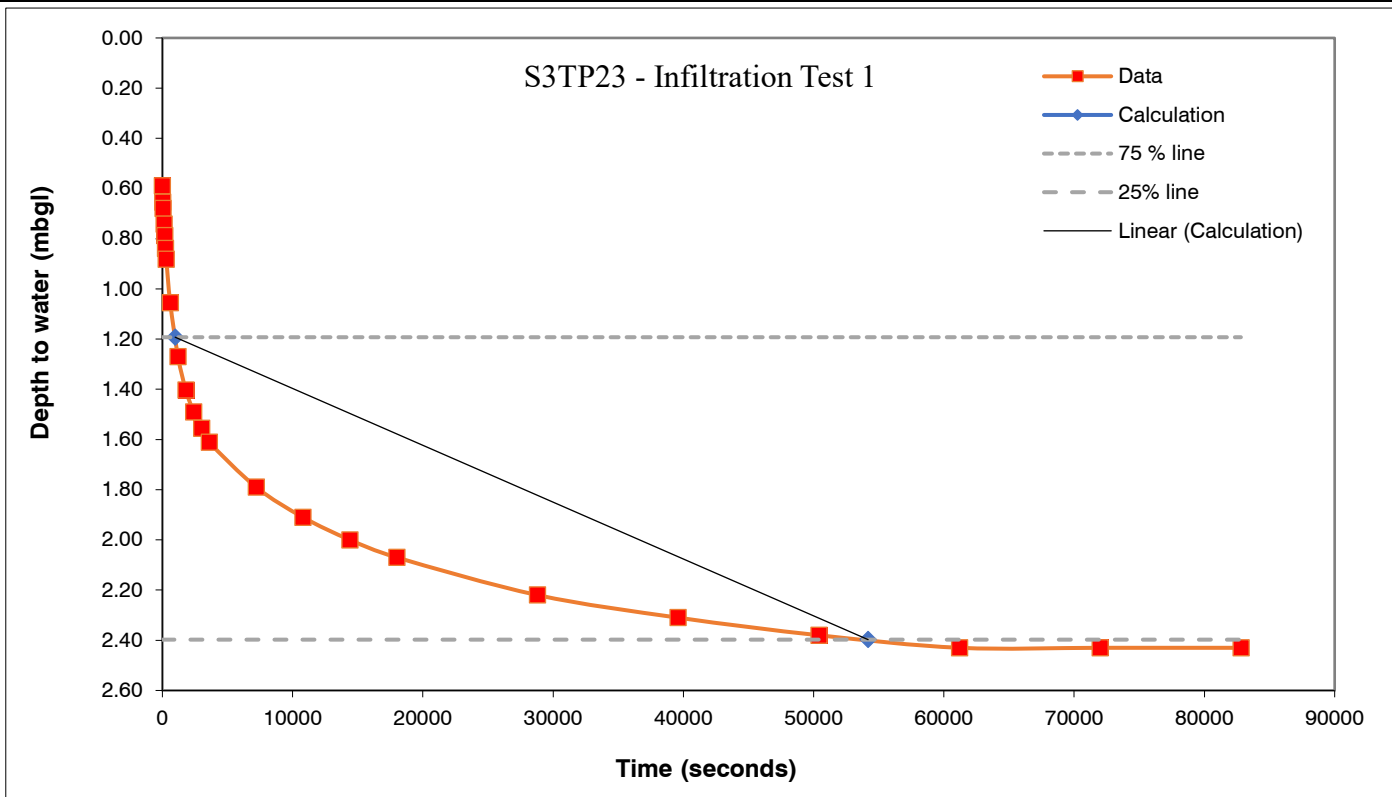
Date	09/02/2023	Pit ID:	S3TP23
Client: Skanska	Job No: G221209	Engineer	PO
Job A46 Newark	Time to fill pit: 00:15:38	Time at start of test 09:59:00	
Trial pit filled with gravel to prevent instability?:		YES	Gravel Void Ratio = 0.42

Pit Dimensions (m)	
Length	2.30
Width	0.80
Depth	3.00
Water level prior to test	0.00

	Depth of water (mbgl)	Time (s)
Start depth / time for calculations:	75%	1.19      984
End depth for time calculations:	25%	2.40      54180

<b>Infilling 1</b>
<b>Soil Infiltration Rate (f)</b>
<b>1.88E-06</b>

Elapsed Time		Depth recorded on dip meter (m bgl)	Depth of water from base (m)
Minutes	Seconds		
0	0	0.59	2.41
0.5	30	0.66	2.35
1	60	0.68	2.32
2	120	0.74	2.26
3	180	0.79	2.21
4	240	0.84	2.16
5	300	0.88	2.12
10	600	1.06	1.95
20	1200	1.27	1.73
30	1800	1.40	1.60
40	2400	1.49	1.51
50	3000	1.56	1.44
60	3600	1.61	1.39
120	7200	1.79	1.21
180	10800	1.91	1.09
240	14400	2.00	1.00
300	18000	2.07	0.93
480	28800	2.22	0.78
660	39600	2.31	0.69
840	50400	2.38	0.62
1020	61200	2.43	0.57
1200	72000	2.43	0.57
1380	82800	2.43	0.57



Remarks:



## SOIL INFILTRATION RATE TEST

*In accordance with BRE Digest 365 (1991 with amendments in 2003, 2007 and 2016)*

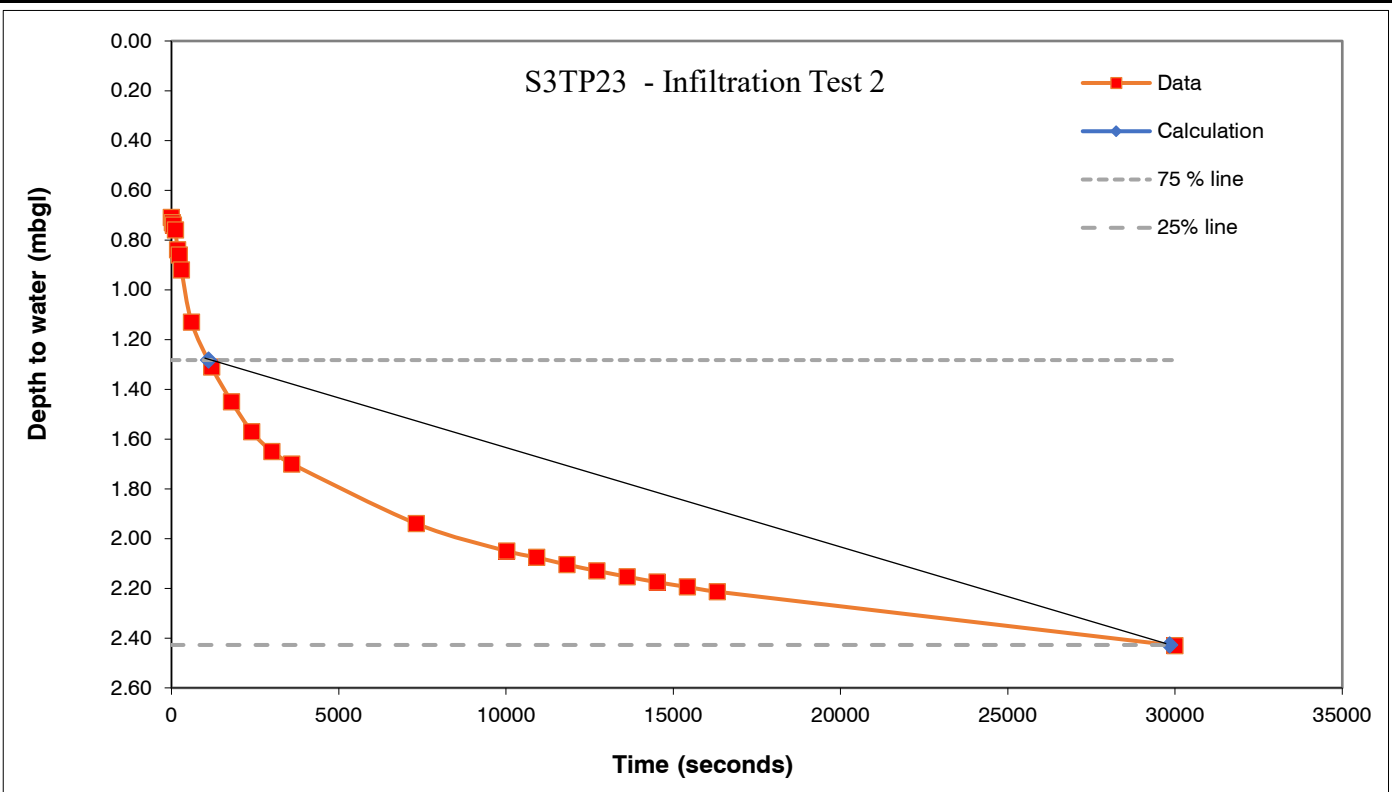
Date:	10/02/2023	Pit ID:	S3TP23
Client:	Skanska	Job No:	G221209
Job:	A46 Newark	Engineer:	AH
Time to fill pit:		00:16:15	Time at start of test 09:28:00
Trial pit filled with gravel to prevent instability?:		YES	Gravel Void Ratio = 0.42

Pit Dimensions (m)	
Length	2.30
Width	0.80
Depth	3.00
Water level prior to test	0.00

Elapsed Time		Depth recorded on dip meter (mbgl)	Depth of water from base (m)
Minutes	Seconds		
0	0	0.71	2.29
0.5	30	0.73	2.27
1	60	0.74	2.26
2	120	0.76	2.24
3	180	0.84	2.16
4	240	0.86	2.14
5	300	0.92	2.08
10	600	1.13	1.87
20	1200	1.31	1.69
30	1800	1.45	1.55
40	2400	1.57	1.43
50	3000	1.65	1.35
60	3600	1.70	1.30
122	7320	1.94	1.06
167	10020	2.05	0.95
182	10920	2.08	0.92
197	11820	2.10	0.90
212	12720	2.13	0.87
227	13620	2.15	0.85
242	14520	2.18	0.82
257	15420	2.19	0.81
272	16320	2.21	0.79
500	30000	2.43	0.57

	Depth of water (mbgl)	Time (s)
Start depth / time for calculations:	75%	1.28
End depth for time calculations:	25%	2.43
		1108
		29842

<b>Infilling 2</b>
<b>Soil Infiltration Rate (f)</b>
<b>3.44504E-06</b>



Remarks: Point 500Min Extrapolated due to working time restrictions.



## SOIL INFILTRATION RATE TEST

*In accordance with BRE Digest 365 (1991 with amendments in 2003, 2007 and 2016)*

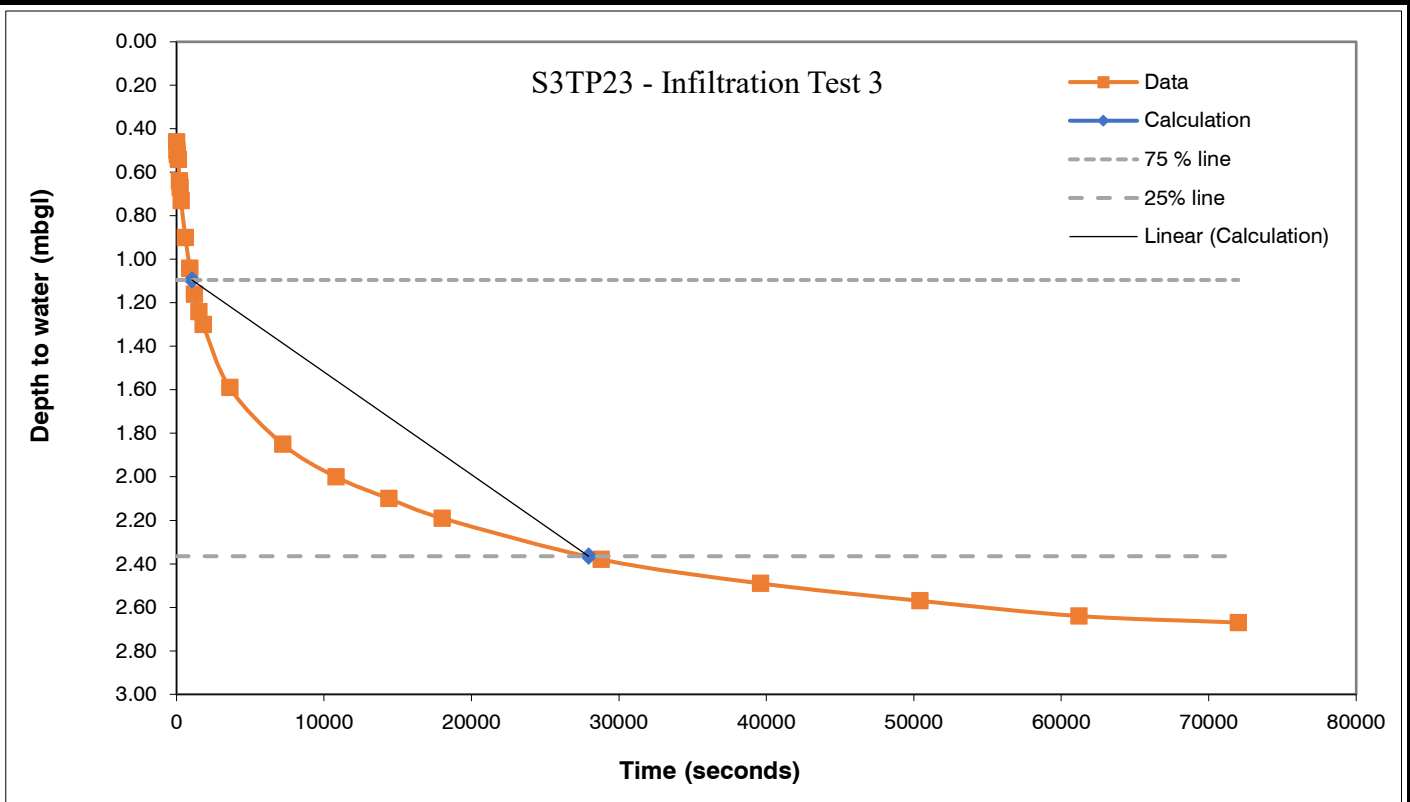
Date	10/02/2023	Pit ID:	S3TP23
Client: Skanska	Job No: G221209	Engineer	AH
Job A46 Newark	Time to fill pit: 00:15:23	Time at start of test	14:15:00
Trial pit filled with gravel to prevent instability?: YES		Gravel Void Ratio = 0.42	

Pit Dimensions (m)	
Length	2.30
Width	0.80
Depth	3.00
Water level prior to test	0.00

Elapsed Time		Depth recorded on dip meter (mbgl)	Depth of water from base (m)
Minutes	Seconds		
0	0	0.46	2.54
0.5	30	0.50	2.50
1	60	0.52	2.48
2	120	0.54	2.46
3	180	0.64	2.36
4	240	0.67	2.33
5	300	0.73	2.27
10	600	0.90	2.10
15	900	1.04	1.96
20	1200	1.16	1.84
25	1500	1.24	1.76
30	1800	1.30	1.70
60	3600	1.59	1.41
120	7200	1.85	1.15
180	10800	2.00	1.00
240	14400	2.10	0.90
300	18000	2.19	0.81
480	28800	2.38	0.62
660	39600	2.49	0.51
840	50400	2.57	0.43
1020	61200	2.64	0.36
1200	72000	2.67	0.33

	Depth of water (mbgl)	Time (s)
Start depth / time for calculations:	75%	1.10    1038
End depth for time calculations:	25%	2.37    27947

<b>Infilling 3</b>
<b>Soil Infiltration Rate (f)</b>
<b>3.75E-06</b>



Remarks:



## SOIL INFILTRATION RATE TEST

*Non-compliant to BRE Digest 365 (1991 with amendments in 2003, 2007, 2016) due to duration*

Date	13/01/2023	Pit ID:	S3TP24
Client: Skanska	Job No: 221209	Engineer	LA
Job A46	Time to fill pit: 36mins	Time at start of test:	12:00:00
Trial pit filled with gravel to prevent instability?:		N	

Pit Dimensions (m)	
Length	4.20
Width	0.80
Depth	2.90
Water level prior to test	2.20

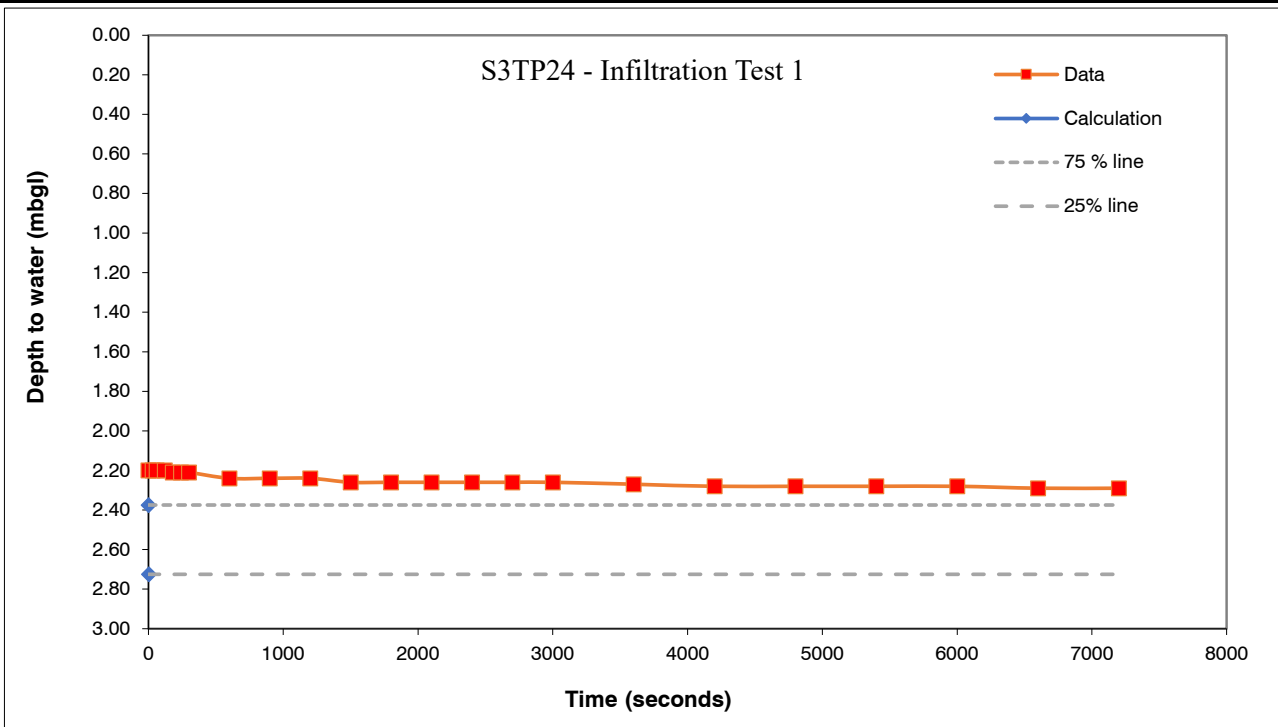
Elapsed Time		Depth recorded on dip meter (m bgl)	Depth of water from base (m)
Minutes	Seconds		
0	0	2.20	0.70
0.5	30	2.20	0.70
1	60	2.20	0.70
2	120	2.20	0.70
3	180	2.21	0.69
4	240	2.21	0.69
5	300	2.21	0.69
10	600	2.24	0.66
15	900	2.24	0.66
20	1200	2.24	0.66
25	1500	2.26	0.64
30	1800	2.26	0.64
35	2100	2.26	0.64
40	2400	2.26	0.64
45	2700	2.26	0.64
50	3000	2.26	0.64
60	3600	2.27	0.63
70	4200	2.28	0.62
80	4800	2.28	0.62
90	5400	2.28	0.62
100	6000	2.28	0.62
110	6600	2.29	0.61
120	7200	2.29	0.61

	Depth of water (mbgl)	Time (s)	
Start depth / time for calculations:	75%	2.38	NA
End depth for time calculations:	25%	2.73	NA

**Infilling 1**

**Soil Infiltration Rate (f)**

Test duration is non-compliant to BRE365



Remarks:



## SOIL INFILTRATION RATE TEST

Non-compliant to BRE Digest 365 (1991 with amendments in 2003, 2007, 2016) due to duration

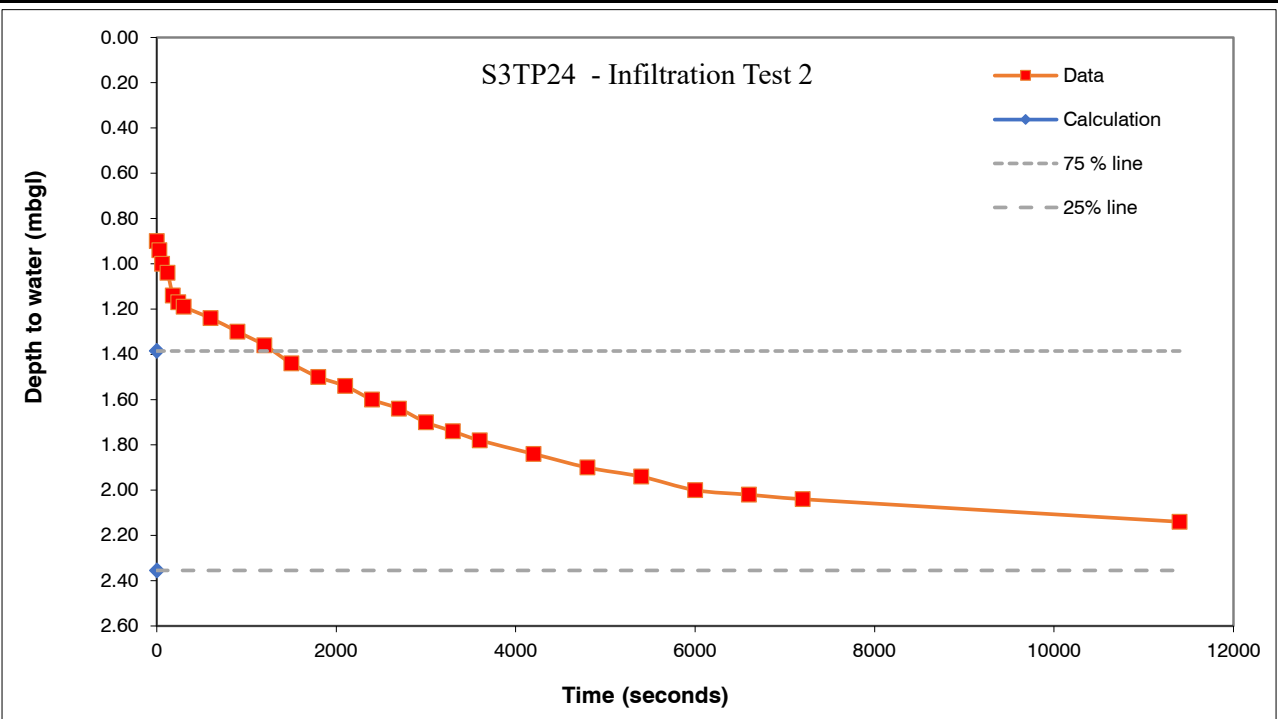
Date	16/01/2023	Pit ID:	STP24
Client:	Skanska	Job No:	221209
Job	A46	Time to fill pit:	39 mins
		Time at start of test:	11:36:00
Trial pit filled with gravel to prevent instability?:		N	

Pit Dimensions (m)	
Length	3.10
Width	0.70
Depth	2.84
Water level prior to test	0.90

	Depth of water (mbgl)	Time (s)
Start depth / time for calculations:	75%	1.39
End depth for time calculations:	25%	2.36

<b>Infilling 2</b>
<b>Soil Infiltration Rate (f)</b>
Test duration is non-compliant to BRE365

Elapsed Time		Depth recorded on dip meter (mbgl)	Depth of water from base (m)
Minutes	Seconds		
0	0	0.90	1.94
0.5	30	0.94	1.90
1	60	1.00	1.84
2	120	1.04	1.80
3	180	1.14	1.70
4	240	1.17	1.67
5	300	1.19	1.65
10	600	1.24	1.60
15	900	1.30	1.54
20	1200	1.36	1.48
25	1500	1.44	1.40
30	1800	1.50	1.34
35	2100	1.54	1.30
40	2400	1.60	1.24
45	2700	1.64	1.20
50	3000	1.70	1.14
55	3300	1.74	1.10
60	3600	1.78	1.06
70	4200	1.84	1.00
80	4800	1.90	0.94
90	5400	1.94	0.90
100	6000	2.00	0.84
110	6600	2.02	0.82
120	7200	2.04	0.80
190	11400	2.14	0.70



Remarks:





## SOIL INFILTRATION RATE TEST

Non-compliant to BRE Digest 365 (1991 with amendments in 2003, 2007, 2016) due to duration

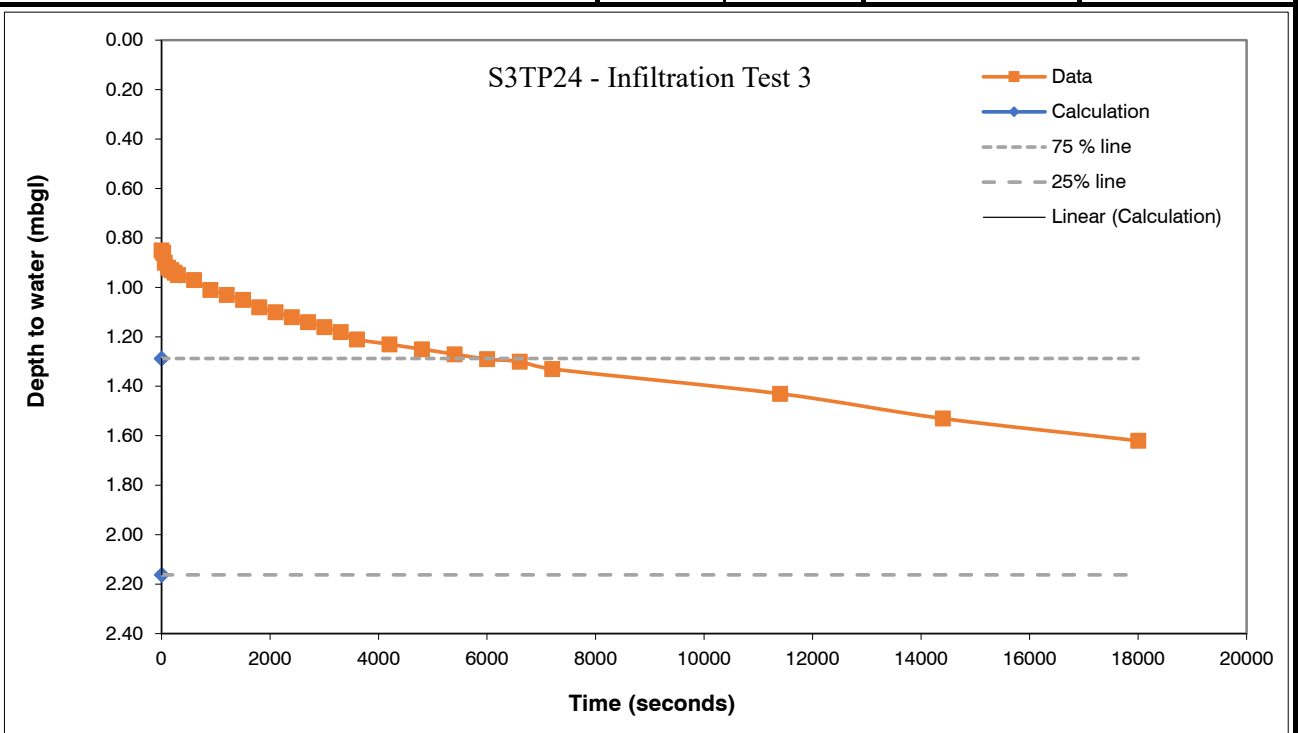
Date	17/01/2023	Pit ID:	STP24
Client:	Skanska	Job No:	221209
Job	A46	Time to fill pit:	26mins
		Time at start of test:	10:36
Trial pit filled with gravel to prevent instability?:		N	

Pit Dimensions (m)	
Length	3.30
Width	0.50
Depth	2.60
Water level prior to test	0.85

	Depth of water (mbgl)	Time (s)
Start depth / time for calculations:	75%	1.29
End depth for time calculations:	25%	2.16
		5925
		NA

<b>Infilling 3</b>
<b>Soil Infiltration Rate (f)</b>
Test duration is non-compliant to BRE365

Elapsed Time		Depth recorded on dip meter (mbgl)	Depth of water from base (m)
Minutes	Seconds		
0	0	0.85	1.75
0.5	30	0.86	1.74
1	60	0.90	1.70
2	120	0.92	1.68
3	180	0.93	1.67
4	240	0.94	1.66
5	300	0.95	1.65
10	600	0.97	1.63
15	900	1.01	1.59
20	1200	1.03	1.57
25	1500	1.05	1.55
30	1800	1.08	1.52
35	2100	1.10	1.50
40	2400	1.12	1.48
45	2700	1.14	1.46
50	3000	1.16	1.44
55	3300	1.18	1.42
60	3600	1.21	1.39
70	4200	1.23	1.37
80	4800	1.25	1.35
90	5400	1.27	1.33
100	6000	1.29	1.31
110	6600	1.30	1.30
120	7200	1.33	1.27
190	11400	1.43	1.17
240	14400	1.53	1.07
300	18000	1.62	0.98



Remarks: Side wall collapse from 2.6m to 2.2m at 90 minutes



### SOIL INFILTRATION RATE TEST

In accordance with BRE Digest 365 (1991 with amendments in 2003, 2007, 2016)

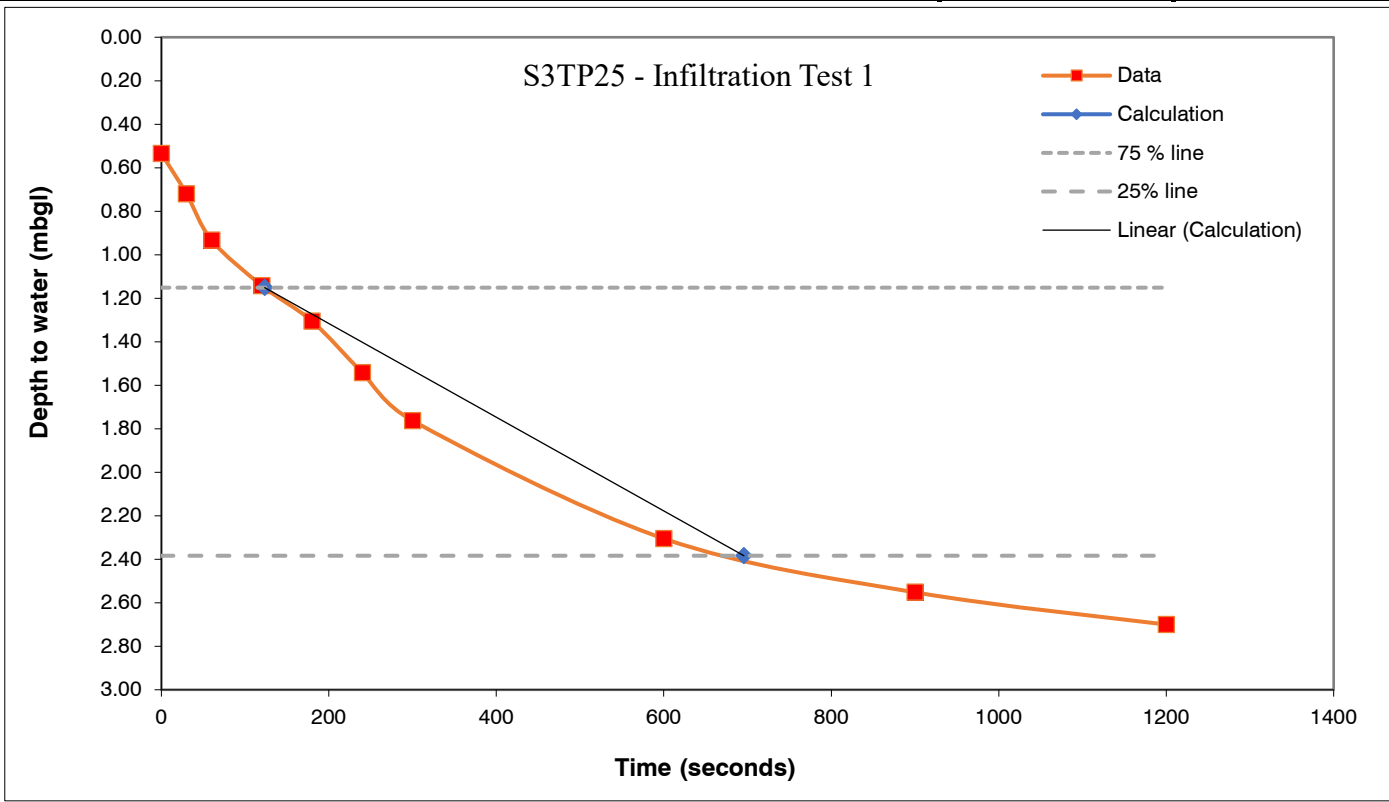
Date	08/02/2023	Pit ID:	S3TP25
Client: Skanska	Job No: G221209	Engineer	PO
Job A46 Newark	Time to fill pit: 00:19:35	Time at start of test	14:58:00
Trial pit filled with gravel to prevent instability?: YES		Gravel Void Ratio = 0.42	

Pit Dimensions (m)	
Length	2.90
Width	0.50
Depth	3.00
Water level prior to test	0.00

Elapsed Time		Depth recorded on dip meter (m bgl)	Depth of water from base (m)
Minutes	Seconds		
0	0	0.54	2.47
0.5	30	0.72	2.28
1	60	0.93	2.07
2	120	1.14	1.86
3	180	1.31	1.69
4	240	1.54	1.46
5	300	1.76	1.24
10	600	2.31	0.70
15	900	2.55	0.45
20	1200	2.70	0.30

	Depth of water (mbgl)	Time (s)
Start depth / time for calculations:	75%	1.15     123
End depth for time calculations:	25%	2.38     696

<b>Infilling 1</b>
<b>Soil Infiltration Rate (f)</b>
<b>1.33E-04</b>



Remarks:



# SOIL INFILTRATION RATE TEST

In accordance with BRE Digest 365 (1991 with amendments in 2003, 2007 and 2016)

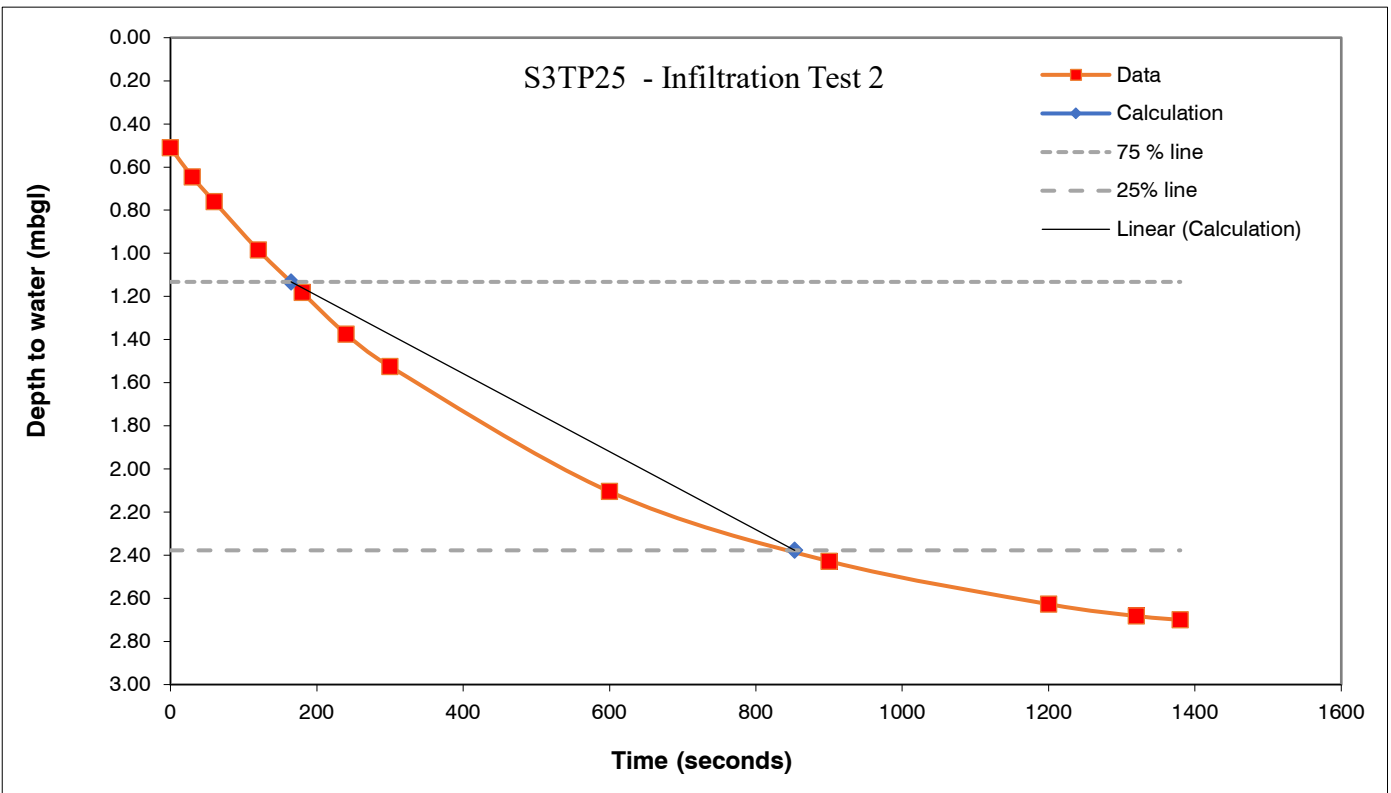
Date	09/02/2023	Pit ID:	S3TP25
Client:	Skanska	Job No:	G221209
Job	A46 Newark	Time to fill pit:	00:18:16
Trial pit filled with gravel to prevent instability?:		YES	Gravel Void Ratio = 0.42
Engineer		PO	
Time at start of test		11:35:00	

Pit Dimensions (m)	
Length	2.90
Width	0.50
Depth	3.00
Water level prior to test	0.00

Elapsed Time		Depth recorded on dip meter (mbgl)	Depth of water from base (m)
Minutes	Seconds		
0	0	0.51	2.49
0.5	30	0.65	2.35
1	60	0.76	2.24
2	120	0.99	2.02
3	180	1.18	1.82
4	240	1.38	1.63
5	300	1.53	1.48
10	600	2.11	0.90
15	900	2.43	0.57
20	1200	2.63	0.37
22	1320	2.68	0.32
23	1380	2.70	0.30

	Depth of water (mbgl)	Time (s)
Start depth / time for calculations:	75%	1.13
End depth for time calculations:	25%	2.38

<b>Infilling 2</b>
<b>Soil Infiltration Rate (f)</b>
<b>1.11E-04</b>



Remarks:

**SOIL INFILTRATION RATE TEST**

*In accordance with BRE Digest 365 (1991 with amendments in 2003, 2007 and 2016)*

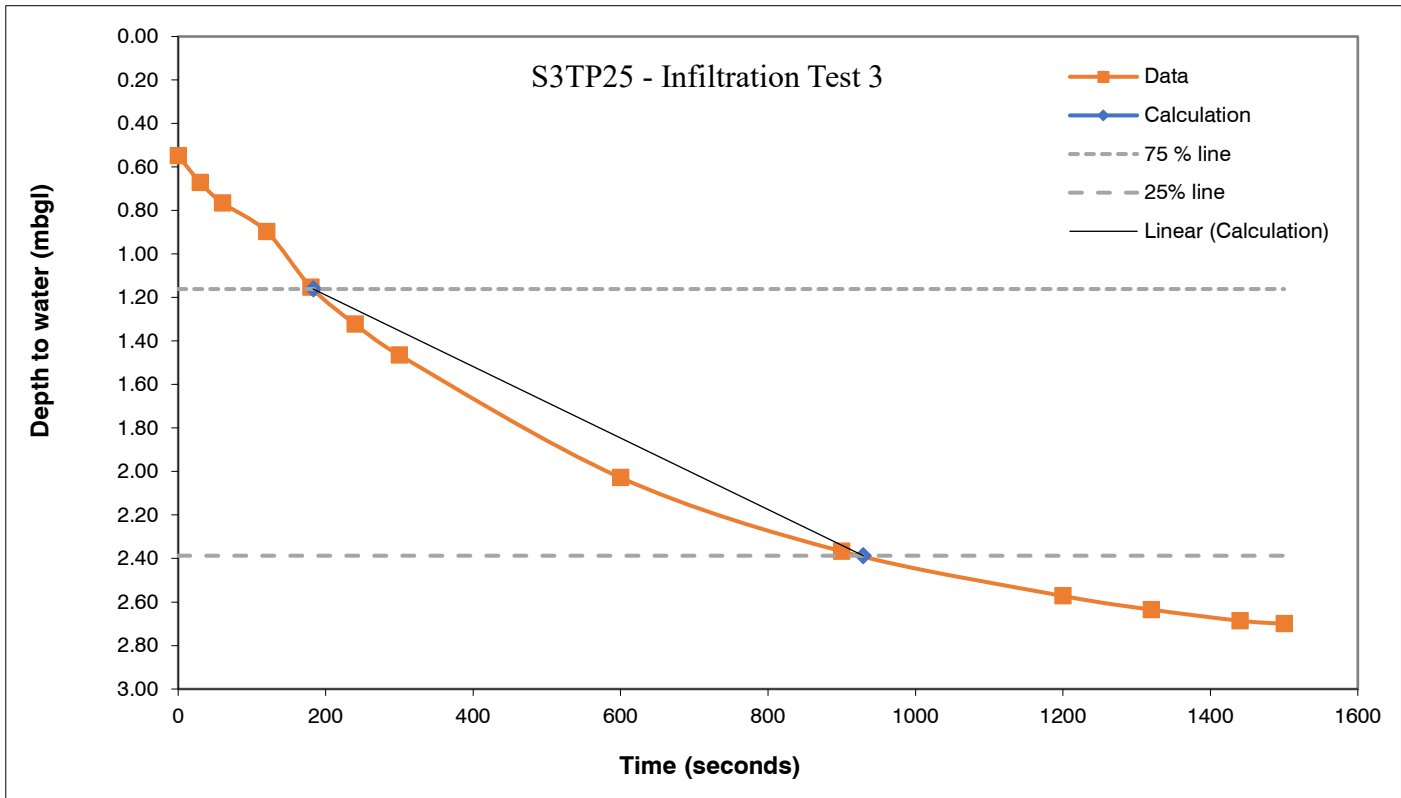
Date	09/02/2023	Pit ID:	S3TP25
Client: Skanska	Job No: G221209	Engineer	PO
Job A46 Newark	Time to fill pit: 00:16:03	Time at start of test	12:39:00
Trial pit filled with gravel to prevent instability?:		YES	Gravel Void Ratio = 0.42

Pit Dimensions (m)	
Length	2.90
Width	0.50
Depth	3.00
Water level prior to test	0.00

Elapsed Time		Depth recorded on dip meter (mbgl)	Depth of water from base (m)
Minutes	Seconds		
0	0	0.55	2.45
0.5	30	0.67	2.33
1	60	0.77	2.24
2	120	0.90	2.10
3	180	1.15	1.85
4	240	1.32	1.68
5	300	1.47	1.54
10	600	2.03	0.97
15	900	2.37	0.63
20	1200	2.57	0.43
22	1320	2.64	0.37
24	1440	2.69	0.31
25	1500	2.70	0.30

	Depth of water (mbgl)	Time (s)
Start depth / time for calculations:	75%	1.16     183
End depth for time calculations:	25%	2.39     929

<b>Infilling 3</b>
<b>Soil Infiltration Rate (f)</b>
<b>1.02E-04</b>



Remarks:



# SOIL INFILTRATION RATE TEST

In accordance with BRE Digest 365 (1991 with amendments in 2003, 2007, 2016)

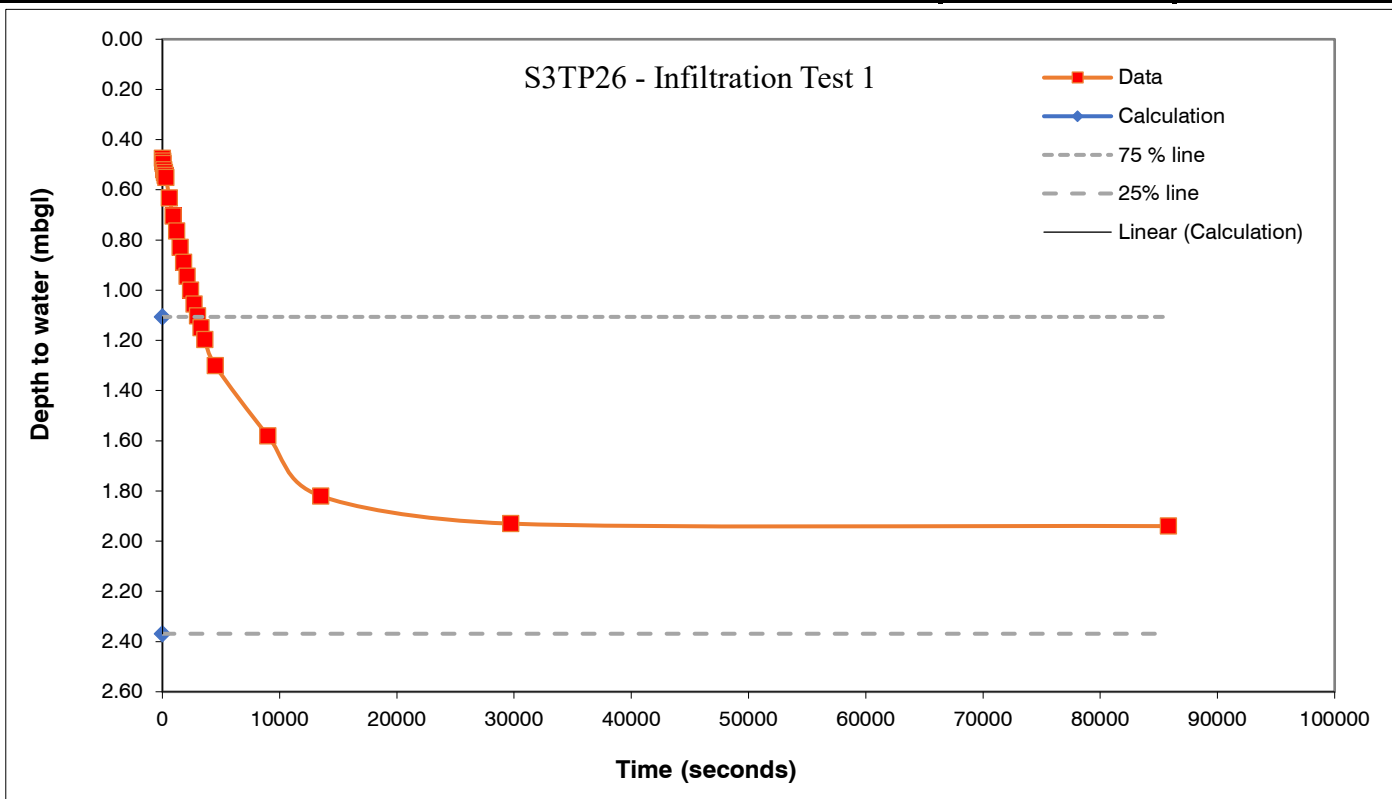
Date	08/02/2023	Pit ID:	S3TP26
Client:	Skanska	Job No:	G221209
Job	A46 Newark	Time to fill pit:	00:06:02
		Time at start of test	13:26:00
Trial pit filled with gravel to prevent instability?:		YES	Gravel Void Ratio = 0.42

Pit Dimensions (m)	
Length	3.20
Width	0.55
Depth	3.00
Water level prior to test	0.00

	Depth of water (mbgl)	Time (s)
Start depth / time for calculations:	75%	1.11
End depth for time calculations:	25%	2.37
		3027
		NA

<b>Infilling 1</b>
<b>Soil Infiltration Rate (f)</b>
<b>NA</b>

Elapsed Time		Depth recorded on dip meter (m bgl)	Depth of water from base (m)
Minutes	Seconds		
0	0	0.48	2.53
0.5	30	0.49	2.51
1	60	0.50	2.51
2	120	0.52	2.48
3	180	0.53	2.47
4	240	0.54	2.46
5	300	0.55	2.45
10	600	0.63	2.37
15	900	0.70	2.30
20	1200	0.76	2.24
25	1500	0.83	2.17
30	1800	0.89	2.11
35	2100	0.95	2.06
40	2400	1.00	2.00
45	2700	1.06	1.95
50	3000	1.10	1.90
55	3300	1.15	1.85
60	3600	1.20	1.80
75	4500	1.30	1.70
150	9000	1.58	1.42
225	13500	1.82	1.18
495	29700	1.93	1.07
1430	85800	1.94	1.06



Remarks: Insufficient drain over 24hrs to infer (f).



## SOIL INFILTRATION RATE TEST

*In accordance with BRE Digest 365 (1991 with amendments in 2003, 2007 and 2016)*

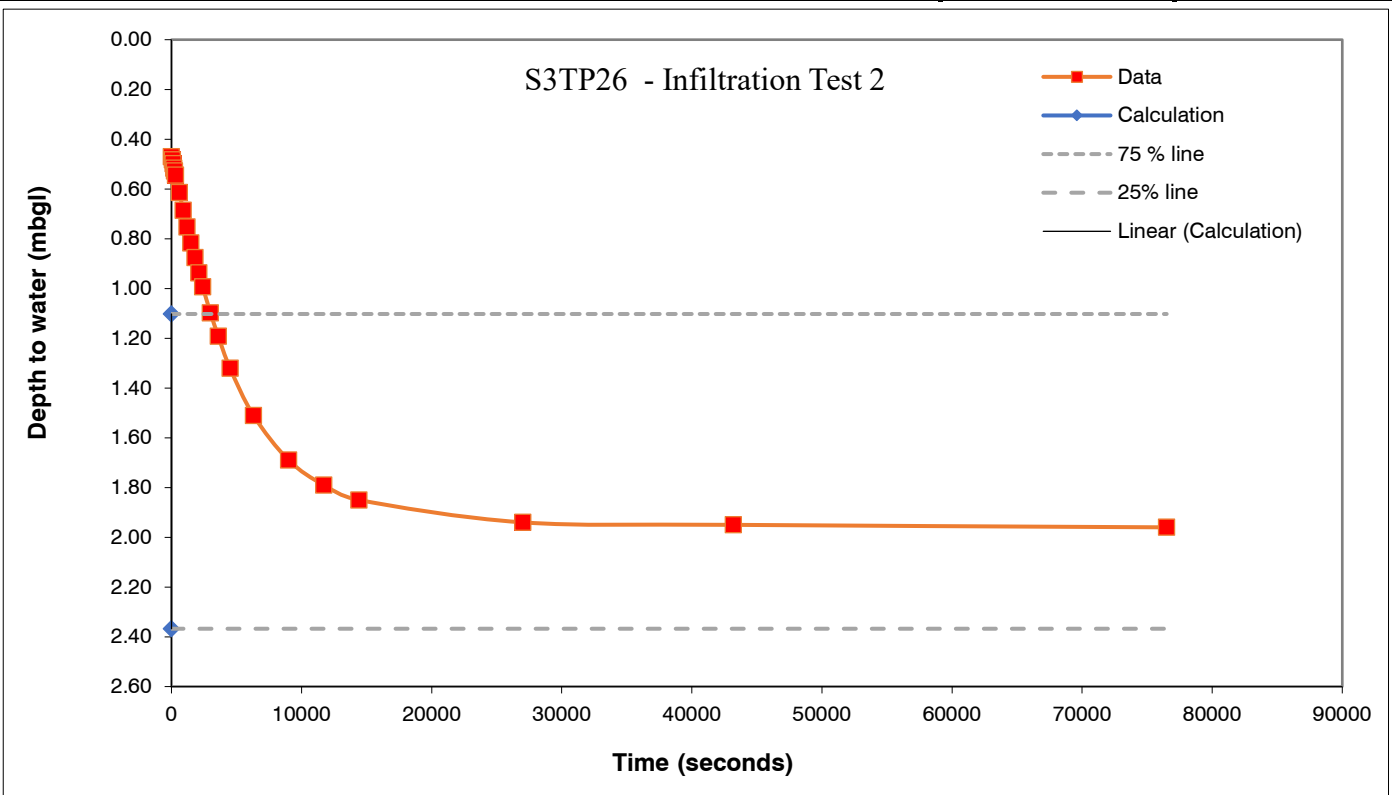
Date:	09/02/2023	Pit ID:	S2TP26
Client:	Skanska	Job No:	G221209
Job:	A46 Newark	Engineer:	PO
Time to fill pit:		00:05:54	Time at start of test 13:26:00
Trial pit filled with gravel to prevent instability?:		YES	Gravel Void Ratio = 0.42

Pit Dimensions (m)	
Length	3.20
Width	0.55
Depth	3.00
Water level prior to test	0.00

	Depth of water (mbgl)	Time (s)
Start depth / time for calculations:	75%	1.10     3029
End depth for time calculations:	25%	2.37     NA

<b>Infilling 2</b>
<b>Soil Infiltration Rate (f)</b>
<b>NA</b>

Elapsed Time		Depth recorded on dip meter (mbgl)	Depth of water from base (m)
Minutes	Seconds		
0	0	0.47	2.53
1	60	0.48	2.52
2	120	0.50	2.50
3	180	0.52	2.48
4	240	0.53	2.47
5	300	0.55	2.46
10	600	0.61	2.39
15	900	0.69	2.31
20	1200	0.75	2.25
25	1500	0.82	2.18
30	1800	0.88	2.12
35	2100	0.94	2.06
40	2400	0.99	2.01
50	3000	1.10	1.90
60	3600	1.19	1.81
75	4500	1.32	1.68
105	6300	1.51	1.49
150	9000	1.69	1.31
195	11700	1.79	1.21
240	14400	1.85	1.15
450	27000	1.94	1.06
720	43200	1.95	1.05
1275	76500	1.96	1.04



Remarks:            Insufficient drain over 21hrs to infer (f).



## SOIL INFILTRATION RATE TEST

*In accordance with BRE Digest 365 (1991 with amendments in 2003, 2007 and 2016)*

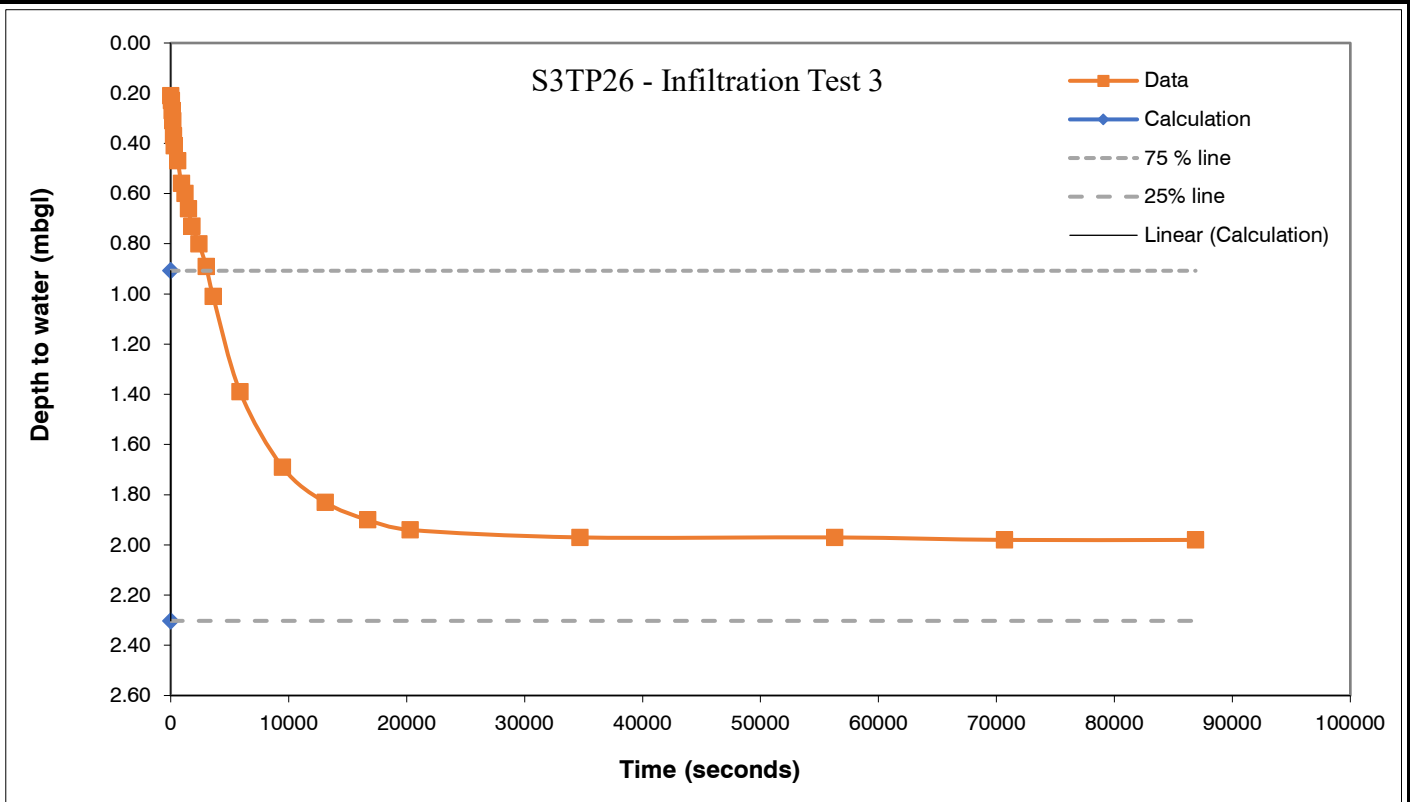
Date	10/02/2023	Pit ID:	S3TP26
Client:	Skanska	Job No:	G221209
Job	A46 Newark	Time to fill pit:	00:06:32
Trial pit filled with gravel to prevent instability?:		YES	Gravel Void Ratio = 0.42
		Engineer	AS
		Time at start of test	10:55:00

Pit Dimensions (m)	
Length	3.20
Width	0.55
Depth	3.00
Water level prior to test	0.00

Elapsed Time		Depth recorded on dip meter (mbgl)	Depth of water from base (m)
Minutes	Seconds		
0	0	0.21	2.79
1	60	0.23	2.77
2	120	0.27	2.73
3	180	0.31	2.69
4	240	0.37	2.63
5	300	0.41	2.59
10	600	0.47	2.53
15	900	0.56	2.44
20	1200	0.60	2.40
25	1500	0.66	2.34
30	1800	0.73	2.27
40	2400	0.80	2.20
50	3000	0.89	2.11
60	3600	1.01	1.99
98	5880	1.39	1.61
158	9480	1.69	1.31
218	13080	1.83	1.17
278	16680	1.90	1.10
338	20280	1.94	1.06
578	34680	1.97	1.03
938	56280	1.97	1.03
1178	70680	1.98	1.02
1448	86880	1.98	1.02

	Depth of water (mbgl)	Time (s)
Start depth / time for calculations:	75%	0.91
End depth for time calculations:	25%	2.30
		3088
		NA

<b>Infilling 3</b>
<b>Soil Infiltration Rate (f)</b>
<b>NA</b>



Remarks: Insufficient drain over 24hrs to infer (f).

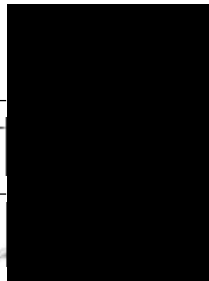
# Factual Ground Investigation Report

## A46 Newark Bypass Phase 3 Works

Client: Skanska

Project Number: G221209

Date of Issue: 14/09/2023

Project Title	A46 Newark Bypass Phase 3 Works			Project Ref	G221209	
Prepared By	Izaak Lovatt, BSc Engineering Manager					
Checked By	Jono Wright MEng, Engineering Manager					
Approved By	David Buckley CEng, Divisional Director					
Issue No	Status	Reason	Date	Prep.	Check	Approval
001	DRAFT	Awaiting Client Comment	18/07/2023	IL	JW	DB
002	FINAL		14/09/2023	IL	JW	DB



## Contents

<b>1</b>	<b>Introduction .....</b>	<b>3</b>
<b>1.1</b>	<b>Appointment.....</b>	<b>3</b>
<b>1.2</b>	<b>Site Location and Description .....</b>	<b>3</b>
<b>1.3</b>	<b>Purpose of Investigation .....</b>	<b>3</b>
<b>1.4</b>	<b>Scope of the Investigation .....</b>	<b>4</b>
1.4.1	In-situ testing .....	4
1.4.1.1	Standard Penetration Tests (SPTs).....	4
1.4.2	Monitoring Wells and Instruments.....	5
1.4.3	Service Clearance .....	5
1.4.4	Sampling Provision.....	5
1.4.5	Laboratory testing.....	5
1.4.5.1	Geo-Environmental.....	6
1.4.5.2	Geo-chemical .....	6
1.4.5.3	Geotechnical .....	6
<b>2</b>	<b>Limitations of Study .....</b>	<b>7</b>
<b>3</b>	<b>Results of the Ground Investigation .....</b>	<b>8</b>
<b>3.1</b>	<b>Published Ground Conditions .....</b>	<b>8</b>
<b>3.2</b>	<b>Encountered Ground Conditions .....</b>	<b>8</b>
3.2.1	Made Ground.....	8
3.2.2	Superficial Deposits.....	9
3.2.3	Completely Weathered Mercia Mudstone .....	9
<b>3.3</b>	<b>In-situ Tests .....</b>	<b>9</b>
3.3.1	In-situ Standard Penetration Tests (SPT) .....	9
<b>3.4</b>	<b>Laboratory Testing .....</b>	<b>10</b>
<b>3.5</b>	<b>Groundwater.....</b>	<b>10</b>
<b>3.6</b>	<b>Groundwater and ground gas monitoring.....</b>	<b>10</b>
<b>4</b>	<b>References .....</b>	<b>11</b>
	APPENDICES Appendix A: Drawings.....	i
	Appendix B: Exploratory Hole Records .....	iii
	Appendix C: Laboratory results.....	vi

## 1 Introduction

### 1.1 Appointment

Strata Geotechnics was appointed to undertake a ground investigation at the A46 Newark Bypass site by Skanska. The specification for the works was provided by the client's Investigation Supervisor Mott MacDonald. Instruction to proceed with the work was received on 10<sup>th</sup> October 2022.

This report presents a site-wide factual account of the site works undertaken.

### 1.2 Site Location and Description

The site is located along a 6km section of the A46 between Farndon Roundabout and Winthorpe Roundabout in Newark-on-Trent. The work was undertaken from a central compound located at central grid reference E482270, N356372.

The site predominantly consists of agricultural land in close proximity to the north and south of the A46. Locations were also undertaken 3km to the north near Kelham village and on the A46 road infrastructure.

A site location plan is included in Appendix A.

### 1.3 Purpose of Investigation

The purpose of this investigation was to determine the subsurface ground and groundwater conditions at the site of the proposed infrastructure development. It is understood that the development will comprise widening a 6.5km length of the existing A46 including earthwork widening and new structures crossing the River Trent, Nether Lock and the Nottingham-Lincoln and East Coast Main Line Railways.

This information was obtained from a combination of laboratory testing, non-intrusive and intrusive investigation techniques.

## 1.4 Scope of the Investigation

The main Ground Investigation was carried out between 20/10/2022 and 10/02/2022 and is reported in "G221209 – A46 Newark – Final Factual Report". This reports details additional work completed between 09/05/2023 and 11/05/2023 consisting of the following:

- 2 no. cable percussive boreholes to a maximum depth ranging from 8.83m to 9.96m BGL both terminating due to SPT Refusal.
- 7 no. machine excavated trial pits to a target depth of 3.00m BGL as specified by the client's Investigation Supervisor. 4 no. pits refused early due to pit stability.

The works were undertaken as detailed by specification: Ref RDP A46 Newark Bypass P01 provided by Skanska

### 1.4.1 In-situ testing

#### 1.4.1.1 Standard Penetration Tests (SPTs)

*In-situ* Standard Penetration Tests (SPTs) were conducted within the boreholes to ascertain 'N' values of the various lithologies encountered. This test acts as a proxy to ascertain the relative density of granular material. Relative density is determined in accordance with BS5930 table 10 for granular materials only. For fine grained or cohesive deposits consistency has been derived by hand field tests carried out by the logging engineer rather than from SPT results. SPT 'N' values detailed in this report have not been corrected for overburden pressure or hammer energy efficiency.

#### 1.4.2 Monitoring Wells and Instruments

2 no. 50mm Installation pipes, with response zones ranging from 0.50m to 8.50m bgl in depth, were installed to allow monitoring of groundwater and water sample abstraction.

*Table 1-1 Installed Monitoring Pipework*

Location ID	Hole depth (m)	Diameter (mm)	Response Top (m bgl)	Response Base (m bgl)	Cover Type	Installed Instrument
S3BH16	9.96	50	0.50	8.50	Flush	Diver
S3BH17	8.83	50	1.00	6.00	Flush	Diver

Monitoring installations should be appropriately decommissioned at the end of their useful life in accordance with the appropriate Environmental Agency guidance. For additional information contact the author.

Results derived from the installed instruments are presented in Appendix J.

#### 1.4.3 Service Clearance

Before any intrusive works, all the locations were scanned utilising a CAT (Cable Avoidance Tool) and associated generator by the main contractor. As a final precaution a hand inspection pit was dug to 1.20m bgl for every borehole location, while trial pits were scanned at 300mm intervals up to and including 1.20m bgl.

#### 1.4.4 Sampling Provision

During the investigation Environmental jar samples (ES) were recovered at pre-determined intervals for contamination testing purposes. Disturbed (D) and Bulk (B), samples were also recovered at specified depths and at every strata change for descriptive purposes and for geotechnical testing. The exploratory hole logs are presented in Appendix B.

#### 1.4.5 Laboratory testing

Laboratory testing was requested by the client comprising geo-environmental, geotechnical and geo-chemical testing as follows:

#### 1.4.5.1 *Geo-Environmental*

Five geo-environmental suites have been scheduled. The determinants within these suites were detailed by the RDP A46 Newark Bypass P01 specification Appendix B and include:

- Mott MacDonald Soil Comprehensive Suite
- Mott MacDonald Leachate Suite
- Mott MacDonald Soil Greenfield Suite
- Mott MacDonald Leachate Greenfield Suite

Geo-Environmental results are presented in Appendix E.

#### 1.4.5.2 *Geo-chemical*

The client has requested the following geo-chemical testing has been scheduled.

- BRE Suite D – Ful Suite

Geo-chemical results are presented in Appendix F.

#### 1.4.5.3 *Geotechnical*

The client has requested the following geotechnical testing has been scheduled.

- Particle Size Distribution by Wet Sieve and Sedimentation by Pipette (PSD)

Geotechnical results are presented in Appendix F.

All the above tests have been carried out in accordance with the relevant standards at UKAS and MCERTS accredited laboratories. Standards adhered to include: BS1377:1990-2022, BS EN 17892 (where appropriate) and BRE SD1 for sulphate suites.

Samples collected during this investigation will be retained on the premises of Strata Geotechnics until 26<sup>th</sup> October 2023. Should any additional laboratory tests be required, please contact Strata Geotechnics prior to the above disposal date.

## 2 Limitations of Study

Strata Geotechnics are a wholly owned subsidiary of Van Elle Limited (VEL).

This report is for the sole use and benefit of Skanska in accordance with their brief and should not be relied upon or used by other parties without explicit prior written agreement from VEL. VEL disclaim any responsibility to the client and others in respect of any matters outside the above scope.

The investigation has been carried out to our understanding of current legislation and best practice; designed to produce information adequate for the appraisal of potential site conditions in relation to the proposed future use of the site. This investigation generally adhered to the guidelines outlined in BS5930:2015+A1:2020, Code of Practice for Site Investigations. In regard to testing of soils, the investigation generally adheres to guidance outlined in BS1377:1990 to 2022 and Testing of Soils for Civil Engineering Purposes and BS EN 17892 where appropriate.

New information, legislation, local authority planning conditions or changes to best practice may necessitate further fieldworks and revision/reissue of the ground investigation report after the date of this report issue. Further assessment, investigation or construction activities over time may reveal conditions that were not found during the period of these investigations and, therefore, could not have been taken into account in the preparation of the report. VEL reserves the right to amend their conclusions and recommendations in the light of further information that may become available.

Interpretation and recommendations should not be assumed valid for either adjacent areas of land or alternative land uses. Should the proposed site use change, the findings of this report should be re-assessed for the new end-use.

Intrusive investigations can only investigate ground beneath a small proportion of the total site area. Attention is drawn to the fact that the findings are based on data obtained from the borehole samples and in-situ testing. Where comments are made based on information obtained from third parties, VEL assumes that all third-party information is true and correct. No independent action has been undertaken to validate the findings of third-party information, unless specifically stated. The possibility of variation in ground conditions around the borehole should not be overlooked. As such these do not necessarily address all aspects of the ground behaviour on site. Any opinion or diagram of a possible configuration of strata beyond the borehole or extrapolated to greater depth is conjectural and given for guidance only, no responsibility is accepted as to its accuracy. No liability can be accepted for such variations.

This investigation was undertaken in good faith with regards to the request and requirements of Skanska at the time of quotation, it does not constitute a full interpretative report with regards to the geotechnical or environmental status of the site. There may be other sources of information not included in this report that hold data relevant to the site that could materially affect the conclusions made in this report.

Where applicable this report should be presented to the relevant statutory authority, planning body, or design engineers as soon as possible for their review, comment and/or acceptance.

It is possible therefore that the intrusive investigation undertaken by VEL, whilst fully appropriate, may not have encountered all significant subsurface conditions. Consequently, no liability can be accepted for conditions not revealed by the exploratory holes.

### 3 Results of the Ground Investigation

#### 3.1 Published Ground Conditions

The published geological records available from the British Geological Survey indicates that the Site is underlain by, moving north-west to south-east, the Balderton Sand and Gravel member, Holme Pierrepont Sand and Gravel Member and Alluvium, all comprising sand and gravel (and alluvium silt) from the Quaternary period. The predominant underlying solid bedrock geology is listed as the Mercia Mudstone Group, which comprises mudstone with occasional sandstone bands formed between 252.2 and 201.3Ma during the Triassic Period. At the southwest extent of the site the solid bedrock geology is listed as Edwalton Member and Gunthorpe Member both comprising mudstone, formed between 237.0 and 228.4Ma and 247.1 and 237.0Ma respectively, during the Triassic period.

#### 3.2 Encountered Ground Conditions

*Table 3-1 Summary of ground conditions encountered*

Location	Made Ground	Superficial Silt, Sand & Gravel	Mercia Mudstone Completely weathered mudstone
S3BH16	NA	0.00 – 6.00	6.00 – 9.96
S3BH17	0.00 – 1.20	1.20 – 5.90	5.90 - 8.83
S3TP35	NA	0.00 – 2.00	NA
S3TP36	NA	0.00 – 3.00	NA
S3TP38	NA	0.00 – 2.70	NA
S3TP39	NA	0.00 – 2.20	NA
S3TP41	NA	0.00 – 2.70	NA
S3TP42	NA	0.00 – 3.00	NA
S3TP43	NA	0.00 – 3.00	NA

##### 3.2.1 Made Ground

Made Ground was encountered within S3BH17. This stratum was of Dark greyish brown slightly gravelly sand. The gravel present consisted of mudstone, brick and occasional fragments of ceramic.

### 3.2.2 Superficial Deposits

Soft to very stiff dark brown to light to dark brown and reddish-brown clay with secondary constituents of varying proportions of fine to coarse sand and gravel. Gravel comprises subangular to rounded fine to coarse mudstone, siltstone, sandstone and quartzite. Locally with pockets and lenses of sand and clay and occasional roots and rootlets.

Loose to dense black/orangish brown/yellowish brown/reddish brown/ light to dark brown/ light to dark grey/ white fine to coarse sand and/or gravel with secondary constituents of varying proportions of silt. The gravel comprises subangular to rounded fine to coarse sandstone, mudstone, siltstone, granite, basalt, quartzite, flint, quartz and chert. At shallow depths occasional rootlets have been sampled.

### 3.2.3 Completely Weathered Mercia Mudstone

Firm to stiff reddish brown/ reddish grey CLAY occasionally with secondary constituents of fine to coarse sand and angular fine to coarse gravel of mudstone. Pockets of fine to coarse sand were also noted.

## 3.3 In-situ Tests

### 3.3.1 In-situ Standard Penetration Tests (SPT)

Standard penetration tests (SPT's) were carried out with the use of a normal solid cone or split spoon sampler in the solid deposits encountered within the boreholes in order to determine the relative strength / density of the materials tested. Where the full penetration depth could not be achieved, the bottom sampling depth is indicated as less than 0.45m from the top (start of test), with the actual depth of penetration being recorded in millimetres. The results are shown as 'N' values on the graphic borehole record sheets, these have not been corrected for hammer efficiency or over burden pressure. Where possible a disturbed sample was collected also.

A summary of SPT results by geological unit is presented below:



Table 3-3 SPT Range by Geology

Strata	SPT Range ('N')	Notes
Superficial	6 – 33	Indicative of variable low to high strength soils
Mercia Mudstone IVb	25 - >50	Indicative of variable medium to high strength soils

### 3.4 Laboratory Testing

The laboratory test results are included in Appendix C

### 3.5 Groundwater

Below is a summary of groundwater encountered during the drilling works.

Table 3-5 Water strikes encountered during drilling.

Location	Depth groundwater was encountered (m BGL)	Water level after 20 minutes (m BGL)
S3BH16	2.80	2.30
S3BH17	1.60 & 5.70	1.30 & 5.00

Water strikes are detailed on the exploratory hole logs presented in Appendix B.

Changes in groundwater level may occur for several reasons, including seasonal effects and variations in drainage. The long-term groundwater elevation may increase or decrease at some time in the future. Groundwater direction has not been determined as part of this report.

### 3.6 Groundwater and ground gas monitoring

During drilling combined groundwater and ground gas-monitoring installations were placed in 2 no. of the boreholes upon completion. These in addition to 12 no. location installed in the first phase and 9 no. pre-existing locations are to be monitored going forward. The 2 no location have been installed with continuous data loggers to allow for automated daily readings. Details of the installed locations are included on the Borehole Logs in Appendix B.

These locations are to be monitored with the preexisting locations on the below planned dates.

Monitoring Visit	Date	No. of Locations Monitored
4	27 <sup>th</sup> – 28 <sup>th</sup> July	Proposed
5	23 <sup>th</sup> – 24 <sup>th</sup> October	Proposed
6	29 <sup>th</sup> – 30 <sup>th</sup> January	Proposed

## 4 References

- British Geological Survey (BGS – formerly the Institute of Geological Sciences (IGS))  
[REDACTED]
- BS 5930:2015 A1 - 2020 Code of Practice for Site Investigations.
- BS EN ISO 14688 Identification, Description and classification of soils
- BS EN ISO 14689 Identification, Description and classification of rocks
- BS1377:1990-2022, Methods for Testing of Soils for Civil Engineering Purposes.
- BS EN ISO 17892, Geotechnical investigation and testing. Laboratory testing of soil
- BS 8574:2014- Geotechnical Data Management
- Soil and Rock Description in Engineering Practice, D. Norbury.
- BRE Special Digest 365 (Revised 2016) – Soakaway design

# APPENDICES

# Appendix A: Drawings

Project ID:	221209	Title	Site Plan
Project Title:	A46 Newark Bypass	Scale	1:5000
Location:	Newark Showground, Coddington, Newark, Nottinghamshire, NG24 2NY	Engineer	James Harbot
Client:	Skanska	Contractor	Strata Geotechnics



Legend Key

- Locations By Type - Empty
- Locations By Type - TP
- ⊕ Locations By Type - CP



Project ID:	221209	Title	Site Plan
Project Title:	A46 Newark Bypass	Scale	1:5000
Location:	Newark Showground, Coddington, Newark, Nottinghamshire, NG24 2NY	Engineer	James Harbot
Client:	Skanska	Contractor	Strata Geotechnics



Legend Key

- Locations By Type - Empty
- Locations By Type - TP
- ⊕ Locations By Type - CP



Project ID:	221209	Title	Site Plan
Project Title:	A46 Newark Bypass	Scale	1:5000
Location:	Newark Showground, Coddington, Newark, Nottinghamshire, NG24 2NY	Engineer	James Harbot
Client:	Skanska	Contractor	Strata Geotechnics



Legend Key

- Locations By Type - Empty
- Locations By Type - TP
- ⊕ Locations By Type - CP



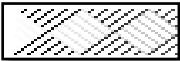
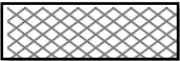









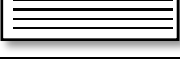
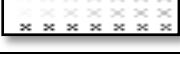



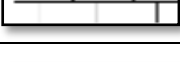
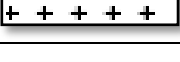
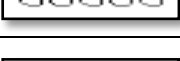







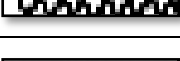
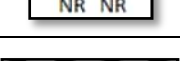




# Appendix B: Exploratory Hole Records




Legends:

U	Undisturbed driven tube sample, 100mm nominal diameter unless noted
UT	Undisturbed thin wall tube sample, 100mm nominal diameter unless noted
P	Undisturbed pushed piston sample, 100mm nominal diameter unless noted
CBR	CBR mould sample
BLK	Block sample
D	Small disturbed sample
B	Disturbed bulk sample
SD	Standard Penetration Test liner sample
ES	Soil sample for environmental testing
W	Water sample
L	Liner, dynamic/windowless sample
C	Core sample
CSS	Core sub sample
	Test results
N (S)	Standard penetration test, split spoon sampler (uncorrected)
N (C)	Standard penetration test, solid cone (uncorrected)
K	Field permeability test, kFH indicates falling head, kPI indicates packer injection
HV	Hand vane test [peak/residual], kPa, Undrained Shear Strength
I <sub>a</sub> or I <sub>d</sub>	Point load strength quoted for axial (a) and diameter (d), MPa Point Load Index
PP	Pocket Penetrometer, kPa, Unconfined Compressive Strength
LMP	Lump sample for laboratory testing
Non-Intact	Core recovered in sections less than one full diameter without signs of weathering

Soil, Rock and Backfill Legends:

Topsoil		MADE GROUND	
Concrete		Bituminous Material	
Clay		Silt	
Sand		Gravel	
Cobbles		Peat	
Sandstone		Mudstone	
Siltstone		Coal	
Breccia		Fine grained Igneous	
Limestone		Medium grained Igneous	
Conglomerate		Coarse grained Igneous	
Clean Ballast		Fine grained Metamorphic	
Slightly dirty Ballast		Medium grained Metamorphic	
Dirty Ballast		Coarse grained Metamorphic	
Broken Ground		No Recovery	
Cement Bentonite		Bentonite	
Arisings		Grout	


		Contract Name: A46 Newark Bypass		Client: Skanska			Borehole ID: S3BH16		
		Contract Number: G221209	Date Started: 10/05/2023	Date Completed: 11/05/2023	Logged: SO	Checked: IL	Status: FINAL	Sheet 1 of 1	
Cable Percussion Borehole Log		Easting:	Northing:	Ground Level:	Plant Used: Dando 2000	Print Date: 14/09/2023	Scale: 1:50		
Weather: Showers		Rig Crew: David Grey		Termination: Refusal		SPT Hammer: AR3543 Energy Ratio: 67%			
Samples & In Situ Testing				Strata Details				Groundwater	
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
0.20	D2					TOPSOIL: Soft dark brown slightly clayey gravelly fine to coarse SAND with abundant rootlets. Gravel is subangular to subrounded fine to coarse quartzite and flint.			
0.20	ES1			(0.60)					
0.20 - 0.60	B3					Loose light brown silty SAND and GRAVEL. Sand is fine to coarse. Gravel is subrounded to round fine to coarse fragments of quartzite and flint with occasional subrounded to round cobbles of quartzite.			
0.50	D5			0.60					
0.50	ES4					Loose to medium dense brown mottled yellowish to white sandy GRAVEL. Sand is fine to medium. Gravel is subrounded to rounded, fine to coarse of quartzite and flint.			
0.60 - 1.20	B8			(0.70)					
1.00	D7					Firm to stiff reddish brown slightly gravelly locally laminated CLAY with occasional reduction patches (<10x20mm) of greenish grey silt. Gravel is fine to medium subrounded to round flint and quartzite			
1.00	ES6	SPT(C) 1.20m, N=14 (2,3/3,3,4,4)		1.30					
1.20 - 2.00	B11					Brown mottled yellowish to white sandy GRAVEL. Sand is fine to medium. Gravel is subrounded to round of fine to coarse fragments of quartzite and flint Stiff becoming very stiff reddish brown sandy CLAY. Sand is fine to medium.			
1.50	D10			(2.50)					
1.50	ES9					End of Borehole at 9.96m			
2.00 - 3.00	B12	SPT(C) 2.00m, N=13 (1,2/3,3,3,4)		3.80					
2.50	D13					Hand dug inspection pit to 1.2m bgl. Ground water was encountered at 2.80m bgl. Combined gas and ground water monitoring installation was installed upon completion.			
3.00 - 4.00	B14	SPT(C) 3.00m, N=16 (2,3/3,4,4,5)		(1.90)					
3.50	D15					End of Borehole at 9.96m			
4.00 - 5.00	B16	SPT(C) 4.00m, N=19 (3,3/5,5,4,5)		5.70					
4.50	D17					End of Borehole at 9.96m			
5.00 - 6.00	B18	SPT(C) 5.00m, N=23 (2,4/4,6,6,7)		(0.30)					
5.50	D19					End of Borehole at 9.96m			
6.50 - 7.50	B20	SPT(C) 6.50m, N=25 (3,4/6,6,6,7)		6.00					
7.00	D21					End of Borehole at 9.96m			
7.50 - 8.50	B22	SPT(C) 8.00m, N=35 (3,6/8,8,9,10)		(3.96)					
8.70 - 8.98	D23	SPT(S) 8.70m, 50 (7,12/50 for 125mm)				End of Borehole at 9.96m			
8.70 - 9.70	B24			9.96					
9.70 - 9.96	D25	SPT(S) 9.70m, 50 (9,14/50 for 105mm)				End of Borehole at 9.96m			


  




Start & End of Shift Observations					Borehole Diameter		Casing Diameter		Remarks:
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	
10-05-2023	07:30	0.00	0.00		9.96	140	9.50	150	Hand dug inspection pit to 1.2m bgl. Ground water was encountered at 2.80m bgl. Combined gas and ground water monitoring installation was installed upon completion.
10-05-2023	18:00	2.45	1.80						
11-05-2023	07:30	2.45	1.80	1.70					
11-05-2023	18:00	9.96	1.80	1.70					

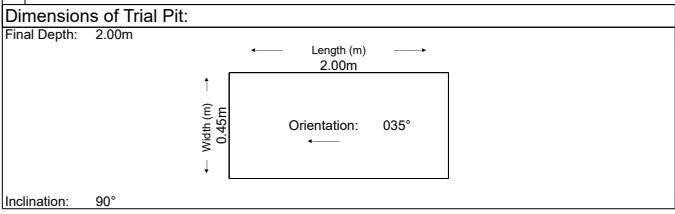
Chiselling				Installation				Water Strikes					
From (m)	To (m)	Duration	Remarks	Top (m)	Base (m)	Type	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
9.40	9.70	01:00		0.00	0.50	PLAIN	50	2.80	2.70	9.00	20	2.30	Medium
				0.50	8.50	SLOTTED	50						

		Contract Name: A46 Newark Bypass			Client: Skanska			Borehole ID: S3BH17						
		Contract Number: G221209	Date Started: 09/05/2023	Date Completed: 10/05/2023	Logged: SO	Checked: SW	Status: FINAL	Sheet 1 of 1						
Cable Percussion Borehole Log		Easting:	Northing:	Ground Level:	Plant Used: Dando 2000		Print Date: 14/09/2023	Scale: 1:50						
Weather: Thunderstorm		Rig Crew: David Grey		Termination: Refusal		SPT Hammer: AR3543 Energy Ratio: 67%								
Samples & In Situ Testing				Strata Details				Groundwater						
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation						
0.00 - 0.30	B3					MADE GROUND: Dark greyish brown slightly gravelly fine SAND with frequent rootlets. Gravel is fine to coarse angular to sub-angular of brick and mudstone with occasional fragments of ceramic.								
0.20	ES1													
0.30	D2													
0.30 - 1.20	B6													
0.50	D5			(1.20)										
0.50	ES4													
1.00	D8					Soft locally firm brown slightly sandy slightly gravelly CLAY. Sand is fine. Gravel is fine to medium, angular to subangular of quartzite.								
1.00	ES7	SPT(S) 1.20m, N=6 (1,1/2,1,2)		1.20										
1.20 - 1.65	D9													
1.50	ES10					Soft locally firm light brown slightly gravelly sandy CLAY. Gravel is medium to coarse, angular to subangular of mudstone.								
1.60 - 2.60	B12													
2.00 - 2.45	D11	SPT(S) 2.00m, N=8 (1,1/2,2,2,2)		(1.60)										
2.80 - 3.80	B15					Soft locally firm light brown slightly gravelly sandy CLAY. Gravel is medium to coarse, angular to subangular of mudstone.								
3.00 - 3.45	D13	SPT(S) 3.00m, N=18 (2,3/4,4,5,5)		2.80										
3.50	D14			(1.10)										
4.00 - 5.00	B16	SPT(C) 4.00m, N=32 (3,5/7,7,9,9)		3.90		Stiff reddish brown sandy slightly gravelly CLAY. Sand is fine. Gravel is medium to coarse, subrounded to rounded quartzite and flint								
4.50 - 4.95	D17	SPT(S) 4.50m, N=33 (3,5/7,8,8,10)												
5.50	D18					Medium dense to dense brown SAND and GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, subrounded of quartzite and flint Stiff reddish brown very sandy CLAY. Sand is fine to coarse. Very stiff reddish brown sandy CLAY. Sand is fine to coarse.								
5.70 - 5.90	B19			5.70										
5.90 - 6.00	D20			5.90										
6.00 - 7.00	B21			(0.30)										
6.20 - 6.65	D22	SPT(S) 6.20m, N=44 (5,6/8,12,11,13)		6.20										
7.00 - 8.00	B23					End of Borehole at 8.83m								
7.50 - 7.84	D24	SPT(S) 7.50m, 50 (6,10/50 for 190mm)		(2.63)										
8.50 - 8.83	D25	SPT(S) 8.50m, 50 (8,9/50 for 180mm)		8.83										
Start & End of Shift Observations					Borehole Diameter		Casing Diameter		Remarks:					
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Hand dug inspection pit to 1.2m bgl. Ground water was encountered at 1.60m and 5.7m bgl. Combined gas and ground water monitoring installation was installed upon completion.					
09-05-2023	03:45	0.00	0.00		8.83	140	7.00	150						
09-05-2023	18:00	6.00	6.00											
10-05-2023	07:30	6.00	6.00	5.80										
10-05-2023	14:15	8.83	7.00	5.80										
Chiselling					Installation				Water Strikes					
From (m)	To (m)	Duration	Remarks		Top (m)	Base (m)	Type	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
8.10	8.50	01:00			0.00	1.00	PLAIN	50	1.60	1.30	4.00	20	1.30	Slow
					1.00	6.00	SLOTTED	50	5.70	5.50	6.00	20	5.00	Medium

	Contract Name: A46 Newark Bypass		Client: Skanska		Trial Pit ID: S3TP35	
	Contract Number: G221209	Date Started: 09/05/2023	Logged By: SW	Checked By: IL	Status: FINAL	Sheet 1 of 1
Trial Pit Log	Easting: 476447.0	Northing: 354783.3	Ground Level: 12.11mOD	Plant Used: JCB 3CX	Date Printed: 14/09/2023	Scale: 1:50
	Weather: Sunny		Stability: Unstable	Services Encountered: None	Hole Termination: Hole collapsed.	


Samples & In Situ Testing			Strata Details				Water	Backfill
Depths	Sample ID	Test Result	Reduced Level	Depth (m) (Thickness)	Legend	Strata Description		
0.00 - 0.20 0.20	D5 ES1		11.91	0.20		TOPSOIL: Dark brown clayey slightly gravelly fine to coarse SAND. Gravel is rounded to subangular, fine to coarse of chert, mudstone and sandstone.		
0.50 0.50 - 1.00	ES2 B7			(1.80)		Orangish brown silty SAND and GRAVEL. Sand is fine to coarse. Gravel is rounded to subrounded, fine to coarse of chert, mudstone, sandstone, quartz and calcite.	1	
0.90 - 1.10 1.00 1.00 - 2.00	D4 ES3 B8							
1.60 - 2.00	D6		10.11	2.00		End of Trial Pit at 2.00m	2	
							3	
							4	
							5	

**Trial Pit Photographs/Sketches**



**Remarks:**  
Groundwater encountered encountered at 2m. Backfilled with arisings upon completion.

Water Strike			
Strike	Time (mins)	Rose to (m)	Remarks

	Contract Name: A46 Newark Bypass		Client: Skanska			Trial Pit ID: S3TP36
	Contract Number: G221209	Date Started: 09/05/2023	Logged By: SW	Checked By: IL	Status: FINAL	Sheet 1 of 1
Trial Pit Log	Easting: 476358.0	Northing: 354864.9	Ground Level: 13.32mOD	Plant Used: JCB 3CX	Date Printed: 14/09/2023	Scale: 1:50
Weather: Sunny		Stability: Unstable		Services Encountered: None		Hole Termination: Scheduled Depth.

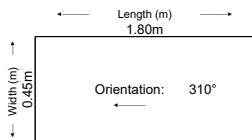
Samples & In Situ Testing			Strata Details					Water	Backfill
Depths	Sample ID	Test Result	Reduced Level	Depth (m) (Thickness)	Legend	Strata Description			
0.00 - 0.20	B6					TOPSOIL: Soft locally firm silty sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is rounded to subrounded, fine to coarse of chert.  Orangish brown silty SAND and GRAVEL. Sand is fine to coarse. Gravel is rounded to subrounded, fine to coarse of chert, mudstone, sandstone and quartz.			
0.00 - 0.20	D3			(0.40)					
0.20	ES1		12.92	0.40					
0.50	ES2								
0.50 - 1.00	B8								
1.00 - 1.20	B7						1		
1.00 - 1.20	D4								
				(2.60)			2		
2.70 - 3.00	D5		10.32	3.00			3		
						End of Trial Pit at 3.00m	4		
							5		

Trial Pit Photographs/Sketches



Dimensions of Trial Pit:

Final Depth: 3.00m




Inclination: 90°



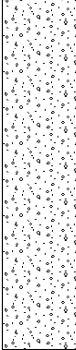
Remarks:

Slow groundwater ingress at 3.00m BGL Backfilled with arisings upon completion.

Water Strike

Strike	Time (mins)	Rose to (m)	Remarks

	Contract Name: A46 Newark Bypass		Client: Skanska			Trial Pit ID: S3TP38
	Contract Number: G221209	Date Started: 10/05/2023	Logged By: SW	Checked By: IL	Status: FINAL	Sheet 1 of 1
Trial Pit Log	Easting: 476957.6	Northing: 355340.0	Ground Level: 11.79mOD	Plant Used: JCB 3CX	Date Printed: 14/09/2023	Scale: 1:50
Weather: Sunny		Stability: Unstable		Services Encountered: None		Hole Termination: Hole collapsed.

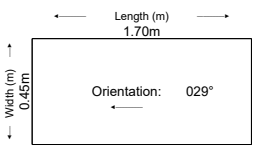
Samples & In Situ Testing			Strata Details					Water	Backfill
Depths	Sample ID	Test Result	Reduced Level	Depth (m) (Thickness)	Legend	Strata Description			
0.00 - 0.20	B8		11.59	0.20		TOPSOIL: Dark brown clayey slightly gravelly fine to coarse SAND. Gravel is rounded to subrounded, fine to coarse of chert and mudstone.			
0.00 - 0.20	D4								
0.20	ES1								
0.50	ES2								
0.50 - 1.00	B10								
1.00	ES3		(2.50)			Orangish brown silty SAND and GRAVEL. Sand is fine to coarse. Gravel is rounded to subrounded, fine to coarse of quartz, mudstone and chert.	1		
1.20 - 1.50	D5								
1.50 - 2.50	B9								
2.00 - 2.30	D6								
2.60 - 2.70	D7								
			9.09	2.70		End of Trial Pit at 2.70m	3		
							4		
							5		

Trial Pit Photographs/Sketches



Dimensions of Trial Pit:

Final Depth: 2.70m



Inclination: 90°

Remarks:

No groundwater was encountered during the drilling. Backfilled with arisings upon completion.

Water Strike			
Strike	Time (mins)	Rose to (m)	Remarks

	Contract Name: A46 Newark Bypass		Client: Skanska			Trial Pit ID: <b>S3TP39</b>
	Contract Number: G221209	Date Started: 10/05/2023	Logged By: SW	Checked By: IL	Status: FINAL	Sheet 1 of 1
<b>Trial Pit Log</b>	Easting: 476820.5	Northing: 355277.4	Ground Level: 12.02mOD	Plant Used: JCB 3CX	Date Printed: 14/09/2023	Scale: 1:50
Weather: Sunny		Stability: Unstable		Services Encountered: None		Hole Termination: Hole collapsed.

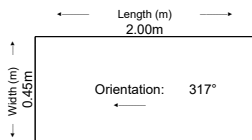
Samples & In Situ Testing			Strata Details				Water	Backfill
Depths	Sample ID	Test Result	Reduced Level	Depth (m) (Thickness)	Legend	Strata Description		
0.00 - 0.20	D8		11.72	(0.30)		TOPSOIL: Dark brown clayey gravelly fine to coarse SAND. Gravel is rounded to subrounded, fine to coarse of chert and sandstone.	1	
0.00 - 0.30	B5			0.30		Orangish brown SAND and GRAVEL. Sand is fine to coarse. Gravel is rounded to subrounded, fine to coarse of sandstone, mudstone, chert and quartz.		
0.20	ES1							
0.50	ES2							
0.50 - 1.00	B6							
0.90 - 1.20	D9		9.82	(1.90)			2	
1.00	ES3							
1.50	ES4							
1.50 - 2.00	D10							
1.80 - 2.20	B7							
2.00 - 2.20	D11							
End of Trial Pit at 2.20m							3	
							4	
							5	

**Trial Pit Photographs/Sketches**



**Dimensions of Trial Pit:**

Final Depth: 2.20m



Inclination: 90°


**Remarks:**





Groundwater ingress encountered at 1.8m. Backfilled with arisings upon completion.

**Water Strike**

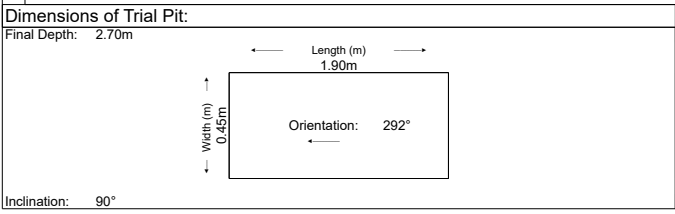
Strike	Time (mins)	Rose to (m)	Remarks



	Contract Name: A46 Newark Bypass		Client: Skanska			Trial Pit ID: S3TP41
	Contract Number: G221209	Date Started: 10/05/2023	Logged By: SW	Checked By: IL	Status: FINAL	Sheet 1 of 1
Trial Pit Log	Easting: 476811.9	Northing: 355060.4	Ground Level: 12.02mOD	Plant Used: JCB 3CX	Date Printed: 14/09/2023	Scale: 1:50
Weather: Sunny		Stability: Unstable		Services Encountered: None		Hole Termination: Hole collapsed.

Samples & In Situ Testing			Strata Details					Water	Backfill
Depths	Sample ID	Test Result	Reduced Level	Depth (m) (Thickness)	Legend	Strata Description			
0.00 - 0.20	B9		11.82	0.20		TOPSOIL: Dark brown clayey gravelly fine to coarse SAND. Gravel is rounded to subrounded, fine to coarse of chert and sandstone.			
0.20	ES1								
0.30 - 0.40	D4								
0.50	ES2								
0.50 - 0.60	D5								
0.90 - 1.10	D6		9.32	(2.50)		Light orangish brown very gravelly medium to coarse SAND. Gravel is rounded to subrounded, fine to coarse of chert, quartz, sandstone and mudstone.	1		
1.00	ES3								
1.00 - 2.00	B10								
1.50 - 1.60	D7								
2.00 - 2.70	B11								
2.20 - 2.50	D8								
						End of Trial Pit at 2.70m	3		
							4		
							5		

Trial Pit Photographs/Sketches



Remarks:

Slow groundwater ingress at 2.70m BGL. Backfilled with arisings upon completion.

Water Strike			
Strike	Time (mins)	Rose to (m)	Remarks

	Contract Name: A46 Newark Bypass		Client: Skanska			Trial Pit ID: <b>S3TP42</b>
	Contract Number: G221209	Date Started: 11/05/2023	Logged By: SW	Checked By: IL	Status: FINAL	Sheet 1 of 1
<b>Trial Pit Log</b>	Easting: 480642.6	Northing: 356389.1	Ground Level: 8.74mOD	Plant Used: JCB 3CX	Date Printed: 14/09/2023	Scale: 1:50
Weather: Sunny		Stability: Unstable		Services Encountered: None		Hole Termination: Scheduled Depth.

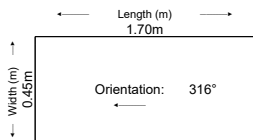
Samples & In Situ Testing			Strata Details				Water	Backfill
Depths	Sample ID	Test Result	Reduced Level	Depth (m) (Thickness)	Legend	Strata Description		
0.00 - 0.40 0.20	B3 ES1		8.34	(0.40)		TOPSOIL: Soft dark brown slightly sandy CLAY. Sand is fine to coarse.		
0.20 - 0.30 0.50	D4 ES2			0.40		Soft locally firm dark brown slightly gravelly CLAY. Gravel is angular to subangular, fine to medium of mudstone.		
1.00 - 2.00	B6	HV 1.00m, 50/20kPa					1	
1.50 - 1.70	D8	HV 1.50m, 62/21kPa  HV 2.00m, 63/12kPa		(2.30)			2	
2.70 - 3.00 2.80 - 3.00	B5 D7		6.04 5.74	2.70 (0.30) 3.00		Light grey slightly clayey SAND and GRAVEL. Sand is fine to coarse. Gravel is rounded to subrounded, medium to coarse of mudstone, chert, quartz and calcite.  End of Trial Pit at 3.00m	3	
							4	
							5	

**Trial Pit Photographs/Sketches**



**Dimensions of Trial Pit:**

Final Depth: 3.00m




Inclination: 90°





**Remarks:**

Slow groundwater ingress at 3.00m BGL. Backfilled with arisings upon completion.

**Water Strike**

Strike	Time (mins)	Rose to (m)	Remarks

	Contract Name: A46 Newark Bypass		Client: Skanska			Trial Pit ID: S3TP43
	Contract Number: G221209	Date Started: 11/05/2023	Logged By: SW	Checked By: IL	Status: FINAL	Sheet 1 of 1
Trial Pit Log	Easting: 480818.7	Northing: 356380.8	Ground Level: 9.57mOD	Plant Used: JCB 3CX	Date Printed: 14/09/2023	Scale: 1:50
Weather: Sunny		Stability: Unstable		Services Encountered: None		Hole Termination: Scheduled Depth.

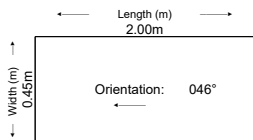
Samples & In Situ Testing			Strata Details					Water	Backfill
Depths	Sample ID	Test Result	Reduced Level	Depth (m) (Thickness)	Legend	Strata Description			
0.00 - 0.15 0.20 0.30 - 0.50	B1 ES2 D4		9.42	0.15		TOPSOIL: Loose dark brown slightly clayey, gravelly fine to coarse SAND. Gravel is rounded to subrounded, medium to coarse of quartz, chert, sandstone and mudstone.			
0.80	ES3					Loose orangish brown silty gravelly medium to coarse SAND. Gravel is rounded to subrounded, fine to coarse of mudstone, sandstone, chert and quartz.	1		
1.00 - 2.00 1.30 - 1.50	B8 D7			(2.85)			2		
1.80 - 2.00 2.00 - 3.00	D5 B9						3		
2.50 - 2.70	D6		6.57	3.00		End of Trial Pit at 3.00m	4		
							5		

Trial Pit Photographs/Sketches



Dimensions of Trial Pit:

Final Depth: 3.00m



Inclination: 90°

Remarks:

No groundwater was encountered during the drilling. Backfilled with arisings upon completion.

Water Strike

Strike	Time (mins)	Rose to (m)	Remarks

# Appendix C: Laboratory results



# LABORATORY REPORT



**Contract Number: PSL23/4778**

Report Date: 18 July 2023  
Client's Reference: G221209/Geo 13  
Client Name: Strata Geotechnics  
Kirkby Lane  
Pinxton  
Nottinghamshire  
NG16 6JA

**For the attention of: Izaak Lovatt**

Contract Title: A46 Newark Bypass  
Date Received: 20/6/2023  
Date Commenced: 20/6/2023  
Date Completed: 17/07/2023

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. 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 other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

A Watkins  
(Director)

R Berriman  
(Quality Manager)

S Royle  
(Laboratory Manager)

L Knight  
(Assistant Laboratory Manager)

S Eyre  
(Senior Technician)



  
M Fennell  
(Senior Technician)

5 – 7 Hexthorpe Road,  
Hexthorpe,  
Doncaster,  
DN4 0AR  
Tel: 01302 768098

Page 1 of

# SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
S3BH16	8	B	0.60	1.20	Brown very sandy silty GRAVEL.
S3BH16	12	B	2.00	3.00	Brown very sandy GRAVEL.
S3BH16	16	B	4.00	5.00	Brown very sandy GRAVEL.
S3BH17	12	B	1.60	2.60	Grey mottled brown slightly gravelly clayey silty SAND.
S3BH17	16	B	4.00	5.00	Brown slightly gravelly very sandy CLAY.
S3TP36	7	B	1.00	1.20	Brown slightly clayey SAND & GRAVEL.
S3TP38	9	B	1.50	2.50	Brown very gravelly clayey silty SAND.
S3TP39	6	B	0.50	1.00	Brown gravelly very sandy CLAY.
S3TP41	10	B	1.00	2.00	Brown very sandy slightly silty GRAVEL.
S3TP42	6	B	1.00	2.00	Brown sandy CLAY.
S3TP42	5	B	2.70	3.00	Brown very gravelly slightly sandy CLAY with some organic material.
S3TP43	8	B	1.00	2.00	Brown very sandy silty GRAVEL.

		<h2 style="margin: 0;">A46 Newark Bypass</h2>	<b>Contract No:</b>
			<b>PSL23/4778</b>
			<b>Client Ref:</b>
			<b>G221209</b>

# PARTICLE SIZE DISTRIBUTION TEST

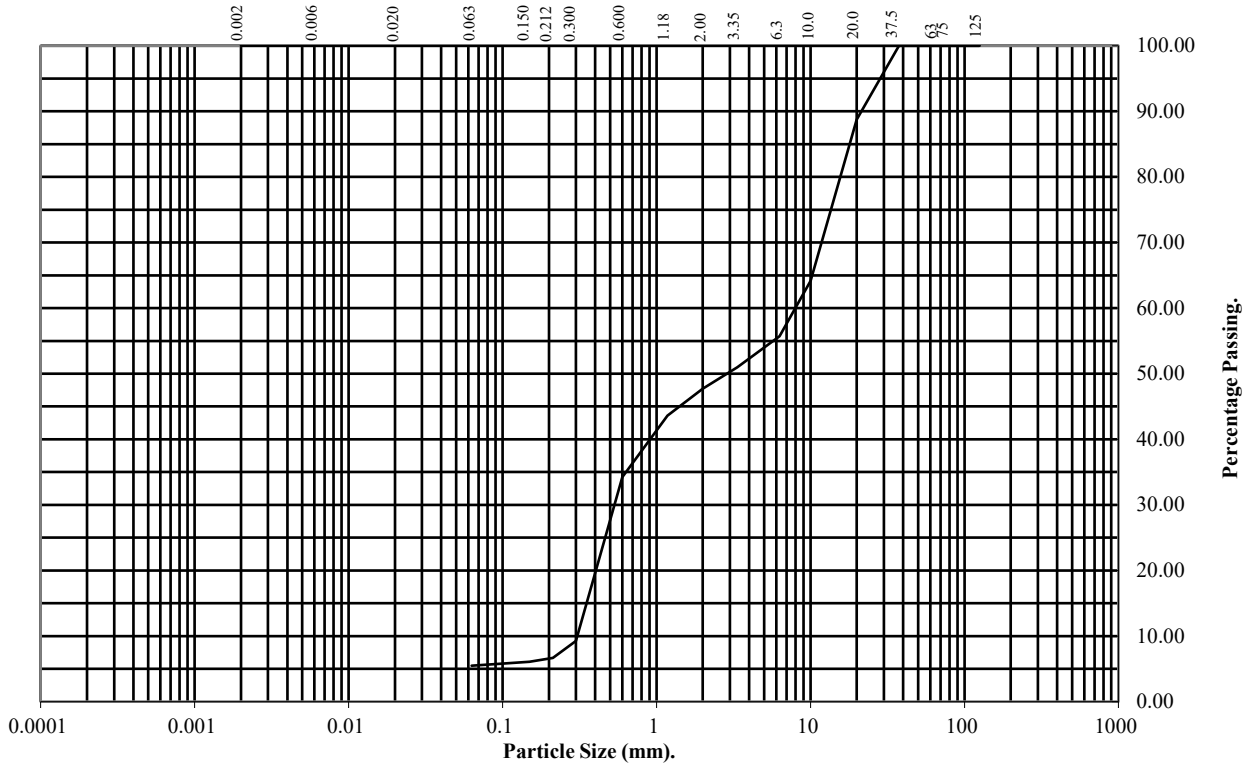
**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

**Hole Number:** S3BH16 **Top Depth (m):** 0.60

**Sample Number:** 8 **Base Depth(m):** 1.20

**Sample Type:** B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	89
10	64
6.3	56
3.35	51
2	48
1.18	44
0.6	34
0.3	9
0.212	7
0.15	6
0.063	5

Soil Fraction	Total Percentage
Cobbles	0
Gravel	52
Sand	43
Silt/Clay	5

**Remarks:**  
See Summary of Soil Descriptions



A46 Newark Bypass

<b>Contract No:</b>
<b>PSL23/4778</b>
<b>Client Ref:</b>
<b>G221209</b>

# PARTICLE SIZE DISTRIBUTION TEST

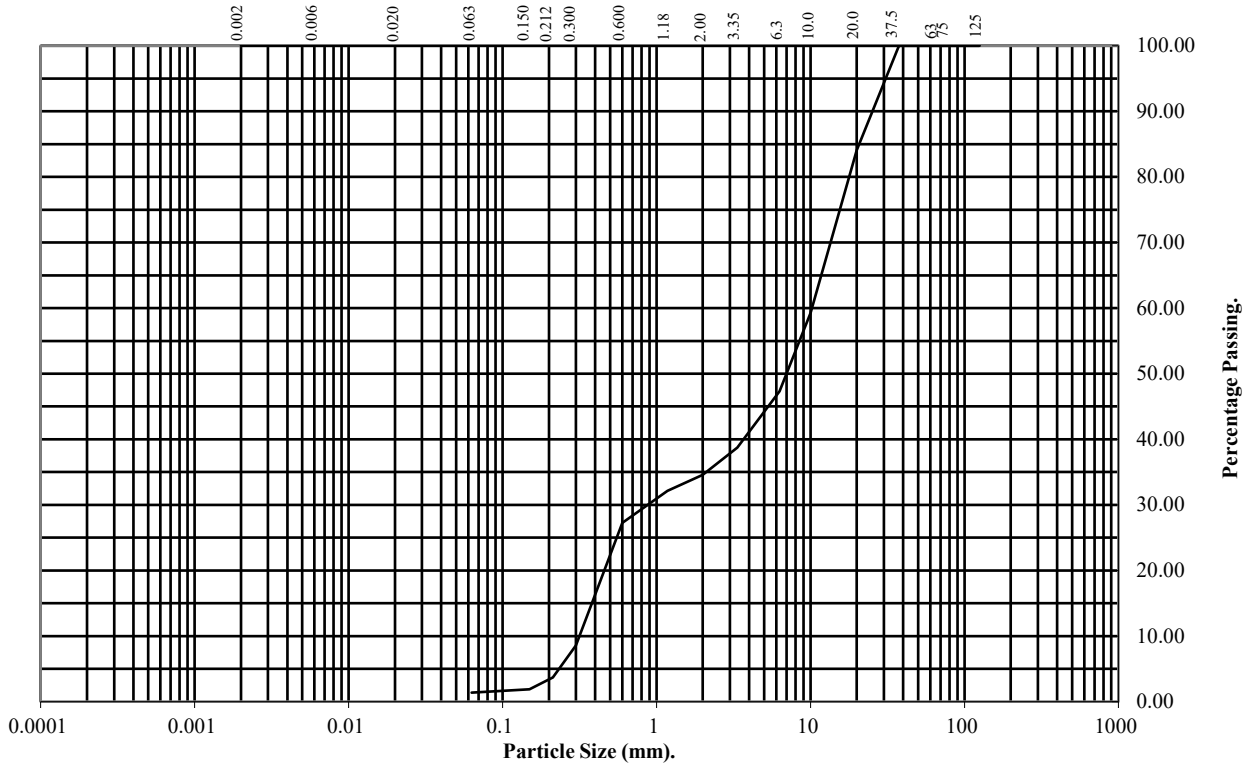
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

**Hole Number:** S3BH16 **Top Depth (m):** 2.00

**Sample Number:** 12 **Base Depth(m):** 3.00

**Sample Type:** B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	84
10	59
6.3	47
3.35	39
2	35
1.18	32
0.6	27
0.3	9
0.212	4
0.15	2
0.063	1

Soil Fraction	Total Percentage
Cobbles	0
Gravel	65
Sand	34
Silt/Clay	1

**Remarks:**  
See Summary of Soil Descriptions



A46 Newark Bypass

<b>Contract No:</b>
<b>PSL23/4778</b>
<b>Client Ref:</b>
<b>G221209</b>



# PARTICLE SIZE DISTRIBUTION TEST

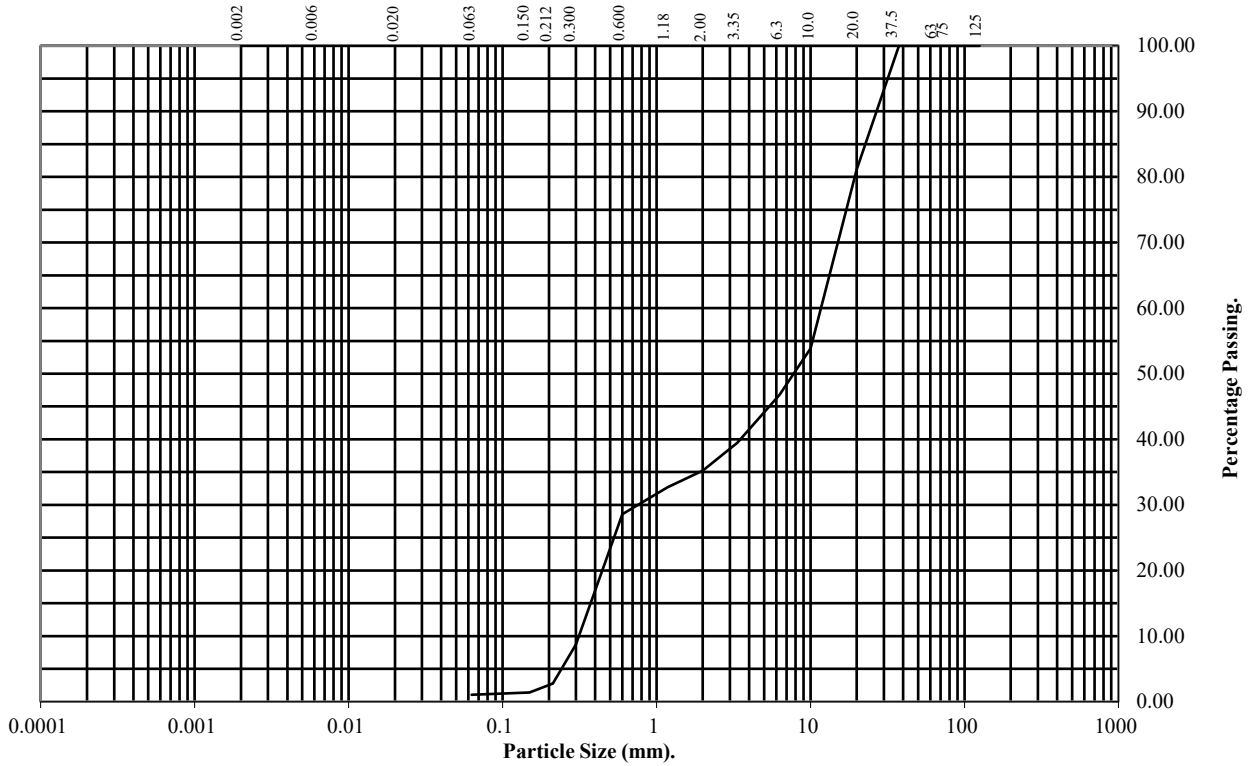
**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

**Hole Number:** S3BH16 **Top Depth (m):** 4.00

**Sample Number:** 16 **Base Depth(m):** 5.00

**Sample Type:** B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	81
10	54
6.3	47
3.35	39
2	35
1.18	33
0.6	29
0.3	9
0.212	3
0.15	1
0.063	1

Soil Fraction	Total Percentage
Cobbles	0
Gravel	65
Sand	34
Silt/Clay	1

**Remarks:**  
See Summary of Soil Descriptions



A46 Newark Bypass

<b>Contract No:</b>
<b>PSL23/4778</b>
<b>Client Ref:</b>
<b>G221209</b>

# PARTICLE SIZE DISTRIBUTION TEST

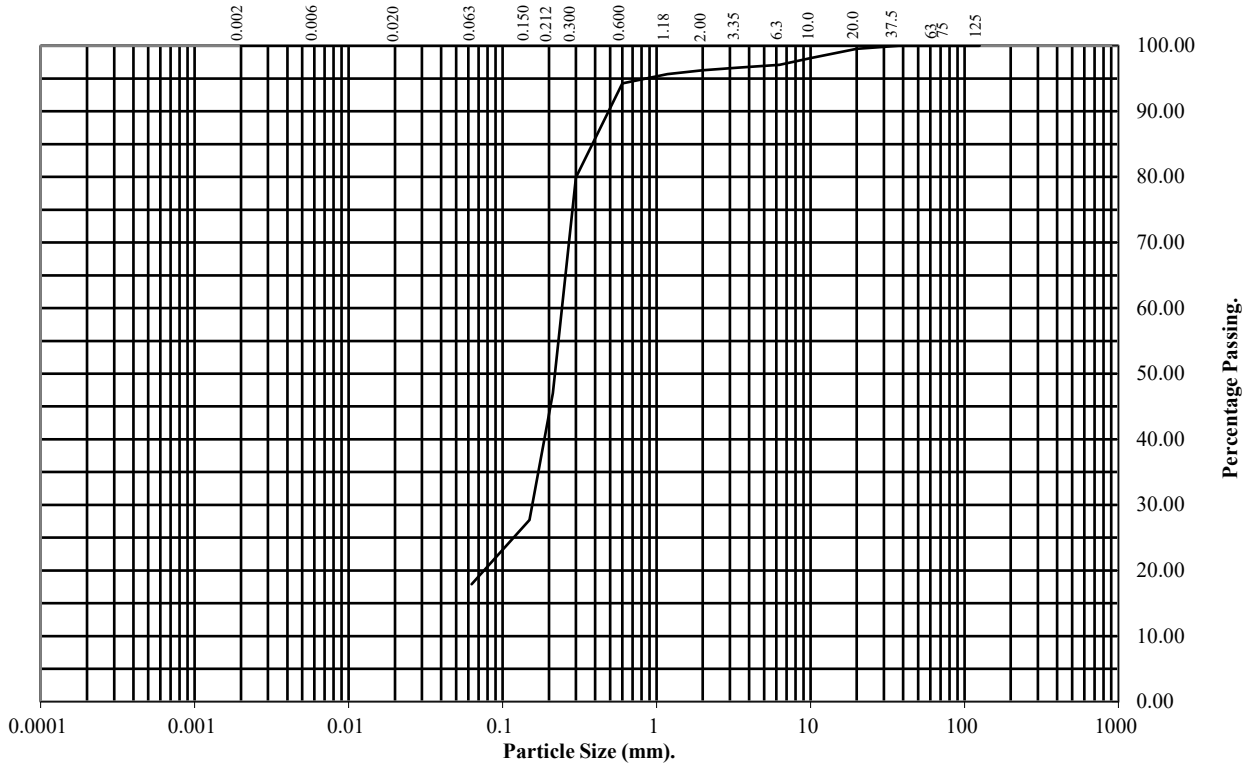
**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

**Hole Number:** S3BH17 **Top Depth (m):** 1.60

**Sample Number:** 12 **Base Depth(m):** 2.60

**Sample Type:** B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	98
6.3	97
3.35	97
2	96
1.18	96
0.6	94
0.3	80
0.212	47
0.15	28
0.063	18

Soil Fraction	Total Percentage
Cobbles	0
Gravel	4
Sand	78
Silt/Clay	18

**Remarks:**  
See Summary of Soil Descriptions



A46 Newark Bypass

<b>Contract No:</b>
<b>PSL23/4778</b>
<b>Client Ref:</b>
<b>G221209</b>

# PARTICLE SIZE DISTRIBUTION TEST

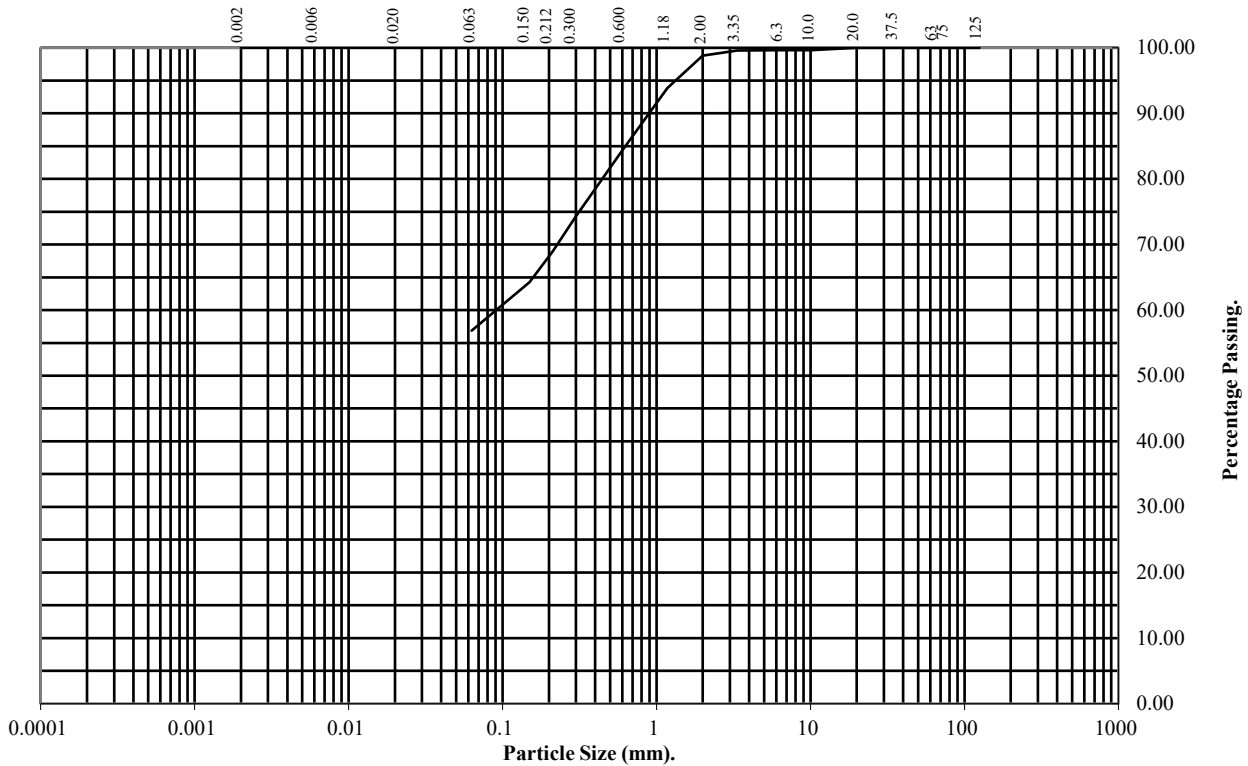
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **S3BH17** Top Depth (m): **4.00**

Sample Number: **16** Base Depth(m): **5.00**

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	99
1.18	94
0.6	84
0.3	74
0.212	69
0.15	64
0.063	57

Soil Fraction	Total Percentage
Cobbles	0
Gravel	1
Sand	42
Silt/Clay	57

**Remarks:**  
See Summary of Soil Descriptions



A46 Newark Bypass

Contract No:  
**PSL23/4778**  
Client Ref:  
**G221209**

# PARTICLE SIZE DISTRIBUTION TEST

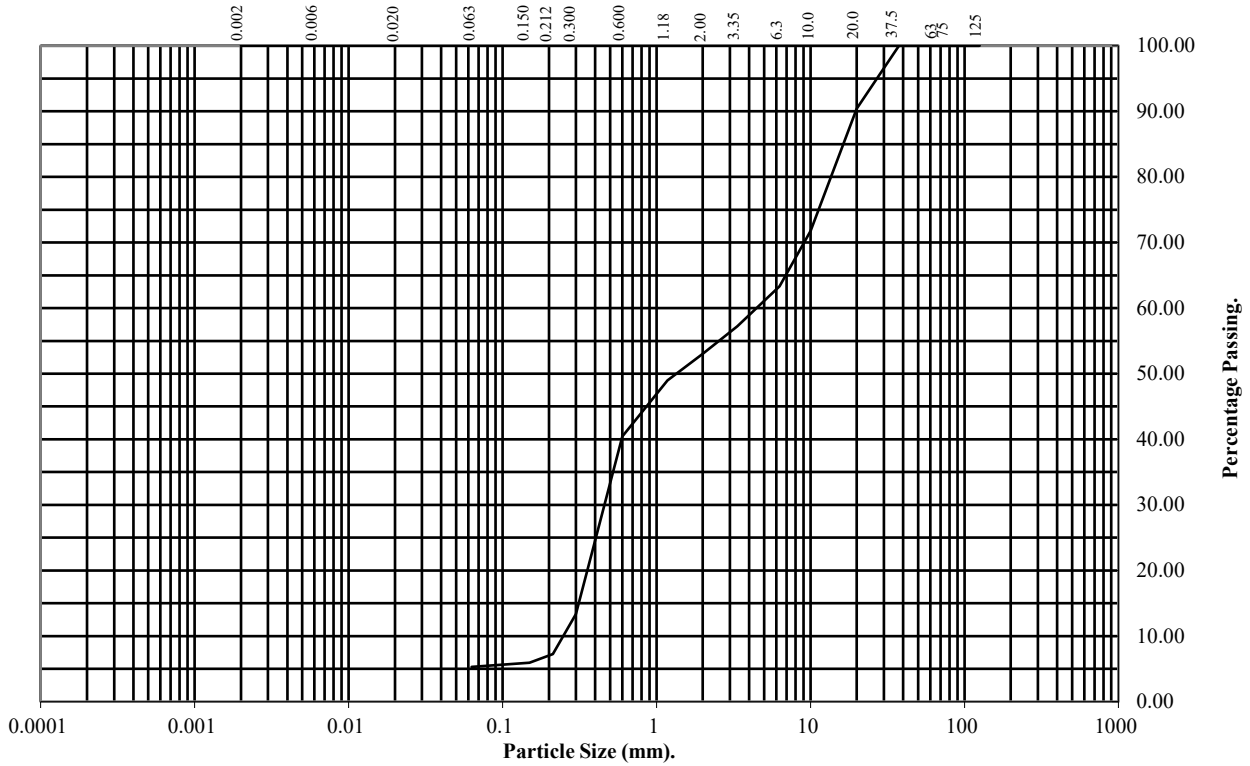
**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

**Hole Number:** S3TP36 **Top Depth (m):** 1.00

**Sample Number:** 7 **Base Depth(m):** 1.20

**Sample Type:** B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	90
10	72
6.3	63
3.35	57
2	53
1.18	49
0.6	40
0.3	13
0.212	7
0.15	6
0.063	5

Soil Fraction	Total Percentage
Cobbles	0
Gravel	47
Sand	48
Silt/Clay	5

**Remarks:**  
See Summary of Soil Descriptions



A46 Newark Bypass

<b>Contract No:</b>
<b>PSL23/4778</b>
<b>Client Ref:</b>
<b>G221209</b>

# PARTICLE SIZE DISTRIBUTION TEST

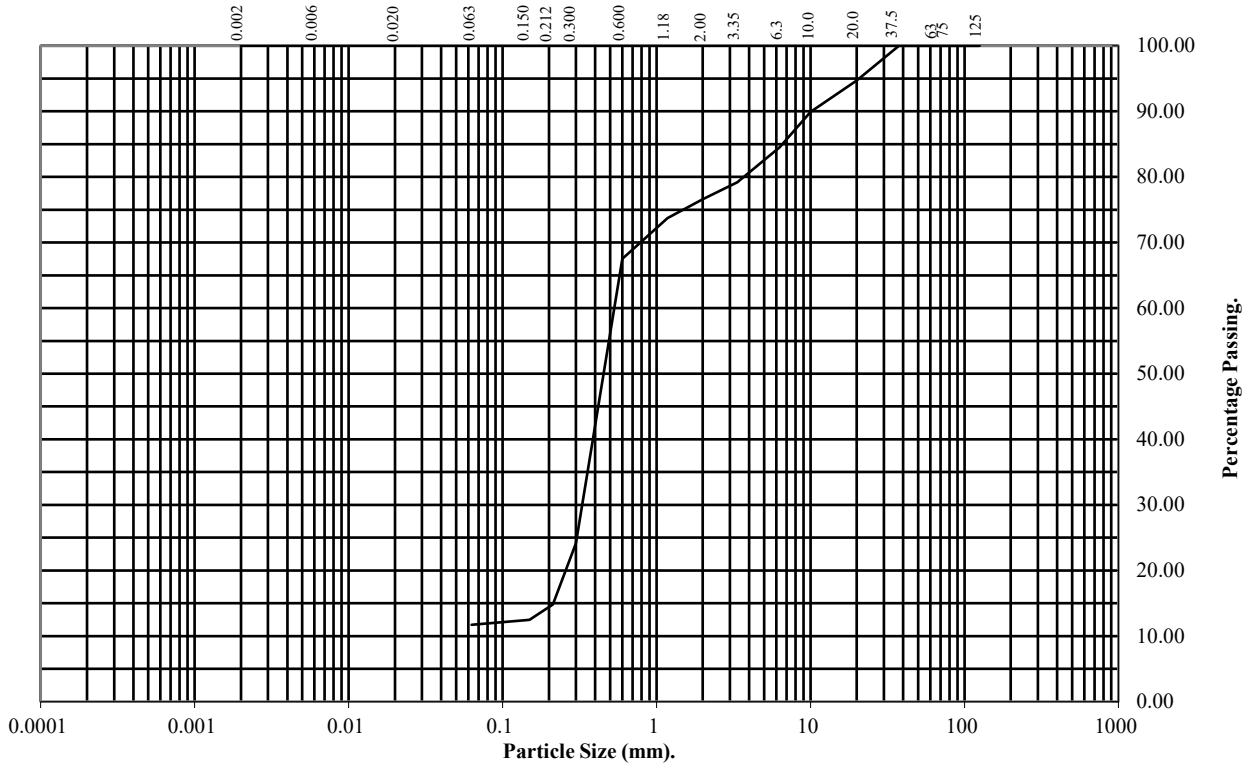
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

**Hole Number:** S3TP38 **Top Depth (m):** 1.50

**Sample Number:** 9 **Base Depth(m):** 2.50

**Sample Type:** B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	95
10	90
6.3	84
3.35	79
2	77
1.18	74
0.6	68
0.3	24
0.212	15
0.15	12
0.063	12

Soil Fraction	Total Percentage
Cobbles	0
Gravel	23
Sand	65
Silt/Clay	12

**Remarks:**  
See Summary of Soil Descriptions



A46 Newark Bypass

<b>Contract No:</b>
<b>PSL23/4778</b>
<b>Client Ref:</b>
<b>G221209</b>

# PARTICLE SIZE DISTRIBUTION TEST

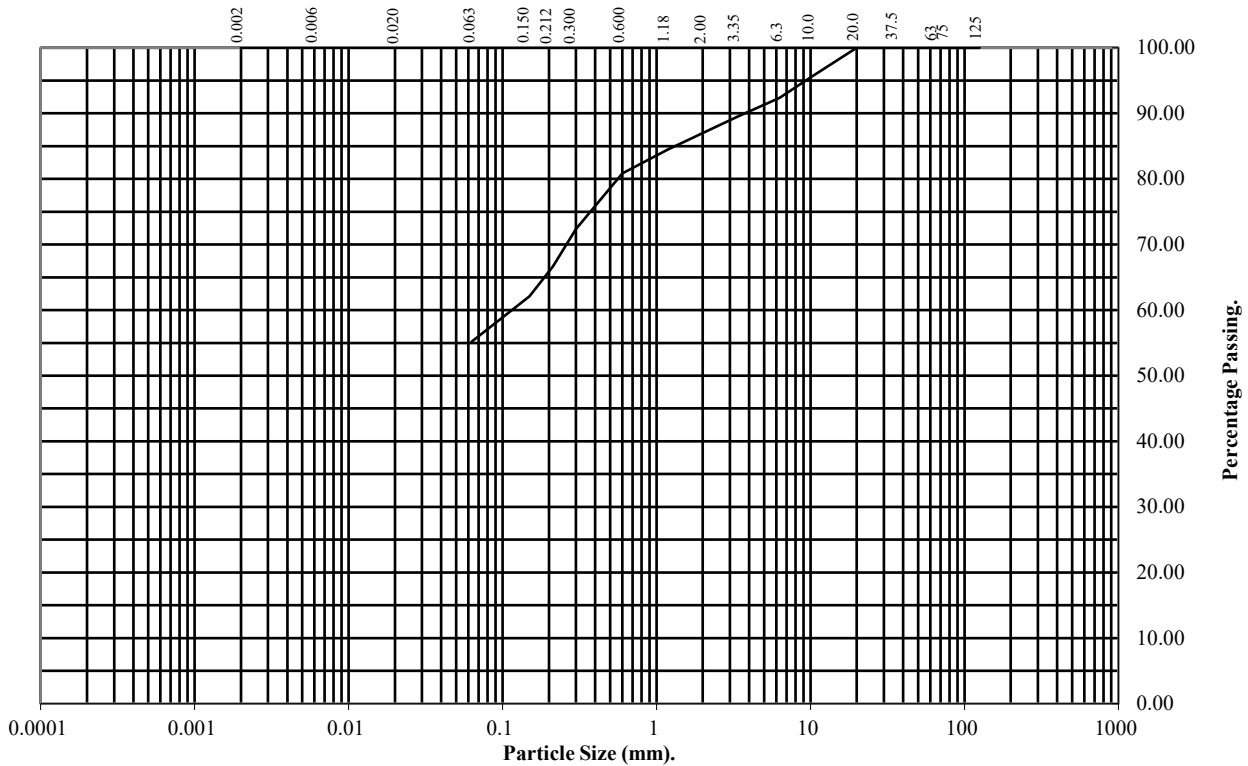
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **S3TP39** Top Depth (m): **0.50**

Sample Number: **6** Base Depth(m): **1.00**

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	95
6.3	92
3.35	89
2	87
1.18	84
0.6	81
0.3	72
0.212	67
0.15	62
0.063	55

Soil Fraction	Total Percentage
Cobbles	0
Gravel	13
Sand	32
Silt/Clay	55

**Remarks:**  
See Summary of Soil Descriptions



A46 Newark Bypass

<b>Contract No:</b>
<b>PSL23/4778</b>
<b>Client Ref:</b>
<b>G221209</b>

# PARTICLE SIZE DISTRIBUTION TEST

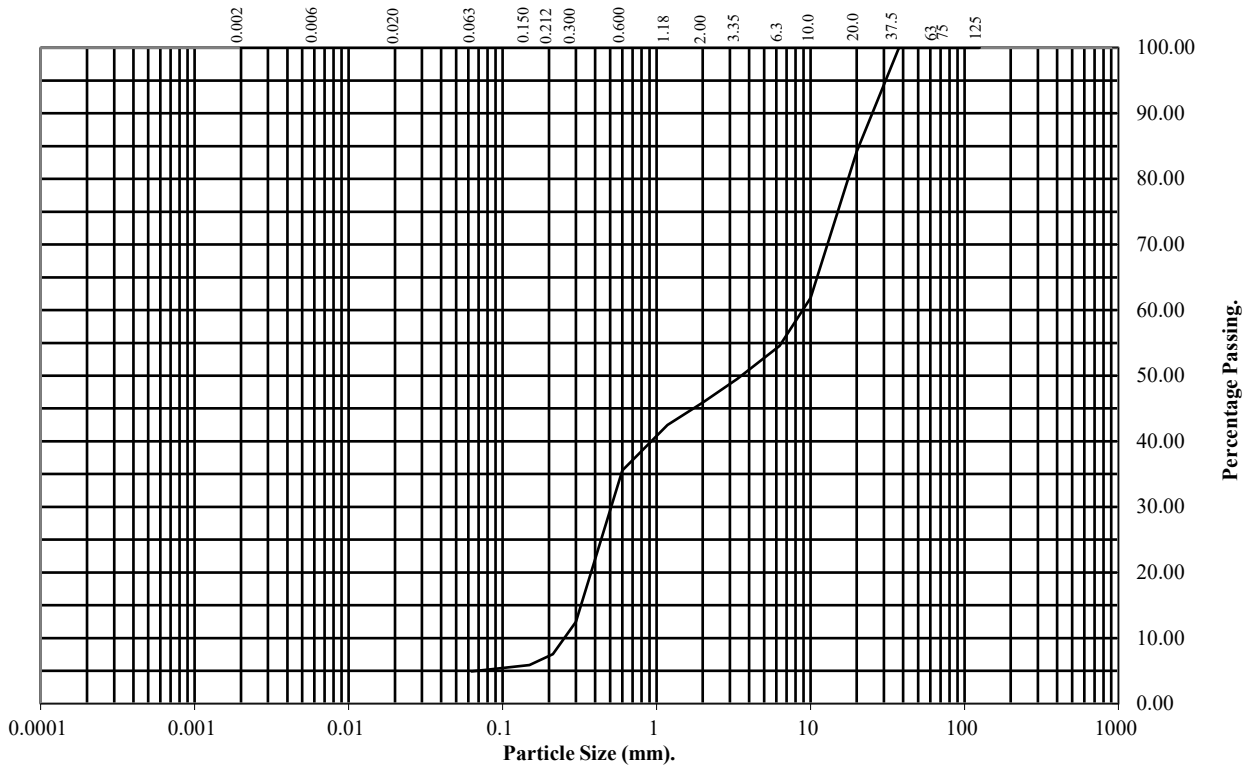
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **S3TP41** Top Depth (m): **1.00**

Sample Number: **10** Base Depth(m): **2.00**

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	84
10	62
6.3	55
3.35	50
2	46
1.18	42
0.6	36
0.3	12
0.212	8
0.15	6
0.063	5

Soil Fraction	Total Percentage
Cobbles	0
Gravel	54
Sand	41
Silt/Clay	5

**Remarks:**  
See Summary of Soil Descriptions



A46 Newark Bypass

<b>Contract No:</b>
<b>PSL23/4778</b>
<b>Client Ref:</b>
<b>G221209</b>

# PARTICLE SIZE DISTRIBUTION TEST

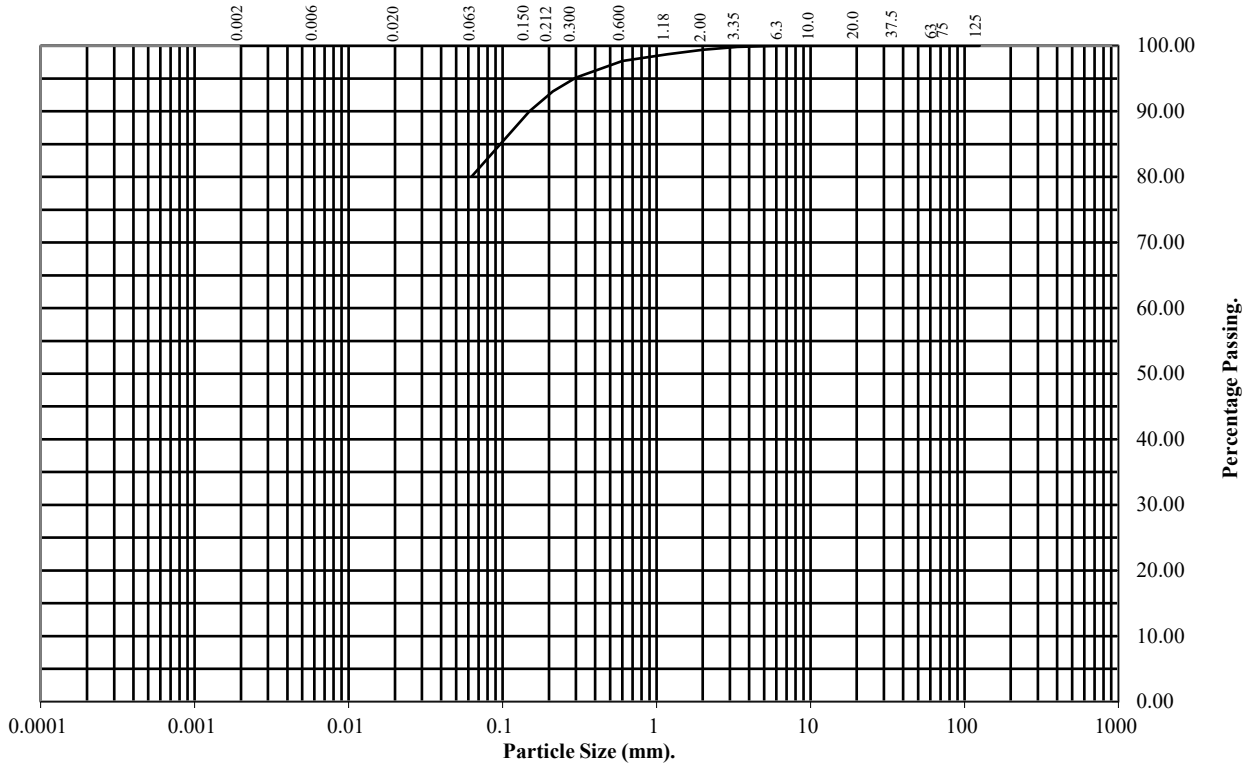
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **S3TP42** Top Depth (m): **1.00**

Sample Number: **6** Base Depth(m): **2.00**

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	99
1.18	99
0.6	98
0.3	95
0.212	93
0.15	90
0.063	80

Soil Fraction	Total Percentage
Cobbles	0
Gravel	1
Sand	19
Silt/Clay	80

**Remarks:**  
See Summary of Soil Descriptions



A46 Newark Bypass

<b>Contract No:</b>
<b>PSL23/4778</b>
<b>Client Ref:</b>
<b>G221209</b>



# PARTICLE SIZE DISTRIBUTION TEST

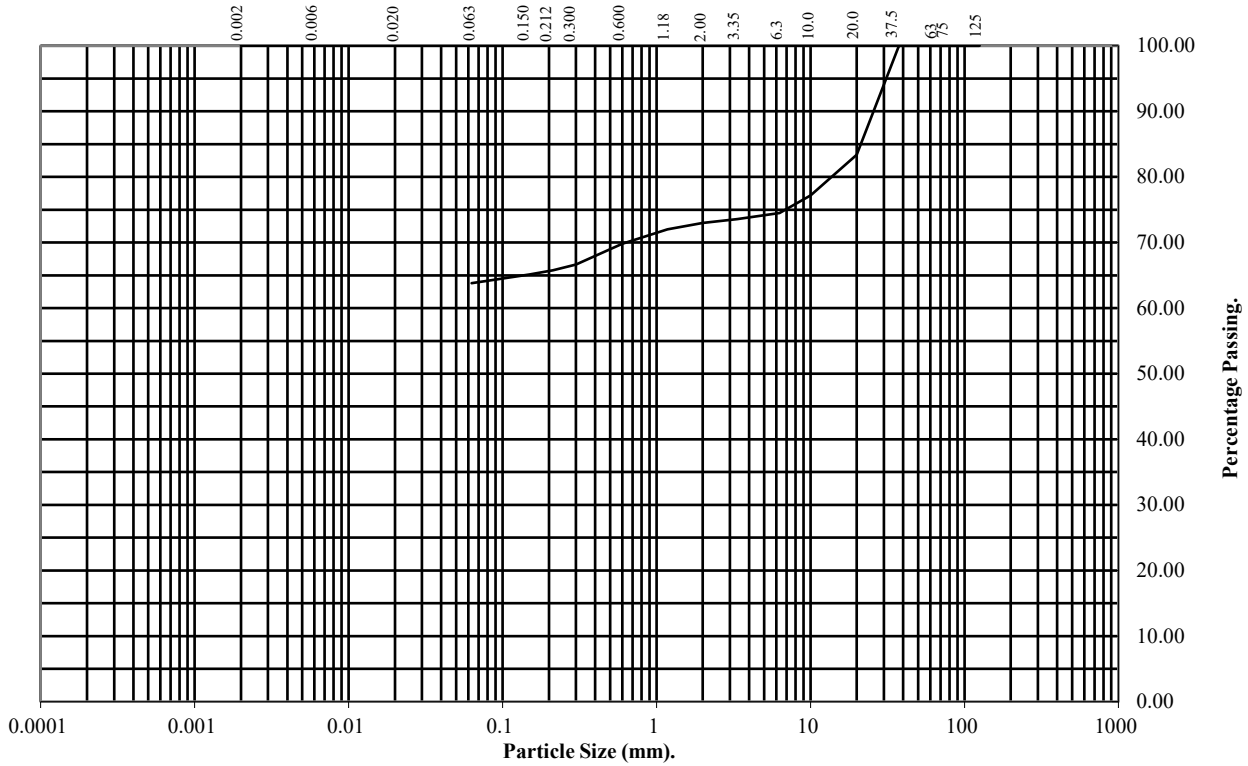
**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

**Hole Number:** S3TP42 **Top Depth (m):** 2.70

**Sample Number:** 5 **Base Depth(m):** 3.00

**Sample Type:** B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	83
10	77
6.3	74
3.35	74
2	73
1.18	72
0.6	70
0.3	67
0.212	66
0.15	65
0.063	64

Soil Fraction	Total Percentage
Cobbles	0
Gravel	27
Sand	9
Silt/Clay	64

**Remarks:**  
See Summary of Soil Descriptions



A46 Newark Bypass

<b>Contract No:</b>
<b>PSL23/4778</b>
<b>Client Ref:</b>
<b>G221209</b>

# PARTICLE SIZE DISTRIBUTION TEST

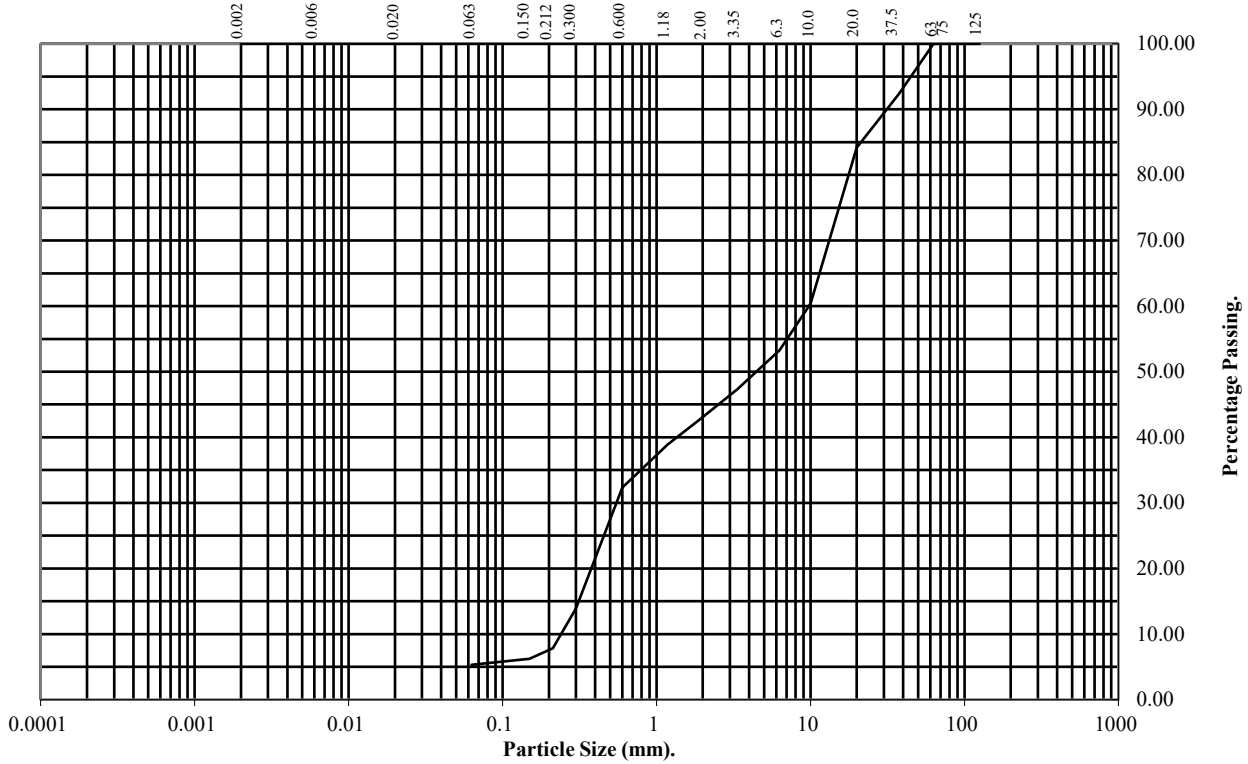
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: S3TP43 Top Depth (m): 1.00

Sample Number: 8 Base Depth(m): 2.00

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	92
20	84
10	60
6.3	53
3.35	47
2	43
1.18	39
0.6	32
0.3	14
0.212	8
0.15	6
0.063	5

Soil Fraction	Total Percentage
Cobbles	0
Gravel	57
Sand	38
Silt/Clay	5

**Remarks:**  
See Summary of Soil Descriptions



A46 Newark Bypass

Contract No:
PSL23/4778
Client Ref:
G221209



4161



**Professional Soils Laboratory**  
5/7 Hexthorpe Road  
Hexthorpe  
Doncaster  
DN4 0AR

**Analytical Test Report: L23/03183/PSL - 23-35066**

Your Project Reference:	<b>PSL23/4778 A46 Newark Bypass</b>		
Your Order Number:	Anthony	Samples Received / Instructed:	06/07/2023 / 06/07/2023
Report Issue Number:	1	Sample Tested:	06/07 to 12/07/2023
Samples Analysed:	13 soil samples	Report issued:	12/07/2023

Signed



**James Gane**  
Analytical Services Manager  
CTS Group

Notes:

**General**

Please refer to Methodologies page for details pertaining to the analytical methods undertaken.

Samples will be retained for 14 days after issue of this report unless otherwise requested.

Moisture Content was determined in accordance with CTS method statement MS - CL - Sample Prep, oven dried at <30°C.

Moisture Content is reported as a percentage of the dry mass of soil, this calculation is in accordance with BS1377, Part 2, 1990, Clause 3.2

Stone Content was determined in accordance with CTS method statement MS - CL - Sample Prep and refers to the percentage of stones retained on a 10mm BS test sieve.

**Where specification limits are included these are for guidance only. Where a measured value has been highlighted this is not implying acceptance or failure and certainty of measurement values have not been taken into account.**

**Uncertainty of measurement values are available on request.**

Samples were supplied by customer, results apply to the samples as received.

**Deviating Samples**

On receipt samples are compared against our sample holding and handling protocols, where any deviations have been noted these are reported on our deviating sample page (if present)

**Accreditation Key**

UKAS = UKAS Accreditation, MCERTS = MCERTS Accreditation, u = Unaccredited

MCERTS Accreditation only covers the SAND, CLAY and LOAM matrices

Date of Issue: 06.07.23

Issued by: J. Gane

Issue No: 4

Rev No: 1



7 - 11 Harding Street  
Leicester  
LE1 4DH

L23/03183/PSL - 23-35066

Project Reference - PSL23/4778 A46 Newark Bypass

Analytical Test Results - Chemical Analysis

Lab Reference	303053	303054	303055	303056	303057	303058	303059		
Client Sample ID	-	-	-	-	-	-	-		
Client Sample Location	S3BH16	S3BH16	S3BH16	S3BH17	S3BH17	S3TP35	S3TP36		
Client Sample Type	D	D	D	D	D	D	D		
Client Sample Number	7	13	17	11	17	4	4		
Depth - Top (m)	1.00	2.50	4.50	2.00	4.50	0.90	1.00		
Depth - Bottom (m)	1.00	2.50	4.50	2.45	4.95	1.10	1.20		
Date of Sampling	10/05/2023	11/05/2023	09/05/2023	09/05/2023	09/05/2023	09/05/2023	10/05/2023		
Time of Sampling	-	-	-	-	-	-	-		
Sample Matrix	Sand	Sand	Sand	Clay	Clay	Sand	Sand		
<b>Determinant</b>	<b>Units</b>	<b>Accreditation</b>							
Water soluble sulphate (as SO <sub>4</sub> )	(mg/l)	u	24	16	37	1400	33	58	48
Acid Soluble Sulphate	(%)	u	0.02	< 0.01	0.02	0.33	0.03	0.03	0.02
Total Sulphur	(%)	UKAS	0.01	< 0.01	0.01	0.26	< 0.01	0.02	0.01
pH Value	pH Units	MCERTS	7.3	7.4	9.1	5.5	7.9	8.0	7.4
Water Soluble Chloride	(mg/l)	u	4.3	4.8	8.3	13	5.5	19	6.2
Water Soluble Nitrate (As NO <sub>3</sub> )	(mg/l)	u	< 1.0	< 1.0	7.4	< 1.0	< 1.0	96	3.5
Water Soluble Magnesium	(mg/l)	u	5.9	2.5	2.5	110	4.1	3.2	2.5
Water Soluble Ammonium Ion	(mg/l)	u	< 1.0	< 1.0	< 1.0	< 1.0	1.7	< 1.0	< 1.0



7 - 11 Harding Street  
Leicester  
LE1 4DH

L23/03183/PSL - 23-35066

Project Reference - PSL23/4778 A46 Newark Bypass

Analytical Test Results - Chemical Analysis

Lab Reference	303060	303061	303062	303063	303064	303065		
Client Sample ID	-	-	-	-	-	-		
Client Sample Location	S3TP38	S3TP39	S3TP41	S3TP42	S3TP42	S3TP43		
Client Sample Type	D	D	D	D	D	D		
Client Sample Number	5	9	6	8	7	7		
Depth - Top (m)	1.20	0.90	0.90	1.50	2.80	1.30		
Depth - Bottom (m)	1.50	1.20	1.10	1.70	3.00	1.50		
Date of Sampling	10/05/2023	10/05/2023	10/05/2023	11/05/2023	11/05/2023	11/05/2023		
Time of Sampling	-	-	-	-	-	-		
Sample Matrix	Sand	Sand	Sand	Clay	Clay	Sand		
<b>Determinant</b>	<b>Units</b>	<b>Accreditation</b>						
Water soluble sulphate (as SO <sub>4</sub> )	(mg/l)	u	26	32	22	110	4100	110
Acid Soluble Sulphate	(%)	u	0.02	0.02	0.02	0.06	1.73	0.07
Total Sulphur	(%)	UKAS	< 0.01	< 0.01	0.02	0.02	8.27	0.13
pH Value	pH Units	MCERTS	7.5	7.8	7.5	7.4	3.6	7.1
Water Soluble Chloride	(mg/l)	u	6.0	2.8	3.1	10	44	2.9
Water Soluble Nitrate (As NO <sub>3</sub> )	(mg/l)	u	14	18	35	< 1.0	< 1.0	12
Water Soluble Magnesium	(mg/l)	u	2.5	2.5	2.5	8.8	340	8.5
Water Soluble Ammonium Ion	(mg/l)	u	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0



4161

7 - 11 Harding Street  
Leicester  
LE1 4DH

L23/03183/PSL - 23-35066

Project Reference - PSL23/4778 A46 Newark Bypass

## Sample Descriptions

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Description	Moisture Content (%)	Stone Content (%)	Passing 2mm test sieve (%)
303053	-	S3BH16	D	7	Mottled cream brown gravelly silty sand with rare rootlets	5.2	29	39
303054	-	S3BH16	D	13	Mottled cream brown gravelly silty sand	9.6	63	35
303055	-	S3BH16	D	17	Mottled cream brown gravelly silty sand	6.6	46	34
303056	-	S3BH17	D	11	Brown silty clay	32	< 0.1	100
303057	-	S3BH17	D	17	Red slightly sandy silty clay	17	< 0.1	89
303058	-	S3TP35	D	4	Brown gravelly silty sand	9.5	26	59
303059	-	S3TP36	D	4	Brown slightly clayey silty sand	11	9.1	85
303060	-	S3TP38	D	5	Mottled cream brown gravelly silty sand	7.6	12	34
303061	-	S3TP39	D	9	Mottled cream brown gravelly silty sand	9.0	28	35
303062	-	S3TP41	D	6	Mottled cream brown gravelly silty sand	4.4	56	41
303063	-	S3TP42	D	8	Brown silty clay	25	5.3	100
303064	-	S3TP42	D	7	Grey gravelly silty clay	13	56	29
303065	-	S3TP43	D	7	Mottled cream brown gravelly silty sand	6.3	32	34



4161



7 - 11 Harding Street  
Leicester  
LE1 4DH

L23/03183/PSL - 23-35066

Project Reference - PSL23/4778 A46 Newark Bypass

Sample Comments

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Comments
303053	-	S3BH16	D	7	
303054	-	S3BH16	D	13	
303055	-	S3BH16	D	17	
303056	-	S3BH17	D	11	
303057	-	S3BH17	D	17	
303058	-	S3TP35	D	4	
303059	-	S3TP36	D	4	
303060	-	S3TP38	D	5	
303061	-	S3TP39	D	9	
303062	-	S3TP41	D	6	
303063	-	S3TP42	D	8	
303064	-	S3TP42	D	7	
303065	-	S3TP43	D	7	



7 - 11 Harding Street  
Leicester  
LE1 4DH

L23/03183/PSL - 23-35066

Project Reference - PSL23/4778 A46 Newark Bypass

#### Analysis Methodologies

Test Code	Test Name / Reference	Sample condition for analysis	Sample Preparation	Test Details
ANIONSS	MS - CL - Anions by Aquakem (2:1Extract)	Oven dried	Passing 2mm test sieve	Determination of Anions (inc Sulphate, chloride etc.) in soils by Aquakem. Analysis is based on a 2:1 water to soil extraction ratio
PHS	MS - CL - pH in Soils	As received	Passing 10mm test sieve	Determination of pH in soils using a pH probe (using a 1:3 soil to water extraction)
ASSO4S	MS - CL - Acid Soluble Sulphate	Oven Dried	Passing 2mm test sieve	Determination of total sulphate in soils by acid extraction followed by ICP analysis
SAMPLEPREP	MS - CL - Sample Preparation	-	-	Preparation of samples (including determination of moisture content) to allow for subsequent analysis
1377TS-ELT	BS1377 Total Sulphur Content by HTC	Oven dried	BS1377 : Part 1 : 2016	Total Sulphur Content testing of Soil in accordance with BS 1377 : Part 3 : 2018 + A1 : 2021 Clause 7.10 (using Eltra CS-800 Analyser)





7 - 11 Harding Street  
Leicester  
LE1 4DH

L23/03183/PSL - 23-35066

Project Reference - PSL23/4778 A46 Newark Bypass

**Sample Deviations**

Deviations are listed below against each sample and associated test method, where deviation(s) are noted it means data may not be representative of the sample at the time of sampling and it is possible that results provided may be compromised.

**Observations on receipt**

A - No date of sampling provided

C - Received in inappropriate container

H - Contains headspace

T - Temperature on receipt exceeds storage temperature

R - Date of sampling to receipt insufficient to allow analysis to be completed without deviation, Please note this is only a deviation if 'X' is also recorded against the sample

**Observations whilst in laboratory**

X - Exceeds sampling to extraction or analysis timescales

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Test	Deviations
303053	-	S3BH16	D	7	BS1377 Total Sulphur Content by HTC	RX
303053	-	S3BH16	D	7	MS - CL - Anions by Aquakem (2:1Extract)	RX
303053	-	S3BH16	D	7	MS - CL - pH in Soils	RX
303054	-	S3BH16	D	13	BS1377 Total Sulphur Content by HTC	RX
303054	-	S3BH16	D	13	MS - CL - Anions by Aquakem (2:1Extract)	RX
303054	-	S3BH16	D	13	MS - CL - pH in Soils	RX
303055	-	S3BH16	D	17	BS1377 Total Sulphur Content by HTC	RX
303055	-	S3BH16	D	17	MS - CL - Anions by Aquakem (2:1Extract)	RX
303055	-	S3BH16	D	17	MS - CL - pH in Soils	RX
303056	-	S3BH17	D	11	BS1377 Total Sulphur Content by HTC	RX
303056	-	S3BH17	D	11	MS - CL - Anions by Aquakem (2:1Extract)	RX
303056	-	S3BH17	D	11	MS - CL - pH in Soils	RX
303057	-	S3BH17	D	17	BS1377 Total Sulphur Content by HTC	RX
303057	-	S3BH17	D	17	MS - CL - Anions by Aquakem (2:1Extract)	RX
303057	-	S3BH17	D	17	MS - CL - pH in Soils	RX
303058	-	S3TP35	D	4	BS1377 Total Sulphur Content by HTC	RX
303058	-	S3TP35	D	4	MS - CL - Anions by Aquakem (2:1Extract)	RX
303058	-	S3TP35	D	4	MS - CL - pH in Soils	RX
303059	-	S3TP36	D	4	BS1377 Total Sulphur Content by HTC	RX
303059	-	S3TP36	D	4	MS - CL - Anions by Aquakem (2:1Extract)	RX
303059	-	S3TP36	D	4	MS - CL - pH in Soils	RX
303060	-	S3TP38	D	5	BS1377 Total Sulphur Content by HTC	RX
303060	-	S3TP38	D	5	MS - CL - Anions by Aquakem (2:1Extract)	RX
303060	-	S3TP38	D	5	MS - CL - pH in Soils	RX
303061	-	S3TP39	D	9	BS1377 Total Sulphur Content by HTC	RX
303061	-	S3TP39	D	9	MS - CL - Anions by Aquakem (2:1Extract)	RX
303061	-	S3TP39	D	9	MS - CL - pH in Soils	RX
303062	-	S3TP41	D	6	BS1377 Total Sulphur Content by HTC	RX
303062	-	S3TP41	D	6	MS - CL - Anions by Aquakem (2:1Extract)	RX
303062	-	S3TP41	D	6	MS - CL - pH in Soils	RX
303063	-	S3TP42	D	8	BS1377 Total Sulphur Content by HTC	RX
303063	-	S3TP42	D	8	MS - CL - Anions by Aquakem (2:1Extract)	RX
303063	-	S3TP42	D	8	MS - CL - pH in Soils	RX
303064	-	S3TP42	D	7	BS1377 Total Sulphur Content by HTC	RX
303064	-	S3TP42	D	7	MS - CL - Anions by Aquakem (2:1Extract)	RX
303064	-	S3TP42	D	7	MS - CL - pH in Soils	RX



L23/03183/PSL - 23-35066

Project Reference - PSL23/4778 A46 Newark Bypass

**Sample Deviations**

Deviations are listed below against each sample and associated test method, where deviation(s) are noted it means data may not be representative of the sample at the time of sampling and it is possible that results provided may be compromised.

**Observations on receipt**

A - No date of sampling provided

C - Received in inappropriate container

H - Contains headspace

T - Temperature on receipt exceeds storage temperature

R - Date of sampling to receipt insufficient to allow analysis to be completed without deviation, Please note this is only a deviation if 'X' is also recorded against the sample

**Observations whilst in laboratory**

X - Exceeds sampling to extraction or analysis timescales

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Test	Deviations
303065	-	S3TP43	D	7	BS1377 Total Sulphur Content by HTC	RX
303065	-	S3TP43	D	7	MS - CL - Anions by Aquakem (2:1Extract)	RX
303065	-	S3TP43	D	7	MS - CL - pH in Soils	RX



# Final Report

---

**Report No.:** 23-16947-1

**Initial Date of Issue:** 01-Jun-2023

**Re-Issue Details:**

**Client** Strata Geotechnics Limited

**Client Address:** Summit Close  
Kirkby in Ashfield  
Nottinghamshire  
NG17 8GJ

**Contact(s):** LABS

**Project** G221209 A46 Newark Bypass

**Quotation No.:** **Date Received:** 23-May-2023

**Order No.:** **Date Instructed:** 23-May-2023

**No. of Samples:** 8

**Turnaround (Wkdays):** 7 **Results Due:** 01-Jun-2023

**Date Approved:** 01-Jun-2023

**Approved By:**



**Details:** Stuart Henderson, Technical  
Manager

---

## Results - Leachate

**Project: G221209 A46 Newark Bypass**

Client: Strata Geotechnics Limited		Chemtest Job No.:			23-16947	23-16947	23-16947	
Quotation No.:		Chemtest Sample ID.:			1643412	1643417	1643432	
Order No.:		Client Sample Ref.:			4	7	2	
		Sample Location:			S3BH16	S3BH17	S3TP41	
		Sample Type:			SOIL	SOIL	SOIL	
		Top Depth (m):			0.50	1.00	0.50	
		Bottom Depth (m):			0.50	1.00		
		Date Sampled:			10-May-2023	09-May-2023	10-May-2023	
Determinand	Accred.	SOP	Type	Units	LOD			
pH	U	1010	10:1		N/A	6.9	7.2	6.3
Chloride	U	1220	10:1	mg/l	1.0	1.2	1.6	2.3
Fluoride	U	1220	10:1	mg/l	0.050	0.54	0.89	0.26
Ammoniacal Nitrogen	U	1220	10:1	mg/l	0.050	0.086	0.086	0.078
Nitrate	U	1220	10:1	mg/l	0.50		2.0	
Sulphate	U	1220	10:1	mg/l	1.0	< 1.0	12	2.9
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050	< 0.050
Cyanide (Complex)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050	< 0.050
Sulphide	U	1325	10:1	mg/l	0.050		< 0.050	
Calcium	U	1455	10:1	mg/l	2.00	3.0	9.4	3.0
Magnesium	U	1455	10:1	mg/l	0.20	0.97	2.4	0.46
Hardness	U	1415	10:1	mg/l	15		33	
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	1.9	0.92	0.89
Boron (Dissolved)	U	1455	10:1	µg/l	10.0	50	68	51
Barium (Dissolved)	U	1455	10:1	µg/l	5.00	6.6	31	10
Beryllium (Dissolved)	U	1455	10:1	µg/l	1.00	< 1.0	< 1.0	< 1.0
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11	< 0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	0.68	0.87	1.2
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	5.5	3.3	4.4
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05		< 0.05
Manganese (Dissolved)	U	1455	10:1	µg/l	0.50	25	7.2	37
Molybdenum (Dissolved)	U	1455	10:1	µg/l	0.20	0.97	0.61	0.44
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	1.0	1.2	1.3
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	2.1	2.3	1.5
Antimony (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50	< 0.50
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50	< 0.50
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	2.5	1.4	1.6
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	16	11	11
Iron (Total)	N	1455	10:1	µg/l	5.0		1100	
Mercury Low Level	U	1460	10:1	µg/l	0.010		< 0.010	
Iron (Dissolved)	N	1455	10:1	µg/l	5.0	650		1200
Chromium (Trivalent)	N	1490	10:1	µg/l	20		< 20	
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20	< 20	< 20
Florisil Cleanup	N		10:1	-	N/A	Done	Done	Done
Total TPH >C6-C40	U	1670	10:1	µg/l	10	< 10		< 10
Aliphatic TPH >C5-C6	N	1675	10:1	µg/l	0.10		< 0.10	
Aliphatic TPH >C6-C8	N	1675	10:1	µg/l	0.10		< 0.10	

## Results - Leachate

**Project: G221209 A46 Newark Bypass**

Client: Strata Geotechnics Limited		Chemtest Job No.:			23-16947	23-16947	23-16947
Quotation No.:		Chemtest Sample ID.:			1643412	1643417	1643432
Order No.:		Client Sample Ref.:			4	7	2
		Sample Location:			S3BH16	S3BH17	S3TP41
		Sample Type:			SOIL	SOIL	SOIL
		Top Depth (m):			0.50	1.00	0.50
		Bottom Depth (m):			0.50	1.00	
		Date Sampled:			10-May-2023	09-May-2023	10-May-2023
Determinand	Accred.	SOP	Type	Units	LOD		
Aliphatic TPH >C8-C10	N	1675	10:1	µg/l	0.10		< 0.10
Aliphatic TPH >C10-C12	N	1675	10:1	µg/l	0.10		< 0.10
Aliphatic TPH >C12-C16	N	1675	10:1	µg/l	0.10		< 0.10
Aliphatic TPH >C16-C21	N	1675	10:1	µg/l	0.10		< 0.10
Aliphatic TPH >C21-C35	N	1675	10:1	µg/l	0.10		< 0.10
Aliphatic TPH >C35-C44	N	1675	10:1	µg/l	0.10		< 0.10
Total Aliphatic Hydrocarbons	N	1675	10:1	µg/l	5.0		< 5.0
Aromatic TPH >C5-C7	N	1675	10:1	µg/l	0.10		< 0.10
Aromatic TPH >C7-C8	N	1675	10:1	µg/l	0.10		< 0.10
Aromatic TPH >C8-C10	N	1675	10:1	µg/l	0.10		< 0.10
Aromatic TPH >C10-C12	N	1675	10:1	µg/l	0.10		< 0.10
Aromatic TPH >C12-C16	N	1675	10:1	µg/l	0.10		< 0.10
Aromatic TPH >C16-C21	N	1675	10:1	µg/l	0.10		< 0.10
Aromatic TPH >C21-C35	N	1675	10:1	µg/l	0.10		< 0.10
Aromatic TPH >C35-C44	N	1675	10:1	µg/l	0.10		< 0.10
Total Aromatic Hydrocarbons	N	1675	10:1	µg/l	5.0		< 5.0
Total Petroleum Hydrocarbons	N	1675	10:1	µg/l	10		< 10
Naphthalene	N	1700	10:1	µg/l	0.010	< 0.010	< 0.010
Acenaphthylene	N	1700	10:1	µg/l	0.010	< 0.010	< 0.010
Acenaphthene	N	1700	10:1	µg/l	0.010	< 0.010	< 0.010
Fluorene	N	1700	10:1	µg/l	0.010	< 0.010	< 0.010
Phenanthrene	N	1700	10:1	µg/l	0.010	< 0.010	< 0.010
Anthracene	N	1700	10:1	µg/l	0.010	< 0.010	< 0.010
Fluoranthene	N	1700	10:1	µg/l	0.010	< 0.010	< 0.010
Pyrene	N	1700	10:1	µg/l	0.010	< 0.010	< 0.010
Benzo[a]anthracene	N	1700	10:1	µg/l	0.010	< 0.010	< 0.010
Chrysene	N	1700	10:1	µg/l	0.010	< 0.010	< 0.010
Benzo[b]fluoranthene	N	1700	10:1	µg/l	0.010	< 0.010	< 0.010
Benzo[k]fluoranthene	N	1700	10:1	µg/l	0.010	< 0.010	< 0.010
Benzo[a]pyrene	N	1700	10:1	µg/l	0.010	< 0.010	< 0.010
Indeno(1,2,3-c,d)Pyrene	N	1700	10:1	µg/l	0.010	< 0.010	< 0.010
Dibenz(a,h)Anthracene	N	1700	10:1	µg/l	0.010	< 0.010	< 0.010
Benzo[g,h,i]perylene	N	1700	10:1	µg/l	0.010	< 0.010	< 0.010
Total Of 16 PAH's	N	1700	10:1	µg/l	0.20	< 0.20	< 0.20
Naphthalene	U	1800	10:1	µg/l	0.10		< 0.10
Acenaphthylene	U	1800	10:1	µg/l	0.10		< 0.10
Acenaphthene	U	1800	10:1	µg/l	0.10		< 0.10
Fluorene	U	1800	10:1	µg/l	0.10		< 0.10

## Results - Leachate

**Project: G221209 A46 Newark Bypass**

<b>Client: Strata Geotechnics Limited</b>		<b>Chemtest Job No.:</b>		23-16947	23-16947	23-16947
<b>Quotation No.:</b>		<b>Chemtest Sample ID.:</b>		1643412	1643417	1643432
<b>Order No.:</b>		<b>Client Sample Ref.:</b>		4	7	2
		<b>Sample Location:</b>		S3BH16	S3BH17	S3TP41
		<b>Sample Type:</b>		SOIL	SOIL	SOIL
		<b>Top Depth (m):</b>		0.50	1.00	0.50
		<b>Bottom Depth (m):</b>		0.50	1.00	
		<b>Date Sampled:</b>		10-May-2023	09-May-2023	10-May-2023
<b>Determinand</b>	<b>Accred.</b>	<b>SOP</b>	<b>Type</b>	<b>Units</b>	<b>LOD</b>	
Phenanthrene	U	1800	10:1	µg/l	0.10	< 0.10
Anthracene	U	1800	10:1	µg/l	0.10	< 0.10
Fluoranthene	U	1800	10:1	µg/l	0.10	< 0.10
Pyrene	U	1800	10:1	µg/l	0.10	< 0.10
Benzo[a]anthracene	U	1800	10:1	µg/l	0.10	< 0.10
Chrysene	U	1800	10:1	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1800	10:1	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1800	10:1	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1800	10:1	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1800	10:1	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1800	10:1	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1800	10:1	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1800	10:1	µg/l	2.0	< 2.0
Resorcinol	U	1920	10:1	mg/l	0.0050	< 0.0050
Phenol	U	1920	10:1	mg/l	0.0050	< 0.0050
Cresols	U	1920	10:1	mg/l	0.0050	< 0.0050
Xylenols	U	1920	10:1	mg/l	0.0050	< 0.0050
1-Naphthol	N	1920	10:1	mg/l	0.0050	< 0.0050
Trimethylphenols	U	1920	10:1	mg/l	0.0050	< 0.0050
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030

## Results - Soil

**Project: G221209 A46 Newark Bypass**

Client: Strata Geotechnics Limited		Chemtest Job No.:		23-16947	23-16947	23-16947	23-16947	23-16947	23-16947	23-16947	23-16947	23-16947
Quotation No.:		Chemtest Sample ID.:		1643412	1643417	1643423	1643426	1643428	1643432	1643435	1643437	
Order No.:		Client Sample Ref.:		4	7	2	3	2	2	2	3	
		Sample Location:		S3BH16	S3BH17	S3TP36	S3TP38	ST3P39	S3TP41	S3TP42	S3TP43	
		Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	
		Top Depth (m):		0.50	1.00	0.50	1.00	0.50	0.50	0.50	0.80	
		Bottom Depth (m):		0.50	1.00							
		Date Sampled:		10-May-2023	09-May-2023	09-May-2023	10-May-2023	10-May-2023	10-May-2023	11-May-2023	11-May-2023	
		Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	
Determinand	Accred.	SOP	Units	LOD								
ACM Type	U	2192		N/A	-	-	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	13	21	7.5	9.4	5.3	12	19	7.2
Soil Colour	N	2040		N/A	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown
Other Material	N	2040		N/A	Stones and Roots	Stones and Roots	Stones	Stones	Stones	Stones	Stones	Stones
Soil Texture	N	2040		N/A	Sand	Sand	Sand	Sand	Sand	Sand	Clay	Sand
pH	M	2010		4.0	6.9	7.6	7.7	8.3	8.0	6.8	7.8	8.2
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	1.1	3.2	0.44	< 0.40	0.51	0.56	0.73	< 0.40
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	0.016	< 0.010	0.014	< 0.010	0.060	0.14	0.034	< 0.010
Total Sulphur	U	2175	%	0.010	0.050	0.039	< 0.010	< 0.010	< 0.010	0.025	0.019	< 0.010
Cyanide (Free)	M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Iron (Total)	N	2430	mg/kg	100	14000	22000	19000	13000	29000	18000	33000	17000
Arsenic	M	2455	mg/kg	0.5	6.0	9.4	7.5	4.2	8.6	6.4	18	28
Barium	M	2455	mg/kg	0	72	230	65	30	110	94	310	78
Beryllium	U	2455	mg/kg	0.5	0.7	1.0	0.7	< 0.5	0.7	0.7	1.4	0.6
Cadmium	M	2455	mg/kg	0.10	0.33	1.3	0.19	0.18	0.62	0.21	1.8	0.15
Chromium	M	2455	mg/kg	0.5	11		16	5.6	12	18	34	8.7
Manganese	M	2455	mg/kg	1.0	490	920	490	170	1100	470	1400	240
Molybdenum	M	2455	mg/kg	0.5	1.0	1.2	1.0	< 0.5	1.1	0.9	1.8	0.9
Antimony	N	2455	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Copper	M	2455	mg/kg	0.50	21	19	14	6.3	9.8	15	20	8.0
Mercury	M	2455	mg/kg	0.05	0.36	0.14	< 0.05	< 0.05	< 0.05	0.06	< 0.05	< 0.05
Nickel	M	2455	mg/kg	0.50	12	25	19	8.4	28	15	40	12
Lead	M	2455	mg/kg	0.50	44	120	12	4.7	10	30	33	6.9
Selenium	M	2455	mg/kg	0.25	0.47	1.0	0.66	0.25	0.66	0.56	1.4	0.40
Vanadium	U	2455	mg/kg	0.5	15	29	21	8.2	17	20	46	28
Zinc	M	2455	mg/kg	0.50	66	150	39	21	42	64	250	33
Chromium (Trivalent)	N	2490	mg/kg	1.0	11	25	16	5.6	12	18	34	8.7
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05		< 0.05						
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05		< 0.05						
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05		< 0.05						
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25		< 0.25						
Aliphatic EPH >C10-C12	M	2690	mg/kg	2.00		4.0						
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05		< 0.05						

## Results - Soil

**Project: G221209 A46 Newark Bypass**

Client: Strata Geotechnics Limited		Chemtest Job No.:		23-16947	23-16947	23-16947	23-16947	23-16947	23-16947	23-16947	23-16947	23-16947
Quotation No.:		Chemtest Sample ID.:		1643412	1643417	1643423	1643426	1643428	1643432	1643435	1643437	
Order No.:		Client Sample Ref.:		4	7	2	3	2	2	2	3	
		Sample Location:		S3BH16	S3BH17	S3TP36	S3TP38	ST3P39	S3TP41	S3TP42	S3TP43	
		Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	
		Top Depth (m):		0.50	1.00	0.50	1.00	0.50	0.50	0.50	0.80	
		Bottom Depth (m):		0.50	1.00							
		Date Sampled:		10-May-2023	09-May-2023	09-May-2023	10-May-2023	10-May-2023	10-May-2023	11-May-2023	11-May-2023	
		Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	
Determinand	Accred.	SOP	Units	LOD								
Aliphatic EPH >C12-C16	M	2690	mg/kg	1.00			2.6					
Aliphatic EPH >C16-C21	M	2690	mg/kg	2.00			2.9					
Aliphatic EPH >C21-C35	M	2690	mg/kg	3.00			15					
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00			< 10					
Total Aliphatic EPH >C10-C35	M	2690	mg/kg	5.00			25					
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00			25					
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05			< 0.05					
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05			< 0.05					
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05			< 0.05					
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25			< 0.25					
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00			1.4					
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00			< 1.0					
Aromatic EPH >C16-C21	U	2690	mg/kg	2.00			2.2					
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00			14					
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00			9.1					
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00			18					
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00			27					
Total VPH >C5-C10	U	2780	mg/kg	0.50			< 0.50					
Total EPH >C10-C35	U	2690	mg/kg	10.00			43					
Total EPH >C10-C40	N	2690	mg/kg	10.00			52					
Fraction of Organic Carbon	M	2625		0.0010	0.028	0.017	0.0010	< 0.0010	0.0018	0.015	0.0046	< 0.0010
Total TPH >C6-C40 Trigger	M	2670	mg/kg	10			< 10					
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 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	< 1.0	< 1.0
Aliphatic TPH >C8-C10	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 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	< 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	< 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	< 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	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0



## Results - Soil

**Project: G221209 A46 Newark Bypass**

Client: Strata Geotechnics Limited		Chemtest Job No.:		23-16947	23-16947	23-16947	23-16947	23-16947	23-16947	23-16947	23-16947	23-16947
Quotation No.:		Chemtest Sample ID.:		1643412	1643417	1643423	1643426	1643428	1643432	1643435	1643437	
Order No.:		Client Sample Ref.:		4	7	2	3	2	2	2	3	
		Sample Location:		S3BH16	S3BH17	S3TP36	S3TP38	ST3P39	S3TP41	S3TP42	S3TP43	
		Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	
		Top Depth (m):		0.50	1.00	0.50	1.00	0.50	0.50	0.50	0.80	
		Bottom Depth (m):		0.50	1.00							
		Date Sampled:		10-May-2023	09-May-2023	09-May-2023	10-May-2023	10-May-2023	10-May-2023	11-May-2023	11-May-2023	
		Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	
Determinand	Accred.	SOP	Units	LOD								
Aromatic TPH >C21-C35	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 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	< 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	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Naphthalene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dichlorodifluoromethane	U	2760	µg/kg	1.0		< 1.0						
Chloromethane	M	2760	µg/kg	1.0		< 1.0						
Vinyl Chloride	M	2760	µg/kg	1.0		< 1.0						
Bromomethane	M	2760	µg/kg	20		< 20						
Chloroethane	U	2760	µg/kg	2.0		< 2.0						
Trichlorofluoromethane	M	2760	µg/kg	1.0		< 1.0						
1,1-Dichloroethene	M	2760	µg/kg	1.0		< 1.0						
Dichloromethane	N	2760	µg/kg	50		< 50						
Trans 1,2-Dichloroethene	M	2760	µg/kg	1.0		< 1.0						
1,1-Dichloroethane	M	2760	µg/kg	1.0		< 1.0						
cis 1,2-Dichloroethene	M	2760	µg/kg	1.0		< 1.0						
Bromochloromethane	U	2760	µg/kg	5.0		< 5.0						
Trichloromethane	M	2760	µg/kg	1.0		< 1.0						
1,1,1-Trichloroethane	M	2760	µg/kg	1.0		< 1.0						
Tetrachloromethane	M	2760	µg/kg	1.0		< 1.0						
1,1-Dichloropropene	U	2760	µg/kg	1.0		< 1.0						

## Results - Soil

**Project: G221209 A46 Newark Bypass**

Client: Strata Geotechnics Limited		Chemtest Job No.:		23-16947	23-16947	23-16947	23-16947	23-16947	23-16947	23-16947	23-16947
Quotation No.:		Chemtest Sample ID.:		1643412	1643417	1643423	1643426	1643428	1643432	1643435	1643437
Order No.:		Client Sample Ref.:		4	7	2	3	2	2	2	3
		Sample Location:		S3BH16	S3BH17	S3TP36	S3TP38	ST3P39	S3TP41	S3TP42	S3TP43
		Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):		0.50	1.00	0.50	1.00	0.50	0.50	0.50	0.80
		Bottom Depth (m):		0.50	1.00						
		Date Sampled:		10-May-2023	09-May-2023	09-May-2023	10-May-2023	10-May-2023	10-May-2023	11-May-2023	11-May-2023
		Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD							
Benzene	M	2760	µg/kg	1.0		< 1.0					
1,2-Dichloroethane	M	2760	µg/kg	2.0		< 2.0					
Trichloroethene	N	2760	µg/kg	1.0		< 1.0					
1,2-Dichloropropane	M	2760	µg/kg	1.0		< 1.0					
Dibromomethane	M	2760	µg/kg	1.0		< 1.0					
Bromodichloromethane	M	2760	µg/kg	5.0		< 5.0					
cis-1,3-Dichloropropene	N	2760	µg/kg	10		< 10					
Toluene	M	2760	µg/kg	1.0		< 1.0					
Trans-1,3-Dichloropropene	N	2760	µg/kg	10		< 10					
1,1,2-Trichloroethane	M	2760	µg/kg	10		< 10					
Tetrachloroethene	M	2760	µg/kg	1.0		< 1.0					
1,3-Dichloropropane	U	2760	µg/kg	2.0		< 2.0					
Dibromochloromethane	U	2760	µg/kg	10		< 10					
1,2-Dibromoethane	M	2760	µg/kg	5.0		< 5.0					
Chlorobenzene	M	2760	µg/kg	1.0		< 1.0					
1,1,1,2-Tetrachloroethane	M	2760	µg/kg	2.0		< 2.0					
Ethylbenzene	M	2760	µg/kg	1.0		< 1.0					
m & p-Xylene	M	2760	µg/kg	1.0		< 1.0					
o-Xylene	M	2760	µg/kg	1.0		< 1.0					
Styrene	M	2760	µg/kg	1.0		< 1.0					
Tribromomethane	U	2760	µg/kg	1.0		< 1.0					
Isopropylbenzene	M	2760	µg/kg	1.0		< 1.0					
Bromobenzene	M	2760	µg/kg	1.0		< 1.0					
1,2,3-Trichloropropane	N	2760	µg/kg	50		< 50					
N-Propylbenzene	U	2760	µg/kg	1.0		< 1.0					
2-Chlorotoluene	M	2760	µg/kg	1.0		< 1.0					
1,3,5-Trimethylbenzene	M	2760	µg/kg	1.0		< 1.0					
4-Chlorotoluene	U	2760	µg/kg	1.0		< 1.0					
Tert-Butylbenzene	U	2760	µg/kg	1.0		< 1.0					
1,2,4-Trimethylbenzene	M	2760	µg/kg	1.0		< 1.0					
Sec-Butylbenzene	U	2760	µg/kg	1.0		< 1.0					
1,3-Dichlorobenzene	M	2760	µg/kg	1.0		< 1.0					
4-Isopropyltoluene	U	2760	µg/kg	1.0		< 1.0					
1,4-Dichlorobenzene	M	2760	µg/kg	1.0		< 1.0					
N-Butylbenzene	U	2760	µg/kg	1.0		< 1.0					
1,2-Dichlorobenzene	M	2760	µg/kg	1.0		< 1.0					
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50		< 50					

## Results - Soil

**Project: G221209 A46 Newark Bypass**

Client: Strata Geotechnics Limited		Chemtest Job No.:		23-16947	23-16947	23-16947	23-16947	23-16947	23-16947	23-16947	23-16947	23-16947
Quotation No.:		Chemtest Sample ID.:		1643412	1643417	1643423	1643426	1643428	1643432	1643435	1643437	
Order No.:		Client Sample Ref.:		4	7	2	3	2	2	2	3	
		Sample Location:		S3BH16	S3BH17	S3TP36	S3TP38	ST3P39	S3TP41	S3TP42	S3TP43	
		Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	
		Top Depth (m):		0.50	1.00	0.50	1.00	0.50	0.50	0.50	0.80	
		Bottom Depth (m):		0.50	1.00							
		Date Sampled:		10-May-2023	09-May-2023	09-May-2023	10-May-2023	10-May-2023	10-May-2023	11-May-2023	11-May-2023	
		Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	
Determinand	Accred.	SOP	Units	LOD								
1,2,4-Trichlorobenzene	M	2760	µg/kg	1.0		< 1.0						
Hexachlorobutadiene	N	2760	µg/kg	1.0		< 1.0						
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0		< 2.0						
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0		< 1.0						
Naphthalene	M	2800	mg/kg	0.10		< 0.10						
Acenaphthylene	N	2800	mg/kg	0.10		< 0.10						
Acenaphthene	M	2800	mg/kg	0.10		< 0.10						
Fluorene	M	2800	mg/kg	0.10		< 0.10						
Phenanthrene	M	2800	mg/kg	0.10		< 0.10						
Anthracene	M	2800	mg/kg	0.10		< 0.10						
Fluoranthene	M	2800	mg/kg	0.10		< 0.10						
Pyrene	M	2800	mg/kg	0.10		< 0.10						
Benzo[a]anthracene	M	2800	mg/kg	0.10		< 0.10						
Chrysene	M	2800	mg/kg	0.10		< 0.10						
Benzo[b]fluoranthene	M	2800	mg/kg	0.10		< 0.10						
Benzo[k]fluoranthene	M	2800	mg/kg	0.10		< 0.10						
Benzo[a]pyrene	M	2800	mg/kg	0.10		< 0.10						
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10		< 0.10						
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10		< 0.10						
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10		< 0.10						
Total Of 16 PAH's	N	2800	mg/kg	2.0		< 2.0						
Resorcinol	M	2920	mg/kg	0.020		< 0.020						
Phenol	M	2920	mg/kg	0.020		< 0.020						
Cresols	M	2920	mg/kg	0.020		< 0.020						
Xylenols	M	2920	mg/kg	0.020		< 0.020						
1-Naphthol	N	2920	mg/kg	0.020		< 0.020						
Trimethylphenols	M	2920	mg/kg	0.020		< 0.020						
Total Phenols	M	2920	mg/kg	0.10		< 0.10						

## Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH 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.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1325	Sulphide in Waters	Sulphides	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using N,N-dimethyl-pphenylenediamine.
1415	Cations in Waters by ICP-MS	Sodium; Potassium; Calcium; Magnesium	Direct determination by inductively coupled plasma - mass spectrometry (ICP-MS).
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).
1460	Mercury low-level in Waters by AFS	Mercury	Atomic Fluorescence Spectrometry, with collimated UV source, wavelength 253.7 nm.
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.
1670	Total Petroleum Hydrocarbons (TPH) in Waters by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO	Pentane extraction / GC FID detection
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44 Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters 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)
1800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-MS	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	Pentane extraction / GCMS detection
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
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
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.

## Test Methods

SOP	Title	Parameters included	Method summary
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.
2455	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.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8, >C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35–C44 Aromatics: >C5–C7, >C7–C8, >C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35–C44	Dichloromethane extraction / GCxGC FID detection
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35–C40 Aromatics: >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35–C40	Acetone/Heptane 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)
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.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7, >C7–C8, >C8–C10 Aromatics: >C5–C7, >C7–C8, >C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	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-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and Trimethylphenols Note: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	Compliance Test 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](mailto:customerservices@chemtest.com)

# A46 North Newark Bypass





**TETRA TECH**

**Tetra Tech Limited**  
5th Floor, Longcross Court  
47 Newport Road  
Cardiff  
CF24 0AD  
029 20 829 200

**[tetrattech.com](https://www.tetrattech.com)**



---

# Factual Ground Investigation Report

Final Report V1.1  
B026948  
March, 2022

## PRESENTED TO

---

**National Highways**  
2 Colmore Square  
Birmingham  
B4 6BN

## PRESENTED BY

---

**Tetra Tech Ltd**      029 20 829 200  
5<sup>th</sup> Flr, Longcross Court      tetratech.com  
47 Newport Road  
Cardiff  
CF24 0AD

Prepared by:

---

Alex Hunter      20/09/21  
**Geo-environmental Consultant**

James Hall  
**Geo-environmental Consultant**      09/06/22

Reviewed by:

---

Nicholas Bool      06/10/21  
**Principal Geo-environmental Engineer**

Authorised by:

---

Jools Carr      11/10/21  
Associate Director

---

## TABLE OF CONTENTS

---

<b>1.0 INTRODUCTION</b> .....	<b>4</b>
1.1 Instruction.....	4
1.2 Brief .....	4
1.3 Report Scope .....	4
1.4 Limitations .....	4
<b>2.0 SUMMARY OF SITE INFORMATION</b> .....	<b>6</b>
2.1 Location.....	6
2.2 Site Description .....	6
2.3 Geology .....	6
<b>3.0 GROUND INVESTIGATION</b> .....	<b>8</b>
3.1 Scope .....	8
3.2 Changes to the Scope.....	8
<b>4.0 GROUND CONDITIONS ENCOUNTERED</b> .....	<b>10</b>
4.1 Strata Encountered .....	10
4.1.1 Topsoil .....	13
4.1.2 Made Ground.....	13
4.1.3 Superficial Deposits .....	14
4.1.4 Bedrock Geology .....	14
4.2 Groundwater .....	15
4.3 In Situ Testing .....	16
4.3.1 Standard Penetration Testing.....	16
4.3.2 Soakaway Testing .....	17
4.3.3 Monitoring of Groundwater Levels .....	17
4.4 Visual or Olfactory Evidence of Contamination .....	18
<b>5.0 LABORATORY TESTING</b> .....	<b>19</b>
5.1 Geotechnical Testing .....	19
5.2 Environmental Testing .....	20
<b>6.0 NOTES</b> .....	<b>22</b>
<b>7.0 REFERENCES</b> .....	<b>23</b>
<b>FIGURES</b> .....	<b>24</b>
<b>APPENDICES</b> .....	<b>27</b>

## LIST OF TABLES

---

Table 4-1 – Summary of Ground Conditions Encountered - Boreholes.....	10
Table 4-2 – Summary of Ground Conditions Encountered- Trial Pits .....	13

Table 4-3– Groundwater Details..... 15  
Table 4-4– Summary of Soil Infiltration Testing ..... 17  
Table 4-6– Summary of Groundwater Monitoring ..... 17  
Table 5-1 - Summary of Geotechnical Testing..... 19  
Table 5-2 - Summary of Soil Environmental Testing..... 20  
Table 5-3 - Summary of Soil Environmental Testing..... 20

## **LIST OF FIGURES**

---

Figure 1 - Site Location Plan ..... 25  
Figure 2 – Ground Investigation Location Plan ..... 26

## **APPENDICES**

---

**APPENDIX A – REPORT CONDITIONS.....**  
**APPENDIX B – EXPLORATORY HOLE LOGS AND PHOTO PLATES.....**  
**APPENDIX C – SOIL INFILTRATION TESTING RESULTS.....**  
**APPENDIX D – GROUNDWATER MONITORING RESULTS.....**  
**APPENDIX E – GEOTECHNICAL LABORATORY TEST RESULTS .....**  
**APPENDIX G – ENVIRONMENTAL LABORATORY RESULTS.....**

## ACRONYMS/ABBREVIATIONS

Acronyms/Abbreviations	Definition
AOD	above Ordnance Datum
bgl	below ground level
BGS	British Geological Survey
BTEX	Benzene, Toluene, Ethylbenzene and Xylenes
C4SL	Category 4 Screening Levels
CIEH	Chartered Institute of Environmental Health
CLEA	Contaminated Land Exposure Assessment
CoC	Constituent of Concern
CSM	Conceptual Site Model
DEFRA	Department of Environment, food and Rural Affairs
DQRA	Detailed Quantitative Risk Assessment
DTS	Desktop Study
DRO	Diesel Range Organics
DWS	Drinking Water Standard
EA	Environment Agency (England)
EPH	Extractable Petroleum Hydrocarbons
EQS	Environmental Quality Standards
FOC	Fraction Organic Carbon
GPR	Ground Penetrating Radar
LOD	Limit of Detection
LQM	Land Quality Management
NRW	Natural Resources Wales
OS	Ordnance Survey
PAH	Polycyclic aromatic hydrocarbon
PCB	Polychlorinated biphenyl
PFA	Pulverised Fuel Ash
PPE	Personal Protection Equipment
ppm	parts per million
PRO	Petroleum Range Organics
SGV	Soil Guideline Values
SOM	Soil Organic Matter
SVOC	Semi-volatile organic compounds
TPH	Total Petroleum Hydrocarbon
TSV	Tier 1 Screening Values
VOC	Volatile Organic Carbon
VPH	Volatile Petroleum Hydrocarbons

## 1.0 INTRODUCTION

### 1.1 INSTRUCTION

---

Tetra Tech Ltd was commissioned by National Highways to undertake a Ground Investigation for the proposed dual of the 6.5km length of the existing A46 between Farndon Roundabout and Winthorpe Roundabout. The scope will involve the widening of the existing embankment and associated structures, where the route crosses the railway line (Nottingham – Lincoln line) and the River Trent.

The location of the site is shown on Figure 1.

### 1.2 BRIEF

---

The brief was to undertake an intrusive ground investigation to provide preliminary geotechnical and contamination information on the prevalent ground conditions across the site. Tetra Tech was appointed to undertake the ground investigation works in accordance with a Ground Investigation Specification Ref. HE551478-ATK-HGT-XX-SP-CE-000001\_02.

The specification details the following of scope of works:

- 50 No. dynamic sampling with rotary follow-on boreholes.
- 44 No. window sample boreholes.
- 16 No. machine excavated trial pits to characterise superficial deposits to 4.50 m bgl or to refusal (proving rockhead or superficial material).
- 127 No. hand excavated trial pits (pre-borehole inspection pits and for in-situ CBR tests).
- 60 No. pavement cores in the existing highways.
- Groundwater monitoring installations in selected exploratory holes with post fieldwork monitoring visits of all installations.
- Geotechnical small and bulk disturbed sampling.
- Geo-environmental soils and groundwater laboratory testing.
- Factual reporting outlining finding of the investigation.

Changes to the scope of works are discussed in Section 3.0 of this report.

### 1.3 REPORT SCOPE

---

This report includes the following key elements:

- Full factual records of the site works carried out;
- Summary of the ground conditions encountered;
- In- situ testing results;
- Environmental laboratory testing results; and
- Geotechnical laboratory testing results.

### 1.4 LIMITATIONS

---

The recommendations and opinions expressed in this report are based on information obtained as part of the desk study or provided by others. Information provided from other sources is taken in good faith and Tetra Tech cannot guarantee its accuracy.

This report is subject to the report conditions presented in Appendix A.

The information contained in this report is intended for the use of the National Highways and Tetra Tech can take no responsibility for the use of this information by any third party or for uses other than that described in this report or detailed within the terms of our engagement.

## 2.0 SUMMARY OF SITE INFORMATION

### 2.1 LOCATION

---

The site is located along a 6.5 km section of the existing A46, north-west of Newark on Trent, Nottinghamshire. The investigation focusses on the length of the existing A46 and surrounding land between Farndon Roundabout and Winthorpe Roundabout.

A site location plan is presented in Figure 1.

### 2.2 SITE DESCRIPTION

---

The site comprises the existing 6.5km A46 highway between Farndon Roundabout and Winthorpe Roundabout. The remaining areas of the site comprise surrounding agricultural fields and private properties (canal, Newark Showground etc.) which are located either side of the of the road network.

### 2.3 GEOLOGY

---

Details of the geology underlying the site have been obtained from the following sources:

- British Geological Survey (BGS) Sheet No. 70 (Newark, Grantham, Corby, Sleaford, Spalding and Tattershall) Drift Edition, 1:63 360 scale;
- BGS GeoIndex website (British Geological Survey, 2021); **and**
- BGS Lexicon of Named Rock Units.

#### **Superficial Geology**

The 1:50,000 scale geological plan indicates the northern area of the site from the A1/A17 roundabout to the Winthorpe Roundabout to be underlain by superficial deposits of Balderton Sand and Gravel Member. The southern and central areas of the site are underlain by Alluvium deposits and multiple small areas of the site are underlain by the Holme Pierrepont Sand and Gravel Member.

The BGS Lexicon describes the Balderton Sand and Gravel Member as: *'Orange-brown sandy gravel dominated by rounded pebbles of "bunter" Quartz/quartzite (c. 75%) with subordinate subangular flint (c. 15%) and rarer Triassic sandstone etc.'*

The BGS Lexicon describes Alluvium deposits as: *'a general term for clay, silt, sand and gravel. It is the unconsolidated detrital material deposited by a river, stream or other body of running water as a sorted or semi-sorted sediment in the bed of a stream or on its floodplain or delta.'*

The BGS Lexicon describes the Holme Pierrepont Sand and Gravel Member as: *'Generally pinkish, poorly sorted and compositionally rather immature matrix-supported, sandy, trough-cross bedded (braided river) gravels.'*

#### **Bedrock Geology**

The 1:50,000 scale geological plan indicates that majority of the site in the north and central areas to be underlain by bedrock of the Mercia Mudstone Group. The southern extent of the site from the Kelham Roundabout to the Farndon Roundabout is underlain by Gunthorpe Member and Edwalton Member.

The BGS Lexicon describes the Mercia Mudstone Group as: *'Dominantly red, less commonly green-grey, mudstones and subordinate siltstones with thick halite-bearing units in some basinal areas. Thin beds of gypsum/anhydrite widespread.'*

The BGS Lexicon describes the Gunthorpe Member as: *'Mudstone, red-brown, with subordinate dolomitic siltstone and fine grained sandstone, greenish grey, common gypsum veins and nodules.'*

The BGS Lexicon describes the Edwalton Member as: *'Mudstone and siltstone, red-brown and greenish grey, with beds of indurated, variably dolomitic siltstone and very fine-grained sandstone common in the lower half; finely disseminated gypsum in upper half.'*

**Structural Geology**

The 1:65,000 scale geological plan does not show faults within the site boundary or in the vicinity of the site.



## 3.0 GROUND INVESTIGATION

The ground investigation was undertaken between 6<sup>th</sup> April and 15<sup>th</sup> July 2021.

Details of the fieldwork methods are given in the notes section at the end of this report.

### 3.1 SCOPE

---

The final scope of the ground investigation included the following:

- PAS 128 clearance of all exploratory hole locations where known buried services are anticipated via cable avoidance tool and ground penetrating radar;
- 16 No. dynamic sampling with rotary follow-on boreholes to a maximum depth of 29.50m bgl.
- 8 No. cable percussive with rotary follow-on boreholes to a maximum depth of 25.0m bgl.
- 24 No. sonic cored boreholes to a maximum depth of 35.0m bgl.
- 16 No. cable percussive boreholes to a maximum depth of 10.0m bgl.
- 15 No. machine excavated trial pits to a maximum depth of 3.0m bgl.
- 23 No. hand excavated inspection pits to a maximum depth of 1.20m bgl.
- 1 No. rotary cored borehole to a maximum depth of 7.50m bgl.
- 30 No. dynamic sample boreholes to a maximum depth of 6.0m bgl.
- 45 No. pavement cores in the existing highways.
- Groundwater monitoring installations in selected exploratory holes with post fieldwork monitoring visits of all installations.
- Geotechnical in-situ, small and bulk disturbed sampling and laboratory testing.
- 6 No. post fieldwork surface water samples.
- Geo-environmental soils, groundwater and surface water laboratory testing.
- Factual reporting outlining finding of the investigation.

The locations of exploratory holes advanced during the ground investigation along with all surface water sample locations are presented in Figure 2. Detailed Tetra Tech Engineer Logs are presented as Appendix B. Photographs of the encountered geology are included as Appendix B.

All intrusive locations were cleared via cable avoidance tool and ground penetrating radar. Inspection pits were excavated at borehole locations to 1.20m bgl using insulated hand pitting tools to ensure service avoidance prior to drilling.

The exploratory holes were supervised, logged and samples by a Tetra Tech Engineer. Fieldworks were undertaken in general accordance with BS5930:2015+A1:2020.

### 3.2 CHANGES TO THE SCOPE

---

The final scope of the ground investigation differs from the Ground Investigation Scoping Report (GISR) (doc ref HE551478-ATK-GEN-XX-CM-CE-000003).

The changes to the initial scope include the following:

- Given the very dense superficial geology encountered, the dynamic sampling drilling method was unable to proceed through the superficial deposits or provided poor recovery. Therefore, cable percussive techniques were utilised to advance through the superficial geology with rotary core follow-on.

- Due to the density of the made ground deposits present in the highway embankments dynamic sampling with rotary core follow on was not deemed suitable. The methodology was changed to utilise sonic drilling techniques.
- Cable percussive boreholes BH51, BH52 and BH53 were added to the scope by Atkins to allow the superficial deposits to be fully profiled.
- Sonic boreholes BH67 and BH68 were added to the scope by Atkins where recovery was poor in BH15 and BH17 respectively.
- The proposed co-ordinates of exploratory locations were supplied to Tetra Tech from Atkins prior to the GI; however, a number of exploratory holes were re-positioned due to constraints predominantly associated with access. All positions were agreed with Atkins prior to breaking ground and the amended positions are recorded on the borehole logs in Appendix B and presented in Figure 2.

## 4.0 GROUND CONDITIONS ENCOUNTERED

### 4.1 STRATA ENCOUNTERED

The strata encountered beneath the site comprised:

- Topsoil;
- Made Ground;
- Alluvium Deposits;
- Balderton Sand and Gravel Member; and
- Mercia Mudstone Group.

A summary of each stratum depth is provided in the tables below, with descriptions of each stratum detailed in the subsequent sections. Exploratory hole logs including photographic plates can also be seen in Appendix B.

**Table 4-1 – Summary of Ground Conditions Encountered - Boreholes**

Location	Depth to base of strata (m bgl)				
	Topsoil	Made Ground	Balderton Sand and Gravel Member (BSGM)	Alluvium Deposits	Mercia Mudstone Group (MMG)
BH01	GL-0.20	<i>ne</i>	<i>ne</i>	0.20-5.20	5.20-25.00*
BH02	GL-0.50	<i>ne</i>	<i>ne</i>	0.50-3.90	3.90-25.00*
BH03	GL-0.30	<i>ne</i>	<i>ne</i>	0.30-4.00*	<i>ne</i>
BH03A	GL-0.30	<i>ne</i>	<i>ne</i>	0.30-5.70	5.70-25.00*
BH05	<i>ne</i>	GL-3.00	<i>ne</i>	3.00-7.50	7.50-25.00*
BH06	<i>ne</i>	GL-0.70	<i>ne</i>	0.70-10.30	10.30-25.00*
BH07	GL-0.10	0.10-1.20	<i>ne</i>	1.20-6.10	6.10-25.00*
BH08	GL-0.50	0.50-15.40	<i>ne</i>	<i>ne</i>	15.40-35.00*
BH09	GL-0.40	<i>ne</i>	<i>ne</i>	0.40-5.20	5.20-25.00*
BH10	GL-0.40	<i>ne</i>	<i>ne</i>	0.40-4.10	4.10-25.00*
BH11	<i>ne</i>	GL-2.50	<i>ne</i>	2.50-7.50	7.50-25.00*
BH12	GL-0.50	<i>ne</i>	<i>ne</i>	0.50-6.75	7.50-25.50*
BH13	<i>ne</i>	GL-13.40	<i>ne</i>	13.40-17.00	17.00-27.50*
BH14	GL-0.30	<i>ne</i>	<i>ne</i>	0.30-4.50	4.50-25.00*
BH15	GL-0.60	<i>ne</i>	<i>ne</i>	0.60-2.30	2.30-29.50*
BH16	GL-0.60	<i>ne</i>	<i>ne</i>	0.60-2.30	2.30-25.00*
BH17	GL-0.30	<i>ne</i>	<i>ne</i>	0.30-3.60	3.60-25.00*
BH18	<i>ne</i>	GL-1.10	<i>ne</i>	<i>ne</i>	1.10-25.00*
BH19	<i>ne</i>	GL-0.40	<i>ne</i>	0.40-2.20	2.20-12.00*
BH21	GL-0.60	<i>ne</i>	0.60-9.00*	<i>ne</i>	<i>ne</i>
BH22	GL-0.50	<i>ne</i>	0.50-10.50*	<i>ne</i>	<i>ne</i>

Location	Depth to base of strata (m bgl)				
	Topsoil	Made Ground	Balderton Sand and Gravel Member (BSGM)	Alluvium Deposits	Mercia Mudstone Group (MMG)
BH24	ne	GL-6.00*	ne	ne	ne
BH25	ne	GL-6.00	ne	6.00-10.90	10.90-12.00*
BH26	ne	GL-3.50	ne	3.50-7.30	7.30-10.00*
BH27	ne	GL-5.30	ne	5.30-7.40	7.40-11.00*
BH28	ne	GL-6.00	ne	6.00-8.30	8.30-10.00*
BH29	ne	GL-6.50	ne	6.50-10.00*	ne
BH30	ne	GL-11.60	ne	11.60-14.20	14.20-16.00*
BH31	ne	GL-11.60	ne	11.60-12.00*	ne
BH32	ne	GL-9.50*	ne	ne	ne
BH33	ne	GL-6.30	ne	6.30-12.00*	ne
BH34	ne	GL-5.10	ne	5.10-11.00	11.0-12.50*
BH35	ne	GL-4.40	ne	4.40-10.00*	ne
BH36	ne	GL-4.00	ne	4.00-10.00*	ne
BH37	ne	GL-4.00	ne	4.00-10.00*	ne
BH38	ne	GL-5.60	ne	5.60-12.00*	ne
BH42	ne	GL-12.00*	ne	ne	ne
BH43	ne	GL-6.70	ne	6.70-13.90	13.90-15.00*
BH44	ne	GL-4.85	ne	4.85-6.00*	
BH45	ne	GL-5.85	ne	5.85-10.60	10.60-12.00*
BH45A	ne	GL-5.85	ne	5.85-10.60	10.60-12.00*
BH46	ne	GL-4.50	ne	4.50-10.00*	
BH47	ne	GL-3.00	ne	3.00-4.60	4.60-10.00*
BH48	ne	GL-1.80	ne	1.80-3.50	3.50-10.00*
BH49	GL-0.50	ne	ne	0.50-2.70	2.70-10.00*
BH50	GL-0.10	0.10-2.70	ne	ne	2.70-10.00*
BH51				GL-6.00	6.00-7.30*
BH52	ne	ne	ne	GL-6.50	6.50-7.65*
BH53	ne	ne	ne	GL-7.20	7.20-7.70*
BH54	GL-0.10	ne	ne	0.10-4.50	4.50-6.45*
BH55	ne	GL-0.30	ne	0.30-7.50	7.50-10.00*
BH56	ne	ne	ne	GL-6.50	6.50-9.00*
BH57	ne	GL-0.90	ne	0.90-9.00	9.00-10.00*
BH58	ne	GL-0.40	ne	0.40-8.20	8.20-9.00*
BH59	GL-0.10	ne	ne	0.10-7.50	7.50-8.00*

Location	Depth to base of strata (m bgl)				
	Topsoil	Made Ground	Balderton Sand and Gravel Member (BSGM)	Alluvium Deposits	Mercia Mudstone Group (MMG)
BH60	GL-0.10	ne	ne	0.10-7.50	7.50-8.00*
BH61	ne	GL-0.40	ne	0.40-7.50	7.50-8.00*
BH62	ne	GL-0.40	ne	0.40-1.00	1.00-1.50*
BH63	GL-0.30	ne	ne	0.30-2.10	2.10-3.50*
BH64	GL-0.50	ne	ne	0.50-3.00*	ne
BH65	GL-0.30	ne	ne	0.30-1.40	1.40-3.00*
BH66	ne	GL-0.50	ne	0.50-3.00*	ne
BH67	GL-0.30	ne	ne	0.30-1.30	1.30-30.40*
BH68	ne	ne	ne	GL-3.00	3.00-30.00*
WS04	GL-0.50	0.50-3.60	3.60-5.00*	ne	ne
WS06	GL-0.40	ne	0.40-5.00*	ne	ne
WS08	GL-0.50	ne	ne	0.50-6.00*	ne
WS10	GL-0.40	ne	ne	0.40-3.00*	ne
WS12	GL-0.50	ne	ne	0.50-3.00*	ne
WS13	GL-0.30	ne	ne	0.30-3.00*	ne
WS15	GL-0.20	ne	ne	0.20-3.00*	ne
WS17	GL-0.20	ne	ne	0.20-4.00*	ne
WS23	GL-0.30	ne	ne	0.30-4.00*	ne
WS25	GL-0.25	ne	ne	0.25-4.00*	ne
WS26	GL-0.30	ne	ne	0.30-4.00*	ne
WS28	GL-0.50	ne	ne	0.50-5.00*	ne
WS29	GL-0.30	ne	ne	0.30-3.00*	ne
WS31	GL-0.40	ne	ne	0.40-5.00*	ne
WS46	ne	GL-2.50	ne	2.50-6.00*	ne
WS48	GL-0.40	0.40-2.20	ne	2.20-5.00*	ne
WS50	GL-0.40	ne	ne	0.40-0.70*	ne
WS50A	ne	GL-2.20	ne	2.20-5.00*	ne
WS54	ne	GL-2.60	ne	2.60-5.00*	ne
WS57	GL-0.80	ne	ne	0.80-6.70*	ne
WS65	GL-0.55	ne	ne	0.55-5.00*	ne
WS65	GL-0.20	ne	ne	0.20-3.00*	ne
WS66	GL-0.70	ne	ne	0.70-3.90*	ne
WS67	GL-0.90	ne	ne	0.90-3.40*	ne

\*Base of stratum not proven. *ne* denotes not encountered

Table 4-2 – Summary of Ground Conditions Encountered- Trial Pits

Location	Depth to base (m bgl)			
	Topsoil	Made Ground	Alluvium Deposits	Mercia Mudstone Group (MMG)
TP01	GL-0.35	ne	0.35-3.00*	ne
TP02	GL-0.55	ne	0.55-2.20*	ne
TP03	GL-0.42	ne	0.42-1.75*	ne
TP04	GL-0.30	ne	0.30-2.50*	ne
TP05	GL-0.90	ne	0.90-2.80*	ne
TP08	GL-0.45	ne	0.45-1.50*	ne
TP09	GL-0.40	ne	0.40-2.00*	ne
TP10	GL-0.40	ne	0.40-2.70*	ne
TP11	GL-0.80	ne	0.80-2.50*	ne
TP13	ne	GL-1.00	1.00-1.20*	ne
TP15	GL-0.40	ne	0.40-1.20*	ne
TP18	ne	GL-0.20*	ne	ne
TP20	GL-0.25	ne	0.25-1.20*	ne
TP25	GL-0.30	ne	0.30-1.20*	ne
TP27	GL-0.30	0.30-0.75	0.75-3.20*	ne
TP30	GL-0.40	ne	0.40-0.65	0.65-1.20*
TP31	GL-0.30	ne	ne	0.30-2.00*
TP32	GL-0.60	ne	0.60-1.00	1.00-2.70*
TP33	GL-0.35	ne	ne	0.35-1.50*
TP34	GL-0.25	ne	0.25-1.20*	ne
TP35	GL-0.50	ne	0.50-1.20*	ne
TP36	GL-0.50	ne	0.50-1.20*	ne
TP37	GL-0.20	0.20-1.20	ne	ne

\*Base of stratum not proven, ne denotes not encountered

### 4.1.1 Topsoil

Topsoil encountered during the investigation generally comprised grass/crops/vegetation over soft dark brown slightly sandy to sandy and slightly gravelly to gravelly clay and dark brown clayey fine to medium sand. Gravel content typically comprised fine to medium sub-angular to sub-rounded quartzite and sandstone.

### 4.1.2 Made Ground

Made Ground was encountered within 43 boreholes and 4 trial pits, The maximum recorded thickness was 14.90m (BH08), but it was more typically 4.00m to 6.00m at the other exploratory hole locations.

## **Hardstanding**

Concrete / Asphalt was encountered from ground level to depths between 0.10m to 0.60m bgl on all locations on the A46 carriageway. Detailed hardstanding logs can be seen in the core logs attached in Appendix B.

## **Embankment Fill**

Embankment fill was encountered during the highway investigation and comprised both cohesive and granular deposits. The cohesive material was typically described as compacted stiff mid grey slightly sandy silt pulverised fuel ash (PFA). The granular material was described as brown sandy gravel. The gravel content comprised sub-rounded to rounded fine to coarse siltstone, quartz, chert and flint. The use of PFA as an embankment fill material was also confirmed by Travers Morgan One Ltd historic cross sections provided by Atkins. Based on these cross sections a layer of plastic membrane was also to be expected at the base of the embankment fill and was encountered on a number of the highway exploratory hole locations.

## **Granular Made Ground**

Granular Made Ground was encountered in each highway borehole directly underlying hardstanding as sub-base. Granular Made Ground was also encountered underlying topsoil in various locations across the site. The deposits encountered generally comprised white sandy sub-angular to angular coarse gravel of limestone (MOT TYPE 1) and dark grey gravelly slightly silty fine to coarse sand. Gravel content was typically classified as angular to sub-rounded of various lithologies.

## **Cohesive Made Ground**

Cohesive Made Ground generally comprised soft orangish brown slightly sandy slightly gravelly clay/silt. Sand is fine to medium. Gravel content was typically classified as sub-rounded to sub-angular fine to coarse of various lithologies.

### **4.1.3 Superficial Deposits**

As mentioned previously in Section 2.3, the BGS mapping identifies Alluvium deposits, Balderton Sand and Gravel Member and Holme Pierrepont Sand and Gravel Member as superficial deposits underlying the site. However, only Alluvium deposits and Balderton Sand and Gravel Member were encountered during the investigation. The descriptions of these deposits are provided below.

#### **Alluvium Deposits**

Granular Alluvium deposits were typically recorded as brown sand and gravel. sand is fine to coarse. Gravel is fine to coarse sub-angular to sub-rounded quartzite and flint. Additional granular deposits were generally recorded as orangish brown slightly clayey fine to medium sand.

Cohesive Alluvium deposits were typically recorded as soft to firm brown mottled orangish brown slightly sandy clay. Sand is fine to medium.

#### **Balderton Sand and Gravel Member**

The Balderton Sand and Gravel Member generally comprised dense reddish brown slightly gravelly fine to coarse sand. Gravel content comprised fine to coarse sub-rounded to rounded flint and limestone.

### **4.1.4 Bedrock Geology**

#### **Weathered Mercia Mudstone Group (MMG)**

Weathered MMG encountered at shallow depths generally comprised soft to firm reddish brown silty clay. (Zone IVb).

#### **Competent Mercia Mudstone Group (MMG)**

Competent bedrock was achieved at greater depths, and generally comprised weak to medium strong very thinly bedded reddish brown and bluish grey mudstone, with 0-10 degree very closely spaced to closely spaced planar irregular discontinuities. Frequent bands of gypsum (5-10mm) following discontinuities. (IF:40/100/200).

## 4.2 GROUNDWATER

Groundwater was encountered within the locations detailed within table 4-3 below:

**Table 4-3– Groundwater Details**

Location	Depth (m bgl)	Description
BH01	1.50	Rose to 1.20m after 20 minutes
BH02	1.20	Rose to 1.00m after 20 minutes
BH03	1.20	Rose to 1.00m after 20 minutes
BH03A	1.20	Rose to 0.70m after 20 minutes
BH05	4.50	Rose to 2.40m after 20 minutes
BH06	2.0	Water level at 2.00m after 20 minutes
BH07	1.0	Water level at 1.00m after 20 minutes
BH07	2.0	Rose to 1.70m after 20 minutes
BH11	1.40	Rose to 1.00m after 20 minutes
BH12	1.90	Water level at 1.90 after 20 minutes
BH14	3.0	Rose to 2.80m after 20 minutes
BH15	1.10	Water level at 1.10m after 20 minutes
BH16	3.50	Water level at 3.50m after 20 minutes
BH17	4.0	Rose to 2.00m after 20 minutes
BH18	3.0	Water level at 3.00m after 20 minutes
BH19	1.40	Water level at 1.40m after 20 minutes
BH22	6.0	Water level at 6.00m after 20 minutes
BH47	4.0	Dropped to 4.20m after 20 minutes
BH49	4.50	Rose to 4.30m after 20 minutes
BH50	7.0	Rose to 6.20m after 20 minutes
BH51	1.0	Rose to 0.80m after 20 minutes
BH52	2	Water level at 2.00m after 20 minutes
BH53	2.0	Water level at 2.00m after 20 minutes
BH55	2.0	Rose to 1.58m after 20 minutes
BH56	2.10	Rose to 1.54m after 20 minutes
BH57	2.0	Water level at 2.00m after 20 minutes
BH58	2.0	Water level at 2.00m after 20 minutes
BH59	2.0	Water level at 2.00m after 20 minutes
BH60	2.0	Water level at 2.00m after 20 minutes
BH63	2.0	Water level at 2.00m after 20 minutes
WS04	1.20	Rose to 0.60m after 20 minutes



Location	Depth (m bgl)	Description
WS06	1.20	Rose to 0.90m after 20 minutes
WS08	1.10	Rose to 0.80m after 20 minutes
WS10	1.10	Rose to 0.60m after 20 minutes
WS12	1.20	Rise to 0.90m after 20 minutes
WS13	1.20	Rose to 0.90m after 20 minutes
WS15	1.30	Rose to 0.80m after 20 minutes
WS17	1.80	Rose to 1.30m after 20 minutes
WS23	1.30	Rose to 1.10m after 20 minutes
WS25	1.40	Rose to 1.20m after 20 minutes
WS26	1.20	Rose to 1.10m after 20 minutes
WS29	1.30	Rose to 0.90m after 20 minutes
WS31	1.50	Rose to 1.20m after 20 minutes
WS46	3.50	-
WS48	2.80	-
WS50A	2.80	-
WS54	1.10	-
WS64	2.80	-
WS65	2.60	-
WS66	2.50	-
TP01	2.0	Rose to 1.00m after 10 minutes
TP02	2.0	Rose to 1.20m after 20 minutes
TP03	1.30	Rose to 1.10m after 20 minutes
TP04	1.40	Rose to 1.20m after 20 minutes
TP05	1.30	Rose to 1.20m after 20 minutes
TP08	1.30	Rose to 1.20m after 20 minutes
TP09	2.0	Rose to 0.90m after 20 minutes
TP10	2.60	Rose to 2.40m after 20 minutes
TP11	1.80	Rose to 1.70m after 20 minutes
TP27	2.50	Rose to 2.00m after 20 minutes

## 4.3 IN SITU TESTING

### 4.3.1 Standard Penetration Testing

Standard penetration tests were undertaken through the soils in all boreholes at regular intervals and at suspected competent rock head. The results are presented in the exploratory hole logs included in Appendix B.

### 4.3.2 Soakaway Testing

In-situ soil infiltration testing was undertaken at two locations (TP31 and TP33), the results of which are included as Appendix C and summarised below. Testing at the other scheduled locations was not possible due to the presence of groundwater at shallow depth.

**Table 4-4– Summary of Soil Infiltration Testing**

Location	Test No.	Soil Infiltration Rate (m/s)	Strata Description
TP31	1	N/A	Soft to firm reddish brown slightly silty slightly gravelly clay. Gravel is fine to medium sub-angular mudstone. (Weathered Mercia Mudstone Group)
TP33	2	N/A	Soft reddish brown silty clay. (Weathered Mercia Mudstone Group)

### 4.3.3 Monitoring of Groundwater Levels

A total

of six rounds of post ground investigation groundwater monitoring have been completed. The results of which are summarised below. This Report will be updated on completion of the monitoring programme.

**Table 4-5– Summary of Groundwater Monitoring**

Location	Base depth (m bgl)	Post GI Monitoring - (m bgl)					
		Round 1 (11-13/08/21)	Round 2 (2-3/09/21)	Round 3 (28-29/09/21)	Round 4 (18-19/11/21)	Round 5 (29-30/11/21)	Round 6 (14-15/12/2021)
BH01	14.34	1.73	1.73	1.73	1.33	1.10	1.12
BH02	4.91	1.10	1.08	1.00	1.00	1.10	Destroyed
BH03A	4.29	1.06	1.02	1.02	1.02	1.16	1.54
BH05	4.33	2.11	2.13	2.07	2.31	2.24	2.12
BH07	4.03	-	1.49	1.30	1.33	1.13	1.28
BH09	4.37	1.35	1.35	1.35	1.46	1.29	1.13
BH10	4.24	1.78	1.78	1.75	1.89	1.75	1.60
BH11	5.88	3.71	3.67	3.67	3.50	3.42	3.31
BH12	4.76	2.85	2.91	2.77	2.51	2.33	2.71
BH14	4.47	2.98	3.02	2.94	2.54	2.22	2.10
BH15	4.83	1.86	1.79	1.71	2.00	2.13	1.10
BH16	6.98	2.77	2.69	2.69	3.52	3.01	3.41
BH17	17.39	2.54	2.51	2.39	2.31	2.55	2.19
BH18	6.97	-	2.82	2.77	2.03	2.03	2.46
BH19	4.86	0.33	0.42	0.33	0.64	0.44	0.63

Location	Base depth (m bgl)	Post GI Monitoring - (m bgl)					
		Round 1 (11-13/08/21)	Round 2 (2-3/09/21)	Round 3 (28-29/09/21)	Round 4 (18-19/11/21)	Round 5 (29-30/11/21)	Round 6 (14-15/12/2021)
BH21	5.60	2.51	2.51	2.33	3.66	3.29	3.80
BH22	5.74	3.52	3.49	3.40	3.74	3.51	4.13
BH56	4.06	1.62	1.59	1.66	1.23	1.12	1.40
BH66	2.44	DRY	DRY	DRY	Destroyed	Destroyed	Destroyed
WS08	4.89	1.14	1.09	1.01	1.10	1.19	1.24
WS12	2.89	1.20	1.17	1.10	0.69	0.55	0.89
WS15	2.89	1.26	1.23	1.20	1.40	1.26	1.30
WS25	3.44	2.24	2.21	2.00	2.56	2.44	1.96
WS26	3.41	1.86	1.79	1.70	1.99	1.73	1.43
WS31	3.98	-	1.74	1.66	2.40	2.15	1.82
WS48	2.15	2.06	2.08	2.13	2.13	1.88	DRY
WS50	3.98	3.68	3.61	3.58	DRY	DRY	1.96
WS54	4.69	1.64	1.73	1.61	1.03	0.88	0.80
WS66	2.91	2.78	2.74	2.39	Not located	Not located	2.74
WS67	2.62	DRY	DRY	DRY	DRY	DRY	DRY

#### 4.4 VISUAL OR OLFACTORY EVIDENCE OF CONTAMINATION

No visual or olfactory evidence of significant contamination was encountered during the ground investigation.

## 5.0 LABORATORY TESTING

### 5.1 GEOTECHNICAL TESTING

A programme of laboratory testing was carried out on samples taken from the various strata encountered during the ground investigation. Geotechnical testing was scheduled by Atkins and carried out by Professional Soil Laboratory (PSL), an approved supplier in accordance with the requirements of Tetra Tech quality system and UKAS accredited for a range of geotechnical tests. The test procedures used were generally in accordance with the methods described in BS1377:1990. Details of the specific tests used in each case are given in Table 5-1. The laboratory geotechnical test results are given in Appendix E.

**Table 5-1 - Summary of Geotechnical Testing**

Test	No.	Test Method
Moisture Content	203	BS1377:1990 Part 2:3.2
4 Point Liquid & Plastic Limit	198	BS1377:1990 Part 2:4.3&5.3
PSD: Wet & Dry Sieve method	206	BS1377:1990 Part 2:9.2
PSD: Sedimentation by Pipette	89	BS1377:1990 Part 2:9.4
BRE Suite (B) (incl. pH, water and acid soluble sulphate and total sulphur)	46	BRE
BRE Suite (C)	7	BRE
BRE Suite (D)	2	BRE
Dry Density/MC (2.5kg Rammer Method 1 Litre Mould/CBR Mould)	15	BS1377:1990 Part 4:3.3
Shear strength of a set of three 60 mm x 60 mm square specimens by direct shear	19	BS1377:1990 Part 7:4.1
Shear strength of a single 300 mm x 300 mm square specimens by direct shear	1	BS1377:1990 Part 7:5.1
Undrained shear strength of a single 100 mm diameter specimen in triaxial compression without the measurement of pore pressure	15	BS1377:1990 Part 7:8.1
Consolidated undrained triaxial compression test with measurement of pore pressure single-stage or multi-stage test using 100 mm diameter specimen	9	BS1377:1990 Part 8:7.1
Organic Matter Content	18	
One Dimensional Consolidation	2	BS1377:1990 Part 6:3.6
Determination of Point Load Value	103	ISRM suggested method
Uniaxial compressive strength of rock	16	ISRM suggested method
Rock Density	16	ISRM suggested method

## 5.2 ENVIRONMENTAL TESTING

Environmental chemistry was investigated by specialist chemical analysis of selected soil samples carried out by ALS Environmental Laboratories, an approved supplier in accordance with the requirements of Tetra Tech quality system and UKAS and MCERTS accredited for a range of chemical analyses. The testing was scheduled by Tetra Tech and is summarised in Table 5-2 for soil samples, Table 5-3 for groundwater samples and Table 5-3 for surface water samples. The test results are included in Appendix F.

**Table 5-2 - Summary of Soil Environmental Testing**

Test suite	No.
Suite E (Soil samples Schedule S1.20.3) as modified in Schedule 4 of the Specification including TPH CWG, Phenol (monohydric) and asbestos quantification where asbestos is identified	105
Suite E1	105
Suite E4 – Pesticide and Herbicide Suite	25
Suite K - Leachate	64
Cyanide - Free	105
SVOCs	49
VOCs	49
PCBs	16
Bacteriological suite: coliforms (total), coliforms (faecal), streptococci (total), streptococci (faecal), clostridia	4
PAHs	105
Vanadium	105
Suite H – (Inert waste landfill schedule)	20

**Table 5-3 - Summary of Ground Water Environmental Testing**

Test suite	No.
Suite F (Water samples Schedule S1.20.3) as modified in Schedule 4 including TPH CWG and Phenol (monohydric)	95
Suite F1 – Chlorinated Solvents	95
Suite F4 – Pesticide and Herbicide Suite	24
Cyanide - Free	89
SVOCs	17
VOCs	17
Bacteriological suite: coliforms (total), coliforms (faecal), streptococci (total), streptococci (faecal), clostridia	9

**Table 5-4 - Summary of Surface Water Environmental Testing**

Test suite	No.
Suite F (Water samples Schedule S1.20.3) as modified in Schedule 4 including TPH CWG and Phenol (monohydric)	16
Suite F1 – Chlorinated Solvents	16

## 6.0 NOTES

### 1. Standards

All boring operations, sampling of soils, *in situ* testing and geotechnical laboratory testing have been carried out in accordance with the recommendations of the British Standards BS 5930(2015)<sup>(1)</sup>, BS 1377 (1990)<sup>(2)</sup> and BS10175 (2001)<sup>(3)</sup>.

Soil and rock descriptions follow the recommendations of BS 593. Where descriptions or classifications are based on other documents (e.g. BS 8004 (1986) or CIRIA Project Report 11 (1993)), this is stated in the report text.

### 2. Site methods

Unless specifically stated otherwise, the following methods are used for exploratory holes.

- Holes described as cable percussive are bored using a light cable percussive rig. Standard penetration tests are carried out where appropriate, as shown in the logs. Disturbed and undisturbed samples are taken from the exploratory holes at the depths on the records.
- Window sampling generally uses the windowless sampling method, using a tracked Geotool.
- Dynamic probes are usually heavy dynamic probes, using the same tracked Geotool used for window sampling.

### 3. Definitions and abbreviations

The following terms are used in the exploratory hole logs

#### Samples

U	Undisturbed 102mm dia. sample
TW	Thin Walled undisturbed 102mm dia. sample
B	Bulk sample
D	Small disturbed sample
W	Water sample
CBR	California Bearing Ratio test or CBR value obtained from Mexiprobe test

#### In situ tests

S	Standard penetration test (SPT)
N	SPT N value (blows/300mm)
HP	Hand penetrometer – shear strength
SV	Hand shear vane – shear strength
VOC	Volatile organic compounds (ppm)
PID	Photo-ionisation detector – used to detect the presence of VOCs.

#### Core recovery and rock quality

TCR	Total core recovery (%)
SCR	Solid core recovery (%)
RQD	Rock quality designation (%)
FI	Fracture index
NR	No recovery
NI	Not intact

#### Rotary drilling sizes

Index letter	Nominal diameter (mm)	
	Borehole	Core
N	75	54
H	99	76
P	120	92
S	146	113

#### Water strikes

▽	Level of water strike
▼	Water level rose to this level (see Remarks at foot of log for details)

Depth means depth below existing ground level unless otherwise specified. Values specified in soil descriptions given in the exploratory hole logs are depths unless otherwise specified.

## 7.0 REFERENCES

- A46 Newark Northern Bypass – Ground Investigation Specification. Highways England. (Ref HE551478-ATK-HGT-XX-SP-CE-0000001\_c02)
- British Geological Survey. (2021). *GeoIndex*. Retrieved from <http://www.bgs.ac.uk/GeoIndex/>
- British Geological Survey (BGS). 1:50,000 Solid & Drift Sheet No. 70 (Newark, Grantham, Corby, Sleaford, Spalding and Tattershall) Drift Edition, 1:63 360 scale;
- British Geological Survey (BGS) Lexicon of Named Rock Units - [www.bgslexiconofnamedrockunits.com](http://www.bgslexiconofnamedrockunits.com)
- CIRIA. (2001). *Contaminated land risk assessment A guide to good practice*.
- CIRIA. (2007). *CIRIA C665, Assessing Risks Posed by Hazardous Ground Gases to Building*. London.
- CL:AIRE. (August 2018). *Technical Bulletin TB17. Ground Gas Monitoring and 'Worst-Case' Conditions*. CL:AIRE.
- DEFRA. (2021). *MAGIC*. Retrieved from Magic Map: <http://magic.defra.gov.uk/MagicMap.aspx>
- Environment Agency. (March 2017). *New Groundwater Vulnerability Mapping Methodology in England and Wales. Reference SC040016/R*. Environment Agency.
- Scivyer, C. (2015). *BRE 211. Radon: Guidance on protective measures for new buildings (including supplementary advice for extensions, conversions and refurbishment projects). Fifth Edition*. BRE.
- The Coal Authority. (2021). *Coal Authority Interactive Viewer*. Retrieved from <http://mapapps2.bgs.ac.uk/coalauthority/home.html>
- Zetica UXO. (2008). *Zetica UXO Risk Maps*. Retrieved from <https://zeticauxo.com/downloads-and->



## FIGURES

Figure 1 - Site Location Plan

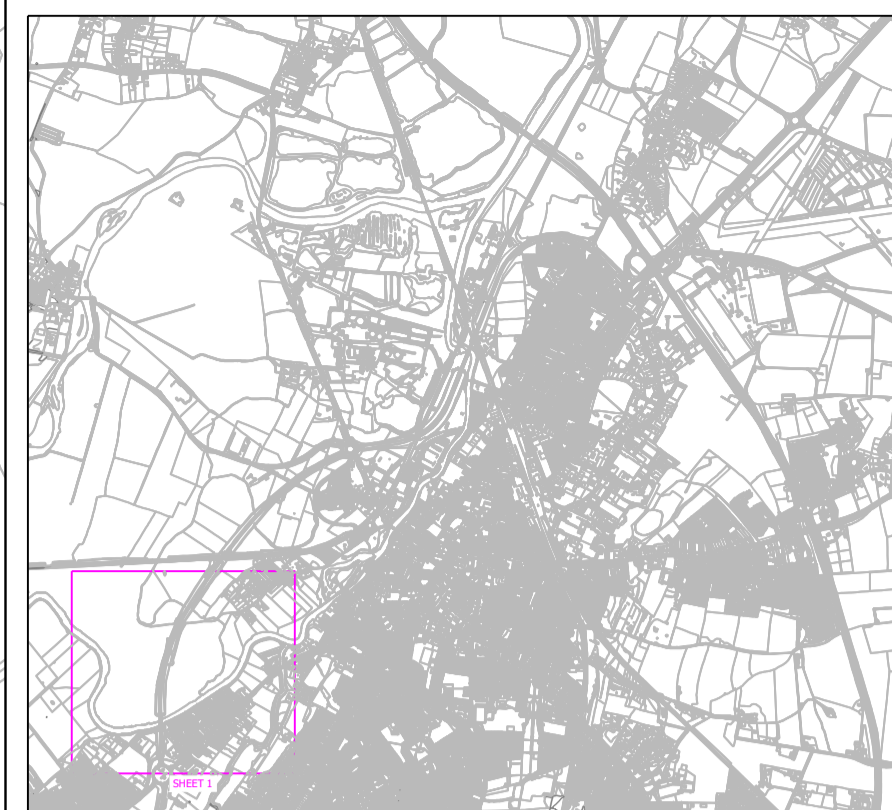
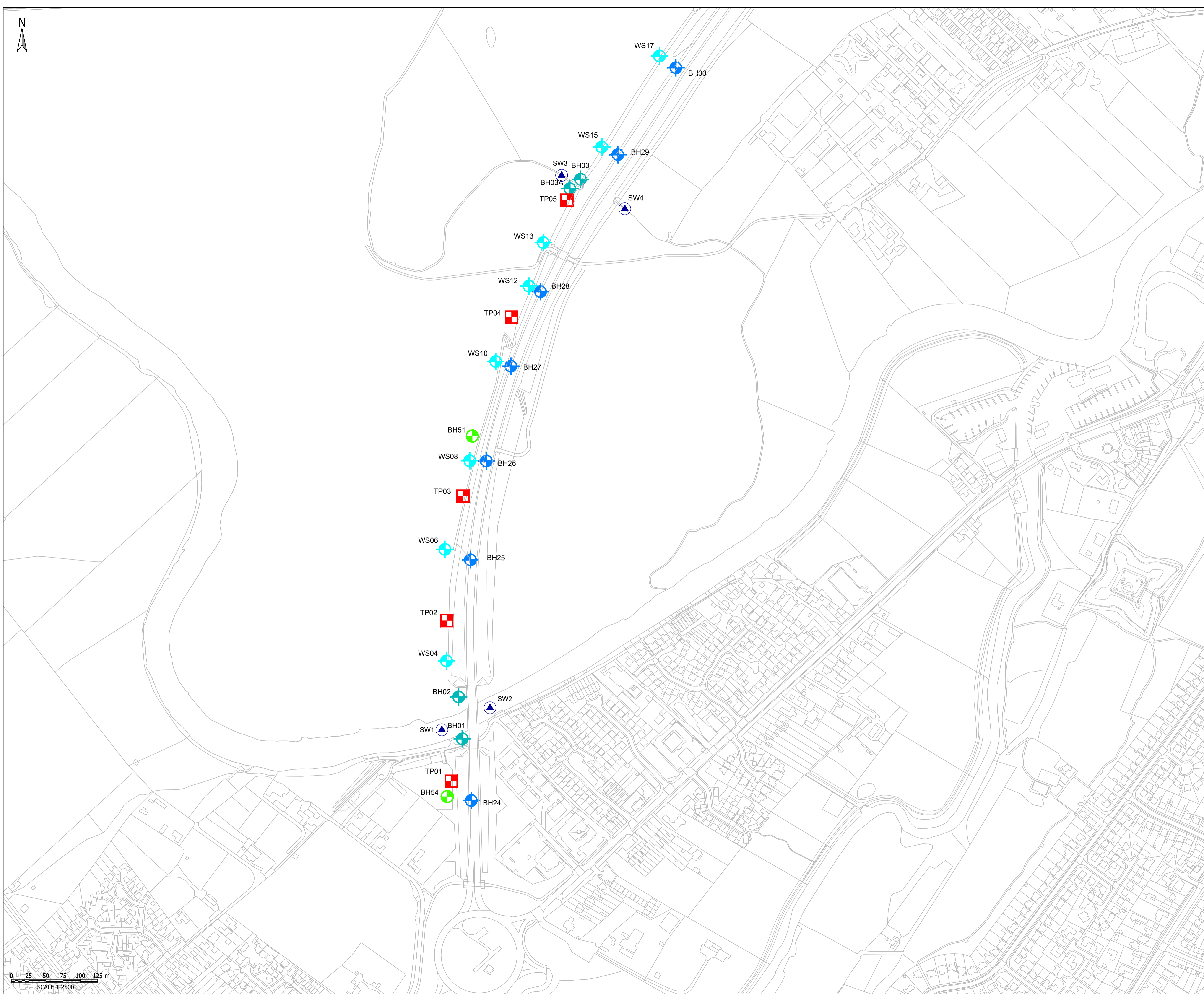


Tetra Tech EPT  
 5<sup>th</sup> Floor, Longcross Court, 47 Newport Road, Cardiff  
 Tel: 02920 829200  
 Fax: 02920 455321  
 Environmental Consultancy  
 Ground Engineering Services

Project  
**A46 NNB**  
 Client  
**NATIONAL HIGHWAYS**

Drawing Title  
**SITE LOCATION PLAN**  
 Checked by  
 Drawing No.  
**FIGURE 1**

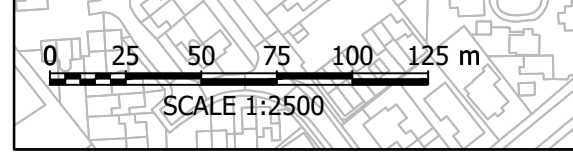
Figure 2 – Ground Investigation Location Plan



KEY PLAN:  
SCALE 1:50,000

LEGEND:

- SONIC BOREHOLES
- CABLE PERCUSSIVE BOREHOLES
- CABLE PERCUSSIVE & ROTARY CORE BOREHOLES
- DYNAMIC SAMPLING AND ROTARY CORE BOREHOLES
- WINDOW SAMPLES
- TRIAL PITS
- INSPECTION PITS
- SURFACE WATER SAMPLING



Rev	Description	Date	Drawn	Appr
R03	SURFACE WATER SAMPLING LOCATIONS ADDED	13.06.2022	PP	JC
R02	TP11 RELOCATED	29.03.2022	PP	AH
R01	SI HOLES & LEGEND UPDATED	17.11.2021	PP	KW
P01	PRELIMINARY FIRST ISSUE	06.10.2021	PP	NEB

Issuing Office  
**Tetra Tech Cardiff**  
 5th Floor, Longcross Court,  
 47 Newport Road, Cardiff,  
 United Kingdom, CF24 0AD  
 Tel: +44 (0)29 2082 9200  
 www.tetraeteurope.com

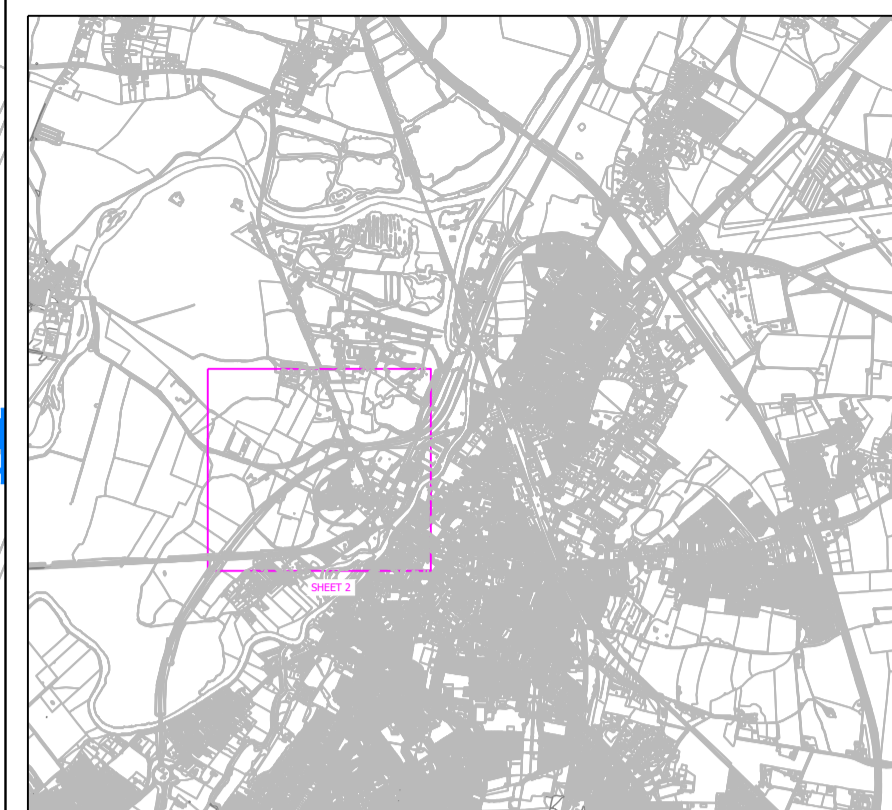
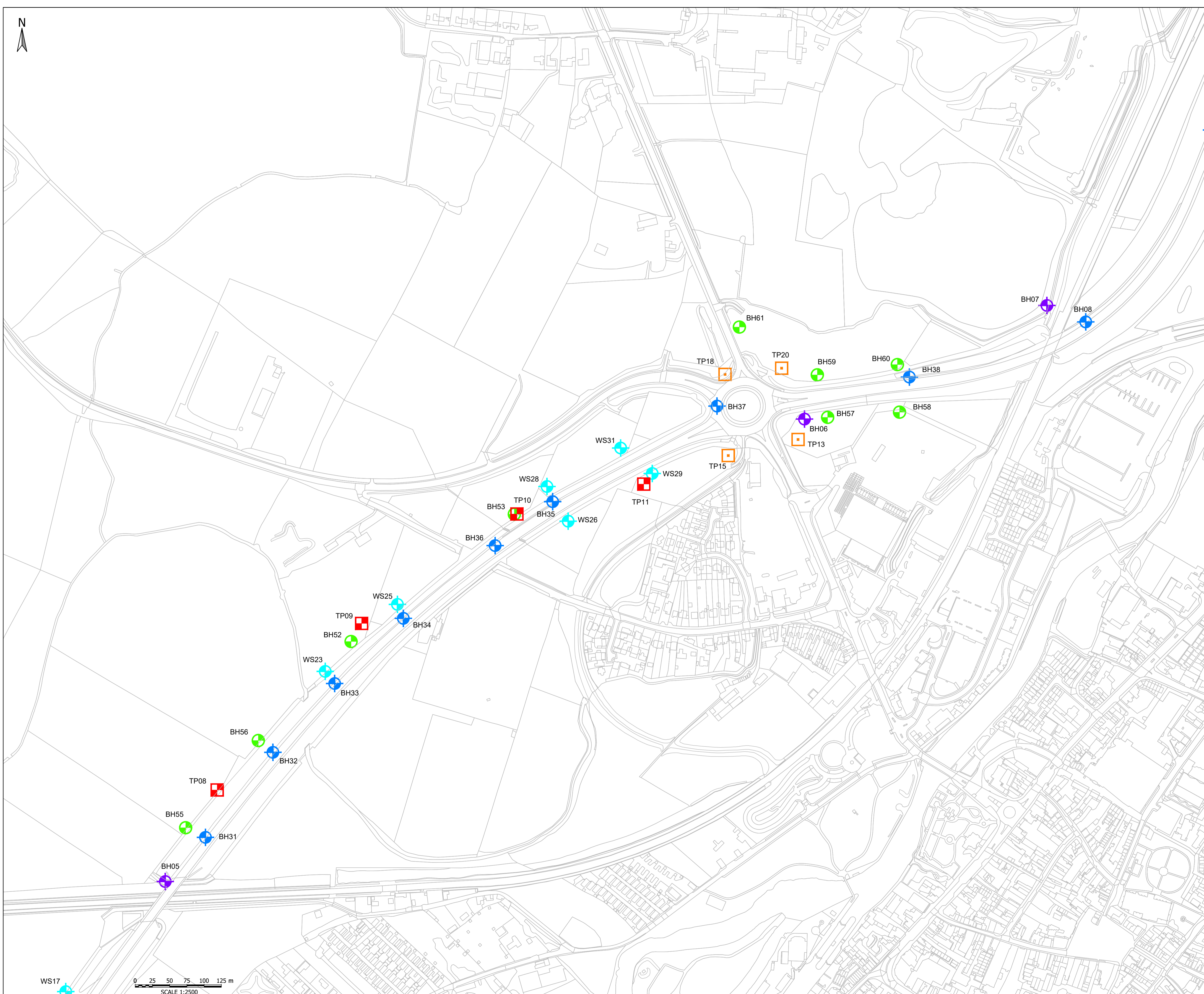


Client  
**HIGHWAYS ENGLAND**

Project Name  
**A46 NEWARK BYPASS**

Sheet Title  
**SITE INVESTIGATION LAYOUT PLAN  
 (SHEET 1 OF 4)**

TTE Project Number	Drawn By	Date	Checked By	Date	Approved By	Date	Scale	Suitability
784-B026948	PP	06.10.21	NEB	06.10.21	-	06.10.21	As Shown	S0
Client Project Number	Originator	Volume/System Level/Location	Type/Code	Role	Number	Revision		
B026948	- TTE	- 00	- XX	- DR	- U	- 00-02	R03	



KEY PLAN:  
SCALE 1:50,000

LEGEND:

- SONIC BOREHOLES
- CABLE PERCUSSIVE BOREHOLES
- CABLE PERCUSSIVE & ROTARY CORE BOREHOLES
- DYNAMIC SAMPLING AND ROTARY CORE BOREHOLES
- WINDOW SAMPLES
- TRIAL PITS
- INSPECTION PITS
- SURFACE WATER SAMPLING

Rev	Description	Date	Drawn	Checked	Appr
R03	SURFACE WATER SAMPLING LOCATIONS ADDED	13.06.2022	PP	JC	NEB
R02	TP11 RELOCATED	29.03.2022	PP	AH	NEB
R01	SI HOLES & LEGEND UPDATED	17.11.2021	PP	KW	NEB
P01	PRELIMINARY FIRST ISSUE	06.10.2021	PP	NEB	NEB

Issuing Office  
**Tetra Tech Cardiff**  
5th Floor, Longcross Court,  
47 Newport Road, Cardiff,  
United Kingdom, CF24 0AD  
Tel: +44 (0)29 2082 9200  
www.tetrateteurope.com

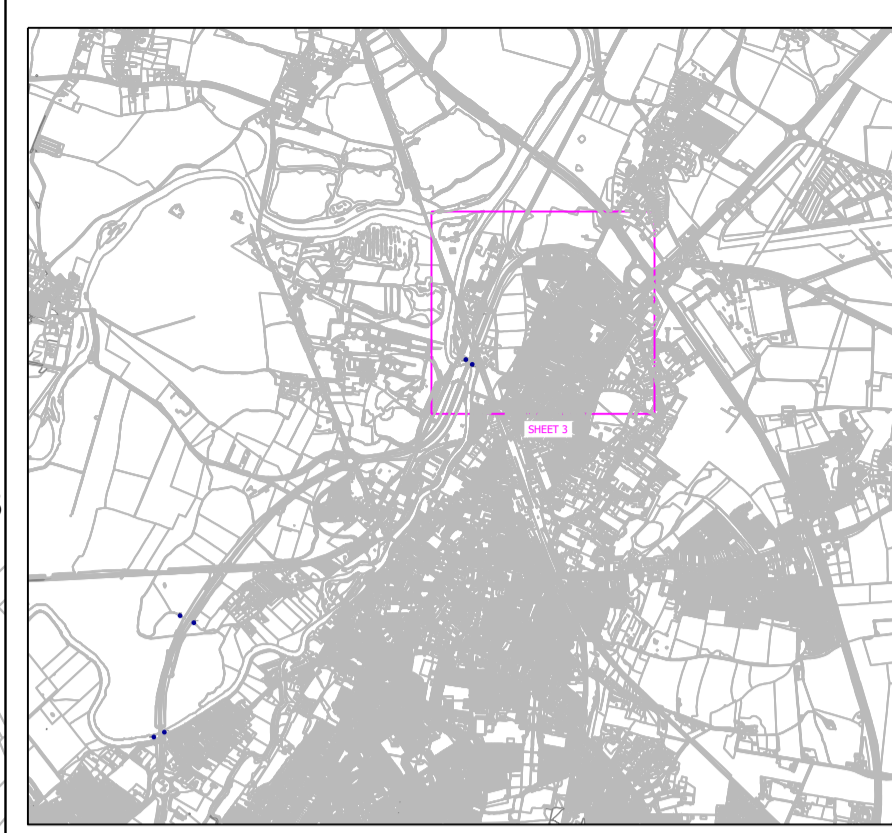
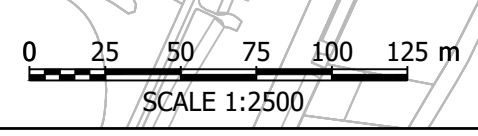
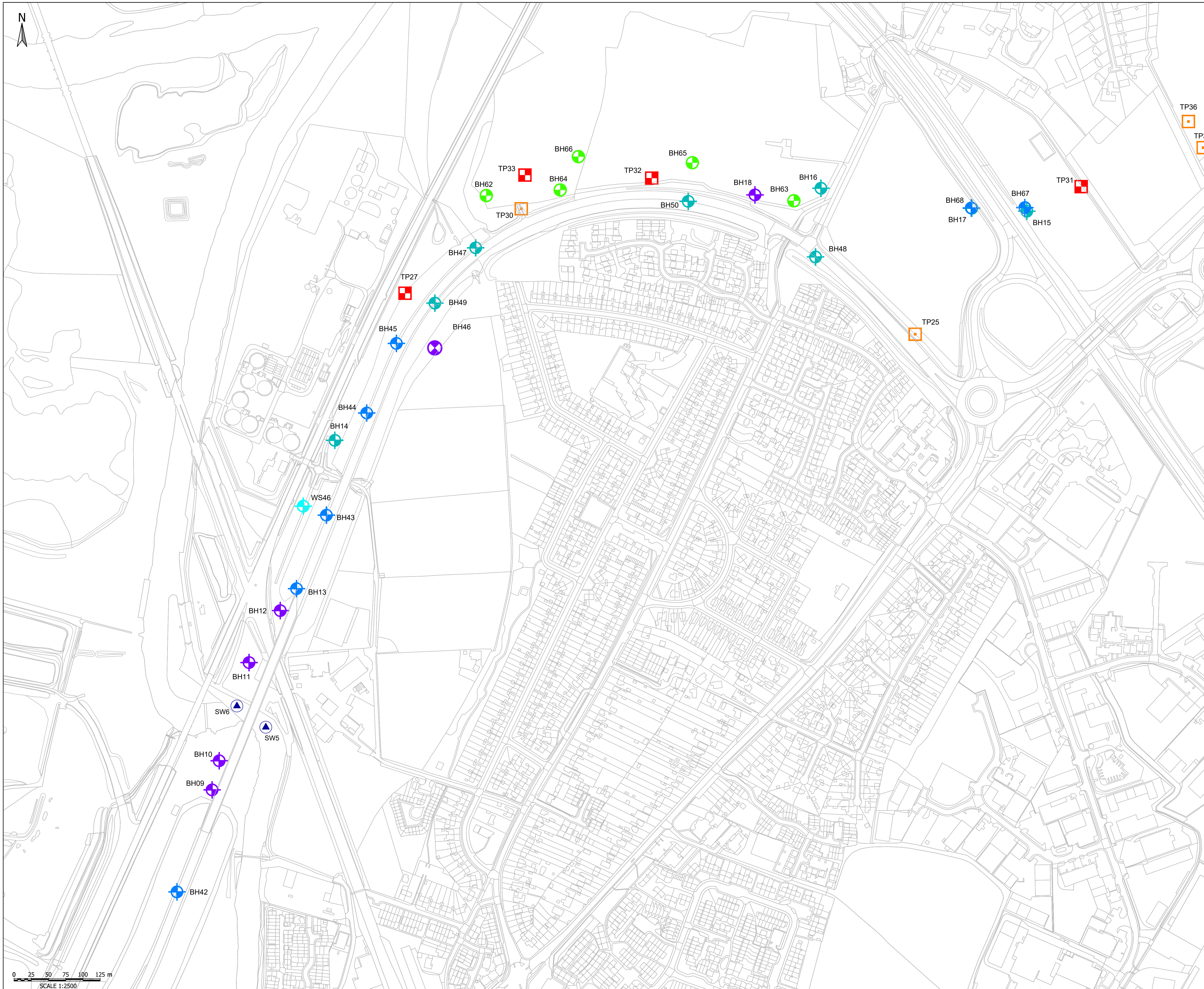


Client:  
**HIGHWAYS ENGLAND**

Project Name:  
**A46 NEWARK BYPASS**

Sheet Title:  
**SITE INVESTIGATION LAYOUT PLAN  
(SHEET 2 OF 4)**

TTE Project Number	Drawn By	Date	Checked By	Date	Approved By	Date	Scale @ As Shown	Suitability
784-B026948	PP	06.10.21	NEB	06.10.21		06.10.21	As Shown	S0
Client Project Number	Originator	Volume/System	Level/Location	Type/Code	Role	Number	Revision	
B026948	TTE	00	XX	DR	U	00-02	R03	



KEY PLAN:  
SCALE 1:50,000

- LEGEND:**
- SONIC BOREHOLES
  - CABLE PERCUSSIVE BOREHOLES
  - CABLE PERCUSSIVE & ROTARY CORE BOREHOLES
  - DYNAMIC SAMPLING AND ROTARY CORE BOREHOLES
  - WINDOW SAMPLES
  - TRIAL PITS
  - INSPECTION PITS
  - SURFACE WATER SAMPLING

Rev	Description	Date	Drawn	Checked	App
R03	SURFACE WATER SAMPLING LOCATIONS & WS46 ADDED	13.06.2022	PP	JC	NEB
R02	TP11 RELOCATED	29.03.2022	PP	AH	NEB
R01	SI HOLES & LEGEND UPDATED	17.11.2021	PP	KW	NEB
P01	PRELIMINARY FIRST ISSUE	06.10.2021	PP	NEB	NEB

Issuing Office  
**Tetra Tech Cardiff**  
 5th Floor, Longcross Court,  
 47 Newport Road, Cardiff,  
 United Kingdom, CF24 0AD  
 Tel: +44 (0)29 2082 9200  
 www.tetratech.europa.com

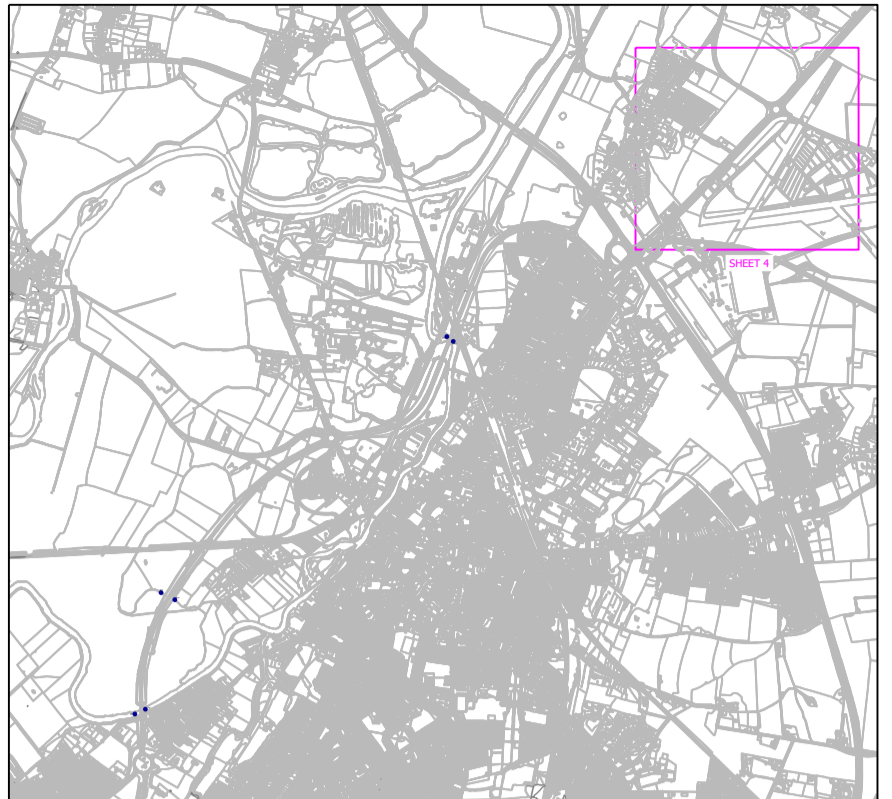
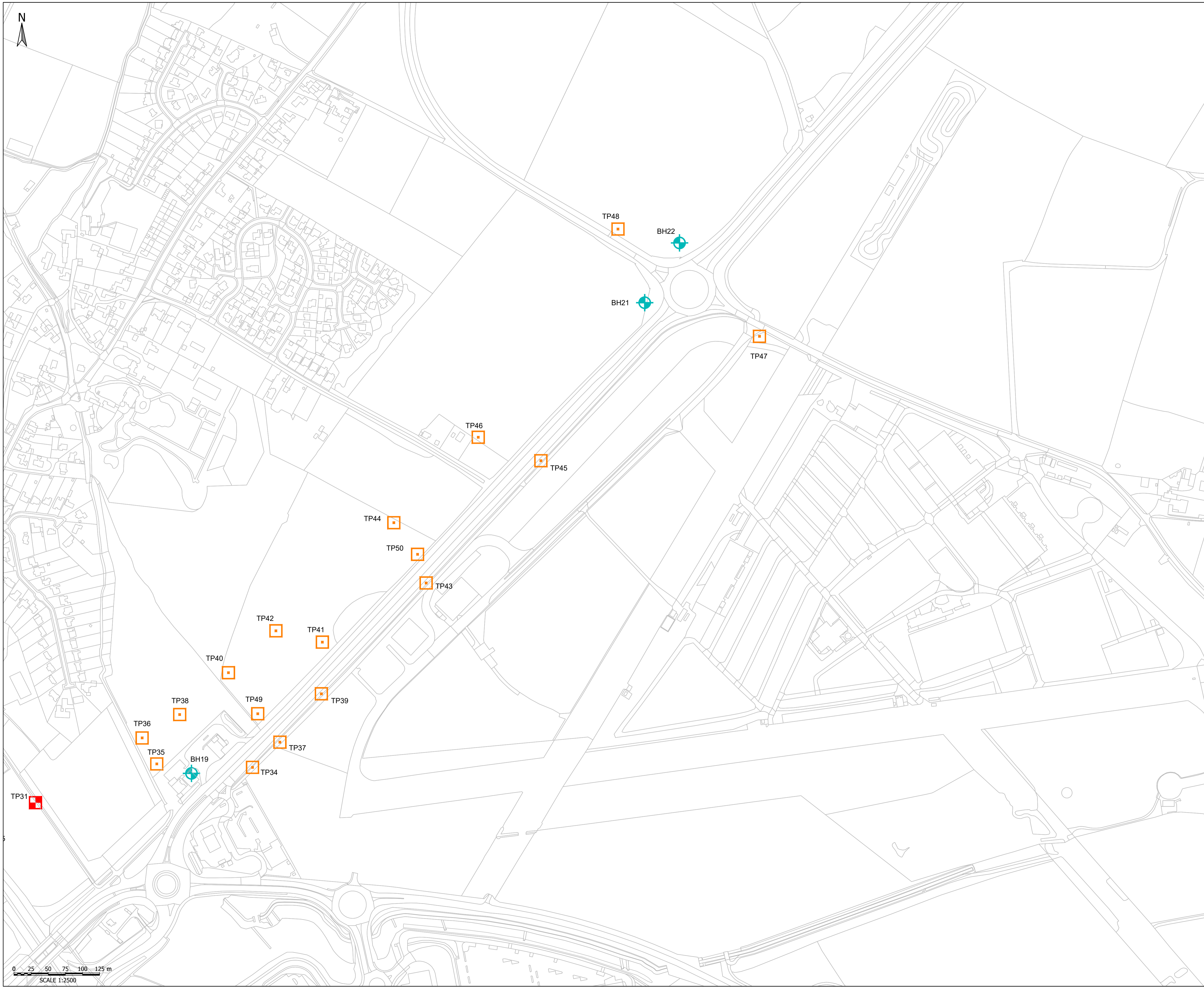


Client:  
**HIGHWAYS ENGLAND**

Project Name:  
**A46 NEWARK BYPASS**

Sheet Title:  
**SITE INVESTIGATION LAYOUT PLAN  
 (SHEET 3 OF 4)**

TTE Project Number	Drawn By	Date	Checked By	Date	Approved By	Date	Scale @ A1	Suitability
784-B026948	PP	06.10.21	NEB	06.10.21		06.10.21	As Shown	S0
Client Project Number	Originator	Volume/System	Level/Location	Type/Code	Role	Number	Revision	
B026948	TTE	00	XX	DR	U	00-02	R03	



KEY PLAN:  
SCALE 1:50,000

LEGEND:

- SONIC BOREHOLES
- CABLE PERCUSSIVE BOREHOLES
- CABLE PERCUSSIVE & ROTARY CORE BOREHOLES
- DYNAMIC SAMPLING AND ROTARY CORE BOREHOLES
- WINDOW SAMPLES
- TRIAL PITS
- INSPECTION PITS
- SURFACE WATER SAMPLING

Rev	Description	Date	Drawn	Check	Appr	Scale	App
R03	SURFACE WATER SAMPLING LOCATIONS ADDED	13.06.2022	PP	JC	NEB		
R02	TP11 RELOCATED	29.03.2022	PP	AH	NEB		
R01	SI HOLES & LEGEND UPDATED	17.11.2021	PP	KW	NEB		
P01	PRELIMINARY FIRST ISSUE	06.10.2021	PP	NEB			

Issuing Office  
**Tetra Tech Cardiff**  
 5th Floor, Longcross Court,  
 47 Newport Road, Cardiff,  
 United Kingdom, CF24 0AD  
 Tel: +44 (0)29 2082 9200  
 www.tetratech.eu.com



Client  
**HIGHWAYS ENGLAND**

Project Name  
**A46 NEWARK BYPASS**

Sheet Title  
**SITE INVESTIGATION LAYOUT PLAN  
 (SHEET 4 OF 4)**

TTE Project Number	Drawn By	Date	Checked By	Date	Approved By	Date	Scale	As Shown	Subsidiary
784-B026948	PP	06.10.21	NEB	06.10.21		06.10.21	As Shown		S0
Client Project Number	Originator	Volume/System Level/Location	Type/Code	Role	Number	Revision			
B026948	- TTE	- 00	- XX	- DR	- U	- 00-02	R03		

0 25 50 75 100 125 m  
SCALE 1:2500



## APPENDICES

## APPENDIX A – REPORT CONDITIONS

**APPENDIX A - REPORT CONDITIONS**  
**GROUND INVESTIGATION**

This report is produced solely for the benefit of National Highways and no liability is accepted for any reliance placed on it by any other party unless specifically agreed in writing otherwise.

This report refers, within the limitations stated, to the condition of the site at the time of the inspections. No warranty is given as to the possibility of future changes in the condition of the site.


This report is based on a visual site inspection, reference to accessible referenced historical records, information supplied by those parties referenced in the text and preliminary discussions with local and Statutory Authorities. Some of the opinions are based on unconfirmed data and information and are presented as the best that can be obtained without further extensive research. Where ground contamination is suspected but no physical site test results are available to confirm this, the report must be regarded as initial advice only, and further assessment should be undertaken prior to activities related to the site. Where test results undertaken by others have been made available these can only be regarded as a limited sample. The possibility of the presence of contaminants, perhaps in higher concentrations, elsewhere on the site cannot be discounted.

Whilst confident in the findings detailed within this report because there are no exact UK definitions of these matters, being subject to risk analysis, we are unable to give categorical assurances that they will be accepted by Authorities or Funds etc. without question as such bodies often have unpublished, more stringent objectives. This report is prepared for the proposed uses stated in the report and should not be used in a different context without reference to TETRA TECH. In time improved practices or amended legislation may necessitate a re-assessment.


The assessment of ground conditions within this report is based upon the findings of the study undertaken. We have interpreted the ground conditions in between locations on the assumption that conditions do not vary significantly. However, no investigation can inspect each and every part of the site and therefore changes or variances in the physical and chemical site conditions as described in this report cannot be discounted.


















The report is limited to those aspects of land contamination specifically reported on and is necessarily restricted and no liability is accepted for any other aspect especially concerning gradual or sudden pollution incidents. The opinions expressed cannot be absolute due to the limitations of time and resources imposed by the agreed brief and the possibility of unrecorded previous use and abuse of the site and adjacent sites. The report concentrates on the site as defined in the report and provides an opinion on surrounding sites. If migrating pollution or contamination (past or present) exists further extensive research will be required before the effects can be better determined.

## APPENDIX B – EXPLORATORY HOLE LOGS AND PHOTO PLATES

 Project: <b>A46 Newark - Northern Bypass</b> Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>						<b>Location Details</b> Easting: 478088.91 Northing: 352816.46 Level: 13.84mAOD Depth: 25.00m Logger: DD Type: WLS+RC Inclination: 90°						<b>Status</b>  <b>FINAL</b>		<b>Borehole Number</b>  <b>BH01</b>							
Method, Plant and Crew						Diameter		Casing		Drilling Progress by Time						Scale: 1:50					
From (m)	To (m)	Type	Plant Used	Crew		Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	Approved By:	Start Date:	Finish Date:			
0.00	1.20	Inspection Pit	Hand Excavated	S. Hales	300	1.20	-	07/05		13:30	13:30	1.20	-	-	NEB	JC	07/05/2021	14/05/2021			
1.20	5.50	Dynamic Windowless Sampling	Comacchio 205	S. Hales	25.00	5.50	-	10:05		16:15	16:15	10.00	-	1.2							
5.50	25.00	Rotary Core	Comacchio 205	S. Hales		25.00	102	11:05		16:20	16:20	17.50	10.50	3.2							
								12:05		16:15	16:15	19.00	10.50	1.2							
								13:05		16:30	16:30	23.50	20.50	1.2							
								14:05		15:00	15:00	25.00	20.50	1.1							
								17:05		12:00	12:00	25.00	20.50	1.1							
Strata Description									Legend			Samples, Tests and Rotary Coring									
Dark brown slightly gravelly slightly silty fine to coarse SAND. Silt is fine to coarse. Gravel is fine to coarse angular to sub-rounded of sandstone and quartzite. (TOPSOIL) TOP Orangish brown sandy fine to coarse angular to sub-rounded sandstone and quartzite GRAVEL. Sand is fine to coarse. (ALLUVIUM) <i>From 0.70m bgl gravelly.</i>									Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Depth (m)	Ref	Core Run	FI	TCR	SCR	RQD	Tests / Results	
									0.20	13.64			0.10 ES1 0.10 - 0.20 B2 0.20 - 0.50 B3								
Dense brown sandy GRAVEL, with low cobble content. Gravel is subrounded to rounded occasionally angular fine to coarse siltstone quartz chert and occasional flint. Cobbles are rounded quartz. Sand is coarse. (ALLUVIUM)									1.20	12.64			0.60 ES4 0.80 - 1.20 B5								
									1.70	12.14			1.20 D6 1.20 - 1.70 B 1.20 - 1.70 BB								SPT(S) 1.20m, 50 (7,9/50 for 295mm)
Mid brown slightly clayey gravelly fine to medium SAND. Gravel is subrounded to rounded fine to coarse siltstone quartz and chert. (ALLUVIUM) <i>From 1.75m to 1.78m bgl Interlaminae (3-5mm) of fine black organic matter.</i>									1.85	11.99											
									2.00	11.84			1.70 - 1.85 DD								
Mid to dark brown gravelly coarse SAND. Gravel is subrounded to rounded fine to coarse siltstone quartz chert and flint. (ALLUVIUM) (Sample lost trying to advance casing). (NO RECOVERY)									4.50	9.34											
									4.80	9.04											
Dense light brown medium to coarse SAND. (Poor recovery). (ALLUVIUM)									5.20	8.64											
									5.50	8.70											
Light brown sandy GRAVEL, with medium cobble content (60-100mm). Gravel is subrounded to rounded occasionally angular fine to coarse siltstone quartz chert and occasional flint. Cobbles are rounded quartz. Sand is coarse. (ALLUVIUM)									5.50	8.64											
									7.00	8.50											SPT(S) 5.50m, N=45 (6,5/9,11,11,14)
Stiff friable dark reddish brown silty CLAY. (Weathered mudstone). (Zone IVb). (MERCIA MUDSTONE GROUP) <i>From 5.20m to 5.25m bgl 45 degree gravel / clay contact.</i>									7.00	8.50											
									8.50	8.50											
Stiff reddish brown CLAY, with frequent pockets (3-5mm) of light bluish grey silt. (Weathered mudstone). (Zone IVb). (MERCIA MUDSTONE GROUP)									8.15	8.69											
									8.50	8.69											SPT(S) 7.00m, 50 (6,8/50 for 240mm)
									8.50	8.69											
									10.00	8.69											SPT(S) 8.50m, N=48 (7,8/10,10,12,16)
Observations / Remarks									Sampling Runs				Drilling Fluid				Hammer Information				
1. Upon completion 50mm diameter gas/groundwater monitoring pipe installed to 15.00m bgl.									From (m)	To (m)	Diameter (mm)	Recovery %	From (m)	To (m)	Return Min %	Colour	Type	Serial No.	Energy Ratio %		
									5.50	7.00	50	100	5.50	19.00	100		Air / Mist Water				
									7.00	8.50	50	100	19.00	25.00	100						
									Groundwater				Project Number								
									Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>						
1.50	-	-	20	1.20																	



Project: <b>A46 Newark - Northern Bypass</b>					Location Details					Status		Borehole Number												
 Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>					Easting: 478088.91    Northing: 352816.46 Level: 13.84mAOD    Depth: 25.00m Logger: DD    Type: WLS+RC Inclination: 90°					<b>FINAL</b>		<b>BH01</b>												
					Sheet 3 of 3																			
Method, Plant and Crew					Casing		Drilling Progress by Time					Scale: 1:50												
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By: NEB										
0.00	1.20	Inspection Pit Dynamic Windowless Sampling Rotary Core	Hand Excavated Comacchio 205 Comacchio 205	S. Hales	1.20	300			07/05	13:30	1.20	-	-	1:50										
1.20	5.50			S. Hales	5.50	-				10/05	16:15	10.00	-	1.2	NEB									
5.50	25.00			S. Hales	25.00	102				11/05	16:20	17.50	10.50	1.2	JC									
										12/05	16:15	19.00	10.50	1.2	07/05/2021									
									13/05	16:30	20.50	1.2	14/05/2021											
									14/05	15:00	20.50	1.1												
									17/05	12:00	25.00	1.1												
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples, Tests and Rotary Coring												
Weak very thinly bedded reddish brown MUDSTONE, with 0-10 degree closely spaced irregular undulating rough discontinuities, localised clay infill to 1mm. Frequent 1-30mm veins/ bands of gypsum following bedding/ discontinuities, locally crosscutting 30 degrees. (Zone II) (IF: 20/100/150). (MERCIA MUDSTONE GROUP)													19.50											
													21.20 - 21.30	CORECS	20.50			73	73	30				
																			100	60	13			
From 22.80m to 23.20m bgl 90 degree wavy irregular rough joint, striated polished joint. From 22.80m to 23.50m bgl very weak (reduction in strength close to 90 degree and 45 degree joints). From 22.90m to 23.50m bgl very closely spaced 45 degree undulating rough joints, partly non-intact (IF: NI/60/80).																								
From 23.75m to 23.85m bgl 70 degree irregular rough joint. From 23.90m to 24.05m bgl 60 degree irregular rough joint.																								
From 24.70m to 24.80m bgl 60 degree irregular rough joint. From 24.70m to 25.00m bgl very weak partly non-intact.																								
EOH at 25.00m - Target depth achieved								25.00	-11.16															
Observations / Remarks 1. Upon completion 50mm diameter gas/groundwater monitoring pipe installed to 15.00m bgl.							Sampling Runs				Drilling Fluid				Hammer Information									
							From (m)	To (m)	Diameter (mm)	Recovery %	From (m)	To (m)	Return Min %	Colour	Type	Serial No.	Energy Ratio %							
	20.50	22.00			5.50	19.00			Air / Mist Water															
	22.00	23.50			19.00	25.00																		
	23.50	25.00																						
							Groundwater					Project Number												
							Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>											

 <b>Project: A46 Newark - Northern Bypass</b> <b>Location: Newark-on-Trent, Nottinghamshire</b> <b>Client: Highways England</b>					<b>Location Details</b> Easting: 478083.73 Northing: 352877.19 Level: 11.09mAOD Depth: 25.00m Logger: DD Type: WLS+RC Inclination: 90°					<b>Status</b> <b>FINAL</b>		<b>Borehole Number</b> <b>BH02</b>							
Method, Plant and Crew					Diameter		Casing		Drilling Progress by Time					Scale: 1:50					
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB				
0.00	0.40	Inspection Pit	Hand Excavated	A. Richardson	0.40	300			28/04	16:30	13.00	13.00	1	Approved By:	JC				
0.40	5.50	Dynamic Windowless Sampling Rotary Core	Comacchio 205	A. Richardson	5.50	-			29/04	16:15	25.00	16.00	3.1	Start Date:	28/04/2021				
5.50	25.00		Comacchio 205	A. Richardson	25.00	-			30/04	16:00	25.00	16.00	3.1	Finish Date:	30/04/2021				
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples, Tests and Rotary Coring							
Brown slightly gravelly slightly silty fine to coarse SAND with low cobble content. Silt is fine to coarse. Gravel is fine to coarse angular to sub-rounded of sandstone. Cobbles are angular to sub-rounded of quartzite. (TOPSOIL) TOP								0.50	10.59			0.20 D2 0.20 ES1 0.30 - 0.50 B3					SPT(S) 0.40m, N=2 (1,0/0,1,0,1)		
Brown slightly clayey slightly silty fine to coarse SAND. (ALLUVIUM)								1.20	9.89			0.60 D5 0.60 ES4 0.70 - 1.20 B6					SPT(S) 1.20m, N=1 (1,0/0,0,1)		
Very soft light brown sandy CLAY. Sand is fine. (ALLUVIUM)								1.40	9.69			1.40 - 2.00 B4 1.40 - 2.00 BB1 1.40 - 2.00 BB4					SPT(S) 2.00m, N=13 (1,2/2,3,4,4)		
Soft mid to dark grey slightly sandy CLAY. Sand is fine with occasional lenses (1-2mm) of organic matter. (ALLUVIUM)								2.00	9.09			2.00 - 3.40 BB2					SPT(S) 3.00m, 50 (7,10/50 for 280mm)		
Medium dense light greyish brown medium SAND. (ALLUVIUM)								2.80	8.29			2.80 - 3.40 B2 2.80 - 3.40 BB2					SPT(S) 3.00m, 50 (7,10/50 for 280mm)		
Dense light brownish grey medium to coarse SAND. (ALLUVIUM)								3.40	7.69			3.30 - 3.90 BB3					SPT(S) 4.00m, 50 (8,10/50 for 275mm)		
Light brown grey sandy GRAVEL. Gravel is subrounded to rounded fine to coarse siltstone, quartz and chert. Sand is medium to coarse. (ALLUVIUM)								3.90	7.19			3.90 - 4.00 D1 3.90 - 4.00 DD1						SPT(S) 5.50m, 50 (25 for 80mm/50 for 155mm)	
Stiff very friable reddish brown CLAY. (MERCIA MUDSTONE GROUP)								6.55	4.54			6.00 - 6.10 D2 6.00 - 6.10 DD2	5.50	7.00	33				
Stiff very thin bedded reddish brown clayey SILT, with rare pockets (5-10mm) of light bluish fine sand (Weathered Mercia Mudstone) (Zone IVa). (MERCIA MUDSTONE GROUP)								7.00	4.54			7.00 - 8.50 D3 8.20 - 8.30 DD3						SPT(S) 7.00m, 50 (25 for 80mm/50 for 115mm)	
Extremely weak thin bedded reddish brown MUDSTONE, with 0-30 and 40-60 degree very closely spaced to closely spaced planar irregular rough discontinuities with a trace of light orange brown silt. (Weathered Mercia Mudstone) (Zone II). (MERCIA MUDSTONE GROUP)								9.00	2.09			9.00 - 9.10 DD4 9.30 - 9.50 B 9.30 - 9.50 CORECL	8.50	10.00	87	0	0		
From 8.70m to 9.00m bgl very soft.								9.00	2.09			9.00 - 9.10 DD4 9.30 - 9.50 B 9.30 - 9.50 CORECL						SPT(S) 10.00m, 50 (25 for 65mm/50 for 55mm)	
From 2.70m to 2.80m bgl gravel horizon. Gravel is rounded medium to coarse quartz and chert.								2.80	8.29			2.80 - 3.40 B2 2.80 - 3.40 BB2							
From 3.15m to 3.50m bgl soft mid grey clay.								3.40	7.69			3.30 - 3.90 BB3							
From 1.73m to 1.78m bgl band of medium sand.								2.00	9.09			2.00 - 3.40 BB2							
From 1.93m to 1.99m bgl band of medium sand.								1.40	9.69			1.40 - 2.00 B4 1.40 - 2.00 BB1 1.40 - 2.00 BB4							
From 1.98m to 2.00m bgl medium sand								1.40	9.69			1.40 - 2.00 B4 1.40 - 2.00 BB1 1.40 - 2.00 BB4							
Observations / Remarks							Sampling Runs		Drilling Fluid				Hammer Information						
1. Upon completion 50mm diameter gas/groundwater monitoring pipe installed to 5.00m bgl.							From (m)	To (m)	Diameter (mm)	Recovery %	From (m)	To (m)	Return Min %	Colour	Type	Serial No.	Energy Ratio %		
							5.50	7.00			5.50	25.00			Air / Mist				
							7.00	8.50											
							8.50	10.00											
							10.00	11.50											
							Groundwater				Project Number								
							Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>						
							1.20	-	-	20	1.00								



Project: <b>A46 Newark - Northern Bypass</b>					Location Details					Status	Borehole Number										
Location: <b>Newark-on-Trent, Nottinghamshire</b>					Easting: 478083.73		Northing: 352877.19			<b>FINAL</b>	<b>BH02</b>										
Client: <b>Highways England</b>					Level: 11.09m AOD		Depth: 25.00m														
					Logger: DD		Type: WLS+RC														
					Inclination: 90°					Sheet 2 of 3											
Method, Plant and Crew					Casing		Drilling Progress by Time						Scale: 1:50								
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:									
0.00	0.40	Inspection Pit Dynamic Windowless Sampling Rotary Core	Hand Excavated Comacchio 205 Comacchio 205	A. Richardson A. Richardson A. Richardson	0.40	300	28/04	16:30	13.00	13.00	1	NEB									
0.40	5.50				5.50	29/04	16:15	16.00	25.00	16.00	3.1										
5.50	25.00				25.00	30/04	16:00	25.00	16.00	3.1											
Strata Description						Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples, Tests and Rotary Coring										
													Depth (m)	Ref	Core Run	FI	TCR	SCR	RQD	Tests / Results	
Extremely weak thinly bedded reddish brown MUDSTONE, with 0-30 and 40-60 degree very closely spaced to closely spaced planar irregular rough discontinuities with a trace of light orange brown silt. (Weathered Mercia Mudstone) (Zone II). (MERCIA MUDSTONE GROUP)																				11	
Stiff very thinly bedded reddish brown clayey SILT, with rare pockets (5-10mm) of light bluish fine sand (Weathered Mercia Mudstone) (Zone IVa). (MERCIA MUDSTONE GROUP)						X X X X	11.40	-0.31								10.00 11.50		7	0	0	
Extremely weak thinly bedded reddish brown MUDSTONE, with 0-30 and 40-60 degree very closely spaced to closely spaced planar irregular rough discontinuities with a trace of light orange brown silt. (Weathered Mercia Mudstone) (Zone II). (MERCIA MUDSTONE GROUP)						X X X X														12	
Weak to medium strong very thinly bedded reddish brown MUDSTONE, with 0-20 degree very closely spaced planar irregular rough discontinuities (Weathered Mercia Mudstone) (Zone II). (IF: NI/40/40). (MERCIA MUDSTONE GROUP)						X X X X	12.40	-1.31								11.50 13.00		40	0	0	
Very weak to weak very thinly bedded reddish brown and bluish grey MUDSTONE, with horizontal to 30 degree very closely spaced planar irregular rough discontinuities. Frequent bands of gypsum (5-10mm) following discontinuities. (IF:20/50/100). (MERCIA MUDSTONE GROUP)						X X X X															13
Weak to medium strong very thinly bedded reddish brown and bluish grey MUDSTONE, with 0-10 degree very closely spaced to closely spaced planar irregular rough discontinuities. Frequent bands of gypsum (5-10mm) following discontinuities. (IF:40/100/200). (MERCIA MUDSTONE GROUP)						X X X X															14
Very weak to weak very thinly bedded reddish brown and bluish grey MUDSTONE, with horizontal to 30 degree very closely spaced planar irregular rough discontinuities. Frequent bands of gypsum (5-10mm) following discontinuities. (IF:20/50/100). (MERCIA MUDSTONE GROUP)						X X X X															15
Weak to medium strong very thinly bedded reddish brown and bluish grey MUDSTONE, with 0-10 degree very closely spaced to closely spaced planar irregular rough discontinuities. Frequent bands of gypsum (5-10mm) following discontinuities. (IF:40/100/200). (MERCIA MUDSTONE GROUP)						X X X X															16
Weak to medium strong very thinly bedded reddish brown and bluish grey MUDSTONE, with 0-10 degree very closely spaced to closely spaced planar irregular rough discontinuities. Frequent bands of gypsum (5-10mm) following discontinuities. (IF:40/100/200). (MERCIA MUDSTONE GROUP)						X X X X															17
Weak to medium strong very thinly bedded reddish brown and bluish grey MUDSTONE, with 0-10 degree very closely spaced to closely spaced planar irregular rough discontinuities. Frequent bands of gypsum (5-10mm) following discontinuities. (IF:40/100/200). (MERCIA MUDSTONE GROUP)						X X X X															18
Weak to medium strong very thinly bedded reddish brown and bluish grey MUDSTONE, with 0-10 degree very closely spaced to closely spaced planar irregular rough discontinuities. Frequent bands of gypsum (5-10mm) following discontinuities. (IF:40/100/200). (MERCIA MUDSTONE GROUP)						X X X X															19
Weak to medium strong very thinly bedded reddish brown and bluish grey MUDSTONE, with 0-10 degree very closely spaced to closely spaced planar irregular rough discontinuities. Frequent bands of gypsum (5-10mm) following discontinuities. (IF:40/100/200). (MERCIA MUDSTONE GROUP)						X X X X															20
Observations / Remarks						Sampling Runs			Drilling Fluid				Hammer Information								
1. Upon completion 50mm diameter gas/groundwater monitoring pipe installed to 5.00m bgl.						From (m)	To (m)	Diameter (mm)	Recovery %	From (m)	To (m)	Return Min %	Colour	Type	Serial No.	Energy Ratio %					
						11.50	13.00			5.50	25.00			Air / Mist							
						13.00	14.50														
						14.50	16.00														
						16.00	17.50														
						17.50	19.00														
						19.00	20.50														
										Groundwater				Project Number							
										Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>					



**Project:** A46 Newark - Northern Bypass  
**Location:** Newark-on-Trent, Nottinghamshire  
**Client:** Highways England

**Location Details**  
 Easting: 478083.73 Northing: 352877.19  
 Level: 11.09mAOD Depth: 25.00m  
 Logger: DD Type: WLS+RC  
 Inclination: 90°








**Status**  
**FINAL**





























**Borehole Number**  
**BH02**


Method, Plant and Crew					Diameter		Casing		Drilling Progress by Time					Scale:	
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	1:50
0.00	0.40	Inspection Pit	Hand Excavated	A. Richardson	0.40	300			28/04	16:30	13.00	13.00	1	NEB	
0.40	5.50	Dynamic Windowless Sampling	Comacchio 205	A. Richardson	5.50	-			29/04	16:15	25.00	16.00	3.1	JC	
5.50	25.00	Rotary Core	Comacchio 205	A. Richardson	25.00	-			30/04	16:00	25.00	16.00	3.1	Approved By:	
														Start Date:	28/04/2021
														Finish Date:	30/04/2021


Strata Description	Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples, Tests and Rotary Coring										
						Depth (m)	Ref	Core Run	FI	TCR	SCR	RQD	Tests / Results			
						20.55	C6									21
						20.55 - 20.70	B									
						20.55 - 20.70	COREC5									
						20.50						73	66	26		
						22.80	C5									22
						22.80 - 23.00	COREC6					80	80	33		
						24.15 - 24.25	COREC7									23
						23.50										
						23.50 - 25.00						66	66	6		24
																25
																26
																27
																28
																29
																30


Observations / Remarks	Sampling Runs				Drilling Fluid					Hammer Information	
	From (m)	To (m)	Diameter (mm)	Recovery %	From (m)	To (m)	Return Min %	Colour	Type	Serial No.	Energy Ratio %
	1. Upon completion 50mm diameter gas/groundwater monitoring pipe installed to 5.00m bgl.	20.50	22.00			5.50	25.00			Air / Mist	
	22.00	23.50									
	23.50	25.00									
					Groundwater					Project Number	
	Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks					
											<b>784-B026948</b>


 Project: <b>A46 Newark - Northern Bypass</b> Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>						<b>Location Details</b> Easting: 478260.28 Northing: 353627.87 Level: 10.47mAOD Depth: 4.00m Logger: DD Type: WLS+RC Inclination: 90°				<b>Status</b> <b>FINAL</b>		<b>Borehole Number</b> <b>BH03</b>							
Method, Plant and Crew						Diameter		Casing		Drilling Progress by Time					Scale: 1:50				
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB				
0.00	1.20	Inspection Pit	Hand Excavated	Dynamic Sampling	1.20	300			26/04	16:30	1.20	-	1	Approved By:	JC				
1.20	4.00	Dynamic Windowless Sampling	Comacchio 205	Dynamic Sampling	4.00	-			27/04	00:00	7.00	4.00	1.3	Start Date:	07/05/2021				
<b>Strata Description</b>							<b>Legend</b>		<b>Drilling Progress by Time</b>			<b>Samples, Tests and Rotary Coring</b>							
Dark brown slightly gravelly slightly clayey slightly silty fine to coarse SAND. Silt is fine to coarse. Gravel is fine to coarse angular to sub-rounded of sandstone and quartzite. (TOPSOIL) TOP Soft brown sandy silty CLAY. Sand is fine to coarse. (ALLUVIUM)								Depth (m) 0.30	Reduced Level (mAOD) 10.17	Water Level (m)	Inst / Backfill	Depth (m) 0.10 0.10 0.20 - 0.30	Ref D2 ES1 B3	Core Run D5 ES4 B6	FI TCR SCR RQD	Tests / Results			
Firm brownish grey mottled with orange CLAY, with frequent pockets/ lenses (1-3mm) of orange fine sand. (Glacial Till) (ALLUVIUM)								1.20	9.27									SPT(S) 2.00m, N=47 (6,10/11,12,12,12)	
Medium dense grey medium to coarse SAND. (ALLUVIUM)								2.45	8.02									SPT(S) 2.45m, N=25 (3,5/5,6,7,7)	
Dense brown sandy GRAVEL. gravel is subrounded to rounded occasionally sub-angular fine to coarse siltstone sandstone quartz and chert. sand is medium to coarse. (ALLUVIUM) From 2.85m to 3.00m bgl dark grey black mottled/ disseminated organic clay. From 3.00m to 3.40m bgl dark grey with occasional sub-angular to angular coarse gravel of flint. From 3.40m to 4.00m bgl grey medium to coarse sand.								2.70	7.77										SPT(S) 3.00m, 50 (9,12/50 for 230mm)
EOH at 4.00m - Terminated due to refusal								4.00	6.47			3.60 - 4.00 3.60 - 4.00	B4 BB4				SPT(S) 4.00m, 50 (25 for 80mm/50 for 65mm)		
Observations / Remarks							Sampling Runs		Drilling Fluid				Hammer Information						
1. Upon completion exploratory hole backfilled with bentonite.							From (m) 1.20 2.00 3.00	To (m) 2.00 3.00 4.00	Diameter (mm) 	Recovery % 100 55 100	From (m) 	To (m) 	Return Min % 	Colour 	Type 	Serial No. 	Energy Ratio % 		
							Groundwater				Project Number								
							Strike (m) 1.20	Casing (m) -	Sealed (m) -	Time (min) 20	Rose To (m) 1.00	Remarks 	<b>784-B026948</b>						

 <b>Project: A46 Newark - Northern Bypass</b> <b>Location: Newark-on-Trent, Nottinghamshire</b> <b>Client: Highways England</b>						<b>Location Details</b> Easting: 478244.85 Northing: 353614.11 Level: 7.10mAOD Depth: 25.00m Logger: DD Type: WLS+RC Inclination: 90°				<b>Status</b> <b>FINAL</b>		<b>Borehole Number</b> <b>BH03A</b>										
Method, Plant and Crew						Diameter		Casing		Drilling Progress by Time					Scale: 1:50							
From (m)	To (m)	Type	Plant Used	Crew		Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By: NEB	Approved By: JC						
0.00	1.00	Inspection Pit	Hand Excavated	A. Richardson		1.00	300			11/05	16:30	7.00	7.00	0.7								
1.00	8.50	Dynamic Windowless Sampling	Comacchio 205	A. Richardson		8.50	-			12/05	16:15	16.00	7.00	0.8								
8.50	25.00	Rotary Core	Comacchio 205	A. Richardson		25.00	102			13/05	16:15	25.00	17.50	2.1								
										14/05	16:30	25.00	17.50	2.1	Start Date: 11/05/2021	Finish Date: 14/05/2021						
Strata Description								Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples, Tests and Rotary Coring									
Dark brown slightly gravelly slightly clayey slightly silty fine to coarse SAND. Silt is fine to coarse. Gravel is fine to coarse angular to sub-rounded of sandstone and quartzite. (TOPSOIL) TOP									0.30	6.80												
Soft brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse angular to sub-rounded of sandstone and quartzite. (ALLUVIUM)									1.20	5.90												
Soft to firm locally spongy dark grey organic CLAY, with frequent lenses / thin laminae of decomposed woody stem and leaf, frequent lenses of dark brown decomposed woody stem and leaf. (ALLUVIUM)									1.50	5.60			1.30 - 1.40	B								
Dark grey fine SAND. Locally clayey, with occasional lenses/ thin laminae of decomposed organic matter. (ALLUVIUM)									1.80	5.30			1.30 - 1.40	DD								
From 1.75m to 1.80m bgl firm to soft organic clay.									2.00	5.10			1.30 - 1.40	B					SPT(S) 1.00m, N=1 (1,0/1,0,0)			
Mid to dark grey medium to coarse SAND. (ALLUVIUM)									3.00	4.10			1.50 - 1.80	BB					SPT(S) 1.20m, N=20 (3,4/4,5,5,6)			
Brown and grey sandy GRAVEL, with low cobble content. Gravel is subrounded to rounded occasionally angular fine to coarse siltstone, chert and quartz. cobbles are subrounded (60mm) sandstone. Sand is medium to coarse. (ALLUVIUM)									3.00	4.10										SPT(S) 2.00m, N=24 (5,6/6,6,6,6)		
From 2.30m to 2.50m bgl very sandy.									3.50	3.60									SPT(S) 3.00m, N=25 (4,5/5,6,7,7)			
Mid grey medium SAND. (ALLUVIUM)									5.70	1.40												
Brown and grey sandy GRAVEL, with low cobble content. Gravel is subrounded to rounded occasionally angular fine to coarse siltstone, chert and quartz. cobbles are subrounded (60mm) sandstone. Sand is medium to coarse. (ALLUVIUM)									9.70	-2.60											SPT(S) 4.00m, N=28 (5,6/6,6,8,8)	
Stiff reddish brown friable silty CLAY. (Zone IVb). (MERCIA MUDSTONE GROUP)																				SPT(S) 6.00m, 50 (9,10/50 for 270mm)		
Stiff reddish brown mottled light bluish grey silty gravelly CLAY. Gravel is sub-angular to angular fine to coarse extremely weak mudstone (lithorelics of mudstone in silt / clay matrix). 0-10 degrees extremely closely spaced to closely spaced discontinuities. (Zone III). (MERCIA MUDSTONE GROUP)																						SPT(S) 7.00m, N=46 (7,10/10,11,12,13)
																				SPT(S) 8.50m, N=49 (10,10/12,11,12,14)		
																						
																						
																						
																						
																						
																						
																						
																						
																						
																						
																						
																						
																						
																						
Observations / Remarks								Sampling Runs		Drilling Fluid				Hammer Information								
1. Upon completion 50mm diameter gas/groundwater monitoring pipe installed to 5.00m bgl.								From (m)	To (m)	Diameter (mm)	Recovery %	From (m)	To (m)	Return Min %	Colour	Type	Serial No.	Energy Ratio %				
								8.50	10.00	11.50		8.50	25.00			Air / Mist						
												Groundwater				Project Number						
Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks																	
1.20	-	-	20	0.70																		
														<b>784-B026948</b>								


 <b>Project: A46 Newark - Northern Bypass</b> <b>Location: Newark-on-Trent, Nottinghamshire</b> <b>Client: Highways England</b>						<b>Location Details</b> Easting: 478244.85 Northing: 353614.11 Level: 7.10mAOD Depth: 25.00m Logger: DD Type: WLS+RC Inclination: 90°						<b>Status</b>  <b>FINAL</b>		<b>Borehole Number</b>  <b>BH03A</b>															
						Sheet 2 of 3																							
						<b>Method, Plant and Crew</b>				<b>Diameter</b>		<b>Casing</b>		<b>Drilling Progress by Time</b>				Scale: 1:50 Checked By: NEB Approved By: JC Start Date: 11/05/2021 Finish Date: 14/05/2021											
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)																
0.00 1.00 8.50	1.00 8.50 25.00	Inspection Pit Dynamic Windowless Sampling Rotary Core	Hand Excavated Comacchio 205 Comacchio 205	A. Richardson A. Richardson A. Richardson	1.00 8.50 25.00	300 - 102			11/05 12/05 13/05 14/05	16:30 16:15 16:15 16:30	7.00 7.00 16.00 25.00 25.00	7.00 7.00 17.50 17.50	0.7 0.8 2.1 2.1																
<b>Strata Description</b>							<b>Legend</b>	<b>Depth (m)</b>	<b>Reduced Level (mAOD)</b>	<b>Water Level (m)</b>	<b>Inst / Backfill</b>	<b>Samples, Tests and Rotary Coring</b>																	
															Depth (m)	Ref	Core Run	FI	TCR	SCR	RQD	Tests / Results							
Stiff reddish brown mottled light bluish grey silty gravelly CLAY. Gravel is sub-angular to angular fine to coarse extremely weak mudstone (lithorelics of mudstone in silt / clay matrix). 0-10 degrees extremely closely spaced to closely spaced discontinuities. (Zone III). (MERCIA MUDSTONE GROUP)								10.30	-3.20										10.00 11.50		80	0	0						
Soft light grey slightly silty slightly gravelly CLAY. Gravel is subangular to angular flat fine to medium very weak mudstone (Zone III/IVb). (MERCIA MUDSTONE GROUP)								11.10	-4.00																11				
Stiff reddish brown mottled light bluish grey silty gravelly CLAY. Gravel is sub-angular to angular fine to coarse extremely weak mudstone (lithorelics of mudstone in silt / clay matrix). 0-10 degrees extremely closely spaced to closely spaced discontinuities. (Zone III). (MERCIA MUDSTONE GROUP)								12.60	-5.50											11.50 13.00		100	0	0	SPT(S) 11.50m, 50 (25 for 80mm/50 for 155mm)	12			
Very weak very thinly bedded light grey SILTSTONE, with 0-5 degrees very closely spaced to closely spaced planar smooth discontinuities. (Zone II). (MERCIA MUDSTONE GROUP)								12.60	-5.50																				
Reddish brown clayey fine to medium SAND (Zone IVb) (extremely weathered - destructured). (MERCIA MUDSTONE GROUP)								13.00	-5.90																		13		
Weak very thinly bedded reddish brown and light bluish grey MUDSTONE, with 0-10 degree closely spaced irregular slightly rough discontinuities. Frequent (1-10mm) gypsum veins/bands following bedding / discontinuities, locally crosscutting 30 degrees (Zone II). (IF: 20/100/150). (MERCIA MUDSTONE GROUP)								13.50	-6.40													13.00 14.50		100	46	16		14	
Non intact, recovered as grey sandy clayey GRAVEL. Gravel is sub-angular to angular fine to coarse siltstone and mudstone. Sand is fine to coarse. (possibly very closely spaced subhorizontal 60 degree discontinuities (Zone III). (MERCIA MUDSTONE GROUP)								14.50	-7.40																				15
<i>From 14.50m to 14.55m bgl band of gypsum.</i> Weak to medium strong mid to light grey SILTSTONE, with 30 degree and 70 degree undulating irregular rough discontinuities. Localised clay infill to 2mm and occasional gypsum. (Zone II). (IF: 20/100/100). (MERCIA MUDSTONE GROUP)								14.80	-7.70													14.50 16.00		91	25	25		16	
<i>From 15.10m to 15.25m bgl 70 degree irregular rough joint, slight reduction in strength.</i> <i>From 15.45m to 15.60m bgl 70 degree irregular rough joint, slight reduction in strength.</i> <i>From 15.60m to 15.75m bgl 70 degree irregular rough joint, slight reduction in strength.</i> Gypsum to 5mm. <i>From 15.60m to 16.00m bgl very weak to weak mudstone.</i> <i>From 15.95m to 16.00m bgl band of gypsum.</i>								16.00	-8.50														16.00 17.50		27	6	0	SPT(S) 16.00m, 50 (25 for 45mm/50 for 65mm)	17
<i>From 17.45m to 17.50m bgl weak reddish brown mudstone.</i> Very weak to weak very thinly bedded reddish brown MUDSTONE, with 0-70 degree and 20 degree closely spaced irregular undulating rough discontinuities, locally striated frequent 2-5mm gypsum veins/ bands following bedding and discontinuities. (Zone II) (IF:20/80/150). (MERCIA MUDSTONE GROUP)								17.50	-10.40														17.50 19.00		97	53	29		18
<i>From 17.70m to 17.90m bgl partly non-intact (possibly 70 degree joints).</i> <i>From 18.20m to 18.70m bgl weak mid grey siltstone.</i>								19.00	-10.40														19.00 20.50		40	20	0	SPT(S) 19.00m, 50 (25 for 80mm/50 for 60mm)	19
<i>From 18.20m to 18.70m bgl weak mid grey siltstone.</i>								20.00	-10.40																			20	
<b>Observations / Remarks</b>							<b>Sampling Runs</b>				<b>Drilling Fluid</b>				<b>Hammer Information</b>														
1. Upon completion 50mm diameter gas/groundwater monitoring pipe installed to 5.00m bgl.							From (m)	To (m)	Diameter (mm)	Recovery %	From (m)	To (m)	Return Min %	Colour	Type	Serial No.	Energy Ratio %												
							11.50	13.00	13.00		8.50	25.00			Air / Mist														
							14.50	14.50	14.50																				
														<b>Groundwater</b>															
							Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>Project Number</b>																
													<b>784-B026948</b>																






















		<b>Project: A46 Newark - Northern Bypass</b> <b>Location: Newark-on-Trent, Nottinghamshire</b> <b>Client: Highways England</b>				<b>Location Details</b> Easting: 478244.85    Northing: 353614.11 Level: 7.10mAOD    Depth: 25.00m Logger: DD    Type: WLS+RC Inclination: 90°				<b>Status</b>  <b>FINAL</b>		<b>Borehole Number</b>  <b>BH03A</b>										
<b>Method, Plant and Crew</b>						<b>Diameter</b>		<b>Casing</b>		<b>Drilling Progress by Time</b>					<b>Scale: 1:50</b>							
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By: NEB	Approved By: JC							
0.00	1.00	Inspection Pit Dynamic Windowless Sampling Rotary Core	Hand Excavated Comacchio 205 Comacchio 205	A. Richardson	1.00	300			11/05	16:30	7.00	7.00	0.7									
1.00	8.50			A. Richardson	8.50	-			12/05	16:15	16.00	7.00	7.00	0.8								
8.50	25.00			A. Richardson	25.00	102			13/05	16:15	16:15	25.00	17.50	17.50	2.1	Start Date: 11/05/2021						
									14/05	16:30	25.00	17.50	2.1	Finish Date: 14/05/2021								
<b>Strata Description</b>							<b>Legend</b>	<b>Depth (m)</b>	<b>Reduced Level (mAOD)</b>	<b>Water Level (m)</b>	<b>Inst / Backfill</b>	<b>Samples, Tests and Rotary Coring</b>					<b>Tests / Results</b>					
<p>Very weak to weak very thinly bedded reddish brown MUDSTONE, with 0-70 degree and 20 degree closely spaced irregular undulating rough discontinuities, locally striated frequent 2-5mm gypsum veins/ bands following bedding and discontinuities. (Zone II) (IF:20/80/150). (MERCIA MUDSTONE GROUP)</p> <p><i>From 20.80m to 20.90m bgl 40 degree planar slightly rough striated joint, localised clay infill to 2mm.</i>  <i>From 21.00m to 21.15m bgl partly non-intact</i></p> <p><i>From 21.25m to 21.40m bgl partly non-intact, extremely weak to very weak.</i></p> <p><i>From 21.75m to 21.85m bgl 70 degree irregular rough joint.</i>  <i>From 21.85m to 21.92m bgl band of gypsum.</i></p> <p><i>From 22.60m to 22.67m bgl band of gypsum.</i>  <i>From 22.80m to 22.88m bgl extremely weak to very weak, partly non intact.</i></p> <p><i>From 23.35m to 23.50m bgl weak mid grey SILTSTONE.</i></p>																						
<p>Weak reddish brown MUDSTONE, with 0-10 degree closely spaced planar discontinuities. (MERCIA MUDSTONE GROUP)</p> <p><i>From 24.55m to 24.60m bgl band of gypsum.</i>  <i>From 24.95m to 25.00m bgl band of gypsum.</i></p> <p>EOH at 25.00m - Target depth achieved</p>								24.55	-17.45													
								25.00	-17.90													
<b>Observations / Remarks</b>							<b>Sampling Runs</b>		<b>Drilling Fluid</b>				<b>Hammer Information</b>									
<p>1. Upon completion 50mm diameter gas/groundwater monitoring pipe installed to 5.00m bgl.</p>							From (m)	To (m)	Diameter (mm)	Recovery %	From (m)	To (m)	Return Min %	Colour	Type	Serial No.	Energy Ratio %					
							20.50	22.00			8.50	25.00			Air / Mist							
							22.00	23.50														
							23.50	25.00			<b>Groundwater</b>				<b>Project Number</b>							
											Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>					


 Project: <b>A46 Newark - Northern Bypass</b> Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>						<b>Location Details</b> Easting: 478519.07 Northing: 353966.19 Level: 8.93mAOD Depth: 25.00m Logger: Type: CP+RC Inclination: 90°				<b>Status</b> <b>FINAL</b>		<b>Borehole Number</b> <b>BH05</b>											
Method, Plant and Crew						Diameter		Casing				Drilling Progress by Time				Scale: 1:50							
From (m)	To (m)	Type	Plant Used	Crew		Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB							
0.00	1.20	Inspection Pit	Hand Excavated	D. Harrison	D. Harrison	1.20	300	10.70	150	09/07	16:00	6.00	5.00	4	Approved By:	JC							
1.20	10.70	Cable Percussion	Dando 3000	D. Harrison	D. Harrison	10.70	300			14/07	16:30	10.70	9.00	6	Start Date:	09/07/2021							
10.70	25.00	Rotary Core	Comacchio 205	A. Richardson	A. Richardson	10.70	25.00			15/07	16:20	18.20	10.00	1.4	Finish Date:	26/07/2021							
										16/07	13:45	25.00	25.00	0.9									
Strata Description								Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing										
<p>Medium dense mid brown slightly clayey slightly gravelly fine to medium SAND. Gravel is subangular to angular fine to coarse flint and fragments of brick and concrete, occasional metal. (MADE GROUND) MGR</p> <p>Loose dark grey medium GRAVEL, with medium cobble content. Gravel is subangular to angular occasionally rounded fine to coarse slag and concrete with occasional chert. Cobbles are subangular (60-80mm) slag and concrete. Sand is fine to coarse. (MADE GROUND) MGR</p> <p>Loose light brownish grey sandy GRAVEL, with high cobble content. Gravel is subangular to angular occasionally rounded fine to coarse slag and concrete, with occasional chert. Cobbles are subangular to angular (60-80mm) slag and concrete. (MADE GROUND) MGR</p> <p>Mid to dark brown sandy GRAVEL, with medium to high cobble content. Gravel is subrounded to rounded occasionally subangular fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded (60-80mm) chert. Sand is fine to coarse. (MADE GROUND) MGR</p>									0.20	8.73		0.00 - 0.20 BB8 0.10 - 0.20 ESES1 0.20 - 0.50 BB9 0.30 - 0.40 DD2 0.30 - 0.40 ESES7 0.50 - 0.60 DD3 0.50 - 0.60 ESES4 0.50 - 0.80 BB10											
									0.50	8.43		1.00 - 1.10 DD5 1.10 - 1.20 ESES6											
									0.80	8.13		1.20 - 1.65 B11 1.20 - 1.65 BB11	SPT(C) 1.20m, N=30 (4,5/9,6,6,9)										
									3.00	5.93		2.00 - 2.10 DD13 2.00 - 2.10 ESES14 2.00 - 2.45 BB12	SPT(C) 2.00m, N=23 (4,5/5,6,6,6)										
									3.60	5.33		3.00 - 3.10 DD16 3.00 - 3.10 ESES17 3.00 - 3.40 B15 3.00 - 3.40 BB15	SPT(C) 3.00m, N=9 (1,2/2,2,2,3)										
Soft to firm mid greyish brown slightly sandy slightly gravelly CLAY. Gravel is subrounded to rounded fine to coarse chert. Sand is fine to medium. Slight organic odour. (ALLUVIUM)												3.60 - 4.00 B18 3.60 - 4.00 BB18											
Mid to dark brown sandy GRAVEL, with medium to high cobble content. Gravel is subrounded to rounded occasionally subangular fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded (60-80mm) chert. Sand is fine to coarse. (ALLUVIUM)												4.00 - 4.45 BB19	SPT(C) 4.00m, N=12 (2,3/3,3,3,3)										
													SPT(C) 5.00m, N=26 (4,5/6,6,7,7)										
												6.00 - 6.45 B20 6.00 - 6.45 BB20											
												6.90 BB21											
Firm to stiff reddish brown silty CLAY. (Zone IVb). (MERCIA MUDSTONE GROUP)									7.50	1.43		7.50 - 7.95 U1 7.50 - 7.95 U100U1											
Weak reddish brown silty MUDSTONE, with occasional bands of residual clay. 0-10 degree extremely closely spaced to very closely spaced discontinuities. Recovered as clayey GRAVEL. Gravel is subangular to angular flat fine to coarse weak mudstone. (MERCIA MUDSTONE GROUP)									8.00	0.93		7.95 - 8.20 DD22 8.00 - 9.00 BB23											
												9.00 - 9.45 BB24 9.00 - 9.45 D25 9.00 - 9.45 DD25	SPT(S) 9.00m, N=26 (3,3/5,7,7,7)										
Observations / Remarks												Chiselling			Water Added		Hammer Information						
1. Upon completion 50mm diameter gas/groundwater monitoring pipe installed to 5.00m bgl.												From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %					
															1.20	3.00							
												Groundwater							Project Number				
Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>																	
4.50	4	-	20	2.40																			


 <b>Project: A46 Newark - Northern Bypass</b> <b>Location: Newark-on-Trent, Nottinghamshire</b> <b>Client: Highways England</b>						<b>Location Details</b> Easting: 478519.07 Northing: 353966.19 Level: 8.93mAOD Depth: 25.00m Logger: Type: CP+RC Inclination: 90°				<b>Status</b> <b>FINAL</b>		<b>Borehole Number</b> <b>BH05</b>						
Method, Plant and Crew						Diameter		Casing				Drilling Progress by Time				Scale: 1:50		
From (m)	To (m)	Type	Plant Used	Crew		Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB		
0.00	1.20	Inspection Pit	Hand Excavated	D. Harrison	D. Harrison	1.20	300	10.70	150	09/07	16:00	6.00	5.00	4	Approved By:	JC		
1.20	10.70	Cable Percussion	Dando 3000	D. Harrison	D. Harrison	10.70	150			14/07	16:00	10.70	9.00	6	Start Date:	09/07/2021		
10.70	25.00	Rotary Core	Comacchio 205	A. Richardson	A. Richardson	10.70	150			15/07	16:20	25.00	10.00	0.9	Finish Date:	26/07/2021		
										16/07	13:45	25.00	25.00	0.9				
Strata Description								Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing					
Weak reddish brown silty MUDSTONE, with occasional bands of residual clay. 0-10 degree extremely closely spaced to very closely spaced discontinuities. Recovered as clayey GRAVEL. Gravel is subangular to angular flat fine to coarse weak mudstone. (MERCIA MUDSTONE GROUP)													10.50 - 10.90	BB26	SPT(S) 10.50m, 50 (5,6/50 for 275mm)			
Firm reddish brown gravelly CLAY. Gravel is subangular to angular fine to coarse randomly orientated lithorelics of very weak mudstone. 0-10 degree, locally 45 degree, extremely closely spaced to very closely spaced discontinuities, with a trace of silt. (Zone IVa). (MERCIA MUDSTONE GROUP)									10.70	-1.77			10.50 - 10.95	DD27	SPT(S) 10.70m, 50 (12,12/50 for 210mm)			
Firm to stiff reddish brown gravelly CLAY, with 0-10 degree 0-10 degree extremely closely spaced to very closely spaced discontinuities (fissures). Gravel is subangular to angular, flat, fine to coarse horizontal lithorelics of very weak mudstone. (Zone III). (MERCIA MUDSTONE GROUP)									11.20	-2.27			10.70 - 11.00	DD28	SPT(S) 10.70m, 50 (12,12/50 for 210mm)			
From 12.60m to 12.80m bgl weak to medium strong bluish grey siltstone.												10.90	D29					
From 13.30m to 13.40m bgl soft to firm.												10.90 - 11.00	DD29					
Firm to stiff bluish grey silty gravelly CLAY, with occasional clasts of angular unweathered siltstone. Gravel is subangular to angular, fine to coarse lithorelics of extremely weak to very weak siltstone. 0-10 degree, locally 45 degree, extremely closely spaced to very closely spaced fissures. Occasional (5-20mm) weathered gypsum veins following discontinuities (Zone III). (MERCIA MUDSTONE GROUP)									14.30	-5.37			11.30	C30				
Firm to stiff reddish brown gravelly CLAY, with 0-10 degree 0-10 degree extremely closely spaced to very closely spaced discontinuities (fissures). Gravel is subangular to angular, flat, fine to coarse horizontal lithorelics of very weak mudstone. (Zone III). (MERCIA MUDSTONE GROUP)									15.00	-6.07			11.30 - 11.60	COREC3 0	10.70	100	0	0
Recovered as reddish brown clayey slightly gravelly medium to coarse SAND. Occasional irregular (20-40mm) pockets of clay. Gravel is subangular fine to coarse very weak to weak mudstone and siltstone, possibly drilling induced. (MERCIA MUDSTONE GROUP)									15.20	-6.27			11.80 - 11.90	DD31				
Very weak to weak thickly laminated to very thinly bedded light reddish brown and light bluish grey MUDSTONE and SILTSTONE. Occasional 0-10 degree closely spaced planar to undulating slightly rough discontinuities. Frequent gypsum veins (1-50mm) following bedding and discontinuities. (40/150/350). (Zone I/II). (MERCIA MUDSTONE GROUP)									15.50	-6.57			11.90 - 12.20	C32				
From 16.40m to 16.70m bgl partly non intact, possibly due to 45 degree conjugate joints. From 16.50m to 16.70m bgl 45 degree conjugate joints, striated with localised polishing.												11.90 - 12.20	COREC3 2					
From 17.40m to 17.60m bgl non intact, possibly due to joints.												13.00 - 70.00	B1	12.20	100	7	0	
From 17.80m to 18.70m bgl extremely weak, partly weathered to clay.												13.50 - 13.60	DD33					
From 18.20m to 18.70m bgl partly non intact, possibly drilling Induced.												13.70 - 13.80	COREC3 4					
From 18.80m to 18.90m bgl non intact, possibly due to joints.												13.90 - 14.00	D36					
Very weak to weak thickly laminated to very thinly bedded light reddish brown and light bluish grey MUDSTONE and SILTSTONE. Occasional 0-10 degree closely spaced planar to undulating slightly rough discontinuities. Frequent gypsum veins (1-50mm) following bedding and discontinuities. (40/150/350). (Zone I/II). (MERCIA MUDSTONE GROUP)												14.50 - 14.60	DD35	13.70	100	7	7	
From 16.40m to 16.70m bgl partly non intact, possibly due to 45 degree conjugate joints. From 16.50m to 16.70m bgl 45 degree conjugate joints, striated with localised polishing.												17.20	C37					
From 17.40m to 17.60m bgl non intact, possibly due to joints.												17.20 - 17.40	COREC3 7	16.70	100	60	40	
From 17.80m to 18.70m bgl extremely weak, partly weathered to clay.												15.20	C38					
From 18.20m to 18.70m bgl partly non intact, possibly drilling Induced.												15.20 - 16.70	COREC3 8	15.20	100	20	20	
From 18.80m to 18.90m bgl non intact, possibly due to joints.												17.20	C37					
Very weak to weak thickly laminated to very thinly bedded light reddish brown and light bluish grey MUDSTONE and SILTSTONE. Occasional 0-10 degree closely spaced planar to undulating slightly rough discontinuities. Frequent gypsum veins (1-50mm) following bedding and discontinuities. (40/150/350). (Zone I/II). (MERCIA MUDSTONE GROUP)												17.20 - 17.40	COREC3 7	16.70	100	60	40	
From 16.40m to 16.70m bgl partly non intact, possibly due to 45 degree conjugate joints. From 16.50m to 16.70m bgl 45 degree conjugate joints, striated with localised polishing.												18.20	C38					
From 17.40m to 17.60m bgl non intact, possibly due to joints.												18.20 - 19.70		18.20	87	53	38	
From 17.80m to 18.70m bgl extremely weak, partly weathered to clay.												19.50	C38					
From 18.20m to 18.70m bgl partly non intact, possibly drilling Induced.												19.50 - 19.60	COREC3 8					
From 18.80m to 18.90m bgl non intact, possibly due to joints.																		
Observations / Remarks								Chiselling				Water Added		Hammer Information				
1. Upon completion 50mm diameter gas/groundwater monitoring pipe installed to 5.00m bgl.								From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %				
								10.50	10.70	30								
								Groundwater				Project Number						
Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>												





 <b>Project: A46 Newark - Northern Bypass</b> <b>Location: Newark-on-Trent, Nottinghamshire</b> <b>Client: Highways England</b>						<b>Location Details</b> Easting: 478519.07 Northing: 353966.19 Level: 8.93mAOD Depth: 25.00m Logger: Type: CP+RC Inclination: 90°				<b>Status</b>  <b>FINAL</b>		<b>Borehole Number</b>  <b>BH05</b>											
										<b>Sheet 3 of 3</b>													
Method, Plant and Crew					Diameter		Casing		Drilling Progress by Time				Scale: 1:50										
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB								
0.00	1.20	Inspection Pit Cable Percussion Rotary Core	Hand Excavated Dando 3000 Comacchio 205	D. Harrison D. Harrison A. Richardson	1.20	300	10.70	150	09/07	16:00	6.00	5.00	4	Approved By: JC	Start Date: 09/07/2021								
1.20	10.70				10.70	150	14/07	16:00	10.70	9.00	6												
10.70	25.00				25.00	150	15/07	16:30	18.20	12.00	1.4												
					25.00	-			16:07	13:45	25.00	25.00	0.9	Finish Date:	26/07/2021								
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples, Tests and Rotary Coring											
<p>Very weak to weak thickly laminated to very thinly bedded light reddish brown and light bluish grey MUDSTONE and SILTSTONE. Occasional 0-10 degree closely spaced planar to undulating slightly rough discontinuities. Frequent gypsum veins (1-50mm) following bedding and discontinuities. (40/150/350). (Zone I/II). (MERCIA MUDSTONE GROUP)</p> <p><i>From 20.00m to 20.20m bgl 65 degree joint, striated and locally weathered to firm gravelly clay, possibly Zone IVa.</i></p> <p><i>From 20.70m to 20.80m bgl 45 degree joint, striated with localised clay infill (3-5mm).</i></p> <p><i>From 21.30m to 21.35m bgl band of gypsum.</i></p> <p><i>From 21.50m to 21.60m bgl 65 degree joint with striations, crosscut by subhorizontal discontinuities.</i></p> <p><i>From 22.70m to 22.90m bgl partly non intact, very closely spaced discontinuities.</i></p> <p><i>From 23.85m to 24.00m bgl band of gypsum.</i></p> <p><i>From 24.00m to 24.20m bgl non intact, very closely spaced discontinuities.</i></p>																							
EOH at 25.00m - Target depth achieved								25.00	-16.07														
<b>Observations / Remarks</b> 1. Upon completion 50mm diameter gas/groundwater monitoring pipe installed to 5.00m bgl.							<b>Drilling Fluid</b> From (m) To (m) Return Min % Colour Type 10.70 25.00 Air / Mist						<b>Hammer Information</b> Serial No. Energy Ratio %										
							<b>Groundwater</b> Strike (m) Casing (m) Sealed (m) Time (min) Rose To (m) Remarks						<b>Project Number</b> <b>784-B026948</b>										

	Project: <b>A46 Newark - Northern Bypass</b>	Location Details			Status	Borehole Number											
	Location: <b>Newark-on-Trent, Nottinghamshire</b>	Easting: 479445.92	Northing: 354636.69	FINAL	BH06												
Client: <b>Highways England</b>	Level: 10.19mAOD	Depth: 25.00m	Logger: DD			Type: CP+RC											
		Inclination: 90°			Sheet 1 of 3												
Method, Plant and Crew			Diameter		Casing		Drilling Progress by Time			Scale: 1:50							
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth (m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By: NEB			
0.00	1.20	Inspection Pit	Hand Excavated	M. Whitehead	1.20	300	9.00	150	11/06	16:00	9.30	9.00	1.5	Approved By: JC			
1.20	9.30	Cable Percussion	Dando 3000	M. Whitehead	9.30	150	14/06	16:15	15/06	16:20	12.30	10.50	2.2				
9.30	25.00	Rotary Core	Comacchio 205	A. Richardson	1.20	300	15/06	16:20	16/06	16:00	19.80	10.50	1.7				
					9.30	150	16/06	16:00	17/06	11:45	25.00	10.50	0.9				
														Start Date: 10/06/2000			
														Finish Date: 23/06/2021			
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing					
COMPACTED LOOSE CONCRETE with underlying membrane.								0.20	9.99			0.20 - 0.40	B001				
Orangish brown sandy subangular to angular GRAVEL of limestone and sandstone (SUBBASE). (MADE GROUND) MGR								0.70	9.49			0.50 - 1.00	B003				
Dark brown sandy silty CLAY. Sand is fine to medium. (ALLUVIUM)								1.20	8.99			1.00	B004				
Loose becoming medium dense dark brown clayey medium SAND. (ALLUVIUM)								1.20	8.99			1.30	ES005			SPT(S) 1.50m, N=8 (1,1/2,2,2,2)	
Medium dense becoming dense brown clayey sandy subangular to subrounded coarse GRAVEL of flint. Sand is fine to coarse. (ALLUVIUM)								3.50	6.69			2.50	B007				
												2.50	B007			SPT(C) 2.50m, N=13 (2,2/3,3,3,4)	
								3.50	6.69			3.50	B008				
												3.50	B008			SPT(C) 3.50m, N=18 (9,6/6,4,4,4)	
								3.50	6.69			4.50					
												4.50				SPT(C) 4.50m, N=25 (2,4/5,6,7,7)	
								3.50	6.69			6.00	B009				
												6.00	B009			SPT(C) 6.00m, N=29 (4,6/6,6,8,9)	
								3.50	6.69			7.50					
												7.50				SPT(S) 9.30m, 0 (75 for 110mm/0 for 0mm)	
								3.50	6.69			9.00					
												9.00				SPT(S) 9.00m, 50 (25 for 211mm/50 for 188mm)	
Grayish blue silty CLAY. (ALLUVIUM)								9.30	0.89			9.30	D010				
								9.30	0.89			9.30	D10				
Observations / Remarks											Chiselling		Water Added		Hammer Information		
1. Upon completion 50mm diameter gas/groundwater monitoring pipe installed to 6.00m bgl.											From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %
											9.00	9.30	60				
											Groundwater				Project Number		
											Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	784-B026948
											2.00	-	-	20	2.00		






























 <b>Project: A46 Newark - Northern Bypass</b> <b>Location: Newark-on-Trent, Nottinghamshire</b> <b>Client: Highways England</b>						<b>Location Details</b> Easting: 479445.92 Northing: 354636.69 Level: 10.19mAOD Depth: 25.00m Logger: DD Type: CP+RC Inclination: 90°				<b>Status</b>  <b>FINAL</b>		<b>Borehole Number</b>  <b>BH06</b>											
Method, Plant and Crew						Diameter		Casing		Drilling Progress by Time						Scale: 1:50							
From (m)	To (m)	Type	Plant Used	Crew		Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB							
0.00	1.20	Inspection Pit Cable Percussion Rotary Core	Hand Excavated Dando 3000 Comacchio 205	M. Whitehead	M. Whitehead	1.20	300	9.00	150	11/06	16:00	9.30	9.00	1.5	Approved By: JC	Start Date: 10/06/2000							
1.20	9.30			A. Richardson	A. Richardson	9.30	150	14/06	16:15	12.30	16:20	19.80	10.50	2.2									
9.30	25.00					25.00	-	15/06	16:00	25.00	16:00	17:06	11:45	10.50			0.9						
<b>Strata Description</b>								Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	<b>Samples, Tests and Rotary Coring</b>										
Grayish blue silty CLAY. (ALLUVIUM)									10.30	-0.11			Depth (m)	Ref	Core Run	FI	TCR	SCR	RQD	Tests / Results			
Stiff reddish brown and light bluish grey gravelly CLAY. Gravel is subangular fine to coarse weak mudstone. (Poor recovery). (MERCIA MUDSTONE GROUP)									10.80	-0.61			10.30 10.80				100	0	0				
Firm to stiff reddish brown gravelly CLAY, with 0-10 degree extremely closely spaced to closely spaced discontinuities. Gravel is subangular to angular flat fine to coarse horizontal lithorelics of very weak to weak mudstone. (Zone III). (MERCIA MUDSTONE GROUP)  <i>From 11.80m to 11.90m bgl extremely weak to very weak reddish brown mudstone.</i>									12.30	-2.11			11.60 - 11.75 11.60 - 11.75	C1 COREC1	10.80 12.30			100	0	0			11
Weak to medium strong very thinly bedded reddish brown MUDSTONE, with 0-20 degree very closely spaced to closely spaced planar discontinuities. Frequent gypsum veins (2-5mm) following bedding. (Zone I). (IF:NI/80/200). (MERCIA MUDSTONE GROUP)  <i>From 12.30m to 13.40m bgl non-intact, possibly very closely spaced discontinuities.</i>  <i>From 13.80m to 14.20m bgl non-intact, possibly very closely spaced discontinuities.</i>  <i>From 14.25m to 14.40m bgl extremely weak, partly weathered to clay.</i>  <i>From 14.60m to 14.70m bgl extremely weak partly weathered to clay.</i>									12.30	-2.11			12.30 13.80		12.30 13.80			100	4	0			12
Firm to stiff bluish grey silty CLAY, with occasional fine to coarse clasts of weak to medium strong siltstone. (Possibly IVa). (MERCIA MUDSTONE GROUP)  <i>From 13.80m to 14.20m bgl non-intact, possibly very closely spaced discontinuities.</i>  <i>From 14.25m to 14.40m bgl extremely weak, partly weathered to clay.</i>  <i>From 14.60m to 14.70m bgl extremely weak partly weathered to clay.</i>									12.30	-2.11			13.80 15.30		13.80 15.30			100	40	23			13
Very weak to weak thickly laminated to very thinly bedded light bluish grey silty MUDSTONE, with 0-10 degree very closely spaced undulating rough discontinuities, localised clay infill (1-2mm). (Zone II). (IF:NI/60/200). (MERCIA MUDSTONE GROUP)									14.75	-2.11			14.75 14.75 - 14.90	C2 COREC2	14.75 14.90			100	28	20			14
Firm to stiff bluish grey silty CLAY, with occasional fine to coarse clasts of weak to medium strong siltstone. (Possibly IVa). (MERCIA MUDSTONE GROUP)  <i>From 14.60m to 14.70m bgl extremely weak partly weathered to clay.</i>									15.30	-2.11			15.30 16.80		15.30 16.80			100	68	68			15
Medium strong to strong light bluish grey SILTSTONE. (IF:200/200/200). (MERCIA MUDSTONE GROUP)  <i>From 15.30m to 16.40m bgl medium strong to strong light bluish grey siltstone.</i>									16.40	-2.11			16.40 - 16.58	COREC3	16.40 - 16.58			100	28	20			16
Very weak to weak thickly laminated to very thinly bedded light bluish grey silty MUDSTONE, with 0-10 degree very closely spaced undulating rough discontinuities, localised clay infill (1-2mm). (Zone II). (IF:NI/60/200). (MERCIA MUDSTONE GROUP)									16.80	-2.11			16.80 18.30		16.80 18.30			80	36	6			17
Firm to stiff bluish grey silty CLAY, with occasional fine to coarse clasts of weak to medium strong siltstone. (Possibly IVa). (MERCIA MUDSTONE GROUP)  <i>From 16.80m to 17.10m bgl no recovery.</i>									16.80	-2.11			16.80 18.30		16.80 18.30			100	68	68			18
Medium strong to strong light bluish grey SILTSTONE. (IF:200/200/200). (MERCIA MUDSTONE GROUP)  <i>From 16.80m to 17.10m bgl no recovery.</i>									18.30	-9.01			18.30 19.80		18.30 19.80			100	68	68			19
Very weak to weak thickly laminated to very thinly bedded light bluish grey silty MUDSTONE, with 0-10 degree very closely spaced undulating rough discontinuities, localised clay infill (1-2mm). (Zone II). (IF:NI/60/200). (MERCIA MUDSTONE GROUP)									19.20	-9.01			19.20 19.80		19.20 19.80			80	36	6			20
Very weak to weak thickly laminated to very thinly bedded light bluish grey silty MUDSTONE, with 0-10 degree very closely spaced undulating rough discontinuities, localised clay infill (1-2mm). (Zone II). (IF:NI/60/200). (MERCIA MUDSTONE GROUP)									19.60	-9.41			19.60 19.80		19.60 19.80			80	36	6			
Very weak to weak thickly laminated to very thinly bedded light bluish grey silty MUDSTONE, with 0-10 degree very closely spaced undulating rough discontinuities, localised clay infill (1-2mm). (Zone II). (IF:NI/60/200). (MERCIA MUDSTONE GROUP)									19.80	-9.61			19.80 19.80		19.80 19.80			80	36	6			
<b>Observations / Remarks</b> 1. Upon completion 50mm diameter gas/groundwater monitoring pipe installed to 6.00m bgl.										<b>Drilling Fluid</b>					<b>Hammer Information</b>								
					From (m)	To (m)	Return Min %	Colour	Type	Serial No.	Energy Ratio %												
					9.30	25.00			Air / Mist														
										<b>Groundwater</b>					<b>Project Number</b>								
Strike (m)		Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks						<b>784-B026948</b>											

Project: <b>A46 Newark - Northern Bypass</b>					Location Details					Status		Borehole Number									
 Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>					Easting: 479445.92 Northing: 354636.69 Level: 10.19mAOD Depth: 25.00m Logger: DD Type: CP+RC Inclination: 90°					<b>FINAL</b>		<b>BH06</b>									
					Method, Plant and Crew									Casing		Drilling Progress by Time					Scale: 1:50
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth (m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB						
0.00	1.20	Inspection Pit	Hand Excavated	M. Whitehead	1.20	300	9.00	150	11/06	16:00	9.30	9.00	1.5	Approved By:	JC						
1.20	9.30	Cable Percussion	Dando 3000	M. Whitehead	9.30	150			14/06	16:15	12.30	10.50	2.2	Start Date:	10/06/2000						
9.30	25.00	Rotary Core	Comacchio 205	A. Richardson	25.00	-			15/06	16:20	19.80	10.50	1.7	Finish Date:	23/06/2021						
									16/06	16:00	25.00	10.50	0.9								
									17/06	11:45	25.00	10.50	0.9								
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples, Tests and Rotary Coring									
Very weak to weak thickly laminated to very thinly bedded light bluish grey silty MUDSTONE, with 0-10 degree very closely spaced undulating rough discontinuities, localised clay infill (1-2mm). (Zone II). (IF:NI/60/200). (MERCIA MUDSTONE GROUP)								21.80	-11.61			19.80									
												21.30									
Weak to medium strong very thinly bedded reddish brown MUDSTONE, with 0-20 degree very closely spaced to closely spaced planar discontinuities. Frequent gypsum veins (2-5mm) following bedding. (Zone I). (IF:NI/80/200). (MERCIA MUDSTONE GROUP)								22.80	-11.61			21.10	C4								
												21.30	COREC4								
Medium strong thickly laminated to very thinly bedded light bluish grey SILTSTONE, with closely spaced to medium spaced irregular rough discontinuities. Frequent gypsum veins (1-2mm), crosscutting bedding. (Zone I). (IF:60/200/200). (MERCIA MUDSTONE GROUP)								24.10	-13.91			22.00	C5	21.30							
												22.80	COREC5	22.80							
EOH at 25.00m - Target depth achieved								25.00	-14.81			22.80									
												24.30									
								24.10	-13.91			24.60	C6	24.30							
												24.80	COREC6	25.00							
								25.00	-14.81												
Observations / Remarks 1. Upon completion 50mm diameter gas/groundwater monitoring pipe installed to 6.00m bgl.							Drilling Fluid					Hammer Information									
							From (m)	To (m)	Return Min %	Colour	Type	Serial No.	Energy Ratio %								
9.30	25.00			Air / Mist																	
							Groundwater					Project Number									
							Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>								


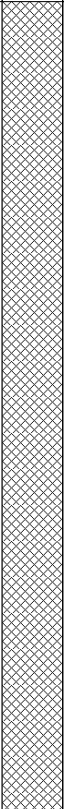
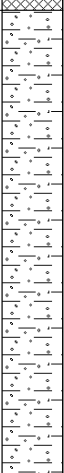
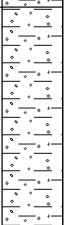
 Project: <b>A46 Newark - Northern Bypass</b> Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>						Location Details				Status	Borehole Number			
						Easting: 479797.41	Northing: 354801.44		FINAL	BH07				
						Level: 6.17mAOD	Depth: 25.00m							
						Logger: DD	Type: CP+RC							
						Inclination: 90°				Sheet 1 of 3				
Method, Plant and Crew						Diameter		Drilling Progress by Time				Scale:	1:50	
From (m)	To (m)	Type	Plant Used	Crew		Depth (m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB
0.00	1.20	Inspection Pit Cable Percussion Rotary Core	Hand Excavated Cable Percussion Rig Comacchio 205	M. Whitehead	M. Whitehead A. Richardson	1.20	300	05/05	16:30	4.00	4.00	1.7	Approved By: JC	Start Date: 10/06/2021
1.20	7.00			7.00		25.00	06/05	13:30	4.50	4.50	1.6			
7.00	25.00			07/05		11:30	4.50	4.60	1.6					
								04/06	16:20	10.85	10.50	3.3	Finish Date: 10/06/2021	
								07/06	16:20	17.85	12.00	2.7		
								08/06	16:20	25.00	12.00	3.5		
Strata Description						Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing			
Dark grey slightly gravelly silty fine to coarse SAND. Gravel is fine to coarse angular to sub-rounded of sandstone and flint. Silt is fine to coarse. (TOPSOIL) TOP							0.10	6.07			0.00 - 0.10	B3	SPT(S) 0.20m, N=2 (1,0/0,1,1,0)	
											0.10	D2		
Soft orangish brown and yellowish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse sub-rounded of various lithologies. (MADE GROUND) MGR							1.20	4.97			0.50	D5	SPT(S) 1.20m, N=3 (1,1/0,1,1,1)	
											0.50	ES4		
Loose light greyish brown mottled with light orange brown slightly clayey fine to medium SAND. (ALLUVIUM)							1.20	4.97			0.60 - 1.00	B	SPT(S) 2.00m, N=25 (5,5/6,6,6,7)	
											1.70 - 1.80	D1		
Medium dense slightly silty slightly clayey light brown medium SAND. (ALLUVIUM) <i>From 2.40m to 2.55m bgl becomes gravelly. Gravel of sub angular to angular medium to coarse chert.</i> <i>From 2.40m to 3.00m bgl mottled orange.</i> <i>From 2.70m to 2.75m bgl slightly clayey gravelly, gravels of subangular to subrounded medium quartz and chert.</i>							1.95	4.22			1.70 - 1.80	DD1	SPT(S) 3.00m, N=31 (6,6/7,8,8,8)	
											1.70 - 1.80	B2		
Brown sandy GRAVEL with occasional pebbles (60-70mm) of subangular to subrounded siltstone and quartz. Gravels of subangular to subrounded, predominantly subrounded to rounded, fine to coarse siltstone sandstone quartz and chert. (ALLUVIUM)							3.45	2.72			2.00 - 3.00	BB2	SPT(S) 3.00m, N=31 (6,6/7,8,8,8)	
											2.00 - 3.00	DD2		
Brown slightly clayey very sandy subangular to subrounded coarse GRAVEL of flint. Sand is fine to coarse. (ALLUVIUM)							4.00	2.17			2.45 - 2.70	DD2	SPT(S) 3.00m, N=31 (6,6/7,8,8,8)	
											3.45 - 4.00	BB3		
Moderately weak laminated to very thinly bedded reddish brown MUDSTONE. Subhorizontal very closely spaced discontinuities. (MERCIA MUDSTONE GROUP)							6.10	0.07			3.45 - 4.00	BB3	SPT(S) 6.00m, 50 (9,9/50 for 125mm)	
											6.00	B4		
Firm reddish brown slightly gravelly silty CLAY. Gravel is subangular fine to coarse very weak mudstone lithorelicts. (Zone IVb). (MERCIA MUDSTONE GROUP)							7.15	-0.98			6.00	BBB4	SPT(S) 6.60m, 50 (25 for 80mm/50 for 100mm)	
											6.00	DDD3		
Firm reddish brown gravelly silty CLAY. Gravel is subangular fine to coarse lithorelicts of very weak mudstone. (Zone IVa). (MERCIA MUDSTONE GROUP)							7.90	-1.73			6.10	DDD4	SPT(S) 7.00m, N=53 (6,8/8,14,14,17)	
											7.00	DDD4		
Weak to medium strong reddish brown MUDSTONE, with 0-10 degree closely spaced irregular rough discontinuities and randomly orientated very closely spaced to closely spaced incipient discontinuities, frequently polished/striated. Frequent gypsum veins (1-10mm) following discontinuities, locally crosscutting at 60 degrees. (Zone II). (IF:40/100/400). (MERCIA MUDSTONE GROUP)							9.90	-3.73			7.20 - 7.30	D4	SPT(S) 7.00m, N=53 (6,8/8,14,14,17)	
											7.20 - 7.30	DD4		
							9.90	-3.73			7.35		SPT(S) 7.35m, 50 (25 for 75mm/50 for 77mm)	
											8.10			
							9.90	-3.73			7.35		SPT(S) 8.10m, 50 (25 for 65mm/50 for 75mm)	
											8.10			
							9.90	-3.73			8.10		SPT(S) 8.85m, 50 (25 for 80mm/50 for 65mm)	
											8.10			
							9.90	-3.73			8.10		SPT(S) 9.35m, 50 (25 for 50mm/50 for 80mm)	
											9.35			
							9.90	-3.73			9.35		SPT(S) 9.35m, 50 (25 for 50mm/50 for 80mm)	
											10.10			
Observations / Remarks						Chiselling		Water Added		Hammer Information				
1. Upon completion 50mm diameter gas/groundwater monitoring pipe installed to 5.00m bgl.						From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %		
						6.10	7.00	60						
						Groundwater				Project Number				
						Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	784-B026948		
1.00	-	-	20	1.00										
						2.00	-	-	20	1.70				


Project: <b>A46 Newark - Northern Bypass</b>					Location Details					Status		Borehole Number								
 Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>					Easting: 479797.41    Northing: 354801.44 Level: 6.17mAOD    Depth: 25.00m Logger: DD    Type: CP+RC Inclination: 90°					<b>FINAL</b>		<b>BH07</b>								
					Sheet 2 of 3															
Method, Plant and Crew					Diameter		Casing		Drilling Progress by Time					Scale: 1:50						
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB					
0.00	1.20	Inspection Pit Cable Percussion Rotary Core	Hand Excavated Cable Percussion Rig Comacchio 205	M. Whitehead M. Whitehead A. Richardson	1.20	300	7.00	150	05/05	16:30	4.00	4.00	1.7	Approved By: JC	Start Date: 10/06/2021					
1.20	7.00				7.00	150	06/05	13:30	4.50	4.50	1.6									
7.00	25.00				25.00	150	07/05	11:30	4.50	4.50	1.6									
									04/06	16:20	10.85	10.50	3.3	Finish Date: 10/06/2021						
									07/06	16:20	17.85	12.00	2.7							
									08/06	16:20	25.00	12.00	3.5							
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples, Tests and Rotary Coring								
Weak to medium strong reddish brown MUDSTONE, with 0-10 degree closely spaced irregular rough discontinuities and randomly orientated very closely spaced to closely spaced incipient discontinuities, frequently polished/striated. Frequent gypsum veins (1-10mm) following discontinuities, locally crosscutting at 60 degrees. (Zone II). (IF:40/100/400). (MERCIA MUDSTONE GROUP)								12.65	-6.48				10.10	C6	100	80	75	11		
													10.10 - 10.40	B1						
Weak dark reddish brown MUDSTONE, with 0-10 degree and 30 degree very closely spaced to closely spaced irregular rough locally polished/ striated discontinuities. (partly non intact). (Zone II). (IF:NI/80/100). (MERCIA MUDSTONE GROUP)								13.85	-7.68				10.10 - 10.40	COREC6	10.10					
													10.10 - 10.40		10.85	95	44	14		
Medium strong to strong thickly laminated to very thinly bedded light bluish grey SILTSTONE, with 0-10 degree closely spaced irregular rough discontinuities. Frequent gypsum veins (1-20mm). (Zone I). (IF:40/200/380). (MERCIA MUDSTONE GROUP)  <i>From 14.55m to 14.75m bgl very weak mudstone, partly weathered to clay.</i>								16.35	-10.18				11.95 - 12.25	COREC7						
													11.95 - 12.25		11.85	93	40	38		
Weak to medium strong very thinly bedded reddish brown MUDSTONE, with 0-10 degree closely spaced to medium spaced planar discontinuities and 60 degree medium to widely spaced planar smooth discontinuities. Frequent gypsum veins (1-20mm) following discontinuities/bedding. (Zone I). (IF:40/200/300). (MERCIA MUDSTONE GROUP)  <i>From 19.35m to 19.45m bgl weak partly non-intact.</i>  <i>From 19.60m to 19.75m bgl weak partly non intact.</i>								16.35	-10.18				12.65 - 12.70	COREC8	13.35	66	40	16		
													12.65 - 12.70		14.85	100	86	86		
								16.35	-10.18						14.85	C9	16.45			
															14.85		16.45 - 16.85	COREC9	16.35	86
								16.35	-10.18						17.85		73	42	32	
															17.85		18.95			
								16.35	-10.18						18.95	C10				
															18.95 - 19.10	COREC10				
Observations / Remarks											Drilling Fluid			Hammer Information						
1. Upon completion 50mm diameter gas/groundwater monitoring pipe installed to 5.00m bgl.											From (m)	To (m)	Return Min %	Colour	Type	Serial No.	Energy Ratio %			
											7.00	25.00			Air / Mist					
											Groundwater							Project Number		
Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>														





























Project: <b>A46 Newark - Northern Bypass</b>					Location Details					Status		Borehole Number				
 Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>					Easting: 479853.68    Northing: 354777.56 Level: 19.13mAOD    Depth: 35.00m Logger: DD    Type: SNC Inclination: 90°					<b>FINAL</b>		<b>BH08</b>				
					Sheet 1 of 4											
Method, Plant and Crew					Diameter		Casing		Drilling Progress by Time							
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth (m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)			
0.00	1.20	Inspection Pit	Hand Excavated	A. Mossman	1.20	300			29/06	03:30	10.00	-	-			
1.20	35.00	Sonic Core Drilling	Fraste CRS-XL	A. Mossman	35.00	-			30/06	03:30	20.00	-	-			
									01/07	03:00	32.00	-	-			
									02/07	01:40	35.00	-	-			
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing				
Grass overlying brown gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse of flint. (TOPSOIL) TOP								0.50	18.63			0.10 0.20 - 0.40 0.30	ESES1 BB1 DD1			
Brown slightly clayey gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse of flint and limestone. (MADE GROUND) MGR								0.80	18.33			0.60 0.60 0.60 - 0.70	DD2 ESES2 BB2			
Brown gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse of flint. (MADE GROUND) MGR								1.30	17.83			1.00 1.00 1.20 - 1.30	DD3 ESES3 BB3	SPT(C) 1.20m, N=13 (1,4/3,4,3,3)		
Compacted stiff mid grey SILT, with rare sub-angular to subrounded fine to coarse gravels of slag. (Embankment fill). (Fuel ash). (MADE GROUND) MGR														SPT(C) 2.00m, N=31 (2,2/2,4,10,15)		
<i>firm to stiff, possibly water added.</i>												2.50 - 2.60 2.50 - 2.60	ES ESES4			
												3.50 - 3.60	DD5			
												4.50 - 4.60	ESES6	SPT(S) 4.00m, 50 (25 for 75mm/50 for 75mm)		
												5.50 - 5.60	DD7			
												6.50 - 6.60	ESES7	SPT(C) 6.00m, 50 (25 for 105mm/50 for 40mm)		
Loose orangish brown sandy GRAVEL, with low cobble content. Gravel is subrounded to rounded fine to coarse siltstone quartz and chert. Cobbles are subrounded to rounded (60mm) chert. (MADE GROUND) MGR								8.00	11.13			7.50 - 7.60	DD8			
								8.30	10.83			8.60 - 8.70	ESES9	SPT(C) 8.00m, N=46 (8,11/9,10,14,13)		
								8.55	10.58			9.00 - 10.00	BB12			
Stiff mid grey SILT with rare subrounded fine to coarse gravels of slag. (MADE GROUND) MGR												9.50 - 9.60	ESES10			
From 8.30m bgl membrane (thin membrane, 1-2mm). Loose orangish brown sandy GRAVEL, with low cobble content. Gravel is subrounded to rounded fine to coarse siltstone quartz and chert. Cobbles are subrounded to rounded (60mm) chert. (Sand and gravel in a clayey sand matrix). (MADE GROUND) MGR														SPT(C) 10.00m, 50 (9,15/50 for 200mm)		
Observations / Remarks										Chiselling		Water Added		Hammer Information		
1. Groundwater not observed. 2. Upon completion 50mm diameter gas/groundwater monitoring pipe installed to 8.00m bgl.										From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %
										Groundwater					Project Number	
										Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>





Project: <b>A46 Newark - Northern Bypass</b>					Location Details					Status		Borehole Number					
 Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>					Easting: 479853.68    Northing: 354777.56 Level: 19.13mAOD    Depth: 35.00m Logger: DD    Type: SNC Inclination: 90°					<b>FINAL</b>		<b>BH08</b>					
					Method, Plant and Crew									Diameter		Casing	
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth (m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB		
0.00	1.20	Inspection Pit	Hand Excavated	A. Mossman	1.20	300			29/06	03:30	10.00	-	-	Approved By:	JC		
1.20	35.00	Sonic Core Drilling	Fraste CRS-XL	A. Mossman	35.00	-			30/06	03:30	20.00	-	-	Start Date:	29/06/2021		
									01/07	03:00	32.00	-	-	Finish Date:	01/07/2021		
									02/07	01:40	35.00	-	-				
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing					
Loose orangish brown sandy GRAVEL, with low cobble content. Gravel is subrounded to rounded fine to coarse siltstone quartz and chert. Cobbles are subrounded to rounded (60mm) chert. (Sand and gravel in a clayey sand matrix). (MADE GROUND) MGR <i>From 10.00m to 14.00m bgl strata compressed by sonic drilling.</i>								10.00	-	-	-	10.50 - 10.60	ESES11	-	-	-	
												10.50 - 12.50	BB13				
Stiff reddish brown and purple locally bluish grey slightly gravelly CLAY. Gravel is subangular to angular flat fine to coarse horizontal weak to very weak mudstone lithorelicts. 0-10 degree very to extremely closely spaced discontinuities. (Zone: IVa). (MERCIA MUDSTONE GROUP)  <i>From 16.20m to 16.50m bgl very gravelly subangular flat fine to coarse lithorelicts (Zone: III/IVa).</i>								15.40	3.73	-	-	14.00 - 15.00	BB14	SPT(C) 14.00m, N=16 (1,0/2,5,4,5)			
												15.90 - 16.00	COREC1 5	SPT(C) 16.00m, 50 (5,12/50 for 220mm)			
Firm reddish brown sandy gravelly CLAY. Gravel is subangular to angular fine to medium lithorelicts of very weak to weak mudstone. Sand is fine to medium. (Zone IVa). (Partly disturbed by drilling). (MERCIA MUDSTONE GROUP) <i>From 18.50m to 19.00m bgl very stiff gravelly, subangular flat fine to coarse mudstone lithorelicts (Zone: III/IVa).</i>								18.50	0.63	-	-	17.70 - 18.00	COREC1 6				
												18.70 - 19.00	COREC1 7				
								20.00	-0.87								
Observations / Remarks											Chiselling		Water Added		Hammer Information		
1. Groundwater not observed. 2. Upon completion 50mm diameter gas/groundwater monitoring pipe installed to 8.00m bgl.											From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %
											Groundwater				Project Number		
											Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>
















Project: <b>A46 Newark - Northern Bypass</b>					Location Details					Status		Borehole Number		
 Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>					Easting: 479853.68    Northing: 354777.56 Level: 19.13mAOD    Depth: 35.00m Logger: DD    Type: SNC Inclination: 90°					<b>FINAL</b>		<b>BH08</b>		
					Sheet 3 of 4									
Method, Plant and Crew					Diameter		Casing		Drilling Progress by Time					
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Scale:
0.00	1.20	Inspection Pit	Hand Excavated	A. Mossman	1.20	300			29/06	03:30	10.00	-	-	1:50
1.20	35.00	Sonic Core Drilling	Fraсте CRS-XL	A. Mossman	35.00	-			30/06	03:30	20.00	-	-	Checked By: NEB
									01/07	03:00	32.00	-	-	Approved By: JC
									02/07	01:40	35.00	-	-	Start Date: 29/06/2021
														Finish Date: 01/07/2021
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing		
<p>Extremely weak to weak thickly laminated reddish brown MUDSTONE. 0-10 degree closely spaced planar slightly rough discontinuities and 0-10 degree to randomly orientated extremely closely spaced incipient discontinuities. Localised clay infill to 2mm. Frequent 1-10mm gypsum veins following bedding. (Zone II/III). (IF:40/80/100). (MERCIA MUDSTONE GROUP)  <i>From 20.60m to 20.70m bgl 45 degree joint, partly weathered to clay.</i></p>							[Symbol]	21.10	-1.97			20.25 - 20.35	COREC1 8	Tests / Results
								21						
<p>Firm to stiff reddish brown slightly sandy gravelly CLAY. Gravel is subangular to angular fine to medium horizontal lithorelics of very weak to weak mudstone. 0-10 degree very closely spaced discontinuities. Frequent 1-10mm weathered gypsum veins following discontinuities. (Zone IVa). (MERCIA MUDSTONE GROUP)</p>							[Symbol]	22.00	-2.87					22
<p>Weak to medium strong very thinly interbedded light bluish grey and reddish brown MUDSTONE and SILTSTONE. 0-10 degree very closely spaced undulating rough discontinuities. Frequent 1-10mm gypsum veins following bedding. (Zone II). (IF:80/300/300). (MERCIA MUDSTONE GROUP)  <i>From 22.10m to 22.20m bgl Weathered gypsum.</i>  <i>From 22.30m to 22.40m bgl Weathered to firm clay.</i></p>							[Symbol]	22.80	-3.67					23
<p>Stiff dark reddish brown gravelly CLAY. Gravel is subangular to angular flat fine to coarse horizontal lithorelics of very weak MUDSTONE. 0-10 degree extremely closely spaced to very closely spaced incipient discontinuities. Frequent 1-10mm gypsum veins following discontinuities (Zone IVa). (MERCIA MUDSTONE GROUP)  <i>From 23.90m to 24.00m bgl weathered gypsum.</i></p>							[Symbol]	24.00	-4.87			23.30 - 23.60	COREC1 9	
<p>Weak to medium strong thickly laminated to very thinly interbedded light bluish grey and reddish brown MUDSTONE and SILTSTONE, with 0-10 degree undulating slightly rough discontinuities. Frequent 1-30mm gypsum veins following bedding. (Zone II). (IF:60/150/230). (MERCIA MUDSTONE GROUP)  <i>From 24.70m to 24.90m bgl very weak to weak, with 45 degree irregular incipient discontinuities, slightly polished.</i></p>							[Symbol]	24.90	-5.77			24.50 - 24.70	COREC2 0	
<p>Stiff dark reddish brown slightly gravelly CLAY. Gravel is subangular to angular flat fine to coarse horizontal lithorelics of very weak MUDSTONE. 0-10 degree extremely closely spaced to very closely spaced incipient discontinuities. Frequent 1-10mm gypsum veins following discontinuities (Zone IVa). (MERCIA MUDSTONE GROUP)</p>							[Symbol]	26.00	-6.87			25.50 - 25.80	COREC2 1	
<p>Weak to medium strong thickly laminated to very thinly interbedded reddish grey to reddish brown MUDSTONE and SILTSTONE. 0-10 degree very closely spaced irregular to rough discontinuities. Frequent 1-15mm gypsum veins following bedding and crosscutting at 45 degrees. (Zone I). (IF:100/120/180). (MERCIA MUDSTONE GROUP)</p>							[Symbol]	26.45	-7.32					26
<p>Stiff dark reddish brown gravelly CLAY. Gravel is subangular to angular flat fine to coarse horizontal lithorelics of very weak MUDSTONE. 0-10 degree extremely closely spaced to very closely spaced incipient discontinuities. Frequent 1-10mm gypsum veins following discontinuities (Zone IVa). (MERCIA MUDSTONE GROUP)</p>							[Symbol]	27.20	-8.77			27.20 - 27.50	COREC2 2	
<p>Weak to medium strong thickly laminated to very thinly interbedded reddish grey to reddish brown MUDSTONE and SILTSTONE. 0-10 degree closely spaced irregular to rough discontinuities, clay infill 2-3mm. Frequent 1-15mm gypsum veins following bedding and crosscutting at 45 degrees. (Zone I). (IF:20/80/150). (MERCIA MUDSTONE GROUP)  <i>From 28.30m to 28.40m bgl weathered to firm clay.</i></p>							[Symbol]	28.00	-8.87					28
<p>Firm bluish grey locally reddish brown gravelly CLAY, gravel is subangular to angular fine to coarse randomly orientated lithorelics of weak mudstone. (Zone: IVa). (MERCIA MUDSTONE GROUP)</p>							[Symbol]	29.00	-9.87					29
<p>Weak very thinly bedded dark brown MUDSTONE. 0-10 degree very closely spaced undulating smooth incipient discontinuities, locally polished and striated. Frequent 1-10mm gypsum veins following bedding and discontinuities. (Zone II). (IF:20/60/150). (MERCIA MUDSTONE GROUP)</p>							[Symbol]	29.90	-10.77			29.70 - 29.85	COREC2 3	
<p>Observations / Remarks</p> <p>1. Groundwater not observed.            2. Upon completion 50mm diameter gas/groundwater monitoring pipe installed to 8.00m bgl.</p>							Chiselling			Water Added		Hammer Information		
							From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %	
							Groundwater					Project Number		
							Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>	




Project: <b>A46 Newark - Northern Bypass</b>					Location Details					Status		Borehole Number		
 Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>					Easting: 479853.68    Northing: 354777.56 Level: 19.13mAOD    Depth: 35.00m Logger: DD    Type: SNC Inclination: 90°					<b>FINAL</b>		<b>BH08</b>		
					Sheet 4 of 4									
Method, Plant and Crew					Diameter		Casing		Drilling Progress by Time					
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Scale:
0.00	1.20	Inspection Pit	Hand Excavated	A. Mossman	1.20	300			29/06	03:30	10.00	-	-	1:50
1.20	35.00	Sonic Core Drilling	Fraste CRS-XL	A. Mossman	35.00	-			30/06	03:30	20.00	-	-	Checked By: NEB
									01/07	03:30	32.00	-	-	Approved By: JC
									02/07	01:40	35.00	-	-	Start Date: 29/06/2021
														Finish Date: 01/07/2021
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing		
Weak very thinly bedded dark brown MUDSTONE. 0-10 degree very closely spaced undulating smooth incipient discontinuities, locally polished and striated. Frequent 1-10mm gypsum veins following bedding and discontinuities. (Zone II). (IF:20/60/150). (MERCIA MUDSTONE GROUP) <i>From 30.00m to 30.30m bgl weak to medium strong.</i> <i>From 30.50m to 31.00m bgl partly non intact.</i>							[Symbol]	30.20	-11.87			30.20 - 30.45	COREC2 4	Tests / Results
												31.00	31.50 - 31.60	
Stiff dark reddish brown very gravelly CLAY. Gravel is subangular to angular flat fine to coarse generally horizontal lithorelics of weak mudstone, with a trace of silt. (lithorelics of mudstone in a clay matrix). (Zone III). (MERCIA MUDSTONE GROUP) <i>From 31.40m to 31.80m bgl frequent 1-10mm weathered gypsum veins.</i>  <i>From 32.00m to 32.70m bgl non intact, recovered as clayey gravel (possibly drilling disturbed).</i>							[Symbol]	31.00	-11.87			31.90 - 32.00	COREC2 5	
												32.00	33.50 - 33.60	DD28
<i>From 34.00m to 34.30m bgl 60 degree joint, planar slightly rough.</i> <i>From 34.00m to 34.40m bgl non intact, weak mudstone with very closely spaced discontinuities.</i>							[Symbol]	33.50	-15.87			33.60 - 33.75	COREC2 6	
												34.00	34.60 - 34.70	DD27
EOH at 35.00m - Target depth achieved							[Symbol]	35.00	-15.87					
Observations / Remarks 1. Groundwater not observed. 2. Upon completion 50mm diameter gas/groundwater monitoring pipe installed to 8.00m bgl.							Chiselling			Water Added		Hammer Information		
							From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %	
							Groundwater							
							Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	Project Number	
							<b>784-B026948</b>							

Project: <b>A46 Newark - Northern Bypass</b>						Location Details				Status		Borehole Number						
 Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>						Easting: 480086.86		Northing: 355203.77		<b>FINAL</b>		<b>BH09</b>						
						Level: 8.94mAOD		Depth: 25.00m										
						Logger: DD		Type: CP+RC				Sheet 1 of 3						
						Inclination: 90°												
Method, Plant and Crew					Diameter		Casing		Drilling Progress by Time					Scale: 1:50				
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth (m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB			
0.00	1.20	Inspection Pit Cable Percussion Rotary Core	Hand Excavated Dando 3000 Comacchio 205	M. Snaith	1.20	300			28/06	17:50	6.30	6.00	0.9	Approved By: JC	28/06/2021			
1.20	6.30			M. Snaith	6.30	300			29/06	16:20	10:50	7.50	7.50			0.5		
6.30	25.00			A. Richardson	6.30	150			30/06	16:30	16:50	7.50	1.1	Start Date:	12/07/2021			
					25.00	-			01/07	16:20	24.00	7.50	1					
									02/07	16:00	25.00	7.50	1	Finish Date:				
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing						
Grass onto mid brown slightly gravelly fine to medium SAND, with occasional rootlets (<1mm). Gravel is subrounded to rounded quartz and chert. (TOPSOIL) (TOP)								0.40	8.54			0.10 - 0.20	DD1	Tests / Results				
												0.20 - 0.40	BB2					
Stiff mid brownish grey possibly fissured CLAY, with rare partings of light brown silt. (ALLUVIUM)								1.10	7.84			0.80 - 0.90	DD3	SPT(C) 1.20m, N=7 (1,1/2,1,2,2)				
												0.90 - 1.00	ESES2					
Firm to stiff mid greyish brown very closely fissured CLAY. Possibly with thin layers (1-2mm) of silt / fine sand. (ALLUVIUM)								3.40	5.54			0.90 - 1.10	BB4	SPT(C) 2.50m, N=11 (2,3/2,2,3,4)				
												1.10 - 1.30	BB5					
Greyish brown sandy GRAVEL, with low to medium cobble content. Gravel is subrounded to rounded occasionally angular fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded (60-80mm) chert. Sand is medium to coarse. (ALLUVIUM)								5.20	3.74			1.20 - 1.30	ESES3	SPT(C) 3.50m, N=28 (4,5/5,6,7,10)				
												2.10 - 2.20	DD6					
Stiff reddish brown and light bluish grey slightly gravelly CLAY, with occasional interbeds (<20mm) of light bluish grey silt. Gravel is subangular to angular fine to coarse flat horizontal very weak lithorelicts of mudstone. (Zone IVa). (MERCIA MUDSTONE GROUP)								6.30	2.64			2.30 - 2.80	BB7	SPT(C) 4.50m, N=34 (5,4/4,7,9,14)				
												3.20 - 3.70	BB8					
Stiff reddish brown gravelly CLAY, with subangular to angular flat fine to medium horizontal lithorelicts (Zone IVa). (MERCIA MUDSTONE GROUP) <i>From 6.30m to 6.60m bgl partly non intact, recovered as clayey gravelly sand, possibly drilling disturbed.</i>								7.00	1.94			4.20 - 4.30	DD9	SPT(S) 5.50m, 50 (7,14/50 for 124mm)				
												4.30 - 4.70	BB10					
Weak thickly laminated to very thinly interbedded reddish brown and light bluish grey MUDSTONE and SILTSTONE. 0-10 degree very closely spaced to closely spaced planar and irregular slightly rough discontinuities. Frequent gypsum veins (2-30mm) following bedding discontinuities, locally crosscutting 30-40 degrees. (Zone IVa). (IF:NI/80/100). (MERCIA MUDSTONE GROUP)  <i>From 8.40m to 8.70m bgl very weak to weak, partly non intact.</i>  <i>From 9.00m to 10.20m bgl weak to medium strong (20/200/250).</i>								6.30	2.64			5.20 - 5.30	DD11	SPT(S) 6.30m, 50 (25 for 42mm/50 for 28mm)				
												5.50 - 5.60	DD12					
								6.30	2.64			6.30 - 6.40	DD13	SPT(S) 6.30m, 50 (25 for 42mm/50 for 28mm)				
												6.80 - 6.90	D14					
								7.00	1.94			6.80 - 6.90	DD14	SPT(S) 6.30m, 50 (25 for 42mm/50 for 28mm)				
												7.20 - 7.35	COREC1 5					
								7.00	1.94			7.20	COREC1 5	SPT(S) 6.30m, 50 (25 for 42mm/50 for 28mm)				
												7.20 - 7.35	COREC1 5					
								7.00	1.94			8.40 - 8.50	COREC1 6	SPT(S) 6.30m, 50 (25 for 42mm/50 for 28mm)				
												8.40 - 8.50	COREC1 6					
								7.00	1.94			9.80	COREC1 7	SPT(S) 6.30m, 50 (25 for 42mm/50 for 28mm)				
												9.80 - 10.00	COREC1 7					
Observations / Remarks											Chiselling		Water Added		Hammer Information			
1. Groundwater not observed. 2. Upon completion 50mm diameter gas/groundwater monitoring pipe installed to 5.00m bgl.											From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %	
											6.10	6.30	60	1.20	6.30			
											Groundwater						Project Number	
											Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>	


 <b>Project: A46 Newark - Northern Bypass</b> <b>Location: Newark-on-Trent, Nottinghamshire</b> <b>Client: Highways England</b>						<b>Location Details</b> Easting: 480086.86 Northing: 355203.77 Level: 8.94mAOD Depth: 25.00m Logger: DD Type: CP+RC Inclination: 90°				<b>Status</b> <b>FINAL</b>		<b>Borehole Number</b> <b>BH09</b>												
										Scale: 1:50 Checked By: NEB Approved By: JC Start Date: 28/06/2021 Finish Date: 12/07/2021														
Method, Plant and Crew					Diameter		Casing		Drilling Progress by Time															
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth (m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)											
0.00	1.20	Inspection Pit	Hand Excavated	M. Snaith	1.20	300			28/06	17:50	6.30	6.00	0.9											
1.20	6.30	Cable Percussion	Dando 3000	M. Snaith	6.30	150			29/06	16:20	10.50	7.50	0.5											
6.30	25.00	Rotary Core	Comacchio 205	A. Richardson	25.00	-			30/06	16:30	16.50	7.50	1.1											
									01/07	16:20	24.00	7.50	1											
									02/07	16:00	25.00	7.50	1											
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples, Tests and Rotary Coring												
<p>Weak thickly laminated to very thinly interbedded reddish brown and light bluish grey MUDSTONE and SILTSTONE. 0-10 degree very closely spaced to closely spaced planar and irregular slightly rough discontinuities. Frequent gypsum veins (2-30mm) following bedding discontinuities, locally crosscutting 30-40 degrees. (Zone IVa). (IF:NI/80/100). (MERCIA MUDSTONE GROUP)  <i>From 10.20m to 10.50m bgl no recovery.</i></p> <p><i>From 11.20m to 11.50m bgl non intact, recovered as subangular medium to coarse gravel of weak to very weak mudstone.</i></p> <p><i>From 11.80m to 12.00m bgl no recovery.</i></p>																								
<p>Extremely weak to very weak reddish brown MUDSTONE, partly weathered to clay. (Zone IVa/III). (IF:NI/80/100). (MERCIA MUDSTONE GROUP)  <i>From 13.30m to 13.50m bgl no recovery.</i></p>								12.90	-3.96															
<p>Weak thickly laminated light bluish grey and reddish brown MUDSTONE. 0-10 degree closely spaced undulating slightly rough discontinuities. Frequent gypsum veins (1-30mm) following bedding discontinuities (Zone II). (IF:20/80/150). (MERCIA MUDSTONE GROUP)</p>								13.50	-4.56															
<p>Medium strong thickly laminated light bluish grey and reddish brown MUDSTONE. 0-10 degree very closely spaced undulating slightly rough discontinuities. Frequent gypsum veins (1-30mm) following bedding discontinuities. (Zone II). (IF:20/80/150). (MERCIA MUDSTONE GROUP)</p> <p><i>From 16.50m to 17.20m bgl very thinly bedded bluish grey siltstone and mudstone.</i>  <i>From 16.60m to 16.70m bgl extremely weak to very weak, non intact.</i>  <i>From 16.90m to 17.00m bgl very weak, non intact.</i>  <i>From 17.15m to 17.20m bgl extremely weak to very weak non intact.</i></p>								15.40	-6.46															
<p>Weak thickly laminated to thinly bedded reddish brown MUDSTONE. 0-10 degree closely spaced planar to irregular slightly rough discontinuities, localised clay infill to 2mm with a reduction in strength penetrating discontinuity walls (2-3mm). Frequent gypsum (1-2mm) following bedding discontinuities, locally crosscutting 45 and 60 degrees. (MERCIA MUDSTONE GROUP)</p> <p><i>From 18.55m to 18.75m bgl extremely weak to very weak, non intact.</i></p>								17.20	-8.26															
<p>1. Groundwater not observed.            2. Upon completion 50mm diameter gas/groundwater monitoring pipe installed to 5.00m bgl.</p>																								
<b>Observations / Remarks</b>							<b>Drilling Fluid</b>					<b>Hammer Information</b>												
							From (m)	To (m)	Return Min %	Colour	Type	Serial No.	Energy Ratio %											
							6.30	25.00			Air / Mist													
<b>Groundwater</b>							<b>Project Number</b>																	
							Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>											





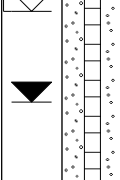

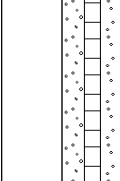
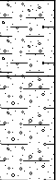
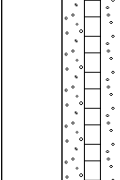

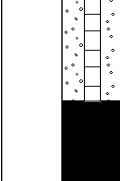




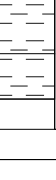
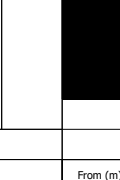

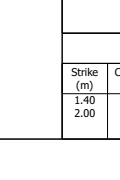

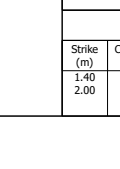

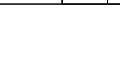
 <b>Project: A46 Newark - Northern Bypass</b> <b>Location: Newark-on-Trent, Nottinghamshire</b> <b>Client: Highways England</b>					<b>Location Details</b> Easting: 480086.86 Northing: 355203.77 Level: 8.94mAOD Depth: 25.00m Logger: DD Type: CP+RC Inclination: 90°					<b>Status</b> <b>FINAL</b>		<b>Borehole Number</b> <b>BH09</b>								
<b>Method, Plant and Crew</b>					<b>Diameter</b>		<b>Casing</b>		<b>Drilling Progress by Time</b>				<b>Scale:</b> 1:50							
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB					
0.00	1.20	Inspection Pit	Hand Excavated	M. Snailth	1.20	300			28/06	17:50	6.30	6.00	0.9	Approved By:	JC					
1.20	6.30	Cable Percussion	Dando 3000	M. Snailth	6.30	150			29/06	16:20	10.50	7.50	0.5	Start Date:	28/06/2021					
6.30	25.00	Rotary Core	Comacchio 205	A. Richardson	25.00	-			30/06	16:30	16.50	7.50	1.1	Finish Date:	12/07/2021					
									01/07	16:20	24.00	7.50	1							
									02/07	16:00	25.00	7.50	1							
<b>Strata Description</b>							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	<b>Samples, Tests and Rotary Coring</b>								
Weak thickly laminated to thinly bedded reddish brown MUDSTONE. 0-10 degree closely spaced planar to irregular slightly rough discontinuities, localised clay infill to 2mm with a reduction in strength penetrating discontinuity walls (2-3mm). Frequent gypsum (1-2mm) following bedding discontinuities, locally crosscutting 45 and 60 degrees. (MERCIA MUDSTONE GROUP)												Depth (m)	Ref	Core Run	FI	TCR	SCR	RQD	Tests / Results	
												20.25	C22	19.50						
<i>From 21.00m to 21.30m bgl partly non intact, possibly 60 degree joint.</i>												20.25 - 20.45	COREC2	2						
<i>From 21.50m to 21.75m bgl 60 degree joint, planar slightly rough, striated.</i> <i>From 21.60m to 21.70m bgl very weak, non intact.</i>												21.00			100	93	47			
												22.50			100	90	30			
<i>From 22.50m to 22.65m bgl 60 degree joint, slightly rough, striated.</i> <i>From 22.65m to 22.75m bgl 45 degree joint, slightly rough, striated.</i>																				
<i>From 23.40m to 23.55m bgl extremely weak to very weak, possibly 80-90 degree joints.</i>																				
<i>From 23.85m to 24.00m bgl 60 degree, irregular, rough.</i> <i>From 23.85m to 24.20m bgl partly non intact.</i>																				
<i>From 24.80m to 24.90m bgl non intact, clay and gravel.</i>												24.80 - 25.05	COREC2	3						
EOH at 25.00m - Target depth achieved								25.00	-16.06											
<b>Observations / Remarks</b> 1. Groundwater not observed. 2. Upon completion 50mm diameter gas/groundwater monitoring pipe installed to 5.00m bgl.												<b>Drilling Fluid</b>			<b>Hammer Information</b>					
From (m)			To (m)			Return Min %		Colour		Type		Serial No.	Energy Ratio %							
6.30			25.00							Air / Mist										
<b>Groundwater</b>												<b>Project Number</b>								
Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks															
							<b>784-B026948</b>													


 <b>Project: A46 Newark - Northern Bypass</b> <b>Location: Newark-on-Trent, Nottinghamshire</b> <b>Client: Highways England</b>						<b>Location Details</b> Easting: 480097.16 Northing: 355246.00 Level: 9.10mAOD Depth: 25.00m Logger: DD Type: CP+RC Inclination: 90°				<b>Status</b> <b>FINAL</b>		<b>Borehole Number</b> <b>BH10</b>									
<b>Method, Plant and Crew</b>						<b>Diameter</b>		<b>Casing</b>		<b>Drilling Progress by Time</b>				<b>Scale: 1:50</b>							
From (m)	To (m)	Type	Plant Used	Crew		Depth (m)	Diam (mm)	Depth (m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB					
0.00	1.20	Inspection Pit	Hand Excavated	M Snaith	M Snaith	1.20	300			29/06	17:10	4.60	-	1.9							
1.20	4.60	Cable Percussion	Dando 3000	M Snaith	M Snaith	4.60	150			05/07	16:20	10.10	7.50	2.8							
4.60	25.00	Rotary Core	Comacchio 205	A. Richardson	A. Richardson	4.60	-			06/07	16:20	17.60	7.50	2.6							
						25.00				07/07	16:20	23.60	7.50	1.8							
										08/07	13:30	25.00	7.50	0.9							
<b>Strata Description</b>								<b>Legend</b>		<b>Reduced Level (mAOD)</b>		<b>Water Level (m)</b>		<b>Inst / Backfill</b>		<b>Samples and Testing</b>					
Mid to dark brown slightly clayey slightly gravelly fine to medium SAND, with occasional rootlets up to 1mm. Gravel is subrounded to rounded medium to coarse quartz with rare angular fine to coarse brick fragments. (TOPSOIL) TOP										0.40		8.70				0.10 - 0.20 DD1 0.10 - 0.20 ESES3 0.10 - 0.40 BB2					
Firm friable mid to dark brown silty CLAY. (ALLUVIUM)										2.30		6.80				0.50 - 0.60 DD4 0.50 - 1.10 BB5 0.70 - 0.80 ESES18					
Mid greyish brown slightly clayey slightly gravelly SAND, with low to medium cobble content. Gravel is subrounded to rounded fine to coarse siltstone chert and quartz. Cobbles are subrounded to rounded (60-80mm) chert. (ALLUVIUM)										4.10		5.00				1.50 - 1.60 DD7 1.50 - 2.00 BB6 1.80 - 1.90 ESES8 2.20 - 2.30 DD9 2.50 - 2.80 BB10 2.80 - 2.90 ESES11 3.20 - 3.30 DD12 3.50 - 3.80 BB13 3.80 - 3.90 ESES14					
Stiff reddish brown slightly gravelly CLAY. Gravel is subangular to angular flat fine to coarse horizontal very weak lithorelicts of mudstone. Possibly locally extremely very closely spaced fissures. (Zone IVa). (MERCIA MUDSTONE GROUP)										4.60		4.50				4.10 - 4.20 DD15 4.20 - 4.50 DD16 4.60 - 4.70 DD17					
Firm to stiff reddish brown locally light bluish grey slightly gravelly silty CLAY. Gravel is subangular to angular flat fine to coarse horizontal very weak lithorelicts of mudstone. 0-10 degree extremely closely spaced to very closely spaced discontinuities (fissures). (IVa/IVb). (MERCIA MUDSTONE GROUP)										4.60		4.50				4.60 100 0 0 5.30 - 5.40 D4 5.30 - 5.40 DD4					
Stiff reddish brown very gravelly CLAY. Gravel is subangular to angular fine to coarse randomly orientated lithorelicts of very weak to weak mudstone. 20-45 degree very closely spaced discontinuities (lithorelicts of mudstone in a clay matrix) (Zone: III). (MERCIA MUDSTONE GROUP)										7.40		1.70				5.60 7.10 100 0 0 6.70 - 6.80 DD5 7.60 - 7.70 D6 7.60 - 7.70 DD6					
Weak locally medium strong, thickly laminated to very thinly interbedded reddish brown and light bluish grey MUDSTONE and SILTSTONE. 0-10 degree closely spaced undulating to irregular, rounded discontinuities. Frequent gypsum veins (2-30mm) following bedding/discontinuities. (Zone I). (IF:10/80/250). (MERCIA MUDSTONE GROUP) <i>From 9.25m to 10.00m bgl medium strong.</i>										9.00		0.10				7.10 8.60 100 0 0 8.60 10.10 100 73 66 9.35 C7 9.35 - 9.50 COREC7					
<b>Observations / Remarks</b>										<b>Chiselling</b>			<b>Water Added</b>		<b>Hammer Information</b>						
1. Groundwater not observed. 2. Upon completion 50mm diameter gas/groundwater monitoring pipe installed to 5.00m bgl.										From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %					
										4.20	4.60	60	1.20	4.60							
										<b>Groundwater</b>					<b>Project Number</b>						
										Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks						
																<b>784-B026948</b>					


 <b>Project: A46 Newark - Northern Bypass</b> <b>Location: Newark-on-Trent, Nottinghamshire</b> <b>Client: Highways England</b>						<b>Location Details</b> Easting: 480097.16 Northing: 355246.00 Level: 9.10mAOD Depth: 25.00m Logger: DD Type: CP+RC Inclination: 90°				<b>Status</b> <b>FINAL</b>		<b>Borehole Number</b> <b>BH10</b>								
										<b>Sheet 2 of 3</b>										
Method, Plant and Crew					Diameter		Casing		Drilling Progress by Time				Scale: 1:50							
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB					
0.00	1.20	Inspection Pit Cable Percussion Rotary Core	Hand Excavated Dando 3000 Comacchio 205	M Snaith	1.20	300			29/06	17:10	4.60	-	1.9	Approved By: JC	Start Date: 29/06/2021					
1.20	4.60			M Snaith	4.60	150			05/07	16:20	10.10	7.50	2.8							
4.60	25.00			A. Richardson	25.00	-			06/07	16:20	17.60	7.50	2.6							
									07/07	16:20	23.60	7.50	1.8	Finish Date: 12/07/2021						
									08/07	13:30	25.00	7.50	0.9							
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples, Tests and Rotary Coring								
<p>Weak locally medium strong, thickly laminated to very thinly interbedded reddish brown and light bluish grey MUDSTONE and SILTSTONE. 0-10 degree closely spaced undulating to irregular, rounded discontinuities. Frequent gypsum veins (2-30mm) following bedding/discontinuities. (Zone I). (IF:10/80/250). (MERCIA MUDSTONE GROUP)</p> <p><i>From 10.10m to 10.60m bgl partly non intact.</i></p> <p><i>From 10.90m to 11.00m bgl band of gypsum.</i></p> <p><i>From 12.30m to 12.40m bgl band of gypsum.</i></p> <p><i>From 12.50m to 13.10m bgl 45-60 degree very closely spaced to closely spaced joints, partly non intact.</i></p> <p><i>From 13.10m to 13.20m bgl band of gypsum.</i></p> <p><i>From 14.35m to 14.60m bgl very weak, clay infill (2-3mm) partly non intact.</i></p>								16.10	-7.00											
<p>Medium strong thickly laminated bluish grey SILTSTONE, with 0-10 degree very closely spaced to closely spaced irregular slightly rough discontinuities. Frequent (5-20mm) gypsum bands following bedding. (Zone I). (IF: NI/80/150). (MERCIA MUDSTONE GROUP)</p> <p><i>From 16.60m to 17.45m bgl very weak partly non intact, possibly very closely spaced discontinuities.</i></p> <p><i>From 17.00m to 17.15m bgl band of gypsum.</i></p>								17.10	-8.00											
<p>Weak thickly laminated to very thinly bedded reddish brown MUDSTONE. 0-10 degree closely spaced, planar to undulating, slightly rough discontinuities, with localised clay infill (2-3mm). Frequent (1-10mm) gypsum veins following bedding, locally crosscutting at 60 degrees. (Zone I) (IF:40/200/300). (MERCIA MUDSTONE GROUP)</p> <p><i>From 18.40m to 18.60m bgl partly non-intac, possibly 45-60 joint.</i></p> <p><i>From 19.55m to 20.00m bgl partly non intact with possibly 90 degree joint, clay infill up to 20mm.</i></p>																				
<b>Observations / Remarks</b> 1. Groundwater not observed. 2. Upon completion 50mm diameter gas/groundwater monitoring pipe installed to 5.00m bgl.							<b>Drilling Fluid</b> From (m) To (m) Return Min % Colour Type 4.60 25.00 Air / Mist					<b>Hammer Information</b> Serial No. Energy Ratio %								
							<b>Groundwater</b> Strike (m) Casing (m) Sealed (m) Time (min) Rose To (m) Remarks					<b>Project Number</b> <b>784-B026948</b>								

























 <b>Project: A46 Newark - Northern Bypass</b> <b>Location: Newark-on-Trent, Nottinghamshire</b> <b>Client: Highways England</b>						<b>Location Details</b> Easting: 480097.16 Northing: 355246.00 Level: 9.10mAOD Depth: 25.00m Logger: DD Type: CP+RC Inclination: 90°				<b>Status</b>  <b>FINAL</b>		<b>Borehole Number</b>  <b>BH10</b>															
										<b>Sheet 3 of 3</b>																	
Method, Plant and Crew					Diameter		Casing		Drilling Progress by Time				Scale: 1:50														
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB												
0.00	1.20	Inspection Pit Cable Percussion Rotary Core	Hand Excavated Dando 3000 Comacchio 205	M Snaith	1.20	300			29/06	17:10	4.60	-	1.9	Approved By:	JC												
1.20	4.60			M Snaith	4.60	150			05/07	16:20	10.10	7.50	2.8	Start Date:	29/06/2021												
4.60	25.00			A. Richardson	25.00	-			06/07	16:20	17.60	7.50	2.6	Finish Date:	12/07/2021												
							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples, Tests and Rotary Coring															
												Depth (m)	Ref	Core Run	FI	TCR	SCR	RQD	Tests / Results								
<b>Strata Description</b>  Weak thickly laminated to very thinly bedded reddish brown MUDSTONE. 0-10 degree closely spaced, planar to undulating, slightly rough discontinuities, with localised clay infill (2-3mm). Frequent (1-10mm) gypsum veins following bedding, locally crosscutting at 60 degrees. (Zone I) (IF:40/200/300). <b>(MERCIA MUDSTONE GROUP)</b> <i>From 20.00m to 20.40m bgl no recovery.</i> <i>From 20.40m to 20.60m bgl weathered into firm gravelly clay, possibly Zone IVa.</i> <i>From 20.60m to 21.50m bgl non intact, with clay infill (2-3mm).</i>  <i>From 21.80m to 21.85m bgl non intact, possibly conjugate joints.</i>  <i>From 22.10m to 22.45m bgl extremely weak to very weak, partly non intact, partly weathered to clay.</i>  <i>From 23.20m to 23.40m bgl partly non-intact, possibly 45 degree joints.</i>  <i>From 24.05m to 24.24m bgl extremely weak to very weak, partly non intact possibly 60 degree joints.</i>																											
																	21.30 - 21.50	COREC1 2	20.60 22.10	100	90	50			21		
																											22
																											23
																					24						
																						25					
																						26					
																						27					
																						28					
																						29					
																						30					
EOH at 25.00m - Target depth achieved								25.00	-15.90																		
<b>Observations / Remarks</b> 1. Groundwater not observed. 2. Upon completion 50mm diameter gas/groundwater monitoring pipe installed to 5.00m bgl.											<b>Drilling Fluid</b> From (m) To (m) Return Min % Colour Type 4.60 25.00				<b>Hammer Information</b> Serial No. Energy Ratio %												
											<b>Groundwater</b> Strike (m) Casing (m) Sealed (m) Time (min) Rose To (m) Remarks				<b>Project Number</b>  <b>784-B026948</b>												


Project: <b>A46 Newark - Northern Bypass</b>						Location Details			Status	Borehole Number								
 Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>						Easting: 480140.46 Northing: 355388.35 Level: 6.85m AOD Depth: 25.00m Logger: DD Type: CP+RC Inclination: 90°			<b>FINAL</b>	<b>BH11</b>								
						Sheet 1 of 3												
Method, Plant and Crew						Casing		Drilling Progress by Time					Scale: 1:50					
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth (m)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB				
0.00	1.20	Inspection Pit Cable Percussion Rotary Core	Hand Excavated Dando 3000 Comacchio 205	A. Richardson M.W + M.S	1.20	300		19/05	12:00	6.70	2.50	3.1	JC	19/05/2021				
1.20	6.70			A. Richardson	6.70	150		20/05	16:30	12.70	9.00	5.6						
6.70	25.00								21/05	16:00	20.20	13.00			0.6			
								24/05	16:10	25.00	13.00	3.8		01/06/2021				
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing						
Dark brown silty gravelly medium SAND. Gravel is subangular to angular fine to coarse flint, brick, clinker and concrete. (MADE GROUND) MGR								1.20	5.65			0.00 - 0.50	B008					
												0.10	ES001					
Medium dense brown slightly clayey sandy subangular to subrounded coarse GRAVEL of flint with occasional clinker and brick. Sand is fine to coarse. (MADE GROUND) MGR								1.20	5.65			0.50	ES002					
												0.50 - 1.00	B009					
Medium dense brown clayey fine to coarse SAND. (ALLUVIUM)								2.50	4.35			1.00	B003	SPT(C) 1.50m, N=16 (2,2/3,5,4,4)				
												1.20	ES004					
Black soft sandy gravelly CLAY. Sand is fine. Gravel is subangular to subrounded fine to coarse flint. (ALLUVIUM)								4.50	2.35			1.50	B005					
												1.50	B5					
Medium dense black and dark grey slightly clayey sandy subangular to subrounded coarse GRAVEL of flint. Sand is fine to coarse. (ALLUVIUM)								2.50	4.35			2.00	B006			SPT(C) 2.50m, N=12 (3,3/3,3,3,3)		
												2.50	D007					
Stiff to very stiff reddish brown and light grey slightly gravelly silty CLAY. Gravel is subangular to angular fine to coarse flat very weak lithorelicts. (ALLUVIUM)								4.00	2.85			3.00	B					
												3.00	B010					
Medium dense black and dark grey slightly clayey sandy subangular to subrounded coarse GRAVEL of flint. Sand is fine to coarse. (ALLUVIUM)								4.50	2.35			4.00	D012	SPT(S) 4.50m, 25 (4,9/25 for 75mm)				
												4.00	D12					
Stiff to very stiff reddish brown and light grey slightly gravelly silty CLAY. Gravel is subangular to angular fine to coarse flat very weak lithorelicts. (ALLUVIUM)								4.50	2.35			5.00	B014					
												5.00	B14					
Non intact, recovered as dark reddish brown slightly clayey gravelly fine to coarse SAND. Gravel is subangular to angular flat fine to medium very weak mudstone. (Zone: possibly IVa/III). (MERCIA MUDSTONE GROUP)								5.50	1.35			2.00	D007			SPT(S) 6.00m, 50 (25 for 36mm/50 for 21mm)		
												2.50	D007					
Firm to stiff reddish brown locally mottled light bluish grey CLAY. 0-5 degrees locally extremely closely spaced discontinuities/ fissures. (Zone IVb). (MERCIA MUDSTONE GROUP)								5.50	1.35			3.00	B					
												3.00	B010					
Stiff reddish brown silty gravelly CLAY, with 0-10 degree locally randomly orientated extremely closely spaced to very closely spaced discontinuities. Gravel is subangular to angular flat locally horizontal fine to coarse very weak to weak mudstone lithorelicts. (Zone IVa/III). (MERCIA MUDSTONE GROUP)								5.50	1.35			5.50	D015	SPT(S) 6.70m, 50 (25 for 12mm/50 for 8mm)				
												5.50	D15					
Non intact, recovered as dark reddish brown slightly clayey gravelly fine to coarse SAND. Gravel is subangular to angular flat fine to medium very weak mudstone. (Zone: possibly IVa/III). (MERCIA MUDSTONE GROUP)								7.50	-0.65			4.00	D013			SPT(S) 6.70m, 50 (25 for 12mm/50 for 8mm)		
												4.00	D13					
Firm to stiff reddish brown locally mottled light bluish grey CLAY. 0-5 degrees locally extremely closely spaced discontinuities/ fissures. (Zone IVb). (MERCIA MUDSTONE GROUP)								7.50	-0.65			5.00	B014					
												5.00	B14					
Stiff reddish brown silty gravelly CLAY, with 0-10 degree locally randomly orientated extremely closely spaced to very closely spaced discontinuities. Gravel is subangular to angular flat locally horizontal fine to coarse very weak to weak mudstone lithorelicts. (Zone IVa/III). (MERCIA MUDSTONE GROUP)								7.50	-0.75			5.50	B	SPT(S) 6.70m, 50 (25 for 12mm/50 for 8mm)				
												5.50	B015					
Non intact, recovered as dark reddish brown slightly clayey gravelly fine to coarse SAND. Gravel is subangular to angular flat fine to medium very weak mudstone. (Zone: possibly IVa/III). (MERCIA MUDSTONE GROUP)								7.50	-0.75			6.70	DD16			40	0	0
												6.70	DD16					
Stiff reddish brown silty gravelly CLAY, with 0-10 degree locally randomly orientated extremely closely spaced to very closely spaced discontinuities. Gravel is subangular to angular flat locally horizontal fine to coarse very weak to weak mudstone lithorelicts. (Zone IVa/III). (MERCIA MUDSTONE GROUP)								7.50	-0.75			8.00 - 8.10	DD17			SPT(S) 6.70m, 50 (25 for 12mm/50 for 8mm)		
												8.00 - 8.10	DD17					
								7.50	-0.75			8.20		0	0			0
												8.20						
								7.60	-0.75			8.20		0	0			0
												8.20						
								9.70	-2.85			8.20		0	0	0		
												8.20						
Observations / Remarks										Chiselling			Water Added		Hammer Information			
1. Upon completion 50mm diameter gas/groundwater monitoring pipe installed to 6.00m bgl.										From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %		
										6.40	6.70	60	1.40	6.70				
										Groundwater					Project Number			
										Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>		
										1.40	2	-	20	1.00				
										2.00	-	-	20	2.00				


 <b>Project: A46 Newark - Northern Bypass</b> <b>Location: Newark-on-Trent, Nottinghamshire</b> <b>Client: Highways England</b>						<b>Location Details</b> Easting: 480140.46 Northing: 355388.35 Level: 6.85mAOD Depth: 25.00m Logger: DD Type: CP+RC Inclination: 90°				<b>Status</b> <b>FINAL</b>		<b>Borehole Number</b> <b>BH11</b>				
Method, Plant and Crew						Casing		Drilling Progress by Time					Scale: 1:50			
From (m)	To (m)	Type	Plant Used	Crew		Depth (m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB		
0.00	1.20	Inspection Pit Cable Percussion Rotary Core	Hand Excavated Dando 3000 Comacchio 205	A. Richardson M.W + M.S A. Richardson	1.20	300	19/05	12:00	6.70	2.50	3.1		Approved By: JC	Start Date: 19/05/2021		
1.20	6.70				6.70	150	20/05	16:30	12.70	9.00	5.6					
6.70	25.00				25.00	-	21/05	16:00	20.20	13.00	0.6					
<b>Strata Description</b>						Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples, Tests and Rotary Coring					
											Depth (m)	Ref	Core Run	FI	TCR	SCR
Stiff reddish brown silty gravelly CLAY, with 0-10 degree locally randomly orientated extremely closely spaced to very closely spaced discontinuities. Gravel is subangular to angular flat locally horizontal fine to coarse very weak to weak mudstone lithorelicts. (Zone IVa/III). (MERCIA MUDSTONE GROUP)																
Medium strong thickly interlaminated locally disseminated reddish brown and light grey MUDSTONE and SILTSTONE, with 0-10 degree closely spaced irregular rough discontinuities. (Zone: I). (IF: 70/100/200). (MERCIA MUDSTONE GROUP)							10.95	-4.10								11
Weak to medium strong thickly laminated to very thickly interbedded reddish brown and light bluish grey MUDSTONE and SILTSTONE, with 0-20 degree closely spaced undulating irregular rough discontinuities. Frequent gypsum viens (1-30mm) following discontinuities/ bedding. locally cross cutting 30-45 degrees. (Zone: I). (IF:20/150/200). (MERCIA MUDSTONE GROUP)							11.70	-4.85								12
<i>From 12.70m to 13.00m bgl non intact.</i>																13
<i>From 14.20m to 14.80m bgl non intact (possibly 30 and 60 degree joints).</i>																14
Medium strong very thinly bedded light bluish grey SILTSTONE, with 0-10 and 30 degree closely spaced planar to irregular slightly rough discontinuities. Frequent (25-50mm) gypsum veins following bedding/ discontinuities. (Zone: I). (IF:30/100/200). (MERCIA MUDSTONE GROUP)							17.00	-10.15								17
Weak to medium strong very thinly bedded reddish brown MUDSTONE, with 0-10 degree closely spaced planar irregular slightly rough discontinuities. Occasional gypsum veins (2-10mm) following bedding discontinuities. (Zone I). (IF:20/100/200). (MERCIA MUDSTONE GROUP)							18.70	-11.85								19
<i>From 19.70m to 20.20m bgl partly non-intact, very weak to weak, possibly 30-45 degree joints.</i>																20
<b>Observations / Remarks</b> 1. Upon completion 50mm diameter gas/groundwater monitoring pipe installed to 6.00m bgl.										<b>Drilling Fluid</b>			<b>Hammer Information</b>			
						From (m)	To (m)	Return Min %	Colour	Type	Serial No.	Energy Ratio %				
						6.70	25.00			Air / Mist						
										<b>Groundwater</b>			<b>Project Number</b>			
						Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks					
												<b>784-B026948</b>				

Project: <b>A46 Newark - Northern Bypass</b>					Location Details					Status		Borehole Number									
 Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>					Easting: 480140.46 Northing: 355388.35 Level: 6.85mAOD Depth: 25.00m Logger: DD Type: CP+RC Inclination: 90°					<b>FINAL</b>		<b>BH11</b>									
					Method, Plant and Crew									Casing		Drilling Progress by Time					Scale: 1:50
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:							
0.00	1.20	Inspection Pit Cable Percussion Rotary Core	Hand Excavated Dando 3000 Comacchio 205	A. Richardson M.W + M.S A. Richardson	1.20	300			19/05	12:00	6.70	2.50	3.1	NEB							
1.20	6.70				6.70	150	20/05	16:30	9.00	9.00	5.6	Approved By: JC									
6.70	25.00				25.00	-	21/05	16:00	13.00	13.00	0.6		Start Date: 19/05/2021								
															Finish Date: 01/06/2021						
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples, Tests and Rotary Coring									
Weak to medium strong very thin bedded reddish brown MUDSTONE, with 0-10 degree closely spaced planar irregular slightly rough discontinuities. Occasional gypsum veins (2-10mm) following bedding discontinuities. (Zone I). (IF:20/100/200). (MERCIA MUDSTONE GROUP)  <i>From 21.40m to 21.70m bgl partly non-intact, very weak to weak, possibly 30-45 degree joints.</i>							[Hatched Pattern]	25.00	-18.15	[Redacted]	COREC2 6	23.00 - 23.20									
												23.45 - 23.75									
												23.20 - 24.70									
												24.70 - 25.00									
												25.00									
<i>From 24.60m to 24.90m bgl non intact (60 degree irregular rough joints).</i>																					
<i>From 24.90m to 25.00m bgl non intact (60 degree very closely spaced joints).</i> EOH at 25.00m - Target depth achieved																					
Observations / Remarks 1. Upon completion 50mm diameter gas/groundwater monitoring pipe installed to 6.00m bgl.												Drilling Fluid			Hammer Information						
From (m)			To (m)			Return Min %		Colour		Type		Serial No.	Energy Ratio %								
6.70			25.00							Air / Mist											
Groundwater												Project Number									
Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks																
							<b>784-B026948</b>														



Project: <b>A46 Newark - Northern Bypass</b>					Location Details					Status		Borehole Number													
 Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>					Easting: 480185.70    Northing: 355463.65 Level: 10.30mAOD    Depth: 25.00m Logger: DD    Type: CP+RC Inclination: 90°					<b>FINAL</b>		<b>BH12</b>													
					Sheet 1 of 3																				
Method, Plant and Crew					Diameter		Casing		Drilling Progress by Time																
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth (m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Scale:											
0.00	1.20	Inspection Pit Cable Percussion Rotary Core	Hand Excavated Cable Percussion Comcchio 205	M. Whitehead M. Whitehead A. Robertson	1.20	300	6.00	150	17/06	12:00	6.40	6.00	6.00	1:50											
6.40	25.00				6.40	150	21/06	16:20	13.50	7.50	22/06	16:20	19.50	7.50	3.3	Checked By: NEB									
					23/06	25.00	23/06	16:30	23/06	16:30	25.00	7.50	2.8	Approved By: JC											
					24/06	25.00	24/06	12:00	24/06	12:00	25.00	7.50	2.4	Start Date: 21/06/2021											
													2.4	Finish Date: 24/06/2021											
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing													
Dark brown silty gravelly coarse SAND. Gravel is subangular to subrounded fine to coarse flint. (TOPSOIL TOP)								0.50	9.80			0.00 - 0.50	B001	SPT(S) 1.50m, N=11 (1,2/2,3,3,3)											
												0.30	ES002												
Loose becoming medium dense brown silty gravelly coarse SAND. Gravel is subangular to subrounded fine to coarse flint. (ALLUVIUM)								0.50	9.80			0.50 - 1.00	B003												
												1.30	ES004												
Medium dense brown slightly clayey sandy subangular to subrounded coarse GRAVEL of flint. Sand is fine to coarse. (ALLUVIUM)								3.00	7.30			1.50	B005 B5	SPT(C) 2.50m, N=16 (2,2/4,4,4,4)											
												1.50	B005 B5												
From 4.50m to 6.00m bgl becoming dark grey/black								3.00	7.30			2.50	D006	SPT(C) 3.50m, N=23 (1,5/5,6,6,6)											
												3.50	B007 B1												
Reddish brown silty CLAY. (ALLUVIUM)								6.00	4.30			4.50	B008 B8	SPT(C) 4.50m, N=29 (1,3/6,8,7,8)											
												4.50	B008 B8												
Firm to stiff friable reddish brown slightly gravelly silty CLAY. Gravel is subangular to angular flat fine to medium horizontal very weak mudstone lithorelicts. (Very poor recovery). (MERCIA MUDSTONE GROUP)								6.00	4.30			6.00 - 6.45	D009 D9	SPT(S) 6.00m, N=50 (1,3/7,14,16,13)											
												6.00 - 6.45	D009 D9												
Weak thickly laminated to very thinly interbedded reddish brown and light bluish grey MUDSTONE and SILTSTONE, with 0-10 degree very closely spaced to closely spaced undulating to irregular rough discontinuities. Frequent (2-50mm) gypsum veins following bedding discontinuities. (Zone II). (IF:20/80/200). (MERCIA MUDSTONE GROUP)								6.75	3.55			7.00 - 7.10	ESES10	<table border="1"> <tr> <td>6.75</td> <td>26</td> <td>0</td> <td>0</td> </tr> <tr> <td>7.50</td> <td></td> <td></td> <td></td> </tr> </table>				6.75	26	0	0	7.50			
												6.75	26					0	0						
7.50																									
7.50	ESES11																								
From 7.50m to 8.00m bgl partly non-intact. From 8.00m to 8.50m bgl poor recovery.								7.50	2.80			7.75	ESES11	<table border="1"> <tr> <td>7.75</td> <td>75</td> <td>80</td> <td>20</td> </tr> <tr> <td>8.00</td> <td></td> <td></td> <td></td> </tr> </table>				7.75	75	80	20	8.00			
												7.75	75					80	20						
8.00																									
8.00 - 8.10	ESES11																								
From 8.70m to 8.75m bgl gypsum.								7.50	2.80			8.00	COREC1 2	<table border="1"> <tr> <td>8.00</td> <td>86</td> <td>86</td> <td>50</td> </tr> <tr> <td>9.50</td> <td></td> <td></td> <td></td> </tr> </table>				8.00	86	86	50	9.50			
												8.00	86					86	50						
9.50																									
8.85 - 8.95	COREC1 2																								
From 9.00m to 9.05m bgl gypsum.								7.50	2.80			9.50	C13 COREC1 3												
												9.50 - 9.73	C13 COREC1 3												
Observations / Remarks										Chiselling		Water Added		Hammer Information											
1. Upon completion 50mm diameter gas/groundwater monitoring pipe installed to 6.00m bgl.										From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %									
										6.00	6.40	60													
										Groundwater				Project Number											
										Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>									
										1.90	-	-	20	1.90											


 Project: <b>A46 Newark - Northern Bypass</b> Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>				Location Details				Status		Borehole Number									
				Easting:	480185.70		Northing:	355463.65		FINAL	BH12								
Level:	10.30m AOD		Depth:	25.00m		Sheet 2 of 3													
Logger:	DD		Type:	CP+RC															
				Inclination: 90°															
Method, Plant and Crew					Casing		Drilling Progress by Time					Scale:	1:50						
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB				
0.00	1.20	Inspection Pit Cable Percussion Rotary Core	Hand Excavated Cable Percussion Comchio 205	M. Whitehead M. Whitehead A. Robertson	1.20	300	6.00	150	17/06	12:00	6.40	6.00		Checked By:	NEB				
1.20	6.40				6.40	150	21/06	16:20	13.50	7.50	3.3	Approved By:	JC						
6.40	25.00				25.00	-	22/06	16:20	19.50	7.50	2.8	Start Date:	21/06/2021						
					23/06	25.00	7.50	2.4	Finish Date:	24/06/2021									
					24/06	25.00	7.50	2.4											
Strata Description					Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples, Tests and Rotary Coring									
Weak thickly laminated to very thin interbedded reddish brown and light bluish grey MUDSTONE and SILTSTONE, with 0-10 degree very closely spaced to closely spaced undulating to irregular rough discontinuities. Frequent (2-50mm) gypsum veins following bedding discontinuities. (Zone II). (IF:20/80/200). (MERCIA MUDSTONE GROUP) <i>From 10.00m to 10.63m bgl band of gypsum.</i>										9.50				60		60	50		
From 11.60m to 12.00m bgl extremely weak to very weak, with localized clay infill to 2mm.						12.00	-1.70			11.30									
										11.30 - 11.42	C14								
										COREC1	4			100	70	40			
Weak to medium strong very thin interbedded reddish brown and bluish grey MUDSTONE and SILTSTONE, with 0-10 degree very closely spaced to closely spaced planar and undulating smooth and rough discontinuities. Frequent (2-50mm) gypsum veins following bedding discontinuities. (Zone I). (IF:20/80/200). (MERCIA MUDSTONE GROUP) <i>From 12.00m to 12.50m bgl poor recovery.</i>										12.00									
From 13.00m to 13.25m bgl medium strong.										12.00									
										13.35									
										13.35 - 13.43	C15								
										COREC1	5								
From 13.90m to 14.40m bgl extremely weak to very weak (possibly extremely closely spaced discontinuities).										13.50				80	80	26			
										14.70									
										14.70 - 14.85	C16								
										COREC1	6								
From 15.00m to 15.60m bgl no recovery.										15.00									
										15.00									
										15.00				60	60	50			
From 16.00m to 16.20m bgl medium strong.										16.50									
										16.50									
Weak to medium strong thinly laminated to very thin bedded reddish brown MUDSTONE, with 0 to 20 degree very closely spaced to medium spaced planar smooth and slightly rough discontinuities. Frequent (1-10mm) gypsum veins following bedding/laminations, locally crosscutting 45 degrees. (Zone I). (IF:20/200/350). (MERCIA MUDSTONE GROUP) <i>From 16.50m to 16.75m bgl Partly non intact.</i>						16.50	-6.20			18.45									
From 18.00m to 18.40m bgl no recovery.										18.45									
										18.45 - 18.70	C17								
										COREC1	7								
Observations / Remarks										Drilling Fluid			Hammer Information						
1. Upon completion 50mm diameter gas/groundwater monitoring pipe installed to 6.00m bgl.										From (m)	To (m)	Return Min %	Colour	Type	Serial No.	Energy Ratio %			
										6.40	25.00			Air / Mist					
										Groundwater			Project Number						
										Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>			








Project: <b>A46 Newark - Northern Bypass</b>					Location Details					Status		Borehole Number					
 Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>					Easting: 480185.70 Northing: 355463.65 Level: 10.30mAOD Depth: 25.00m Logger: DD Type: CP+RC Inclination: 90°					<b>FINAL</b>		<b>BH12</b>					
					Sheet 3 of 3												
Method, Plant and Crew					Casing		Drilling Progress by Time					Scale: 1:50					
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By: NEB			
0.00	1.20	Inspection Pit Cable Percussion Rotary Core	Hand Excavated Cable Percussion Comchio 205	M. Whitehead M. Whitehead A. Robertson	1.20	300	6.00	150	17/06	12:00	6.40	6.00	6.00	1:50			
1.20	6.40				6.40	150	22/06	16:20	7.50	7.50	3.3						
6.40	25.00				6.40	150	23/06	16:20	19.50	7.50	2.8						
					25.00	-			24/06	12:00	25.00	7.50	2.4	Approved By: JC			
											25.00	7.50	2.4	Start Date: 21/06/2021			
														Finish Date: 24/06/2021			
Strata Description					Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples, Tests and Rotary Coring							
Weak to medium strong thinly laminated to very thinly bedded reddish brown MUDSTONE, with 0 to 20 degree very closely spaced to medium spaced planar smooth and slightly rough discontinuities. Frequent (1-10mm) gypsum veins following bedding/laminations, locally crosscutting 45 degrees. (Zone I). (IF:20/200/350). (MERCIA MUDSTONE GROUP) <i>From 20.45m to 20.55m bgl 70 degree joint, irregular slightly rough.</i>  <i>From 21.00m to 21.30m bgl 70 degree joint, irregular slightly rough.</i>  <i>From 21.70m to 22.05m bgl 70 degree joint, irregular slightly rough.</i>  <i>From 22.35m to 22.50m bgl partly non intact, possibly 45 to 70 degree joints, with clay infill to 1mm.</i> <i>From 22.50m to 22.90m bgl no recovery.</i>  <i>From 22.95m to 23.05m bgl extremely weak to very weak, partly non intact. Possibly clay infill to 1mm.</i>  <i>From 24.70m to 25.00m bgl non intact, possibly drilling Induced.</i>										Depth (m)	Ref	Core Run	FI	TCR	SCR	RQD	Tests / Results
											20.50						
											20.50 - 20.85	C18 COREC18					
																	21
																	22
																	23
											23.20						
											23.20 - 23.55	C19 COREC19					
																	24
																	25
EOH at 25.00m - Target depth achieved						25.00	-14.70										26
																	27
																	28
																	29
																	30
Observations / Remarks										Drilling Fluid			Hammer Information				
1. Upon completion 50mm diameter gas/groundwater monitoring pipe installed to 6.00m bgl.										From (m)	To (m)	Return Min %	Colour	Type	Serial No.	Energy Ratio %	
										6.40	25.00			Air / Mist			
										Groundwater			Project Number				
										Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>	


Project: <b>A46 Newark - Northern Bypass</b>					Location Details					Status		Borehole Number													
 Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>					Easting: 480209.30    Northing: 355495.50 Level: 14.02mAOD    Depth: 27.50m Logger: DD    Type: SNC Inclination: 90°					<b>FINAL</b>		<b>BH13</b>													
					Method, Plant and Crew									Diameter		Casing					Drilling Progress by Time				
From (m)		To (m)		Type	Plant Used		Crew		Depth (m)	Diam (mm)	Depth (m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By: NEB		Approved By: JC		Start Date: 21/06/2021		Finish Date: 24/06/2021	
0.00		1.20		Inspection Pit	Hand Excavated		A. Mossman		1.20	300			22/06	03:30	6.00	6.00	5								
1.20		27.50		Sonic Core Drilling	Fraste CRS-XL		A. Mossman		27.50	-			23/06	03:30	17.00	16.00	12.18								
													24/06	03:30	23.00	18.00	12.7								
													25/06	03:30	27.50	18.00	7								
Strata Description										Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing										
ASPHALT															Depth (m)	Ref	Tests / Results								
White slightly sandy subangular to angular coarse GRAVEL of limestone. Sand is fine to coarse. (MADE GROUND)											0.38	13.64			0.40	D004									
MGR											0.60	13.42			0.40	ES001									
Light brown sandy angular to rounded GRAVEL of flint and limestone. Sand is fine to coarse. (MADE GROUND)											1.10	12.92			0.70	B005									
MGR											1.20	12.82			0.70	D006									
Grey silty medium SAND. (MADE GROUND)															0.70	ES002	SPT(C) 1.20m, 50 (25 for 75mm/50 for 75mm)								
MGR															1.15 - 1.20	B009									
Stiff to hard grey to dark grey sandy slightly clayey SILT, with rare subrounded to rounded fine to medium gravel of slag. (Fuel ash, embankment fill). (MADE GROUND)															1.15 - 1.20	D008	SPT(C) 2.00m, 50 (25 for 75mm/50 for 257mm)								
MGR															1.50 - 1.60	ESES5									
															2.50 - 2.60	ESES6	SPT(C) 4.00m, 50 (24 for 75mm/50 for 70mm)								
															2.60 - 2.70	D7									
															2.60 - 2.70	DD7									
															3.50 - 4.50	B10	SPT(C) 6.00m, 50 (25 for 75mm/50 for 70mm)								
															3.50 - 4.50	BB10									
															4.50 - 4.60	ESES8	SPT(C) 8.00m, 50 (10,15/50 for 150mm)								
															4.60 - 4.70	DD9									
															6.50 - 6.60	ESES11	SPT(C) 10.00m, 50 (8,19/50 for 135mm)								
															6.60 - 6.70	DD12									
															7.40 - 7.50	D14									
Stiff friable grey to dark grey SILT. (Fuel ash) (Embankment fill). (MADE GROUND)											7.00	7.02			7.40 - 7.50	DD14	SPT(C) 8.00m, 50 (10,15/50 for 150mm)								
MGR															7.50 - 7.60	ESES13									
															8.40 - 8.50	ESES15	SPT(C) 10.00m, 50 (8,19/50 for 135mm)								
															9.40 - 9.50	ESES16									
Brown slightly clayey sandy GRAVEL, with low to medium cobble content. Gravel is subrounded to rounded, occasionally angular, fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded (60-80mm) chert. Sand is medium to coarse. (Gravel and cobbles in clayey sand matrix). (Embankment fill). (MADE GROUND)											9.10	4.92													
MGR																									
															10.00 - 11.00	BB18									
											10.00	4.02													
Observations / Remarks										Chiselling			Water Added		Hammer Information										
1. Groundwater not observed. 2. Upon completion exploratory hole backfilled with asphalt to 0.30m, concrete to 1.20m and 2:1 bentonite to base of pit .										From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %									
										Groundwater				Project Number											
										Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>									












































Project: <b>A46 Newark - Northern Bypass</b>					Location Details					Status		Borehole Number				
 Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>					Easting: 480209.30    Northing: 355495.50 Level: 14.02mAOD    Depth: 27.50m Logger: DD    Type: SNC Inclination: 90°					<b>FINAL</b>		<b>BH13</b>				
					Method, Plant and Crew									Casing		Drilling Progress by Time
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth (m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:		
0.00	1.20	Inspection Pit	Hand Excavated	A. Mossman	1.20	300			22/06	03:30	6.00	6.00	5	NEB		
1.20	27.50	Sonic Core Drilling	Fraste CRS-XL	A. Mossman	27.50	-			23/06	03:30	17.00	16.00	12.18	JC		
									24/06	03:30	23.00	18.00	12.7	21/06/2021		
									25/06	03:30	27.50	18.00	7	24/06/2021		
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing				
Brown to dark brown slightly clayey very sandy GRAVEL, with low cobble content. Gravel is subrounded to rounded, occasional angular, fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded (60-80mm) chert. Sand in medium to coarse. (Gravel and cobbles in clayey sandy matrix). (Embankment fill). (MADE GROUND) MGR  At 12.20m bgl membrane (5mm).  At 12.60m bgl membrane (5mm).												10.40 - 10.50	ESES17	Tests / Results		11
Light orange brown very gravelly clayey SAND, with low cobble content. Gravel of subrounded to rounded, occasionally angular, fine to coarse siltstone quartz chert and flint. Sand is fine to medium. (Gravel and cobbles in a sandy clay matrix). (ALLUVIUM)								13.40	0.62			13.40 - 13.50	ESES21	SPT(C) 12.00m, 50 (25 for 75mm/50 for 150mm)	12	
Brown slightly clayey sandy GRAVEL, with low to medium cobble content. Gravel is subrounded to rounded, occasionally angular, fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded (60-80mm) chert. Sand is medium to coarse. (Gravel and cobbles in clayey sand matrix). (ALLUVIUM)								14.00	0.02			14.00 - 15.00	BB22	SPT(C) 14.00m, 50 (25 for 85mm/50 for 145mm)	14	
Dark reddish brown clayey sandy GRAVEL, with low cobble content. Gravel is subrounded to rounded fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded (60-80mm) chert. Sand is medium to coarse. (ALLUVIUM)  From 15.80m to 15.90m bgl sandy gravelly clay.								15.20	-1.18			15.50 - 15.60	D24		16	
Stiff thickly laminated mid reddish brown slightly gravelly CLAY. Gravel is subangular to angular fine to coarse horizontal very weak mudstone lithorelicts. Occasional gypsum veins (2-50mm) following bedding laminations. Occasional interbeds (<20mm) of light bluish grey silt. (Zone IVa). (MERCIA MUDSTONE GROUP)  From 18.50m to 18.55m bgl gypsum.  From 19.00m to 19.50m bgl stiff light bluish grey silt.  From 19.50m to 19.70m bgl very stiff very gravelly clay (III).								17.00	-2.98			18.80 - 19.00	C25		19	
												18.80 - 19.00	COREC2 5	SPT(C) 18.00m, 50 (25 for 75mm/50 for 30mm)	18	
												19.80 - 19.95	COREC2 6		20	
Observations / Remarks 1. Groundwater not observed. 2. Upon completion exploratory hole backfilled with asphalt to 0.30m, concrete to 1.20m and 2:1 bentonite to base of pit .										Chiselling			Water Added		Hammer Information	
					From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %					
										Groundwater			Project Number			
					Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>					

 <b>Project: A46 Newark - Northern Bypass</b> <b>Location: Newark-on-Trent, Nottinghamshire</b> <b>Client: Highways England</b>					Location Details					Status		Borehole Number				
					Easting: 480209.30		Northing: 355495.50			FINAL		BH13				
					Level: 14.02mAOD		Depth: 27.50m									
					Logger: DD		Type: SNC									
					Inclination: 90°				Sheet 3 of 3							
Method, Plant and Crew					Diameter		Casing		Drilling Progress by Time			Scale: 1:50				
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By: NEB		
0.00	1.20	Inspection Pit	Hand Excavated	A. Mossman	1.20	300			22/06	03:30	6.00	6.00	5	Approved By: JC		
1.20	27.50	Sonic Core Drilling	Fraste CRS-XL	A. Mossman	27.50	-			23/06	03:30	17.00	16.00	12.18			
									24/06	03:30	23.00	18.00	12.7			
									25/06	03:30	27.50	18.00	7			
<b>Strata Description</b>  Stiff thickly laminated mid reddish brown slightly gravelly CLAY. Gravel is subangular to angular fine to coarse horizontal very weak mudstone lithorelicts. Occasional gypsum veins (2-50mm) following bedding laminations. Occasional interbeds (<20mm) of light bluish grey silt. (Zone IVa). (MERCIA MUDSTONE GROUP) <i>From 20.00m to 20.60m bgl gravelly clay, partly non-intact (possibly drilling Induced).</i> <i>From 20.80m to 20.90m bgl extremely weathered disseminated gypsum.</i>  <i>From 22.00m to 22.60m bgl non-intact, recovered as clayey gravel (possibly III).</i>  <i>From 22.70m to 22.85m bgl extremely weathered gypsum.</i>  <i>From 23.00m to 24.00m bgl very stiff gravelly clay (III).</i>  <i>From 23.75m to 24.00m bgl frequent gypsum veins (2-10mm), crosscutting bedding/ laminations.</i> <i>From 24.00m to 24.05m bgl gypsum</i>  <i>From 24.85m to 25.50m bgl very stiff.</i>  <i>From 25.15m to 25.25m bgl extremely weak to very weak siltstone.</i>  <i>From 25.50m to 26.25m bgl soft to firm, possibly drilling disturbed.</i>  <i>From 26.25m to 26.40m bgl extremely weak to very weak mudstone, with relic 45 degree incipient joints (possibly II).</i>					Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing						
					Depth (m)	Ref	Tests / Results									
														21		
														22		
											22.85 - 23.00	COREC2 7		23		
											23.20 - 23.40	COREC2 8		23		
											24.85	C29		24		
											24.85 - 25.10	COREC2 9		25		
											26.25	C31		26		
											26.25 - 26.40	COREC3 1		26		
											27.00 - 27.20	D30		27		
											27.00 - 27.20	DD30		27		
EOH at 27.50m - Target depth achieved							27.50	-13.48						28		
														29		
														30		
Observations / Remarks										Chiselling		Water Added		Hammer Information		
1. Groundwater not observed. 2. Upon completion exploratory hole backfilled with asphalt to 0.30m, concrete to 1.20m and 2:1 bentonite to base of pit .										From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %
										Groundwater			Project Number			
										Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>


Project: <b>A46 Newark - Northern Bypass</b>					Location Details					Status		Borehole Number					
 Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>					Easting: 480264.83    Northing: 355710.56 Level: 9.55mAOD    Depth: 25.00m Logger: DD    Type: WLS+RC Inclination: 90°					<b>FINAL</b>		<b>BH14</b>					
					Method, Plant and Crew									Casing		Drilling Progress by Time	
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth (m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB		
0.00	1.20	Inspection Pit Dynamic Windowless Sampling Rotary Core	Hand Excavated Comacchio 205 Comacchio 205		1.20	300	4.00	150	30/04	16:00	5.00	-	2.6	Approved By: JC	Start Date: 30/04/2021 Finish Date: 13/05/2021		
1.20	8.50				8.50	150	04/05	16:00	8.50	8.00	2.65						
8.50	25.00				25.00	102	05/05	16:00	19.00	13.00	16.2						
<b>Strata Description</b>							<b>Legend</b>			<b>Samples, Tests and Rotary Coring</b>							
Dark brown slightly gravelly clayey fine to coarse SAND. Gravel is fine to coarse angular to sub-rounded of sandstone and quartzite. (TOPSOIL) <b>TOP</b> Soft orangish brown slightly sandy CLAY. Sand is fine to coarse. (ALLUVIUM) <i>At 0.40m bgl bacteriological sample taken.</i>										Depth (m) 0.10 0.10 0.20 - 0.30 0.40 0.40 0.50 - 1.00	Ref D2 E3 B3 D5 ES4 B6	Tests / Results SPT(S) 1.20m, N=24 (4,5/5,6,7,6)					
Medium dense becoming dense yellowish brown sandy fine to coarse angular to sub-rounded sandstone and quartzite GRAVEL. Sand is fine to coarse. (ALLUVIUM)  <i>At 3.00m bgl bacteriological sample taken.</i>										Depth (m) 1.20 1.50 1.60 - 1.90 1.60 - 1.90 2.00 2.10 - 2.40 2.10 - 2.40	Ref D7 ES8 B B9 D10 B B11	Tests / Results SPT(S) 2.00m, N=28 (4,7/7,7,7,7)					
Firm to stiff reddish brown slightly gravelly CLAY. Gravel is fine to coarse angular to sub-angular of mudstone and siltstone. (Zone 1Vb) (MERCIA MUDSTONE GROUP)										Depth (m) 4.50 - 7.00 4.70 - 4.80 4.70 - 4.80	Ref BB1 D1 DD1	Tests / Results SPT(S) 4.50m, N=35 (4,5/9,8,9)					
No Recovery (NO RECOVERY)										Depth (m) 4.70 - 4.80 4.70 - 4.80	Ref D1 DD1	Tests / Results SPT(S) 5.00m, 19 (3,5/6,7,6,)					
Firm to stiff reddish brown slightly gravelly slightly silty SAND. Gravel is fine to coarse angular to sub-angular of mudstone and siltstone. (Zone 1Vb) (MERCIA MUDSTONE GROUP) <i>From 6.00m to 6.40m bgl very soft, bluish grey (possibly drilling disturbed)</i>  <i>From 7.00m to 7.50m bgl recovered as clayey sandy gravel.</i>  <i>From 8.00m to 8.50m bgl gravels of sub-angular to angular, flat, fine to medium and occasionally coarse, very weak mudstone.</i>										Depth (m) 6.60 - 6.80 7.00 - 7.50 7.00 - 7.50 7.00 - 8.50 7.00 - 8.50 7.60 - 7.80	Ref DD2 D3 DD3 B2 BB2 DD4	Tests / Results SPT(S) 6.00m, N=12 (1,1/2,3,4,3) SPT(S) 7.00m, N=16 (7,7/5,4,3,4)					
Weak to medium strong thickly laminated to very thinly interbedded reddish brown and light bluish grey MUDSTONE (30 - 120mm) and siltstone (20-80mm). 0-20 degrees closely spaced undulating to irregular rough discontinuities with a reduction in strength penetrating discontinuity walls (2-3mm) and clay infill (2-3mm). Frequent veins / bands of gypsum (2-100mm) following bedding / discontinuities and crosscutting bedding laminations (Zone II). (IF:20/100/100). (MERCIA MUDSTONE GROUP)										Depth (m) 8.20 - 8.30 8.20 - 8.30	Ref D5 DD5	Tests / Results SPT(S) 8.00m, 50 (6,16/50 for 85mm)					
Observations / Remarks							Sampling Runs			Drilling Fluid					Hammer Information		
1. Upon completion 50mm diameter gas/groundwater monitoring pipe installed to 4.00m bgl.							From (m)	To (m)	Diameter (mm)	Recovery %	From (m)	To (m)	Return Min %	Colour	Type	Serial No.	Energy Ratio %
							1.20	2.00	107	100	8.50	25.00			Air / Mist		
							2.00	3.00	107	90							
							Groundwater			Project Number							
							Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>				
							3.00	-	-	20	2.80						

 <b>TETRA TECH</b>	Project: <b>A46 Newark - Northern Bypass</b>		Location Details				Status		Borehole Number															
	Location: <b>Newark-on-Trent, Nottinghamshire</b>		Easting: 480264.83    Northing: 355710.56		Level: 9.55mAOD    Depth: 25.00m Logger: DD    Type: WLS+RC Inclination: 90°		FINAL		BH14															
Client: <b>Highways England</b>				Sheet 2 of 3																				
Method, Plant and Crew					Diameter		Casing		Drilling Progress by Time					Scale: 1:50										
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:										
0.00 1.20 8.50	1.20 8.50 25.00	Inspection Pit Dynamic Windowless Sampling Rotary Core	Hand Excavated Comacchio 205 Comacchio 205		1.20 8.50 25.00	300 150 102	4.00	150	30/04 04/05 05/05 06/05	16:00 16:00 16:00 15:15	5.00 8.50 19.00 25.00	- 8.00 13.00 13.00	2.6 2.65 16.2 2.45	NEB										
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples, Tests and Rotary Coring												
<p>Weak to medium strong thickly laminated to very thinly interbedded reddish brown and light bluish grey MUDSTONE (30 - 120mm) and siltstone (20-80mm). 0-20 degrees closely spaced undulating to irregular rough discontinuities with a reduction in strength penetrating discontinuity walls (2-3mm) and clay infill (2-3mm). Frequent veins / bands of gypsum (2-100mm) following bedding / discontinuities and crosscutting bedding laminations (Zone II). (IF:20/100/100). (MERCIA MUDSTONE GROUP)</p> <p><i>From 10.40m to 10.50m bgl band of gypsum.</i></p> <p><i>From 11.30m to 11.40m bgl band of gypsum.</i></p> <p><i>From 11.80m to 11.90m bgl band of gypsum.</i></p> <p><i>From 13.00m to 13.20m bgl band of gypsum.</i></p> <p>Weak thinly bedded reddish brown MUDSTONE with 0-20 degree closely spaced irregular rough discontinuities and randomly orientated very closely spaced incipient discontinuities, locally striated (Zone II/III). (IF: 20/100/200). (MERCIA MUDSTONE GROUP)</p> <p>Weak to medium strong thickly laminated to very thinly interbedded reddish brown and light bluish grey MUDSTONE (30 - 120mm) and siltstone (20-80mm). 0-20 degrees closely spaced undulating to irregular rough discontinuities with a reduction in strength penetrating discontinuity walls (2-3mm) and clay infill (2-3mm). Frequent veins / bands of gypsum (2-100mm) following bedding / discontinuities and crosscutting bedding laminations (Zone II). (IF:41/50/300). (MERCIA MUDSTONE GROUP)</p> <p>Weak thinly bedded reddish brown MUDSTONE with 0-20 degree closely spaced irregular rough discontinuities and randomly orientated very closely spaced incipient discontinuities, locally striated (Zone II/III). (IF: 40/100/100) (MERCIA MUDSTONE GROUP)</p> <p>Medium strong to strong thinly bedded light grey SILTSTONE, with 0-20 degree closely spaced undulating rough discontinuities with frequent veins / bands (2-50mm) following bedding. (Zone I). (IF:40/150/250). (MERCIA MUDSTONE GROUP)</p> <p><i>From 16.70m to 16.78m bgl band of gypsum.</i></p> <p><i>From 17.35m to 17.41m bgl band of gypsum.</i></p> <p>Weak to medium strong very thinly bedded reddish brown MUDSTONE, with 0-30 degree closely spaced planar smooth discontinuities. frequent veins/ bands of gypsum (1-20mm) following bedding discontinuities and crosscutting bedding/ discontinuities, typically 0-20 degrees and 60 degrees. (Zone I). (IF:60/150/350). (MERCIA MUDSTONE GROUP)</p>												10.65 - 11.20 10.70	COREC1 C1	10.00 11.50	90	78	56	SPT(S) 11.50m, 50 (25 for 45mm/50 for 20mm)	11					
													11.50 13.00			97	58		33		12			
													13.20		-3.65								13	
													13.90		-4.35								14	
													15.10		-5.55								15	
													15.60		-6.05								16	
																		16.00 17.50	95	79	70		17	
													17.90		-8.35			17.50 19.00	97	80	69		18	
																							19	
																		18.50 18.50 - 18.85					20	
							Observations / Remarks							Sampling Runs		Drilling Fluid				Hammer Information				
							1. Upon completion 50mm diameter gas/groundwater monitoring pipe installed to 4.00m bgl.							From (m)	To (m)	Diameter (mm)	Recovery %	From (m)	To (m)	Return Min %	Colour	Type	Serial No.	Energy Ratio %
														11.50 13.00 14.50 16.00 17.50 19.00	13.00 14.50 16.00 17.50 19.00 20.50			8.50	25.00			Air / Mist		
														Groundwater				Project Number						
														Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks					
																				<b>784-B026948</b>				










Project: <b>A46 Newark - Northern Bypass</b>						Location Details				Status		Borehole Number						
						Location: <b>Newark-on-Trent, Nottinghamshire</b>				Easting: 480264.83 Northing: 355710.56		FINAL		BH14				
						Client: <b>Highways England</b>				Level: 9.55mAOD Depth: 25.00m						Logger: DD Type: WLS+RC		
Method, Plant and Crew						Diameter		Casing		Drilling Progress by Time				Scale: 1:50				
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB			
0.00	1.20	Inspection Pit Dynamic Windowless Sampling Rotary Core	Hand Excavated Comacchio 205 Comacchio 205		1.20	300	4.00	150	30/04	16:00	5.00	-	2.6	Approved By: JC	Start Date: 30/04/2021			
1.20	8.50				8.50	150	05/05	16:00	8.50	8.00	16.2							
8.50	25.00				25.00	102	06/05	15:15	25.00	13.00	2.45							
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples, Tests and Rotary Coring						
Weak to medium strong very thinly bedded reddish brown MUDSTONE, with 0-30 degree closely spaced planar smooth discontinuities. frequent veins/ bands of gypsum (1-20mm) following bedding discontinuities and crosscutting bedding/ discontinuities, typically 0-20 degrees and 60 degrees. (Zone I). (1F:60/150/350). (MERCIA MUDSTONE GROUP)											Depth (m)	Ref	Core Run	FI	TCR	SCR	RQD	Tests / Results
EOH at 25.00m - Target depth achieved																		
Observations / Remarks							Sampling Runs				Drilling Fluid				Hammer Information			
							From (m)	To (m)	Diameter (mm)	Recovery %	From (m)	To (m)	Return Min %	Colour	Type	Serial No.	Energy Ratio %	
1. Upon completion 50mm diameter gas/groundwater monitoring pipe installed to 4.00m bgl.							20.50	22.00			8.50	25.00			Air / Mist			
							22.00	23.50										
							Groundwater				Project Number							
							Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	784-B026948					

Project: <b>A46 Newark - Northern Bypass</b>					Location Details					Status		Borehole Number										
 Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>					Easting: 481268.14    Northing: 356042.74 Level: 9.76mAOD    Depth: 29.50m Logger: DD    Type: WLS+RC Inclination: 90°					<b>FINAL</b>		<b>BH15</b>										
					Method, Plant and Crew									Casing		Drilling Progress by Time					Scale: 1:50	
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:								
0.00	1.20	Inspection Pit Dynamic Windowless Sampling Rotary Core	Hand Excavated Comacchio 205 Comacchio 205	S. Hales	1.20	300			16/04	15:15	9.00	8.00	1.15	NEB								
1.20	5.00			S. Hales	5.00	-			19/04	16:00	16:00	13.50	12.00	1.4	JC							
5.00	29.50			S. Hales	29.50	-			20/04	16:00	16:00	15.50	13.50	1.6								
									21/04	16:00	16:00	23.00	15.50	1.2								
							22/04	16:00	16:00	29.50	25.00	1.15										
							23/04	14:00	14:00	29.50	25.00	1.1										
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples, Tests and Rotary Coring										
Dark brown slightly gravelly slightly clayey fine to coarse SAND. Gravel is fine to coarse angular to sub-rounded of sandstone and quartzite. (TOPSOIL) TOP								0.60	9.16			0.10	D2									
Yellowish grey slightly gravelly fine to coarse SAND. Gravel is fine to coarse angular to sub-rounded of sandstone and quartzite. (ALLUVIUM)								1.20	8.56			0.10	D5									
Brown locally mottled with light grey fine and medium SAND. (ALLUVIUM)								2.30	7.46			0.20 - 0.60	ES1 B3									
Brown very sandy slightly silty sub-angular to sub-rounded fine to coarse sandstone and mudstone GRAVEL. (ALLUVIUM)								2.30	7.46			0.70	D5									
Stiff to very stiff reddish brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse sub-angular to sub-rounded of mudstone. Occasional black staining on gravel surfaces. Rare bluish grey discolouration pockets (up to 50mm). (MERCIA MUDSTONE GROUP; Grade III) (MERCIA MUDSTONE GROUP) <i>From 3.72m to 4.00m bgl frequent bluish grey discolouration pockets (up to 50mm)</i>								3.72	6.04			0.70	ES4 B6									
No Recovery. (NO RECOVERY)								5.00	4.76			1.20 - 2.30	B101							SPT(S) 1.20m, N=4 (1,0/0,1,2,1)		
												1.90	ES102 D103						SPT(S) 2.00m, N=20 (3,4/5,5,5,5)			
												2.30 - 3.70	B104							SPT(S) 3.00m, N=13 (1,2/3,3,4,3)		
												3.00	D105							SPT(S) 4.00m, 50 (1,4/50 for 290mm)		
												3.80 - 5.00	B106							SPT(S) 5.00m, 50 (7,8/50 for 280mm)		
												4.00	D107							SPT(S) 6.50m, 50 (7,9/50 for 285mm)		
												5.00	D108							SPT(S) 8.00m, 50 (8,10/50 for 250mm)		
												5.00										
												6.50										
												8.00										
												9.00										
												9.50										
																						
																						
Observations / Remarks							Sampling Runs				Drilling Fluid				Hammer Information							
1. Upon completion 50mm diameter gas/groundwater monitoring pipe installed to 4.00m bgl.							From (m)	To (m)	Diameter (mm)	Recovery %	From (m)	To (m)	Return Min %	Colour	Type	Serial No.	Energy Ratio %					
							1.20	2.00	112	100	5.00	9.00			Air / Mist							
							2.00	3.00	102	100	9.00	23.00			Water							
							3.00	4.00	112	100	23.00	25.00			Air / Mist							
							Groundwater				Project Number											
							Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>									
							1.10	-	-	20	1.10											






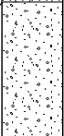
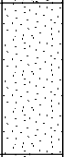






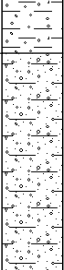
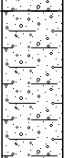


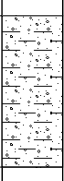


 <b>Project: A46 Newark - Northern Bypass</b> <b>Location: Newark-on-Trent, Nottinghamshire</b> <b>Client: Highways England</b>						<b>Location Details</b> Easting: 481268.14 Northing: 356042.74 Level: 9.76mAOD Depth: 29.50m Logger: DD Type: WLS+RC Inclination: 90°				<b>Status</b> <b>FINAL</b>		<b>Borehole Number</b> <b>BH15</b>						
Method, Plant and Crew						Diameter		Casing		Drilling Progress by Time						Scale: 1:50		
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth (m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB			
0.00	1.20	Inspection Pit Dynamic Windowless Sampling Rotary Core	Hand Excavated Comacchio 205 Comacchio 205	S. Hales	1.20	300			16/04	15:15	9.00	8.00	1.15	Approved By: JC	Start Date: 16/04/2021			
1.20	5.00			S. Hales	5.00	-			19/04	16:00	13.50	12.00	1.4					
5.00	29.50			S. Hales	29.50	102			20/04	16:00	15.50	13.50	1.6					
									21/04	16:00	23.00	15.50	1.2	Finish Date: 23/04/2021				
									22/04	16:00	29.50	25.00	1.15					
									23/04	14:00	29.50	25.00	1.1					
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples, Tests and Rotary Coring						
Minimal Recovery. Recovered material comprises of stiff to very stiff reddish brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine and medium sub-angular to sub-rounded of mudstone. Occasional bluish grey discolouration pockets (up to 80mm). (MERCIA MUDSTONE GROUP)								21.50	-11.74			20.00	D113	20	0	0	SPT(S) 21.50m, 50 (25 for 145mm/50 for 265mm)	
												21.50						
Minimal Recovery. Recovered material comprises of reddish brown mottled with bluish grey sandy slightly clayey fine and medium sub-angular to sub-rounded of mudstone GRAVEL. Sand is fine to coarse. (MERCIA MUDSTONE GROUP)								23.00	-13.24			23.00	D114	41	0	0	SPT(S) 23.00m, 50 (9,11/50 for 260mm)	
												23.00						
Partial Recovery. Recovered material comprises of reddish brown and bluish grey clayey fine to coarse sub-angular to sub-rounded of mudstone GRAVEL. (MERCIA MUDSTONE GROUP)								24.00				24.00	D115	26	0	0	SPT(S) 24.00m, 50 (25 for 85mm/50 for 55mm)	
												24.00						
Weak to medium strong dark bluish grey MUDSTONE. Abundant white mineral veins dipping 0-20 degrees (up to 30mm thick). Discontinuity set 1 is dipping 0-20 degrees closely to medium spaced undulating smooth and rough with trace clay infill (up to 5mm thick). (Grade I) (MERCIA MUDSTONE GROUP) <i>From 25.24m to 25.34m bgl white mineral vein</i>								25.00	-15.24			25.00	D116	100	84	65	SPT(S) 25.00m, 50 (25 for 60mm/50 for 30mm)	
												25.00						
Weak to medium strong thinly to medium interbedded reddish brown MUDSTONE with dark bluish grey MUDSTONE. Abundant white mineral veins dipping 0-40 degrees (up to 50mm thick). Discontinuity set 1 is dipping 0-20 degrees closely to medium spaced undulating smooth and rough with trace clay infill (up to 5mm thick). (Grade I) (MERCIA MUDSTONE GROUP) <i>From 25.91m to 25.95m bgl recovered as clayey fine to medium angular to sub-angular gravel. Drilling Induced.</i> <i>From 26.29m to 26.32m bgl recovered as clayey fine to medium angular to sub-angular gravel. Drilling Induced.</i> <i>From 26.60m to 26.66m bgl recovered as clayey fine to medium angular to sub-angular gravel. Drilling Induced.</i>								25.66	-15.90			25.66	C118	100	89	60	SPT(S) 25.66m, 50 (25 for 60mm/50 for 30mm)	
												25.66						
Weak to medium strong dark bluish grey MUDSTONE. Abundant white mineral veins dipping 0-20 degrees (up to 30mm thick). Discontinuity set 1 is dipping 0-20 degrees closely to medium spaced undulating smooth and rough with trace clay infill (up to 3mm thick). (Grade I) (MERCIA MUDSTONE GROUP) <i>From 28.00m to 28.11m bgl recovered as clayey fine to medium angular to sub-angular gravel. Drilling Induced.</i>								28.65	-18.89			28.65	C119	100	88	88	SPT(S) 28.65m, 50 (25 for 60mm/50 for 30mm)	
												28.65						
EOH at 29.50m - Target depth achieved								29.50	-19.74									
Observations / Remarks							Sampling Runs				Drilling Fluid				Hammer Information			
1. Upon completion 50mm diameter gas/groundwater monitoring pipe installed to 4.00m bgl.							From (m)	To (m)	Diameter (mm)	Recovery %	From (m)	To (m)	Return Min %	Colour	Type	Serial No.	Energy Ratio %	
							21.50	23.00	23.00		5.00	9.00			Air / Mist			
							23.00	24.00	24.00		9.00	23.00			Water			
							24.00	25.00	25.00		23.00	25.00			Air / Mist			
							25.00	26.50	26.50									
							26.50	28.00	28.00									
							28.00	29.50	29.50									
							28.00	29.50	29.50									
							28.00	29.50	29.50									
							Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	Project Number					
													<b>784-B026948</b>					




Project: <b>A46 Newark - Northern Bypass</b>					Location Details					Status		Borehole Number											
 Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>					Easting: 480969.62 Northing: 356076.08 Level: 10.88mAOD Depth: 25.00m Logger: DD Type: WLS+RC Inclination: 90°					<b>FINAL</b>		<b>BH16</b>											
					Method, Plant and Crew									Casing		Drilling Progress by Time					Scale: 1:50		
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth (m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:									
0.00	1.20	Inspection Pit	Hand Excavated	S. Hales	1.20	300			26/04	15:45				NEB									
1.20	6.30	Dynamic Windowless Sampling	Comacchio 205	S. Hales	6.30	102			27/04	16:00	9.00	6.00	3.45	JC									
6.30	25.00	Rotary Core	Comacchio 205	S. Hales	25.00	-			28/04	16:00	21.00	16.50	3.6	JC									
									29/04	15:00	25.00	16.50	3.1	26/04/2021									
														29/04/2021									
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples, Tests and Rotary Coring											
Dark brown slightly gravelly slightly silty fine to coarse SAND. Gravel is fine to coarse angular to sub-rounded of sandstone and flint. Silt is fine to coarse. (TOPSOIL) TOP								0.10			0.10	D2 ES1 B3	0.10										
Yellowish brown gravelly slightly silty fine to coarse SAND. Silt is fine to coarse. Gravel is fine to coarse angular to sub-rounded of sandstone and quartzite. (ALLUVIUM)								0.60	10.28			D5 ES4 B6	0.70										
Loose light reddish brown slightly silty slightly gravelly SAND. Gravel is fine to coarse sub-rounded and rounded of siltstone and quartz. Sand is fine to medium. (ALLUVIUM)								1.20	9.68											SPT(S) 1.20m, N=9 (1,1/2,2,3,2)			
Stiff very friable reddish brown silty sandy CLAY, with rare sub-angular to angular flat fine to medium lithorelics of mudstone and rare pockets of light bluish grey silt. extremely closely spaced sub horizontal discontinuities. (Zone Iva). (MERCIA MUDSTONE GROUP)								2.30	8.57											SPT(S) 2.00m, N=32 (1,0/5,7,12,8)			
Stiff very friable reddish brown silty CLAY, with rare sub-angular to angular flat fine to medium lithorelics of mudstone and rare pockets of light bluish grey silt. extremely closely spaced sub horizontal discontinuities. (Zone Iva). (MERCIA MUDSTONE GROUP)								5.50	5.38												SPT(S) 3.00m, N=4 (1,1/1,1,1,1)		
Weak to medium strong very thinly bedded reddish brown MUDSTONE. With extremely closely spaced to very closely spaced planar smooth discontinuities, localised clay infill to 2mm. (Zone II) (IF: NI/20/20). (MERCIA MUDSTONE GROUP)								6.00	4.88					6.10 - 6.20	DD3							SPT(S) 3.50m, N=23 (4,5/5,5,6,7)	
Stiff very friable reddish brown silty CLAY, with rare sub-angular to angular flat fine to medium lithorelics of mudstone and rare pockets of light bluish grey silt. extremely closely spaced sub horizontal discontinuities. (Zone Iva). (MERCIA MUDSTONE GROUP)								7.20	3.68					6.30		20	0	0				SPT(S) 4.50m, N=8 (1,0/1,2,2,3)	
Medium strong thinly bedded reddish brown occasional light bluish grey MUDSTONE, with 0-10 degree closely spaced planar to irregular rough discontinuities and frequent 5-10mm bands of gypsum following discontinuities. localised reduction in strength penetrating discontinuity walls to 2-3mm. (Zone I) (IF: 20/130/350). (MERCIA MUDSTONE GROUP)								9.00	0.98					7.50		0	0	0					SPT(S) 6.00m, 50 (8,9/50 for 295mm)
													7.50	9.00						SPT(S) 6.30m, 50 (8,8/50 for 290mm)			
													9.00	10.50		38	16	13		SPT(S) 7.50m, 50 (8,10/50 for 290mm)			
																				SPT(S) 9.00m, 50 (4,12/50 for 30mm)			
Observations / Remarks							Sampling Runs		Drilling Fluid				Hammer Information										
1. Upon completion 50mm diameter gas/groundwater monitoring pipe installed to 6.00m bgl.							From (m)	To (m)	Diameter (mm)	Recovery %	From (m)	To (m)	Return Min %	Colour	Type	Serial No.	Energy Ratio %						
							6.30	7.50	7.50		6.30	25.00			Air / Mist								
							7.50	9.00	9.00														
							Groundwater				Project Number												
							Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>										
							3.50			20	3.50												















 <b>Project: A46 Newark - Northern Bypass</b> <b>Location: Newark-on-Trent, Nottinghamshire</b> <b>Client: Highways England</b>						<b>Location Details</b> Easting: 480969.62    Northing: 356076.08 Level: 10.88mAOD    Depth: 25.00m Logger: DD    Type: WLS+RC Inclination: 90°					<b>Status</b>  <b>FINAL</b>		<b>Borehole Number</b>  <b>BH16</b>										
										<b>Sheet 3 of 3</b>		<b>Scale: 1:50</b>											
Method, Plant and Crew					Diameter		Casing		Drilling Progress by Time					Checked By: NEB Approved By: JC Start Date: 26/04/2021 Finish Date: 29/04/2021									
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)										
0.00	1.20	Inspection Pit	Hand Excavated	S. Hales	1.20	300			26/04	15:45	-	-	-										
1.20	6.30	Dynamic Windowless Sampling Rotary Core	Comacchio 205 Comacchio 205	S. Hales	6.30	102			27/04	16:00	9.00	6.00	3.45										
6.30	25.00			S. Hales	25.00	-			28/04	16:00	21.00	21.00	16.50	3.6									
									29/04	15:00	25.00	16.50	3.1										
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples, Tests and Rotary Coring											
Medium strong thinly bedded reddish brown occasionally light bluish grey MUDSTONE, with 0-10 degree closely spaced planar to irregular rough discontinuities and frequent 5-10mm bands of gypsum following discontinuities. localised reduction in strength penetrating discontinuity walls to 2-3mm. (Zone I) (IF: 20/130/350). (MERCIA MUDSTONE GROUP)  <i>From 21.05m to 21.11m bgl band of gypsum.</i>  <i>From 22.35m to 22.45m bgl band of gypsum.</i> <i>From 22.60m to 22.70m bgl 60 degree irregular rough striated joint.</i>  <i>From 23.00m to 23.15m bgl band of gypsum.</i>  <i>From 23.90m to 24.10m bgl very weak predominantly gypsum.</i>																							
EOH at 25.00m - Target depth achieved								25.00	-14.12														
Observations / Remarks							Sampling Runs				Drilling Fluid				Hammer Information								
1. Upon completion 50mm diameter gas/groundwater monitoring pipe installed to 6.00m bgl.							From (m)	To (m)	Diameter (mm)	Recovery %	From (m)	To (m)	Return Min %	Colour	Type	Serial No.	Energy Ratio %						
							21.00	22.00			6.30	25.00					Air / Mist						
							22.00	23.50															
							Groundwater				Project Number												
							Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>										

 <b>Project: A46 Newark - Northern Bypass</b> <b>Location: Newark-on-Trent, Nottinghamshire</b> <b>Client: Highways England</b>						<b>Location Details</b> Easting: 481188.40 Northing: 356047.01 Level: 10.01mAOD Depth: 25.00m Logger: DD Type: WLS+RC Inclination: 90°				<b>Status</b> <b>FINAL</b>		<b>Borehole Number</b> <b>BH17</b>					
Method, Plant and Crew						Diameter		Casing		Drilling Progress by Time				Scale: 1:50			
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB		
0.00	0.40	Inspection Pit	Hand Excavated	A. Richardson	0.40	300			13/04	16:15	7.50	-	-	Approved By:	JC		
0.40	4.50	Dynamic Windowless Sampling	Comacchio 205	A. Richardson	4.50	-			14/04	16:15	22.50	13.50	2.7	Start Date:	14/04/2021		
4.50	25.00	Rotary Core	Comacchio 205	A. Richardson	25.00	102			15/04	16:15	25.00	13.50	2.7	Finish Date:	15/04/2021		
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples, Tests and Rotary Coring				Tests / Results	
Dark brown slightly gravelly slightly silty fine to coarse SAND. Gravel is fine to coarse angular to sub-rounded of sandstone and quartzite. Silt is fine to coarse. (TOPSOIL) TOP								0.30	9.71			0.10 D2 0.10 ES1 0.20 - 0.30 B3 0.40 ES4 0.50 D5 0.60 - 1.20 B6				SPT(S) 0.40m, N=12 (1,3/3,3,3,3)	
Orangish brown slightly gravelly fine to coarse SAND. Gravel is fine to coarse angular to sub-rounded of sandstone and quartzite. (ALLUVIUM)								1.20	8.81			1.20 - 2.20 B101 1.20 - 2.20				SPT(S) 1.20m, N=11 (1,1/2,3,3,3)	
Loose becoming medium dense brown fine to coarse SAND. (ALLUVIUM)								1.80				1.80 ES102					
<i>From 1.90m to 2.00m bgl slightly gravelly.</i>								2.00				2.00 D103				SPT(S) 2.00m, N=20 (4,5/5,4,5,6)	
Dark reddish brown mottled with bluish grey slightly gravelly clayey fine to coarse SAND. Gravel is fine to coarse sub-rounded to rounded of flint and limestone. (ALLUVIUM)								2.20	7.81			2.50 D104					
Stiff bluish grey mottled with light brown slightly sandy slightly gravelly locally slightly peaty CLAY. Sand is fine to coarse. Gravel is fine and medium sub-angular to sub-rounded of mudstone and sandstone. (ALLUVIUM)								2.60	7.41			2.60 - 3.00 B105					
Dense brown slightly gravelly fine to coarse SAND. Gravel is fine to coarse sub-rounded to rounded of flint. (ALLUVIUM)								3.00	7.01			2.90 D106 3.00 - 3.60 B107				SPT(S) 3.00m, N=45 (7,10/10,11,12,12)	
Stiff light bluish grey sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine and medium sub-angular to sub-rounded of mudstone. Grade IVa (MERCIA MUDSTONE GROUP)								3.60	6.41			3.50 D108					
Stiff to very stiff reddish brown slightly sandy gravelly CLAY. Sand is fine and medium. Gravel is fine and medium sub-angular to sub-rounded of mudstone. Grade III (MERCIA MUDSTONE GROUP)								3.85	6.16			3.80 D109					
Partial Recovery. Recovered material comprises of reddish brown sandy clayey fine and medium sub-angular to sub-rounded of mudstone GRAVEL. Sand is fine to coarse. (MERCIA MUDSTONE GROUP)								4.50	5.51			4.30 D110				SPT(S) 4.50m, 50 (25 for 80mm/50 for 85mm)	
Reddish brown sandy clayey fine to coarse sub-angular to sub-rounded of mudstone GRAVEL. Sand is fine to coarse. Grade III (MERCIA MUDSTONE GROUP)								6.00	4.01			6.00 D111 6.00 - 7.50 B112					
<i>From 6.98m to 7.07m bgl bluish grey discolouration.</i>								6.00				6.00 D111					
No Recovery. (NO RECOVERY)								7.50	2.51			7.50 D112				SPT(S) 7.50m, 50 (25 for 40mm/50 for 50mm)	
Firm reddish brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse sub-angular to sub-rounded of mudstone. (Grade III) (MERCIA MUDSTONE GROUP)								9.00	1.01			9.00 - 10.50 B113 9.00 - 10.50				SPT(S) 9.00m, 50 (25 for 80mm/50 for 60mm)	
								9.00				9.00 D113					
								10.00				10.00 D114					
Observations / Remarks							Sampling Runs		Drilling Fluid				Hammer Information				
1. Upon completion 50mm diameter gas/groundwater monitoring pipe installed to 18.70m bgl.							From (m)	To (m)	Diameter (mm)	Recovery %	From (m)	To (m)	Return Min %	Colour	Type	Serial No.	Energy Ratio %
							1.20	2.00	101	100	4.50	25.00			Air / Mist		
							2.00	3.00	101	100							
							3.00	4.00	87	100							
							4.00	4.50	77	90							
							4.50	6.00									
							6.00	7.50									
							7.50	9.00									
							9.00	10.50									
											Groundwater		Project Number				
							Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>				
							4.00	-	-	20	2.00						





 <b>Project: A46 Newark - Northern Bypass</b> <b>Location: Newark-on-Trent, Nottinghamshire</b> <b>Client: Highways England</b>					<b>Location Details</b> Easting: 481188.40 Northing: 356047.01 Level: 10.01mAOD Depth: 25.00m Logger: DD Type: WLS+RC Inclination: 90°					<b>Status</b>  <b>FINAL</b>		<b>Borehole Number</b>  <b>BH17</b>									
<b>Method, Plant and Crew</b>							<b>Diameter</b>		<b>Casing</b>		<b>Drilling Progress by Time</b>					<b>Scale:</b> 1:50					
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	<b>Checked By:</b> NEB							
0.00	0.40	Inspection Pit	Hand Excavated	A. Richardson	0.40	300			13/04	16:15	7.50	-	2.7	<b>Approved By:</b> JC							
0.40	4.50	Dynamic Windowless Sampling	Comacchio 205	A. Richardson	4.50	-			14/04	16:15	22.50	13.50	2.7	<b>Start Date:</b> 14/04/2021							
4.50	25.00	Rotary Core	Comacchio 205	A. Richardson	25.00	102			15/04	16:15	25.00	13.50	2.7	<b>Finish Date:</b> 15/04/2021							
<b>Strata Description</b>							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	<b>Samples, Tests and Rotary Coring</b>									
Weak to medium strong thinly to medium interbedded reddish brown MUDSTONE with bluish grey MUDSTONE. Abundant white mineral veins dipping 0-35 degrees (up to 40mm thick). Weathering: Rare black staining along discontinuity surfaces. Discontinuity set 1 is dipping 0-20 degrees closely to medium spaced undulating smooth and rough with occasional trace clay infill (up to 3mm thick). (Grade I) (MERCIA MUDSTONE GROUP)												Depth (m)	Ref	Core Run	FI	TCR	SCR	RQD	Tests / Results		
												19.50			100	87	68				
												21.00						21			
												21.83 - 22.20	C116	21.00			100	90	71	22	
																			23		
																			24		
																			25		
EOH at 25.00m - Target depth achieved								25.00	-14.99											26	
																			27		
																			28		
																			29		
																			30		
<b>Observations / Remarks</b>							<b>Sampling Runs</b>				<b>Drilling Fluid</b>				<b>Hammer Information</b>						
1. Upon completion 50mm diameter gas/groundwater monitoring pipe installed to 18.70m bgl.							From (m)	To (m)	Diameter (mm)	Recovery %	From (m)	To (m)	Return Min %	Colour	Type	Serial No.	Energy Ratio %				
							21.00	22.50			4.50	25.00			Air / Mist						
											<b>Groundwater</b>				<b>Project Number</b>						
							Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks									
													<b>784-B026948</b>								











 <b>Project: A46 Newark - Northern Bypass</b> <b>Location: Newark-on-Trent, Nottinghamshire</b> <b>Client: Highways England</b>						<b>Location Details</b> Easting: 480874.00 Northing: 356066.44 Level: 10.01mAOD Depth: 25.00m Logger: DD Type: CP+RC Inclination: 90°				<b>Status</b> <b>FINAL</b>		<b>Borehole Number</b> <b>BH18</b>					
<b>Method, Plant and Crew</b>						<b>Diameter</b>		<b>Casing</b>		<b>Drilling Progress by Time</b>				<b>Scale: 1:50</b>			
From (m)	To (m)	Type	Plant Used	Crew		Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB	
0.00	1.20	Inspection Pit	Hand Excavated	M. Whitehead		1.20	300	3.32	150	26/05	10:00	3.00	3.32	3.00			
1.20	3.00	Cable Percussion	Cable Percussion Rig	M. Whitehead		3.00	300			27/05	12:45	10.50	7.00	2.7			
3.00	25.00	Rotary Core	Comacchio 205	A. Richardson		25.00	-			28/05	16:00	16.00	7.00	2.5			
										01/06	14:00	20.50	7.00	2.9			
										02/06	15:50	22.00	7.00	3			
										03/06	14:00	25.00	7.00	1.9			
<b>Strata Description</b>						<b>Legend</b>		<b>Depth (m)</b>		<b>Reduced Level (mAOD)</b>		<b>Water Level (m)</b>		<b>Inst / Backfill</b>		<b>Samples and Testing</b>	
Grass over dark brown slightly gravelly sandy CLAY. Sand is fine to medium. Gravel is subangular to subrounded fine to coarse flint, brick and ash. (MADE GROUND) MGR								0.00 - 0.50 0.10		8.91		B002 ES001		Tests / Results		1	
Reddish brown slightly gravelly silty CLAY. Gravel is subangular fine to medium mudstone weak to moderately strong lithorelicts. (MERCIA MUDSTONE GROUP) <i>From 1.10m to 3.00m bgl gypsum noted.</i>								1.10 1.50 1.50 1.50		8.91		B005 B008 B8 D009 ES006		SPT(S) 1.50m, N=17 (3,3/3,4,4,6)		2	
Extremely weak to very weak reddish brown MUDSTONE, with 0-10 degree extremely closely spaced to very closely spaced planar smooth locally slightly rough with clay silt infill (1mm). (Locally discernable 45 degree). (Zone II/III). (MERCIA MUDSTONE GROUP)								2.50 2.50 2.50 2.50		6.41		B011 B11 D010 ES007		SPT(S) 2.50m, N=26 (2,4/5,7,7,7)		3	
Extremely weak to very weak reddish brown MUDSTONE, with 0-10 degree extremely closely spaced to very closely spaced planar smooth locally slightly rough with clay silt infill (1mm). (Locally discernable 45 degree). (Zone II/III). (MERCIA MUDSTONE GROUP)								3.00 3.00		6.41		B012 D013		SPT(S) 3.00m, 50 (25 for 80mm/50 for 240mm) SPT(S) 3.00m, 50 (25 for 80mm/50 for 240mm)		4	
Extremely weak to very weak reddish brown MUDSTONE, with 0-10 degree extremely closely spaced to very closely spaced planar smooth locally slightly rough with clay silt infill (1mm). (Locally discernable 45 degree). (Zone II/III). (MERCIA MUDSTONE GROUP)								4.30 - 4.40		6.41		DD14		SPT(S) 4.50m, 50 (25 for 45mm/50 for 80mm)		5	
Extremely weak to very weak reddish brown MUDSTONE. (Non intact). (MERCIA MUDSTONE GROUP)								4.50 6.00		3.31		BB16		SPT(S) 4.50m, 50 (25 for 45mm/50 for 80mm)		6	
Reddish brown clayey fine to coarse SAND (Possibly drilling induced). (Possibly IVb). (MERCIA MUDSTONE GROUP)								6.80 - 7.50		3.31		BB16		SPT(S) 6.00m, 50 (25 for 50mm/50 for 100mm)		7	
Extremely weak reddish brown MUDSTONE with 0-10 degree randomly oriented extremely closely spaced incipient discontinuities. (Partially altered to silt and fine sand). (Zone II/III). (MERCIA MUDSTONE GROUP)								7.50 9.00		3.31		DD17		SPT(S) 7.50m, 50 (25 for 80mm/50 for 65mm)		8	
Reddish brown clayey fine to coarse SAND (Possibly drilling induced). (Possibly IVb). (MERCIA MUDSTONE GROUP)								8.70 - 8.80		1.41		DD17		SPT(S) 9.00m, 50 (25 for 40mm/50 for 60mm)		9	
Extremely weak reddish brown MUDSTONE with 0-10 degree randomly oriented extremely closely spaced incipient discontinuities. (Partially altered to silt and fine sand). (Zone II/III). (MERCIA MUDSTONE GROUP)								9.00 10.50		1.41		DD17		SPT(S) 9.00m, 50 (25 for 40mm/50 for 60mm)		10	
<b>Observations / Remarks</b>						<b>Chiselling</b>		<b>Water Added</b>		<b>Hammer Information</b>							
1. Upon completion 50mm diameter gas/groundwater monitoring pipe installed to 7.00m bgl.						From (m) To (m) Time (mins) 2.50 3.00 60		From (m) To (m) 		Serial No. Energy Ratio % 							
						<b>Groundwater</b>		<b>Project Number</b>									
						Strike (m) Casing (m) Sealed (m) Time (min) Rose To (m) Remarks 3.00 - - 20 3.00		<b>784-B026948</b>									

 <b>Project: A46 Newark - Northern Bypass</b> <b>Location: Newark-on-Trent, Nottinghamshire</b> <b>Client: Highways England</b>					<b>Location Details</b> Easting: 480874.00 Northing: 356066.44 Level: 10.01mAOD Depth: 25.00m Logger: DD Type: CP+RC Inclination: 90°					<b>Status</b>  <b>FINAL</b>		<b>Borehole Number</b>  <b>BH18</b>						
										Sheet 2 of 3								
Method, Plant and Crew					Diameter		Casing		Drilling Progress by Time					Scale: 1:50				
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB			
0.00	1.20	Inspection Pit	Hand Excavated	M. Whitehead	1.20	300	3.32	150	26/05	10:00	3.00	3.32	3.00					
1.20	3.00	Cable Percussion	Cable Percussion Rig	M. Whitehead	3.00	150			27/05	12:45	10.50	7.00	2.7	Approved By:	JC			
3.00	25.00	Rotary Core	Comacchio 205	A. Richardson	25.00	-			28/05	16:00	15.00	7.00	2.5	Start Date:	08/06/2021			
									01/06	14:00	20.50	7.00	2.9	Finish Date:	03/06/2021			
									02/06	15:50	22.00	7.00	3					
									03/06	14:00	25.00	7.00	1.9					
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples, Tests and Rotary Coring						
Extremely weak reddish brown MUDSTONE with 0-10 degree randomly oriented extremely closely spaced incipient discontinuities. (Partial altered to silt and fine sand). (Zone II/III). (MERCIA MUDSTONE GROUP) <i>From 10.30m to 10.50m bgl 60 degree joint</i>								10.50	-0.49			10.30 - 10.40	DD18					
												10.30 - 10.40	DD29					
Medium strong thickly laminated to very thinly interbedded light reddish brown and light bluish grey MUDSTONE and SILTSTONE with 0-10 degree closely spaced planar to undulating slightly rough discontinuities. Frequent gypsum veins (1-50mm) following bedding discontinuities. (Zone I). (MERCIA MUDSTONE GROUP)								11				10.70 - 11.00	COREC1 9	10.50 11.00		100	78	60
Very weak to weak dark purple brown MUDSTONE, with 0-10 degree very closely spaced planar to undulating slightly rough discontinuities with clay infill (2-3mm), partly non-intact. (Zone I). (IF:NI/20/40). (MERCIA MUDSTONE GROUP) <i>From 13.50m to 14.00m bgl 60 degree joint</i>								13.50	-3.49			11.00 12.50				0	0	0
Weak thickly laminated to very thinly bedded reddish brown MUDSTONE, with 0-10 degree planar undulating slightly rough discontinuities. Frequent gypsum (1-40mm) following bedding discontinuities. (Zone I). (IF:40/150/160). (MERCIA MUDSTONE GROUP) <i>From 14.80m to 14.88m bgl band of gypsum.</i>								14.20	-4.19			12.70 - 13.00	COREC2 0	12.50 13.00		90	84	84
Weak to medium strong thickly laminated to very thinly interbedded reddish brown and light bluish grey MUDSTONE and SILTSTONE, with 0-10 degree closely spaced undulating rough discontinuities. Frequent gypsum (1-50mm) following bedding, locally crosscutting at 45 degrees. (Zone I). (IF:40/150/300). (MERCIA MUDSTONE GROUP) <i>From 16.00m to 16.30m bgl no recovery.</i>								15.20	-5.19			13.00 14.00				100	12	0
Weak to medium strong thickly laminated to very thinly interbedded reddish brown and light bluish grey MUDSTONE and SILTSTONE, with 0-10 degree closely spaced undulating rough discontinuities. Frequent gypsum (1-50mm) following bedding, locally crosscutting at 45 degrees. (Zone I). (IF:40/150/300). (MERCIA MUDSTONE GROUP) <i>From 17.00m to 17.50m bgl 45 degree conjugate joints; closely spaced, locally striated.</i>								15.20	-5.19			13.70 - 13.80	DD21					
Weak to medium strong thickly laminated to very thinly interbedded reddish brown and light bluish grey MUDSTONE and SILTSTONE, with 0-10 degree closely spaced undulating rough discontinuities. Frequent gypsum (1-50mm) following bedding, locally crosscutting at 45 degrees. (Zone I). (IF:40/150/300). (MERCIA MUDSTONE GROUP) <i>From 19.00m to 19.30m bgl no recovery.</i>								15.20	-5.19			14.50 - 14.65	COREC2 2	14.00 15.00		80	48	44
Weak to medium strong thickly laminated to very thinly interbedded reddish brown and light bluish grey MUDSTONE and SILTSTONE, with 0-10 degree closely spaced undulating rough discontinuities. Frequent gypsum (1-50mm) following bedding, locally crosscutting at 45 degrees. (Zone I). (IF:40/150/300). (MERCIA MUDSTONE GROUP) <i>From 19.90m to 20.00m bgl band of gypsum (100mm)</i>								15.20	-5.19			15.00 16.00				80	26	15
								15.20	-5.19			15.75 - 15.85	COREC2 3					
								15.20	-5.19			16.00 17.50				80	7	
								15.20	-5.19			16.90 - 17.10	COREC2 4					
								15.20	-5.19			17.50 19.00				100	56	44
								15.20	-5.19			18.40 - 18.70	COREC2 5					
								15.20	-5.19			19.00 20.50				80	47	19
Observations / Remarks												Drilling Fluid			Hammer Information			
1. Upon completion 50mm diameter gas/groundwater monitoring pipe installed to 7.00m bgl.												From (m)	To (m)	Return Min %	Colour	Type	Serial No.	Energy Ratio %
												3.00	25.00			Air / Mist		
												Groundwater					Project Number	
												Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>




Project: <b>A46 Newark - Northern Bypass</b>					Location Details					Status		Borehole Number										
 Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>					Easting: 480874.00 Northing: 356066.44 Level: 10.01mAOD Depth: 25.00m Logger: DD Type: CP+RC Inclination: 90°					<b>FINAL</b>		<b>BH18</b>										
					Sheet 3 of 3																	
Method, Plant and Crew					Diameter		Casing		Drilling Progress by Time					Scale: 1:50								
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB							
0.00	1.20	Inspection Pit Cable Percussion Rotary Core	Hand Excavated Cable Percussion Rig Comacchio 205	M. Whitehead M. Whitehead A. Richardson	1.20	300	3.32	150	26/05	10:00	3.00	3.32	3.00	3.32	JC							
1.20	3.00				3.00	150	27/05	12:45	10.50	7.00	16:00	15:00	7.00	2.7		2.5						
3.00	25.00				25.00	-	28/05	16:00	20.50	7.00	01/06	14:00	20.50	7.00		2.9	3					
									02/06	15:50	22.00	7.00	3	Start Date:	08/06/2021							
									03/06	14:00	25.00	7.00	1.9	Finish Date:	03/06/2021							
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples, Tests and Rotary Coring										
<p>Weak to medium strong thickly laminated to very thinly interbedded reddish brown and light bluish grey MUDSTONE and SILTSTONE, with 0-10 degree closely spaced undulating rough discontinuities. Frequent gypsum (1-50mm) following bedding, locally crosscutting at 45 degrees. (Zone I). (IF:40/150/300). (MERCIA MUDSTONE GROUP)</p> <p>Weak very thinly bedded mid brown MUDSTONE, with 0-10 degree very closely spaced planar smooth discontinuities. Frequent gypsum (2-20mm) following bedding, with local displacement. (Zone I). (IF:NI/40/100). (MERCIA MUDSTONE GROUP) <i>From 20.50m to 20.80m bgl 80 degree joint, localised striations.</i> <i>From 21.10m to 21.60m bgl partly non-intact.</i></p> <p>Medium strong thickly laminated to very thinly interbedded light reddish brown and light bluish grey MUDSTONE and SILTSTONE, with 0-10 degree closely spaced undulating rough discontinuities. Frequent gypsum (1-50mm) following bedding and discontinuities. Locally crosscutting to 60 degrees. (Zone I). (IF:40/150/400). (MERCIA MUDSTONE GROUP) <i>From 21.80m to 21.90m bgl 45 degree joint with clay infill (5mm).</i></p> <p><i>From 23.00m to 23.05m bgl partly weathered to stiff dark bluish grey clay.</i> <i>From 23.00m to 23.15m bgl 45 degree irregular rough joint.</i></p>								20.50	-10.49			20.10 - 20.40	COREC2 6									
									21.65	-11.64			20.75 - 20.85	COREC2 7								
													22.90 - 23.15	COREC2 8								
EOH at 25.00m - Target depth achieved								25.00	-14.99													
Observations / Remarks							Drilling Fluid					Hammer Information										
1. Upon completion 50mm diameter gas/groundwater monitoring pipe installed to 7.00m bgl.							From (m)	To (m)	Return Min %	Colour	Type	Serial No.	Energy Ratio %									
							3.00	25.00			Air / Mist											
							Groundwater							Project Number								
Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>																


 <b>Project: A46 Newark - Northern Bypass</b> <b>Location: Newark-on-Trent, Nottinghamshire</b> <b>Client: Highways England</b>						Location Details				Status		Borehole Number					
						Easting: 481574.43		Northing: 356121.19		FINAL		<b>BH19</b>					
Method, Plant and Crew						Casing		Drilling Progress by Time					Scale: 1:50				
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth (m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By: NEB			
0.00	0.20	Inspection Pit	Hand Excavated	A. Richardson	0.20	300			16/04	14:30	4.00	4.00	1.4	Approved By: JC			
0.20	6.00	Dynamic Windowless Sampling	Comacchio 205	A. Richardson	6.00	-			19/04	14:30	12.00	4.50	1.4				
6.00	12.00	Rotary Core	Comacchio 205	A. Richardson	12.00	-			20/04	16:00	12.00	4.50	1.4				
									21/04	16:00	12.00	4.50	1.4				
									26/04	11:30	12.00	4.50	1.4	Start Date: 16/04/2021			
														Finish Date: 26/04/2021			
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples, Tests and Rotary Coring					
<b>MACADAM. (MADE GROUND)</b> <b>MGR</b> Orangish grey gravelly slightly silty fine to coarse SAND. Silt is fine to coarse. Gravel is fine to coarse angular to sub-angular of various lithologies. (MADE GROUND)								0.10	15.09			0.20	D2				SPT(S) 0.20m, N=10 (1,2/2,2,3,3)
								0.40	14.79			0.20 - 0.40	B3				
<b>MGR</b> Greyish brown slightly gravelly silty fine to coarse SAND. Gravel is fine to coarse angular to sub-rounded of sandstone and quartzite. Silt is fine to coarse. (ALLUVIUM)								1.10	14.09			0.50	D5			SPT(S) 1.20m, N=35 (5,7/8,8,9,10)	
								1.50	13.69			0.60 - 1.10	B6				
Soft grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse sub-rounded of sandstone and quartzite. (ALLUVIUM)								1.70	13.49			1.10	D7			SPT(S) 2.00m, N=43 (8,10/10,11,11,11)	
								2.20	12.99			1.20 - 1.70	B				
Firm orangish brown mottled light grey slightly sandy slightly gravelly CLAY. Gravel is subrounded to rounded fine to coarse siltstone quartz and chert. sand is fine and disseminated. (ALLUVIUM)								1.50	13.69			1.50 - 1.60	D			SPT(S) 3.00m, N=15 (2,3/3,3,4,5)	
								1.70	13.49			1.50 - 1.60	D1				
Light greyish brown locally stained dark reddish brown medium to coarse SAND. Rare gravel, gravel is subrounded coarse quartz and occasional weathered sandstone. (ALLUVIUM)								2.20	12.99			1.70 - 2.20	B			SPT(S) 4.00m, N=46 (7,8/10,11,12,13)	
								3.90	11.29			1.70 - 2.20	BB2				
From 1.70m to 1.75m bgl clay/sand contact inclined at 60 degrees. Medium dense reddish brown slightly clayey sandy GRAVEL. Gravel is subrounded to rounded, occasionally sub-angular (flint) fine to coarse siltstone quartz and chert. Sand is medium to coarse. (MERCIA MUDSTONE GROUP)								2.20	12.99			2.20 - 2.50	B			SPT(S) 4.45m, N=18 (3,4/4,4,5,5)	
								3.90	11.29			2.20 - 2.50	BB3				
From 2.20m to 2.50m bgl very sandy. Sand is medium to coarse. Firm to stiff reddish brown CLAY with frequent pockets (up to 5mm) of light bluish grey silt. (Zone IVb). (MERCIA MUDSTONE GROUP)								3.90	11.29			2.50 - 3.90	B			SPT(S) 5.00m, 50 (7,10/50 for 226mm)	
								5.60	8.29			2.50 - 3.90	B4				
From 4.40m to 4.50m bgl stiff gravelly clay. Gravel is sub-angular to angular fine to coarse weak mudstone (Zone III). From 5.00m to 6.00m bgl closely spaced, locally extremely closely spaced discontinuities.								5.60	8.29			2.50 - 3.90	BB4			SPT(S) 9.00m, 50 (25 for 60mm/50 for 90mm)	
								6.90	8.29			3.90 - 5.00	B				
From 5.00m to 6.00m bgl closely spaced, locally extremely closely spaced discontinuities. Stiff very friable reddish brown silty CLAY. (Zone IVb). (MERCIA MUDSTONE GROUP)								5.60	8.29			3.90 - 5.00	BB5			SPT(S) 7.50m, 50 (25 for 55mm/50 for 65mm)	
								7.10	8.29			4.60 - 4.70	D				
From 7.20m to 7.50m bgl sub-horizontal to randomly orientated discontinuities and frequent sub-angular coarse lithorelics. From 8.80m to 8.85m bgl medium strong reddish brown siltstone.								6.90	8.29			4.60 - 4.70	DD2			SPT(S) 9.00m, 50 (25 for 60mm/50 for 90mm)	
								9.50	5.69			5.60 - 5.70	D				
From 8.80m to 8.85m bgl medium strong reddish brown siltstone. Stiff very friable reddish brown silty CLAY, with frequent sub-angular to angular fine to coarse lithorelics of weak MUDSTONE. (Zone III). (MERCIA MUDSTONE GROUP)								9.50	5.69			5.60 - 5.70	DD3			SPT(S) 9.00m, 50 (25 for 60mm/50 for 90mm)	
								9.50	5.69			5.60 - 5.70	DD3				
From 9.80m to 9.95m bgl recovered as subangular to subrounded fine to coarse gravel of very weak to weak mudstone.								9.50	5.69			5.60 - 5.70	DD3			SPT(S) 9.00m, 50 (25 for 60mm/50 for 90mm)	
								9.50	5.69			5.60 - 5.70	DD3				
Observations / Remarks							Sampling Runs				Drilling Fluid			Hammer Information			
1. Upon completion 50mm diameter gas/groundwater monitoring pipe installed to 5.00m bgl.							From (m)	To (m)	Diameter (mm)	Recovery %	From (m)	To (m)	Return Min %	Colour	Type	Serial No.	Energy Ratio %
											6.00	12.00					
											Groundwater						
							Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>				
							1.40	-	-	20	1.40						

 Project: <b>A46 Newark - Northern Bypass</b> Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>					<b>Location Details</b> Easting: 481574.43 Northing: 356121.19 Level: 15.19mAOD Depth: 12.00m Logger: DD Type: WLS+RC Inclination: 90°					<b>Status</b>  <b>FINAL</b>		<b>Borehole Number</b>  <b>BH19</b>								
										Sheet 2 of 2										
Method, Plant and Crew					Diameter		Casing		Drilling Progress by Time					Scale: 1:50						
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB					
0.00	0.20	Inspection Pit	Hand Excavated	A. Richardson	0.20	300			16/04	14:30	4.00	4.00	1.4	Approved By:	JC					
0.20	6.00	Dynamic Windowless Sampling Rotary Core	Comacchio 205 Comacchio 205	A. Richardson	6.00	-			19/04	14:30	12.00	4.50	1.4	Start Date:	16/04/2021					
6.00	12.00			A. Richardson	12.00	-			20/04	16:00	12.00	4.50	1.4	Finish Date:	26/04/2021					
										21/04	16:00	12.00	4.50	1.4						
										26/04	11:30	12.00	4.50	1.4						
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples, Tests and Rotary Coring								
Stiff very friable reddish brown silty CLAY, with frequent sub-angular to angular fine to coarse lithorelics of weak MUDSTONE. (Zone III). (MERCIA MUDSTONE GROUP)							        	11.50	3.69			10.20 - 10.30	D							SPT(S) 10.50m, 50 (25 for 60mm/50 for 80mm)
								12.00	3.19			11.60 - 11.70	D							
Non intact. Recovered as subangular to angular flat fine to coarse gravel of weak to medium strong mudstone (possibly Zone II), with extremely closely spaced to closely spaced discontinuities. (MERCIA MUDSTONE GROUP) <i>From 11.90m to 12.00m bgl light bluish grey.</i> EOH at 12.00m - Target depth achieved																				
Observations / Remarks							Sampling Runs				Drilling Fluid				Hammer Information					
1. Upon completion 50mm diameter gas/groundwater monitoring pipe installed to 5.00m bgl.							From (m)	To (m)	Diameter (mm)	Recovery %	From (m)	To (m)	Return Min %	Colour	Type	Serial No.	Energy Ratio %			
											6.00	12.00			Air / Mist					
															Groundwater				Project Number	
							Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>							







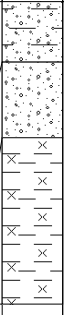
Project: <b>A46 Newark - Northern Bypass</b>					Location Details					Status		Borehole Number								
 Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>					Easting: 482286.03    Northing: 356894.78 Level: 18.76mAOD    Depth: 10.50m Logger: DD    Type: WLS+RC Inclination: 90°					<b>FINAL</b>		<b>BH22</b>								
					Sheet 2 of 2															
Method, Plant and Crew					Diameter		Casing		Drilling Progress by Time					Scale: 1:50						
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB					
0.00	1.20	Inspection Pit Dynamic Windowless Sampling Rotary Core	Hand Excavated Comacchio 205 Comacchio 205	A. Richardson	1.20	300			22/04	11:30	7.50	7.50	3.6	Approved By:	JC					
1.20	7.50			A. Richardson	7.50	-			23/04	16:30	10.50	10.50		Start Date:	22/04/2021					
7.50	10.50			A. Richardson	10.50	-									Finish Date:	23/04/2021				
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples, Tests and Rotary Coring								
EOH at 10.50m - Target depth achieved													Depth (m)	Ref	Core Run	FI	TCR	SCR	RQD	Tests / Results
																			11	
																				12
																				13
																				14
																				15
																				16
																				17
																				18
																				19
																				20
Observations / Remarks							Sampling Runs				Drilling Fluid				Hammer Information					
1. Upon completion exploratory hole backfilled with bentonite.							From (m)	To (m)	Diameter (mm)	Recovery %	From (m)	To (m)	Return Min %	Colour	Type	Serial No.	Energy Ratio %			
											7.50	10.50			Air / Mist					
							Groundwater				Project Number									
				Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>										








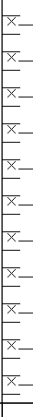

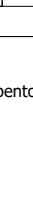



 <b>Project: A46 Newark - Northern Bypass</b> <b>Location: Newark-on-Trent, Nottinghamshire</b> <b>Client: Highways England</b>					<b>Location Details</b> Easting: 478102.00 Northing: 352727.10 Level: 16.42mAOD Depth: 6.00m Logger: DD Type: SNC Inclination: 90°				<b>Status</b>  <b>FINAL</b>		<b>Borehole Number</b>  <b>BH24</b>					
Sheet 1 of 1																
Method, Plant and Crew					Diameter		Casing		Drilling Progress by Time				Scale: 1:50			
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB	
0.00	1.20	Inspection Pit	Hand Excavated	A. Mossman	1.20	300			15/06	04:00	4.00	4.00	Full	Approved By:	JC	
1.20	6.00	Sonic Core Drilling	Fraste CRS-XL	A. Mossman	6.00	-			12/07	03:03	6.00	6.00	Full	Start Date:	16/06/2021	
														Finish Date:	16/06/2021	
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing				
ASPHALT. (MADE GROUND) MGR								0.37	16.05			0.37 - 0.56	B003	SPT(C) 1.20m, 50 (25 for 75mm/50 for 70mm)		
White slightly silty slightly sandy subangular to angular coarse GRAVEL of limestone. (MADE GROUND) MGR								0.56	15.86			0.40	D002			
Orangish brown slightly silty gravelly coarse SAND with low cobble content. Gravel is subangular to subrounded fine to coarse mixed lithologies. (MADE GROUND) MGR												0.40	ES001			
												0.70	D005			
Brown slightly clayey sandy GRAVEL, with low to medium cobble content. Gravel is subrounded to rounded fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded (60-80mm) chert. Sand is medium to coarse. (Gravel and cobbles in a clayey sand matrix). (Embankment fill). (MADE GROUND) MGR <i>From 1.30m to 1.40m bgl light grey silty fine sand (ash), with a slight carbonised odour.</i> <i>From 1.80m to 2.00m bgl light brown clayey silty gravel, with low cobble content.</i>								1.20	15.22			0.80 - 1.20	B006			
												1.00	ES004			
From 3.30m to 3.40m bgl light grey slightly gravelly silty fine sand(ash), carbonised odour. Gravel is rounded medium chert.  From 3.70m to 3.80m bgl light brown silty clayey gravel, with medium cobble content.												1.30 - 1.40	DD10	SPT(C) 2.00m, 50 (25 for 85mm/50 for 95mm)		
												1.30 - 1.40	ESES7			
												1.40 - 1.80	BB12			
												1.50 - 1.60	ESES8			
												1.80 - 1.90	ESES9	SPT(C) 4.00m, 50 (13,14/50 for 150mm)		
												1.90 - 2.00	DD11			
												2.00 - 3.00	B14			
												2.00 - 3.00	BB14			
												2.70 - 2.80	ESES13	SPT(C) 6.00m, 50 (12,13/50 for 115mm)		
												3.30 - 3.40	DD16			
												3.30 - 3.40	ESES15			
												3.50 - 3.60	DD18			
												3.50 - 3.60	ESES17	SPT(C) 4.00m, 50 (13,14/50 for 150mm)		
												3.50 - 3.60	DD19			
												3.70 - 3.80	ESES18			
												3.70 - 3.80	ESES18			
Greyish dark brown clayey very sandy GRAVEL, with low to medium cobble content. Gravel is subrounded to rounded fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded (60-80mm) chert. Sand is medium to coarse. (Gravel and cobbles in a clayey sand matrix). (Embankment fill). (MADE GROUND) MGR								5.50	10.92			4.00 - 5.00	B20	SPT(C) 4.00m, 50 (13,14/50 for 150mm)		
												4.00 - 5.00	BB20			
EOH at 6.00m - Target depth achieved												4.50 - 4.60	ESES21	SPT(C) 6.00m, 50 (12,13/50 for 115mm)		
												5.50 - 6.00	B23			
												5.50 - 6.00	BB23	SPT(C) 6.00m, 50 (12,13/50 for 115mm)		
												5.60 - 5.70	ESES22			
								6.00	10.42							


Observations / Remarks										Chiselling			Water Added		Hammer Information		
1. Groundwater not observed. 2. Upon completion exploratory hole backfilled with asphalt to 0.30m, concrete to 1.20m and bentonite to base of pit.										From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %	
										Groundwater						Project Number	
										Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>	


 <b>Project: A46 Newark - Northern Bypass</b> <b>Location: Newark-on-Trent, Nottinghamshire</b> <b>Client: Highways England</b>						<b>Location Details</b> Easting: 478100.80 Northing: 353076.00 Level: 16.07mAOD Depth: 12.00m Logger: DD Type: SNC Inclination: 90°				<b>Status</b> <b>FINAL</b>		<b>Borehole Number</b> <b>BH25</b>						
Method, Plant and Crew						Diameter		Casing		Drilling Progress by Time				Scale: 1:50				
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth (m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB			
0.00	1.20	Inspection Pit	Hand Excavated	A. Mossman	1.20	300			14/06	04:30	12.00	10.00	FULL	Approved By:	JC			
1.20	12.00	Sonic Core Drilling	Frastr CRS-XL	A. Mossman	12.00	-								Start Date:	14/06/2021			
														Finish Date:	17/06/2021			
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing						
Black to dark grey dominated ASPHALT. Aggregate of fine to coarse angular to sub angular of limestone (up to 28mm in length). Less than 1% pore space, <7mm. (MADE GROUND) MGR								0.37	15.70			0.37 - 0.56	B003	SPT(C) 1.20m, N=47 (7,8,8,10,12,17)	1			
White slightly silty slightly sandy, fine to coarse, GRAVEL. Gravel is fine to coarse angular to sub angular limestone. (FILL) (SUB BASE) (MOT TYPE 1) (MADE GROUND) MGR								0.56	15.51			0.40 0.40 0.40 0.70 0.80 - 1.20	D002 ES001 ES004 D005 B006					
Orangish brown slightly silty gravelly to very gravelly fine to coarse SAND. Gravel is fine to coarse sub angular to sub rounded of mixed lithologies. Occasional cobbles of sub rounded to rounded sandstone. (MADE GROUND) MGR								1.20	14.87			1.30 - 1.40	ESES7					
Brown slightly clayey sandy GRAVEL, with low to medium cobble content. Gravel is subrounded to rounded fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded (60-80mm) chert. Sand is medium to coarse. (Gravel and cobbles in a clayey sand matrix). (Embankment fill). (MADE GROUND) MGR												1.50 - 1.60	DD8					
From 3.60m to 3.70m bgl light brown silty clayey GRAVEL, with medium cobble content.													2.00 - 3.00			B10	SPT(C) 2.00m, N=35 (8,8/7,8,9,11)	2
													2.00 - 3.00			BB10		
													2.50 - 2.60	ESES9	SPT(C) 4.00m, 50 (12,12/50 for 70mm)	4		
													3.00 - 3.60	BB13				
													3.30 - 3.40	ESES11				
													3.60 - 3.70	DD12				
Firm mid brownish grey slightly clayey slightly silty sandy subrounded to rounded fine to coarse siltstone quartz chert and flint GRAVEL with low to medium cobble content. Cobbles of subrounded to rounded (60-80mm) chert. Sand is medium. (Embankment fill). (MADE GROUND) MGR								4.30	11.77			4.40 - 4.50	ESES14	SPT(C) 6.00m, N=44 (10,11/11,12,11,10)	6			
Brown slightly clayey gravelly SAND with low to medium cobble content. Gravel is subrounded to rounded fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded (60-80mm) chert. Sand is medium to coarse. (Gravel and cobbles in a clayey sand matrix). (Embankment fill). (MADE GROUND) MGR								4.90	11.17			4.40 - 4.80	B16					
												4.40 - 4.80	BB16					
												4.50 - 4.60	D15					
												4.50 - 4.60	DD15					
Firm mid brownish grey silty clayey slightly gravelly SAND, with frequent pockets (3-5mm) of orangish brown silt. Gravel is subrounded fine to coarse lignite. Sand is medium. Slight organic odour. (ALLUVIUM) From 6.00m bgl membrane (5mm), possibly representing the base of the embankment fill.								6.00	10.07			5.00 - 6.00	B19	SPT(C) 8.00m, N=39 (8,8/9,9,10,11)	8			
												5.00 - 6.00	BB19					
Mid brown slightly clayey medium to coarse SAND. (ALLUVIUM)								6.50	9.57			5.50 - 5.60	ESES17	SPT(C) 10.00m, N=40 (9,10/10,9,12)	10			
												5.60 - 5.70	DD18					
Brown slightly clayey sandy GRAVEL, with low to medium cobble content. Gravel is subrounded to rounded fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded (60-80mm) chert. Sand is medium to coarse. (Gravel and cobbles in a clayey sand matrix). (ALLUVIUM) From 7.80m to 7.90m bgl soft greyish brown very sandy CLAY. Sand is medium to coarse.								7.10	8.97			6.00 - 6.50	B2	SPT(C) 8.00m, N=39 (8,8/9,9,10,11)	8			
												6.00 - 6.50	B22					
												6.00 - 6.50	BB22	SPT(C) 8.00m, N=39 (8,8/9,9,10,11)	8			
												6.20 - 6.30	ESES20					
Brownish grey slightly clayey sandy GRAVEL, with low cobble content. Gravel is subrounded to rounded fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded (60-80mm) chert. Sand is medium to coarse. (Gravel and cobbles in a clayey sand matrix). (ALLUVIUM)												6.30 - 6.40	D21	SPT(C) 8.00m, N=39 (8,8/9,9,10,11)	8			
												6.30 - 6.40	DD21					
												6.70 - 6.80	ESES23	SPT(C) 8.00m, N=39 (8,8/9,9,10,11)	8			
												6.80 - 6.90	DD24					
												7.00 - 8.00	BB26	SPT(C) 8.00m, N=39 (8,8/9,9,10,11)	8			
												7.50 - 7.60	ESES25					
												8.00 - 9.50	B28	SPT(C) 8.00m, N=39 (8,8/9,9,10,11)	8			
												8.00 - 9.50	BB28					
												8.50 - 8.60	ESES27	SPT(C) 8.00m, N=39 (8,8/9,9,10,11)	8			
								9.50	6.57			9.50 - 10.50	BB29	SPT(C) 10.00m, N=40 (9,10/10,9,12)	10			
Observations / Remarks											Chiselling		Water Added		Hammer Information			
1. Groundwater not observed. 2. Upon completion exploratory hole backfilled with asphalt to 0.30m, concrete to 1.20m and bentonite to base of pit.											From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %	
											Groundwater						Project Number	
											Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>	
































Project: <b>A46 Newark - Northern Bypass</b>					Location Details					Status		Borehole Number																															
 Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>					Easting: 478100.80 Northing: 353076.00 Level: 16.07mAOD Depth: 12.00m Logger: DD Type: SNC Inclination: 90°					<b>FINAL</b>		<b>BH25</b>																															
					Method, Plant and Crew									Casing		Drilling Progress by Time																											
<table border="1"> <thead> <tr> <th>From (m)</th> <th>To (m)</th> <th>Type</th> <th>Plant Used</th> <th>Crew</th> </tr> </thead> <tbody> <tr> <td>0.00</td> <td>1.20</td> <td>Inspection Pit</td> <td>Hand Excavated</td> <td>A. Mossman</td> </tr> <tr> <td>1.20</td> <td>12.00</td> <td>Sonic Core Drilling</td> <td>Fraсте CRS-XL</td> <td>A. Mossman</td> </tr> </tbody> </table>					From (m)	To (m)	Type	Plant Used	Crew	0.00	1.20	Inspection Pit	Hand Excavated	A. Mossman	1.20	12.00	Sonic Core Drilling	Fraсте CRS-XL	A. Mossman	<table border="1"> <thead> <tr> <th>Depth (m)</th> <th>Diam (mm)</th> </tr> </thead> <tbody> <tr> <td>1.20</td> <td>300</td> </tr> <tr> <td>12.00</td> <td>-</td> </tr> </tbody> </table>		Depth (m)	Diam (mm)	1.20	300	12.00	-	<table border="1"> <thead> <tr> <th>Depth (m)</th> <th>Date</th> <th>Time</th> <th>Depth (m)</th> <th>Casing (m)</th> <th>Water (m)</th> </tr> </thead> <tbody> <tr> <td>12.00</td> <td>14/06</td> <td>04:30</td> <td>12.00</td> <td>10.00</td> <td>FULL</td> </tr> </tbody> </table>		Depth (m)	Date	Time	Depth (m)	Casing (m)	Water (m)	12.00	14/06	04:30	12.00	10.00	FULL	Scale: 1:50 Checked By: NEB Approved By: JC Start Date: 14/06/2021 Finish Date: 17/06/2021	
From (m)	To (m)	Type	Plant Used	Crew																																							
0.00	1.20	Inspection Pit	Hand Excavated	A. Mossman																																							
1.20	12.00	Sonic Core Drilling	Fraсте CRS-XL	A. Mossman																																							
Depth (m)	Diam (mm)																																										
1.20	300																																										
12.00	-																																										
Depth (m)	Date	Time	Depth (m)	Casing (m)	Water (m)																																						
12.00	14/06	04:30	12.00	10.00	FULL																																						
Strata Description					Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing																																	
<p>Brownish grey slightly clayey sandy GRAVEL, with low cobble content. Gravel is subrounded to rounded fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded (60-80mm) chert. Sand is medium to coarse. (Gravel and cobbles in a clayey sand matrix). (ALLUVIUM)</p> <p>Grey brown very sandy GRAVEL. Gravel is subrounded to rounded, occasionally angular (flint), fine to coarse siltstone quartz chert and flint. Sand is medium to coarse. (ALLUVIUM)</p> <p><i>From 10.50m to 10.55m bgl soft spongy dark grey silty organic CLAY, with a slight organic odour.</i></p> <p>Stiff friable reddish brown silty CLAY, with occasional pockets (3-5mm) of light bluish grey silt. Localised 0-10 degree extremely closely spaced fissures. (Zone IVb). (MERCIA MUDSTONE GROUP)</p>							10.40	5.67																																			
							10.90	5.17																																			
							12.00	4.07																																			
EOH at 12.00m - Target depth achieved																																											
Observations / Remarks 1. Groundwater not observed. 2. Upon completion exploratory hole backfilled with asphalt to 0.30m, concrete to 1.20m and bentonite to base of pit.					Chiselling			Water Added		Hammer Information																																	
					From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %																																
					Groundwater						Project Number																																
					Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks																																	
											<b>784-B026948</b>																																

 <b>Project: A46 Newark - Northern Bypass</b> <b>Location: Newark-on-Trent, Nottinghamshire</b> <b>Client: Highways England</b>						<b>Location Details</b> Easting: 478123.80 Northing: 353219.30 Level: 14.09mAOD Depth: 10.00m Logger: DD Type: SNC Inclination: 90°				<b>Status</b>  <b>FINAL</b>		<b>Borehole Number</b>  <b>BH26</b>				
												Sheet 1 of 2				
Method, Plant and Crew					Diameter		Casing		Drilling Progress by Time							
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth (m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Scale: 1:50		
0.00	1.20	Inspection Pit	Hand Excavated	A.M + M.S	1.20	300	10.00	178	11/06	03:30	10.00	10.00	FULL	Checked By: NEB		
1.20	10.00	Sonic Core Drilling	Fraste CRS-XL	A.M + M.S	10.00	178								Approved By: JC		
												Start Date: 11/06/2021 Finish Date: 12/06/2021				
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing				
<b>Black and grey dominated ASPHALT. Aggregate of fine to coarse angular to sub angular of limestone (up to 32mm). Less than 1% pore space and less than 8% diameter. (MADE GROUND)</b> <b>MGR</b> <b>White slightly silty slightly sandy fine to coarse GRAVEL. Gravel is fine to coarse angular to sub angular of limestone. (FILL) (SUB BASE) (MOT TYPE 1) (MADE GROUND)</b> <b>MGR</b> <b>Brown and orangish slightly silty gravelly to very gravelly fine to coarse SAND. Gravel is fine to coarse sub rounded to rounded mixed lithologies. Occasional cobbles of sub angular to rounded sandstone. (MADE GROUND)</b> <b>MGR</b> <b>Dense brown slightly clayey sandy GRAVEL, with low to medium cobble content. Gravel is subrounded to rounded fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded (60-80mm) chert. Sand is medium to coarse. (Gravel and cobble in clay sand matrix). (Embankment fill). (MADE GROUND)</b> <b>MGR</b>								0.36	13.73			0.36 - 0.57	B003	SPT(C) 1.20m, 50 (13,13/50 for 160mm)	1	
								0.57	13.52			0.40	D002			
<b>Firm thinly laminated mid brownish grey organic CLAY, with occasional lenses (2-3mm) of light brown silt following laminae. Rare gravels of subrounded to subangular fine to coarse lignite. Slight organic odour. (ALLUVIUM)</b> <i>From 3.50m to 4.00m bgl membrane (5mm), possibly representing the base of the embankment fill.</i> <b>Soft brownish grey clayey silty slightly sandy GRAVEL. Gravel of subangular to subrounded fine to coarse siltstone quartz and chert. (recovered as wet clay). (ALLUVIUM)</b>								1.20	12.89			0.80 - 1.20	D005	SPT(C) 2.00m, 50 (25 for 75mm/50 for 150mm)	2	
								3.50	10.59			1.30 - 1.40	ESES7			
<b>Soft to firm thinly laminated mid brownish grey slightly sandy organic CLAY, with frequent pockets and lenses (3-5mm) of light brown silt following laminae. Rare gravels of subrounded to rounded fine to coarse quartz and lignite. Sand is fine to medium. Slight organic odour. (ALLUVIUM)</b> <b>Compacted mid brown slightly clayey slightly gravelly medium to coarse SAND. Gravel of subrounded to rounded, occasionally angular (flint) quartz, chert and flint. (ALLUVIUM)</b> <i>From 5.50m to 5.60m bgl soft mid greyish brown silty sandy CLAY. Sand is medium.</i> <b>Medium dense light to mid brownish grey slightly clayey slightly gravelly SAND. Gravel is subrounded to rounded fine to coarse siltstone quartz chert and flint. Sand is medium to coarse. (ALLUVIUM)</b>								4.00	10.09			1.50 - 1.60	DD8	SPT(C) 4.00m, 50 (25 for 75mm/50 for 150mm)	4	
								5.00	9.09			2.00 - 3.00	B10 BB10			
<b>Stiff friable reddish brown silty CLAY, with occasional pockets and lenses (3-5mm) of light bluish grey silt following fissures. 0-10 degree extremely closely spaced discontinuities (fissures). (Zone IVb). (MERCIA MUDSTONE GROUP)</b>								5.00	8.69			2.00 - 3.00	B10 BB10	SPT(C) 6.00m, N=24 (2,2/5,5,7,7)	6	
								5.40	8.69			3.00 - 3.60	BB13			
								6.00	8.09			3.30 - 3.40	ESES11	SPT(C) 8.00m, N=31 (6,7/7,7,10)	8	
								7.30	6.79			3.60 - 3.70	B3 D12 DD12			
								7.30	6.79			4.40 - 4.50	ESES14	SPT(C) 10.00m, N=49 (4,9/11,11,12,15)	10	
								10.00	4.09			4.50 - 4.60	B16 BB16 D15 DD15			
<b>Observations / Remarks</b> 1. Position completed on night shift programme. 2. Groundwater not observed. 3. Upon completion exploratory hole backfilled with asphalt to 0.30m, concrete to 1.20m and bentonite to base of pit.											<b>Chiselling</b> From (m) To (m) Time (mins)		<b>Water Added</b> From (m) To (m)		<b>Hammer Information</b> Serial No. Energy Ratio %	
											<b>Groundwater</b> Strike (m) Casing (m) Sealed (m) Time (min) Rose To (m) Remarks		<b>Project Number</b> <b>784-B026948</b>			





 <b>TETRA TECH</b>	Project: <b>A46 Newark - Northern Bypass</b> Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>	<b>Location Details</b> Easting: 478123.80    Northing: 353219.30 Level: 14.09mAOD    Depth: 10.00m Logger: DD    Type: SNC Inclination: 90°			<b>Status</b>  <b>FINAL</b>	<b>Borehole Number</b>  <b>BH26</b>									
	Sheet 2 of 2														
	<b>Method, Plant and Crew</b>			<b>Diameter</b>		<b>Casing</b>		<b>Drilling Progress by Time</b>				Scale: 1:50			
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth (m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By: <b>NEB</b> Approved By: <b>JC</b> Start Date: <b>11/06/2021</b> Finish Date: <b>12/06/2021</b>	
0.00	1.20	Inspection Pit	Hand Excavated	A.M + M.S	1.20	300	10.00	178	11/06	03:30	10.00	10.00	FULL		
1.20	10.00	Sonic Core Drilling	Fraste CRS-XL	A.M + M.S	10.00	178									
<b>Strata Description</b>							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	<b>Samples and Testing</b>			
EOH at 10.00m - Target depth achieved												Depth (m)	Ref	Tests / Results	
												11.50 - 11.60	D30		11
															12
															13
															14
															15
															16
															17
															18
															19
															20
<b>Observations / Remarks</b> 1. Position completed on night shift programme. 2. Groundwater not observed. 3. Upon completion exploratory hole backfilled with asphalt to 0.30m, concrete to 1.20m and bentonite to base of pit.						<b>Chiselling</b>			<b>Water Added</b>		<b>Hammer Information</b>				
						From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %			
						<b>Groundwater</b>						<b>Project Number</b>			
						Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks				
												<b>784-B026948</b>			

 <b>Project: A46 Newark - Northern Bypass</b> <b>Location: Newark-on-Trent, Nottinghamshire</b> <b>Client: Highways England</b>						<b>Location Details</b> Easting: 478159.40 Northing: 353356.90 Level: 12.91mAOD Depth: 11.00m Logger: DD Type: SNC Inclination: 90°				<b>Status</b>  <b>FINAL</b>		<b>Borehole Number</b>  <b>BH27</b>						
Method, Plant and Crew						Diameter		Casing		Drilling Progress by Time				Scale: 1:50				
From (m)	To (m)	Type	Plant Used	Crew		Depth (m)	Diam (mm)	Depth (m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB		
0.00	1.20	Inspection Pit	Hand Excavated	A.M + M.S		1.20	300	10.00	178	10/06	04:15	11.00	-	FULL	Approved By:	JC		
1.20	11.00	Sonic Core Drilling	Fraste CRS-XL	A.M + M.S		10.00	178								Start Date:	10/06/2021		
						11.00	102								Finish Date:	11/06/2021		
Strata Description								Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing					
<b>ASPHALT. (MADE GROUND)</b> MGR													Depth (m)	Ref	Tests / Results			
White slightly sandy slightly silty subangular to angular coarse GRAVEL of limestone. (MADE GROUND) MGR									0.37	12.54			0.37 - 0.56	B003				
Orangish brown slightly silty gravelly coarse SAND with occasional cobbles. Gravel is subangular to subrounded fine to coarse sandstone, limestone and quartz. (MADE GROUND) MGR									0.56	12.35			0.40	D002				
Dense becoming medium dense brown slightly clayey sandy GRAVEL, with low to medium cobble content. Gravel is subrounded to rounded fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded (60-80mm) chert. Sand is medium to coarse. (Gravel and cobble in a clayey sand matrix). (Embankment fill). (MADE GROUND) MGR									1.20	11.71			0.40	ES001				
													0.70	D005				
													0.80 - 1.20	B006				
													1.00	ES004			1	
													1.30 - 1.40	ESES7	SPT(C) 1.20m, 42 (11,13/42 for 103mm)			
													2.00 - 3.00	B9				
													2.00 - 3.00	BB9	SPT(C) 2.00m, N=47 (11,14/13,11,12,11)		2	
													2.50 - 2.60	ESES8				
													3.50 - 3.60	ESES9			3	
													4.50 - 5.00	BB11				
									4.80	8.11			4.70 - 4.80	ESES10			4	
													5.40 - 5.90	B14				
													5.40 - 5.90	B4				
													5.40 - 5.90	BB14				
													5.50 - 5.60	ESES12				
													6.50 - 7.30	B15				
									5.30	7.61			6.50 - 7.30	BB15				
													6.60 - 6.70	ESES13				
													7.70 - 7.80	D16				
													7.70 - 7.80	DD16				
													8.00 - 9.00	BB19	SPT(C) 8.00m, N=47 (5,5/12,11,11,13)		8	
													8.50 - 8.60	DD17				
													9.50 - 9.60	D18				
													9.50 - 9.60	DD18				
									9.30	3.61					SPT(C) 10.00m, N=36 (2,4/7,8,13)		10	
<b>Observations / Remarks</b> 1. Position completed on night shift programme. 2. Groundwater not observed. 3. Upon completion exploratory hole backfilled with asphalt to 0.30m, concrete to 1.20m and bentonite to base of pit.												<b>Chiselling</b> From (m) To (m) Time (mins)			<b>Water Added</b> From (m) To (m)		<b>Hammer Information</b> Serial No. Energy Ratio %	
												<b>Groundwater</b> Strike (m) Casing (m) Sealed (m) Time (min) Rose To (m) Remarks			<b>Project Number</b> <b>784-B026948</b>			


 <b>Project: A46 Newark - Northern Bypass</b> <b>Location: Newark-on-Trent, Nottinghamshire</b> <b>Client: Highways England</b>					<b>Location Details</b> Easting: 478159.40 Northing: 353356.90 Level: 12.91mAOD Depth: 11.00m Logger: DD Type: SNC Inclination: 90°					<b>Status</b>  <b>FINAL</b>		<b>Borehole Number</b>  <b>BH27</b>				
<b>Method, Plant and Crew</b>					<b>Diameter</b>		<b>Casing</b>		<b>Drilling Progress by Time</b>				<b>Scale:</b> 1:50			
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB	
0.00	1.20	Inspection Pit	Hand Excavated	A.M + M.S	1.20	300	10.00	178	10/06	04:15	11.00	-	FULL	Approved By:	JC	
1.20	11.00	Sonic Core Drilling	Fraste CRS-XL	A.M + M.S	10.00	178								Start Date:	10/06/2021	
					11.00	102								Finish Date:	11/06/2021	
<b>Strata Description</b>							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	<b>Samples and Testing</b>				
Stiff reddish brown slightly gravelly silty CLAY, with occasional pockets (2-5mm) of bluish grey silt. 0-10 degree, locally randomly orientated, extremely closely spaced to very closely spaced fissures. Gravel is subangular to angular flat locally horizontal fine to coarse very weak mudstone lithorelicts. (Zone: IVa/III). (MERCIA MUDSTONE GROUP)  <i>From 10.80m to 10.90m bgl 10 degree irregular rough fissure.</i>								11.00	1.91			10.80 - 10.90	DD20	SPT(C) 11.00m, N=52 (6,7,11,14,13,14)		11
EOH at 11.00m - Target depth achieved																12
																13
																14
																15
																16
																17
																18
																19
																20
<b>Observations / Remarks</b> 1. Position completed on night shift programme. 2. Groundwater not observed. 3. Upon completion exploratory hole backfilled with asphalt to 0.30m, concrete to 1.20m and bentonite to base of pit.										<b>Chiselling</b>			<b>Water Added</b>		<b>Hammer Information</b>	
					From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %					
<b>Groundwater</b>										<b>Project Number</b>						
Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks											
						<b>784-B026948</b>										


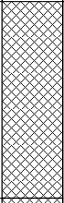
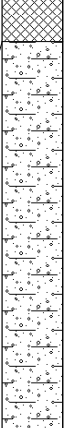
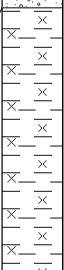






 <b>Project: A46 Newark - Northern Bypass</b> <b>Location: Newark-on-Trent, Nottinghamshire</b> <b>Client: Highways England</b>						<b>Location Details</b> Easting: 478202.40 Northing: 353464.80 Level: 14.90m AOD Depth: 10.00m Logger: DD Type: SNC Inclination: 90°				<b>Status</b>  <b>FINAL</b>		<b>Borehole Number</b>  <b>BH28</b>				
<b>Method, Plant and Crew</b>						<b>Diameter</b>		<b>Casing</b>		<b>Drilling Progress by Time</b>				<b>Scale:</b> 1:50		
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth (m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB	
0.00	1.20	Inspection Pit	Hand Excavated	A.M + M.S	1.20	300	8.00	178	09/06	04:30	10.00	8.00	FULL	Approved By:	JC	
1.20	10.00	Sonic Core Drilling	Fraste CRS-XL	A.M + M.S	8.00	178								Start Date:	09/06/2021	
					10.00	102								Finish Date:	10/06/2021	
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing				
ASPHALT. (MADE GROUND) MGR								0.37	14.53			0.37 - 0.57	B003	1 2 3 4 5 6 7 8 9 10		
White slightly silty slightly sandy angular to subangular coarse GRAVEL of limestone (MOT TYPE 1 SUBBASE). (MADE GROUND) MGR								0.57	14.33			0.40 0.40 0.60 0.70 - 1.20	B002 ES001 D005 B006			
Orangish brown gravelly slightly silty coarse SAND with low cobble content. Gravel is subangular to subrounded fine to coarse sandstone, limestone and quartz. (MADE GROUND) MGR								1.20	13.70			1.00	ES004			
Dense brown slightly clayey sandy GRAVEL, with low to medium cobble content. Gravel is subrounded to rounded fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded (60-80mm) chert. Sand is medium to coarse. (Gravel and cobble in a clayey sand matrix). (Embankment fill). MGR												1.20 - 2.00	BB8		SPT(C) 1.20m, 50 (25 for 75mm/50 for 60mm)	
												1.50 - 1.60	ESES7			
															SPT(C) 2.00m, 50 (25 for 75mm/50 for 60mm)	
												2.50 - 2.60	ESES9			
												2.80 - 3.50	BB10			
																
																
Dense mid brown to light brown clayey silty GRAVEL, with low to medium cobble content. Gravel is subrounded to rounded occasional subangular fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded (60mm). (Gravel and cobble in a clay/ silt matrix). (Embankment fill). (MADE GROUND) MGR								3.70	11.20			4.30 - 4.40	ESES11	SPT(C) 4.00m, 43 (11,14/20,23,,)		
Brown slightly clayey sandy GRAVEL, with low to medium cobble content. Gravel is subrounded to rounded fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded (60-80mm) chert. Sand is medium to coarse. (Gravel and cobble in a clayey sand matrix). (Embankment fill). (MADE GROUND) MGR								5.00	9.90							
Loose mid grey slightly clayey fine to medium SAND. (ALLUVIUM)  <i>From 6.50m bgl 5mm membrane (possibly pushed through from previous run).</i>								6.00	8.90			6.00 - 7.30	BB13	SPT(C) 6.00m, N=4 (1,0/1,0,1,2)		
												6.40 - 6.50	ESES12			
Brown slightly clayey sandy GRAVEL, with low to medium cobble content. Gravel is subrounded to rounded fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded (60-80mm) chert. Sand is medium to coarse. (Gravel and cobble in a clayey sand matrix). (ALLUVIUM)								7.20	7.70			7.80 - 7.90	ESES14	SPT(C) 8.00m, N=28 (4,4/6,7,8,7)		
Stiff reddish brown slightly gravelly CLAY. Gravel is subangular fine to coarse weak to very weak locally horizontal mudstone lithorelicts. (Zone IVb). (MERCIA MUDSTONE GROUP)  <i>From 9.30m to 10.00m bgl silty clay.</i>								8.30	6.60			8.90 - 9.00 8.90 - 9.00	D1 DD1			
EOH at 10.00m - Target depth achieved								10.00	4.90					SPT(C) 10.00m, N=43 (5,8/10,10,11,12)		
Observations / Remarks										Chiselling		Water Added		Hammer Information		
1. Position completed on night shift programme. 2. Groundwater not observed. 3. Upon completion exploratory hole backfilled with asphalt to 0.30m, concrete to 1.20m and bentonite to base of pit.										From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %
										Groundwater				Project Number		
										Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>


 <b>Project: A46 Newark - Northern Bypass</b> <b>Location: Newark-on-Trent, Nottinghamshire</b> <b>Client: Highways England</b>						<b>Location Details</b> Easting: 478314.40 Northing: 353663.40 Level: 15.68mAOD Depth: 14.00m Logger: DD Type: SNC Inclination: 90°				<b>Status</b> <b>FINAL</b>		<b>Borehole Number</b> <b>BH29</b>					
Method, Plant and Crew						Diameter		Casing		Drilling Progress by Time				Scale: 1:50			
From (m)	To (m)	Type	Plant Used	Crew		Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB	
0.00	1.20	14.00	Inspection Pit Sonic Core Drilling	Hand Excavated Fraste CRS-XL	A.M + M.S A.M + M.S	1.20 8.00 14.00	300 178 102	8.00	178	08/06 09/07	04:45 04:00	10.00 14.00	8.00 12.00	FULL FULL	Approved By:	JC	
															Start Date:	08/06/2021	
															Finish Date:	09/07/2021	
Strata Description								Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing				
<b>ASPHALT. (MADE GROUND)</b> MGR													Depth (m)	Ref	Tests / Results		
White slightly silty slightly sandy subangular to angular coarse GRAVEL of limestone. (MOT TYPE 1 SUBBASE) (MADE GROUND) MGR									0.37	15.31			0.37 - 0.57	B003			
Orangish brown slightly silty sandy subangular to subrounded coarse GRAVEL of sandstone, limestone and quartz with occasional cobbles. (MADE GROUND) MGR									0.54	15.14			0.40 0.40 0.57 - 1.05 0.60 0.90	D002 ES001 B006 D005 ES004			
Dense grey and brown loose GRAVEL. Gravel is subrounded to rounded fine to coarse siltstone quartz chert and flint. (MADE GROUND) MGR									1.05	14.63			1.05 - 1.20 1.10	B007 D008	SPT(C) 1.20m, 50 (25 for 110mm/50 for 50mm)		1
Dense mid brown slightly clayey sandy GRAVEL, with low cobble content. Gravel is subrounded to rounded occasional subangular fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded chert (60mm). Sand is medium to coarse. (gravel and cobble in a clayey sand matrix). (Embankment fill). MGR									1.20	14.48					SPT(C) 2.00m, 50 (25 for 87mm/50 for 100mm)		2
<i>From 3.50m to 4.00m bgl mid grey.</i>									1.80	13.88			1.90 - 2.00	ESES7			
Light brown clayey silty GRAVEL, with low cobble content. Gravel is subrounded to rounded occasionally subangular fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded (60mm) chert. (gravel and cobble in a silty clay matrix). (Embankment fill). MGR									5.10	10.58			2.50 - 3.50 2.50 - 3.50 2.80 - 2.90	B9 BB9 ESES8			3
Dense mid brown slightly clayey sandy GRAVEL, with low cobble content. Gravel is subrounded to rounded occasional subangular fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded chert (60mm). Sand is medium to coarse. (gravel and cobble in a clayey sand matrix). (Embankment fill). MGR									6.00	9.68			4.00 - 4.10 4.00 - 5.00	ESES10 BB11	SPT(C) 4.00m, 50 (25 for 75mm/50 for 60mm)		4
Mid to dark grey slightly clayey sandy GRAVEL, with low cobble content. Gravel is subrounded to rounded occasionally subangular fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded chert (60mm). Sand is medium to coarse. (gravel and cobble in a clayey sand matrix). (ALLUVIUM)									6.50	9.18							
Firm to stiff thickly laminated brownish dark grey CLAY, with a slight organic odour. (ALLUVIUM)									7.30	8.38			5.80 - 5.90	ESES12			
Firm mid brown locally mottled orange CLAY, with rare lignite and rare fine to medium gravel of quartz. (ALLUVIUM)									8.00	7.68			6.00 - 6.50	BB14	SPT(C) 6.00m, 50 (25 for 75mm/50 for 45mm)		6
Mid brown slightly clayey sandy GRAVEL, with low cobble content. Gravel is subrounded to rounded occasionally subangular fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded chert (60mm). Sand is medium to coarse. (gravel and cobble in a clayey sand matrix). (ALLUVIUM)									9.00	6.68			7.40 - 7.50 7.50 - 7.60 7.50 - 7.60	ESES13 D15 DD15			7
Firm mid brown locally mottled orange CLAY, with rare lignite and rare fine to medium gravel of quartz. (ALLUVIUM)									8.00	7.68			8.40 - 8.50 8.50 - 8.60 8.50 - 8.60	ESES17 B3 DD16	SPT(C) 8.00m, N=28 (5,6/8,7,7,6)		8
Mid brown slightly clayey sandy GRAVEL, with low cobble content. Gravel is subrounded to rounded occasionally subangular fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded chert (60mm). Sand is medium to coarse. (gravel and cobble in a clayey sand matrix). (ALLUVIUM)									9.00	6.68			9.00 - 10.00	BB18			9
Firm mid brown locally mottled orange CLAY, with rare lignite and rare fine to medium gravel of quartz. (ALLUVIUM)									10.00	5.68					SPT(C) 10.00m, N=27 (4,6/5,7,7,8)		10
<b>Observations / Remarks</b> 1. Position completed on night shift programme. 2. Groundwater not observed. 3. Upon completion exploratory hole backfilled with asphalt to 0.30m, concrete to 1.20m and bentonite to base of pit.										<b>Chiselling</b> From (m) To (m) Time (mins)			<b>Water Added</b> From (m) To (m)		<b>Hammer Information</b> Serial No. Energy Ratio %		
										<b>Groundwater</b> Strike (m) Casing (m) Sealed (m) Time (min) Rose To (m) Remarks			<b>Project Number</b> <b>784-B026948</b>				

				Project: <b>A46 Newark - Northern Bypass</b> Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>			<b>Location Details</b> Easting: 478314.40    Northing: 353663.40 Level: 15.68mAOD    Depth: 14.00m Logger: DD    Type: SNC Inclination: 90°				<b>Status</b>  <b>FINAL</b>		<b>Borehole Number</b>  <b>BH29</b>				
<b>Method, Plant and Crew</b>						<b>Diameter</b>		<b>Casing</b>		<b>Drilling Progress by Time</b>				<b>Scale:</b> 1:50			
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:			
0.00	1.20	Inspection Pit	Hand Excavated	A.M + M.S	1.20	300	8.00	178	08/06	04:45	10.00	8.00	FULL	NEB			
1.20	14.00	Sonic Core Drilling	Fraste CRS-XL	A.M + M.S	8.00	178			09/07	04:00	14.00	12.00	FULL	JC			
					14.00	102								Start Date:	08/06/2021		
														Finish Date:	09/07/2021		
<b>Strata Description</b>							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	<b>Samples and Testing</b>					
SAND and GRAVEL. (Drillers description) (ALLUVIUM)												Depth (m)	Ref	Tests / Results			
MUDSTONE. (Drillers description) (MERCIA MUDSTONE GROUP)								12.70	2.98					SPT(C) 12.00m, N=8 (1,0/1,2,2,3)	11		
EOH at 14.00m - Target depth achieved								14.00	1.68					SPT(C) 14.00m, N=37 (6,7/8,9,9,11)	12		
															13		
															14		
															15		
															16		
															17		
															18		
															19		
															20		
<b>Observations / Remarks</b> 1. Position completed on night shift programme. 2. Groundwater not observed. 3. Upon completion exploratory hole backfilled with asphalt to 0.30m, concrete to 1.20m and bentonite to base of pit.											<b>Chiselling</b>			<b>Water Added</b>		<b>Hammer Information</b>	
						From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %					
						<b>Groundwater</b>						<b>Project Number</b>					
						Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks						
												<b>784-B026948</b>					



 <b>Project: A46 Newark - Northern Bypass</b> <b>Location: Newark-on-Trent, Nottinghamshire</b> <b>Client: Highways England</b>						<b>Location Details</b> Easting: 478398.60 Northing: 353789.40 Level: 17.43mAOD Depth: 16.00m Logger: DD Type: SNC Inclination: 90°				<b>Status</b>  <b>FINAL</b>		<b>Borehole Number</b>  <b>BH30</b>					
										Sheet 1 of 2							
Method, Plant and Crew					Diameter		Casing		Drilling Progress by Time				Scale: 1:50				
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth (m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB		
0.00	1.20	Inspection Pit	Hand Excavated	A.M + M.S	1.20	300	14.00	178	04/06	03:30	8.00	6.00	FULL	Approved By:	JC		
1.20	16.00	Sonic Core Drilling	Frastr CRS-XL	A.M + M.S	14.00	178			05/06	03:30	10.00	8.00	FULL	Start Date:	03/06/2021		
					16.00	102			08/06	03:15	16.00	14.00	FULL	Finish Date:	08/06/2021		
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing					
ASPHALT. (MADE GROUND) MGR												Depth (m)	Ref	Tests / Results			
White slightly silty slightly sandy subangular to angular coarse GRAVEL of limestone. Sand is fine to coarse. (MADE GROUND) MGR								0.37	17.06			0.37 - 0.55	B003	SPT(C) 1.20m, 50 (12,13/50 for 225mm)		1	
Orangish brown slightly silty gravelly coarse SAND with low cobble content. Gravel is angular to subrounded sandstone, limestone and quartzite. (MADE GROUND) MGR								0.55	16.88			0.40	D002				
Dense brown locally discoloured dark purplish brown slightly clayey sandy GRAVEL, with low cobble content. Gravel is subrounded to rounded occasionally subangular fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded (60mm) chert. Sand is fine to medium. (Gravel and cobble in a clayey sand matrix). (Embankment fill). (MADE GROUND) MGR								1.20	16.23			0.40	ES001				
											0.60	D005					
											0.70 - 1.20	B006					
From 2.80m to 2.90m bgl stiff brown slightly clayey silt.												1.00	ES004				
Light yellowish brown slightly clayey slightly sandy silty GRAVEL, with low cobble content. Gravel is subrounded to rounded occasional subangular fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded (60mm) chert. (Gravel and cobble in a clayey silty matrix). (Embankment fill). (MADE GROUND) MGR								2.90	14.53			1.50 - 1.60	ESES7	SPT(C) 2.00m, 50 (25 for 80mm/50 for 175mm)		2	
Brown locally discoloured dark purplish brown slightly clayey sandy GRAVEL, with low cobble content. Gravel is subrounded to rounded occasional subangular fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded (60mm) chert. Sand is fine to medium. (Gravel and cobble in a clayey sand matrix). (Embankment fill). (MADE GROUND) MGR												2.50 - 2.60	ESES8			3	
											2.50 - 2.60	ESES9					
											2.50 - 3.50	BB8					
Brown locally discoloured dark purplish brown slightly clayey sandy GRAVEL, with low cobble content. Gravel is subrounded to rounded occasional subangular fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded (60mm) chert. Sand is fine to medium. (Gravel and cobble in a clayey sand matrix). (Embankment fill). (MADE GROUND) MGR												3.50 - 3.60	ESES10	SPT(C) 4.00m, 44 (5,7/44 for 150mm)		4	
											3.50 - 3.60	ESES9					
											4.50 - 4.60	ESES10			5		
				4.50 - 4.60	ESES12												
				4.50 - 5.50	B11												
				4.50 - 5.50	BB11												
Brown locally discoloured dark purplish brown slightly clayey slightly sandy GRAVEL, with low to medium cobble content. Gravel is subrounded to rounded occasional subangular fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded (60mm) chert. Sand is fine to medium. (Gravel and cobble in a clayey sand matrix). (Embankment fill). (MADE GROUND) MGR												5.50 - 5.60	ESES11	SPT(C) 6.00m, 50 (25 for 125mm/50 for 280mm)		6	
											5.50 - 5.60	ESES13					
											7.00 - 8.00	BB14			7		
Brown locally discoloured dark purplish brown slightly clayey slightly sandy GRAVEL, with low to medium cobble content. Gravel is subrounded to rounded occasional subangular fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded (60mm) chert. Sand is fine to medium. (Gravel and cobble in a clayey sand matrix). (Embankment fill). (MADE GROUND) MGR												8.00 - 9.00	BB15			8	
											8.30 - 9.00	BB16					
											8.50 - 8.60	ESES17					
From 9.50m to 9.80m bgl mid brown clayey gravelly medium sand.												9.00 - 9.70	B18			9	
				9.00 - 9.70	BB18												
				9.70 - 9.80	DD20			10									
				9.70 - 9.80	ESES18												
								10.00	7.43			10.00 - 10.70	BB22	SPT(C) 10.00m, N=30 (4,5/7,9,8,6)			
Observations / Remarks											Chiselling		Water Added		Hammer Information		
1. Position completed on night shift programme. 2. Groundwater not observed. 3. Upon completion exploratory hole backfilled with asphalt to 0.30m, concrete to 1.20m and bentonite to base of pit.											From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %
											Groundwater				Project Number		
											Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>

Project: <b>A46 Newark - Northern Bypass</b>					Location Details					Status		Borehole Number				
 Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>					Easting: 478398.60 Northing: 353789.40 Level: 17.43mAOD Depth: 16.00m Logger: DD Type: SNC Inclination: 90°					<b>FINAL</b>		<b>BH30</b>				
					Method, Plant and Crew									Casing		Drilling Progress by Time
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth (m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:		
0.00	1.20	Inspection Pit Sonic Core Drilling	Hand Excavated Fraste CRS-XL	A.M + M.S A.M + M.S	1.20	300	14.00	178	04/06	03:30	8.00	6.00	FULL	NEB		
1.20	16.00				14.00	178	05/06	03:30	10.00	8.00	FULL	JC				
															Start Date: 03/06/2021 Finish Date: 08/06/2021	
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing				
Dense Mid brown slightly clayey sandy GRAVEL, Gravel is subrounded to rounded occasional subangular fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded (60-80mm) chert. Sand is medium to coarse. (Gravel and cobble in a clayey sand matrix). (Embankment fill). (MADE GROUND) MGR <i>From 10.60m to 10.70m bgl firm dark grey very gravelly CLAY, with slight hydrocarbon odour.</i>								11.30	6.13			10.60 - 10.70	ESES27	11		
								11.60	5.83			10.80 - 10.90	ESES21			
Compacted mid to light brown fine to medium SAND, with rare subrounded fine to medium quartz gravel. At 11.6m bgl. membrane (5mm), possibly formation level of embankment fill. (Embankment fill). (MADE GROUND) MGR Medium dense becoming dense brown locally discoloured dark purplish brown slightly clayey sandy GRAVEL, with low to medium cobble content. Gravel is subrounded to rounded occasional subangular fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded (60-80mm) chert. Sand is fine to medium. (Gravel and cobble in a clayey sand matrix). (ALLUVIUM)  <i>From 14.10m to 14.20m bgl firm to soft spongy mid to dark grey slightly sandy gravelly organic CLAY.</i>								11.70				11.40 - 11.60	D	12		
								14.20	3.23			11.70 - 11.80	ESES23			
Firm to stiff reddish brown silty CLAY, with rare sub-angular fine to coarse locally horizontal gravel lithorelicts of weak mudstone. (Zone IVb). (MERCIA MUDSTONE GROUP)								15.50				12.50 - 13.50	B25	13		
								15.50				12.50 - 13.50	BD25			
EOH at 16.00m - Target depth achieved								15.50				15.50 - 15.60	D26	14		
								15.50				15.50 - 15.60	DD26			
								16.00	1.43					16		
														17		
														18		
														19		
														20		
Observations / Remarks 1. Position completed on night shift programme. 2. Groundwater not observed. 3. Upon completion exploratory hole backfilled with asphalt to 0.30m, concrete to 1.20m and bentonite to base of pit.											Chiselling		Water Added		Hammer Information	
						From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %				
Groundwater											Project Number					
Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks											
						<b>784-B026948</b>										

 Project: <b>A46 Newark - Northern Bypass</b> Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>					<b>Location Details</b> Easting: 478577.40 Northing: 354030.20 Level: 17.70mAOD Depth: 12.00m Logger: DD Type: SNC Inclination: 90°					<b>Status</b>  <b>FINAL</b>		<b>Borehole Number</b>  <b>BH31</b>						
										Sheet 1 of 2								
<b>Method, Plant and Crew</b>					<b>Diameter</b>		<b>Casing</b>		<b>Drilling Progress by Time</b>									
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Scale:				
0.00	1.20	Inspection Pit	Hand Excavated	A.M + M.S	1.20	300			02/06	02:45	2.00	-		1:50				
1.20	12.00	Sonic Core Drilling	Fraste CRS-XL	A.M + M.S	2.00	102			15/07	04:45	12.00	10.00	FULL	Checked By: NEB				
												Approved By: JC		Start Date: 03/06/2021				
														Finish Date: 05/07/2021				
<b>Strata Description</b>							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	<b>Samples and Testing</b>						
<b>ASPHALT. (MADE GROUND)</b> MGR												Depth (m)	Ref	Tests / Results				
White slightly silty sandy subangular to angular coarse GRAVEL of limestone. (MADE GROUND) MGR								0.37	17.33			0.40	D002					
Orangish brown slightly silty gravelly coarse SAND with low cobble content. Gravel is subangular to subrounded limestone and sandstone. (MADE GROUND) MGR								0.60	17.10			0.40	ES001					
												0.50 - 0.60	B003					
												0.60	D005					
													0.70 - 1.20	B006	1 SPT(C) 1.20m, 50 (13,16/50 for 154mm)			
													1.00	ES004				
Dense dark brown slightly clayey sandy GRAVEL, with low to medium cobble content. Gravel is subrounded to rounded, occasional angular, fine to coarse siltstone quartz chert and occasional flint. Cobbles are subrounded to rounded (60-80mm) chert. Sand is fine to coarse. (Gravel and cobbles in a clayey sand matrix). MGR								2.00	15.70			2.00 - 4.00	BB5	2 SPT(C) 2.00m, N=39 (7,2/39 for 265mm)				
												2.50 - 2.60	ESES5	3 				
												3.50 - 3.60	ESES6					
												4.50 - 4.60	ESES7	4 				
												5.00 - 6.00	B6					
												5.00 - 6.00	BB6	5 				
												5.50 - 5.60	ESES8					
												5.60 - 5.80	DD4	6 SPT(C) 6.00m, N=54 (4,8/11,15,13,15)				
												6.00 - 8.00	BB7					
												6.20 - 6.30	D12	7 				
												9.00 - 10.45	B8					
												9.00 - 10.50	BB8	8 SPT(C) 8.00m, 50 (6,9/50 for 150mm)				
												9.50 - 9.60	DD5					
												9.50 - 9.60	ESES9	9 				
														10 SPT(C) 10.00m, 50 (9,16/50 for 5mm)				
<b>Observations / Remarks</b>												<b>Chiselling</b>		<b>Water Added</b>		<b>Hammer Information</b>		
1. Position completed on night shift programme. 2. Groundwater not observed. 3. Upon completion exploratory hole backfilled with asphalt to 0.30m, concrete to 1.20m and bentonite to base of pit.												From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %
												<b>Groundwater</b>				<b>Project Number</b>		
												Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>



Project: **A46 Newark - Northern Bypass**  
 Location: **Newark-on-Trent, Nottinghamshire**  
 Client: **Highways England**

**Location Details**  
 Easting: 478577.40 Northing: 354030.20  
 Level: 17.70mAOD Depth: 12.00m  
 Logger: DD Type: SNC  
 Inclination: 90°


















Status  
**FINAL**
























Borehole Number  
**BH31**

Method, Plant and Crew					Diameter		Casing		Drilling Progress by Time				Scale: 1:50		
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB
0.00	1.20	Inspection Pit	Hand Excavated	A.M + M.S	1.20	300			02/06	02:45	2.00	-	-	Approved By:	JC
1.20	12.00	Sonic Core Drilling	Fraste CRS-XL	A.M + M.S	2.00	102			15/07	04:45	12.00	10.00	FULL	Start Date:	03/06/2021
														Finish Date:	05/07/2021

























Strata Description	Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing		
						Depth (m)	Ref	Tests / Results
Dense dark brown slightly clayey sandy GRAVEL, with low to medium cobble content. Gravel is subrounded to rounded, occasional angular, fine to coarse siltstone quartz chert and occasional flint. Cobbles are subrounded to rounded (60-80mm) chert. Sand is fine to coarse. (Gravel and cobbles in a clayey sand matrix). MGR						11.40 - 11.50	ESES10	
Firm mid brown slightly sandy CLAY, with occasional irregular (4-6mm) pockets of fine black organic matter. Sand is fine to medium. Slight organic odour. (ALLUVIUM)		11.60	6.10			11.60 - 12.00	B9	
						11.80 - 11.90	DD6	
						11.80 - 12.00	ESES11	
EOH at 12.00m - Target depth achieved		12.00	5.70					SPT(C) 12.00m, N=28 (6,8/8,7,5,8)

Observations / Remarks	Chiselling			Water Added		Hammer Information	
	From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %
1. Position completed on night shift programme. 2. Groundwater not observed. 3. Upon completion exploratory hole backfilled with asphalt to 0.30m, concrete to 1.20m and bentonite to base of pit.							
	Groundwater			Project Number			
	Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	
							<b>784-B026948</b>



 <b>Project: A46 Newark - Northern Bypass</b> <b>Location: Newark-on-Trent, Nottinghamshire</b> <b>Client: Highways England</b>					<b>Location Details</b> Easting: 478675.17 Northing: 354153.50 Level: 18.43mAOD Depth: 9.50m Logger: DD Type: SNC Inclination: 90°					<b>Status</b>  <b>FINAL</b>		<b>Borehole Number</b>  <b>BH32</b>				
					Sheet 1 of 1											
<b>Method, Plant and Crew</b>					<b>Diameter</b>		<b>Casing</b>		<b>Drilling Progress by Time</b>				<b>Scale:</b> 1:50			
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB	
0.00	1.20	Inspection Pit	Hand Excavated	A.M + M.S	1.20	300	8.00	178	01/06	05:00	9.50	8.00	FULL	Approved By:	JC	
1.20	9.50	Sonic Core Drilling	Fraste CRS-XL	A.M + M.S	8.00	178								Start Date:	01/06/2021	
					9.50	102								Finish Date:	02/06/2021	
<b>Strata Description</b>							<b>Legend</b>	<b>Depth (m)</b>	<b>Reduced Level (mAOD)</b>	<b>Water Level (m)</b>	<b>Inst / Backfill</b>	<b>Samples and Testing</b>				
												Depth (m)	Ref	Tests / Results		
<b>ASPHALT. (MADE GROUND)</b> MGR								0.37	18.06							
White slightly sandy fine to coarse GRAVEL. Gravel is subangular to angular limestone (MOT TYPE 1). (MADE GROUND) MGR								0.52	17.91							
Orangish brown slightly silty gravelly fine to coarse SAND with low cobble content. Gravel is angular to subrounded sandstone, limestone and quartz. (MADE GROUND) MGR								1.20	17.23					SPT(C) 1.20m, 50 (12,15/50 for 135mm)	1	
Dense dark brown clayey sandy GRAVEL, with medium cobble content. Gravel is subrounded to rounded occasional subangular fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded (60-80mm) chert. Sand is fine to medium. (Gravel and cobbles in a clayey sand matrix). (Embankment fill). (MADE GROUND) MGR  <i>From 2.00m to 3.90m bgl occasional intact core (gravel/ cobble in clayey sand matrix).</i>								3.00	15.43					SPT(C) 2.00m, 50 (12,12/50 for 227mm)	2	
Dense light brown slightly clayey GRAVEL, with medium cobble content. Gravel is subrounded to rounded occasional angular fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded (60-80mm) chert. (gravel and cobble in a silty clay matrix). (Embankment fill). (MADE GROUND) MGR								4.50	13.93					3.90 - 5.50 BB13 SPT(C) 4.00m, 50 (13,12/50 for 155mm)	4	
Mid brown locally discoloured orange slightly clayey gravelly fine to medium SAND. Gravel is subrounded to rounded occasional subangular fine to coarse siltstone quartz and chert. (Embankment fill). (MADE GROUND) MGR								5.50	12.93					4.50 - 5.50 BB15 ESES12 4.60 - 4.70	5	
Dense mid light brown sandy GRAVEL, with medium to high cobble content. Gravel is subrounded to rounded occasional subangular fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded (60-80mm). (Embankment fill). (MADE GROUND) MGR								7.30	11.13					6.00 - 7.50 BB18 SPT(C) 6.00m, 50 (14,13/50 for 228mm) 6.40 - 6.50 ESES14	6	
Dense light brown silty clayey GRAVEL, with medium to high cobble content. Gravel is subrounded to rounded occasional angular fine to coarse siltstone quartz and chert. Cobbles are subrounded to rounded (60-80mm) chert. (Gravel and cobble in a silty clay matrix). (Possibly embankment fill). (MADE GROUND) MGR								9.50	8.93					7.50 - 7.60 DD17 ESES16 7.50 - 7.60 SPT(C) 8.00m, 50 (8,10/50 for 230mm)	8	
EOH at 9.50m - Target depth achieved																9
																10
<b>Observations / Remarks</b>										<b>Chiselling</b>			<b>Water Added</b>		<b>Hammer Information</b>	
1. Position completed on night shift programme. Drilling ceased at 9.50m bgl due to obstruction in hole and subsequent risk to equipment if drilling continued. 2. Groundwater not observed. 3. Upon completion exploratory hole backfilled with asphalt to 0.30m, concrete to 1.20m and bentonite to base of pit.										From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %
										<b>Groundwater</b>				<b>Project Number</b>		
										Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>






















 Project: <b>A46 Newark - Northern Bypass</b> Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>						<b>Location Details</b> Easting: 478764.74 Northing: 354253.28 Level: 14.84mAOD Depth: 12.00m Logger: DD Type: SNC Inclination: 90°				<b>Status</b> <b>FINAL</b>		<b>Borehole Number</b> <b>BH33</b>							
Method, Plant and Crew						Diameter		Casing		Drilling Progress by Time				Scale: 1:50					
From (m)	To (m)	Type	Plant Used	Crew		Depth (m)	Diam (mm)	Depth (m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB			
0.00	1.20	Inspection Pit	Hand Excavated	A.M + G.H		1.20	300	12.00	178	27/05	04:30	12.00	10.00	FULL	Approved By:	JC			
1.20	12.00	Sonic Core Drilling	Fraste CRS-XL	A.M + G.H		1.20	178								Start Date:	27/05/2021			
															Finish Date:	28/05/2021			
Strata Description								Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing						
ASPHALT. (MADE GROUND) MGR									0.39	14.45			Depth (m)	Ref	Tests / Results				
White slightly silty sandy subangular to angular coarse GRAVEL of limestone (MOT TYPE 1 SUBBASE). (MADE GROUND) MGR									0.65	14.19			0.40 0.40 0.50 - 0.65 0.70 - 1.20	D002 ES001 B003 B006					
Brown slightly silty gravelly coarse SAND with low cobble content. Gravel is subangular to rounded fine to coarse sandstone, quartzite and limestone. (MADE GROUND) MGR									1.20	13.64			1.00 1.00 1.20 - 2.00	D005 ES004 BB14	SPT(C) 1.20m, N=53 (1,6/7,14,16,16)		1		
Dense brown clayey sandy GRAVEL, with low cobble content. Gravel is subrounded to rounded occasional subangular fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded (60-80mm) quartz chert. Sand is medium to fine. (Gravel and cobble in a clayey sand matrix). (Embankment fill). (MADE GROUND) MGR															SPT(C) 2.00m, 51 (25 for 90mm/51 for 225mm)		2		
															SPT(C) 4.00m, N=51 (5,5/12,12,13,14)		4		
															SPT(C) 6.00m, N=46 (6,6/8,12,12,14)		6		
Firm dark grey slightly sandy gravelly CLAY. Gravel is subrounded to rounded occasionally subangular fine to coarse siltstone quartz and chert. Sand is medium. Slight organic odour. (ALLUVIUM)									6.30	8.54									
Firm to stiff mid brownish grey slightly micaceous CLAY, with 0-10 degree very closely spaced fissures, with slight organic odour. (ALLUVIUM)									6.90	7.94							7		
Soft brown sandy CLAY. Sand is fine. (ALLUVIUM)									7.60	7.24			7.50 - 7.60 7.50 - 8.00	DD17 BB18					
Soft to firm spongy thickly laminated dark grey and black organic CLAY, with occasional lenses and laminations (2-5mm) of organic debris and strong organic odour. (ALLUVIUM)									8.00	6.84			8.00 - 9.00 8.00 - 9.00 8.30 - 8.40	B BB20 DD19	SPT(C) 8.00m, N=23 (7,4/4,5,6,8)		8		
<i>From 8.80m to 8.90m bgl clayey fine to medium sand.</i>																			
Dense brown clayey sandy GRAVEL, with medium to high cobble content. Gravel is subrounded to rounded occasionally subangular fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded (60-80mm) chert. Sand is medium (Gravel and cobble in a clayey sand matrix). (ALLUVIUM)									9.10	5.74					SPT(C) 10.00m, N=34 (6,6/8,8,9,9)		10		
Observations / Remarks												Chiselling		Water Added		Hammer Information			
1. Position completed on night shift programme. 2. Groundwater not observed. 3. Upon completion exploratory hole backfilled with asphalt to 0.30m, concrete to 1.20m and bentonite to base of pit.												From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %	
												Groundwater				Project Number			
												Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>	























Project: <b>A46 Newark - Northern Bypass</b>						Location Details						Status		Borehole Number			
 Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>						Easting: 478864.30		Northing: 354347.76				<b>FINAL</b>		<b>BH34</b>			
						Level: 13.86mAOD		Depth: 12.50m		Logger: DD						Type: SNC	
								Inclination: 90°				Sheet 1 of 2					
Method, Plant and Crew					Diameter		Casing		Drilling Progress by Time								
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth (m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Scale:	1:50		
0.00	1.20	Inspection Pit	Hand Excavated	A.M + G.H	1.20	300	12.00	178	27/05	05:00	12.50	12.00	FULL	Checked By:	NEB		
1.20	12.50	Sonic Core Drilling	Fraste CRS-XL	A.M + G.H	12.00	178								Approved By:	JC		
					12.50	102								Start Date:	26/05/2021		
														Finish Date:	27/05/2021		
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing					
ASPHALT. (MADE GROUND) MGR								0.37	13.50			Depth (m)	Ref	Tests / Results			
White slightly silty slightly sandy subangular to angular coarse GRAVEL of limestone (Subbase). (MADE GROUND) MGR								0.58	13.28			0.40 0.40 - 0.58 0.60 - 1.20 0.80 0.90	D002 ES001 B003 B006 D005 ES004			1	
Brown slightly silty gravelly coarse SAND. Gravel is angular to subrounded fine to coarse sandstone, quartzite and limestone. (MADE GROUND) MGR								1.20	12.66			1.20 - 5.10	BB12	SPT(C) 1.20m, 48 (8,16/48 for 165mm)			
Dense mid brown slightly clayey very sandy GRAVEL, with low cobble content. Gravel is subrounded to rounded occasional angular fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded (60-80mm) chert. Sand is medium (possibly gravel and cobble in clayey sand matrix). (Embankment fill). (MADE GROUND) MGR														SPT(C) 2.00m, 44 (3,12/44 for 225mm)		2	
												2.40 - 2.50	ESES7			3	
												3.70 - 3.80	ESES8			4	
												4.20 - 4.30	ESES9	SPT(C) 4.00m, 47 (7,10/47 for 225mm)		4	
												4.70 - 4.80	ESES10			5	
Firm mid to dark grey locally discoloured brown slighty micacious CLAY, with 0-10 degree very closely spaced fissures. Occasional brown silt partings. (ALLUVIUM)								5.10	8.76			5.20 - 5.30	ESES11			5	
												5.40 - 5.50	DD13			6	
														SPT(C) 6.00m, N=19 (3,3/4,4,5,6)		6	
Brown locally orange slightly clayey slightly gravelly fine to medium SAND. Gravel is subrounded to rounded fine to coarse siltstone quartz and chert. (ALLUVIUM)								6.20	7.66			6.70 - 6.80	DD14			7	
												7.10 - 8.00	BB15			7	
Dense mid orangish brown sandy GRAVEL, with low cobble content. Gravel is subrounded to rounded, occasionally angular, fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded (60mm) chert. Sand is medium to coarse. (No recovery from 10-11m, assumed sample is compressed and recovered in previous runs). (ALLUVIUM)								7.10	6.76					SPT(C) 8.00m, N=36 (4,4/6,8,10,12)		8	
												8.50 - 10.00	BB16			9	
														SPT(C) 10.00m, N=34 (6,8/7,10,9,8)		10	
Observations / Remarks											Chiselling		Water Added		Hammer Information		
1. Position completed on night shift programme. 2. Groundwater not observed. 3. Upon completion exploratory hole backfilled with asphalt to 0.30m, concrete to 1.20m and bentonite to base of pit.											From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %
											Groundwater						
Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>											








































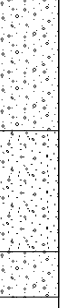
 <b>Project: A46 Newark - Northern Bypass</b> <b>Location: Newark-on-Trent, Nottinghamshire</b> <b>Client: Highways England</b>					<b>Location Details</b> Easting: 478864.30 Northing: 354347.76 Level: 13.86mAOD Depth: 12.50m Logger: DD Type: SNC Inclination: 90°					<b>Status</b>  <b>FINAL</b>		<b>Borehole Number</b>  <b>BH34</b>				
<b>Method, Plant and Crew</b>					<b>Diameter</b>		<b>Casing</b>		<b>Drilling Progress by Time</b>				<b>Scale:</b> 1:50			
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth (m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB	
0.00	1.20	Inspection Pit	Hand Excavated	A.M + G.H	1.20	300	12.00	178	27/05	05:00	12.50	12.00	FULL	Approved By:	JC	
1.20	12.50	Sonic Core Drilling	Fraste CRS-XL	A.M + G.H	12.00	178								Start Date:	26/05/2021	
					12.50	102								Finish Date:	27/05/2021	
<b>Strata Description</b>							<b>Legend</b>	<b>Depth (m)</b>	<b>Reduced Level (mAOD)</b>	<b>Water Level (m)</b>	<b>Inst / Backfill</b>	<b>Samples and Testing</b>				
Dense mid orangish brown sandy GRAVEL, with low cobble content. Gravel is subrounded to rounded, occasionally angular, fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded (60mm) chert. Sand is medium to coarse. (No recovery from 10-11m, assumed sample is compressed and recovered in previous runs). (ALLUVIUM)												<b>Depth (m)</b>	<b>Ref</b>	<b>Tests / Results</b>		
Stiff friable reddish brown slightly gravelly CLAY, with 0-10 degree very closely spaced to closely spaced fissures. Gravel is subangular to angular fine to coarse weak mudstone lithorelicts. Rare pockets (5-10mm) of light bluish grey silt. (Zone: IVb). (MERCIA MUDSTONE GROUP)								11.00	2.86			11.00 - 12.00	BB18			11
EOH at 12.50m - Target depth achieved								12.50	1.36			12.00 - 12.10	DD17			12
																13
																14
																15
																16
																17
																18
																19
																20
<b>Observations / Remarks</b> 1. Position completed on night shift programme. 2. Groundwater not observed. 3. Upon completion exploratory hole backfilled with asphalt to 0.30m, concrete to 1.20m and bentonite to base of pit.										<b>Chiselling</b>			<b>Water Added</b>		<b>Hammer Information</b>	
					From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %					
<b>Groundwater</b>										<b>Project Number</b>						
Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks							<b>784-B026948</b>				


 <b>Project: A46 Newark - Northern Bypass</b> <b>Location: Newark-on-Trent, Nottinghamshire</b> <b>Client: Highways England</b>						<b>Location Details</b> Easting: 479080.80 Northing: 354516.90 Level: 12.75mAOD Depth: 10.00m Logger: DD Type: SNC Inclination: 90°				<b>Status</b>  <b>FINAL</b>		<b>Borehole Number</b>  <b>BH35</b>						
Method, Plant and Crew						Diameter		Casing		Drilling Progress by Time				Scale: 1:50				
From (m)	To (m)	Type	Plant Used	Crew		Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB		
0.00	1.20	Inspection Pit	Hand Excavated	A.M + G.H		1.20	300	8.00	178	21/05	04:00	10.00	8.00	FULL	Approved By:	JC		
1.20	10.00	Sonic Core Drilling	Fraсте CRS-XL	A.M + G.H		8.00	178								Start Date:	21/05/2021		
															Finish Date:	22/05/2021		
Strata Description								Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing					
ASPHALT. (MADE GROUND) MGR													Depth (m)	Ref	Tests / Results			
White slightly silty fine to coarse SAND and GRAVEL. Gravel is angular to subangular fine to coarse sandstone (MOT TYPE 1) (MADE GROUND) MGR Medium dense to dense slightly silty sandy subangular to subrounded coarse GRAVEL of sandstone and quartzite. Sand is fine to coarse. (MADE GROUND) MGR									0.36	12.39			0.40	ES001				
Brown and mid grey sandy GRAVEL with low cobble content. Gravel is subrounded to rounded occasional subangular fine to coarse siltstone quartz chert and occasional flint, cobbles are subrounded to rounded (60mm) chert (Embankment fill) (MADE GROUND) MGR Stiff friable light yellowish brown silty gravelly CLAY. Gravel is subrounded to rounded occasional angular fine to coarse siltstone quartz chert (Embankment fill) (MADE GROUND) MGR Dense brownish grey slightly clayey slightly gravelly fine to coarse SAND. with medium cobble content. Gravel is subrounded to rounded occasional subangular fine to coarse siltstone quartz chert and quartzite. Cobbles are subrounded to rounded chert (60-80mm) (Embankment fill). (MADE GROUND) MGR									1.20	11.55			1.20 - 1.60	BB13	SPT(C) 1.20m, 51 (2,9/51 for 150mm)			1
Stiff friable light yellowish brown silty gravelly CLAY. Gravel is subrounded to rounded occasional angular fine to coarse siltstone quartz chert (Embankment fill). (MADE GROUND) MGR									1.50	11.25			1.30 - 1.40	ESES7				
Dense brownish grey slightly clayey slightly gravelly fine to coarse SAND. with medium cobble content. Gravel is subrounded to rounded occasional subangular fine to coarse siltstone quartz chert and quartzite. Cobbles are subrounded to rounded chert (60-80mm) (Embankment fill). (MADE GROUND) MGR									2.00	10.75			1.60 - 2.00	BB14				2
Stiff friable light yellowish brown silty gravelly CLAY. Gravel is subrounded to rounded occasional angular fine to coarse siltstone quartz chert (Embankment fill). (MADE GROUND) MGR									2.00	10.75			1.70 - 1.80	DD12				
Medium dense brownish grey slightly clayey sandy GRAVEL, with medium cobble content. Gravel is subrounded to rounded occasional subangular fine to coarse siltstone quartz chert and quartzite. Cobbles are subrounded to rounded chert (60-80mm). Occasional pockets (30 x 50mm) of clay. (Embankment fill). MGR Firm mid grey mottled light orange CLAY. (ALLUVIUM)									3.30	9.45			1.70 - 1.80	ESES8				
Stiff friable light yellowish brown silty gravelly CLAY. Gravel is subrounded to rounded occasional angular fine to coarse siltstone quartz chert (Embankment fill). (MADE GROUND) MGR									4.00	8.75			2.00 - 3.00	B15	SPT(C) 2.00m, 50 (7,8/50 for 235mm)			2
Medium dense brownish grey slightly clayey sandy GRAVEL, with medium cobble content. Gravel is subrounded to rounded occasional subangular fine to coarse siltstone quartz chert and quartzite. Cobbles are subrounded to rounded chert (60-80mm). Occasional pockets (30 x 50mm) of clay. (Embankment fill). MGR Firm mid grey mottled light orange CLAY. (ALLUVIUM)									4.00	8.75			2.00 - 3.00	BB15				
Greyish brown slightly clayey sandy GRAVEL, with low to medium cobble content. Gravel is subrounded to rounded occasionally angular fine to coarse siltstone quartz chert and occasional flint. Cobbles are subrounded to rounded (60mm) chert. Sand is medium to coarse. (ALLUVIUM)									4.40	8.35			2.70 - 2.90	ESES9				3
Very soft spongy dark grey and black organic CLAY, with frequent lenses/ laminae (2-3mm thick). of decomposed organic matter. (ALLUVIUM)									5.00	7.75			3.40 - 3.50	DD17				
Medium dense brown slightly sandy GRAVEL, with low cobble content. Gravel is subrounded to rounded occasionally subangular medium to coarse, occasionally fine, siltstone quartz and chert. Cobbles are subrounded to rounded (60mm) chert. (ALLUVIUM)									6.60	6.15			3.50 - 4.00	B16	SPT(C) 4.00m, N=11 (3,4/4,3,2,2)			4
EOH at 10.00m - Target depth achieved									10.00	2.75			3.50 - 4.00	BB16				
									10.00	2.75			3.70 - 3.80	ESES10				
									10.00	2.75			5.00 - 5.10	D18	SPT(C) 6.00m, N=30 (5,8/6,7,8,9)			6
									10.00	2.75			5.00 - 5.10	DD18				5
									10.00	2.75			9.00 - 10.00	B20	SPT(C) 8.00m, N=14 (4,3/3,4,4,3)			8
									10.00	2.75			9.00 - 10.00	BB20				9
									10.00	2.75			9.00 - 10.00	BB20	SPT(C) 10.00m, N=13 (1,4/3,4,3)			10
Observations / Remarks										Chiselling			Water Added		Hammer Information			
1. Position completed on night shift programme. 2. Groundwater not observed. 3. Upon completion exploratory hole backfilled with asphalt to 0.30m, concrete to 1.20m and bentonite to base of pit.										From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %		
										Groundwater				Project Number				
										Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>		


 Project: <b>A46 Newark - Northern Bypass</b> Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>						<b>Location Details</b> Easting: 478997.37 Northing: 354453.25 Level: 13.58mAOD Depth: 10.00m Logger: DD Type: SNC Inclination: 90°				<b>Status</b> <b>FINAL</b>		<b>Borehole Number</b> <b>BH36</b>					
										<b>Sheet 1 of 1</b>							
Method, Plant and Crew					Diameter		Casing		Drilling Progress by Time								
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth (m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Scale:			
0.00	1.20	Inspection Pit	Hand Excavated	A.M + G.H	1.20	300	8.00	178	20/05	02:50	4.00	2.00	FULL	1:50			
1.20	10.00	Sonic Core Drilling	Fraste CRS-XL	A.M + G.H	8.00	102			21/05	02:50	10.00	8.00	FULL	Checked By: NEB			
														Approved By: JC			
														Start Date: 19/05/2021			
														Finish Date: 21/05/2021			
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing					
<b>ASPHALT. (MADE GROUND)</b> MGR												Depth (m)	Ref	Tests / Results			
White slightly silty SAND and GRAVEL. Sand is fine to coarse. Gravel is subangular to angular fine to coarse limestone (MOT - Type 1) (MADE GROUND) MGR								0.40	13.18			0.10	ES001				
Brown slightly silty SAND and GRAVEL. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse limestone, sandstone and quartz. Occasional cobbles of rounded quartz. (MADE GROUND) MGR								0.60	12.98			0.50 0.50 - 0.60 0.70 0.80 - 1.00	D002 B003 D005 B006			1	
Dense reddish brown and purple slightly clayey slightly sandy GRAVEL, with medium cobble content. Gravel is subrounded to rounded, occasionally angular fine to coarse siltstone chert quartz and occasional sandstone. Cobbles are subrounded to rounded (60-80mm) siltstone quartzite and chert. Sand is medium to coarse. (Embankment fill). (MADE GROUND) MGR <i>From 1.70m to 2.00m bgl very sandy. Sand is medium to coarse.</i>								1.20	12.38			1.00 1.20 - 4.00 1.20 - 4.00 1.40 - 1.50	ES004 B9 BB9 ESES7	SPT(S) 1.20m, N=40 (7,7/6,7,12,15)		2	
Firm mid grey and brown sandy gravelly CLAY. Gravel is subrounded to rounded fine to coarse siltstone quartz and chert. Sand is medium to coarse. (ALLUVIUM)								4.00	9.58			1.80 - 1.90	DD10	SPT(S) 2.00m, 53 (9,15/53 for 225mm)		3	
Brownish grey slightly clayey slightly gravelly fine to medium SAND. (ALLUVIUM) <i>From 4.80m to 4.90m bgl firm clay.</i>								4.40	9.18			2.40 - 2.50	ESES8			4	
Medium dense brown and grey slightly silty slightly gravelly medium to coarse SAND, with medium cobble content. Gravel is subrounded to rounded occasionally angular fine to coarse siltstone quartz chert and occasional sandstone. cobbles are subrounded to rounded (60-80mm) siltstone quartz and chert. (ALLUVIUM) <i>From 6.00m to 6.20m bgl mid grey firm sandy very gravelly clay.</i>								4.90	8.68			3.40 - 3.50	ESES11	SPT(C) 4.00m, N=10 (3,3/4,2,2,2)		5	
								4.00	9.58			4.20 - 4.30 4.20 - 4.30 4.20 - 4.30 4.50 - 4.90	D13 DD13 ESES12 BB14			6	
								4.40	9.18			4.70 - 4.80	ESES15			7	
								4.90	8.68			6.10 - 6.20 6.10 - 6.20	DD17 ESES16	SPT(C) 6.00m, N=18 (1,2/2,4,6,6)		8	
								4.90	8.68			6.50 - 7.50 6.50 - 7.50	B18 BB18			9	
								4.90	8.68			7.30 - 7.40	ESES19			10	
								4.90	8.68			9.00 - 10.00	BB20	SPT(C) 8.00m, N=28 (5,5/5,8,8,7)			
								10.00	3.58			9.70 - 9.80	DD21	SPT(C) 10.00m, N=15 (1,2/4,4,3,4)			
EOH at 10.00m - Target depth achieved								10.00	3.58								
<b>Observations / Remarks</b> 1. Position completed on night shift programme. 2. Groundwater not observed. 3. Upon completion exploratory hole backfilled with asphalt to 0.30m, concrete to 1.20m and bentonite to base of pit.											<b>Chiselling</b> From (m) To (m) Time (mins)			<b>Water Added</b> From (m) To (m)		<b>Hammer Information</b> Serial No. Energy Ratio %	
											<b>Groundwater</b> Strike (m) Casing (m) Sealed (m) Time (min) Rose To (m) Remarks		<b>Project Number</b> <b>784-B026948</b>				

 <b>Project: A46 Newark - Northern Bypass</b> <b>Location: Newark-on-Trent, Nottinghamshire</b> <b>Client: Highways England</b>						<b>Location Details</b> Easting: 479319.07 Northing: 354655.53 Level: 13.99mAOD Depth: 10.00m Logger: DD Type: SNC Inclination: 90°				<b>Status</b> <b>FINAL</b>		<b>Borehole Number</b> <b>BH37</b>					
Method, Plant and Crew						Diameter		Casing		Drilling Progress by Time				Scale: 1:50			
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth (m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB		
0.00	1.20	Inspection Pit	Hand Excavated	A.M + G.H	1.20	300	8.00	178	24/05	04:30	10.00	8.00	FULL	Approved By:	JC		
1.20	10.00	Sonic Core Drilling	Fraсте CRS-XL	A.M + G.H	8.00	178								Start Date:	24/05/2021		
					10.00	102								Finish Date:	25/05/2021		
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing					
ASPHALT. (MADE GROUND) MGR								0.38	13.61			0.40	D002	Tests / Results D002 ES001 B003 D005 ES004 B006	1		
White slightly silty sandy subangular to angular coarse GRAVEL of sandstone. Sand is fine to coarse. (MOT TYPE 1). (MADE GROUND) MGR								0.59	13.40			0.40 0.50 - 0.59					
Brown gravelly coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone and quartzite. (MADE GROUND) MGR								1.20	12.79			0.70 0.70 0.80 - 1.00	BB7			SPT(C) 1.20m, N=52 (2,9/11,13,14,14)	2
Dense brown and grey slightly clayey sandy GRAVEL. Sand is subrounded to rounded occasional subangular fine to coarse siltstone quartz chert and occasional flint. Sand is medium to coarse. (MADE GROUND) MGR												1.70 - 1.80	ESES7			SPT(C) 2.00m, 48 (25 for 75mm/48 for 150mm)	
Firm brownish grey locally mottled reddish brown slightly gravelly CLAY. Gravel is subangular to subrounded fine to medium siltstone and quartz. (ALLUVIUM)								4.00	9.99			4.20 - 4.30 4.20 - 4.30	DD9 ESES9			SPT(C) 4.00m, N=10 (2,2/1,2,3,4)	4
Firm brownish grey mottled reddish brown sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to medium siltstone and quarts. Sand is fine. (ALLUVIUM)								4.50	9.49			4.70 - 4.80 4.70 - 4.80	B DD10				
Dense greyish brown slightly clayey sandy GRAVEL, with medium cobble content. Gravel is subrounded to rounded occasional angular fine to coarse siltstone sandstone chert and quartz with occasional flint and quartzite. Cobbles are subrounded to rounded chert. Sand is medium to coarse. (Possibly gravel/cobbles in a sandy clay matrix). (ALLUVIUM)								5.00	8.99			5.50 - 6.50	BB11	SPT(C) 6.00m, N=37 (11,9/9,7,10,11)	6		
Gravelly coarse SAND. Gravel is subrounded to rounded occasionally subangular fine to coarse siltstone quartz and chert. (ALLUVIUM)								7.10	6.89			7.00 - 8.00	BB12			7	
Medium dense greyish brown slightly clayey sandy GRAVEL, with medium cobble content. Gravel is subrounded to rounded occasional angular fine to coarse siltstone sandstone chert and quartz with occasional flint and quartzite. Cobbles are subrounded to rounded chert. Sand is medium to coarse. (Possibly gravel/cobbles in a sandy clay matrix). (ALLUVIUM)								8.00	5.99			8.50 - 10.00 8.50 - 10.00	B BB13	SPT(C) 8.00m, N=24 (8,7/7,5,6,5)	8		
EOH at 10.00m - Target depth achieved								10.00	3.99					SPT(C) 10.00m, N=21 (2,4/5,6,5,5)		10	
Observations / Remarks										Chiselling		Water Added		Hammer Information			
1. Position completed on night shift programme. 2. Groundwater not observed. 3. Upon completion exploratory hole backfilled with asphalt to 0.30m, concrete to 1.20m and bentonite to base of pit.										From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %	
										Groundwater				Project Number			
										Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>	

Project: <b>A46 Newark - Northern Bypass</b>						Location Details						Status		Borehole Number		
 Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>						Easting: 479598.00		Northing: 354697.60				<b>FINAL</b>		<b>BH38</b>		
						Level: 14.53mAOD		Depth: 12.00m								
						Logger: DD		Type: SNC								
								Inclination: 90°				Sheet 1 of 2				
Method, Plant and Crew					Diameter		Casing		Drilling Progress by Time					Scale: 1:50		
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:		
0.00	1.20	Inspection Pit	Hand Excavated	A. Mossman	1.20	300			06/07	03:30	12.00	10.00	FULL	NEB		
1.20		Sonic Core Drilling	Fraste CRS-XL	A. Mossman	12.00	-								JC		
														Start Date:	06/07/2021	
														Finish Date:	07/07/2021	
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing				
Black to dark grey dominated ASPHALT. Aggregate of fine to coarse angular to subangular of limestone (up to 35mm) less than 1% pore space. (MADE GROUND) MGR (FILL) (SUBBASE) White slightly silty slightly sandy GRAVEL. Gravel is angular to subangular fine to coarse of limestone. (MADE GROUND) MGR (FILL) Brown very gravelly to gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse of flint. some cobble sized flint. (MADE GROUND) MGR Dense dark brown slightly clayey sandy GRAVEL, with low cobble content. Gravel is subrounded to rounded occasional angular fine to coarse siltstone quartz chert and occasional flint. Cobbles are subrounded to rounded (60-80mm) chert. Sand is fine to coarse. (Embankment fill). Gravel and cobble in clay sand matrix. (MADE GROUND) MGR <i>From 1.70m to 2.00m bgl gravel in a slightly sandy silt matrix.</i>  <i>From 2.30m bgl membrane (5mm).</i>  <i>From 3.00m to 3.30m bgl gravel in a slightly sandy silt matrix.</i>							                                  					Depth (m)	Ref	Tests / Results		
								0.37	14.16				0.40	ES001	SPT(C) 1.20m, 50 (3,19/50 for 150mm)  SPT(C) 2.00m, 50 (12,13/50 for 150mm)  SPT(C) 4.00m, 50 (5,11/50 for 150mm)  SPT(C) 8.00m, N=38 (2,4/10,11,10,7)  SPT(C) 10.00m, N=0 (1,0/0,0,0,0)	
0.55	13.98				0.40 - 0.50	B001										
					0.50	D002										
					0.60	ES004										
					0.60 - 0.70	B006										
					0.70	D005										
					1.00	ES007										
					1.10	D008										
					1.10 - 1.20	B009										
					1.50 - 1.60	ESES4										
					2.00 - 3.00	BB7	SPT(C) 2.00m, 50 (12,13/50 for 150mm)									
					2.50 - 2.60	ESES5										
					3.50 - 3.60	ESES6										
					4.00 - 5.00	B9	SPT(C) 4.00m, 50 (5,11/50 for 150mm)									
					4.00 - 5.00	BB9										
					4.50 - 4.60	ESES8										
					5.60	8.93	5.70 - 5.80	ESES10								
					6.10	8.43			SPT(C) 6.00m, N=6 (1,2/1,2,1,2)							
							6.30 - 6.40	D12								
							6.30 - 6.40	DD12								
							6.50 - 6.60	ESES11								
					6.70	7.83										
							7.00 - 8.00	B13								
							7.00 - 8.00	BB13								
					7.10	7.43										
							9.00	B14								
							9.00 - 10.00	BB14								
									SPT(C) 10.00m, N=0 (1,0/0,0,0,0)							
Observations / Remarks 1. Groundwater not observed. 2. Upon completion exploratory hole backfilled with asphalt to 0.30m, concrete to 1.20m and bentonite to base of pit.											Chiselling		Water Added		Hammer Information	
						From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %				
						Groundwater						Project Number				
						Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks					
											<b>784-B026948</b>					












Project: <b>A46 Newark - Northern Bypass</b>					Location Details					Status		Borehole Number									
 Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>					Easting: 479598.00 Northing: 354697.60 Level: 14.53mAOD Depth: 12.00m Logger: DD Type: SNC Inclination: 90°					<b>FINAL</b>		<b>BH38</b>									
					Sheet 2 of 2																
Method, Plant and Crew					Diameter		Casing		Drilling Progress by Time												
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth (m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Scale:							
0.00	1.20	Inspection Pit	Hand Excavated	A. Mossman	1.20	300			06/07	03:30	12.00	10.00	FULL	1:50							
1.20	12.00	Sonic Core Drilling	Fraste CRS-XL	A. Mossman	12.00	-								Checked By: <b>NEB</b>							
														Approved By: <b>JC</b>							
														Start Date: <b>06/07/2021</b>							
														Finish Date: <b>07/07/2021</b>							
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing									
Loose orangish brown sandy GRAVEL. Gravel is subrounded to rounded occaionaly angular fine to coarse siltstone quartz chert and occasional flint. Sand is medium to coarse. (ALLUVIUM)								10.90	3.63												
								Mid greyish brown slightly gravelly fine to coarse SAND. Gravel is subrounded to rounded fine to coarse siltstone quartz and chert. (ALLUVIUM)							11.00 - 11.70	11.00 - 11.70		B15	BB15	11	
								Loose orangish brown sandy GRAVEL. Gravel is subrounded to rounded occaionaly angular fine to coarse siltstone quartz chert and occasional flint. Sand is medium to coarse. (ALLUVIUM)							11.70	2.83					
								EOH at 12.00m - Target depth achieved							12.00	2.53					12
															13						
															14						
															15						
															16						
															17						
															18						
															19						
															20						
Observations / Remarks											Chiselling		Water Added		Hammer Information						
1. Groundwater not observed. 2. Upon completion exploratory hole backfilled with asphalt to 0.30m, concrete to 1.20m and bentonite to base of pit.											From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %				
											Groundwater				Project Number						
											Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>				


Project: <b>A46 Newark - Northern Bypass</b>						Location Details				Status		Borehole Number				
 Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>						Easting: 480036.01		Northing: 355055.85		FINAL		BH42				
						Level: 22.48mAOD		Depth: 12.00m								
						Logger: DD		Type: SNC				Sheet 1 of 2				
						Inclination: 90°										
Method, Plant and Crew					Diameter		Casing		Drilling Progress by Time				Scale: 1:50			
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth (m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB	
0.00	1.20	Inspection Pit	Hand Excavated	A. Mossman	1.20	300			28/06	03:30	10.00	8.00	FULL	Approved By:	JC	
1.20	12.00	Sonic Core Drilling	Fraste CRS-XL	A. Mossman	12.00	-			14/07	04:45	12.00	10.00	FULL	Start Date:	28/06/2021	
														Finish Date:	30/06/2021	
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing				
Black ASPHALT. Aggregate of fine angular to subangular of limestone. Less than 1% pore space (<8mm). (MADE GROUND) MGR							[Pattern]	0.06	22.42		[Pattern]	Depth (m)	Ref	Tests / Results		
								0.38	22.10		[Pattern]	0.40 - 0.50	ESES01	SPT(C) 1.20m, 50 (15 for 80mm/50 for 10mm)		
Light grey dominated ASPHALT. Aggregate of fine angular to subangular of limestone (up to 40mm). Less than 1% pore space. (MADE GROUND) MGR							[Pattern]	0.50	21.98		[Pattern]	0.40 - 0.50	BB1		SPT(C) 2.00m, 50 (25 for 75mm/50 for 105mm)	
											[Pattern]	0.45	DD1			
White sandy angular to subrounded fine to coarse GRAVEL of flint and limestone. Sand is fine to coarse. (MADE GROUND) MGR							[Pattern]	0.90	21.58		[Pattern]	0.60	ESES2	SPT(C) 4.00m, 50 (6,19/50 for 105mm)		
											[Pattern]	0.70	DD2			
Brown very sandy angular to rounded fine to coarse GRAVEL of flint. Sand is fine to coarse. (MADE GROUND) MGR							[Pattern]	1.20	21.28		[Pattern]	0.70 - 0.80	BB2	SPT(C) 8.00m, 50 (25 for 85mm/50 for 95mm)		
											[Pattern]	1.00	ESES3			
Grey slightly sandy SILT. Sand is fine to coarse. (Pfa.) (MADE GROUND) MGR <i>From 1.00m to 1.20m bgl weak mudstone.</i>							[Pattern]				[Pattern]	1.10	DD3	SPT(C) 2.00m, 50 (25 for 75mm/50 for 105mm)		
											[Pattern]	1.10 - 1.20	BB3			
Compacted stiff mid grey SILT with rare subrounded fine to coarse gravels of slag. (Embankment Fill). (Fuel ash). (MADE GROUND) MGR <i>From 1.20m to 1.80m bgl slightly gravelly, subrounded to rounded fine to coarse quartz and chert.</i>							[Pattern]				[Pattern]	1.50 - 1.60	ESES4	SPT(C) 4.00m, 50 (6,19/50 for 105mm)		
											[Pattern]	2.50 - 2.60	ESES5			
<i>From 3.00m to 4.00m bgl firm to stiff.</i>							[Pattern]				[Pattern]	3.50 - 3.60	DD6	SPT(C) 6.00m, 52 (10,15/52 for 150mm)		
											[Pattern]	4.50 - 4.60	ESES7			
							[Pattern]				[Pattern]	5.50 - 5.60	DD8	SPT(C) 8.00m, 50 (25 for 85mm/50 for 95mm)		
											[Pattern]	6.50 - 6.60	ESES9			
							[Pattern]				[Pattern]	7.50 - 7.60	DD10			
											[Pattern]					
Compacted stiff mid grey SILT with rare subrounded fine to coarse gravels of slag. (Embankment Fill). (Fuel ash). (MADE GROUND) MGR							[Pattern]	9.80	12.68		[Pattern]	9.80 - 9.90	ESES11			
											[Pattern]					
Observations / Remarks										Chiselling		Water Added		Hammer Information		
1. Groundwater not observed. 2. Upon completion exploratory hole backfilled with asphalt to 0.30m, concrete to 1.20m and bentonite to base of pit.										From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %
										Groundwater			Project Number			
										Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	784-B026948


 <b>Project: A46 Newark - Northern Bypass</b> <b>Location: Newark-on-Trent, Nottinghamshire</b> <b>Client: Highways England</b>					<b>Location Details</b> Easting: 480036.01 Northing: 355055.85 Level: 22.48mAOD Depth: 12.00m Logger: DD Type: SNC Inclination: 90°					<b>Status</b>  <b>FINAL</b>		<b>Borehole Number</b>  <b>BH42</b>					
<b>Method, Plant and Crew</b>					<b>Diameter</b>		<b>Casing</b>		<b>Drilling Progress by Time</b>					<b>Scale:</b> 1:50			
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	<b>Checked By:</b> NEB			
0.00	1.20	Inspection Pit	Hand Excavated	A. Mossman	1.20	300			28/06	03:30	10.00	8.00	FULL	<b>Approved By:</b> JC			
1.20	12.00	Sonic Core Drilling	Fraste CRS-XL	A. Mossman	12.00	-			14/07	04:45	12.00	10.00	FULL	<b>Start Date:</b> 28/06/2021			
															<b>Finish Date:</b> 30/06/2021		
<b>Strata Description</b>							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	<b>Samples and Testing</b>					
Compacted stiff mid grey SILT with rare subrounded fine to coarse gravels of slag. (Embankment Fill). (Fuel ash). (MADE GROUND) MGR												10.50 - 10.60	ESES12	Tests / Results			
Dense light brown sandy GRAVEL, with low cobble content. Gravel is subrounded to rounded occasional subangular fine to coarse siltstone quartz chert and flint. cobbles are subrounded to rounded (60-80mm) chert. Sand is fine to coarse. (MADE GROUND) MGR								11.00	11.48			11.50 - 11.60	ESES13				11
EOH at 12.00m - Target depth achieved								12.00	10.48			11.90 - 12.00	ESES14	SPT(C) 12.00m, 50 (11,14/50 for 87mm)			12
																13	
																14	
																15	
																16	
																17	
																18	
																19	
																20	
<b>Observations / Remarks</b> 1. Groundwater not observed. 2. Upon completion exploratory hole backfilled with asphalt to 0.30m, concrete to 1.20m and bentonite to base of pit.											<b>Chiselling</b>			<b>Water Added</b>		<b>Hammer Information</b>	
						From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %					
						<b>Groundwater</b>						<b>Project Number</b>					
						Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks		<b>784-B026948</b>				







Project: <b>A46 Newark - Northern Bypass</b>					Location Details					Status		Borehole Number				
 Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>					Easting: 480252.60 Northing: 355602.10 Level: 14.77mAOD Depth: 16.00m Logger: DD Type: SNC Inclination: 90°					<b>FINAL</b>		<b>BH43</b>				
					Sheet 2 of 2											
Method, Plant and Crew					Diameter		Casing		Drilling Progress by Time							
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth (m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Scale:		
0.00	1.20	Inspection Pit	Hand Excavated	A. Mossman	1.20	300			17/06	04:30	16.00	14.00		1:50		
1.20	16.00	Sonic Core Drilling	Fraste CRS-XL	A. Mossman	16.00	-								Checked By: <b>NEB</b>		
														Approved By: <b>JC</b>		
														Start Date: <b>17/06/2021</b>		
														Finish Date: <b>23/06/2021</b>		
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing				
Soft to firm mid brown slightly sandy CLAY, with rare pockets (1-2mm) of light brown silt and lignite. Sand is fine to medium. Slight organic odour. (ALLUVIUM) <i>From 10.40m to 10.60m bgl bluish dark grey.</i> <i>From 10.50m to 11.10m bgl soft with slight organic odour.</i>								11.10	3.67			10.40 - 10.50	ESES29	11		
												10.50 - 10.60	D30			
Dense brown slightly clayey sandy GRAVEL, with low to medium cobble content. Gravel is subrounded to rounded occasional subangular fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded (60-80mm) chert. Sand is medium to coarse. (gravel and cobble in a clayey sand matrix). (ALLUVIUM)								11.10	3.67			11.10 - 11.20	DD31	12		
												11.40 - 12.00	BB32			
Mid greyish brown slightly clayey sandy GRAVEL, with medium cobble content. Gravel is subrounded to rounded occasionally subangular fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded (60-80mm) chert. Sand is medium to coarse. (gravel and cobble in a clayey sand matrix). (ALLUVIUM)								13.00	1.77			SPT(C) 12.00m, N=32 (6,6/8,7,9,8)		13		
												12.50 - 13.50	B33			
Stiff reddish brown, locally stained purple and orange, gravelly CLAY, with extremely closely spaced to very closely spaced discontinuities (fissures). Gravel is subangular to angular flat fine to coarse horizontal very weak mudstone lithorelicts (Zone IVa). (MERCIA MUDSTONE GROUP)								13.90	0.87			SPT(C) 14.00m, N=29 (3,4/6,6,8,9)		14		
												14.20 - 14.30	D34			
EOH at 16.00m - Target depth achieved								16.00	-1.23			14.20 - 14.30	DD34	15		
												14.70 - 14.80	DD35			
								16.00	-1.23					16		
								16.00	-1.23					17		
								16.00	-1.23					18		
								16.00	-1.23					19		
								16.00	-1.23					20		
Observations / Remarks 1. Groundwater not observed. 2. Upon completion exploratory hole backfilled with asphalt to 0.30m, concrete to 1.20m and bentonite to base of pit.											Chiselling		Water Added		Hammer Information	
							From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %			
											Groundwater		Project Number			
							Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>			





Project: <b>A46 Newark - Northern Bypass</b>						Location Details				Status		Borehole Number					
 Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>						Easting: 480311.10    Northing: 355750.20 Level: 11.55mAOD    Depth: 6.00m Logger: DD    Type: SNC Inclination: 90°				<b>FINAL</b>		<b>BH44</b>					
Method, Plant and Crew						Diameter		Casing		Drilling Progress by Time				Scale: 1:50			
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB		
0.00	1.20	Inspection Pit	Hand Excavated	A. Mossman	1.20	300			18/06	03:00	6.00	4.00		Approved By:	JC		
1.20	6.00	Sonic Core Drilling	Fraste CRS-XL	A. Mossman	6.00	-								Start Date:	18/06/2021		
														Finish Date:	23/06/2021		
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing					
<b>ASPHALT. (MADE GROUND)</b> MGR							[Cross-hatch pattern]	0.38	11.17		[Cross-hatch pattern]	0.38 - 0.56	B003	1			
								0.56	10.99		[Cross-hatch pattern]	0.40	D002				
White slightly silty slightly sandy subangular to subrounded coarse GRAVEL of sandstone, limestone and quartz with low cobble content. (MADE GROUND) MGR							[Cross-hatch pattern]	0.90	10.65		[Cross-hatch pattern]	0.40	ES001	1			
								1.00	10.55		[Cross-hatch pattern]	0.56 - 0.90	B006				
Orangish brown slightly silty gravelly coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone, limestone and quartz with low cobble content. (MADE GROUND) MGR							[Cross-hatch pattern]	1.00	10.55		[Cross-hatch pattern]	0.60	D005	1			
								1.00	10.55		[Cross-hatch pattern]	0.90	ES004				
Grey slightly sandy slightly gravelly SILT. Gravel is subrounded to rounded fine to medium sandstone and quartz. (MADE GROUND) MGR							[Cross-hatch pattern]	1.40 - 1.50			[Cross-hatch pattern]	1.00	D007	1			
								1.50 - 1.60			[Cross-hatch pattern]	1.40 - 1.50	ESES7				
Stiff compacted friable mid to dark grey slightly sandy clayey SILT, with frequent subrounded vesicles (1-2mm) and rare gravels of subrounded to subangular fine to medium slag. (Fuel ash). (Embankment fill). (MADE GROUND) MGR							[Cross-hatch pattern]	2.40 - 2.50			[Cross-hatch pattern]	1.50 - 1.60	DD8	2			
								2.50 - 2.60			[Cross-hatch pattern]	2.40 - 2.50	ESES9				
Dense brown slightly clayey sandy GRAVEL, with medium cobble content. Gravel is subrounded to rounded, occasional angular, siltstone quartz chert and flint. Cobbles are subrounded to rounded (60-80mm) chert. Sand is medium to coarse. (Gravel and cobble in a clayey sand matrix). (ALLUVIUM)							[Cross-hatch pattern]	2.50 - 3.50			[Cross-hatch pattern]	2.50 - 3.50	B13	3			
								3.50 - 3.60			[Cross-hatch pattern]	2.50 - 3.50	BB13				
EOH at 6.00m - Target depth achieved							[Cross-hatch pattern]	3.40 - 3.50			[Cross-hatch pattern]	3.40 - 3.50	ESES11	4			
								3.50 - 3.60			[Cross-hatch pattern]	3.50 - 3.60	D12				
Dense brown slightly clayey sandy GRAVEL, with medium cobble content. Gravel is subrounded to rounded, occasional angular, siltstone quartz chert and flint. Cobbles are subrounded to rounded (60-80mm) chert. Sand is medium to coarse. (Gravel and cobble in a clayey sand matrix). (ALLUVIUM)							[Cross-hatch pattern]	4.40 - 4.50			[Cross-hatch pattern]	3.50 - 3.60	DD12	4			
								4.50 - 4.60			[Cross-hatch pattern]	4.40 - 4.50	ESES14				
Dense brown slightly clayey sandy GRAVEL, with medium cobble content. Gravel is subrounded to rounded, occasional angular, siltstone quartz chert and flint. Cobbles are subrounded to rounded (60-80mm) chert. Sand is medium to coarse. (Gravel and cobble in a clayey sand matrix). (ALLUVIUM)							[Cross-hatch pattern]	5.00 - 6.00	6.70		[Cross-hatch pattern]	4.50 - 4.60	DD15	5			
								5.00 - 6.00			[Cross-hatch pattern]	5.00 - 6.00	B17				
EOH at 6.00m - Target depth achieved							[Cross-hatch pattern]	5.40 - 5.50			[Cross-hatch pattern]	5.40 - 5.50	ESES16	5			
								5.40 - 5.50			[Cross-hatch pattern]	5.40 - 5.50	ESES16				
EOH at 6.00m - Target depth achieved							[Cross-hatch pattern]	6.00	5.55		[Cross-hatch pattern]	5.00 - 6.00	BB17	6			
								6.00			[Cross-hatch pattern]	5.40 - 5.50	ESES16				
EOH at 6.00m - Target depth achieved							[Cross-hatch pattern]	6.00	5.55		[Cross-hatch pattern]	5.40 - 5.50	ESES16	6			
								6.00			[Cross-hatch pattern]	5.40 - 5.50	ESES16				
EOH at 6.00m - Target depth achieved							[Cross-hatch pattern]	6.00	5.55		[Cross-hatch pattern]	5.40 - 5.50	ESES16	6			
								6.00			[Cross-hatch pattern]	5.40 - 5.50	ESES16				
EOH at 6.00m - Target depth achieved							[Cross-hatch pattern]	6.00	5.55		[Cross-hatch pattern]	5.40 - 5.50	ESES16	6			
								6.00			[Cross-hatch pattern]	5.40 - 5.50	ESES16				
EOH at 6.00m - Target depth achieved							[Cross-hatch pattern]	6.00	5.55		[Cross-hatch pattern]	5.40 - 5.50	ESES16	6			
								6.00			[Cross-hatch pattern]	5.40 - 5.50	ESES16				
EOH at 6.00m - Target depth achieved							[Cross-hatch pattern]	6.00	5.55		[Cross-hatch pattern]	5.40 - 5.50	ESES16	6			
								6.00			[Cross-hatch pattern]	5.40 - 5.50	ESES16				
EOH at 6.00m - Target depth achieved							[Cross-hatch pattern]	6.00	5.55		[Cross-hatch pattern]	5.40 - 5.50	ESES16	6			
								6.00			[Cross-hatch pattern]	5.40 - 5.50	ESES16				
EOH at 6.00m - Target depth achieved							[Cross-hatch pattern]	6.00	5.55		[Cross-hatch pattern]	5.40 - 5.50	ESES16	6			
								6.00			[Cross-hatch pattern]	5.40 - 5.50	ESES16				
EOH at 6.00m - Target depth achieved							[Cross-hatch pattern]	6.00	5.55		[Cross-hatch pattern]	5.40 - 5.50	ESES16	6			
								6.00			[Cross-hatch pattern]	5.40 - 5.50	ESES16				
EOH at 6.00m - Target depth achieved							[Cross-hatch pattern]	6.00	5.55		[Cross-hatch pattern]	5.40 - 5.50	ESES16	6			
								6.00			[Cross-hatch pattern]	5.40 - 5.50	ESES16				
EOH at 6.00m - Target depth achieved							[Cross-hatch pattern]	6.00	5.55		[Cross-hatch pattern]	5.40 - 5.50	ESES16	6			
								6.00			[Cross-hatch pattern]	5.40 - 5.50	ESES16				
EOH at 6.00m - Target depth achieved							[Cross-hatch pattern]	6.00	5.55		[Cross-hatch pattern]	5.40 - 5.50	ESES16	6			
								6.00			[Cross-hatch pattern]	5.40 - 5.50	ESES16				
EOH at 6.00m - Target depth achieved							[Cross-hatch pattern]	6.00	5.55		[Cross-hatch pattern]	5.40 - 5.50	ESES16	6			
								6.00			[Cross-hatch pattern]	5.40 - 5.50	ESES16				
EOH at 6.00m - Target depth achieved							[Cross-hatch pattern]	6.00	5.55		[Cross-hatch pattern]	5.40 - 5.50	ESES16	6			
								6.00			[Cross-hatch pattern]	5.40 - 5.50	ESES16				
EOH at 6.00m - Target depth achieved							[Cross-hatch pattern]	6.00	5.55		[Cross-hatch pattern]	5.40 - 5.50	ESES16	6			
								6.00			[Cross-hatch pattern]	5.40 - 5.50	ESES16				
EOH at 6.00m - Target depth achieved							[Cross-hatch pattern]	6.00	5.55		[Cross-hatch pattern]	5.40 - 5.50	ESES16	6			
								6.00			[Cross-hatch pattern]	5.40 - 5.50	ESES16				
EOH at 6.00m - Target depth achieved							[Cross-hatch pattern]	6.00	5.55		[Cross-hatch pattern]	5.40 - 5.50	ESES16	6			
								6.00			[Cross-hatch pattern]	5.40 - 5.50	ESES16				
EOH at 6.00m - Target depth achieved							[Cross-hatch pattern]	6.00	5.55		[Cross-hatch pattern]	5.40 - 5.50	ESES16	6			
								6.00			[Cross-hatch pattern]	5.40 - 5.50	ESES16				
EOH at 6.00m - Target depth achieved							[Cross-hatch pattern]	6.00	5.55		[Cross-hatch pattern]	5.40 - 5.50	ESES16	6			
								6.00			[Cross-hatch pattern]	5.40 - 5.50	ESES16				
EOH at 6.00m - Target depth achieved							[Cross-hatch pattern]	6.00	5.55		[Cross-hatch pattern]	5.40 - 5.50	ESES16	6			
								6.00			[Cross-hatch pattern]	5.40 - 5.50	ESES16				
EOH at 6.00m - Target depth achieved							[Cross-hatch pattern]	6.00	5.55		[Cross-hatch pattern]	5.40 - 5.50	ESES16	6			
								6.00			[Cross-hatch pattern]	5.40 - 5.50	ESES16				
EOH at 6.00m - Target depth achieved							[Cross-hatch pattern]	6.00	5.55		[Cross-hatch pattern]	5.40 - 5.50	ESES16	6			
								6.00			[Cross-hatch pattern]	5.40 - 5.50	ESES16				
EOH at 6.00m - Target depth achieved							[Cross-hatch pattern]	6.00	5.55		[Cross-hatch pattern]	5.40 - 5.50	ESES16	6			
								6.00			[Cross-hatch pattern]	5.40 - 5.50	ESES16				
EOH at 6.00m - Target depth achieved							[Cross-hatch pattern]	6.00	5.55		[Cross-hatch pattern]	5.40 - 5.50	ESES16	6			
								6.00			[Cross-hatch pattern]	5.40 - 5.50	ESES16				
EOH at 6.00m - Target depth achieved							[Cross-hatch pattern]	6.00	5.55		[Cross-hatch pattern]	5.40 - 5.50	ESES16	6			
								6.00			[Cross-hatch pattern]	5.40 - 5.50	ESES16				
EOH at 6.00m - Target depth achieved							[Cross-hatch pattern]	6.00	5.55		[Cross-hatch pattern]	5.40 - 5.50	ESES16	6			
								6.00			[Cross-hatch pattern]	5.40 - 5.50	ESES16				
EOH at 6.00m - Target depth achieved							[Cross-hatch pattern]	6.00	5.55		[Cross-hatch pattern]	5.40 - 5.50	ESES16	6			
								6.00			[Cross-hatch pattern]	5.40 - 5.50	ESES16				
EOH at 6.00m - Target depth achieved							[Cross-hatch pattern]	6.00	5.55		[Cross-hatch pattern]	5.40 - 5.50	ESES16	6			
								6.00			[Cross-hatch pattern]	5.40 - 5.50	ESES16				
EOH at 6.00m - Target depth achieved							[Cross-hatch pattern]	6.00	5.55		[Cross-hatch pattern]	5.40 - 5.50	ESES16	6			
								6.00			[Cross-hatch pattern]	5.40 - 5.50	ESES16				
EOH at 6.00m - Target depth achieved							[Cross-hatch pattern]	6.00	5.55		[Cross-hatch pattern]	5.40 - 5.50	ESES16	6			
								6.00			[Cross-hatch pattern]						

Project: <b>A46 Newark - Northern Bypass</b>					Location Details					Status		Borehole Number					
 Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>					Easting: 480354.10 Northing: 355851.10 Level: 12.01mAOD Depth: 12.00m Logger: DD Type: SNC Inclination: 90°					<b>FINAL</b>		<b>BH45</b>					
					Sheet 1 of 2												
Method, Plant and Crew					Diameter		Casing		Drilling Progress by Time								
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth (m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Scale:			
0.00	1.20	Inspection Pit	Hand Excavated	L. Gouws	1.20	300			13/07	04:00	12.00	10.00	FULL	1:50			
1.20	7.50	Sonic Core Drilling	Fraste CRS-XL	L. Gouws	12.00	-								Checked By: <b>NEB</b>			
														Approved By: <b>JC</b>			
														Start Date: <b>13/07/2021</b>			
														Finish Date: <b>15/07/2021</b>			
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing					
Soft dark brown silty sandy slightly gravelly CLAY, Sand is fine to coarse. Gravel is fine to coarse quartzite, flint and mudstone. (MADE GROUND) MGR Brown silty SAND and GRAVEL. Sand is fine to coarse. Gravel is angular fine to coarse quartzite, quartz and flint. (MADE GROUND) MGR <i>From 0.50m to 0.65m bgl band of limestone gravels.</i>							[Pattern]	0.20	11.81		[Pattern]	0.10	ES001	1 2 3 4 5 6 7 8 9 10	Tests / Results		
								0.30	D002	0.50	D003	0.55	ES007		0.60	B004	
Compacted dark grey SILT with rare subangular fine gravels of slag. (MADE GROUND) MGR							[Pattern]	1.20	10.81		[Pattern]	1.00	D005		SPT(C) 1.20m, 50 (7,15/50 for 70mm)		
								1.10	B006	1.20	ES008	1.40 - 1.50	DD9			1.40 - 1.80	BB8
Light brown slightly sandy silty GRAVEL, with low cobble content. Gravel is subrounded to rounded occasional angular fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded (60-80mm) chert. Sand is fine to coarse. (Embankment fill) (Gravel in a slightly sandy silt matrix). (MADE GROUND) MGR							[Pattern]	2.70	9.31		[Pattern]	2.30 - 2.40	ESES5		2.30 - 2.40 ESES5		
								3.00 - 4.00	BB7	3.40 - 3.50	ESES6	SPT(C) 4.00m, 48 (13,12/48 for 180mm)					
Dense light brown slightly clayey sandy GRAVEL, with low cobble content. Gravel is subrounded to rounded occasional angular fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded (60-80mm) chert. Sand is fine to coarse. (Embankment fill) (Gravel in a slightly sandy silt matrix). (MADE GROUND) MGR							[Pattern]	4.00	8.01		[Pattern]	4.00 - 5.00	BB9		4.00 - 5.00 BB9 4.40 - 4.50 ESES8		
								SPT(C) 4.00m, 48 (13,12/48 for 180mm)									
Firm thickly laminated to very thinly bedded mid bluish grey mottled light orange brown CLAY, with occasional pockets (1-10mm) of silt. Slight organic odour. (ALLUVIUM)							[Pattern]	5.85	6.16		[Pattern]	6.20 - 6.30	DD12		SPT(C) 6.00m, N=10 (1,2/2,3,2,3)		
								6.40 - 6.50	ESES10	SPT(C) 10.00m, N=17 (1,3/5,4,3,5)							
							[Pattern]	7.50	4.51		[Pattern]	7.40 - 7.50	ESES11	SPT(C) 8.00m, N=38 (6,6/8,10,10,10)			
								7.50	DD13	8.10 - 8.60	B14						
SPT(C) 10.00m, N=17 (1,3/5,4,3,5)																	
Observations / Remarks										Chiselling		Water Added		Hammer Information			
1. Groundwater not observed. 2. Upon completion exploratory hole backfilled with asphalt to 0.30m, concrete to 1.20m and bentonite to base of pit.										From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %	
										Groundwater			Project Number				
										Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>	


 Project: <b>A46 Newark - Northern Bypass</b> Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>					Location Details Easting: 480354.10 Northing: 355851.10 Level: 12.01mAOD Depth: 12.00m Logger: DD Type: SNC Inclination: 90°					Status  <b>FINAL</b>		Borehole Number  <b>BH45</b>																																						
					Method, Plant and Crew <table border="1"> <thead> <tr> <th>From (m)</th> <th>To (m)</th> <th>Type</th> <th>Plant Used</th> <th>Crew</th> </tr> </thead> <tbody> <tr> <td>0.00</td> <td>1.20</td> <td>Inspection Pit</td> <td>Hand Excavated</td> <td>L. Gouws</td> </tr> <tr> <td>1.20</td> <td>7.50</td> <td>Sonic Core Drilling</td> <td>Fraste CRS-XL</td> <td>L. Gouws</td> </tr> </tbody> </table>					From (m)	To (m)	Type	Plant Used	Crew	0.00	1.20	Inspection Pit	Hand Excavated	L. Gouws	1.20	7.50	Sonic Core Drilling	Fraste CRS-XL	L. Gouws	Diameter <table border="1"> <thead> <tr> <th>Depth (m)</th> <th>Diam (mm)</th> </tr> </thead> <tbody> <tr> <td>1.20</td> <td>300</td> </tr> <tr> <td>12.00</td> <td>-</td> </tr> </tbody> </table>		Depth (m)	Diam (mm)	1.20	300	12.00	-	Casing <table border="1"> <thead> <tr> <th>Depth(m)</th> <th>Diam (mm)</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>		Depth(m)	Diam (mm)			Drilling Progress by Time <table border="1"> <thead> <tr> <th>Date</th> <th>Time</th> <th>Depth (m)</th> <th>Casing (m)</th> <th>Water (m)</th> </tr> </thead> <tbody> <tr> <td>13/07</td> <td>04:00</td> <td>12.00</td> <td>10.00</td> <td>FULL</td> </tr> </tbody> </table>					Date	Time	Depth (m)	Casing (m)	Water (m)	13/07	04:00
From (m)	To (m)	Type	Plant Used	Crew																																														
0.00	1.20	Inspection Pit	Hand Excavated	L. Gouws																																														
1.20	7.50	Sonic Core Drilling	Fraste CRS-XL	L. Gouws																																														
Depth (m)	Diam (mm)																																																	
1.20	300																																																	
12.00	-																																																	
Depth(m)	Diam (mm)																																																	
Date	Time	Depth (m)	Casing (m)	Water (m)																																														
13/07	04:00	12.00	10.00	FULL																																														
Strata Description					Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing <table border="1"> <thead> <tr> <th>Depth (m)</th> <th>Ref</th> <th>Tests / Results</th> </tr> </thead> <tbody> <tr> <td>11.10 - 11.40</td> <td>C15</td> <td></td> </tr> <tr> <td></td> <td></td> <td>SPT(C) 12.00m, N=23 (11,10/8,6,4,5)</td> </tr> </tbody> </table>		Depth (m)	Ref	Tests / Results	11.10 - 11.40	C15				SPT(C) 12.00m, N=23 (11,10/8,6,4,5)																														
Depth (m)	Ref	Tests / Results																																																
11.10 - 11.40	C15																																																	
		SPT(C) 12.00m, N=23 (11,10/8,6,4,5)																																																
EOH at 12.00m - Terminated and moved to BH45A																																																		
Observations / Remarks 1. Groundwater not observed. 2. Upon completion exploratory hole backfilled with asphalt to 0.30m, concrete to 1.20m and bentonite to base of pit.					Chiselling <table border="1"> <thead> <tr> <th>From (m)</th> <th>To (m)</th> <th>Time (mins)</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table>			From (m)	To (m)	Time (mins)				Water Added <table border="1"> <thead> <tr> <th>From (m)</th> <th>To (m)</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>		From (m)	To (m)			Hammer Information <table border="1"> <thead> <tr> <th>Serial No.</th> <th>Energy Ratio %</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>		Serial No.	Energy Ratio %																											
From (m)	To (m)	Time (mins)																																																
From (m)	To (m)																																																	
Serial No.	Energy Ratio %																																																	
					Groundwater <table border="1"> <thead> <tr> <th>Strike (m)</th> <th>Casing (m)</th> <th>Sealed (m)</th> <th>Time (min)</th> <th>Rose To (m)</th> <th>Remarks</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>			Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks							Project Number  <b>784-B026948</b>																														
Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks																																													















	Project: <b>A46 Newark - Northern Bypass</b>	Location Details			Status	Borehole Number		
	Location: <b>Newark-on-Trent, Nottinghamshire</b>	Easting:	Northing:	FINAL	<b>BH45A</b>			
Client: <b>Highways England</b>	Level:	Depth: 12.00m	Logger: DD	Type: SNC	Inclination: 90°	Sheet 1 of 2		
Method, Plant and Crew		Diameter		Casing		Drilling Progress by Time		
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Date	
0.00	1.20	Inspection Pit	Hand Excavated	L. Gouws	1.20	300		
1.20	12.00	Sonic Core Drilling	Fraсте CRS-XL	L. Gouws	12.00	-		
					Scale: 1:50	Checked By: NEB	Approved By: JC	
					Start Date: 15/07/2021	Finish Date: 16/07/2021		
Strata Description					Legend	Depth (m)	Reduced Level (mAOD)	
Black ASPHALT. Aggregate of fine to coarse subangular to angular of limestone. (MADE GROUND)						0.06		
MGR						0.38		
Light grey dominated ASPHALT. Aggregate of fine to coarse angular to subangular of limestone. (MADE GROUND)						0.54		
MGR						1.20		
White sandy GRAVEL. Sand is fine to coarse. Gravel is angular to subangular fine to coarse flint and limestone. (MADE GROUND)								
MGR								
Dark brown very gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse flint. Some cobble size Gravel with depth. (MADE GROUND)								
MGR								
Compacted dark grey silt with rare subangular fine gravels of slag. (MADE GROUND)								
MGR								
Light brown slightly sandy silty GRAVEL, with low cobble content. Gravel is subrounded to rounded occasional angular fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded (60-80mm) chert. Sand is fine to coarse. (Embankment fill) (Gravel in a slightly sandy silt matrix). (MADE GROUND)								
MGR								
Light brown slightly clayey sandy GRAVEL, with low cobble content. Gravel is subrounded to rounded occasional angular fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded (60-80mm) chert. Sand is fine to coarse. (Embankment fill) (Gravel in a slightly sandy silt matrix). (MADE GROUND)								
MGR								
Light brown slightly clayey sandy GRAVEL, with low cobble content. Gravel is subrounded to rounded occasional angular fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded (60-80mm) chert. Sand is fine to coarse. (Embankment fill) (Gravel in a slightly sandy silt matrix). (MADE GROUND)								
MGR								
Firm thickly laminated to very thinly bedded mid bluish grey mottled light orange brown CLAY, with occasional pockets (1-10mm) of silt. Slight organic odour. (ALLUVIUM)								
From 8.00m to 8.10m bgl slightly clayey, sand is fine to medium								
Light brown slightly clayey sandy GRAVEL, with low cobble content. Gravel is subrounded to rounded occasionally angular fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded (60-80mm) chert. Sand is fine to coarse. (Gravel in a slightly sandy silt matrix). (ALLUVIUM)								
From 9.35m to 9.45m bgl gravel is clayey.								
From 9.45m bgl firm dark brown organic clay and decomposed wood.								
Observations / Remarks					Chiselling		Water Added	Hammer Information
1. Groundwater not observed.					From (m)	To (m)	Time (mins)	From (m)
2. Upon completion exploratory hole backfilled with asphalt to 0.30m, concrete to 1.20m and bentonite to base of pit.					To (m)			To (m)
					Groundwater			Project Number
					Strike (m)	Casing (m)	Sealed (m)	Time (min)
					Rose To (m)	Remarks		
								<b>784-B026948</b>


	Project: <b>A46 Newark - Northern Bypass</b>	Location Details			Status	Borehole Number								
	Location: <b>Newark-on-Trent, Nottinghamshire</b>	Easting:	Northing:		<b>FINAL</b>	<b>BH45A</b>								
	Client: <b>Highways England</b>	Level:	Depth: 12.00m	Type: SNC										
					Inclination: 90°			Sheet 2 of 2						
Method, Plant and Crew				Diameter		Casing		Drilling Progress by Time			Scale: 1:50			
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth (m)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	
0.00	1.20	Inspection Pit	Hand Excavated	L. Gouws	1.20	300							NEB	
1.20	12.00	Sonic Core Drilling	Fraste CRS-XL	L. Gouws	12.00	-							Approved By: JC	
													Start Date: 15/07/2021	
													Finish Date: 16/07/2021	
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing		
Light brown slightly clayey sandy GRAVEL, with low cobble content. Gravel is subrounded to rounded occasionally angular fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded (60-80mm) chert. Sand is fine to coarse. (Gravel in a slightly sandy silt matrix). (ALLUVIUM) Stiff reddish brown gravelly silty CLAY, with 0-10 degree extremely closely spaced to very closely spaced discontinuities. Gravel is subangular to angular flat fine to coarse horizontal lithorelics of very weak to extremely weak mudstone. (Zone IVa). (MERCIA MUDSTONE GROUP)							Depth (m)	Ref	Tests / Results					
							10.60		11.10 - 11.40 COREC15		11			
EOH at 12.00m - Target depth achieved							12.00				12			
											13			
											14			
											15			
											16			
											17			
											18			
											19			
											20			
Observations / Remarks								Chiselling		Water Added		Hammer Information		
1. Groundwater not observed. 2. Upon completion exploratory hole backfilled with asphalt to 0.30m, concrete to 1.20m and bentonite to base of pit.								From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %
								Groundwater			Project Number			
								Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>


Project: <b>A46 Newark - Northern Bypass</b>						Location Details						Status		Borehole Number										
 Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>						Easting: 480409.75    Northing: 355844.54 Level: 12.31mAOD    Depth: 7.50m Logger: DD    Type: RC Inclination: 90°						<b>FINAL</b>		<b>BH46</b>										
						Method, Plant and Crew										Casing		Drilling Progress by Time						Scale: 1:50
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By: NEB										
0.00 1.20	1.20 7.50	Inspection Pit Rotary Core	Hand Excavated Comacchio 205	S. Hales S. Hales	1.20 7.50	300 -			26/05	03:00	7.50	-	4.1	Approved By: JC										
<b>Strata Description</b>							<b>Legend</b>	<b>Depth (m)</b>	<b>Reduced Level (mAOD)</b>	<b>Water Level (m)</b>	<b>Inst / Backfill</b>	<b>Samples, Tests and Rotary Coring</b>												
												Depth (m)	Ref	Core Run	FI	TCR	SCR	RQD	Tests / Results					
Grass over dark brown soft silty sandy slightly gravelly CLAY with abundant rootlets. Sand is fine to medium. Gravel is subrounded to rounded fine quartzite and mudstone. (MADE GROUND) MGR Brown slightly sandy slightly gravelly SILT/CLAY. Sand is fine to coarse. Gravel is fine to coarse angular to rounded flint, quartzite, limestone, concrete and mudstone. (MADE GROUND) MGR <i>From 0.50m to 0.60m bgl band od subangular to angular limestone/concrete.</i>								0.10	12.21															
								1.20	11.11															
Firm light bluish grey mottled brownish orange CLAY. (ALLUVIUM)																								
Firm thinly laminated mid grey slightly organic CLAY. Slight organic odour. (ALLUVIUM)								6.10	6.21															
Dark brownish orange sandy GRAVEL. Gravel is subrounded to rounded fine to coarse siltstone quartz and chert. Sand is medium to coarse. (Poor recovery). (ALLUVIUM)								6.65	5.66															
EOH at 7.50m - Target depth achieved								7.50	4.81															
<b>Observations / Remarks</b> 1. Groundwater not observed. 2. Upon completion exploratory hole backfilled with asphalt to 0.30m, concrete to 1.20m and bentonite to base of pit.												<b>Drilling Fluid</b>				<b>Hammer Information</b>								
						From (m)	To (m)	Return Min %	Colour	Type	Serial No.		Energy Ratio %											
						1.20	7.50			Air														
<b>Groundwater</b>												<b>Project Number</b>												
						Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks		<b>784-B026948</b>											











 <b>Project: A46 Newark - Northern Bypass</b> <b>Location: Newark-on-Trent, Nottinghamshire</b> <b>Client: Highways England</b>						<b>Location Details</b> Easting: 480469.03 Northing: 355989.71 Level: 13.00mAOD Depth: 10.00m Logger: DD Type: WLS+RC Inclination: 90°				<b>Status</b>  <b>FINAL</b>		<b>Borehole Number</b>  <b>BH47</b>							
Method, Plant and Crew						Diameter		Casing		Drilling Progress by Time				Scale: 1:50					
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB				
0.00	1.20	Inspection Pit	Hand Excavated	S. Hales	1.20	300			25/05	03:20	10.00	8.50	4.1	Approved By:	JC				
1.20	8.50	Dynamic Windowless Sampling	Comacchio 205	S. Hales	8.50	-								Start Date:	25/05/2021				
8.50	10.00	Rotary Core	Comacchio 205	S. Hales	10.00	-								Finish Date:	03/06/2021				
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples, Tests and Rotary Coring							
Dark brown slightly sandy slightly gravelly SILT. Sand is fine to medium. Gravel is angular fine to coarse quartzite, concrete and limestone. (MADE GROUND) MGR							[Pattern]	0.25	12.75		[Pattern]	0.10	B004						
Light brown slightly sandy subangular medium GRAVEL of limestone and concrete. Sand is fine to medium. (MADE GROUND) MGR								0.50	12.50		[Pattern]	0.10 0.20 0.30 0.40 0.50 0.70 0.70 0.80 0.90	D001 B005 E008 D002 B006 B6 E009 D003						
Firm dark greyish brown organic CLAY, with occasional pockets and lenses (3-5mm) of light brown fine decomposed organic matter. Occasional rootlets (<1mm), with slight organic odour. (ALLUVIUM)							[Pattern]	3.00	10.00			3.20 - 3.30	ESES11						SPT(S) 1.20m, N=41 (1,4/9,10,10,12)
Soft light bluish grey mottled brown CLAY, with frequent pockets (5-10mm) of decomposed organic matter. (ALLUVIUM) <i>From 3.80m to 4.00m bgl locally silty.</i> <i>From 4.00m to 5.00m bgl tap root (10mm).</i>								3.80	9.20		[Symbol]	3.50 - 3.60	DD4						SPT(S) 2.00m, N=11 (2,3/2,3,3,3)
Mid orange brown clayey slightly gravelly medium to coarse SAND. Gravel is subangular to angular fine to coarse lithorelics of mudstone. (Zone: IVa/IVb). (MERCIA MUDSTONE GROUP)							[Pattern]	4.60	8.40			4.20 - 4.30	B						SPT(S) 3.00m, N=5 (1,1/2,1,1,1)
Stiff friable reddish brown slightly sandy slightly gravelly CLAY. Gravel is subangular to angular fine to coarse locally horizontal very weak mudstone. Sand is fine to medium. (Zone: IVa/IVb). (MERCIA MUDSTONE GROUP)								5.00	8.00			4.20 - 4.30	DD5					SPT(S) 4.00m, N=19 (2,3/4,5,6,4)	
							[Pattern]	4.90				4.90 - 5.00	DD6					SPT(S) 5.00m, N=9 (1,1/2,1,2,4)	
								5.40				5.40 - 5.50	DD7					SPT(S) 6.00m, N=21 (1,3/5,5,5,6)	
							[Pattern]	6.40				6.40 - 6.50	DD8					SPT(S) 7.00m, 50 (9,12/50 for 230mm)	
								7.50				7.50 - 7.60	DD9					SPT(S) 8.50m, 50 (9,10/50 for 255mm)	
Medium strong mid to light bluish grey SILTSTONE, locally disseminated reddish brown mudstone (2-3mm). (Zone 1). (IF:40/300/300). (MERCIA MUDSTONE GROUP) <i>From 9.50m to 9.60m bgl band of gypsum.</i>							[Pattern]	9.15	3.85										
Weak reddish brown MUDSTONE. (Zone II). (IF:40/100/150). (MERCIA MUDSTONE GROUP) <i>From 9.80m to 9.87m bgl non-intact.</i>								9.70	3.30			9.70 - 10.00	COREC1 0						
EOH at 10.00m - Target depth achieved								10.00	3.00										
Observations / Remarks							Sampling Runs			Drilling Fluid				Hammer Information					
1. Upon completion exploratory hole backfilled with asphalt to 0.30m, concrete to 1.20m and bentonite to base of pit.							From (m)	To (m)	Diameter (mm)	Recovery %	From (m)	To (m)	Return Min %	Colour	Type	Serial No.	Energy Ratio %		
							1.20	2.00		100	8.50	10.00			Air / Mist				
							2.00	4.00		100									
							4.00	6.00		100	Groundwater				Project Number				
							6.00	8.00		100	Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	784-B026948		
							8.00	10.00		100	4.00	3	-	20	4.20				




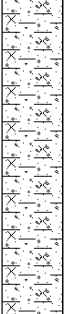

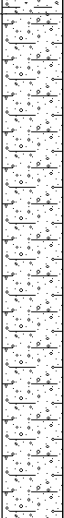

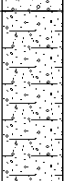



Project: <b>A46 Newark - Northern Bypass</b>						Location Details						Status		Borehole Number												
 Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>						Easting: 480961.80		Northing: 355976.50				<b>FINAL</b>		<b>BH48</b>												
						Level: 11.12mAOD		Depth: 10.00m		Logger: DD						Type: WLS+RC										
								Inclination: 90°				Sheet 1 of 1														
Method, Plant and Crew					Diameter		Casing		Drilling Progress by Time																	
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Scale:	1:50											
0.00	1.20	Inspection Pit	Hand Excavated	S. Hales	1.20	300			19/05	04:00	7.00	6.00	4.1	Checked By:	NEB											
1.20	7.00	Dynamic Windowless Sampling	Comacchio 205	S. Hales	7.00	-			20/05	01:40	10.00	7.00	4.1	Approved By:	JC											
7.00	10.00	Rotary Core	Comacchio 205	S. Hales	10.00	-								Start Date:	19/05/2021											
															Finish Date:	26/05/2021										
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples, Tests and Rotary Coring														
												Depth (m)	Ref	Core Run	FI	TCR	SCR	RQD	Tests / Results							
Grass over slightly sandy slightly gravelly soft CLAY with frequent rootlets. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium flint, limestone, and sandstone. (MADE GROUND) MGR Brown and grey slightly gravelly coarse SAND. Gravel is angular to rounded fine to coarse sandstone, siltstone and limestone. (MADE GROUND) MGR <i>From 1.00m to 1.20m bgl becoming slightly clayey.</i>								0.20	10.92			0.30 0.30 0.30 - 0.50	D002 ES001 B003													
Stiff reddish brown locally mottled dark grey/ black sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse mudstone quartz chert and occasional fragments of glass. Sand is fine. (Embankment fill). (MADE GROUND) MGR								1.20	9.92			1.20 - 1.80 1.20 - 1.80	B11 BB11													
Medium dense becoming loose light reddish brown slightly gravelly medium SAND. Gravel is subrounded to rounded occasional angular fine to coarse siltstone quartz chert and flint. (ALLUVIUM)  <i>From 2.70m to 3.00m bgl gravelly, Gravel is subrounded to rounded medium to coarse sandstone quartz and chert.</i> <i>From 3.00m to 3.50m bgl mid reddish brown.</i>								1.80	9.32			1.80 - 3.50 1.80 - 3.50 2.00 - 2.50	B12 BB12 ESES9											SPT(S) 2.00m, N=22 (3,4/4,6,6)	2	
Firm to soft reddish brown mottled light bluish grey slightly gravelly CLAY. Gravel is subangular to angular occasionally flat fine to coarse very weak to weak mudstone. (Zone: IVa). (MERCIA MUDSTONE GROUP) Stiff reddish brown very gravelly CLAY. Gravel is subangular to angular flat locally horizontal fine to medium occasionally coarse very weak to weak mudstone. 0-10 degree extremely closely spaced dark purple stained discontinuities. Non intact recovered as clayey gravel. (Zone: III). (MERCIA MUDSTONE GROUP)								3.50	7.62			3.60 - 3.70	DD13													
Firm mid reddish brown clayey SILT. (Zonne: IVb). (MERCIA MUDSTONE GROUP)								3.90	7.22			4.00 - 5.00 4.00 - 5.00	B15 BB15											SPT(S) 4.00m, N=19 (1,2/4,5,5)	4	
Extremely weak to very weak reddish brown MUDSTONE, with 0-5 degree closely spaced irregular rough discontinuities. 0-10 degree and randomly orientated extremely closely spaced to very closely spaced incipient discontinuities with a trace of silt/ fine sand. (Zone: II/III) (IF: 20/150/200). (MERCIA MUDSTONE GROUP) <i>From 9.80m to 10.00m bgl light bluish grey.</i>								9.40	1.72			9.50 - 9.70	COREC1 7													
EOH at 10.00m - Target depth achieved								10.00	1.12																	
Observations / Remarks 1. Upon completion exploratory hole backfilled with asphalt to 0.30m, concrete to 1.20m and bentonite to base of pit.							Sampling Runs		Drilling Fluid				Hammer Information													
							From (m)	To (m)	Diameter (mm)	Recovery %	From (m)	To (m)	Return Min %	Colour	Type	Serial No.	Energy Ratio %									
							3.00	4.00		100	7.00	10.00			Air / Mist											
							4.00	5.00		100	Groundwater				Project Number											
							5.00	6.00		100	Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>									
6.00	7.00		100	4.00	-	-	0	0.00																		
7.00	8.50		100																							
8.50	10.00		100																							



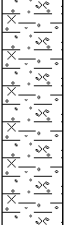
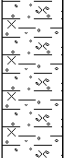


 <b>Project: A46 Newark - Northern Bypass</b> <b>Location: Newark-on-Trent, Nottinghamshire</b> <b>Client: Highways England</b>				<b>Location Details</b> Easting: 480409.92 Northing: 355909.50 Level: 11.87mAOD Depth: 10.00m Logger: DD Type: WLS+RC Inclination: 90°			<b>Status</b>  <b>FINAL</b>		<b>Borehole Number</b>  <b>BH49</b>												
<b>Method, Plant and Crew</b>						<b>Diameter</b>		<b>Casing</b>			<b>Drilling Progress by Time</b>				Scale: 1:50 Checked By: NEB Approved By: JC Start Date: 24/05/2021 Finish Date: 01/06/2021						
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)								
0.00	1.20	Inspection Pit	Hand Excavated	S. Hales	1.20	300	10.00	152	24/05	04:00	10.00	6.00	4.2								
1.20	6.00	Rotary Core	Comacchio 205	S. Hales	10.00	152															
6.00	7.00	Dynamic Windowless Sampling	Comacchio 205	S. Hales																	
7.00	10.00	Rotary Core	Comacchio 205	S. Hales																	
<b>Strata Description</b>							<b>Legend</b>	<b>Depth (m)</b>	<b>Reduced Level (mAOD)</b>	<b>Water Level (m)</b>	<b>Inst / Backfill</b>	<b>Samples, Tests and Rotary Coring</b>									
Grass overlying dark brown silty slightly gravelly medium SAND. Gravel is subrounded to rounded fine to coarse quartzite and mudstone. (TOPSOIL) TOP								0.10				0.10	ES004								
Extremely weak reddish brown slightly sandy slightly gravelly SILT. Sand is fine. Gravel is angular to subangular fine to coarse mudstone. (ALLUVIUM)								0.30				0.30	D001								
								0.40				0.40	B006								
								0.50				0.50	ES005								
								0.60				0.60	D002								
								0.80				0.80	B007								
								0.80				0.80	B7								
								1.00				1.00	D003								
								1.00				1.00	ES008								
Non intact, recovered as dense subangular to angular medium to coarse GRAVEL of weak mudstone. (MERCIA MUDSTONE GROUP)								2.70	9.17			1.50									
								3.00				3.00									
								3.70	8.17			4.00 - 4.10	DD7								
Extremely weak to locally very weak reddish brown MUDSTONE with 0-10 degree locally discernible 60 degree and randomly orientated extremely closely spaced to very closely spaced planar and irregular slightly rough discontinuities with occasional discoloured mid purple brown with a trace of silt. localised silt infill (2-3mm) and locally striated and polished. (Zone III) (IF:NI/20/60). (MERCIA MUDSTONE GROUP) <i>From 3.90m to 4.50m bgl 60 degree closely spaced planar undulating slightly rough with 1-2mm silt infill. (IF:20/80/120).</i>								4.00				5.00 - 5.10	DD8								
								4.50				4.50									
								5.00				6.00									
								5.50				6.00									
								6.00				6.50 - 6.60	DD9								
								6.50				6.50									
								7.00	4.87			7.40 - 7.70	B CORE1								
Medium strong very thickly bedded light reddish brown MUDSTONE, with 0-10 degree closely spaced to medium spaced planar to undulating slightly rough with frequent gypsum veins (2-10mm) following bedding, localised displacement (2-3mm). (Zone: I). (IF:80/350/600). (MERCIA MUDSTONE GROUP) <i>From 8.20m to 8.50m bgl gypsum.</i>								7.40				7.40 - 7.70	0								
								7.70				7.70									
								7.80				7.70									
								8.00				7.70									
								8.50				7.70									
								8.80	2.97			9.00 - 9.10	CORE1								
Medium strong grey SILTSTONE (250mm intact core). (Zone: I). (MERCIA MUDSTONE GROUP)								9.00				9.00	1								
								9.10				8.50									
								9.15	2.72			9.40 - 9.55	CORE1								
Weak very thinly bedded dark reddish brown MUDSTONE, with 0-10 degree very closely spaced undulating slightly rough discontinuities, partly non intact. (Zone II) (IF:20/60/80). (MERCIA MUDSTONE GROUP)								9.40				9.40	2								
								9.50				8.50									
								10.00	1.87												
EOH at 10.00m - Target depth achieved																					
<b>Observations / Remarks</b>							<b>Sampling Runs</b>		<b>Drilling Fluid</b>				<b>Hammer Information</b>								
1. Upon completion exploratory hole backfilled with asphalt to 0.30m, concrete to 1.20m and bentonite to base of pit.							From (m)	To (m)	Diameter (mm)	Recovery %	From (m)	To (m)	Return Min %	Colour	Type	Serial No.	Energy Ratio %				
							1.50	3.00			1.20	10.00									
							3.00	4.50													
							4.50	6.00													
							6.00	7.00													
							7.00	8.50													
							8.50	10.00													
							<b>Groundwater</b>				<b>Project Number</b>										
							Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks									
							4.50	3	-	20	4.30										
														<b>784-B026948</b>							

 <b>Project: A46 Newark - Northern Bypass</b> <b>Location: Newark-on-Trent, Nottinghamshire</b> <b>Client: Highways England</b>						<b>Location Details</b> Easting: 480777.20 Northing: 356057.10 Level: 12.89mAOD Depth: 10.00m Logger: DD Type: WLS+RC Inclination: 90°				<b>Status</b> <b>FINAL</b>		<b>Borehole Number</b> <b>BH50</b>											
Method, Plant and Crew						Diameter		Casing		Drilling Progress by Time				Scale: 1:50									
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB								
0.00	1.20	Inspection Pit	Hand Excavated	S. Hales	1.20	300	7.00	152	21/05	02:45	10.00	7.00	6.15	Approved By:	JC								
1.20	4.00	Dynamic Windowless Sampling	Comacchio 205	S. Hales	7.00	152								Start Date:	20/05/2021								
4.00	7.00	Rotary Core	Comacchio 205	S. Hales	7.00	102								Finish Date:	27/05/2021								
7.00	10.00	Dynamic Windowless Sampling	Comacchio 205	S. Hales	10.00																		
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples, Tests and Rotary Coring											
Grass over soft brown slightly sandy CLAY with frequent rootlets. Sand is fine to coarse. (TOPSOIL) TOP								0.10	12.79			Depth (m)	Ref	Core Run	FI	TCR	SCR	RQD	Tests / Results				
Brown sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse siltstone, quartzite, shale and sandstone. (MADE GROUND) MGR								0.90	11.99			0.40	D002										
Firm brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to rounded fine to coarse sandstone, quartzite and siltstone. (MADE GROUND) MGR								1.20	11.69			0.40 - 0.60	ES001	B003									
Stiff reddish brown locally mottled orange and grey slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to medium sandstone mudstone and quartz. Occasional irregular pockets (to 3mm thick) of mid grey fine to medium sand. (Embankment fill). (MADE GROUND) MGR								2.00	10.89			1.00	D005								1		
From 1.30m to 1.40m bgl light pink and white subangular coarse 30-50mm granite clasts (possibly subbase).								1.20	11.69			1.00 - 1.20	ES004	B006	B6					SPT(S) 1.20m, N=23 (7,10/8,6,4,5)			
Compacted brown locally mottled orange/ dark grey sandy very gravelly fine to medium CLAY. Gravel is subrounded to rounded fine to coarse, occasionally angular, siltstone quartz chert and sandstone. (Subbase fill). (MADE GROUND) MGR								2.50	10.39			1.60 - 1.70	ESES7								2		
From 2.30m to 2.40m bgl frequent pockets (5x10mm) of ash.								2.70	10.19			1.80 - 1.90	DD10							SPT(S) 2.00m, N=22 (3,5/6,6,5,5)			
Compacted dark reddish brown clayey fine to medium SAND. (MADE GROUND) MGR								3.00	9.89			2.00 - 2.50	BB9							3			
Stiff reddish brown CLAY, with locally extremely closely spaced 0 degree discontinuities with localised dark purple staining. (Zone: IVb). (MERCIA MUDSTONE GROUP)								3.50	9.39			2.50 - 2.70	DD11								SPT(S) 3.00m, N=50 (9,11/11,11,13,15)		
From 2.70m bgl 45 degree contact.								5.30	7.59			2.70 - 2.80	ESES8							4			
Stiff friable reddish brown silty CLAY, with extremely closely spaced (0-10 degree) discontinuities (fissures). (Zone IVb). (MERCIA MUDSTONE GROUP)								5.30	7.59			2.80 - 2.90	DD12								SPT(S) 4.00m, N=34 (5,10/11,9,7,7)		
Stiff reddish brown very gravelly silty CLAY. Gravel is subangular to angular occasionally flat fine to coarse very weak to weak mudstone. (Lithorelics of mudstone within a clay matrix). Frequent dark purple staining on discontinuity surfaces (Zone III). (MERCIA MUDSTONE GROUP)								6.80	6.09			3.30 - 3.40	DD13									5	
Stiff friable reddish brown silty CLAY, with extremely closely spaced (0-10 degree) discontinuities (fissures). (Zone IVb). (MERCIA MUDSTONE GROUP)								6.80	6.09			3.70 - 3.80	DD14								6		
Stiff friable reddish brown and light black grey silty CLAY, with 0-10 degree extremely closely spaced to very closely spaced discontinuities/ fissures. Rare angular to sub-angular fine to coarse lithorelics of very weak mudstone. (Zone: IVa/IVb). (MERCIA MUDSTONE GROUP)								7.30	5.79			5.40 - 5.50	DD15										SPT(S) 5.50m, N=12 (1,2/3,3,2,4)
From 8.00m to 8.50m bgl recovered as clayey fine SAND.								7.30	5.79			7.30 - 7.40	DD16								7		
Extremely weak to very weak reddish brown MUDSTONE. Non intact, recovered as clayey subangular to angular fine to medium, occasionally coarse, gravel. (Possibly extremely closely spaced discontinuities). (Zone III). (MERCIA MUDSTONE GROUP)								7.60	5.69			7.60 - 7.70	DD17									8	
Stiff reddish brown very gravelly CLAY. Gravel is subangular to angular fine to coarse lithorelics of very weak mudstone. (Randomly orientated lithorelics in a clay matrix). (Zone III). (MERCIA MUDSTONE GROUP)								8.30	5.39			8.30 - 8.40	DD18										SPT(S) 8.00m, N=30 (1,2/2,6,9,13)
EOH at 10.00m - Target depth achieved								8.90	3.99			9.30 - 9.40	DD19								9		
EOH at 10.00m - Target depth achieved								9.60	3.29			9.80 - 9.90	DD20									SPT(S) 9.00m, N=13 (2,2/3,3,4)	
EOH at 10.00m - Target depth achieved								10.00	2.89												10		
Observations / Remarks							Sampling Runs				Drilling Fluid				Hammer Information								
1. Upon completion exploratory hole backfilled with asphalt to 0.30m, concrete to 1.20m and bentonite to base of pit.							From (m)	To (m)	Diameter (mm)	Recovery %	From (m)	To (m)	Return Min %	Colour	Type	Serial No.	Energy Ratio %						
							1.20	2.00		100	4.00	10.00			Air / Mist								
							2.00	3.00		100													
							Groundwater						Project Number										
							Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	784-B026948										
							7.00	4	-	20	6.20												



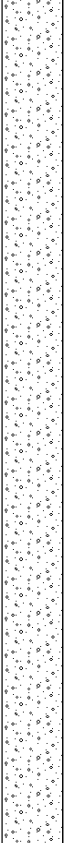
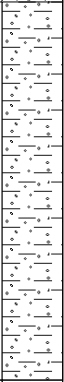


 <b>Project: A46 Newark - Northern Bypass</b> <b>Location: Newark-on-Trent, Nottinghamshire</b> <b>Client: Highways England</b>						<b>Location Details</b> Easting: 478103.48 Northing: 353255.52 Level: 7.75mAOD Depth: 7.30m Logger: TK Type: CP Inclination: 90°				<b>Status</b>  <b>FINAL</b>		<b>Borehole Number</b>  <b>BH51</b>					
Method, Plant and Crew						Diameter		Casing		Drilling Progress by Time				Scale: 1:50			
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth (m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB		
0.00	1.20	Inspection Pit	Hand Excavated	M. Whitehead	1.20	300	7.00	150	10/05	14:00	4.00	-	0.7	Approved By:	JC		
1.20	7.30	Cable Percussion	Cable Percussion Rig	M. Whitehead	7.30	150			11/05	09:30	4.00	7.00	0.7	Start Date:	18/05/2021		
									18/05	16:00	7.30			Finish Date:	21/05/2021		
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing					
Brown slightly gravelly slightly silty slightly clayey fine to coarse SAND. Gravel is angular to subangular fine to coarse quartzite and flint (ALLUVIUM)								0.30	7.45								
Yellow orange and grey slightly gravelly slightly sandy CLAY. Gravel is angular to subrounded fine to coarse fine to coarse quartzite. (ALLUVIUM)								1.10	6.65								
Loose yellow orange slightly silty fine to coarse SAND. (ALLUVIUM)								1.20	6.55								
Soft mottled mid grey and greyish brown very sandy CLAY, with rare gravels of medium subangular to angular flat very weak carbonaceous mudstone. Frequent pockets of fine organic matter. Sand is medium to coarse. (ALLUVIUM)								1.65	6.10				1.40 - 1.50 B 1.40 - 1.50 D1 1.40 - 1.50 DD1 1.70 - 2.30 BB1				
Medium dense brown slightly gravelly medium SAND. Gravels is subrounded to rounded, occasional subangular (flint) medium to coarse chert quartz and flint. (ALLUVIUM)								2.40	5.35								
<i>Light to mid brown gravelly coarse sand.</i>																	
Light brown to brown sandy GRAVEL. Gravel is subrounded to rounded occasional subangular (flint) fine to coarse quartzite and quartz. Sand is medium to coarse. (ALLUVIUM)								3.00	4.75				2.50 - 3.00 B2 2.50 - 3.00 BB2				
Medium dense brown slightly clayey sandy subangular to angular coarse GRAVEL of flint with occasional cobbles. Sand is fine to coarse. (ALLUVIUM)								5.00									
Reddish brown silty CLAY. (MERCIA MUDSTONE GROUP FORMATION) <i>From 6.00 to 7.00m bgl gypsum crystals.</i>								6.00	1.75				6.00 - 6.45 D2 6.00 - 6.45 DD2				
EOH at 7.30m - Target depth achieved								7.30	0.45				7.00 - 7.45 DD3				
Observations / Remarks											Chiselling		Water Added		Hammer Information		
1. Upon completion exploratory hole backfilled with bentonite.											From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %
											6.00	7.00	60				
											Groundwater				Project Number		
											Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	
											1.00	-	-	20	0.80		<b>784-B026948</b>


Project: <b>A46 Newark - Northern Bypass</b>					Location Details					Status		Borehole Number					
 Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>					Easting: 478788.53    Northing: 354314.15 Level: 6.76mAOD    Depth: 7.65m Logger: TK    Type: CP Inclination: 90°					<b>FINAL</b>		<b>BH52</b>					
					Sheet 1 of 1												
Method, Plant and Crew					Diameter		Casing		Drilling Progress by Time								
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Scale:			
0.00	1.20	Inspection Pit	Hand Excavated	M. Whitehead	1.20	300	7.20	150	20/05	15:45	7.65	7.20		1:50			
1.20	7.65	Cable Percussion	Cable Percussion Rig	M. Whitehead	7.65	150								Checked By: <b>NEB</b>			
														Approved By: <b>JC</b>			
														Start Date: <b>20/05/2021</b>			
														Finish Date: <b>21/05/2021</b>			
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing					
Firm brown slightly gravelly sandy CLAY with abundant roots. Sand is fine to medium. Gravel is subangular to subrounded fine to medium flint with rare brick fragments. (ALLUVIUM)								0.30	6.46			0.10	B002	SPT(S) 1.50m, N=10 (1,1/2,1,3,4)			
												0.10	ES001				
0.30	B004																
0.30	ES003																
0.50	B006																
0.50	B6																
0.50	ES005																
1.00	B008																
1.00	ES007																
1.20	D009																
1.30	ES010																
Orangish brown soft to firm sandy CLAY. Sand is fine to medium. (ALLUVIUM)								1.20	5.56			1.50	D011	SPT(C) 2.50m, N=11 (2,1/2,2,4,3)			
												1.50 - 1.95	B012				
1.50 - 1.95	B12																
Medium dense orangish brown slightly clayey sandy subangular to subrounded coarse GRAVEL. Sand is fine to coarse. (ALLUVIUM)								1.90	4.86			2.30	ES013				
												2.50	B014				
2.50	B14																
3.00	D015																
3.50	B016	SPT(C) 3.50m, N=16 (3,3/4,3,4,5)															
4.00	D017																
4.00	D17																
4.50	B018	SPT(C) 4.50m, N=15 (2,3/4,4,3,4)															
5.00	D019																
5.50	B020																
6.00	B021	SPT(C) 6.00m, N=15 (2,2/5,4,3,3)															
Stiff reddish brown silty CLAY. (ALLUVIUM)								6.50	0.26			6.50	B022				
												6.50	B22				
7.00	D023	SPT(S) 7.20m, 50 (25 for 75mm/50 for 100mm)															
EOH at 7.65m - Target depth achieved								7.65	-0.89								
Observations / Remarks											Chiselling		Water Added		Hammer Information		
1. Upon completion exploratory hole backfilled with bentonite.											From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %
											6.50	7.20	60	2.00	7.20		
											Groundwater				Project Number		
											Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>
											2.00	-	-	20	2.00		













 Project: <b>A46 Newark - Northern Bypass</b> Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>					<b>Location Details</b> Easting: 479025.17 Northing: 354498.73 Level: 10.78mAOD Depth: 7.70m Logger: Type: CP Inclination: 90°					<b>Status</b> <b>FINAL</b>		<b>Borehole Number</b> <b>BH53</b>				
<b>Method, Plant and Crew</b>					<b>Diameter</b>		<b>Casing</b>		<b>Drilling Progress by Time</b>				Scale: 1:50 Checked By: NEB Approved By: JC Start Date: 21/05/2021 Finish Date: 24/05/2021			
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth (m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	<b>Samples and Testing</b>		
0.00	1.20	Inspection Pit	Hand Excavated	M. Whitehead	1.20	300	7.50	150	21/05	15:00	7.70	7.50		Depth (m)	Ref	Tests / Results
<b>Strata Description</b>					<b>Legend</b>		<b>Reduced Level (mAOD)</b>		<b>Water Level (m)</b>		<b>Inst / Backfill</b>					
Stiff dark brown silty sandy CLAY. Sand is fine to medium. (TOPSOIL) TOP							0.40		10.38				0.10 B001 0.10 ES002 0.30 ES003 0.50 B004 0.50 ES005			
Stiff brown slightly gravelly sandy silty CLAY. Sand is fine to medium. Gravel is subangular to angular fine to medium brick fragments. (ALLUVIUM)  <i>From 1.50m bgl very sandy.</i>							2.60		8.18				1.00 B006 1.00 ES007 1.40 D009 1.40 ES008 1.50 B010 1.50 B10 SPT(S) 1.50m, N=9 (1,1/2,1,3,3) 2.00 B011 2.40 B013 2.40 ES012 2.50 D014 SPT(S) 2.50m, N=13 (2,2/2,3,4,4) 3.00 D015 3.50 B016 SPT(S) 3.50m, N=17 (3,3/3,4,5,5) 4.00 D017 4.50 B018 4.50 B18 SPT(S) 4.50m, N=16 (2,3/4,4,4,4) 5.50 D019			
Medium dense orangish brown slightly clayey sandy subangular to subrounded coarse GRAVEL of flint. Sand is fine to coarse. (ALLUVIUM)  <i>From 4.70m bgl occasional cobbles.</i>							6.00		4.78				6.00 B020 SPT(C) 6.00m, N=15 (2,2/5,4,3,3)			
Medium dense orangish brown clayey gravelly coarse SAND. Gravel is subangular to angular fine to coarse flint. (ALLUVIUM)							7.20		3.58				SPT(C) 7.50m, 50 (15,10/50 for 113mm)			
Rock encountered but no sample recovery. (NO RECOVERY)							7.70		3.08							
EOH at 7.70m - Target depth achieved																
<b>Observations / Remarks</b>										<b>Chiselling</b>			<b>Water Added</b>		<b>Hammer Information</b>	
1. Upon completion exploratory hole backfilled with bentonite.										From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %
										7.10	7.50	60				
										<b>Groundwater</b>					<b>Project Number</b>	
										Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>
										2.00	-	-	20	2.00		


Project: <b>A46 Newark - Northern Bypass</b>					Location Details					Status		Borehole Number				
 Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>					Easting: 478067.15    Northing: 352732.82 Level: 10.78mAOD    Depth: 6.45m Logger: TK    Type: CP Inclination: 90°					<b>FINAL</b>		<b>BH54</b>				
					Sheet 1 of 1											
Method, Plant and Crew					Diameter		Casing		Drilling Progress by Time							
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth (m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)			
0.00	1.20	Inspection Pit	Hand Excavated	M. Whitehead	1.20	300	5.00	150	02/06	15:30	1.50	1.50				
1.20	6.45	Cable Percussion	Cable Percussion Rig	M. Whitehead	6.45	150			03/06	18:00	6.45	5.00				
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing				
Dark brown gravelly sandy silty CLAY. Sand is fine to medium. Gravel is subangular to subrounded fine to coarse flint. (TOPSOIL)								0.10	10.68			0.40	ES001			
												0.50	B002			
Medium dense reddish brown and light grey slightly silty slightly gravelly silty fine to coarse SAND. Gravel is rounded to subrounded fine to coarse flint and siltstone. (ALLUVIUM)								1.00	8.78			0.50 - 1.00	B003			
												1.00	B004			
Medium dense brown clayey sandy subangular to subrounded fine to coarse GRAVEL of flint. Sand is fine to coarse. (ALLUVIUM)								1.50	8.78					SPT(S) 1.50m, N=16 (2,2/4,4,4,4)		
												1.50	B005			
Medium dense brown clayey sandy subangular to subrounded fine to coarse GRAVEL of flint. Sand is fine to coarse. (ALLUVIUM)								2.00	8.78							
												2.50	B006	SPT(S) 2.50m, N=27 (4,4/6,6,7,8)		
Brown and reddish brown silty CLAY. (MERCIA MUDSTONE GROUP)								4.50	6.28							
												3.50	B007 D008	SPT(C) 3.50m, N=20 (2,3/4,4,6,6)		
Brown and reddish brown silty CLAY. (MERCIA MUDSTONE GROUP)								4.50	6.28							
												4.50	D009	SPT(S) 4.50m, N=8 (1,2/2,2,2,2)		
Brown and reddish brown silty CLAY. (MERCIA MUDSTONE GROUP)								5.50	6.28							
												5.50	D010			
Brown and reddish brown silty CLAY. (MERCIA MUDSTONE GROUP)								6.00	6.28							
												6.00	D011	SPT(S) 6.00m, 50 (7,11/50 for 350mm)		
EOH at 6.45m - Target depth achieved								6.45	4.34							
Observations / Remarks										Chiselling			Water Added		Hammer Information	
1. Groundwater not observed. 2. Upon completion exploratory hole backfilled with bentonite.										From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %
										5.00	6.00	60				
										Groundwater				Project Number		
										Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>






Project: <b>A46 Newark - Northern Bypass</b>					Location Details					Status		Borehole Number				
 Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>					Easting: 478548.70    Northing: 354044.20 Level: 10.19mAOD    Depth: 10.00m Logger: TW    Type: CP Inclination: 90°					<b>FINAL</b>		<b>BH55</b>				
					Method, Plant and Crew									Casing		Drilling Progress by Time
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth (m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:		
0.00	1.20	Inspection Pit	Hand Excavated	D. Hanson	1.20	300	8.50	150	13/07	17:00	10.00	8.80	4	NEB		
1.20	10.00	Cable Percussion	Dando 3000	D. Hanson	10.00	150								Approved By: JC		
														Start Date: 13/07/2021		
														Finish Date: 16/07/2021		
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing				
Firm brown gravelly CLAY, with low to medium cobble content. Gravel is subangular to subrounded fine to coarse fragments of brick. Cobbles are subangular to subrounded (up to 60mm) fragments of brick. (Reworked natural). (MADE GROUND) MGR Firm brown mottled light orange slightly gravelly CLAY. Gravel is subangular to angular fine dark grey siltstone/ carbonaceous mudstone. (ALLUVIUM)								0.30	9.89			0.00 - 0.20	BB1	HV 0.40m, (p)=40.0 kPa (r)=40.0 kPa		
												0.10 - 0.20	ESES1			
0.20 - 0.50	B2															
0.20 - 0.50	BB2															
0.50 - 0.60	ESES2															
Medium dense brown to dark brown sandy GRAVEL, with medium to high cobble content. Gravel is subrounded to rounded occasional subangular fine to coarse siltstone quartz chert and flint. Cobbles are subrounded to rounded (60-80mm) chert. Sand is fine to coarse. (ALLUVIUM)								1.90	8.29			1.00 - 1.10	ESES3	SPT(S) 2.00m, N=29 (2,4/4,8,8,9)		
												1.20 - 1.65	U100UT 3			
												1.20 - 1.65	UT3			
												1.65 - 1.90	D4			
												1.65 - 1.90	DD4			
												2.00 - 2.10	ESES4			
												2.00 - 2.45	B7			
												2.00 - 2.45	BB6			
												2.00 - 2.45	DD5			
												3.00 - 3.45	B9		SPT(C) 3.00m, N=12 (5,4/3,3,3,3)	
3.00 - 3.45	BB7															
Firm to stiff reddish brown slightly gravelly CLAY. Gravel is subangular to angular fine to coarse lithorelics of very weak mudstone. (Weathered Mercia Mudstone). (MERCIA MUDSTONE GROUP)								7.50	2.69			4.00 - 4.45	BB8	SPT(C) 4.00m, N=21 (2,5/5,6,5,5)		
												4.00 - 6.45	BAMAL			
												5.00 - 5.45	BB9		SPT(C) 5.00m, N=16 (3,3/4,4,4,4)	
												6.00 - 6.45	BB10		SPT(C) 6.00m, N=18 (2,2/4,4,5,5)	
EOH at 10.00m - Target depth achieved								10.00	0.19			6.80	BB11	SPT(S) 7.50m, N=19 (3,4/4,5,5)		
												7.50 - 7.95	BB13			
												7.50 - 7.95	DD12			
								10.00	0.19			8.60	D19	SPT(S) 8.80m, 50 (25 for 105mm/50 for 160mm)		
												8.60	DD14			
												8.80	DD15			
Observations / Remarks 1. Upon completion exploratory hole backfilled with bentonite.											Chiselling		Water Added		Hammer Information	
							From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %			
							8.60	8.80	45	3.00	4.00					
											Groundwater		Project Number			
							Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>			
							2.00	2	-	20	1.58					

 <b>Project: A46 Newark - Northern Bypass</b> <b>Location: Newark-on-Trent, Nottinghamshire</b> <b>Client: Highways England</b>						<b>Location Details</b> Easting: 478654.00 Northing: 354170.60 Level: 10.09mAOD Depth: 9.00m Logger: TW Type: CP Inclination: 90°				<b>Status</b> <b>FINAL</b>		<b>Borehole Number</b> <b>BH56</b>											
Method, Plant and Crew						Diameter		Casing		Drilling Progress by Time				Scale: 1:50									
From (m)	To (m)	Type	Plant Used	Crew		Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By: NEB								
0.00	1.20	Inspection Pit	Hand Excavated	D. Hanson		1.20	300			14/07	17:00	9.00	9.00	7	Approved By: JC								
1.20	9.00	Cable Percussion	Dando 3000	D. Hanson		9.00	150								Start Date: 14/07/2021 Finish Date: 16/07/2021								
Strata Description								Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing										
<p>Firm brown mottled light orange slightly gravelly CLAY. Gravel is subangular to angular fine dark grey siltstone/carbonaceous mudstone. (ALLUVIUM)</p> <p>Medium dense brown to dark brown sandy GRAVEL, with medium to high cobble content. Gravel is subrounded to rounded occasional subangular fine to coarse siltstone quartz chert and flint. cobbles are subrounded to rounded (60-80mm) chert. Sand is fine to coarse. (ALLUVIUM)</p> <p><i>From 6.10m to 6.50m bgl sand becomes clayey.</i></p> <p>Firm to stiff reddish brown slightly gravelly CLAY. Gravel is subangular to angular fine to coarse lithologies of very weak mudstone. (Weathered Mercia Mudstone). (MERCIA MUDSTONE GROUP)</p> <p>Weak to very weak bluish grey SILTSTONE. (MERCIA MUDSTONE GROUP) EOH at 9.00m - Hole terminated with gas and ground water installation</p>																							
Observations / Remarks												Chiselling		Water Added		Hammer Information							
1. Upon completion 50mm diameter gas/groundwater monitoring pipe installed to 4.00m bgl.												From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %					
												8.80	9.00	30	2.00	5.00							
												Groundwater						Project Number					
Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>																	
2.10	2	-	20	1.54																			

 <b>Project: A46 Newark - Northern Bypass</b> <b>Location: Newark-on-Trent, Nottinghamshire</b> <b>Client: Highways England</b>						<b>Location Details</b> Easting: 479479.50 Northing: 354639.18 Level: 10.09mAOD Depth: 10.00m Logger: TK Type: CP Inclination: 90°				<b>Status</b> <b>FINAL</b>		<b>Borehole Number</b> <b>BH57</b>				
Method, Plant and Crew						Diameter		Casing		Drilling Progress by Time				Scale: 1:50		
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB	
0.00	1.20	10.00	Inspection Pit Cable Percussion	Hand Excavated Cable Percussion Rig	M. Whitehead M. Whitehead	1.20 10.00	300 150	10.00	150	14/06 15/06	12:30 15:30	6.00 10.00	6.00 9.00		Approved By:	JC
														Start Date:	14/06/2021	
														Finish Date:	15/06/2021	
Strata Description						Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing					
Sandy GRAVEL of fine to coarse angular to sub angular limestone. Sand is fine to medium. (MADE GROUND) MGR							0.10	9.98			0.20 0.30 - 0.50	ES001 B001	PID 0.20m, 0.2ppm			
Grey slightly clayey SAND AND GRAVEL. Sand is fine to coarse. Gravel is fine to medium angular to sub angular limestone and sandstone. (MADE GROUND) MGR							0.50	9.59			0.70	ES002	PID 0.70m, 0.1ppm			
Clayey SAND AND GRAVEL. Sand is fine to coarse. Gravel is fine to medium sub rounded sandstone. (MADE GROUND) MGR							0.90	9.18			1.00 1.00	D001 D1				1
Soft dark brown mottled orangish brown slightly sandy slightly gravelly silty CLAY. (ALLUVIUM)											1.50 1.50 - 1.70 1.50 - 1.70	ES003 B002 B2	SPT(S) 1.50m, N=8 (1,2/2,2,2,2) PID 1.50m, 0.0ppm			
Medium dense brown SAND AND GRAVEL. Sand is fine to coarse. Gravel is fine to coarse sub angular to sub rounded quartzite. (ALLUVIUM)							2.00	8.09			2.10 - 2.20	B003	SPT(C) 2.50m, N=15 (2,2/3,4,4,4)			2
Medium dense brown sandy GRAVEL of fine to medium angular to sub rounded quartzite. Sand is medium to coarse. (ALLUVIUM)							3.00	7.08			3.20 - 3.50 3.20 - 3.50	B004 B4	SPT(C) 3.50m, N=12 (1,2/2,3,3,4)			3
Medium dense brown slightly sandy GRAVEL of fine to coarse. Sand is fine to coarse. (ALLUVIUM)							4.40	5.68			4.50 - 4.60	B005	SPT(C) 4.50m, N=11 (2,2/2,2,2,5)			5
Grey/bluish grey and reddish brown slightly gravelly silty CLAY. Gravel is subangular to angular fine to coarse siltstone and mudstone lithorelicts. (MERCIA MUDSTONE GROUP)							9.00	1.08			6.00	B006	SPT(C) 6.00m, N=16 (2,2/4,4,4,4)			6
													SPT(C) 7.50m, N=10 (1,2/2,3,2,3)			8
													SPT(S) 9.00m, N=27 (1,3/4,6,8,9)			9
EOH at 10.00m - Target depth achieved							10.00	0.08								10
Observations / Remarks										Chiselling			Water Added		Hammer Information	
1. Upon completion exploratory hole backfilled with bentonite.										From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %
										9.00	10.00	60				
										Groundwater				Project Number		
										Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>
										2.00	-	-	20	2.00		

 Project: <b>A46 Newark - Northern Bypass</b> Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>						<b>Location Details</b> Easting: 479583.70 Northing: 354646.72 Level: 9.82mAOD Depth: 9.00m Logger: TK Type: CP Inclination: 90°						<b>Status</b> <b>FINAL</b>		<b>Borehole Number</b> <b>BH58</b>			
Method, Plant and Crew						Diameter		Casing		Drilling Progress by Time				Scale: 1:50			
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth (m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB		
0.00	1.20	Inspection Pit	Hand Excavated	M. Whitehead	1.20	300	8.20	150	02/06	12:00	2.50	2.50					
1.20	9.00	Cable Percussion	Dando 3000	M. Whitehead	9.00	150			15/06	16:00	4.00	4.00		Approved By:	JC		
									16/06	16:00	9.00	8.20		Start Date:	15/06/2021		
														Finish Date:	17/06/2021		
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing					
Hard-core over membrane. (MADE GROUND: MGR)								0.40	9.42			0.00 - 0.40	B001	SPT(S) 1.50m, 49 (11,13/49 for 334mm)		1	
Dark brown sandy CLAY. Sand is fine to medium. (ALLUVIUM)													0.30				ES002
Dense brown clayey coarse SAND. (ALLUVIUM)								8.32			0.50 - 1.00	B003					2
												1.00					
Brown slightly clayey slightly sandy subangular to subrounded coarse GRAVEL of flint with low cobble content. Sand is fine to coarse. (ALLUVIUM)								7.82			1.30	ES005					3
												1.50					
Medium dense brown slightly clayey slightly silty sandy GRAVEL. Gravel is subangular to subrounded fine to coarse flint. Sand is coarse. (ALLUVIUM)								3.92			2.50	B007 ES008					4
												3.50					
Firm to stiff dark brown and bluish grey gravelly silty CLAY. Horizontal subangular to angular lithorelicts of weak to strong mudstone and siltstone. (MERCIA MUDSTONE GROUP)								1.62			4.50	B010					5
												6.00					
EOH at 9.00m - Target depth achieved								0.82			7.50	B012 B12		6			
												7.50			B012 B12		
											8.20	D013 D014 D14		7			
												8.20 - 8.65			D013 D014 D14		
											8.20 - 8.65	D013 D014 D14		8			
														9			
														10			
Observations / Remarks										Chiselling		Water Added		Hammer Information			
1. Upon completion exploratory hole backfilled with bentonite.										From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %	
										1.50	2.50	60					
										Groundwater				Project Number			
										Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>	
										2.00	-	-	20	2.00			

 <b>TETRA TECH</b>		<b>Project: A46 Newark - Northern Bypass</b>			<b>Location: Newark-on-Trent, Nottinghamshire</b>				<b>Client: Highways England</b>			<b>Location Details</b> Easting: 479464.50    Northing: 354700.80 Level: 9.67mAOD    Depth: 8.00m Logger:                      Type: CP Inclination: 90°				<b>Status</b>  <b>FINAL</b>		<b>Borehole Number</b>  <b>BH59</b>							
		<b>Method, Plant and Crew</b>											<b>Diameter</b> Depth (m)    Diam (mm) 1.20    300 8.00    150		<b>Casing</b> Depth (m)    Diam (mm) 8.00    150		<b>Drilling Progress by Time</b> Date    Time    Depth (m)    Casing (m)    Water (m)				Scale: 1:50				
From (m)    To (m) 0.00    1.20 1.20    8.00		Type Inspection Pit Cable Percussion		Plant Used Hand Excavated Dando 3000		Crew M. Whitehead M. Whitehead									Checked By: NEB		Approved By: JC		Start Date: 09/06/2021		Finish Date: 09/06/2021				
<b>Strata Description</b>  Dark brown slightly gravelly silty CLAY. Gravel is subangular to subrounded fine to medium flint. (TOPSOIL) TOP Brown slightly gravelly silty CLAY. Gravel is subangular to rounded fine to coarse flint. (ALLUVIUM)							<b>Legend</b>	<b>Depth (m)</b> 0.10 2.00 3.50 7.50 8.00	<b>Reduced Level (mAOD)</b> 9.57 7.67 6.17 2.17 1.67	<b>Water Level (m)</b> 	<b>Inst / Backfill</b> 	<b>Samples and Testing</b>					<b>Tests / Results</b>								
												<b>Depth (m)</b> 0.00 - 0.50 0.00 - 0.50 0.30 0.50 - 1.00 1.00 1.00 1.00 1.50 1.50 2.50 3.50 6.00 6.00 6.00 7.50m 8.00	<b>Ref</b> B001 B1 ES002 B003 B005 B5 ES004 B007 D006 B008 B009 B010 B10 D011	<b>SPT(S) 1.50m, N=8 (1,2/2,2,2,2)</b>  <b>SPT(C) 2.50m, N=17 (2,4/4,4,4,5)</b>  <b>SPT(C) 3.50m, 50 (25 for 60mm/50 for 146mm)</b>  <b>SPT(C) 4.50m, N=23 (5,3/5,6,6,6)</b>  <b>SPT(S) 6.00m, N=22 (2,3/4,6,6,6)</b>  <b>SPT(S) 7.50m, 50 (25 for 30mm/50 for 47mm)</b>											
Medium dense brown slightly clayey coarse SAND. (ALLUVIUM)																									
Medium dense brown slightly clayey sandy subangular to subrounded coarse GRAVEL of flint. Sand is fine to coarse. (ALLUVIUM)																									
Weak reddish brown MUDSTONE. Recovered as angular fine to coarse GRAVEL. (MERCIA MUDSTONE GROUP)																									
EOH at 8.00m - Target depth achieved																									
<b>Observations / Remarks</b> 1. Upon completion exploratory hole backfilled with bentonite.												<b>Chiselling</b> From (m)    To (m)    Time (mins) 7.50    8.00    60			<b>Water Added</b> From (m)    To (m) -    -		<b>Hammer Information</b> Serial No.    Energy Ratio % -    -								
						<b>Groundwater</b> Strike (m)    Casing (m)    Sealed (m)    Time (min)    Rose To (m)    Remarks 2.00    -    -    20    2.00    -						<b>Project Number</b>  <b>784-B026948</b>													



Project: **A46 Newark - Northern Bypass**  
 Location: **Newark-on-Trent, Nottinghamshire**  
 Client: **Highways England**

**Location Details**  
 Easting: 479580.60 Northing: 354715.70  
 Level: 9.58mAOD Depth: 8.00m  
 Logger: TK Type: CP  
 Inclination: 90°

**Status**  
**FINAL**
















**Borehole Number**  
**BH60**

Sheet 1 of 1

Method, Plant and Crew					Diameter		Casing		Drilling Progress by Time					Scale: 1:50	
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth (m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB
0.00	1.20	Inspection Pit	Hand Excavated	M. Whitehead	1.20	300	7.50	150	09/06	16:00	8.00	7.50		Approved By:	JC
1.20	8.00	Cable Percussion	Dando 3000	M. Whitehead	8.00	150								Start Date:	08/06/2021
														Finish Date:	10/06/2021











Strata Description	Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing		
						Depth (m)	Ref	Tests / Results
Dark brown sandy silty CLAY. Sand is fine to medium. (TOPSOIL) TOP		0.10	9.48			0.00 - 0.50	B001	
Dark brown and brown very gravelly sandy silty CLAY. Sand is fine to medium. (ALLUVIUM)						0.30	ES002	
						0.50	B003	
						1.00	B004	
						1.00	B4	
						1.30	ES005	
						1.40	B006	
						1.50	D007	SPT(S) 1.50m, N=8 (1,2,2,2,2)
Loose to medium dense brown clayey slightly sandy subangular to subrounded fine to medium flint GRAVEL. Sand is fine to coarse. (ALLUVIUM)		1.50	8.08					
						2.50	B008	SPT(C) 2.50m, N=15 (2,3/3,4,4,4)
						2.50	BB	
						3.50	B009	SPT(C) 3.50m, N=15 (1,3/3,4,4,4)
						4.50	B010	SPT(C) 4.50m, N=17 (2,2/3,4,5,5)
						6.00	B011	SPT(C) 6.00m, N=22 (1,3/3,5,6,8)
						7.50		SPT(C) 7.50m, 50 (14,11/50 for 70mm)
Competent red MARL. (Drillers description) (MERCIA MUDSTONE GROUP)		7.50	2.08					
EOH at 8.00m - Target depth achieved		8.00	1.58					



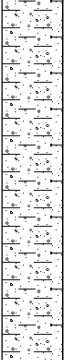
Observations / Remarks	Chiselling			Water Added		Hammer Information		
	From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %	
	1. Upon completion 50mm diameter gas/groundwater monitoring standpipe installed to 8.00m bgl.	7.50	8.00	60				
		Groundwater			Project Number			
Strike (m)		Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>	
2.00	-	-	20	2.00				


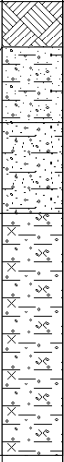
Project: <b>A46 Newark - Northern Bypass</b>					Location Details					Status		Borehole Number				
 Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>					Easting: 479351.50    Northing: 354770.10 Level: 9.19mAOD    Depth: 8.00m Logger: TK    Type: CP Inclination: 90°					<b>FINAL</b>		<b>BH61</b>				
					Sheet 1 of 1											
Method, Plant and Crew					Diameter		Casing		Drilling Progress by Time							
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth (m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)			
0.00	1.20	Inspection Pit	Hand Excavated	M. Whitehead	1.20	300	8.00	150	04/06	10:30	6.00	6.00				
1.20	8.00	Cable Percussion	Dando 3000	M. Whitehead	8.00	150			07/06	18:00	8.00	8.00				
									Scale: 1:50 Checked By: NEB Approved By: JC Start Date: 04/06/2021 Finish Date: 08/06/2021							
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing				
Dark brown clayey gravelly medium SAND. Gravel is subrounded to rounded fine to coarse flint, tile and brick. (MADE GROUND) MGR								0.40	8.79			0.30	ES002			
												0.30 - 0.40			B001	
Orangish brown, brown and light grey very sandy gravelly CLAY. Sand is fine to medium. Gravel is subrounded to rounded fine to coarse flint. (ALLUVIUM)												0.50	B003			
												1.00	B004			
Medium dense brown clayey gravelly coarse SAND. Gravel is subangular to subrounded fine to coarse flint. (ALLUVIUM)								2.10	7.09			1.50	B005	SPT(S) 1.50m, N=8 (2,2,2,2,2)		
												2.50	B007	SPT(S) 2.50m, N=23 (2,2,4,7,6,6)		
Medium dense brown clayey sandy subangular to subrounded coarse GRAVEL of flint. Sand is fine to coarse. (ALLUVIUM)								3.00	6.19			2.50	D006			
												3.50	B008	SPT(C) 3.50m, N=14 (2,3/3,3,4,4)		
Medium dense brown clayey gravelly coarse SAND. Gravel is subangular to subrounded fine to coarse flint. (ALLUVIUM)								5.50	3.69			4.50	B009	SPT(C) 4.50m, N=20 (1,3/4,4,6,6)		
												5.50	B010			
Light grey, reddish brown and greyish brown silty CLAY. (MERCIA MUDSTONE GROUP)								7.50	1.69			6.00	B011	SPT(C) 6.00m, N=28 (4,7/7,7,7,7)		
												7.50	D012	SPT(S) 7.50m, 50 (25 for 75mm/50 for 200mm)		
EOH at 8.00m - Target depth achieved								8.00	1.19			7.50				
Observations / Remarks 1. Groundwater not observed. 2. Upon completion 50mm diameter gas/groundwater monitoring standpipe installed to 6.00m bgl.										Chiselling			Water Added		Hammer Information	
										From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %
										7.50	8.00	60				
										Groundwater					Project Number	
										Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>





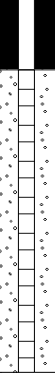


























Project: <b>A46 Newark - Northern Bypass</b>					Location Details					Status		Borehole Number					
 Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>					Easting: 480930.40    Northing: 356057.90 Level: 10.86mAOD    Depth: 3.50m Logger: TK    Type: CP Inclination: 90°					<b>FINAL</b>		<b>BH63</b>					
					Sheet 1 of 1												
Method, Plant and Crew					Diameter		Casing		Drilling Progress by Time								
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth (m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Scale:			
0.00	1.20	Inspection Pit	Hand Excavated	M. Whitehead	1.20	300	3.20	150	26/05	17:00	3.50	3.20		1:50			
1.20	3.50	Cable Percussion	Dando 3000	M. Whitehead	3.50	150								Checked By: NEB			
														Approved By: JC			
														Start Date: 27/05/2021			
														Finish Date: 27/05/2021			
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing					
Dark brown clayey gravelly medium SAND with abundant roots. Gravel is subangular to subrounded fine to coarse flint. (TOPSOIL) <b>TOP</b> Orangish brown clayey sandy subangular to subrounded fine to coarse flint GRAVEL. Sand is coarse. (ALLUVIUM)								0.30	10.56			0.00 - 0.30	B001				
												0.10	ES002				
Reddish brown slightly gravelly silty CLAY. Gravel is subangular to angular fine to medium mudstone weak to moderately weak lithorelicts. (ALLUVIUM)								2.10	8.76			0.40	ES003				
												0.40 - 0.60	B004				
EOH at 3.50m - Terminated due to bedrock								3.50	7.36			1.00	B				
												1.00	B005				
												1.00	B5				
												1.30	ES006				
												1.50	D007				
													SPT(S) 1.50m, N=24 (2,4/4,7,6,7)				
												2.00	B008				
												2.30	ES009				
												2.50	B				
												2.50	SPT(S) 2.50m, N=19 (2,3/3,4,6,6)				
												2.50	B10				
												2.50	D012				
												3.00	D011				
													SPT(S) 3.50m, 50 (9,15/50 for 140mm)				
														1			
														2			
														3			
														4			
														5			
														6			
														7			
														8			
														9			
														10			
Observations / Remarks										Chiselling			Water Added		Hammer Information		
1. Upon completion exploratory hole backfilled with bentonite.										From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %	
										2.50	3.50	60					
										Groundwater						Project Number	
										Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	784-B026948	
										2.00	-	-	20	2.00			


 <b>Project: A46 Newark - Northern Bypass</b> <b>Location: Newark-on-Trent, Nottinghamshire</b> <b>Client: Highways England</b>					<b>Location Details</b> Easting: 480591.60 Northing: 356073.60 Level: 12.22mAOD Depth: 3.00m Logger: TK Type: CP Inclination: 90°					<b>Status</b>  <b>FINAL</b>		<b>Borehole Number</b>  <b>BH64</b>						
<b>Method, Plant and Crew</b>					<b>Diameter</b>		<b>Casing</b>		<b>Drilling Progress by Time</b>				<b>Scale:</b> 1:50					
From (m) 0.00 1.20	To (m) 1.20 3.00	Type Inspection Pit Cable Percussion	Plant Used Hand Excavated Drdo 3000	Crew M. Whitehead M. Whitehead	Depth (m) 1.20 3.00	Diam (mm) 300 150	Depth (m) 3.00	Diam (mm) 150	Date 11/06	Time 18:00	Depth (m) 3.00	Casing (m) 3.00	Water (m)	Checked By: NEB	Approved By: JC	Start Date: 02/06/2021	Finish Date: 11/06/2021	
<b>Strata Description</b>							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	<b>Samples and Testing</b>						
Dark brown slightly gravelly sandy CLAY. Sand is fine to medium. Gravel is subangular to subrounded fine to coarse flint and siltstone. (TOPSOIL) TOP								0.50	11.72			0.00 - 0.50 0.10	B001 ES002	Tests / Results  SPT(S) 1.50m, N=19 (3,4/4,5,4,6)				
Brown and reddish brown slightly silty slightly clayey slightly gravelly SAND. Sand is fine to medium. Gravel is subangular to angular fine to coarse flint, mudstone and siltstone. (ALLUVIUM)								0.50	11.72			0.50	B003					
												1.00	B004					
												1.50 1.50 1.50	B006 D007 ES005					
												2.00	B008					
												2.50	D009	SPT(S) 2.50m, 50 (25 for 44mm/50 for 100mm)				
EOH at 3.00m - Terminated due to bedrock								3.00	9.22				3.00	B010				
<b>Observations / Remarks</b> 1. Groundwater not observed. 2. Upon completion exploratory hole backfilled with bentonite.												<b>Chiselling</b>			<b>Water Added</b>		<b>Hammer Information</b>	
						From (m) 2.50	To (m) 3.00	Time (mins) 60	From (m)	To (m)	Serial No.	Energy Ratio %						
<b>Groundwater</b>												<b>Project Number</b>						
						Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>						


Project: <b>A46 Newark - Northern Bypass</b>					Location Details					Status		Borehole Number				
 Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>					Easting: 480783.20    Northing: 356113.10 Level: 10.74mAOD    Depth: 3.00m Logger: TK    Type: CP Inclination: 90°					<b>FINAL</b>		<b>BH65</b>				
					Sheet 1 of 1											
Method, Plant and Crew					Diameter		Casing		Drilling Progress by Time							
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Scale:		
0.00	1.20	Inspection Pit	Hand Excavated	M. Whitehead	1.20	300								1:50		
1.20	3.00	Cable Percussion	Dando 3000	M. Whitehead	3.00	150								Checked By: NEB		
														Approved By: JC		
														Start Date: 27/05/2021		
														Finish Date: 27/05/2021		
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing				
Dark brown clayey gravelly medium SAND with abundant roots. Gravel is subangular to subrounded fine to coarse flint. (TOPSOIL) TOP Dark brown sandy gravelly CLAY with frequent roots. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse flint and sandstone. (ALLUVIUM) Greyish brown clayey gravelly coarse SAND. Gravel is subangular to subrounded fine to coarse flint. (ALLUVIUM) Reddish brown slightly gravelly silty CLAY. Gravel is subangular to angular fine to coarse weak to moderately strong lithorelicts and siltstone. (MERCIA MUDSTONE GROUP FORMATION)								0.30	10.44			0.00 - 0.30	B001	Tests / Results		
								0.40				0.10	ES002			
								0.80	9.94			0.40	ES003			
												0.50	B004			
												1.00	B005			
				1.00	B5											
				1.40	ES006											
				1.50	B007											
				2.00	D008											
				2.50	B009											
				2.50	B9											
				3.00	B010											
EOH at 3.00m - Terminated due to bedrock								3.00	7.74							
														1		
														2		
														3		
														4		
														5		
														6		
														7		
														8		
														9		
														10		
Observations / Remarks										Chiselling		Water Added		Hammer Information		
1. Groundwater not observed. 2. Upon completion exploratory hole backfilled with bentonite.										From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %
										Groundwater			Project Number			
										Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>

	<b>Project: A46 Newark - Northern Bypass</b> <b>Location: Newark-on-Trent, Nottinghamshire</b> <b>Client: Highways England</b>					<b>Location Details</b> Easting: 480618.00 Northing: 356121.90 Level: 11.49mAOD Depth: 3.00m Logger: Type: CP Inclination: 90°				<b>Status</b> FINAL		<b>Borehole Number</b> BH66				
											Sheet 1 of 1					
<b>Method, Plant and Crew</b>					<b>Diameter</b>		<b>Casing</b>		<b>Drilling Progress by Time</b>				Scale: 1:50 Checked By: NEB Approved By: JC Start Date: 01/06/2021 Finish Date: 02/06/2021			
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth (m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)			
0.00	1.20	Inspection Pit	Hand Excavated	M. Whitehead	1.20	300	3.00	150	01/06	14:30	3.00	3.00				
1.20	3.00	Cable Percussion	Dando 3000	M. Whitehead	3.00	150										
<b>Strata Description</b>							<b>Legend</b>	<b>Depth (m)</b>	<b>Reduced Level (mAOD)</b>	<b>Water Level (m)</b>	<b>Inst / Backfill</b>	<b>Samples and Testing</b>				
Slightly gravelly sandy CLAY. Sand is fine to medium. Gravel is subangular to angular fine to coarse flint. (TOPSOIL) TOP <i>At 0.50m bgl rare ash fragments</i>								0.50	10.99			0.00 - 0.50 0.10	B001 ES002			
Reddish brown slightly gravelly sandy CLAY. Sand is fine to medium. Gravel is subangular to angular fine to coarse flint and siltstone. (ALLUVIUM)								0.50	10.99			0.50	B003			1
								1.00	10.99			1.00	B004			2
								1.50	10.99			1.50	D006 ES005	SPT(S) 1.50m, N=17 (2,3/3,4,4,6)		3
								2.00	10.99			2.00	B006			4
								2.50	10.99			2.50	D007	SPT(S) 2.50m, 50 (25 for 67mm/50 for 105mm)		5
EOH at 3.00m - Terminated due to bedrock								3.00	8.49			3.00 3.00	B B008			6
								3.00	8.49			3.00				7
								3.00	8.49			3.00				8
								3.00	8.49			3.00				9
								3.00	8.49			3.00				10
<b>Observations / Remarks</b> 1. Groundwater not observed. 2. Upon completion 50mm diameter gas/groundwater monitoring standpipe installed to 3.00m bgl.										<b>Chiselling</b>		<b>Water Added</b>		<b>Hammer Information</b>		
						From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %				
						2.50	3.00	60								
										<b>Groundwater</b>			<b>Project Number</b>			
					Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks		<b>784-B026948</b>				

Project: <b>A46 Newark - Northern Bypass</b>					Location Details					Status		Borehole Number					
 Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>					Easting: 481265.24 Northing: 356048.03 Level: 9.67mAOD Depth: 30.40m Logger: TW Type: SNC Inclination: 90°					<b>FINAL</b>		<b>BH67</b>					
					Method, Plant and Crew									Casing		Drilling Progress by Time	
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:			
0.00	1.20	Inspection Pit	Hand Excavated	L. Gouws	1.20	300			23/07	12:00	10.00	8.00	FULL	NEB			
1.20	30.40	Sonic Core Drilling	Fraste CRS-XL	L. Gouws	30.40	-			26/07	18:45	24.00	18.00	FULL	JC			
									27/07	16:30	30.40	18.00	FULL	23/07/2021			
														Approved By: JC Start Date: 23/07/2021 Finish Date: 27/07/2021			
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing					
Vegetation over soft orangish brown sandy CLAY. Sand is fine to medium. (TOPSOIL) TOP								0.30	9.37			0.20	ES001	SPT(C) 1.20m, N=9 (2,1/2,2,3,2)	1		
Light brown gravelly clayey fine to coarse SAND. Gravel is fine sub angular flint and quartzite. (ALLUVIUM)												0.25	D001			0.50	ES002
Reddish brown clayey fine to medium SAND, with occasional irregular (10-20mm) pockets of light bluish grey silty clay. (MERCIA MUDSTONE GROUP) Firm light to mid reddish brown CLAY, with occasional irregular (5-10mm) pockets of light bluish grey silt. 0-10 degree, occasionally 45 degree, very closely spaced fissures. (Zone IVb). (MERCIA MUDSTONE GROUP) <i>From 1.70m to 1.80m bgl weathered to very soft light bluish grey silty clay.</i> Firm reddish brown gravelly CLAY. Gravel is subangular to angular, flat, randomly orientated, locally horizontal, lithorelics of very weak mudstone, with randomly orientated discontinuities. (Zone IVa). (MERCIA MUDSTONE GROUP) Soft light bluish grey gravelly silty CLAY. Gravel is subrounded to subangular fine to coarse very weak siltstone. (MERCIA MUDSTONE GROUP) <i>From 3.20m to 3.30m bgl sandy, with frequent clasts of subangular to angular (30-50mm) unweathered siltstone. Sand is coarse.</i>							1.00	ES003	1.30 - 1.40	DD1	1.40 - 1.50	DD2					
							1.30	8.37	1.60 - 1.75	COREC3							
							1.50	8.17	1.80 - 1.90	D4	1.80 - 1.90	DD4	2.00 - 3.00			BB6	SPT(C) 2.00m, N=10 (2,3/3,2,3,2)
Firm stiff light grey slightly gravelly silty CLAY. Gravel is rounded to subangular fine to coarse very weak siltstone. 0-10 degree extremely closely spaced discontinuities. (Zone IVa/III). (MERCIA MUDSTONE GROUP) Firm to stiff reddish brown gravelly CLAY, with occasional pockets of clay. Gravel is subrounded to angular, occasionally flat, horizontal, locally randomly orientated very weak mudstone. 0-10 degree, locally randomly orientated, extremely closely spaced to closely spaced fissures. (Zone III). (MERCIA MUDSTONE GROUP)							1.90	7.77	2.50 - 2.60	B3	2.50 - 2.60	DD5					
							2.00	7.67	3.70 - 4.00	COREC7	4.70 - 4.80	DD8	SPT(C) 4.00m, N=16 (2,3/3,4,4,5)			4	
Firm to stiff reddish brown gravelly CLAY, with occasional pockets of clay. Gravel is subrounded to angular, occasionally flat, horizontal, locally randomly orientated very weak mudstone. 0-10 degree, locally randomly orientated, extremely closely spaced to closely spaced fissures. (Zone III). (MERCIA MUDSTONE GROUP)							3.30	6.37	5.20 - 5.40	C9	5.20 - 5.40	COREC9					
							<i>From 5.50m to 5.65m bgl firm.</i>  <i>From 6.40m to 6.55m bgl weathered to soft to firm light bluish grey slightly gravelly silty clay, siltstone gravel.</i>									4.00	5.67
<i>From 8.00m to 9.00m bgl no recovery.</i>  <i>From 9.00m to 9.50m bgl possibly drilling disturbed, recovered as clayey gravel. Gravel is very weak siltstone, possibly III</i>																5.20	5.40
														5.20	5.40	10.00 - 10.10	B4
														6.50	6.60	10.00 - 10.10	DD13
							Observations / Remarks 1. Groundwater not observed. 2. Upon completion 50mm diameter gas/groundwater monitoring standpipe installed to 5.00m bgl.										
						From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %					
Groundwater												Project Number					
Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks							<b>784-B026948</b>					


Project: <b>A46 Newark - Northern Bypass</b>						Location Details				Status		Borehole Number									
 Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>						Easting: 481265.24		Northing: 356048.03		<b>FINAL</b>		<b>BH67</b>									
						Level: 9.67mAOD		Depth: 30.40m													
						Logger: TW		Type: SNC				Inclination: 90°									
Method, Plant and Crew						Diameter		Casing		Drilling Progress by Time				Scale: 1:50							
From (m)	To (m)	Type	Plant Used	Crew		Depth (m)	Diam (mm)	Depth (m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB					
0.00	1.20	Inspection Pit	Hand Excavated	L. Gouws		1.20	300			23/07	12:00	10.00	8.00	FULL	Approved By: JC	Start Date: 23/07/2021					
1.20	30.40	Sonic Core Drilling	Fraste CRS-XL	L. Gouws		30.40	-			26/07	18:45	24.00	18.00	FULL							
										27/07	16:30	30.40	18.00	FULL	Finish Date: 27/07/2021						
Strata Description						Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing										
<p>Firm to stiff reddish brown gravelly CLAY, with occasional pockets of clay. Gravel is subrounded to angular, occasionally flat, horizontal, locally randomly orientated very weak mudstone. 0-10 degree, locally randomly orientated, extremely closely spaced to closely spaced fissures. (Zone III). (MERCIA MUDSTONE GROUP) <i>From 10.40m to 10.80m bgl incipient randomly orientated fissures.</i> <i>From 10.80m to 11.00m bgl no recovery.</i></p> <p><i>From 11.70m to 13.00m bgl no recovery.</i></p> <p>Firm to stiff friable reddish brown gravelly CLAY. Gravel is angular, flat, fine to coarse, horizontal lithorelics of weak mudstone. (lithorelics of mudstone in a clay matrix). (Zone III). (MERCIA MUDSTONE GROUP)</p> <p>Stiff friable light bluish grey gravelly silty CLAY. Gravel is subangular to angular, occasionally flat, locally horizontal lithorelics of very weak siltstone (Zone III). (MERCIA MUDSTONE GROUP)</p> <p>Firm to stiff reddish brown gravelly CLAY, with occasional pockets of clay. Gravel is subrounded to angular, occasionally flat, horizontal, locally randomly orientated very weak mudstone. 0-10 degree, locally randomly orientated, extremely closely spaced to closely spaced fissures. (Zone III). (MERCIA MUDSTONE GROUP)</p> <p>Possibly drilling disturbed, recovered as gravelly CLAY. Gravel of subangular to angular fine to coarse mudstone (possibly III). (MERCIA MUDSTONE GROUP)</p> <p>Firm to stiff reddish brown gravelly CLAY, with occasional pockets of clay. Gravel is subrounded to angular, occasionally flat, horizontal, locally randomly orientated very weak mudstone. 0-10 degree, locally randomly orientated, extremely closely spaced to closely spaced fissures. (Zone III). (MERCIA MUDSTONE GROUP)</p> <p>Stiff friable reddish brown locally light bluish grey gravelly CLAY. Gravel is angular, flat, fine to coarse, horizontal lithorelics of weak mudstone and siltstone. (lithorelics of mudstone in a clay matrix). (Zone III). (MERCIA MUDSTONE GROUP)</p> <p>Stiff dark reddish brown gravelly CLAY. Gravel is angular flat fine to coarse horizontal lithorelics of very weak mudstone. 0-10 degree locally randomly orientated extremely closely spaced to very closely spaced discontinuities. (lithorelics of mudstone in a clay matrix). (MERCIA MUDSTONE GROUP) <i>From 16.30m to 16.50m bgl randomly orientated discontinuities.</i></p> <p>Stiff friable dark reddish brown and locally light bluish grey gravelly CLAY. Gravel is subrounded to angular occasionally flat fine to coarse locally horizontal lithorelics of very weak mudstone and siltstone. 0-10, locally 45 degree extremely closely spaced discontinuities. (Zone III). (MERCIA MUDSTONE GROUP)</p> <p>Firm to stiff light bluish grey very gravelly silty CLAY. Gravel is angular flat fine to coarse horizontal lithorelics of very weak siltstone. (lithorelics of siltstone in a silty clay matrix). (Zone III). (MERCIA MUDSTONE GROUP)</p> <p>Stiff friable dark reddish brown and locally light bluish grey gravelly CLAY. Gravel is subrounded to angular occasionally flat fine to coarse locally horizontal lithorelics of very weak mudstone and siltstone. 0-10, locally 45 degree extremely closely spaced discontinuities. (Zone III). (MERCIA MUDSTONE GROUP)</p>											Depth (m)	Ref	Tests / Results								
																10.30 - 10.50	C12	SPT(C) 11.00m, N=22 (4,5/4,6,8)		11	
																10.30 - 10.50	COREC12				
																		SPT(C) 12.00m, N=27 (5,6/7,7,6,7)		12	
												13.00	-3.33			13.10 - 13.20	DD14	SPT(C) 13.00m, N=25 (3,4/4,5,7,9)		13	
												13.40	-3.73			13.50 - 13.60	D15				
												13.70	-4.03			13.50 - 13.60	DD15				
												14.00	-4.33					SPT(C) 14.00m, N=41 (6,6/10,9,10,12)		14	
																14.50 - 14.60	DD17				
												15.00	-5.33			15.30 - 15.40	DD18			15	
												15.50	-5.83					SPT(C) 16.00m, N=50 (10,10/11,12,13,14)		16	
												16.30	-6.63			16.40 - 16.50	DD19				
												16.90	-7.23					SPT(C) 18.00m, 50 (7,10/50 for 220mm)		18	
												17.50	-7.63			17.50 - 17.60	DD21				
												18.30	-8.63			18.30 - 18.40	DD22				
												18.90	-9.23			19.50 - 19.60	D24				
																19.50 - 19.60	DD24				
																		SPT(C) 20.00m, 50 (25 for 50mm/50 for 40mm)		20	
						Observations / Remarks										Chiselling		Water Added		Hammer Information	
						1. Groundwater not observed. 2. Upon completion 50mm diameter gas/groundwater monitoring standpipe installed to 5.00m bgl.										From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.
										Groundwater				Project Number							
										Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>					

Project: <b>A46 Newark - Northern Bypass</b>						Location Details						Status		Borehole Number		
 Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>						Easting: 481265.24		Northing: 356048.03				<b>FINAL</b>		<b>BH67</b>		
						Level: 9.67mAOD		Depth: 30.40m		Logger: TW						Type: SNC
								Inclination: 90°						Sheet 3 of 4		
Method, Plant and Crew					Diameter		Casing		Drilling Progress by Time					Scale: 1:50		
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB	
0.00	1.20	Inspection Pit	Hand Excavated	L. Gouws	1.20	300			23/07	12:00	10.00	8.00	FULL	Approved By:	JC	
1.20	30.40	Sonic Core Drilling	Frastr CRS-XL	L. Gouws	30.40	-			26/07	18:45	24.00	18.00	FULL	Start Date:	23/07/2021	
									27/07	16:30	30.40	18.00	FULL	Finish Date:	27/07/2021	
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing				
<p>Stiff friable dark reddish brown and locally light bluish grey gravelly CLAY. Gravel is subrounded to angular occasionally flat fine to coarse locally horizontal lithorelics of very weak mudstone and siltstone. 0-10, locally 45 degree extremely closely spaced discontinuities. (Zone III). (MERCIA MUDSTONE GROUP)</p> <p><i>From 20.10m to 20.50m bgl light bluish grey, silty.</i></p> <p><i>From 20.40m to 20.80m bgl locally 45 degree extremely closely spaced discontinuities.</i></p> <p><i>From 20.90m to 21.00m bgl soft to firm.</i></p> <p><i>From 21.80m to 21.90m bgl light bluish grey, silty.</i></p> <p><i>From 22.50m to 23.20m bgl locally angular flat lithorelics of very weak mudstone in a clay matrix, possibly III.</i></p> <p><i>From 23.40m to 23.70m bgl firm to stiff light bluish grey, silty.</i></p> <p><i>From 23.90m to 24.00m bgl weathered to firm light bluish grey silty clay.</i></p>											Depth (m)	Ref	Tests / Results			
<p>Very weak to weak thickly laminated to very thinly bedded reddish brown locally light bluish grey MUDSTONE and SILTSTONE. 0-10 degree very closely spaced planar to undulating discontinuities. Frequent gypsum veins (1-4mm) following bedding/discontinuities. (Zone II). (MERCIA MUDSTONE GROUP)</p>								24.20	-14.53			24.20	C26			
<p>Stiff friable reddish brown locally light bluish grey gravelly CLAY. Gravel is subangular to angular flat fine to coarse locally horizontal lithorelics of mudstone and siltstone. 0-10 degree extremely closely spaced to very closely spaced fissures. Frequent weathered gypsum veins (5-20mm) following bedding/discontinuities. (Zone III). (MERCIA MUDSTONE GROUP)</p> <p><i>From 24.50m to 24.70m bgl light bluish grey, silty.</i></p> <p><i>From 24.80m to 24.90m bgl weak siltstone.</i></p>								24.50	-14.83			24.20 - 24.35	COREC2 6			
<p>Partly non intact, possibly drilling disturbed, recovered as angular (30-40mm) clasts of weak light bluish grey SILTSTONE (possibly II). (MERCIA MUDSTONE GROUP)</p>								26.00	-16.33			25.30 - 25.40	DD33			
<p>Stiff reddish brown gravelly CLAY. Gravel is angular, flat fine to coarse horizontal locally 45 degree lithorelics of very weak mudstone. 0-10 degree locally 45 degree very closely spaced discontinuities. Frequent gypsum veins (5-10mm) following discontinuities. (MERCIA MUDSTONE GROUP)</p>								26.50	-16.83			27.10 - 27.20	DD34			
<p>Very weak to weak thickly laminated to very thinly bedded reddish brown locally light bluish grey MUDSTONE and SILTSTONE. 0-10 degree very closely spaced planar to undulating discontinuities. Frequent gypsum veins (1-4mm) following bedding/discontinuities. (Zone II). (MERCIA MUDSTONE GROUP)</p>								28.00	-18.33			28.50	C27			
<p>Stiff reddish brown gravelly CLAY. Gravel is angular, flat fine to coarse horizontal locally 45 degree lithorelics of very weak mudstone. 0-10 degree locally 45 degree very closely spaced discontinuities. Frequent gypsum veins (5-10mm) following discontinuities. (MERCIA MUDSTONE GROUP)</p>								29.00	-19.33			28.50 - 28.60	COREC2 7			
												29.70	C28			
												29.70 - 29.90	COREC2 8			
														SPT(C) 30.00m, 50 (25 for 5mm/50 for 5mm)		
Observations / Remarks										Chiselling			Water Added		Hammer Information	
1. Groundwater not observed. 2. Upon completion 50mm diameter gas/groundwater monitoring standpipe installed to 5.00m bgl.										From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %
										Groundwater				Project Number		
										Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>

 Project: <b>A46 Newark - Northern Bypass</b> Location: <b>Newark-on-Trent, Nottinghamshire</b> Client: <b>Highways England</b>					<b>Location Details</b> Easting: 481265.24    Northing: 356048.03 Level: 9.67mAOD    Depth: 30.40m Logger: TW    Type: SNC Inclination: 90°					<b>Status</b>  <b>FINAL</b>		<b>Borehole Number</b>  <b>BH67</b>				
<b>Method, Plant and Crew</b>					<b>Diameter</b>		<b>Casing</b>		<b>Drilling Progress by Time</b>					Scale: 1:50 Checked By: NEB Approved By: JC Start Date: 23/07/2021 Finish Date: 27/07/2021		
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth (m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Tests / Results		
0.00	1.20	Inspection Pit	Hand Excavated	L. Gouws	1.20	300			23/07	12:00	10.00	8.00	FULL			
1.20	30.40	Sonic Core Drilling	Fraste CRS-XL	L. Gouws	30.40	-			26/07 27/07	18:45 16:30	24.00 30.40	18.00 18.00	FULL FULL			
<b>Strata Description</b>							<b>Legend</b>	<b>Depth (m)</b>	<b>Reduced Level (mAOD)</b>	<b>Water Level (m)</b>	<b>Inst / Backfill</b>	<b>Samples and Testing</b>				
Stiff reddish brown gravelly CLAY. Gravel is angular, flat fine to coarse horizontal locally 45 degree lithorelics of very weak mudstone. 0-10 degree locally 45 degree very closely spaced discontinuities. Frequent gypsum veins (5-10mm) following discontinuities. (MERCIA MUDSTONE GROUP) EOH at 30.40m - Target depth achieved											Depth (m)	Ref	Tests / Results			
								30.40	-20.73			30.30 - 30.40 30.30 - 30.40	B6 DD35			
														31		
														32		
														33		
														34		
														35		
														36		
														37		
														38		
														39		
														40		
<b>Observations / Remarks</b>										<b>Chiselling</b>			<b>Water Added</b>		<b>Hammer Information</b>	
1. Groundwater not observed. 2. Upon completion 50mm diameter gas/groundwater monitoring standpipe installed to 5.00m bgl.										From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %
										<b>Groundwater</b>					<b>Project Number</b>	
										Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	<b>784-B026948</b>



 <b>Project: A46 Newark - Northern Bypass</b> <b>Location: Newark-on-Trent, Nottinghamshire</b> <b>Client: Highways England</b>						Location Details				Status	Borehole Number					
						Easting: 481187.58		Northing: 356047.52				FINAL	BH68			
						Level: 6.01mAOD		Depth: 30.00m						Sheet 1 of 3		
						Logger: TW		Type: SNC								
						Inclination: 90°										
Method, Plant and Crew					Diameter		Casing		Drilling Progress by Time					Scale: 1:50		
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth (m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB	
0.00	1.20	Inspection Pit	Hand Excavated	A. Mossman	1.20	300			20/07	17:00	16.00	10.00	10.00	FULL	Approved By:	JC
1.20	30.00	Sonic Core Drilling	Fraste CRS-XL	A. Mossman	30.00	-			21/07	17:00	24.00	18.00	18.00	FULL	Start Date:	19/07/2021
									22/07	14:30	30.00	18.00	18.00	FULL	Finish Date:	29/07/2021
Strata Description						Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing					
											Depth (m)	Ref	Tests / Results			
<p>Loose greyish brown slightly gravelly clayey fine to coarse SAND, with occasional irregular (20-50mm) pockets of soft to firm dark brown clay. Gravel is subrounded to rounded fine to coarse brown clay. Gravel is subrounded to rounded fine to coarse carbonaceous mudstone. (ALLUVIUM)</p> <p><i>From 1.20m to 1.50m bgl no recovery.</i></p> <p><i>From 2.70m to 3.00m bgl becomes brownish grey, very clayey, gravel is very weak siltstone.</i></p>										0.10 - 0.20	ESES1	SPT(C) 1.20m, N=8 (1,2/1,2,2,3)	1			
							0.30 - 1.00	B1	SPT(C) 2.00m, N=10 (2,2/3,2,3,2)	2						
							0.30 - 1.00	BB1			SPT(C) 4.00m, N=24 (4,4/5,5,6,8)			4		
							0.50 - 0.60	ESES2								
							1.00 - 1.10	ESES3			SPT(C) 6.00m, N=30 (5,5/6,6,8,10)	6				
							1.80 - 1.90	DD1								
						2.00 - 3.00	B2	SPT(C) 7.70m, N=30 (5,5/6,6,8,10)	7							
						2.00 - 3.00	BB2									
						2.40 - 2.50	B7	SPT(C) 8.50m, N=30 (5,5/6,6,8,10)		8						
						2.40 - 2.50	DD2									
						3.00	3.01				9					
						3.30 - 3.40	D3	SPT(C) 10.00m, N=30 (5,5/6,6,8,10)				10				
						3.30 - 3.40	DD3									
						3.60	2.41									
						3.60 - 3.70	D4	SPT(C) 11.00m, N=30 (5,5/6,6,8,10)								
						3.60 - 3.70	DD4									
						4.50 - 4.60	DD5	SPT(C) 12.00m, N=30 (5,5/6,6,8,10)								
						5.30 - 5.50	C1									
						5.30 - 5.50	COREC1	SPT(C) 13.00m, N=30 (5,5/6,6,8,10)								
						6.00	0.01		SPT(C) 14.00m, N=30 (5,5/6,6,8,10)							
						6.70 - 6.80	DD6									
						6.60	-0.59									
						7.70 - 7.85	COREC2	SPT(C) 15.00m, N=30 (5,5/6,6,8,10)								
						8.00	-1.99		SPT(C) 16.00m, N=30 (5,5/6,6,8,10)							
						8.50 - 8.60	B8									
						8.50 - 8.60	DD7	SPT(C) 17.00m, N=30 (5,5/6,6,8,10)								
						8.00	-1.99									
Observations / Remarks 1. Groundwater not observed. 2. Upon completion exploratory hole backfilled with bentonite.											Chiselling		Water Added		Hammer Information	
						From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %				
						Groundwater						Project Number				
						Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks					
												784-B026948				

 <b>Project: A46 Newark - Northern Bypass</b> <b>Location: Newark-on-Trent, Nottinghamshire</b> <b>Client: Highways England</b>						<b>Location Details</b> Easting: 481187.58 Northing: 356047.52 Level: 6.01mAOD Depth: 30.00m Logger: TW Type: SNC Inclination: 90°				<b>Status</b>  <b>FINAL</b>		<b>Borehole Number</b>  <b>BH68</b>				
<b>Method, Plant and Crew</b>						<b>Diameter</b>		<b>Casing</b>		<b>Drilling Progress by Time</b>				<b>Scale:</b> 1:50		
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB	
0.00	1.20	Inspection Pit	Hand Excavated	A. Mossman	1.20	300			20/07	17:00	16.00	10.00	FULL	Approved By:	JC	
1.20	30.00	Sonic Core Drilling	Frate CRS-XL	A. Mossman	30.00	-			21/07	17:00	24.00	18.00	FULL	Start Date:	19/07/2021	
									22/07	14:30	30.00	18.00	FULL	Finish Date:	29/07/2021	
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing				
No recovery. (NO RECOVERY)													Depth (m)	Ref	Tests / Results	
Firm to stiff reddish brown locally light bluish grey slightly gravelly CLAY, with occasional irregular pockets/lenses (5-10mm) of light bluish grey silt. Gravel is subrounded to angular flat fine to coarse locally horizontal lithorelics of very weak mudstone. 0-10 degree, locally 25-35 degree, extremely closely spaced to very closely spaced fissures. (IVa, locally III). (MERCIA MUDSTONE GROUP)								10.90	-4.89				11.50 - 11.60	D8		
												11.50 - 11.60	DD8			
												11.50 - 11.70	C3			
												11.50 - 11.70	COREC3			
Firm reddish brown gravelly CLAY, with rare angular (30-60mm) clasts of unweathered mudstone and occasional (3-5mm) lenses of light bluish grey silt. Gravel is subangular to angular, occasionally flat, randomly orientated, locally horizontal, very weak mudstone. 0-10 degree extremely closely spaced to very closely spaced fissures. (IVa/III). (MERCIA MUDSTONE GROUP)								12.00	-5.99				12.00 - 12.20	COREC4		
Stiff reddish brown very gravelly CLAY. Gravel is angular fine to coarse lithorelics of very weak mudstone. Randomly orientated extremely closely spaced to very closely spaced discontinuities. (Lithorelics of mudstone in clay matrix). (Zone III). (MERCIA MUDSTONE GROUP)								13.00	-6.99				13.10 - 13.50	COREC5		
Possibly drilling disturbed, recovered as reddish brown slightly sandy clayey GRAVEL. Gravel is subrounded to angular, occasionally flat, fine to coarse very weak mudstone. Sand is fine to coarse. (Possibly III). (MERCIA MUDSTONE GROUP)								13.70	-7.69				13.80 - 13.90	DD9		
Stiff reddish brown slightly gravelly CLAY, with occasional irregular (3-5mm) pockets of light bluish grey silt. Gravel is subrounded to subangular fine to coarse lithorelics of very weak mudstone. 0-10 degree, locally 25-35 degree, extremely closely spaced to very closely spaced fissures. (Zone IVa). (MERCIA MUDSTONE GROUP) <i>From 14.30m to 15.10m bgl firm.</i>								14.30	-8.29				14.30 - 14.40	DD10		
												15.50 - 15.70	C6			
												15.50 - 15.70	COREC6			
<i>From 16.00m to 16.50m bgl stiff, dark reddish brown (Zone IVa).</i>												16.20 - 16.30	B9			
												16.20 - 16.30	DD15			
												16.60	C7			
												16.60 - 16.80	COREC7			
														SPT(C) 17.00m, 50 (25 for 50mm/50 for 100mm)		
<i>From 17.70m to 18.00m bgl light bluish grey, silty.</i>																
<i>From 18.10m to 19.50m bgl possibly zone III.</i>																
Stiff light bluish grey gravelly silty CLAY, with occasional angular (40-50mm) clasts of unweathered siltstone. Gravel is subangular to angular, locally flat and horizontal, very weak siltstone. 0-10 degree extremely closely spaced to very closely spaced discontinuities. Frequent (5-10mm) weathered gypsum veins, following discontinuities (Zone III). (MERCIA MUDSTONE GROUP) <i>From 19.80m to 20.00m bgl weathered gypsum.</i>								19.50	-13.49							
															SPT(C) 20.00m, 50 (25 for 95mm/50 for 25mm)	
<b>Observations / Remarks</b> 1. Groundwater not observed. 2. Upon completion exploratory hole backfilled with bentonite.										<b>Chiselling</b>			<b>Water Added</b>		<b>Hammer Information</b>	
					From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %					
<b>Groundwater</b>										<b>Project Number</b>						
Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks											
						<b>784-B026948</b>										











 <b>Project: A46 Newark - Northern Bypass</b> <b>Location: Newark-on-Trent, Nottinghamshire</b> <b>Client: Highways England</b>						<b>Location Details</b> Easting: 481187.58 Northing: 356047.52 Level: 6.01mAOD Depth: 30.00m Logger: TW Type: SNC Inclination: 90°				<b>Status</b>  <b>FINAL</b>		<b>Borehole Number</b>  <b>BH68</b>					
Method, Plant and Crew						Diameter		Casing		Drilling Progress by Time				Scale: 1:50			
From (m)	To (m)	Type	Plant Used	Crew		Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NEB	
0.00	1.20	Inspection Pit	Hand Excavated	A. Mossman	A. Mossman	1.20	300			20/07	17:00	16.00	10.00	FULL	Approved By:	JC	
1.20	30.00	Sonic Core Drilling	Frastr CRS-XL			30.00	-			21/07	17:00	24.00	18.00	FULL	Start Date:	19/07/2021	
										22/07	14:30	30.00	18.00	FULL	Finish Date:	29/07/2021	
Strata Description								Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing				
<p>Stiff light bluish grey gravelly silty CLAY, with occasional angular (40-50mm) clasts of unweathered siltstone. Gravel is subangular to angular, locally flat and horizontal, very weak siltstone. 0-10 degree extremely closely spaced to very closely spaced discontinuities. Frequent (5-10mm) weathered gypsum veins, following discontinuities (Zone III). (MERCIA MUDSTONE GROUP)</p> <p><i>From 20.10m to 20.30m bgl weak light bluish grey siltstone. (Zone II).</i></p>									20.00	-15.99			20.50 - 20.70	C9	COREC9		
													20.50 - 20.70				
<p>Very weak to weak thickly laminated to very thinly bedded reddish brown and light bluish grey MUDSTONE and SILTSTONE. 0-10 degree, locally 35-45 degree very closely spaced to closely spaced undulating rough discontinuities. Occasional gypsum veins (10-15mm) following bedding and discontinuities. (NI/100/150) (Zone II).</p> <p>(MERCIA MUDSTONE GROUP)</p> <p><i>From 22.00m to 22.20m bgl weak light bluish grey siltstone.</i>  <i>From 22.00m to 23.00m bgl extremely weak reddish brown mudstone.</i></p>									22.00	-15.99			22.10	C10	COREC10		
													22.10 - 22.25	0			
<p>Partly non intact, possibly drilling induced, recovered as clayey GRAVEL, with frequent clasts of angular (40-60mm) of unweathered siltstone and mudstone. Gravel is subangular to angular fine to coarse siltstone and mudstone.</p> <p>(MERCIA MUDSTONE GROUP)</p>									23.00	-16.99			23.30 - 23.40	DD18			
													23.30 - 23.40				
<p>Firm to stiff reddish brown, locally light bluish grey gravelly CLAY, with occasional clasts of angular (30-40mm) siltstone. Gravel is subangular to angular fine to coarse very weak mudstone and siltstone. 0-10 degree extremely closely spaced to very closely spaced fissures. Occasional weathered gypsum veins (5-10mm) following discontinuities. (Zone III).</p> <p>(MERCIA MUDSTONE GROUP)</p> <p><i>From 23.60m to 23.80m bgl disseminated weathered gypsum.</i>  <i>From 24.00m to 24.25m bgl no recovery.</i>  <i>From 24.25m to 24.50m bgl weak siltstone.</i>  <i>From 24.75m to 24.85m bgl band of gypsum.</i></p>									23.60	-17.59			24.35	C11	COREC11		
													24.35 - 24.50	1			
<p>Very weak thin laminated to very thinly bedded reddish brown and light bluish grey MUDSTONE and SILTSTONE, with 0-10 degree extremely closely spaced to closely spaced discontinuities. Occasional (10-20mm) gypsum veins. (NI/80/100). (Zone II).</p> <p>(MERCIA MUDSTONE GROUP)</p> <p><i>From 26.60m to 27.00m bgl partly weathered to clay (possibly zone III).</i></p>									26.00	-19.99			26.80	C12	COREC12		
													26.80 - 27.00	2			
<p>Firm to stiff reddish brown, locally light bluish grey gravelly CLAY, with occasional clasts of angular (30-40mm) siltstone. Gravel is subangular to angular fine to coarse very weak mudstone and siltstone. 0-10 degree extremely closely spaced to very closely spaced fissures. Occasional weathered gypsum veins (5-10mm) following discontinuities. (Zone III).</p> <p>(MERCIA MUDSTONE GROUP)</p>									27.20	-21.19			27.50 - 27.60	DD20			
													27.50 - 27.60				
<p>Weak thin laminated to very thinly bedded reddish brown and light bluish grey MUDSTONE and SILTSTONE, with 0-10 degree, locally 45 degree, extremely closely spaced to closely spaced discontinuities. Occasional (10-20mm) gypsum veins. (50/180/200). (Zone II).</p> <p>(MERCIA MUDSTONE GROUP)</p>									28.00	-21.99			28.30	C14	COREC14		
													28.30 - 28.50	3			
<p>Firm to stiff reddish brown, locally light bluish grey gravelly CLAY, with occasional clasts of angular (30-40mm) siltstone. Gravel is subangular to angular fine to coarse very weak mudstone and siltstone. 0-10 degree extremely closely spaced to very closely spaced fissures. Occasional weathered gypsum veins (5-10mm) following discontinuities. (Zone III).</p> <p>(MERCIA MUDSTONE GROUP)</p> <p><i>From 29.00m to 29.50m bgl frequent disseminated weathered gypsum veins (5-10mm) following discontinuities.</i>  <i>From 29.10m to 29.50m bgl light bluish grey, silty.</i></p>									28.90	-22.89			29.00	C14	COREC14		
													29.00 - 29.10	4			
<p>EOH at 30.00m - Target depth achieved</p>									30.00	-23.99			29.10 - 29.20	B11	DD21		
													29.10 - 29.20				
<b>Observations / Remarks</b> 1. Groundwater not observed. 2. Upon completion exploratory hole backfilled with bentonite.											<b>Chiselling</b> From (m) To (m) Time (mins)		<b>Water Added</b> From (m) To (m)		<b>Hammer Information</b> Serial No. Energy Ratio %		
											<b>Groundwater</b> Strike (m) Casing (m) Sealed (m) Time (min) Rose To (m) Remarks		<b>Project Number</b> <b>784-B026948</b>				



Plate 1

BH01 - 1.20 to 7.00m bgl



Plate 2

BH01 - 7.00 to 10.50m bgl

Tetra Tech  
5th Floor, Longcross Court  
47 Newport Road  
Cardiff  
CF24 0AD

Tel: 029 20 829200  
Fax: 029 20 455321

Environmental Consultancy  
Ground Technologies & Investigation



Project :-  
A46 NNB

Project No.: B026948

Oct-21



Plate 3 BH01 - 10.50 to 13.00m bgl



Plate 4 BH01 - 13.00 to 16.00m bgl

Tetra Tech  
5th Floor, Longcross Court  
47 Newport Road  
Cardiff  
CF24 0AD



Tel: 029 20 829200  
Fax: 029 20 455321

Environmental Consultancy  
Ground Technologies & Investigation

Project :-  
A46 NNB

Project No.: B026948

Oct-21

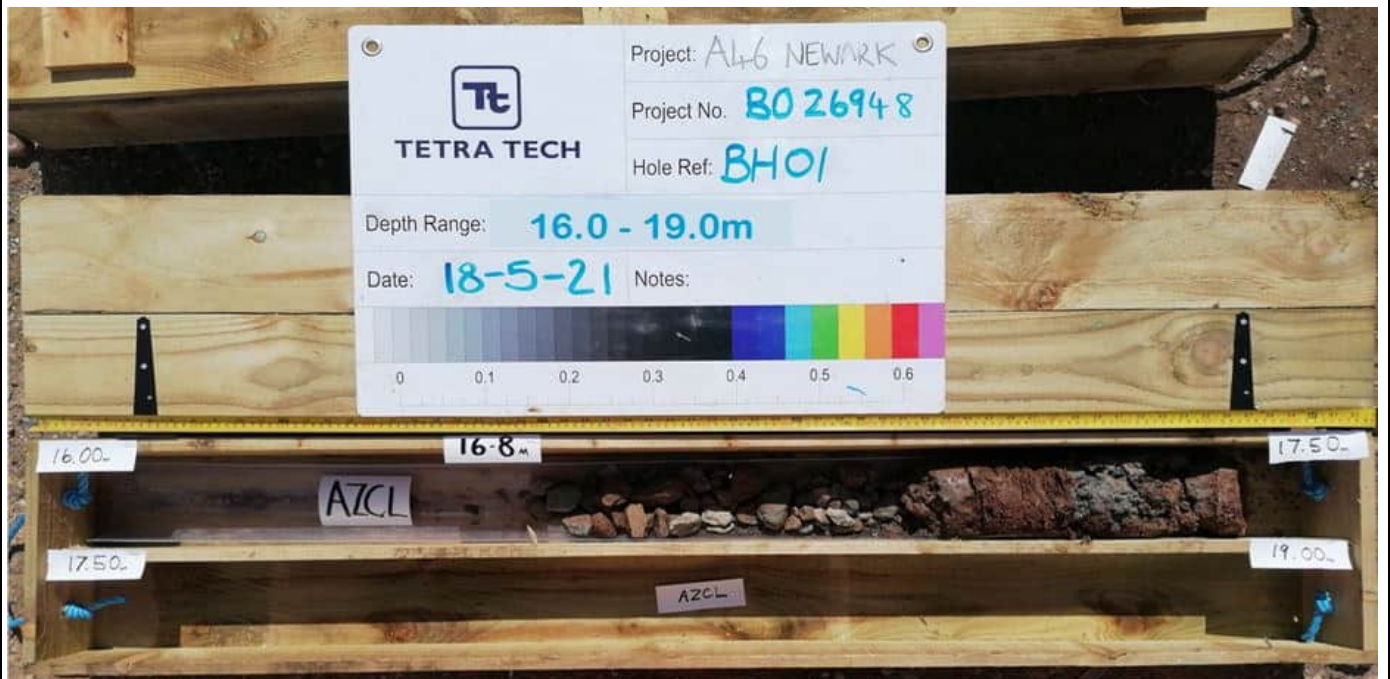


Plate 5

BH01 - 16.00 to 19.00m bgl



Plate 6

BH01 - 19.00 to 25.00m bgl

Tetra Tech  
5th Floor, Longcross Court  
47 Newport Road  
Cardiff  
CF24 0AD

Tel: 029 20 829200  
Fax: 029 20 455321

Environmental Consultancy  
Ground Technologies & Investigation



Project :-  
A46 NNB

Project No.: B026948

Oct-21



Plate 7

BH01 - 20.50 to 23.50m bgl



Plate 8

BH01 - 23.50 to 25.00m bgl

Tetra Tech  
5th Floor, Longcross Court  
47 Newport Road  
Cardiff  
CF24 0AD

Tel: 029 20 829200  
Fax: 029 20 455321

Environmental Consultancy  
Ground Technologies & Investigation



Project :-  
A46 NNB

Project No.: B026948

Oct-21



Plate 9

BH02 - 5.50 to 8.50m bgl



Plate 10

BH02 - 8.50 to 11.50m bgl

Tetra Tech  
5th Floor, Longcross Court  
47 Newport Road  
Cardiff  
CF24 0AD

Tel: 029 20 829200  
Fax: 029 20 455321

Environmental Consultancy  
Ground Technologies & Investigation



Project :-  
A46 NNB

Project No.: B026948

Oct-21





Plate 11

BH02 - 11.50 to 14.50m bgl



Plate 12

BH02 - 14.50 to 17.50m bgl

Tetra Tech  
5th Floor, Longcross Court  
47 Newport Road  
Cardiff  
CF24 0AD



Tel: 029 20 829200  
Fax: 029 20 455321

Environmental Consultancy  
Ground Technologies & Investigation

Project :-  
A46 NNB

Project No.: B026948

Oct-21



**Plate 13**

BH02 - 17.50 to 20.50m bgl



**Plate 14**

BH02 - 20.50 to 23.50m bgl

Tetra Tech  
5th Floor, Longcross Court  
47 Newport Road  
Cardiff  
CF24 0AD

Tel: 029 20 829200  
Fax: 029 20 455321

Environmental Consultancy  
Ground Technologies & Investigation



Project :-  
A46 NNB

Project No.: B026948

Oct-21



Plate 15

BH02 - 23.50 to 25.00m bgl

Plate 16

BLANK

Tetra Tech  
5th Floor, Longcross Court  
47 Newport Road  
Cardiff  
CF24 0AD

Tel: 029 20 829200  
Fax: 029 20 455321

Environmental Consultancy  
Ground Technologies & Investigation



TETRA TECH

Project :-  
A46 NNB

Project No.: B026948

Oct-21



**Plate 17**

BH03 - 1.20 to 4.00m bgl

**Plate 18**

BLANK

Tetra Tech  
 5th Floor, Longcross Court  
 47 Newport Road  
 Cardiff  
 CF24 0AD



Tel: 029 20 829200  
 Fax: 029 20 455321

Environmental Consultancy  
 Ground Technologies & Investigation

Project :-  
 A46 NNB

0

Project No.: B026948

Oct-21



Plate 19

BH03A 1.20 to 3.00m bgl



Plate 20

BH03A - 3.00 to 7.00m bgl

Tetra Tech  
5th Floor, Longcross Court  
47 Newport Road  
Cardiff  
CF24 0AD

Tel: 029 20 829200  
Fax: 029 20 455321

Environmental Consultancy  
Ground Technologies & Investigation



Project :-  
A46 NNB

Project No.: B026948

Oct-21

Plate 21

BH03A - 7.00 to 8.50m bgl (NO RECOVERY)



Plate 22

BH03A - 8.50 to 11.50m bgl

Tetra Tech  
5th Floor, Longcross Court  
47 Newport Road  
Cardiff  
CF24 0AD

Tel: 029 20 829200  
Fax: 029 20 455321

Environmental Consultancy  
Ground Technologies & Investigation



Project :-  
A46 NNB

Project No.: B026948

Oct-21



Plate 23

BH03A - 11.50 to 14.50m bgl



Plate 24

BH03A - 14.50 to 17.50m bgl

Tetra Tech  
5th Floor, Longcross Court  
47 Newport Road  
Cardiff  
CF24 0AD

Tel: 029 20 829200  
Fax: 029 20 455321

Environmental Consultancy  
Ground Technologies & Investigation



Project :-  
A46 NNB

Project No.: B026948

Oct-21



Plate 25

BH03A - 17.50 to 20.50m bgl



Plate 26

BH03A - 20.50 to 23.50m bgl

Tetra Tech  
5th Floor, Longcross Court  
47 Newport Road  
Cardiff  
CF24 0AD



Tel: 029 20 829200  
Fax: 029 20 455321

Environmental Consultancy  
Ground Technologies & Investigation

Project :-  
A46 NNB

Project No.: B026948

Oct-21



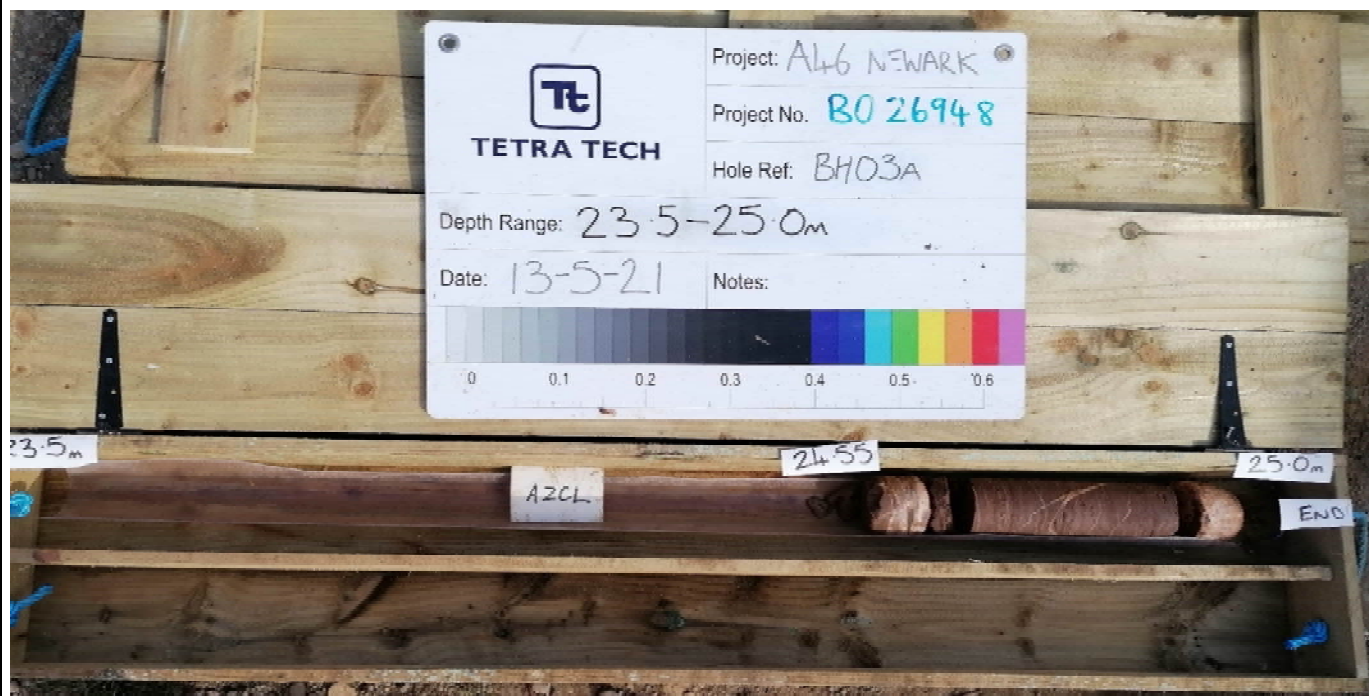


Plate 27

BH03A - 23.50 to 25.00m bgl

Plate 28

BLANK

Tetra Tech  
5th Floor, Longcross Court  
47 Newport Road  
Cardiff  
CF24 0AD

Tel: 029 20 829200  
Fax: 029 20 455321

Environmental Consultancy  
Ground Technologies & Investigation



Project :-  
A46 NNB

Project No.: B026948

Oct-21

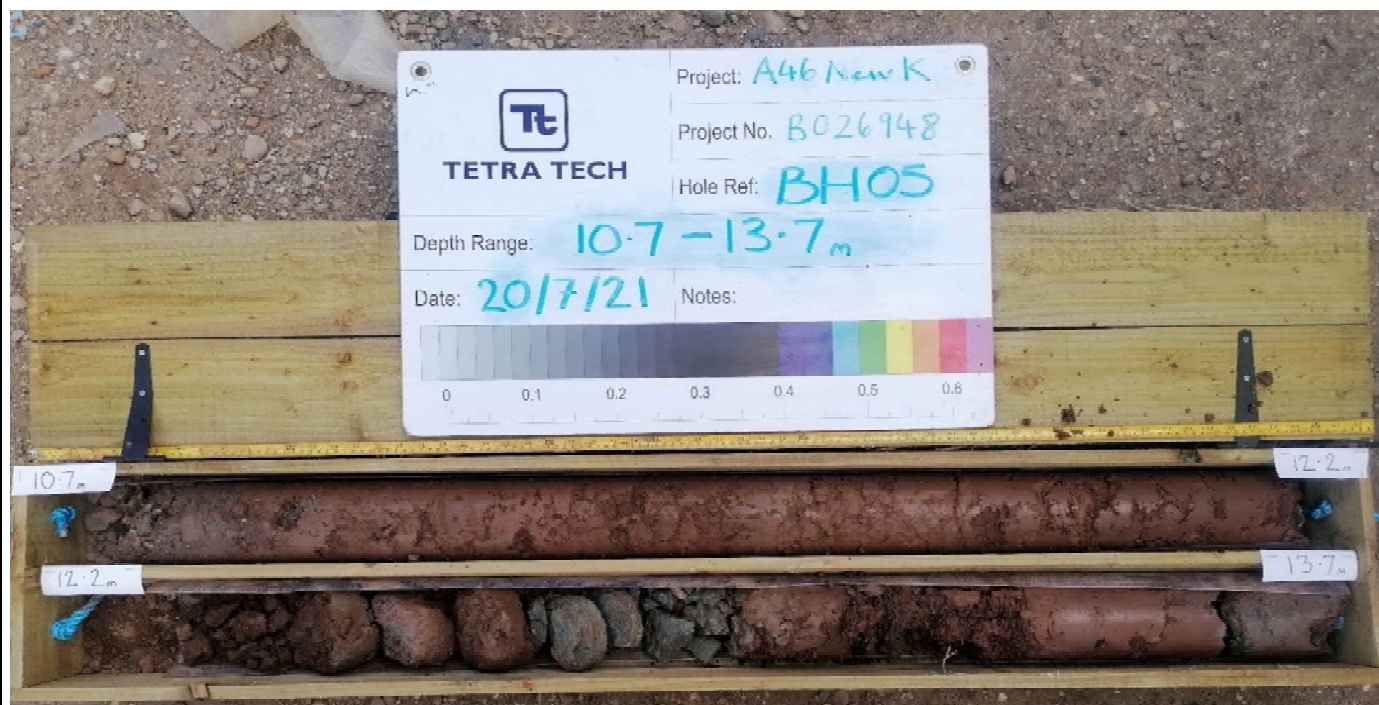


Plate 29

BH05 - 10.70 to 13.70m bgl

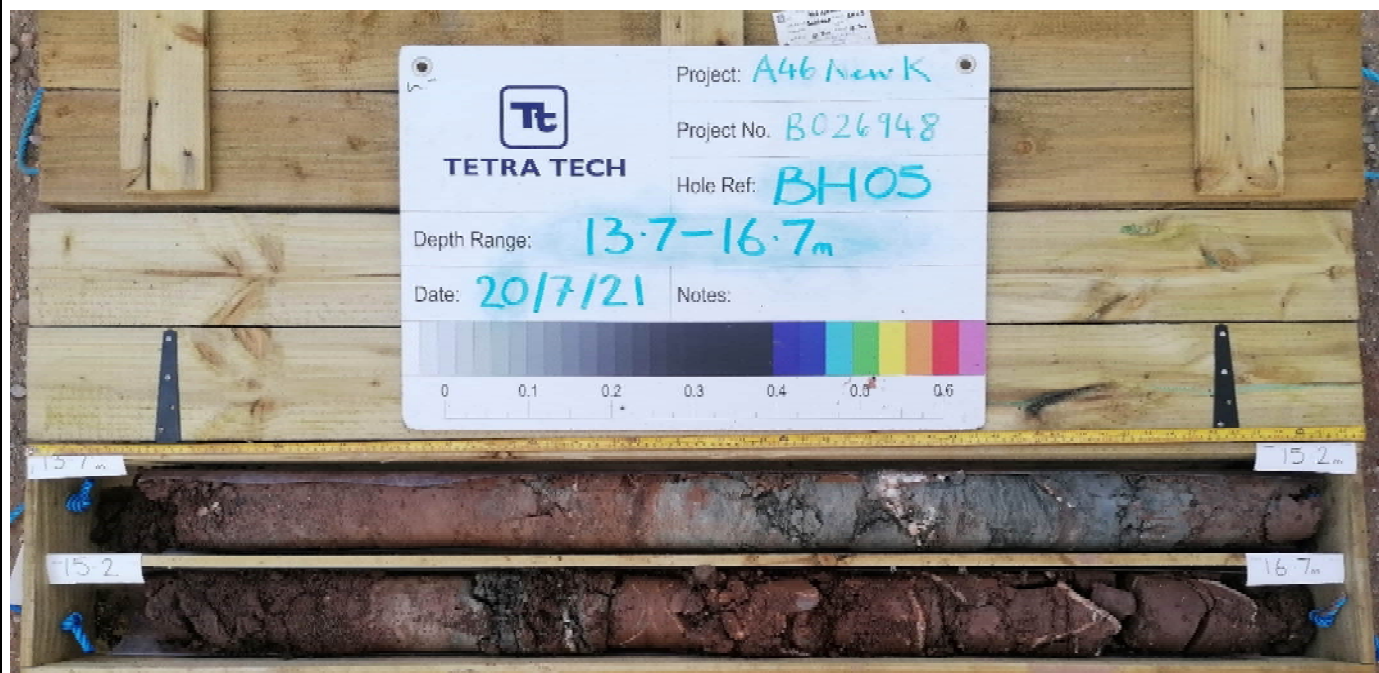


Plate 30

BH05 - 13.70 to 16.70m bgl

Tetra Tech  
5th Floor, Longcross Court  
47 Newport Road  
Cardiff  
CF24 0AD



Tel: 029 20 829200  
Fax: 029 20 455321

Environmental Consultancy  
Ground Technologies & Investigation

Project :-  
A46 NNB

Project No.: B026948


Oct-21



**Plate 31** BH05 - 16.70 to 19.70m bgl



**Plate 32** BH05 - 19.70 to 22.70m bgl

<p><b>Tetra Tech</b>          5th Floor, Longcross Court          47 Newport Road          Cardiff          CF24 0AD</p> <p>Tel: 029 20 829200          Fax: 029 20 455321</p> <p>Environmental Consultancy          Ground Technologies &amp; Investigation</p>	 <b>TETRA TECH</b>		<p><b>Project :-</b>  <b>A46 NNB</b></p>
	<p>Project No.: B026948</p>	<p>Oct-21</p>	



**Plate 33**

BH05 - 22.70 to 25.00m bgl

**Plate 34**

BLANK

Tetra Tech  
5th Floor, Longcross Court  
47 Newport Road  
Cardiff  
CF24 0AD

Tel: 029 20 829200  
Fax: 029 20 455321

Environmental Consultancy  
Ground Technologies & Investigation



Project :-  
A46 NNB

Project No.: B026948

Oct-21

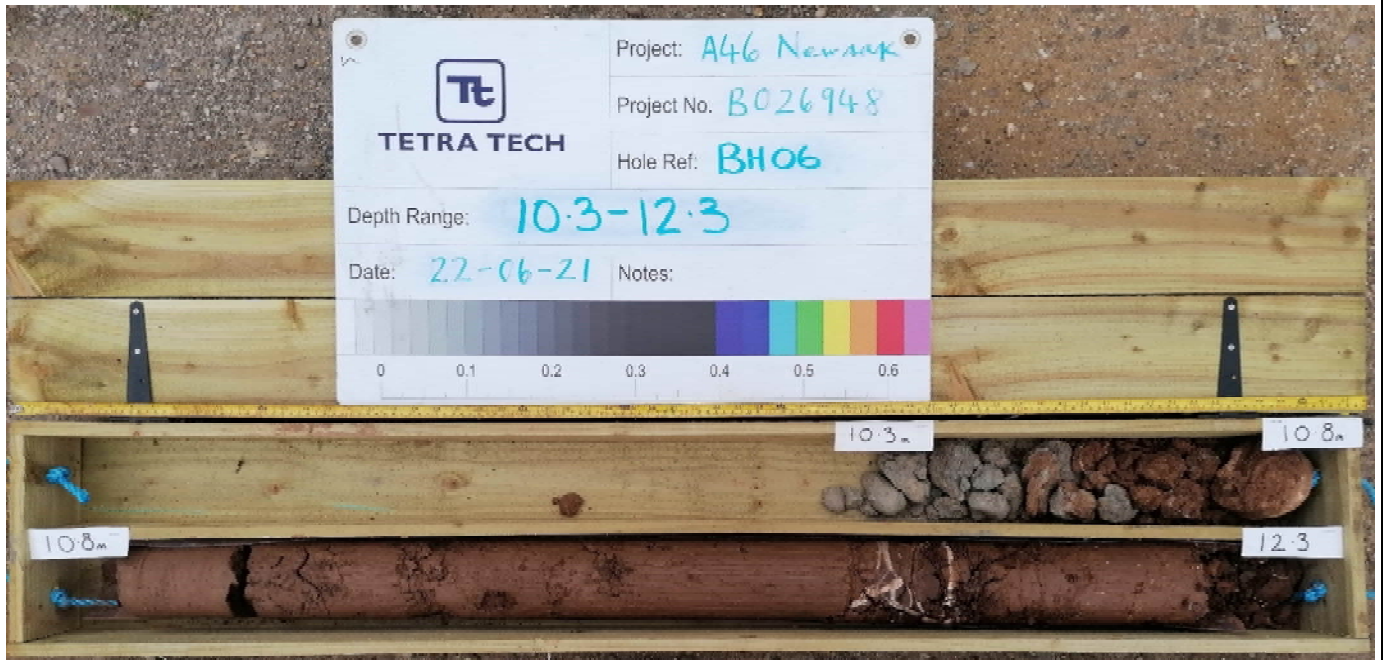


Plate 35

BH06 - 10.3 to 12.30m bgl



Plate 36

BH06 - 12.30 to 15.30m bgl

Tetra Tech  
5th Floor, Longcross Court  
47 Newport Road  
Cardiff  
CF24 0AD

Tel: 029 20 829200  
Fax: 029 20 455321

Environmental Consultancy  
Ground Technologies & Investigation



Project :-  
A46 NNB

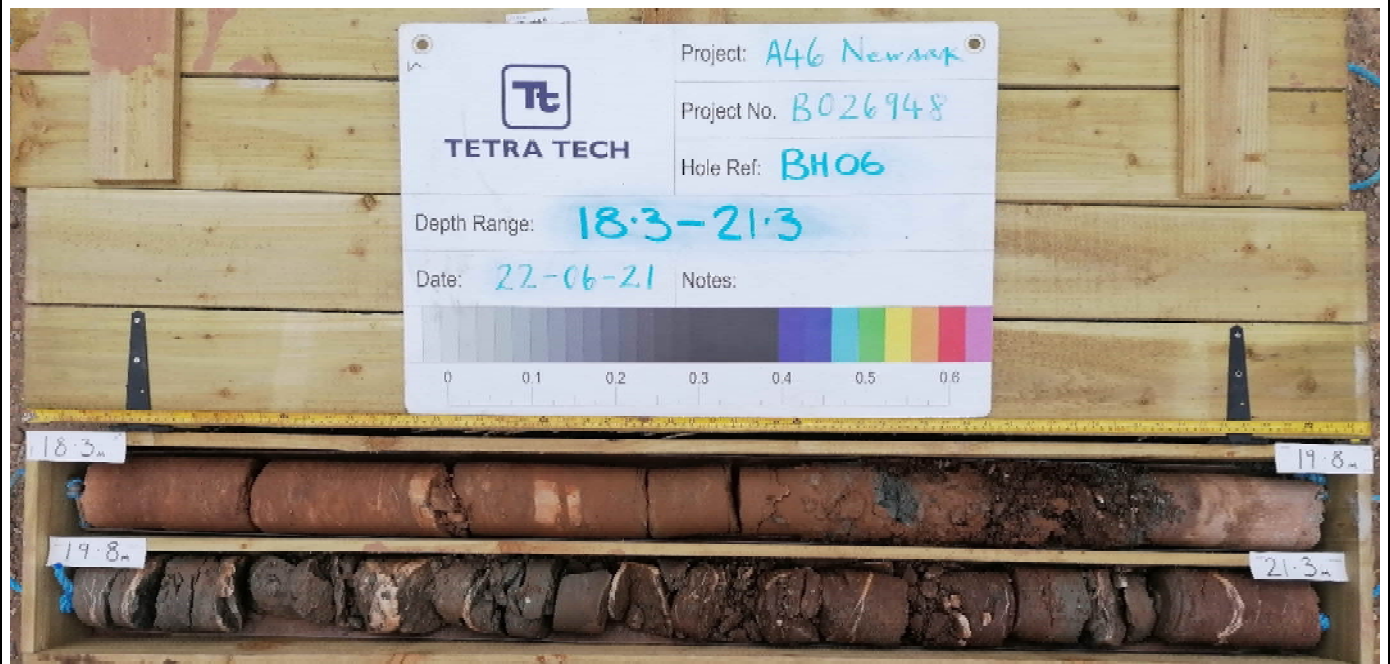
Project No.: B026948

Oct-21



**Plate 37**

BH06 - 15.30 to 18.30m bgl



**Plate 38**

BH06 - 18.30 to 21.30m bgl

**Tetra Tech**  
 5th Floor, Longcross Court  
 47 Newport Road  
 Cardiff  
 CF24 0AD



Tel: 029 20 829200  
 Fax: 029 20 455321

Environmental Consultancy  
 Ground Technologies & Investigation

**Project :-**  
**A46 NNB**

Project No.: B026948

Oct-21



**Plate 39**

BH06 - 21.30 to 24.30m bgl



**Plate 40**

BH06 - 24.30 to 25.00m bgl

**Tetra Tech**  
 5th Floor, Longcross Court  
 47 Newport Road  
 Cardiff  
 CF24 0AD



Tel: 029 20 829200  
 Fax: 029 20 455321

Environmental Consultancy  
 Ground Technologies & Investigation

**Project :-**  
**A46 NNB**

Project No.: B026948

Oct-21



Plate 41

BH07 - 1.20 to 4.00m bgl



Plate 42

BH07 - 6.60 to 10.85m bgl

Tetra Tech  
5th Floor, Longcross Court  
47 Newport Road  
Cardiff  
CF24 0AD

Tel: 029 20 829200  
Fax: 029 20 455321

Environmental Consultancy  
Ground Technologies & Investigation



Project :-  
A46 NNB

Project No.: B026948

Oct-21



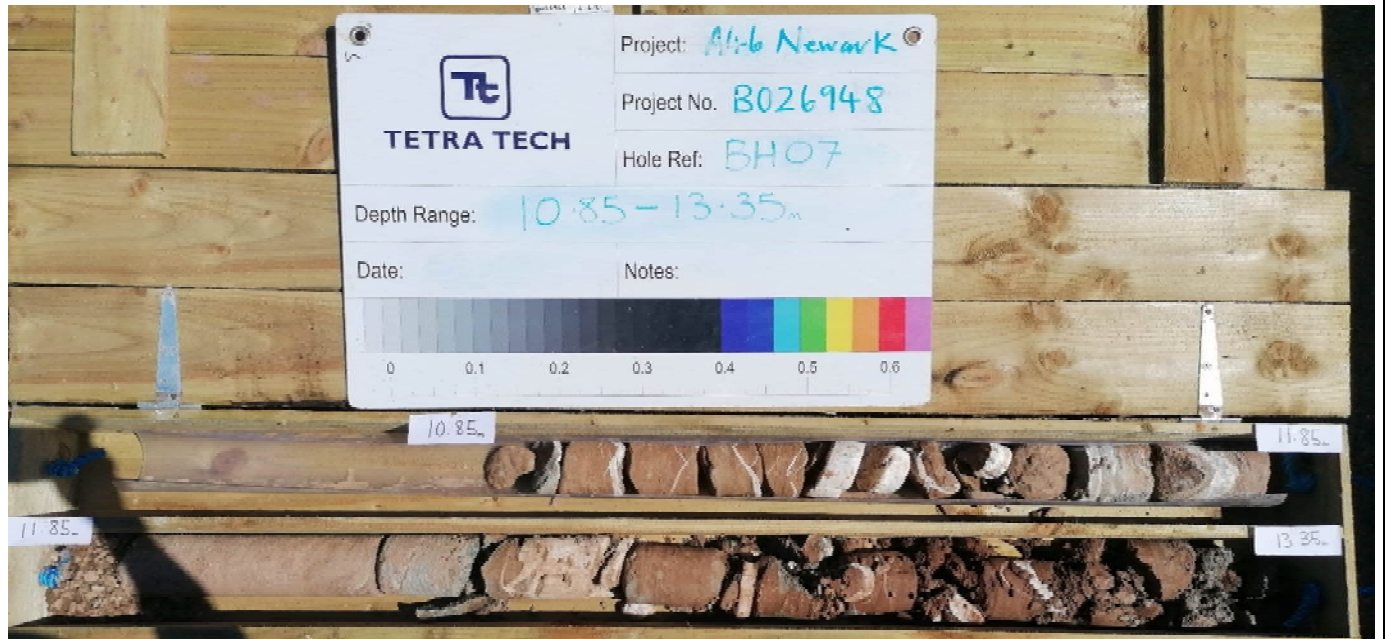


Plate 43

BH07 - 10.85 to 13.35m bgl



Plate 44

BH07 - 13.35 to 16.35m bgl

Tetra Tech  
5th Floor, Longcross Court  
47 Newport Road  
Cardiff  
CF24 0AD

Tel: 029 20 829200  
Fax: 029 20 455321

Environmental Consultancy  
Ground Technologies & Investigation



Project :-  
A46 NNB

Project No.: B026948

Oct-21



**Plate 45**

BH07 - 16.35 to 19.35m bgl



**Plate 46**

BH07 - 19.35 to 22.35m bgl

**Tetra Tech**  
 5th Floor, Longcross Court  
 47 Newport Road  
 Cardiff  
 CF24 0AD



Tel: 029 20 829200  
 Fax: 029 20 455321

Environmental Consultancy  
 Ground Technologies & Investigation

**Project :-**  
**A46 NNB**

Project No.: B026948

Oct-21

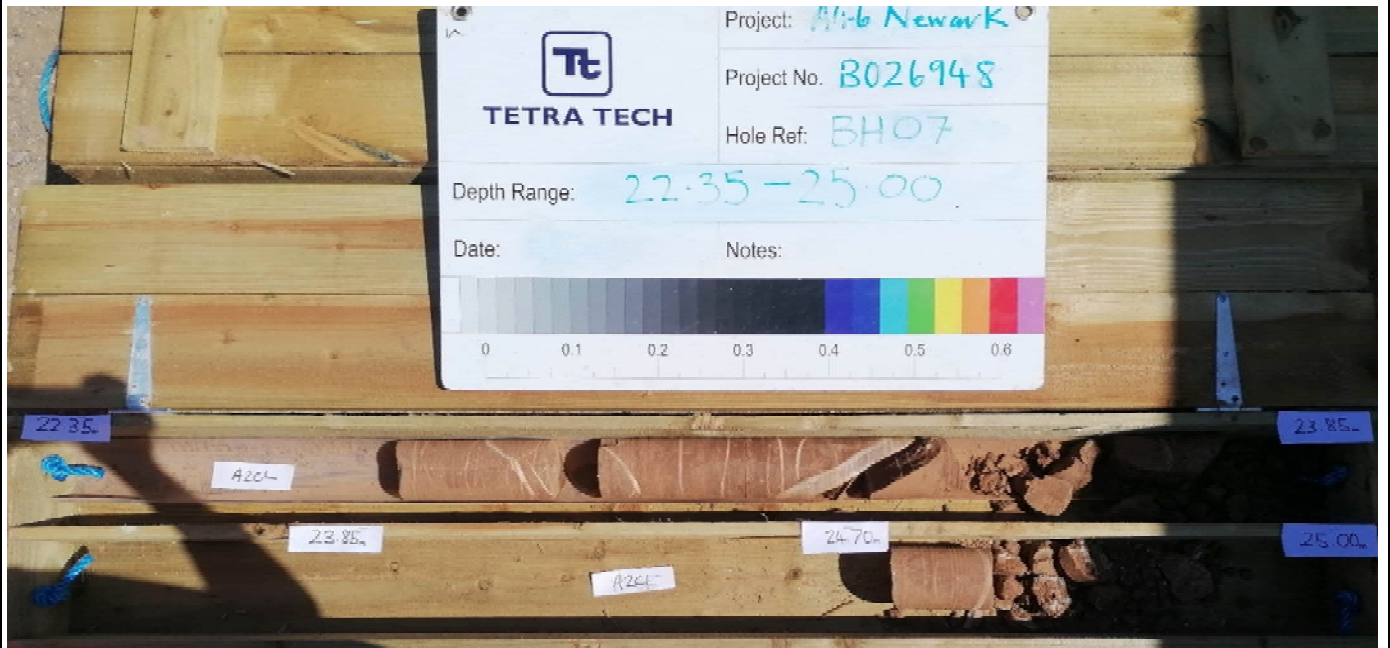


Plate 47

BH07 - 22.35 to 25.00m bgl

Plate 48

BLANK

Tetra Tech  
 5th Floor, Longcross Court  
 47 Newport Road  
 Cardiff  
 CF24 0AD

Tel: 029 20 829200  
 Fax: 029 20 455321

Environmental Consultancy  
 Ground Technologies & Investigation



Project :-  
 A46 NNB

Project No.: B026948

Oct-21

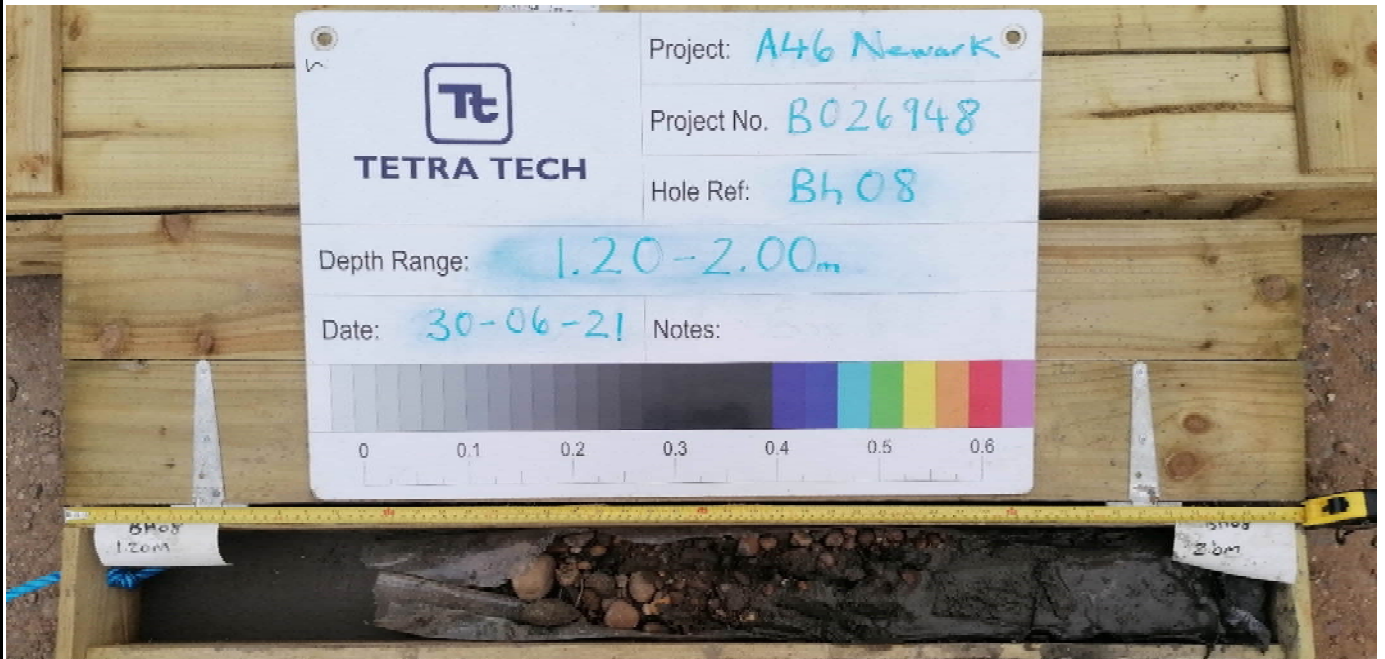


Plate 49

BH08 - 1.20 to 2.00m bgl



Plate 50

BH08 - 2.00 to 4.00m bgl

Tetra Tech  
5th Floor, Longcross Court  
47 Newport Road  
Cardiff  
CF24 0AD

Tel: 029 20 829200  
Fax: 029 20 455321

Environmental Consultancy  
Ground Technologies & Investigation



Project :-  
A46 NNB

Project No.: B026948

Oct-21

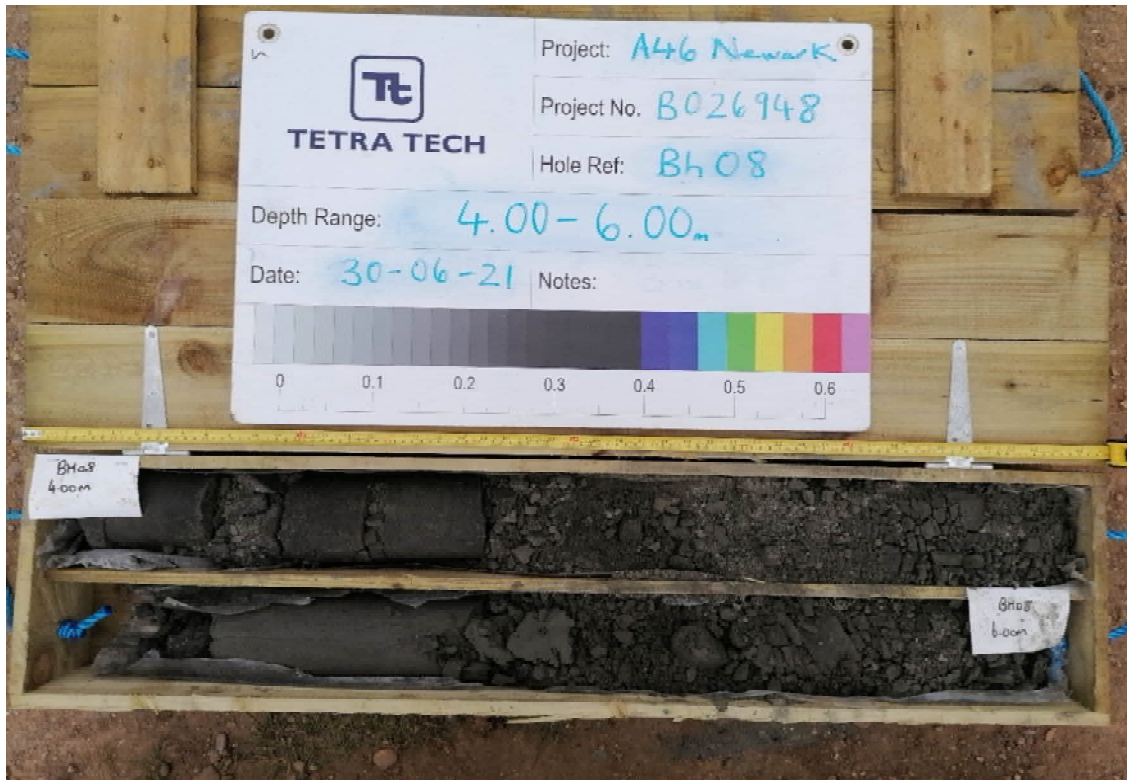


Plate 51

BH08 - 4.00 to 6.00m bgl



Plate 52

BH08 - 6.00 to 8.00m bgl

Tetra Tech  
5th Floor, Longcross Court  
47 Newport Road  
Cardiff  
CF24 0AD

Tel: 029 20 829200  
Fax: 029 20 455321

Environmental Consultancy  
Ground Technologies & Investigation



Project :-  
A46 NNB

Project No.: B026948

Oct-21

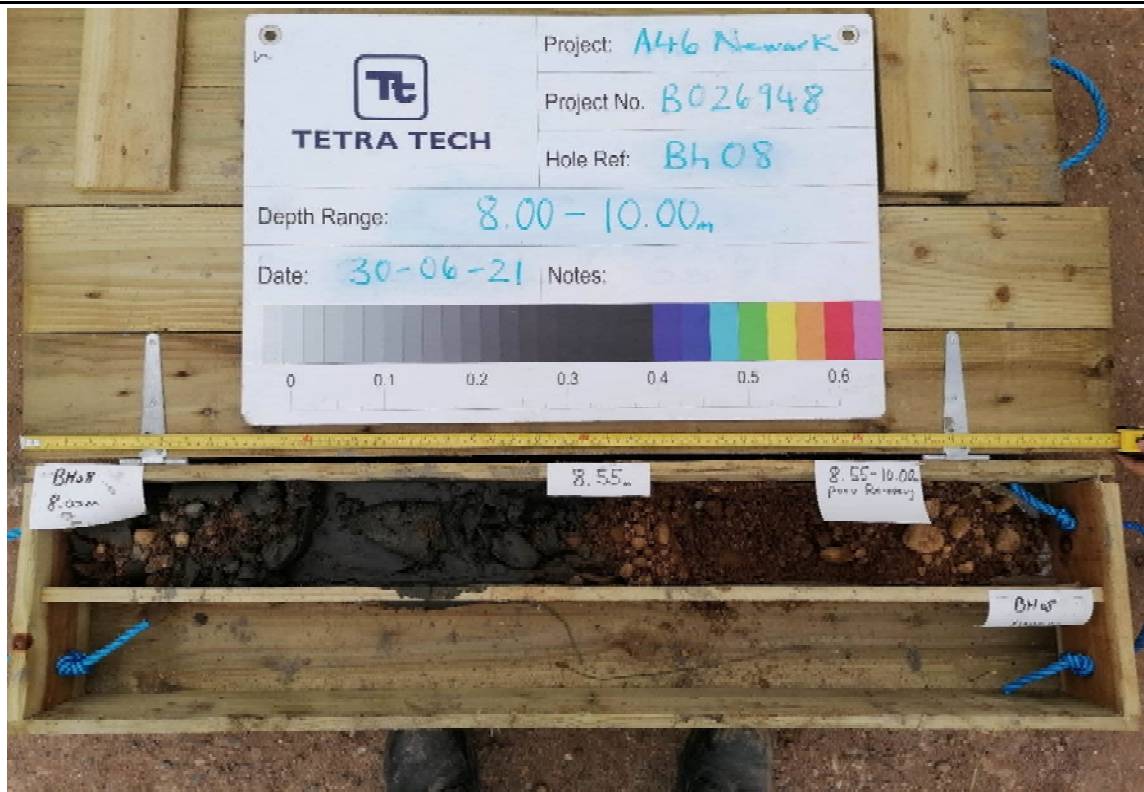


Plate 53

BH08 - 8.00 to 10.00m bgl



Plate 54

BH08 - 10.00 to 14.00m bgl

Tetra Tech  
5th Floor, Longcross Court  
47 Newport Road  
Cardiff  
CF24 0AD

Tel: 029 20 829200  
Fax: 029 20 455321

Environmental Consultancy  
Ground Technologies & Investigation



Project :-  
A46 NNB

Project No.: B026948

Oct-21



Plate 55

BH08 - 14.00 to 16.00m bgl

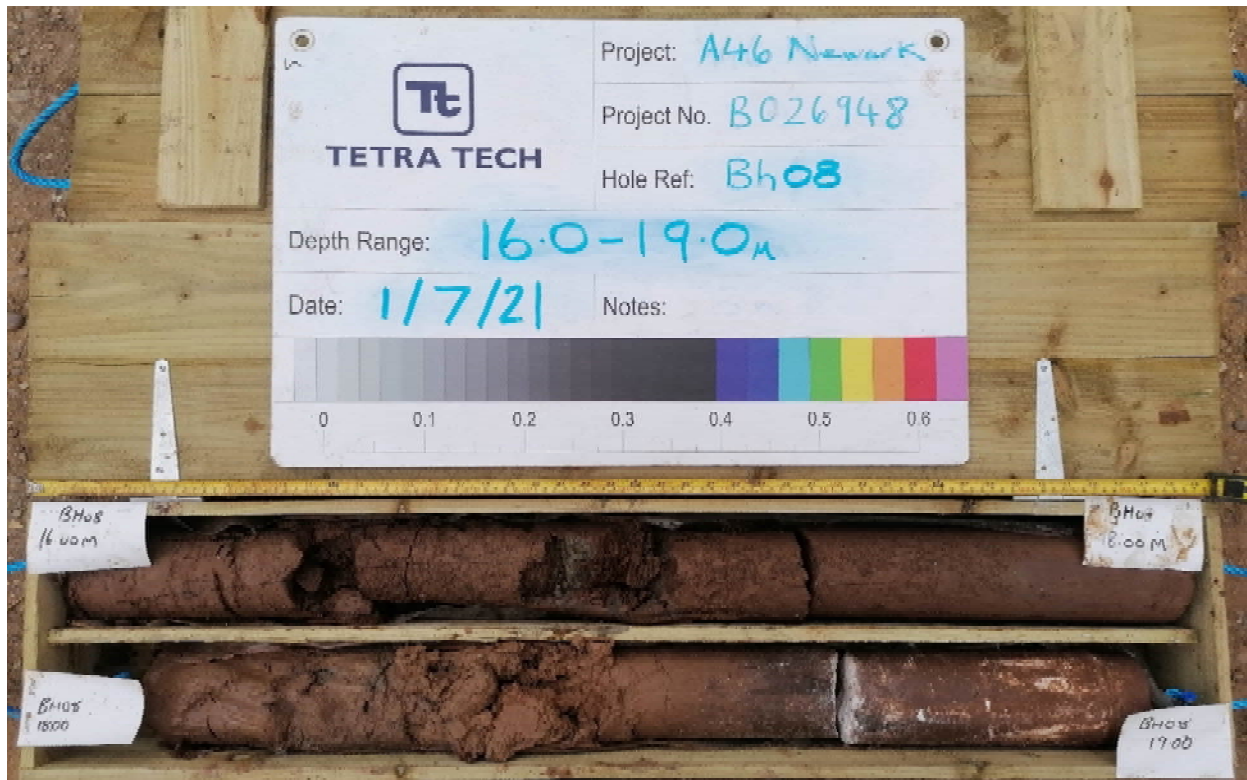


Plate 56

BH08 - 16.00 to 19.00m bgl

Tetra Tech  
5th Floor, Longcross Court  
47 Newport Road  
Cardiff  
CF24 0AD

Tel: 029 20 829200  
Fax: 029 20 455321

Environmental Consultancy  
Ground Technologies & Investigation



Project :-  
A46 NNB

Project No.: B026948

Oct-21

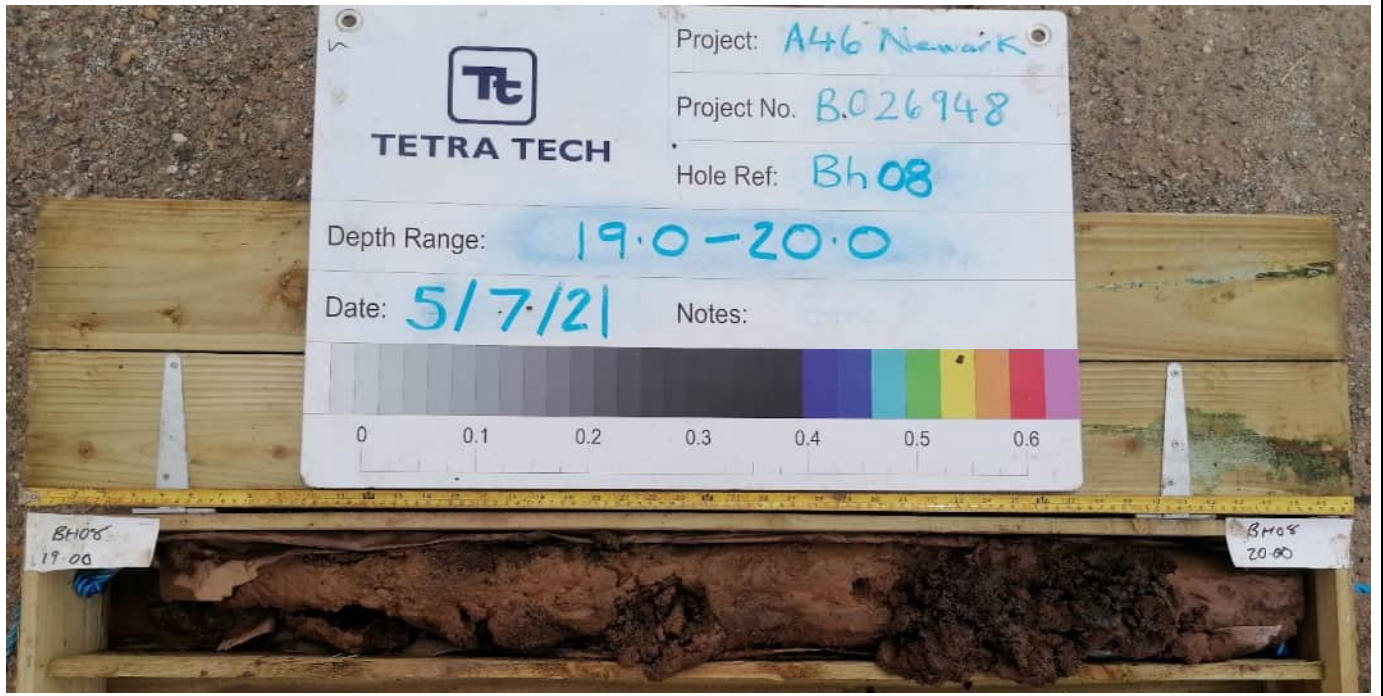


Plate 57

BH08 - 19.00 to 20.00m bgl



Plate 58

BH08 - 20.00 to 22.00m bgl

Tetra Tech  
5th Floor, Longcross Court  
47 Newport Road  
Cardiff  
CF24 0AD

Tel: 029 20 829200  
Fax: 029 20 455321

Environmental Consultancy  
Ground Technologies & Investigation



Project :-  
A46 NNB

Project No.: B026948

Oct-21





Plate 59

BH08 - 22.00 to 24.00m bgl



Plate 60

BH08 - 24.00 to 26.00m bgl

Tetra Tech  
5th Floor, Longcross Court  
47 Newport Road  
Cardiff  
CF24 0AD

Tel: 029 20 829200  
Fax: 029 20 455321

Environmental Consultancy  
Ground Technologies & Investigation



Project :-  
A46 NNB

Project No.: B026948

Oct-21



**Plate 61** BH08 - 26.00 to 28.00m bgl



**Plate 62** BH08 - 28.00 to 30.00m bgl

**Tetra Tech**  
 5th Floor, Longcross Court  
 47 Newport Road  
 Cardiff  
 CF24 0AD

Tel: 029 20 829200  
 Fax: 029 20 455321

Environmental Consultancy  
 Ground Technologies & Investigation



**Project :-**  
**A46 NNB**

Project No.: B026948

Oct-21



Plate 63

BH08 - 30.00 to 32.00m bgl



Plate 64

BH08 - 32.00 to 34.00m bgl

Tetra Tech  
5th Floor, Longcross Court  
47 Newport Road  
Cardiff  
CF24 0AD

Tel: 029 20 829200  
Fax: 029 20 455321

Environmental Consultancy  
Ground Technologies & Investigation



Project :-  
A46 NNB

Project No.: B026948

Oct-21



Plate 65

BH08 - 34.00 to 35.00m bgl

Plate 66

BLANK

Tetra Tech  
 5th Floor, Longcross Court  
 47 Newport Road  
 Cardiff  
 CF24 0AD

Tel: 029 20 829200  
 Fax: 029 20 455321

Environmental Consultancy  
 Ground Technologies & Investigation



Project :-  
 A46 NNB

Project No.: B026948

Oct-21