INVESTIGATE

REMEDIATE

REGENERATE

SUB SURFACE
Site Investigation Specialists,
Geotechnical & Environmental Consultants

GROUND INVESTIGATION REPORT

FOR
HILLSIDE,
MOOR LANE,
WISWELL,
BB7 9DG

PREPARED FOR
REDFOOT SHOES LTD

FACTUAL REPORT NO. 7840
DECEMBER 2023

SUB SURFACE NORTH WEST LIMITED
3 Peel Street
Preston
Lancashire
PR2 2QS
Tel: (01772) 561135 Fax: (01772) 204907
Email: preston@subsurface.co.uk
Website: www.subsurface.co.uk

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Sub Surface North West Limited
3 Peel Street, Preston, Lancashire, PR2 2QS
Tel: 01772 561135 Fax: 01772 204907 Email: preston@subsurface.co.uk

GROUND INVESTIGATION AT HILLSIDE, MOOR LANE, WISWELL, BB7 9DG

CLIENT: REDFOOT SHOES LTD

ARCHITECT: RALA

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1. INTRODUCTION

This report has been prepared in accordance with an email, dated 24th October 2023, from the Architect on behalf of the Client.

The brief was set out in our estimate, ref. E6733 and dated 18th October 2023, with amendments as the investigation proceeded and includes:

- 6 No. mini boreholes
- Insitu testing
- Geotechnical laboratory testing
- Provision of a factual report on the above.

1.1 Site Location and Description

The site is located at Hillside, Moor Lane, Wiswell, BB7 8DG, as indicated on Figure 1. The approximate National Grid Reference of the centre of the site is 374636E 437222N.

As shown on Figure 2, the site is bounded to the north and east by Moor Lane, and to the southeast by the garden of an adjacent residential property, and to the west and southwest by an undeveloped field.

The site comprises of a residential property and garden. The property, driveway and garage are located in the southeast of the site, with the garden to the northwest. The site decreases in topography toward the northwest and the garden is on different levels with steps for access. Two ponds are present in the garden, located close to the north of the property and in the centre of the garden. A brook runs through the site, from the southern corner of the site, likely passing through a culvert underneath or alongside the property, and through the garden close to the southern boundary towards the south eastern corner of the site.

1.2 Proposed Development and Purpose of the Ground Investigation

We understand that the proposed development is to demolish the existing property and rebuild a replacement residential property and driveway, as shown on Figure 3.

The purpose of the ground investigation is to determine the ground conditions at the exploratory hole positions and to provide results for assessment by the Engineer/ others.

Sub Surface North West Limited
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Tel: 01772 561135 Fax: 01772 204907 Email: preston@subsurface.co.uk

2. INVESTIGATION

2.1 Investigation Details

Seven mini boreholes were put down to depths of between 0.15m and 5.43m, using a Mini Sampling Rig fitted with windowless sample tubes of 86mm to 56mm diameter at the positions determined and set out by Sub Surface North West Limited, as shown on Figure 4. Three of the mini boreholes were put down to depths of between 3.39m and 5.43m and the remaining four mini boreholes were terminated due to concrete or boulder obstructions at depths of between 0.15m and 1.55m. The samples were subsequently logged in accordance with BS.5930:2015+A1:2020 and the resulting Mini Borehole Records are appended. On completion the mini boreholes were backfilled with gravel as no installations were required.

Ground levels at the exploratory hole positions have been interpolated from spot heights and contours given on an existing site plan by Calderpeel Architects, provided by the Client.

2.2 Sub Surface Detail

Details of the strata encountered in the ground investigation are given on the appended Mini Borehole Records. The exploratory holes generally found Made Ground to depths of between 0.20m and greater than 1.55m, with concrete encountered in M3, M3A and M3B, overlying friable and very soft, becoming firm medium strength then stiff high strength then very high strength, dark brown to dark brownish grey gravelly slightly sandy to sandy silty clay with low sandstone cobble content.

A general summary of the strata found is as follows:

2.2.1 Made Ground

Made Ground was recorded in all exploratory holes to depths of between greater than 0.15m and greater than 1.55m.

Bituminous macadam surfacing was recorded in M1, M2 and M3 to a depth of 0.05m and in M5 to a depth of 0.01m. M1 and M3 then recorded gravel sized fragments of stone to 0.20m and 0.15m respectively, M2 recorded dark brown slightly sandy slightly silty fine to coarse gravel sized fragments of stone and brick with high cobble sized fragments of stone and brick to 0.40m, and M5 recorded brown and dark grey sandy fine to coarse gravel sized fragments of stone with low cobble sized fragment content of stone to 0.20m.

M1 then recorded greyish brown slightly sandy slightly clayey slightly silty fine to coarse gravel sized fragments of stone to 0.35m.

Below 0.40m, M2 recorded very soft dark brown and occasional dark grey mottled gravelly slightly sandy silty clay with medium cobble sized fragment content of stone to 1.20m, overlying dark brown slightly sandy slightly silty fine to coarse gravel sized fragments of stone. M2 then encountered a boulder obstruction at 1.55m, preventing the borehole from progressing further.

M3 encountered concrete at 0.15m, at which depth the borehole was terminated.

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Paving flags were recorded in M3A and M3B to a depth of 0.02m, overlying yellowish brown slightly sandy slightly clayey slightly silty fine to coarse gravel sized fragments of stone to 0.40m and 0.60m respectively, overlying brown very sandy slightly silty fine to coarse gravel sized fragments of stone. M3A and M3B then both encountered concrete at depths of 0.80m and 0.70m respectively and the boreholes were terminated.

M4 recorded friable dark brown slightly gravelly sandy silty clay with low cobble sized fragment content of stone and occasional roots and rootlets to 0.20m, gravel sized fragments are fine to coarse stone.

2.2.2 Drift Deposits

Below the Made Ground, M1 recorded very soft dark brown gravelly silty clay with high siltstone cobble content to 1.20m, overlying stiff medium strength becoming high strength below 2.15m, locally medium strength between 3.15m and 4.15m, then very high strength below 5.15m, dark brown gravelly silty clay.

M4 recorded friable brown gravelly sandy silty clay with low sandstone cobble content to 1.20m, overlying firm locally high strength becoming medium strength below 2.15m, then stiff high strength below 3.00m, then very stiff very high strength below 4.50m, dark greyish brown gravelly slightly sandy silty clay with low sandstone cobble content.

M5 recorded firm, friable in places, low strength becoming medium strength below 2.15m, then very high strength (possibly affected and enhanced SPT due to cobbles) below 3.15m, dark brownish grey gravelly slightly sandy silty clay with low sandstone cobble content.

2.2.3 Groundwater

Groundwater seepage was recorded at 1.20m in M4 and no groundwater was encountered in the remainder of the exploratory holes, although it should be noted that they were only left open for a short period of time and groundwater levels and rates of inflow may be subject to seasonal and/ or climatic variations.

3. SAMPLING AND TESTING

3.1 Sampling

Continuous core, small disturbed and bulk disturbed samples were obtained for the strata encountered and were subjected to careful examination.

The samples will be retained for a period of one month after the issue of this report, for reference purposes, and then disposed of unless otherwise instructed.

3.2 Field Testing

Fourteen Standard Penetration Tests (SPTs) were performed in the mini boreholes, the results of which are recorded on the appended Standard Penetration Test Results Sheet with 'N' values and indicative relative density and shear strength, where appropriate, given on the Mini Borehole Records.

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3 Peel Street, Preston, Lancashire, PR2 2QS
Tel: 01772 561135 Fax: 01772 204907 Email: preston@subsurface.co.uk

3.3 Laboratory Testing

The following laboratory tests were carried out in accordance with BS.1377: 1990, where applicable, and the results are appended.

- Moisture content, plastic limit and liquid limit tests
- Soluble sulphate content and pH value tests

4. GENERAL

We trust that this report fulfils your present requirements but if you have any queries or we can be of further assistance please contact Ms Anna Marsden at our Preston office.

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FACTUAL REPORT No. 7840
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3 Peel Street, Preston, Lancashire, PR2 2QS
Tel: 01772 561135 Fax: 01772 204907 Email: preston@subsurface.co.uk

INSITU TEST RESULTS

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SITE INVESTIGATION, GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907

Standard Penetration Test Results

Site : HILLSIDE, MOOR LANE, WISWELL, BB7 9DG

Client : REDFOOT SHOES LTD

Architect: RALA

Job Number 7840

Sheet 1 / 1

Borehole Number	Base of Borehole (m)	End of Seating Drive (m)	End of Test Drive (m)	Test Type	Seating Blows per 75mm		Blows for each 75mm penetration				Result	Comments
					1	2	1	2	3	4		
M1	1.20	1.35	1.65	SPT	3	3	3	4	5	5	N=17	
M1	2.00	2.15	2.45	SPT	4	4	5	6	6	6	N=23	
M1	3.00	3.15	3.45	SPT	3	4	4	5	4	4	N=17	
M1	4.00	4.15	4.45	SPT	3	5	6	7	7	8	N=28	
M1	5.00	5.15	5.43	SPT	5	6	8	10	15	17	50/275mm	
M2	1.20	1.35	1.55	SPT	10	10	19	19	12		50/200mm	
M4	1.20	1.35	1.65	SPT	2	4	4	5	5	6	N=20	
M4	2.00	2.15	2.45	SPT	2	4	3	4	4	4	N=15	
M4	3.00	3.15	3.45	SPT	2	2	4	4	5	6	N=19	
M4	4.00	4.15	4.45	SPT	3	5	6	6	7	7	N=26	
M4	4.50	4.65	4.82	SPT	7	10	15	22	13		50/170mm	
M5	1.20	1.35	1.65	SPT	1	2	2	3	2	2	N=9	
M5	2.00	2.15	2.45	SPT	2	2	3	3	4	4	N=14	
M5	3.00	3.15	3.39	SPT	8	8	8	10	21	11	50/235mm	

LABORATORY TEST RESULTS

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Laboratory Test Results

Site : HILLSIDE, MOOR LANE, WISWELL, BB7 9DG

Client : REDFOOT SHOES LTD

Architect: RALA

Job Number 7840

Sheet 1 / 1

DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY AND LIQUIDITY INDEX

Borehole/ Trial Pit	Depth (m)	Sample	Natural Moisture Content %	Sample Passing 425µm Sieve		Liquid Limit %	Plastic Limit %	Plasticity Index %	Liquidity Index	Group Symbol	Laboratory Description
				Percentage %	Moisture Content %						
M1	0.35	B	17	59	29	32	16	16	0.80	CL	Very soft dark brownish grey gravelly silty CLAY with high siltstone cobble content. Gravel is subangular fine to coarse sandstone, siltstone and quartz
M1	1.20	D	13	32	41	28	15	13	1.97	CL	Stiff dark brown gravelly silty CLAY. Gravel is subangular fine to coarse sandstone, siltstone and quartz
M4	0.20	B	22	65	34	33	22	11	1.07	CL	Friable brown gravelly sandy silty CLAY with low sandstone cobble content. Gravel is angular to subrounded fine to coarse sandstone, siltstone and quartz
M4	1.20	D	19	55	35	30	16	14	1.32	CL	Firm dark greyish brown gravelly slightly sandy silty CLAY with low sandstone cobble content. Gravel is angular to subrounded fine to coarse sandstone, siltstone and quartz
M5	0.20	B	13	55	24	29	15	14	0.61	CL	Firm, friable in places, dark brownish grey gravelly slightly sandy silty CLAY with low sandstone cobble content. Gravel is angular to subrounded fine to coarse sandstone, siltstone and quartz
M5	2.00	D	13	64	20	31	15	16	0.33	CL	Firm dark brownish grey gravelly slightly sandy silty CLAY with low sandstone cobble content. Gravel is angular to subrounded fine to coarse sandstone, siltstone and quartz

Method of Preparation : BS 1377:PART 1:1990:7.4 Preparation of samples for classification tests BS 1377:PART 2:1990:4.2 & 5.2 Sample preparations

Method of Test : BS 1377:PART 2:1990:3 Determination of moisture content 1990:4 Determination of the liquid limit BS 1377:PART 2:1990:5 Determination of the plastic limit and plasticity index

Remarks :

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Laboratory Test Results

Site : HILLSIDE, MOOR LANE, WISWELL, BB7 9DG

Client : REDFOOT SHOES LTD

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DETERMINATION OF THE pH VALUE AND THE SULPHATE CONTENT OF SOIL AND GROUNDWATER

Borehole/ Trial Pit	Depth (m)	Sample	Concentration of Soluble Sulphate			Percentage of sample passing 2mm Sieve %	pH	Classification	Laboratory Description
			Soil		Groundwater g /l				
			Total S03 %	S04 in 2:1 water:soil g /l					
M1	0.20	B		0.11			7.9	DS-1	MADE GROUND: greyish brown slightly clayey slightly silty slightly sandy fine to coarse gravel sizeed fragments of stone
M1	0.35	B		0.02			9.1	DS-1	Very soft dark brownish grey gravelly silty CLAY with high siltstone cobble content. Gravel is subangular fine to coarse sandstone, siltstone and quartz
M4	0.20	B		0.01			7.9	DS-1	Friable brown gravelly sandy silty CLAY with low sandstone cobble content. Gravel is angular to subrounded fine to coarse sandstone, siltstone and quartz
M4	1.20	D		0.04			8.2	DS-1	Firm dark greyish brown gravelly slightly sandy silty CLAY with low sandstone cobble content. Gravel is angular to subrounded fine to coarse sandstone, siltstone and quartz
M5	0.20	B		0.14			8.2	DS-1	Firm, friable in places, dark brownish grey gravelly slightly sandy silty CLAY with low sandstone cobble content. Gravel is angular to subrounded fine to coarse sandstone, siltstone and quartz
M5	2.00	D		0.16			8.2	DS-1	Firm dark brownish grey gravelly slightly sandy silty CLAY with low sandstone cobble content. Gravel is angular to subrounded fine to coarse sandstone, siltstone and quartz

Method of Preparation : BS 1377:PART 1:1990:7.5 Preparation of soil for chemical tests BS 1377:PART 3:1990:5.2, 5.3, 5.4 & 9.4

Method of Test : Laboratory in-house methods based on BS1377: Part 3 for contents of water soluble sulphate, total sulphate and pH. Laboratory in-house method based on MEWAM (Environment Agency, 2006) for total sulphur

Remarks :

AGGRESSIVE CHEMICAL ENVIRONMENT FOR CONCRETE (ACEC) SITE CLASSIFICATION.

Table C1 Aggressive Chemical Environment for Concrete (ACEC) classification for natural ground locations [a]

Sulfate				Groundwater		
Design Sulfate Class for location	2:1 water/soil extract [b]	Groundwater	Total potential sulfate [c]	Static water	Mobile water	ACEC Class for location
1	2 (SO_4 mg/l)	3 (SO_4 mg/l)	4 (SO_4 %)	5 (pH)	6 (pH)	7
DS-1	< 500	< 400	< 0.24	≥ 2.5		AC-1s
					> 5.5 [d]	AC-1 [d]
					2.5–5.5	AC-2z
DS-2	500–1500	400–1400	0.24–0.6	> 3.5		AC-1s
					> 5.5	AC-2
				2.5–3.5		AC-2s
					2.5–5.5	AC-3z
DS-3	1600–3000	1500–3000	0.7–1.2	> 3.5		AC-2s
					> 5.5	AC-3
				2.5–3.5		AC-3s
					2.5–5.5	AC-4
DS-4	3100–6000	3100–6000	1.3–2.4	> 3.5		AC-3s
					> 5.5	AC-4
				2.5–3.5		AC-4s
					2.5–5.5	AC-5
DS-5	> 6000	> 6000	> 2.4	> 3.5		AC-4s
				2.5–3.5	≥ 2.5	AC-5

Notes
a Applies to locations on sites that comprise either undisturbed ground that is in its natural state (ie is not brownfield – Table C2) or clean fill derived from such ground.
b The limits of Design Sulfate Classes based on 2:1 water/soil extracts have been lowered relative to previous Digests (Box C7).
c Applies only to locations where concrete will be exposed to sulfate ions (SO_4) which may result from the oxidation of sulfides (eg pyrite) following ground disturbance (Appendix A1 and Box C8).
d For flowing water that is potentially aggressive to concrete owing to high purity or an aggressive carbon dioxide level greater than 15 mg/l (Section C2.2.3), increase the ACEC Class to AC-2z.

Explanation of suffix symbols to ACEC Class
- Suffix 's' indicates that the water has been classified as static.
- Concrete placed in ACEC Classes that include the suffix 'z' primarily have to resist acid conditions and may be made with any of the cements or combinations listed in Table D2 on page 42.

Table C2 Aggressive Chemical Environment for Concrete (ACEC) classification for brownfield locations [a]

Sulfate and magnesium						Groundwater		ACEC
Design Sulfate Class for location	2:1 water/soil extract [b]		Groundwater		Total potential sulfate [c]	Static water	Mobile water	Class for location
1	2 (SO_4 mg/l)	3 (Mg mg/l)	4 (SO_4 mg/l)	5 (Mg mg/l)	6 (SO_4 %)	7 (pH) [d]	8 (pH) [d]	9
DS-1	< 500		< 400		< 0.24	≥ 2.5		AC-1s
							> 6.5 [d]	AC-1
							5.5–6.5	AC-2z
							4.5–5.5	AC-3z
							2.5–4.5	AC-4z
DS-2	500–1500		400–1400		0.24–0.6	> 5.5		AC-1s
							> 6.5	AC-2
						2.5–5.5		AC-2s
							5.5–6.5	AC-3z
							4.5–5.5	AC-4z
							2.5-4.5	AC-5z
DS-3	1600–3000		1500–3000		0.7–1.2	> 5.5		AC-2s
							> 6.5	AC-3
						2.5–5.5		AC-3s
							5.5–6.5	AC-4
							2.5–5.5	AC-5
DS-4	3100–6000	≤ 1200	3100–6000	≤ 1000	1.3–2.4	> 5.5		AC-3s
							> 6.5	AC-4
						2.5–5.5		AC-4s
							2.5–6.5	AC-5
DS-4m	3100–6000	> 1200 [e]	3100–6000	> 1000 [e]	1.3–2.4	> 5.5		AC-3s
							> 6.5	AC-4m
						2.5–5.5		AC-4ms
							2.5–6.5	AC-5m
DS-5	> 6000	≤ 1200	> 6000	≤ 1000	> 2.4	> 5.5		AC-4s
						2.5–5.5	≥ 2.5	AC-5
DS-5m	> 6000	> 1200 [e]	> 6000	> 1000 [e]	> 2.4	> 5.5		AC-4ms
						2.5–5.5	≥ 2.5	AC-5m

Notes
a Brownfield locations are those sites, or parts of sites, that might contain chemical residues produced by or associated with industrial production (Section C5.1.3).
b The limits of Design Sulfate Classes based on 2:1 water/soil extracts have been lowered from previous Digests (Box C7).
c Applies only to locations where concrete will be exposed to sulfate ions (SO_4), which may result from the oxidation of sulfides such as pyrite, following ground disturbance (Appendix A1 and Box C8).
d An additional account is taken of hydrochloric and nitric acids by adjustment to sulfate content (Section C5.1.3).
e The limit on water-soluble magnesium does not apply to brackish groundwater (chloride content between 12 000 mg/l and 17 000 mg/l). This allows 'm' to be omitted from the relevant ACEC classification. Seawater (chloride content about 18 000 mg/l) and stronger brines are not covered by this table.

Explanation of suffix symbols to ACEC Class
- Suffix 's' indicates that the water has been classified as static.
- Concrete placed in ACEC Classes that include the suffix 'z' have primarily to resist acid conditions and may be made with any of the cements in Table D2 on page 42.
- Suffix 'm' relates to the higher levels of magnesium in Design Sulfate Classes 4 and 5.

MINI BOREHOLE RECORD SHEETS

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SITE INVESTIGATION, GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

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Site	Borehole Number
HILLSIDE, MOOR LANE, WISWELL, BB7 9DG	M1

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
MINI PERCUSSIVE		133.80	REDFOOT SHOES LTD	7840
	Location	**Dates**	**Architect**	**Sheet**
	AS PLAN	02/11/2023	RALA	1/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					133.75	0.05	MADE GROUND: bituminous macadam surfacing		
						(0.15)			
					133.60	0.20	MADE GROUND: gravel sized fragments of stone (M.O.T.).		
0.20-0.35	B					(0.15)			
					133.45	0.35	MADE GROUND: greyish brown slightly sandy slightly clayey slightly silty fine to coarse gravel sized fragments of stone.		
0.35-1.20	B						Very soft dark brownish grey gravelly silty CLAY with high siltstone cobble content. Gravel is subangular fine to coarse sandstone, siltstone and quartz.		
						(0.85)			
					132.60	1.20			
1.20-1.65	D			1.20m to 2.00m - 100% Recovery 3,3/3,4,5,5			Stiff medium strength becoming high strength, locally medium strength, then very high strength dark brown gravelly silty CLAY. Gravel is subangular fine to coarse sandstone, siltstone and quartz.		
1.20-2.00	C								
1.20-1.65	SPT N=17								
2.00-2.45	D			2.00m to 3.00m - 90% Recovery 4,4/5,6,6,6					
2.00-3.00	C								
2.00-2.45	SPT N=23						… Below 2.15m: high strength		
3.00-3.45	D			3.00m to 4.00m - 90% Recovery 3,4/4,5,4,4					
3.00-4.00	C								
3.00-3.45	SPT N=17						… Between 3.15m and 4.15m: medium strength		
						(4.23)			
4.00-4.45	D			4.00m to 5.00m - 90% Recovery 3,5/6,7,7,8					
4.00-5.00	C								
4.00-4.45	SPT N=28								
5.00-5.43	SPT 50/275			5,6/8,10,15,17					

Remarks

Hand dug inspection pit from GL to 1.20m to check for services.
Core diameter: 86mm to 2.00m, 76mm to 3.00m, 66mm to 4.00m, 56mm to 5.00m.
No groundwater encountered.
On completion, backfilled with gravel.

Scale (approx)	Logged By
1:25	AP/HB

Figure No. 7840.M1

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3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907

Site	Borehole Number
HILLSIDE, MOOR LANE, WISWELL, BB7 9DG	M1

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
MINI PERCUSSIVE		133.80	REDFOOT SHOES LTD	7840
	Location AS PLAN	**Dates** 02/11/2023	**Architect** RALA	**Sheet** 2/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
5.00-5.45	D			02/11/2023:DRY	128.37	5.43 (5.43)	… Below 5.15m: very high strength Complete at 5.43m		

Remarks

Scale (approx)	Logged By
1:25	AP/HB

Figure No. 7840.M1

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Site	Borehole Number
HILLSIDE, MOOR LANE, WISWELL, BB7 9DG	M2

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
MINI PERCUSSIVE		133.40	REDFOOT SHOES LTD	7840
	Location	**Dates**	**Architect**	**Sheet**
	AS PLAN	02/11/2023	RALA	1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					133.35	0.05	MADE GROUND: bituminous macadam surfacing		
0.05-0.40	B					(0.35)	MADE GROUND: dark brown slightly sandy slightly silty fine to coarse gravel sized fragments of stone and brick with high cobble sized fragment content of stone and brick.		
0.40-1.20	B				133.00	0.40	MADE GROUND: very soft dark brown and occasional dark grey mottled gravelly slightly sandy silty clay with medium cobble sized fragment content of stone. Gravel sized fragments are fine to coarse stone and brick.		
						(0.80)			
1.20-1.55	SPT 50/200			10,10/19,19,12	132.20	1.20	MADE GROUND: dark brown slightly sandy slightly silty fine to coarse gravel sized fragments of stone.		
1.20-1.55	D					(0.35)			
				02/11/2023:DRY	131.85	1.55	… At 1.55m: boulder obstruction.		
							Complete at 1.55m		

Remarks

Hand dug inspection pit from GL to 1.20m to check for services.
No groundwater encountered.
On completion, backfilled with gravel.

Scale (approx)	Logged By
1:25	AP/HB

Figure No. 7840.M2

SUB SURFACE

SITE INVESTIGATION, GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907

Site	Borehole Number
HILLSIDE, MOOR LANE, WISWELL, BB7 9DG	M3

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
MINI PERCUSSIVE		133.60	REDFOOT SHOES LTD	7840
	Location	**Dates**	**Architect**	**Sheet**
	AS PLAN	02/11/2023	RALA	1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					133.55	0.05	MADE GROUND: bituminous macadam surfacing.		
						(0.10)			
					133.45	0.15	MADE GROUND: gravel sized fragments of stone (MOT) … At 0.15m: CONCRETE		
							Complete at 0.15m		

Remarks

Hand dug inspection pit from GL to 1.20m to check for services.
No groundwater encountered.
On completion, backfilled with gravel.

Scale (approx)	Logged By
1:25	AP/HB

Figure No. 7840.M3

SUB SURFACE

SITE INVESTIGATION, GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907

Site	Borehole Number
HILLSIDE, MOOR LANE, WISWELL, BB7 9DG	M3A

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
MINI PERCUSSIVE		133.70	REDFOOT SHOES LTD	7840
	Location	**Dates**	**Architect**	**Sheet**
	AS PLAN	02/11/2023	RALA	1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.02-0.70	B				133.68	0.02	MADE GROUND: paving flags.		
						(0.38)	MADE GROUND: yellowish brown slightly sandy slightly clayey slightly silty fine to coarse gravel sized fragments of stone.		
					133.30	0.40	MADE GROUND: brown very sandy slightly silty fine to coarse gravel sized fragments of stone.		
						(0.40)			
0.70-0.80	B			02/11/2023:DRY	132.90	0.80	At 0.80m: CONCRETE.		
							Complete at 0.80m		

Remarks

Hand dug inspection pit from GL to 1.20m to check for services.
No groundwater encountered.
On completion, backfilled with gravel.

Scale (approx)	Logged By
1:25	AP/HB

Figure No. 7840.M3A

SUB SURFACE

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Site	Borehole Number
HILLSIDE, MOOR LANE, WISWELL, BB7 9DG	M3B

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
MINI PERCUSSIVE		133.75	REDFOOT SHOES LTD	7840
	Location	**Dates**	**Architect**	**Sheet**
	AS PLAN	02/11/2023	RALA	1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.02-0.60	B				133.73	0.02	MADE GROUND: paving flags.		
						(0.58)	MADE GROUND: yellowish brown slightly sandy slightly clayey slightly silty fine to coarse gravel sized fragments of stone.		
0.60-0.70	B			02/11/2023:DRY	133.15 133.05	0.60 (0.10) 0.70	MADE GROUND: brown very sandy slightly silty fine to coarse gravel sized fragments of stone. At 0.70m: CONCRETE.		
							Complete at 0.70m		

Remarks

Hand dug inspection pit from GL to 1.20m to check for services.
No groundwater encountered.
On completion, backfilled with gravel.

Scale (approx)	Logged By
1:25	AP/HB

Figure No. 7840.M3B

SUB SURFACE

SITE INVESTIGATION, GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907

Site	Borehole Number
HILLSIDE, MOOR LANE, WISWELL, BB7 9DG	M4

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
MINI PERCUSSIVE		131.80	REDFOOT SHOES LTD	7840
	Location	**Dates**	**Architect**	**Sheet**
	AS PLAN	17/11/2023	RALA	1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.20	B					(0.20)	MADE GROUND: friable dark brown slightly gravelly sandy silty clay with low cobble sized fragment content of stone and occasional roots and rootlets. Gravel sized fragments are fine to coarse stone. (Topsoil).		
0.20-1.20	B				131.60	0.20	Friable brown gravelly sandy silty CLAY with low sandstone cobble content. Gravel is angular to subrounded fine to coarse sandstone, siltstone and quartz.		
						(1.00)			
1.20-1.65	D			Seepage(1) at 1.20m.	130.60	1.20	Firm locally high strength becoming medium strength then stiff high strength then very stiff very high strength dark greyish brown gravelly slightly sandy silty CLAY with low sandstone cobble content. Gravel is angular to subrounded fine to coarse sandstone, siltstone and quartz.		▽1
1.20-2.00	C			1.20m to 2.00m - 100% Recovery					
1.20-1.65	SPT N=20			2,4/4,5,5,6					
2.00-2.45	D			2.00m to 3.00m - 80% Recovery					
2.00-3.00	C								
2.00-2.45	SPT N=15			2,4/3,4,4,4			… Below 2.15m: medium strength		
3.00-3.45	D			3.00m to 4.00m - 90% Recovery		(3.62)	… Below 3.00m: stiff high strength		
3.00-4.00	C								
3.00-3.45	SPT N=19			2,2/4,4,5,6					
4.00-4.45	D			4.00m to 4.50m - 100% Recovery					
4.00-4.50	C								
4.00-4.45	SPT N=26			3,5/6,6,7,7					
4.50-4.82	SPT 50/170			7,10/15,22,13			… Below 4.50m: very stiff very high strength		
4.50-4.82	D								
				17/11/2023:	126.98	4.82	Complete at 4.82m		

Remarks

Hand dug inspection pit from GL to 1.20m to check for services.
Core diameter: 86mm to 2.00m, 76mm to 3.00m, 66mm to 4.00m and 56mm to 4.50m.
Groundwater seepage at 1.20m.
On completion, backfilled with gravel and arisings.

Scale (approx)	Logged By
1:25	JMH/HB

Figure No. 7840.M4

SUB SURFACE

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Site	Borehole Number
HILLSIDE, MOOR LANE, WISWELL, BB7 9DG	M5

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
MINI PERCUSSIVE		133.90	REDFOOT SHOES LTD	7840
	Location	**Dates**	**Architect**	**Sheet**
	AS PLAN	17/11/2023	RALA	1/1

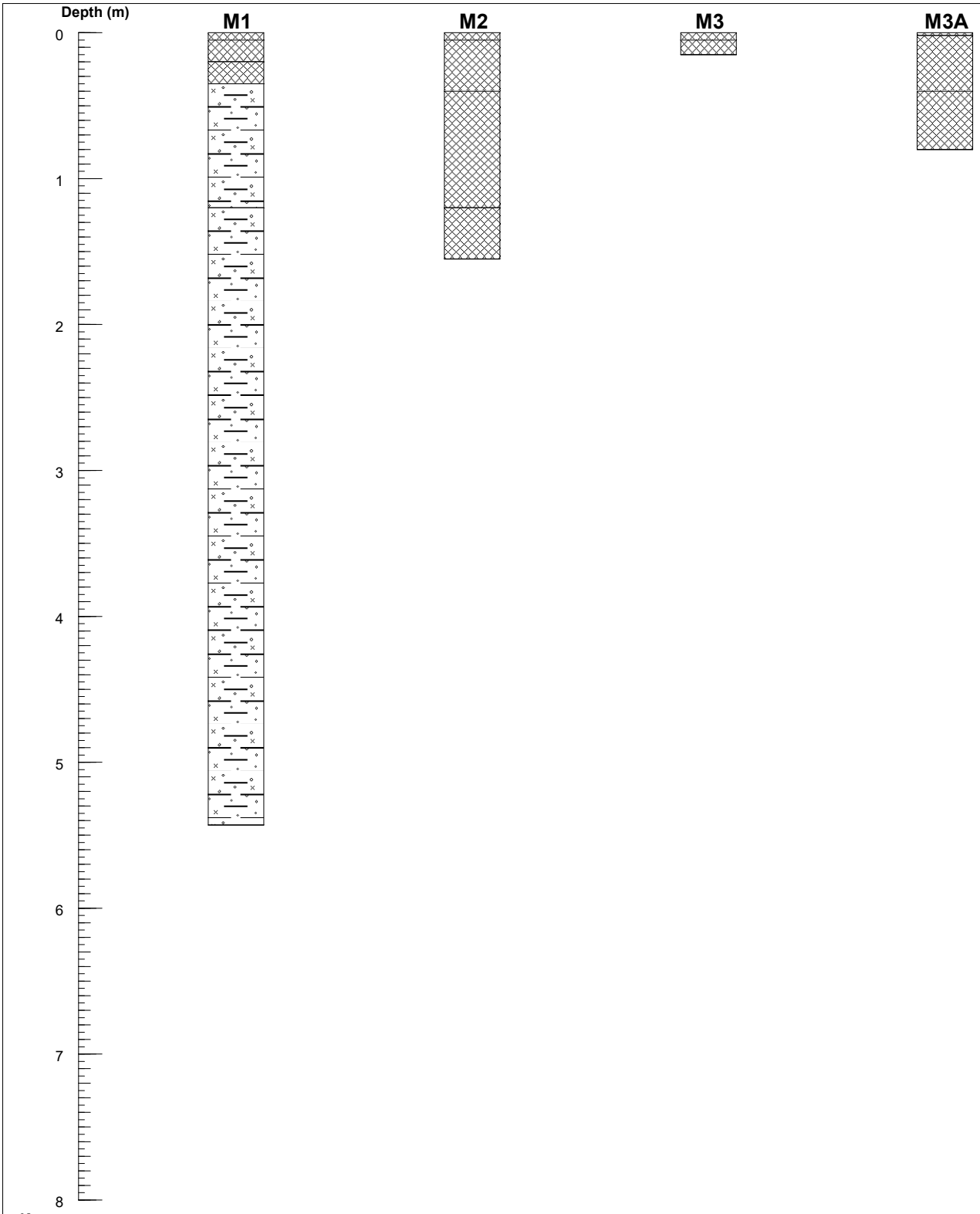
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.01-0.20	B				133.89	0.01	MADE GROUND: bituminous macadam surfacing.		
						(0.19)			
0.20-1.20	B				133.70	0.20	MADE GROUND: brown and dark grey sandy fine to coarse gravel sized fragments of stone with low cobble sized fragment content of stone.		
							Firm, friable in places, low strength becoming medium strength then very high strength dark brownish grey gravelly slightly sandy silty CLAY with low sandstone cobble content. Gravel is angular to subrounded fine to coarse sandstone, siltstone and quartz.		
1.20-1.65	D			1.20m to 2.00m - 100% Recovery 1,2/2,3,2,2			… Below 1.20m: firm low strength		
1.20-2.00	C								
1.20-1.65	SPT N=9								
						(3.19)			
2.00-2.45	D			2.00m to 3.00m - 55% Recovery 2,2/3,3,4,4			… Below 2.15m: medium strength		
2.00-3.00	C								
2.00-2.45	SPT N=14								
3.00-3.39	SPT 50/235			8,8/8,10,21,11			… Below 3.15m: very high strength *		
3.00-3.39	D								
				17/11/2023:DRY	130.51	3.39	Complete at 3.39m		

Remarks

Hand dug inspection pit from GL to 1.20m to check for services.
Core diameter: 86mm to 2.00m and 86mm to 3.00m
*Possibly affected and enhanced SPT (at 3.00m to 3.39m) due to cobbles.
No groundwater encountered.
On completion, backfilled with gravel.

Scale (approx)	Logged By
1:25	JMH/HB

Figure No. 7840.M5



Key

Groundwater Strike

Strike Rise Level

MADE GROUND

Silty gravelly CLAY

Silty sandy gravelly CLAY

SUB SURFACE

SITE INVESTIGATION, GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

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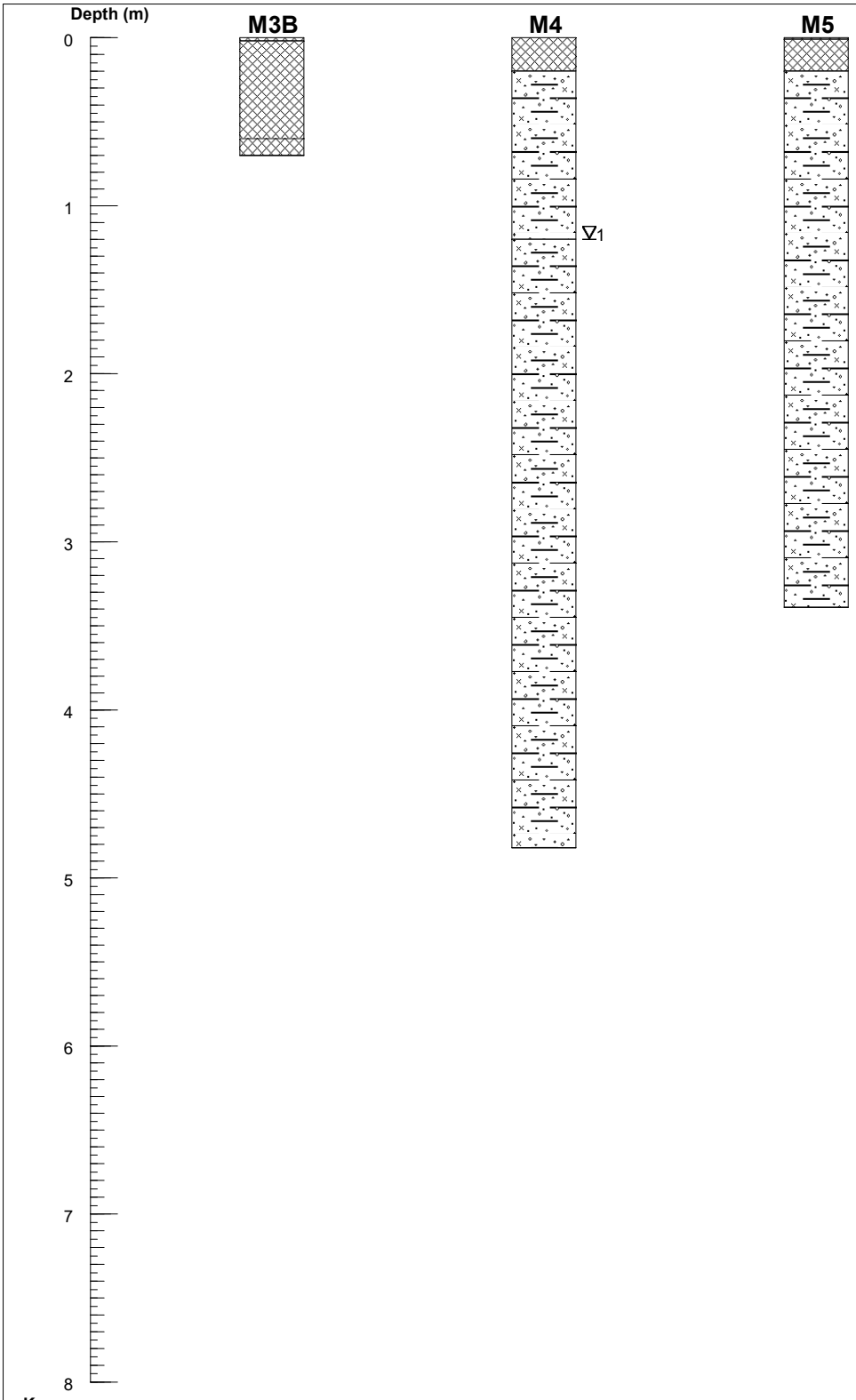
Nominal Section

Site	Date Drawn	Date Checked	Sheet	Job Number
HILLSIDE, MOOR LANE, WISWELL, BB7 9DG	18/12/2023		1/2	7840
Client	**Drawn By**	**Checked By**	**Scale**	**Figure No.**
REDFOOT SHOES LTD			1:40[V]	7840.1



Key

Groundwater Strike

Strike Rise Level

MADE GROUND

Silty gravelly CLAY

Silty sandy gravelly CLAY

SUB SURFACE

SITE INVESTIGATION, GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

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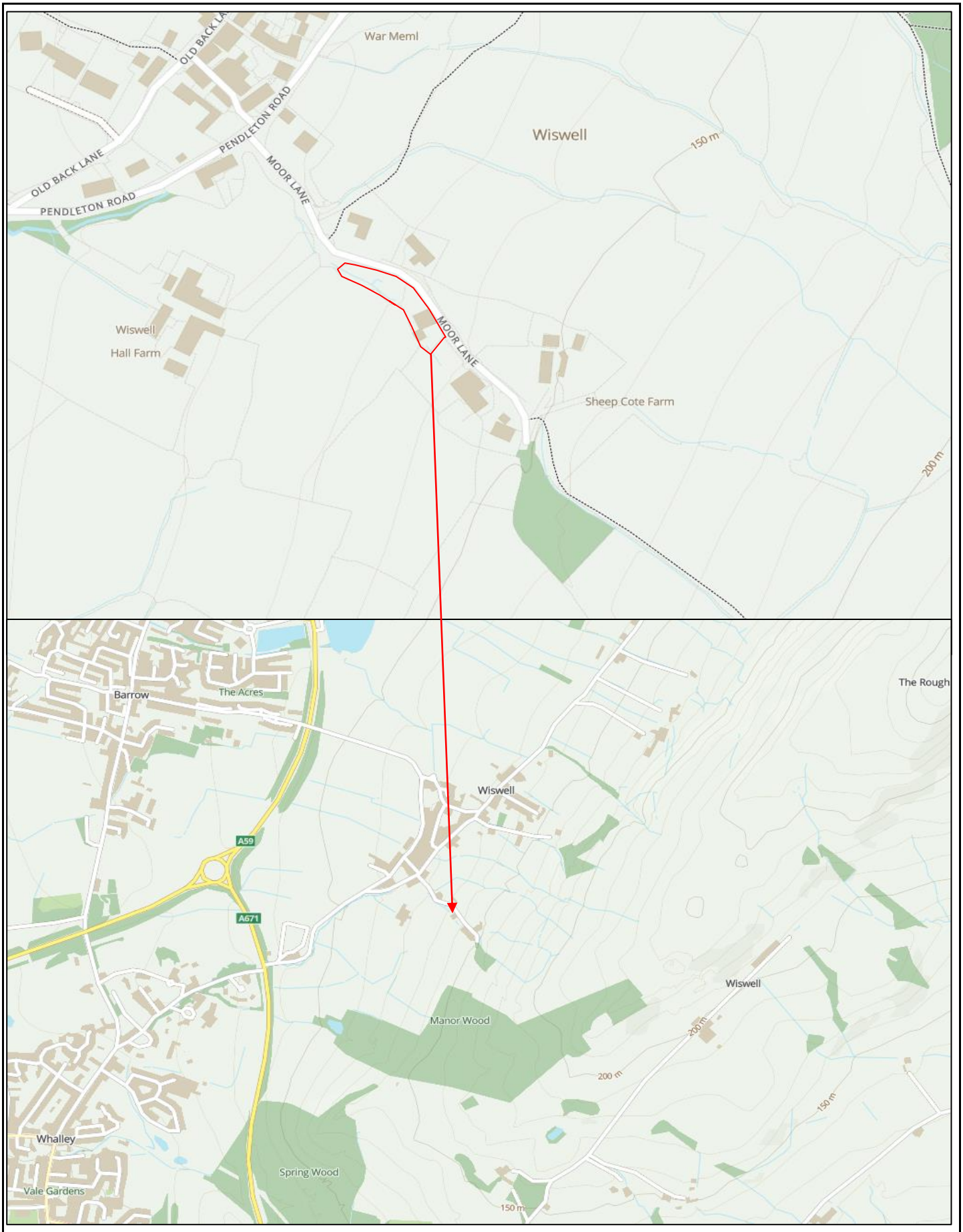
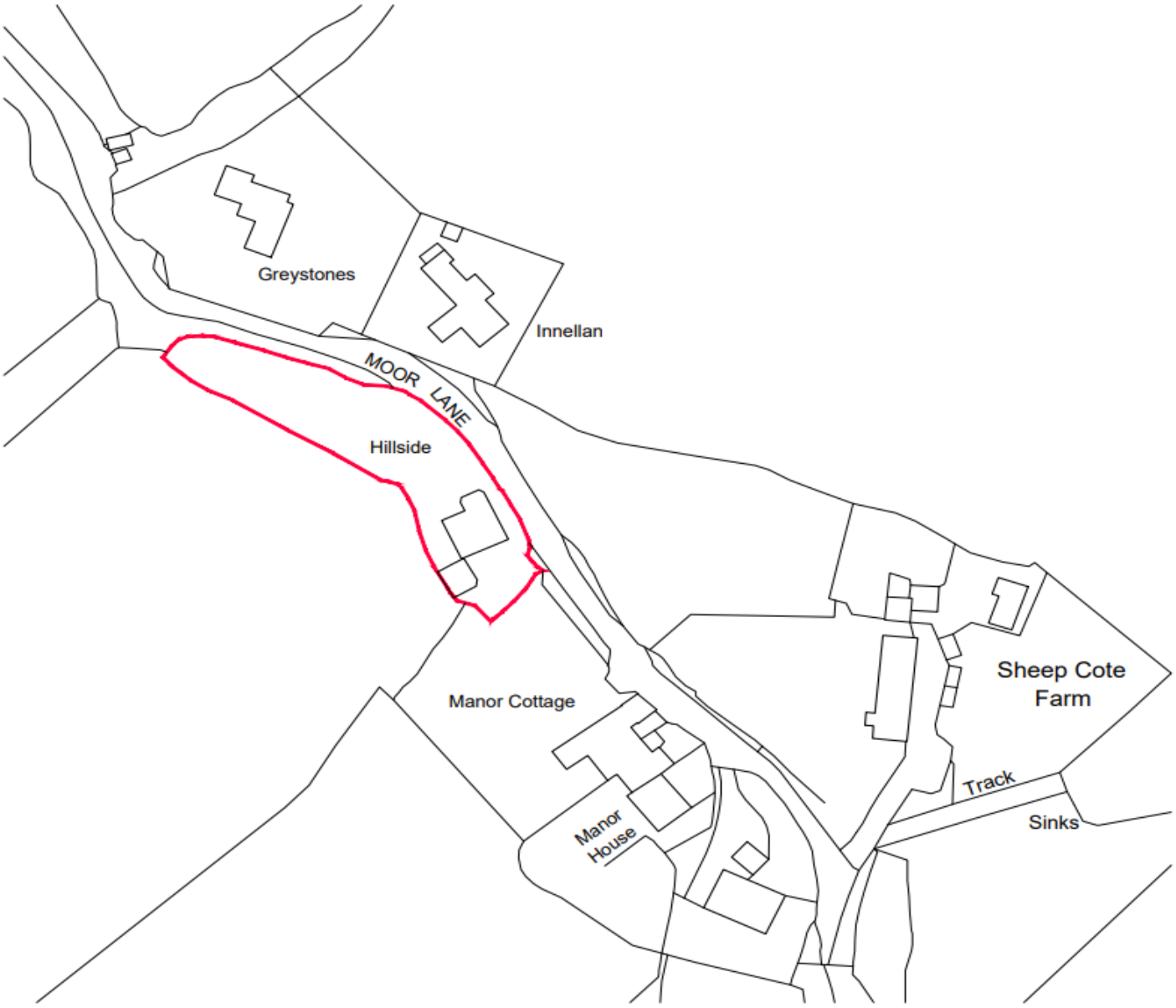
Nominal Section

Site	Date Drawn	Date Checked	Sheet	Job Number
HILLSIDE, MOOR LANE, WISWELL, BB7 9DG	18/12/2023		2/2	7840
Client	**Drawn By**	**Checked By**	**Scale**	**Figure No.**
REDFOOT SHOES LTD			1:40[V]	7840.1

FIGURES



SUB SURFACE SITE INVESTIGATION AND SPECIALIST GEOTECHNICAL CONSULTANTS 3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907	General Site Location			
Site HILLSIDE, MOOR LANE, WISWELL, BB7 9DG	Date Drawn 27-Nov-23	Date Checked	Orientation N	Job No. 7840
Client REDFOOT SHOES LTD	Drawn By JMH	Checked By	Scale _	Figure No. 1



SUB SURFACE SITE INVESTIGATION AND SPECIALIST GEOTECHNICAL CONSULTANTS 3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907	Site Location			
Site HILLSIDE, MOOR LANE, WISWELL, BB7 9DG	Date Drawn 27-Nov-23	Date Checked	Orientation N	Job No. 7840
Client REDFOOT SHOES LTD	Drawn By JMH	Checked By	Scale _	Figure No. 2

SUB SURFACE SITE INVESTIGATION AND SPECIALIST GEOTECHNICAL CONSULTANTS 3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907	Proposed Development			
Site HILLSIDE, MOOR LANE, WISWELL, BB7 9DG	Date Drawn 27-Nov-23	Date Checked	Orientation N	Job No. 7840
Client REDFOOT SHOES LTD	Drawn By JMH	Checked By	Scale _	Figure No. 3

SUB SURFACE
SITE INVESTIGATION AND SPECIALIST GEOTECHNICAL CONSULTANTS
3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907

Exploratory Hole Location Plan

Site	Date Drawn	Date Checked	Orientation	Job No.
HILLSIDE, MOOR LANE, WISWELL, BB7 9DG	27-Nov-23			7840
Client	**Drawn By**	**Checked By**	**Scale**	**Figure No.**
REDFOOT SHOES LTD	JMH		_	4