A6 to Manchester Airport Relief Road

B005A – Mill Hill Hollow Footbridge Preliminary Design Report Report No. 1007/704/154

August 2013





south east manchester multi modal strateg



PRELIMINARY DESIGN REPORT

Structure Name :Mill Hill Hollow FootbridgeStructure Number :B005A

Report No. 1007/704/154

Report Control Sheet

Version	Date	Status	Prepared By	Checked By	Approved By
P1	29/08/2013	Draft	J Watton	M Ellis	N Sheena
P2	13/09/2013	Final	J Watton	M Ellis	N Sheena

Table of Contents:

1. Description of Site	. 4
2. Highway Details	. 4
3. Proposed Structure	
4. Span Arrangements	
5. Headroom and Clearances	
6. Road Restraint System (Bridge Parapets)	. 4
7. Preferred Structural Options	
7.1 Superstructure Options	
7.2 Substructure Options	
8. Geotechnical Information	
9. Appearance	

Appendix A: Location Plans
Appendix B: Proposed General Arrangement Drawing
3D Model
Appendix C: Ground Investigation Information

1. Description of Site

The Mill Hill Hollow Footbridge is part of the A6 to Manchester Airport Relief Road (A6MARR) and is proposed to give pedestrian, cyclist and equestrian access across Norbury Brook approximately 600m North of Poynton Lake at chainage 10300m approximately.

There are a few residential properties on Mill Hill Hollow to the North of the proposed bridge crossing. However the immediate surrounding area is open farm land to the north and south. An aerial location plan at 1:1250 scale is included in Appendix A.

2. Highway Details

Over Structure – Mill Hill Hollow Footbridge – 3.5m wide footway and string courses in accordance with BD29/04. (3.5m footway + $2 \times 0.5m$ string courses)

Under Structure – Norbury Brook

3. Proposed Structure

The proposed structure will be a single span fully integral bridge. The superstructure will be in the form of pre-stressed concrete TY-beams supporting an in-situ reinforced concrete (R.C.) slab deck. The bridge superstructure will be supported on a capping beam founded on a contiguous piled retaining wall. A proposed General Arrangement drawing is included in Appendix B.

4. Span Arrangements

The bridge will be a single span of 8.05m, measured between the centres of each abutment, running approximately parallel to the relief road.

5. Headroom and Clearances

Norbury Brook is a non-navigable watercourse and therefore minimum headroom limits do not apply. The bridge will be a minimum of 0.6m above the anticipated high water table.

6. Road Restraint System (Bridge Parapets)

It is proposed to use steel equestrian parapets that shall be 1.8m above the finished pavement level of the bridge in accordance with TD 19/06.

7. Preferred Structural Options

7.1 Superstructure Options

It is proposed that the bridge will be a single span, fully integral pre-stressed concrete TY-beams supporting an in-situ reinforced concrete slab deck. Refer to Drawing 1007/3D/DF7/A6-MA/B005A/701 and the 3D Model in Appendix B for further details.

For a span range up to 30m, fully integral construction is normally considered a cost effective option. Elimination of movement joints removes a major cause

of maintenance problems from penetration of dirt, water and de-icing salts, which corrode substructures and bearings.

The advantages for using pre-cast concrete beam construction are as follows:

- Low capital & whole-life cost
- Fast and efficient build
- Factory quality with engineered tolerances
- Low maintenance
- The beams can be lifted individually
- Permanent formwork provides self-supporting system during construction and eliminates falsework
- Reduces site works which are weather dependent

Disadvantages:

- Precast concrete beams are usually heavier than comparable steel beams. As a result larger cranes might be required to lift the precast concrete beams
- Heavier superstructure mentioned above might lead to larger foundation sizes
- Delivery times are dependent on a specialist supplier

7.2 Substructure Options

It is proposed that the bridge will be supported on a contiguous piled wall. It is the most feasible option taking consideration of the topography of the site and existing geotechnical. The close proximity of the proposed footpaths to the edge of the slope means that the use of bank seat abutments could destabilise the steep slopes adjacent to the brook. Further geotechnical information is addressed in section 8 of this report.

8. Geotechnical Information

The boreholes most relevant to the new location are EA POYNTON 98_4 and EA POYNTON 99_1 and 99_1R (Exploration Associates, April 1992). The bridge deck is to be above Norbury brook at this location. The span is to be approximately 8m.

BH98_4 encountered Very loose and loose SAND and GRAVEL to 2.30m overlying;

Highly weathered to completely weathered SANDSTONE with rare "pebbles" to 10.70m, recorded as very weak.

BH 99_ 1 together with rotary follow on BH99_1R encountered loose clayey SAND to 1.10m bgl overlying;

Dense becoming very dense gravelly SAND and GRAVEL, becoming slightly cemented from 4.60m to 6.90m overlying;

Highly weathered poorly cemented SANDSTONE to 14.9m bgl. This was recorded as very weak. The bedrock in this area is described as pebble beds of the Sherwood sandstone group of Permian to Triassic age. There are no faults recorded in this area.

Groundwater was not encountered in any of the above boreholes but was encountered nearby in BH 97_3 at a depth of 1.50m bgl. It was described as a slight seepage and was not observed to rise after 20 minutes.

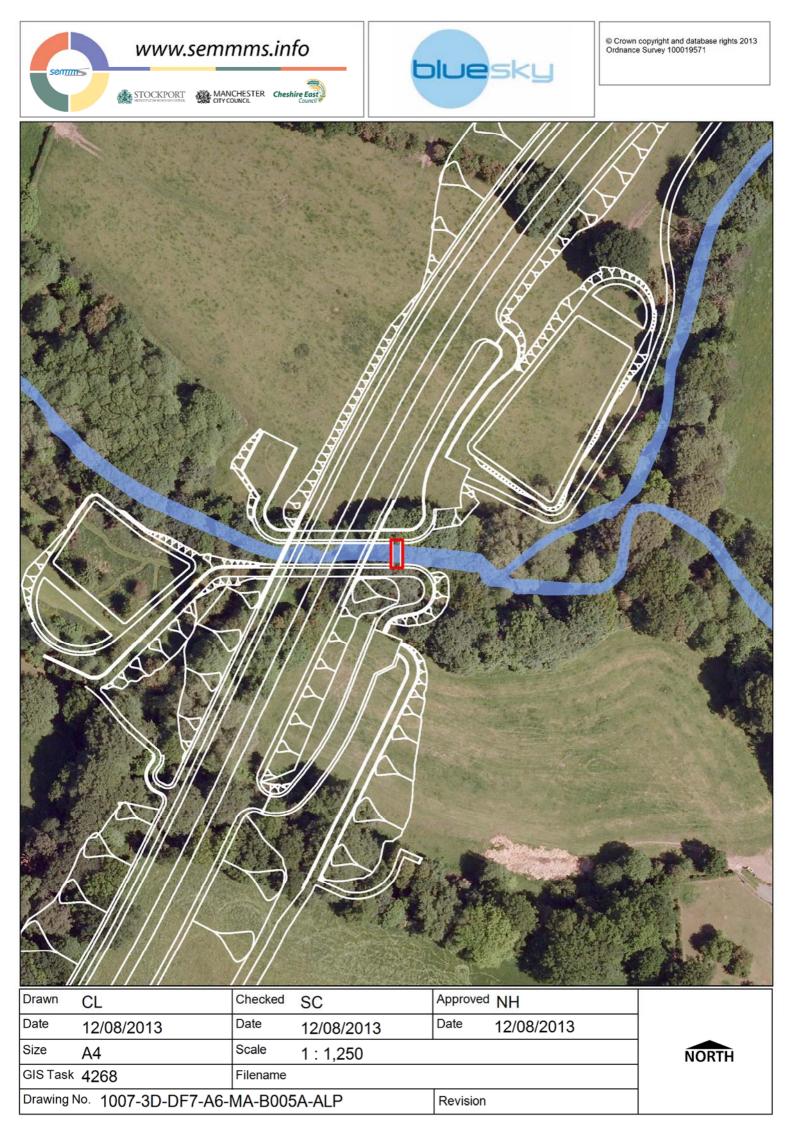
A review of the abandonment plans for the Poynton and Norbury collieries shows that the location for B005A is not underlain by any historical workings and no movement is therefore expected from historic mine workings. Furthermore the published geological information for the area indicates that the site underlain by Sherwood Sandstone and is separated by faulting from the area in which the Poynton and Norbury collieries operated.

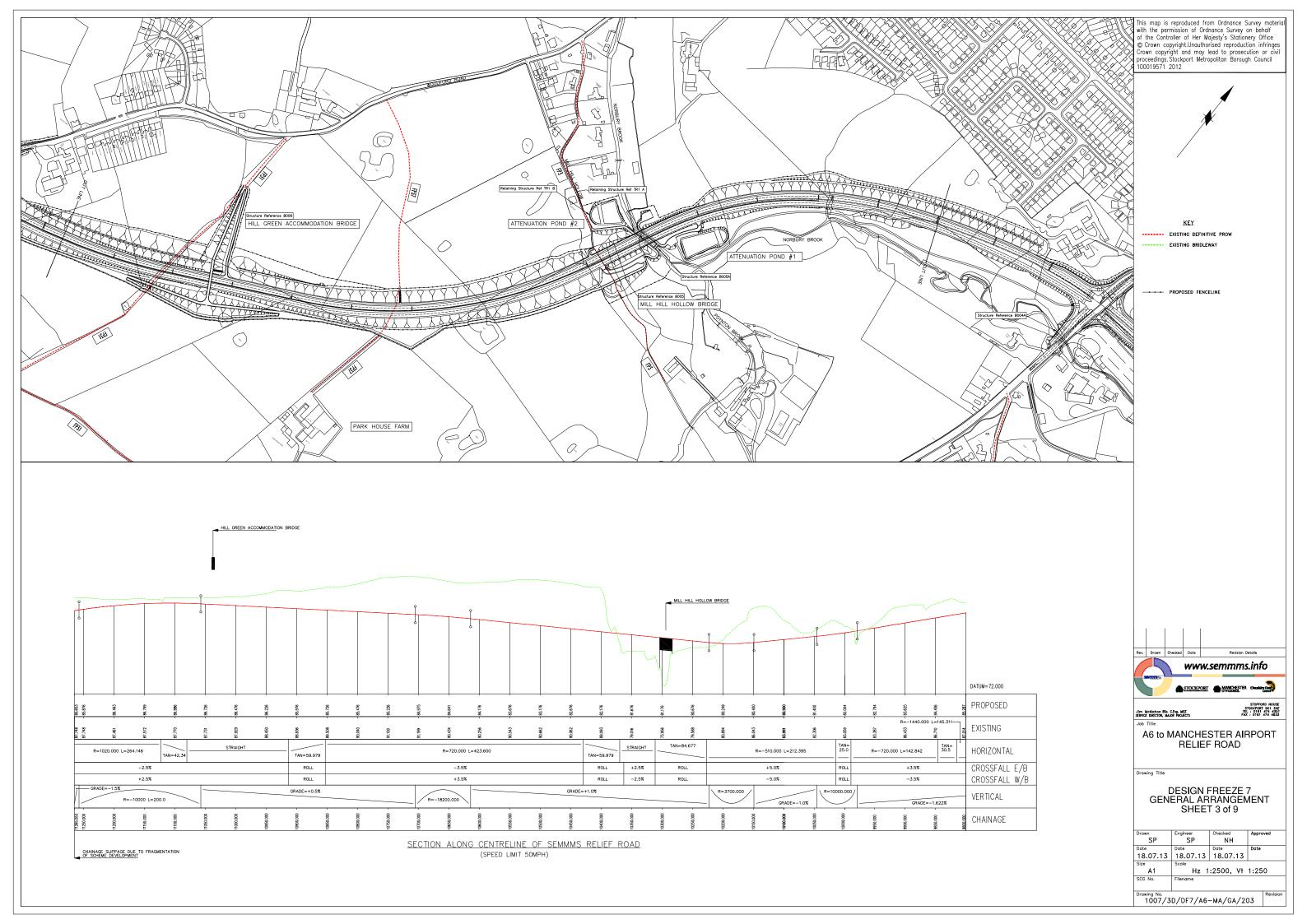
It is proposed that the bridge abutments are founded on a contiguous pile wall taken down into weathered sandstone bedrock using 1050mm diameter piles. The contiguous piled wall is to be taken up to deck level at which there will be a pile cap incorporated within the deck construction. It may be possible to achieve the necessary bearing capacity and resistance to overturning by using wide strip foundations resting on the dense and very dense sand and weathered bedrock. It is assessed that a safe bearing capacity of at least 200kN/m² could be achieved in the dense sand, which is the weakest material at founding level. However, this would require large excavations to below stream bed level in the sand and sandstone and it is probable that there would be large inflows of water through the permeable sand and sandstone into the excavations. The resulting settlement may also exceed tolerable limits. It is therefore recommended that piled foundations are adopted at this location.

9. Appearance

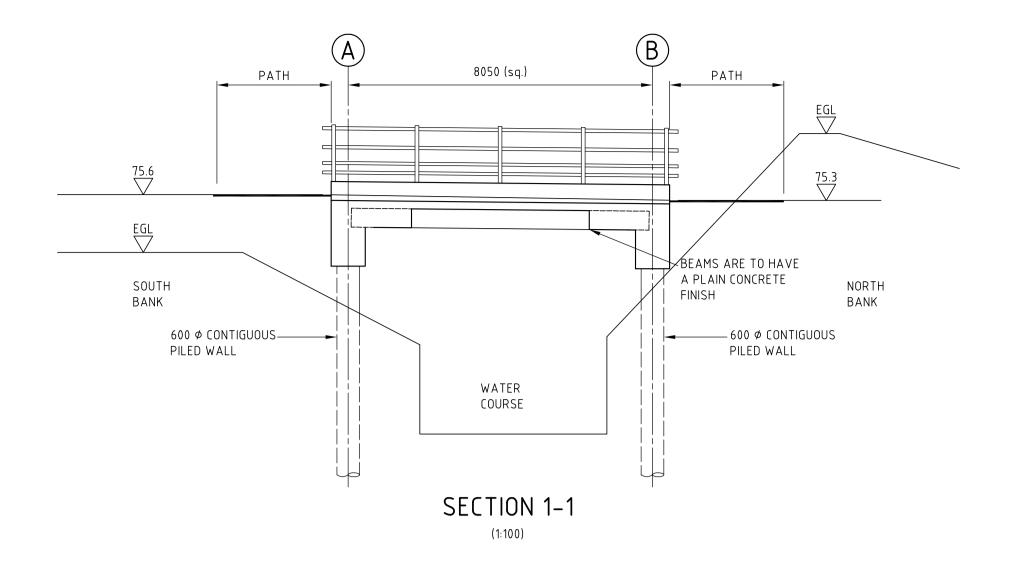
The proposed superstructure will be clearly visible which on elevation comprises approximately 0.45m deep pre-cast beams and 0.5m string course spanning across Norbury Brook. In addition, steel parapets (post with 4 rails-open structure) with a galvanised mesh infill and a 600mm high solid infill panel at the base will be mounted on the string courses either side of the bridge. The exposed concrete beams are to be plain concrete and the faces of the contiguous piled wall to be masonry cladded.

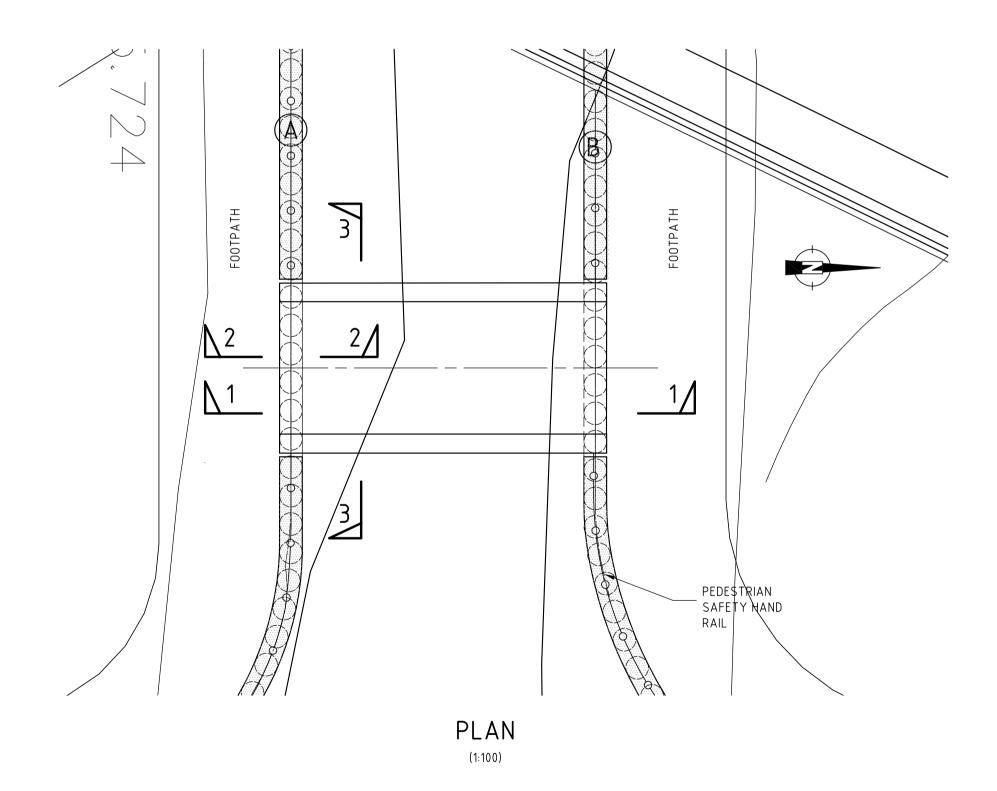
Appendix A: Location Plans

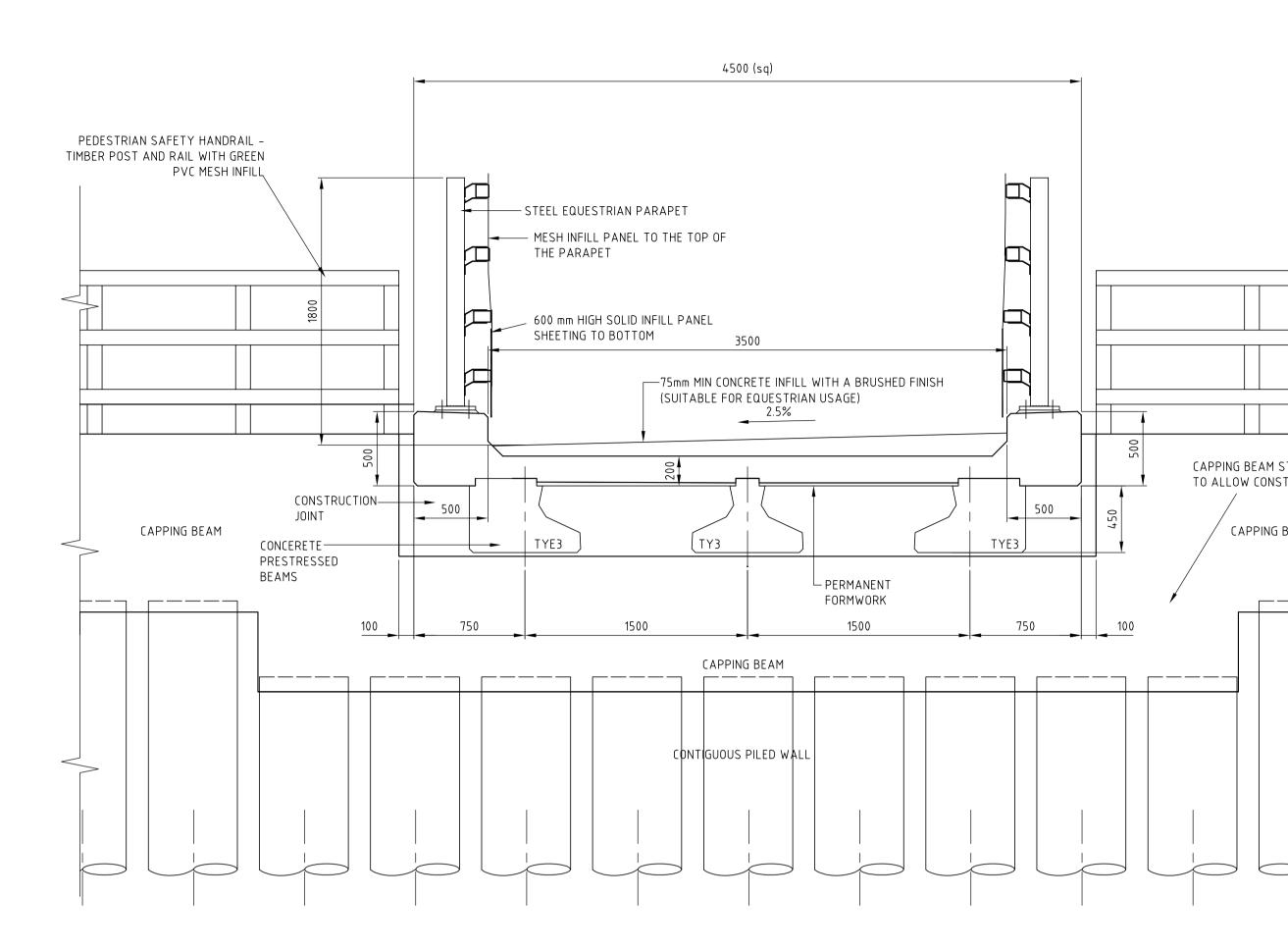




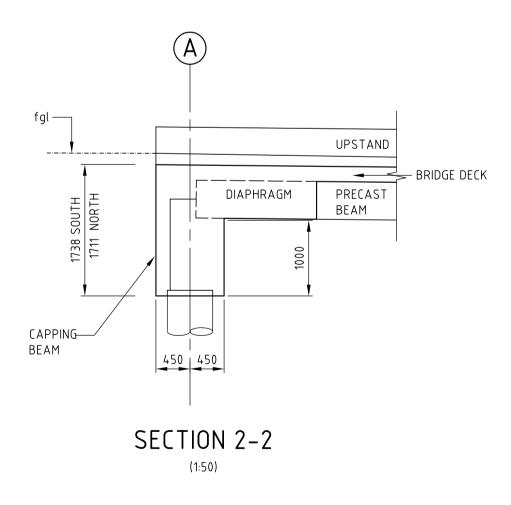
Appendix B: Proposed General Arrangement Drawing 3D Model



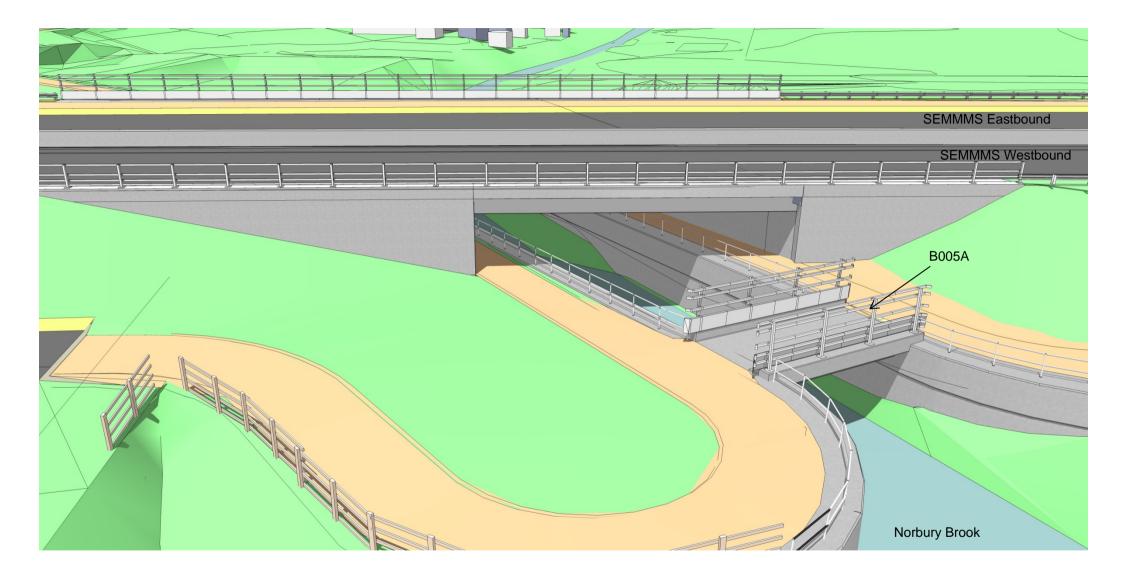




SECTION 3-3 (1:25)



STEPPED STRUCTION OF BRIDGE	 This map is reproduced from Ordnance Survey material with the permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationery Office © Crown copyright and may lead to prosecution or civil proceedings. Stockport Metropolitan Borough Council 100019571 2010 NOTES 1. THIS DRAWING HAS BEEN PRODUCED MAINLY FOR THE PURPOSE OF PRELIMINARY DESION. 2. LEVELS ARE IN METRES AND ABOVE ORDNANCE DATUM. 3. ALL DIMENSIONS ARE IN MILLIMETRES. 4. THE OPTION SHOWN IN THIS DRAWING IS NOT FOR CONSTRUCTION. 5. THE FOUNDATION TYPE SHOWN ON THE DRAWING IS BASED ON THE LATEST AVAILABLE GOTECHNICAL INFORMATION. 6. BASIC PRELIMINARY DESIGN HAS BEEN UNDERTAKEN TO DETERMINE THE GEONETRY OF THE SECTION SIZES AS PER CLENT'S INSTRUCTION. 7. THE BRIDGE HAS A COMBINED USE OF PEDESTRIAN, CYCLIST AND EQUESTRIAN. THE WIDTH IS 35M IN ACCORDANCE WITH BD 29/04. 8. CONCRETE STRENGTHS:- DECK SLAB C32/ 40 10. 9. PERMANENT FORMWORK IS REQUIRED. 10. THIS DRAWING HAS BEEN PRODUCED BASED ON THE LATEST MY HIGHWAY MODEL - DRAFT DESIGN FREEZE T, AS PROVIDED BY THE CLENT 11. CONCRETE FINISHES TO BE AS PER MCHW SPECIFICATION SERIEST MOUTING IN JUN. 0 BURIED FOUNDATIONS: F1, U1. ABUTHENT COLUMNS: F1 BURIED FOUNDATIONS: F1, U1. ABUTHENT COLUMNS: F1 BURIED FOUNDATIONS: F1, U1. ABUTHENT COLUMNS: F1 BURIED FOUNDATIONS: F1, U1. ABUTHENT EDGE BEAM: F3, U3. DECK SLAB TOP SURFACE: U4.
	A CT JW 13.09.13 ISSUED FOR PLANNING - CT JW 28.03.13 FIRST ISSUE (FOR CLIENT COMMENTS) Rev. Drawn Checked Date Revision Details SOUTH COST manchester multi modal strategy SOUTH COST
	DrawnEngineerCheckedApprovedCTJWMENSDateDateDate28.08.1328.08.13DateSizeScaleA1ASSCG No.FilenameDrawing No.1007/3D/DF7/A6-MA/B005A/701Revision



B005 – Mill Hill Hollow Bridge B005A – Pedestrian Bridge over Norbury Brook

View Looking East



Appendix C: Ground Investigation Information



roject:	SEM	IMS							Jol	b No: 377321SG		Borehol	
		1992/11-						.2 N 3850		ound Level: 77.35 (m)	EA	POYNI	
atrac	tor: (HNICAL EN	GINEERI	NG L	IMITED	r		Engineer: Faber I			Sheet: 1	
		Samples	a & Tests		_	Water/				Strata			
Depth		Type No	Test Result	SCR B ROT	ư (mm)	(Flush Return)	O.D.	Depth (Thickness)		Description		Leger	Partninent
			1	Itge				-	TOPSOIL: Dark brown	n peaty sandy with rootle	ets.	1	
							77.05	- 0.30	Very loose brown grey	y fine, medium and coars	e gravelly	XO-	
50	0.50	D 5831 C	N = 4(450mi 1 1/1 1 1 1	m)				F	SAND with bands of f	firm brown mottled grey s	slightly sa	ndy $\begin{bmatrix} -x \\ -x \end{bmatrix}$	
								- (1.20)	,			×	4
	3							F				×9	<u></u>
							75.85	1.50				xo-	
							13.65	-	Loose orange-brown r	medium and coarse SAN	D and fine		-
70	1.70	B 565 SPI D 5832	N = 9(450mi 1 1/2 2 2 3	m)				(0.80)	medium sub-angular	and subrounded GRAVE	GL.	0	_
				1				-				- -	.
20		D 5833					75.05	2.30		completely weathered fin	e and med		
	2.40	SP1	N = 50(225r 10 26/50 0	nm) 00				-	SANDSTONE. Very w	veak, poorly cemented with nclusions. Below 3.00m:	th rare	and	
								F	coarse. 6.20m: coarse	e subrounded gravel size	d pebbles		11
	3.00	c	N = 0(600m 31 50/0 0 0	m)			1	F	recovered.			1.11	
			31 50/000					F					
	3.60		N = 0(525m	m)				-					99
	0.00		50 0/0 0 0	0				Ē					
								F					
	4.20	c	N = 0(600m) 21 50/0 0 0	m) 0 0	1			È					
								-					48 I.
	4.70	c	N = 0(525m) 50 0/0 0 0	m)				F					
		l		Ŭ				F					
								Ę				111	
						2		Ē					
						1		2					11
								E					38 L
	6.20	0	N = 0(600m) 27 50/0 0 0	m)				Ę					
								(8.40)					
								2					92. L
								-					
								2					
								E					
	7.70	0	C N = 0(525m 50 0/0 0 0	m)			l .	2					
			000/000					Ē					10
								-				111	
								Ē				111	
								-					
								F					
	9,20		C N = 0(600m 31 50/0 0	m)				-				633	3
			51 50/000					Ē					
							1	F					
_		1						ł			6017G	1.1.1	
		Wata	r Strikes						Mathad Ba	minment and Dama-h	9		
trike	Casi	ng Post	Post	Plow Re	mark	B Met	hod: CP	0	Method, Eq	quipment and Remark			
epth	Dep	th Mins	B Depth		má áb								
ĺ													
ale:]	:50	@ A4 C	lient: STO	CKPORT	MET	ROPOL	TAN B	OROUGH C	COUNCIL	ogged By:	Data Che	ecked By:	
				5111						-001			

C



roject: SEN								Job No: 377321S		Borehole 1		Ĵ
	1992/11-0					91829	.2 N 3850		7.35 (m) EA	POYNTO		9
ontractor:	GEOTECH	NICAL EN	GINEER	ING L	IMITED			Engineer: Faber Maunsell Ltd		Sheet: 2 of	2	
	Samples	& Tests			Water/			Strata			/1	nent
Depth	Туре	Test Result	TCI	R Lf R (mm)	(Flush Return)	O.D.	Depth	Description	L	Legend	Backfill/	Instrument
	No	Result	Rgi	υ·,		Level	(Thickness)	-			Å	ų
							-	Red-brown highly to completely wea SANDSTONE. Very weak, poorly cer subrounded pebble inclusions. Belo	nented with rare	and		
							-	coarse. 6.20m: coarse subrounded	gravel sized pebbles	3		
			-			66.65	10.70	recovered. (continued) End of Borehole	5-11-			
							-					
							-					
						1						
							F					
							-					
							-					
							F					
							r F					
							-				C	
							Ē					1
							E					
							È.					
							-					
							-					
							-					
							-					
							-					
							F					
							E					
							L .					
							F					
							ļ.					
							E					
							E					
							F					_
							E					
				1			-					
							-					
							F					
							E					
							ļ.					
							E					
							È.					
					1		F					
							E					
							È					
							L					
					1.							_
		Strikes						Method, Equipment and	Remarks			
rike Casi epth Dep	ng Post th Mins	Post Depth	Flow Re	mark	Meth	od: CP			•			
								-				
ale: 1:50	@ A4 C1	ient: STO	CKPORT	MET	ROPOLI	TAN B	OROUGH C	OUNCIL Logged By:	Data Ch	ecked By:		

4





Project: SEMMS Job No: 377321SG Borehole No. Date: 23-04-1992/24-02-1992 Co-ordinates: E 391844.6 N 385025.5 Ground Level: 78.28 (m) EA POYNTON 99 1 Contractor: GEOTECHNICAL ENGINEERING LIMITED Engineer: Faber Maunsell Ltd Sheet: 1 of 2 Samples & Tests Strata net man and Water/ Backfill/ (Flush Return) TCR SCR ROD Test Results u Imm O.D. Depth Type Depth Description Legend No Level (Thickness TOPSOIL: (turfed) 77.98 0.30 Loose brown fine and medium slightly clayey SAND. xo 0.45 N = 9(450mm) 1 2/2 2 3 2 0.45 B 571 SPT D 5859 X (0.80) \sim 0.90 D 5860 77.18 1.10 Dense yellow-brown fine, medium and coarse silty very 1.20 B 572 gravelly SAND with occasional cobbles. a N = 33(450mm) 5 5/6 8 8 11 1.65 SPI L(1.70) N = 36(450mm) 5 7/8 8 9 11 2.25 С a 75.48 2.80 9 2.80 2.80 B 573 N = 56(450mm) 8 9/11 11 15 19 C Very dense brown subrounded medium and coarse GRAVEL, occasional cobbles. o Q N = 54{450mm} 9 14/15 11 14 14 (1.20) 3.40 3.40 U 599 С ō .0 ____ o 0 ____ 74.28 4.00 Very dense orange-brown fine, medium and coarse gravelly SAND. 4.00 B 574 SPT N = 47(450mm) 5 9/10 11 11 15 4.00 Xn X 4.45 D 5861 -× σ 4.60 SPT N = 58(450mm) 6 9/11 15 15 17 8 Г . 5.05 D 5862 N = 50(450mm) 8 8/10 11 15 14 5.20 5.20 B 575 SPT ΞQ (3.00) 5.65 D 5863 N = 55(450mm) 9 11/12 12 14 17 5.80 SPT 10:26:20 Ē Q 23/11/2011 6.25 D 5864 N = 68(450mm) 11 12/14 14 17 23 6.40 SPI ð 46.85 D 5865 7.00 X 71.28 N = 0(600mm) 28 50/0 0 0 0 7.00 С Weak red-brown SANDSTONE. INFORMATION/GINT\47060785-SEMMS GPJ SEMMS\05.0 PROJECT (5.30) K.\47060785 Water Strikes Method, Equipment and Remarks Strike Casing Post Post Method: CP CP/RC) Flow Remarks Depth Depth Mins Depth 90 HB MS NEW GLB AGS3 Scale: 1:50 @ A4 Client: STOCKPORT METROPOLITAN BOROUGH COUNCIL Logged By: Data Checked By:



	IMS								Job No: 377321SG		Borehole N	
te: 23-04-			1			91844	.6 N 3850		Ground Level: 78.2	28 (m) EA	POYNTC	
ntractor:		NICAL ENG	INEERI		IMITED			Engineer: Fa	ber Maunsell Ltd		Sheet: 2 of	
	Samples		1	_	Water/				Strata			Backfill/ Instrument
Depth	Type No	Test Results	SCR RQD	If (mm)	(Flush Return)	O.D. Level	Depth (Thickness)		Description		Legend	Backf
								Weak red-brown	SANDSTONE. (contin	ued)		
							-				11111	
				1			-				10111	
								5				
	1						-					
				1	3		-				11111	
							-				199999	
						65.98	12.30					
							:	End of Borehole	64026			
							2				1	
							E					
												\bigcirc
							-					
							E					
							-					
							Ē					
							-					
							È.					
							E					
				1			E					
					~		ŧ.					
				1			E					
						1	2				2 22	
							F					
							E					
							E .					
							Ę					
							E					0
							E .					
							F					
							E					
							F					
	2						E					
							Ê					
							-				- 14	
							E					
							2					
						1	-					
						Î	E					
							t					Ш
rike Casi		Strikes			1 34-45	ad on		Method	. Equipment and F			
rike Casi epth Dep	oth Mins	Post . Depth	Flow Rea	mark	s Miet)	10d: CP				•		
1		1 I			11							



No News No News No News No <	oject: SE	MMS	5									Job No: 377321SG			rehole N	
Stampte & Texts Stampte & Texts Stampte & Texts Prior Texts Stampte & Texts Stampte & Texts Lever									91844	.2 N 38502			1 (m) EA	-1		r
7.30 C N=000000000 Performance Performanc	tractor	: GE	OTECHI	NICAL EN	GINEE	CRIN	G LIM	IITED			Engineer: Fat	per Maunsell Ltd		Sh	eet: 1 of	-
7.30 C N=000000000000000000000000000000000000		Sa	mples	& Tests	I Wa			ater/			2	Strata	Strata			ment
7.30 C N=000000000000000000000000000000000000	Depth			Test Result	s	ICR	u (H mm) Re	Flush				Description		1	Legend	Backfi Batru
7.30 C N - OSCIENTIAL 7.5.1 0.40 Dense brown slightly clayery medium SAND and GRAVEL 0.0 9 0					ľ					- ()	TOPSOIL	(3 ¹)				
7.30 C N=0255med Bo 0/0000 Red-brown medium coarse SAND. Sparse gravel. Sparse Super-									78.11							
7.30 C N - OEEEned 3 - 0.00 Red brown medium coarse SAND. Sparse gravel. Image: Comparison of the sparse gravel. 7.30 2.00 Red brown medium coarse SAND. Sparse gravel. Image: Comparison of the sparse gravel. 7.30 2.00 Red brown weakly comented SANDSTONE with sparse gravel. 7.30 0.00 7.30 0.00 8 0.00 9.00 C N - OEEEned 3 - 0.00 9.00 C N - OEEEned 3 - 0.000										-	Dense brown slig	tly clayey medium S	AND and GRAVI	EL.		
7.30 C N=00256mil Red brown medium coarse SAND. Sparse gravel. Image: Sanse gravel. <thimage: gravel.<="" sanse="" th=""> <thimage: gr<="" sanse="" td=""><td></td><td></td><td></td><td></td><td>- 1</td><td></td><td></td><td></td><td></td><td>E I</td><td></td><td></td><td></td><td>9</td><td>2_0</td><td></td></thimage:></thimage:>					- 1					E I				9	2_0	
7.50 C N - 0025mml 30 1/00 0 0 0 Red brown medium coarse SAND. Sparse gravel. To or									1	-				ç	- 1	1- 1
7.00 C N=0025000 2.60 7.00 C N=0025000 Parameter Parameter 7.00 C N=0025000 Parameter Parameter 9.00 C N=0025000 Parameter Method, Equipment and Remarks 9.00 C N=0025000 Parameter Method, Equipment and Remarks										5				c		
7.50 C N=02250m9 50 (9000) Red brown medium coarse SAND. Sparse gravel. 0 0 7.50 C N=02250m9 50 (9000) Red brown medium coarse SAND. Sparse gravel. 0										(2.10)						
7.50 C N = 00550mml Red brown medium coarse SAND. Sparse gravel.										Ē					_ 	
7.30 C N=0525cml 76.01 2.50 C N=0525cml 0 0 7.30 C N=0525cml 0 0 0 0 0 9.00 C N=0525cml 0 0 0 0 0					1					-				C	#	
7.50 C N=0825cml Fed brown medium coarse SAND. Sparse gravel.										-				c	00	
7.30 C N - 0625mml 50 0/0 0 0 0 Red brown weakly cemented SANDSTONE with sparse gravel. 7.30 C N - 0625mml 50 0/0 0 0 0 Red brown highly westbered poorly cemented medium and sub horzontal andy discontinuities. Rare subminded poble inclusions. moderately weakbered with were closely pared sub horzontal andy discontinuities. Rare subminded poble inclusions. moderately weakbered weakbered weakbered weakbered sub horzontal andy discontinuities. Rare subminded poble inclusion. 9.00 C N - 0625mml bit or 10.00m 5.50m Febby bed. Below 10.00m 0.00m 10.00m 5.50m Febby bed. Below 10.00m 0.00m 10.00m 10.00m 5.50m febby bed. Below 10.00m 0.00m 10.00m									76.01	2.50	Red-brown mediu	m coarse SAND. Spa	rse gravel.			
7.50 C V= 0255mal 50 0/9 0 0 0 Red brown weakly cemented SANDSTONE with sparse gravel. 7.50 C V= 0255mal 50 0/9 0 0 0 Red brown highly weathered poorly cemented medium and sub-harzontal sandy discontinuities. Rare sub-builded sub-harzontal sandy discontinuities. Rare sub-builded to 14.50m. cccasional pebbles. Very weak mudsione the clusion. 9.00 C N= 06058mml b0 0/00 0 0 Method, Equipment and Remarks										Ē.			d	Ĩ		
7.50 C N=0(925mm) 9.00 C N=0(925mm) 80 0/0 0 0 D D 9.00 S Heited: RO										Ē					σ-×	
7.50 C N=0(325mm) 9.00										-					×	
7.50 C N=0(325mm) 9.00										(2.10)					×0	
Value Value Value Value 7.50 C N=0(025mm) 7.50 C N=0(025mm) 9.00 C N=0(025mm)										-				Ļ		
7.50 C N = 0525mml 9.00 N = 0525mml N = 0525mml 9.00 N = 0525mml N = 0525mml 9.00 N = 0525mml N = 0525mml 9.00 N = 0525mm										-				ł	~~~ ×	
7.50 C N = 0525mml 50 0/0 0 0 0 Red-brown weakly cemented SANDSTONE with sparse gravel. 7.50 C N = 0525mml 50 0/0 0 0 0 Red-brown highly weathered poorly cemented medium and coarse SANDSTONE. Very weak with very dosely spaced pebble inclusions, moderately weathered, vea. 8.80m to 9.00m 9.00 C N = 0525mml 50 0/0 0 0 0 N = 0525mml 10.60m 9.00 C N = 0525mml 50 0/0 0 0 0 N = 0525mml 10.60m 9.00 C N = 0525mml 50 0/0 0 0 0 N = 0525mml 10.60m 9.00 C N = 0525mml 50 0/0 0 0 0 N = 0525mml 10.60m 9.00 C N = 0525mml 50 0/0 0 0 0 N = 0525mml 10.60m 9.00 N = 0525mml 10.60m N = 0525mml 10.60m N = 0525mml 10.60m 9.00 C N = 0525mml 50 0/0 0 0 0 N = 0525mml 10.60m 9.00 C N = 0525mml 10.60m N = 0525mml 10.60m 9.00 N = 0525mml 10.60m N = 0525mml 10.60m 9.00 C N = 0525mml 10.60m 9.00 N = 0525mml 10.60m N = 0525mml 10.60m 9.00 N = 0525mml 10.60m N = 0525mml 10.60m 9.00 N = 0525mml 10.60m N = 0525mml 10.60m										ŧ.				ł	<u>\$</u>	
7.50 C N=0525mml) 71.61 6.90 7.50 C N=0525mml) Red-brown highly weathered poorly cemented medium and pebble medium and sandy discontinuality. Rare subrained pebble medium and sub-horizontal sandy discontinuality. Rare subrained pebble medium and pebble medium and pebble medium and to 0.9000.900 medium to 0.060m s.50m. Pebbly bed. Below 10.060m s.50m. Pebbly bed. Below 10.050m. sccasional pebbles. Very weak mudstone inclusion. 9.00 C N=01525mml) 9.00 C N=01525mml) 9.00 C N=01525mml) 9.00 C N=01525mml) 9.00 Maine Pebble 9.00 C N=01525mml) 9.00 Maine Pebble 9.00 C N=01525mml) 9.00 Maine Pebble Nethod. Equipment and Remarks Method: RO					3				73.91	4.60						
7.50 C N=0(925mm) 9.00 N=0(925mm) N=0(925mm)										:		y cemented SANDST	ONE with sparse	e		
7.50 C N = 0(525mm) 9.00 C <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>È</td><td>B</td><td></td><td></td><td></td><td></td><td>2</td></t<>										È	B					2
7.50 C N = 0(525mm) 9.00 C <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>-</td><td></td><td></td><td></td><td></td><td></td><td></td></t<>										-						
7.50 C N = 0(525mm) 9.00 C <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>E</td><td></td><td></td><td></td><td></td><td></td><td></td></t<>										E						
7.50 C N = 0(525mm) 9.00 N = 0(525mm) N = 0(525mm) 9.01 N = 0(52										(2.30)						
7.50 C N = 0(525mm) 9.00 N = 0(525mm) N = 0(525mm) 9.01 N = 0(52										-	~					
7.50 C N = 0(525mm) 7.50 C N = 0(525mm) S0 0/0 0 0 D D Mathematical State Method, Equipment and Remarks Method: RO Method: RO									1	-						
7.50 C N = 0(525mm) 7.50 C N = 0(525mm) S0 0/0 0 0 D D Mathematical State Method, Equipment and Remarks Method: RO Method: RO										E						
7.50 C N = 0(525mm) 7.50 C N = 0(525mm) S0 0/0 0 0 D D Mathematical State Method, Equipment and Remarks Method: RO Method: RO		1							716	690						
7.50 C N = 0[525mm] So 0/0 0 0 So 0/0									11.0	E		y weathered poorly ce	mented medium	1 and		
9.00 C N = 0(525mm) S0 0/0 0 0 0 N = 0(525mm) S0 0/0 0 0 0 N = 0(525mm) S0 0/0 0 0 0 ter Water Strikes ba Mains Post Depth Post Mains Post Depth Pow Remarks			12							E	sub-horizontal es	andy discontinuities	Rare subrounde	ad l		
9.00 C N=0(525mm) S0 0/0 0 0 0 Water Strikes te Casing Post Plow Remarks Mins Depth Mins Depth Flow Remarks Method: RO	7.	50	с	N = 0(525n	nım)					F	9.00m, 9.60m to	10.60m. 9.50m. Peb	bly bed. Below	to		
9.00 C N = 0(525mm) S0 0/0 0 0 Image: Strike				50 0/0 0 0	0					E	to 14.50m: occas	o completely weather sional pebbles. Very w	ed. Very weak. 1 veak mudstone	.3.10m		
Water Strikes Method, Equipment and Remarks Image: Construction of the strike strite stri strike strike strike strike strike strike strike strike s										-	inclusion.					
Water Strikes Method, Equipment and Remarks Image: Construction of the strike strite stri strike strike strike strike strike strike strike strike s										Ę						
Water Strikes Method, Equipment and Remarks Image: Construction of the strike stri strike strike strike strike strike strike strike strike strike s										-						
Water Strikes Method, Equipment and Remarks Image: the strike is the s										-						
Water Strikes Method, Equipment and Remarks Image: Construction of the strike stri strike strike strike strike strike strike strike strike strike s	9.	00	с	N = 0(525n	nm)				1	F						
Cessing Depth Post Mins Post Depth Flow Remarks Image: Image				30 0/0 0 0	U					F						
Cessing Depth Post Mins Post Depth Flow Remarks Image: Image										-						
Cessing Depth Post Mins Post Depth Flow Remarks Image: Image									1	Ę						
Cessing Depth Post Mins Post Depth Flow Remarks Image: Image										1					1 (- 1) () ()	
Cessing Depth Post Depth Post Depth Flow Remarks Image: Imag			Water	Strikes		_][Method	. Equipment and R	emarks			
	rike Ca pth De	sing	Post		Flow	Rem	arks	Metl	hod: RO							
		-1-1		Jepth				1								
e: 1:50 @ A4 Client: STOCKPORT METROPOLITAN BOROUGH COUNCIL Logged By: Data Checked By:	le: 1:50	0@4	4 Cl	ient: STC	CKPO	RT N	METR	OPOLI	TAN B	OROUGH C	COUNCIL	Logged By:	Data Ch	iecked B	y:	





oject: SEM									Borehole N	
ate: 06-05-1						91844	.2 N 3850			
ntractor: (GINEER	ING I	JMITED			Engineer: Faber Maunsell Ltd	Sheet: 2 of	
	Samples	& Tests		_	Water/			Strata		II/ ment
Depth	Type No	Test Results	S SC	R If R (mm)	(Flush Return)	O.D.	Depth (Thickness)	Description	Legend	Backfill/ Instrument
							(8.00)	Red-brown highly weathered poorly cemented medium and coarse SANDSTONE. Very weak with very closely spaced sub-horizontal sandy discontinuities. Rare subrounded pebble inclusions, moderately weathered, wea. 8.80m to 9.00m, 9.60m to 10.60m. 9.50m. Pebbly bed. Below 10.60m: highly to completely weathered. Very weak. 13.10m to 14.50m: occasional pebbles. Very weak mudstone inclusion. (continued)		<u> </u>
13.00	с	N = 0(600mi 27 50/0 0 0	m) 00			63.61		End of Borehole		0
										C
trike Casin epth Depi	ng Post	r Strikes Post Depth	Flow Re		Meth	nod: RO	-	Method, Equipment and Remarks		

(_____