













Department of the Environment CIVIL ENGINEERING LABORATORY Cardington		Investigation No. SE5/82		Appendix A 6 Sheet No. 2	
Retaining Wall			HARDWICK HALL (MANSIE)		
BOREHOLE LOG SK 46 SE 40					
Borehole No. 1		Note: Perforated standpipe inserted to 14.8m on completion of borehole			
Ground Level 173.6m O.D.					
Date 11th - 17th March 1974					
Description of Strata	Legend	Sample	Depth (m)	O.D.	Remarks
Topsoil, dark brown clayey sand and dolomitic limestone fragments up to boulder size (MADE GROUND)			0	173.6	Water levels in standpipe 17th March '74 to 27th March '74 (daily readings) } constant at 11.2 m 28th March '74 11.3 m 29th March '74 11.3 m 2nd April '74 11.5 m
Fragments of buff, orange or red - brown dolomitic LIMESTONE up to boulder size and clayey SILT/ SAND in varying proportions. Organic patches present in top 1.0m (LW - Weathered LOWER MAGNESIAN LIMESTONE)			3.0	170.6	
			4.7	168.9	chisel used frequently between 3.0 and 7.0m
			6.2	167.4	
			7.0	166.6	chisel used continuously between 7.0 and 8.0m
LIMESTONE, dolomitic, buff/ red - brown, broken, with layers of silt/ sand (L - LOWER MAGNESIAN LIMESTONE)			7.7	165.9	
			8.0	165.6	

Department of the Environment CIVIL ENGINEERING LABORATORY Cardington		Investigation No. SE5/82		Appendix A <input checked="" type="checkbox"/> Sheet No. 3	
Retaining Wall		HARDWICK HALL (MANSFIELD)			
BOREHOLE LOG SK 46 SE / 40					
Borehole No. 1 (contd.)		Notes:			
Ground Level 173.6 m O.D.					
Date					
Description of Strata	Legend	Sample	Depth (m)	O.D.	Remarks
LIMESTONE, dolomitic, buff / red - brown, broken, with layers of silt / sand (L - LOWER MAGNESIAN LIMESTONE)		•	8.0	165.6	chisel used continuously between 8.0 and 9.0m
CLAY / weak MUDSTONE, calcareous, sandy and silty, yellow - brown to grey, with thin layers of limestone (M - LOWER PERMIAN MARL)			9.0	164.6	
			9.3	164.3	
			9.8	163.8	
(approx) CLAY, calcareous, sandy and silty grey / brown with thin layers of limestone. Layers of mudstone between 11.5 and 12.2m (M - LOWER PERMIAN MARL)		(10)	11.5	162.1	 11.2m (162.4m O.D.)  Water entry 11.4m (162.2m O.D.)
MUDSTONE, calcareous, weak, grey, with a few limestone layers up to 40mm thick and fossil plant remains (M - LOWER PERMIAN MARL)		(67)	13.5	160.1	
		(69)	13.7	159.9	
			14.5	159.1	
			14.8	158.8	End of borehole
			16.0		

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Appendix ☒ A
Sheet No. 4

Retaining Wall

HARDWICK HALL (MANSFIELD)

BOREHOLE LOG SK 46SE/40







Borehole No. PIT 2

Ground Level 165.1m O.D.

Date 2nd April 1974

Note:

- 1/ Strata appeared disturbed to a depth of 1.0m, possibly due to slipping of the Lower Permian Marl
- 2/ No water entered the pit.

Description of Strata	Legend	Sample	Depth (m)	O.D.	Remarks
masonry			0	165.1	foundation of buttress
laid rubble			0.3	164.8	
LIMESTONE, dolomitic, sandy, badly broken and weathered with layers of sandy clayey silt. (L-LOWER MAGNESIAN LIMESTONE)			0.5	164.6	
MUDSTONE, calcareous, silty and sandy, orange-brown, rubbly to blocky with layers of sandy and sometimes clayey silt. (M-LOWER PERMIAN MARL)		•	0.8	164.3	
MUDSTONE, weak/SILT, sandy and slightly clayey, brown/grey (M-LOWER PERMIAN MARL)		•	1.5	163.6	
Bottom of pit		•	1.8	163.3	



Department of the Environment CIVIL ENGINEERING LABORATORY Cardington		Investigation No. SE5/82		Appendix <input checked="" type="checkbox"/> A Sheet No. 5		
Retaining Wall		HARDWICK HALL (MANSFIELD)				
BOREHOLE LOG SK 46 SE / 40						
Borehole No. 3		Note: Perforated standpipe inserted to 11.5m on completion of borehole				
Ground Level 173.7 m O.D.						
Date 26th - 28th March 1974						
Description of Strata	Legend	Sample	Depth (m)	O.D.	Remarks	
Topsoil (MADE GROUND)			0	173.7	Water levels in standpipe	
					28th March '74 (on withdrawing casing)	11.2m
					29th March '74	10.4m
					2nd April '74	Standpipe blocked
Fragments of LIMESTONE up to boulder size and brown clayey SILT/ SAND in varying proportions. Some red - brown silty sandy clay is present between 2.0 and 3.5m. Roots occur at the top (LW - Weathered LOWER MAGNESIAN LIMESTONE)			1.2	172.5	chisel used frequently between 1.2 and 5.0m	
LIMESTONE, dolomitic, variably sandy, yellow - brown / grey, broken with some sandy silt / clay (L - LOWER MAGNESIAN LIMESTONE)			3.5	170.2		
LIMESTONE, argillaceous, badly broken with much clayey silt / sand (L - LOWER MAGNESIAN LIMESTONE)			5.5	168.2	(24)	
CLAY, calcareous, silty and sandy, buff / brown with a few layers of mudstone / limestone (M - LOWER PERMIAN MARL)			5.7	168.0		
			6.0	167.7		
			7.2	166.5	(24)	
			8.0	165.7		
					contd.	

Department of the Environment CIVIL ENGINEERING LABORATORY Cardington		Investigation No. SE5/82		Appendix <input checked="" type="checkbox"/> A Sheet No. 6	
Retaining Wall			HARDWICK HALL (MANSFIELD)		
BOREHOLE LOG SK 46 SE / 40					
Borehole No. <u>3 (contd.)</u>		Note:			
Ground Level					
Date					
Description of Strata	Legend	Sample	Depth (m)	O.D.	Remarks
CLAY / weak MUDSTONE, calcareous, silty and sandy, buff, becoming brown/grey in colour below 9.0 m. Fossil plant remains are present	I	I	8.0	165.7	<div style="text-align: center;"> 10.4 m (163.3m O.D.) </div> <div style="text-align: center; margin-top: 20px;"> Water entry 11.2 m (162.5m O.D.) </div>
(M - LOWER PERMIAN MARL)	I	I	8.5	165.2	
	I	I	9.5	164.2	
	I	I	10.0	163.7	
CLAY, stiff, calcareous, grey (M - LOWER PERMIAN MARL)	I	I	10.5	163.2 (approx)	
	I	I	11.5	162.2	End of borehole

Department of the Environment CIVIL ENGINEERING LABORATORY Cardington		Investigation No. SE5 / 82		Appendix A ✓ Sheet No. 7											
Retaining Wall			HARDWICK HALL (MANSFIELD)												
BOREHOLE LOG SK 46 SE / 40															
Borehole No. 4		Note: Perforated standpipe inserted to 4.0 m on completion of boring													
Ground Level 168.3 m															
Date 23rd - 25th March 1974															
Description of Strata	Legend	Sample	Depth (m)	O.D.	Remarks										
TOPSOIL with stones	T		0	168.3	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="2">Water levels in standpipe</th> </tr> <tr> <td>26th March '74</td> <td>dry</td> </tr> <tr> <td>27th March '74</td> <td>dry</td> </tr> <tr> <td>28th March '74</td> <td>dry</td> </tr> <tr> <td>2nd April '74</td> <td>standpipe blocked</td> </tr> </table>	Water levels in standpipe		26th March '74	dry	27th March '74	dry	28th March '74	dry	2nd April '74	standpipe blocked
Water levels in standpipe															
26th March '74	dry														
27th March '74	dry														
28th March '74	dry														
2nd April '74	standpipe blocked														
CLAY, calcareous, silty and sandy, buff / yellow - brown with a few layers of mudstone / limestone (M - LOWER PERMIAN MARL)			0.3	168.0											
			1.2	167.1											
CLAY / with MUDSTONE, calcareous, silty and sandy, fissured, yellow - brown becoming brown / grey at the bottom, with a few thin limestone layers. Fossil plant remains are present (M - LOWER PERMIAN MARL)			2.5	165.8											
			2.7	165.6											
			3.5	164.8											
			4.0	164.3	End of borehole										



Department of the Environment CIVIL ENGINEERING LABORATORY Cardington		Investigation No. SE 5/82		Appendix A Sheet No. 8 ✓	
Retaining Wall		HARDWICK HALL (MANSFIELD)			
BOREHOLE LOG SK 46 SE / 40					
Borehole No. 5		Note: Perforated standpipe inserted to 14.0m on completion of borehole			
Ground Level 174.1 m O.D.					
Date 18th - 22nd March 1974					
Description of Strata	Legend	Sample	Depth (m)	O.D.	Remarks
TOPSOIL, with stones	T		0	174.1	Water levels in standpipe
Fragments of buff or red-brown dolomitic LIMESTONE up to boulder size and clayey SAND/SILT in varying proportions. (LW - Weathered LOWER MAGNESIAN LIMESTONE)			0.4	173.7	23rd Mar '74 11.7m
				24th Mar '74 11.7m	
				25th Mar '74 11.7m	
				26th Mar '74 11.7m	
				27th Mar '74 11.7m	
				28th Mar '74 11.8m	
				29th Mar '74 11.8m	
				2nd Apr '74 12.0m	
LIMESTONE, dolomitic, sandy buff/red/grey, broken, with a little silt/sand. Strong and unbroken between 6.0 and 6.5m (L-LOWER MAGNESIAN LIMESTONE)			3.0	171.1	Chisel used continuously from 2.0m to 7.5m
			3.2	170.9	
			4.7	169.4	
			6.0	168.1	
			7.7	166.4	
S.P.T. attempted - no penetration 3 hours chiselling required to penetrate from 6.0 to 6.5m					



Department of the Environment CIVIL ENGINEERING LABORATORY Cardington		Investigation No. SE5/82		Appendix A ✓ Sheet No. 9	
Retaining Wall		HARDWICK HALL (MANSFIELD)			
BOREHOLE LOG SK 46SE/40					
Borehole No. 5 (cont'd)		Note:			
Ground Level 174.1 m O.D.					
Date					
Description of Strata	Legend	Sample	Depth (m)	O.D.	Remarks
CLAY/weak MUDSTONE, calcareous silty and sandy, buff/grey. Fossil plant remains are present. (M-LOWER PERMIAN MARL)		22	8.0	166.1	
			9.2	164.9	
			10.7	163.4	
			11.0	163.1	
			11.5	162.6	
			12.0	162.1	Water entry 12.0 m (162.1 m O.D.)
			12.5	161.6	
			13.7	160.4	
			14.0	160.1	
			CLAY, calcareous, silty, dark gray/buff Very stiff (M-LOWER PERMIAN MARL)		61
16.0	158.1				
End of borehole		End of borehole			