



Heidelberg Materials

TYTHERINGTON QUARRY: 6 MILLION TONNES ADDITIONAL RESERVES

Environmental Statement: Appendix 9B Borehole Logs and
Construction Details For Piezometers 1 To 6 From ENTEC
(1998)





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ENTEC (1998)

TYPE OF DOCUMENT (VERSION) PUBLIC

PROJECT NO. 62282762

**OUR REF. NO. 6MT ES / APPENDIX 9B BOREHOLE LOGS AND CONSTRUCTION
DETAILS FOR PIEZOMETERS 1 TO 6 FROM ENTEC (1998)**

DATE: MAY 2024

WSP

Canon Court West

Abbey Lawn


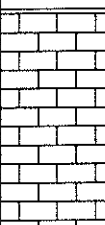


Shrewsbury

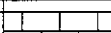
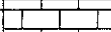
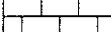
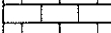
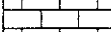
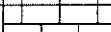
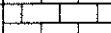
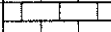
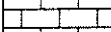
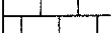
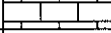
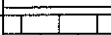


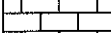
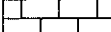
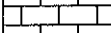
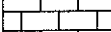
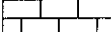
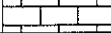
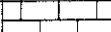
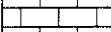
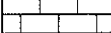
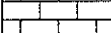
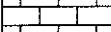
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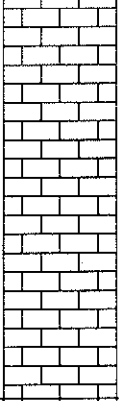
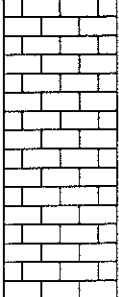
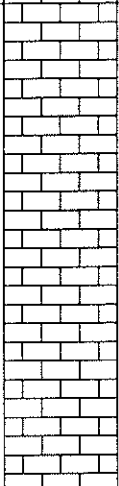
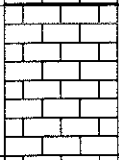

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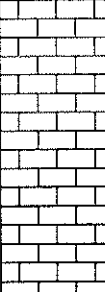



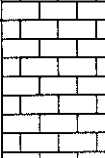
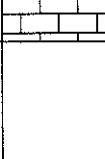
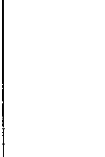

Entec							Borehole BH1		
Project: Tytherington Quarry							Sheet 1 of 2		
Client: Greenways waste management							Project No: 24116		
Contractor : HB Boring							Diameter: 0.12 m		
Method : Rotary Drilling (air flush, button bit, Rig Type: Rotary							Ground Level 99.07 m AOD		
							Co-Ordinates: E 366992.0 N 188927.0		
							Date Drilled: 21/08/98 -		
Depth mbgl	Borehole Log		Legend	Depth (Thick- ness)	mAOD	Water Strikes	Sample		Piezo.
	Strata Description						Type	Data	
1	Grass over brown sandy clay. TOP SOIL.			(0.30)	98.77				
2	Dark greenish gray, and pinkish, fine grained, slightly crystalline (calcite), moderately strong, slightly weathered. LIMESTONE.			(4.00)					
3				4.30	94.77				
4	Dark gray, very fine grained, slightly crystalline (calcite), strong LIMESTONE. No pink colouring.								
5									
6									
7				(7.70)					
8									
9									
10									
11									
12			12.00	87.07					
13	Slight pink coloration within gray strong LIMESTONE.								
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									
26									
27									
28									
29									
30									
31									
32									
33									
34									
35									
36				36.30 62.77					
37	Very yellowish brown, fine to course grained, poorly cemented weak SANDSTONE.			(7.80) 61.97					
38	Dark graybrown and dark pink, fine grained slightly crystalline, moderately strong LIMESTONE/DOLOMITE.			(5.00)					
39									
40									
41				42.10 56.97					
42	More pink coloration below 42 mbgl.								
43									
44									
45									
46									
47									
48									
49									
50									
General Remarks:									
Logged By: SMJ				All Dimensions in Metres			Scale: 1:250		

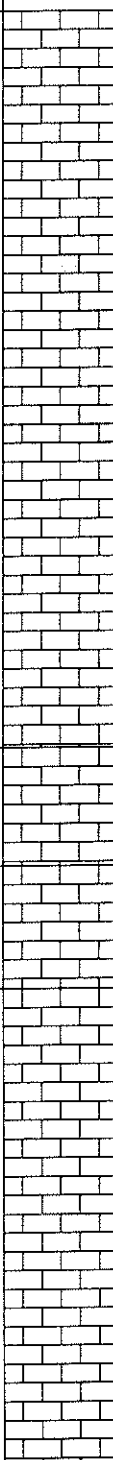

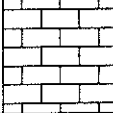
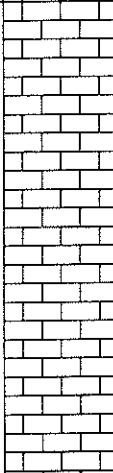
Entec						Borehole BH1		
Project: Tytherington Quarry						Sheet 2 of 2		
Client: Greenways waste management						Project No: 24116		
Contractor : HB Boring						Ground Level 99.07 m AOD		
Diameter: 0.12 m						Co-Ordinates: E 366992.0		
Method : Rotary Drilling (air flush, button bit, Rig Type: Rotary						N 188927.0		
						Date Drilled: 21/08/98 -		
Depth mbgl	Borehole Log	Legend	Depth (Thick- ness)	mAOD	Water Strikes	Sample		Piezo.
	Strata Description					Type	Data	
51			(20.10)					
52								
53								
54								
55								
56								
57								
58								
59								
60								
61	Dark gray very fine grained, slight presence of laminations, weak to moderately strong MUDSTONE. Dark gray very fine grained, slightly crystalline, strong LIMESTONE.		(7.60)					
62								
63								
64								
65								
66								
67								
68								
69								
70								
71	Dark gray very fine grained, moderately weak MUDSTONE. (Pink color from veins of red mark possibly)		(14.20)					
72								
73								
74								
75								
76								
77								
78								
79								
80								
81	Borehole terminated. No water strikes.							
82								
83								
84								
85								
86								
87								
88								
89								
90								
91								
92								
93								
94								
95								
96								
97								
98								
99								
100								
General Remarks:								
Logged By: SMJ			All Dimensions in Metres			Scale: 1:250		

Entec						Borehole BH2			
Project: Tytherington Quarry Client: Greenways waste management Contractor : HB Boring Method : Rotary Drilling (air flush, button bit, Rig Type: Rotary Diameter: 0.12 m Project No: 24116						Sheet 1 of 2			
						Ground Level 99.29 m AOD			
						Co-Ordinates: E 366792.0 N 188970.0			
						Date Drilled: 11/08/98 - 12/08/98			
Depth mbgl	Borehole Log		Legend	Depth (Thick- ness)	mAOD	Water Strikes	Sample		Piezo.
	Strata Description						Type	Data	
1	Grass over brown silty TOP SOIL.			(0.40)	98.89				
2	Very pale brownish gray, finely grained, cryptocrystalline (calcite), strong LIMESTONE.			(1.40)	97.89				
3	Gray with purple and brown flecks, fine grained, with some			(4.00)					
4	calcareous crystals, very strong LIMESTONE.								
5				5.40	93.89				
6	Very pale brown, fine grained, slightly weathered,(chalky)			(6.40)	92.89				
7	OOLITE LIMESTONE, moderately strong.			(7.40)	91.89				
8	Pale brownish gray, fine grained, strong LIMESTONE.								
9	Becoming less strong below 7.4 mbgl.			(4.00)					
10									
11				11.40	87.89				
12	Dark gray, very fine grained, slightly laminated, weak			(12.40)	87.29				
13	MUDSTONE.								
14	Brownish gray, fine grained, moderately strong LIMESTONE								
15	(with occasional bands up to 0.2m thickness of mudstone)								
16				(9.00)					
17									
18									
19									
20				21.00	78.29				
21	Brownish gray, fine grained moderately strong LIMESTONE.								
22									
23									
24									
25									
26									
27									
28									
29									
30									
31									
32									
33									
34									
35									
36				(29.40)					
37									
38									
39									
40									
41									
42									
43									
44									
45									
46									
47									
48									
49									
50									
General Remarks: At 69.5 the borehole became dry: injection of mist to clean side walls.									
Logged By: SMJ				All Dimensions in Metres			Scale: 1:250		

Entec						Borehole BH2		
Project: Tytherington Quarry						Sheet 2 of 2		
Client: Greenways waste management						Project No: 24116		
Contractor : HB Boring						Diameter: 0.12 m		
Method : Rotary Drilling (air flush, button bit, Rig Type: Rotary						Co-Ordinates: E 366792.0 N 188970.0		
						Date Drilled: 11/08/98 - 12/08/98		
Depth mbgl	Borehole Log	Legend	Depth (Thick-ness)	mAOD	Water Strikes	Sample		Piezo.
	Strata Description					Type	Data	
51	Gray, very fine grained, slightly sandy, moderately weak		50.40	48.89				
52	MUDSTONE.		(2.00)	46.89				
53	Gray, fine grained, strong LIMESTONE.		(8.60)					
54								
55								
56								
57								
58								
59			61.00	38.29	▽			
60			(2.50)					
61	Damp below 61 mbgl.		63.50	35.79	▼			
62			(6.00)					
63	Groundwater strike below 63.5 mbgl		69.50	29.79				
64								
65								
66								
67			74.50	24.79				
68								
69								
70								
71	Borehole becomes dry below 69.5 mbgl.		(5.00)					
72								
73								
74								
75								
76								
77								
78								
79								
80								
81	Borehole terminated.							
82								
83								
84								
85								
86								
87								
88								
89								
90								
91								
92								
93								
94								
95								
96								
97								
98								
99								
100								
General Remarks: At 69.5 the borehole became dry: injection of mist to clean side walls.								
Logged By: SMJ			All Dimensions in Metres			Scale: 1:250		

Entec							Borehole BH3						
Project: Tytherington Quarry							Sheet 1 of 2						
Client: Greenways waste management							Project No: 24116						
Contractor : HB Boring							Diameter: 0.12 m						
Method : Rotary Drilling (air flush, button bit, Rig Type: Rotary							Ground Level 85.87 m AOD						
							Co-Ordinates: E 366602.0 N 188685.0						
							Date Drilled: -						
Depth mbgl	Borehole Log						Legend	Depth (Thick- ness)	mAOD	Water Strikes	Sample		Piezo.
	Strata Description										Type	Data	
1	Grass over orange/brown slightly clayey sand with much coarse limestone gravel. TOP SOIL.							(0.20)	85.67				
2	Tarmac over type 2 sub base material. MADE GROUND.							(0.80)	85.07				
3	Dark gray and purple gray, fine grained, slightly crystalline, occasionally slightly weathered, moderately strong LIMESTONE.							(14.20)					
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15							15.00	70.87					
16	Slight pink coloration from soft red marl possibly within fracture below 15 mbgl.							(10.00)					
17													
18													
19													
20													
21													
22													
23													
24													
25													
26	Some calcitic veining present below 25 mbgl.							(16.30)					
27													
28													
29													
30													
31													
32													
33													
34													
35													
36													
37													
38													
39													
40							41.30	44.57					
41	Pale yellowish brown and gray, very fine grained, moderately weak weathered LIMESTONE.						(42.30)	43.27					
42	Brownish gray, fine grained, strong LIMESTONE.							(5.00)					
43													
44													
45													
46													
47							47.60	38.27					
48	Very dark gray color below 47.6 mbgl.												
49													
50													
General Remarks: Inspection pit hand dry to bed rock at 8 mbgl. (2hrs) Inject mist at 10.5 mbgl to reduce dust.													
Logged By: SMJ							All Dimensions in Metres			Scale: 1:250			

Entec						Borehole BH3		
Project: Tytherington Quarry						Sheet 2 of 2		
Client: Greenways waste management						Ground Level 85.87 m AOD		
Contractor : HB Boring						Co-Ordinates: E 366602.0		
Diameter: 0.12 m						N 188685.0		
Method : Rotary Drilling (air flush, button bit, Rig Type: Rotary						Date Drilled:		
Depth mbgl	Borehole Log	Legend	Depth (Thick- ness)	mAOD	Water Strikes	Sample		Piezo.
	Strata Description					Type	Data	
51			(13.00)					
52								
53								
54								
55								
56								
57	Yellowish brown gray below 60.6 mbgl.		60.60	25.27				
58								
59								
60								
61	With fregment calcite veins and orange oxide deposits (weathered rock?) below 65.6 mbgl.		(5.00)					
62								
63								
64								
65			65.60	20.27				
66								
67								
68								
69	Borehole terminated.		(5.90)					
70								
71								
72								
73			71.50	14.37				
74								
75								
76								
77								
78								
79								
80								
81								
82								
83								
84								
85								
86								
87								
88								
89								
90								
91								
92								
93								
94								
95								
96								
97								
98								
99								
100								
General Remarks: Inspection pit hand dry to bed rock at 8 mbgl. (2hrs) Inject mist at 10.5 mbgl to reduce dust.								
Logged By: SMJ			All Dimensions in Metres			Scale: 1:250		

Entec						Borehole BH4	
Project: Tytherington Quarry						Sheet 1 of 2	
Client: Greenways waste management						Ground Level 67.80 m AOD	
Contractor : HB Boring						Co-Ordinates: E 366090.0	
Diameter: 0.12 m						N 188765.0	
Method : Rotary Drilling (air flush, button bit, Rig Type: Rotary						Date Drilled: 25/08/98 -	
Depth mbgl	Borehole Log	Legend	Depth (Thick- ness)	mAOD	Water Strikes	Sample	
	Strata Description					Type	Data
1	MADE GROUND (Boulders of limestone of orange/brown firm sandy clay reworked).		(1.50)	66.30			
2	Brownish gray and slightly greenish gray, fine grained, strong LIMESTONE with occasional calcitic veining.		(24.50)				
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
26	Dark purple/gray, very fine grained, slightly crystalline, moderately strong LIMESTONE, with pink coloration from soft red marl possibly within fracture of limestone.		(3.90)				
27							
28							
29	Damp below 30 mbgl.		(4.10)				
30							
31							
32							
33			34.00	33.80			
34	Very dark gray, fine grained, slightly crystalline, moderately strong LIMESTONE with much calcitic veining. Slight pink coloration from marl.		(29.00)				
35							
36							
37							
38							
39							
40							
41							
42							
43							
44							
45							
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47							
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50							

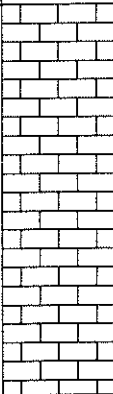

General Remarks:

Logged By: **SMJ**

All Dimensions in Metres

Scale: **1:250**

Entec						Borehole BH4	
Project: Tytherington Quarry						Sheet 2 of 2	
Client: Greenways waste management						Project No: 24116	
Contractor : HB Boring						Ground Level 67.80 m AOD	
Diameter: 0.12 m						Co-Ordinates: E 366090.0 N 188765.0	
Method : Rotary Drilling (air flush, button bit, Rig Type: Rotary						Date Drilled: 25/08/98 -	

Depth mbgl	Borehole Log	Legend	Depth (Thick- ness)	mAOD	Water Strikes	Sample		Piezo.
	Strata Description					Type	Data	
51								
52								
53								
54								
55								
56								
57								
58								
59								
60								
61								
62								
63	Borehole terminated.		63.00	4.80				
64								
65								
66								
67								
68								
69								
70								
71								
72								
73								
74								
75								
76								
77								
78								
79								
80								
81								
82								
83								
84								
85								
86								
87								
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General Remarks:		
Logged By: SMJ	All Dimensions in Metres	Scale: 1:250

Entec						Borehole BH5		
Project: Tytherington Quarry Client: Greenways waste management						Sheet 1 of 2		
						Ground Level 95.86 m AOD		
Contractor : HB Boring Diameter: 0.12 m Method : Rotary Drilling (air flush, button bit, Rig Type: Rotary						Co-Ordinates: E 365476.0 N 188188.0		
						Date Drilled: 13/08/98 -		
Depth	Borehole Log	Legend	Depth (Thick-ness)	mAOD	Water Strikes	Sample		Piezo.
mbgl	Strata Description					Type	Data	
1	TOP SOIL: orange brown, slightly clayey, sand and gravel.		(1.20)	94.66				
2	Yellow brown, fine to medium, weak poorly cemented		(2.40)	93.46				
3	SANDSTONE with occasional iron oxide.							
4	Dark greenish gray, fine grained, moderately strong weathered							
5	LIMESTONE with some orange iron oxide.		(6.00)					
6								
7								
8			8.40	87.46				
9	Dark gray with calcite veining below 8.4 mbgl.		(9.00)	86.46				
10	Orange brown, fine to coarse weak, poorly cemented		(10.80)	85.66				
11	SANDSTONE.							
12	Dark greenish grey and occasionally dark red, fine grained,							
13	slightly crystalline, strong LIMESTONE. (calcitic veining							
14	present)							
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46			(70.80)					
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General Remarks:								
Logged By: SMJ				All Dimensions in Metres			Scale: 1:250	

Entec						Borehole BH5		
Project: Tytherington Quarry						Sheet 2 of 2		
Client: Greenways waste management						Ground Level 95.86 m AOD		
Contractor : HB Boring						Co-Ordinates: E 365476.0		
Diameter: 0.12 m						N 188188.0		
Method : Rotary Drilling (air flush, button bit, Rig Type: Rotary						Date Drilled: 13/08/98 -		
Depth m bgl	Borehole Log	Legend	Depth (Thick-ness)	mAOD	Water Strikes	Sample		Piezo.
	Strata Description					Type	Data	
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80			81.00	14.86				
81			82.30	13.56				
82	Dark greenish gray and occasionally dark red, fine grained, slightly crystalline, strong LIMESTONE. (calcitic veining present). Strong pink coloration in the water. Possibly fracture containing soft red marl.		(2.20)					
83			84.50	11.36				
84								
85	Dark greenish gray and occasionally dark red /purple, fine grained, strong LIMESTONE.							
86								
87	Borehole terminated							
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General Remarks:								
Logged By: SMJ			All Dimensions in Metres			Scale: 1:250		

Entec						Borehole BH6		
Project: Tytherington Quarry						Sheet 1 of 1		
Client: Greenways waste management						Ground Level 92.76 m AOD		
Contractor : HB Boring						Co-Ordinates: E 366824.0		
Diameter: 0.12 m						N 189278.0		
Method : Rotary Drilling (air flush, button bit, Rlg Type: Rotary						Date Drilled: 18/08/98 -		
Depth mbgl	Borehole Log	Legend	Depth (Thick- ness)	mAOD	Water Strikes	Sample		Piezo.
	Strata Description					Type	Data	
1	Gray, fine grained, strong LIMESTONE with some dark red/purple and orange grains (possibly oxidised iron and red marl in fractures. (Weathered?) Some calcitic veining present, increased quantity of calcitic crystals and dark red material.		(0.70)	92.06				
2			(2.70)					
3		3.40	89.36					
4	Gray, very fine grained, strong LIMESTONE.		(3.40)	88.96				
5	Orange brown, fine to medium gravel, moderately weak SANDSTONE.		(4.80)	87.96				
6			(6.10)	86.66				
7	Gray, fine grained, strong LIMESTONE.		(2.30)					
8	Orange brown, fine to medium moderately weak SANDSTONE.		8.40	84.36				
9	Gray, fine grained, strong LIMESTONE.		(9.40)	83.36				
10	Very dark gray, very fine grained, moderately weak MUDSTONE.		(10.80)	81.96				
11	Damp below 9.4 mbgl.							
12	Groundwater strikes below 10.8 mbgl.							
13								
14								
15								
16								
17			(12.00)					
18								
19								
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21								
22			22.80	69.96				
23	Gray, fine grained, strong LIMESTONE with some dark red/purple and orange grains (possibly oxidised iron and red marl in fractures. (Weathered?) Some calcitic veining present.		(4.70)					
24								
25								
26								
27			27.50	65.26				
28	Borehole terminated.							
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General Remarks:								
Logged By: SMJ				All Dimensions in Metres			Scale: 1:250	