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Date 18/10/2018 10:12	Designed by MH				
File FC2780 MIDDLETON house-...	Checked by				
Micro Drainage		Source Control 2017.1.2			
<u>Summary of Results for 100 year Return Period (+40%)</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
60 min Winter	4.533	0.363	1.0	10.9	O K
120 min Winter	4.553	0.383	1.0	11.5	O K
180 min Winter	4.543	0.373	1.0	11.2	O K
240 min Winter	4.526	0.356	1.0	10.7	O K
360 min Winter	4.482	0.312	1.0	9.4	O K
480 min Winter	4.429	0.259	1.0	7.8	O K
600 min Winter	4.381	0.211	1.0	6.3	O K
720 min Winter	4.339	0.169	1.0	5.1	O K
960 min Winter	4.276	0.106	1.0	3.2	O K
1440 min Winter	4.228	0.058	0.9	1.7	O K
2160 min Winter	4.210	0.040	0.6	1.2	O K
2880 min Winter	4.202	0.032	0.5	1.0	O K
4320 min Winter	4.194	0.024	0.4	0.7	O K
5760 min Winter	4.190	0.020	0.3	0.6	O K
7200 min Winter	4.187	0.017	0.3	0.5	O K
8640 min Winter	4.185	0.015	0.2	0.4	O K
10080 min Winter	4.183	0.013	0.2	0.4	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)	
60 min Winter	53.779	0.0	13.5	60	
120 min Winter	33.337	0.0	16.8	114	
180 min Winter	24.832	0.0	18.8	142	
240 min Winter	20.006	0.0	20.1	180	
360 min Winter	14.706	0.0	22.2	258	
480 min Winter	11.818	0.0	23.8	326	
600 min Winter	9.966	0.0	25.1	390	
720 min Winter	8.665	0.0	26.2	448	
960 min Winter	6.943	0.0	28.0	558	
1440 min Winter	5.071	0.0	30.7	754	
2160 min Winter	3.696	0.0	33.5	1108	
2880 min Winter	2.949	0.0	35.7	1472	
4320 min Winter	2.142	0.0	38.8	2196	
5760 min Winter	1.705	0.0	41.2	2848	
7200 min Winter	1.427	0.0	43.1	3672	
8640 min Winter	1.235	0.0	44.8	4272	
10080 min Winter	1.093	0.0	46.3	5064	
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Felpham	Option 3										
West Sussex PO22 7EY	Attenuation tank										
Date 18/10/2018 10:12	Designed by MH										
File FC2780 MIDDLETON house-...	Checked by										
Micro Drainage		Source Control 2017.1.2									
<u>Rainfall Details</u>											
Rainfall Model	FSR	Winter Storms Yes									
Return Period (years)	100	Cv (Summer) 0.750									
Region England and Wales		Cv (Winter) 0.840									
M5-60 (mm)	19.000	Shortest Storm (mins) 15									
Ratio R	0.350	Longest Storm (mins) 10080									
Summer Storms	Yes	Climate Change % +40									
<u>Time Area Diagram</u>											
Total Area (ha) 0.030											
<table border="0"> <thead> <tr> <th colspan="2">Time (mins)</th> <th>Area</th> </tr> <tr> <th>From:</th> <th>To:</th> <th>(ha)</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>4</td> <td>0.030</td> </tr> </tbody> </table>			Time (mins)		Area	From:	To:	(ha)	0	4	0.030
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Micro Drainage		Source Control 2017.1.2

Model Details

Storage is Online Cover Level (m) 5.250

Tank or Pond Structure

Invert Level (m) 4.170

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	30.0	0.700	30.0	1.400	30.0	2.100	30.0
0.100	30.0	0.800	30.0	1.500	30.0	2.200	30.0
0.200	30.0	0.900	30.0	1.600	30.0	2.300	30.0
0.300	30.0	1.000	30.0	1.700	30.0	2.400	30.0
0.400	30.0	1.100	30.0	1.800	30.0	2.500	30.0
0.401	30.0	1.200	30.0	1.900	30.0		
0.431	30.0	1.300	30.0	2.000	30.0		

Hydro-Brake® Optimum Outflow Control

Unit Reference	MD-SHE-0054-1000-0450-1000
Design Head (m)	0.450
Design Flow (l/s)	1.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	54
Invert Level (m)	4.160
Minimum Outlet Pipe Diameter (mm)	75
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.450	1.0
Flush-Flo™	0.132	1.0
Kick-Flo®	0.301	0.8
Mean Flow over Head Range	-	0.9

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	1.0	1.200	1.5	3.000	2.4	7.000	3.5
0.200	1.0	1.400	1.7	3.500	2.5	7.500	3.7
0.300	0.8	1.600	1.8	4.000	2.7	8.000	3.8
0.400	0.9	1.800	1.9	4.500	2.8	8.500	3.9
0.500	1.0	2.000	2.0	5.000	3.0	9.000	4.0
0.600	1.1	2.200	2.0	5.500	3.1	9.500	4.1
0.800	1.3	2.400	2.1	6.000	3.3		
1.000	1.4	2.600	2.2	6.500	3.4		