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1 The Grove Felpham West Sussex PO22 7EY		SWD CRL Littlehampton			
Date June 17 File F2505 SWD - Rev A June ...		Designed by MH Checked by			
Micro Drainage		Source Control 2015.1			
<u>Summary of Results for 100 year Return Period (+30%)</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Summer	4.730	0.430	5.0	31.4	O K
30 min Summer	4.855	0.555	5.0	40.5	O K
60 min Summer	4.955	0.655	5.0	47.9	O K
120 min Summer	4.989	0.689	5.0	50.3	O K
180 min Summer	4.977	0.677	5.0	49.5	O K
240 min Summer	4.952	0.652	5.0	47.7	O K
360 min Summer	4.888	0.588	5.0	43.0	O K
480 min Summer	4.819	0.519	5.0	37.9	O K
600 min Summer	4.756	0.456	5.0	33.3	O K
720 min Summer	4.699	0.399	5.0	29.2	O K
960 min Summer	4.604	0.304	5.0	22.2	O K
1440 min Summer	4.485	0.185	4.9	13.5	O K
2160 min Summer	4.419	0.119	4.3	8.7	O K
2880 min Summer	4.398	0.098	3.5	7.1	O K
4320 min Summer	4.378	0.078	2.6	5.7	O K
5760 min Summer	4.367	0.067	2.1	4.9	O K
7200 min Summer	4.360	0.060	1.7	4.4	O K
8640 min Summer	4.355	0.055	1.5	4.0	O K
10080 min Summer	4.352	0.052	1.3	3.8	O K
15 min Winter	4.787	0.487	5.0	35.6	O K
30 min Winter	4.932	0.632	5.0	46.2	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)	
15 min Summer	115.731	0.0	34.8	18	
30 min Summer	77.804	0.0	46.9	32	
60 min Summer	49.937	0.0	60.2	60	
120 min Summer	30.956	0.0	74.7	102	
180 min Summer	23.058	0.0	83.5	134	
240 min Summer	18.577	0.0	89.7	168	
360 min Summer	13.656	0.0	98.9	238	
480 min Summer	10.974	0.0	105.9	302	
600 min Summer	9.254	0.0	111.7	364	
720 min Summer	8.046	0.0	116.5	426	
960 min Summer	6.447	0.0	124.5	542	
1440 min Summer	4.709	0.0	136.4	766	
2160 min Summer	3.432	0.0	149.2	1104	
2880 min Summer	2.739	0.0	158.7	1468	
4320 min Summer	1.989	0.0	172.8	2200	
5760 min Summer	1.583	0.0	183.4	2936	
7200 min Summer	1.325	0.0	192.0	3624	
8640 min Summer	1.147	0.0	199.4	4400	
10080 min Summer	1.015	0.0	205.9	5072	
15 min Winter	115.731	0.0	39.0	18	
30 min Winter	77.804	0.0	52.5	32	
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Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
60 min Winter	5.048	0.748	5.0	54.7	O K
120 min Winter	5.032	0.782	5.0	57.9	O K
180 min Winter	5.074	0.774	5.0	56.6	O K
240 min Winter	5.039	0.739	5.0	54.0	O K
360 min Winter	4.950	0.650	5.0	47.5	O K
480 min Winter	4.838	0.538	5.0	39.4	O K
600 min Winter	4.737	0.437	5.0	32.0	O K
720 min Winter	4.652	0.352	5.0	25.7	O K
960 min Winter	4.525	0.225	5.0	16.4	O K
1440 min Winter	4.421	0.121	4.4	8.8	O K
2160 min Winter	4.391	0.091	3.2	6.6	O K
2880 min Winter	4.377	0.077	2.6	5.6	O K
4320 min Winter	4.363	0.063	1.9	4.6	O K
5760 min Winter	4.355	0.055	1.5	4.0	O K
7200 min Winter	4.350	0.050	1.3	3.7	O K
8640 min Winter	4.346	0.046	1.1	3.4	O K
10080 min Winter	4.343	0.043	1.0	3.1	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)	
60 min Winter	49.937	0.0	67.5	60	
120 min Winter	39.956	0.0	83.7	114	
180 min Winter	23.058	0.0	93.5	142	
240 min Winter	18.577	0.0	100.4	182	
360 min Winter	13.656	0.0	110.8	258	
480 min Winter	10.974	0.0	118.7	328	
600 min Winter	9.254	0.0	125.1	390	
720 min Winter	8.046	0.0	130.5	448	
960 min Winter	6.447	0.0	139.4	558	
1440 min Winter	4.709	0.0	152.7	752	
2160 min Winter	3.432	0.0	167.1	1104	
2880 min Winter	2.739	0.0	177.7	1468	
4320 min Winter	1.989	0.0	193.6	2180	
5760 min Winter	1.583	0.0	205.5	2864	
7200 min Winter	1.325	0.0	215.0	3672	
8640 min Winter	1.147	0.0	223.3	4400	
10080 min Winter	1.015	0.0	230.6	5136	
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Rainfall Details

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 %	+30

Time Area Diagram

Total Area (ha) 0.161

Time (mins)		Area
From:	To:	(ha)
0	4	0.161

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Model Details

Storage is Online Cover Level (m) 5.700

Tank or Pond Structure

Invert Level (m) 4.300

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	73.1	0.700	73.1	1.400	0.0	2.100	0.0
0.100	73.1	0.800	73.1	1.500	0.0	2.200	0.0
0.200	73.1	0.801	0.0	1.600	0.0	2.300	0.0
0.300	73.1	1.000	0.0	1.700	0.0	2.400	0.0
0.400	73.1	1.100	0.0	1.800	0.0	2.500	0.0
0.500	73.1	1.200	0.0	1.900	0.0		
0.600	73.1	1.300	0.0	2.000	0.0		

Hydro-Brake Optimum® Outflow Control

Unit Reference MD-SHE-0107-5000-0930-5000
Design Head (m) 0.930
Design Flow (l/s) 5.0
Flush-Flo™ Calculated
Objective Minimise upstream storage
Diameter (mm) 107
Invert Level (m) 4.300
Minimum Outlet Pipe Diameter (mm) 150
Suggested Manhole Diameter (mm) 1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.930	5.0
Flush-Flo™	0.273	5.0
Kick-Flo®	0.600	4.1
Mean Flow over Head Range	-	4.3

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	3.6	1.200	5.6	3.000	8.6	7.000	12.9
0.200	4.9	1.400	6.0	3.500	9.3	7.500	13.4
0.300	5.0	1.600	6.4	4.000	9.9	8.000	13.8
0.400	4.9	1.800	6.8	4.500	10.5	8.500	14.2
0.500	4.7	2.000	7.1	5.000	11.0	9.000	14.6
0.600	4.1	2.200	7.5	5.500	11.5	9.500	14.9
0.800	4.7	2.400	7.8	6.000	12.0		
1.000	5.2	2.600	8.1	6.500	12.5		

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