

Appendix C - MicroDrainage modelling

Ove Arup & Partners International Ltd					Page 1
The Arup Campus Blyth Gate Solihull B90 8AE					
Date 15/09/2026 11:35 File Attenuation volume esti...		Designed by Matt.Lai Checked by			
XP Solutions		Source Control 2020.1.3			
Summary of Results for 100 year Return Period (+40%)					
Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Summer	98.346	0.346	11.4	952.5	O K
30 min Summer	98.455	0.455	11.4	1249.9	O K
60 min Summer	98.568	0.568	11.4	1561.6	O K
120 min Summer	98.670	0.670	11.4	1841.6	O K
180 min Summer	98.731	0.731	11.4	2011.1	O K
240 min Summer	98.774	0.774	11.4	2127.1	O K
360 min Summer	98.827	0.827	11.4	2273.6	O K
480 min Summer	98.854	0.854	11.4	2349.7	O K
600 min Summer	98.869	0.869	11.4	2389.9	O K
720 min Summer	98.876	0.876	11.4	2408.7	O K
960 min Summer	98.876	0.876	11.4	2408.7	O K
1440 min Summer	98.847	0.847	11.4	2330.6	O K
2160 min Summer	98.798	0.798	11.4	2195.6	O K
2880 min Summer	98.760	0.760	11.4	2090.4	O K
4320 min Summer	98.697	0.697	11.4	1917.5	O K
5760 min Summer	98.639	0.639	11.4	1757.5	O K
7200 min Summer	98.593	0.593	11.4	1631.0	O K
8640 min Summer	98.554	0.554	11.4	1524.9	O K
10080 min Summer	98.522	0.522	11.4	1434.1	O K
15 min Winter	98.388	0.388	11.4	1068.1	O K
30 min Winter	98.510	0.510	11.4	1402.0	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)	
15 min Summer	138.802	0.0	766.2	30	
30 min Summer	91.241	0.0	931.8	45	
60 min Summer	57.287	0.0	1459.7	74	
120 min Summer	34.137	0.0	1693.1	134	
180 min Summer	25.107	0.0	1787.4	192	
240 min Summer	20.126	0.0	1804.7	252	
360 min Summer	14.644	0.0	1774.9	370	
480 min Summer	11.590	0.0	1747.0	490	
600 min Summer	9.629	0.0	1722.2	608	
720 min Summer	8.258	0.0	1699.2	728	
960 min Summer	6.457	0.0	1655.6	964	
1440 min Summer	4.529	0.0	1570.4	1440	
2160 min Summer	3.186	0.0	3033.7	1816	
2880 min Summer	2.494	0.0	3095.0	2172	
4320 min Summer	1.784	0.0	2925.7	2988	
5760 min Summer	1.420	0.0	3756.6	3760	
7200 min Summer	1.201	0.0	3967.3	4544	
8640 min Summer	1.054	0.0	4169.2	5360	
10080 min Summer	0.948	0.0	4353.2	6152	
15 min Winter	138.802	0.0	843.6	30	
30 min Winter	91.241	0.0	957.7	45	
©1982-2020 Innovyze					

Ove Arup & Partners International Ltd					Page 2
The Arup Campus Blyth Gate Solihull B90 8AE					
Date 15/09/2026 11:35 File Attenuation volume esti...		Designed by Matt.Lai Checked by			
XP Solutions		Source Control 2020.1.3			
Summary of Results for 100 year Return Period (+40%)					
Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
60 min Winter	98.637	0.637	11.4	1752.8	O K
120 min Winter	98.752	0.752	11.4	2068.8	O K
180 min Winter	98.822	0.822	11.4	2259.6	O K
240 min Winter	98.870	0.870	11.4	2391.3	O K
360 min Winter	98.931	0.931	11.4	2559.7	O K
480 min Winter	98.963	0.963	11.4	2649.6	O K
600 min Winter	98.982	0.982	11.4	2699.3	O K
720 min Winter	98.991	0.991	11.4	2725.0	O K
960 min Winter	98.994	0.994	11.4	2734.5	O K
1440 min Winter	98.970	0.970	11.4	2666.4	O K
2160 min Winter	98.915	0.915	11.4	2517.4	O K
2880 min Winter	98.866	0.866	11.4	2381.4	O K
4320 min Winter	98.785	0.785	11.4	2159.7	O K
5760 min Winter	98.710	0.710	11.4	1952.2	O K
7200 min Winter	98.633	0.633	11.4	1741.7	O K
8640 min Winter	98.567	0.567	11.4	1558.0	O K
10080 min Winter	98.510	0.510	11.4	1401.8	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)	
60 min Winter	57.287	0.0	1615.1	74	
120 min Winter	34.137	0.0	1804.6	132	
180 min Winter	25.107	0.0	1813.8	190	
240 min Winter	20.126	0.0	1796.6	248	
360 min Winter	14.644	0.0	1770.2	364	
480 min Winter	11.590	0.0	1751.1	482	
600 min Winter	9.629	0.0	1734.6	598	
720 min Winter	8.258	0.0	1718.9	714	
960 min Winter	6.457	0.0	1688.0	944	
1440 min Winter	4.529	0.0	1626.9	1392	
2160 min Winter	3.186	0.0	3320.5	2020	
2880 min Winter	2.494	0.0	3284.3	2284	
4320 min Winter	1.784	0.0	3001.8	3208	
5760 min Winter	1.420	0.0	4206.6	4152	
7200 min Winter	1.201	0.0	4442.6	4976	
8640 min Winter	1.054	0.0	4669.3	5792	
10080 min Winter	0.948	0.0	4881.7	6560	
©1982-2020 Innovyze					

Ove Arup & Partners International Ltd		Page 3
The Arup Campus Blyth Gate Solihull B90 8AE		
Date 15/09/2026 11:35	Designed by Matt.Lai	
File Attenuation volume esti...	Checked by	
XP Solutions		Source Control 2020.1.3

Model Details

Storage is Online Cover Level (m) 100.000

Tank or Pond Structure

Invert Level (m) 98.000

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	2750.0	1.000	2750.0	1.001	0.0	2.000	0.0

Hydro-Brake® Optimum Outflow Control

Unit Reference	MD-SHE-0155-1140-0988-1140
Design Head (m)	0.988
Design Flow (l/s)	11.4
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	155
Invert Level (m)	98.000
Minimum Outlet Pipe Diameter (mm)	225
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.988	11.4
Flush-Flo™	0.303	11.4
Kick-Flo®	0.675	9.5
Mean Flow over Head Range	-	9.7

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

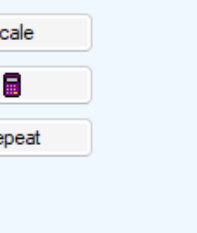
Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	5.6	1.200	12.5	3.000	19.3	7.000	29.0
0.200	11.1	1.400	13.4	3.500	20.8	7.500	30.0
0.300	11.4	1.600	14.3	4.000	22.2	8.000	31.0
0.400	11.3	1.800	15.1	4.500	23.5	8.500	31.9
0.500	11.0	2.000	15.9	5.000	24.7	9.000	32.8
0.600	10.4	2.200	16.7	5.500	25.8	9.500	33.6
0.800	10.3	2.400	17.4	6.000	26.9		
1.000	11.5	2.600	18.0	6.500	28.0		

©1982-2020 Innovyze

Tank or Pond Structure

Cover Level (m)	100.000	Storage is	<select value="Online"></select>
		Dividing Weir Level (m)	0.000

Invert Level (m)	Area (m ²)
0.000	2750.0
1.000	2750.0
1.001	0.0
2.000	0.0



Scale Factor (%)

0

Enter Cover Level between -9999.999 and 9999.999