

RSK LDE				Page 1	
Spring Lodge 172 Chester Road Helsby Cheshire WA6 0AR					
Date 01/02/2024 09:50		Designed by mrayner			
File Stoarge.SRCX		Checked by			
Micro Drainage		Source Control 2020.1.3			
Summary of Results for 100 year Return Period (+45%)					
Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Summer	63.471	0.471	3.5	66.0	O K
30 min Summer	63.625	0.625	3.5	87.5	O K
60 min Summer	63.783	0.783	3.5	109.6	O K
120 min Summer	63.922	0.922	3.5	129.1	O K
180 min Summer	63.979	0.979	3.5	137.1	O K
240 min Summer	64.000	1.000	3.5	140.1	O K
360 min Summer	63.995	0.995	3.5	139.3	O K
480 min Summer	63.979	0.979	3.5	137.0	O K
600 min Summer	63.959	0.959	3.5	134.3	O K
720 min Summer	63.938	0.938	3.5	131.3	O K
960 min Summer	63.893	0.893	3.5	125.0	O K
1440 min Summer	63.799	0.799	3.5	111.8	O K
2160 min Summer	63.636	0.636	3.5	89.0	O K
2880 min Summer	63.501	0.501	3.5	70.2	O K
4320 min Summer	63.314	0.314	3.5	43.9	O K
5760 min Summer	63.208	0.208	3.3	29.1	O K
7200 min Summer	63.148	0.148	3.1	20.7	O K
8640 min Summer	63.115	0.115	2.8	16.1	O K
10080 min Summer	63.100	0.100	2.6	14.0	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)	
15 min Summer	122.874	0.0	68.6	22	
30 min Summer	82.496	0.0	92.2	36	
60 min Summer	52.935	0.0	118.8	66	
120 min Summer	32.866	0.0	147.6	124	
180 min Summer	24.536	0.0	165.3	182	
240 min Summer	19.814	0.0	178.0	242	
360 min Summer	14.543	0.0	196.0	340	
480 min Summer	11.685	0.0	210.0	396	
600 min Summer	9.852	0.0	221.3	460	
720 min Summer	8.566	0.0	230.9	524	
960 min Summer	6.863	0.0	246.6	664	
1440 min Summer	5.012	0.0	270.1	942	
2160 min Summer	3.653	0.0	295.8	1324	
2880 min Summer	2.915	0.0	314.6	1680	
4320 min Summer	2.117	0.0	342.6	2380	
5760 min Summer	1.685	0.0	364.0	3056	
7200 min Summer	1.411	0.0	380.8	3744	
8640 min Summer	1.220	0.0	395.0	4408	
10080 min Summer	1.079	0.0	407.4	5144	
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Summary of Results for 100 year Return Period (+45%)					
Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Winter	63.530	0.530	3.5	74.2	O K
30 min Winter	63.705	0.705	3.5	98.7	O K
60 min Winter	63.884	0.884	3.5	123.8	O K
120 min Winter	64.045	1.045	3.5	146.3	O K
180 min Winter	64.116	1.116	3.5	156.2	O K
240 min Winter	64.146	1.146	3.5	160.5	O K
360 min Winter	64.152	1.152	3.5	161.2	O K
480 min Winter	64.131	1.131	3.5	158.3	O K
600 min Winter	64.104	1.104	3.5	154.6	O K
720 min Winter	64.077	1.077	3.5	150.8	O K
960 min Winter	64.015	1.015	3.5	142.1	O K
1440 min Winter	63.877	0.877	3.5	122.8	O K
2160 min Winter	63.627	0.627	3.5	87.7	O K
2880 min Winter	63.428	0.428	3.5	59.9	O K
4320 min Winter	63.206	0.206	3.3	28.9	O K
5760 min Winter	63.119	0.119	2.9	16.7	O K
7200 min Winter	63.095	0.095	2.5	13.3	O K
8640 min Winter	63.082	0.082	2.2	11.5	O K
10080 min Winter	63.074	0.074	1.9	10.3	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)	
15 min Winter	122.874	0.0	76.9	22	
30 min Winter	82.496	0.0	103.3	36	
60 min Winter	52.935	0.0	133.1	64	
120 min Winter	32.866	0.0	165.4	122	
180 min Winter	24.536	0.0	185.2	178	
240 min Winter	19.814	0.0	199.4	236	
360 min Winter	14.543	0.0	219.5	346	
480 min Winter	11.685	0.0	235.2	446	
600 min Winter	9.852	0.0	247.9	480	
720 min Winter	8.566	0.0	258.6	556	
960 min Winter	6.863	0.0	276.3	714	
1440 min Winter	5.012	0.0	302.6	1024	
2160 min Winter	3.653	0.0	331.3	1428	
2880 min Winter	2.915	0.0	352.4	1764	
4320 min Winter	2.117	0.0	383.8	2420	
5760 min Winter	1.685	0.0	407.6	3048	
7200 min Winter	1.411	0.0	426.6	3680	
8640 min Winter	1.220	0.0	442.4	4408	
10080 min Winter	1.079	0.0	456.4	5144	
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Micro Drainage Source Control 2020.1.3		

Model Details

Storage is Online Cover Level (m) 65.300

Tank or Pond Structure

Invert Level (m) 63.000

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	140.0	1.200	140.0	1.201	0.0

Hydro-Brake® Optimum Outflow Control

Unit Reference	MD-SHE-0086-3500-1200-3500
Design Head (m)	1.200
Design Flow (l/s)	3.5
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	86
Invert Level (m)	63.000
Minimum Outlet Pipe Diameter (mm)	100
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.200	3.5	Kick-Flo®	0.746	2.8
Flush-Flo™	0.367	3.5	Mean Flow over Head Range	-	3.1

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	2.6	1.200	3.5	3.000	5.4	7.000	8.0
0.200	3.3	1.400	3.8	3.500	5.8	7.500	8.3
0.300	3.5	1.600	4.0	4.000	6.1	8.000	8.5
0.400	3.5	1.800	4.2	4.500	6.5	8.500	8.8
0.500	3.4	2.000	4.4	5.000	6.8	9.000	9.0
0.600	3.3	2.200	4.6	5.500	7.1	9.500	9.2
0.800	2.9	2.400	4.8	6.000	7.4		
1.000	3.2	2.600	5.0	6.500	7.7		

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