

Keytech Development Design Ltd					Page 1
46 Sandbach Road Congleton Cheshire CW12 4LW		THE HOMESTEAD BIDDULPH STORAGE CALCS			
Date JUNE 2017 File STORAGE CALCS.SRCX		Designed by GS Checked by			
XP Solutions		Source Control 2014.1.1			
Summary of Results for 100 year Return Period (+40%)					
Storm Event	Max Level (m)	Max Depth (m)	Max Control (1/s)	Max Volume (m³)	Status
15 min Summer	180.392	0.292	4.0	19.1	Flood Risk
30 min Summer	180.472	0.372	4.5	24.3	Flood Risk
60 min Summer	180.526	0.426	4.9	27.9	Flood Risk
120 min Summer	180.549	0.449	5.0	29.4	Flood Risk
180 min Summer	180.542	0.442	5.0	28.9	Flood Risk
240 min Summer	180.525	0.425	4.9	27.8	Flood Risk
360 min Summer	180.484	0.384	4.6	25.1	Flood Risk
480 min Summer	180.447	0.347	4.4	22.7	Flood Risk
600 min Summer	180.415	0.315	4.1	20.7	Flood Risk
720 min Summer	180.388	0.288	3.9	18.9	Flood Risk
960 min Summer	180.344	0.244	3.6	16.0	Flood Risk
1440 min Summer	180.284	0.184	3.0	12.0	O K
2160 min Summer	180.233	0.133	2.5	8.7	O K
2880 min Summer	180.204	0.104	2.1	6.8	O K
4320 min Summer	180.180	0.080	1.6	5.2	O K
5760 min Summer	180.169	0.069	1.3	4.5	O K
7200 min Summer	180.161	0.061	1.1	4.0	O K
8640 min Summer	180.156	0.056	1.0	3.7	O K
10080 min Summer	180.152	0.052	0.8	3.4	O K
15 min Winter	180.428	0.328	4.2	21.5	Flood Risk
30 min Winter	180.520	0.420	4.8	27.5	Flood Risk
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)	
15 min Summer	118.150	0.0	22.0	23	
30 min Summer	79.253	0.0	29.6	34	
60 min Summer	50.812	0.0	38.1	54	
120 min Summer	31.529	0.0	47.2	88	
180 min Summer	23.534	0.0	52.9	122	
240 min Summer	19.005	0.0	57.0	156	
360 min Summer	13.943	0.0	62.7	222	
480 min Summer	11.200	0.0	67.1	288	
600 min Summer	9.441	0.0	70.7	350	
720 min Summer	8.207	0.0	73.8	412	
960 min Summer	6.574	0.0	78.8	534	
1440 min Summer	4.800	0.0	86.3	774	
2160 min Summer	3.497	0.0	94.4	1132	
2880 min Summer	2.790	0.0	100.4	1480	
4320 min Summer	2.026	0.0	109.3	2204	
5760 min Summer	1.612	0.0	116.1	2936	
7200 min Summer	1.350	0.0	121.4	3672	
8640 min Summer	1.167	0.0	126.0	4392	
10080 min Summer	1.031	0.0	129.8	5104	
15 min Winter	118.150	0.0	24.7	23	
30 min Winter	79.253	0.0	33.2	34	
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<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	180.582	0.482	5.2	31.6	Flood Risk
120 min Winter	180.600	0.500	5.3	32.7	Flood Risk
180 min Winter	180.582	0.482	5.2	31.6	Flood Risk
240 min Winter	180.554	0.454	5.1	29.7	Flood Risk
360 min Winter	180.492	0.392	4.7	25.7	Flood Risk
480 min Winter	180.440	0.340	4.3	22.3	Flood Risk
600 min Winter	180.397	0.297	4.0	19.5	Flood Risk
720 min Winter	180.362	0.262	3.7	17.1	Flood Risk
960 min Winter	180.308	0.208	3.3	13.6	Flood Risk
1440 min Winter	180.243	0.143	2.6	9.4	O K
2160 min Winter	180.197	0.097	2.0	6.4	O K
2880 min Winter	180.180	0.080	1.6	5.2	O K
4320 min Winter	180.165	0.065	1.2	4.2	O K
5760 min Winter	180.156	0.056	1.0	3.7	O K
7200 min Winter	180.151	0.051	0.8	3.3	O K
8640 min Winter	180.146	0.046	0.7	3.0	O K
10080 min Winter	180.142	0.042	0.6	2.8	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)	
60 min Winter	50.812	0.0	42.6	58	
120 min Winter	31.529	0.0	52.9	94	
180 min Winter	23.534	0.0	59.2	132	
240 min Winter	19.005	0.0	63.8	168	
360 min Winter	13.943	0.0	70.2	236	
480 min Winter	11.200	0.0	75.2	302	
600 min Winter	9.441	0.0	79.2	366	
720 min Winter	8.207	0.0	82.7	428	
960 min Winter	6.574	0.0	88.3	550	
1440 min Winter	4.800	0.0	96.6	788	
2160 min Winter	3.497	0.0	105.7	1132	
2880 min Winter	2.790	0.0	112.5	1476	
4320 min Winter	2.026	0.0	122.4	2200	
5760 min Winter	1.612	0.0	130.0	2912	
7200 min Winter	1.350	0.0	136.0	3680	
8640 min Winter	1.167	0.0	141.1	4360	
10080 min Winter	1.031	0.0	145.4	5112	
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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)	18.000	Shortest Storm (mins)	15
Ratio R	0.356	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.100

Time (mins)	Area	Time (mins)	Area	Time (mins)	Area
From: To:	(ha)	From: To:	(ha)	From: To:	(ha)
0 4	0.034	4 8	0.033	8 12	0.033

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Model Details

Storage is Online Cover Level (m) 180.600

Tank or Pond Structure

Invert Level (m) 180.100

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	65.5	0.500	65.5

Orifice Outflow Control

Diameter (m) 0.061 Discharge Coefficient 0.600 Invert Level (m) 180.100

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