

Calibro Consultants Ltd				
Whitefriars	20-206 Creyke Beck Solar Farm			
Bristol	Substation Compounds			
BS1 2NT	1 in 100 yr + 25% cc	Mirco		
Date 10/07/2025	Designed by CF	Drainage		
File 20-206-Substation Compound Grav	Checked by PG	Drainage		
XP Solutions	Source Control 2020.1			

Summary of Results for 100 year Return Period (+25%)

Half Drain Time : 66 minutes.

	Storm Event		Max Level (m)	Max Depth (m)	Max Infiltration (1/s)	Max Control (1/s)	Max Σ Outflow (1/s)	Max Volume (m³)	Status
15	min S	Summer	0.099	0.099	0.0	0.9	0.9	3.5	Flood Risk
30	min S	Summer	0.120	0.120	0.0	0.9	0.9	4.5	Flood Risk
60	min S	Summer	0.134	0.134	0.0	0.9	0.9	5.2	Flood Risk
120	min S	Summer	0.126	0.126	0.0	0.9	0.9	4.8	Flood Risk
180	min S	Summer	0.116	0.116	0.0	0.9	0.9	4.3	Flood Risk
240	min S	Summer	0.106	0.106	0.0	0.9	0.9	3.8	Flood Risk
360	min S	Summer	0.088	0.088	0.0	0.9	0.9	3.0	Flood Risk
480	min S	Summer	0.075	0.075	0.0	0.9	0.9	2.3	Flood Risk
600	min S	Summer	0.067	0.067	0.0	0.8	0.8	1.9	Flood Risk
720	min S	Summer	0.061	0.061	0.0	0.8	0.8	1.7	Flood Risk
960	min S	Summer	0.053	0.053	0.0	0.7	0.7	1.3	Flood Risk
1440	min S	Summer	0.043	0.043	0.0	0.5	0.5	0.8	Flood Risk
2160	min S	Summer	0.036	0.036	0.0	0.4	0.4	0.6	Flood Risk
2880	min S	Summer	0.031	0.031	0.0	0.3	0.3	0.4	Flood Risk
4320	min S	Summer	0.026	0.026	0.0	0.2	0.2	0.3	Flood Risk
5760	min S	Summer	0.023	0.023	0.0	0.2	0.2	0.2	Flood Risk
7200	min S	Summer	0.021	0.021	0.0	0.2	0.2	0.2	Flood Risk
8640	min S	Summer	0.019	0.019	0.0	0.1	0.1	0.2	Flood Risk
10080	min S	Summer	0.018	0.018	0.0	0.1	0.1	0.1	Flood Risk
15	min W	Vinter	0.110	0.110	0.0	0.9	0.9	4.0	Flood Risk
30	min W	Vinter	0.135	0.135	0.0	0.9	0.9	5.2	Flood Risk
60	min W	Vinter	0.152	0.152	0.0	0.9	0.9	6.0	Flood Risk

	Storm Event		Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15	min	Summer	160.247	0.0	4.0	17
30	min	Summer	105.321	0.0	5.5	31
60	min	Summer	66.134	0.0	7.1	54
120	min	Summer	37.093	0.0	8.1	84
180	min	Summer	26.337	0.0	8.6	118
240	min	Summer	20.630	0.0	9.0	150
360	min	Summer	14.607	0.0	9.6	214
480	min	Summer	11.431	0.0	10.0	272
600	min	Summer	9.454	0.0	10.3	330
720	min	Summer	8.099	0.0	10.6	390
960	min	Summer	6.353	0.0	11.1	510
1440	min	Summer	4.524	0.0	11.7	740
2160	min	Summer	3.240	0.0	12.5	1104
2880	min	Summer	2.566	0.0	13.0	1468
4320	min	Summer	1.858	0.0	13.8	2200
5760	min	Summer	1.484	0.0	14.4	2936
7200	min	Summer	1.249	0.0	14.8	3608
8640	min	Summer	1.087	0.0	15.1	4400
10080	min	Summer	0.968	0.0	15.3	5088
15	min	Winter	160.247	0.0	4.6	17
30	min	Winter	105.321	0.0	6.3	31
60	min	Winter	66.134	0.0	8.1	58

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Whitefriars	20-206 Creyke Beck Solar Farm	
Bristol	Substation Compounds	
BS1 2NT	1 in 100 yr + 25% cc	Mirro
Date 10/07/2025	Designed by CF	Desinado
File 20-206-Substation Compound Grav	Checked by PG	Drainage
XP Solutions	Source Control 2020.1	•

Summary of Results for 100 year Return Period (+25%)

	Storm Event		Max Level (m)	Max Depth (m)	Max Infiltration (1/s)	Max Control (1/s)	Max Σ Outflow (1/s)	Max Volume (m³)	Status
120	min W	inter	0.139	0.139	0.0	0.9	0.9	5.4	Flood Risk
180	min W	inter	0.124	0.124	0.0	0.9	0.9	4.7	Flood Risk
240	min W	inter	0.110	0.110	0.0	0.9	0.9	4.0	Flood Risk
360	min W	inter	0.085	0.085	0.0	0.9	0.9	2.8	Flood Risk
480	min W	inter	0.069	0.069	0.0	0.9	0.9	2.0	Flood Risk
600	min W	inter	0.060	0.060	0.0	0.8	0.8	1.6	Flood Risk
720	min W	inter	0.054	0.054	0.0	0.7	0.7	1.3	Flood Risk
960	min W	inter	0.045	0.045	0.0	0.6	0.6	0.9	Flood Risk
1440	min W	inter	0.036	0.036	0.0	0.4	0.4	0.6	Flood Risk
2160	min W	inter	0.030	0.030	0.0	0.3	0.3	0.4	Flood Risk
2880	min W	inter	0.026	0.026	0.0	0.2	0.2	0.3	Flood Risk
4320	min W	inter	0.022	0.022	0.0	0.2	0.2	0.2	Flood Risk
5760	min W	inter	0.019	0.019	0.0	0.1	0.1	0.2	Flood Risk
7200	min W	inter	0.017	0.017	0.0	0.1	0.1	0.1	Flood Risk
8640	min W	inter	0.016	0.016	0.0	0.1	0.1	0.1	Flood Risk
10080	min W	inter	0.015	0.015	0.0	0.1	0.1	0.1	Flood Risk

Storm			Rain	Flooded	Discharge	Time-Peak
	Even	t	(mm/hr)	Volume	Volume	(mins)
				(m³)	(m³)	
120	min	Winter	37.093	0.0	9.1	92
180	min	Winter	26.337	0.0	9.8	128
240	min	Winter	20.630	0.0	10.2	162
360	min	Winter	14.607	0.0	10.9	224
480	min	Winter	11.431	0.0	11.3	280
600	min	Winter	9.454	0.0	11.7	340
720	min	Winter	8.099	0.0	12.0	398
960	min	Winter	6.353	0.0	12.5	510
1440	min	Winter	4.524	0.0	13.3	750
2160	min	Winter	3.240	0.0	14.2	1100
2880	min	Winter	2.566	0.0	14.8	1460
4320	min	Winter	1.858	0.0	15.7	2136
5760	min	Winter	1.484	0.0	16.4	3000
7200	min	Winter	1.249	0.0	17.0	3496
8640	min	Winter	1.087	0.0	17.4	4408
10080	min	Winter	0.968	0.0	17.7	5160

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Bristol	Substation Compounds		
BS1 2NT	1 in 100 yr + 25% cc	Micco	
Date 10/07/2025	Designed by CF	Drainage	
File 20-206-Substation Compound Grav	Checked by PG	Dialilads	
XP Solutions	Source Control 2020.1		

Rainfall Details

Rainfall Model FEH Winter Storms Yes
Return Period (years) 100 Cv (Summer) 0.750
FEH Rainfall Version 2013 Cv (Winter) 0.840
Site Location GB 485890 394120 SK 85890 94120 Shortest Storm (mins) 15
Data Type Point Longest Storm (mins) 10080
Summer Storms Yes Climate Change % +25

Time Area Diagram

Total Area (ha) 0.016

Time (mins) Area From: To: (ha)

0 4 0.016

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Model Details

Storage is Online Cover Level (m) 0.300

Porous Car Park Structure

10.0	Width (m)	0.00000	Infiltration Coefficient Base (m/hr)
16.1	Length (m)	1000	Membrane Percolation (mm/hr)
300.0	Slope (1:X)	44.7	Max Percolation (1/s)
5	Depression Storage (mm)	5.0	Safety Factor
3	Evaporation (mm/day)	0.30	Porosity
0	Membrane Depth (m)	0.000	Invert Level (m)

Hydro-Brake® Optimum Outflow Control

Unit Reference MD-SHE-0054-9000-0300-9000 Design Head (m) 0.300 Design Flow (1/s) 0.9 Flush-Flo™ Calculated Objective Minimise upstream storage Application Surface Sump Available Yes Diameter (mm) 54 Invert Level (m) 0.000 Minimum Outlet Pipe Diameter (mm) 75 1200 Suggested Manhole Diameter (mm)

Control Points	Head (m)	Flow (1/s)	Control Points	Head (m)	Flow (1/s)
Design Point (Calculated)	0.300	0.9	Kick-Flo®	0.212	0.8
Flush-Flo**	0.087	0.9	Mean Flow over Head Range	_	0.7

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 (1/s)	Depth (m) F	low (l/s)	Depth (m) F	low (l/s)	Depth (m) Flo	w (1/s)	Depth (m)	Flow $(1/s)$
0.100	0.9	0.800	1.4	2.000	2.1	4.000	2.9	7.000	3.9
0.200	0.8	1.000	1.5	2.200	2.2	4.500	3.1	7.500	4.0
0.300	0.9	1.200	1.7	2.400	2.3	5.000	3.3	8.000	4.2
0.400	1.0	1.400	1.8	2.600	2.4	5.500	3.4	8.500	4.3
0.500	1.1	1.600	1.9	3.000	2.5	6.000	3.6	9.000	4.4
0.600	1.2	1.800	2.0	3.500	2.7	6.500	3.7	9.500	4.5

























