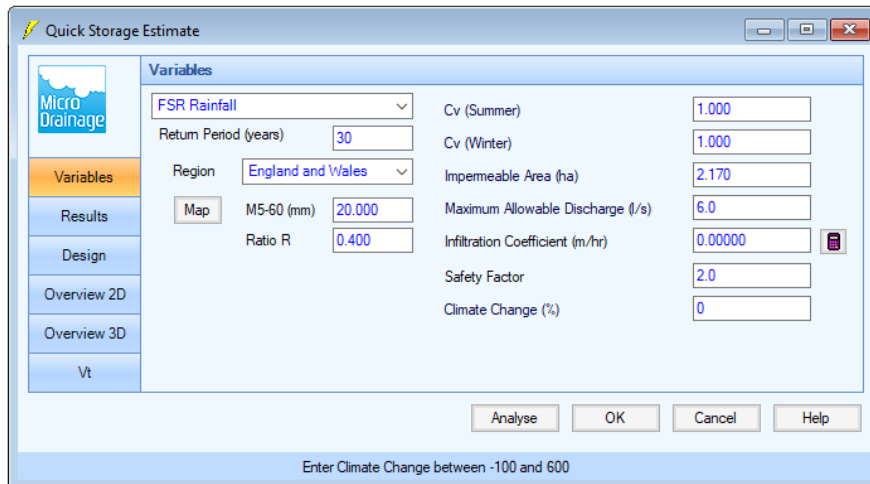


Appendix C Calculations

1 in 30 Year Quick Storage Estimate Results

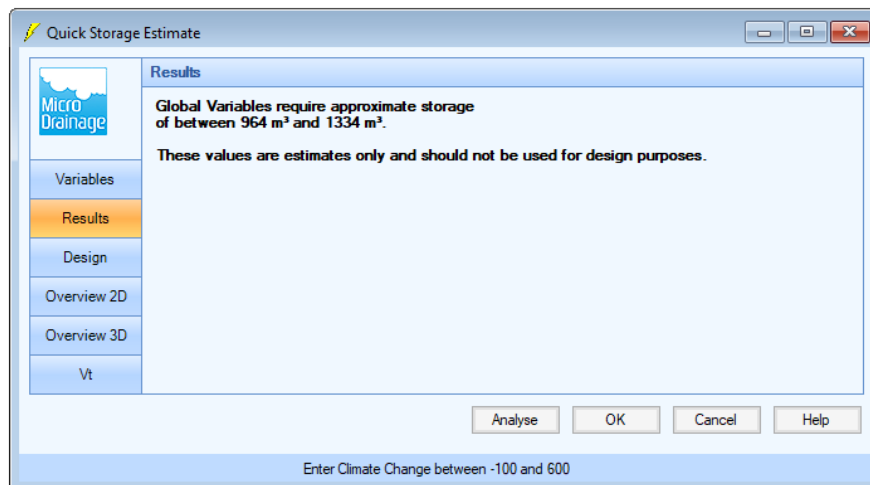


The 'Quick Storage Estimate' dialog box is shown with the 'Variables' tab selected. The 'Micro Drainage' logo is in the top left. The 'Variables' tab is highlighted in the left sidebar. The main area contains the following fields:

Variable	Value
FSR Rainfall	[Dropdown]
Return Period (years)	30
Region	England and Wales
Map	M5-60 (mm)
Ratio R	0.400
Cv (Summer)	1.000
Cv (Winter)	1.000
Impervious Area (ha)	2.170
Maximum Allowable Discharge (l/s)	6.0
Infiltration Coefficient (m/hr)	0.00000
Safety Factor	2.0
Climate Change (%)	0

Buttons: Analyse, OK, Cancel, Help

Enter Climate Change between -100 and 600



The 'Quick Storage Estimate' dialog box is shown with the 'Results' tab selected. The 'Micro Drainage' logo is in the top left. The 'Results' tab is highlighted in the left sidebar. The main area contains the following text:

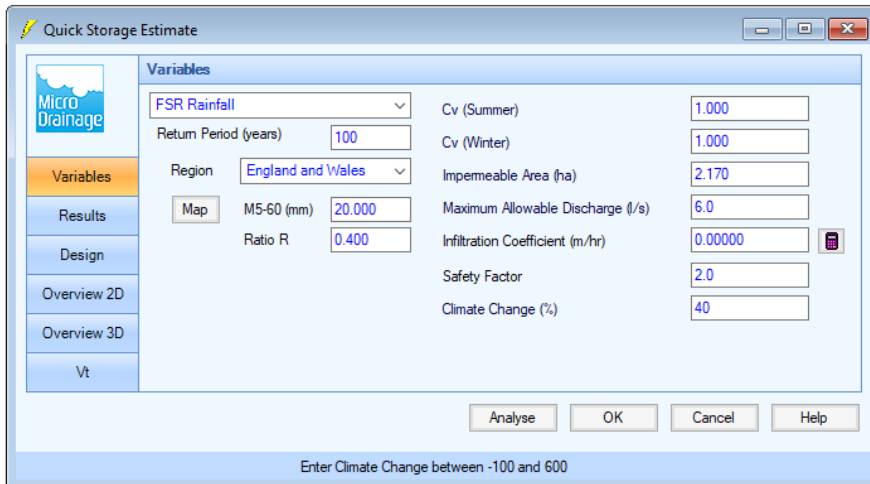
Global Variables require approximate storage of between 964 m³ and 1334 m³.

These values are estimates only and should not be used for design purposes.

Buttons: Analyse, OK, Cancel, Help

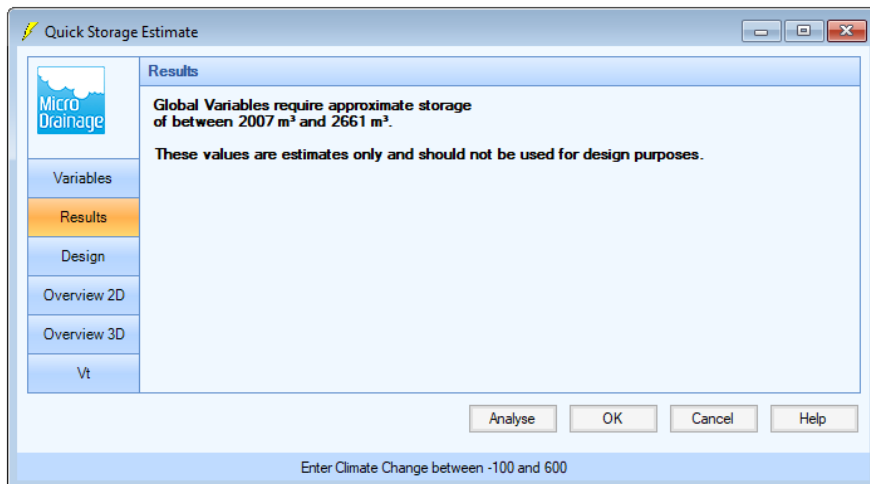
Enter Climate Change between -100 and 600

1 in 100 Year + 40% CC Quick Storage Estimate Results



Micro Drainage Quick Storage Estimate dialog box. The 'Variables' tab is selected. The 'FSR Rainfall' dropdown is set to 'FSR Rainfall'. The 'Return Period (years)' is set to '100'. The 'Region' dropdown is set to 'England and Wales'. The 'Map' button is visible. The 'M5-60 (mm)' is set to '20.000'. The 'Ratio R' is set to '0.400'. The 'Cv (Summer)' is set to '1.000'. The 'Cv (Winter)' is set to '1.000'. The 'Impermeable Area (ha)' is set to '2.170'. The 'Maximum Allowable Discharge (l/s)' is set to '6.0'. The 'Infiltration Coefficient (m/hr)' is set to '0.00000'. The 'Safety Factor' is set to '2.0'. The 'Climate Change (%)' is set to '40'. The 'Analyse', 'OK', 'Cancel', and 'Help' buttons are at the bottom. A status bar at the bottom reads 'Enter Climate Change between -100 and 600'.

Variable	Value
FSR Rainfall	FSR Rainfall
Return Period (years)	100
Region	England and Wales
M5-60 (mm)	20.000
Ratio R	0.400
Cv (Summer)	1.000
Cv (Winter)	1.000
Impermeable Area (ha)	2.170
Maximum Allowable Discharge (l/s)	6.0
Infiltration Coefficient (m/hr)	0.00000
Safety Factor	2.0
Climate Change (%)	40



Micro Drainage Quick Storage Estimate Results dialog box. The 'Results' tab is selected. The text reads: 'Global Variables require approximate storage of between 2007 m³ and 2661 m³. These values are estimates only and should not be used for design purposes.' The 'Analyse', 'OK', 'Cancel', and 'Help' buttons are at the bottom. A status bar at the bottom reads 'Enter Climate Change between -100 and 600'.

Global Variables require approximate storage of between 2007 m³ and 2661 m³.
These values are estimates only and should not be used for design purposes.

Atrium Network Calculations (Including Kennels and Existing Car Park)

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	1	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	20.000	Minimum Backdrop Height (m)	1.500
Ratio-R	0.400	Preferred Cover Depth (m)	0.600
CV	1.000	Include Intermediate Ground	✓
Time of Entry (mins)	4.00	Enforce best practice design rules	x

Links (Input)

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.012	2	1	62.132	0.600	71.190	70.968	0.222	279.9	300	7.76	44.4
1.011	3	2	13.536	0.600	71.250	71.190	0.060	225.6	600	7.17	46.2
1.010	4	3	9.835	0.600	71.270	71.250	0.020	491.7	600	7.03	46.6
1.009	5	4	4.899	0.600	71.560	71.270	0.290	16.9	450	6.88	47.1
1.008	6	5	5.599	0.600	71.660	71.560	0.100	56.0	450	6.87	47.2
1.007	11	6	54.103	0.600	73.350	71.660	1.690	32.0	225	6.83	47.3
10.001	9	6	61.885	0.600	71.930	71.660	0.270	229.2	225	6.11	49.9
11.001	7	6	62.670	0.600	72.000	71.660	0.340	184.3	225	6.40	48.8
11.000	8	7	41.712	0.600	72.070	72.000	0.070	595.9	225	5.32	50.0
10.000	10	9	60.862	0.600	72.370	71.930	0.440	138.3	225	4.91	50.0
1.006	35	11	47.830	0.600	73.600	73.350	0.250	191.3	225	6.44	48.7
4.008	23	11	43.817	0.600	74.920	73.425	1.495	29.3	225	6.28	49.3
7.008	13	11	14.527	0.600	73.877	73.350	0.527	27.6	225	6.09	50.0
9.000	12	11	65.862	0.600	74.161	73.350	0.811	81.2	225	4.76	50.0
7.007	14	13	6.225	0.600	73.903	73.877	0.026	239.4	300	5.99	50.0
7.006	15	14	17.970	0.600	74.084	73.978	0.106	169.5	225	5.89	50.0
7.005	16	15	24.380	0.600	74.228	74.084	0.144	169.3	225	5.59	50.0
7.004	17	16	28.570	0.600	74.397	74.228	0.169	169.1	225	5.19	50.0
7.003	18	17	19.289	0.600	74.766	74.472	0.293	65.7	150	4.71	50.0
7.002	19	18	13.166	0.600	77.338	74.816	2.522	5.2	100	4.45	50.0
7.001	20	19	10.850	0.600	77.521	77.338	0.183	59.3	100	4.39	50.0
7.000	22	20	12.507	0.600	77.732	77.521	0.211	59.3	100	4.21	50.0
8.000	21	20	10.298	0.600	78.032	77.521	0.511	20.2	100	4.10	50.0
4.007	24	23	14.017	0.600	75.401	74.920	0.481	29.2	225	5.98	50.0
4.006	27	24	8.228	0.600	75.450	75.401	0.049	167.9	225	5.88	50.0
6.001	25	24	37.608	0.600	76.352	75.526	0.826	45.5	100	4.86	50.0
6.000	26	25	18.699	0.600	76.667	76.352	0.315	59.4	100	4.31	50.0
4.005	28	27	17.262	0.600	75.552	75.450	0.102	169.2	225	5.74	50.0
4.004	30	28	9.803	0.600	77.308	77.250	0.058	169.0	225	5.46	50.0
5.000	29	28	17.356	0.600	77.478	75.677	1.801	9.6	100	4.12	50.0
4.003	31	30	20.351	0.600	77.428	77.308	0.120	169.6	225	5.29	50.0
4.002	32	31	21.592	0.600	77.820	77.503	0.317	68.2	150	4.95	50.0
4.001	33	32	21.745	0.600	78.036	77.820	0.216	100.7	150	4.66	50.0
4.000	34	33	17.812	0.600	78.213	78.036	0.177	100.6	150	4.30	50.0
1.005	37	35	52.589	0.600	77.080	73.600	3.480	15.1	225	5.60	50.0
3.000	36	35	42.048	0.600	76.427	73.725	2.702	15.6	100	4.36	50.0
1.004	38	37	19.995	0.600	78.077	77.080	0.997	20.1	225	5.34	50.0
1.003	39	38	28.180	0.600	78.243	78.077	0.166	169.8	225	5.22	50.0
1.002	40	39	10.360	0.600	78.421	78.318	0.103	100.6	150	4.75	50.0
1.001	42	40	12.470	0.600	78.763	78.471	0.292	42.7	100	4.58	50.0
2.000	41	40	25.671	0.600	78.903	78.471	0.432	59.4	100	4.43	50.0
1.000	43	42	24.356	0.600	79.173	78.763	0.410	59.4	100	4.41	50.0

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Normal
FSR Region	England and Wales	Skip Steady State	x
M5-60 (mm)	20.000	Drain Down Time (mins)	240
Ratio-R	0.400	Additional Storage (m ³ /ha)	20.0
Summer CV	0.950	Check Discharge Rate(s)	x
Winter CV	1.000	Check Discharge Volume	x

Storm Durations

15 | 30 | 60 | 120 | 180 | 240 | 480 | 720 | 1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
30	0	0	0
100	40	0	0

Node 18 Online Orifice Control

Flap Valve	x	Invert Level (m)	74.766	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.100		

Node 32 Online Orifice Control

Flap Valve	x	Invert Level (m)	77.820	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.100		

Node 17 Online Orifice Control

Flap Valve	x	Invert Level (m)	74.397	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.100		

Node 15 Online Orifice Control

Flap Valve	x	Invert Level (m)	74.084	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.100		

Node 28 Online Orifice Control

Flap Valve	x	Invert Level (m)	75.552	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.100		

Node 2 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	71.190	Product Number	CTL-SHE-0218-2660-1500-2660
Design Depth (m)	1.500	Min Outlet Diameter (m)	0.300
Design Flow (l/s)	26.6	Min Node Diameter (mm)	1800

Node 38 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	78.077	Product Number	CTL-SHE-0049-1200-1200-1200
Design Depth (m)	1.200	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	1.2	Min Node Diameter (mm)	1200

Node 18 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	74.766	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	41	Depth (m)	0.800
Safety Factor	2.0	Width (m)	7.000	Inf Depth (m)	
Porosity	1.00	Length (m)	6.000		

Node 21 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	78.032	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	0	Depth (m)	0.800
Safety Factor	2.0	Width (m)	7.000	Inf Depth (m)	
Porosity	0.95	Length (m)	6.000		

Node 22 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	77.732	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	0	Depth (m)	0.800
Safety Factor	2.0	Width (m)	7.000	Inf Depth (m)	
Porosity	0.95	Length (m)	6.000		

Node 32 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	77.820	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	23	Depth (m)	0.800
Safety Factor	2.0	Width (m)	7.000	Inf Depth (m)	
Porosity	0.95	Length (m)	6.000		

Node 17 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	74.397	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	78	Depth (m)	0.800
Safety Factor	2.0	Width (m)	7.000	Inf Depth (m)	
Porosity	0.95	Length (m)	6.000		

Node 15 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	74.084	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	94	Depth (m)	0.800
Safety Factor	2.0	Width (m)	7.000	Inf Depth (m)	
Porosity	0.95	Length (m)	6.000		

Node 28 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	75.552	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	70	Depth (m)	0.800
Safety Factor	2.0	Width (m)	7.000	Inf Depth (m)	
Porosity	0.95	Length (m)	6.000		

Node 29 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	77.478	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	20	Depth (m)	0.800
Safety Factor	2.0	Width (m)	7.000	Inf Depth (m)	
Porosity	0.95	Length (m)	6.000		

Node 3 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	71.250
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	0

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	1000.0	0.0	1.500	2000.0	0.0

Node 40 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	78.421	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	0.800
Safety Factor	2.0	Width (m)	8.000	Inf Depth (m)	
Porosity	0.95	Length (m)	10.000		

Results for 1 year Critical Storm Duration. Lowest mass balance: 99.57%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	43	10	79.241	0.068	5.9	0.1371	0.0000	OK
15 minute summer	42	10	78.823	0.060	5.9	0.0681	0.0000	OK
15 minute summer	41	10	78.955	0.052	4.1	0.0907	0.0000	OK
180 minute winter	40	164	78.609	0.188	4.0	10.7738	0.0000	SURCHARGED
180 minute winter	39	164	78.609	0.366	3.1	0.5639	0.0000	SURCHARGED
180 minute winter	38	164	78.609	0.532	1.8	0.6015	0.0000	SURCHARGED
15 minute summer	37	163	77.094	0.014	0.9	0.0153	0.0000	OK
15 minute summer	36	10	76.488	0.061	10.4	0.1195	0.0000	OK
15 minute summer	35	11	73.681	0.081	11.2	0.0917	0.0000	OK
15 minute summer	34	10	78.295	0.082	9.9	0.2085	0.0000	OK
15 minute summer	33	10	78.143	0.107	14.1	0.1803	0.0000	OK
30 minute winter	32	23	77.959	0.139	13.0	4.5646	0.0000	OK
30 minute winter	31	23	77.490	0.061	6.2	0.0694	0.0000	OK
30 minute winter	30	24	77.371	0.063	6.2	0.0711	0.0000	OK
15 minute summer	29	11	77.535	0.057	13.9	1.2723	0.0000	OK
60 minute winter	28	45	75.806	0.255	16.0	9.3676	0.0000	SURCHARGED
30 minute summer	27	18	75.540	0.090	12.7	0.1859	0.0000	OK
15 minute summer	26	1	76.667	0.000	0.0	0.0000	0.0000	OK
15 minute summer	25	1	76.352	0.000	0.0	0.0000	0.0000	OK
30 minute summer	24	18	75.458	0.057	12.6	0.0645	0.0000	OK
30 minute summer	23	19	74.975	0.055	12.6	0.0624	0.0000	OK
15 minute summer	22	12	77.751	0.019	0.9	0.1510	0.0000	OK
15 minute summer	21	1	78.032	0.000	0.0	0.0000	0.0000	OK
15 minute summer	20	12	77.540	0.019	0.6	0.0213	0.0000	OK
15 minute summer	19	9	77.384	0.046	11.2	0.1091	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	43	1.000	42	5.9	1.118	0.750	0.1284	
15 minute summer	42	1.001	40	5.8	1.211	0.622	0.0595	
15 minute summer	41	2.000	40	4.0	0.997	0.514	0.1040	
180 minute winter	40	1.002	39	2.1	0.607	0.118	0.1824	
180 minute winter	39	1.003	38	1.8	0.316	0.046	1.1207	
180 minute winter	38	Hydro-Brake®	37	0.9				
15 minute summer	37	1.005	35	0.9	0.559	0.007	0.3612	
15 minute summer	36	3.000	35	10.4	2.085	0.670	0.2089	
15 minute summer	35	1.006	11	10.6	0.535	0.283	0.9743	
15 minute summer	34	4.000	33	9.9	0.848	0.561	0.2078	
15 minute summer	33	4.001	32	14.1	1.177	0.796	0.2880	
30 minute winter	32	Orifice	31	6.2				
30 minute winter	31	4.003	30	6.2	0.699	0.156	0.1811	
30 minute winter	30	4.004	28	6.2	0.712	0.156	0.0855	
15 minute summer	29	5.000	28	11.5	2.538	0.583	0.0784	
60 minute winter	28	Orifice	27	9.4				
30 minute summer	27	4.006	24	12.6	1.124	0.316	0.0935	
15 minute summer	26	6.000	25	0.0	0.000	0.000	0.0000	
15 minute summer	25	6.001	24	0.0	0.000	0.000	0.0000	
30 minute summer	24	4.007	23	12.6	1.636	0.130	0.1079	
30 minute summer	23	4.008	11	12.5	1.664	0.130	0.3368	
15 minute summer	22	7.000	20	0.6	0.606	0.079	0.0130	
15 minute summer	21	8.000	20	0.0	0.000	0.000	0.0053	
15 minute summer	20	7.001	19	0.6	0.516	0.077	0.0230	
15 minute summer	19	7.002	18	11.3	3.140	0.421	0.0629	

Results for 1 year Critical Storm Duration. Lowest mass balance: 99.57%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute winter	18	23	74.916	0.151	14.2	5.2870	0.0000	SURCHARGED
60 minute winter	17	46	74.570	0.173	10.9	6.1624	0.0000	OK
15 minute summer	16	10	74.311	0.083	11.3	0.1581	0.0000	OK
60 minute winter	15	54	74.283	0.199	11.8	7.0812	0.0000	OK
60 minute winter	14	54	73.971	0.068	8.1	0.0767	0.0000	OK
60 minute winter	13	54	73.920	0.043	8.1	0.0489	0.0000	OK
15 minute summer	12	10	74.254	0.093	21.0	0.3548	0.0000	OK
15 minute summer	11	11	73.499	0.149	67.5	0.3992	0.0000	OK
15 minute summer	10	12	73.701	1.331	60.2	6.7691	0.0000	FLOOD RISK
15 minute summer	9	11	73.378	1.448	75.3	5.0686	0.0000	SURCHARGED
15 minute winter	8	11	72.675	0.605	21.1	2.1945	0.0000	SURCHARGED
15 minute summer	7	11	72.648	0.648	44.7	2.6733	0.0000	SURCHARGED
15 minute summer	6	10	72.383	0.723	179.2	1.0350	0.0000	SURCHARGED
15 minute summer	5	10	72.357	0.797	207.3	1.1410	0.0000	SURCHARGED
15 minute summer	4	10	72.333	1.063	228.3	1.8777	0.0000	SURCHARGED
180 minute winter	3	140	71.410	0.160	61.0	169.0571	0.0000	OK
180 minute winter	2	140	71.409	0.219	23.5	0.5567	0.0000	OK
15 minute summer	1	1	70.968	0.000	13.5	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
30 minute winter	18	Orifice	17	6.6				
60 minute winter	17	Orifice	16	7.3				
15 minute summer	16	7.005	15	11.4	0.820	0.286	0.4278	
60 minute winter	15	Orifice	14	8.1				
60 minute winter	14	7.007	13	8.1	0.902	0.113	0.0564	
60 minute winter	13	7.008	11	8.1	1.082	0.081	0.1640	
15 minute summer	12	9.000	11	20.8	1.062	0.360	1.3881	
15 minute summer	11	1.007	6	65.9	1.776	0.714	1.8298	
15 minute summer	10	10.000	9	40.3	1.013	0.913	2.4205	
15 minute summer	9	10.001	6	72.8	1.830	2.130	2.4612	
15 minute winter	8	11.000	7	22.0	0.553	1.047	1.6589	
15 minute summer	7	11.001	6	46.8	1.177	1.226	2.4925	
15 minute summer	6	1.008	5	207.3	2.119	0.479	0.8871	
15 minute summer	5	1.009	4	228.3	1.861	0.289	0.7762	
15 minute summer	4	1.010	3	257.5	2.361	0.835	1.3998	
180 minute winter	3	1.011	2	23.5	0.387	0.051	1.0366	
180 minute winter	2	Hydro-Brake®	1	23.5				277.5

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.57%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	43	11	79.674	0.501	14.6	1.0171	0.0000	FLOOD RISK
15 minute winter	42	13	78.980	0.217	9.7	0.2454	0.0000	SURCHARGED
15 minute summer	41	11	79.103	0.200	10.0	0.3483	0.0000	SURCHARGED
180 minute winter	40	176	78.929	0.508	10.2	35.5490	0.0000	SURCHARGED
180 minute winter	39	176	78.929	0.686	3.5	1.0566	0.0000	SURCHARGED
180 minute winter	38	176	78.929	0.852	1.9	0.9631	0.0000	SURCHARGED
180 minute winter	37	176	77.094	0.014	1.0	0.0160	0.0000	OK
15 minute summer	36	12	77.372	0.945	25.5	1.8448	0.0000	SURCHARGED
15 minute summer	35	12	74.312	0.712	27.2	0.8049	0.0000	SURCHARGED
15 minute summer	34	11	78.796	0.583	24.4	1.4760	0.0000	FLOOD RISK
15 minute summer	33	11	78.567	0.531	27.8	0.8950	0.0000	FLOOD RISK
30 minute winter	32	25	78.163	0.343	27.4	13.0147	0.0000	SURCHARGED
30 minute winter	31	25	77.513	0.085	11.3	0.0959	0.0000	OK
30 minute winter	30	26	77.395	0.087	11.3	0.0984	0.0000	OK
15 minute summer	29	12	77.609	0.131	34.1	4.4607	0.0000	SURCHARGED
60 minute winter	28	49	76.233	0.681	35.2	27.0504	0.0000	SURCHARGED
15 minute summer	27	10	75.587	0.137	27.2	0.2834	0.0000	OK
15 minute summer	26	1	76.667	0.000	0.0	0.0000	0.0000	OK
15 minute summer	25	1	76.352	0.000	0.0	0.0000	0.0000	OK
15 minute summer	24	10	75.487	0.087	27.0	0.0980	0.0000	OK
15 minute summer	23	10	75.000	0.080	26.8	0.0908	0.0000	OK
15 minute summer	22	11	77.762	0.030	2.3	0.3497	0.0000	OK
15 minute summer	21	1	78.032	0.000	0.0	0.0000	0.0000	OK
15 minute summer	20	12	77.551	0.030	1.5	0.0337	0.0000	OK
15 minute summer	19	11	77.503	0.165	27.6	0.3914	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	43	1.000	42	9.9	1.270	1.264	0.1906	
15 minute winter	42	1.001	40	9.0	1.286	0.971	0.0976	
15 minute summer	41	2.000	40	8.1	1.086	1.026	0.2009	
180 minute winter	40	1.002	39	-2.3	0.590	-0.127	0.1824	
180 minute winter	39	1.003	38	1.9	0.374	0.047	1.1207	
180 minute winter	38	Hydro-Brake®	37	1.0				
180 minute winter	37	1.005	35	1.0	0.604	0.008	0.2528	
15 minute summer	36	3.000	35	15.6	2.087	1.011	0.3290	
15 minute summer	35	1.006	11	22.1	0.556	0.590	1.9023	
15 minute summer	34	4.000	33	18.2	1.034	1.029	0.3136	
15 minute summer	33	4.001	32	25.4	1.444	1.436	0.3828	
30 minute winter	32	Orifice	31	11.3				
30 minute winter	31	4.003	30	11.3	0.812	0.284	0.2830	
30 minute winter	30	4.004	28	11.3	0.835	0.283	0.1326	
15 minute summer	29	5.000	28	18.7	2.728	0.952	0.1358	
60 minute winter	28	Orifice	27	16.6				
15 minute summer	27	4.006	24	27.0	1.369	0.675	0.1622	
15 minute summer	26	6.000	25	0.0	0.000	0.000	0.0000	
15 minute summer	25	6.001	24	0.0	0.000	0.000	0.0000	
15 minute summer	24	4.007	23	26.8	2.005	0.277	0.1876	
15 minute summer	23	4.008	11	26.5	1.736	0.275	1.1494	
15 minute summer	22	7.000	20	1.5	0.775	0.193	0.0248	
15 minute summer	21	8.000	20	0.0	0.000	0.000	0.0101	
15 minute summer	20	7.001	19	1.5	0.676	0.193	0.0525	
15 minute summer	19	7.002	18	26.1	3.459	0.975	0.1030	

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.57%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute winter	18	24	75.145	0.380	35.0	15.2239	0.0000	SURCHARGED
60 minute winter	17	56	74.846	0.449	23.0	17.8928	0.0000	SURCHARGED
60 minute winter	16	58	74.551	0.323	17.9	0.6134	0.0000	SURCHARGED
60 minute winter	15	59	74.534	0.450	23.1	17.4938	0.0000	SURCHARGED
15 minute winter	14	13	74.255	0.351	11.0	0.3973	0.0000	SURCHARGED
15 minute summer	13	12	74.253	0.376	14.2	0.4254	0.0000	SURCHARGED
15 minute winter	12	12	74.524	0.363	48.4	1.3890	0.0000	SURCHARGED
15 minute winter	11	12	74.250	0.900	119.7	2.4135	0.0000	SURCHARGED
15 minute winter	10	8	73.981	1.611	160.8	8.1919	39.5186	FLOOD
15 minute summer	9	9	74.105	2.175	123.5	7.6147	2.3222	FLOOD
15 minute winter	8	8	73.023	0.953	51.8	3.4546	7.6298	FLOOD
15 minute winter	7	8	72.950	0.950	82.2	3.9188	7.3707	FLOOD
15 minute winter	6	8	72.767	1.107	247.7	1.5837	0.0000	SURCHARGED
15 minute winter	5	8	72.730	1.170	248.0	1.6747	0.0000	SURCHARGED
15 minute winter	4	8	72.696	1.426	258.7	2.5202	0.0000	SURCHARGED
180 minute winter	3	180	71.651	0.401	130.7	455.1361	0.0000	OK
240 minute winter	2	228	71.653	0.463	29.3	1.1787	0.0000	SURCHARGED
15 minute summer	1	1	70.968	0.000	22.8	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
30 minute winter	18	Orifice	17	12.0				
60 minute winter	17	Orifice	16	11.4				
60 minute winter	16	7.005	15	17.1	0.583	0.429	0.9696	
60 minute winter	15	Orifice	14	13.2				
15 minute winter	14	7.007	13	14.2	0.989	0.198	0.4384	
15 minute summer	13	7.008	11	20.2	1.177	0.203	0.5778	
15 minute winter	12	9.000	11	42.4	1.138	0.735	2.6194	
15 minute winter	11	1.007	6	100.1	2.518	1.085	2.1517	
15 minute winter	10	10.000	9	42.7	1.074	0.968	2.4205	
15 minute summer	9	10.001	6	89.5	2.252	2.621	2.4612	
15 minute winter	8	11.000	7	26.6	0.670	1.268	1.6589	
15 minute winter	7	11.001	6	60.9	1.532	1.597	2.4925	
15 minute winter	6	1.008	5	248.0	2.274	0.573	0.8871	
15 minute winter	5	1.009	4	258.7	2.218	0.328	0.7762	
15 minute winter	4	1.010	3	276.9	2.748	0.898	1.4024	
180 minute winter	3	1.011	2	27.8	0.377	0.061	2.9256	
240 minute winter	2	Hydro-Brake®	1	26.6				615.4

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.57%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	43	9	79.873	0.700	26.5	1.4217	2.7644	FLOOD
180 minute winter	42	124	79.381	0.618	5.4	0.6992	0.0000	SURCHARGED
15 minute summer	41	10	79.603	0.700	18.1	1.2215	0.6964	FLOOD
180 minute winter	40	120	79.358	0.937	18.2	58.4162	0.0000	SURCHARGED
180 minute winter	39	120	79.336	1.093	10.3	1.6849	0.0000	SURCHARGED
480 minute winter	38	296	79.323	1.246	6.7	1.4092	17.3727	FLOOD
120 minute summer	37	98	77.095	0.015	1.2	0.0174	0.0000	OK
15 minute winter	36	9	77.767	1.340	43.5	2.6157	5.5869	FLOOD
15 minute summer	35	11	74.874	1.274	47.1	1.4414	0.0000	SURCHARGED
15 minute summer	34	9	78.963	0.750	44.3	1.8998	5.2607	FLOOD
15 minute summer	33	10	78.838	0.802	35.7	1.3514	0.1172	FLOOD
60 minute winter	32	45	78.441	0.621	33.8	24.5655	0.0000	SURCHARGED
60 minute winter	31	42	77.739	0.310	15.8	0.3511	0.0000	SURCHARGED
60 minute winter	30	42	77.716	0.407	16.6	0.4605	0.0000	SURCHARGED
60 minute winter	29	48	77.844	0.366	28.7	14.5722	0.0000	SURCHARGED
60 minute winter	28	42	77.701	2.150	49.1	34.1019	0.0000	SURCHARGED
15 minute summer	27	10	75.638	0.188	44.1	0.3882	0.0000	OK
15 minute summer	26	1	76.667	0.000	0.0	0.0000	0.0000	OK
15 minute summer	25	1	76.352	0.000	0.0	0.0000	0.0000	OK
15 minute summer	24	10	75.513	0.113	43.9	0.1276	0.0000	OK
15 minute summer	23	11	75.072	0.152	44.0	0.1715	0.0000	OK
15 minute winter	22	14	77.833	0.101	10.9	2.9788	0.0000	SURCHARGED
15 minute summer	21	1	78.032	0.000	0.0	0.0000	0.0000	OK
15 minute winter	20	12	78.021	0.500	8.7	0.5655	0.0000	SURCHARGED
15 minute summer	19	10	78.262	0.924	48.2	2.1899	0.9987	FLOOD

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	43	1.000	42	11.1	1.423	1.416	0.1906	
180 minute winter	42	1.001	40	5.1	0.766	0.545	0.0976	
15 minute summer	41	2.000	40	10.9	1.393	1.386	0.2009	
180 minute winter	40	1.002	39	7.1	0.671	0.401	0.1824	
180 minute winter	39	1.003	38	10.3	0.389	0.259	1.1207	
480 minute winter	38	Hydro-Brake®	37	1.2				
120 minute summer	37	1.005	35	1.2	0.628	0.009	1.0752	
15 minute winter	36	3.000	35	16.0	2.108	1.035	0.3290	
15 minute summer	35	1.006	11	-30.1	-0.770	-0.804	1.9023	
15 minute summer	34	4.000	33	18.0	1.020	1.015	0.3136	
15 minute summer	33	4.001	32	30.2	1.716	1.707	0.3828	
60 minute winter	32	Orifice	31	15.8				
60 minute winter	31	4.003	30	16.6	0.854	0.416	0.8094	
60 minute winter	30	4.004	28	17.1	0.886	0.429	0.3899	
60 minute winter	29	5.000	28	18.5	2.372	0.940	0.1358	
60 minute winter	28	Orifice	27	30.1				
15 minute summer	27	4.006	24	43.9	1.558	1.098	0.2277	
15 minute summer	26	6.000	25	0.0	0.000	0.000	0.0000	
15 minute summer	25	6.001	24	0.0	0.000	0.000	0.0000	
15 minute summer	24	4.007	23	44.0	2.217	0.455	0.3270	
15 minute summer	23	4.008	11	42.3	1.979	0.439	1.4947	
15 minute winter	22	7.000	20	-7.7	-1.043	-0.982	0.0979	
15 minute summer	21	8.000	20	0.0	0.000	0.000	0.0403	
15 minute winter	20	7.001	19	-8.7	1.401	-1.103	0.0849	
15 minute summer	19	7.002	18	27.0	3.450	1.009	0.1030	

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.57%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	18	47	75.559	0.793	42.0	33.1651	0.0000	SURCHARGED
60 minute winter	17	43	75.251	0.854	37.5	32.9646	7.5278	FLOOD
60 minute winter	16	43	75.210	0.982	25.1	1.8658	0.0794	FLOOD
60 minute winter	15	43	75.208	1.124	36.2	32.5904	0.0000	FLOOD RISK
30 minute summer	14	18	74.793	0.890	17.7	1.0066	0.0000	FLOOD RISK
60 minute winter	13	42	74.790	0.912	21.1	1.0320	0.0000	FLOOD RISK
15 minute winter	12	9	74.986	0.825	88.0	3.1565	11.2963	FLOOD
15 minute winter	11	10	74.777	1.427	166.8	3.8272	5.3506	FLOOD
30 minute winter	10	12	73.981	1.611	213.0	8.1919	112.7153	FLOOD
15 minute winter	9	7	74.105	2.175	203.9	7.6147	23.0533	FLOOD
30 minute winter	8	13	73.023	0.953	71.2	3.4546	22.3571	FLOOD
15 minute winter	7	7	72.950	0.950	132.8	3.9188	23.8532	FLOOD
15 minute winter	6	7	72.952	1.292	262.1	1.8493	0.0000	SURCHARGED
15 minute winter	5	7	72.921	1.361	262.1	1.9475	0.0000	SURCHARGED
15 minute winter	4	7	72.889	1.619	270.3	2.8601	0.0000	SURCHARGED
240 minute winter	3	244	72.015	0.765	192.1	961.5769	0.0000	SURCHARGED
240 minute winter	2	244	72.015	0.825	27.6	2.0989	0.0000	SURCHARGED
15 minute summer	1	1	70.968	0.000	25.5	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute winter	18	Orifice	17	13.1				
60 minute winter	17	Orifice	16	12.5				
60 minute winter	16	7.005	15	23.8	0.658	0.598	0.9696	
60 minute winter	15	Orifice	14	18.5				
30 minute summer	14	7.007	13	20.6	1.128	0.289	0.4384	
60 minute winter	13	7.008	11	25.7	1.477	0.259	0.5778	
15 minute winter	12	9.000	11	45.5	1.208	0.789	2.6194	
15 minute winter	11	1.007	6	110.9	2.788	1.202	2.1517	
30 minute winter	10	10.000	9	42.8	1.075	0.969	2.4205	
15 minute winter	9	10.001	6	90.7	2.280	2.654	2.4612	
30 minute winter	8	11.000	7	27.1	0.681	1.288	1.6589	
15 minute winter	7	11.001	6	60.6	1.525	1.590	2.4925	
15 minute winter	6	1.008	5	262.1	2.307	0.606	0.8871	
15 minute winter	5	1.009	4	270.3	2.308	0.342	0.7762	
15 minute winter	4	1.010	3	286.4	2.797	0.928	1.4025	
240 minute winter	3	1.011	2	27.6	0.379	0.060	3.8128	
240 minute winter	2	Hydro-Brake®	1	26.6				649.0

Atrium Car Park (North) Network Calculations

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	1	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	20.000	Minimum Backdrop Height (m)	1.500
Ratio-R	0.400	Preferred Cover Depth (m)	0.300
CV	1.000	Include Intermediate Ground	✓
Time of Entry (mins)	4.00	Enforce best practice design rules	✓

Links (Input)

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.003	2	1	14.355	0.600	76.016	75.837	0.179	80.0	150	5.04	50.0
1.002	5	2	22.436	0.600	76.346	76.066	0.280	80.0	100	4.83	50.0
2.001	3	2	11.003	0.600	76.454	76.016	0.438	25.1	150	4.24	50.0
2.000	4	3	7.707	0.600	76.600	76.504	0.096	80.0	100	4.15	50.0
1.001	6	5	11.718	0.600	76.492	76.346	0.146	80.3	100	4.39	50.0
1.000	7	6	8.649	0.600	76.600	76.492	0.108	80.0	100	4.17	50.0

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Normal
FSR Region	England and Wales	Skip Steady State	x
M5-60 (mm)	20.000	Drain Down Time (mins)	240
Ratio-R	0.400	Additional Storage (m³/ha)	20.0
Summer CV	0.950	Check Discharge Rate(s)	x
Winter CV	1.000	Check Discharge Volume	x

Storm Durations

15 | 30 | 60 | 120 | 180 | 240 | 480 | 720 | 1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
30	0	0	0
100	40	0	0

Node 1 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.01800	Invert Level (m)	75.837	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.01800	Time to half empty (mins)	442	Depth (m)	0.450
Safety Factor	2.0	Width (m)	41.000	Inf Depth (m)	
Porosity	0.30	Length (m)	38.000		

Results for 1 year Critical Storm Duration. Lowest mass balance: 99.90%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	7	10	76.642	0.042	2.3	0.0317	0.0000	OK
15 minute summer	6	10	76.534	0.042	2.3	0.0066	0.0000	OK
15 minute summer	5	11	76.386	0.040	2.3	0.0064	0.0000	OK
15 minute summer	4	10	76.640	0.040	2.1	0.0283	0.0000	OK
15 minute summer	3	10	76.479	0.025	2.1	0.0039	0.0000	OK
15 minute summer	2	11	76.063	0.047	4.2	0.0074	0.0000	OK
180 minute winter	1	136	76.010	0.173	7.1	18.9104	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute summer	7	1.000	6	2.3	0.744	0.340	0.0268
15 minute summer	6	1.001	5	2.3	0.783	0.342	0.0349
15 minute summer	5	1.002	2	2.2	0.767	0.330	0.0653
15 minute summer	4	2.000	3	2.1	0.740	0.310	0.0219
15 minute summer	3	2.001	2	2.1	0.738	0.059	0.0358
15 minute summer	2	1.003	1	4.2	0.483	0.212	0.1385
180 minute winter	1	Infiltration		1.8			

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.90%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	7	10	76.675	0.075	5.6	0.0570	0.0000	OK
15 minute summer	6	10	76.566	0.074	5.6	0.0117	0.0000	OK
15 minute summer	5	11	76.416	0.070	5.6	0.0111	0.0000	OK
15 minute summer	4	10	76.670	0.070	5.1	0.0496	0.0000	OK
15 minute summer	3	10	76.492	0.038	5.1	0.0061	0.0000	OK
180 minute winter	2	152	76.117	0.101	2.2	0.0161	0.0000	OK
180 minute winter	1	152	76.117	0.280	16.0	49.1058	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute summer	7	1.000	6	5.6	0.900	0.828	0.0540
15 minute summer	6	1.001	5	5.6	0.942	0.827	0.0702
15 minute summer	5	1.002	2	5.4	0.944	0.803	0.1290
15 minute summer	4	2.000	3	5.1	0.907	0.754	0.0433
15 minute summer	3	2.001	2	5.1	0.883	0.143	0.0690
180 minute winter	2	1.003	1	2.1	0.180	0.106	0.2173
180 minute winter	1	Infiltration		2.9			

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.90%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	7	11	76.932	0.332	10.1	0.2521	0.0000	FLOOD RISK
15 minute summer	6	12	76.741	0.249	8.8	0.0395	0.0000	FLOOD RISK
15 minute summer	5	12	76.544	0.198	7.8	0.0315	0.0000	SURCHARGED
15 minute summer	4	10	76.797	0.197	9.2	0.1397	0.0000	FLOOD RISK
15 minute summer	3	10	76.505	0.051	8.8	0.0081	0.0000	OK
180 minute winter	2	172	76.235	0.219	4.0	0.0348	0.0000	SURCHARGED
180 minute winter	1	172	76.234	0.397	29.3	98.0170	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute summer	7	1.000	6	8.8	1.122	1.298	0.0677
15 minute summer	6	1.001	5	7.8	0.991	1.149	0.0917
15 minute summer	5	1.002	2	7.1	0.956	1.047	0.1755
15 minute summer	4	2.000	3	8.8	1.125	1.302	0.0592
15 minute summer	3	2.001	2	8.8	0.963	0.246	0.1251
180 minute winter	2	1.003	1	3.8	0.219	0.192	0.2527
180 minute winter	1	Infiltration		4.0			

Atrium Car Park (South) Network Calculations

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	1	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	20.000	Minimum Backdrop Height (m)	1.500
Ratio-R	0.400	Preferred Cover Depth (m)	0.600
CV	1.000	Include Intermediate Ground	✓
Time of Entry (mins)	4.00	Enforce best practice design rules	✓

Links (Input)

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.002	2	1	7.435	0.600	75.800	75.726	0.074	100.5	150	4.76	50.0
1.001	3	2	11.224	0.600	76.435	75.800	0.635	17.7	150	4.64	50.0
1.000	4	3	44.121	0.600	77.177	76.435	0.742	59.5	150	4.56	50.0

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Normal
FSR Region	England and Wales	Skip Steady State	x
M5-60 (mm)	20.000	Drain Down Time (mins)	240
Ratio-R	0.400	Additional Storage (m³/ha)	20.0
Summer CV	0.950	Check Discharge Rate(s)	x
Winter CV	1.000	Check Discharge Volume	x

Storm Durations

15 | 30 | 60 | 120 | 180 | 240 | 480 | 720 | 1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
30	0	0	0
100	40	0	0

Node 1 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.01800	Invert Level (m)	75.726	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.01800	Time to half empty (mins)	448	Depth (m)	0.600
Safety Factor	2.0	Width (m)	58.000	Inf Depth (m)	
Porosity	0.30	Length (m)	48.000		

Results for 1 year Critical Storm Duration. Lowest mass balance: 99.97%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	4	1	77.177	0.000	0.0	0.0000	0.0000	OK
15 minute summer	3	1	76.435	0.000	0.0	0.0000	0.0000	OK
240 minute winter	2	184	75.967	0.167	0.1	0.1892	0.0000	SURCHARGED
240 minute winter	1	184	75.967	0.241	14.6	53.6899	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute summer	4	1.000	3	0.0	0.000	0.000	0.0000
15 minute summer	3	1.001	2	0.0	0.000	0.000	0.0720
240 minute winter	2	1.002	1	-0.1	-0.008	-0.005	0.1309
240 minute winter	1	Infiltration		3.6			

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.97%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	4	1	77.177	0.000	0.0	0.0000	0.0000	OK
15 minute summer	3	1	76.435	0.000	0.0	0.0000	0.0000	OK
180 minute winter	2	172	76.115	0.315	0.1	0.3561	0.0000	SURCHARGED
180 minute winter	1	172	76.115	0.389	41.2	136.4282	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute summer	4	1.000	3	0.0	0.000	0.000	0.0000
15 minute summer	3	1.001	2	0.0	0.000	0.000	0.0988
180 minute winter	2	1.002	1	-0.1	-0.019	-0.008	0.1309
180 minute winter	1	Infiltration		5.7			

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.97%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	4	1	77.177	0.000	0.0	0.0000	0.0000	OK
15 minute summer	3	1	76.435	0.000	0.0	0.0000	0.0000	OK
240 minute winter	2	232	76.285	0.485	0.1	0.5484	0.0000	FLOOD RISK
240 minute winter	1	232	76.285	0.559	60.0	273.3143	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute summer	4	1.000	3	0.0	0.000	0.000	0.0000
15 minute summer	3	1.001	2	0.0	0.000	0.000	0.0988
240 minute winter	2	1.002	1	-0.1	-0.020	-0.007	0.1309
240 minute winter	1	Infiltration		7.1			

Decant Building Network Calculations

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	1	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	20.000	Minimum Backdrop Height (m)	1.500
Ratio-R	0.400	Preferred Cover Depth (m)	0.600
CV	1.000	Include Intermediate Ground	✓
Time of Entry (mins)	4.00	Enforce best practice design rules	x

Links (Input)

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.011	2	1	4.789	0.600	77.860	77.760	0.100	47.9	150	5.99	50.0
1.010	3	2	8.019	0.600	78.013	77.860	0.153	52.4	225	5.79	50.0
1.009	10	3	14.969	0.600	78.102	78.013	0.089	168.2	225	5.71	50.0
2.005	4	3	12.334	0.600	78.230	78.088	0.142	87.0	150	4.96	50.0
2.004	5	4	13.154	0.600	78.361	78.230	0.131	100.4	150	4.76	50.0
2.003	6	5	16.089	0.600	79.349	78.361	0.988	16.3	150	4.55	50.0
2.002	7	6	7.817	0.600	79.531	79.399	0.132	59.2	100	4.44	50.0
2.001	8	7	8.644	0.600	79.677	79.531	0.146	59.2	100	4.31	50.0
2.000	9	8	9.951	0.600	79.845	79.677	0.168	59.2	100	4.17	50.0
1.008	11	10	16.561	0.600	78.200	78.102	0.098	169.0	225	5.47	50.0
1.007	12	11	7.971	0.600	78.888	78.200	0.688	11.6	225	5.19	50.0
1.006	13	12	6.210	0.600	78.928	78.888	0.040	156.2	225	5.16	50.0
1.005	14	13	19.254	0.600	79.467	79.003	0.464	41.5	150	5.06	50.0
1.004	15	14	17.545	0.600	80.026	79.467	0.559	31.4	150	4.85	50.0
1.003	16	15	11.733	0.600	80.143	80.026	0.117	100.3	150	4.69	50.0
1.002	17	16	11.194	0.600	80.254	80.143	0.111	100.9	150	4.49	50.0
1.001	18	17	10.266	0.600	80.356	80.254	0.102	100.7	150	4.31	50.0
1.000	19	18	8.243	0.600	80.545	80.406	0.139	59.3	100	4.14	50.0

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Normal
FSR Region	England and Wales	Skip Steady State	x
M5-60 (mm)	20.000	Drain Down Time (mins)	240
Ratio-R	0.400	Additional Storage (m³/ha)	20.0
Summer CV	0.950	Check Discharge Rate(s)	x
Winter CV	1.000	Check Discharge Volume	x

Storm Durations

15 | 30 | 60 | 120 | 180 | 240 | 480 | 720 | 1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
30	0	0	0
100	40	0	0

Node 2 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	77.860	Product Number	CTL-SHE-0056-1400-1000-1400
Design Depth (m)	1.000	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	1.4	Min Node Diameter (mm)	1200

Node 5 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	78.361	Product Number	CTL-SHE-0041-1000-1800-1000
Design Depth (m)	1.800	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	1.0	Min Node Diameter (mm)	1200

Node 6 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	79.349	Product Number	CTL-SHE-0095-5000-1730-5000
Design Depth (m)	1.730	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	5.0	Min Node Diameter (mm)	1200

Node 11 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	78.200	Product Number	CTL-SHE-0049-1000-0840-1000
Design Depth (m)	0.840	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	1.0	Min Node Diameter (mm)	1200

Node 16 Online Orifice Control

Flap Valve	x	Invert Level (m)	80.143	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.075		

Node 5 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	78.361
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	
Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	32.0	0.0	0.800	32.0	0.0
			0.801	0.0	0.0

Node 8 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	79.677	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	24	Depth (m)	0.800
Safety Factor	2.0	Width (m)	7.000	Inf Depth (m)	
Porosity	0.95	Length (m)	6.000		

Node 11 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	78.200
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	32.0	0.0	0.800	32.0	0.0	0.801	0.0	0.0

Node 12 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	78.888	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	0.800
Safety Factor	2.0	Width (m)	7.000	Inf Depth (m)	
Porosity	0.95	Length (m)	6.000		

Node 16 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	80.143	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	28	Depth (m)	0.800
Safety Factor	2.0	Width (m)	7.000	Inf Depth (m)	
Porosity	0.95	Length (m)	6.000		

Results for 1 year Critical Storm Duration. Lowest mass balance: 99.11%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	19	10	80.605	0.060	4.8	0.1116	0.0000	OK
15 minute summer	18	10	80.434	0.078	8.5	0.1173	0.0000	OK
15 minute summer	17	10	80.332	0.078	8.5	0.0877	0.0000	OK
30 minute winter	16	24	80.253	0.110	8.3	3.3645	0.0000	OK
15 minute summer	15	10	80.077	0.051	7.9	0.0887	0.0000	OK
15 minute summer	14	10	79.531	0.064	10.1	0.0844	0.0000	OK
15 minute summer	13	10	79.026	0.098	15.4	0.1809	0.0000	OK
15 minute summer	12	11	78.936	0.047	15.3	0.8066	0.0000	OK
240 minute winter	11	224	78.714	0.514	4.2	16.1951	0.0000	SURCHARGED
240 minute winter	10	232	78.541	0.439	0.9	0.4970	0.0000	SURCHARGED
15 minute summer	9	1	79.845	0.000	0.0	0.0000	0.0000	OK
15 minute winter	8	13	79.724	0.047	4.0	0.8071	0.0000	OK
15 minute summer	7	11	79.734	0.203	3.2	0.2291	0.0000	SURCHARGED
15 minute summer	6	11	79.745	0.396	7.3	0.6205	0.0000	SURCHARGED
240 minute winter	5	236	78.568	0.207	1.9	6.5338	0.0000	SURCHARGED
240 minute winter	4	232	78.541	0.311	1.0	0.4580	0.0000	SURCHARGED
240 minute winter	3	232	78.541	0.528	2.9	0.5976	0.0000	SURCHARGED
240 minute winter	2	232	78.541	0.681	2.8	0.7705	0.0000	SURCHARGED
15 minute summer	1	1	77.760	0.000	1.3	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	19	1.000	18	4.8	1.012	0.608	0.0390	
15 minute summer	18	1.001	17	8.5	0.918	0.479	0.0948	
15 minute summer	17	1.002	16	8.4	1.004	0.477	0.1061	
30 minute winter	16	Orifice	15	3.2				
15 minute summer	15	1.004	14	7.8	1.258	0.245	0.1092	
15 minute summer	14	1.005	13	9.9	1.406	0.357	0.1356	
15 minute summer	13	1.006	12	15.3	1.377	0.369	0.0706	
15 minute summer	12	1.007	11	15.1	2.314	0.098	0.1634	
240 minute winter	11	Hydro-Brake®	10	0.9				
240 minute winter	10	1.009	3	1.1	0.400	0.027	0.5953	
15 minute summer	9	2.000	8	0.0	0.000	0.000	0.0175	
15 minute winter	8	2.001	7	2.5	0.706	0.319	0.0494	
15 minute summer	7	2.002	6	2.9	0.605	0.365	0.0612	
15 minute summer	6	Hydro-Brake®	5	4.5				
240 minute winter	5	Hydro-Brake®	4	0.6				
240 minute winter	4	2.005	3	1.0	0.551	0.052	0.2171	
240 minute winter	3	1.010	2	2.8	0.301	0.039	0.3189	
240 minute winter	2	Hydro-Brake®	1	1.3				29.4

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.11%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	19	11	80.823	0.278	11.7	0.5163	0.0000	SURCHARGED
15 minute summer	18	11	80.553	0.197	18.6	0.2953	0.0000	SURCHARGED
30 minute summer	17	20	80.440	0.186	16.1	0.2099	0.0000	SURCHARGED
30 minute winter	16	25	80.400	0.257	19.5	9.4605	0.0000	SURCHARGED
15 minute summer	15	10	80.106	0.080	17.9	0.1405	0.0000	OK
15 minute summer	14	10	79.580	0.113	23.4	0.1481	0.0000	OK
240 minute winter	13	240	79.408	0.480	9.0	0.8837	0.0000	SURCHARGED
240 minute winter	12	240	79.408	0.520	10.9	20.1519	0.0000	SURCHARGED
240 minute winter	11	240	79.408	1.208	10.4	25.7017	0.0000	FLOOD RISK
240 minute winter	10	228	78.904	0.802	0.9	0.9070	0.0000	FLOOD RISK
30 minute winter	9	26	79.854	0.009	0.2	0.0101	0.0000	OK
30 minute winter	8	25	79.853	0.176	11.8	6.0991	0.0000	SURCHARGED
15 minute summer	7	12	80.047	0.516	10.3	0.5841	0.0000	SURCHARGED
15 minute summer	6	11	80.311	0.962	18.0	1.5086	0.0000	SURCHARGED
240 minute winter	5	236	78.964	0.604	4.2	19.0339	0.0000	SURCHARGED
240 minute winter	4	228	78.904	0.674	1.6	0.9916	0.0000	FLOOD RISK
240 minute winter	3	228	78.904	0.891	2.1	1.0076	0.0000	FLOOD RISK
240 minute winter	2	228	78.904	1.044	3.3	1.1805	0.0000	FLOOD RISK
15 minute summer	1	1	77.760	0.000	1.3	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	19	1.000	18	9.7	1.245	1.238	0.0645	
15 minute summer	18	1.001	17	17.6	1.039	0.992	0.1807	
30 minute summer	17	1.002	16	15.5	0.951	0.880	0.1971	
30 minute winter	16	Orifice	15	5.5				
15 minute summer	15	1.004	14	17.8	1.493	0.560	0.2091	
15 minute summer	14	1.005	13	23.2	1.691	0.837	0.2637	
240 minute winter	13	1.006	12	9.0	1.181	0.218	0.2470	
240 minute winter	12	1.007	11	10.4	1.484	0.067	0.3170	
240 minute winter	11	Hydro-Brake®	10	0.9				
240 minute winter	10	1.009	3	0.9	0.408	0.022	0.5953	
30 minute winter	9	2.000	8	-0.2	-0.034	-0.021	0.0406	
30 minute winter	8	2.001	7	-6.7	-0.852	-0.847	0.0676	
15 minute summer	7	2.002	6	-10.3	-1.316	-1.307	0.0612	
15 minute summer	6	Hydro-Brake®	5	4.5				
240 minute winter	5	Hydro-Brake®	4	0.6				
240 minute winter	4	2.005	3	1.4	0.551	0.073	0.2171	
240 minute winter	3	1.010	2	3.3	0.305	0.045	0.3189	
240 minute winter	2	Hydro-Brake®	1	1.4				36.0

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.11%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	19	10	81.245	0.700	21.3	1.2985	1.0191	FLOOD
15 minute summer	18	11	80.921	0.565	27.8	0.8486	0.0000	SURCHARGED
30 minute winter	17	21	80.704	0.450	21.5	0.5089	0.0000	SURCHARGED
60 minute winter	16	46	80.632	0.489	22.0	19.0687	0.0000	SURCHARGED
15 minute summer	15	11	80.367	0.341	29.9	0.5978	0.0000	SURCHARGED
15 minute summer	14	11	79.962	0.495	34.4	0.6479	0.0000	SURCHARGED
180 minute winter	13	112	79.563	0.635	18.4	1.1684	0.0000	FLOOD RISK
180 minute winter	12	112	79.554	0.666	17.8	26.1183	0.0000	FLOOD RISK
720 minute winter	11	390	79.542	1.342	7.5	25.8530	47.8980	FLOOD
120 minute summer	10	68	78.942	0.840	0.9	0.9498	0.0000	FLOOD RISK
60 minute winter	9	51	80.098	0.253	0.8	0.2859	0.0000	SURCHARGED
60 minute winter	8	52	80.097	0.420	15.7	16.2101	0.0000	SURCHARGED
30 minute summer	7	20	80.531	1.000	16.1	1.1310	0.0000	SURCHARGED
15 minute summer	6	10	81.129	1.780	32.7	2.7910	1.0097	FLOOD
240 minute winter	5	232	79.917	1.557	4.9	26.0957	0.0000	FLOOD RISK
120 minute summer	4	68	78.944	0.715	4.4	1.0511	0.0000	FLOOD RISK
120 minute summer	3	68	78.939	0.926	3.2	1.0477	0.0000	FLOOD RISK
1440 minute winter	2	750	78.937	1.077	3.5	1.2181	11.2077	FLOOD
15 minute summer	1	1	77.760	0.000	1.3	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	19	1.000	18	11.5	1.467	1.458	0.0645	
15 minute summer	18	1.001	17	25.1	1.427	1.419	0.1807	
30 minute winter	17	1.002	16	20.8	1.183	1.179	0.1971	
60 minute winter	16	Orifice	15	7.9				
15 minute summer	15	1.004	14	24.4	1.569	0.766	0.3089	
15 minute summer	14	1.005	13	33.6	1.911	1.215	0.3390	
180 minute winter	13	1.006	12	17.5	1.375	0.421	0.2470	
180 minute winter	12	1.007	11	15.3	1.748	0.099	0.3170	
720 minute winter	11	Hydro-Brake®	10	0.9				
120 minute summer	10	1.009	3	1.0	0.381	0.024	0.5953	
60 minute winter	9	2.000	8	-0.8	-0.142	-0.099	0.0779	
60 minute winter	8	2.001	7	-9.4	-1.201	-1.193	0.0676	
30 minute summer	7	2.002	6	-16.1	-2.057	-2.043	0.0612	
15 minute summer	6	Hydro-Brake®	5	5.1				
240 minute winter	5	Hydro-Brake®	4	0.8				
120 minute summer	4	2.005	3	2.8	0.590	0.149	0.2171	
120 minute summer	3	1.010	2	3.3	0.468	0.046	0.3189	
1440 minute winter	2	Hydro-Brake®	1	1.5				127.1

Rear Car Park (North) Permeable Paving Calculations

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	1	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	20.000	Minimum Backdrop Height (m)	1.500
Ratio-R	0.400	Preferred Cover Depth (m)	0.600
CV	1.000	Include Intermediate Ground	✓
Time of Entry (mins)	4.00	Enforce best practice design rules	✓

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Normal
FSR Region	England and Wales	Skip Steady State	x
M5-60 (mm)	20.000	Drain Down Time (mins)	240
Ratio-R	0.400	Additional Storage (m³/ha)	20.0
Summer CV	0.950	Check Discharge Rate(s)	x
Winter CV	1.000	Check Discharge Volume	x

Storm Durations

15 | 30 | 60 | 120 | 180 | 240 | 480 | 720 | 1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
30	0	0	0
100	40	0	0

Node Permeable Car Park Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.01800	Invert Level (m)	79.500	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.01800	Time to half empty (mins)	161	Depth (m)	0.450
Safety Factor	2.0	Width (m)	30.000	Inf Depth (m)	
Porosity	0.30	Length (m)	55.000		

Results for 1 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute winter	Permeable Car Park	136	79.723	0.223	7.1	19.8507	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)					
180 minute winter	Permeable Car Park	Infiltration	1.7					

Results for 30 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute winter	Permeable Car Park	164	79.863	0.363	16.4	51.1135	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)
180 minute winter	Permeable Car Park	Infiltration	2.8

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute winter	Permeable Car Park	132	80.000	0.500	30.0	95.4728	5.5440	FLOOD
Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)					
180 minute winter	Permeable Car Park	Infiltration	3.9					

Rear Car Park (South) Permeable Paving Calculations

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	1	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	20.000	Minimum Backdrop Height (m)	1.500
Ratio-R	0.400	Preferred Cover Depth (m)	0.600
CV	1.000	Include Intermediate Ground	✓
Time of Entry (mins)	4.00	Enforce best practice design rules	✓

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Normal
FSR Region	England and Wales	Skip Steady State	x
M5-60 (mm)	20.000	Drain Down Time (mins)	240
Ratio-R	0.400	Additional Storage (m³/ha)	20.0
Summer CV	0.950	Check Discharge Rate(s)	x
Winter CV	1.000	Check Discharge Volume	x

Storm Durations

15 | 30 | 60 | 120 | 180 | 240 | 480 | 720 | 1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
30	0	0	0
100	40	0	0

Node Permeable Car Park Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.01800	Invert Level (m)	78.500	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.01800	Time to half empty (mins)	147	Depth (m)	0.450
Safety Factor	2.0	Width (m)	30.000	Inf Depth (m)	
Porosity	0.30	Length (m)	60.000		

Results for 1 year Critical Storm Duration. Lowest mass balance: 99.81%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute winter	Permeable Car Park	180	78.775	0.275	7.8	28.0240	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)
240 minute winter	Permeable Car Park	Infiltration	2.1

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.81%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute winter	Permeable Car Park	168	78.947	0.447	22.1	71.4269	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)					
180 minute winter	Permeable Car Park	Infiltration	3.4					

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.81%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
240 minute winter	Permeable Car Park	128	79.000	0.500	32.2	89.0043	58.8965	FLOOD

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)
240 minute winter	Permeable Car Park	Infiltration	3.9

Network Plan

