

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	100	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)	0.200
Ratio-R	0.350	Preferred Cover Depth (m)	1.200
CV	1.000	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	✓

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
RE1	0.005	5.00	76.440	450	438895.252	409309.699	0.790
RE2	0.019	5.00	76.325	450	438912.948	409311.294	0.625
RE3	0.013	5.00	76.153	450	438903.860	409292.874	0.703
S1			76.379	1200	438911.003	409297.396	1.148
EXCMH04			76.078	600	438916.404	409297.151	1.480

Links

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)
1.000	RE1	S1	19.986	0.600	75.650	75.231	0.419	47.7	150	5.23	50.0
2.000	RE2	S1	14.033	0.600	75.700	75.231	0.469	29.9	150	5.13	50.0
3.000	RE3	S1	8.454	0.600	75.450	75.231	0.219	38.6	150	5.09	50.0
1.001	S1	EXCMH04	5.407	0.600	75.231	74.598	0.633	8.5	150	5.25	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	1.460	25.8	0.9	0.640	0.998	0.005	0.0	19	0.679
2.000	1.847	32.6	3.4	0.475	0.998	0.019	0.0	33	1.197
3.000	1.625	28.7	2.3	0.553	0.998	0.013	0.0	29	0.983
1.001	3.468	61.3	6.7	0.998	1.330	0.037	0.0	33	2.275

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	19.986	47.7	150	Circular	76.440	75.650	0.640	76.379	75.231	0.998
2.000	14.033	29.9	150	Circular	76.325	75.700	0.475	76.379	75.231	0.998
3.000	8.454	38.6	150	Circular	76.153	75.450	0.553	76.379	75.231	0.998
1.001	5.407	8.5	150	Circular	76.379	75.231	0.998	76.078	74.598	1.330

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	RE1	450	Manhole	Adoptable	S1	1200	Manhole	Adoptable
2.000	RE2	450	Manhole	Adoptable	S1	1200	Manhole	Adoptable
3.000	RE3	450	Manhole	Adoptable	S1	1200	Manhole	Adoptable
1.001	S1	1200	Manhole	Adoptable	EXCMH04	600	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
RE1	438895.252	409309.699	76.440	0.790	450		0	1.000	75.650	150
RE2	438912.948	409311.294	76.325	0.625	450		0	2.000	75.700	150
RE3	438903.860	409292.874	76.153	0.703	450		0	3.000	75.450	150

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
S1	438911.003	409297.396	76.379	1.148	1200		1	3.000	75.231	150
						2	2.000	75.231	150	
						3	1.000	75.231	150	
						0	1.001	75.231	150	
EXCMH04	438916.404	409297.151	76.078	1.480	600		1	1.001	74.598	150

Simulation Settings

Rainfall Methodology	FSR	Summer CV	1.000	Additional Storage (m ³ /ha)	0.0
Rainfall Events	Singular	Winter CV	1.000	Starting Level (m)	
FSR Region	England and Wales	Analysis Speed	Detailed	Check Discharge Rate(s)	x
M5-60 (mm)	20.000	Skip Steady State	x	Check Discharge Volume	x
Ratio-R	0.350	Drain Down Time (mins)	240		

Storm Durations

15 | 30 | 60 | 120 | 180 | 240 | 360 | 480 | 600 | 720 | 960 | 1440

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

Node S1 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	75.231	Product Number	CTL-SHE-0128-7500-1000-7500
Design Depth (m)	1.000	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	7.5	Min Node Diameter (mm)	1200

Node S1 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Width (m)	19.000	Depth (m)	0.300
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	75.231	Length (m)	20.000	Inf Depth (m)	
Safety Factor	2.0	Time to half empty (mins)	0	Slope (1:X)	100.0		

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
15 minute summer	RE1	10	75.689	0.039	3.8	0.0062	0.0000	OK
15 minute summer	RE2	10	75.770	0.070	14.5	0.0111	0.0000	OK
15 minute summer	RE3	10	75.511	0.061	9.9	0.0096	0.0000	OK
60 minute summer	S1	41	75.417	0.186	19.9	10.0795	0.0000	SURCHARGED
60 minute summer	EXCMH04	41	74.632	0.034	6.9	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	RE1	1.000	S1	3.8	0.423	0.146	0.2090	
15 minute summer	RE2	2.000	S1	14.5	1.278	0.443	0.1768	
15 minute summer	RE3	3.000	S1	9.9	0.932	0.344	0.1009	
60 minute summer	S1	1.001	EXCMH04	6.9	2.204	0.113	0.0170	21.0