

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	2	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)	0.600
Ratio-R	0.400	Preferred Cover Depth (m)	1.200
CV	0.750	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)
S1	0.001	5.00	13.760	450	747.568	119.701	0.600
S2	0.008	5.00	13.760	450	735.438	125.559	0.750
S3	0.009	5.00	13.760	450	734.638	101.974	0.562
S4	0.006	5.00	13.760	450	721.024	109.120	0.750
S5	0.007	5.00	13.600	500	730.455	128.025	1.100
S6			13.400	450	717.285	133.062	1.137
RE1	0.000	5.00	13.760	300	739.861	111.924	0.450
HW1	0.000		12.850	100	708.793	138.981	0.761

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	S1	S2	13.470	0.600	13.160	13.010	0.150	89.8	100	5.28	50.0
1.001	S2	S5	5.560	0.600	13.010	12.500	0.510	10.9	100	5.32	50.0
2.000	RE1	S3	11.238	0.600	13.310	13.198	0.112	100.3	100	5.24	50.0
2.001	S3	S4	15.376	0.600	13.198	13.010	0.188	81.8	100	5.55	50.0
2.002	S4	S5	21.127	0.600	13.010	12.500	0.510	41.4	100	5.84	50.0
2.003	S5	S6	14.100	0.600	12.500	12.263	0.237	59.5	100	6.07	50.0
2.004	S6	HW1	10.351	0.600	12.263	12.089	0.174	59.5	100	6.25	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	0.812	6.4	0.1	0.500	0.650	0.001	0.0	11	0.326
1.001	2.354	18.5	1.2	0.650	1.000	0.009	0.0	18	1.334
2.000	0.767	6.0	0.0	0.350	0.462	0.000	0.0	0	0.000
2.001	0.851	6.7	1.2	0.462	0.850	0.009	0.0	29	0.651
2.002	1.201	9.4	2.0	0.650	1.000	0.015	0.0	32	0.959
2.003	1.000	7.9	4.2	1.000	1.037	0.031	0.0	52	1.016
2.004	1.000	7.9	4.2	1.037	0.661	0.031	0.0	52	1.016

Simulation Settings

Rainfall Methodology	FSR	Drain Down Time (mins)	240
FSR Region	England and Wales	Additional Storage (m³/ha)	20.0
M5-60 (mm)	20.000	Check Discharge Rate(s)	✓
Ratio-R	0.400	1 year (l/s)	0.0
Summer CV	0.750	30 year (l/s)	0.0
Winter CV	0.840	100 year (l/s)	0.0
Analysis Speed	Normal	Check Discharge Volume	x
Skip Steady State	x		

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 %)
30	0	0	0
100	40	0	0

Pre-development Discharge Rate

Site Makeup	Greenfield	Growth Factor 30 years	2.30
Greenfield Method	IH124	Growth Factor 100 years	3.19
Positively Drained Area (ha)	0.031	Betterment (%)	0
SAAR (mm)	771	QBar	0.0
Soil Index	1	Q 1 year (l/s)	0.0
SPR	0.10	Q 30 year (l/s)	0.0
Region	1	Q 100 year (l/s)	0.0
Growth Factor 1 year	0.85		

Node S5 Online Orifice Control

Flap Valve	x	Design Depth (m)	1.100	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Design Flow (l/s)	1.0		
Invert Level (m)	12.500	Diameter (m)	0.021		

Node S5 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	12.550
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	300

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	26.0	0.0	0.400	26.0	0.0	0.401	0.0	0.0

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.41%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S1	12	13.175	0.015	0.3	0.0028	0.0000	OK
15 minute winter	S2	10	13.038	0.028	3.1	0.0103	0.0000	OK
15 minute winter	S3	10	13.246	0.048	3.1	0.0231	0.0000	OK
15 minute winter	S4	10	13.062	0.052	5.1	0.0166	0.0000	OK
180 minute winter	S5	144	12.821	0.321	2.5	6.8103	0.0000	SURCHARGED
180 minute winter	S6	144	12.281	0.018	0.5	0.0028	0.0000	OK

15 minute summer	RE1	1	13.310	0.000	0.0	0.0000	0.0000	OK
180 minute winter	HW1	144	12.106	0.017	0.5	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)
15 minute summer	S1	1.000	S2	0.3	0.286	0.047	0.0162	
15 minute winter	S2	1.001	S5	3.1	0.536	0.166	0.0267	
15 minute winter	S3	2.001	S4	3.0	0.772	0.453	0.0603	
15 minute winter	S4	2.002	S5	5.0	0.741	0.534	0.1262	
180 minute winter	S5	Orifice	S6	0.5				
180 minute winter	S6	2.004	HW1	0.5	0.560	0.065	0.0095	9.3
15 minute summer	RE1	2.000	S3	0.0	0.000	0.000	0.0204	

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.41%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute winter	S1	140	13.580	0.420	0.3	0.0806	0.0000	FLOOD RISK
180 minute winter	S2	140	13.580	0.570	1.4	0.2120	0.0000	FLOOD RISK
180 minute winter	S3	144	13.582	0.384	1.3	0.1839	0.0000	FLOOD RISK
180 minute winter	S4	144	13.581	0.571	2.2	0.1823	0.0000	FLOOD RISK
180 minute winter	S5	140	13.580	1.080	4.5	10.2545	0.0000	FLOOD RISK
180 minute winter	S6	144	12.287	0.024	1.0	0.0038	0.0000	OK
180 minute winter	RE1	144	13.582	0.272	0.7	0.0193	0.0000	FLOOD RISK
180 minute winter	HW1	144	12.113	0.024	1.0	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)
180 minute winter	S1	1.000	S2	0.2	0.212	0.035	0.1054	
180 minute winter	S2	1.001	S5	1.3	0.246	0.070	0.0435	
180 minute winter	S3	2.001	S4	1.3	0.626	0.195	0.1203	
180 minute winter	S4	2.002	S5	2.2	0.368	0.233	0.1653	
180 minute winter	S5	Orifice	S6	1.0				
180 minute winter	S6	2.004	HW1	1.0	0.669	0.121	0.0147	14.6
180 minute winter	RE1	2.000	S3	-0.7	-0.107	-0.110	0.0879	