

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	2	Maximum Rainfall (mm/hr)	0.0
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)	9.900
Ratio-R	0.400	Preferred Cover Depth (m)	1.500
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)
61	0.116	5.00	127.139	1200	444768.510	303022.475	1.725
72	0.081	5.00	128.287	1200	444825.434	302985.788	1.725
73	0.022	5.00	127.818	1500	444825.439	303012.844	1.668
76	0.027	5.00	128.843	1200	444884.227	303033.307	1.631
78	0.047	5.00	128.511	1500	444863.690	303039.713	1.790
74	0.083	5.00	127.962	1200	444828.168	303040.018	2.389
75	0.086	5.00	127.725	1200	444813.183	303042.079	2.407
62	0.097	5.00	127.322	1500	444779.278	303050.999	2.669
63	0.022	5.00	127.210	1500	444787.030	303073.936	2.710
64	0.035	5.00	126.870	1500	444791.627	303099.555	2.570
65	0.058	5.00	126.583	1500	444770.906	303104.466	2.433
66	0.095	5.00	125.900	1500	444743.092	303115.175	1.900
67	0.215	5.00	125.550	1500	444758.031	303155.770	1.650
68			125.200	1500	444772.154	303179.379	1.450
79	0.105	5.00	127.978	1200	444905.219	303094.375	1.725
80	0.091	5.00	127.787	1200	444875.201	303096.724	2.040
88	0.123	5.00	127.168	1200	444818.922	303097.398	1.725
81	0.066	5.00	127.317	1200	444832.830	303097.561	2.208
82	0.065	5.00	125.904	1500	444833.047	303151.357	1.454
83	0.146	5.00	126.600	1200	444874.793	303151.284	2.375
84			125.600	1500	444873.877	303164.741	1.420
85			125.600	1500	444851.001	303168.407	1.500
86			125.400	1500	444833.873	303169.060	1.400
87			125.200	1500	444815.843	303170.781	1.350
69			125.200	1500	444769.580	303181.271	1.500
70			125.200	1500	444764.191	303187.829	1.550
71			124.300	1500	444765.358	303196.429	0.700

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	61	62	30.489	0.600	125.414	124.803	0.611	49.9	300	5.23	0.0
2.000	72	73	27.056	0.600	126.562	126.300	0.262	103.3	225	5.35	0.0
2.001	73	74	27.311	0.600	126.150	125.573	0.577	47.3	375	5.52	0.0
3.000	76	78	21.513	0.600	127.212	126.796	0.416	51.7	225	5.20	0.0
3.002	78	74	35.523	0.600	126.721	125.648	1.073	33.1	300	5.41	0.0
2.002	74	75	15.126	0.600	125.573	125.318	0.255	59.3	375	5.63	0.0
2.003	75	62	35.059	0.600	125.318	124.728	0.590	59.4	375	5.88	0.0
1.001	62	63	24.212	0.600	124.653	124.500	0.153	158.2	450	6.13	0.0
1.002	63	64	26.028	0.600	124.500	124.300	0.200	130.1	450	6.37	0.0
1.003	64	65	21.295	0.600	124.300	124.150	0.150	142.0	450	6.58	0.0
1.004	65	66	29.804	0.600	124.150	124.000	0.150	198.7	450	6.93	0.0
1.005	66	67	43.257	0.600	124.000	123.900	0.100	432.6	450	7.67	0.0
1.006	67	68	27.511	0.600	123.900	123.750	0.150	183.4	450	7.97	0.0
1.007	68	69	3.195	0.600	123.750	123.700	0.050	63.9	525	7.99	0.0
4.000	79	80	30.110	0.600	126.253	125.747	0.506	59.5	225	5.30	0.0
4.001	80	81	42.379	0.600	125.747	125.109	0.638	66.4	225	5.74	0.0
5.000	88	81	13.909	0.600	125.443	125.109	0.334	41.6	225	5.11	0.0
4.002	81	82	53.796	0.600	125.109	124.600	0.509	105.7	300	6.32	0.0
4.003	82	83	41.746	0.600	124.450	124.300	0.150	278.3	450	6.90	0.0
4.004	83	84	13.488	0.600	124.225	124.180	0.045	299.7	525	7.07	0.0
4.005	84	85	23.168	0.600	124.180	124.100	0.080	289.6	600	7.34	0.0
4.006	85	86	17.140	0.600	124.100	124.000	0.100	171.4	525	7.51	0.0
4.007	86	87	18.112	0.600	124.000	123.850	0.150	120.7	525	7.66	0.0
4.008	87	69	47.437	0.600	123.850	123.700	0.150	316.2	525	8.29	0.0

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	2.231	157.7	0.0	1.425	2.219	0.116	0.0	0	0.000
2.000	1.286	51.1	0.0	1.500	1.293	0.081	0.0	0	0.000
2.001	2.639	291.5	0.0	1.293	2.014	0.103	0.0	0	0.000
3.000	1.823	72.5	0.0	1.406	1.490	0.027	0.0	0	0.000
3.002	2.741	193.8	0.0	1.490	2.014	0.074	0.0	0	0.000
2.002	2.356	260.2	0.0	2.014	2.032	0.260	0.0	0	0.000
2.003	2.354	260.0	0.0	2.032	2.219	0.346	0.0	0	0.000
1.001	1.613	256.6	0.0	2.219	2.260	0.559	0.0	0	0.000
1.002	1.780	283.1	0.0	2.260	2.120	0.581	0.0	0	0.000
1.003	1.704	271.0	0.0	2.120	1.983	0.616	0.0	0	0.000
1.004	1.438	228.8	0.0	1.983	1.450	0.674	0.0	0	0.000
1.005	0.971	154.4	0.0	1.450	1.200	0.769	0.0	0	0.000
1.006	1.498	238.2	0.0	1.200	1.000	0.984	0.0	0	0.000
1.007	2.805	607.2	0.0	0.925	0.975	0.984	0.0	0	0.000
4.000	1.698	67.5	0.0	1.500	1.815	0.105	0.0	0	0.000
4.001	1.607	63.9	0.0	1.815	1.983	0.196	0.0	0	0.000
5.000	2.033	80.8	0.0	1.500	1.983	0.123	0.0	0	0.000
4.002	1.529	108.1	0.0	1.908	1.004	0.385	0.0	0	0.000
4.003	1.213	193.0	0.0	1.004	1.850	0.450	0.0	0	0.000
4.004	1.288	278.9	0.0	1.850	0.895	0.596	0.0	0	0.000
4.005	1.426	403.1	0.0	0.820	0.900	0.596	0.0	0	0.000
4.006	1.708	369.7	0.0	0.975	0.875	0.596	0.0	0	0.000
4.007	2.037	441.0	0.0	0.875	0.825	0.596	0.0	0	0.000
4.008	1.254	271.4	0.0	0.825	0.975	0.596	0.0	0	0.000

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)
1.008	69	70	8.488	0.600	123.700	123.650	0.050	169.8	525	8.37	0.0
1.009	70	71	8.679	0.600	123.650	123.600	0.050	173.6	450	8.46	0.0

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)
1.008	1.716	371.5	0.0	0.975	1.025	1.580	0.0	0	0.000
1.009	1.540	244.9	0.0	1.100	0.250	1.580	0.0	0	0.000

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	30.489	49.9	300	Circular_Default Sewer Type	127.139	125.414	1.425	127.322	124.803	2.219
2.000	27.056	103.3	225	Circular_Default Sewer Type	128.287	126.562	1.500	127.818	126.300	1.293
2.001	27.311	47.3	375	Circular_Default Sewer Type	127.818	126.150	1.293	127.962	125.573	2.014
3.000	21.513	51.7	225	Circular_Default Sewer Type	128.843	127.212	1.406	128.511	126.796	1.490
3.002	35.523	33.1	300	Circular_Default Sewer Type	128.511	126.721	1.490	127.962	125.648	2.014
2.002	15.126	59.3	375	Circular_Default Sewer Type	127.962	125.573	2.014	127.725	125.318	2.032
2.003	35.059	59.4	375	Circular_Default Sewer Type	127.725	125.318	2.032	127.322	124.728	2.219
1.001	24.212	158.2	450	Circular_Default Sewer Type	127.322	124.653	2.219	127.210	124.500	2.260
1.002	26.028	130.1	450	Circular_Default Sewer Type	127.210	124.500	2.260	126.870	124.300	2.120
1.003	21.295	142.0	450	Circular_Default Sewer Type	126.870	124.300	2.120	126.583	124.150	1.983
1.004	29.804	198.7	450	Circular_Default Sewer Type	126.583	124.150	1.983	125.900	124.000	1.450
1.005	43.257	432.6	450	Circular_Default Sewer Type	125.900	124.000	1.450	125.550	123.900	1.200
1.006	27.511	183.4	450	Circular_Default Sewer Type	125.550	123.900	1.200	125.200	123.750	1.000
1.007	3.195	63.9	525	Circular_Default Sewer Type	125.200	123.750	0.925	125.200	123.700	0.975
4.000	30.110	59.5	225	Circular_Default Sewer Type	127.978	126.253	1.500	127.787	125.747	1.815
4.001	42.379	66.4	225	Circular_Default Sewer Type	127.787	125.747	1.815	127.317	125.109	1.983
5.000	13.909	41.6	225	Circular_Default Sewer Type	127.168	125.443	1.500	127.317	125.109	1.983
4.002	53.796	105.7	300	Circular_Default Sewer Type	127.317	125.109	1.908	125.904	124.600	1.004

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	61	1200	Manhole	Adoptable	62	1500	Manhole	Adoptable
2.000	72	1200	Manhole	Adoptable	73	1500	Manhole	Adoptable
2.001	73	1500	Manhole	Adoptable	74	1200	Manhole	Adoptable
3.000	76	1200	Manhole	Adoptable	78	1500	Manhole	Adoptable
3.002	78	1500	Manhole	Adoptable	74	1200	Manhole	Adoptable
2.002	74	1200	Manhole	Adoptable	75	1200	Manhole	Adoptable
2.003	75	1200	Manhole	Adoptable	62	1500	Manhole	Adoptable
1.001	62	1500	Manhole	Adoptable	63	1500	Manhole	Adoptable
1.002	63	1500	Manhole	Adoptable	64	1500	Manhole	Adoptable
1.003	64	1500	Manhole	Adoptable	65	1500	Manhole	Adoptable
1.004	65	1500	Manhole	Adoptable	66	1500	Manhole	Adoptable
1.005	66	1500	Manhole	Adoptable	67	1500	Manhole	Adoptable
1.006	67	1500	Manhole	Adoptable	68	1500	Manhole	Adoptable
1.007	68	1500	Manhole	Adoptable	69	1500	Manhole	Adoptable
4.000	79	1200	Manhole	Adoptable	80	1200	Manhole	Adoptable
4.001	80	1200	Manhole	Adoptable	81	1200	Manhole	Adoptable
5.000	88	1200	Manhole	Adoptable	81	1200	Manhole	Adoptable
4.002	81	1200	Manhole	Adoptable	82	1500	Manhole	Adoptable

Pipeline Schedule

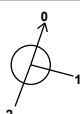
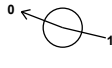
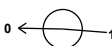
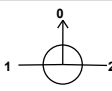
Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
4.003	41.746	278.3	450	Circular_Default Sewer Type	125.904	124.450	1.004	126.600	124.300	1.850
4.004	13.488	299.7	525	Circular_Default Sewer Type	126.600	124.225	1.850	125.600	124.180	0.895
4.005	23.168	289.6	600	Circular_Default Sewer Type	125.600	124.180	0.820	125.600	124.100	0.900
4.006	17.140	171.4	525	Circular_Default Sewer Type	125.600	124.100	0.975	125.400	124.000	0.875
4.007	18.112	120.7	525	Circular_Default Sewer Type	125.400	124.000	0.875	125.200	123.850	0.825
4.008	47.437	316.2	525	Circular_Default Sewer Type	125.200	123.850	0.825	125.200	123.700	0.975
1.008	8.488	169.8	525	Circular_Default Sewer Type	125.200	123.700	0.975	125.200	123.650	1.025
1.009	8.679	173.6	450	Circular_Default Sewer Type	125.200	123.650	1.100	124.300	123.600	0.250

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
4.003	82	1500	Manhole	Adoptable	83	1200	Manhole	Adoptable
4.004	83	1200	Manhole	Adoptable	84	1500	Manhole	Adoptable
4.005	84	1500	Manhole	Adoptable	85	1500	Manhole	Adoptable
4.006	85	1500	Manhole	Adoptable	86	1500	Manhole	Adoptable
4.007	86	1500	Manhole	Adoptable	87	1500	Manhole	Adoptable
4.008	87	1500	Manhole	Adoptable	69	1500	Manhole	Adoptable
1.008	69	1500	Manhole	Adoptable	70	1500	Manhole	Adoptable
1.009	70	1500	Manhole	Adoptable	71	1500	Manhole	Adoptable

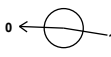
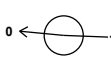
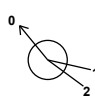
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
61	444768.510	303022.475	127.139	1.725	1200				
						0	1.000	125.414	300
72	444825.434	302985.788	128.287	1.725	1200				
						0	2.000	126.562	225
73	444825.439	303012.844	127.818	1.668	1500				
						0	2.001	126.150	375
76	444884.227	303033.307	128.843	1.631	1200				
						0	3.000	127.212	225
78	444863.690	303039.713	128.511	1.790	1500				
						0	3.002	126.721	300
74	444828.168	303040.018	127.962	2.389	1200				
						2	2.001	125.573	375
						0	2.002	125.573	375
75	444813.183	303042.079	127.725	2.407	1200				
						1	2.002	125.318	375
						0	2.003	125.318	375

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
62	444779.278	303050.999	127.322	2.669	1500		1 2.003 124.728 375 2 1.000 124.803 300		
63	444787.030	303073.936	127.210	2.710	1500		1 1.001 124.500 450 0 1.002 124.500 450		
64	444791.627	303099.555	126.870	2.570	1500		1 1.002 124.300 450 0 1.003 124.300 450		
65	444770.906	303104.466	126.583	2.433	1500		1 1.003 124.150 450 0 1.004 124.150 450		
66	444743.092	303115.175	125.900	1.900	1500		1 1.004 124.000 450 0 1.005 124.000 450		
67	444758.031	303155.770	125.550	1.650	1500		1 1.005 123.900 450 0 1.006 123.900 450		
68	444772.154	303179.379	125.200	1.450	1500		1 1.006 123.750 450 0 1.007 123.750 525		
79	444905.219	303094.375	127.978	1.725	1200		0 4.000 126.253 225 1 4.000 125.747 225		
80	444875.201	303096.724	127.787	2.040	1200		0 4.001 125.747 225 0 5.000 125.443 225		
81	444832.830	303097.561	127.317	2.208	1200		1 5.000 125.109 225 2 4.001 125.109 225 0 4.002 125.109 300		
82	444833.047	303151.357	125.904	1.454	1500		1 4.002 124.600 300 0 4.003 124.450 450		
83	444874.793	303151.284	126.600	2.375	1200		1 4.003 124.300 450 0 4.004 124.225 525		

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
84	444873.877	303164.741	125.600	1.420	1500		1	4.004	124.180	525
85	444851.001	303168.407	125.600	1.500	1500		0	4.005	124.180	600
							1	4.005	124.100	600
86	444833.873	303169.060	125.400	1.400	1500		0	4.006	124.100	525
							1	4.006	124.000	525
87	444815.843	303170.781	125.200	1.350	1500		1	4.007	123.850	525
							0	4.008	123.850	525
69	444769.580	303181.271	125.200	1.500	1500		1	4.008	123.700	525
							2	1.007	123.700	525
							0	1.008	123.700	525
70	444764.191	303187.829	125.200	1.550	1500		1	1.008	123.650	525
							0	1.009	123.650	450
71	444765.358	303196.429	124.300	0.700	1500		1	1.009	123.600	450

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Normal
Rainfall Events	Singular	Skip Steady State	✓
FSR Region	England and Wales	Drain Down Time (mins)	240
M5-60 (mm)	20.000	Additional Storage (m³/ha)	20.0
Ratio-R	0.400	Starting Level (m)	
Summer CV	0.750	Check Discharge Rate(s)	x
Winter CV	0.840	Check Discharge Volume	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 %)
2	0	0	0
30	0	0	0
100	40	0	0

Node 70 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	123.650	Product Number	CTL-SHE-0152-1100-1000-1100
Design Depth (m)	1.000	Min Outlet Diameter (m)	0.225
Design Flow (l/s)	11.0	Min Node Diameter (mm)	1200

Node 70 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	123.700
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	230.4	0.0	1.500	758.9	0.0

Node 85 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	124.100
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	505.2	0.0	1.500	1281.0	0.0