

### Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	100	Maximum Rainfall (mm/hr)	75.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	17.000	Minimum Backdrop Height (m)	1.000
Ratio-R	0.300	Preferred Cover Depth (m)	1.200
CV	1.000	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	✓

### Nodes




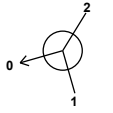
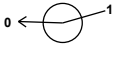

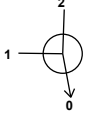


Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
H1	0.047	5.00	186.898	1350	420473.425	428493.054	1.421
H2	0.050	5.00	187.660	1200	420439.622	428478.202	2.430
S1	0.069	5.00	187.118	1500	420431.303	428451.936	1.950
S2	0.014	5.00	187.314	1500	420428.814	428460.647	2.397
S3	0.169	5.00	187.830	1500	420407.680	428454.611	3.215
S4	0.052	5.00	186.917	1500	420346.365	428456.584	2.717
Tank	0.000	5.00	185.501	300	420340.359	428433.126	2.751
S5	0.057	5.00	185.347	2100	420345.557	428433.061	3.147
CW			185.450	1200	420346.440	428428.331	2.850

### 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)	Design Flow (l/s)
1.000	H1	H2	36.922	0.600	185.477	185.230	0.247	149.5	225	5.58	75.0	
1.001	H2	S2	20.615	0.600	185.230	184.992	0.238	86.6	225	5.82	75.0	
2.000	S1	S2	9.060	0.600	185.168	184.992	0.176	51.5	225	5.08	75.0	
1.002	S2	S3	21.979	0.600	184.917	184.690	0.227	96.8	300	6.05	75.0	
1.003	S3	S4	61.347	0.600	184.615	184.200	0.415	147.8	375	6.74	75.0	
1.004	S4	S5	23.537	0.600	184.200	182.700	1.500	15.7	375	6.82	75.0	
3.000	Tank	S5	5.198	0.600	182.750	182.700	0.050	104.0	300	5.06	75.0	
1.005	S5	CW	4.812	0.600	182.650	182.600	0.050	96.2	150	6.90	75.0	3.5

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	1.067	42.4	12.7	1.196	2.205	0.047	0.0	85	0.938
1.001	1.405	55.9	26.3	2.205	2.097	0.097	0.0	109	1.385
2.000	1.827	72.6	18.7	1.725	2.097	0.069	0.0	78	1.539
1.002	1.598	112.9	48.8	2.097	2.840	0.180	0.0	138	1.543
1.003	1.488	164.3	94.6	2.840	2.342	0.349	0.0	204	1.537
1.004	4.593	507.3	108.7	2.342	2.272	0.401	0.0	117	3.680
3.000	1.541	109.0	0.0	2.451	2.347	0.000	0.0	0	0.000
1.005	1.024	18.1	3.5	2.547	2.700	0.458	0.0	45	0.795

**Manhole Schedule**

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
H1	420473.425	428493.054	186.898	1.421	1350		0	1.000	185.477	225
H2	420439.622	428478.202	187.660	2.430	1200		1	1.000	185.230	225
S1	420431.303	428451.936	187.118	1.950	1500		0	1.001	185.230	225
S2	420428.814	428460.647	187.314	2.397	1500		1	2.000	184.992	225
S3	420407.680	428454.611	187.830	3.215	1500		2	1.001	184.992	225
S4	420346.365	428456.584	186.917	2.717	1500		0	1.002	184.917	300
S5	420345.557	428433.061	185.347	3.147	2100		1	1.002	184.690	300
Tank	420340.359	428433.126	185.501	2.751	300		0	1.003	184.615	375
CW	420346.440	428428.331	185.450	2.850	1200		1	1.003	184.200	375
							0	1.004	184.200	375
							0	3.000	182.750	300
							1	3.000	182.700	300
							2	1.004	182.700	375
							0	1.005	182.650	150
							1	1.005	182.600	150

**Node S5 Online Hydro-Brake® Control**

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	182.650	Product Number	CTL-SHE-0081-3500-1580-3500
Design Depth (m)	1.580	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	3.5	Min Node Diameter (mm)	1200

**Node Tank Depth/Area Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	182.750
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	



Depth (m)	Area (m <sup>2</sup> )	Inf Area (m <sup>2</sup> )	Depth (m)	Area (m <sup>2</sup> )	Inf Area (m <sup>2</sup> )	Depth (m)	Area (m <sup>2</sup> )	Inf Area (m <sup>2</sup> )
0.000	286.0	0.0	1.450	286.0	0.0	1.451	0.0	0.0

**Results for 1 year Critical Storm Duration. Lowest mass balance: 99.46%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
15 minute summer	H1	10	185.535	0.058	6.5	0.0836	0.0000	OK
15 minute summer	H2	11	185.307	0.077	13.2	0.0866	0.0000	OK
15 minute summer	S1	10	185.226	0.058	9.5	0.1026	0.0000	OK
15 minute summer	S2	11	185.015	0.098	24.1	0.1736	0.0000	OK
15 minute summer	S3	11	184.762	0.147	46.8	0.2600	0.0000	OK
15 minute summer	S4	11	184.282	0.082	53.7	0.1442	0.0000	OK
480 minute summer	Tank	328	182.927	0.177	11.0	48.2034	0.0000	OK
15 minute summer	S5	10	183.573	0.923	61.3	3.1987	0.0000	<b>SURCHARGED</b>
30 minute winter	CW	16	182.642	0.042	3.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
15 minute summer	H1	1.000	H2	6.3	0.640	0.150	0.3695	
15 minute summer	H2	1.001	S2	13.1	1.129	0.234	0.2387	
15 minute summer	S1	2.000	S2	9.4	1.216	0.130	0.0702	
15 minute summer	S2	1.002	S3	24.2	1.251	0.215	0.4258	
15 minute summer	S3	1.003	S4	46.9	1.652	0.285	1.7704	
15 minute summer	S4	1.004	S5	53.8	1.241	0.106	1.5056	
480 minute summer	Tank	3.000	S5	-11.0	0.442	-0.101	0.2616	
15 minute summer	S5	1.005	CW	3.0	0.730	0.168	0.0201	24.3

**Results for 2 year Critical Storm Duration. Lowest mass balance: 99.54%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
15 minute summer	H1	10	185.544	0.067	8.4	0.0954	0.0000	OK
15 minute summer	H2	11	185.318	0.088	17.1	0.0997	0.0000	OK
15 minute summer	S1	10	185.235	0.067	12.3	0.1180	0.0000	OK
15 minute summer	S2	11	185.030	0.113	31.2	0.2002	0.0000	OK
15 minute summer	S3	11	184.784	0.169	60.7	0.2993	0.0000	OK
15 minute summer	S4	11	184.293	0.093	69.5	0.1642	0.0000	OK
480 minute summer	Tank	344	182.988	0.238	13.9	64.6048	0.0000	OK
15 minute summer	S5	10	183.747	1.097	79.4	3.7987	0.0000	<b>SURCHARGED</b>
30 minute summer	CW	17	182.642	0.042	3.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
15 minute summer	H1	1.000	H2	8.2	0.684	0.194	0.4459	
15 minute summer	H2	1.001	S2	16.9	1.208	0.302	0.2882	
15 minute summer	S1	2.000	S2	12.2	1.301	0.168	0.0849	
15 minute summer	S2	1.002	S3	31.4	1.339	0.278	0.5151	
15 minute summer	S3	1.003	S4	60.7	1.771	0.370	2.1321	
15 minute summer	S4	1.004	S5	69.7	1.131	0.137	1.5477	
480 minute summer	Tank	3.000	S5	-13.9	-0.413	-0.127	0.3361	
15 minute summer	S5	1.005	CW	3.0	0.729	0.167	0.0200	31.5

**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 (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
15 minute summer	H1	10	185.570	0.093	15.7	0.1333	0.0000	OK
15 minute summer	H2	11	185.359	0.129	32.1	0.1455	0.0000	OK
15 minute summer	S1	10	185.264	0.096	23.1	0.1690	0.0000	OK
15 minute summer	S2	10	185.083	0.166	59.0	0.2925	0.0000	OK
15 minute summer	S3	10	184.860	0.245	114.9	0.4327	0.0000	OK
15 minute summer	S4	10	184.345	0.145	130.8	0.2568	0.0000	OK
480 minute winter	Tank	464	183.319	0.569	16.8	154.5721	0.0000	SURCHARGED
15 minute summer	S5	9	184.063	1.413	154.3	4.8932	0.0000	SURCHARGED
15 minute winter	CW	9	182.643	0.043	3.3	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
15 minute summer	H1	1.000	H2	15.5	0.794	0.364	0.7186	
15 minute summer	H2	1.001	S2	31.7	1.407	0.567	0.4642	
15 minute summer	S1	2.000	S2	23.0	1.492	0.316	0.1404	
15 minute summer	S2	1.002	S3	58.7	1.462	0.520	0.8901	
15 minute summer	S3	1.003	S4	113.7	2.047	0.692	3.5471	
15 minute summer	S4	1.004	S5	136.0	1.577	0.268	1.7620	
480 minute winter	Tank	3.000	S5	-16.8	-0.322	-0.155	0.3660	
15 minute summer	S5	1.005	CW	3.3	0.742	0.180	0.0211	43.5

**Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.49%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
15 minute summer	H1	11	185.764	0.287	29.3	0.4104	0.0000	SURCHARGED
15 minute summer	H2	11	185.656	0.426	56.7	0.4818	0.0000	SURCHARGED
15 minute summer	S1	11	185.487	0.319	43.1	0.5628	0.0000	SURCHARGED
15 minute summer	S2	11	185.405	0.488	100.0	0.8629	0.0000	SURCHARGED
15 minute summer	S3	11	185.180	0.565	197.9	0.9977	0.0000	SURCHARGED
15 minute winter	S4	9	184.494	0.294	213.5	0.5190	0.0000	OK
720 minute winter	Tank	705	184.073	1.323	25.3	359.4276	0.0000	SURCHARGED
15 minute winter	S5	8	184.308	1.658	254.2	5.7441	0.0000	SURCHARGED
15 minute winter	CW	8	182.645	0.045	3.5	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
15 minute summer	H1	1.000	H2	26.6	0.878	0.627	1.4684	
15 minute summer	H2	1.001	S2	53.5	1.500	0.957	0.8199	
15 minute summer	S1	2.000	S2	40.0	1.498	0.550	0.3603	
15 minute summer	S2	1.002	S3	99.8	1.511	0.884	1.5477	
15 minute summer	S3	1.003	S4	195.0	2.188	1.187	6.1994	
15 minute winter	S4	1.004	S5	222.8	2.264	0.439	2.3881	
720 minute winter	Tank	3.000	S5	-25.3	-0.360	-0.233	0.3660	
15 minute winter	S5	1.005	CW	3.5	0.760	0.196	0.0224	45.7