STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for 2024.12.17 - INTERNAL DRAINAGE NETWORK 2.SWS

Pipe Sizes 2024.12.06 - S185 NETWORK Manhole Sizes 2024.12.06 - S185 NETWORK

FSR Rainfall Model - England and Wales

Return Period (years)	2	PIMP (%)	100
M5-60 (mm)	18.000	Add Flow / Climate Change (%)	0
Ratio R	0.365	Minimum Backdrop Height (m)	0.500
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.200
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	0.75
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	400

Designed with Level Soffits

Time Area Diagram for 2024.12.17 - INTERNAL DRAINAGE NETWORK 2.SWS

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.403	4-8	0.214	8-12	0.007

Total Area Contributing (ha) = 0.624

Total Pipe Volume (m³) = 20.173

Network Design Table for 2024.12.17 - INTERNAL DRAINAGE NETWORK 2.SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S1.000	3.817	0.596	6.4	0.000	5.00	0.0	0.600	o	100	Pipe/Conduit	
S1.001	23.415	-0.800	-29.3	0.018	0.00	0.0	0.600	o	225	Pipe/Conduit	
S1.002	9.904	0.044	225.1	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S1.003	16.474	0.073	225.7	0.040	0.00	0.0	0.600	o	225	Pipe/Conduit	
S1.004	8.442	0.038	222.2	0.024	0.00	0.0	0.600	o	225	Pipe/Conduit	
S1.005	34.311	0.152	225.7	0.035	0.00	0.0	0.600	o	225	Pipe/Conduit	
S1.006	6.861	0.078	88.0	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S1.000	50.00	5.02	27.196	0.000	0.0	0.0	0.0	3.08	24.2	0.0
S1.001	48.20	8.20	26.475	0.018	0.0	0.0	0.0	0.12	4.9	2.3
S1.002	47.65	8.39	27.275	0.018	0.0	0.0	0.0	0.87	34.5	2.3
S1.003	46.78	8.71	27.231	0.058	0.0	0.0	0.0	0.87	34.4	7.3
S1.004	46.34	8.87	27.158	0.082	0.0	0.0	0.0	0.87	34.7	10.3
S1.005	44.67	9.53	27.120	0.117	0.0	0.0	0.0	0.87	34.4	14.2
S1.006	44.47	9.61	26.968	0.117	0.0	0.0	0.0	1.39	55.5	14.2

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Network Design Table for 2024.12.17 - INTERNAL DRAINAGE NETWORK 2.SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S1.007	24.798	0.110	225.4	0.022	0.00	0.0	0.600	o	225	Pipe/Conduit	
S2.000	27.494	0.195	141.0	0.047	5.00	0.0	0.600	o	225	Pipe/Conduit	
S1.008	12.319	0.055	222.0	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
S3.000	32.453	0.138	235.2	0.124	5.00	0.0	0.600	o	300	Pipe/Conduit	
S4.000	11.440	0.048	238.3	0.049	5.00	0.0	0.600	o	300	Pipe/Conduit	
S4.001	18.063	0.075	240.8	0.026	0.00	0.0	0.600	o	300	Pipe/Conduit	
S3.001	6.507	0.027	241.0	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
S1.009	5.990	0.025	239.6	0.023	0.00	0.0	0.600	o	300	Pipe/Conduit	
S1.010	3.556	0.015	240.0	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
S5.000	21.225	0.422	50.3	0.076	5.00	0.0	0.600	o	225	Pipe/Conduit	
S5.001	29.270	0.366	80.0	0.052	0.00	0.0	0.600	o	225	Pipe/Conduit	
S5.002	9.456	0.042	225.1	0.011	0.00	0.0	0.600	o	225	Pipe/Conduit	
S6.000	9.129	0.152	60.0	0.011	5.00	0.0	0.600	o	225	Pipe/Conduit	
S6.001	22.229	0.222	100.0	0.019	0.00	0.0	0.600	o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S1.007	43.35	10.09	26.890	0.139	0.0	0.0	0.0	0.87	34.5	16.3
S2.000	50.00	5.42	26.975	0.047	0.0	0.0	0.0	1.10	43.7	6.4
S1.008	42.92	10.29	26.705	0.186	0.0	0.0	0.0	1.05	74.3	21.6
S3.000	50.00	5.53	26.815	0.124	0.0	0.0	0.0	1.02	72.2	16.8
S4.000	50.00	5.19	26.800	0.049	0.0	0.0	0.0	1.01	71.7	6.6
S4.001	50.00	5.49	26.752	0.075	0.0	0.0	0.0	1.01	71.3	10.2
S3.001	50.00	5.64	26.677	0.199	0.0	0.0	0.0	1.01	71.3	26.9
S1.009	42.70	10.38	26.650	0.408	0.0	0.0	0.0	1.01	71.5	47.2
S1.010	42.57	10.44	26.625	0.408	0.0	0.0	0.0	1.01	71.4	47.2
S5.000	50.00	5.19	27.640	0.076	0.0	0.0	0.0	1.85	73.5	10.3
S5.001	50.00	5.52	27.218	0.128	0.0	0.0	0.0	1.46	58.2	17.3
S5.002	50.00	5.71	26.852	0.139	0.0	0.0	0.0	0.87	34.5	18.8
S6.000	50.00	5.09	27.925	0.011	0.0	0.0	0.0	1.69	67.3	1.5
S6.001	50.00	5.37	27.773	0.030	0.0	0.0	0.0	1.31	52.0	4.1

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Network Design Table for 2024.12.17 - INTERNAL DRAINAGE NETWORK 2.SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S6.002	24.222	0.242	100.0	0.032	0.00	0.0	0.600	o	225	Pipe/Conduit	
S6.003	22.779	0.228	100.0	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S6.004	26.847	0.270	99.4	0.015	0.00	0.0	0.600	o	225	Pipe/Conduit	
S5.003	10.873	0.125	87.0	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S1.011	4.617	0.188	24.5	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
S1.012	4.494	0.183	24.6	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S1.013	5.592	0.224	25.0	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S6.002	50.00	5.68	27.551	0.062	0.0	0.0	0.0	1.31	52.0	8.4
S6.003	50.00	5.97	27.308	0.062	0.0	0.0	0.0	1.31	52.0	8.4
S6.004	50.00	6.31	27.081	0.077	0.0	0.0	0.0	1.31	52.1	10.4
S5.003	50.00	6.44	26.810	0.216	0.0	0.0	0.0	1.40	55.8	29.2
S1.011	42.52	10.47	26.610	0.624	0.0	0.0	0.0	3.19	225.5	71.9
S1.012	42.46	10.50	26.422	0.624	0.0	0.0	0.0	2.65	105.4	71.9
S1.013	42.38	10.53	26.239	0.624	0.0	0.0	0.0	2.63	104.6	71.9

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Manhole Schedules for 2024.12.17 - INTERNAL DRAINAGE NETWORK 2.SWS

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)
S0	28.050	0.854	Open Manhole	1200	S1.000	27.196	100			
S1	28.200	1.725	Open Manhole	1200	S1.001	26.475	225	S1.000	26.600	100
S2	29.080	1.805	Open Manhole	1200	S1.002	27.275	225	S1.001	27.275	225
S3	28.885	1.654	Open Manhole	1350	S1.003	27.231	225	S1.002	27.231	225
S4	28.810	1.652	Open Manhole	1350	S1.004	27.158	225	S1.003	27.158	225
S5	28.745	1.625	Open Manhole	1350	S1.005	27.120	225	S1.004	27.120	225
S6	28.485	1.517	Open Manhole	1350	S1.006	26.968	225	S1.005	26.968	225
S7	28.315	1.425	Open Manhole	1350	S1.007	26.890	225	S1.006	26.890	225
S15	28.400	1.425	Open Manhole	1350	S2.000	26.975	225			
S8	28.990	2.285	Open Manhole	1200	S1.008	26.705	300	S1.007	26.780	225
								S2.000	26.780	225
S16	29.025	2.210	Open Manhole	1200	S3.000	26.815	300			
S18	29.000	2.200	Open Manhole	1200	S4.000	26.800	300			
S19	29.105	2.353	Open Manhole	1200	S4.001	26.752	300	S4.000	26.752	300
S17	29.025	2.348	Open Manhole	1200	S3.001	26.677	300	S3.000	26.677	300
								S4.001	26.677	300
S9	28.900	2.250	Open Manhole	1200	S1.009	26.650	300	S1.008	26.650	300
								S3.001	26.650	300
S10	29.005	2.380	Open Manhole	1200	S1.010	26.625	300	S1.009	26.625	300
S20	29.065	1.425	Open Manhole	600	S5.000	27.640	225			
S21	28.760	1.542	Open Manhole	600	S5.001	27.218	225	S5.000	27.218	225
S22	28.365	1.513	Open Manhole	600	S5.002	26.852	225	S5.001	26.852	225
S24	29.150	1.225	Open Manhole	600	S6.000	27.925	225			
S25	29.150	1.377	Open Manhole	600	S6.001	27.773	225	S6.000	27.773	225
S26	29.150	1.599	Open Manhole	600	S6.002	27.551	225	S6.001	27.551	225
S27	29.150	1.842	Open Manhole	600	S6.003	27.308	225	S6.002	27.308	225
S28	29.250	2.169	Open Manhole	600	S6.004	27.081	225	S6.003	27.081	225
S23	28.280	1.470	Open Manhole	1350	S5.003	26.810	225	S5.002	26.810	225
								S6.004	26.810	225
S11	29.100	2.490	Open Manhole	1200	S1.011	26.610	300	S1.010	26.610	300
								S5.003	26.685	225
S12	29.070	2.648	Open Manhole	1500	S1.012	26.422	225	S1.011	26.422	300
SC13	28.450	2.211	Open Manhole	1200	S1.013	26.239	225	S1.012	26.239	225
SExisting UU MH	28.210	2.195	Open Manhole	0		OUTFALL		S1.013	26.015	225

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Manhole Schedules for 2024.12.17 - INTERNAL DRAINAGE NETWORK 2.SWS

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
S0	382552.325	393260.162	382552.325	393260.162	Required	
S1	382551.954	393263.881	382551.954	393263.881	Required	
S2	382533.279	393278.005	382533.279	393278.005	Required	
S3	382525.380	393283.980	382525.380	393283.980	Required	
S4	382515.442	393270.841	382515.442	393270.841	Required	
S5	382515.733	393262.404	382515.733	393262.404	Required	
S6	382495.275	393234.859	382495.275	393234.859	Required	
S7	382495.183	393227.999	382495.183	393227.999	Required	
S15	382461.951	393187.746	382461.951	393187.746	Required	
S8	382480.628	393207.922	382480.628	393207.922	Required	
S16	382467.112	393169.394	382467.112	393169.394	Required	
S18	382507.735	393193.626	382507.735	393193.626	Required	
S19	382500.965	393184.405	382500.965	393184.405	Required	
S17	382486.594	393195.349	382486.594	393195.349	Required	
S9	382490.500	393200.553	382490.500	393200.553	Required	

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Manhole Schedules for 2024.12.17 - INTERNAL DRAINAGE NETWORK 2.SWS

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
S10	382494.106	393205.336	382494.106	393205.336	Required	
S20	382524.133	393263.766	382524.133	393263.766	Required	
S21	382511.496	393246.713	382511.496	393246.713	Required	
S22	382494.072	393223.194	382494.072	393223.194	Required	
S24	382557.266	393262.463	382557.266	393262.463	Required	
S25	382564.467	393256.853	382564.467	393256.853	Required	
S26	382551.159	393239.068	382551.159	393239.068	Required	
S27	382537.112	393219.354	382537.112	393219.354	Required	
S28	382523.079	393201.364	382523.079	393201.364	Required	
S23	382501.602	393217.474	382501.602	393217.474	Required	
S11	382495.120	393208.744	382495.120	393208.744	Required	
S12	382491.443	393211.535	382491.443	393211.535	Required	
SC13	382487.863	393214.253	382487.863	393214.253	Required	
SExisting UU MH	382483.200	393217.339			No Entry	

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PIPELINE SCHEDULES for 2024.12.17 - INTERNAL DRAINAGE NETWORK 2.SWS

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.000	o	100	S0	28.050	27.196	0.754	Open Manhole	1200
S1.001	o	225	S1	28.200	26.475	1.500	Open Manhole	1200
S1.002	o	225	S2	29.080	27.275	1.580	Open Manhole	1200
S1.003	o	225	S3	28.885	27.231	1.429	Open Manhole	1350
S1.004	o	225	S4	28.810	27.158	1.427	Open Manhole	1350
S1.005	o	225	S5	28.745	27.120	1.400	Open Manhole	1350
S1.006	o	225	S6	28.485	26.968	1.292	Open Manhole	1350
S1.007	o	225	S7	28.315	26.890	1.200	Open Manhole	1350
S2.000	o	225	S15	28.400	26.975	1.200	Open Manhole	1350
S1.008	o	300	S8	28.990	26.705	1.985	Open Manhole	1200
S3.000	o	300	S16	29.025	26.815	1.910	Open Manhole	1200
S4.000	o	300	S18	29.000	26.800	1.900	Open Manhole	1200
S4.001	o	300	S19	29.105	26.752	2.053	Open Manhole	1200
S3.001	o	300	S17	29.025	26.677	2.048	Open Manhole	1200
S1.009	o	300	S9	28.900	26.650	1.950	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.000	3.817	6.4	S1	28.200	26.600	1.500	Open Manhole	1200
S1.001	23.415	-29.3	S2	29.080	27.275	1.580	Open Manhole	1200
S1.002	9.904	225.1	S3	28.885	27.231	1.429	Open Manhole	1350
S1.003	16.474	225.7	S4	28.810	27.158	1.427	Open Manhole	1350
S1.004	8.442	222.2	S5	28.745	27.120	1.400	Open Manhole	1350
S1.005	34.311	225.7	S6	28.485	26.968	1.292	Open Manhole	1350
S1.006	6.861	88.0	S7	28.315	26.890	1.200	Open Manhole	1350
S1.007	24.798	225.4	S8	28.990	26.780	1.985	Open Manhole	1200
S2.000	27.494	141.0	S8	28.990	26.780	1.985	Open Manhole	1200
S1.008	12.319	222.0	S9	28.900	26.650	1.950	Open Manhole	1200
S3.000	32.453	235.2	S17	29.025	26.677	2.048	Open Manhole	1200
S4.000	11.440	238.3	S19	29.105	26.752	2.053	Open Manhole	1200
S4.001	18.063	240.8	S17	29.025	26.677	2.048	Open Manhole	1200
S3.001	6.507	241.0	S9	28.900	26.650	1.950	Open Manhole	1200
S1.009	5.990	239.6	S10	29.005	26.625	2.080	Open Manhole	1200

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PIPELINE SCHEDULES for 2024.12.17 - INTERNAL DRAINAGE NETWORK 2.SWS

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.010	o	300	S10	29.005	26.625	2.080	Open Manhole	1200
S5.000	o	225	S20	29.065	27.640	1.200	Open Manhole	600
S5.001	o	225	S21	28.760	27.218	1.317	Open Manhole	600
S5.002	o	225	S22	28.365	26.852	1.288	Open Manhole	600
S6.000	o	225	S24	29.150	27.925	1.000	Open Manhole	600
S6.001	o	225	S25	29.150	27.773	1.152	Open Manhole	600
S6.002	o	225	S26	29.150	27.551	1.374	Open Manhole	600
S6.003	o	225	S27	29.150	27.308	1.617	Open Manhole	600
S6.004	o	225	S28	29.250	27.081	1.944	Open Manhole	600
S5.003	o	225	S23	28.280	26.810	1.245	Open Manhole	1350
S1.011	o	300	S11	29.100	26.610	2.190	Open Manhole	1200
S1.012	o	225	S12	29.070	26.422	2.423	Open Manhole	1500
S1.013	o	225	SC13	28.450	26.239	1.986	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.010	3.556	240.0	S11	29.100	26.610	2.190	Open Manhole	1200
S5.000	21.225	50.3	S21	28.760	27.218	1.317	Open Manhole	600
S5.001	29.270	80.0	S22	28.365	26.852	1.288	Open Manhole	600
S5.002	9.456	225.1	S23	28.280	26.810	1.245	Open Manhole	1350
S6.000	9.129	60.0	S25	29.150	27.773	1.152	Open Manhole	600
S6.001	22.229	100.0	S26	29.150	27.551	1.374	Open Manhole	600
S6.002	24.222	100.0	S27	29.150	27.308	1.617	Open Manhole	600
S6.003	22.779	100.0	S28	29.250	27.081	1.944	Open Manhole	600
S6.004	26.847	99.4	S23	28.280	26.810	1.245	Open Manhole	1350
S5.003	10.873	87.0	S11	29.100	26.685	2.190	Open Manhole	1200
S1.011	4.617	24.5	S12	29.070	26.422	2.348	Open Manhole	1500
S1.012	4.494	24.6	SC13	28.450	26.239	1.986	Open Manhole	1200
S1.013	5.592	25.0	SExisting UU MH	28.210	26.015	1.970	Open Manhole	0

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Area Summary for 2024.12.17 - INTERNAL DRAINAGE NETWORK 2.SWS

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.000	0.000	0.000
1.001	-	-	100	0.018	0.018	0.018
1.002	-	-	100	0.000	0.000	0.000
1.003	-	-	100	0.040	0.040	0.040
1.004	-	-	100	0.024	0.024	0.024
1.005	-	-	100	0.035	0.035	0.035
1.006	-	-	100	0.000	0.000	0.000
1.007	-	-	100	0.022	0.022	0.022
2.000	-	-	100	0.047	0.047	0.047
1.008	-	-	100	0.000	0.000	0.000
3.000	-	-	100	0.124	0.124	0.124
4.000	-	-	100	0.049	0.049	0.049
4.001	-	-	100	0.026	0.026	0.026
3.001	-	-	100	0.000	0.000	0.000
1.009	-	-	100	0.023	0.023	0.023
1.010	-	-	100	0.000	0.000	0.000
5.000	-	-	100	0.076	0.076	0.076
5.001	-	-	100	0.052	0.052	0.052
5.002	-	-	100	0.011	0.011	0.011
6.000	-	-	100	0.011	0.011	0.011
6.001	-	-	100	0.019	0.019	0.019
6.002	-	-	100	0.032	0.032	0.032
6.003	-	-	100	0.000	0.000	0.000
6.004	-	-	100	0.015	0.015	0.015
5.003	-	-	100	0.000	0.000	0.000
1.011	-	-	100	0.000	0.000	0.000
1.012	-	-	100	0.000	0.000	0.000
1.013	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				0.624	0.624	0.624

Surcharged Outfall Details for 2024.12.17 - INTERNAL DRAINAGE NETWORK 2.SWS

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
S1.013	SExisting UU MH	28.210	26.015	25.190	0	0

Datum (m) 25.190 Offset (mins) 0

Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
1	1.000	6	1.000	11	1.000	16	1.000	21	1.000	26	1.000
2	1.000	7	1.000	12	1.000	17	1.000	22	1.000	27	1.000
3	1.000	8	1.000	13	1.000	18	1.000	23	1.000	28	1.000
4	1.000	9	1.000	14	1.000	19	1.000	24	1.000	29	1.000
5	1.000	10	1.000	15	1.000	20	1.000	25	1.000	30	1.000

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Surcharged Outfall Details for 2024.12.17 - INTERNAL DRAINAGE NETWORK 2.SWS

Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
31	1.000	81	1.000	131	1.000	181	1.000	231	1.000	281	1.000
32	1.000	82	1.000	132	1.000	182	1.000	232	1.000	282	1.000
33	1.000	83	1.000	133	1.000	183	1.000	233	1.000	283	1.000
34	1.000	84	1.000	134	1.000	184	1.000	234	1.000	284	1.000
35	1.000	85	1.000	135	1.000	185	1.000	235	1.000	285	1.000
36	1.000	86	1.000	136	1.000	186	1.000	236	1.000	286	1.000
37	1.000	87	1.000	137	1.000	187	1.000	237	1.000	287	1.000
38	1.000	88	1.000	138	1.000	188	1.000	238	1.000	288	1.000
39	1.000	89	1.000	139	1.000	189	1.000	239	1.000	289	1.000
40	1.000	90	1.000	140	1.000	190	1.000	240	1.000	290	1.000
41	1.000	91	1.000	141	1.000	191	1.000	241	1.000	291	1.000
42	1.000	92	1.000	142	1.000	192	1.000	242	1.000	292	1.000
43	1.000	93	1.000	143	1.000	193	1.000	243	1.000	293	1.000
44	1.000	94	1.000	144	1.000	194	1.000	244	1.000	294	1.000
45	1.000	95	1.000	145	1.000	195	1.000	245	1.000	295	1.000
46	1.000	96	1.000	146	1.000	196	1.000	246	1.000	296	1.000
47	1.000	97	1.000	147	1.000	197	1.000	247	1.000	297	1.000
48	1.000	98	1.000	148	1.000	198	1.000	248	1.000	298	1.000
49	1.000	99	1.000	149	1.000	199	1.000	249	1.000	299	1.000
50	1.000	100	1.000	150	1.000	200	1.000	250	1.000	300	1.000
51	1.000	101	1.000	151	1.000	201	1.000	251	1.000	301	1.000
52	1.000	102	1.000	152	1.000	202	1.000	252	1.000	302	1.000
53	1.000	103	1.000	153	1.000	203	1.000	253	1.000	303	1.000
54	1.000	104	1.000	154	1.000	204	1.000	254	1.000	304	1.000
55	1.000	105	1.000	155	1.000	205	1.000	255	1.000	305	1.000
56	1.000	106	1.000	156	1.000	206	1.000	256	1.000	306	1.000
57	1.000	107	1.000	157	1.000	207	1.000	257	1.000	307	1.000
58	1.000	108	1.000	158	1.000	208	1.000	258	1.000	308	1.000
59	1.000	109	1.000	159	1.000	209	1.000	259	1.000	309	1.000
60	1.000	110	1.000	160	1.000	210	1.000	260	1.000	310	1.000
61	1.000	111	1.000	161	1.000	211	1.000	261	1.000	311	1.000
62	1.000	112	1.000	162	1.000	212	1.000	262	1.000	312	1.000
63	1.000	113	1.000	163	1.000	213	1.000	263	1.000	313	1.000
64	1.000	114	1.000	164	1.000	214	1.000	264	1.000	314	1.000
65	1.000	115	1.000	165	1.000	215	1.000	265	1.000	315	1.000
66	1.000	116	1.000	166	1.000	216	1.000	266	1.000	316	1.000
67	1.000	117	1.000	167	1.000	217	1.000	267	1.000	317	1.000
68	1.000	118	1.000	168	1.000	218	1.000	268	1.000	318	1.000
69	1.000	119	1.000	169	1.000	219	1.000	269	1.000	319	1.000
70	1.000	120	1.000	170	1.000	220	1.000	270	1.000	320	1.000
71	1.000	121	1.000	171	1.000	221	1.000	271	1.000	321	1.000
72	1.000	122	1.000	172	1.000	222	1.000	272	1.000	322	1.000
73	1.000	123	1.000	173	1.000	223	1.000	273	1.000	323	1.000
74	1.000	124	1.000	174	1.000	224	1.000	274	1.000	324	1.000
75	1.000	125	1.000	175	1.000	225	1.000	275	1.000	325	1.000
76	1.000	126	1.000	176	1.000	226	1.000	276	1.000	326	1.000
77	1.000	127	1.000	177	1.000	227	1.000	277	1.000	327	1.000
78	1.000	128	1.000	178	1.000	228	1.000	278	1.000	328	1.000
79	1.000	129	1.000	179	1.000	229	1.000	279	1.000	329	1.000
80	1.000	130	1.000	180	1.000	230	1.000	280	1.000	330	1.000

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Surcharged Outfall Details for 2024.12.17 - INTERNAL DRAINAGE NETWORK 2.SWS

Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
331	1.000	381	1.000	431	1.000	481	1.000	531	1.000	581	1.000
332	1.000	382	1.000	432	1.000	482	1.000	532	1.000	582	1.000
333	1.000	383	1.000	433	1.000	483	1.000	533	1.000	583	1.000
334	1.000	384	1.000	434	1.000	484	1.000	534	1.000	584	1.000
335	1.000	385	1.000	435	1.000	485	1.000	535	1.000	585	1.000
336	1.000	386	1.000	436	1.000	486	1.000	536	1.000	586	1.000
337	1.000	387	1.000	437	1.000	487	1.000	537	1.000	587	1.000
338	1.000	388	1.000	438	1.000	488	1.000	538	1.000	588	1.000
339	1.000	389	1.000	439	1.000	489	1.000	539	1.000	589	1.000
340	1.000	390	1.000	440	1.000	490	1.000	540	1.000	590	1.000
341	1.000	391	1.000	441	1.000	491	1.000	541	1.000	591	1.000
342	1.000	392	1.000	442	1.000	492	1.000	542	1.000	592	1.000
343	1.000	393	1.000	443	1.000	493	1.000	543	1.000	593	1.000
344	1.000	394	1.000	444	1.000	494	1.000	544	1.000	594	1.000
345	1.000	395	1.000	445	1.000	495	1.000	545	1.000	595	1.000
346	1.000	396	1.000	446	1.000	496	1.000	546	1.000	596	1.000
347	1.000	397	1.000	447	1.000	497	1.000	547	1.000	597	1.000
348	1.000	398	1.000	448	1.000	498	1.000	548	1.000	598	1.000
349	1.000	399	1.000	449	1.000	499	1.000	549	1.000	599	1.000
350	1.000	400	1.000	450	1.000	500	1.000	550	1.000	600	1.000
351	1.000	401	1.000	451	1.000	501	1.000	551	1.000	601	1.000
352	1.000	402	1.000	452	1.000	502	1.000	552	1.000	602	1.000
353	1.000	403	1.000	453	1.000	503	1.000	553	1.000	603	1.000
354	1.000	404	1.000	454	1.000	504	1.000	554	1.000	604	1.000
355	1.000	405	1.000	455	1.000	505	1.000	555	1.000	605	1.000
356	1.000	406	1.000	456	1.000	506	1.000	556	1.000	606	1.000
357	1.000	407	1.000	457	1.000	507	1.000	557	1.000	607	1.000
358	1.000	408	1.000	458	1.000	508	1.000	558	1.000	608	1.000
359	1.000	409	1.000	459	1.000	509	1.000	559	1.000	609	1.000
360	1.000	410	1.000	460	1.000	510	1.000	560	1.000	610	1.000
361	1.000	411	1.000	461	1.000	511	1.000	561	1.000	611	1.000
362	1.000	412	1.000	462	1.000	512	1.000	562	1.000	612	1.000
363	1.000	413	1.000	463	1.000	513	1.000	563	1.000	613	1.000
364	1.000	414	1.000	464	1.000	514	1.000	564	1.000	614	1.000
365	1.000	415	1.000	465	1.000	515	1.000	565	1.000	615	1.000
366	1.000	416	1.000	466	1.000	516	1.000	566	1.000	616	1.000
367	1.000	417	1.000	467	1.000	517	1.000	567	1.000	617	1.000
368	1.000	418	1.000	468	1.000	518	1.000	568	1.000	618	1.000
369	1.000	419	1.000	469	1.000	519	1.000	569	1.000	619	1.000
370	1.000	420	1.000	470	1.000	520	1.000	570	1.000	620	1.000
371	1.000	421	1.000	471	1.000	521	1.000	571	1.000	621	1.000
372	1.000	422	1.000	472	1.000	522	1.000	572	1.000	622	1.000
373	1.000	423	1.000	473	1.000	523	1.000	573	1.000	623	1.000
374	1.000	424	1.000	474	1.000	524	1.000	574	1.000	624	1.000
375	1.000	425	1.000	475	1.000	525	1.000	575	1.000	625	1.000
376	1.000	426	1.000	476	1.000	526	1.000	576	1.000	626	1.000
377	1.000	427	1.000	477	1.000	527	1.000	577	1.000	627	1.000
378	1.000	428	1.000	478	1.000	528	1.000	578	1.000	628	1.000
379	1.000	429	1.000	479	1.000	529	1.000	579	1.000	629	1.000
380	1.000	430	1.000	480	1.000	530	1.000	580	1.000	630	1.000

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Surcharged Outfall Details for 2024.12.17 - INTERNAL DRAINAGE NETWORK 2.SWS

Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
631	1.000	681	1.000	731	1.000	781	1.000	831	1.000	881	1.000
632	1.000	682	1.000	732	1.000	782	1.000	832	1.000	882	1.000
633	1.000	683	1.000	733	1.000	783	1.000	833	1.000	883	1.000
634	1.000	684	1.000	734	1.000	784	1.000	834	1.000	884	1.000
635	1.000	685	1.000	735	1.000	785	1.000	835	1.000	885	1.000
636	1.000	686	1.000	736	1.000	786	1.000	836	1.000	886	1.000
637	1.000	687	1.000	737	1.000	787	1.000	837	1.000	887	1.000
638	1.000	688	1.000	738	1.000	788	1.000	838	1.000	888	1.000
639	1.000	689	1.000	739	1.000	789	1.000	839	1.000	889	1.000
640	1.000	690	1.000	740	1.000	790	1.000	840	1.000	890	1.000
641	1.000	691	1.000	741	1.000	791	1.000	841	1.000	891	1.000
642	1.000	692	1.000	742	1.000	792	1.000	842	1.000	892	1.000
643	1.000	693	1.000	743	1.000	793	1.000	843	1.000	893	1.000
644	1.000	694	1.000	744	1.000	794	1.000	844	1.000	894	1.000
645	1.000	695	1.000	745	1.000	795	1.000	845	1.000	895	1.000
646	1.000	696	1.000	746	1.000	796	1.000	846	1.000	896	1.000
647	1.000	697	1.000	747	1.000	797	1.000	847	1.000	897	1.000
648	1.000	698	1.000	748	1.000	798	1.000	848	1.000	898	1.000
649	1.000	699	1.000	749	1.000	799	1.000	849	1.000	899	1.000
650	1.000	700	1.000	750	1.000	800	1.000	850	1.000	900	1.000
651	1.000	701	1.000	751	1.000	801	1.000	851	1.000	901	1.000
652	1.000	702	1.000	752	1.000	802	1.000	852	1.000	902	1.000
653	1.000	703	1.000	753	1.000	803	1.000	853	1.000	903	1.000
654	1.000	704	1.000	754	1.000	804	1.000	854	1.000	904	1.000
655	1.000	705	1.000	755	1.000	805	1.000	855	1.000	905	1.000
656	1.000	706	1.000	756	1.000	806	1.000	856	1.000	906	1.000
657	1.000	707	1.000	757	1.000	807	1.000	857	1.000	907	1.000
658	1.000	708	1.000	758	1.000	808	1.000	858	1.000	908	1.000
659	1.000	709	1.000	759	1.000	809	1.000	859	1.000	909	1.000
660	1.000	710	1.000	760	1.000	810	1.000	860	1.000	910	1.000
661	1.000	711	1.000	761	1.000	811	1.000	861	1.000	911	1.000
662	1.000	712	1.000	762	1.000	812	1.000	862	1.000	912	1.000
663	1.000	713	1.000	763	1.000	813	1.000	863	1.000	913	1.000
664	1.000	714	1.000	764	1.000	814	1.000	864	1.000	914	1.000
665	1.000	715	1.000	765	1.000	815	1.000	865	1.000	915	1.000
666	1.000	716	1.000	766	1.000	816	1.000	866	1.000	916	1.000
667	1.000	717	1.000	767	1.000	817	1.000	867	1.000	917	1.000
668	1.000	718	1.000	768	1.000	818	1.000	868	1.000	918	1.000
669	1.000	719	1.000	769	1.000	819	1.000	869	1.000	919	1.000
670	1.000	720	1.000	770	1.000	820	1.000	870	1.000	920	1.000
671	1.000	721	1.000	771	1.000	821	1.000	871	1.000	921	1.000
672	1.000	722	1.000	772	1.000	822	1.000	872	1.000	922	1.000
673	1.000	723	1.000	773	1.000	823	1.000	873	1.000	923	1.000
674	1.000	724	1.000	774	1.000	824	1.000	874	1.000	924	1.000
675	1.000	725	1.000	775	1.000	825	1.000	875	1.000	925	1.000
676	1.000	726	1.000	776	1.000	826	1.000	876	1.000	926	1.000
677	1.000	727	1.000	777	1.000	827	1.000	877	1.000	927	1.000
678	1.000	728	1.000	778	1.000	828	1.000	878	1.000	928	1.000
679	1.000	729	1.000	779	1.000	829	1.000	879	1.000	929	1.000
680	1.000	730	1.000	780	1.000	830	1.000	880	1.000	930	1.000

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Surcharged Outfall Details for 2024.12.17 - INTERNAL DRAINAGE NETWORK 2.SWS

Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
931	1.000	981	1.000	1031	1.000	1081	1.000	1131	1.000	1181	1.000
932	1.000	982	1.000	1032	1.000	1082	1.000	1132	1.000	1182	1.000
933	1.000	983	1.000	1033	1.000	1083	1.000	1133	1.000	1183	1.000
934	1.000	984	1.000	1034	1.000	1084	1.000	1134	1.000	1184	1.000
935	1.000	985	1.000	1035	1.000	1085	1.000	1135	1.000	1185	1.000
936	1.000	986	1.000	1036	1.000	1086	1.000	1136	1.000	1186	1.000
937	1.000	987	1.000	1037	1.000	1087	1.000	1137	1.000	1187	1.000
938	1.000	988	1.000	1038	1.000	1088	1.000	1138	1.000	1188	1.000
939	1.000	989	1.000	1039	1.000	1089	1.000	1139	1.000	1189	1.000
940	1.000	990	1.000	1040	1.000	1090	1.000	1140	1.000	1190	1.000
941	1.000	991	1.000	1041	1.000	1091	1.000	1141	1.000	1191	1.000
942	1.000	992	1.000	1042	1.000	1092	1.000	1142	1.000	1192	1.000
943	1.000	993	1.000	1043	1.000	1093	1.000	1143	1.000	1193	1.000
944	1.000	994	1.000	1044	1.000	1094	1.000	1144	1.000	1194	1.000
945	1.000	995	1.000	1045	1.000	1095	1.000	1145	1.000	1195	1.000
946	1.000	996	1.000	1046	1.000	1096	1.000	1146	1.000	1196	1.000
947	1.000	997	1.000	1047	1.000	1097	1.000	1147	1.000	1197	1.000
948	1.000	998	1.000	1048	1.000	1098	1.000	1148	1.000	1198	1.000
949	1.000	999	1.000	1049	1.000	1099	1.000	1149	1.000	1199	1.000
950	1.000	1000	1.000	1050	1.000	1100	1.000	1150	1.000	1200	1.000
951	1.000	1001	1.000	1051	1.000	1101	1.000	1151	1.000	1201	1.000
952	1.000	1002	1.000	1052	1.000	1102	1.000	1152	1.000	1202	1.000
953	1.000	1003	1.000	1053	1.000	1103	1.000	1153	1.000	1203	1.000
954	1.000	1004	1.000	1054	1.000	1104	1.000	1154	1.000	1204	1.000
955	1.000	1005	1.000	1055	1.000	1105	1.000	1155	1.000	1205	1.000
956	1.000	1006	1.000	1056	1.000	1106	1.000	1156	1.000	1206	1.000
957	1.000	1007	1.000	1057	1.000	1107	1.000	1157	1.000	1207	1.000
958	1.000	1008	1.000	1058	1.000	1108	1.000	1158	1.000	1208	1.000
959	1.000	1009	1.000	1059	1.000	1109	1.000	1159	1.000	1209	1.000
960	1.000	1010	1.000	1060	1.000	1110	1.000	1160	1.000	1210	1.000
961	1.000	1011	1.000	1061	1.000	1111	1.000	1161	1.000	1211	1.000
962	1.000	1012	1.000	1062	1.000	1112	1.000	1162	1.000	1212	1.000
963	1.000	1013	1.000	1063	1.000	1113	1.000	1163	1.000	1213	1.000
964	1.000	1014	1.000	1064	1.000	1114	1.000	1164	1.000	1214	1.000
965	1.000	1015	1.000	1065	1.000	1115	1.000	1165	1.000	1215	1.000
966	1.000	1016	1.000	1066	1.000	1116	1.000	1166	1.000	1216	1.000
967	1.000	1017	1.000	1067	1.000	1117	1.000	1167	1.000	1217	1.000
968	1.000	1018	1.000	1068	1.000	1118	1.000	1168	1.000	1218	1.000
969	1.000	1019	1.000	1069	1.000	1119	1.000	1169	1.000	1219	1.000
970	1.000	1020	1.000	1070	1.000	1120	1.000	1170	1.000	1220	1.000
971	1.000	1021	1.000	1071	1.000	1121	1.000	1171	1.000	1221	1.000
972	1.000	1022	1.000	1072	1.000	1122	1.000	1172	1.000	1222	1.000
973	1.000	1023	1.000	1073	1.000	1123	1.000	1173	1.000	1223	1.000
974	1.000	1024	1.000	1074	1.000	1124	1.000	1174	1.000	1224	1.000
975	1.000	1025	1.000	1075	1.000	1125	1.000	1175	1.000	1225	1.000
976	1.000	1026	1.000	1076	1.000	1126	1.000	1176	1.000	1226	1.000
977	1.000	1027	1.000	1077	1.000	1127	1.000	1177	1.000	1227	1.000
978	1.000	1028	1.000	1078	1.000	1128	1.000	1178	1.000	1228	1.000
979	1.000	1029	1.000	1079	1.000	1129	1.000	1179	1.000	1229	1.000
980	1.000	1030	1.000	1080	1.000	1130	1.000	1180	1.000	1230	1.000

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Surcharged Outfall Details for 2024.12.17 - INTERNAL DRAINAGE NETWORK 2.SWS

Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
1231	1.000	1266	1.000	1301	1.000	1336	1.000	1371	1.000	1406	1.000
1232	1.000	1267	1.000	1302	1.000	1337	1.000	1372	1.000	1407	1.000
1233	1.000	1268	1.000	1303	1.000	1338	1.000	1373	1.000	1408	1.000
1234	1.000	1269	1.000	1304	1.000	1339	1.000	1374	1.000	1409	1.000
1235	1.000	1270	1.000	1305	1.000	1340	1.000	1375	1.000	1410	1.000
1236	1.000	1271	1.000	1306	1.000	1341	1.000	1376	1.000	1411	1.000
1237	1.000	1272	1.000	1307	1.000	1342	1.000	1377	1.000	1412	1.000
1238	1.000	1273	1.000	1308	1.000	1343	1.000	1378	1.000	1413	1.000
1239	1.000	1274	1.000	1309	1.000	1344	1.000	1379	1.000	1414	1.000
1240	1.000	1275	1.000	1310	1.000	1345	1.000	1380	1.000	1415	1.000
1241	1.000	1276	1.000	1311	1.000	1346	1.000	1381	1.000	1416	1.000
1242	1.000	1277	1.000	1312	1.000	1347	1.000	1382	1.000	1417	1.000
1243	1.000	1278	1.000	1313	1.000	1348	1.000	1383	1.000	1418	1.000
1244	1.000	1279	1.000	1314	1.000	1349	1.000	1384	1.000	1419	1.000
1245	1.000	1280	1.000	1315	1.000	1350	1.000	1385	1.000	1420	1.000
1246	1.000	1281	1.000	1316	1.000	1351	1.000	1386	1.000	1421	1.000
1247	1.000	1282	1.000	1317	1.000	1352	1.000	1387	1.000	1422	1.000
1248	1.000	1283	1.000	1318	1.000	1353	1.000	1388	1.000	1423	1.000
1249	1.000	1284	1.000	1319	1.000	1354	1.000	1389	1.000	1424	1.000
1250	1.000	1285	1.000	1320	1.000	1355	1.000	1390	1.000	1425	1.000
1251	1.000	1286	1.000	1321	1.000	1356	1.000	1391	1.000	1426	1.000
1252	1.000	1287	1.000	1322	1.000	1357	1.000	1392	1.000	1427	1.000
1253	1.000	1288	1.000	1323	1.000	1358	1.000	1393	1.000	1428	1.000
1254	1.000	1289	1.000	1324	1.000	1359	1.000	1394	1.000	1429	1.000
1255	1.000	1290	1.000	1325	1.000	1360	1.000	1395	1.000	1430	1.000
1256	1.000	1291	1.000	1326	1.000	1361	1.000	1396	1.000	1431	1.000
1257	1.000	1292	1.000	1327	1.000	1362	1.000	1397	1.000	1432	1.000
1258	1.000	1293	1.000	1328	1.000	1363	1.000	1398	1.000	1433	1.000
1259	1.000	1294	1.000	1329	1.000	1364	1.000	1399	1.000	1434	1.000
1260	1.000	1295	1.000	1330	1.000	1365	1.000	1400	1.000	1435	1.000
1261	1.000	1296	1.000	1331	1.000	1366	1.000	1401	1.000	1436	1.000
1262	1.000	1297	1.000	1332	1.000	1367	1.000	1402	1.000	1437	1.000
1263	1.000	1298	1.000	1333	1.000	1368	1.000	1403	1.000	1438	1.000
1264	1.000	1299	1.000	1334	1.000	1369	1.000	1404	1.000	1439	1.000
1265	1.000	1300	1.000	1335	1.000	1370	1.000	1405	1.000	1440	1.000

Simulation Criteria for 2024.12.17 - INTERNAL DRAINAGE NETWORK 2.SWS

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs	0	Number of Storage Structures	1
Number of Online Controls	2	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

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Simulation Criteria for 2024.12.17 - INTERNAL DRAINAGE NETWORK 2.SWS

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	2	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	18.000	Storm Duration (mins)	30
Ratio R	0.365		

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Online Controls for 2024.12.17 - INTERNAL DRAINAGE NETWORK 2.SWS

Pump Manhole: S1, DS/PN: S1.001, Volume (m³): 2.0

Invert Level (m) 26.475

Depth (m)	Flow (l/s)
0.800	3.0000

Hydro-Brake® Optimum Manhole: S12, DS/PN: S1.012, Volume (m³): 4.9

Unit Reference	MD-SHE-0140-1000-1400-1000
Design Head (m)	1.400
Design Flow (l/s)	10.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	140
Invert Level (m)	26.422
Minimum Outlet Pipe Diameter (mm)	225
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.400	10.0
Flush-Flo™	0.410	10.0
Kick-Flo®	0.879	8.0
Mean Flow over Head Range	-	8.7

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	5.0	1.200	9.3	3.000	14.3	7.000	21.5
0.200	9.2	1.400	10.0	3.500	15.4	7.500	22.2
0.300	9.8	1.600	10.6	4.000	16.5	8.000	22.9
0.400	10.0	1.800	11.3	4.500	17.4	8.500	23.6
0.500	9.9	2.000	11.8	5.000	18.3	9.000	24.3
0.600	9.8	2.200	12.4	5.500	19.2	9.500	24.9
0.800	8.9	2.400	12.9	6.000	20.0		
1.000	8.5	2.600	13.4	6.500	20.8		

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Storage Structures for 2024.12.17 - INTERNAL DRAINAGE NETWORK 2.SWS

Cellular Storage Manhole: S11, DS/PN: S1.011

Invert Level (m) 26.610 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	250.0	250.0	1.201	0.0	334.0
1.200	250.0	334.0			

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 2024.12.17 - INTERNAL DRAINAGE NETWORK 2.SWS

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Storage Structures 1
Number of Online Controls 2 Number of Time/Area Diagrams 0
Number of Offline Controls 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.366
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 18.000 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0
Analysis Timestep 2.5 Second Increment (Extended)
DTS Status ON
DVD Status ON
Inertia Status OFF

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years) 100
Climate Change (%) 45

WARNING: Half Drain Time has not been calculated as the structure is too full.

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S1.000	S0	30 Winter	100	+45%	100/15 Summer				27.754
S1.001	S1	30 Winter	100	+45%	100/15 Summer				27.756
S1.002	S2	15 Winter	100	+45%	100/15 Summer				28.221
S1.003	S3	15 Winter	100	+45%	100/15 Summer				28.219
S1.004	S4	15 Winter	100	+45%	100/15 Summer				28.191
S1.005	S5	15 Winter	100	+45%	100/15 Summer				28.141
S1.006	S6	15 Winter	100	+45%	100/15 Summer				27.989
S1.007	S7	15 Winter	100	+45%	100/15 Summer				27.893
S2.000	S15	15 Winter	100	+45%	100/15 Summer				27.784
S1.008	S8	15 Winter	100	+45%	100/15 Summer				27.726
S3.000	S16	15 Winter	100	+45%	100/15 Summer				27.878
S4.000	S18	15 Winter	100	+45%	100/15 Summer				27.867
S4.001	S19	15 Winter	100	+45%	100/15 Summer				27.846
S3.001	S17	15 Winter	100	+45%	100/15 Summer				27.762
S1.009	S9	240 Winter	100	+45%	100/15 Summer				27.676
S1.010	S10	240 Winter	100	+45%	100/15 Summer				27.673

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 2024.12.17 - INTERNAL DRAINAGE NETWORK 2.SWS

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S0	0.458	0.000	0.06			1.2	FLOOD RISK	
S1.001	S1	1.056	0.000	0.29			3.0	SURCHARGED	
S1.002	S2	0.721	0.000	0.20			5.8	SURCHARGED	
S1.003	S3	0.763	0.000	0.48			14.8	SURCHARGED	
S1.004	S4	0.808	0.000	0.78			21.8	SURCHARGED	
S1.005	S5	0.796	0.000	0.99			32.1	SURCHARGED	
S1.006	S6	0.796	0.000	0.85			33.6	SURCHARGED	
S1.007	S7	0.778	0.000	1.26			40.0	SURCHARGED	
S2.000	S15	0.584	0.000	0.50			20.2	SURCHARGED	
S1.008	S8	0.721	0.000	0.97			58.4	SURCHARGED	
S3.000	S16	0.763	0.000	0.91			59.9	SURCHARGED	
S4.000	S18	0.767	0.000	0.39			22.2	SURCHARGED	
S4.001	S19	0.794	0.000	0.52			32.1	SURCHARGED	
S3.001	S17	0.785	0.000	1.78			90.0	SURCHARGED	
S1.009	S9	0.727	0.000	0.81			40.5	SURCHARGED	
S1.010	S10	0.748	0.000	0.81			40.3	SURCHARGED	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 2024.12.17 - INTERNAL DRAINAGE NETWORK 2.SWS

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S5.000	S20	15 Winter	100	+45%	100/15 Summer				28.364
S5.001	S21	15 Winter	100	+45%	100/15 Summer				28.225
S5.002	S22	15 Winter	100	+45%	100/15 Summer				27.725
S6.000	S24	15 Winter	100	+45%					27.975
S6.001	S25	15 Winter	100	+45%					27.867
S6.002	S26	15 Winter	100	+45%	100/15 Winter				27.795
S6.003	S27	15 Winter	100	+45%	100/15 Summer				27.702
S6.004	S28	240 Winter	100	+45%	100/15 Summer				27.679
S5.003	S23	240 Winter	100	+45%	100/15 Summer				27.676
S1.011	S11	240 Winter	100	+45%	100/15 Summer				27.671
S1.012	S12	240 Winter	100	+45%	100/15 Summer				27.682
S1.013	SC13	1440 Summer	100	+45%					26.297

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S5.000	S20	0.499	0.000	0.57			38.0	SURCHARGED	
S5.001	S21	0.782	0.000	1.15			62.3	SURCHARGED	
S5.002	S22	0.648	0.000	2.35			67.1	SURCHARGED	
S6.000	S24	-0.175	0.000	0.11			6.1	OK	
S6.001	S25	-0.131	0.000	0.36			17.3	OK	
S6.002	S26	0.019	0.000	0.74			35.2	SURCHARGED	
S6.003	S27	0.169	0.000	0.61			29.2	SURCHARGED	
S6.004	S28	0.374	0.000	0.18			8.6	SURCHARGED	
S5.003	S23	0.641	0.000	0.48			22.7	SURCHARGED	
S1.011	S11	0.761	0.000	0.11			11.5	SURCHARGED	
S1.012	S12	1.035	0.000	0.17			10.0	SURCHARGED	
S1.013	SC13	-0.167	0.000	0.15			10.0	OK	

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