STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FEH Rainfall Model

Return Period (years)	1
FEH Rainfall Version	1999
Site Location	GB 507250 184950 TQ 07250 84950
C (1km)	-0.025
D1 (1km)	0.304
D2 (1km)	0.321
D3 (1km)	0.230
E (1km)	0.305
F (1km)	2.546
Maximum Rainfall (mm/hr)	50
Maximum Time of Concentration (mins)	30
Foul Sewage (l/s/ha)	0.000
Volumetric Runoff Coeff.	0.750
PIMP (%)	100
Add Flow / Climate Change (%)	40
Minimum Backdrop Height (m)	0.000
Maximum Backdrop Height (m)	0.000
Min Design Depth for Optimisation (m)	1.200
Min Vel for Auto Design only (m/s)	1.00
Min Slope for Optimisation (1:X)	500

Designed with Level Inverts

Time Area Diagram for Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.706	4-8	1.027	8-12	0.012

Total Area Contributing (ha) = 1.745

Total Pipe Volume (m³) = 344.030

Network Design Table for Storm

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

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)

Network Design Table for Storm

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
1.000	17.350	0.040	433.8	0.042	5.00	0.0	0.600	o	750	Pipe/Conduit	
2.000	12.000	0.027	444.4	0.030	5.00	0.0	0.600	o	750	Pipe/Conduit	
1.001	47.400	0.105	451.4	0.108	0.00	0.0	0.600	o	750	Pipe/Conduit	
3.000	6.000	0.400	15.0	0.000	5.00	0.0	0.600	o	225	Pipe/Conduit	
1.002	38.400	0.085	451.8	0.096	0.00	0.0	0.600	o	750	Pipe/Conduit	
4.000	6.000	0.400	15.0	0.000	5.00	0.0	0.600	o	225	Pipe/Conduit	
5.000	24.250	0.053	457.5	0.000	5.00	0.0	0.600	o	750	Pipe/Conduit	
6.000	6.000	0.400	15.0	0.000	5.00	0.0	0.600	o	225	Pipe/Conduit	
5.001	37.050	0.082	451.8	0.093	0.00	0.0	0.600	o	750	Pipe/Conduit	
1.003	71.400	0.159	449.1	0.178	0.00	0.0	0.600	o	750	Pipe/Conduit	
7.000	18.050	0.040	451.3	0.045	5.00	0.0	0.600	o	750	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)
1.000	50.00	5.22	33.505	0.042	0.0	0.0	2.3	1.34	590.8	8.0
2.000	50.00	5.15	33.492	0.030	0.0	0.0	1.6	1.32	583.6	5.7
1.001	50.00	5.82	33.465	0.180	0.0	0.0	9.7	1.31	579.0	34.1
3.000	50.00	5.03	33.760	0.000	0.0	0.0	0.0	3.40	135.0	0.0
1.002	50.00	6.31	33.360	0.276	0.0	0.0	14.9	1.31	578.8	52.3
4.000	50.00	5.03	33.760	0.000	0.0	0.0	0.0	3.40	135.0	0.0
5.000	50.00	5.31	33.410	0.000	0.0	0.0	0.0	1.30	575.1	0.0
6.000	50.00	5.03	33.760	0.000	0.0	0.0	0.0	3.40	135.0	0.0
5.001	50.00	5.78	33.357	0.093	0.0	0.0	5.0	1.31	578.7	17.6
1.003	50.00	7.21	33.275	0.547	0.0	0.0	29.6	1.31	580.5	103.7
7.000	50.00	5.23	33.358	0.045	0.0	0.0	2.4	1.31	579.1	8.5

Network Design Table for Storm

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
8.000	50.900	0.113	450.4	0.127	5.00	0.0	0.600	o	750	Pipe/Conduit	
7.001	14.950	0.033	453.0	0.037	0.00	0.0	0.600	o	750	Pipe/Conduit	
9.000	50.900	0.113	450.4	0.127	5.00	0.0	0.600	o	750	Pipe/Conduit	
7.002	25.255	0.057	443.1	0.063	0.00	0.0	0.600	o	750	Pipe/Conduit	
10.000	50.350	0.112	449.6	0.125	5.00	0.0	0.600	o	750	Pipe/Conduit	
7.003	21.900	0.049	446.9	0.055	0.00	0.0	0.600	o	750	Pipe/Conduit	
11.000	57.950	0.129	449.2	0.145	5.00	0.0	0.600	o	750	Pipe/Conduit	
7.004	28.200	0.063	447.6	0.071	0.00	0.0	0.600	o	750	Pipe/Conduit	
1.004	5.850	0.013	450.0	0.015	0.00	0.0	0.600	o	750	Pipe/Conduit	
1.005	43.850	0.097	452.1	0.110	0.00	0.0	0.600	o	750	Pipe/Conduit	
1.006	9.550	0.021	454.8	0.027	0.00	0.0	0.600	o	975	Pipe/Conduit	
12.000	25.150	0.055	457.3	0.063	5.00	0.0	0.600	o	750	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)
8.000	50.00	5.65	33.431	0.127	0.0	0.0	6.9	1.31	579.6	24.1
7.001	50.00	5.84	33.318	0.209	0.0	0.0	11.3	1.31	577.9	39.6
9.000	50.00	5.65	33.398	0.127	0.0	0.0	6.9	1.31	579.6	24.1
7.002	50.00	6.16	33.285	0.399	0.0	0.0	21.6	1.32	584.5	75.6
10.000	50.00	5.64	33.340	0.125	0.0	0.0	6.8	1.31	580.2	23.7
7.003	50.00	6.43	33.228	0.579	0.0	0.0	31.4	1.32	581.9	109.8
11.000	50.00	5.74	33.308	0.145	0.0	0.0	7.9	1.31	580.4	27.5
7.004	50.00	6.79	33.179	0.795	0.0	0.0	43.1	1.32	581.5	150.7
1.004	50.00	7.29	33.116	1.357	0.0	0.0	73.5	1.31	579.9	257.3
1.005	50.00	7.85	33.103	1.467	0.0	0.0	79.5	1.31	578.6	278.1
1.006	50.00	7.95	33.006	1.494	0.0	0.0	80.9	1.54	1147.7	283.2
12.000	50.00	5.32	33.040	0.063	0.0	0.0	3.4	1.30	575.2	11.9

Network Design Table for Storm

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
1.007	39.600	0.088	450.0	0.099	0.00	0.0	0.600	o	975	Pipe/Conduit	
13.000	20.100	0.045	446.7	0.052	5.00	0.0	0.600	o	750	Pipe/Conduit	
1.008	14.500	0.032	453.1	0.037	0.00	0.0	0.600	o	975	Pipe/Conduit	
1.009	4.900	0.015	326.7	0.000	0.00	0.0	0.600	o	975	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)
1.007	50.00	8.38	32.985	1.656	0.0	0.0	89.7	1.55	1153.8	313.9
13.000	50.00	5.25	32.942	0.052	0.0	0.0	2.8	1.32	582.1	9.9
1.008	49.57	8.53	32.897	1.745	0.0	0.0	93.7	1.54	1149.8	328.0
1.009	49.39	8.58	32.865	1.745	0.0	0.0	93.7	1.82	1355.8	328.0

Manhole Schedules for Storm

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)	Backdrop (mm)
S1	34.750	1.245	Open Manhole	1800	1.000	33.505	750				
S2	34.750	1.258	Open Manhole	1800	2.000	33.492	750				
S3	34.750	1.285	Open Manhole	1800	1.001	33.465	750	1.000	33.465	750	
								2.000	33.465	750	
S4	34.750	0.990	Open Manhole	1200	3.000	33.760	225				
S5	34.750	1.390	Open Manhole	1800	1.002	33.360	750	1.001	33.360	750	
								3.000	33.360	225	
S6	34.750	0.990	Open Manhole	1200	4.000	33.760	225				
S7	34.970	1.560	Open Manhole	1200	5.000	33.410	750				
S8	34.750	0.990	Open Manhole	1200	6.000	33.760	225				
S9	34.750	1.393	Open Manhole	1800	5.001	33.357	750	5.000	33.357	750	
								6.000	33.360	225	
S10	34.750	1.475	Open Manhole	1800	1.003	33.275	750	1.002	33.275	750	
								4.000	33.360	225	
								5.001	33.275	750	
S11	34.800	1.442	Open Manhole	1800	7.000	33.358	750				
S12	34.800	1.369	Open Manhole	1800	8.000	33.431	750				
S13	34.800	1.482	Open Manhole	1800	7.001	33.318	750	7.000	33.318	750	
								8.000	33.318	750	
S14	34.800	1.402	Open Manhole	1800	9.000	33.398	750				
S15	34.800	1.515	Open Manhole	1800	7.002	33.285	750	7.001	33.285	750	
								9.000	33.285	750	
S16	34.800	1.460	Open Manhole	1800	10.000	33.340	750				
S17	34.800	1.572	Open Manhole	1800	7.003	33.228	750	7.002	33.228	750	
								10.000	33.228	750	
S18	34.800	1.492	Open Manhole	1800	11.000	33.308	750				
S19	34.800	1.621	Open Manhole	1800	7.004	33.179	750	7.003	33.179	750	
								11.000	33.179	750	
S20	34.800	1.684	Open Manhole	1800	1.004	33.116	750	1.003	33.116	750	
								7.004	33.116	750	
S21	34.800	1.697	Open Manhole	1800	1.005	33.103	750	1.004	33.103	750	
S22	35.350	2.344	Open Manhole	1800	1.006	33.006	975	1.005	33.006	750	
S23	35.500	2.460	Open Manhole	1800	12.000	33.040	750				
S24	35.500	2.515	Open Manhole	1800	1.007	32.985	975	1.006	32.985	975	
								12.000	32.985	750	
S25	35.650	2.708	Open Manhole	1800	13.000	32.942	750				
S26	35.650	2.753	Open Manhole	1800	1.008	32.897	975	1.007	32.897	975	
								13.000	32.897	750	

Manhole Schedules for Storm

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)	Backdrop (mm)
S27 / FC	35.920	3.055	Open Manhole	1800	1.009	32.865	975	1.008	32.865	975	
S28	35.920	3.070	Open Manhole	1800		OUTFALL		1.009	32.850	975	

PIPELINE SCHEDULES for Storm

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)
1.000	o	750	S1	34.750	33.505	0.495	Open Manhole	1800
2.000	o	750	S2	34.750	33.492	0.508	Open Manhole	1800
1.001	o	750	S3	34.750	33.465	0.535	Open Manhole	1800
3.000	o	225	S4	34.750	33.760	0.765	Open Manhole	1200
1.002	o	750	S5	34.750	33.360	0.640	Open Manhole	1800
4.000	o	225	S6	34.750	33.760	0.765	Open Manhole	1200
5.000	o	750	S7	34.970	33.410	0.810	Open Manhole	1200
6.000	o	225	S8	34.750	33.760	0.765	Open Manhole	1200
5.001	o	750	S9	34.750	33.357	0.643	Open Manhole	1800
1.003	o	750	S10	34.750	33.275	0.725	Open Manhole	1800
7.000	o	750	S11	34.800	33.358	0.692	Open Manhole	1800

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)
1.000	17.350	433.8	S3	34.750	33.465	0.535	Open Manhole	1800
2.000	12.000	444.4	S3	34.750	33.465	0.535	Open Manhole	1800
1.001	47.400	451.4	S5	34.750	33.360	0.640	Open Manhole	1800
3.000	6.000	15.0	S5	34.750	33.360	1.165	Open Manhole	1800
1.002	38.400	451.8	S10	34.750	33.275	0.725	Open Manhole	1800
4.000	6.000	15.0	S10	34.750	33.360	1.165	Open Manhole	1800
5.000	24.250	457.5	S9	34.750	33.357	0.643	Open Manhole	1800
6.000	6.000	15.0	S9	34.750	33.360	1.165	Open Manhole	1800
5.001	37.050	451.8	S10	34.750	33.275	0.725	Open Manhole	1800
1.003	71.400	449.1	S20	34.800	33.116	0.934	Open Manhole	1800
7.000	18.050	451.3	S13	34.800	33.318	0.732	Open Manhole	1800

PIPELINE SCHEDULES for Storm

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)
8.000	o	750	S12	34.800	33.431	0.619	Open Manhole	1800
7.001	o	750	S13	34.800	33.318	0.732	Open Manhole	1800
9.000	o	750	S14	34.800	33.398	0.652	Open Manhole	1800
7.002	o	750	S15	34.800	33.285	0.765	Open Manhole	1800
10.000	o	750	S16	34.800	33.340	0.710	Open Manhole	1800
7.003	o	750	S17	34.800	33.228	0.822	Open Manhole	1800
11.000	o	750	S18	34.800	33.308	0.742	Open Manhole	1800
7.004	o	750	S19	34.800	33.179	0.871	Open Manhole	1800
1.004	o	750	S20	34.800	33.116	0.934	Open Manhole	1800
1.005	o	750	S21	34.800	33.103	0.947	Open Manhole	1800
1.006	o	975	S22	35.350	33.006	1.369	Open Manhole	1800

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)
8.000	50.900	450.4	S13	34.800	33.318	0.732	Open Manhole	1800
7.001	14.950	453.0	S15	34.800	33.285	0.765	Open Manhole	1800
9.000	50.900	450.4	S15	34.800	33.285	0.765	Open Manhole	1800
7.002	25.255	443.1	S17	34.800	33.228	0.822	Open Manhole	1800
10.000	50.350	449.6	S17	34.800	33.228	0.822	Open Manhole	1800
7.003	21.900	446.9	S19	34.800	33.179	0.871	Open Manhole	1800
11.000	57.950	449.2	S19	34.800	33.179	0.871	Open Manhole	1800
7.004	28.200	447.6	S20	34.800	33.116	0.934	Open Manhole	1800
1.004	5.850	450.0	S21	34.800	33.103	0.947	Open Manhole	1800
1.005	43.850	452.1	S22	35.350	33.006	1.594	Open Manhole	1800
1.006	9.550	454.8	S24	35.500	32.985	1.540	Open Manhole	1800

PIPELINE SCHEDULES for Storm

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)
12.000	o	750	S23	35.500	33.040	1.710	Open Manhole	1800
1.007	o	975	S24	35.500	32.985	1.540	Open Manhole	1800
13.000	o	750	S25	35.650	32.942	1.958	Open Manhole	1800
1.008	o	975	S26	35.650	32.897	1.778	Open Manhole	1800
1.009	o	975	S27 / FC	35.920	32.865	2.080	Open Manhole	1800

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)
12.000	25.150	457.3	S24	35.500	32.985	1.765	Open Manhole	1800
1.007	39.600	450.0	S26	35.650	32.897	1.778	Open Manhole	1800
13.000	20.100	446.7	S26	35.650	32.897	2.003	Open Manhole	1800
1.008	14.500	453.1	S27 / FC	35.920	32.865	2.080	Open Manhole	1800
1.009	4.900	326.7	S28	35.920	32.850	2.095	Open Manhole	1800

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.009	S28	35.920	32.850	0.000	1800	0

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.840	Additional Flow - % of Total Flow	40.000
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	6
Number of Online Controls	1	Number of Time/Area Diagrams	4
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Synthetic Rainfall Details

Rainfall Model	FEH
Return Period (years)	1
FEH Rainfall Version	1999
Site Location	GB 507250 184950 TQ 07250 84950
C (1km)	-0.025
D1 (1km)	0.304
D2 (1km)	0.321
D3 (1km)	0.230
E (1km)	0.305
F (1km)	2.546
Summer Storms	No
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Storm Duration (mins)	15

Online Controls for Storm

Hydro-Brake® Optimum Manhole: S27 / FC, DS/PN: 1.009, Volume (m³): 17.3

Unit Reference	MD-SHE-0143-1170-1885-1170
Design Head (m)	1.885
Design Flow (l/s)	11.7
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	143
Invert Level (m)	32.865
Minimum Outlet Pipe Diameter (mm)	225
Suggested Manhole Diameter (mm)	1500

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.885	11.7
Flush-Flo™	0.553	11.6
Kick-Flo®	1.143	9.2
Mean Flow over Head Range	-	10.2

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	5.2	1.200	9.5	3.000	14.6	7.000	21.9
0.200	9.9	1.400	10.2	3.500	15.7	7.500	22.6
0.300	10.9	1.600	10.8	4.000	16.7	8.000	23.3
0.400	11.4	1.800	11.4	4.500	17.7	8.500	24.0
0.500	11.6	2.000	12.0	5.000	18.6	9.000	24.7
0.600	11.6	2.200	12.6	5.500	19.5	9.500	25.3
0.800	11.3	2.400	13.1	6.000	20.3		
1.000	10.5	2.600	13.6	6.500	21.1		

Storage Structures for Storm

Tank or Pond Manhole: S3, DS/PN: 1.001

Invert Level (m) 34.150

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	6.3	1.400	0.0	2.800	0.0	4.200	0.0
0.200	18.6	1.600	0.0	3.000	0.0	4.400	0.0
0.400	59.7	1.800	0.0	3.200	0.0	4.600	0.0
0.600	117.0	2.000	0.0	3.400	0.0	4.800	0.0
0.800	0.0	2.200	0.0	3.600	0.0	5.000	0.0
1.000	0.0	2.400	0.0	3.800	0.0		
1.200	0.0	2.600	0.0	4.000	0.0		

Tank or Pond Manhole: S5, DS/PN: 1.002

Invert Level (m) 34.150

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	12.2	1.400	0.0	2.800	0.0	4.200	0.0
0.200	31.2	1.600	0.0	3.000	0.0	4.400	0.0
0.400	70.3	1.800	0.0	3.200	0.0	4.600	0.0
0.600	117.0	2.000	0.0	3.400	0.0	4.800	0.0
0.800	0.0	2.200	0.0	3.600	0.0	5.000	0.0
1.000	0.0	2.400	0.0	3.800	0.0		
1.200	0.0	2.600	0.0	4.000	0.0		

Tank or Pond Manhole: S7, DS/PN: 5.000

Invert Level (m) 34.150

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	4.4	1.400	0.0	2.800	0.0	4.200	0.0
0.200	14.5	1.600	0.0	3.000	0.0	4.400	0.0
0.400	27.4	1.800	0.0	3.200	0.0	4.600	0.0
0.600	43.0	2.000	0.0	3.400	0.0	4.800	0.0
0.800	0.0	2.200	0.0	3.600	0.0	5.000	0.0
1.000	0.0	2.400	0.0	3.800	0.0		
1.200	0.0	2.600	0.0	4.000	0.0		

Tank or Pond Manhole: S9, DS/PN: 5.001

Invert Level (m) 33.950

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	9.6	0.400	52.7	0.800	144.0	1.200	0.0
0.200	21.7	0.600	97.0	1.000	0.0	1.400	0.0

Tank or Pond Manhole: S9, DS/PN: 5.001

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
1.600	0.0	2.600	0.0	3.600	0.0	4.600	0.0
1.800	0.0	2.800	0.0	3.800	0.0	4.800	0.0
2.000	0.0	3.000	0.0	4.000	0.0	5.000	0.0
2.200	0.0	3.200	0.0	4.200	0.0		
2.400	0.0	3.400	0.0	4.400	0.0		

Tank or Pond Manhole: S19, DS/PN: 7.004

Invert Level (m) 33.800

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	8.1	1.400	0.0	2.800	0.0	4.200	0.0
0.200	42.2	1.600	0.0	3.000	0.0	4.400	0.0
0.400	92.9	1.800	0.0	3.200	0.0	4.600	0.0
0.600	161.0	2.000	0.0	3.400	0.0	4.800	0.0
0.800	254.0	2.200	0.0	3.600	0.0	5.000	0.0
1.000	350.0	2.400	0.0	3.800	0.0		
1.200	0.0	2.600	0.0	4.000	0.0		

Cellular Storage Manhole: S22, DS/PN: 1.006

Invert Level (m) 33.050 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	728.0	0.0	2.600	0.0	0.0
0.200	728.0	0.0	2.800	0.0	0.0
0.400	728.0	0.0	3.000	0.0	0.0
0.600	728.0	0.0	3.200	0.0	0.0
0.800	728.0	0.0	3.400	0.0	0.0
1.000	728.0	0.0	3.600	0.0	0.0
1.200	728.0	0.0	3.800	0.0	0.0
1.400	0.0	0.0	4.000	0.0	0.0
1.600	0.0	0.0	4.200	0.0	0.0
1.800	0.0	0.0	4.400	0.0	0.0
2.000	0.0	0.0	4.600	0.0	0.0
2.200	0.0	0.0	4.800	0.0	0.0
2.400	0.0	0.0	5.000	0.0	0.0

Time Area Diagram for Green Roof at Pipe Number 3.000 (Storm)

Area (m³) 505 Evaporation (mm/day) 3
Depression Storage (mm) 5 Decay Coefficient 0.050

Time Area Diagram for Green Roof at Pipe Number 3.000 (Storm)

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.009177	32	36	0.001853	64	68	0.000374	96	100	0.000076
4	8	0.007513	36	40	0.001517	68	72	0.000306	100	104	0.000062
8	12	0.006151	40	44	0.001242	72	76	0.000251	104	108	0.000051
12	16	0.005036	44	48	0.001017	76	80	0.000205	108	112	0.000041
16	20	0.004123	48	52	0.000833	80	84	0.000168	112	116	0.000034
20	24	0.003376	52	56	0.000682	84	88	0.000138	116	120	0.000028
24	28	0.002764	56	60	0.000558	88	92	0.000113			
28	32	0.002263	60	64	0.000457	92	96	0.000092			

Time Area Diagram for Green Roof at Pipe Number 4.000 (Storm)

Area (m³) 510 Evaporation (mm/day) 3
Depression Storage (mm) 5 Decay Coefficient 0.050

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.009268	32	36	0.001871	64	68	0.000378	96	100	0.000076
4	8	0.007588	36	40	0.001532	68	72	0.000309	100	104	0.000062
8	12	0.006212	40	44	0.001254	72	76	0.000253	104	108	0.000051
12	16	0.005086	44	48	0.001027	76	80	0.000207	108	112	0.000042
16	20	0.004164	48	52	0.000841	80	84	0.000170	112	116	0.000034
20	24	0.003409	52	56	0.000688	84	88	0.000139	116	120	0.000028
24	28	0.002791	56	60	0.000564	88	92	0.000114			
28	32	0.002285	60	64	0.000461	92	96	0.000093			

Time Area Diagram for Green Roof at Pipe Number 5.000 (Storm)

Area (m³) 850 Evaporation (mm/day) 3
Depression Storage (mm) 5 Decay Coefficient 0.050

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.015446	32	36	0.003119	64	68	0.000630	96	100	0.000127
4	8	0.012646	36	40	0.002553	68	72	0.000515	100	104	0.000104
8	12	0.010354	40	44	0.002090	72	76	0.000422	104	108	0.000085
12	16	0.008477	44	48	0.001711	76	80	0.000346	108	112	0.000070
16	20	0.006940	48	52	0.001401	80	84	0.000283	112	116	0.000057
20	24	0.005682	52	56	0.001147	84	88	0.000232	116	120	0.000047
24	28	0.004652	56	60	0.000939	88	92	0.000190			
28	32	0.003809	60	64	0.000769	92	96	0.000155			

Time Area Diagram for Green Roof at Pipe Number 6.000 (Storm)

Area (m³) 510 Evaporation (mm/day) 3
Depression Storage (mm) 5 Decay Coefficient 0.050

Time Area Diagram for Green Roof at Pipe Number 6.000 (Storm)

Time (mins) From:	To:	Area (ha)	Time (mins) From:	To:	Area (ha)	Time (mins) From:	To:	Area (ha)	Time (mins) From:	To:	Area (ha)
0	4	0.009268	32	36	0.001871	64	68	0.000378	96	100	0.000076
4	8	0.007588	36	40	0.001532	68	72	0.000309	100	104	0.000062
8	12	0.006212	40	44	0.001254	72	76	0.000253	104	108	0.000051
12	16	0.005086	44	48	0.001027	76	80	0.000207	108	112	0.000042
16	20	0.004164	48	52	0.000841	80	84	0.000170	112	116	0.000034
20	24	0.003409	52	56	0.000688	84	88	0.000139	116	120	0.000028
24	28	0.002791	56	60	0.000564	88	92	0.000114			
28	32	0.002285	60	64	0.000461	92	96	0.000093			

Summary of Results for 15 minute 1 year Winter (Storm)

Margin for Flood Risk Warning (mm)	100.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	ON
Inertia Status	OFF

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status
1.000	S1	33.629	-0.626	0.000	0.02		8.3	OK
2.000	S2	33.624	-0.618	0.000	0.02		5.8	OK
1.001	S3	33.621	-0.594	0.000	0.06		31.1	OK
3.000	S4	33.773	-0.212	0.000	0.01		1.1	OK
1.002	S5	33.557	-0.553	0.000	0.09		43.0	OK
4.000	S6	33.773	-0.212	0.000	0.01		1.1	OK
5.000	S7	33.526	-0.634	0.000	0.00		1.7	OK
6.000	S8	33.773	-0.212	0.000	0.01		1.1	OK
5.001	S9	33.526	-0.581	0.000	0.03		12.1	OK
1.003	S10	33.522	-0.503	0.000	0.14		70.4	OK
7.000	S11	33.542	-0.566	0.000	0.02		8.2	OK
8.000	S12	33.582	-0.599	0.000	0.05		25.3	OK
7.001	S13	33.541	-0.527	0.000	0.10		30.7	OK
9.000	S14	33.555	-0.593	0.000	0.05		25.3	OK
7.002	S15	33.531	-0.504	0.000	0.13		54.6	OK
10.000	S16	33.518	-0.572	0.000	0.05		24.6	OK
7.003	S17	33.513	-0.465	0.000	0.17		71.7	OK
11.000	S18	33.498	-0.560	0.000	0.06		28.5	OK
7.004	S19	33.493	-0.436	0.000	0.20		89.3	OK
1.004	S20	33.469	-0.397	0.000	0.45		153.8	OK
1.005	S21	33.406	-0.447	0.000	0.34		162.6	OK
1.006	S22	33.238	-0.743	0.000	0.05		23.2	OK
12.000	S23	33.237	-0.553	0.000	0.03		12.3	OK
1.007	S24	33.237	-0.723	0.000	0.02		19.8	OK
13.000	S25	33.234	-0.458	0.000	0.02		9.3	OK
1.008	S26	33.234	-0.638	0.000	0.03		14.8	OK
1.009	S27 / FC	33.233	-0.607	0.000	0.02		10.8	OK

Summary of Results for 30 minute 1 year Winter (Storm)

Margin for Flood Risk Warning (mm)	100.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	ON
Inertia Status	OFF

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status
1.000	S1	33.612	-0.643	0.000	0.02		6.2	OK
2.000	S2	33.608	-0.634	0.000	0.01		4.4	OK
1.001	S3	33.605	-0.610	0.000	0.05		24.9	OK
3.000	S4	33.783	-0.202	0.000	0.02		2.0	OK
1.002	S5	33.544	-0.566	0.000	0.08		36.0	OK
4.000	S6	33.784	-0.201	0.000	0.02		2.0	OK
5.000	S7	33.514	-0.646	0.000	0.01		3.2	OK
6.000	S8	33.784	-0.201	0.000	0.02		2.0	OK
5.001	S9	33.514	-0.593	0.000	0.02		10.6	OK
1.003	S10	33.508	-0.517	0.000	0.12		63.0	OK
7.000	S11	33.528	-0.580	0.000	0.02		6.3	OK
8.000	S12	33.563	-0.618	0.000	0.04		19.0	OK
7.001	S13	33.527	-0.541	0.000	0.08		25.7	OK
9.000	S14	33.540	-0.608	0.000	0.04		18.9	OK
7.002	S15	33.517	-0.518	0.000	0.11		46.2	OK
10.000	S16	33.507	-0.583	0.000	0.04		18.4	OK
7.003	S17	33.499	-0.479	0.000	0.15		62.9	OK
11.000	S18	33.486	-0.572	0.000	0.04		21.3	OK
7.004	S19	33.480	-0.449	0.000	0.18		82.1	OK
1.004	S20	33.454	-0.412	0.000	0.42		142.6	OK
1.005	S21	33.393	-0.460	0.000	0.32		151.6	OK
1.006	S22	33.282	-0.699	0.000	0.04		18.6	OK
12.000	S23	33.282	-0.508	0.000	0.02		9.1	OK
1.007	S24	33.282	-0.678	0.000	0.02		18.6	OK
13.000	S25	33.279	-0.413	0.000	0.02		7.2	OK
1.008	S26	33.279	-0.593	0.000	0.03		15.3	OK
1.009	S27 / FC	33.279	-0.561	0.000	0.02		11.1	OK

Summary of Results for 60 minute 1 year Winter (Storm)

Margin for Flood Risk Warning (mm)	100.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	ON
Inertia Status	OFF

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status
1.000	S1	33.588	-0.667	0.000	0.01		4.2	OK
2.000	S2	33.582	-0.660	0.000	0.01		2.9	OK
1.001	S3	33.579	-0.636	0.000	0.04		17.3	OK
3.000	S4	33.785	-0.200	0.000	0.03		2.4	OK
1.002	S5	33.515	-0.595	0.000	0.06		26.0	OK
4.000	S6	33.785	-0.200	0.000	0.03		2.5	OK
5.000	S7	33.483	-0.677	0.000	0.01		4.2	OK
6.000	S8	33.785	-0.200	0.000	0.03		2.5	OK
5.001	S9	33.482	-0.625	0.000	0.02		9.7	OK
1.003	S10	33.474	-0.551	0.000	0.09		48.7	OK
7.000	S11	33.496	-0.612	0.000	0.01		4.3	OK
8.000	S12	33.536	-0.645	0.000	0.03		12.6	OK
7.001	S13	33.495	-0.573	0.000	0.06		18.7	OK
9.000	S14	33.512	-0.636	0.000	0.03		12.6	OK
7.002	S15	33.483	-0.552	0.000	0.08		35.2	OK
10.000	S16	33.476	-0.614	0.000	0.02		12.2	OK
7.003	S17	33.464	-0.514	0.000	0.12		49.0	OK
11.000	S18	33.455	-0.603	0.000	0.03		14.2	OK
7.004	S19	33.443	-0.486	0.000	0.15		65.6	OK
1.004	S20	33.414	-0.452	0.000	0.33		114.1	OK
1.005	S21	33.360	-0.493	0.000	0.26		122.3	OK
1.006	S22	33.332	-0.649	0.000	0.03		15.5	OK
12.000	S23	33.331	-0.459	0.000	0.01		6.0	OK
1.007	S24	33.331	-0.629	0.000	0.02		15.8	OK
13.000	S25	33.328	-0.364	0.000	0.01		4.8	OK
1.008	S26	33.328	-0.544	0.000	0.03		14.6	OK
1.009	S27 / FC	33.326	-0.514	0.000	0.02		11.3	OK

Summary of Results for 120 minute 1 year Winter (Storm)

Margin for Flood Risk Warning (mm)	100.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	ON
Inertia Status	OFF

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status
1.000	S1	33.566	-0.689	0.000	0.01		2.7	OK
2.000	S2	33.559	-0.683	0.000	0.01		1.9	OK
1.001	S3	33.555	-0.660	0.000	0.02		11.3	OK
3.000	S4	33.784	-0.201	0.000	0.03		2.3	OK
1.002	S5	33.483	-0.627	0.000	0.04		17.1	OK
4.000	S6	33.784	-0.201	0.000	0.03		2.3	OK
5.000	S7	33.484	-0.676	0.000	0.01		3.9	OK
6.000	S8	33.784	-0.201	0.000	0.03		2.3	OK
5.001	S9	33.467	-0.640	0.000	0.02		10.7	OK
1.003	S10	33.443	-0.582	0.000	0.07		37.9	OK
7.000	S11	33.458	-0.650	0.000	0.01		2.8	OK
8.000	S12	33.513	-0.668	0.000	0.02		8.0	OK
7.001	S13	33.456	-0.612	0.000	0.04		12.6	OK
9.000	S14	33.485	-0.663	0.000	0.02		8.0	OK
7.002	S15	33.443	-0.592	0.000	0.06		24.0	OK
10.000	S16	33.439	-0.651	0.000	0.02		7.9	OK
7.003	S17	33.418	-0.560	0.000	0.08		34.5	OK
11.000	S18	33.414	-0.644	0.000	0.02		9.1	OK
7.004	S19	33.394	-0.535	0.000	0.11		46.7	OK
1.004	S20	33.388	-0.478	0.000	0.24		81.2	OK
1.005	S21	33.392	-0.461	0.000	0.18		86.8	OK
1.006	S22	33.377	-0.604	0.000	0.03		14.4	OK
12.000	S23	33.376	-0.414	0.000	0.01		3.7	OK
1.007	S24	33.376	-0.584	0.000	0.02		13.9	OK
13.000	S25	33.373	-0.319	0.000	0.01		3.0	OK
1.008	S26	33.373	-0.499	0.000	0.02		13.2	OK
1.009	S27 / FC	33.371	-0.469	0.000	0.02		11.4	OK

Summary of Results for 240 minute 1 year Winter (Storm)

Margin for Flood Risk Warning (mm) 100.0
Analysis Timestep 2.5 Second Increment (Extended)
DTS Status ON
DVD Status ON
Inertia Status OFF

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status
1.000	S1	33.548	-0.707	0.000	0.00		1.7	OK
2.000	S2	33.542	-0.700	0.000	0.00		1.2	OK
1.001	S3	33.539	-0.676	0.000	0.01		7.1	OK
3.000	S4	33.781	-0.204	0.000	0.02		1.7	OK
1.002	S5	33.462	-0.648	0.000	0.03		12.5	OK
4.000	S6	33.781	-0.204	0.000	0.02		1.7	OK
5.000	S7	33.464	-0.696	0.000	0.01		2.9	OK
6.000	S8	33.781	-0.204	0.000	0.02		1.7	OK
5.001	S9	33.448	-0.659	0.000	0.02		8.1	OK
1.003	S10	33.424	-0.601	0.000	0.06		28.8	OK
7.000	S11	33.426	-0.682	0.000	0.00		1.8	OK
8.000	S12	33.488	-0.693	0.000	0.01		5.0	OK
7.001	S13	33.423	-0.645	0.000	0.03		8.2	OK
9.000	S14	33.461	-0.687	0.000	0.01		5.0	OK
7.002	S15	33.414	-0.621	0.000	0.04		15.4	OK
10.000	S16	33.416	-0.674	0.000	0.01		4.9	OK
7.003	S17	33.412	-0.566	0.000	0.05		22.0	OK
11.000	S18	33.412	-0.646	0.000	0.01		5.7	OK
7.004	S19	33.412	-0.517	0.000	0.07		29.7	OK
1.004	S20	33.411	-0.455	0.000	0.17		57.2	OK
1.005	S21	33.413	-0.440	0.000	0.13		61.2	OK
1.006	S22	33.404	-0.577	0.000	0.03		15.2	OK
12.000	S23	33.403	-0.387	0.000	0.01		2.3	OK
1.007	S24	33.403	-0.557	0.000	0.01		13.1	OK
13.000	S25	33.400	-0.292	0.000	0.00		1.9	OK
1.008	S26	33.400	-0.472	0.000	0.03		14.1	OK
1.009	S27 / FC	33.398	-0.442	0.000	0.02		11.5	OK

Summary of Results for 360 minute 1 year Winter (Storm)

Margin for Flood Risk Warning (mm)	100.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	ON
Inertia Status	OFF

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status
1.000	S1	33.534	-0.721	0.000	0.00		1.3	OK
2.000	S2	33.527	-0.715	0.000	0.00		0.9	OK
1.001	S3	33.523	-0.692	0.000	0.01		5.4	OK
3.000	S4	33.777	-0.208	0.000	0.02		1.4	OK
1.002	S5	33.448	-0.662	0.000	0.02		9.6	OK
4.000	S6	33.777	-0.208	0.000	0.02		1.4	OK
5.000	S7	33.453	-0.707	0.000	0.01		2.3	OK
6.000	S8	33.777	-0.208	0.000	0.02		1.4	OK
5.001	S9	33.438	-0.669	0.000	0.01		6.4	OK
1.003	S10	33.422	-0.603	0.000	0.04		22.4	OK
7.000	S11	33.419	-0.689	0.000	0.00		1.3	OK
8.000	S12	33.474	-0.707	0.000	0.01		3.8	OK
7.001	S13	33.419	-0.649	0.000	0.02		6.3	OK
9.000	S14	33.445	-0.703	0.000	0.01		3.8	OK
7.002	S15	33.418	-0.617	0.000	0.03		11.9	OK
10.000	S16	33.418	-0.672	0.000	0.01		3.7	OK
7.003	S17	33.417	-0.561	0.000	0.04		17.0	OK
11.000	S18	33.417	-0.641	0.000	0.01		4.3	OK
7.004	S19	33.417	-0.512	0.000	0.05		22.9	OK
1.004	S20	33.416	-0.450	0.000	0.13		44.6	OK
1.005	S21	33.416	-0.437	0.000	0.10		47.7	OK
1.006	S22	33.409	-0.572	0.000	0.03		14.6	OK
12.000	S23	33.408	-0.382	0.000	0.00		1.7	OK
1.007	S24	33.408	-0.552	0.000	0.02		14.1	OK
13.000	S25	33.405	-0.287	0.000	0.00		1.4	OK
1.008	S26	33.405	-0.467	0.000	0.03		15.0	OK
1.009	S27 / FC	33.403	-0.437	0.000	0.02		11.5	OK

Summary of Results for 720 minute 1 year Winter (Storm)

Margin for Flood Risk Warning (mm) 100.0
Analysis Timestep 2.5 Second Increment (Extended)
DTS Status ON
DVD Status ON
Inertia Status OFF

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status
1.000	S1	33.519	-0.736	0.000	0.00		0.8	OK
2.000	S2	33.508	-0.734	0.000	0.00		0.6	OK
1.001	S3	33.501	-0.714	0.000	0.01		3.3	OK
3.000	S4	33.771	-0.214	0.000	0.01		0.9	OK
1.002	S5	33.430	-0.680	0.000	0.01		6.0	OK
4.000	S6	33.771	-0.214	0.000	0.01		0.9	OK
5.000	S7	33.435	-0.725	0.000	0.00		1.5	OK
6.000	S8	33.771	-0.214	0.000	0.01		0.9	OK
5.001	S9	33.418	-0.689	0.000	0.01		4.1	OK
1.003	S10	33.409	-0.616	0.000	0.03		14.3	OK
7.000	S11	33.408	-0.700	0.000	0.00		0.8	OK
8.000	S12	33.457	-0.724	0.000	0.00		2.4	OK
7.001	S13	33.408	-0.660	0.000	0.01		3.9	OK
9.000	S14	33.426	-0.722	0.000	0.00		2.4	OK
7.002	S15	33.407	-0.628	0.000	0.02		7.4	OK
10.000	S16	33.407	-0.683	0.000	0.00		2.3	OK
7.003	S17	33.406	-0.572	0.000	0.03		10.6	OK
11.000	S18	33.406	-0.652	0.000	0.01		2.7	OK
7.004	S19	33.405	-0.524	0.000	0.03		14.2	OK
1.004	S20	33.404	-0.462	0.000	0.08		28.1	OK
1.005	S21	33.409	-0.444	0.000	0.06		30.1	OK
1.006	S22	33.399	-0.582	0.000	0.02		11.2	OK
12.000	S23	33.398	-0.392	0.000	0.00		1.1	OK
1.007	S24	33.398	-0.562	0.000	0.01		11.9	OK
13.000	S25	33.395	-0.297	0.000	0.00		0.9	OK
1.008	S26	33.395	-0.477	0.000	0.02		11.9	OK
1.009	S27 / FC	33.393	-0.447	0.000	0.02		11.5	OK

Summary of Results for 1440 minute 1 year Winter (Storm)

Margin for Flood Risk Warning (mm) 100.0
Analysis Timestep 2.5 Second Increment (Extended)
DTS Status ON
DVD Status ON
Inertia Status OFF

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status
1.000	S1	33.512	-0.743	0.000	0.00		0.5	OK
2.000	S2	33.499	-0.743	0.000	0.00		0.3	OK
1.001	S3	33.486	-0.729	0.000	0.00		2.1	OK
3.000	S4	33.767	-0.218	0.000	0.01		0.6	OK
1.002	S5	33.406	-0.704	0.000	0.01		3.8	OK
4.000	S6	33.767	-0.218	0.000	0.01		0.6	OK
5.000	S7	33.423	-0.737	0.000	0.00		0.9	OK
6.000	S8	33.767	-0.218	0.000	0.01		0.6	OK
5.001	S9	33.393	-0.714	0.000	0.01		2.6	OK
1.003	S10	33.366	-0.659	0.000	0.02		9.0	OK
7.000	S11	33.372	-0.736	0.000	0.00		0.5	OK
8.000	S12	33.446	-0.735	0.000	0.00		1.5	OK
7.001	S13	33.367	-0.701	0.000	0.01		2.4	OK
9.000	S14	33.414	-0.734	0.000	0.00		1.5	OK
7.002	S15	33.361	-0.674	0.000	0.01		4.6	OK
10.000	S16	33.364	-0.726	0.000	0.00		1.5	OK
7.003	S17	33.355	-0.623	0.000	0.02		6.7	OK
11.000	S18	33.357	-0.701	0.000	0.00		1.7	OK
7.004	S19	33.354	-0.575	0.000	0.02		9.1	OK
1.004	S20	33.352	-0.514	0.000	0.05		17.9	OK
1.005	S21	33.351	-0.502	0.000	0.04		19.1	OK
1.006	S22	33.347	-0.634	0.000	0.02		10.6	OK
12.000	S23	33.346	-0.444	0.000	0.00		0.7	OK
1.007	S24	33.346	-0.614	0.000	0.01		11.1	OK
13.000	S25	33.343	-0.349	0.000	0.00		0.6	OK
1.008	S26	33.343	-0.529	0.000	0.02		11.4	OK
1.009	S27 / FC	33.342	-0.498	0.000	0.02		11.4	OK

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FEH Rainfall Model

Return Period (years)	30
FEH Rainfall Version	1999
Site Location	GB 507250 184950 TQ 07250 84950
C (1km)	-0.025
D1 (1km)	0.304
D2 (1km)	0.321
D3 (1km)	0.230
E (1km)	0.305
F (1km)	2.546
Maximum Rainfall (mm/hr)	50
Maximum Time of Concentration (mins)	30
Foul Sewage (l/s/ha)	0.000
Volumetric Runoff Coeff.	0.750
PIMP (%)	100
Add Flow / Climate Change (%)	40
Minimum Backdrop Height (m)	0.000
Maximum Backdrop Height (m)	0.000
Min Design Depth for Optimisation (m)	1.200
Min Vel for Auto Design only (m/s)	1.00
Min Slope for Optimisation (1:X)	500

Designed with Level Inverts

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.840	Additional Flow - % of Total Flow	40.000
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	6
Number of Online Controls	1	Number of Time/Area Diagrams	4
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH
Return Period (years)	30
FEH Rainfall Version	1999
Site Location	GB 507250 184950 TQ 07250 84950
C (1km)	-0.025
D1 (1km)	0.304
D2 (1km)	0.321
D3 (1km)	0.230
E (1km)	0.305

Synthetic Rainfall Details

F (1km)	2.546
Summer Storms	No
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Storm Duration (mins)	15

Summary of Results for 15 minute 30 year Winter (Storm)

Margin for Flood Risk Warning (mm)	100.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	ON
Inertia Status	OFF

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status
1.000	S1	33.986	-0.269	0.000	0.07		25.4	OK
2.000	S2	33.985	-0.257	0.000	0.06		18.1	OK
1.001	S3	33.984	-0.231	0.000	0.21		100.3	OK
3.000	S4	33.939	-0.046	0.000	0.10		9.2	OK
1.002	S5	33.931	-0.179	0.000	0.28		130.3	OK
4.000	S6	33.886	-0.099	0.000	0.11		9.5	OK
5.000	S7	33.942	-0.218	0.000	0.04		15.2	OK
6.000	S8	33.938	-0.047	0.000	0.10		9.2	OK
5.001	S9	33.930	-0.177	0.000	0.08		39.5	OK
1.003	S10	33.878	-0.147	0.000	0.42		213.4	OK
7.000	S11	34.020	-0.088	0.000	0.07		25.7	OK
8.000	S12	34.091	-0.090	0.000	0.16		76.3	OK
7.001	S13	34.014	-0.054	0.000	0.22		68.3	OK
9.000	S14	34.078	-0.070	0.000	0.15		75.8	OK
7.002	S15	33.981	-0.054	0.000	0.28		123.4	OK
10.000	S16	34.020	-0.070	0.000	0.15		73.9	OK
7.003	S17	33.918	-0.060	0.000	0.38		157.6	OK
11.000	S18	33.958	-0.100	0.000	0.17		85.7	OK
7.004	S19	33.864	-0.065	0.000	0.46		203.4	OK
1.004	S20	33.798	-0.068	0.000	1.00		341.1	OK
1.005	S21	33.637	-0.216	0.000	0.80		384.9	OK
1.006	S22	33.601	-0.380	0.000	0.14		64.8	OK
12.000	S23	33.600	-0.190	0.000	0.09		38.6	OK
1.007	S24	33.601	-0.359	0.000	0.05		47.2	OK
13.000	S25	33.595	-0.097	0.000	0.08		31.2	OK
1.008	S26	33.595	-0.277	0.000	0.05		27.9	OK
1.009	S27 / FC	33.592	-0.248	0.000	0.02		11.6	OK

Summary of Results for 30 minute 30 year Winter (Storm)

Margin for Flood Risk Warning (mm)	100.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	ON
Inertia Status	OFF

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status
1.000	S1	33.908	-0.347	0.000	0.05		18.1	OK
2.000	S2	33.908	-0.334	0.000	0.04		12.6	OK
1.001	S3	33.907	-0.308	0.000	0.15		72.9	OK
3.000	S4	33.871	-0.114	0.000	0.10		9.0	OK
1.002	S5	33.863	-0.247	0.000	0.20		96.2	OK
4.000	S6	33.828	-0.157	0.000	0.10		9.3	OK
5.000	S7	33.871	-0.289	0.000	0.04		15.1	OK
6.000	S8	33.870	-0.115	0.000	0.10		9.1	OK
5.001	S9	33.862	-0.245	0.000	0.09		41.8	OK
1.003	S10	33.820	-0.205	0.000	0.32		165.3	OK
7.000	S11	33.896	-0.212	0.000	0.05		18.4	OK
8.000	S12	33.944	-0.237	0.000	0.11		54.5	OK
7.001	S13	33.892	-0.176	0.000	0.17		53.6	OK
9.000	S14	33.934	-0.214	0.000	0.11		54.3	OK
7.002	S15	33.877	-0.158	0.000	0.23		100.9	OK
10.000	S16	33.904	-0.186	0.000	0.11		53.3	OK
7.003	S17	33.837	-0.141	0.000	0.33		137.1	OK
11.000	S18	33.872	-0.186	0.000	0.12		61.7	OK
7.004	S19	33.801	-0.128	0.000	0.44		193.8	OK
1.004	S20	33.750	-0.116	0.000	1.00		341.1	OK
1.005	S21	33.718	-0.135	0.000	0.78		375.8	OK
1.006	S22	33.673	-0.308	0.000	0.07		33.8	OK
12.000	S23	33.672	-0.118	0.000	0.06		27.8	OK
1.007	S24	33.672	-0.288	0.000	0.04		34.2	OK
13.000	S25	33.665	-0.027	0.000	0.06		22.7	OK
1.008	S26	33.665	-0.207	0.000	0.04		19.5	OK
1.009	S27 / FC	33.661	-0.179	0.000	0.02		11.6	OK

Summary of Results for 60 minute 30 year Winter (Storm)

Margin for Flood Risk Warning (mm)	100.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	ON
Inertia Status	OFF

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status
1.000	S1	33.898	-0.357	0.000	0.03		11.2	OK
2.000	S2	33.898	-0.344	0.000	0.03		7.8	OK
1.001	S3	33.898	-0.317	0.000	0.09		45.5	OK
3.000	S4	33.902	-0.083	0.000	0.09		8.0	OK
1.002	S5	33.898	-0.212	0.000	0.15		68.1	OK
4.000	S6	33.899	-0.086	0.000	0.09		8.1	OK
5.000	S7	33.908	-0.252	0.000	0.03		13.5	OK
6.000	S8	33.909	-0.076	0.000	0.09		8.1	OK
5.001	S9	33.906	-0.201	0.000	0.09		39.7	OK
1.003	S10	33.896	-0.129	0.000	0.29		148.8	OK
7.000	S11	33.859	-0.249	0.000	0.03		11.7	OK
8.000	S12	33.860	-0.321	0.000	0.07		33.9	OK
7.001	S13	33.859	-0.209	0.000	0.13		40.9	OK
9.000	S14	33.859	-0.289	0.000	0.07		33.9	OK
7.002	S15	33.859	-0.176	0.000	0.18		76.7	OK
10.000	S16	33.857	-0.233	0.000	0.07		33.5	OK
7.003	S17	33.856	-0.122	0.000	0.27		112.3	OK
11.000	S18	33.854	-0.204	0.000	0.08		39.0	OK
7.004	S19	33.854	-0.075	0.000	0.35		156.1	OK
1.004	S20	33.850	-0.016	0.000	0.88		301.3	OK
1.005	S21	33.812	-0.041	0.000	0.67		320.0	OK
1.006	S22	33.745	-0.236	0.000	0.03		14.4	OK
12.000	S23	33.744	-0.046	0.000	0.04		16.9	OK
1.007	S24	33.744	-0.216	0.000	0.03		24.6	OK
13.000	S25	33.734	0.042	0.000	0.04		13.8	SURCHARGED
1.008	S26	33.734	-0.138	0.000	0.03		17.5	OK
1.009	S27 / FC	33.730	-0.110	0.000	0.02		11.6	OK

Summary of Results for 120 minute 30 year Winter (Storm)

Margin for Flood Risk Warning (mm)	100.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	ON
Inertia Status	OFF

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status
1.000	S1	33.990	-0.265	0.000	0.02		6.9	OK
2.000	S2	33.990	-0.252	0.000	0.02		4.9	OK
1.001	S3	33.990	-0.225	0.000	0.06		29.2	OK
3.000	S4	33.990	0.005	0.000	0.07		6.3	SURCHARGED
1.002	S5	33.988	-0.122	0.000	0.10		48.0	OK
4.000	S6	33.977	-0.008	0.000	0.07		6.3	OK
5.000	S7	33.989	-0.171	0.000	0.02		10.0	OK
6.000	S8	33.990	0.005	0.000	0.07		6.3	SURCHARGED
5.001	S9	33.987	-0.120	0.000	0.06		28.5	OK
1.003	S10	33.974	-0.051	0.000	0.21		106.1	OK
7.000	S11	33.983	-0.125	0.000	0.02		7.1	OK
8.000	S12	33.984	-0.197	0.000	0.04		20.9	OK
7.001	S13	33.983	-0.085	0.000	0.09		28.3	OK
9.000	S14	33.983	-0.165	0.000	0.04		20.7	OK
7.002	S15	33.982	-0.053	0.000	0.12		53.4	OK
10.000	S16	33.969	-0.121	0.000	0.04		20.4	OK
7.003	S17	33.967	-0.011	0.000	0.18		75.8	OK
11.000	S18	33.932	-0.126	0.000	0.05		23.7	OK
7.004	S19	33.929	0.000	0.000	0.23		103.9	OK
1.004	S20	33.866	0.000	0.000	0.59		202.1	OK
1.005	S21	33.853	0.000	0.000	0.46		219.0	SURCHARGED
1.006	S22	33.849	-0.132	0.000	0.03		16.0	OK
12.000	S23	33.851	0.061	0.000	0.02		9.6	SURCHARGED
1.007	S24	33.851	-0.109	0.000	0.02		17.6	OK
13.000	S25	33.831	0.139	0.000	0.02		7.9	SURCHARGED
1.008	S26	33.831	-0.041	0.000	0.03		16.0	OK
1.009	S27 / FC	33.819	-0.021	0.000	0.02		11.6	OK

Summary of Results for 240 minute 30 year Winter (Storm)

Margin for Flood Risk Warning (mm)	100.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	ON
Inertia Status	OFF

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status
1.000	S1	34.008	-0.247	0.000	0.01		3.9	OK
2.000	S2	34.008	-0.234	0.000	0.01		2.8	OK
1.001	S3	34.008	-0.207	0.000	0.03		16.5	OK
3.000	S4	34.007	0.022	0.000	0.05		4.4	SURCHARGED
1.002	S5	34.005	-0.105	0.000	0.06		27.9	OK
4.000	S6	33.989	0.004	0.000	0.05		4.4	SURCHARGED
5.000	S7	34.003	-0.157	0.000	0.02		6.9	OK
6.000	S8	34.004	0.019	0.000	0.05		4.4	SURCHARGED
5.001	S9	34.001	-0.106	0.000	0.04		17.6	OK
1.003	S10	33.987	-0.038	0.000	0.12		61.5	OK
7.000	S11	34.011	-0.097	0.000	0.01		3.9	OK
8.000	S12	34.013	-0.168	0.000	0.02		11.9	OK
7.001	S13	34.011	-0.057	0.000	0.05		16.2	OK
9.000	S14	34.010	-0.138	0.000	0.02		11.8	OK
7.002	S15	34.007	-0.028	0.000	0.07		29.8	OK
10.000	S16	33.982	-0.108	0.000	0.02		11.7	OK
7.003	S17	33.978	0.000	0.000	0.10		41.0	OK
11.000	S18	33.949	-0.109	0.000	0.03		13.6	OK
7.004	S19	33.949	0.020	0.000	0.12		54.4	SURCHARGED
1.004	S20	33.948	0.082	0.000	0.31		107.0	SURCHARGED
1.005	S21	33.947	0.094	0.000	0.24		115.9	SURCHARGED
1.006	S22	33.945	-0.036	0.000	0.03		16.4	OK
12.000	S23	33.958	0.168	0.000	0.01		5.8	SURCHARGED
1.007	S24	33.960	0.000	0.000	0.02		17.9	OK
13.000	S25	33.936	0.244	0.000	0.01		4.8	SURCHARGED
1.008	S26	33.935	0.063	0.000	0.03		18.6	SURCHARGED
1.009	S27 / FC	33.904	0.064	0.000	0.02		11.6	SURCHARGED

Summary of Results for 360 minute 30 year Winter (Storm)

Margin for Flood Risk Warning (mm)	100.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	ON
Inertia Status	OFF

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status
1.000	S1	34.005	-0.250	0.000	0.01		2.8	OK
2.000	S2	34.005	-0.237	0.000	0.01		2.0	OK
1.001	S3	34.005	-0.210	0.000	0.02		11.8	OK
3.000	S4	34.005	0.020	0.000	0.04		3.4	SURCHARGED
1.002	S5	34.005	-0.105	0.000	0.04		19.6	OK
4.000	S6	34.004	0.019	0.000	0.04		3.4	SURCHARGED
5.000	S7	34.005	-0.155	0.000	0.01		5.4	OK
6.000	S8	34.005	0.020	0.000	0.04		3.4	SURCHARGED
5.001	S9	34.005	-0.102	0.000	0.03		13.0	OK
1.003	S10	34.004	-0.021	0.000	0.08		42.7	OK
7.000	S11	34.011	-0.097	0.000	0.01		2.9	OK
8.000	S12	34.013	-0.168	0.000	0.02		8.7	OK
7.001	S13	34.011	-0.057	0.000	0.04		11.0	OK
9.000	S14	34.010	-0.138	0.000	0.02		8.7	OK
7.002	S15	34.007	-0.028	0.000	0.05		20.8	OK
10.000	S16	33.983	-0.107	0.000	0.02		8.5	OK
7.003	S17	33.983	0.005	0.000	0.07		28.6	SURCHARGED
11.000	S18	33.983	-0.075	0.000	0.02		9.9	OK
7.004	S19	33.983	0.054	0.000	0.08		37.4	SURCHARGED
1.004	S20	33.983	0.117	0.000	0.22		73.5	SURCHARGED
1.005	S21	33.982	0.129	0.000	0.17		79.2	SURCHARGED
1.006	S22	33.980	-0.001	0.000	0.04		17.2	OK
12.000	S23	33.977	0.187	0.000	0.01		4.3	SURCHARGED
1.007	S24	33.978	0.018	0.000	0.02		15.7	SURCHARGED
13.000	S25	33.966	0.274	0.000	0.01		3.5	SURCHARGED
1.008	S26	33.966	0.094	0.000	0.02		13.0	SURCHARGED
1.009	S27 / FC	33.967	0.127	0.000	0.02		11.6	SURCHARGED

Summary of Results for 720 minute 30 year Winter (Storm)

Margin for Flood Risk Warning (mm)	100.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	ON
Inertia Status	OFF

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status
1.000	S1	34.000	-0.255	0.000	0.00		1.6	OK
2.000	S2	34.000	-0.242	0.000	0.00		1.1	OK
1.001	S3	34.000	-0.215	0.000	0.01		6.8	OK
3.000	S4	34.000	0.015	0.000	0.02		2.1	SURCHARGED
1.002	S5	34.000	-0.110	0.000	0.02		11.0	OK
4.000	S6	34.000	0.015	0.000	0.02		2.1	SURCHARGED
5.000	S7	34.000	-0.160	0.000	0.01		3.3	OK
6.000	S8	34.000	0.015	0.000	0.02		2.1	SURCHARGED
5.001	S9	34.000	-0.107	0.000	0.02		8.0	OK
1.003	S10	33.999	-0.026	0.000	0.05		24.6	OK
7.000	S11	33.989	-0.119	0.000	0.00		1.7	OK
8.000	S12	33.989	-0.192	0.000	0.01		5.1	OK
7.001	S13	33.989	-0.079	0.000	0.02		6.2	OK
9.000	S14	33.989	-0.159	0.000	0.01		5.1	OK
7.002	S15	33.989	-0.046	0.000	0.03		11.3	OK
10.000	S16	33.987	-0.103	0.000	0.01		5.0	OK
7.003	S17	33.987	0.009	0.000	0.04		15.5	SURCHARGED
11.000	S18	33.987	-0.071	0.000	0.01		5.8	OK
7.004	S19	33.987	0.058	0.000	0.05		20.5	SURCHARGED
1.004	S20	33.986	0.120	0.000	0.12		41.5	SURCHARGED
1.005	S21	33.985	0.132	0.000	0.09		44.5	SURCHARGED
1.006	S22	33.984	0.003	0.000	0.03		15.8	SURCHARGED
12.000	S23	33.997	0.207	0.000	0.01		2.5	SURCHARGED
1.007	S24	33.997	0.037	0.000	0.01		12.8	SURCHARGED
13.000	S25	34.005	0.313	0.000	0.01		2.0	SURCHARGED
1.008	S26	34.005	0.133	0.000	0.02		12.4	SURCHARGED
1.009	S27 / FC	34.006	0.166	0.000	0.02		11.6	SURCHARGED

Summary of Results for 1440 minute 30 year Winter (Storm)

Margin for Flood Risk Warning (mm)	100.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	ON
Inertia Status	OFF

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status
1.000	S1	33.911	-0.344	0.000	0.00		1.0	OK
2.000	S2	33.911	-0.331	0.000	0.00		0.7	OK
1.001	S3	33.911	-0.304	0.000	0.01		4.1	OK
3.000	S4	33.911	-0.074	0.000	0.01		1.2	OK
1.002	S5	33.911	-0.199	0.000	0.01		6.9	OK
4.000	S6	33.911	-0.074	0.000	0.01		1.2	OK
5.000	S7	33.910	-0.250	0.000	0.00		2.0	OK
6.000	S8	33.911	-0.074	0.000	0.01		1.2	OK
5.001	S9	33.910	-0.197	0.000	0.01		4.9	OK
1.003	S10	33.910	-0.115	0.000	0.03		15.6	OK
7.000	S11	33.923	-0.185	0.000	0.00		1.0	OK
8.000	S12	33.923	-0.258	0.000	0.01		3.0	OK
7.001	S13	33.923	-0.145	0.000	0.01		4.0	OK
9.000	S14	33.923	-0.225	0.000	0.01		3.0	OK
7.002	S15	33.923	-0.112	0.000	0.02		7.3	OK
10.000	S16	33.922	-0.168	0.000	0.01		3.0	OK
7.003	S17	33.922	-0.056	0.000	0.02		9.9	OK
11.000	S18	33.920	-0.138	0.000	0.01		3.4	OK
7.004	S19	33.920	-0.009	0.000	0.03		13.0	OK
1.004	S20	33.906	0.040	0.000	0.08		26.4	SURCHARGED
1.005	S21	33.906	0.053	0.000	0.06		28.6	SURCHARGED
1.006	S22	33.904	-0.077	0.000	0.03		11.9	OK
12.000	S23	33.901	0.111	0.000	0.00		1.5	SURCHARGED
1.007	S24	33.901	-0.059	0.000	0.01		12.0	OK
13.000	S25	33.879	0.187	0.000	0.00		1.2	SURCHARGED
1.008	S26	33.879	0.007	0.000	0.02		12.3	SURCHARGED
1.009	S27 / FC	33.878	0.038	0.000	0.02		11.6	SURCHARGED

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FEH Rainfall Model

Return Period (years)	100
FEH Rainfall Version	1999
Site Location	GB 507250 184950 TQ 07250 84950
C (1km)	-0.025
D1 (1km)	0.304
D2 (1km)	0.321
D3 (1km)	0.230
E (1km)	0.305
F (1km)	2.546
Maximum Rainfall (mm/hr)	50
Maximum Time of Concentration (mins)	30
Foul Sewage (l/s/ha)	0.000
Volumetric Runoff Coeff.	0.750
PIMP (%)	100
Add Flow / Climate Change (%)	40
Minimum Backdrop Height (m)	0.000
Maximum Backdrop Height (m)	0.000
Min Design Depth for Optimisation (m)	1.200
Min Vel for Auto Design only (m/s)	1.00
Min Slope for Optimisation (1:X)	500

Designed with Level Inverts

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.840	Additional Flow - % of Total Flow	40.000
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	6
Number of Online Controls	1	Number of Time/Area Diagrams	4
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	1999
Site Location	GB 507250 184950 TQ 07250 84950
C (1km)	-0.025
D1 (1km)	0.304
D2 (1km)	0.321
D3 (1km)	0.230
E (1km)	0.305

Synthetic Rainfall Details

F (1km)	2.546
Summer Storms	No
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Storm Duration (mins)	15

Summary of Results for 15 minute 100 year Winter (Storm)

Margin for Flood Risk Warning (mm)	100.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	ON
Inertia Status	OFF

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status
1.000	S1	34.255	0.000	0.000	0.10		35.9	OK
2.000	S2	34.242	0.000	0.000	0.08		24.1	OK
1.001	S3	34.229	0.014	0.000	0.28		136.3	SURCHARGED
3.000	S4	34.229	0.244	0.000	0.17		15.3	SURCHARGED
1.002	S5	34.218	0.108	0.000	0.35		163.4	SURCHARGED
4.000	S6	34.211	0.226	0.000	0.19		17.0	SURCHARGED
5.000	S7	34.208	0.048	0.000	0.06		25.7	SURCHARGED
6.000	S8	34.218	0.233	0.000	0.17		14.8	SURCHARGED
5.001	S9	34.206	0.099	0.000	0.15		70.0	SURCHARGED
1.003	S10	34.199	0.174	0.000	0.55		282.3	SURCHARGED
7.000	S11	34.290	0.182	0.000	0.10		36.4	SURCHARGED
8.000	S12	34.298	0.117	0.000	0.22		110.4	SURCHARGED
7.001	S13	34.287	0.219	0.000	0.43		132.3	SURCHARGED
9.000	S14	34.286	0.138	0.000	0.22		110.2	SURCHARGED
7.002	S15	34.275	0.240	0.000	0.58		254.3	SURCHARGED
10.000	S16	34.258	0.168	0.000	0.23		111.0	SURCHARGED
7.003	S17	34.247	0.269	0.000	0.89		369.5	SURCHARGED
11.000	S18	34.220	0.162	0.000	0.26		130.2	SURCHARGED
7.004	S19	34.207	0.278	0.000	0.95		423.5	SURCHARGED
1.004	S20	34.151	0.285	0.000	2.06		702.4	SURCHARGED
1.005	S21	33.950	0.097	0.000	1.52		727.9	SURCHARGED
1.006	S22	33.847	-0.134	0.000	0.24		112.4	OK
12.000	S23	33.844	0.054	0.000	0.14		59.3	SURCHARGED
1.007	S24	33.845	-0.115	0.000	0.08		74.2	OK
13.000	S25	33.829	0.137	0.000	0.12		47.7	SURCHARGED
1.008	S26	33.829	-0.043	0.000	0.06		33.8	OK
1.009	S27 / FC	33.818	-0.022	0.000	0.02		11.6	OK

Summary of Results for 30 minute 100 year Winter (Storm)

Margin for Flood Risk Warning (mm)	100.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	ON
Inertia Status	OFF

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status
1.000	S1	34.255	0.000	0.000	0.07		24.4	OK
2.000	S2	34.242	0.000	0.000	0.06		16.8	OK
1.001	S3	34.215	0.000	0.000	0.19		91.8	OK
3.000	S4	34.122	0.137	0.000	0.15		13.6	SURCHARGED
1.002	S5	34.110	0.000	0.000	0.27		125.8	OK
4.000	S6	34.066	0.081	0.000	0.16		14.1	SURCHARGED
5.000	S7	34.160	0.000	0.000	0.05		22.8	OK
6.000	S8	34.120	0.135	0.000	0.15		13.7	SURCHARGED
5.001	S9	34.107	0.000	0.000	0.16		72.4	OK
1.003	S10	34.054	0.029	0.000	0.51		262.5	SURCHARGED
7.000	S11	34.109	0.001	0.000	0.08		26.8	SURCHARGED
8.000	S12	34.181	0.000	0.000	0.16		76.5	OK
7.001	S13	34.107	0.039	0.000	0.39		120.8	SURCHARGED
9.000	S14	34.148	0.000	0.000	0.16		76.6	OK
7.002	S15	34.098	0.063	0.000	0.49		215.8	SURCHARGED
10.000	S16	34.090	0.000	0.000	0.16		76.2	OK
7.003	S17	34.078	0.100	0.000	0.70		289.7	SURCHARGED
11.000	S18	34.059	0.001	0.000	0.18		89.8	SURCHARGED
7.004	S19	34.050	0.121	0.000	0.80		356.3	SURCHARGED
1.004	S20	34.008	0.142	0.000	1.78		606.4	SURCHARGED
1.005	S21	33.963	0.110	0.000	1.34		641.0	SURCHARGED
1.006	S22	33.961	-0.020	0.000	0.07		33.1	OK
12.000	S23	33.951	0.161	0.000	0.10		41.6	SURCHARGED
1.007	S24	33.951	-0.009	0.000	0.06		56.1	OK
13.000	S25	33.914	0.222	0.000	0.09		34.0	SURCHARGED
1.008	S26	33.914	0.042	0.000	0.05		26.5	SURCHARGED
1.009	S27 / FC	33.913	0.073	0.000	0.02		11.6	SURCHARGED

Summary of Results for 60 minute 100 year Winter (Storm)

Margin for Flood Risk Warning (mm)	100.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	ON
Inertia Status	OFF

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status
1.000	S1	34.223	-0.032	0.000	0.04		15.4	OK
2.000	S2	34.217	-0.025	0.000	0.04		10.7	OK
1.001	S3	34.214	-0.001	0.000	0.12		58.2	OK
3.000	S4	34.120	0.135	0.000	0.12		10.8	SURCHARGED
1.002	S5	34.111	0.001	0.000	0.19		87.4	SURCHARGED
4.000	S6	34.116	0.131	0.000	0.13		11.2	SURCHARGED
5.000	S7	34.160	0.000	0.000	0.04		18.5	OK
6.000	S8	34.117	0.132	0.000	0.12		10.9	SURCHARGED
5.001	S9	34.112	0.005	0.000	0.11		51.4	SURCHARGED
1.003	S10	34.109	0.084	0.000	0.36		186.8	SURCHARGED
7.000	S11	34.108	0.000	0.000	0.05		16.2	OK
8.000	S12	34.181	0.000	0.000	0.10		48.0	OK
7.001	S13	34.104	0.036	0.000	0.20		60.0	SURCHARGED
9.000	S14	34.148	0.000	0.000	0.10		48.0	OK
7.002	S15	34.104	0.069	0.000	0.26		115.0	SURCHARGED
10.000	S16	34.105	0.015	0.000	0.10		47.4	SURCHARGED
7.003	S17	34.105	0.127	0.000	0.40		166.9	SURCHARGED
11.000	S18	34.105	0.047	0.000	0.11		55.8	SURCHARGED
7.004	S19	34.105	0.176	0.000	0.50		223.1	SURCHARGED
1.004	S20	34.105	0.239	0.000	1.10		376.1	SURCHARGED
1.005	S21	34.105	0.252	0.000	0.81		390.5	SURCHARGED
1.006	S22	34.103	0.122	0.000	0.25		118.9	SURCHARGED
12.000	S23	34.240	0.450	0.000	0.06		24.4	SURCHARGED
1.007	S24	34.123	0.163	0.000	0.06		54.6	SURCHARGED
13.000	S25	34.345	0.653	0.000	0.05		20.0	SURCHARGED
1.008	S26	34.196	0.324	0.000	0.05		26.0	SURCHARGED
1.009	S27 / FC	34.227	0.387	0.000	0.02		11.6	SURCHARGED

Summary of Results for 120 minute 100 year Winter (Storm)

Margin for Flood Risk Warning (mm)	100.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	ON
Inertia Status	OFF

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status
1.000	S1	34.258	0.003	0.000	0.03		9.2	SURCHARGED
2.000	S2	34.258	0.016	0.000	0.02		6.4	SURCHARGED
1.001	S3	34.258	0.043	0.000	0.08		37.1	SURCHARGED
3.000	S4	34.260	0.275	0.000	0.09		8.4	SURCHARGED
1.002	S5	34.258	0.148	0.000	0.13		59.8	SURCHARGED
4.000	S6	34.260	0.275	0.000	0.10		8.5	SURCHARGED
5.000	S7	34.259	0.099	0.000	0.03		14.1	SURCHARGED
6.000	S8	34.261	0.276	0.000	0.09		8.5	SURCHARGED
5.001	S9	34.259	0.152	0.000	0.08		36.6	SURCHARGED
1.003	S10	34.258	0.233	0.000	0.26		133.1	SURCHARGED
7.000	S11	34.257	0.149	0.000	0.03		9.6	SURCHARGED
8.000	S12	34.257	0.076	0.000	0.06		28.5	SURCHARGED
7.001	S13	34.257	0.189	0.000	0.12		35.6	SURCHARGED
9.000	S14	34.257	0.109	0.000	0.06		28.5	SURCHARGED
7.002	S15	34.257	0.222	0.000	0.16		67.9	SURCHARGED
10.000	S16	34.256	0.166	0.000	0.06		28.0	SURCHARGED
7.003	S17	34.256	0.278	0.000	0.24		98.4	SURCHARGED
11.000	S18	34.256	0.198	0.000	0.07		32.6	SURCHARGED
7.004	S19	34.256	0.327	0.000	0.30		134.0	SURCHARGED
1.004	S20	34.256	0.390	0.000	0.71		242.4	SURCHARGED
1.005	S21	34.256	0.403	0.000	0.55		265.5	SURCHARGED
1.006	S22	34.255	0.274	0.000	0.04		18.7	SURCHARGED
12.000	S23	34.295	0.505	0.000	0.03		13.8	SURCHARGED
1.007	S24	34.292	0.332	0.000	0.04		32.8	SURCHARGED
13.000	S25	34.363	0.671	0.000	0.03		11.1	SURCHARGED
1.008	S26	34.333	0.461	0.000	0.04		19.8	SURCHARGED
1.009	S27 / FC	34.338	0.498	0.000	0.02		11.6	SURCHARGED

Summary of Results for 240 minute 100 year Winter (Storm)

Margin for Flood Risk Warning (mm)	100.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	ON
Inertia Status	OFF

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status
1.000	S1	34.482	0.227	0.000	0.01		4.9	SURCHARGED
2.000	S2	34.481	0.239	0.000	0.01		3.3	SURCHARGED
1.001	S3	34.482	0.267	0.000	0.04		19.5	SURCHARGED
3.000	S4	34.483	0.498	0.000	0.07		5.9	SURCHARGED
1.002	S5	34.485	0.375	0.000	0.07		32.9	SURCHARGED
4.000	S6	34.501	0.516	0.000	0.07		6.0	SURCHARGED
5.000	S7	34.481	0.321	0.000	0.02		9.8	SURCHARGED
6.000	S8	34.482	0.497	0.000	0.07		5.8	SURCHARGED
5.001	S9	34.484	0.377	0.000	0.05		24.5	SURCHARGED
1.003	S10	34.573	0.548	0.000	0.16		80.8	SURCHARGED
7.000	S11	34.512	0.404	0.000	0.01		5.3	SURCHARGED
8.000	S12	34.512	0.331	0.000	0.03		16.1	SURCHARGED
7.001	S13	34.512	0.444	0.000	0.08		24.5	SURCHARGED
9.000	S14	34.512	0.364	0.000	0.03		16.1	SURCHARGED
7.002	S15	34.512	0.477	0.000	0.11		46.9	SURCHARGED
10.000	S16	34.512	0.422	0.000	0.03		15.9	SURCHARGED
7.003	S17	34.512	0.534	0.000	0.16		68.2	SURCHARGED
11.000	S18	34.512	0.454	0.000	0.04		18.6	SURCHARGED
7.004	S19	34.513	0.584	0.000	0.21		94.0	SURCHARGED
1.004	S20	34.619	0.753	0.000	0.48		165.1	SURCHARGED
1.005	S21	34.619	0.766	0.000	0.37		178.6	SURCHARGED
1.006	S22	34.625	0.644	0.000	0.12		55.3	SURCHARGED
12.000	S23	34.577	0.787	0.000	0.02		8.3	SURCHARGED
1.007	S24	34.579	0.619	0.000	0.04		33.6	SURCHARGED
13.000	S25	34.578	0.886	0.000	0.02		9.3	SURCHARGED
1.008	S26	34.579	0.707	0.000	0.03		18.5	SURCHARGED
1.009	S27 / FC	34.578	0.738	0.000	0.02		11.6	SURCHARGED

Summary of Results for 360 minute 100 year Winter (Storm)

Margin for Flood Risk Warning (mm)	100.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	ON
Inertia Status	OFF

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status
1.000	S1	34.575	0.320	0.000	0.01		3.5	SURCHARGED
2.000	S2	34.575	0.333	0.000	0.01		2.4	SURCHARGED
1.001	S3	34.575	0.360	0.000	0.03		14.0	SURCHARGED
3.000	S4	34.578	0.593	0.000	0.05		4.4	SURCHARGED
1.002	S5	34.577	0.467	0.000	0.05		25.7	SURCHARGED
4.000	S6	34.634	0.649	0.000	0.05		4.6	SURCHARGED
5.000	S7	34.579	0.419	0.000	0.02		7.5	SURCHARGED
6.000	S8	34.580	0.595	0.000	0.05		4.5	SURCHARGED
5.001	S9	34.579	0.472	0.000	0.04		18.1	SURCHARGED
1.003	S10	34.629	0.604	0.000	0.12		61.1	SURCHARGED
7.000	S11	34.619	0.511	0.000	0.01		4.0	SURCHARGED
8.000	S12	34.619	0.438	0.000	0.02		11.6	SURCHARGED
7.001	S13	34.619	0.551	0.000	0.06		18.5	SURCHARGED
9.000	S14	34.619	0.471	0.000	0.02		11.6	SURCHARGED
7.002	S15	34.619	0.584	0.000	0.08		35.4	SURCHARGED
10.000	S16	34.619	0.529	0.000	0.02		11.7	SURCHARGED
7.003	S17	34.619	0.641	0.000	0.12		51.5	SURCHARGED
11.000	S18	34.619	0.561	0.000	0.03		13.6	SURCHARGED
7.004	S19	34.619	0.690	0.000	0.16		70.8	SURCHARGED
1.004	S20	34.658	0.792	0.000	0.37		126.4	SURCHARGED
1.005	S21	34.661	0.808	0.000	0.29		137.3	SURCHARGED
1.006	S22	34.707	0.726	0.000	0.04		20.1	SURCHARGED
12.000	S23	34.718	0.928	0.000	0.01		5.9	SURCHARGED
1.007	S24	34.717	0.757	0.000	0.03		22.8	SURCHARGED
13.000	S25	34.727	1.035	0.000	0.01		5.5	SURCHARGED
1.008	S26	34.726	0.854	0.000	0.03		16.4	SURCHARGED
1.009	S27 / FC	34.726	0.886	0.000	0.02		11.6	SURCHARGED

Summary of Results for 720 minute 100 year Winter (Storm)

Margin for Flood Risk Warning (mm)	100.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	ON
Inertia Status	OFF

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status
1.000	S1	34.607	0.352	0.000	0.01		2.1	SURCHARGED
2.000	S2	34.607	0.365	0.000	0.01		1.5	SURCHARGED
1.001	S3	34.607	0.392	0.000	0.02		8.6	SURCHARGED
3.000	S4	34.617	0.632	0.000	0.03		2.6	SURCHARGED
1.002	S5	34.617	0.507	0.000	0.03		15.3	SURCHARGED
4.000	S6	34.639	0.654	0.000	0.03		2.7	SURCHARGED
5.000	S7	34.615	0.455	0.000	0.01		4.5	SURCHARGED
6.000	S8	34.617	0.632	0.000	0.03		2.7	SURCHARGED
5.001	S9	34.617	0.510	0.000	0.02		11.0	SURCHARGED
1.003	S10	34.656	0.631	0.000	0.07		37.3	FLOOD RISK
7.000	S11	34.654	0.546	0.000	0.01		2.4	SURCHARGED
8.000	S12	34.654	0.473	0.000	0.01		6.7	SURCHARGED
7.001	S13	34.654	0.586	0.000	0.04		10.8	SURCHARGED
9.000	S14	34.654	0.506	0.000	0.01		6.8	SURCHARGED
7.002	S15	34.654	0.619	0.000	0.05		20.8	SURCHARGED
10.000	S16	34.654	0.564	0.000	0.01		6.8	SURCHARGED
7.003	S17	34.654	0.676	0.000	0.07		30.4	SURCHARGED
11.000	S18	34.655	0.597	0.000	0.02		8.0	SURCHARGED
7.004	S19	34.655	0.726	0.000	0.09		41.7	SURCHARGED
1.004	S20	34.697	0.831	0.000	0.23		77.5	SURCHARGED
1.005	S21	34.728	0.875	0.000	0.17		83.6	FLOOD RISK
1.006	S22	34.774	0.793	0.000	0.04		18.6	SURCHARGED
12.000	S23	34.778	0.988	0.000	0.01		3.4	SURCHARGED
1.007	S24	34.778	0.818	0.000	0.02		14.7	SURCHARGED
13.000	S25	34.780	1.088	0.000	0.01		2.8	SURCHARGED
1.008	S26	34.780	0.908	0.000	0.02		12.6	SURCHARGED
1.009	S27 / FC	34.780	0.940	0.000	0.02		11.6	SURCHARGED

Summary of Results for 1440 minute 100 year Winter (Storm)

Margin for Flood Risk Warning (mm)	100.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	ON
Inertia Status	OFF

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status
1.000	S1	34.468	0.213	0.000	0.00		1.3	SURCHARGED
2.000	S2	34.468	0.226	0.000	0.00		0.9	SURCHARGED
1.001	S3	34.468	0.253	0.000	0.01		5.2	SURCHARGED
3.000	S4	34.484	0.499	0.000	0.02		1.6	SURCHARGED
1.002	S5	34.491	0.381	0.000	0.02		9.1	SURCHARGED
4.000	S6	34.519	0.534	0.000	0.02		1.6	SURCHARGED
5.000	S7	34.470	0.310	0.000	0.01		2.6	SURCHARGED
6.000	S8	34.470	0.485	0.000	0.02		1.6	SURCHARGED
5.001	S9	34.476	0.369	0.000	0.01		6.8	SURCHARGED
1.003	S10	34.484	0.459	0.000	0.04		22.2	SURCHARGED
7.000	S11	34.496	0.388	0.000	0.00		1.3	SURCHARGED
8.000	S12	34.495	0.314	0.000	0.01		3.9	SURCHARGED
7.001	S13	34.496	0.428	0.000	0.02		6.1	SURCHARGED
9.000	S14	34.496	0.348	0.000	0.01		3.9	SURCHARGED
7.002	S15	34.497	0.462	0.000	0.03		11.5	SURCHARGED
10.000	S16	34.498	0.408	0.000	0.01		3.8	SURCHARGED
7.003	S17	34.498	0.520	0.000	0.04		16.7	SURCHARGED
11.000	S18	34.498	0.440	0.000	0.01		4.5	SURCHARGED
7.004	S19	34.498	0.569	0.000	0.05		23.3	SURCHARGED
1.004	S20	34.555	0.689	0.000	0.13		44.0	SURCHARGED
1.005	S21	34.572	0.719	0.000	0.10		47.3	SURCHARGED
1.006	S22	34.550	0.569	0.000	0.03		12.2	SURCHARGED
12.000	S23	34.511	0.721	0.000	0.00		2.0	SURCHARGED
1.007	S24	34.511	0.551	0.000	0.01		12.0	SURCHARGED
13.000	S25	34.507	0.815	0.000	0.00		1.6	SURCHARGED
1.008	S26	34.508	0.636	0.000	0.02		12.1	SURCHARGED
1.009	S27 / FC	34.507	0.667	0.000	0.02		11.6	SURCHARGED