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Lombard House 145 Great Charles Street Birmingham, B3 3LP	WERRINGTON STORM NETWORK 21-081 / 601 J	
Date 10/08/2023 12:06	Designed by SCH	
File STORM NETWORK - REV M (FEH	Checked by	
Innovyze	Network 2019.1	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FEH Rainfall Model	
Return Period (years)	2
FEH Rainfall Version	2013
Site Location	GB 394046 347339 SJ 94046 47339
Data Type	Point
Maximum Rainfall (mm/hr)	0
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)	0.200
Maximum Backdrop Height (m)	1.500
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 Soffits

Time Area Diagram for Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.801	4-8	0.367

Total Area Contributing (ha) = 1.168

Total Pipe Volume (m³) = 42.956

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
S1.000	23.000	2.000	11.5	0.035	5.00	0.0	0.600	o	150	Pipe/Conduit	
S1.001	10.694	0.930	11.5	0.039	0.00	0.0	0.600	o	150	Pipe/Conduit	
S1.002	10.703	0.931	11.5	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
S1.003	47.844	2.479	19.3	0.138	0.00	0.0	0.600	o	225	Pipe/Conduit	
S1.004	6.000	2.595	2.3	0.085	0.00	0.0	0.600	o	225	Pipe/Conduit	
S2.000	23.574	0.845	27.9	0.105	5.00	0.0	0.600	o	300	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	0.00	5.13	258.750	0.035	0.0	0.0	0.0	2.99	52.8	0.0
S1.001	0.00	5.19	256.750	0.074	0.0	0.0	0.0	2.99	52.8	0.0
S1.002	0.00	5.25	255.820	0.074	0.0	0.0	0.0	2.99	52.8	0.0
S1.003	0.00	5.51	254.814	0.212	0.0	0.0	0.0	2.99	119.0	0.0
S1.004	0.00	5.53	252.335	0.297	0.0	0.0	0.0	8.67	344.7	0.0
S2.000	0.00	5.13	250.510	0.105	0.0	0.0	0.0	2.99	211.2	0.0

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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
S1.005	11.740	0.421	27.9	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
S1.006	45.990	1.236	37.2	0.069	0.00	0.0	0.600	o	375	Pipe/Conduit	
S3.000	19.066	0.114	167.2	0.084	5.00	0.0	0.600	o	225	Pipe/Conduit	
S3.001	40.384	0.242	166.9	0.080	0.00	0.0	0.600	o	375	Pipe/Conduit	
S3.002	11.510	0.069	166.8	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
S3.003	23.731	0.142	167.1	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
S1.007	15.304	0.144	106.3	0.128	0.00	0.0	0.600	o	450	Pipe/Conduit	
S1.008	11.588	0.109	106.3	0.065	0.00	0.0	0.600	o	450	Pipe/Conduit	
S1.009	38.133	0.806	47.3	0.078	0.00	0.0	0.600	o	450	Pipe/Conduit	
S1.010	47.852	0.345	138.7	0.071	0.00	0.0	0.600	o	525	Pipe/Conduit	
S1.011	10.928	0.179	61.1	0.191	0.00	0.0	0.600	o	525	Pipe/Conduit	
S1.012	15.718	1.310	12.0	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	E I.Area (ha)	E Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S1.005	0.00	5.59	249.665	0.402	0.0	0.0	0.0	2.99	211.3	0.0
S1.006	0.00	5.85	249.169	0.471	0.0	0.0	0.0	2.98	329.0	0.0
S3.000	0.00	5.32	248.650	0.084	0.0	0.0	0.0	1.01	40.1	0.0
S3.001	0.00	5.80	248.386	0.164	0.0	0.0	0.0	1.40	154.6	0.0
S3.002	0.00	5.93	248.144	0.164	0.0	0.0	0.0	1.40	154.6	0.0
S3.003	0.00	6.22	248.075	0.164	0.0	0.0	0.0	1.40	154.5	0.0
S1.007	0.00	6.35	247.858	0.763	0.0	0.0	0.0	1.97	313.6	0.0
S1.008	0.00	6.44	247.714	0.828	0.0	0.0	0.0	1.97	313.5	0.0
S1.009	0.00	6.66	247.605	0.906	0.0	0.0	0.0	2.96	471.0	0.0
S1.010	0.00	7.08	246.724	0.977	0.0	0.0	0.0	1.90	411.3	0.0
S1.011	0.00	7.14	246.379	1.168	0.0	0.0	0.0	2.87	621.4	0.0
S1.012	0.00	7.23	246.200	1.168	0.0	0.0	0.0	2.92	51.7	0.0

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Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
S1	259.818	1.068	Open Manhole	1200	S1.000	258.750	150				
S2	258.977	2.227	Open Manhole	1200	S1.001	256.750	150	S1.000	256.750	150	
S3	258.736	2.916	Open Manhole	1200	S1.002	255.820	150	S1.001	255.820	150	
S3	258.125	3.311	Open Manhole	1200	S1.003	254.814	225	S1.002	254.889	150	
S5	253.462	1.127	Open Manhole	1200	S1.004	252.335	225	S1.003	252.335	225	
S5	252.833	2.323	Open Manhole	1200	S2.000	250.510	300				
S5	252.862	3.197	Open Manhole	1200	S1.005	249.665	300	S1.004	249.740	225	
								S2.000	249.665	300	
S6	251.974	2.805	Open Manhole	1350	S1.006	249.169	375	S1.005	249.244	300	
S7	250.550	1.900	Open Manhole	1200	S3.000	248.650	225				
S8	250.317	1.931	Open Manhole	1350	S3.001	248.386	375	S3.000	248.536	225	
S9	250.590	2.446	Open Manhole	1350	S3.002	248.144	375	S3.001	248.144	375	
S10	250.550	2.475	Open Manhole	1350	S3.003	248.075	375	S3.002	248.075	375	
S11	250.215	2.357	Open Manhole	1350	S1.007	247.858	450	S1.006	247.933	375	
								S3.003	247.933	375	
S12	249.760	2.046	Open Manhole	1350	S1.008	247.714	450	S1.007	247.714	450	
S13	249.386	1.781	Open Manhole	1350	S1.009	247.605	450	S1.008	247.605	450	
S14	248.449	1.725	Open Manhole	1500	S1.010	246.724	525	S1.009	246.799	450	
S15	248.200	1.821	Open Manhole	1500	S1.011	246.379	525	S1.010	246.379	525	
S16	248.610	2.410	Open Manhole	1500	S1.012	246.200	150	S1.011	246.200	525	
SEx MH	247.700	2.810	Open Manhole	1200		OUTFALL		S1.012	244.890	150	

No coordinates have been specified, layout information cannot be produced.

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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)
S1.000	o	150	S1	259.818	258.750	0.918	Open Manhole	1200
S1.001	o	150	S2	258.977	256.750	2.077	Open Manhole	1200
S1.002	o	150	S3	258.736	255.820	2.766	Open Manhole	1200
S1.003	o	225	S3	258.125	254.814	3.086	Open Manhole	1200
S1.004	o	225	S5	253.462	252.335	0.902	Open Manhole	1200
S2.000	o	300	S5	252.833	250.510	2.023	Open Manhole	1200
S1.005	o	300	S5	252.862	249.665	2.897	Open Manhole	1200
S1.006	o	375	S6	251.974	249.169	2.430	Open Manhole	1350
S3.000	o	225	S7	250.550	248.650	1.675	Open Manhole	1200
S3.001	o	375	S8	250.317	248.386	1.556	Open Manhole	1350
S3.002	o	375	S9	250.590	248.144	2.071	Open Manhole	1350
S3.003	o	375	S10	250.550	248.075	2.100	Open Manhole	1350
S1.007	o	450	S11	250.215	247.858	1.907	Open Manhole	1350
S1.008	o	450	S12	249.760	247.714	1.596	Open Manhole	1350
S1.009	o	450	S13	249.386	247.605	1.331	Open Manhole	1350
S1.010	o	525	S14	248.449	246.724	1.200	Open Manhole	1500
S1.011	o	525	S15	248.200	246.379	1.296	Open Manhole	1500
S1.012	o	150	S16	248.610	246.200	2.260	Open Manhole	1500

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	23.000	11.5	S2	258.977	256.750	2.077	Open Manhole	1200
S1.001	10.694	11.5	S3	258.736	255.820	2.766	Open Manhole	1200
S1.002	10.703	11.5	S3	258.125	254.889	3.086	Open Manhole	1200
S1.003	47.844	19.3	S5	253.462	252.335	0.902	Open Manhole	1200
S1.004	6.000	2.3	S5	252.862	249.740	2.897	Open Manhole	1200
S2.000	23.574	27.9	S5	252.862	249.665	2.897	Open Manhole	1200
S1.005	11.740	27.9	S6	251.974	249.244	2.430	Open Manhole	1350
S1.006	45.990	37.2	S11	250.215	247.933	1.907	Open Manhole	1350
S3.000	19.066	167.2	S8	250.317	248.536	1.556	Open Manhole	1350
S3.001	40.384	166.9	S9	250.590	248.144	2.071	Open Manhole	1350
S3.002	11.510	166.8	S10	250.550	248.075	2.100	Open Manhole	1350
S3.003	23.731	167.1	S11	250.215	247.933	1.907	Open Manhole	1350
S1.007	15.304	106.3	S12	249.760	247.714	1.596	Open Manhole	1350
S1.008	11.588	106.3	S13	249.386	247.605	1.331	Open Manhole	1350
S1.009	38.133	47.3	S14	248.449	246.799	1.200	Open Manhole	1500
S1.010	47.852	138.7	S15	248.200	246.379	1.296	Open Manhole	1500
S1.011	10.928	61.1	S16	248.610	246.200	1.885	Open Manhole	1500
S1.012	15.718	12.0	SEx MH	247.700	244.890	2.660	Open Manhole	1200

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Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.035	0.035	0.035
1.001	-	-	100	0.039	0.039	0.039
1.002	-	-	100	0.000	0.000	0.000
1.003	-	-	100	0.138	0.138	0.138
1.004	-	-	100	0.085	0.085	0.085
2.000	-	-	100	0.105	0.105	0.105
1.005	-	-	100	0.000	0.000	0.000
1.006	-	-	100	0.069	0.069	0.069
3.000	-	-	100	0.084	0.084	0.084
3.001	-	-	100	0.080	0.080	0.080
3.002	-	-	100	0.000	0.000	0.000
3.003	-	-	100	0.000	0.000	0.000
1.007	-	-	100	0.128	0.128	0.128
1.008	-	-	100	0.065	0.065	0.065
1.009	-	-	100	0.078	0.078	0.078
1.010	-	-	100	0.071	0.071	0.071
1.011	-	-	100	0.191	0.191	0.191
1.012	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				1.168	1.168	1.168

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Network Classifications for Storm

PN	USMH Name	Pipe Dia (mm)	Min Cover Depth (m)	Max Cover Depth (m)	Pipe Type	MH Dia (mm)	MH Width (mm)	MH Ring Depth (m)	MH Type
S1.000	S1	150	0.918	2.077	Unclassified	1200	0	0.918	Unclassified
S1.001	S2	150	2.077	2.766	Unclassified	1200	0	2.077	Unclassified
S1.002	S3	150	2.766	3.086	Unclassified	1200	0	2.766	Unclassified
S1.003	S3	225	0.902	3.086	Unclassified	1200	0	3.086	Unclassified
S1.004	S5	225	0.902	2.897	Unclassified	1200	0	0.902	Unclassified
S2.000	S5	300	2.023	2.897	Unclassified	1200	0	2.023	Unclassified
S1.005	S5	300	2.430	2.897	Unclassified	1200	0	2.897	Unclassified
S1.006	S6	375	1.907	2.430	Unclassified	1350	0	2.430	Unclassified
S3.000	S7	225	1.556	1.675	Unclassified	1200	0	1.675	Unclassified
S3.001	S8	375	1.556	2.071	Unclassified	1350	0	1.556	Unclassified
S3.002	S9	375	2.071	2.100	Unclassified	1350	0	2.071	Unclassified
S3.003	S10	375	1.907	2.100	Unclassified	1350	0	2.100	Unclassified
S1.007	S11	450	1.596	1.907	Unclassified	1350	0	1.907	Unclassified
S1.008	S12	450	1.331	1.596	Unclassified	1350	0	1.596	Unclassified
S1.009	S13	450	1.200	1.331	Unclassified	1350	0	1.331	Unclassified
S1.010	S14	525	1.200	1.296	Unclassified	1500	0	1.200	Unclassified
S1.011	S15	525	1.296	1.885	Unclassified	1500	0	1.296	Unclassified
S1.012	S16	150	2.260	2.660	Unclassified	1500	0	2.260	Unclassified

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)
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S1.012 SEx MH 247.700 244.890 244.890 1200 0

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.840	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m ³ /ha Storage	0.000
Hot Start (mins)	0	Inlet Coefficient	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)	2880
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	24
Number of Input Hydrographs	0	Number of Offline Controls	0
Number of Online Controls	1	Number of Time/Area Diagrams	0
		Number of Storage Structures	1
		Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH	Summer Storms	No
Return Period (years)	100	Winter Storms	Yes
FEH Rainfall Version	2013	Cv (Summer)	0.750
Site Location GB 394046 347339 SJ 94046 47339		Cv (Winter)	0.840
Data Type	Point Storm Duration (mins)		1440

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Online Controls for Storm

Hydro-Brake® Optimum Manhole: S16, DS/PN: S1.012, Volume (m³): 6.3

Unit Reference	MD-SHE-0059-2000-1700-2000
Design Head (m)	1.700
Design Flow (l/s)	2.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	59
Invert Level (m)	246.200
Minimum Outlet Pipe Diameter (mm)	75
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.700	2.0	Kick-Flo®	0.527	1.2
Flush-Flo™	0.257	1.5	Mean Flow over Head Range	-	1.5

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)	Depth (m)	Flow (l/s)
0.100	1.3	0.800	1.4	2.000	2.2	4.000	3.0	7.000	3.8
0.200	1.4	1.000	1.6	2.200	2.2	4.500	3.1	7.500	4.0
0.300	1.4	1.200	1.7	2.400	2.3	5.000	3.3	8.000	4.1
0.400	1.4	1.400	1.8	2.600	2.4	5.500	3.4	8.500	4.2
0.500	1.3	1.600	1.9	3.000	2.6	6.000	3.6	9.000	4.3
0.600	1.3	1.800	2.1	3.500	2.8	6.500	3.7	9.500	4.4

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Storage Structures for Storm

Tank or Pond Manhole: S16, DS/PN: S1.012

Invert Level (m) 246.800

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	622.0	1.200	1189.0

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2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 0.000
 Hot Start Level (mm) 0 Inlet Coefficient 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 Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
 FEH Rainfall Version 2013 Cv (Summer) 0.750
 Site Location GB 394046 347339 SJ 94046 47339 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
 Return Period(s) (years) 2, 30, 100
 Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
S1.000	S1	15 Winter	2	+0%					258.782	-0.118
S1.001	S2	15 Winter	2	+0%	100/15 Summer				256.797	-0.103
S1.002	S3	15 Winter	2	+0%	100/15 Summer				255.867	-0.103
S1.003	S3	15 Winter	2	+0%	100/15 Summer				254.889	-0.150
S1.004	S5	15 Winter	2	+0%	100/15 Summer				252.397	-0.163
S2.000	S5	15 Winter	2	+0%	100/15 Summer				250.568	-0.242
S1.005	S5	15 Winter	2	+0%	100/15 Summer				249.784	-0.181
S1.006	S6	15 Winter	2	+0%	100/15 Summer				249.284	-0.260
S3.000	S7	15 Winter	2	+0%	100/15 Summer				248.741	-0.134
S3.001	S8	15 Winter	2	+0%	100/15 Summer				248.486	-0.275
S3.002	S9	15 Winter	2	+0%	100/15 Summer				248.259	-0.260
S3.003	S10	15 Winter	2	+0%	30/15 Winter				248.177	-0.273
S1.007	S11	15 Winter	2	+0%	30/15 Summer				248.072	-0.236
S1.008	S12	15 Winter	2	+0%	30/15 Summer				247.959	-0.205
S1.009	S13	15 Winter	2	+0%	100/15 Summer				247.767	-0.288
S1.010	S14	1440 Winter	2	+0%	30/15 Summer				247.167	-0.082
S1.011	S15	1440 Winter	2	+0%	2/15 Winter				247.167	0.263
S1.012	S16	1440 Winter	2	+0%	2/15 Summer				247.167	0.817

PN	US/MH Name	Flooded		Pipe		Status	Level Exceeded
		Volume (m ³)	Flow / Cap.	Overflow (l/s)	Flow (l/s)		
S1.000	S1	0.000	0.10		5.2	OK	
S1.001	S2	0.000	0.21		10.0	OK	
S1.002	S3	0.000	0.21		10.0	OK	
S1.003	S3	0.000	0.24		27.1	OK	
S1.004	S5	0.000	0.17		37.7	OK	
S2.000	S5	0.000	0.08		15.5	OK	

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2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Flooded		Pipe	Status	Level Exceeded
		Volume (m³)	Flow / Overflow Cap. (l/s)	Flow (l/s)		
S1.005	S5	0.000	0.33	53.0		OK
S1.006	S6	0.000	0.20	61.8		OK
S3.000	S7	0.000	0.34	12.3		OK
S3.001	S8	0.000	0.16	22.2		OK
S3.002	S9	0.000	0.21	22.1		OK
S3.003	S10	0.000	0.17	22.0		OK
S1.007	S11	0.000	0.46	98.7		OK
S1.008	S12	0.000	0.57	105.7		OK
S1.009	S13	0.000	0.28	115.1		OK
S1.010	S14	0.000	0.03	9.5		OK
S1.011	S15	0.000	0.03	11.2	SURCHARGED	
S1.012	S16	0.000	0.03	1.5	SURCHARGED	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 0.000
 Hot Start Level (mm) 0 Inlet Coefficient 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 Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
 FEH Rainfall Version 2013 Cv (Summer) 0.750
 Site Location GB 394046 347339 SJ 94046 47339 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
 Return Period(s) (years) 2, 30, 100
 Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water	Surcharged
									Level (m)	Depth (m)
S1.000	S1	15 Winter	30	+0%					258.799	-0.101
S1.001	S2	15 Winter	30	+0%	100/15 Summer				256.829	-0.071
S1.002	S3	15 Winter	30	+0%	100/15 Summer				255.899	-0.071
S1.003	S3	15 Winter	30	+0%	100/15 Summer				254.948	-0.091
S1.004	S5	15 Winter	30	+0%	100/15 Summer				252.443	-0.117
S2.000	S5	15 Winter	30	+0%	100/15 Summer				250.598	-0.212
S1.005	S5	15 Winter	30	+0%	100/15 Summer				249.881	-0.084
S1.006	S6	15 Winter	30	+0%	100/15 Summer				249.367	-0.177
S3.000	S7	15 Winter	30	+0%	100/15 Summer				248.801	-0.074
S3.001	S8	15 Winter	30	+0%	100/15 Summer				248.552	-0.209
S3.002	S9	15 Winter	30	+0%	100/15 Summer				248.481	-0.038
S3.003	S10	15 Winter	30	+0%	30/15 Winter				248.457	0.007
S1.007	S11	15 Winter	30	+0%	30/15 Summer				248.424	0.116
S1.008	S12	15 Winter	30	+0%	30/15 Summer				248.245	0.081
S1.009	S13	15 Winter	30	+0%	100/15 Summer				247.878	-0.177
S1.010	S14	1440 Winter	30	+0%	30/15 Summer				247.452	0.203
S1.011	S15	1440 Winter	30	+0%	2/15 Winter				247.452	0.548
S1.012	S16	1440 Winter	30	+0%	2/15 Summer				247.451	1.101

PN	US/MH Name	Flooded		Pipe		Status	Level Exceeded
		Volume (m ³)	Flow / Cap.	Overflow (l/s)	Flow (l/s)		
S1.000	S1	0.000	0.23		11.7	OK	
S1.001	S2	0.000	0.54		25.6	OK	
S1.002	S3	0.000	0.54		25.5	OK	
S1.003	S3	0.000	0.66		74.9	OK	
S1.004	S5	0.000	0.46		105.2	OK	
S2.000	S5	0.000	0.19		35.2	OK	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Flooded		Pipe		Status	Level Exceeded
		Volume (m³)	Flow / Overflow Cap. (l/s)	Flow (l/s)			
S1.005	S5	0.000	0.86	139.8		OK	
S1.006	S6	0.000	0.54	163.7		OK	
S3.000	S7	0.000	0.77	27.8		OK	
S3.001	S8	0.000	0.39	54.7		OK	
S3.002	S9	0.000	0.56	60.2		OK	
S3.003	S10	0.000	0.51	67.0		SURCHARGED	
S1.007	S11	0.000	1.11	238.4		SURCHARGED	
S1.008	S12	0.000	1.38	257.4		SURCHARGED	
S1.009	S13	0.000	0.67	280.3		OK	
S1.010	S14	0.000	0.04	15.6		SURCHARGED	
S1.011	S15	0.000	0.06	18.5		SURCHARGED	
S1.012	S16	0.000	0.04	1.7		SURCHARGED	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 0.000
 Hot Start Level (mm) 0 Inlet Coefficient 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 Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
 FEH Rainfall Version 2013 Cv (Summer) 0.750
 Site Location GB 394046 347339 SJ 94046 47339 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
 Return Period(s) (years) 2, 30, 100
 Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water	Surcharged
									Level (m)	Depth (m)
S1.000	S1	15 Winter	100	+40%					258.821	-0.079
S1.001	S2	15 Winter	100	+40%	100/15 Summer				257.311	0.411
S1.002	S3	15 Winter	100	+40%	100/15 Summer				256.534	0.564
S1.003	S3	15 Winter	100	+40%	100/15 Summer				255.838	0.799
S1.004	S5	15 Winter	100	+40%	100/15 Summer				253.020	0.460
S2.000	S5	15 Winter	100	+40%	100/15 Summer				251.772	0.962
S1.005	S5	15 Winter	100	+40%	100/15 Summer				251.691	1.726
S1.006	S6	15 Winter	100	+40%	100/15 Summer				250.951	1.407
S3.000	S7	15 Winter	100	+40%	100/15 Summer				250.444	1.569
S3.001	S8	15 Winter	100	+40%	100/15 Summer				250.272	1.511
S3.002	S9	15 Winter	100	+40%	100/15 Summer				250.188	1.669
S3.003	S10	15 Winter	100	+40%	30/15 Winter				250.155	1.705
S1.007	S11	15 Winter	100	+40%	30/15 Summer				250.113	1.805
S1.008	S12	15 Winter	100	+40%	30/15 Summer				249.656	1.492
S1.009	S13	15 Winter	100	+40%	100/15 Summer				249.124	1.069
S1.010	S14	15 Winter	100	+40%	30/15 Summer				248.187	0.938
S1.011	S15	1440 Winter	100	+40%	2/15 Winter				247.910	1.006
S1.012	S16	1440 Winter	100	+40%	2/15 Summer				247.909	1.559

PN	US/MH Name	Flooded		Pipe		Status	Level Exceeded
		Volume (m ³)	Flow / Cap.	Overflow (l/s)	Flow (l/s)		
S1.000	S1	0.000	0.45		22.5	OK	
S1.001	S2	0.000	0.94		44.3	SURCHARGED	
S1.002	S3	0.000	0.97		45.9	SURCHARGED	
S1.003	S3	0.000	1.12		127.3	SURCHARGED	
S1.004	S5	0.000	0.78		177.2	SURCHARGED	
S2.000	S5	0.000	0.33		61.4	SURCHARGED	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Flooded		Pipe	Status	Level Exceeded
		Volume (m³)	Flow / Overflow Cap. (l/s)	Flow (l/s)		
S1.005	S5	0.000	1.34	217.9	SURCHARGED	
S1.006	S6	0.000	0.83	249.5	SURCHARGED	
S3.000	S7	0.000	1.23	44.4	FLOOD RISK	
S3.001	S8	0.000	0.57	80.8	FLOOD RISK	
S3.002	S9	0.000	0.90	96.8	SURCHARGED	
S3.003	S10	0.000	0.78	103.0	SURCHARGED	
S1.007	S11	0.000	1.79	382.2	FLOOD RISK	
S1.008	S12	0.000	2.21	411.0	FLOOD RISK	
S1.009	S13	0.000	1.07	446.0	FLOOD RISK	
S1.010	S14	0.000	1.30	476.1	FLOOD RISK	
S1.011	S15	0.000	0.10	32.8	FLOOD RISK	
S1.012	S16	0.000	0.04	2.0	SURCHARGED	