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1 Dale Street Liverpool L2 2ET	219-174 Broadoak Farm, Linthwaite Proposed S.W Network Rev G	
Date 13/10/2022 14:49 File 219-174 SW Network Rev ...	Designed by JCM Checked by JLS	
Micro Drainage	Network 2020.1	

Existing Network Details for 219-174 SW NETWORK 1 REV C.SWS

- Indicates pipe length does not match coordinates

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	k (mm)	HYD SECT	DIA (mm)	Section Type
1.000	21.974	1.831	12.0	0.081	5.00	0.600	o	225	Pipe/Conduit
1.001	11.511	0.959	12.0	0.025	0.00	0.600	o	225	Pipe/Conduit
1.002	13.653	1.138	12.0	0.020	0.00	0.600	o	225	Pipe/Conduit
1.003	28.156	2.346	12.0	0.118	0.00	0.600	o	225	Pipe/Conduit
1.004	21.023	1.752	12.0	0.032	0.00	0.600	o	225	Pipe/Conduit
1.005	15.508	1.292	12.0	0.099	0.00	0.600	o	225	Pipe/Conduit
1.006	12.970	1.081	12.0	0.021	0.00	0.600	o	225	Pipe/Conduit
1.007	20.632	0.413	50.0	0.016	0.00	0.600	o	300	Pipe/Conduit
1.008	28.497	0.524	54.4	0.018	0.00	0.600	o	300	Pipe/Conduit
2.000	13.491	0.135	99.9	0.194	5.00	0.600	o	225	Pipe/Conduit
2.001	40.081	0.401	100.0	0.128	0.00	0.600	o	300	Pipe/Conduit
1.009	57.986	1.160	50.0	0.153	0.00	0.600	o	375	Pipe/Conduit
1.010	16.352	0.654	25.0	0.018	0.00	0.600	o	375	Pipe/Conduit
1.011	45.720	1.829	25.0	0.177	0.00	0.600	o	375	Pipe/Conduit
1.012	25.425	1.017	25.0	0.036	0.00	0.600	o	375	Pipe/Conduit
1.013	50.744	2.030	25.0	0.119	0.00	0.600	o	375	Pipe/Conduit
1.014	7.500#	0.385	19.5	0.000	0.00	0.600	o	450	Pipe/Conduit
1.015	7.668#	0.403	19.0	0.000	0.00	0.600	o	450	Pipe/Conduit

PN	US/MH Name	US/CL (m)	US/IL (m)	US C.Depth (m)	DS/CL (m)	DS/IL (m)	DS C.Depth (m)	Ctrl	US/MH (mm)
1.000	20	213.938	212.000	1.713	211.923	210.169	1.529		1200
1.001	19	211.923	210.169	1.529	210.812	209.210	1.377		1200
1.002	18	210.812	209.210	1.377	209.529	208.072	1.232		1200
1.003	17	209.529	208.072	1.232	207.163	205.726	1.212		1350
1.004	16	207.163	205.726	1.212	205.931	203.974	1.732		1500
1.005	15	205.931	203.974	1.732	205.016	202.682	2.109		1500
1.006	14	205.016	202.682	2.109	204.363	201.601	2.537		1500
1.007	13	204.363	201.601	2.537	204.021	201.113	2.608		1500
1.008	12	204.021	201.113	2.608	203.823	200.589	2.934		1500
2.000	22	203.548	201.200	2.123	203.840	201.065	2.550		1500
2.001	21	203.840	200.990	2.550	203.823	200.589	2.934		1800
1.009	11	203.823	200.514	2.934	201.437	199.354	1.708		1800
1.010	10	201.437	199.354	1.708	200.755	198.700	1.680		1800
1.011	9	200.755	198.700	1.680	198.824	196.871	1.578		1800
1.012	8	198.824	196.871	1.578	197.749	195.854	1.520		1800
1.013	7	197.749	195.854	1.520	195.646	193.824	1.447		1800
1.014	6	195.646	193.749	1.447	194.500	193.364	0.686		1800
1.015	5A	194.500	193.364	0.686	194.697	192.961	1.286		1500

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Micro Drainage	Network 2020.1	

Existing Network Details for 219-174 SW NETWORK 1 REV C.SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	k (mm)	HYD SECT	DIA (mm)	Section Type
1.016	13.370	0.055	245.0	0.000	0.00	0.600	o	450	Pipe/Conduit
1.017	23.509#	0.104	226.0	0.016	0.00	0.600	o	450	Pipe/Conduit
3.000	20.192	0.808	25.0	0.103	5.00	0.600	o	225	Pipe/Conduit
3.001	10.983	0.439	25.0	0.067	0.00	0.600	o	225	Pipe/Conduit
3.002	27.827	0.696	40.0	0.068	0.00	0.600	o	225	Pipe/Conduit
3.003	16.645	0.416	40.0	0.060	0.00	0.600	o	225	Pipe/Conduit
3.004	11.890	0.297	40.0	0.056	0.00	0.600	o	300	Pipe/Conduit
3.005	42.267	1.057	40.0	0.142	0.00	0.600	o	300	Pipe/Conduit
3.006	45.451	1.136	40.0	0.031	0.00	0.600	o	300	Pipe/Conduit
3.007	6.987	0.466	15.0	0.061	0.00	0.600	o	300	Pipe/Conduit
3.008	22.864	1.905	12.0	0.000	0.00	0.600	o	300	Pipe/Conduit
3.009	17.966	1.497	12.0	0.000	0.00	0.600	o	300	Pipe/Conduit
3.010	7.702	0.465	16.6	0.000	0.00	0.600	o	300	Pipe/Conduit
1.018	5.070	0.051	99.4	0.000	0.00	1.500	o	150	Pipe/Conduit
1.019	3.026	0.201	15.1	0.000	0.00	1.500	o	150	Pipe/Conduit

PN	US/MH Name	US/CL (m)	US/IL (m)	US C.Depth (m)	DS/CL (m)	DS/IL (m)	DS C.Depth (m)	Ctrl	US/MH (mm)
1.016	5	194.697	192.961	1.286	194.072	192.907	0.715		1800
1.017	4	194.072	192.597	1.025	194.574	192.493	1.631		1800
3.000	33	203.661	201.900	1.536	202.859	201.092	1.542		1200
3.001	32	202.859	201.092	1.542	202.434	200.653	1.556		1200
3.002	31	202.434	200.653	1.556	201.893	199.957	1.711		1500
3.003	30	201.893	199.957	1.711	201.701	199.541	1.935		1200
3.004	29	201.701	199.466	1.935	201.552	199.169	2.083		1500
3.005	28	201.552	199.169	2.083	201.011	198.112	2.599		1500
3.006	27	201.011	198.112	2.599	200.525	196.976	3.249		1500
3.007	26	200.525	196.976	3.249	200.300	196.510	3.490		1500
3.008	25	200.300	196.510	3.490	197.000	194.605	2.095		1500
3.009	24	197.000	194.605	2.095	194.996	193.108	1.588		1500
3.010	23	194.996	193.108	1.588	194.574	192.643	1.631		1500
1.018	3	194.574	192.443	1.981	194.373	192.392	1.831	Hydro-Brake®	2100
1.019	2	194.373	192.392	1.831	194.400	192.191	2.059		1200

Free Flowing Outfall Details for 219-174 SW NETWORK 1 REV C.SWS

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.019	1	194.400	192.191	192.018	1500	0

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Simulation Criteria for 219-174 SW NETWORK 1 REV C.SWS

Volumetric Runoff Coeff	0.750	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)	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	1	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	1	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.000	Storm Duration (mins)	30
Ratio R	0.290		

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Online Controls for 219-174 SW NETWORK 1 REV C.SWS

Hydro-Brake® Optimum Manhole: 3, DS/PN: 1.018, Volume (m³): 11.2

Unit Reference	MD-SHE-0099-5000-1450-5000
Design Head (m)	1.450
Design Flow (l/s)	5.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	99
Invert Level (m)	192.443
Minimum Outlet Pipe Diameter (mm)	150
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.450	5.0
Flush-Flo™	0.432	5.0
Kick-Flo®	0.882	4.0
Mean Flow over Head Range	-	4.4

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)						
0.100	3.2	1.200	4.6	3.000	7.0	7.000	10.5
0.200	4.5	1.400	4.9	3.500	7.5	7.500	10.8
0.300	4.9	1.600	5.2	4.000	8.0	8.000	11.2
0.400	5.0	1.800	5.5	4.500	8.5	8.500	11.5
0.500	5.0	2.000	5.8	5.000	8.9	9.000	11.8
0.600	4.9	2.200	6.1	5.500	9.3	9.500	12.1
0.800	4.4	2.400	6.3	6.000	9.7		
1.000	4.2	2.600	6.6	6.500	10.1		

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Storage Structures for 219-174 SW NETWORK 1 REV C.SWS

Tank or Pond Manhole: 4, DS/PN: 1.017

Invert Level (m) 192.597

Depth (m)	Area (m ²)						
0.000	1332.0	0.400	1637.0	0.800	1959.0	1.400	2341.0
0.200	1482.0	0.600	1769.0	1.000	2126.0	1.475	3023.0

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for 219-174 SW NETWORK 1 REV C.SWS

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 Storage Structures 1
Number of Online Controls 1 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 0.290
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.000 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 ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600,
720, 960, 1440
Return Period(s) (years) 1, 2, 30, 100
Climate Change (%) 0, 0, 0, 30

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	20 15	Winter	1	+0%					212.039
1.001	19 15	Winter	1	+0%					210.215
1.002	18 15	Winter	1	+0%					209.259
1.003	17 15	Winter	1	+0%	100/15	Winter			208.138
1.004	16 15	Winter	1	+0%	100/15	Summer			205.797
1.005	15 15	Winter	1	+0%	100/15	Summer			204.057
1.006	14 15	Winter	1	+0%	100/15	Summer			202.769
1.007	13 15	Winter	1	+0%	100/15	Summer			201.641
1.008	12 15	Winter	1	+0%	100/15	Summer			201.230
2.000	22 15	Winter	1	+0%	30/15	Summer			201.315
2.001	21 15	Winter	1	+0%	100/15	Summer			201.113
1.009	11 15	Winter	1	+0%	100/15	Summer			200.669
1.010	10 15	Winter	1	+0%	100/15	Summer			199.496
1.011	9 15	Winter	1	+0%	100/15	Summer			198.843
1.012	8 15	Winter	1	+0%	100/15	Summer			197.021
1.013	7 15	Winter	1	+0%	30/15	Winter			196.006
1.014	6 15	Winter	1	+0%	30/15	Summer			193.937
1.015	5A 15	Winter	1	+0%	30/15	Summer			193.549

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Micro Drainage	Network 2020.1	

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for 219-174 SW NETWORK 1 REV C.SWS

PN	US/MH Name	Surcharged		Flooded	Flow / Overflow Cap.	Half Drain Time (mins)	Pipe	Status	Level Exceeded
		Depth (m)	Volume (m ³)	Flow (l/s)			Flow (l/s)		
1.000	20	-0.186	0.000	0.07		9.6	OK		
1.001	19	-0.179	0.000	0.09		12.0	OK		
1.002	18	-0.176	0.000	0.11		14.0	OK		
1.003	17	-0.159	0.000	0.18		25.8	OK		
1.004	16	-0.154	0.000	0.21		29.1	OK		
1.005	15	-0.142	0.000	0.29		39.1	OK		
1.006	14	-0.138	0.000	0.32		41.2	OK		
1.007	13	-0.185	0.000	0.31		42.8	OK		
1.008	12	-0.183	0.000	0.33		44.5	OK		
2.000	22	-0.110	0.000	0.51		23.0	OK		
2.001	21	-0.177	0.000	0.34		35.6	OK		
1.009	11	-0.220	0.000	0.36		94.2	OK		
1.010	10	-0.233	0.000	0.30		95.4	OK		
1.011	9	-0.232	0.000	0.30		112.1	OK		
1.012	8	-0.225	0.000	0.33		116.1	OK		
1.013	7	-0.223	0.000	0.34		127.2	OK		
1.014	6	-0.262	0.000	0.36		127.5	OK		
1.015	5A	-0.265	0.000	0.36		127.4	OK		

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Micro Drainage	Network 2020.1	

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for 219-174 SW NETWORK 1 REV C.SWS

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.016	5	15	Winter	1	+0%	2/15	Winter		193.275
1.017	4	1440	Winter	1	+0%	30/360	Winter		192.825
3.000	33	15	Winter	1	+0%	100/15	Summer		201.954
3.001	32	15	Winter	1	+0%	100/15	Summer		201.163
3.002	31	15	Winter	1	+0%	30/15	Summer		200.744
3.003	30	15	Winter	1	+0%	30/15	Summer		200.062
3.004	29	15	Winter	1	+0%	100/15	Summer		199.573
3.005	28	15	Winter	1	+0%	100/15	Summer		199.284
3.006	27	15	Winter	1	+0%	100/15	Summer		198.230
3.007	26	15	Winter	1	+0%	100/15	Summer		197.099
3.008	25	15	Winter	1	+0%				196.603
3.009	24	15	Winter	1	+0%				194.700
3.010	23	15	Winter	1	+0%	30/15	Summer		193.231
1.018	3	30	Summer	1	+0%	1/15	Summer		193.074
1.019	2	15	Summer	1	+0%				192.434

PN	US/MH Name	Depth (m)	Surcharged Volume (m³)	Flooded Flow / Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.016	5	-0.136	0.000	0.82		126.5	OK	
1.017	4	-0.222	0.000	0.05		8.3	OK	
3.000	33	-0.171	0.000	0.13		12.2	OK	
3.001	32	-0.154	0.000	0.21		18.9	OK	
3.002	31	-0.134	0.000	0.33		25.6	OK	
3.003	30	-0.120	0.000	0.43		31.8	OK	
3.004	29	-0.193	0.000	0.27		37.5	OK	
3.005	28	-0.185	0.000	0.31		51.6	OK	
3.006	27	-0.182	0.000	0.33		54.2	OK	
3.007	26	-0.177	0.000	0.35		59.9	OK	
3.008	25	-0.207	0.000	0.21		59.9	OK	
3.009	24	-0.205	0.000	0.22		60.1	OK	
3.010	23	-0.177	0.000	0.35		60.3	OK	
1.018	3	0.481	0.000	0.38		5.0	SURCHARGED	
1.019	2	-0.108	0.000	0.18		5.0	OK	

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Micro Drainage	Network 2020.1	

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for 219-174 SW NETWORK 1 REV C.SWS

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 Storage Structures 1
Number of Online Controls 1 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 0.290
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.000 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 ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600,
720, 960, 1440
Return Period(s) (years) 1, 2, 30, 100
Climate Change (%) 0, 0, 0, 30

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	20 15	Winter	2	+0%					212.046
1.001	19 15	Winter	2	+0%					210.221
1.002	18 15	Winter	2	+0%					209.266
1.003	17 15	Winter	2	+0%	100/15	Winter			208.147
1.004	16 15	Winter	2	+0%	100/15	Summer			205.807
1.005	15 15	Winter	2	+0%	100/15	Summer			204.070
1.006	14 15	Winter	2	+0%	100/15	Summer			202.782
1.007	13 15	Winter	2	+0%	100/15	Summer			201.658
1.008	12 15	Winter	2	+0%	100/15	Summer			201.249
2.000	22 15	Winter	2	+0%	30/15	Summer			201.335
2.001	21 15	Winter	2	+0%	100/15	Summer			201.132
1.009	11 15	Winter	2	+0%	100/15	Summer			200.693
1.010	10 15	Winter	2	+0%	100/15	Summer			199.517
1.011	9 15	Winter	2	+0%	100/15	Summer			198.865
1.012	8 15	Winter	2	+0%	100/15	Summer			197.044
1.013	7 15	Winter	2	+0%	30/15	Winter			196.030
1.014	6 15	Winter	2	+0%	30/15	Summer			193.967
1.015	5A 15	Winter	2	+0%	30/15	Summer			193.579

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Micro Drainage	Network 2020.1	

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for 219-174 SW NETWORK 1 REV C.SWS

PN	US/MH Name	Surcharged		Flooded		Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
		Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)				
1.000	20	-0.179	0.000	0.09			12.5	OK	
1.001	19	-0.173	0.000	0.12			15.6	OK	
1.002	18	-0.169	0.000	0.14			18.1	OK	
1.003	17	-0.150	0.000	0.24			33.4	OK	
1.004	16	-0.144	0.000	0.27			37.7	OK	
1.005	15	-0.129	0.000	0.38			50.6	OK	
1.006	14	-0.125	0.000	0.41			53.4	OK	
1.007	13	-0.168	0.000	0.40			55.5	OK	
1.008	12	-0.164	0.000	0.42			57.6	OK	
2.000	22	-0.090	0.000	0.66			29.7	OK	
2.001	21	-0.158	0.000	0.45			46.1	OK	
1.009	11	-0.196	0.000	0.46			122.1	OK	
1.010	10	-0.212	0.000	0.39			123.4	OK	
1.011	9	-0.210	0.000	0.39			145.1	OK	
1.012	8	-0.202	0.000	0.43			150.2	OK	
1.013	7	-0.199	0.000	0.44			164.7	OK	
1.014	6	-0.232	0.000	0.47			165.2	OK	
1.015	5A	-0.236	0.000	0.46			165.1	OK	

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Micro Drainage	Network 2020.1	

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for 219-174 SW NETWORK 1 REV C.SWS

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.016	5	15	Winter	2	+0%	2/15	Winter		193.422
1.017	4	1440	Winter	2	+0%	30/360	Winter		192.882
3.000	33	15	Winter	2	+0%	100/15	Summer		201.962
3.001	32	15	Winter	2	+0%	100/15	Summer		201.173
3.002	31	15	Winter	2	+0%	30/15	Summer		200.758
3.003	30	15	Winter	2	+0%	30/15	Summer		200.079
3.004	29	15	Winter	2	+0%	100/15	Summer		199.590
3.005	28	15	Winter	2	+0%	100/15	Summer		199.302
3.006	27	15	Winter	2	+0%	100/15	Summer		198.249
3.007	26	15	Winter	2	+0%	100/15	Summer		197.118
3.008	25	15	Winter	2	+0%				196.617
3.009	24	15	Winter	2	+0%				194.713
3.010	23	15	Winter	2	+0%	30/15	Summer		193.250
1.018	3	15	Winter	2	+0%	1/15	Summer		193.106
1.019	2	15	Winter	2	+0%				192.434

PN	US/MH Name	Depth (m)	Surcharged Volume (m³)	Flooded Flow / Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.016	5	0.011	0.000	1.06		162.8	SURCHARGED	
1.017	4	-0.165	0.000	0.04		7.9	OK	
3.000	33	-0.163	0.000	0.17		15.8	OK	
3.001	32	-0.144	0.000	0.28		24.4	OK	
3.002	31	-0.120	0.000	0.43		33.1	OK	
3.003	30	-0.103	0.000	0.56		41.1	OK	
3.004	29	-0.176	0.000	0.36		48.5	OK	
3.005	28	-0.167	0.000	0.41		66.7	OK	
3.006	27	-0.163	0.000	0.43		70.2	OK	
3.007	26	-0.158	0.000	0.45		77.5	OK	
3.008	25	-0.193	0.000	0.27		77.5	OK	
3.009	24	-0.192	0.000	0.28		77.8	OK	
3.010	23	-0.158	0.000	0.46		78.0	OK	
1.018	3	0.513	0.000	0.38		5.0	SURCHARGED	
1.019	2	-0.108	0.000	0.18		5.0	OK	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for 219-174 SW NETWORK 1 REV C.SWS

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 Storage Structures 1
Number of Online Controls 1 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 0.290
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.000 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 ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600,
720, 960, 1440
Return Period(s) (years) 1, 2, 30, 100
Climate Change (%) 0, 0, 0, 30

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	20 15	Winter	30	+0%					212.062
1.001	19 15	Winter	30	+0%					210.244
1.002	18 15	Winter	30	+0%					209.292
1.003	17 15	Winter	30	+0%	100/15	Winter			208.189
1.004	16 15	Winter	30	+0%	100/15	Summer			205.854
1.005	15 15	Winter	30	+0%	100/15	Summer			204.135
1.006	14 15	Winter	30	+0%	100/15	Summer			202.852
1.007	13 15	Winter	30	+0%	100/15	Summer			201.750
1.008	12 15	Winter	30	+0%	100/15	Summer			201.346
2.000	22 15	Winter	30	+0%	30/15	Summer			201.497
2.001	21 15	Winter	30	+0%	100/15	Summer			201.219
1.009	11 15	Winter	30	+0%	100/15	Summer			200.829
1.010	10 15	Winter	30	+0%	100/15	Summer			199.621
1.011	9 15	Winter	30	+0%	100/15	Summer			198.972
1.012	8 15	Winter	30	+0%	100/15	Summer			197.159
1.013	7 15	Winter	30	+0%	30/15	Winter			196.246
1.014	6 15	Winter	30	+0%	30/15	Summer			194.468
1.015	5A 15	Winter	30	+0%	30/15	Summer			194.093

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Micro Drainage	Network 2020.1	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for 219-174 SW NETWORK 1 REV C.SWS

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Overflow Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	20	-0.163	0.000	0.17		23.6	OK	
1.001	19	-0.150	0.000	0.24		31.1	OK	
1.002	18	-0.143	0.000	0.28		37.1	OK	
1.003	17	-0.108	0.000	0.52		73.5	OK	
1.004	16	-0.097	0.000	0.61		83.1	OK	
1.005	15	-0.064	0.000	0.85		113.4	OK	
1.006	14	-0.055	0.000	0.91		119.2	OK	
1.007	13	-0.076	0.000	0.89		123.0	OK	
1.008	12	-0.067	0.000	0.94		128.9	OK	
2.000	22	0.072	0.000	1.24		56.0	SURCHARGED	
2.001	21	-0.071	0.000	0.90		93.0	OK	
1.009	11	-0.060	0.000	1.00		264.3	OK	
1.010	10	-0.108	0.000	0.85		268.6	OK	
1.011	9	-0.103	0.000	0.86		316.1	OK	
1.012	8	-0.087	0.000	0.94		325.5	OK	
1.013	7	0.017	0.000	0.94		349.4	SURCHARGED	
1.014	6	0.269	0.000	0.99		346.0	SURCHARGED	
1.015	5A	0.279	0.000	0.96		344.6	SURCHARGED	

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Micro Drainage	Network 2020.1	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for 219-174 SW NETWORK 1 REV C.SWS

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.016	5	15	Winter	30	+0%	2/15	Winter		193.715
1.017	4	1440	Winter	30	+0%	30/360	Winter		193.152
3.000	33	15	Winter	30	+0%	100/15	Summer		201.987
3.001	32	15	Winter	30	+0%	100/15	Summer		201.215
3.002	31	15	Winter	30	+0%	30/15	Summer		200.920
3.003	30	15	Winter	30	+0%	30/15	Summer		200.341
3.004	29	15	Winter	30	+0%	100/15	Summer		199.663
3.005	28	15	Winter	30	+0%	100/15	Summer		199.390
3.006	27	15	Winter	30	+0%	100/15	Summer		198.341
3.007	26	15	Winter	30	+0%	100/15	Summer		197.216
3.008	25	15	Winter	30	+0%				196.677
3.009	24	15	Winter	30	+0%				194.774
3.010	23	15	Summer	30	+0%	30/15	Summer		193.596
1.018	3	15	Summer	30	+0%	1/15	Summer		193.294
1.019	2	1440	Summer	30	+0%				192.434

PN	US/MH Name	Depth (m)	Surcharged Volume (m³)	Flooded Volume (m³)	Flow / Overflow Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.016	5	0.303	0.000	0.000	2.24		344.7	SURCHARGED	
1.017	4	0.105	0.000	0.000	0.07		11.9	SURCHARGED	
3.000	33	-0.138	0.000	0.000	0.32		29.9	OK	
3.001	32	-0.102	0.000	0.000	0.57		50.4	OK	
3.002	31	0.042	0.000	0.000	0.90		69.2	SURCHARGED	
3.003	30	0.159	0.000	0.000	1.18		86.3	SURCHARGED	
3.004	29	-0.103	0.000	0.000	0.75		101.7	OK	
3.005	28	-0.079	0.000	0.000	0.86		141.9	OK	
3.006	27	-0.071	0.000	0.000	0.92		151.9	OK	
3.007	26	-0.060	0.000	0.000	0.99		169.0	OK	
3.008	25	-0.133	0.000	0.000	0.59		169.1	OK	
3.009	24	-0.131	0.000	0.000	0.61		168.6	OK	
3.010	23	0.188	0.000	0.000	0.97		165.3	SURCHARGED	
1.018	3	0.701	0.000	0.000	0.38		5.0	SURCHARGED	
1.019	2	-0.108	0.000	0.000	0.18		5.0	OK	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 219-174 SW NETWORK 1 REV C.SWS

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 Storage Structures 1
Number of Online Controls 1 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 0.290
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.000 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 ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600,
720, 960, 1440
Return Period(s) (years) 1, 2, 30, 100
Climate Change (%) 0, 0, 0, 30

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	20 15	Winter	100	+30%					212.082
1.001	19 15	Winter	100	+30%					210.269
1.002	18 15	Winter	100	+30%					209.320
1.003	17 15	Winter	100	+30%	100/15	Winter			208.373
1.004	16 15	Winter	100	+30%	100/15	Summer			207.024
1.005	15 15	Winter	100	+30%	100/15	Summer			205.878
1.006	14 15	Winter	100	+30%	100/15	Summer			204.423
1.007	13 15	Winter	100	+30%	100/15	Summer			203.073
1.008	12 15	Winter	100	+30%	100/15	Summer			202.601
2.000	22 15	Winter	100	+30%	30/15	Summer			202.881
2.001	21 15	Winter	100	+30%	100/15	Summer			202.459
1.009	11 15	Winter	100	+30%	100/15	Summer			201.970
1.010	10 15	Winter	100	+30%	100/15	Summer			200.372
1.011	9 15	Winter	100	+30%	100/15	Summer			199.784
1.012	8 15	Winter	100	+30%	100/15	Summer			198.088
1.013	7 15	Winter	100	+30%	30/15	Winter			197.010
1.014	6 15	Winter	100	+30%	30/15	Summer			194.765
1.015	5A 15	Winter	100	+30%	30/15	Summer			194.289

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 219-174 SW NETWORK 1 REV C.SWS

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Overflow Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	20	-0.143	0.000	0.29		39.5	OK	
1.001	19	-0.125	0.000	0.41		52.2	OK	
1.002	18	-0.115	0.000	0.47		62.2	OK	
1.003	17	0.076	0.000	0.86		120.6	SURCHARGED	
1.004	16	1.073	0.000	0.86		118.0	FLOOD RISK	
1.005	15	1.679	0.000	1.13		149.9	FLOOD RISK	
1.006	14	1.516	0.000	1.12		145.9	SURCHARGED	
1.007	13	1.247	0.000	1.09		150.8	SURCHARGED	
1.008	12	1.188	0.000	1.19		162.3	SURCHARGED	
2.000	22	1.456	0.000	1.78		80.1	SURCHARGED	
2.001	21	1.169	0.000	1.23		126.6	SURCHARGED	
1.009	11	1.081	0.000	1.19		314.2	SURCHARGED	
1.010	10	0.643	0.000	1.00		315.5	SURCHARGED	
1.011	9	0.709	0.000	0.95		351.2	SURCHARGED	
1.012	8	0.842	0.000	1.04		362.0	SURCHARGED	
1.013	7	0.781	0.000	1.05		390.3	SURCHARGED	
1.014	6	0.566	0.000	1.11		389.3	SURCHARGED	
1.015	5A	0.475	0.000	1.09		389.0	FLOOD RISK	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 219-174 SW NETWORK 1 REV C.SWS

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.016	5	15 Winter	100	+30%	2/15 Winter				193.812
1.017	4	1440 Winter	100	+30%	30/360 Winter				193.546
3.000	33	15 Winter	100	+30%	100/15 Summer				202.816
3.001	32	15 Winter	100	+30%	100/15 Summer				202.659
3.002	31	15 Winter	100	+30%	30/15 Summer				202.414
3.003	30	15 Winter	100	+30%	30/15 Summer				201.512
3.004	29	15 Winter	100	+30%	100/15 Summer				200.596
3.005	28	15 Winter	100	+30%	100/15 Summer				200.335
3.006	27	15 Winter	100	+30%	100/15 Summer				199.009
3.007	26	15 Winter	100	+30%	100/15 Summer				197.505
3.008	25	15 Winter	100	+30%					196.702
3.009	24	15 Winter	100	+30%					194.801
3.010	23	15 Summer	100	+30%	30/15 Summer				193.910
1.018	3	1440 Winter	100	+30%	1/15 Summer				193.549
1.019	2	15 Winter	100	+30%					192.434

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Overflow Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.016	5	0.401	0.000	2.53		389.2	SURCHARGED	
1.017	4	0.499	0.000	0.03		5.5	SURCHARGED	
3.000	33	0.691	0.000	0.49		46.0	SURCHARGED	
3.001	32	1.342	0.000	0.73		64.5	FLOOD RISK	
3.002	31	1.536	0.000	1.16		88.8	FLOOD RISK	
3.003	30	1.330	0.000	1.49		109.0	SURCHARGED	
3.004	29	0.830	0.000	0.95		130.2	SURCHARGED	
3.005	28	0.866	0.000	1.11		183.1	SURCHARGED	
3.006	27	0.597	0.000	1.15		189.8	SURCHARGED	
3.007	26	0.229	0.000	1.23		209.8	SURCHARGED	
3.008	25	-0.108	0.000	0.74		209.7	OK	
3.009	24	-0.104	0.000	0.76		209.3	OK	
3.010	23	0.502	0.000	1.20		204.2	SURCHARGED	
1.018	3	0.956	0.000	0.38		5.0	SURCHARGED	
1.019	2	-0.108	0.000	0.18		5.0	OK	