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Trafford Wharf Road Trafford Park Manchester M17 1HH		
Date 29/10/2020 12:10 File PARCEL B-RIMINGTON.MDX	Designed by MOSSROOR.KHAN Checked by	
Micro Drainage		Network 2019.1

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Parcel B










Pipe Sizes Standard Manhole Sizes Standard

FSR Rainfall Model - England and Wales			
Return Period (years)	100	PIMP (%)	100
M5-60 (mm)	19.200	Add Flow / Climate Change (%)	0
Ratio R	0.250	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	450

Designed with Level Soffits


Network Design Table for Parcel B

« - Indicates pipe capacity < flow














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	20.650	0.340	60.7	0.010	5.00	0.0	0.600	o	150	Pipe/Conduit	
1.001	18.265	0.180	101.5	0.010	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.002	17.506	0.200	87.5	0.010	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.003	9.682	0.350	27.7	0.005	0.00	0.0	0.600	o	150	Pipe/Conduit	
2.000	33.681	1.070	31.5	0.010	5.00	0.0	0.600	o	150	Pipe/Conduit	
2.001	29.999	0.240	125.0	0.010	0.00	0.0	0.600	o	150	Pipe/Conduit	
2.002	29.107	0.240	121.3	0.010	0.00	0.0	0.600	o	150	Pipe/Conduit	
2.003	23.429	0.230	101.9	0.010	0.00	0.0	0.600	o	150	Pipe/Conduit	
2.004	7.112	0.249	28.6	0.005	0.00	0.0	0.600	o	150	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	5.27	147.520	0.010	0.0	0.0	0.0	1.29	22.8	1.4
1.001	50.00	5.57	147.180	0.020	0.0	0.0	0.0	1.00	17.6	2.7
1.002	50.00	5.84	147.000	0.030	0.0	0.0	0.0	1.07	19.0	4.1
1.003	50.00	5.93	146.800	0.035	0.0	0.0	0.0	1.92	34.0	4.7
2.000	50.00	5.31	149.030	0.010	0.0	0.0	0.0	1.80	31.8	1.4
2.001	50.00	5.87	147.960	0.020	0.0	0.0	0.0	0.90	15.9	2.7
2.002	50.00	6.40	147.720	0.030	0.0	0.0	0.0	0.91	16.1	4.1
2.003	50.00	6.79	147.480	0.040	0.0	0.0	0.0	1.00	17.6	5.4
2.004	50.00	6.86	147.250	0.045	0.0	0.0	0.0	1.89	33.4	6.1

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Network Design Table for Parcel B

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
3.000	26.689	1.000	26.7	0.010	5.00	0.0	0.600	o	150	Pipe/Conduit	
3.001	34.098	2.130	16.0	0.015	0.00	0.0	0.600	o	150	Pipe/Conduit	
3.002	32.657	0.320	102.1	0.010	0.00	0.0	0.600	o	150	Pipe/Conduit	
3.003	45.319	0.350	129.5	0.015	0.00	0.0	0.600	o	150	Pipe/Conduit	
3.004	38.622	0.300	128.7	0.015	0.00	0.0	0.600	o	150	Pipe/Conduit	
3.005	4.604	0.060	76.7	0.010	0.00	0.0	0.600	o	150	Pipe/Conduit	
3.006	24.395	0.350	69.7	0.010	0.00	0.0	0.600	o	150	Pipe/Conduit	
3.007	16.659	0.999	16.7	0.010	0.00	0.0	0.600	o	150	Pipe/Conduit	
2.005	20.486	0.171	119.8	0.010	0.00	0.0	0.600	o	150	Pipe/Conduit	
2.006	47.353	0.380	124.6	0.015	0.00	0.0	0.600	o	150	Pipe/Conduit	
4.000	19.438	0.410	47.4	0.010	5.00	0.0	0.600	o	150	Pipe/Conduit	
1.004	22.715	1.740	13.1	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.005	30.145	3.349	9.0	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	




Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
3.000	50.00	5.23	152.510	0.010	0.0	0.0	0.0	1.96	34.6	1.4
3.001	50.00	5.45	151.510	0.025	0.0	0.0	0.0	2.53	44.7	3.4
3.002	50.00	6.00	149.380	0.035	0.0	0.0	0.0	0.99	17.6	4.7
3.003	50.00	6.86	149.060	0.050	0.0	0.0	0.0	0.88	15.6	6.8
3.004	50.00	7.58	148.710	0.065	0.0	0.0	0.0	0.88	15.6	8.8
3.005	50.00	7.65	148.410	0.075	0.0	0.0	0.0	1.15	20.3	10.2
3.006	50.00	7.99	148.350	0.085	0.0	0.0	0.0	1.21	21.3	11.5
3.007	50.00	8.10	148.000	0.095	0.0	0.0	0.0	2.48	43.8	12.9
2.005	50.00	8.47	147.001	0.150	0.0	0.0	0.0	0.92	16.2«	20.3
2.006	50.00	9.35	146.830	0.165	0.0	0.0	0.0	0.90	15.9«	22.3
4.000	50.00	5.22	146.910	0.010	0.0	0.0	0.0	1.46	25.9	1.4
1.004	50.00	9.45	146.450	0.210	0.0	0.0	0.0	3.64	144.8	28.4
1.005	50.00	9.57	144.635	0.210	0.0	0.0	0.0	4.39	174.5	28.4

Manhole Schedules for Parcel B

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	PN	Pipe Out		Pipes In			Backdrop (mm)
						Invert Level (m)	Diameter (mm)	PN	Invert Level (m)	Diameter (mm)	
CP27	148.420	0.900	Open Manhole	500	1.000	147.520	150				
CP28	148.080	0.900	Open Manhole	500	1.001	147.180	150	1.000	147.180	150	
CP29	148.310	1.310	Open Manhole	500	1.002	147.000	150	1.001	147.000	150	
CP30	147.860	1.060	Open Manhole	500	1.003	146.800	150	1.002	146.800	150	
CP20	149.930	0.900	Open Manhole	500	2.000	149.030	150				
CP21	148.860	0.900	Open Manhole	500	2.001	147.960	150	2.000	147.960	150	
CP22	148.740	1.020	Open Manhole	500	2.002	147.720	150	2.001	147.720	150	
CP23	149.230	1.750	Open Manhole	500	2.003	147.480	150	2.002	147.480	150	
CP24	149.000	1.750	Open Manhole	500	2.004	147.250	150	2.003	147.250	150	
CP12	153.410	0.900	Open Manhole	500	3.000	152.510	150				
CP13	152.410	0.900	Open Manhole	500	3.001	151.510	150	3.000	151.510	150	
CP14	150.280	0.900	Open Manhole	500	3.002	149.380	150	3.001	149.380	150	
CP15	149.960	0.900	Open Manhole	500	3.003	149.060	150	3.002	149.060	150	
CP16	150.000	1.290	Open Manhole	500	3.004	148.710	150	3.003	148.710	150	
CP17	150.025	1.615	Open Manhole	500	3.005	148.410	150	3.004	148.410	150	
CP18	150.380	2.030	Open Manhole	500	3.006	148.350	150	3.005	148.350	150	
CP19	149.640	1.640	Open Manhole	500	3.007	148.000	150	3.006	148.000	150	
CP25	149.010	2.009	Open Manhole	500	2.005	147.001	150	2.004	147.001	150	
								3.007	147.001	150	
CP26	148.330	1.500	Open Manhole	500	2.006	146.830	150	2.005	146.830	150	
CP31	147.610	0.700	Open Manhole	500	4.000	146.910	150				
SW3	147.250	0.800	Open Manhole	1500	1.004	146.450	225	1.003	146.450	150	
								2.006	146.450	150	
								4.000	146.500	150	
SW4	146.060	1.425	Open Manhole	1500	1.005	144.635	225	1.004	144.710	225	
HW2	142.110	0.824	Open Manhole	0		OUTFALL		1.005	141.286	225	

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MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
CP27	383413.158	446903.793	383413.158	446903.793	Required	
CP28	383404.197	446922.397	383404.197	446922.397	Required	
CP29	383397.101	446939.228	383397.101	446939.228	Required	

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Trafford Park
Manchester M17 1HH

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Manhole Schedules for Parcel B

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
CP30	383390.523	446955.451	383390.523	446955.451	Required	
CP20	383420.601	446849.078	383420.601	446849.078	Required	
CP21	383395.976	446872.057	383395.976	446872.057	Required	
CP22	383374.043	446892.524	383374.043	446892.524	Required	
CP23	383352.762	446912.383	383352.762	446912.383	Required	
CP24	383335.633	446928.367	383335.633	446928.367	Required	
CP12	383458.795	446804.828	383458.795	446804.828	Required	
CP13	383433.453	446796.457	383433.453	446796.457	Required	
CP14	383408.496	446819.693	383408.496	446819.693	Required	
CP15	383384.595	446841.946	383384.595	446841.946	Required	
CP16	383351.426	446872.828	383351.426	446872.828	Required	
CP17	383323.160	446899.145	383323.160	446899.145	Required	
CP18	383319.834	446895.962	383319.834	446895.962	Required	
CP19	383319.374	446920.352	383319.374	446920.352	Required	
CP25	383330.229	446932.990	383330.229	446932.990	Required	

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Manhole Schedules for Parcel B

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
CP26	383343.533	446948.568	383343.533	446948.568	Required	
CP31	383406.894	446969.434	383406.894	446969.434	Required	
SW3	383388.015	446964.803	383388.015	446964.803	Required	
SW4	383376.030	446984.099	383376.030	446984.099	Required	
HW2	383369.843	447013.602			No Entry	

PIPELINE SCHEDULES for Parcel B

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	150	CP27	148.420	147.520	0.750	Open Manhole	500
1.001	o	150	CP28	148.080	147.180	0.750	Open Manhole	500
1.002	o	150	CP29	148.310	147.000	1.160	Open Manhole	500
1.003	o	150	CP30	147.860	146.800	0.910	Open Manhole	500
2.000	o	150	CP20	149.930	149.030	0.750	Open Manhole	500
2.001	o	150	CP21	148.860	147.960	0.750	Open Manhole	500
2.002	o	150	CP22	148.740	147.720	0.870	Open Manhole	500
2.003	o	150	CP23	149.230	147.480	1.600	Open Manhole	500
2.004	o	150	CP24	149.000	147.250	1.600	Open Manhole	500
3.000	o	150	CP12	153.410	152.510	0.750	Open Manhole	500
3.001	o	150	CP13	152.410	151.510	0.750	Open Manhole	500
3.002	o	150	CP14	150.280	149.380	0.750	Open Manhole	500
3.003	o	150	CP15	149.960	149.060	0.750	Open Manhole	500
3.004	o	150	CP16	150.000	148.710	1.140	Open Manhole	500
3.005	o	150	CP17	150.025	148.410	1.465	Open Manhole	500
3.006	o	150	CP18	150.380	148.350	1.880	Open Manhole	500
3.007	o	150	CP19	149.640	148.000	1.490	Open Manhole	500
2.005	o	150	CP25	149.010	147.001	1.859	Open Manhole	500

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	20.650	60.7	CP28	148.080	147.180	0.750	Open Manhole	500
1.001	18.265	101.5	CP29	148.310	147.000	1.160	Open Manhole	500
1.002	17.506	87.5	CP30	147.860	146.800	0.910	Open Manhole	500
1.003	9.682	27.7	SW3	147.250	146.450	0.650	Open Manhole	1500
2.000	33.681	31.5	CP21	148.860	147.960	0.750	Open Manhole	500
2.001	29.999	125.0	CP22	148.740	147.720	0.870	Open Manhole	500
2.002	29.107	121.3	CP23	149.230	147.480	1.600	Open Manhole	500
2.003	23.429	101.9	CP24	149.000	147.250	1.600	Open Manhole	500
2.004	7.112	28.6	CP25	149.010	147.001	1.859	Open Manhole	500
3.000	26.689	26.7	CP13	152.410	151.510	0.750	Open Manhole	500
3.001	34.098	16.0	CP14	150.280	149.380	0.750	Open Manhole	500
3.002	32.657	102.1	CP15	149.960	149.060	0.750	Open Manhole	500
3.003	45.319	129.5	CP16	150.000	148.710	1.140	Open Manhole	500
3.004	38.622	128.7	CP17	150.025	148.410	1.465	Open Manhole	500
3.005	4.604	76.7	CP18	150.380	148.350	1.880	Open Manhole	500
3.006	24.395	69.7	CP19	149.640	148.000	1.490	Open Manhole	500
3.007	16.659	16.7	CP25	149.010	147.001	1.859	Open Manhole	500
2.005	20.486	119.8	CP26	148.330	146.830	1.350	Open Manhole	500

PIPELINE SCHEDULES for Parcel B

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)
2.006	o	150	CP26	148.330	146.830	1.350	Open Manhole	500
4.000	o	150	CP31	147.610	146.910	0.550	Open Manhole	500
1.004	o	225	SW3	147.250	146.450	0.575	Open Manhole	1500
1.005	o	225	SW4	146.060	144.635	1.200	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)
2.006	47.353	124.6	SW3	147.250	146.450	0.650	Open Manhole	1500
4.000	19.438	47.4	SW3	147.250	146.500	0.600	Open Manhole	1500
1.004	22.715	13.1	SW4	146.060	144.710	1.125	Open Manhole	1500
1.005	30.145	9.0	HW2	142.110	141.286	0.599	Open Manhole	0

Free Flowing Outfall Details for Parcel B

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
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1.005	HW2	142.110	141.286	0.000	0	0
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Simulation Criteria for Parcel B

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet 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	3
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	0.250
Return Period (years)	100	Profile Type	Summer
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	19.200	Cv (Winter)	0.840

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Synthetic Rainfall Details


Storm Duration (mins) 30

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Online Controls for Parcel B

Orifice Manhole: SW3, DS/PN: 1.004, Volume (m³): 2.7

Diameter (m) 0.047 Discharge Coefficient 0.600 Invert Level (m) 146.450

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Storage Structures for Parcel B

Filter Drain Manhole: CP30, DS/PN: 1.003


Infiltration Coefficient Base (m/hr)	0.00000	Pipe Diameter (m)	0.150
Infiltration Coefficient Side (m/hr)	0.25200	Pipe Depth above Invert (m)	0.900
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	125.0
Invert Level (m)	146.800	Cap Volume Depth (m)	0.800
Trench Width (m)	1.0	Cap Infiltration Depth (m)	0.600
Trench Length (m)	135.0		

Filter Drain Manhole: CP19, DS/PN: 3.007

Infiltration Coefficient Base (m/hr)	0.00000	Pipe Diameter (m)	0.150
Infiltration Coefficient Side (m/hr)	0.25200	Pipe Depth above Invert (m)	1.500
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	125.0
Invert Level (m)	146.450	Cap Volume Depth (m)	1.300
Trench Width (m)	1.0	Cap Infiltration Depth (m)	1.100
Trench Length (m)	135.0		

Filter Drain Manhole: CP26, DS/PN: 2.006

Infiltration Coefficient Base (m/hr)	0.00000	Pipe Diameter (m)	0.150
Infiltration Coefficient Side (m/hr)	0.25200	Pipe Depth above Invert (m)	1.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	125.0
Invert Level (m)	146.800	Cap Volume Depth (m)	0.800
Trench Width (m)	1.0	Cap Infiltration Depth (m)	0.600
Trench Length (m)	135.0		

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for Parcel B

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
Hot Start Level (mm) 0 Inlet 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 3
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 0.225
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 18.600 Cv (Winter) 0.840

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


Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 20

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	CP27	15 Winter	1	+0%					147.541
1.001	CP28	15 Winter	1	+0%	100/30 Summer				147.215
1.002	CP29	15 Winter	1	+0%	30/15 Summer				147.040
1.003	CP30	60 Winter	1	+0%	1/30 Summer				146.996
2.000	CP20	15 Winter	1	+0%					149.048
2.001	CP21	15 Winter	1	+0%					147.996
2.002	CP22	15 Winter	1	+0%					147.763
2.003	CP23	15 Winter	1	+0%	100/15 Summer				147.528
2.004	CP24	15 Winter	1	+0%	100/15 Summer				147.288
3.000	CP12	15 Winter	1	+0%					152.528
3.001	CP13	15 Winter	1	+0%					151.533
3.002	CP14	15 Winter	1	+0%	100/15 Summer				149.425
3.003	CP15	15 Winter	1	+0%	100/15 Summer				149.117
3.004	CP16	15 Winter	1	+0%	30/15 Summer				148.775
3.005	CP17	15 Winter	1	+0%	30/15 Summer				148.478
3.006	CP18	15 Winter	1	+0%	100/15 Summer				148.412
3.007	CP19	240 Winter	1	+0%					147.087
2.005	CP25	15 Winter	1	+0%	30/15 Summer				147.060
2.006	CP26	60 Winter	1	+0%	1/30 Winter				147.012

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for Parcel B

PN	US/MH Name	Surcharged		Flooded		Pipe Flow (l/s)	Status	Level Exceeded
		Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)			
1.000	CP27	-0.129	0.000	0.05		1.1	OK	
1.001	CP28	-0.115	0.000	0.12		2.0	OK	
1.002	CP29	-0.110	0.000	0.16		2.9	OK	
1.003	CP30	0.046	0.000	0.06		1.9	SURCHARGED	
2.000	CP20	-0.132	0.000	0.03		1.1	OK	
2.001	CP21	-0.114	0.000	0.13		1.9	OK	
2.002	CP22	-0.107	0.000	0.18		2.8	OK	
2.003	CP23	-0.102	0.000	0.22		3.6	OK	
2.004	CP24	-0.112	0.000	0.14		4.1	OK	
3.000	CP12	-0.132	0.000	0.03		1.1	OK	
3.001	CP13	-0.127	0.000	0.06		2.4	OK	
3.002	CP14	-0.105	0.000	0.20		3.3	OK	
3.003	CP15	-0.093	0.000	0.30		4.5	OK	
3.004	CP16	-0.085	0.000	0.37		5.7	OK	
3.005	CP17	-0.082	0.000	0.42		6.4	OK	
3.006	CP18	-0.088	0.000	0.36		7.2	OK	
3.007	CP19	-1.063	0.000	0.00		0.0	OK	
2.005	CP25	-0.091	0.000	0.32		4.9	OK	
2.006	CP26	0.032	0.000	0.24		3.7	SURCHARGED	

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for Parcel B

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
4.000	CP31	60	Winter	1	+0%	30/15	Summer		146.994
1.004	SW3	60	Winter	1	+0%	1/15	Summer	30/30	146.993
1.005	SW4	60	Winter	1	+0%				144.657

PN	US/MH Name	Surcharged		Flooded		Pipe		Level Exceeded
		Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)	Flow (l/s)	Status	
4.000	CP31	-0.066	0.000	0.03		0.7	OK	
1.004	SW3	0.318	0.000	0.03		3.3	FLOOD RISK	19
1.005	SW4	-0.203	0.000	0.02		3.3	OK	

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Rainfall Hyetograph for 15 minute 1 year Winter I+0%
for Pipe 1.000 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	5.668	4	13.636	7	50.828	10	35.712	13	10.772
2	10.343	5	22.072	8	59.041	11	22.072	14	10.343
3	10.772	6	35.712	9	50.828	12	13.636	15	5.668

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Rainfall Hyetograph for 15 minute 1 year Winter I+0%
for Pipe 1.001 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	5.668	4	13.636	7	50.828	10	35.712	13	10.772
2	10.343	5	22.072	8	59.041	11	22.072	14	10.343
3	10.772	6	35.712	9	50.828	12	13.636	15	5.668

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Rainfall Hyetograph for 15 minute 1 year Winter I+0%
for Pipe 1.002 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	5.668	4	13.636	7	50.828	10	35.712	13	10.772
2	10.343	5	22.072	8	59.041	11	22.072	14	10.343
3	10.772	6	35.712	9	50.828	12	13.636	15	5.668

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Rainfall Hyetograph for 60 minute 1 year Winter I+0%
for Pipe 1.003 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	0.839	13	5.859	25	22.620	37	20.529	49	5.511
2	2.412	14	6.332	26	24.400	38	18.654	50	5.339
3	3.567	15	6.961	27	26.060	39	16.806	51	5.259
4	4.420	16	7.884	28	27.690	40	14.813	52	5.247
5	4.873	17	8.901	29	28.847	41	13.155	53	5.258
6	5.130	18	10.083	30	29.680	42	11.621	54	5.244
7	5.244	19	11.621	31	29.680	43	10.083	55	5.130
8	5.258	20	13.155	32	28.847	44	8.901	56	4.873
9	5.247	21	14.813	33	27.690	45	7.884	57	4.420
10	5.259	22	16.806	34	26.060	46	6.961	58	3.567
11	5.339	23	18.654	35	24.400	47	6.332	59	2.412
12	5.511	24	20.529	36	22.620	48	5.859	60	0.839

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Rainfall Hyetograph for 15 minute 1 year Winter I+0%
for Pipe 2.000 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	5.668	4	13.636	7	50.828	10	35.712	13	10.772
2	10.343	5	22.072	8	59.041	11	22.072	14	10.343
3	10.772	6	35.712	9	50.828	12	13.636	15	5.668

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Rainfall Hyetograph for 15 minute 1 year Winter I+0%
 for Pipe 2.001 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	5.668	4	13.636	7	50.828	10	35.712	13	10.772
2	10.343	5	22.072	8	59.041	11	22.072	14	10.343
3	10.772	6	35.712	9	50.828	12	13.636	15	5.668

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Rainfall Hyetograph for 15 minute 1 year Winter I+0%
 for Pipe 2.002 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	5.668	4	13.636	7	50.828	10	35.712	13	10.772
2	10.343	5	22.072	8	59.041	11	22.072	14	10.343
3	10.772	6	35.712	9	50.828	12	13.636	15	5.668

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Rainfall Hyetograph for 15 minute 1 year Winter I+0%
 for Pipe 2.003 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	5.668	4	13.636	7	50.828	10	35.712	13	10.772
2	10.343	5	22.072	8	59.041	11	22.072	14	10.343
3	10.772	6	35.712	9	50.828	12	13.636	15	5.668

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Rainfall Hyetograph for 15 minute 1 year Winter I+0%
for Pipe 2.004 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	5.668	4	13.636	7	50.828	10	35.712	13	10.772
2	10.343	5	22.072	8	59.041	11	22.072	14	10.343
3	10.772	6	35.712	9	50.828	12	13.636	15	5.668

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Rainfall Hyetograph for 15 minute 1 year Winter I+0%
for Pipe 3.000 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	5.668	4	13.636	7	50.828	10	35.712	13	10.772
2	10.343	5	22.072	8	59.041	11	22.072	14	10.343
3	10.772	6	35.712	9	50.828	12	13.636	15	5.668

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Rainfall Hyetograph for 15 minute 1 year Winter I+0%
 for Pipe 3.001 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	5.668	4	13.636	7	50.828	10	35.712	13	10.772
2	10.343	5	22.072	8	59.041	11	22.072	14	10.343
3	10.772	6	35.712	9	50.828	12	13.636	15	5.668

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Rainfall Hyetograph for 15 minute 1 year Winter I+0%
 for Pipe 3.002 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	5.668	4	13.636	7	50.828	10	35.712	13	10.772
2	10.343	5	22.072	8	59.041	11	22.072	14	10.343
3	10.772	6	35.712	9	50.828	12	13.636	15	5.668

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Rainfall Hyetograph for 15 minute 1 year Winter I+0%
 for Pipe 3.003 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	5.668	4	13.636	7	50.828	10	35.712	13	10.772
2	10.343	5	22.072	8	59.041	11	22.072	14	10.343
3	10.772	6	35.712	9	50.828	12	13.636	15	5.668

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Rainfall Hyetograph for 15 minute 1 year Winter I+0%
 for Pipe 3.004 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	5.668	4	13.636	7	50.828	10	35.712	13	10.772
2	10.343	5	22.072	8	59.041	11	22.072	14	10.343
3	10.772	6	35.712	9	50.828	12	13.636	15	5.668

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Rainfall Hyetograph for 15 minute 1 year Winter I+0%
 for Pipe 3.005 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	5.668	4	13.636	7	50.828	10	35.712	13	10.772
2	10.343	5	22.072	8	59.041	11	22.072	14	10.343
3	10.772	6	35.712	9	50.828	12	13.636	15	5.668

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Rainfall Hyetograph for 15 minute 1 year Winter I+0%
 for Pipe 3.006 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	5.668	4	13.636	7	50.828	10	35.712	13	10.772
2	10.343	5	22.072	8	59.041	11	22.072	14	10.343
3	10.772	6	35.712	9	50.828	12	13.636	15	5.668

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Rainfall Hyetograph for 240 minute 1 year Winter I+0%
 for Pipe 3.007 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	0.186	49	2.754	97	10.597	145	10.040	193	2.662
2	0.186	50	2.754	98	10.597	146	10.040	194	2.662
3	0.509	51	2.825	99	10.925	147	9.704	195	2.622
4	0.724	52	2.873	100	11.143	148	9.479	196	2.595
5	0.813	53	2.903	101	11.249	149	9.367	197	2.586
6	1.170	54	3.021	102	11.672	150	8.918	198	2.549
7	1.170	55	3.021	103	11.672	151	8.918	199	2.549
8	1.460	56	3.165	104	12.075	152	8.474	200	2.528
9	1.532	57	3.201	105	12.176	153	8.363	201	2.522
10	1.648	58	3.286	106	12.366	154	8.145	202	2.517
11	1.821	59	3.413	107	12.650	155	7.818	203	2.510
12	1.821	60	3.413	108	12.650	156	7.818	204	2.510
13	2.045	61	3.658	109	13.085	157	7.287	205	2.508
14	2.045	62	3.658	110	13.085	158	7.287	206	2.508
15	2.147	63	3.825	111	13.318	159	6.980	207	2.510
16	2.215	64	3.937	112	13.473	160	6.775	208	2.511
17	2.239	65	3.999	113	13.539	161	6.677	209	2.512
18	2.337	66	4.249	114	13.805	162	6.285	210	2.515
19	2.337	67	4.249	115	13.805	163	6.285	211	2.515
20	2.405	68	4.525	116	14.020	164	5.913	212	2.515
21	2.421	69	4.595	117	14.074	165	5.820	213	2.514
22	2.442	70	4.746	118	14.152	166	5.644	214	2.510
23	2.474	71	4.972	119	14.269	167	5.381	215	2.503
24	2.474	72	4.972	120	14.269	168	5.381	216	2.503
25	2.503	73	5.381	121	14.269	169	4.972	217	2.474
26	2.503	74	5.381	122	14.269	170	4.972	218	2.474
27	2.510	75	5.644	123	14.152	171	4.746	219	2.442
28	2.514	76	5.820	124	14.074	172	4.595	220	2.421
29	2.515	77	5.913	125	14.020	173	4.525	221	2.405
30	2.515	78	6.285	126	13.805	174	4.249	222	2.338
31	2.515	79	6.285	127	13.805	175	4.249	223	2.338
32	2.512	80	6.677	128	13.539	176	3.999	224	2.239
33	2.511	81	6.775	129	13.473	177	3.937	225	2.215
34	2.510	82	6.980	130	13.318	178	3.825	226	2.147
35	2.508	83	7.287	131	13.085	179	3.658	227	2.045
36	2.508	84	7.287	132	13.085	180	3.658	228	2.045
37	2.510	85	7.818	133	12.650	181	3.413	229	1.821
38	2.510	86	7.818	134	12.650	182	3.413	230	1.821
39	2.517	87	8.145	135	12.366	183	3.286	231	1.648
40	2.522	88	8.363	136	12.176	184	3.201	232	1.532
41	2.528	89	8.474	137	12.075	185	3.165	233	1.460
42	2.549	90	8.918	138	11.672	186	3.021	234	1.170
43	2.549	91	8.918	139	11.672	187	3.021	235	1.170
44	2.586	92	9.367	140	11.249	188	2.903	236	0.813
45	2.595	93	9.479	141	11.143	189	2.873	237	0.724
46	2.622	94	9.704	142	10.925	190	2.825	238	0.509
47	2.662	95	10.040	143	10.597	191	2.754	239	0.186
48	2.662	96	10.040	144	10.597	192	2.754	240	0.186

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Rainfall Hyetograph for 15 minute 1 year Winter I+0%
 for Pipe 2.005 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	5.668	4	13.636	7	50.828	10	35.712	13	10.772
2	10.343	5	22.072	8	59.041	11	22.072	14	10.343
3	10.772	6	35.712	9	50.828	12	13.636	15	5.668

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Rainfall Hyetograph for 60 minute 1 year Winter I+0%
for Pipe 2.006 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	0.839	13	5.859	25	22.620	37	20.529	49	5.511
2	2.412	14	6.332	26	24.400	38	18.654	50	5.339
3	3.567	15	6.961	27	26.060	39	16.806	51	5.259
4	4.420	16	7.884	28	27.690	40	14.813	52	5.247
5	4.873	17	8.901	29	28.847	41	13.155	53	5.258
6	5.130	18	10.083	30	29.680	42	11.621	54	5.244
7	5.244	19	11.621	31	29.680	43	10.083	55	5.130
8	5.258	20	13.155	32	28.847	44	8.901	56	4.873
9	5.247	21	14.813	33	27.690	45	7.884	57	4.420
10	5.259	22	16.806	34	26.060	46	6.961	58	3.567
11	5.339	23	18.654	35	24.400	47	6.332	59	2.412
12	5.511	24	20.529	36	22.620	48	5.859	60	0.839

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Rainfall Hyetograph for 60 minute 1 year Winter I+0%
for Pipe 4.000 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	0.839	13	5.859	25	22.620	37	20.529	49	5.511
2	2.412	14	6.332	26	24.400	38	18.654	50	5.339
3	3.567	15	6.961	27	26.060	39	16.806	51	5.259
4	4.420	16	7.884	28	27.690	40	14.813	52	5.247
5	4.873	17	8.901	29	28.847	41	13.155	53	5.258
6	5.130	18	10.083	30	29.680	42	11.621	54	5.244
7	5.244	19	11.621	31	29.680	43	10.083	55	5.130
8	5.258	20	13.155	32	28.847	44	8.901	56	4.873
9	5.247	21	14.813	33	27.690	45	7.884	57	4.420
10	5.259	22	16.806	34	26.060	46	6.961	58	3.567
11	5.339	23	18.654	35	24.400	47	6.332	59	2.412
12	5.511	24	20.529	36	22.620	48	5.859	60	0.839

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Rainfall Hyetograph for 60 minute 1 year Winter I+0%
for Pipe 1.004 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	0.839	13	5.859	25	22.620	37	20.529	49	5.511
2	2.412	14	6.332	26	24.400	38	18.654	50	5.339
3	3.567	15	6.961	27	26.060	39	16.806	51	5.259
4	4.420	16	7.884	28	27.690	40	14.813	52	5.247
5	4.873	17	8.901	29	28.847	41	13.155	53	5.258
6	5.130	18	10.083	30	29.680	42	11.621	54	5.244
7	5.244	19	11.621	31	29.680	43	10.083	55	5.130
8	5.258	20	13.155	32	28.847	44	8.901	56	4.873
9	5.247	21	14.813	33	27.690	45	7.884	57	4.420
10	5.259	22	16.806	34	26.060	46	6.961	58	3.567
11	5.339	23	18.654	35	24.400	47	6.332	59	2.412
12	5.511	24	20.529	36	22.620	48	5.859	60	0.839

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Rainfall Hyetograph for 60 minute 1 year Winter I+0%
for Pipe 1.005 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	0.839	13	5.859	25	22.620	37	20.529	49	5.511
2	2.412	14	6.332	26	24.400	38	18.654	50	5.339
3	3.567	15	6.961	27	26.060	39	16.806	51	5.259
4	4.420	16	7.884	28	27.690	40	14.813	52	5.247
5	4.873	17	8.901	29	28.847	41	13.155	53	5.258
6	5.130	18	10.083	30	29.680	42	11.621	54	5.244
7	5.244	19	11.621	31	29.680	43	10.083	55	5.130
8	5.258	20	13.155	32	28.847	44	8.901	56	4.873
9	5.247	21	14.813	33	27.690	45	7.884	57	4.420
10	5.259	22	16.806	34	26.060	46	6.961	58	3.567
11	5.339	23	18.654	35	24.400	47	6.332	59	2.412
12	5.511	24	20.529	36	22.620	48	5.859	60	0.839

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

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
Hot Start Level (mm) 0 Inlet 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 3
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 0.225
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 18.600 Cv (Winter) 0.840

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


Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 20

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	CP27	15 Winter	30	+0%					147.555
1.001	CP28	60 Winter	30	+0%	100/30 Summer				147.282
1.002	CP29	60 Winter	30	+0%	30/15 Summer				147.273
1.003	CP30	60 Winter	30	+0%	1/30 Summer				147.259
2.000	CP20	15 Winter	30	+0%					149.059
2.001	CP21	15 Winter	30	+0%					148.022
2.002	CP22	15 Winter	30	+0%					147.797
2.003	CP23	15 Winter	30	+0%	100/15 Summer				147.567
2.004	CP24	60 Winter	30	+0%	100/15 Summer				147.343
3.000	CP12	15 Winter	30	+0%					152.538
3.001	CP13	15 Winter	30	+0%					151.550
3.002	CP14	15 Winter	30	+0%	100/15 Summer				149.461
3.003	CP15	15 Winter	30	+0%	100/15 Summer				149.171
3.004	CP16	15 Winter	30	+0%	30/15 Summer				148.886
3.005	CP17	15 Winter	30	+0%	30/15 Summer				148.570
3.006	CP18	15 Winter	30	+0%	100/15 Summer				148.467
3.007	CP19	120 Winter	30	+0%					147.415
2.005	CP25	60 Winter	30	+0%	30/15 Summer				147.330
2.006	CP26	60 Winter	30	+0%	1/30 Winter				147.302

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

PN	US/MH Name	Surcharged Flooded		Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
		Depth (m)	Volume (m ³)					
1.000	CP27	-0.115	0.000	0.12		2.6	OK	
1.001	CP28	-0.048	0.000	0.20		3.3	OK	
1.002	CP29	0.123	0.000	0.23		4.2	SURCHARGED	
1.003	CP30	0.309	0.000	0.09		2.6	SURCHARGED	
2.000	CP20	-0.121	0.000	0.08		2.6	OK	
2.001	CP21	-0.088	0.000	0.34		5.2	OK	
2.002	CP22	-0.073	0.000	0.50		7.8	OK	
2.003	CP23	-0.063	0.000	0.62		10.3	OK	
2.004	CP24	-0.057	0.000	0.26		7.3	OK	
3.000	CP12	-0.122	0.000	0.08		2.6	OK	
3.001	CP13	-0.110	0.000	0.16		6.8	OK	
3.002	CP14	-0.069	0.000	0.55		9.3	OK	
3.003	CP15	-0.039	0.000	0.85		12.9	OK	
3.004	CP16	0.026	0.000	1.01		15.3	SURCHARGED	
3.005	CP17	0.010	0.000	1.12		17.2	SURCHARGED	
3.006	CP18	-0.033	0.000	0.95		19.2	OK	
3.007	CP19	-0.735	0.000	0.00		0.0	OK	
2.005	CP25	0.179	0.000	0.56		8.5	SURCHARGED	
2.006	CP26	0.322	0.000	0.36		5.6	SURCHARGED	

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

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
4.000	CP31	60	Winter	30	+0%	30/15 Summer			147.257
1.004	SW3	60	Winter	30	+0%	1/15 Summer	30/30 Winter		147.252
1.005	SW4	60	Winter	30	+0%				144.659

PN	US/MH Name	Surcharged		Flooded		Pipe		Level Exceeded
		Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (1/s)	Flow (1/s)	Status	
4.000	CP31	0.197	0.000	0.06		1.4	SURCHARGED	
1.004	SW3	0.577	1.959	0.03		4.1	FLOOD	19
1.005	SW4	-0.201	0.000	0.02		4.1	OK	

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Rainfall Hyetograph for 15 minute 30 year Winter I+0%
 for Pipe 1.000 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	13.788	4	33.173	7	123.647	10	86.875	13	26.205
2	25.160	5	53.695	8	143.626	11	53.695	14	25.160
3	26.205	6	86.875	9	123.647	12	33.173	15	13.788

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Rainfall Hyetograph for 60 minute 30 year Winter I+0%
 for Pipe 1.001 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	2.034	13	14.203	25	54.835	37	49.767	49	13.359
2	5.847	14	15.350	26	59.151	38	45.220	50	12.943
3	8.646	15	16.874	27	63.175	39	40.741	51	12.750
4	10.714	16	19.112	28	67.127	40	35.909	52	12.721
5	11.812	17	21.577	29	69.929	41	31.891	53	12.747
6	12.437	18	24.444	30	71.950	42	28.172	54	12.713
7	12.713	19	28.172	31	71.950	43	24.444	55	12.437
8	12.747	20	31.891	32	69.929	44	21.577	56	11.812
9	12.721	21	35.909	33	67.127	45	19.112	57	10.714
10	12.750	22	40.741	34	63.175	46	16.874	58	8.646
11	12.943	23	45.220	35	59.151	47	15.350	59	5.847
12	13.359	24	49.767	36	54.835	48	14.203	60	2.033

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Rainfall Hyetograph for 60 minute 30 year Winter I+0%
for Pipe 1.002 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	2.034	13	14.203	25	54.835	37	49.767	49	13.359
2	5.847	14	15.350	26	59.151	38	45.220	50	12.943
3	8.646	15	16.874	27	63.175	39	40.741	51	12.750
4	10.714	16	19.112	28	67.127	40	35.909	52	12.721
5	11.812	17	21.577	29	69.929	41	31.891	53	12.747
6	12.437	18	24.444	30	71.950	42	28.172	54	12.713
7	12.713	19	28.172	31	71.950	43	24.444	55	12.437
8	12.747	20	31.891	32	69.929	44	21.577	56	11.812
9	12.721	21	35.909	33	67.127	45	19.112	57	10.714
10	12.750	22	40.741	34	63.175	46	16.874	58	8.646
11	12.943	23	45.220	35	59.151	47	15.350	59	5.847
12	13.359	24	49.767	36	54.835	48	14.203	60	2.033

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Rainfall Hyetograph for 60 minute 30 year Winter I+0%
for Pipe 1.003 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	2.034	13	14.203	25	54.835	37	49.767	49	13.359
2	5.847	14	15.350	26	59.151	38	45.220	50	12.943
3	8.646	15	16.874	27	63.175	39	40.741	51	12.750
4	10.714	16	19.112	28	67.127	40	35.909	52	12.721
5	11.812	17	21.577	29	69.929	41	31.891	53	12.747
6	12.437	18	24.444	30	71.950	42	28.172	54	12.713
7	12.713	19	28.172	31	71.950	43	24.444	55	12.437
8	12.747	20	31.891	32	69.929	44	21.577	56	11.812
9	12.721	21	35.909	33	67.127	45	19.112	57	10.714
10	12.750	22	40.741	34	63.175	46	16.874	58	8.646
11	12.943	23	45.220	35	59.151	47	15.350	59	5.847
12	13.359	24	49.767	36	54.835	48	14.203	60	2.033

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Rainfall Hyetograph for 15 minute 30 year Winter I+0%
 for Pipe 2.000 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	13.788	4	33.173	7	123.647	10	86.875	13	26.205
2	25.160	5	53.695	8	143.626	11	53.695	14	25.160
3	26.205	6	86.875	9	123.647	12	33.173	15	13.788

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Rainfall Hyetograph for 15 minute 30 year Winter I+0%
 for Pipe 2.001 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	13.788	4	33.173	7	123.647	10	86.875	13	26.205
2	25.160	5	53.695	8	143.626	11	53.695	14	25.160
3	26.205	6	86.875	9	123.647	12	33.173	15	13.788

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Rainfall Hyetograph for 15 minute 30 year Winter I+0%
 for Pipe 2.002 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	13.788	4	33.173	7	123.647	10	86.875	13	26.205
2	25.160	5	53.695	8	143.626	11	53.695	14	25.160
3	26.205	6	86.875	9	123.647	12	33.173	15	13.788

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Rainfall Hyetograph for 15 minute 30 year Winter I+0%
 for Pipe 2.003 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	13.788	4	33.173	7	123.647	10	86.875	13	26.205
2	25.160	5	53.695	8	143.626	11	53.695	14	25.160
3	26.205	6	86.875	9	123.647	12	33.173	15	13.788

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Rainfall Hyetograph for 60 minute 30 year Winter I+0%
for Pipe 2.004 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	2.034	13	14.203	25	54.835	37	49.767	49	13.359
2	5.847	14	15.350	26	59.151	38	45.220	50	12.943
3	8.646	15	16.874	27	63.175	39	40.741	51	12.750
4	10.714	16	19.112	28	67.127	40	35.909	52	12.721
5	11.812	17	21.577	29	69.929	41	31.891	53	12.747
6	12.437	18	24.444	30	71.950	42	28.172	54	12.713
7	12.713	19	28.172	31	71.950	43	24.444	55	12.437
8	12.747	20	31.891	32	69.929	44	21.577	56	11.812
9	12.721	21	35.909	33	67.127	45	19.112	57	10.714
10	12.750	22	40.741	34	63.175	46	16.874	58	8.646
11	12.943	23	45.220	35	59.151	47	15.350	59	5.847
12	13.359	24	49.767	36	54.835	48	14.203	60	2.033

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Rainfall Hyetograph for 15 minute 30 year Winter I+0%
 for Pipe 3.000 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	13.788	4	33.173	7	123.647	10	86.875	13	26.205
2	25.160	5	53.695	8	143.626	11	53.695	14	25.160
3	26.205	6	86.875	9	123.647	12	33.173	15	13.788

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Rainfall Hyetograph for 15 minute 30 year Winter I+0%
 for Pipe 3.001 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	13.788	4	33.173	7	123.647	10	86.875	13	26.205
2	25.160	5	53.695	8	143.626	11	53.695	14	25.160
3	26.205	6	86.875	9	123.647	12	33.173	15	13.788

Trafford Wharf Road
 Trafford Park
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Rainfall Hyetograph for 15 minute 30 year Winter I+0%
 for Pipe 3.002 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	13.788	4	33.173	7	123.647	10	86.875	13	26.205
2	25.160	5	53.695	8	143.626	11	53.695	14	25.160
3	26.205	6	86.875	9	123.647	12	33.173	15	13.788

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Rainfall Hyetograph for 15 minute 30 year Winter I+0%
 for Pipe 3.003 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	13.788	4	33.173	7	123.647	10	86.875	13	26.205
2	25.160	5	53.695	8	143.626	11	53.695	14	25.160
3	26.205	6	86.875	9	123.647	12	33.173	15	13.788

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Rainfall Hyetograph for 15 minute 30 year Winter I+0%
 for Pipe 3.004 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	13.788	4	33.173	7	123.647	10	86.875	13	26.205
2	25.160	5	53.695	8	143.626	11	53.695	14	25.160
3	26.205	6	86.875	9	123.647	12	33.173	15	13.788

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Rainfall Hyetograph for 15 minute 30 year Winter I+0%
 for Pipe 3.005 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	13.788	4	33.173	7	123.647	10	86.875	13	26.205
2	25.160	5	53.695	8	143.626	11	53.695	14	25.160
3	26.205	6	86.875	9	123.647	12	33.173	15	13.788

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Rainfall Hyetograph for 15 minute 30 year Winter I+0%
 for Pipe 3.006 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	13.788	4	33.173	7	123.647	10	86.875	13	26.205
2	25.160	5	53.695	8	143.626	11	53.695	14	25.160
3	26.205	6	86.875	9	123.647	12	33.173	15	13.788

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Rainfall Hyetograph for 120 minute 30 year Winter I+0%
for Pipe 3.007 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	0.629	25	9.329	49	35.899	73	34.013	97	9.017
2	2.089	26	9.651	50	37.378	74	32.491	98	8.835
3	3.359	27	10.034	51	38.822	75	30.971	99	8.697
4	4.454	28	10.479	52	40.222	76	29.458	100	8.599
5	5.386	29	10.987	53	41.569	77	27.960	101	8.536
6	6.168	30	11.562	54	42.853	78	26.483	102	8.502
7	6.929	31	12.392	55	44.325	79	24.687	103	8.495
8	7.388	32	13.147	56	45.377	80	23.299	104	8.504
9	7.752	33	13.971	57	46.316	81	21.956	105	8.515
10	8.032	34	14.862	58	47.131	82	20.660	106	8.520
11	8.238	35	15.821	59	47.809	83	19.417	107	8.510
12	8.381	36	16.844	60	48.339	84	18.230	108	8.479
13	8.479	37	18.230	61	48.339	85	16.844	109	8.381
14	8.510	38	19.417	62	47.809	86	15.821	110	8.238
15	8.519	39	20.660	63	47.131	87	14.862	111	8.032
16	8.515	40	21.956	64	46.316	88	13.971	112	7.752
17	8.504	41	23.299	65	45.377	89	13.147	113	7.388
18	8.495	42	24.687	66	44.325	90	12.392	114	6.929
19	8.502	43	26.483	67	42.853	91	11.562	115	6.168
20	8.536	44	27.960	68	41.569	92	10.987	116	5.386
21	8.599	45	29.458	69	40.222	93	10.479	117	4.454
22	8.697	46	30.970	70	38.822	94	10.034	118	3.359
23	8.835	47	32.491	71	37.378	95	9.651	119	2.089
24	9.017	48	34.013	72	35.899	96	9.328	120	0.628

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Rainfall Hyetograph for 60 minute 30 year Winter I+0%
for Pipe 2.005 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	2.034	13	14.203	25	54.835	37	49.767	49	13.359
2	5.847	14	15.350	26	59.151	38	45.220	50	12.943
3	8.646	15	16.874	27	63.175	39	40.741	51	12.750
4	10.714	16	19.112	28	67.127	40	35.909	52	12.721
5	11.812	17	21.577	29	69.929	41	31.891	53	12.747
6	12.437	18	24.444	30	71.950	42	28.172	54	12.713
7	12.713	19	28.172	31	71.950	43	24.444	55	12.437
8	12.747	20	31.891	32	69.929	44	21.577	56	11.812
9	12.721	21	35.909	33	67.127	45	19.112	57	10.714
10	12.750	22	40.741	34	63.175	46	16.874	58	8.646
11	12.943	23	45.220	35	59.151	47	15.350	59	5.847
12	13.359	24	49.767	36	54.835	48	14.203	60	2.033

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Rainfall Hyetograph for 60 minute 30 year Winter I+0%
for Pipe 2.006 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	2.034	13	14.203	25	54.835	37	49.767	49	13.359
2	5.847	14	15.350	26	59.151	38	45.220	50	12.943
3	8.646	15	16.874	27	63.175	39	40.741	51	12.750
4	10.714	16	19.112	28	67.127	40	35.909	52	12.721
5	11.812	17	21.577	29	69.929	41	31.891	53	12.747
6	12.437	18	24.444	30	71.950	42	28.172	54	12.713
7	12.713	19	28.172	31	71.950	43	24.444	55	12.437
8	12.747	20	31.891	32	69.929	44	21.577	56	11.812
9	12.721	21	35.909	33	67.127	45	19.112	57	10.714
10	12.750	22	40.741	34	63.175	46	16.874	58	8.646
11	12.943	23	45.220	35	59.151	47	15.350	59	5.847
12	13.359	24	49.767	36	54.835	48	14.203	60	2.033

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Rainfall Hyetograph for 60 minute 30 year Winter I+0%
for Pipe 4.000 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	2.034	13	14.203	25	54.835	37	49.767	49	13.359
2	5.847	14	15.350	26	59.151	38	45.220	50	12.943
3	8.646	15	16.874	27	63.175	39	40.741	51	12.750
4	10.714	16	19.112	28	67.127	40	35.909	52	12.721
5	11.812	17	21.577	29	69.929	41	31.891	53	12.747
6	12.437	18	24.444	30	71.950	42	28.172	54	12.713
7	12.713	19	28.172	31	71.950	43	24.444	55	12.437
8	12.747	20	31.891	32	69.929	44	21.577	56	11.812
9	12.721	21	35.909	33	67.127	45	19.112	57	10.714
10	12.750	22	40.741	34	63.175	46	16.874	58	8.646
11	12.943	23	45.220	35	59.151	47	15.350	59	5.847
12	13.359	24	49.767	36	54.835	48	14.203	60	2.033

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Rainfall Hyetograph for 60 minute 30 year Winter I+0%
 for Pipe 1.004 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	2.034	13	14.203	25	54.835	37	49.767	49	13.359
2	5.847	14	15.350	26	59.151	38	45.220	50	12.943
3	8.646	15	16.874	27	63.175	39	40.741	51	12.750
4	10.714	16	19.112	28	67.127	40	35.909	52	12.721
5	11.812	17	21.577	29	69.929	41	31.891	53	12.747
6	12.437	18	24.444	30	71.950	42	28.172	54	12.713
7	12.713	19	28.172	31	71.950	43	24.444	55	12.437
8	12.747	20	31.891	32	69.929	44	21.577	56	11.812
9	12.721	21	35.909	33	67.127	45	19.112	57	10.714
10	12.750	22	40.741	34	63.175	46	16.874	58	8.646
11	12.943	23	45.220	35	59.151	47	15.350	59	5.847
12	13.359	24	49.767	36	54.835	48	14.203	60	2.033

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Rainfall Hyetograph for 60 minute 30 year Winter I+0%
for Pipe 1.005 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	2.034	13	14.203	25	54.835	37	49.767	49	13.359
2	5.847	14	15.350	26	59.151	38	45.220	50	12.943
3	8.646	15	16.874	27	63.175	39	40.741	51	12.750
4	10.714	16	19.112	28	67.127	40	35.909	52	12.721
5	11.812	17	21.577	29	69.929	41	31.891	53	12.747
6	12.437	18	24.444	30	71.950	42	28.172	54	12.713
7	12.713	19	28.172	31	71.950	43	24.444	55	12.437
8	12.747	20	31.891	32	69.929	44	21.577	56	11.812
9	12.721	21	35.909	33	67.127	45	19.112	57	10.714
10	12.750	22	40.741	34	63.175	46	16.874	58	8.646
11	12.943	23	45.220	35	59.151	47	15.350	59	5.847
12	13.359	24	49.767	36	54.835	48	14.203	60	2.033

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

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
Hot Start Level (mm) 0 Inlet 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 3
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 0.225
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 18.600 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 20

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	CP27	15 Winter	100	+20%					147.564
1.001	CP28	30 Winter	100	+20%	100/30 Summer				147.351
1.002	CP29	30 Winter	100	+20%	30/15 Summer				147.326
1.003	CP30	30 Winter	100	+20%	1/30 Summer				147.281
2.000	CP20	15 Winter	100	+20%					149.066
2.001	CP21	15 Winter	100	+20%					148.039
2.002	CP22	15 Winter	100	+20%					147.822
2.003	CP23	30 Summer	100	+20%	100/15 Summer				147.706
2.004	CP24	30 Winter	100	+20%	100/15 Summer				147.594
3.000	CP12	15 Winter	100	+20%					152.545
3.001	CP13	15 Winter	100	+20%					151.560
3.002	CP14	15 Winter	100	+20%	100/15 Summer				149.695
3.003	CP15	15 Winter	100	+20%	100/15 Summer				149.545
3.004	CP16	15 Winter	100	+20%	30/15 Summer				149.188
3.005	CP17	15 Winter	100	+20%	30/15 Summer				148.703
3.006	CP18	15 Winter	100	+20%	100/15 Summer				148.595
3.007	CP19	120 Winter	100	+20%					147.673
2.005	CP25	30 Winter	100	+20%	30/15 Summer				147.549
2.006	CP26	60 Winter	100	+20%	1/30 Winter				147.428

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

PN	US/MH Name	Surcharged Flooded		Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
		Depth (m)	Volume (m ³)					
1.000	CP27	-0.106	0.000	0.19		4.0	OK	
1.001	CP28	0.021	0.000	0.40		6.6	SURCHARGED	
1.002	CP29	0.176	0.000	0.50		8.9	SURCHARGED	
1.003	CP30	0.331	0.000	0.27		8.3	SURCHARGED	
2.000	CP20	-0.114	0.000	0.13		4.0	OK	
2.001	CP21	-0.071	0.000	0.52		8.0	OK	
2.002	CP22	-0.048	0.000	0.78		12.0	OK	
2.003	CP23	0.076	0.000	0.82		13.6	SURCHARGED	
2.004	CP24	0.194	0.000	0.45		13.0	SURCHARGED	
3.000	CP12	-0.115	0.000	0.12		4.0	OK	
3.001	CP13	-0.100	0.000	0.24		10.4	OK	
3.002	CP14	0.165	0.000	0.79		13.4	SURCHARGED	
3.003	CP15	0.335	0.000	1.05		15.9	SURCHARGED	
3.004	CP16	0.328	0.000	1.24		18.8	SURCHARGED	
3.005	CP17	0.143	0.000	1.37		21.0	SURCHARGED	
3.006	CP18	0.095	0.000	1.13		22.9	SURCHARGED	
3.007	CP19	-0.477	0.000	0.00		0.0	OK	
2.005	CP25	0.398	0.000	1.01		15.5	SURCHARGED	
2.006	CP26	0.448	0.000	0.67		10.3	SURCHARGED	

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

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
4.000	CP31	30	Winter	100	+20%	30/15	Summer	
1.004	SW3	120	Winter	100	+20%	1/15	Summer	30/30 Winter
1.005	SW4	120	Winter	100	+20%			

PN	US/MH Name	Water			Surcharged		Flooded		Pipe		Level Exceeded
		Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Flow (l/s)	Status			
4.000	CP31	147.269	0.209	0.000	0.14		3.3	SURCHARGED			
1.004	SW3	147.266	0.591	15.521	0.03		4.1	FLOOD		19	
1.005	SW4	144.659	-0.201	0.000	0.03		4.1	OK			

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Rainfall Hyetograph for 15 minute 100 year Winter I+20%
for Pipe 1.000 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	21.255	4	51.137	7	190.608	10	133.922	13	40.397
2	38.786	5	82.773	8	221.406	11	82.773	14	38.786
3	40.396	6	133.922	9	190.608	12	51.137	15	21.254

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Rainfall Hyetograph for 30 minute 100 year Winter I+20%
for Pipe 1.001 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	8.924	7	33.469	13	129.089	19	107.573	25	29.788
2	21.926	8	40.754	14	147.567	20	86.807	26	28.845
3	27.462	9	52.119	15	160.679	21	68.022	27	28.834
4	28.834	10	68.022	16	160.679	22	52.119	28	27.462
5	28.845	11	86.807	17	147.567	23	40.754	29	21.926
6	29.788	12	107.573	18	129.089	24	33.469	30	8.924

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Rainfall Hyetograph for 30 minute 100 year Winter I+20%
for Pipe 1.002 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	8.924	7	33.469	13	129.089	19	107.573	25	29.788
2	21.926	8	40.754	14	147.567	20	86.807	26	28.845
3	27.462	9	52.119	15	160.679	21	68.022	27	28.834
4	28.834	10	68.022	16	160.679	22	52.119	28	27.462
5	28.845	11	86.807	17	147.567	23	40.754	29	21.926
6	29.788	12	107.573	18	129.089	24	33.469	30	8.924

Trafford Wharf Road
 Trafford Park
 Manchester M17 1HH



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Rainfall Hyetograph for 30 minute 100 year Winter I+20%
for Pipe 1.003 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	8.924	7	33.469	13	129.089	19	107.573	25	29.788
2	21.926	8	40.754	14	147.567	20	86.807	26	28.845
3	27.462	9	52.119	15	160.679	21	68.022	27	28.834
4	28.834	10	68.022	16	160.679	22	52.119	28	27.462
5	28.845	11	86.807	17	147.567	23	40.754	29	21.926
6	29.788	12	107.573	18	129.089	24	33.469	30	8.924

Trafford Wharf Road
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Rainfall Hyetograph for 15 minute 100 year Winter I+20%
for Pipe 2.000 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	21.255	4	51.137	7	190.608	10	133.922	13	40.397
2	38.786	5	82.773	8	221.406	11	82.773	14	38.786
3	40.396	6	133.922	9	190.608	12	51.137	15	21.254

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Rainfall Hyetograph for 15 minute 100 year Winter I+20%
 for Pipe 2.001 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	21.255	4	51.137	7	190.608	10	133.922	13	40.397
2	38.786	5	82.773	8	221.406	11	82.773	14	38.786
3	40.396	6	133.922	9	190.608	12	51.137	15	21.254

Trafford Wharf Road
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Rainfall Hyetograph for 15 minute 100 year Winter I+20%
for Pipe 2.002 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	21.255	4	51.137	7	190.608	10	133.922	13	40.397
2	38.786	5	82.773	8	221.406	11	82.773	14	38.786
3	40.396	6	133.922	9	190.608	12	51.137	15	21.254

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Trafford Wharf Road Trafford Park Manchester M17 1HH		
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Rainfall Hyetograph for 30 minute 100 year Summer I+20%
for Pipe 2.003 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	21.251	7	31.099	13	124.786	19	87.014	25	28.378
2	22.353	8	34.469	14	170.269	20	62.069	26	26.240
3	23.454	9	39.198	15	228.970	21	47.815	27	24.491
4	24.491	10	47.815	16	228.970	22	39.198	28	23.454
5	26.240	11	62.069	17	170.269	23	34.468	29	22.353
6	28.378	12	87.014	18	124.787	24	31.099	30	21.251

Trafford Wharf Road
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Rainfall Hyetograph for 30 minute 100 year Winter I+20%
for Pipe 2.004 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	8.924	7	33.469	13	129.089	19	107.573	25	29.788
2	21.926	8	40.754	14	147.567	20	86.807	26	28.845
3	27.462	9	52.119	15	160.679	21	68.022	27	28.834
4	28.834	10	68.022	16	160.679	22	52.119	28	27.462
5	28.845	11	86.807	17	147.567	23	40.754	29	21.926
6	29.788	12	107.573	18	129.089	24	33.469	30	8.924

Trafford Wharf Road
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Rainfall Hyetograph for 15 minute 100 year Winter I+20%
for Pipe 3.000 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	21.255	4	51.137	7	190.608	10	133.922	13	40.397
2	38.786	5	82.773	8	221.406	11	82.773	14	38.786
3	40.396	6	133.922	9	190.608	12	51.137	15	21.254

Trafford Wharf Road
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Rainfall Hyetograph for 15 minute 100 year Winter I+20%
 for Pipe 3.001 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	21.255	4	51.137	7	190.608	10	133.922	13	40.397
2	38.786	5	82.773	8	221.406	11	82.773	14	38.786
3	40.396	6	133.922	9	190.608	12	51.137	15	21.254

Trafford Wharf Road
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Rainfall Hyetograph for 15 minute 100 year Winter I+20%
for Pipe 3.002 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	21.255	4	51.137	7	190.608	10	133.922	13	40.397
2	38.786	5	82.773	8	221.406	11	82.773	14	38.786
3	40.396	6	133.922	9	190.608	12	51.137	15	21.254

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Rainfall Hyetograph for 15 minute 100 year Winter I+20%
for Pipe 3.003 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	21.255	4	51.137	7	190.608	10	133.922	13	40.397
2	38.786	5	82.773	8	221.406	11	82.773	14	38.786
3	40.396	6	133.922	9	190.608	12	51.137	15	21.254

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Rainfall Hyetograph for 15 minute 100 year Winter I+20%
for Pipe 3.004 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	21.255	4	51.137	7	190.608	10	133.922	13	40.397
2	38.786	5	82.773	8	221.406	11	82.773	14	38.786
3	40.396	6	133.922	9	190.608	12	51.137	15	21.254

Trafford Wharf Road
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Rainfall Hyetograph for 15 minute 100 year Winter I+20%
for Pipe 3.005 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	21.255	4	51.137	7	190.608	10	133.922	13	40.397
2	38.786	5	82.773	8	221.406	11	82.773	14	38.786
3	40.396	6	133.922	9	190.608	12	51.137	15	21.254

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Rainfall Hyetograph for 15 minute 100 year Winter I+20%
 for Pipe 3.006 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	21.255	4	51.137	7	190.608	10	133.922	13	40.397
2	38.786	5	82.773	8	221.406	11	82.773	14	38.786
3	40.396	6	133.922	9	190.608	12	51.137	15	21.254

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Rainfall Hyetograph for 120 minute 100 year Winter I+20%
for Pipe 3.007 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	0.991	25	14.701	49	56.574	73	53.602	97	14.211
2	3.292	26	15.210	50	58.905	74	51.204	98	13.924
3	5.294	27	15.813	51	61.182	75	48.808	99	13.706
4	7.019	28	16.514	52	63.388	76	46.424	100	13.552
5	8.487	29	17.315	53	65.511	77	44.064	101	13.452
6	9.721	30	18.220	54	67.533	78	41.736	102	13.398
7	10.920	31	19.529	55	69.854	79	38.905	103	13.387
8	11.644	32	20.719	56	71.512	80	36.718	104	13.402
9	12.217	33	22.017	57	72.992	81	34.601	105	13.419
10	12.658	34	23.422	58	74.276	82	32.560	106	13.426
11	12.983	35	24.932	59	75.345	83	30.601	107	13.411
12	13.208	36	26.546	60	76.179	84	28.729	108	13.362
13	13.362	37	28.729	61	76.179	85	26.546	109	13.208
14	13.411	38	30.601	62	75.345	86	24.932	110	12.983
15	13.426	39	32.560	63	74.276	87	23.422	111	12.658
16	13.419	40	34.601	64	72.992	88	22.017	112	12.217
17	13.402	41	36.718	65	71.512	89	20.719	113	11.644
18	13.387	42	38.905	66	69.854	90	19.529	114	10.920
19	13.399	43	41.736	67	67.533	91	18.220	115	9.721
20	13.452	44	44.064	68	65.511	92	17.315	116	8.487
21	13.552	45	46.424	69	63.388	93	16.514	117	7.019
22	13.707	46	48.808	70	61.182	94	15.813	118	5.294
23	13.924	47	51.204	71	58.905	95	15.210	119	3.292
24	14.211	48	53.603	72	56.574	96	14.701	120	0.990

Trafford Wharf Road
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Rainfall Hyetograph for 30 minute 100 year Winter I+20%
for Pipe 2.005 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	8.924	7	33.469	13	129.089	19	107.573	25	29.788
2	21.926	8	40.754	14	147.567	20	86.807	26	28.845
3	27.462	9	52.119	15	160.679	21	68.022	27	28.834
4	28.834	10	68.022	16	160.679	22	52.119	28	27.462
5	28.845	11	86.807	17	147.567	23	40.754	29	21.926
6	29.788	12	107.573	18	129.089	24	33.469	30	8.924

Trafford Wharf Road
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Rainfall Hyetograph for 60 minute 100 year Winter I+20%
for Pipe 2.006 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	3.205	13	22.384	25	86.420	37	78.433	49	21.054
2	9.214	14	24.192	26	93.223	38	71.267	50	20.399
3	13.626	15	26.593	27	99.564	39	64.209	51	20.094
4	16.886	16	30.120	28	105.792	40	56.593	52	20.048
5	18.616	17	34.005	29	110.209	41	50.260	53	20.090
6	19.600	18	38.524	30	113.394	42	44.400	54	20.036
7	20.036	19	44.400	31	113.394	43	38.524	55	19.600
8	20.090	20	50.260	32	110.209	44	34.005	56	18.616
9	20.048	21	56.593	33	105.792	45	30.120	57	16.886
10	20.094	22	64.209	34	99.564	46	26.593	58	13.626
11	20.399	23	71.267	35	93.223	47	24.192	59	9.214
12	21.055	24	78.433	36	86.420	48	22.384	60	3.204

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Rainfall Hyetograph for 30 minute 100 year Winter I+20%
for Pipe 4.000 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	8.924	7	33.469	13	129.089	19	107.573	25	29.788
2	21.926	8	40.754	14	147.567	20	86.807	26	28.845
3	27.462	9	52.119	15	160.679	21	68.022	27	28.834
4	28.834	10	68.022	16	160.679	22	52.119	28	27.462
5	28.845	11	86.807	17	147.567	23	40.754	29	21.926
6	29.788	12	107.573	18	129.089	24	33.469	30	8.924

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Rainfall Hyetograph for 120 minute 100 year Winter I+20%
for Pipe 1.004 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	0.991	25	14.701	49	56.574	73	53.602	97	14.211
2	3.292	26	15.210	50	58.905	74	51.204	98	13.924
3	5.294	27	15.813	51	61.182	75	48.808	99	13.706
4	7.019	28	16.514	52	63.388	76	46.424	100	13.552
5	8.487	29	17.315	53	65.511	77	44.064	101	13.452
6	9.721	30	18.220	54	67.533	78	41.736	102	13.398
7	10.920	31	19.529	55	69.854	79	38.905	103	13.387
8	11.644	32	20.719	56	71.512	80	36.718	104	13.402
9	12.217	33	22.017	57	72.992	81	34.601	105	13.419
10	12.658	34	23.422	58	74.276	82	32.560	106	13.426
11	12.983	35	24.932	59	75.345	83	30.601	107	13.411
12	13.208	36	26.546	60	76.179	84	28.729	108	13.362
13	13.362	37	28.729	61	76.179	85	26.546	109	13.208
14	13.411	38	30.601	62	75.345	86	24.932	110	12.983
15	13.426	39	32.560	63	74.276	87	23.422	111	12.658
16	13.419	40	34.601	64	72.992	88	22.017	112	12.217
17	13.402	41	36.718	65	71.512	89	20.719	113	11.644
18	13.387	42	38.905	66	69.854	90	19.529	114	10.920
19	13.399	43	41.736	67	67.533	91	18.220	115	9.721
20	13.452	44	44.064	68	65.511	92	17.315	116	8.487
21	13.552	45	46.424	69	63.388	93	16.514	117	7.019
22	13.707	46	48.808	70	61.182	94	15.813	118	5.294
23	13.924	47	51.204	71	58.905	95	15.210	119	3.292
24	14.211	48	53.603	72	56.574	96	14.701	120	0.990

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Rainfall Hyetograph for 120 minute 100 year Winter I+20%
for Pipe 1.005 (Parcel B)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	0.991	25	14.701	49	56.574	73	53.602	97	14.211
2	3.292	26	15.210	50	58.905	74	51.204	98	13.924
3	5.294	27	15.813	51	61.182	75	48.808	99	13.706
4	7.019	28	16.514	52	63.388	76	46.424	100	13.552
5	8.487	29	17.315	53	65.511	77	44.064	101	13.452
6	9.721	30	18.220	54	67.533	78	41.736	102	13.398
7	10.920	31	19.529	55	69.854	79	38.905	103	13.387
8	11.644	32	20.719	56	71.512	80	36.718	104	13.402
9	12.217	33	22.017	57	72.992	81	34.601	105	13.419
10	12.658	34	23.422	58	74.276	82	32.560	106	13.426
11	12.983	35	24.932	59	75.345	83	30.601	107	13.411
12	13.208	36	26.546	60	76.179	84	28.729	108	13.362
13	13.362	37	28.729	61	76.179	85	26.546	109	13.208
14	13.411	38	30.601	62	75.345	86	24.932	110	12.983
15	13.426	39	32.560	63	74.276	87	23.422	111	12.658
16	13.419	40	34.601	64	72.992	88	22.017	112	12.217
17	13.402	41	36.718	65	71.512	89	20.719	113	11.644
18	13.387	42	38.905	66	69.854	90	19.529	114	10.920
19	13.399	43	41.736	67	67.533	91	18.220	115	9.721
20	13.452	44	44.064	68	65.511	92	17.315	116	8.487
21	13.552	45	46.424	69	63.388	93	16.514	117	7.019
22	13.707	46	48.808	70	61.182	94	15.813	118	5.294
23	13.924	47	51.204	71	58.905	95	15.210	119	3.292
24	14.211	48	53.603	72	56.574	96	14.701	120	0.990