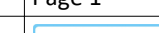


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Network Design Table for Storm													
PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section	Type	Auto Design	
Sw-3.000	18.141	0.181	100.0	0.001	4.00	0.0	0.600	o	100	Pipe/Conduit			
Sw-3.001	16.375	0.164	100.0	0.000	0.00	0.0	0.600	o	100	Pipe/Conduit			
Sw-3.002	20.843	0.208	100.0	0.000	0.00	0.0	0.600	o	100	Pipe/Conduit			
Sw-1.001	40.353	0.099	406.4	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit			
Sw-4.000	9.180	0.092	100.0	0.005	4.00	0.0	0.600	o	100	Pipe/Conduit			
Sw-4.001	23.900	0.404	59.2	0.000	0.00	0.0	0.600	o	100	Pipe/Conduit			
Sw-5.000	14.604	0.265	55.2	0.018	4.00	0.0	0.600	o	100	Pipe/Conduit			
Sw-6.000	13.300	0.275	48.3	0.012	4.00	0.0	0.600	o	100	Pipe/Conduit			
Sw-7.000	34.845	0.348	100.0	0.031	4.00	0.0	0.600	o	150	Pipe/Conduit			
Sw-7.001	15.346	0.153	100.0	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit			
Sw-7.002	27.792	0.473	58.8	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit			
Sw-8.000	15.860	0.157	100.7	0.017	4.00	0.0	0.600	o	150	Pipe/Conduit			
Sw-8.001	4.038	0.041	99.4	0.033	0.00	0.0	0.600	o	225	Pipe/Conduit			
Sw-9.000	22.676	0.227	100.0	0.010	4.00	0.0	0.600	o	100	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)			
Sw-3.000	50.00	4.39	51.000	0.001	0.0	0.0	0.0	0.77	6.0	0.1			
Sw-3.001	50.00	4.75	50.819	0.001	0.0	0.0	0.0	0.77	6.0	0.1			
Sw-3.002	50.00	5.20	50.655	0.001	0.0	0.0	0.0	0.77	6.0	0.1			
Sw-1.001	50.00	6.57	49.950	0.045	0.0	0.0	0.0	0.49	8.7	6.1			
Sw-4.000	50.00	4.20	50.916	0.005	0.0	0.0	0.0	0.77	6.0	0.7			
Sw-4.001	50.00	4.60	50.824	0.005	0.0	0.0	0.0	1.00	7.9	0.7			
Sw-5.000	50.00	4.23	50.663	0.018	0.0	0.0	0.0	1.04	8.2	2.4			
Sw-6.000	50.00	4.20	50.673	0.012	0.0	0.0	0.0	1.11	8.7	1.7			
Sw-7.000	50.00	4.58	50.857	0.031	0.0	0.0	0.0	1.00	17.8	4.3			
Sw-7.001	50.00	4.83	50.509	0.031	0.0	0.0	0.0	1.00	17.8	4.3			
Sw-7.002	50.00	5.18	50.355	0.031	0.0	0.0	0.0	1.31	23.2	4.3			
Sw-8.000	50.00	4.26	50.400	0.017	0.0	0.0	0.0	1.00	17.7	2.3			
Sw-8.001	50.00	4.31	50.243	0.050	0.0	0.0	0.0	1.31	52.1	6.8			
Sw-9.000	50.00	4.49	50.765	0.010	0.0	0.0	0.0	0.77	6.0	1.4			
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Date 18/05/2022 16:56 File drainage model-P2.MDX	Designed by GlynRatcliffe Checked by	
Innovyze	Network 2020.1.3	
<u>Simulation Criteria for Storm</u> 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 1 Number of Online Controls 1 Number of Time/Area Diagrams 0 Number of Offline Controls 0 Number of Real Time Controls 0 <u>Synthetic Rainfall Details</u> Rainfall Model FSR Profile Type Summer Return Period (years) 2 Cv (Summer) 0.750 Region England and Wales Cv (Winter) 0.840 M5-60 (mm) 18.000 Storm Duration (mins) 30 Ratio R 0.355		
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Online Controls for Storm

Hydro-Brake® Optimum Manhole: MH-ATT-TK, DS/PN: Sw-1.002, Volume (m³): 1.9

Unit Reference	MD-SHE-0131-7500-0800-7500
Design Head (m)	0.800
Design Flow (l/s)	7.5
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	131
Invert Level (m)	49.827
Minimum Outlet Pipe Diameter (mm)	150
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.800	7.5
Flush-Flo™	0.248	7.5
Kick-Flo®	0.553	6.3
Mean Flow over Head Range	-	6.4

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)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	4.7	1.200	9.1	3.000	14.0	7.000	21.0
0.200	7.4	1.400	9.8	3.500	15.1	7.500	21.7
0.300	7.4	1.600	10.4	4.000	16.1	8.000	22.4
0.400	7.2	1.800	11.0	4.500	17.0	8.500	23.0
0.500	6.8	2.000	11.5	5.000	17.9	9.000	23.7
0.600	6.6	2.200	12.1	5.500	18.7	9.500	24.3
0.800	7.5	2.400	12.6	6.000	19.5		
1.000	8.3	2.600	13.1	6.500	20.3		

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PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	
Sw-8.004	MH-16	15 Winter	1	+0%	30/15 Summer				
Sw-1.002	MH-ATT-TK	120 Winter	1	+0%	30/60 Winter				
Sw-1.003	MH-17	120 Winter	1	+0%					
PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap. (l/s)	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
Sw-8.004	MH-16	49.999	-0.103	0.000	0.57			17.8	OK
Sw-1.002	MH-ATT-TK	49.953	-0.174	0.000	0.07		76	4.4	OK*
Sw-1.003	MH-17	49.851	-0.139	0.000	0.31			4.4	OK
PN	US/MH Name	Level Exceeded							
Sw-8.004	MH-16								
Sw-1.002	MH-ATT-TK								
Sw-1.003	MH-17								
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<u>30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm</u>									
PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
Sw-1.000	MH-RWP-5	50.850	0.000	0.000	2.15			8.5	SURCHARGED*
Sw-2.000	MH-RWP-6	50.904	-0.026	0.000	0.90			5.4	OK*
Sw-2.001	MH-10	50.778	-0.024	0.000	0.92			5.3	OK
Sw-2.002	MH-11	50.609	-0.024	0.000	0.92			5.4	OK
Sw-3.000	MH-RWP-7	51.014	-0.086	0.000	0.05			0.3	OK*
Sw-3.001	MH-12	50.833	-0.085	0.000	0.05			0.3	OK
Sw-3.002	MH-13	50.669	-0.086	0.000	0.05			0.3	OK
Sw-1.001	MH-14	50.268	0.168	0.000	1.57			13.3	SURCHARGED
Sw-4.000	MH-RG	50.952	-0.064	0.000	0.29			1.7	OK*
Sw-4.001	MH-01	50.856	-0.068	0.000	0.22			1.7	OK
Sw-5.000	MH-RWP-2	50.725	-0.038	0.000	0.70			5.7	OK*
Sw-6.000	MH-RWP-3	50.720	-0.053	0.000	0.45			3.9	OK*
Sw-7.000	MH-RWP-1	50.937	-0.070	0.000	0.55			9.8	OK*
Sw-7.001	MH-02	50.593	-0.066	0.000	0.59			9.7	OK
Sw-7.002	MH-03	50.425	-0.080	0.000	0.44			9.7	OK
Sw-8.000	MH-RG-1	50.457	-0.093	0.000	0.31			5.5	OK*
Sw-8.001	MH-15	50.360	-0.108	0.000	0.53			15.9	OK
Sw-9.000	MH-RWP-8	50.816	-0.049	0.000	0.52			3.1	OK*
Sw-9.001	MH-08	50.579	-0.059	0.000	0.35			3.1	OK
Sw-8.002	MH-09	50.326	-0.101	0.000	0.59			18.9	OK
Sw-10.000	MH-RWP-4	50.635	-0.070	0.000	0.19			3.6	OK*
Sw-8.003	MH-JUN	50.294	-0.081	0.000	0.73			22.3	OK*
Sw-11.000	MH-RWP-9	50.896	-0.054	0.000	0.72			7.3	OK*
Sw-11.001	MH-04	50.825	-0.061	0.000	0.64			7.2	OK
Sw-11.002	MH-05	50.739	-0.083	0.000	0.39			10.3	OK
Sw-11.003	MH-06	50.498	-0.075	0.000	0.48			10.4	OK
Sw-11.004	MH-07	50.388	-0.066	0.000	0.58			16.6	OK
	US/MH Name	Level Exceeded							
	Sw-1.000	MH-RWP-5							
	Sw-2.000	MH-RWP-6							
	Sw-2.001	MH-10							
	Sw-2.002	MH-11							
	Sw-3.000	MH-RWP-7							
	Sw-3.001	MH-12							
	Sw-3.002	MH-13							
	Sw-1.001	MH-14							
	Sw-4.000	MH-RG							
	Sw-4.001	MH-01							
	Sw-5.000	MH-RWP-2							
	Sw-6.000	MH-RWP-3							
	Sw-7.000	MH-RWP-1							
	Sw-7.001	MH-02							
	Sw-7.002	MH-03							

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Sw-8.004	MH-16	180 Winter	100	+40%	30/15 Summer				
Sw-1.002	MH-ATT-TK	120 Summer	100	+40%	30/60 Winter				
Sw-1.003	MH-17	180 Winter	100	+40%					
PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
Sw-8.004	MH-16	51.171	1.070	0.000	0.66			20.6	SURCHARGED
Sw-1.002	MH-ATT-TK	50.521	0.394	0.000	0.12		140	7.6	SURCHARGED*
Sw-1.003	MH-17	49.898	-0.093	0.000	0.65			9.3	OK
PN	US/MH Name	Level Exceeded							
Sw-8.004	MH-16								
Sw-1.002	MH-ATT-TK								
Sw-1.003	MH-17								
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