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11 Tungsten Building George Street Fishergate BN41 1RA	Manor Nursery Angmering West Sussex	
Date 28/06/2019	Designed by S Burgess	
File Planning Network File.MDX	Checked by SRD	
Innovyze	Network 2020.1	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for NETWORK 1.SWS

Pipe Sizes NETWORK 9 Manhole Sizes NETWORK 9

FSR Rainfall Model - England and Wales

Return Period (years)	2	PIMP (%)	100
M5-60 (mm)	19.600	Add Flow / Climate Change (%)	0
Ratio R	0.350	Minimum Backdrop Height (m)	0.500
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.000
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)	0.75
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for NETWORK 1.SWS

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.119	4-8	0.038

Total Area Contributing (ha) = 0.157

Total Pipe Volume (m³) = 1.865

Network Design Table for NETWORK 1.SWS

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	20.697	0.230	90.0	0.019	5.00	0.0	0.600	o	100	Pipe/Conduit	
1.001	6.648	0.077	86.3	0.000	0.00	0.0	0.600	o	100	Pipe/Conduit	
1.002	6.073	0.374	16.2	0.012	0.00	0.0	0.600	o	100	Pipe/Conduit	
2.000	8.048	0.365	22.1	0.016	5.00	0.0	0.600	o	100	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	E I.Area (ha)	E Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	50.00	5.43	15.366	0.019	0.0	0.0	0.0	0.81	6.4	2.6
1.001	50.00	5.56	15.136	0.019	0.0	0.0	0.0	0.83	6.5	2.6
1.002	50.00	5.61	15.059	0.031	0.0	0.0	0.0	1.93	15.1	4.2
2.000	50.00	5.08	15.050	0.016	0.0	0.0	0.0	1.65	13.0	2.2

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(mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design	1.003	13.287	0.149	89.2	0.005	0.00	0.0	0.600	o	150	Pipe/Conduit		1.004	20.099	0.115	174.8	0.029	0.00	0.0	0.600	o	150	Pipe/Conduit		3.000	15.482	0.262	59.0	0.020	5.00	0.0	0.600	o	100	Pipe/Conduit		3.001	9.676	0.094	103.4	0.007	0.00	0.0	0.600	o	100	Pipe/Conduit		4.000	11.118	0.692	16.1	0.014	5.00	0.0	0.600	o	100	Pipe/Conduit		3.002	25.581	0.243	105.3	0.015	0.00	0.0	0.600	o	150	Pipe/Conduit		3.003	2.503	0.087	28.8	0.012	0.00	0.0	0.600	o	150	Pipe/Conduit		1.005	4.226	0.024	176.1	0.008	0.00	0.0	0.600	o	225	Pipe/Conduit		PN	Rain (mm/hr)	T.C. 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<u>Synthetic Rainfall Details</u> Ratio R 0.350 Cv (Winter) 0.840 Profile Type Summer Storm Duration (mins) 30 Cv (Summer) 0.750		
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<u>Summary of Critical Results by Maximum Level (Rank 1) for NETWORK 1.SWS</u>									
<u>Simulation Criteria</u>									
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 Coeffiecient 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 0									
Number of Online Controls 0 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 Ratio R 0.350									
Region England and Wales Cv (Summer) 0.750									
M5-60 (mm) 19.500 Cv (Winter) 0.840									
Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF									
Analysis Timestep Fine Inertia Status OFF									
DTS Status ON									
Profile(s) Summer and Winter									
Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440									
Return Period(s) (years) 100									
Climate Change (%) 40									

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<u>Summary of Critical Results by Maximum Level (Rank 1) for NETWORK 1.SWS</u>									
PN	US/MH Name	Surcharged Flooded		Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
		Depth (m)	Volume (m³)						
2.000	104	0.379	0.000	0.61			7.2	SURCHARGED	
1.003	105	0.609	0.000	1.19			20.5	SURCHARGED	
1.004	106	0.600	0.000	2.48			31.2	SURCHARGED	
3.000	107	0.706	0.000	1.03			7.7	SURCHARGED	
3.001	108	0.687	0.000	2.02			11.1	SURCHARGED	
4.000	109	-0.029	0.000	0.56			8.0	OK	
3.002	110	0.497	0.000	1.37			22.5	SURCHARGED	
3.003	111	0.284	0.000	1.50			27.8	SURCHARGED	
1.005	112	0.167	0.000	2.29			62.5	SURCHARGED	
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