STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for Storm

- Indicates pipe length does not match coordinates

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	19.866	0.275	72.2	0.014	5.00	0.0	0.600	o	100	Pipe/Conduit	
1.001	3.907	1.785	2.2	0.000	0.00	0.0	0.600	o	100	Pipe/Conduit	
1.002	26.000#	0.070	371.4	0.009	0.00	0.0	0.600	o	600	Pipe/Conduit	
1.003	15.004	0.040	375.1	0.000	0.00	0.0	0.600	o	600	Pipe/Conduit	
2.000	50.068	2.190	22.9	0.034	5.00	0.0	0.600	o	150	Pipe/Conduit	
1.004	10.568	0.088	120.1	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	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	5.37	188.350	0.014	0.0	0.0	0.0	0.91	7.1	1.9
1.001	50.00	5.38	188.075	0.014	0.0	0.0	0.0	5.27	41.4	1.9
1.002	50.00	5.72	185.870	0.023	0.0	0.0	0.0	1.26	355.6	3.1
1.003	50.00	5.92	185.800	0.023	0.0	0.0	0.0	1.25	353.8	3.1
2.000	50.00	5.39	188.400	0.034	0.0	0.0	0.0	2.12	37.4	4.6
1.004	50.00	6.11	185.760	0.057	0.0	0.0	0.0	0.92	16.2	7.7

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Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.014	0.014	0.014
1.001	-	-	100	0.000	0.000	0.000
1.002	-	-	100	0.009	0.009	0.009
1.003	-	-	100	0.000	0.000	0.000
2.000	-	-	100	0.034	0.034	0.034
1.004	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				0.057	0.057	0.057

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.004		187.500	185.672	0.000	0	0

Simulation Criteria for Storm

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 Coeffiecient	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	0
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)	30	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.000	Storm Duration (mins)	30
Ratio R	0.339		

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Online Controls for Storm

Orifice Manhole: 5, DS/PN: 1.004, Volume (m³): 8.3

Diameter (m) 0.036 Discharge Coefficient 0.600 Invert Level (m) 185.760

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