

JS Bloor (Wilmslow) Ltd		Page 0
Dean Court 85 Adlington Road Wilmslow SK9 1BT		
Date 11/08/2025 14:05 File PH7A - STORM. 11.08.25.MDX	Designed by d_southa Checked by	
Elstree Computing Ltd		Network 2020.1.3

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Surface Network 8

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	2	PIMP (%)	100
M5-60 (mm)	19.900	Add Flow / Climate Change (%)	0
Ratio R	0.404	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)	500

Designed with Level Soffits

Network Design Table for Surface Network 8

« - 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	30.932	0.327	94.6	0.167	5.00	0.0	0.600	o	300	Pipe/Conduit	
1.001	17.048	0.253	67.4	0.081	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.002	24.461	0.315	77.7	0.032	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.003	16.291	0.265	61.5	0.011	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.004	30.319	0.590	51.4	0.257	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.005	14.528	0.258	56.2	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.006	15.635	0.284	55.0	0.000	0.00	0.0	0.600	o	525	Pipe/Conduit	
1.007	30.561	0.110	277.8	0.066	0.00	0.0	0.600	o	525	Pipe/Conduit	
1.008	19.656	0.160	122.8	0.023	0.00	0.0	0.600	o	525	Pipe/Conduit	
2.000	42.890	0.416	103.1	0.184	5.00	0.0	0.600	o	300	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	5.32	102.116	0.167	0.0	0.0	0.0	1.62	114.3	22.6
1.001	50.00	5.47	101.789	0.248	0.0	0.0	0.0	1.92	135.6	33.6
1.002	50.00	5.70	101.536	0.280	0.0	0.0	0.0	1.79	126.2	37.9
1.003	50.00	5.80	101.071	0.291	0.0	0.0	0.0	2.60	413.0	39.4
1.004	50.00	5.98	100.806	0.548	0.0	0.0	0.0	2.84	451.9	74.2
1.005	50.00	6.07	100.216	0.548	0.0	0.0	0.0	2.72	431.8	74.2
1.006	50.00	6.15	99.883	0.548	0.0	0.0	0.0	3.02	654.8	74.2
1.007	50.00	6.53	99.570	0.614	0.0	0.0	0.0	1.34	289.8	83.1
1.008	50.00	6.70	99.460	0.637	0.0	0.0	0.0	2.02	437.2	86.2
2.000	50.00	5.46	100.555	0.184	0.0	0.0	0.0	1.55	109.4	24.9

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Network Design Table for Surface Network 8

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
2.001	26.139	0.153	170.8	0.120	0.00	0.0	0.600	o	300	Pipe/Conduit	
2.002	26.496	0.027	981.3	0.088	0.00	0.0	0.600	o	375	Pipe/Conduit	
3.000	48.145	0.207	232.6	0.115	5.00	0.0	0.600	o	525	Pipe/Conduit	
3.001	25.530	0.084	303.9	0.083	0.00	0.0	0.600	o	525	Pipe/Conduit	
2.003	15.475	0.209	74.0	0.007	0.00	0.0	0.600	o	525	Pipe/Conduit	
2.004	17.159	0.072	238.3	0.142	0.00	0.0	0.600	o	525	Pipe/Conduit	
2.005	13.568	0.027	502.5	0.138	0.00	0.0	0.600	o	525	Pipe/Conduit	
2.006	17.264	0.126	137.0	0.148	0.00	0.0	0.600	o	525	Pipe/Conduit	
1.009	41.865	0.075	556.0	0.047	0.00	0.0	0.600	o	525	Pipe/Conduit	
1.010	34.997	0.110	319.0	0.208	0.00	0.0	0.600	o	600	Pipe/Conduit	
1.011	32.331	0.546	59.2	0.047	0.00	0.0	0.600	o	600	Pipe/Conduit	
4.000	58.521	0.246	238.0	0.121	5.00	0.0	0.600	o	300	Pipe/Conduit	
1.012	6.746	0.124	54.4	0.138	0.00	0.0	0.600	o	600	Pipe/Conduit	
1.013	21.383	0.350	61.1	0.050	0.00	0.0	0.600	o	600	Pipe/Conduit	
1.014	13.269	0.160	82.9	0.054	0.00	0.0	0.600	o	600	Pipe/Conduit	
1.015	37.757	0.380	99.4	0.032	0.00	0.0	0.600	o	600	Pipe/Conduit	
1.016	47.054	1.100	42.8	0.105	0.00	0.0	0.600	o	600	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)
2.001	50.00	5.82	100.139	0.304	0.0	0.0	0.0	1.20	84.8	41.2
2.002	50.00	6.60	99.911	0.392	0.0	0.0	0.0	0.57	63.0	53.1
3.000	50.00	5.55	100.025	0.115	0.0	0.0	0.0	1.46	317.0	15.6
3.001	50.00	5.88	99.818	0.198	0.0	0.0	0.0	1.28	277.0	26.8
2.003	50.00	6.70	99.734	0.597	0.0	0.0	0.0	2.61	564.0	80.8
2.004	50.00	6.90	99.525	0.739	0.0	0.0	0.0	1.45	313.1	100.1
2.005	50.00	7.12	99.453	0.877	0.0	0.0	0.0	0.99	214.8	118.8
2.006	50.00	7.27	99.426	1.025	0.0	0.0	0.0	1.91	413.9	138.8
1.009	50.00	8.01	99.300	1.709	0.0	0.0	0.0	0.94	204.1	231.5
1.010	50.00	8.44	99.150	1.917	0.0	0.0	0.0	1.36	383.9	259.6
1.011	50.00	8.61	99.040	1.964	0.0	0.0	0.0	3.17	895.9	266.0
4.000	50.00	5.96	99.040	0.121	0.0	0.0	0.0	1.01	71.7	16.4
1.012	50.00	8.65	98.494	2.223	0.0	0.0	0.0	3.31	935.2	301.0
1.013	50.00	8.76	98.370	2.272	0.0	0.0	0.0	3.12	882.0	307.7
1.014	50.00	8.84	98.020	2.326	0.0	0.0	0.0	2.68	756.5	315.0
1.015	50.00	9.10	97.860	2.359	0.0	0.0	0.0	2.44	690.8	319.4
1.016	50.00	9.31	97.480	2.464	0.0	0.0	0.0	3.73	1054.8	333.6

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Online Controls for Surface Network 8 Hydro-Brake® Optimum Manhole: S8052 Control Chamber, DS/PN: 1.020, Volume (m³): 16.4 Unit Reference MD-SHE-0148-1130-1400-1130 Design Head (m)1.400 Design Flow (l/s)11.3 Flush-Flo™Calculated ObjectiveMinimise upstream storage ApplicationSurface Sump AvailableYes Diameter (mm)148 Invert Level (m)96.200 Minimum Outlet Pipe Diameter (mm)225 Suggested Manhole Diameter (mm)1200 Control Points Head (m)Flow (l/s) Design Point (Calculated)1.40011.3 Flush-Flo™0.41411.3 Kick-Flo®0.8899.1 Mean Flow over Head Range-9.8 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 <table><tr><td>Depth (m)</td><td>Flow (l/s)</td><td>Depth (m)</td><td>Flow (l/s)</td><td>Depth (m)</td><td>Flow (l/s)</td><td>Depth (m)</td><td>Flow (l/s)</td></tr><tr><td>0.100</td><td>5.3</td><td>1.200</td><td>10.5</td><td>3.000</td><td>16.2</td><td>7.000</td><td>24.3</td></tr><tr><td>0.200</td><td>10.4</td><td>1.400</td><td>11.3</td><td>3.500</td><td>17.5</td><td>7.500</td><td>25.2</td></tr><tr><td>0.300</td><td>11.1</td><td>1.600</td><td>12.0</td><td>4.000</td><td>18.6</td><td>8.000</td><td>26.0</td></tr><tr><td>0.400</td><td>11.3</td><td>1.800</td><td>12.7</td><td>4.500</td><td>19.7</td><td>8.500</td><td>26.7</td></tr><tr><td>0.500</td><td>11.2</td><td>2.000</td><td>13.4</td><td>5.000</td><td>20.7</td><td>9.000</td><td>27.5</td></tr><tr><td>0.600</td><td>11.0</td><td>2.200</td><td>14.0</td><td>5.500</td><td>21.7</td><td>9.500</td><td>28.2</td></tr><tr><td>0.800</td><td>10.1</td><td>2.400</td><td>14.6</td><td>6.000</td><td>22.6</td><td></td><td></td></tr><tr><td>1.000</td><td>9.6</td><td>2.600</td><td>15.2</td><td>6.500</td><td>23.5</td><td></td><td></td></tr></table> ©1982-2020 Innovyze			Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	0.100	5.3	1.200	10.5	3.000	16.2	7.000	24.3	0.200	10.4	1.400	11.3	3.500	17.5	7.500	25.2	0.300	11.1	1.600	12.0	4.000	18.6	8.000	26.0	0.400	11.3	1.800	12.7	4.500	19.7	8.500	26.7	0.500	11.2	2.000	13.4	5.000	20.7	9.000	27.5	0.600	11.0	2.200	14.0	5.500	21.7	9.500	28.2	0.800	10.1	2.400	14.6	6.000	22.6			1.000	9.6	2.600	15.2	6.500	23.5		
Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)																																																																			
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Storage Structures for Surface Network 8

Swale Manhole: S8115 Jelson, DS/PN: 3.000

Warning:- Volume should always be included unless the upstream pipe is being used for storage and/or as a carrier

Infiltration Coefficient Base (m/hr)	0.00000	Length (m)	20.0
Infiltration Coefficient Side (m/hr)	0.00000	Side Slope (1:X)	4.0
Safety Factor	2.0	Slope (1:X)	0.0
Porosity	1.00	Cap Volume Depth (m)	0.000
Invert Level (m)	100.300	Cap Infiltration Depth (m)	0.000
Base Width (m)	1.0	Include Swale Volume	Yes

Tank or Pond Manhole: S8052 Control Chamber, DS/PN: 1.020

Invert Level (m) 96.200

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	716.5	0.500	953.7	1.000	1216.9	1.500	1505.2
0.100	761.2	0.600	1004.3	1.100	1272.5	1.600	1565.8
0.200	807.8	0.700	1056.0	1.200	1329.2	1.700	1627.5
0.300	855.5	0.800	1108.6	1.300	1386.8		
0.400	904.1	0.900	1162.2	1.400	1445.5		

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Summary of Critical Results by Maximum Level (Rank 1) for Surface Network 8

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 2

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 0.404

Region England and Wales Cv (Summer) 0.750

M5-60 (mm) 19.900 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, 180, 240, 360, 480, 600, 720, 960, 1440

Return Period(s) (years) 1, 30, 100

Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood
1.000	S8104 Jelson	15 Winter	100	+40%	100/15 Summer	
1.001	S8172 Jelson	15 Winter	100	+40%	100/15 Summer	
1.002	S8105 Jelson	15 Winter	100	+40%	100/15 Summer	
1.003	S8107 Jelson	15 Winter	100	+40%	100/15 Summer	
1.004	S8171 Jelson	15 Winter	100	+40%	100/15 Summer	
1.005	S8170 Jelson	15 Winter	100	+40%	100/15 Summer	
1.006	S8009 - Jelson Connection	15 Winter	100	+40%	30/15 Winter	100/15 Winter
1.007	S8010	15 Winter	100	+40%	30/15 Summer	100/15 Winter
1.008	S8011	15 Winter	100	+40%	30/15 Summer	
2.000	S8108 Jelson	15 Winter	100	+40%	30/15 Winter	100/15 Summer
2.001	S8109 Jelson	15 Winter	100	+40%	30/15 Summer	100/15 Summer
2.002	S8110 Jelson	15 Winter	100	+40%	30/15 Summer	
3.000	S8115 Jelson	15 Winter	100	+40%	100/15 Summer	
3.001	S8116 Jelson	15 Winter	100	+40%	30/15 Summer	
2.003	S8111 Jelson	15 Winter	100	+40%	30/15 Summer	
2.004	S8112 Jelson	15 Winter	100	+40%	30/15 Summer	
2.005	S8113 Jelson	15 Winter	100	+40%	30/15 Summer	
2.006	S8022 Jelson Connection	15 Winter	100	+40%	30/15 Summer	
1.009	S8023	15 Winter	100	+40%	30/15 Summer	
1.010	S8025	15 Winter	100	+40%	30/15 Summer	
1.011	S8026	15 Winter	100	+40%	100/15 Summer	

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Summary of Critical Results by Maximum Level (Rank 1) for Surface Network 8

PN	US/MH Name	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.
1.000	S8104 Jelson			103.499	1.083	0.000	0.89
1.001	S8172 Jelson			103.262	1.173	0.000	1.15
1.002	S8105 Jelson			102.959	1.123	0.000	1.27
1.003	S8107 Jelson			102.480	0.959	0.000	0.50
1.004	S8171 Jelson			102.430	1.174	0.000	0.69
1.005	S8170 Jelson			102.121	1.455	0.000	0.91
1.006	S8009 - Jelson Connection			101.885	1.477	1.808	0.64
1.007	S8010			101.815	1.720	2.692	1.25
1.008	S8011			101.746	1.761	0.000	1.02
2.000	S8108 Jelson			102.563	1.708	3.383	1.00
2.001	S8109 Jelson			102.302	1.863	1.810	1.98
2.002	S8110 Jelson			101.921	1.635	0.000	4.73
3.000	S8115 Jelson			101.266	0.716	0.000	0.80
3.001	S8116 Jelson			101.450	1.107	0.000	1.01
2.003	S8111 Jelson			101.647	1.388	0.000	0.74
2.004	S8112 Jelson			101.707	1.657	0.000	1.10
2.005	S8113 Jelson			101.725	1.747	0.000	2.22
2.006	S8022 Jelson Connection			101.714	1.763	0.000	1.12
1.009	S8023			101.677	1.852	0.000	2.86
1.010	S8025			101.252	1.502	0.000	1.89
1.011	S8026			100.981	1.341	0.000	0.83

PN	US/MH Name	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	S8104 Jelson			92.1	FLOOD RISK	
1.001	S8172 Jelson			133.4	FLOOD RISK	
1.002	S8105 Jelson			143.2	SURCHARGED	
1.003	S8107 Jelson			145.9	SURCHARGED	
1.004	S8171 Jelson			267.4	SURCHARGED	
1.005	S8170 Jelson			261.6	FLOOD RISK	
1.006	S8009 - Jelson Connection			261.2	FLOOD	1
1.007	S8010			303.0	FLOOD	1
1.008	S8011			312.2	FLOOD RISK	
2.000	S8108 Jelson			101.8	FLOOD	2
2.001	S8109 Jelson			150.5	FLOOD	2
2.002	S8110 Jelson			191.1	SURCHARGED	
3.000	S8115 Jelson			7 225.4	FLOOD RISK	
3.001	S8116 Jelson			228.3	SURCHARGED	
2.003	S8111 Jelson			258.2	SURCHARGED	
2.004	S8112 Jelson			261.3	SURCHARGED	
2.005	S8113 Jelson			264.5	SURCHARGED	
2.006	S8022 Jelson Connection			306.1	SURCHARGED	
1.009	S8023			510.9	FLOOD RISK	
1.010	S8025			604.8	SURCHARGED	
1.011	S8026			615.7	SURCHARGED	

