

JS Bloor (Wilmslow) Ltd		Page 1
Dean Court 85 Adlington Road Wilmslow SK9 1BT		
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Elstree Computing Ltd		Network 2020.1.3

Network Design Table for Surface Network 5

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	44.282	0.825	53.7	0.072	5.00	0.0	0.600	o	375	Pipe/Conduit	
3.001	19.072	0.140	136.2	0.093	0.00	0.0	0.600	o	450	Pipe/Conduit	
3.002	36.653	0.175	209.4	0.151	0.00	0.0	0.600	o	525	Pipe/Conduit	
3.003	14.380	0.320	44.9	0.101	0.00	0.0	0.600	o	525	Pipe/Conduit	
1.008	27.959	0.140	199.7	0.123	0.00	0.0	0.600	o	525	Pipe/Conduit	
1.009	21.589	0.230	93.9	0.000	0.00	0.0	0.600	o	525	Pipe/Conduit	
1.010	25.448	0.070	363.5	0.120	0.00	0.0	0.600	o	525	Pipe/Conduit	
4.000	23.367	0.999	23.4	0.067	5.00	0.0	0.600	o	300	Pipe/Conduit	
1.011	16.716	0.040	417.9	0.026	0.00	0.0	0.600	o	525	Pipe/Conduit	
1.012	19.123	0.035	546.4	0.051	0.00	0.0	0.600	o	600	Pipe/Conduit	
1.013	18.537	0.360	51.5	0.086	0.00	0.0	0.600	o	600	Pipe/Conduit	
5.000	45.943	0.360	127.6	0.184	5.00	0.0	0.600	o	450	Pipe/Conduit	
5.001	17.179	0.155	110.8	0.113	0.00	0.0	0.600	o	450	Pipe/Conduit	
6.000	42.376	0.457	92.8	0.072	5.00	0.0	0.600	o	300	Pipe/Conduit	
6.001	19.218	0.119	161.9	0.109	0.00	0.0	0.600	o	375	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	5.30	95.930	0.072	0.0	0.0	0.0	2.48	273.7	9.8
3.001	50.00	5.48	95.030	0.165	0.0	0.0	0.0	1.74	276.8	22.4
3.002	50.00	5.88	94.815	0.316	0.0	0.0	0.0	1.54	334.2	42.8
3.003	50.00	5.95	94.640	0.417	0.0	0.0	0.0	3.35	724.7	56.5
1.008	50.00	7.78	94.320	1.345	0.0	0.0	0.0	1.58	342.3	182.2
1.009	50.00	7.94	94.180	1.345	0.0	0.0	0.0	2.31	500.6	182.2
1.010	50.00	8.30	93.950	1.465	0.0	0.0	0.0	1.17	253.0	198.4
4.000	50.00	5.12	95.104	0.067	0.0	0.0	0.0	3.26	230.8	9.1
1.011	50.00	8.56	93.880	1.558	0.0	0.0	0.0	1.09	235.8	211.0
1.012	50.00	8.87	93.840	1.609	0.0	0.0	0.0	1.03	292.6	217.9
1.013	50.00	8.96	93.730	1.696	0.0	0.0	0.0	3.40	960.8	229.6
5.000	50.00	5.43	94.070	0.184	0.0	0.0	0.0	1.80	286.0	24.9
5.001	50.00	5.57	93.710	0.297	0.0	0.0	0.0	1.93	307.0	40.2
6.000	50.00	5.43	94.292	0.072	0.0	0.0	0.0	1.63	115.4	9.8
6.001	50.00	5.66	93.760	0.181	0.0	0.0	0.0	1.42	157.0	24.5

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Network Design Table for Surface Network 5

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
10.000	20.854	0.084	248.9	0.030	5.00	0.0	0.600	o	450	Pipe/Conduit	
10.001	10.001	0.031	320.8	0.046	0.00	0.0	0.600	o	525	Pipe/Conduit	
7.007	20.220	0.335	60.4	0.082	0.00	0.0	0.600	o	525	Pipe/Conduit	
7.008	36.906	0.180	205.5	0.015	0.00	0.0	0.600	o	525	Pipe/Conduit	
7.009	28.378	0.062	455.0	0.155	0.00	0.0	0.600	o	525	Pipe/Conduit	
11.000	24.409	0.146	167.0	0.033	5.00	0.0	0.600	o	225	Pipe/Conduit	
11.001	18.487	0.078	237.9	0.041	0.00	0.0	0.600	o	300	Pipe/Conduit	
11.002	18.482	0.078	237.9	0.005	0.00	0.0	0.600	o	300	Pipe/Conduit	
12.000	50.891	0.305	167.0	0.127	5.00	0.0	0.600	o	225	Pipe/Conduit	
7.010	11.324	0.448	25.3	0.041	0.00	0.0	0.600	o	525	Pipe/Conduit	
7.011	44.443	0.835	53.2	0.054	0.00	0.0	0.600	o	525	Pipe/Conduit	
7.012	9.766	0.164	59.4	0.104	0.00	0.0	0.600	o	525	Pipe/Conduit	
7.013	7.750	0.131	59.4	0.000	0.00	0.0	0.600	o	525	Pipe/Conduit	
7.014	52.662	0.000	0.0	0.000	0.00	0.0	0.600	o	675	Pipe/Conduit	
1.018	9.903	0.050	198.1	0.000	0.00	0.0	0.600	o	750	Pipe/Conduit	
1.019	14.831	0.150	98.9	0.000	0.00	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)
10.000	50.00	5.27	95.545	0.030	0.0	0.0	0.0	1.28	204.2	4.1
10.001	50.00	5.40	95.386	0.076	0.0	0.0	0.0	1.25	269.5	10.3
7.007	50.00	7.40	95.355	1.275	0.0	0.0	0.0	2.89	625.0	172.6
7.008	50.00	7.79	95.020	1.290	0.0	0.0	0.0	1.56	337.4	174.7
7.009	50.00	8.24	94.840	1.445	0.0	0.0	0.0	1.04	225.9	195.7
11.000	50.00	5.40	95.155	0.033	0.0	0.0	0.0	1.01	40.1	4.5
11.001	50.00	5.71	94.933	0.074	0.0	0.0	0.0	1.01	71.7	10.1
11.002	50.00	6.01	94.856	0.079	0.0	0.0	0.0	1.02	71.8	10.7
12.000	50.00	5.84	95.158	0.127	0.0	0.0	0.0	1.01	40.1	17.2
7.010	50.00	8.29	94.778	1.693	0.0	0.0	0.0	4.47	967.3	229.3
7.011	50.00	8.53	94.330	1.747	0.0	0.0	0.0	3.08	665.7	236.5
7.012	50.00	8.58	93.495	1.851	0.0	0.0	0.0	2.91	630.1	250.6
7.013	50.00	8.63	93.331	1.851	0.0	0.0	0.0	2.91	630.1	250.6
7.014	44.70	12.09	93.200	1.851	0.0	0.0	0.0	0.25	90.7«	250.6
1.018	44.53	12.17	93.200	4.411	0.0	0.0	0.0	1.98	876.9	532.0
1.019	44.21	12.33	93.150	4.411	0.0	0.0	0.0	1.58	111.8«	532.0

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Free Flowing Outfall Details for Surface Network 5

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.019	S5051 Outfall	93.800	93.000	0.000	1800	0

Simulation Criteria for Surface Network 5

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m ³ /ha Storage	0.000
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	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	Profile Type	Summer
Return Period (years)	2	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.500	Storm Duration (mins)	30
Ratio R	0.400		

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Online Controls for Surface Network 5 Hydro-Brake® Optimum Manhole: S5050 Control Chamber, DS/PN: 1.019, Volume (m³): 21.5 Unit Reference MD-SHE-0146-1240-2000-1240 Design Head (m)2.000 Design Flow (l/s)12.4 Flush-Flo™Calculated ObjectiveMinimise upstream storage ApplicationSurface Sump AvailableYes Diameter (mm)146 Invert Level (m)93.150 Minimum Outlet Pipe Diameter (mm)225 Suggested Manhole Diameter (mm)1500 Control Points Head (m)Flow (l/s) Design Point (Calculated)2.00012.4 Flush-Flo™0.58712.3 Kick-Flo®1.2099.8 Mean Flow over Head Range-10.8 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>9.9</td><td>3.000</td><td>15.0</td><td>7.000</td><td>22.5</td></tr><tr><td>0.200</td><td>10.3</td><td>1.400</td><td>10.5</td><td>3.500</td><td>16.2</td><td>7.500</td><td>23.3</td></tr><tr><td>0.300</td><td>11.4</td><td>1.600</td><td>11.1</td><td>4.000</td><td>17.2</td><td>8.000</td><td>24.0</td></tr><tr><td>0.400</td><td>12.0</td><td>1.800</td><td>11.8</td><td>4.500</td><td>18.2</td><td>8.500</td><td>24.7</td></tr><tr><td>0.500</td><td>12.3</td><td>2.000</td><td>12.4</td><td>5.000</td><td>19.2</td><td>9.000</td><td>25.4</td></tr><tr><td>0.600</td><td>12.3</td><td>2.200</td><td>13.0</td><td>5.500</td><td>20.1</td><td>9.500</td><td>26.1</td></tr><tr><td>0.800</td><td>12.1</td><td>2.400</td><td>13.5</td><td>6.000</td><td>20.9</td><td></td><td></td></tr><tr><td>1.000</td><td>11.4</td><td>2.600</td><td>14.0</td><td>6.500</td><td>21.7</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	9.9	3.000	15.0	7.000	22.5	0.200	10.3	1.400	10.5	3.500	16.2	7.500	23.3	0.300	11.4	1.600	11.1	4.000	17.2	8.000	24.0	0.400	12.0	1.800	11.8	4.500	18.2	8.500	24.7	0.500	12.3	2.000	12.4	5.000	19.2	9.000	25.4	0.600	12.3	2.200	13.0	5.500	20.1	9.500	26.1	0.800	12.1	2.400	13.5	6.000	20.9			1.000	11.4	2.600	14.0	6.500	21.7		
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	9.9	3.000	15.0	7.000	22.5																																																																			
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0.400	12.0	1.800	11.8	4.500	18.2	8.500	24.7																																																																			
0.500	12.3	2.000	12.4	5.000	19.2	9.000	25.4																																																																			
0.600	12.3	2.200	13.0	5.500	20.1	9.500	26.1																																																																			
0.800	12.1	2.400	13.5	6.000	20.9																																																																					
1.000	11.4	2.600	14.0	6.500	21.7																																																																					

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Storage Structures for Surface Network 5

Tank or Pond Manhole: S8135, DS/PN: 7.000

Invert Level (m) 96.165

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	30.0	1.000	60.0	1.600	75.0
0.500	50.0	1.500	70.0		

Tank or Pond Manhole: S8149, DS/PN: 7.009

Invert Level (m) 94.840

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	20.0	0.500	30.0	1.000	40.0	1.500	50.0

Tank or Pond Manhole: S5050 Control Chamber, DS/PN: 1.019

Invert Level (m) 93.150

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	2749.0	0.600	3368.8	1.200	4018.8	1.800	4697.0
0.100	2848.7	0.700	3475.2	1.300	4129.8	1.900	4812.7
0.200	2951.1	0.800	3582.3	1.400	4241.7	2.000	4929.3
0.300	3054.4	0.900	3690.3	1.500	4354.3	2.100	5046.6
0.400	3158.4	1.000	3799.0	1.600	4467.8	2.200	5164.8
0.500	3263.2	1.100	3908.5	1.700	4582.0	2.300	5283.7