

Aire House
12 Victoria Avenue
Harrogate, HG1 1ED



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Date 16/02/2024 16:19
File 15.02.24 NETWORK.MDX
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Designed by OliverG
Checked by

Innovyze

Network 2020.1.3

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out			Pipes In			Backdrop (mm)
					PN	Invert Level (m)	Diameter (mm)	PN	Invert Level (m)	Diameter (mm)	
1	147.600	1.000	Open Manhole	1350	1.000	146.600	375				
2	147.760	1.898	Open Manhole	1350	1.001	146.283	375	1.000	145.862	375	
3	147.520	1.530	Open Manhole	1350	1.002	145.990	375	1.001	145.990	375	
4	147.950	0.950	Open Manhole	1200	2.000	147.000	150				
5	147.600	1.744	Open Manhole	1350	1.003	145.880	375	1.002	145.856	375	
								2.000	145.883	150	
6	147.500	0.800	Open Manhole	1200	3.000	146.700	300				
7	147.400	1.272	Open Manhole	1200	3.001	146.128	300	3.000	146.128	300	
8	147.550	1.657	Open Manhole	1200	3.002	145.893	300	3.001	145.893	300	
9	147.800	2.400	Open Manhole	1350	1.004	145.400	375	1.003	145.836	375	436
								3.002	145.857	300	382
10	147.650	2.258	Open Manhole	1350	1.005	145.392	300	1.004	145.392	375	
11	147.600	2.235	Open Manhole	1200	1.006	145.365	300	1.005	145.365	300	
	146.020	1.026	Open Manhole	0		OUTFALL		1.006	144.994	300	

No coordinates have been specified, layout information cannot be produced.

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Network Classifications for Storm

PN	USMH Name	Pipe Dia (mm)	Min Cover Depth (m)	Max Cover Depth (m)	Pipe Type	MH Dia (mm)	MH Width (mm)	MH Ring Depth (m)	MH Type
1.000	1	375	0.625	1.523	Unclassified	1350	0	0.625	Unclassified
1.001	2	375	1.102	1.155	Unclassified	1350	0	1.102	Unclassified
1.002	3	375	1.155	1.369	Unclassified	1350	0	1.155	Unclassified
2.000	4	150	0.800	1.567	Unclassified	1200	0	0.800	Unclassified
1.003	5	375	1.345	1.589	Unclassified	1350	0	1.345	Unclassified
3.000	6	300	0.500	0.972	Unclassified	1200	0	0.500	Unclassified
3.001	7	300	0.972	1.357	Unclassified	1200	0	0.972	Unclassified
3.002	8	300	1.357	1.643	Unclassified	1200	0	1.357	Unclassified
1.004	9	375	1.883	2.025	Unclassified	1350	0	2.025	Unclassified
1.005	10	300	1.935	1.958	Unclassified	1350	0	1.958	Unclassified
1.006	11	300	0.726	1.935	Unclassified	1200	0	1.935	Unclassified

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall C. Level Name	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.006	146.020	144.994	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 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 Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	1	Number of Storage Structures	1	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.000	Storm Duration (mins)	30
Ratio R	0.350		

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Online Controls for Storm Hydro-Brake® Optimum Manhole: 10, DS/PN: 1.005, Volume (m³): 3.2 Unit Reference MD-SHE-0075-3100-1600-3100 Design Head (m)1.600 Design Flow (l/s)3.1 Flush-Flo™Calculated ObjectiveMinimise upstream storage ApplicationSurface Sump AvailableYes Diameter (mm)75 Invert Level (m)145.392 Minimum Outlet Pipe Diameter (mm)100 Suggested Manhole Diameter (mm)1200 <table><tr><th>Control Points</th><th>Head (m)</th><th>Flow (l/s)</th><th>Control Points</th><th>Head (m)</th><th>Flow (l/s)</th></tr><tr><td>Design Point (Calculated)</td><td>1.600</td><td>3.1</td><td>Kick-Flo®</td><td>0.673</td><td>2.1</td></tr><tr><td>Flush-Flo™</td><td>0.332</td><td>2.6</td><td>Mean Flow over Head Range</td><td>-</td><td>2.5</td></tr></table> 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><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th></tr><tr><td>0.100</td><td>2.1</td><td>1.200</td><td>2.7</td><td>3.000</td><td>4.1</td><td>7.000</td><td>6.2</td></tr><tr><td>0.200</td><td>2.5</td><td>1.400</td><td>2.9</td><td>3.500</td><td>4.4</td><td>7.500</td><td>6.4</td></tr><tr><td>0.300</td><td>2.6</td><td>1.600</td><td>3.1</td><td>4.000</td><td>4.7</td><td>8.000</td><td>6.6</td></tr><tr><td>0.400</td><td>2.6</td><td>1.800</td><td>3.3</td><td>4.500</td><td>5.0</td><td>8.500</td><td>6.8</td></tr><tr><td>0.500</td><td>2.5</td><td>2.000</td><td>3.4</td><td>5.000</td><td>5.3</td><td>9.000</td><td>6.9</td></tr><tr><td>0.600</td><td>2.3</td><td>2.200</td><td>3.6</td><td>5.500</td><td>5.5</td><td>9.500</td><td>7.1</td></tr><tr><td>0.800</td><td>2.3</td><td>2.400</td><td>3.7</td><td>6.000</td><td>5.7</td><td></td><td></td></tr><tr><td>1.000</td><td>2.5</td><td>2.600</td><td>3.9</td><td>6.500</td><td>6.0</td><td></td><td></td></tr></table> <tr><td colspan="3">©1982-2020 Innovyze</td></tr>			Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)	Design Point (Calculated)	1.600	3.1	Kick-Flo®	0.673	2.1	Flush-Flo™	0.332	2.6	Mean Flow over Head Range	-	2.5	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	0.100	2.1	1.200	2.7	3.000	4.1	7.000	6.2	0.200	2.5	1.400	2.9	3.500	4.4	7.500	6.4	0.300	2.6	1.600	3.1	4.000	4.7	8.000	6.6	0.400	2.6	1.800	3.3	4.500	5.0	8.500	6.8	0.500	2.5	2.000	3.4	5.000	5.3	9.000	6.9	0.600	2.3	2.200	3.6	5.500	5.5	9.500	7.1	0.800	2.3	2.400	3.7	6.000	5.7			1.000	2.5	2.600	3.9	6.500	6.0			©1982-2020 Innovyze		
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Storage Structures for Storm

Cellular Storage Manhole: 9, DS/PN: 1.004

Invert Level (m) 145.400 Safety Factor 2.0
 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
 Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	250.0	250.0	1.700	0.0	362.0
1.600	250.0	362.0			

Manhole Headloss for Storm

PN	US/MH	US/MH
Name	Headloss	
1.000	1	0.500
1.001	2	0.500
1.002	3	0.500
2.000	4	0.500
1.003	5	0.500
3.000	6	0.500
3.001	7	0.500
3.002	8	0.500
1.004	9	0.500
1.005	10	0.500
1.006	11	0.500

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Simulation Criteria

Number of Input Hydrographs	0	Number of Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	1	Number of Storage Structures	1	Number of Real Time Controls	0

Rainfall Model	FSR	Ratio R	0.361
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	19.000	Cv (Winter)	0.840

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 40

									Water
	US/MH		Return	Climate	First (X)	First (Y)	First (Z)	Overflow	Level
PN	Name	Storm	Period	Change	Surcharge	Flood	Overflow	Act.	(m)
1.000	1	15 Winter	30	+0%	100/15 Summer				146.786
1.001	2	15 Winter	30	+0%	100/15 Winter				146.467
1.002	3	480 Winter	30	+0%	100/15 Summer				146.243
1.000	4	15 Winter	30	+0%					147.048
1.003	5	480 Winter	30	+0%	100/15 Summer				146.243
1.000	6	15 Winter	30	+0%	100/15 Summer				146.884
1.001	7	15 Winter	30	+0%	100/15 Summer				146.333
1.002	8	480 Winter	30	+0%	30/15 Summer				146.242
1.004	9	480 Winter	30	+0%	30/30 Summer				146.242
1.005	10	480 Winter	30	+0%	1/240 Winter				146.218
1.006	11	1440 Summer	30	+0%					145.391

