

Manhole Schedules for Storm										
MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)
S2000	29.931	0.931	Open Manhole	600	1.000	29.000	225			
S2001	29.950	1.180	Open Manhole	600	1.001	28.770	225	1.000	28.770	225
S2002	29.382	0.787	Open Manhole	600	1.002	28.595	300	1.001	28.670	225
Tank	29.140	1.340	Open Manhole	1	2.000	27.800				
S2003	29.220	1.450	Open Manhole	1200	1.003	27.770	300	1.002	28.490	300
								2.000	27.770	
S2200	29.815	0.815	Open Manhole	1	3.000	29.000	150			
S2100	29.140	0.390	Open Manhole	600	3.001	28.750	300	3.000	28.900	150
S2004	29.140	1.605	Open Manhole	1500	1.004	27.535	225	1.003	27.535	300
								3.001	27.535	300
	28.134	2.134	Open Manhole	0		OUTFALL		1.004	26.000	225

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
S2000	382659.884	395181.237	382659.884	395181.237	Required	
S2001	382635.659	395156.957	382635.659	395156.957	Required	
S2002	382624.931	395146.205	382624.931	395146.205	Required	
Tank	382646.427	395124.758	382646.427	395124.758	Required	
S2003	382639.843	395131.327	382639.843	395131.327	Required	
S2200	382682.142	395159.578	382682.142	395159.578	Required	
S2100	382675.070	395166.634	382675.070	395166.634	Required	
S2004	382664.672	395156.212	382664.672	395156.212	Required	
	382676.145	395144.766			No Entry	

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	o	225	S2000	29.931	29.000	0.706	Open Manhole	600
1.001	o	225	S2001	29.950	28.770	0.955	Open Manhole	600
1.002	o	300	S2002	29.382	28.595	0.487	Open Manhole	600
2.000	→[↓]		Tank	29.140	27.800	0.139	Open Manhole	1
1.003	o	300	S2003	29.220	27.770	1.150	Open Manhole	1200
3.000	o	150	S2200	29.815	29.000	0.665	Open Manhole	1
3.001	o	300	S2100	29.140	28.750	0.090	Open Manhole	600
1.004	o	225	S2004	29.140	27.535	1.380	Open Manhole	1500

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	34.298	149.1	S2001	29.950	28.770	0.955	Open Manhole	600
1.001	15.189	151.9	S2002	29.382	28.670	0.487	Open Manhole	600
1.002	21.065	200.6	S2003	29.220	28.490	0.430	Open Manhole	1200
2.000	9.300	310.0	S2003	29.220	27.770	0.249	Open Manhole	1200
1.003	35.153	149.6	S2004	29.140	27.535	1.305	Open Manhole	1500
3.000	9.989	99.9	S2100	29.140	28.900	0.090	Open Manhole	600
3.001	14.722	12.1	S2004	29.140	27.535	1.305	Open Manhole	1500
1.004	16.206	10.6		28.134	26.000	1.909	Open Manhole	0

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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	0.052	0.052	0.052
1.001	-	-	100	0.012	0.012	0.012
1.002	-	-	100	0.027	0.027	0.027
2.000	-	-	100	0.002	0.002	0.002
1.003	-	-	100	0.104	0.104	0.104
3.000	-	-	100	0.022	0.022	0.022
3.001	-	-	100	0.019	0.019	0.019
1.004	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				0.238	0.238	0.238

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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	S2000	225	0.706	0.955	Unclassified	600	0	0.706	Unclassified
1.001	S2001	225	0.487	0.955	Unclassified	600	0	0.955	Unclassified
1.002	S2002	300	0.430	0.487	Unclassified	600	0	0.487	Unclassified
2.000	Tank				Cellular Storage	1	0	0.139	Unclassified
1.003	S2003	300	1.150	1.305	Unclassified	1200	0	1.150	Unclassified
3.000	S2200	150	0.090	0.665	Unclassified	1	0	0.665	Unclassified
3.001	S2100	300	0.090	1.305	Unclassified	600	0	0.090	Unclassified
1.004	S2004	225	1.380	1.909	Unclassified	1500	0	1.380	Unclassified

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)
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1.004		28.134	26.000	0.000	0	0
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Simulation Criteria for Storm

Volumetric Runoff Coeff	1.000	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/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	1
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)	100	Cv (Summer)	1.000
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.000	Storm Duration (mins)	30
Ratio R	0.280		

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Online Controls for Storm Hydro-Brake® Optimum Manhole: S2004, DS/PN: 1.004, Volume (m³): 6.2 <table><tr><td>Unit Reference</td><td colspan="2">MD-SCU-0126-2000-1605-2000</td></tr><tr><td>Design Head (m)</td><td colspan="2">1.605</td></tr><tr><td>Design Flow (l/s)</td><td colspan="2">20.0</td></tr><tr><td>Flush-Flo™</td><td colspan="2">Calculated</td></tr><tr><td>Objective</td><td colspan="2">Linear discharge profile</td></tr><tr><td>Application</td><td colspan="2">Surface</td></tr><tr><td>Sump Available</td><td colspan="2">Yes</td></tr><tr><td>Diameter (mm)</td><td colspan="2">126</td></tr><tr><td>Invert Level (m)</td><td colspan="2">27.535</td></tr><tr><td>Minimum Outlet Pipe Diameter (mm)</td><td colspan="2">150</td></tr><tr><td>Suggested Manhole Diameter (mm)</td><td colspan="2">1200</td></tr></table> <table><tr><td>Control Points</td><td>Head (m)</td><td>Flow (l/s)</td></tr><tr><td>Design Point (Calculated)</td><td>1.605</td><td>20.0</td></tr><tr><td>Flush-Flo™</td><td>0.154</td><td>7.4</td></tr><tr><td>Kick-Flo®</td><td>0.188</td><td>7.3</td></tr><tr><td>Mean Flow over Head Range</td><td>-</td><td>13.5</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><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>5.0</td><td>1.200</td><td>17.4</td><td>3.000</td><td>27.0</td><td>7.000</td><td>40.7</td></tr><tr><td>0.200</td><td>7.5</td><td>1.400</td><td>18.7</td><td>3.500</td><td>29.1</td><td>7.500</td><td>42.1</td></tr><tr><td>0.300</td><td>9.0</td><td>1.600</td><td>20.0</td><td>4.000</td><td>31.0</td><td>8.000</td><td>43.4</td></tr><tr><td>0.400</td><td>10.3</td><td>1.800</td><td>21.1</td><td>4.500</td><td>32.8</td><td>8.500</td><td>44.7</td></tr><tr><td>0.500</td><td>11.5</td><td>2.000</td><td>22.2</td><td>5.000</td><td>34.6</td><td>9.000</td><td>46.0</td></tr><tr><td>0.600</td><td>12.5</td><td>2.200</td><td>23.3</td><td>5.500</td><td>36.2</td><td>9.500</td><td>47.2</td></tr><tr><td>0.800</td><td>14.4</td><td>2.400</td><td>24.3</td><td>6.000</td><td>37.7</td><td></td><td></td></tr><tr><td>1.000</td><td>16.0</td><td>2.600</td><td>25.2</td><td>6.500</td><td>39.2</td><td></td><td></td></tr></table>			Unit Reference	MD-SCU-0126-2000-1605-2000		Design Head (m)	1.605		Design Flow (l/s)	20.0		Flush-Flo™	Calculated		Objective	Linear discharge profile		Application	Surface		Sump Available	Yes		Diameter (mm)	126		Invert Level (m)	27.535		Minimum Outlet Pipe Diameter (mm)	150		Suggested Manhole Diameter (mm)	1200		Control Points	Head (m)	Flow (l/s)	Design Point (Calculated)	1.605	20.0	Flush-Flo™	0.154	7.4	Kick-Flo®	0.188	7.3	Mean Flow over Head Range	-	13.5	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	0.100	5.0	1.200	17.4	3.000	27.0	7.000	40.7	0.200	7.5	1.400	18.7	3.500	29.1	7.500	42.1	0.300	9.0	1.600	20.0	4.000	31.0	8.000	43.4	0.400	10.3	1.800	21.1	4.500	32.8	8.500	44.7	0.500	11.5	2.000	22.2	5.000	34.6	9.000	46.0	0.600	12.5	2.200	23.3	5.500	36.2	9.500	47.2	0.800	14.4	2.400	24.3	6.000	37.7			1.000	16.0	2.600	25.2	6.500	39.2		
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Storage Structures for Storm Cellular Storage Pipe: 2.000 Manning's N0.050Infiltration Coefficient Side (m/hr)0.00000 Invert Level (m)27.800Safety Factor1.0 Infiltration Coefficient Base (m/hr)0.00000Porosity0.95 <table><thead><tr><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th></tr></thead><tbody><tr><td>0.000</td><td>75.0</td><td>0.0</td><td>1.201</td><td>0.0</td><td>0.0</td></tr><tr><td>1.200</td><td>75.0</td><td>0.0</td><td></td><td></td><td></td></tr></tbody></table> Volume Summary (Static) Length Calculations based on Centre-Centre <table><thead><tr><th>Pipe Number</th><th>USMH Name</th><th>Manhole Volume (m³)</th><th>Pipe Volume (m³)</th><th>Storage Structure Volume (m³)</th><th>Total Volume (m³)</th></tr></thead><tbody><tr><td>1.000</td><td>S2000</td><td>0.263</td><td>1.364</td><td>0.000</td><td>1.627</td></tr><tr><td>1.001</td><td>S2001</td><td>0.334</td><td>0.604</td><td>0.000</td><td>0.938</td></tr><tr><td>1.002</td><td>S2002</td><td>0.223</td><td>1.489</td><td>0.000</td><td>1.712</td></tr><tr><td>2.000</td><td>Tank</td><td>0.000</td><td>85.536</td><td>0.000</td><td>85.536</td></tr><tr><td>1.003</td><td>S2003</td><td>1.640</td><td>2.485</td><td>0.000</td><td>4.125</td></tr><tr><td>3.000</td><td>S2200</td><td>0.000</td><td>0.177</td><td>0.000</td><td>0.177</td></tr><tr><td>3.001</td><td>S2100</td><td>0.110</td><td>1.041</td><td>0.000</td><td>1.151</td></tr><tr><td>1.004</td><td>S2004</td><td>2.836</td><td>0.644</td><td>0.000</td><td>3.481</td></tr><tr><td colspan="2">Total</td><td>5.406</td><td>93.339</td><td>0.000</td><td>98.744</td></tr></tbody></table> Volume Summary (Static) Length Calculations based on True Length <table><thead><tr><th>Pipe Number</th><th>USMH Name</th><th>Manhole Volume (m³)</th><th>Pipe Volume (m³)</th><th>Storage Structure Volume (m³)</th><th>Total Volume (m³)</th></tr></thead><tbody><tr><td>1.000</td><td>S2000</td><td>0.263</td><td>1.340</td><td>0.000</td><td>1.603</td></tr><tr><td>1.001</td><td>S2001</td><td>0.334</td><td>0.580</td><td>0.000</td><td>0.914</td></tr><tr><td>1.002</td><td>S2002</td><td>0.223</td><td>1.425</td><td>0.000</td><td>1.648</td></tr><tr><td>2.000</td><td>Tank</td><td>0.000</td><td>80.013</td><td>0.000</td><td>80.013</td></tr><tr><td>1.003</td><td>S2003</td><td>1.640</td><td>2.389</td><td>0.000</td><td>4.029</td></tr><tr><td>3.000</td><td>S2200</td><td>0.000</td><td>0.171</td><td>0.000</td><td>0.171</td></tr><tr><td>3.001</td><td>S2100</td><td>0.110</td><td>0.966</td><td>0.000</td><td>1.077</td></tr><tr><td>1.004</td><td>S2004</td><td>2.836</td><td>0.615</td><td>0.000</td><td>3.451</td></tr><tr><td colspan="2">Total</td><td>5.406</td><td>87.499</td><td>0.000</td><td>92.905</td></tr></tbody></table> ©1982-2020 Innovyze						Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	75.0	0.0	1.201	0.0	0.0	1.200	75.0	0.0				Pipe Number	USMH Name	Manhole Volume (m³)	Pipe Volume (m³)	Storage Structure Volume (m³)	Total Volume (m³)	1.000	S2000	0.263	1.364	0.000	1.627	1.001	S2001	0.334	0.604	0.000	0.938	1.002	S2002	0.223	1.489	0.000	1.712	2.000	Tank	0.000	85.536	0.000	85.536	1.003	S2003	1.640	2.485	0.000	4.125	3.000	S2200	0.000	0.177	0.000	0.177	3.001	S2100	0.110	1.041	0.000	1.151	1.004	S2004	2.836	0.644	0.000	3.481	Total		5.406	93.339	0.000	98.744	Pipe Number	USMH Name	Manhole Volume (m³)	Pipe Volume (m³)	Storage Structure Volume (m³)	Total Volume (m³)	1.000	S2000	0.263	1.340	0.000	1.603	1.001	S2001	0.334	0.580	0.000	0.914	1.002	S2002	0.223	1.425	0.000	1.648	2.000	Tank	0.000	80.013	0.000	80.013	1.003	S2003	1.640	2.389	0.000	4.029	3.000	S2200	0.000	0.171	0.000	0.171	3.001	S2100	0.110	0.966	0.000	1.077	1.004	S2004	2.836	0.615	0.000	3.451	Total		5.406	87.499	0.000	92.905
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1.003	S2003	1.640	2.389	0.000	4.029																																																																																																																																										
3.000	S2200	0.000	0.171	0.000	0.171																																																																																																																																										
3.001	S2100	0.110	0.966	0.000	1.077																																																																																																																																										
1.004	S2004	2.836	0.615	0.000	3.451																																																																																																																																										
Total		5.406	87.499	0.000	92.905																																																																																																																																										

SGi Consulting		Page 10
4th Floor, Colchester House 40 Peter Street Manchester, M2 5GP		
Date 20/12/2024 09:49	Designed by sgicivils	
File SW Network 3 Drainage S...	Checked by	
Micro Drainage		Network 2020.1.3

Summary of Critical Results by Maximum Level (Rank 1) for Storm

		Surcharged			Flooded			Total	
PN	US/MH Name	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Overflow Act.	Overflow Vol (m³)	Overflow Vol (m³)	Level Exceeded
3.000	S2200	-0.034	0.000	0.95					
3.001	S2100	0.009	0.000	0.06					
1.004	S2004	1.296	0.000	0.14					

		US/MH		Maximum	Discharge	Maximum	Pipe		
PN	Name	Vol (m³)	Vol (m³)	(m/s)	(l/s)	(m/s)	(l/s)	Status	
1.000	S2000	0.057	15.517	1.1	34.8			OK	
1.001	S2001	1.189	45.861	1.0	23.5			SURCHARGED	
1.002	S2002	0.717	65.209	1.0	33.5			FLOOD RISK	
2.000	Tank	0.000	1.433	0.0	0.7			FLOOD RISK	
1.003	S2003	82.386	140.955	0.8	17.9			FLOOD RISK	
3.000	S2200	0.000	6.569	1.0	15.0			OK	
3.001	S2100	0.206	29.380	2.2	15.2			FLOOD RISK	
1.004	S2004	6.029	170.275	2.8	19.5			FLOOD RISK	