

Walsh Associates		Page 1																																																																																																																																																																																																																																						
32 Lafone Street London SE1 2LX																																																																																																																																																																																																																																								
Date 10/08/2021 14:16 File 5359-210618-exceedance ...	Designed by jacqui.kantor Checked by																																																																																																																																																																																																																																							
Innovyze	Network 2019.1																																																																																																																																																																																																																																							
STORM SEWER DESIGN by the Modified Rational Method Design Criteria for Storm Pipe Sizes STANDARD Manhole Sizes STANDARD FSR Rainfall Model - England and Wales <table><tr><td>Return Period (years)</td><td>100</td><td>PIMP (%)</td><td>100</td></tr><tr><td>M5-60 (mm)</td><td>21.000</td><td>Add Flow / Climate Change (%)</td><td>0</td></tr><tr><td>Ratio R</td><td>0.435</td><td>Minimum Backdrop Height (m)</td><td>0.000</td></tr><tr><td>Maximum Rainfall (mm/hr)</td><td>50</td><td>Maximum Backdrop Height (m)</td><td>0.000</td></tr><tr><td>Maximum Time of Concentration (mins)</td><td>30</td><td>Min Design Depth for Optimisation (m)</td><td>1.200</td></tr><tr><td>Foul Sewage (l/s/ha)</td><td>0.000</td><td>Min Vel for Auto Design only (m/s)</td><td>1.00</td></tr><tr><td>Volumetric Runoff Coeff.</td><td>0.750</td><td>Min Slope for Optimisation (1:X)</td><td>500</td></tr></table> Designed with Level Soffits			Return Period (years)	100	PIMP (%)	100	M5-60 (mm)	21.000	Add Flow / Climate Change (%)	0	Ratio R	0.435	Minimum Backdrop Height (m)	0.000	Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	0.000	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																																																																																																																																																																																																										
Return Period (years)	100	PIMP (%)	100																																																																																																																																																																																																																																					
M5-60 (mm)	21.000	Add Flow / Climate Change (%)	0																																																																																																																																																																																																																																					
Ratio R	0.435	Minimum Backdrop Height (m)	0.000																																																																																																																																																																																																																																					
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	0.000																																																																																																																																																																																																																																					
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																																																																																																																																																																																																																																					
Network Design Table for Storm « - Indicates pipe capacity < flow <table><tr><th>PN</th><th>Length (m)</th><th>Fall (m)</th><th>Slope (1:X)</th><th>I.Area (ha)</th><th>T.E. (mins)</th><th>Base Flow (l/s)</th><th>k (mm)</th><th>HYD SECT</th><th>DIA (mm)</th><th>Section Type</th><th>Auto Design</th></tr><tr><td>S1.000</td><td>56.711</td><td>0.350</td><td>162.0</td><td>0.113</td><td>5.00</td><td>0.0</td><td>0.600</td><td>o</td><td>300</td><td>Pipe/Conduit</td><td></td></tr><tr><td>S1.001</td><td>5.334</td><td>0.053</td><td>100.6</td><td>0.027</td><td>0.00</td><td>0.0</td><td>0.600</td><td>o</td><td>375</td><td>Pipe/Conduit</td><td></td></tr><tr><td>S1.002</td><td>27.710</td><td>0.111</td><td>250.0</td><td>0.185</td><td>0.00</td><td>0.0</td><td>0.600</td><td>o</td><td>375</td><td>Pipe/Conduit</td><td></td></tr><tr><td>S1.003</td><td>33.513</td><td>0.134</td><td>250.0</td><td>0.370</td><td>0.00</td><td>0.0</td><td>0.600</td><td>o</td><td>375</td><td>Pipe/Conduit</td><td></td></tr><tr><td>S2.000</td><td>23.788</td><td>0.050</td><td>475.8</td><td>0.048</td><td>5.00</td><td>0.0</td><td>0.600</td><td>o</td><td>150</td><td>Pipe/Conduit</td><td></td></tr><tr><td>S2.001</td><td>27.182</td><td>0.074</td><td>367.3</td><td>0.106</td><td>0.00</td><td>0.0</td><td>0.600</td><td>o</td><td>150</td><td>Pipe/Conduit</td><td></td></tr><tr><td>S2.002</td><td>25.931</td><td>0.200</td><td>129.7</td><td>0.053</td><td>0.00</td><td>0.0</td><td>0.600</td><td>o</td><td>150</td><td>Pipe/Conduit</td><td></td></tr><tr><td>S2.003</td><td>23.074</td><td>0.100</td><td>230.7</td><td>0.059</td><td>0.00</td><td>0.0</td><td>0.600</td><td>o</td><td>150</td><td>Pipe/Conduit</td><td></td></tr><tr><td>S2.004</td><td>11.459</td><td>0.374</td><td>30.6</td><td>0.000</td><td>0.00</td><td>0.0</td><td>0.600</td><td>o</td><td>150</td><td>Pipe/Conduit</td><td></td></tr></table> Network Results Table <table><tr><th>PN</th><th>Rain (mm/hr)</th><th>T.C. (mins)</th><th>US/IL (m)</th><th>Σ I.Area (ha)</th><th>Σ Base Flow (l/s)</th><th>Foul (l/s)</th><th>Add Flow (l/s)</th><th>Vel (m/s)</th><th>Cap (l/s)</th><th>Flow (l/s)</th></tr><tr><td>S1.000</td><td>50.00</td><td>5.77</td><td>33.700</td><td>0.113</td><td>0.0</td><td>0.0</td><td>0.0</td><td>1.23</td><td>87.1</td><td>15.3</td></tr><tr><td>S1.001</td><td>50.00</td><td>5.82</td><td>33.350</td><td>0.140</td><td>0.0</td><td>0.0</td><td>0.0</td><td>1.81</td><td>199.5</td><td>18.9</td></tr><tr><td>S1.002</td><td>50.00</td><td>6.22</td><td>30.096</td><td>0.324</td><td>0.0</td><td>0.0</td><td>0.0</td><td>1.14</td><td>126.1</td><td>43.9</td></tr><tr><td>S1.003</td><td>50.00</td><td>6.71</td><td>29.986</td><td>0.694</td><td>0.0</td><td>0.0</td><td>0.0</td><td>1.14</td><td>126.1</td><td>94.0</td></tr><tr><td>S2.000</td><td>50.00</td><td>5.87</td><td>34.150</td><td>0.048</td><td>0.0</td><td>0.0</td><td>0.0</td><td>0.45</td><td>8.0</td><td>6.4</td></tr><tr><td>S2.001</td><td>50.00</td><td>6.75</td><td>34.100</td><td>0.154</td><td>0.0</td><td>0.0</td><td>0.0</td><td>0.52</td><td>9.2«</td><td>20.8</td></tr><tr><td>S2.002</td><td>50.00</td><td>7.24</td><td>33.750</td><td>0.206</td><td>0.0</td><td>0.0</td><td>0.0</td><td>0.88</td><td>15.6«</td><td>28.0</td></tr><tr><td>S2.003</td><td>50.00</td><td>7.82</td><td>33.450</td><td>0.266</td><td>0.0</td><td>0.0</td><td>0.0</td><td>0.66</td><td>11.6«</td><td>36.0</td></tr><tr><td>S2.004</td><td>50.00</td><td>7.93</td><td>33.300</td><td>0.266</td><td>0.0</td><td>0.0</td><td>0.0</td><td>1.83</td><td>32.3«</td><td>36.0</td></tr></table> ©1982-2019 Innovyze			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	S1.000	56.711	0.350	162.0	0.113	5.00	0.0	0.600	o	300	Pipe/Conduit		S1.001	5.334	0.053	100.6	0.027	0.00	0.0	0.600	o	375	Pipe/Conduit		S1.002	27.710	0.111	250.0	0.185	0.00	0.0	0.600	o	375	Pipe/Conduit		S1.003	33.513	0.134	250.0	0.370	0.00	0.0	0.600	o	375	Pipe/Conduit		S2.000	23.788	0.050	475.8	0.048	5.00	0.0	0.600	o	150	Pipe/Conduit		S2.001	27.182	0.074	367.3	0.106	0.00	0.0	0.600	o	150	Pipe/Conduit		S2.002	25.931	0.200	129.7	0.053	0.00	0.0	0.600	o	150	Pipe/Conduit		S2.003	23.074	0.100	230.7	0.059	0.00	0.0	0.600	o	150	Pipe/Conduit		S2.004	11.459	0.374	30.6	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit		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)	S1.000	50.00	5.77	33.700	0.113	0.0	0.0	0.0	1.23	87.1	15.3	S1.001	50.00	5.82	33.350	0.140	0.0	0.0	0.0	1.81	199.5	18.9	S1.002	50.00	6.22	30.096	0.324	0.0	0.0	0.0	1.14	126.1	43.9	S1.003	50.00	6.71	29.986	0.694	0.0	0.0	0.0	1.14	126.1	94.0	S2.000	50.00	5.87	34.150	0.048	0.0	0.0	0.0	0.45	8.0	6.4	S2.001	50.00	6.75	34.100	0.154	0.0	0.0	0.0	0.52	9.2«	20.8	S2.002	50.00	7.24	33.750	0.206	0.0	0.0	0.0	0.88	15.6«	28.0	S2.003	50.00	7.82	33.450	0.266	0.0	0.0	0.0	0.66	11.6«	36.0	S2.004	50.00	7.93	33.300	0.266	0.0	0.0	0.0	1.83	32.3«	36.0
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																																																																																																																																																																																																																													
S1.000	56.711	0.350	162.0	0.113	5.00	0.0	0.600	o	300	Pipe/Conduit																																																																																																																																																																																																																														
S1.001	5.334	0.053	100.6	0.027	0.00	0.0	0.600	o	375	Pipe/Conduit																																																																																																																																																																																																																														
S1.002	27.710	0.111	250.0	0.185	0.00	0.0	0.600	o	375	Pipe/Conduit																																																																																																																																																																																																																														
S1.003	33.513	0.134	250.0	0.370	0.00	0.0	0.600	o	375	Pipe/Conduit																																																																																																																																																																																																																														
S2.000	23.788	0.050	475.8	0.048	5.00	0.0	0.600	o	150	Pipe/Conduit																																																																																																																																																																																																																														
S2.001	27.182	0.074	367.3	0.106	0.00	0.0	0.600	o	150	Pipe/Conduit																																																																																																																																																																																																																														
S2.002	25.931	0.200	129.7	0.053	0.00	0.0	0.600	o	150	Pipe/Conduit																																																																																																																																																																																																																														
S2.003	23.074	0.100	230.7	0.059	0.00	0.0	0.600	o	150	Pipe/Conduit																																																																																																																																																																																																																														
S2.004	11.459	0.374	30.6	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit																																																																																																																																																																																																																														
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)																																																																																																																																																																																																																														
S1.000	50.00	5.77	33.700	0.113	0.0	0.0	0.0	1.23	87.1	15.3																																																																																																																																																																																																																														
S1.001	50.00	5.82	33.350	0.140	0.0	0.0	0.0	1.81	199.5	18.9																																																																																																																																																																																																																														
S1.002	50.00	6.22	30.096	0.324	0.0	0.0	0.0	1.14	126.1	43.9																																																																																																																																																																																																																														
S1.003	50.00	6.71	29.986	0.694	0.0	0.0	0.0	1.14	126.1	94.0																																																																																																																																																																																																																														
S2.000	50.00	5.87	34.150	0.048	0.0	0.0	0.0	0.45	8.0	6.4																																																																																																																																																																																																																														
S2.001	50.00	6.75	34.100	0.154	0.0	0.0	0.0	0.52	9.2«	20.8																																																																																																																																																																																																																														
S2.002	50.00	7.24	33.750	0.206	0.0	0.0	0.0	0.88	15.6«	28.0																																																																																																																																																																																																																														
S2.003	50.00	7.82	33.450	0.266	0.0	0.0	0.0	0.66	11.6«	36.0																																																																																																																																																																																																																														
S2.004	50.00	7.93	33.300	0.266	0.0	0.0	0.0	1.83	32.3«	36.0																																																																																																																																																																																																																														

Walsh Associates		Page 2
32 Lafone Street London SE1 2LX		
Date 10/08/2021 14:16	Designed by jacqui.kantor	
File 5359-210618-exceedance ...	Checked by	
Innovyze	Network 2019.1	

Network Design Table for Storm

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
S1.004	16.870	0.067	250.0	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
S1.005	21.129	0.085	250.0	0.086	0.00	0.0	0.600	o	300	Pipe/Conduit	
S1.006	43.133	0.173	249.3	0.020	0.00	0.0	0.600	o	225	Pipe/Conduit	
S1.007	17.541	0.117	150.0	0.139	0.00	0.0	0.600	o	225	Pipe/Conduit	
S1.008	5.556	0.014	400.8	0.006	0.00	0.0	0.600	o	300	Pipe/Conduit	
S1.009	8.936	0.036	248.2	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
S1.010	19.254	0.036	534.8	0.100	0.00	0.0	0.600	o	375	Pipe/Conduit	
S1.011	11.708	0.148	79.1	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S1.012	9.646	0.039	250.0	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S1.013	9.646	0.030	321.5	0.080	0.00	0.0	0.600	o	225	Pipe/Conduit	
S1.014	9.367	0.053	176.7	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S3.000	11.540	0.080	144.3	0.014	5.00	0.0	0.600	o	375	Pipe/Conduit	
S3.001	3.006	0.080	37.6	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
S3.002	18.490	0.420	44.0	0.173	0.00	0.0	0.600	o	375	Pipe/Conduit	
S4.000	17.477	0.076	230.0	0.222	5.00	0.0	0.600	o	225	Pipe/Conduit	
S4.001	24.516	0.123	199.3	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
S4.002	7.591	0.045	168.7	0.082	0.00	0.0	0.600	o	150	Pipe/Conduit	
S3.003	18.490	0.420	44.0	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
S3.004	36.710	0.300	122.4	0.000	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)
S1.004	50.00	8.21	29.851	0.960	0.0	0.0	0.0	0.99	70.0«	129.9
S1.005	50.00	8.57	29.784	1.046	0.0	0.0	0.0	0.99	70.0«	141.6
S1.006	50.00	9.44	29.234	1.066	0.0	0.0	0.0	0.82	32.7«	144.3
S1.007	50.00	9.71	28.825	1.204	0.0	0.0	0.0	1.07	42.4«	163.1
S1.008	50.00	9.83	26.000	1.211	0.0	0.0	0.0	0.78	55.1«	163.9
S1.009	50.00	9.98	25.978	1.211	0.0	0.0	0.0	0.99	70.2«	163.9
S1.010	50.00	10.40	25.942	1.310	0.0	0.0	0.0	0.78	85.8«	177.5
S1.011	50.00	10.53	25.870	1.310	0.0	0.0	0.0	1.47	58.5«	177.5
S1.012	50.00	10.72	25.838	1.310	0.0	0.0	0.0	0.82	32.7«	177.5
S1.013	50.00	10.95	25.799	1.390	0.0	0.0	0.0	0.72	28.8«	188.3
S1.014	50.00	11.11	25.765	1.390	0.0	0.0	0.0	0.98	39.0«	188.3
S3.000	50.00	5.13	31.000	0.014	0.0	0.0	0.0	1.51	166.4	1.9
S3.001	50.00	5.14	30.920	0.014	0.0	0.0	0.0	2.96	327.4	1.9
S3.002	50.00	5.26	30.840	0.187	0.0	0.0	0.0	2.74	302.3	25.3
S4.000	50.00	5.34	33.850	0.222	0.0	0.0	0.0	0.86	34.1	30.1
S4.001	50.00	5.92	33.850	0.222	0.0	0.0	0.0	0.71	12.5«	30.1
S4.002	50.00	6.08	33.575	0.304	0.0	0.0	0.0	0.77	13.6«	41.1
S3.003	50.00	6.19	30.420	0.490	0.0	0.0	0.0	2.74	302.3	66.4
S3.004	50.00	6.57	30.000	0.490	0.0	0.0	0.0	1.64	180.8	66.4

Walsh Associates										Page 3	
32 Lafone Street London SE1 2LX											
Date 10/08/2021 14:16 File 5359-210618-exceedance ...					Designed by jacqui.kantor Checked by						
Innovyze					Network 2019.1						
Network Design Table for Storm											
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
S3.005	11.680	0.078	150.0	0.234	0.00	0.0	0.600	o	375	Pipe/Conduit	
S3.006	8.740	0.058	150.7	0.102	0.00	0.0	0.600	o	375	Pipe/Conduit	
S3.007	16.298	0.065	250.7	0.054	0.00	0.0	0.600	o	375	Pipe/Conduit	
S5.000	37.655	0.038	990.9	0.028	5.00	0.0	0.600	o	300	Pipe/Conduit	
S5.001	19.675	0.131	150.0	0.036	0.00	0.0	0.600	o	300	Pipe/Conduit	
S5.002	11.104	4.000	2.8	0.087	0.00	0.0	0.600	o	150	Pipe/Conduit	
S6.000	12.423	0.116	107.1	0.000	5.00	0.0	0.600	o	100	Pipe/Conduit	
S3.008	2.082	0.014	150.0	0.063	0.00	0.0	0.600	o	375	Pipe/Conduit	
S7.000	39.547	0.566	69.9	0.018	5.00	0.0	0.600	o	150	Pipe/Conduit	
S7.001	18.702	0.187	100.0	0.017	0.00	0.0	0.600	o	225	Pipe/Conduit	
S7.002	5.255	0.027	194.6	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S8.000	10.371	0.067	154.8	0.000	5.00	0.0	0.600	o	100	Pipe/Conduit	
S8.001	16.523	0.364	45.3	0.057	0.00	0.0	0.600	o	225	Pipe/Conduit	
S7.003	1.968	0.041	48.0	0.050	0.00	0.0	0.600	o	150	Pipe/Conduit	
S7.004	5.239	0.041	127.8	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
Network Results Table											
PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	E I.Area (ha)	E Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)	
S3.005	50.00	6.70	28.720	0.725	0.0	0.0	0.0	1.48	163.1	98.1	
S3.006	50.00	6.80	28.642	0.827	0.0	0.0	0.0	1.47	162.8	111.9	
S3.007	50.00	7.04	28.584	0.881	0.0	0.0	0.0	1.14	125.9	119.3	
S5.000	50.00	6.28	33.850	0.028	0.0	0.0	0.0	0.49	34.7	3.9	
S5.001	50.00	6.53	33.812	0.065	0.0	0.0	0.0	1.28	90.6	8.8	
S5.002	50.00	6.56	33.800	0.152	0.0	0.0	0.0	6.09	107.7	20.6	
S6.000	50.00	5.28	30.000	0.000	0.0	0.0	0.0	0.74	5.8	0.0	
S3.008	50.00	7.06	28.519	1.095	0.0	0.0	0.0	1.48	163.1	148.3	
S7.000	50.00	5.55	27.750	0.018	0.0	0.0	0.0	1.20	21.3	2.4	
S7.001	50.00	5.79	26.740	0.034	0.0	0.0	0.0	1.31	52.0	4.6	
S7.002	50.00	5.88	26.550	0.034	0.0	0.0	0.0	0.93	37.1	4.6	
S8.000	50.00	5.28	26.800	0.000	0.0	0.0	0.0	0.62	4.8	0.0	
S8.001	50.00	5.42	27.300	0.057	0.0	0.0	0.0	1.95	77.4	7.7	
S7.003	50.00	5.90	26.537	0.141	0.0	0.0	0.0	1.46	25.7	19.1	
S7.004	50.00	5.98	26.421	0.141	0.0	0.0	0.0	1.16	45.9	19.1	
©1982-2019 Innovyze											

Walsh Associates		Page 4
32 Lafone Street London SE1 2LX		
Date 10/08/2021 14:16	Designed by jacqui.kantor	
File 5359-210618-exceedance ...	Checked by	
Innovyze	Network 2019.1	

Online Controls for Storm

Hydro-Brake® Optimum Manhole: S5, DS/PN: S1.006, Volume (m³): 6.8

Unit Reference	MD-SHE-0151-1840-4000-1840
Design Head (m)	4.000
Design Flow (l/s)	18.4
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	151
Invert Level (m)	29.234
Minimum Outlet Pipe Diameter (mm)	225
Suggested Manhole Diameter (mm)	1500

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	4.000	18.4
Flush-Flo™	0.662	14.0
Kick-Flo®	1.354	11.0
Mean Flow over Head Range	-	14.0

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	5.4	1.200	12.5	3.000	16.0	7.000	24.1
0.200	11.2	1.400	11.2	3.500	17.3	7.500	24.9
0.300	12.6	1.600	11.9	4.000	18.4	8.000	25.7
0.400	13.4	1.800	12.6	4.500	19.5	8.500	26.4
0.500	13.8	2.000	13.2	5.000	20.5	9.000	27.2
0.600	13.9	2.200	13.8	5.500	21.4	9.500	27.9
0.800	13.9	2.400	14.4	6.000	22.3		
1.000	13.4	2.600	15.0	6.500	23.2		

Hydro-Brake® Optimum Manhole: S9, DS/PN: S1.011, Volume (m³): 8.0

Unit Reference	MD-SHE-0173-2400-4000-2400
Design Head (m)	4.000
Design Flow (l/s)	24.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	173
Invert Level (m)	25.870
Minimum Outlet Pipe Diameter (mm)	225
Suggested Manhole Diameter (mm)	1800

Walsh Associates		Page 5
32 Lafone Street London SE1 2LX		
Date 10/08/2021 14:16	Designed by jacqui.kantor	
File 5359-210618-exceedance ...	Checked by	
Innovyze	Network 2019.1	

Hydro-Brake® Optimum Manhole: S9, DS/PN: S1.011, Volume (m³): 8.0

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	4.000	24.0
Flush-Flo™	0.749	19.5
Kick-Flo®	1.551	15.3
Mean Flow over Head Range	-	18.8

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	6.1	1.200	18.5	3.000	20.9	7.000	31.4
0.200	15.0	1.400	17.1	3.500	22.5	7.500	32.4
0.300	17.0	1.600	15.5	4.000	24.0	8.000	33.5
0.400	18.2	1.800	16.4	4.500	25.4	8.500	34.5
0.500	19.0	2.000	17.2	5.000	26.7	9.000	35.4
0.600	19.3	2.200	18.0	5.500	27.9	9.500	36.4
0.800	19.5	2.400	18.8	6.000	29.1		
1.000	19.2	2.600	19.5	6.500	30.3		

Complex Manhole: S11, DS/PN: S1.014, Volume (m³): 3.2

Hydro-Brake® Optimum

Unit Reference	MD-SHE-0152-1300-1800-1300
Design Head (m)	1.800
Design Flow (l/s)	13.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	152
Invert Level (m)	25.765
Minimum Outlet Pipe Diameter (mm)	225
Suggested Manhole Diameter (mm)	1500

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.800	13.0
Flush-Flo™	0.532	13.0
Kick-Flo®	1.113	10.3
Mean Flow over Head Range	-	11.4

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

Walsh Associates		Page 6
32 Lafone Street London SE1 2LX		
Date 10/08/2021 14:16	Designed by jacqui.kantor	
File 5359-210618-exceedance ...	Checked by	
Innovyze	Network 2019.1	

Hydro-Brake® Optimum

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	5.5	1.200	10.7	3.000	16.5	7.000	24.8
0.200	11.2	1.400	11.5	3.500	17.8	7.500	25.7
0.300	12.3	1.600	12.3	4.000	19.0	8.000	26.5
0.400	12.8	1.800	13.0	4.500	20.1	8.500	27.3
0.500	13.0	2.000	13.6	5.000	21.1	9.000	28.0
0.600	13.0	2.200	14.3	5.500	22.1	9.500	28.8
0.800	12.6	2.400	14.9	6.000	23.1		
1.000	11.5	2.600	15.5	6.500	24.0		

Orifice

Diameter (m) 0.061 Discharge Coefficient 0.600 Invert Level (m) 27.600

Non Return Valve Manhole: S22, DS/PN: S3.001, Volume (m³): 5.8

Non Return Valve Manhole: S13, DS/PN: S3.002, Volume (m³): 5.0

Hydro-Brake® Optimum Manhole: S18, DS/PN: S5.002, Volume (m³): 2.1

Unit Reference	MD-SHE-0085-3000-0800-3000
Design Head (m)	0.800
Design Flow (l/s)	3.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	85
Invert Level (m)	33.800
Minimum Outlet Pipe Diameter (mm)	100
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.800	3.0
Flush-Flo™	0.239	3.0
Kick-Flo®	0.517	2.5
Mean Flow over Head Range	-	2.6

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	2.6	0.300	3.0	0.500	2.6	0.800	3.0
0.200	3.0	0.400	2.9	0.600	2.6	1.000	3.3

Walsh Associates		Page 7
32 Lafone Street London SE1 2LX		
Date 10/08/2021 14:16	Designed by jacqui.kantor	
File 5359-210618-exceedance ...	Checked by	
Innovyze	Network 2019.1	

Hydro-Brake® Optimum Manhole: S18, DS/PN: S5.002, Volume (m³): 2.1

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
1.200	3.6	2.400	5.0	5.000	7.0	8.000	8.8
1.400	3.9	2.600	5.2	5.500	7.4	8.500	9.0
1.600	4.1	3.000	5.5	6.000	7.7	9.000	9.3
1.800	4.4	3.500	6.0	6.500	8.0	9.500	9.6
2.000	4.6	4.000	6.3	7.000	8.3		
2.200	4.8	4.500	6.7	7.500	8.5		

Complex Manhole: S17, DS/PN: S3.008, Volume (m³): 10.3

Hydro-Brake® Optimum

Unit Reference	MD-SHE-0097-7000-3200-7000
Design Head (m)	3.200
Design Flow (l/s)	7.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	97
Invert Level (m)	28.519
Minimum Outlet Pipe Diameter (mm)	150
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	3.200	7.0
Flush-Flo™	0.417	4.8
Kick-Flo®	0.866	3.8
Mean Flow over Head Range	-	5.2

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	3.2	1.200	4.4	3.000	6.8	7.000	10.1
0.200	4.4	1.400	4.8	3.500	7.3	7.500	10.5
0.300	4.7	1.600	5.1	4.000	7.8	8.000	10.8
0.400	4.8	1.800	5.3	4.500	8.2	8.500	11.1
0.500	4.8	2.000	5.6	5.000	8.6	9.000	11.4
0.600	4.7	2.200	5.9	5.500	9.0	9.500	11.7
0.800	4.2	2.400	6.1	6.000	9.4		
1.000	4.1	2.600	6.3	6.500	9.8		

Walsh Associates		Page 8
32 Lafone Street London SE1 2LX		
Date 10/08/2021 14:16	Designed by jacqui.kantor	
File 5359-210618-exceedance ...	Checked by	
Innovyze	Network 2019.1	

Orifice

Diameter (m) 0.040 Discharge Coefficient 0.600 Invert Level (m) 31.719

Hydro-Brake® Optimum Manhole: S21, DS/PN: S7.003, Volume (m³): 2.6

Unit Reference	MD-SHE-0063-1800-1000-1800
Design Head (m)	1.000
Design Flow (l/s)	1.8
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	63
Invert Level (m)	26.537
Minimum Outlet Pipe Diameter (mm)	100
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.000	1.8
Flush-Flo™	0.280	1.7
Kick-Flo®	0.565	1.4
Mean Flow over Head Range	-	1.5

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	1.5	1.200	2.0	3.000	3.0	7.000	4.4
0.200	1.7	1.400	2.1	3.500	3.2	7.500	4.6
0.300	1.7	1.600	2.2	4.000	3.4	8.000	4.7
0.400	1.7	1.800	2.3	4.500	3.6	8.500	4.8
0.500	1.6	2.000	2.5	5.000	3.8	9.000	5.0
0.600	1.4	2.200	2.6	5.500	3.9	9.500	5.1
0.800	1.6	2.400	2.7	6.000	4.1		
1.000	1.8	2.600	2.8	6.500	4.3		

Non Return Valve Manhole: S39, DS/PN: S7.004, Volume (m³): 0.5

Walsh Associates		Page 9
32 Lafone Street London SE1 2LX		
Date 10/08/2021 14:16	Designed by jacqui.kantor	
File 5359-210618-exceedance ...	Checked by	
Innovyze		Network 2019.1

Offline Controls for Storm

Pipe Manhole: S5, DS/PN: S2.000, Loop to PN: S2.002

Diameter (m)	0.150	Roughness k (mm)	0.600
Section Type Pipe/Conduit		Entry Loss Coefficient	0.500
Slope (1:X)	500.0	Coefficient of Contraction	0.600
Length (m)	5.000	Upstream Invert Level (m)	34.150

Pipe Manhole: S6, DS/PN: S2.001, Loop to PN: S2.002

Diameter (m)	0.150	Roughness k (mm)	0.600
Section Type Pipe/Conduit		Entry Loss Coefficient	0.500
Slope (1:X)	100.0	Coefficient of Contraction	0.600
Length (m)	5.000	Upstream Invert Level (m)	34.100

Pipe Manhole: S6, DS/PN: S2.002, Loop to PN: S2.004

Diameter (m)	0.150	Roughness k (mm)	0.600
Section Type Pipe/Conduit		Entry Loss Coefficient	0.500
Slope (1:X)	100.0	Coefficient of Contraction	0.600
Length (m)	10.000	Upstream Invert Level (m)	33.750

Pipe Manhole: S21, DS/PN: S4.000, Loop to PN: S5.001

Diameter (m)	-4	Roughness k (mm)	0.600
Section Type Pipe/Conduit		Entry Loss Coefficient	0.500
Slope (1:X)	1000.0	Coefficient of Contraction	0.600
Length (m)	5.000	Upstream Invert Level (m)	33.850

Pipe Manhole: S17, DS/PN: S5.001, Loop to PN: S4.000

Diameter (m)	0.450	Roughness k (mm)	0.600
Section Type Pipe/Conduit		Entry Loss Coefficient	0.500
Slope (1:X)	1000.0	Coefficient of Contraction	0.600
Length (m)	5.000	Upstream Invert Level (m)	33.850

Flap Valve Manhole: S37, DS/PN: S8.000, Loop to PN: S6.000

Discharge Coefficient 0.600 Diameter (m) 0.100 Invert Level (m) 26.800

Pump Manhole: S37, DS/PN: S8.000, Loop to PN: S6.000

Invert Level (m) 26.800

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	0.0000	0.500	0.0000	0.900	1.8000	1.300	1.8000
0.200	0.0000	0.600	0.0000	1.000	1.8000	1.400	1.8000
0.300	0.0000	0.700	0.0000	1.100	1.8000	1.500	1.8000
0.400	0.0000	0.800	1.8000	1.200	1.8000	1.600	1.8000

©1982-2019 Innovyze

Walsh Associates			Page 10																																								
32 Lafone Street London SE1 2LX																																											
Date 10/08/2021 14:16 File 5359-210618-exceedance ...		Designed by jacqui.kantor Checked by																																									
Innovyze		Network 2019.1																																									
<u>Pump Manhole: S37, DS/PN: S8.000, Loop to PN: S6.000</u> <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>1.700</td><td>1.8000</td><td>2.100</td><td>1.8000</td><td>2.500</td><td>1.8000</td><td>2.900</td><td>1.8000</td></tr><tr><td>1.800</td><td>1.8000</td><td>2.200</td><td>1.8000</td><td>2.600</td><td>1.8000</td><td>3.000</td><td>1.8000</td></tr><tr><td>1.900</td><td>1.8000</td><td>2.300</td><td>1.8000</td><td>2.700</td><td>1.8000</td><td></td><td></td></tr><tr><td>2.000</td><td>1.8000</td><td>2.400</td><td>1.8000</td><td>2.800</td><td>1.8000</td><td></td><td></td></tr></table>				Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	1.700	1.8000	2.100	1.8000	2.500	1.8000	2.900	1.8000	1.800	1.8000	2.200	1.8000	2.600	1.8000	3.000	1.8000	1.900	1.8000	2.300	1.8000	2.700	1.8000			2.000	1.8000	2.400	1.8000	2.800	1.8000		
Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)																																				
1.700	1.8000	2.100	1.8000	2.500	1.8000	2.900	1.8000																																				
1.800	1.8000	2.200	1.8000	2.600	1.8000	3.000	1.8000																																				
1.900	1.8000	2.300	1.8000	2.700	1.8000																																						
2.000	1.8000	2.400	1.8000	2.800	1.8000																																						
©1982-2019 Innovyze																																											

Walsh Associates		Page 11																		
32 Lafone Street London SE1 2LX																				
Date 10/08/2021 14:16	Designed by jacqui.kantor																			
File 5359-210618-exceedance ...	Checked by																			
Innovyze	Network 2019.1																			
Storage Structures for Storm																				
Cellular Storage Manhole: S2, DS/PN: S1.002																				
Invert Level (m) 29.700 Safety Factor 2.0																				
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95																				
Infiltration Coefficient Side (m/hr) 0.00000																				
<table><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><tr><td>0.000</td><td>80.0</td><td>0.0</td><td>3.201</td><td>0.0</td><td>0.0</td></tr><tr><td>3.200</td><td>80.0</td><td>0.0</td><td></td><td></td><td></td></tr></table>			Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	80.0	0.0	3.201	0.0	0.0	3.200	80.0	0.0			
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)															
0.000	80.0	0.0	3.201	0.0	0.0															
3.200	80.0	0.0																		
Cellular Storage Manhole: S3, DS/PN: S1.003																				
Invert Level (m) 29.700 Safety Factor 2.0																				
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95																				
Infiltration Coefficient Side (m/hr) 0.00000																				
<table><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><tr><td>0.000</td><td>80.0</td><td>0.0</td><td>3.201</td><td>0.0</td><td>0.0</td></tr><tr><td>3.200</td><td>80.0</td><td>0.0</td><td></td><td></td><td></td></tr></table>			Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	80.0	0.0	3.201	0.0	0.0	3.200	80.0	0.0			
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)															
0.000	80.0	0.0	3.201	0.0	0.0															
3.200	80.0	0.0																		
Complex Manhole: S5, DS/PN: S2.000																				
Porous Car Park																				
Infiltration Coefficient Base (m/hr) 0.00000 Width (m) 19.7																				
Membrane Percolation (mm/hr) 1000 Length (m) 8.0																				
Max Percolation (l/s) 43.8 Slope (1:X) 1000.0																				
Safety Factor 2.0 Depression Storage (mm) 5																				
Porosity 0.95 Evaporation (mm/day) 3																				
Invert Level (m) 34.050 Cap Volume Depth (m) 0.150																				
Infiltration Trench																				
Infiltration Coefficient Base (m/hr) 0.00000 Trench Width (m) 4.0																				
Infiltration Coefficient Side (m/hr) 0.00000 Trench Length (m) 21.0																				
Safety Factor 2.0 Slope (1:X) 0.0																				
Porosity 0.30 Cap Volume Depth (m) 0.500																				
Invert Level (m) 33.925 Cap Infiltration Depth (m) 0.000																				
Porous Car Park Manhole: S6, DS/PN: S2.001																				
Infiltration Coefficient Base (m/hr) 0.00000 Invert Level (m) 34.050																				
Membrane Percolation (mm/hr) 1000 Width (m) 26.1																				
Max Percolation (l/s) 58.0 Length (m) 8.0																				
Safety Factor 2.0 Slope (1:X) 1000.0																				
Porosity 0.95 Depression Storage (mm) 5																				
©1982-2019 Innovyze																				

Walsh Associates		Page 12																																																																																																																				
32 Lafone Street London SE1 2LX																																																																																																																						
Date 10/08/2021 14:16	Designed by jacqui.kantor																																																																																																																					
File 5359-210618-exceedance ...	Checked by																																																																																																																					
Innovyze	Network 2019.1																																																																																																																					
<u>Porous Car Park Manhole: S6, DS/PN: S2.001</u> Evaporation (mm/day) 3 Cap Volume Depth (m) 0.150 <u>Infiltration Trench Manhole: S6, DS/PN: S2.002</u> <table><tr><td>Infiltration Coefficient Base (m/hr)</td><td>0.00000</td><td>Trench Width (m)</td><td>2.7</td></tr><tr><td>Infiltration Coefficient Side (m/hr)</td><td>0.00000</td><td>Trench Length (m)</td><td>10.0</td></tr><tr><td>Safety Factor</td><td>2.0</td><td>Slope (1:X)</td><td>0.0</td></tr><tr><td>Porosity</td><td>0.30</td><td>Cap Volume Depth (m)</td><td>0.500</td></tr><tr><td>Invert Level (m)</td><td>33.925</td><td>Cap Infiltration Depth (m)</td><td>0.000</td></tr></table> <u>Porous Car Park Manhole: S7, DS/PN: S2.003</u> <table><tr><td>Infiltration Coefficient Base (m/hr)</td><td>0.00000</td><td>Width (m)</td><td>80.0</td></tr><tr><td>Membrane Percolation (mm/hr)</td><td>1000</td><td>Length (m)</td><td>2.5</td></tr><tr><td>Max Percolation (l/s)</td><td>55.6</td><td>Slope (1:X)</td><td>1000.0</td></tr><tr><td>Safety Factor</td><td>2.0</td><td>Depression Storage (mm)</td><td>5</td></tr><tr><td>Porosity</td><td>0.95</td><td>Evaporation (mm/day)</td><td>3</td></tr><tr><td>Invert Level (m)</td><td>33.300</td><td>Cap Volume Depth (m)</td><td>0.150</td></tr></table> <u>Cellular Storage Manhole: S4, DS/PN: S1.005</u> <table><tr><td>Invert Level (m)</td><td>29.700</td><td>Safety Factor</td><td>2.0</td></tr><tr><td>Infiltration Coefficient Base (m/hr)</td><td>0.00000</td><td>Porosity</td><td>0.95</td></tr><tr><td>Infiltration Coefficient Side (m/hr)</td><td>0.00000</td><td></td><td></td></tr></table> <table><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><tr><td>0.000</td><td>80.0</td><td>0.0</td><td>3.201</td><td>0.0</td><td>0.0</td></tr><tr><td>3.200</td><td>80.0</td><td>0.0</td><td></td><td></td><td></td></tr></table> <u>Cellular Storage Manhole: S11, DS/PN: S1.010</u> <table><tr><td>Invert Level (m)</td><td>26.000</td><td>Safety Factor</td><td>2.0</td></tr><tr><td>Infiltration Coefficient Base (m/hr)</td><td>0.00000</td><td>Porosity</td><td>0.95</td></tr><tr><td>Infiltration Coefficient Side (m/hr)</td><td>0.00000</td><td></td><td></td></tr></table> <table><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><tr><td>0.000</td><td>100.0</td><td>0.0</td><td>2.401</td><td>0.0</td><td>0.0</td></tr><tr><td>2.400</td><td>100.0</td><td>0.0</td><td></td><td></td><td></td></tr></table> <u>Complex Manhole: S13, DS/PN: S1.013</u> <u>Cellular Storage</u> <table><tr><td>Invert Level (m)</td><td>25.838</td><td>Safety Factor</td><td>2.0</td></tr><tr><td>Infiltration Coefficient Base (m/hr)</td><td>0.00000</td><td>Porosity</td><td>0.95</td></tr><tr><td>Infiltration Coefficient Side (m/hr)</td><td>0.00000</td><td></td><td></td></tr></table>			Infiltration Coefficient Base (m/hr)	0.00000	Trench Width (m)	2.7	Infiltration Coefficient Side (m/hr)	0.00000	Trench Length (m)	10.0	Safety Factor	2.0	Slope (1:X)	0.0	Porosity	0.30	Cap Volume Depth (m)	0.500	Invert Level (m)	33.925	Cap Infiltration Depth (m)	0.000	Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	80.0	Membrane Percolation (mm/hr)	1000	Length (m)	2.5	Max Percolation (l/s)	55.6	Slope (1:X)	1000.0	Safety Factor	2.0	Depression Storage (mm)	5	Porosity	0.95	Evaporation (mm/day)	3	Invert Level (m)	33.300	Cap Volume Depth (m)	0.150	Invert Level (m)	29.700	Safety Factor	2.0	Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.95	Infiltration Coefficient Side (m/hr)	0.00000			Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	80.0	0.0	3.201	0.0	0.0	3.200	80.0	0.0				Invert Level (m)	26.000	Safety Factor	2.0	Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.95	Infiltration Coefficient Side (m/hr)	0.00000			Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	100.0	0.0	2.401	0.0	0.0	2.400	100.0	0.0				Invert Level (m)	25.838	Safety Factor	2.0	Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.95	Infiltration Coefficient Side (m/hr)	0.00000		
Infiltration Coefficient Base (m/hr)	0.00000	Trench Width (m)	2.7																																																																																																																			
Infiltration Coefficient Side (m/hr)	0.00000	Trench Length (m)	10.0																																																																																																																			
Safety Factor	2.0	Slope (1:X)	0.0																																																																																																																			
Porosity	0.30	Cap Volume Depth (m)	0.500																																																																																																																			
Invert Level (m)	33.925	Cap Infiltration Depth (m)	0.000																																																																																																																			
Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	80.0																																																																																																																			
Membrane Percolation (mm/hr)	1000	Length (m)	2.5																																																																																																																			
Max Percolation (l/s)	55.6	Slope (1:X)	1000.0																																																																																																																			
Safety Factor	2.0	Depression Storage (mm)	5																																																																																																																			
Porosity	0.95	Evaporation (mm/day)	3																																																																																																																			
Invert Level (m)	33.300	Cap Volume Depth (m)	0.150																																																																																																																			
Invert Level (m)	29.700	Safety Factor	2.0																																																																																																																			
Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.95																																																																																																																			
Infiltration Coefficient Side (m/hr)	0.00000																																																																																																																					
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)																																																																																																																	
0.000	80.0	0.0	3.201	0.0	0.0																																																																																																																	
3.200	80.0	0.0																																																																																																																				
Invert Level (m)	26.000	Safety Factor	2.0																																																																																																																			
Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.95																																																																																																																			
Infiltration Coefficient Side (m/hr)	0.00000																																																																																																																					
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)																																																																																																																	
0.000	100.0	0.0	2.401	0.0	0.0																																																																																																																	
2.400	100.0	0.0																																																																																																																				
Invert Level (m)	25.838	Safety Factor	2.0																																																																																																																			
Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.95																																																																																																																			
Infiltration Coefficient Side (m/hr)	0.00000																																																																																																																					
©1982-2019 Innovyze																																																																																																																						

Walsh Associates		Page 13																																																																																																																																																
32 Lafone Street London SE1 2LX																																																																																																																																																		
Date 10/08/2021 14:16	Designed by jacqui.kantor																																																																																																																																																	
File 5359-210618-exceedance ...	Checked by																																																																																																																																																	
Innovyze	Network 2019.1																																																																																																																																																	
Cellular Storage <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>160.0</td><td>0.0</td><td>0.801</td><td>0.0</td><td>0.0</td></tr><tr><td>0.800</td><td>160.0</td><td>0.0</td><td></td><td></td><td></td></tr></tbody></table> Infiltration Trench <table><tbody><tr><td>Infiltration Coefficient Base (m/hr)</td><td>0.00000</td><td>Trench Width (m)</td><td>1.6</td></tr><tr><td>Infiltration Coefficient Side (m/hr)</td><td>0.00000</td><td>Trench Length (m)</td><td>16.0</td></tr><tr><td>Safety Factor</td><td>2.0</td><td>Slope (1:X)</td><td>0.0</td></tr><tr><td>Porosity</td><td>0.30</td><td>Cap Volume Depth (m)</td><td>0.500</td></tr><tr><td>Invert Level (m)</td><td>28.425</td><td>Cap Infiltration Depth (m)</td><td>0.000</td></tr></tbody></table> Cellular Storage Manhole: S21, DS/PN: S4.000 <table><tbody><tr><td>Invert Level (m)</td><td>33.850</td><td>Safety Factor</td><td>2.0</td></tr><tr><td>Infiltration Coefficient Base (m/hr)</td><td>0.00000</td><td>Porosity</td><td>0.95</td></tr><tr><td>Infiltration Coefficient Side (m/hr)</td><td>0.00000</td><td></td><td></td></tr></tbody></table> <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>100.0</td><td>0.0</td><td>0.451</td><td>0.0</td><td>0.0</td></tr><tr><td>0.450</td><td>100.0</td><td>0.0</td><td></td><td></td><td></td></tr></tbody></table> Porous Car Park Manhole: S23, DS/PN: S4.002 <table><tbody><tr><td>Infiltration Coefficient Base (m/hr)</td><td>0.00000</td><td>Width (m)</td><td>11.0</td></tr><tr><td>Membrane Percolation (mm/hr)</td><td>1000</td><td>Length (m)</td><td>11.0</td></tr><tr><td>Max Percolation (l/s)</td><td>33.6</td><td>Slope (1:X)</td><td>0.0</td></tr><tr><td>Safety Factor</td><td>2.0</td><td>Depression Storage (mm)</td><td>5</td></tr><tr><td>Porosity</td><td>0.30</td><td>Evaporation (mm/day)</td><td>3</td></tr><tr><td>Invert Level (m)</td><td>33.850</td><td>Cap Volume Depth (m)</td><td>0.500</td></tr></tbody></table> Cellular Storage Manhole: S16, DS/PN: S3.004 <table><tbody><tr><td>Invert Level (m)</td><td>30.000</td><td>Safety Factor</td><td>2.0</td></tr><tr><td>Infiltration Coefficient Base (m/hr)</td><td>0.00000</td><td>Porosity</td><td>0.95</td></tr><tr><td>Infiltration Coefficient Side (m/hr)</td><td>0.00000</td><td></td><td></td></tr></tbody></table> <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>260.0</td><td>0.0</td><td>3.001</td><td>0.0</td><td>0.0</td></tr><tr><td>3.000</td><td>260.0</td><td>0.0</td><td></td><td></td><td></td></tr></tbody></table> Porous Car Park Manhole: S16, DS/PN: S3.007 <table><tbody><tr><td>Infiltration Coefficient Base (m/hr)</td><td>0.00000</td><td>Invert Level (m)</td><td>33.700</td></tr><tr><td>Membrane Percolation (mm/hr)</td><td>1000</td><td>Width (m)</td><td>9.7</td></tr><tr><td>Max Percolation (l/s)</td><td>53.9</td><td>Length (m)</td><td>20.0</td></tr><tr><td>Safety Factor</td><td>2.0</td><td>Slope (1:X)</td><td>0.0</td></tr><tr><td>Porosity</td><td>0.30</td><td>Depression Storage (mm)</td><td>5</td></tr></tbody></table>			Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	160.0	0.0	0.801	0.0	0.0	0.800	160.0	0.0				Infiltration Coefficient Base (m/hr)	0.00000	Trench Width (m)	1.6	Infiltration Coefficient Side (m/hr)	0.00000	Trench Length (m)	16.0	Safety Factor	2.0	Slope (1:X)	0.0	Porosity	0.30	Cap Volume Depth (m)	0.500	Invert Level (m)	28.425	Cap Infiltration Depth (m)	0.000	Invert Level (m)	33.850	Safety Factor	2.0	Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.95	Infiltration Coefficient Side (m/hr)	0.00000			Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	100.0	0.0	0.451	0.0	0.0	0.450	100.0	0.0				Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	11.0	Membrane Percolation (mm/hr)	1000	Length (m)	11.0	Max Percolation (l/s)	33.6	Slope (1:X)	0.0	Safety Factor	2.0	Depression Storage (mm)	5	Porosity	0.30	Evaporation (mm/day)	3	Invert Level (m)	33.850	Cap Volume Depth (m)	0.500	Invert Level (m)	30.000	Safety Factor	2.0	Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.95	Infiltration Coefficient Side (m/hr)	0.00000			Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	260.0	0.0	3.001	0.0	0.0	3.000	260.0	0.0				Infiltration Coefficient Base (m/hr)	0.00000	Invert Level (m)	33.700	Membrane Percolation (mm/hr)	1000	Width (m)	9.7	Max Percolation (l/s)	53.9	Length (m)	20.0	Safety Factor	2.0	Slope (1:X)	0.0	Porosity	0.30	Depression Storage (mm)	5	©1982-2019 Innovyze	
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)																																																																																																																																													
0.000	160.0	0.0	0.801	0.0	0.0																																																																																																																																													
0.800	160.0	0.0																																																																																																																																																
Infiltration Coefficient Base (m/hr)	0.00000	Trench Width (m)	1.6																																																																																																																																															
Infiltration Coefficient Side (m/hr)	0.00000	Trench Length (m)	16.0																																																																																																																																															
Safety Factor	2.0	Slope (1:X)	0.0																																																																																																																																															
Porosity	0.30	Cap Volume Depth (m)	0.500																																																																																																																																															
Invert Level (m)	28.425	Cap Infiltration Depth (m)	0.000																																																																																																																																															
Invert Level (m)	33.850	Safety Factor	2.0																																																																																																																																															
Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.95																																																																																																																																															
Infiltration Coefficient Side (m/hr)	0.00000																																																																																																																																																	
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)																																																																																																																																													
0.000	100.0	0.0	0.451	0.0	0.0																																																																																																																																													
0.450	100.0	0.0																																																																																																																																																
Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	11.0																																																																																																																																															
Membrane Percolation (mm/hr)	1000	Length (m)	11.0																																																																																																																																															
Max Percolation (l/s)	33.6	Slope (1:X)	0.0																																																																																																																																															
Safety Factor	2.0	Depression Storage (mm)	5																																																																																																																																															
Porosity	0.30	Evaporation (mm/day)	3																																																																																																																																															
Invert Level (m)	33.850	Cap Volume Depth (m)	0.500																																																																																																																																															
Invert Level (m)	30.000	Safety Factor	2.0																																																																																																																																															
Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.95																																																																																																																																															
Infiltration Coefficient Side (m/hr)	0.00000																																																																																																																																																	
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)																																																																																																																																													
0.000	260.0	0.0	3.001	0.0	0.0																																																																																																																																													
3.000	260.0	0.0																																																																																																																																																
Infiltration Coefficient Base (m/hr)	0.00000	Invert Level (m)	33.700																																																																																																																																															
Membrane Percolation (mm/hr)	1000	Width (m)	9.7																																																																																																																																															
Max Percolation (l/s)	53.9	Length (m)	20.0																																																																																																																																															
Safety Factor	2.0	Slope (1:X)	0.0																																																																																																																																															
Porosity	0.30	Depression Storage (mm)	5																																																																																																																																															

Walsh Associates		Page 14																																																						
32 Lafone Street London SE1 2LX																																																								
Date 10/08/2021 14:16 File 5359-210618-exceedance ...	Designed by jacqui.kantor Checked by																																																							
Innovyze Network 2019.1																																																								
<u>Porous Car Park Manhole: S16, DS/PN: S3.007</u> Evaporation (mm/day) 3 Cap Volume Depth (m) 0.300 <u>Cellular Storage Manhole: S29, DS/PN: S5.000</u> Invert Level (m) 33.850 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.00000 <table><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><tr><td>0.000</td><td>139.0</td><td>0.0</td><td>0.451</td><td>0.0</td><td>0.0</td></tr><tr><td>0.450</td><td>139.0</td><td>0.0</td><td></td><td></td><td></td></tr></table> <u>Cellular Storage Manhole: S17, DS/PN: S5.001</u> Invert Level (m) 33.850 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.00000 <table><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><tr><td>0.000</td><td>421.0</td><td>0.0</td><td>0.451</td><td>0.0</td><td>0.0</td></tr><tr><td>0.450</td><td>421.0</td><td>0.0</td><td></td><td></td><td></td></tr></table> <u>Cellular Storage Manhole: S21, DS/PN: S8.001</u> Invert Level (m) 26.600 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.00000 <table><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><tr><td>0.000</td><td>140.0</td><td>300.0</td><td>0.801</td><td>0.0</td><td>364.0</td></tr><tr><td>0.800</td><td>140.0</td><td>364.0</td><td></td><td></td><td></td></tr></table>			Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	139.0	0.0	0.451	0.0	0.0	0.450	139.0	0.0				Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	421.0	0.0	0.451	0.0	0.0	0.450	421.0	0.0				Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	140.0	300.0	0.801	0.0	364.0	0.800	140.0	364.0			
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)																																																			
0.000	139.0	0.0	0.451	0.0	0.0																																																			
0.450	139.0	0.0																																																						
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)																																																			
0.000	421.0	0.0	0.451	0.0	0.0																																																			
0.450	421.0	0.0																																																						
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)																																																			
0.000	140.0	300.0	0.801	0.0	364.0																																																			
0.800	140.0	364.0																																																						
©1982-2019 Innovyze																																																								

Walsh Associates		Page 15							
32 Lafone Street London SE1 2LX									
Date 10/08/2021 14:16		Designed by jacqui.kantor							
File 5359-210618-exceedance ...		Checked by							
Innovyze		Network 2019.1							
Summary Wizard of 15 minute 100 year Winter I+40% for Storm									
Simulation Criteria									
Areal Reduction Factor 1.000		Additional Flow - % of Total Flow 0.000							
Hot Start (mins) 0		MADD Factor * 10m³/ha Storage 2.000							
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 16							
Number of Online Controls 9		Number of Time/Area Diagrams 0							
Number of Offline Controls 7		Number of Real Time Controls 0							
Synthetic Rainfall Details									
Rainfall Model		FEH							
FEH Rainfall Version		2013							
Site Location GB 528850 184100 TQ 28850 84100									
Data Type		Catchment							
Cv (Summer)		0.750							
Cv (Winter)		0.840							
Margin for Flood Risk Warning (mm)		300.0							
Analysis Timestep 2.5 Second Increment (Extended)									
DTS Status		ON							
DVD Status		ON							
Inertia Status		OFF							
Profile(s)		Summer and Winter							
Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440									
Return Period(s) (years)		2, 30, 100							
Climate Change (%)		40, 40, 40							
Water Surcharged Flooded Pipe									
PN	US/MH Name	Storm Rank	Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status
S1.000	S2	1	34.070	0.070	0.000	1.06		87.4	SURCHARGED
S1.001	S1	1	33.653	-0.072	0.000	0.99		106.5	OK
S1.002	S2	2	31.024	0.553	0.000	0.55		60.5	SURCHARGED
S1.003	S3	1	31.020	0.659	0.000	0.92		104.0	SURCHARGED
S2.000	S5	54	34.136	-0.164	0.000	0.00	0.0	0.0	OK
S2.001	S6	6	34.262	0.012	0.000	1.04	19.2	9.1	FLOOD RISK
S2.002	S6	1	34.042	0.142	0.000	1.31	27.9	19.4	SURCHARGED
S2.003	S7	15	33.909	0.309	0.000	1.55		17.0	SURCHARGED
S2.004	S8	8	33.714	0.264	0.000	1.29		37.5	SURCHARGED
S1.004	S3	1	31.019	0.868	0.000	2.13		127.2	SURCHARGED
S1.005	S4	25	30.994	0.910	0.000	0.29		17.7	SURCHARGED
S1.006	S5	52	31.003	1.544	0.000	0.41		12.9	SURCHARGED
S1.007	S6	1	30.121	1.071	0.000	3.17		120.1	SURCHARGED
S1.008	S7	1	26.953	0.653	0.000	2.70		122.2	SURCHARGED
S1.009	S8	1	26.870	0.592	0.000	2.26		121.3	SURCHARGED
S1.010	S11	6	26.823	0.506	0.000	0.48		29.4	SURCHARGED
S1.011	S9	13	27.087	0.992	0.000	0.39		19.4	SURCHARGED
©1982-2019 Innovyze									

Walsh Associates		Page 16
32 Lafone Street London SE1 2LX		
Date 10/08/2021 14:16	Designed by jacqui.kantor	
File 5359-210618-exceedance ...	Checked by	
Innovyze	Network 2019.1	

Summary Wizard of 15 minute 100 year Winter I+40% for Storm

PN	US/MH Name	Storm Rank	Water	Surcharged	Flooded	Flow / Cap.	Overflow (l/s)	Pipe	Status
			Level (m)	Depth (m)	Volume (m³)			Flow (l/s)	
S1.012	S10	13	26.188	0.125	0.000	0.71		19.3	SURCHARGED
S1.013	S13	39	26.164	0.140	0.000	0.55		12.8	SURCHARGED
S1.014	S11	41	26.148	0.158	0.000	0.40		12.7	SURCHARGED
S3.000	S12	1	31.111	-0.264	0.000	0.10		11.2	OK
S3.001	S22	1	31.111	-0.184	0.000	0.11		12.7	OK
S3.002	S13	1	31.110	-0.105	0.000	0.65		162.3	OK
S4.000	S21	15	34.176	0.101	0.000	0.44	109.9	13.4	FLOOD RISK
S4.001	S22	15	34.170	0.170	0.000	1.13		13.5	SURCHARGED
S4.002	S23	1	34.151	0.426	0.000	3.25		38.2	FLOOD RISK
S3.003	S26	2	31.097	0.302	0.000	0.76		190.6	SURCHARGED
S3.004	S16	43	31.059	0.684	0.000	0.08		13.3	SURCHARGED
S3.005	S14	1	32.053	2.958	0.000	0.23		25.1	SURCHARGED
S3.006	S15	1	32.240	3.223	0.000	0.26		28.0	SURCHARGED
S3.007	S16	1	32.311	3.352	0.000	0.17		17.1	SURCHARGED
S5.000	S29	11	34.027	-0.123	0.000	0.11		3.0	OK
S5.001	S17	12	34.075	-0.037	0.000	0.04	4.6	2.9	OK
S5.002	S18	19	34.226	0.276	0.000	0.03		3.0	FLOOD RISK
S6.000	S33	2	32.255	2.155	0.000	1.56		8.6	SURCHARGED
S3.008	S17	13	32.354	3.460	0.000	0.12		10.0	SURCHARGED
S7.000	S19	1	28.174	0.274	0.000	0.66		13.6	SURCHARGED
S7.001	S20	1	27.950	0.985	0.000	0.56		26.0	FLOOD RISK
S7.002	S36	1	27.877	1.102	0.000	1.01		27.7	FLOOD RISK
S8.000	S37	18	26.947	0.047	0.000	0.00	0.0	0.0	SURCHARGED
S8.001	S21	51	26.947	-0.578	0.000	0.00		0.0	OK
S7.003	S21	1	27.821	1.134	0.000	0.16		2.0	SURCHARGED
S7.004	S39	1	26.459	-0.187	0.000	0.07		2.0	OK

Walsh Associates		Page 17
32 Lafone Street London SE1 2LX		
Date 10/08/2021 14:16	Designed by jacqui.kantor	
File 5359-210618-exceedance ...	Checked by	
Innovyze	Network 2019.1	

Summary Wizard of 480 minute 100 year Winter I+40% for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
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	16
Number of Online Controls	9	Number of Time/Area Diagrams	0
Number of Offline Controls	7	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH
FEH Rainfall Version	2013
Site Location	GB 528850 184100 TQ 28850 84100
Data Type	Catchment
Cv (Summer)	0.750
Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	ON
Inertia Status	OFF

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years)	2, 30, 100
Climate Change (%)	40, 40, 40

	US/MH	Storm	Water Level	Surcharged Depth	Flooded Volume	Pipe Flow / Overflow	Pipe Flow	Status
PN	Name	Rank	(m)	(m)	(m³)	Cap. (l/s)	(l/s)	
S1.000	S2	32	33.772	-0.228	0.000	0.13	11.0	OK
S1.001	S1	32	33.438	-0.287	0.000	0.13	13.6	OK
S1.002	S2	37	33.157	2.686	0.000	0.11	11.8	SURCHARGED
S1.003	S3	39	33.153	2.792	0.000	0.20	23.0	SURCHARGED
S2.000	S5	4	34.208	-0.092	0.000	0.32	1.2 2.4	FLOOD RISK
S2.001	S6	23	34.173	-0.077	0.000	0.48	6.7 4.2	OK
S2.002	S6	24	33.828	-0.072	0.000	0.53	8.4 7.9	OK
S2.003	S7	21	33.639	0.039	0.000	1.21	13.3	SURCHARGED
S2.004	S8	22	33.397	-0.053	0.000	0.74	21.6	OK
S1.004	S3	31	33.145	2.994	0.000	0.54	32.0	SURCHARGED
S1.005	S4	23	33.129	3.045	0.000	0.29	17.8	SURCHARGED
S1.006	S5	2	33.110	3.651	0.000	0.58	18.1	SURCHARGED
S1.007	S6	28	28.967	-0.083	0.000	0.71	27.0	OK
S1.008	S7	29	28.402	2.102	0.000	0.61	27.4	SURCHARGED
S1.009	S8	29	28.395	2.117	0.000	0.51	27.2	SURCHARGED
S1.010	S11	24	28.384	2.067	0.000	0.35	21.3	SURCHARGED
S1.011	S9	12	28.374	2.279	0.000	0.39	19.4	SURCHARGED

©1982-2019 Innovyze

Walsh Associates		Page 18
32 Lafone Street London SE1 2LX		
Date 10/08/2021 14:16	Designed by jacqui.kantor	
File 5359-210618-exceedance ...	Checked by	
Innovyze	Network 2019.1	

Summary Wizard of 480 minute 100 year Winter I+40% for Storm

PN	US/MH Name	Storm Rank	Water	Surcharged	Flooded	Flow / Cap.	Overflow (l/s)	Pipe	Status
			Level (m)	Depth (m)	Volume (m³)			Flow (l/s)	
S1.012	S10	12	27.979	1.916	0.000	0.71		19.4	SURCHARGED
S1.013	S13	2	27.956	1.932	0.000	0.80		18.4	SURCHARGED
S1.014	S11	2	27.932	1.942	0.000	0.57		18.4	SURCHARGED
S3.000	S12	36	33.407	2.032	0.000	0.01		1.1	FLOOD RISK
S3.001	S22	35	33.407	2.112	0.000	0.01		1.2	SURCHARGED
S3.002	S13	33	34.020	2.805	0.000	0.06		16.0	FLOOD RISK
S4.000	S21	8	34.110	0.035	0.000	0.51	5.5	15.5	SURCHARGED
S4.001	S22	8	34.079	0.079	0.000	1.31		15.5	SURCHARGED
S4.002	S23	24	34.026	0.301	0.000	1.83		21.5	FLOOD RISK
S3.003	S26	30	34.019	3.224	0.000	0.15		36.5	SURCHARGED
S3.004	S16	2	34.017	3.642	0.000	0.12		19.0	SURCHARGED
S3.005	S14	9	34.012	4.917	0.000	0.18		19.2	FLOOD RISK
S3.006	S15	7	34.010	4.993	0.000	0.19		20.6	FLOOD RISK
S3.007	S16	6	34.007	5.048	0.000	0.13		13.0	FLOOD RISK
S5.000	S29	20	34.113	-0.037	0.000	0.09		2.5	OK
S5.001	S17	26	34.111	-0.001	0.000	0.03	5.3	2.7	OK
S5.002	S18	16	34.115	0.165	0.000	0.03		3.0	SURCHARGED
S6.000	S33	43	33.992	3.892	0.000	0.16		0.9	SURCHARGED
S3.008	S17	1	34.011	5.117	0.000	0.16		14.0	SURCHARGED
S7.000	S19	32	27.779	-0.121	0.000	0.08		1.7	OK
S7.001	S20	28	27.534	0.569	0.000	0.07		3.3	SURCHARGED
S7.002	S36	28	27.528	0.753	0.000	0.12		3.3	SURCHARGED
S8.000	S37	2	27.390	0.490	0.000	0.00	0.0	0.0	SURCHARGED
S8.001	S21	2	27.390	-0.135	0.000	0.02		1.6	OK
S7.003	S21	27	27.525	0.838	0.000	0.14		1.8	SURCHARGED
S7.004	S39	27	26.456	-0.190	0.000	0.06		1.8	OK

Walsh Associates		Page 19
32 Lafone Street London SE1 2LX		
Date 10/08/2021 14:16	Designed by jacqui.kantor	
File 5359-210618-exceedance ...	Checked by	
Innovyze	Network 2019.1	

Summary Wizard of 960 minute 100 year Winter I+40% for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
 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 16
 Number of Online Controls 9 Number of Time/Area Diagrams 0
 Number of Offline Controls 7 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH
 FEH Rainfall Version 2013
 Site Location GB 528850 184100 TQ 28850 84100
 Data Type Catchment
 Cv (Summer) 0.750
 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0
 Analysis Timestep 2.5 Second Increment (Extended)
 DTS Status ON
 DVD Status ON
 Inertia Status OFF

Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
 Return Period(s) (years) 2, 30, 100
 Climate Change (%) 40, 40, 40

WARNING: The analysis maybe unstable. Please see the method of analysis help for more details.

PN	US/MH Name	Storm Rank	Water			Surcharged		Flooded		Pipe	Status
			Level (m)	Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)	Flow (l/s)			
S1.000	S2	41	33.754	-0.246	0.000	0.07			6.1	OK	
S1.001	S1	41	33.415	-0.310	0.000	0.07			7.6	OK	
S1.002	S2	42	32.507	2.036	0.000	0.08			8.8	SURCHARGED	
S1.003	S3	44	32.504	2.143	0.000	0.16			18.3	SURCHARGED	
S2.000	S5	11	34.195	-0.105	0.000	0.20	0.7	1.5		OK	
S2.001	S6	30	34.156	-0.094	0.000	0.30	4.2	2.6		OK	
S2.002	S6	31	33.809	-0.091	0.000	0.33	5.3	4.9		OK	
S2.003	S7	28	33.545	-0.055	0.000	0.73		8.0		OK	
S2.004	S8	30	33.371	-0.079	0.000	0.46		13.3		OK	
S1.004	S3	42	32.497	2.346	0.000	0.36		21.5		SURCHARGED	
S1.005	S4	38	32.482	2.398	0.000	0.27		16.5		SURCHARGED	
S1.006	S5	5	32.475	3.016	0.000	0.53		16.6		SURCHARGED	
S1.007	S6	41	28.946	-0.104	0.000	0.56		21.3		OK	
S1.008	S7	41	28.532	2.232	0.000	0.47		21.5		SURCHARGED	

Walsh Associates		Page 20
32 Lafone Street London SE1 2LX		
Date 10/08/2021 14:16	Designed by jacqui.kantor	
File 5359-210618-exceedance ...	Checked by	
Innovyze	Network 2019.1	

Summary Wizard of 960 minute 100 year Winter I+40% for Storm

PN	US/MH Name	Storm Rank	Water		Surcharged		Flooded		Pipe		Status
			Level (m)	Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)	Flow (l/s)			
S1.009	S8	41	28.525	2.247	0.000	0.40		21.4		SURCHARGED	
S1.010	S11	30	28.514	2.197	0.000	0.31		18.6		SURCHARGED	
S1.011	S9	30	28.503	2.408	0.000	0.37		18.4		SURCHARGED	
S1.012	S10	29	28.058	1.995	0.000	0.68		18.4		SURCHARGED	
S1.013	S13	1	28.034	2.010	0.000	0.83		19.2		SURCHARGED	
S1.014	S11	1	28.009	2.019	0.000	0.60		19.2		FLOOD RISK	
S3.000	S12	10	33.601	2.226	0.682	0.06		6.3		FLOOD	
S3.001	S22	7	33.631	2.336	0.000	0.07		7.8		SURCHARGED	
S3.002	S13	43	33.922	2.707	0.000	0.04		8.9		FLOOD RISK	
S4.000	S21	28	34.017	-0.058	0.000	0.39	2.6	11.9		OK	
S4.001	S22	25	33.994	-0.006	0.000	1.00		11.9		OK	
S4.002	S23	34	33.933	0.208	0.000	1.39		16.3		SURCHARGED	
S3.003	S26	38	33.921	3.126	0.000	0.10		25.0		SURCHARGED	
S3.004	S16	1	33.917	3.542	0.000	0.12		19.1		SURCHARGED	
S3.005	S14	12	33.913	4.818	0.000	0.16		17.0		FLOOD RISK	
S3.006	S15	10	33.908	4.891	0.000	0.17		17.8		FLOOD RISK	
S3.007	S16	7	33.905	4.946	0.000	0.12		12.7		FLOOD RISK	
S5.000	S29	29	34.021	-0.129	0.000	0.07		1.9		OK	
S5.001	S17	37	34.019	-0.093	0.000	0.03	2.5	2.5		OK	
S5.002	S18	34	34.021	0.071	0.000	0.03		3.0		SURCHARGED	
S6.000	S33	29	33.886	3.786	0.000	0.17		0.9		SURCHARGED	
S3.008	S17	2	33.918	5.024	0.000	0.16		13.8		SURCHARGED	
S7.000	S19	41	27.771	-0.129	0.000	0.05		1.0		OK	
S7.001	S20	39	27.406	0.441	0.000	0.04		1.9		SURCHARGED	
S7.002	S36	40	27.402	0.627	0.000	0.07		1.9		SURCHARGED	
S8.000	S37	7	27.309	0.409	0.000	0.00	0.0	0.0		SURCHARGED	
S8.001	S21	4	27.309	-0.216	0.000	0.01		0.6		OK	
S7.003	S21	43	27.400	0.713	0.000	0.13		1.7		SURCHARGED	
S7.004	S39	41	26.455	-0.191	0.000	0.06		1.7		OK	