

Powell Tolner Associates		Page 1
29 Red Lion Street Chesham Bucks HP5 1EJ	Grimshaw Lane Manchester	
Date 13/08/2021 16:07 File SW.MDX	Designed by LB Checked by	
Innovyze	Network 2020.1	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for 9762 - SW

Pipe Sizes PTA Manhole Sizes PTA

FSR Rainfall Model - England and Wales

Return Period (years)	1	PIMP (%)	100
M5-60 (mm)	18.100	Add Flow / Climate Change (%)	0
Ratio R	0.352	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.000
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for 9762 - SW

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	1.481	4-8	5.062	8-12	1.298

Total Area Contributing (ha) = 7.841

Total Pipe Volume (m³) = 304.011

Network Design Table for 9762 - SW

« - Indicates pipe capacity < flow

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S1.000	51.100	0.514	99.5	0.112	3.00	0.0	0.600	o	225	Pipe/Conduit	
S2.000	34.370	0.451	76.2	0.137	3.00	0.0	0.600	o	300	Pipe/Conduit	
S2.001	44.923	0.299	150.3	0.273	0.00	0.0	0.600	o	375	Pipe/Conduit	
S2.002	70.916	0.461	153.8	0.123	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)
S1.000	50.00	3.65	72.000	0.112	0.0	0.0	0.0	1.31	52.1	15.2
S2.000	50.00	3.32	73.000	0.137	0.0	0.0	0.0	1.80	127.4	18.5
S2.001	50.00	3.83	72.474	0.410	0.0	0.0	0.0	1.48	163.0	55.5
S2.002	47.99	4.64	72.175	0.533	0.0	0.0	0.0	1.46	161.1	69.3

Powell Tolner Associates											Page 2	
29 Red Lion Street Chesham Bucks HP5 1EJ						Grimshaw Lane Manchester						
Date 13/08/2021 16:07 File SW.MDX						Designed by LB Checked by						
Innovyze						Network 2020.1						
Network Design Table for 9762 - SW												
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	
S2.003	21.608	2.037	10.6	0.169	0.00	0.0	0.600	o	375	Pipe/Conduit		
S2.004	47.640	0.115	414.3	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit		
S1.001	27.456	0.115	238.7	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit		
S3.000	49.000	0.426	115.0	0.109	3.00	0.0	0.600	o	300	Pipe/Conduit		
S4.000	20.000	0.426	46.9	0.218	3.00	0.0	0.600	o	300	Pipe/Conduit		
S3.001	30.390	0.203	149.7	0.225	0.00	0.0	0.600	o	450	Pipe/Conduit		
S3.002	35.707	0.357	100.0	0.074	0.00	0.0	0.600	o	450	Pipe/Conduit		
S5.000	34.370	0.361	95.2	0.134	3.00	0.0	0.600	o	300	Pipe/Conduit		
S5.001	34.814	0.241	144.5	0.266	0.00	0.0	0.600	o	375	Pipe/Conduit		
S5.002	55.079	0.366	150.7	0.201	0.00	0.0	0.600	o	375	Pipe/Conduit		
S1.002	54.519	0.352	154.9	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit		
S6.000	37.202	0.357	104.2	0.193	3.00	0.0	0.600	o	300	Pipe/Conduit		
S6.001	37.671	0.301	125.0	0.341	0.00	0.0	0.600	o	450	Pipe/Conduit		
S6.002	76.344	0.477	159.9	0.221	0.00	0.0	0.600	o	450	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)		
S2.003	47.72	4.70	71.714	0.702	0.0	0.0	0.0	5.59	617.4	90.8		
S2.004	44.34	5.60	69.677	0.702	0.0	0.0	0.0	0.88	97.6	90.8		
S1.001	43.03	5.99	69.562	0.815	0.0	0.0	0.0	1.17	129.0	94.9		
S3.000	50.00	3.56	72.000	0.109	0.0	0.0	0.0	1.47	103.6	14.8		
S4.000	50.00	3.14	72.000	0.218	0.0	0.0	0.0	2.30	162.6	29.5		
S3.001	50.00	3.86	71.424	0.552	0.0	0.0	0.0	1.66	263.9	74.7		
S3.002	50.00	4.16	71.500	0.625	0.0	0.0	0.0	2.03	323.3	84.7		
S5.000	50.00	3.36	73.000	0.134	0.0	0.0	0.0	1.61	113.9	18.1		
S5.001	50.00	3.74	72.564	0.400	0.0	0.0	0.0	1.51	166.3	54.1		
S5.002	49.15	4.36	72.323	0.601	0.0	0.0	0.0	1.47	162.8	80.0		
S1.002	40.85	6.71	69.241	2.041	0.0	0.0	0.0	1.26	89.1«	225.7		
S6.000	50.00	3.40	71.200	0.193	0.0	0.0	0.0	1.54	108.9	26.2		
S6.001	50.00	3.75	70.693	0.535	0.0	0.0	0.0	1.82	289.0	72.4		
S6.002	48.39	4.54	70.392	0.756	0.0	0.0	0.0	1.61	255.3	99.0		
©1982-2020 Innovyze												

Powell Tolner Associates										Page 3	
29 Red Lion Street Chesham Bucks HP5 1EJ						Grimshaw Lane Manchester					
Date 13/08/2021 16:07 File SW.MDX						Designed by LB Checked by					
Innovyze						Network 2020.1					
<u>Network Design Table for 9762 - SW</u>											
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
S7.000	13.250	0.194	68.3	0.053	3.00	0.0	0.600	o	150	Pipe/Conduit	
S1.003	44.696	0.149	300.0	0.276	0.00	0.0	0.600	o	600	Pipe/Conduit	
S8.000	61.091	0.309	197.7	0.131	3.00	0.0	0.600	o	300	Pipe/Conduit	
S9.000	38.578	0.360	107.2	0.188	3.00	0.0	0.600	o	375	Pipe/Conduit	
S9.001	48.054	0.233	206.2	0.332	0.00	0.0	0.600	o	375	Pipe/Conduit	
S9.002	68.686	0.339	202.6	0.167	0.00	0.0	0.600	o	450	Pipe/Conduit	
S10.000	31.794	0.563	56.5	0.069	3.00	0.0	0.600	o	300	Pipe/Conduit	
S10.001	21.157	0.205	103.2	0.161	0.00	0.0	0.600	o	450	Pipe/Conduit	
S10.002	30.078	0.270	111.4	0.176	0.00	0.0	0.600	o	450	Pipe/Conduit	
S9.003	30.472	0.154	197.6	0.087	0.00	0.0	0.600	o	450	Pipe/Conduit	
S1.004	45.004	0.167	269.5	0.222	0.00	0.0	0.600	o	600	Pipe/Conduit	
S11.000	45.533	0.512	88.9	0.036	5.00	0.0	0.600	o	375	Pipe/Conduit	
S1.005	59.032	0.197	299.7	0.420	0.00	0.0	0.600	o	600	Pipe/Conduit	
S1.006	15.704	0.052	302.0	0.409	0.00	0.0	0.600	o	600	Pipe/Conduit	
<u>Network Results Table</u>											
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)	
S7.000	50.00	3.18	70.500	0.053		0.0	0.0	0.0	1.22	21.5	7.2
S1.003	39.39	7.24	67.973	3.126		0.0	0.0	0.0	1.40	396.1	333.5
S8.000	50.00	3.91	70.200	0.131		0.0	0.0	0.0	1.11	78.8	17.7
S9.000	50.00	3.37	71.200	0.188		0.0	0.0	0.0	1.75	193.3	25.4
S9.001	50.00	4.00	70.840	0.520		0.0	0.0	0.0	1.26	138.9	70.3
S9.002	47.29	4.81	70.532	0.687		0.0	0.0	0.0	1.42	226.6	88.0
S10.000	50.00	3.25	70.250	0.069		0.0	0.0	0.0	2.10	148.2	9.3
S10.001	50.00	3.43	69.537	0.230		0.0	0.0	0.0	2.00	318.3	31.1
S10.002	50.00	3.69	69.332	0.405		0.0	0.0	0.0	1.93	306.3	54.9
S9.003	45.92	5.16	69.062	1.180		0.0	0.0	0.0	1.44	229.4	146.7
S1.004	38.11	7.75	67.674	4.659		0.0	0.0	0.0	1.48	418.1«	480.9
S11.000	45.06	5.39	69.750	0.036		0.0	0.0	0.0	1.92	212.3	4.3
S1.005	36.50	8.45	67.282	5.114		0.0	0.0	0.0	1.40	396.3«	505.5
S1.006	36.09	8.64	66.935	5.523		0.0	0.0	0.0	1.40	394.7«	539.8
©1982-2020 Innovyze											

Powell Tolner Associates										Page 4	
29 Red Lion Street Chesham Bucks HP5 1EJ					Grimshaw Lane Manchester						
Date 13/08/2021 16:07 File SW.MDX					Designed by LB Checked by						
Innovyze					Network 2020.1						
Network Design Table for 9762 - SW											
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
S12.000	45.826	0.573	80.0	0.069	3.00	0.0	0.600	o	225	Pipe/Conduit	
S12.001	5.117	0.051	100.0	0.073	0.00	0.0	0.600	o	225	Pipe/Conduit	
S13.000	31.775	0.318	100.0	0.046	3.00	0.0	0.600	o	225	Pipe/Conduit	
S12.002	45.743	0.305	150.0	0.051	0.00	0.0	0.600	o	300	Pipe/Conduit	
S14.000	28.334	0.328	86.4	0.066	3.00	0.0	0.600	o	375	Pipe/Conduit	
S14.001	32.588	0.328	99.4	0.062	0.00	0.0	0.600	o	375	Pipe/Conduit	
S14.002	28.649	0.286	100.2	0.049	0.00	0.0	0.600	o	375	Pipe/Conduit	
S12.003	39.735	0.603	65.9	0.056	0.00	0.0	0.600	o	375	Pipe/Conduit	
S15.000	45.362	0.562	80.7	0.058	3.00	0.0	0.600	o	225	Pipe/Conduit	
S15.001	33.696	0.335	100.6	0.079	0.00	0.0	0.600	o	225	Pipe/Conduit	
S15.002	26.771	0.315	85.0	0.086	0.00	0.0	0.600	o	300	Pipe/Conduit	
S15.003	13.901	0.074	187.9	0.009	0.00	0.0	0.600	o	375	Pipe/Conduit	
S15.004	18.511	0.183	101.2	0.004	0.00	0.0	0.600	o	375	Pipe/Conduit	
S16.000	16.889	0.152	111.1	0.073	3.00	0.0	0.600	o	225	Pipe/Conduit	
S16.001	35.495	1.958	18.1	0.043	0.00	0.0	0.600	o	300	Pipe/Conduit	
Network Results Table											
PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)	
S12.000	50.00	3.52	68.397	0.069	0.0	0.0	0.0	1.46	58.2	9.3	
S12.001	50.00	3.59	67.824	0.142	0.0	0.0	0.0	1.31	52.0	19.3	
S13.000	50.00	3.41	70.000	0.046	0.0	0.0	0.0	1.31	52.0	6.3	
S12.002	49.97	4.18	67.698	0.240	0.0	0.0	0.0	1.28	90.6	32.4	
S14.000	50.00	3.24	68.715	0.066	0.0	0.0	0.0	1.95	215.4	8.9	
S14.001	50.00	3.54	68.387	0.127	0.0	0.0	0.0	1.82	200.8	17.2	
S14.002	50.00	3.80	68.059	0.176	0.0	0.0	0.0	1.81	199.9	23.8	
S12.003	48.66	4.48	67.318	0.472	0.0	0.0	0.0	2.24	246.9	62.2	
S15.000	50.00	3.52	70.500	0.058	0.0	0.0	0.0	1.46	57.9	7.8	
S15.001	50.00	3.95	69.938	0.137	0.0	0.0	0.0	1.30	51.8	18.5	
S15.002	49.84	4.21	69.528	0.223	0.0	0.0	0.0	1.71	120.6	30.1	
S15.003	49.05	4.39	69.138	0.232	0.0	0.0	0.0	1.32	145.6	30.8	
S15.004	48.32	4.56	69.064	0.236	0.0	0.0	0.0	1.80	199.0	30.9	
S16.000	50.00	3.23	70.700	0.073	0.0	0.0	0.0	1.24	49.3	9.9	
S16.001	50.00	3.39	70.473	0.116	0.0	0.0	0.0	3.71	262.3	15.7	
©1982-2020 Innovyze											

Powell Tolner Associates										Page 5	
29 Red Lion Street Chesham Bucks HP5 1EJ					Grimshaw Lane Manchester						
Date 13/08/2021 16:07 File SW.MDX					Designed by LB Checked by						
Innovyze					Network 2020.1						
<u>Network Design Table for 9762 - SW</u>											
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
S15.005	6.363	0.068	93.6	0.067	0.00	0.0	0.600	o	375	Pipe/Conduit	
S15.006	12.004	0.120	100.0	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
S15.007	16.234	1.829	8.9	0.000	0.00	0.0	0.600	o	545	Pipe/Conduit	
S1.007	46.248	0.154	300.0	0.098	0.00	0.0	0.600	o	750	Pipe/Conduit	
S17.000	22.605	0.226	100.0	0.047	3.00	0.0	0.600	o	150	Pipe/Conduit	
S17.001	14.717	0.149	98.8	0.039	0.00	0.0	0.600	o	225	Pipe/Conduit	
S17.002	23.769	0.212	112.1	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S17.003	10.624	3.119	3.4	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S1.008	18.014	0.060	300.0	0.132	0.00	0.0	0.600	o	750	Pipe/Conduit	
S18.000	40.375	0.364	110.9	0.042	5.00	0.0	0.600	o	225	Pipe/Conduit	
S1.009	18.838	0.063	300.0	0.000	0.00	0.0	0.600	o	750	Pipe/Conduit	
S19.000	27.034	0.270	100.1	0.046	3.00	0.0	0.600	o	150	Pipe/Conduit	
S19.001	42.616	0.426	100.0	0.050	0.00	0.0	0.600	o	225	Pipe/Conduit	
S19.002	41.865	0.378	110.8	0.056	0.00	0.0	0.600	o	300	Pipe/Conduit	
<u>Network Results Table</u>											
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)	
S15.005	48.08	4.61	68.440	0.420	0.0	0.0	0.0	1.87	206.9	54.6	
S15.006	47.67	4.71	68.297	0.420	0.0	0.0	0.0	2.03	323.3	54.6	
S15.007	47.53	4.75	68.082	0.420	0.0	0.0	0.0	7.73	1802.8	54.6	
S1.007	35.10	9.12	66.048	6.512	0.0	0.0	0.0	1.61	711.5	619.0	
S17.000	50.00	3.37	70.200	0.047	0.0	0.0	0.0	1.00	17.8	6.3	
S17.001	50.00	3.56	69.899	0.086	0.0	0.0	0.0	1.32	52.3	11.7	
S17.002	50.00	3.88	69.750	0.086	0.0	0.0	0.0	1.23	49.1	11.7	
S17.003	50.00	3.91	69.538	0.086	0.0	0.0	0.0	7.14	283.9	11.7	
S1.008	34.73	9.30	65.894	6.729	0.0	0.0	0.0	1.61	711.5	633.0	
S18.000	44.53	5.54	69.250	0.042	0.0	0.0	0.0	1.24	49.3	5.1	
S1.009	34.36	9.50	65.834	6.772	0.0	0.0	0.0	1.61	711.5	633.0	
S19.000	50.00	3.45	70.200	0.046	0.0	0.0	0.0	1.00	17.7	6.3	
S19.001	50.00	3.99	69.855	0.097	0.0	0.0	0.0	1.31	52.0	13.1	
S19.002	48.74	4.46	69.354	0.153	0.0	0.0	0.0	1.49	105.6	20.1	
©1982-2020 Innovyze											

Powell Tolner Associates										Page 6	
29 Red Lion Street Chesham Bucks HP5 1EJ					Grimshaw Lane Manchester						
Date 13/08/2021 16:07 File SW.MDX					Designed by LB Checked by						
Innovyze					Network 2020.1						
Network Design Table for 9762 - SW											
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
S1.010	33.983	0.113	300.7	0.131	0.00	0.0	0.600	o	525	Pipe/Conduit	
S20.000	36.064	0.451	80.0	0.030	3.00	0.0	0.600	o	150	Pipe/Conduit	
S20.001	29.852	0.299	99.8	0.052	0.00	0.0	0.600	o	225	Pipe/Conduit	
S20.002	28.645	0.191	150.0	0.028	0.00	0.0	0.600	o	225	Pipe/Conduit	
S21.000	25.600	0.320	80.0	0.019	3.00	0.0	0.600	o	150	Pipe/Conduit	
S21.001	35.060	0.351	99.9	0.032	0.00	0.0	0.600	o	225	Pipe/Conduit	
S21.002	28.941	0.365	79.3	0.118	0.00	0.0	0.600	o	300	Pipe/Conduit	
S22.000	15.105	0.189	79.9	0.007	3.00	0.0	0.600	o	150	Pipe/Conduit	
S22.001	29.679	0.297	99.9	0.015	0.00	0.0	0.600	o	225	Pipe/Conduit	
S22.002	28.373	0.189	150.1	0.086	0.00	0.0	0.600	o	300	Pipe/Conduit	
S21.003	21.137	0.141	149.9	0.086	0.00	0.0	0.600	o	375	Pipe/Conduit	
S21.004	5.774	0.038	151.9	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
S23.000	29.448	0.196	150.2	0.023	3.00	0.0	0.600	o	150	Pipe/Conduit	
S21.005	36.465	0.623	58.5	0.038	0.00	0.0	0.600	o	300	Pipe/Conduit	
S20.003	13.328	0.167	80.0	0.032	0.00	0.0	0.600	o	300	Pipe/Conduit	
Network Results Table											
PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)	
S1.010	33.54	9.94	65.771	7.055		0.0	0.0	0.0	1.29	278.5	640.9
S20.000	50.00	3.53	68.500	0.030	0.0	0.0	0.0	1.13	19.9	4.1	
S20.001	50.00	3.91	67.974	0.083	0.0	0.0	0.0	1.31	52.0	11.2	
S20.002	49.16	4.36	67.675	0.111	0.0	0.0	0.0	1.07	42.4	14.8	
S21.000	50.00	3.38	68.500	0.019	0.0	0.0	0.0	1.12	19.9	2.6	
S21.001	50.00	3.83	68.105	0.051	0.0	0.0	0.0	1.31	52.0	7.0	
S21.002	50.00	4.10	67.679	0.169	0.0	0.0	0.0	1.77	124.9	22.9	
S22.000	50.00	3.22	68.500	0.007	0.0	0.0	0.0	1.13	19.9	0.9	
S22.001	50.00	3.60	68.236	0.022	0.0	0.0	0.0	1.31	52.0	3.0	
S22.002	50.00	3.97	67.864	0.108	0.0	0.0	0.0	1.28	90.5	14.6	
S21.003	49.27	4.34	67.239	0.364	0.0	0.0	0.0	1.48	163.2	48.5	
S21.004	48.98	4.40	67.098	0.364	0.0	0.0	0.0	1.47	162.1	48.5	
S23.000	50.00	3.60	68.500	0.023	0.0	0.0	0.0	0.82	14.4	3.1	
S21.005	47.73	4.70	67.060	0.425	0.0	0.0	0.0	2.06	145.5	54.9	
S20.003	47.22	4.82	66.437	0.568	0.0	0.0	0.0	1.76	124.4	72.6	
©1982-2020 Innovyze											

Powell Tolner Associates		Page 7
29 Red Lion Street Chesham Bucks HP5 1EJ	Grimshaw Lane Manchester	
Date 13/08/2021 16:07 File SW.MDX	Designed by LB Checked by	
Innovyze	Network 2020.1	

Network Design Table for 9762 - SW

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
S1.011	50.678	0.169	299.9	0.035	0.00	0.0	0.600	o	675	Pipe/Conduit	
S24.000	9.581	0.144	66.5	0.062	3.00	0.0	0.600	o	300	Pipe/Conduit	
S25.000	7.555	0.094	80.4	0.035	3.00	0.0	0.600	o	300	Pipe/Conduit	
S1.012	11.530	0.038	303.4	0.086	0.00	0.0	0.600	o	525	Pipe/Conduit	
S1.013	5.278	0.053	100.0	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)
S1.011	32.57	10.50	65.358	7.658	0.0	0.0	0.0	1.51	539.7«	675.5
S24.000	50.00	3.08	65.500	0.062	0.0	0.0	0.0	1.93	136.5	8.4
S25.000	50.00	3.07	65.500	0.035	0.0	0.0	0.0	1.76	124.1	4.8
S1.012	32.32	10.65	64.756	7.841	0.0	0.0	0.0	1.28	277.2«	686.4
S1.013	32.24	10.70	64.343	7.841	0.0	0.0	0.0	1.81	200.1«	686.4

Powell Tolner Associates		Page 8																																																																																																																																																																																																																																																																																																																																																																												
29 Red Lion Street Chesham Bucks HP5 1EJ	Grimshaw Lane Manchester																																																																																																																																																																																																																																																																																																																																																																													
Date 13/08/2021 16:07 File SW.MDX	Designed by LB Checked by																																																																																																																																																																																																																																																																																																																																																																													
Innovyze Network 2020.1																																																																																																																																																																																																																																																																																																																																																																														
<u>Area Summary for 9762 - SW</u> <table><thead><tr><th>Pipe Number</th><th>PIMP Type</th><th>PIMP Name</th><th>PIMP (%)</th><th>Gross Area (ha)</th><th>Imp. Area (ha)</th><th>Pipe Total (ha)</th></tr></thead><tbody><tr><td>1.000</td><td>User</td><td>-</td><td>100</td><td>0.112</td><td>0.112</td><td>0.112</td></tr><tr><td>2.000</td><td>User</td><td>-</td><td>100</td><td>0.137</td><td>0.137</td><td>0.137</td></tr><tr><td>2.001</td><td>User</td><td>-</td><td>100</td><td>0.273</td><td>0.273</td><td>0.273</td></tr><tr><td>2.002</td><td>User</td><td>-</td><td>100</td><td>0.123</td><td>0.123</td><td>0.123</td></tr><tr><td>2.003</td><td>User</td><td>-</td><td>100</td><td>0.169</td><td>0.169</td><td>0.169</td></tr><tr><td>2.004</td><td>-</td><td>-</td><td>100</td><td>0.000</td><td>0.000</td><td>0.000</td></tr><tr><td>1.001</td><td>-</td><td>-</td><td>100</td><td>0.000</td><td>0.000</td><td>0.000</td></tr><tr><td>3.000</td><td>User</td><td>-</td><td>100</td><td>0.109</td><td>0.109</td><td>0.109</td></tr><tr><td>4.000</td><td>User</td><td>-</td><td>100</td><td>0.218</td><td>0.218</td><td>0.218</td></tr><tr><td>3.001</td><td>User</td><td>-</td><td>100</td><td>0.225</td><td>0.225</td><td>0.225</td></tr><tr><td>3.002</td><td>User</td><td>-</td><td>100</td><td>0.074</td><td>0.074</td><td>0.074</td></tr><tr><td>5.000</td><td>User</td><td>-</td><td>100</td><td>0.134</td><td>0.134</td><td>0.134</td></tr><tr><td>5.001</td><td>User</td><td>-</td><td>100</td><td>0.266</td><td>0.266</td><td>0.266</td></tr><tr><td>5.002</td><td>User</td><td>-</td><td>100</td><td>0.201</td><td>0.201</td><td>0.201</td></tr><tr><td>1.002</td><td>-</td><td>-</td><td>100</td><td>0.000</td><td>0.000</td><td>0.000</td></tr><tr><td>6.000</td><td>User</td><td>-</td><td>100</td><td>0.193</td><td>0.193</td><td>0.193</td></tr><tr><td>6.001</td><td>User</td><td>-</td><td>100</td><td>0.341</td><td>0.341</td><td>0.341</td></tr><tr><td>6.002</td><td>User</td><td>-</td><td>100</td><td>0.221</td><td>0.221</td><td>0.221</td></tr><tr><td>7.000</td><td>User</td><td>-</td><td>100</td><td>0.053</td><td>0.053</td><td>0.053</td></tr><tr><td>1.003</td><td>User</td><td>-</td><td>100</td><td>0.276</td><td>0.276</td><td>0.276</td></tr><tr><td>8.000</td><td>User</td><td>-</td><td>100</td><td>0.131</td><td>0.131</td><td>0.131</td></tr><tr><td>9.000</td><td>User</td><td>-</td><td>100</td><td>0.188</td><td>0.188</td><td>0.188</td></tr><tr><td>9.001</td><td>User</td><td>-</td><td>100</td><td>0.332</td><td>0.332</td><td>0.332</td></tr><tr><td>9.002</td><td>User</td><td>-</td><td>100</td><td>0.167</td><td>0.167</td><td>0.167</td></tr><tr><td>10.000</td><td>User</td><td>-</td><td>100</td><td>0.069</td><td>0.069</td><td>0.069</td></tr><tr><td>10.001</td><td>User</td><td>-</td><td>100</td><td>0.161</td><td>0.161</td><td>0.161</td></tr><tr><td>10.002</td><td>User</td><td>-</td><td>100</td><td>0.176</td><td>0.176</td><td>0.176</td></tr><tr><td>9.003</td><td>User</td><td>-</td><td>100</td><td>0.087</td><td>0.087</td><td>0.087</td></tr><tr><td>1.004</td><td>User</td><td>-</td><td>100</td><td>0.222</td><td>0.222</td><td>0.222</td></tr><tr><td>11.000</td><td>User</td><td>-</td><td>100</td><td>0.036</td><td>0.036</td><td>0.036</td></tr><tr><td>1.005</td><td>User</td><td>-</td><td>100</td><td>0.420</td><td>0.420</td><td>0.420</td></tr><tr><td>1.006</td><td>User</td><td>-</td><td>100</td><td>0.409</td><td>0.409</td><td>0.409</td></tr><tr><td>12.000</td><td>User</td><td>-</td><td>100</td><td>0.069</td><td>0.069</td><td>0.069</td></tr><tr><td>12.001</td><td>User</td><td>-</td><td>100</td><td>0.073</td><td>0.073</td><td>0.073</td></tr><tr><td>13.000</td><td>User</td><td>-</td><td>100</td><td>0.046</td><td>0.046</td><td>0.046</td></tr><tr><td>12.002</td><td>User</td><td>-</td><td>100</td><td>0.051</td><td>0.051</td><td>0.051</td></tr><tr><td>14.000</td><td>User</td><td>-</td><td>100</td><td>0.066</td><td>0.066</td><td>0.066</td></tr><tr><td>14.001</td><td>User</td><td>-</td><td>100</td><td>0.062</td><td>0.062</td><td>0.062</td></tr><tr><td>14.002</td><td>User</td><td>-</td><td>100</td><td>0.049</td><td>0.049</td><td>0.049</td></tr><tr><td>12.003</td><td>User</td><td>-</td><td>100</td><td>0.056</td><td>0.056</td><td>0.056</td></tr><tr><td>15.000</td><td>User</td><td>-</td><td>100</td><td>0.058</td><td>0.058</td><td>0.058</td></tr><tr><td>15.001</td><td>User</td><td>-</td><td>100</td><td>0.079</td><td>0.079</td><td>0.079</td></tr><tr><td>15.002</td><td>User</td><td>-</td><td>100</td><td>0.086</td><td>0.086</td><td>0.086</td></tr><tr><td>15.003</td><td>User</td><td>-</td><td>100</td><td>0.009</td><td>0.009</td><td>0.009</td></tr><tr><td>15.004</td><td>User</td><td>-</td><td>100</td><td>0.004</td><td>0.004</td><td>0.004</td></tr><tr><td>16.000</td><td>User</td><td>-</td><td>100</td><td>0.073</td><td>0.073</td><td>0.073</td></tr><tr><td>16.001</td><td>User</td><td>-</td><td>100</td><td>0.043</td><td>0.043</td><td>0.043</td></tr><tr><td>15.005</td><td>User</td><td>-</td><td>100</td><td>0.067</td><td>0.067</td><td>0.067</td></tr><tr><td>15.006</td><td>-</td><td>-</td><td>100</td><td>0.000</td><td>0.000</td><td>0.000</td></tr><tr><td>15.007</td><td>-</td><td>-</td><td>100</td><td>0.000</td><td>0.000</td><td>0.000</td></tr><tr><td>1.007</td><td>User</td><td>-</td><td>100</td><td>0.098</td><td>0.098</td><td>0.098</td></tr></tbody></table>			Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)	1.000	User	-	100	0.112	0.112	0.112	2.000	User	-	100	0.137	0.137	0.137	2.001	User	-	100	0.273	0.273	0.273	2.002	User	-	100	0.123	0.123	0.123	2.003	User	-	100	0.169	0.169	0.169	2.004	-	-	100	0.000	0.000	0.000	1.001	-	-	100	0.000	0.000	0.000	3.000	User	-	100	0.109	0.109	0.109	4.000	User	-	100	0.218	0.218	0.218	3.001	User	-	100	0.225	0.225	0.225	3.002	User	-	100	0.074	0.074	0.074	5.000	User	-	100	0.134	0.134	0.134	5.001	User	-	100	0.266	0.266	0.266	5.002	User	-	100	0.201	0.201	0.201	1.002	-	-	100	0.000	0.000	0.000	6.000	User	-	100	0.193	0.193	0.193	6.001	User	-	100	0.341	0.341	0.341	6.002	User	-	100	0.221	0.221	0.221	7.000	User	-	100	0.053	0.053	0.053	1.003	User	-	100	0.276	0.276	0.276	8.000	User	-	100	0.131	0.131	0.131	9.000	User	-	100	0.188	0.188	0.188	9.001	User	-	100	0.332	0.332	0.332	9.002	User	-	100	0.167	0.167	0.167	10.000	User	-	100	0.069	0.069	0.069	10.001	User	-	100	0.161	0.161	0.161	10.002	User	-	100	0.176	0.176	0.176	9.003	User	-	100	0.087	0.087	0.087	1.004	User	-	100	0.222	0.222	0.222	11.000	User	-	100	0.036	0.036	0.036	1.005	User	-	100	0.420	0.420	0.420	1.006	User	-	100	0.409	0.409	0.409	12.000	User	-	100	0.069	0.069	0.069	12.001	User	-	100	0.073	0.073	0.073	13.000	User	-	100	0.046	0.046	0.046	12.002	User	-	100	0.051	0.051	0.051	14.000	User	-	100	0.066	0.066	0.066	14.001	User	-	100	0.062	0.062	0.062	14.002	User	-	100	0.049	0.049	0.049	12.003	User	-	100	0.056	0.056	0.056	15.000	User	-	100	0.058	0.058	0.058	15.001	User	-	100	0.079	0.079	0.079	15.002	User	-	100	0.086	0.086	0.086	15.003	User	-	100	0.009	0.009	0.009	15.004	User	-	100	0.004	0.004	0.004	16.000	User	-	100	0.073	0.073	0.073	16.001	User	-	100	0.043	0.043	0.043	15.005	User	-	100	0.067	0.067	0.067	15.006	-	-	100	0.000	0.000	0.000	15.007	-	-	100	0.000	0.000	0.000	1.007	User	-	100	0.098	0.098	0.098
Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)																																																																																																																																																																																																																																																																																																																																																																								
1.000	User	-	100	0.112	0.112	0.112																																																																																																																																																																																																																																																																																																																																																																								
2.000	User	-	100	0.137	0.137	0.137																																																																																																																																																																																																																																																																																																																																																																								
2.001	User	-	100	0.273	0.273	0.273																																																																																																																																																																																																																																																																																																																																																																								
2.002	User	-	100	0.123	0.123	0.123																																																																																																																																																																																																																																																																																																																																																																								
2.003	User	-	100	0.169	0.169	0.169																																																																																																																																																																																																																																																																																																																																																																								
2.004	-	-	100	0.000	0.000	0.000																																																																																																																																																																																																																																																																																																																																																																								
1.001	-	-	100	0.000	0.000	0.000																																																																																																																																																																																																																																																																																																																																																																								
3.000	User	-	100	0.109	0.109	0.109																																																																																																																																																																																																																																																																																																																																																																								
4.000	User	-	100	0.218	0.218	0.218																																																																																																																																																																																																																																																																																																																																																																								
3.001	User	-	100	0.225	0.225	0.225																																																																																																																																																																																																																																																																																																																																																																								
3.002	User	-	100	0.074	0.074	0.074																																																																																																																																																																																																																																																																																																																																																																								
5.000	User	-	100	0.134	0.134	0.134																																																																																																																																																																																																																																																																																																																																																																								
5.001	User	-	100	0.266	0.266	0.266																																																																																																																																																																																																																																																																																																																																																																								
5.002	User	-	100	0.201	0.201	0.201																																																																																																																																																																																																																																																																																																																																																																								
1.002	-	-	100	0.000	0.000	0.000																																																																																																																																																																																																																																																																																																																																																																								
6.000	User	-	100	0.193	0.193	0.193																																																																																																																																																																																																																																																																																																																																																																								
6.001	User	-	100	0.341	0.341	0.341																																																																																																																																																																																																																																																																																																																																																																								
6.002	User	-	100	0.221	0.221	0.221																																																																																																																																																																																																																																																																																																																																																																								
7.000	User	-	100	0.053	0.053	0.053																																																																																																																																																																																																																																																																																																																																																																								
1.003	User	-	100	0.276	0.276	0.276																																																																																																																																																																																																																																																																																																																																																																								
8.000	User	-	100	0.131	0.131	0.131																																																																																																																																																																																																																																																																																																																																																																								
9.000	User	-	100	0.188	0.188	0.188																																																																																																																																																																																																																																																																																																																																																																								
9.001	User	-	100	0.332	0.332	0.332																																																																																																																																																																																																																																																																																																																																																																								
9.002	User	-	100	0.167	0.167	0.167																																																																																																																																																																																																																																																																																																																																																																								
10.000	User	-	100	0.069	0.069	0.069																																																																																																																																																																																																																																																																																																																																																																								
10.001	User	-	100	0.161	0.161	0.161																																																																																																																																																																																																																																																																																																																																																																								
10.002	User	-	100	0.176	0.176	0.176																																																																																																																																																																																																																																																																																																																																																																								
9.003	User	-	100	0.087	0.087	0.087																																																																																																																																																																																																																																																																																																																																																																								
1.004	User	-	100	0.222	0.222	0.222																																																																																																																																																																																																																																																																																																																																																																								
11.000	User	-	100	0.036	0.036	0.036																																																																																																																																																																																																																																																																																																																																																																								
1.005	User	-	100	0.420	0.420	0.420																																																																																																																																																																																																																																																																																																																																																																								
1.006	User	-	100	0.409	0.409	0.409																																																																																																																																																																																																																																																																																																																																																																								
12.000	User	-	100	0.069	0.069	0.069																																																																																																																																																																																																																																																																																																																																																																								
12.001	User	-	100	0.073	0.073	0.073																																																																																																																																																																																																																																																																																																																																																																								
13.000	User	-	100	0.046	0.046	0.046																																																																																																																																																																																																																																																																																																																																																																								
12.002	User	-	100	0.051	0.051	0.051																																																																																																																																																																																																																																																																																																																																																																								
14.000	User	-	100	0.066	0.066	0.066																																																																																																																																																																																																																																																																																																																																																																								
14.001	User	-	100	0.062	0.062	0.062																																																																																																																																																																																																																																																																																																																																																																								
14.002	User	-	100	0.049	0.049	0.049																																																																																																																																																																																																																																																																																																																																																																								
12.003	User	-	100	0.056	0.056	0.056																																																																																																																																																																																																																																																																																																																																																																								
15.000	User	-	100	0.058	0.058	0.058																																																																																																																																																																																																																																																																																																																																																																								
15.001	User	-	100	0.079	0.079	0.079																																																																																																																																																																																																																																																																																																																																																																								
15.002	User	-	100	0.086	0.086	0.086																																																																																																																																																																																																																																																																																																																																																																								
15.003	User	-	100	0.009	0.009	0.009																																																																																																																																																																																																																																																																																																																																																																								
15.004	User	-	100	0.004	0.004	0.004																																																																																																																																																																																																																																																																																																																																																																								
16.000	User	-	100	0.073	0.073	0.073																																																																																																																																																																																																																																																																																																																																																																								
16.001	User	-	100	0.043	0.043	0.043																																																																																																																																																																																																																																																																																																																																																																								
15.005	User	-	100	0.067	0.067	0.067																																																																																																																																																																																																																																																																																																																																																																								
15.006	-	-	100	0.000	0.000	0.000																																																																																																																																																																																																																																																																																																																																																																								
15.007	-	-	100	0.000	0.000	0.000																																																																																																																																																																																																																																																																																																																																																																								
1.007	User	-	100	0.098	0.098	0.098																																																																																																																																																																																																																																																																																																																																																																								
©1982-2020 Innovyze																																																																																																																																																																																																																																																																																																																																																																														

Powell Tolner Associates		Page 9
29 Red Lion Street Chesham Bucks HP5 1EJ	Grimshaw Lane Manchester	
Date 13/08/2021 16:07 File SW.MDX	Designed by LB Checked by	
Innovyze	Network 2020.1	

Area Summary for 9762 - SW

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
17.000	User	-	100	0.047	0.047	0.047
17.001	User	-	100	0.039	0.039	0.039
17.002	-	-	100	0.000	0.000	0.000
17.003	-	-	100	0.000	0.000	0.000
1.008	User	-	100	0.132	0.132	0.132
18.000	User	-	100	0.042	0.042	0.042
1.009	-	-	100	0.000	0.000	0.000
19.000	User	-	100	0.046	0.046	0.046
19.001	User	-	100	0.050	0.050	0.050
19.002	User	-	100	0.056	0.056	0.056
1.010	User	-	100	0.131	0.131	0.131
20.000	User	-	100	0.030	0.030	0.030
20.001	User	-	100	0.052	0.052	0.052
20.002	User	-	100	0.028	0.028	0.028
21.000	User	-	100	0.019	0.019	0.019
21.001	User	-	100	0.032	0.032	0.032
21.002	User	-	100	0.118	0.118	0.118
22.000	User	-	100	0.007	0.007	0.007
22.001	User	-	100	0.015	0.015	0.015
22.002	User	-	100	0.086	0.086	0.086
21.003	User	-	100	0.086	0.086	0.086
21.004	-	-	100	0.000	0.000	0.000
23.000	User	-	100	0.023	0.023	0.023
21.005	User	-	100	0.038	0.038	0.038
20.003	User	-	100	0.032	0.032	0.032
1.011	User	-	100	0.035	0.035	0.035
24.000	User	-	100	0.062	0.062	0.062
25.000	User	-	100	0.035	0.035	0.035
1.012	User	-	100	0.086	0.086	0.086
1.013	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				7.841	7.841	7.841

Free Flowing Outfall Details for 9762 - SW

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
S1.013	S	66.500	64.290	0.000	0	0

Powell Tolner Associates		Page 10
29 Red Lion Street Chesham Bucks HP5 1EJ	Grimshaw Lane Manchester	
Date 13/08/2021 16:07 File SW.MDX	Designed by LB Checked by	
Innovyze	Network 2020.1	

Simulation Criteria for 9762 - SW

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m ³ /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 Storage Structures	4
Number of Online Controls	4	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)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	18.200	Storm Duration (mins)	30
Ratio R	0.350		

©1982-2020 Innovyze

Powell Tolner Associates		Page 11																																																																								
29 Red Lion Street Chesham Bucks HP5 1EJ	Grimshaw Lane Manchester																																																																									
Date 13/08/2021 16:07 File SW.MDX	Designed by LB Checked by																																																																									
Innovyze	Network 2020.1																																																																									
<u>Online Controls for 9762 - SW</u>																																																																										
<u>Hydro-Brake® Optimum Manhole: S14 Flow Control 50 l/s, DS/PN: S1.002, Volume (m³): 19.9</u>																																																																										
Unit Reference	MD-SHE-0271-5000-2700-5000																																																																									
Design Head (m)	2.700																																																																									
Design Flow (l/s)	50.0																																																																									
Flush-Flo™	Calculated																																																																									
Objective	Minimise upstream storage																																																																									
Application	Surface																																																																									
Sump Available	Yes																																																																									
Diameter (mm)	271																																																																									
Invert Level (m)	69.241																																																																									
Minimum Outlet Pipe Diameter (mm)	300																																																																									
Suggested Manhole Diameter (mm)	Site Specific Design (Contact Hydro International)																																																																									
<table><tr><td>Control Points</td><td>Head (m)</td><td>Flow (l/s)</td></tr><tr><td>Design Point (Calculated)</td><td>2.700</td><td>49.9</td></tr><tr><td>Flush-Flo™</td><td>0.790</td><td>50.0</td></tr><tr><td>Kick-Flo®</td><td>1.686</td><td>39.8</td></tr><tr><td>Mean Flow over Head Range</td><td>-</td><td>43.5</td></tr></table>			Control Points	Head (m)	Flow (l/s)	Design Point (Calculated)	2.700	49.9	Flush-Flo™	0.790	50.0	Kick-Flo®	1.686	39.8	Mean Flow over Head Range	-	43.5																																																									
Control Points	Head (m)	Flow (l/s)																																																																								
Design Point (Calculated)	2.700	49.9																																																																								
Flush-Flo™	0.790	50.0																																																																								
Kick-Flo®	1.686	39.8																																																																								
Mean Flow over Head Range	-	43.5																																																																								
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																																																																										
<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>8.6</td><td>1.200</td><td>48.4</td><td>3.000</td><td>52.5</td><td>7.000</td><td>79.2</td></tr><tr><td>0.200</td><td>27.9</td><td>1.400</td><td>46.3</td><td>3.500</td><td>56.6</td><td>7.500</td><td>81.9</td></tr><tr><td>0.300</td><td>43.1</td><td>1.600</td><td>42.4</td><td>4.000</td><td>60.4</td><td>8.000</td><td>84.5</td></tr><tr><td>0.400</td><td>46.3</td><td>1.800</td><td>41.1</td><td>4.500</td><td>63.9</td><td>8.500</td><td>87.0</td></tr><tr><td>0.500</td><td>48.2</td><td>2.000</td><td>43.2</td><td>5.000</td><td>67.3</td><td>9.000</td><td>89.5</td></tr><tr><td>0.600</td><td>49.3</td><td>2.200</td><td>45.2</td><td>5.500</td><td>70.4</td><td>9.500</td><td>91.9</td></tr><tr><td>0.800</td><td>50.0</td><td>2.400</td><td>47.2</td><td>6.000</td><td>73.5</td><td></td><td></td></tr><tr><td>1.000</td><td>49.5</td><td>2.600</td><td>49.0</td><td>6.500</td><td>76.4</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)	0.100	8.6	1.200	48.4	3.000	52.5	7.000	79.2	0.200	27.9	1.400	46.3	3.500	56.6	7.500	81.9	0.300	43.1	1.600	42.4	4.000	60.4	8.000	84.5	0.400	46.3	1.800	41.1	4.500	63.9	8.500	87.0	0.500	48.2	2.000	43.2	5.000	67.3	9.000	89.5	0.600	49.3	2.200	45.2	5.500	70.4	9.500	91.9	0.800	50.0	2.400	47.2	6.000	73.5			1.000	49.5	2.600	49.0	6.500	76.4		
Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)																																																																			
0.100	8.6	1.200	48.4	3.000	52.5	7.000	79.2																																																																			
0.200	27.9	1.400	46.3	3.500	56.6	7.500	81.9																																																																			
0.300	43.1	1.600	42.4	4.000	60.4	8.000	84.5																																																																			
0.400	46.3	1.800	41.1	4.500	63.9	8.500	87.0																																																																			
0.500	48.2	2.000	43.2	5.000	67.3	9.000	89.5																																																																			
0.600	49.3	2.200	45.2	5.500	70.4	9.500	91.9																																																																			
0.800	50.0	2.400	47.2	6.000	73.5																																																																					
1.000	49.5	2.600	49.0	6.500	76.4																																																																					
<u>Hydro-Brake® Optimum Manhole: S61 Flow Control 168 l/s, DS/PN: S1.010, Volume (m³): 22.2</u>																																																																										
Unit Reference	MD-SHE-0442-1680-4500-1680																																																																									
Design Head (m)	4.500																																																																									
Design Flow (l/s)	168.0																																																																									
Flush-Flo™	Calculated																																																																									
Objective	Minimise upstream storage																																																																									
Application	Surface																																																																									
Sump Available	Yes																																																																									
Diameter (mm)	442																																																																									
Invert Level (m)	65.771																																																																									
Minimum Outlet Pipe Diameter (mm)	Site Specific Design (Contact Hydro International)																																																																									
©1982-2020 Innovyze																																																																										

Powell Tolner Associates		Page 12
29 Red Lion Street Chesham Bucks HP5 1EJ	Grimshaw Lane Manchester	
Date 13/08/2021 16:07 File SW.MDX	Designed by LB Checked by	
Innovyze Network 2020.1		

Hydro-Brake® Optimum Manhole: S61 Flow Control 168 l/s, DS/PN: S1.010,
Volume (m³): 22.2

Suggested Manhole Diameter (mm) Site Specific Design (Contact Hydro International)

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	4.500	167.8
Flush-Flo™	1.283	167.9
Kick-Flo®	2.754	132.0
Mean Flow over Head Range	-	145.7

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	11.7	1.200	167.7	3.000	137.7	7.000	208.2
0.200	42.4	1.400	167.6	3.500	148.4	7.500	215.3
0.300	84.0	1.600	166.4	4.000	158.4	8.000	222.3
0.400	124.4	1.800	164.2	4.500	167.8	8.500	229.0
0.500	145.5	2.000	161.3	5.000	176.6	9.000	235.5
0.600	152.5	2.200	157.0	5.500	185.0	9.500	241.8
0.800	161.5	2.400	150.8	6.000	193.1		
1.000	166.0	2.600	141.8	6.500	200.8		

Hydro-Brake® Optimum Manhole: S75 Flow Control 10 l/s, DS/PN: S20.003,
Volume (m³): 7.0

Unit Reference	MD-SHE-0124-1000-2500-1000
Design Head (m)	2.500
Design Flow (l/s)	10.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	124
Invert Level (m)	66.437
Minimum Outlet Pipe Diameter (mm)	150
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	2.500	10.0
Flush-Flo™	0.539	8.6
Kick-Flo®	1.107	6.8
Mean Flow over Head Range	-	8.0

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

©1982-2020 Innovyze

Powell Tolner Associates				Page 13																																																																																																																																																																																																														
29 Red Lion Street Chesham Bucks HP5 1EJ				Grimshaw Lane Manchester																																																																																																																																																																																																														
Date 13/08/2021 16:07 File SW.MDX				Designed by LB Checked by																																																																																																																																																																																																														
Innovyze				Network 2020.1																																																																																																																																																																																																														
Hydro-Brake® Optimum Manhole: S75 Flow Control 10 l/s, DS/PN: S20.003, Volume (m³): 7.0 <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>4.4</td><td>1.200</td><td>7.1</td><td>3.000</td><td>10.9</td><td>7.000</td><td>16.3</td></tr><tr><td>0.200</td><td>7.4</td><td>1.400</td><td>7.6</td><td>3.500</td><td>11.7</td><td>7.500</td><td>16.9</td></tr><tr><td>0.300</td><td>8.1</td><td>1.600</td><td>8.1</td><td>4.000</td><td>12.5</td><td>8.000</td><td>17.4</td></tr><tr><td>0.400</td><td>8.5</td><td>1.800</td><td>8.6</td><td>4.500</td><td>13.2</td><td>8.500</td><td>17.9</td></tr><tr><td>0.500</td><td>8.6</td><td>2.000</td><td>9.0</td><td>5.000</td><td>13.9</td><td>9.000</td><td>18.4</td></tr><tr><td>0.600</td><td>8.6</td><td>2.200</td><td>9.4</td><td>5.500</td><td>14.5</td><td>9.500</td><td>18.9</td></tr><tr><td>0.800</td><td>8.3</td><td>2.400</td><td>9.8</td><td>6.000</td><td>15.2</td><td></td><td></td></tr><tr><td>1.000</td><td>7.6</td><td>2.600</td><td>10.2</td><td>6.500</td><td>15.7</td><td></td><td></td></tr></table> Hydro-Brake® Optimum Manhole: S79 Flow Control 187 l/s, DS/PN: S1.012, Volume (m³): 25.9 <table><tr><td>Unit Reference</td><td colspan="3">MD-SHE-0493-1870-2600-1870</td></tr><tr><td>Design Head (m)</td><td colspan="3">2.600</td></tr><tr><td>Design Flow (l/s)</td><td colspan="3">187.0</td></tr><tr><td>Flush-Flo™</td><td colspan="3">Calculated</td></tr><tr><td>Objective</td><td colspan="3">Minimise upstream storage</td></tr><tr><td>Application</td><td colspan="3">Surface</td></tr><tr><td>Sump Available</td><td colspan="3">Yes</td></tr><tr><td>Diameter (mm)</td><td colspan="3">493</td></tr><tr><td>Invert Level (m)</td><td colspan="3">64.756</td></tr><tr><td>Minimum Outlet Pipe Diameter (mm)</td><td colspan="3">Site Specific Design (Contact Hydro International)</td></tr><tr><td>Suggested Manhole Diameter (mm)</td><td colspan="3">Site Specific Design (Contact Hydro International)</td></tr></table> <table><tr><th>Control Points</th><th>Head (m)</th><th>Flow (l/s)</th></tr><tr><td>Design Point (Calculated)</td><td>2.600</td><td>186.8</td></tr><tr><td>Flush-Flo™</td><td>0.873</td><td>186.9</td></tr><tr><td>Kick-Flo®</td><td>1.839</td><td>157.8</td></tr><tr><td>Mean Flow over Head Range</td><td>-</td><td>158.2</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>12.5</td><td>1.200</td><td>183.9</td><td>3.000</td><td>200.4</td><td>7.000</td><td>303.4</td></tr><tr><td>0.200</td><td>45.9</td><td>1.400</td><td>180.1</td><td>3.500</td><td>216.1</td><td>7.500</td><td>313.9</td></tr><tr><td>0.300</td><td>92.8</td><td>1.600</td><td>173.8</td><td>4.000</td><td>230.6</td><td>8.000</td><td>324.0</td></tr><tr><td>0.400</td><td>143.5</td><td>1.800</td><td>161.6</td><td>4.500</td><td>244.3</td><td>8.500</td><td>333.8</td></tr><tr><td>0.500</td><td>177.4</td><td>2.000</td><td>164.4</td><td>5.000</td><td>257.3</td><td>9.000</td><td>343.3</td></tr><tr><td>0.600</td><td>182.4</td><td>2.200</td><td>172.2</td><td>5.500</td><td>269.6</td><td>9.500</td><td>352.6</td></tr><tr><td>0.800</td><td>186.7</td><td>2.400</td><td>179.7</td><td>6.000</td><td>281.3</td><td></td><td></td></tr><tr><td>1.000</td><td>186.3</td><td>2.600</td><td>186.8</td><td>6.500</td><td>292.6</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)	0.100	4.4	1.200	7.1	3.000	10.9	7.000	16.3	0.200	7.4	1.400	7.6	3.500	11.7	7.500	16.9	0.300	8.1	1.600	8.1	4.000	12.5	8.000	17.4	0.400	8.5	1.800	8.6	4.500	13.2	8.500	17.9	0.500	8.6	2.000	9.0	5.000	13.9	9.000	18.4	0.600	8.6	2.200	9.4	5.500	14.5	9.500	18.9	0.800	8.3	2.400	9.8	6.000	15.2			1.000	7.6	2.600	10.2	6.500	15.7			Unit Reference	MD-SHE-0493-1870-2600-1870			Design Head (m)	2.600			Design Flow (l/s)	187.0			Flush-Flo™	Calculated			Objective	Minimise upstream storage			Application	Surface			Sump Available	Yes			Diameter (mm)	493			Invert Level (m)	64.756			Minimum Outlet Pipe Diameter (mm)	Site Specific Design (Contact Hydro International)			Suggested Manhole Diameter (mm)	Site Specific Design (Contact Hydro International)			Control Points	Head (m)	Flow (l/s)	Design Point (Calculated)	2.600	186.8	Flush-Flo™	0.873	186.9	Kick-Flo®	1.839	157.8	Mean Flow over Head Range	-	158.2	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	0.100	12.5	1.200	183.9	3.000	200.4	7.000	303.4	0.200	45.9	1.400	180.1	3.500	216.1	7.500	313.9	0.300	92.8	1.600	173.8	4.000	230.6	8.000	324.0	0.400	143.5	1.800	161.6	4.500	244.3	8.500	333.8	0.500	177.4	2.000	164.4	5.000	257.3	9.000	343.3	0.600	182.4	2.200	172.2	5.500	269.6	9.500	352.6	0.800	186.7	2.400	179.7	6.000	281.3			1.000	186.3	2.600	186.8	6.500	292.6		
Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)																																																																																																																																																																																																											
0.100	4.4	1.200	7.1	3.000	10.9	7.000	16.3																																																																																																																																																																																																											
0.200	7.4	1.400	7.6	3.500	11.7	7.500	16.9																																																																																																																																																																																																											
0.300	8.1	1.600	8.1	4.000	12.5	8.000	17.4																																																																																																																																																																																																											
0.400	8.5	1.800	8.6	4.500	13.2	8.500	17.9																																																																																																																																																																																																											
0.500	8.6	2.000	9.0	5.000	13.9	9.000	18.4																																																																																																																																																																																																											
0.600	8.6	2.200	9.4	5.500	14.5	9.500	18.9																																																																																																																																																																																																											
0.800	8.3	2.400	9.8	6.000	15.2																																																																																																																																																																																																													
1.000	7.6	2.600	10.2	6.500	15.7																																																																																																																																																																																																													
Unit Reference	MD-SHE-0493-1870-2600-1870																																																																																																																																																																																																																	
Design Head (m)	2.600																																																																																																																																																																																																																	
Design Flow (l/s)	187.0																																																																																																																																																																																																																	
Flush-Flo™	Calculated																																																																																																																																																																																																																	
Objective	Minimise upstream storage																																																																																																																																																																																																																	
Application	Surface																																																																																																																																																																																																																	
Sump Available	Yes																																																																																																																																																																																																																	
Diameter (mm)	493																																																																																																																																																																																																																	
Invert Level (m)	64.756																																																																																																																																																																																																																	
Minimum Outlet Pipe Diameter (mm)	Site Specific Design (Contact Hydro International)																																																																																																																																																																																																																	
Suggested Manhole Diameter (mm)	Site Specific Design (Contact Hydro International)																																																																																																																																																																																																																	
Control Points	Head (m)	Flow (l/s)																																																																																																																																																																																																																
Design Point (Calculated)	2.600	186.8																																																																																																																																																																																																																
Flush-Flo™	0.873	186.9																																																																																																																																																																																																																
Kick-Flo®	1.839	157.8																																																																																																																																																																																																																
Mean Flow over Head Range	-	158.2																																																																																																																																																																																																																
Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)																																																																																																																																																																																																											
0.100	12.5	1.200	183.9	3.000	200.4	7.000	303.4																																																																																																																																																																																																											
0.200	45.9	1.400	180.1	3.500	216.1	7.500	313.9																																																																																																																																																																																																											
0.300	92.8	1.600	173.8	4.000	230.6	8.000	324.0																																																																																																																																																																																																											
0.400	143.5	1.800	161.6	4.500	244.3	8.500	333.8																																																																																																																																																																																																											
0.500	177.4	2.000	164.4	5.000	257.3	9.000	343.3																																																																																																																																																																																																											
0.600	182.4	2.200	172.2	5.500	269.6	9.500	352.6																																																																																																																																																																																																											
0.800	186.7	2.400	179.7	6.000	281.3																																																																																																																																																																																																													
1.000	186.3	2.600	186.8	6.500	292.6																																																																																																																																																																																																													
©1982-2020 Innovyze																																																																																																																																																																																																																		

Powell Tolner Associates		Page 14
29 Red Lion Street Chesham Bucks HP5 1EJ	Grimshaw Lane Manchester	
Date 13/08/2021 16:07 File SW.MDX	Designed by LB Checked by	
Innovyze	Network 2020.1	

Storage Structures for 9762 - SW

Cellular Storage Manhole: S7 Tank, DS/PN: S1.001

Invert Level (m) 70.250 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	600.0	0.0	1.001	0.0	0.0
1.000	600.0	0.0			

Tank or Pond Manhole: S8 Pond, DS/PN: S3.002

Invert Level (m) 71.500

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	382.0	1.500	738.0

Cellular Storage Manhole: S30 Tank, DS/PN: S1.005

Invert Level (m) 67.500 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	1150.0	0.0	1.501	0.0	0.0
1.500	1150.0	0.0	2.000	0.0	0.0

Cellular Storage Manhole: S72 Tank 3, DS/PN: S21.004

Invert Level (m) 67.500 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	230.0	0.0	1.001	0.0	0.0
1.000	230.0	0.0	2.000	0.0	0.0

Powell Tolner Associates		Page 16
29 Red Lion Street Chesham Bucks HP5 1EJ	Grimshaw Lane Manchester	
Date 13/08/2021 16:07 File SW.MDX	Designed by LB Checked by	
Innovyze	Network 2020.1	

Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	Overflow Act.	Water Surcharged Flooded				Flow / Cap.	Overflow (l/s)
			Level (m)	Depth (m)	Volume (m³)			
S1.000		S05	72.090	-0.135	0.000		0.33	
S2.000		S01	73.084	-0.216	0.000		0.16	
S2.001		S02	72.616	-0.233	0.000		0.30	
S2.002		S03	72.336	-0.215	0.000		0.37	
S2.003		S04	71.807	-0.282	0.000		0.14	
S2.004		S6	70.396	0.344	0.000		0.75	
S1.001	S7 Tank		70.320	0.382	0.000		0.39	
S3.000		S08	72.082	-0.218	0.000		0.16	
S4.000		S10	72.097	-0.203	0.000		0.22	
S3.001		S09	71.604	-0.270	0.000		0.23	
S3.002	S8 Pond		71.579	-0.371	0.000		0.07	
S5.000		S11	73.089	-0.211	0.000		0.18	
S5.001		S12	72.704	-0.235	0.000		0.30	
S5.002		S13	72.495	-0.203	0.000		0.43	
S1.002	S14 Flow Control 50 l/s		70.937	1.396	0.000		0.59	
S6.000		S15	71.310	-0.190	0.000		0.27	
S6.001		S16	70.841	-0.302	0.000		0.24	
S6.002		S17	70.575	-0.266	0.000		0.35	

PN	US/MH Name	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000		S05	16.3	OK	
S2.000		S01	19.3	OK	
S2.001		S02	44.6	OK	
S2.002		S03	55.6	OK	
S2.003		S04	72.0	OK	
S2.004		S6	67.8	SURCHARGED	
S1.001	S7 Tank	15	43.6	SURCHARGED	
S3.000		S08	15.8	OK	
S4.000		S10	31.5	OK	
S3.001		S09	51.7	OK	
S3.002	S8 Pond		20.5	OK	
S5.000		S11	18.7	OK	
S5.001		S12	44.4	OK	
S5.002		S13	65.1	OK	
S1.002	S14 Flow Control 50 l/s		50.0	SURCHARGED	
S6.000		S15	27.2	OK	
S6.001		S16	60.4	OK	
S6.002		S17	82.9	OK	

Powell Tolner Associates						Page 17	
29 Red Lion Street Chesham Bucks HP5 1EJ				Grimshaw Lane Manchester			
Date 13/08/2021 16:07 File SW.MDX				Designed by LB Checked by			
Innovyze				Network 2020.1			
<u>Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW</u>							
PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow
S7.000		S18 15 Summer	1	+0%			
S1.003		S19 15 Winter	1	+0%			
S8.000		S20 15 Summer	1	+0%			
S9.000		S21 15 Summer	1	+0%			
S9.001		S22 15 Winter	1	+0%			
S9.002		S23 15 Winter	1	+0%			
S10.000		S24 15 Summer	1	+0%			
S10.001		S25 15 Summer	1	+0%			
S10.002		S26 15 Winter	1	+0%			
S9.003		S27 15 Winter	1	+0%			
S1.004		S28 15 Winter	1	+0%			
S11.000		S29 15 Winter	1	+0%			
S1.005	S30 Tank	30 Winter	1	+0%			
S1.006		S31 60 Winter	1	+0%	1/15 Summer		
S12.000		S32 15 Summer	1	+0%			
S12.001		S33 15 Summer	1	+0%			
S13.000		S34 15 Summer	1	+0%			
S12.002		S35 15 Summer	1	+0%			
S14.000		S36 15 Summer	1	+0%			
S14.001		S37 15 Summer	1	+0%			
S14.002		S38 15 Winter	1	+0%			
S12.003		S39 60 Winter	1	+0%			
S15.000		S40 15 Summer	1	+0%			
S15.001		S41 15 Summer	1	+0%			
S15.002		S42 15 Winter	1	+0%			
S15.003		S43 15 Winter	1	+0%			
S15.004		S44 15 Winter	1	+0%			
S16.000		S45 15 Summer	1	+0%			
S16.001		S46 15 Summer	1	+0%			
S15.005		S47 15 Winter	1	+0%			
S15.006		S48 15 Winter	1	+0%			
S15.007		S49 15 Winter	1	+0%			
S1.007		S50 60 Winter	1	+0%	1/15 Summer		
S17.000		S51 15 Summer	1	+0%			
S17.001		S52 15 Summer	1	+0%			
S17.002		S53 15 Summer	1	+0%			
S17.003		S54 15 Summer	1	+0%			
S1.008		S55 30 Winter	1	+0%	1/15 Summer		
S18.000		S56 15 Winter	1	+0%			
S1.009		S57 30 Winter	1	+0%	1/15 Summer		
S19.000		S58 15 Summer	1	+0%			
S19.001		S59 15 Summer	1	+0%			
S19.002		S60 15 Winter	1	+0%			
S1.010	S61 Flow Control 168	l/s 30 Winter	1	+0%	1/15 Summer		
S20.000		S62 15 Summer	1	+0%			
S20.001		S63 15 Summer	1	+0%			
S20.002		S64 15 Winter	1	+0%			
S21.000		S65 15 Summer	1	+0%			
S21.001		S66 15 Summer	1	+0%			
©1982-2020 Innovyze							

Powell Tolner Associates						Page 18	
29 Red Lion Street Chesham Bucks HP5 1EJ			Grimshaw Lane Manchester				
Date 13/08/2021 16:07 File SW.MDX			Designed by LB Checked by				
Innovyze			Network 2020.1				
<u>Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW</u>							
PN	US/MH Name	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)
S7.000		S18	70.567	-0.083	0.000	0.39	
S1.003		S19	68.266	-0.307	0.000	0.47	
S8.000		S20	70.304	-0.196	0.000	0.26	
S9.000		S21	71.300	-0.275	0.000	0.15	
S9.001		S22	71.018	-0.197	0.000	0.45	
S9.002		S23	70.716	-0.266	0.000	0.35	
S10.000		S24	70.305	-0.245	0.000	0.07	
S10.001		S25	69.632	-0.355	0.000	0.10	
S10.002		S26	69.454	-0.328	0.000	0.16	
S9.003		S27	69.322	-0.190	0.000	0.63	
S1.004		S28	68.110	-0.164	0.000	0.87	
S11.000		S29	69.788	-0.337	0.000	0.02	
S1.005	S30 Tank		67.614	-0.268	0.000	0.45	
S1.006		S31	67.672	0.137	0.000	0.93	
S12.000		S32	68.462	-0.160	0.000	0.17	
S12.001		S33	67.940	-0.109	0.000	0.53	
S13.000		S34	70.056	-0.169	0.000	0.13	
S12.002		S35	67.816	-0.182	0.000	0.32	
S14.000		S36	68.770	-0.320	0.000	0.05	
S14.001		S37	68.461	-0.301	0.000	0.09	
S14.002		S38	68.143	-0.291	0.000	0.11	
S12.003		S39	67.647	-0.047	0.000	0.20	
S15.000		S40	70.559	-0.166	0.000	0.15	
S15.001		S41	70.026	-0.137	0.000	0.32	
S15.002		S42	69.625	-0.203	0.000	0.23	
S15.003		S43	69.262	-0.251	0.000	0.24	
S15.004		S44	69.163	-0.276	0.000	0.16	
S16.000		S45	70.776	-0.149	0.000	0.24	
S16.001		S46	70.522	-0.251	0.000	0.06	
S15.005		S47	68.611	-0.204	0.000	0.43	
S15.006		S48	68.444	-0.303	0.000	0.23	
S15.007		S49	68.153	-0.474	0.000	0.04	
S1.007		S50	67.608	0.810	0.000	0.36	
S17.000		S51	70.268	-0.082	0.000	0.39	
S17.001		S52	69.973	-0.151	0.000	0.23	
S17.002		S53	69.824	-0.151	0.000	0.23	
S17.003		S54	69.568	-0.195	0.000	0.04	
S1.008		S55	67.550	0.906	0.000	0.44	
S18.000		S56	69.299	-0.176	0.000	0.11	
S1.009		S57	67.535	0.952	0.000	0.39	
S19.000		S58	70.267	-0.083	0.000	0.39	
S19.001		S59	69.929	-0.151	0.000	0.23	
S19.002		S60	69.439	-0.215	0.000	0.18	
S1.010	S61 Flow Control 168	l/s	67.520	1.224	0.000	0.71	
S20.000		S62	68.549	-0.101	0.000	0.22	
S20.001		S63	68.041	-0.158	0.000	0.19	
S20.002		S64	67.761	-0.139	0.000	0.31	
S21.000		S65	68.539	-0.111	0.000	0.14	
©1982-2020 Innovyze							

Powell Tolner Associates				Page 19		
29 Red Lion Street Chesham Bucks HP5 1EJ		Grimshaw Lane Manchester				
Date 13/08/2021 16:07 File SW.MDX		Designed by LB Checked by				
Innovyze		Network 2020.1				
<u>Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW</u>						
			Water	Surcharged	Flooded	
PN	US/MH	Overflow	Level	Depth	Volume	Flow / Overflow
	Name	Act.	(m)	(m)	(m³)	Cap. (l/s)
S21.001		S66	68.157	-0.173	0.000	0.12
			Half Drain	Pipe		
			Time	Flow		Level
PN	US/MH		(mins)	(l/s)	Status	Exceeded
S7.000		S18		7.7	OK	
S1.003		S19		161.1	OK	
S8.000		S20		19.4	OK	
S9.000		S21		26.2	OK	
S9.001		S22		57.5	OK	
S9.002		S23		74.1	OK	
S10.000		S24		9.8	OK	
S10.001		S25		25.5	OK	
S10.002		S26		43.0	OK	
S9.003		S27		124.2	OK	
S1.004		S28		316.2	OK	
S11.000		S29		4.2	OK	
S1.005	S30 Tank	18	160.1		OK	
S1.006		S31	262.8		SURCHARGED	
S12.000		S32	9.6		OK	
S12.001		S33	16.9		OK	
S13.000		S34	6.5		OK	
S12.002		S35	27.1		OK	
S14.000		S36	9.4		OK	
S14.001		S37	15.3		OK	
S14.002		S38	19.9		OK	
S12.003		S39	44.8		OK	
S15.000		S40	8.1		OK	
S15.001		S41	15.8		OK	
S15.002		S42	24.5		OK	
S15.003		S43	25.5		OK	
S15.004		S44	25.9		OK	
S16.000		S45	10.5		OK	
S16.001		S46	14.5		OK	
S15.005		S47	45.7		OK	
S15.006		S48	45.9		OK	
S15.007		S49	45.8		OK	
S1.007		S50	211.7		SURCHARGED	
S17.000		S51	6.6		OK	
S17.001		S52	10.6		OK	
S17.002		S53	10.5		OK	
S17.003		S54	10.4		OK	
S1.008		S55	214.9		SURCHARGED	
S18.000		S56	5.1		OK	
S1.009		S57	194.7		SURCHARGED	
S19.000		S58	6.6		OK	
S19.001		S59	11.6		OK	
©1982-2020 Innovyze						

Powell Tolner Associates		Page 20
29 Red Lion Street Chesham Bucks HP5 1EJ	Grimshaw Lane Manchester	
Date 13/08/2021 16:07 File SW.MDX	Designed by LB Checked by	
Innovyze	Network 2020.1	

Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S19.002		S60	17.2	OK	
S1.010	S61 Flow Control 168	1/s	167.6	SURCHARGED	
S20.000		S62	4.3	OK	
S20.001		S63	9.4	OK	
S20.002		S64	12.3	OK	
S21.000		S65	2.7	OK	
S21.001		S66	6.0	OK	

Powell Tolner Associates

29 Red Lion Street

Chesham

Bucks HP5 1EJ

Grimshaw Lane

Manchester

Date 13/08/2021 16:07

File SW.MDX

Designed by LB

Checked by

Innovyze

Network 2020.1

Page 21



Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow
S21.002		S67 15 Winter	1	+0%			
S22.000		S68 15 Summer	1	+0%			
S22.001		S69 15 Summer	1	+0%			
S22.002		S70 15 Winter	1	+0%			
S21.003		S71 15 Winter	1	+0%	1/15 Winter		
S21.004	S72 Tank 3	60 Winter	1	+0%	1/15 Summer		
S23.000		S73 15 Summer	1	+0%			
S21.005		S74 60 Winter	1	+0%	1/15 Summer		
S20.003	S75 Flow Control 10	1/s 60 Winter	1	+0%	1/15 Summer		
S1.011		S76 15 Winter	1	+0%			
S24.000		S77 15 Summer	1	+0%			
S25.000		S78 15 Summer	1	+0%			
S1.012	S79 Flow Control 187	1/s 60 Winter	1	+0%	1/15 Summer		
S1.013		S80 60 Winter	1	+0%	1/15 Summer		

PN	US/MH Name	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (1/s)
S21.002		S67	67.759	-0.220	0.000	0.16	
S22.000		S68	68.523	-0.127	0.000	0.06	
S22.001		S69	68.269	-0.192	0.000	0.05	
S22.002		S70	67.938	-0.226	0.000	0.14	
S21.003		S71	67.637	0.023	0.000	0.24	
S21.004	S72 Tank 3		67.598	0.125	0.000	0.12	
S23.000		S73	68.550	-0.100	0.000	0.24	
S21.005		S74	67.611	0.251	0.000	0.11	
S20.003	S75 Flow Control 10	1/s	67.623	0.886	0.000	0.08	
S1.011		S76	65.646	-0.387	0.000	0.38	
S24.000		S77	65.563	-0.237	0.000	0.09	
S25.000		S78	65.551	-0.249	0.000	0.07	
S1.012	S79 Flow Control 187	1/s	65.452	0.171	0.000	0.96	
S1.013		S80	64.860	0.142	0.000	1.69	

PN	US/MH Name	Half Drain Time (mins)	Pipe Flow (1/s)	Status	Level Exceeded
S21.002		S67	17.7	OK	
S22.000		S68	1.0	OK	
S22.001		S69	2.5	OK	
S22.002		S70	11.2	OK	
S21.003		S71	32.5	SURCHARGED	
S21.004	S72 Tank 3	38	12.7	SURCHARGED	
S23.000		S73	3.3	OK	
S21.005		S74	14.4	SURCHARGED	
S20.003	S75 Flow Control 10	1/s	8.6	SURCHARGED	

©1982-2020 Innovyze

Powell Tolner Associates		Page 22
29 Red Lion Street Chesham Bucks HP5 1EJ	Grimshaw Lane Manchester	
Date 13/08/2021 16:07 File SW.MDX	Designed by LB Checked by	
Innovyze	Network 2020.1	

Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.011		S76	175.9	OK	
S24.000		S77	9.0	OK	
S25.000		S78	5.2	OK	
S1.012	S79 Flow Control 187 l/s		180.9	SURCHARGED	
S1.013		S80	180.9	SURCHARGED	