

Jubb Consulting Engineers Limited		Page 1
Unit 1, Ensign House Parkway Court, Longbridge Road Plymouth, PL6 8LR	VICTORIA ROAD SWD NETWORK- POND B 30 YEAR	
Date 09/09/2025 File SWD NETWORK - POND B - ...	Designed by EPH Checked by	
Innovyze	Network 2019.1	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FEH Rainfall Model	
Return Period (years)	100
FEH Rainfall Version	1999
Site Location GB 386850 145550 ST 86850 45550	
C (1km)	-0.027
D1 (1km)	0.363
D2 (1km)	0.417
D3 (1km)	0.273
E (1km)	0.289
F (1km)	2.484
Maximum Rainfall (mm/hr)	50
Maximum Time of Concentration (mins)	30
Foul Sewage (l/s/ha)	0.000
Volumetric Runoff Coeff.	0.750
PIMP (%)	100
Add Flow / Climate Change (%)	0
Minimum Backdrop Height (m)	0.200
Maximum Backdrop Height (m)	1.500
Min Design Depth for Optimisation (m)	1.200
Min Vel for Auto Design only (m/s)	1.00
Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.414	4-8	0.263

Total Area Contributing (ha) = 0.677

Total Pipe Volume (m³) = 30.555

Network Design Table for Storm

« - Indicates pipe capacity < flow

PN (m)	Length (m)	Fall (1:X)	Slope (ha)	I.Area (mins)	T.E. (Flow)	Base (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
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Network Results Table

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Network Design Table for Storm

PN	Rain	T.C.	US/IL	Σ I	Area	Σ Base	Foul	Add Flow	Vel	Cap	Flow
	(mm/hr)	(mins)	(m)		(ha)	Flow (l/s)	(l/s)	(l/s)	(m/s)	(l/s)	(l/s)

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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
1.000	1.000	0.020	50.0	0.020	4.00	0.0	0.600	o	100	Pipe/Conduit	
1.001	5.042	0.420	12.0	0.000	0.00	0.0	0.600	o	100	Pipe/Conduit	
1.002	10.188	0.295	34.5	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
2.000	8.227	0.150	54.8	0.003	4.00	0.0	0.600	o	100	Pipe/Conduit	
2.001	11.400	0.190	60.0	0.003	0.00	0.0	0.600	o	100	Pipe/Conduit	
2.002	5.341	0.090	59.3	0.000	0.00	0.0	0.600	o	100	Pipe/Conduit	
2.003	9.398	0.150	62.7	0.017	0.00	0.0	0.600	o	150	Pipe/Conduit	
3.000	2.000	0.040	50.0	0.006	4.00	0.0	0.600	o	100	Pipe/Conduit	
3.001	6.593	0.500	13.2	0.003	0.00	0.0	0.600	o	100	Pipe/Conduit	
1.003	30.379	0.305	99.6	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.004	29.182	0.195	150.0	0.074	0.00	0.0	0.600	o	300	Pipe/Conduit	
4.000	1.000	0.020	50.0	0.019	4.00	0.0	0.600	o	100	Pipe/Conduit	
4.001	6.211	0.580	10.7	0.000	0.00	0.0	0.600	o	100	Pipe/Conduit	
4.002	22.423	0.225	99.7	0.017	0.00	0.0	0.600	o	150	Pipe/Conduit	
5.000	1.000	0.020	50.0	0.015	4.00	0.0	0.600	o	100	Pipe/Conduit	
5.001	4.139	1.545	2.7	0.002	0.00	0.0	0.600	o	100	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)
1.000	50.00	4.02	137.675	0.020	0.0	0.0	0.0	1.09	8.6	2.7
1.001	50.00	4.05	137.655	0.020	0.0	0.0	0.0	2.24	17.6	2.7
1.002	50.00	4.15	137.185	0.020	0.0	0.0	0.0	1.72	30.4	2.7
2.000	50.00	4.13	137.520	0.003	0.0	0.0	0.0	1.04	8.2	0.4
2.001	50.00	4.32	137.370	0.006	0.0	0.0	0.0	1.00	7.8	0.8
2.002	50.00	4.41	137.180	0.006	0.0	0.0	0.0	1.00	7.9	0.8
2.003	50.00	4.53	137.040	0.023	0.0	0.0	0.0	1.27	22.5	3.1
3.000	50.00	4.03	137.480	0.006	0.0	0.0	0.0	1.09	8.6	0.8
3.001	50.00	4.08	137.440	0.009	0.0	0.0	0.0	2.14	16.8	1.2
1.003	50.00	4.92	136.815	0.052	0.0	0.0	0.0	1.31	52.1	7.0
1.004	50.00	5.30	136.435	0.126	0.0	0.0	0.0	1.28	90.6	17.1
4.000	50.00	4.02	137.750	0.019	0.0	0.0	0.0	1.09	8.6	2.6
4.001	50.00	4.06	137.730	0.019	0.0	0.0	0.0	2.38	18.7	2.6
4.002	50.00	4.43	137.100	0.036	0.0	0.0	0.0	1.01	17.8	4.9
5.000	50.00	4.02	138.490	0.015	0.0	0.0	0.0	1.09	8.6	2.0
5.001	50.00	4.03	138.470	0.017	0.0	0.0	0.0	4.76	37.4	2.3

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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
4.003	12.740	0.485	26.3	0.005	0.00	0.0	0.600	o	150	Pipe/Conduit		
1.005	6.887	0.046	149.7	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit		
6.000	1.000	0.020	50.0	0.008	4.00	0.0	0.600	o	100	Pipe/Conduit		
6.001	7.071	2.286	3.1	0.000	0.00	0.0	0.600	o	100	Pipe/Conduit		
1.006	6.441	0.043	149.8	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit		
7.000	1.000	0.020	50.0	0.010	4.00	0.0	0.600	o	100	Pipe/Conduit		
7.001	7.071	2.534	2.8	0.000	0.00	0.0	0.600	o	100	Pipe/Conduit		
1.007	10.168	0.068	149.5	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit		
8.000	1.000	0.020	50.0	0.016	4.00	0.0	0.600	o	100	Pipe/Conduit		
8.001	7.182	2.657	2.7	0.000	0.00	0.0	0.600	o	100	Pipe/Conduit		
1.008	5.947	0.040	148.7	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit		
1.009	14.194	0.095	149.4	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit		
1.010	17.468	0.116	150.6	0.062	0.00	0.0	0.600	o	375	Pipe/Conduit		
9.000	1.000	0.020	50.0	0.019	4.00	0.0	0.600	o	100	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)		
4.003	50.00	4.54	136.875	0.058	0.0	0.0	0.0	1.97	34.9	7.9		
1.005	50.00	5.38	136.165	0.184	0.0	0.0	0.0	1.48	163.3	24.9		
6.000	50.00	4.02	138.700	0.008	0.0	0.0	0.0	1.09	8.6	1.1		
6.001	50.00	4.04	138.680	0.008	0.0	0.0	0.0	4.43	34.8	1.1		
1.006	50.00	5.45	136.119	0.192	0.0	0.0	0.0	1.48	163.3	26.0		
7.000	50.00	4.02	138.905	0.010	0.0	0.0	0.0	1.09	8.6	1.4		
7.001	50.00	4.04	138.885	0.010	0.0	0.0	0.0	4.67	36.6	1.4		
1.007	50.00	5.57	136.076	0.202	0.0	0.0	0.0	1.48	163.4	27.4		
8.000	50.00	4.02	138.960	0.016	0.0	0.0	0.0	1.09	8.6	2.2		
8.001	50.00	4.04	138.940	0.016	0.0	0.0	0.0	4.74	37.2	2.2		
1.008	50.00	5.63	136.008	0.218	0.0	0.0	0.0	1.48	163.9	29.5		
1.009	50.00	5.79	135.968	0.218	0.0	0.0	0.0	1.48	163.5	29.5		
1.010	50.00	5.99	135.873	0.280	0.0	0.0	0.0	1.47	162.8	37.9		
9.000	50.00	4.02	138.630	0.019	0.0	0.0	0.0	1.09	8.6	2.6		
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Unit 1, Ensign House
Parkway Court, Longbridge Road
Plymouth, PL6 8LR

VICTORIA ROAD
SWD NETWORK- POND B
30 YEAR

Date 09/09/2025
File SWD NETWORK - POND B - ...

Designed by EPH
Checked by

Innovyze

Network 2019.1

Micro Drainage

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
9.001	5.420	2.578	2.1	0.000	0.00	0.0	0.600	o	100	Pipe/Conduit	
1.011	20.950	0.140	149.6	0.019	0.00	0.0	0.600	o	375	Pipe/Conduit	
10.000	21.119	1.683	12.5	0.037	4.00	0.0	0.600	o	150	Pipe/Conduit	
11.000	9.445	0.160	59.0	0.009	4.00	0.0	0.600	o	100	Pipe/Conduit	
11.001	9.196	1.673	5.5	0.006	0.00	0.0	0.600	o	100	Pipe/Conduit	
1.012	14.290	0.057	250.7	0.048	0.00	0.0	0.600	o	375	Pipe/Conduit	
12.000	1.000	0.020	50.0	0.018	4.00	0.0	0.600	o	100	Pipe/Conduit	
12.001	9.908	1.950	5.1	0.003	0.00	0.0	0.600	o	100	Pipe/Conduit	
1.013	2.337	0.009	250.0	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
1.014	12.859	0.051	250.0	0.010	0.00	0.0	0.600	o	375	Pipe/Conduit	
13.000	1.000	0.020	50.0	0.019	4.00	0.0	0.600	o	100	Pipe/Conduit	
13.001	6.336	1.536	4.1	0.000	0.00	0.0	0.600	o	100	Pipe/Conduit	
1.015	15.541	0.062	250.0	0.025	0.00	0.0	0.600	o	375	Pipe/Conduit	
1.016	10.187	0.217	47.0	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)
9.001	50.00	4.03	138.610	0.019	0.0	0.0	0.0	5.38	42.2	2.6
1.011	50.00	6.23	135.757	0.318	0.0	0.0	0.0	1.48	163.3	43.1
10.000	50.00	4.12	137.525	0.037	0.0	0.0	0.0	2.86	50.5	5.0
11.000	50.00	4.16	137.725	0.009	0.0	0.0	0.0	1.00	7.9	1.2
11.001	50.00	4.20	137.565	0.015	0.0	0.0	0.0	3.32	26.1	2.0
1.012	50.00	6.43	135.617	0.418	0.0	0.0	0.0	1.14	125.9	56.6
12.000	50.00	4.02	137.805	0.018	0.0	0.0	0.0	1.09	8.6	2.4
12.001	50.00	4.06	137.785	0.021	0.0	0.0	0.0	3.45	27.1	2.8
1.013	50.00	6.47	135.560	0.439	0.0	0.0	0.0	1.14	126.1	59.4
1.014	50.00	6.66	135.551	0.449	0.0	0.0	0.0	1.14	126.1	60.8
13.000	50.00	4.02	137.330	0.019	0.0	0.0	0.0	1.09	8.6	2.6
13.001	50.00	4.04	137.310	0.019	0.0	0.0	0.0	3.84	30.1	2.6
1.015	50.00	6.88	135.499	0.493	0.0	0.0	0.0	1.14	126.1	66.8
1.016	50.00	6.95	135.437	0.493	0.0	0.0	0.0	2.65	292.5	66.8

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Innovyze						Network 2019.1							
<u>Network Design Table for Storm</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	
14.000	1.000	0.020	50.0	0.016	4.00	0.0	0.600	o	100	Pipe/Conduit			
14.001	6.264	1.060	5.9	0.000	0.00	0.0	0.600	o	100	Pipe/Conduit			
1.017	17.125	0.364	47.0	0.016	0.00	0.0	0.600	o	375	Pipe/Conduit			
15.000	1.000	0.020	50.0	0.020	4.00	0.0	0.600	o	100	Pipe/Conduit			
15.001	8.005	0.889	9.0	0.000	0.00	0.0	0.600	o	100	Pipe/Conduit			
1.018	11.940	0.254	47.0	0.033	0.00	0.0	0.600	o	375	Pipe/Conduit			
16.000	1.000	0.020	50.0	0.008	4.00	0.0	0.600	o	100	Pipe/Conduit			
16.001	6.790	0.963	7.1	0.000	0.00	0.0	0.600	o	100	Pipe/Conduit			
1.019	4.923	0.105	46.9	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit			
1.020	4.699	0.124	37.9	0.018	0.00	0.0	0.600	o	375	Pipe/Conduit			
17.000	1.000	0.020	50.0	0.007	4.00	0.0	0.600	o	100	Pipe/Conduit			
17.001	7.178	0.937	7.7	0.000	0.00	0.0	0.600	o	100	Pipe/Conduit			
1.021	4.741	0.125	37.9	0.000	0.00	0.0	0.600	o	375	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)			
14.000	50.00	4.02	136.575	0.016	0.0	0.0	0.0	1.09	8.6	2.2			
14.001	50.00	4.05	136.555	0.016	0.0	0.0	0.0	3.20	25.1	2.2			
1.017	50.00	7.05	135.220	0.525	0.0	0.0	0.0	2.65	292.4	71.1			
15.000	50.00	4.02	136.040	0.020	0.0	0.0	0.0	1.09	8.6	2.7			
15.001	50.00	4.07	136.020	0.020	0.0	0.0	0.0	2.59	20.4	2.7			
1.018	50.00	7.13	134.856	0.578	0.0	0.0	0.0	2.65	292.5	78.3			
16.000	50.00	4.02	135.860	0.008	0.0	0.0	0.0	1.09	8.6	1.1			
16.001	50.00	4.05	135.840	0.008	0.0	0.0	0.0	2.93	23.0	1.1			
1.019	50.00	7.16	134.602	0.586	0.0	0.0	0.0	2.65	292.9	79.4			
1.020	50.00	7.19	134.497	0.604	0.0	0.0	0.0	2.95	326.0	81.8			
17.000	50.00	4.02	135.605	0.007	0.0	0.0	0.0	1.09	8.6	0.9			
17.001	50.00	4.06	135.585	0.007	0.0	0.0	0.0	2.81	22.1	0.9			
1.021	50.00	7.21	134.373	0.611	0.0	0.0	0.0	2.95	325.8	82.7			
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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
18.000	1.000	0.020	50.0	0.012	4.00	0.0	0.600	o	100	Pipe/Conduit	
18.001	7.750	0.892	8.7	0.000	0.00	0.0	0.600	o	100	Pipe/Conduit	
1.022	3.784	0.100	37.8	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
1.023	13.150	0.255	51.6	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
19.000	8.622	1.082	8.0	0.000	5.00	3.5	0.600	o	150	Pipe/Conduit	
1.024	12.518	0.373	33.6	0.054	0.00	0.0	0.600	o	375	Pipe/Conduit	
1.025	1.425	0.005	285.0	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
1.026	3.454	0.015	230.3	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
1.027	4.027	0.020	201.4	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.028	7.938	0.476	16.7	0.000	0.00	0.0	0.600	o	150	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)
18.000	50.00	4.02	135.435	0.012	0.0	0.0	0.0	1.09	8.6	1.6
18.001	50.00	4.06	135.415	0.012	0.0	0.0	0.0	2.64	20.7	1.6
1.022	50.00	7.24	134.248	0.623	0.0	0.0	0.0	2.95	326.2	84.4
1.023	50.00	7.32	134.148	0.623	0.0	0.0	0.0	2.53	279.2	84.4
19.000	50.00	5.04	135.200	0.000	3.5	0.0	0.0	3.59	63.5	3.5
1.024	50.00	7.39	133.893	0.677	3.5	0.0	0.0	3.14	346.5	95.2
1.025	50.00	7.41	133.520	0.677	3.5	0.0	0.0	1.07	118.0	95.2
1.026	50.00	7.46	133.515	0.677	3.5	0.0	0.0	1.19	131.4	95.2
1.027	50.00	7.51	133.500	0.677	3.5	0.0	0.0	1.43	227.3	95.2
1.028	50.00	7.56	133.480	0.677	3.5	0.0	0.0	2.48	43.8<	95.2

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Innovyze				Network 2019.1							
<u>Manhole Schedules for Storm</u>											
MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backd (mm)
DIST TANK	138.400	0.725	Open Manhole	450	1.000	137.675	100				
SIC 225-1	138.425	0.770	Open Manhole	450	1.001	137.655	100	1.000	137.655	100	
SMH 61	138.535	1.350	Open Manhole	1200	1.002	137.185	150	1.001	137.235	100	
SWRE 227-4	138.120	0.600	Open Manhole	450	2.000	137.520	100				
SIC 227-3	138.185	0.815	Open Manhole	450	2.001	137.370	100	2.000	137.370	100	
SIC 227-2	138.030	0.850	Open Manhole	450	2.002	137.180	100	2.001	137.180	100	
SIC 227-1	137.995	0.955	Open Manhole	450	2.003	137.040	150	2.002	137.090	100	
DIST TANK	138.120	0.640	Open Manhole	450	3.000	137.480	100				
SIC 226-1	138.170	0.730	Open Manhole	450	3.001	137.440	100	3.000	137.440	100	
SMH 60	138.270	1.455	Open Manhole	1200	1.003	136.815	225	1.002	136.890	150	
								2.003	136.890	150	
								3.001	136.940	100	
SMH 59	138.000	1.565	Open Manhole	1200	1.004	136.435	300	1.003	136.510	225	
DIST TANK	138.540	0.790	Open Manhole	450	4.000	137.750	100				
SIC 1-1	138.640	0.910	Open Manhole	450	4.001	137.730	100	4.000	137.730	100	
SMH 64	138.450	1.350	Open Manhole	1200	4.002	137.100	150	4.001	137.150	100	
DIST TANK	139.130	0.640	Open Manhole	450	5.000	138.490	100				
SIC 4-1	139.250	0.780	Open Manhole	450	5.001	138.470	100	5.000	138.470	100	
SMH 63	139.260	2.385	Open Manhole	1200	4.003	136.875	150	4.002	136.875	150	
								5.001	136.925	100	
SMH 58	139.125	2.960	Open Manhole	1350	1.005	136.165	375	1.004	136.240	300	
								4.003	136.390	150	
DIST TANK	139.340	0.640	Open Manhole	450	6.000	138.700	100				
SIC 5-1	139.425	0.745	Open Manhole	450	6.001	138.680	100	6.000	138.680	100	
JUNCTION	139.375	3.256	Junction		1.006	136.119	375	1.005	136.119	375	
								6.001	136.394	100	
DIST TANK	139.545	0.640	Open Manhole	450	7.000	138.905	100				
SIC 6-1	139.575	0.690	Open Manhole	450	7.001	138.885	100	7.000	138.885	100	
JUNCTION	139.550	3.474	Junction		1.007	136.076	375	1.006	136.076	375	
								7.001	136.351	100	
DIST TANK	139.600	0.640	Open Manhole	450	8.000	138.960	100				
SIC 7-1	139.580	0.640	Open Manhole	450	8.001	138.940	100	8.000	138.940	100	
JUNCTION	139.625	3.617	Junction		1.008	136.008	375	1.007	136.008	375	
								8.001	136.283	100	
SMH 57	139.515	3.547	Open Manhole	1350	1.009	135.968	375	1.008	135.968	375	
SMH 56	139.300	3.427	Open Manhole	1350	1.010	135.873	375	1.009	135.873	375	
DIST TANK	139.272	0.642	Open Manhole	450	9.000	138.630	100				
SIC 10-1	139.272	0.662	Open Manhole	450	9.001	138.610	100	9.000	138.610	100	
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<u>Manhole Schedules for Storm</u>											
MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backsight (mm)
JUNCTION	139.150	3.393	Junction		1.011	135.757	375	1.010	135.757	375	
								9.001	136.032	100	
SMH 62	139.175	1.650	Open Manhole	1200	10.000	137.525	150				
SIC 124-2	138.725	1.000	Open Manhole	450	11.000	137.725	100				
SIC 124-1	139.025	1.460	Open Manhole	450	11.001	137.565	100	11.000	137.565	100	
SMH 55	138.905	3.288	Open Manhole	1350	1.012	135.617	375	1.011	135.617	375	
								10.000	135.842	150	
								11.001	135.892	100	
DIST TANK	138.445	0.640	Open Manhole	450	12.000	137.805	100				
SIC 14-1	138.690	0.905	Open Manhole	450	12.001	137.785	100	12.000	137.785	100	
SMH 54	138.710	3.150	Open Manhole	1350	1.013	135.560	375	1.012	135.560	375	
								12.001	135.835	100	
JUNCTION	138.675	3.124	Junction		1.014	135.551	375	1.013	135.551	375	
DIST TANK	137.970	0.640	Open Manhole	450	13.000	137.330	100				
SIC 121-1	138.285	0.975	Open Manhole	450	13.001	137.310	100	13.000	137.310	100	
JUNCTION	138.295	2.796	Junction		1.015	135.499	375	1.014	135.499	375	
								13.001	135.774	100	
SMH 53	137.800	2.363	Open Manhole	1350	1.016	135.437	375	1.015	135.437	375	
DIST TANK	137.215	0.640	Open Manhole	450	14.000	136.575	100				
SIC 119-1	137.365	0.810	Open Manhole	450	14.001	136.555	100	14.000	136.555	100	
JUNCTION	137.425	2.205	Junction		1.017	135.220	375	1.016	135.220	375	
								14.001	135.495	100	
DIST TANK	136.680	0.640	Open Manhole	450	15.000	136.040	100				
SIC 117-1	136.760	0.740	Open Manhole	450	15.001	136.020	100	15.000	136.020	100	
JUNCTION	137.350	2.494	Junction		1.018	134.856	375	1.017	134.856	375	
								15.001	135.131	100	
DIST TANK	136.500	0.640	Open Manhole	450	16.000	135.860	100				
SIC 104-1	136.550	0.710	Open Manhole	450	16.001	135.840	100	16.000	135.840	100	
JUNCTION	136.515	1.913	Junction		1.019	134.602	375	1.018	134.602	375	
								16.001	134.877	100	
SMH 52	136.375	1.878	Open Manhole	1350	1.020	134.497	375	1.019	134.497	375	
DIST TANK	136.245	0.640	Open Manhole	1200	17.000	135.605	100				
SIC 105-1	136.275	0.690	Open Manhole	1200	17.001	135.585	100	17.000	135.585	100	
JUNCTION	136.275	1.902	Junction		1.021	134.373	375	1.020	134.373	375	
								17.001	134.648	100	
DIST TANK	136.075	0.640	Open Manhole	1200	18.000	135.435	100				
SIC 106-1	136.125	0.710	Open Manhole	1200	18.001	135.415	100	18.000	135.415	100	
JUNCTION	136.140	1.892	Junction		1.022	134.248	375	1.021	134.248	375	
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Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdr (mm)
SMH 51	136.025	1.877	Open Manhole	1350	1.023	134.148	375	18.001	134.523	100	
FC 1	136.350	1.150	Open Manhole	1200	19.000	135.200	150	1.022	134.148	375	
SMH 50B	135.720	1.827	Open Manhole	1350	1.024	133.893	375	1.023	133.893	375	
								19.000	134.118	150	
STORAGE	135.200	1.680	Open Manhole	1350	1.025	133.520	375	1.024	133.520	375	
SMH 50A	135.000	1.485	Open Manhole	1350	1.026	133.515	375	1.025	133.515	375	
POND	134.500	1.000	Open Manhole	1350	1.027	133.500	450	1.026	133.500	375	
FC 2	134.500	1.020	Open Manhole	1350	1.028	133.480	150	1.027	133.480	450	
	133.750	0.746	Open Manhole	0		OUTFALL		1.028	133.004	150	

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

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	o	100	DIST TANK	138.400	137.675	0.625	Open Manhole	450
1.001	o	100	SIC 225-1	138.425	137.655	0.670	Open Manhole	450
1.002	o	150	SMH 61	138.535	137.185	1.200	Open Manhole	1200
2.000	o	100	SWRE 227-4	138.120	137.520	0.500	Open Manhole	450
2.001	o	100	SIC 227-3	138.185	137.370	0.715	Open Manhole	450
2.002	o	100	SIC 227-2	138.030	137.180	0.750	Open Manhole	450
2.003	o	150	SIC 227-1	137.995	137.040	0.805	Open Manhole	450
3.000	o	100	DIST TANK	138.120	137.480	0.540	Open Manhole	450
3.001	o	100	SIC 226-1	138.170	137.440	0.630	Open Manhole	450
1.003	o	225	SMH 60	138.270	136.815	1.230	Open Manhole	1200
1.004	o	300	SMH 59	138.000	136.435	1.265	Open Manhole	1200
4.000	o	100	DIST TANK	138.540	137.750	0.690	Open Manhole	450
4.001	o	100	SIC 1-1	138.640	137.730	0.810	Open Manhole	450
4.002	o	150	SMH 64	138.450	137.100	1.200	Open Manhole	1200
5.000	o	100	DIST TANK	139.130	138.490	0.540	Open Manhole	450
5.001	o	100	SIC 4-1	139.250	138.470	0.680	Open Manhole	450

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	1.000	50.0	SIC 225-1	138.425	137.655	0.670	Open Manhole	450
1.001	5.042	12.0	SMH 61	138.535	137.235	1.200	Open Manhole	1200
1.002	10.188	34.5	SMH 60	138.270	136.890	1.230	Open Manhole	1200
2.000	8.227	54.8	SIC 227-3	138.185	137.370	0.715	Open Manhole	450
2.001	11.400	60.0	SIC 227-2	138.030	137.180	0.750	Open Manhole	450
2.002	5.341	59.3	SIC 227-1	137.995	137.090	0.805	Open Manhole	450
2.003	9.398	62.7	SMH 60	138.270	136.890	1.230	Open Manhole	1200
3.000	2.000	50.0	SIC 226-1	138.170	137.440	0.630	Open Manhole	450
3.001	6.593	13.2	SMH 60	138.270	136.940	1.230	Open Manhole	1200
1.003	30.379	99.6	SMH 59	138.000	136.510	1.265	Open Manhole	1200
1.004	29.182	150.0	SMH 58	139.125	136.240	2.585	Open Manhole	1350
4.000	1.000	50.0	SIC 1-1	138.640	137.730	0.810	Open Manhole	450
4.001	6.211	10.7	SMH 64	138.450	137.150	1.200	Open Manhole	1200
4.002	22.423	99.7	SMH 63	139.260	136.875	2.235	Open Manhole	1200
5.000	1.000	50.0	SIC 4-1	139.250	138.470	0.680	Open Manhole	450
5.001	4.139	2.7	SMH 63	139.260	136.925	2.235	Open Manhole	1200

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
4.003	o	150	SMH 63	139.260	136.875	2.235	Open Manhole	1200
1.005	o	375	SMH 58	139.125	136.165	2.585	Open Manhole	1350
6.000	o	100	DIST TANK	139.340	138.700	0.540	Open Manhole	450
6.001	o	100	SIC 5-1	139.425	138.680	0.645	Open Manhole	450
1.006	o	375	JUNCTION	139.375	136.119	2.881	Junction	
7.000	o	100	DIST TANK	139.545	138.905	0.540	Open Manhole	450
7.001	o	100	SIC 6-1	139.575	138.885	0.590	Open Manhole	450
1.007	o	375	JUNCTION	139.550	136.076	3.099	Junction	
8.000	o	100	DIST TANK	139.600	138.960	0.540	Open Manhole	450
8.001	o	100	SIC 7-1	139.580	138.940	0.540	Open Manhole	450
1.008	o	375	JUNCTION	139.625	136.008	3.242	Junction	
1.009	o	375	SMH 57	139.515	135.968	3.172	Open Manhole	1350
1.010	o	375	SMH 56	139.300	135.873	3.052	Open Manhole	1350

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
4.003	12.740	26.3	SMH 58	139.125	136.390	2.585	Open Manhole	1350
1.005	6.887	149.7	JUNCTION	139.375	136.119	2.881	Junction	
6.000	1.000	50.0	SIC 5-1	139.425	138.680	0.645	Open Manhole	450
6.001	7.071	3.1	JUNCTION	139.375	136.394	2.881	Junction	
1.006	6.441	149.8	JUNCTION	139.550	136.076	3.099	Junction	
7.000	1.000	50.0	SIC 6-1	139.575	138.885	0.590	Open Manhole	450
7.001	7.071	2.8	JUNCTION	139.550	136.351	3.099	Junction	
1.007	10.168	149.5	JUNCTION	139.625	136.008	3.242	Junction	
8.000	1.000	50.0	SIC 7-1	139.580	138.940	0.540	Open Manhole	450
8.001	7.182	2.7	JUNCTION	139.625	136.283	3.242	Junction	
1.008	5.947	148.7	SMH 57	139.515	135.968	3.172	Open Manhole	1350
1.009	14.194	149.4	SMH 56	139.300	135.873	3.052	Open Manhole	1350
1.010	17.468	150.6	JUNCTION	139.150	135.757	3.018	Junction	

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
9.000	o	100	DIST TANK	139.272	138.630	0.542	Open Manhole	450
9.001	o	100	SIC 10-1	139.272	138.610	0.562	Open Manhole	450
1.011	o	375	JUNCTION	139.150	135.757	3.018	Junction	
10.000	o	150	SMH 62	139.175	137.525	1.500	Open Manhole	1200
11.000	o	100	SIC 124-2	138.725	137.725	0.900	Open Manhole	450
11.001	o	100	SIC 124-1	139.025	137.565	1.360	Open Manhole	450
1.012	o	375	SMH 55	138.905	135.617	2.913	Open Manhole	1350
12.000	o	100	DIST TANK	138.445	137.805	0.540	Open Manhole	450
12.001	o	100	SIC 14-1	138.690	137.785	0.805	Open Manhole	450
1.013	o	375	SMH 54	138.710	135.560	2.775	Open Manhole	1350
1.014	o	375	JUNCTION	138.675	135.551	2.749	Junction	
13.000	o	100	DIST TANK	137.970	137.330	0.540	Open Manhole	450
13.001	o	100	SIC 121-1	138.285	137.310	0.875	Open Manhole	450

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
9.000	1.000	50.0	SIC 10-1	139.272	138.610	0.562	Open Manhole	450
9.001	5.420	2.1	JUNCTION	139.150	136.032	3.018	Junction	
1.011	20.950	149.6	SMH 55	138.905	135.617	2.913	Open Manhole	1350
10.000	21.119	12.5	SMH 55	138.905	135.842	2.913	Open Manhole	1350
11.000	9.445	59.0	SIC 124-1	139.025	137.565	1.360	Open Manhole	450
11.001	9.196	5.5	SMH 55	138.905	135.892	2.913	Open Manhole	1350
1.012	14.290	250.7	SMH 54	138.710	135.560	2.775	Open Manhole	1350
12.000	1.000	50.0	SIC 14-1	138.690	137.785	0.805	Open Manhole	450
12.001	9.908	5.1	SMH 54	138.710	135.835	2.775	Open Manhole	1350
1.013	2.337	250.0	JUNCTION	138.675	135.551	2.749	Junction	
1.014	12.859	250.0	JUNCTION	138.295	135.499	2.421	Junction	
13.000	1.000	50.0	SIC 121-1	138.285	137.310	0.875	Open Manhole	450
13.001	6.336	4.1	JUNCTION	138.295	135.774	2.421	Junction	

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.015	o	375	JUNCTION	138.295	135.499	2.421	Junction	
1.016	o	375	SMH 53	137.800	135.437	1.988	Open Manhole	1350
14.000	o	100	DIST TANK	137.215	136.575	0.540	Open Manhole	450
14.001	o	100	SIC 119-1	137.365	136.555	0.710	Open Manhole	450
1.017	o	375	JUNCTION	137.425	135.220	1.830	Junction	
15.000	o	100	DIST TANK	136.680	136.040	0.540	Open Manhole	450
15.001	o	100	SIC 117-1	136.760	136.020	0.640	Open Manhole	450
1.018	o	375	JUNCTION	137.350	134.856	2.119	Junction	
16.000	o	100	DIST TANK	136.500	135.860	0.540	Open Manhole	450
16.001	o	100	SIC 104-1	136.550	135.840	0.610	Open Manhole	450
1.019	o	375	JUNCTION	136.515	134.602	1.538	Junction	
1.020	o	375	SMH 52	136.375	134.497	1.503	Open Manhole	1350
17.000	o	100	DIST TANK	136.245	135.605	0.540	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.015	15.541	250.0	SMH 53	137.800	135.437	1.988	Open Manhole	1350
1.016	10.187	47.0	JUNCTION	137.425	135.220	1.830	Junction	
14.000	1.000	50.0	SIC 119-1	137.365	136.555	0.710	Open Manhole	450
14.001	6.264	5.9	JUNCTION	137.425	135.495	1.830	Junction	
1.017	17.125	47.0	JUNCTION	137.350	134.856	2.119	Junction	
15.000	1.000	50.0	SIC 117-1	136.760	136.020	0.640	Open Manhole	450
15.001	8.005	9.0	JUNCTION	137.350	135.131	2.119	Junction	
1.018	11.940	47.0	JUNCTION	136.515	134.602	1.538	Junction	
16.000	1.000	50.0	SIC 104-1	136.550	135.840	0.610	Open Manhole	450
16.001	6.790	7.1	JUNCTION	136.515	134.877	1.538	Junction	
1.019	4.923	46.9	SMH 52	136.375	134.497	1.503	Open Manhole	1350
1.020	4.699	37.9	JUNCTION	136.275	134.373	1.527	Junction	
17.000	1.000	50.0	SIC 105-1	136.275	135.585	0.590	Open Manhole	1200

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
17.001	o	100	SIC 105-1	136.275	135.585	0.590	Open Manhole	1200
1.021	o	375	JUNCTION	136.275	134.373	1.527	Junction	
18.000	o	100	DIST TANK	136.075	135.435	0.540	Open Manhole	1200
18.001	o	100	SIC 106-1	136.125	135.415	0.610	Open Manhole	1200
1.022	o	375	JUNCTION	136.140	134.248	1.517	Junction	
1.023	o	375	SMH 51	136.025	134.148	1.502	Open Manhole	1350
19.000	o	150	FC 1	136.350	135.200	1.000	Open Manhole	1200
1.024	o	375	SMH 50B	135.720	133.893	1.452	Open Manhole	1350
1.025	o	375	STORAGE	135.200	133.520	1.305	Open Manhole	1350
1.026	o	375	SMH 50A	135.000	133.515	1.110	Open Manhole	1350
1.027	o	450	POND	134.500	133.500	0.550	Open Manhole	1350
1.028	o	150	FC 2	134.500	133.480	0.870	Open Manhole	1350

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
17.001	7.178	7.7	JUNCTION	136.275	134.648	1.527	Junction	
1.021	4.741	37.9	JUNCTION	136.140	134.248	1.517	Junction	
18.000	1.000	50.0	SIC 106-1	136.125	135.415	0.610	Open Manhole	1200
18.001	7.750	8.7	JUNCTION	136.140	134.523	1.517	Junction	
1.022	3.784	37.8	SMH 51	136.025	134.148	1.502	Open Manhole	1350
1.023	13.150	51.6	SMH 50B	135.720	133.893	1.452	Open Manhole	1350
19.000	8.622	8.0	SMH 50B	135.720	134.118	1.452	Open Manhole	1350
1.024	12.518	33.6	STORAGE	135.200	133.520	1.305	Open Manhole	1350
1.025	1.425	285.0	SMH 50A	135.000	133.515	1.110	Open Manhole	1350
1.026	3.454	230.3	POND	134.500	133.500	0.625	Open Manhole	1350
1.027	4.027	201.4	FC 2	134.500	133.480	0.570	Open Manhole	1350
1.028	7.938	16.7		133.750	133.004	0.596	Open Manhole	0

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.028		133.750	133.004	0.000	0	0

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Simulation Criteria for Storm

Volumetric Runoff Coeff	0.840	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m ³ /ha Storage	0.000
Hot Start (mins)	0	Inlet 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	17
Number of Online Controls	16	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH
Return Period (years)	1
FEH Rainfall Version	1999
Site Location	GB 386850 145550 ST 86850 45550
C (1km)	-0.027
D1 (1km)	0.363
D2 (1km)	0.417
D3 (1km)	0.273
E (1km)	0.289
F (1km)	2.484
Summer Storms	No
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Storm Duration (mins)	15

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<u>Online Controls for Storm</u> <u>Orifice Manhole: SIC 225-1, DS/PN: 1.001, Volume (m³): 0.1</u> Diameter (m) 0.020 Discharge Coefficient 0.600 Invert Level (m) 137.655 <u>Orifice Manhole: SIC 226-1, DS/PN: 3.001, Volume (m³): 0.1</u> Diameter (m) 0.015 Discharge Coefficient 0.600 Invert Level (m) 137.440 <u>Orifice Manhole: SIC 1-1, DS/PN: 4.001, Volume (m³): 0.1</u> Diameter (m) 0.025 Discharge Coefficient 0.600 Invert Level (m) 137.730 <u>Orifice Manhole: SIC 4-1, DS/PN: 5.001, Volume (m³): 0.1</u> Diameter (m) 0.020 Discharge Coefficient 0.600 Invert Level (m) 138.470 <u>Orifice Manhole: SIC 5-1, DS/PN: 6.001, Volume (m³): 0.1</u> Diameter (m) 0.015 Discharge Coefficient 0.600 Invert Level (m) 138.680 <u>Orifice Manhole: SIC 6-1, DS/PN: 7.001, Volume (m³): 0.1</u> Diameter (m) 0.020 Discharge Coefficient 0.600 Invert Level (m) 138.885 <u>Orifice Manhole: SIC 7-1, DS/PN: 8.001, Volume (m³): 0.1</u> Diameter (m) 0.015 Discharge Coefficient 0.600 Invert Level (m) 138.940 <u>Orifice Manhole: SIC 10-1, DS/PN: 9.001, Volume (m³): 0.1</u> Diameter (m) 0.020 Discharge Coefficient 0.600 Invert Level (m) 138.610 <u>Orifice Manhole: SIC 14-1, DS/PN: 12.001, Volume (m³): 0.1</u> Diameter (m) 0.025 Discharge Coefficient 0.600 Invert Level (m) 137.785 <u>Orifice Manhole: SIC 121-1, DS/PN: 13.001, Volume (m³): 0.2</u> Diameter (m) 0.020 Discharge Coefficient 0.600 Invert Level (m) 137.310 <u>Orifice Manhole: SIC 119-1, DS/PN: 14.001, Volume (m³): 0.1</u> Diameter (m) 0.015 Discharge Coefficient 0.600 Invert Level (m) 136.555		
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Unit 1, Ensign House Parkway Court, Longbridge Road Plymouth, PL6 8LR	VICTORIA ROAD SWD NETWORK- POND B 30 YEAR																																																																																																														
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<u>Orifice Manhole: SIC 117-1, DS/PN: 15.001, Volume (m³): 0.1</u> Diameter (m) 0.020 Discharge Coefficient 0.600 Invert Level (m) 136.020 <u>Orifice Manhole: SIC 104-1, DS/PN: 16.001, Volume (m³): 0.1</u> Diameter (m) 0.015 Discharge Coefficient 0.600 Invert Level (m) 135.840 <u>Orifice Manhole: SIC 105-1, DS/PN: 17.001, Volume (m³): 0.8</u> Diameter (m) 0.015 Discharge Coefficient 0.600 Invert Level (m) 135.585 <u>Orifice Manhole: SIC 106-1, DS/PN: 18.001, Volume (m³): 0.8</u> Diameter (m) 0.015 Discharge Coefficient 0.600 Invert Level (m) 135.415 <u>Hydro-Brake® Optimum Manhole: FC 2, DS/PN: 1.028, Volume (m³): 1.9</u> <table><tr><td>Unit Reference</td><td>MD-SHE-0130-7300-0730-7300</td></tr><tr><td>Design Head (m)</td><td>0.730</td></tr><tr><td>Design Flow (l/s)</td><td>7.3</td></tr><tr><td>Flush-Flo™</td><td>Calculated</td></tr><tr><td>Objective</td><td>Minimise upstream storage</td></tr><tr><td>Application</td><td>Surface</td></tr><tr><td>Sump Available</td><td>Yes</td></tr><tr><td>Diameter (mm)</td><td>130</td></tr><tr><td>Invert Level (m)</td><td>133.480</td></tr><tr><td>Minimum Outlet Pipe Diameter (mm)</td><td>150</td></tr><tr><td>Suggested Manhole Diameter (mm)</td><td>1200</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>0.730</td><td>7.3</td></tr><tr><td>Flush-Flo™</td><td>0.235</td><td>7.3</td></tr><tr><td>Kick-Flo®</td><td>0.518</td><td>6.2</td></tr><tr><td>Mean Flow over Head Range</td><td>-</td><td>6.2</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>4.7</td><td>1.200</td><td>9.2</td><td>3.000</td><td>14.2</td><td>7.000</td><td>21.3</td></tr><tr><td>0.200</td><td>7.3</td><td>1.400</td><td>9.9</td><td>3.500</td><td>15.3</td><td>7.500</td><td>22.0</td></tr><tr><td>0.300</td><td>7.2</td><td>1.600</td><td>10.5</td><td>4.000</td><td>16.3</td><td>8.000</td><td>22.7</td></tr><tr><td>0.400</td><td>7.0</td><td>1.800</td><td>11.1</td><td>4.500</td><td>17.2</td><td>8.500</td><td>23.4</td></tr><tr><td>0.500</td><td>6.4</td><td>2.000</td><td>11.7</td><td>5.000</td><td>18.1</td><td>9.000</td><td>24.1</td></tr><tr><td>0.600</td><td>6.7</td><td>2.200</td><td>12.3</td><td>5.500</td><td>19.0</td><td>9.500</td><td>24.7</td></tr><tr><td>0.800</td><td>7.6</td><td>2.400</td><td>12.8</td><td>6.000</td><td>19.8</td><td></td><td></td></tr><tr><td>1.000</td><td>8.4</td><td>2.600</td><td>13.3</td><td>6.500</td><td>20.6</td><td></td><td></td></tr></table>			Unit Reference	MD-SHE-0130-7300-0730-7300	Design Head (m)	0.730	Design Flow (l/s)	7.3	Flush-Flo™	Calculated	Objective	Minimise upstream storage	Application	Surface	Sump Available	Yes	Diameter (mm)	130	Invert Level (m)	133.480	Minimum Outlet Pipe Diameter (mm)	150	Suggested Manhole Diameter (mm)	1200	Control Points	Head (m)	Flow (l/s)	Design Point (Calculated)	0.730	7.3	Flush-Flo™	0.235	7.3	Kick-Flo®	0.518	6.2	Mean Flow over Head Range	-	6.2	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	0.100	4.7	1.200	9.2	3.000	14.2	7.000	21.3	0.200	7.3	1.400	9.9	3.500	15.3	7.500	22.0	0.300	7.2	1.600	10.5	4.000	16.3	8.000	22.7	0.400	7.0	1.800	11.1	4.500	17.2	8.500	23.4	0.500	6.4	2.000	11.7	5.000	18.1	9.000	24.1	0.600	6.7	2.200	12.3	5.500	19.0	9.500	24.7	0.800	7.6	2.400	12.8	6.000	19.8			1.000	8.4	2.600	13.3	6.500	20.6		
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Storage Structures for Storm Porous Car Park Manhole: DIST TANK, DS/PN: 1.000 Infiltration Coefficient Base (m/hr) 0.01080 Width (m) 6.0 Membrane Percolation (mm/hr) 1000 Length (m) 10.0 Max Percolation (l/s) 16.7 Slope (1:X) 0.0 Safety Factor 5.0 Depression Storage (mm) 5 Porosity 0.30 Evaporation (mm/day) 3 Invert Level (m) 137.675 Membrane Depth (mm) 0 Porous Car Park Manhole: DIST TANK, DS/PN: 3.000 Infiltration Coefficient Base (m/hr) 0.01080 Width (m) 3.0 Membrane Percolation (mm/hr) 1000 Length (m) 9.6 Max Percolation (l/s) 8.0 Slope (1:X) 0.0 Safety Factor 5.0 Depression Storage (mm) 5 Porosity 0.30 Evaporation (mm/day) 3 Invert Level (m) 137.480 Membrane Depth (mm) 0 Porous Car Park Manhole: DIST TANK, DS/PN: 4.000 Infiltration Coefficient Base (m/hr) 0.01080 Width (m) 6.4 Membrane Percolation (mm/hr) 1000 Length (m) 5.8 Max Percolation (l/s) 10.3 Slope (1:X) 0.0 Safety Factor 5.0 Depression Storage (mm) 5 Porosity 0.30 Evaporation (mm/day) 3 Invert Level (m) 137.750 Membrane Depth (mm) 0 Porous Car Park Manhole: DIST TANK, DS/PN: 5.000 Infiltration Coefficient Base (m/hr) 0.01080 Width (m) 6.0 Membrane Percolation (mm/hr) 1000 Length (m) 9.6 Max Percolation (l/s) 16.0 Slope (1:X) 0.0 Safety Factor 5.0 Depression Storage (mm) 5 Porosity 0.30 Evaporation (mm/day) 3 Invert Level (m) 138.490 Membrane Depth (mm) 0 Porous Car Park Manhole: DIST TANK, DS/PN: 6.000 Infiltration Coefficient Base (m/hr) 0.01080 Width (m) 4.8 Membrane Percolation (mm/hr) 1000 Length (m) 4.8 Max Percolation (l/s) 6.4 Slope (1:X) 0.0 Safety Factor 5.0 Depression Storage (mm) 5 Porosity 0.30 Evaporation (mm/day) 3 Invert Level (m) 138.700 Membrane Depth (mm) 0 Porous Car Park Manhole: DIST TANK, DS/PN: 7.000 Infiltration Coefficient Base (m/hr) 0.01080 Max Percolation (l/s) 6.4 Membrane Percolation (mm/hr) 1000 Safety Factor 5.0		
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<u>Porous Car Park Manhole: DIST TANK, DS/PN: 7.000</u> <table><tr><td>Porosity</td><td>0.30</td><td>Slope (1:X)</td><td>0.0</td></tr><tr><td>Invert Level (m)</td><td>138.905</td><td>Depression Storage (mm)</td><td>5</td></tr><tr><td>Width (m)</td><td>4.8</td><td>Evaporation (mm/day)</td><td>3</td></tr><tr><td>Length (m)</td><td>4.8</td><td>Membrane Depth (mm)</td><td>0</td></tr></table> <u>Porous Car Park Manhole: DIST TANK, DS/PN: 8.000</u> <table><tr><td>Infiltration Coefficient Base (m/hr)</td><td>0.01080</td><td>Width (m)</td><td>6.0</td></tr><tr><td>Membrane Percolation (mm/hr)</td><td>1000</td><td>Length (m)</td><td>9.6</td></tr><tr><td>Max Percolation (l/s)</td><td>16.0</td><td>Slope (1:X)</td><td>0.0</td></tr><tr><td>Safety Factor</td><td>5.0</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>138.960</td><td>Membrane Depth (mm)</td><td>0</td></tr></table> <u>Porous Car Park Manhole: DIST TANK, DS/PN: 9.000</u> <table><tr><td>Infiltration Coefficient Base (m/hr)</td><td>0.01080</td><td>Width (m)</td><td>6.0</td></tr><tr><td>Membrane Percolation (mm/hr)</td><td>1000</td><td>Length (m)</td><td>9.6</td></tr><tr><td>Max Percolation (l/s)</td><td>16.0</td><td>Slope (1:X)</td><td>0.0</td></tr><tr><td>Safety Factor</td><td>5.0</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>138.630</td><td>Membrane Depth (mm)</td><td>0</td></tr></table> <u>Porous Car Park Manhole: DIST TANK, DS/PN: 12.000</u> <table><tr><td>Infiltration Coefficient Base (m/hr)</td><td>0.01080</td><td>Width (m)</td><td>6.0</td></tr><tr><td>Membrane Percolation (mm/hr)</td><td>1000</td><td>Length (m)</td><td>9.6</td></tr><tr><td>Max Percolation (l/s)</td><td>16.0</td><td>Slope (1:X)</td><td>0.0</td></tr><tr><td>Safety Factor</td><td>5.0</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>137.805</td><td>Membrane Depth (mm)</td><td>0</td></tr></table> <u>Porous Car Park Manhole: DIST TANK, DS/PN: 13.000</u> <table><tr><td>Infiltration Coefficient Base (m/hr)</td><td>0.01080</td><td>Width (m)</td><td>6.0</td></tr><tr><td>Membrane Percolation (mm/hr)</td><td>1000</td><td>Length (m)</td><td>9.6</td></tr><tr><td>Max Percolation (l/s)</td><td>16.0</td><td>Slope (1:X)</td><td>0.0</td></tr><tr><td>Safety Factor</td><td>5.0</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>137.330</td><td>Membrane Depth (mm)</td><td>0</td></tr></table> <u>Porous Car Park Manhole: DIST TANK, DS/PN: 14.000</u> <table><tr><td>Infiltration Coefficient Base (m/hr)</td><td>0.01080</td><td>Width (m)</td><td>6.0</td></tr><tr><td>Membrane Percolation (mm/hr)</td><td>1000</td><td>Length (m)</td><td>9.6</td></tr><tr><td>Max Percolation (l/s)</td><td>16.0</td><td>Slope (1:X)</td><td>0.0</td></tr><tr><td>Safety Factor</td><td>5.0</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>136.575</td><td>Membrane Depth (mm)</td><td>0</td></tr></table>			Porosity	0.30	Slope (1:X)	0.0	Invert Level (m)	138.905	Depression Storage (mm)	5	Width (m)	4.8	Evaporation (mm/day)	3	Length (m)	4.8	Membrane Depth (mm)	0	Infiltration Coefficient Base (m/hr)	0.01080	Width (m)	6.0	Membrane Percolation (mm/hr)	1000	Length (m)	9.6	Max Percolation (l/s)	16.0	Slope (1:X)	0.0	Safety Factor	5.0	Depression Storage (mm)	5	Porosity	0.30	Evaporation (mm/day)	3	Invert Level (m)	138.960	Membrane Depth (mm)	0	Infiltration Coefficient Base (m/hr)	0.01080	Width (m)	6.0	Membrane Percolation (mm/hr)	1000	Length (m)	9.6	Max Percolation (l/s)	16.0	Slope (1:X)	0.0	Safety Factor	5.0	Depression Storage (mm)	5	Porosity	0.30	Evaporation (mm/day)	3	Invert Level (m)	138.630	Membrane Depth (mm)	0	Infiltration Coefficient Base (m/hr)	0.01080	Width (m)	6.0	Membrane Percolation (mm/hr)	1000	Length (m)	9.6	Max Percolation (l/s)	16.0	Slope (1:X)	0.0	Safety Factor	5.0	Depression Storage (mm)	5	Porosity	0.30	Evaporation (mm/day)	3	Invert Level (m)	137.805	Membrane Depth (mm)	0	Infiltration Coefficient Base (m/hr)	0.01080	Width (m)	6.0	Membrane Percolation (mm/hr)	1000	Length (m)	9.6	Max Percolation (l/s)	16.0	Slope (1:X)	0.0	Safety Factor	5.0	Depression Storage (mm)	5	Porosity	0.30	Evaporation (mm/day)	3	Invert Level (m)	137.330	Membrane Depth (mm)	0	Infiltration Coefficient Base (m/hr)	0.01080	Width (m)	6.0	Membrane Percolation (mm/hr)	1000	Length (m)	9.6	Max Percolation (l/s)	16.0	Slope (1:X)	0.0	Safety Factor	5.0	Depression Storage (mm)	5	Porosity	0.30	Evaporation (mm/day)	3	Invert Level (m)	136.575	Membrane Depth (mm)	0
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Innovyze	Network 2019.1	

Summary of Critical Results by Maximum Level (Rank 1) 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 0.000
 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 17
 Number of Online Controls 16 Number of Time/Area Diagrams 0
 Number of Offline Controls 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH
 FEH Rainfall Version 1999
 Site Location GB 386850 145550 ST 86850 45550
 C (1km) -0.027
 D1 (1km) 0.363
 D2 (1km) 0.417
 D3 (1km) 0.273
 E (1km) 0.289
 F (1km) 2.484
 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 OFF
 DVD Status ON
 Inertia Status ON

Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600,
 720, 960, 1440, 2160, 2880, 4320, 5760,
 7200, 8640, 10080
 Return Period(s) (years) 30
 Climate Change (%) 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
1.000	DIST TANK	180 Winter	30	+0%	30/15 Summer			
1.001	SIC 225-1	120 Winter	30	+0%	30/15 Summer			
1.002	SMH 61	180 Winter	30	+0%				
2.000	SWRE 227-4	15 Winter	30	+0%				
2.001	SIC 227-3	15 Winter	30	+0%				
2.002	SIC 227-2	15 Summer	30	+0%				
2.003	SIC 227-1	15 Summer	30	+0%				
3.000	DIST TANK	120 Winter	30	+0%	30/15 Summer			
3.001	SIC 226-1	120 Winter	30	+0%	30/15 Summer			
1.003	SMH 60	15 Winter	30	+0%				

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

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	DIST TANK	137.906	0.131	0.000	0.10		0.4	SURCHARGED	
1.001	SIC 225-1	137.917	0.162	0.000	0.03		0.4	SURCHARGED	
1.002	SMH 61	137.196	-0.139	0.000	0.02		0.4	OK	
2.000	SWRE 227-4	137.547	-0.073	0.000	0.17		1.3	OK	
2.001	SIC 227-3	137.410	-0.060	0.000	0.34		2.5	OK	
2.002	SIC 227-2	137.222	-0.058	0.000	0.37		2.5	OK	
2.003	SIC 227-1	137.114	-0.076	0.000	0.49		9.7	OK	
3.000	DIST TANK	137.668	0.088	0.000	0.04		0.2	SURCHARGED	
3.001	SIC 226-1	137.672	0.132	0.000	0.01		0.2	SURCHARGED	
1.003	SMH 60	136.884	-0.156	0.000	0.21		10.0	OK	

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Plymouth, PL6 8LR

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File SWD NETWORK - POND B - ...

VICTORIA ROAD
SWD NETWORK- POND B
30 YEAR

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Micro Drainage

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

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.
1.004	SMH 59	15 Winter	30	+0%				
4.000	DIST TANK	60 Winter	30	+0%	30/15 Summer			
4.001	SIC 1-1	60 Winter	30	+0%	30/15 Summer			
4.002	SMH 64	15 Winter	30	+0%				
5.000	DIST TANK	120 Winter	30	+0%	30/15 Summer			
5.001	SIC 4-1	180 Winter	30	+0%	30/15 Summer			
4.003	SMH 63	15 Winter	30	+0%				
1.005	SMH 58	15 Winter	30	+0%				
6.000	DIST TANK	120 Winter	30	+0%	30/15 Summer			
6.001	SIC 5-1	180 Winter	30	+0%	30/15 Summer			
1.006	JUNCTION	15 Winter	30	+0%				
7.000	DIST TANK	60 Winter	30	+0%	30/15 Summer			
7.001	SIC 6-1	60 Winter	30	+0%	30/15 Summer			
1.007	JUNCTION	15 Winter	30	+0%				
8.000	DIST TANK	240 Winter	30	+0%	30/15 Summer			
8.001	SIC 7-1	240 Winter	30	+0%	30/15 Summer			
1.008	JUNCTION	15 Winter	30	+0%				
1.009	SMH 57	15 Winter	30	+0%				
1.010	SMH 56	15 Winter	30	+0%	30/15 Winter			
9.000	DIST TANK	120 Winter	30	+0%	30/15 Summer			
9.001	SIC 10-1	240 Winter	30	+0%	30/15 Summer			
1.011	JUNCTION	15 Winter	30	+0%				
10.000	SMH 62	15 Winter	30	+0%				
11.000	SIC 124-2	15 Winter	30	+0%				
11.001	SIC 124-1	15 Winter	30	+0%				
1.012	SMH 55	15 Winter	30	+0%	30/15 Summer			
12.000	DIST TANK	120 Winter	30	+0%	30/15 Summer			
12.001	SIC 14-1	60 Winter	30	+0%	30/15 Summer			
1.013	SMH 54	15 Winter	30	+0%	30/15 Summer			
1.014	JUNCTION	15 Winter	30	+0%				
13.000	DIST TANK	120 Winter	30	+0%	30/15 Summer			
13.001	SIC 121-1	240 Winter	30	+0%	30/15 Summer			
1.015	JUNCTION	15 Winter	30	+0%				
1.016	SMH 53	15 Winter	30	+0%				
14.000	DIST TANK	240 Winter	30	+0%	30/15 Summer			
14.001	SIC 119-1	240 Winter	30	+0%	30/15 Summer			
1.017	JUNCTION	15 Winter	30	+0%				
15.000	DIST TANK	180 Winter	30	+0%	30/15 Summer			
15.001	SIC 117-1	180 Winter	30	+0%	30/15 Summer			
1.018	JUNCTION	15 Winter	30	+0%				
16.000	DIST TANK	120 Winter	30	+0%	30/15 Summer			
16.001	SIC 104-1	180 Winter	30	+0%	30/15 Summer			
1.019	JUNCTION	15 Winter	30	+0%				
1.020	SMH 52	15 Winter	30	+0%				
17.000	DIST TANK	120 Winter	30	+0%	30/15 Summer			
17.001	SIC 105-1	120 Winter	30	+0%	30/15 Summer			
1.021	JUNCTION	15 Winter	30	+0%				
18.000	DIST TANK	180 Winter	30	+0%	30/15 Summer			
18.001	SIC 106-1	180 Winter	30	+0%	30/15 Summer			

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Summary of Critical Results by Maximum Level (Rank 1) for Storm									
PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.004	SMH 59	136.585	-0.150	0.000	0.49		40.6	OK	
4.000	DIST TANK	138.040	0.190	0.000	0.18		0.7	SURCHARGED	
4.001	SIC 1-1	138.030	0.200	0.000	0.04		0.7	SURCHARGED	
4.002	SMH 64	137.171	-0.079	0.000	0.45		7.6	OK	
5.000	DIST TANK	138.686	0.096	0.000	0.10		0.4	SURCHARGED	
5.001	SIC 4-1	138.702	0.132	0.000	0.01		0.4	SURCHARGED	
4.003	SMH 63	136.933	-0.092	0.000	0.31		9.9	OK	
1.005	SMH 58	136.429	-0.111	0.000	0.47		49.9	OK	
6.000	DIST TANK	138.909	0.109	0.000	0.06		0.2	SURCHARGED	
6.001	SIC 5-1	138.915	0.135	0.000	0.01		0.2	SURCHARGED	
1.006	JUNCTION	136.413	-0.081	0.000	0.47		50.4	OK*	
7.000	DIST TANK	139.137	0.132	0.000	0.10		0.4	SURCHARGED	
7.001	SIC 6-1	139.132	0.147	0.000	0.01		0.4	SURCHARGED	
1.007	JUNCTION	136.393	-0.058	0.000	0.47		50.0	OK*	
8.000	DIST TANK	139.175	0.115	0.000	0.06		0.2	SURCHARGED	
8.001	SIC 7-1	139.197	0.157	0.000	0.01		0.2	SURCHARGED	
1.008	JUNCTION	136.361	-0.022	0.000	0.47		50.1	OK*	
1.009	SMH 57	136.322	-0.021	0.000	0.43		52.0	OK	
1.010	SMH 56	136.264	0.016	0.000	0.50		66.0	SURCHARGED	
9.000	DIST TANK	138.856	0.126	0.000	0.10		0.4	SURCHARGED	
9.001	SIC 10-1	138.866	0.156	0.000	0.01		0.4	SURCHARGED	
1.011	JUNCTION	136.132	0.000	0.000	0.50		73.8	SURCHARGED*	
10.000	SMH 62	137.584	-0.091	0.000	0.33		15.6	OK	
11.000	SIC 124-2	137.776	-0.049	0.000	0.52		3.8	OK	
11.001	SIC 124-1	137.600	-0.065	0.000	0.26		6.3	OK	
1.012	SMH 55	136.042	0.050	0.000	0.90		90.0	SURCHARGED	
12.000	DIST TANK	138.026	0.121	0.000	0.15		0.6	SURCHARGED	
12.001	SIC 14-1	138.039	0.154	0.000	0.02		0.6	SURCHARGED	
1.013	SMH 54	135.952	0.017	0.000	1.03		88.3	SURCHARGED	
1.014	JUNCTION	135.827	-0.099	0.000	0.85		91.6	OK*	
13.000	DIST TANK	137.556	0.126	0.000	0.10		0.4	SURCHARGED	
13.001	SIC 121-1	137.565	0.155	0.000	0.01		0.4	SURCHARGED	
1.015	JUNCTION	135.788	-0.086	0.000	0.94		100.7	OK*	
1.016	SMH 53	135.636	-0.175	0.000	0.55		100.6	OK	
14.000	DIST TANK	136.790	0.115	0.000	0.06		0.2	SURCHARGED	
14.001	SIC 119-1	136.812	0.157	0.000	0.01		0.2	SURCHARGED	
1.017	JUNCTION	135.397	-0.198	0.000	0.45		106.5	OK*	
15.000	DIST TANK	136.235	0.095	0.000	0.10		0.4	SURCHARGED	
15.001	SIC 117-1	136.256	0.136	0.000	0.02		0.4	SURCHARGED	
1.018	JUNCTION	135.068	-0.163	0.000	0.60		118.7	OK*	
16.000	DIST TANK	136.069	0.109	0.000	0.06		0.2	SURCHARGED	
16.001	SIC 104-1	136.075	0.135	0.000	0.01		0.2	SURCHARGED	
1.019	JUNCTION	134.888	-0.089	0.000	0.93		118.1	OK*	
1.020	SMH 52	134.777	-0.095	0.000	0.89		123.1	OK	
17.000	DIST TANK	135.751	0.046	0.000	0.06		0.2	SURCHARGED	
17.001	SIC 105-1	135.751	0.066	0.000	0.01		0.2	SURCHARGED	
1.021	JUNCTION	134.662	-0.086	0.000	0.89		123.7	OK*	
18.000	DIST TANK	135.614	0.079	0.000	0.06		0.2	SURCHARGED	
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Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Cap. (l/s)	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
18.001	SIC 106-1	135.614	0.099	0.000	0.01		0.2	SURCHARGED	

