

Technical design note

Project name	Phase 2A, Himley		
Design note title	Phase 2A, LLFA Drainage Response		
Document reference	27141-HYD-2A-XX-TN-C-0006		
Author	Olivia Dent		
Revision	P01		
Date	20 August 2024	Approved	<input type="checkbox"/>

This Technical Note has been produced to support the Microdrainage calculations for Phase 2A of the development at Himley Village, Bicester (planning reference: 23/O1586/REM) and in response to comments received from the LLFA

Drainage Strategy

The Phase 2A Microdrainage calculations have been provided as part of the wider strategic surface water network model (known as Phase 1B).

Phase 2A is split into two residential parcels: east and west; these have been highlighted in the appended microdrainage calculates in green and pink respectively.

Both parcels have a maximum discharge into the downstream network of 10L/s as approved under the Phase 1B strategy.

The calculations show that there is no flooding within the Phase 2A network in all design storm events including the 1 in 1 year, 1 in 30 year, and 1 in 100 year + 40% CC.

Elsewhere in the network, minor levels of flooding are shown in the 1 in 100 year + 40% CC. Pipe no. 27.001 has a larger flood volume, however this is a dummy run through a future phase as indicated by the 'SXX' in the upstream manhole reference and this flood volume will be designed out when that phase comes forward with a fixed layout.

Appendix A - Microdrainage Calculations

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Phase 2A Eastern Parcel

STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for NW3 Storm + 2A

Phase 2A Western Parcel

Note, all dummy nodes serving future phases are marked with an XX

- Indicates pipe length does not match coordinates
« - Indicates pipe capacity < flow

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
S1.000	66.731	0.970	68.8	0.136	5.00	0.0	0.600		o	225	Pipe/Conduit	
S2.000	70.318	0.820	85.8	0.177	5.00	0.0	0.600		o	375	Pipe/Conduit	
S1.001	18.215	0.091	200.0	0.133	0.00	0.0	0.600		o	375	Pipe/Conduit	
S1.002	12.254	0.061	200.9	0.034	0.00	0.0	0.600		o	450	Pipe/Conduit	
S1.003	23.154	0.478	48.4	0.000	0.00	0.0	0.600		o	450	Pipe/Conduit	
S1.004	52.204	0.350	149.2	0.067	0.00	0.0	0.600		o	450	Pipe/Conduit	
S1.005	69.675	0.450	154.8	0.290	0.00	0.0	0.600		o	450	Pipe/Conduit	
S1.006	36.329	0.180	201.8	0.041	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)
S1.000	50.00	5.70	93.100	0.136	0.0	0.0	0.0	1.58	62.8	18.4
S2.000	50.00	5.60	92.800	0.177	0.0	0.0	0.0	1.96	216.2	24.0
S1.001	50.00	5.94	91.980	0.446	0.0	0.0	0.0	1.28	141.1	60.4
S1.002	50.00	6.08	91.814	0.480	0.0	0.0	0.0	1.43	227.6	65.0
S1.003	50.00	6.22	91.753	0.480	0.0	0.0	0.0	2.93	465.5	65.0
S1.004	50.00	6.74	91.275	0.547	0.0	0.0	0.0	1.66	264.4	74.1
S1.005	50.00	7.45	90.925	0.837	0.0	0.0	0.0	1.63	259.5	113.3
S1.006	50.00	7.88	90.475	0.878	0.0	0.0	0.0	1.43	227.0	118.9



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Network Design Table for NW3 Storm + 2A

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
S1.007	12.507	0.031	400.0	0.033	0.00	0.0	0.600		o	600	Pipe/Conduit	
S1.008	13.972	0.035	400.0	0.237	0.00	0.0	0.600		o	600	Pipe/Conduit	
S1.009	37.892	0.179	211.7	0.039	0.00	0.0	0.600		o	600	Pipe/Conduit	
S1.010	14.772	0.050	295.4	0.081	0.00	0.0	0.600		o	600	Pipe/Conduit	
S1.011	35.821	0.150	238.8	0.000	0.00	0.0	0.600		o	600	Pipe/Conduit	
S3.000	35.797	0.450	79.5	0.178	5.00	0.0	0.600		o	225	Pipe/Conduit	
S3.001	13.454	0.725	18.6	0.118	0.00	0.0	0.600		o	300	Pipe/Conduit	
S3.002	9.725	0.150	64.8	0.000	0.00	0.0	0.600		o	300	Pipe/Conduit	
S1.012	11.254	0.111	101.4	0.106	0.00	0.0	0.600		o	150	Pipe/Conduit	
S1.013	32.595	0.249	130.9	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	
S1.014	73.512	0.348	211.2	0.102	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)
S1.007	50.00	8.05	90.145	0.911	0.0	0.0	0.0	1.21	342.5	123.4
S1.008	50.00	8.24	90.114	1.148	0.0	0.0	0.0	1.21	342.5	155.5
S1.009	50.00	8.62	90.079	1.187	0.0	0.0	0.0	1.67	472.1	160.7
S1.010	50.00	8.79	89.900	1.268	0.0	0.0	0.0	1.41	399.1	171.7
S1.011	50.00	9.17	89.850	1.268	0.0	0.0	0.0	1.57	444.3	171.7
S3.000	50.00	5.41	91.100	0.178	0.0	0.0	0.0	1.47	58.3	24.1
S3.001	50.00	5.47	90.575	0.296	0.0	0.0	0.0	3.67	259.2	40.1
S3.002	50.00	5.55	89.850	0.296	0.0	0.0	0.0	1.96	138.2	40.1
S1.012	50.00	9.36	89.700	1.670	0.0	0.0	0.0	1.00	17.6	226.1
S1.013	50.00	9.84	89.589	1.670	0.0	0.0	0.0	1.14	45.4	226.1
S1.014	50.00	10.97	89.265	1.772	0.0	0.0	0.0	1.08	76.2	240.0



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Network Design Table for NW3 Storm + 2A

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
S4.000	52.488	0.400	131.2	0.083	5.00	0.0	0.600		o	225	Pipe/Conduit	
S4.001	38.478	0.150	256.5	0.144	0.00	0.0	0.600		o	300	Pipe/Conduit	
S4.002	12.484	0.180	69.4	0.000	0.00	0.0	0.600		o	100	Pipe/Conduit	
S4.003	53.095	0.425	124.9	0.241	0.00	0.0	0.600		o	300	Pipe/Conduit	
S5.000	25.414	0.250	101.7	0.126	5.00	0.0	0.600		o	300	Pipe/Conduit	
S5.001	72.095	0.217	332.2	0.160	0.00	0.0	0.600		o	375	Pipe/Conduit	
S5.002	14.849	0.483	30.7	0.000	0.00	0.0	0.600		o	100	Pipe/Conduit	
S4.004	58.047	0.750	77.4	0.000	0.00	0.0	0.600		o	300	Pipe/Conduit	
S6.000	51.982	0.347	150.0	0.080	5.00	0.0	0.600		o	225	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)
S4.000	50.00	5.77	93.135	0.083	0.0	0.0	0.0	1.14	45.3	11.2
S4.001	50.00	6.42	92.660	0.227	0.0	0.0	0.0	0.98	69.1	30.7
S4.002	50.00	6.65	92.380	0.227	0.0	0.0	0.0	0.93	7.3«	30.7
S4.003	50.00	7.28	92.000	0.468	0.0	0.0	0.0	1.41	99.3	63.4
S5.000	50.00	5.27	92.800	0.126	0.0	0.0	0.0	1.56	110.2	17.1
S5.001	50.00	6.49	92.475	0.286	0.0	0.0	0.0	0.99	109.2	38.7
S5.002	50.00	6.66	92.258	0.286	0.0	0.0	0.0	1.40	11.0«	38.7
S4.004	50.00	7.82	91.575	0.754	0.0	0.0	0.0	1.79	126.5	102.1
S6.000	50.00	5.81	92.900	0.080	0.0	0.0	0.0	1.07	42.4	10.8



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Network Design Table for NW3 Storm + 2A

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
S6.001	72.070	1.653	43.6	0.075	0.00	0.0	0.600		o	225	Pipe/Conduit	
S4.005	52.213	0.985	53.0	0.170	0.00	0.0	0.600		o	375	Pipe/Conduit	
S7.000	39.570	1.348	29.4	0.110	5.00	0.0	0.600		o	225	Pipe/Conduit	
S7.001	17.469	0.103	170.0	0.077	0.00	0.0	0.600		o	225	Pipe/Conduit	
S8.000	51.795	1.350	38.4	0.052	5.00	0.0	0.600		o	225	Pipe/Conduit	
S8.001	19.004	0.350	54.3	0.052	0.00	0.0	0.600		o	225	Pipe/Conduit	
S8.002	9.479	0.560	16.9	0.035	0.00	0.0	0.600		o	225	Pipe/Conduit	
S8.003	26.950	0.112	240.6	0.035	0.00	0.0	0.600		o	300	Pipe/Conduit	
S8.004	21.566	0.088	245.1	0.000	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)
S6.001	50.00	6.42	92.553	0.155	0.0	0.0	0.0	1.99	79.0	21.0
S4.005	50.00	8.17	90.750	1.079	0.0	0.0	0.0	2.49	275.4	146.1
S7.000	50.00	5.27	92.116	0.110	0.0	0.0	0.0	2.42	96.4	14.9
S7.001	50.00	5.56	90.768	0.187	0.0	0.0	0.0	1.00	39.8	25.3
S8.000	50.00	5.41	93.125	0.052	0.0	0.0	0.0	2.12	84.2	7.0
S8.001	50.00	5.59	91.775	0.104	0.0	0.0	0.0	1.78	70.7	14.1
S8.002	50.00	5.63	91.425	0.139	0.0	0.0	0.0	3.20	127.1	18.8
S8.003	50.00	6.08	90.790	0.174	0.0	0.0	0.0	1.01	71.3	23.6
S8.004	50.00	6.44	90.678	0.174	0.0	0.0	0.0	1.00	70.7	23.6



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Network Design Table for NW3 Storm + 2A

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
S7.002	37.303	0.124	300.8	0.075	0.00	0.0	0.600		o	375	Pipe/Conduit	🔒
S9.000	19.337	0.064	302.1	0.018	5.00	0.0	0.600		o	375	Pipe/Conduit	🔒
S7.003	9.857	0.033	298.7	0.031	0.00	0.0	0.600		o	375	Pipe/Conduit	🔒
S7.004	19.479	0.065	300.0	0.007	0.00	0.0	0.600		o	375	Pipe/Conduit	🔒
S7.005	15.066	0.100	150.7	0.101	0.00	0.0	0.600		o	225	Pipe/Conduit	🔒
S7.006	41.649	0.278	149.8	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	🔒
S4.006	80.231	0.365	219.8	0.000	0.00	0.0	0.600		o	450	Pipe/Conduit	🔒
S4.007	88.214	0.558	158.1	0.000	0.00	0.0	0.600		o	450	Pipe/Conduit	🔒
S1.015	26.886	0.857	31.4	0.133	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)
S7.002	50.00	7.04	90.515	0.436	0.0	0.0	0.0	1.04	114.8	59.0
S9.000	50.00	5.31	90.455	0.018	0.0	0.0	0.0	1.04	114.5	2.4
S7.003	50.00	7.20	90.391	0.485	0.0	0.0	0.0	1.04	115.2	65.7
S7.004	50.00	7.51	90.358	0.492	0.0	0.0	0.0	1.04	115.0	66.6
S7.005	50.00	5.24	90.293	0.000	10.0	0.0	0.0	1.06	42.3	10.0
S7.006	50.00	5.89	90.193	0.000	10.0	0.0	0.0	1.07	42.4	10.0
S4.006	50.00	9.15	89.690	1.079	10.0	0.0	0.0	1.37	217.4	156.1
S4.007	50.00	10.06	89.325	1.079	10.0	0.0	0.0	1.61	256.8	156.1
S1.015	50.00	11.10	88.767	2.984	10.0	0.0	0.0	3.64	578.9	414.1



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Network Design Table for NW3 Storm + 2A

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S10.000	34.316	0.722	47.5	0.154	5.00	0.0	0.600		o	300	Pipe/Conduit	🔒
S11.000	23.896	0.353	67.7	0.031	5.00	0.0	0.600		o	100	Pipe/Conduit	🔒
S11.001	42.220	0.619	68.2	0.030	0.00	0.0	0.600		o	225	Pipe/Conduit	🔒
S11.002	6.457	0.094	68.7	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	🔒
S11.003	43.001	0.485	88.7	0.090	0.00	0.0	0.600		o	225	Pipe/Conduit	🔒
S11.004	4.826	0.269	17.9	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	🔒
S10.001	65.983	0.220	299.9	0.122	0.00	0.0	0.600		o	750	Pipe/Conduit	🔒
S12.000	14.711	0.280	52.5	0.109	5.00	0.0	0.600		o	225	Pipe/Conduit	🔒
S12.001	23.546	0.872	27.0	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	🔒

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	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)
S10.000	50.00	5.25	89.830	0.154	0.0	0.0	0.0	2.29	161.6	20.9
S11.000	50.00	5.42	90.928	0.031	0.0	0.0	0.0	0.94	7.4	4.2
S11.001	50.00	5.87	90.450	0.061	0.0	0.0	0.0	1.59	63.1	8.3
S11.002	50.00	5.94	89.831	0.061	0.0	0.0	0.0	1.58	62.8	8.3
S11.003	50.00	6.45	89.737	0.151	0.0	0.0	0.0	1.39	55.2	20.4
S11.004	50.00	6.48	89.252	0.151	0.0	0.0	0.0	3.10	123.4	20.4
S10.001	50.00	7.16	88.658	0.427	0.0	0.0	0.0	1.61	711.6	57.8
S12.000	50.00	5.14	90.225	0.109	0.0	0.0	0.0	1.81	71.9	14.8
S12.001	50.00	5.29	89.945	0.109	0.0	0.0	0.0	2.53	100.5	14.8



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S13.000	17.003	0.113	150.5	0.029	5.00	0.0	0.600		o	225	Pipe/Conduit	
S13.001	5.487	0.037	148.3	0.010	0.00	0.0	0.600		o	225	Pipe/Conduit	
S12.002	27.379	0.183	149.6	0.015	0.00	0.0	0.600		o	225	Pipe/Conduit	
S14.000	18.168	0.121	150.1	0.051	5.00	0.0	0.600		o	225	Pipe/Conduit	
S14.001	8.909	0.059	151.0	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	
S12.003	11.591	0.077	150.5	0.015	0.00	0.0	0.600		o	225	Pipe/Conduit	
S10.002	49.078	0.164	299.3	0.083	0.00	0.0	0.600		o	750	Pipe/Conduit	
S10.003	17.026	0.057	298.7	0.072	0.00	0.0	0.600		o	750	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)
S13.000	50.00	5.27	89.223	0.029	0.0	0.0	0.0	1.06	42.3	3.9
S13.001	50.00	5.35	89.110	0.039	0.0	0.0	0.0	1.07	42.6	5.3
S12.002	50.00	5.78	89.073	0.163	0.0	0.0	0.0	1.07	42.4	22.1
S14.000	50.00	5.28	89.070	0.051	0.0	0.0	0.0	1.06	42.3	6.9
S14.001	50.00	5.42	88.949	0.051	0.0	0.0	0.0	1.06	42.2	6.9
S12.003	50.00	5.96	88.890	0.229	0.0	0.0	0.0	1.06	42.3	31.0
S10.002	50.00	7.67	88.438	0.739	0.0	0.0	0.0	1.61	712.4	100.1
S10.003	50.00	7.84	88.274	0.811	0.0	0.0	0.0	1.61	713.0	109.8



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Network Design Table for NW3 Storm + 2A

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
S15.000	28.884	0.096	300.9	0.044	5.00	0.0	0.600		o	300	Pipe/Conduit	🔒
S15.001	6.860	0.028	245.0	0.000	0.00	0.0	0.600		o	300	Pipe/Conduit	🔒
S10.004	62.322	0.208	299.6	0.050	0.00	0.0	0.600		o	750	Pipe/Conduit	🔒
S16.000	22.034	0.073	301.8	0.038	5.00	0.0	0.600		o	300	Pipe/Conduit	🔒
S16.001	8.125	0.033	246.2	0.000	0.00	0.0	0.600		o	300	Pipe/Conduit	🔒
S17.000	23.228	0.077	301.7	0.041	5.00	0.0	0.600		o	300	Pipe/Conduit	🔒
S17.001	13.287	0.054	246.1	0.000	0.00	0.0	0.600		o	300	Pipe/Conduit	🔒
S10.005	18.718	0.062	301.9	0.020	0.00	0.0	0.600		o	750	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)
S15.000	50.00	5.53	88.641	0.044	0.0	0.0	0.0	0.90	63.7	6.0
S15.001	50.00	5.65	88.545	0.044	0.0	0.0	0.0	1.00	70.7	6.0
S10.004	50.00	8.49	88.217	0.905	0.0	0.0	0.0	1.61	711.9	122.5
S16.000	50.00	5.41	88.415	0.038	0.0	0.0	0.0	0.90	63.6	5.1
S16.001	50.00	5.54	88.342	0.038	0.0	0.0	0.0	1.00	70.5	5.1
S17.000	50.00	5.43	88.440	0.041	0.0	0.0	0.0	0.90	63.6	5.6
S17.001	50.00	5.65	88.363	0.041	0.0	0.0	0.0	1.00	70.5	5.6
S10.005	50.00	8.68	88.009	1.004	0.0	0.0	0.0	1.61	709.2	136.0



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STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for NW3 Storm + 2A

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
S10.006	11.089	0.037	299.7	0.109	0.00	0.0	0.600		o	450	Pipe/Conduit	
S1.016	65.237	0.325	200.7	0.050	0.00	0.0	0.600		o	450	Pipe/Conduit	
S18.000	18.686	0.235	79.5	0.020	5.00	0.0		0.015	→\-/→		Dry Swale	
S18.001	8.472	0.110	77.0	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	
S18.002	57.574	0.780	73.8	0.093	0.00	0.0		0.015	→\-/→		Dry Swale	
S18.003	9.579	0.150	63.9	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	
S18.004	36.586	0.340	107.6	0.063	0.00	0.0		0.015	→\-/→		Dry Swale	
S18.005	18.821	0.265	71.0	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	
S19.000	25.595	0.276	92.7	0.170	5.00	0.0		0.015	→\-/→		Dry Swale	

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)
S10.006	50.00	5.16	87.947	0.000	10.0	0.0	0.0	1.17	185.9	10.0
S1.016	50.00	11.86	87.910	3.034	20.0	0.0	0.0	1.43	227.6«	430.8
S18.000	50.00	5.10	94.003	0.020	0.0	0.0	0.0	2.97	4538.9	2.7
S18.001	50.00	5.23	93.769	0.020	0.0	0.0	0.0	1.15	20.3	2.7
S18.002	50.00	5.54	93.663	0.113	0.0	0.0	0.0	3.06	4587.4	15.3
S18.003	50.00	5.67	92.876	0.113	0.0	0.0	0.0	1.26	22.3	15.3
S18.004	50.00	5.91	92.729	0.176	0.0	0.0	0.0	2.55	3901.7	23.8
S18.005	50.00	6.17	92.390	0.176	0.0	0.0	0.0	1.19	21.1«	23.8
S19.000	50.00	5.16	92.402	0.170	0.0	0.0	0.0	2.75	4203.0	23.0



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STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for NW3 Storm + 2A

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
S18.006	8.400	0.084	100.0	0.000	0.00	0.0		0.015	→\-/→		Dry Swale	
S18.007	2.984	0.030	99.5	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	
S18.008	4.969	0.034	146.1	0.000	0.00	0.0		0.015	→\-/→		Dry Swale	
S18.009	8.340	0.056	148.9	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	
S18.010	15.181	0.101	150.3	0.061	0.00	0.0		0.015	→\-/→		Dry Swale	
S18.011	13.396	0.089	150.5	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	
S20.000	14.695	1.159	12.7	0.045	5.00	0.0		0.015	→\-/→		Dry Swale	
S18.012	7.665	0.051	150.3	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	
S18.013	74.253	0.823	90.2	0.000	0.00	0.0		0.015	→\-/→		Dry Swale	
S18.014	77.585	1.295	59.9	0.000	0.00	0.0		0.015	→\-/→		Dry Swale	
S18.015	9.244	0.200	46.2	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	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)
S18.006	50.00	6.22	92.126	0.346	0.0	0.0	0.0	2.65	4047.4	46.9
S18.007	50.00	6.27	92.042	0.346	0.0	0.0	0.0	1.01	17.8	46.9
S18.008	50.00	6.31	92.012	0.346	0.0	0.0	0.0	2.19	3348.0	46.9
S18.009	50.00	6.44	91.978	0.346	0.0	0.0	0.0	1.07	42.5	46.9
S18.010	50.00	6.55	91.922	0.407	0.0	0.0	0.0	2.37	5324.8	55.1
S18.011	50.00	6.76	91.821	0.407	0.0	0.0	0.0	1.06	42.3	55.1
S20.000	50.00	5.03	92.891	0.045	0.0	0.0	0.0	7.44	11366.7	6.1
S18.012	50.00	6.88	91.732	0.452	0.0	0.0	0.0	1.06	42.3	61.2
S18.013	50.00	7.89	91.618	0.452	0.0	0.0	0.0	1.22	333.4	61.2
S18.014	50.00	8.27	90.795	0.452	0.0	0.0	0.0	3.45	5317.6	61.2
S18.015	50.00	8.35	89.500	0.452	0.0	0.0	0.0	1.93	76.7	61.2



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STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for NW3 Storm + 2A

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
S18.016	0.500#	0.150	3.3	0.000	0.00	0.0	0.600		o	300	Pipe/Conduit	
S21.000	30.817	0.585	52.7	0.061	5.00	0.0	0.600		o	300	Pipe/Conduit	
S21.001	9.639	0.335	28.8	0.307	0.00	0.0	0.600		o	300	Pipe/Conduit	
S21.002	0.500#	0.150	3.3	0.000	0.00	0.0	0.600		o	300	Pipe/Conduit	
S18.017	21.942	0.765	28.7	0.000	0.00	0.0	0.600		o	450	Pipe/Conduit	
S1.017	79.204	0.528	150.0	0.071	0.00	0.0	0.600		o	225	Pipe/Conduit	
S1.018	86.332	0.576	149.9	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	
S1.019	52.421	0.349	150.0	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	
S22.000	43.551	0.290	150.0	0.041	5.00	0.0		0.015	-\-/→		Dry Swale	

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)
S18.016	50.00	8.35	88.500	0.452	0.0	0.0	0.0	8.67	612.8	61.2
S21.000	50.00	5.24	89.850	0.061	0.0	0.0	0.0	2.17	153.5	8.3
S21.001	50.00	5.29	89.265	0.368	0.0	0.0	0.0	2.94	208.0	49.8
S21.002	50.00	5.29	88.500	0.368	0.0	0.0	0.0	8.67	612.8	49.8
S18.017	50.00	8.44	88.350	0.820	0.0	0.0	0.0	3.81	605.6	111.0
S1.017	50.00	13.10	87.585	3.925	20.0	0.0	0.0	1.07	42.4«	551.5
S1.018	50.00	14.45	87.057	3.925	20.0	0.0	0.0	1.07	42.4«	551.5
S1.019	50.00	15.27	86.481	3.925	20.0	0.0	0.0	1.07	42.4«	551.5
S22.000	50.00	5.34	92.483	0.041	0.0	0.0	0.0	2.16	3304.7	5.6



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STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for NW3 Storm + 2A

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
S22.001	7.478	0.050	150.0	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	
S22.002	78.891	0.641	123.1	0.210	0.00	0.0		0.015	→\-/→		Dry Swale	
S23.000	11.566	0.077	150.2	0.042	5.00	0.0		0.015	→\-/→		Dry Swale	
S23.001	8.760	0.058	151.0	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	
S23.002	15.338	0.102	150.4	0.072	0.00	0.0		0.015	→\-/→		Dry Swale	
S23.003	3.234	0.022	147.0	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	
S23.004	27.302	0.182	150.0	0.000	0.00	0.0		0.015	→\-/→		Dry Swale	
S23.005	9.352	0.062	150.8	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	
S23.006	52.820	0.352	150.1	0.113	0.00	0.0		0.015	→\-/→		Dry Swale	
S23.007	18.754	0.427	43.9	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	
S22.003	36.487	0.218	167.4	0.044	0.00	0.0		0.015	→\-/→		Dry Swale	

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)
S22.001	50.00	5.49	92.193	0.041	0.0	0.0	0.0	0.82	14.5	5.6
S22.002	50.00	5.94	92.143	0.251	0.0	0.0	0.0	2.94	7483.1	34.0
S23.000	50.00	5.09	92.784	0.042	0.0	0.0	0.0	2.16	3302.4	5.7
S23.001	50.00	5.27	92.707	0.042	0.0	0.0	0.0	0.82	14.4	5.7
S23.002	50.00	5.35	92.649	0.114	0.0	0.0	0.0	3.04	10869.8	15.4
S23.003	50.00	5.42	92.547	0.114	0.0	0.0	0.0	0.83	14.6	15.4
S23.004	50.00	5.57	92.525	0.114	0.0	0.0	0.0	3.07	11268.9	15.4
S23.005	50.00	5.76	92.343	0.114	0.0	0.0	0.0	0.82	14.4	15.4
S23.006	50.00	6.20	92.281	0.227	0.0	0.0	0.0	1.98	2432.8	30.7
S23.007	50.00	6.41	91.929	0.227	0.0	0.0	0.0	1.52	26.9	30.7
S22.003	50.00	6.72	91.502	0.522	0.0	0.0	0.0	1.95	2646.9	70.7



Date 20/08/2024 11:55

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Network Design Table for NW3 Storm + 2A

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
S22.004	10.066	0.341	29.5	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	🔒
S22.005	150.685	1.014	148.6	0.301	0.00	0.0		0.015	→\-/→		Dry Swale	🔒
S22.006	9.198	0.136	67.6	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	🔒
S22.007	45.310	0.514	88.2	0.117	0.00	0.0		0.015	→\-/→		Dry Swale	🔒
S22.008	7.011	0.076	92.3	0.000	0.00	0.0	0.600		o	300	Pipe/Conduit	🔒
S22.009	39.555	0.430	92.0	0.149	0.00	0.0		0.015	→\-/→		Dry Swale	🔒
S22.010	10.813	0.117	92.4	0.000	0.00	0.0		0.015	o	300	Pipe/Conduit	🔒
S22.011	11.605	0.131	88.6	0.000	0.00	0.0		0.015	→\-/→		Dry Swale	🔒
S22.012	8.239	0.090	91.5	0.000	0.00	0.0	0.600		o	300	Pipe/Conduit	🔒
S22.013	38.915	0.422	92.2	0.094	0.00	0.0		0.015	→\-/→		Dry Swale	🔒
S22.014	5.389	0.058	92.9	0.000	0.00	0.0	0.600		o	300	Pipe/Conduit	🔒
S22.015	24.259	0.203	119.5	0.054	0.00	0.0		0.015	→\-/→		Dry Swale	🔒
S22.016	9.387	0.134	70.1	0.000	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)
S22.004	50.00	6.81	91.284	0.522	0.0	0.0	0.0	1.86	32.9«	70.7
S22.005	50.00	8.09	90.943	0.823	0.0	0.0	0.0	1.97	2442.9	111.4
S22.006	50.00	8.18	89.929	0.823	0.0	0.0	0.0	1.59	63.3«	111.4
S22.007	50.00	8.48	89.793	0.940	0.0	0.0	0.0	2.57	3237.9	127.3
S22.008	50.00	8.55	89.279	0.940	0.0	0.0	0.0	1.64	115.7«	127.3
S22.009	50.00	8.81	89.203	1.089	0.0	0.0	0.0	2.52	3169.7	147.5
S22.010	50.00	8.95	88.773	1.089	0.0	0.0	0.0	1.23	87.2«	147.5
S22.011	50.00	9.03	88.656	1.089	0.0	0.0	0.0	2.60	3323.1	147.5
S22.012	50.00	9.11	88.525	1.089	0.0	0.0	0.0	1.64	116.2«	147.5
S22.013	50.00	9.37	88.435	1.183	0.0	0.0	0.0	2.55	3257.1	160.2
S22.014	50.00	9.42	88.013	1.183	0.0	0.0	0.0	1.63	115.3«	160.2
S22.015	50.00	9.60	87.955	1.237	0.0	0.0	0.0	2.24	2861.2	167.5
S22.016	50.00	9.69	87.752	1.237	0.0	0.0	0.0	1.88	133.0«	167.5



Date 20/08/2024 11:55

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Network Design Table for NW3 Storm + 2A

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
S22.017	94.550	1.139	83.0	0.250	0.00	0.0		0.015	→\-/→		Dry Swale	
S22.018	11.375	0.422	27.0	0.000	0.00	0.0	0.600		o	300	Pipe/Conduit	
S1.020	32.215	0.275	117.1	0.069	0.00	0.0	0.600		o	450	Pipe/Conduit	
S1.021	17.276	0.058	297.9	0.000	0.00	0.0	0.600		o	450	Pipe/Conduit	
S1.022	22.203	0.074	300.0	0.016	0.00	0.0	0.600		o	450	Pipe/Conduit	
S1.023	0.500#	0.050	10.0	0.000	0.00	0.0	0.600		o	450	Pipe/Conduit	
S24.000	48.378	0.323	149.8	0.191	5.00	0.0	0.600		o	300	Pipe/Conduit	
S24.001	65.978	0.800	82.5	0.191	0.00	0.0	0.600		o	450	Pipe/Conduit	
S24.002	62.947	0.925	68.1	0.191	0.00	0.0	0.600		o	450	Pipe/Conduit	
S24.003	8.119	0.075	108.3	0.192	0.00	0.0	0.600		o	450	Pipe/Conduit	
S24.004	0.500#	0.150	3.3	0.000	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)
S22.017	50.00	10.27	87.618	1.487	0.0	0.0	0.0	2.68	3432.9	201.4
S22.018	50.00	10.34	86.479	1.487	0.0	0.0	0.0	3.04	214.9	201.4
S1.020	50.00	15.55	85.907	5.481	20.0	0.0	0.0	1.88	298.6«	762.2
S1.021	50.00	15.80	85.632	5.481	20.0	0.0	0.0	1.17	186.5«	762.2
S1.022	50.00	16.11	85.574	5.497	20.0	0.0	0.0	1.17	185.8«	764.4
S1.023	50.00	16.12	85.500	5.497	20.0	0.0	0.0	6.46	1027.0	764.4
S24.000	50.00	5.63	88.023	0.191	0.0	0.0	0.0	1.28	90.6	25.9
S24.001	50.00	6.12	87.550	0.382	0.0	0.0	0.0	2.24	356.3	51.7
S24.002	50.00	6.54	86.750	0.573	0.0	0.0	0.0	2.47	392.4	77.6
S24.003	50.00	6.61	85.975	0.765	0.0	0.0	0.0	1.95	310.7	103.6
S24.004	50.00	6.61	85.900	0.765	0.0	0.0	0.0	11.19	1780.4	103.6



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STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for NW3 Storm + 2A

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
S24.005	34.390	0.250	137.6	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	🔒
S24.006	0.500#	0.150	3.3	0.000	0.00	0.0	0.600		o	375	Pipe/Conduit	🔒
S1.024	7.948	0.090	88.3	0.000	0.00	0.0		0.045	o	450	Pipe/Conduit	🔒
S25.000	31.034	0.530	58.6	0.191	5.00	0.0	0.600		o	450	Pipe/Conduit	🔒
S26.000	61.852	0.650	95.2	0.190	5.00	0.0	0.600		o	450	Pipe/Conduit	🔒
S27.000	39.443	0.760	51.9	0.190	5.00	0.0	0.600		o	300	Pipe/Conduit	🔒
S27.001	23.177	0.240	96.6	0.190	0.00	0.0	0.600		o	300	Pipe/Conduit	🔒
S26.001	55.493	0.515	107.8	0.190	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)
S24.005	50.00	7.29	85.750	0.765	0.0	0.0	0.0	0.85	15.1«	103.6
S24.006	50.00	7.29	85.500	0.765	0.0	0.0	0.0	9.98	1102.5	103.6
S1.024	50.00	16.36	85.350	6.262	20.0	0.0	0.0	0.55	87.6«	868.0
S25.000	50.00	5.19	86.250	0.191	0.0	0.0	0.0	2.66	423.2	25.9
S26.000	50.00	5.49	87.250	0.190	0.0	0.0	0.0	2.08	331.5	25.7
S27.000	50.00	5.30	87.750	0.190	0.0	0.0	0.0	2.19	154.6	25.7
S27.001	50.00	5.54	86.990	0.380	0.0	0.0	0.0	1.60	113.1	51.5
S26.001	50.00	6.01	86.600	0.760	0.0	0.0	0.0	1.96	311.3	102.9



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STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for NW3 Storm + 2A

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
S28.000	56.389	0.615	91.7	0.190	5.00	0.0	0.600		o	300	Pipe/Conduit	
S28.001	29.103	0.400	72.8	0.190	0.00	0.0	0.600		o	450	Pipe/Conduit	
S26.002	60.337	0.150	402.2	0.190	0.00	0.0	0.600		o	600	Pipe/Conduit	
S26.003	63.227	0.215	294.1	0.000	0.00	0.0	0.600		o	600	Pipe/Conduit	
S25.001	75.210	0.190	395.8	0.000	0.00	0.0	0.600		o	600	Pipe/Conduit	
S25.002	13.324	0.089	149.7	0.190	0.00	0.0	0.600		o	150	Pipe/Conduit	
S1.025	7.211	0.040	180.3	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	
S1.026	60.641	0.020	3109.8	0.000	0.00	0.0		0.045	3 \=/	500	1:3 Swale	

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)
S28.000	50.00	5.57	87.250	0.190	0.0	0.0	0.0	1.64	116.1	25.7
S28.001	50.00	5.78	86.485	0.380	0.0	0.0	0.0	2.39	379.4	51.5
S26.002	50.00	6.85	85.935	1.330	0.0	0.0	0.0	1.21	341.5	180.1
S26.003	50.00	7.59	85.785	1.330	0.0	0.0	0.0	1.41	400.0	180.1
S25.001	50.00	8.62	85.570	1.521	0.0	0.0	0.0	1.22	344.3	206.0
S25.002	50.00	8.89	85.349	1.711	0.0	0.0	0.0	0.82	14.5«	231.7
S1.025	50.00	16.52	85.260	7.973	20.0	0.0	0.0	0.75	13.2«	1099.6
S1.026	50.00	28.42	85.220	7.973	20.0	0.0	0.0	0.08	12.1«	1099.6



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STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for NW3 Storm + 2A

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
S29.000	15.445	0.105	147.1	0.178	5.00	0.0	0.600		o	225	Pipe/Conduit	
S29.001	13.319	0.090	148.0	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	
S1.027	19.459	0.059	329.8	0.000	0.00	0.0		0.045	3 \=/	500	1:3 Swale	
S1.028	6.209	0.045	138.0	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	
S1.029	4.903	0.030	163.4	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	
S1.030	105.946	0.047	2254.2	0.000	0.00	0.0		0.045	3 \=/	500	1:3 Swale	
S1.031	4.456	0.030	148.5	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	
S1.032	9.315	0.062	150.2	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)
S29.000	50.00	5.24	85.395	0.178	0.0	0.0	0.0	1.08	42.8	24.1
S29.001	50.00	5.51	85.290	0.178	0.0	0.0	0.0	0.82	14.6«	24.1
S1.027	50.00	29.66	85.200	8.151	20.0	0.0	0.0	0.26	37.2«	1123.7
S1.028	50.00	29.78	85.141	8.151	20.0	0.0	0.0	0.85	15.1«	1123.7
S1.029	50.00	29.89	85.100	8.151	20.0	0.0	0.0	0.78	13.8«	1123.7
S1.030	50.00	30.00	85.067	8.151	20.0	0.0	0.0	0.10	14.2«	1123.7
S1.031	50.00	30.00	85.020	8.151	20.0	0.0	0.0	0.82	14.5«	1123.7
S1.032	50.00	30.00	84.990	8.151	20.0	0.0	0.0	0.82	14.4«	1123.7



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Area Summary for NW3 Storm + 2A

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.136	0.136	0.136
2.000	-	-	100	0.177	0.177	0.177
1.001	-	-	100	0.133	0.133	0.133
1.002	-	-	100	0.034	0.034	0.034
1.003	-	-	100	0.000	0.000	0.000
1.004	-	-	100	0.067	0.067	0.067
1.005	-	-	100	0.290	0.290	0.290
1.006	-	-	100	0.041	0.041	0.041
1.007	-	-	100	0.033	0.033	0.033
1.008	-	-	100	0.237	0.237	0.237
1.009	-	-	100	0.039	0.039	0.039
1.010	-	-	100	0.081	0.081	0.081
1.011	-	-	100	0.000	0.000	0.000
3.000	-	-	100	0.178	0.178	0.178
3.001	-	-	100	0.118	0.118	0.118
3.002	-	-	100	0.000	0.000	0.000
1.012	-	-	100	0.106	0.106	0.106
1.013	-	-	100	0.000	0.000	0.000
1.014	-	-	100	0.102	0.102	0.102
4.000	-	-	100	0.083	0.083	0.083
4.001	-	-	100	0.144	0.144	0.144
4.002	-	-	100	0.000	0.000	0.000
4.003	-	-	100	0.241	0.241	0.241
5.000	-	-	100	0.126	0.126	0.126
5.001	-	-	100	0.160	0.160	0.160
5.002	-	-	100	0.000	0.000	0.000
4.004	-	-	100	0.000	0.000	0.000
6.000	-	-	100	0.080	0.080	0.080
6.001	-	-	100	0.075	0.075	0.075
4.005	-	-	100	0.170	0.170	0.170
7.000	-	-	100	0.110	0.110	0.110
7.001	-	-	100	0.077	0.077	0.077
8.000	-	-	100	0.052	0.052	0.052
8.001	-	-	100	0.052	0.052	0.052
8.002	-	-	100	0.035	0.035	0.035



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Area Summary for NW3 Storm + 2A

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
8.003	-	-	100	0.035	0.035	0.035
8.004	-	-	100	0.000	0.000	0.000
7.002	-	-	100	0.075	0.075	0.075
9.000	-	-	100	0.018	0.018	0.018
7.003	-	-	100	0.031	0.031	0.031
7.004	-	-	100	0.007	0.007	0.007
7.005	-	-	100	0.101	0.101	0.101
7.006	-	-	100	0.000	0.000	0.000
4.006	-	-	100	0.000	0.000	0.000
4.007	-	-	100	0.000	0.000	0.000
1.015	-	-	100	0.133	0.133	0.133
10.000	-	-	100	0.154	0.154	0.154
11.000	-	-	100	0.031	0.031	0.031
11.001	-	-	100	0.030	0.030	0.030
11.002	-	-	100	0.000	0.000	0.000
11.003	-	-	100	0.090	0.090	0.090
11.004	-	-	100	0.000	0.000	0.000
10.001	-	-	100	0.122	0.122	0.122
12.000	-	-	100	0.109	0.109	0.109
12.001	-	-	100	0.000	0.000	0.000
13.000	-	-	100	0.029	0.029	0.029
13.001	-	-	100	0.010	0.010	0.010
12.002	-	-	100	0.015	0.015	0.015
14.000	-	-	100	0.051	0.051	0.051
14.001	-	-	100	0.000	0.000	0.000
12.003	-	-	100	0.015	0.015	0.015
10.002	-	-	100	0.083	0.083	0.083
10.003	-	-	100	0.072	0.072	0.072
15.000	-	-	100	0.044	0.044	0.044
15.001	-	-	100	0.000	0.000	0.000
10.004	-	-	100	0.050	0.050	0.050
16.000	-	-	100	0.038	0.038	0.038
16.001	-	-	100	0.000	0.000	0.000
17.000	-	-	100	0.041	0.041	0.041
17.001	-	-	100	0.000	0.000	0.000



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Area Summary for NW3 Storm + 2A

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
10.005	-	-	100	0.020	0.020	0.020
10.006	-	-	100	0.109	0.109	0.109
1.016	-	-	100	0.050	0.050	0.050
18.000	-	-	100	0.020	0.020	0.020
18.001	-	-	100	0.000	0.000	0.000
18.002	-	-	100	0.093	0.093	0.093
18.003	-	-	100	0.000	0.000	0.000
18.004	-	-	100	0.063	0.063	0.063
18.005	-	-	100	0.000	0.000	0.000
19.000	-	-	100	0.170	0.170	0.170
18.006	-	-	100	0.000	0.000	0.000
18.007	-	-	100	0.000	0.000	0.000
18.008	-	-	100	0.000	0.000	0.000
18.009	-	-	100	0.000	0.000	0.000
18.010	-	-	100	0.061	0.061	0.061
18.011	-	-	100	0.000	0.000	0.000
20.000	-	-	100	0.045	0.045	0.045
18.012	-	-	100	0.000	0.000	0.000
18.013	-	-	100	0.000	0.000	0.000
18.014	-	-	100	0.000	0.000	0.000
18.015	-	-	100	0.000	0.000	0.000
18.016	-	-	100	0.000	0.000	0.000
21.000	-	-	100	0.061	0.061	0.061
21.001	-	-	100	0.307	0.307	0.307
21.002	-	-	100	0.000	0.000	0.000
18.017	-	-	100	0.000	0.000	0.000
1.017	-	-	100	0.071	0.071	0.071
1.018	-	-	100	0.000	0.000	0.000
1.019	-	-	100	0.000	0.000	0.000
22.000	-	-	100	0.041	0.041	0.041
22.001	-	-	100	0.000	0.000	0.000
22.002	-	-	100	0.210	0.210	0.210
23.000	-	-	100	0.042	0.042	0.042
23.001	-	-	100	0.000	0.000	0.000
23.002	-	-	100	0.072	0.072	0.072



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Area Summary for NW3 Storm + 2A

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
23.003	-	-	100	0.000	0.000	0.000
23.004	-	-	100	0.000	0.000	0.000
23.005	-	-	100	0.000	0.000	0.000
23.006	-	-	100	0.113	0.113	0.113
23.007	-	-	100	0.000	0.000	0.000
22.003	-	-	100	0.044	0.044	0.044
22.004	-	-	100	0.000	0.000	0.000
22.005	-	-	100	0.301	0.301	0.301
22.006	-	-	100	0.000	0.000	0.000
22.007	-	-	100	0.117	0.117	0.117
22.008	-	-	100	0.000	0.000	0.000
22.009	-	-	100	0.149	0.149	0.149
22.010	-	-	100	0.000	0.000	0.000
22.011	-	-	100	0.000	0.000	0.000
22.012	-	-	100	0.000	0.000	0.000
22.013	-	-	100	0.094	0.094	0.094
22.014	-	-	100	0.000	0.000	0.000
22.015	-	-	100	0.054	0.054	0.054
22.016	-	-	100	0.000	0.000	0.000
22.017	-	-	100	0.250	0.250	0.250
22.018	-	-	100	0.000	0.000	0.000
1.020	-	-	100	0.069	0.069	0.069
1.021	-	-	100	0.000	0.000	0.000
1.022	-	-	100	0.016	0.016	0.016
1.023	-	-	100	0.000	0.000	0.000
24.000	-	-	100	0.191	0.191	0.191
24.001	-	-	100	0.191	0.191	0.191
24.002	-	-	100	0.191	0.191	0.191
24.003	-	-	100	0.192	0.192	0.192
24.004	-	-	100	0.000	0.000	0.000
24.005	-	-	100	0.000	0.000	0.000
24.006	-	-	100	0.000	0.000	0.000
1.024	-	-	100	0.000	0.000	0.000
25.000	-	-	100	0.191	0.191	0.191
26.000	-	-	100	0.190	0.190	0.190



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Area Summary for NW3 Storm + 2A

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
27.000	-	-	100	0.190	0.190	0.190
27.001	-	-	100	0.190	0.190	0.190
26.001	-	-	100	0.190	0.190	0.190
28.000	-	-	100	0.190	0.190	0.190
28.001	-	-	100	0.190	0.190	0.190
26.002	-	-	100	0.190	0.190	0.190
26.003	-	-	100	0.000	0.000	0.000
25.001	-	-	100	0.000	0.000	0.000
25.002	-	-	100	0.190	0.190	0.190
1.025	-	-	100	0.000	0.000	0.000
1.026	-	-	100	0.000	0.000	0.000
29.000	-	-	100	0.178	0.178	0.178
29.001	-	-	100	0.000	0.000	0.000
1.027	-	-	100	0.000	0.000	0.000
1.028	-	-	100	0.000	0.000	0.000
1.029	-	-	100	0.000	0.000	0.000
1.030	-	-	100	0.000	0.000	0.000
1.031	-	-	100	0.000	0.000	0.000
1.032	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				9.857	9.857	9.857

Free Flowing Outfall Details for NW3 Storm + 2A

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D, L (mm)	W (mm)
S1.032	S	86.000	84.928	0.000	0	0



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Simulation Criteria for NW3 Storm + 2A

Volumetric Runoff Coeff	0.750	Manhole Headloss Coeff (Global)	0.500	Inlet Coefficient	0.800
Areal Reduction Factor	1.000	Foul Sewage per hectare (l/s)	0.000	Flow per Person per Day (l/per/day)	0.000
Hot Start (mins)	0	Additional Flow - % of Total Flow	0.000	Run Time (mins)	60
Hot Start Level (mm)	0	MADD Factor * 10m ³ /ha Storage	0.000	Output Interval (mins)	1

Number of Input Hydrographs	0	Number of Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	9	Number of Storage Structures	40	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	M5-60 (mm)	20.000	Cv (Summer)	0.750
Return Period (years)	100	Ratio R	0.400	Cv (Winter)	0.840
Region	England and Wales	Profile Type	Summer Storm	Duration (mins)	30



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Online Controls for NW3 Storm + 2A

Hydro-Brake® Optimum Manhole: S8FC, DS/PN: S1.013, Volume (m³): 11.1

Unit Reference	MD-SHE-0057-2000-2000-2000	Sump Available	Yes
Design Head (m)	2.000	Diameter (mm)	57
Design Flow (l/s)	2.0	Invert Level (m)	89.589
Flush-Flo™	Calculated	Minimum Outlet Pipe Diameter (mm)	75
Objective	Minimise upstream storage	Suggested Manhole Diameter (mm)	1200
Application	Surface		

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	2.000	2.0	Kick-Flo®	0.506	1.1
Flush-Flo™	0.247	1.3	Mean Flow over Head Range	-	1.5

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	1.2	0.600	1.2	1.600	1.8	2.600	2.3	5.000	3.0	7.500	3.7
0.200	1.3	0.800	1.3	1.800	1.9	3.000	2.4	5.500	3.2	8.000	3.8
0.300	1.3	1.000	1.5	2.000	2.0	3.500	2.6	6.000	3.3	8.500	3.9
0.400	1.3	1.200	1.6	2.200	2.1	4.000	2.7	6.500	3.4	9.000	4.0
0.500	1.1	1.400	1.7	2.400	2.2	4.500	2.9	7.000	3.6	9.500	4.1

Hydro-Brake® Optimum Manhole: S255FC, DS/PN: S7.005, Volume (m³): 11.1

Unit Reference	MD-SHE-0131-1000-2000-1000	Sump Available	Yes
Design Head (m)	2.000	Diameter (mm)	131
Design Flow (l/s)	10.0	Invert Level (m)	90.293
Flush-Flo™	Calculated	Minimum Outlet Pipe Diameter (mm)	150
Objective	Minimise upstream storage	Suggested Manhole Diameter (mm)	1500
Application	Surface		



Date 20/08/2024 11:55

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Hydro-Brake® Optimum Manhole: S255FC, DS/PN: S7.005, Volume (m³): 11.1

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	2.000	10.0	Kick-Flo®	1.167	7.8
Flush-Flo™	0.569	9.8	Mean Flow over Head Range	-	8.7

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)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	4.7	0.600	9.8	1.600	9.0	2.600	11.3	5.000	15.4	7.500	18.7
0.200	8.3	0.800	9.6	1.800	9.5	3.000	12.1	5.500	16.2	8.000	19.3
0.300	9.2	1.000	9.0	2.000	10.0	3.500	13.0	6.000	16.8	8.500	19.9
0.400	9.6	1.200	7.9	2.200	10.5	4.000	13.9	6.500	17.5	9.000	20.5
0.500	9.8	1.400	8.5	2.400	10.9	4.500	14.7	7.000	18.1	9.500	21.0

Hydro-Brake® Optimum Manhole: S206FC, DS/PN: S10.006, Volume (m³): 21.9

Unit Reference	MD-SHE-0125-1000-2400-1000	Sump Available	Yes
Design Head (m)	2.400	Diameter (mm)	125
Design Flow (l/s)	10.0	Invert Level (m)	87.947
Flush-Flo™	Calculated	Minimum Outlet Pipe Diameter (mm)	150
Objective	Minimise upstream storage	Suggested Manhole Diameter (mm)	1500
Application	Surface		

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	2.400	10.0	Kick-Flo®	1.118	7.0
Flush-Flo™	0.549	8.8	Mean Flow over Head Range	-	8.1

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)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	4.5	0.300	8.3	0.500	8.8	0.800	8.5	1.200	7.2	1.600	8.3
0.200	7.5	0.400	8.6	0.600	8.8	1.000	7.8	1.400	7.8	1.800	8.7



Date 20/08/2024 11:55
File 27141 Himely Drainage Model.MDX

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Hydro-Brake® Optimum Manhole: S206FC, DS/PN: S10.006, Volume (m³): 21.9

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
2.000	9.2	2.600	10.4	4.000	12.7	5.500	14.8	7.000	16.6	8.500	18.2
2.200	9.6	3.000	11.1	4.500	13.5	6.000	15.4	7.500	17.2	9.000	18.8
2.400	10.0	3.500	11.9	5.000	14.2	6.500	16.0	8.000	17.7	9.500	19.2

Hydro-Brake® Optimum Manhole: S12FC, DS/PN: S1.017, Volume (m³): 28.9

Unit Reference	MD-SHE-0157-1500-2200-1500	Sump Available	Yes
Design Head (m)	2.200	Diameter (mm)	157
Design Flow (l/s)	15.0	Invert Level (m)	87.585
Flush-Flo™	Calculated	Minimum Outlet Pipe Diameter (mm)	225
Objective	Minimise upstream storage	Suggested Manhole Diameter (mm)	1500
Application	Surface		

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	2.200	15.0	Kick-Flo®	1.322	11.8
Flush-Flo™	0.644	14.9	Mean Flow over Head Range	-	13.1

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)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	5.6	0.600	14.9	1.600	12.9	2.600	16.2	5.000	22.1	7.500	26.9
0.200	12.1	0.800	14.7	1.800	13.6	3.000	17.3	5.500	23.2	8.000	27.8
0.300	13.5	1.000	14.2	2.000	14.3	3.500	18.7	6.000	24.2	8.500	28.6
0.400	14.3	1.200	13.1	2.200	15.0	4.000	19.9	6.500	25.1	9.000	29.4
0.500	14.7	1.400	12.1	2.400	15.6	4.500	21.0	7.000	26.0	9.500	30.2

Hydro-Brake® Optimum Manhole: SXXFC, DS/PN: S24.003, Volume (m³): 16.8

Unit Reference	MD-SHE-0098-5000-1500-5000	Flush-Flo™	Calculated
Design Head (m)	1.500	Objective	Minimise upstream storage
Design Flow (l/s)	5.0	Application	Surface



Date 20/08/2024 11:55

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Hydro-Brake® Optimum Manhole: SXXFC, DS/PN: S24.003, Volume (m³): 16.8

Sump Available Yes Minimum Outlet Pipe Diameter (mm) 150
 Diameter (mm) 98 Suggested Manhole Diameter (mm) 1200
 Invert Level (m) 85.975

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.500	5.0	Kick-Flo®	0.878	3.9
Flush-Flo™	0.431	4.9	Mean Flow over Head Range	-	4.3

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)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	3.2	0.600	4.8	1.600	5.1	2.600	6.5	5.000	8.8	7.500	10.7
0.200	4.4	0.800	4.3	1.800	5.4	3.000	6.9	5.500	9.2	8.000	11.0
0.300	4.8	1.000	4.1	2.000	5.7	3.500	7.4	6.000	9.6	8.500	11.3
0.400	4.9	1.200	4.5	2.200	6.0	4.000	7.9	6.500	10.0	9.000	11.6
0.500	4.9	1.400	4.8	2.400	6.2	4.500	8.4	7.000	10.3	9.500	11.9

Hydro-Brake® Optimum Manhole: SXXFC, DS/PN: S25.002, Volume (m³): 28.9

Unit Reference MD-SHE-0103-5000-1200-5000 Sump Available Yes
 Design Head (m) 1.200 Diameter (mm) 103
 Design Flow (l/s) 5.0 Invert Level (m) 85.380
 Flush-Flo™ Calculated Minimum Outlet Pipe Diameter (mm) 150
 Objective Minimise upstream storage Suggested Manhole Diameter (mm) 1200
 Application Surface

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.200	5.0	Kick-Flo®	0.745	4.0
Flush-Flo™	0.354	5.0	Mean Flow over Head Range	-	4.4

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated



Date 20/08/2024 11:55

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Network 2020.1.3

Hydro-Brake® Optimum Manhole: SXXFC, DS/PN: S25.002, Volume (m³): 28.9

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	3.4	0.600	4.7	1.600	5.7	2.600	7.2	5.000	9.8	7.500	11.8
0.200	4.7	0.800	4.1	1.800	6.0	3.000	7.7	5.500	10.2	8.000	12.2
0.300	5.0	1.000	4.6	2.000	6.3	3.500	8.3	6.000	10.7	8.500	12.6
0.400	5.0	1.200	5.0	2.200	6.6	4.000	8.8	6.500	11.1	9.000	12.9
0.500	4.9	1.400	5.4	2.400	6.9	4.500	9.3	7.000	11.5	9.500	13.3

Hydro-Brake® Optimum Manhole: S20FC, DS/PN: S1.025, Volume (m³): 12.8

Unit Reference	MD-SHE-0121-8000-1700-8000	Sump Available	Yes
Design Head (m)	1.700	Diameter (mm)	121
Design Flow (l/s)	8.0	Invert Level (m)	85.260
Flush-Flo™	Calculated	Minimum Outlet Pipe Diameter (mm)	150
Objective	Minimise upstream storage	Suggested Manhole Diameter (mm)	1200
Application	Surface		

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.700	8.0	Kick-Flo®	1.039	6.4
Flush-Flo™	0.507	8.0	Mean Flow over Head Range	-	7.0

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	4.3	0.600	8.0	1.600	7.8	2.600	9.8	5.000	13.3	7.500	16.2
0.200	7.0	0.800	7.6	1.800	8.2	3.000	10.4	5.500	13.9	8.000	16.7
0.300	7.6	1.000	6.7	2.000	8.6	3.500	11.2	6.000	14.5	8.500	17.2
0.400	7.9	1.200	6.8	2.200	9.0	4.000	12.0	6.500	15.1	9.000	17.6
0.500	8.0	1.400	7.3	2.400	9.4	4.500	12.7	7.000	15.6	9.500	18.1



Date 20/08/2024 11:55

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Hydro-Brake® Optimum Manhole: SXXFC, DS/PN: S29.001, Volume (m³): 6.9

Unit Reference	MD-SHE-0105-5000-1000-5000	Sump Available	Yes
Design Head (m)	1.000	Diameter (mm)	105
Design Flow (l/s)	5.0	Invert Level (m)	85.290
Flush-Flo™	Calculated	Minimum Outlet Pipe Diameter (mm)	150
Objective	Minimise upstream storage	Suggested Manhole Diameter (mm)	1200
Application	Surface		

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.000	5.0	Kick-Flo®	0.637	4.1
Flush-Flo™	0.296	5.0	Mean Flow over Head Range	-	4.3

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)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	3.6	0.600	4.3	1.600	6.2	2.600	7.8	5.000	10.6	7.500	12.9
0.200	4.8	0.800	4.5	1.800	6.6	3.000	8.4	5.500	11.1	8.000	13.3
0.300	5.0	1.000	5.0	2.000	6.9	3.500	9.0	6.000	11.6	8.500	13.7
0.400	4.9	1.200	5.4	2.200	7.2	4.000	9.6	6.500	12.1	9.000	14.1
0.500	4.7	1.400	5.8	2.400	7.5	4.500	10.1	7.000	12.5	9.500	14.5

Hydro-Brake® Optimum Manhole: S21FC, DS/PN: S1.029, Volume (m³): 6.4

Unit Reference	MD-SHE-0103-5500-1500-5500	Sump Available	Yes
Design Head (m)	1.500	Diameter (mm)	103
Design Flow (l/s)	5.5	Invert Level (m)	85.100
Flush-Flo™	Calculated	Minimum Outlet Pipe Diameter (mm)	150
Objective	Minimise upstream storage	Suggested Manhole Diameter (mm)	1200
Application	Surface		

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.500	5.5	Kick-Flo®	0.918	4.4
Flush-Flo™	0.449	5.5	Mean Flow over Head Range	-	4.8

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control



Date 20/08/2024 11:55

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Network 2020.1.3

Hydro-Brake® Optimum Manhole: S21FC, DS/PN: S1.029, Volume (m³): 6.4

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)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	3.5	0.600	5.4	1.600	5.7	2.600	7.1	5.000	9.7	7.500	11.7
0.200	4.9	0.800	5.0	1.800	6.0	3.000	7.6	5.500	10.1	8.000	12.1
0.300	5.3	1.000	4.6	2.000	6.3	3.500	8.2	6.000	10.6	8.500	12.5
0.400	5.5	1.200	5.0	2.200	6.6	4.000	8.7	6.500	11.0	9.000	12.8
0.500	5.5	1.400	5.3	2.400	6.8	4.500	9.2	7.000	11.4	9.500	13.1



Date 20/08/2024 11:55

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Storage Structures for NW3 Storm + 2A

Tank or Pond Manhole: SBasin A, DS/PN: S1.012

Invert Level (m) 89.700

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	415.0	2.200	1288.0

Tank or Pond Manhole: S24, DS/PN: S4.002

Invert Level (m) 92.380

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	40.0	1.500	40.0

Tank or Pond Manhole: SXX, DS/PN: S5.002

Invert Level (m) 92.258

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	100.0	1.500	100.0

Cellular Storage Manhole: S257, DS/PN: S8.004

Invert Level (m) 90.597 Infiltration Coefficient Side (m/hr) 0.00000 Porosity 0.95
 Infiltration Coefficient Base (m/hr) 0.00000 Safety Factor 2.0

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	85.0	0.0	1.200	85.0	0.0	1.201	0.0	0.0



Date 20/08/2024 11:55

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Network 2020.1.3

Cellular Storage Manhole: S253xx, DS/PN: S9.000

Invert Level (m) 90.421 Infiltration Coefficient Side (m/hr) 0.00000 Porosity 0.95
 Infiltration Coefficient Base (m/hr) 0.00000 Safety Factor 2.0

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	128.0	0.0	1.200	128.0	0.0	1.201	0.0	0.0

Cellular Storage Manhole: SIC209, DS/PN: S13.001

Invert Level (m) 89.110 Infiltration Coefficient Side (m/hr) 0.00000 Porosity 0.95
 Infiltration Coefficient Base (m/hr) 0.00000 Safety Factor 2.0

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	56.0	56.0	1.200	56.0	102.8	1.201	0.0	102.8

Cellular Storage Manhole: SIC205, DS/PN: S14.001

Invert Level (m) 88.949 Infiltration Coefficient Side (m/hr) 0.00000 Porosity 0.95
 Infiltration Coefficient Base (m/hr) 0.00000 Safety Factor 2.0

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	61.3	61.3	1.200	61.3	111.7	1.201	0.0	111.7

Cellular Storage Manhole: SIC204, DS/PN: S15.001

Invert Level (m) 88.540 Infiltration Coefficient Side (m/hr) 0.00000 Porosity 0.95
 Infiltration Coefficient Base (m/hr) 0.00000 Safety Factor 2.0

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	111.0	0.0	1.600	111.0	0.0	1.601	0.0	0.0



Date 20/08/2024 11:55

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Network 2020.1.3

Cellular Storage Manhole: SIC206, DS/PN: S16.001

Invert Level (m) 88.336 Infiltration Coefficient Side (m/hr) 0.00000 Porosity 0.95
 Infiltration Coefficient Base (m/hr) 0.00000 Safety Factor 2.0

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	84.0	84.0	2.000	84.0	184.0	2.010	0.0	184.0

Cellular Storage Manhole: SIC205, DS/PN: S17.001

Invert Level (m) 88.353 Infiltration Coefficient Side (m/hr) 0.00000 Porosity 0.95
 Infiltration Coefficient Base (m/hr) 0.00000 Safety Factor 2.0

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	77.0	77.0	2.000	77.0	179.0	2.010	0.0	179.0

Dry Swale Pipe: S18.000

Manning's N	0.015	Invert Level (m)	94.003	Trench Porosity	0.30
Infiltration Coefficient Base (m/hr)	0.00000	Trench Height (m)	0.900	Side Slope (1:X)	3.0
Infiltration Coefficient Side (m/hr)	0.00000	Trench Width (m)	0.5	Slope (1:X)	79.5
Safety Factor	2.0	Trench Length (m)	18.7	Cap Volume Depth (m)	0.000
Swale Porosity	1.00	Trench Infiltration Side (m/hr)	0.00000	Cap Infiltration Depth (m)	0.000

Under Drain Details

Depth above Invert Level (m) 0.000 Diameter (m) 0.150 Number of Pipes 1 Manning's N 0.010

Dry Swale Pipe: S18.002

Manning's N	0.015	Invert Level (m)	93.663	Trench Porosity	0.30
Infiltration Coefficient Base (m/hr)	0.00000	Trench Height (m)	0.900	Side Slope (1:X)	3.0
Infiltration Coefficient Side (m/hr)	0.00000	Trench Width (m)	0.5	Slope (1:X)	73.8
Safety Factor	2.0	Trench Length (m)	57.6	Cap Volume Depth (m)	0.000
Swale Porosity	1.00	Trench Infiltration Side (m/hr)	0.00000	Cap Infiltration Depth (m)	0.000

Under Drain Details



Date 20/08/2024 11:55

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Network 2020.1.3

Dry Swale Pipe: S18.002

Depth above Invert Level (m) 0.000 Diameter (m) 0.150 Number of Pipes 1 Manning's N 0.010

Dry Swale Pipe: S18.004

Manning's N	0.015	Invert Level (m)	92.729	Trench Porosity	0.30
Infiltration Coefficient Base (m/hr)	0.00000	Trench Height (m)	0.900	Side Slope (1:X)	3.0
Infiltration Coefficient Side (m/hr)	0.00000	Trench Width (m)	0.5	Slope (1:X)	107.6
Safety Factor	2.0	Trench Length (m)	36.6	Cap Volume Depth (m)	0.000
Swale Porosity	1.00	Trench Infiltration Side (m/hr)	0.00000	Cap Infiltration Depth (m)	0.000

Under Drain Details

Depth above Invert Level (m) 0.000 Diameter (m) 0.150 Number of Pipes 1 Manning's N 0.010

Dry Swale Pipe: S19.000

Manning's N	0.015	Invert Level (m)	92.402	Trench Porosity	0.30
Infiltration Coefficient Base (m/hr)	0.00000	Trench Height (m)	0.900	Side Slope (1:X)	3.0
Infiltration Coefficient Side (m/hr)	0.00000	Trench Width (m)	0.5	Slope (1:X)	92.7
Safety Factor	2.0	Trench Length (m)	25.6	Cap Volume Depth (m)	0.000
Swale Porosity	1.00	Trench Infiltration Side (m/hr)	0.00000	Cap Infiltration Depth (m)	0.000

Under Drain Details

Depth above Invert Level (m) 0.000 Diameter (m) 0.150 Number of Pipes 1 Manning's N 0.010

Dry Swale Pipe: S18.006

Manning's N	0.015	Invert Level (m)	92.126	Trench Porosity	0.30
Infiltration Coefficient Base (m/hr)	0.00000	Trench Height (m)	0.900	Side Slope (1:X)	3.0
Infiltration Coefficient Side (m/hr)	0.00000	Trench Width (m)	0.5	Slope (1:X)	100.0
Safety Factor	2.0	Trench Length (m)	8.4	Cap Volume Depth (m)	0.000
Swale Porosity	1.00	Trench Infiltration Side (m/hr)	0.00000	Cap Infiltration Depth (m)	0.000

Under Drain Details

Depth above Invert Level (m) 0.000 Diameter (m) 0.150 Number of Pipes 1 Manning's N 0.010



Date 20/08/2024 11:55

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Dry Swale Pipe: S18.008

Manning's N	0.015	Invert Level (m)	92.012	Trench Porosity	0.30
Infiltration Coefficient Base (m/hr)	0.00000	Trench Height (m)	0.900	Side Slope (1:X)	3.0
Infiltration Coefficient Side (m/hr)	0.00000	Trench Width (m)	0.5	Slope (1:X)	146.1
Safety Factor	2.0	Trench Length (m)	5.0	Cap Volume Depth (m)	0.000
Swale Porosity	1.00	Trench Infiltration Side (m/hr)	0.00000	Cap Infiltration Depth (m)	0.000

Under Drain Details

Depth above Invert Level (m) 0.000 Diameter (m) 0.150 Number of Pipes 1 Manning's N 0.010

Dry Swale Pipe: S18.010

Manning's N	0.015	Invert Level (m)	91.922	Trench Porosity	0.30
Infiltration Coefficient Base (m/hr)	0.00000	Trench Height (m)	0.900	Side Slope (1:X)	4.0
Infiltration Coefficient Side (m/hr)	0.00000	Trench Width (m)	0.5	Slope (1:X)	150.3
Safety Factor	2.0	Trench Length (m)	15.2	Cap Volume Depth (m)	0.000
Swale Porosity	1.00	Trench Infiltration Side (m/hr)	0.00000	Cap Infiltration Depth (m)	0.000

Under Drain Details

Depth above Invert Level (m) 0.000 Diameter (m) 0.150 Number of Pipes 1 Manning's N 0.010

Dry Swale Pipe: S20.000

Manning's N	0.015	Invert Level (m)	92.891	Trench Porosity	0.30
Infiltration Coefficient Base (m/hr)	0.00000	Trench Height (m)	0.900	Side Slope (1:X)	3.0
Infiltration Coefficient Side (m/hr)	0.00000	Trench Width (m)	0.5	Slope (1:X)	12.7
Safety Factor	2.0	Trench Length (m)	14.7	Cap Volume Depth (m)	0.000
Swale Porosity	1.00	Trench Infiltration Side (m/hr)	0.00000	Cap Infiltration Depth (m)	0.000

Under Drain Details

Depth above Invert Level (m) 0.000 Diameter (m) 0.150 Number of Pipes 1 Manning's N 0.010

Dry Swale Pipe: S18.013

Manning's N	0.015	Infiltration Coefficient Side (m/hr)	0.00000	Swale Porosity	1.00
Infiltration Coefficient Base (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	91.618



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Dry Swale Pipe: S18.013

Trench Height (m) 2.000 Trench Infiltration Side (m/hr) 0.00000 Slope (1:X) 90.2
 Trench Width (m) 0.5 Trench Porosity 0.30 Cap Volume Depth (m) 0.000
 Trench Length (m) 74.3 Side Slope (1:X) 3.0 Cap Infiltration Depth (m) 0.000

Under Drain Details

Depth above Invert Level (m) 0.000 Diameter (m) 0.225 Number of Pipes 1 Manning's N 0.010

Dry Swale Pipe: S18.014

Manning's N 0.015 Invert Level (m) 90.795 Trench Porosity 0.30
 Infiltration Coefficient Base (m/hr) 0.00000 Trench Height (m) 0.900 Side Slope (1:X) 3.0
 Infiltration Coefficient Side (m/hr) 0.00000 Trench Width (m) 0.5 Slope (1:X) 59.9
 Safety Factor 2.0 Trench Length (m) 77.6 Cap Volume Depth (m) 0.000
 Swale Porosity 1.00 Trench Infiltration Side (m/hr) 0.00000 Cap Infiltration Depth (m) 0.000

Under Drain Details

Depth above Invert Level (m) 0.010 Diameter (m) 0.225 Number of Pipes 1 Manning's N 0.010

Tank or Pond Manhole: SBasin B, DS/PN: S18.017

Invert Level (m) 88.350

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	647.0	1.950	2135.0

Dry Swale Pipe: S22.000

Manning's N 0.015 Invert Level (m) 92.483 Trench Porosity 0.30
 Infiltration Coefficient Base (m/hr) 0.00000 Trench Height (m) 0.900 Side Slope (1:X) 3.0
 Infiltration Coefficient Side (m/hr) 0.00000 Trench Width (m) 0.5 Slope (1:X) 150.0
 Safety Factor 2.0 Trench Length (m) 43.6 Cap Volume Depth (m) 0.000
 Swale Porosity 1.00 Trench Infiltration Side (m/hr) 0.00000 Cap Infiltration Depth (m) 0.000

Under Drain Details



Date 20/08/2024 11:55

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Network 2020.1.3

Dry Swale Pipe: S22.000

Depth above Invert Level (m) 0.000 Diameter (m) 0.150 Number of Pipes 1 Manning's N 0.010

Dry Swale Pipe: S22.002

Manning's N	0.015	Invert Level (m)	92.143	Trench Porosity	0.30
Infiltration Coefficient Base (m/hr)	0.00000	Trench Height (m)	0.900	Side Slope (1:X)	3.0
Infiltration Coefficient Side (m/hr)	0.00000	Trench Width (m)	0.5	Slope (1:X)	123.1
Safety Factor	2.0	Trench Length (m)	78.9	Cap Volume Depth (m)	0.000
Swale Porosity	1.00	Trench Infiltration Side (m/hr)	0.00000	Cap Infiltration Depth (m)	0.000

Under Drain Details

Depth above Invert Level (m) 0.000 Diameter (m) 0.150 Number of Pipes 1 Manning's N 0.010

Dry Swale Pipe: S23.000

Manning's N	0.015	Invert Level (m)	92.784	Trench Porosity	0.30
Infiltration Coefficient Base (m/hr)	0.00000	Trench Height (m)	0.900	Side Slope (1:X)	3.0
Infiltration Coefficient Side (m/hr)	0.00000	Trench Width (m)	0.5	Slope (1:X)	150.2
Safety Factor	2.0	Trench Length (m)	11.6	Cap Volume Depth (m)	0.000
Swale Porosity	1.00	Trench Infiltration Side (m/hr)	0.00000	Cap Infiltration Depth (m)	0.000

Under Drain Details

Depth above Invert Level (m) 0.000 Diameter (m) 0.150 Number of Pipes 1 Manning's N 0.010

Dry Swale Pipe: S23.002

Manning's N	0.015	Invert Level (m)	92.649	Trench Porosity	0.30
Infiltration Coefficient Base (m/hr)	0.00000	Trench Height (m)	0.900	Side Slope (1:X)	3.0
Infiltration Coefficient Side (m/hr)	0.00000	Trench Width (m)	0.5	Slope (1:X)	150.4
Safety Factor	2.0	Trench Length (m)	15.3	Cap Volume Depth (m)	0.000
Swale Porosity	1.00	Trench Infiltration Side (m/hr)	0.00000	Cap Infiltration Depth (m)	0.000

Under Drain Details

Depth above Invert Level (m) 0.000 Diameter (m) 0.150 Number of Pipes 1 Manning's N 0.010



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Network 2020.1.3

Dry Swale Pipe: S23.004

Manning's N	0.015	Invert Level (m)	92.525	Trench Porosity	0.30
Infiltration Coefficient Base (m/hr)	0.00000	Trench Height (m)	0.900	Side Slope (1:X)	3.0
Infiltration Coefficient Side (m/hr)	0.00000	Trench Width (m)	0.5	Slope (1:X)	150.0
Safety Factor	2.0	Trench Length (m)	27.3	Cap Volume Depth (m)	0.000
Swale Porosity	1.00	Trench Infiltration Side (m/hr)	0.00000	Cap Infiltration Depth (m)	0.000

Under Drain Details

Depth above Invert Level (m) 0.000 Diameter (m) 0.150 Number of Pipes 1 Manning's N 0.010

Dry Swale Pipe: S23.006

Manning's N	0.015	Invert Level (m)	92.281	Trench Porosity	0.30
Infiltration Coefficient Base (m/hr)	0.00000	Trench Height (m)	0.900	Side Slope (1:X)	3.0
Infiltration Coefficient Side (m/hr)	0.00000	Trench Width (m)	0.5	Slope (1:X)	150.1
Safety Factor	2.0	Trench Length (m)	52.8	Cap Volume Depth (m)	0.000
Swale Porosity	1.00	Trench Infiltration Side (m/hr)	0.00000	Cap Infiltration Depth (m)	0.000

Under Drain Details

Depth above Invert Level (m) 0.000 Diameter (m) 0.150 Number of Pipes 1 Manning's N 0.010

Dry Swale Pipe: S22.003

Manning's N	0.015	Invert Level (m)	91.502	Trench Porosity	0.30
Infiltration Coefficient Base (m/hr)	0.00000	Trench Height (m)	0.900	Side Slope (1:X)	3.0
Infiltration Coefficient Side (m/hr)	0.00000	Trench Width (m)	0.5	Slope (1:X)	167.4
Safety Factor	2.0	Trench Length (m)	36.5	Cap Volume Depth (m)	0.000
Swale Porosity	1.00	Trench Infiltration Side (m/hr)	0.00000	Cap Infiltration Depth (m)	0.000

Under Drain Details

Depth above Invert Level (m) 0.000 Diameter (m) 0.150 Number of Pipes 1 Manning's N 0.010

Dry Swale Pipe: S22.005

Manning's N	0.015	Infiltration Coefficient Side (m/hr)	0.00000	Swale Porosity	1.00
Infiltration Coefficient Base (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	90.943



Date 20/08/2024 11:55

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Network 2020.1.3

Dry Swale Pipe: S22.005

Trench Height (m) 1.000 Trench Infiltration Side (m/hr) 0.00000 Slope (1:X) 148.6
 Trench Width (m) 0.6 Trench Porosity 0.30 Cap Volume Depth (m) 0.000
 Trench Length (m) 150.7 Side Slope (1:X) 3.0 Cap Infiltration Depth (m) 0.000

Under Drain Details

Depth above Invert Level (m) 0.000 Diameter (m) 0.150 Number of Pipes 1 Manning's N 0.010

Dry Swale Pipe: S22.007

Manning's N 0.015 Invert Level (m) 89.793 Trench Porosity 0.30
 Infiltration Coefficient Base (m/hr) 0.00000 Trench Height (m) 1.000 Side Slope (1:X) 3.0
 Infiltration Coefficient Side (m/hr) 0.00000 Trench Width (m) 0.6 Slope (1:X) 88.2
 Safety Factor 2.0 Trench Length (m) 45.3 Cap Volume Depth (m) 0.000
 Swale Porosity 1.00 Trench Infiltration Side (m/hr) 0.00000 Cap Infiltration Depth (m) 0.000

Under Drain Details

Depth above Invert Level (m) 0.000 Diameter (m) 0.225 Number of Pipes 1 Manning's N 0.010

Dry Swale Pipe: S22.009

Manning's N 0.015 Invert Level (m) 89.203 Trench Porosity 0.30
 Infiltration Coefficient Base (m/hr) 0.00000 Trench Height (m) 1.000 Side Slope (1:X) 3.0
 Infiltration Coefficient Side (m/hr) 0.00000 Trench Width (m) 0.6 Slope (1:X) 92.0
 Safety Factor 2.0 Trench Length (m) 39.6 Cap Volume Depth (m) 0.000
 Swale Porosity 1.00 Trench Infiltration Side (m/hr) 0.00000 Cap Infiltration Depth (m) 0.000

Under Drain Details

Depth above Invert Level (m) 0.000 Diameter (m) 0.225 Number of Pipes 1 Manning's N 0.010

Dry Swale Pipe: S22.011

Manning's N 0.015 Swale Porosity 1.00 Trench Length (m) 11.6
 Infiltration Coefficient Base (m/hr) 0.00000 Invert Level (m) 88.656 Trench Infiltration Side (m/hr) 0.00000
 Infiltration Coefficient Side (m/hr) 0.00000 Trench Height (m) 1.000 Trench Porosity 0.30
 Safety Factor 2.0 Trench Width (m) 0.6 Side Slope (1:X) 3.0



Date 20/08/2024 11:55

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Network 2020.1.3

Dry Swale Pipe: S22.011

Slope (1:X) 88.6 Cap Volume Depth (m) 0.000 Cap Infiltration Depth (m) 0.000

Under Drain Details

Depth above Invert Level (m) 0.000 Diameter (m) 0.300 Number of Pipes 1 Manning's N 0.010

Dry Swale Pipe: S22.013

Manning's N	0.015	Invert Level (m)	88.435	Trench Porosity	0.30
Infiltration Coefficient Base (m/hr)	0.00000	Trench Height (m)	1.000	Side Slope (1:X)	3.0
Infiltration Coefficient Side (m/hr)	0.00000	Trench Width (m)	0.6	Slope (1:X)	92.2
Safety Factor	2.0	Trench Length (m)	38.9	Cap Volume Depth (m)	0.000
Swale Porosity	1.00	Trench Infiltration Side (m/hr)	0.00000	Cap Infiltration Depth (m)	0.000

Under Drain Details

Depth above Invert Level (m) 0.000 Diameter (m) 0.300 Number of Pipes 1 Manning's N 0.010

Dry Swale Pipe: S22.015

Manning's N	0.015	Invert Level (m)	87.955	Trench Porosity	0.30
Infiltration Coefficient Base (m/hr)	0.00000	Trench Height (m)	1.000	Side Slope (1:X)	3.0
Infiltration Coefficient Side (m/hr)	0.00000	Trench Width (m)	0.6	Slope (1:X)	119.5
Safety Factor	2.0	Trench Length (m)	24.3	Cap Volume Depth (m)	0.000
Swale Porosity	1.00	Trench Infiltration Side (m/hr)	0.00000	Cap Infiltration Depth (m)	0.000

Under Drain Details

Depth above Invert Level (m) 0.000 Diameter (m) 0.300 Number of Pipes 1 Manning's N 0.010

Dry Swale Pipe: S22.017

Manning's N	0.015	Invert Level (m)	87.618	Trench Porosity	0.30
Infiltration Coefficient Base (m/hr)	0.00000	Trench Height (m)	1.000	Side Slope (1:X)	3.0
Infiltration Coefficient Side (m/hr)	0.00000	Trench Width (m)	0.6	Slope (1:X)	83.0
Safety Factor	2.0	Trench Length (m)	94.6	Cap Volume Depth (m)	0.000
Swale Porosity	1.00	Trench Infiltration Side (m/hr)	0.00000	Cap Infiltration Depth (m)	0.000

Under Drain Details



Date 20/08/2024 11:55

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Dry Swale Pipe: S22.017

Depth above Invert Level (m) 0.000 Diameter (m) 0.300 Number of Pipes 1 Manning's N 0.010

Tank or Pond Manhole: SXXFC, DS/PN: S24.003

Invert Level (m) 85.975

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	300.0	1.500	300.0

Tank or Pond Manhole: SBasin C, DS/PN: S24.005

Invert Level (m) 85.750

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	223.0	1.700	650.0

Tank or Pond Manhole: SBasin D, DS/PN: S1.024

Invert Level (m) 85.350

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	1208.0	1.850	2601.0

Tank or Pond Manhole: SXXFC, DS/PN: S25.002

Invert Level (m) 85.380

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	1000.0	1.500	1000.0

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Date 20/08/2024 11:55

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Tank or Pond Manhole: SXXFC, DS/PN: S29.001

Invert Level (m) 85.625

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	250.0	1.500	250.0

Hydrock Consultants Ltd		Page 43
. . .		
Date 20/08/2024 11:55 File 27141 Himely Drainage Model.MDX	Designed by OliviaDent Checked by	
Innovyze	Network 2020.1.3	

1 year Return Period Summary of Critical Results by Flow Capacity Ratio (Rank 1) for NW3 Storm + 2A

Simulation Criteria

Areal Reduction Factor 1.000 Manhole Headloss Coeff (Global) 0.500 MADD Factor * 10m³/ha Storage 0.000
 Hot Start (mins) 0 Foul Sewage per hectare (l/s) 0.000 Inlet Coeffiecient 0.800
 Hot Start Level (mm) 0 Additional Flow - % of Total Flow 0.000 Flow per Person per Day (l/per/day) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 9 Number of Storage Structures 40 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 20.000 Cv (Summer) 0.750
 Region England and Wales Ratio R 0.405 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 450.0 DVD Status ON
 Analysis Timestep 2.5 Second Increment (Extended) Inertia Status ON
 DTS Status OFF

Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
 Return Period(s) (years) 1, 30, 100
 Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water	Surcharged	Flooded	Flow / Overflow Cap.	Half Drain Time (mins)	Pipe	Status
									Level (m)	Depth (m)	Volume (m³)			Flow (l/s)	
S1.000	S1	15 Winter	1	+0%	100/15 Summer	100/15 Winter		93.187	-0.138	0.000	0.31		18.6	OK	
S2.000	SXX	15 Winter	1	+0%	100/15 Summer			92.887	-0.288	0.000	0.12		24.2	OK	
S1.001	S2	15 Winter	1	+0%	30/15 Summer			92.169	-0.186	0.000	0.50		58.6	OK	
S1.002	S3	15 Winter	1	+0%	100/15 Summer			92.004	-0.260	0.000	0.37		62.5	OK	
S1.003	S4	15 Winter	1	+0%	100/15 Summer			91.874	-0.329	0.000	0.16		62.0	OK	
S1.004	S5	15 Winter	1	+0%	100/15 Summer			91.441	-0.284	0.000	0.29		69.3	OK	
S1.005	S6	15 Winter	1	+0%	30/15 Winter			91.128	-0.247	0.000	0.40		97.8	OK	
S1.006	SXX	15 Winter	1	+0%	30/15 Summer			90.703	-0.222	0.000	0.51		101.6	OK	
S1.007	SXX	15 Winter	1	+0%	30/15 Summer			90.483	-0.262	0.000	0.52		103.7	OK	
S1.008	SXX	15 Winter	1	+0%	30/120 Winter			90.452	-0.262	0.000	0.60		123.7	OK	



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1 year Return Period Summary of Critical Results by Flow Capacity Ratio (Rank 1) for NW3 Storm + 2A

	US/MH	Level	
PN	Name	Exceeded	
S1.000	S1	1	
S2.000	SXX		
S1.001	S2		
S1.002	S3		
S1.003	S4		
S1.004	S5		
S1.005	S6		
S1.006	SXX		
S1.007	SXX		
S1.008	SXX		



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1 year Return Period Summary of Critical Results by Flow Capacity Ratio (Rank 1) for NW3 Storm + 2A

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Overflow Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)
S1.009	SXX	15 Winter	1	+0%	30/120 Winter				90.312	-0.367	0.000	0.32		125.9
S1.010	S7	15 Winter	1	+0%	30/60 Winter				90.190	-0.310	0.000	0.47		131.7
S1.011	SHWA2	15 Winter	1	+0%					90.091	-0.359	0.000	0.34		131.4
S3.000	S22	15 Winter	1	+0%	30/15 Summer	100/15 Winter			91.207	-0.118	0.000	0.45		24.5
S3.001	S23	15 Winter	1	+0%	30/1440 Winter				90.662	-0.213	0.000	0.18		38.5
S3.002	SHWA3	15 Winter	1	+0%	1/180 Winter				89.983	-0.167	0.000	0.40		38.9
S1.012	SBasin A	15 Winter	1	+0%	1/15 Summer				89.929	0.079	0.000	0.49		7.7
S1.013	S8FC	1440 Summer	1	+0%	1/15 Summer				90.246	0.432	0.000	0.03		1.3
S1.014	S9	15 Winter	1	+0%	100/15 Summer				89.349	-0.216	0.000	0.17		12.5
S4.000	SXX	15 Winter	1	+0%	100/15 Summer				93.214	-0.146	0.000	0.26		11.3
S4.001	SXX	15 Winter	1	+0%	30/15 Summer				92.800	-0.160	0.000	0.44		28.2
S4.002	S24	30 Winter	1	+0%	1/15 Summer				92.618	0.138	0.000	1.34		9.2
S4.003	S25	15 Winter	1	+0%	30/15 Summer				92.128	-0.172	0.000	0.37		34.9
S5.000	SXX	15 Winter	1	+0%	100/15 Summer				92.886	-0.214	0.000	0.18		17.5
S5.001	SXX	15 Winter	1	+0%	100/15 Summer				92.630	-0.220	0.000	0.34		35.1
S5.002	SXX	30 Winter	1	+0%	1/15 Summer				92.388	0.030	0.000	1.04		10.8
S4.004	S26	15 Winter	1	+0%	100/15 Summer				91.700	-0.175	0.000	0.36		43.2
S6.000	S31	15 Winter	1	+0%	100/15 Summer				92.981	-0.144	0.000	0.27		10.8
S6.001	S32	15 Winter	1	+0%	100/15 Summer				92.631	-0.148	0.000	0.26		19.6
S4.005	S27	15 Winter	1	+0%	100/15 Summer				90.893	-0.232	0.000	0.31		78.9
S7.000	S250	15 Winter	1	+0%	100/15 Summer				92.178	-0.163	0.000	0.17		15.3
S7.001	S251	15 Winter	1	+0%	30/15 Summer				90.907	-0.086	0.000	0.69		24.4
S8.000	S256xx	15 Winter	1	+0%					93.171	-0.179	0.000	0.09		7.2
S8.001	S256xx	15 Winter	1	+0%	100/15 Summer				91.845	-0.155	0.000	0.21		13.3
S8.002	S256xx	15 Winter	1	+0%	100/15 Summer				91.487	-0.163	0.000	0.17		17.4
S8.003	S256	15 Winter	1	+0%	100/15 Summer				90.911	-0.179	0.000	0.34		21.7
S8.004	S257	30 Winter	1	+0%	30/30 Winter				90.747	-0.231	0.000	0.11		7.1
S7.002	S252	15 Winter	1	+0%	30/15 Summer				90.757	-0.133	0.000	0.30		30.9
S9.000	S253xx	60 Winter	1	+0%	30/30 Summer				90.591	-0.239	0.000	0.06	40	5.6
S7.003	S253	15 Winter	1	+0%	30/15 Summer				90.733	-0.033	0.000	0.14		12.0
S7.004	S254	15 Winter	1	+0%	30/15 Summer				90.732	-0.001	0.000	0.10		10.0
S7.005	S255FC	15 Winter	1	+0%	1/15 Summer				90.726	0.208	0.000	0.26		9.7
S7.006	S28A	15 Winter	1	+0%	100/15 Summer				90.267	-0.151	0.000	0.24		9.7



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1 year Return Period Summary of Critical Results by Flow Capacity Ratio (Rank 1) for NW3 Storm + 2A

PN	US/MH Name	Status	Level Exceeded
S1.009	SXX	OK	
S1.010	S7	OK	
S1.011	SHWA2	OK*	
S3.000	S22	OK	1
S3.001	S23	OK	
S3.002	SHWA3	OK	
S1.012	SBasin A	SURCHARGED	
S1.013	S8FC	SURCHARGED	
S1.014	S9	OK	
S4.000	SXX	OK	
S4.001	SXX	OK	
S4.002	S24	SURCHARGED	
S4.003	S25	OK	
S5.000	SXX	OK	
S5.001	SXX	OK	
S5.002	SXX	SURCHARGED	
S4.004	S26	OK	
S6.000	S31	OK	
S6.001	S32	OK	
S4.005	S27	OK	
S7.000	S250	OK	
S7.001	S251	OK	
S8.000	S256xx	OK	
S8.001	S256xx	OK	
S8.002	S256xx	OK	
S8.003	S256	OK	
S8.004	S257	OK	
S7.002	S252	OK	
S9.000	S253xx	OK	
S7.003	S253	OK	
S7.004	S254	OK	
S7.005	S255FC	SURCHARGED	



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1 year Return Period Summary of Critical Results by Flow Capacity Ratio (Rank 1) for NW3 Storm + 2A

PN	US/MH Name	Status	Level Exceeded
S7.006	S28A	OK	



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1 year Return Period Summary of Critical Results by Flow Capacity Ratio (Rank 1) for NW3 Storm + 2A

PN	US/MH		Return Period	Climate Change	First (X)		First (Y) Flood	First (Z) Overflow	Overflow Act.	Water	Surcharged	Flooded	Flow / Overflow Cap.	Half Drain Time (mins)	Pipe
	Name	Storm			Surcharge	Surcharge				Level (m)	Depth (m)	Volume (m ³)			Flow (l/s)
S4.006	S28	15 Winter	1	+0%	30/15	Winter			89.897	-0.243	0.000	0.42			85.7
S4.007	S29	15 Winter	1	+0%	100/15	Summer			89.510	-0.265	0.000	0.35			83.8
S1.015	S10	15 Winter	1	+0%	30/15	Summer			89.074	-0.143	0.000	0.21			101.1
S10.000	S200	15 Winter	1	+0%	100/240	Winter			89.906	-0.224	0.000	0.14			21.4
S11.000	S21XX	15 Winter	1	+0%	30/15	Summer	100/15	Summer	90.985	-0.043	0.000	0.60			4.3
S11.001	S22XX	15 Winter	1	+0%	100/15	Summer			90.504	-0.171	0.000	0.13			7.8
S11.002	S23XX	15 Winter	1	+0%	100/15	Summer			89.896	-0.160	0.000	0.18			7.9
S11.003	S24XX	15 Winter	1	+0%	100/15	Summer			89.829	-0.133	0.000	0.35			18.2
S11.004	S25XX	15 Winter	1	+0%	100/15	Summer			89.328	-0.149	0.000	0.25			18.2
S10.001	S201	15 Winter	1	+0%	30/360	Winter			88.806	-0.602	0.000	0.08			52.2
S12.000	S207	15 Winter	1	+0%	100/15	Summer			90.300	-0.150	0.000	0.24			15.2
S12.001	S208	15 Winter	1	+0%	100/360	Winter			90.006	-0.164	0.000	0.16			15.1
S13.000	SIC209XX	15 Winter	1	+0%	100/15	Winter			89.272	-0.176	0.000	0.11			4.0
S13.001	SIC209	30 Winter	1	+0%	30/240	Winter			89.158	-0.177	0.000	0.09	19		2.7
S12.002	S209	15 Winter	1	+0%	30/180	Winter			89.175	-0.123	0.000	0.41			16.3
S14.000	S205XX	15 Winter	1	+0%	30/180	Winter			89.136	-0.159	0.000	0.19			7.1
S14.001	SIC205	30 Winter	1	+0%	30/120	Winter			89.000	-0.174	0.000	0.09	18		3.2
S12.003	S205	15 Winter	1	+0%	30/15	Summer			89.001	-0.114	0.000	0.49			17.5
S10.002	S202	15 Winter	1	+0%	30/120	Winter			88.679	-0.509	0.000	0.13			76.1
S10.003	S203	15 Winter	1	+0%	30/60	Summer			88.663	-0.361	0.000	0.15			72.8
S15.000	S204XX	15 Winter	1	+0%	30/30	Winter			88.706	-0.235	0.000	0.11			6.1
S15.001	SIC204	15 Winter	1	+0%	30/30	Summer			88.582	-0.263	0.000	0.02			1.2
S10.004	S204	15 Winter	1	+0%	30/30	Winter			88.655	-0.312	0.000	0.11			69.1
S16.000	S206XX	15 Winter	1	+0%	1/120	Winter			88.560	-0.155	0.000	0.09			5.2
S16.001	SIC206	480 Summer	1	+0%	1/60	Summer			88.735	0.093	0.000	0.05	431		2.5
S17.000	S205XX	15 Winter	1	+0%	1/120	Winter			88.558	-0.182	0.000	0.10			5.6
S17.001	SIC205	480 Summer	1	+0%	1/60	Winter			88.735	0.072	0.000	0.03	416		1.9
S10.005	S205	15 Summer	1	+0%	1/120	Winter			88.613	-0.146	0.000	0.03			15.2
S10.006	S206FC	600 Summer	1	+0%	1/15	Summer			88.725	0.328	0.000	0.06			8.1
S1.016	S11	30 Winter	1	+0%	1/15	Summer			88.947	0.587	0.000	0.41			86.5
S18.000	SIC20	15 Winter	1	+0%					94.033	-1.470	0.000	0.00		4	2.8
S18.001	SIC21	15 Winter	1	+0%	100/15	Summer			93.809	-0.110	0.000	0.16			2.8
S18.002	SIC22	15 Winter	1	+0%					93.746	-1.417	0.000	0.00		8	13.7



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1 year Return Period Summary of Critical Results by Flow Capacity Ratio (Rank 1) for NW3 Storm + 2A

PN	US/MH Name	Status	Level Exceeded
S4.006	S28	OK	
S4.007	S29	OK	
S1.015	S10	OK	
S10.000	S200	OK	
S11.000	S21XX	OK	3
S11.001	S22XX	OK	
S11.002	S23XX	OK	
S11.003	S24XX	OK	
S11.004	S25XX	OK	
S10.001	S201	OK	
S12.000	S207	OK	
S12.001	S208	OK	
S13.000	SIC209XX	OK	
S13.001	SIC209	OK	
S12.002	S209	OK	
S14.000	S205XX	OK	
S14.001	SIC205	OK	
S12.003	S205	OK	
S10.002	S202	OK	
S10.003	S203	OK	
S15.000	S204XX	OK	
S15.001	SIC204	OK	
S10.004	S204	OK	
S16.000	S206XX	OK	
S16.001	SIC206	SURCHARGED	
S17.000	S205XX	OK	
S17.001	SIC205	SURCHARGED	
S10.005	S205	OK	
S10.006	S206FC	SURCHARGED	
S1.016	S11	SURCHARGED	
S18.000	SIC20	OK	
S18.001	SIC21	OK	

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PN	US/MH Name	Status	Level Exceeded
S18.002	SIC22	OK	



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1 year Return Period Summary of Critical Results by Flow Capacity Ratio (Rank 1) for NW3 Storm + 2A

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Overflow Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)
S18.003	SIC23	15 Winter	1	+0%	30/15 Summer				92.969	-0.057	0.000	0.70		13.8
S18.004	SIC24	15 Winter	1	+0%					92.858	-1.371	0.000	0.01	6	18.6
S18.005	SIC25	15 Winter	1	+0%	1/15 Summer				92.756	0.216	0.000	0.89		17.7
S19.000	SIC37	15 Winter	1	+0%					92.582	-1.320	0.000	0.01	5	19.9
S18.006	SIC26	15 Winter	1	+0%					92.566	-1.060	0.000	0.01	6	32.2
S18.007	SIC27	15 Winter	1	+0%	1/15 Summer				92.559	0.367	0.000	2.97		32.2
S18.008	SIC28	15 Winter	1	+0%					92.297	-1.215	0.000	0.02	8	32.2
S18.009	SIC29	15 Winter	1	+0%	1/15 Summer				92.283	0.080	0.000	0.96		32.1
S18.010	SIC30	15 Winter	1	+0%					92.201	-1.285	0.000	0.01	9	37.7
S18.011	SIC31	15 Winter	1	+0%	1/15 Summer				92.079	0.033	0.000	1.03		37.8
S20.000	SIC38	15 Winter	1	+0%					92.911	-1.480	0.000	0.00	4	6.3
S18.012	SIC34	15 Winter	1	+0%	1/15 Summer				91.986	0.029	0.000	1.31		41.8
S18.013	SIC35	15 Winter	1	+0%					91.788	-2.412	0.000	0.13	9	41.7
S18.014	Swale	15 Winter	1	+0%					90.936	-1.496	0.000	0.01	9	41.5
S18.015	SIC36	15 Winter	1	+0%	30/15 Summer				89.634	-0.091	0.000	0.66		41.5
S18.016	SHWB2	15 Winter	1	+0%	30/15 Winter				88.637	-0.163	0.000	0.43		41.6
S21.000	SXX	15 Winter	1	+0%	100/15 Summer				89.898	-0.252	0.000	0.06		8.5
S21.001	Sxx	15 Winter	1	+0%	100/15 Summer				89.380	-0.185	0.000	0.31		44.8
S21.002	SHWB3	15 Winter	1	+0%	30/15 Summer				88.645	-0.155	0.000	0.46		44.7
S18.017	SBasin B	480 Winter	1	+0%	30/30 Winter				88.702	-0.098	0.000	0.02		8.2
S1.017	S12FC	1440 Winter	1	+0%	1/15 Summer				88.616	0.806	0.000	0.36		14.8
S1.018	S14	1440 Winter	1	+0%					87.150	-0.132	0.000	0.36		14.8
S1.019	S15	1440 Winter	1	+0%	100/15 Summer				86.575	-0.131	0.000	0.36		14.8
S22.000	SIC40	15 Winter	1	+0%					92.543	-1.440	0.000	0.00	5	5.6
S22.001	SIC41	15 Summer	1	+0%	30/15 Summer				92.329	-0.014	0.000	0.52		6.5
S22.002	SIC42	15 Winter	1	+0%					92.324	-1.681	0.000	0.00	6	27.7
S23.000	SIC60	15 Winter	1	+0%					92.845	-1.439	0.000	0.00	5	5.9
S23.001	SIC61	15 Winter	1	+0%	30/15 Summer				92.787	-0.070	0.000	0.46		5.8
S23.002	SIC62	15 Winter	1	+0%					92.765	-1.772	0.000	0.00	7	14.3
S23.003	SIC63	15 Winter	1	+0%	1/15 Summer				92.722	0.025	0.000	1.33		14.4
S23.004	SIC64	15 Winter	1	+0%					92.632	-1.958	0.000	0.00	7	14.4
S23.005	SIC65	15 Winter	1	+0%	1/15 Summer				92.526	0.033	0.000	1.08		13.8
S23.006	SIC66	15 Summer	1	+0%					92.449	-1.648	0.000	0.01	6	23.0



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1 year Return Period Summary of Critical Results by Flow Capacity Ratio (Rank 1) for NW3 Storm + 2A

PN	US/MH Name	Status	Level Exceeded
S18.003	SIC23	OK	
S18.004	SIC24	OK	
S18.005	SIC25	SURCHARGED	
S19.000	SIC37	OK	
S18.006	SIC26	OK	
S18.007	SIC27	SURCHARGED	
S18.008	SIC28	OK	
S18.009	SIC29	SURCHARGED	
S18.010	SIC30	OK	
S18.011	SIC31	SURCHARGED	
S20.000	SIC38	OK	
S18.012	SIC34	SURCHARGED	
S18.013	SIC35	OK	
S18.014	Swale	OK	
S18.015	SIC36	OK	
S18.016	SHWB2	OK	
S21.000	SXX	OK	
S21.001	Sxx	OK	
S21.002	SHWB3	OK	
S18.017	SBasin B	OK	
S1.017	S12FC	SURCHARGED	
S1.018	S14	OK	
S1.019	S15	OK	
S22.000	SIC40	OK	
S22.001	SIC41	OK	
S22.002	SIC42	OK	
S23.000	SIC60	OK	
S23.001	SIC61	OK	
S23.002	SIC62	OK	
S23.003	SIC63	SURCHARGED	
S23.004	SIC64	OK	
S23.005	SIC65	SURCHARGED	

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1 year Return Period Summary of Critical Results by Flow Capacity Ratio (Rank 1) for NW3 Storm + 2A

PN	US/MH Name	Status	Level Exceeded
S23.006	SIC66	OK	



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1 year Return Period Summary of Critical Results by Flow Capacity Ratio (Rank 1) for NW3 Storm + 2A

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Overflow Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)
S23.007	SIC67	15 Winter	1	+0%	1/15 Summer				92.296	0.217	0.000	0.79		19.9
S22.003	SIC43	15 Winter	1	+0%					92.032	-1.185	0.000	0.02	6	41.6
S22.004	SIC44	15 Winter	1	+0%	1/15 Summer	100/30 Winter			91.997	0.563	0.000	1.44		42.2
S22.005	SIC45	15 Winter	1	+0%					91.356	-1.161	0.000	0.03	11	66.6
S22.006	SIC46	15 Winter	1	+0%	1/15 Summer				90.262	0.108	0.000	1.28		66.8
S22.007	SIC47	15 Winter	1	+0%					90.038	-1.255	0.000	0.03	9	72.0
S22.008	SIC48	15 Winter	1	+0%	1/15 Winter				89.583	0.004	0.000	1.01		70.0
S22.009	SIC49	30 Winter	1	+0%					89.472	-1.231	0.000	0.03	12	77.0
S22.010	SIC50	30 Winter	1	+0%	30/15 Summer	100/30 Winter			89.039	-0.034	0.000	1.00		75.6
S22.011	SIC51	30 Winter	1	+0%					88.862	-1.294	0.000	0.04	12	75.6
S22.012	SIC52	30 Winter	1	+0%	30/15 Summer				88.784	-0.041	0.000	1.00		75.2
S22.013	SIC53	30 Winter	1	+0%					88.646	-1.289	0.000	0.03	13	79.3
S22.014	SIC54	30 Winter	1	+0%	1/15 Summer				88.341	0.028	0.000	1.29		79.2
S22.015	SIC55	30 Winter	1	+0%					88.200	-1.255	0.000	0.04	14	81.4
S22.016	SIC56	30 Winter	1	+0%	30/15 Summer				87.971	-0.081	0.000	0.89		81.3
S22.017	SIC57	30 Winter	1	+0%					87.847	-1.271	0.000	0.03	16	93.0
S22.018	SIC58	30 Winter	1	+0%	30/15 Summer				86.642	-0.137	0.000	0.57		93.0
S1.020	S17	30 Winter	1	+0%	30/15 Summer				86.109	-0.248	0.000	0.41		107.3
S1.021	S18	30 Winter	1	+0%	30/15 Summer				85.919	-0.163	0.000	0.73		107.4
S1.022	S19	30 Winter	1	+0%	1/1440 Winter				85.854	-0.170	0.000	0.70		107.5
S1.023	SHWD2	30 Winter	1	+0%					85.761	-0.189	0.000	0.64		107.4
S24.000	SXX	15 Winter	1	+0%	100/15 Summer				88.139	-0.184	0.000	0.31		26.6
S24.001	SXX	15 Winter	1	+0%					87.666	-0.334	0.000	0.15		48.8
S24.002	SXX	15 Winter	1	+0%	100/120 Winter				86.884	-0.316	0.000	0.19		69.9
S24.003	SXXFC	240 Winter	1	+0%	30/30 Winter				86.248	-0.177	0.000	0.03		4.7
S24.004	SHWC2	240 Winter	1	+0%					85.945	-0.405	0.000	0.02		4.7
S24.005	SBasin C	360 Winter	1	+0%	1/600 Winter				85.828	-0.072	0.000	0.32		4.7
S24.006	SHWD3	360 Winter	1	+0%	1/480 Winter				85.826	-0.049	0.000	0.03		4.6
S1.024	SBasin D	480 Summer	1	+0%	1/360 Winter				85.852	0.052	0.000	0.11		9.6
S25.000	SXX	15 Winter	1	+0%	100/15 Summer				86.330	-0.370	0.000	0.07		26.7
S26.000	SXX	15 Winter	1	+0%	100/15 Summer				87.340	-0.360	0.000	0.08		26.0
S27.000	SXX	15 Winter	1	+0%	100/15 Summer				87.837	-0.213	0.000	0.18		26.3
S27.001	SXX	15 Winter	1	+0%	30/15 Summer	100/15 Summer			87.139	-0.151	0.000	0.48		48.5



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1 year Return Period Summary of Critical Results by Flow Capacity Ratio (Rank 1) for NW3 Storm + 2A

PN	US/MH Name	Status	Level Exceeded
S23.007	SIC67	SURCHARGED	
S22.003	SIC43	OK	
S22.004	SIC44	SURCHARGED	1
S22.005	SIC45	OK	
S22.006	SIC46	SURCHARGED	
S22.007	SIC47	OK	
S22.008	SIC48	SURCHARGED	
S22.009	SIC49	OK	
S22.010	SIC50	OK	1
S22.011	SIC51	OK	
S22.012	SIC52	OK	
S22.013	SIC53	OK	
S22.014	SIC54	SURCHARGED	
S22.015	SIC55	OK	
S22.016	SIC56	OK	
S22.017	SIC57	OK	
S22.018	SIC58	OK	
S1.020	S17	OK	
S1.021	S18	OK	
S1.022	S19	OK	
S1.023	SHWD2	OK*	
S24.000	SXX	OK	
S24.001	SXX	OK	
S24.002	SXX	OK	
S24.003	SXXFC	OK	
S24.004	SHWC2	OK*	
S24.005	SBasin C	OK	
S24.006	SHWD3	OK	
S1.024	SBasin D	SURCHARGED	
S25.000	SXX	OK	
S26.000	SXX	OK	
S27.000	SXX	OK	

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1 year Return Period Summary of Critical Results by Flow Capacity Ratio (Rank 1) for NW3 Storm + 2A

PN	US/MH Name	Status	Level Exceeded
S27.001	SXX	OK	4



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1 year Return Period Summary of Critical Results by Flow Capacity Ratio (Rank 1) for NW3 Storm + 2A

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water	Surcharged	Flooded	Flow / Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)
									Level (m)	Depth (m)	Volume (m ³)			
S26.001	SXX	15 Winter	1	+0%	100/15 Summer	100/15 Summer		86.782	-0.268	0.000	0.34		96.9	
S28.000	SXX	15 Winter	1	+0%	100/15 Summer			87.350	-0.200	0.000	0.24		26.3	
S28.001	SXX	15 Winter	1	+0%	100/15 Summer			86.602	-0.333	0.000	0.15		48.8	
S26.002	SXX	15 Winter	1	+0%	30/15 Summer	100/15 Winter		86.252	-0.283	0.000	0.53		162.1	
S26.003	SXX	15 Winter	1	+0%	30/15 Summer	100/15 Winter		86.065	-0.320	0.000	0.43		156.1	
S25.001	SXX	15 Winter	1	+0%	30/15 Summer			85.885	-0.285	0.000	0.53		167.7	
S25.002	SXXFC	15 Winter	1	+0%	1/30 Summer			85.488	-0.011	0.000	0.25		3.3	
S1.025	S20FC	1440 Winter	1	+0%	1/15 Summer			86.022	0.612	0.000	0.62		7.0	
S1.026	SHWE2	1440 Winter	1	+0%				85.821	-0.879	0.000	0.00		7.0	
S29.000	SXX	15 Winter	1	+0%	1/15 Summer			85.714	0.094	0.000	0.65		24.4	
S29.001	SXXFC	30 Winter	1	+0%	1/15 Summer			85.648	0.208	0.000	0.37		5.0	
S1.027	SHWF3	60 Winter	1	+0%				85.439	-1.261	0.000	0.00		6.7	
S1.028	SHWF1	1440 Winter	1	+0%	1/15 Summer			85.821	0.530	0.000	0.42		5.5	
S1.029	S21FC	480 Winter	1	+0%	1/15 Summer			85.671	0.421	0.000	0.51		5.5	
S1.030	SHWG1	600 Winter	1	+0%				85.164	-0.836	0.000	0.00		5.5	
S1.031	SHWO3	600 Summer	1	+0%				85.095	-0.075	0.000	0.51		5.5	
S1.032	S21A	480 Winter	1	+0%				85.058	-0.082	0.000	0.43		5.5	

PN	US/MH Name	Status	Level Exceeded
S26.001	SXX	OK	2
S28.000	SXX	OK	
S28.001	SXX	OK	
S26.002	SXX	OK	1
S26.003	SXX	OK	1
S25.001	SXX	OK	
S25.002	SXXFC	OK	
S1.025	S20FC	SURCHARGED	
S1.026	SHWE2	OK	
S29.000	SXX	SURCHARGED	



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1 year Return Period Summary of Critical Results by Flow Capacity Ratio (Rank 1) for NW3 Storm + 2A

	US/MH		Level
PN	Name	Status	Exceeded
S29.001	SXXFC	SURCHARGED	
S1.027	SHWF3	OK	
S1.028	SHWF1	SURCHARGED*	
S1.029	S21FC	SURCHARGED	
S1.030	SHWG1	OK	
S1.031	SHWO3	OK*	
S1.032	S21A	OK	



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30 year Return Period Summary of Critical Results by Flow Capacity Ratio (Rank 1) for NW3 Storm + 2A

Simulation Criteria

Areal Reduction Factor 1.000 Manhole Headloss Coeff (Global) 0.500 MADD Factor * 10m³/ha Storage 0.000
 Hot Start (mins) 0 Foul Sewage per hectare (l/s) 0.000 Inlet Coeffiecient 0.800
 Hot Start Level (mm) 0 Additional Flow - % of Total Flow 0.000 Flow per Person per Day (l/per/day) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 9 Number of Storage Structures 40 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 20.000 Cv (Summer) 0.750
 Region England and Wales Ratio R 0.405 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 450.0 DVD Status ON
 Analysis Timestep 2.5 Second Increment (Extended) Inertia Status ON
 DTS Status OFF

Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
 Return Period(s) (years) 1, 30, 100
 Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Water				Half Drain Time (mins)	Pipe Flow (l/s)	Status
								Overflow Act.	Level (m)	Depth (m)	Volume (m ³)			
S1.000	S1	15 Winter	30	+0%	100/15 Summer	100/15 Winter		93.250	-0.075	0.000	0.75		45.5	OK
S2.000	SXX	15 Winter	30	+0%	100/15 Summer			92.940	-0.235	0.000	0.29		59.3	OK
S1.001	S2	15 Winter	30	+0%	30/15 Summer			92.401	0.046	0.000	1.28		149.8	SURCHARGED
S1.002	S3	15 Winter	30	+0%	100/15 Summer			92.163	-0.101	0.000	0.96		160.0	OK
S1.003	S4	15 Winter	30	+0%	100/15 Summer			91.955	-0.248	0.000	0.41		158.0	OK
S1.004	S5	15 Winter	30	+0%	100/15 Summer			91.601	-0.124	0.000	0.72		172.5	OK
S1.005	S6	15 Winter	30	+0%	30/15 Winter			91.433	0.058	0.000	0.96		232.1	SURCHARGED
S1.006	SXX	15 Winter	30	+0%	30/15 Summer			91.009	0.084	0.000	1.19		237.2	SURCHARGED
S1.007	SXX	15 Winter	30	+0%	30/15 Summer			90.752	0.007	0.000	1.21		241.6	SURCHARGED
S1.008	SXX	15 Winter	30	+0%	30/120 Winter			90.714	0.000	0.000	1.39		285.9	OK



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30 year Return Period Summary of Critical Results by Flow Capacity Ratio (Rank 1) for NW3 Storm + 2A

PN	US/MH Name	Level Exceeded
S1.000	S1	1
S2.000	SXX	
S1.001	S2	
S1.002	S3	
S1.003	S4	
S1.004	S5	
S1.005	S6	
S1.006	SXX	
S1.007	SXX	
S1.008	SXX	



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30 year Return Period Summary of Critical Results by Flow Capacity Ratio (Rank 1) for NW3 Storm + 2A

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)
S1.009	SXX	15 Winter	30	+0%	30/120 Winter				90.597	-0.082	0.000	0.71		283.9
S1.010	S7	15 Winter	30	+0%	30/60 Winter				90.500	0.000	0.000	1.03		288.1
S1.011	SHWA2	15 Winter	30	+0%					90.245	-0.205	0.000	0.74		285.9
S3.000	S22	15 Winter	30	+0%	30/15 Summer	100/15 Winter			91.423	0.098	0.000	1.09		60.1
S3.001	S23	15 Winter	30	+0%	30/1440 Winter				90.723	-0.152	0.000	0.47		100.7
S3.002	SHWA3	15 Winter	30	+0%	1/180 Winter				90.203	0.053	0.000	1.03		99.9
S1.012	SBasin A	15 Summer	30	+0%	1/15 Summer				90.157	0.307	0.000	0.64		10.1
S1.013	S8FC	1440 Winter	30	+0%	1/15 Summer				90.895	1.081	0.000	0.04		1.6
S1.014	S9	15 Summer	30	+0%	100/15 Summer				89.445	-0.120	0.000	0.50		36.8
S4.000	SXX	15 Winter	30	+0%	100/15 Summer				93.269	-0.091	0.000	0.64		27.7
S4.001	SXX	15 Winter	30	+0%	30/15 Summer				93.023	0.063	0.000	1.18		75.7
S4.002	S24	30 Winter	30	+0%	1/15 Summer				93.039	0.559	0.000	2.03		13.9
S4.003	S25	15 Winter	30	+0%	30/15 Summer				92.322	0.022	0.000	1.00		94.1
S5.000	SXX	15 Winter	30	+0%	100/15 Summer				92.940	-0.160	0.000	0.44		42.9
S5.001	SXX	15 Winter	30	+0%	100/15 Summer				92.773	-0.077	0.000	0.91		93.7
S5.002	SXX	60 Winter	30	+0%	1/15 Summer				92.632	0.274	0.000	1.26		13.1
S4.004	S26	15 Winter	30	+0%	100/15 Summer				91.794	-0.081	0.000	0.87		104.5
S6.000	S31	15 Winter	30	+0%	100/15 Summer				93.037	-0.088	0.000	0.65		26.6
S6.001	S32	15 Winter	30	+0%	100/15 Summer				92.693	-0.085	0.000	0.67		51.6
S4.005	S27	15 Winter	30	+0%	100/15 Summer				91.015	-0.110	0.000	0.82		210.4
S7.000	S250	15 Winter	30	+0%	100/15 Summer				92.217	-0.124	0.000	0.41		37.5
S7.001	S251	15 Winter	30	+0%	30/15 Summer				91.360	0.367	0.000	1.85		65.9
S8.000	S256xx	15 Winter	30	+0%					93.197	-0.153	0.000	0.22		17.6
S8.001	S256xx	15 Winter	30	+0%	100/15 Summer				91.898	-0.102	0.000	0.57		36.4
S8.002	S256xx	15 Winter	30	+0%	100/15 Summer				91.534	-0.116	0.000	0.47		49.0
S8.003	S256	15 Winter	30	+0%	100/15 Summer				91.025	-0.065	0.000	0.94		60.4
S8.004	S257	15 Winter	30	+0%	30/30 Winter				90.964	-0.014	0.000	0.34	26	21.1
S7.002	S252	15 Winter	30	+0%	30/15 Summer				91.030	0.140	0.000	0.59		61.6
S9.000	S253xx	60 Winter	30	+0%	30/30 Summer				90.990	0.160	0.000	0.18		16.8
S7.003	S253	120 Winter	30	+0%	30/15 Summer				91.022	0.256	0.000	0.25		21.1
S7.004	S254	180 Winter	30	+0%	30/15 Summer				91.027	0.294	0.000	0.18		17.6
S7.005	S255FC	30 Winter	30	+0%	1/15 Summer				90.952	0.434	0.000	0.26		9.8
S7.006	S28A	120 Summer	30	+0%	100/15 Summer				90.268	-0.150	0.000	0.24		9.8



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30 year Return Period Summary of Critical Results by Flow Capacity Ratio (Rank 1) for NW3 Storm + 2A

PN	US/MH Name	Status	Level Exceeded
S1.009	SXX	OK	
S1.010	S7	OK	
S1.011	SHWA2	OK*	
S3.000	S22	SURCHARGED	1
S3.001	S23	OK	
S3.002	SHWA3	SURCHARGED	
S1.012	SBasin A	SURCHARGED	
S1.013	S8FC	SURCHARGED	
S1.014	S9	OK	
S4.000	SXX	OK	
S4.001	SXX	SURCHARGED	
S4.002	S24	SURCHARGED	
S4.003	S25	SURCHARGED	
S5.000	SXX	OK	
S5.001	SXX	OK	
S5.002	SXX	SURCHARGED	
S4.004	S26	OK	
S6.000	S31	OK	
S6.001	S32	OK	
S4.005	S27	OK	
S7.000	S250	OK	
S7.001	S251	SURCHARGED	
S8.000	S256xx	OK	
S8.001	S256xx	OK	
S8.002	S256xx	OK	
S8.003	S256	OK	
S8.004	S257	OK	
S7.002	S252	SURCHARGED	
S9.000	S253xx	SURCHARGED	
S7.003	S253	SURCHARGED	
S7.004	S254	SURCHARGED	
S7.005	S255FC	SURCHARGED	

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30 year Return Period Summary of Critical Results by Flow Capacity Ratio (Rank 1) for NW3 Storm + 2A

PN	US/MH Name	Status	Level Exceeded
S7.006	S28A	OK	



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30 year Return Period Summary of Critical Results by Flow Capacity Ratio (Rank 1) for NW3 Storm + 2A

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Cap. (l/s)	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)
S4.006	S28	15 Winter	30	+0%	30/15 Winter				90.153	0.013	0.000	1.00			205.3
S4.007	S29	15 Summer	30	+0%	100/15 Summer				89.696	-0.079	0.000	0.73			175.9
S1.015	S10	15 Winter	30	+0%	30/15 Summer				89.478	0.261	0.000	0.40			198.4
S10.000	S200	15 Winter	30	+0%	100/240 Winter				89.954	-0.176	0.000	0.35			52.5
S11.000	S21XX	15 Winter	30	+0%	30/15 Summer	100/15 Summer			91.415	0.387	0.000	1.44			10.3
S11.001	S22XX	15 Winter	30	+0%	100/15 Summer				90.542	-0.133	0.000	0.34			20.1
S11.002	S23XX	15 Winter	30	+0%	100/15 Summer				89.943	-0.113	0.000	0.47			20.4
S11.003	S24XX	15 Winter	30	+0%	100/15 Summer				89.923	-0.039	0.000	0.97			51.1
S11.004	S25XX	15 Winter	30	+0%	100/15 Summer				89.393	-0.084	0.000	0.70			51.3
S10.001	S201	15 Winter	30	+0%	30/360 Winter				89.003	-0.405	0.000	0.23			142.3
S12.000	S207	15 Winter	30	+0%	100/15 Summer				90.351	-0.099	0.000	0.59			37.4
S12.001	S208	15 Winter	30	+0%	100/360 Winter				90.045	-0.125	0.000	0.40			37.0
S13.000	SIC209XX	15 Winter	30	+0%	100/15 Winter				89.302	-0.146	0.000	0.26			9.9
S13.001	SIC209	15 Winter	30	+0%	30/240 Winter				89.223	-0.112	0.000	0.38	10		11.4
S12.002	S209	15 Winter	30	+0%	30/180 Winter				89.277	-0.021	0.000	0.95			37.5
S14.000	S205XX	15 Winter	30	+0%	30/180 Winter				89.178	-0.117	0.000	0.46			17.3
S14.001	SIC205	15 Winter	30	+0%	30/120 Winter				89.079	-0.095	0.000	0.36	9		12.3
S12.003	S205	15 Winter	30	+0%	30/15 Summer				89.120	0.005	0.000	1.05			37.7
S10.002	S202	15 Summer	30	+0%	30/120 Winter				88.911	-0.277	0.000	0.26			156.9
S10.003	S203	15 Winter	30	+0%	30/60 Summer				88.902	-0.122	0.000	0.32			156.3
S15.000	S204XX	15 Winter	30	+0%	30/30 Winter				88.837	-0.104	0.000	0.26			14.8
S15.001	SIC204	180 Summer	30	+0%	30/30 Summer				89.224	0.379	0.000	0.09			4.8
S10.004	S204	15 Winter	30	+0%	30/30 Winter				88.866	-0.101	0.000	0.21			130.7
S16.000	S206XX	15 Winter	30	+0%	1/120 Winter				88.838	0.123	0.000	0.23			12.9
S16.001	SIC206	180 Summer	30	+0%	1/60 Summer				89.226	0.584	0.000	0.08			4.4
S17.000	S205XX	15 Winter	30	+0%	1/120 Winter				88.837	0.097	0.000	0.25			13.8
S17.001	SIC205	180 Summer	30	+0%	1/60 Winter				89.225	0.562	0.000	0.06			3.5
S10.005	S205	30 Summer	30	+0%	1/120 Winter				88.903	0.144	0.000	0.02			11.3
S10.006	S206FC	1440 Summer	30	+0%	1/15 Summer				89.257	0.860	0.000	0.06			7.8
S1.016	S11	15 Winter	30	+0%	1/15 Summer				89.197	0.837	0.000	0.92			193.8
S18.000	SIC20	15 Winter	30	+0%					94.058	-1.445	0.000	0.00	5		6.9
S18.001	SIC21	15 Winter	30	+0%	100/15 Summer				93.883	-0.036	0.000	0.39			6.9
S18.002	SIC22	15 Winter	30	+0%					93.861	-1.302	0.000	0.01	4		37.3



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30 year Return Period Summary of Critical Results by Flow Capacity Ratio (Rank 1) for NW3 Storm + 2A

PN	US/MH Name	Status	Level Exceeded
S4.006	S28	SURCHARGED	
S4.007	S29	OK	
S1.015	S10	SURCHARGED	
S10.000	S200	OK	
S11.000	S21XX	SURCHARGED	3
S11.001	S22XX	OK	
S11.002	S23XX	OK	
S11.003	S24XX	OK	
S11.004	S25XX	OK	
S10.001	S201	OK	
S12.000	S207	OK	
S12.001	S208	OK	
S13.000	SIC209XX	OK	
S13.001	SIC209	OK	
S12.002	S209	OK	
S14.000	S205XX	OK	
S14.001	SIC205	OK	
S12.003	S205	SURCHARGED	
S10.002	S202	OK	
S10.003	S203	OK	
S15.000	S204XX	OK	
S15.001	SIC204	SURCHARGED	
S10.004	S204	OK	
S16.000	S206XX	SURCHARGED	
S16.001	SIC206	SURCHARGED	
S17.000	S205XX	SURCHARGED	
S17.001	SIC205	SURCHARGED	
S10.005	S205	SURCHARGED	
S10.006	S206FC	SURCHARGED	
S1.016	S11	SURCHARGED	
S18.000	SIC20	OK	
S18.001	SIC21	OK	



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PN	US/MH Name	Status	Level Exceeded
S18.002	SIC22	OK	



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PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Cap. (l/s)	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)
S18.003	SIC23	15 Winter	30	+0%	30/15 Summer				93.708	0.682	0.000	1.16			22.8
S18.004	SIC24	15 Winter	30	+0%					93.545	-0.685	0.000	0.01		10	34.2
S18.005	SIC25	15 Winter	30	+0%	1/15 Summer				93.539	0.999	0.000	1.44			28.5
S19.000	SIC37	15 Winter	30	+0%					93.244	-0.658	0.000	0.02		9	51.5
S18.006	SIC26	15 Summer	30	+0%					93.187	-0.438	0.000	0.03		8	61.2
S18.007	SIC27	15 Winter	30	+0%	1/15 Summer				93.223	1.031	0.000	4.78			51.9
S18.008	SIC28	15 Winter	30	+0%					92.648	-0.864	0.000	0.03		17	52.0
S18.009	SIC29	15 Winter	30	+0%	1/15 Summer				92.642	0.439	0.000	1.57			52.5
S18.010	SIC30	15 Winter	30	+0%					92.542	-0.944	0.000	0.01		18	62.5
S18.011	SIC31	15 Winter	30	+0%	1/15 Summer				92.512	0.466	0.000	1.68			61.8
S20.000	SIC38	15 Winter	30	+0%					92.939	-1.452	0.000	0.00		5	15.4
S18.012	SIC34	15 Winter	30	+0%	1/15 Summer				92.258	0.301	0.000	2.36			74.9
S18.013	SIC35	15 Winter	30	+0%					91.966	-2.234	0.000	0.23		10	74.9
S18.014	Swale	15 Winter	30	+0%					91.034	-1.398	0.000	0.02		15	74.8
S18.015	SIC36	15 Winter	30	+0%	30/15 Summer				89.793	0.068	0.000	1.17			74.0
S18.016	SHWB2	15 Winter	30	+0%	30/15 Winter				88.818	0.018	0.000	0.76			74.1
S21.000	SXX	15 Winter	30	+0%	100/15 Summer				89.927	-0.223	0.000	0.15			21.0
S21.001	Sxx	15 Winter	30	+0%	100/15 Summer				89.491	-0.074	0.000	0.92			133.5
S21.002	SHWB3	15 Winter	30	+0%	30/15 Summer				88.926	0.126	0.000	1.38			133.6
S18.017	SBasin B	960 Summer	30	+0%	30/30 Winter				89.156	0.356	0.000	0.02			8.5
S1.017	S12FC	720 Winter	30	+0%	1/15 Summer				89.298	1.488	0.000	0.36			14.8
S1.018	S14	720 Winter	30	+0%					87.150	-0.132	0.000	0.36			14.8
S1.019	S15	720 Winter	30	+0%	100/15 Summer				86.575	-0.131	0.000	0.36			14.8
S22.000	SIC40	15 Summer	30	+0%					92.717	-1.266	0.000	0.00		4	13.9
S22.001	SIC41	15 Summer	30	+0%	30/15 Summer				92.704	0.361	0.000	1.28			15.9
S22.002	SIC42	15 Winter	30	+0%					92.693	-1.312	0.000	0.01		19	73.2
S23.000	SIC60	15 Winter	30	+0%					93.357	-0.927	0.000	0.00		7	11.8
S23.001	SIC61	15 Winter	30	+0%	30/15 Summer				93.356	0.499	0.000	0.75			9.5
S23.002	SIC62	15 Winter	30	+0%					93.325	-1.213	0.000	0.00		13	31.9
S23.003	SIC63	15 Summer	30	+0%	1/15 Summer				93.233	0.536	0.000	2.42			26.3
S23.004	SIC64	15 Winter	30	+0%					93.203	-1.388	0.000	0.00		13	26.0
S23.005	SIC65	15 Winter	30	+0%	1/15 Summer				93.198	0.705	0.000	1.65			21.1
S23.006	SIC66	15 Winter	30	+0%					93.043	-1.053	0.000	0.02		15	40.8



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30 year Return Period Summary of Critical Results by Flow Capacity Ratio (Rank 1) for NW3 Storm + 2A

PN	US/MH Name	Status	Level Exceeded
S18.003	SIC23	SURCHARGED	
S18.004	SIC24	OK	
S18.005	SIC25	FLOOD RISK	
S19.000	SIC37	OK	
S18.006	SIC26	FLOOD RISK	
S18.007	SIC27	FLOOD RISK	
S18.008	SIC28	OK	
S18.009	SIC29	SURCHARGED	
S18.010	SIC30	OK	
S18.011	SIC31	SURCHARGED	
S20.000	SIC38	OK	
S18.012	SIC34	SURCHARGED	
S18.013	SIC35	OK	
S18.014	Swale	OK	
S18.015	SIC36	SURCHARGED	
S18.016	SHWB2	SURCHARGED	
S21.000	SXX	OK	
S21.001	Sxx	OK	
S21.002	SHWB3	SURCHARGED	
S18.017	SBasin B	SURCHARGED	
S1.017	S12FC	SURCHARGED	
S1.018	S14	OK	
S1.019	S15	OK	
S22.000	SIC40	OK	
S22.001	SIC41	SURCHARGED	
S22.002	SIC42	OK	
S23.000	SIC60	OK	
S23.001	SIC61	SURCHARGED	
S23.002	SIC62	OK	
S23.003	SIC63	SURCHARGED	
S23.004	SIC64	OK	
S23.005	SIC65	SURCHARGED	

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30 year Return Period Summary of Critical Results by Flow Capacity Ratio (Rank 1) for NW3 Storm + 2A

PN	US/MH Name	Status	Level Exceeded
S23.006	SIC66	OK	



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30 year Return Period Summary of Critical Results by Flow Capacity Ratio (Rank 1) for NW3 Storm + 2A

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Overflow Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)
S23.007	SIC67	15 Winter	30	+0%	1/15 Summer				93.032	0.953	0.000	1.04		26.3
S22.003	SIC43	15 Summer	30	+0%					92.528	-0.689	0.000	0.03	13	67.1
S22.004	SIC44	15 Winter	30	+0%	1/15 Summer	100/30 Winter			92.534	1.100	0.000	1.90		55.6
S22.005	SIC45	15 Winter	30	+0%					91.809	-0.708	0.000	0.06	20	131.4
S22.006	SIC46	15 Winter	30	+0%	1/15 Summer				91.016	0.862	0.000	2.32		120.6
S22.007	SIC47	15 Winter	30	+0%					90.304	-0.989	0.000	0.05	12	133.8
S22.008	SIC48	15 Winter	30	+0%	1/15 Winter				90.083	0.504	0.000	1.93		133.5
S22.009	SIC49	30 Winter	30	+0%					89.902	-0.801	0.000	0.06	25	149.0
S22.010	SIC50	30 Winter	30	+0%	30/15 Summer	100/30 Winter			89.835	0.762	0.000	1.91		144.3
S22.011	SIC51	30 Winter	30	+0%					89.407	-0.748	0.000	0.08	11	144.3
S22.012	SIC52	30 Winter	30	+0%	30/15 Summer				89.391	0.566	0.000	1.93		145.0
S22.013	SIC53	30 Winter	30	+0%					89.065	-0.870	0.000	0.06	12	154.2
S22.014	SIC54	30 Winter	30	+0%	1/15 Summer				89.005	0.692	0.000	2.53		155.3
S22.015	SIC55	30 Winter	30	+0%					88.631	-0.824	0.000	0.08	17	161.0
S22.016	SIC56	30 Winter	30	+0%	30/15 Summer				88.576	0.524	0.000	1.76		161.8
S22.017	SIC57	30 Winter	30	+0%					88.194	-0.923	0.000	0.06	16	194.9
S22.018	SIC58	30 Winter	30	+0%	30/15 Summer				87.066	0.287	0.000	1.19		193.2
S1.020	S17	30 Winter	30	+0%	30/15 Summer				86.477	0.120	0.000	0.81		209.9
S1.021	S18	30 Winter	30	+0%	30/15 Summer				86.297	0.215	0.000	1.43		209.5
S1.022	S19	30 Winter	30	+0%	1/1440 Winter				86.158	0.134	0.000	1.38		210.6
S1.023	SHWD2	30 Winter	30	+0%					85.950	0.000	0.000	1.25		210.6
S24.000	SXX	15 Winter	30	+0%	100/15 Summer				88.223	-0.100	0.000	0.75		64.1
S24.001	SXX	15 Winter	30	+0%					87.750	-0.250	0.000	0.39		128.5
S24.002	SXX	15 Winter	30	+0%	100/120 Winter				86.990	-0.210	0.000	0.54		194.3
S24.003	SXXFC	600 Summer	30	+0%	30/30 Winter				86.589	0.164	0.000	0.03		4.9
S24.004	SHWC2	240 Summer	30	+0%					85.947	-0.403	0.000	0.02		4.9
S24.005	SBasin C	120 Summer	30	+0%	1/600 Winter				85.819	-0.081	0.000	0.33		4.8
S24.006	SHWD3	120 Summer	30	+0%	1/480 Winter				85.796	-0.079	0.000	0.03		4.7
S1.024	SBasin D	600 Winter	30	+0%	1/360 Winter				86.195	0.395	0.000	0.12		9.7
S25.000	SXX	15 Winter	30	+0%	100/15 Summer				86.379	-0.321	0.000	0.18		65.6
S26.000	SXX	15 Winter	30	+0%	100/15 Summer				87.391	-0.309	0.000	0.21		63.7
S27.000	SXX	15 Winter	30	+0%	100/15 Summer				87.893	-0.157	0.000	0.45		64.6
S27.001	SXX	15 Winter	30	+0%	30/15 Summer	100/15 Summer			87.477	0.187	0.000	1.31		131.0



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30 year Return Period Summary of Critical Results by Flow Capacity Ratio (Rank 1) for NW3 Storm + 2A

PN	US/MH Name	Status	Level Exceeded
S23.007	SIC67	FLOOD RISK	
S22.003	SIC43	OK	
S22.004	SIC44	FLOOD RISK	1
S22.005	SIC45	OK	
S22.006	SIC46	FLOOD RISK	
S22.007	SIC47	OK	
S22.008	SIC48	SURCHARGED	
S22.009	SIC49	OK	
S22.010	SIC50	FLOOD RISK	1
S22.011	SIC51	OK	
S22.012	SIC52	SURCHARGED	
S22.013	SIC53	OK	
S22.014	SIC54	SURCHARGED	
S22.015	SIC55	OK	
S22.016	SIC56	SURCHARGED	
S22.017	SIC57	OK	
S22.018	SIC58	SURCHARGED	
S1.020	S17	SURCHARGED	
S1.021	S18	SURCHARGED	
S1.022	S19	SURCHARGED	
S1.023	SHWD2	SURCHARGED*	
S24.000	SXX	OK	
S24.001	SXX	OK	
S24.002	SXX	OK	
S24.003	SXXFC	SURCHARGED	
S24.004	SHWC2	OK*	
S24.005	SBasin C	OK	
S24.006	SHWD3	OK	
S1.024	SBasin D	SURCHARGED	
S25.000	SXX	OK	
S26.000	SXX	OK	
S27.000	SXX	OK	



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30 year Return Period Summary of Critical Results by Flow Capacity Ratio (Rank 1) for NW3 Storm + 2A

PN	US/MH Name	Status	Level Exceeded
S27.001	SXX	SURCHARGED	4



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30 year Return Period Summary of Critical Results by Flow Capacity Ratio (Rank 1) for NW3 Storm + 2A

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Overflow Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)
S26.001	SXX	15 Winter	30	+0%	100/15 Summer	100/15 Summer			87.042	-0.008	0.000	0.86		245.9
S28.000	SXX	15 Winter	30	+0%	100/15 Summer				87.418	-0.132	0.000	0.58		63.7
S28.001	SXX	15 Winter	30	+0%	100/15 Summer				86.724	-0.211	0.000	0.40		130.7
S26.002	SXX	15 Winter	30	+0%	30/15 Summer	100/15 Winter			86.664	0.129	0.000	1.33		407.1
S26.003	SXX	15 Winter	30	+0%	30/15 Summer	100/15 Winter			86.471	0.086	0.000	1.02		365.1
S25.001	SXX	15 Winter	30	+0%	30/15 Summer				86.258	0.088	0.000	1.22		383.4
S25.002	SXXFC	30 Winter	30	+0%	1/30 Summer				85.719	0.220	0.000	0.34		4.6
S1.025	S20FC	1440 Winter	30	+0%	1/15 Summer				86.446	1.036	0.000	0.69		7.7
S1.026	SHWE2	1440 Winter	30	+0%					86.248	-0.452	0.000	0.00		7.7
S29.000	SXX	15 Winter	30	+0%	1/15 Summer				85.942	0.322	0.000	1.58		59.6
S29.001	SXXFC	30 Winter	30	+0%	1/15 Summer				85.727	0.287	0.000	0.37		5.0
S1.027	SHWF3	120 Winter	30	+0%					85.658	-1.042	0.000	0.00		7.6
S1.028	SHWF1	180 Winter	30	+0%	1/15 Summer				85.700	0.409	0.000	0.42		5.6
S1.029	S21FC	180 Winter	30	+0%	1/15 Summer				85.689	0.439	0.000	0.51		5.5
S1.030	SHWG1	240 Summer	30	+0%					85.164	-0.836	0.000	0.00		5.5
S1.031	SHW03	240 Summer	30	+0%					85.095	-0.075	0.000	0.51		5.5
S1.032	S21A	240 Summer	30	+0%					85.058	-0.082	0.000	0.43		5.5

PN	US/MH Name	Status	Level Exceeded
S26.001	SXX	OK	2
S28.000	SXX	OK	
S28.001	SXX	OK	
S26.002	SXX	SURCHARGED	1
S26.003	SXX	SURCHARGED	1
S25.001	SXX	SURCHARGED	
S25.002	SXXFC	SURCHARGED	
S1.025	S20FC	SURCHARGED	
S1.026	SHWE2	OK	
S29.000	SXX	SURCHARGED	



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30 year Return Period Summary of Critical Results by Flow Capacity Ratio (Rank 1) for NW3 Storm + 2A

	US/MH		Level
PN	Name	Status	Exceeded
S29.001	SXXFC	SURCHARGED	
S1.027	SHWF3		OK
S1.028	SHWF1	SURCHARGED*	
S1.029	S21FC	SURCHARGED	
S1.030	SHWG1		OK
S1.031	SHWO3		OK*
S1.032	S21A		OK



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100 year Return Period Summary of Critical Results by Flow Capacity Ratio (Rank 1) for NW3 Storm + 2A

Simulation Criteria

Areal Reduction Factor 1.000 Manhole Headloss Coeff (Global) 0.500 MADD Factor * 10m³/ha Storage 0.000
 Hot Start (mins) 0 Foul Sewage per hectare (l/s) 0.000 Inlet Coeffiecient 0.800
 Hot Start Level (mm) 0 Additional Flow - % of Total Flow 0.000 Flow per Person per Day (l/per/day) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 9 Number of Storage Structures 40 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 20.000 Cv (Summer) 0.750
 Region England and Wales Ratio R 0.405 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 450.0 DVD Status ON
 Analysis Timestep 2.5 Second Increment (Extended) Inertia Status ON
 DTS Status OFF

Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
 Return Period(s) (years) 1, 30, 100
 Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Water				Half Drain Time (mins)	Pipe Flow (l/s)	Status
								Overflow Act.	Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)			
S1.000	S1 15 Winter	100	+40%	100/15 Summer	100/15 Winter		95.160	1.835	0.454	1.13	68.4	FLOOD		
S2.000	SXX 15 Summer	100	+40%	100/15 Summer			93.882	0.707	0.000	0.49	99.1	SURCHARGED		
S1.001	S2 15 Winter	100	+40%	30/15 Summer			94.088	1.733	0.000	1.81	211.5	FLOOD RISK		
S1.002	S3 15 Winter	100	+40%	100/15 Summer			93.800	1.536	0.000	1.35	225.5	FLOOD RISK		
S1.003	S4 15 Winter	100	+40%	100/15 Summer			93.655	1.453	0.000	0.59	225.8	FLOOD RISK		
S1.004	S5 15 Winter	100	+40%	100/15 Summer			93.442	1.717	0.000	1.04	251.7	FLOOD RISK		
S1.005	S6 15 Winter	100	+40%	30/15 Winter			93.083	1.708	0.000	1.45	350.4	SURCHARGED		
S1.006	SXX 15 Winter	100	+40%	30/15 Summer			92.060	1.135	0.000	1.84	367.3	SURCHARGED		
S1.007	SXX 15 Winter	100	+40%	30/15 Summer			91.452	0.707	0.000	1.91	380.1	SURCHARGED		
S1.008	SXX 15 Winter	100	+40%	30/120 Winter			91.318	0.604	0.000	2.30	471.9	SURCHARGED		



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PN	US/MH Name	Level Exceeded
S1.000	S1	1
S2.000	SXX	
S1.001	S2	
S1.002	S3	
S1.003	S4	
S1.004	S5	
S1.005	S6	
S1.006	SXX	
S1.007	SXX	
S1.008	SXX	



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100 year Return Period Summary of Critical Results by Flow Capacity Ratio (Rank 1) for NW3 Storm + 2A

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Overflow Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)
S1.009	SXX	15 Winter	100	+40%	30/120 Winter				91.079	0.401	0.000	1.21		482.4
S1.010	S7	15 Winter	100	+40%	30/60 Winter				90.807	0.307	0.000	1.84		514.2
S1.011	SHWA2	15 Winter	100	+40%					90.450	0.000	0.000	1.32		512.4
S3.000	S22	15 Winter	100	+40%	30/15 Summer	100/15 Winter			92.645	1.320	0.012	1.92		105.7
S3.001	S23	15 Winter	100	+40%	30/1440 Winter				90.966	0.091	0.000	0.82		173.9
S3.002	SHWA3	15 Winter	100	+40%	1/180 Winter				90.517	0.367	0.000	1.78		173.0
S1.012	SBasin A	15 Winter	100	+40%	1/15 Summer				90.517	0.667	0.000	0.69		11.0
S1.013	S8FC	1440 Winter	100	+40%	1/15 Summer				91.574	1.760	0.000	0.05		1.9
S1.014	S9	15 Summer	100	+40%	100/15 Summer				90.043	0.478	0.000	0.75		54.7
S4.000	SXX	15 Winter	100	+40%	100/15 Summer				94.188	0.828	0.000	1.06		46.2
S4.001	SXX	15 Winter	100	+40%	30/15 Summer				93.749	0.789	0.000	2.01		128.6
S4.002	S24	30 Winter	100	+40%	1/15 Summer				93.804	1.324	0.000	2.89		19.9
S4.003	S25	15 Summer	100	+40%	30/15 Summer				93.269	0.969	0.000	1.53		143.9
S5.000	SXX	15 Winter	100	+40%	100/15 Summer				93.465	0.365	0.000	0.80		78.5
S5.001	SXX	15 Winter	100	+40%	100/15 Summer				93.305	0.455	0.000	1.61		166.5
S5.002	SXX	60 Winter	100	+40%	1/15 Summer				93.080	0.722	0.000	1.58		16.5
S4.004	S26	15 Winter	100	+40%	100/15 Summer				92.686	0.811	0.000	1.09		130.6
S6.000	S31	15 Winter	100	+40%	100/15 Summer				93.811	0.686	0.000	1.05		42.9
S6.001	S32	15 Winter	100	+40%	100/15 Summer				93.489	0.711	0.000	0.97		74.1
S4.005	S27	15 Summer	100	+40%	100/15 Summer				91.761	0.636	0.000	1.07		272.6
S7.000	S250	15 Winter	100	+40%	100/15 Summer				92.774	0.433	0.000	0.70		64.1
S7.001	S251	15 Winter	100	+40%	30/15 Summer				92.093	1.100	0.000	3.02		107.2
S8.000	S256xx	15 Winter	100	+40%					93.224	-0.126	0.000	0.39		31.9
S8.001	S256xx	15 Winter	100	+40%	100/15 Summer				92.062	0.062	0.000	1.01		64.2
S8.002	S256xx	15 Winter	100	+40%	100/15 Summer				91.709	0.059	0.000	0.81		85.3
S8.003	S256	15 Winter	100	+40%	100/15 Summer				91.390	0.300	0.000	1.64		105.1
S8.004	S257	15 Winter	100	+40%	30/30 Winter				91.277	0.299	0.000	0.48		30.0
S7.002	S252	15 Summer	100	+40%	30/15 Summer				91.158	0.268	0.000	1.12		115.9
S9.000	S253xx	360 Summer	100	+40%	30/30 Summer				91.481	0.651	0.000	0.18	266	16.9
S7.003	S253	480 Summer	100	+40%	30/15 Summer				91.445	0.679	0.000	0.25		21.1
S7.004	S254	480 Winter	100	+40%	30/15 Summer				91.628	0.895	0.000	0.18		17.6
S7.005	S255FC	60 Winter	100	+40%	1/15 Summer				91.613	1.095	0.000	0.26		9.8
S7.006	S28A	30 Summer	100	+40%	100/15 Summer				90.994	0.576	0.000	0.45		18.1



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100 year Return Period Summary of Critical Results by Flow Capacity Ratio (Rank 1) for NW3 Storm + 2A

PN	US/MH Name	Status	Level Exceeded
S1.009	SXX	SURCHARGED	
S1.010	S7	SURCHARGED	
S1.011	SHWA2	SURCHARGED*	
S3.000	S22	FLOOD	1
S3.001	S23	SURCHARGED	
S3.002	SHWA3	SURCHARGED	
S1.012	SBasin A	SURCHARGED	
S1.013	S8FC	FLOOD RISK	
S1.014	S9	SURCHARGED	
S4.000	SXX	FLOOD RISK	
S4.001	SXX	SURCHARGED	
S4.002	S24	SURCHARGED	
S4.003	S25	SURCHARGED	
S5.000	SXX	SURCHARGED	
S5.001	SXX	SURCHARGED	
S5.002	SXX	SURCHARGED	
S4.004	S26	SURCHARGED	
S6.000	S31	SURCHARGED	
S6.001	S32	SURCHARGED	
S4.005	S27	SURCHARGED	
S7.000	S250	SURCHARGED	
S7.001	S251	SURCHARGED	
S8.000	S256xx	OK	
S8.001	S256xx	SURCHARGED	
S8.002	S256xx	SURCHARGED	
S8.003	S256	SURCHARGED	
S8.004	S257	SURCHARGED	
S7.002	S252	SURCHARGED	
S9.000	S253xx	SURCHARGED	
S7.003	S253	SURCHARGED	
S7.004	S254	SURCHARGED	
S7.005	S255FC	SURCHARGED	



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100 year Return Period Summary of Critical Results by Flow Capacity Ratio (Rank 1) for NW3 Storm + 2A

PN	US/MH Name	Status	Level Exceeded
S7.006	S28A	SURCHARGED	



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100 year Return Period Summary of Critical Results by Flow Capacity Ratio (Rank 1) for NW3 Storm + 2A

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Overflow Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)
S4.006	S28	15 Summer	100	+40%	30/15 Winter				90.878	0.738	0.000	1.18		242.1
S4.007	S29	15 Winter	100	+40%	100/15 Summer				90.618	0.843	0.000	0.99		239.4
S1.015	S10	30 Winter	100	+40%	30/15 Summer				90.113	0.896	0.000	0.61		300.6
S10.000	S200	15 Winter	100	+40%	100/240 Winter				90.007	-0.123	0.000	0.64		95.5
S11.000	S21XX	15 Winter	100	+40%	30/15 Summer	100/15 Summer			92.268	1.240	0.790	2.13		15.2
S11.001	S22XX	15 Winter	100	+40%	100/15 Summer				91.119	0.444	0.000	0.52		31.3
S11.002	S23XX	15 Summer	100	+40%	100/15 Summer				90.888	0.832	0.000	0.90		39.0
S11.003	S24XX	15 Winter	100	+40%	100/15 Summer				90.827	0.865	0.000	1.59		83.5
S11.004	S25XX	15 Winter	100	+40%	100/15 Summer				89.604	0.127	0.000	1.11		81.3
S10.001	S201	15 Winter	100	+40%	30/360 Winter				89.294	-0.114	0.000	0.38		233.8
S12.000	S207	15 Winter	100	+40%	100/15 Summer				90.497	0.047	0.000	1.07		67.2
S12.001	S208	15 Winter	100	+40%	100/360 Winter				90.091	-0.079	0.000	0.73		67.7
S13.000	SIC209XX	15 Winter	100	+40%	100/15 Winter				89.459	0.011	0.000	0.48		18.0
S13.001	SIC209	15 Summer	100	+40%	30/240 Winter				89.395	0.060	0.000	0.63	11	19.0
S12.002	S209	15 Winter	100	+40%	30/180 Winter				89.445	0.147	0.000	1.10		43.4
S14.000	S205XX	15 Winter	100	+40%	30/180 Winter				89.295	0.000	0.000	0.83		31.5
S14.001	SIC205	15 Summer	100	+40%	30/120 Winter				89.242	0.068	0.000	0.24		8.2
S12.003	S205	15 Summer	100	+40%	30/15 Summer				89.241	0.126	0.000	1.35		48.5
S10.002	S202	15 Winter	100	+40%	30/120 Winter				89.192	0.004	0.000	0.48		288.7
S10.003	S203	15 Winter	100	+40%	30/60 Summer				89.192	0.168	0.000	0.66		317.4
S15.000	S204XX	15 Winter	100	+40%	30/30 Winter				89.169	0.228	0.000	0.46		26.8
S15.001	SIC204	180 Winter	100	+40%	30/30 Summer				90.041	1.196	0.000	0.09		4.5
S10.004	S204	15 Winter	100	+40%	30/30 Winter				89.189	0.222	0.000	0.34		208.2
S16.000	S206XX	15 Winter	100	+40%	1/120 Winter				89.169	0.454	0.000	0.41		23.2
S16.001	SIC206	360 Winter	100	+40%	1/60 Summer				90.227	1.585	0.000	0.09		4.6
S17.000	S205XX	15 Winter	100	+40%	1/120 Winter				89.170	0.430	0.000	0.44		25.0
S17.001	SIC205	360 Winter	100	+40%	1/60 Winter				90.227	1.564	0.000	0.07		3.9
S10.005	S205	30 Winter	100	+40%	1/120 Winter				89.440	0.681	0.000	0.02		12.1
S10.006	S206FC	480 Winter	100	+40%	1/15 Summer				90.307	1.910	0.000	0.07		8.7
S1.016	S11	30 Winter	100	+40%	1/15 Summer				89.782	1.422	0.000	1.45		306.3
S18.000	SIC20	15 Winter	100	+40%					94.161	-1.342	0.000	0.00	5	12.2
S18.001	SIC21	15 Summer	100	+40%	100/15 Summer				94.109	0.190	0.000	0.53		9.4
S18.002	SIC22	15 Winter	100	+40%					94.129	-1.034	0.000	0.02	11	60.3



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100 year Return Period Summary of Critical Results by Flow Capacity Ratio (Rank 1) for NW3 Storm + 2A

PN	US/MH Name	Status	Level Exceeded
S4.006	S28	SURCHARGED	
S4.007	S29	SURCHARGED	
S1.015	S10	SURCHARGED	
S10.000	S200	OK	
S11.000	S21XX	FLOOD	3
S11.001	S22XX	SURCHARGED	
S11.002	S23XX	FLOOD RISK	
S11.003	S24XX	FLOOD RISK	
S11.004	S25XX	SURCHARGED	
S10.001	S201	OK	
S12.000	S207	SURCHARGED	
S12.001	S208	OK	
S13.000	SIC209XX	SURCHARGED	
S13.001	SIC209	SURCHARGED	
S12.002	S209	SURCHARGED	
S14.000	S205XX	OK	
S14.001	SIC205	SURCHARGED	
S12.003	S205	SURCHARGED	
S10.002	S202	SURCHARGED	
S10.003	S203	SURCHARGED	
S15.000	S204XX	SURCHARGED	
S15.001	SIC204	SURCHARGED	
S10.004	S204	SURCHARGED	
S16.000	S206XX	SURCHARGED	
S16.001	SIC206	SURCHARGED	
S17.000	S205XX	SURCHARGED	
S17.001	SIC205	SURCHARGED	
S10.005	S205	SURCHARGED	
S10.006	S206FC	SURCHARGED	
S1.016	S11	SURCHARGED	
S18.000	SIC20	OK	
S18.001	SIC21	SURCHARGED	

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100 year Return Period Summary of Critical Results by Flow Capacity Ratio (Rank 1) for NW3 Storm + 2A

PN	US/MH Name	Status	Level Exceeded
S18.002	SIC22	OK	



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PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Overflow Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)
S18.003	SIC23	15 Winter	100	+40%	30/15 Summer				94.103	1.077	0.000	1.62		32.0
S18.004	SIC24	15 Winter	100	+40%					93.791	-0.438	0.000	0.02	21	48.0
S18.005	SIC25	30 Winter	100	+40%	1/15 Summer				93.820	1.280	0.000	1.73		34.2
S19.000	SIC37	15 Winter	100	+40%					93.548	-0.354	0.000	0.03	17	83.4
S18.006	SIC26	15 Summer	100	+40%					93.473	-0.153	0.000	0.03	9	70.0
S18.007	SIC27	15 Winter	100	+40%	1/15 Summer				93.495	1.303	0.000	5.30		57.5
S18.008	SIC28	15 Winter	100	+40%					92.958	-0.554	0.000	0.04	22	57.5
S18.009	SIC29	15 Winter	100	+40%	1/15 Summer				92.955	0.752	0.000	1.73		57.8
S18.010	SIC30	15 Summer	100	+40%					92.846	-0.640	0.000	0.01	28	76.8
S18.011	SIC31	15 Winter	100	+40%	1/15 Summer				92.848	0.802	0.000	1.95		71.5
S20.000	SIC38	15 Winter	100	+40%					92.965	-1.426	0.000	0.00	5	28.1
S18.012	SIC34	15 Winter	100	+40%	1/15 Summer				92.540	0.583	0.000	2.95		93.9
S18.013	SIC35	15 Winter	100	+40%					92.091	-2.109	0.000	0.29	19	93.8
S18.014	Swale	15 Winter	100	+40%					91.091	-1.341	0.000	0.02	5	93.7
S18.015	SIC36	15 Winter	100	+40%	30/15 Summer				89.953	0.228	0.000	1.48		93.3
S18.016	SHWB2	15 Winter	100	+40%	30/15 Winter				89.079	0.279	0.000	0.96		92.7
S21.000	SXX	15 Winter	100	+40%	100/15 Summer				90.514	0.364	0.000	0.29		41.2
S21.001	Sxx	15 Winter	100	+40%	100/15 Summer				90.420	0.855	0.000	1.58		229.5
S21.002	SHWB3	15 Winter	100	+40%	30/15 Summer				89.519	0.719	0.000	2.38		231.0
S18.017	SBasin B	960 Winter	100	+40%	30/30 Winter				89.977	1.177	0.000	0.02		10.7
S1.017	S12FC	1440 Winter	100	+40%	1/15 Summer				90.000	2.190	0.000	0.38		15.6
S1.018	S14	1440 Winter	100	+40%					87.153	-0.129	0.000	0.38		15.6
S1.019	S15	15 Winter	100	+40%	100/15 Summer				86.883	0.177	0.000	0.45		18.2
S22.000	SIC40	15 Winter	100	+40%					93.184	-0.799	0.000	0.00	8	23.1
S22.001	SIC41	15 Summer	100	+40%	30/15 Summer				93.156	0.813	0.000	2.32		28.8
S22.002	SIC42	15 Winter	100	+40%					93.053	-0.953	0.000	0.02	38	141.3
S23.000	SIC60	15 Winter	100	+40%					93.800	-0.484	0.000	0.01	14	24.5
S23.001	SIC61	15 Summer	100	+40%	30/15 Summer				93.761	0.904	0.000	1.17		14.8
S23.002	SIC62	15 Winter	100	+40%					93.731	-0.807	0.000	0.01	30	61.0
S23.003	SIC63	15 Winter	100	+40%	1/15 Summer				93.724	1.027	0.000	3.27		35.4
S23.004	SIC64	15 Winter	100	+40%					93.488	-1.102	0.000	0.00	24	35.3
S23.005	SIC65	15 Winter	100	+40%	1/15 Summer				93.484	0.991	0.000	1.89		24.1
S23.006	SIC66	15 Summer	100	+40%					93.224	-0.873	0.000	0.03	27	71.4



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100 year Return Period Summary of Critical Results by Flow Capacity Ratio (Rank 1) for NW3 Storm + 2A

PN	US/MH Name	Status	Level Exceeded
S18.003	SIC23	FLOOD RISK	
S18.004	SIC24	FLOOD RISK	
S18.005	SIC25	FLOOD RISK	
S19.000	SIC37	FLOOD RISK*	
S18.006	SIC26	FLOOD RISK	
S18.007	SIC27	FLOOD RISK	
S18.008	SIC28	OK	
S18.009	SIC29	SURCHARGED	
S18.010	SIC30	OK	
S18.011	SIC31	SURCHARGED	
S20.000	SIC38	OK	
S18.012	SIC34	SURCHARGED	
S18.013	SIC35	OK	
S18.014	Swale	OK	
S18.015	SIC36	SURCHARGED	
S18.016	SHWB2	SURCHARGED	
S21.000	SXX	SURCHARGED	
S21.001	Sxx	SURCHARGED	
S21.002	SHWB3	SURCHARGED	
S18.017	SBasin B	FLOOD RISK	
S1.017	S12FC	FLOOD RISK	
S1.018	S14	OK	
S1.019	S15	SURCHARGED	
S22.000	SIC40	OK	
S22.001	SIC41	SURCHARGED	
S22.002	SIC42	OK	
S23.000	SIC60	OK	
S23.001	SIC61	SURCHARGED	
S23.002	SIC62	OK	
S23.003	SIC63	SURCHARGED	
S23.004	SIC64	OK	
S23.005	SIC65	SURCHARGED	

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PN	US/MH Name	Status	Level Exceeded
S23.006	SIC66	OK	



Date 20/08/2024 11:55

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100 year Return Period Summary of Critical Results by Flow Capacity Ratio (Rank 1) for NW3 Storm + 2A

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Overflow Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)
S23.007	SIC67	15 Summer	100	+40%	1/15 Summer				93.209	1.130	0.000	1.07		27.0
S22.003	SIC43	15 Summer	100	+40%					92.771	-0.446	0.000	0.04	19	82.3
S22.004	SIC44	30 Winter	100	+40%	1/15 Summer	100/30 Winter			92.743	1.309	1.307	2.01		58.7
S22.005	SIC45	15 Summer	100	+40%					91.995	-0.522	0.000	0.08	32	179.9
S22.006	SIC46	15 Summer	100	+40%	1/15 Summer				91.314	1.160	0.000	2.35		122.0
S22.007	SIC47	15 Winter	100	+40%					90.621	-0.672	0.000	0.06	18	168.4
S22.008	SIC48	15 Summer	100	+40%	1/15 Winter				90.512	0.933	0.000	2.10		144.7
S22.009	SIC49	15 Winter	100	+40%					90.276	-0.427	0.000	0.08	18	205.8
S22.010	SIC50	30 Winter	100	+40%	30/15 Summer	100/30 Winter			90.274	1.201	0.583	2.12		160.4
S22.011	SIC51	30 Winter	100	+40%					89.812	-0.344	0.000	0.08	23	160.5
S22.012	SIC52	30 Winter	100	+40%	30/15 Summer				89.797	0.972	0.000	2.19		164.7
S22.013	SIC53	30 Winter	100	+40%					89.447	-0.489	0.000	0.06	25	174.0
S22.014	SIC54	15 Winter	100	+40%	1/15 Summer				89.351	1.038	0.000	2.96		181.4
S22.015	SIC55	30 Winter	100	+40%					88.982	-0.473	0.000	0.09	29	184.9
S22.016	SIC56	30 Winter	100	+40%	30/15 Summer				88.953	0.901	0.000	2.06		189.3
S22.017	SIC57	15 Winter	100	+40%					88.570	-0.548	0.000	0.09	26	276.8
S22.018	SIC58	30 Winter	100	+40%	30/15 Summer				87.824	1.045	0.000	1.50		244.5
S1.020	S17	30 Winter	100	+40%	30/15 Summer				86.879	0.522	0.000	1.04		269.4
S1.021	S18	30 Winter	100	+40%	30/15 Summer				86.578	0.496	0.000	1.84		269.5
S1.022	S19	30 Winter	100	+40%	1/1440 Winter				86.349	0.325	0.000	1.78		272.9
S1.023	SHWD2	30 Winter	100	+40%					85.950	0.000	0.000	1.61		273.0
S24.000	SXX	15 Winter	100	+40%	100/15 Summer				88.628	0.305	0.000	1.37		116.4
S24.001	SXX	15 Winter	100	+40%					87.838	-0.162	0.000	0.70		231.7
S24.002	SXX	15 Winter	100	+40%	100/120 Winter				87.168	-0.032	0.000	0.93		339.3
S24.003	SXXFC	600 Summer	100	+40%	30/30 Winter				87.296	0.871	0.000	0.03		4.9
S24.004	SHWC2	720 Winter	100	+40%					86.350	0.000	0.000	0.02		4.9
S24.005	SBasin C	720 Winter	100	+40%	1/600 Winter				86.670	0.770	0.000	0.33		4.8
S24.006	SHWD3	720 Winter	100	+40%	1/480 Winter				86.652	0.777	0.000	0.03		
S1.024	SBasin D	960 Winter	100	+40%	1/360 Winter				86.771	0.971	0.000	0.12		
S25.000	SXX	15 Winter	100	+40%	100/15 Summer				87.049	0.349	0.000	0.31		
S26.000	SXX	15 Winter	100	+40%	100/15 Summer				88.744	1.044	0.000	0.35		
S27.000	SXX	15 Winter	100	+40%	100/15 Summer				89.412	1.362	0.000	0.81		115.9
S27.001	SXX	15 Winter	100	+40%	30/15 Summer	100/15 Summer			88.891	1.601	14.382	1.94		194.2

Flooding within future phase, to be designed out when layout available and upstream network confirmed



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100 year Return Period Summary of Critical Results by Flow Capacity Ratio (Rank 1) for NW3 Storm + 2A

PN	US/MH Name	Status	Level Exceeded
S23.007	SIC67	FLOOD RISK	
S22.003	SIC43	FLOOD RISK	
S22.004	SIC44	FLOOD	1
S22.005	SIC45	OK	
S22.006	SIC46	FLOOD RISK	
S22.007	SIC47	OK	
S22.008	SIC48	FLOOD RISK	
S22.009	SIC49	FLOOD RISK	
S22.010	SIC50	FLOOD	1
S22.011	SIC51	FLOOD RISK	
S22.012	SIC52	FLOOD RISK	
S22.013	SIC53	OK	
S22.014	SIC54	FLOOD RISK	
S22.015	SIC55	OK	
S22.016	SIC56	FLOOD RISK	
S22.017	SIC57	OK	
S22.018	SIC58	FLOOD RISK	
S1.020	S17	SURCHARGED	
S1.021	S18	SURCHARGED	
S1.022	S19	SURCHARGED	
S1.023	SHWD2	SURCHARGED*	
S24.000	SXX	SURCHARGED	
S24.001	SXX	OK	
S24.002	SXX	OK	
S24.003	SXXFC	FLOOD RISK	
S24.004	SHWC2	SURCHARGED*	
S24.005	SBasin C	SURCHARGED	
S24.006	SHWD3	SURCHARGED	
S1.024	SBasin D	SURCHARGED	
S25.000	SXX	SURCHARGED	
S26.000	SXX	SURCHARGED	
S27.000	SXX	FLOOD RISK	



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100 year Return Period Summary of Critical Results by Flow Capacity Ratio (Rank 1) for NW3 Storm + 2A

PN	US/MH Name	Status	Level Exceeded
S27.001	SXX	FLOOD	4



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PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Overflow Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)
S26.001	SXX	15 Summer	100	+40%	100/15 Summer	100/15 Summer			88.557	1.507	0.087	1.25		357.1
S28.000	SXX	15 Winter	100	+40%	100/15 Summer				88.829	1.279	0.000	0.94		103.9
S28.001	SXX	15 Winter	100	+40%	100/15 Summer				88.223	1.288	0.000	0.62		201.5
S26.002	SXX	15 Winter	100	+40%	30/15 Summer	100/15 Winter			87.997	1.462	0.354	2.00		610.7
S26.003	SXX	15 Winter	100	+40%	30/15 Summer	100/15 Winter			87.401	1.016	1.542	1.64		589.5
S25.001	SXX	15 Winter	100	+40%	30/15 Summer				86.829	0.659	0.000	2.06		646.0
S25.002	SXXFC	30 Winter	100	+40%	1/30 Summer				85.989	0.490	0.000	0.38		5.0
S1.025	S20FC	1440 Summer	100	+40%	1/15 Summer				86.816	1.406	0.000	0.71		8.0
S1.026	SHWE2	1440 Winter	100	+40%					86.464	-0.236	0.000	0.00		8.0
S29.000	SXX	15 Winter	100	+40%	1/15 Summer				86.612	0.992	0.000	2.88		108.5
S29.001	SXXFC	60 Summer	100	+40%	1/15 Summer				85.842	0.402	0.000	0.37		5.0
S1.027	SHWF3	60 Winter	100	+40%					85.645	-1.055	0.000	0.00		8.0
S1.028	SHWF1	120 Winter	100	+40%	1/15 Summer				85.782	0.491	0.000	0.43		5.7
S1.029	S21FC	1440 Winter	100	+40%	1/15 Summer				86.447	1.197	0.000	0.51		5.5
S1.030	SHWG1	1440 Summer	100	+40%					85.164	-0.836	0.000	0.00		5.5
S1.031	SHWO3	1440 Winter	100	+40%					85.095	-0.075	0.000	0.51		5.5
S1.032	S21A	1440 Winter	100	+40%					85.058	-0.082	0.000	0.43		5.5

PN	US/MH Name	Status	Level Exceeded
S26.001	SXX	FLOOD	2
S28.000	SXX	FLOOD RISK	
S28.001	SXX	FLOOD RISK	
S26.002	SXX	FLOOD	1
S26.003	SXX	FLOOD	1
S25.001	SXX	SURCHARGED	
S25.002	SXXFC	SURCHARGED	
S1.025	S20FC	SURCHARGED	
S1.026	SHWE2	FLOOD RISK*	
S29.000	SXX	FLOOD RISK	



Date 20/08/2024 11:55

Designed by OliviaDent

File 27141 Himely Drainage Model.MDX

Checked by

Innovyze

Network 2020.1.3

100 year Return Period Summary of Critical Results by Flow Capacity Ratio (Rank 1) for NW3 Storm + 2A

	US/MH		Level
PN	Name	Status	Exceeded
S29.001	SXXFC	SURCHARGED	
S1.027	SHWF3	OK	
S1.028	SHWF1	SURCHARGED*	
S1.029	S21FC	FLOOD RISK	
S1.030	SHWG1	OK	
S1.031	SHWO3	OK*	
S1.032	S21A	OK	