ICP SUDS Mean Annual Flood

Input

Return Period (years)	100	Soil	0.450
Area (ha)	46.726	Urban	0.000
SAAR (mm)	800	Region Number	Region 10

Results l/s

QBAR Rural	240.0
QBAR Urban	240.0
Q100 years	499.2
Q1 year	208.8
Q30 years	406.9
Q100 years	499.2

ICP SUDS Mean Annual Flood

Input

Return Period (years)	100	Soil	0.450
Area (ha)	46.726	Urban	0.250
SAAR (mm)	800	Region Number	Region 10

Results l/s

QBAR Rural	240.0
QBAR Urban	346.9
Q100 years	639.5
Q1 year	301.8
Q30 years	552.3
Q100 years	639.5

IH 124 Mean Annual Flood

Input

Return Period (years)	100	Soil	0.450
Area (ha)	72.436	Urban	0.750
SAAR (mm)	800	Region Number	Region 10

Results l/s

QBAR Rural	357.2
QBAR Urban	914.4
Q100 years	1438.5
Q1 year	795.6
Q2 years	934.2
Q5 years	1121.1
Q10 years	1208.1
Q20 years	1287.5
Q25 years	1308.0
Q30 years	1324.2
Q50 years	1366.3
Q100 years	1438.5
Q200 years	1538.6
Q250 years	1568.6
Q1000 years	1754.4

IH 124 Mean Annual Flood

Input

Return Period (years)	100	Soil	0.450
Area (ha)	72.436	Urban	0.000
SAAR (mm)	800	Region Number	Region 10

Results	**l/s**
QBAR Rural	357.2
QBAR Urban	357.2
Q100 years	742.9
Q1 year	310.7
Q2 years	332.7
Q5 years	425.0
Q10 years	492.9
Q20 years	561.5
Q25 years	585.8
Q30 years	605.6
Q50 years	660.8
Q100 years	742.9
Q200 years	842.9
Q250 years	875.1
Q1000 years	1085.8

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for SW_Drainage

Pipe Sizes STANDARD Manhole Sizes STANDARD

FEH Rainfall Model

Return Period (years)	30
FEH Rainfall Version	2013
Site Location	GB 354250 385750 SJ 54250 85750
Data Type	Catchment
Maximum Rainfall (mm/hr)	50
Maximum Time of Concentration (mins)	30
Foul Sewage (l/s/ha)	0.000
Volumetric Runoff Coeff.	0.750
PIMP (%)	70
Add Flow / Climate Change (%)	0
Minimum Backdrop Height (m)	0.200
Maximum Backdrop Height (m)	1.500
Min Design Depth for Optimisation (m)	1.200
Min Vel for Auto Design only (m/s)	1.00
Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Network Design Table for SW_Drainage

- 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	23.393	0.216	108.3	8.859	5.00	0.0	0.600		o	600	Pipe/Conduit	
S1.001	31.373#	0.349	90.0	0.000	0.00	0.0	0.600		o	600	Pipe/Conduit	
S2.000	10.879	0.073	149.0	0.000	5.00	0.0	0.600		o	600	Pipe/Conduit	
S2.001	25.812#	0.833	31.0	3.098	0.00	0.0	0.600		o	600	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	5.17	7.200	8.859	0.0	0.0	0.0	2.34	661.5«	1199.6
S1.001	50.00	5.37	6.984	8.859	0.0	0.0	0.0	2.57	726.0«	1199.6
S2.000	50.00	5.09	7.575	0.000	0.0	0.0	0.0	1.99	563.4	0.0
S2.001	50.00	5.19	7.502	3.098	0.0	0.0	0.0	4.39	1239.9	419.4

Network Design Table for SW_Drainage

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
S3.000	20.270	0.203	99.9	1.295	5.00	0.0	0.600		o	750	Pipe/Conduit	
S3.001	40.970	0.711	57.6	0.000	0.00	0.0	0.600		o	450	Pipe/Conduit	
S3.002	57.090	0.190	300.5	0.000	0.00	0.0	0.600		o	450	Pipe/Conduit	
S3.003	61.829	0.200	309.1	0.000	0.00	0.0	0.600		o	450	Pipe/Conduit	
S4.000	15.456	0.071	217.7	0.000	5.00	0.0	0.600		o	450	Pipe/Conduit	
S4.001	21.949	0.233	94.2	4.060	0.00	0.0	0.600		o	450	Pipe/Conduit	
S3.004	44.197	0.422	104.7	0.000	0.00	0.0	0.600		o	450	Pipe/Conduit	
S5.000	96.492	0.498	193.8	0.000	5.00	0.0	0.600		o	600	Pipe/Conduit	
S5.001	102.614	0.309	332.1	15.680	0.00	0.0	0.600		o	525	Pipe/Conduit	
S5.002	6.527	0.313	20.9	0.000	0.00	0.0	0.600		o	525	Pipe/Conduit	
S6.000	80.781	0.466	173.3	0.199	5.00	0.0	0.600		o	525	Pipe/Conduit	
S6.001	10.279	0.064	160.6	0.024	0.00	0.0	0.600		o	525	Pipe/Conduit	
S6.002	53.700	0.311	172.7	0.186	0.00	0.0	0.600		o	525	Pipe/Conduit	
S6.003	12.431	0.058	214.3	0.019	0.00	0.0	0.600		o	525	Pipe/Conduit	
S6.004	46.500	0.262	177.5	0.089	0.00	0.0	0.600		o	525	Pipe/Conduit	
S6.005	54.701	0.418	130.9	0.124	0.00	0.0	0.600		o	525	Pipe/Conduit	
S6.006	43.634	0.257	169.8	0.104	0.00	0.0	0.600		o	525	Pipe/Conduit	
S6.007	37.257	0.075	495.0	0.047	0.00	0.0	0.600		o	525	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)
S3.000	50.00	5.12	9.850	1.295	0.0	0.0	0.0	2.80	1237.3	175.4
S3.001	50.00	5.38	9.647	1.295	0.0	0.0	0.0	2.68	426.6	175.4
S3.002	50.00	6.19	8.936	1.295	0.0	0.0	0.0	1.17	185.7	175.4
S3.003	50.00	7.09	8.746	1.295	0.0	0.0	0.0	1.15	183.0	175.4
S4.000	50.00	5.19	8.850	0.000	0.0	0.0	0.0	1.37	218.5	0.0
S4.001	50.00	5.36	8.779	4.060	0.0	0.0	0.0	2.10	333.2«	549.8
S3.004	50.00	7.46	8.546	5.355	0.0	0.0	0.0	1.99	315.9«	725.1
S5.000	50.00	5.92	9.200	0.000	0.0	0.0	0.0	1.75	493.7	0.0
S5.001	50.00	7.32	8.702	15.680	0.0	0.0	0.0	1.22	264.9«	2123.3
S5.002	50.00	7.34	8.393	15.680	0.0	0.0	0.0	4.92	1065.3«	2123.3
S6.000	50.00	5.79	10.918	0.199	0.0	0.0	0.0	1.70	367.6	27.0
S6.001	50.00	5.89	10.452	0.223	0.0	0.0	0.0	1.76	382.0	30.2
S6.002	50.00	6.42	10.388	0.409	0.0	0.0	0.0	1.70	368.4	55.4
S6.003	50.00	6.55	10.077	0.429	0.0	0.0	0.0	1.53	330.4	58.0
S6.004	50.00	7.01	10.019	0.518	0.0	0.0	0.0	1.68	363.3	70.1
S6.005	50.00	7.48	9.757	0.642	0.0	0.0	0.0	1.96	423.5	86.9
S6.006	50.00	7.90	9.339	0.746	0.0	0.0	0.0	1.72	371.5	101.0
S6.007	50.00	8.52	9.082	0.792	0.0	0.0	0.0	1.00	216.5	107.3

Network Design Table for SW_Drainage

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
S6.008	48.977	0.125	391.8	0.061	0.00	0.0	0.600		o	525	Pipe/Conduit	
S6.009	7.489	0.015	499.3	0.000	0.00	0.0	0.600		o	525	Pipe/Conduit	
S6.010	21.807	0.316	69.0	0.028	0.00	0.0		0.033	\/	-1	Pipe/Conduit	
S6.011	20.015	0.100	200.0	0.027	0.00	0.0		0.033	\/	-1	Pipe/Conduit	
S6.012	2.511	0.006	418.5	0.000	0.00	0.0	0.600		o	600	Pipe/Conduit	
S6.013	18.146	0.181	100.3	0.025	0.00	0.0		0.033	\/	-1	Pipe/Conduit	
S6.014	22.741	0.114	199.5	0.030	0.00	0.0		0.033	\/	-1	Pipe/Conduit	
S6.015	17.116	0.041	417.5	0.021	0.00	0.0	0.600		o	750	Pipe/Conduit	
S7.000	74.891	0.400	187.2	0.080	5.00	0.0	0.600		o	300	Pipe/Conduit	
S7.001	78.626	0.500	157.3	0.083	0.00	0.0	0.600		o	375	Pipe/Conduit	
S7.002	18.820	0.055	342.2	0.000	0.00	0.0	0.600		o	450	Pipe/Conduit	
S7.003	90.000	0.281	320.3	0.122	0.00	0.0	0.600		o	450	Pipe/Conduit	
S7.004	81.174	0.254	319.6	0.184	0.00	0.0	0.600		o	450	Pipe/Conduit	
S7.005	51.514	0.430	119.8	0.052	0.00	0.0	0.600		o	450	Pipe/Conduit	
S6.016	14.589	0.029	503.1	0.000	0.00	0.0	0.600		o	750	Pipe/Conduit	
S5.003	20.744	0.046	451.0	0.000	0.00	0.0	0.600		o	750	Pipe/Conduit	
S3.005	59.997	0.133	451.1	0.000	0.00	0.0	0.600		o	750	Pipe/Conduit	
S3.006	74.855	0.166	450.9	0.000	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)
S6.008	50.00	9.25	9.007	0.853	0.0	0.0	0.0	1.13	243.6	115.6
S6.009	50.00	9.37	8.882	0.853	0.0	0.0	0.0	1.00	215.5	115.6
S6.010	50.00	9.59	8.867	0.881	0.0	0.0	0.0	1.68	1485.1	119.3
S6.011	50.00	9.93	8.551	0.908	0.0	0.0	0.0	0.99	872.4	123.0
S6.012	50.00	9.97	8.451	0.908	0.0	0.0	0.0	1.18	334.8	123.0
S6.013	50.00	10.18	8.445	0.933	0.0	0.0	0.0	1.39	1232.2	126.3
S6.014	50.00	10.57	8.264	0.963	0.0	0.0	0.0	0.99	873.5	130.4
S6.015	50.00	10.78	8.150	0.984	0.0	0.0	0.0	1.36	602.3	133.3
S7.000	50.00	6.09	12.200	0.080	0.0	0.0	0.0	1.15	81.0	10.8
S7.001	50.00	7.00	11.725	0.162	0.0	0.0	0.0	1.44	159.3	22.0
S7.002	50.00	7.28	11.150	0.162	0.0	0.0	0.0	1.09	173.9	22.0
S7.003	50.00	8.61	11.095	0.284	0.0	0.0	0.0	1.13	179.8	38.5
S7.004	50.00	9.81	10.814	0.468	0.0	0.0	0.0	1.13	180.0	63.4
S7.005	50.00	10.27	10.560	0.520	0.0	0.0	0.0	1.86	295.3	70.5
S6.016	50.00	10.97	8.109	1.505	0.0	0.0	0.0	1.24	548.2	203.7
S5.003	50.00	11.24	8.080	17.185	0.0	0.0	0.0	1.31	579.3«	2327.0
S3.005	50.00	12.00	8.034	22.540	0.0	0.0	0.0	1.31	579.2«	3052.1
S3.006	50.00	12.95	7.901	22.540	0.0	0.0	0.0	1.31	579.3«	3052.1

Network Design Table for SW_Drainage

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
S3.007	81.830	0.212	386.0	0.000	0.00	0.0	0.600		o	750	Pipe/Conduit	
S3.008	82.269	0.477	172.5	0.000	0.00	0.0	0.600		o	750	Pipe/Conduit	
S8.000	166.185	2.927	56.8	0.000	5.00	0.0	0.600		o	600	Pipe/Conduit	
S8.001	55.038	0.121	454.9	17.101	0.00	0.0	0.600		o	600	Pipe/Conduit	
S9.000	60.120	0.387	155.3	0.000	5.00	0.0	0.600		o	525	Pipe/Conduit	
S9.001	15.464	0.124	124.7	3.619	0.00	0.0	0.600		o	525	Pipe/Conduit	
S8.002	77.470	0.869	89.1	0.000	0.00	0.0	0.600		o	600	Pipe/Conduit	
S10.000	20.765	0.104	200.0	0.052	5.00	0.0		0.033	\/	-1	Pipe/Conduit	
S10.001	23.170	0.960	24.1	0.058	0.00	0.0		0.033	\/	-1	Pipe/Conduit	
S10.002	19.300	0.250	77.2	0.049	0.00	0.0		0.033	\/	-1	Pipe/Conduit	
S10.003	19.515	0.098	200.0	0.049	0.00	0.0		0.033	\/	-1	Pipe/Conduit	
S10.004	2.324	0.006	387.3	0.000	0.00	0.0	0.600		o	450	Pipe/Conduit	
S10.005	19.770	0.098	201.7	0.052	0.00	0.0		0.033	\/	-1	Pipe/Conduit	
S10.006	21.681	0.108	200.0	0.053	0.00	0.0		0.033	\/	-1	Pipe/Conduit	
S10.007	20.275	0.101	200.7	0.051	0.00	0.0		0.033	\/	-1	Pipe/Conduit	
S10.008	21.214	0.106	200.1	0.054	0.00	0.0		0.033	\/	-1	Pipe/Conduit	
S10.009	15.453	0.031	498.5	0.059	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)
S3.007	50.00	13.91	7.735	22.540	0.0	0.0	0.0	1.42	626.6«	3052.1
S3.008	50.00	14.56	7.523	22.540	0.0	0.0	0.0	2.13	940.1«	3052.1
S8.000	50.00	5.86	11.000	0.000	0.0	0.0	0.0	3.24	915.0	0.0
S8.001	50.00	6.66	8.073	17.101	0.0	0.0	0.0	1.14	321.0«	2315.7
S9.000	50.00	5.56	8.463	0.000	0.0	0.0	0.0	1.79	388.5	0.0
S9.001	50.00	5.69	8.076	3.619	0.0	0.0	0.0	2.00	433.9«	490.1
S8.002	50.00	7.16	7.952	20.720	0.0	0.0	0.0	2.58	729.5«	2805.7
S10.000	50.00	5.35	8.948	0.052	0.0	0.0	0.0	0.99	872.4	7.1
S10.001	50.00	5.49	8.844	0.110	0.0	0.0	0.0	2.84	2511.3	14.9
S10.002	50.00	5.69	7.884	0.159	0.0	0.0	0.0	1.59	1404.2	21.5
S10.003	50.00	6.02	7.634	0.208	0.0	0.0	0.0	0.99	872.4	28.2
S10.004	50.00	6.06	7.536	0.208	0.0	0.0	0.0	1.03	163.3	28.2
S10.005	50.00	6.39	7.530	0.261	0.0	0.0	0.0	0.98	868.6	35.3
S10.006	50.00	6.76	7.432	0.314	0.0	0.0	0.0	0.99	872.4	42.5
S10.007	50.00	7.10	7.324	0.365	0.0	0.0	0.0	0.98	870.8	49.4
S10.008	50.00	7.46	7.223	0.419	0.0	0.0	0.0	0.99	872.1	56.7
S10.009	50.00	7.67	7.117	0.477	0.0	0.0	0.0	1.25	550.7	64.7

Network Design Table for SW_Drainage

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
S8.003	18.727	0.040	468.2	0.000	0.00	0.0	0.600		o	750	Pipe/Conduit	
S3.009	44.160	0.088	501.8	0.159	0.00	0.0	0.600		o	750	Pipe/Conduit	
S3.010	79.558	0.159	500.4	0.073	0.00	0.0	0.600		o	750	Pipe/Conduit	
S3.011	58.901	0.118	499.2	0.000	0.00	0.0	0.600		o	750	Pipe/Conduit	
S3.012	29.299#	0.059	499.8	0.000	0.00	0.0	0.600		o	750	Pipe/Conduit	
S3.013	35.571	0.000	0.0	0.509	0.00	0.0	0.600		o	750	Pipe/Conduit	
S1.002	63.276	0.000	0.0	0.000	0.00	0.0	0.600		o	750	Pipe/Conduit	
S1.003	31.191	0.062	503.1	0.000	0.00	0.0	0.600		o	750	Pipe/Conduit	
S1.004	74.723	0.149	501.5	0.000	0.00	0.0	0.600		o	750	Pipe/Conduit	
S1.005	77.709	0.155	500.0	0.000	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)
S8.003	50.00	7.91	7.086	21.197	0.0	0.0	0.0	1.29	568.4«	2870.4
S3.009	50.00	15.15	7.046	43.896	0.0	0.0	0.0	1.24	548.9«	5944.0
S3.010	50.00	16.21	6.958	43.969	0.0	0.0	0.0	1.24	549.7«	5953.9
S3.011	50.00	17.00	6.799	43.969	0.0	0.0	0.0	1.25	550.3«	5953.9
S3.012	50.00	17.39	6.681	43.969	0.0	0.0	0.0	1.24	550.0«	5953.9
S3.013	50.00	19.58	6.620	44.477	0.0	0.0	0.0	0.27	119.9«	6022.8
S1.002	50.00	23.47	6.620	56.434	0.0	0.0	0.0	0.27	119.9«	7641.9
S1.003	50.00	23.89	6.620	56.434	0.0	0.0	0.0	1.24	548.2«	7641.9
S1.004	50.00	24.89	6.558	56.434	0.0	0.0	0.0	1.24	549.0«	7641.9
S1.005	50.00	25.93	6.409	56.434	0.0	0.0	0.0	1.24	549.9«	7641.9

Manhole Schedules for SW_Drainage

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
S1	9.000	1.800	Open Manhole	1500	S1.000	7.200	600				
S2	9.000	2.016	Open Manhole	1500	S1.001	6.984	600	S1.000	6.984	600	
S3	9.000	1.425	Open Manhole	1500	S2.000	7.575	600				
S4	9.000	1.498	Open Manhole	1500	S2.001	7.502	600	S2.000	7.502	600	
S5	11.500	1.650	Open Manhole	1800	S3.000	9.850	750				
S6	11.500	1.853	Open Manhole	1800	S3.001	9.647	450	S3.000	9.647	750	
S7	11.500	2.564	Open Manhole	1350	S3.002	8.936	450	S3.001	8.936	450	
S8	11.205	2.459	Open Manhole	1350	S3.003	8.746	450	S3.002	8.746	450	
S9	10.500	1.650	Open Manhole	1350	S4.000	8.850	450				
S10	10.500	1.721	Open Manhole	1350	S4.001	8.779	450	S4.000	8.779	450	
S11	10.848	2.302	Open Manhole	1350	S3.004	8.546	450	S3.003	8.546	450	
								S4.001	8.546	450	
S12	11.000	1.800	Open Manhole	1500	S5.000	9.200	600				
S13	11.000	2.298	Open Manhole	1500	S5.001	8.702	525	S5.000	8.702	600	
S14	11.700	3.307	Open Manhole	1050	S5.002	8.393	525	S5.001	8.393	525	
S15	12.343	1.425	Open Manhole	1500	S6.000	10.918	525				
S16	11.877	1.425	Open Manhole	1500	S6.001	10.452	525	S6.000	10.452	525	
S17	11.813	1.425	Open Manhole	1500	S6.002	10.388	525	S6.001	10.388	525	
S18	11.502	1.425	Open Manhole	1500	S6.003	10.077	525	S6.002	10.077	525	
S19	11.444	1.425	Open Manhole	1500	S6.004	10.019	525	S6.003	10.019	525	
S20	11.182	1.425	Open Manhole	1500	S6.005	9.757	525	S6.004	9.757	525	
S21	10.864	1.525	Open Manhole	1500	S6.006	9.339	525	S6.005	9.339	525	
S22	10.607	1.525	Open Manhole	1500	S6.007	9.082	525	S6.006	9.082	525	
S23	10.343	1.336	Open Manhole	1500	S6.008	9.007	525	S6.007	9.007	525	
S24	10.020	1.138	Open Manhole	1500	S6.009	8.882	525	S6.008	8.882	525	
S25	10.562	1.695	Open Manhole	1050	S6.010	8.867	-1	S6.009	8.867	525	
S26	9.551	1.000	Junction		S6.011	8.551	-1	S6.010	8.551	-1	
S27	9.533	1.082	Open Manhole	1050	S6.012	8.451	600	S6.011	8.451	-1	
S28	9.450	1.005	Open Manhole	1050	S6.013	8.445	-1	S6.012	8.445	600	
S29	9.450	1.186	Junction		S6.014	8.264	-1	S6.013	8.264	-1	
S30	9.500	1.350	Open Manhole	1050	S6.015	8.150	750	S6.014	8.150	-1	
S31	13.100	0.900	Open Manhole	1200	S7.000	12.200	300				
S32	12.700	0.975	Open Manhole	1350	S7.001	11.725	375	S7.000	11.800	300	
S33	12.200	1.050	Open Manhole	1350	S7.002	11.150	450	S7.001	11.225	375	
S34	12.373	1.278	Open Manhole	1350	S7.003	11.095	450	S7.002	11.095	450	
S35	12.353	1.539	Open Manhole	1350	S7.004	10.814	450	S7.003	10.814	450	
S36	12.500	1.940	Open Manhole	1350	S7.005	10.560	450	S7.004	10.560	450	
S37	11.180	3.071	Open Manhole	1800	S6.016	8.109	750	S6.015	8.109	750	

Manhole Schedules for SW_Drainage

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
								S7.005	10.130	450	1721
S38	11.493	3.413	Open Manhole	1800	S5.003	8.080	750	S5.002	8.080	525	
								S6.016	8.080	750	
S39	10.597	2.563	Open Manhole	1800	S3.005	8.034	750	S3.004	8.124	450	
								S5.003	8.034	750	
S40	10.223	2.322	Open Manhole	1800	S3.006	7.901	750	S3.005	7.901	750	
S41	9.717	1.982	Open Manhole	1800	S3.007	7.735	750	S3.006	7.735	750	
S42	9.173	1.650	Open Manhole	1800	S3.008	7.523	750	S3.007	7.523	750	
S43	13.000	2.000	Open Manhole	1500	S8.000	11.000	600				
S44	13.000	4.927	Open Manhole	1500	S8.001	8.073	600	S8.000	8.073	600	
S45	12.000	3.537	Open Manhole	1500	S9.000	8.463	525				
S46	11.720	3.644	Open Manhole	1500	S9.001	8.076	525	S9.000	8.076	525	
S47	10.000	2.048	Open Manhole	1500	S8.002	7.952	600	S8.001	7.952	600	
								S9.001	7.952	525	
S48	10.562	1.614	Junction		S10.000	8.948	-1				
S49	9.959	1.115	Junction		S10.001	8.844	-1	S10.000	8.844	-1	
S50	8.884	1.000	Junction		S10.002	7.884	-1	S10.001	7.884	-1	
S51	8.634	1.000	Junction		S10.003	7.634	-1	S10.002	7.634	-1	
S52	8.606	1.070	Junction		S10.004	7.536	450	S10.003	7.536	-1	
S53	8.642	1.112	Junction		S10.005	7.530	-1	S10.004	7.530	450	
S54	8.520	1.088	Junction		S10.006	7.432	-1	S10.005	7.432	-1	
S55	8.575	1.251	Junction		S10.007	7.324	-1	S10.006	7.324	-1	
S56	8.507	1.284	Junction		S10.008	7.223	-1	S10.007	7.223	-1	
S57	8.545	1.428	Junction		S10.009	7.117	750	S10.008	7.117	-1	
S58	9.101	2.018	Open Manhole	1800	S8.003	7.086	750	S8.002	7.083	600	
								S10.009	7.086	750	
S59	8.712	1.666	Open Manhole	1800	S3.009	7.046	750	S3.008	7.046	750	
								S8.003	7.046	750	
S60	8.550	1.592	Open Manhole	1800	S3.010	6.958	750	S3.009	6.958	750	
S61	8.500	1.701	Open Manhole	1800	S3.011	6.799	750	S3.010	6.799	750	
S62	8.500	1.819	Open Manhole	1800	S3.012	6.681	750	S3.011	6.681	750	
S63	8.500	1.880	Open Manhole	1800	S3.013	6.620	750	S3.012	6.622	750	2
S64	8.500	1.880	Open Manhole	1800	S1.002	6.620	750	S1.001	6.635	600	
								S2.001	6.669	600	
								S3.013	6.620	750	
S65	8.500	1.880	Open Manhole	1800	S1.003	6.620	750	S1.002	6.620	750	
S66	8.500	1.942	Open Manhole	1800	S1.004	6.558	750	S1.003	6.558	750	
S67	8.500	2.091	Open Manhole	1800	S1.005	6.409	750	S1.004	6.409	750	

Manhole Schedules for SW_Drainage

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
S68	8.500	2.246	Open Manhole	0	OUTFALL			S1.005	6.254	750	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
S1	354028.081	385929.679	354028.081	385929.679	Required	
S2	354042.197	385911.025	354042.197	385911.025	Required	
S3	354141.518	385890.836	354141.518	385890.836	Required	
S4	354132.290	385885.075	354132.290	385885.075	Required	
S5	353833.802	386370.689	353833.802	386370.689	Required	
S6	353854.071	386370.528	353854.071	386370.528	Required	
S7	353890.924	386388.428	353890.924	386388.428	Required	
S8	353939.271	386358.066	353939.271	386358.066	Required	
S9	353945.420	386291.219	353945.420	386291.219	Required	
S10	353959.626	386297.308	353959.626	386297.308	Required	
S11	353977.758	386309.676	353977.758	386309.676	Required	
S12	354055.077	386452.918	354055.077	386452.918	Required	
S13	354096.816	386365.920	354096.816	386365.920	Required	

Manhole Schedules for SW_Drainage

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
S14	354026.714	386290.984	354026.714	386290.984	Required	
S15	353827.174	386473.130	353827.174	386473.130	Required	
S16	353876.897	386409.466	353876.897	386409.466	Required	
S17	353884.765	386402.852	353884.765	386402.852	Required	
S18	353932.233	386377.743	353932.233	386377.743	Required	
S19	353942.245	386370.375	353942.245	386370.375	Required	
S20	353971.310	386334.077	353971.310	386334.077	Required	
S21	354004.876	386290.885	354004.876	386290.885	Required	
S22	354031.708	386256.477	354031.708	386256.477	Required	
S23	354054.137	386226.728	354054.137	386226.728	Required	
S24	354084.454	386188.261	354084.454	386188.261	Required	
S25	354090.365	386192.859	354090.365	386192.859	Required	
S26	354077.369	386210.371			No Entry	
S27	354064.101	386225.356	354064.101	386225.356	Required	
S28	354062.582	386227.355	354062.582	386227.355	Required	

Manhole Schedules for SW_Drainage

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
S29	354052.410	386242.382			No Entry	
S30	354038.220	386260.153	354038.220	386260.153	Required	
S31	354071.110	386333.297	354071.110	386333.297	Required	
S32	354129.998	386379.566	354129.998	386379.566	Required	
S33	354191.649	386428.365	354191.649	386428.365	Required	
S34	354203.300	386413.585	354203.300	386413.585	Required	
S35	354132.470	386358.059	354132.470	386358.059	Required	
S36	354068.859	386307.634	354068.859	386307.634	Required	
S37	354029.232	386274.719	354029.232	386274.719	Required	
S38	354021.484	386287.080	354021.484	386287.080	Required	
S39	354004.816	386274.730	354004.816	386274.730	Required	
S40	354041.743	386227.443	354041.743	386227.443	Required	
S41	354087.625	386168.298	354087.625	386168.298	Required	
S42	354137.958	386103.779	354137.958	386103.779	Required	
S43	354474.346	386162.772	354474.346	386162.772	Required	

Manhole Schedules for SW_Drainage

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
S44	354313.035	386122.819	354313.035	386122.819	Required	
S45	354340.501	386101.124	354340.501	386101.124	Required	
S46	354281.043	386092.225	354281.043	386092.225	Required	
S47	354265.766	386094.624	354265.766	386094.624	Required	
S48	354090.365	386192.859			No Entry	
S49	354103.485	386176.764			No Entry	
S50	354116.540	386157.622			No Entry	
S51	354129.489	386143.310			No Entry	
S52	354140.462	386127.173			No Entry	
S53	354141.828	386125.294			No Entry	
S54	354154.952	386110.507			No Entry	
S55	354167.252	386092.654			No Entry	
S56	354180.700	386077.480			No Entry	
S57	354192.638	386059.945			No Entry	
S58	354203.318	386048.777	354203.318	386048.777	Required	

Manhole Schedules for SW_Drainage

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
S59	354187.785	386038.316	354187.785	386038.316	Required	
S60	354213.785	386002.621	354213.785	386002.621	Required	
S61	354152.637	385951.725	354152.637	385951.725	Required	
S62	354105.995	385915.756	354105.995	385915.756	Required	
S63	354090.076	385889.758	354090.076	385889.758	Required	
S64	354083.695	385854.763	354083.695	385854.763	Required	
S65	354139.273	385824.514	354139.273	385824.514	Required	
S66	354161.280	385802.410	354161.280	385802.410	Required	
S67	354186.967	385732.241	354186.967	385732.241	Required	
S68	354214.043	385659.401			No Entry	

PIPELINE SCHEDULES for SW_Drainage

Upstream Manhole

- Indicates pipe length does not match coordinates

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.000	o	600	S1	9.000	7.200	1.200	Open Manhole	1500
S1.001	o	600	S2	9.000	6.984	1.416	Open Manhole	1500
S2.000	o	600	S3	9.000	7.575	0.825	Open Manhole	1500
S2.001	o	600	S4	9.000	7.502	0.898	Open Manhole	1500
S3.000	o	750	S5	11.500	9.850	0.900	Open Manhole	1800
S3.001	o	450	S6	11.500	9.647	1.403	Open Manhole	1800
S3.002	o	450	S7	11.500	8.936	2.114	Open Manhole	1350
S3.003	o	450	S8	11.205	8.746	2.009	Open Manhole	1350
S4.000	o	450	S9	10.500	8.850	1.200	Open Manhole	1350
S4.001	o	450	S10	10.500	8.779	1.271	Open Manhole	1350
S3.004	o	450	S11	10.848	8.546	1.852	Open Manhole	1350
S5.000	o	600	S12	11.000	9.200	1.200	Open Manhole	1500
S5.001	o	525	S13	11.000	8.702	1.773	Open Manhole	1500
S5.002	o	525	S14	11.700	8.393	2.782	Open Manhole	1050

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.000	23.393	108.3	S2	9.000	6.984	1.416	Open Manhole	1500
S1.001	31.373#	90.0	S64	8.500	6.635	1.265	Open Manhole	1800
S2.000	10.879	149.0	S4	9.000	7.502	0.898	Open Manhole	1500
S2.001	25.812#	31.0	S64	8.500	6.669	1.231	Open Manhole	1800
S3.000	20.270	99.9	S6	11.500	9.647	1.103	Open Manhole	1800
S3.001	40.970	57.6	S7	11.500	8.936	2.114	Open Manhole	1350
S3.002	57.090	300.5	S8	11.205	8.746	2.009	Open Manhole	1350
S3.003	61.829	309.1	S11	10.848	8.546	1.852	Open Manhole	1350
S4.000	15.456	217.7	S10	10.500	8.779	1.271	Open Manhole	1350
S4.001	21.949	94.2	S11	10.848	8.546	1.852	Open Manhole	1350
S3.004	44.197	104.7	S39	10.597	8.124	2.023	Open Manhole	1800
S5.000	96.492	193.8	S13	11.000	8.702	1.698	Open Manhole	1500
S5.001	102.614	332.1	S14	11.700	8.393	2.782	Open Manhole	1050
S5.002	6.527	20.9	S38	11.493	8.080	2.888	Open Manhole	1800

PIPELINE SCHEDULES for SW_Drainage

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S6.000	o	525	S15	12.343	10.918	0.900	Open Manhole	1500
S6.001	o	525	S16	11.877	10.452	0.900	Open Manhole	1500
S6.002	o	525	S17	11.813	10.388	0.900	Open Manhole	1500
S6.003	o	525	S18	11.502	10.077	0.900	Open Manhole	1500
S6.004	o	525	S19	11.444	10.019	0.900	Open Manhole	1500
S6.005	o	525	S20	11.182	9.757	0.900	Open Manhole	1500
S6.006	o	525	S21	10.864	9.339	1.000	Open Manhole	1500
S6.007	o	525	S22	10.607	9.082	1.000	Open Manhole	1500
S6.008	o	525	S23	10.343	9.007	0.811	Open Manhole	1500
S6.009	o	525	S24	10.020	8.882	0.613	Open Manhole	1500
S6.010	\/	-1	S25	10.562	8.867	1.195	Open Manhole	1050
S6.011	\/	-1	S26	9.551	8.551	0.500	Junction	
S6.012	o	600	S27	9.533	8.451	0.482	Open Manhole	1050
S6.013	\/	-1	S28	9.450	8.445	0.505	Open Manhole	1050
S6.014	\/	-1	S29	9.450	8.264	0.686	Junction	
S6.015	o	750	S30	9.500	8.150	0.600	Open Manhole	1050
S7.000	o	300	S31	13.100	12.200	0.600	Open Manhole	1200
S7.001	o	375	S32	12.700	11.725	0.600	Open Manhole	1350
S7.002	o	450	S33	12.200	11.150	0.600	Open Manhole	1350

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S6.000	80.781	173.3	S16	11.877	10.452	0.900	Open Manhole	1500
S6.001	10.279	160.6	S17	11.813	10.388	0.900	Open Manhole	1500
S6.002	53.700	172.7	S18	11.502	10.077	0.900	Open Manhole	1500
S6.003	12.431	214.3	S19	11.444	10.019	0.900	Open Manhole	1500
S6.004	46.500	177.5	S20	11.182	9.757	0.900	Open Manhole	1500
S6.005	54.701	130.9	S21	10.864	9.339	1.000	Open Manhole	1500
S6.006	43.634	169.8	S22	10.607	9.082	1.000	Open Manhole	1500
S6.007	37.257	495.0	S23	10.343	9.007	0.811	Open Manhole	1500
S6.008	48.977	391.8	S24	10.020	8.882	0.613	Open Manhole	1500
S6.009	7.489	499.3	S25	10.562	8.867	1.170	Open Manhole	1050
S6.010	21.807	69.0	S26	9.551	8.551	0.500	Junction	
S6.011	20.015	200.0	S27	9.533	8.451	0.582	Open Manhole	1050
S6.012	2.511	418.5	S28	9.450	8.445	0.405	Open Manhole	1050
S6.013	18.146	100.3	S29	9.450	8.264	0.686	Junction	
S6.014	22.741	199.5	S30	9.500	8.150	0.850	Open Manhole	1050
S6.015	17.116	417.5	S37	11.180	8.109	2.321	Open Manhole	1800
S7.000	74.891	187.2	S32	12.700	11.800	0.600	Open Manhole	1350
S7.001	78.626	157.3	S33	12.200	11.225	0.600	Open Manhole	1350
S7.002	18.820	342.2	S34	12.373	11.095	0.828	Open Manhole	1350

PIPELINE SCHEDULES for SW_Drainage

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S7.003	o	450	S34	12.373	11.095	0.828	Open Manhole	1350
S7.004	o	450	S35	12.353	10.814	1.089	Open Manhole	1350
S7.005	o	450	S36	12.500	10.560	1.490	Open Manhole	1350
S6.016	o	750	S37	11.180	8.109	2.321	Open Manhole	1800
S5.003	o	750	S38	11.493	8.080	2.663	Open Manhole	1800
S3.005	o	750	S39	10.597	8.034	1.813	Open Manhole	1800
S3.006	o	750	S40	10.223	7.901	1.572	Open Manhole	1800
S3.007	o	750	S41	9.717	7.735	1.232	Open Manhole	1800
S3.008	o	750	S42	9.173	7.523	0.900	Open Manhole	1800
S8.000	o	600	S43	13.000	11.000	1.400	Open Manhole	1500
S8.001	o	600	S44	13.000	8.073	4.327	Open Manhole	1500
S9.000	o	525	S45	12.000	8.463	3.012	Open Manhole	1500
S9.001	o	525	S46	11.720	8.076	3.119	Open Manhole	1500
S8.002	o	600	S47	10.000	7.952	1.448	Open Manhole	1500

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S7.003	90.000	320.3	S35	12.353	10.814	1.089	Open Manhole	1350
S7.004	81.174	319.6	S36	12.500	10.560	1.490	Open Manhole	1350
S7.005	51.514	119.8	S37	11.180	10.130	0.600	Open Manhole	1800
S6.016	14.589	503.1	S38	11.493	8.080	2.663	Open Manhole	1800
S5.003	20.744	451.0	S39	10.597	8.034	1.813	Open Manhole	1800
S3.005	59.997	451.1	S40	10.223	7.901	1.572	Open Manhole	1800
S3.006	74.855	450.9	S41	9.717	7.735	1.232	Open Manhole	1800
S3.007	81.830	386.0	S42	9.173	7.523	0.900	Open Manhole	1800
S3.008	82.269	172.5	S59	8.712	7.046	0.916	Open Manhole	1800
S8.000	166.185	56.8	S44	13.000	8.073	4.327	Open Manhole	1500
S8.001	55.038	454.9	S47	10.000	7.952	1.448	Open Manhole	1500
S9.000	60.120	155.3	S46	11.720	8.076	3.119	Open Manhole	1500
S9.001	15.464	124.7	S47	10.000	7.952	1.523	Open Manhole	1500
S8.002	77.470	89.1	S58	9.101	7.083	1.418	Open Manhole	1800

PIPELINE SCHEDULES for SW_Drainage

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S10.000	\/	-1	S48	10.562	8.948	1.114	Junction	
S10.001	\/	-1	S49	9.959	8.844	0.615	Junction	
S10.002	\/	-1	S50	8.884	7.884	0.500	Junction	
S10.003	\/	-1	S51	8.634	7.634	0.500	Junction	
S10.004	o	450	S52	8.606	7.536	0.620	Junction	
S10.005	\/	-1	S53	8.642	7.530	0.612	Junction	
S10.006	\/	-1	S54	8.520	7.432	0.588	Junction	
S10.007	\/	-1	S55	8.575	7.324	0.751	Junction	
S10.008	\/	-1	S56	8.507	7.223	0.784	Junction	
S10.009	o	750	S57	8.545	7.117	0.678	Junction	
S8.003	o	750	S58	9.101	7.086	1.265	Open Manhole	1800
S3.009	o	750	S59	8.712	7.046	0.916	Open Manhole	1800
S3.010	o	750	S60	8.550	6.958	0.842	Open Manhole	1800
S3.011	o	750	S61	8.500	6.799	0.951	Open Manhole	1800
S3.012	o	750	S62	8.500	6.681	1.069	Open Manhole	1800
S3.013	o	750	S63	8.500	6.620	1.130	Open Manhole	1800
S1.002	o	750	S64	8.500	6.620	1.130	Open Manhole	1800
S1.003	o	750	S65	8.500	6.620	1.130	Open Manhole	1800

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S10.000	20.765	200.0	S49	9.959	8.844	0.615	Junction	
S10.001	23.170	24.1	S50	8.884	7.884	0.500	Junction	
S10.002	19.300	77.2	S51	8.634	7.634	0.500	Junction	
S10.003	19.515	200.0	S52	8.606	7.536	0.570	Junction	
S10.004	2.324	387.3	S53	8.642	7.530	0.662	Junction	
S10.005	19.770	201.7	S54	8.520	7.432	0.588	Junction	
S10.006	21.681	200.0	S55	8.575	7.324	0.751	Junction	
S10.007	20.275	200.7	S56	8.507	7.223	0.784	Junction	
S10.008	21.214	200.1	S57	8.545	7.117	0.928	Junction	
S10.009	15.453	498.5	S58	9.101	7.086	1.265	Open Manhole	1800
S8.003	18.727	468.2	S59	8.712	7.046	0.916	Open Manhole	1800
S3.009	44.160	501.8	S60	8.550	6.958	0.842	Open Manhole	1800
S3.010	79.558	500.4	S61	8.500	6.799	0.951	Open Manhole	1800
S3.011	58.901	499.2	S62	8.500	6.681	1.069	Open Manhole	1800
S3.012	29.299#	499.8	S63	8.500	6.622	1.128	Open Manhole	1800
S3.013	35.571	0.0	S64	8.500	6.620	1.130	Open Manhole	1800
S1.002	63.276	0.0	S65	8.500	6.620	1.130	Open Manhole	1800
S1.003	31.191	503.1	S66	8.500	6.558	1.192	Open Manhole	1800

PIPELINE SCHEDULES for SW_Drainage

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.004	o	750	S66	8.500	6.558	1.192	Open Manhole	1800
S1.005	o	750	S67	8.500	6.409	1.341	Open Manhole	1800

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.004	74.723	501.5	S67	8.500	6.409	1.341	Open Manhole	1800
S1.005	77.709	500.0	S68	8.500	6.254	1.496	Open Manhole	0

Area Summary for SW_Drainage

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	70	12.656	8.859	8.859
1.001	-	-	70	0.000	0.000	0.000
2.000	-	-	70	0.000	0.000	0.000
2.001	-	-	70	4.425	3.098	3.098
3.000	-	-	70	1.850	1.295	1.295
3.001	-	-	70	0.000	0.000	0.000
3.002	-	-	70	0.000	0.000	0.000
3.003	-	-	70	0.000	0.000	0.000
4.000	-	-	70	0.000	0.000	0.000
4.001	-	-	70	5.800	4.060	4.060
3.004	-	-	70	0.000	0.000	0.000
5.000	-	-	70	0.000	0.000	0.000
5.001	-	-	70	22.400	15.680	15.680
5.002	-	-	70	0.000	0.000	0.000
6.000	User	-	100	0.199	0.199	0.199
6.001	User	-	100	0.024	0.024	0.024
6.002	User	-	100	0.025	0.025	0.025
	User	-	100	0.161	0.161	0.186
6.003	User	-	100	0.019	0.019	0.019
6.004	User	-	100	0.089	0.089	0.089
6.005	User	-	100	0.124	0.124	0.124
6.006	User	-	100	0.104	0.104	0.104
6.007	User	-	100	0.047	0.047	0.047
6.008	User	-	100	0.061	0.061	0.061
6.009	-	-	70	0.000	0.000	0.000
6.010	User	-	100	0.028	0.028	0.028
6.011	User	-	100	0.027	0.027	0.027
6.012	-	-	70	0.000	0.000	0.000
6.013	User	-	100	0.025	0.025	0.025
6.014	User	-	100	0.030	0.030	0.030
6.015	User	-	100	0.021	0.021	0.021
7.000	User	-	100	0.080	0.080	0.080
7.001	User	-	100	0.083	0.083	0.083
7.002	-	-	70	0.000	0.000	0.000
7.003	User	-	100	0.122	0.122	0.122
7.004	User	-	100	0.017	0.017	0.017
	User	-	100	0.064	0.064	0.080
	User	-	100	0.104	0.104	0.184
7.005	User	-	100	0.052	0.052	0.052
6.016	-	-	70	0.000	0.000	0.000
5.003	-	-	70	0.000	0.000	0.000
3.005	-	-	70	0.000	0.000	0.000
3.006	-	-	70	0.000	0.000	0.000
3.007	-	-	70	0.000	0.000	0.000
3.008	-	-	70	0.000	0.000	0.000
8.000	-	-	70	0.000	0.000	0.000
8.001	-	-	70	24.430	17.101	17.101
9.000	-	-	70	0.000	0.000	0.000
9.001	-	-	70	5.170	3.619	3.619
8.002	-	-	70	0.000	0.000	0.000
10.000	User	-	100	0.052	0.052	0.052

Area Summary for SW_Drainage

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
10.001	User	-	100	0.058	0.058	0.058
10.002	User	-	100	0.049	0.049	0.049
10.003	User	-	100	0.049	0.049	0.049
10.004	-	-	70	0.000	0.000	0.000
10.005	User	-	100	0.052	0.052	0.052
10.006	User	-	100	0.053	0.053	0.053
10.007	User	-	100	0.051	0.051	0.051
10.008	User	-	100	0.054	0.054	0.054
10.009	User	-	100	0.059	0.059	0.059
8.003	-	-	70	0.000	0.000	0.000
3.009	User	-	100	0.159	0.159	0.159
3.010	User	-	100	0.073	0.073	0.073
3.011	-	-	70	0.000	0.000	0.000
3.012	-	-	70	0.000	0.000	0.000
3.013	User	-	100	0.509	0.509	0.509
1.002	-	-	70	0.000	0.000	0.000
1.003	-	-	70	0.000	0.000	0.000
1.004	-	-	70	0.000	0.000	0.000
1.005	-	-	70	0.000	0.000	0.000
				Total	Total	Total
				79.453	56.434	56.434

Free Flowing Outfall Details for SW_Drainage

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
S1.005	S68	8.500	6.254	0.000	0	0

Simulation Criteria for SW_Drainage

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs	0	Number of Storage Structures	8
Number of Online Controls	8	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	2013

Synthetic Rainfall Details

Site Location	GB 354250 385750 SJ 54250 85750
Data Type	Catchment
Summer Storms	Yes
Winter Storms	No
Cv (Summer)	0.750
Cv (Winter)	0.840
Storm Duration (mins)	30

Online Controls for SW_Drainage

Hydro-Brake® Optimum Manhole: S2, DS/PN: S1.001, Volume (m³): 9.8

Unit Reference	MD-SHE-0455-1400-1000-1400
Design Head (m)	1.000
Design Flow (l/s)	140.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	455
Invert Level (m)	6.984
Minimum Outlet Pipe Diameter (mm)	500
Suggested Manhole Diameter (mm)	Site Specific Design (Contact Hydro International)

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.000	140.0
Flush-Flo™	0.609	139.8
Kick-Flo®	0.881	131.6
Mean Flow over Head Range	-	102.7

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	11.9	1.200	153.0	3.000	239.4	7.000	362.9
0.200	43.3	1.400	164.9	3.500	258.2	7.500	375.5
0.300	86.3	1.600	176.0	4.000	275.7	8.000	387.6
0.400	129.6	1.800	186.4	4.500	292.1	8.500	399.3
0.500	138.3	2.000	196.3	5.000	307.6	9.000	410.7
0.600	139.8	2.200	205.7	5.500	322.3	9.500	421.8
0.800	135.8	2.400	214.6	6.000	336.4		
1.000	140.0	2.600	223.2	6.500	349.9		

Hydro-Brake® Optimum Manhole: S4, DS/PN: S2.001, Volume (m³): 5.3

Unit Reference	MD-SHE-0219-2520-1000-2520
Design Head (m)	1.000
Design Flow (l/s)	25.2
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	219
Invert Level (m)	7.502
Minimum Outlet Pipe Diameter (mm)	300
Suggested Manhole Diameter (mm)	1500

Hydro-Brake® Optimum Manhole: S4, DS/PN: S2.001, Volume (m³): 5.3

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.000	25.2
Flush-Flo™	0.362	25.1
Kick-Flo®	0.733	21.7
Mean Flow over Head Range	-	20.9

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	7.4	1.200	27.5	3.000	42.7	7.000	64.3
0.200	21.6	1.400	29.6	3.500	46.0	7.500	66.5
0.300	24.9	1.600	31.5	4.000	49.0	8.000	68.7
0.400	25.1	1.800	33.4	4.500	51.9	8.500	70.7
0.500	24.7	2.000	35.1	5.000	54.6	9.000	72.7
0.600	24.0	2.200	36.7	5.500	57.2	9.500	74.7
0.800	22.6	2.400	38.3	6.000	59.7		
1.000	25.2	2.600	39.8	6.500	62.1		

Hydro-Brake® Optimum Manhole: S6, DS/PN: S3.001, Volume (m³): 12.9

Unit Reference	MD-SHE-0146-1000-1000-1000
Design Head (m)	1.000
Design Flow (l/s)	10.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	146
Invert Level (m)	9.647
Minimum Outlet Pipe Diameter (mm)	225
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.000	10.0
Flush-Flo™	0.306	9.9
Kick-Flo®	0.673	8.3
Mean Flow over Head Range	-	8.6

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	5.2	0.300	9.9	0.500	9.6	0.800	9.0
0.200	9.6	0.400	9.8	0.600	9.1	1.000	10.0

Hydro-Brake® Optimum Manhole: S6, DS/PN: S3.001, Volume (m³): 12.9

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
1.200	10.9	2.400	15.1	5.000	21.5	8.000	26.9
1.400	11.7	2.600	15.7	5.500	22.5	8.500	27.7
1.600	12.5	3.000	16.8	6.000	23.4	9.000	28.5
1.800	13.2	3.500	18.1	6.500	24.4	9.500	29.2
2.000	13.9	4.000	19.3	7.000	25.2		
2.200	14.5	4.500	20.4	7.500	26.1		

Hydro-Brake® Optimum Manhole: S10, DS/PN: S4.001, Volume (m³): 4.7

Unit Reference	MD-SHE-0227-2730-1000-2730
Design Head (m)	1.000
Design Flow (l/s)	27.3
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	227
Invert Level (m)	8.779
Minimum Outlet Pipe Diameter (mm)	300
Suggested Manhole Diameter (mm)	1500

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.000	27.3
Flush-Flo™	0.369	27.3
Kick-Flo®	0.740	23.6
Mean Flow over Head Range	-	22.7

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	7.6	1.200	29.8	3.000	46.3	7.000	69.8
0.200	22.7	1.400	32.1	3.500	49.9	7.500	72.2
0.300	27.1	1.600	34.2	4.000	53.2	8.000	74.5
0.400	27.2	1.800	36.2	4.500	56.3	8.500	76.7
0.500	26.9	2.000	38.1	5.000	59.3	9.000	78.9
0.600	26.1	2.200	39.9	5.500	62.1	9.500	81.0
0.800	24.5	2.400	41.6	6.000	64.8		
1.000	27.3	2.600	43.2	6.500	67.3		

Hydro-Brake® Optimum Manhole: S13, DS/PN: S5.001, Volume (m³): 30.9

Unit Reference	MD-SHE-0419-1150-1000-1150
Design Head (m)	1.000
Design Flow (l/s)	115.0
Flush-Flo™	Calculated

Hydro-Brake® Optimum Manhole: S13, DS/PN: S5.001, Volume (m³): 30.9

Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	419
Invert Level (m)	8.702
Minimum Outlet Pipe Diameter (mm)	450
Suggested Manhole Diameter (mm)	Site Specific Design (Contact Hydro International)

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.000	114.9
Flush-Flo™	0.574	115.0
Kick-Flo®	0.862	106.9
Mean Flow over Head Range	-	86.3

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)
0.100	11.3	1.200	125.6	3.000	196.4	7.000	297.7
0.200	40.8	1.400	135.4	3.500	211.8	7.500	307.9
0.300	79.6	1.600	144.5	4.000	226.2	8.000	317.9
0.400	111.2	1.800	153.0	4.500	239.6	8.500	327.5
0.500	114.4	2.000	161.1	5.000	252.3	9.000	336.8
0.600	114.9	2.200	168.8	5.500	264.4	9.500	345.9
0.800	110.2	2.400	176.1	6.000	275.9		
1.000	114.9	2.600	183.1	6.500	287.0		

Hydro-Brake® Optimum Manhole: S44, DS/PN: S8.001, Volume (m³): 55.3

Unit Reference	MD-SHE-0420-1246-2000-1246
Design Head (m)	2.000
Design Flow (l/s)	124.6
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	420
Invert Level (m)	8.073
Minimum Outlet Pipe Diameter (mm)	450
Suggested Manhole Diameter (mm)	Site Specific Design (Contact Hydro International)

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	2.000	124.5
Flush-Flo™	0.708	124.5
Kick-Flo®	1.447	106.4
Mean Flow over Head Range	-	104.5

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 Manhole: S44, DS/PN: S8.001, Volume (m³): 55.3

Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	11.3	1.200	118.1	3.000	151.7	7.000	229.6
0.200	40.9	1.400	109.8	3.500	163.6	7.500	237.5
0.300	80.0	1.600	111.7	4.000	174.6	8.000	245.2
0.400	116.0	1.800	118.3	4.500	184.9	8.500	252.6
0.500	121.9	2.000	124.5	5.000	194.7	9.000	259.8
0.600	123.9	2.200	130.4	5.500	204.0	9.500	266.7
0.800	124.2	2.400	136.1	6.000	212.9		
1.000	122.0	2.600	141.5	6.500	221.4		

Hydro-Brake® Optimum Manhole: S46, DS/PN: S9.001, Volume (m³): 19.1

Unit Reference	MD-SHE-0434-1254-1000-1254
Design Head (m)	1.000
Design Flow (l/s)	125.4
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	434
Invert Level (m)	8.076
Minimum Outlet Pipe Diameter (mm)	450
Suggested Manhole Diameter (mm)	Site Specific Design (Contact Hydro International)

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.000	125.3
Flush-Flo™	0.590	125.2
Kick-Flo®	0.870	117.1
Mean Flow over Head Range	-	93.1

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)
0.100	11.6	1.200	136.9	3.000	214.2	7.000	324.7
0.200	41.9	1.400	147.6	3.500	231.0	7.500	335.9
0.300	82.6	1.600	157.6	4.000	246.7	8.000	346.8
0.400	120.4	1.800	166.9	4.500	261.3	8.500	357.3
0.500	124.2	2.000	175.7	5.000	275.2	9.000	367.5
0.600	125.2	2.200	184.1	5.500	288.4	9.500	377.4
0.800	120.8	2.400	192.1	6.000	301.0		
1.000	125.3	2.600	199.7	6.500	313.1		

Hydro-Brake® Optimum Manhole: S64, DS/PN: S1.002, Volume (m³): 34.9

Unit Reference	MD-CHE-0606-3650-1680-3650
Design Head (m)	1.680
Design Flow (l/s)	365.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	606
Invert Level (m)	6.620
Minimum Outlet Pipe Diameter (mm)	Site Specific Design (Contact Hydro International)
Suggested Manhole Diameter (mm)	Site Specific Design (Contact Hydro International)

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.680	364.9
Flush-Flo™	0.914	364.2
Kick-Flo®	1.128	304.8
Mean Flow over Head Range	-	253.0

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	12.5	1.200	309.9	3.000	485.3	7.000	736.4
0.200	46.9	1.400	333.6	3.500	523.5	7.500	761.9
0.300	97.5	1.600	356.2	4.000	559.1	8.000	786.5
0.400	157.6	1.800	377.4	4.500	592.5	8.500	810.3
0.500	218.5	2.000	397.5	5.000	624.0	9.000	833.4
0.600	268.3	2.200	416.6	5.500	654.0	9.500	855.9
0.800	347.2	2.400	434.8	6.000	682.6		
1.000	341.2	2.600	452.3	6.500	710.0		

Storage Structures for SW_Drainage

Tank or Pond Manhole: S1, DS/PN: S1.000

Invert Level (m) 7.200

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	6700.0	1.000	6700.0	1.001	0.0

Tank or Pond Manhole: S4, DS/PN: S2.001

Invert Level (m) 7.502

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	3500.0	1.000	3500.0	1.001	0.0

Tank or Pond Manhole: S6, DS/PN: S3.001

Invert Level (m) 9.647

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	4250.0	1.000	4250.0	1.001	0.0

Tank or Pond Manhole: S10, DS/PN: S4.001

Invert Level (m) 8.779

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	6000.0	1.000	6000.0	1.001	0.0

Tank or Pond Manhole: S13, DS/PN: S5.001

Invert Level (m) 8.702

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	13000.0	1.000	13000.0	1.001	0.0

Tank or Pond Manhole: S44, DS/PN: S8.001

Invert Level (m) 8.073

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	15000.0	1.000	15000.0	1.001	0.0

Tank or Pond Manhole: S46, DS/PN: S9.001

Invert Level (m) 8.076

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	1775.0	1.000	1775.0	1.001	0.0

Tank or Pond Manhole: S64, DS/PN: S1.002

Invert Level (m) 6.620

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	2892.0	1.880	5073.0

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW_Drainage

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Storage Structures	8
Number of Online Controls	8	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH
FEH Rainfall Version	2013
Site Location	GB 354250 385750 SJ 54250 85750
Data Type	Catchment
Cv (Summer)	1.000
Cv (Winter)	1.000

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years)	30
Climate Change (%)	25

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S1.000	S1	1440 Winter	30	+25%	30/360 Summer				8.001
S1.001	S2	1440 Summer	30	+25%	30/60 Summer				8.011
S2.000	S3	1440 Winter	30	+25%					7.981
S2.001	S4	1440 Winter	30	+25%					7.981
S3.000	S5	15 Summer	30	+25%					10.436
S3.001	S6	1440 Summer	30	+25%					9.805
S3.002	S7	1440 Summer	30	+25%					9.003
S3.003	S8	1440 Summer	30	+25%					8.813
S4.000	S9	960 Summer	30	+25%					9.113
S4.001	S10	960 Summer	30	+25%					9.113
S3.004	S11	1440 Summer	30	+25%					8.654
S5.000	S12	960 Summer	30	+25%					9.281
S5.001	S13	960 Summer	30	+25%	30/240 Summer				9.281
S5.002	S14	30 Summer	30	+25%					8.844
S6.000	S15	15 Summer	30	+25%					11.117
S6.001	S16	15 Summer	30	+25%					10.723

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW_Drainage

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S1	0.201	0.000	0.12		56.3	SURCHARGED	
S1.001	S2	0.427	0.000	0.09		53.2	SURCHARGED	
S2.000	S3	-0.194	0.000	0.00		0.2	OK	
S2.001	S4	-0.121	0.000	0.03		24.4	OK	
S3.000	S5	-0.164	0.000	0.95		671.3	OK	
S3.001	S6	-0.292	0.000	0.02		9.2	OK	
S3.002	S7	-0.383	0.000	0.05		9.2	OK	
S3.003	S8	-0.383	0.000	0.05		9.2	OK	
S4.000	S9	-0.187	0.000	0.00		0.1	OK	
S4.001	S10	-0.116	0.000	0.10		27.2	OK	
S3.004	S11	-0.342	0.000	0.13		36.4	OK	
S5.000	S12	-0.519	0.000	0.00		0.0	OK	
S5.001	S13	0.054	0.000	0.46		114.8	SURCHARGED	
S5.002	S14	-0.074	0.000	0.26		110.2	OK	
S6.000	S15	-0.326	0.000	0.30		101.0	OK	
S6.001	S16	-0.254	0.000	0.46		114.9	OK	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW_Drainage

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
S6.002	S17	15 Summer	30	+25%				
S6.003	S18	15 Summer	30	+25%				
S6.004	S19	15 Summer	30	+25%				
S6.005	S20	15 Summer	30	+25%				
S6.006	S21	15 Summer	30	+25%	30/15 Summer			
S6.007	S22	15 Summer	30	+25%	30/15 Summer			
S6.008	S23	15 Winter	30	+25%	30/15 Summer			
S6.009	S24	15 Winter	30	+25%	30/15 Summer			
S6.010	S25	30 Summer	30	+25%				
S6.011	S26	15 Winter	30	+25%	30/15 Summer			
S6.012	S27	30 Winter	30	+25%				
S6.013	S28	30 Summer	30	+25%	30/30 Summer			
S6.014	S29	30 Summer	30	+25%	30/15 Summer			
S6.015	S30	30 Summer	30	+25%				
S7.000	S31	15 Summer	30	+25%				
S7.001	S32	15 Summer	30	+25%				
S7.002	S33	15 Summer	30	+25%				
S7.003	S34	15 Summer	30	+25%				
S7.004	S35	15 Summer	30	+25%	30/15 Summer			
S7.005	S36	15 Summer	30	+25%				
S6.016	S37	30 Summer	30	+25%	30/30 Summer			
S5.003	S38	30 Summer	30	+25%				
S3.005	S39	60 Summer	30	+25%				
S3.006	S40	1440 Summer	30	+25%				
S3.007	S41	1440 Summer	30	+25%				
S3.008	S42	1440 Summer	30	+25%	30/960 Summer			
S8.000	S43	60 Winter	30	+25%				
S8.001	S44	960 Summer	30	+25%				
S9.000	S45	120 Summer	30	+25%				
S9.001	S46	120 Summer	30	+25%	30/60 Summer			
S8.002	S47	1440 Summer	30	+25%				
S10.000	S48	15 Summer	30	+25%				
S10.001	S49	15 Summer	30	+25%				
S10.002	S50	1440 Summer	30	+25%				
S10.003	S51	1440 Summer	30	+25%				
S10.004	S52	1440 Summer	30	+25%	30/60 Summer			
S10.005	S53	1440 Summer	30	+25%	30/60 Summer			
S10.006	S54	1440 Summer	30	+25%	30/30 Summer			
S10.007	S55	1440 Summer	30	+25%	30/15 Summer			
S10.008	S56	1440 Summer	30	+25%	30/15 Summer			
S10.009	S57	1440 Summer	30	+25%	30/30 Summer			
S8.003	S58	1440 Summer	30	+25%	30/15 Winter			
S3.009	S59	1440 Summer	30	+25%	30/15 Summer			
S3.010	S60	1440 Summer	30	+25%	30/15 Summer			
S3.011	S61	1440 Summer	30	+25%	30/15 Summer			
S3.012	S62	1440 Summer	30	+25%	30/15 Summer			
S3.013	S63	1440 Winter	30	+25%	30/15 Summer			
S1.002	S64	1440 Winter	30	+25%	30/120 Summer			

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW_Drainage

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S6.002	S17	10.698	-0.215	0.000	0.63		207.3	OK	
S6.003	S18	10.475	-0.127	0.000	0.91		210.8	OK	
S6.004	S19	10.374	-0.170	0.000	0.76		245.5	OK	
S6.005	S20	10.198	-0.084	0.000	0.72		274.8	OK	
S6.006	S21	10.039	0.175	0.000	0.82		268.7	SURCHARGED	
S6.007	S22	9.869	0.262	0.000	1.46		273.0	SURCHARGED	
S6.008	S23	9.712	0.180	0.000	1.26		274.0	SURCHARGED	
S6.009	S24	9.501	0.094	0.000	2.03		273.7	SURCHARGED	
S6.010	S25	9.112	-0.255	0.000	0.21		279.4	OK	
S6.011	S26	9.075	0.024	0.000	0.30		259.1	SURCHARGED*	
S6.012	S27	9.051	0.000	0.000	1.11		254.5	OK	
S6.013	S28	8.950	0.005	0.000	0.25		277.9	SURCHARGED	
S6.014	S29	8.925	0.161	0.000	0.32		276.9	SURCHARGED*	
S6.015	S30	8.900	0.000	0.000	0.75		278.5	OK	
S7.000	S31	12.357	-0.143	0.000	0.51		39.3	OK	
S7.001	S32	11.928	-0.172	0.000	0.53		79.7	OK	
S7.002	S33	11.453	-0.147	0.000	0.56		78.5	OK	
S7.003	S34	11.424	-0.121	0.000	0.71		120.8	OK	
S7.004	S35	11.270	0.006	0.000	1.00		169.8	SURCHARGED	
S7.005	S36	10.831	-0.179	0.000	0.67		179.8	OK	
S6.016	S37	8.870	0.011	0.000	1.54		423.4	SURCHARGED	
S5.003	S38	8.830	0.000	0.000	1.02		403.2	OK	
S3.005	S39	8.573	-0.211	0.000	0.84		419.1	OK	
S3.006	S40	8.495	-0.156	0.000	0.38		194.6	OK	
S3.007	S41	8.411	-0.074	0.000	0.34		193.4	OK	
S3.008	S42	8.294	0.021	0.000	0.23		191.9	SURCHARGED	
S8.000	S43	11.000	-0.600	0.000	0.00		0.0	OK	
S8.001	S44	8.649	-0.024	0.000	0.41		116.8	OK	
S9.000	S45	8.694	-0.294	0.000	0.00		0.1	OK	
S9.001	S46	8.694	0.093	0.000	0.46		124.0	SURCHARGED	
S8.002	S47	8.204	-0.348	0.000	0.29		194.7	OK	
S10.000	S48	9.018	-0.430	0.000	0.03		27.0	OK	
S10.001	S49	8.905	-0.439	0.000	0.02		60.6	OK	
S10.002	S50	8.130	-0.254	0.000	0.00		5.5	OK	
S10.003	S51	8.130	-0.004	0.000	0.01		7.3	OK	
S10.004	S52	8.127	0.141	0.000	0.04		7.4	SURCHARGED*	
S10.005	S53	8.127	0.097	0.000	0.01		9.2	SURCHARGED*	
S10.006	S54	8.127	0.195	0.000	0.01		10.9	SURCHARGED*	
S10.007	S55	8.127	0.303	0.000	0.01		12.7	SURCHARGED*	
S10.008	S56	8.128	0.405	0.000	0.02		14.4	SURCHARGED*	
S10.009	S57	8.128	0.261	0.000	0.04		16.7	SURCHARGED*	
S8.003	S58	8.128	0.292	0.000	0.57		201.0	SURCHARGED	
S3.009	S59	8.110	0.314	0.000	0.83		379.1	SURCHARGED	
S3.010	S60	8.064	0.356	0.000	0.77		380.6	SURCHARGED	
S3.011	S61	8.001	0.452	0.000	0.80		380.5	SURCHARGED	
S3.012	S62	7.952	0.521	0.000	0.90		380.4	SURCHARGED	
S3.013	S63	7.913	0.543	0.000	1.38		361.4	SURCHARGED	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW_Drainage

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.002	S64	7.872	0.502	0.000	0.94		317.8	SURCHARGED	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW_Drainage

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S1.003	S65	1440 Winter	30	+25%					7.111
S1.004	S66	1440 Winter	30	+25%					7.012
S1.005	S67	1440 Winter	30	+25%					6.849

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.003	S65	-0.259	0.000	0.74		317.8	OK	
S1.004	S66	-0.296	0.000	0.65		317.8	OK	
S1.005	S67	-0.310	0.000	0.65		317.8	OK	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW_Drainage

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Storage Structures	8
Number of Online Controls	8	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH
FEH Rainfall Version	2013
Site Location	GB 354250 385750 SJ 54250 85750
Data Type	Catchment
Cv (Summer)	1.000
Cv (Winter)	1.000

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years)	100
Climate Change (%)	45

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
S1.000	S1	1440 Winter	100	+45%	100/60 Summer			
S1.001	S2	1440 Winter	100	+45%	100/15 Summer			
S2.000	S3	1440 Winter	100	+45%	100/360 Summer			
S2.001	S4	1440 Winter	100	+45%	100/240 Summer			
S3.000	S5	15 Summer	100	+45%	100/15 Summer			
S3.001	S6	960 Summer	100	+45%				
S3.002	S7	60 Summer	100	+45%				
S3.003	S8	60 Summer	100	+45%				
S4.000	S9	960 Summer	100	+45%	100/360 Summer			
S4.001	S10	960 Winter	100	+45%	100/240 Summer			
S3.004	S11	60 Summer	100	+45%	100/60 Summer			
S5.000	S12	480 Summer	100	+45%				
S5.001	S13	480 Summer	100	+45%	100/30 Summer			
S5.002	S14	60 Summer	100	+45%	100/30 Summer			
S6.000	S15	15 Summer	100	+45%	100/15 Summer			
S6.001	S16	15 Summer	100	+45%	100/15 Summer			

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW_Drainage

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S1	8.745	0.945	0.000	0.30		137.6	FLOOD RISK	
S1.001	S2	8.591	1.007	0.000	0.23		137.5	SURCHARGED	
S2.000	S3	8.305	0.130	0.000	0.00		0.2	SURCHARGED	
S2.001	S4	8.305	0.203	0.000	0.03		24.6	SURCHARGED	
S3.000	S5	10.820	0.220	0.000	1.48		1046.9	SURCHARGED	
S3.001	S6	9.897	-0.200	0.000	0.03		9.9	OK	
S3.002	S7	9.034	-0.352	0.000	0.06		9.4	OK	
S3.003	S8	9.012	-0.184	0.000	0.10		16.9	OK	
S4.000	S9	9.330	0.030	0.000	0.00		0.0	SURCHARGED	
S4.001	S10	9.330	0.101	0.000	0.10		27.2	SURCHARGED	
S3.004	S11	9.008	0.012	0.000	0.20		57.0	SURCHARGED	
S5.000	S12	9.659	-0.141	0.000	0.00		0.1	OK	
S5.001	S13	9.659	0.432	0.000	0.46		114.6	SURCHARGED	
S5.002	S14	9.080	0.162	0.000	0.35		152.0	SURCHARGED	
S6.000	S15	11.688	0.245	0.000	0.44		149.9	SURCHARGED	
S6.001	S16	11.702	0.725	0.000	0.62		153.8	FLOOD RISK	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW_Drainage

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S6.002	S17	15 Summer	100	+45%	100/15 Summer				11.239
S6.003	S18	30 Summer	100	+45%	100/15 Summer				11.075
S6.004	S19	15 Summer	100	+45%	100/15 Summer				11.010
S6.005	S20	15 Summer	100	+45%	100/15 Summer				10.936
S6.006	S21	15 Summer	100	+45%	100/15 Summer				10.657
S6.007	S22	30 Summer	100	+45%	100/15 Summer				10.323
S6.008	S23	15 Summer	100	+45%	100/15 Summer				10.042
S6.009	S24	30 Summer	100	+45%	100/15 Summer				9.618
S6.010	S25	30 Summer	100	+45%	100/30 Summer				9.390
S6.011	S26	30 Summer	100	+45%	100/15 Summer				9.358
S6.012	S27	30 Summer	100	+45%	100/15 Summer				9.336
S6.013	S28	30 Summer	100	+45%	100/15 Summer				9.206
S6.014	S29	30 Summer	100	+45%	100/15 Summer				9.175
S6.015	S30	60 Summer	100	+45%	100/15 Summer				9.147
S7.000	S31	15 Summer	100	+45%					12.410
S7.001	S32	15 Summer	100	+45%	100/15 Summer				12.149
S7.002	S33	15 Summer	100	+45%	100/15 Summer				11.957
S7.003	S34	15 Summer	100	+45%	100/15 Summer				11.916
S7.004	S35	15 Summer	100	+45%	100/15 Summer				11.680
S7.005	S36	15 Summer	100	+45%					10.917
S6.016	S37	60 Summer	100	+45%	100/15 Summer				9.115
S5.003	S38	60 Summer	100	+45%	100/15 Summer				9.067
S3.005	S39	60 Summer	100	+45%	100/15 Summer				9.007
S3.006	S40	60 Summer	100	+45%	100/15 Summer				8.890
S3.007	S41	60 Summer	100	+45%	100/30 Summer				8.743
S3.008	S42	960 Winter	100	+45%	100/15 Summer				8.620
S8.000	S43	60 Winter	100	+45%					11.000
S8.001	S44	960 Winter	100	+45%	100/60 Summer				9.035
S9.000	S45	240 Summer	100	+45%	100/60 Summer				10.756
S9.001	S46	240 Summer	100	+45%	100/15 Summer				10.756
S8.002	S47	960 Winter	100	+45%	100/60 Summer				8.678
S10.000	S48	15 Summer	100	+45%					9.039
S10.001	S49	15 Summer	100	+45%					8.922
S10.002	S50	960 Winter	100	+45%	100/60 Summer				8.450
S10.003	S51	960 Winter	100	+45%	100/30 Summer				8.450
S10.004	S52	960 Winter	100	+45%	100/15 Summer				8.450
S10.005	S53	960 Winter	100	+45%	100/15 Summer				8.451
S10.006	S54	960 Winter	100	+45%	100/15 Summer				8.451
S10.007	S55	960 Winter	100	+45%	100/15 Summer				8.451
S10.008	S56	960 Winter	100	+45%	100/15 Summer				8.451
S10.009	S57	960 Winter	100	+45%	100/15 Summer				8.451
S8.003	S58	960 Winter	100	+45%	100/15 Summer				8.451
S3.009	S59	960 Winter	100	+45%	100/15 Summer				8.437
S3.010	S60	960 Winter	100	+45%	100/15 Summer				8.394
S3.011	S61	960 Winter	100	+45%	100/15 Summer				8.339
S3.012	S62	960 Winter	100	+45%	100/15 Summer				8.292
S3.013	S63	960 Winter	100	+45%	100/15 Summer				8.255
S1.002	S64	960 Winter	100	+45%	100/60 Summer				8.215

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW_Drainage

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S6.002	S17	0.326	0.000	0.84		278.4	SURCHARGED	
S6.003	S18	0.473	0.000	0.97		224.4	SURCHARGED	
S6.004	S19	0.466	0.000	0.87		278.3	SURCHARGED	
S6.005	S20	0.654	0.000	0.80		305.5	FLOOD RISK	
S6.006	S21	0.793	0.000	1.10		358.7	FLOOD RISK	
S6.007	S22	0.716	0.000	1.94		362.8	FLOOD RISK	
S6.008	S23	0.510	0.000	1.76		382.7	SURCHARGED	
S6.009	S24	0.211	0.000	2.81		379.8	SURCHARGED	
S6.010	S25	0.023	0.000	0.29		386.2	SURCHARGED	
S6.011	S26	0.307	0.000	0.43		372.3	FLOOD RISK*	
S6.012	S27	0.285	0.000	1.60		368.7	FLOOD RISK	
S6.013	S28	0.261	0.000	0.34		373.6	FLOOD RISK	
S6.014	S29	0.411	0.000	0.43		378.2	FLOOD RISK*	
S6.015	S30	0.247	0.000	0.97		358.7	SURCHARGED	
S7.000	S31	-0.090	0.000	0.78		60.9	OK	
S7.001	S32	0.049	0.000	0.73		110.3	SURCHARGED	
S7.002	S33	0.357	0.000	0.89		123.3	FLOOD RISK	
S7.003	S34	0.371	0.000	0.93		158.6	SURCHARGED	
S7.004	S35	0.416	0.000	1.44		243.1	SURCHARGED	
S7.005	S36	-0.093	0.000	0.98		263.5	OK	
S6.016	S37	0.256	0.000	2.09		572.6	SURCHARGED	
S5.003	S38	0.237	0.000	1.52		600.3	SURCHARGED	
S3.005	S39	0.223	0.000	1.18		593.9	SURCHARGED	
S3.006	S40	0.239	0.000	1.08		555.4	SURCHARGED	
S3.007	S41	0.258	0.000	0.94		526.9	SURCHARGED	
S3.008	S42	0.347	0.000	0.25		206.5	SURCHARGED	
S8.000	S43	-0.600	0.000	0.00		0.0	OK	
S8.001	S44	0.362	0.000	0.42		120.0	SURCHARGED	
S9.000	S45	1.768	0.000	0.01		2.0	SURCHARGED	
S9.001	S46	2.155	0.000	0.69		187.1	SURCHARGED	
S8.002	S47	0.126	0.000	0.33		219.9	SURCHARGED	
S10.000	S48	-0.409	0.000	0.05		41.8	OK	
S10.001	S49	-0.422	0.000	0.04		94.1	OK	
S10.002	S50	0.066	0.000	0.01		7.4	SURCHARGED*	
S10.003	S51	0.316	0.000	0.01		9.7	FLOOD RISK*	
S10.004	S52	0.464	0.000	0.05		8.7	FLOOD RISK*	
S10.005	S53	0.421	0.000	0.01		10.9	FLOOD RISK*	
S10.006	S54	0.519	0.000	0.01		12.9	FLOOD RISK*	
S10.007	S55	0.627	0.000	0.02		15.2	FLOOD RISK*	
S10.008	S56	0.728	0.000	0.02		17.9	FLOOD RISK*	
S10.009	S57	0.584	0.000	0.05		20.4	FLOOD RISK*	
S8.003	S58	0.615	0.000	0.67		238.0	SURCHARGED	
S3.009	S59	0.641	0.000	0.95		432.3	FLOOD RISK	
S3.010	S60	0.686	0.000	0.89		435.0	FLOOD RISK	
S3.011	S61	0.790	0.000	0.91		434.6	FLOOD RISK	
S3.012	S62	0.861	0.000	1.02		434.4	FLOOD RISK	
S3.013	S63	0.885	0.000	1.75		457.4	FLOOD RISK	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW_Drainage

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.002	S64	0.845	0.000	1.06		357.1	FLOOD RISK	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW_Drainage

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S1.003	S65	960 Summer	100	+45%					7.151
S1.004	S66	960 Summer	100	+45%					7.050
S1.005	S67	960 Summer	100	+45%					6.885

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.003	S65	-0.219	0.000	0.83		357.1	OK	
S1.004	S66	-0.258	0.000	0.73		357.1	OK	
S1.005	S67	-0.274	0.000	0.73		357.1	OK	