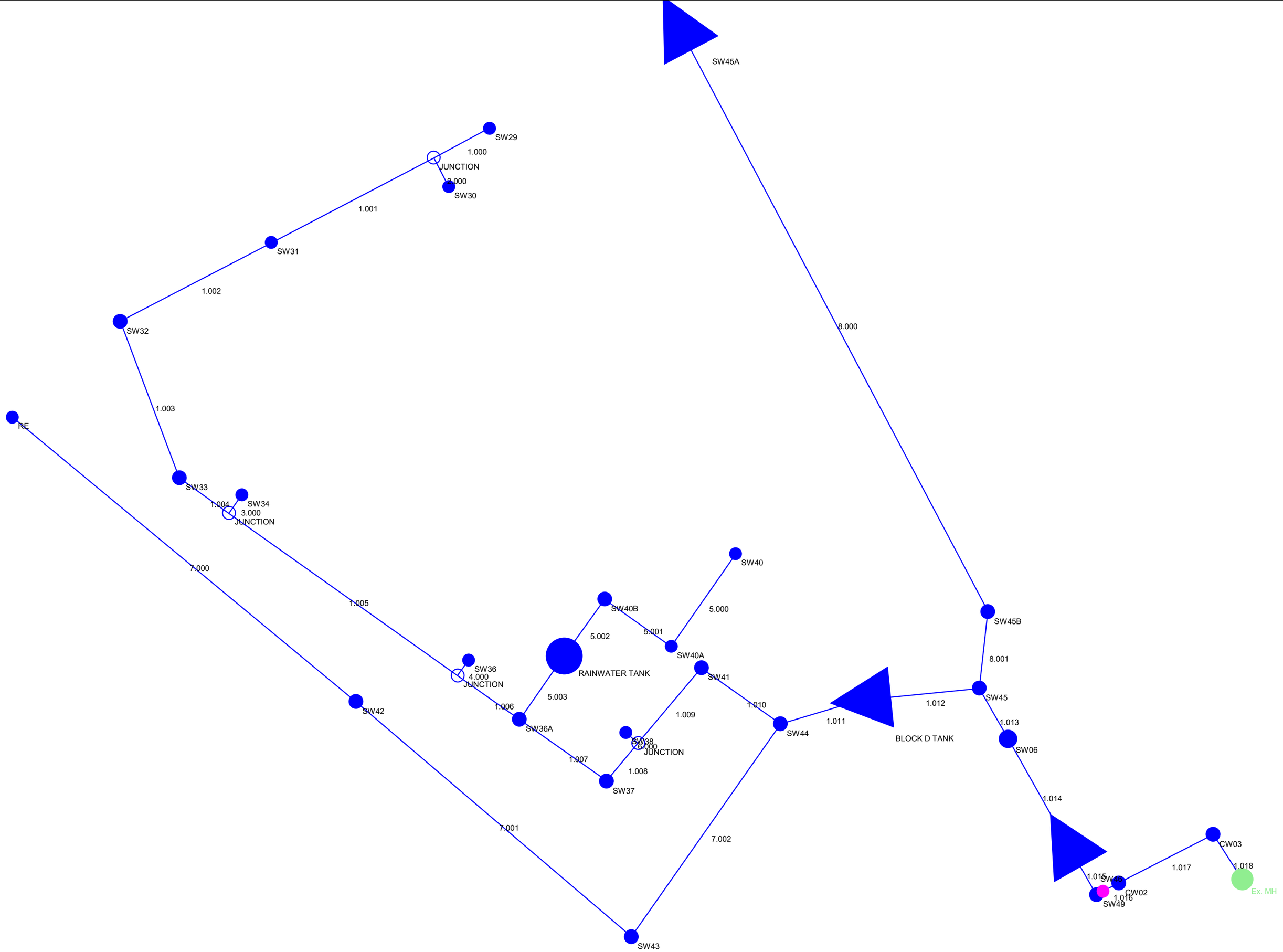

SW45A
8.000
SW29
1.000
JUNCTION
SW30
1.001
SW31
1.002
SW32
1.003
RE
SW33
1.004
SW34
3.000
JUNCTION
7.000
1.005
SW40
SW40B
5.000
5.002
5.001
SW40A
SW36
4.000
JUNCTION
RAINWATER TANK
SW41
5.003
1.006
1.009
1.010
SW36A
SW38
6.000
JUNCTION
1.007
1.008
SW37
SW42
7.001
7.002
SW43
SW44
1.011
BLOCK D TANK
1.012
SW45B
8.001
SW45
1.013
SW06
1.014
CW03
1.017
1.018
1.015
SW46
CW02
1.016
SW49
Ex. MH

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Block D

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	30	PIMP (%)	100
M5-60 (mm)	18.000	Add Flow / Climate Change (%)	0
Ratio R	0.361	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Block D

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.064	4-8	0.063

Total Area Contributing (ha) = 0.128

Total Pipe Volume (m³) = 8.853

Network Design Table for Block D

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
1.000	5.120	0.050	102.4	0.005	5.00	0.0	0.600	o	150	Pipe/Conduit	
2.000	2.661	0.430	6.2	0.018	5.00	0.0	0.600	o	150	Pipe/Conduit	
1.001	14.876	0.150	99.2	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.002	13.839	0.140	98.9	0.009	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.003	13.570	0.090	150.8	0.021	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.004	4.939	0.033	150.8	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
3.000	1.802	0.501	3.6	0.006	5.00	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)
1.000	50.00	5.09	32.170	0.005	0.0	0.0	0.0	0.99	17.5	0.7
2.000	50.00	5.01	32.550	0.018	0.0	0.0	0.0	4.08	72.1	2.4
1.001	50.00	5.33	32.120	0.023	0.0	0.0	0.0	1.01	17.8	3.1
1.002	50.00	5.56	31.970	0.032	0.0	0.0	0.0	1.01	17.9	4.3
1.003	50.00	5.77	31.755	0.053	0.0	0.0	0.0	1.06	42.2	7.2
1.004	50.00	5.85	31.665	0.053	0.0	0.0	0.0	1.06	42.2	7.2
3.000	50.00	5.01	32.220	0.006	0.0	0.0	0.0	5.35	94.5	0.9

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Network Design Table for Block D

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
1.005	22.778	0.151	150.8	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
4.000	1.528	0.463	3.3	0.002	5.00	0.0	0.600	o	150	Pipe/Conduit	
1.006	6.135	0.041	148.0	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
5.000	9.141	0.290	31.5	0.032	5.00	0.0	0.600	o	150	Pipe/Conduit	
5.001	6.627	0.070	95.3	0.010	0.00	0.0	0.600	o	150	Pipe/Conduit	
5.002	5.676	0.031	183.1	0.024	0.00	0.0	0.600	o	150	Pipe/Conduit	
5.003	6.298	0.035	181.0	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.007	8.671	0.060	144.5	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.008	4.033	0.027	150.0	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
6.000	1.328	0.341	3.9	0.000	5.00	0.0	0.600	o	150	Pipe/Conduit	
1.009	7.978	0.053	150.0	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.010	7.855	0.050	157.1	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
7.000	36.195	0.240	150.5	0.000	5.00	0.0	0.600	o	150	Pipe/Conduit	
7.001	29.397	0.200	147.0	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
7.002	21.097	0.140	150.2	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.011	6.767	0.050	135.8	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.012	9.707	0.060	161.8	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.005	50.00	6.21	31.632	0.059	0.0	0.0	0.0	1.06	42.2	8.1
4.000	50.00	5.00	32.020	0.002	0.0	0.0	0.0	5.59	98.8	0.3
1.006	50.00	6.30	31.481	0.062	0.0	0.0	0.0	1.07	42.6	8.3
5.000	50.00	5.08	31.940	0.032	0.0	0.0	0.0	1.80	31.8	4.3
5.001	50.00	5.19	31.650	0.042	0.0	0.0	0.0	1.03	18.2	5.7
5.002	50.00	5.32	31.580	0.066	0.0	0.0	0.0	0.74	13.1	8.9
5.003	50.00	5.46	31.549	0.066	0.0	0.0	0.0	0.74	13.1	8.9
1.007	50.00	6.44	31.440	0.128	0.0	0.0	0.0	1.09	43.2	17.3
1.008	50.00	6.50	31.380	0.128	0.0	0.0	0.0	1.07	42.4	17.3
6.000	50.00	5.00	31.770	0.000	0.0	0.0	0.0	5.14	90.8	0.0
1.009	50.00	6.62	31.353	0.128	0.0	0.0	0.0	1.07	42.4	17.3
1.010	50.00	6.75	31.300	0.128	0.0	0.0	0.0	1.04	41.4	17.3
7.000	50.00	5.74	33.950	0.000	0.0	0.0	0.0	0.82	14.4	0.0
7.001	50.00	6.33	33.710	0.000	0.0	0.0	0.0	0.83	14.6	0.0
7.002	50.00	6.76	33.510	0.000	0.0	0.0	0.0	0.82	14.4	0.0
1.011	50.00	6.86	31.250	0.128	0.0	0.0	0.0	1.12	44.5	17.3
1.012	50.00	7.02	31.200	0.128	0.0	0.0	0.0	1.03	40.8	17.3

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Network Design Table for Block D

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
8.000	54.016	0.540	100.0	0.000	5.00	0.0	0.600	o	150	Pipe/Conduit	
8.001	6.242	0.055	113.2	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.013	4.741	0.037	129.0	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.014	9.456	0.073	129.5	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.015	5.083	0.118	43.1	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.016	2.039	0.072	28.3	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.017	8.620	0.090	95.4	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.018	4.355	0.044	100.0	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)
8.000	50.00	5.90	33.250	0.000	0.0	0.0	0.0	1.00	17.8	0.0
8.001	50.00	6.01	32.710	0.000	0.0	0.0	0.0	0.94	16.7	0.0
1.013	50.00	7.09	31.140	0.128	0.0	0.0	0.0	1.15	45.7	17.3
1.014	50.00	7.23	31.103	0.128	0.0	0.0	0.0	1.15	45.6	17.3
1.015	50.00	7.27	31.030	0.128	0.0	0.0	0.0	2.00	79.5	17.3
1.016	50.00	7.28	30.912	0.128	0.0	0.0	0.0	2.47	98.1	17.3
1.017	50.00	7.39	30.840	0.128	0.0	0.0	0.0	1.34	53.2	17.3
1.018	50.00	7.44	30.750	0.128	0.0	0.0	0.0	1.31	52.0	17.3

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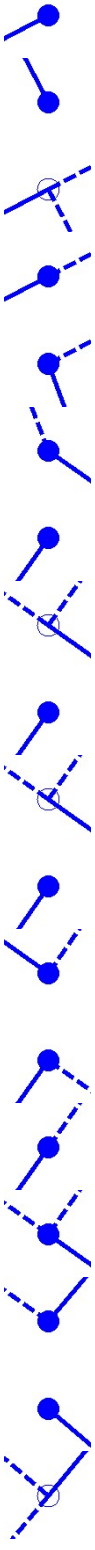
Manhole Schedules for Block D

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)
SW29	33.750	1.580	Open Manhole	600	1.000	32.170	150				
SW30	33.800	1.250	Open Manhole	600	2.000	32.550	150				
JUNCTION	33.750	1.630	Junction		1.001	32.120	150	1.000	32.120	150	
								2.000	32.120	150	
SW31	33.750	1.780	Open Manhole	600	1.002	31.970	150	1.001	31.970	150	
SW32	33.750	1.995	Open Manhole	1200	1.003	31.755	225	1.002	31.830	150	
SW33	33.800	2.135	Open Manhole	1200	1.004	31.665	225	1.003	31.665	225	
SW34	33.800	1.580	Open Manhole	600	3.000	32.220	150				
JUNCTION	33.800	2.168	Junction		1.005	31.632	225	1.004	31.632	225	
								3.000	31.719	150	12
SW36	33.800	1.780	Open Manhole	600	4.000	32.020	150				
JUNCTION	33.800	2.319	Junction		1.006	31.481	225	1.005	31.481	225	
								4.000	31.557	150	1
SW40	33.800	1.860	Open Manhole	600	5.000	31.940	150				
SW40A	33.800	2.150	Open Manhole	600	5.001	31.650	150	5.000	31.650	150	
SW40B	33.800	2.220	Open Manhole	1200	5.002	31.580	150	5.001	31.580	150	
RAINWATER TANK	33.800	2.251	Open Manhole	3000	5.003	31.549	150	5.002	31.549	150	
SW36A	33.800	2.360	Open Manhole	1200	1.007	31.440	225	1.006	31.440	225	
								5.003	31.515	150	
SW37	33.800	2.420	Open Manhole	1200	1.008	31.380	225	1.007	31.380	225	
SW38	33.800	2.030	Open Manhole	600	6.000	31.770	150				
JUNCTION	33.800	2.447	Junction		1.009	31.353	225	1.008	31.353	225	
								6.000	31.429	150	2
SW41	33.800	2.500	Open Manhole	1200	1.010	31.300	225	1.009	31.300	225	
RE	34.700	0.750	Open Manhole	150	7.000	33.950	150				
SW42	34.700	0.990	Open Manhole	1200	7.001	33.710	150	7.000	33.710	150	
SW43	34.700	1.190	Open Manhole	1200	7.002	33.510	150	7.001	33.510	150	
SW44	34.700	3.450	Open Manhole	1200	1.011	31.250	225	1.010	31.250	225	
								7.002	33.370	150	2045
BLOCK D TANK	34.400	3.200	Open Manhole	1500	1.012	31.200	225	1.011	31.200	225	
SW45A	34.000	0.750	Open Manhole	1200	8.000	33.250	150				
SW45B	34.000	1.290	Open Manhole	1200	8.001	32.710	150	8.000	32.710	150	
SW45	34.150	3.010	Open Manhole	1200	1.013	31.140	225	1.012	31.140	225	
								8.001	32.655	150	1440
SW06	34.670	3.567	Open Manhole	1500	1.014	31.103	225	1.013	31.103	225	
SW46	34.550	3.520	Open Manhole	1200	1.015	31.030	225	1.014	31.030	225	
SW49	34.700	3.788	Open Manhole	1200	1.016	30.912	225	1.015	30.912	225	
CW02	34.650	3.810	Open Manhole	1200	1.017	30.840	225	1.016	30.840	225	
CW03	34.450	3.700	Open Manhole	1200	1.018	30.750	225	1.017	30.750	225	
Ex. MH	34.670	3.964	Open Manhole	1800		OUTFALL		1.018	30.706	225	

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Manhole Schedules for Block D

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
SW29	383769.007	397207.342	383769.007	397207.342	Required	
SW30	383765.701	397202.613	383765.701	397202.613	Required	
JUNCTION	383764.469	397204.971			No Entry	
SW31	383751.284	397198.082	383751.284	397198.082	Required	
SW32	383739.018	397191.673	383739.018	397191.673	Required	
SW33	383743.827	397178.984	383743.827	397178.984	Required	
SW34	383748.900	397177.597	383748.900	397177.597	Required	
JUNCTION	383747.856	397176.128			No Entry	
SW36	383767.309	397164.181	383767.309	397164.181	Required	
JUNCTION	383766.424	397162.935			No Entry	
SW40	383788.977	397172.813	383788.977	397172.813	Required	
SW40A	383783.761	397165.306	383783.761	397165.306	Required	
SW40B	383778.358	397169.144	383778.358	397169.144	Required	
RAINWATER TANK	383775.072	397164.516	383775.072	397164.516	Required	
SW36A	383771.425	397159.382	383771.425	397159.382	Required	
SW37	383778.495	397154.362	383778.495	397154.362	Required	
SW38	383780.070	397158.306	383780.070	397158.306	Required	
JUNCTION	383781.087	397157.452			No Entry	



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Manhole Schedules for Block D

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
SW41	383786.213	397163.565	383786.213	397163.565	Required	
RE	383730.265	397183.894	383730.265	397183.894	Required	
SW42	383758.159	397160.829	383758.159	397160.829	Required	
SW43	383780.513	397141.738	383780.513	397141.738	Required	
SW44	383792.617	397159.017	383792.617	397159.017	Required	
BLOCK D TANK	383799.108	397160.930	383799.108	397160.930	Required	
SW45A	383784.227	397215.883	383784.227	397215.883	Required	
SW45B	383809.453	397168.119	383809.453	397168.119	Required	
SW45	383808.765	397161.915	383808.765	397161.915	Required	
SW06	383811.100	397157.789	383811.100	397157.789	Required	
SW46	383815.750	397149.555	383815.750	397149.555	Required	
SW49	383818.279	397145.146	383818.279	397145.146	Required	
CW02	383820.086	397146.090	383820.086	397146.090	Required	
CW03	383827.744	397150.048	383827.744	397150.048	Required	
Ex. MH	383830.121	397146.398			No Entry	

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PIPELINE SCHEDULES for Block D

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	o	150	SW29	33.750	32.170	1.430	Open Manhole	600
2.000	o	150	SW30	33.800	32.550	1.100	Open Manhole	600
1.001	o	150	JUNCTION	33.750	32.120	1.480	Junction	
1.002	o	150	SW31	33.750	31.970	1.630	Open Manhole	600
1.003	o	225	SW32	33.750	31.755	1.770	Open Manhole	1200
1.004	o	225	SW33	33.800	31.665	1.910	Open Manhole	1200
3.000	o	150	SW34	33.800	32.220	1.430	Open Manhole	600
1.005	o	225	JUNCTION	33.800	31.632	1.943	Junction	
4.000	o	150	SW36	33.800	32.020	1.630	Open Manhole	600
1.006	o	225	JUNCTION	33.800	31.481	2.094	Junction	
5.000	o	150	SW40	33.800	31.940	1.710	Open Manhole	600
5.001	o	150	SW40A	33.800	31.650	2.000	Open Manhole	600
5.002	o	150	SW40B	33.800	31.580	2.070	Open Manhole	1200
5.003	o	150	RAINWATER TANK	33.800	31.549	2.101	Open Manhole	3000
1.007	o	225	SW36A	33.800	31.440	2.135	Open Manhole	1200
1.008	o	225	SW37	33.800	31.380	2.195	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	5.120	102.4	JUNCTION	33.750	32.120	1.480	Junction	
2.000	2.661	6.2	JUNCTION	33.750	32.120	1.480	Junction	
1.001	14.876	99.2	SW31	33.750	31.970	1.630	Open Manhole	600
1.002	13.839	98.9	SW32	33.750	31.830	1.770	Open Manhole	1200
1.003	13.570	150.8	SW33	33.800	31.665	1.910	Open Manhole	1200
1.004	4.939	150.8	JUNCTION	33.800	31.632	1.943	Junction	
3.000	1.802	3.6	JUNCTION	33.800	31.719	1.931	Junction	
1.005	22.778	150.8	JUNCTION	33.800	31.481	2.094	Junction	
4.000	1.528	3.3	JUNCTION	33.800	31.557	2.093	Junction	
1.006	6.135	148.0	SW36A	33.800	31.440	2.135	Open Manhole	1200
5.000	9.141	31.5	SW40A	33.800	31.650	2.000	Open Manhole	600
5.001	6.627	95.3	SW40B	33.800	31.580	2.070	Open Manhole	1200
5.002	5.676	183.1	RAINWATER TANK	33.800	31.549	2.101	Open Manhole	3000
5.003	6.298	181.0	SW36A	33.800	31.515	2.135	Open Manhole	1200
1.007	8.671	144.5	SW37	33.800	31.380	2.195	Open Manhole	1200
1.008	4.033	150.0	JUNCTION	33.800	31.353	2.222	Junction	

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PIPELINE SCHEDULES for Block D

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)
6.000	o	150	SW38	33.800	31.770	1.880	Open Manhole	600
1.009	o	225	JUNCTION	33.800	31.353	2.222	Junction	
1.010	o	225	SW41	33.800	31.300	2.275	Open Manhole	1200
7.000	o	150	RE	34.700	33.950	0.600	Open Manhole	150
7.001	o	150	SW42	34.700	33.710	0.840	Open Manhole	1200
7.002	o	150	SW43	34.700	33.510	1.040	Open Manhole	1200
1.011	o	225	SW44	34.700	31.250	3.225	Open Manhole	1200
1.012	o	225	BLOCK D TANK	34.400	31.200	2.975	Open Manhole	1500
8.000	o	150	SW45A	34.000	33.250	0.600	Open Manhole	1200
8.001	o	150	SW45B	34.000	32.710	1.140	Open Manhole	1200
1.013	o	225	SW45	34.150	31.140	2.785	Open Manhole	1200
1.014	o	225	SW06	34.670	31.103	3.342	Open Manhole	1500
1.015	o	225	SW46	34.550	31.030	3.295	Open Manhole	1200
1.016	o	225	SW49	34.700	30.912	3.563	Open Manhole	1200
1.017	o	225	CW02	34.650	30.840	3.585	Open Manhole	1200
1.018	o	225	CW03	34.450	30.750	3.475	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
6.000	1.328	3.9	JUNCTION	33.800	31.429	2.221	Junction	
1.009	7.978	150.0	SW41	33.800	31.300	2.275	Open Manhole	1200
1.010	7.855	157.1	SW44	34.700	31.250	3.225	Open Manhole	1200
7.000	36.195	150.5	SW42	34.700	33.710	0.840	Open Manhole	1200
7.001	29.397	147.0	SW43	34.700	33.510	1.040	Open Manhole	1200
7.002	21.097	150.2	SW44	34.700	33.370	1.180	Open Manhole	1200
1.011	6.767	135.8	BLOCK D TANK	34.400	31.200	2.975	Open Manhole	1500
1.012	9.707	161.8	SW45	34.150	31.140	2.785	Open Manhole	1200
8.000	54.016	100.0	SW45B	34.000	32.710	1.140	Open Manhole	1200
8.001	6.242	113.2	SW45	34.150	32.655	1.345	Open Manhole	1200
1.013	4.741	129.0	SW06	34.670	31.103	3.342	Open Manhole	1500
1.014	9.456	129.5	SW46	34.550	31.030	3.295	Open Manhole	1200
1.015	5.083	43.1	SW49	34.700	30.912	3.563	Open Manhole	1200
1.016	2.039	28.3	CW02	34.650	30.840	3.585	Open Manhole	1200
1.017	8.620	95.4	CW03	34.450	30.750	3.475	Open Manhole	1200
1.018	4.355	100.0	Ex. MH	34.670	30.706	3.739	Open Manhole	1800

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Area Summary for Block D

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.005	0.005	0.005
2.000	-	-	100	0.018	0.018	0.018
1.001	-	-	100	0.000	0.000	0.000
1.002	-	-	100	0.009	0.009	0.009
1.003	-	-	100	0.021	0.021	0.021
1.004	-	-	100	0.000	0.000	0.000
3.000	User	-	100	0.006	0.006	0.006
1.005	-	-	100	0.000	0.000	0.000
4.000	User	-	100	0.002	0.002	0.002
1.006	-	-	100	0.000	0.000	0.000
5.000	-	-	100	0.032	0.032	0.032
5.001	-	-	100	0.010	0.010	0.010
5.002	-	-	100	0.024	0.024	0.024
5.003	-	-	100	0.000	0.000	0.000
1.007	-	-	100	0.000	0.000	0.000
1.008	-	-	100	0.000	0.000	0.000
6.000	-	-	100	0.000	0.000	0.000
1.009	-	-	100	0.000	0.000	0.000
1.010	-	-	100	0.000	0.000	0.000
7.000	-	-	100	0.000	0.000	0.000
7.001	-	-	100	0.000	0.000	0.000
7.002	-	-	100	0.000	0.000	0.000
1.011	-	-	100	0.000	0.000	0.000
1.012	-	-	100	0.000	0.000	0.000
8.000	-	-	100	0.000	0.000	0.000
8.001	-	-	100	0.000	0.000	0.000
1.013	-	-	100	0.000	0.000	0.000
1.014	-	-	100	0.000	0.000	0.000
1.015	-	-	100	0.000	0.000	0.000
1.016	-	-	100	0.000	0.000	0.000
1.017	-	-	100	0.000	0.000	0.000
1.018	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				0.128	0.128	0.128

Free Flowing Outfall Details for Block D

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.018	Ex. MH	34.670	30.706	27.920	1800	0

Simulation Criteria for Block D

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 Offline Controls 0 Number of Time/Area Diagrams 12
Number of Online Controls 1 Number of Storage Structures 3 Number of Real Time Controls 0

Synthetic Rainfall Details

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Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	30	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	18.000	Storm Duration (mins)	30
Ratio R	0.360		

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Online Controls for Block D

Hydro-Brake® Optimum Manhole: SW49, DS/PN: 1.016, Volume (m³): 4.4

Unit Reference	MD-SHE-0087-5000-2500-5000
Design Head (m)	2.500
Design Flow (l/s)	5.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	87
Invert Level (m)	30.912
Minimum Outlet Pipe Diameter (mm)	100
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	2.500	5.0	Kick-Flo®	0.777	2.9
Flush-Flo™	0.379	3.6	Mean Flow over Head Range	-	3.8

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	2.6	0.800	2.9	2.000	4.5	4.000	6.2	7.000	8.1
0.200	3.4	1.000	3.3	2.200	4.7	4.500	6.6	7.500	8.4
0.300	3.6	1.200	3.6	2.400	4.9	5.000	6.9	8.000	8.6
0.400	3.6	1.400	3.8	2.600	5.1	5.500	7.2	8.500	8.9
0.500	3.6	1.600	4.1	3.000	5.4	6.000	7.5	9.000	9.1
0.600	3.5	1.800	4.3	3.500	5.8	6.500	7.8	9.500	9.4

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Storage Structures for Block D

Cellular Storage Manhole: BLOCK D TANK, DS/PN: 1.012

Invert Level (m) 31.200 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	31.5	0.0	1.500	31.5	0.0	1.501	0.0	0.0

Porous Car Park Manhole: SW45A, DS/PN: 8.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	5.2
Membrane Percolation (mm/hr)	1000	Length (m)	68.3
Max Percolation (l/s)	98.7	Slope (1:X)	100.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	33.500	Cap Volume Depth (m)	0.300

Porous Car Park Manhole: SW46, DS/PN: 1.015

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	6.0
Membrane Percolation (mm/hr)	1000	Length (m)	18.5
Max Percolation (l/s)	30.8	Slope (1:X)	100.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	34.050	Cap Volume Depth (m)	0.300

Time Area Diagram for Green Roof at Pipe Number 1.000 (Block D)

Area (m³) 284 Evaporation (mm/day) 3
Depression Storage (mm) 5 Decay Coefficient 0.050

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.005161	32	36	0.001042	64	68	0.000210	96	100	0.000042
4	8	0.004225	36	40	0.000853	68	72	0.000172	100	104	0.000035
8	12	0.003459	40	44	0.000698	72	76	0.000141	104	108	0.000028
12	16	0.002832	44	48	0.000572	76	80	0.000115	108	112	0.000023
16	20	0.002319	48	52	0.000468	80	84	0.000095	112	116	0.000019
20	24	0.001899	52	56	0.000383	84	88	0.000077	116	120	0.000016
24	28	0.001554	56	60	0.000314	88	92	0.000063			
28	32	0.001273	60	64	0.000257	92	96	0.000052			

Time Area Diagram for Green Roof at Pipe Number 2.000 (Block D)

Area (m³) 111 Evaporation (mm/day) 3
Depression Storage (mm) 5 Decay Coefficient 0.050

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.002017	16	20	0.000906	32	36	0.000407	48	52	0.000183
4	8	0.001651	20	24	0.000742	36	40	0.000333	52	56	0.000150
8	12	0.001352	24	28	0.000608	40	44	0.000273	56	60	0.000123
12	16	0.001107	28	32	0.000497	44	48	0.000223	60	64	0.000100

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Time Area Diagram for Green Roof at Pipe Number 2.000 (Block D)

Time (mins) From:	To:	Area (ha)	Time (mins) From:	To:	Area (ha)	Time (mins) From:	To:	Area (ha)	Time (mins) From:	To:	Area (ha)
64	68	0.000082	80	84	0.000037	96	100	0.000017	112	116	0.000007
68	72	0.000067	84	88	0.000030	100	104	0.000014	116	120	0.000006
72	76	0.000055	88	92	0.000025	104	108	0.000011			
76	80	0.000045	92	96	0.000020	108	112	0.000009			

Time Area Diagram for Green Roof at Pipe Number 1.002 (Block D)

Area (m³) 107 Evaporation (mm/day) 3
Depression Storage (mm) 5 Decay Coefficient 0.050

Time (mins) From:	To:	Area (ha)	Time (mins) From:	To:	Area (ha)	Time (mins) From:	To:	Area (ha)	Time (mins) From:	To:	Area (ha)
0	4	0.001944	32	36	0.000393	64	68	0.000079	96	100	0.000016
4	8	0.001592	36	40	0.000321	68	72	0.000065	100	104	0.000013
8	12	0.001303	40	44	0.000263	72	76	0.000053	104	108	0.000011
12	16	0.001067	44	48	0.000215	76	80	0.000043	108	112	0.000009
16	20	0.000874	48	52	0.000176	80	84	0.000036	112	116	0.000007
20	24	0.000715	52	56	0.000144	84	88	0.000029	116	120	0.000006
24	28	0.000586	56	60	0.000118	88	92	0.000024			
28	32	0.000479	60	64	0.000097	92	96	0.000020			

Time Area Diagram for Green Roof at Pipe Number 3.000 (Block D)

Area (m³) 236 Evaporation (mm/day) 3
Depression Storage (mm) 5 Decay Coefficient 0.050

Time (mins) From:	To:	Area (ha)	Time (mins) From:	To:	Area (ha)	Time (mins) From:	To:	Area (ha)	Time (mins) From:	To:	Area (ha)
0	4	0.004289	32	36	0.000866	64	68	0.000175	96	100	0.000035
4	8	0.003511	36	40	0.000709	68	72	0.000143	100	104	0.000029
8	12	0.002875	40	44	0.000580	72	76	0.000117	104	108	0.000024
12	16	0.002354	44	48	0.000475	76	80	0.000096	108	112	0.000019
16	20	0.001927	48	52	0.000389	80	84	0.000079	112	116	0.000016
20	24	0.001578	52	56	0.000319	84	88	0.000064	116	120	0.000013
24	28	0.001292	56	60	0.000261	88	92	0.000053			
28	32	0.001058	60	64	0.000214	92	96	0.000043			

Time Area Diagram for Green Roof at Pipe Number 4.000 (Block D)

Area (m³) 30 Evaporation (mm/day) 3
Depression Storage (mm) 5 Decay Coefficient 0.050

Time (mins) From:	To:	Area (ha)	Time (mins) From:	To:	Area (ha)	Time (mins) From:	To:	Area (ha)	Time (mins) From:	To:	Area (ha)
0	4	0.000545	32	36	0.000110	64	68	0.000022	96	100	0.000004
4	8	0.000446	36	40	0.000090	68	72	0.000018	100	104	0.000004
8	12	0.000365	40	44	0.000074	72	76	0.000015	104	108	0.000003
12	16	0.000299	44	48	0.000060	76	80	0.000012	108	112	0.000002
16	20	0.000245	48	52	0.000049	80	84	0.000010	112	116	0.000002
20	24	0.000201	52	56	0.000040	84	88	0.000008	116	120	0.000002
24	28	0.000164	56	60	0.000033	88	92	0.000007			
28	32	0.000134	60	64	0.000027	92	96	0.000005			

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Time Area Diagram for Green Roof at Pipe Number 5.000 (Block D)

Area (m³) 225 Evaporation (mm/day) 3
Depression Storage (mm) 5 Decay Coefficient 0.050

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.004089	32	36	0.000825	64	68	0.000167	96	100	0.000034
4	8	0.003348	36	40	0.000676	68	72	0.000136	100	104	0.000028
8	12	0.002741	40	44	0.000553	72	76	0.000112	104	108	0.000023
12	16	0.002244	44	48	0.000453	76	80	0.000091	108	112	0.000018
16	20	0.001837	48	52	0.000371	80	84	0.000075	112	116	0.000015
20	24	0.001504	52	56	0.000304	84	88	0.000061	116	120	0.000012
24	28	0.001231	56	60	0.000249	88	92	0.000050			
28	32	0.001008	60	64	0.000204	92	96	0.000041			

Time Area Diagram for Green Roof at Pipe Number 5.001 (Block D)

Area (m³) 92 Evaporation (mm/day) 3
Depression Storage (mm) 5 Decay Coefficient 0.050

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.001672	32	36	0.000338	64	68	0.000068	96	100	0.000014
4	8	0.001369	36	40	0.000276	68	72	0.000056	100	104	0.000011
8	12	0.001121	40	44	0.000226	72	76	0.000046	104	108	0.000009
12	16	0.000918	44	48	0.000185	76	80	0.000037	108	112	0.000008
16	20	0.000751	48	52	0.000152	80	84	0.000031	112	116	0.000006
20	24	0.000615	52	56	0.000124	84	88	0.000025	116	120	0.000005
24	28	0.000504	56	60	0.000102	88	92	0.000021			
28	32	0.000412	60	64	0.000083	92	96	0.000017			

Time Area Diagram for Green Roof at Pipe Number 6.000 (Block D)

Area (m³) 155 Evaporation (mm/day) 3
Depression Storage (mm) 5 Decay Coefficient 0.050

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.002817	32	36	0.000569	64	68	0.000115	96	100	0.000023
4	8	0.002306	36	40	0.000466	68	72	0.000094	100	104	0.000019
8	12	0.001888	40	44	0.000381	72	76	0.000077	104	108	0.000016
12	16	0.001546	44	48	0.000312	76	80	0.000063	108	112	0.000013
16	20	0.001266	48	52	0.000256	80	84	0.000052	112	116	0.000010
20	24	0.001036	52	56	0.000209	84	88	0.000042	116	120	0.000009
24	28	0.000848	56	60	0.000171	88	92	0.000035			
28	32	0.000695	60	64	0.000140	92	96	0.000028			

Time Area Diagram for Green Roof at Pipe Number 7.000 (Block D)

Area (m³) 39 Evaporation (mm/day) 3
Depression Storage (mm) 5 Decay Coefficient 0.050

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000709	8	12	0.000475	16	20	0.000318	24	28	0.000213
4	8	0.000580	12	16	0.000389	20	24	0.000261	28	32	0.000175

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Time Area Diagram for Green Roof at Pipe Number 7.000 (Block D)

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
32	36	0.000143	56	60	0.000043	80	84	0.000013	104	108	0.000004
36	40	0.000117	60	64	0.000035	84	88	0.000011	108	112	0.000003
40	44	0.000096	64	68	0.000029	88	92	0.000009	112	116	0.000003
44	48	0.000079	68	72	0.000024	92	96	0.000007	116	120	0.000002
48	52	0.000064	72	76	0.000019	96	100	0.000006			
52	56	0.000053	76	80	0.000016	100	104	0.000005			

Time Area Diagram for Green Roof at Pipe Number 7.001 (Block D)

Area (m³) 45 Evaporation (mm/day) 3
Depression Storage (mm) 5 Decay Coefficient 0.050

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000818	32	36	0.000165	64	68	0.000033	96	100	0.000007
4	8	0.000670	36	40	0.000135	68	72	0.000027	100	104	0.000006
8	12	0.000548	40	44	0.000111	72	76	0.000022	104	108	0.000005
12	16	0.000449	44	48	0.000091	76	80	0.000018	108	112	0.000004
16	20	0.000367	48	52	0.000074	80	84	0.000015	112	116	0.000003
20	24	0.000301	52	56	0.000061	84	88	0.000012	116	120	0.000002
24	28	0.000246	56	60	0.000050	88	92	0.000010			
28	32	0.000202	60	64	0.000041	92	96	0.000008			

Time Area Diagram for Green Roof at Pipe Number 8.000 (Block D)

Area (m³) 354 Evaporation (mm/day) 3
Depression Storage (mm) 5 Decay Coefficient 0.050

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.006433	32	36	0.001299	64	68	0.000262	96	100	0.000053
4	8	0.005267	36	40	0.001063	68	72	0.000215	100	104	0.000043
8	12	0.004312	40	44	0.000871	72	76	0.000176	104	108	0.000035
12	16	0.003530	44	48	0.000713	76	80	0.000144	108	112	0.000029
16	20	0.002890	48	52	0.000584	80	84	0.000118	112	116	0.000024
20	24	0.002367	52	56	0.000478	84	88	0.000096	116	120	0.000019
24	28	0.001938	56	60	0.000391	88	92	0.000079			
28	32	0.001586	60	64	0.000320	92	96	0.000065			

Time Area Diagram for Green Roof at Pipe Number 1.015 (Block D)

Area (m³) 111 Evaporation (mm/day) 3
Depression Storage (mm) 5 Decay Coefficient 0.050

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.002017	28	32	0.000497	56	60	0.000123	84	88	0.000030
4	8	0.001651	32	36	0.000407	60	64	0.000100	88	92	0.000025
8	12	0.001352	36	40	0.000333	64	68	0.000082	92	96	0.000020
12	16	0.001107	40	44	0.000273	68	72	0.000067	96	100	0.000017
16	20	0.000906	44	48	0.000223	72	76	0.000055	100	104	0.000014
20	24	0.000742	48	52	0.000183	76	80	0.000045	104	108	0.000011
24	28	0.000608	52	56	0.000150	80	84	0.000037	108	112	0.000009

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Time Area Diagram for Green Roof at Pipe Number 1.015 (Block D)

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
112	116	0.000007	116	120	0.000006						

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Block D

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 Offline Controls 0 Number of Time/Area Diagrams 12
Number of Online Controls 1 Number of Storage Structures 3 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	M5-60 (mm) 18.000	Cv (Summer) 0.750
Region England and Wales		Ratio R 0.360	Cv (Winter) 0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years)	1, 2, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	SW29	60 Winter	1	+0%	100/60 Winter				32.195
2.000	SW30	120 Summer	1	+0%	100/240 Winter				32.557
1.001	JUNCTION	120 Winter	1	+0%					32.145
1.002	SW31	120 Winter	1	+0%	100/60 Summer				32.001
1.003	SW32	120 Winter	1	+0%	100/30 Winter				31.791
1.004	SW33	120 Winter	1	+0%	100/30 Summer				31.705
3.000	SW34	120 Summer	1	+0%	100/120 Summer				32.232
1.005	JUNCTION	120 Winter	1	+0%	100/30 Summer				31.670
4.000	SW36	120 Summer	1	+0%	100/60 Summer				32.022
1.006	JUNCTION	120 Winter	1	+0%	30/120 Summer				31.529
5.000	SW40	120 Winter	1	+0%	100/60 Summer				31.956
5.001	SW40A	60 Winter	1	+0%	30/120 Winter				31.676
5.002	SW40B	15 Winter	1	+0%	30/120 Summer				31.629
5.003	RAINWATER TANK	15 Winter	1	+0%	30/60 Winter				31.595
1.007	SW36A	120 Winter	1	+0%	30/60 Winter				31.494
1.008	SW37	120 Winter	1	+0%	30/60 Summer				31.439
6.000	SW38	120 Summer	1	+0%	100/30 Summer				31.780
1.009	JUNCTION	120 Winter	1	+0%	30/60 Summer				31.412
1.010	SW41	120 Winter	1	+0%	30/30 Winter				31.359
7.000	RE	120 Winter	1	+0%					33.956
7.001	SW42	120 Winter	1	+0%					33.722
7.002	SW43	120 Winter	1	+0%					33.523
1.011	SW44	120 Winter	1	+0%	30/30 Winter				31.311
1.012	BLOCK D TANK	120 Winter	1	+0%	30/30 Summer				31.255
8.000	SW45A	240 Winter	1	+0%					33.268
8.001	SW45B	240 Winter	1	+0%					32.730
1.013	SW45	120 Winter	1	+0%	30/30 Summer				31.215
1.014	SW06	120 Winter	1	+0%	30/15 Winter				31.211
1.015	SW46	120 Winter	1	+0%	2/60 Winter				31.207
1.016	SW49	120 Winter	1	+0%	1/120 Winter				31.204

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Block D

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	SW29	-0.125	0.000	0.06			0.9	OK	
2.000	SW30	-0.143	0.000	0.01			0.3	OK	
1.001	JUNCTION	-0.125	0.000	0.07			1.2	OK*	
1.002	SW31	-0.119	0.000	0.09			1.5	OK	
1.003	SW32	-0.189	0.000	0.06			2.2	OK	
1.004	SW33	-0.185	0.000	0.07			2.2	OK	
3.000	SW34	-0.138	0.000	0.02			0.7	OK	
1.005	JUNCTION	-0.187	0.000	0.07			2.9	OK*	
4.000	SW36	-0.148	0.000	0.00			0.1	OK	
1.006	JUNCTION	-0.178	0.000	0.10			3.0	OK*	
5.000	SW40	-0.134	0.000	0.02			0.7	OK	
5.001	SW40A	-0.124	0.000	0.06			1.0	OK	
5.002	SW40B	-0.101	0.000	0.23			2.4	OK	
5.003	RAINWATER TANK	-0.104	0.000	0.20			2.2	OK	
1.007	SW36A	-0.171	0.000	0.13			4.6	OK	
1.008	SW37	-0.166	0.000	0.16			4.6	OK	
6.000	SW38	-0.140	0.000	0.01			0.4	OK	
1.009	JUNCTION	-0.166	0.000	0.15			5.0	OK*	
1.010	SW41	-0.165	0.000	0.16			5.0	OK	
7.000	RE	-0.144	0.000	0.01			0.1	OK	
7.001	SW42	-0.138	0.000	0.02			0.2	OK	
7.002	SW43	-0.137	0.000	0.02			0.2	OK	
1.011	SW44	-0.163	0.000	0.17			5.3	OK	
1.012	BLOCK D TANK	-0.170	0.000	0.14		49	4.7	OK	
8.000	SW45A	-0.132	0.000	0.03		37	0.6	OK	
8.001	SW45B	-0.130	0.000	0.04			0.6	OK	
1.013	SW45	-0.150	0.000	0.16			4.7	OK	
1.014	SW06	-0.117	0.000	0.12			4.6	OK	
1.015	SW46	-0.048	0.000	0.08		17	4.0	OK	
1.016	SW49	0.067	0.000	0.10			3.6	SURCHARGED	

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Block D

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 (m³)
1.017	CW02	120 Winter	1	+0%					30.884	-0.181	0.000
1.018	CW03	120 Winter	1	+0%					30.801	-0.173	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.017	CW02	0.08			3.6	OK	
1.018	CW03	0.12			3.6	OK	

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2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Block D

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 Offline Controls 0 Number of Time/Area Diagrams 12
Number of Online Controls 1 Number of Storage Structures 3 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	M5-60 (mm) 18.000	Cv (Summer) 0.750
Region England and Wales		Ratio R 0.360	Cv (Winter) 0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years)	1, 2, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	SW29	60 Winter	2	+0%	100/60 Winter				32.200
2.000	SW30	60 Winter	2	+0%	100/240 Winter				32.559
1.001	JUNCTION	60 Winter	2	+0%					32.152
1.002	SW31	60 Winter	2	+0%	100/60 Summer				32.007
1.003	SW32	60 Winter	2	+0%	100/30 Winter				31.798
1.004	SW33	60 Winter	2	+0%	100/30 Summer				31.713
3.000	SW34	60 Winter	2	+0%	100/120 Summer				32.236
1.005	JUNCTION	60 Winter	2	+0%	100/30 Summer				31.678
4.000	SW36	60 Winter	2	+0%	100/60 Summer				32.023
1.006	JUNCTION	60 Winter	2	+0%	30/120 Summer				31.536
5.000	SW40	60 Winter	2	+0%	100/60 Summer				31.960
5.001	SW40A	60 Winter	2	+0%	30/120 Winter				31.680
5.002	SW40B	15 Winter	2	+0%	30/120 Summer				31.636
5.003	RAINWATER TANK	15 Winter	2	+0%	30/60 Winter				31.602
1.007	SW36A	120 Winter	2	+0%	30/60 Winter				31.503
1.008	SW37	60 Winter	2	+0%	30/60 Summer				31.450
6.000	SW38	60 Winter	2	+0%	100/30 Summer				31.784
1.009	JUNCTION	60 Winter	2	+0%	30/60 Summer				31.422
1.010	SW41	120 Winter	2	+0%	30/30 Winter				31.370
7.000	RE	60 Winter	2	+0%					33.959
7.001	SW42	60 Winter	2	+0%					33.725
7.002	SW43	60 Winter	2	+0%					33.526
1.011	SW44	240 Winter	2	+0%	30/30 Winter				31.331
1.012	BLOCK D TANK	240 Winter	2	+0%	30/30 Summer				31.329
8.000	SW45A	120 Winter	2	+0%					33.272
8.001	SW45B	240 Winter	2	+0%					32.735
1.013	SW45	240 Winter	2	+0%	30/30 Summer				31.325
1.014	SW06	240 Winter	2	+0%	30/15 Winter				31.322
1.015	SW46	240 Winter	2	+0%	2/60 Winter				31.317
1.016	SW49	240 Winter	2	+0%	1/120 Winter				31.315

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2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Block D

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	SW29	-0.120	0.000	0.09			1.2	OK	
2.000	SW30	-0.141	0.000	0.01			0.5	OK	
1.001	JUNCTION	-0.118	0.000	0.10			1.7	OK*	
1.002	SW31	-0.113	0.000	0.13			2.2	OK	
1.003	SW32	-0.182	0.000	0.08			2.9	OK	
1.004	SW33	-0.177	0.000	0.10			3.0	OK	
3.000	SW34	-0.134	0.000	0.02			1.1	OK	
1.005	JUNCTION	-0.179	0.000	0.09			3.9	OK*	
4.000	SW36	-0.147	0.000	0.00			0.1	OK	
1.006	JUNCTION	-0.170	0.000	0.14			4.0	OK*	
5.000	SW40	-0.130	0.000	0.04			1.0	OK	
5.001	SW40A	-0.120	0.000	0.09			1.4	OK	
5.002	SW40B	-0.094	0.000	0.29			3.2	OK	
5.003	RAINWATER TANK	-0.097	0.000	0.27			3.0	OK	
1.007	SW36A	-0.161	0.000	0.18			6.2	OK	
1.008	SW37	-0.155	0.000	0.21			6.1	OK	
6.000	SW38	-0.136	0.000	0.02			0.7	OK	
1.009	JUNCTION	-0.155	0.000	0.21			6.8	OK*	
1.010	SW41	-0.155	0.000	0.21			6.8	OK	
7.000	RE	-0.141	0.000	0.01			0.2	OK	
7.001	SW42	-0.134	0.000	0.02			0.3	OK	
7.002	SW43	-0.134	0.000	0.02			0.3	OK	
1.011	SW44	-0.143	0.000	0.16			5.1	OK	
1.012	BLOCK D TANK	-0.096	0.000	0.15		39	5.0	OK	
8.000	SW45A	-0.128	0.000	0.05		35	0.9	OK	
8.001	SW45B	-0.125	0.000	0.07			0.9	OK	
1.013	SW45	-0.040	0.000	0.16			4.9	OK	
1.014	SW06	-0.006	0.000	0.12			4.6	OK	
1.015	SW46	0.062	0.000	0.08		52	4.0	SURCHARGED	
1.016	SW49	0.178	0.000	0.10			3.6	SURCHARGED	

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2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Block D

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 (m³)
1.017	CW02	120 Winter	2	+0%					30.884	-0.181	0.000
1.018	CW03	360 Summer	2	+0%					30.802	-0.173	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.017	CW02	0.09			3.6	OK	
1.018	CW03	0.12			3.6	OK	

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

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 Offline Controls 0 Number of Time/Area Diagrams 12
Number of Online Controls 1 Number of Storage Structures 3 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model		FSR M5-60 (mm) 18.000	Cv (Summer) 0.750
Region England and Wales		Ratio R 0.360	Cv (Winter) 0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years)	1, 2, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	SW29	30 Winter	30	+0%	100/60 Winter				32.215
2.000	SW30	60 Winter	30	+0%	100/240 Winter				32.566
1.001	JUNCTION	60 Summer	30	+0%					32.165
1.002	SW31	30 Winter	30	+0%	100/60 Summer				32.024
1.003	SW32	240 Winter	30	+0%	100/30 Winter				31.858
1.004	SW33	240 Winter	30	+0%	100/30 Summer				31.856
3.000	SW34	60 Winter	30	+0%	100/120 Summer				32.242
1.005	JUNCTION	240 Winter	30	+0%	100/30 Summer				31.855
4.000	SW36	60 Winter	30	+0%	100/60 Summer				32.025
1.006	JUNCTION	120 Summer	30	+0%	30/120 Summer				31.707
5.000	SW40	60 Winter	30	+0%	100/60 Summer				31.968
5.001	SW40A	240 Winter	30	+0%	30/120 Winter				31.856
5.002	SW40B	240 Winter	30	+0%	30/120 Summer				31.855
5.003	RAINWATER TANK	240 Winter	30	+0%	30/60 Winter				31.853
1.007	SW36A	240 Winter	30	+0%	30/60 Winter				31.851
1.008	SW37	240 Winter	30	+0%	30/60 Summer				31.849
6.000	SW38	240 Winter	30	+0%	100/30 Summer				31.847
1.009	JUNCTION	60 Summer	30	+0%	30/60 Summer				31.580
1.010	SW41	240 Winter	30	+0%	30/30 Winter				31.845
7.000	RE	30 Winter	30	+0%					33.966
7.001	SW42	60 Winter	30	+0%					33.732
7.002	SW43	60 Winter	30	+0%					33.532
1.011	SW44	240 Winter	30	+0%	30/30 Winter				31.843
1.012	BLOCK D TANK	240 Winter	30	+0%	30/30 Summer				31.841
8.000	SW45A	60 Winter	30	+0%					33.291
8.001	SW45B	60 Winter	30	+0%					32.756
1.013	SW45	240 Winter	30	+0%	30/30 Summer				31.846
1.014	SW06	240 Winter	30	+0%	30/15 Winter				31.847
1.015	SW46	240 Winter	30	+0%	2/60 Winter				31.847
1.016	SW49	240 Winter	30	+0%	1/120 Winter				31.846

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

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	SW29	-0.105	0.000	0.19			2.6	OK	
2.000	SW30	-0.134	0.000	0.02			1.0	OK	
1.001	JUNCTION	-0.105	0.000	0.19			3.3	OK*	
1.002	SW31	-0.096	0.000	0.28			4.5	OK	
1.003	SW32	-0.122	0.000	0.10			3.8	OK	
1.004	SW33	-0.034	0.000	0.13			3.8	OK	
3.000	SW34	-0.128	0.000	0.05			2.1	OK	
1.005	JUNCTION	-0.002	0.000	0.12			5.0	OK*	
4.000	SW36	-0.145	0.000	0.01			0.3	OK	
1.006	JUNCTION	0.001	0.000	0.27			8.0	SURCHARGED*	
5.000	SW40	-0.122	0.000	0.07			2.0	OK	
5.001	SW40A	0.056	0.000	0.11			1.7	SURCHARGED	
5.002	SW40B	0.125	0.000	0.28			3.0	SURCHARGED	
5.003	RAINWATER TANK	0.154	0.000	0.27			3.0	SURCHARGED	
1.007	SW36A	0.186	0.000	0.24			8.2	SURCHARGED	
1.008	SW37	0.244	0.000	0.28			8.1	SURCHARGED	
6.000	SW38	-0.073	0.000	0.02			0.8	OK	
1.009	JUNCTION	0.002	0.000	0.48			15.7	SURCHARGED*	
1.010	SW41	0.321	0.000	0.27			8.4	SURCHARGED	
7.000	RE	-0.134	0.000	0.03			0.3	OK	
7.001	SW42	-0.128	0.000	0.05			0.7	OK	
7.002	SW43	-0.128	0.000	0.05			0.7	OK	
1.011	SW44	0.368	0.000	0.27			8.4	SURCHARGED	
1.012	BLOCK D TANK	0.416	0.000	0.19		130	6.3	SURCHARGED	
8.000	SW45A	-0.109	0.000	0.16		30	2.8	OK	
8.001	SW45B	-0.104	0.000	0.20			2.8	OK	
1.013	SW45	0.481	0.000	0.19			5.8	SURCHARGED	
1.014	SW06	0.519	0.000	0.14			5.2	SURCHARGED	
1.015	SW46	0.592	0.000	0.09		179	4.3	SURCHARGED	
1.016	SW49	0.709	0.000	0.10			3.6	SURCHARGED	

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

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 (m³)
1.017	CW02	60 Winter	30	+0%					30.884	-0.181	0.000
1.018	CW03	120 Winter	30	+0%					30.802	-0.173	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.017	CW02	0.09			3.6	OK	
1.018	CW03	0.12			3.6	OK	

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

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 Offline Controls 0 Number of Time/Area Diagrams 12
Number of Online Controls 1 Number of Storage Structures 3 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model		FSR M5-60 (mm) 18.000	Cv (Summer) 0.750
Region England and Wales		Ratio R 0.360	Cv (Winter) 0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years)	1, 2, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	SW29	240 Winter	100	+40%	100/60 Winter				32.752
2.000	SW30	240 Winter	100	+40%	100/240 Winter				32.751
1.001	JUNCTION	120 Summer	100	+40%					32.270
1.002	SW31	240 Winter	100	+40%	100/60 Summer				32.748
1.003	SW32	240 Winter	100	+40%	100/30 Winter				32.744
1.004	SW33	240 Winter	100	+40%	100/30 Summer				32.742
3.000	SW34	240 Winter	100	+40%	100/120 Summer				32.741
1.005	JUNCTION	1440 Summer	100	+40%	100/30 Summer				31.869
4.000	SW36	240 Winter	100	+40%	100/60 Summer				32.737
1.006	JUNCTION	15 Summer	100	+40%	30/120 Summer				31.707
5.000	SW40	240 Winter	100	+40%	100/60 Summer				32.743
5.001	SW40A	240 Winter	100	+40%	30/120 Winter				32.742
5.002	SW40B	240 Winter	100	+40%	30/120 Summer				32.740
5.003	RAINWATER TANK	240 Winter	100	+40%	30/60 Winter				32.738
1.007	SW36A	240 Winter	100	+40%	30/60 Winter				32.736
1.008	SW37	240 Winter	100	+40%	30/60 Summer				32.732
6.000	SW38	240 Winter	100	+40%	100/30 Summer				32.731
1.009	JUNCTION	15 Summer	100	+40%	30/60 Summer				31.580
1.010	SW41	240 Winter	100	+40%	30/30 Winter				32.728
7.000	RE	30 Winter	100	+40%					33.971
7.001	SW42	30 Winter	100	+40%					33.741
7.002	SW43	30 Winter	100	+40%					33.542
1.011	SW44	240 Winter	100	+40%	30/30 Winter				32.724
1.012	BLOCK D TANK	240 Winter	100	+40%	30/30 Summer				32.721
8.000	SW45A	60 Winter	100	+40%					33.309
8.001	SW45B	30 Winter	100	+40%					32.777
1.013	SW45	240 Winter	100	+40%	30/30 Summer				32.717

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

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	SW29	0.432	0.000	0.20			2.7	SURCHARGED	
2.000	SW30	0.051	0.000	0.03			1.1	SURCHARGED	
1.001	JUNCTION	0.000	0.000	0.31			5.5	SURCHARGED*	
1.002	SW31	0.628	0.000	0.29			4.8	SURCHARGED	
1.003	SW32	0.764	0.000	0.18			6.6	SURCHARGED	
1.004	SW33	0.852	0.000	0.21			6.3	SURCHARGED	
3.000	SW34	0.371	0.000	0.05			2.3	SURCHARGED	
1.005	JUNCTION	0.012	0.000	0.08			3.5	SURCHARGED*	
4.000	SW36	0.567	0.000	0.01			0.3	SURCHARGED	
1.006	JUNCTION	0.001	0.000	0.41			12.3	SURCHARGED*	
5.000	SW40	0.653	0.000	0.08			2.1	SURCHARGED	
5.001	SW40A	0.942	0.000	0.18			2.8	SURCHARGED	
5.002	SW40B	1.010	0.000	0.45			4.9	SURCHARGED	
5.003	RAINWATER TANK	1.039	0.000	0.41			4.6	SURCHARGED	
1.007	SW36A	1.071	0.000	0.32			10.9	SURCHARGED	
1.008	SW37	1.128	0.000	0.36			10.4	SURCHARGED	
6.000	SW38	0.811	0.000	0.04			1.4	SURCHARGED	
1.009	JUNCTION	0.002	0.000	0.70			22.9	SURCHARGED*	
1.010	SW41	1.203	0.000	0.33			10.5	SURCHARGED	
7.000	RE	-0.129	0.000	0.05			0.7	OK	
7.001	SW42	-0.118	0.000	0.10			1.4	OK	
7.002	SW43	-0.118	0.000	0.10			1.4	OK	
1.011	SW44	1.250	0.000	0.34			10.6	SURCHARGED	
1.012	BLOCK D TANK	1.296	0.000	0.19		226	6.3	SURCHARGED	
8.000	SW45A	-0.091	0.000	0.33		35	5.7	OK	
8.001	SW45B	-0.083	0.000	0.40			5.5	OK	
1.013	SW45	1.352	0.000	0.19			5.8	SURCHARGED	

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

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 (m³)
1.014	SW06	240 Winter	100	+40%	30/15 Winter				32.714	1.385	0.000
1.015	SW46	240 Winter	100	+40%	2/60 Winter				32.709	1.454	0.000
1.016	SW49	240 Winter	100	+40%	1/120 Winter				32.705	1.568	0.000
1.017	CW02	240 Winter	100	+40%					30.888	-0.177	0.000
1.018	CW03	240 Winter	100	+40%					30.806	-0.169	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.014	SW06	0.14			5.2	SURCHARGED	
1.015	SW46	0.10			4.7	SURCHARGED	
1.016	SW49	0.11			4.3	SURCHARGED	
1.017	CW02	0.10			4.3	OK	
1.018	CW03	0.14			4.3	OK	

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