STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for SW 06

Pipe Sizes STANDARD Manhole Sizes STANDARD

FEH Rainfall Model

Return Period (years)	1	Maximum Time of Concentration (mins)	30
		Foul Sewage (l/s/ha)	0.000
FEH Rainfall Version	1999	Volumetric Runoff Coeff.	0.750
Site Location	GB 568800 245850 TL 68800 45850	PIMP (%)	100
C (1km)	-0.024	Add Flow / Climate Change (%)	0
D1 (1km)	0.285	Minimum Backdrop Height (m)	0.200
D2 (1km)	0.289	Maximum Backdrop Height (m)	1.500
D3 (1km)	0.297	Min Design Depth for Optimisation (m)	1.200
E (1km)	0.307	Min Vel for Auto Design only (m/s)	1.00
F (1km)	2.496	Min Slope for Optimisation (1:X)	500
Maximum Rainfall (mm/hr)	50		

Designed with Level Soffits

Network Design Table for SW 06

- Indicates pipe length does not match coordinates

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

Network Design Table for SW 06

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)

Network Design Table for SW 06

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	41.426	0.001	41426.0	0.000	4.00	0.0	0.600		-1	Pipe/Conduit	
2.000	35.150	0.156	225.3	0.060	4.00	0.0	0.600	o	225	Pipe/Conduit	
2.001	4.269	0.019	225.0	0.060	0.00	0.0	0.600	o	225	Pipe/Conduit	
2.002	4.148	0.160	25.9	0.060	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.001	34.684#	0.001	34684.0	0.000	0.00	0.0	0.600		-1	Pipe/Conduit	
3.000	26.753	0.394	67.9	0.060	4.00	0.0	0.600	o	225	Pipe/Conduit	
3.001	33.176	2.425	13.7	0.060	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)
1.000	50.00	5.88	90.077	0.000	0.0	0.0	0.0	0.37	3847.0	0.0
2.000	50.00	4.68	90.800	0.060	0.0	0.0	0.0	0.87	34.5	8.1
2.001	50.00	4.76	90.644	0.120	0.0	0.0	0.0	0.87	34.5	16.2
2.002	50.00	4.78	90.550	0.180	0.0	0.0	0.0	3.10	219.1	24.4
1.001	50.00	7.32	90.076	0.180	0.0	0.0	0.0	0.40	4214.0	24.4
3.000	50.00	4.28	94.486	0.060	0.0	0.0	0.0	1.59	63.2	8.1
3.001	50.00	4.44	94.092	0.120	0.0	0.0	0.0	3.56	141.4	16.2

Network Design Table for SW 06

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
4.000	49.994	1.165	42.9	0.060	4.00	0.0	0.600	o	100	Pipe/Conduit	
3.002	32.300	0.543	59.5	0.060	0.00	0.0	0.600	o	300	Pipe/Conduit	
5.000	12.407	0.634	19.6	0.060	4.00	0.0	0.600	o	225	Pipe/Conduit	
5.001	30.726	1.362	22.6	0.060	0.00	0.0	0.600	o	300	Pipe/Conduit	
5.002	17.981	0.250	71.9	0.060	0.00	0.0	0.600	o	375	Pipe/Conduit	
3.003	50.876	0.800	63.6	0.060	0.00	0.0	0.600	o	300	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
4.000	50.00	4.71	92.957	0.060	0.0	0.0	0.0	1.18	9.3	8.1
3.002	50.00	4.97	91.592	0.240	0.0	0.0	0.0	2.04	144.4	32.5
5.000	50.00	4.07	93.445	0.060	0.0	0.0	0.0	2.97	118.2	8.1
5.001	50.00	4.22	92.736	0.120	0.0	0.0	0.0	3.32	235.0	16.2
5.002	50.00	4.36	91.299	0.180	0.0	0.0	0.0	2.14	236.2	24.4
3.003	50.00	5.40	91.049	0.480	0.0	0.0	0.0	1.97	139.6	65.0

Network Design Table for SW 06

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
3.004	8.450	0.174	48.6	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.002	7.353	0.600	12.3	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
3.004	50.00	5.46	90.249	0.480	0.0	0.0	0.0	2.26	159.9	65.0
1.002	50.00	7.35	90.075	0.660	0.0	0.0	0.0	4.52	319.2	89.4

Conduit Sections for SW 06

NOTE: Diameters less than 66 refer to section numbers of hydraulic conduits. These conduits are marked by the symbols:- [] box culvert, \/ open channel, oo dual pipe, ooo triple pipe, O egg.

Section numbers < 0 are taken from user conduit table

Section Number	Conduit Type	Major Dimn. (mm)	Minor Dimn. (mm)	Side Slope (Deg)	Corner Splay (mm)	4*Hyd Radius (m)	XSect Area (m^2)
-1		10000	1500			3.922	10.500

Manhole Schedules for SW 06

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)
S6.01	92.170	2.093	Junction		1.000	90.077	-1				
S6.02	92.433	1.633	Open Manhole	1200	2.000	90.800	225				
S6.03	91.500	0.856	Open Manhole	1200	2.001	90.644	225	2.000	90.644	225	
S6.04	91.500	0.950	Open Manhole	1200	2.002	90.550	300	2.001	90.625	225	
S6.05	91.300	1.224	Open Manhole	10000	1.001	90.076	-1	1.000	90.076	-1	
								2.002	90.390	300	
S6.06	96.088	1.602	Open Manhole	1200	3.000	94.486	225				
S6.07	94.882	0.790	Open Manhole	1200	3.001	94.092	225	3.000	94.092	225	
S6.08	94.496	1.539	Open Manhole	1200	4.000	92.957	100				
S6.09	93.563	1.971	Open Manhole	1200	3.002	91.592	300	3.001	91.667	225	
								4.000	91.792	100	
S6.10	94.746	1.301	Open Manhole	1200	5.000	93.445	225				
S6.11	94.248	1.512	Open Manhole	1200	5.001	92.736	300	5.000	92.811	225	
S6.12	93.100	1.801	Open Manhole	1350	5.002	91.299	375	5.001	91.374	300	
S6.13	93.052	2.003	Open Manhole	1350	3.003	91.049	300	3.002	91.049	300	
								5.002	91.049	375	
S6.14	91.300	1.051	Open Manhole	1200	3.004	90.249	300	3.003	90.249	300	
S6.15 FC	91.300	1.225	Open Manhole	1800	1.002	90.075	300	1.001	90.075	-1	
								3.004	90.075	300	

Manhole Schedules for SW 06

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)
S6.O1	90.972	1.497	Open Manhole	0		OUTFALL		1.002	89.475	300	

PIPELINE SCHEDULES for SW 06

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)
1.000		-1	S6.01	92.170	90.077	0.593	Junction	
2.000	o	225	S6.02	92.433	90.800	1.408	Open Manhole	1200
2.001	o	225	S6.03	91.500	90.644	0.631	Open Manhole	1200
2.002	o	300	S6.04	91.500	90.550	0.650	Open Manhole	1200
1.001		-1	S6.05	91.300	90.076	-0.276	Open Manhole	10000

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	41.426	41426.0	S6.05	91.300	90.076	-0.276	Open Manhole	10000
2.000	35.150	225.3	S6.03	91.500	90.644	0.631	Open Manhole	1200
2.001	4.269	225.0	S6.04	91.500	90.625	0.650	Open Manhole	1200
2.002	4.148	25.9	S6.05	91.300	90.390	0.610	Open Manhole	10000
1.001	34.684#	34684.0	S6.15 FC	91.300	90.075	-0.275	Open Manhole	1800

PIPELINE SCHEDULES for SW 06

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)
3.000	o	225	S6.06	96.088	94.486	1.377	Open Manhole	1200
3.001	o	225	S6.07	94.882	94.092	0.565	Open Manhole	1200
4.000	o	100	S6.08	94.496	92.957	1.439	Open Manhole	1200
3.002	o	300	S6.09	93.563	91.592	1.671	Open Manhole	1200
5.000	o	225	S6.10	94.746	93.445	1.076	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)
3.000	26.753	67.9	S6.07	94.882	94.092	0.565	Open Manhole	1200
3.001	33.176	13.7	S6.09	93.563	91.667	1.671	Open Manhole	1200
4.000	49.994	42.9	S6.09	93.563	91.792	1.671	Open Manhole	1200
3.002	32.300	59.5	S6.13	93.052	91.049	1.703	Open Manhole	1350
5.000	12.407	19.6	S6.11	94.248	92.811	1.212	Open Manhole	1200

PIPELINE SCHEDULES for SW 06

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)
5.001	o	300	S6.11	94.248	92.736	1.212	Open Manhole	1200
5.002	o	375	S6.12	93.100	91.299	1.426	Open Manhole	1350
3.003	o	300	S6.13	93.052	91.049	1.703	Open Manhole	1350
3.004	o	300	S6.14	91.300	90.249	0.751	Open Manhole	1200
1.002	o	300	S6.15 FC	91.300	90.075	0.925	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)
5.001	30.726	22.6	S6.12	93.100	91.374	1.426	Open Manhole	1350
5.002	17.981	71.9	S6.13	93.052	91.049	1.628	Open Manhole	1350
3.003	50.876	63.6	S6.14	91.300	90.249	0.751	Open Manhole	1200
3.004	8.450	48.6	S6.15 FC	91.300	90.075	0.925	Open Manhole	1800
1.002	7.353	12.3	S6.O1	90.972	89.475	1.197	Open Manhole	0

Area Summary for SW 06

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.000	0.000	0.000
2.000	-	-	100	0.060	0.060	0.060
2.001	-	-	100	0.060	0.060	0.060
2.002	-	-	100	0.060	0.060	0.060
1.001	-	-	100	0.000	0.000	0.000
3.000	-	-	100	0.060	0.060	0.060
3.001	-	-	100	0.060	0.060	0.060
4.000	-	-	100	0.060	0.060	0.060
3.002	-	-	100	0.060	0.060	0.060
5.000	-	-	100	0.060	0.060	0.060
5.001	-	-	100	0.060	0.060	0.060
5.002	-	-	100	0.060	0.060	0.060
3.003	-	-	100	0.060	0.060	0.060
3.004	-	-	100	0.000	0.000	0.000
1.002	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				0.660	0.660	0.660

Free Flowing Outfall Details for SW 06

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.002	S6.O1	90.972	89.475	0.000	0	0

Simulation Criteria for SW 06

Volumetric Runoff Coeff	0.840	Manhole Headloss Coeff (Global)	0.500	Inlet Coeffiecient	0.800
Areal Reduction Factor	1.000	Foul Sewage per hectare (l/s)	0.000	Flow per Person per Day (l/per/day)	0.000
Hot Start (mins)	0	Additional Flow - % of Total Flow	0.000	Run Time (mins)	60
Hot Start Level (mm)	0	MADD Factor * 10m³/ha Storage	2.000	Output Interval (mins)	1

Number of Input Hydrographs 0	Number of Offline Controls 0	Number of Time/Area Diagrams 0
Number of Online Controls 1	Number of Storage Structures 0	Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	M5-60 (mm)	21.000	Cv (Summer)	0.750
Return Period (years)	100	Ratio R	0.423	Cv (Winter)	0.840
Region	England and Wales	Profile Type	Winter	Storm Duration (mins)	15

Online Controls for SW 06

Complex Manhole: S6.15 FC, DS/PN: 1.002, Volume (m³): 305.8

Hydro-Brake® Optimum

Unit Reference	MD-SHE-0061-1200-0300-1200	Sump Available	Yes
Design Head (m)	0.300	Diameter (mm)	61
Design Flow (l/s)	1.2	Invert Level (m)	90.075
Flush-Flo™	Calculated	Minimum Outlet Pipe Diameter (mm)	75
Objective	Minimise upstream storage	Suggested Manhole Diameter (mm)	1200
Application	Surface		

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.300	1.2	Kick-Flo®	0.218	1.0
Flush-Flo™	0.094	1.2	Mean Flow over Head Range	-	1.0

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	1.2	0.600	1.6	1.600	2.6	2.600	3.2	5.000	4.4	7.500	5.4
0.200	1.1	0.800	1.9	1.800	2.7	3.000	3.4	5.500	4.6	8.000	5.6
0.300	1.2	1.000	2.1	2.000	2.8	3.500	3.7	6.000	4.8	8.500	5.8
0.400	1.4	1.200	2.2	2.200	3.0	4.000	3.9	6.500	5.0	9.000	5.9
0.500	1.5	1.400	2.4	2.400	3.1	4.500	4.2	7.000	5.2	9.500	6.1

Orifice

Diameter (m) 0.055 Discharge Coefficient 0.600 Invert Level (m) 90.875

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW 06

Simulation Criteria

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

Number of Input Hydrographs	0	Number of Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	1	Number of Storage Structures	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH	D3 (1km)	0.297
FEH Rainfall Version	1999	E (1km)	0.307
Site Location	GB 568800 245850 TL 68800 45850	F (1km)	2.496
C (1km)	-0.024	Cv (Summer)	0.750
D1 (1km)	0.285	Cv (Winter)	0.840
D2 (1km)	0.289		

Margin for Flood Risk Warning (mm) 300.0 DTS Status ON Inertia Status OFF
Analysis Timestep Medium DVD Status ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 30

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW 06

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW 06

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)
1.000	S6.01	480 Winter	1	+0%					90.488	-1.089	0.000	0.00		0.0
2.000	S6.02	15 Winter	1	+0%	30/15 Summer				90.882	-0.143	0.000	0.28		9.1
2.001	S6.03	15 Winter	1	+0%	30/15 Summer				90.777	-0.092	0.000	0.66		16.3
2.002	S6.04	15 Winter	1	+0%	100/15 Summer				90.648	-0.202	0.000	0.23		23.5
1.001	S6.05	480 Winter	1	+0%					90.489	-1.087	0.000	0.00		1.8
3.000	S6.06	15 Winter	1	+0%	100/15 Summer				94.546	-0.165	0.000	0.16		9.4
3.001	S6.07	15 Winter	1	+0%	100/15 Summer				94.145	-0.172	0.000	0.13		16.9
4.000	S6.08	15 Winter	1	+0%	30/15 Summer	30/15 Summer			93.052	-0.005	0.000	1.00		9.1
3.002	S6.09	15 Winter	1	+0%	30/15 Summer	100/15 Summer			91.694	-0.198	0.000	0.25		33.2
5.000	S6.10	15 Winter	1	+0%	100/15 Summer				93.491	-0.179	0.000	0.09		9.4
5.001	S6.11	15 Winter	1	+0%	100/15 Summer				92.792	-0.244	0.000	0.08		16.9
5.002	S6.12	15 Winter	1	+0%	30/15 Summer	100/15 Summer			91.387	-0.287	0.000	0.12		24.3
3.003	S6.13	15 Winter	1	+0%	30/15 Summer	100/15 Summer			91.199	-0.150	0.000	0.50		65.3
3.004	S6.14	480 Winter	1	+0%	30/15 Summer	100/15 Winter			90.490	-0.059	0.000	0.07		7.7
1.002	S6.15 FC	480 Winter	1	+0%	1/120 Winter				90.489	0.114	0.000	0.01		1.4

PN	US/MH Name	Status	Level Exceeded
1.000	S6.01	OK	
2.000	S6.02	OK	
2.001	S6.03	OK	
2.002	S6.04	OK	

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW 06

PN	US/MH Name	Status	Level Exceeded
1.001	S6.05	OK	
3.000	S6.06	OK	
3.001	S6.07	OK	
4.000	S6.08	OK	8
3.002	S6.09	OK	2
5.000	S6.10	OK	
5.001	S6.11	OK	
5.002	S6.12	OK	4
3.003	S6.13	OK	4
3.004	S6.14	OK	1
1.002	S6.15 FC	SURCHARGED	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW 06

Simulation Criteria

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

Number of Input Hydrographs	0	Number of Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	1	Number of Storage Structures	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH	D3 (1km)	0.297
FEH Rainfall Version	1999	E (1km)	0.307
Site Location	GB 568800 245850 TL 68800 45850	F (1km)	2.496
C (1km)	-0.024	Cv (Summer)	0.750
D1 (1km)	0.285	Cv (Winter)	0.840
D2 (1km)	0.289		

Margin for Flood Risk Warning (mm) 300.0 DTS Status ON Inertia Status OFF

Analysis Timestep Medium DVD Status ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 30

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW 06

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW 06

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)
1.000	S6.01	480 Winter	30	+0%					90.821	-0.756	0.000	0.00		0.1
2.000	S6.02	15 Winter	30	+0%	30/15 Summer				91.133	0.108	0.000	0.87		28.2
2.001	S6.03	15 Winter	30	+0%	30/15 Summer				91.006	0.137	0.000	2.25		55.8
2.002	S6.04	480 Winter	30	+0%	100/15 Summer				90.821	-0.029	0.000	0.07		6.9
1.001	S6.05	480 Winter	30	+0%					90.821	-0.755	0.000	0.00		1.6
3.000	S6.06	15 Winter	30	+0%	100/15 Summer				94.600	-0.111	0.000	0.51		29.8
3.001	S6.07	15 Summer	30	+0%	100/15 Summer				94.198	-0.119	0.000	0.45		59.7
4.000	S6.08	15 Winter	30	+0%	30/15 Summer	30/15 Summer			94.498	1.441	1.801	1.50		13.7
3.002	S6.09	15 Winter	30	+0%	30/15 Summer	100/15 Summer			92.535	0.643	0.000	0.66		86.9
5.000	S6.10	15 Winter	30	+0%	100/15 Summer				93.528	-0.142	0.000	0.29		29.9
5.001	S6.11	15 Winter	30	+0%	100/15 Summer				92.844	-0.192	0.000	0.28		59.7
5.002	S6.12	15 Winter	30	+0%	30/15 Summer	100/15 Summer			92.461	0.787	0.000	0.35		68.6
3.003	S6.13	15 Winter	30	+0%	30/15 Summer	100/15 Summer			92.306	0.957	0.000	1.33		175.0
3.004	S6.14	15 Winter	30	+0%	30/15 Summer	100/15 Winter			90.897	0.348	0.000	1.64		171.2
1.002	S6.15 FC	480 Winter	30	+0%	1/120 Winter				90.821	0.446	0.000	0.01		1.8

PN	US/MH Name	Status	Level Exceeded
1.000	S6.01	OK	
2.000	S6.02	SURCHARGED	
2.001	S6.03	SURCHARGED	
2.002	S6.04	OK	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW 06

PN	US/MH Name	Status	Level Exceeded
1.001	S6.05	OK	
3.000	S6.06	OK	
3.001	S6.07	OK	
4.000	S6.08	FLOOD	8
3.002	S6.09	SURCHARGED	2
5.000	S6.10	OK	
5.001	S6.11	OK	
5.002	S6.12	SURCHARGED	4
3.003	S6.13	SURCHARGED	4
3.004	S6.14	SURCHARGED	1
1.002	S6.15 FC	SURCHARGED	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW 06

Simulation Criteria

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

Number of Input Hydrographs	0	Number of Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	1	Number of Storage Structures	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH	D3 (1km)	0.297
FEH Rainfall Version	1999	E (1km)	0.307
Site Location	GB 568800 245850 TL 68800 45850	F (1km)	2.496
C (1km)	-0.024	Cv (Summer)	0.750
D1 (1km)	0.285	Cv (Winter)	0.840
D2 (1km)	0.289		

Margin for Flood Risk Warning (mm) 300.0 DTS Status ON Inertia Status OFF

Analysis Timestep Medium DVD Status ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 30

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW 06

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW 06

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)
1.000	S6.01	600 Winter	100	+30%					91.129	-0.448	0.000	0.00		0.1
2.000	S6.02	15 Winter	100	+30%	30/15 Summer				91.984	0.959	0.000	1.66		54.1
2.001	S6.03	15 Winter	100	+30%	30/15 Summer				91.497	0.628	0.000	4.04		100.3
2.002	S6.04	600 Winter	100	+30%	100/15 Summer				91.130	0.280	0.000	0.10		9.6
1.001	S6.05	600 Winter	100	+30%					91.130	-0.446	0.000	0.00		3.9
3.000	S6.06	15 Winter	100	+30%	100/15 Summer				95.163	0.452	0.000	0.87		51.2
3.001	S6.07	15 Winter	100	+30%	100/15 Summer				94.875	0.558	0.000	0.73		97.1
4.000	S6.08	15 Winter	100	+30%	30/15 Summer	30/15 Summer			94.511	1.454	14.153	1.50		13.7
3.002	S6.09	15 Winter	100	+30%	30/15 Summer	100/15 Summer			93.569	1.677	5.297	0.97		127.7
5.000	S6.10	15 Winter	100	+30%	100/15 Summer				93.717	0.047	0.000	0.56		56.8
5.001	S6.11	15 Winter	100	+30%	100/15 Summer				93.510	0.474	0.000	0.53		113.4
5.002	S6.12	15 Winter	100	+30%	30/15 Summer	100/15 Summer			93.120	1.446	19.980	0.60		117.8
3.003	S6.13	15 Winter	100	+30%	30/15 Summer	100/15 Summer			93.065	1.716	12.947	1.58		208.3
3.004	S6.14	15 Winter	100	+30%	30/15 Summer	100/15 Winter			91.300	0.751	0.126	1.94		202.7
1.002	S6.15 FC	600 Winter	100	+30%	1/120 Winter				91.130	0.755	0.000	0.03		5.1

PN	US/MH Name	Status	Level Exceeded
1.000	S6.01	OK	
2.000	S6.02	SURCHARGED	
2.001	S6.03	FLOOD RISK	
2.002	S6.04	SURCHARGED	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW 06

PN	US/MH Name	Status	Level Exceeded
1.001	S6.05	FLOOD RISK	
3.000	S6.06	SURCHARGED	
3.001	S6.07	FLOOD RISK	
4.000	S6.08	FLOOD	8
3.002	S6.09	FLOOD	2
5.000	S6.10	SURCHARGED	
5.001	S6.11	SURCHARGED	
5.002	S6.12	FLOOD	4
3.003	S6.13	FLOOD	4
3.004	S6.14	FLOOD	1
1.002	S6.15 FC	FLOOD RISK	