


David R Murray and Associates LLP		Page 1
150-156 St Johns Road Edinburgh RH12 8AY		
Date 15/10/2015 14:24 File sw3.mdx	Designed by Checked by	
XP Solutions	Network 2015.1	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for SW3.SWS






Pipe Sizes SW1 Manhole Sizes SW1

FSR Rainfall Model - Scotland and Ireland

Return Period (years)	30	Add Flow / Climate Change (%)	20
M5-60 (mm)	14.000	Minimum Backdrop Height (m)	0.000
Ratio R	0.300	Maximum Backdrop Height (m)	0.000
Maximum Rainfall (mm/hr)	50	Min Design Depth for Optimisation (m)	1.500
Maximum Time of Concentration (mins)	30	Min Vel for Auto Design only (m/s)	1.00
Foul Sewage (l/s/ha)	0.000	Min Slope for Optimisation (1:X)	300
Volumetric Runoff Coeff.	0.750		


Designed with Level Soffits

Network Design Table for SW3.SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
1.000	24.882	0.612	40.7	0.048	5.00	0.0	0.600	o	150	
2.000	13.557	0.134	101.2	0.050	5.00	0.0	0.600	o	150	
1.001	4.245	0.107	39.8	0.000	0.00	0.0	0.600	o	150	
1.002	16.152	0.762	21.2	0.000	0.00	0.0	0.600	o	150	
1.003	10.988	0.111	99.0	0.000	0.00	0.0	0.600	o	150	

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	5.26	129.971	0.048	0.0	0.0	1.3	1.58	28.0	7.8
2.000	50.00	5.23	129.026	0.050	0.0	0.0	1.4	1.00	17.7	8.1
1.001	50.00	5.31	128.892	0.098	0.0	0.0	2.7	1.60	28.3	15.9
1.002	50.00	5.43	128.785	0.098	0.0	0.0	2.7	2.20	38.8	15.9
1.003	50.00	5.61	128.023	0.098	0.0	0.0	2.7	1.01	17.8	15.9


David R Murray and Associates LLP		Page 2
150-156 St Johns Road Edinburgh RH12 8AY		
Date 15/10/2015 14:24 File sw3.mdx	Designed by XXXXXXXXXX Checked by	
XP Solutions		Network 2015.1

Manhole Schedules for SW3.SWS

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
200	131.621	1.650	Open Manhole	1200	1.000	129.971	150				
205	130.676	1.650	Open Manhole	1200	2.000	129.026	150				
201	131.010	2.117	Open Manhole	1200	1.001	128.892	150	1.000	129.359	150	467
								2.000	128.892	150	
202	130.435	1.649	Open Manhole	1200	1.002	128.785	150	1.001	128.785	150	
203	129.673	1.650	Open Manhole	2100	1.003	128.023	150	1.002	128.023	150	
204	130.063	2.150	Open Manhole	0		OUTFALL		1.003	127.912	150	

Free Flowing Outfall Details for SW3.SWS

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D, L (mm)	W (mm)
1.003	204	130.063	127.912	118.600	0	0

David R Murray and Associates LLP		Page 3
150-156 St Johns Road Edinburgh RH12 8AY		
Date 15/10/2015 14:24 File sw3.mdx	Designed by XXXXXXXXXX Checked by	
XP Solutions	Network 2015.1	

Online Controls for SW3.SWS

Complex Manhole: 203, DS/PN: 1.003, Volume (m³): 6.0

Hydro-Brake Optimum®

Unit Reference MD-SHE-0098-4500-1150-4500
Design Head (m) 1.150
Design Flow (l/s) 4.5
Flush-Flo™ Calculated
Objective Minimise upstream storage
Diameter (mm) 98
Invert Level (m) 128.023
Minimum Outlet Pipe Diameter (mm) 150
Suggested Manhole Diameter (mm) 1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.150	4.5
Flush-Flo™	0.342	4.5
Kick-Flo®	0.717	3.6
Mean Flow over Head Range	-	3.9

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	3.2	1.200	4.6	3.000	7.0	7.000	10.5
0.200	4.3	1.400	4.9	3.500	7.5	7.500	10.8
0.300	4.5	1.600	5.2	4.000	8.0	8.000	11.2
0.400	4.5	1.800	5.5	4.500	8.5	8.500	11.5
0.500	4.4	2.000	5.8	5.000	8.9	9.000	11.8
0.600	4.2	2.200	6.1	5.500	9.3	9.500	12.1
0.800	3.8	2.400	6.3	6.000	9.7		
1.000	4.2	2.600	6.6	6.500	10.1		

Weir

Discharge Coef 0.544 Width (m) 2.100 Invert Level (m) 129.173

```
Date 15/10/2015 14:24
File sw3.mdx
```

Checked by




Network 2015.1

Storage Structures for SW3.SWS

Cellular Storage Manhole: 202, DS/PN: 1.002

Invert Level (m)	128.785	Safety Factor	2.0
Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.95
Infiltration Coefficient Side (m/hr)	0.00000		

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	48.0	48.0	0.801	0.0	70.2
0.800	48.0	70.2			

David R Murray and Associates LLP		Page 5
150-156 St Johns Road Edinburgh RH12 8AY		
Date 15/10/2015 14:24 File sw3.mdx	Designed by XXXXXXXXXX Checked by	
XP Solutions	Network 2015.1	

Summary Wizard of 15 minute 30 year Winter I+0% for SW3.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	20.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

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


Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.300
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	14.000	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	OFF

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	0, 0, 0

			Water	Surcharged	Flooded		Pipe	
PN	US/MH Name	Storm Rank	Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s) Status
1.000	200	5	130.044	-0.077	0.000	0.46	12.3	OK
2.000	205	5	129.161	-0.015	0.000	0.77	12.4	OK
1.001	201	7	129.081	0.039	0.000	1.20	24.6	SURCHARGED
1.002	202	17	128.912	-0.024	0.000	0.50	18.1	OK
1.003	203	17	128.895	0.722	0.000	0.28	4.4	SURCHARGED

David R Murray and Associates LLP		Page 6
150-156 St Johns Road Edinburgh RH12 8AY		
Date 15/10/2015 14:24 File sw3.mdx	Designed by XXXXXXXXXX Checked by	
XP Solutions	Network 2015.1	

Summary Wizard of 30 minute 30 year Winter I+0% for SW3.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	20.000
Hot Start (mins)	0	MADD Factor * 10m ³ /ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

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


Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.300
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	14.000	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	OFF

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	0, 0, 0

			Water	Surcharged	Flooded		Pipe	
PN	US/MH Name	Storm Rank	Level (m)	Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)
1.000	200	7	130.035	-0.086	0.000	0.38		10.1 OK
2.000	205	7	129.115	-0.061	0.000	0.65		10.6 OK
1.001	201	11	129.021	-0.021	0.000	1.00		20.5 OK
1.002	202	13	128.946	0.010	0.000	0.46		16.4 SURCHARGED
1.003	203	13	128.928	0.755	0.000	0.28		4.4 SURCHARGED

David R Murray and Associates LLP		Page 7
150-156 St Johns Road Edinburgh RH12 8AY		
Date 15/10/2015 14:24 File sw3.mdx	Designed by <div></div> Checked by	
XP Solutions Network 2015.1		

Summary Wizard of 60 minute 30 year Winter I+0% for SW3.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	20.000
Hot Start (mins)	0	MADD Factor * 10m ³ /ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

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


Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.300
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	14.000	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	OFF

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	0, 0, 0

			Water	Surcharged	Flooded		Pipe	
PN	US/MH Name	Storm Rank	Level (m)	Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s) Status
1.000	200	9	130.023	-0.098	0.000	0.26	7.0	OK
2.000	205	10	129.097	-0.079	0.000	0.45	7.3	OK
1.001	201	14	128.985	-0.057	0.000	0.70	14.3	OK
1.002	202	12	128.952	0.016	0.000	0.33	11.8	SURCHARGED
1.003	203	12	128.934	0.761	0.000	0.28	4.5	SURCHARGED

David R Murray and Associates LLP		Page 8
150-156 St Johns Road Edinburgh RH12 8AY		
Date 15/10/2015 14:24 File sw3.mdx	Designed by XXXXXXXXXX Checked by	
XP Solutions Network 2015.1		

Summary Wizard of 120 minute 30 year Winter I+0% for SW3.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	20.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

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

Synthetic Rainfall Details


Rainfall Model	FSR	Ratio R	0.300
Region	Scotland and Ireland Cv (Summer) 0.750		
M5-60 (mm)	14.000	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	OFF

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	0, 0, 0

	US/MH	Storm	Water Level	Surcharged Depth	Flooded Volume	Pipe Flow / Overflow	Pipe Flow	Status
PN	Name	Rank	(m)	(m)	(m³)	Cap. (l/s)	(l/s)	
1.000	200	13	130.012	-0.109	0.000	0.17	4.5	OK
2.000	205	13	129.081	-0.095	0.000	0.29	4.7	OK
1.001	201	15	128.962	-0.080	0.000	0.45	9.2	OK
1.002	202	16	128.917	-0.018	0.000	0.24	8.8	OK
1.003	203	16	128.901	0.727	0.000	0.28	4.5	SURCHARGED

©1982-2015 XP Solutions

David R Murray and Associates LLP		Page 9
150-156 St Johns Road Edinburgh RH12 8AY		
Date 15/10/2015 14:24 File sw3.mdx	Designed by XXXXXXXXXX Checked by	
XP Solutions	Network 2015.1	

Summary Wizard of 180 minute 30 year Winter I+0% for SW3.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	20.000
Hot Start (mins)	0	MADD Factor * 10m ³ /ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

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


Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.300
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	14.000	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	OFF

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	0, 0, 0

			Water	Surcharged	Flooded		Pipe	
PN	US/MH Name	Storm Rank	Level (m)	Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s) Status
1.000	200	17	130.007	-0.114	0.000	0.13	3.4	OK
2.000	205	17	129.074	-0.102	0.000	0.22	3.6	OK
1.001	201	17	128.953	-0.089	0.000	0.34	7.0	OK
1.002	202	18	128.874	-0.061	0.000	0.19	6.9	OK
1.003	203	18	128.857	0.684	0.000	0.28	4.5	SURCHARGED

David R Murray and Associates LLP		Page 10
150-156 St Johns Road Edinburgh RH12 8AY		
Date 15/10/2015 14:24 File sw3.mdx	Designed by <div></div> Checked by	
XP Solutions Network 2015.1		

Summary Wizard of 240 minute 30 year Winter I+0% for SW3.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	20.000
Hot Start (mins)	0	MADD Factor * 10m ³ /ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

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


Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.300
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	14.000	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	OFF

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	0, 0, 0

			Water	Surcharged	Flooded		Pipe	
PN	US/MH Name	Storm Rank	Level (m)	Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s) Status
1.000	200	19	130.003	-0.118	0.000	0.11	2.8	OK
2.000	205	19	129.069	-0.107	0.000	0.18	2.9	OK
1.001	201	19	128.946	-0.096	0.000	0.28	5.8	OK
1.002	202	21	128.831	-0.104	0.000	0.16	5.7	OK
1.003	203	21	128.815	0.641	0.000	0.28	4.5	SURCHARGED

David R Murray and Associates LLP		Page 11
150-156 St Johns Road Edinburgh RH12 8AY		
Date 15/10/2015 14:24 File sw3.mdx	Designed by XXXXXXXXXX Checked by	
XP Solutions	Network 2015.1	

Summary Wizard of 360 minute 30 year Winter I+0% for SW3.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	20.000
Hot Start (mins)	0	MADD Factor * 10m ³ /ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

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


Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.300
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	14.000	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	OFF

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	0, 0, 0

				Water	Surcharged	Flooded		Pipe	
	US/MH	Storm		Level	Depth	Volume	Flow /	Overflow	Pipe
PN	Name	Rank		(m)	(m)	(m³)	Cap.	(l/s)	(l/s)
									Status
1.000	200	24	129.999	-0.122	0.000	0.08		2.1	OK
2.000	205	24	129.063	-0.113	0.000	0.14		2.2	OK
1.001	201	24	128.939	-0.103	0.000	0.21		4.4	OK
1.002	202	24	128.820	-0.116	0.000	0.12		4.3	OK
1.003	203	24	128.211	0.038	0.000	0.26		4.2	SURCHARGED

David R Murray and Associates LLP		Page 12
150-156 St Johns Road Edinburgh RH12 8AY		
Date 15/10/2015 14:24 File sw3.mdx	Designed by XXXXXXXXXX Checked by	
XP Solutions Network 2015.1		

Summary Wizard of 480 minute 30 year Winter I+0% for SW3.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	20.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

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

Synthetic Rainfall Details


Rainfall Model	FSR	Ratio R	0.300
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	14.000	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	OFF

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	0, 0, 0

			Water	Surcharged	Flooded		Pipe	
PN	US/MH Name	Storm Rank	Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s) Status
1.000	200	27	129.996	-0.125	0.000	0.07	1.7	OK
2.000	205	27	129.059	-0.117	0.000	0.11	1.8	OK
1.001	201	27	128.934	-0.108	0.000	0.17	3.6	OK
1.002	202	27	128.817	-0.119	0.000	0.10	3.6	OK
1.003	203	27	128.135	-0.039	0.000	0.22	3.5	OK

©1982-2015 XP Solutions

David R Murray and Associates LLP		Page 13
150-156 St Johns Road Edinburgh RH12 8AY		
Date 15/10/2015 14:24 File sw3.mdx	Designed by Checked by	
XP Solutions	Network 2015.1	

Summary Wizard of 600 minute 30 year Winter I+0% for SW3.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	20.000
Hot Start (mins)	0	MADD Factor * 10m ³ /ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

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


Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.300
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	14.000	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	OFF

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	0, 0, 0

			Water	Surcharged	Flooded		Pipe	
PN	US/MH Name	Storm Rank	Level (m)	Depth (m)	Volume (m³)	Flow / Cap. (l/s)	Overflow (l/s)	Pipe Flow (l/s) Status
1.000	200	30	129.994	-0.127	0.000	0.06	1.5	OK
2.000	205	30	129.057	-0.119	0.000	0.10	1.6	OK
1.001	201	30	128.930	-0.112	0.000	0.15	3.0	OK
1.002	202	30	128.814	-0.121	0.000	0.08	3.0	OK
1.003	203	30	128.118	-0.055	0.000	0.19	3.0	OK

David R Murray and Associates LLP		Page 14
150-156 St Johns Road Edinburgh RH12 8AY		
Date 15/10/2015 14:24 File sw3.mdx	Designed by <div></div> Checked by	
XP Solutions Network 2015.1		

Summary Wizard of 720 minute 30 year Winter I+0% for SW3.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	20.000
Hot Start (mins)	0	MADD Factor * 10m ³ /ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

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


Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.300
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	14.000	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	OFF

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	0, 0, 0

			Water	Surcharged	Flooded		Pipe	
PN	US/MH Name	Storm Rank	Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s) Status
1.000	200	32	129.992	-0.129	0.000	0.05	1.3	OK
2.000	205	32	129.055	-0.121	0.000	0.08	1.4	OK
1.001	201	32	128.928	-0.114	0.000	0.13	2.7	OK
1.002	202	32	128.812	-0.123	0.000	0.07	2.7	OK
1.003	203	32	128.108	-0.065	0.000	0.17	2.7	OK

David R Murray and Associates LLP		Page 15
150-156 St Johns Road Edinburgh RH12 8AY		
Date 15/10/2015 14:24 File sw3.mdx	Designed by XXXXXXXXXX Checked by	
XP Solutions	Network 2015.1	

Summary Wizard of 960 minute 30 year Winter I+0% for SW3.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	20.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

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


Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.300
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	14.000	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	OFF

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	0, 0, 0

			Water	Surcharged	Flooded		Pipe	
PN	US/MH Name	Storm Rank	Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s) Status
1.000	200	34	129.990	-0.131	0.000	0.04	1.1	OK
2.000	205	34	129.052	-0.124	0.000	0.07	1.1	OK
1.001	201	34	128.924	-0.118	0.000	0.11	2.2	OK
1.002	202	34	128.809	-0.126	0.000	0.06	2.2	OK
1.003	203	34	128.096	-0.077	0.000	0.14	2.2	OK

David R Murray and Associates LLP		Page 16
150-156 St Johns Road Edinburgh RH12 8AY		
Date 15/10/2015 14:24 File sw3.mdx	Designed by XXXXXXXXXX Checked by	
XP Solutions	Network 2015.1	

Summary Wizard of 1440 minute 30 year Winter I+0% for SW3.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	20.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

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


Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.300
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	14.000	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	OFF

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	0, 0, 0

			Water	Surcharged	Flooded		Pipe	
PN	US/MH Name	Storm Rank	Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s) Status
1.000	200	36	129.988	-0.133	0.000	0.03	0.8	OK
2.000	205	36	129.048	-0.128	0.000	0.05	0.8	OK
1.001	201	36	128.920	-0.122	0.000	0.08	1.6	OK
1.002	202	36	128.806	-0.130	0.000	0.05	1.6	OK
1.003	203	36	128.084	-0.090	0.000	0.10	1.6	OK

David R Murray and Associates LLP		Page 17
150-156 St Johns Road Edinburgh RH12 8AY		
Date 15/10/2015 14:24 File sw3.mdx	Designed by XXXXXXXXXX Checked by	
XP Solutions Network 2015.1		

Summary Wizard of 15 minute 100 year Winter I+0% for SW3.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	20.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

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

Synthetic Rainfall Details


Rainfall Model	FSR	Ratio R	0.300
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	14.000	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	OFF

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	0, 0, 0

	US/MH	Storm	Water Level	Surcharged Depth	Flooded Volume	Pipe Flow / Overflow	Pipe Flow	Status
PN	Name	Rank	(m)	(m)	(m³)	Cap. (l/s)	(l/s)	
1.000	200	2	130.056	-0.065	0.000	0.60	15.9	OK
2.000	205	2	129.308	0.132	0.000	0.97	15.6	SURCHARGED
1.001	201	2	129.176	0.134	0.000	1.52	31.2	SURCHARGED
1.002	202	11	128.974	0.039	0.000	0.56	20.1	SURCHARGED
1.003	203	11	128.956	0.783	0.000	0.27	4.4	SURCHARGED

©1982-2015 XP Solutions

David R Murray and Associates LLP		Page 18
150-156 St Johns Road Edinburgh RH12 8AY		
Date 15/10/2015 14:24 File sw3.mdx	Designed by XXXXXXXXXX Checked by	
XP Solutions Network 2015.1		

Summary Wizard of 30 minute 100 year Winter I+0% for SW3.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	20.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

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

Synthetic Rainfall Details


Rainfall Model	FSR	Ratio R	0.300
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	14.000	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	OFF

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	0, 0, 0

	US/MH	Storm	Water Level	Surcharged Depth	Flooded Volume	Pipe Flow / Overflow	Pipe Flow	Status
PN	Name	Rank	(m)	(m)	(m³)	Cap. (l/s)	(l/s)	
1.000	200	4	130.046	-0.075	0.000	0.50	13.2	OK
2.000	205	4	129.200	0.024	0.000	0.82	13.3	SURCHARGED
1.001	201	5	129.107	0.065	0.000	1.29	26.4	SURCHARGED
1.002	202	6	129.029	0.094	0.000	0.45	16.3	SURCHARGED
1.003	203	6	129.011	0.838	0.000	0.28	4.4	SURCHARGED

©1982-2015 XP Solutions

David R Murray and Associates LLP		Page 19
150-156 St Johns Road Edinburgh RH12 8AY		
Date 15/10/2015 14:24 File sw3.mdx	Designed by XXXXXXXXXX Checked by	
XP Solutions	Network 2015.1	

Summary Wizard of 60 minute 100 year Winter I+0% for SW3.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	20.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

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


Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.300
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	14.000	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	OFF

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	0, 0, 0

			Water	Surcharged	Flooded		Pipe	
PN	US/MH Name	Storm Rank	Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s) Status
1.000	200	8	130.032	-0.089	0.000	0.34	9.2	OK
2.000	205	9	129.109	-0.067	0.000	0.59	9.5	OK
1.001	201	9	129.056	0.014	0.000	0.91	18.7	SURCHARGED
1.002	202	5	129.048	0.113	0.000	0.36	13.1	SURCHARGED
1.003	203	5	129.030	0.857	0.000	0.28	4.4	SURCHARGED

David R Murray and Associates LLP		Page 20
150-156 St Johns Road Edinburgh RH12 8AY		
Date 15/10/2015 14:24 File sw3.mdx	Designed by XXXXXXXXXX Checked by	
XP Solutions Network 2015.1		

Summary Wizard of 120 minute 100 year Winter I+0% for SW3.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	20.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

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

Synthetic Rainfall Details



Rainfall Model	FSR	Ratio R	0.300
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	14.000	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	OFF

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	0, 0, 0

	US/MH	Storm	Water Level	Surcharged Depth	Flooded Volume	Pipe Flow / Overflow	Pipe Flow	Status
PN	Name	Rank	(m)	(m)	(m³)	Cap. (l/s)	(l/s)	
1.000	200	11	130.018	-0.103	0.000	0.22	5.9	OK
2.000	205	11	129.090	-0.086	0.000	0.38	6.1	OK
1.001	201	10	129.029	-0.013	0.000	0.58	12.0	OK
1.002	202	7	129.021	0.086	0.000	0.27	9.6	SURCHARGED
1.003	203	7	129.003	0.830	0.000	0.28	4.5	SURCHARGED

©1982-2015 XP Solutions

David R Murray and Associates LLP		Page 21
150-156 St Johns Road Edinburgh RH12 8AY		
Date 15/10/2015 14:24 File sw3.mdx	Designed by  Checked by	
XP Solutions Network 2015.1		

Summary Wizard of 180 minute 100 year Winter I+0% for SW3.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	20.000
Hot Start (mins)	0	MADD Factor * 10m ³ /ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

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


Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.300
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	14.000	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	OFF

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	0, 0, 0

			Water	Surcharged	Flooded		Pipe	
PN	US/MH Name	Storm Rank	Level (m)	Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s) Status
1.000	200	14	130.012	-0.109	0.000	0.17	4.4	OK
2.000	205	14	129.080	-0.096	0.000	0.29	4.6	OK
1.001	201	13	128.986	-0.056	0.000	0.44	9.1	OK
1.002	202	10	128.979	0.043	0.000	0.22	8.1	SURCHARGED
1.003	203	10	128.961	0.788	0.000	0.28	4.5	SURCHARGED

David R Murray and Associates LLP		Page 22
150-156 St Johns Road Edinburgh RH12 8AY		
Date 15/10/2015 14:24 File sw3.mdx	Designed by Checked by	
XP Solutions	Network 2015.1	

Summary Wizard of 240 minute 100 year Winter I+0% for SW3.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	20.000
Hot Start (mins)	0	MADD Factor * 10m ³ /ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

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


Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.300
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	14.000	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	OFF

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	0, 0, 0

			Water	Surcharged	Flooded		Pipe	
PN	US/MH Name	Storm Rank	Level (m)	Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s) Status
1.000	200	16	130.008	-0.113	0.000	0.14	3.6	OK
2.000	205	16	129.075	-0.101	0.000	0.23	3.8	OK
1.001	201	16	128.954	-0.088	0.000	0.36	7.4	OK
1.002	202	14	128.934	-0.001	0.000	0.19	7.0	OK
1.003	203	14	128.917	0.744	0.000	0.28	4.5	SURCHARGED

David R Murray and Associates LLP		Page 23
150-156 St Johns Road Edinburgh RH12 8AY		
Date 15/10/2015 14:24 File sw3.mdx	Designed by XXXXXXXXXX Checked by	
XP Solutions	Network 2015.1	

Summary Wizard of 360 minute 100 year Winter I+0% for SW3.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	20.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

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


Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.300
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	14.000	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	OFF

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	0, 0, 0

			Water	Surcharged	Flooded		Pipe	
PN	US/MH Name	Storm Rank	Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s) Status
1.000	200	20	130.003	-0.118	0.000	0.10	2.7	OK
2.000	205	20	129.068	-0.108	0.000	0.18	2.8	OK
1.001	201	20	128.945	-0.097	0.000	0.27	5.6	OK
1.002	202	19	128.848	-0.087	0.000	0.15	5.5	OK
1.003	203	19	128.832	0.658	0.000	0.28	4.5	SURCHARGED

David R Murray and Associates LLP		Page 24
150-156 St Johns Road Edinburgh RH12 8AY		
Date 15/10/2015 14:24 File sw3.mdx	Designed by <div></div> Checked by	
XP Solutions Network 2015.1		

Summary Wizard of 480 minute 100 year Winter I+0% for SW3.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	20.000
Hot Start (mins)	0	MADD Factor * 10m ³ /ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

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


Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.300
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	14.000	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	OFF

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	0, 0, 0

			Water	Surcharged	Flooded		Pipe	
PN	US/MH Name	Storm Rank	Level (m)	Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s) Status
1.000	200	22	130.000	-0.121	0.000	0.08	2.2	OK
2.000	205	22	129.064	-0.112	0.000	0.14	2.3	OK
1.001	201	22	128.940	-0.102	0.000	0.22	4.5	OK
1.002	202	22	128.820	-0.115	0.000	0.13	4.5	OK
1.003	203	22	128.260	0.087	0.000	0.27	4.4	SURCHARGED

David R Murray and Associates LLP		Page 25
150-156 St Johns Road Edinburgh RH12 8AY		
Date 15/10/2015 14:24 File sw3.mdx	Designed by XXXXXXXXXX Checked by	
XP Solutions	Network 2015.1	

Summary Wizard of 600 minute 100 year Winter I+0% for SW3.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	20.000
Hot Start (mins)	0	MADD Factor * 10m ³ /ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

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


Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.300
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	14.000	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	OFF

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	0, 0, 0

			Water	Surcharged	Flooded		Pipe	
PN	US/MH Name	Storm Rank	Level (m)	Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s) Status
1.000	200	26	129.997	-0.124	0.000	0.07	1.9	OK
2.000	205	26	129.061	-0.115	0.000	0.12	2.0	OK
1.001	201	26	128.936	-0.106	0.000	0.19	3.9	OK
1.002	202	26	128.818	-0.117	0.000	0.11	3.9	OK
1.003	203	26	128.149	-0.024	0.000	0.24	3.8	OK

David R Murray and Associates LLP		Page 26
150-156 St Johns Road Edinburgh RH12 8AY		
Date 15/10/2015 14:24 File sw3.mdx	Designed by Checked by	
XP Solutions Network 2015.1		

Summary Wizard of 720 minute 100 year Winter I+0% for SW3.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	20.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

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

Synthetic Rainfall Details


Rainfall Model	FSR	Ratio R	0.300
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	14.000	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	OFF

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	0, 0, 0

			Water	Surcharged	Flooded		Pipe	
PN	US/MH Name	Storm Rank	Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s) Status
1.000	200	28	129.995	-0.126	0.000	0.06	1.7	OK
2.000	205	28	129.059	-0.117	0.000	0.11	1.7	OK
1.001	201	28	128.933	-0.109	0.000	0.17	3.4	OK
1.002	202	28	128.816	-0.119	0.000	0.09	3.4	OK
1.003	203	28	128.129	-0.044	0.000	0.21	3.4	OK

©1982-2015 XP Solutions

David R Murray and Associates LLP		Page 27
150-156 St Johns Road Edinburgh RH12 8AY		
Date 15/10/2015 14:24 File sw3.mdx	Designed by <div></div> Checked by	
XP Solutions Network 2015.1		

Summary Wizard of 960 minute 100 year Winter I+0% for SW3.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	20.000
Hot Start (mins)	0	MADD Factor * 10m ³ /ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

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


Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.300
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	14.000	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	OFF

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	0, 0, 0

			Water	Surcharged	Flooded		Pipe	
PN	US/MH Name	Storm Rank	Level (m)	Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s) Status
1.000	200	31	129.993	-0.128	0.000	0.05	1.3	OK
2.000	205	31	129.056	-0.120	0.000	0.09	1.4	OK
1.001	201	31	128.928	-0.114	0.000	0.13	2.7	OK
1.002	202	31	128.812	-0.123	0.000	0.08	2.7	OK
1.003	203	31	128.110	-0.063	0.000	0.17	2.7	OK

David R Murray and Associates LLP		Page 28
150-156 St Johns Road Edinburgh RH12 8AY		
Date 15/10/2015 14:24 File sw3.mdx	Designed by Checked by	
XP Solutions	Network 2015.1	

Summary Wizard of 1440 minute 100 year Winter I+0% for SW3.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	20.000
Hot Start (mins)	0	MADD Factor * 10m ³ /ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

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



Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.300
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	14.000	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	OFF

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	0, 0, 0

			Water	Surcharged	Flooded		Pipe	
PN	US/MH Name	Storm Rank	Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s) Status
1.000	200	35	129.990	-0.131	0.000	0.04	1.0	OK
2.000	205	35	129.051	-0.125	0.000	0.06	1.0	OK
1.001	201	35	128.924	-0.118	0.000	0.10	2.0	OK
1.002	202	35	128.808	-0.127	0.000	0.06	2.0	OK
1.003	203	35	128.093	-0.080	0.000	0.13	2.0	OK

David R Murray and Associates LLP		Page 29
150-156 St Johns Road Edinburgh RH12 8AY		
Date 15/10/2015 14:24 File sw3.mdx	Designed by  Checked by	
XP Solutions Network 2015.1		

Summary Wizard of 15 minute 200 year Winter I+0% for SW3.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	20.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

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


Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.300
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	14.000	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	OFF

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	0, 0, 0

			Water	Surcharged	Flooded		Pipe	
PN	US/MH Name	Storm Rank	Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s) Status
1.000	200	1	130.065	-0.056	0.000	0.69	18.4	OK
2.000	205	1	129.431	0.255	0.000	1.10	17.8	SURCHARGED
1.001	201	1	129.257	0.215	0.000	1.75	35.8	SURCHARGED
1.002	202	8	129.017	0.082	0.000	0.58	20.8	SURCHARGED
1.003	203	8	129.000	0.826	0.000	0.27	4.3	SURCHARGED

David R Murray and Associates LLP		Page 30
150-156 St Johns Road Edinburgh RH12 8AY		
Date 15/10/2015 14:24 File sw3.mdx	Designed by XXXXXXXXXX Checked by	
XP Solutions	Network 2015.1	

Summary Wizard of 30 minute 200 year Winter I+0% for SW3.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	20.000
Hot Start (mins)	0	MADD Factor * 10m ³ /ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

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


Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.300
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	14.000	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	OFF

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	0, 0, 0

			Water	Surcharged	Flooded		Pipe	
PN	US/MH Name	Storm Rank	Level (m)	Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s) Status
1.000	200	3	130.053	-0.068	0.000	0.58	15.4	OK
2.000	205	3	129.293	0.117	0.000	0.95	15.3	SURCHARGED
1.001	201	3	129.175	0.133	0.000	1.47	30.1	SURCHARGED
1.002	202	3	129.088	0.153	0.000	0.47	16.9	SURCHARGED
1.003	203	3	129.069	0.896	0.000	0.28	4.4	SURCHARGED

David R Murray and Associates LLP		Page 31
150-156 St Johns Road Edinburgh RH12 8AY		
Date 15/10/2015 14:24 File sw3.mdx	Designed by <div></div> Checked by	
XP Solutions Network 2015.1		

Summary Wizard of 60 minute 200 year Winter I+0% for SW3.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	20.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

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



Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.300
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	14.000	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	OFF

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	0, 0, 0

			Water	Surcharged	Flooded		Pipe	
PN	US/MH Name	Storm Rank	Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s) Status
1.000	200	6	130.037	-0.084	0.000	0.40	10.7	OK
2.000	205	6	129.150	-0.026	0.000	0.68	11.1	OK
1.001	201	4	129.125	0.083	0.000	1.03	21.2	SURCHARGED
1.002	202	1	129.117	0.182	0.000	0.35	12.7	SURCHARGED
1.003	203	1	129.099	0.925	0.000	0.28	4.4	SURCHARGED

David R Murray and Associates LLP		Page 32
150-156 St Johns Road Edinburgh RH12 8AY		
Date 15/10/2015 14:24 File sw3.mdx	Designed by  Checked by	
XP Solutions Network 2015.1		

Summary Wizard of 120 minute 200 year Winter I+0% for SW3.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	20.000
Hot Start (mins)	0	MADD Factor * 10m ³ /ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

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

Synthetic Rainfall Details


Rainfall Model	FSR	Ratio R	0.300
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	14.000	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	OFF

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	0, 0, 0

			Water	Surcharged	Flooded		Pipe	
PN	US/MH Name	Storm Rank	Level (m)	Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)
1.000	200	10	130.022	-0.099	0.000	0.26		6.8
2.000	205	8	129.113	-0.063	0.000	0.44		7.1
1.001	201	6	129.103	0.061	0.000	0.68		13.8
1.002	202	2	129.095	0.160	0.000	0.27		9.8
1.003	203	2	129.077	0.903	0.000	0.28		4.5

OK
OK
SURCHARGED
SURCHARGED
SURCHARGED

David R Murray and Associates LLP		Page 33
150-156 St Johns Road Edinburgh RH12 8AY		
Date 15/10/2015 14:24 File sw3.mdx	Designed by XXXXXXXXXX Checked by	
XP Solutions	Network 2015.1	

Summary Wizard of 180 minute 200 year Winter I+0% for SW3.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	20.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

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


Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.300
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	14.000	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	OFF

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	0, 0, 0

			Water	Surcharged	Flooded		Pipe	
PN	US/MH Name	Storm Rank	Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s) Status
1.000	200	12	130.015	-0.106	0.000	0.19	5.1	OK
2.000	205	12	129.085	-0.091	0.000	0.33	5.4	OK
1.001	201	8	129.062	0.020	0.000	0.51	10.5	SURCHARGED
1.002	202	4	129.054	0.119	0.000	0.23	8.4	SURCHARGED
1.003	203	4	129.036	0.863	0.000	0.28	4.5	SURCHARGED

David R Murray and Associates LLP		Page 34
150-156 St Johns Road Edinburgh RH12 8AY		
Date 15/10/2015 14:24 File sw3.mdx	Designed by Checked by	
XP Solutions	Network 2015.1	

Summary Wizard of 240 minute 200 year Winter I+0% for SW3.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	20.000
Hot Start (mins)	0	MADD Factor * 10m ³ /ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

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


Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.300
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	14.000	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	OFF

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	0, 0, 0

			Water	Surcharged	Flooded		Pipe	
PN	US/MH Name	Storm Rank	Level (m)	Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s) Status
1.000	200	15	130.011	-0.110	0.000	0.16	4.2	OK
2.000	205	15	129.079	-0.097	0.000	0.27	4.4	OK
1.001	201	12	129.016	-0.026	0.000	0.42	8.6	OK
1.002	202	9	129.009	0.074	0.000	0.21	7.4	SURCHARGED
1.003	203	9	128.991	0.818	0.000	0.28	4.5	SURCHARGED

David R Murray and Associates LLP		Page 35
150-156 St Johns Road Edinburgh RH12 8AY		
Date 15/10/2015 14:24 File sw3.mdx	Designed by XXXXXXXXXX Checked by	
XP Solutions	Network 2015.1	

Summary Wizard of 360 minute 200 year Winter I+0% for SW3.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	20.000
Hot Start (mins)	0	MADD Factor * 10m ³ /ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

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


Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.300
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	14.000	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	OFF

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	0, 0, 0

			Water	Surcharged	Flooded		Pipe	
PN	US/MH Name	Storm Rank	Level (m)	Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s) Status
1.000	200	18	130.005	-0.116	0.000	0.12	3.1	OK
2.000	205	18	129.072	-0.104	0.000	0.20	3.3	OK
1.001	201	18	128.949	-0.093	0.000	0.31	6.4	OK
1.002	202	15	128.920	-0.015	0.000	0.17	6.2	OK
1.003	203	15	128.903	0.730	0.000	0.28	4.5	SURCHARGED

David R Murray and Associates LLP		Page 36
150-156 St Johns Road Edinburgh RH12 8AY		
Date 15/10/2015 14:24 File sw3.mdx	Designed by Checked by	
XP Solutions	Network 2015.1	

Summary Wizard of 480 minute 200 year Winter I+0% for SW3.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	20.000
Hot Start (mins)	0	MADD Factor * 10m ³ /ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

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


Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.300
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	14.000	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	OFF

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	0, 0, 0

			Water	Surcharged	Flooded		Pipe	
PN	US/MH Name	Storm Rank	Level (m)	Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s) Status
1.000	200	21	130.002	-0.119	0.000	0.10	2.5	OK
2.000	205	21	129.066	-0.110	0.000	0.16	2.7	OK
1.001	201	21	128.943	-0.099	0.000	0.25	5.2	OK
1.002	202	20	128.837	-0.098	0.000	0.14	5.2	OK
1.003	203	20	128.821	0.648	0.000	0.28	4.5	SURCHARGED

David R Murray and Associates LLP		Page 37
150-156 St Johns Road Edinburgh RH12 8AY		
Date 15/10/2015 14:24 File sw3.mdx	Designed by Checked by	
XP Solutions Network 2015.1		

Summary Wizard of 600 minute 200 year Winter I+0% for SW3.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	20.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

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

Synthetic Rainfall Details


Rainfall Model	FSR	Ratio R	0.300
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	14.000	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	OFF

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	0, 0, 0

PN	US/MH Name	Storm Rank	Water		Surcharged		Flooded		Pipe Flow (l/s)	Status
			Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)			
1.000	200	23	129.999	-0.122	0.000	0.08		2.2	OK	
2.000	205	23	129.063	-0.113	0.000	0.14		2.3	OK	
1.001	201	23	128.939	-0.103	0.000	0.22		4.4	OK	
1.002	202	23	128.820	-0.115	0.000	0.12		4.4	OK	
1.003	203	23	128.241	0.067	0.000	0.27		4.3	SURCHARGED	

©1982-2015 XP Solutions

David R Murray and Associates LLP		Page 38
150-156 St Johns Road Edinburgh RH12 8AY		
Date 15/10/2015 14:24 File sw3.mdx	Designed by XXXXXXXXXX Checked by	
XP Solutions Network 2015.1		

Summary Wizard of 720 minute 200 year Winter I+0% for SW3.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	20.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

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

Synthetic Rainfall Details


Rainfall Model	FSR	Ratio R	0.300
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	14.000	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	OFF

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	0, 0, 0

			Water	Surcharged	Flooded		Pipe	
PN	US/MH Name	Storm Rank	Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s) Status
1.000	200	25	129.997	-0.124	0.000	0.07	1.9	OK
2.000	205	25	129.061	-0.115	0.000	0.12	2.0	OK
1.001	201	25	128.936	-0.106	0.000	0.19	3.9	OK
1.002	202	25	128.818	-0.117	0.000	0.11	3.9	OK
1.003	203	25	128.152	-0.022	0.000	0.24	3.9	OK

©1982-2015 XP Solutions

David R Murray and Associates LLP		Page 39
150-156 St Johns Road Edinburgh RH12 8AY		
Date 15/10/2015 14:24 File sw3.mdx	Designed by Checked by	
XP Solutions Network 2015.1		

Summary Wizard of 960 minute 200 year Winter I+0% for SW3.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	20.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

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

Synthetic Rainfall Details


Rainfall Model	FSR	Ratio R	0.300
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	14.000	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	OFF

Profile(s)	Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	30, 100, 200
Climate Change (%)	0, 0, 0

			Water	Surcharged	Flooded		Pipe	
PN	US/MH Name	Storm Rank	Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s) Status
1.000	200	29	129.994	-0.127	0.000	0.06	1.5	OK
2.000	205	29	129.057	-0.119	0.000	0.10	1.6	OK
1.001	201	29	128.931	-0.111	0.000	0.15	3.1	OK
1.002	202	29	128.815	-0.120	0.000	0.09	3.1	OK
1.003	203	29	128.121	-0.052	0.000	0.20	3.1	OK

©1982-2015 XP Solutions

David R Murray and Associates LLP		Page 40
150-156 St Johns Road Edinburgh RH12 8AY		
Date 15/10/2015 14:24 File sw3.mdx	Designed by <div></div> Checked by	
XP Solutions Network 2015.1		

Summary Wizard of 1440 minute 200 year Winter I+0% for SW3.SWS

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 20.000
 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
 Hot Start Level (mm) 0 Inlet Coefficient 0.800
 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
 Foul Sewage per hectare (l/s) 0.000

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

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.300
 Region Scotland and Ireland Cv (Summer) 0.750
 M5-60 (mm) 14.000 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 OFF

Profile(s) Winter
 Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600,
 720, 960, 1440
 Return Period(s) (years) 30, 100, 200
 Climate Change (%) 0, 0, 0

			Water	Surcharged	Flooded		Pipe	
PN	US/MH Name	Storm Rank	Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s) Status
1.000	200	33	129.991	-0.130	0.000	0.04	1.1	OK
2.000	205	33	129.053	-0.123	0.000	0.07	1.2	OK
1.001	201	33	128.925	-0.117	0.000	0.11	2.3	OK
1.002	202	33	128.810	-0.125	0.000	0.06	2.3	OK
1.003	203	33	128.099	-0.074	0.000	0.14	2.3	OK