

Lees Roxburgh

The Genesis Centre
Science Park South
Birchwood WA3 7BH

Date 01/01/0001
File sws.MDX

Innovyze

6697-Hafod Road
Johnstown
Network 1 Simulations

Designed by LR
Checked by

Network 2019.1

Page 1



Existing Network Details for SWS REVISED.SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	k (mm)	HYD SECT	DIA (mm)	Section Type
1.006	15.693	0.039	402.4	0.062	0.00	0.600	o	600	Pipe/Conduit
1.007	20.203	0.051	396.1	0.062	0.00	0.600	o	600	Pipe/Conduit
1.008	32.823	0.082	400.3	0.062	0.00	0.600	o	600	Pipe/Conduit
5.000	38.445	0.385	99.9	0.062	5.00	0.600	o	225	Pipe/Conduit
5.001	19.687	0.197	99.9	0.062	0.00	0.600	o	225	Pipe/Conduit
1.009	24.662	0.062	397.8	0.062	0.00	0.600	o	600	Pipe/Conduit
6.000	16.711	0.167	100.1	0.062	5.00	0.600	o	225	Pipe/Conduit
6.001	35.001	0.350	100.0	0.062	0.00	0.600	o	225	Pipe/Conduit
6.002	33.421	0.334	100.1	0.062	0.00	0.600	o	225	Pipe/Conduit
1.010	18.448	0.046	401.0	0.062	0.00	0.600	o	600	Pipe/Conduit
1.011	20.746	0.052	399.0	0.062	0.00	0.600	o	600	Pipe/Conduit
1.012	11.202	0.028	400.1	0.062	0.00	0.600	o	600	Pipe/Conduit
7.000	14.830	0.124	119.6	0.062	5.00	0.600	o	225	Pipe/Conduit
7.001	13.674	0.114	119.9	0.062	0.00	0.600	o	225	Pipe/Conduit

PN	US/MH Name	US/CL (m)	US/IL (m)	US C.Depth (m)	DS/CL (m)	DS/IL (m)	DS C.Depth (m)	Ctrl	US/MH (mm)
1.006	14	105.283	102.099	2.584	105.350	102.060	2.690		2100
1.007	15	105.350	102.060	2.690	105.175	102.009	2.566		2100
1.008	16	105.175	102.009	2.566	105.015	101.927	2.488		2100
5.000	17	105.495	104.070	1.200	105.118	103.685	1.208		1500
5.001	18	105.118	103.685	1.208	105.015	103.488	1.302		1500
1.009	19	105.015	101.927	2.488	105.331	101.865	2.866		1800
6.000	20	105.980	104.555	1.200	105.878	104.388	1.265		1500
6.001	21	105.878	104.388	1.265	105.542	104.038	1.279		1500
6.002	22	105.542	104.038	1.279	105.331	103.704	1.402		1500
1.010	23	105.331	101.865	2.866	105.475	101.819	3.056		2100
1.011	24	105.475	101.819	3.056	105.318	101.767	2.951		2100
1.012	25	105.318	101.767	2.951	105.139	101.739	2.800		2100
7.000	26	105.685	104.260	1.200	105.845	104.136	1.484		1500
7.001	27	105.845	104.136	1.484	105.908	104.022	1.661		1500

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Lees Roxburgh		Page 5
The Genesis Centre Science Park South Birchwood WA3 7BH	6697-Hafod Road Johnstown Network 1 Simulations	
Date 01/01/0001 File sws.MDX	Designed by LR Checked by	
Innovyze Network 2019.1		

Online Controls for SWS REVISED.SWS

Hydro-Brake® Optimum Manhole: 62, DS/PN: 1.021, Volume (m³): 6.9

Unit Reference	MD-SHE-0520-2000-1500-2000
Design Head (m)	1.500
Design Flow (l/s)	200.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	520
Invert Level (m)	100.866
Minimum Outlet Pipe Diameter (mm)	Site Specific Design (Contact Hydro International)
Suggested Manhole Diameter (mm)	Site Specific Design (Contact Hydro International)

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.500	200.0	Kick-Flo®	1.220	180.8
Flush-Flo™	0.747	199.8	Mean Flow over Head Range	-	156.5

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	12.9	1.200	182.7	3.000	280.7	7.000	425.6
0.200	47.6	1.400	193.3	3.500	302.7	7.500	440.3
0.300	97.2	1.600	206.4	4.000	323.2	8.000	454.5
0.400	152.5	1.800	218.6	4.500	342.5	8.500	468.3
0.500	192.7	2.000	230.1	5.000	360.7	9.000	481.7
0.600	197.5	2.200	241.1	5.500	378.0	9.500	494.7
0.800	199.6	2.400	251.6	6.000	394.5		
1.000	194.7	2.600	261.7	6.500	410.4		

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Lees Roxburgh		Page 6																		
The Genesis Centre Science Park South Birchwood WA3 7BH	6697-Hafod Road Johnstown Network 1 Simulations																			
Date 01/01/0001 File sws.MDX	Designed by LR Checked by																			
Innovyze	Network 2019.1																			
Storage Structures for SWS REVISED.SWS Cellular Storage Manhole: 60, DS/PN: 1.019 Invert Level (m) 100.925 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.00000 <table><thead><tr><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th></tr></thead><tbody><tr><td>0.000</td><td>1550.0</td><td>0.0</td><td>0.901</td><td>0.0</td><td>0.0</td></tr><tr><td>0.900</td><td>1550.0</td><td>0.0</td><td></td><td></td><td></td></tr></tbody></table>			Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	1550.0	0.0	0.901	0.0	0.0	0.900	1550.0	0.0			
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)															
0.000	1550.0	0.0	0.901	0.0	0.0															
0.900	1550.0	0.0																		
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Lees Roxburgh		Page 7	
The Genesis Centre Science Park South Birchwood WA3 7BH		6697-Hafod Road Johnstown Network 1 Simulations	
Date 01/01/0001 File sws.MDX		Designed by LR Checked by	
Innovyze		Network 2019.1	

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for
SWS REVISED.SWS

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

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.306
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 18.000 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960
Return Period(s) (years) 1, 2, 30, 100
Climate Change (%) 0, 0, 0, 30

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	1	15 Winter	1	+0%	100/15 Summer				103.551
1.001	2	15 Winter	1	+0%	100/15 Summer				103.399
1.002	3	15 Winter	1	+0%	100/15 Summer				103.252
2.000	4	15 Winter	1	+0%	100/15 Summer				102.740
2.001	5	15 Winter	1	+0%	100/15 Summer				102.690
2.002	6	15 Winter	1	+0%	100/15 Summer				102.661
1.003	7	15 Winter	1	+0%	100/15 Summer				102.644
3.000	8	15 Winter	1	+0%					104.510
3.001	9	15 Winter	1	+0%	100/30 Winter				103.565
1.004	10	15 Winter	1	+0%	30/15 Summer				102.584
4.000	11	15 Winter	1	+0%	100/15 Summer				102.597
4.001	12	15 Winter	1	+0%	100/15 Summer				102.507
1.005	13	15 Winter	1	+0%	30/30 Winter				102.399
1.006	14	15 Winter	1	+0%	30/30 Summer				102.345
1.007	15	15 Winter	1	+0%	100/15 Summer				102.302

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Lees Roxburgh		Page 8
The Genesis Centre Science Park South Birchwood WA3 7BH	6697-Hafod Road Johnstown Network 1 Simulations	
Date 01/01/0001 File sws.MDX	Designed by LR Checked by	
Innovyze	Network 2019.1	

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for
SWS REVISED.SWS

PN	US/MH Name	Surcharged Flooded			Pipe		Level Exceeded
		Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)	Flow (l/s)	
1.000	1	-0.166	0.000	0.15		7.0	OK
1.001	2	-0.142	0.000	0.29		13.0	OK
1.002	3	-0.148	0.000	0.25		19.0	OK
2.000	4	-0.376	0.000	0.05		6.8	OK
2.001	5	-0.335	0.000	0.08		11.5	OK
2.002	6	-0.296	0.000	0.14		16.3	OK
1.003	7	-0.270	0.000	0.26		37.3	OK
3.000	8	-0.179	0.000	0.09		7.0	OK
3.001	9	-0.166	0.000	0.15		13.0	OK
1.004	10	-0.206	0.000	0.57		52.1	OK
4.000	11	-0.385	0.000	0.05		6.8	OK
4.001	12	-0.360	0.000	0.09		12.4	OK
1.005	13	-0.371	0.000	0.24		66.7	OK
1.006	14	-0.354	0.000	0.32		69.5	OK
1.007	15	-0.358	0.000	0.28		72.4	OK

Lees Roxburgh		Page 9
The Genesis Centre	6697-Hafod Road	
Science Park South	Johnstown	
Birchwood WA3 7BH	Network 1 Simulations	
Date 01/01/0001	Designed by LR	
File sws.MDX	Checked by	
Innovyze	Network 2019.1	

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for
SWS REVISED.SWS

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
1.008	16 15	Winter	1	+0%	100/15	Summer		
5.000	17 15	Winter	1	+0%				
5.001	18 15	Winter	1	+0%	100/15	Summer		
1.009	19 30	Winter	1	+0%	100/15	Summer		
6.000	20 15	Winter	1	+0%	100/15	Summer		
6.001	21 15	Winter	1	+0%	100/15	Summer		
6.002	22 15	Winter	1	+0%	30/15	Winter		
1.010	23 30	Winter	1	+0%	100/15	Summer		
1.011	24 30	Winter	1	+0%	100/15	Summer		
1.012	25 30	Winter	1	+0%	100/15	Summer		
7.000	26 15	Winter	1	+0%	100/15	Summer		
7.001	27 15	Winter	1	+0%	30/15	Summer		
7.002	28 15	Winter	1	+0%	30/15	Summer		
8.000	29 15	Winter	1	+0%				
7.003	30 15	Winter	1	+0%	100/15	Summer		
1.013	31 30	Winter	1	+0%	100/15	Summer		
1.014	32 30	Winter	1	+0%	30/30	Winter		
1.015	33 30	Winter	1	+0%	30/15	Winter		
9.000	34 15	Winter	1	+0%	100/15	Summer		
9.001	35 15	Winter	1	+0%	30/15	Summer		
9.002	36 15	Winter	1	+0%	30/15	Summer		
9.003	37 15	Winter	1	+0%	30/15	Summer		
9.004	38 15	Winter	1	+0%	30/15	Summer		
9.005	39 15	Winter	1	+0%	30/15	Summer		
9.006	40 15	Winter	1	+0%	30/15	Summer		
9.007	41 15	Winter	1	+0%	30/15	Summer		
9.008	42 15	Winter	1	+0%	100/15	Summer		
1.016	43 30	Winter	1	+0%	30/15	Winter		
10.000	44 15	Winter	1	+0%	100/30	Winter		
1.017	45 30	Winter	1	+0%	30/15	Summer		
1.018	46 30	Winter	1	+0%	30/30	Summer		
11.000	47 15	Winter	1	+0%	100/15	Winter		
11.001	48 15	Winter	1	+0%	100/15	Summer		
11.002	49 15	Winter	1	+0%	30/15	Winter		
11.003	50 15	Winter	1	+0%	30/15	Summer		
11.004	51 15	Winter	1	+0%	30/15	Summer		
11.005	52 15	Winter	1	+0%	30/15	Summer		
11.006	53 15	Winter	1	+0%	30/15	Summer		
12.000	54 15	Winter	1	+0%	100/15	Summer		
12.001	55 15	Winter	1	+0%	100/15	Summer		
12.002	56 15	Winter	1	+0%	100/15	Summer		
12.003	57 15	Winter	1	+0%	100/15	Summer	100/15	Summer

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Lees Roxburgh		Page 10							
The Genesis Centre Science Park South Birchwood WA3 7BH		6697-Hafod Road Johnstown Network 1 Simulations							
Date 01/01/0001 File sws.MDX		Designed by LR Checked by							
Innovyze		Network 2019.1							
1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for <u>SWS REVISED.SWS</u>									
PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap. (l/s)	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.008	16	102.258	-0.351	0.000	0.26		74.5	OK	
5.000	17	104.127	-0.168	0.000	0.14		7.0	OK	
5.001	18	103.765	-0.145	0.000	0.28		13.0	OK	
1.009	19	102.202	-0.325	0.000	0.31		82.8	OK	
6.000	20	104.614	-0.166	0.000	0.15		7.0	OK	
6.001	21	104.467	-0.146	0.000	0.27		13.0	OK	
6.002	22	104.135	-0.128	0.000	0.39		18.8	OK	
1.010	23	102.161	-0.304	0.000	0.40		97.5	OK	
1.011	24	102.120	-0.299	0.000	0.38		100.1	OK	
1.012	25	102.080	-0.287	0.000	0.53		103.2	OK	
7.000	26	104.322	-0.163	0.000	0.17		7.0	OK	
7.001	27	104.223	-0.138	0.000	0.32		13.0	OK	
7.002	28	104.126	-0.122	0.000	0.43		18.9	OK	
8.000	29	104.578	-0.180	0.000	0.09		7.0	OK	
7.003	30	103.801	-0.182	0.000	0.33		31.6	OK	
1.013	31	102.006	-0.333	0.000	0.40		124.7	OK	
1.014	32	101.863	-0.313	0.000	0.42		124.8	OK	
1.015	33	101.758	-0.291	0.000	0.44		126.2	OK	
9.000	34	103.583	-0.161	0.000	0.18		7.0	OK	
9.001	35	103.406	-0.133	0.000	0.35		13.0	OK	
9.002	36	103.243	-0.201	0.000	0.24		18.8	OK	
9.003	37	103.123	-0.183	0.000	0.32		24.5	OK	
9.004	38	103.034	-0.168	0.000	0.39		30.1	OK	
9.005	39	102.944	-0.156	0.000	0.46		35.8	OK	
9.006	40	102.842	-0.140	0.000	0.55		41.5	OK	
9.007	41	102.728	-0.159	0.000	0.45		46.4	OK	
9.008	42	102.237	-0.187	0.000	0.30		51.5	OK	
1.016	43	101.673	-0.286	0.000	0.50		154.2	OK	
10.000	44	102.048	-0.173	0.000	0.12		7.0	OK	
1.017	45	101.552	-0.234	0.000	0.69		156.4	OK	
1.018	46	101.355	-0.290	0.000	0.53		157.4	OK	
11.000	47	103.252	-0.177	0.000	0.10		7.0	OK	
11.001	48	102.675	-0.155	0.000	0.21		13.0	OK	
11.002	49	102.251	-0.132	0.000	0.35		19.0	OK	
11.003	50	102.058	-0.179	0.000	0.33		24.3	OK	
11.004	51	101.870	-0.163	0.000	0.43		29.9	OK	
11.005	52	101.753	-0.154	0.000	0.47		34.4	OK	
11.006	53	101.544	-0.122	0.000	0.66		39.1	OK	
12.000	54	102.459	-0.166	0.000	0.15		5.6	OK	
12.001	55	102.355	-0.146	0.000	0.26		10.0	OK	
12.002	56	102.045	-0.128	0.000	0.38		14.3	OK	
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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for
SWS REVISED.SWS

PN	US/MH		Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water
	Name									Level (m)
12.004	58	15	Winter	1	+0%	100/15	Summer			101.613
12.005	59	15	Winter	1	+0%	30/15	Summer			101.409
1.019	60	240	Winter	1	+0%	100/30	Winter			101.151
1.020	61	240	Winter	1	+0%	100/30	Winter			101.120
1.021	62	240	Winter	1	+0%	100/30	Winter			101.092
1.022	63	240	Winter	1	+0%					100.892

PN	US/MH Name	Surcharged	Flooded	Flow / Cap.	Overflow (l/s)	Pipe	Status	Level Exceeded
		Depth (m)	Volume (m³)			Flow		
12.004	58	-0.177	0.000	0.34		23.5	OK	
12.005	59	-0.155	0.000	0.47		27.7	OK	
1.019	60	-0.299	0.000	0.32		47.3	OK	
1.020	61	-0.298	0.000	0.34		47.3	OK	
1.021	62	-0.299	0.000	0.22		47.3	OK	
1.022	63	-0.362	0.000	0.21		47.2	OK	

Lees Roxburgh		Page 13	
The Genesis Centre Science Park South Birchwood WA3 7BH		6697-Hafod Road Johnstown Network 1 Simulations	
Date 01/01/0001 File sws.MDX		Designed by LR Checked by	
Innovyze		Network 2019.1	

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for
SWS REVISED.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
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 Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.306
Region England and Wales Cv	(Summer)		0.750
M5-60 (mm)	18.000 Cv	(Winter)	0.840

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

Profile(s)

Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960
Return Period(s) (years)	1, 2, 30, 100
Climate Change (%)	0, 0, 0, 30

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	1	15 Winter	2	+0%	100/15 Summer				103.560
1.001	2	15 Winter	2	+0%	100/15 Summer				103.412
1.002	3	15 Winter	2	+0%	100/15 Summer				103.264
2.000	4	15 Winter	2	+0%	100/15 Summer				102.756
2.001	5	15 Winter	2	+0%	100/15 Summer				102.714
2.002	6	15 Winter	2	+0%	100/15 Summer				102.692
1.003	7	15 Winter	2	+0%	100/15 Summer				102.679
3.000	8	15 Winter	2	+0%					104.515
3.001	9	15 Winter	2	+0%	100/30 Winter				103.574
1.004	10	15 Winter	2	+0%	30/15 Summer				102.627
4.000	11	15 Winter	2	+0%	100/15 Summer				102.608
4.001	12	15 Winter	2	+0%	100/15 Summer				102.518
1.005	13	15 Winter	2	+0%	30/30 Winter				102.435
1.006	14	15 Winter	2	+0%	30/30 Summer				102.384
1.007	15	15 Winter	2	+0%	100/15 Summer				102.342

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Lees Roxburgh		Page 14
The Genesis Centre Science Park South Birchwood WA3 7BH	6697-Hafod Road Johnstown Network 1 Simulations	
Date 01/01/0001 File sws.MDX	Designed by LR Checked by	
Innovyze	Network 2019.1	

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for
SWS REVISED.SWS

PN	US/MH Name	Surcharged Flooded			Pipe		Level Exceeded
		Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)	Flow (l/s)	
1.000	1	-0.157	0.000	0.20		9.1	OK
1.001	2	-0.129	0.000	0.37		16.8	OK
1.002	3	-0.136	0.000	0.32		24.6	OK
2.000	4	-0.360	0.000	0.06		8.7	OK
2.001	5	-0.311	0.000	0.10		14.0	OK
2.002	6	-0.265	0.000	0.17		20.4	OK
1.003	7	-0.235	0.000	0.32		47.2	OK
3.000	8	-0.174	0.000	0.12		9.0	OK
3.001	9	-0.157	0.000	0.20		16.8	OK
1.004	10	-0.163	0.000	0.73		66.5	OK
4.000	11	-0.374	0.000	0.06		8.8	OK
4.001	12	-0.349	0.000	0.11		16.0	OK
1.005	13	-0.335	0.000	0.31		84.9	OK
1.006	14	-0.315	0.000	0.41		88.6	OK
1.007	15	-0.318	0.000	0.35		92.1	OK

Lees Roxburgh		Page 15
The Genesis Centre	6697-Hafod Road	
Science Park South	Johnstown	
Birchwood WA3 7BH	Network 1 Simulations	
Date 01/01/0001	Designed by LR	
File sws.MDX	Checked by	
Innovyze	Network 2019.1	

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for
SWS REVISED.SWS

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow Overflow	Overflow Act.
1.008	16 15	Winter	2	+0%	100/15	Summer		
5.000	17 15	Winter	2	+0%				
5.001	18 15	Winter	2	+0%	100/15	Summer		
1.009	19 30	Winter	2	+0%	100/15	Summer		
6.000	20 15	Winter	2	+0%	100/15	Summer		
6.001	21 15	Winter	2	+0%	100/15	Summer		
6.002	22 15	Winter	2	+0%	30/15	Winter		
1.010	23 30	Winter	2	+0%	100/15	Summer		
1.011	24 30	Winter	2	+0%	100/15	Summer		
1.012	25 30	Winter	2	+0%	100/15	Summer		
7.000	26 15	Winter	2	+0%	100/15	Summer		
7.001	27 15	Winter	2	+0%	30/15	Summer		
7.002	28 15	Winter	2	+0%	30/15	Summer		
8.000	29 15	Winter	2	+0%				
7.003	30 15	Winter	2	+0%	100/15	Summer		
1.013	31 30	Winter	2	+0%	100/15	Summer		
1.014	32 30	Winter	2	+0%	30/30	Winter		
1.015	33 30	Winter	2	+0%	30/15	Winter		
9.000	34 15	Winter	2	+0%	100/15	Summer		
9.001	35 15	Winter	2	+0%	30/15	Summer		
9.002	36 15	Winter	2	+0%	30/15	Summer		
9.003	37 15	Winter	2	+0%	30/15	Summer		
9.004	38 15	Winter	2	+0%	30/15	Summer		
9.005	39 15	Winter	2	+0%	30/15	Summer		
9.006	40 15	Winter	2	+0%	30/15	Summer		
9.007	41 15	Winter	2	+0%	30/15	Summer		
9.008	42 15	Winter	2	+0%	100/15	Summer		
1.016	43 30	Winter	2	+0%	30/15	Winter		
10.000	44 15	Winter	2	+0%	100/30	Winter		
1.017	45 30	Winter	2	+0%	30/15	Summer		
1.018	46 30	Winter	2	+0%	30/30	Summer		
11.000	47 15	Winter	2	+0%	100/15	Winter		
11.001	48 15	Winter	2	+0%	100/15	Summer		
11.002	49 15	Winter	2	+0%	30/15	Winter		
11.003	50 15	Winter	2	+0%	30/15	Summer		
11.004	51 15	Winter	2	+0%	30/15	Summer		
11.005	52 15	Winter	2	+0%	30/15	Summer		
11.006	53 15	Winter	2	+0%	30/15	Summer		
12.000	54 15	Winter	2	+0%	100/15	Summer		
12.001	55 15	Winter	2	+0%	100/15	Summer		
12.002	56 15	Winter	2	+0%	100/15	Summer		
12.003	57 15	Winter	2	+0%	100/15	Summer	100/15 Summer	

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2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for
SWS REVISED.SWS

PN	US/MH		Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water
	Name									Level (m)
12.004	58	15	Winter	2	+0%	100/15	Summer			101.632
12.005	59	15	Winter	2	+0%	30/15	Summer			101.435
1.019	60	240	Winter	2	+0%	100/30	Winter			101.193
1.020	61	240	Winter	2	+0%	100/30	Winter			101.166
1.021	62	240	Winter	2	+0%	100/30	Winter			101.142
1.022	63	240	Winter	2	+0%					100.913

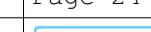
PN	US/MH Name	Surcharged	Flooded	Pipe			Status	Level Exceeded
		Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Flow (l/s)		
12.004	58	-0.158	0.000	0.45		30.4	OK	
12.005	59	-0.129	0.000	0.61		35.9	OK	
1.019	60	-0.257	0.000	0.41		59.6	OK	
1.020	61	-0.252	0.000	0.43		59.6	OK	
1.021	62	-0.249	0.000	0.28		59.5	OK	
1.022	63	-0.342	0.000	0.27		59.5	OK	

Lees Roxburgh		Page 20
The Genesis Centre Science Park South Birchwood WA3 7BH	6697-Hafod Road Johnstown Network 1 Simulations	
Date 01/01/0001 File sws.MDX	Designed by LR Checked by	
Innovyze	Network 2019.1	

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

PN	US/MH Name	Surcharged Flooded			Pipe Flow (l/s)	Status	Level Exceeded
		Depth (m)	Volume (m ³)	Flow / Overflow Cap. (l/s)			
1.000	1	-0.130	0.000	0.37	17.2	OK	
1.001	2	-0.073	0.000	0.78	35.4	OK	
1.002	3	-0.083	0.000	0.71	53.6	OK	
2.000	4	-0.152	0.000	0.10	13.7	OK	
2.001	5	-0.076	0.000	0.17	23.5	OK	
2.002	6	-0.048	0.000	0.35	40.5	OK	
1.003	7	-0.044	0.000	0.55	80.2	OK	
3.000	8	-0.153	0.000	0.22	17.1	OK	
3.001	9	-0.123	0.000	0.42	35.4	OK	
1.004	10	0.006	0.000	1.15	104.6	SURCHARGED	
4.000	11	-0.184	0.000	0.09	13.6	OK	
4.001	12	-0.073	0.000	0.29	40.7	OK	
1.005	13	0.004	0.000	0.51	140.5	SURCHARGED	
1.006	14	0.003	0.000	0.68	146.6	SURCHARGED	
1.007	15	0.000	0.000	0.55	143.9	OK	

Lees Roxburgh		Page 22							
The Genesis Centre Science Park South Birchwood WA3 7BH		6697-Hafod Road Johnstown Network 1 Simulations							
Date 01/01/0001 File sws.MDX		Designed by LR Checked by							
Innovyze		Network 2019.1							
30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SWS REVISED.SWS									
PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap. (l/s)	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.008	16	102.609	0.000	0.000	0.50		142.1	OK	
5.000	17	104.162	-0.133	0.000	0.34		17.0	OK	
5.001	18	103.832	-0.078	0.000	0.73		34.3	OK	
1.009	19	102.527	0.000	0.000	0.56		151.3	OK	
6.000	20	104.651	-0.129	0.000	0.37		17.2	OK	
6.001	21	104.532	-0.081	0.000	0.71		34.6	OK	
6.002	22	104.269	0.006	0.000	1.01		49.6	SURCHARGED	
1.010	23	102.465	0.000	0.000	0.81		197.3	OK	
1.011	24	102.419	0.000	0.000	0.75		195.1	OK	
1.012	25	102.336	-0.031	0.000	1.00		193.9	OK	
7.000	26	104.408	-0.077	0.000	0.38		15.8	OK	
7.001	27	104.377	0.016	0.000	0.75		31.0	SURCHARGED	
7.002	28	104.283	0.035	0.000	1.07		47.5	SURCHARGED	
8.000	29	104.604	-0.154	0.000	0.21		17.3	OK	
7.003	30	103.898	-0.085	0.000	0.85		82.0	OK	
1.013	31	102.289	-0.050	0.000	0.85		263.6	OK	
1.014	32	102.190	0.014	0.000	0.85		254.2	SURCHARGED	
1.015	33	102.113	0.064	0.000	0.89		255.4	SURCHARGED	
9.000	34	103.639	-0.105	0.000	0.42		16.8	OK	
9.001	35	103.603	0.064	0.000	0.85		31.3	SURCHARGED	
9.002	36	103.525	0.081	0.000	0.55		43.7	SURCHARGED	
9.003	37	103.423	0.117	0.000	0.74		56.6	SURCHARGED	
9.004	38	103.320	0.118	0.000	0.87		66.3	SURCHARGED	
9.005	39	103.218	0.118	0.000	1.04		80.7	SURCHARGED	
9.006	40	103.092	0.110	0.000	1.26		95.1	SURCHARGED	
9.007	41	102.935	0.048	0.000	1.05		109.5	SURCHARGED	
9.008	42	102.316	-0.108	0.000	0.72		122.9	OK	
1.016	43	102.046	0.087	0.000	1.11		345.2	SURCHARGED	
10.000	44	102.079	-0.142	0.000	0.29		17.1	OK	
1.017	45	101.839	0.053	0.000	1.55		352.2	SURCHARGED	
1.018	46	101.668	0.023	0.000	1.19		355.6	SURCHARGED	
11.000	47	103.281	-0.148	0.000	0.25		17.1	OK	
11.001	48	102.728	-0.102	0.000	0.56		35.1	OK	
11.002	49	102.415	0.032	0.000	0.96		51.9	SURCHARGED	
11.003	50	102.311	0.074	0.000	0.88		63.9	SURCHARGED	
11.004	51	102.191	0.158	0.000	1.01		70.9	SURCHARGED	
11.005	52	102.059	0.152	0.000	1.10		80.7	SURCHARGED	
11.006	53	101.744	0.078	0.000	1.53		91.4	SURCHARGED	
12.000	54	102.497	-0.128	0.000	0.38		13.7	OK	
12.001	55	102.420	-0.081	0.000	0.69		26.6	FLOOD RISK	
12.002	56	102.149	-0.024	0.000	1.00		37.6	OK	
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Lees Roxburgh		Page 24
The Genesis Centre Science Park South Birchwood WA3 7BH	6697-Hafod Road Johnstown Network 1 Simulations	
Date 01/01/0001 File sws.MDX	Designed by LR Checked by	
Innovyze	Network 2019.1	

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

									Water
	US/MH			Return	Climate	First (X)	First (Y)	First (Z)	Overflow
PN	Name	Storm		Period	Change	Surcharge	Flood	Overflow	Act.
12.004	58	15	Winter	30	+0%	100/15	Summer		
12.005	59	15	Winter	30	+0%	30/15	Summer		
1.019	60	180	Winter	30	+0%	100/30	Winter		
1.020	61	180	Winter	30	+0%	100/30	Winter		
1.021	62	180	Winter	30	+0%	100/30	Winter		
1.022	63	120	Winter	30	+0%				

PN	US/MH Name	Surcharged		Flooded	Pipe		Status	Level Exceeded
		Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Flow (l/s)		
12.004	58	-0.035	0.000	0.87		59.4	OK	
12.005	59	0.014	0.000	1.19		69.6	SURCHARGED	
1.019	60	-0.054	0.000	0.77		112.9	OK	
1.020	61	-0.033	0.000	0.79		109.0	OK	
1.021	62	-0.032	0.000	0.50		107.8	OK	
1.022	63	-0.267	0.000	0.48		107.4	OK	

Lees Roxburgh		Page 25	
The Genesis Centre Science Park South Birchwood WA3 7BH		6697-Hafod Road Johnstown Network 1 Simulations	
Date 01/01/0001 File sws.MDX		Designed by LR Checked by	
Innovyze		Network 2019.1	



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

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
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 Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.306
Region England and Wales Cv	(Summer)		0.750
M5-60 (mm)	18.000 Cv	(Winter)	0.840

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

Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960
 Return Period(s) (years) 1, 2, 30, 100
 Climate Change (%) 0, 0, 0, 30

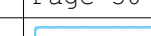
PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	1	30 Winter	100	+30%	100/15 Summer				104.088
1.001	2	30 Winter	100	+30%	100/15 Summer				104.065
1.002	3	30 Winter	100	+30%	100/15 Summer				104.003
2.000	4	30 Winter	100	+30%	100/15 Summer				103.928
2.001	5	30 Winter	100	+30%	100/15 Summer				103.922
2.002	6	30 Winter	100	+30%	100/15 Summer				103.913
1.003	7	30 Winter	100	+30%	100/15 Summer				103.902
3.000	8	15 Winter	100	+30%					104.559
3.001	9	30 Winter	100	+30%	100/30 Winter				103.938
1.004	10	30 Winter	100	+30%	30/15 Summer				103.862
4.000	11	30 Winter	100	+30%	100/15 Summer				103.854
4.001	12	30 Winter	100	+30%	100/15 Summer				103.848
1.005	13	30 Winter	100	+30%	30/30 Winter				103.838
1.006	14	30 Winter	100	+30%	30/30 Summer				103.809
1.007	15	30 Winter	100	+30%	100/15 Summer				103.782

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Lees Roxburgh		Page 26
The Genesis Centre Science Park South Birchwood WA3 7BH	6697-Hafod Road Johnstown Network 1 Simulations	
Date 01/01/0001 File sws.MDX	Designed by LR Checked by	
Innovyze	Network 2019.1	

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

PN	US/MH Name	Surcharged Flooded			Pipe		Status	Level Exceeded
		Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)	Flow (l/s)		
1.000	1	0.371	0.000	0.50		23.5	SURCHARGED	
1.001	2	0.524	0.000	1.00		45.3	SURCHARGED	
1.002	3	0.603	0.000	0.87		66.2	SURCHARGED	
2.000	4	0.812	0.000	0.13		18.2	FLOOD RISK	
2.001	5	0.897	0.000	0.24		32.2	SURCHARGED	
2.002	6	0.956	0.000	0.37		43.0	SURCHARGED	
1.003	7	0.988	0.000	0.76		111.4	SURCHARGED	
3.000	8	-0.130	0.000	0.37		28.6	OK	
3.001	9	0.207	0.000	0.56		47.9	SURCHARGED	
1.004	10	1.072	0.000	1.86		168.7	SURCHARGED	
4.000	11	0.872	0.000	0.13		18.5	FLOOD RISK	
4.001	12	0.981	0.000	0.25		35.3	SURCHARGED	
1.005	13	1.068	0.000	0.61		168.8	SURCHARGED	
1.006	14	1.110	0.000	0.80		171.6	SURCHARGED	
1.007	15	1.122	0.000	0.67		174.2	SURCHARGED	

Lees Roxburgh		Page 30
The Genesis Centre	6697-Hafod Road	
Science Park South	Johnstown	
Birchwood WA3 7BH	Network 1 Simulations	
Date 01/01/0001	Designed by LR	
File sws.MDX	Checked by	
Innovyze	Network 2019.1	

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

									Water
	US/MH			Return	Climate	First (X)	First (Y)	First (Z)	Overflow
PN	Name	Storm	Period	Change		Surcharge	Flood	Overflow	Act.
12.004	58	15 Winter	100	+30%	100/15	Summer			101.945
12.005	59	180 Winter	100	+30%	30/15	Summer			101.769
1.019	60	180 Winter	100	+30%	100/30	Winter			101.759
1.020	61	240 Winter	100	+30%	100/30	Winter			102.000
1.021	62	240 Winter	100	+30%	100/30	Winter			102.017
1.022	63	180 Winter	100	+30%					101.076

PN	US/MH Name	Surcharged	Flooded	Flow / Cap.	Overflow (l/s)	Pipe	Status	Level Exceeded
		Depth (m)	Volume (m³)			Flow (l/s)		
12.004	58	0.155	0.000	1.09		74.6	SURCHARGED	
12.005	59	0.205	0.000	0.76		44.4	SURCHARGED	
1.019	60	0.309	0.000	1.24		181.0	FLOOD RISK	
1.020	61	0.582	0.000	1.25		173.0	SURCHARGED	
1.021	62	0.626	0.000	0.79		169.3	FLOOD RISK	
1.022	63	-0.178	0.000	0.75		168.5	OK	