


MTC Engineering (Cambridge) Ltd		Page 0
Ground Floor, 24 High Street Whittlesford Cambs, CB22 4LT	Monks Green Farm SWS Calcs	
Date 30/11/2023 09:50 File SWS-CALC.MDX	Designed by JF Checked by	
Innovyze	Network 2020.1	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Surface Network 1

Pipe Sizes STANDARD Manhole Sizes STANDARD

FEH Rainfall Model

Return Period (years)	2
FEH Rainfall Version	2013
Site Location GB 533381 208600 TL 33381 08600	
Data Type	Point
Maximum Rainfall (mm/hr)	50
Maximum Time of Concentration (mins)	30
Foul Sewage (l/s/ha)	0.000
Volumetric Runoff Coeff.	0.750
PIMP (%)	100
Add Flow / Climate Change (%)	0
Minimum Backdrop Height (m)	0.200
Maximum Backdrop Height (m)	1.500
Min Design Depth for Optimisation (m)	1.200
Min Vel for Auto Design only (m/s)	1.00
Min Slope for Optimisation (1:X)	500

Designed with Level Soffits




Time Area Diagram for Surface Network 1

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.190	4-8	0.041

Total Area Contributing (ha) = 0.232

Total Pipe Volume (m³) = 2.955

Network Design Table for Surface Network 1

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	9.045	0.155	58.4	0.032	5.00	0.0	0.600	o	150	Pipe/Conduit	
1.001	9.565	0.164	58.3	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.002	11.727	0.201	58.3	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	E I.Area (ha)	E Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	50.00	5.11	9.566	0.032	0.0	0.0	0.0	1.32	23.3	4.4
1.001	50.00	5.24	9.412	0.032	0.0	0.0	0.0	1.32	23.3	4.4
1.002	50.00	5.38	9.248	0.032	0.0	0.0	0.0	1.32	23.3	4.4

MTC Engineering (Cambridge) Ltd		Page 1
Ground Floor, 24 High Street Whittlesford Cambs, CB22 4LT		Monks Green Farm SWS Calcs
Date 30/11/2023 09:50 File SWS-CALC.MDX		Designed by JF Checked by
Innovyze		Network 2020.1

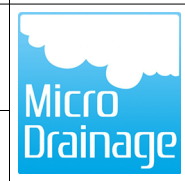


Network Design Table for Surface Network 1

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
1.003	7.479	0.128	58.4	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
2.000	9.757	0.167	58.5	0.010	5.00	0.0	0.600	o	100	Pipe/Conduit	
2.001	10.048	0.172	58.5	0.010	0.00	0.0	0.600	o	100	Pipe/Conduit	
2.002	8.012	0.138	58.0	0.000	0.00	0.0	0.600	o	100	Pipe/Conduit	
1.004	20.233	0.349	58.0	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
3.000	9.045	0.155	58.5	0.026	5.00	0.0	0.600	o	100	Pipe/Conduit	
3.001	9.565	0.164	58.3	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
3.002	11.727	0.201	58.3	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
3.003	7.801	0.137	56.9	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
4.000	9.757	0.167	58.4	0.010	5.00	0.0	0.600	o	150	Pipe/Conduit	
4.001	10.048	0.172	58.4	0.010	0.00	0.0	0.600	o	150	Pipe/Conduit	
4.002	7.690	0.136	56.5	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.005	16.089	0.096	167.9	0.135	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)
1.003	50.00	5.48	9.048	0.032	0.0	0.0	0.0	1.32	23.3	4.4
2.000	50.00	5.16	9.396	0.010	0.0	0.0	0.0	1.01	7.9	1.3
2.001	50.00	5.33	9.230	0.019	0.0	0.0	0.0	1.01	7.9	2.6
2.002	50.00	5.46	9.058	0.019	0.0	0.0	0.0	1.01	8.0	2.6
1.004	50.00	5.73	8.920	0.052	0.0	0.0	0.0	1.32	23.4	7.0
3.000	50.00	5.15	9.227	0.026	0.0	0.0	0.0	1.01	7.9	3.5
3.001	50.00	5.27	9.072	0.026	0.0	0.0	0.0	1.32	23.3	3.5
3.002	50.00	5.42	8.909	0.026	0.0	0.0	0.0	1.32	23.3	3.5
3.003	50.00	5.52	8.708	0.026	0.0	0.0	0.0	1.34	23.6	3.5
4.000	50.00	5.12	9.045	0.010	0.0	0.0	0.0	1.32	23.3	1.3
4.001	50.00	5.25	8.878	0.019	0.0	0.0	0.0	1.32	23.3	2.6
4.002	50.00	5.35	8.706	0.019	0.0	0.0	0.0	1.34	23.7	2.6
1.005	50.00	6.00	8.446	0.232	0.0	0.0	0.0	1.01	40.0	31.4



Manhole Schedules for Surface Network 1

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out			Pipes In			Backdrop (mm)
					PN	Invert Level (m)	Diameter (mm)	PN	Invert Level (m)	Diameter (mm)	
PS1	10.000	0.434	Open Manhole	250	1.000	9.566	150				
PS2	10.000	0.589	Open Manhole	250	1.001	9.412	150	1.000	9.411	150	
PS3	10.000	0.752	Open Manhole	250	1.002	9.248	150	1.001	9.248	150	
PS4	10.000	0.953	Open Manhole	250	1.003	9.048	150	1.002	9.047	150	
PS10	10.000	0.604	Open Manhole	450	2.000	9.396	100				
PS9	10.000	0.770	Open Manhole	450	2.001	9.230	100	2.000	9.230	100	
PS8	10.000	0.942	Open Manhole	450	2.002	9.058	100	2.001	9.058	100	
PS5	10.000	1.080	Open Manhole	450	1.004	8.920	150	1.003	8.920	150	
								2.002	8.920	100	
PS17	10.000	0.773	Open Manhole	250	3.000	9.227	100				
PS16	10.000	0.928	Open Manhole	250	3.001	9.072	150	3.000	9.072	100	
PS15	10.000	1.092	Open Manhole	450	3.002	8.909	150	3.001	8.908	150	
PS14	10.000	1.292	Open Manhole	450	3.003	8.708	150	3.002	8.708	150	
PS13	10.000	0.955	Open Manhole	250	4.000	9.045	150				
PS12	10.000	1.122	Open Manhole	450	4.001	8.878	150	4.000	8.878	150	
PS11	10.000	1.294	Open Manhole	450	4.002	8.706	150	4.001	8.706	150	
PS6	10.000	1.554	Open Manhole	450	1.005	8.446	225	1.004	8.571	150	50
								3.003	8.571	150	50
								4.002	8.570	150	49
PS7	10.000	1.650	Open Manhole	0		OUTFALL		1.005	8.350	225	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
PS1	-69.681	-27.181	-69.681	-27.181	Required	
PS2	-67.659	-18.365	-67.659	-18.365	Required	
PS3	-65.520	-9.041	-65.520	-9.041	Required	
PS4	-62.899	2.389	-62.899	2.389	Required	
PS10	-55.008	36.791	-55.008	36.791	Required	

Ground Floor, 24 High Street
Whittlesford
Cambs, CB22 4LT

Monks Green Farm
SWS Calcs



Date 30/11/2023 09:50
File SWS-CALC.MDX


Designed by JF
Checked by

Innovyze

Network 2020.1

Manhole Schedules for Surface Network 1

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
PS9	-57.190	27.281	-57.190	27.281	Required	
PS8	-59.436	17.487	-59.436	17.487	Required	
PS5	-61.222	9.677	-61.222	9.677	Required	
PS17	-49.985	-31.698	-49.985	-31.698	Required	
PS16	-47.963	-22.882	-47.963	-22.882	Required	
PS15	-45.825	-13.559	-45.825	-13.559	Required	
PS14	-43.203	-2.129	-43.203	-2.129	Required	
PS13	-35.313	32.274	-35.313	32.274	Required	
PS12	-37.494	22.763	-37.494	22.763	Required	
PS11	-39.740	12.970	-39.740	12.970	Required	
PS6	-41.432	5.469	-41.432	5.469	Required	
PS7	-26.973	-1.590			No Entry	

MTC Engineering (Cambridge) Ltd		Page 4
Ground Floor, 24 High Street Whittlesford Cambs, CB22 4LT	Monks Green Farm SWS Calcs	
Date 30/11/2023 09:50 File SWS-CALC.MDX	Designed by JF Checked by	
Innovyze	Network 2020.1	


PIPELINE SCHEDULES for Surface Network 1

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	o	150	PS1	10.000	9.566	0.284	Open Manhole	250
1.001	o	150	PS2	10.000	9.412	0.438	Open Manhole	250
1.002	o	150	PS3	10.000	9.248	0.602	Open Manhole	250
1.003	o	150	PS4	10.000	9.048	0.802	Open Manhole	250
2.000	o	100	PS10	10.000	9.396	0.504	Open Manhole	450
2.001	o	100	PS9	10.000	9.230	0.670	Open Manhole	450
2.002	o	100	PS8	10.000	9.058	0.842	Open Manhole	450
1.004	o	150	PS5	10.000	8.920	0.930	Open Manhole	450
3.000	o	100	PS17	10.000	9.227	0.673	Open Manhole	250
3.001	o	150	PS16	10.000	9.072	0.778	Open Manhole	250
3.002	o	150	PS15	10.000	8.909	0.941	Open Manhole	450
3.003	o	150	PS14	10.000	8.708	1.142	Open Manhole	450
4.000	o	150	PS13	10.000	9.045	0.805	Open Manhole	250
4.001	o	150	PS12	10.000	8.878	0.972	Open Manhole	450
4.002	o	150	PS11	10.000	8.706	1.144	Open Manhole	450
1.005	o	225	PS6	10.000	8.446	1.329	Open Manhole	450

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	9.045	58.4	PS2	10.000	9.411	0.439	Open Manhole	250
1.001	9.565	58.3	PS3	10.000	9.248	0.602	Open Manhole	250
1.002	11.727	58.3	PS4	10.000	9.047	0.803	Open Manhole	250
1.003	7.479	58.4	PS5	10.000	8.920	0.930	Open Manhole	450
2.000	9.757	58.5	PS9	10.000	9.230	0.670	Open Manhole	450
2.001	10.048	58.5	PS8	10.000	9.058	0.842	Open Manhole	450
2.002	8.012	58.0	PS5	10.000	8.920	0.980	Open Manhole	450
1.004	20.233	58.0	PS6	10.000	8.571	1.279	Open Manhole	450
3.000	9.045	58.5	PS16	10.000	9.072	0.828	Open Manhole	250
3.001	9.565	58.3	PS15	10.000	8.908	0.942	Open Manhole	450
3.002	11.727	58.3	PS14	10.000	8.708	1.142	Open Manhole	450
3.003	7.801	56.9	PS6	10.000	8.571	1.279	Open Manhole	450
4.000	9.757	58.4	PS12	10.000	8.878	0.972	Open Manhole	450
4.001	10.048	58.4	PS11	10.000	8.706	1.144	Open Manhole	450
4.002	7.690	56.5	PS6	10.000	8.570	1.280	Open Manhole	450
1.005	16.089	167.9	PS7	10.000	8.350	1.425	Open Manhole	0

MTC Engineering (Cambridge) Ltd		Page 5
Ground Floor, 24 High Street Whittlesford Cambs, CB22 4LT	Monks Green Farm SWS Calcs	
Date 30/11/2023 09:50 File SWS-CALC.MDX	Designed by JF Checked by	
Innovyze	Network 2020.1	

Free Flowing Outfall Details for Surface Network 1

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
------------------------	-----------------	-----------------	-----------------	------------------------	-------------	-----------


1.005	PS7	10.000	8.350	8.350	0	0
-------	-----	--------	-------	-------	---	---

Simulation Criteria for Surface Network 1

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m ³ /ha Storage	2.000
Hot Start (mins)	0	Inlet Coefficient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1
Number of Input Hydrographs	0	Number of Storage Structures	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	FEH
Return Period (years)	2
FEH Rainfall Version	2013
Site Location	GB 533381 208600 TL 33381 08600
Data Type	Point
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Storm Duration (mins)	30

MTC Engineering (Cambridge) Ltd		Page 6
Ground Floor, 24 High Street Whittlesford Cambs, CB22 4LT	Monks Green Farm SWS Calcs	
Date 30/11/2023 09:50 File SWS-CALC.MDX	Designed by JF Checked by	
Innovyze	Network 2020.1	

Online Controls for Surface Network 1


Hydro-Brake® Optimum Manhole: PS6, DS/PN: 1.005, Volume (m³): 0.9

Unit Reference	MD-SHE-0042-1000-1544-1000
Design Head (m)	1.544
Design Flow (l/s)	1.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	42
Invert Level (m)	8.446
Minimum Outlet Pipe Diameter (mm)	75
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.544	1.0
Flush-Flo™	0.185	0.6
Kick-Flo®	0.377	0.5
Mean Flow over Head Range	-	0.7

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	0.6	1.200	0.9	3.000	1.3	7.000	2.0
0.200	0.6	1.400	1.0	3.500	1.4	7.500	2.1
0.300	0.6	1.600	1.0	4.000	1.5	8.000	2.1
0.400	0.6	1.800	1.1	4.500	1.6	8.500	2.2
0.500	0.6	2.000	1.1	5.000	1.7	9.000	2.2
0.600	0.7	2.200	1.2	5.500	1.8	9.500	2.3
0.800	0.7	2.400	1.2	6.000	1.9		
1.000	0.8	2.600	1.3	6.500	1.9		

MTC Engineering (Cambridge) Ltd		Page 7
Ground Floor, 24 High Street Whittlesford Cambs, CB22 4LT	Monks Green Farm SWS Calcs	
Date 30/11/2023 09:50 File SWS-CALC.MDX	Designed by JF Checked by	
Innovyze	Network 2020.1	

Storage Structures for Surface Network 1

Complex Manhole: PS6, DS/PN: 1.005


Cellular Storage

Invert Level (m) 8.446 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	32.0	32.0	0.801	0.0	50.1
0.800	32.0	50.1			

Porous Car Park

Infiltration Coefficient Base (m/hr) 0.00000 Width (m) 134.5
 Membrane Percolation (mm/hr) 1000 Length (m) 10.0
 Max Percolation (l/s) 373.6 Slope (1:X) 0.0
 Safety Factor 2.0 Depression Storage (mm) 5
 Porosity 0.30 Evaporation (mm/day) 3
 Invert Level (m) 9.500 Membrane Depth (mm) 0

MTC Engineering (Cambridge) Ltd		Page 8
Ground Floor, 24 High Street Whittlesford Cambs, CB22 4LT	Monks Green Farm SWS Calcs	
Date 30/11/2023 09:50 File SWS-CALC.MDX	Designed by JF Checked by	
Innovyze	Network 2020.1	

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

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 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 FEH
FEH Rainfall Version 2013
Site Location GB 533381 208600 TL 33381 08600
Data Type Point
Cv (Summer) 1.000
Cv (Winter) 1.000

Margin for Flood Risk Warning (mm) 150.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS 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) 2, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	PS1	15 Summer	2	+0%	30/30 Summer				9.624
1.001	PS2	480 Winter	2	+0%	30/15 Summer				9.539
1.002	PS3	480 Winter	2	+0%	2/120 Summer				9.539
1.003	PS4	480 Winter	2	+0%	2/120 Summer				9.539
2.000	PS10	480 Winter	2	+0%	2/120 Summer				9.540
2.001	PS9	480 Winter	2	+0%	2/120 Summer				9.539
2.002	PS8	480 Winter	2	+0%	2/120 Summer				9.539
1.004	PS5	480 Winter	2	+0%	2/60 Summer				9.538
3.000	PS17	480 Winter	2	+0%	2/120 Summer				9.539
3.001	PS16	480 Winter	2	+0%	2/120 Summer				9.538
3.002	PS15	480 Winter	2	+0%	2/60 Summer				9.538
3.003	PS14	480 Winter	2	+0%	2/30 Summer				9.537
4.000	PS13	480 Winter	2	+0%	2/120 Summer				9.537
4.001	PS12	480 Winter	2	+0%	2/60 Summer				9.538
4.002	PS11	480 Winter	2	+0%	2/30 Summer				9.537
1.005	PS6	480 Winter	2	+0%	2/15 Summer				9.537

MTC Engineering (Cambridge) Ltd		Page 9
Ground Floor, 24 High Street Whittlesford Cambs, CB22 4LT	Monks Green Farm SWS Calcs	
Date 30/11/2023 09:50 File SWS-CALC.MDX	Designed by JF Checked by	
Innovyze	Network 2020.1	

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

PN	US/MH Name	Surcharged Flooded		Flow / Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
		Depth (m)	Volume (m ³)					
1.000	PS1	-0.092	0.000	0.32		6.5	OK	
1.001	PS2	-0.023	0.000	0.04		0.8	OK	
1.002	PS3	0.141	0.000	0.04		0.8	SURCHARGED	
1.003	PS4	0.341	0.000	0.04		0.8	SURCHARGED	
2.000	PS10	0.043	0.000	0.03		0.2	SURCHARGED	
2.001	PS9	0.210	0.000	0.07		0.5	SURCHARGED	
2.002	PS8	0.381	0.000	0.07		0.5	SURCHARGED	
1.004	PS5	0.468	0.000	0.06		1.2	SURCHARGED	
3.000	PS17	0.212	0.000	0.09		0.7	SURCHARGED	
3.001	PS16	0.316	0.000	0.03		0.7	SURCHARGED	
3.002	PS15	0.479	0.000	0.03		0.6	SURCHARGED	
3.003	PS14	0.679	0.000	0.03		0.6	SURCHARGED	
4.000	PS13	0.342	0.000	0.01		0.2	SURCHARGED	
4.001	PS12	0.510	0.000	0.02		0.4	SURCHARGED	
4.002	PS11	0.681	0.000	0.02		0.4	SURCHARGED	
1.005	PS6	0.866	0.000	0.02	504	0.9	SURCHARGED	

MTC Engineering (Cambridge) Ltd		Page 10
Ground Floor, 24 High Street Whittlesford Cambs, CB22 4LT	Monks Green Farm SWS Calcs	
Date 30/11/2023 09:50 File SWS-CALC.MDX	Designed by JF Checked by	
Innovyze	Network 2020.1	

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

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 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 FEH
FEH Rainfall Version 2013
Site Location GB 533381 208600 TL 33381 08600
Data Type Point
Cv (Summer) 1.000
Cv (Winter) 1.000

Margin for Flood Risk Warning (mm) 150.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS 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) 2, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	PS1	30 Summer	30	+0%	30/30 Summer				9.747
1.001	PS2	30 Summer	30	+0%	30/15 Summer				9.721
1.002	PS3	30 Summer	30	+0%	2/120 Summer				9.690
1.003	PS4	480 Winter	30	+0%	2/120 Summer				9.671
2.000	PS10	30 Summer	30	+0%	2/120 Summer				9.768
2.001	PS9	30 Summer	30	+0%	2/120 Summer				9.748
2.002	PS8	30 Summer	30	+0%	2/120 Summer				9.681
1.004	PS5	600 Summer	30	+0%	2/60 Summer				9.673
3.000	PS17	30 Summer	30	+0%	2/120 Summer				9.750
3.001	PS16	480 Winter	30	+0%	2/120 Summer				9.670
3.002	PS15	480 Winter	30	+0%	2/60 Summer				9.670
3.003	PS14	480 Winter	30	+0%	2/30 Summer				9.669
4.000	PS13	480 Winter	30	+0%	2/120 Summer				9.670

MTC Engineering (Cambridge) Ltd		Page 11
Ground Floor, 24 High Street Whittlesford Cambs, CB22 4LT	Monks Green Farm SWS Calcs	
Date 30/11/2023 09:50 File SWS-CALC.MDX	Designed by JF Checked by	
Innovyze	Network 2020.1	

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


PN	US/MH Name	Surcharged		Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
		Depth (m)	Volume (m ³)						
1.000	PS1	0.031	0.000	0.63			13.0	SURCHARGED	
1.001	PS2	0.159	0.000	0.63			13.0	SURCHARGED	
1.002	PS3	0.292	0.000	0.58			12.3	SURCHARGED	
1.003	PS4	0.473	0.000	0.08			1.5	SURCHARGED	
2.000	PS10	0.272	0.000	0.51			3.7	SURCHARGED	
2.001	PS9	0.418	0.000	0.92			6.8	SURCHARGED	
2.002	PS8	0.523	0.000	0.88			6.4	SURCHARGED	
1.004	PS5	0.603	0.000	0.14			3.0	SURCHARGED	
3.000	PS17	0.423	0.000	1.32			9.7	SURCHARGED	
3.001	PS16	0.448	0.000	0.06			1.2	SURCHARGED	
3.002	PS15	0.611	0.000	0.06			1.2	SURCHARGED	
3.003	PS14	0.811	0.000	0.06			1.2	SURCHARGED	
4.000	PS13	0.475	0.000	0.02			0.5	SURCHARGED	

MTC Engineering (Cambridge) Ltd		Page 12
Ground Floor, 24 High Street Whittlesford Cambs, CB22 4LT	Monks Green Farm SWS Calcs	
Date 30/11/2023 09:50 File SWS-CALC.MDX	Designed by JF Checked by	
Innovyze	Network 2020.1	

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

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
4.001	PS12	480	Winter	30	+0% 2/60	Summer			9.670
4.002	PS11	480	Winter	30	+0% 2/30	Summer			9.669
1.005	PS6	480	Winter	30	+0% 2/15	Summer			9.669

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap. (l/s)	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
4.001	PS12	0.642	0.000	0.04			0.9	SURCHARGED	
4.002	PS11	0.813	0.000	0.04			0.9	SURCHARGED	
1.005	PS6	0.998	0.000	0.03			0.9	SURCHARGED	

MTC Engineering (Cambridge) Ltd		Page 13
Ground Floor, 24 High Street Whittlesford Cambs, CB22 4LT	Monks Green Farm SWS Calcs	
Date 30/11/2023 09:50 File SWS-CALC.MDX	Designed by JF Checked by	
Innovyze	Network 2020.1	

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

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 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 FEH
FEH Rainfall Version 2013
Site Location GB 533381 208600 TL 33381 08600
Data Type Point
Cv (Summer) 1.000
Cv (Winter) 1.000

Margin for Flood Risk Warning (mm) 150.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS 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) 2, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	PS1	30 Summer	100	+40%	30/30 Summer				10.000
1.001	PS2	60 Summer	100	+40%	30/15 Summer				9.957
1.002	PS3	720 Winter	100	+40%	2/120 Summer				9.938
1.003	PS4	720 Winter	100	+40%	2/120 Summer				9.937
2.000	PS10	30 Summer	100	+40%	2/120 Summer				9.999
2.001	PS9	15 Summer	100	+40%	2/120 Summer				10.000
2.002	PS8	720 Winter	100	+40%	2/120 Summer				9.938
1.004	PS5	720 Winter	100	+40%	2/60 Summer				9.937
3.000	PS17	30 Summer	100	+40%	2/120 Summer				10.000
3.001	PS16	720 Winter	100	+40%	2/120 Summer				9.937
3.002	PS15	720 Winter	100	+40%	2/60 Summer				9.936
3.003	PS14	720 Winter	100	+40%	2/30 Summer				9.936
4.000	PS13	720 Winter	100	+40%	2/120 Summer				9.936

MTC Engineering (Cambridge) Ltd		Page 14
Ground Floor, 24 High Street Whittlesford Cambs, CB22 4LT	Monks Green Farm SWS Calcs	
Date 30/11/2023 09:50 File SWS-CALC.MDX	Designed by JF Checked by	
Innovyze	Network 2020.1	

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

PN	US/MH Name	Surcharged		Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
		Depth (m)	Volume (m ³)						
1.000	PS1	0.284	0.000	0.78			16.0	FLOOD RISK	
1.001	PS2	0.395	0.000	0.57			11.8	FLOOD RISK	
1.002	PS3	0.540	0.000	0.09			2.0	FLOOD RISK	
1.003	PS4	0.739	0.000	0.10			2.0	FLOOD RISK	
2.000	PS10	0.503	0.000	0.70			5.1	FLOOD RISK	
2.001	PS9	0.670	0.000	1.24			9.2	FLOOD RISK	
2.002	PS8	0.780	0.000	0.16			1.2	FLOOD RISK	
1.004	PS5	0.867	0.000	0.14			3.1	FLOOD RISK	
3.000	PS17	0.673	0.000	1.48			10.9	FLOOD RISK	
3.001	PS16	0.715	0.000	0.08			1.6	FLOOD RISK	
3.002	PS15	0.877	0.000	0.08			1.6	FLOOD RISK	
3.003	PS14	1.078	0.000	0.08			1.6	FLOOD RISK	
4.000	PS13	0.741	0.000	0.03			0.6	FLOOD RISK	

MTC Engineering (Cambridge) Ltd		Page 15
Ground Floor, 24 High Street Whittlesford Cambs, CB22 4LT	Monks Green Farm SWS Calcs	
Date 30/11/2023 09:50 File SWS-CALC.MDX	Designed by JF Checked by	
Innovyze	Network 2020.1	

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

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
4.001	PS12	720	Winter	100	+40%	2/60	Summer		9.936
4.002	PS11	720	Winter	100	+40%	2/30	Summer		9.935
1.005	PS6	720	Winter	100	+40%	2/15	Summer		9.935

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap. (l/s)	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
4.001	PS12	0.908	0.000	0.06			1.2	FLOOD RISK	
4.002	PS11	1.079	0.000	0.06			1.2	FLOOD RISK	
1.005	PS6	1.264	0.000	0.03			1.0	FLOOD RISK	