Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs	0	Number of 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)	1
Site Location	439400 302750 SK 39400 02750
C (1km)	-0.029
D1 (1km)	0.362
D2 (1km)	0.338
D3 (1km)	0.281
E (1km)	0.309
F (1km)	2.369
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Storm Duration (mins)	30

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Online Controls for Storm

Hydro-Brake Optimum® Manhole: SA35, DS/PN: S1.014, Volume (m³): 6.0

Unit Reference	MD-SHE-0203-2120-1025-2120
Design Head (m)	1.025
Design Flow (l/s)	21.2
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	203
Invert Level (m)	94.125
Minimum Outlet Pipe Diameter (mm)	225
Suggested Manhole Diameter (mm)	1500

Control Points	**Head (m)**	**Flow (l/s)**
Design Point (Calculated)	1.025	21.2
Flush-Flo™	0.349	21.1
Kick-Flo®	0.737	18.1
Mean Flow over Head Range	-	17.8

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

Depth (m)	**Flow (l/s)**	**Depth (m)**	**Flow (l/s)**	**Depth (m)**	**Flow (l/s)**	**Depth (m)**	**Flow (l/s)**
0.100	7.0	1.200	22.8	3.000	35.4	7.000	53.3
0.200	19.4	1.400	24.6	3.500	38.1	7.500	55.2
0.300	21.0	1.600	26.2	4.000	40.7	8.000	56.9
0.400	21.1	1.800	27.7	4.500	43.1	8.500	58.6
0.500	20.7	2.000	29.1	5.000	45.3	9.000	60.3
0.600	20.2	2.200	30.5	5.500	47.5	9.500	61.9
0.800	18.8	2.400	31.8	6.000	49.5		
1.000	20.9	2.600	33.1	6.500	51.5		

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Storage Structures for Storm

Tank or Pond Manhole: SHW3, DS/PN: S1.013

Invert Level (m) 94.150

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	1900.0	1.000	1900.0

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Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

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

Number of Input Hydrographs 0 Number of 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 0.400
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 20.200 Cv (Winter) 0.840

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

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

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S1.000	SA1	15 Winter	30	+0%					98.964
S1.001	SA2	15 Winter	30	+0%					98.500
S1.002	SA3	15 Winter	30	+0%	30/15 Summer				98.406
S2.000	SA4	15 Winter	30	+0%					102.277
S2.001	SA5	15 Winter	30	+0%					101.971
S2.002	SA6	15 Winter	30	+0%					100.931
S2.003	SA7	15 Winter	30	+0%	30/15 Summer				100.470
S2.004	SA8	15 Winter	30	+0%	30/15 Summer				100.277
S2.005	SA9	15 Winter	30	+0%	30/15 Winter				99.977
S2.006	SA10	15 Winter	30	+0%					99.191
S1.003	SA11	15 Winter	30	+0%	30/15 Summer				98.203
S1.004	SA12	15 Winter	30	+0%					97.925
S3.000	SA13	15 Winter	30	+0%					102.214
S3.001	SA14	15 Winter	30	+0%					101.520
S3.002	SA15	15 Winter	30	+0%	30/15 Summer				99.521
S3.003	SA16	15 Winter	30	+0%					98.982
S3.004	SA17	15 Winter	30	+0%					97.777
S3.005	SA18	15 Winter	30	+0%	30/15 Summer				97.737

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Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	SA1	-0.086	0.000	0.64		25.1	OK	
S1.001	SA2	-0.110	0.000	0.62		50.2	OK	
S1.002	SA3	0.066	0.000	1.00		67.1	SURCHARGED	
S2.000	SA4	-0.123	0.000	0.42		26.5	OK	
S2.001	SA5	-0.179	0.000	0.34		54.5	OK	
S2.002	SA6	-0.169	0.000	0.39		82.5	OK	
S2.003	SA7	0.410	0.000	2.05		107.0	SURCHARGED	
S2.004	SA8	0.247	0.000	2.26		133.2	SURCHARGED	
S2.005	SA9	0.007	0.000	1.01		154.7	SURCHARGED	
S2.006	SA10	-0.254	0.000	0.39		179.4	OK	
S1.003	SA11	0.138	0.000	1.69		262.9	SURCHARGED	
S1.004	SA12	-0.055	0.000	0.88		285.2	OK	
S3.000	SA13	-0.136	0.000	0.33		26.6	OK	
S3.001	SA14	-0.105	0.000	0.54		54.2	OK	
S3.002	SA15	0.346	0.000	2.34		81.1	SURCHARGED	
S3.003	SA16	-0.118	0.000	0.66		107.4	OK	
S3.004	SA17	-0.123	0.000	0.52		131.3	OK	
S3.005	SA18	0.037	0.000	1.08		153.6	SURCHARGED	

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Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S1.005	SA19	15 Winter	30	+0%	30/15 Summer				97.684
S1.006	SA20	15 Winter	30	+0%	30/15 Summer				97.486
S1.007	SA21	15 Winter	30	+0%					96.952
S1.008	SA22	15 Winter	30	+0%	30/15 Summer				95.753
S4.000	SA23	15 Winter	30	+0%					97.971
S4.001	SA24	15 Winter	30	+0%	30/15 Winter				97.719
S4.002	SA25	15 Winter	30	+0%					96.708
S1.009	SA26	15 Winter	30	+0%	30/15 Summer				95.511
S1.010	SA27	15 Winter	30	+0%	30/15 Summer				95.323
S5.000	SA28	15 Winter	30	+0%					97.582
S5.001	SA29	15 Winter	30	+0%					96.999
S5.002	SA30	15 Winter	30	+0%					96.809
S5.003	SA31	15 Winter	30	+0%					95.949
S5.004	SA32	15 Winter	30	+0%					95.652
S1.011	SA33	15 Winter	30	+0%	30/15 Summer				95.241
S1.012	SHW1	15 Winter	30	+0%	30/15 Winter				95.065
S6.000	SA34	480 Winter	30	+0%					94.616
S6.001	SHW2	480 Winter	30	+0%	30/120 Winter				94.600
S1.013	SHW3	480 Winter	30	+0%					94.587
S1.014	SA35	480 Winter	30	+0%	30/15 Winter				94.582

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.005	SA19	0.034	0.000	0.98		437.7	SURCHARGED	
S1.006	SA20	0.036	0.000	1.17		455.5	SURCHARGED	
S1.007	SA21	-0.348	0.000	0.37		471.2	OK	
S1.008	SA22	0.318	0.000	1.78		482.4	SURCHARGED	
S4.000	SA23	-0.129	0.000	0.38		26.6	OK	
S4.001	SA24	0.019	0.000	0.98		50.6	SURCHARGED	
S4.002	SA25	-0.092	0.000	0.63		75.4	OK	
S1.009	SA26	0.121	0.000	0.86		545.2	SURCHARGED	
S1.010	SA27	0.188	0.000	1.11		555.3	SURCHARGED	
S5.000	SA28	-0.118	0.000	0.45		26.0	OK	
S5.001	SA29	-0.151	0.000	0.48		53.9	OK	
S5.002	SA30	-0.141	0.000	0.54		81.9	OK	
S5.003	SA31	-0.251	0.000	0.40		109.1	OK	
S5.004	SA32	-0.248	0.000	0.41		134.6	OK	
S1.011	SA33	0.171	0.000	2.29		655.6	SURCHARGED	
S1.012	SHW1	0.015	0.000	1.16		655.5	SURCHARGED	
S6.000	SA34	-0.184	0.000	0.07		5.0	OK	
S6.001	SHW2	0.075	0.000	0.16		5.0	SURCHARGED	
S1.013	SHW3	-0.313	0.000	0.08		29.1	OK	
S1.014	SA35	0.232	0.000	0.32		21.1	SURCHARGED	

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