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Kingston House Long Barrow Road Orbital Park Ashford	36939 Dover Road Sandwich	
Date 21/01/2021 File 36939-KHP-CA-C-0001-SUR...	Designed by LB Checked by DK	
Causeway		Network 2020.1

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	2	PIMP (%)	100
M5-60 (mm)	26.250	Add Flow / Climate Change (%)	0
Ratio R	0.400	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	75	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Storm




Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.319	4-8	0.566	8-12	0.017

Total Area Contributing (ha) = 0.902

Total Pipe Volume (m³) = 34.193


Network Design Table for Storm

« - Indicates pipe capacity < flow










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	18.395	0.568	32.4	0.040	4.00	0.0	0.600	o	225	Pipe/Conduit	
2.000	18.100	0.108	167.0	0.076	4.00	0.0	0.600	o	225	Pipe/Conduit	
1.001	52.183	0.209	250.0	0.087	0.00	0.0	0.600	o	300	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL E (m)	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	75.00	4.13	6.810	0.040	0.0	0.0	0.0	2.31	91.7	8.1
2.000	75.00	4.30	6.350	0.076	0.0	0.0	0.0	1.01	40.1	15.4
1.001	75.00	5.18	6.167	0.203	0.0	0.0	0.0	0.99	70.0	41.2


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Network Design Table for Storm

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
1.002	13.422	0.053	253.2	0.028	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.003	32.824	0.131	250.0	0.145	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.004	32.489	0.314	103.5	0.074	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.005	17.007	0.057	298.4	0.026	0.00	0.0	0.600	o	450	Pipe/Conduit	
3.000	10.000	0.047	212.8	0.000	4.00	0.0	0.600	o	450	Pipe/Conduit	
1.006	57.227	0.247	231.7	0.212	0.00	0.0	0.600	o	450	Pipe/Conduit	
4.000	16.410	0.219	74.9	0.123	4.00	0.0	0.600	o	225	Pipe/Conduit	
1.007	37.026	0.123	301.0	0.091	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.008	38.415	0.256	150.1	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)	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)
1.002	75.00	5.41	5.958	0.231	0.0	0.0	0.0	0.98	69.5	46.9
1.003	75.00	5.96	5.905	0.376	0.0	0.0	0.0	0.99	70.0	76.4
1.004	75.00	6.23	5.624	0.450	0.0	0.0	0.0	2.00	317.9	91.4
1.005	75.00	6.47	5.310	0.476	0.0	0.0	0.0	1.17	186.4	96.7
3.000	75.00	4.12	5.300	0.000	0.0	0.0	0.0	1.39	221.0	0.0
1.006	75.00	7.19	5.253	0.688	0.0	0.0	0.0	1.33	211.7	139.7
4.000	75.00	4.18	5.350	0.123	0.0	0.0	0.0	1.51	60.1	25.0
1.007	75.00	7.72	5.006	0.902	0.0	0.0	0.0	1.17	185.5	183.2
1.008	72.35	8.50	4.883	0.902	0.0	0.0	0.0	0.82	14.5	183.2

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Manhole Schedules for Storm

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)
1	7.860	1.050	Open Manhole	1200	1.000	6.810	225			
2	7.340	0.990	Open Manhole	1200	2.000	6.350	225			
3	7.610	1.443	Open Manhole	1200	1.001	6.167	300	1.000	6.242	225
								2.000	6.242	225
4	7.570	1.612	Open Manhole	1200	1.002	5.958	300	1.001	5.958	300
5	7.330	1.425	Open Manhole	1200	1.003	5.905	300	1.002	5.905	300
6	6.920	1.296	Open Manhole	1350	1.004	5.624	450	1.003	5.774	300
8	6.510	1.200	Open Manhole	1350	1.005	5.310	450	1.004	5.310	450
8	7.150	1.850	Open Manhole	1350	3.000	5.300	450			
7	6.460	1.207	Open Manhole	1350	1.006	5.253	450	1.005	5.253	450
								3.000	5.253	450
9	6.580	1.230	Open Manhole	1200	4.000	5.350	225			
10	6.460	1.454	Open Manhole	1350	1.007	5.006	450	1.006	5.006	450
								4.000	5.131	225
11	6.800	1.917	Open Manhole	1350	1.008	4.883	150	1.007	4.883	450
	5.500	0.873	Open Manhole	0		OUTFALL		1.008	4.627	150

No coordinates have been specified, layout information cannot be produced.

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PIPELINE SCHEDULES for Storm

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	225	1	7.860	6.810	0.825	Open Manhole	1200
2.000	o	225	2	7.340	6.350	0.765	Open Manhole	1200
1.001	o	300	3	7.610	6.167	1.143	Open Manhole	1200
1.002	o	300	4	7.570	5.958	1.312	Open Manhole	1200
1.003	o	300	5	7.330	5.905	1.125	Open Manhole	1200
1.004	o	450	6	6.920	5.624	0.846	Open Manhole	1350
1.005	o	450	8	6.510	5.310	0.750	Open Manhole	1350
3.000	o	450	8	7.150	5.300	1.400	Open Manhole	1350
1.006	o	450	7	6.460	5.253	0.757	Open Manhole	1350
4.000	o	225	9	6.580	5.350	1.005	Open Manhole	1200
1.007	o	450	10	6.460	5.006	1.004	Open Manhole	1350
1.008	o	150	11	6.800	4.883	1.767	Open Manhole	1350

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	18.395	32.4	3	7.610	6.242	1.143	Open Manhole	1200
2.000	18.100	167.0	3	7.610	6.242	1.143	Open Manhole	1200
1.001	52.183	250.0	4	7.570	5.958	1.312	Open Manhole	1200
1.002	13.422	253.2	5	7.330	5.905	1.125	Open Manhole	1200
1.003	32.824	250.0	6	6.920	5.774	0.846	Open Manhole	1350
1.004	32.489	103.5	8	6.510	5.310	0.750	Open Manhole	1350
1.005	17.007	298.4	7	6.460	5.253	0.757	Open Manhole	1350
3.000	10.000	212.8	7	6.460	5.253	0.757	Open Manhole	1350
1.006	57.227	231.7	10	6.460	5.006	1.004	Open Manhole	1350
4.000	16.410	74.9	10	6.460	5.131	1.104	Open Manhole	1350
1.007	37.026	301.0	11	6.800	4.883	1.467	Open Manhole	1350
1.008	38.415	150.1		5.500	4.627	0.723	Open Manhole	0

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Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall C. Level Name (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
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1.008	5.500	4.627	0.000	0	0
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Simulation Criteria for Storm

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	7
Number of Online Controls	2	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	2	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	20.600	Storm Duration (mins)	30
Ratio R	0.400		

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Online Controls for Storm

Orifice Manhole: 7, DS/PN: 1.006, Volume (m³): 5.6

Diameter (m) 0.250 Discharge Coefficient 0.600 Invert Level (m) 5.253


Hydro-Brake® Optimum Manhole: 11, DS/PN: 1.008, Volume (m³): 8.4

Unit Reference	MD-SHE-0097-5000-1577-5000
Design Head (m)	1.577
Design Flow (l/s)	5.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	97
Invert Level (m)	4.883
Minimum Outlet Pipe Diameter (mm)	150
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.577	5.0
Flush-Flo™	0.424	4.7
Kick-Flo®	0.863	3.8
Mean Flow over Head Range	-	4.2

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	3.1	1.200	4.4	3.000	6.7	7.000	10.1
0.200	4.3	1.400	4.7	3.500	7.3	7.500	10.4
0.300	4.6	1.600	5.0	4.000	7.7	8.000	10.7
0.400	4.7	1.800	5.3	4.500	8.2	8.500	11.0
0.500	4.7	2.000	5.6	5.000	8.6	9.000	11.4
0.600	4.6	2.200	5.8	5.500	9.0	9.500	11.7
0.800	4.1	2.400	6.1	6.000	9.4		
1.000	4.0	2.600	6.3	6.500	9.7		

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Storage Structures for Storm

Cellular Storage Manhole: 2, DS/PN: 2.000

Invert Level (m) 6.400 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	51.0	51.0	0.501	0.0	65.3
0.500	51.0	65.3			

Porous Car Park Manhole: 5, DS/PN: 1.003

Infiltration Coefficient Base (m/hr) 0.00000 Width (m) 12.9
 Membrane Percolation (mm/hr) 1000 Length (m) 12.9
 Max Percolation (l/s) 46.2 Slope (1:X) 500.0
 Safety Factor 2.0 Depression Storage (mm) 5
 Porosity 0.30 Evaporation (mm/day) 3
 Invert Level (m) 6.580 Cap Volume Depth (m) 0.335

Porous Car Park Manhole: 6, DS/PN: 1.004

Infiltration Coefficient Base (m/hr) 0.00000 Width (m) 13.4
 Membrane Percolation (mm/hr) 1000 Length (m) 13.4
 Max Percolation (l/s) 49.9 Slope (1:X) 500.0
 Safety Factor 2.0 Depression Storage (mm) 5
 Porosity 0.30 Evaporation (mm/day) 3
 Invert Level (m) 5.810 Cap Volume Depth (m) 0.335


Porous Car Park Manhole: 8, DS/PN: 1.005

Infiltration Coefficient Base (m/hr) 0.00000 Width (m) 14.4
 Membrane Percolation (mm/hr) 1000 Length (m) 14.4
 Max Percolation (l/s) 57.6 Slope (1:X) 500.0
 Safety Factor 2.0 Depression Storage (mm) 5
 Porosity 0.30 Evaporation (mm/day) 3
 Invert Level (m) 6.100 Cap Volume Depth (m) 0.335

Complex Manhole: 8, DS/PN: 3.000

Cellular Storage

Invert Level (m) 5.300 Safety Factor 2.0
 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
 Infiltration Coefficient Side (m/hr) 0.00000

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Cellular Storage

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	420.0	420.0	1.501	0.0	543.0
1.500	420.0	543.0			

Porous Car Park

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	15.4
Membrane Percolation (mm/hr)	1000	Length (m)	15.4
Max Percolation (l/s)	65.9	Slope (1:X)	500.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	5.770	Cap Volume Depth (m)	0.500

Complex Manhole: 9, DS/PN: 4.000

Cellular Storage

Invert Level (m)	5.350	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	54.0	54.0	0.501	0.0	68.7
0.500	54.0	68.7			

Porous Car Park


Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	9.9
Membrane Percolation (mm/hr)	1000	Length (m)	9.9
Max Percolation (l/s)	27.2	Slope (1:X)	500.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	5.300	Cap Volume Depth (m)	0.335

Complex Manhole: 10, DS/PN: 1.007

Cellular Storage

Invert Level (m)	5.006	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	84.0	84.0	0.501	0.0	102.3
0.500	84.0	102.3			

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Porous Car Park

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	11.4
Membrane Percolation (mm/hr)	1000	Length (m)	11.4
Max Percolation (l/s)	36.1	Slope (1:X)	500.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	6.096	Cap Volume Depth (m)	0.335

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1 year Return Period 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 * 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	7
Number of Online Controls	2	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)		26.250 Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	ON
Analysis Timestep		Fine Inertia Status	ON
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)		1, 30, 100
Climate Change (%)		0, 0, 30

WARNING: Half Drain Time has not been calculated as the structure is too full.


PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.
1.000	1	15 Winter	1	+0%	100/15 Summer			
2.000	2	15 Winter	1	+0%	30/15 Summer	100/15 Winter		
1.001	3	15 Winter	1	+0%	30/15 Summer			
1.002	4	15 Winter	1	+0%	30/15 Summer			
1.003	5	15 Winter	1	+0%	30/15 Summer			
1.004	6	15 Winter	1	+0%	100/15 Summer			
1.005	8	30 Winter	1	+0%	30/15 Summer			
3.000	8	360 Winter	1	+0%	30/60 Winter			
1.006	7	30 Winter	1	+0%	30/15 Summer	100/360 Winter		
4.000	9	120 Winter	1	+0%	30/15 Summer			
1.007	10	60 Winter	1	+0%	1/60 Winter	100/180 Winter		
1.008	11	120 Winter	1	+0%	1/15 Summer	30/1440 Winter		

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

PN	US/MH Name	Water		Surcharged		Flooded		Half Drain		Pipe Flow (l/s)	Status
		Level (m)	Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)	Time (mins)				
1.000	1	6.857	-0.178	0.000	0.10					8.0	OK
2.000	2	6.434	-0.141	0.000	0.30			6		10.7	OK
1.001	3	6.312	-0.155	0.000	0.45					29.9	OK
1.002	4	6.148	-0.110	0.000	0.59					33.9	OK
1.003	5	6.119	-0.086	0.000	0.84			7		54.0	OK
1.004	6	5.771	-0.303	0.000	0.23			8		63.8	OK
1.005	8	5.672	-0.088	0.000	0.40			9		57.9	OK
3.000	8	5.505	-0.245	0.000	0.02			246		3.7	OK
1.006	7	5.634	-0.069	0.000	0.28					53.9	OK
4.000	9	5.506	-0.069	0.000	0.12			88		6.3	OK
1.007	10	5.563	0.107	0.000	0.07					11.4	SURCHARGED
1.008	11	5.753	0.720	0.000	0.34					4.7	SURCHARGED

PN	US/MH Name	Level Exceeded
1.000	1	
2.000	2	1
1.001	3	
1.002	4	
1.003	5	
1.004	6	
1.005	8	
3.000	8	
1.006	7	5
4.000	9	
1.007	10	5
1.008	11	14

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30 year Return Period 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 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 7
Number of Online Controls 2 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) 26.250 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status ON
Analysis Timestep Fine Inertia Status ON
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) 1, 30, 100
Climate Change (%) 0, 0, 30

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.
1.000	1	15 Winter	30	+0%	100/15 Summer			
2.000	2	15 Winter	30	+0%	30/15 Summer	100/15 Winter		
1.001	3	15 Winter	30	+0%	30/15 Summer			
1.002	4	15 Summer	30	+0%	30/15 Summer			
1.003	5	15 Summer	30	+0%	30/15 Summer			
1.004	6	30 Winter	30	+0%	100/15 Summer			
1.005	8	480 Winter	30	+0%	30/15 Summer			
3.000	8	480 Winter	30	+0%	30/60 Winter			
1.006	7	480 Winter	30	+0%	30/15 Summer	100/360 Winter		
4.000	9	60 Winter	30	+0%	30/15 Summer			
1.007	10	1440 Winter	30	+0%	1/60 Winter	100/180 Winter		
1.008	11	1440 Winter	30	+0%	1/15 Summer	30/1440 Winter		


PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Overflow Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.000	1	6.884	-0.151	0.000	0.24		19.5	OK

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Causeway		Network 2020.1

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

PN	US/MH Name	Water		Surcharged		Flooded		Half Drain Pipe		Status
		Level (m)	Depth (m)	Volume (m³)	Flow / Overflow Cap. (l/s)	Time (mins)	Pipe Flow (l/s)			
2.000	2	6.658	0.083	0.000	1.00			6	35.9	SURCHARGED
1.001	3	6.703	0.236	0.000	0.79				52.3	SURCHARGED
1.002	4	6.619	0.361	0.000	1.00				57.2	SURCHARGED
1.003	5	6.549	0.344	0.000	1.82			8	116.4	SURCHARGED
1.004	6	6.008	-0.066	0.000	0.41			13	112.3	OK
1.005	8	6.048	0.288	0.000	0.15				21.4	SURCHARGED
3.000	8	5.972	0.222	0.000	0.08				11.9	SURCHARGED
1.006	7	6.065	0.362	0.000	0.07				13.2	SURCHARGED
4.000	9	6.124	0.549	0.000	0.41				21.8	SURCHARGED
1.007	10	6.183	0.727	0.000	0.04			1416	6.4	FLOOD RISK
1.008	11	6.458	1.425	0.012	0.34				4.7	FLOOD

PN	US/MH Name	Level Exceeded
1.000	1	
2.000	2	1
1.001	3	
1.002	4	
1.003	5	
1.004	6	
1.005	8	
3.000	8	
1.006	7	5
4.000	9	
1.007	10	5
1.008	11	14

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100 year Return Period 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 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 7
Number of Online Controls 2 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
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M5-60 (mm) 26.250 Cv (Winter) 0.840

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Analysis Timestep Fine Inertia Status ON
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) 1, 30, 100
Climate Change (%) 0, 0, 30

WARNING: Half Drain Time has not been calculated as the structure is too full.

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.
1.000	1	15 Winter	100	+30%	100/15 Summer			
2.000	2	15 Winter	100	+30%	30/15 Summer	100/15 Winter		
1.001	3	15 Winter	100	+30%	30/15 Summer			
1.002	4	15 Winter	100	+30%	30/15 Summer			
1.003	5	15 Winter	100	+30%	30/15 Summer			
1.004	6	600 Winter	100	+30%	100/15 Summer			
1.005	8	600 Winter	100	+30%	30/15 Summer			
3.000	8	600 Winter	100	+30%	30/60 Winter			
1.006	7	600 Winter	100	+30%	30/15 Summer	100/360 Winter		
4.000	9	30 Winter	100	+30%	30/15 Summer			
1.007	10	360 Winter	100	+30%	1/60 Winter	100/180 Winter		
1.008	11	360 Winter	100	+30%	1/15 Summer	30/1440 Winter		

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

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Overflow Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.000	1	7.327	0.292	0.000	0.37		30.6	SURCHARGED
2.000	2	7.340	0.765	0.159	1.46	11	52.7	FLOOD
1.001	3	7.290	0.823	0.000	1.17		77.2	SURCHARGED
1.002	4	6.939	0.681	0.000	1.51		86.7	SURCHARGED
1.003	5	6.809	0.604	0.000	2.20	4	140.8	SURCHARGED
1.004	6	6.470	0.396	0.000	0.09		24.4	SURCHARGED
1.005	8	6.468	0.708	0.000	0.17	470	25.1	FLOOD RISK
3.000	8	6.467	0.717	0.000	0.05		7.3	SURCHARGED
1.006	7	6.467	0.764	6.982	0.05		9.3	FLOOD
4.000	9	6.495	0.920	0.000	1.00		53.3	FLOOD RISK
1.007	10	6.464	1.008	6.405	0.11		18.7	FLOOD
1.008	11	6.801	1.768	2.702	0.36		5.0	FLOOD

PN	US/MH Name	Level Exceeded
1.000	1	
2.000	2	1
1.001	3	
1.002	4	
1.003	5	
1.004	6	
1.005	8	
3.000	8	
1.006	7	5
4.000	9	
1.007	10	5
1.008	11	14