

Project:

HAVEN HOLIDAY PARKS - ALLHALLOWS

Client:

HAVEN LEISURE LTD

Document Title:

DRAINAGE MODELLING CALCULATIONS

Date:


DECEMBER 2023

Revision:

C01

Job No:

5720

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Kent	HAVEN, ALL HALLOWS	
ME14 5PP	NETWORK - C01	
Date 05/12/2023	Designed by SJ	
File 5720- SW NETWORK 1 - P01.2.MDX	Checked by MJF	
Innovyze	Network 2020.1.3	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FEH Rainfall Model

Return Period (years)	2	Volumetric Runoff Coeff.	0.750
		PIMP (%)	100
FEH Rainfall Version	2013	Add Flow / Climate Change (%)	0
Site Location	GB 583814 178717 TQ 83814 78717	Minimum Backdrop Height (m)	0.200
Data Type	Point	Maximum Backdrop Height (m)	1.500
Maximum Rainfall (mm/hr)	50	Min Design Depth for Optimisation (m)	1.200
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)	500


Designed with Level Soffits

Network Design Table for Storm






PN	Length	Fall	Slope	I.Area	T.E.	Base	k	HYD	DIA	Section Type	Auto
(m)	(m)	(1:X)	(ha)	(mins)	Flow (l/s)	(mm)	SECT	(mm)		Design	

Network Results Table

PN	Rain	T.C.	US/IL	Σ I.Area	Σ Base	Foul	Add Flow	Vel	Cap	Flow
(mm/hr)	(mins)	(m)	(ha)	Flow (l/s)	(l/s)	(l/s)	(m/s)	(l/s)	(l/s)	(l/s)


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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
1.000	13.175	0.460	28.6	0.007	5.00	0.0	0.600	o	100	Pipe/Conduit	
2.000	3.881	0.050	77.6	0.011	5.00	0.0	0.600	o	100	Pipe/Conduit	
1.001	8.113	0.058	139.9	0.028	0.00	0.0	0.600	o	225	Pipe/Conduit	
3.000	8.999	0.698	12.9	0.007	5.00	0.0	0.600	o	100	Pipe/Conduit	
1.002	9.710	0.073	133.0	0.000	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)
1.000	50.00	5.15	11.370	0.007	0.0	0.0	0.0	1.45	11.4	0.9
2.000	50.00	5.07	10.960	0.011	0.0	0.0	0.0	0.87	6.9	1.5
1.001	50.00	5.27	10.785	0.046	0.0	0.0	0.0	1.10	43.9	6.2
3.000	50.00	5.07	11.550	0.007	0.0	0.0	0.0	2.16	17.0	1.0
1.002	50.00	5.42	10.727	0.053	0.0	0.0	0.0	1.13	45.0	7.2


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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
4.000	9.520	0.841	11.3	0.006	5.00	0.0	0.600	o	100	Pipe/Conduit	
1.003	10.081	0.075	134.4	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
5.000	3.507	0.996	3.5	0.007	5.00	0.0	0.600	o	100	Pipe/Conduit	
1.004	4.774	0.024	198.9	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
6.000	7.486	0.100	74.9	0.042	5.00	0.0	0.600	o	150	Pipe/Conduit	
6.001	2.863	0.040	71.6	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)
4.000	50.00	5.07	11.620	0.006	0.0	0.0	0.0	2.31	18.1	0.8
1.003	50.00	5.57	10.654	0.059	0.0	0.0	0.0	1.13	44.8	8.0
5.000	50.00	5.01	11.700	0.007	0.0	0.0	0.0	4.15	32.6	0.9
1.004	50.00	5.65	10.574	0.066	0.0	0.0	0.0	0.92	36.7	8.9
6.000	50.00	5.11	10.690	0.042	0.0	0.0	0.0	1.16	20.6	5.7
6.001	50.00	5.15	10.590	0.042	0.0	0.0	0.0	1.19	21.0	5.7


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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
1.005	5.611	0.096	58.5	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)
1.005	50.00	5.72	9.490	0.108	0.0	0.0	0.0	1.32	23.3	14.6








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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)	
SRE1.1	11.930	0.560	Open Manhole	100	1.000	11.370	100			
SRE1.2	11.510	0.550	Open Manhole	100	2.000	10.960	100			
SS1	12.300	1.515	Open Manhole	450	1.001	10.785	225	1.000	10.910	100
								2.000	10.910	100
SS2	12.320	0.770	Open Manhole	450	3.000	11.550	100			
SJUNC 1	12.280	1.553	Junction		1.002	10.727	225	1.001	10.727	225
								3.000	10.852	100
SRWP	12.320	0.700	Open Manhole	100	4.000	11.620	100			
SJUNC 2	12.280	1.626	Junction		1.003	10.654	225	1.002	10.654	225
								4.000	10.779	100
SRE3.1	12.250	0.550	Open Manhole	100	5.000	11.700	100			
SS3-CP	12.280	1.706	Open Manhole	600	1.004	10.574	225	1.003	10.579	225
								5.000	10.704	100
SS4	11.470	0.780	Open Manhole	450	6.000	10.690	150			
SS5-CP	12.240	1.650	Open Manhole	450	6.001	10.590	150	6.000	10.590	150
SATT1	12.190	2.700	Junction		1.005	9.490	150	1.004	10.550	225
								6.001	10.550	150
S	12.220	2.826	Open Manhole	0		OUTFALL		1.005	9.394	150
										1135
										1060







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Manhole Schedules for Storm

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
SRE1.1	583796.001	178718.963	583796.001	178718.963	Required	
SRE1.2	583811.724	178725.082	583811.724	178725.082	Required	
SS1	583808.619	178722.754	583808.619	178722.754	Required	
SS2	583802.786	178712.364	583802.786	178712.364	Required	
SJUNC 1	583811.353	178715.116			No Entry	
SRWP	583805.385	178702.938	583805.385	178702.938	Required	
SJUNC 2	583814.430	178705.906			No Entry	

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Manhole Schedules for Storm

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
SRE3.1	583814.121	178696.557	583814.121	178696.557	Required	
SS3-CP	583817.621	178696.343	583817.621	178696.343	Required	
SS4	583826.908	178703.532	583826.908	178703.532	Required	
SS5-CP	583824.297	178696.516	583824.297	178696.516	Required	
SATT1	583822.098	178694.683			No Entry	
S	583827.709	178694.598			No Entry	

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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	100	SRE1.1	11.930	11.370	0.460	Open Manhole	100
2.000	o	100	SRE1.2	11.510	10.960	0.450	Open Manhole	100
1.001	o	225	SS1	12.300	10.785	1.290	Open Manhole	450
3.000	o	100	SS2	12.320	11.550	0.670	Open Manhole	450
1.002	o	225	SJUNC 1	12.280	10.727	1.328	Junction	

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	13.175	28.6	SS1	12.300	10.910	1.290	Open Manhole	450
2.000	3.881	77.6	SS1	12.300	10.910	1.290	Open Manhole	450
1.001	8.113	139.9	SJUNC 1	12.280	10.727	1.328	Junction	
3.000	8.999	12.9	SJUNC 1	12.280	10.852	1.328	Junction	
1.002	9.710	133.0	SJUNC 2	12.280	10.654	1.401	Junction	

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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)
4.000	o	100	SRWP	12.320	11.620	0.600	Open Manhole	100
1.003	o	225	SJUNC 2	12.280	10.654	1.401	Junction	
5.000	o	100	SRE3.1	12.250	11.700	0.450	Open Manhole	100
1.004	o	225	SS3-CP	12.280	10.574	1.481	Open Manhole	600

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)
4.000	9.520	11.3	SJUNC 2	12.280	10.779	1.401	Junction	
1.003	10.081	134.4	SS3-CP	12.280	10.579	1.476	Open Manhole	600
5.000	3.507	3.5	SS3-CP	12.280	10.704	1.476	Open Manhole	600
1.004	4.774	198.9	SATT1	12.190	10.550	1.415	Junction	

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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)
6.000	o	150	SS4	11.470	10.690	0.630	Open Manhole	450
6.001	o	150	SS5-CP	12.240	10.590	1.500	Open Manhole	450
1.005	o	150	SATT1	12.190	9.490	2.550	Junction	


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)
6.000	7.486	74.9	SS5-CP	12.240	10.590	1.500	Open Manhole	450
6.001	2.863	71.6	SATT1	12.190	10.550	1.490	Junction	
1.005	5.611	58.5	S	12.220	9.394	2.676	Open Manhole	0

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Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	As Zoned	Default	100	0.007	0.007	0.007
2.000	As Zoned	Default	100	0.003	0.003	0.003
	User	-	100	0.007	0.007	0.011
1.001	As Zoned	Default	100	0.009	0.009	0.009
	As Zoned	Default	100	0.019	0.019	0.028
3.000	As Zoned	Default	100	0.007	0.007	0.007
1.002	-	-	100	0.000	0.000	0.000
4.000	As Zoned	Default	100	0.006	0.006	0.006
1.003	-	-	100	0.000	0.000	0.000
5.000	As Zoned	Default	100	0.007	0.007	0.007
1.004	-	-	100	0.000	0.000	0.000
6.000	As Zoned	Default	100	0.005	0.005	0.005
	As Zoned	Default	100	0.007	0.007	0.007
	User	-	100	0.031	0.031	0.042
6.001	-	-	100	0.000	0.000	0.000
1.005	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				0.108	0.108	0.108

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Online Controls for Storm

Pump Manhole: SATT1, DS/PN: 1.005, Volume (m³): 0.2

Invert Level (m) 9.490

Depth (m) Flow (l/s)

0.001 3.0000


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Storage Structures for Storm

Cellular Storage Manhole: SATT1, DS/PN: 1.005

Invert Level (m) 9.490 Infiltration Coefficient Side (m/hr) 0.00000 Porosity 0.95
 Infiltration Coefficient Base (m/hr) 0.00000 Safety Factor 2.0

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	30.0	30.0	1.600	30.0	65.1	1.601	0.0	65.1

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

Simulation Criteria

Areal Reduction Factor 1.000 Manhole Headloss Coeff (Global) 0.500 MADD Factor * 10m³/ha Storage 2.000
Hot Start (mins) 0 Foul Sewage per hectare (l/s) 0.000 Inlet Coeffiecient 0.800
Hot Start Level (mm) 0 Additional Flow - % of Total Flow 0.000 Flow per Person per Day (l/per/day) 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 FEH Data Type Point
FEH Rainfall Version 2013 Cv (Summer) 0.750
Site Location GB 583814 178717 TQ 83814 78717 Cv (Winter) 0.840

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


Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years) 2, 30, 100
Climate Change (%) 0, 0, 20

US/MH PN Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Surcharged Flooded			Half Drain Pipe		
								Level (m)	Depth (m)	Volume (m ³)	Flow / Cap. (l/s)	Overflow (l/s)	Time (mins)
1.000 SRE1.1	15 Winter	2	+0%					11.391	-0.079	0.000	0.10		1.1

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


	US/MH		Level
PN	Name	Status	Exceeded
1.000	SRE1.1	OK	

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2 year Return Period 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	Surcharged	Flooded	Flow / Overflow Cap.	Half Drain Time (mins)
									Level (m)	Depth (m)	Volume (m³)		
2.000	SRE1.2	15 Winter	2	+0%	100/15 Summer				10.997	-0.063	0.000	0.29	
1.001	SS1	15 Winter	2	+0%					10.852	-0.158	0.000	0.19	
3.000	SS2	15 Winter	2	+0%					11.568	-0.082	0.000	0.08	
1.002	SJUNC 1	15 Winter	2	+0%					10.796	-0.156	0.000	0.20	
4.000	SRWP	15 Winter	2	+0%					11.635	-0.085	0.000	0.05	
1.003	SJUNC 2	15 Winter	2	+0%					10.726	-0.153	0.000	0.22	
5.000	SRE3.1	15 Winter	2	+0%					11.713	-0.087	0.000	0.04	
1.004	SS3-CP	15 Winter	2	+0%	100/15 Summer				10.668	-0.131	0.000	0.37	
6.000	SS4	15 Winter	2	+0%	100/15 Summer				10.754	-0.086	0.000	0.38	
6.001	SS5-CP	15 Winter	2	+0%	30/15 Summer				10.669	-0.071	0.000	0.52	
1.005	SATT1	30 Winter	2	+0%	2/15 Winter				9.670	0.030	0.000	0.15	21

PN	US/MH Name	Pipe	Status	Level
		Flow (l/s)		Exceeded
2.000	SRE1.2	1.7	OK	
1.001	SS1	6.5	OK	
3.000	SS2	1.2	OK	
1.002	SJUNC 1	7.7	OK*	
4.000	SRWP	0.9	OK	
1.003	SJUNC 2	8.7	OK*	
5.000	SRE3.1	1.1	OK	
1.004	SS3-CP	9.7	OK	

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

PN	US/MH Name	Pipe Flow (l/s)	Status	Level Exceeded
6.000	SS4	6.6	OK	
6.001	SS5-CP	6.6	OK	
1.005	SATT1	3.0	SURCHARGED*	

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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 Manhole Headloss Coeff (Global) 0.500 MADD Factor * 10m³/ha Storage 2.000
Hot Start (mins) 0 Foul Sewage per hectare (l/s) 0.000 Inlet Coeffiecient 0.800
Hot Start Level (mm) 0 Additional Flow - % of Total Flow 0.000 Flow per Person per Day (l/per/day) 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 FEH Data Type Point
FEH Rainfall Version 2013 Cv (Summer) 0.750
Site Location GB 583814 178717 TQ 83814 78717 Cv (Winter) 0.840

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


Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years) 2, 30, 100
Climate Change (%) 0, 0, 20

US/MH PN Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water	Surcharged	Flooded	Half Drain Time (mins)	Pipe
								Level (m)	Depth (m)	Volume (m ³)		Flow / Cap. (l/s)
1.000 SRE1.1	15 Winter	30	+0%					11.403	-0.067	0.000	0.24	2.5

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


	US/MH	Level
PN	Name	Status Exceeded
1.000	SRE1.1	OK

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30 year Return Period 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	Surcharged	Flooded	Flow / Overflow Cap.	Half Drain Time (mins)
									Level (m)	Depth (m)	Volume (m³)		
2.000	SRE1.2	15 Winter	30	+0%	100/15 Summer				11.022	-0.038	0.000	0.69	
1.001	SS1	15 Winter	30	+0%					10.901	-0.109	0.000	0.52	
3.000	SS2	15 Winter	30	+0%					11.578	-0.072	0.000	0.18	
1.002	SJUNC 1	15 Winter	30	+0%					10.845	-0.107	0.000	0.53	
4.000	SRWP	15 Winter	30	+0%					11.644	-0.076	0.000	0.13	
1.003	SJUNC 2	15 Winter	30	+0%					10.779	-0.100	0.000	0.58	
5.000	SRE3.1	15 Winter	30	+0%					11.720	-0.080	0.000	0.09	
1.004	SS3-CP	15 Winter	30	+0%	100/15 Summer				10.747	-0.052	0.000	0.94	
6.000	SS4	15 Winter	30	+0%	100/15 Summer				10.835	-0.005	0.000	0.87	
6.001	SS5-CP	15 Winter	30	+0%	30/15 Summer				10.755	0.015	0.000	1.23	
1.005	SATT1	60 Winter	30	+0%	2/15 Winter				10.147	0.507	0.000	0.15	58

PN	US/MH Name	Pipe	Status	Level
		Flow (l/s)		Exceeded
2.000	SRE1.2	4.0	OK	
1.001	SS1	17.6	OK	
3.000	SS2	2.8	OK	
1.002	SJUNC 1	20.3	OK*	
4.000	SRWP	2.1	OK	
1.003	SJUNC 2	22.3	OK*	
5.000	SRE3.1	2.5	OK	
1.004	SS3-CP	24.9	OK	

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PN	US/MH Name	Pipe Flow (l/s)	Status	Level Exceeded
6.000	SS4	15.3		OK
6.001	SS5-CP	15.5	SURCHARGED	
1.005	SATT1	3.0	SURCHARGED*	

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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 Manhole Headloss Coeff (Global) 0.500 MADD Factor * 10m³/ha Storage 2.000
Hot Start (mins) 0 Foul Sewage per hectare (l/s) 0.000 Inlet Coeffiecient 0.800
Hot Start Level (mm) 0 Additional Flow - % of Total Flow 0.000 Flow per Person per Day (l/per/day) 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 FEH Data Type Point
FEH Rainfall Version 2013 Cv (Summer) 0.750
Site Location GB 583814 178717 TQ 83814 78717 Cv (Winter) 0.840

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


Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years) 2, 30, 100
Climate Change (%) 0, 0, 20

US/MH PN	Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water	Surcharged	Flooded	Half Drain Time (mins)	Pipe
									Level (m)	Depth (m)	Volume (m ³)		Flow / Cap. (l/s)
1.000	SRE1.1	15 Winter	100	+20%					11.412	-0.058	0.000	0.37	3.9

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


	US/MH		Level
PN	Name	Status	Exceeded
1.000	SRE1.1	OK	

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


PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Surcharged Flooded				Half Drain Time (mins)
									Level (m)	Depth (m)	Volume (m ³)	Flow / Overflow Cap. (l/s)	
2.000	SRE1.2	15 Winter	100	+20%	100/15 Summer				11.064	0.004	0.000	1.07	
1.001	SS1	15 Winter	100	+20%					10.967	-0.043	0.000	0.79	
3.000	SS2	15 Winter	100	+20%					11.586	-0.064	0.000	0.27	
1.002	SJUNC 1	15 Winter	100	+20%					10.933	-0.019	0.000	0.79	
4.000	SRWP	15 Winter	100	+20%					11.650	-0.070	0.000	0.20	
1.003	SJUNC 2	15 Summer	100	+20%					10.879	0.000	0.000	0.84	
5.000	SRE3.1	15 Winter	100	+20%					11.725	-0.075	0.000	0.14	
1.004	SS3-CP	15 Winter	100	+20%	100/15 Summer				10.832	0.033	0.000	1.39	
6.000	SS4	15 Winter	100	+20%	100/15 Summer				11.023	0.183	0.000	1.34	
6.001	SS5-CP	15 Winter	100	+20%	30/15 Summer				10.838	0.098	0.000	1.89	
1.005	SATT1	120 Winter	100	+20%	2/15 Winter				10.752	1.112	0.000	0.15	113

PN	US/MH Name	Pipe Flow (l/s)	Status	Level Exceeded
1.001	SS1	26.9	OK	
3.000	SS2	4.3	OK	
1.002	SJUNC 1	30.1	OK*	
4.000	SRWP	3.3	OK	
1.003	SJUNC 2	32.6	SURCHARGED*	
5.000	SRE3.1	3.9	OK	
1.004	SS3-CP	36.9	SURCHARGED	

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PN	US/MH Name	Pipe Flow (l/s)	Status	Level Exceeded
6.000	SS4	23.6	SURCHARGED	
6.001	SS5-CP	23.7	SURCHARGED	
1.005	SATT1	3.0	SURCHARGED*	

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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 Manhole Headloss Coeff (Global) 0.500 MADD Factor * 10m³/ha Storage 2.000
Hot Start (mins) 0 Foul Sewage per hectare (l/s) 0.000 Inlet Coeffiecient 0.800
Hot Start Level (mm) 0 Additional Flow - % of Total Flow 0.000 Flow per Person per Day (l/per/day) 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 FEH Data Type Point
FEH Rainfall Version 2013 Cv (Summer) 0.750
Site Location GB 583814 178717 TQ 83814 78717 Cv (Winter) 0.840

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


Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years) 30, 100
Climate Change (%) 35, 45

US/MH PN Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Surcharged Flooded			Half Drain Time (mins)	Pipe Flow (l/s)	
								Level (m)	Depth (m)	Volume (m ³)			Flow / Cap. (l/s)
1.000 SRE1.1	15 Winter	30	+35%					11.409	-0.061	0.000	0.32		3.4

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	US/MH	Level
PN	Name	Status Exceeded
1.000	SRE1.1	OK

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


PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water	Surcharged	Flooded	Flow / Overflow (l/s)	Half Drain
									Level (m)	Depth (m)	Volume (m ³)		Cap.
2.000	SRE1.2	15 Winter	30	+35%	100/15 Summer				11.037	-0.023	0.000	0.93	
1.001	SS1	15 Winter	30	+35%	100/15 Summer				10.925	-0.085	0.000	0.70	
3.000	SS2	15 Winter	30	+35%					11.583	-0.067	0.000	0.24	
1.002	SJUNC 1	15 Winter	30	+35%					10.883	-0.069	0.000	0.71	
4.000	SRWP	15 Winter	30	+35%					11.648	-0.072	0.000	0.17	
1.003	SJUNC 2	15 Winter	30	+35%					10.853	-0.026	0.000	0.77	
5.000	SRE3.1	15 Winter	30	+35%					11.723	-0.077	0.000	0.12	
1.004	SS3-CP	15 Winter	30	+35%	30/15 Summer				10.819	0.020	0.000	1.24	
6.000	SS4	15 Winter	30	+35%	30/15 Summer				10.947	0.107	0.000	1.17	
6.001	SS5-CP	15 Winter	30	+35%	30/15 Summer				10.805	0.065	0.000	1.66	
1.005	SATT1	120 Winter	30	+35%	30/15 Summer				10.511	0.871	0.000	0.15	92

Pipe				
PN	US/MH Name	Flow (l/s)	Status	Level Exceeded
2.000	SRE1.2	5.4	OK	
1.001	SS1	23.8	OK	
3.000	SS2	3.8	OK	
1.002	SJUNC 1	26.9	OK*	
4.000	SRWP	2.9	OK	
1.003	SJUNC 2	29.5	OK*	
5.000	SRE3.1	3.4	OK	
1.004	SS3-CP	32.9	SURCHARGED	

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

PN	US/MH Name	Pipe Flow (l/s)	Status	Level Exceeded
6.000	SS4	20.7	SURCHARGED	
6.001	SS5-CP	20.8	SURCHARGED	
1.005	SATT1	3.0	SURCHARGED*	

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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 Manhole Headloss Coeff (Global) 0.500 MADD Factor * 10m³/ha Storage 2.000
Hot Start (mins) 0 Foul Sewage per hectare (l/s) 0.000 Inlet Coeffiecient 0.800
Hot Start Level (mm) 0 Additional Flow - % of Total Flow 0.000 Flow per Person per Day (l/per/day) 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 FEH Data Type Point
FEH Rainfall Version 2013 Cv (Summer) 0.750
Site Location GB 583814 178717 TQ 83814 78717 Cv (Winter) 0.840

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


Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years) 30, 100
Climate Change (%) 35, 45

US/MH PN Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Surcharged Flooded			Half Drain Pipe		
								Level (m)	Depth (m)	Volume (m ³)	Flow / Cap. (l/s)	Overflow (l/s)	Time (mins)
1.000 SRE1.1	15 Winter	100	+45%					11.417	-0.053	0.000	0.44		4.7

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


	US/MH		Level
PN	Name	Status	Exceeded
1.000	SRE1.1	OK	

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100 year Return Period 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	Surcharged	Flooded	Flow / Overflow Cap.	Half Drain Time (mins)
									Level (m)	Depth (m)	Volume (m ³)		
2.000	SRE1.2	15 Winter	100	+45%	100/15 Summer				11.149	0.089	0.000	1.27	
1.001	SS1	120 Winter	100	+45%	100/15 Summer				11.081	0.071	0.000	0.31	
3.000	SS2	15 Winter	100	+45%					11.590	-0.060	0.000	0.33	
1.002	SJUNC 1	15 Summer	100	+45%					10.952	0.000	0.000	0.92	
4.000	SRWP	15 Winter	100	+45%					11.653	-0.067	0.000	0.24	
1.003	SJUNC 2	15 Summer	100	+45%					10.879	0.000	0.000	1.01	
5.000	SRE3.1	15 Winter	100	+45%					11.728	-0.072	0.000	0.17	
1.004	SS3-CP	120 Winter	100	+45%	30/15 Summer				11.076	0.277	0.000	0.57	
6.000	SS4	15 Winter	100	+45%	30/15 Summer				11.166	0.326	0.000	1.61	
6.001	SS5-CP	120 Winter	100	+45%	30/15 Summer				11.076	0.336	0.000	0.77	
1.005	SATT1	120 Winter	100	+45%	30/15 Summer				11.075	1.435	0.000	0.15	152

PN	US/MH Name	Pipe	Status	Level Exceeded
		Flow (l/s)		
2.000	SRE1.2	7.4	SURCHARGED	
1.001	SS1	10.4	SURCHARGED	
3.000	SS2	5.2	OK	
1.002	SJUNC 1	35.1	SURCHARGED*	
4.000	SRWP	4.0	OK	
1.003	SJUNC 2	39.1	SURCHARGED*	
5.000	SRE3.1	4.7	OK	
1.004	SS3-CP	15.0	SURCHARGED	

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

PN	US/MH Name	Pipe Flow (1/s)	Status	Level Exceeded
6.000	SS4	28.4	SURCHARGED	
6.001	SS5-CP	9.6	SURCHARGED	
1.005	SATT1	3.0	SURCHARGED*	