

TECHNICAL NOTE

Job Name: Lands at Burfield Valley and Reef Way
Job No: 49366-2001
Note No: TN03
Date: 30/07/2020
Prepared By: Anthony Thorpe
Subject: **Combined assessment of surface water flooding from multiple developments**

1. Introduction

- 1.1. Persimmons Homes South East have commissioned Stantec UK Limited to provide drainage advice associated with changes in land use on developments adjacent Reef Way, Hailsham, East Sussex.
- 1.2. This note is intended to support planning applications WD/2018/1271/F and WD/2018/0122/MAJ. It will also respond to planning comments and requirements provided on 16.01.2020, specifically in relation to the combined effect on the existing surface water network. The effects of the drainage strategies proposed under planning applications WD/3400/CC and WD/2018/1806/F will also be assessed as part of this. For the purposes of this note, the planning applications shall sometimes be referred to as:
 - WD/2018/1271/F as '6 Home Development'
 - WD/2018/0122/MAJ as '35 Home Development'
 - WD/3400/CC as 'School'
 - WD/2018/1806/F as 'Medical Centre'
- 1.3. This note should be read in conjunction with the following documents:
 - 49366-2001-TN01 (*Drainage Statement & Planning comment responses for the 6 Home Development*)
 - 49366-2001-TN02 (*Drainage Statement & Planning comment responses for the 35 Home Development*)
 - 8/1663 Rev A (*Hailsham New Medical Centre Flood Risk Assessment and Sustainable Drainage Assessment*)
 - 18089-C1806-LON-ZZ-00-RE-0001 Rev P1 (*Proposed SEMH School – Flood Risk Assessment & Drainage Strategy Report*)

2. Existing Conditions

- 2.1. The existing development, as designed under planning application WD/2009/2705/MEA., is intended to provide 170 homes. The development considered that 4.165ha of site was impermeable and able to enter the proposed surface water sewer. This sewer would outfall into a balancing pond to the East of the site, where it would meet the surface water network from another development further East. The pond would then attenuate and treat any arising waters from the surface water network before discharging into the Whelpley Sewer. The surface water features have been constructed and in use for several years and should be considered established features.

3. Proposed Development Summaries

- 3.1. Four developments have been proposed for construction on the existing site (see figure 3.1). These have been designed by different consultants in isolation from each other. Overall, there is approximately an increase of 0.797ha across the existing development. For further information relating to each proposed development refer to their respective drainage strategy/ design notes.

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Figure 3.1 – Extent of development boundaries.

Table 3.1 – Comparison between the existing conditions and proposed conditions. It focuses on the flow rates and catchment allocations for each site.

Planning Ref	Impermeable Catchment, ha		Peak Flow Rate during 1 in 100+40% Storm event, l/s	
	Existing	Proposed	Existing	Proposed
WD/2018/1271/F	0	0.118	0	5.0
WD/3400/CC	0.217	0.656 ¹	11.5 ¹	11.2 ¹
WD/2018/1806/F	0.196	0.382 ¹	79.8 ¹	15.0 ¹
WD/2018/0122/MAJ	0.194	0.248	86.3	57.2

4. Assessment Results

- 4.1. The intention of this assessment is to determine whether the current drainage network has sufficient capacity to accommodate the discharge rates from the proposed developments. The existing network was designed for a 1 in 100-year +30% climate change storm event and utilised highways to manage extreme flood events. To acquire a comparable baseline, the existing network has been re-run for a 1 in 100-year +40% climate change event. If the overall flooding volume for this baseline remains the same or is reduced, it will show that the network has sufficient capacity for the proposed developments. If the overall flooding volume increases, the network does not have sufficient capacity for the proposed developments.

¹ Values were prescribed by others and are assumed to be accurate

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Table 4.1 - Baseline flooding for the existing network during 1 in 100-year +40% climate change storm event.

Manhole Ref	Flooded Volume, m3
S2	0.662
S3	5.389
S4	4.781
S5	0.553
S12	1.109
S14	6.340
S21	6.362
S26	18.500
S30	11.345
S31	7.761
S36	0.125
S37	8.605
S49	5.122
S57	6.499
S58	2.988
S59	22.800
S76	29.337
S89	4.855
Total	143.133

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Table 4.2 - The resultant flooding for the overall network when all four developments are considered.

Manhole Ref	Flooded Volume, m3		
	Original Model	Combined Model	Change in Volume
S2	0.662	0.662	0.000
S3	5.389	5.389	0.000
S4	4.781	4.781	0.000
S5	0.553	0.553	0.000
S12	1.109	1.109	0.000
S14	6.340	6.340	0.000
S21	6.362	2.072	-4.290
S26	18.500	0.000	-18.500
S30	11.345	9.706	-1.639
S31	7.761	0.000	-7.761
S36	0.125	0.000	-0.125
S37	8.605	0.000	-8.605
S49	5.122	5.040	-0.082
S57	6.499	4.007	-2.492
S58	2.988	0.000	-2.988
S59	22.800	7.787	-15.013
S76	29.337	22.974	-6.363
S89	4.855	4.855	0.000
Total	143.133	75.275	-67.858

- 4.2. As shown in table 4.2, the overall flooded volume anticipated from the additional impermeable areas has reduced significantly. This suggests that the existing sewer network has sufficient capacity for the proposed developments, thus no additional attenuation or upsizing of network is required.

5. Conclusions

- 5.1. The existing surface water network is sufficiently sized to accommodate the additional surface water flows from the four developments outlined in section 1.2. This is achieved without exceeding the perceived existing flood volumes. As a result, no additional changes should be required because of these developments.

DOCUMENT ISSUE RECORD

Technical Note No	Rev	Date	Prepared	Checked	Reviewed (Discipline Lead)	Approved (Project Director)
49366/2001/TN003	-	30.07.20	AT	DC	DC	PH


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APPENDIX A

Hydraulic Calculations – Existing Conditions

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Micro Drainage	Network 2018.1	

Free Flowing Outfall Details for Transfer.txt

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
20.024	OUTFALL	8.650	7.753	0.000	0	0

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Online Controls for Transfer.txt

Hydro-Brake® Manhole: 97, DS/PN: 41.011, Volume (m³): 15.7

Design Head (m) 0.870 Hydro-Brake® Type Md5 SW Only Invert Level (m) 7.980
Design Flow (l/s) 31.0 Diameter (mm) 226

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	8.1	1.200	34.1	3.000	53.2	7.000	81.3
0.200	19.6	1.400	36.6	3.500	57.5	7.500	84.2
0.300	27.1	1.600	39.0	4.000	61.5	8.000	86.9
0.400	30.0	1.800	41.3	4.500	65.2	8.500	89.6
0.500	30.5	2.000	43.5	5.000	68.7	9.000	92.2
0.600	30.2	2.200	45.6	5.500	72.1	9.500	94.7
0.800	30.3	2.400	47.6	6.000	75.3		
1.000	31.9	2.600	49.6	6.500	78.4		


Complex Manhole: 109, DS/PN: 20.024, Volume (m³): 73.6

Orifice

Diameter (m) 0.130 Discharge Coefficient 0.600 Invert Level (m) 7.930

Orifice

Diameter (m) 0.204 Discharge Coefficient 0.600 Invert Level (m) 8.530

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Offline Controls for Transfer.txt

Weir Manhole: 81, DS/PN: 20.021, Loop to PN: 41.010

Discharge Coef 0.544 Width (m) 0.700 Invert Level (m) 8.382

Weir Manhole: 96, DS/PN: 41.010, Loop to PN: 20.023

Discharge Coef 0.544 Width (m) 2.000 Invert Level (m) 8.800

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Storage Structures for Transfer.txt

Tank or Pond Manhole: 96, DS/PN: 41.010


Invert Level (m) 7.990

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	314.0	0.700	883.0	1.400	1166.0	2.100	1209.0
0.100	407.0	0.800	921.0	1.500	1209.0	2.200	1209.0
0.200	696.0	0.900	960.0	1.600	1209.0	2.300	1209.0
0.300	732.0	1.000	1000.0	1.700	1209.0	2.400	1209.0
0.400	769.0	1.100	1041.0	1.800	1209.0	2.500	1209.0
0.500	806.0	1.200	1082.0	1.900	1209.0		
0.600	844.0	1.300	1124.0	2.000	1209.0		

Tank or Pond Manhole: 99, DS/PN: 20.023

Invert Level (m) 7.940

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	348.0	0.700	1333.0	1.400	1853.0	2.100	1933.0
0.100	471.0	0.800	1403.0	1.500	1933.0	2.200	1933.0
0.200	931.0	0.900	1474.0	1.600	1933.0	2.300	1933.0
0.300	1034.0	1.000	1547.0	1.700	1933.0	2.400	1933.0
0.400	1123.0	1.100	1621.0	1.800	1933.0	2.500	1933.0
0.500	1197.0	1.200	1697.0	1.900	1933.0		
0.600	1264.0	1.300	1774.0	2.000	1933.0		

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Summary of Critical Results by Maximum Level (Rank 1) for Transfer.txt

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


Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.356
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 20.300 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0
Analysis Timestep 2.5 Second Increment (Extended)
DTS Status ON
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
Return Period(s) (years) 1, 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.
20.000	1	15 Winter	100	+40%	100/15 Summer			
20.001	2	15 Winter	100	+40%	30/15 Summer	100/15 Summer		
20.002	3	15 Winter	100	+40%	30/15 Summer	100/15 Summer		
20.003	4	15 Winter	100	+40%	30/15 Summer	100/15 Summer		
20.004	5	15 Winter	100	+40%	30/15 Summer	100/15 Summer		
20.005	6	15 Winter	100	+40%				
20.006	7	15 Winter	100	+40%				
20.007	8	15 Winter	100	+40%				
21.000	9	15 Winter	100	+40%	100/15 Summer			
20.008	10	15 Winter	100	+40%	30/15 Summer			
22.000	11	15 Winter	100	+40%	100/15 Summer			
22.001	12	15 Winter	100	+40%	100/15 Summer	100/15 Summer		
22.002	13	15 Summer	100	+40%	30/15 Summer			
22.003	14	15 Winter	100	+40%	30/15 Summer	100/15 Summer		
20.009	15	15 Winter	100	+40%	100/15 Summer			
20.010	16	15 Winter	100	+40%	30/15 Summer			
23.000	17	15 Winter	100	+40%	100/15 Summer			
23.001	18	15 Winter	100	+40%	100/15 Summer			
23.002	19	15 Winter	100	+40%	100/15 Summer			

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Summary of Critical Results by Maximum Level (Rank 1) for Transfer.txt

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Overflow Cap. (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
20.000	1	23.563	0.993	0.000	0.73	25.8	FLOOD RISK	
20.001	2	23.231	1.201	0.662	1.00	36.2	FLOOD	2
20.002	3	22.315	1.205	5.389	1.00	37.4	FLOOD	5
20.003	4	21.175	1.205	4.781	1.36	47.5	FLOOD	6
20.004	5	20.491	1.201	0.553	1.51	55.4	FLOOD	3
20.005	6	18.253	-0.087	0.000	0.68	70.3	OK	
20.006	7	17.320	-0.070	0.000	0.80	85.3	OK	
20.007	8	15.965	-0.065	0.000	0.83	92.4	OK	
21.000	9	15.636	0.206	0.000	1.56	25.3	SURCHARGED	
20.008	10	14.546	1.254	0.000	2.15	140.3	SURCHARGED	
22.000	11	19.161	0.711	0.000	0.72	37.5	SURCHARGED	
22.001	12	18.601	1.201	1.109	1.01	52.8	FLOOD	2
22.002	13	17.744	1.194	0.000	0.99	52.5	FLOOD RISK	
22.003	14	16.656	1.206	6.340	1.44	59.3	FLOOD	5
20.009	15	14.097	0.947	0.000	0.62	225.6	SURCHARGED	
20.010	16	13.282	2.457	0.000	1.51	214.2	SURCHARGED	
23.000	17	18.791	0.541	0.000	0.95	35.6	SURCHARGED	
23.001	18	17.097	0.747	0.000	1.16	52.6	SURCHARGED	
23.002	19	15.326	0.326	0.000	1.12	52.2	SURCHARGED	

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Summary of Critical Results by Maximum Level (Rank 1) for Transfer.txt

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.
23.003	20 15	Winter	100	+40%	100/15 Summer			
24.000	21 15	Winter	100	+40%	30/15 Summer	100/15 Summer		
23.004	22 15	Winter	100	+40%	30/15 Summer			
23.005	23 15	Winter	100	+40%	100/15 Summer			
23.006	24 15	Winter	100	+40%	30/15 Summer			
20.011	25 15	Winter	100	+40%	30/15 Summer			
25.000	26 15	Winter	100	+40%	30/15 Summer	100/15 Summer		
25.001	27 15	Winter	100	+40%	100/15 Summer			
20.012	28 15	Winter	100	+40%	30/15 Summer			
26.000	29 15	Winter	100	+40%	100/15 Summer			
27.000	30 15	Winter	100	+40%	30/15 Summer	100/15 Summer		
28.000	31 15	Winter	100	+40%	30/15 Summer	100/15 Summer		
26.001	32 15	Winter	100	+40%	30/15 Summer			
20.013	33 15	Winter	100	+40%	30/15 Summer			
20.014	34 15	Winter	100	+40%	30/15 Summer			
20.015	35 15	Winter	100	+40%	30/15 Summer			
29.000	36 15	Winter	100	+40%	30/15 Summer	100/15 Summer		
30.000	37 15	Winter	100	+40%	30/15 Summer	100/15 Summer		
29.001	38 15	Summer	100	+40%	30/15 Summer			
20.016	39 15	Winter	100	+40%	30/15 Summer			
31.000	40 15	Winter	100	+40%	100/15 Summer			
31.001	41 15	Winter	100	+40%	30/15 Summer			
31.002	42 15	Winter	100	+40%	30/15 Summer			
31.003	43 15	Winter	100	+40%	30/15 Summer			
20.017	44 15	Winter	100	+40%	30/15 Summer			
32.000	45 15	Winter	100	+40%	100/15 Summer			
32.001	46 15	Winter	100	+40%	30/15 Summer			
32.002	47 30	Winter	100	+40%	30/15 Winter			
32.003	48 30	Winter	100	+40%	100/15 Summer			
33.000	49 15	Winter	100	+40%	30/15 Summer	100/15 Summer		
32.004	50 30	Winter	100	+40%	30/15 Summer			
32.005	51 30	Winter	100	+40%	100/15 Summer			
32.006	52 30	Winter	100	+40%	30/15 Summer			
32.007	53 30	Winter	100	+40%	30/15 Summer			
34.000	56 30	Winter	100	+40%	30/15 Summer			
34.001	57 30	Winter	100	+40%	30/15 Summer	100/15 Summer		
32.008	58 30	Winter	100	+40%	30/15 Summer	100/15 Winter		
32.009	59 30	Winter	100	+40%	30/15 Summer	100/15 Summer		
35.000	60 15	Winter	100	+40%	30/15 Summer			
35.001	61 15	Winter	100	+40%	100/15 Summer			
35.002	62 15	Winter	100	+40%	100/15 Summer			
35.003	63 15	Winter	100	+40%	100/15 Summer			
36.000	64 15	Winter	100	+40%	100/15 Summer			
36.001	65 15	Winter	100	+40%	100/15 Summer			
35.004	66 15	Winter	100	+40%	100/15 Summer			
37.000	67 15	Winter	100	+40%	100/15 Summer			
35.005	68 15	Winter	100	+40%	100/15 Summer			
32.010	69 15	Winter	100	+40%	30/15 Summer			
38.000	70 15	Winter	100	+40%	30/15 Winter			

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Summary of Critical Results by Maximum Level (Rank 1) for Transfer.txt

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Cap. (l/s)	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
23.003	20	14.067	0.117	0.000	0.57		83.5	SURCHARGED	
24.000	21	13.471	1.021	6.362	2.28		45.6	FLOOD	4
23.004	22	13.626	1.303	0.000	2.20		94.4	FLOOD RISK	
23.005	23	13.455	1.225	0.000	0.69		99.0	SURCHARGED	
23.006	24	13.214	2.014	0.000	0.84		84.2	SURCHARGED	
20.011	25	12.982	2.288	0.000	2.11		292.3	SURCHARGED	
25.000	26	18.018	1.218	18.500	1.18		52.8	FLOOD	6
25.001	27	14.407	0.607	0.000	0.89		56.4	SURCHARGED	
20.012	28	12.636	2.020	0.000	1.79		352.1	SURCHARGED	
26.000	29	13.268	0.493	0.000	1.14		118.8	SURCHARGED	
27.000	30	13.911	1.211	11.345	1.78		77.0	FLOOD	5
28.000	31	13.908	1.208	7.761	1.71		79.6	FLOOD	4
26.001	32	12.657	0.507	0.000	1.54		271.4	SURCHARGED	
20.013	33	12.249	1.754	0.000	2.36		576.2	SURCHARGED	
20.014	34	11.920	1.477	0.000	2.30		585.0	SURCHARGED	
20.015	35	11.562	1.187	0.000	2.40		614.2	SURCHARGED	
29.000	36	13.600	1.125	0.125	1.33		53.2	FLOOD	2
30.000	37	13.609	1.134	8.605	2.16		86.3	FLOOD	4
29.001	38	13.460	1.065	0.000	1.51		140.2	FLOOD RISK	
20.016	39	11.154	0.848	0.000	2.32		768.3	SURCHARGED	
31.000	40	12.231	0.956	0.000	0.89		63.5	FLOOD RISK	
31.001	41	11.849	1.074	0.000	1.27		60.7	FLOOD RISK	
31.002	42	11.666	1.032	0.000	2.20		75.2	SURCHARGED	
31.003	43	11.386	0.822	0.000	1.51		89.8	SURCHARGED	
20.017	44	10.780	0.535	0.000	2.93		857.1	SURCHARGED	
32.000	45	13.916	1.016	0.000	1.06		43.6	FLOOD RISK	
32.001	46	12.501	1.051	0.000	1.67		38.9	FLOOD RISK	
32.002	47	11.729	0.579	0.000	1.16		34.6	SURCHARGED	
32.003	48	11.657	0.547	0.000	0.70		47.4	SURCHARGED	
33.000	49	13.005	1.205	5.122	1.34		53.1	FLOOD	4
32.004	50	11.435	0.835	0.000	1.58		96.1	SURCHARGED	
32.005	51	11.286	0.721	0.000	0.73		102.5	SURCHARGED	
32.006	52	10.983	0.983	0.000	0.92		102.6	FLOOD RISK	
32.007	53	10.815	1.015	0.000	0.71		102.5	FLOOD RISK	
34.000	56	11.035	1.135	0.000	0.91		24.9	FLOOD RISK	
34.001	57	10.606	1.206	6.499	2.25		67.3	FLOOD	6
32.008	58	10.603	1.233	2.988	1.30		139.1	FLOOD	3
32.009	59	10.523	1.223	22.800	0.88		144.3	FLOOD	5
35.000	60	12.697	0.897	0.000	2.11		38.9	SURCHARGED	
35.001	61	11.913	0.313	0.000	1.36		66.1	SURCHARGED	
35.002	62	11.764	0.295	0.000	0.64		59.6	SURCHARGED	
35.003	63	11.555	0.755	0.000	1.00		54.4	SURCHARGED	
36.000	64	11.689	0.259	0.000	0.55		16.8	SURCHARGED	
36.001	65	11.644	0.594	0.000	1.01		31.4	SURCHARGED	
35.004	66	11.404	0.769	0.000	1.38		97.9	SURCHARGED	
37.000	67	10.899	0.469	0.000	0.94		15.5	SURCHARGED	
35.005	68	10.857	0.587	0.000	0.57		99.5	SURCHARGED	
32.010	69	10.542	1.188	0.000	1.07		183.8	SURCHARGED	

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Summary of Critical Results by Maximum Level (Rank 1) for Transfer.txt

PN	US/MH Name	Water		Surcharged		Flooded		Pipe Flow (l/s)	Status	Level Exceeded
		Level (m)	Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)				
38.000	70	10.568	0.683	0.000	0.28		10.1	SURCHARGED		

Summary of Critical Results by Maximum Level (Rank 1) for Transfer.txt

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
32.011	71	15 Winter	100	+40%	30/15 Summer			
32.012	72	15 Winter	100	+40%	30/15 Summer			
32.013	73	15 Winter	100	+40%	30/15 Summer			
32.014	74	15 Winter	100	+40%	30/15 Summer			
20.018	75	15 Winter	100	+40%	30/15 Summer			
39.000	76	30 Winter	100	+40%	30/15 Summer	100/15 Summer		
40.000	77	15 Winter	100	+40%	100/15 Summer			
39.001	78	15 Winter	100	+40%	1/15 Summer			
20.019	79	15 Winter	100	+40%	30/15 Summer			
20.020	80	15 Winter	100	+40%	30/15 Summer			
20.021	81	60 Winter	100	+40%			1/15 Summer	66
41.000	82	15 Winter	100	+40%				
41.001	83	15 Winter	100	+40%				
41.002	84	15 Winter	100	+40%	100/15 Summer			
41.003	85	15 Winter	100	+40%	100/15 Summer			
41.004	86	15 Winter	100	+40%	30/15 Summer			
42.000	87	15 Winter	100	+40%	30/15 Summer			
41.005	88	15 Winter	100	+40%	100/15 Summer			
43.000	89	15 Winter	100	+40%	30/15 Summer	100/15 Summer		
43.001	90	15 Winter	100	+40%	30/15 Summer			
43.002	91	15 Winter	100	+40%	30/15 Summer			
41.006	92	15 Winter	100	+40%	100/15 Summer			
41.007	93	15 Winter	100	+40%	100/15 Summer			
41.008	94	15 Winter	100	+40%	30/15 Summer			
41.009	95	360 Winter	100	+40%				
41.010	96	360 Winter	100	+40%			100/30 Summer	20
41.011	97	360 Winter	100	+40%	30/240 Winter			
20.022	98	360 Winter	100	+40%				
20.023	99	360 Winter	100	+40%				
20.024	109	360 Winter	100	+40%	30/60 Summer			

PN	US/MH Name	Water		Surcharged		Flooded		Pipe Flow (l/s)	Status	Level Exceeded
		Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Flow / Overflow (l/s)				
32.011	71	10.536	1.202	0.000	1.16	202.8	SURCHARGED			
32.012	72	10.528	1.215	0.000	1.13	192.4	SURCHARGED			
32.013	73	10.520	1.227	0.000	0.85	180.0	SURCHARGED			
32.014	74	10.513	1.234	0.000	0.62	178.3	SURCHARGED			
20.018	75	10.482	1.258	0.000	3.84	1007.2	SURCHARGED			
39.000	76	10.059	0.929	29.337	1.85	68.2	FLOOD		6	
40.000	77	10.711	0.536	0.000	1.22	77.8	FLOOD RISK			
39.001	78	10.165	1.180	0.000	2.22	140.0	SURCHARGED			
20.019	79	10.061	0.862	0.000	4.31	1079.7	SURCHARGED			
20.020	80	9.573	0.395	0.000	2.78	1074.6	SURCHARGED			
20.021	81	9.132	0.000	0.000	1.08	523.9	495.7	OK		
41.000	82	21.528	-0.102	0.000	0.22	13.0		OK		
41.001	83	19.321	-0.079	0.000	0.46	23.4		OK		


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Summary of Critical Results by Maximum Level (Rank 1) for Transfer.txt

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Overflow Cap. (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
41.002	84	18.857	0.706	0.000	0.95	41.2	SURCHARGED	
41.003	85	15.708	1.119	0.000	1.20	50.2	FLOOD RISK	
41.004	86	14.764	0.909	0.000	1.72	74.9	FLOOD RISK	
42.000	87	14.858	0.955	0.000	1.71	28.8	FLOOD RISK	
41.005	88	14.116	0.482	0.000	1.09	129.2	SURCHARGED	
43.000	89	12.255	1.205	4.855	2.39	39.3	FLOOD	4
43.001	90	12.319	1.440	0.000	1.12	50.5	FLOOD RISK	
43.002	91	12.245	1.505	0.000	1.73	64.9	FLOOD RISK	
41.006	92	11.832	1.202	0.000	1.25	215.1	SURCHARGED	
41.007	93	10.697	0.792	0.000	1.21	213.3	SURCHARGED	
41.008	94	9.771	0.516	0.000	1.12	211.8	SURCHARGED	
41.009	95	9.076	-0.985	0.000	0.13	46.0	OK	
41.010	96	9.075	-0.425	0.000	0.13	44.0 24.1	OK	
41.011	97	9.121	0.391	0.000	0.09	23.0	SURCHARGED	
20.022	98	9.050	-0.450	0.000	0.25	298.9	OK	
20.023	99	9.047	-0.453	0.000	0.06	101.8	OK	
20.024	109	9.032	0.577	0.000	0.28	90.9	SURCHARGED	

TECHNICAL NOTE

Hydraulic Calculations – Combined Site

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Online Controls for Transfer.txt

Hydro-Brake® Optimum Manhole: S6, DS/PN: 21.004, Volume (m³): 9.4

Unit Reference MD-SHE-0087-5000-2450-5000
 Design Head (m) 2.450
 Design Flow (l/s) 5.0
 Flush-Flo™ Calculated
 Objective Minimise upstream storage
 Application Surface
 Sump Available Yes
 Diameter (mm) 87
 Invert Level (m) 15.600
 Minimum Outlet Pipe Diameter (mm) 100
 Suggested Manhole Diameter (mm) 1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	2.450	5.0
Flush-Flo™	0.379	3.7
Kick-Flo®	0.779	2.9
Mean Flow over Head Range	-	3.8

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	2.7	1.200	3.6	3.000	5.5	7.000	8.2
0.200	3.4	1.400	3.8	3.500	5.9	7.500	8.5
0.300	3.6	1.600	4.1	4.000	6.3	8.000	8.7
0.400	3.7	1.800	4.3	4.500	6.6	8.500	9.0
0.500	3.6	2.000	4.5	5.000	7.0	9.000	9.2
0.600	3.5	2.200	4.7	5.500	7.3	9.500	9.5
0.800	3.0	2.400	4.9	6.000	7.6		
1.000	3.3	2.600	5.1	6.500	7.9		


Orifice Manhole: 10, DS/PN: 20.008, Volume (m³): 2.0

Diameter (m) 0.193 Discharge Coefficient 0.600 Invert Level (m) 15.436

Depth/Flow Relationship Manhole: WD/3400/CC, DS/PN: 27.001, Volume (m³): 4.9

Invert Level (m) 10.750

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	11.2000	0.500	11.2000	0.900	11.2000	1.300	11.2000
0.200	11.2000	0.600	11.2000	1.000	11.2000	1.400	11.2000
0.300	11.2000	0.700	11.2000	1.100	11.2000	1.500	11.2000
0.400	11.2000	0.800	11.2000	1.200	11.2000	1.600	11.2000

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Depth/Flow Relationship Manhole: WD/3400/CC, DS/PN: 27.001, Volume (m³): 4.9

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
1.700	11.2000	2.100	11.2000	2.500	11.2000	2.900	11.2000
1.800	11.2000	2.200	11.2000	2.600	11.2000	3.000	11.2000
1.900	11.2000	2.300	11.2000	2.700	11.2000		
2.000	11.2000	2.400	11.2000	2.800	11.2000		

Depth/Flow Relationship Manhole: WD/2018/1806/F, DS/PN: 30.001, Volume (m³): 1.9

Invert Level (m) 12.275

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	15.0000	0.900	15.0000	1.700	15.0000	2.500	15.0000
0.200	15.0000	1.000	15.0000	1.800	15.0000	2.600	15.0000
0.300	15.0000	1.100	15.0000	1.900	15.0000	2.700	15.0000
0.400	15.0000	1.200	15.0000	2.000	15.0000	2.800	15.0000
0.500	15.0000	1.300	15.0000	2.100	15.0000	2.900	15.0000
0.600	15.0000	1.400	15.0000	2.200	15.0000	3.000	15.0000
0.700	15.0000	1.500	15.0000	2.300	15.0000		
0.800	15.0000	1.600	15.0000	2.400	15.0000		

Hydro-Brake® Optimum Manhole: 7, DS/PN: 33.006, Volume (m³): 2.2

Unit Reference MD-SHE-0164-1200-0500-1200
Design Head (m) 0.500
Design Flow (l/s) 12.0
Flush-Flo™ Calculated
Objective Minimise upstream storage
Application Surface
Sump Available Yes
Diameter (mm) 164
Invert Level (m) 12.585
Minimum Outlet Pipe Diameter (mm) 225
Suggested Manhole Diameter (mm) 1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.500	12.0
Flush-Flo™	0.242	12.0
Kick-Flo®	0.405	10.9
Mean Flow over Head Range	-	9.4

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

Hydro-Brake® Optimum Manhole: 7, DS/PN: 33.006, Volume (m³): 2.2

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	5.9	1.200	18.2	3.000	28.2	7.000	42.4
0.200	11.9	1.400	19.6	3.500	30.4	7.500	44.0
0.300	11.8	1.600	20.8	4.000	32.4	8.000	45.4
0.400	11.0	1.800	22.1	4.500	34.3	8.500	46.8
0.500	12.0	2.000	23.2	5.000	36.1	9.000	48.2
0.600	13.1	2.200	24.3	5.500	37.6	9.500	49.5
0.800	15.0	2.400	25.3	6.000	39.3		
1.000	16.7	2.600	26.3	6.500	40.9		

Orifice Manhole: 15, DS/PN: 38.003, Volume (m³): 2.0

Diameter (m) 0.114 Discharge Coefficient 0.600 Invert Level (m) 11.481

Hydro-Brake® Manhole: 97, DS/PN: 49.011, Volume (m³): 15.7

Design Head (m) 0.870 Hydro-Brake® Type Md5 SW Only Invert Level (m) 7.980
Design Flow (l/s) 31.0 Diameter (mm) 226

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	8.1	1.200	34.1	3.000	53.2	7.000	81.3
0.200	19.6	1.400	36.6	3.500	57.5	7.500	84.2
0.300	27.1	1.600	39.0	4.000	61.5	8.000	86.9
0.400	30.0	1.800	41.3	4.500	65.2	8.500	89.6
0.500	30.5	2.000	43.5	5.000	68.7	9.000	92.2
0.600	30.2	2.200	45.6	5.500	72.1	9.500	94.7
0.800	30.3	2.400	47.6	6.000	75.3		
1.000	31.9	2.600	49.6	6.500	78.4		


Complex Manhole: 109, DS/PN: 19.007, Volume (m³): 73.6

Orifice

Diameter (m) 0.130 Discharge Coefficient 0.600 Invert Level (m) 7.930

Orifice

Diameter (m) 0.204 Discharge Coefficient 0.600 Invert Level (m) 8.530

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Storage Structures for Transfer.txt

Cellular Storage Manhole: S6, DS/PN: 21.004

Invert Level (m) 15.600 Safety Factor 2.0
 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.96
 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	12.8	0.0	1.321	0.0	0.0
1.320	12.8	0.0			

Tank or Pond Manhole: 26, DS/PN: 27.000

Invert Level (m) 11.750

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	144.2	2.500	144.2	2.501	0.0

Tank or Pond Manhole: 31, DS/PN: 30.000

Invert Level (m) 12.550

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	210.0	1.000	210.0	1.001	0.0

Tank or Pond Manhole: Attn Access, DS/PN: 35.000


Invert Level (m) 12.937

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	78.1	0.350	78.1	0.351	0.0

Tank or Pond Manhole: 96, DS/PN: 49.010

Invert Level (m) 7.990


Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	314.0	0.700	883.0	1.400	1166.0	2.100	1209.0
0.100	407.0	0.800	921.0	1.500	1209.0	2.200	1209.0
0.200	696.0	0.900	960.0	1.600	1209.0	2.300	1209.0
0.300	732.0	1.000	1000.0	1.700	1209.0	2.400	1209.0
0.400	769.0	1.100	1041.0	1.800	1209.0	2.500	1209.0
0.500	806.0	1.200	1082.0	1.900	1209.0		
0.600	844.0	1.300	1124.0	2.000	1209.0		

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Tank or Pond Manhole: 99, DS/PN: 19.006

Invert Level (m) 7.940

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	348.0	0.700	1333.0	1.400	1853.0	2.100	1933.0
0.100	471.0	0.800	1403.0	1.500	1933.0	2.200	1933.0
0.200	931.0	0.900	1474.0	1.600	1933.0	2.300	1933.0
0.300	1034.0	1.000	1547.0	1.700	1933.0	2.400	1933.0
0.400	1123.0	1.100	1621.0	1.800	1933.0	2.500	1933.0
0.500	1197.0	1.200	1697.0	1.900	1933.0		
0.600	1264.0	1.300	1774.0	2.000	1933.0		

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
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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 6
Number of Online Controls 8 Number of Time/Area Diagrams 0
Number of Offline Controls 2 Number of Real Time Controls 0


Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.356
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 20.300 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0
Analysis Timestep 2.5 Second Increment (Extended)
DTS Status ON
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
Return Period(s) (years) 1, 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.
19.000	16 15	Winter	1	+0%				
20.000	1 15	Winter	1	+0%	100/15	Summer		
20.001	2 15	Winter	1	+0%	30/15	Summer	100/15	Summer
20.002	3 15	Winter	1	+0%	30/15	Summer	100/15	Summer
20.003	4 15	Winter	1	+0%	30/15	Summer	100/15	Summer
20.004	5 15	Winter	1	+0%	30/15	Summer	100/15	Summer
20.005	6 15	Winter	1	+0%				
20.006	7 15	Winter	1	+0%	100/15	Summer		
20.007	8 15	Winter	1	+0%	30/15	Summer		
21.000	S1 15	Winter	1	+0%	100/15	Summer		
21.001	S2 15	Winter	1	+0%	100/15	Summer		
21.002	S3 15	Winter	1	+0%	100/15	Winter		
21.003	S4 15	Winter	1	+0%	100/15	Summer		
22.000	S5 30	Winter	1	+0%	30/15	Summer		
21.004	S6 30	Winter	1	+0%	1/15	Summer		
20.008	10 15	Winter	1	+0%	1/15	Summer		
23.000	9 15	Winter	1	+0%	100/15	Summer		
20.009	10 15	Winter	1	+0%	30/15	Summer		

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

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Cap. (l/s)	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
19.000	16	10.292	-0.118	0.000	0.10		1.5	OK	
20.000	1	22.467	-0.103	0.000	0.21		7.6	OK	
20.001	2	21.938	-0.092	0.000	0.32		11.5	OK	2
20.002	3	21.031	-0.079	0.000	0.45		16.8	OK	5
20.003	4	19.903	-0.067	0.000	0.58		20.2	OK	6
20.004	5	19.232	-0.058	0.000	0.68		25.1	OK	3
20.005	6	18.195	-0.145	0.000	0.27		28.1	OK	
20.006	7	17.248	-0.142	0.000	0.29		31.1	OK	
20.007	8	15.903	-0.127	0.000	0.39		33.5	OK	
21.000	S1	17.253	-0.110	0.000	0.16		2.6	OK	
21.001	S2	17.087	-0.095	0.000	0.29		4.7	OK	
21.002	S3	16.442	-0.579	0.000	0.01		4.8	OK	
21.003	S4	16.041	-0.559	0.000	0.01		9.0	OK	
22.000	S5	15.921	-0.346	0.000	0.01		1.8	OK	
21.004	S6	15.921	0.171	0.000	0.20		3.7	SURCHARGED	
20.008	10	15.737	0.076	0.000	0.41		34.9	SURCHARGED	
23.000	9	16.340	-0.090	0.000	0.33		5.4	OK	
20.009	10	13.177	-0.115	0.000	0.69		44.9	OK	

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
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PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow
24.000		11 15	Winter	1	+0%	100/15	Summer
24.001		12 15	Winter	1	+0%	100/15	Summer 100/15 Summer
24.002		13 15	Winter	1	+0%	30/15	Summer
24.003		14 15	Winter	1	+0%	30/15	Summer 100/15 Summer
20.010		15 15	Winter	1	+0%	100/15	Summer
20.011		16 15	Winter	1	+0%	30/15	Summer
25.000		17 15	Winter	1	+0%	100/15	Summer
25.001		18 15	Winter	1	+0%	100/15	Summer
25.002		19 15	Winter	1	+0%	100/15	Summer
25.003		20 15	Winter	1	+0%	100/15	Winter
26.000		21 15	Summer	1	+0%	30/15	Summer 100/15 Summer
25.004		22 15	Winter	1	+0%	30/15	Summer
25.005		23 15	Winter	1	+0%	100/15	Summer
25.006		24 15	Winter	1	+0%	30/15	Summer
20.012		25 15	Winter	1	+0%	30/15	Summer
27.000		26 60	Winter	1	+0%	1/15	Summer
27.001	WD/3400/CC	60	Winter	1	+0%	1/15	Summer
20.013		28 15	Winter	1	+0%	30/15	Summer
28.000		29 15	Winter	1	+0%	100/15	Summer
29.000		30 15	Summer	1	+0%	30/15	Summer 100/15 Summer
30.000		31 30	Winter	1	+0%	30/15	Summer
30.001	WD/2018/1806/F	30	Winter	1	+0%	1/15	Summer
28.001		32 15	Winter	1	+0%	100/15	Summer
20.014		33 15	Winter	1	+0%	30/15	Summer
20.015		34 15	Winter	1	+0%	30/15	Summer
20.016		35 15	Winter	1	+0%	30/15	Summer
31.000		36 15	Summer	1	+0%	100/15	Summer
32.000		37 15	Winter	1	+0%	100/15	Summer
33.000		1 15	Winter	1	+0%	100/15	Summer
33.001		2 15	Winter	1	+0%	100/15	Summer
34.000		8 15	Winter	1	+0%		
33.002		3 15	Winter	1	+0%	100/15	Summer
33.003		4 15	Winter	1	+0%	100/15	Summer
33.004		5 15	Winter	1	+0%	100/15	Summer
35.000	Attn Access	15	Winter	1	+0%	100/15	Summer
33.005		6 15	Winter	1	+0%	30/15	Summer
36.000		9 15	Winter	1	+0%		
33.006		7 15	Winter	1	+0%	1/15	Summer
31.001		38 15	Winter	1	+0%	100/15	Summer
20.017		39 30	Winter	1	+0%	30/15	Summer
37.000		40 15	Winter	1	+0%	100/15	Summer
37.001		41 15	Summer	1	+0%	30/15	Summer
37.002		42 15	Winter	1	+0%	30/15	Summer
37.003		43 15	Winter	1	+0%	30/15	Summer
38.000		10 15	Winter	1	+0%		
38.001		11 15	Winter	1	+0%	30/15	Summer
38.002		12 15	Winter	1	+0%	30/15	Summer
39.000		13 15	Winter	1	+0%	100/15	Summer

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
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PN	US/MH Name	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status
24.000		11	18.345	-0.105	0.000	0.20		10.5	OK
24.001		12	17.308	-0.092	0.000	0.31		16.4	OK
24.002		13	16.457	-0.093	0.000	0.31		16.4	OK
24.003		14	15.382	-0.068	0.000	0.57		23.4	OK
20.010		15	12.891	-0.259	0.000	0.21		75.5	OK
20.011		16	10.646	-0.179	0.000	0.54		75.9	OK
25.000		17	18.153	-0.097	0.000	0.27		10.0	OK
25.001		18	16.258	-0.092	0.000	0.31		14.3	OK
25.002		19	14.907	-0.093	0.000	0.31		14.2	OK
25.003		20	13.781	-0.169	0.000	0.14		20.7	OK
26.000		21	12.344	-0.106	0.000	0.19		3.8	OK
25.004		22	12.228	-0.095	0.000	0.62		26.8	OK
25.005		23	12.075	-0.155	0.000	0.21		30.3	OK
25.006		24	11.060	-0.140	0.000	0.30		30.4	OK
20.012		25	10.547	-0.147	0.000	0.78		107.4	OK
27.000		26	12.023	0.123	0.000	0.31		18.3	SURCHARGED
27.001	WD/3400/CC		11.987	1.087	0.000	0.59		11.2	SURCHARGED
20.013		28	10.395	-0.221	0.000	0.59		117.2	OK
28.000		29	12.630	-0.145	0.000	0.27		28.6	OK
29.000		30	12.643	-0.057	0.000	0.70		30.4	OK
30.000		31	12.641	-0.059	0.000	0.52		17.1	OK
30.001	WD/2018/1806/F		12.591	0.166	0.000	0.46		15.0	SURCHARGED
28.001		32	11.941	-0.209	0.000	0.39		68.9	OK
20.014		33	10.285	-0.211	0.000	0.66		161.9	OK
20.015		34	10.221	-0.222	0.000	0.63		160.4	OK
20.016		35	10.136	-0.239	0.000	0.65		165.4	OK
31.000		36	12.336	-0.139	0.000	0.31		12.6	OK
32.000		37	12.252	-0.223	0.000	0.00		0.0	OK
33.000		1	14.289	-0.111	0.000	0.15		2.8	OK
33.001		2	14.020	-0.097	0.000	0.27		5.1	OK
34.000		8	14.332	-0.118	0.000	0.10		1.6	OK
33.002		3	13.696	-0.156	0.000	0.20		8.6	OK
33.003		4	13.598	-0.152	0.000	0.23		10.3	OK
33.004		5	13.483	-0.165	0.000	0.16		12.4	OK
35.000	Attn Access		12.952	-0.210	0.000	0.01		0.4	OK
33.005		6	13.086	-0.050	0.000	0.18		13.0	OK
36.000		9	14.322	-0.128	0.000	0.05		3.4	OK
33.006		7	13.074	0.264	0.000	0.36		11.8	SURCHARGED
31.001		38	12.258	-0.137	0.000	0.33		30.2	OK
20.017		39	10.030	-0.275	0.000	0.56		184.9	OK
37.000		40	11.127	-0.148	0.000	0.25		18.2	OK
37.001		41	10.647	-0.128	0.000	0.38		18.3	OK
37.002		42	10.541	-0.093	0.000	0.64		21.9	OK
37.003		43	10.443	-0.121	0.000	0.43		25.7	OK
38.000		10	13.281	-0.119	0.000	0.10		3.8	OK
38.001		11	11.710	-0.100	0.000	0.24		3.8	OK
38.002		12	11.675	-0.040	0.000	0.23		3.6	OK

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
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PN	US/MH Name	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status
39.000		13	12.849	-0.101	0.000	0.23		4.3	OK

PN	US/MH Name	Level Exceeded
24.000		11
24.001		12
24.002		13
24.003		14
20.010		15
20.011		16
25.000		17
25.001		18
25.002		19
25.003		20
26.000		21
25.004		22
25.005		23
25.006		24
20.012		25
27.000		26
27.001	WD/3400/CC	
20.013		28
28.000		29
29.000		30
30.000		31
30.001	WD/2018/1806/F	
28.001		32
20.014		33
20.015		34
20.016		35
31.000		36
32.000		37
33.000		1
33.001		2
34.000		8
33.002		3
33.003		4
33.004		5
35.000	Attn Access	
33.005		6
36.000		9
33.006		7
31.001		38
20.017		39
37.000		40

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
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PN	US/MH Name	Level Exceeded
37.001		41
37.002		42
37.003		43
38.000		10
38.001		11
38.002		12
39.000		13

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

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
39.001	14 15	Winter	1	+0%	100/15	Summer		
38.003	15 15	Winter	1	+0%	1/15	Summer		
20.018	44 30	Winter	1	+0%	100/15	Summer		
40.000	45 15	Winter	1	+0%	100/15	Summer		
40.001	46 15	Summer	1	+0%	30/15	Summer		
40.002	47 15	Summer	1	+0%	30/15	Winter		
40.003	48 15	Winter	1	+0%	100/15	Summer		
41.000	49 15	Summer	1	+0%	30/15	Summer	100/15	Summer
40.004	50 15	Winter	1	+0%	30/15	Summer		
40.005	51 15	Winter	1	+0%	100/15	Summer		
40.006	52 15	Winter	1	+0%	30/15	Winter		
40.007	53 15	Winter	1	+0%	30/15	Summer		
42.000	56 15	Summer	1	+0%	30/15	Winter		
42.001	57 15	Winter	1	+0%	30/15	Summer	100/15	Summer
40.008	58 30	Winter	1	+0%	30/15	Summer		
40.009	59 30	Winter	1	+0%	30/15	Summer	100/15	Summer
43.000	60 15	Summer	1	+0%	30/15	Summer		
43.001	61 15	Winter	1	+0%	100/15	Summer		
43.002	62 15	Winter	1	+0%	100/15	Summer		
43.003	63 15	Winter	1	+0%	100/15	Summer		
44.000	64 15	Winter	1	+0%	100/15	Summer		
44.001	65 15	Winter	1	+0%	100/15	Summer		
43.004	66 15	Winter	1	+0%	100/15	Summer		
45.000	67 15	Winter	1	+0%	100/15	Summer		
43.005	68 15	Winter	1	+0%	100/15	Summer		
40.010	69 30	Winter	1	+0%	30/15	Summer		
46.000	70 15	Summer	1	+0%	100/15	Summer		
40.011	71 30	Winter	1	+0%	30/15	Summer		
40.012	72 30	Winter	1	+0%	30/15	Summer		
40.013	73 30	Winter	1	+0%	30/15	Summer		
40.014	74 30	Winter	1	+0%	30/15	Summer		
19.001	75 30	Winter	1	+0%	30/15	Summer		
47.000	76 30	Winter	1	+0%	30/15	Summer	100/15	Summer
48.000	77 15	Summer	1	+0%	100/15	Summer		
47.001	78 30	Winter	1	+0%	1/15	Summer		
19.002	79 30	Winter	1	+0%	30/15	Summer		
19.003	80 30	Winter	1	+0%	30/15	Summer		
19.004	81 30	Winter	1	+0%			1/15	Summer
49.000	82 15	Winter	1	+0%				66
49.001	83 15	Winter	1	+0%				
49.002	84 15	Winter	1	+0%	100/15	Summer		
49.003	85 15	Winter	1	+0%	100/15	Summer		
49.004	86 15	Winter	1	+0%	30/15	Summer		
50.000	87 15	Winter	1	+0%	30/15	Summer		
49.005	88 15	Winter	1	+0%	100/15	Summer		
51.000	89 15	Winter	1	+0%	30/15	Summer	100/15	Summer
51.001	90 15	Winter	1	+0%	30/15	Summer		
51.002	91 15	Winter	1	+0%	30/15	Summer		

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

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
39.001	14	12.576	-0.122	0.000	0.08		4.3	OK	
38.003	15	11.664	0.033	0.000	0.13		9.6	SURCHARGED	
20.018	44	9.958	-0.288	0.000	0.70		203.6	OK	
40.000	45	12.807	-0.093	0.000	0.31		12.8	OK	
40.001	46	11.380	-0.070	0.000	0.55		12.9	OK	
40.002	47	11.029	-0.121	0.000	0.43		12.9	OK	
40.003	48	10.960	-0.150	0.000	0.24		16.3	OK	
41.000	49	11.726	-0.074	0.000	0.51		20.3	OK	4
40.004	50	10.475	-0.125	0.000	0.63		38.4	OK	
40.005	51	10.375	-0.190	0.000	0.29		40.2	OK	
40.006	52	9.826	-0.174	0.000	0.36		40.7	OK	
40.007	53	9.608	-0.192	0.000	0.28		40.9	OK	
42.000	56	9.808	-0.092	0.000	0.32		8.8	OK	
42.001	57	9.267	-0.133	0.000	0.35		10.5	OK	4
40.008	58	9.190	-0.180	0.000	0.39		41.5	OK	
40.009	59	9.179	-0.121	0.000	0.24		39.6	OK	4
43.000	60	11.730	-0.070	0.000	0.56		10.2	OK	
43.001	61	11.463	-0.137	0.000	0.32		15.8	OK	
43.002	62	11.306	-0.163	0.000	0.17		15.7	OK	
43.003	63	10.658	-0.142	0.000	0.29		15.7	OK	
44.000	64	11.317	-0.113	0.000	0.14		4.2	OK	
44.001	65	10.952	-0.098	0.000	0.26		8.2	OK	
43.004	66	10.506	-0.129	0.000	0.38		26.8	OK	
45.000	67	10.328	-0.102	0.000	0.22		3.6	OK	
43.005	68	10.054	-0.216	0.000	0.17		30.4	OK	
40.010	69	9.147	-0.207	0.000	0.35		59.4	OK	
46.000	70	9.760	-0.125	0.000	0.07		2.3	OK	
40.011	71	9.140	-0.194	0.000	0.35		61.3	OK	
40.012	72	9.132	-0.181	0.000	0.34		57.8	OK	
40.013	73	9.124	-0.169	0.000	0.26		55.0	OK	
40.014	74	9.116	-0.163	0.000	0.19		54.9	OK	
19.001	75	9.059	-0.165	0.000	0.97		253.6	OK	
47.000	76	9.115	-0.015	0.000	0.41		15.1	OK	6
48.000	77	10.037	-0.138	0.000	0.32		20.3	OK	
47.001	78	9.094	0.109	0.000	0.49		30.8	SURCHARGED	
19.002	79	9.025	-0.174	0.000	1.10		275.7	OK	
19.003	80	8.897	-0.281	0.000	0.71		275.3	OK	
19.004	81	8.640	-0.492	0.000	0.26	156.1	119.0	OK	
49.000	82	21.502	-0.128	0.000	0.05		2.9	OK	
49.001	83	19.281	-0.119	0.000	0.09		4.8	OK	
49.002	84	18.049	-0.102	0.000	0.22		9.7	OK	
49.003	85	14.494	-0.095	0.000	0.29		12.1	OK	
49.004	86	13.734	-0.121	0.000	0.43		18.7	OK	
50.000	87	13.828	-0.075	0.000	0.50		8.4	OK	
49.005	88	13.491	-0.143	0.000	0.28		33.5	OK	
51.000	89	10.976	-0.074	0.000	0.51		8.4	OK	4
51.001	90	10.744	-0.135	0.000	0.34		15.1	OK	

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
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PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Overflow Cap. (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
51.002	91	10.639	-0.101	0.000	0.58	21.6	OK	

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

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
49.006	92	15	Winter	1	+0%	100/15	Summer	
49.007	93	15	Winter	1	+0%	100/15	Summer	
49.008	94	15	Winter	1	+0%	30/15	Summer	
49.009	95	360	Winter	1	+0%			
49.010	96	360	Winter	1	+0%		100/30	Summer 20
49.011	97	480	Winter	1	+0%	30/180	Winter	
19.005	98	720	Winter	1	+0%			
19.006	99	720	Winter	1	+0%			
19.007	109	720	Winter	1	+0%	30/60	Summer	

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Level	
								Status	Exceeded
49.006	92	10.454	-0.176	0.000	0.36		61.9	OK	
49.007	93	9.727	-0.178	0.000	0.35		61.6	OK	
49.008	94	9.073	-0.182	0.000	0.32		61.2	OK	
49.009	95	8.503	-1.558	0.000	0.03		11.7	OK	
49.010	96	8.503	-0.997	0.000	0.11	0.0	21.3	OK	
49.011	97	8.503	-0.227	0.000	0.08		20.1	OK	
19.005	98	8.401	-1.099	0.000	0.04		52.5	OK	
19.006	99	8.399	-1.101	0.000	0.04		63.6	OK	
19.007	109	8.394	-0.061	0.000	0.07		22.3	OK	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
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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 6
Number of Online Controls 8 Number of Time/Area Diagrams 0
Number of Offline Controls 2 Number of Real Time Controls 0


Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.356
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 20.300 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0
Analysis Timestep 2.5 Second Increment (Extended)
DTS Status ON
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
Return Period(s) (years) 1, 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.
19.000	16 15	Winter	30	+0%				
20.000	1 15	Winter	30	+0%	100/15	Summer		
20.001	2 15	Winter	30	+0%	30/15	Summer	100/15	Summer
20.002	3 15	Winter	30	+0%	30/15	Summer	100/15	Summer
20.003	4 15	Winter	30	+0%	30/15	Summer	100/15	Summer
20.004	5 15	Winter	30	+0%	30/15	Summer	100/15	Summer
20.005	6 15	Winter	30	+0%				
20.006	7 15	Winter	30	+0%	100/15	Summer		
20.007	8 15	Winter	30	+0%	30/15	Summer		
21.000	S1 15	Winter	30	+0%	100/15	Summer		
21.001	S2 15	Winter	30	+0%	100/15	Summer		
21.002	S3 60	Winter	30	+0%	100/15	Winter		
21.003	S4 60	Winter	30	+0%	100/15	Summer		
22.000	S5 60	Winter	30	+0%	30/15	Summer		
21.004	S6 60	Winter	30	+0%	1/15	Summer		
20.008	10 15	Winter	30	+0%	1/15	Summer		
23.000	9 15	Winter	30	+0%	100/15	Summer		
20.009	10 15	Winter	30	+0%	30/15	Summer		

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
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PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Cap. (l/s)	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
19.000	16	10.310	-0.100	0.000	0.24		3.7	OK	
20.000	1	22.497	-0.073	0.000	0.52		18.6	OK	
20.001	2	22.184	0.154	0.000	0.80		28.8	SURCHARGED	2
20.002	3	21.798	0.688	0.000	0.92		34.4	SURCHARGED	5
20.003	4	20.892	0.922	0.000	1.14		40.1	FLOOD RISK	6
20.004	5	20.005	0.715	0.000	1.32		48.7	SURCHARGED	3
20.005	6	18.234	-0.106	0.000	0.54		55.3	OK	
20.006	7	17.292	-0.098	0.000	0.60		63.4	OK	
20.007	8	16.480	0.450	0.000	0.79		67.5	SURCHARGED	
21.000	S1	17.278	-0.085	0.000	0.39		6.4	OK	
21.001	S2	17.134	-0.048	0.000	0.80		13.1	OK	
21.002	S3	16.521	-0.500	0.000	0.01		6.7	OK	
21.003	S4	16.521	-0.079	0.000	0.02		11.9	OK	
22.000	S5	16.521	0.254	0.000	0.01		3.3	SURCHARGED	
21.004	S6	16.521	0.771	0.000	0.20		3.7	SURCHARGED	
20.008	10	16.248	0.587	0.000	0.77		65.8	SURCHARGED	
23.000	9	16.385	-0.045	0.000	0.82		13.3	OK	
20.009	10	13.422	0.130	0.000	1.39		90.7	SURCHARGED	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
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PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow
24.000		11 15 Winter	30	+0%	100/15 Summer		
24.001		12 15 Winter	30	+0%	100/15 Summer	100/15 Summer	
24.002		13 15 Winter	30	+0%	30/15 Summer		
24.003		14 15 Winter	30	+0%	30/15 Summer	100/15 Summer	
20.010		15 15 Winter	30	+0%	100/15 Summer		
20.011		16 15 Winter	30	+0%	30/15 Summer		
25.000		17 15 Winter	30	+0%	100/15 Summer		
25.001		18 15 Winter	30	+0%	100/15 Summer		
25.002		19 15 Winter	30	+0%	100/15 Summer		
25.003		20 15 Winter	30	+0%	100/15 Winter		
26.000		21 15 Summer	30	+0%	30/15 Summer	100/15 Summer	
25.004		22 15 Winter	30	+0%	30/15 Summer		
25.005		23 15 Winter	30	+0%	100/15 Summer		
25.006		24 15 Winter	30	+0%	30/15 Summer		
20.012		25 15 Winter	30	+0%	30/15 Summer		
27.000		26 120 Winter	30	+0%	1/15 Summer		
27.001	WD/3400/CC	120 Winter	30	+0%	1/15 Summer		
20.013		28 15 Winter	30	+0%	30/15 Summer		
28.000		29 15 Winter	30	+0%	100/15 Summer		
29.000		30 15 Winter	30	+0%	30/15 Summer	100/15 Summer	
30.000		31 60 Winter	30	+0%	30/15 Summer		
30.001	WD/2018/1806/F	60 Winter	30	+0%	1/15 Summer		
28.001		32 15 Winter	30	+0%	100/15 Summer		
20.014		33 15 Winter	30	+0%	30/15 Summer		
20.015		34 15 Winter	30	+0%	30/15 Summer		
20.016		35 15 Winter	30	+0%	30/15 Summer		
31.000		36 15 Summer	30	+0%	100/15 Summer		
32.000		37 15 Winter	30	+0%	100/15 Summer		
33.000		1 15 Winter	30	+0%	100/15 Summer		
33.001		2 15 Winter	30	+0%	100/15 Summer		
34.000		8 15 Winter	30	+0%			
33.002		3 15 Winter	30	+0%	100/15 Summer		
33.003		4 15 Winter	30	+0%	100/15 Summer		
33.004		5 15 Winter	30	+0%	100/15 Summer		
35.000	Attn Access	30 Winter	30	+0%	100/15 Summer		
33.005		6 15 Winter	30	+0%	30/15 Summer		
36.000		9 15 Winter	30	+0%			
33.006		7 15 Winter	30	+0%	1/15 Summer		
31.001		38 15 Summer	30	+0%	100/15 Summer		
20.017		39 15 Winter	30	+0%	30/15 Summer		
37.000		40 15 Winter	30	+0%	100/15 Summer		
37.001		41 15 Winter	30	+0%	30/15 Summer		
37.002		42 15 Winter	30	+0%	30/15 Summer		
37.003		43 15 Winter	30	+0%	30/15 Summer		
38.000		10 15 Winter	30	+0%			
38.001		11 15 Winter	30	+0%	30/15 Summer		
38.002		12 15 Winter	30	+0%	30/15 Summer		
39.000		13 15 Winter	30	+0%	100/15 Summer		

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
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PN	US/MH Name	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status
24.000		11	18.374	-0.076	0.000	0.49		25.7	OK
24.001		12	17.367	-0.033	0.000	0.84		43.8	OK
24.002		13	16.893	0.343	0.000	0.74		39.3	SURCHARGED
24.003		14	16.332	0.882	0.000	1.33		54.7	SURCHARGED
20.010		15	12.957	-0.193	0.000	0.47		170.1	OK
20.011		16	11.403	0.578	0.000	1.15		162.8	SURCHARGED
25.000		17	18.189	-0.061	0.000	0.66		24.6	OK
25.001		18	16.305	-0.045	0.000	0.83		37.8	OK
25.002		19	14.953	-0.047	0.000	0.81		37.7	OK
25.003		20	13.823	-0.127	0.000	0.39		57.9	OK
26.000		21	12.530	0.080	0.000	0.47		9.4	SURCHARGED
25.004		22	12.501	0.178	0.000	1.69		72.8	SURCHARGED
25.005		23	12.130	-0.100	0.000	0.58		82.6	OK
25.006		24	11.455	0.255	0.000	0.77		77.2	SURCHARGED
20.012		25	11.233	0.539	0.000	1.70		235.5	SURCHARGED
27.000		26	12.672	0.772	0.000	0.25		14.8	SURCHARGED
27.001	WD/3400/CC		12.636	1.736	0.000	0.59		11.2	SURCHARGED
20.013		28	11.004	0.388	0.000	1.27		250.0	SURCHARGED
28.000		29	12.685	-0.090	0.000	0.67		70.1	OK
29.000		30	13.325	0.625	0.000	1.46		63.0	SURCHARGED
30.000		31	12.841	0.141	0.000	0.55		18.1	SURCHARGED
30.001	WD/2018/1806/F		12.784	0.359	0.000	0.46		15.0	SURCHARGED
28.001		32	12.046	-0.104	0.000	0.85		149.7	OK
20.014		33	10.794	0.298	0.000	1.52		370.2	SURCHARGED
20.015		34	10.656	0.213	0.000	1.46		371.9	SURCHARGED
20.016		35	10.509	0.134	0.000	1.50		383.3	SURCHARGED
31.000		36	12.399	-0.076	0.000	0.77		30.8	OK
32.000		37	12.303	-0.172	0.000	0.01		0.3	OK
33.000		1	14.314	-0.086	0.000	0.37		6.9	OK
33.001		2	14.063	-0.054	0.000	0.71		13.7	OK
34.000		8	14.351	-0.099	0.000	0.25		4.0	OK
33.002		3	13.747	-0.105	0.000	0.54		23.1	OK
33.003		4	13.657	-0.093	0.000	0.62		28.1	OK
33.004		5	13.531	-0.117	0.000	0.45		34.4	OK
35.000	Attn Access		13.105	-0.057	0.000	0.35		10.4	OK
33.005		6	13.236	0.100	0.000	0.19		13.4	SURCHARGED
36.000		9	14.335	-0.115	0.000	0.13		8.4	OK
33.006		7	13.236	0.426	0.000	0.41		13.5	SURCHARGED
31.001		38	12.306	-0.089	0.000	0.67		62.2	OK
20.017		39	10.347	0.042	0.000	1.28		423.6	SURCHARGED
37.000		40	11.179	-0.096	0.000	0.62		44.7	OK
37.001		41	10.891	0.116	0.000	0.90		43.0	SURCHARGED
37.002		42	10.785	0.151	0.000	1.56		53.2	SURCHARGED
37.003		43	10.616	0.052	0.000	1.07		63.8	SURCHARGED
38.000		10	13.300	-0.100	0.000	0.24		9.3	OK
38.001		11	12.160	0.350	0.000	0.48		7.5	SURCHARGED
38.002		12	12.133	0.418	0.000	0.56		8.7	SURCHARGED

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
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PN	US/MH Name	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status
39.000		13	12.882	-0.068	0.000	0.56		10.5	OK

PN	US/MH Name	Level Exceeded
24.000		11
24.001		12
24.002		13
24.003		14
20.010		15
20.011		16
25.000		17
25.001		18
25.002		19
25.003		20
26.000		21
25.004		22
25.005		23
25.006		24
20.012		25
27.000		26
27.001	WD/3400/CC	
20.013		28
28.000		29
29.000		30
30.000		31
30.001	WD/2018/1806/F	
28.001		32
20.014		33
20.015		34
20.016		35
31.000		36
32.000		37
33.000		1
33.001		2
34.000		8
33.002		3
33.003		4
33.004		5
35.000	Attn Access	
33.005		6
36.000		9
33.006		7
31.001		38
20.017		39
37.000		40

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
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PN	US/MH Name	Level Exceeded
37.001		41
37.002		42
37.003		43
38.000		10
38.001		11
38.002		12
39.000		13

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

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
39.001	14 15	Winter	30	+0%	100/15	Summer		
38.003	15 15	Winter	30	+0%	1/15	Summer		
20.018	44 15	Winter	30	+0%	100/15	Summer		
40.000	45 15	Winter	30	+0%	100/15	Summer		
40.001	46 15	Winter	30	+0%	30/15	Summer		
40.002	47 15	Winter	30	+0%	30/15	Winter		
40.003	48 15	Summer	30	+0%	100/15	Summer		
41.000	49 15	Winter	30	+0%	30/15	Summer	100/15	Summer
40.004	50 15	Winter	30	+0%	30/15	Summer		
40.005	51 15	Winter	30	+0%	100/15	Summer		
40.006	52 30	Winter	30	+0%	30/15	Winter		
40.007	53 30	Winter	30	+0%	30/15	Summer		
42.000	56 30	Winter	30	+0%	30/15	Winter		
42.001	57 30	Winter	30	+0%	30/15	Summer	100/15	Summer
40.008	58 30	Winter	30	+0%	30/15	Summer		
40.009	59 15	Winter	30	+0%	30/15	Summer	100/15	Summer
43.000	60 15	Winter	30	+0%	30/15	Summer		
43.001	61 15	Winter	30	+0%	100/15	Summer		
43.002	62 15	Winter	30	+0%	100/15	Summer		
43.003	63 15	Winter	30	+0%	100/15	Summer		
44.000	64 15	Winter	30	+0%	100/15	Summer		
44.001	65 15	Summer	30	+0%	100/15	Summer		
43.004	66 15	Winter	30	+0%	100/15	Summer		
45.000	67 15	Winter	30	+0%	100/15	Summer		
43.005	68 15	Winter	30	+0%	100/15	Summer		
40.010	69 15	Winter	30	+0%	30/15	Summer		
46.000	70 15	Winter	30	+0%	100/15	Summer		
40.011	71 15	Winter	30	+0%	30/15	Summer		
40.012	72 15	Winter	30	+0%	30/15	Summer		
40.013	73 15	Winter	30	+0%	30/15	Summer		
40.014	74 15	Winter	30	+0%	30/15	Summer		
19.001	75 15	Winter	30	+0%	30/15	Summer		
47.000	76 15	Winter	30	+0%	30/15	Summer	100/15	Summer
48.000	77 15	Summer	30	+0%	100/15	Summer		
47.001	78 15	Winter	30	+0%	1/15	Summer		
19.002	79 15	Winter	30	+0%	30/15	Summer		
19.003	80 15	Winter	30	+0%	30/15	Summer		
19.004	81 15	Winter	30	+0%			1/15	Summer
49.000	82 15	Winter	30	+0%				66
49.001	83 15	Winter	30	+0%				
49.002	84 15	Summer	30	+0%	100/15	Summer		
49.003	85 15	Winter	30	+0%	100/15	Summer		
49.004	86 15	Winter	30	+0%	30/15	Summer		
50.000	87 15	Winter	30	+0%	30/15	Summer		
49.005	88 15	Winter	30	+0%	100/15	Summer		
51.000	89 15	Winter	30	+0%	30/15	Summer	100/15	Summer
51.001	90 15	Winter	30	+0%	30/15	Summer		
51.002	91 15	Winter	30	+0%	30/15	Summer		

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
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PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
39.001	14	12.593	-0.105	0.000	0.19		10.5	OK	
38.003	15	12.109	0.478	0.000	0.27		20.4	SURCHARGED	
20.018	44	10.246	0.000	0.000	1.64		480.9	OK	
40.000	45	12.849	-0.051	0.000	0.77		31.5	OK	
40.001	46	11.683	0.233	0.000	1.31		30.6	SURCHARGED	
40.002	47	11.168	0.018	0.000	0.99		29.5	SURCHARGED	
40.003	48	11.011	-0.099	0.000	0.58		39.5	OK	
41.000	49	12.103	0.303	0.000	1.09		43.0	SURCHARGED	4
40.004	50	10.680	0.080	0.000	1.46		88.9	SURCHARGED	
40.005	51	10.447	-0.118	0.000	0.67		95.0	OK	
40.006	52	10.183	0.183	0.000	0.70		78.4	SURCHARGED	
40.007	53	10.031	0.231	0.000	0.54		77.8	SURCHARGED	
42.000	56	9.931	0.031	0.000	0.59		16.2	SURCHARGED	
42.001	57	9.881	0.481	0.000	0.67		20.2	SURCHARGED	4
40.008	58	9.874	0.504	0.000	0.95		101.8	SURCHARGED	
40.009	59	9.783	0.483	0.000	0.64		105.3	SURCHARGED	4
43.000	60	11.949	0.149	0.000	1.30		23.9	SURCHARGED	
43.001	61	11.535	-0.065	0.000	0.83		40.3	OK	
43.002	62	11.348	-0.121	0.000	0.43		40.0	OK	
43.003	63	10.722	-0.078	0.000	0.75		40.4	OK	
44.000	64	11.340	-0.090	0.000	0.34		10.4	OK	
44.001	65	10.995	-0.055	0.000	0.73		22.5	OK	
43.004	66	10.602	-0.033	0.000	1.00		70.7	OK	
45.000	67	10.359	-0.071	0.000	0.54		8.9	OK	
43.005	68	10.112	-0.158	0.000	0.45		79.3	OK	
40.010	69	9.757	0.403	0.000	1.05		178.9	SURCHARGED	
46.000	70	9.775	-0.110	0.000	0.16		5.7	OK	
40.011	71	9.743	0.409	0.000	1.09		189.7	SURCHARGED	
40.012	72	9.727	0.414	0.000	1.09		184.8	SURCHARGED	
40.013	73	9.711	0.418	0.000	0.85		179.2	SURCHARGED	
40.014	74	9.697	0.418	0.000	0.61		174.8	SURCHARGED	
19.001	75	9.660	0.436	0.000	2.43		637.8	SURCHARGED	
47.000	76	9.712	0.582	0.000	1.09		40.0	SURCHARGED	6
48.000	77	10.100	-0.075	0.000	0.78		49.7	OK	
47.001	78	9.610	0.625	0.000	1.69		106.3	SURCHARGED	
19.002	79	9.492	0.293	0.000	2.77		693.6	SURCHARGED	
19.003	80	9.293	0.115	0.000	1.79		693.0	SURCHARGED	
19.004	81	8.843	-0.289	0.000	0.69	372.3	319.6	OK	
49.000	82	21.515	-0.115	0.000	0.12		7.1	OK	
49.001	83	19.301	-0.099	0.000	0.25		12.9	OK	
49.002	84	18.090	-0.061	0.000	0.66		28.4	OK	
49.003	85	14.546	-0.043	0.000	0.85		35.5	OK	
49.004	86	13.989	0.134	0.000	1.26		54.6	SURCHARGED	
50.000	87	14.000	0.097	0.000	1.15		19.5	SURCHARGED	
49.005	88	13.562	-0.071	0.000	0.79		92.9	OK	
51.000	89	11.259	0.209	0.000	1.07		17.7	SURCHARGED	4
51.001	90	11.062	0.183	0.000	0.79		35.7	SURCHARGED	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
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PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Overflow Cap. (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
51.002	91	10.957	0.218	0.000	1.42	53.3	SURCHARGED	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
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PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
49.006	92	15 Winter	30	+0%	100/15 Summer			
49.007	93	15 Winter	30	+0%	100/15 Summer			
49.008	94	15 Winter	30	+0%	30/15 Summer			
49.009	95	15 Winter	30	+0%				
49.010	96	600 Winter	30	+0%			100/30 Summer	20
49.011	97	600 Winter	30	+0%	30/180 Winter			
19.005	98	600 Winter	30	+0%				
19.006	99	600 Winter	30	+0%				
19.007	109	600 Winter	30	+0%	30/60 Summer			

PN	US/MH Name	Water			Surcharged		Flooded		Pipe		Level Exceeded
		Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Flow (l/s)	Status			
49.006	92	10.566	-0.064	0.000	0.96		164.9		OK		
49.007	93	9.854	-0.051	0.000	0.93		163.7		OK		
49.008	94	9.301	0.046	0.000	0.86		162.5	SURCHARGED			
49.009	95	8.866	-1.195	0.000	0.46		160.6		OK		
49.010	96	8.790	-0.710	0.000	0.11	0.0	21.3		OK		
49.011	97	8.809	0.079	0.000	0.08		20.7	SURCHARGED			
19.005	98	8.758	-0.742	0.000	0.11		130.9		OK		
19.006	99	8.755	-0.745	0.000	0.04		60.8		OK		
19.007	109	8.746	0.291	0.000	0.17		55.0	SURCHARGED			

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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 6
Number of Online Controls 8 Number of Time/Area Diagrams 0
Number of Offline Controls 2 Number of Real Time Controls 0


Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.356
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 20.300 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0
Analysis Timestep 2.5 Second Increment (Extended)
DTS Status ON
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
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.
19.000	16	15 Winter	100	+40%				
20.000	1	15 Winter	100	+40%	100/15 Summer			
20.001	2	15 Winter	100	+40%	30/15 Summer	100/15 Summer		
20.002	3	15 Winter	100	+40%	30/15 Summer	100/15 Summer		
20.003	4	15 Winter	100	+40%	30/15 Summer	100/15 Summer		
20.004	5	15 Winter	100	+40%	30/15 Summer	100/15 Summer		
20.005	6	15 Winter	100	+40%				
20.006	7	15 Winter	100	+40%	100/15 Summer			
20.007	8	15 Winter	100	+40%	30/15 Summer			
21.000	S1	120 Winter	100	+40%	100/15 Summer			
21.001	S2	120 Winter	100	+40%	100/15 Summer			
21.002	S3	120 Winter	100	+40%	100/15 Winter			
21.003	S4	120 Winter	100	+40%	100/15 Summer			
22.000	S5	120 Winter	100	+40%	30/15 Summer			
21.004	S6	120 Winter	100	+40%	1/15 Summer			
20.008	10	15 Winter	100	+40%	1/15 Summer			
23.000	9	15 Winter	100	+40%	100/15 Summer			
20.009	10	15 Winter	100	+40%	30/15 Summer			

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PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Cap. (l/s)	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
19.000	16	10.386	-0.024	0.000	0.44		6.6	OK	
20.000	1	23.563	0.993	0.000	0.73		25.8	FLOOD RISK	
20.001	2	23.231	1.201	0.662	1.00		36.2	FLOOD	2
20.002	3	22.315	1.205	5.389	1.00		37.4	FLOOD	5
20.003	4	21.175	1.205	4.781	1.36		47.5	FLOOD	6
20.004	5	20.491	1.201	0.553	1.51		55.4	FLOOD	3
20.005	6	18.286	-0.054	0.000	0.69		71.6	OK	
20.006	7	17.878	0.488	0.000	0.76		80.5	SURCHARGED	
20.007	8	17.122	1.092	0.000	1.02		87.7	FLOOD RISK	
21.000	S1	18.035	0.672	0.000	0.22		3.7	SURCHARGED	
21.001	S2	18.032	0.850	0.000	0.47		7.7	SURCHARGED	
21.002	S3	18.025	1.004	0.000	0.01		7.0	SURCHARGED	
21.003	S4	18.025	1.425	0.000	0.01		9.4	SURCHARGED	
22.000	S5	18.025	1.758	0.000	0.01		3.8	FLOOD RISK	
21.004	S6	18.025	2.275	0.000	0.27		4.9	FLOOD RISK	
20.008	10	16.747	1.086	0.000	1.00		85.7	FLOOD RISK	
23.000	9	16.591	0.161	0.000	1.47		23.8	SURCHARGED	
20.009	10	13.997	0.704	0.000	2.01		131.3	SURCHARGED	

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PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow
24.000		11 15 Winter	100	+40%	100/15 Summer		
24.001		12 15 Winter	100	+40%	100/15 Summer	100/15 Summer	
24.002		13 15 Summer	100	+40%	30/15 Summer		
24.003		14 15 Winter	100	+40%	30/15 Summer	100/15 Summer	
20.010		15 15 Winter	100	+40%	100/15 Summer		
20.011		16 15 Winter	100	+40%	30/15 Summer		
25.000		17 15 Winter	100	+40%	100/15 Summer		
25.001		18 15 Winter	100	+40%	100/15 Summer		
25.002		19 15 Winter	100	+40%	100/15 Summer		
25.003		20 15 Winter	100	+40%	100/15 Winter		
26.000		21 15 Winter	100	+40%	30/15 Summer	100/15 Summer	
25.004		22 15 Winter	100	+40%	30/15 Summer		
25.005		23 15 Winter	100	+40%	100/15 Summer		
25.006		24 15 Winter	100	+40%	30/15 Summer		
20.012		25 15 Winter	100	+40%	30/15 Summer		
27.000		26 180 Winter	100	+40%	1/15 Summer		
27.001	WD/3400/CC	28 180 Winter	100	+40%	1/15 Summer		
20.013		28 15 Winter	100	+40%	30/15 Summer		
28.000		29 15 Winter	100	+40%	100/15 Summer		
29.000		30 15 Winter	100	+40%	30/15 Summer	100/15 Summer	
30.000		31 120 Winter	100	+40%	30/15 Summer		
30.001	WD/2018/1806/F	120 Winter	100	+40%	1/15 Summer		
28.001		32 15 Winter	100	+40%	100/15 Summer		
20.014		33 15 Winter	100	+40%	30/15 Summer		
20.015		34 15 Winter	100	+40%	30/15 Summer		
20.016		35 15 Winter	100	+40%	30/15 Summer		
31.000		36 15 Winter	100	+40%	100/15 Summer		
32.000		37 15 Winter	100	+40%	100/15 Summer		
33.000		1 15 Winter	100	+40%	100/15 Summer		
33.001		2 15 Winter	100	+40%	100/15 Summer		
34.000		8 15 Winter	100	+40%			
33.002		3 30 Winter	100	+40%	100/15 Summer		
33.003		4 30 Winter	100	+40%	100/15 Summer		
33.004		5 30 Winter	100	+40%	100/15 Summer		
35.000	Attn Access	30 Winter	100	+40%	100/15 Summer		
33.005		6 30 Winter	100	+40%	30/15 Summer		
36.000		9 15 Winter	100	+40%			
33.006		7 30 Winter	100	+40%	1/15 Summer		
31.001		38 15 Winter	100	+40%	100/15 Summer		
20.017		39 15 Winter	100	+40%	30/15 Summer		
37.000		40 15 Winter	100	+40%	100/15 Summer		
37.001		41 15 Winter	100	+40%	30/15 Summer		
37.002		42 15 Winter	100	+40%	30/15 Summer		
37.003		43 15 Winter	100	+40%	30/15 Summer		
38.000		10 15 Winter	100	+40%			
38.001		11 15 Winter	100	+40%	30/15 Summer		
38.002		12 15 Winter	100	+40%	30/15 Summer		
39.000		13 15 Winter	100	+40%	100/15 Summer		

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PN	US/MH Name	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap. (l/s)	Overflow Flow (l/s)	Pipe Flow (l/s)	Status
24.000		11	19.161	0.711	0.000	0.72		37.5	SURCHARGED
24.001		12	18.601	1.201	1.109	1.01		52.8	FLOOD
24.002		13	17.744	1.194	0.000	0.99		52.5	FLOOD RISK
24.003		14	16.656	1.206	6.340	1.44		59.3	FLOOD
20.010		15	13.499	0.349	0.000	0.63		229.9	SURCHARGED
20.011		16	12.715	1.890	0.000	1.52		215.3	SURCHARGED
25.000		17	18.790	0.540	0.000	0.95		35.6	SURCHARGED
25.001		18	17.094	0.744	0.000	1.16		52.7	SURCHARGED
25.002		19	15.276	0.276	0.000	1.12		52.2	SURCHARGED
25.003		20	13.965	0.015	0.000	0.58		85.4	SURCHARGED
26.000		21	13.467	1.017	2.072	1.65		32.9	FLOOD
25.004		22	13.512	1.189	0.000	2.32		99.5	FLOOD RISK
25.005		23	13.201	0.971	0.000	0.75		107.3	SURCHARGED
25.006		24	12.811	1.611	0.000	0.91		91.7	SURCHARGED
20.012		25	12.444	1.750	0.000	2.28		315.2	SURCHARGED
27.000		26	13.856	1.956	0.000	0.27		15.9	SURCHARGED
27.001	WD/3400/CC		13.821	2.921	0.000	0.59		11.2	SURCHARGED
20.013		28	12.095	1.479	0.000	1.71		336.1	SURCHARGED
28.000		29	13.069	0.294	0.000	1.15		120.7	SURCHARGED
29.000		30	13.910	1.210	9.706	1.79		77.4	FLOOD
30.000		31	13.197	0.497	0.000	0.51		16.8	SURCHARGED
30.001	WD/2018/1806/F		13.140	0.715	0.000	0.46		15.0	SURCHARGED
28.001		32	12.296	0.146	0.000	1.26		221.0	SURCHARGED
20.014		33	11.772	1.277	0.000	2.12		516.4	SURCHARGED
20.015		34	11.513	1.070	0.000	2.04		518.7	SURCHARGED
20.016		35	11.232	0.857	0.000	2.16		551.7	SURCHARGED
31.000		36	12.648	0.173	0.000	1.32		52.6	SURCHARGED
32.000		37	12.503	0.028	0.000	0.07		2.6	SURCHARGED
33.000		1	14.451	0.051	0.000	0.63		11.9	SURCHARGED
33.001		2	14.342	0.225	0.000	1.13		21.7	SURCHARGED
34.000		8	14.372	-0.078	0.000	0.46		7.3	OK
33.002		3	14.020	0.168	0.000	0.77		32.8	SURCHARGED
33.003		4	14.008	0.258	0.000	0.89		40.1	SURCHARGED
33.004		5	14.002	0.354	0.000	0.64		49.1	SURCHARGED
35.000	Attn Access		13.976	0.814	0.000	0.46		13.8	SURCHARGED
33.005		6	13.977	0.841	0.000	0.21		15.0	SURCHARGED
36.000		9	14.349	-0.101	0.000	0.23		15.2	OK
33.006		7	13.954	1.144	0.000	0.59		19.3	FLOOD RISK
31.001		38	12.505	0.110	0.000	1.06		98.3	SURCHARGED
20.017		39	10.896	0.590	0.000	1.96		650.6	SURCHARGED
37.000		40	12.204	0.929	0.000	0.90		64.7	FLOOD RISK
37.001		41	11.814	1.039	0.000	1.30		62.1	FLOOD RISK
37.002		42	11.580	0.946	0.000	2.25		76.9	SURCHARGED
37.003		43	11.268	0.704	0.000	1.55		91.8	SURCHARGED
38.000		10	13.319	-0.081	0.000	0.43		17.0	OK
38.001		11	12.976	1.166	0.000	0.80		12.6	FLOOD RISK
38.002		12	12.923	1.208	0.000	0.88		13.6	FLOOD RISK

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PN	US/MH Name	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status
39.000		13	13.088	0.138	0.000	0.99		18.6	SURCHARGED

PN	US/MH Name	Level Exceeded
24.000		11
24.001		12
24.002		13
24.003		14
20.010		15
20.011		16
25.000		17
25.001		18
25.002		19
25.003		20
26.000		21
25.004		22
25.005		23
25.006		24
20.012		25
27.000		26
27.001	WD/3400/CC	
20.013		28
28.000		29
29.000		30
30.000		31
30.001	WD/2018/1806/F	
28.001		32
20.014		33
20.015		34
20.016		35
31.000		36
32.000		37
33.000		1
33.001		2
34.000		8
33.002		3
33.003		4
33.004		5
35.000	Attn Access	
33.005		6
36.000		9
33.006		7
31.001		38
20.017		39
37.000		40

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PN	US/MH Name	Level Exceeded
37.001		41
37.002		42
37.003		43
38.000		10
38.001		11
38.002		12
39.000		13

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

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.
39.001	14	15 Winter	100	+40%	100/15 Summer			
38.003	15	15 Winter	100	+40%	1/15 Summer			
20.018	44	15 Winter	100	+40%	100/15 Summer			
40.000	45	15 Winter	100	+40%	100/15 Summer			
40.001	46	15 Winter	100	+40%	30/15 Summer			
40.002	47	15 Winter	100	+40%	30/15 Winter			
40.003	48	15 Winter	100	+40%	100/15 Summer			
41.000	49	15 Winter	100	+40%	30/15 Summer	100/15 Summer		
40.004	50	30 Winter	100	+40%	30/15 Summer			
40.005	51	30 Winter	100	+40%	100/15 Summer			
40.006	52	30 Winter	100	+40%	30/15 Winter			
40.007	53	30 Winter	100	+40%	30/15 Summer			
42.000	56	30 Winter	100	+40%	30/15 Winter			
42.001	57	30 Winter	100	+40%	30/15 Summer	100/15 Summer		
40.008	58	15 Winter	100	+40%	30/15 Summer			
40.009	59	15 Winter	100	+40%	30/15 Summer	100/15 Summer		
43.000	60	15 Winter	100	+40%	30/15 Summer			
43.001	61	15 Winter	100	+40%	100/15 Summer			
43.002	62	15 Winter	100	+40%	100/15 Summer			
43.003	63	15 Winter	100	+40%	100/15 Summer			
44.000	64	15 Winter	100	+40%	100/15 Summer			
44.001	65	15 Winter	100	+40%	100/15 Summer			
43.004	66	15 Winter	100	+40%	100/15 Summer			
45.000	67	15 Winter	100	+40%	100/15 Summer			
43.005	68	15 Winter	100	+40%	100/15 Summer			
40.010	69	15 Winter	100	+40%	30/15 Summer			
46.000	70	15 Winter	100	+40%	100/15 Summer			
40.011	71	15 Winter	100	+40%	30/15 Summer			
40.012	72	15 Winter	100	+40%	30/15 Summer			
40.013	73	15 Winter	100	+40%	30/15 Summer			
40.014	74	15 Winter	100	+40%	30/15 Summer			
19.001	75	15 Winter	100	+40%	30/15 Summer			
47.000	76	30 Winter	100	+40%	30/15 Summer	100/15 Summer		
48.000	77	15 Winter	100	+40%	100/15 Summer			
47.001	78	15 Winter	100	+40%	1/15 Summer			
19.002	79	15 Winter	100	+40%	30/15 Summer			
19.003	80	15 Winter	100	+40%	30/15 Summer			
19.004	81	480 Winter	100	+40%			1/15 Summer	66
49.000	82	15 Winter	100	+40%				
49.001	83	15 Winter	100	+40%				
49.002	84	15 Winter	100	+40%	100/15 Summer			
49.003	85	15 Winter	100	+40%	100/15 Summer			
49.004	86	15 Winter	100	+40%	30/15 Summer			
50.000	87	15 Winter	100	+40%	30/15 Summer			
49.005	88	15 Winter	100	+40%	100/15 Summer			
51.000	89	15 Winter	100	+40%	30/15 Summer	100/15 Summer		
51.001	90	15 Winter	100	+40%	30/15 Summer			
51.002	91	15 Winter	100	+40%	30/15 Summer			

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PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Overflow Cap. (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
39.001	14	12.944	0.246	0.000	0.30	16.7	SURCHARGED	
38.003	15	12.880	1.249	0.000	0.41	31.3	FLOOD RISK	
20.018	44	10.626	0.380	0.000	2.64	774.3	SURCHARGED	
40.000	45	13.915	1.015	0.000	1.06	43.6	FLOOD RISK	
40.001	46	12.479	1.029	0.000	1.69	39.3	FLOOD RISK	
40.002	47	11.712	0.562	0.000	1.27	38.0	SURCHARGED	
40.003	48	11.640	0.530	0.000	0.78	53.0	SURCHARGED	
41.000	49	13.005	1.205	5.040	1.34	53.2	FLOOD	4
40.004	50	11.411	0.811	0.000	1.63	99.1	SURCHARGED	
40.005	51	11.265	0.700	0.000	0.72	101.8	SURCHARGED	
40.006	52	10.970	0.970	0.000	0.90	101.2	FLOOD RISK	
40.007	53	10.807	1.007	0.000	0.70	101.1	FLOOD RISK	
42.000	56	10.985	1.085	0.000	0.86	23.6	FLOOD RISK	
42.001	57	10.604	1.204	4.007	1.60	47.7	FLOOD	4
40.008	58	10.600	1.230	0.000	1.10	118.4	FLOOD RISK	
40.009	59	10.508	1.208	7.787	0.97	157.9	FLOOD	4
43.000	60	12.695	0.895	0.000	2.12	39.0	SURCHARGED	
43.001	61	11.872	0.272	0.000	1.36	66.1	SURCHARGED	
43.002	62	11.720	0.251	0.000	0.64	60.1	SURCHARGED	
43.003	63	11.510	0.710	0.000	1.02	55.5	SURCHARGED	
44.000	64	11.675	0.245	0.000	0.55	16.8	SURCHARGED	
44.001	65	11.607	0.557	0.000	1.01	31.5	SURCHARGED	
43.004	66	11.358	0.723	0.000	1.39	98.4	SURCHARGED	
45.000	67	10.837	0.407	0.000	0.97	15.9	SURCHARGED	
43.005	68	10.804	0.534	0.000	0.59	103.0	SURCHARGED	
40.010	69	10.499	1.145	0.000	1.25	213.1	SURCHARGED	
46.000	70	10.519	0.634	0.000	0.28	10.1	SURCHARGED	
40.011	71	10.487	1.153	0.000	1.27	221.3	SURCHARGED	
40.012	72	10.468	1.155	0.000	1.32	223.8	SURCHARGED	
40.013	73	10.446	1.153	0.000	1.07	226.2	SURCHARGED	
40.014	74	10.427	1.148	0.000	0.79	227.8	SURCHARGED	
19.001	75	10.377	1.153	0.000	3.71	973.0	SURCHARGED	
47.000	76	10.053	0.923	22.974	1.85	68.0	FLOOD	6
48.000	77	10.699	0.524	0.000	1.23	78.7	SURCHARGED	
47.001	78	10.129	1.144	0.000	2.27	142.7	SURCHARGED	
19.002	79	9.988	0.789	0.000	4.19	1049.0	SURCHARGED	
19.003	80	9.541	0.363	0.000	2.68	1037.6	SURCHARGED	
19.004	81	9.132	0.000	0.000	0.49	65.7	227.9	OK
49.000	82	21.528	-0.102	0.000	0.22	13.0		OK
49.001	83	19.321	-0.079	0.000	0.46	23.4		OK
49.002	84	18.857	0.706	0.000	0.95	41.2	SURCHARGED	
49.003	85	15.708	1.119	0.000	1.20	50.2	FLOOD RISK	
49.004	86	14.764	0.909	0.000	1.72	74.9	FLOOD RISK	
50.000	87	14.858	0.955	0.000	1.71	28.8	FLOOD RISK	
49.005	88	14.116	0.482	0.000	1.09	129.2	SURCHARGED	
51.000	89	12.255	1.205	4.855	2.39	39.3	FLOOD	4
51.001	90	12.319	1.440	0.000	1.12	50.5	FLOOD RISK	

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Micro Drainage	Network 2018.1	

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

PN	US/MH Name	Water			Surcharged		Flooded		Pipe Flow (l/s)	Status	Level Exceeded
		Level (m)	Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)					
51.002	91	12.245	1.505	0.000	1.73			64.9	FLOOD RISK		

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30 Tower View Kings Hill West Malling ME19 4PR	LANDS AT BURFIELD VALLEY HAILSHAM SURFACE WATER NETWORK	
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Micro Drainage	Network 2018.1	

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

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
49.006	92	15 Winter	100	+40%	100/15 Summer			
49.007	93	15 Winter	100	+40%	100/15 Summer			
49.008	94	15 Winter	100	+40%	30/15 Summer			
49.009	95	600 Winter	100	+40%				
49.010	96	600 Winter	100	+40%			100/30 Summer	20
49.011	97	360 Winter	100	+40%	30/180 Winter			
19.005	98	600 Winter	100	+40%				
19.006	99	600 Winter	100	+40%				
19.007	109	600 Winter	100	+40%	30/60 Summer			

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Overflow Cap. (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
49.006	92	11.832	1.202	0.000	1.25	215.1	SURCHARGED	
49.007	93	10.697	0.792	0.000	1.21	213.3	SURCHARGED	
49.008	94	9.771	0.516	0.000	1.12	211.8	SURCHARGED	
49.009	95	9.124	-0.937	0.000	0.09	31.1	OK	
49.010	96	9.123	-0.377	0.000	0.11	50.6 21.0	OK	
49.011	97	9.163	0.433	0.000	0.09	22.6	SURCHARGED	
19.005	98	9.114	-0.386	0.000	0.16	193.4	OK	
19.006	99	9.110	-0.390	0.000	0.06	100.8	OK	
19.007	109	9.098	0.643	0.000	0.30	96.3	SURCHARGED	