

BUILDING DESIGN PARTNERSHIP SHALL HAVE NO RESPONSIBILITY FOR ANY USE MADE OF THIS DOCUMENT OTHER THAN FOR THAT WHICH IT WAS PREPARED AND ISSUED.
 ALL DIMENSIONS SHOULD BE CHECKED ON SITE.
 DO NOT SCALE FROM THIS DRAWING.
 ANY DRAWING ERRORS OR DIVERGENCES SHOULD BE BROUGHT TO THE ATTENTION OF BUILDING DESIGN PARTNERSHIP AT THE ADDRESS SHOWN BELOW.

NOTES

- All dimensions are in metres unless stated otherwise.
- This drawing should be read in conjunction with all other relevant architectural and engineering details, drawings and specifications.
- Any discrepancies should be reported to the architect and/or engineer immediately so that clarification can be sought prior to the commencement of work.
- All pipes shall be laid with soffits level (unless otherwise shown) and all manhole/ inspection chamber invert levels shown are for the outlet pipe (unless otherwise shown). Pipe runs shall be laid to the levels indicated, and all pipe gradients indicated are approximate.
- All building drainage works shall be carried out in accordance with BS EN752 drainage and sewer systems outside buildings, the current building regulations, the local authority building control specifications and requirements and the civil engineering specification for the water industry 7th edition, published by the UK water industry research Ltd. (CESWI).
- Existing drainage, manhole positions & levels base on records provided and the drainage CCTV survey undertaken.
- Cover levels are shown for guidance only. Final levels to be determined on site. Where affected by the proposed works existing covers are to be adjusted as necessary.
- The contractor shall allow for the protection, temporary and permanent support and diversion works as necessary, to all existing services to the satisfaction of the statutory undertaker.
- Topographical Information provided within this Drawing is an indication of existing levels across site.
- All existing/ proposed foul water popups and rainwater pipe positions are based on BDP MEP Drawing. Existing below ground drainage to be abandoned/ retained is therefore as accurate as this information provided.

MANHOLE SCHEDULE						
MANHOLE REF	EASTINGS (m)	NORTHINGS (m)	MANHOLE DETAILS	COVER TYPE	MANHOLE DIA.	DEPTH TO INVERT
SW1	6622767.057	201036.536	COVER = 79.150 6x 100Ø IL 77.850 S1.000 INV OUT = 77.650	Standard	1.200	1.500
SW2	622743.165	201026.598	COVER = 80.480 100Ø IL 77.591 S1.000 INV IN = 77.391 S1.001 INV OUT = 77.391	Standard	0.600	3.089
SW3	622739.497	201027.393	COVER = 80.480 S1.001 INV IN = 77.376 S1.002 INV OUT = 77.376	Standard	0.600	3.104
SW4	622735.561	201046.085	COVER = 80.500 S1.002 INV IN = 77.297 S1.003 INV OUT = 77.297	Standard	0.600	3.203
SW5	622743.644	201048.728	COVER = 79.500 S1.003 INV OUT = 77.261 S1.004 INV OUT = 77.261	Standard	1.200	2.239
SW6	622782.085	201062.571	COVER = 77.800 S1.005 INV IN = 75.789 S1.006 INV OUT = 75.789	Standard	1.200	2.011
SW7 (HYDRO-BRAKE)	622789.817	201041.987	COVER = 77.670 S1.006 INV IN = 75.719 S2.002 INV IN = 75.569	Standard	1.200	2.101
SW8	622772.772	201017.154	COVER = 79.150 100 Ø INV IN = 78.450 100 Ø INV IN = 78.450 S3.000 INV OUT = 78.250	Standard	0.600	0.900
SW9	622760.258	201011.910	COVER = 79.150 S3.000 INV IN = 78.081 S3.001 INV OUT = 78.081	Standard	0.600	1.069
SW10	622753.997	200995.259	COVER = 79.200 100Ø INV IN = 78.400 S2.000 INV OUT = 78.200	Standard	0.600	0.800
SW11	622765.318	201000.063	COVER = 78.800 S2.000 INV IN = 77.457 S3.001 INV IN = 77.457 S2.001 INV OUT = 77.457	Standard	1.200	1.343
SW12	622796.799	201013.505	COVER = 77.600 S2.001 INV IN = 76.100 S2.002 INV OUT = 75.950	Standard	1.200	1.500
SW13	622706.111	201012.711	COVER = 82.000 S4.000 INV OUT = 80.350	Standard	1.200	1.650
SW14	622698.234	200989.435	COVER = 82.100 100 Ø INV IN = 81.150 100 Ø INV IN = 81.150 S5.000 INV OUT = 81.100	Standard	1.200	0.950
SW15 (HYDRO-BRAKE)	622713.129	200989.342	COVER = 82.050 S4.000 INV IN = 80.109 S4.001 INV OUT = 80.109	Standard	1.200	1.941
SW16	622715.480	200983.745	COVER = 82.000 S4.001 INV IN = 80.023 S4.002 INV OUT = 80.023	Standard	1.200	1.977
SW17	622738.937	200991.962	COVER = 81.950 S4.002 INV IN = 79.803 S4.003 INV OUT = 79.803	Standard	1.200	2.147
SW18	622738.937	200991.962	COVER = 79.560 S4.003 INV IN = 78.415 S4.004 INV OUT = 78.415	Standard	1.200	1.145
SW19	622742.304	200985.722	COVER = 79.520 S4.004 INV IN = 78.327 S4.005 INV OUT = 78.327	Standard	1.200	1.193

MANHOLE SCHEDULE						
MANHOLE REF	EASTINGS (m)	NORTHINGS (m)	MANHOLE DETAILS	COVER TYPE	MANHOLE DIA.	DEPTH TO INVERT
FW1	622778.500	201014.949	COVER = 79.650 100Ø IL 78.614 100Ø IL 78.614 F1.000 INV IN = 78.564 F1.001 INV OUT = 78.564	Standard	0.600	1.086
FW2	622774.665	201018.163	COVER = 79.320 F1.001 INV IN = 78.441 F1.002 INV OUT = 78.441	Standard	0.600	0.879
FW3	622769.683	201016.643	COVER = 79.280 F1.002 INV IN = 78.315	Standard	1.200	0.965
FW4	622716.620	201040.802	COVER = 81.900 100Ø INV IN = 80.477	Standard	1.200	1.423
FW5	622723.852	201023.514	COVER = 80.870 F2.000 INV OUT = 79.971	Standard	1.200	0.899
FW6	622725.384	201019.855	COVER = 80.865 F2.000 INV IN = 79.874 F2.001 INV OUT = 79.874	Standard	1.200	0.991
FW7	622728.192	201013.163	COVER = 80.810 F2.001 INV IN = 79.756 F2.002 INV OUT = 79.756	Standard	1.200	1.054
FW8	622730.504	201007.653	COVER = 80.700 F2.002 INV IN = 79.711 F2.003 INV OUT = 79.711	Standard	1.200	0.989
FW9	6022717.056	200992.056	COVER = 80.630 F2.003 INV IN = 79.138 F2.004 INV OUT = 79.138	Standard	1.200	1.492

P01 - DESIGN UPDATES	CS	DN	29/05/19
FIRST ISSUE	CS	DN	28/02/19

REVISION / DESCRIPTION	ISSUED	CHECKED	DATE

CLIENT



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PROJECT TITLE
**COVENTRY UNIVERSITY
 FACILITY OF ARTS AND HUMANITIES**

DRAWING TITLE
MANHOLE SCHEDULE

SCALE
NTS @ A1

DATE
FEB '19

PROJECT NUMBER
P2007391

DRAWING NO.
FAH-BDP-ZZ-00-DR-C-50_10-0002

REVISION
P01

I. Surface Water Calculations

11 Ducie Street
 Piccadilly Basin
 Manchester M1 2JB



Date 28/05/2019 17:45

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File Proposed Drainage AREA

Checked by

Innovyze

Network 2016.1

Existing Network Details 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
S1.000	25.918	0.259	100.1	0.155	5.00	0.0	0.600	o	300	Pipe/Conduit
S1.001	3.689	0.015	245.9	0.022	0.00	0.0	0.600	o	300	Pipe/Conduit
S1.002	19.203	0.079	243.1	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit
S1.003	8.783	0.036	244.0	0.033	0.00	0.0	0.600	o	300	Pipe/Conduit
S1.004	19.342	0.080	241.8	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit
S1.005	21.054	0.211	99.8	0.112	0.00	0.0	0.600	o	300	Pipe/Conduit
S1.006	21.969	0.091	241.4	0.008	0.00	0.0	0.600	o	300	Pipe/Conduit
S2.000	11.240	0.305	36.9	0.061	5.00	0.0	0.600	o	300	Pipe/Conduit
S3.000	13.488	0.169	79.8	0.045	5.00	0.0	0.600	o	300	Pipe/Conduit
S3.001	12.695	0.431	29.5	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit
S2.001	34.117	1.357	25.1	0.039	0.00	0.0	0.600	o	300	Pipe/Conduit
S2.002	29.499	0.122	241.8	0.029	0.00	0.0	0.600	o	450	Pipe/Conduit
S1.007	6.347	0.079	80.3	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit
S4.000	25.983	0.350	74.2	0.000	5.00	0.0	0.600	o	375	Pipe/Conduit
S4.001	31.479	0.315	99.9	0.106	0.00	0.0	0.600	o	375	Pipe/Conduit
S5.000	19.142	0.191	100.2	0.000	5.00	0.0	0.600	o	150	Pipe/Conduit
S5.001	6.870	0.086	79.9	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit
S4.002	22.200	1.533	14.5	0.103	0.00	0.0	0.600	o	300	Pipe/Conduit
S4.003	7.443	0.093	80.0	0.140	0.00	0.0	0.600	o	375	Pipe/Conduit

Network Results Table

PN	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Vel (m/s)	Cap (l/s)
S1.000	77.650	0.155	0.0	1.57	111.1
S1.001	77.391	0.177	0.0	1.00	70.5
S1.002	77.376	0.177	0.0	1.00	71.0
S1.003	77.297	0.210	0.0	1.00	70.8
S1.004	77.261	0.210	0.0	1.01	71.2
S1.005	76.000	0.322	0.0	1.57	111.3
S1.006	75.789	0.330	0.0	1.01	71.2
S2.000	78.200	0.061	0.0	2.60	183.7
S3.000	78.250	0.045	0.0	1.76	124.5
S3.001	78.081	0.045	0.0	2.91	205.5
S2.001	77.457	0.145	0.0	3.15	222.5
S2.002	75.950	0.174	0.0	1.30	207.2
S1.007	75.569	0.504	0.0	1.76	124.1
S4.000	80.700	0.000	0.0	2.10	232.5
S4.001	80.350	0.106	0.0	1.81	200.2
S5.000	81.100	0.000	0.0	1.00	17.7
S5.001	80.109	0.000	0.0	1.13	19.9
S4.002	80.023	0.209	0.0	4.15	293.5
S4.003	78.415	0.349	0.0	2.03	223.9

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File Proposed Drainage AREA

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Network 2016.1

Existing Network Details 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
S4.004	14.968	0.187	80.0	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit

Network Results Table

PN	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Vel (m/s)	Cap (l/s)
S4.004	78.322	0.349	0.0	2.03	223.8

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Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
S1	79.150	1.500	Open Manhole	1200	S1.000	77.650	300				
S2	80.480	3.089	Open Manhole	600	S1.001	77.391	300	S1.000	77.391	300	
S3	80.480	3.104	Open Manhole	600	S1.002	77.376	300	S1.001	77.376	300	
S4	80.500	3.203	Open Manhole	600	S1.003	77.297	300	S1.002	77.297	300	
S5	79.500	2.239	Open Manhole	1200	S1.004	77.261	300	S1.003	77.261	300	
S6	79.000	3.000	Open Manhole	1200	S1.005	76.000	300	S1.004	77.181	300	1181
S7	77.800	2.011	Open Manhole	1200	S1.006	75.789	300	S1.005	75.789	300	
S8	79.200	1.000	Open Manhole	600	S2.000	78.200	300				
S9	79.150	0.900	Open Manhole	600	S3.000	78.250	300				
S10	79.150	1.069	Open Manhole	1200	S3.001	78.081	300	S3.000	78.081	300	
S9	78.800	1.343	Open Manhole	600	S2.001	77.457	300	S2.000	77.895	300	438
								S3.001	77.650	300	193
S10	77.600	1.650	Open Manhole	1200	S2.002	75.950	450	S2.001	76.100	300	
S8	77.670	2.101	Open Manhole	1200	S1.007	75.569	300	S1.006	75.698	300	129
								S2.002	75.828	450	409
S	77.500	2.010	Open Manhole	0		OUTFALL		S1.007	75.490	300	
S18	82.000	1.300	Open Manhole	1050	S4.000	80.700	375				
S19	82.000	1.650	Open Manhole	1200	S4.001	80.350	375	S4.000	80.350	375	
S20	82.100	1.000	Open Manhole	1050	S5.000	81.100	150				
S21	82.050	1.941	Open Manhole	1200	S5.001	80.109	150	S5.000	80.909	150	800
S20	82.200	2.177	Open Manhole	1200	S4.002	80.023	300	S4.001	80.035	375	87
								S5.001	80.023	150	
S18	79.560	1.145	Open Manhole	1050	S4.003	78.415	375	S4.002	78.490	300	
S19	79.540	1.218	Open Manhole	1050	S4.004	78.322	375	S4.003	78.322	375	
S	80.000	1.865	Open Manhole	0		OUTFALL		S4.004	78.135	375	

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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)
S1.000	o	300	S1	79.150	77.650	1.200	Open Manhole	1200
S1.001	o	300	S2	80.480	77.391	2.789	Open Manhole	600
S1.002	o	300	S3	80.480	77.376	2.804	Open Manhole	600
S1.003	o	300	S4	80.500	77.297	2.903	Open Manhole	600
S1.004	o	300	S5	79.500	77.261	1.939	Open Manhole	1200
S1.005	o	300	S6	79.000	76.000	2.700	Open Manhole	1200
S1.006	o	300	S7	77.800	75.789	1.711	Open Manhole	1200
S2.000	o	300	S8	79.200	78.200	0.700	Open Manhole	600
S3.000	o	300	S9	79.150	78.250	0.600	Open Manhole	600
S3.001	o	300	S10	79.150	78.081	0.769	Open Manhole	1200
S2.001	o	300	S9	78.800	77.457	1.043	Open Manhole	600
S2.002	o	450	S10	77.600	75.950	1.200	Open Manhole	1200
S1.007	o	300	S8	77.670	75.569	1.801	Open Manhole	1200
S4.000	o	375	S18	82.000	80.700	0.925	Open Manhole	1050
S4.001	o	375	S19	82.000	80.350	1.275	Open Manhole	1200
S5.000	o	150	S20	82.100	81.100	0.850	Open Manhole	1050
S5.001	o	150	S21	82.050	80.109	1.791	Open Manhole	1200
S4.002	o	300	S20	82.200	80.023	1.877	Open Manhole	1200

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)
S1.000	25.918	100.1	S2	80.480	77.391	2.789	Open Manhole	600
S1.001	3.689	245.9	S3	80.480	77.376	2.804	Open Manhole	600
S1.002	19.203	243.1	S4	80.500	77.297	2.903	Open Manhole	600
S1.003	8.783	244.0	S5	79.500	77.261	1.939	Open Manhole	1200
S1.004	19.342	241.8	S6	79.000	77.181	1.519	Open Manhole	1200
S1.005	21.054	99.8	S7	77.800	75.789	1.711	Open Manhole	1200
S1.006	21.969	241.4	S8	77.670	75.698	1.672	Open Manhole	1200
S2.000	11.240	36.9	S9	78.800	77.895	0.605	Open Manhole	600
S3.000	13.488	79.8	S10	79.150	78.081	0.769	Open Manhole	1200
S3.001	12.695	29.5	S9	78.800	77.650	0.850	Open Manhole	600
S2.001	34.117	25.1	S10	77.600	76.100	1.200	Open Manhole	1200
S2.002	29.499	241.8	S8	77.670	75.828	1.392	Open Manhole	1200
S1.007	6.347	80.3	S	77.500	75.490	1.710	Open Manhole	0
S4.000	25.983	74.2	S19	82.000	80.350	1.275	Open Manhole	1200
S4.001	31.479	99.9	S20	82.200	80.035	1.790	Open Manhole	1200
S5.000	19.142	100.2	S21	82.050	80.909	0.991	Open Manhole	1200
S5.001	6.870	79.9	S20	82.200	80.023	2.027	Open Manhole	1200
S4.002	22.200	14.5	S18	79.560	78.490	0.770	Open Manhole	1050

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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)
S4.003	o	375	S18	79.560	78.415	0.770	Open Manhole	1050
S4.004	o	375	S19	79.540	78.322	0.843	Open Manhole	1050

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)
S4.003	7.443	80.0	S19	79.540	78.322	0.843	Open Manhole	1050
S4.004	14.968	80.0	S	80.000	78.135	1.490	Open Manhole	0

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Online Controls for Storm

Hydro-Brake Optimum® Manhole: S8, DS/PN: S1.007, Volume (m³): 8.3

Unit Reference MD-SHE-0271-4400-1600-4400
 Design Head (m) 1.600
 Design Flow (l/s) 44.0
 Flush-Flo™ Calculated
 Objective Minimise upstream storage
 Application Surface
 Sump Available Yes
 Diameter (mm) 271
 Invert Level (m) 75.569
 Minimum Outlet Pipe Diameter (mm) 300
 Suggested Manhole Diameter (mm) 2100

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.600	44.0	Kick-Flo®	1.107	36.9
Flush-Flo™	0.513	43.8	Mean Flow over Head Range	-	37.4

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	8.6	0.800	42.5	2.000	49.0	4.000	68.5	7.000	89.9
0.200	27.9	1.000	40.0	2.200	51.3	4.500	72.6	7.500	93.0
0.300	41.8	1.200	38.3	2.400	53.5	5.000	76.4	8.000	96.0
0.400	43.3	1.400	41.3	2.600	55.6	5.500	80.0	8.500	98.9
0.500	43.8	1.600	44.0	3.000	59.6	6.000	83.4	9.000	101.7
0.600	43.6	1.800	46.6	3.500	64.2	6.500	86.8	9.500	104.4

Hydro-Brake Optimum® Manhole: S21, DS/PN: S5.001, Volume (m³): 2.5

Unit Reference MD-SHE-0097-5000-1600-5000
 Design Head (m) 1.600
 Design Flow (l/s) 5.0
 Flush-Flo™ Calculated
 Objective Minimise upstream storage
 Application Surface
 Sump Available Yes
 Diameter (mm) 97
 Invert Level (m) 80.109
 Minimum Outlet Pipe Diameter (mm) 150
 Suggested Manhole Diameter (mm) 1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.600	5.0	Kick-Flo®	0.865	3.8
Flush-Flo™	0.425	4.7	Mean Flow over Head Range	-	4.2

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	3.1	0.400	4.7	0.800	4.1	1.400	4.7	2.000	5.5
0.200	4.3	0.500	4.7	1.000	4.0	1.600	5.0	2.200	5.8
0.300	4.6	0.600	4.6	1.200	4.4	1.800	5.3	2.400	6.0

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Hydro-Brake Optimum® Manhole: S21, DS/PN: S5.001, Volume (m³): 2.5

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
2.600	6.3	4.000	7.7	5.500	8.9	7.000	10.0	8.500	11.0
3.000	6.7	4.500	8.1	6.000	9.3	7.500	10.3	9.000	11.3
3.500	7.2	5.000	8.5	6.500	9.7	8.000	10.7	9.500	11.6

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Storage Structures for Storm

Tank or Pond Manhole: S6, DS/PN: S1.005

Invert Level (m) 76.000

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	250.0	0.800	250.0	0.801	0.0

Tank or Pond Manhole: S21, DS/PN: S5.001

Invert Level (m) 80.109

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	37.5	0.800	37.5	0.801	0.0

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

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
 Hot Start (mins) 0 MADD Factor * 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 Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 2 Number of Storage Structures 2 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 19.200 Cv (Summer) 0.750
 Region England and Wales Ratio R 0.400 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status ON

Profile(s)

Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
 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.	Water	Surcharged	Flooded
									Level (m)	Depth (m)	Volume (m ³)
S1.000	S1	15 Winter	1	+0%	100/15 Summer				77.743	-0.207	0.000
S1.001	S2	15 Winter	1	+0%	30/15 Summer				77.536	-0.155	0.000
S1.002	S3	15 Winter	1	+0%	30/15 Winter				77.504	-0.172	0.000
S1.003	S4	15 Winter	1	+0%	30/15 Summer				77.446	-0.151	0.000
S1.004	S5	15 Winter	1	+0%	100/15 Summer				77.398	-0.163	0.000
S1.005	S6	60 Winter	1	+0%	100/15 Summer				76.070	-0.230	0.000
S1.006	S7	60 Winter	1	+0%	30/15 Summer				75.880	-0.209	0.000
S2.000	S8	15 Winter	1	+0%					78.247	-0.253	0.000
S3.000	S9	15 Winter	1	+0%					78.297	-0.253	0.000
S3.001	S10	15 Winter	1	+0%					78.118	-0.263	0.000
S2.001	S9	15 Winter	1	+0%					77.518	-0.239	0.000
S2.002	S10	15 Winter	1	+0%	100/15 Summer				76.055	-0.345	0.000
S1.007	S8	15 Winter	1	+0%	30/15 Summer				75.752	-0.117	0.000
S4.000	S18	60 Winter	1	+0%					80.700	-0.375	0.000
S4.001	S19	15 Winter	1	+0%					80.414	-0.311	0.000
S5.000	S20	60 Winter	1	+0%					81.100	-0.150	0.000
S5.001	S21	60 Winter	1	+0%					80.109	-0.150	0.000
S4.002	S20	15 Winter	1	+0%					80.084	-0.239	0.000
S4.003	S18	15 Winter	1	+0%	100/15 Summer				78.564	-0.226	0.000
S4.004	S19	15 Winter	1	+0%	100/15 Summer				78.445	-0.252	0.000

PN	US/MH Name	Pipe		Level Exceeded
		Flow / Cap.	Flow / (l/s)	
S1.000	S1	0.21	20.4	OK
S1.001	S2	0.47	23.1	OK
S1.002	S3	0.37	23.0	OK
S1.003	S4	0.49	26.3	OK
S1.004	S5	0.43	26.5	OK
S1.005	S6	0.13	12.3	OK
S1.006	S7	0.20	12.6	OK

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

PN	US/MH Name	Flow / Cap.	Pipe		Level Exceeded
			Overflow (l/s)	Flow (l/s)	
S2.000	S8	0.06		8.1	OK
S3.000	S9	0.06		6.0	OK
S3.001	S10	0.04		5.9	OK
S2.001	S9	0.09		18.3	OK
S2.002	S10	0.12		21.9	OK
S1.007	S8	0.35		24.4	OK
S4.000	S18	0.00		0.0	OK
S4.001	S19	0.07		11.9	OK
S5.000	S20	0.00		0.0	OK
S5.001	S21	0.00		0.0	OK
S4.002	S20	0.09		23.5	OK
S4.003	S18	0.33		39.3	OK
S4.004	S19	0.23		39.5	OK

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

Simulation Criteria

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

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 2 Number of Storage Structures 2 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 19.200 Cv (Summer) 0.750
 Region England and Wales Ratio R 0.400 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status ON

Profile(s)

Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
 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.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)
S1.000	S1	15 Winter	30	+0%	100/15 Summer				77.803	-0.147	0.000
S1.001	S2	15 Winter	30	+0%	30/15 Summer				77.708	0.017	0.000
S1.002	S3	15 Winter	30	+0%	30/15 Winter				77.685	0.009	0.000
S1.003	S4	15 Winter	30	+0%	30/15 Summer				77.623	0.026	0.000
S1.004	S5	15 Winter	30	+0%	100/15 Summer				77.559	-0.002	0.000
S1.005	S6	30 Winter	30	+0%	100/15 Summer				76.174	-0.126	0.000
S1.006	S7	30 Winter	30	+0%	30/15 Summer				76.145	0.056	0.000
S2.000	S8	15 Winter	30	+0%					78.276	-0.224	0.000
S3.000	S9	15 Winter	30	+0%					78.326	-0.224	0.000
S3.001	S10	15 Winter	30	+0%					78.142	-0.239	0.000
S2.001	S9	15 Winter	30	+0%					77.556	-0.201	0.000
S2.002	S10	15 Winter	30	+0%	100/15 Summer				76.156	-0.244	0.000
S1.007	S8	15 Winter	30	+0%	30/15 Summer				76.127	0.258	0.000
S4.000	S18	60 Winter	30	+0%					80.700	-0.375	0.000
S4.001	S19	15 Winter	30	+0%					80.466	-0.259	0.000
S5.000	S20	60 Winter	30	+0%					81.100	-0.150	0.000
S5.001	S21	15 Winter	30	+0%					80.112	-0.147	0.000
S4.002	S20	15 Winter	30	+0%					80.131	-0.192	0.000
S4.003	S18	15 Winter	30	+0%	100/15 Summer				78.752	-0.038	0.000
S4.004	S19	15 Summer	30	+0%	100/15 Summer				78.555	-0.142	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S1	0.50		50.2	OK	
S1.001	S2	1.14		56.1	SURCHARGED	
S1.002	S3	0.90		55.5	SURCHARGED	
S1.003	S4	1.20		64.6	SURCHARGED	
S1.004	S5	1.01		62.2	OK	
S1.005	S6	0.38		36.6	OK	
S1.006	S7	0.60		37.8	SURCHARGED	

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

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe	Status	Level
				Flow (l/s)		Exceeded
S2.000	S8	0.14		20.0	OK	
S3.000	S9	0.14		14.7	OK	
S3.001	S10	0.09		14.6	OK	
S2.001	S9	0.23		47.9	OK	
S2.002	S10	0.32		56.6	OK	
S1.007	S8	0.62		43.8	SURCHARGED	
S4.000	S18	0.00		0.0	OK	
S4.001	S19	0.21		37.1	OK	
S5.000	S20	0.00		0.0	OK	
S5.001	S21	0.00		0.0	OK	
S4.002	S20	0.28		72.5	OK	
S4.003	S18	1.00		119.2	OK	
S4.004	S19	0.70		118.8	OK	

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

Simulation Criteria

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

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 2 Number of Storage Structures 2 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 19.200 Cv (Summer) 0.750
 Region England and Wales Ratio R 0.400 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status ON

Profile(s)

Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
 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.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)
S1.000	S1	15 Winter	100	+40%	100/15 Summer				78.468	0.518	0.000
S1.001	S2	15 Winter	100	+40%	30/15 Summer				78.278	0.587	0.000
S1.002	S3	15 Winter	100	+40%	30/15 Winter				78.130	0.454	0.000
S1.003	S4	15 Winter	100	+40%	30/15 Summer				77.937	0.340	0.000
S1.004	S5	15 Winter	100	+40%	100/15 Summer				77.732	0.171	0.000
S1.005	S6	60 Winter	100	+40%	100/15 Summer				76.445	0.145	0.000
S1.006	S7	15 Summer	100	+40%	30/15 Summer				76.486	0.397	0.000
S2.000	S8	15 Winter	100	+40%					78.304	-0.196	0.000
S3.000	S9	15 Winter	100	+40%					78.354	-0.196	0.000
S3.001	S10	15 Winter	100	+40%					78.162	-0.219	0.000
S2.001	S9	15 Winter	100	+40%					77.595	-0.162	0.000
S2.002	S10	15 Winter	100	+40%	100/15 Summer				76.696	0.296	0.000
S1.007	S8	15 Winter	100	+40%	30/15 Summer				76.648	0.779	0.000
S4.000	S18	60 Winter	100	+40%					80.700	-0.375	0.000
S4.001	S19	15 Winter	100	+40%					80.510	-0.215	0.000
S5.000	S20	60 Winter	100	+40%					81.100	-0.150	0.000
S5.001	S21	15 Winter	100	+40%					80.122	-0.137	0.000
S4.002	S20	15 Winter	100	+40%					80.174	-0.149	0.000
S4.003	S18	15 Winter	100	+40%	100/15 Summer				79.118	0.328	0.000
S4.004	S19	15 Winter	100	+40%	100/15 Summer				78.804	0.107	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S1	0.84		84.1	SURCHARGED	
S1.001	S2	1.93		95.4	SURCHARGED	
S1.002	S3	1.54		94.7	SURCHARGED	
S1.003	S4	2.05		110.8	SURCHARGED	
S1.004	S5	1.80		111.0	SURCHARGED	
S1.005	S6	0.42		40.9	SURCHARGED	
S1.006	S7	0.66		41.4	SURCHARGED	

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PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe	Status	Level
				Flow (l/s)		Exceeded
S2.000	S8	0.26		36.3	OK	
S3.000	S9	0.26		26.7	OK	
S3.001	S10	0.16		26.4	OK	
S2.001	S9	0.43		86.9	OK	
S2.002	S10	0.58		103.0	SURCHARGED	
S1.007	S8	0.62		43.8	SURCHARGED	
S4.000	S18	0.00		0.0	OK	
S4.001	S19	0.38		67.3	OK	
S5.000	S20	0.00		0.0	OK	
S5.001	S21	0.01		0.1	OK	
S4.002	S20	0.51		130.8	OK	
S4.003	S18	1.80		215.0	SURCHARGED	
S4.004	S19	1.26		213.2	SURCHARGED	